Chestnut Mast

Volume 14, Issue 1 The Carolinas Chapter of The American Chestnut Foundation® Summer 2012

Photo essay: A busy season in review

It's been a busy year for the Carolinas Chapter! Here are just a few highlights.

Drs. Joe James and Steve Jeffers continue to work with a team from Clemson University to breed chestnuts with resistance to blight and Phytophthora root rot.

And member Doug Gillis traveled again to Oregon, seeking out chestnut trees. To read more about his trip and view photos, visit www.carolinas-tacf.org and click on "Photos" at the top of the page.

We hope you'll join us on our next adventure! See the back page for more pictures.

At left, a Brevard High student who was part of a special science class funded by Burroughs-Wellcome. Students inoculated Chapter trees at Cataloochee Ranch.
Photo by Brook Reynolds.
Below, Scott Pryor (back right) brought his grandkids to the Chapter's 'Clapper' seed orchard, planted this spring. Dr. Paul Sisco is on the right. Photo by Nancy Pryor.
At right, scientists from Belgium visited Paul Vonk's orchard in Macon County, N.C., to learn about chestnut breeding.
Photo by Paul Sisco.

Mark your calendar

The Chapter's fall picnic will be held Nov. 10 at the orchard of Jim and Caroline Hurst in Asheville.

In This Issue

President's message

Two decades later

More than 26 years ago, Dr. Charles Burnham signed me up as a member of The American Chestnut Foundation® (TACF®), an organization that he helped found. Restoring the American chestnut was then only a gleam in Dr. Burnham's eye.

Three years later, in 1989, a farm was leased in Meadowview, Va., and a scientist, Dr. Fred Hebard, was hired to get the program started. The organization lived hand-to-mouth for many years, but thanks to some strong and capable leadership, it is now at the point where it can test its first "Restoration 1.0" chestnut trees.

I emphasize the word "test" because we need more data about the resistance to chestnut blight of this set of trees. TACF operates differently from a standard plant breeding program where a new plant variety is extensively tested before it is distributed to the public. Rather than testing the trees first and then sending them out, TACF is using the public to test its Restoration 1.0 chestnut trees. We already know that some of them will not have any blight resistance at

all, while others will have at least some resistance to the blight. Thus, it is very important that our members who receive these trees report back on how well the trees grow and whether they show blight symptoms. It is also important to keep up with numbered tags attached to the trees – numbers like D-7-31-112. This number identifies the seed parent of the tree, and by tabulating the results sent back by members and from TACF's own tests, we will know which of the seed parents to keep and which to eliminate from the seed orchard.

Our Carolinas Chapter is also undertaking its own breeding program with the goal of establishing one or more chapter seed orchards. Each tree in our program has at least one parent that is a native Carolinas American chestnut tree. By using our native surviving trees, we hope to increase the adaptation of the Carolinas Chapter Restoration Chestnuts as well as increase the genetic diversity of TACF's overall breeding program. Many members have helped us locate and pollinate these native Carolina American chestnut trees. Many, many thanks.

Finally, thanks to the efforts of Dr. Joseph B. James of Seneca, S.C., and cooperating scientists at Clemson University, our Carolinas Chapter is leading the way in breeding American-type chestnut trees that are resistant to both chestnut blight and Phytophthora root rot. The root rot disease, prevalent in warm southern soils, is lethal to the American chestnut, but all Asian species are resistant to it.

If at all possible, join us for the Chestnut Summit in Asheville, N.C., in October. Excellent talks are scheduled on a wide variety of topics, from the genetics of disease resistance to the challenges of chestnut reintroduction. And I hope to see you at our annual fall picnic on Saturday, Nov. 10, at 10:30 a.m. at the orchard of Jim and Caroline Hurst, 113 Farida Drive, Asheville. Bring your own bag lunch.

Paul Sisco, Ph.D.
Summer 2012

Chestnut Summit

Join scientists, private landowners, conservationists, outdoor enthusiasts and industry professionals to share more about the American chestnut and inspire reintroduction of this species to eastern forests.

What: 2012 American Chestnut Summit

When: Oct. 20-21; reception Oct. 19

Where: Crowne Plaza Tennis and Golf Resort, Asheville, N.C.

Topics include:
- Chesnut genetics and diseases
- Chestnut ecology and restoration
- Culture and history of chestnuts
- Practical skills

Event includes a Bent Creek chestnut tour and hands on workshops!

For more information, to register, for accommodations or a full schedule:
www.acf.org/summit
828-281-0047

CAROLINAS CHAPTER
THE AMERICAN CHESTNUT FOUNDATION

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Photos by or courtesy of Paul Sisco, Doug Gillis and Brook Reynolds, Nancy Pryor, Julia Hurst and Steve Motsinger.

