



Dedicated to restoring the American

The Chestnut Tree

VOLUME 26, ISSUE 1

MARCH 2021

PA/NJ Chapter of TACF — Spring Growers Virtual Meeting

Saturday, April 10th / 9:30 A.M. to 11:45 A.M.

REGISTRATION IS REQUIRED! Visit our Website: <https://patacf.org/2021-panj-sgm/>
Email or call Jean : mail@patacf.org / 814-8637192

What are the similarities between the restoration of Eastern Hemlock and the American chestnut?

The state tree of Pennsylvania is threatened by an invasive insect species, the hemlock woolly adelgid. The efforts to save it run parallel to those of our efforts to restore the American chestnut. Understanding how the many threats to our forest is critical to our restoration mission. The American chestnut does not stand alone.



Presentation Title:

"Conservation and Restoration of Hemlock Species in the Southern Appalachian Mountains Threatened by the Invasive Hemlock Woolly Adelgid."

Robert Jetton: Associate Professor of Forest Health and Conservation, Dept. of Forestry and Environmental Resources at N.C. State University.



Dr. Jetton studies the ecology and management of invasive species in forest ecosystems and the conservation genetics of threatened and endangered tree species. His presentation will introduce the audience to the invasive insect pest hemlock woolly adelgid, discuss its impact on

native hemlock ecosystems; and review ongoing research efforts to conserve hemlock genetic resources, breed for adelgid resistance, and restore hemlocks to their native environments.

Meeting Program

Login starting at 9:25 test your connection.

9:30 —	Chapter Update Jim Searing President
9:45 — 10:15 AM	Chapter Science and Breeding Priorities for 2021 with Sara Fitzsimmons Presentation and Q & A
10:15 — 11:15 AM	Restoration of Eastern Hemlock with Robert Jetton Presentation and Q & A
11:15 —	Break Out Sessions: Debrief & Catchup with Speakers & Attendees

What is a Break-out Session?

As we plan for our 3rd virtual Member meeting the thing that we miss the most is the socializing. We can't ship donuts and coffee to you, yet we can provide this opportunity to meet in small groups and connect in a more personal way with other members. Each small group of 6 to 8 people will be guided by a staff or board member. It will be informal, but we will provide some questions to get the conversation going.



This is an experiment so we don't exactly know how it will go but we hope you will stick around and hang out with your fellow members.

Hope to see you there!



President's Corner

Hello Fellow Chestnutters,

As I start my two year term as PA/NJ Chapter President, I must admit I am still getting my bearings. So instead of reciting a litany of 'me', I'd rather focus on you, our dedicated and inspiring members.

Dedicated, because who else would plant, nurture and sustain so many trees? Who else would remain steadfast in the search for a disease resistant tree, and continues to delve into chestnut lore, ecology, recipes, characteristics, virtues? Or, tune into chestnut chats, walk in the woods in all weather conditions, prune remote trees in the dead of winter? Or crush their brake pedals upon sighting creamy catkins on a country road on a bright summer day? And who else would wait, search, plant, write and hope for the day when we can all say "Eureka! We have a disease resistant tree that will change everything!"

The fact is, I'm here because you are here. I'm inspired by your persistence, your stories, your curiosity, and by all that has gone before I joined TACF. By the members and volunteers who are tending trees, educating others, serving as advocates, and contributing to the cause. I'm inspired by our most recent president, Mary Ayres, who brought in new leaders and positioned the chapter for future growth. By the incredible scientific talent at TACF and American universities who are going to get us 'there.' By the support of Penn State and by our many alliance partners. And I'm inspired any time we are together, as well as anytime I'm in the forest or near a chestnut tree.

Over the next two years, we will find and catalog the wild American chestnuts needed to preserve and diversify new generations of disease resistant chestnuts; start to prepare for larger-scale restoration, and embrace new ways to connect with each other. I know we are up to the task.

Our journey begins. Together.

