The West Virginia Chapter
of
The American Chestnut Foundation
NEWSLETTER
In the heart of American chestnut's natural range
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Table of Contents

PA/NJ Chapter News

At the December 2022 Zoom meeting of chapter presidents, the president of the PA/NJ, **Rick Hartlieb**, gave an overview of his chapter. Rick has been a chapter member since 2005 and was recently elected president. The PA/NJ chapter has 815 members currently. Their highest number of members was 1,000 a few years ago. The PA/NJ chapter has a full-time nursery manager, **Steven Hoy**, who is employed by both the PA/NJ chapter and the national office on a 50/50 basis. Stephen's largest taks is managing the 8,000-tree chestnut orchard at Penn State. This orchard was started in 2002 and encompases 10 acres. In addition to the Penn State orchard, the Gamelands 176 orchard, just south of campus has 1,600 trees that Stephen manages. His tasks for the national organization include assisting other state chapters with orchard issues and helping with seedling distribution.

Their chapter administraor is **Jean Najjar**. She handles all administrative duties such as developing meeting programs, newsletters, speakers for events, etc. Jean is currenlty cataloging old, historic photos for the chapter. In 2022, their chapter had 2 paid interns. The first intern, Brady, was tasked with crisscrossing the state and touching base with chestnut growers who may not have been contacted by anyone in the chapter for 6-8 years. The second intern, John, mainly helped Stephen Hoy in the Penn State orchard.

The big news for the PA/NJ chapter is that part of the Forest Resources Building (on the Penn State campus) that houses Sara Fitzsimmons is being torn down. This building also housed their equipment, and their fungal laboratory. They will be relocated to a new space nearby. The current greenhouses also will be torn down, but they will have use of newer greenhouses that can accommodate 5,000 chestnut seedlings. There are several benefits to Sara being housed at Penn State: the Schatz connection (for molecular work); meeting factilities; library access, and equipment.

The PA/NJ chapter has about 50 members who volunteer to work fairs/festivals, nature programs, school programs, the Harrisburg Farm show and the Ag. Progress Days at State College. The volunteers put up a display and sell hats, t-chirts, etc with the PA/NJ logo.

Their chapter has two meeting each year. At their spring meeting they focus on how to grow trees with updates from the national organization. The fall meeting has speakers that talk about issues not related to chestnut

such as ecosystems, hazelnut production, etc.

Their chapter created a Conservation Mission, a way to look for native American chestnuts. They took a good look at maps of PA and NJ and plotted areas where there was little or no evidence of native American chestnut trees. They then enlisted hiking group and scouts to look for American chestnut to help find native trees.

The PA/NJ chapter has their own webpage (https:patacf.org) that has links for volulnteers, newsletters, fact sheets, their chapter store and a speaker's bureau.

They do sell merchandise, and it is a source of revenue. Although it is not a big source of income fo the chapter, they use merchandise mostly to get out the logo of PA/NJ and TACF. They hope that people will see the shirts and become interested in TACF. They sell short-sleeve T-shirts for $10 and long-sleeve for $20. All merchandise is housed at Penn State. Volunteers haul the merchandise to fairs/festival in large totes.

The last item that Rick Hartlieb mentioned was insurance for their chapter. They hold a $1M policy that covers volunteers falling off ladders, accidents, etc. The cost of the policy is $12,000 per year.

Report from Sara Fitzsimmons

Sara Fitzsimnons is TACF's Chief Conservation Officer. At the Decmeber 2022 chapter president's meeting, she gave a report on several items.

1. **Administration**. The PA/NJ and NY state chapters are the only two chapters that have paid staff. PA/NJ has Stephen Hoy and Jean Najjar and NY employs Linda McGiugan. Paid staff can be very effective producing newsletters, coordinating meetings, booking hotels for meetings, etc. To this end, TACF is planning on hiring a full-time **Outreach Coordinator** to help state chapters with everything adminstrative: developing and updating by-laws; recruiting new members; websites; social media; chapter board issues; and newsletters. They hope to being interviewing this month.

2. '**Darling 58' rollout**. TACF hopes to have a combined framework with the State University of New York (SUNY), where the 'Darling 58' tree was developed. Each chapter should begin now gathering an inventory of floweirng American chestnut trees and documenting which trees will be used in controled pollination studies.

TACF has defined three typs of orchards: BCO; Blight 1 and Blight 2.

