SPROUT &ABOUT

A MIDWEST PLANT AND MUSHROOM HUNT

When using this book please use caution and good judgment to prevent serious harm or even death. Always do your research before handling, consuming, and/or harvesting anything.

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Taxonomy

Taxonomy is the hierarchical system used to identify plants based on similarities of characteristics. In order from highest taxonomic rank to lowest classification is as follows: Domain, Kingdom, Phylum, Class, Order, Family, Genus, and Species. The higher ranks are more broad but the lower ranks have increased specificity. Some plants will have "spp." listed as its species name this abbreviation stands for "species pluralis" in Latin, meaning "species" in the plural form. It is used in scientific writing to refer to multiple species within a genus when the specific species are not identified.

Domain is the highest taxonomic rank, which categorizes life into three broad groups: Archaea, Bacteria, and Eukarya. It is determined by fundamental differences in cellular structure and biochemistry. Plants and fungi fall into the eukarya domain.

Kingdom contains subdivisions of domains. In Eukarya, there are kingdoms like Animalia, Plantae, and Fungi. Kingdoms often refer to cellular organization, modes of nutrition, and reproductive methods.

Phylum groups organisms based on major body plans or structural features.

Class divides phyla into groups that share more specific characteristics.

Order adds specificity within classes, grouping families with similar traits.

Family is the category that groups together genera (plural of genus) with common traits.

Genus is a group of closely related species.

Species is the most specific level of classification, representing a group of individuals that can interbreed and produce fertile offspring.

SPECIFICITY INCREASES

Scientific vs Common Name

A plant's **common name** is the more well-known name. Using the common name only works in one language, and multiple plants from different regions can have the same one. The primary advantage of using a plant's common name is that people who may not have the expertise to understand scientific names can recognize the plant.

A plant's **scientific name** refers to the genus name and the species identifier name. The genus name will be first and is always capitalized whereas the species name is placed second and remains lowercase. Using a plant's scientific name is ideal as there is only one in the whole world, there is increased specificity and it gives an idea of the taxonomy hierarchy of the plants.

Chemical Compounds

Phytochemicals are naturally occurring chemical compounds found in plants. There are several types of phytochemicals each with different properties. These various properties are related to the benefits the plant can provide.

Chemical	Provided Benefit
Flavanoids	Antioxidant, Anti-inflammatory, improves Cardiovascular Health
Alkaloids	Stimulant, Pain Reliever
Terpenes	Anti-inflammatory, Mood Enhancer
Saponins	Immune Support, Lowers Cholesterol (Improves Cardiovascular Health)
Glycosides	Therapeutic Effects, Anti-inflammatory, Antimicrobial
Tannins	Astringent Properties, Potential Antioxidant

Benefits Defined

Anti-Inflammatory - Lowers inflammation, linked to health issues such as heart disease and arthritis.

Antimicrobial - Substance that kills or inhibits the growth of microorganisms.

Antioxidant - Combats oxidative stressors, potentially reducing the risk of chronic diseases.

Astringent Properties - The binding and precipitate of proteins creating a tightening or tingling sensation.

Antimicrobial - Substance that kills or inhibits the growth of microorganisms.

Immune Support - Enhances immune system aiding in resistance to infections.

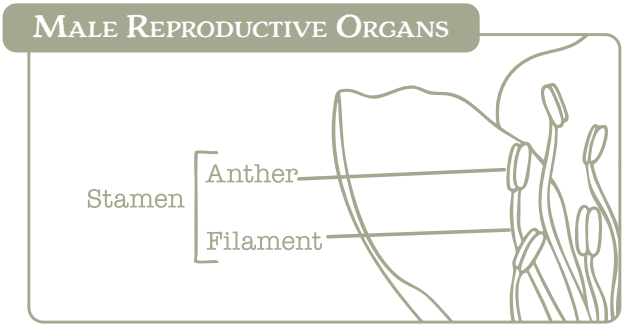
Mood Enhancer - A substance that interacts with the body's neurotransmitter level or overall brain chemistry and positively influences mood.

