WHAT'S THAT TREE?

A **WINTER** GUIDE TO TREE IDENTIFICATION
AT
INDIAN CREEK NATURE CENTER

ABOUT THIS GUIDE (2nd edition)

Without leaves to aid us, identifying trees in winter is often challenging. The purpose of this guide (Guide) is to give staff, volunteers and visitors at Indian Creek Nature Center (ICNC) the tools needed to make winter tree identifications in the field. This is accomplished through a combination of factual information about tree species, photos, and analytic tools.

You might ask what is the purpose of identifying trees, especially in the winter? Besides being essential to forest management, nature center programs, and academic pursuits, identifying trees is a fun way to expand knowledge, sharpen observational skills and enhance appreciation of nature.

This 2nd edition of the Guide was prepared for use at ICNC, but also more generally throughout eastern Iowa. The changes from the 1st edition are:

- The number of species covered are increased by three (five added and two deleted);
- A section describing the distinction between simple and compound leaves is included;
- Some photos are upgraded; and
- The map of ICNC depicting tree locations is updated to show changes to the tree-scape and trail system resulting from the windstorm (derecho) on August 10, 2020. Restoration of the Woodland Trail is in progress as of this writing, so some specimens may not yet be easily accessible.

Included in this Guide are three tools to aid you in winter tree identification:

1. **Easy IDs** lists eight tree species or groups with unique characteristics that are easy for the average person to observe (such as the Honey Locust with large thorns shown on the cover). Scanning the Easy IDs before going into the field will enable you to look them up quickly in the Easy IDs section when you come across them.

2. **The Winter Identification Key** covers six characteristics of trees that are evident in winter and that aid in identification (e.g., the color of bark or the branching pattern). A summary and overview of the Key, including tips on using it, is on pages 11-12. A detailed explanation of the Key and the six "Characteristics" it uses, complete with photos of examples, follows the overview beginning at page 13.

3. **Species Fact Pages** contain a standard set of the Key's Characteristics and photographs for each tree species. This tool may be used alone to confirm a suspected identification or in conjunction with the other tools. If a species is found at ICNC, its Fact Pages include a trail reference and Location # that can be used with the site map enclosed to locate at least one example of the particular tree species at ICNC.

I am indebted to Iowa Master Naturalists for the inspiration to write this Guide, which was my capstone project in its certification program. Iowa Master Naturalists is a non-profit organization having the mission of educating a corps of adult volunteers about Iowa's environment and natural history, thus empowering them to promote awareness, appreciation, and stewardship of the natural world in their communities. I would like to thank the Iowa Master Naturalists program for motivating me to undertake this project and for supplying funding support for the duplication and distribution of this guide book.

I also wish to acknowledge Andria Cossolotto of Indian Creek Nature Center, Elisabeth Swain (Executive Director of Iowa Master Naturalists) and Phil White for their assistance with this Guide. Their thoughtful reviews, insightful comments, and helpful suggestions are greatly appreciated.

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Winter 2018-19 and Winter 2020-2021 (2nd edition)

Edition 2.0

TABLE OF CONTENTS

TABLE OF CONTENTS

EASY IDs AT ICNC

These trees have one or two unique characteristics that stand out. In some cases, the characteristic identifies an individual tree species; in others it identifies a group of related trees. Becoming familiar with them is a good start towards becoming adept at winter tree identification. (Species names are capitalized in this Guide for ease of location in the text.)

HONEY LOCUST: The Honey Locust is unmistakable for its very large thorns growing from the lower trunk and branches. Thorns can grow up to 12" long. Also unique to the Honey Locust are its large (up to 16" long), dark brown, crescent shaped seedpods.


Thorny Trunk


Twig with Thorns


Seed Pods with 12" Ruler

HACKBERRY: The Hackberry's warty, bumpy bark is like no other and quite unmistakable. If there is any doubt, brown to purplish-red berries (not always present) will confirm identification.


Warty Trunk


Berries Visible on Branches


Berries Close-up

BLACK CHERRY: Bark that is as dark as any in an Iowa forest, plus having a texture of "burnt corn flakes" sets the Black Cherry apart. Mature Black Cherry trees stand out in a winter forest and can be spotted from a good distance. Mature trees growing in a forest have long trunks with very few lower branches.

Dark Bark

Corn Flake/Potato Chip

Few Lower Branches

OAKS (generally): If leaves persist on a tree well into the winter, there is a good chance it is an oak tree. The easily recognizable shape of leaves in the Red Oak and White Oak groups, whether spotted in the tree or on the ground, helps to narrow down the species possibilities substantially.

Many Leaves Holding

Red Oaks with Pointed Lobes

White Oaks-Curved Lobes

RIVER BIRCH: The papery, layered, multi-colored bark peeling horizontally away from the trunk distinguishes the River Birch. You may also find catkins (male flowers) hanging from the branches in the winter.


Peeling Trunk


Trunk Close-up


Catkins at Branch Ends


Catkins Close-up

SYCAMORE: A big Sycamore tree is impossible to miss. Not only is the mature tree one of the largest in the forest, its wide-spreading pure white upper branches stand out from its surroundings. Its bark is further distinguished by the multi-colored, camouflage pattern of its lower branches. Leaves sometimes persist on branches, but will be prominent on the ground by virtue of their large size. To top things off, the Sycamore's large seed balls (1"+ in diameter) are frequently visible in the upper canopy.


White Upper Branches


Camouflage Pattern Bark

EASY IDs: SYCAMORE (cont.)


Sycamore Leaf on Glove


Sycamore Seed Ball (1.5" diameter)

ASPENS (generally): The upper branches of Aspens are noticeable for their light yellow to white color. Aspen trunks grow straight and tall and mature trees have gray, furrowed lower trunks. Mid-level trunk bark appears smooth and is marked by horizontal lines. Leaves normally do not persist on the branches into winter, but are prominent on the ground. Roughly triangular in shape, their base is more rounded than the straight base of a Cottonwood. Aspens include the Bigtooth Aspen, which can be seen at ICNC, and the Quaking Aspen.


Full Tree with White Canopy


Mid-level Trunk


Bigtooth Leaf On Mature Trunk

BLACK LOCUST: The Black Locust is the only tree with crescent shaped, dark brown seed pods 4-6 inches long that persist on the tree through winter. The pods may also be found on the ground and are about half the size of Honey Locust pods. You will also find

EASY IDs: BLACK LOCUST (cont.)

small thorns (less than ½ inch) at leaf nodes on the Black Locust twigs and occasionally very small thorns protruding from the trunk of young trees.

Many Seed Pods Persisting

Seed Pods on Branch

Seed Pod Close-up

Thorns at Leaf Nodes

Small Thorns on Trunk

Seeds Exposed in Pod

WINTER IDENTIFICATION KEY
(An Overview)

To the untrained eye, most of the deciduous trees encountered in winter look very similar. A forest hike, for example, may seem like a walk through stands of indistinguishable grayish trunks and bare branches. Yet, if one is curious and willing to invest a little time, there are ways to recognize differences and identify species.

The Key. This Guide makes use of an Identification Key (the "Key"). The Key consists of six "Characteristics" of trees that highlight differences between species and are observable in winter. The six Characteristics are:

1. **Bark**;
2. **Branching/Leafing Pattern**;
3. **Size, Shape, and Location**;
4. **Observable Leaves**;
5. **Observable Fruit and Flowers**; and
6. **Twigs and Buds**.

A detailed explanation of the Key's six Characteristics, including photos and examples, are contained in the next Section. Furthermore, the Species Fact Pages (starting at page 25) contain details of each of the six Characteristics for each species included in this Guide.

Method and Tips. There is no recognized standard approach to using keys, but most people use variations of a process of elimination. Consider that many species are indistinguishable from each other with respect to one or two Characteristics (bark color and leafing pattern, for example), but when three or more Characteristics are considered, identification often can be made. Here are a few tips that will help make the process easier.

> **First**, learn and memorize the short list of single Characteristics that uniquely identify a species (the Easy IDs section of this Guide contains many of them and there are most certainly others). For example, if you observe clumps of foot-long thorns protruding from the bark of a trunk, you should know you are looking at a Honey Locust without needing to consider any other Key Characteristics. Similarly, the yellow buds of Bitternut Hickory are a reliable single identifier.

Second, develop a pattern of observing Characteristics in a particular order. For example, after: (i) noting bark details; (ii) look up to see if you can determine the branching pattern (an "opposite" pattern reduces the possibilities greatly); then (iii) scan the branches for signs of leaves or fruit that may persist into winter; (iv) bend over and sort through the leaf litter or dig through the snow and look for fallen leaves and fruit; (v) take note of the tree size, shape and location for further clues and (vi) if within reach, examine twigs and buds (a hand lens can be helpful). Often one or two Characteristics will not be observable on a particular tree, but if you follow a regular order, then you are less likely to overlook those that are apparent.

Third, look for confirmation. If you are fairly sure of identification because of 1 or 2 Characteristics, but not 100% certain, look for additional Characteristics to confirm you are right or wrong. For example, bark color, texture, and pattern together with stout twigs and "monkey face" leaf scars may leave you almost convinced you are observing a Black Walnut, but could it be something else? Do some additional searching to see if you find any nut pieces under the tree. If you do, you are most likely correct, but if you don't, you have to question that Black Walnut identification (keeping in mind that Walnuts do not fruit every year).

Winter tree identification is a useful and enjoyable activity. Sharp observational skills, knowledge of the Key's Characteristics for each species, a good memory and a good guidebook yield the best results.

KEY CHARACTERISTICS DETAIL

BARK

Caveat. Tree bark frequently changes over time. Young trees may have a different color or texture than mature trees, e.g., progressing from smooth to furrowed. Variations also occur in some species on the same tree from trunk to upper branches. Environmental conditions may also affect bark characteristics.

