

# Chestnut Mast



Volume 8, Issue 1 Newsletter of the Carolinas Chapter of The American Chestnut Foundation Pollination 2006

## Phytophthora Screening Update from Chestnut Return Farm

When I began planting chestnuts on my red clay Piedmont farm some 6 years ago, I soon realized what a high mortality rate I had. When I planted 80 bare root seedlings donated by Paul Sisco and they were ALL dead within 2 years, I knew there was a severe, basic problem. I had grown up hearing stories of chestnuts growing in the immediate area (at or below 1,000 ft elevation). The pedigree of those 80 trees was Wayah Bald x WV480. I called Dr. Pat Layton (a former knee patient of mine and then Chairman of the Forestry Dept. at Clemson). She put me in touch with Dr. Steve Jeffers, a plant pathologist at Clemson. Upon hearing the name of the suspected infective agent, my first question was "How do you spell that?" Then off to the library I went. Although often overlooked, imported Asiatic *Phytophthora cinnamomi* is now essentially ubiquitous in the East, south of the Mason-Dixon Line and below 2,000 ft. (above 3,500 ft on previous farmland or disturbed sites). It is the causal agent of a root rot disease, sometimes called Ink Disease, that is devastating to over 1,000 species of plants including Fraser firs and American chestnut trees. To be sure, this has been a collaborative effort by many talented scientists and dedicated volunteers. And, by the way, you might gather that the family of WV480 probably carries no significant genes for resistance.

On April 5, 2006, our planting team gathered at Chestnut Return Farm, the *Phytophthora cinnamomi* "Killing Fields". Our team consisted of Dr. Steve Jeffers (Clemson Univ. plant pathologist), Dr. Jaesoon Hwang, Dr.



Planting crew at Chestnut Return Farm.

Yeshe Wamishe, Ms. Lynn Luszcz, Mr. Jim Sevic (volunteer) and myself. Following the same format of previous years, we planted 1159 nuts in 6 tubs. There were a total of 28 family groups. Each family was divided into 6 equal groupings. Each grouping was then planted in sequential rows with 1/6 of a given family planted in each tub. The rows had been carefully delineated by 2 parallel strings. These strings will remain for the season until the survivors are harvested in December or January. The start and end of each group has been marked by a labeled stake. By the use of this method, all seedlings, living and dead, could be exactly identified and their progress checked. All of this mapping information had to be recorded. So you can see why this intense

See *Phytophthora*, page 3

See *Plantings*, page 8

See *Phytophthora*, page 3

**The Carolinas Chapter  
of The American Chestnut  
Foundation  
Annual Meeting:  
August 26, 2006**

**Where:** North Carolina Arboretum in the USFS Bent Creek Experimental Forest of the Pisgah National Forest.

## Spring Plantings 2006

Several new cooperators planted backcross and mother tree orchards this spring. Trees in backcross orchards will be screened for blight resistance in their fifth or sixth growing season. The best trees in these orchards, which will have moderate resistance to the blight, will be selected for intercrossing with other moderately-resistant trees to produce highly resistant BC3F2 trees for the chapter regional seed orchard. Trees in mother tree orchards are pure Americans collected from the Carolinas that can be used as parents for future breeding efforts, saving us the time and expense of pollinating trees in the mountains. All cooperators who plant backcross seed have also signed TACF's Germplasm Agreement, which protects the seed and trees during the critical breeding and testing period.

Dr. Paul Sisco, TACF Regional Science Coordinator

See *Plantings*, page 8



Dr. Brian Joyce and his students at Montreat College established a new planting at the old Terry Estate in the Town of Black Mountain.

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THE AMERICAN CHESTNUT FOUNDATION

### Carolinan Chapter

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### Board of Directors

#### Officers

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Douglas Gillis  
Joe James  
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## President's Message



Ah, SPRING, leaves are unfurling and seed have begun to sprout and a pollination season will be upon us soon.

The Carolinas' Chapter board meeting was held March 18, 2006, in the conference room of Crowder's Mountain State Park. Eleven of our twelve board members were present. Louis Acker requested that his resignation from the board be accepted, which the board did. In turn, the board voted to ask Steve Motsinger to fill out Louis' board term, which he has accepted. The board also voted K. O. Summerville to be the next board president. Steve Barilovits has accepted the vice-presidency, and Carol Namkoong will succeed John Frampton as secretary. Jane and John Frampton have also stated they are stepping down as editors of our newsletter after this issue. Ron Myers has agreed to serve as the new editor. Don Surrette and Paul Sisco will continue as our co-treasurers.