Pain Reliever - Relieves pain in the body interacting with the body's nervous system.

Stimulant - A substance that increases physiological or nervous system activity in the body.

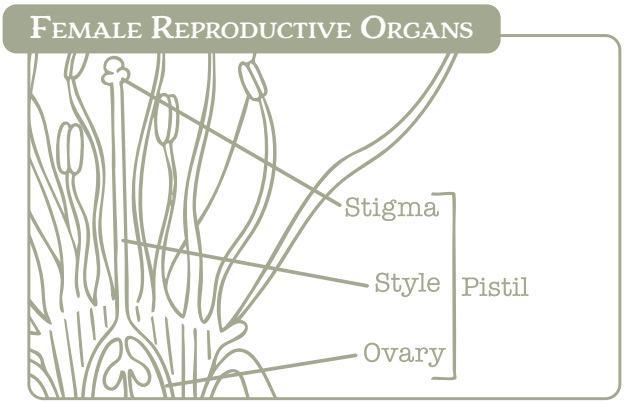
Therapeutic Effects - Compounds leading to an overall beneficial state of health and wellness.

Stamens are the male reproductive organ of flowers responsible for pollen production. They consist of an **anther** that produces pollen, and the **filament**, the stalk that supports the anther.



A flower's stamen can be **exserted** or **included**. Exserted stamens extend past the surrounding organ while included means it stays within that organ.

Pistils are the female reproductive parts of a flower, responsible for receiving pollen and facilitating fertilization. They consist of the **stigma**, a sticky surface that collects pollen, the **style**, a stalk connecting the stigma to the ovary, and the **ovary**, which contains ovules where seeds develop.

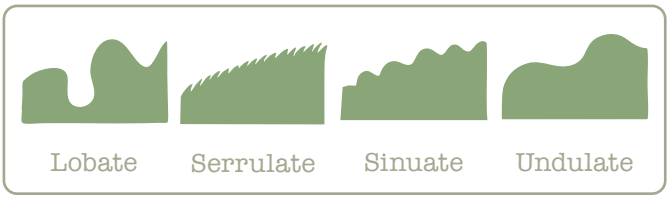


Leaves with **lobate** margins have distinct, rounded or deep, but irregularly spaced indentations or lobes. These lobes are often large and extend into the leaf blade.

Leaves with **serrulate** margins are finely serrated, with very small, delicate, tooth-like structures. The teeth are usually minute and closely spaced.

Leaves with **sinuate** margins have large, smooth, and curving indentations or waves. These sinuous curves resemble a series of broad, shallow lobes.

Leaves with **undulate** margins have a wavy, undulating pattern, with smooth, gentle curves along the edge. These waves are not as deep as sinuate indentations.



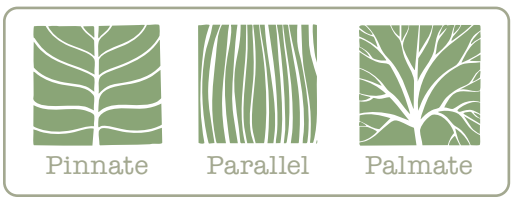
Leaf Venation

Leaf venation depicts the pattern of veins within a leaf. Leaf venation mentioned within this section include pinnate, parallel, and palmate.

Leaves with **pinnate** venation are arranged like a feather, with a central main vein (the midrib) and smaller secondary veins branching off from it, typically at an angle.