BARK COLOR

White/Yellow Trunk or Branches


Aspen


Sycamore (branches)


River Birch (mottled)

Shades of Gray-Brown


White Oak (Light)


Walnut (Medium)


Black Cherry (Dark)

Variations on Same Tree

Variations in color occur within the same individual tree in some species. For example, the Sycamore has a dark trunk, a "camouflage" pattern of dark and white on the lower branches, and solid white upper branches (see photos on page 8). The mature River Birch has a gray trunk, but mottled peeling bark on newer growth. Mature Aspen and Cottonwood often have dark bark on the lower trunk, but light or white bark on upper branches (Aspen photos on page 9).


Mature River Birch Trunk


River Birch Layered Mottled Bark


Cottonwood-Dark & Light Bark

BARK TEXTURE AND PATTERN

Smooth Texture

Smooth bark on mature trees is characteristic of some species, e.g., Hornbeam. In others, new growth has smooth bark that transitions to rough as it matures (some Maples and Hickories). On faster growing species with this characteristic (e.g., Chokecherry and Aspen) both smooth and rough may be on the same tree (older trunk and newer branches).

Smooth

Young Chokecherry

Young Black Cherry (smooth branch-rough trunk)

Hornbeam

Thorns on Trunk or Branches

Honey Locust trunk

Honey Locust branch

Shaggy or Flaky

Shagbark Hickory

Silver Maple

Hophornbeam (mature-closeup)

Furrows and Ridges

Cottonwood (deeply furrowed with horizontal cracks)

Red Oak (deeply furrowed with light colored flat ridges)

White Oak (moderately furrowed)

Ash (interlacing ridges-diamond pattern)

Warty or Bumpy


Hackberry

Burnt Corn Flakes

Black Cherry

Papery

River Birch

Corky Ridges

Bur Oak

Stringy

Northern White Cedar

BRANCHING/LEAFING PATTERNS

In winter, the branching and leafing arrangement of a tree can be critical to identification. In particular, **common species having opposite patterns are limited to Maples (including Box Elder), Ashes, Dogwoods and Buckeye**. Whorled patterns are even more rare (at ICNC, just Catalpa). Occasionally, broken or obscured branches can complicate distinguishing between opposite and alternate. One can also look at the bud arrangement on twigs to determine the leafing pattern.

Opposite

Branches, leaves and bud grow directly opposite from each other on the same node.

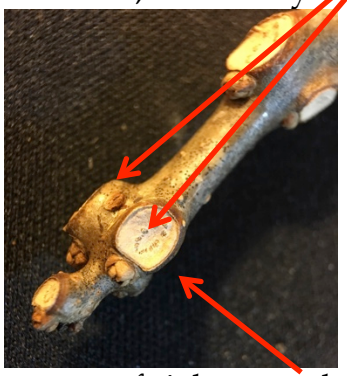
Maples and Ashes

Alternate

Branches and leaves/buds/scars are staggered from side to side.

Hophornbeam (Ironwood) branch

Whorled Leafing: 3 or more leaves/buds/scars extending from each node. These are rare at ICNC, seen only on the Northern Catalpa tree.



Third scar out of sight on underside

SIZE, SHAPE, AND LOCATION,

The Species Fact Pages contain a table of information on each tree's mature size, shape, and location.

SIZE

Tree species have a natural limit to their size. Growing conditions affect size. The following table provides examples of mature tree sizes by height.

Mature Height	Species
Up to 30′	Chokecherry, Dogwoods, Hornbeam
Up to 75′	Red Oak, River Birch, Sycamore
Over 75′	Basswood, Elm, Cottonwood

SHAPE

The natural shape of a mature tree is consistent within a species. However, environmental factors can affect the shape of any particular tree. An oak growing in an open field will be shaped differently from one germinating in a dense forest. Shape can be described by many terms, including columnar (cylindrical), pyramidal (or conical), and widely spreading.

Pyramidal/Conical

Norway Spruce

Cylindrical: Tall & narrow with few lower branches

Black Cherry

Widely Spreading

Sycamore

LOCATION

Trees have evolved to adapt to their habitat. Clues of identity may be derived from the environment in which the tree is found. For example, willows and cottonwoods are more likely to be found near water. Familiarity with the habitat can help narrow down the possible species. Elements of location are terrain (height, slope and direction), moisture, soil composition, and sunlight exposure. The following table provides some examples of these characteristics.

Location (habitat)	Species
Lowland-water proximity	Cottonwood, Willow, River Birch, Silver Maple
Well-drained-sandy	Pines, Black Oak
Moist, drained slopes, uplands	Oaks, Shagbark Hickory, Basswood, Sugar Maple
Marginal areas (edges)	Mulberry, Chokecherry, Box Elder
Understory-shade	Hophornbeam, Bitternut Hickory, Hornbeam

OBSERVABLE LEAVES

A small number of tree species are marcescent, meaning they hold onto leaves into the winter. Searching the ground for fallen leaves can also provide clues, although leaves of different species can easily be mixed together when windblown, making it difficult to match a fallen leaf with a particular tree. Conversely, though, the absence of a particular leaf species from the mixture of nearby fallen leaves may convince you to eliminate that species from consideration. The size of a leaf also may aid in identification.

Red Oak

Holding leaves into winter: coniferous trees, some Oaks, Hophornbeam, Shagbark Hickory, and Sycamore.

Sycamore

Very large leaves: Sycamore, Catalpa, some Oaks (especially on lower shaded branches).

Simple and compound leaves. Determining whether a tree's leaves are simple or compound can provide an important clue to its identity. Most trees have simple leaves, so finding evidence of compound leaves narrows down the possibilities considerably.

A "leaf" is the growth that emerges from a single leaf bud on a twig.

If that growth consists of a stem and a one-piece blade, it is simple, such as this oak leaf.

Simple Oak Leaf

If that growth is more complex, such as is seen with this black walnut, it is a compound leaf.

Compound Black Walnut Leaf

What looks like many leaves in the Black Walnut photo are actually "leaflets". Compound leaves generally have three or more leaflets and are arranged in specific patterns, depending on the species. Common compound leaf types are: (i) pinnately compound (leaflets arranged on either side of the stem, typically opposite each other, such as the Black Walnut above); bi-pinnately compound (leaflet is itself subdivided pinnately,); and palmately compound (leaflets radiate from one point). Examples of each are shown below.

Pinnate (Hickory)

Bi-Pinnate (Honey Locust)

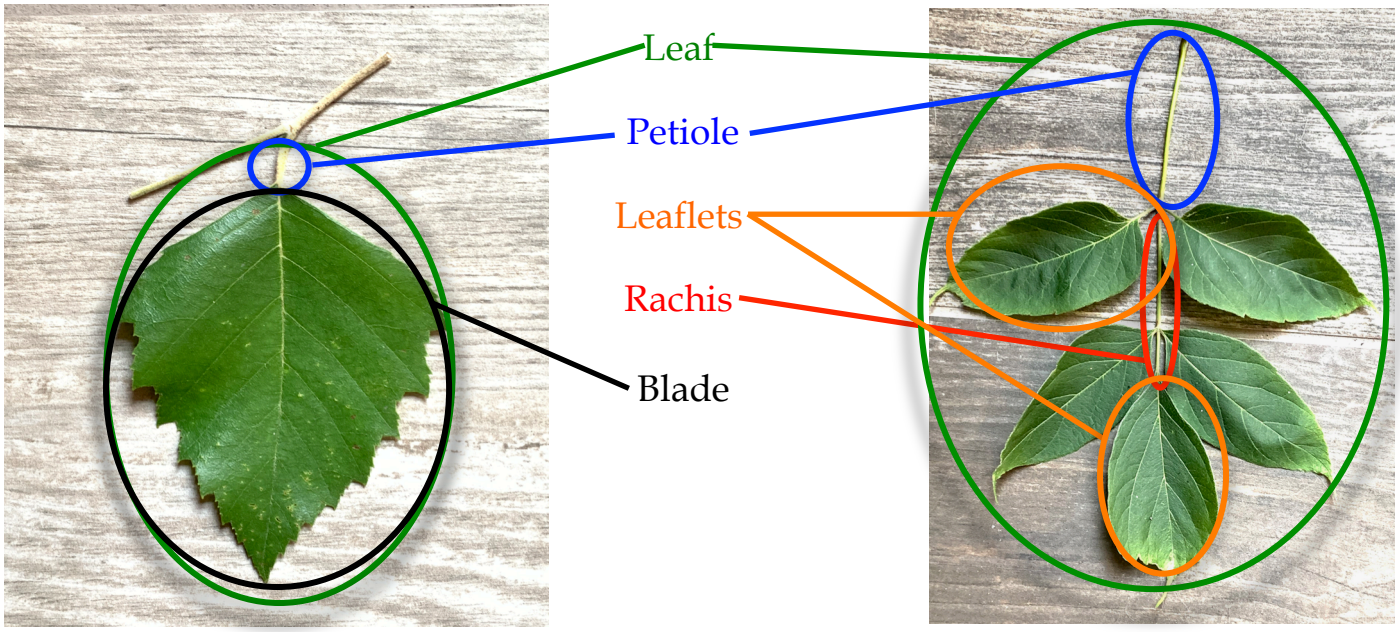
Palmate (Buckeye)

In this Guide, the only species with compound leaves are Ashes, Box Elder, Black Locust, Buckeye, Hickories, Honey Locust, and Black Walnut. Below is a diagram showing the main parts of simple and compound leaves.

SIMPLE AND COMPOUND LEAVES

(Summer leaves shown for illustrative purposes)

SIMPLE **COMPOUND**



Observable evidence of compound leaves. Some compound leaves, such as those of Hickories (see photo on page 20 above), may survive the winter relatively intact, either on the tree or the ground. Often, however, what remains of a compound leaf in winter is mainly the stick-like rachises to which the leaflets were originally attached. The rachis of a compound leaf is continuous with the petiole that attaches the blade-like portion of a leaf to the twig. See the diagram on page 20.

