



YALE FORESTS

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About the YALE SCHOOL FORESTS

The Yale Forests are a network of 10,770 acres of forestland in Connecticut, New Hampshire, and Vermont. One of the nation's oldest sustainably managed forest systems, the Yale Forests are owned by Yale University and stewarded by the faculty, staff, and students of The Forest School at The Yale School of the Environment. They provide opportunities for education, research, professional development, and community building, especially the 7,840-acre Yale-Myers Forest in northeastern Connecticut.

2025 ANNUAL REPORT

Dr. Joe Orefice, Director of Forest and Agricultural Operations, '09 MF

Dr. Mark S. Ashton, Faculty Director, '85 MF

The Year Behind

Wow — time travels fast. We have another year of activities and accomplishments to report on for January - December 2024.

Income and management: Last year we had an OK maple sugaring operation. It was not as good as the year before — our first year. Joe was hoping it would be a better, but the vagaries of New England climate for early spring did not provide those regular cold nights and warm sunny days. And this year, unfortunately, Yale-Myers maple syrup was no better, so you had better contact Joe or Shaylyn Austin, our trusty Forest Manager, for orders ASAP as we don't have much.

What we did not bring in syrup income we did bring in timber income. We (the forest crew of 2024 — see the crew report on page 3) marked a shelterwood/seed tree on a drumlin site in the Plusnin Division that was harvested over the fall and brought in a nice slice of income from the premier forest type and size class that we grow — veneer oak on a 100+ rotation. We left a well-spaced legacy structure that we might remove some of later if it becomes too shady for the regeneration. It is picture perfect with the tops left high to protect seedlings from browsing. This is the treatment that Bernie Nyanzu and our ADAPT research program has used in an experimental enrichment planting (see *ADAPT* article, p. 1).

We also completed a picture-perfect crown thinning in Plusnin as well. So this in combination with a sale marked as a thinning and group selection originally created by the forest crew of 2006 and then revisited by the forest crew of 2020 called "Cut my Trees and Leave Them Too," as well as two shelterwoods marked in 2023, and a crown thinning marked in 2021, comprised a total of approximately 460,000 bdf cut this past year. We obtained more income this year from timber than from the last five prior years.

Continued on page 2

Yale Forests advances climate-smart agroforestry through ADAPT project



Gabriela D'Orazio '26 MFS measures and establishes planting zones in a new Experimental Linear Gap (ELG), rectangular openings created to monitor the performance of select species. Photo by Bernard Nyanzu

Bernard Nyanzu, Agroforestry Research Fellow, '24 MF

The ADAPT project is a USDA-funded initiative promoting climate-smart, sustainable agriculture in New England through the development of regionally adapted agroforestry systems. ADAPT — Adaptive Agroforestry Principles & Teaching — is a collaboration among faculty and staff from three universities: Yale, Dartmouth, and the University of New Hampshire.

At Yale Forests, the project is led by Professors Mark Ashton and Joe Orefice. During the school year, two YSE students, Gabriela D'Orazio '26 MFS and De-Graft Acquah '26 MF, assisted in the planning and implementation of the projects. This summer, we will continue this work with the help of a YSE student intern, Cayce Morrison '26 MEM.

Together, we are designing and implementing three agroforestry systems suited to New England conditions: Silvopasture, polyculture, and forest farming.

Silvopasture is a system in which trees and grazing livestock are intentionally managed on the same land. The silvopasture research involves the creation of three distinct systems: converting forest to silvopasture, converting

pasture to silvopasture, and open pasture and maintaining adjacent forest as a control. These comparisons aim to assess both the ecological and agricultural productivity of these silvopasture systems.

In the forest farming research, the team is establishing enrichment plantings of agroforestry crops in the forest understory following a shelterwood silvicultural treatment, a regeneration method that creates large canopy openings. Within these openings, we will plant selected crops on the north and south sides near residual trees, as well as in open areas away from trees.

This layout is designed to test how light availability, soil moisture, and root competition affect crop establishment and growth across the treatment area.

This experiment is further replicated in a more controlled setting using Experimental Linear Gaps (ELGs). These are rectangular openings strategically created to monitor the performance of select herbaceous, shrub, and tree species of economic value. The ELG is designed to represent the full range of forest soil and light conditions possible on a given site and soil type, offering valuable insight into how agroforestry crops perform across varied microenvironments.

Yale Forests 2025 Annual Report (continued from page 1)

Partly this has been logistical – finding the right logger to work with at the right time has been extraordinarily difficult; but it is partly the very poor markets that we have been dealing with as well.

