

Chestnut Mast



Volume 13, Issue 1 The Carolinas Chapter of The American Chestnut Foundation® Summer 2011

On the road: Introducing a new series

The *Chestnut Mast* will feature articles from the journals of volunteers who write about their travels and work for the Carolinas Chapter and The American Chestnut Foundation®. Articles written by Paul Sisco in this issue tell of two of the many trips he made from May 20 to mid-July to volunteer in chestnut orchards. Stories of other trips are in the current issue of *The Journal of the American Chestnut Foundation*.

Inoculation and pollination occur over a nine-week period because of the large differences in elevation at which orchards grow. Surviving American chestnut trees that are pollinated are located from 1,200 feet in the Piedmont to 5,300 feet in the mountains. By the last pollination, Paul does not want to drive any farther

– even to the grocery store! He enjoys the scenery on his long trips, making the driving worthwhile. The people he meets along the way are most important in making chestnut breeding a success.

Others who made this summer's orchard work a success: Brad Stanback and David Nelson of Canton; Don Surrence of Pisgah Forest; Carroll Parker of Brevard; Robert Clark of Lake Toxaway; Russell Regnery of Macon County; Judy Coker and Judy Sutton of Maggie Valley; Grover DeHart and Becky Brookshire of Walnut; Pat and Bob Momich of Marshall; Jim Hurst of Asheville; Susan Wilson and Don Myers of Sandy Mush; David Vaughn and David Gomer of Landrum, S.C.; Jim Phillips of Spruce Pine; and Brian Joyce of Montreat College. Paul says thanks to everyone.

Read more

See page 3 for Paul's journal entries.



On the right, Jon Taylor and Louis Acker bagging a tree. Photo by Paul Sisco. Below, volunteers and Clemson scientists who helped Joe James at his farm in South Carolina. Photo by Steve Jeffers.



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President's message

No off season here

As you read this message, I will have completed two years of service as president of the Carolinas Chapter of The American Chestnut Foundation. It is a great honor to serve people dedicated to restoring the American chestnut to eastern woodlands. We are blessed with extraordinary people, all volunteers, who put an enormous amount of time, energy and their own resources into advancing the work of the Carolinas Chapter and TACF®.

One of our members is treasurer of TACF. He and five other members serve on the Board of Directors and in the Science and Development Cabinets of TACF.

We have more than 40 breeding orchards in the Carolinas maintained by a very dedicated group of growers. Chapter members and volunteers help with pollination and harvesting nuts in the orchards, with inoculation of orchard trees and with selection of trees to use in further breeding efforts. Some help with pollination of trees at Meadowview

Member Jon Taylor offers advice for those concerned with theft of their BC₃F₃ trees: Guard them with about 40,000 honey bees. "I think it would deter most people," he says. Photo by Jon Taylor.



A bee gathering pollen and nectar. Photo by Jon Taylor.

Research Farms in southwest Virginia and with harvesting nuts from those trees.

Members organize, plan and conduct Restoration Branch events to which new members and resources are attracted. Chestnut Saturday at Cataloochee Ranch is an annual, family event conducted by members and other volunteers that is fun and educational for children and adults.

Chapter members make presentations at conferences, speak at outdoor environmental events and talk to civic groups about the American chestnut and its restoration. Members participate in ceremonial plantings of "Restoration Chestnut" seedlings and help with demonstration plantings. They assemble eight-page chapter newsletters each year, write additional articles for *The Journal of The American Chestnut Foundation* and maintain the chapter's website.

Restoration of the American chestnut is a great environmental story. We need to celebrate what we do as a chapter and thank those who work diligently and commit personal resources to restore the American chestnut. Let them know you appreciate their efforts and give yourself a pat on the back as well.

Each member contributes in a unique way, and in volunteering has the chance to work with others to maximize what he or she offers and in return, what he or she receives from working with others. If you wish to be more involved, contact me or any board member.

Participate in the chapter's annual meeting and its fall picnic and orchard tour at Black Mountain in November. Invite your friends to come and join TACF. As a chapter, we need to attract



THE AMERICAN CHESTNUT FOUNDATION

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Photos by or courtesy of Paul Sisco, Jon Taylor, Steve Barilovits III, Steve Jeffers, Meghan Jordan and Doug Gillis.

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many more new people, partners, organizations and resources to help with the restoration of the American chestnut to eastern woodlands.