Jim Searing
President
PA/NJ Chapter of TACF

Introducing our Board President for the 2021-2022 Term:

Jim is a retired Ernst & Young partner. He traveled the world serving clients as a management consultant and CPA. Jim's interest in chestnuts was spurred at Temple University's landscape architecture program after he retired. He was intrigued by the tree's former dominance and its almost complete absence. That led to joining TACF, planting hybrids in preserves, attending TACF events and joining the chapter's board. Jim is also a member of the TACF national board where he focuses on communications and leading TACF's campaign to gain USDA approval to release SUNY-ESF's blight tolerant tree. Jim served as chapter VP for 2019-2020.

Board of Directors

President

Jim Searing
New Hope, PA

Vice President

Rick Hartlieb
Robesonia, PA

Past President

Mary Ayres
Wynnewood, PA

Treasurer

Peter Reinhart
Allentown, PA

Board Members

Mike Aucott
Edward Buchak
Tim Eck
Ronald Farr
Lake Graboski
Steve Johnstonbaugh
Daniel O'Keefe
Philip Peterson
James Walizer
John Wenderoth

Non-Voting Members

PA-DCNR

Representative

Annetta Ayers

US-ACE Representative

Jeff Krause

Staff

Director of Restoration
Sara Fern Fitzsimmons
sff3@psu.edu
(814) 404-6013

Orchard Manager
Stephen Hoy
sdh177@psu.edu
(814) 424-0022

Chapter Administrator
Jean Najjar
jmn173@psu.edu
(814)863-7192

CHESTNUT GROVE AT WEST PITTSBURGH, PA

By Don Harper

Chestnut trees were virtually wiped out throughout the United States by the Chestnut blight fungus, after it was accidentally imported from Asia. After I learned of Penn State's efforts to bring back the chestnut tree, both by traditional planting and by genetic modification. I decided to try to assist. I volunteered to plant chestnut seeds in an open area on the property of the Beaver-Lawrence Railway Historical Society (formerly belonging to the Pittsburgh and Lake Erie Railroad) in West Pittsburgh. The area, called the "north woods" because of the numerous locust trees, is at the north end of the property, bordered by a creek. I am a member of the Society, and I had recently finished clearing the north woods of multiflora rose, Japanese honeysuckle, and all the other overgrown vegetation. Once cleared, the area has been consistently mowed.

In May 2013 I obtained 12 chestnut seeds from Gary Micsky at the Mercer County Extension Office, and planted them in that part of the north woods that was most open to sunlight. The seeds were planted on 15 foot centers, in alternating rows. I dug holes with a post hole digger, drove in stakes, tied the stakes to tubes with cable ties, mixed vermiculite and dirt from the holes together, and put some of this mixture in the tubes, dropped a chestnut seed in each tube, mixed more vermiculite and dirt to cover the seeds, then dug shovels full of sand from along the creek to fill in the holes and provide more support for the tubes. The stream was also a handy place to obtain water for the trees. As the seeds sprouted, the plastic tubes were surrounded by wire cages. In October I measured the height of each sapling and transmitted the data to Gary.

Three of the seeds did not germinate, so on May 15, 2014, I obtained 6 more seeds from Gary Micsky and planted them the next day. As the saplings grew, larger



The chestnut grove in June 2013, after the seeds had been planted and cages erected around sprouts. Note that 3 tubes do not have cages - no sprouts.



6/18/13 — The first chestnut seedling to emerge from its tube.

cages were constructed in the autumn to protect the saplings from deer. By August 2015, some of the trees had outgrown their cages, so the cages were removed, and stakes were driven into the ground to protect the trees from being mowed. In one case this did not help and the young tree was destroyed by a mower. In November the trees were once again enclosed in deer-proof cages. This procedure of uncaging and caging occurred each year.

The trees grew quite rapidly over the next several years. They were pruned in Apr 2020 to remove the lower branches that were impeding mowing the north woods. In Nov 2020, the trees were once again enclosed in anti-deer cages. In 2019, I found some of the lower branches were being broken by deer, I placed dead tree limbs on the tops of the cages, projecting outward to try to inhibit the deer from damaging the lowest branches. As of November, 2020, there are 11 surviving chestnut trees in the grove. Most have exhibited excellent growth.



On 6 Nov 2020, the chestnut trees were enclosed in cages and dead branches were placed on top of the cages to deter deer browsing.

