

DePauw Nature Park

Field Guide to Trees

There are over 300 acres of forests at the DePauw Nature Park, inhabited by over 30 species of trees. This field guide provides information about how to identify forest trees based on leaves, bark, fruit, and flowers. Some of the best places to observe trees in the Nature Park are along the Rail Trail, Creekside Trail, and Woodland Trail.

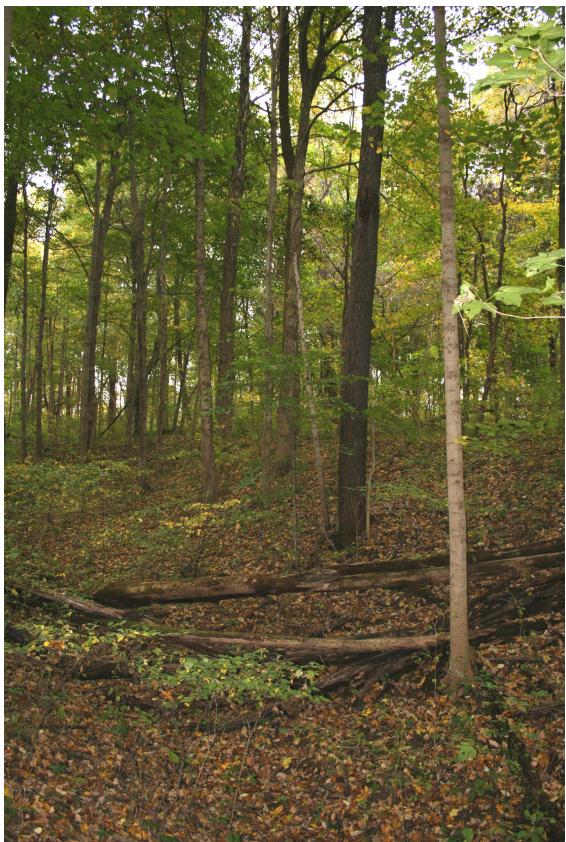


Table of Contents

	<u>page</u>
<u>Leaf shapes</u>	
Compound leaves	2
Lobed leaves	3
Heart-shaped or triangular leaves	4
Leaf edges smooth	4
Leaf edges toothed	5
<u>Tree species</u>	
American Beech	6
Basswood	7
Bitternut Hickory	8
Black Cherry	9
Black Locust	10
Black Walnut	11
Box Elder	12
Buckeye	13
Chinkapin Oak	14
Eastern Cottonwood	15
Eastern Juniper	16
Flowering Dogwood	17
Hackberry	18
Honey Locust	19
Hop Hornbeam	20
Ironwood	21
Pawpaw	22
Red/Black Oak	23
Redbud	24
Sassafras	25
Shagbark Hickory	26
Slippery Elm	27
Sugar Maple	28
Sycamore	29
Tulip Poplar	30
White Ash	31
White Oak	32
<u>Sources</u>	33

COMPOUND LEAVES



WHITE ASH

5 to 9 leaflets,
leaflets usually all the same size
bark furrowed
(source #13)



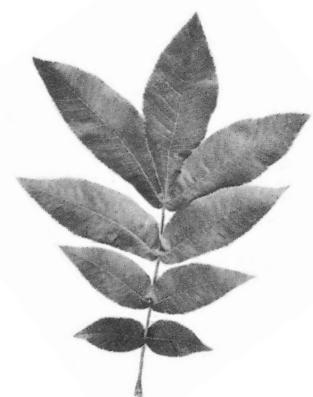
BOX ELDER

3 to 5 leaflets,
coarse-toothed edges,
bark furrowed, twigs green
(source #13)



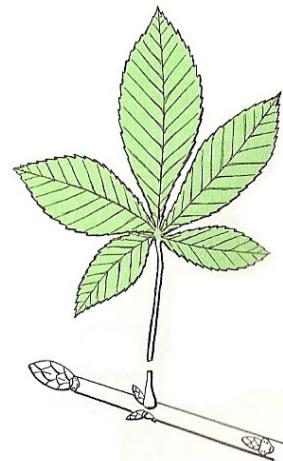
SHAGBARK HICKORY

5 to 7 leaflets,
outer leaflets much larger than
inner leaflets; bark very shaggy
(source #6)



BITTERNUT HICKORY

7 to 9 leaflets
bark ridged, not shaggy
(source #6)



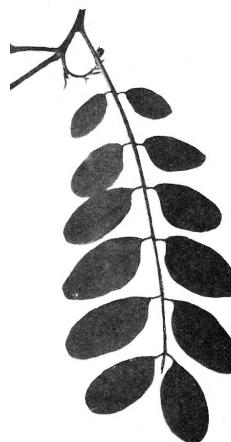
BUCKEYE

5 leaflets, palmately arranged,
bark rough, twigs green
(source #11)



BLACK WALNUT

8 to 16 leaflets,
end leaflets usually absent,
leaflets usually drooping
(source #13)



BLACK LOCUST

6 to 20 leaflets,
leaflets egg-shaped,
1" thorns
(source #13)



HONEY LOCUST

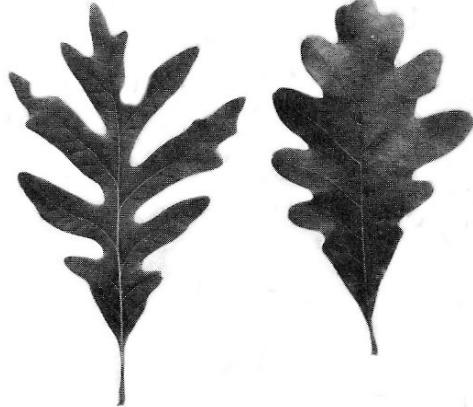
twice-compound leaves,
3" thorns
(source #13)

LOBED LEAVES



CHINKAPIN OAK

leaves wavy-edged,
8 to 13 pairs of lobes
(source #6)



WHITE OAK

leaves lobed,
underside of leaves white,
bark whitish
(source #13)



BLACK OAK

leaves lobed, with bristle tips;
bark dark, furrowed
(source #13)



RED OAK



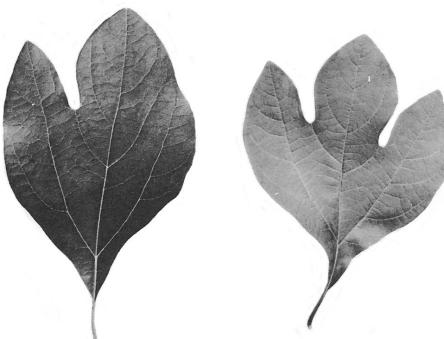
SUGAR MAPLE

leaves 5-lobed
(source #13)