Speaking of income, Joe put in an alley cropping agroforestry trial with a variety of apple trees. The area is the old French Field that Os and his students treasured for so long for his experimental mesocosm work until eventually succession took its toll with autumn olive, pine and everything else. Joe forestry mulched the whole area – electrified it and has planted apple trees with the hopes of planting squash and a variety of other easy to grow vegetables – all of which he intends to harvest and sell as another source of income for the forest – apple cider mmm...mmm good (see *alley cropping article*, p. 7)!

Lastly, with consideration to management and operations, Shaylyn Austin joined the team as the new Forest Manager from Gracie Bachmann who is now galivanting around Rwanda working as a Forester with our Forest School's Environmental Leadership and Training Initiative ([ELTI – ELTI | Empowering People to Restore and Conserve Tropical Forests](#)) in Rwanda. Shay actually is a 2023 winter graduate MF (crew '22) who then went on to work as a postgraduate fellow with Joe on his sugar maple research and extension in winter - fall 2024. We welcome Shay and her ever present little dog "Stogie" to the team.

Research: This year we have more than 50 ongoing and new research projects at the forest. Some of the more recent publications are coming of our chronosequence shelterwood studies, where we have about 35 silvicultural treatments to obtain natural regeneration of oak-hardwood with permanent plots that range across a developmental age distribution from 0 to 35 years; and that we

have compared with plots in older mature oak-hardwood forest (100+ years old). This year, studies have been published that have examined the effects of soils and local site attributes on surface soil carbon and nitrogen over time since regeneration treatment; and how ground beetle trophic interaction influence soil nitrogen. Lastly, a group from Rutgers has been examining the abundance and diversity of bees across this chronosequence and they are poised to publish much of the kinds of similar trends that we have published with breeding bird abundance and diversity. Namely that young regenerating forests can be extremely diverse and abundant with fauna and flora. Diversity declines with entry into stem exclusion before diversifying and increasing in abundance again as the stand matures but not the degree of early stand dynamics. Irrespective of the chronosequence studies, there is so much more going on that has been reported that we encourage you to look at our research report in the newsletter (p. 5).

Extension and Education: We had a record number of students stay over the summer period with nine members in the forest crew, six undergraduate students in the Ingalls Naturalist Program and a host of doctoral and masters student researchers who came and went. All of this was overseen by camp cook Kumba Jammeh who made exquisite Gambian cuisine that knocked everybody's socks off.

In August, we had a great weekend getaway at the Yale Camp at Great Mountain Forest for The Forest School students, staff and faculty; and the Ecosystem Measurements Mod was held at Yale-Myers. And then through the academic school year we had our usual routine of silviculture, forest operations, forest dynamics and field skills student course trips in the fall and spring.

For the Quiet Corner Initiative this

was the second year in which we ramped up further to our pre-Covid levels. We organized our traditional horse logging and portable sawmill demonstration – always a winner. We held our usual summer research seminar series, management plans engagement with landowners (this year we worked with another six landowners); and we resumed some workshops. We had our harvest festival between the school, its students and our neighbors. And Joe, Laura, Shay and Marlyse put together a variety of forest farming workshops and maple syrup-sugar bush management demonstrations, but we still need to do more to get back to pre-Covid levels.

Lastly, and surprisingly, in regard to facilities we really have not much to report having put in a bunch of renovations the year before for the Morse House and the bathhouse!! Joe is recovering we suspect from dealing with Yale!!

The Year Ahead

Research: The year ahead is somewhat similar as the year behind. Mark Ashton and Joseph Orefice are fully engaged in collaborating with the University of New Hampshire and Dartmouth on an agroforestry research and extension grant – though at the time of this writing we are “paused”!!! We pray our five-year grant won't be cancelled!!! Additionally, Laura Green and Marlyse Duguid were awarded a Connecticut Specialty Crop Block Grant to address barriers to cultivation and sale of ginseng and goldenseal and this work continues; and Joe and Emily Sigman '21 MF continue to lead a collaborative project with Dartmouth and the CT Agricultural Experiment Station on lead and PFAS contamination in maple sap and syrup from urban and rural contaminated sites.

Education and Extension: The forest crew is poised to take on another year. A smaller group this year with only seven. But it seems we have a big Ingalls Naturalist Program that Laura is taking care of and our usual suite of researchers pursuing agroforestry, silvicultural, aquatic and community ecology studies.

We also have the usual trip to Germany with TUM and Bavaria at the top of the visit as always but with an additional foray into the Czech Republic to test out the Pilsners!! Joe is leading the charge. So it looks like we have another productive year ahead.

