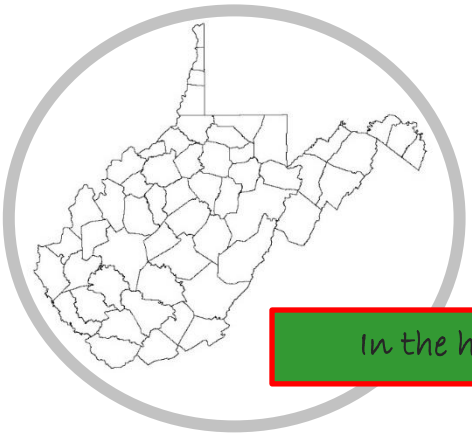

The West Virginia Chapter of The American Chestnut Foundation

NEWSLETTER

In the heart of American chestnut's natural range

April 2020

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Potomac Valley Audubon Society

Prior to the Covid-19 pandemic that kept West Virginians at home, WV-TACF president, Mark Double, spoke to a group of 50 people in Berkeley Springs at the Morgan County Board of Education office in February. Krista Hawley, Potomac Valley Audubon coordinator of adult education for three eastern panhandle counties (Berkeley, Jefferson and Morgan), indicated that the group that came to learn about American chestnut was the largest group she has had in 2-3 years. The audience was attentive, and a few new WV chapter members were added.

Mark Double spoke at the Morgan County Board of Education Office in late February.

American Chestnut Hunt in Hardy County

By Robert Sypolt and Darrell Dean

Our day to check out some American chestnut trees started off by meeting Jim Bowen, service forester for Hardy and eastern Grant County, in his Moorefield office. This trip was the result of asking Jim about getting chestnut seeds in order to start more Germplasm Conservation Orchards (GCO) in West Virginia. Jim had previously given us some chestnut seeds from a tree in Hardy County. Now, he had 50 chestnut seeds to give us and an invitation to see some large native, American chestnut trees. The first tree we saw is located south of Franklin in Pendleton County. To get to this tree, Darrell and I were given a ride up a steep road which passed through three gates, over deep culverts, and crossed a stream 3 or 4 times. After reaching an elevation of 3709 ft. (which was not the top), we arrived at Tree #1 which currently has a dbh of 18.8 inches. It is growing next to a gum tree and did produce burs but no chestnuts last growing season. There is a field nearby that could potentially be utilized as a GCO orchard site. Then, we traveled back north to Hardy County to meet Forester Darwin Bergdoll who works for Grant County Mulch, Inc. Darwin took us to view three additional trees. Tree #2 is growing at an elevation of 2456 ft. and has a dbh of 16.3 inches. Unfortunately, the top of the tree is dead. Its future is questionable. Then on to Tree #3 about a quarter of a mile away, which is growing at an elevation of 2593 ft., and has a dbh of 18.4 inches. This tree is suffering from chestnut blight. It has a large sunken canker of 17 inches by about 40 inches (nearly 3 quarters of its circumference). It is producing burs. This tree, as well as the other large trees we saw, is in the 70-foot height range. Tree #4 is nearby with an approximately 6-inch dbh. It has some beginning signs of blight. Tree #4, located along a trail, produced a few burs last season, and is being partially shaded by a nearby gum tree. Then it was on to Tree #5 about a one-half mile away. This tree was the grand prize of the day. It is growing at an elevation of 2674 ft. and has a dbh of nearly 18 inches (Jim left his measuring tape in his truck). The tree has perfect form and a good crown. The ground underneath it is covered with a thick layer of burs. This was the first time Jim had seen this tree. There was some harvesting of trees in this area three years ago when Tree #5 was discovered by loggers. This area should be considered for future chestnut tree

hunting to see if there is a tree nearby to pollinate it. Some of the large burs may have contained nuts. We did not have enough time to visit Tree #6 which, with Jim's assistance, produced over 200 chestnuts last fall. We were very fortunate to receive 50 of the chestnut seeds from Tree #6. Jim has been monitoring some chestnut trees for several years. His relationship with Darwin, a forester, really helps in locating large surviving American chestnut trees. However, collecting nuts from the chestnut trees in these remote woods is a real challenge due to the nuts being a ready food source for resident squirrels and deer.

Forester Jim Bowen provides a prospective for the size of the Pendleton County tree.

Tree 2 with a DBH of 16.3 inches.

Robert Sypolt, Jim Bowen and Darrell Dean at tree #3 (DBH of 18.3 inches).

Tree 5 in Hardy County with a DBH of 18+ inches.

