

The HIGHLANDS Current

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Putnam Officials Tussle Over COVID

Montgomery presses for details about response

By Liz Schevtchuk Armstrong

When COVID-19 cases began to rise, clashes among elected officials about Putnam's response soon followed.

From Philipstown came questions and a call for the removal of the county health commissioner. From the eastern side of Putnam, praise more often rang out, albeit concerns surfaced, too.

Meanwhile, cases continue to climb.

In a briefing for the Putnam Legislature's Health Committee on Wednesday, Dr. Michael Nesheiwat, the county health commissioner, reported that Putnam had more positive cases in November than at any month during the pandemic. The daily positivity rate has risen from 1.8 percent on Oct. 31 to 9.1 percent on Dec. 9.

The state updates Putnam's testing numbers daily on its online dashboard but the county only shares more specific detail, such as the number of new cases in each town, once per week. The county reported 153 active cases on Dec. 3 and 19 new cases in Philipstown, 164 in Carmel, 73 in Kent, 57 in Patterson, 36 in Putnam Valley and 93 in Southeast. Thirteen people were hospitalized at the Putnam Hospital Center in Carmel as of Dec. 3.

Since mid-November, Legislator Nancy Montgomery, who represents Philipstown

on the nine-member county Legislature and is its only Democrat, has pressed the county administration for details on its anti-COVID efforts.

"What plans are being put in place to deal with the coming surge of cases?" she wrote to County Executive MaryEllen Odell and Nesheiwat on Nov. 18, when the positivity rate had topped 5 percent. She likewise wondered about implementing "a full shut-down similar to earlier in the year."

Six days later, while acknowledging that county officials "want to provide answers and guidance to an anxious public," she urged Putnam to "expand testing so we have data faster. A single testing site is not enough," she said, and "the only way that we keep schools open is to provide testing." She suggested Putnam emulate Ulster County, which transformed a bus into a mobile testing unit, staffed by public health nurses, to conduct rapid testing.

On Nov. 23 Legislator Joseph Castellano of Brewster sent his own memo to Nesheiwat and Odell, citing public worries. "Would it be possible to have more testing available for these residents?" he asked.

Nesheiwat informed Castellano on Nov. 24 that the county Health Department is in frequent contact with the state and with public school officials on such matters as testing. However, in fighting COVID-19, "the main method of mitigation we employ is through case investigation, which enables us to identify contacts that will

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"The Pines" atop the Pocket Road trail on Mount Beacon

Photo by B. Cronin

THE FADING FOREST

Ash, beech and hemlock trees are being threatened by causes known and unknown, changing the forests of the Highlands in drastic, and dangerous, ways

PART 1 OF A SERIES

By Brian PJ Cronin

Thirteen years ago, when I moved to Beacon, I asked a lifelong resident, a neighbor who knew more about the city than pretty much anyone, what his favorite local hike was.

"That'd be the one up Hemlock Gorge," he said, pointing to the cleave in the distance separating Mount Beacon from Fishkill Ridge.

Maps refer to it as the Dry Brook Trail, even though the brook running down the gorge is rarely dry. Colloquially it's referred to as the Pocket Road Trail, after the road that ends at the trailhead. I have never again heard that geologic feature referred to as Hemlock Gorge, and I probably never will, and not only because my neighbor died this year.

Hike to the top of the trail and you'll find an area known as The Pines because of the once towering hemlock trees that provided a tranquil oasis.

What happened to them was devastating — and practically invisible.

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Hustis Changes Plea to Guilty

Sentencing scheduled for Feb. 18 on lesser charge

By Chip Rowe

Charles E. "Chuck" Hustis III, a former Cold Spring trustee and mayoral candidate who was charged last year with the attempted enticement of a minor for sex, on Nov. 19 pleaded guilty to a lesser charge — attempted receipt of child pornography — as part of a deal reached with federal prosecutors.

Hustis, 37, was arrested on Dec. 16 by FBI agents in the Foodtown parking lot in Cold Spring, where they alleged he was waiting to meet a 16-year-old boy for sex. According to the investigator's report, Hustis also solicited explicit photos from the teen via Facebook Messenger.

The child pornography charge carries a

minimum sentence of five years in prison for a defendant with no prior convictions, although in some circumstances prosecutors can ask for leniency. If Hustis had been convicted of the enticement charge, he faced a minimum sentence of 10 years.

Following his arrest, Hustis was released on \$150,000 bond and placed under house arrest with a monitoring device. The judge allowed Hustis to remain at home until his sentencing, which is scheduled for Feb. 18. The government filed a forfeiture motion to keep his cellphone, which agents had seized.

Hustis, a 2002 Haldane graduate, served on the Village Board from 2010 to 2014 and also ran unsuccessfully for the Haldane school board in 2015. He challenged incumbent Mayor Dave Merandy last year.

According to the complaint filed with the court, the 16-year-old notified the Putnam

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THE FADING FOREST

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“This insect the size of the head of a pin comes in and starts feeding,” explains William Schuster, the executive director of the Black Rock Forest Consortium in Cornwall. “They’re tiny, but when you have 10,000 of them on one tree...”

The damage is apparent at the top of the gorge, where the hemlocks look as if they were struck by lightning or ravaged by fire, with barely a pine needle in sight. The hemlock woolly adelgid, which originated in southern Japan, showed up in the Hudson Valley in the 1980s and has been surging of late in part because of increasing temperatures caused by climate change.

