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SAVING HEMLOCKS

As an invasive insect threatens to eradicate Pennsylvania's state tree, a diverse public-private partnership struggles to preserve the tree in its remaining strongholds

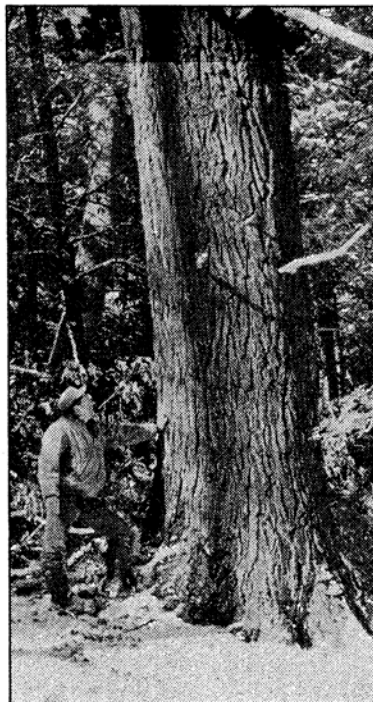
By Ben Moyer
Special to the Post-Gazette

Bugs don't respect borders. If those bugs are exotic invaders that feed on native trees they'll chew, suck or bore their way across whole landscapes. That's why more than 50 federal, state and local agencies, organizations and businesses are working together to stem the spread of hemlock woolly adelgid across Pennsylvania's Allegheny Plateau. The impacted area includes several popular state parks and the 517,000-acre Allegheny National Forest in Elk, Forest, McKean and Warren counties.

Hemlock woolly adelgid is an aphid-like insect native to Asia where it feeds on trees related to North America's hemlocks. It arrived in Virginia on nursery stock or packing material in the 1920s and initially spread slowly. But recent mild winters, scientists believe, have fueled the invasion rapidly north and west. The adelgid has wreaked destruction on hemlocks in the southern Appalachians. Some trees killed in Great Smoky Mountains National Park were 800 years old, and hemlock mortality has reached 95 percent in Shenandoah National Park.

The woolly adelgid punctures hemlock needles and sucks out fluid. Infested trees turn gray and sickly — without treatment to diminish the pest, most die within five years.

Hemlock stands in eastern Pennsylvania have already suffered major loss. The bug was detected at Ohiopyle State Park in Fayette County three years ago and now has been confirmed at scattered sites within and near Allegheny National Forest, home to Pennsylvania's most revered stands of its official state tree.



Dale Luthringer, environmental education specialist at Cook Forest State Park, examines the ancient Susquehannock hemlock, which scientists believe is the largest hemlock tree north of the Great Smoky Mountains.

Groups signing onto the effort, known as the High Allegheny Collaborative Hemlock Conservation Strategy, won't give up their hemlock without a fight.

"Some of the hemlocks at Hearts Content [Scenic Area] and Tionesta on the national forest are 500 years old," said Kirk Johnson, executive director of Friends of Allegheny Wilderness. "It would be tragic to lose trees that have stood since Columbus arrived in North America."

Coming together

The Allegheny Plateau sprawls in an arc across northwestern Pennsylvania. Its vast forests are veined with shady stands of eastern hemlock, mostly along streams. With a half-million acres inside its boundaries, Allegheny National Forest dominates the plateau. But juxtaposed around the federal lands are state forests, state game lands, state parks and large tracts owned by commercial forest products companies. Hemlock grows on all of it, much to the liking of the adelgid.

But forest managers reasoned that if the plateau was inviting to the woolly adelgid, it also offered a plus in resisting the pest.

"There's a unique situation on the plateau because of the land ownership pattern. Nowhere else in the eastern United States can you address so much forest by talking with so few landowners," said Sarah Johnson (no relation to Kirk Johnson), a conservation analyst with the nonprofit group The Nature Conservancy and coordinator of the joint effort.

That opportunity prompted the idea of forming a cooperative response to the adelgid invasion.