Chestnut Potting

A group of 13 individuals gathered at the West Virginia University Plant and Soil Sciences greenhouse in mid-March and potted nearly 400 chestnut seeds. Folks came from around the state to assist: Donny Dodd (Raleigh County); Jimmy and Linda Jenkins (Braxton County); Sam Muncy and Sharon Cottrill (Barbour County); Robert Sypolt (Preston County); Carla Kessling (Harrison County); and Scott Burnworth, Rob Eckenrode, Amy Metheny, Mark and Mindy Double (Monongalia County). Individuals were assigned to one of four group and members labeled pots, filled pots with potting mixture and added chestnuts. We potted backcross chestnuts sent from Meadowview along with American chestnuts from Maryland and Hardy County, WV. With so many hands, the process took only one hour. Thanks to all who assisted.

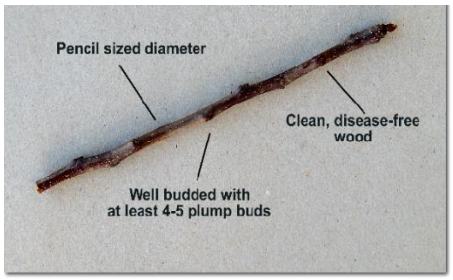
Assisting with chestnut potting were (L to R): Donny Dodd, March Double, Linda and Jimmy Jenkins, Carla Kessling, Elaine Kapphan, Sam Muncy, Sharon Cottrill, Robert Sypolt, Bill Kapphan, Rob Eckenrode and Amy Metheny.

Scion wood Collection

While collecting nuts from wild tree is the easiest way to obtain native American chestnut material, finding mature, nut-bearing trees in the forest can be problematic. Even if the location of nut-bearing trees is known, beating squirrels, blue jays, chipmunks, turkeys and other wildlife

can be tricky. Scion wood is an alternative to collecting nuts.

As reported in the February 2020 WV-TACF newsletter, the State University of New York received a $3.2 M grant from the Templeton World Charity Fund to work on transgenic chestnuts. A portion of that grant, $460,000, was awarded to The American Chestnut Foundation as part of the Landscape Genomic Project, which hopes to conserve American chestnut germplasm from across American chestnut's natural range. Our chapter contributed to obtaining scion wood in West Virginia. Tom Saielli, our TACF mid-Atlantic coordinator hoped to find a dozen sources of native American chestnut in his region (WV, KY, MD and VA). In WV, scion wood was collected by Dr. Brian Perkins, Jeff Kochenderfer, Dr. Melissa Thomas-VanGundy, Amy Metheny and Mark Double. Tom also collected scion wood from WV trees, and his goal of 12 sources is close to 50 for American chestnut in the four-state region. Tom will graft the scion wood onto rootstock and the grafted seedlings can then be placed into germplasm conservation orchards in WV.



Scionwood is about the diameter of a pencil with good buds. Photo courtesy of: https://www.thelostseed.com.au/

WV-TACF Board of Director Change

Long-time WV-TACF board of director's member, Ed Grafton, is stepping down from the board due to health concerns. Dr. Joe Golden from Beckley (Raleigh County) has agreed to serve Ed's unexpired term through 2022. We welcome Joe and wish Ed good health.

Dr. Joe Golden

Dr. Golden is a retired family practitioner and gerontologist who keeps involved in medicine by volunteering at Beckley Health Right (a free clinic) a few days per month. He enjoys many things including the outdoors and chestnuts!

Public Comment on the Transgenic Tree

Since 1983, TACF's bold mission has been to rescue the American chestnut tree from the brink of extinction and restore it to the eastern forests of North America. Using the 3BUR approach (Breeding, Biotechnology and Biocontrol—United for Restoration) ensures multiple pathways to this goal. We are now at a critical milestone for the biotechnology approach. A gene from wheat, known as oxalate oxidase (OxO), was engineered into the genome of the American chestnut at The State University of New York, College of Environmental Sciences and Forestry (SUNY-ESF). This gene allows the transgenic tree to tolerate blight infections. SUNY-ESF has named trees with OxO, "Darling," in honor of longtime supporter and NY-TACF Chapter member Herb Darling and his family. Rigorously tested for safety and efficacy, the 'Darling 58' tree shows tremendous promise to tolerate blight infection. Because genetically engineered plants must be approved for use by federal agencies, SUNY-ESF has filed a "Petition for Determination of Nonregulated Status for Blight-Tolerant 'Darling 58' American Chestnut (*Castanea dentata*)" with the United States Department of Agriculture's office of Animal and Plant Health Inspection Service (USDA-APHIS). This is one part of the U.S. federal government's coordinated framework that also includes the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA). Approval of the petition is a critical step toward planting this blight-tolerant transgenic tree in unrestricted areas as part of restoration programs. Public comments play an important role in the review process of USDA-APHIS. Once the public comment period is open, you will be invited to participate in this groundbreaking opportunity to save the American chestnut.