Bringing Back Pollination Activities in the PA/NJ Chapter

By Sara Fitzsimmons, Director of Restoration at TACF

For 2021, our priority for outdoor activities is focused on making controlled pollinations. When the PA/NJ Chapter first started in 1994, controlled pollinations were a primary activity for volunteers and generated most of the chestnuts which were planted by partners and members. From 1994 through 2009, when the traditional breeding efforts for the Chapter were at their height, the Chapter created over 30,000 control pollinated nuts. In 2004, the Chapter harvested almost 6,000 nuts along from control pollination.



A close-up of labeled bags used for controlled pollinations on American chestnuts

Our Chapter's original intent was to harvest from these control pollinations, select the best trees to be placed in seed orchards, and allow those trees to then be open pollinated. Open pollination is much easier than con-

trolled pollination. Nature is more efficient than humans in creating chestnuts. In a given year, the Chapter harvests 10 times the number of open-pollinated nuts than by control pollination. Overall, the PA/NJ Chapter has harvested and distributed a total of 343,537 chestnuts, 300,000 of which have been created via open-pollination (Figure 1).

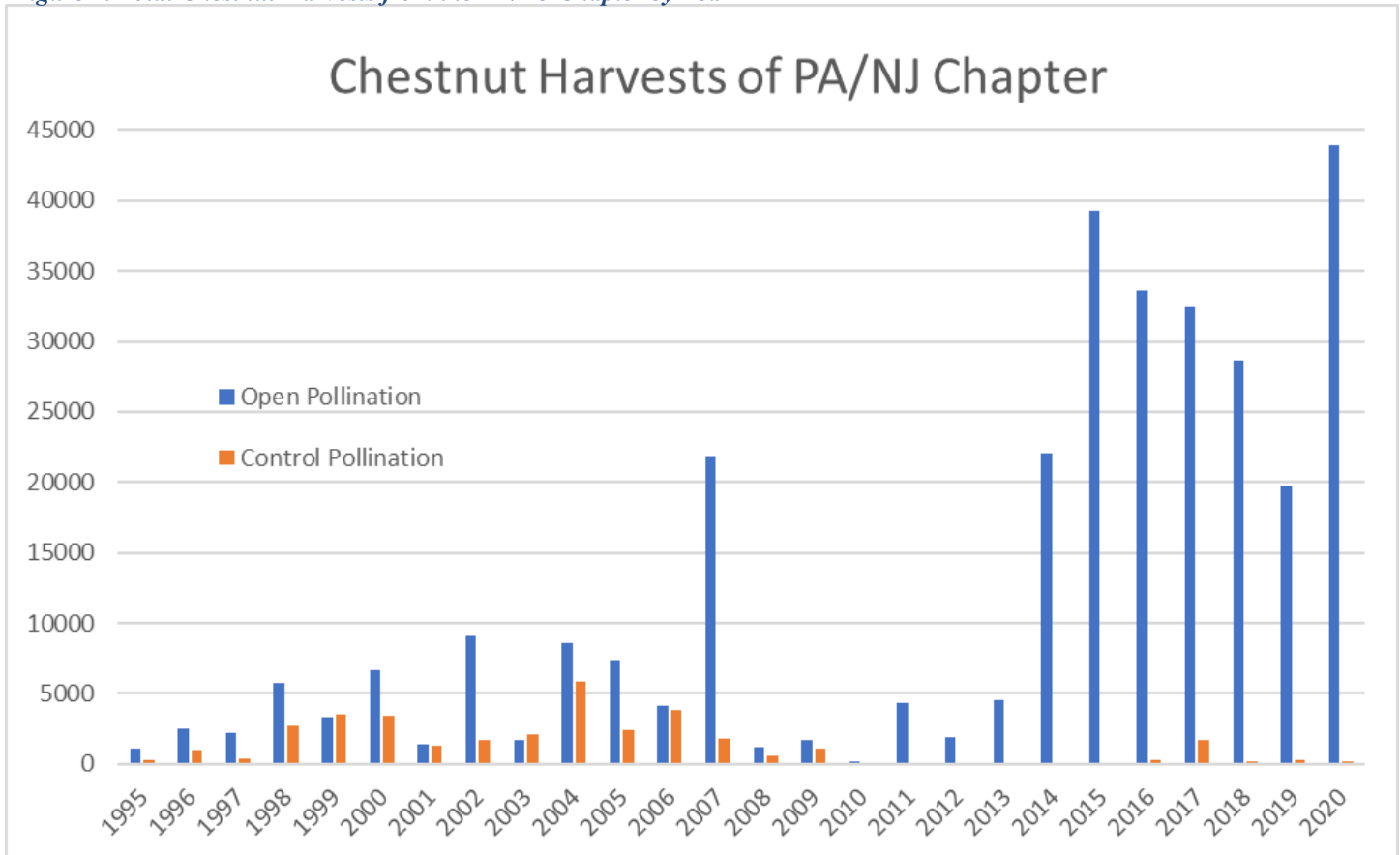
Why do controlled pollinations?

