



Spring 2020

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## HELP FIND WILD AMERICAN CHESTNUTS FOR THE VIRGINIA CHAPTER GCOs

by Tom Saielli, Regional Science Coordinator

On December 9, 2019, one of the finest Mother Tree Orchards, or germplasm conservation orchards (GCOs), in the Mid-Atlantic region was dedicated to Cathy Mayes, for her tireless efforts to restore the American chestnut, and as the driving force behind the establishment of so many successful backcross orchards in Virginia. The orchard, established in 2009, has more than 200 American chestnut trees, representing more than 30 sources of wild-type American chestnut germplasm and consists of mostly mature trees. GCOs are important for our breeding program because the American chestnut trees planted in them can be used in controlled crosses for traditional breeding or future transgenic breeding.

Earlier this year we submitted a U.S. Department of Agriculture application to make our first transgenic backcrosses in the Mid-Atlantic region experimentally at the Catherine D. Mayes Chestnut Orchard. The transgenic backcross seeds produced will represent the first generation O<sub>x</sub>O backcrosses for the Mid-Atlantic Region and the blight resistant



progeny from these crosses will then be incorporated in other GCOs throughout the state chapters in Virginia, Maryland, West Virginia and Kentucky.

The transgenic program began in New York in 1990 through a collaboration between the New York Chapter of The American Chestnut Foundation (NY-TACF) and the

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## The President's Message

By Warren Laws, Virginia Chapter President

In February your Board of Directors received the resignation of John Scrivani as president. John resigned for personal reasons. He is currently serving as chapter secretary and will continue with field work. This is unfortunate for the chapter as his past leadership contributed greatly to our mission.

As your new president I would like to introduce myself. I graduated from the U.S Air Force Academy in 1969 and flew B-52s and FB-111s during my career. I also served in operational and intelligence staff positions. After my retirement in 1990 I flew for American Airlines, retiring in 2003. I have been a member of the Virginia chapter for 12 years and have enjoyed every minute of it. Like my previous careers I have met many dedicated and knowledgeable people. Altruistic people are enjoyable to be with.

Currently we need more volunteers to help achieve our mission. As your new president I hope to recruit more volunteers. It is unreasonable to expect volunteers to travel great distances within our state. For this reason we have divided our state into four regions. Each region has a vice president who serves as a point of contact for activities in their area. Information on regional activities follows. Our need for volunteers peaks in the spring (planting season) and in the fall (harvesting). During the summer we need to maintain our orchards. If you have the time please contact me at 540-364-1922 or [vachestnut@verizon.net](mailto:vachestnut@verizon.net) and I will put you into contact with your local vice president. Each of them has outlined projected activities in their respective regions. If you find something of interest in a region not near you, contact me. You are welcome at any and all chapter activities.



Included in this newsletter are two articles, one from our Vice President of Science, Fred Hebard, and one from our Regional Science Coordinator, Tom Saielli. After reading Fred's article you will understand how much work is involved in our breeding program. Tom's article mentions the transgenic program and the need for regulatory approval by the federal government. The law requires a 60 day public comment period before permission can be granted. This is also where you can participate. The public comment period has not yet started, but when it does, information will be sent out on how you can help.

Our activities involve a great amount of work. However, it is always better to have many volunteers each do a little work than to have a few be overworked. If you have not participated in our past activities please give it a try. I think you will find it rewarding.

For those of you who have participated as volunteers or donors, I would like to thank you for your support in restoring this "perfect tree" back into our environment.

How Our Seed Orchards Are Doing  
by Fred Hebard, Chapter Vice President  
of Science

Sixteen volunteers for the Virginia Chapter planted 3,761 chestnuts in seed orchards this March. Our three seed orchards now contain 7,202 seedlings and planted nuts. After 3 years, seed orchard planting for our Graves source of resistance is about 40% complete. We should finish in 2-4 years.

An important measure of planting success is emergence and survival of seedlings originating from planted nuts. Our overall emergence and survival was 56%. For different crosses it ranged from 6 to 95%. Poor survival necessitates replanting of nuts, such as with the cross that had 6% survival. Replanting is more inefficient than planting new plots. For instance, in 2020 it took 10 days to replant 1,182 nuts but only 7 days to install new plantings of 2,579 nuts. If survival is low enough, the program can grind to a halt.

Factors affecting survival were examined to find ways to improve it. Survival varied depending on the cross that gave rise to nuts, the year of planting and the planting site.

