

QUAKING ASPEN

(*Populus tremuloides*)



Frank Oliver photo

This tree, aka trembling aspen, is popular for landscaping partially due to its straight trunk. Because it forms colonies, it is also planted as a windbreak.

By Taylor Lehman

Quaking aspen has leaves that alternate along the stem and are borne on slender flat petioles (leaf stalks) that appear to quake or tremble in the wind, hence its name.

These leaves are nearly round with a pointed tip and have finely toothed margins. They are shiny and green on the upper surface and dull and paler on the lower surface. Young trees have smooth, light-gray bark and diamond-shaped lenticels (raised pores) often dot the surface. The bark becomes more furrowed and darker with age, but the upper portions of the tree retain the youthful characteristics.

As a pioneer species, quaking aspen is one of the first trees to colonize open habitats. It prefers partial and full sun and moist to somewhat dry soils. It grows in a variety of habitats and is the most widely distributed tree in North America. Its ability to form colonies via underground stems called rhizomes

contributes to its success. A single tree can form thousands of clones.

In Utah, one quaking aspen tree and its clones occupy an area over a hundred acres, making it one of the largest organisms in the world. Although individual trees generally live 50-60 years on average, clones can live for thousands of years. The colony in Utah is believed to be a million years old. Due to its ability to form these dense clonal stands, quaking aspen is considered weedy in some areas. It quickly dominates sites and crowds out other species, which can lead to less diverse plant communities.

Despite its weedy tendencies, quaking aspen is beneficial to wildlife. Numerous insects consume various parts of this tree. Many birds are drawn to quaking aspen to feed on these insects. Purple finches and red squirrels eat the buds and flowers. A lucky observer may see the state endangered ruffed grouse browsing on the buds and flow-

Family: *Salicaceae* (Willow).

State Range: Occupies various open habitats in most northern counties but is present in scattered counties in the remainder of the state.

Size: Usually reaches heights of up to 60 feet, although it occasionally grows taller.

Related Species: Bigtooth aspen, Eastern cottonwood, swamp cottonwood, balsam poplar.

ers. The trees is also used by nesting birds. White-tailed deer, beavers, voles, and rabbits browse the bark and twigs.

Quaking aspen also has a number of human uses. It is a popular choice for landscaping due to its straight trunk, pyramidal crown, and attractive golden fall foliage. Since it forms colonies, it is occasionally used as a wind or privacy barrier.

In the past, some Native American tribes ground the inner bark into flour. Many tribes also used quaking aspen to treat maladies ranging from minor wounds to intestinal illnesses. Quaking aspen, like other species in the willow family, contains salicin, which has anti-inflammatory properties similar to aspirin's; however, no FDA-approved treatments containing salicin or quaking aspen are currently available. □

Taylor Lehman is the Limberlost and East Central Region Ecologist for the Division of Nature Preserves.

WILD GINGER

(*Asarum canadense*)



Frank Oliver photos

Wild ginger has heart- to kidney-shaped leaves. Finding its flower, shown in the inset, takes work but is worth the extra effort.

By Taylor Davis

The flora on the forest floor, shaded by majestic deciduous trees, is often overlooked unless it has showy or brightly colored flowers. Looking closely, however, reveals a diverse collection of plants unique to this herbaceous layer of which wild ginger is an iconic member.

This common species grows in rich, wooded areas throughout Indiana. It can readily be identified by the two heart- to kidney-shaped leaves that originate from its horizontal underground stem, or rhizome. Each velvety leaf is deeply veined with thick, whitish hairs lining the leaf stalk, and the plant forms colonies that carpet the forest in its brilliant green color.

Wild ginger does not have the showiest flowers in the forest. Some investigation below the line of foliage is required to even find its blooms, but searching to locate its springtime flower is still worth your time.

Along or just barely above the leaf

litter, growing from a short stalk at the base of the leaves, is either a solitary, magnificent, deep red to reddish-brown flower or a more discreet, green-colored one, depending on the variety. The cup-shaped flower is also covered with hairs and opens with three spreading lobes that taper to a point. These structures form the calyx, the outermost layer of the flower, and take on the coloration and function of petals in their absence.

