



CAROLINE A. FOX RESEARCH AND DEMONSTRATION FOREST NEWSLETTER



February 2025* Inge Seaboyer – Program Forester, Editor

NH DEPARTMENT OF NATURAL & CULTURAL RESOURCES DIVISION OF FORESTS AND LANDS, FOREST MANAGEMENT BUREAU

Pardon our Appearance

Getting Departmental Capital Improvement fund projects at Fox “into the pipeline” in 2024 proved a bit more challenging than anticipated. Things you don’t see – like lighted exit signs in HQ (completed – rah!), plans and contracting for the driveway/paving project, contracting for painting HQ and the Baldwin Center - are complete.



Something you do see is the aftermath of the waterline replacement work being done in early December! Additional cleanup will happen in the spring, but things will still be messy until the paving project is completed. As part of the process to prep for the water line and paving, several trees were removed around HQ. First, in the spring of 2024 it became apparent that both a Norway spruce and an eastern hemlock located between the headquarters building and the barn would need to be removed before work began on the waterline. Piliated woodpecker activity in the spruce indicated internal issues which became apparent when the tree was felled. Due to the location of the trees a crane was necessary to safely remove them. The tree removal was completed using a state contractor with funding from the Capital Improvement funds. Next, sadly the cedar near the

Baldwin Center had to be removed to make space for the new handicap parking spaces which will be part of the paving project. Lastly, the red oak we had kept near the tractor shed (the legacy of what we jokingly refer to as Ken Desmarais’s “weed garden” – a small plot where he tried out a variety of seedlings) was removed – also for the paving project (okay, so it was not the mightiest of oaks – a sapling with a wonky shaped crown from growing in and around the hybrid poplar cut in 2022). By next year’s newsletter we hope you will see fresh paint on HQ and the Baldwin Center, new pavement without frost heaves and cracks, a circular driveway to the front of the BC, handicap parking and an upgraded gravel access road to the barn cellar, and, with luck, a plan to shore up the tractor shed. Many thanks to the folks in the Department’s Capital Projects & Maintenance Bureau for all their assistance.

Inge Seaboyer

Staff Highlights

Matt Lewis stayed on part time through the winter of 2024 – among other duties he completed two prescription cruises and a regeneration study at Fox. In May he left to work in the Division’s North Region for the summer. Great experience in northern cover types for him, but that left me looking for two new seasonal technicians for the summer! Luckily Ryan Fleury (who worked with Matt in 2022) was available to return for the summer. Ryan, who graduated from UNH with a Bachelor of Science in Forestry (BSF) in 2023, hit the ground running helping to mark the Spring Road timber sale which Matt helped plan. He was joined for the summer by Natalie Deshaies, from Tilton. Natalie is a 2024 graduate of the Keene State College in the Environmental Studies major. Her experience running a tractor proved invaluable – as did her forest inventory experience from Andorra Forest in Marlow. It was another summer with lots of bridge work (keep reading!). At the end of summer Ryan and Natalie both left for other jobs just after Matt returned from the north country. Matt was back on part time status helping with timber sale planning, research projects, and the never-ending chase of blow down on the Fox trails, until January 2025 when he was hired for a full time Forester I position in our Central Region.



What’s Been Happening at Fox?

Around Headquarters

American Chestnut Seed Orchard - In the fall of 2023 ACF was able to harvest seed from some of the unique lines in both the Shieling State Forest (in Peterborough) and High Shelter Farm (in CT) orchards. In June of 2024, twenty-four seedlings from four breeding lines from these orchards were planted in three new blocks in the Fox Orchard as part of the conservation collection of the Chapter’s backcross lines. We usually plant germinated chestnuts, so putting in seedlings in the spring was new. ACF’s Kendra Collins and her summer intern brought the seedlings and Ryan, Natalie, Inge and Ryan Crandall (from our Forest Health Program) assisted with planting. Jim Byers had prepped the area by spraying the locations in advance of planting to knock back competition from grass and crabgrass, Natalie and Ryan pre-dug holes and retrieved “local forest soil” to provide soil mycorrhizae which may be beneficial to the seedlings. With a relatively dry summer Natalie and Ryan also took on watering the seedlings (thanks to ACF for additional hose to make this easier). In December we got word that Kendra is moving on from her position as ACF’s New England Regional Science Coordinator, however, she also let us know that we will have additional seeds to plant at Fox in the spring.