Doug Gillis
Summer 2011

On the road: By Paul Sisco

S.C. Piedmont

To reach Chestnut Return Farms, the home of Joe James, I drove along the foot of the Blue Ridge Mountains through the northwest edge of the South Carolina Piedmont. I met Joe, a surgeon and chestnut enthusiast, in 1999 when he came to the first organizational meeting for the Carolinas Chapter. He impressed me as a ball of energy and a quick study. I have never had reason to change that opinion! Joe's first attempts to plant backcross chestnut trees at his farm ended in failure — all the trees died. Not one to give up easily, Joe enlisted the help of scientists at nearby Clemson University who diagnosed the problem to be a soil-borne pathogen, *Phytophthora cinnamomi*. It causes root rot, or Ink Disease, which is lethal to American chestnuts. European chestnuts are affected by Ink Disease as well. Asian chestnut species have resistance to root rot as well as to chestnut blight.

Joe teamed up with Clemson professor Steve Jeffers, a *Phytophthora* expert, and undertook an ambitious program to breed hybrid chestnut trees resistant both to *Phytophthora* root rot and chestnut blight. Joe and Steve are in their sixth year of that effort. This year, they are working with Dr. Albert Abbott, a Clemson geneticist, to map the gene or genes for *Phytophthora* resistance. The mapping made it necessary to label and take samples from more than 1,400 seedlings being grown and screened for *Phytophthora* resistance at Chestnut Return Farms. Chapter members Steve Barilovits III and Michael Egan helped with labeling (below right). Two leaf samples were taken from each seedling (below left) and placed in individual bags labeled to match the seedling. Bagged samples were delivered to Dr. Abbott's lab. Ten people helped with the work. Some seedlings labeled and sampled were provided by researchers at State University of New York-College of Environmental Science and Forestry and the University of Georgia. Seedlings grown from nuts they supplied were genetically engineered, and screening being done will help determine if *Phytophthora* resistance can be introduced using molecular techniques. The accurate labeling will help researchers track data for samples back to each seedling sampled this spring.

GA to VA

This year, I carried pollen from Paul Vonk's orchard in Macon County, just a few hundred yards from the Georgia border, to the chestnut orchard of Louis Acker and Allie Funk in Ashe County, not far from the Virginia border. The selected backcross trees at both orchards looked very good. We hope the selected BCF₂ offspring from these intercrosses will be outstanding additions to the Carolinas Chapter seed orchard. Thanks to Paul, Louis and Jon Taylor of Asheville for all their work. (See photo on page 1.)

The long-distance pollen transfer has to do with the next big step in our chapter breeding program. We are intercrossing selected backcross trees to make BC₃F₂ seed for planting in our orchard. Since 2001, we have crossed surviving pure American chestnut trees in the Carolinas with pollen from hybrid trees with moderate blight resistance, a process called backcrossing. We have tried to grow out at least 50 trees from each backcross family. When they are at least 1.5 inches in diameter, we inoculate them with blight and select the most blight-resistant two or three trees from each family. We backcross to our native Carolina trees to increase genetic diversity and capture genes for local adaptation. Our initial work has been on surviving American chestnut trees at high elevations — 3,000 to 5,300 feet. That's where American chestnut trees are most numerous.

However, the most blight resistance we can expect from these backcrossed trees is moderate resistance, good enough for short-term survival but probably not enough for long-term survival. For higher resistance, we need to intercross the best trees from each backcross family to produce what are called "BCF₂ seed." With moderate resistance coming from *both* parents, we can expect some of these intercrossed offspring to have a higher level of resistance than either parent.

The easiest way to intercross is to grow up two or more backcross families at a single location and intercross the best trees from each family after selection for blight resistance. But we did not always have two families to plant each year, so some of our locations have only a single backcross family. In these cases, we have to carry pollen from one orchard to another, and that can be at some distance, as it was in this case.



2011 Picnic and orchard tour Nov. 12

By Paul Sisco



Mark your calendars to attend the Carolinas Chapter fall picnic and orchard tour at the Terry Estate in the Town of Black Mountain. The event will take place on Saturday, Nov. 12, from noon to 2 p.m. and will be hosted by Dr. Brian Joyce of Montreat College.

We will meet at the Manor House at the Terry Estate at noon, from which we will walk to the picnic site at the nearby chestnut orchard. Please bring your own lunch and drinks, as well as a blanket to spread out on the grass.