Even though they are less efficient than open pollination, there are reasons to continue to do control pollinations.

1. *F1 Crosses for Research*: Each year, TACF needs first generation (F1) hybrids made between Chinese and American chestnuts. F1 crosses can be finicky: You are bringing together two different species and is a primary reason TACF has a great need for them. These F1 crosses are vital for providing baseline information about performance and phenotype for virtually every research study undertaken by the Foundation.

Continued on page 5

Figure 1. Total Chestnut Harvests from the PA/NJ Chapter by Year



TIMELINE and PROCESS for DEREGULATION of DARLING 58

A note from Sara Fitzsimmons

Thanks to those of you in the chapter who participated in the USDA's public comment period regarding non-regulated status of Darling 58 transgenic American chestnut, submitted by SUNY's College of Environmental Science and Forestry (ESF), in the fall of 2020. The excitement generated by this process was enormous, and more than 4600 comments were posted on the Federal Register with 62% of the commenters encouraging USDA to deregulate the Darling 58. TACF staff are regularly asked if the USDA has made a decision regarding the petition and what the timeline might be for availability of transgenic trees for the public. The USDA review process is quite extensive, and the regulators review each individual comment and weigh other scientific input to determine its final decision. Our colleagues at USDA have not estimated when this decision will occur, but if past petitions are any indication, we do not expect to hear a decision for at least another 12-18 months, perhaps longer.

Once a decision is made by the USDA, non-regulated status must also be secured by the EPA and FDA for full release of transgenic American chestnuts. TACF and ESF are optimistic about the changes for gaining non-regulated status, as past meetings with all three agency regulators in DC have been encouraging.

In the meantime, there is still plenty of fun to be had and vital activities to be accomplished! We encourage everyone to stay tuned to advances in research, participate in upcoming pollination workshops, continue to plant wild-type and/or advance backcross trees, and locate American chestnuts in the wild as part of our ongoing and future restoration efforts.

Continued from page 4 **2. Best x Best Crosses of Backcross**

Trees: While the backcross breeding program has not yielded the level of resistance hypothesized via open-pollination, there is ample room for improvement via controlled-pollination. We estimate up to a 25% gain in blight-resistance by crossing the best backcross trees among themselves, through a process of recurrent selection. This process can be done via open-pollination but will be hastened through controlled pollination.

- 3. Diversification of Transgenic Chestnuts:** Another reason is to prepare for the distribution and diversification of transgenic American chestnuts. When Darling 58 reaches non-regulated status, seed and seedlings will be an extreme premium and in low supply. Pollen, however, will be easier to obtain and cheaper to ship to cooperators. For those TACF members interested in having transgenic trees, having flowering advance backcross trees and/or wild-type trees offer an opportunity to make your own trees for planting on your property.

Participate in Control Pollination Workshops this Summer

Through the summer of 2021, the Chapter will hold a series of pollination workshops in one or more regions of PA and NJ, depending on COVID guidelines and restrictions. If you have a flowering chestnut, and would like to participate in pollinations this summer, let us know! We can send you supplies for reimbursement of shipping costs, or you can plan to join us at one or more workshops at dates and times to be determined. Announcements of these locations and times will be made in the Chapter e-Newsletter and the Chapter

email listserv.

