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WILDLIFE FOR EVERYONE FOUNDATION

RETURNING THE MIGHTY GIANT

by
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After four miles of plodding along the Appalachian Trail, just north of Caledonia State Park, I was beginning to feel a hot spot developing on my foot. Of all the ailments that can strike a backpacker, blisters are my most feared.

As I sat down to change socks, I noticed chestnut burs scattered on the ground. I scanned the trees and found the source; a 10-inch diameter American chestnut. The tree was heavily infected with blight, and now was using its last remaining energy reserves in a useless attempt to reproduce.

This tree was a true American chestnut. Its roots could have been 200 to 300 years old, or ever older. The same blight fungus killing this tree today was the same fungus that decimated an estimated four billion chestnut trees during early 1900s throughout its historic range.

As I continued my hike I kept an eye open for more chestnut trees, and there were many. Although the chestnut is no longer a canopy tree in our forests, the sprouts from the root systems of trees that died over 100 years ago are very common, especially on Pennsylvania's ridges. These sprouts follow a natural cycle; they grow from the existing root system until the blight eventually finds and infects the tree and kills it. But the blight does not kill the root system, so the cycle of sprouting and top killing continues on today, although in vain.

The loss of the American chestnut was a true ecological disaster. The blight was first identified in New York City in 1904, although the

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blight likely had been introduced in the late 1890s. The chestnut blight was thought to be shipped in from Asia, possibly growing on imported Japanese and European chestnut tree seedlings.

The Chestnut blight was first identified in Pennsylvania in 1908, north of Philadelphia on the estate of Harold Pierce. With this discovery, Pennsylvania took the lead in efforts to stop further spread of the blight by creating the Pennsylvania Chestnut Tree Blight Commission in 1911. However, their valiant efforts failed and in 1913 the Chestnut Tree Blight Commission was disbanded.

The impact to wildlife raised an alarm with the Pennsylvania Game Commission. Chestnuts were an important food source for many species of wildlife including: squirrels, wild turkey, deer, bear and grouse and others. Unlike oaks, chestnut trees flowered in early summer after the risk of frost was gone. By avoiding late freezes, chestnut trees produced a dependable crop of nuts every year.

The agency urged sportsmen to plant vines, shrubs and food-producing trees in an attempt to provide wildlife new food sources. In fact, the loss of the chestnut transformed the way the Game Commission managed wildlife by expanding the agency's effort and resources into habitat management rather than simply just setting season and bag limits for game species. A heavy focus on wildlife habitat management continues today with almost 50 percent of the agency's budget allocated to improving wildlife habitat.

Chestnut wood was also very important to communities. Chestnut wood and bark was very high in tannic acid, a chemical used in the manufacturing of leather goods. Two-thirds of the tannic acid produced in the U.S. came from the chestnut. The wood was very valuable commercially as it was rot resistant, easy to work, light weight yet strong and used for fence posts, telegraph poles, coffins, barns, and houses.

RESCUING THE MIGHTY GIANT

The American Chestnut Foundation (TACF) was formed in 1983 with the sole mission of restoring the American chestnut to its historic range. But in order to accomplish this, the Foundation had to first develop a chestnut that could survive the chestnut blight.

The Foundation has focused their efforts for the last three-and-a-half decades on using a traditional breeding program to incorporate blight-resistance from Asiatic chestnut species into local American chestnuts. The Pennsylvania-New Jersey Chapter of the Chestnut Foundation has an active breeding and conservation program which has conserved just over 200 wild American chestnuts.

"We have made many great advances in our breeding program throughout the original range of the American chestnut," says foundation Director of Restoration, Sara Fitzsimmons, headquartered at Penn State. "Restoring a species to a landscape level will be a herculean task, but we are inching closer and the results are extremely encouraging."

On another front, the New York Chapter of Chestnut Foundation and the State University of New York's College of Environment Science & Forestry (SUNY-ESF) partnered to enact a program that uses biotechnology techniques to develop a chestnut resistant to the blight. Scientists have successfully taken a gene from wheat and inserted it into an American chestnut to produce a tree resistant to the blight.

"Restoring a species to a landscape level will be a herculean task, but we are inching closer and the results are extremely encouraging."

–Sara Fitzsimmons

Above: *Chestnut Bur.*

Opposite Page: *Controlled chestnut pollination, Meadowview Farm.*

"Using these biotechnology strategies, SUNY-ESF scientists have been able to develop a chestnut which in some cases is showing levels of resistance higher than that of the Chinese chestnut," said Fitzsimmons. "Genetic modification is tightly regulated by several federal agencies, and these clones will require significant outcrossing to thousands of native American chestnuts to create a diverse population suitable for restoration. Additional testing is needed before these trees will be approved and ready for range-wide planting."

I am confident the American chestnut will someday be returned to Penn's Woods. There is still much work ahead, but the team of dedicated scientists working for Chestnut Foundation gives us hope. Although I may never have the opportunity to lean back on a mature chestnut and listen to the thunder of a turkey's gobble on a spring morning in my lifetime, I am optimistic that the next generation will someday experience the return of this mighty giant.