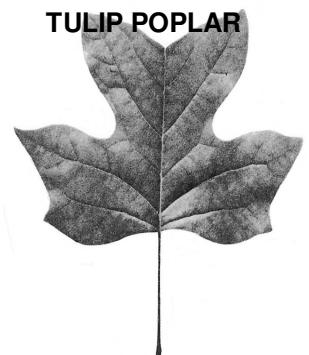
SYCAMORE

leaves 3- or 5-lobed,
leaf edges toothed,
bark white and smooth
or light brown and flaky
(source #13)



SASSAFRAS

leaves lobed or oval;
crushed leaves are
spicy-fragrant
(source #13)



TULIP POPLAR

leaf notched at tip; leaf
with 4 points; large
orange flowers; bark
grooved (source #13)

LEAVES HEART-SHAPED or TRIANGULAR



BASSWOOD

leaves heart-shaped,
leaf edges toothed,
leaf bases uneven,
bark light brown, grooved
(source #13)



EASTERN COTTONWOOD

leaves triangular;
leaf edges coarse-toothed;
leaf stalk flat; bark ridged
(source #13)



REDBUD

leaves heart-shaped,
leaf edges smooth,
leaf bases even,
bark gray, smooth;
bright pink flowers in spring
(source #13)

LEAF EDGES SMOOTH



SASSAFRAS

leaves oval or lobed;
crushed leaves are
spicy-fragrant
(source #13)



PAWPAW

leaves 6 to 12 " long;
leaf edges smooth;
usually grow in patches in
forest understory
(source #13)



FLOWERING DOGWOOD

leaves egg-shaped;
leaf edges smooth;
leaf veins parallel to leaf edges;
bark checkered, like alligator skin
(source #13)

LEAF EDGES TOOTHED



HOP HORNBEAM

leaves smooth,
base of leaf even;
leaf edges finely double-toothed;
leaf veins branched;
bark is light brown, flaky
(source #12)



SLIPPERY ELM

leaves rough, sandpaperly;
base of leaf uneven;
leaf edges coarsely double-toothed (source #12)



IRONWOOD

leaves smooth, base of leaf even;
leaf veins unbranched;
leaf edges finely double-toothed;
bark light gray, smooth
(source #12)



BLACK CHERRY

leaves smooth;
leaves glossy, dark green;
leaf edges finely toothed;
two small glands at base of leaf;
bark of older trees is dark, blocky
(source #13)

HACKBERRY

leaves heart-shaped;
with curved tips;
leaves slightly rough;
leaf edges double-toothed;
leaf base uneven;
bark rough, warty or ridged
(source #13)



AMERICAN BEECH

leaves smooth, papery;
leaf edges toothed;
bark smooth, gray
(source #6)

American Beech

Fagus grandifolia, Beech family (Fagaceae)

Leaves:

Leaves are elliptical or egg-shaped
Leaf edges are coarsely toothed
Leaves are thin and papery texture, smooth
Long-pointed at the tip
Dark green on top and light green beneath



(source #6)

Bark:

Bark is light gray, smooth



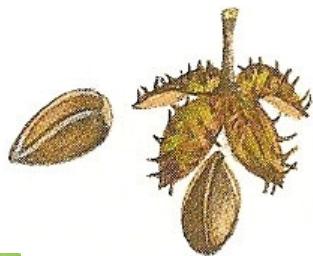
Beech nuts are enclosed in light brown prickly burs
(source #7)

Flowers:

Male and female flowers are separate but on same tree (monoecious)
Flowers are small

Fruit:

Small triangular nuts are enclosed in light brown prickly burs.
Each bur contains four nuts.
Nuts are sweet, edible.



Beech nuts
(source #12)



Beech leaves are flat and thin with a smooth papery texture (source #5)



Beech trees are distinctive in winter given their smooth light gray bark. Beech trees usually retain their leaves throughout the winter, another distinctive characteristic. (source #5)

Basswood

Tilia americana, Mallow family
(Malvaceae)

Leaves:

Leaves are heart-shaped
Leaf edges are coarsely saw-toothed
Base of leaf is uneven
Shiny dark green above, light green below
Leaves are large, up to 6 inches long, 4 inches wide



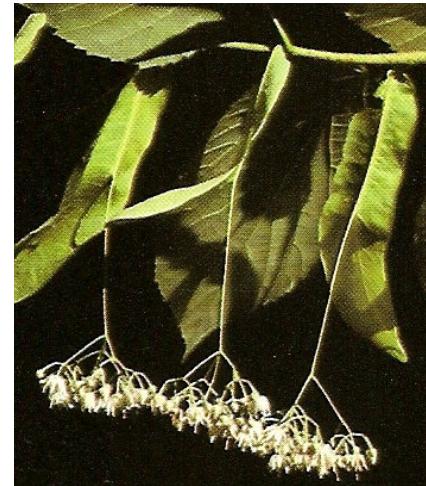
(source #13)

Bark:

Bark is dark gray with ridges and furrows

Flowers:

Small flowers have five yellowish-white petals
Flowers hang in long-stalked clusters from a leafy greenish bract



Flowers of Basswood hang down in clusters from a leaf-like greenish bract
(source #7)

Fruit:

Fruit is small, round, gray, hard, contains one to two seeds
Fruit hangs under a leafy bract that acts as a spinning parachute when ripe



Mature fruit of Basswood
(source #1)



Basswood leaf, flower, and fruit (source #1)

Bitternut Hickory

Carya cordiformis, Walnut family
(Juglandaceae)

Leaves:

Leaves are pinnately compound,
8-14" long.

Each leaf has 7 to 9 leaflets.

Leaves are yellowish green on
top, light green below

Leaflets are lance-shaped with
saw-toothed edges

Leaflets are usually all about the
same size. In comparison, the
Shagbark Hickory has larger
leaflets at the end of the leaf.



