



THE BUR

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Newsletter of the New York State Chapter of The American Chestnut Foundation

Fall 2018

Part I: The Long and Difficult Road to the World's First Blight-Resistant Chestnut

SUNY-ESF / TACF-NYS Chapter Partnership Produces Science Breakthroughs

By John Neumann, TACF-NY Secretary & Vice President for Education

Longtime readers of *The Bur* know at least three important facts related to this article's headline. First, that the New York Chapter of The American Chestnut Foundation (TACF-NY) and the State University of New York College of Environmental Science and Forestry (SUNY-ESF) formed a partnership in 1990. Second, that the purpose of this partnership was (and still is) to develop the best possible American chestnut tree with proven blight-resistance to use for the restoration of America's most iconic tree to all its former range in our eastern forests. Third, that in 2015, SUNY-ESF and TACF-NY jointly announced the successful development of the world's first proven blight-resistant American Chestnut trees.

To further review, chapter members know that we now have a transgenic tree that is 100% pure American chestnut with an additional gene from wheat to give it blight-resistance (more details later). It may now seem like a simple, elegant solution, but as veteran chapter members remember, the task was daunting. No one had ever done what was being contemplated. There was no guarantee of success. There were many nay-sayers and difficulties. To get through it all, our chapter leaders, members, and our partners at ESF, all supported each other. We shared a vision that was inspired by nature and guided by science.

For more than a year now, we have been using "Inspired by Nature. Guided by Science." as our New York State Chapter slogan. While the wording may be recent, the philosophy behind it has been the

underpinning of our chapter's reason for being, for what we do, and for our productive partnership with SUNY-ESF. There is much more to this story, some of which is little known today.

Let's begin at the beginning and what is well known. We know that an estimated four billion American chestnut trees once thrived in the eastern forests of the U.S. We know these mighty giants were the keystone species in that environment until *Cryphonectria parasitica*, an Asian fungus discovered in New York City in 1904, began its unstoppable devastation. We know that by 1950, the once super abundant and super useful American chestnut (*Castanea dentata*) was virtually eliminated from its entire range. We know that sprouts continue to grow from old chestnut root collars, some of which get big enough to produce nuts, before being killed back by the blight again.

Since the founding of The American Chestnut Foundation (TACF) in 1983, their focus for American chestnut restoration has been the backcross breeding program. This approach crosses American chestnut with Chinese chestnut and then backcrosses these hybrids to other American chestnuts over generations, again and again. The goal is to produce hybrid chestnut trees that have about 94% American genes and 6% Chinese genes, while maintaining as much of the blight-resistance found in Chinese chestnut as possible and keeping all of the physical characteristics of the American chestnut forest tree. According to TACF, there is more work ahead to complete this goal.

Continued on page 6



Bill Powell, Herb Darling, and Chuck Maynard standing next to the first transgenic American chestnut tree planted in the field on June 7, 2006 (bottom left). The tree, named after Stan and Arline Wirsig, is still there.

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The American Chestnut Foundation
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Founded in 1990, the New York State Chapter (TACF-NY) is the oldest chapter of The American Chestnut Foundation, Inc., a non-profit 501 (c) (3) membership organization. TACF-NY, in partnership with the State University of New York College of Environmental Science and Forestry, is working to restore the American chestnut tree to our eastern forests by developing truly blight-resistant American chestnut trees through biotechnology. Membership information may be found on the back page of *The Bur*.

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Linda McGuigan – *The Bur* Editor

President's Message



Another year is nearly behind us and a lot has been accomplished. Over 7,000 nuts were again distributed for members to plant for “mother” trees. Many members have older trees that are now producing burs and they are eagerly waiting to pollinate them with blight resistant pollen. The State University of New York College of Environmental Science and Forestry (SUNY-ESF) had a pollination-grafting workshop in July, anticipating that we may be pollinating mother trees in the near future.

SUNY-ESF has been working on the submission for approval to distribute material and when that will happen is probably the #1 question I am asked. Information can be found on page 5, and everyone is optimistically waiting for that day to arrive.

With so much happening with the submission, mother trees, blight control, grafting, planting, and tree locating, it is impossible to include everything in *The Bur*. However, for everyone who is online, SUNY-ESF has a Facebook group “American Chestnut Research and Restoration Project” where questions can be asked and pictures posted (<https://www.facebook.com/groups/esfchestnut/>). I would encourage all members to join this group.

