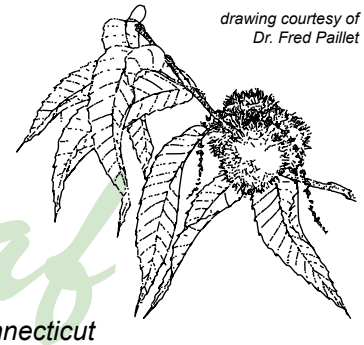
News from the Connecticut Chapter of The American Chestnut Foundation

Winter 2018

the New Leaf

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



drawing courtesy of Dr. Fred Paillet

President's Letter

Jack Swatt - Woolcott, CT

As the growing season is ending, and chestnut burrs are opening up to release their nuts, it is time to look back at the activities that our chapter has been involved with over this past season. While there was not much management activities at our backcross and seed orchards, the warm temperatures and abundant rainfall provided optimal growing conditions for our trees and seedlings. A ceremonial planting of five Restoration American chestnut trees was held in Hamden to commemorate a conservation success story at Rocky Top preserve. We have also been approached by several organizations that are looking into hosting orchards so hopefully we will have more opportunities in the future to plant and raise more chestnut trees to continue the process of restoring the American chestnut to Connecticut forests.

Although there was not much news on the orchards, this has been a great year for finding large growing American chestnut trees in the forests of Connecticut. Some of the new trees found were part of an ongoing search for chestnuts growing in an area recently clear-cut at Naugatuck State Forest. Others were found at a site in Plainfield where active management had been performed years ago to foster growth of several Restoration chestnuts planted in a forest opening. The increased light allowed understory sprouts to rapidly grow to impressive heights. Articles in this newsletter highlight those occurrences. The chapter also received many reports of American chestnut trees found on both public and private woodlands. Many trees were not yet large enough for flowering, but two trees were flowering when found and were of very significant size. These reports prove that the American chestnut can still become an important part of the forest ecosystem and gives me encouragement that our work will one day make finding a large American chestnut tree in the forest a common occurrence.

Fall is also a great time to go out in the woods to search for chestnut trees. Any trees that produced nuts this year will have open burrs scattered around the base of the tree. After the forest trees drop their leaves, some burrs may still be found attached to the tops of the trees and can be seen from a distance. This is how I found my first American chestnut tree at Naugatuck State Forest. Another tip for finding trees is that American chestnuts, as well as beech and oak, retain their leaves into the winter making them more visible once the other leaves have fallen. I hope the reports mentioned, as well as articles included in this newsletter, encourage everyone to be a little more observant for chestnuts when you are out enjoying Connecticut's woodlands this fall.

- Jack Swatt

Below - American chestnut leaves are easy to spot from below. Leaves remain on the tree well into the foliage season. Yellow hues and distictive canoe shape ease identification. Photographed on Deforest Lane, Wilton (Photo courtesy of Bill Adamsen)

Norcross Seed Orchard - Update

James Gage - Ellington, CT

The Norcross Chestnut Seed Orchard is located on land owned by the Norcross Wildlife Foundation in Stafford, CT. It is operated by volunteers from the Northern CT Land Trust. When the orchard is complete, it will consist of 20 plots. Each plot will contain descendants from a different mother tree. The goal is to plant 150 nuts in each plot.

In 2017, the first three plots were planted with nuts from the Woodbridge breeding orchard. In 2018, two more plots were planted with nuts from the Ellington breeding orchard.

The trees at the Norcross Chestnut Seed Orchard are ready for winter. The saplings have been measured and recorded. Many of the trees from the first seed planting last year are up to three feet tall, with a handful reaching four feet.

Above - Chestnut grow fast, part of their secret to dominance of the forests along their range. These dense rows of saplings planted in 2017 show vigorous growth and some are expected to exhibit blight resistance. (Photo courtesy of Ginny Patsun)

Below - Tree tubes identify the planting of rows of intercrossed trees ... the offspring of native American chestnuts (Photo courtesy of Ginny Patsun)

The planting from this season is not faring as well. Fewer than half of the seeds have sprouted, but the ones that have seem to be doing very well.

The orchard now has a pump set up that pumps water from a pond, uphill through a hose to a large plastic tank. A garden hose hooked up to the tank is used to water the trees. It worked out very well during the dry times during the past summer.

Many birds have been seen at the orchard, including a kestrel (as recently as October 19th), red tailed hawks, turkeys, bluebirds and bobolinks. The Kestrel has been hunting and using the orchard's fence post as lookout post.

