Bay Journal

Atlantic white cedars helped to build nation, need help rebuilding their population

As sea level rise is quick to take over trees' habitat, efforts to replant saplings are slow to take root

Jeremy Cox | June 13, 2019

A flock of sixth-graders fanned out across a field pocked with thorny vines and a curious congregation of evergreens.

"I've got two more trees!" called out Travis Anthony, a crew leader with the Maryland Conservation Corps. "Who wants them?"

"Trees" was putting it politely. These reedy specimens looked more like Christmas trees that only Charlie Brown could love. Nonetheless, two girls immediately thrust their hands into the air and were soon nudging the lower extremities of their saplings into the soft earth.

In this swampy furrow, surrounded by pine plantations and chicken farms on Maryland's

lower Eastern Shore, re-establishing a landscape of Atlantic white cedars has been the top order of business for 10 years. The Nature Conservancy, which owns and manages the 10,000-acre Nassawango Creek Preserve, partners with the National Aquarium in Baltimore to connect schoolchildren with nature by having them plant thousands of cedar seedlings at the site.

Luna Lorance, left, and Peyton Redmond, sixth graders at Berlin Middle School in Maryland, plant Atlantic white cedars in The Nature Conservancy's Nassawango Creek Preserve. (Dave Harp)

From Maine to Mississippi, the fragrant conifers are disappearing despite restoration efforts like the one at Nassawango. Since European settlers arrived in what is now the United States, fires, hurricanes, urban sprawl and poor forest management have conspired to wipe out at least three-quarters of the stands that Atlantic white cedars once dominated.

Now, experts say the tree that literally helped build the nation — look no further than the cedar shingles on the roof of Independence Hall in Philadelphia — faces a serious existential threat as rising seas push saltwater into coastal forests.

"We're sort of sitting on the edge of our seats waiting for the trees to die and the salt marsh to move in," said LeeAnn Haaf, a wetlands coordinator at the Partnership for the Delaware Estuary who has studied cedar landscapes for years.

To understand the severity of *Chamaecyparis thyoides' plight,* first check in with another prized timber species: *Pinus palustris,* or longleaf pine. Similar forces reduced its scope from 92 million acres to about 3 million. Alarmed conservation groups, landowners and regulators banded together in the 1990s to save the longleaf pine. The movement coalesced behind the Longleaf Alliance, a nonprofit that has planted thousands of acres of new stands while coordinating research conferences and promoting sustainable forestry.

Atlantic white cedars, though, began with only about 500,000 acres and now find themselves with about 100,000 acres left.

Axel Beck, a sixth grader at Berlin Middle School in Maryland, prepares to plant an Atlantic white cedar at the Nassawango Creek Preserve. (Dave Harp)

For more than two decades, organizers behind the Atlantic White Cedar Initiative have tried to emulate the alliance's strategy — with mixed success. Biannual conferences raised the tree's profile in academic circles, but little coordinated restoration activity followed.

The group has been inactive in recent years, said Eric Hinesley, a retired North Carolina State University horticulture professor. He joined the organization in the mid-1990s and writes most of the material for its website.

"We really haven't done anything or talked in the last several years," he said. "Our numbers are kind of shrinking."

Bob Williams is president of Pine Creek Forestry, a consulting firm based in New Jersey. His unofficial title could be the "Johnny Appleseed of Atlantic white cedar." He has worked with landowners to plant millions of cedars, primarily in his home state. But that's just a drop in the bucket compared to what's needed, he said.

"How do I compete with the loss of thousands of acres per year?" Williams asked.

He has grown frustrated with what he sees as a lack of top-down effort to bring the species back from the brink. Time is running out, he said.

"Overall, my feeling is this ecosystem is in deep trouble," Williams said. "What we have is a lot of people who say they're concerned, but they do nothing. We need to get on with it."

The species grows along a margin of coastline stretching up to 100 miles inland from the sea from southern Maine to north Florida and across the Gulf Coast as far west as Mississippi. Most can be found in the Pine Barrens of New Jersey and along the North Carolina coast.

Despite their name, white cedars are members of the cypress family. They're finicky, preferring moist, acidic soils. They can tower up to 75 feet tall, forming dense clusters, usually along streams with hardly any other tree types mixed in.

"It's like a cathedral," Williams said.

The cedar's decline, according to experts, can be traced to an endless string of setbacks. A resurgence of the deer population during the 1900s resulted in a seedling feeding frenzy. Many cedar stands thinned out because of too many wildfires — or too few. Others were converted to agriculture or suburban development.