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Where to find it: Chestnut wood

By Doug Gillis

Lumber-quality chestnut wood is no longer harvested from the forest. Salvagers reclaim pre-wormy and wormy chestnut lumber from private homes, barns and outbuildings, and other structures built 100 or more years ago. Chestnut wood is very rot resistant, and salvaged wood is a prized commodity.

There are many buildings in upstate South Carolina and in western North Carolina where chestnut wood has been used in construction of and in finishing the interiors and exteriors of buildings. It's also found in other states.

The Carolinas Chapter wishes to catalog the places people can visit to see chestnut wood. A partial listing follows. If you know of other places, contact Doug Gillis by email at dgillis001@carolina.rr.com, by phone at 704-542-0627, or by mail at 10607 Newberry Park Lane, Charlotte, NC 28277.

Examples of use of chestnut bark shingles

Building	*Location*	*Use of wood*	*Comments*
All Saints Episcopal Church	Carolina Ave., Linville, N.C.	Interior and exterior clad with shingles	Architect Henry Bacon also designed the Lincoln Memorial in Washington, D.C.
Inn at Ragged Garden	203 Sunset Drive, Blowing Rock, N.C.	Exterior clad in chestnut and poplar shingles, interior uses chestnut paneling	Compare poplar and chestnut shingles

See WOOD / Page 7

Salvaged wood makes new homes

By Doug Gillis

I like to work with American chestnut wood, whether wormy or pre-wormy chestnut. Wood that was first milled 60 or more years ago and is still sound is a delight to handle. Since the wood is salvaged wood, I wonder who else has worked the same piece of wood in the past. I like to take the scraps of American chestnut wood discarded by other wood workers and turn them into homes for bluebirds.

I am talking about short boards a foot or so in length that are up to six inches or more wide and three-fourths inches thick. Building a bluebird home requires little more than two board feet of lumber. Some boards I use have season cracks. The wood is so precious, I break the board apart, mill it if necessary, and glue it back together to produce a useable board.

I've made eight homes for bluebirds and plan many more in the future. Some are gifts to friends and some are auctioned at fundraisers. I use a design created after much experimentation by Jack Finch of Bailey, N.C. Jack Finch, uncle of Marsha Finch Gillis, my wife, worked diligently to restore the eastern bluebird. He founded the nonprofit Homes for Bluebirds in the 1970s. He saw the population of eastern bluebirds decline as habitat was eliminated, and many birds nesting in flue-cured tobacco barns were killed when used to cure bright leaf tobacco.

Since the 1970s, his nonprofit has distributed an estimated 100,000 bluebird homes throughout the southeastern United States.

Uncle Jack, who passed on in 2006, was special. He taught me the importance of restoring a species that might be lost unless caretakers get involved. I think about him each time I make a home for bluebirds from chestnut wood using his design. Read more about Jack Finch and his interest in bluebirds at www.danfinch.com/birds.htm.

Someday, homes for bluebirds might be built using American chestnut wood harvested from eastern woodlands – a gift from one re-established species to another.

“Village Blacksmith” remembered

By Doug Gillis

As a child, I memorized “The Village Blacksmith” by American poet Henry Wadsworth Longfellow. The first two lines of the poem are “Under a spreading chestnut tree, The village smithy stands.”

Every day on his way to Harvard College in Cambridge, Mass., Longfellow passed by the blacksmith shop he memorialized. In 1840, he sketched the scene depicted in this article. Alas, the tree he revered in the poem and included in his sketch was not an American chestnut. It was a horse chestnut – a Buckeye tree.

I was disappointed when I learned of Longfellow’s error. I corrected my mental image of the scene he sketched when I visited a spreading American chestnut tree this past June which shaded a building that at one time could have been a blacksmith shop.

The tree pictured is located on the grounds of Bridgeport Elementary School in Tualatin, southwest of Portland, Oreg. The tree, more than five feet in diameter at chest height, was planted in 1905 at a farm, the year after chestnut blight was first recognized in the east. The tree grows strong, as chestnut bark blight is not a problem in Oregon.

Great thanks to the person who planted it and to those who preserve it. One day we hope to have trees like it growing in our eastern woodlands.

To the right, a tree sketched by poet Henry Wadsworth Longfellow. Below, an American chestnut tree in Tualatin, Oreg. Photo by Doug Gillis.

22 'Clapper' lines and counting!