Learn More about the Controlled Pollination Process?

Learn how to determine timing and perform controlled pollinations on chestnut by watching the Chestnut Chat #9, July 10, 2020 edition at:

https://www.youtube.com/watch?v=V_6hoM9GaKg.

Additional information and materials may be found here: <https://ecosystems.psu.edu/research/chestnut/breeding/pollination>



As part of controlled pollination efforts, long-time PA/NJ Chapter Board Member and volunteer John Wenderoth bags American chestnut flowers at the Tyler Arboretum GCO

Improving Chestnut Quality with Post Harvest Processing

By Stephen Hoy, PSU Orchard Manager

The chestnut tree is multifaceted. TACF's work focuses on the native American chestnut- and the effort to restore it to our landscape. There is also the commercial chestnut production realm that seeks to produce high quality, tasty nuts that consumers want to buy. While these two areas do not often intersect, our work with a Specialty Crop Block Grant (SCBG) demonstrated that restoration can benefit from some processes used on the commercial side. Anyone who grows chestnut knows that weevils are formidable foes. They do not discriminate between American or Chinese nuts, nor those grown for commercial or research purposes. For commercial growers, a weevil larva will drive away customers. For research, the weevils reduce chestnut germination if they consume the embryo and can also reduce seedling quality.

Growers on the commercial and research sides share a common interest in sorting and treating nuts to ensure nut quality. Just like many orchards around the states, the quality of chestnuts from PA/NJ Chapter orchards varies. Some orchards have large weevil infestations as well as other insect issues. We can reduce their impact by applying heat treatment immediately after harvesting. This has an additional benefit: By killing off the larvae before they emerge and go underground, we lower the incidence of weevils in future years. To learn more, the partners on the SCGB project set off to learn how larger-scale operations prevent weevils by traveling to the Route 9 Cooperative in neighboring Ohio.

Route 9 Cooperative was formed in 2010 by the owners of five chestnut orchards in eastern Ohio, located on land once occupied by native American chestnut

trees but now planted in Chinese. The cooperative provides services to its members: harvesting and processing, a packing facility, and a unified marketing effort. The cooperative also works together to combat the chestnut weevil—in addition to pesticide applications, the cooperative heat treats the nuts to kill the weevil.

Dr. Greg Miller of Route 9 Cooperative, who holds a PhD in engineering, has experimented with designs for creating a hot water bath. Dr. Miller met with the project partners and shared his experiences with his early designs as well as the hot water bath they currently use and provided the starting point for the partners to develop a mobile hot water bath. Route 9's water bath is massive: it can accommodate 1,000 pounds of chest-

nuts and uses two industrial hot water heaters that are powered by natural gas. To make it mobile, the partners had to put it on wheels and find a way to efficiently heat the water at a small scale.

Steve Hoy and intern Sean Freidhof set about designing a water bath that would meet the needs of the chapter, as well

as small-scale growers, and be something that can be re-created with minimal outside inputs and technical skills. Technology has provided some great solutions, in particular hybrid tank/tankless water heaters, inexpensive temperature controllers, and efficient transfer pumps. Hours spent searching the internet for heating calculations and videos on how to properly wire the circuits, some improvised electrician/carpenter/plumber skills, and quite a few runs to the hardware store resulted in success.

The prototype sits on a 6x12 trailer

Continued on page 7



Prototype Mobile Processor

Chapter News

Outreach at PA Farm Show Goes Virtual

The PA/NJ Chapter of The American Chestnut Foundation (TACF) hosted a series of Zoom webinars to highlight chestnuts at the 2021 Virtual PA Farm Show. Our "Chestnut Week" webinars featured an array of experts on growing, restoring, finding, and farming chestnuts in our region. There was a great turnout with over 500 folks attending the live webinars.

