

PAPER BIRCH

(Betula papyrifera)



Frank Oliver photo

As this tree species matures, the bark turns creamy or chalky white and develops thin, peeling layers that resemble small scraps of paper.

By Derek Nimetz

The chalky white, paper-thin bark of the mature version of this hardwood tree paints a contrast of color in the open sand savannas and woodlands of northwest Indiana, particularly in the flatwood forests of LaPorte County.

Rare in Indiana, paper birch can have either a single stem or multiple trunks. Its crowns are often narrowly rounded, and the tree has many slender ascending branches. Branching is alternate. Twigs are reddish brown with a rough texture. Mature trees can measure 1 to 2 feet in diameter.

Paper birch leaves are egg shaped with a pointed tip and rounded base, approximately 3 inches long with coarsely double-toothed edges. During autumn, the deciduous leaves turn golden yellow before falling.

Male and female flowers are separated on the same tree and organized into flower spike groupings called catkins. These start to develop during autumn then become dormant during winter.

Male flower catkins are cylindrical and hang down from the tips of twigs. Female flower catkins are cylindrical too, but shorter and narrower than male catkins, and they stand upright on twigs rather than dropping. The flowers are cross-pollinated by wind during April and May.

Although there are differences between the bark of young and old paper birch trees, winter is a good season to locate and identify either—both are virtually unmistakable to amateur naturalists and botanists alike. Young trees have shiny reddish-brown to burgundy bark with many horizontal pores called lenticels. As the tree matures, the bark turns creamy or chalky white and develops thin, peeling layers that resemble small scraps of paper, thus its common name. Older specimens can have dark gray bases near the ground.

Distribution is wide across the northern United States and Canada; however, Indiana is near its southernmost limits—naturally occurring populations have been

State Range: Lake, Porter, and LaPorte counties.

Habitat: Boreal forests and sand savannas.

Size: 50 to 70 feet tall at maturity.

Other Common Names: White birch, canoe birch.

documented from only four counties, mostly in the Lake Michigan watershed.

Paper birch is primarily located in sandy soils near wetlands but not in standing water. It is short-lived and shade intolerant. Although paper birch is a pioneer plant species, it may only live up to 150 years.

Paper birch has been used commercially for plywood and veneer. Its relatively soft whitish wood has been used to make toothpicks, ice cream sticks, and clothespins. Pulpwood is used for making paper products. Native Americans have used the waterproof bark to cover the bottom of canoes and make baskets.

Now is time to get outside and go on a botanical adventure. Hiking the trails at Ambler Flatwoods Nature Preserve and Wintergreen Woods Nature Preserve will yield many great examples of this northern boreal birch tree. □

Derek Nimetz is a regional ecologist with DNR Nature Preserves, working in the Coastal Region, dnimetz@dnr.IN.gov.

HOARY PUCCOON

(*Lithospermum canescens*)



Frank Oliver photo

Hoary puccoon on full display in Lake County. The word “puccoon” means this plant was the source of a dye at one time.

By Thomas Swinford

If you find yourself among a colony of hoary puccoon, count yourself lucky. You will be in an important native habitat, and the plant is a relic of the expansive Midwestern prairies of times gone by. Hoary puccoon is a precious holdover somehow spared from the profound changes Indiana’s wild spaces have undergone during the past 200 years.

Its vivid, deeply colored golden-yellow flowers are scattered in great numbers throughout the oak savannas and dunes of Indiana’s prairie regions in mid- to late spring. Often interspersed with the purples and blues of the wildflowers spiderwort and lupine, hoary puccoon can be part of a stunning display of native floral beauty.

The plant is rarely found away from the full sun of prairies and openings in dry sandy woodlands. Because it’s difficult to propagate, you won’t find it in pollinator plantings, gardens, or nursery catalogs—it is truly a “wild” flower.

Having hoary puccoon present in

Indiana also helps preserve the culture and language of the Algonquin-speaking peoples who occupied the prairies and woodlands of eastern North America. “Puccoon” is that language’s word for the plant.

Algonquins used hoary puccoon as a source for red or yellow pigments and dyes, per English writings dating back to 1609. The intense pigment is derived from the plant’s long roots. The deep red pigment within the taproot is believed to serve as a chemical defense that protects the plant from attack by soil microbes and disease.

The word “hoary” refers to the color of the long white hairs that cover many parts of the plant.

A relatively low plant, hoary puccoon reaches no taller than 20 inches in height. Its upright stems extend directly from the roots and are topped with clusters of flowers. The flowers have five petals that fuse to form a tube-like “throat” that is a deep orange hue. The

State Range: Found across Indiana but only in its specific habitat.

