

Hunting the Woolly Adelgid

By Dianne Fallon

Editor's Note: Three years ago, The Waterman Fund, which supports research and teaching projects about alpine areas in the Northeast, approached Appalachia about sponsoring a contest to encourage new writing about the spirit of wildness. It is our goal at the journal to help writers develop their unique voices. Our third winner takes us into the Maine woods, where she struggles to document an invasive insect. Fallon received a \$1,500 prize; honorable mention of \$500 went to Jonathan Mingle for a piece musing on red squirrels. To learn more about the contest, see watermanfund.org.

I have been tramping in the woods near Mount Agamenticus in southern Maine for a couple of hours looking for signs of a tiny aphid-like insect that kills hemlock trees, and I am starting to feel hungry and cold. I should have brought more snacks. I'm feeling a bit uncertain about the scientific aspect of the survey I have volunteered to do. I'm supposed to plot data on a sheet, following the compass points spelled out in the instructions-but I think I can figure it out: Start with the first hemlock tree, examine two branches of new foliage, walk 25 paces, find another tree, check it. Check the sheet for the next cardinal point, use the compass to orient myself, and walk another 25 paces in that direction. My goal is to check 100 hemlock trees in this random but directed fashion.

I have come here today to survey my adopted tree stand for signs of the woolly adelgid because I love hemlocks, the way their lacy branches spread out and make the woods into a cathedral. In the winter, I love seeing the patches of packed down snow beneath a hemlock's sheltering branches-evidence that deer are keeping themselves cozy and warm. And I love these woods, and the opportunity to experience them in a different way-to get out into the forest with my compass and follow the directions for the survey, wandering in terrain I might not otherwise explore. I like having a purpose to direct my wandering, to take me into patches of the forest where I might not go otherwise. I like feeling as if I am taking care of these trees.

The day is overcast, a little chilly, but not cold. This is strange weather for mid-December. On Thursday night came the freezing cold that caused an ice storm that snapped branches and toppled trees. On Friday, a blast of warm air melted the ice within hours. Today, colder air has blown in. We've been camping out at the house without power for five days, stoking the wood stove and flushing the toilet with water siphoned from standing pools into a trash barrel. On this Monday, ten days before Christmas, I have student portfolios to grade, errands to run, and a children's birthday party to organize. Coming to the woods today takes time away from these responsibilities, but I consider it time well spent, an antidote for this frenzied time of year.

Earlier, driving up Mountain Road, I navigated debris from the ice storm littering the road: pine needles, branches, and limbs pushed off to the sides. No lights or other signs of electricity in the homes set back on wooded lots. I passed two Central Maine Power trucks, their crews floating in buckets amid the power lines as they worked to restore order from the tangled mess created by the storm. I knew that I would have to be vigilant for hanging limbs in the treetops—widowmakers—that might snap and break. Was I crazy to be out here today? Maybe, but I felt confident that most branches weak enough to break had already done so.

As I drove past the Mount Agamenticus access road, I ignored the Road Closed sign and continued up Mountain Road as pavement gave way to dirt. This portion is officially closed December to April, but that doesn't mean the road is impassable, at least not until the first heavy snow. I drove to the high point where a cliff overlooks a ravine, and then down the steep hill toward Cedar Creek. I had to slow down and drive around a white pine that lay on one side of the road, blocking the opposite lane. After parking my car at the Cedar Creek trailhead, I set off, walking down the old tote road. My map shows that this old road leads to a pond, so I walked to the pond and then plunged into the woods from there, making that area the first block of my survey.

Although I live in southern coastal Maine, an area that feels more suburban than rural, today I am alone out here. This patch of forest feels as remote as any that I've walked in North Woods or the White Mountains of New Hampshire. Maybe even more so, because when I hike in the Whites, I take trails. When I visit my tree stand, I wander.

My tree stand is part of the largest unfragmented coastal forest between Acadia National Park and the New Jersey Pine Barrens. The forest here has been preserved in small and large parcels by ten conservation groups working together, the Mount Agamenticus to the Sea Coalition—an effort that began over 100 years ago, when the local water district began to buy up land to protect the water supplies for the towns of York and Kittery. This sprawling stretch of undeveloped land—about 30,000 acres—stretches from the backside of 691-foot Mount Agamenticus to slivers of marshland along the York River.

Like almost all land in New England, these 30,000 acres have been used and developed in many ways over the centuries: for farming, sheep grazing, lumber. During World War II, a radar tower—the first of its kind in the United States—was installed on the summit of Mount A and the forest cut to make room for barracks to house 25 soldiers of the 551st Signal Battalion. For ten years in the 1960s and 1970s, a ski area drew locals to the mountain each winter.

