Catoctin Mountain Park

National Park Service
U.S. Department of the Interior

American Chestnut Inventory *Resource Brief*

Importance

The American chestnut (*Castanea dentata*) was once a dominant tree of the eastern U.S., renowned for its rot resistant lumber and its abundant production of wildlife-supporting chestnuts (Anagnostakis 1987, Ellison et al. 2005, Russell 1987).

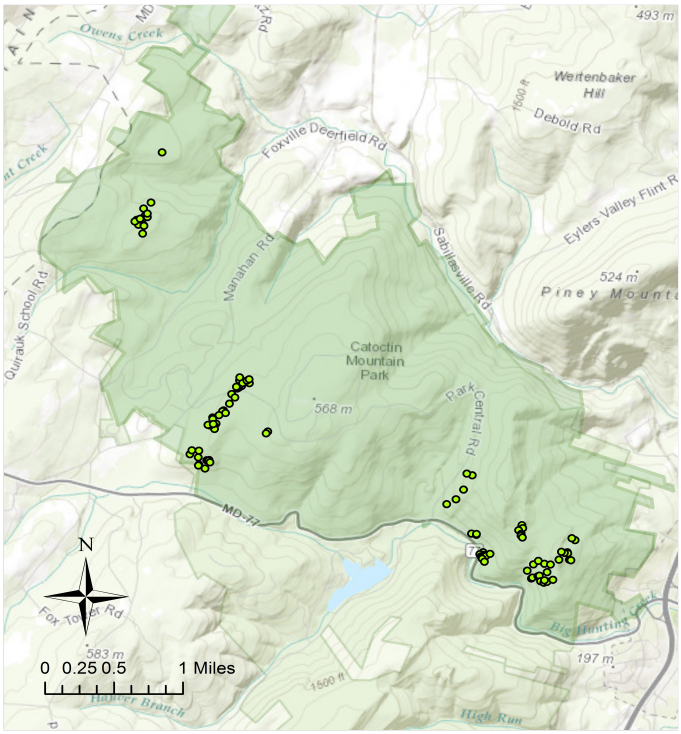
American chestnuts occupied forests as far south as central Alabama, west through Tennessee, and as far north as Maine and southern Ontario. They comprised over 50% of the total basal area in some forest stands (Braun 1950, Keever 1953).

In 1904 however, the exotic chestnut blight fungus (*Chryphonectria parasitica*) was introduced and quickly spread through forests of the eastern U.S. at a rate of ~37 km/year (Anagnostakis 1987). By 1950, almost all American chestnuts in their native range were dead (Anagnostakis 1987).

However, because the blight fungus does not directly impact the root system of trees, American chestnuts persist today in natural areas as re-sprouts from blight-free root systems.

Photos: NPS/Reidman

Left: An American chestnut grows toward the canopy. **Right:** Orange bark cankers of chestnut blight infection.



Green dots show American chestnut tree locations at CATO.

Inventory

Because of its ecological function, historical importance, and the fact that the National Capital Region (NCR) is part of its native range, many people are interested in bringing back American chestnuts to NCR forests.

To better understand their current status, the National Capital Region Network, Inventory & Monitoring (NCRN I&M) inventoried American chestnuts in eleven NCR parks in 2014. We collected location information for each living stem, measured diameter at breast height (dbh) of all stems >1cm dbh, estimated height for the tallest stem, classified each tree's canopy position, and recorded the presence of visual blight symptoms and reproductive structures including flowers and fruit.

Results

We found living American chestnut trees in every NCRN park except Antietam and Manassas. In all we documented 234 trees; 98 of them in Catoctin (CATO).

The majority of NCRN and CATO trees were small (Figure 1), with dbh values ranging from 1.5 - 42.5cm (mean=7.3cm) and heights ranging from 1.4 - 23.9m (mean=6.8m). Most NCRN trees were understory trees; 91% were classified as "overtopped," meaning that the tree's crown

