



The West Virginia Chapter of The American Chestnut Foundation NEWSLETTER



In the heart of American chestnut's natural range

May 2024

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Find us on Facebook: @WVTACF
National Office: 50 N. Merrimon
Street, Asheville, NC 28804
Phone: 828-281-0047

Email: WVChapter@tacf.org
Website: tacf.org/wv
Newsletter Editor: Mark Double

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Work Day at the Summit Bechtel Reserve

On a Saturday in late April, a work day was held at the Summit Bechtel Reserve (SBR) in Fayette County. WV chapter board member, **Dr. Lewis Cook**, worked with a Boy Scout troop to check the trees, weed, fix cages, etc. The following is the report from Dr. Cook relative to the five sites at the SBR.

All of the sites were evaluated and inventoried.

Bridge site--Overall, the site is doing better than expected. This was the original site started 10 years ago and seedlings have been replanted each year since. Some of the original trees appear to have survived, reaching a base diameter of 2 to 3 inches (4 in number). Out of all the trees direct-seeded from nuts in 2023, planted in tubes, 6 out of 30 survived. Overall, 23 are surviving with stem diameters of $\frac{3}{4}$ in. to 1.5 in. This is the result of replanting every year for 10 years. Overall, the percent survival is very low, but a few appear to be maturing. All of these are backcross trees.

Fire Ring site--This is a 3-year-old site and designated as a GCO with all-American chestnuts. It has been replanted once. Thirty trees were planted initially with one year of replacing dead seedlings. Eighteen planting sites were identifiable, and 15 live trees were identified. All were very small and spindly.

Orchard site--Another 3-year-old site and designated as a GCO with all-American chestnuts. It has been replanted once. Thirty trees were planted initially with one year of replacing dead seedlings. Out of 18 identifiable planting sites, 6-to-8 trees were identifiable. Again, all very small and spindly.

Perry Point (Roadside) site--16 trees planted at varying times over last 5 years. 16 trees were found. 14 trees appeared healthy and thriving, most $\frac{3}{4}$ to 1 inch diameter stem.

Antoline area--No evidence of trees previously planted of past 5 years.

The driving force for the chestnut plantings at the SBR has been **Sam Muncy**, current treasurer of the WV chapter. Sam was unable to attend the work day as he was exploring the western U.S. Sam had the following reply to Lewis's report.

"The fire ring site was completely destroyed the first year due to grazing of deer and local cattle that were allowed to graze the site. The tree cages were mangled due to deer antlers being caught. This put the deer into a

frenzy at that site. The seedlings were completely nibbled off to the ground by cattle graze, and there were scattered cow patties.

The bridge site was identified through soil samples as having *Phytophthora*. Any surviving trees there may be *Phytophthora* resistant. This is the oldest site having been planted in 2014.

The fire ring, Antoline and Woodlot sites were identified as not having *Phytophthora*.

The Antoline site has no top soil and is considered poor choice by many, and it is a catch-all site with orphaned seedlings from all sources being put there. But, it is located on the Conservation Trail close to the future Antoline Family Conservation Center being donated by **Mr. Steve Antoline**. It is my hope that scouts can view our teaching station at the Antoline center and then be lead on a guided hike to the Antoline site to be taught American chestnut identification and growth management.



Dr. Lewis Cook (far left) and Boy Scouts at the SBR work day.

Clements Nursery and Fidelis Corporation

Last August, West Virginia **Governor Jim Justice** announced that Fidelis New Energy®, LLC (Fidelis) selected Mason County as the site for a life cycle carbon neutral hydrogen production facility – The Mountaineer GigaSystem™ and the Monarch Cloud Campus for data centers powered by net-zero hydrogen. Mountaineer will be implementing the proprietary FidelisH2® technology that enables production of hydrogen with zero life cycle carbon emissions from a combination of natural gas, carbon capture, utilization, and sequestration (CCUS) and renewable energy.