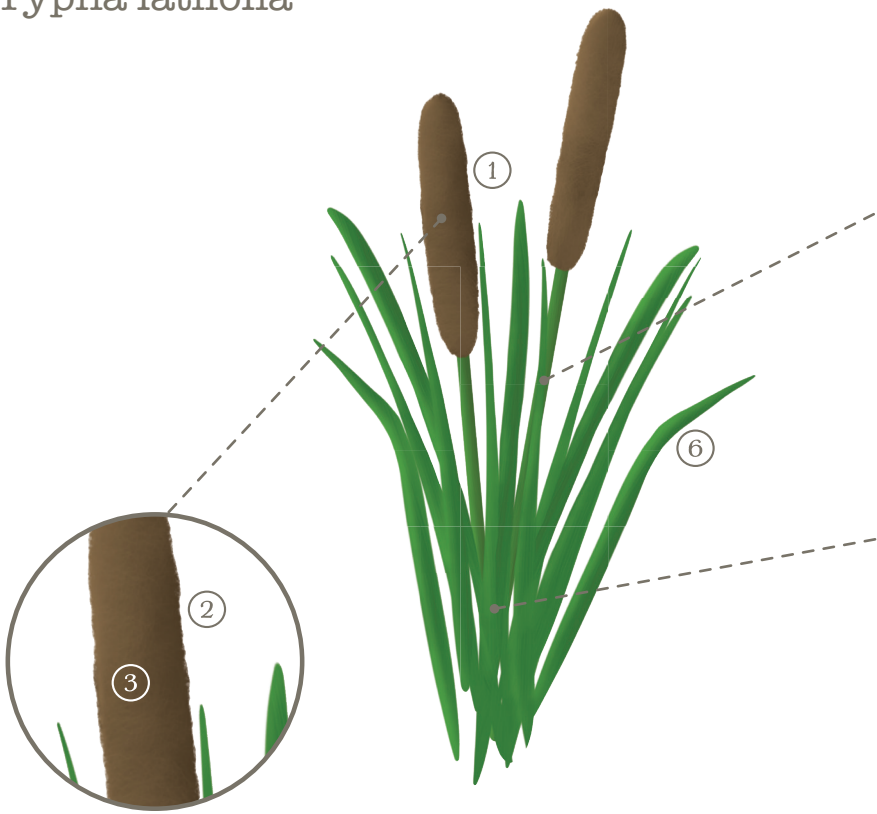
Leaves with **parallel** venation have veins that run parallel to each other, with little to no branching.

Leaves with **palmate** venation have several large veins radiating from a single point, like the fingers of a hand.



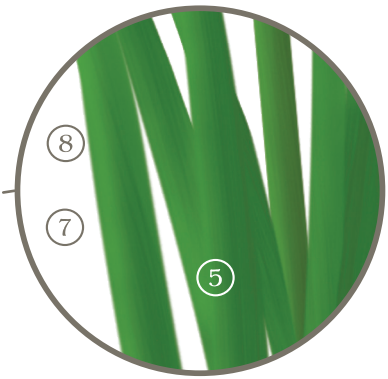
BROADLEAF CATTAIL

Typha latifolia



Background Information

Common Name: Broadleaf Cattail
Scientific Name: Typha latifolia
Growth Type: Perennial
Growth Season(s): Spring to Fall
Classification: Herb
Midwest Native: Yes
Maximum Height: 3-10 Feet
Use(s): Medicinal, nutritional



Taxonomy Hierarchy

- **Domain:** Eukarya
- **Kingdom:** Plantae
- **Phylum:** Angiosperms
- **Class:** Monocots
- **Order:** Poales
- **Family:** Typhaceae
- **Genus:** Typha
- **Species:** Typha latifolia

In-Depth Anatomy

① **Flower Type:** Cylindrical spikes
② **Petal Type:** Small, densely packed
③ **Petal Color:** Brown
④ **Stem Type:** Caulescent
Stem Tissue: Herbaceous
⑤ **Leaf Shape:** Linear
Leaf Size: 1-2 in (2.5-5 cm) long
⑥ **Leaf Arrangement:** Alternate
⑦ **Leaf Margins:** Undulate
Leaf Texture: Smooth
⑧ **Leaf Venation:** Parallel
Leaf Color: Green
Root Type: Rhizomatous

Uses and Preparations

Nutritional Use

Parts Used: Young shoots and flower spikes.

Preparation: Harvest young shoots in spring. Peel away outer layers and eat raw in salads or cook like asparagus.

