

# Delaware's Great Cypress Swamp Rises Again

STORY AND PHOTOS BY  
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The bald cypress is a familiar sight in southern swamps, as iconic as Spanish moss and easily recognized by its knobby “knees” poking out of the water. It’s also one of the few conifers that loses its needle-like leaves in the fall. As a building material, the wood is famous for its workability and resistance to rot and insects.

Southern Delaware marks the East Coast’s northernmost natural boundary of the bald cypress trees’ range. Their local habitat was once a vast primeval watershed covering nearly 60,000 acres. Fresh water, filtered through the wetlands where



Bald cypress trees more than a century old at the Roman-Fisher farm send up “knees” through the spongy ground. The knees may help the roots breathe in standing water. ()

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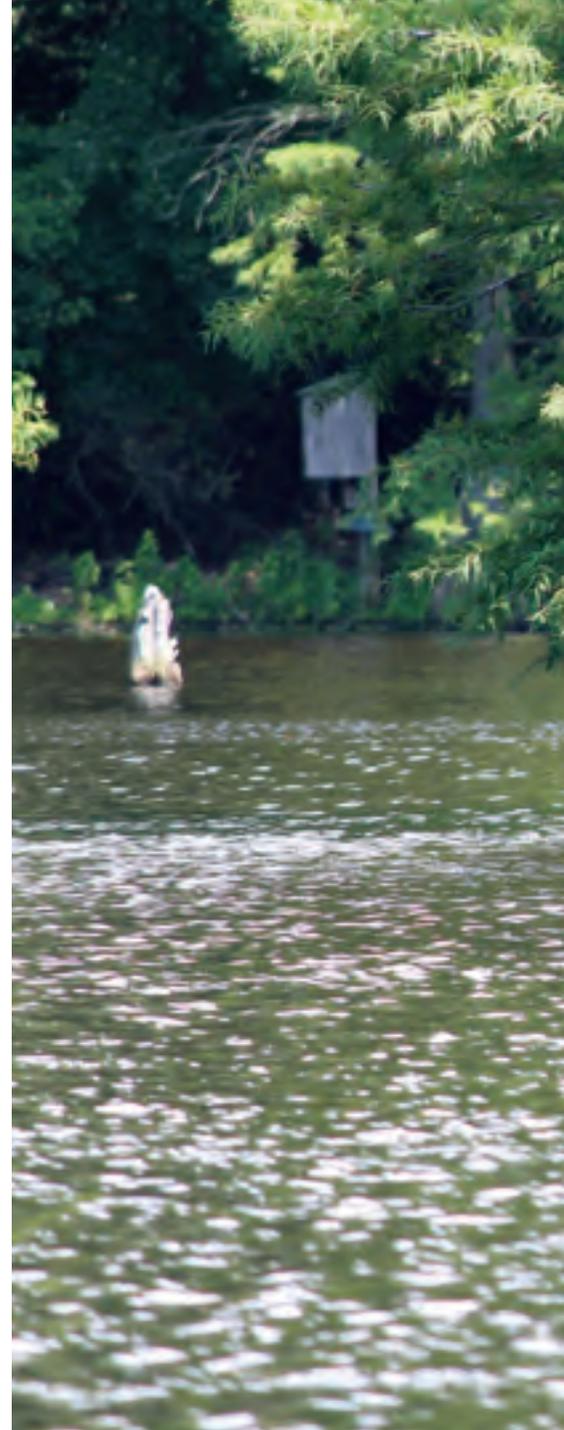
they grew, flowed southwestward into the Pocomoke River and eventually into the Chesapeake Bay, or eastward into the Indian River, emptying at last into the Delaware Bay.

An 18th-century observer described bald cypresses growing as high as 140 feet with trunks “from four to six feet in diameter,” and the “green cypress,” (Atlantic white cedar) “whose regular and majestic height... impressed the beholder with a religious solemnity.” He also noted the black soil “three feet deep” and the clear, tannin-stained water that never putrefied.

Prior to the Civil War, the dark recesses of Sussex County’s Great Cypress Swamp served as a hideaway for outlaws and runaway slaves. During Prohibition, stills operated there out of sight. Local farmers earned extra income collecting holly that grew wild in upland patches, helping to make Delaware the “Holly Capital of the Nation” – until the advent of plastic wreaths.

Today, much of this swamp is gone. When all the old growth trees had been harvested, logs long-preserved in the acidic peat kept the saw mills running for a time. Finally, a devastating fire in 1930, believed to have been started by an exploding still, reduced the peat to ashes, ending the profitable log mining boom, and inspired a new name, “Burnt Swamp.”

Drainage ditches were carved into



the land beginning in the 1860s, allowing farms to take over the ever-diminishing wetlands. The Depression-era federal guide book for Delaware described what little was left of the swamp as “a stubborn, melancholy wilderness.”