Note that the petioles of some large simple leaves, such as Catalpa, can look similar to the rachis/petiole axis of a compound leaf. Also be aware that twigs of simple leaved trees may break from the branch and, if still holding multiple leaves, may look like a compound leaf with leaflets. There are several examples of compound petioles and rachises below and more are in the Species Fact Pages.

PETIOLES AND RACHISES EXAMPLES

Catalpa Petioles


Hickory Petioles/Rachises Holding Without Leaflets


Walnut Petioles/Rachises

OBSERVABLE FRUIT AND FLOWERS

A small number of species hold onto their fruit or flowers into winter. Others are observable on the ground. Although often not as prone to being windblown, hard-shelled fruit such as nuts and acorns are moved about by squirrels and other animals.

FRUIT/FLOWER	SPECIES
Hard shells on ground (nuts and acorns)	Oaks, Walnuts, Hickories
Holding "berries" into winter	Hackberry, Basswood, East. Red Cedar
Winged seedpods (samaras)	Maples, Box Elder and Ashes
Hops-like seedpods holding	Hophornbeam (Ironwood)
Crescent-shaped seedpods	Honey Locust (large) and Black Locust
Catkins	River Birch, Hophornbeam
Cones (coniferous)	White Pine, Balsam Fir, Norway Spruce


Eastern Red Cedar


Hackberry


Basswood/Linden


Hophornbeam

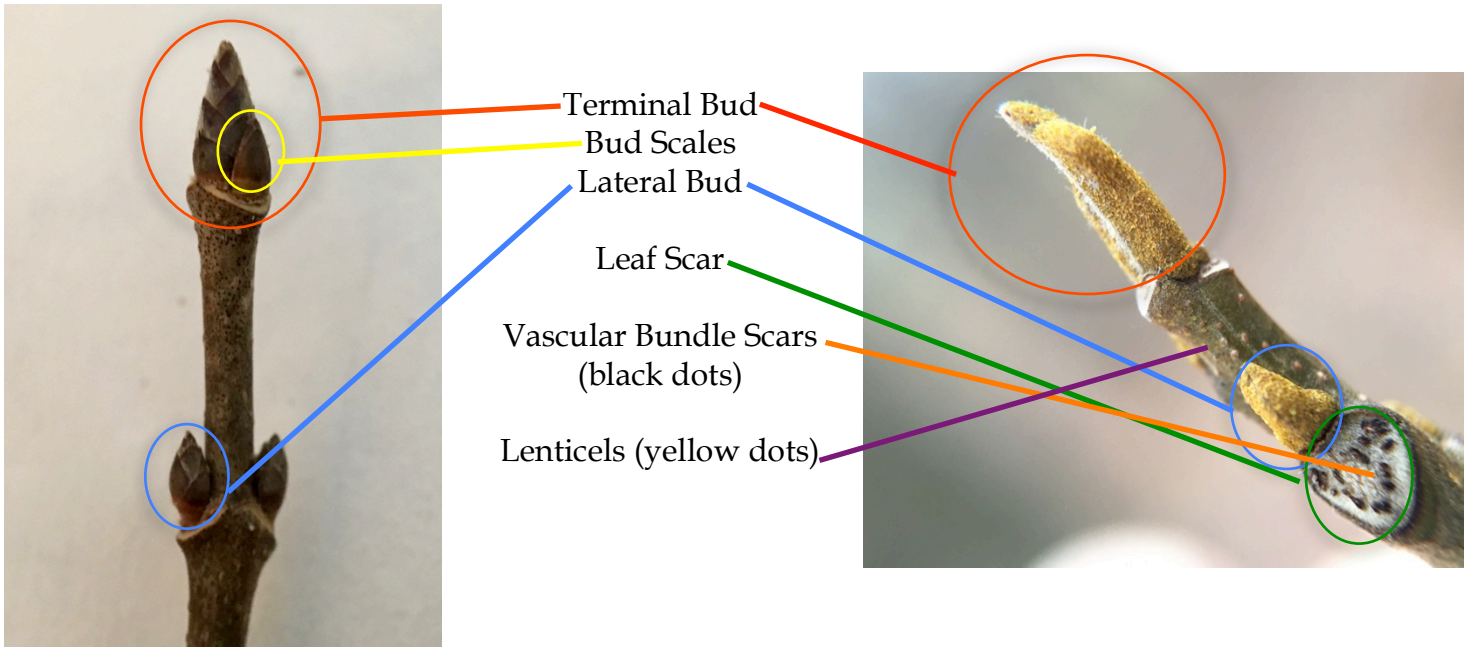
TWIGS AND BUDS

Examining twigs and buds will often confirm identification. Characteristics of twigs and buds discussed in this Guide include:

1. Color (often noted when different from trunk and branches);
2. Twig size, strength and shape; (twig pith is beyond the scope of this Guide);
3. Terminal bud and lateral bud description;
4. Leaf scar and vascular bundle scar characteristics;
5. Lenticels when notable; and
6. Odor and taste when notable.

The diagram below illustrates the twig and bud parts referenced above.

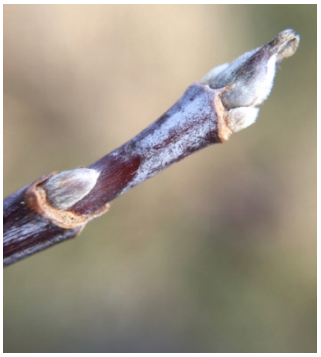
TWIG AND BUD PARTS DIAGRAM



TWIGS AND BUDS EXAMPLES

Black Walnut Leaf Scar
("monkey face")

White Oak Terminal Bud
(cluster)



Box Elder Buds

Cottonwood Term. Bud
with Oval Leaf Scar

SPECIES FACT PAGES

ASH, GREEN

BARK: Mature trees are moderately to deeply furrowed, gray in color, and distinguished by the interlacing "diamond" pattern of the ridges. The bark looks similar to Walnut, but Ashes are opposite branching and Walnuts are alternate. A further distinction is that the inner bark (shave the outer bark with a knife to see inner bark) of an Ash is a light brown, compared to the dark brown of the Walnut.


Green Ash Trunk


Ash light brown inner bark


Walnut dark brown inner bark

BRANCHING/LEAFING PATTERN: Opposite

SIZE, SHAPE AND LOCATION

Mature Size	Height: 50-80 ft.	Width: 50-70 ft.
Shape	Slightly pyramidal; upright with a rounded crown	
Location	Native to Iowa, ash trees grow best in full sun and moist, well-drained soils. They are tolerant of a wide range of soil conditions. Green Ash is common in bottomland areas.	

OBSERVABLE LEAVES: Generally not available.

OBSERVABLE FRUIT AND FLOWERS: Single-winged, paddle shaped samaras may be found hanging from the tree in clusters or on the ground.

Single Wing Samaras

Low Profile Seed Bump

White Ash samaras are slightly shorter and have a more prominent seed bump close to the stem.

TWIGS AND BUDS: Twigs are stout. Terminal buds on ashes often resemble a small Hershey's Kiss. The tree may have stiff prominent leaflet stems or rachises on branches or strewn on the ground. Opposite leaf scars are shaped like a D, which distinguishes them from the C shaped, notched, leaf scars of the White Ash. Vascular bundle scars are so close together they may appear as an unbroken line.

Stout Twig

Hershey's Kiss

"D" Leaf Scar

ICNC MAP LOCATION: Wood Duck Way-#1

OTHER FACTS OF INTEREST: Ash wood is finely and straightly grained and noted for its hardness. It is used to make baseball bats. This tree is being decimated in many parts of the country by the emerald ash borer beetle.

ASH, WHITE

BARK: Like the Green Ash, White Ashes are distinguished by the interlacing "diamond" pattern of the ridges. Their inner bark is also the same light brown color as the Green Ash (see previous pages). One difference between the two Ashes is that the younger branches of a White Ash have smooth bark, while those of the Green Ash do not.

Mature Trunk

Juvenile Trunk

BRANCHING/LEAFING PATTERN: Opposite

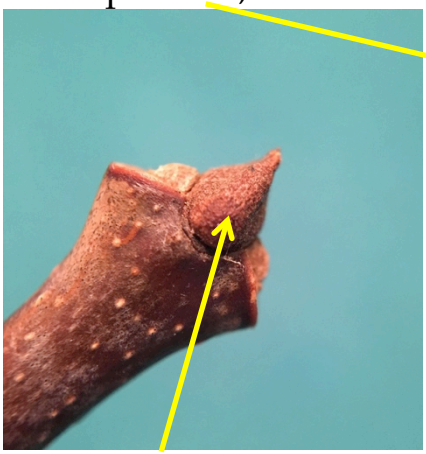
SIZE, SHAPE AND LOCATION

Mature Size	Height: 50-80 ft.	Width: 50-70 ft.
Shape	Slightly pyramidal; upright with a rounded crown	
Location	Native to Iowa, Ash trees grow best in full sun and moist, well-drained soils. They are tolerant of a wide range of soil conditions. White Ash are common in upland locations.	

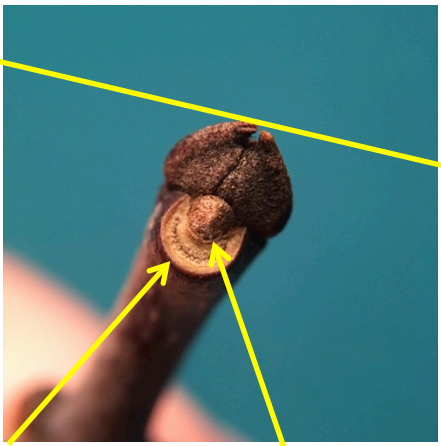
OBSERVABLE LEAVES: Generally not available.

OBSERVABLE FRUIT AND FLOWERS: Photos not available, but samaras are similar to Green Ash with small distinctions. Refer to the Green Ash pages above.