Nutritional Supplement

Parts Used: Pollen from flower spikes.

Preparation: Collect pollen from the flower spikes in late spring. Dry and use as a flour substitute in baking or add to smoothies for nutritional benefits.

Anti-inflammatory (Topical Application)

Parts Used: Leaves and stems.

Preparation: Crush fresh leaves or stems to extract juices. Apply directly to inflamed skin or minor wounds for relief.

Wild Growing Conditions

Commonly found in wetlands, marshes, and along pond edges. Prefers shallow water and can tolerate a variety of soil types.

At-Home Growing

Broadleaf cattail can be grown in water gardens or wetland areas in home gardens. It requires full sun and prefers moist, nutrient-rich soil. Regular maintenance is necessary to control spread, as it can become invasive in some areas.

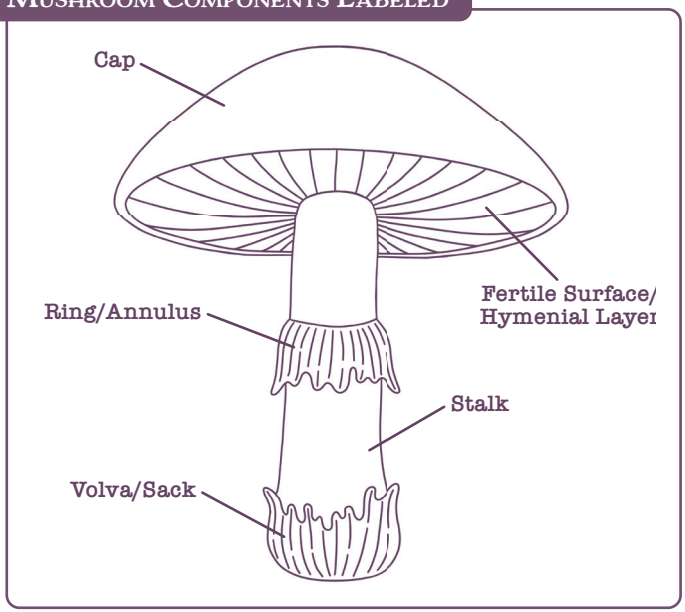
Fungi vs Mushroom

Fungi refers to the whole of an organism including the part that grows underground called the mycelium and the part that grows above ground is referred to as the **mushroom**. The main parts of fungi include the cap, fertile surface, stalk, veil, and mycelium.

Components of a Mushroom

The key components of a mushroom include its cap, fertile surface/hymenial layer, stalk, veil, along with its spore print results. Each of these components plays a vital role in the plant's reproductive success and survival, as well as in its identification.

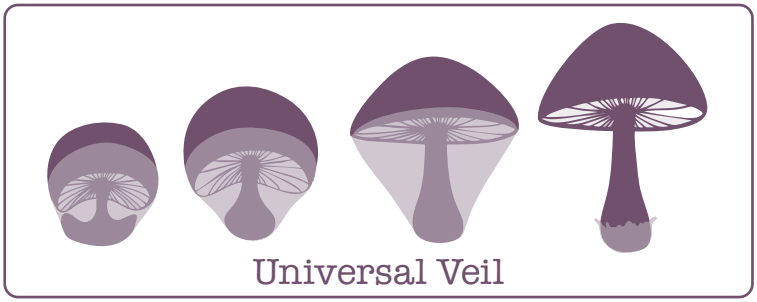
Mushroom Components Labeled



Veil

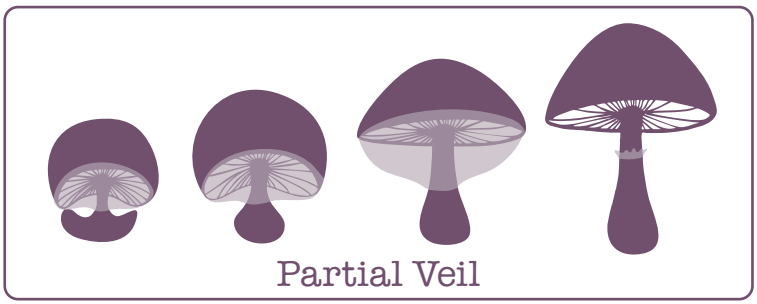
The veil of a mushroom is the membrane that covers young spores until they fully develop protecting them from outside dangers.