Habitat: Grows only in native prairie and oak savanna, most commonly in sandy soils; requires use of prescribed fire to maintain the open sunny conditions it needs.

Appearance: Golden-yellow flowers; long white hairs cover much of the rest of the plant.

Uses: Provided some Native Americans with a source of dye and perhaps medicine.

blunt and rounded leaves are arranged symmetrically along the plant’s hairy stems in an alternate arrangement.

Hoary puccoon’s taproot extends deep into the soil, allowing it to reach moisture during dry times and survive the intense wildland fires of the open grasslands. Prairies and oak savannas require periodic prescribed fires to maintain their health and open aspect; otherwise, competing brush and saplings soon become well established.

This plant’s historic range is concentrated across the Great Plains. Even in Indiana’s former prairie areas, hoary puccoon is uncommon and habitat restricted, and it is nearly absent from most of central Indiana. But you don’t need to leave the state to see it—try Gibson Woods Nature Preserve or Seidner Dune & Swale Nature Preserve, both near Hammond. □

Thomas Swinford is assistant director of the Division of Nature Preserves.

WILD BERGAMOT

(Monarda fistulosa)



John Maxwell photo

A clearwing moth hovers while feeding on wild bergamot blooms in Marion County last June. Bergamot flowers also attract bees, hummingbirds and butterflies.

By Ronald Hellmich

If you are one of many people looking to attract nectar-seeking insects or hummingbirds to your garden, try wild bergamot, aka Eastern bee balm. It blooms throughout the summer, and pollinators will flock to the flowers.

Wild bergamot is a perennial that grows about 3 feet high. It starts blooming in June and can last until fall. Its flowers are lavender, pink or—rarely—white, and grow in clusters at the top of the stem. Because this plant is in the mint family, its stem is square, not rounded. The leaves are opposite (paired directly across from each other on the stem), and each pair forms at right angles to the previous pair.

A native wildflower that occurs throughout most of North America, wild bergamot likes the sun, but can take partial shade, and thrives in a wide range of soils. The plant's native habitats are dry/open woods, fields, wet meadows and along ditches.

This plant is excellent as a garden ornamental. In addition to attracting bees, butterflies and hummingbirds, it also is resistant to damage from deer and rabbits because of its aromatic stems and leaves. It can be propagated by seed, or you can divide the root rhizomes to use as new starts.

The leaves have a minty smell and can be boiled for tea or used either raw or dried as a seasoning. Wild bergamot is an important medicinal herb for some Native Americans. It has been used to treat many health challenges, including respiratory and stomach ailments, nosebleeds, insomnia, sore throats, headaches, and colds. The leaves have antiseptic properties and are the natural source of thymol, the primary active ingredient in many mouthwashes. Hot, sunny places seem to produce leaves that possess a higher content of the essential oil.

To further attract pollinators, use a variety of native plants, in groups, so the

State Range: Found throughout state.

Habitat: Dry/open woods, fields, wet meadows and along ditches.

Size: 3 feet tall.

Flowers: Pink to lavender; blooming throughout the summer.

Status: Common.

pollinators can be more efficient in gathering nectar by not having to move as far when collecting. Be diverse in your selection—take into account blooming time, color, height, and flower shape. Include host plants for caterpillars—monarch caterpillars feed exclusively on milkweeds. Sunflowers and coneflowers are other good caterpillar hosts.

Avoid cultivars or hybrids. These may have flowers shaped in such a way that their nectar is unobtainable. Another challenge is that the scent or color of their flower has been changed, and the insect can't recognize it. Avoid pesticides—some can accumulate in nectar and pollen, making them harmful to beneficial insects.

Make sure to provide a source of water for the bounty you attract.

And enjoy the sweet smell of wild bergamot. □

Ronald Hellmich is the director of the Division of Nature Preserves, rhellmich@dnr.IN.gov.

RATTLESNAKE MASTER

(*Eryngium yuccifolium*)



Frank Oliver photo

Seidner Dune and Swale Nature Preserve in Hammond offers the chance to see plenty of examples of rattlesnake master plant.

By Emily Stork

Visiting an Indiana prairie or open savanna during summer brings the senses a wealth of richness in colors, shapes, textures, and fragrances.

This plant stands out for all of those qualities.

Upon close inspection, its almost inconspicuously tiny cream-white flowers might appear dull compared to those of other native Indiana wildflowers, many of which sport brilliantly colored petals. But most of the color with which rattlesnake master complements the landscape comes not from its flowers but its unique light-bluish, gray-green foliage. This feature not only delivers a striking color contrast among the leaves of its neighbors, but also boasts a unique shape and texture.