While the plant's exact pollination mechanisms are not fully understood or agreed upon, the ground-layer flowers are known to attract small flies that emerge from below ground in early spring. Later in the growing season, ants disseminate seeds from the parent plant. The color, shape, and position of the flower help facilitate these processes.

As suggested by its name, wild ginger roots smell similar to ginger; however, it is neither related to this kitchen staple nor commonly used in today's

Family: Aristolochiaceae, the birthwort family, which contains seven genera and about 590 species of mostly tropical woody vines and a few temperate-zone species.

Habitat and Distribution: Found in moist, deciduous forests throughout Indiana.

Size: Grows to 8 to 12 inches tall.

Bloom time: March through June.

cooking. Its modern use is in landscaping. It provides a native option for use as shade-loving ground cover.

Wild ginger is documented to have been used in various ways by early cultures, some of whom dried and ground its roots into a powder to use as a spice. Additionally, certain parts of the plant were boiled to extract compounds to make a wide variety of medicinal remedies to treat cold symptoms and wounds, and to use as a gastrointestinal aid.

Wild ginger is a common but fundamental species within Indiana's remnant forest stands. In your next stroll through the woods, take time to shift your focus from the canopy and other sights above to the forest floor to find and examine this mysterious, often overlooked plant. □

Taylor Davis is the data manager with the Indiana Natural Heritage Data Center in the Division of Nature Preserves.

YELLOW WATER BUTTERCUP

(Ranunculus flabellaris)



Frank Oliver photo

Each individual yellow water buttercup flower is about the size of a quarter, but the plant's blooms can cover an acre or more.

By Matt Beatty

Most of the blooming wildflowers thousands of Hoosiers seek out every spring—anemones, trillium, hepatica, and more—grow on dry ground.

Most of the nearby wetland plants, while still growing at this time, won't bloom until later. Yellow water buttercup is an exception. Its small yellow flower blooms each spring, in shallow wetlands.

Each of its individual flowers are about the size of a quarter and sit on a stem that sticks a few inches out of the water. Its five yellow petals have a distinct shine to their surface, a trait shared by many other members of the buttercup genus. One close relative, white water buttercup, grows in similar habitats but blooms in white.

What yellow water buttercup lacks in size, it makes up for in abundance. If conditions are right, its blooms often blanket an acre or more. The effect can be startling, creating a bright yellow

wash across large swaths of wetland habitat.

Yellow water buttercup blooms as early as April in southern portions of Indiana and later into May and early June in northern Indiana. While it can be found in scattered counties across the Hoosier state, it reaches its highest density in the northern counties.

After its blooming period ends, yellow water buttercup's seeds are produced in fruits called achenes in a head at the end of the stem. Only about 2 millimeters long, these achenes are dispersed by floating on the water and moving with a current or by being blown across the water by the wind.

After the plant has produced its seeds, its stems die back, leaving behind, below the surface of the water, only the leaves. Throughout the year, if the water is clear, you can look closely and see the submerged leaves, which are highly dissected into narrow segments that are arranged like a fan.

State Distribution:

Abundant in far northwest Indiana's dune-and-swale region; patchy throughout the northern two-thirds of the state.

Habitat: Shallow ponds, lakes, ditches, and marshes; also flatwoods.

Name: *Ranunculus* means little frog; *flabellaris* means fan-like.

Relatives: Approximately 20 species in the genus *Ranunculus* are found in Indiana.

Although underwater, these leaves can harvest energy through photosynthesis on cold, sunny days, even in the middle of winter.

Like many other wetland plants, yellow water buttercup adapts to cyclical changes in habitat conditions. During periods of drought, the shallow wetlands this plant calls home can sometimes dry up. In these conditions, the leaves of the plant tend to develop thicker lobes that become less finely divided. Scientists call this ability to change forms to adapt to changing habitat conditions heterophylly or developmental plasticity.

As you head to your local nature preserve or state park this spring to look for the annual bursts of color, remember to take a closer look in ponds, swales, and marshes to see if you can find this golden treasure. □

Matt Beatty is the Kankakee Regional Ecologist for the Division of Nature Preserves.

AMERICAN GINSENG

(Panax quinquefolia)



Frank Oliver photo

Most American ginseng plants seen these days have one to three leaves, which ginseng diggers call “prongs”. The species’ green berries turn scarlet in late summer.