The timber industry took perhaps the biggest toll. Aromatic and decay-resistant, Atlantic white cedar wood has historically been used for making everything from buckets and fences to channel markers and Adirondack chairs. Cut into shingles, white cedar helped 18th-century houses in Philadelphia and Wilmington, DE,

withstand decades of mid-Atlantic summers and winters. Farther south, they were sawed and sanded into the hulls of shad boats that became the backbone of the Outer Banks's shad fishery.

For much of the industry's history, profits and expediency outweighed maintaining the health of the forests, Williams said. After the saws fell silent, there often weren't enough left to seed the next generation of trees.

"They just cut it and walked away, and sometimes it came back and sometimes it didn't," he said. "There was no effort to sustain the resource."

The loss of white cedars reverberated across the ecosystem. Studies on their role in nature depict them as environmental superheroes. An analysis in the Great Dismal Swamp National Wildlife Refuge, which straddles the Virginia-North Carolina border, found twice as many birds in cedar stands than in the surrounding hardwood forest. In northern Florida, a sparse population of black bears showed its preference for cedars by slashing at the bark with their massive paws.

Restoring cedar's place in the coastal landscape isn't easy. A 1989 report prepared for the U.S. Fish and Wildlife Service prescribed a restoration process that involves felling all existing trees on a site and returning repeatedly to weed out unwanted sprouts. The report labeled such endeavors "costly" and predicted that they "will be decidedly limited in application."

That assessment has largely proved prescient. Take what happened at the Great Dismal

Swamp. (About 20% of the refuge's land lies in the Chesapeake Bay's watershed.)

In 2003, Hurricane Isabel felled one the largest pure stands of white cedars in existence, downing a swath across 3,600 acres of the refuge, said Chris Lowie, the refuge's manager. The trees are highly susceptible to wind damage because of their shallow root systems.

The federal government hired a contractor to salvage the toppled trees, clearing space for a new generation to take root. But just weeks before the contractor's work was set to be completed in 2008, a wildfire scorched the area. Three years later, a second blaze burned it again.

Deborah Landau, ecologist for the MD/DC chapter of The Nature Conservancy, is dwarfed by a stand of Atlantic white cedar. The trees were planted on the Nassawango Creek Preserve in Wicomico County, MD, 10 years ago. (Dave Harp)

The fires destroyed the mucky layer of decaying leaves and other organic matter, known as peat, on which white cedars thrive. The loss of peat lowered the land 3-6 feet. Most of the cedar's habitat inside the refuge is now permanently under water.

"Much of that area that was burned over now is a lake," Hinesley said. "It's a really sad legacy that there is no real mature white cedar left in the swamp."

Although they sprout along the coast, white cedars can't tolerate salt. So, the future of the species, Haaf said, depends on preserving and expanding stands

farther inland, where they are unlikely to be poisoned by rising seas.

In Anne Arundel County, MD, environmental officials make sure to include white cedars in their plantings at stream restoration sites. “The state of the tree is such that incorporating it into restoration efforts is a good way to preserve the genome and get it more broadly established,” said Erik Michelsen, head of the county’s watershed restoration program.

At Nassawango preserve, the focus is white cedar.

“They’ve done a lot of site surveys here to know this is where they can survive,” said Maura Duffy, conservation project manager with the National Aquarium. “Here’s this tiny sliver of the Eastern Shore where they could possibly be.”

The preserve lies roughly halfway between the peninsula’s Chesapeake and Atlantic coasts, making it a relatively safe bet to survive at least several decades of rising waters. Another positive sign is the presence of fellow white cedars, though not nearly as many as there once were.

The restoration takes a herculean effort. First, the loblolly pines have to be cut down, and drainage ditches created for former tree farms have to be plugged, Duffy said. The idea is to create a swamplike footing where the trees can settle in with just the right amount of moisture. Once that’s done, the Nature Conservancy installs a fence around the perimeter that will keep hungry deer at bay until the trees are about 8 years old.

Only then can the students take the field to plant the cedars.

Then comes the vigilance. Workers come out regularly to remove stray tree species. Even so, some of the earliest restoration plots are dotted with pines and sweet gum. The cedars themselves appear to be thriving, with some reaching more than 15 feet tall, Duffy said.

So far, the effort has restored about 70 acres of white cedar forest.

But to remain a meaningful part of the U.S. landscape, thousands more acres will have to follow suit, experts say. And it's unclear whether there's enough will and resources to make it happen.

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