

Cooperative Study of American Chestnut Trees

BY CAROLINE DUFOUR AND MEGHAN JORDAN

The American Chestnut Foundation (TACF), the Appalachian Trail Conservancy and the Potomac Appalachian Trail Club (PATC) have partnered to study the remaining American chestnut trees along the Appalachian Trail.

Scientists from TACF are preparing a training program, a guide to American chestnut identification and a data-collection protocol, with ATC staff and PATC volunteer support. PATC volunteers will be recruited to participate in the training program and to collect data along a portion of the Trail with which they are familiar. The data will help scientists estimate the population densities of the American chestnut in the variety of conditions that exist along the studied portion of the Trail. The data will also help scientists locate and document populations of trees that produce flowers, whose genetic material might potentially be incorporated into TACF's breeding program. The focus is on producing blight-resistant trees similar to Chinese chestnuts while retaining American chestnut characteristics.

ATC will include information resulting from this study in its A.T. MEGA-Transect program, which brings together multiple partners with a shared interest in the environmental health of the Appalachian Region. These partners are engaging volunteers in a variety of citizen science projects to improve understanding of environmental health issues along the Trail. ATC, TACF and PATC will work together to promote public awareness of the study of the American chestnut.

TACF plans to celebrate its 25th anniversary in cooperation with ATC by participating in a series of events along the A.T. during the 2008 hiking season. ATC and TACF's presence at these events will include a focus on identification of American chestnuts along the A.T. by members of the public, as well as information about the cooperative scientific study of the trees.

An estimated four billion American chestnut trees grew in the Appalachian Region at the start of the 20th century, when a deadly blight fungus was first discovered in New York City. These trees, sometimes known as "redwoods of the East" because of their size, often reached giant proportions, and routinely grew to 100-foot heights and three to four foot diameters. By 1950, virtually all of those trees were gone, reduced to struggling stump shoots that quickly succumbed to the blight.

Although stump shoots are still fairly common along the A.T., the tree's limited reproductive ability

and environmental factors such as intensive deer browsing may be causing a rapid decline in the number of American chestnut trees. A recent study by Dr. Henry Wilbur of the University of Virginia's Department of Environmental Science found that on a plot in southwestern Virginia, genetic diversity is currently declining by 50 percent every four years.

Genetic diversity is an important factor in species survival because it gives the species its ability to adapt to the wide range of conditions encountered in different geographic and ecological regions and changes in climatic conditions over time. When a species is reduced to a relatively few individuals, the adaptive abilities are also greatly reduced. Scientific evidence suggests that the American chestnut tree has lived for many thousands of years, through ice ages and global warming. This remarkable, adaptive ability may be imperiled if the number of genetically distinct trees declines rapidly.

PATC volunteers maintain trails and shelters on

approximately 200 miles of the A.T. in Virginia, West Virginia, Maryland and Pennsylvania. ATC works with the National Park Service Appalachian Trail Park Office, the U.S. Forest Service, 30 Trail maintaining clubs and many other partners to engage the public in conserving the A.T., a 250,000-acre greenway extending from Maine to Georgia. TACF and its members, including its network of 15 state chapters and an Ozark multi-state initiative, carry out a backcross breeding strategy and other scientific and educational efforts directed toward restoring the American chestnut. TACF's breeding program is now in its 25th year and has begun to produce sixth-generation seed that will be field-tested for both blight resistance and American character.

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For more information on this partnership and the A.T. MEGA-Transect program, visit:

www.appalachiantrail.org/megatransect

The American Chestnut Foundation

www.acf.org

Potomac Appalachian Trail Club

www.potomacappalachian.org



American chestnut leaves have a distinct tapered appearance with small hooked teeth along their edges.

Recently discovered in Massachusetts, this American chestnut will be used in TACF's breeding program.

PHOTO BY BRAD SMITH

This tree in Kentucky is one of the largest surviving American chestnut trees. Bucket trucks are used to reach the upper limbs during pollination and harvest.

PHOTO BY JOE SCHIBIG

An open burr shows the usual three American chestnuts found inside.

