



Dedicated to restoring the American

Chestnut Tree

VOLUME 26, ISSUE 11

SEPTEMBER 2021

PA/NJ Chapter Fall Member Meeting—Zoom Saturday, November 6th | 10:00 AM—11:30

REGISTRATION IS REQUIRED!

Visit our website: patacf.org/2021-fall-meeting-zoom

Email or call mail@patacf.org | 814-8637192

In times like these, flexibility is often the key to success.

With that in mind the Board of Directors has decided to postpone our in-person meeting this November. We are disappointed that our plans to host Douglas Tallamy and Kimberly Bohn have temporarily, been put on hold but we're working on plans for an in-person event that will allow more engagement with these great speakers next year.

Stay tuned for more details!

In the meantime, we are planning a virtual member meeting on November 6th. This will be shorter and more focused gathering on the American chestnut and our restoration efforts. Sara Fitzsimmons, Director of Restoration and Stephen Hoy, Orchard Manager at Penn State will make short presentations with plenty opportunity for new and experienced growers to connect, ask questions, and share experiences.



From Left: Bob and Ann Leffel, and Dave Armstrong

David J. Armstrong Orchard Dedication

September 26th, 1:00 PM | Codorus State Park

RSVP : 814-863-7192 | mail@patacf.org

Join us as we gather for the to dedicate this orchard to the memory of long-time member, dedicated volunteer, and mighty friend of the American chestnut. New interpretive signage has been installed at the orchard and his fellow "chestnutters" will share their memories and tributes.

Take a deep dive into chestnut restoration with Sara Fitzsimmons and Steve Hoy at the Fall Member Meeting

Sara Fitzsimmons

Director of Restoration
The American Chestnut
Foundation

Restoration Science at the Chapter Level

Sara will review the current scientific status of American chestnut rescue and restoration, including the most up-to-date data retrieved from hybrid genotyping and transgenic deregulation.



Stephen Hoy

Orchard Manager
Penn State University

Field Activities: Chestnut Research at Penn State

Steve will review 2021 field activities including grafting, pollination, inoculation and harvest. He will also talk about what's ahead for orchard research at Penn State.



President's Corner

Dear PA/NJ TACF Members

Last year, I was 'talking trees' with Bob, one of those amazing local gas station owners who know everyone, everything going on around town, and are beloved by all. His wife Jean heads our local bank. Their family has lived here for over two hundred years and is part of the community's bed-rock.

We commiserated about all the dead and dying trees we see every day. While the dark hulk of insect-ravaged Ash trees are the most prominent casualties, there are so many others under assault, including: walnut, oak, hemlock, beech, and pine. Much of this decline in our native forest can be attributed to non-native pests brought here on nursery stock and shipping materials.

This is an old story to our members, as American chestnut was the first prominent species to succumb to an imported blight, leading to its functional extinction. As the first conservation organization dedicated to saving a tree species, TACF is recognized as being on the leading edge of rescuing and restoring the American chestnut. Many other conservation organizations are looking to us for answers about what works, what does not and are intensely curious about where we are going.

TACF is gaining more and more momentum. Our own brilliant Sara Fitzsimmons, TACF's Director of Restoration is in national demand to make the case to save the chestnut. At Meadowview Farm, Penn State, and other TACF orchards, a huge roguing program is taking place to focus on the breeding program's "best of the best." TACF volunteers are preserving the germplasm and making new finds of American chestnuts in the wild. The race to find a solution to phytophthora, a soil disease, goes on.

On the biotech front, gene sequencing promises new paths to blight resistance. And the SUNY/ESF petition to deregulate the Darling 58 blight tolerant American chestnut is winding its way through the regulatory maze in Washington DC. We were delighted to see USDA's recent indication that deregulating Darling 58 is their 'preferred alternative.' The dawn of a day when we can plant trees with a high degree of confidence that they'll be able to tolerate the blight is in sight.

Your continued support through membership, volunteerism, donations, ideas, discoveries, tree planting and care, are what power this restoration effort forward. Thank you for taking this journey with us and making a difference for the American chestnut, for the trees and forests we love, for generations to come, and for the Jean's and Bob's who make our communities great places to live and work.

Jim Searing
President
PA/NJ Chapter of TACF

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Chapter News

Volunteer Spotlight — Peter Reinhart

By Jean Najjar Chapter Administrator

Mild mannered man of finance by day, super volunteer by night! As the Chapter Administrator for the PA/NJ Chapter, I take great pride in spotlighting Peter Reinhart as an invaluable volunteer. His professional service as Treasurer has been substantial and tireless. Peter joined the Board of Directors as Treasurer in 2018 and has worked diligently to update our accounting systems, providing more transparency to the Board of Directors and more clarity to this administrator.