Invasive Plant Control – The past few summers weather conditions have not been ideal for continuing chemical control of invasive plants (primarily oriental bittersweet) around HQ (including in the IUFRO larch plantation behind the barn and around the parking lot and ACF orchard). In the interim the bittersweet growth has exploded, and cutting it back is the first step in trying to regain control of the areas. Brush sawing is one option, but not ideal in areas with heavy poison ivy. The Forest Health Program provided funding for a day of mowing by a mini excavator with a mulching head in some of the most problematic locations. This should allow spraying to recommence in 2025.

Big wood pile – Natalie and Ryan made sure all the wood that was bucked and split in 2023 made it into the cellar before the end of Summer. In October South Region staff Tyler Comte and (former Fox Intern) Connor Breton, joined Matt, Inge and Forest Health Program staff Kyle Lombard and Bill Davidson, for a day working up firewood. In total, we processed about 4 cords of the wood for heating next winter. The last of the Compartment 4 North timber sale firewood went right into the cellar, and two thirds of the Jones Hill timber sale firewood was worked up and stacked. About two-thirds of what we will need to heat HQ next winter is in the woodshed.

Bats in the Barn – With no one in house to do the Summer Bat Colony Count, Sandra Houghton, bat biologist at Fish & Game, coordinated with volunteers to do the Fox count. Shawna Crosby, who lives in Hillsborough, did counts on three nights, two before pups were flying and one after. That final night she counted 488 bats. Amazing considering that in 2014 there were only 7 counted! Sounds like Shawna is up for doing the 2025 count as well, but if you are interested in helping, I can put you in contact with Sandi.



Seeing the Light – In addition to the other Capital Budget projects, we were able to update lighting in HQ, the barn, and the Baldwin Center with new energy efficient fixtures and bulbs. Seth Prescott from the DNCR Maintenance Bureau coordinated with the State Energy Management Office to get the fixtures and Capital Improvement funds paid for installation.

In the Forest

Three-birds-orchard Pete Bowman at the Natural Heritage Bureau has not yet been out to visit the three-birds orchid (*Triphora trianthophora*) location to formally document it. However, our in-house avid amateur botanist Ryan Crandall, from our Forest Health Program went looking (on his own time) and found plants again in 2024. This plant is extremely ephemeral – with blooms which last only a few days, it can be easy to miss. It is said that it blooms the week following the first drenching rain in August. Ryan found plants in the later stages of blooming a week earlier than the ones I found in 2023. He was also in a slightly different location so the population may be larger than we originally thought.

Spring Road Sale – Planning, layout, marking (thanks to Ryan and Natalie assisting), contracting, and completion of the timber sale was accomplished in 2024. The harvest was cut by local logger Mike Barrett (Tru Timber Harvesting) and his son Devon. They use a cut-to-length

harvesting system, with Devon felling and processing the wood, and Mike “forwarding” wood to the log landing and trucking wood to local mills. This project pre-salvaged the last significant block of red pine at Fox, before red pine scale (established just up the Contoocook River in Hopkinton) reaches the Forest. The remainder of the project was Group Selection with tending (partial shelterwood cutting between groups), specifically designed to introduce expanding gaps (or Femelschlag in German) into the compartment. The area was divided into roughly equal blocks – with the goal of cutting one group in each block each time the area is treated. Eleven roughly ½ acre groups were located in the southwest portion of blocks. Observationally, red oak regeneration tends to occur on the northeast end of group cuts and extend into the forest to the northeast (this has to do with where sunlight falls in the cut) – so at the next harvest entry area there should be established regeneration to release to the northeast thus “expanding” the original cut. With our “bumper crop” of red oak acorns last fall dropping during the harvest, we expect great regeneration. It typically takes an acorn crop like we just had to get significant oak regeneration, add to that heavy equipment pushing the acorns into the ground (helping both with germination and hiding acorns from all the critter who eat them) and it is a best-case scenario. We will know for sure later next summer when new oak seedlings become apparent. We had hoped to establish research plots in and around the groups prior to the harvesting to document the pre-harvest regeneration conditions as well as post-sale results. That didn’t happen but post-sale plot locations will be established next summer which will be followed into the future.