We are establishing seed orchards at three sites, Sky Meadows State Park, Banshee Reeks Nature Preserve and Blandy Experimental Farm. Sky Meadows had lower survival than the other two sites. However, this occurred because the worst-performing crosses happened to be planted at Sky Meadows. The effects of site could be disentangled from cross and year when the same cross was planted at multiple sites in the same year. Sky Meadows shared four crosses with Blandy in 2019, and site did not significantly af-

fect survival. However, there was large, significant variation between the four crosses, with survival ranging from 25% to 67%. In three crosses shared between Blandy and Banshee Reeks, survival of one cross was lower at Blandy while survival in the other two crosses was lower at Banshee Reeks; the difference was statistically significant. These data indicate that site was not a major factor in survival, but cross certainly was.

The effect of cross and year on survival is thought to be due largely to variation in storage conditions for nuts from different crosses. The peat moss in which nuts are stored needs to be at a uniform moisture content, about 10% water by volume. Storage temperature also needs to be as close to 32 degrees F as possible, and storage bags need to be aerated by having about 20 holes poked in them with a paper clip.

While it didn't affect survival, site did affect seedling size. At Blandy, seedlings averaged 26 inches in height after 1 season of growth, whereas seedlings at Sky Meadows and Banshee Reeks averaged about 10 inches. The excellent growth at Blandy is attributed to proper fertilization, good weed control and the presence of ectomycorrhizal fungi associated with the chestnut trees previously growing there. We plan to fertilize all three sites this year, using recommendations from soil samples. The recommendations have been made and await the beginning of May to implement; we don't want to push the seedlings to leaf out prematurely. Weed control has been done already this year (2020) at Sky Meadows and Blandy and is planned for Banshee Reeks. We cannot expect 26 inches of height in soil lacking ectmycorrhizae, but,

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State University of New York's College of Environmental Science & Forestry (ESF). Transgenically, by adding a gene from wheat called oxalate oxidase, or OxO, oxalic acid, which is what the blight fungus uses to attack chestnut trees, is broken down or detoxified within the host, enhancing the tree's ability to tolerate blight.

Research has shown that transgenic American chestnut trees not only demonstrate high levels of blight tolerance, but all ecological studies (American competitiveness and form, herbivory studies, leaf decomposition studies, colonization of roots by mycorrhizal fungi, etc.) have shown no difference between transgenic chestnuts and wild-type American chestnut.

Regulatory approval is currently being sought to allow range-wide distribution of transgenic American chestnut trees for restoration purposes. We expect release of transgenic pollen for earnest breeding work to begin within the next two years (the work this year will be experimental, but leads to the next step of backcrossing once approved). Once approval is achieved, more than one generation of outcrossing of the transgenic tree to wild-type American chestnut trees will be required to increase the genetic diversity and adaptability of chestnut populations. Ultimately, three generations of backcrossing with hundreds of wild-type chestnut trees will be required throughout the chestnut's range.

Therefore, while the regulatory process is underway, it is imperative that TACF chapters find wild American chestnuts to cross with the transgenic trees and, if possible, transplant the American

chestnut germplasm in chapter GCOs. Currently in Virginia there are two large GCOs and three more are currently being established, but we need to find more wild American chestnut germplasm for these GCOs.

The American Chestnut Foundation and the Virginia Chapter request all interested volunteers help us find as many wild American chestnuts as possible! If all goes according to plan, we will need over one hundred new unique sources of American chestnuts for transgenic breeding work in Virginia alone.

So, head out to the woods, up in the mountains (chestnuts are found upslope, on mountaintops, not down in valleys along rivers) to find older forests with plenty of mature trees, look for the common forest types –chestnut oaks, mountain laurel and maybe blueberries or sassafras, and you'll be sure to find wild chestnuts (you may need to search a bit). If you *do* find American chestnuts, be sure to download the TreeSnap app on your phone so you can record data and GPS coordinates, or use an old fashioned Tree Locator Form found on the TACF website. Make sure to let us know what you find and where you found it!

#### **Additional Resources:**

- Visit [www.esf.edu/chestnut/about.asp](http://www.esf.edu/chestnut/about.asp) to learn more about ESF's research
- Learn more about OxO gene at [www.esf.edu/chestnut/genes.htm](http://www.esf.edu/chestnut/genes.htm)
- Video presentation by Dr. William Powell, lead researcher of SUNY-ESF's American Chestnut Research and Restoration Project, at [www.youtube.com/watch?v=WYHQDLCmgyg](http://www.youtube.com/watch?v=WYHQDLCmgyg)
- Questions: email the American Chestnut Research and Restoration Project at [chestnut@esf.edu](mailto:chestnut@esf.edu)

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hopefully, seedlings planted this year at Sky Meadows and Banshee Reeks will average 18 inches in height, in line with seedling heights routinely achieved at Meadowview..

Another factor affecting seedling size was deer predation. Blandy and Sky Meadows have deer fences but not Banshee Reeks. Deer at Banshee Reeks ate just about every seedling back to the top of its protective tube. A fence is being installed at Banshee Reeks. At Sky Meadows, deer were jumping over and crawling under the fence. The holes at the bottom have been patched and barbed wire is being strung at the top.