Today, telemark skiers trek up Mount A to turn on slopes that shrink a bit more each season as trees and brush take over. When the snow melts, hikers and casual visitors wander the summit's open meadow, bikers careen down the rocky trails, and the mountaintop can feel like a busy place, like the top of Mount Washington on a clear day. But even with the people there, the blue ocean shimmers to the east. To the west, the spine of Mount Washington rises above the Ossipee Hills, a spectacular sight any day but especially on a clear spring afternoon, when the sloping ridge of Washington remains covered in snow.

These woods below the slope of Mount A are the deepest and thickest area in this vast tract of protected land. A rambler can tramp for hours without seeing a house or road. Although the woods welcome their share of dog walkers and mountain bikers, especially on the weekends, most people, myself included, tend to overlook this wildness in their own back yard. It's only in recent years that I have taken to exploring this terrain. Somehow we have the idea that the woods are wild only if they are remote.

In the past, instead of looking for wildness in my own neighborhood, I sought it in more distant locales: in climbing 4,000-footers in New Hampshire, in bushwhacking in Arctic national parks, and while listening for lions on Mount Kenya. Only when my travels were curbed by family responsibilities did I begin to view the Agamenticus forest as an opportunity to experience the wild.

And these woods are wild. A massive beaver lodge rises from the middle of the boggy pond. Are the beavers still living there, or have they abandoned this lodge? I examine the branches littering the shore, trying to determine if beavers have been gnawing at them, since I know that beavers will live in an area until they have exhausted the food supply, and then move on. The surface of the pond is patchy white. Maybe the surface is frozen, but it's certainly not ice. It's quiet here. As quiet as my house without electricity.

I breathe in the stillness, hopeful that I might see something-a deer, an elusive bobcat?-but I have missed the prime wildlife watching hours of early morning. I know that bobcats live here because I have seen their snowy tracks on nearby Chase Pond. Wild turkeys roost in the trees and strut about on old logging roads. Wetlands such as this pond and nearby vernal pools are breeding grounds for wood frogs, blue-spotted salamanders, and the rare spotted and Blanding's turtles. Earlier in the fall, on another drive up Mountain Road with my young son and his friend, we passed a "Turtle Crossing" sign, and then, as if the sign had conjured the creature, we came upon a spotted turtle crossing the road.

After a few minutes of enjoying the pond, I backtrack a few steps and plunge into the forest to do my survey. The forest floor is littered with natural debris-small brooms of leaves, tangles of branches, and, here and there, a large limb that would have killed whatever creature happened to be passing as it fell. Some trees will wither and die from the effects of the ice storm, especially the weaker trees that can't recover from the loss of a thick upper limb. But overall, the forest looks healthy, green. The forest will survive this natural catastrophe.

But will it survive the woolly adelgid? This tiny insect is a killer, gluing itself to the twigs of hemlock foliage where it then sucks the sap within the tree's green needles. Hemlock trees infested with woolly adelgids usually die within four to ten years. This deadly Asian pest, which first appeared in the Northwest in the 1920s, showed up in the eastern United States, in Virginia, in the 1950s. Since then, it has been creeping south and north, carried along by animals, birds, and the wind. The insect has ravaged the eastern Hemlock forests in southern Appalachia, creating large swaths of grayish-green dying or dead hemlocks. Now, the woolly adelgid has reached southern Maine. On the other side of Mountain Road-less than 100 yards from my tree stand-many hemlocks are marked with surveyor's tape so that researchers and conservation workers know where the pests have been spotted.

To try to save the Eastern hemlock in Maine, the Maine Forest Service has mobilized an army of volunteers, staff, and other conservation professionals to detect the woolly adelgids. Entomologists don't believe that they can stop or eradicate the woolly beast; containment is the goal. If these stewards of the forest find an area where the adelgids have invaded, the Forest Service moves in to attack the insects with a tiny black beetle, *Laricobius nigrinus*, that eats woolly adelgids. Nobody knows if this effort will be successful. The cold might kill the beetles. The beetles might not reproduce. Releasing the beetles, which are native to the Northwest, might provoke unintended consequences. Entomologists have evaluated this possibility and believe that the beetles will not upset the balance of the local ecosystem, but they can't be certain.

Other ways of saving the hemlocks also might prove to be successful. The Asian hemlock is resistant to the adelgids and scientists are experimenting with hybridizing this tree with its cousin, the eastern Hemlock. And hemlock forests have been devastated before, but recovered-although in the past, people, not natural pests, caused the devastation, as they looted the trees of their bark to extract the tannins once used in the tanning industry.