We hope many of you will visit us at Yale Forests this upcoming year, and we sincerely appreciate your continued support.



Firewood logs on the landing of Acer Shungus, marked in 2023 and harvested fall 2024. Photo by Shaylyn Austin

2024 Yale Forest Crew takes on the Plusnin Division

Led by forest manager **Gracie Bachmann** '23 MF, the 2024 Forest Crew was charged with inventorying and implementing prescriptions in the Plusnin Division of Yale-Myers Forest. The crew consisted of nine Yale School of the Environment master's students: **Nate McMullen** '25 MF, **Leah Snavelly** '25 MF, **Owen Klein** '25 MF, **Aaron Donato** '25 MF, **Kate Regan-Loomis** '24 MF, **Alice Gerow** '24 MF, **Grace Dominic** '24 MF, **Bernard Nyanzu** '24 MF, and **Franklin Bertellotti** '24 MEM.

The crew marked three timber sales across Yale-Myers and Yale-Toumey Forest. They also completed a round of Yale-Myers' permanent Continuous Forest Inventory (CFI) plots. The YMF CFI plots were first established in the 1950s and are resampled every 10 years. The data provide critical information on the development of the forest, supporting numerous research inquiries and informing our ongoing silvicultural prescriptions and management decisions. We're proud of everything the 2024 crew accomplished!

Donato published a personal account of his time working on forest crew in an August 2024 article in The Overstory. [Check it out!](#)



The 2024 Forest Crew (top) Photo by Chloe Arner

Nyanzu traverses a field of shrubs. This field was later converted into an alley cropping orchard (middle left) (see [alley cropping article](#), p. 7) Photo by Grace Dominic

Bertellotti admires a robust skunk cabbage while inventorying the Plusnin Division at YMF. (middle right) Photo by Leah Snavelly

Regan-Loomis and Klein measure the heights of red pines at Yale-Toumey. (bottom left) Photo by Leah Snavelly

McMullen marks a thinning. (Bottom right) Photo by Alice Gerow

Sale Name	Forest	Acreage	Volume (MBF)	Silvicultural Prescription(s)	Sale Name Origin
Win Some Pluse Some	Yale-Myers	29	49	Crown Thinning	A play on a classic expression, and the crew's division – Plusnin
McLeody, with a Chance of Treefall	Yale-Myers	33	187	Shelterwood & Crown Thinning	Another clever pun – a McLeod is a popular trailwork tool.
Pipe Down, Franklin!	Yale-Toumey	70.6	510	Red Pine Pre-Salvage	In an email to NESAF members, the director of NESAF credited Franklin for alerting him to a scam phishing email sent by a fake NESAF account. This was Mark's reaction, in jest of course.

Prescriptions marked by the summer forest crew of 2024 and their descriptions.

Another season of maple syrup production is in the books (Or rather, on the sugar house walls)

Shaylyn Austin, Forest Manager, '23 MF

The Yale-Myers sugarhouse is a navy blue food truck trailer. Inside, it holds our evaporator — the key piece of equipment used to boil sap into syrup — a table with our filter press and canner, and a shelving unit stocked with tools and supplies. The space is snug but it does the trick, comfortably accommodating up to four workers at a time.

There's hardly space for decor, but written in Sharpie on the sugarhouse walls are the dates of every boil since the program began, along with the weather, syrup grade, and volume produced that day. We now have four seasons of boiling days recorded. It's fun to read the data and reflect — each year tells a different story.

The first year, my classmates Emma Broderick '23 MF and Mary Katherine DeWane '24 MF built the sap house and installed tubing lines to the first 200 taps. They finished just in time to squeeze in a couple of boils to test the system. In the second year, the sap was flowing! They boiled 100 gallons from just 200 taps, averaging about 0.5 gallons per tree (the average yield in Connecticut is ~0.36 gallons per tree).

I joined the team in January 2024. We remember this third season as the year of the spoiled sap. We had doubled the size of the sugarbush to 412 taps, and had high hopes. We produced 120 gallons of syrup, but 20 of those gallons were sour. Ubenownst to us, a couple of especially warm days had spoiled the sap. The resulting syrup was a strange, light honey color. The consistency was stringy, and the flavor fermented. Dozens of bottles of this unsellable syrup sit in the sap house, a reminder of what can go wrong. Silver lining — it's a delightful souvenir for sugarhouse visitors.