BCO is a backcross conservation orchard. These orchards of backcross trees may or may not have much resistance to the chestnut blight fungus. In fact, many of the trees in these orchards may be pure American chestnut.

Blight 1 orchards contain trees that are 40%-60% American.

Blight 2 orchards have high American characteristics, greater than 60%.

How many trees in each of the above three catergories can be pollinated in 2023 with 'Darling 58' pollen? For any tree that will be pollinated with transgenic pollen in 2023, they must in in TACF's database, Dentatabase. Even if 'Darling 58' (or 'D58' for short) is deregulated by USDA-APHIS in 2023, the transgenic pollen is still considered a pesticide and therefore all tree must be documented and maintained on the database so they can be followed over time.

The oxalate oxidase gene (OXO) that confers resisitance to chestnut blight from transgenic pollen should be inherited in 50% of the nuts. They have found that only 40% of the nuts are OXO-positive. The other 60% are OXO-negative. Nuts can be tested by removing a small plug of endosperm. This small piece of tissue is then treated with

histochemicals. If the reaction turns blue, the OXO genes are present. A lack of blue pigment indicates that nut does not contain the OXO gene. At this time, there are three labs that can conduct testing of nuts for the OXO gene: SUNY in Syracuse, Penn State and Meadowview. Sara indicated that 100 nuts can be processed in an hour, but the results take another 3 hours. Sara said that they are looking for ways to scale-up this testing because SUNY has 13,000 nuts to test.

Let's say hypothetically that the WV chapter is provided pollen to pollinate 100 female flowers. The absolute best outcome would be 300 nuts produced. If in fact only 40% of nuts contain the OXO gene, that means we could have 120 OXO postivie nuts. All 300 nuts will be shipped to one of the testing facilities. If in fact, WV has 120 OXO-postivie nuts, a percenetage of our nuts will be used for research and they will not be returned to us. That percentage has not been determined yet. For argument sake, lets say TACF keeps 20 of the 120 nuts, meaning that the WV chapter will recieve 100 OXO-positive nuts. Those 100 nuts will be a combination of all OXO-positive nuts from the various state chapters. In summary, we will not be returned the nuts we sent for testing. The hope is that mixing nuts from various regions will benefit the diversity each state chapter receives.

Where to plant our OXO-positive nuts? We should plant 'D58' trees in our germplasm conservation orchards (GCOs) and harvest primarily from 'D58' trees. We also can plant 'D58' trees in the forest, on minelands, in a canopy gaps, a field, where ever someone wants to plant them.

TACF is currently working on more specific guidance and guidelines, but there will be no restrictions on purpose. There will be recommendations for various goals for TACF and perhaps chapters.

Story of Science Adventure School

In 2022, our very first WV Chapter grant for $1,000 was awarded to WVU's Science Adventure School (SAS). The associate director of SAS is **Dr. Alice Morgan**. Alice sent the following note:

One of the last tasks we have our staff do before they wrap up with SAS is write down a story or two of an impact that they remember having on a student. I was going through this year's reports and saw one involving the Chestnut curriculum we developed with the help of the foundation and I wanted to share it with you.

As we transitioned to the WVU Outdoor Education Center for the last few weeks of the season's programming, our Environmental Education curriculum also shifted to accommodate a lesson on the American Chestnut, once one of the most common trees in Appalachia. One week, a student from the group I was paired with on Tuesday pulled me aside at dinner; his group had gone through our four-hour American Chestnut lesson with Carina earlier that day, and the lesson had clearly stuck with him.

I asked him how his day and lessons had been, expecting that he, like most students, would talk about archery, BMX biking, or rock climbing. But he excitedly said, "I think I have chestnuts growing at my house!"

I replied that this was a really cool connection for him to make from his lesson: "Now, you'll know how to identify them to make sure."

He replied, "Yeah! I have a whole acre to explore now—well, actually, I already explored it, but now I'll have something new to look for!"

As an educator, it was amazing to see the connection that the student had made between the lesson and something in his life. It really exemplified the goal we have for the American Chestnut/Forest Ecology lesson: helping students make connections to nature and see forests as a complex, vibrant part of the world home to myriad plants, animals, and (if they know where to look) American Chestnuts.

Sixth-grader at SAS viewing chestnut leaves under a microscope.

A SAS educator and students after a hike where they found a chestnut tree!

Alice reported that there were 151 students who went through the chestnut curriculum. While they want to make some changes to their original set of lesson plans, it went very well overall. A higher number of students than anticipated cited chestnut as a favorite class (over other classes that focused on rock climbing, BMX biking and archery).

