

New life for the chestnut

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An American chestnut tree growing next to a steep mountain trail in Nelson County inspires hope as magnificently as a brilliant sunrise on a new day.

Planted 28 years ago, the towering Thompson Tree survives on a 200 million-acre battlefield of sorts stretching from Maine to Florida and from the Piedmont westward into the Ohio Valley. During the first half of the 20th century, an estimated

3.5 billion American chestnut trees — a quarter of the hardwood tree population — withered and died en masse on this vast killing ground.

The once hardy and beautiful trees that would rise up 100 feet or more succumbed to a lethal fungus. The mindless destroyer became known as the chestnut blight, and is believed to have entered this country around 1900 on infected Chinese chestnut trees delivered to a Long Island, N.Y., nursery.

Carried on the air and water, the blight had established a secure foothold by the time its ravaging work was first noticed. Herman Merkel, head forester of the New York Zoological Park, sounded the initial alarm in 1904 when the American chestnut trees in the park started to die.

It was too late to stop the disease, and the devastating impact it had on people and animals is incalculable. By 1930 the blight had reached Virginia, and within a few decades the once regal giants of the forest were all but gone.

“When the chestnut trees in this area started dying out it came as a real shock to people, especially those living in the mountains,” said Wayne Bowman, research forester with the Virginia Department of Forestry.

“Everything about the tree was used. The logs built their homes, the bark was used for shingles, they were split to build rail fences. And they ate the nuts, which also represented a cash crop for them.

“The nuts were also an important food source for deer, turkeys, squirrels — everything ate them. The oak tree will produce a big acorn crop maybe once every five years, but the chestnut trees produced a big crop every year.”

On a recent morning Bowman walked through a wooded area at the foot of Three Ridges Mountain in Nelson County. Called Lesesne State Forest, the 420 acres was donated to the forestry department in 1969 by Dr. Arthur Valk and his wife to be used for American chestnut tree research.

Since then it has become a major battlefield where foresters, scientists and volunteers continue the effort to resurrect the American chestnut tree. The strategy of attack consists of multifaceted approaches from grafting to crossing American chestnut trees with Chinese chestnut trees that are resistant, though not immune, to the blight.

After nearly four decades of effort, the promise of coming victory can be read in the leaves of the trees.

“This is from a pure Chinese chestnut,” Bowman said, holding a leafy bough in his hands. “You can see the leaves are rounded at the base, and you really don’t have sharp edges.

“Now this is a pure American chestnut leaf. The leaves are larger, longer and more serrated. Here we have some leaves from a tree that’s a fourth American. It’s a little different than the pure Chinese, its leaves are a little longer, but it hasn’t changed a lot.

“Here we have leaves from a tree that’s three-fourth American and they’re starting to get longer. These leaves are from a tree that’s 7/8th American, and if I saw this growing in the wild I couldn’t tell it from a pure American.”

At the heart of the crossbreeding project, and what has enabled it to succeed, is a miracle of nature. Although the blight killed almost all the chestnut trees in Virginia and elsewhere, it didn’t get them all.

One of the best known survivors is the Ross Tree in Amherst County. It and other pure American chestnuts have served a vital role by supplying their nuts and pollen for use in restoration programs.

“The Ross Tree is used a lot in the breeding program, and is one of the largest surviving trees,” Bowman said. “But we probably have used 50 different American chestnut trees in our program.

“The Ross Tree, as well as all the other large surviving trees we know of, have the blight, and they’ll all eventually die. There’s one cove we know of that has 17 American chestnut trees in it.

“They all have the blight, but they’re still large surviving trees and that’s unusual. One of the challenges is finding the large surviving American chestnut trees in the wild and collecting that pollen for use in our program.”

A long-fought battle

Gary Griffin, professor emeritus in plant pathology at Virginia Tech, has been one of the commanding generals in the long-fought war to keep the American chestnut from becoming extinct. Much of his labor has focused on grafting work as well as determining why the large survivors live.

