American Chestnut Tree
Identification Resources
For the Appalachian Trail Mega-Transect Chestnut Project
May 2008

Pilot Project Partners:
The Appalachian Trail Conservancy
Potomac Appalachian Trail Club
How to identify American chestnut trees

Excerpt from:
Field Guide for locating, pollinating, and harvesting nuts from flowering American Chestnut Trees (Castanea dentata)

The American Chestnut Foundation

Chestnut trees are most easily located while they are in full bloom, from early June, in the southern part of the range, to the weeks around the Fourth of July in the North. The great mass of conspicuous white catkins on larger trees is visible at great distances. The odor of the blooms is also quite distinctive, especially on still mornings and evenings. Later in summer, bur-laden trees are fairly obvious. In early fall, chestnut leaves turn yellow sooner than the leaves of many other deciduous trees with yellow leaves. In late fall, the brown leaves tend to stay on the trees. In fall and winter, to locate trees that had female flowers the previous summer look on the ground for fallen burs.

American chestnut leaves are long in comparison to their width, the teeth on the edges of the leaf curve inward, and the stems usually have a reddish color.

Chinese chestnut leaves are more oval in shape, thicker and more leathery than American chestnut leaves. Chinese chestnut leaves grown in the sun have a whitish cast on the back of the leaf, and the stems are gray with large white "bumps" or lenticels on them.

European chestnut leaves look much like American chestnut leaves, but their teeth tend to be triangular in shape rather than curved inward.

Japanese chestnut leaves are often dark, shiny green on top and the sides of leaves are somewhat parallel.
Chinkapin | Japanese | European | Chinese | American
---|---|---|---|---
Nut |
1 nut ½ " tip pointed with a round cross section | 2-3 nuts, 1-2 in. No sunburst pattern at base, moderate brown | 2-3 nuts, 1-2 in. No sunburst pattern, dark brown black stripes | 2-3 nuts, ¼ - 2 in. rounded hairy tip, sunburst pattern uncommon, often lt. brown | 2-3 nuts, ½ - 1 in., pointed tip, top 1/3 to 2/3 downy, sunburst at base

Taste |
Sweet | Not sweet | Starchy | Sweet | Sweet

Resistance to blight |
None | Moderate | Slight | High | Low to None

Checklist for Data Collection:

___ Chestnut Count Forms  
___ Large Tree Report Forms  
___ Large Ziplock Bag  
___ Pencils  
___ Clipboard  
___ Measuring Tape  
___ Trail Section # and Start and End Points

Optional But Helpful:

___ Trail Maps  
___ Hand lens or microscope  
___ GPS  
___ Digital Camera

Other trees that might confuse you

- fat twigs and buds
- very few spines on the husk of the burr
- glossy dark brown nuts without a pointed tip like a chestnut
- 7 leaflets to a leaf rather than one leaf

- leaf teeth may be pointed, but never have a bristle at the tip
- Chestnut oak leaves are thinly haired underneath
- acorns rather than chestnuts
- leaf stalk longer than a chestnut's
- long droopy flower catkins that are less fragrant and not as creamy white compared to a chestnut catkin
- 3 buds with many scales at twig tip rather than one bud with few scales
- the chinkapin oak has very hairy undersides of leaves whereas the chestnut has smooth leaf undersides

The Beech is known as the "initial tree" and is often carved.

The chestnut does not have the smooth silvery bark that the beech has.
Reproductive life-cycle of the American chestnut

Flowering American chestnut trees will either have only male flowers (catkins) or both male and female flowers (small burrs). Female flowers usually have male flowers on the same branch. Chestnut trees bloom from mid-June to early July, depending on latitude and elevation. A chestnut tree rarely self-pollinates. Therefore at least two chestnut trees need to be near each other for viable nut production.

![Image of male and female chestnut flowers](image)

Fig. 3. Male and female chestnut flowers

Female chestnut flowers develop into burs that contain up to three nuts at maturity. The nuts are ready for harvest when the burs begin to open up.