TWIGS AND BUDS: Twigs are stout. As with Green Ash, terminal buds on White Ashes often resemble a small Hershey's Kiss. Opposite leaf scars are shaped like a C with a notch in the scar where the bud emerges. Vascular bundle scars are close together and resemble a C shaped line, also like Green Ashes.



"Hershey's Kiss" Terminal Bud



"C" Leaf Scar with Notch for Bud

Lateral Bud Leaf Scar with "C" Vascular Bundle Scars

ICNC MAP LOCATION: Wood Duck Way-#2

OTHER FACTS OF INTEREST: White Ash is native to the southeastern two thirds of Iowa and to the Cedar River drainage in north central Iowa. The wood is finely and straightly grained and noted for its hardness. It makes excellent firewood and is also used to make a variety of products including baseball bats, pallets, skis, paddles, and tool handles. The single-winged samara seeds are not preferred by wildlife, but because they may persist on branches well into winter, can become an important food source when other sources are in short supply. Moderately fast growing, White Ash was sometimes planted as a shade tree, but not as frequently as the faster growing Green Ash. Ash trees are no longer recommended for planting in Iowa for shade or ornamental purposes because of the destructive threat of the emerald ash borer beetle.

ASPEN, BIG-TOOTH

BARK: Mature trees may have dark gray, furrowed bark on the lower trunk and smooth yellow-to-white bark in upper reaches.


Lower Trunk


Lower Trunk Close-up


Mid-Level Trunk

BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 50-100 ft.	Width: variable
Shape	Narrow to rounded	
Location	Upland woods on moist-to dry sites. Prefers full sun.	

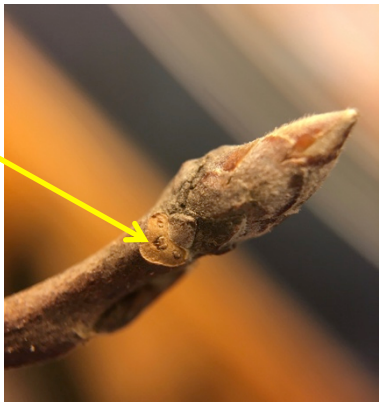

Mature Aspen-Full Tree

OBSERVABLE LEAVES: Frequently found on the ground in winter, the triangular leaves are rounded at the bottom and distinctive for large scalloped marginal teeth.


OBSERVABLE FRUIT AND FLOWERS: Not generally available.

TWIGS AND BUDS: Twigs are moderately stout, brown, and with half-circle leaf scars having three vascular bundle scars. Buds are light brown to red-brown and covered with fine gray hairs.





ICNC MAP LOCATION: Bena Trail-#3

OTHER FACTS OF INTEREST: Aspen may be harvested commercially for pulpwood for particleboard. Big-tooth is similar to Quaking Aspen, but differentiated by its large-toothed leaves. Aspens reproduce rapidly from root suckers and can form dense stands when cut, appearing to be many trees, but all of which may be sprouts from the root of a single tree.

BASSWOOD, AMERICAN (American Linden)

BARK: Gray with small furrows, smoother on younger trees. Basswood often grows in clumps of multiple trunks.

Young Trees in Multiple Trunks

Mature Trunk

Transition from Old Rough Bark to New Smooth Bark

BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 30-50 ft.
Shape	Wide-spreading, round-topped with dense foliage.	
Location	Moist upland slopes and protected bluffs and ravines. Often grows in clumps of multiple trunks. Tolerant of a variety of soil conditions and sun exposures.	

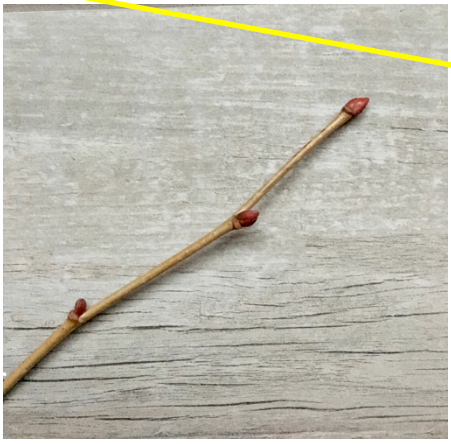
OBSERVABLE LEAVES: Generally not available, but occasionally found on the ground. Leaves are large, heart-shaped and with small marginal teeth.

OBSERVABLE FRUIT AND FLOWERS: Leaf-like bracts, from which berry-like seeds hang from the central rib, are often found persisting on branches into winter.

Bracts on Branch with Seeds Hanging

Bract with Seeds Close-up

TWIGS AND BUDS: Twigs are moderately thick and light brown. Buds are pointed with red scales. Leaf scars are nearly oval.



ICNC MAP LOCATION: Woodland Trail-#4

OTHER FACTS OF INTEREST: Basswood got its name from the Native Americans' use of its tough inner bark, or "bast", as cordage. Buds are edible in early spring.

BIRCH, RIVER

BARK: Distinctive mottled brown and white bark, papery in texture and often peeling and curling horizontally.

BRANCHING/LEAFING PATTERN: Alternate

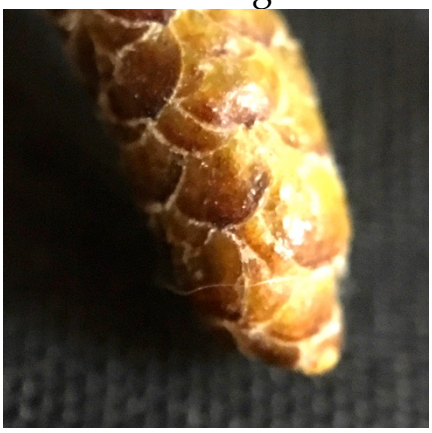
SIZE, SHAPE AND LOCATION

Mature Size	Height: 40-70 ft.	Width: 35-60 ft.
Shape	Pyramidal, open-rounded	
Location	Stream bottoms, acidic soil, partial to full sun.	

OBSERVABLE LEAVES: Generally not available, but occasionally persist.
OBSERVABLE FRUIT AND FLOWERS: Cylindrical fruit ripens in spring and is generally not available in winter. Male catkins are found on branches and ground.

Catkins on Branches in Silhouette

Catkins



Catkins Close-up

TWIGS AND BUDS: Twigs are slender, straight and hairy. Buds are reddish-brown.

Slender, straight twig

Lateral Bud Close-up

Terminal Bud Close-up with Hair Visible

ICNC MAP LOCATION: Woodland Trail-#5

OTHER FACTS OF INTEREST: Valuable to wildlife due to its spring-ripening fruit, it is also popular as an ornamental because of its striking coloring and texture. Due to its tolerance of acidic soils, it is sometimes used on mine reclamation sites.

BLACK LOCUST

BARK: Mature trees are medium gray and deeply furrowed. Younger trees are light brown or gray with smoother bark and often having small thorns on the trunk.


Mature Trunk


Young Tree Trunk


Young Trunk Close-up with Thorns

BRANCHING/LEAFING PATTERN: Alternate.

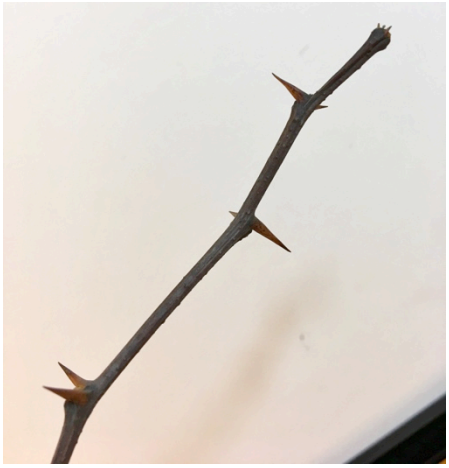
SIZE, SHAPE AND LOCATION

Mature Size	Height: 50 ft.	Width: 25 ft.
Shape	Upright to spreading ovular.	
Location	Prefers rich, deep, moist, well-drained soil. However, commonly found in poor soil conditions, especially thin soil and near limestone outcrops. Prefers full to partial sun.	

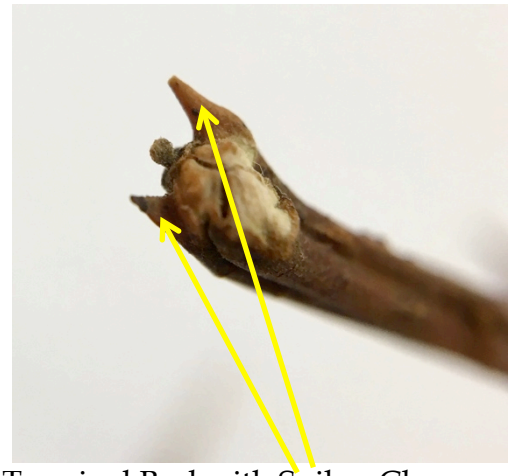
OBSERVABLE LEAVES: Generally not available.

OBSERVABLE FRUIT AND FLOWERS: Crescent shaped seed pods 4-6 inches long often remain on the tree. Each pod contains 8-15 small reddish brown bean-like seeds.

TWIGS AND BUDS: Twigs have a slight zigzag pattern with small thorns (1/2 inch) at the leaf nodes. Terminal buds may have small spikes.


Zigzag Twig with Thorns


Terminal Bud Close-up


Terminal Bud with Spikes Close-up

ICNC MAP LOCATION: Woodland Trail-#6

OTHER FACTS OF INTEREST: Black Locust is native to North America, but not to Iowa. Its natural range extends from Pennsylvania south-westward to Alabama and westward to southern Illinois. Known for its extremely hard wood, it was planted widely in Iowa for fencepost production. Black Locusts have invasive traits that enable them to spread aggressively. The tree often suffers extensive damage from the locust borer insect.

BOX ELDER

BARK: Gray to dark brown color, sometimes with a green tinge, and shallowly furrowed.