If this past year — Year 4 — had a theme, it would be *The Frozen February*. Everyone was talking about it. Successive bouts of snow, rain, and unyielding cold blanketed the forest in a sheet of ice. For two



Assistant forest manager Leah Snavelly '25 MF wraps up a day of sugarbush maintenance. Every year, Yale Forests staff make improvements to the sugarbush, some big some small. Last fall, we straightened the mainline through the phragmites swamp, the thoroughfare that connects the two main sections of the sugarbush. We can proudly report that the mainline is straight as an arrow. Photo by Shaylyn Austin

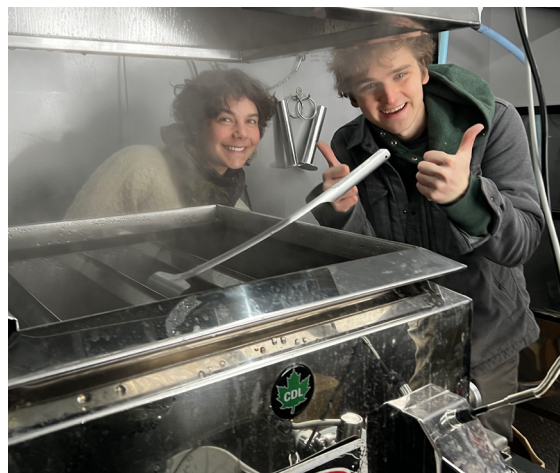
weeks, it was impossible to traverse the woods without spikes, or ice skates. The trees were frozen to the pith.

Eventually, the weather warmed, but it took time for the sap to thaw. We didn't have enough sap to "sweeten the pan" — fill the evaporator for the first boil — until February 28, four weeks later than previous years. We knew it would be a short season. To avoid the pain of spoiled sap, we adjusted our protocol. Twice in-between boils, I drained the evaporator pans into buckets and stored the sap in the fridge. We couldn't afford to waste a drop of sugar.

Freezing nights followed by warm, sunny days create the pressure differential inside the tree that causes sap to flow. By the third week of March, freezing nights were few and far between. Thankfully, our vacuum pump assisted the sap flow, and we managed a few more boils. Late-season sap has a greater concentration of bacteria, leading to more caramelization and a darker syrup. We were producing the darkest syrup to ever come out of that sugarhouse.

On March 25, the syrup turned *buddy*, a term maple farmers use to describe the taste of late-season syrup that's no longer viable table syrup. Its fruity and slightly metallic. Not bad, but not quite right. Our season was over. In total, we made 82 gallons of syrup, averaging about 0.2 gallons per tap. Far below average, but we made the most of every drop the trees gave us.

Each year, we learn something new and improve the system, bit by bit. We dream of a timber-frame sugarhouse, with enough space for a mini-fridge stocked with cold sodas and chilled pickles. Knowing the relentless work ethic of the Yale Forests staff and countless students who bring this program to life, I'm sure this dream will be realized.



Nat Burr '26 MF and Will Kessler '26 MF help out in the sugarhouse. Photo by Shaylyn Austin

Explore the world of maple sugaring through our online StoryMaps

[Silviculture for maple syrup production](#)

A practical guide to sugarbush management considerations

[Maple sap collection: From Tree to Tank](#)

A look into the process of collecting and transporting maple sap from a sugarbush

[Maple Syrup Production](#)

An introduction to efficient and modern syrup production methods

Thanks to the support of the USDA ACER Access and Development Program!

- - - Research Spotlight - - -

Searching for clues to amphibian die-offs in Yale-Myers Forest ponds

Laura Green, Research and Extension Forester, '18 MF
Dr. Marlyse Duguid, Director of Research, '10 ME, '16 PhD

Each year, researchers spend long days, weeks, and months in the field at Yale-Myers Forest, taking measurements and collecting observations to better understand all manner of ecological questions. For our "Research Spotlight," we highlight current research done at the Yale Forests. In this edition, Yale Forests' Research & Extension Forester Laura Green spoke with [Logan Billet](#).

Logan is a fifth-year doctoral candidate at Yale, where he is part of

the [Skelly Lab](#). Logan studies amphibians in vernal ponds at Yale-Myers Forest and is a four-time recipient of the [Kohlberg-Donohoe Research Fellowship](#), which supports students conducting research at the Yale Forests. Logan is also part of the Yale Forests Research Committee — an advisory group made up of students and faculty who review proposals for new research projects and provide feedback to support the research infrastructure at the Yale Forests.

This interview has been edited for length and clarity. To read the entire interview, please [visit our website](#). For a full list of publications based on work conducted at the Yale Forests, check out our [Google Scholar page](#).

Laura Green: Tell me about the arc of your research, and what you're interested in.

