

Black Walnut

Juglans nigra

Twig & Bud



buds are large w/ pubescent scales

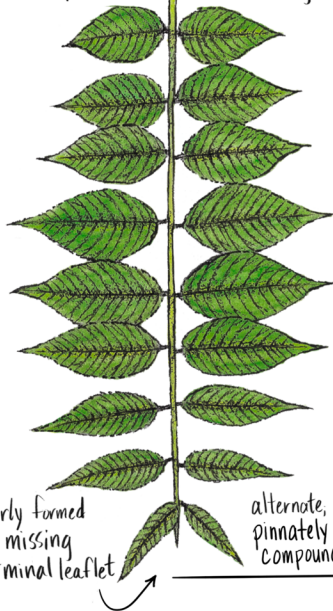
leaf scars are 3-lobed, resembling a "monkey face"

twig is stout & has a chambered pith

Leaf

rachis is stout. Somewhat pubescent

11-24 leaflets finely serrate, 3-3½" long



12-24 inches

poorly formed or missing terminal leaflet

alternate, pinnately compound

Bark

dark and scaly on young trees; matures to darker gray-black w/ intersecting ridges and furrows that form a diamond pattern

Habitat

prefers moist, organically rich, well-drained soils; often found in riparian zones & mesic woodlands

Flower

monoecious

male flowers on single-stemmed catkins

female flowers appear as short spikes, in groups of 2-5, near twig end of season's new growth



2½ - 5½ inches



2/8 inch

Fruit

round, thick, indehiscent husk that contains irregularly furrowed nut; matures late summer to fall



diameter of husk is 1½ - 2½ inches



diameter of nut is 1-¼ inch



TREE OF THE MONTH

Black Walnut • *Juglans nigra*

ALSO KNOWN AS: EASTERN BLACK WALNUT, AMERICAN WALNUT

Black walnut (*Juglans nigra*) is a large, deciduous tree with a capacious canopy and a height of around 80 feet, sometimes attaining heights up to 150 feet. Its round, low-branching, open crown spreads nearly as wide as the tree is tall. This species occurs throughout the central and eastern parts of the United States and is typically found growing in small groups or as scattered individuals.

Black walnut prefers moist, organically rich, well-drained soils in riparian zones—the lands that occur along the edges of rivers, streams, lakes, and other water bodies. Black walnuts are often found alongside tuliptrees, white ash, black cherry, American beech, basswood, sugar maple, oaks, and hickories.

Black walnut branches, twigs, and leaves grow in an alternate pattern. The alternately arranged, **pinnately** compound leaves have 11 to 24 smaller leaves called “leaflets” that may be alternate or opposite of each other. The terminal leaflet is typically poorly formed or missing entirely. The leaflets are oval-shaped, have finely serrated edges, and are 3 to 3½ inches long. Each leaflet is nearly stalkless, has an **acuminate** tip and rounded **oblique** base, and is fragrant when crushed. The **rachis** of the leaf is stout and somewhat **pubescent**.

The bark is dark and scaly on young trees, but on mature trees, it becomes a darker gray-black with intersecting ridges and furrows forming a diamond pattern. Twigs are stout and often slightly pubescent. The leaf scars are shield-shaped with three lobes, resembling a monkey face. The twig has a buff-colored chambered pith, which means there are numerous disk-like segments separated by discrete, short cavities in the center of the twig; not many twigs have this feature. The buds of the black walnut twig are grayish-tan and relatively large with a few fuzzy, **valvate** scales.

Black walnuts are monoecious, meaning male and female flowers grow on each tree. They bloom in May and June when the leaves begin developing. Male flowers bloom on single-stemmed **catkins** hanging from the leaf scars of the prior season. Female flowers appear as short spikes, in groups of 2 to 5, near the twig end of the season's new growth. Pollination occurs by the wind or self-pollination of the female flowers.

Perhaps the black walnut's most distinct and well-known characteristic is its fruit: the walnut. These large, green globes will hang from trees as they mature in late summer to fall. They have a thick, **indehiscent** husk that contains an irregularly furrowed, hard nut that is oily and edible. The fruit of black walnuts provides food to many rodents, and their leaves host numerous species of caterpillars and moths, which are an essential food source for birds.

Black walnut's species epithet, *nigra*, refers to the tree's dark bark and nuts. The genus name, *Juglans*, comes from the Latin names *jovis*, meaning “of Jupiter,” and *glans*, which literally means acorn. The black walnut is often confused with butternut, tree of heaven, and staghorn sumac.

pinnately: resembling a feather in having parts or branches arranged on each side of a common axis
acuminate: tapering to a point
oblique: having unequal sides or a slanting direction or position
rachis: the central axis of a compound structure
pubescent: fine covering of soft, short hair on the surface of a leaf and other parts of a plant

leaf scar: the mark left by a leaf after it falls off the twig
valvate: having adjacent edges abutting rather than overlapping
catkin: a slim, cylindrical flower cluster with inconspicuous or no petals
indehiscent: (of a pod or fruit) not splitting open to release the seeds when ripe



OPPOSITE BRANCHING PATTERN

ALTERNATE BRANCHING PATTERN

WHORLED BRANCHING PATTERN

Black walnut has been vilified for decades as a “killer tree” due to it containing a toxic chemical called “juglone,” which will kill other plants growing nearby. This phenomenon of plants releasing biochemicals that affect other organisms is called allelopathy. Juglone occurs naturally in all parts of the black walnut tree, and many laboratory studies have found that concentrated amounts of the chemical will kill plants.

However, as recently as 2019, a published study provided evidence that black walnuts are not as allelopathic as they've been demonized to be. Previous research has used artificial experimental methods to test for allelopathy in relation to juglone and didn't test for this relationship in natural conditions. The most recent study by Linda Chalker-Scott found that the amount of juglone in walnuts can't survive in soil with microbial conditions.



Tree of the Month is sponsored by Berkshire Environmental Action Team, a 501(c)(3) nonprofit organization located in Pittsfield, MA. Find more Trees of the Month at www.thebeatnews.org.