BRANCHING/LEAFING PATTERN: Opposite. Like other members of the Maple genus and Ashes, opposite branching or budding is a critical identification Characteristic.

SIZE, SHAPE AND LOCATION

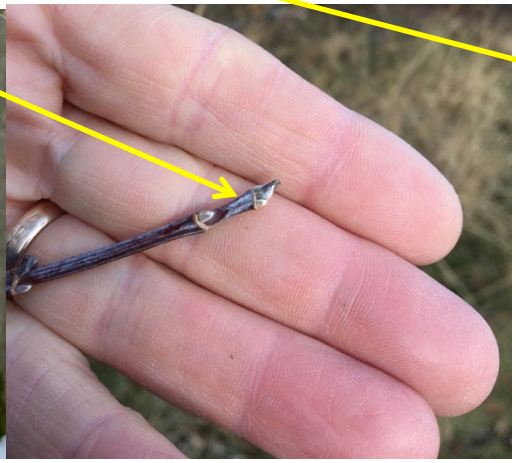
Mature Size	Height: 40-60 ft.	Width: 30-40 ft.
Shape	Irregular tending to be broadly rounded.	
Location	Moist bottomlands, prefers good soils.	

OBSERVABLE LEAVES: Not generally available.

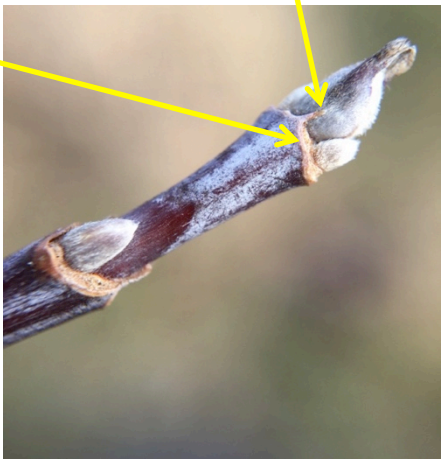
OBSERVABLE FRUIT AND FLOWERS: Some trees will hold dual-winged "helicopter" seeds (samaras) into the winter. Samaras may also be observable on the ground.

TWIGS AND BUDS: Twigs are slender and can be green or red, often appearing to have a white haze. Leaf scars almost encircle the terminal bud and meet in a raised point. Buds are covered with a dense whitish hair.

Green Twig



Red Twig



White Hair on Terminal Bud

ICNC MAP LOCATION: Sense of Wonder-#7 (around and south of Sugar House)

OTHER FACTS OF INTEREST: A member of the Maple (Acer) genus, which some botanists now consider a part of the Soapberry family, it is the only Maple to have compound leaves. It is fast growing, tolerant of disturbed sites, wide-spreading, short-lived, brittle, and of little commercial value. However, because of its rapid growth, it has been planted for shade purposes in areas where other trees do not grow well. The tree also attracts box elder bugs, which are known to enter homes in the fall.

BUCKEYE, OHIO

BARK: Initially smooth ashy gray, becoming darker gray with irregular plates having roughened scales.



BRANCHING/LEAFING PATTERN: Opposite

SIZE, SHAPE AND LOCATION

Mature Size	Height: 50-60 ft.	Width: 25-40 ft.
Shape	Pyramidal or elliptical when young, rounded upon maturity, with pendulous upturning branches	
Location	Prefers full sun and moist bottomland soils-not drought resistant	

OBSERVABLE LEAVES: Generally not available. Leaves are palmately compound with five leaflets.

OBSERVABLE FRUIT AND FLOWERS: Nut-like fruit 1½ to 2 inches in diameter with a prickly leathery husk that turns dark gray-brown in winter and can be found on the ground. Fruit matures in the fall and yields one or two smooth shiny chestnut brown nuts 1 to 1½ inches in diameter with a prominent spot on one end (not pictured and not generally available in the fall).

TWIGS AND BUDS: Twigs are reddish-brown to ashy gray, very stout, straight, and coarse. They have shield shaped leaf scars, prominent lenticels and an unpleasant odor when broken. Terminal buds are large, orange-brown, with keeled scales. Opposite lateral buds are much smaller.

ICNC MAP LOCATION: Bluebird Trail, Wood Duck Way and Sense of Wonder-#7B

OTHER POINTS OF INTEREST: In Iowa, the Ohio Buckeye is found in the southeastern and central portions, scattered in timber and mixed in with other species, usually on moist bottomland soils. Its name comes from the whitish spot on the brown shiny nut, resembling the eye of a deer. It is susceptible to leaf blight.

CATALPA, NORTHERN

BARK: Mature bark is thick and reddish brown with scaly, longitudinal ridges.

Stump and New Shoots at ICNC

BRANCHING/LEAFING PATTERN: Whorled (see whorled bud pattern in photographs below).

SIZE, SHAPE AND LOCATION

Mature Size	Height: 40-60 ft.	Width: 20-40 ft.
Shape	Narrow, open, irregular oval crown.	
Location	Widely tolerant of different soil conditions. Prefers moist locations, but can withstand hot and dry environments.	

OBSERVABLE LEAVES: Distinctive for very large, heart-shaped leaves, which may be occasionally found (in shriveled condition) in winter.

OBSERVABLE FRUIT AND FLOWERS: Catalpas are distinctive for their long, slender cigar-shaped seed pods, which can be 8-20 inches long, some of which may persist on branches into winter. Seeds are flat and elongated oval in shape, with hairy protrusions on either end. Catalpas do not bear seeds until they are about 20 years old.


Cigar Pods on Mature Tree


Pod to Scale


Seed Bundles


Individual Seeds

TWIGS AND BUDS: Twigs are stout and reddish brown with prominent lenticels. Terminal buds show a whorled pattern (3 at each node). Leaf scars are oval.


Twig with Terminal Bud


Terminal Bud Close-up


Lateral Bud with Leaf Scar
(3rd leaf scar out of sight on underside)

ICNC MAP LOCATION: Bena Trail-#8

OTHER FACTS OF INTEREST: The Catalpa is not a native Iowa tree, but was introduced because of its large showy flowers. Two small catalpa trees that were located along the Bena Trail at ICNC were cut down and are now growing multiple suckers/saplings from each stump. Leaves can be found, but seed pods will not be produced until the trees are about 20 years old. Another larger specimen is visible from the bridge crossing Bena Brook, looking north.

CEDAR, EASTERN RED

BARK: Red-brown in color, the bark is thin, flat, and shreds off in narrow strips.


BRANCHING/LEAFING PATTERN: N/A-coniferous

SIZE, SHAPE AND LOCATION

Mature Size	Height: 30-40 ft.	Width: 10-20 ft.
Shape	Densely pyramidal becoming irregular and pendulous with age.	
Location	Prefers full sun and well-drained soils, but widely tolerant of poor soils, heat and drought. Common throughout Iowa.	

OBSERVABLE LEAVES: Dark green to blue-green in color, awl-like, about ¼ to ½ inch long, pointing away from the twig.


OBSERVABLE FRUIT AND FLOWERS: Not a true Cedar, but a member of the Juniper genus, hence it's berry-like fruit. A good food source for birds, including Robins and Cedar Waxwings, which disperse its seed widely through elimination.



TWIGS AND BUDS: Twigs appear to be square in cross-section. Buds are tiny, hidden by the awl-like leaves.


ICNC MAP LOCATION: Blue Bird Trail, Sense of Wonder Trail-#9.

OTHER FACTS OF INTEREST: Eastern Red Cedar heartwood is used for chests and closets because of its fragrance and reputed ability to repel moths. It is also used for fence posts and shingles because of its durability. The berry-like fruit is used to flavor gin.

CEDAR, NORTHERN WHITE (American Arborvitae)

BARK: The bark is thin and gray to reddish brown. It separates into long, vertical, narrow strips, similar to Eastern Red Cedar.

BRANCHING/LEAFING PATTERN: N/A-coniferous.

SIZE, SHAPE AND LOCATION

Mature Size	Height: ft. 30-40 ft.	Width: 10-15 ft.
Shape	Stiff, narrow, pyramidal. Roots shallow and spreading, often appearing above ground.	
Location	Soil tolerant, moist and well-drained, full sun.	

OBSERVABLE LEAVES: Leaves are scale-like needles one eighth to ¼ inch long and are arranged to make the small branches flat. They have an aromatic odor when crushed.

Needles Close-up

"Branches"

OBSERVABLE FRUIT AND FLOWERS: Cones are oblong, ½ inch long, yellowish brown, and borne singly or in large clusters at the end of branches (photo N/A).

TWIGS AND BUDS: Branches terminate in flattened green alternate formations made up of needles. Buds are small and appear at the end of branches.

Branch

Close-up of Buds

ICNC MAP LOCATION: Sense of Wonder Trail-#10 (between barn and Otis Road)

OTHER FACTS OF INTEREST: Also known as American Arborvitae, or Tree of Life, it has been planted in eastern Iowa as an ornamental and in northeastern Iowa as a windbreak tree because of its heavy, dense foliage. The wood is pale brown in color, durable, light and soft. It is used for making canoes, fence posts, railroad ties, telephone poles and shingles.

CHERRY, BLACK

BARK: Distinctive, very dark, flaky scales on mature trunks that have been described as burnt corn flakes and burnt potato chips.

BRANCHING/LEAFING PATTERN: Alternate

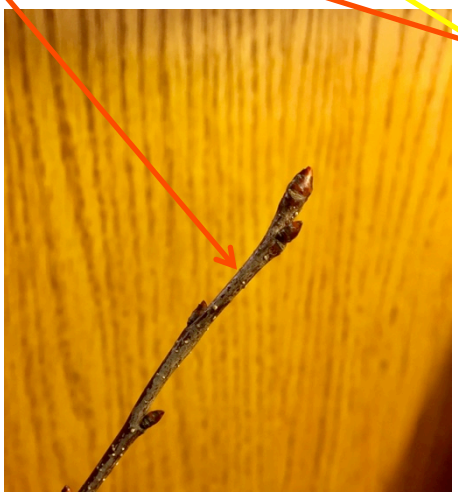
SIZE, SHAPE AND LOCATION

Mature Size	Height: 30+ ft.	Width: 25+ ft.
Shape	Variable from short and crooked to tall and slender (see below).	
Location	Prefers upland moist, well-drained soils, but is widely tolerant and grows quickly. Often found in mixed stands with other hardwoods. Tree can appear in shrubby areas with crooked trunks and as tall gently curving trunks (with few lower branches) reaching to top of forest canopy.	