The aphid-like insects feed on hemlock twigs from autumn through spring, growing fuzzy white coats to protect themselves from the cold and to hold their eggs. As the swarms feed, the flow of nutrients within the twigs is compromised, leading to needle die-off, and then, the deaths of the trees.

Hemlocks are not the only trees in the Highlands undergoing rapid change. Earlier this year, a friend who had an ash tree cut down in his yard was told by the arborist that, in the next few years, every ash tree in the Hudson Valley would be dead because of the emerald ash borer, another invasive insect from Asia. As with the hemlock woolly adelgid, no native predators feed on them, and the trees have not had nearly enough time and generations to develop resistance.

Alarmed, I asked two friends who both have backgrounds in forestry if this could be true. Are all the ash trees about to die?

They said it wasn’t true: Not all the ash trees will die — only 99.5 percent of them. About 0.5 percent will survive because they have a natural resistance to the ash borer — as long as someone doesn’t cut them down because they heard all the ash trees were dying.

Sometime later I asked one of those friends if she was familiar with the disease ravaging beech trees.

Which one, she asked?

There’s the old one (Birch Bark Disease, which has been around for decades), the new one (Beech Leaf Disease, which appeared in Ohio eight years ago and is encroaching on the Highlands,) and the *new* new one (an unnamed leaf necrosis that showed up in the Highlands within the last few months).

A forest is always in flux, even if the changes often creep forward too slowly to be noticed by even frequent visitors. Sometimes, however, those glacial changes can speed up to seem like landslides. Time in the forest is speeding up.

Ashes, ashes, all fall down

I have been walking with Jonathan Rosenthal and Radka Wildova for maybe 15 seconds when they spot an ash tree. I ask them how they do that so quickly.

“We dream about them,” Rosenthal says.



Radka Wildova examines a recently felled ash tree in High Falls.

Photo by B. Cronin

Rosenthal and Wildova are scientists at the Ecological Research Institute in New Paltz who run a program called Monitoring and Managing Ash that enlists the public to combat emerald ash borer and protect the few trees that can resist them.

It’s mid-June and we’ve come to High Falls to hike the D&H Canal and check in on what might be one of those trees. We’ve barely left the parking lot of the museum when Rosenthal and Wildova spot a mature, healthy ash that both say they were not aware of. They are delighted, entranced and a bit confused as to how it’s in such good shape.

Since the tree is in someone’s yard, Rosenthal suggests it might have been injected with a systemic insecticide that has been shown to protect individual trees from emerald ash borer. Because the treatment is expensive and must be done every few years, it’s not suitable for widespread application. But for ash trees with particular historical or sentimental value, or that might (like this one) crush a house if toppled, it remains an option.

“I’d love to go take a closer look,” says Rosenthal. “But, you know...”

Meaning we would need to trespass, and whoever owns the tree may not take kindly to three strangers poking at it. We take to the woods instead, bypassing several ash trees that have recently been cut down.

In order to locate trees with ash borer resistance, Monitoring and Managing Ash asks people to keep an eye out for “lingering ash.” The theory is that if you notice a clump of dead or dying ash trees in which one tree appears *not* to be dying, it’s reasonable to assume the tree might have at least some natural resistance.

To determine if an ash is fully resistant,

the tree needs to be monitored for a few years. Last year, someone told Rosenthal and Wildova about such an ash tree at the D&H Canal; when they visited last summer it appeared to be healthy despite several dead ash trees within sight.

But it was not resistant. As we approach, Rosenthal and Wildova point out the several signs of its impending death by borer. There’s the die-back in the leaf canopy: many of the branches are barren. There’s the epicormic shoots emerging from the lower parts of the tree, often a desperate attempt to increase leaf production to compensate for the lost canopy and chemical energy. (No leaves, no photosynthesis, no life.)

However, both conditions could be caused by other stresses besides the borer, so once we reach the tree, they look for signs of infestation.

It doesn’t take long. Underneath a piece of bark, the insect’s looping, serpentine “galleries” can be seen: Trails caused by larvae as they tunnel. Several D-shaped holes are found around the trunk, which is the particular shape that the borer makes when it emerges from its larval stage and exits the tree as a beetle.

Emerald ash borers start at the top of the tree, and subsequent generations work their way down. If you’re seeing the D holes at eye level, Rosenthal says, “you can kiss your ash goodbye.”

The forests of New York are under attack from more than 150 invasive pests, more than any other state, according to Rosenthal. The primary reason for this is New York City’s role as a global shipping hub, with invasive bugs traveling inside shipping crates, pallets and packing material.

Once they escape, there’s just enough

forests within New York City itself — Central Park, the Bronx — for them to establish themselves before spreading into the thickly wooded suburbs.

The gilded wealth of those suburbs also plays a role, in the form of exotic and expensive imported trees. “You want to be the first on the block with that new tree,” says Rosenthal.

That was the case with the first American tree epidemic that can be traced back to human interference: The chestnut blight that destroyed almost every mature chestnut tree in the early 20th century. Arriving on imported Japanese trees, the fungus was discovered on chestnut trees at the Bronx Zoo in 1904. By the 1940s, it was everywhere.

The massive, stately chestnut trees of young America are now few and far between. Today the species lives on mostly as scrubby underbrush, still shooting up from chestnut roots, but felled by the blight before they ever mature.

This may be the future of the ash. Since the emerald ash borer needs a thick trunk to tunnel through, younger and reedy ash trees are safe until they mature. That may be largely how ash trees in the Hudson Valley survive: As thickets and understory, ecological ghosts haunting the forests where they once were found in soaring abundance.