"The U.S. Forest Service invited participation by The Nature Conservancy because they know of [its] ability to bring together partners and their success working with businesses and public agencies on conservation issues," Sarah Johnson said.

The Forest Service and conservancy organized meetings and employed the latest electronic communications to pull the partnership together. The group includes dozens of participants — Sarah Johnson said all were vital partners — including several universities, the Pennsylvania Department of Conservation and Natural Resources and state Game Commission; New York Office of Parks, Recreation and Historic Preservation; Elk, Forest and McKean counties; U.S. Army

Corps of Engineers; Seneca Nation of Indians; Pennsylvania Sustainable Forest Initiative; Friends of Allegheny Wilderness and National Wild Turkey Federation, as well as the U.S. Forest Service, Nature Conservancy and many more.

"Everybody has been so incredible in their cooperation," Sarah Johnson said. "None of these people need to give time to this. They all have other obligations. But they care about protecting this important part of Penn's Woods."

Hard hemlock choices

Their first challenge was to identify key hemlock stands for protection.

"We pulled together a committee that developed a list of reasons people value hemlock," Sarah Johnson

said. "The list was impressive, ranging from water quality to aesthetics, wildlife habitat, shading of trout streams, rare communities, recreation sites and scientific research."

"We welcomed the chance to think about why hemlock is important," said Ken Kane, president of Generations Forestry Inc. "Hemlock is our state tree. It's extremely valuable ecologically and to people's sense of place here. The value of hemlock is not necessarily measurable in the lumber output of the tree."

Later meetings identified places where hemlock provides irreplaceable values.

"Folks hovering over maps climaxed this first year's effort," Sarah Johnson said. "All their knowledge of places, their familiarity with this landscape gave us a plan for moving forward. I could sit at a computer ... to find hemlock, but that would never be as complete as the combined field knowledge of these collaborators."

Top priority hemlock areas identified for combating the adelgid are Cook Forest, Chapman Dam, Oil Creek and Clear Creek state parks, the Allegheny National Forest areas of Hearts Content, Minister Creek, Tionesta, Kane Experimental Forest and Sugar Run, and Alleghany State Park in New York.

Next steps

Prioritizing must happen because funding for hemlock woolly adelgid treatment is limited and all methods are expensive and labor intensive. Insecticide must be injected in soil around roots or painted onto the bark of individual trees.

"The cost per acre of chemical treatment depends on several variables," said Don Eggen, chief of the forest pest management division in DCNR's Bureau of Forestry. "One is the size of the trees. Bigger trees require more insecticide than smaller ones, and there's a limit to how much chemical you can use per acre."

Biological control using release of predatory beetles can be effective, but the beetles are in limited supply and their use is an ecological balancing act.

"We have winter on our side here," Eggen said. "Cold is tough on [adelgids], but if it's cold enough to knock [them] back it also knocks back our predator populations."

Eggen's division is researching more cold-tolerant predatory beetles, some of which are native to the northwestern U.S.

Plans of the collaborative effort include a formal High Allegheny Cooperative Management Area. Participating public or private landowners within its perimeter would be eligible for whatever treatment funds are available.

"We've put a lot of work into identifying priority areas. That will go to waste if we are not able to attract funding to protect those sites," Sarah Johnson said.

"That's the way to go — form a cooperative with multiple landowners acting as one entity," Eggen said.

Johnson sees other values in the concept. Personnel from any agency or landowner would be authorized to work on other lands within the management area, maximizing efficiency.

"It will take man hours to monitor infestation, apply treatments and assess results," she said.