Its long, smooth, sword-shaped leaves arise stiffly from the base, with some smaller leaves attached higher, all curving downward, their edges adorned with widely scattered bristles. The leaves resemble those of yucca, to which it owes its Latin-specific epithet,

yuccifolium. Its smooth and prickly demeanor makes rattlesnake master look like it's from the American southwest rather than being a native Hoosier.

The individual tiny, numerous flowers might seem inconspicuous, but not when considered in combination. They occur in tight, globular clusters, much like flowers of a globe thistle, giving the appearance of perfect, prickly white balls hovering over the landscape. The clusters buzz with life, their nectar feeding a variety of native butterflies, skippers, beetles, and many more.

From initial bloom through seed set and even into winter, these bristly, round flower heads provide an enjoyable combination of regular shape and coarse texture.

Native Americans used the dried seed heads as rattles. Early European settlers thought an extract from the plant could be used as an antidote to rattlesnake bite venom, which is how the plant got the name rattlesnake master, a moniker almost as eye-catching as the plant itself.

State Range: Primarily in northern and western counties.

Grows: In open, sunny areas on most types of soil.

Blooms: July through September.

Family: *Apiaceae* (carrot family).

Now that you're acquainted with the look and feel of rattlesnake master, try crushing a leaf to get a sense of its surprising smell, which is distinctly carrotty and serves as one of the few discernable clues that this plant is more closely related to carrots, parsnips, and parsley than to yucca or thistles.

Yummy carrot smell aside, rattlesnake master is not an important food source for humans, nor is it especially favored by other mammals, including deer.

A good place to see rattlesnake master is Seidner Dune and Swale Nature Preserve in Lake County.

Another is any sunny spot in your backyard you plant it. Then, you can not only enjoy the beauty of this unique plant every day, but also share its many benefits with your neighbors, humans and hungry insects alike. □

Emily Stork is the Grand Calumet Regional Ecologist with the Division of Nature Preserves, estork@dnr.IN.gov.

LESSER LADIES' TRESSES

(*Spiranthes ovalis* var. *erostellata*)



Frank Oliver photo

Lesser ladies' tresses can be found at Moraine Nature Preserve in Porter County and range in size from 6 to 13 inches tall.

By Sarah Nimetz

Often no larger than a No. 2 pencil and easily overlooked among deciduous trees stands this inconspicuous perennial wildflower. This diminutive orchid grows throughout Indiana in forests, woodlands, shrubby areas, and old fields, often in areas with some disturbance.

Several species of *Spiranthes* orchids grace Indiana, and they can be difficult to distinguish from one another. The best indicators of lesser ladies' tresses are the times of year the plant produces flowers and habitat. Flowering into November, later than most others of the same genus, lesser ladies' tresses begins blooming in Indiana in late August. Given its preference for just the right amount of light, partial shade but usually not full sun, and forest habitat but not dense forest, you might find it along the edges of trails and in open areas of woodlands. Lesser ladies' tresses can also be found scattered

throughout the other Great Lakes states and from Ontario to Texas and Florida.

The genus name *Spiranthes* can be attributed to the way the flowers spiral along their stalk, sometimes tightly coiled atop one another and other times loosely draped and wound around the stem. In the case of lesser ladies' tresses, you may notice each of the 20 to 40 flowers wrapping in an almost woven formation, neatly stacked with three blooms per spiral, reminiscent of a woman's braided tresses.

Lesser ladies' tresses stands from 6 to 13 inches tall, usually presenting with one or two basal leaves, sometimes more. The flowers coil up the stem in a spike shape, more narrow at the tip, with blooms starting in late summer at the wider base of the spike. The petals of the delicate white flowers are narrowly oval, with the lowest petal tending to curve downward to form a lip. Though arranged in a tight, dense spiral, each flower is easily distinguishable when in bloom.

State Range: Found in a scattered but increasing number of counties throughout Indiana.

Habitat: Young forests and woodlands, old fields, trails.

Size: 6 to 13 inches.

Other Common Names:

October ladies' tresses, oval ladies' tresses.

