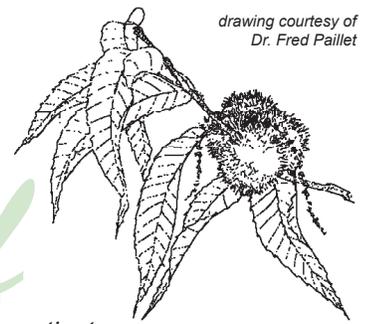


News from the Connecticut Chapter of The American Chestnut Foundation

Winter/Spring 2023

the New Leaf

Our mission is restoration of the American chestnut in the State of Connecticut



President's Letter



CT-TACF Chapter President Jack Swatt, during one of the chestnut hikes this year, following a talk he gave at the Granby Public Library. Photo by Holly K. Johnson.

When we enter the new year, we are full of hope. We plan our resolutions to make this year better than before. Our work with TACF has also been guided by hope. In our early years, we planted the Backcross orchards with the hope that at least a few of the hundreds of seedlings would have the right combination of genes to resist the blight infection. While the blight leveled our weaker saplings, several stronger trees held on to produce nuts for our Seed Orchards with the hope that their seedlings would be better than those of the previous years. As science and genetics evolved over the years it has enabled us to refine our selections for the best chance of using our Backcross Orchard trees to incorporate stronger resistance into our future seed orchard plantings.

With the advances in technology came a new form of hope. Scientists at SUNY-ESF found a way to give chestnut embryos a gene from wheat which enabled the production of an enzyme to break down the toxic acid produced by the blight fungus. Seedlings propagated from these embryos were able to demonstrate a superior level of blight tolerance, and since the enzyme was produced by a single gene, it would be easier to transfer that blight tolerance to its seeds. Hopeful that this new technology could be utilized by TACF and our chapter, we set out to plant new orchards, Germplasm Conservation Orchards. In doing so we hoped to conserve the genetic diversity of surviving trees and to have an ample supply of flowering trees to pollinate

with the transgenic pollen. Each year we planted many American chestnut seeds, hopeful that the chestnut trees we planted this past year, as well as previous years, will survive and will be healthy enough to flower. The trees are growing fast in optimal growing conditions and this past year one of our first GCO trees planted three seasons prior was able to flower.

Now we have even more hope as we await the possible deregulation of the transgenic Darling 58 tree. With the potential deregulation occurring this year, we may have the ability to produce truly blight tolerant chestnuts this growing season. If the deregulation does occur before the chestnut trees flower in July, we may be able to use the pollen on flowering trees in our Backcross Orchards and GCOs and harvest our first sets of potentially blight-tolerant nuts. These first nuts will need to be tested for the presence of the enzyme and will likely be used for future outcrossing, so it will be a few years until we will have sufficient numbers of nuts to perform large scale plantings. But it does give us more hope. Hope that in a few years we will have orchards of blight-tolerant American chestnut trees. Hope that we will be able to produce enough blight-tolerant nuts to start reforestation trials. And hope that the American chestnut will return to its dominance of the Eastern forests.

Jack Swatt

President, CT-TACF

The dawn of Darling 58

By Florian Carle



State University of New York College of Environmental Science and Forestry (SUNY-ESF) researchers with chestnut saplings in their laboratories. Photo by Claire B. Dunn.

The American Chestnut Foundation is leading an unprecedented mission to restore the American chestnut tree to its native range. By employing complementary methods of traditional breeding, biotechnology, and biocontrol, TACF is working to create a disease-tolerant and genetically diverse population of American chestnuts. Working in close collaboration with TACF, the State University of New York College of Environmental Science and Forestry (SUNY-ESF) leads the biotechnology research and testing efforts. These methods have proven to be the most successful for generating blight-tolerant American chestnut trees, known as Darling 58 (D58).

The blight tolerance of the D58 tree is a result of inserting a gene from wheat called oxalate oxidase (OxO), a gene

which detoxifies the acid produced by fungus and prevents lethal cankers on the tree, essentially allowing the tree to coexist with the blight pathogen. SUNY-ESF researchers carefully chose the OxO gene because it is well understood, commonly found in nature as a defense against pathogens, and because there has been no evidence found that the enzyme is harmful to human or animal health, to the environment, or that it is a plant pest risk.

Darling 58 chestnut trees retain 100% of their natural genes, producing the closest form to wild American chestnuts. However, it is imperative, that the D58 is bred with wild-type American chestnut trees to diversify the population and provide regional adaptation. This work will be a priority for us at the CT chapter. We have been

The CT chapter is on Facebook!

Hosted under The American Chestnut Foundation Facebook Page, this community group allows every member to ask questions, share articles, info, and upcoming events that might interest Chestnut enthusiasts!