By Paul Sisco

The Carolinas Chapter 'Clapper' Seed Orchard is a reality. We made our first big planting this spring with seeds spaced only two feet apart, since we will save only the trees with a high level of blight resistance. Our research suggests that only one of 64 of the trees planted will have the high level of resistance we want in this seed orchard, which will be the source of our high-mountain plantings.

The orchard will contain seed from 22 lines from the 'Clapper' source of resistance. 'Clapper' was a BC1 tree from the old USDA chestnut breeding program that showed good blight resistance and fast growth in the first few years of its life – enough so that R.B. Clapper, the USDA breeder, published a scientific paper about this particular tree (Clapper, 1954). However, it eventually died, since, as a BC1 tree, it had only moderate resistance to the blight. Both R.B. Clapper's 1954 paper and a later "Diary of the 'Clapper' Tree" were reprinted in the spring 2007 issue of *The Journal of The American Chestnut Foundation*, which can be downloaded at www.acf.org. Click on "Questions and Resources," then "Resources and Links," then "Journal."

So what is a line anyway? It's a term that TACF scientists use to keep up with the relationship among the trees we have that are descended from the 'Clapper' BC1 tree and the 'Graves' BC1 tree. These two trees have been our main sources of blight resistance in the first years of our breeding program.

We don't want to have too much inbreeding in the seed we send out for reforestation. But we have to intercross BC3 or BC4 trees to get the high level of blight resistance we need, and intercrossing closely related trees results in inbreeding. The chart below also explains what lines are.

In this chart you'll see that the Carolinas Chapter made two families from line 28 – a BC3 family of Moses Cone Park x Gr97 and a BC4 family of Squirrel Hollow x AG247. Both these Carolinas families were inoculated this summer – 33 surviving trees of the BC4 family and eight surviving trees of the BC3 family. We hope that at least one of these BC3 or BC4 trees will have moderate blight resistance.

If so, we will then cross this moderately resistant tree with a BC3 or BC4 tree from another of the 22 'Clapper' lines that we successfully pollinated. Two BC3 trees from different lines should be half-first-cousins. Two BC4 trees from different lines should be half-second-cousins. In either case, the cross between trees of two different lines should not result in much inbreeding. We expect that there will be vigorous, highly blight resistant trees among the BCF2 offspring of these intercrosses, and that only these trees will remain as parents of the Restoration Chestnuts resulting from our Carolinas breeding program. We also expect them to be adapted to the conditions of our mountains where the female parents originated and to add genetic diversity to the national chestnut breeding effort.

Example: Line 28 of 32 'Clapper' Lines

GEN 1 Pollen from a graft of the 'Clapper' BC_1 Tree in CT was taken to VA and put on

↓

Quarter Branch forest opening American chestnut tree #3. Dr. Fred Hebard pollinated this tree in 1990 and seeds were planted in 1991 in the Graves Orchard at TACF's Meadowview VA Research Farms.

The descendants of this American chestnut female parent (one of 32 pollinated with 'Clapper' pollen) form Clapper Line 28 with a Line Code of **QBF3CL** for "**Q**uarter **B**ranch **F**red **3** x **Cl**apper", a code designating the female parent crossed by 'Clapper'.

↓

GEN 2 The only BC_2 offspring selected from this cross was Graves Orchard Tree 97 = **Gr97**. In some lines, more than one BC_2 offspring was selected.

↓

GEN 3 In 1996 pollen from **Gr97** was put on Hussy Branch American Tree #2. Seed were planted in the Angus Orchard in 1997 and four BC3 offspring were selected: **AG200**, **AG247**, **AG635**, and **AG824**. In 2004 the Carolinas chapter also used pollen from **Gr97** on an American at Moses Cone State Park in NC to produce one BC_3 family.

↓

GEN 4 In 2007 pollen from **AG247** was put on another NC tree in Squirrel Hollow in Avery County to produce one BC_4 family.

Culinary Corner: *Chestnut pizza*

By Doug Gillis

Pizza is popular among all ages. I decided to make a pizza using chestnuts as a topping. In the process, I learned some important facts about cooking with chestnut flour and chestnuts.

Chestnut flour does not make good pizza dough. It is gluten free and will not rise if yeast is added. Eggs and butter must be added to bind together chestnut flour, making it best suited for baking cookies or cakes.

Chestnuts have a subtle, distinct flavor. I realized that other ingredients used in a pizza with chestnut topping should enhance and not overpower the taste of the nuts. A Béchamel, or basic white sauce, makes a better base than tomato sauce, which is acidic. Toppings that are sweet or mild best complement the flavor of chestnuts. Toppings that are somewhat crunchy (sliced and placed on the pizza rather than sautéed first) go well with chestnuts, which are soft in texture.