Some mushrooms grow **universal veils** in which the entire mushroom is covered by its veil in the early stages of development.



Universal Veil

Other mushrooms only grow **partial veils**. This type of veil only grows over its pores during the early stages of development.



Partial Veil

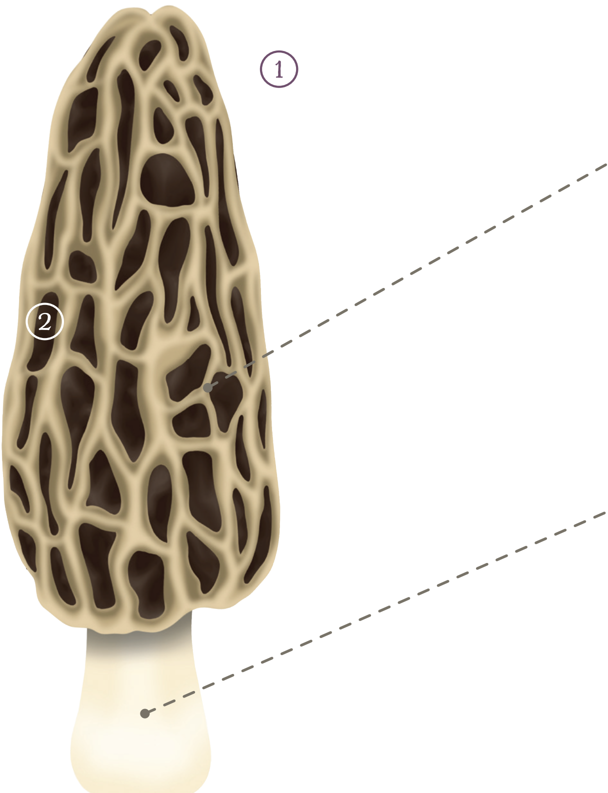
While having a universal or partial veil is the most common, certain species may even grow both types or neither!

As the mushroom grows the membrane is stretched and begins to break away, this process typically leaves behind remnants of the veil around the stalk. A partial veil will leave remnants known as the **ring** or **annulus** near the top of the stalk while a universal veil will leave behind tissue called the **volva** or **sack** around the base of the stalk.

