

THE SPROUT

The Newsletter of the Georgia Chapter of the American Chestnut Foundation

VOLUNTEER OPPORTUNITIES

The Georgia chapter is in need of volunteers to assist with a number of different activities!

- Culling trees in backcross orchards around the state
 - **UGA Horticultural Farm**
Athens, GA
 - **Callaway Preserve**
Pine Mountain, GA
 - **Reinhardt University**
Waleska, GA
- Monitoring and collecting pollen from several wild American chestnut trees across the state
- Make a trip to Meadowview, VA in mid- to late-June to assist with chestnut breeding

If you are interested in volunteering, please contact Marty Cipollini at mcipollini@berry.edu for more information.

IN THIS ISSUE

A MESSAGE FROM THE PRESIDENT	2
AN UPDATE FROM THE BERRY COLLEGE INTERNS	3
SELECTING THE BEST OF THE BEST: CULLING OUR ORCHARDS	4
PROGRESS OF THE GA-TACF BREEDING PROGRAM	5
THE IMPORTANCE OF CITIZEN SCIENCE	6-7
NEW WEBSITE	8

A MESSAGE FROM THE PRESIDENT

Dear Georgia Members,

The very best of greetings to you all. This past year has seen the chapter make important progress in our efforts to restore the American chestnut tree to our beautiful state and spread and to spread our message about the work our chapter does. The chapter hosted a wonderful spring annual meeting at the Atlanta History Center in April. Our keynote speaker was Dr. David Shields from the University of South Carolina. Dr. Shields gave an excellent speech on restoring chestnuts (and chinquapin) to Southern cuisine. He even provided samples of chinquapin for everybody to try. The chapter also established at planting at the history center of some of the most genetically advanced seeds in our entire organization. The seeds are from trees that have been evaluated for both blight and *Phytophthora* resistance. If you visit the Atlanta History Center, be sure to see their newest exhibit of a period log cabin and check on the progress of our trees.

This past year the Georgia chapter has signed Memorandum of Understanding with the state Department of Natural resources and the Georgia Forestry Commission. These agreements help pave the way for the Georgia Chapter to establish important new planting locations and provide educational opportunities to the public, as well as develop important personal relationships within these state agencies. Please visit our new website, www.georgiachestnut.org. We will be adding new content to this site, and eventually, our old website will redirect to the new site. We also maintain a Facebook page, www.facebook.com/gatacf. Many of our latest photos are posted here.

Many new plantings were established over the past year in various orchards. So many plantings in fact that I can't keep up with all of them anymore. Thanks to Dr. Marty Cipollini and his interns, data is being meticulously kept on all of these plantings. The chapter is working on plans to establish new plantings this fall at the Carter Center and the Georgia Governor's mansion.

This Spring has seen the start of removal of trees from our very first backcross orchard at Berry College. This step is necessary, and is the culmination of blight inoculations and evaluation made the previous year. The remaining trees which are showing adequate resistance will form the basis for our chapter's continued breeding efforts.

I would like to thank each one of you for your past and future support of the Georgia Chapter.

Mark Stoakes

President
Georgia Chapter
The American Chestnut Foundation

AN UPDATE FROM THE BERRY COLLEGE INTERNS

Theron Kantelis, Royce Dingley and Patrick Felch



Interns from left to right: Royce Dingley, Theron Kantelis, Patrick Felch

GA-TACF's biggest accomplishment from the last year is most certainly the very first chestnut blight inoculations for the state. So far, inoculations have been completed at the Berry College, UGA Mountain Research and Education Center, UGA Horticultural Farm, Reinhardt University, and Callaway Preserve backcross orchards. GA-TACF members and other volunteers have helped follow up on these inoculations by evaluating the resulting cankers. These analyses, paired with study of the American chestnut-like characteristics of our backcross trees, is allowing the chapter to identify candidate trees to produce crosses that will go into chapter seed orchards. These five orchards and the hundreds of trees undergoing selection for blight-resistance there will provide the nucleus for restoration of American chestnut in Georgia, even as we continue to plant additional backcross orchards across the state.