(source #6)



Bitternut Hickory leaf, twig, and fruit
(source #12)

Bark:

Bark is smooth on young trees and forms shallow furrows in an x-shaped
pattern on older trees

Flowers:

Separate male and female flowers are on the same tree (monoecious)

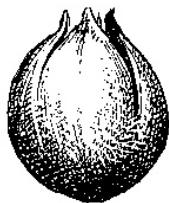
Flowers are very small, green, wind-pollinated

Flowers are produced in early spring before leaves

Fruit:

Nuts are enclosed in thin husk with yellow scales

Nuts are very bitter



Bitternut Hickory nuts are
smaller and have thinner husks
than Shagbark Hickory nuts.
(source #11)



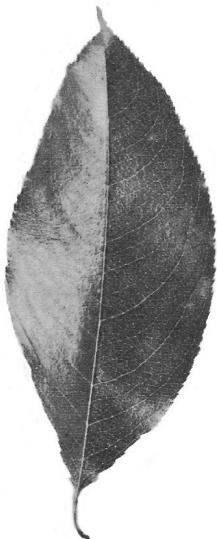
The bark of older Bitternut Hickory trees has shallow x-shaped marks in a criss-cross pattern. The bark is probably the easiest way to identify Bitternut Hickory. (source #5)

Black Cherry

Prunus serotina, Rose family (Rosaceae)

Leaves:

Leaves are long and narrow, shiny dark green on top, often look glossy
Edges of leaves are finely toothed
1 to 2 small red glands at the base of each leaf



(source #13)

Bark:

Bark of younger trees is smooth, gray
Bark of older trees is rough, dark, reddish-brown to nearly black; looks like "burnt potato chips" or dark roof shingles.



The dark shingle-like bark is a distinct feature of Black Cherry trees
(source #5)

Flowers:

Flowers are small with round white petals
Blooms in late spring or early summer.



Black Cherry leaves are long and narrow and often a glossy green color. The leaf edges are finely toothed. (source #5)



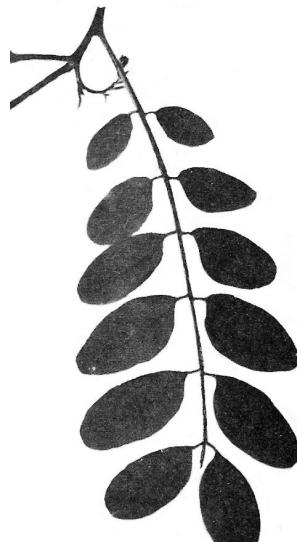
Small red cherries are produced on stalks during summer but are hard to see on the tall Cherry trees in the Nature Park (source #5)

Black Locust

Robinia pseudo-acacia, Legume family
(Fabaceae)

Leaves:

Leaves are pinnately compound
Leaves are 6 to 12 inches long
Each leaf has 7 to 19 leaflets
Leaflets are 1 inch long, $\frac{1}{2}$ inch wide
Leaflets are elliptical with untoothed edges
Leaflets are dark blue-green above, pale below



(source #13)



Black Locust leaves are larger and rounder than Honey Locust leaflets
(source #7)

Bark:

Bark is light gray, thick, deeply furrowed into long rough forking ridges



Twigs:

Each twig has a stout pair of spines at its base.
Spines are $\frac{1}{2}$ inch long

Flowers:

Flowers are very fragrant
Flowers are white, pea-shaped, grouped in showy drooping clusters, 4 to 8 inches long
Blooms in late spring.
Black locust trees are easily recognizable in late May and early June with their dense arrays of flowers.



Paired thorns are about $\frac{1}{2}$ inch long
(source #13)

Fruit:

Fruit is a long flat pod, dark brown, 2 to 4 inches long.
Each fruit contains 3 to 14 dark brown flat beanlike seeds

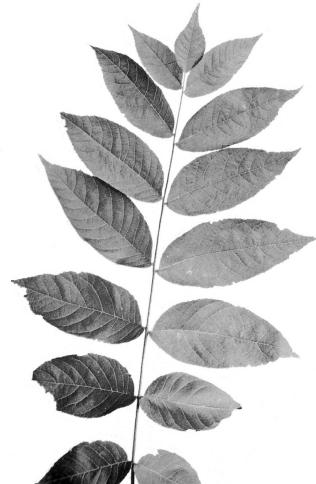
Black locust fruit looks like pea pods
(source #7)

Black Walnut

Juglans nigra, Walnut family
(Juglandaceae)

Leaves:

Leaves are pinnately compound
Leaves have a feathery appearance, look more delicate than White Ash leaves
14-24 leaflets on each leaf, usually an even number of leaflets
Largest leaflets are located in the center of the leaf.
Leaflets are lance-shaped, finely saw-toothed, long pointed



(source #13)



Black Walnut leaves appear to be drooping and feathery. Each leaf is composed of many small leaflets. Walnut's leaflets are smaller than Ash or Hickory leaflets (source #5)

Bark:

Bark is dark grayish-brown to blackish, deeply furrowed.
Bark is similar to White Ash, but Black Walnut leaves are thinner and more delicate-looking than White Ash leaves.

Flowers:

Male and female flowers are clustered in separate catkins but are in the same tree (monoecious)

Fruit:

Fruit ripens in autumn.
Nut is very hard, covered by thick green husk.
Husk produces a dark-staining, strong-smelling juice.
Nuts are edible.
Before eating or storage, nuts should be cured in a dry place for at least two weeks.
Green husk of fruit has been used to make a blackish dye since colonial times.

Chemistry:

Black Walnut is famous for producing juglone, a chemical released through its roots that is toxic (allelopathic) to some nearby competitor plants. Juglone causes wilting or yellowing of foliage of neighboring plants.



Black Walnut bark is dark and deeply furrowed (source #5)



Fruit is contained inside a thick green husk (bottom) and a hard brown shell (top) (source #16)

Box Elder

also known as Ashleaf Maple

Acer negundo – Maple family (Aceraceae)

Leaves:

Leaves are pinnately compound

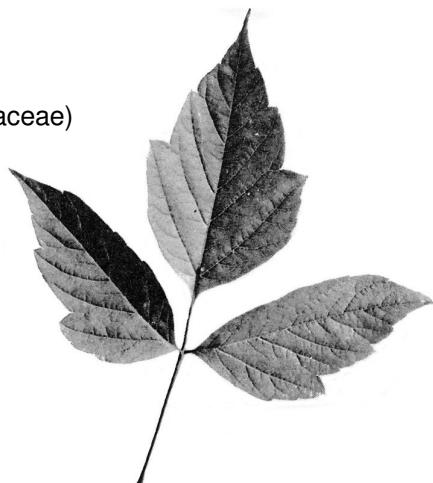
Usually 3 leaflets per leaf, but

sometimes 5 or 7 leaflets per leaf

Edges of leaflets have coarse
saw-like teeth

Top of leaf is light green,
paler below

Petioles are reddish



(source #13)



Box Elder may be confused with Poison Ivy – both have three leaflets per leaf – but Box Elder is a tree and Poison Ivy is a vine. Box Elder leaves are usually light green with reddish petioles and twigs are almost always bright green. (source #5)

Bark:

Bark is light gray-brown with many narrow
ridges and fissures.

