



## Buckeyes and Horsechestnuts

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Buckeyes are distinctive trees, known for their early spring flowers and for the seeds that have inspired the name of this unique family of trees. The nut-like seeds are shiny and dark brown, with a light-colored spot that gives them the appearance of a deer's eye. These seeds are popularly believed to bring good luck, and school children especially still carry them in their pockets as a charm. And while highly poisonous, buckeye seeds contain much protein and were used as a food source by Native Americans who boiled and leached them to remove their toxins.

Buckeyes are often small trees, with a spread nearly equal to their height. Ohio and yellow buckeyes are some of the larger species in this family, with heights of 50 feet or more. What makes buckeyes especially unique is their early spring flowers, which bloom as early as many woodland wildflowers. As well as greening up early, buckeyes also lose their leaves before most other trees in the fall. The wood of the buckeyes is pale and light, and it is sometimes used for paper, crate, and novelty item production. There are seven species of buckeye native to the United States, mostly found in the eastern half of the country.

The Buckeye's Place in History - As well as the belief in the good fortune of its storied seed, the buckeye has been held to cure rheumatism and other, more minor ailments. Pioneering farm families also made soap from the kernels of buckeye seeds, and many a child's cradle was carved from the wood of this tree. Before the advent of synthetic materials, buckeye wood was used to make artificial limbs. The genus *Aesculus* comprises 13–19 species of flowering plants in the soapberry and lychee family Sapindaceae.

They are trees and shrubs native to the temperate Northern Hemisphere, with 6 species native to North America and 7–13 species native to Eurasia. There are also several hybrids.

Linnaeus named the genus *Aesculus* after the Roman name for an edible acorn. Common names for these trees include "buckeye" and "horse chestnut". Some are also called white chestnut or red chestnut. In Britain, they are sometimes called conker trees because of their link with the game of conkers, played with the seeds, also called conkers.

Description - *Aesculus* species have stout shoots with resinous, often sticky, buds; opposite, palmately divided leaves, often very large—to 26 in across in the Japanese horse chestnut *Aesculus turbinata*. Species are deciduous or evergreen. Flowers are showy, insect- or bird-pollinated, with four or five petals fused into a lobed corolla tube, arranged in a panicle inflorescence. Flowering starts after 80–110 growing degree days. The fruit matures to a capsule, 25/32–1 31/32 in diameter, usually globose, containing one to three seeds (often erroneously called a nut) per capsule. Capsules containing more than one seed result in flatness on one side of the seeds. The point of attachment of the seed in the capsule (hilum) shows as a large circular whitish scar. The capsule epidermis has "spines" (botanically: prickles) in some species, while other capsules are warty or smooth. At maturity, the capsule splits into three sections to release the seeds.

Seeds were traditionally eaten, after leaching, by the Jōmon people of Japan over about four millennia, until 300 AD.

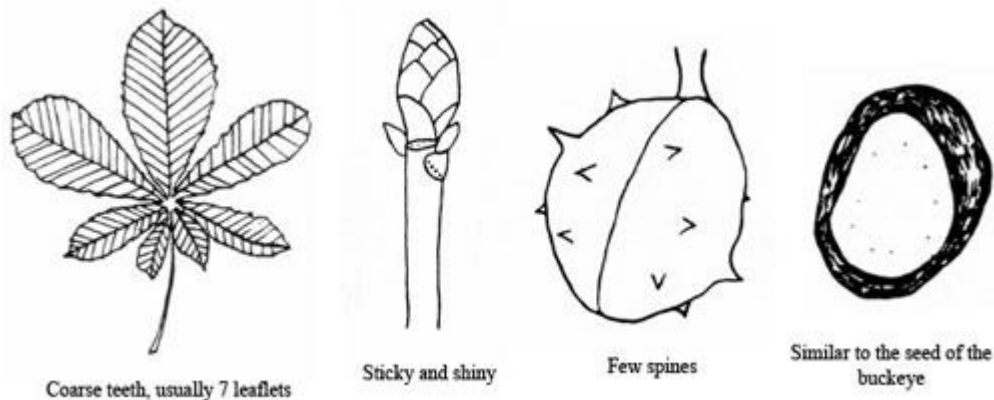
All parts of the buckeye or horse chestnut tree are moderately toxic, including the nut-like seeds. The toxin affects the gastrointestinal system, causing gastrointestinal disturbances. The USDA notes that the toxicity is due to saponin aescin and glucoside aesculin, with alkaloids possibly contributing.