- James Gage and Ginny Patsun

Plainfield Conservation Commission Works to Keep Chestnuts Growing in Pachaug Forest

Walter Cwynar - Plainfield, CT

In 2009, numerous Native American Chestnut trees were found by Plainfield Conservation Commission members in what was then our Forest Management Area, but now is a part of Pachaug State forest. Two of these were over 25 feet tall at that time. To confirm what was found, leaf samples were taken and sent to Kendra Collins, New England Regional Science Coordinator for TACF. She confirmed we had American Chestnut trees in October of 2010. That sparked our commission to join The American Chestnut Foundation. By early 2011, the commission received two B3-F3 restoration 2010 harvest chestnut seeds. Wally Cwynar potted both to grow as seedlings, but only one sprouted, was nurtured through spring and summer, then planted with the help of 3 Commission members, in a protected part the Forest Management Area on September 27, 2011. The idea was to start a hybrid grove to co-mingle some day with the native chestnut trees. Surrounding trees shading the spot were girdled to make way for the needed sunlight to help the growth of the chestnut trees. Since 2012, three more B3-F3 seedlings were planted there and are being monitored.

Fast forward to July 2018, Wally met with CT Chapter TACF President Jack Swatt, and visited the chestnut grove. They observed the four B3-F3 plantings, the numerous native chestnut trees in various sizes, especially the one native tree which is approx. 45 ft tall and 6 inches in diameter. That tree has no indication of blight and is hopeful to flower and seed sometime soon. During that visit, another previously known large native tree was re-discovered by Jack and Wally when catkins were observed from a distance. That was the first sighting of any native American chestnut tree blooming since the commission has been keeping watch on the grove. On September 9, Wally and his wife Dawn returned to the grove to check the flowering tree, and two burrs were sighted up high in that tree. These were photographed, and the plan is to harvest them and any others that might have been missed. Sadly, that tree has signs of blight on the lower trunk, and atop the crown. There will be an effort to try to save this tree with mudpacks and opening up the area for more sunlight. The trips to the chestnut grove always keep the excitement and hopes of bringing back the American Chestnut tree alive, and The Plainfield Conservation Commission is dedicated to that end.

- Walter

Below - Walter Cwynar, Plainfield Conservation Commission and CT-TACF member, stands below a large American chestnut tree growing tall and blight free. (no photo credit)

Restoration Chestnut Trees Planted in Hamden to Recognize Local Couple Who Led Efforts to Save Rocky Top

By Craig Repasz, Reprinted from Hamden Land Conservation Trust Newsletter

On September 28th members of HLCT, Connecticut Forests and Parks Association, Rocky Top Neighbors, and citizens of Hamden gathered for the dedication of the Rocky Top section of the Quinnipiac trail to Rev Edgar Heermance. Unbeknownst to all was a dedication of five Restoration American Chestnut trees to honor Roberta and Tim Mack. As the plaque states:

…for their vision and efforts to organize a community to save Rocky Top for the people of Hamden and generations following. May these trees grow strong for years to come and stand as sentinels over Hamden's woodlands. May they continue to represent the natural spaces that were almost lost; and may they flourish throughout these Rocky Top woods so future generations can appreciate their beauty and majesty.

American Chestnuts once grew on Rocky Top, and in fact the tree was one of the most prominent trees in the eastern Untied States, numbering four billion a century ago. Many trees had reached heights of 130 feet, the same height of a ten-story building. One out of every four trees were a chestnut in its 200-million-acre range. In June and through the summer the tops of the trees looked like they were covered with snow as the white blooms proliferated and powdered the air with their pollen. The nuts had once sustained the flocks of passenger pigeons that had blocked the sky during their migration.

At the turn of the century Cryphonectria parasitica, the causal agent of chestnut blight, appeared. From 1908 to 1913 this disease reduced the American chestnut in Connecticut from its position as the dominant tree species in the forest ecosystem to little more than an early-succession-stage shrub. This blight has been called the greatest ecological disaster to strike any of the world's forests. The blight was brought in on Asian Chestnuts and first appeared in the New York Botanical Gardens.

Through the Appalachians and into New England the chestnut played a key role in the American life: Infants were rocked to sleep in cradles made from chestnut wood; people lived in houses built from chestnut post and beams; they ate chestnuts sitting at chestnut tables and sipped tea sweetened with chestnut honey; finally, people were laid to rest on hillsides shaded by the long-toothed leaves in coffins constructed from the rot resistant chestnut wood. As the trees died they were left standing as white ghost trees across the forested landscape. The corpses had lain on our forest floors for decades. Most of us will never see a mature, native chestnut tree in the wild. Those who have seen these trees are now in their 80's and 90's and these living memories are dying.