1 in 1 cm

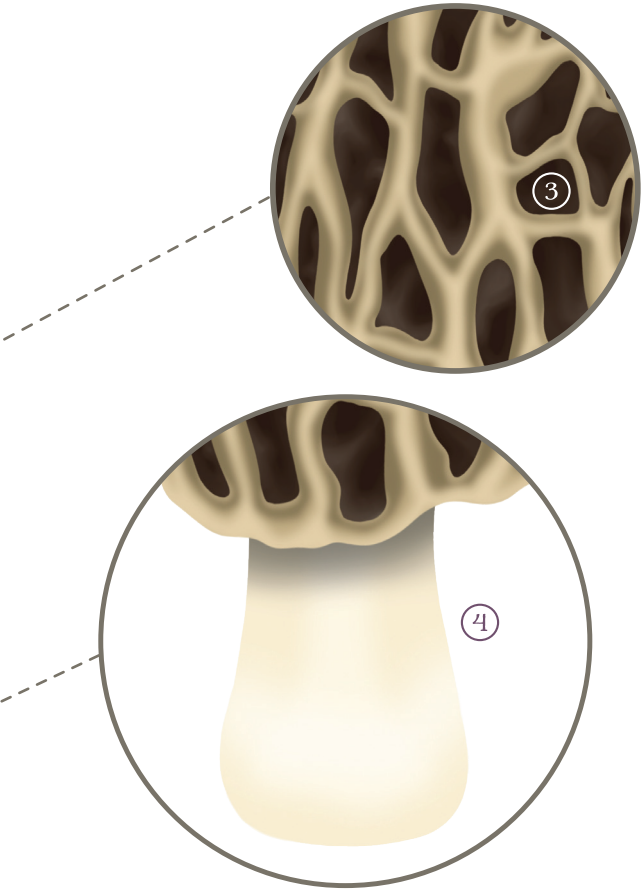
YELLOW MOREL

Morchella esculenta



Background Information

Common Name: Yellow Morel
Scientific Name: Morchella esculenta
Average Height: 3-10 in (7.55-25 cm)
Growth Season(s): Spring
Midwest Native: Yes
Use(s): Nutritional



Taxonomy Hierarchy

- **Domain:** Eukarya
- **Kingdom:** Fungi
- **Phylum:** Ascomycota
- **Class:** Pezizomycetes
- **Order:** Pezizales
- **Family:** Morchellaceae
- **Genus:** Morchella
- **Species:** Morchella esculenta

In-Depth Anatomy

1. **Cap Shape:** Conical
2. **Cap Surface:** Honeycomb
   Cap Color: Yellow or light tan
   Cap Size: 1-3 in (2.5-7.5 cm) tall, 1-2 in (2.5-5 cm) wide
3. **Fertile Surface Type:** Covered in ridges
4. **Stalk Shape:** Hollow, cylindrical
   Stalk Color: White or cream
   Stalk Size: 3-6 in (7.5-15 cm) tall, 0.5-1 in (1.3-2.5 cm) wide
   Veil Type: None
   Veil Presence After Maturity: None
   Spore Print: White or pale yellow

Uses and Preparations

Yellow Morels provide many necessary vitamins and minerals. They must be thoroughly cooked before consumption as they are extremely toxic raw.

Growing Conditions

Yellow morels grow naturally in forests, especially near hardwood trees like elm, ash, and apple, as well as in disturbed areas such as forest clearings or along riverbanks. They thrive in the spring when temperatures are between 50°F and 70°F, typically after rainfall. Yellow morels prefer moist, well drained soils and are often found in areas with rich, loamy soil. They grow in shaded or partially sunny areas and require high humidity to fruit. They typically appear in early to mid-spring.

The color of a leaf is a key feature in plant identification, as it can provide important clues about the species and its environment. Green leaves are the most common, thanks to chlorophyll, which helps with photosynthesis. However, variations in green, such as darker or lighter shades, can indicate different species or health conditions. Some leaves may turn yellow, red, or purple in the fall, signaling changes in pigment as the plant prepares for winter. Additionally, certain plants may have leaves with unique colors, like the silvery or reddish hues of some evergreens, which can aid in distinguishing them. Observing leaf color alongside other traits like shape, size, and texture helps create a clearer picture for accurate identification.

Leaf Retention

Leaf retention refers to the way in which trees keep or shed their leaves throughout the year. The various types of leaf retention strategies are largely based on how trees cope with environmental conditions, particularly temperature and water availability. There are two main categories of leaf retention: deciduous and evergreen.

Deciduous retention means the leaves die and fall off, usually in winter, and regrow the following season.

Evergreen retention means the leaves do not die and fall off based on season instead they remain green year-round.

Bark

The bark of a tree can be one of the easiest ways to identify a specific species. The pattern, color, and depth are examples of specific features that bark can show to hint towards that tree's species. Identifying features of bark include thickness, ridges, color, spacing, and looseness that makes each tree unique.

Bark Appearance

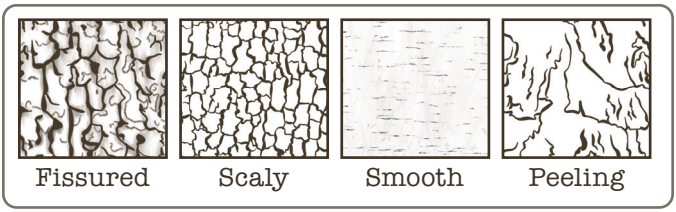
Bark appearance is defined as how the bark on the outer parts of a tree look at first glance. Bark types referred to in this section include fissured, scaly, smooth, and peeling.