Bark becomes deeply furrowed as tree ages

Young stems are green.

Flowers:

Male and female flowers are on separate trees (dioecious)

Flowers emerge before leaves in spring.

Several flowers are clustered on slender drooping stalks

Male flowers are in upright clusters like an umbrella

Female flowers are in clusters hanging down

Fruit:

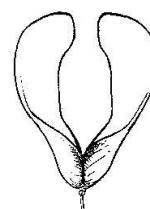
Fruit is more v-shaped than other maples

Fruit matures in summer and remain attached during winter.

Only female trees produce seeds

Habitat:

Box Elders are common in wet areas



Box Elder fruit
(source #11)



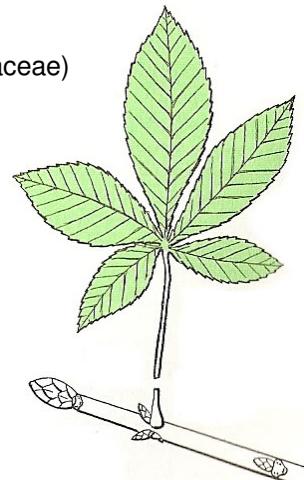
Poison Ivy leaf,
for comparison
(source #13)

Buckeye

Aesculus glabra – Buckeye family (Sapindaceae)

Leaves:

Leaves are palmately compound with five leaflets per leaf
Leaflets are not fused at the base.



(source #11)



Buckeye leaf (source #5)

Bark:

Bark is light gray to light brown, furrowed or scaly

Flowers:

Flowers are showy, yellowish-green; arranged in large upright clusters
Each flower is about 1 inch long
Stamens are longer than petals.



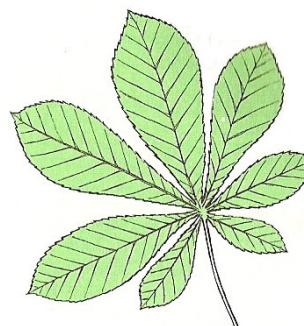
Buckeye flower
(source #2)

Fruit:

Fruit is a spiny capsule, 2 inches in diameter
Each fruit contains 1 to 3 nut-like seeds
Seeds are large, shiny, and dark brown with a whitish basal scar
Nuts contain tannic acid and are poisonous for cattle and possibly humans.

Habitat:

Buckeyes are not common in the Nature Park but the best time of year to identify Buckeyes is during early spring. Buckeyes are the first trees to leaf out in the spring, so they're easy to identify because they're the only trees with leaves.



Horse Chestnut leaf,
for comparison
(source #11)



Buckeye nuts are surrounded by a spiny husk. Each husk contains 1 to 3 nuts
(source #9).



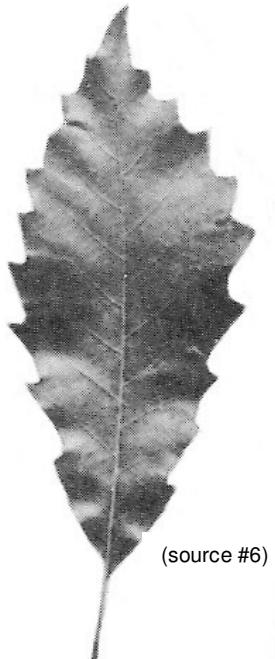
Buckeye nuts are large, shiny, and dark brown with a light brown scar at their base (source #16)

Chinkapin Oak

Quercus muehlenbergii, Beech family
(Fagaceae)

Leaves:

Leaves are coarsely toothed with a wave-like pattern of lobes or teeth along edges
Leaves are wider toward tip than at base
Dark and shiny above, pale and hairy beneath



Bark:

Bark is thin, scaly, or flaky; light gray with a faint yellowish cast
Bark has shallow fissures and scales

Flowers:

Male and female flowers are separate but on same tree (monoecious)
Male flowers are yellow, arranged in hanging clusters
Female flowers are smaller, on short hairy spikes at base of leaves.

Fruits:

Acorns mature in one season
Acorns are 1 inch long, shiny brown, egg-shaped and rounded to a point at the tip.

Habitat:

Occurs mostly on limestone outcrops
Often co-occurs with other oaks



A young Chinkapin Oak seedling growing on the forest floor in the Nature Park (source #5)



Male flowers of Chinkapin Oak (source #17)

Eastern Cottonwood

Populus deltoides, Willow family (Salicaceae)

Leaves:

Leaves are triangular in shape with coarsely toothed edges.

Leaves are shiny green with red petiole

Leaves are always moving even in the slightest breeze because their petioles are flattened sideways



Bark:

Bark is yellowish-green and smooth on young trees

Bark becomes thick and deeply furrowed as tree ages



Flowers:

Flowers are 2 to 3 inches long, brown

Male and female flowers are on separate trees (dioecious)

Flowers appear before leaves in spring

Fruit:

Fruit is brownish, matures and splits into four parts

Fruit capsule contains many tiny cottony seeds

Only female trees produce fruit



Eastern Juniper

also known as Eastern Redcedar
Juniperus virginiana – Cypress family
(Cupressaceae)

Leaves:

Leaves are small and scaly, evergreen



(source #1)

Bark:

Bark is reddish-brown, thin, fibrous and shreddy



The bright blue berries are actually fleshy scales of a cone and are not true berries (source – unknown)

Cones:

Male and female cones are on separate trees (dioecious).

Cones on female trees look like small blue berries

These are not true berries but are a series of fleshy scales that fuse together to form the berry-like structure.

Female cones require about 6 to 8 months to mature

Female cones have a soft, juicy, sweet and resinous flavor and are often consumed by birds.

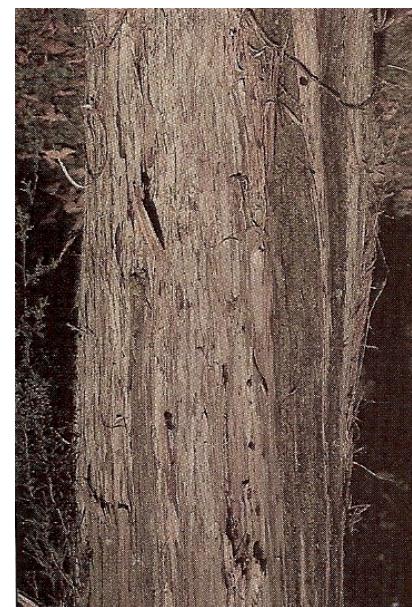
Cones on male trees are small, light brown.