Peter's first recollection of the American chestnut came many years ago, hearing a couple of country old-timers reminisce about chestnut trees and how as kids they were collecting nuts for storage. Their stories sparked an interest, and he began to read about the American chestnut tree and the incredible loss it represented to the forest ecosystem. This led him to TACF and the restoration efforts underway. He was hooked!

He credits his parents for his passion for the forest and sustainability. They introduced him to hunting and fishing and the great outdoors in his youth. They shared their appreciation of nature and instilled in him a sense of stewardship for the land you hunt and fish. "If you take care of the land, it will give back more than you can ever dream". His father a doctor and his mother a nurse, Peter



was the first of his siblings, to break from that medical tradition. He graduated from Moravian College studying with a BA in Economics and a minor in Management took a job at Janney Montgomery Scott and has been there for 34 years holding various management and trading positions within the fixed-income department. Lucky for our Chapter that he did.

As a member of the PA/NJ Chapter Peter says that he has been struck by the passion, devotion, and personal commitment of so many talented individuals to bring back this iconic tree. He enjoys being a member of the Board of Directors for our chapter. "It provides an opportunity to col-

laborate and share ideas with other active members. And more than ever he feels motivated to share the restoration efforts of TACF with fellow landowners. He is confident that with our continued work, the American chestnut will be restored to its previous niche in the forest for the benefit of future generations and storytellers.

In addition to having a passion for forestry, the environment and wildlife, which all ties back to chestnuts, folks may be surprised to know that Peter is a beekeeper. He says, "It is a small operation but it's enough to keep him buzzing!"

Remembering a leader at Penn State in Forest Tree Improvement



Sadly, we must report the passing of long-time member **Henry Dietrich Gerhold (2/1/1931-6/6/2021)**. A Penn State Alum, Henry earned his PhD in Forestry from Yale University before returning to PSU for a 51-year career, in Forest Genetics, ending as a Professor Emeritus. He

worked closely with Kim Steiner, and was a leader of forest tree genetics at PSU, especially for Christmas tree improvement. He started one of the first chestnut orchards at PSU, the Game lands 176 B2F2 silviculture trial, in 1997

You may be familiar with one of his publications: *A Century of Forest Resources Education at Penn State: Serving Our Forests, Waters, Wildlife, and Wood Industries*, and *Landscape Tree Factsheets*.



Some of the planting crew at PSU B2F2 — From left: Bob Summersgill, Henry Gerhold, Bob Leffel, Jim Zaczek, PA School of Forestry Instructor, and Ron Stanley.

What Will it Take to Restore the American Chestnut?

By Sara Fitzsimmons, Director of Restoration at TACF

The best materials from the breeding program continue to be deployed into the forest, hypovirulent “super donor” strains are being tested on trees in the field, and deregulation of Darling 58 is on the horizon. As these aspects of the 3BUR approach of TACF (The American Chestnut Foundation) mature, the organization adds projects related to reintroduction and distribution for restoration to its portfolio.

How will this be done? It surely seems like a daunting task! I regularly get asked, “Can I plant in gaps in the forest, a shelterwood, or a clear-cut?” “Should we plant monocultures of chestnut, or interplant with other species?” “Should I plant seeds or seedlings?” “Should we plant on private or public lands?” Yes, yes, and yes! The answer to restoration is that it’s going to take everyone possible employing a variety of methods to reintroduce a species and make an ecological impact on a landscape scale.

As per E.B. Little’s published range map of the American chestnut, the area historically covered by American chestnut is about 180 million acres (about the area of Texas). Based on an analysis of Ecological Landscape Units (ELU) within Little’s range map, a rough approximation of the amount of suitable habitat for reintroduction of the American chestnut is 90 million acres. Expanding beyond that published range to all the states in the eastern US (United States), that number jumps to 130 million acres (Fitzsimmons, 2020).

Not all that land is available for reforestation. Rarely, if

ever, would TACF encourage landowners to cut down mature forests solely for the purpose of introducing American chestnut. At any given time, there will be thousands if not millions of acres available for planting. The Nature Conservancy (TNC) recently published a reforestation model, showing the geographic spread of acres available for tree planting across the United States (2021). Based on those models, there are currently an estimated 94 million acres of land suitable for reforestation across the eastern US. How much of that is suitable for chestnut planting still needs to be determined, but that is a lot of land and a lot of opportunity for planting.

These big numbers can be both overwhelming and difficult to conceptualize, so I’ve found it helpful to break down what is possible based on current nursery production and hardwood seedling production in the United States. At the most recent height of hardwood seedling planting, the total acreage of hardwood trees planted in the eastern US was 79,000 acres (Hernandez 2016). A substantial majority of those plantings were with oak seedlings, about 63%.