I think our WV grant money was well spent!

Best Management Practices

Sara Fitzsimmons put together a comprehensive plan for **Best Management Practices** when planting American chesntut. Here is a small portion of TACF's plan.

Planting and growing chestnut trees is a rewarding and challenging experience. As with growing anything, there are some "rules of the road" that will help with the successful establishment and survival of your chestnut trees. The American Chestnut Foundation is working to restore the American chestnut (*Castanea dentata*) to its original range. To do this, we must plant a lot of trees! To date, we have planted over 500,000 trees as part of our mission.

Restoring the American chestnut to its native hardwood forests is not a single event, but a process that will take multiple generations of people and trees to complete. Along the way, a blight-resistant American chestnut will face the same challenges that today limit regeneration for many species in the eastern hardwood forests. Key among these challenges is competition with other plants, dispersal, and wildlife predation. What we understand about these challenges and how the chestnut grows in response to them is vital to restoring this foundational species.

SITE SELECTION

The first decision that you are going to need to make when planting chestnuts is WHERE to plant your chestnuts. Typically, chestnuts are a hardy species, but they do have some general requirements.

1. Site selection: Well-drained, acidic soil type. **This is *the* most important consideration when planting chestnuts**. Choose wisely. Sandy (25%-75% sand composition) or rocky, well-drained, highly permeable, and somewhat acidic soils (pH 4.5-6.5) on gently sloping, land is best. Avoid heavy clay soils or planting in swales. Review your property's location on county soil maps from the Natural Resources Conservation Services (NRCS). Many of these are available on-line through Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/), but you may also find them in your local library.

2. Test for *Phytophthora cinnamomi* root rot in the southerns states.

3. Exposure. Full sun is often best for growth, vigor and seed production. A sheltered north-facing slope that provides protection from drying winds and the low sun of winter may be better for cold or windy sites. Planting on a slope may also help alleviate some drainage issues.

4. How many trees / how much area to plant. How many trees and/or how much area to plant really depends on several factors. What type of trees you'll be planting, how long you want to have them on your land, and the amount of land you have available, which could be the most important limiting factor.

Remember that you will need to plant at least 2 chestnuts to get nut production. Account for up-

wards of 50% or greater mortality over time, and plant at least 5. If you just want to plant a few trees, a good amount would be between 10 to 50. For those who want to plant 100s or 1000s of trees, the economies of scale will set in, of course!

TACF often recommends that new growers start by testing their growing methods and land by planting 10 - 50 wild-type American chestnuts before planting many and/or implementing large-scale planting projects. This "trial run" can be a very valuable exercise to learn the finer points of growing chestnuts.

SITE PREPARATION
Site preparation needed will depend on the condition of the site. If the site is uncultivated, trees and brush should be removed, the field mowed, and re-growth controlled.

Assuming you want maximum growth and nut production, you will be choosing a relatively open site. One of the easiest ways to do this might be to plant in an open field.

OPEN FIELD
Old fields can be easier to maintain, but they often contain hardier weeds that require persistence in management to control. They can also harbor different kinds of pests and vermin. For example, meadow voles are more highly populated in field sites. In addition, in earlier years, pests such as aphids and leafhoppers tend to also be in higher abundance in old fields.

ABANDONED MINELANDS
Many areas within the native range of American chestnut may be defined as an abandoned mine land (AML).

Depending on the way the site was reclaimed, reforestation may be more or less difficult. TACF works closely with ARRI, the Appalachian Regional Reforestation Initiative, to plant on AMLs in the most appropriate fashion. One of the most important things to keep in mind is that drainage is key, and some heavy land manipulation may be required on these lands. More information on reclaiming these areas can be received by contacting TACF and/or ARRI.

FORESTED SITES
Forested sites typically have proper mycorrhizal associations for trees and may maximize growth potential because of their fertility. There are several ways to prepare forested sites for reforestation plantings.

OBTAIN A FOREST MANAGEMENT PLAN
Before moving forward with any forest clearing projects, TACF recommends consulting with a professional forester and creating a forest management plan. Forests are complicated entities, and certain actions can swing value - either economic or ecological - either up or down. Professional foresters can help manage those decisions by a) establishing baseline information about stands on your property; b) implementing different management units and plans based on stocking,regeneration potential, and landowner goals; and c) making landowners aware of cost-share and other opportunities that can assist them in executing their management plan.