Logan Billet: My work is focused on amphibian disease ecology, specifically focused on a pathogen called ranavirus, which causes mass die-offs in amphibian populations. Yale-Myers Forest is a great place to do this work because previous researchers from University of Washington and UConn had done surveys for ranavirus at Yale-Myers back in 2012-2013, so Yale-Myers is one of the most well-documented sites for recurring ranavirus die-off events. There's still a lot we don't understand about these die-offs, and my interest was in understanding how they play out in real life, in the field. We know a lot about what goes on with ranavirus in the lab, but the lab observations don't match up very well with what happens during natural epizootic events in the field.

My goal for the first year of my PhD was to go out and survey tadpole populations in these small vernal ponds across the entire forest. I wanted to track a bunch of populations really closely and get a good gauge on the basics of this virus. Where is it? How does it progress when it gets to a pond? How often does it lead to die offs? Does it differ from year to year?

Laura: You've now done several years of fieldwork at Yale-Myers Forest. Are there ways your project has evolved based on what you were seeing while you were out in the field? What has your research trajectory been over the course of those years?

Logan: My first year of fieldwork at Yale-Myers was really interesting and kept me wanting to go on doing more surveys. I could have gone out in the first year, done all this work going from pond to pond, and not even found any ranavirus.

Continued on page 6



A photogenic green frog on a log. Photo by Logan Billet.



Logan places a temperature logger in one of the wood frog breeding ponds. These loggers are installed each spring, sometimes requiring breaking through the ice. Photo courtesy of Logan Billet

Research Spotlight interview, continued from page 5

But it turned out that my first year was a very severe year for ranavirus epizootic events at the forest. I surveyed 40 vernal ponds that year, and I found ranavirus die-off events in seven or eight of them. That is a pretty high proportion of wood frog populations within the forest that had a complete extirpation that year due to disease. That was a great baseline of data to start working with, and we thought, "Let's keep going."

In the following two years, we found fewer die-off events, but that was still interesting in the context of that first year. We could start to ask questions about what was different in that first year that made things worse. Why? Were there characteristics about the climate in those three years that might affect the trajectory in a pond?

Ranavirus is a really difficult-to-understand pathogen. People have been working with it for 20 years, and there's still a lot that we don't understand about how it works out in the wild. But that's the goal, and I'm starting to dig into it now. I don't have all the analysis done on my field data, but I'm starting to dig into the patterns of climatic differences between years one, two, and three of my surveys.

Laura: So it sounds like the fundamental research question has not necessarily evolved, but you're tracking what changes on the ground from year to year, and developing new hypotheses from there.

Logan: Yes. It's also informed some other spin-off work. I continued doing these vernal pond surveys in 2021, 2022, and 2023. I did these surveys of between 30 and 40 ponds

each year. Then, in my third year in 2023, I did some lab experiments that didn't go well. We still have more ideas we want to test in the lab, but those experiments can be finicky, especially when you're doing a bunch of fieldwork at the same time. Working with a lab-cultured pathogen doesn't always go the way you might want it to.

So, we have some follow-up questions that I won't be able to address during my PhD, but they might be things that I do later. I'm still learning a lot. My work has been really field-heavy, but it's giving us new directions to go for future lab-based experiments to test some hypotheses about how fluctuations and temperature might affect the severity of die-offs.

Laura: I'm curious about the intersection between the lab studies and the field studies, and how those inform each other. What pieces of the ranavirus die-off question are you breaking off to test more directly in the lab?

Logan: We know that temperature plays a big role in the progression and severity of ranavirus die-off events. That is logical,



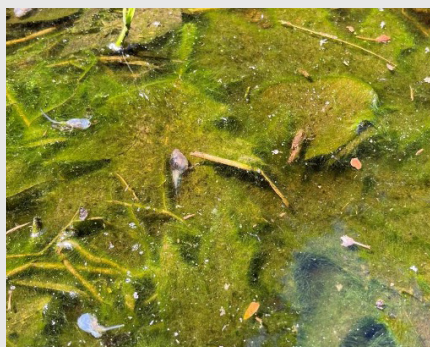
The mountain bike setup Logan used to travel throughout the forest and survey ponds in 2021. Photo by Logan Billet

because tadpoles are cold-blooded, so their body temperature is impacted by the temperature of their environment. The virus replicates faster at warmer temperatures, so warm temperatures typically lead to a more severe epizootic event. What hasn't been considered as much, though, is that it may not just be the average temperature that matters. The way the temperature fluctuates during an epizootic event may also important.