Chestnut pizza

Ingredients

Béchamel Sauce:

2 tablespoons butter
2 tablespoons all purpose flour
1 ¼ cups light cream
1 pinch of salt
1 pinch of ground, black pepper

Pizza:

Prepared pizza dough (store-bought or homemade)
8 oz. steamed or boiled chestnuts cut in halves
1 medium fennel bulb sliced thin
2 medium shallots, peeled and sliced thin
8 oz. crimini mushrooms rinsed and sliced
Optional — shredded, mild flavored cheese, such as Provolone

Directions

Preheat oven to 350°. If using a pizza stone, place it in the oven to heat. If using a metal pizza pan, oil it lightly. On a surface dusted with flour, form the pizza dough into a 12-inch circle. Cut chestnuts in half and set aside. Slice fennel bulb, shallots and mushrooms and set aside.

Make a Béchamel sauce by melting butter in a saucepan on low heat. While stirring constantly, add the flour and then the cream. Stir until the sauce thickens without burning. Remove from heat.

Remove the heated stone from the oven and place the 12-inch pizza shell on it or on the oiled pizza pan. Spread the Béchamel sauce on the pizza shell. Arrange the shallot, fennel and mushroom slices evenly on top of the sauce. Place chestnuts on top of the other ingredients, sliced side down.

Press down on the toppings to bed them into the Béchamel sauce, especially if not using a cheese topping. Place pizza in the oven and bake for 10 minutes. Check to see if pizza dough is cooked sufficiently by looking at the edges. Add 2 more minutes cooking time if necessary.

Remove pizza from the oven, and if using cheese, sprinkle on sparingly and let melt. Slice and serve.

Try it at home

Other types of mild cheese to try on chestnut pizza:

Wisconsin colby
Swiss
Cream havarti
Dutch gouda
Goat gouda
Edam
Hoop cheese
Mozzarella

REMINDERS

- Chestnut flour doesn't work well for making pizza dough.
- Toppings should not overpower the taste of the chestnuts.
- A white sauce works better than a tomato sauce.

Recipe idea?

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

WOOD
continued from Page 3

Examples of use of chestnut wood

Building	*Location*	*Use of wood*	*Comments*
Cradle of Forestry Center	11250 Pisgah Hwy., Pisgah Forest, N.C.	Paneling in conference room	
First Baptist Church	5 Oak St., Asheville, N.C.	Exterior doors, paneling in sanctuary	Built in 1937
Gaither Hall Chapel and Fellowship Room	Montreat College, Montreat, N.C.	Vaulted wood ceilings with posts and beams, paneling and other trim	Built in 1936
Graham Cabin	Anne Close Springs Greenway, Fort Mill, S.C.	Logs used to construct cabin	Built in 1780, relocated in 1999 from site west of Ft. Mill
Hawthorne Lane Methodist Church	501 Hawthorne Lane, Charlotte, N.C.	Vaulted wood ceilings with posts and beams, veneer paneling on walls	Built in 1916
Highlands Nature Center	930 Horse Cove Road, Highlands, N.C.	Interior beams and woodwork	Built by WPA between 1939 and 1941
Snowbird Mountain Lodge	4633 Santeetlah Road, Robbinsville, N.C.	Paneling in lobby, bar and dining area	

Cataloochee Ranch offers tours

Cataloochee Ranch in Maggie Valley, N.C., now offers tours of its magnificent backcross chestnut orchard on Wednesdays. A fee of $15 includes lunch. The ranch, which borders the Great Smoky Mountains National Park, also offers horseback riding and luxurious accommodations in a rustic mountain setting.

The ranch's orchard includes about 300 chestnut trees from four backcross families. A science class from Brevard High inoculated the trees with blight in June to determine which have enough blight resistance to advance to the final generation where we expect high resistance to the blight. Don't miss the chance to see this fine stand of chestnut trees while enjoying the cool mountain air a mile high!

At left, a Brevard High student helps inoculate trees. Photo by Brook Reynolds. Below, Judy Coker shows off a chestnut tree at the ranch in the summer of 2010. Photo by Paul Sisco.

Above, Chapter interns and volunteers inoculated backcross trees at Hurst orchard in Buncombe County. Photo by Julia Hurst.

Above, Steve Barilovits IV (center) relaxes with his cousins, Michael and Matthew Egan, after inoculating an orchard in Surry County, N.C. Steve, Michael and Matthew were student interns for the Chapter this summer, along with Mark Lemke of Asheville. Photo by Steve Motsinger.

See this issue in full color!

This issue and previous issues of the newsletter can be viewed in full color at www.carolinas-tacf.org under "Resources."

CAROLINAS CHAPTER

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