Our core planting crew consisted of Peter West, Cindy Ingram, Larry Johnson, Geary Brummell, Jack LaMonica, Dan Bluntzer, and myself. These volunteers were present on most of the 17 days we spent planting, and they deserve our gratitude. Likewise, thanks are given to Don Cahoon, Michael McCormick, Mark Freemantle, Chris Young, Dean Salman, Eric Hottenstein, Cindy Reaves, Nana Chroninger, Bruce Belt, and Paige Hebard. They contributed at least one day's labor to our efforts.

The staff at our planting sites also provided invaluable assistance. These were: Ron Circe and Eric Bishop at Banshee Reeks; Dave Carr, T'ai Roulston, Chris Schmidt and Chris Youngs at Blandy; and Kevin Bowman,

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Planting at Sky Meadows State Park

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Brian Selove, Drew Davis, Caleb Gooden and Kevin Davenport at Sky Meadows.

Our volunteer coordinator, Pete West, will be calling for volunteers periodically in the next few months to help with chores in the orchard. We hope you will be encouraged to come out and help make this dream a reality.

## Regional Reports

**Northern Virginia Region**

by Jack LaMonica, Regional Vice President

Pollination Training, Marshall--TBD

**Central Virginia Region**

by Tom Wild, Regional Vice President

Heritage Festival Outreach, Monticello--  
October 3

Riverfest Outreach, Waynesboro--TBD

Maintenance at Middle Mountain Orchard,  
Albemarle County--TBD

Tufton Farm work, Albemarle County--  
TBD

**Catawba Region**

by Carl Absher, Regional Vice President

Thanks to our current stay-at-home policy and social distancing, the quiet winter time has extended into what should have been a busy spring. We participated in the second annual Woods & Wildlife conference in Roanoke on February 15. Aaron Friday of Gate City won the door prize of two Restoration chestnuts. It is a compliment whenever someone chooses chestnut trees from a table covered with prizes.

So many activities are on hold pending the end of the stay-at-home orders and social distancing that plans for any pollination or inoculations are on hold. One activity that is still encouraged is finding new survivors in the woods. Hopefully, we may be submitting samples again this year for genomic testing and building the database.

The one activity that we still plan on having is the bur opening at McDonalds Mill in late September or early October. It is always a good time to enjoy coffee, chestnut flour snacks and roasted chestnuts. Surely we will get to enjoy that little social and get back to full activities in 2021.

Hopefully, things will pick back up in a couple of months.

**Southwest Virginia Region**

by Beth Merz, Regional Vice President

Our Branch met in late January to plan for activities, events, and work projects for 2020. As usual, we enjoyed a working lunch with good discussions about setting goals in support of American chestnut restoration. Fortunately we were able to get a couple of these accomplished or started prior to the need to curtail work

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due to the coronavirus pandemic. We met with TACF Meadowview farm staff to get their updated wish list and were able to donate \$2000 to purchase binoculars, a Stihl pole saw, and chip in on other needs. Several of us helped to pot seed at the Meadowview greenhouse in late February. We are also developing a proposal for the Southwest Virginia Region to establish restoration plantings as a 5+ year project. This will entail coordination with TACF staff, as well as outreach to some of the public land managers in SWVA to ascertain their interest in incorporating new chestnut plantings within their forest management strategies.

For the rest of 2020, even though our spring projects and public events aren't happening, we hope to make progress with these activities:

- Participate in volunteer work projects needed at Meadowview (possibly orchard planting, pollen processing, field inoculations, small stem assays, and seed processing). These activities would be recruited and supervised by the farm staff as they are able to safely open up opportunities.



Volunteer work at Grindstone Campground

- Manage the native garden at Meadowview, in concert with the Washington County Master Gardeners.
- Dentatabase data entry.
- Various tasks at existing SWVA planting sites (Channels State Forest, Grindstone Campground, Matthews State Forest). This would include survival checks, monumenting plot corners, possible inoculation, evaluation, culling as needed.

Meanwhile, everyone stay safe and remember we are committed to American chestnut restoration for the long term!



Meadowview Orchard

## Volunteer Profile—Pete West

Pete West graduated from the University of North Carolina with a degree in Math and English. He served in the U.S. Navy aboard a destroyer and taught computer programming in Dam Neck, VA. He also worked for TRW/Northrop Grumman as a systems engineer, project manager and business development manager. Pete has served as a volunteer firefighter and on a rescue team for over 50 years. His hobby is the restoration and preservation of antique fire trucks. He has authored two books on fire trucks.

This spring Pete was instrumental in organizing volunteers for our seed orchards in northern Virginia. The Virginia Chapter of The American Chestnut Foundation is fortunate to have such a dedicated volunteer.



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FOUNDATION

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