Across the three years I surveyed, the average air and water temperatures were about the same each year. However, during that first year — which was most severe year for die-off events — there were dramatic spikes and drops in temperature throughout the season. The variation between temperature highs and lows was much greater in 2021 than it was in 2022 or 2023, even though the average temperature was pretty much the same. We had a week in May 2021 when there was a heat wave; it was in the 80s, and then it dropped to the 40s.

There was a die-off that started in one of our ponds in late May, which is pretty early. It started during that heat wave, and then when the heatwave ended and the temperature dropped, the die-off stopped. The tadpoles started to look healthier, and we weren't finding very many carcasses. That was a kind of natural experiment — we saw that the temperature had gone up, there was ranavirus in the pond, and things started to get really bad for the tadpoles. Viral loads got very high. Then, when the temperature dropped, the tadpoles seemed to start recovering.

"Ranavirus is a really difficult-to-understand pathogen. People have been working with it for 20 years, and there's still a lot that we don't understand about how it works out in the wild. But that's the goal, and I'm starting to dig into it now."



Dead tadpoles in a vernal pool at Yale-Myers Forest in 2022 — the outcome of a ranavirus die-off event. Photo by Logan Billet

Continued on page 7

A fruitful fall project springs to life

Agroforestry demonstration field comes to Yale-Myers Forest

Nat Burr, Assistant Forest Manager, '26 MF

Down French Road, past the lab and through a few formidable muddy spots that would challenge even the most tenacious Subaru drivers, students and staff of Yale Forests have been busy preparing and planting an orchard. The project, led by Director of Forestry and Agricultural Operations Joe Orefice, will demonstrate alley cropping agroforestry systems, and it is already an active research site for studying the regenerative potential of interactions between perennial tree crops and conventional agricultural crops.

Last summer, the early successional meadow at the end of French Road was a glut of bittersweet, autumn olive, and multiflora rose hemmed at the edges by stone walls running through old field pine and mixed hardwoods (see photo in *Forest Crew* article, p. 3). Yale-Myers Caretaker George French remembers his grandparents growing potatoes here, and corn was briefly grown in the field in the 1960s, when it was retired from cultivation and used for wildlife ecology research. The drumlin site was boldly returned to its former agricultural use in August when Joe took to the tangle of pioneer species with a forestry mulcher.

Throughout the fall, students working at the forest and in Joe's agroforestry class



Yale School of the Environment students plant apple trees in the alley cropping field on an unexpected snowy day in April. Photo by Nat Burr

prepared the site for spring planting. They removed slash left behind from mulching, disked the field with the tractor, took samples to test soil nutrients and measure bulk density, seeded in a green fertilizier of winter rye, and installed the latest military-grade herbivory prevention technology: a three-dimensional electric deer fence.

A cold winter and wet spring combined with the drumlin's perched water table turned the field into a mire of mud just in time for planting. Heirloom semi-dwarf apple tree varieties bearing names like Ashmead's Kernel, Roxbury Russet, and Black Oxford (to name a few) arrived at the forest in tall boxes. We

heeled in the bare roots to prevent them from drying out and got to work planting some 200 trees. Several inches of snow one day in mid-April added to the excitement.

Two types of peaches (Contender & Garnet Beauty) and a pear tree (Niitaka) were planted along the northern edge, and one wild apple tree was left as a legacy of the past in row four.

By widely spacing the rows, annual crops can be planted in between the trees with minimal impacts to yield from shade and competition for water and nutrients. This agroforestry practice is called alley cropping, and has been shown to maximize yield, retain soil moisture, increase organic matter and nutrients,

and provide other ecosystem benefits that aren't found in monocultures.

The varieties selected are timed to ripen in concert with annual YMF summer and fall happenings such as Crew, MODs, and Harvest Fest. Most of the varieties produce good cider apples, and once the trees mature and start fruiting, Yale Forests will have its own hard cider available for purchase.

Buds have already begun to break on the twiggy trees, a promising sign that the alley cropping orchard will further research into regenerative food systems and supply foresters and Quiet Corner residents with fruit and libations for generations to come.

Research Spotlight interview, continued from page 6

When the temperature drops, it could potentially slow down the die-off rate and allow the tadpoles' immune responses to catch up and help them survive.

Laura: So the idea is that you could then test out this temperature variation hypothesis in a more controlled environment in the lab, which would allow you to modulate and spike the temperature intentionally?

