

Hopes for Chestnut Revival Growing

Engineered Versions Of The Once-Common Species, Wiped Out by a Fungus, Take Root BY HEATHER HADDON

Ed's note: In lieu of a message from our chapter president, we are including this important article from The Wall Street Journal 8/20/12 pg A3; additionally, see the journal *Nature's* article detailing the current status of chestnut restoration @ <http://www.nature.com/news/plant-science-the-chestnut-resurrection-1.11504>

Scientists are on the brink of engineering a blight-resistant American chestnut tree, renewing hope for a comeback of a long-celebrated species that is valued by business for its sturdy hardwood.

For the first time, techniques used to genetically engineer sturdier farm crops are being tapped to bring back a devastated native species—one that once numbered in the billions and covered much of the East Coast. Entire forests were laid to waste by an Asian fungus introduced around 1900, and healthy chestnuts now exist only in a smattering of places in the American West, where the blight didn't reach.

Now, chestnut trees whose lives began as smudges on a petri dish are growing in upstate New York, their genes infused with a wheat DNA that appears to kill the fungus that attacks the tree's trunk and limbs. Unlike chestnuts in nature, these trees haven't succumbed so far to the blight—even when scientists directly infect them with it.

The experiments are the culmination of decades of research by scientists at the State University of New York College of Environmental Science and Forestry in Syracuse. At the same time, a separate effort was under way to splice the American chestnut with a Chinese version, producing a potentially blight-resistant tree dubbed the "Restoration chestnut." Both efforts have given hope to supporters who want the chestnut to reclaim part of its share of the forest.

"I didn't think they would ever do it," said Kim Steiner, a professor of forest biology at Pennsylvania State University. Now, he said, "I'm sure it's going to happen."

By 2006, Syracuse scientists had planted the first genetically modified trees, and they hope to gather their first nut crop this fall. The results are promising so far, as the trees haven't succumbed to blight halfway into the study. "It's just a matter of time giving us the combination of genes we want," said William Powell, the project's co-director.

The breeding techniques used to save the chestnut hold promise for other hardwood trees succumbing to pests, including the American elm, white walnut and eastern hemlock.

"We have to be proactive," said Steven Handel, a professor of plant ecology at Rutgers University, who is researching blight-resistant chestnuts planted at Duke Farms, a nature sanctuary in New Jersey. "The statement that nature takes care of itself—if only it was true."



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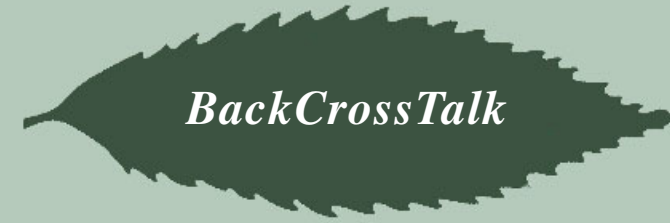
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Our Goal: To restore the American chestnut tree to its native range within the woodlands of the eastern United States.



THE AMERICAN CHESTNUT
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www.acf.org/ChapterNews_al.php

Chestnut Restoration – the environment, the future

fall 2012

Forthcoming Chestnut Events

Annual State Chapter Meeting
Sat., Dec 8 @ 10:00,
Emmett O'Neal Library
50 Oak St Mountain Brk, AL 35213

Want to help plant over 4,000 chestnut seedlings in various locations in the Nantahala, Cherokee and Chattahoochee National Forests this coming November? Tom Saielli
tom@acf.org 828-450-9100