Native Americans used to crush the seeds and the resulting mash was thrown into still or sluggish waters to stun or kill fish. They would then boil and drain (leach) the fish at least three times in order to dilute the toxin's effects. New shoots from the seeds also have been known to kill grazing cattle.

### Some Common Species

**Common Horsechestnut** (*Aesculus hippocastanum*) – Not native to North America, common horsechestnut is also called European horsechestnut as it is extremely common in Western Europe and is native to parts of southern Europe and southern Asia. Horsechestnut grows best in well-drained soils in partial shade, but will grow in full sun. Often the foliage becomes scorched under summer drought conditions when growing in full sun, so a part-shade landscape site is best. This species grows to become a large tree at 60 feet tall and 60 feet wide.

Bloom time is spring, with trees in full bloom by mid-April in the Piedmont. These white to pink flowers are much more open than those of the painted or red buckeyes, and flowers have a prominent yellow blotch. Horsechestnut fruit are strongly spiny, leathery and contain one or two shiny brown seeds, which are called conkers in Europe.



Horse-chestnut is similar to Ohio buckeye but is not quite as hardy and does not grow as tall. It also differs in having larger flower clusters and cream-colored flowers. Its leaves are typically larger and divided into 7 leaflets. The fruit husks are not as spiny as Ohio buckeye husks. In winter the Horse-chestnut has large, sticky terminal buds.

*Remember David: Horse-chestnut nuts are not edible.*

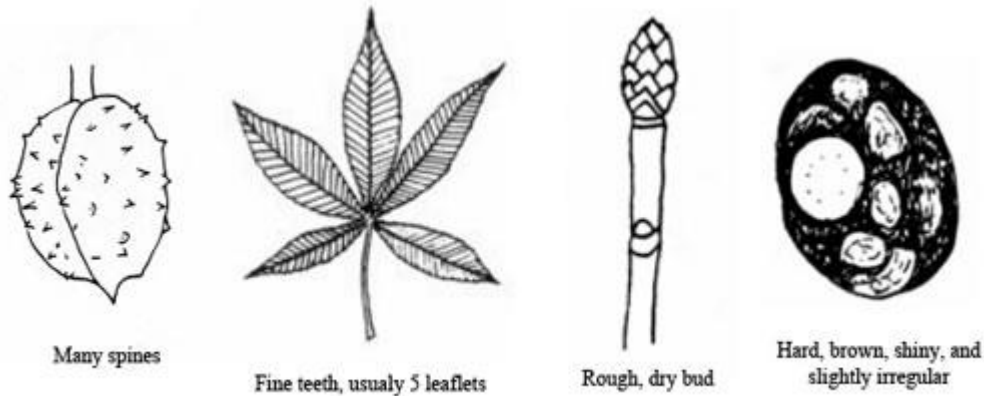
**Ohio buckeye** (*Aesculus glabra*) is an attractive tree often recognized by its rounded canopy and thick, deeply fissured, gray bark. The tree is valued for its early, showy spring flowers and for the equally early and striking orange and yellow color show its leaves produce in autumn or late summer. Ohio buckeye is seldom used as a street tree because of the odor it produces when damaged, giving it the popular name of Fetid Buckeye, and because of litter from its dropping fruit and leaves. Ohio buckeye's natural range extends from Ohio and western Pennsylvania to parts of Alabama, and westward to areas of Kansas, Nebraska, and Iowa. (Grows in hardiness zones 4 to 7.)

As with the other buckeyes, Ohio buckeye grows best in deep, rich, well-drained soils in part-shade. They are prone, as are other buckeye species, to leaf scorch if sited in full sun and under drought conditions. Higher elevations of South Carolina are at the bottom end of the range for Ohio buckeye. This species also thrives in mesic hardwood forests in ravines and along stream banks which provide constant soil moisture. Typically, Ohio buckeyes grow as small to medium-sized trees to 30 to 50 feet tall.

Ohio buckeye flowers are creamy to greenish-yellow and held in upright terminal panicles, and flowering occurs in early spring. Stamens extend beyond the petals. The fruit are weakly warty or spiny, leathery capsules that

usually contain just one hard, shiny, dark brown seed that matures in October. These are the most common buckeyes carried for good luck.