Habitat:

Junipers do well in stressful conditions, where the soil is dry and infertile.



Juniper trees are abundant in the quarry bottom at the Nature Park because they do well in stressful environments
(source #2)



Juniper bark is reddish-brown and fibrous (source #12)

Flowering Dogwood

Cornus florida, Dogwood family
(Cornaceae)

Leaves:

Leaves are egg-shaped to elliptic with smooth untoothed edges.

All leaf veins are parallel to the leaf edges



Dogwood leaf
(source #6)

Bark:

Gray bark is broken into small blocks.

Deeply checkered bark looks like alligator skin.

Flowers:

Flowers are small, inconspicuous

Showy white "petals" are not actually part of the flowers but are expanded bud scales

Flowers bloom before leaves emerge in the spring.

Fruits:

Clusters of green berries ripen to bright red in autumn

Berries are bitter

Habitat:

Small tree, grows in forest understory

Widely planted as an ornamental tree

Diseases:

Trees are susceptible to dogwood anthracnose, a disease caused by a fungus. Fungus kills many wild trees. Ornamentals are also affected, but less so because of better air circulation and less humid conditions in domestic settings.



The flowers of Flowering Dogwood are actually the small yellow parts in the center of this structure. The white "petals" are the bracts surrounding the flowers. (source #3)



Dogwood berries turn bright red in the fall (source #3)



The bark of Dogwood trees is deeply checkered, almost looking like an alligator hide (source #17)



Foliage and fruits of Flowering Dogwood (source #3)

Hackberry

Celtis occidentalis, Hemp family (Cannabaceae)

Leaves:

Edges of leaves are double-toothed
Base of leaves is asymmetrical and heart-shaped.
Tip of leaf has a narrow curve, looks like a paisley shape.
Leaves are usually rough like sandpaper.



(source #13)



Hackberry leaves (source #5)

Bark:

Bark is gray or light brown with distinctive corky ridges and small wart-like bumps on older trees.



Hackberry bark has distinct corky ridges and small wart-like bumps
(source #5)

Flowers:

Small green flowers are found at the base of leaves in spring.

Fruits:

Berries are small orange-red or purple
Each berry contains one seed.
Fruit matures in autumn.



Hackberry fruit
(source #12)

Honey Locust

Gleditsia triacanthos, Legume family (Fabaceae)

Leaves:

Leaves may be singly compound or doubly compound

Leaves are 4 to 8 inches long

Leaflets are oblong, about 1 inch long with finely wavy edges.

Leaflets are dark green above, dull yellow-green below



Leaves of Honey Locust may be doubly compound (left) or singly compound (right) (source #13)

Bark:

Bark is gray brown or black

Bark is fissured with long narrow scaly ridges

Bark has stout brown spines, usually branched, sometimes 8 inches long

Twigs:

Twigs are stout with long unpaired spines (in comparison to Black Locust which has paired spines).

Flowers:

Flowers are greenish-yellow, bell-shaped with 5 petals

Flowers are clustered at leaf bases.

Blooms in late spring

Fruit:

Fruit is a long flat pod, 6 to 16 inches long, dark brown

Fruit contains many beanlike flat dark brown seeds



Honey Locust fruit (source #13)



Honey Locust thorns are stout, long, and unpaired (source #5)



Honey Locust thorns (source #13)

Hop Hornbeam

also known as Catscratch
Ostrya virginiana, Birch family (Betulaceae)

Leaves:

Leaves are dark green and lightly hairy above,
paler below

Leaf edges are double-toothed

Leaf veins branch one to several times as they
approach the margin



(source #12)

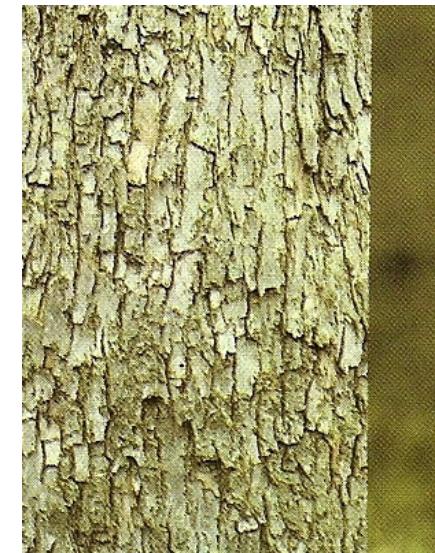


Hop Hornbeam fruit (source #7)

Bark:

Bark is scaly, rough, unlike smooth bark of
Ironwood or Beech.

Bark of older trees looks shredded like a cat
used it as a scratching post



Flowers:

Male and female flowers are separate but on same tree (monoecious)

Male flowers are greenish, 2 to 4 inches long, hanging in narrow
cylindrical clusters

Female flowers are reddish-green, 1 to 2 inches long, hanging in narrow
clusters

Blooms in spring before leaves are produced



Male flowers
(source #14)

Fruits:

Cone-like hanging clusters of brown nutlets mature in late summer

Each nutlet is within a swollen egg-shaped flattened structure that is
papery and sack-like

Bark is scaly and rough, unlike the
smooth bark of Ironwood (source #7)

Ironwood

also known as Blue Beech, Musclewood, or American Hornbeam

Carpinus caroliniana, Birch family (Betulaceae)

Leaves:

Elliptical in shape, long-pointed at tip

Leaf edges are double-toothed

Leaf veins are prominent and unbranched

Leaves look very similar to Hop Hornbeam leaves. The bark is the best way to differentiate these two species.



(source #12)



(source #5)



Male flowers (source #8)

Bark:

Bark is smooth, bluish-gray.

Bark has a sinewy look, like muscles

Flowers:

Separate male and female flowers

Male flowers are greenish, in drooping catkins, 2 inches long

Female flowers are reddish-green in narrow catkins, 1 inch long

Flowers appear in spring, at the same time as the leaves.

Fruits:

Fruits are small long nuts, greenish, with leaf-like scales.

Fruits mature in autumn.