*Past presidents and board members have given us a good sound footing to carry out our mission of returning American chestnut to its rightful place in our eastern forests.*

New board members are needed for the slate of officers to be presented at the general meeting on 26 August, so if anyone is interested in serving on the board let me or a current board member know. Board members serve for a two year term and can be re-elected.

An additional test planting of backcross nuts was planted on Nancy and Scott Pryor's farm in Edneyville, NC on March 17. The chapter now has test plantings in 6 counties in NC and 1 county in SC. The oldest planting will be inoculated in June 2006 to determine susceptibility. This has been planned as a chapter outing if members are interested.

The chapter has standing committees in the following areas: mother tree, research, membership, publications, fund raising, audit, and education-media-public awareness. If anyone has an interest in participating on any of these committees please let me know. Some of you may know of a local civic group that would like to have a program given or know of a local festival being held

where we could put up an information booth. Let's use the opportunity to tell our story.

Plans are being made for the 2006 annual meeting at the NC Arboretum in Asheville. What would you like to hear about? Past presidents and board members have given us a good sound footing to carry out our mission of returning American chestnut to its rightful

place in our eastern forests.

I thank Louis Acker for his service on the board, John Frampton's service as secretary, the Framptons' editorship of our newsletter and welcome Steve Motsinger, our new board member.

*K. O. Summerville  
President, Carolinas Chapter*

*1623 Kenbrook Drive  
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### Carolinan Chapter Endowment Fund

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

Mail to: CC-TACF Endowment Fund  
c/o Paul Sisco, One Oak Plaza,  
Suite 308, Asheville, NC 28801

mini-farm operation required 6 people and all day to complete. Listed below is a break-



Planting tub used for *Phytophthora* screening experiments.

down of the groups by level of hybridization and number of nuts.

Hybridization	# Groups	# Nuts
F1	2	23
B2F2	3	100
B2F3	1	11
B3F1	10	514
B3F2	5	232
B4F1	2	134
Pure Chinese	3	90
Pure American	1	43
Chinkapin	1	12
<b>Totals</b>	<b>28</b>	<b>1159</b>

Germination has been 10% to 15% better than in years past. But this year we are using nuts with the majority of their genes from one species (*C. dentata*) and fewer F1's and B1's. This year's germination rate is between 75 to 80%. Once the seedlings have reached the ripe old age of 9 to 10 weeks (from date of emergence), we will apply pure laboratory

grown *Phytophthora cinnamomi* directly on the roots. Wilting and dying seedlings start to appear consistently at 21 to 22 days post-inoculation and continue in a linear fashion for some 9 weeks before tapering off. Last year's overall survival rate was 25.2%. However this survival rate credits all the trees that just got through the first growing season. It has been my experience that less than half of these trees survive, unaffected by *Phytophthora*. In the long run, only about one in three of these trees actually survives. Even so, what a blessing it is that this many have carried the resistance through 3 to 5 generations of backcrossing.

Fortunately, the Graves and Clapper lines both carried resistance, albeit in a diluted form. Of the 15 families of B3 seedlings screened last year, 6 families had enough resistance in their gene pool to produce a few individuals capable of surviving *Phytophthora*. Three of these families produced 90% of the potential survivors. However, when one closely examines our 15 families for relatedness or common ancestry, the 15 can be further reduced to 8 unrelated groups. One should note that all Clapper trees at the B3 backcross level share the same grandfather but different grandmothers and are therefore half 1st cousins. The same is true that all Graves B3 trees are half 1st cousins (and you know what they say about marrying your 1st cousin). At the B4 level they become half 2nd cousins, thank goodness. Two of these groups, CL198 and JB575 (Mahogany source of resistance) showed a survival quotient\* of 18% and 39%, respectively. Based on last year's sampling of the gene pool in the current backcross breeding program, 2 of 8, or 25%, of the least related

families or lines seem to carry significant resistance to *Phytophthora*. Although 8 families are too small to be statistically significant, this year we are adding 15 B3 and 2 B4 families to the screening process. Hopefully, as seed sources from the many unrelated lines become available, we will be able to screen and identify *Phytophthora* resistant family groups or lines.