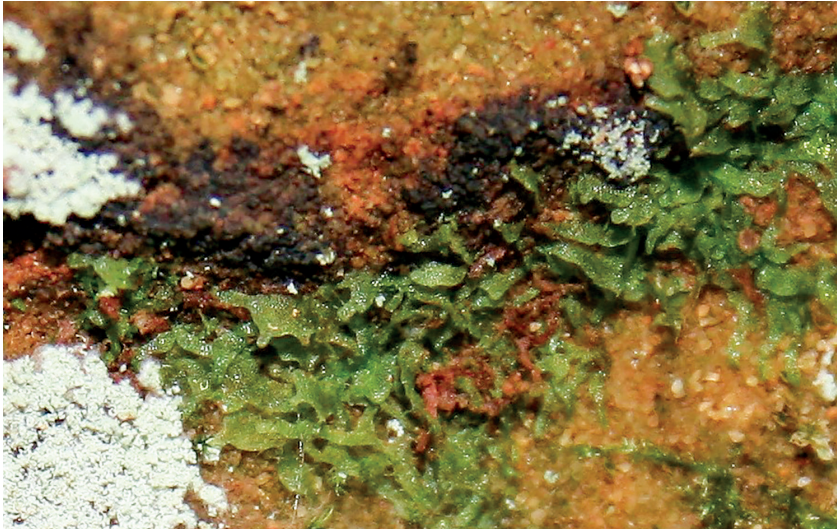
There has been an increase in recent years of reports of lesser ladies' tresses in northern Indiana. This may be a result of the plant's adaptability and ability to thrive in disturbed habitat, slightly wet or dry sites, and the variety of surfaces from which it grows. Another contributing factor to the continued spread and success of lesser ladies' tresses is that it does not require cross-pollination by insects. Because of this, seed production does not rely upon the surrounding environment being dense with pollinator plants.

Lesser ladies' tresses can be found at Moraine Nature Preserve in Porter County as well as Little Calumet Headwaters Nature Preserve in LaPorte County, and at several scattered sites throughout Indiana to the Ohio River. □

Sarah Nimetz formerly worked for the Division of Nature Preserves Lake Michigan Coastal Program.

APPALACHIAN SHOESTRING FERN

(*Vittaria appalachiana*)



Michael Homoya photo

Appalachian shoestring fern is not a normal fern. For one thing, it lives only half a life. Find out more below.

By Michael Homoya

Deep in the rugged hills of southern Indiana, a peculiar, oddly shaped fern grows in dimly lit sandstone cliff overhangs. This species is especially strange because it's "half" a fern.

Half of one? To be clear, the body of Appalachian shoestring fern is fully intact. But the plant lives only half the life one might think a fern should.

To clarify, ferns live double lives, as two separate plants, in alternating generations. For example, picture a typical fern in your mind, like the Boston fern commonly used in hanging baskets. That plant is in a stage of its life that produces spores. Because it produces spores, it's known as a sporophyte, which means, literally, "spore-plant".

Spores are tiny, often dust-sized bodies that disperse into the environment to grow into the fern's "second" or alternate life, which is known as a gametophyte. It's a separate plant that differs greatly from the sporophyte.

Gametophytes come in a variety of shapes, but many are thin, flat plantlets that are smaller than a fingernail. There are no hanging baskets made for these little plants, but they're still ferns. Regardless of their size or appearance, they serve a most important role in fern reproduction.

The gametophyte is where male and female reproductive cells (gametes, or sex cells) are formed. The union of reproductive cells results in growth of a new sporophyte (remember, this is fern body we know and love). With the creation of the sporophyte, the cycle has come full circle—from a sporophyte, to a gametophyte, to another sporophyte. This is the fern's normal cycle that has occurred for countless generations.

But hold on. Appalachian shoestring fern is not normal. For reasons unknown, it is "stuck" in the gametophyte stage, meaning it is no longer capable of forming fully developed sporophytes. Instead, it reproduces only by vegetative

State Range: Crawford, Martin, and Perry counties.

Habitat: Sandstone overhangs and grottoes.

Appearance: Green, thin, irregularly-shaped bodies, 1/8-1/4 inch long.

State Status: Threatened.

means, producing small "buds" that detach from the plant to grow into more gametophytes. The process can be compared to using the eyes of a potato to grow new potato plants.

If Appalachian fern had a sporophyte phase, it would probably look something like a "normal" species that grows in Florida that is called Dixie shoestring fern (*Vittaria lineata*). Dixie shoestring fern leaves are super skinny and grow up to 2 feet long. Imagine a stringy mop-head dangling high from its attachment on a tree trunk and branch.

Clearly, Appalachian shoestring fern is not normal. It's also uncommon, preferring to stay hidden in its protective, sandstone shelter. But who can blame it? You might do the same if you only lived half a life. □

Michael Homoya is a retired botanist and ecologist for the Division of Nature Preserves. He is currently working on a field guide about wildflowers of the Midwest.