“We spent many years working with the large survivors, and we found out that there were three components that contributed to their survival,” said Griffin, who started the American chestnut program at Virginia Tech in 1973, and is one of the founders of the American Chestnut Cooperators’ Foundation. “One, they had a low level of blight resistance.

“Two, they had a weak strain of the blight fungus. And three, they usually were at non-stressful sites. We then interbred and grafted trees that showed good blight resistance.

“Tom Dierauf with the Virginia Department of Forestry deserves a great deal of credit for all this. He started the program at Lesesne, and much of what we have been able to do would not have happened without his effort.”

The crossbreeding program at Lesesne State Forest is tied to nature’s timetable. The window of opportunity comes in June, when the pencil eraser-sized flowers appear on the trees.

With two bucket trucks to provide access to the tree branches, the labor-intensive crossbreeding work begins by first removing the fuzzy spikes of pollen called catkin from the branches. Breeding bags, the same used for corn pollination, are then placed over the flowers to ensure they aren’t pollinated by anything other than what is desired.

“About a week to 10 days later, when the flower is receptive to pollen, we come back with pollen we selected in the wild from American trees,” said Bowman, who is in charge of the work being done at Lesesne.

“We’ll take the bag off and pollinate the flowers by rubbing the catkin on it. We then replace the bag, and we’ll leave it on through the summer. We come back during the first half of September when the nuts are ripe and collect them.

“We store the nuts in coolers during the winter. We’ll then plant the nuts the following spring.”

If all goes well the new generation of trees will more closely resemble the American chestnut and be more resistant to the blight. Currently there are nearly 30,000 chestnut

trees in the Lesesne State Forest, many of which are approaching the sought after goal of being 15/16th American.

“The biologists tell us when we get to 15/16th we won’t be able to tell it from the pure American,” Bowman said. “The stage we’re at right now is working to bring the trees to being 7/8th American and show resistance to the blight.

“The American Chestnut Foundation has been doing this same type work since the mid-1980s. They have the 15/16th trees now and are putting them in test plots.

“One of the important things we’re doing here is identifying large surviving American chestnut trees in Virginia, and using their pollen. That keeps the biodiversity in the gene pool.”

George Thompson is the chairman of the Virginia chapter of the American Chestnut Foundation. The all-volunteer nonprofit group has about 600 members in Virginia and 6,000 nationwide.

“I’m getting on in years, and as a boy I remember the chestnut tree stumps being very prevalent in the woods of the farm I grew up on,” Thompson said during a telephone interview from his home in Marshall.

“I’m particularly saddened by the loss of the American chestnut tree as an economic force in the local economy. It was an absolute staple in Appalachia, and was a wonderful timber tree that grew fast, tall and straight.

“And its weathering features were such that it lasted much longer than any other known species. The work we’re doing is providing an opportunity to reintroduce a nearly extinct species.

“It could again be a great factor to the lumber industry, and for the general welfare of the woods in Virginia and Appalachia. And my Lord, it’s a beautiful tree.”

Bowman said it’s possible blight-resistant American chestnut trees could be available to the public in as little as 10 years. Griffin believes the tree could be restored to economic importance within the next 50 years.

Future warriors

Zack Glover plans to carry the work into the future. The 17-year-old is one of the volunteers who helps Bowman with the restoration project at Lesesne State Forest.

“I had helped Wayne on his Christmas tree farm, and he brought me up here to show me what they’re doing,” said Zack, a rising senior at Liberty Christian Academy in Lynchburg. “I became fascinated with this effort.

“What they’re doing to bring the American chestnut tree back is amazing, and a blessing. I believe God left some of the trees live so we can use them to cross-pollinate and bring them back.

“I plan to go to Virginia Tech, study forestry and hopefully go into what Wayne is doing and pick up where he leaves off. This means a whole lot to me, and I really want to be a part of it.”

To learn more about the effort to restore the American chestnut tree, visit <http://www.acf.org>. To contact the Virginia chapter of the ACF, e-mail vachestnut@grthompson.com or call (540) 364-0364.