Joe James

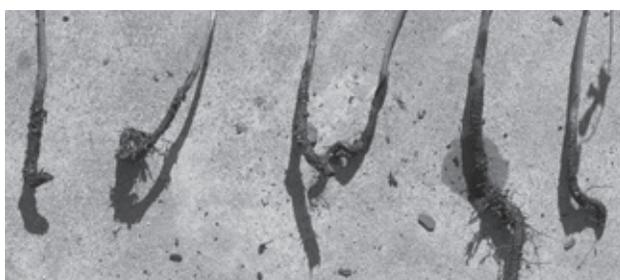
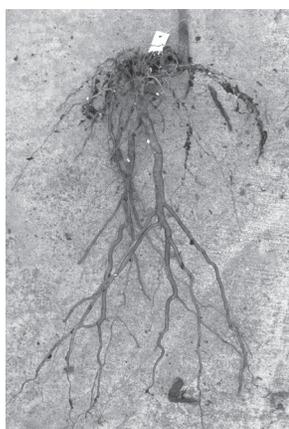
The ultimate survivors of this process are being planted in orchards on my farm in Oconee County, S.C. All trees are to be tested for *Cryphonectria* resistance and culled accordingly. Also a further culling in favor of the "American genotype" will be carried out. This process should result in a genetically broad-based population of largely American type trees resistant to both *Cryphonectria parasitica* and *Phytophthora cinnamomi*.

Joseph James  
CC-TACF Past President and owner of  
Chestnut Return Farm

\*"Survival quotient" is strictly an invention of mine. It is derived by taking the total number of emerged seedlings and dividing it by the total number of seedlings graded "zero" (no visible disease on their roots at harvest) plus 1/2 of the total graded "one" at harvest. For example, JB575 had 69 seedlings, 22 graded at "zero" and 10 graded at "one."

$$22 \times 1/2 (10) / 69 = 27 / 69 = 39\%$$

I think this is a valid concept because it gives 1/2 credit to the families for producing intermediately resistant progeny which occasionally do survive. It also eliminates those graded "two" since they rarely if ever survive. Hopefully it reflects a more accurate picture of a given family's level of resistance.



Above: Root systems of pure American chestnut seedlings rated dead, and almost completely destroyed by the root rot organism. Left: Healthy root system of a Chinese chestnut seedling, exposed to *Phytophthora* for 6 months.



## Chapter News

### US Fish and Wildlife Service Provides Grant to Carolinas Chapter

Thanks to the efforts of former Chapter President Dr. Joe James of Seneca, SC, the US Fish and Wildlife Service has provided the chapter with a grant of \$6800 through its “Partners” program. Good going, Joe! Let’s also give a round of applause to Joe Cockrell, Wildlife Biologist and Partners Coordinator of the USFWS office in Charleston, SC, who made this all happen. The money will be used for our pollination and planting activities, particularly in upper South Carolina.

### Spring Board of Directors Meeting

The Board of Directors of the Carolina Chapter met at Crowders Mountain State Park on March 18, 2006. General topics addressed at the meeting included the Chapter budget, progress with the breeding program, the Southeast breeder’s meeting, the endowment fund, potential by-law changes, and updates on Phytophthora research. Additionally, new board officers were elected: K.O. Summerville as president, Steve Barilovits as vice president, Carol Namkoong as secretary, and Paul Sisco and Don Surrette as co-treasurers



*Passing the Baton. Past President, Joe James, hands over his “ancient” caduceus to newly elected President, K.O. Summerville. Being from South Carolina, he used a souvenir bottle of Coca-Cola that commemorates Clemson University’s 1981 National Football Championship.*



*Board Members are attending the March meeting. From left to right: kneeling; Paul Sisco, Ron Myers, and Joe James; standing, 1st row; K.O. Summerville, Carol Namkoong, and Doug Gillis; standing, 2nd row; Don Surrette, Scott Pryor, John Frampton, Steve Barilovits, and Jack Johnston.*

### Farewell from Editors

This will be the last issue of the Chestnut Mast that we will edit. We have enjoyed being able to contribute to our Chapter by producing the last six issues and hope to stay involved with the Chapter. Past president, Ron Myers has agreed to take over editorship. We are happy he stepped forward to volunteer and are confident that the newsletter is passing into capable hands.