The site in Mason County for this operation is the former Clements State Tree Nursery in West Columbia. For the 2024 season, the vast majority of the American chestnut seedlings for our chapter members, the WV Division of Forestry and other groups around the state, came from the trees at the Clements Nursery. If these trees are lost to construction, we will have very few American chestnuts in future years.

To than end, WV chapter member, **Dr. Joe Golden**, has been in touch with the WV Secretary of Commerce, **James Bailey**. Several communications have been made with Mr. Bailey, and he is aware of the chestnut trees at Clements. He assured the WV chapter that the trees will remain and be taken care of by Fidelis. Mr. Bailey stated, "We value the chestnuts and will ensure that they are cared for. The state maintains ownership and control of the property, but if that ever changes, then the trees will be taken care of". What happens in the future is still unclear, as the Secretary of Commerce in WV is appointed by the Governor, and as of November 2024, we will have a new Governor and therefore a new Secretary of Commerce. Whether of not the new Secretary will have the same con-

cerns for these chestnut trees remains to be seen.

According to Fidelis, the proposed plant is expected to employ 4,200 construction workers and 800 permanent employees. The project is planned to be built over time in four phases with each phase producing over 500 metric tons per day (MTPD) of net-zero carbon hydrogen at an approximate capital cost of \$2 billion per phase excluding associated investments in data centers, greenhouses, etc. The first FidelisH2 train of the Mountaineer GigaSystem is expected to commence operations in 2028.

This net-zero carbon hydrogen will be used for a variety of purposes including carbon-neutral hyperscale datacenters, greenhouses, transportation, and steel production. The Monarch Cloud Campus will consist of net-zero carbon emission data centers on land secured by Fidelis within the Mountaineer site and additional acreage within Mason County. Fully built out, the data center capacity could reach 1,000 MW, representing over \$5 billion in additional investment.



Photo, courtesy of the office of Governor Jim Justice, shows the plans for the Fidelis plant in Mason County.

Since the plant will not be fully operational until 2028, we hope to harvest from the chestnut trees for several more years. Members of the WV chapter have offered to meet with members of Fidelis and the Governor's office to express the vital importance of the chestnut trees at the site.

Preston County Journal Newspaper Article

The 16 April 2024 edition of the *Preston County Journal*, featured an article about a WV chapter member, **Susan Thompson**. The article, written by **Jack Walker**, WV Public Broadcasting, was titled, *Science project wants to bring back American chestnuts*. Thompson is a practicing attorney and graduate student in Appalachian Studies at Shepherd University. In the article, Walker writes, "Thompson began the local project last year, when she rallied together a team of community members to plant hybrid chestnut trees at a local farm. These trees were hybridized with Chinese chestnut trees, which made them more resistant to the blight. Now, Thompson's team aims to replant pure American chestnuts, with a little help from an ecological ally. When a symbiotic relationship with mycelium, which is the plant that a mushroom grows off of--its all these white tendrils. Sort of imagine how the internet threads going in every direction and connections. It's like that, the threads going in every direction. Mycelium works with chestnut trees to more efficiently capture resources". **Dr. Sylvia Shurbutt** is the Director of the Center of Appalachian Studies and Communities. Shurbutt stated, 'We really want to engage our students and the community in what I think is probably one of the most important and significant things and gifts that we can certainly give. That is to bring back the iconic tree, a tree that was the symbol of Appalachia'.

The lengthy article featured three color photos. Congratulations to Susan for a wonderful project with American chestnut and fungal mycorrhizae.

Mountain Maryland Native Plant Festival

Two members of the WV chapter, **Bernie Coyle and Mark Double** participated in the Mountain Maryland Native Plant Festival at New Germany State Park on Saturday, May 11.



Maryland Native Plant Society
Appreciation Conservation Education

The festival ran from 10:00 am until 3:00 pm, and there was a steady stream of visitors to the WV chapter booth. A TACF tablecloth, pins, stickers, membership brochures and patches were supplied by **Catherine Martini**, TACF's northern Regional Outreach Coordinator. The TACF pins were in big demand, and the children all enjoyed the stickers. Visitors were able to see chestnut seedlings growing in milk containers, and branches of American and Chinese chestnut with leaves were used as educational tools so folks learned how to differentiate the two species. The weather was overcast and thankfully, it did not start raining until near the end of the day.