Fruits hang on slender stalks, in clusters 2 to 4 inches long

Habitat:

Ironwood occurs as small trees in the understory of forests



(source #5)



Ironwood bark is smooth and sinewy, unlike the rough bark of Hop Hornbeam (source #6)

Pawpaw

Asimina triloba, Custard Apple family (Annonaceae)

Leaves:

Leaves are large, long, widest toward tip
Edges of leaves are smooth, untoothed



(source #13)

Bark

Bark may be smooth and gray or brown and warty

Flowers

Flowers are usually dark purple or reddish-brown.

Flowers have 6 petals, 2 inches wide.

Flowers are perfect with both male and female parts in each flower

Flowers are self-incompatible, require

cross-pollination. Pollinated by carrion flies and beetles. Flowers smell like rotting meat to attract blowflies or carrion beetles, but flower scent is weak, attracting few pollinators, thus limiting fruit production.



Pawpaws have very large leaves, up to 12" long, and pawpaws usually grow as small trees in the understory of forests (source #5)



Bark of Pawpaw trees may be smooth and gray or brown and warty (source #17)

Fruit:

Fruit is a large edible berry, 3 to 4 inches long.

Fruits are green when unripe, maturing to yellow or brown.

Flavor is similar to banana and mango, but pawpaws have never been cultivated, primarily because its fruit does not store or ship well.



Pawpaw fruits are edible and large, 3 to 4 inches long.
Fruits are initially green then turn brown or yellow when ripe (source #15)



Flowers are dark purple or reddish-brown (source #2)

Red/Black Oak

Red Oak - *Quercus rubra*

Black Oak - *Quercus velutina*

Beech family (Fagaceae)

Leaves:

Leaves have deep wavy lobes. Tips of leaves are bristled

Red Oak - 7 to 11 lobes; leaves are narrower and more deeply lobed than Black Oak.

Black Oak - 5 to 7 lobes; leaves are wider with more shallow lobes than Red Oak.

Bark:

Bark is dark gray or blackish; rough, furrowed into scaly ridges

Red Oak - bark ridges have shiny vertical stripes down the center; stripes run all the ways down the trunk

Red Oak bark looks like a gentleman's striped trousers

Red Oak inner bark is reddish

Black Oak inner bark is blackish

Flowers:

Separate male and female flowers are on the same tree (monoecious)

Female flowers are on catkins.

Male flowers are on spikes.

Flowers appear with leaves in April or May.

Fruit:

Acorns are 1 inch long and nearly round.

Acorns matures in 2 years, ripens in fall.

Red Oak acorn - cap is flat and thick, covers one quarter of the acorn.

Black Oak acorn - cap covers about half of the acorn.

Acorns are bitter but are eaten by deer, squirrels, and birds.



Red Oak leaves (left) have more lobes than Black Oak leaves (right). Lobes on Red Oak leaves are narrower and deeper than lobes on Black Oak leaves. (source #13)



Red Oak and Black Oak acorns are about the same size and shape, but the acorn caps are different – the caps on Red Oak acorns (left) cover about one quarter of the acorn and the caps on Black Oak acorns (right) cover about one half of the acorn (source #7).

Redbud

Cercis canadensis, Legume family
(Fabaceae)

Leaves:

Leaves are heart-shaped, widest toward base.

Leaves are palmately veined.

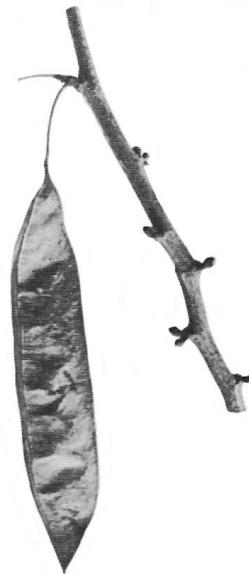
Leaf texture is thin and papery



(source #13)

Bark:

Bark is reddish-brown, smooth



Redbud fruits are long flat pods containing flat brown seeds (source #13)

Flowers:

Flowers are in clusters, showy, bright pink.

Flowers in mid-April before leaves are produced.

Flowers are pollinated by long-tongued bees .

Fruits:

Fruit is a long flat pod containing flat brown seeds; starts out green then matures to brown in late summer and fall.

Habitat:

Redbuds occur as large shrubs or small trees in the understory of the forest. Redbuds are often planted as ornamentals.

Redbud roots have nitrogen-fixing bacteria in root nodules.



Individual Redbud flowers (source #2)



Redbud trees bloom early in the spring time before leaves are produced (source #5)

Sassafras

Sassafras albidum, Laurel family (Lauraceae)

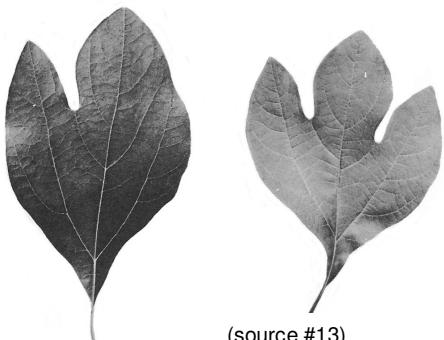
Leaves:

Sassafras leaves are three distinct shapes:

unlobed oval, two lobes, or three lobes

Leaves have smooth edges.

Leaves are shiny green on top, pale and hairy beneath.



(source #13)

stalked cups.



Sassafras fruits are small dark-blue berries produced on long red-stalked cups (source #18)



Sassafras is the only tree species with both lobed and unlobed leaves (source #7)

Bark:

Bark of mature trees is thick, reddish-brown, deeply furrowed.

Flowers:

Tiny yellow flowers are produced in spring. Male and female flowers are on separate trees (dioecious).

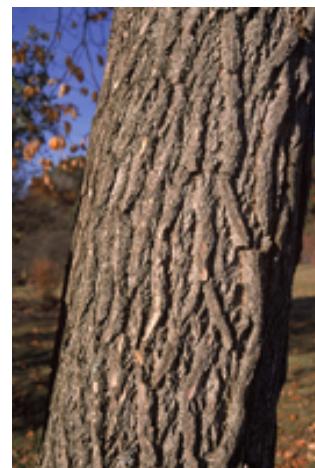
Fruit:

Fruits are small, oblong, dark

blue, produced on long red-

Mature in late summer.

Only female trees produce fruit.



