American Chestnut

Demise of an Eastern Giant

American Chestnut
(*Castanea dentata*)

- Component of Appalachian Mountain Region ecology as far back as 17-25 mya.
- Range stretched from Maine to Michigan (east/west) and as far south as Mississippi.
- Made up about 25% of the tree species in these areas. Estimate of one in every four trees was a chestnut in 1900.
- Estimates are that blight wiped out 4 billion trees+.

Pre-1904 range estimates

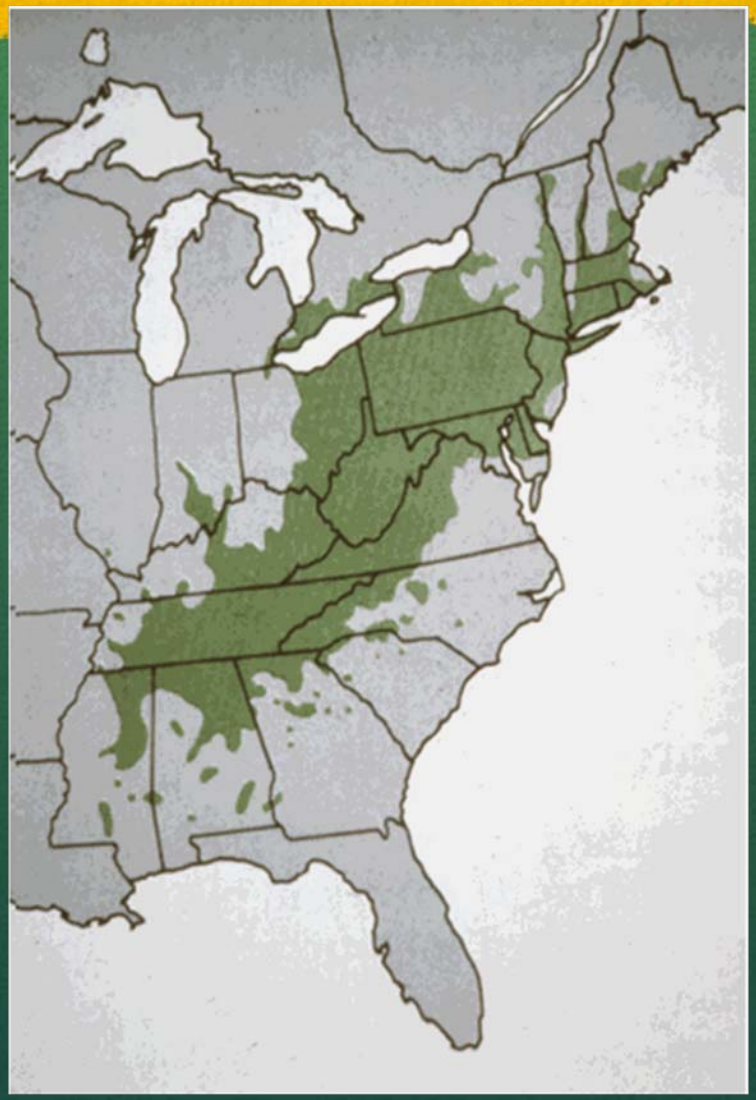
Maine, Vermont, New York, Connecticut, Delaware, Pennsylvania, New Jersey, Virginia, West Virginia, Rhode Island, Maryland, North Carolina, South Carolina, Georgia, Tennessee, Ohio, Kentucky, Arkansas, Indiana, Michigan, Illinois, Alabama, Mississippi, some reports of trees in Florida

24 States were in the original range.

Vitals

- Trees ranged in height from 60 – 120 feet.
- Capable of reaching 6-7 feet in diameter or 30 feet circumference. One specimen in NC measured 17 feet in diameter.
- Average growth rate would be 1 inch / 3 years diameter.
- Blooms in June/July long after frost would freeze young fruit. Almost always produced a mast unlike oaks.
- Nuts were very high nutritionally. [11% protein, 16% fat, 14% sugar (glucose), and 40% carbs (mostly starch), 19% hull, cellulose, and fiber]
- Very important food source for wildlife and humans.

Pre-1904 range estimates



Ecological importance

- Provided an abundant “mast” each year due to blooming well after any chance of frost.
- Important food for wild turkey, squirrels, black bear, grouse, white-tailed deer, and by extension, predator species like mountain lion, red wolf, and bobcat. Also affected many other species.
- Loss of the chestnut, post-blight, resulted in significant reductions of these species. Some are only now beginning to recover.
- Other ecological roles are poorly understood because most information is anecdotal in nature and hard to quantify.
- Relationships to other plant species are unknown but might be inferred due to canopy cover. Probably not dissimilar to the oak/hickory forests that replaced the chestnut/oak forests.