Bernie Coyle, WV chapter president, talks with visitors at the WV-TACF booth.

About 100 people stopped by the booth, many from western Maryland, but there were visitors from West Virginia, Philadelphia, Baltimore, Michigan, and a couple from Bulgaria. The level of chestnut knowledge varied from knowing virtually nothing about the tree to one young woman who had studied leaf litter from American and hybrid chestnuts. The organizers of the festival were pleased with the attraction of visitors to the chestnut booth, and we have been invited back again next year.



Bernie Coyle spent most of the 5 hours at the festival engaging with those who stopped by the booth.

Chestnut Chat, 'How To Grow Chestnuts'

The April 19, 2024 Chestnut Chat featured TACF staff and gave tips on how to grow chestnut. **Jamie VanClief**, the southern Regional Science Coordinator, talked about stratification or cold storage over the winter. Stratification is a process of mimicking natural conditions to allow for proper seed dormancy. Dormancy is a defense mechanism allowing seeds to wait out unfavorable conditions for more favorable conditions. Jamie pointed out that storing seeds in a refrigerator allows the seeds to wait for favorable conditions before germinating, as seeds often face varying conditions in the wild. Years ago, winter was winter in that once cold winter set in, cold temperatures remained for months. Lately, our winters vary in temperatures with wide shifts ranging from near zero to temperatures in the 60s. Given these conditions, nuts can germinate in warm temperatures only to be frozen a week later. A refrigerator at home can offer a consistent temperature all winter. Dormancy is generally 40-60

days with temperatures ranging from 34-40 F. Ideally, the nuts should not freeze, but have consistently cold temperatures. Moisture also is critical. The storage mix should be moist but not wet. A wet mixture will promote mold, while a mixture that is too dry will be detrimental to the nuts as they will desiccate. Plastic ziplock bags are useful for storing nuts. Once the nuts and storage mixture are placed in the bags, a few holes should be poked in the bag to allow for nuts' respiration over the winter months. If the nuts are placed in storage in early October, they should begin to germinate in late February/early March.

Ciera Wilbur, the nursery manager at TACF's research farm in Meadowview, VA, talked about pot selection. D40 pots are narrow but long. Length is important to allow for proper root growth. TACF is now using CP413 (citrus) pots that have a 4" top but are 13.5" long. After choosing a pot, the second most important item is the potting mix. TACF uses Pro-Mix BK-55 that contains pine bark with a peat content of 25-35%. Do not choose a potting mix with a higher peat content as peat retains water that can cause the nuts to rot. The bark-based medium allows for better drainage. Make sure to label each pot to limit confusion later. Once a pot is filled with potting medium and labeled, create a 1"-deep hole. Plant the nut flat-side down and cover with medium. If the nut already has a radicle, be delicate and follow the lead of the new root, but try and plant sideways in the pot.



Germinating chestnuts can vary in the size and length of the emerging root. Potting nuts with a long radicle can be tricky in narrow pots.

The shoot and root come out of the same area of the nut, so planting a nut with the root pointing downward will lead to a shoot that struggles to find the surface. Next, water to saturation on the first watering, but do not rewater for a while. Once planted, shoots should be visible in 7-14 days.



Chestnut shoot emerging after 10 days.

New seedlings can be fertilized, but a slow-release fertilizer, like Osmocot®[®], is recommended. The timing of fertilization is based on pot size, but generally, fertilizer can be added once every two months.

Kenra Collins, the New England Regional Science Coordinator, talked about direct seeding of chestnuts. This method of seeding is very low input. She finds that generally 80-90% of nuts germinate. Direct seeding can be used in areas with less water. Full-leaf seedlings require frequent watering. If planting a lot of trees, direct seeding is easier. First, the soil should be loosened. A bulb auger is useful when creating a hole. A weed-free area must be provided as chestnuts do not compete well with grass and weeds. Adding some forest soil to the hole may provide beneficial mycorrhizae. Place the nut 1/2" deep, and add a tree shelter that is placed 2"-3" deep in the ground. This is necessary to prevent predation by wildlife. Landscape mats or herbicide can be used to control grass. Direct seeding is done about the time to plant peas (mid-March). Freezing temperatures are alright but not temperatures that will cause a hard freeze. Plant when it is warm enough for the seeds to germinate. Do not plant in areas that are too wet, as the seeds may rot before they germinate.