Aside from a run in with a timber rattler at the Callaway Preserve (as Joe Nicholson and Ronnie Camp could tell you all about), the inoculations were a great success! We send a big thanks to volunteers Erin Coughlin, Zach White, Jonathan Price, Ryan McNeill, Joe Nicholson, Jack Rogers, Susan Hawkins, Ronnie Camp, and the Berry College Microbiology and Botany class!

The Georgia chapter has continued the annual tradition recruiting and sending a number of

volunteers up to the Meadowview research farm to assist with pollination work. Special thanks go to Erin Coughlin and Larry Cohrs for helping this summer! Together, the interns and volunteers made 12 new crosses using some of the 18 different pollens collected this year. These pollinations have led to well over 1000 nuts looking for orchard homes in 2015.

In addition to helping with inoculations, GA-TACF volunteers have been helping with all sorts of other tasks. We've had help planting orchards at Bottomlands Farm, Lake Allatoona, Confluence Park, Five Ridges, Smithgall Woods, Rabun Gap Nacoochee School, and Camp Sidney Dew (among the 44 orchards that were established or added to this year). Substantial maintenance work was also done at Confluence Park, Lake Allatoona, and the Dawson GFC orchards, and pollen collections were made from trees at FDR State Park, Springer Mountain, and Brasstown Bald (the location of our state champion chestnut tree!). Our chapter breeding program could not exist without volunteers, so remember to keep an eye on the GATACF Facebook page and your e-mail for volunteer opportunities.

In addition to the routine maintenance of the Berry College and Henry Family/Berry College orchards this summer, the GA-TACF interns helped plant and maintain about 500 potted chestnut seedlings that came from the 2013 breeding season. While we still prefer to direct-seed orchards, growing seeds in pots holds the advantage of higher germination rates and can help guarantee an initial orchard planting full of healthy seedlings. The seedlings grown this summer were planted at various orchards across the state this fall, including three new orchards (Berry College House of Dreams, Berry College Oak Hill, and Rabun Gap Nacoochee School).

...Cont'd pg. 4

SELECTING THE BEST OF THE BEST: CULLING OUR ORCHARDS

Culling has begun in a few backcross orchards around the state, and this is exciting news for the Georgia chapter!

Backcross chestnut *orchard culling* is the process of selecting and maintaining blight-resistant hybrids in an orchard. It is perhaps the most exciting aspect of the breeding process because it means progressing on to the next step! Once trees have reached a sufficient size, they are evaluated for blight resistance. Usually only about 10% of trees pass the evaluation process and those that don't have enough resistance are removed from the orchard. However, what's left are only the most blight-resistant trees and their seeds are carried on to take part in the next phase of the breeding process!



*Berry College orchard culling crew
From left to right: Scott Frazier, Brian Anthony,
Sarah Roberts and Royce Dingley*

*The recently culled Berry orchard: only
trees with higher levels of blight-resistant
trees remain*



... "Berry Interns" cont'd from pg. 3

Georgia interns have also been working to transfer orchard and cross-pollination data to the new TREES database developed by TACF staff. The TREES database is an online database that facilitates data entry and updating, and can be accessed from any computer or mobile device. Once the setup is complete, orchard stewards will be able to directly add information about their trees to the database, making life that little bit easier for everyone.

Finally, the GA-TACF interns want to publically acknowledge and thank Mary Belle Price for her continued support of the internship program! She was kind to help support a third intern this summer by way of a surprise bonus at the end of the summer. This program would not likely exist without her generous support.

PROGRESS OF THE GA-TACF BREEDING PROGRAM

Dr. Martin Cipollini

GA-TACF Breeding Program Coordinator, Berry College

This is a brief run-down of the progress made this past year in the chestnut blight resistance backcross breeding program in GA:

1) To date, we have planted 4427 backcross, 1102 American, 432 Chinese, 309 F1s, and 26 other chestnuts in the Georgia = 6306 total. By our most recent records, 3440 of those are alive (over 50% of trees planted in the past 9 years).

2) This past year we helped start 21 new test orchards and 2 new backcross orchards, and added trees to 21 existing orchard sites (44 orchard sites altogether). New orchard sites for 2015 will include Fort Mountain State Park, Don Carter State Park, and a private property (so far).