During lunch, entertainment will be provided by the Ross Brothers of Maggie Valley, N.C., playing guitar and banjo. Note that the Terry Estate is now known as the Black Mountain Campus of Montreat College, but it is several miles from the main Montreat College campus.

After lunch, we will tour the chestnut orchard at the site. The trees in the orchard were inoculated this past summer to determine which trees are most resistant to blight. The orchard includes backcross hybrid trees, as well as pure American and

pure Chinese chestnut trees as controls.

We hope to see you for an afternoon of fun, relaxation and fellowship.

Directions

Take Interstate 40 to Exit 64 (to Black Mountain). Turn north on N.C. Highway 9 toward downtown Black Mountain. In about two-tenths of a mile, turn left onto Vance Avenue. There is a Shell Station on the left and a Bi-Lo on the right. If you cross the railroad tracks, you have gone too far. Drive along Vance Avenue about ½ mile past Terry Estate Drive and turn right into the gravel drive where there is a large Montreat College sign. Follow the arrows to the Manor House and park in the circle next to the house or along the drive.

Directions will also be posted at our Carolinas Chapter website at www.carolinas-tacf.org

Student memberships take root

By Doug Gillis

Paul Sisco suggested this summer that the Carolinas Chapter reward certain youth who showed interest in the American chestnut with a one-year student membership. Paul's idea was that we as a chapter should tap into the students' interests and help them learn more about the American chestnut tree and its restoration. A source of funds was needed to sponsor the memberships.

Just as Paul put forth his idea, I was putting the finishing touches on a bluebird home I had crafted from wormy American chestnut wood, which Carolinas Chapter member John Chalk asked that I make for him.

He had lost out on a bid to purchase a similar bluebird home at the silent auction held April 26 at Daniel Stowe Botanical Garden as part of the Charlotte Restoration Branch event. When I agreed to build John the bluebird home, John said that he would be glad to pay me for it. John's offer funded Paul's idea.

John took possession of the bluebird home and made a donation that paid for five student memberships in TACF. During the next year, the students, who would not have become members otherwise, will be receiving copies of TACF journals and Carolinas Chapter newsletters and enjoying the benefits of membership.

Once they learn more about the American chestnut and its restoration, we hope they will continue their memberships.



A birdhouse that Doug Gillis built for chapter member John Chalk funded five one-year student memberships. Photo by Doug Gillis.

Beetles and wasps: Pests in chestnut orchards

By Paul Sisco

Several insects originally from Asia can cause damage on chestnut trees. Among these are two species of ambrosia beetle, a gall-forming wasp, and the Japanese beetle. The granulate ambrosia beetle (*Xylosandrus crassivellus*) was introduced to South Carolina from Asia in the early 1970s and has spread throughout the southeast, the Gulf Coast and northward to Maryland and Ohio.

The female beetle bores into the trunks of trees and excavates galleries in the heartwood, inoculating the trees with ambrosia fungus which can interfere with the transport of nutrients. The female lays eggs within the tunnels, and she and her brood feed on the ambrosia fungus.

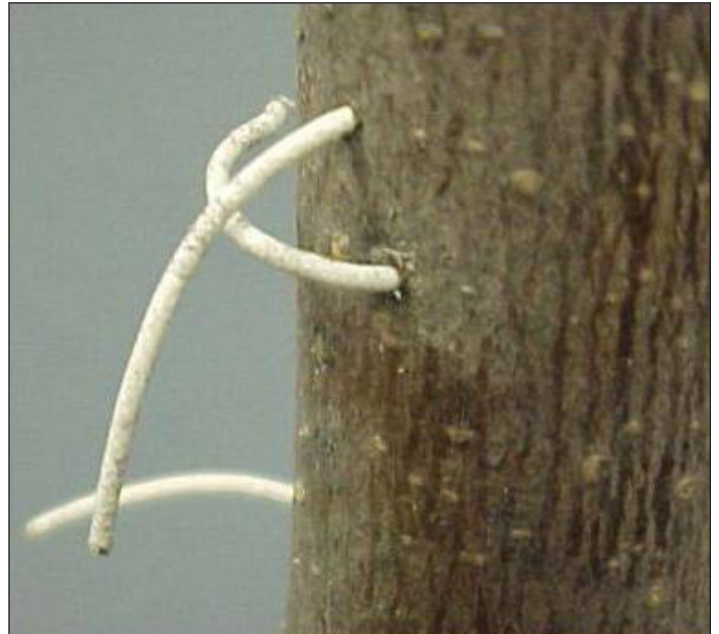
Secondary pathogenic fungi can enter the tree through the bore holes. A combination of boring, ambrosia fungus and/or infection by another pathogen can damage and potentially kill young chestnut trees. A sure sign of infestation is toothpick-sized pieces of excreted, digested wood (or frass) that extend outward from the bore hole (see the top picture). The larvae mature into adult beetles within two months, mate, and emerge from the infected tree looking for another host tree.