One can see small native chestnuts saplings on a trip up the Blue Blazed Quinnipiac Trail to the top of Rocky Top. Such small growth springs from the old stumps and root stocks of the ancient trees that once towered over the forest. Unfortunately, these trees will hit a height of 25 feet and then succumb to the blight killing the young trees back to their old roots. The blight lives on in oak trees ready and waiting to attack the susceptible chestnuts. Few of these trees ever bloom and produce nuts.

The trees planted on Rocky Top in honor of the Macks were donated by the Connecticut Chapter of the American Chestnut Federation. Chapter President Jack Swatt explains that the trees are a result of back breeding.. For three and a half decades, TACF has pursued backcross breeding to generate hybrids that combine the pathogen resistance of Chinese Chestnut (Castanea mollissima) and the timber-type growth form of American Chestnut (Castanea dentata). The backcross method to introduce blight resistance from Chinese chestnut into American chestnut was first proposed by one of TACF's founders, Dr. Charles Burnham, a renowned maize geneticist. Burnham's rationale for backcrossing was based on the hypothesis that a few genes from Chinese chestnut are responsible for its blight resistance. Thus, it should be possible to dilute out most of the genes inherited from Chinese chestnut except for those involved in blight resistance and recover hybrids that are morphologically indistinguishable from American chestnut. Our trees on Rocky Top have a genealogy that first originated in the chestnut grove on the side of Sleeping Giant developed by biologist Dr Sandra Anagnostakis of the Connecticut Agricultural Experiment Station.

It will be determined in the future which of the five trees on Rocky Top have inherited the blight- resistance genes. The hope is that the resistant trees will eventually cross pollinate and produce a generation of resistant nuts. This seed crop could be used to propagate more trees or could be allowed to spread naturally through the area. The reason to restore the chestnuts are many. They could once again be a food source for wildlife, they could help the reclamation of depleted forest soils, and they could bring back a timber product that has been lost, but most importantly they would restore a forest legacy.

American Chestnut benefiting from actions to save the New England Cottontail

By Jack Swatt

Not many people realize that there are two species of cottontails in Connecticut. The New England Cottontail is the only rabbit native to Connecticut while the eastern cottontail was introduced in the late 1800s. When agricultural areas reverted to forest, the New England cottontail remained more numerous as young forest and shrubland was their preferred habitat. But as forests matured New England cottontail numbers declined and in 2006 they were designated as a candidate for threatened or endangered status by the U. S. Fish and Wildlife Service. In 2009 the New England Cottontail Initiative began a coordinated effort to reduce the decline of New England cottontail numbers and to restore and preserve their favored habitat throughout New England. The need for increased young forest habitat led to many large patches of forest being clearcut on hundreds of acres of both private and public lands in Connecticut. The resulting new forest growth has benefitted not only New England cottontails, but also many other species of greatest conservation need, including American chestnuts.

Most remnant American chestnut trees found in the forest today are young saplings that grow to a height of up to 20 ft before succumbing to the blight fungus. American chestnuts are known as fast growers, especially when given abundant light. Chestnut trees growing in areas of forest disturbance also have been known to grow to sufficient heights to flower and produce nuts. With multiple areas of clearcutting in forests containing remnant American chestnut sprouts we should expect to find American chestnut trees growing to a height capable of flowering and producing nuts in these areas.

One such area is in Naugatuck State Forest at the end of Hunter's Mountain Rd. I had previously found two pure American chestnuts producing nuts that had grown about 30 to 40 feet after a previous clearcut. The area is being actively managed for shrubland habitat and in 2014 an additional area of forest was clearcut as part of the New England cottontail management plan. The foresters performing the cutting recognized some larger chestnut sprouts and left them standing with other reserved trees. Since the two previous nut-producing trees succumbed to the blight, I have been monitoring the trees growing in the new clearcut and this year five of them produced flowers with one tree producing fertile burrs which I was able to harvest this year (with permission from the DEEP).