Why are public comments important? Public comments are important because they demonstrate support or concern for a particular set of regulations. For this petition, positive public comments will bolster the efforts of thousands of volunteers, researchers and other professionals working for nearly four decades to save the American chestnut. Ultimately, the risk assessment and decision made by USDA-APHIS will be driven by legal, scientific,

economic, and technical information. This input enables the USDA to make a fully informed decision on the petition incorporating both scientific data and public support or concerns.

Who can comment? Anyone can submit a comment. We are enlisting support from our network of stakeholders including TACF membership, volunteers, and growers. Opinions from scientists, academic researchers, nongovernmental organizations and governmental agencies also are expected. Our goal is to demonstrate wide, positive support for the 'Darling 58' and its offspring to rescue the American chestnut. The case of the 'Darling 58' American chestnut is unique, as it will be the first time a petition has been evaluated for nonprofit use in environmental restoration, so it is important that the USDA hears from many enthusiastic members of the public who want to plant these trees and help restore the forests.

Is it helpful to hear from scientists? Yes, the USDA will incorporate scientific data throughout the process, and will go through a rigorous scientific review. Professional scientists can think of public comment as a type of peer review for federal regulations. And in this process, commenters who demonstrate an expert understanding of the issue and who can support positions with substantive data are especially valuable to the agency. Public comment periods are designed to cast a wider net for collecting scientific information by encouraging participation from scientists across disciplines and sectors, as well as from knowledgeable chestnut enthusiasts without formal scientific training.

If I am a scientist, what should my comment focus on? In order to be the most effective and useful to the agency, comments should be original and focus on the scientific arguments for accepting the petition, not a copied and pasted note or form letter. Your comment can report on scientific evidence that supports the theory behind approving nonregulated status for the 'Darling 58' transgenic tree. Providing additional supporting evidence helps create a stronger scientific foundation for action. Once the public comment period begins, the entire petition will be available on SUNY-ESF's website as well as the Federal Register.

If I am not a scientist, what should my comment focus on? It will be important to tell your own story, your relationship to the American chestnut, and why you would like to see the 'Darling 58' tree deregulated for restoration purposes.

When the open comment period is announced, you will be notified. You will be asked to submit your name, organization (if appropriate) and your comments (not to exceed 3,500 words).

TACF's National Science and Technology Committee

A spring meeting of the Science and Technology Committee was to be held in Abingdon, VA the last weekend of March, but due to the coronavirus outbreak, a webinar was held instead. The 2.25 hour Zoom meeting brought together 72TACF committee members and other interested individuals.

Jim Searing, chair of the *Public Comment Period Task Force* talked about USDA's upcoming comment period regarding the release of the transgenic tree (preceding article). Searing stated that comments will come from many people—those who are informed, non-informed, emotional and irrational. There may be 1,000 comments or 100,000 comments. TACF has the support of its chapters, volunteers, stakeholders and they will be monitoring the comments so TACF can respond appropriately. Searing had six key assertions relative to the transgenic tree, 'Darling 58':

1. 'Darling 58' is not a weedy species.
2. 'Darling 58' is no riskier than traditionally bred backcross/hybrid chestnuts and does not introduce a trait wholly foreign to the species.
3. Introduction of 'Darling 58' will not have unpredictable or harmful impacts on forests, biodiversity or make forests less natural
4. Reintroduction will not cause the chestnut blight fungus to evolve into a more virulent pathogen. The introduction of the OXO gene has essentially no effects on other pests, especially compared to introducing blight tolerance via traditional breeding.
5. 'Darling 58' will not have adverse environmental

effects on endangered species or beneficial non-target species.

6. 'Darling 58' is not a plant pest.

TACF cannot assume the USDA will approve the tree. The technology provided by the years of work conducted by TACF may possibly save other tree species that are under siege by introduced pathogens and pests. According to **Dr. Jason Delborne,** North Carolina State University, 455 known insect species have been introduced into the U.S. since the 1600s. Of those introductions, there have been 62 high-impact insect pests and 16 high-impact pathogen species. There is generally a lack of resistance to novel insect pests and pathogens. We only have to look at the current novel coronavirus to see the impact of an introduced pathogen. Biotechnology provides a means to introduce or modify genes in trees to increase resistance to pests and pathogens. Several tree species have been altered with biotechnology for forest health purposes, but none have been deregulated and released into the wild. According to Delborne, the framework for deciding whether or not to use biotechnology should evaluate the trade-off among positive, negative and neutral impacts. We need to consider ecological risks to forest functions as well as ecosystem services lost or maintained with or without forest health. We need respectful, deliberative, transparent and inclusive engagement. We need to increase our understanding of forest health threats and methods to engage stakeholders, communities and the public.