I want to be hopeful for these beautiful trees, but sometimes I feel discouraged by the constant trickle of news about threats to our forests. Elongate hemlock scale, from Japan, also damages hemlocks. Other species of trees also face dire threats. Asian long-horned beetles have infested the maple trees in central Massachusetts and are creeping north,

especially on firewood. The emerald ash borer already has killed millions of ash trees, just a few years after it was first discovered in the United States in 2002.

Sometimes all of this bad news about invasive insects feels overwhelming, especially in considering the consequences. We've lost our elm trees and our American chestnuts. Can we imagine the forest without hemlocks? Or a New England fall without maple trees? A spring without the sap running?

Our forests need care. In providing the care, in being with the trees, I can deflect the blows from the onslaught of bad news about invasive pests, diseases, and other problems. Although visiting my tree stand has made me more aware of all the threats facing the forest, I didn't know about all of these challenges when I signed on to be part of the Forest Service brigade, to adopt a hemlock tree stand, and check it every year for adelgids. I had seen an item in the newspaper about the insects and decided I want to be part of caring for these trees.

This year, I visited my tree stand in the fall, but it was too early, too warm, to see evidence of them. The adelgids form a protective woolly coating as the weather gets colder-they look like tiny pieces of fuzzy cotton, about the size of a wood tick. The best time to examine hemlocks for the adelgids is winter and early spring because they are more visible, encased in their woolly coats, and because the surveyor is less likely to contribute to spreading the adelgids. In the late spring, mobile larvae known as crawlers emerge from the woolly sacs and will drift on anything that brushes up against an invaded twig.

Today, after a couple of turns and checking of foliage, I land on the bank of Cedar Creek, dark and swollen from the rain. Downstream a few paces, a cluster of rocks creates a bridge, and I cross over to the other side. Hemlocks rise all around me, a primeval cathedral. A few white pines are mixed into the forest, but mostly I am surrounded by hemlocks. This is what I love about hemlocks-the shade created by a mature hemlock stand doesn't allow lower story trees or bushes to flourish, so a hemlock forest is open and airy, devoid of heavy brush.

I work steadily, hiking my 25 paces, in more or less the prescribed direction, climbing up a moss-covered rocky outcropping, then plunging back down toward the stream. At one point, I look up, and notice the shaking crown of a white pine-shaking because something is climbing in the tree-something heavier than a squirrel. Could it be a porcupine? I try to get a look, but the treetop crowns are dense, dark. Still, I feel elated, to be so close to a wild animal doing what it does every day.

The forest floor is damp, spotted with puddles of standing water, but not icy. The ice melted the day after the storm, and it's easy to make my way through the woods. Walk 25 paces, stop, survey branches on one side of the tree, then another. So far, I have not spotted anything that is definitely a woolly adelgid, though I find two branches with whitish spots that could be the adelgid, or something else, like clumps of dried-up sap.

I remind myself to look up for signs of breaking branches. The forest floor is covered with branches and limbs, and some trees are down, but overall, the damage is less than what I expected. Do hemlocks-healthy ones-resist the damage of an ice storm that might kill other trees? I wonder if their foliage, its laciness, protects them by spreading out the weight of the ice.

These hemlocks, it seems, will survive the battering of the ice storm, but may not withstand the slow bleed of this invasive pest. I suppose we're not so different from this tree. We can survive a crisis, get knocked down and still get back up again, but the slow bleed of resentment or stultification does more damage.

I climb up the slope from the creek, scrambling over moss-covered rocks that help to anchor these hemlocks. Hiking in these woods in December reminds me that there are pleasures to savor in all seasons. The emptiness, the quiet, the lack of bugs. The opaque whiteness of the pond. The sound of chickadees calling. These woods today offer as much opportunity for joy as reaching a summit on a brilliant summer afternoon.

I've sampled almost 50 trees. Although I've bagged a couple of twigs with whitish spots, I'm pretty sure that the adelgids have not invaded this side of the road-not yet. I'll need to stop soon, so I won't meet my goal of sampling 100 trees today. But that's okay. I'll have a reason to come here again soon on another day, alone, to wander in this forest, to feel this wildness so close to my everyday life.

The ice storm adds to the pleasures of this December ramble. The storm broke branches and downed trees, creating gaps and light, opening up patches of forest to the sun-opportunity for new life. The broken limbs and uprooted trees will provide food to uncounted insects, fungi, and other organisms. As for me, the storm has caused a shift in perspective. Instead of looking mostly forward, I look up.

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