That is, unless enough naturally resistant trees are found and protected. “Every living, standing, healthy tree provides some hope,” says Rosenthal.

Researchers at the U.S. Forest Service have been collecting scions from resistant ash trees to grow grafted clones. Field tests are underway in Ohio and Delaware to see how these younger ash trees react to emerald ash borer outside of a lab or greenhouse.

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Radka Wildova and Jonathan Rosenthal of the Ecological Research Institute spot a surprisingly healthy ash tree in a yard in High Falls.

Photos by B. Cronin



Trails, aka "galleries," made by Emerald Ash Borer larvae on an ash tree

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For the program to thrive, more resistant ash trees must be identified. In the early days of the emerald ash borer invasion, a common practice was to cut down all the ash trees where the pest had been detected, to stop the spread. While research found this increases the spread (the beetles just fly farther afield to find new ash trees), Rosenthal and Wildova say they still encounter people who preach cut first.

"People want to do something," Rosenthal says. "And what's more American than cutting trees down? That's a headwind that we face."

If all the lingering ash trees are cut down, those that will remain will be the ones that had been deemed "significant" enough to warrant the labor and expense of constant insecticide injections. The state parks department has designated one stand near the entrance to Minnewaska State Park to receive treatment; the trees may become a living museum where New Yorkers can show their children what ash trees are.

For the Mohawk people, a living museum is not enough. Rosenthal and Wildova have spent time on the reservations along the New York-Canadian border, speaking with

elders and craftspeople about the cultural importance of black ash trees.

"For them it's an existential problem," said Rosenthal. "Some say it would be the end of their language, because so much of their language is tied to ash. And they've made huge efforts to maintain their language."

The Mohawk and Iroquois people also weave baskets from black ash for ceremonies. It's tradition that, during weddings, the families of the newly wedded couple exchange black ash baskets. One basket weaver told Rosenthal that if the black ash tree dies out, for Mohawk people it would mean the end of marriage.

A forest full of secrets

"You name the species," says Taro Ietaka, "and there's something that's coming for it."

Ietaka, a Cold Spring resident who serves on the village's Tree Advisory Board, is a parks supervisor for the Westchester County Department of Parks, Recreation and Conservation. During his 20 years working with forests, he's watched the threats in the Highlands steadily increase.

"There's a lot of stressors, especially in our



Taro Ietaka, a Cold Spring resident who works for Westchester County Parks, examines a stricken beech tree at Cranberry Lake Preserve.

area," he says. "There's the changing climate, the big summer droughts, the air pollution. But then you throw on top of that some of these exotic things coming over, like emerald ash borer and the like..." He looks at the beech tree behind us. "They're still not 100 percent sure what's going on with this."

It's late October at Cranberry Lake Preserve, a park north of White Plains that Ietaka used to manage. The leaves are a riot of autumn color, although the beech tree is still green — deeply green. Ietaka plucks a leaf and points to the bands across it. "The stripes, that's pretty unmistakable," he says. For years, beech trees have contended with a bark disease that has been lethal for stands in the Adirondacks and Maine but less so in the Highlands and south. "It's ugly, but down here it usually doesn't kill the tree," says Ietaka. "They scar over and go on living happily."

In 2012, researchers in Ohio noticed something new happening with beech leaves: First came the deep green banding, then the leaves turned leathery, then crinkly, and then they dropped. Beech usually keep their leaves throughout the winter; the faded yellow of winter beech is one of the few predictable pops of color in the Highlands' forests during the colder months.

But once the leaves fall, the disease prevents new buds from forming. Brent Boscarino, who coordinates the Invasive Species Citizen Science Program for the New York-New Jersey Trail Conference, notes that once beech leaf disease afflicts a tree, it will typically be dead within three years. Parts of Ohio have reported a 100 percent mortality rate. "That's what we're scared of," says Boscarino.

It's not clear what is causing the disease,



Dark green stripes, or "banding," are a sign of beech leaf disease.

much less what can be done to combat it, but there are clues. Its rapid spread eastward indicates a high probability of an invasive component, since the disease clearly isn't encountering any natural resistance. So far it's been found in Ohio, Pennsylvania, Ontario, New York and Japan, which might indicate that it originated in Asia. The most important clue may be the presence of nematodes, a microscopic worm, found in afflicted leaves. It's not known if the nematodes are responsible for the disease or are a symptom, but Ietaka isn't waiting to find out. He's received clearance to inject a few beech trees with an insecticide similar to the one used against emerald ash borer.

So far, beech leaf disease has not been discovered in the Highlands, although with the disease encroaching from the west and the south, it appears to be only a matter of time. Or perhaps it is here already, in a different form.

This past fall, beech tree leaves here have been turning deep green, then shriveling and falling off, but without the characteristic banding of beech leaf disease. "I was just in parts of Fahnstock" State Park in Philipstown, Boscarino said at the end of October, "and it looks like every beech tree has had this. The leaves are staying this dark green" and look diseased. "But we were not able to see banding. So is it beech leaf disease?"

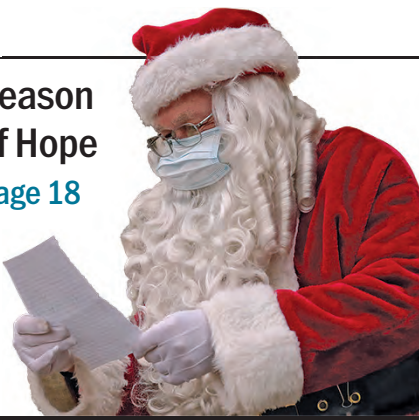
The disease — so new it is unnamed — has so far only shown itself in the Highlands where the familiar beech leaf disease hasn't made an appearance. Across the river in the western Highlands, Schuster, the Black Rock Forest executive director, and Matthew Brady, its manager, have been on the lookout for beech leaf disease.