Dr. Jared Westbrook, TACF's Director of Science, stated that backcross breeding is the premise for why TACF started. It was assumed in the early 1980s that 2-3 genes were responsible for resistance to the chestnut blight fungus. American chestnut was crossed with Chinese chestnut and the resulting trees were selected for American form and tolerance to inoculations with a virulent strain of the chestnut blight fungus. Trees with good form and good resistance were selected and backcross breeding continued through multiple backcross generations resulting in trees that were reportedly 96% American and 4% Chinese. Trees from the final backcross were intercrossed to enhance blight resistance. Resistance still segregates among the progeny, and currently only 1 out of 150 BC_3F_3 trees are selected. Out of approximately 36,000 trees planted at Meadowview since 2002, only 500 trees remain; the others have been removed. Culling in a second orchard at Meadowview will be finished in 2021.

For trees 2-3 years-old, blight resistance was measured by artificial inoculations with a weakly pathogenic strain of the chestnut blight fungus and canker severity was assessed. Cankers were rated 6 months after inoculation and 80% or more of the trees with significant canker expansion were removed.

Small stem assays accelerate progeny testing for blight resistance. Small first-year seedlings are inoculated with a highly virulent strain of the chestnut blight fungus and the days-to-wilt are measured.

Small stem assays inoculate small stems with the chestnut blight fungus and day-to-wilt are assessed. Photo courtesy of esf.edu

In addition to testing actual trees, genomic selection increases the speed and accuracy of the selections made in seed orchards. **Jason Holliday** at Virginia Tech has been conducting much of the genomic work. TACF continues to make selections base on DNA regions associated with blight resistance. From the molecular work being conducted, it appears that 9 of the 12 chromosomes in American chestnut are associated with blight resistance, making resistance much more complicated than originally surmised back in 1983.

Westbrook outlined the "Path Forward" for TACF:

- Increase resistance by increasing Chinese ancestry, as much as necessary and as little as possible.
- Cross inferior chestnut lines with the transgenic tree (when approved).
- Moderate our expectations.

If the SUNY-ESF transgenic tree is deregulated by the USDA,

outcrossing TACF's backcross trees with transgenic trees will increase diversity and decrease the deleterious genes. We need both backcross and biotech trees to be successful in restoring chestnut back into our eastern forests. We may end up with trees with more Chinese chestnut and not as tall as the original American chestnuts. These trees will look like American chestnut and if we can outcross to the transgenic trees, resistance will increase.

Sara Fitzsimmons, TACF's Director of Restoration, stated that we need to begin phenotyping orchards for blight resistance. We need to look at cankers and assess if main stems are alive, how much the chestnut blight fungus is sporulating, etc. This will feed into the genotyping data for long-term success. Canopy health also needs to be assessed this summer in orchards.

A grafting workshop is scheduled for May 5-9, 2020 at the Meadowview Farm, but this is tentative given the coronavirus situation. **Dr. Hill Craddock** (University of Tennessee, Chattanooga) will show grafting techniques to participants.

The USDA multi-state project, **NE-1833** is scheduled for Aug 28-29, 2020 at the Frontier Museum in Staunton, VA. A tour of the Lesesne State Forest is scheduled for the afternoon of Aug 29.

Spring WV-TACF Teleconference

The spring meeting was originally scheduled to take place at Glenville State College in Gilmer County. The Covid-19 pandemic forced a teleconference instead. A summary of the meeting follows.

Rick Sypolt, membership chair, presented a membership report. Our current membership is 145, up about 20 members from last year. With increased membership and additional opportunities for members, Rick is optimistic about the chapter.

Dr. Joe Golden was welcomed as a new member of the chapter board of directors (see article on Page 3).