REFLECTIONS OF A CHESTNUT COOPERATOR

..... A short story by Edwin Camp, Alabama Chapter Treasurer

I think I first learned of the plight of the American Chestnut tree, *Castanea dentata*, when Sheryl and I first started making our annual sojourn to the mountains of East Tennessee way back in the earliest 70's. I was always an outdoorsy type, but Sheryl was a city gal, both of us raised in Birmingham, both going to the same high school, both living in the same neighborhood. You cannot find a soulmate much closer than I; she lived just across the back alley. When I proposed to her in 1969, I told her that she would have to learn to live in the woods. What luck. She agreed. And that was over 43 years ago. We started our mountain odyssey camping out in the national park, sleeping and living out of



our pickup truck. It was grand fun, and when the first little one came along in '74, why we just put a plywood shelf over the bedrails and went on. So both of our sons grew up camping each fall in the mountains. We'd take them out of school for a week, always with the blessings of their teachers, and head for the high woods to watch the seasons change. Sometimes we were even surprised with an early autumn snowfall. Later on, we graduated to a pop-up camper, and, much later, to a travel trailer. But I digress.

Along the way, I began to learn of the culture of the mountain people and their relationship to the environment of the mountains. I learned of the hardships they endured and of the manner in which they learned to cope with the conditions of their mountain lives. I learned of the high infant mortality rate, the lack of educational opportunity, lack of economic opportunity. I learned how they found a way to get along in their mountain homes, often living much like the wild things that dwelled there. And I learned of their relationship with a very special tree. American chestnuts were virtually a supermarket of bounty for the mountain people. They made their very homes from its longlasting wood. It provided not only the walls, but roofs and barns and schoolhouses and churches as well. They fed their stock of its fall bounty of nuts.

They sheltered under its mighty limbs. They sold its fruits as one of the few ways they had to earn cash money for the relatively few things the mountains could not provide. And those nuts made up a sizeable portion of their diet as well. What a marvelous tree this must be, thought I. I found that early in the 1900s, virtually 1 tree in every 4 was an American chestnut; that in early summer the mountains were snow-white with chestnut blossoms, and redolent with the perfume of those flowers. This certainly was a most important gift of nature, not only to us humans, but to wildlife and the environment as well.

And then I learned of an insidious fungus, imported from the orient into our country about 1905. I read where it killed all the native chestnuts in and around New York City, then spread like wildfire down the Appalachian mountain chain, the natural range of this marvelous tree, 50 or more miles each year, killing every tree it found its way to along the way. I read where this event may have been the greatest natural catastrophe to strike the eastern portion of our country. Being a landowner and a lover of trees, I found this profoundly depressing. But at the same

Continued inside

Edwin looks for burs in the state champion chestnut tree (now dead)
photo by Beth Young

time, I learned that small pockets of remnant populations could still be found in mountain fastnesses, that there could still be hope for this signature species. Where there is life, there is always hope. I searched my hills and hollows and I began to find small pieces of trees still living there. I find them still. I began to wonder what could I do, if anything, to help, first to preserve, then to help recover this magnificent tree.

Somewhere during this time, I learned of the scattered efforts of a few dedicated individuals to research and find a cure for this awful blight. There seemed to be some efforts up in the northwest corner of the state, something about forming a chapter in Alabama of a national research organization dedicated to restoration of this tree. And I knew immediately that I had to be a part of the movement. Then I found out about the American Chestnut Foundation, and I just had to join. About then, I also learned of the work of Dr Jimmy Maddox at his orchard on the TVA reservation in Tuscumbia. Over the years, he has become a fellow worker, a mentor, a teacher [not quite the same thing], a supervisor, a fellow mourner, sometimes a slavedriver, and, most important, always a friend. We have spent many days and not a few nights together, both at his orchard and at the national research orchard in Virginia, working to find the 'cure', the perfect tree which could shrug off this killer and repopulate the range. The experiences we've had at the Meadowview orchard, bagging, pollinating, inoculating, have been satisfying, hopefully educational, and sometimes just pure fun. Kindred spirits in the cause.