Bringing back the American chestnut presented by **Mike Aucott, Ph.D.**, PA/NJ TACF board member and adjunct professor of chemistry, The College of New Jersey

Cooperative solutions for Chestnut Processing: a demonstration of processing equipment by **Stephen Hoy**, Orchard Manager at Penn State University

Chestnut Farming: A Growth Opportunity: A Conversation with **Amy Miller**, hosted by Jim Searing, PA/NJ Chapter Board President

The American chestnut: how biotechnology can be applied to conservation, presented by **William Powell, Ph.D.**, Director, American Chestnut Research & Restoration Project, SUNY College of Environmental Science and Forestry, Syracuse, NY

Silvicultural Aspects of American chestnut and Implications for Species Restoration, presented by **Sara Fern Fitzsimmons**, TACF Director of Restoration

Commercial Chestnut Industry in Michigan: A Model for PA? A Conversation with **Roger Blackwell**, President of New Era Chestnuts in Milford Michigan hosted by Jim Searing, PA/NJ Chapter Board President

Finding American Chestnuts, presented by **Lake Graboski**, TACF Board Member and Volunteer, M.S. Ecology the Pennsylvania State University.

Check out the recordings on our website:

<https://patacf.org/chestnut-week-at-the-2021-pa-farm-show/>

We All Scream for Ice Cream!

With the PA Farm Show going virtual in January, we weren't sure how we would encourage new members to join. Usually we get 15 to 20 new members with special offers at this big event in Harrisburg. Fortunately, an anonymous donor came forward offering the prize of 6 pints of Penn State Berkey Creamery Ice Cream. Any new member who joined in January would be entered to win this sweet prize.

It turned out ice cream has a big appeal. We gained 25 new members in January. So join us in welcoming the winner, Linda Greble of Somerset County, and all of the new members who joined in January.



With Your Support, Our Chapter Raised \$9,768 for the Fall Appeal!

Your generosity, spurred on by an anonymous donor match of \$3,000, helped us to more than double our fundraising goal of \$4,000. These funds help us protect our staff from COVID and fund our growing operations.

Many Thanks For Your Amazing Support!

Continued from page 6 and weighs around 1,700 pounds, so it can be pulled by an SUV or small truck. It takes 45 to 75 minutes to reach 120 degrees, when a standard water heater would take twice as long. The design is intended to be able to process chestnuts in 300-pound batches, but it has not been tested to see if it can reach that capacity.

The mobile chestnut processor has been used to treat more than 40,000 chestnuts from the 2020 harvest. While the unit has been a success, there is room for improvement. For better temperature consistency, an additional monitoring sensor is needed. Without that second sensor, some early chestnut batches were over heated to a temperature above 120 degrees, resulting in issues with mold and dead seeds. The system would

also benefit from a stronger injection pump, a more sensitive temperature controller, and an airlock in the injection loop. The project partners hope to continue to improve on this prototype.

To learn more about the heat treatment system, and to see the designs, visit:

<https://ecosystems.psu.edu/research/chestnut/breeding/pollination/mobile-sorter>

Special thanks to Sean for his tenacity, resourcefulness, and good humor throughout this project. His willingness to tackle any aspect of the build has been greatly appreciated!



Pennsylvania State University

206 Forest Resources Lab
University Park, PA 16802
mail@patacf.org
Phone: 814-863-7192

RETURN SERVICE REQUESTED

SOME IMPORTANT DATES

April 10th , 9:30 AM — 11:45AM

Spring Growers Meeting

Zoom

April 24th, 9:00 AM—12:00 PM

Lancaster Native Plant and wildlife Festival

Lancaster, PA

October 29-30th

TACF Annual Meeting

Asheville, NC

(pending COVID restrictions)

Decision to be made in May as to whether to hold in person.

Please check our website for news on other outreach events that may be announced later due to COVID restrictions. www.panjtacf.org

**THE NPC
DIFFERENCE**

Listening. Understanding. Delivering.

www.npcweb.com | 800.847.5757



Integrated Print &
Digital Solutions

13710 Dunnings Hwy | P.O. Box 373 | Claysburg, PA 16625

Printing compliments of NPC, Inc.

The PA/NJ Chapter of TACF is grateful for the continued support of NPC through their pro bono printing of this newsletter. NPC has freely printed every issue of The Chestnut Tree.