OBSERVABLE LEAVES: Leaves drop in the fall. They can be difficult to find on the ground, but are simple, 2 to 5 inches long, oblong to lance-shaped and finely serrated.

OBSERVABLE FRUIT AND FLOWERS: Although berries mature in fall, neither fruit nor flowers are observable in winter.

TWIGS AND BUDS: Twigs are slender, reddish brown, sometimes covered in gray epidermis, and have a pungent bitter almond odor and taste. Lenticels can be prominent on twigs and branches. Buds are very small (1/5 inch) and covered in several glossy, reddish brown to greenish scales. Leaf scars are small and semicircular with 3 bundle scars.



ICNC MAP LOCATION: Connector trail near Amphitheater-#11

OTHER FACTS OF INTEREST: Its name comes from the blackened color of the ripened fruit, which has been used to flavor liquor. Leaves, living bark, fruit and seeds contain hydrocyanic acid and are capable of releasing hydrogen cyanide, which has the potential to poison livestock and other animals if consumed in large quantities. Although they have a shallow root system, making them susceptible to wind throw, some may live more than 250 years. The wood is highly valued and of furniture quality. In fact, ICNC's front desk and conference room table are made from Black Cherry.

CHERRY, CHOKE (CHOKECHERRY)

BARK: Smooth gray-brown bark that can become flaky on mature trees. Bark may be smooth on younger growth and flaky on older growth. Lenticels may be prominent.

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

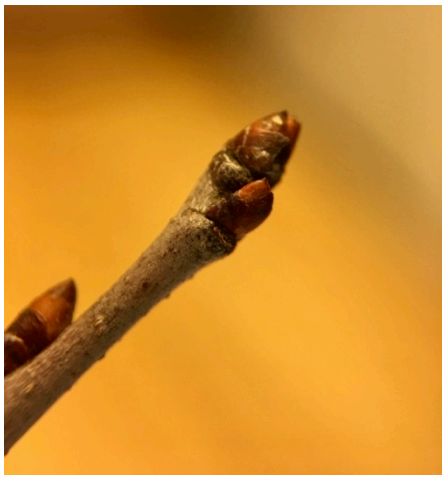
Mature Size	Height: 20-30 ft.	Width: 15-20 ft.
Shape	Varies, but is a small tree with a frequently crooked or inclined trunk and a narrow open slender-branched head. Often forms shrubby thickets.	
Location	Appears at edges of woods, in fencerows and waste places. Prefers full sun to partial shade.	

OBSERVABLE LEAVES: Generally not available, but may be found with a diligent search. Leaves are broader than Black Cherry and the marginal teeth are more pointed. Distinctive small gland structures are on the leaf stem just below the leaf base.

Summer leaf showing pointed teeth

OBSERVABLE FRUIT AND FLOWERS: Generally not available.

TWIGS AND BUDS: Twigs are reddish-brown and slender, but stouter than Black Cherry and have a strong, unpleasant odor when broken. Bud scales are rounded.



Terminal Bud

ICNC MAP LOCATION: Not yet found at ICNC.

OTHER FACTS OF INTEREST: Chokecherry is a beautiful tree when flowering in the spring. Its purple berries are a valuable source of food for wildlife and can be made into a tasty Chokecherry jelly. However, the pits contain hydrocyanic acid and are toxic. Concoctions made from the inner bark of young trees were used by Native Americans and early settlers as a disinfectant and treatment for sore throat and diarrhea.

COTTONWOOD, EASTERN

BARK: Gray and deeply furrowed vertically with horizontal fissures in mature trees. Upper branches of large trees may appear white in color. Sometimes confused with Black Walnut, the inner bark of cottonwood is a lighter brown than Walnut, which has a dark brown color.

Deep Furrows

White Upper Branches

Light Brown Inner Bark

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 50-75 ft.
Shape	Develops an open, spreading crown.	
Location	Lowlands, but tolerant of drought and a wide range of soil conditions.	

OBSERVABLE LEAVES

Leaves turn yellow and drop in the fall, but are often seen on the ground (brown) in winter. Leaf base is flat and perpendicular to the stem.

OBSERVABLE FRUIT AND FLOWERS: Not generally available.

TWIGS AND BUDS: Twigs are stout and brown to yellowish in color. Long, pointed buds up to 3/4 inch long can be sticky. Leaf scars are nearly oval.

ICNC MAP LOCATION: Wood Duck Way, Bluebird Trail-#13

OTHER FACTS OF INTEREST: Cottonwood is the fastest growing and largest tree found in Iowa. Its tall height may help explain its popularity as a nesting tree of Bald Eagles. In spring, it is remarkable for the volume of cottony seeds it drops, thus its namesake. A single tree is capable of producing several million seeds in a good year and will deposit them in large white drifts, considered by some to be a nuisance.

DOGWOOD, ROUGHLEAF

BARK: Smooth on young trees and gray-brown. Mature bark becomes flaky and eventually blocky on larger trees. Trunks may grow in clusters.

BRANCHING/LEAFING PATTERN: Opposite.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 15-25 ft.	Width: 10-15 ft.
Shape	Ovular	
Location	Well-drained moist soils, full sun to partial shade, drought tolerant	

OBSERVABLE LEAVES: May be found on the ground in early winter. Leaves are rough to the touch on top, ovate or elliptical but with a pointed tip, have smooth wavy margins, and are 2-5 inches long. 5 to 7 alternate long curved veins lie on each side of the mid-vein.

OBSERVABLE FRUIT AND FLOWERS: Occasionally the brown dried remnants of branching clusters of berry-like fruit may be found attached to twigs or on the ground. The berries are white when they ripen in late summer to early fall.

TWIGS AND BUDS: Twigs are slender, straight, and colored yellow-brown to green-brown or purplish to reddish-brown (newer growth being redder). Terminal buds are small, but wider than the twig, brown to red-brown, and pointed.

ICNC MAP LOCATION: Bluebird Trail-#13B

OTHER POINTS OF INTEREST: This small native tree also appears as a large shrub and can grow in thickets because of its tendency to sucker. It is commonly found on wood borders, roadsides, and stream banks, but appears only infrequently in northeast Iowa and the northern tier of counties.

ELM, AMERICAN

BARK: On mature trees, bark is light to dark gray and irregularly ridged with deep furrows. When viewed in cross section, it has alternating dark and light layers.

Buttressing Roots Typical

Frequently Grows Slender Shoots from Trunk

Bark Cross-Section

Layered Bark Cross-Section Close-up

BRANCHING/LEAFING PATTERN: Alternate

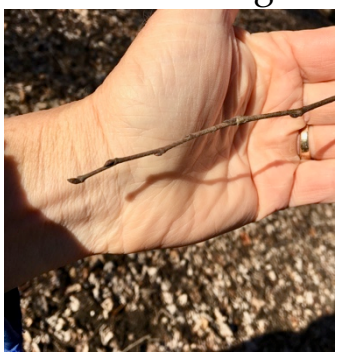
SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-125 ft.	Width: 60-120 ft.
Shape	Buttress roots, upright spreading vase shaped canopy.	
Location	Prefers full to partial sun and moist well-drained soils. Tolerant of adverse soil conditions.	

OBSERVABLE LEAVES: May be found on the ground with a diligent search. Distinguished by an unequal leaf base, sharply pointed top, double-toothed margins, and prominent midrib and lateral veins.

OBSERVABLE FRUIT AND FLOWERS: Generally not available.

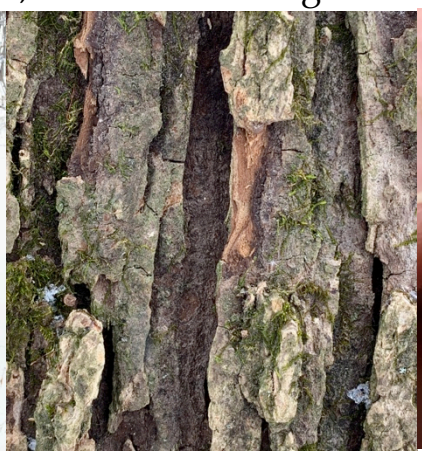
TWIGS AND BUDS: Twigs are thin and buds are small and lie close to the twig.



ICNC MAP LOCATION: Woodland Trail-#14
OTHER FACTS OF INTEREST: Once a popular ornamental, Dutch Elm Disease devastated Elms in the 20th century. It has adapted by reproducing at a very young age.

Elm, Slippery

BARK: Dark brown to reddish-brown with shallow furrows and flat topped ridges. Inner bark is reddish and layered in cross-section. Color differences between layers are muted in contrast to American Elm, which has stronger contrasting dark and light layers.

Slip. Elm X-Section **American** Elm X-Section

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 40-60 ft.	Width: 25-30 ft.
Shape	Moderately vase shaped. Branches more erect than the drooping branches of American Elm.	
Location	Widely tolerant, but prefers moist rich soils and is most commonly found on bottomland, stream banks, and wooded slopes.	

OBSERVABLE LEAVES: May be found on the ground with a diligent search. Very similar to American Elm, but with a slightly more elongated top point. The top side is also rougher than American Elm, but this feature is mostly not detectable in withered leaves.