Fissured bark has deep grooves and cracks, giving a rugged appearance.

Scaly bark is broken into scales or plates.

Smooth bark is even and untextured, and can be shiny.

Peeling bark can be flaky and sheds in strips or flakes.



Twigs and Branchlets

Twigs, while easier to miss with just a glance, play a big role in tree identification. The term twig refers to any new growth on a tree from the current season. Twigs are typically a bright green at the start of their growing season and turn to a darker color as the season progresses ending up as a dark brown in a year or two as they fully mature. A similar branch-like growth can be found on trees called **branchlets** which are from the previous season's new growth. When identifying a tree be sure to notice the difference between twigs and branchlets as key identifying factors.

Roots

Unearthing a complete plant to view its root system is a tedious task but for some plants, this may be the most useful part. The main feature to notice about a plant's roots is by identifying what type of root system is present.

A **fibrous root** system will be made up of many thin roots.

A **taproot** will grow one thicker root.

An **adventitious roots** will grow from less-than-usual locations such as the stem or leaves.

A **rhizome root** system will grow stems horizontally underground that can produce other roots and shoots for new plants.

1 in 1 cm

BLACK WALNUT

Juglans nigra

The black walnut tree leaf is large and compound, with 15 to 23 dark green, serrated leaflets arranged along a central stem. The leaflets are oval to lance-shaped, and the underside is pale and slightly hairy. In fall, the leaves turn yellow-brown.

Background Information

Common Name: Black Walnut
Scientific Name: Juglans nigra
Average Height: 50-75 ft
Growth Season(s): Spring to Fall
Leaf Retention Type: Deciduous
Midwest Native: Yes
Use(s): Burn fuel, medicinal, nutritional

The nut of a black walnut tree is round and about 1 to 2 inches in diameter, enclosed in a thick, green, leathery husk that turns dark brown as it ripens. Once the husk is removed, the hard, rugged shell reveals the rich, oily edible nut inside, which has a strong, distinctive flavor.

Taxonomy Hierarchy

- **Domain:** Eukarya
- **Kingdom:** Plantae
- **Phylum:** Angiosperms
- **Class:** Eudicots
- **Order:** Fagales
- **Family:** Juglandaceae
- **Genus:** Juglans
- **Species:** Juglans nigra

In-Depth Anatomy

Bark Thickness: 1-2 in (2-5 cm)
① **Bark Appearance:** Rough, deep fissures
Bark Color: Dark gray
Twig Appearance: Thick
Twig Color: Light brown
② **Leaf Shape:** Pinnatisect
Leaf Size: 2-4 in (5-10 cm) long
Leaf Arrangement: Alternate
③ **Leaf Margins:** Entire
Leaf Texture: Rough, leathery
④ **Leaf Venation:** Pinnate
Leaf Color: Dark green
Root Type: Taproot

Uses and Preparations

Digestive Relief (Tea)

Parts Used: Bark.

Preparation: Bark from a black walnut tree can be made into tea by boiling 1-2 teaspoons of dry bark for 10-15 minutes to help with digestive issues.

Topical Application (Poultice)

Parts Used: Bark.

Preparation: The bark can also be made into a poultice by finely chopping it into pieces and mashing/boiling it into a paste-like texture and applied topically to treat minor skin wounds or fungal infections.

Nutritional Use

Parts Used: Walnuts.

Preparation: Walnuts from the tree can be eaten raw and are nutrient-dense. Harvest the nuts in late fall as the husks begin to split, the outer husk must be removed. Once the outer husk and the hard shell are removed the kernel can be eaten raw or roasted over a fire.

Firewood

Parts Used: Dry wood or twigs.

Preparation: Twigs and branchlets work as excellent fire starting timber and larger logs chopped from the tree can provide a great campfire when needed. The wood burns hot and slow.