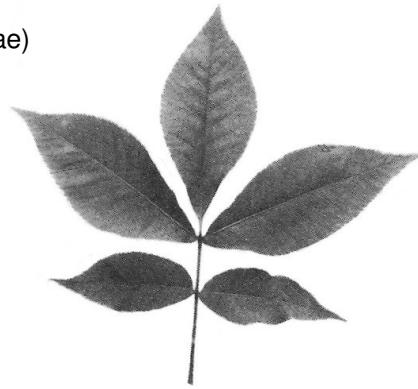
Sassafras bark is deeply furrowed (source #10)

Shagbark Hickory

Carya ovata, Walnut family (Juglandaceae)

Leaves:

Leaves are pinnately compound,
8-14" long
Leaves are yellowish green on top,
light green below
Each leaf has 5 leaflets
Leaflets are ovate-shaped with
saw-toothed edges
End leaflets are usually much larger
than other leaflets (in comparison to
Bitternut Hickory with leaflets all about
the same size)



(source #6)



A young Shagbark Hickory seedling growing on the forest floor in the Nature Park (source #5)

Bark:

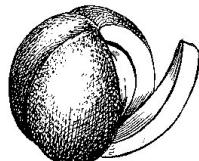
Bark is very shaggy, peels off in long vertical strips

Flowers:

Separate male and female flowers on same tree
Flowers are very small and greenish, wind-pollinated
Flowers produced in early spring before leaves

Fruit:

Nuts enclosed in thick yellowish husk
Nuts are egg-shaped



Shagbark Hickory nuts are larger and rounder
and have thicker husks than Bitternut Hickory
nuts (sources #7 and #11)



Bark of older trees peels off in long vertical strips
(source #5)

Slippery Elm

Ulmus rubra, Elm family (Ulmaceae)

Leaves:

Leaves are elliptical in shape with an obviously asymmetrical base.

Edge of leaf is coarsely double-toothed

Leaves are usually rough on upper side, like sandpaper

Leaves are often creased along midrib



Slippery Elm leaf and fruit (source #12)

Bark:

Reddish-brown, deeply furrowed into broad, forking, scaly ridges

Common name, Slippery Elm, comes from its slimy inner bark.



Slippery Elm leaves are usually dark green and have a rough sandpaper texture (source #5)

Flowers:

Flowers are small, short-stalked, in clusters of 10 to 20

Flowers appear before leaves in spring

Fruit:

About 3/4 inch across, oval-shaped, flat

Fruit contains a single seed in the center.

Seed is surrounded by a thin smooth papery wing



The bark of Slippery Elm trees may have a soft and corky texture and is not as stiff or hard as the bark of other trees (source #5)

Wood:

Latin species name, "rubra", comes from its reddish brown heartwood

Diseases:

Slippery Elm is less susceptible to Dutch elm disease than other elms.



Slippery Elm fruit (source #7)

Sugar Maple

Acer saccharum, Maple family (Aceraceae)

Leaves:

Leaves are palmately veined and lobed

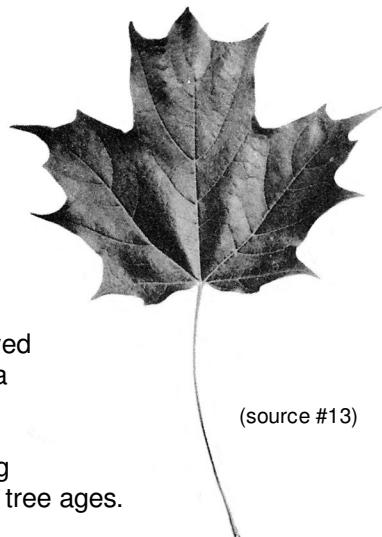
Each leaf has five wide-lobed notches.

Basal lobes are small

Upper lobes are larger and deeply notched.

Leaves are bright green on top and paler on the bottom.

The Sugar Maple leaf is prominently displayed on the red and white national flag of Canada



Bark:

Bark is smooth, gray to pale tan when young

Bark becomes dark gray and shaggy as the tree ages.



Flowers:

Flowers are yellow-green in color

Each flower hangs on a long threadlike slender stalk.

Flowering occurs in early spring before tree produces leaves.

Male and female flowers are separate but on same tree (monoecious)



Sugar Maple fruit
(source #11)

Fruit:

Fruit has two winged seeds.

Seed shape allows it to float and spin to the ground like a helicopter.

Fruits mature in autumn and are wind-dispersed.

Diseases:

Sugar Maples are susceptible to damage from air and water-borne pollutants. Acid rain and soil acidification are some of the primary contributing factors to maple decline.

Verticillium wilt is a disease that occasionally affects Sugar Maples.



Sugar Maple flowers and young leaves (source #5)

Sycamore

Platanus occidentalis,
Plane Tree family (Platanaceae)

Leaves:

Leaves are large; broadly ovate with 3 to 5 short lobes.
Lobes are coarsely toothed



(source #13)

Bark:

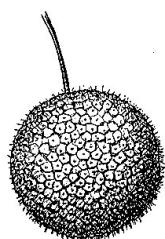
Bark is smooth and white or brown and flaky. Mature bark peels off in irregularly shaped patches.



Sycamore bark may be smooth and white (above left; source #7) or brown and flaky (above right; source #5). The white trunks of Sycamore trees are distinct (below; source #5).

Flowers:

Flowers are in tight round clusters.
Male and female flowers are separate but on same tree (monoecious)
Flowers are wind-pollinated



Sycamore fruit
(source #11)

Fruit:

Fruit clusters into a ball of seeds, 1 to 2 inches in diameter.
The ball contains several hundred seeds.
Bristles are attached to the base of each seed.
Seeds are wind dispersed
Fruits mature in autumn and separate in winter.



Habitat:

Sycamore occurs in rich floodplains of creeks and rivers.
Sycamore also invades old fields, strip mines, and quarries.
Sycamores are planted as an ornamental tree in parks and yards.

Diseases:

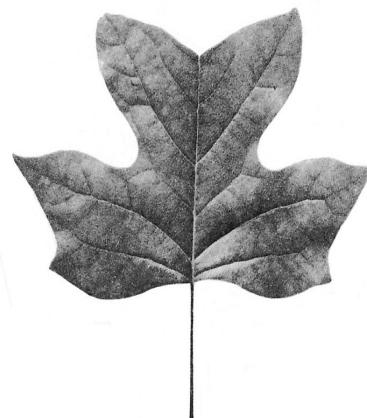
Sycamore is susceptible to anthracnose blight disease, caused by a fungus. Leaves turn black and die. Trees are most susceptible during cool wet springs. Trees will grow a new set of leaves if the first set of leaves is affected by the blight.