Earlier this year, Dr. Jared Westbrook released TACF's breeding and selection plan for 2015 -2025. In it, he set targets for each state chapter to find new sources of American chestnut germplasm to maintain in Germ Conservation Orchards (GCOs). These trees will not only conserve genetic diversity but also establish a source for outcrossing with transgenic trees. For Connecticut the target is 100 new sources of American chestnut germplasm. With the challenge for our chapter to find these sources, the areas that were managed for New England cottontail will be a valuable resource for this search. A list of state owned public lands where habitat restoration for the New England cottontail has been performed is located on their website at https://www.ct.gov/deep/cwp/view.asp?a=2723&q=594728 (or just search their website for "New England cottontail restoration"). The fast-growing American chestnut sprouts at these locations could already be reaching heights capable of flowering and producing nuts.

With the work that was done to improve habitat and a subsequent increase in New England cottontail numbers, the USFWS decided in September of 2015 that it did not need to list the species. The ongoing monitoring and maintenance of this habitat will likely also improve the outlook for other species dependent on these young forests and shrublands. Although American chestnut was the dominant tree in mature forests, if we are able to find nut-producing sprouts within this habitat, this conservation success story may play a role in the eventual return of the American chestnut to the New England forests as well.

Below - Canopy of American chestnut in summer (photo courtesy of Bill Adamsen)

Chapter Events in 2018

CT Flower and Garden Show – From February 22nd to the 25th the Connecticut Chapter held an exhibit booth at the CT Flower and Garden Show at the Connecticut Convention Center in Hartford. The exhibit gave our members a chance to explain our backcross program to the public and educate them about the plight of the American chestnut. Many people stopped to tell us their stories of growing up with chestnut trees in their yards or ones they found in the woods.

Annual Membership Meeting – The annual membership meeting of the Connecticut Chapter was held on April 14th at the CT Forest & Parks Goodwin Center in Rockfall. After a welcoming reception of coffee and light refreshments the meeting commenced. An amendment to the Bylaws allowing a position of President Emeritus was passed. Six current board members, Jim Gage, John Baker, Phil Arnold, David Bingham, Garrett Smith and Bert Malkus were reelected to another two-year term. New additions to the Board of Directors were Mark Vollaro and Ginny Patsun who will be starting their first two-year term. Election of officers followed with Jack Swatt as President, Star Childs as the first President Emeritus, Jack Ostroff as Vice President, Jim Gage as Treasurer and Jane Harris as Secretary. After the conclusion of the membership meeting, Andy Newhouse, a Ph.D. candidate at SUNY College of Environmental Science and Forestry (ESF) gave an informative lecture on "Ongoing Research and Development of Transgenic American Chestnut Trees: Intersection with TACF Research/Production."

Salem Orchard Tour – On June 9th six members came to view the backcross orchard at David Bingham's farm in Salem. After a wonderful tour of the orchard, visitors were invited to his nearby family camp to see a large surviving American chestnut tree that David has been maintaining on the property. Refreshments were served at the conclusion of the event and participants were engaged in conversations about chestnut growing among other things.

Durham Fair Exhibit – From September 27th through the 30th, the Connecticut Chapter held an exhibit booth at the Durham Fair. In addition to the educational panels discussing the chestnut blight and our efforts to restore the American chestnut to the forests, we were also able to draw people's attention by setting up a burr shucking table. Since recently harvested chestnut burrs were drying out and starting to open it was an opportune time to open the burrs and collect the nuts in front of the public. Additional American chestnut burrs were provided by New York Chapter member Mark Meehl who also came down to help with the exhibit. We were also able to find homes for the remaining American chestnut saplings that Mark had previously donated to us.

CT-TACF Officers and Board of Directors

Officers:
President – Jack Swatt
President Emeritus – Star Childs
Vice President – Dr. Jack Ostroff
Treasurer – James Gage
Secretary – Jane Harris
Board of Directors (term ending):
Bill Adamsen (2019)
Christian Allyn (2019)
John Blossom (2019)
Star Childs (2019)
Matt Freund (2019)
Jane Harris (2019)
Dr. Jack Ostroff (2019)
E. Woods Sinclair (2019)
Jim Gage (2020)
John Baker (2020)
Dr. Philip Arnold (2020)
Dr. David Bingham (2020)
Garrett Smith (2020)
Bert Malkus (2020)
Mark Vollaro (2020)
Ginny Patsun (2020)

CT-TACF member Michael Gaffey conversing with a Durham Fair attendee at the CT chapter's exhibit. inspection

Testing the Backcross Breeding Program with Genetics

As The American Chestnut Foundation marks its 35th year, the backcross breeding program is advancing toward production of the B3F3 seeds that the founders hypothesized would be used to repopulate the forests with blight resistant chestnuts. Through the years selection was accomplished by challenging each generation of trees with two levels of virulent blight fungus strains to weed out the less resistant trees, leaving behind the trees that hopefully would carry forward the genes responsible for blight resistance. At the time that the backcross breeding program was developed, genetic sequencing was in its infancy. Since that time technological advances and automation have made it easier and more financially feasible for genetic analysis to be used to test the results of the traditional backcross methods.