Several years back, a number of these kindred spirits finally founded that Alabama chapter, and I am proud to say I was a founding member and have served it in whatever capacity I could since. But still I felt I was missing something. Something I needed to be doing to further the cause. Something. I finally settled in my mind that I needed to volunteer my land as a research orchard. Centrally located at the north end of Red Mountain in Jefferson County, near the southern limits of the Chestnut range, my woodlands had been in my family for over 50 years. I knew intuitively that my Dad, from whom I inherited these woodlands, would have agreed.

So, beginning in March 2009, I volunteered. Dr. Maddox came down and we began planting seedlings at a location I had chosen in advance, using seedlings he felt could best survive in the local environment. I chose the poorest, driest, least likely portion of the property, purely on the theory that if nothing else would grow successfully there, maybe, just maybe, this marvelous tree would and the pathogens wouldn't. Four years and a couple of hundred seedlings later, I have just begun to realize what a monumental task restoring a species truly is. This is work, folks, make no mistake about it. I had to build an irrigation system from scratch, largely a manual one, using water from the Cahaba and a series of poly tanks and pumps I acquired for the purpose. I had to learn to spray for weeds and to use a weedeater very, very carefully. I have yet to perfect proper fertilization techniques, tending to overdo, sometimes possibly killing the seedlings. I discovered ruefully that deer think chestnut seedlings are candy. That problem has yet to be solved.

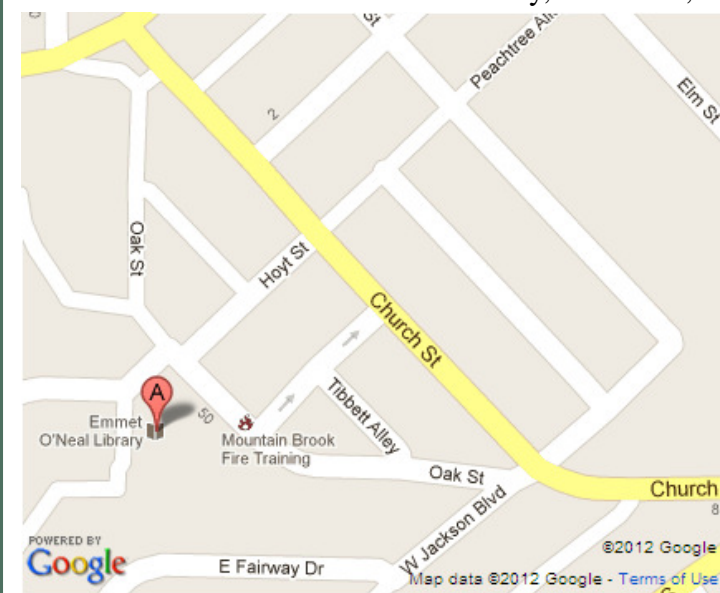
And I have learned to mourn. I mourn the loss of each little tree, and there have been many. Genetics is a profoundly complicated science. I have been forced to learn to live with a survival rate which would daunt most scientists. And I am still looking for that perfect tree; maybe it is out there in my orchard. Down the road, I plan to enlarge the amount of land dedicated to this research, if Dr Maddox and the Board agree. One cannot give up and walk away from an effort such as this. Too much science, too many resources, too many very good minds have dedicated themselves to this effort, and I am pleased and honored just to be a 'worker bee', as I describe myself, among these intellectual giants.

David Morris, Mac Phillippi, Marty Schulman and myself spend much time each year scouring this corner of the state, collecting pollen from known sources [we lost our state champion tree last winter] and investigating leads from others for potential living trees from which to collect pollen and possibly grafting wood. It is, as I said, hard work, oft times discouraging work, and I have shed many gallons of sweat in the effort, I know. But, aside from being a father and grandfather and husband, it is the most fulfilling effort I have experienced in my life. I would urge each member of the chapter to become more involved, both physically and financially, with this magnificent effort. If everyone will pitch in and do as their consciences and abilities lead them, we will win this fight, and my little grandsons will one day be able to go to the mountains and see American chestnuts growing proudly and vigorously in their native range, and they'll be able to say...'My Grampa was part of that'...