A new backcross orchard in Dawson, GA

3) We made 12 cross pollination attempts and have seeds from 2 F1 lines, 1 B1 line, 1 B3 line, and 7 B4 lines (500 total seeds). Some lines have only a few seeds, yet could be valuable (e.g., new F1 lines with new sources of Chinese chestnut blight resistance). We also have open pollinated seeds from several pure American and pure Chinese sources (680 total seeds).

4) We conducted final blight canker evaluations and are culling non-selected trees from the UGA Mountain Research and Education Center and the Berry College orchards.



A blight canker following inoculation at the Reinhardt University Orchard

5) We inoculated and conducted initial blight canker evaluations on three orchards: UGA Horticultural Farm, Reinhardt University, and Callaway Preserve. We will evaluate these again in spring of 2015 and plan to cull before flowering time in June 2015.

6) We used an ambrosia beetle repellent (verbenone) in orchards starting in March 2015, along with our normal trap monitoring and spraying programs. Initial results suggest that verbenone is not an effective repellent, so it is back to the drawing board as to how to deal with these destructive pests. We continue to recommend weekly or bi-weekly spraying with bifenthrin for the two month period preceding bud break.

7) Volunteers helped us located several new flowering American chestnut trees that may be capable of breeding this year, including several in White County.

PLANTING GA-TACF CHESTNUTS AND THE IMPORTANCE OF “CITIZEN SCIENCE”

Dr. Martin Cipollini

GA-TACF Breeding Program Coordinator, Berry College

If you are the typical GA-TACF member, you yearn for the day when American chestnuts are restored to our southeastern forests. You might even dream of those special hybrid American chestnut trees of yours producing their first big seed crop. Or you might have seen a large wild American chestnut tree in flower or fruit, and wondered if GA-TACF knows about it. Those of us helping coordinate the breeding program share your interests. We have been working hard to assist TACF in the development of lines of blight- and *Phytophthora*-resistant trees using wild American chestnuts in Georgia. We all want the same thing, but it's a darn tricky business.

To wit, some you have probably received seeds or seedlings resulting from GA-TACF breeding efforts (or maybe you got them from TACF directly). GA-TACF assists in the establishment of a variety of different chestnut plantings in Georgia, and encourages everyone to join in this endeavor. Trees in the ground are definitely a good thing. But we want to emphasize the experimental nature of the work GA-TACF does, and the importance of getting good feedback on trees that have been planted. For example, GA-TACF currently helps establish four different types of chestnut plantings in Georgia:

1) **Test orchards:** Small orchards usually containing pure American chestnut trees designed simply to test the suitability of sites for future, more valuable plantings. We try to start all larger orchards out as test orchards.

2) **Demonstration orchards:** Small orchards designed to showcase trees of different genetic backgrounds to help educate the public, including friends and family. Most private “backyard” plantings of even a couple of trees are



A demonstration orchard was recently established at the Atlanta History Center

considered by GA-TACF to be demonstration orchards if we helped get the trees to you. Same goes if you obtained some BC_3F_3 seeds from TACF's research farm in Meadowview and planted them somewhere in Georgia. We'd like to know how they are doing.

3) **Backcross or Breeding orchards:** Larger orchards containing specific lines of backcrossed trees (usually more than 50 trees), planted with the intent of inoculating them with the blight after a number of years of growth, and selecting the most resistant trees for future breeding work. These are the heart and soul of GA-TACF's breeding program and a 10 to 15 year commitment is necessary.

4) **Progeny tests or Restoration orchards:** Sites containing large numbers of BC_3F_3 trees from TACF's Meadowview research farm (often 300 or more trees), designed to evaluate the performance of these advanced hybrids over a 30 year period. We have only three such large-scale plantings so far in the state.

Eventually, GA-TACF hopes to be able to plant its own BC_3F_3 seed orchards using trees of Georgia origin, in order to provide its own BC_3F_3

seeds for restoration work in the state. We hope that the establishment of such orchards is only a few years away, given that we've initiated blight-resistance testing in five or our backcross orchards this year and last.