Ohio buckeye is a slow-growing, round-headed tree that grows up to 50 feet high. Large, showy, upright flower clusters appear in early June. The flowers are creamy yellow and lack fragrance. Fruits become conspicuous on the tree in late summer and fall. Their husks have thick, knobby spines. Usually a single, rounded, shiny brown seed is produced in each fruit.



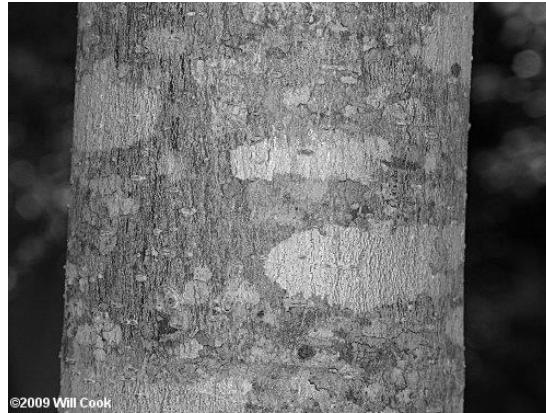
The color, shine, and size of this seed has been said to resemble a buck's eye. Leaves have a good green color in summer and turn golden and orange in the fall. In winter one can identify the Ohio buckeye by its dark brown, dry, scaly buds. These are arranged in pairs, opposite from each other, except for a larger single one at the ends of the twigs.

*Remember David: Ohio buckeye nuts are not edible.*

**Yellow Buckeye** (*Aesculus flava*) - Yellow buckeye is a large, native tree that may grow from 50 to 75 feet tall and 30 to 50 feet wide, and prefers rich, well-drained soils. The preferred soils are the mesic soils of hardwood forests, with slightly acidic to neutral soil pH. Its native range is mostly over the central Appalachian Mountains, and is found at higher elevations in western South Carolina. It is common in the Great Smoky Mountains and found in coves, river bottoms and on northern slopes. It is a shade tolerant species. The foliage may scorch if planted in full-sun and exposed to drought conditions.

Flowers are tubular-shaped, as are those of the red and painted buckeyes, and pale-yellow. The showy upright flower clusters range from 4 to 8 inches tall. Only the lower flowers of each cluster are perfect and produce fruit, as the upper flowers are staminate and produce additional pollen to help assure fruit set. The stamens do not extend beyond the petals. *Aesculus flava* will hybridize with *A. glabra* var. *glabra*, the Ohio buckeye. Yellow buckeye blooms in late April. The stamens remain hidden within the flowers.

Fruit are found in clusters in autumn, and are smooth, thick, leathery capsules that contain from 1 to 3 chestnut-brown, shiny seeds. Fruit are 2 to 2½ inches in diameter. Seeds need to be planted in rich, deep woods soil, and not allowed to dry out before planting.



Worldwide species of *Aesculus* include:

*Aesculus californica*: California buckeye (western North America)

*Aesculus* × *carnea*: red horse chestnut

*Aesculus chinensis*: Chinese horse chestnut (eastern Asia)

*Aesculus chinensis* var. *wilsonii*: Wilson's horse chestnut (eastern Asia)

*Aesculus flava* (*A. octandra*): yellow buckeye (eastern North America)

*Aesculus glabra*: Ohio buckeye (eastern North America)

*Aesculus hippocastanum*: common horse chestnut (Europe, native to the Balkans)

*Aesculus indica*: Indian horse chestnut (eastern Asia)

*Aesculus neglecta*: dwarf buckeye (eastern North America)

*Aesculus parviflora*: bottlebrush buckeye (eastern North America)

*Aesculus parryi*: Parry's buckeye (western North America, endemic in Baja California del Norte)

*Aesculus pavia*: red buckeye (eastern North America)

*Aesculus pavia* var. *flavescens*: Texas yellow buckeye, yellow woolly buckeye (eastern North America, narrowly endemic in Texas)

*Aesculus sylvatica*: painted buckeye (eastern North America)

*Aesculus turbinata*: Japanese horse chestnut (eastern Asia, endemic in Japan)

*Aesculus wangii*: *Aesculus assamica* (eastern Asia)

Data compiled from a variety of book and internet resources, 2016 by Meg Scanlon.