## Saving the swamps

The once-massive footprint, reduced to one-fourth of its original size, would have been completely erased had not Delaware Wild Lands (DWL) intervened. Founded in 1961 by the late Edmund H. “Ted” Harvey, the nonprofit land trust has protected more than 30,000 acres of the state’s irre-



A great blue heron stalks a meal near the roots of a bald cypress in Trap Pond State Park. Like the Great Cypress Swamp, Trap Pond is within the northernmost natural range of bald cypress trees.

placeable open spaces, including the Great Cypress Swamp.

Trussum Pond was Harvey's first "rescue." The most pristine of the state's remaining cypress swamps, according to DWL Executive Director Kate Hackett, it's now part of Trap Pond State Park.

"[Harvey] was alarmed at how quickly development was spreading across the landscape," Hackett explained. "He wanted to first protect what he thought was the iconic landscape of Delaware, and for him that was Trussum Pond. He loved

that southern swampland and felt it was so unique that it warranted special protection."

Harvey's fledgling group also helped to halt plans to establish an oil refinery in the Taylor's Bridge area by selectively purchasing critical tracts of land within the proposed site, and DWL later played a key role in the passage of the landmark Coastal Zone Act of 1971.

In 1974, after saving huge areas of marshland in New Castle County and coastal forest at Milford Neck in Kent

County, DWL purchased most of what is now the Great Cypress Swamp. More than 10,000 acres, including a small portion in Maryland, it is Delmarva's largest contiguous forest. The former Roman Fisher Farm on the western edge of the swamp was added in 2003 and serves as the organization's Sussex County headquarters. It boasts a sizable stand of century-old bald cypresses and new buildings that were constructed from pinewood harvested in the swamp.

Field ecologist Peter Martin, now re-

tired, was tasked by Harvey with bringing back as much of the original habitat as possible. For years, the property had been used as an unofficial dumping ground and was littered with old refrigerators and couches. Loblolly pine, red maple, sweet gum and tupelo had taken over and were affecting the soil's hydrology, which had already been altered by drainage ditches. Martin initiated a cleanup and reforestation program, along with the installation of some water control structures. Today, isolated patches of bald cypress and Atlantic white cedar, scattered throughout the swamp, attest to his efforts.

Peter's son Andrew Martin grew up accompanying his father into the swamp and is continuing the work begun more than three decades ago. "There's not a tremendous amount of Atlantic white cedar or bald cypress anywhere," he said, "so they are the ones we are working hard to restore." Historically, according to Martin, cedars never made up more than 15-20 percent of the trees, and bald cypress only about 10 percent.



Part of an old still found during a cleanup of the swamp is stored in a reconstructed sweet potato curing shed on the Roman-Fisher farm. Stills were secretly operating in the Great Cypress Swamp during Prohibition.

#### **A scientific approach**

Although bald cypress can thrive in dry conditions and does well in landscaped gardens even farther north than Delaware, cypress seeds need moist - not flooded - soil to germinate and open space that is

free from competition by faster growing trees. Once established, it dominates in extreme wet conditions that would kill most trees.

The Atlantic white cedar is more limited in its range and is the only East Coast representative of its genus. It favors moist lowlands that are not submerged and grows best in thick clusters, hugging the boundaries of swamps. Together, the two trees create a unique ecosystem that is more diverse than the forest habitat of pines and hardwoods that had been allowed to spread within the swamp.

An ecological study of the swamp, published in 1998 by DNREC's Natural Heritage Program, confirmed the existence of rare plants and wildlife, and emphasized the swamp's importance to migrating birds. Researchers found what they believed to be the largest concentration of locally rare tawny cotton-grass on the Delmarva Peninsula, along with rare orchids, sundews and ferns. Climbing fern, reported in DNREC's 2001 checklist of Delaware flora as wiped out, has since been found in the swamp. They also counted

With its gates closed, a water control structure (lower center) keeps a field hydrated. In a dry year, gates can be raised to allow freshwater from ditches to flow into the field.





Once used to drain the swamp, rain-fed ditches have been plugged and fitted with gates (foreground) that can be raised to allow more water into the swamp.

eight rare and uncommon species of snakes and amphibians; 26 dragonfly and damselfly species, including five which are rare; three rare species of butterflies and another, the King's Hairstreak, which is globally rare. The swamp also shelters deep forest-dwelling warblers of conservation concern, including the Swainson's warbler, whose most northern limit is the southern Delaware swamp.

In 2009, DWL launched a major effort to restore water to historic levels in parts of the swamp. Assistance was provided by a number of conservation groups, including Ducks Unlimited, which secured funding through the North American Wetlands Conservation Act (NAWCA).

A main drainage ditch bisected the swamp, fed with miles of smaller ditches. These were the vestiges of earlier attempts to turn the swamp into farmland. Two water control structures, which consisted of gates that could be raised or lowered, had been installed in the 1970s, but more were needed.

Al Rizzo, a soil scientist and land res-

toration expert with the U.S. Fish and Wildlife Service, recalled working on the 2009 project. "The ditches were drawing the ground water table down, which was

adversely affecting the ability of the swamp to support bald cypress and Atlantic white cedar. The idea was to try to return the hydrology that would drive the [reestablishment of] native plant communities that had been changed radically by man's activities of 'ditch and drain,'" he said. Rizzo was confident that if water could be kept from draining out through the man-made channels, the soil would become saturated and dry fields and woods would begin to accumulate standing water.