Tulip Poplar

Liriodendron tulipifera, Magnolia family
(Magnoliaceae)
State tree of Indiana

Leaves:

Leaves are tulip-shaped
Leaf has a v-shaped notched tip and four paired lobes
Leaf is shiny, dark green above; pale green beneath
Leaves turn yellow in autumn



(source #13)

Bark:

Bark is furrowed with narrow tight ridges.

Flowers:

Flowers are cup-shaped with 6 rounded petals
Flower petals are pale green or yellow with an orange band at the base.
Produce large quantities of nectar.
Blooms in spring.

Fruit:

Fruit is cone-like, light brown, 1 to 2 inches long
Each fruit is composed of many nutlets
Each nutlet contains 1 or 2 seeds



Tulip poplar leaf, fruit, and twig (source #12)



Tulip Poplar flowers are pale green or yellow, blooming in spring (source #7)



Tulip Poplar fruit is light brown, cone-like, with each fruit containing multiple seeds (source #7)



Bark of Tulip Poplar is furrowed with narrow tight ridges. Tulip Poplar trees are often one of the tallest and straightest-growing trees in the forest (source #17)

White Ash

Fraxinus americana – Olive family
(Oleaceae)

Leaves:

Leaves are pinnately compound
Each leaf has 7 or more leaflets
Leaflets are ovate to elliptical
All leaflets on one leaf are usually
about the same size.
Leaflets are dark green above,
whitish below.
Leaflets are larger than Black
Walnut leaflets.



(source #13)



Leaves are pinnately compound with 7 or more leaflets per leaf

Bark:

Bark is ashy gray in color.
Bark is furrowed.
Corky ridges form obvious diamonds in the bark.



Flowers:

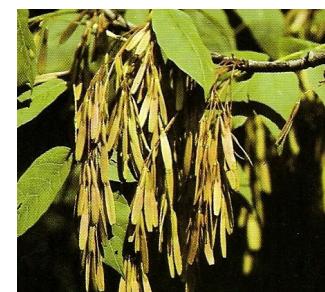
Flowers are very small, produced in small clusters
Flowers emerge before leaves in the spring.
Male and female flowers are on separate trees (dioecious).

Fruit:

Fruit is 1-2 inches long, dry, brown.
Fruit looks like the blade of a canoe paddle in outline with
the seed at the handle end.
Seed is almost entirely surrounded by the wing.
Fruit hangs in clusters, matures in late summer, wind-
dispersed



Bark is ashy gray and has
distinctive diamond-shaped
grooves (source #7)



Dry fruits hang in large
clusters during late
summer (source #7)

White Oak

Quercus alba, Beech family (Fagaceae)

Leaves:

Leaves have rounded lobes along edges. Lobes are sometimes shallow, sometimes deep, depending on whether the leaves are in the sun or shade.

Leaves are bright green above and whitish or gray-green underneath.



(source #18)

Bark:

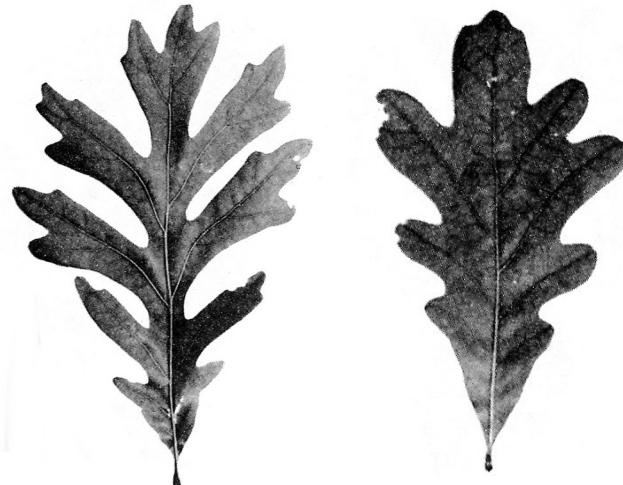
Bark is light gray, shallowly fissured into long plates or ridges that come off.

Acorns:

Acorns are long and thin, enclosed by a shallow cup
Acorns germinate shortly after falling from tree



White Oak acorns are slightly longer and thinner than acorns from Red Oak or Black Oak trees.
(source #17)



White Oak leaves have different shapes, depending on whether they grow in the sun (left) or shade (right) (source #13)



White Oak Bark is light gray or whitish
(source #14)

Photo Sources

1. Brockman, C.F., and R. Merrilees. 2001. Trees of North America. Golden Field Guide, St. Martin's Press, New York.
2. Dudle, D., DePauw University.
3. Duke University, trees, shrubs, and woody vines of North Carolina, www.duke.edu/~cwcook/trees
4. East Tennessee State University, plant list for Appalachian Flora class, <http://faculty.etsu.edu/mcdowell/>
5. Fox, V., DePauw University
6. Harlow, W.M. 1957. Trees of the eastern and central United States and Canada. Dover Publications, Inc., New York.
7. Little, E. L. 1995. National Audubon Society field guide to North American trees, eastern region. Alfred A. Knopf, Inc., New York.
8. Missouri State University Herbarium, <http://biology.missouristate.edu/Herbarium>
9. Northwest Ohio Nature, www.ohio-nature.com
10. Ohio Department of Natural Resources, www.dnr.state.oh.us/forestry/trees.
11. Petrides, G.A. 1972. A field guide to trees and shrubs. Peterson field guide series. Houghton-Mifflin Company, New York.
12. Petrides, G.A. and J. Wehr. 1998. A field guide to eastern trees. Peterson field guide series. Houghton-Mifflin Company, Boston.
13. Symonds, G.W.D. and S.V. Chelminski. 1958. The tree identification book. William Morrow and Company, New York.
14. University of Wisconsin Green Bay, www.uwgb.edu/biodiversity/herbarium/trees.
15. USDA Agricultural Research Service, www.ars.usda.gov.
16. USDA Natural Resources Conservation Service, www.plants.usda.gov.
17. Vanderbilt University, www.cas.vanderbilt.edu/bioimages/species.
18. Virginia Tech University, www.cnr.vt.edu/dendro/dendrology.

About the author

Vanessa Fox is an Associate Professor of Biology and Program Coordinator of the Nature Park at DePauw University in Greencastle, Indiana. She teaches classes in ecology, evolution, and biostatistics, and directs student research in community ecology. Vanessa enjoys spending time out in the woods at the Nature Park. She is always looking for new ways to educate students and visitors and she hopes that this resource will provide another opportunity for education.