In addition, anyone with a smart phone can download a great app called TreeSnap for documenting any American chestnut trees or sprouts. We would like to get as many trees located and documented as possible. Visit <https://treesnap.org/> for more information.

I have also set up a YouTube page where I have posted several videos (https://www.youtube.com/channel/UCvS_KPwYf7umLID2dRQBNLw). These videos will answer many questions on planting and such. If anyone sees a need for other videos that will assist in our restoration program please let me know. And as usual, everyone is encouraged to call or email me if you have any questions.

Again, thanks to everyone that has participated in and supported this historic restoration program.

Allen Nichols
President, TACF-NY
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District Reports

Dale Travis, District 2

District 2 has been very busy placing "mother" trees. This year, we have commitments to plant several in Alley Pond Park in northeastern Queens. We have a permit in review and, if approved, this would give us access to the entire New York City Park system. There are two planned for Battery Park, which is one of the most visited park area in the city. The Statue of Liberty Cruise Line departs from there. We have commitments to plant others in Massachusetts, Pennsylvania, New Jersey, and various other locations in New York State outside of our own District. The small orchard planted last year in District 3 by the Harlem Valley Rail Trail now has a very nice descriptive plaque, donated by the Millbrook Garden Club. An Education Center is planned on a new section of the trail that will include additional information. We have a large number of people coming to us wanting to participate. There appears to be an ever-growing awareness of our program.

Allen Nichols, District 4

It has been busy as usual, distributing over 7,000 nuts for mother tree plantings. Some of the activities I was involved in this year included helping out a local group of Girl Scouts plant nuts.

I gave presentations to the New York State Tree Farm members and the Cortland County Federation of Sportsmen. I also had a booth at the Otsego Co fair, Delaware Co fair, Deposit Lumber Jack Festival, and the Catskill Forest Festival. Thanks to both John Neumann and John Taylor for helping at the fair in Walton.

I am still working on blight protection for our mother trees. I have been using AgriFos and Pentrabark on my blighted trees and have also been treating cankers with ground-up bark from trees with "cruddy bark" to see if it is transferrable. Anyone who's interested in blight control and wants to see pictures should join the American Chestnut Research and Restoration Project Facebook group at: <https://www.facebook.com/groups/esfchestnut/>

I have also made more videos on how to directly plant American chestnut trees in the ground as well as how to transplant seedlings. You can find more information at: https://www.youtube.com/channel/UCvS_KPwYf7umLID2dRQBNLw

Again, anyone who wants nuts for direct planting this fall or in the spring please contact me at fajknichols.75@gmail.com or call (607) 263-5105.

Emmett Hoops, District 5

It's been a great year in District 5. Just over 500 chestnuts and seedlings were given out for mother orchards, and we're beginning to involve schools across the state. I did a planting at my own school with my first grade class, and the whole school was enthusiastic as they saw the mother orchard prominently planted. I'm using lessons from this planting to produce a replicable experience for other schools. Mollie Burgett, of Middleburgh Central Schools (and a 2016 recipient of the Empire State Excellence in Teaching Award!) is preparing a presentation to be used at the New York State Science Teachers' annual meeting, which will also be useful in venues.

I've brought my own presentation and TACF literature to several groups, the largest of which was the Society of American Foresters.

There is a new podcast series available called The Village Chestnut Tree, in which I give a tree enthusiast's view of the challenges and promise of tree restoration, especially American chestnuts. Just do a Google search for The Village Chestnut Tree podcast, or use the podcast app on your mobile device. So far, over 620 different listeners have heard at least one episode!