The plan was simple, Martin added. "Our primary work was the installation of water control structures and ditch plugs, allowing us to manipulate water levels using the ditches that were already in place." The project added or upgraded nine water control structures.

After a couple of dry years, followed by heavy winter snows, standing water began returning to areas that had not been flooded for a long time. Martin estimated that up to a thousand acres had been affected, with only two or three hundred acres under water. "We're not flooding the whole swamp," he said.

### Returning water and wildlife

Over the past five years, with improved hydrology, different areas of the swamp have been cleared by either cutting or selective spraying, and replanted with Atlantic white cedar and bald cypress. Most are seedlings, but occasionally bald cypress



Field ecologist Andrew Martin inspects a water control structure leading to a wetland area in the Great Cypress Swamp.

seeds from trees already growing in the swamp are collected and scattered. Natural germination may take a couple of years. A total of 165,000 seedlings have been planted so far, including 50,000 Atlantic white cedars last spring.

For the first time, Martin used a drone to pinpoint the best spots in advance and coordinated via GPS to flag those areas, so that workers were able to zero in on a site and move quickly to the next. It took an 11-person crew a day and a half to complete the task mostly on foot. Canoes had to be used to reach sites surrounded by water. “Wetland is recovering faster than we expected,” DWL director Hackett said. In a previous year, 10 workers took almost five days to cover a 150-acre site, sometimes wading through standing water.

The goal is to plant 1,000 Atlantic white cedars per acre in selected areas. “Where it naturally regenerates it grows very, very thick,” Martin said. “We’re trying to mimic some of those conditions, so it will grow into a natural, dense stand, which keeps competition out.” It also makes a more cost effective deer deterrent than fencing. In flooded areas, bald cypress trees are safe from deer.

As water gradually reclaimed the land, wood ducks and other waterfowl arrived, followed by hawks and bald eagles, which nest in the trees and hunt in clearings, and now, an occasional river otter. Peter Martin reintroduced wild turkeys in the 1980s,



Holly sprouts in the Great Cypress Swamp amidst dead pine seedlings that have been selectively treated. Local farmers once collected holly in the swamp for shipment around the country, helping to make Delaware the “Holly Capital of the Nation.”



Deer damage bald cypress seedlings and young trees that are not protected by standing water.

the first successful attempt to bring back what was once a common foraging species in Delaware.

### Managing forests for the future

The swamp now boasts one of the strongest populations of red-headed woodpeckers in Delaware. Andrew Martin, who often takes a camera into the swamp, has documented some of the wildlife. He has seen a rare spotted turtle, and on a more recent visit he was alarmed to hear ham-

mering in the woods. It turned out to be the deafening chorus of aptly named carpenter frogs, which he had never before heard—another positive sign of returning health and diversity to the ravaged wetlands.

Deer are a constant threat. Without large predators (the last bear in the swamp was killed in 1908), their numbers are double the ideal level. Local hunt clubs are allowed to take deer, and their detailed reports serve to monitor the herd. The



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Climbing fern, recognized by its open hand-like leaves and grasping stem, was thought to have disappeared from Delaware. It's one of many rare or endangered species found in the Great Cypress Swamp.



Wetlands are beginning to return to what was formerly dry land covered by loblolly pine. While the area is in transition, some pines continue to sprout and grow, but will either be harvested or allowed to die off as water levels continue to rise and more moisture-tolerant trees take hold.

Quality Deer Management Association has given DWL a Legacy designation, its highest level, for “promoting sustainable, high quality deer populations, wildlife habitat and ethical hunting experience.”

“Delaware Wild Lands has a strong tradition of keeping the land economically productive,” Hackett said. “So, we lease our lands for hunting and farming, and we have an active forest program.” DWL, she proudly points out, has earned certification by the internationally recognized Sustainable Forestry Initiative for its forest management.

This multi-use philosophy provides revenue for DWL and serves to further the health and survival of the ecosystem. A cornfield within the swamp provides income; what remains after harvesting feeds flocks of geese and blackbirds, and the field becomes a rich hunting ground for predatory birds and foxes. In another area, selective logging promotes overall forest health, and lumber is either sold or used in construction projects on the Roman Fisher Farm.

Long-term plans for the Great Cypress Swamp allow for timbering on a scheduled rotation only in specific areas, leaving an untouched core where nature is allowed to take its course. Other areas will continue to be managed and monitored for habitat restoration, Hackett said. “The idea is to pursue forestry management for the next 100–150 years.”

Unlike nearby cypress swamps at Trussum Pond and Trap Pond State Park, access to the Great Cypress Swamp is limited. In 1993, plans to designate the site as a National Park were opposed by local residents. So, for now, it remains a sanctuary, ensuring preservation of, as Martin says, “What is special about the swamp.” **OD**

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