Control measures include frequent spraying of labeled insecticides and removal of infected stems by cutting to the ground and allowing resprouting from the root collar.

Another of these imported pests is the Asian chestnut gall wasp (*Dryocosmus kuriphilus*), the female of which lays eggs in buds of chestnut trees in mid-summer. The following spring, the larvae develop, forming green- or rose-colored galls on the leaves. Tree growth is stunted, the tree loses vigor if heavily infested and flower production can be greatly reduced.

The Asian chestnut gall wasp first appeared in the United States in Georgia in 1974, where it was accidentally introduced on imported chestnut seedlings. It has since spread north to Pennsylvania and Ohio and was recently introduced to Italy, where it is causing major problems for the chestnut industry. The most effective control is a form of biocontrol by other species of wasps that lay their eggs in developing gall wasp larvae, which then act as food for their developing young. One species of parasitic wasp, *Torymus sinensis*, was deliberately introduced from Asia to aid in the biocontrol of the Asian chestnut gall wasp. Dr. Lynne Rieske-Kinney and her students at the University of Kentucky authored several recent publications on the gall wasp itself and the predatory wasps that can help control it.

Information on these and other pests of chestnut can be found on the Chestnut Growers website at Penn State: <http://sfr.psu.edu/public/chestnut/breeding/pests>



Above, toothpick-sized strands of excreted wood extending outward from the bore hole are a sign of Ambrosia beetle infestation.

To the right, green- to rosy-colored galls on the leaves of chestnut trees are a sign of infestation by the Asian chestnut gall wasp.
Photo by Paul Sisco.

Culinary Corner: Cherokee style

By Doug Gillis

The Cherokee enjoy bread made with American chestnuts. The bread is made using a recipe and technique handed down through the generations. American chestnuts, if available, can be used in making the bread. Chinese or European chestnuts often are substituted for the more sweet-tasting American chestnuts. Sugar can be added to the ingredients to sweeten the bread. Ground cornmeal is a main ingredient of the bread. Corn blades, the leaves growing from the corn stalk, are used in cooking the bread.

Making Cherokee chestnut bread is a fun experience. Try it yourself. Have friends or members of your family help. Extra hands are helpful in wrapping the corn blades around the dough and in binding the bundles within the corn leaves. Children will enjoy the experience and in the process learn about the American chestnut, its food value and the ingenuity of Native Americans.

Cherokee chestnut bread

Ingredients

6 corn blades, washed and scalded in boiling water
¼ teaspoon salt
2 cups hulled, peeled chestnuts, chopped
¼ teaspoon soda
1 cup coarsely ground cornmeal (such as yellow corn grits)
½ cup sugar
1 cup of plain, ground cornmeal
1 cup water

Directions

Shred one corn blade from end to end to create narrow, one inch wide strips of corn leaf. These strands may be useful, though not necessarily required, to complete the cooking process.

To make the bread dough, mix the cornmeal, salt, soda and sugar. (Use of yellow corn grits will add texture to the cooked bread.) Add the chopped, fresh chestnuts.

Add water slowly to make stiff bread dough. A full cup of water may not be required. Knead the dough well. Place a portion of dough on the wide end of a corn blade.

Wrap the leaf around the mixture, first the sides and then the large end, molding the dough into a rectangular shape about two inches wide, four inches long and one inch thick. Be sure the dough is completely covered by leaf. Leave the narrow end of the corn blade free and unwrapped for the next step.

Split the narrow end of the corn blade into two strands and wrap each strand in opposite directions around the rest of the wrapped bundle.

Tie the two strands into a knot to securely bind the chestnut cornmeal mixture within the leaf wrapping. Repeat the process of placing dough on a corn blade until all dough is used. Use the one inch wide strands of corn leaf to further bind the packets if necessary.