Jane and John Frampton

## 2006 Interns for Carolinas Chapter are Lifelong Friends



*2006 NFF summer interns, David Flood (left) and Zachary Lesch-Huie (right) measure the tallest tree in the chapter's oldest orchard — 18' high and 2.8 inches dbh. These trees are now 5 years old.*

David Flood and Zachary Lesch-Huie grew up together in rural Burke County, attending the same schools until they went their separate ways for college: David to the University of North Carolina at Chapel Hill and Zachary to Appalachian State University in Boone. This summer they've joined up again as Carolinas Chapter summer interns, supported by a grant from the National Forest Foundation <http://www.natlforests.org/> Working part-time this spring, they helped in planting and orchard maintenance as well as measuring tree heights in established orchards. Now they are “psyched” as the pollination season approaches and they begin their full-time work. Let's all welcome David and Zachary as they travel around this summer helping to restore the American chestnut tree to the Carolinas.



## Carolinas Chapter Endowment Fund

Thanks to the generosity of our charter members and additional gifts, the Carolinas Chapter Endowment Fund has now been officially established with an initial balance of \$16,700. The Endowment will be permanently managed by the North Carolina Forestry Foundation at North Carolina State University for a very modest annual fee.

Those wishing to make additional gifts to the Chapter Endowment Fund should make their checks payable to “CC-TACF” and note “Carolinas Chapter Endowment Fund” in the memo section of their check. All contributions to the fund are fully tax-deductible.



## Carolinas Chapter Charter Members

Louis Acker  
Larry Allen  
Rebecca Anderson  
Clay Ballantine and Kathryn Gubista  
Stephen Barilovits, III and Jane Laurents  
Robert Barker  
Benemma Bentley Bailey  
Joe Blanton  
Buck and Joan Blessing  
Robert and Elizabeth Brannon  
Brent Buchanan  
Bill Burnside  
Kim and Susan Carlyle  
Ashley Carter  
Richard Cotton  
John Dainotto  
Ray Daniel  
Dennis Desmond - Land Trust for the Little Tennessee  
Douglas Deyton  
Robert Doudrick  
David and Joanne Drake  
EdgarDunham  
Paul and Johnsie Dunn  
Robert Eidus  
Michael Foster and Linda Pinkerton  
Mac and Margaret Foster

John and Jane Frampton  
Elaine Friebele  
Sadhvi and Sakshi Gantenbein  
William Gardner  
Gerry Gilbert  
Doug Gillis  
William Gooch  
Jackie Greenfield  
Sylvia Hawkins  
Dexter Hayes  
Pierre and Martha Holloway  
Daniel Huger  
E. Paul Huisking, Jr.  
Hugh and Janice Irwin  
Peter Jaber  
Jack Johnston  
Suzanne and Stephen Jones  
Tom Konsler  
John and Phyllis Lund  
Ken Lynch  
Forrest MacGregor  
Jack Mahaney  
Robert Mastro  
Grace Matthews  
Carl Mayfield  
Stephen Motsinger  
Don Myers and Susan Wilson

Bill O'Connor  
D. Carroll Parker  
Robert Patry  
William and Eleanor Poper  
Philip and Liz Pritchard  
Mark Rogers  
Charlotte Ross  
Sherman Runions  
Robert and Lynn Shields  
Paul Sisco, Jr.  
James Sitton  
Charles Sloop  
Alma Spicer  
Palmer Stacy  
Bradford Stanback and Shelli Lodge-Stanback  
Kenneth and Patricia Summerville  
Donald Surrette  
Mary Jean Taboloff  
Stephen Timmons  
M.E. and Ellie Truebenbach  
Walter Whaley  
Robert and Dianne Wilson  
John Wilson  
Ben and Patty Woolf  
Tim Wright  
Dorothy Yunker

## American Chestnut Bark Shingles: A Lifetime Warranty

In this and future issues of the Chestnut Mast, we will feature articles about American chestnut wood on the exterior and interior of buildings. Owners of the buildings displaying American chestnut wood often have great histories to tell of the wood, the tree and its legacy.

If America chestnut bark shingles were available today, they would be marketed with a “Life Time Warranty.” Eighty years ago, such a warranty would have been applied had those nailing them to the sides of homes and buildings in the Linville, NC, area known of their durability. A lifetime has passed since the last shingles from the last great American chestnuts were nailed in place. The warranty, had it been in place, would be expiring about now due to the passage of time.