District 1 – Enrico Nardone, EGNardone@Seatuck.org

District 2 – Dale L. Travis, dale@daletravis.com

District 3 – Frank Munzer, MunzerFrank@gmail.com

District 4 – Allen Nichols, fajknichols.75@gmail.com

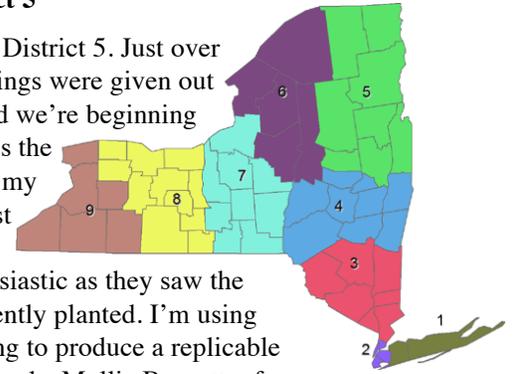
District 5 – Emmett Hoops, emmett.hoops@gmail.com

District 6 – Peter S. Pike Sr., northernpiker1@aol.com

District 7 – Roy Hopke, SnowHawke1@gmail.com

District 8 – Paul Ackerman, trapman1@netzero.net

District 9 – William A. Snyder, wasynderhort@gmail.com



An excerpt of a letter by Nora Ross

October 1918, Letter Courtesy of Transylvania Heritage Museum, Brevard NC

"My Dear Lester:

I hope I may get a letter from you soon. There is a new disease here called Influenza. There is a good many cases at Brevard and several at Cherryfield.

Several more of the boys have got their war papers. Joe Lance, Rufus Barton, Frank Turner and Odd Bryson. A lot of the people here think the war will soon end and I hope and trust it will.

A crowd of us girls went up on the Kirkendoll Creek a chestnut hunting last Thursday. We sure had a nice time only wish you could have been with us. ---Nora Ross "

American Chestnut Displays Exhibited in two District 8 Parks

By Lawrence Windhauser



Humphrey Nature Center in Letchworth State Park. From left to right: Lawrence Windhauser; Brian Scriven, historic site manager; Roland Beck, general park manager. In background: standing in green shirt is Mike Landowski, seated at desk is Stephanie Spittle.



The Nature Center at Mendon Ponds Park in Monroe County. Left: Scott Kreuger, Mendon Ponds park supervisor, a graduate of SUNY-ESF. Right: Lawrence Windhauser

Wanting to help get the word out about the restoration effort and possibly recruit some new members, I built a few American chestnut display boards to place in public areas and printed one page handouts to go with them explaining the mission. In previous years, after receiving permission, I had planted native American chestnut trees in two area parks, so I contacted them to see about displaying them in their nature centers.

With the permission of Lawrence Staub, Director of Monroe County Parks, the first display board was placed with the help of Park Supervisor Scott Kreuger in the nature center at Mendon Ponds Park. Scott who graduated from The State University of New York College of Environmental Science and Forestry and had attended classes held there by Dr. Charles Maynard has shown great interest in our restoration effort. Together we have planted seventeen native American chestnut trees in various locations in the 5000-acre park. I have planted 12 trees (3 groups of 4 trees) and Scott planted 5 other seedlings that I supplied him. He has been very helpful in watering and helping to maintain the trees there. We plan on planting some more trees next spring and he says he is looking forward to helping graft resistant scions onto these trees or to help pollinate them once the transgenic trees are released.

The next display board, with permission by General Manager Roland Beck, was placed in the Humphrey Nature Center at Letchworth State Park. Douglas Basset, Environmental Educator at the 17-mile long park related that American chestnuts once could be found growing the entire length of the park but have long since perished. The last few saplings sprouting from their old remains have either died or are dying from the blight. Allen Nichols is also using one of the displays at various country fairs where the NY Chapter has a booth.

Looking for Volunteers

Our chapter is organized into nine districts that cover the entire state of New York. This is where most of our members volunteer. It is easier to get involved in planting, caring for, and promoting the American chestnut when the activity is nearby rather than driving clear across the state. Each district has a director but they each could use the help of an assistant or two, as well as other volunteers. If you would like to help out, please contact your District Director (see page 3) or contact our chapter president, Allen Nichols, by email (fajknichols.75@gmail.com) or by phone 607-263-5105. Thank you.

Articles Wanted

If you have an article that you would like to contribute to *The Bur* Newsletter, please contact Linda McGuigan at lpolin@esf.edu or mail it to:

Linda McGuigan
1 Forestry Drive
217 Marshall Hall
Syracuse, NY 13210



THE BUR

O Chestnut Tree

Words by John Neumann, 2004
Tune: *O Tannenbaum* (Old German)

O chestnut tree! O chestnut tree!
You fill our lives with beauty.
O chestnut tree! O chestnut tree!
We glory to restore thee.
Once more for healthy nature's good,
Your sweet gifts and your lasting wood.
O chestnut tree! O chestnut tree!
Once more the forest king shall be.