By Thomas O. Swinford

American ginseng is closely related to Chinese and Korean ginseng, which have long been harvested for their roots. As a result, American ginseng has become part of the international trade in plants that have purported health benefits.

Indiana maintains a closely regulated annual harvest to help sustain its ginseng populations while continuing its long tradition of digging and selling the root.

This slow-growing perennial may live 50–75 years. Once likely abundant across Indiana, it is far less common today.

Although this upright plant can grow waist high, it’s usually much smaller. Its few compound leaves are composed of sharply toothed leaflets and arranged in a whorl around its single erect main stem. The compound leaf can be confused with leaflets of Virginia creeper or hickory seedlings.

A first-year plant starts with a single leaf, adding more with age. Ginseng diggers refer to the leaves as “prongs”,

hence a “7-pronger” is a large plant with a valuable root. Most American ginseng seen today has one to three leaves.

A round ball-like cluster of small greenish flowers forms in spring at the junction of the whorled leaves. In late summer, the green berries turn a brilliant scarlet.

References to ginseng first appear in Chinese texts more than 2,000 years old. Ginseng became an element of the indigenous Chinese philosophy/religion known as Taoism, and it entered the international silk and spice trade.

By the late 1400s it was nearly extinct in China, but the lucrative global markets demanded more. After early explorers of North America reported finding ginseng in abundance, the root became intertwined with the fur trade across eastern North America.

Indiana’s earliest pioneers received 25 cents a pound for the dried roots. Today a pound commonly brings in more than \$600. After 200 years of overharvest and loss of forest habitat, American ginseng

State Range: Statewide.

Habitat: Rich forests.

Size: Potentially waist high, usually much shorter.

Status: Watch List (regulated, declining).

Reproduction: Does not typically reproduce until plants are 3 years old. Each plant may produce only a dozen or so berries, each of which has 1–3 seeds. Birds and mammals help spread the plant by consuming the fruit.

was listed under the Convention for International Trade in Endangered Species (CITES) in 1975. As a wild plant, American ginseng is under pressure.

Nevertheless, Western medicine offers little support of its effectiveness as an herbal medicine. While it contains unique compounds, none has been shown to hold significant pharmaceutical value in a laboratory. Still, the American ginseng market is estimated to be worth \$600 million, a figure that includes both the wild and the shade-cultivated plants used as a food and drink additive. Indiana does not currently have commercial ginseng farming.

American ginseng is a fascinating part of Indiana’s rich and unique flora and fauna, as well as a part of our story of relationships with plants. It is protected on nature preserves and all public lands in Indiana. □

Thomas O. Swinford is Assistant Director of the Division Nature Preserves, email tswinford@dnr.IN.gov.

WHITE TURTLEHEAD

(*Chelone glabra*)



Frank Oliver photo

A side view of white turtlehead blossoms resembles the head of a turtle emerging from its shell, which may explain its name's origin.

By Derek A. Nimetz

Average height, thin build, white on top, hairy lip, clever nickname, creative imagination, a good host, a natural problem solver, prefers the outdoors, and hangs out at the best locations.

Do many of these characteristics describe you or your interests? If so, you would probably like to meet this plant.

The botanist who named this genus must have had a vivid imagination and been well-versed in Greek mythology. The scientific name *Chelone* is a Greek word that translates to “tortoise”. Indeed, a side view of the plant's blossoms looks like the head of a turtle emerging from its shell. Additionally, in Greek mythology, Chelone was the name of a nymph who refused to attend the wedding of Zeus and Hera. As punishment, she was changed into a tortoise.

White turtlehead is a perennial that stands about 2 to 3 feet tall when in flower. It has a smooth and unbranched main stem. The leaves are lanceolate or elliptical with small serrations along

their margins and occur in opposite pairings, connecting directly to the central stem or growing from short stalks.

The mostly white flowers occur at the top of the stem in a dense spike and are tubular in shape with two liplike structures. The lower lip has hairs and acts as a landing platform for pollinators. Medium to large bee species such as bumblebees are known to visit turtlehead and pollinate these wildflowers. Flowering most often occurs during August and September, with blooming starting from the bottom of the spike and transitioning to the top.