Is there any urgency for you to see this legacy of the American chestnut tree? You bet! American chestnut bark shingles are disappearing by “poplar” demand—the choice wood for replacing the original shingles.

The American chestnut bark shingles are



*The American chestnut shingles pictured to the left have bark that is more furrowed than the tulip poplar wood shingles pictured on the right. The tulip poplar wood shingles also are a light gray color versus the darker brown color of the American chestnut shingles.*

wearing out from exposure to weather. Tulip poplar (*Liriodendron tulipifera*) bark shingles, which have a grayer and less furrowed appearance, are being used by renovators, as well as new home builders, in the Linville and Blowing Rock areas of North Carolina to replicate the rustic style architecture introduced to the area by Henry Bacon in the early 20th Century.

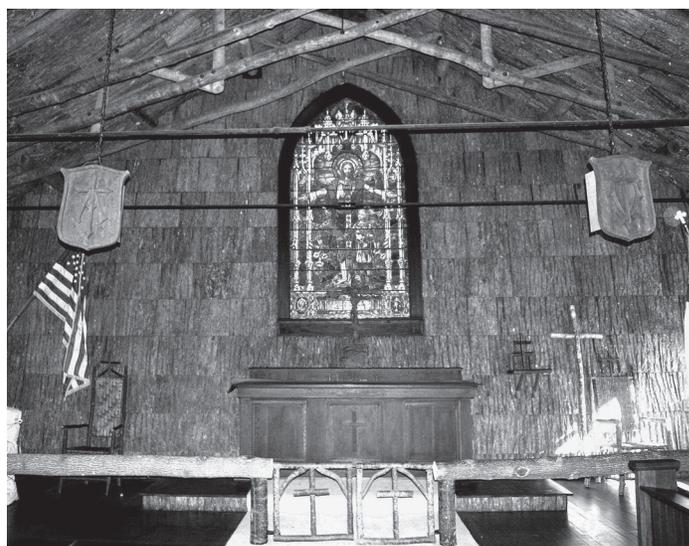
If you wish to see American chestnut bark shingles in use, before they are replaced with poplar wood shingles, visit Linville, NC, and particularly, the All Saints Church in

Linville. On the Carolinas Chapter web site, [www.carolinas-tacf.org](http://www.carolinas-tacf.org), is an album, [www.carolinas-tacf.org/album.php?id=58](http://www.carolinas-tacf.org/album.php?id=58), which highlights the use of American chestnut bark shingles and compares those shingles to poplar bark shingles.

Hurry to see the 80 year old American chestnut bark shingles, for time is a wasting away this legacy.

*Doug Gillis*

*Board Member*



*The All Saints Church in Linville, NC, perhaps has the best display of American chestnut bark shingles in the area. The exterior and interior of the church are clad with shingles that are still in very good condition. The walls inside the All Saints Church as well as the underside of the roof are covered with American chestnut bark shingles. Pews and other furnishings inside the church also are made of American chestnut wood.*

## Nominees for Board of Directors

Elections for CC-TACF Board of Directors will be held during the Fall 2006 meeting in Asheville.

Two-year terms:

CAROL R. NAMKOONG, Leicester, NC

Carol is a mother of three, and grandmother of 2 wonderful girls who live in Oregon. She grew up in Pennsylvania, and during her childhood lived in a house where all the woodwork was chestnut. She worked for the N.C. Department of Labor in Raleigh, where she was a program manager and technical writer. She retired from that position when her husband accepted a position at the University of British Columbia in Vancouver, British Columbia in 1993. Her interest in the TACF began when her late husband Gene was asked to give a speech at the annual meeting in Virginia in 2000. His work in population genetics in forestry was certainly a good background to understand the work that is being done in the breeding program.

R. DOUGLAS GILLIS, Charlotte, NC

Doug received BS and Masters degrees in Civil Engineering from NCSU. He worked for the North Carolina Traffic Engineering Department from 1970 until 1974 as an Urban Traffic Engineer. He then worked with the Charlotte Department of Transportation until 2001, retiring as Assistant Director/Chief Traffic Engineer. He is a Registered Professional Engineer, a Registered Land Surveyor and a Licensed General Contractor in North Carolina. He is part of the Gillis Group of RE/MAX Executive Realty in Charlotte, NC, assisting his wife, Marsha Finch Gillis, in her Real Estate business. Organizations he belongs to are: American Society of Civil Engineers, Institute of Transportation Engineers, Sierra Club, and United Methodist Men. He administers the Carolinas Chapter website. He volunteers considerable time to help build Habitat for Humanity homes in Charlotte. He and Marsha have two daughters.