Logan: Yeah. One idea for an experiment – which I haven't done yet but has been tested in other disease systems – is to hold one set of infected animals at a constant temperature,

while you hold a different set of infected animals at a temperature that fluctuates, but has the same mean temperature as

"It's the extreme temperature events that can push the disease trajectory in a way that may be irreversible in some cases."

the constant-temperature group. You can manipulate these experiments in all sorts of ways in the lab. You could have cold spikes that are more severe than the hot spikes are, or have the hot and cold spikes last longer. If

you keep the average temperature the same, you use can compare and test what factors are most significant in increasing or decreasing die-off severity. Is it the lowest temperature, or is it the highest temperature that is really driving things? It seems that the average temperature in a given year isn't the most important thing. It's the extreme temperature events that can push the disease trajectory in a way that may be irreversible in some cases.

Full interview available [online](#).

Letter from the Forest Manager

Shaylyn Austin, Forest Manager, '23 MF

There isn't much forest in my hometown of Los Angeles. As I kid, my favorite tree was the palm tree. I didn't know then that palms aren't technically trees — but I appreciated their towering stems and feathery fronds that cast shade over the hot sidewalks.

My love of forests blossomed far from home. In college, I visited my sister who was studying abroad in Brazil, and we took a trip to the Amazon. Surrounded by dense layers of green and abundant life, I felt a deep and unfamiliar tranquility.

I went on to spend two semesters of college close to the equator — one in Indonesia, one in Panama — studying the challenges of biodiversity conservation in tropical landscapes. My affinity for forests led me to several field ecology roles, including a year spent studying

wild orangutans in Borneo. Overtime, I found my way to forestry — a field that allowed me to bring together my interests in applied science, community based-work, and hands-on land stewardship. Despite my fascination with the tropics, I entered grad school knowing I wanted to ground my work in local forests, to take part in stewarding the land that sustains my own community.

At YSE, I was a co-leader of the Yale Temperate Forestry (YTF) student group. I co-managed the Christmas tree farm and hosted Woodsy Wednesdays in my backyard. My cohort of YTF leaders — Michael Freiburger '23 MF, Emma Broderick '23 MF, Mary Katherine Dewane '24 MF, Grace Bachmann '23 MF, and I — shared responsibilities equally. With one exception: my dog Stogie, a 23-lb chihuahua mutt, was unanimously voted "President." That made my most important job "Keeper of the

President." Dutifully, I brought Stogie to class in Marsh Hall and on Yale-Myers field trips. She befriended everyone but had a special fondness for those with slippery fingers at lunchtime.

After graduating, I began a post-graduate associateship as the maple fellow. I knew nothing about maple, but luckily, I had the best mentor in the game: Joe Orefice. I fell in love with all aspects of maple syrup — the simplicity of the product, the

mechanics of the operation, the passionate community, and of course, the taste, especially on vanilla ice cream.

As Forest Manager, I strive to create a culture rooted in joy and continuous learning. This year, I had the privilege of leading five Assistant Forest Managers: Leah Snavelly '25 MF, Nate McMullen '25 MF, Tashi '25 MF, Cindy Cifuentes '25 MF, Nat Burr '26 MF. I was fortunate to work with a team so unafraid of challenges and enthusiastic about the work. Some of our accomplishment this year include:

- Straightening the maple mainline through the phragmites swamp
- Prepping the field and planting 200+ apple trees in the new alley cropping plot
- Producing 82 gallons of maple syrup
- Overseeing the sale of 400,000+ board feet of timber across six harvests
- Completing detailed timber sale summaries for the past five years of harvests

I'm honored to contribute to the legacy of managing the land that is Yale Forests — a landscape that serves not just the YSE community but the greater southern New England region.

The brilliance of YSE lies in its people — the professors who challenge you to think more deeply, and the peers who remind you why the work matters. I'm grateful for the four years I've had to make mistakes, learn, and grow. YMF has been a haven for me.

This summer, I'll be leading seven students on our forest crew, delving into the northernmost Myers division. Three years ago, I was a crew member myself, as green as they come. Now, I'm honored to return as a crew leader, to continue to explore and steward a forest that I care for deeply.



Quality control is very important. Forest manager Shaylyn Austin '23 MF tests a batch of Yale Forests syrup. Photo by Bernard Nyanzu

Forestry Learning Community sponsors tree climbing workshop at Yale-Myers

Tashi, Assistant Forest Manager, '25 MF

In April, the Forestry Learning Community organized a tree climbing workshop for YSE students at Yale-Myers Forest. Expert arborists, Bear LeVangie and Melissa LeVangie Ingerson, from Women's Tree Climbing Workshop (WTCW) led a full-day training on methods to safely climb trees with a harness system and ropes.