This plant is widely distributed across the eastern United States and Canada. In Indiana, it has occurred in more than half of the counties, preferring higher-quality habitats. It is frequently found in fens but also occurs in seeps, springs, marshes, sedge meadows, wet prairies, floodplain forests, and openings in wet flatwoods, and it prefers full to partial sunlight.

State Range: Many counties, but it's more frequent in the northern two-thirds of Indiana.

Habitat: Fens, seeps, marshes, wet prairies, sedge meadows, and wet forests.

Size: 2 to 3 feet tall perennial herb with white flowers.

Status: Occasional plant of higher-quality wetland habitats.

White turtlehead is the primary host plant for the Baltimore checkerspot butterfly. Its young caterpillars will feed on the leaves in a communal group, wrapping a silken web around the leaves for protection from predators. This occurs during mid-summer before the turtlehead starts to flower.

Balmomy is a less frequently used name for this plant—early settlers used the leaves to make a balm to relieve itching and skin irritations. Some Native Americans used white turtlehead to make medicines, including a tonic to remedy indigestion and constipation.

Although white turtlehead is found in wet habitats, you can keep your boots dry and see it at Dunes Nature Preserve in Porter County along the boardwalks of trails 2 and 10. □

Derek A. Nimetz is a regional ecologist with the Division of Nature Preserves, dnimetz@dnr.IN.gov.

CUT-LEAVED GRAPE FERN

(Sceptridium dissectum)



John Maxwell photo

Cut-leaved grape fern grows at Shrader-Weaver Nature Preserve. These ferns have a long-stalked upright fertile frond and variably shaped sterile fronds.

By Scott Namestnik

Many Indiana wildflower enthusiasts are familiar with a variety of the charismatic ferns that occur in the state such as sensitive fern, bracken fern, Christmas fern, and cinnamon fern. But this one, despite being one of our most common and widespread, often goes unnoticed—even though you can see it year-round.

Cut-leaved grape fern is also wide-ranging. It occurs north into Canada and south into Central America and some Caribbean islands, as well as throughout the eastern half of the continental United States. It is by far Indiana's most common member of the genus *Sceptridium*—its four closest relatives are on Indiana's respective lists of endangered, threatened, watch, and extirpated plant species. Among the other of Indiana's members of the adder's-tongue family, only rattlesnake fern is more common.

Granted, distinguishing the five species of grape fern in Indiana can be chal-

lenging. Additionally, cut-leaved grape fern is an extremely variable species. It has a sterile frond, or leaf, that can be either deeply dissected and toothed to the point of appearing lacy, or be shallowly lobed with nearly untoothed edges. In all cases, however, its lone sterile frond is generally triangular in outline, leathery in texture, about 6 inches long and wide, and nearly parallel to the ground.

On reproductive plants like this, a long-stalked upright fertile frond (the one that produces spores) arises from near the base of the stalk of the sterile frond. It's strongly dissected with tightly appressed upright lobes that have globular structures called sporangia that contain the microscopic, powder-like yellow spores and looks quite different from the sterile frond. The conglomeration resembles a cluster of greenish-yellow grapes, thus this fern's common name.

Cut-leaved grape fern has an interesting life cycle. This perennial

State Range: Nearly statewide. The most notable exception is in the Grand Prairie natural region in northwest Indiana, where tallgrass prairie and marsh were ubiquitous prior to modern development.

Habitat: Swamps, flatwoods, moist-to-dry upland forests, successional woodlands, old fields.

Size: Grows to about 15 inches tall.

Also known as: Dissected grape fern.

develops its dark green sterile frond during spring. During summer, some of the species' plants produce a fertile frond that releases spores in the late summer or fall. During winter, in response to cold temperatures, the sterile frond turns bronze and stays that color until the next spring when it withers, and a new sterile frond develops. This can make cut-leaved grape fern easier to spot in the winter, especially when there is a shallow layer of snow; however, this fern doesn't necessarily produce fronds every year. And if you see an abundance of it in an area one year, you may not see much the next.

This fern shows that you can still successfully seek out plants as winter approaches. Watch for its uniquely colored fronds in a variety of woods and old fields over the next couple of months. □

Scott Namestnik is the botanist with the Indiana Natural Heritage Data Center in the Division of Nature Preserves.