The following pages are from the web page of Paul Sisco, TACF Regional Science Coordinator:
http://www.mindspring.com/%7Epsisco/www/overview.html
Burs and Nuts

American vs. Chinese

American Chestnuts:
Nuts are relatively small, 1/2 to 1 inch in diameter
Tips of American chestnuts are pointed
Nuts are hairy over 1/3 to 2/3 of length from pointed end
Vascular bundles in a sunburst pattern on hilum end
2 to 3 nuts in each bur

Chinese Chestnuts:
Nuts are relatively large, 3/4 to 2 inches in diameter
Tips of Chinese chestnuts are rounded
Only the tips of the nuts are hairy
Vascular bundles in a diffuse pattern on hilum end
2 to 3 nuts in each bur

Chestnut and Chinkapin Leaves

Top of leaves

Bottom of leaves

Top Row: Allegheny chinkapin leaf
Bottom row (from left): American, Chinese, European and Japanese Chestnut leaves
Chestnut Stems and Buds

From Left: American, Chinese, European, and Japanese twigs

American twig: pointed bud at 45 degree angle from stem; smooth, reddish stem
Chinese twig: rounded, hairy buds, large stipules (leaf-like coverings over the buds), large lenticels (white "bumps" on stem)
European twig: thick stem, large buds
Japanese twig: pale, pinkish stem

Burs and Nuts
American vs. Chinese

American Chestnut Burs:
A dense mass of long, slender spines
Spines are 2 to 3 cm long, 0.5 mm thick
Up to 3 nuts per bur

Chinese Chestnut Burs:
A sparse mass of short, thick spines
Spines are 1 to 2 cm long, 1 mm thick
Up to 3 nuts per bur
Stipules

Chinese Stipules

- Broad
- Cover the buds
- Remain on the stem through September

Chestnut and Chinkapin Burs

Clockwise from top:
- Allegheny chinkapin
- European chestnut
- Japanese chestnut
- Chinese chestnut
- American chestnut

Note that the Chinese bur looks small, even though the nuts inside are large. This is because of their short, stubby spines.

Chestnuts

Chestnut burs have two sutures and open into four valves (sections).

There are up to three nuts per bur.

Chinkapins

Chinkapin burs have one suture and open into two valves (sections).

There is only a single nut per bur.
Chestnut and Chinkapin Nuts

Top and Side Views of Chestnuts
From Left: American, Chinese, Japanese, and European chestnuts

Top: Chinkapin nuts: note the pointed end

Middle: American chestnuts: note the hairy surface

Bottom: Chinese chestnuts: note the rounded end

Stipules

American Stipules

Slender

Angle sharply out from stem

Usually fall off in June
Buds and Stems

Chinese Buds and Lenticels

Rounded buds that hug the stem
Hairy stems and hairy leaf veins
Stem color tan to pea-green
Large lenticels (bumps) on stem

Chinese vs. American Chestnut

(Castanea mollissima vs. Castanea dentata)

Top View

American Leaf (left):
Leaf is long in relation to its width
Large, prominent teeth on edge; bristle at the end of each tooth curves inward
Base of leaf blade tapers sharply
Leaf is very thin and papery

Chinese Leaf (right):
Leaf is oval-shaped
Teeth are smaller
Base of leaf blade is rounded
Leaf is thick and waxy-feeling
American Leaf (left):
Elongated leaf

Large, prominent teeth on edge; bristle on teeth curves inward

Blade tapers sharply to meet stem at base of leaf blade

Light green underside on leaves exposed to the sun

Chinese Leaf (right):
Oval-shaped leaf

Small teeth on edge

Base of leaf blade rounded

Underside of sun leaves look whitish because of many hairs

Buds and Stems

American Buds and Lenticels

Pointed buds that angle away from the stem

Stems smooth and hairless

Stem color reddish brown to dark green

Small but numerous lenticels on stem