Trails – On May 18th, Trailwrights did a spring workday at Fox. Joined by Inge, Ryan, and Natalie they broke into three groups – two targeting Molly Jackson Road, Ridge Trail, Spring Road, and the Monroe Hill Trail, and a third focusing on other east-side trails. Eighteen volunteers spent 96 hours clearing storm damage and brushing out trails. In May and June of 2024, Ryan and Natalie continued brushing out, remarking trails, and replacing signs. They also replaced a bridge on Ridge Trail (near the junction of Ridge Trail and Molly Jackson Road). This bridge, last replaced in 2016 by Josh Kosikowski and Connor Breton, is in a particularly damp location. Rotted hemlock stringers and decking have now been replaced with pressure treated lumber which should prove more durable in this location. Natalie and Ryan also replaced a small bridge on the Fishercat Trail near Jones Road.

In early August we learned that an SCA-AmeriCorps crew would be available to help out at Fox free of charge (thank you Division of Parks & Recreation!). We had discussed adding two



bridges to the Ridge Trail – one on the east side to cross an expanding wetland finger and one on the west side to span the steep rocky upper reaches of Gerry Brook. Both locations would require felling hemlock for stringers on site and winching them

into place. The six-person SCA crew arrived at the beginning of October and during their two week “hitch” completed the east side bridge, set the headers and cut, peeled and set the stringers for the west side bridge. During their hitch the crew camped out behind the Baldwin Center and got to use the BC as home base, with the “luxury” of the kitchen, bathrooms, heat and the shower in HQ (amenities not often available when they are working a hitch). Thanks to their rigging equipment and skills, these new bridges (out of reach of the Fox tractor and winch) were completed before winter. Matt and Inge finished the west side bridge before the first snowfall. Thanks also to Forest Management Bureau Administrator Will Guinn for freeing up funds to buy PT decking and hardware for the new bridges.

Natalie and Ryan started work on revamping the Tree ID Trail, which Matt continued. The trail has been cleared of storm damage, newly made species signs are complete, posts are in, and laminated species info signs are set to go as soon as new sign backs to hold them are completed.

Across the forest Natalie and Ryan (and then Matt and Inge) continued to clear blowdown, but there is always more to do. Brushing out on the west side and along Gould Pond Trail is now a top priority, and will no doubt be the priority for the Trailwrights workday in 2025. Remember if you are interested in helping out on the Fox trails, contact me at foxforest@dncr.nh.gov.



Monroe Hill – At the end of the summer of 2024 repairs were made to the Monroe Hill tower. Broken stair treads and the handrail were replaced with PT wood, the deck was reinforced, wire was installed around the deck to improve safety, and the entire tower was scraped and painted. Thanks to Regional Forester Scott Rolfe for help with grinding off old hardware and installing the wire. Ryan, Natalie and Matt were all in on the project, with Matt and Natalie re-clearing the vista. The summertime view is still somewhat obstructed side to side as the crowns of large trees on the sides of the vista clearing have grown into the

opening. Additionally, trees of the abutting property have grown up into the view over time. When Henry Baldwin first erected the tower he owned the abutting lot and the vista cut extended on to it, which we can no longer do.

Research

Continuous Forest Inventory (CFI) – As one of the longest standing CFI projects in the state, the information gleaned from the Fox Forest CFI plots is of interest not only for establishing management direction and cutting levels at Fox, but with researchers at UNH and beyond. Ken Desmarais (former Fox Program Forester) returned to work part time for the Forest Management Bureau in summer 2023. A meeting was held to re-visit the draft CFI 2022 report he produced as a contractor in May 2023 to make sure Fox will have all it needs to determine cutting levels and other management questions in the future.