PAUL SISCO, Asheville, NC

Paul Sisco holds a Ph.D. in Plant Breeding and Genetics (Cornell 1982) and was USDA/ARS Professor of Crop Science at North Carolina State University, 1983-97. He was TACF Staff Geneticist from 1998 to 2002, and is currently TACF Southern Regional Science Coordinator. He served on the board of directors of Bent Creek Townhomes (Raleigh, NC) from 1986 through 1989 and was its board president, 1988-89 (Bent Creek had over 350 townhomes and an annual budget of over \$250,000). He has served as chapter treasurer for the last 2 years along with serving as a liaison to the Carolinas' Chapter regarding National cooperative projects and grants.

KENNETH O. SUMMERVILLE, Garner, NC

Kenneth Summerville holds a BS in Forest Management (NCSU 1959) and retired from the NC Division of Forest Resources after 36 years. He helped develop a genetic tree improvement program in loblolly, longleaf, and other pines and firs. He has conducted research on vegetative propagation of various commercial hardwood tree species, conducted seed orchard management studies of several pine and fir trees, and has established silvicultural studies with longleaf pine and Atlantic white cedar. A member of the Society of American Foresters (Triangle Chapter Treasurer, 1987-90; NC Division Chair, 1995), he currently serves as Appalachian Society of American Foresters Natural Areas Committee Chair. He has served on the endowment committee and is a member of the Science Cabinet for National.

BRIAN JOYCE, Arden, NC

Brian is an Associate Professor of Environmental Biology and head of the Natural Sciences Department at Montreat College. He holds a Ph.D. in Forest Ecology from Penn State University and has a research background in tree physiology, silviculture, and forest ecology. His current research involves brook trout restoration ecology, macroinvertebrate diversity in headwater streams, and long-term ecological monitoring in the Black Mountain Range. He is the Science Director for the CLIMBE science education program at Montreat College and is a member of the Montreat Wilderness Committee and the Montreat College Land Use Planning Committee. He recently began a partnership with TACF by establishing a chestnut planting at Montreat College's Black Mountain Campus.

One-year term:

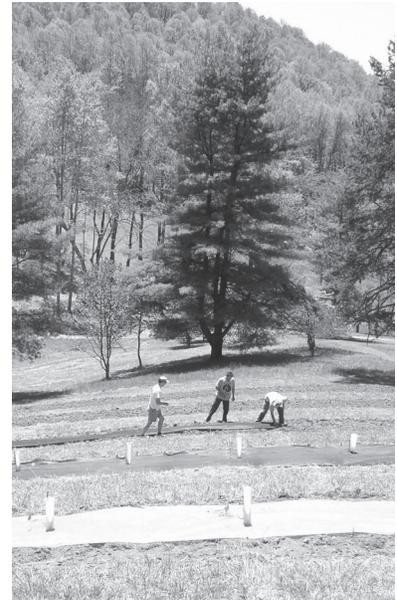
STEVE MOTSINGER, State Road, NC

Steve is a real estate appraiser, specializing in agribusiness, lifestyle farming, and conservation properties with Carolina Farm Credit. He is currently serving the third year of a three year term as president of the NC Chapter of the American Society of Farm Managers and Rural Appraisers. He is an avid outdoorsman and conservationist enjoying trout fishing, hunting, and other activities. He is a life member of the AFA, The Nature Conservancy, and The Virginia Coast Reserve. Steve has been interested in the American chestnut, having grown up in the NC mountains and hearing chestnut stories since childhood. Steve and his wife, Jane, live on a farm in State Road, NC, where they care for a small chestnut orchard of four successive plantings.

Plantings *continued from page 1*



*Dan and Diener Matthews, proprietors of The Swag, and Dr. Paul Sisco, TACF's Regional Science Coordinator, pose with Roger Rathbun, who planted a native American chestnut tree from the Great Smoky Mountains National Park. The Swag, a resort in Haywood County that borders the Park is starting a mother tree orchard of trees from the Great Smokies to use in our chapter breeding program.*



*Interns David Flood and Zachary Lesch-Huie work with Russ Blevins of Red Wolf Run to plant a chestnut orchard in Madison County.*



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