Items requiring a vote:

- *Resolution for Consideration by the WV Chapter for the State University of New York's (SUNY-ESF) Petition for Deregulation*. This action item states that the WV chapter supports the deregulation of SUNY-ESF's genetically modified tree. Motion was made by Robert Sypolt and seconded by Melissa Thomas-VanGundy. The motion passed by acclimation.
- Request by Sam Muncy to spend $400 to purchase 50-60 pounds of chestnuts to roast at the Fort New Salem festival in Harrison County. Sam Muncy and Sharon Cottrill roast chestnuts over an open fire and fill WV-TACF flyers with the roasted nuts. Motion was made by Rick Sypolt and seconded by Robert Sypolt. The motion passed by acclimation.
- Request by Sam Muncy for $300 to purchase patches for volunteers who help at the Summit Bechtel Reserve chestnut planting. Sam makes chestnut items that he sells at the Rowlesburg Chestnut Festival; Sam donates all the approximate $300 proceeds back to TACF. While the motion requests $300, most of the money is restored by Sam. Motion was made by Rick Sypolt and seconded by Jeff Kochenderfer. The motion passed by acclimation.
- Request by Robert Sypolt for $2000 for the Rowlesburg Chestnut Festival. This has been a long-standing gift by the WV chapter to support this festival that draws visitors from around the mid-Atlantic region and beyond. Motion was made by Joe Golden and seconded by Melissa Thomas-VanGundy. The motion passed by acclimation.
- Request by Robert Sypolt to cover the $150 transportation cost for 7th and 8th graders from South Preston Middle School to visit the Waddell Chestnut Orchard at Preston High School in Kingwood this fall. The students who participate in this field trip are educated on the plight of the American chestnut and our efforts to restore the species to our eastern North American forests. Motion was made by Sam Muncy and seconded by Jeff Kochenderfer. The motion passed by acclimation.

Sam Muncy will make a request for volunteers to assist with the chestnut booth at the Boy Scout Jamboree in July 2021 at the Summit Bechtel Reserve (SBR). The chestnut booth at the 2017 Jamboree was well received and we were invited back for 2021. The Jamboree lasts two weeks and Sam want volunteers to work in shifts. Sam also stated that Steve Antoline will partner with TACF to use a portion of his conservation building being constructed at the SBR to highlight the cause of the American chestnut. Sam and Tom Saielli will meet with Steve this spring to discuss plans for the conservation building and the creation of an outdoor laboratory.

Discussion of the Bolgiano property in Randolph County continued from the 2019 fall meeting. The approximate 40 acres of remote property was donated to TACF by Chris Boligano, a freelance writer from western Virginia. The property was surveyed in 2019 by WV-TACF board member, Jimmy Jenkins. The value of the timber was estimated to be $40,000. Heather Nelson, former Controller for the national office of TACF, attempted to sell the property a few years ago, but she was unable to locate a buyer. Since the price of red oak is greatly depressed, it was felt this is not a good time to sell the property. There was discussion about planting backcross American seedlings on the property as this might involve chapter members who live in the area near Valley Head, WV. Since there is evidence of 4-wheelers on the property, and with no one to oversee the property, the consensus was to not plant trees this year. Rick Sypolt felt the most pressing need is to paint the boundaries with purple paint. Rick Sypolt, Sam Muncy and Melissa Thomas-VanGundy agreed to meet in the fall of 2020 to paint the boundaries. Sam Muncy made a motion table the sale of the property. The motion was seconded by Rick Sypolt. The motion passed by acclimation.

There was discussion relative to the WV chapter hiring a summer intern for 2020. Logan Hosaflook was recommended by Robert and Rick Sypolt and Brian Perkins. Logan will be a senior forestry major at Glenville State College, and he is working for his father who is a consulting forester. Logan could promise the WV chapter only 3-4 days per month. With the current coronavirus situation, the national office has strict guidelines about social distancing and travel. Tom Saielli and Melissa Thomas-VanGundy agreed to look at maps where samples of American chestnut are underrepresented. These sites might be good for scouting. Tom Saielli said most interns are paid $12/hr plus $0.50/mile for travel.

Putting a job description and duties together was impossible on a teleconference, so Mark Double suggested that a few board members work up a tentative schedule and the entire board would vote once a program is finalized. If the coronavirus pandemic continues into the summer, the internship will not be offered.

Planting Chestnuts Outdoors

Some members have seedlings in pots. When you are ready to plant your seedling outside, remember that it will be much farther along in its development than if it had sprouted naturally and should be planted outside after risk of frost. Also remember that the seedling is accustomed to the protected environment inside and needs to slowly acclimate to conditions outside. This process is called “hardening-off ” and should take at least two weeks. Transplanting can be stressful on a plant, so properly hardening-off your seedling will improve the odds for success. A final tip – remove the remnant nut from the base of the seedling. At this point the seedling has used all the nutrients it needs from the nut, but the nut can still be attractive to rodents and other wildlife.

WV-TACF Officers

(Elected in October 2019)

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Newsletter editor: Mark Double
mdouble1@hotmail.com

Find us on Facebook: @WVTACF

National Office: 50 N. Merrimon Ave.
Suite 115, Asheville, NC 28804 828-281-0047
chestnut@acf.org