Recently, TACF has begun working with genetic scientists on a study to determine how much of the genetic material from the parent trees remains in the latest generation of trees. Rather than sequencing the entire genomes of these trees, smaller segments of known gene sequences called genetic markers are used. The two original first backcross trees used to start the breeding program, Clapper and Graves, as well as a third tree added later, Mahogany, are all located on the properties of the Connecticut Agricultural Experiment Station in Hamden and the Connecticut chapter was instrumental in obtaining samples from each tree to submit fortesting. Analyzing the samples from these trees will determine where the genetic markers are located on the original parent genome. Samples from all the successive generations of backcross trees will also be analyzed so that the markers found on the parent genomes can be traced through each generation. In Connecticut there are only two backcross orchards, in

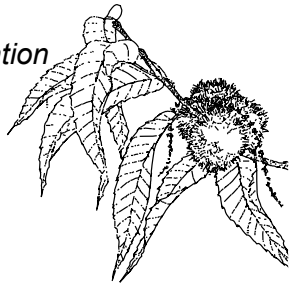
Woodbridge and Ellington, currently producing nuts for seed orchards. This past winter, samples from those trees were also submitted for testing. In addition to providing information on the proportion of Chinese and American ancestry in the backcross selections, the study will also detect and correct pedigree errors among backcross parents as well as provide an estimate of the diversity and effective population size of the breeding program.

In addition to this study, TACF is funding research to determine the entire genetic sequence of both the American and Chinese chestnut genome. This knowledge will foster a better understanding of the genetic differences between the two species where the specific locations of the genes necessary for blight resistance reside. It may also be used in the future to help explain why some large growing American chestnut trees are able to resist blight while most trees easily succumb. As genetic technology continues to advance it will become a useful tool to augment the selection process assuring that the most blight resistant trees remain.

CT-TACF President Jack Swatt stands in front of the Clapper BC1 chestnut tree (at the Connecticut Agricultural Experiment Station's Lockwood Farms in Hamden) with twig samples to be sent for genetic analysis. inspection

The Connecticut Chapter
of The American Chestnut Foundation

Jack Swatt — Chapter President
226 Long Swamp Rd.
Wolcott, CT 06716
tacf.ctchapter@gmail.com



Upcoming Calendar of Events

Saturday, November 10th, 2018, 10 AM to 1 PM – ***Fall Landowner Class in NH on Growing American Chestnut Orchards***

Fall Landowner Classes will be held at various locations in New Hampshire beginning in early October through early November. TACF's Regional Science Coordinator, Kendra Collins, will offer a class on "American Chestnut Orchards on Private Land" November 10 at Shieling Forest State Park in Peterborough, NH. Kendra will speak to participants about growing breeding orchards for American chestnut trees and how to get involved. She'll also share the history of the tree and discuss TACF's breeding programs to develop a blight-resistant tree. A tour of two orchards will also take place. To register, and more information on this class refer to the TACF event calendar

Friday, November 16th, 2018, 11 AM to 1 PM – ***Fall Board of Directors Meeting***

The CT Chapter of The American Chestnut Foundation will be holding it's Fall Board Meeting at the CT Forest and Parks Headquarters on Friday, November 16th from 11 AM to 1 PM. The meeting is open to all members. Lunch will be available but if you plan on attending, please RSVP Jack Swatt at jswattchestnut@gmail.com so we can plan accordingly.

February 21 -24, 2019 – ***CT Flower & Garden Show***

We will again be holding an exhibit at the 2019 CT Flower and Garden Show at the Connecticut Convention Center in Hartford. This is a great event to educate others about chestnuts and to share our mission with the public. We will be needing plenty of volunteers to help staff the exhibit. More information available closer to the event dates.

Additional volunteer opportunities and events may be added at any time. Please check out our event calendar at https://www.acf.org/events/category/ct for the latest information.

Review and approval of the Bylaws, and election of Directors, Offices, and Members of the Nominating Committee will take place at the Annual Meeting. Search the Chapter web-site for more information on the nominees including short biographies.