Vaisily Lakoba, Director of Research at Meadowview Research Farms, talked about selecting a site and planting from containerized seedlings. Choose seedlings that have good top growth, as seedlings that have small shoots also probably have a small root system. Chestnuts seem to be specialist plants. Choose a site

with acidic soil and well-drained.

The soil should be prepared in advance of planting the seedlings. The soil should be loose, not compact.

Next consider spacing. Generally, trees should be planted 10'-20' apart. The hole depth should be the same depth as the pot. The hole should be twice the width of the pot to allow for root expansion. When removing from a pot, remove all the potting medium to allow for immediate contact of the roots with the soil. Also, pinch off the nut when planting a seedling, as there is generally sufficient nutmeat remaining to attract predators that will dig up the seedling for a sweet treat.



Nut attached to seedling.

Burnsville Lake Planting

In conjunction with the U.S. Army Corps of Engineers and the WV Department of Natural Resources, a 100-tree germplasm conservation orchard (GCO) was established at the Burnsville Lake on May 16. This is the first 100-tree GCO in WV.

The site was along U.S. Route 19 in Napier, WV (between Flatwood and Weston). The site was prepared prior to the planting. Large Autumn olive trees were ripped out and all 100 holes were dug with a tractor auger. The Federal and State employees pre-built all the wire cages and cut the rebar. Eight volunteers planted, mulched and caged all 100 seedlings. The trees were planted in blocks of 10 trees each. Trees within blocks

were planted 10' apart while the blocks were separated by 20'. Seeds were collected last fall, stratified in cold over the winter and potted on 9 March 2024 at the WVU greenhouse in Morgantown. The seedlings were monitored daily from potting until mid-May, watering as needed. Seed sources for this planting were from mother trees in Mason, Mineral and Hardy Counties in WV and Garrett County, MD.



Planting at the Napier, WV site.



The holes were pre-dug with a tractor auger.

Why establish GCOs? The WV chapter has about 20 GCOs around the state, but most are in the 20-30-tree range (see Old Hemlock on Page 7). Each GCO was planted with American chestnut seedlings. While all

of these seedlings will become infected with the chestnut blight fungus and die, about half of the trees will sprout, and those sprouts will produce male flowers (catkins) several years from now. We can then take the flowers from these American chestnut sprouts and pollinate the advanced hybrid trees (Best X Best) from TACF's Meadowview Research Farm in VA. The goal is to produce trees that have the form of American chestnut, sufficient resistance to survive in the forest and adaptability to WV.



After planting, the trees were mulched with newspaper and hardwood mulch to help retain moisture.



The Burnsville Lake volunteers pose after planting was completed.

Old Hemlock Planting

The Old Hemlock Foundation maintains 230 acres of real estate situated on the Brandonville Pike in Preston County. The Foundation's purposes include charitable, scientific and educational initiatives.

In May 2022, thirty American chestnut seedlings were

planted on opposite sides of a wood's trail. In March 2023, all of the planting sites were assessed. We found that all of the trees on the upper-side were thriving, while all those on the lower-side died. In March 2023, the sites on the lower-side were direct seeded with chestnuts. In May 2024, almost all the trees on the upper-side were growing very well (5'-7' tall (see photo below).



Amy Metheny standing by an upper-trail tree.

Twelve of the 2023 direct-seeded nuts failed to produce a shoot. Those sites were replanted in May 2024 with seedlings, after cutting back the 7'-tall blackberries and multiflora rose around each site.



Old Hemlock administrator, LeJay Graffious, Robert Lemley and Amy Metheny worked on the Old Hemlock GCO.