Biorama – Ken Desmarais has begun to analyze the 2022-23 re-measure data. These growth plots fall in multiple silvicultural treatments near recreation trails on the southwest end of the Forest. These silvicultural demonstrations (interpreted for recreational users of the Forest) were cut as part of a commercial timber sale by Ken Desmarais in 2003. Silvicultural treatments included Multi Cohort cutting, Crop Tree Release, Group Selection, two levels of Single Tree Selection, Thinning, Modified Diameter Limit cutting (MDL), and one decidedly non-silvicultural treatment Ken Desmarais called “Aesthetic High-Grading”. In the AHG cut stocking, the number of trees per acre was lowered by removing the best quality stems to help evaluate the long-term impact of such “partial” cutting, which nonprofessional observers may find acceptable. Growth plots were established prior to harvest and re-measured in 2011. This second post-treatment measurement in 2022 should yield the first opportunity to compare the results of the differing treatments and write a Fox Note. Data from the modified diameter limit cutting has also been looked at in comparison to a second MDL cut off Mud Pond Road, done by Will Guinn in 2006.

Modified Diameter Limit (MDL) Case Study – In 2006, then Fox Program Forester Will Guinn, built on the Biorama MDL cut in a commercial timber sale off Mud Pond Road. This 20-acre timber sale included an area of MDL cutting, a block of Group Selection with tending and a control (uncut) unit. Traditionally Diameter Limit cutting harvests any stems larger than a specific diameter, while smaller stems are only cut for access purposes. The biggest, fastest growing trees are cut and leaving the smaller, slower growing stems behind. MDL sets a diameter for harvest of each species for both sawlogs, and low-quality pulp trees. One of the Fox CFI plots falls in each treatment and the control, providing some data on the MDL cut. An attempt was made to piggy-back on Soil Compaction Study (SCS) plots established post-harvest by the Forest Health Program. The original intent was to include additional measurements like height and stem quality which were not part of the Forest Health protocol – a Fox Intern assisted with the SCS plot establishment just as Will was moving on to be Regional Forester and Inge was starting as Fox Program Forester. Only when the SCS plots were re-measured was it found that the additional measurements had not been added. Now that Ken Desmarais has returned, as the Division’s part time Biometrician, he has proposed establishing new permanent plots in the project area to compare the MDL cut, Group Selection, and control. This will help determine when the next harvest will occur and answer some research questions within the case study area about growth, species composition and timber value differences between MDL and Group selection cutting.

Early Mechanical White Pine Crop Tree Release – Not all research occurs right here at Fox. In early 2024, Inge and Forest Health Program head Kyle Lombard assessed the possibility of doing an early entry Timber Sale Improvement (TSI) project in dense white pine saplings at Mast Yards State Forest. Much of the eastern white pine at Mast Yard State Forest, show signs of sparse foliage associated with *White Pine Needle Damage* (WPND). WPND, a complex of four native fungi, has been of concern in New Hampshire’s forests since 2010. Trees affected by WPND are subject to mid-growing season needle drop. Additionally, *Caliciopsis* canker has impacted much of the white pine at Mast Yard, including regeneration. *Caliciopsis* pine canker was first reported in New Hampshire in 1997. It is described as a weak perennial fungus which attacks thin barked areas of the branch and bole and has recently been recognized as an emerging problem in white pine, leading to several studies (including at Mast Yard) to look at its impact on the State’s white pine resource. Smooth barked young trees are especially vulnerable to *Caliciopsis*. Dense stocking is associated with both forest health issues, but thinning pure young pine is problematic and leaves stems vulnerable to bending and breaking with snow load. However, strip cuts seemed like a viable option for an early entry.



In the fall of 2024 we made an initial entry into the stand. The project utilized a mini excavator with a mulching head to mow 10-foot-wide strips and leave 10-foot-wide strips. Mowing released potential crop trees on two sides. Following the treatment a sample of potential crop trees (approximately 20 feet apart, representing 100 stems per acre) were identified in the “leave” strips and measured; an equal number of potential crop trees were identified in an untreated “control” area. Measurements will help assess the efficacy of doing this type of early mechanical release in white pine growing on outwash soils in central New Hampshire, and its effectiveness in stemming the effects of pine canker. Funding for the release work is part of the Bipartisan Infrastructure Law/State Forest Action Plan implementation funding. The project may also afford an opportunity to assess the economics of such release work.

Beech Leaf Disease – If you remember Beech Leaf Disease (BLD) from past Newsletter, here is an update. By the summer of 2024 BLD was found across Fox. Forest Health Specialist Ryan Crandall re-measured the plot at Fox this summer. This foliar disease of American beech, European beech and Oriental beech is caused by the nematode *Litylenchus crenatae* and potentially by several bacteria and fungi, which have been detected in association with symptomatic leaves. First discovered in 2012 in Ohio, the disease has now been detected as far east as Maine and was first detected in NH in 2022. By 2024 it had been found in most towns in southern NH and every county except Coos.