The American Chestnut Research and Restoration Project at SUNY-ESF



Planting crew: Standing: Tyler Desmarais, Anna Bishop, Vern Coffey, Yoks Bathula, Bill Powell, Vanessa Gravenstine, Sean Satchwell, Anna McGuigan, Jacob McGuigan, Andy Newhouse, Leah McGuigan, Hannah Pilkey, Dakota Matthews, Erik Carlson, Linda McGuigan
Sitting: Masoumeh Sahar Khodaverdi, Xueqing Shellie Xiong, Kaitlin Breda, Allison Oakes, Andrew Teller, Miles Teller

It was a busy summer at SUNY-ESF. We have been working on many projects including, but not limited to:

- Over 1,250 transgenic American chestnut, non-transgenic American chestnut, and Chinese chestnut trees were planted in our field plots. Of these, more than 300 were our Darling 58 lead event. Our goal is it have 10,000 of these available to distribute once we get through the regulatory process.
- In July, we hosted a Pollination Workshop here in Syracuse. Nineteen attendees learned the ins and outs of pollinating American chestnut flowers with transgenic pollen as well as how to graft scions onto rootstock. Special thanks go out to Vern Coffey, Andy Newhouse, and Hannah Pilkey for giving lectures and demonstrations.



David Wright is seen here pollinating a “Mother Tree” with transgenic pollen during the Pollination Workshop.



- We had a visit from Revive & Restore (<https://reviverestore.org>). Their mission, “to enhance biodiversity through new techniques of genetic rescue for endangered and extinct species”, fits well with our project. We gave lab and field tours to co-founders Stewart Brand and Ryan Phelan (photo above), as well as others in their organization.
- A short video was made to explain The American Chestnut Research and Restoration Project and can be viewed at: <http://www.esf.edu/chestnut/>. Click on “The Chestnut Project in a ‘Nutshell’”.
- Bill Powell, Andy Newhouse, Dakota Matthews, Hannah Pilkey, and Josh Mott inoculated first generation transgenic American chestnut crosses with the blight fungus. Preliminary results indicate progeny that inherit the transgene are tolerant to the blight.

- We’ve received a new grant from the USDA BRAG program to do long-term restoration field trials in collaboration with TACF and two other universities. There will be two types of plots, one in an open field setting, and one in a forested setting at three locations, New York, Pennsylvania, and Virginia. We will compare our Darling American chestnut trees to backcross, hybrids, and wild-type chestnut trees.
- Science magazine wrote an article about our work. You can find it at: <http://www.sciencemag.org/news/2018/08/save-iconic-american-chestnut-researchers-plan-introduction-genetically-engineered-tree>
- We are planning to submit the first draft of the documentation for regulatory approval to the USDA before the end of September. The documentation has taken a long time to prepare due to the many components that need to be included. Once submitted, the USDA will review it for completeness and let us know if we need to include anything else.



Yokshitha Reddy Bathula

I am working with the acid phosphatase (AP) line of transgenic American chestnut. These plants were transformed with the AP gene, which was isolated from Chinese chestnut. I am learning the benefits AP expression has in transgenic plants, including the improvement of overall health, which in turn should provide higher resistance in American chestnut to the blight fungus. I am also using photosynthetic and photochemistry studies to learn the mechanism of the AP gene.

The Long Road

Continued from page 1

In 1988, four New York State residents (who were TACF members) believed it would be beneficial to include a second approach to the restoration efforts. They believed there was a sound science basis for research into developing gene transfer technology to produce a superior blight-resistant American chestnut.

The four intrepid New Yorkers met with TACF leadership, presented their plan for this second approach, and asked that TACF sponsor the proposal. At that time, the plan was turned down by TACF. The four New Yorkers then proposed that TACF allow the formation of a chapter in New York State that would be able to pursue its own approach to research and restoration. That proposal was also turned down. Our four heroes told TACF they were starting a separate entity in New York State to pursue transgenic research.