They haven't seen it yet, but they have found examples of the newer leaf disease, which both believe is likely a deformity caused by a late frost (May 15) this year. "We had 2 inches of snow," notes Brady. If that's true, the trees should recover come spring. If not, the mystery, and the devastation, will deepen.

Next week: *Darwin's last laugh, and a predator on the loose*

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Vaccines: Who Goes First?

Hospital workers, nursing homes at top of list

By Leonard Sparks

After a spring and summer filled with death, the Fishkill Rehabilitation and Nursing Center in Beacon is about to get a shot of life.

Eighty-six residents at the facility have tested positive for COVID-19, and 12 have died. The center also had 65 staff members test positive.

On Tuesday (Dec. 22), its residents and staff will receive the first of two doses of a vaccine created by Pfizer and BioNTech and approved a week ago by the federal Food and Drug Administration for emergency use.

The FDA approval launched a new phase in the pandemic — the effort to vaccinate more than 300 million Americans, beginning with frontline health care workers and the residents and staff of nursing homes and other congregate-care facilities before moving to first responders and other groups and then the general public.

New York has received nearly 88,000 of 170,000 doses it is due from Pfizer for the first phase of the state's vaccination plan, Gov. Andrew Cuomo said on Wednesday. About 19,200 doses are designated for the Mid-Hudson Region, the third highest in

the state behind New York City (72,000) and Long Island (26,500).

Cuomo said the state also expects to receive 346,000 doses of a vaccine made by Moderna once the drug receives FDA authorization for emergency use. The state Department of Financial Services has told insurers to cover the costs of vaccinations, and a website with information about the vaccination program has been created at ny.gov/vaccine.

Public health officials say at least 75 percent of U.S. residents will need to be vaccinated in order to reach “herd immunity,” the point at which the virus is unable to easily spread from person to person.

Cuomo also on Wednesday named 10 hospital systems that will serve as regional hubs to coordinate distribution for Phase 2, which prioritizes paramedics and public health workers; first responders; workers who interact with the public, such as pharmacists and grocery store employees; school staff and child care workers; and people who have health conditions that increase their vulnerability to dying from COVID-19.

The hub for Dutchess, Putnam and five other counties in the Mid-Hudson Valley will be Westchester Medical Center Health, whose system includes MidHudson Regional Hospital in Poughkeepsie.

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Scientists search for Laricobius beetles in Harriman State Park.

Photo by B. Cronin

THE FADING FOREST

Ash, beech and hemlock trees are being threatened by causes known and unknown, changing the forests of the Highlands in drastic, and dangerous, ways

PART 2 OF A SERIES

By Brian PJ Cronin

“This,” says Nicholas Dietschler, displaying a photo to a half-dozen volunteers (including me) on a gray, misty autumn morning in Harriman State Park, “is what we’re looking for.”

The photo is of a black beetle, *Laricobius nigrinus*, which is native to the Pacific Northwest and would normally not be found in the Hudson Valley.

And yet, if we find any of the beetles, it won’t be a cause for alarm but for celebration. In fact, after we search two areas of the park for Laricobius, we’re going to release 843 more of them.

That’s because *Laricobius nigrinus* eats one thing: hemlock woolly adelgids, another non-native species that showed up in the Hudson Valley in the mid-1980s and has been ravaging the Eastern Hemlock population.

Dietschler and his colleague Marshall Lefebvre are from the New York State Hemlock Initiative, an organization founded at Cornell University in 2014 by Mark Whitmore, a forest entomologist. Whitmore has been studying adelgids for nearly 40 years. Over the phone,

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WINTER WONDERLAND — Stefan Danicich of Cold Spring shovels outside his Garden Street home at 8 a.m. on Thursday (Dec. 17) after the first snowstorm of the season dumped 12 to 18 inches on the Highlands. For more photos, including from readers, see highlandscurrent.org.

Photo by Michael Turton



The white, woolly, egg masses of the hemlock woolly adelgid



Mark Whitmore of the Hemlock Institute recording data in the Adirondacks

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THE FADING FOREST

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I asked him how the hemlock woolly adelgids in New York state have changed over the course of that time.

"They've been very happy," he says. "And that's concerning to me."

Nevertheless, there had never been a statewide initiative to deal with the problem. "We need eyes out there, looking, to help us," Whitmore says. "So I figured, aw, what the heck. We'll just try this. It's important for people to realize that they don't have to sit around and watch the trees die."

Like the ash trees afflicted with emerald ash borer beetles that I described last week, hemlock trees can be injected with insecticides that kill hemlock woolly adelgids. Unfortunately, as with ash trees, the treatment is too expensive and labor-intensive to be adopted on a large scale. Eastern Hemlock trees are the third-most common tree in New York, and the state has more hemlock trees than any other state in the country. A large-scale remedy is needed, and that's what the Hemlock Initiative is rolling out, even if it centers on something very small.

The field of "biological controls," or combating a pest by introducing a predator to its environment, can be dangerous to navigate when the predator being introduced is not native to the region. Extensive research must be done to confirm that the predator won't wreak havoc.

William Schuster, the executive director of Black Rock Forest in Cornwall, has elected not to proceed with biological controls there.