A main point is the success of the GA-TACF breeding program depends in large part on what has been called "citizen science". Citizen science depends upon "good data" collected by private citizens, which is then funneled to "experts" for compilation and evaluation. By "good data" we mean any information that is reliable and that can be documented. By "expert" we mean any person willing to call themselves that in public... Just kidding -- GA-TACF depends a great deal upon the expert advice of TACF's Southern Regional Coordinator Dr. Tom Saielli, TACF's Chief Scientist Dr. Fred Hebard, and a slew of other current and former TACF staff experts. Within GA-TACF, however, there are no paid workers except for two Berry College interns who help manage two backcross orchards each summer and help maintain records the rest of the year. Information about your trees, such as how long they lived, how fast they are growing, whether they show signs of disease, etc. is very important for GA-TACF's breeding program, and we encourage you to provide feedback – even if you have only a few trees. *Keep in mind -- if you have ever gotten any trees from us or from TACF, you are involved in the breeding program.*

With so many different "chefs in the kitchen", keeping good records is a difficult, yet extremely important aspect of the breeding program. Our group at Berry College has assumed responsibility of maintaining records for GA-TACF's breeding program, so all information gets funneled to us (even changes in your contact information). From our records, we can tell that GA-TACF has assisted in the planting of at over 6000 chestnut trees in Georgia and that about half of those trees are still alive. That said, the number still alive is likely an underestimate, since GA-TACF has not heard from many of you recently or perhaps not since you got the trees. We realize, of course, that some folks would like

to keep information such as the exact location of their trees private, and we endeavor to abide by those wishes. But, to be honest, we often don't hear anything back from people who have gotten trees from GA-TACF or TACF. Point being, we'd very much like to!

What can you do to keep good records? Here are three simple steps:

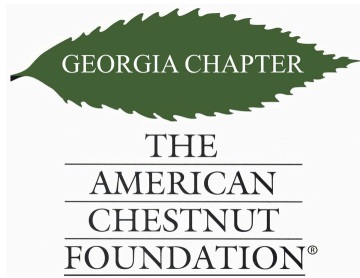
1) Label trees so that they can be tracked. If possible, orchard stewards should label all trees with permanent markers showing the code number along with the date of planting. Drawing up a map at the time of planting is another way to track trees, as long as rediscovering tree planting positions isn't confusing (e.g., when trees are in neat rows).

2) Do a tree-by-tree census including measuring trees once per year. Ideally, height, diameter or circumference, and some statement about tree health (e.g., "no blight") are included in an annual report to GA-TACF. If this is too onerous, something as simple as a report from an annual "walk through" visual survey can be helpful, and certainly better than no information at all.

3) Stay connected. You can do this by making sure we have good contact information for you and by communicating with us. Check out our GA-TACF web page for updated contact information on officers and board members, "like" and post updates to our GA-TACF Facebook page, and send in reports for The Sprout newsletter (see below for some key contacts).

Being an all volunteer organization, there is no "us and them" in GA-TACF. It is all "we" and "we" encourage everyone to share information on what "we've" been up to and how "our" trees are doing. This encouragement to share information extends beyond orchard data to "all things chestnut" in the state, including chestnut-related events, reports of wild trees, calls for volunteer opportunities, etc. As a GA-TACF member, you are free to coordinate events and opportunities in your neck of the woods (we encourage that) and to let the other members

...cont'd pg. 8



2859 Creek Court SW
Marietta, GA 30008
www.georgiachestnut.org

Many thanks to all those who have volunteered over the past year with GA-TACF. Your help is invaluable to the chapter and we greatly appreciate you!

NEW GA-TACF WEBSITE!

Check out the new and improved Georgia chapter webpage:

www.georgiachestnut.org

...”Citizen Science” cont’d from pg. 7

know about it. We’ll all help spread the word amongst Georgia’s chestnut enthusiasts!

Some of us to contact:

Dr. Martin L. Cipollini, GA-TACF Breeding Program Coordinator, Berry College, mcipollini@berry.edu, 706-346-7956 (info on planted trees, wild trees, changes in contact information, and suggestions for sites in which trees might be planted)

Timothy Chesnut, GA-TACF Board Member, Chesnut Forestry, tim@chesnutforestry.com (articles, news, updates, and photos for The Sprout newsletter or for our www.georgiachestnut.org web page)

GA-TACF’s Facebook Page: <https://www.facebook.com/gatacf> (like the page, then get and post brief updates and photos there)

Thanks, and, needless to say, we hope to hear from you soon!