Once we start playing with these numbers, it’s easier to conceptualize the scale of species restoration. If we only planted American chestnut seedlings across those annually planted 79,000 acres (about the area of Philadelphia, PA), it would take a little over 6 years to cover 500,000 acres (about the area of Allegheny National Forest). That sounds like a lot but consider that even on the low range of suitable habitat, 130 million acres, 500,000 acres is only 0.4% of that suitable habitat.

Extrapolating out a bit further, to cover only 1% of the suitable habitat of American chestnut in the eastern US, planting at the entire rate of hardwood seedling plantings every year, would take only 17 years. BUT --- and this is a BIG BUT -- to achieve that acreage, we would need a minimum of **24 million seedlings per**



Blooming Grove Reintroduction Trial with Devin Schappert

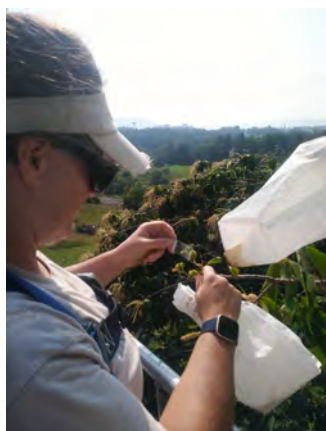
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Back in the Field!

By Stephen Hoy, PSU Orchard Manager

While general maintenance of orchards persisted last year, many other activities had to be delayed. For 2021, we have pushed to complete our to-do list and have made great progress in large part because of our dedicated volunteers and their enthusiasm to get back to work!

This marks the first year the chapter backcross orchard at Penn State witnessed controlled pollinations using transgenic pollen provided by the State University of New York's School of Environmental Science and Forestry (ESF) and the University of New England (UNE).



Sara Fitzsimmons pollinates female flower with glass slide

Thanks to several volunteers donating their time to construct over 1,000 aluminum screen bags to prevent the spread of the potentially transgenic seeds. Using thousands of staples, Gorilla tape, and over 3,500 feet of screening, these metal envelopes slide over the actual pollination bags and are stapled in place.

Sara Fitzsimmons, intern Tyler Grysevicz, and Hoy spent over two weeks monitoring

flower development, bagging, and pollinating 1,000 bags across 25 trees. As the chestnuts ripen in the fall, the screens will be removed to allow for the harvest of the nuts.

The orchards at Penn State were spared from the effects of the Brood X Cicada emergence this year, however, many orchards to the south and west of University Park were not as lucky. The CMS orchard at the Boyd Big Tree Preserve in Dauphin, PA was severely damaged by cicadas; as a result, the expected harvest this fall is reduced to a few hundred chestnuts compared with the 2020 harvest of 6,500. Cicadas damage the branch tips when the female lays eggs within the branch, which results in the loss of the flowers as well as buds. It is expected to take roughly three years for the trees to return to peak production.

Getting caught up with fieldwork after the hurdles of the 2020 season, we continue to inoculate, rate and rogue out seedlings to complete the backcross orchards in the PSU Arboretum as well as other orchards in Pennsyl-

vania. In the Arboretum orchard at Penn State, 435 stems were inoculated with a moderate strain (named Weekly) of *Cryphonectria parasitica*, 1,000 stems were inoculated with the SG2,3 strain at the Raystown Lake B3F2 orchard, and EP155 inoculations were completed at the House Rock orchard in Pequea, PA. Over 12 volunteers joined us in the field to help complete these inoculations. Volunteers also assisted with 600 alternate small stem assays as part of a larger project that is being replicated at four additional sites to compare resistance ratings of 6-month seedlings. We will be collecting data on these seedlings in October, then the seedlings will be overwintered and planted into the orchard at Penn State in the spring of 2022. After four years, these trees will be inoculated in the field, allowing us to compare the results of the alternate small stem assay with the more traditional method of inoculations.



From Left: Larry Martone and David Deaville constructing screen bags for controlled pollinations.

Volunteers needed!

The 2021 field season will wrap up with fall harvest and bur shucking at the end of September and beginning of October, specific dates TBD.

Please contact Steve Hoy at sdh177@psu.edu or (814) 424-0022 if you are interested in volunteering for either of these events.

Chapter News

Chapter Outreach 2021-2022

Fewer Events but the volunteers are still rock!

The Chapter took small steps back into our in-person outreach schedule in 2020, starting last Spring with the Lancaster Native Plant and Wildlife Festival (LNPWF). Tim Eck attended this outdoor event and gave us hope that things might get backing back to normal. Alas, several other outreach events including the Festival of Wood were postponed once again due to COVID. But we ended the summer on an up note with Penn State Ag Progress Days which returned in August.



Tim Eck at LNPWF

Many thanks to volunteers at LNPWF and APD!

Tim Eck Gary Micsky David Deaville
Steve Delp Steve and Jen John Civitts
Mervin Feathers Schoonover

Up Next!