"We decided to take the conservative stance," he says. "I admire the other places that are doing it, but we decided not to bring in something we don't already have. Every once in a while that goes really bad."

Bugs vs. bugs

The textbook biological out-of-control took place in Hawaii in 1883, when sugar cane farmers imported mongoose from



Searching for *Laricobius* beetles after beating a hemlock at Harriman State Park

Photo by B. Cronin

Asia to deal with rats. Unfortunately, the rats slept during the day, while the mongoose slept at night. Since the species never ran into each other, the mongoose instead ate the islands' birds.

Modern researchers put much more thought into the process than 19th-century colonizers. For instance, in the battle against emerald ash borer beetles, certain species of wasps have been found effective, and two types of silverfly (which feed on eggs in the spring), as well as the *Laricobius nigrinus* beetles (which feed on adults in the fall), may be able to control hemlock woolly adelgid.

The 843 *Laricobius* beetles sitting in two cardboard boxes in the back of Dietschler and Lefebvre's pickup truck on this day in October were collected from Western Hemlock foliage in the Pacific Northwest in their pre-pupae

stage, sent to the Hemlock Initiative in Ithaca and placed into a pupation medium.

"Which is a nice term for dirt," quips Dietschler.

"Expensive dirt," adds Lefebvre.

Once the beetles emerge, they're ready for release. So far, the Hemlock Initiative has freed *Laricobius* beetles at 21 sites across the state. Since the beetles prefer warmer temperatures, most of the sites are in southern New York or near bodies of water such as the Finger Lakes. The institute began releasing the beetles at Harriman, which is located in Rockland and Orange counties, in 2018. Overall, more than 2,250 have been set free in the park since the program began.

Today's plan is to check at the two sites where Dietschler and Lefebvre released beetles in 2019 to see if they've established a population. Then, Don Gabel, the direc-

tor of plant health at the New York Botanical Garden, who's here as a volunteer, will lead us off-trail and deep into the heart of Harriman to release the beetles in a stand of hemlock trees he's picked out.

Looking for the beetles in the wild is like looking for a needle in a haystack when the needle is in constant motion and the haystack covers 47,527 acres. The most efficient method so far, and the one we will be using, involves a "beat sheet," a large square of canvas supported by a wooden X. More than one hiker, upon seeing the sheets, asks if there's a kite festival nearby.

To find the beetles, you hold the X under a hemlock tree. Then, using a ski pole borrowed from the park's lost-and-found, you beat the tree. After all manner of things fall from the branches, you hold the sheet

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The coolness in the summer if you hike through a hemlock grove, with their branches hanging over the waters of a local lake... I can't fully describe it other than that they can't be replaced by any other tree.

~Mark Whitmore

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to your face to look for black specks that might be *Laricobius* beetles.

If one of the specks looks promising, an aspirator is deployed. This is a glass vial with a rubber tube running through it. You place one end of the tube in your mouth and the other tube against the speck and suck. (Lefebvre demonstrates how to make sure the filter is in place so the beetle doesn't end up in your mouth instead of the vial.) Once encased, the speck can be identified.

A foundational species

If there's any tree that could inspire people to tromp around the woods early in the morning to suck beetles up through a tube, it's hemlock. Whitmore considers them the "Labrador puppies" of trees.

"There's something about them," he says. "The coolness in the summer if you hike through a hemlock grove, with their branches hanging over the waters of a local lake... I can't fully describe it other than that they can't be replaced by any other tree."

Mineral Springs, on the southern border of Black Rock, is surrounded by hemlocks that are one of the only old-growth parts of the forest that remain. When European settlers began turning the forest into farmland, they were so awed by Mineral Springs that they left the hemlocks unscathed. (They were less awed by the springs, from which they took water to bottle and sell.)

Hemlocks play a pivotal role in the forest. Red squirrels and other species eat their seeds. Deer huddle under their branches during foul weather. Schuster has found the trees to be an invaluable component in the effort to reintroduce native brook trout because their dense branches keep the water cool. "They create, because of their shade, their own microenvironment," he says.

Jonathan Rosenthal of the Ecological Research Institute in New Paltz refers to hemlocks as a foundational species that structure their ecosystem.

"Hemlocks determine the microclimate, the nutrient cycling — everything that's there," he explains. "When you remove hemlocks, that changes everything."

Since hemlocks surround many upstate reservoirs, the New York City Department of Environmental Protection is especially



Marshall Lefebvre and Nick Dietschler of the New York State Hemlock Initiative on a mission at Harriman State Park Photos by B. Cronin

concerned with their fate, because of fears that losing them would adversely affect the quality of the water flowing to more than 18 million people.

Stopping the spread

If the *Laricobius* beetles are at the first site we search, they must be dieting. Branch after overturned branch reveals swarms of fuzzy white hemlock woolly adelgids, and after we beat every hemlock in sight, no beetles appear. The ones that were released the year before appear to have failed. These trees will die.

At the second site, Dietschler finds a beetle with his first thwack. Everyone swarms around to look, and the mood turns from funereal to upbeat. "It's usually not this easy," he says. As the group continues to examine the hemlocks, the beetles are found with increasing frequency.

It's not the first time released beetles have established themselves, but their sheer abundance here is particularly encouraging. "This is a huge thing," says Dietschler. "I guess we should have brought streamers."

As Gabel from the New York Botanical Garden leads us off-trail to the isolated release site, the discussion turns to how hemlock woolly adelgid treatments are evolving. Warming temperatures from climate change are increasing the spread of the adelgids northward. This year, the bugs were detected along the southern foothills of the hemlock-rich Adirondacks.