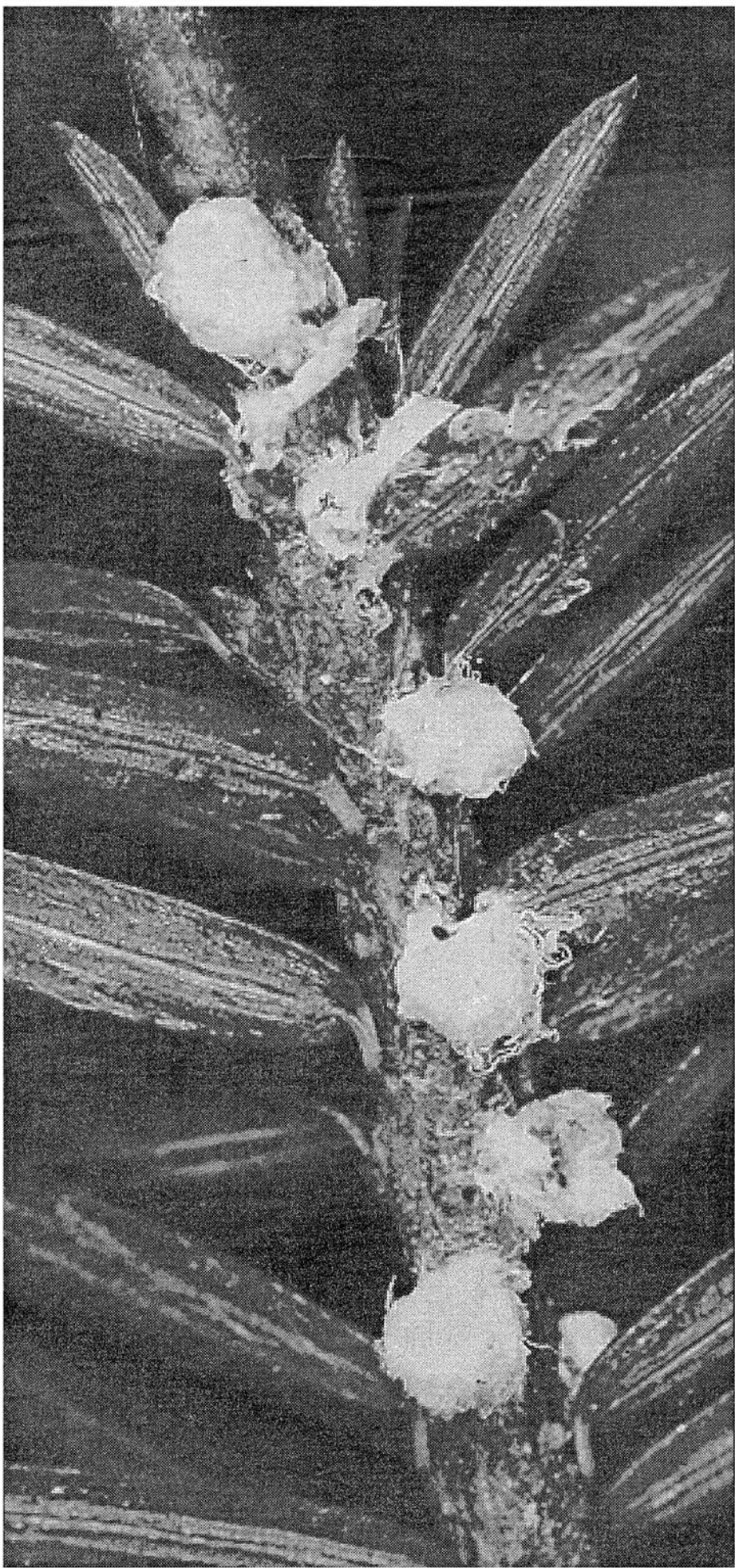
The collaboration's work could pay off in other places yet to be stricken by the adelgid.

"We're creating a model for how regions farther west and north might respond as the hemlock woolly adelgid continues its advance," Kirk Johnson said.

Professionals who know the plateau forests best believe the joint approach may be the only way to save some representation of Pennsylvania's state tree in the region's woodlands.

"Being able to work across boundaries with partners having the same concern ... is critical," said Erin Connelly, Allegheny National Forest supervisor. "After all, hemlock woolly adelgid doesn't recognize whether it's impacting trees on state, federal, tribal or private lands."

Ben Moyer is a freelance writer living in Farmington, Pa.



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