TACF was five years old at the time and had not made the enormous investments of time and funding of the backcross breeding program that was yet to come. It was unknown why TACF did not sponsor the gene transfer method. It may have been because TACF leaders did not have the resources to sponsor two approaches or they had a fear that some TACF donors would end their support when they learned some funds would be going to biotechnology. After all, GMO's were being portrayed as unnatural and dangerous and already had very vocal opposition. It may have been a fear of controversy or a lack of understanding. It is noted that no matter what their reasoning was in 1988, today's TACF leadership is supportive. Our proven success is acknowledged and is being integrated into TACF strategy.

Back then, our four New York State heroes did not give up on their dream. They didn't do what most ordinary people do and say "Well, we tried!", because they weren't ordinary people. Their names are Herbert F. Darling Jr., Jane Darling, Stanley Wirsig, and Arlene Wirsig.

If they had given up, the history of American chestnut research would be far



Herb Darling with Stan and Arlene Wirsig. Marshall Case is in the background. Marshall was the TACF Executive Director at the time. His title was later changed to TACF President & CEO.

different. The four New Yorkers organized the New York State Chestnut Foundation in 1988. They recruited New York State residents to join and even some individuals residing in other states because of their attraction to the science. Herb Darling was elected president, Stan Wirsig was elected vice president for science, and Arlene Wirsig was elected secretary-treasurer. Jane Darling was always at Arlene's side, they made a great team.

Our four leaders approached SUNY-ESF to find research scientists who could institute the research needed to make the transgenic American chestnut a reality. They were directed to two young professors, Drs. Charles Maynard and William Powell, who were already working on different research projects related to the American Chestnut. When Herb, Jane, Stan, and Arlene explained they were looking for scientists to research the development of a blight-resistant transgenic American chestnut and would provide support for that research effort, both professors happily agreed to help. They began making plans to organize what would become the SUNY-ESF American Chestnut Research and Restoration Project (more details later).

Two years after initially rejecting the chapter proposal from the four New Yorkers, the leaders at TACF changed their mind and invited the New York Chestnut Foundation to become the first chapter of TACF. Herb, Jane, Stan, and Arlene once again met with the leaders of TACF and negotiated the founding of the New York

State Chapter. The chapter would be free to pursue the biotechnology approach. The four New Yorkers and TACF negotiated and decided that TACF-NY would get \$15 from the \$40 TACF annual dues. This was the beginning of the chapter system that exists to this day.

The first meeting of the newly formed TACF-NY took place in 1990. Herb Darling was elected our first chapter president. Stan Wirsig was elected our first vice president for science, and Arlene Wirsig was elected our first secretary-treasurer. These are the same offices they held in the former New York State Chestnut Foundation. Our four founders provided the leadership and organization that would eventually enlist over 600 members, a chapter board of 20 or more directors, and nine service districts each with their own directors so members can volunteer close to home. All of this was done without paid staff. We are, and always have been, a completely volunteer organization.

Vision and determination characterize our four founders. What are their stories and what inspired them to achieve so much on behalf of the American chestnut? What did the SUNY-ESF American Chestnut Research and Restoration Project achieve and who are the people who did it? What were the sticking points in the research? What were the breakthroughs? How did our chapter assist? Where do we go from here? Learn all about it in Part II of "The Long and Difficult Road" in the Spring 2019 issue of *The Bur*.



THE BUR
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 New York State Chapter
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 Visit www.acf.org, call 828-281-0047, or mail the form (below) to:

The American Chestnut Foundation Inc.
 50 North Merrimon Avenue, Suite 115, Asheville, NC 28804

Enclosed please find my \$40 membership in support of TACF New York Chapter.
 I also make an additional gift of \$ _____ to the New York State Chapter.
 A total of \$ _____ is enclosed.

All memberships to TACF include TACF publications, a car decal, membership to one of the state chapters as well as opportunities to participate in local chestnut activities. Visit www.acf.org or call (828) 281-0047 for more information.

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NY Chapter membership includes the Newsletter *The Bur*. The NY Chapter helps guide research at SUNY-ESF and maintains plantings to keep the American Chestnut gene pool. TACF & TACF- NY Chapter are 501 (c) (3) non-profit organizations. Except for the membership services portion of your contribution (valued at \$15) your gift is tax deductible to the full extent allowed by law.