Hemlock Woolly Adelgid Biocontrol - Hemlock Woolly Adelgid (HWA) was first detected at Fox Forest in 2014. Forest Health Specialist Ryan Crandall continued rear infested hemlock foliage as a method to detect released silver flies, a newly released predator of HWA. In 2024 Ryan and collaborators were looking to see if the native silver flies, which attacks pine bark adelgid (a native harmless adelgid), was also predated on HWA in NH's mixed white pine/hemlock stands. Ryan continues to sample for *Laricobius* beetles, another released predator for HWA, though none were

recovered at Fox. He also notes that HWA populations are on the rise this year after a few years of low population levels.

White Pine Needle Disease - In 2024 Cameron McIntire and Isabel Munck (with the US Forest Service out of Durham) returned to Fox to re-measure plots that Cameron established as a PhD candidate in 2014. The plots, located in the Harvey Road timber sale, compare tree growth and overall stand health at different harvest levels.



Interested in more forest health news? Check out www.nhdf.dncr.nh.gov/forest-health/newsletter or scan the QR code.

Outreach

Friends of Fox Annual Potluck – Still hoping someone will be interested in working with me to re-start the hike and potluck. If you are please contact me!

Fox Field Day 2024 – On September 21st we held a full-blown Field Day. The day included a walk to the active Spring Road timber sale. AJ Dupere of the Urban Forestry Center returned with the Division's portable sawmill to mill Norway spruce, lost to windstorms at Fox, into boards. Both Matt and Natalie (on her last day at Fox) got to run the mill, as a small but enthusiastic batch of onlookers braved the rain (check out the umbrella mounted on the mill!). Outside the Baldwin Center Diane DeLuca of NH Audubon did a talk on Pollinator Gardens, and Goffstown woodturner, Jim Hallene, demonstrated his craft. Meanwhile, inside, the 7th Fox Forest Art of Nature Exhibit featured nine New Hampshire artists and one photographer (Forest Health's Ryan Crandall). Inge was assisted by Webster NH artist and NH State Forest Nursery employee, Sarah Chalsma, in hanging the exhibit and interpretive signage. In addition to Sarah, Ryan, and Inge, DNCR was represented by painter Susan Sawyer, who is also the NH Division of Parks and Recreation Digital Content and Website Manager. Thanks to all the artists who participated, and Pat Bradley who covered the Baldwin Center



while other activities were happening. Additional thanks to AJ, Jim Byers, Matt and Natalie for giving up a Saturday, we only wish the gloomy weather hadn't impacted turnout.

The Cottrell-Baldwin Lecture Series Turns 20! – Due to the cancellation cause by COVID in 2020, 2024 marked the 20th Lecture Series. Since Ken Desmarais and Dave Anderson of SPNHF first conceived of the idea to celebrate Henry Baldwin and Bill and Annette Cottrell with a natural resource based, free to all lecture series in 2003 which thousands of people from all over New Hampshire have attended. The 2024 series ***Forest Primal, Winter Flux, Forest Carbon and Wood Constructs*** included discussions of old growth forests, fading winter weather and challenges and opportunities of forest carbon.

The series kicked off with a screening of ***“The Forgotten Forest Primeval”*** a film by New England Forest Films / Ray Asselin. The film follows the history of an old growth forest at Mount Sunapee State Park. A second film was screened week two - ***“Remember Winter?”*** follows adventure filmmaker Gabriel Andrus's attempt to cross-country ski the length of New Hampshire. As the series entered April, we pivoted to questions of carbon. With ***A Forest Carbon Primer*** – as the role of forests as a natural climate solution, given their ability to remove carbon from the atmosphere and store it, has gained increased attention. University of Vermont Professor Tony D'Amato reviewed the basics of forest carbon and how the management decisions we make influence this critical forest benefit. The series ended with ***The Promise of Building Big with Wood: An Environmental and Economic Answer***. Building construction is a significant contributor to greenhouse gas emissions driving climate change – can wood, particularly local wood, provide an alternative? UNH Cooperative Extension Forester and Industry Specialist, Andy Fast, lead a lively discussion about Cross Laminated Timber (CLT), a “new” wood building product that is touted as a substitute for fossil-fuel-intensive building materials such as concrete and steel. This final lecture was attended by Henry Baldwin's son Gunner and his son, who is an architect.