One of the day's volunteers is Nick Marcet, who works for the state parks department and spends a lot of his time treating trees. In addition to the insecticide injections used on hemlocks near water sources, the department has started using a basal bark spray on larger groups of trees. Other state agencies are also stepping up



A jar of *Laricobius* beetles, ready for release

their efforts. In October, the Department of Environmental Conservation individually sprayed 2,500 hemlocks and injected 80 more in the Adirondacks, and the Hemlock Initiative released 600 *Laricobius* beetles.

"Tree awareness and management is getting better," says Dietschler. "Down south there's a lot of robust treatment programs, and New York is catching up."

Once we reach the site where we will release today's army of beetles, 21 jars are taken from the two cardboard boxes, each containing a hemlock branch and around 40 beetles. Beat sheets are held under the branches as the jars are emptied on the trees, to catch any beetles that fall so they can be deposited back on the tree.

"They'd probably be fine in the soil, but



Stricken hemlocks at Mineral Springs in Black Rock Forest

we do that just to be nice to them and give them the best chance of survival — and to reassure ourselves we're not stepping on them," Dietschler says.

And then it's over. The beetles have been freed. The equipment is packed. The trees will be checked next fall to see if the beetles established themselves. With this site so far off the beaten path, we'll probably be the last humans to see these trees until then.

To the naked eye, the trees seem the same as any others. But they represent the hope that hemlocks can be preserved.

"It is kind of anticlimactic," says Gabel. "But it'll sink in later."

Next week: *Darwin's last laugh.*



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Frost Named Beacon Police Chief

Appointment must be confirmed by council

By Jeff Simms

Beacon Mayor Lee Kyriacou on Monday (Dec. 21) named Lt. Sands Frost as the city's new police chief, pending confirmation by the City Council. Frost, a 37-year veteran of the department, has been its acting chief since August. After hearing public comment, the council is expected to vote on the appointment at its next meeting, on Jan. 4. The search committee was led by Council Member Terry Nelson and included Air Rhodes, another council member. Because

Kyriacou also has a vote, presumably only one of the other four council members will need to support Frost for him to be confirmed. (Two members reached on Tuesday said they support Frost but would not say how they will vote.)

Monday's announcement completes a nearly five-month search following the retirement in July of Kevin Junjulas, who had been chief since 2018.



Lt. Sands Frost
Photo by J. Simms

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Joe Etta Dies at Age 102

Veteran fought in three WWII invasions

By Chip Rowe

Joseph C. "Joe" Etta, 102, a lifelong resident of Cold Spring and World War II veteran who fought in three major invasions, including at Normandy, died Tuesday (Dec. 22) at the Castle Point VA Medical Center in Wappingers Falls. Etta was born in Cold Spring on April 22, 1918, the son of Giuseppe and Francesca (Botta) Etta. He graduated from Haldane High School in 1938 and enlisted in 1941 in the U.S. Army. In 35 months of service

during World War II, he participated in three major Allied invasions — in North Africa in 1942, Sicily in 1943 and Normandy in the D-Day invasion of June 1944 — and rose from private first class to sergeant. In 1947, in Cold Spring, he married Catherine Fitzgerald, who died in 1998.



Joe Etta on the day he received the French Liberty Medal in 2009
Photo by Ande Merante

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When a tree dies, it opens a hole in the canopy that allows invasive species to thrive.

Photo by B. Cronin

THE FADING FOREST

Ash, beech and hemlock trees are being threatened by causes known and unknown, changing the forests of the Highlands in drastic, and dangerous, ways

LAST OF A SERIES

By Brian PJ Cronin

For the most part, the 3,194 acres of Black Rock Forest across the Hudson River in the western Highlands are not old-growth forest. Much of it was pasture and farmland cleared in the 18th century: One of the main roads through the forest, Continental Road, dates to the Revolutionary War. There are, however, a few places that predate European settlers. There's Mineral Springs near the forest's southern border, shrouded in hemlocks which have stood since before the signing of the Declaration of Independence, only to now be stripped bare by an invasion of hemlock woolly adelgid. There's a labyrinthine oak, hundreds of years old, at the intersection of Continental Road and a hiking trail. About a century ago, early environmentalists attempted to return the fields to the forest. "They put white spruce over there," says William Schuster, the executive director of Black Rock Forest, as we walked down Continental Road in the fall. "Red pine over here. They started a lot of experimental

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RIVER IGLOO — Brigid Slattery, a Clearwater crew member, stands outside the sloop at its berth at the Hudson River Maritime Museum in Kingston on the morning after last week's storm. For more snow photos, see Page 20.
Photo provided



American beech

Fagus grandifolia. Sturdy, imposing tree. Typically 50 to 80 feet but up to 120 feet. Smooth, light gray bark. Rounded crown of spreading, horizontal branches. Produces edible beechnuts.



Eastern hemlock

Tsuga canadensis. Evergreen with conical crown of slender, horizontal branches that often droop. Typically 40 to 70 feet but up to 100 feet. Bark was once a source of tannin in the production of leather.



White ash

Fraxinus americana. Dense, conical or rounded crown of foliage. Typically 75 to 120 feet. Deciduous with dense branching pinnate leaves, and early fall color. Wood particularly suited for baseball bats, tennis racquets, hockey sticks, polo mallets, oars and playground equipment.

Source: Lady Bird Johnson Wildflower Center (wildflower.org)



A state forester applies insecticide to control a hemlock woolly adelgid infestation at Lake George in the Adirondacks.