after clearing weeds, Hartwell installs a sheet metal rodent guard around a seedling planted this past Feb (that's a blue growth tube, black irrigation line & tree tag in foreground) photo by M Schulman

Directions to the state chapter's annual meeting, Sat. Dec 8 @ 10:00, Emmett O'Neal Library, 50 Oak St, Mountain Brk, AL



From Highway 280 Westbound, take the Hollywood Blvd. exit and turn right toward Mountain Brook Village. Go straight through Mountain Brook Village (Starbucks will be on your left, Bromberg's on your right). This will put you on Montevallo Road. Follow Montevallo Road for one mile until you come to an X-shaped intersection with Church St. Turn left on Church Street toward Crestline Village. In the next block you will see the construction site for Mountain Brook City Hall on your left. At the caution light beside the City Hall construction, turn left onto Hoyt Lane (this is a one way street). Go one block. You will see Oak Street Nursery on your right. The Emmett O'Neal Library will be directly in front of you.

From Highway 280 Eastbound, take the exit for 21st Avenue South. Turn left on 21st Avenue South. Take a left on to Cahaba Road and an immediate right onto Fairway Drive. Continue on Fairway Drive as it turns into Country Club Road. Turn right on to Church Street and right onto Hoyt Lane (a one-way street next to Crestline Pharmacy). Go one block. You will see Oak Street Nursery on your right. The Emmett O'Neal Library will be directly in front of you.

We look forward to being with all our friends @ the upcoming **annual meeting** of the Alabama Chapter of the American Chestnut Foundation-mark your calendar **12/8 @ 10:00** (see map to EOM Library):
 - Regional Science Coordinator, Tom Saielli, to speak
 - Possible mystery guest from national; also revelation of the Restoration Plan
 - Congrats to David Morris, newly elected to the national Board of Directors
 - & to our pres, Mac, on joining national's Development Cabinet

So you think you may have found an American chestnut? Be aware that all chestnuts can cross-pollinate, so that the chestnut you are trying to identify may actually be a mix of two or more different types of chestnuts, known as a hybrid.

We can attempt to identify your chestnut if you are unable to do so by means of a leaf and twig sample.

Please press one or two fresh leaves between cardboard with a 4-6" twig. Don't use plastic unless it is perforated or the leaves will mold. Crushed and bent leaves will not be in good enough condition to positively analyse.

Along with your contact information & the location of the tree, mail to:
 American Chestnut Foundation
 14005 Glenbrook Ave.
 Meadowview, VA 24361

Become a Member Today

As a member of The American Chestnut Foundation, you will be part of an extraordinary journey that began in 1983 when a small group of prominent scientists established the premier organization dedicated to restoring the American chestnut.

As a member, you will receive the following:

- All TACF publications
- A special TACF car decal
- Membership in one of our state chapters: AL, CT, GA, IN, KY, MA, MD, ME, NC/SC, NY, OH, PA, TN, VA, VT/NH & WV
- Access to expert advice on growing and caring for American chestnut trees
- Opportunities to participate in local breeding and research activities
- And much, much more

TACF does not sell or otherwise disclose member information outside the organization and its chapters. This policy has no exceptions. We do not sell or exchange your information with any other organization, public, private, or non-profit.

Join the Crusade

Invite others to become TACF members

I want to help restore the American Chestnut tree!

- | | |
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| <input type="checkbox"/> Chestnut Leaf (\$5,000+) | <input type="checkbox"/> Bronze Leaf (\$250-\$499) |
| <input type="checkbox"/> Gold Leaf (\$1,000-\$4,999) | <input type="checkbox"/> Green Leaf (\$100-\$249) |
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| <input type="checkbox"/> Student (\$15) | <input type="checkbox"/> Additional Gift to Alabama State Chapter: \$ _____ |

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