Turnout for the lecture series was lower than in the past – with over 201 people attending over the course of the series. We think there may be some confusion that because SPNHF is asking folks to pre-register that walk-ins are not allowed. Nothing could be further from the truth! Pre-registration helps capture information about attendance, and streamline sign-in on lecture nights, but it is NOT required! Feel free to just show up and join in.

In 2025 we will celebrate the 21st Cottrell-Baldwin Environmental Lecture Series ***Woodlands, Wildlife and Wisdom – from New England Authors***

The 2025 Cottrell-Baldwin Environmental Lecture Series will feature four New England authors writing on themes of wildlife and forests from their own unique personal histories and experiences as wildlife biologists, naturalists and foresters. Details can be found with the series info on the last page of the newsletter.

Fox Workshop – Beech Health

In October a beech health workshop was held at Fox for foresters and arborists. This well-attended event featured speakers from the USDA Forest Service, UNH Cooperative Extension, UNH and the State. It included information about beech bark disease, beech leaf disease, silviculture and a talk by Andy Timmons of NHF&G discussing the importance of beech for wildlife, and specifically the link between beechnut production and successful bear breeding in NH.



About Fox Forest

Fox Forest is officially the “*Caroline A. Fox Research and Demonstration Forest*” and is operated by the State of New Hampshire, Department of Natural & Cultural Resources, Division of Forests and Lands, Forest Management Bureau.

Fox Forest is the State of New Hampshire’s *Research and Demonstration Forest*. We conduct applied research and demonstrations to advance the knowledge and scientific practice of forest management.

The Fox Forest Headquarters is located at 309 Center Road in Hillsboro, New Hampshire. Our mailing address is Post Office Box 1175, Hillsboro, NH 03244.

Reach us by phone at 603-464-3453.

Reach us by email at: foxforest@dncr.nh.gov

Visit our webpage, part of the NH Division of Forests and Lands website at www.nh.gov/nhdf , go Exploring Our Forests, click on State owned Reservations and scroll to Fox Forest.



SAVE THE DATES for the 2025 Cottrell-Baldwin Environmental Lecture Series

Woodlands, Wildlife and Wisdom – from New England Authors

All programs are free and take place on Tuesday evenings from 7:00 to 8:30 pm in the Baldwin Environmental Center at Fox Forest, 309 Center Road, Hillsborough, NH.

March 18th “Wildlife Out Your Window: Fascinating Facts About 100 Animals Commonly Seen in the Northeast US” Did you know that...Blue Jay feathers are brown not blue, some frogs survive freezing by creating anti-freeze, and that Gray Foxes climb trees? Wildlife ecologist Brad Timm will share interesting facts and anecdotes, and sign copies of his guidebook.

March 25th “The Promise of Sunrise: Finding Solace in a Broken World” Former Bronx Zoo zoologist, award-winning writer, photographer and talented naturalist, Ted Levin, spent the years 2020-‘21 during the pandemic rediscovering his home valley in Thetford VT while devoted to walking and observing nature, watching seasons pass, day by day. His new book is due for release March 21st (the Vernal Equinox). Join us for the premiere reading.

April 1st “What’s Wild in NH: A Half A Century of Wisdom From the Woods and Rivers of New England”

Eric Orff is a respected wildlife biologist, with more than thirty-one years at the NH Fish & Game Department and fifteen years with the National Wildlife Federation. His stories will make you laugh and help you connect with the wild nature that lives within us all. Come hear Eric read from and sign copies of his book.

April 8th “How To Love A Forest: The Bittersweet Work of Tending A Changing World”

What does it mean to love a forest? Forester Ethan Tapper writes forests are degraded both by people who do too much and by those who do nothing. In his literary debut, Tapper weaves a new land ethic for the modern world, reminding us that what is simple is rarely true, and what is necessary is rarely easy.



*Registration is **not required** but you can help speed up sign in by registering in advance for each program on the Forest Society’s events page: <https://community.forestsociety.org/site/Calendar>. As always walk ins are fine.*

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