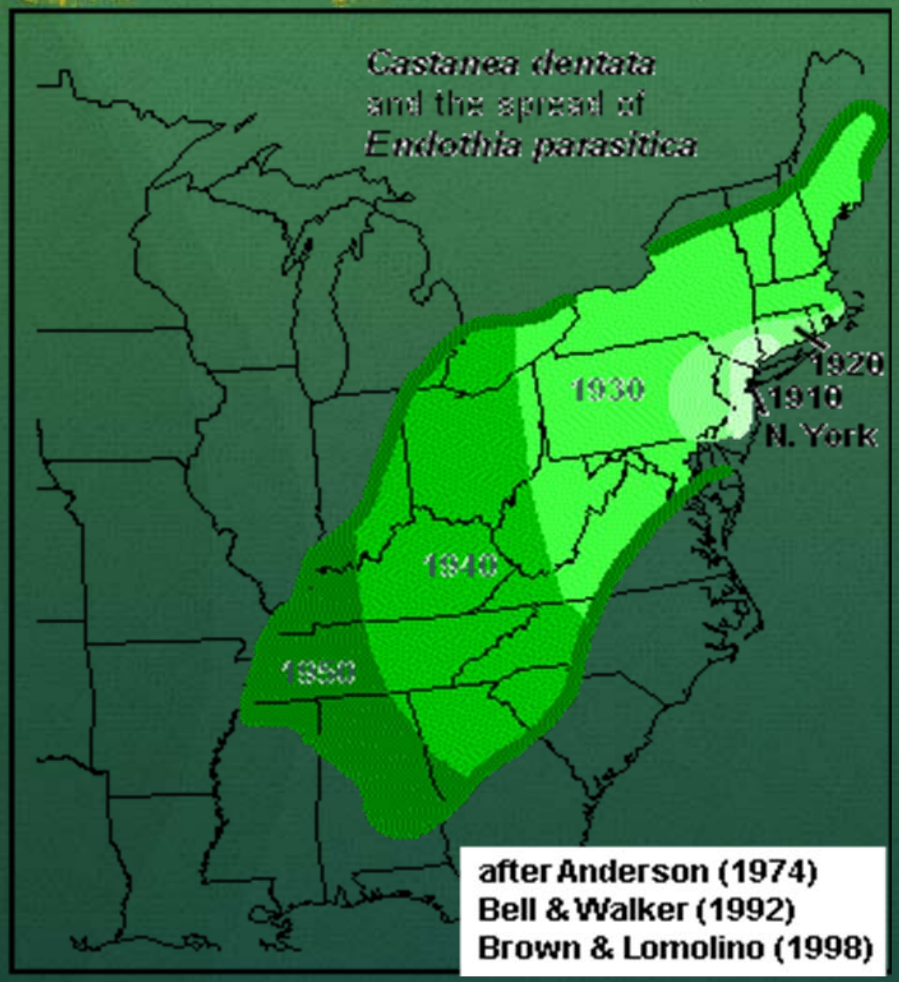
Human/Economic

- Provided ready food for humans, pre-colonial and post. Nuts could be eaten raw, cooked, or could be dried and ground into flour and stored.
- Wood is very straight grained and rot resistant. In 1937 chestnut was labeled the "best lumber producing species in the world." Cut trees readily resprouted from the stump and produced an even thicker stand.
- It was used for telephone/telegraph poles, railroad ties, fence posts, fence rails, barn walls, log buildings, shingles, clapboards, floors, veneers, and furniture. An entire homestead could be built entirely from chestnut.
- Heartwood and bark were harvested to produce a vegetable tannin used to make heavy leathers. At one point more than half the tannin used in America came from chestnut.
- Nuts were used as food for livestock because they were so plentiful.
- Also used as ornamental and shade trees, especially along city streets.

Blight

- In the early 1900's, several Asian chestnut tree were imported and placed in the New York Botanical Gardens. These Asian Chestnut trees were carrying an Asian fungus (*Cryphonectrica parasitica)*, now referred to as Chestnut blight. Infected American and Asian Chestnut develop cankers and split bark openings that eventually girdle and kill the tree.

Spread of the Blight



From New York the blight spread through the American Chestnut range. Within 40 years the majority of the American Chestnut population was gone. Approximately 4 billion trees were rotting on the stump or lying on the ground. Only isolated populations, and in most cases trees, avoid the blight.

Trees did sprout back. Unfortunately, after a tree has died, the fungus goes dormant and remains on the rootstock. When a sprout reaches and age or diameter where the bark splits, the sprout is reinfected and dies within a couple of years.

- Unfortunately, the death of the tree doesn't end the blight. It persists on about 200 species other than chestnut.
- When the chestnut tree resprouts, any open wound or break in the bark allows the fungus spore in to reinfect and kill the sprout.
- Blight spore spreads by being carried by animals (squirrels, birds, insects) and through the air.

Hope

- For 28 years The American Chestnut Foundation has been involved in restoring the American Chestnut to the east coast.
- Through selective pollination, they have developed a new generation of trees that are 94% American Chestnut and 6% Chinese chestnut.
- They are currently conducting field plantings of these saplings.