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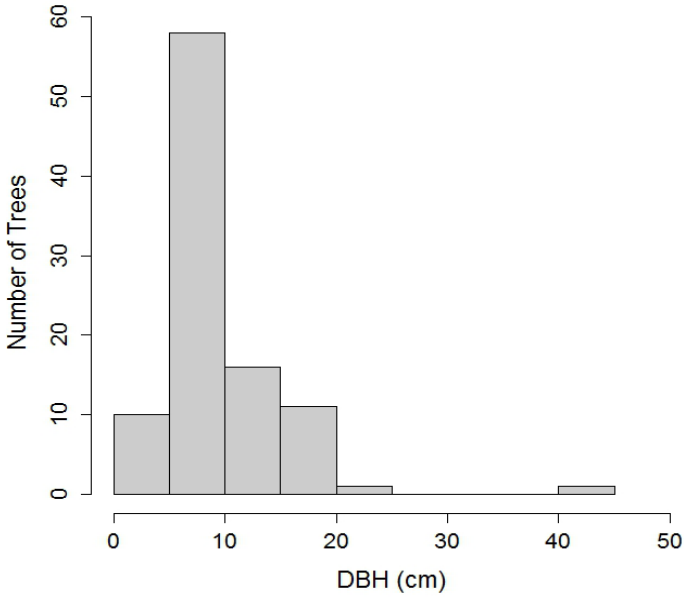
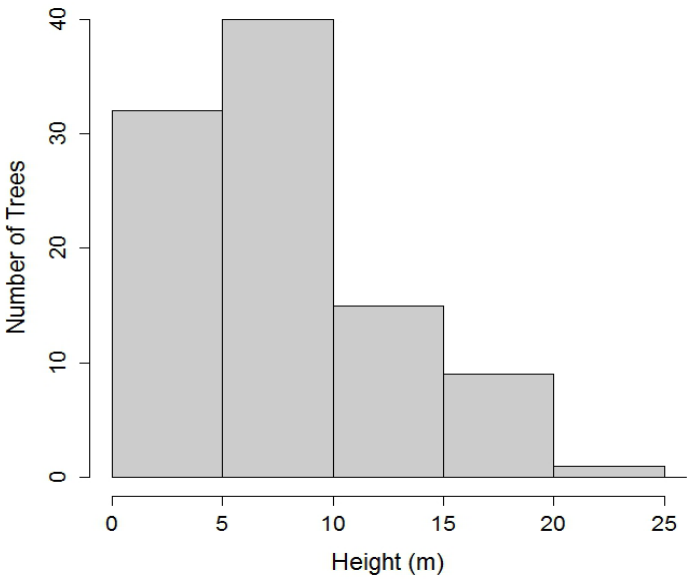
http://science.nature.nps.gov/im/units/ncrn/index.cfm

Figure 1. Distribution of American chestnut trees at Catoctin Mountain Park with respect to dbh and height.





is entirely below the level of the canopy and receives no direct sunlight. The exception was one tree at Catoctin tall enough to reach the forest canopy.

We found evidence of reproduction (flowers and/or fruit) at seven NCRN trees—four of these were in Catoctin. Eleven percent of NCRN trees inventoried showed at least one visual symptom of chestnut blight. In Catoctin, 16% (16 individuals) showed blight symptoms.

Complete results from the American chestnut inventory data are available at https://irma.nps.gov/App/Reference/Profile/2217458. Results include a geodatabase in which each park in the NCR, including CATO, has one folder containing shapefiles with chestnut locations, monitoring tracklines, and areas surveyed. Data on size, health, and other characteristics are also included.

Future Restoration

Restoration of American chestnuts to long-term, self-sustaining and naturally reproducing populations is still a far-off goal. Since the near devastation of the blight, university scientists, non-profit organizations, and others have worked to create hybrid, blight-resistant chestnut trees and to find naturally resistant survivors.

In 2009, NPS signed a memorandum of understanding with the American Chestnut Foundation (TACF) allowing parks to "assist TACF in its goal of restoring American chestnut to the forests of the eastern United States" and giving preference to NPS as a "most favored recipient" of chestnut trees offered by TACF.

References

Anagnostakis, S. 1987. Chestnut blight: the classical problem of an introduced pathogen. Mycologia 79: 23-37.

Braun, E.L. 1950. Deciduous forests of eastern North America. The Blakiston Co., Philadephia. 596 p.

Ellison, A.M., Bank, M.S., Clinton, B.D., Colburn, E.A., Elliott, K., Ford, C.R., Foster, D.R., Kloeppel, B.D., Knoepp, J.D., Lovett, G.M., Mohan, J., Orwig, D.A., Rodenhouse, N.L., Sobczak, W.V., Stinson, K.A., Stone, J.K., Swan, C.M., Thompson, J., Von Holle, B., Webster, J.R., 2005. Loss of foundation species: consequences for the structure and dynamics of forested ecosystems. Frontiers in Ecology and the Environment 3: 479–486.

Keever, C. 1953. Present composition of some stands of the former oak-chestnut forest in the southern Blue Ridge Mountains. Ecology 34: 44-55.

Riedman, M., et al. 2014. NCRN Resource Brief: American Chestnut Inventory. https://irma.nps.gov/App/Reference/Profile/2217820.

Russell, E.W.B. 1987. Pre-blight distribution of Castanea dentata (Marsh.) Borkh. Journal of the Torrey Botanical Society 114: 183-190.