DEER EXCLUSION AND REPELLING
Other landowners may not have the acreage, or enough neighboring, managed acreage, to properly manage deer populations themselves. In these cases, individual deer exclusion methods will need to be implemented.

1) Tree Shelters. One of the first places many growers turn when trying to protect their trees from deer is to plastic tree shelters. TACF typically does not recommend tall, narrow, plastic tree shelters, although this technology is starting to improve. Depending on other establishment methods employed, i.e. vegetation control, etc., there are other options including several types of mesh tubes, hardware cloth exclosures, "superwide" tubes, and others. Each come with their own advantages and disadvantages.

2) Fencing. The most proven method of deer protection is an 8-foot, woven wire fence (with 2-foot tubes inside the fence to protect from smaller critters). In some areas, a multi-strand baited electric fence can be effective. Some growers have used 8-foot tall plastic fencing with some success. Several growers have erected their own fencing, often proving more cost effective over professional installation. Several examples of these fences are available on the Chestnut Growers website.

3) Caging. For small amounts of trees (about 10-20 but no more than 50, as a general rule), wire cages made from 6' lengths, hog rings, and electric fence rods may deter deer as well. Four foot tall chicken wire cages have proven effective as well. The American Chestnut Cooperators Foundation has a website devoted to the construction of wire cages for chestnut trees (http://www.accfonline.org/cages.htm). The taller the cage, the smaller the diameter can be. As a general rule, though, try to use a 6-foot-tall fence approximately 3 feet in diameter. We recommend a minimum of 4 feet tall and 3 feet in diameter.

4) Deer Repellents have proven effective to a certain extent. They must be re-applied biweekly and after any rainfall. You can purchase commercially available repellents based on beef blood or coyote urine or make your own (although collecting coyote urine may prove to be a difficult task). Several reviews of repellents are available online.When using deer repellents, fencing is not a requirement. Short tree shelters may still be used to protect from rodents and from herbicide damage. Be certain to apply the repellent on a regular basis. Again, fencing is the most effective deer control method.

VARMINT CONTROL
Chestnuts are a prized food of many species, humans not being the least of them. Blue jays, turkeys, bears, deer, voles, mice, squirrels, chipmunks, raccoons — just about everything will eat chestnuts. And they won't just eat the nuts themselves, but also the stems.

A Look Back in Time

I was reminded recently that in the early 1900s, during the beginning of the pandemic, the disease of American chestnut was referred to as 'Chestnut Bark Disease". Not unitl 1912-1913 was the disease referred to a Chestnut Blight.

We have a lot of old books in our house and we came across a book belonging to my wife's maternal great-grandmother. The book, ***The Geography of West Virginia*** was written by A. E. Kenney and published in 1895.

The book offers a lot of details about counties in West Virginia. One of the chapters is titled, 'Saw-mill on the Gauley River'. Part of that chapter details the lumber industry in WV. ***"The Gauley River, 120 miles long, flows into the New River at Gauley Bridge and with it forms the Great Kanawha River. It is not a navigable river, but is a great waterway for the rafting of timber. The Gauley River rises in the primeval forests of the mountains. Its head streams in Pocahontas County pass through the 150,000-acre tract of the Camden Company and afford waterways by which the timber is floated to the mills of the Camden-On-Gauley. The timber resources of West Viringia are enourmous. The most valuable sorts for lumber such as chestnut, black walnut, cherry, ash, poplar, hickory, locust, maple and varous kinds of oak abound."***

Historically, there were many tanneries in West Virginia in the late 1800s/early 1900s. In a chapter on Ritchie County, A.E. Kenney states that there were four tanneries in that county in the late 1800s. One of the qualities of chestnut that made it useful for railroad ties, telephone and telegraph poles and fencing, was its high content of tannic acid. Most of us nowadays can relate to tannic acid as the brown ring in a cup of tea. American chestnut has a high content of tannic acid and that was utlilized by early settlers to tan hides for clothing and mocassins. Chestnut was cut into bolts like firewood and added to kettles of boiling water. Tannic acid is water soluble and the 'black water' that developed after the wood was boiled used to tan hides. Gradually with more modern processes, tanneries faded away. One of the last tanneries that I knew of was in Frank, WV, just outside Bartow in Pocahontas County. That tannery closed in the early 1980s.

I plan to write more about the early days of chestnut blight in an another edition in 2023. The history of the chestnut blight is fascinating.

Wishing you a happy and healthy 2023!