Join us at:
www.facebook.com/groups/cttacf

collecting, breeding, and growing CT chestnuts in our GCOs orchards to prepare for this work as soon as Darling 58 is approved for deregulation.

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). Approval of the petition is a critical step toward planting this blight-tolerant transgenic tree in unrestricted areas as part of restoration programs.

Earlier this Fall, USDA APHIS has posted the draft Environmental Impact Statement and Plant Pest Risk Assessment and opened a new public comment period. This is an exciting milestone and marks the next stage of the Darling 58 American chestnut deregulation process. 🍂

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Conservation & Community comes together for the American Chestnut

By Corneil Smith - Wilton Land Conservation Trust Stewardship Programs Manager



Wilton Land Conservation Trust volunteers planted a Germplasm Conservation orchard where they are growing pure American chestnuts that were found in Connecticut forests. Photos by David McCarthy.

Why is the American Chestnut tree important? Some people like the aesthetics of their sharp-toothed leaves or burred fruit, and some prefer them for their sweet and crunchy nuts. But in what way do they play a larger role in how humans interact with their environment? One may perceive the preservation of America's only native Chestnut species as inconsequential considering the variety of other chestnut species that have been introduced to the United States. Still, such a perspective lacks understanding of the importance of native species in ecological functions as well as within cultural contexts.

Native species play a vital role in a region's ecology, as these species are often the best suited to thrive within their historic ranges due to millennia of evolution within specific geography and weather patterns. Beyond this, native plants such as the American Chestnut have co-evolved with animal species that have become dependent upon them for both food and habitat. Ecosystems consist of highly interconnected relationships between various animal and plant species.

The loss of the American Chestnut as a dominant species within the eastern deciduous forest has devastating impacts on the stability of the ecosystem, the adverse effects of which are still being explored to this day.

The Wilton Land Conservation Trust (WLCT) is dedicated to preserving Wilton's natural, scenic, and historical landscapes through conservation, stewardship and education. Valuing a region's ecological and cultural well-being is the epitome of sustainability, and adjusting human systems to be more inclusive of ecosystem health is imperative to creating positive interactions between humans and their natural environment. This requires building a relationship with the natural spaces surrounding us and being committed to creating a culture of respect for the land we call home.

The only way to preserve the American Chestnut is with the dedication of the general public to learning its role within an ecosystem along with the ways that native ecosystems thrive or suffer. The removal of invasive species is just one step in this process, with a need for equal attention to be given to replacing native

species, such as the American Chestnut, back into their historic ranges. WLCT has committed to reintroducing the American Chestnut to its ancestral home within the northeastern forests of Wilton, and also to prioritizing the local community's engagement throughout this process. It achieves this objective through creating opportunities for the community to not only learn more about this iconic tree species, but also to help plant, water, and monitor the trees on WLCT's Chestnut Meadows Nature Preserve. "Conservation and community are connected," says David McCarthy, Executive Director.

The Land Trust is dedicated to keeping the local community engaged and invested in the health of our ecosystems. This would not have been possible without the help of the American Chestnut Foundation. The Wilton Land Conservation Trust is looking forward to watching our partnership with the ACF grow as we work to bring the American Chestnut back to its former glory.

So why is the American Chestnut important? It's not just a tree, but a symbol of our dedication to preserving native forest structures, promoting a culture of land stewardship, and leaving the earth in better shape than we found it. 🌳



Pollination Workshop at the Old Lyme Library

By Jack Swatt



Photo by Lindsay Rush.

With the potential deregulation of the Darling 58 transgenic American chestnut tree this year, and a focus on breeding our best x best Backcross trees, we have a need for many volunteers trained in controlled pollination of chestnut trees. For our second year in a row, we have held a pollination workshop to train members and volunteers in this process. This year we held our workshop at the American chestnut tree growing at the Old Lyme Phoebe Griffin Noyes Library. The tree has had infections with the blight but resprouted with several trunks now growing tall enough to flower on branches that are easily accessible by ladder.

The pollination process is a two-step process. Since there are other Japanese and Chinese chestnut trees flowering in the vicinity, we want to make sure that the nuts we produce are pollinated with American chestnut pollen. The flowers were watched very carefully and when they reach a specific level of maturity, corn shoot bags are placed over the female flowers to make sure that stray pollen does not fertilize

them. We placed bags on the Old Lyme Library tree on July 5th. About 7 to 10 days later, the flowers reach maturity and are receptive to pollen. Therefore, we returned on July 13th, opened the bags, and pollinated the female flowers with pollen from an American chestnut in East Lyme growing in the Nehantic State Forest. The bags were again placed over the female flowers to protect them and to mark which limbs had pollinated flowers on them. We also place control bags over a few female flowers, but do not pollinate them. That way if we get fertile nuts in the control bags, we know that our timing was off and stray pollen was able to pollinate the flowers before we protected them. Once the flowers are pollinated, we just let Mother Nature take its course and return once the burs, which encase up to three nuts each, are close to opening up.