Gently drop the wrapped packets in boiling water and simmer for 60 minutes. After boiling, remove the packets, drain and cool somewhat. Unwrap the packets while still warm and serve with butter. Leftover bread can be reheated in a skillet using a tablespoon or two of cooking oil. The reheated bread should be served while warm.



Say it in Cherokee.

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chestnut tree	ᏊᏚ	ᏊᏚᏊᏚ
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The history

Many of the Cherokee settled in Georgia, Tennessee and the Carolinas. They are the largest Native American tribe in the United States.

The Cherokee knew how to use resources around them, including white oak, hickory and chestnut trees. The chestnut was a favorite food of these Native Americans who spent some winter nights shelling them around a fire. The women made large, flat loaves of chestnut bread wrapped in corn blades.

Chestnut bread is made the same way as bean bread, another traditional Cherokee recipe, but with chestnuts substituted for beans.

Chestnut bread is still eaten in some Cherokee homes today and has been replicated by cooks all over the world. Some make the bread in round loaves and some in typical, rectangular bread loaves.

Recipe idea?

Contact a board member with recipes that include chestnuts as a main ingredient.

Charlotte Restoration Branch

By Doug Gillis

The first Charlotte Restoration Branch event was hosted by Daniel Stowe Botanical Garden (DSBG), located south of Belmont, N.C., the evening of April 26, 2011. Thirty-five people attended the event. Payments for 23 new and extended memberships in The American Chestnut Foundation were part of the proceeds for the event. New and current members had an opportunity to socialize, to meet Kara Newport, executive director of DSBG, Bryan Burhans, president of TACF, and others involved in planning the event.

Planning for and having the event at DSBG opened the door for a mutually beneficial relationship between DSBG, its members and members of The Carolinas Chapter of TACF. As a lead in to the Restoration Branch event, backcross American chestnuts, using trees grown and donated by Dr. Joe James at Chestnut Return Farms, Seneca, S.C., were planted in late winter at DSBG.

The trees were planted along DSBG's Meadowood Walk, a new attraction opened this spring. It will be visited by a great number of people over time who will have the opportunity to view the trees, read the sign erected at the planting and learn about efforts to restore the American chestnut. A ceremonial planting of one of the chestnut trees was conducted April 13. Elementary school children participated.

Charlotte, which is centrally located in the Carolinas, is a logical place for a branch to be situated, especially when an attractive facility such as DSBG is so near and can provide people with an opportunity to learn about the American chestnut and its restoration.

To help build the relationship with DSBG, Steve Barilovits III, Carolinas Chapter board member and TACF treasurer, did a noon presentation on April 5 entitled "The Great American Chestnut Story." Doug Gillis, Carolinas Chapter president, spoke later that evening to the DSBG Board of Visitors.

A panel discussion on the American chestnut was held on Aug. 4 at DSBG as part of its regularly scheduled Thursday Garden Nights event. The chapter's annual meeting was held at the garden on Aug. 20.

The first Charlotte Restoration Branch event was successful in reaching out to people in the Charlotte region and in developing a lasting relationship with DSBG.

The Carolinas Chapter, the Charlotte branch, DSBG and their members will benefit from the relationship.



At the right, a sign was erected at the planting of backcross American chestnut trees at the Daniel Stowe Botanical Garden, where the Charlotte Restoration Branch event was held. Photo by Meghan Jordan.

Above, elementary students participated in the ceremonial planting of an American chestnut in April. The planting is a symbol of the Daniel Stowe Botanical Garden's relationship with the Carolinas Chapter of The American Chestnut Foundation. The American chestnuts planted on site can be enjoyed by visitors. Photo by Doug Gillis.





Carolinas Chapter Endowment Fund

Donations can be made at any time.
Make checks payable to "CC-TACF"
and note on check: "For CC-TACF
Endowment Fund."

Mail to: CC-TACF Endowment
Fund, c/o Don Surrrette
145 Sutton Creek Road
Pisgah Forest, NC 28768

*Above, Steven Slack (left) and Forrest
Edens (right) were two of the excellent
student interns who served the Carolinas
Chapter. Photo by Paul Sisco.*

*To the right, Matthew Egan, 13,
pollinating at Meadowview Research
Farms in southwest Virginia. Photo by
Steve Barilovits III.*



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