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THE FADING FOREST

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things, too, and where they didn't plant, deciduous species [that shed their leaves each year] like ash came in. They're fast-growing, require high light, and they're part of this ecosystem anyhow.

"That's why we had so much ash around here," he said, "and why this is the area that, for us, has been the most devastated by the emerald ash borer," another invasive pest.

The ash trees of Black Rock were once used by craftspeople to make everything from tool handles to Adirondack-brand baseball bats. But the grove that we're approaching has been cut down, a victim of the borer. In its place, the foresters of Black Rock are working on an experimental project they call Patron's Grove.

The new grove addresses several issues. It will be a place where donors can have a tree planted in memory of a loved one. It will serve as a sort of internal arboretum, showcasing at least one example of all of the native plants and trees that can be found in the forest. And, as best it can, the grove will play defense.

When the dying ash trees were cut down, it created an opening in the canopy, allowing light to reach the ground and whatever is there to flourish. If you're not careful, what emerges from the earth below may be headaches.

A forest under siege

Matthew Brady is a second-generation forest manager at Black Rock. His father,

John, was the forest manager for 35 years, and his brother, Ben, works here as well. As forest manager, Brady was responsible for cutting down the dying ash to make way for Patron's Grove; he sent them to a sawmill. They will probably be the last ash trees milled from Black Rock in his lifetime.

Because foresters at Black Rock want to have a robust ecosystem dominated by native plants, Brady spends a lot of time tracking the encroachment of invasive species such as burning bush, which is encroaching from Route 9W.

"The more I look for burning bush, the more I see it," Brady said. "That's a pretty tedious one to kill." He notes that the mile-a-minute weed is "only in one spot, but it will not die." For Devil's Walking Stick plants, a crew from the New York-New Jersey Trail Conference Invasives Strike Force helped him rip out more than 600 stems. When they checked this year, they found success: 99 percent hadn't returned.

Less successful have been efforts against knotweed (which Brady and Schuster agree is a lost cause) and stiltgrass, which has been in the forest since the 1990s.

"I remember the first patch of it, up at the upper reservoir," said Schuster. "Somebody suggested we should get rid of it, and I thought, 'Ah, it's just one patch.' Now, by stem, it's probably the most common species in the forest."

Brady, pointing 20 feet overhead, added: "It's even growing out of the crotch of that tree. There's no stopping it."

And then there's Japanese barberry, prized for its resistance to deer, cursed by foresters and naturalists because of its rapid spread, especially when it finds holes in the canopy. At the Minnewaska State Park Preserve in Ulster County, the stands

of ash trees near the Split Rock swimming hole were rapidly taken over by barberry as soon as the ash trees died.

At Black Rock, Brady said if he notices any Japanese barberry while driving the Bobcat on forest roads, he'll turn the excavator around to rip it out. "That gives me some satisfaction," he said.

At Cranberry Lake Preserve in Westchester County, Taro Ietaka, a Cold Spring resident who is a parks supervisor for the Westchester County Department of Parks, Recreation and Conservation, faces many of the same challenges because of dying ash and beech. He is considering planting oak and maple with the hope that, once the ash and beech have died, the new trees will block barberry, Tree of Heaven and other invasives.

As he explained this, soft pops could be heard ringing through the forest — bottle rockets being shot at the nearby Kensico Reservoir by the New York City Department of Environmental Protection to scare away flocks of Canada geese before they befoul the city water supply.

At some point, seeing all this effort, with explosions, sprays, injections and excavations, with the beetles sucked through tubes and strike forces roaming the woods to rip out aggressive weeds, you start to ask uncomfortable questions, such as, is this all worth it?

Darwin's last laugh

When I spoke to environmental journalist Elizabeth Kolbert, who won a Pulitzer Prize for her book, *The Sixth Extinction*, before she appeared via Zoom on Dec. 6 at a Desmond-Fish Public Library event, I asked which environmental issues she felt weren't getting enough attention. She replied that,

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Fast-growing stiltgrass can quickly take over.



Foresters are creating an experimental grove at Black Rock Forest.

Photos by B. Cronin

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while scientists are well aware, most of the public doesn't realize how much warming because of climate change is already "baked into the system."

"That is why scientists have always said that you have to act before you don't like the climate that you're seeing," she said. "Because you've already baked in a lot of damage because of the time lag in the system."

Even if humanity were able to immediately stop emitting greenhouse gases, we are still going to suffer from increasingly warming temperatures, rising seas and other global upheaval. The effects we are seeing now are only the beginning. In addition, the global system of trade that has facilitated the spread of invasive plants, insects, viruses and pathogens will continue. We continue to alter ecosystems in countless ways that are both known and yet to be realized.

If, as Darwin proposed, nature is a never-ending competition, where only those that can adapt to changing conditions survive, why attempt to restore a fallen world? Why try to save species that cannot adapt fast enough to the global economy and climate change, and let those that can run wild and free? Why even refer to them as "invasives," which implies a nefarious intent by insects and plants that are simply taking advantage of environments they can thrive in? If ash, beech and hemlock trees can't survive in the 21st-century Highlands, why not let them die?

"If we lost every beech tree, it would still be a beautiful forest," says Ietaka at Cranberry Lake. "But we'd lose that diversity."

Schuster, standing where Black Rock's last ash grove used to be, said that to surrender would be to give up on the world, instead of preserving it to our children and grandchildren. "We've lost so much," he said. "We've already lost main species, medicines, organisms that are adapted to this specific environment, the colors in the fall."