Since the burs can open on their own as early as October 1st, we usually collect them in late September. On September 18th, volunteers returned to the Old Lyme Library tree and all the bags, with the burs inside them,

were collected. They were left alone to continue drying out and opening up on their own. In early October our volunteers met at the Connecticut Parks and Forest Headquarters to shuck all the burs we collected, from the Old Lyme tree as well as 35 other American chestnut trees we harvested throughout the state (and some from Massachusetts). We placed 24 bags over female flowers on the Old Lyme tree and collected 62 burs (some bags covered more than one female flower). Within those burs were 33 fertile nuts and many infertile (flat) nuts. With more experience we hopefully can improve our number of fertile nuts collected, but those are 33 more American chestnut seeds that wouldn't have been produced without our efforts. Those nuts will be stored over winter and planted in some of our GCOs (Germplasm Conservation Orchards) in the spring. We will be hosting more pollination workshops, and if you are interested in learning how to perform this process next July, watch for our emails of upcoming events in the Spring. 🍅

2023... New site, New tree?

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Connecticut Chapter

About Us

Our Mission

Our mission is to restore the American Chestnut to the forests and woodlands of Connecticut (25 – 40% of the trees were American chestnuts in CT forests).

The Connecticut Chapter of TACF is a Chartered State Chapter of the American Chestnut Foundation with its own Bylaws, Constitution and Treasury. It is organized as a tax-exempt non-profit foundation under the US Tax Code 501(c)3.

There is a Board of Directors – real people, your neighbors in Connecticut – who determine strategic direction, make decisions about application of resources, and are there when the rubber hits the road to install fences, plant trees and perform all the functions necessary to achieve our goals.

Connecticut Chapter Menu

- Connecticut – About Us
- Chapter Newsletters
- Orchards in CT
- Host An Orchard
- Connecticut News

CONTACT

BECOME A MEMBER

WAYS TO GIVE

With this new year, we all have our resolutions! Ours at the CT chapter is to change the old adage “New Year, New me?” with “New Site, New Tree?”. In the hope of the deregulation of Darling 58 coming closer than ever, we have completely revamped our website in a new modern look and feel, and a more than ever easier way to find all the information about our upcoming events, chestnut research, and on how to identify the type of chestnuts.

Visit the new site at the same address, acf.org/ct.

A year in photos!

By Florian Carle



Thank you to our volunteer editor Susannah Hough for their help on this newsletter.



Upcoming Calendar of Events

All of the events scheduled are subject to possible change. Please check our online calendar at acf.org/ct for any updates.

CT Flower and Garden Show, Hartford

February 23-26, 2023

Stop by our table in the CT Federated Garden exhibit to see the work of the Foundation.

Annual Membership Meeting, Rockfall

April 15, 2023 - 10 AM

Join us for our Annual Membership Meeting in person, at the Connecticut Forest & Park Association in Rockfall/Middletown. featuring a guest speaker on a chestnut relevant topic (TBD). The Spring Board Meeting will also follow the Annual Membership Meeting.

Earth Day Celebrations, Woodbury

April 29, 2023

Come learn about chestnuts at the largest Earth Day celebration in Connecticut in

the wonderful Hollow Park.

Orchard Plantings, throughout CT

May, 2023

We will need volunteers to help with planting American chestnut seeds in several new Germplasm Conservation Orchards throughout the state as well as planting additional seeds in the Winchester Seed Orchard. Details will be made available as it gets closer to planting season.

Chestnut Hikes

June/July, 2023

Late June and early July are great times to look for chestnut trees when their fragrant cream-colored blooms make the trees more visible. A schedule of hikes will be sent via chapter email and posted on our website as it gets closer to that time. If you would be interested in leading a hike

to known or potential chestnut locations, contact us at CTChapter@acf.org.

CAES Plant Science Day, Hamden

August 2, 2023

Join us at the lovely Lockwood Farm in Hamden for the 113th CAES Plant Science Day where we will welcome you with an exhibit on the Foundation work, surrounded by a wide variety of chestnut trees!

Exhibit at the Durham Fair

September 21-24, 2023

The Durham Fair is one of the largest fairs in CT. We host an exhibit educating people about the American chestnut and our mission in the Discovery Center. Stop by, shuck chestnuts harvested a few days before the fair, and come ask all your questions!