OBSERVABLE FRUIT AND FLOWERS: Generally not available

TWIGS AND BUDS: Twigs are slightly stouter than American Elm, less zigzag, gray, finely haired, and with false terminal buds. Buds are no larger than ¼ inch, covered in 10-12 purplish bud scales and sprouting prominent copper colored hairs.

ICNC MAP LOCATION: Woodland Trail-#14B

OTHER POINTS OF INTEREST: The "slippery" characteristic is the tree's mucilaginous inner bark and twigs. The inner bark is marketed as an herbal supplement having medicinal properties. It is used as a home remedy for sore throats, stomach concerns and for dressing wounds, among other afflictions. Like the American Elm, it is susceptible to Dutch Elm Disease, but has maintained good populations in Iowa because of its prolific seed production in its early years (before the disease takes hold). Unlike American Elm, it was not widely used in landscaping due to its shorter stature and the more erect, less elegant, shape of its branching contours. It is also known as Red Elm due to the color of its wood, which has been used for veneers, boxes, and crates. As firewood it is valued for its attractive flames and low ash production.

FIR, BALSAM

BARK: Bark is brown in color, broken into small plates covered in scales. Young bark is often covered in pitch.

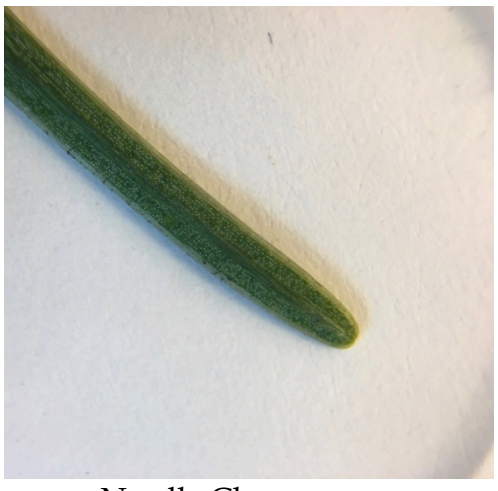
BRANCHING/LEAFING PATTERN: N/A-coniferous.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 40-70 ft.	Width: 15-20 ft.
Shape	Densely pyramidal.	
Location	Moist well-drained soils. Full to partial sun. Does not tolerate heat well.	

OBSERVABLE LEAVES: The leaves are blunt needles 3/4 to 1-1/2 inches long, dark green on the upper surface to silvery white on the lower surface and spreading at nearly right angles to the branch.

Needle Configuration



Needle Close-up

OBSERVABLE FRUIT AND FLOWERS: Cones are 2-4 inches long, purplish, and grow upright on the upper branches (photo not available). Ripened cones break into pieces before falling to the ground.

TWIGS AND BUDS: Slender and flexible, needles grow at right angles from the twig. Terminal buds are brown and gray and roughly bullet shaped.

Twig Configuration

Terminal Bud Close-up

ICNC MAP LOCATION: Sense of Wonder Trail-#15 (north of barn)

OTHER FACTS OF INTEREST: Its name is derived from the pitch or "balsam" exuded by the tree, which has been used historically as a medium for mounting microscope specimens and as a cement for optical systems like lenses and gun sights. For centuries it also was used as a fixative and glossing agent on oil paintings and to waterproof pottery. For campers, it is useful for starting fires, sealing wounds, and patching camp gear. It has also been used in dental procedures and cough syrups, as a vapor to ease headaches, and as an ingestible, to ease stomachaches.

HACKBERRY

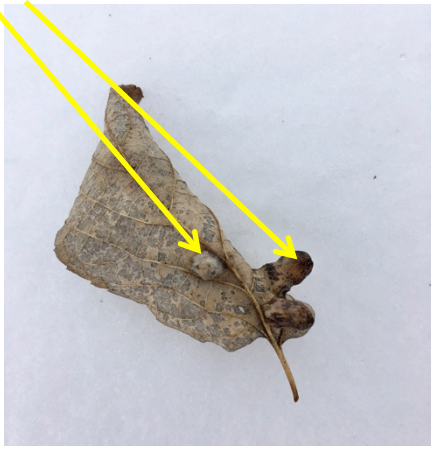
BARK: Light brown to medium gray color with prominent warts or bumps, often with irregular ridges.


BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 40-60 ft.
Shape	Cylindrical with drooping branches.	
Location	Tolerant of a wide variety of soils, moisture levels and sun exposure.	

OBSERVABLE LEAVES: Occasionally persisting on branches into winter, fallen leaves may also be found. Similar to American Elm, the leaves are 2-5 inches long, marginally double-toothed with unequal leaf bases and have a sharply pointed tip. Veins are not as prominent as in Elm leaves. Small rounded galls are common.

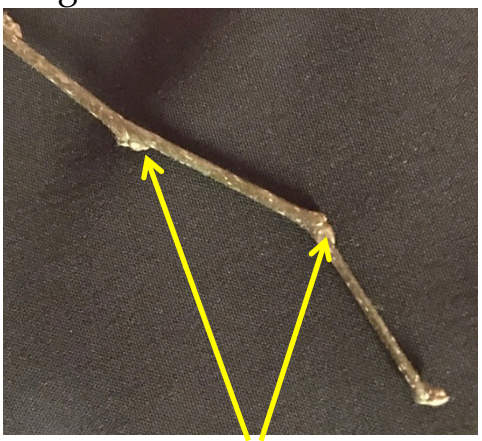



OBSERVABLE FRUIT AND FLOWERS: Reddish-purple to brown berries may remain on branches into winter and may be observable (i) in silhouette on higher branches or (ii) in full color at lower heights.

Berries in Silhouette

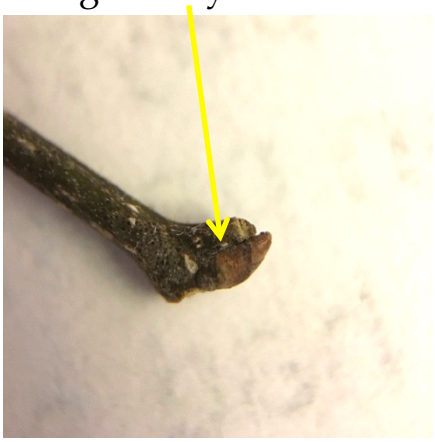
Reddish Purple Berries

TWIGS AND BUDS: Twigs are slender and fragile. Lateral buds grow parallel to the twig. Terminal buds are reddish brown and often point at an angle away from the twig.



Lateral Buds Parallel to Twig

Terminal Bud and Leaf Scar



ICNC MAP LOCATION: Woodland Trail-#16

OTHER FACTS OF INTEREST: Berries are edible. Fresh cut wood gives off a fruit-like fragrance. An extensive root system helps the tree survive drought.

HICKORY, BITTERNUT

BARK: Contrasted with Shagbark Hickory, mature trunk bark is tight with shallow furrows and no shaggy scales. Young tree bark is relatively smooth.

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 60-80 ft.	Width: 30-40 ft.
Shape	Slender pyramidal.	
Location	Upland timber areas commonly mixed in with oaks, moist slopes and even bottomlands. Although an understory tree, it can grow into the upper canopy.	

OBSERVABLE LEAVES: Generally not available, but pinnately compound with 7-9 leaflets.

OBSERVABLE FRUIT AND FLOWERS: Nuts are about 1 inch in diameter with thin husks that will be brown in winter with four ridges that extend about halfway around. The nut contains high levels of tannin, which give it a bitter taste.

TWIGS AND BUDS: Twigs are moderately thick (thinner than Shagbark Hickory), greenish and with prominent lenticels. Buds are yellow and pointed.

Twig

Terminal and lateral buds with leaf scar

Terminal Bud Close-up

ICNC MAP LOCATION: Woodland Trail-#18 (woods north of Bird Room)

OTHER FACTS OF INTEREST: A fast-growing tree that tends to occur as a sub-dominant tree in oak forests and woodlands, it is somewhat short-lived compared to oaks. Wildlife will eat the fruit, although it is not preferred and usually a last choice for most wildlife if other nuts and fruits are available. Small mammals occasionally feed on the bark.

HICKORY, SHAGBARK

BARK: Medium to dark gray in color, the bark of mature trees has long, flaky strands often curling out, producing the "shaggy" effect for which the tree is named.



Juvenile Tree

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 60-80 ft.	Width: 30-50 ft.
Shape	Irregular, oval canopy with a straight trunk.	
Location	Upland often mixed with Oaks-can dominate dry sites.	

OBSERVABLE LEAVES: Stiff, woody, compound leaf rachises may remain on branches, pointing in several opposite directions. Arrangements of 3 to 5 leaflets, 8-16 inches long with finely toothed margins, also often persist on branches into winter.



OBSERVABLE FRUIT AND FLOWERS: Nuts are approximately 1.5 to 2 inches in diameter with green segmented husks eventually turning brown. Husks, unlike Bitternut Hickory, are thick. The nut inside is generally spherical and brown with a point at the intersection of the segments.

TWIGS AND BUDS: Twigs are thick and rachises may remain on branches and ray out in a circular pattern. Terminal bud is large, ovoid, and with many layers. Leaf scar is nearly circular.

Rachises Rayed Out

Terminal Bud

Circular Leaf Scar

ICNC MAP LOCATION: Woodland Trail (large tree on hill north of Bird Room) and Bena Trail-#19

OTHER FACTS OF INTEREST: Shagbark hickory is the prime wood for tool handles because of its exceptional strength and shock resistance. It has also been used for cabinets, skis and other sporting goods, ladder rungs, agricultural implements, pallet construction, charcoal and for smoking meats.

HONEY LOCUST

BARK: Remarkable for the very large thorn clumps growing on the lower portions of the tree. Thorns frequently appear with points of three. About 10% of honey locusts are thornless, but can be easily identified by the seed pods (see below). Bark is colored slate gray and is moderately furrowed.

Zigzag Branch

BRANCHING/LEAFING PATTERN: Alternate, some branches with thorns and some without. Branches and twigs have a zigzag shape.

