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Rebirth of the American Chestnut Tree

Restoring Appalachia's king of the forest

By Renee Elder
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Pulling a prickly green bur from a low-hanging tree branch, plant scientist Fred Hebard cradles the life-giving husk in one hand while slicing open its thick skin with a small knife, revealing three tiny chestnuts.

The reddish-brown nuts are the jewels of Meadowview Research Farm in Meadowview, Va. (pop. 5,050), where researchers are working to revive the American chestnut tree—once the king of the forest in the eastern United States.

"This is the culmination of 28 years of effort," says Hebard, 63. "These seeds will have a chance of restoring the American chestnut."

The goal is to develop trees hardy enough to fend off the American chestnut blight, a fungus that destroyed more than 4 billion trees during the first half of the 20th century.

The 54,000 trees growing on 150 acres at Meadowview Farms represent decades of study, experimentation and crossbreeding by plant scientists, researchers and foresters. Their work is supported by thousands of donors and volunteers coordinated by the American Chestnut Foundation, a nonprofit organization based in Asheville, N.C.

"Our mission from the beginning has been to restore the American chestnut to its former range," says Bryan Burhans, 44, foundation president and CEO. "In order to do that, the first thing that had to happen was the development of a blight-resistant tree."

Mighty giants

Towering American chestnut trees once dominated woodlands from Maine to Mississippi, where they helped define the landscape, economy and culture.

With some trees as tall as 100 feet, chestnuts created a visual spectacle across much of the Appalachian Mountains, especially in early summer when their creamy white blossoms flowered.

The trees' straight-grained wood was a valuable source of lumber. Resistant to rot, the wood was used to build fence posts, barns and other outdoor structures—as well as for railroad ties and telegraph and telephone poles that helped foster American expansion.

Economically strapped families could gather chestnuts and sell them at country stores or trade them for shoes or

for school notebooks. "Even people who could not afford wheat could make meals using chestnut flour," Hebard says.

Livestock also enjoyed the bounty each fall when chestnuts ripened and fell to the ground. "People talk about walking through the mountains and seeing chestnuts in places knee-deep," Burhans says.

In 1904, however, a disease began killing chestnut trees in New York. From there, the blight quickly spread-moving across the Eastern woodlands at a rate of 50 miles or more a year. The blight was traced to a fungus on nursery stock imported from Asia. Attempts to find a cure were unsuccessful, as were efforts to halt its spread by preemptively felling healthy trees in advance of affected areas.

By the 1950s, nearly a quarter of the Eastern hardwood forest was decimated, changing the region's landscape and a way of life for many residents of the Appalachian Mountains.

The loss of the American chestnut as a dominant woodland tree is considered among the worst ecological disasters of the 20th century.

Research and revival

In the early 1980s, Minnesota corn researcher Charles Burnham developed a method of crossing American chestnuts with Chinese chestnuts, a smaller and less hardy tree with an uncanny ability to resist blight. Based on Burnham's promising research, the American Chestnut Foundation was formed and an ambitious breeding program launched that required at least six generations of trees and 30 years to unfold.

Today, about 300 small-scale breeding orchards across the nation are operated by volunteers and managed by state chapters of the American Chestnut Foundation. New stands of chestnuts are being grown and tested on public and private land from Maine to Alabama, from Dollywood theme park in Tennessee to Shieling State Forest in New Hampshire.

The breeding originated at Meadowview Research Farm, where scientists are growing and testing trees for blight-resistance.

Eric Coalson, 22, a Virginia Tech University student, helps identify and purge less-hardy trees from the orchard stock at Meadowview. Using a small sharp copper pipe, he pierces tree bark, and then swabs the cut with cultured blight fungus. Detailed records are kept on how each tree reacts.

"We grade each one on how much it is affected by the blight," Coalson says. "Then we go in with a tractor and pull out those that show less resistance."

The culling process may reduce a stand of 150 trees to just one or two of the hardiest. And depending on the stage of research, seeds from the surviving trees may be recrossed and tested again. "Only the best trees are going to make it," Burhans explains.

Chestnut trees produce seed in three to five years, so growing new generations takes time. Once a strong breed is developed, researchers say it may take another century for the American chestnut to regain its place of preeminence in the forest.

Patience and perseverance

Patience is a virtue shared by chestnut fans. For many, their deep-rooted determination stems from stories shared by parents and grandparents about the beloved trees.

"My father was born in 1913, and he remembered when the American chestnut was still dominant in the forests of western North Carolina," says Doug Gillis, 64, of Charlotte, N.C., past president of the foundation's Carolinas chapter.

Gillis' father told him stories about hillsides bathed each spring in chestnut tree blossoms, and of gathering the tasty nuts after they fell each fall. His father even used chestnut wood to turn the family carport into a paneled den.

"This tree is important to me because of its history and culture," Gillis says. "And it's exciting that we could bring a tree back that had almost disappeared. Even the blighted trees have kept producing shoots from the ground, so the tree has done all it can by itself to stay alive.

"Now we are the ones responsible for bringing it back through science and technology."

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