Mark Whitmore, the head of the New York State Hemlock Initiative, said, "I'm not going to sit by and watch our native trees suffer as a result of somebody's ignorance."

Brent Boscarino, who coordinates the

Invasive Species Citizen Science Program for the New York-New Jersey Trail Conference, noted that the reason to fight is that you otherwise will end up with a "monoculture."

"There's a clear link between invasives and decreasing overall biodiversity in an ecosystem," he said. "When fast-spreading, all-encompassing invasives like barberry and stiltgrass take advantage of newly opened canopy, the forest can't support the higher trophic levels that are either using it as habitat or feeding on it, so that limits the number of species that can be living in an area."

"Just like invasives taking over, all it will take is one disease or one big shift or weather event that could wipe it all out. That's why diverse ecosystems are more resilient and able to withstand other changes that could be coming down the road."

Lose the hemlocks, the ash, the beech, and you also lose the species that depend on them. "Generalist" species that can quickly adapt to changing, even horrific conditions (such as rats, raccoons, pigeons and, yes, humans), are thriving at the expense of "specialist" species that depend on a certain plant or insect to survive, Ietaka noted. Established forests also capture and store carbon; anything that damages them will release tons of carbon into the atmosphere, contributing further to global warming.

Invasive plants may have other characteristics that make them dangerous. Barberry is a home for black-legged ticks, which spread Lyme disease. The sap of giant hogweed, another invasive, can cause severe burns. Tree of Heaven is home to the spotted lanternfly, yet another invasive insect that can kill any smooth-barked tree.

"That'd be almost all our trees," said Brady.

There are other, surprising, consequences to the accelerated loss of tree life. Bryan Quinn, the owner of One Nature, an environmental design firm in Beacon, noted that in 2017 and 2018 a hydrologist assured city officials there was enough water to support a burst of new development.

Beacon's main source of water is a reservoir atop Mount Beacon that is surrounded by trees. "What happens if 50 percent of the trees up there are dead?" asked Quinn.

"What does that do to water run-off, water quality, groundwater recharge?"

Perhaps it isn't useful to think of the world as a binary system, either saved or fallen, native or non-native. "I think," said Quinn, "there's a middle path."

The future forest

Quinn said he hopes that the ashes, beeches and hemlocks of the Highlands can be saved. But he's thinking ahead to a world in which they're gone or nearly gone. If the climate of the Highlands in 2050 will be more like Virginia's today, perhaps it's time to consider what grows in Virginia.

Quinn and his staff, after reviewing scientific papers that examined which plants and trees will adapt better to a rapidly changing climate, decided to conduct a test run. A client offered land for them to plant four "test forests" of about 50 trees each.

Each forest represents a Highlands microclimate, he said, including one adapted for Eastern Hemlock. But Quinn didn't plant Eastern Hemlocks because of the threat of hemlock woolly adelgid. Instead, he imagined what the hemlocks of tomorrow will be by referencing research on resilient plants and considering trees similar to Eastern Hemlocks whose growth ranges extend just as far north as the Highlands.

"There is overlap," says Quinn in regard to the forests of Virginia and our local forests. "What can we pull from there to make the forest of the future here, without cutting things down? Let's seed trees that can reproduce and add to the mosaic."

Although the test forests are only a few years old, Quinn said he has had success with Loblolly Pines, Virginia Pines and American Holly, the latter of which Quinn found growing wild on Mount Beacon. These are evergreens that supply many of the ecological benefits of Eastern Hemlocks. It's also likely that insect and fungal pests from warmer U.S. climates will probably spread north, so it may be worth introducing plants that co-evolved with those pests and resist them naturally.

Then there are ghosts of the forest that are ready to return. After being almost gone for more than 75 years, the American Chest-

nut could make a comeback. Scientists at the State University of New York have developed a genetically modified American Chestnut that can withstand the blight that once wiped it from the landscape. Even Schuster, at Black Rock, who takes such a conservative approach to forest management that he decided to forgo insecticide injections into the forest's hemlocks, is giddy at the prospect. He points out an area of the forest where the roots of old chestnuts still send up shoots, although they don't survive to become trees.

Quinn believes that "return of ecological energy" provided by the revival of chestnuts is sorely needed. They are big trees that "grow quickly, create so much food, so much energy, so much life depends on them."

There are other shoots of hope. At Cranberry Lake, Ietaka mentioned the Asian longhorned beetle, which appeared in New York City in the 1990s. The city last year declared that the bug has been eradicated from the five boroughs. If they hadn't, said Ietaka, gesturing around him, "this could have been the Northeast version of the Great Plains."

Walking through Cranberry Lake, Ietaka pointed out the roots of trees along the trails. He's spoken to other park managers who have, in the months since the COVID-19 shutdown began, seen more tree roots than usual because the number of hikers has increased so much that trails are being compacted. "For years I've been advocating for people to get outside and experience nature," he says. "And now I'm like, 'Ahh! Too much!'"

But like the lost ash trees at Black Rock that made way for a new grove, this crisis could be put to good use. More people are turning to the outdoors for recreation and for solace; the hope is that a newly engaged public can be enlisted to save the forests they've grown to appreciate.

That can mean learning to identify hemlocks, ash and beech trees so that they can keep an eye on them, or volunteering to stop the advance of invasive plants. Ietaka says that after watching the climate crisis grow worse over the past 20 years, it never ceases to amaze him how many people show up on their days off to fill garbage bags with weeds.