The next big event is the PA Farm Show in Harrisburg PA. This is an 8 day event now schedule to be in-person, January 8-15, 2022. This event requires many volunteers to cover the 9 AM to 9 PM schedule of the Farm Show. A sign-up sheet will be posted on our website soon.

To volunteer or learn more contact our office. *Email us at mail@patacf.org or call (814)863-7192.*



Volunteers at the last in-person PA Farm Show in 2020

Penn State and Restoration of the American chestnut

Two key figures who led restoration research at Penn State for several decades, retired this summer. We take this opportunity to acknowledge their service and wish them a very chestnutty retirement.



For over 2 decades, **Kim Steiner** Professor of Forest Biology and driving force behind the development of the Arboretum at Penn State, has played an integral role in forming and maintaining the cooperative partnership between Penn State University and The American Chestnut Foundation (TACF). Kim began silviculture trials with chestnuts at the University's Stone Valley Recreation Area in 1997 around the same time, recently deceased, Professor Emeritus of Forest Genetics Henry Gerhold, was planting the first cross-breeding program at PA State Game Land 176.

He recruited and mentored Sara Fitzsimmons in the early 2000's guiding her research and management of the chestnut orchards at Penn State for over 20 years as she rose to become Director of Restoration at TACF. Since

2006 he has been actively engaged, on the TACF Board serving as Science Vice Chair, Board Chair, Development Vice Chair and most recently as Senior Science Advisor.



John Carlson, Professor of molecular genetics in Penn State's College of Agricultural Sciences and director of the Schatz Center for Tree Molecular Genetics joined the Penn State faculty in 1997. A year later, with a gift from alumnus Dr. Louis W. Schatz for a post-doctoral fellowship,

John worked to from the Schatz Center for Tree Molecular Genetics. Which expanded into a major research center in 2003 through additional gifts to the Department of Ecosystem Science and Management from the estate of Dr. Schatz. Under John's leadership the Center published the first reference genome for chestnut, allowing researchers to look for a genetic basis of adaptive traits that might lead to blight resistance.

So congratulations to Kim and John! Maybe retirement will see them back here as volunteers. We can hope!

Chapter News

Continued from page 4 **year**, at 300 trees per acre planting rate, which is on the low end for most forest plantings. At best, TACF's seedling production has reached 75,000 trees to date. At 75,000 trees per year, it would take a ridiculous 5,200 years to cover that same 1% of suitable habitat acreage.

Obviously, we have some work to do, not the least of which is to increase seed and seedling production. It is highly unlikely that the entirety of hardwood seedling production and planting will be solely American chestnut, so we will need to look at some more sensible numbers and goal for production.

Based on the current production trajectory of TACFs breeding seed orchards and plans for the establishment of additional seed orchard locations, production of 1,000,000 seedlings can occur within the next 20 years and should increase from there.

Realistically, in the near term, let's say eventually TACF and its nursery partners can provide an average of 2.5 million seedlings per year. At that rate, and planting 300 trees per acre, it would take us 156 years to cover the 1% of suitable habitat outlined above. There's still a lot of increases in production to make to get to that point, but that at least seems to be a feasible goal within the next 20-30 years.

The above scenarios are based on real reported data but are back-of-the-envelope calculations meant solely to give TACF and its members and collaborators some conceptual framework for what restoration is going to take. Several authors, including myself, will be using this winter to draft a more detailed look into the particulars of restoration, set for publication next spring or summer. What is



Bruce Wakeland planting chestnuts at Valonia Nursery Planting

clear from any perspective, both broad and detailed: the scale of restoration is much larger than any single person, landowner type, or generation of people or trees can realize. The process will require an all-hands-and-trees-on-deck approach and entail a very long-term commitment on behalf of generations of organizations and landowners.

Works Cited

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2021 Summer Intern—Tyler Gryskovicz

Each summer the PA/NJ Chapter hires a summer intern to assist our Orchard Manager, Steve Hoy, with the restoration efforts here at Penn State University (PSU). Our 2021 summer intern, Tyler Gryskovicz is currently a senior at PSU graduating at the end of this fall semester with a BS in Plant Science. Tyler follows a long line of invaluable young people who have brought curiosity and energy to our Chapter's restoration work. Upon graduation he hopes to find work related to his field study that will provide him the opportunity to continue expand his knowledge about plants. He expressed his gratitude to the Chapter for past summer's experience and all that he learned.



Tyler Gryskovicz uses a hollow punch to create a wound during House Rock inoculations.



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RETURN SERVICE REQUESTED

SOME IMPORTANT DATES

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David J. Armstrong Orchard Dedication
Codorus State Park

November 6th, 10:00 AM — 11:30 AM
2021 Fall Chapter Member Meeting
Zoom

January 8-15, 2022
PA Farm Show
Harrisburg, PA

(Tentative Date)
April 2, 2022
PA/NJ Chapter Spring Growers Meeting
Annville, PA

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