The experience was truly rewarding. As a forester, tree climbing is crucial for tasks like pruning, monitoring tree health, and safely removing hazardous trees. The skills I acquired at the training are invaluable for handling these responsibilities effectively.

Moreover, the opportunity to engage with numerous new individuals from Yale during this enriching training session was truly exciting. I highly encourage fellow foresters, arborists, and anyone interested in this field to consider attending similar training programs in the future. Sharing knowledge and experiences in tree climbing is not only professionally beneficial, but it also fosters a strong sense of community.



Tashi '25 MF climbs a tree at the workshop. Photo by Owen Klein

NEWS FROM THE QUIET CORNER

Laura Green, Research and Extension Forester, '18 MF & Shaylyn Austin, Forest Manager, '23 MF

About the QUIET CORNER INITIATIVE

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 the students and faculty of the Yale School of the Environment. Thank you to our alumni and the rest of the Yale community for their support.

Horse logging and sawmill demonstration — June 2024

Last summer, forest manager Grace Bachmann '23 MF brought back a cherished tradition to Yale Forests — the Horse Logging and Sawmill Demonstration.

A local club demonstrated this sustainable logging technique of using draft animals to skid logs through the woods (pictured, photo by Chloe Poisson). The logs were then cut into lumber on-site with a portable saw mill, and workshop attendees used the wood to build bird houses.



Management Plans class — Fall 2024

Last fall, 14 master's students participated in Dr. Ashton's management plans course. Working in small teams, they produced six comprehensive management plans for properties in Connecticut's Quiet Corner. Each plan obtains a wealth of information about the landowner's property, including social and land use history, biophysical and ecological properties, and forest health considerations. The plans also include management recommendations tailored to the goals and values of the landowner.

If you're interested in a management plan for your property, please contact Research and Extension Forester Laura Green, laura.green@yale.edu

Invasive Species Town Hall — March 2025

The Yale Forests' Quiet Corner Initiative (QCI) revived its Town Hall series this year after a five-year hiatus. Over the years, QCI has held a series of events at the Union Town Hall on natural resource and environmental challenges facing our state. For 2025, the Town Hall focused on invasive species, featuring YSE's own Marlyse Duguid & Sara Kuebbing, along with Jeremiah Foley (Assistant Scientist at the Connecticut Agricultural Experiment Station) as panelists.

Over 60 attendees gathered in Union to listen and ask questions about managing and preventing the spread of invasive species.



Annual Harvest Festival — Sept. 2024

More than 200 Quiet Corner community members, Yale students, staff and faculty attended the Harvest Festival at Yale-Myers Forest last September. A local folk band entertained attendees as they enjoyed a variety of festive fall activities, including face painting, pumpkin carving, timber sports games, and apple cider making (pictured, photo by Bob Handelman).

----- SAVE THE DATE! -----

2025 Summer Seminar Research Series
at Yale-Myers Forest
150 Centre Pike, Eastford, CT 06242

June 11, June 25, July 9, July 23

Join us for refreshments at 6 pm. Seminar begins at 6:30 pm.

Speakers TBA

Harvest Festival 2025
Saturday, September 27

Stay in the loop!

Subscribe to the QCI mailing list at qci.yale.edu



From all of us at Yale Forests, thank you for your support!

Mark S. Ashton, Faculty Director, '85 MF, '90 PhD

Joe Orefice, Director of Forest and Agricultural
Operations, '09 MF

Marlyse Duguid, Director of Research, '10 MF, '16 PhD

Laura Green, Research and Extension Forester, '18 MF

George French, Yale-Myers Facilities Manager

Shaylyn Austin, Forest Manager, '23 MF

Bernard Nyanzu, Agroforestry Research Fellow, '24 MF



(clockwise, from top)

Trusty forest dog Stogie enjoys downtime in the woods. *Photo by Shaylyn Austin*

Cayce Morrison '26 MEM, during the annual Yale Temperate Forestry student group wreath-making and Christmas tree harvest fundraiser. *Photo by Rich Dezzo*

PhD candidate Janey Lienau '23 MESc plants tree seedlings in a recently harvested shelterwood for her dissertation research. *Photo by Shaylyn Austin*

Dr. Mark Ashton communes with a soil pit. *Photo by Adam Burgess*

Grace Dominic '24 MF and **Jimena Terrazas Lozano '24 MESc**, two of the teaching fellows for last year's Forest MOD at YMF. *Photo courtesy of Jimena Terrazas Lozano*

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Or **follow us** on instagram at: **"yaleschoolforests"**



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