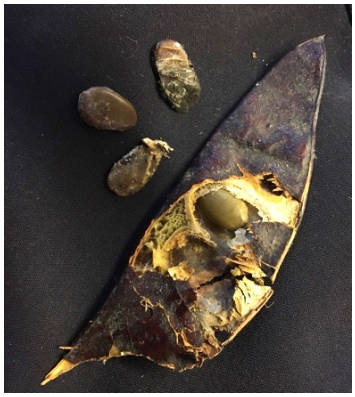
SIZE, SHAPE AND LOCATION

Mature Size	Height: 70-80 ft.	Width: 20-40 ft.
Shape	Upright and spreading with a delicate silhouette.	
Location	Adaptable to most soil and moisture conditions. Prefers part to full sun.	

OBSERVABLE LEAVES: Although generally not available, leaves are notable for being pinnately double compound and for their delicate, light-filtering quality.

OBSERVABLE FRUIT AND FLOWERS: Long brown flat pods, 6-16 inches in length, are curved and twisted in winter. Sometimes persisting on branches and easily found on the ground, the pods contain many beanlike, flattened, light to dark brown seeds.

Seed Pods to Scale



Pod Interior Exposed

Seed Close-up

TWIGS AND BUDS: Twigs are stout, shiny brown-green and have a zigzag pattern. Thorns are single or tri-pointed. Buds are mostly embedded in the branch with only the tips protruding.

ICNC MAP LOCATION: Blue Bird Trail (at trail connector to east parking lot) and Woodland Trail-#20

OTHER FACTS OF INTEREST: Valuable for wildlife because of the honey-like sweet pulp of the pods, hence the tree's name. Deer and rabbits also eat the soft bark of young trees during winter months. Many varieties of this species have been cultivated for urban use because of its open foliage, tolerances to the urban environment and fairly fast growth rate.

HOPHORNBEAM (IRONWOOD)

BARK: Grey-brown and somewhat shaggy on mature trees with thin vertical peeling strips. Smoother bark appears on younger trees.


Vertical Strips


Close-up of Peeling Strips


Close-up to Scale

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 40 ft.	Width: 30 ft.
Shape	Trunk 5″-10″ diameter. Oval canopied.	
Location	Understory tree, tolerant of shade and acidic soil. Often found in dense stands.	

OBSERVABLE LEAVES: Like some Oaks, leaves sometimes persist on trees into winter. Leaves are oval, about 2-4 inches long with short stalks and saw-tooth edges. They turn yellow in fall and are brown in winter on tree or on ground.

OBSERVABLE FRUIT AND FLOWERS: Fruit (seed pods) are inflated brown paper-like sacs resembling hops. Some may remain on the tree into winter. Seeds inside sacs are less than ¼ " long. Short (less than ½") compact immature catkins bearing next year's male flowers are conspicuous in winter.

Hops-like Pods on Tree

Close-up of Seed Pods

Catkins

TWIGS AND BUDS: Twigs are thin, reddish brown in color, with buds angled outwards. Buds are small, about 1/10" long.

Twig with Lateral Bud

Terminal Bud

ICNC MAP LOCATION: Woodland Trail-#21 (and throughout forest understory north of Bird Room)

OTHER FACTS OF INTEREST: Appearing throughout Iowa and having a wide range from Canada in the north to the southern United States, its common name, Ironwood, stems from the extreme hardness of its wood.

HORNBEAM, AMERICAN
(a/k/a Blue Beech and Musclewood)

BARK: Smooth, thin bark colored gray to gray-blue. Often grows in multiple stem clumps. Trunk and limbs are irregularly fluted, giving a muscular appearance.



BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 30ft.	Width: 15-20 ft.
Shape	Symmetrical with ovular crown. Trunk often twisted.	
Location	Moist, rocky, wooded slopes. Prefers acidic soil and grows best in partial shade. Not drought tolerant.	

OBSERVABLE LEAVES: Generally N/A, but may occasionally be found with a diligent search. A member of the birch family, leaves are 2-3 inches long, simple, ovoid, double-toothed, and with an equal leaf base.

OBSERVABLE FRUIT AND FLOWERS: Fruit is a small nutlet, about 1/3" in diameter, concealed inside a 3-lobed slightly folded leafy bract about 1" long. The bracts are clustered together on a hanging stalk 4-6" long and, since seed dispersal occurs from November-spring, are commonly seen in winter. Male catkin flower buds may also be present in winter.


Bract Cluster with Nutlet


Silhouette of Bracts in Canopy


Nutlets Close-up

TWIGS AND BUDS: Slender and reddish brown in winter, showing a slight zigzag pattern. 3 bundle scars are present within very small leaf scars.

ICNC MAP LOCATION: Off trail on bank of Bena Brook.

OTHER POINTS OF INTEREST: Native to the eastern third of Iowa and the Iowa River and Des Moines River valleys. Wood is exceptionally strong and has been used for tool handles, but has little commercial value because of the tree's small size. Makes excellent firewood. Well suited as an ornamental because of its gray-blue fluted limbs and good reddish-orange fall color.

KENTUCKY COFFEE TREE

BARK: Distinctively dark gray and scaly. Frequently has reddish-tan furrows.

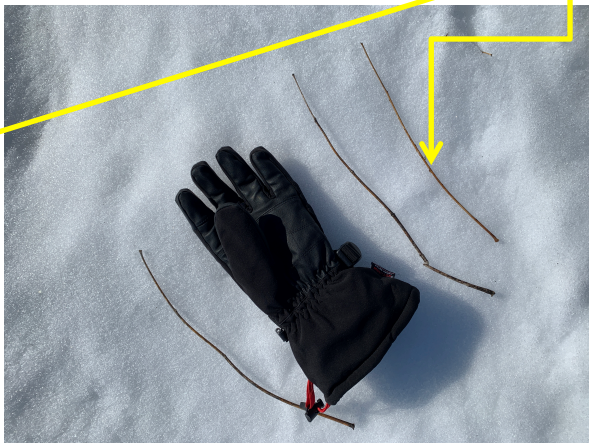


BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 60-100 ft.	Width: 40-50 ft.
Shape	Roughly ovular	
Location	Moist ravines and bottomlands-prefers full sun-soil tolerant	

OBSERVABLE LEAVES: Generally not available, but the long petioles and rachises of its very large alternate, bi-pinnately compound leaves may be found on the tree and the ground.

OBSERVABLE FRUIT AND FLOWERS: Thick, woody, reddish brown seedpods are 4-6 inches long and about 2 inches wide. The pods are shorter, wider and thicker than those of the honey locust. Pods, which often remain on the tree throughout the winter, contain 3 to 9 seeds up ¾ inch long.



TWIGS AND BUDS: Very stout, knobby, and gray-brown. Pith is thick and salmon colored. Buds are very small, partially buried beneath the surface of the twig, greenish in color and appear hairy under a lens. Leaf scars are very large, light colored, shield shaped and have 3 to 5 vascular bundle scars.


ICNC MAP LOCATION: Bluebird- #21C.

OTHER POINTS OF INTEREST: The tree derives its name from a practice of Native Americans and early pioneers of brewing a low quality "coffee" from the seeds. The pods and seeds contain a chemical, cytisine, which is similar in structure and action to the stimulant nicotine. Although cytisine can be lethally toxic to livestock, wildlife, and humans, when the bean-like seeds are heated the toxicity is reduced to non-lethal levels. Native Americans and early settlers were thus able to boil the seeds to brew a drink with the stimulating effect of the caffeine in coffee.

Native to Iowa, the range of the Kentucky Coffee Tree includes the entire state, but it is found mostly along drainages of the major rivers. Interestingly, it is not found at all in the drainages of some minor rivers, such as the Wapsipinicon. Within the areas where it does occur, its distribution is uniquely sporadic for reasons that are as of yet unknown.

The leaves of Kentucky Coffee Tree are notable for their large size. They are bi-pinnately compound, up to 3 feet long, and contain 40 or more leaflets, each 2 to 3 inches long. It and the Honey Locust are the only native Iowa trees to have bi-pinnately compound leaves. The visually appealing large leaves and stout twigs, together with its tolerance of a wide range of soil conditions make it a good landscape tree. The wood is hard and durable and has been used for fence posts and furniture but due to its relative scarcity has little commercial value.

MAPLE, SILVER

BARK: Light gray and smooth on young trees, becoming ashy gray and having long scaly flaky strips on mature trees.

BRANCHING/LEAFING PATTERN: Opposite

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 50-75 ft.
Shape	Large rounded crown	
Location	Prefers moist well-drained soil and full to partial sun. A common stream bank and floodplain tree that is also tolerant of dry sites.	

OBSERVABLE LEAVES: Leaves are fragile and withered after falling, but are commonly found. They are small and deeply five-lobed with long-pointed V-shaped sinuses.

Top Side

Underside

OBSERVABLE FRUIT AND FLOWERS: Generally not available, but occasionally their broad angle, double samara fruit (i.e. "helicopters") can be found on the ground.

TWIGS AND BUDS: Twigs are slender, dull red or red-brown, with V-shaped leaf scars. Leaf buds are red to red-purple and 1/8th to ¼ inch in length. Flower buds, if found, are in clumps or spheres of the same color. Twigs and buds have a slightly unpleasant odor when crushed or scratched.


Twig with Buds


Terminal Bud Close-up


Flower Buds Close-up

ICNC MAP LOCATION: Sense of Wonder Trail and Wood Duck Way-#22

OTHER FACTS OF INTEREST: The Silver Maple grows faster than all other Maples, leading to brittle branches and, together with its shallow root system, susceptibility to wind and ice damage. The summer leaves have a silvery-white underside, hence the name. Its wood, light in color and weight and typically sold as "soft maple", is used for furniture veneers, boxes, crates, and pallets.

MAPLE, SUGAR

BARK: Gray-brown and deeply furrowed on mature trees, smoother on young trees.

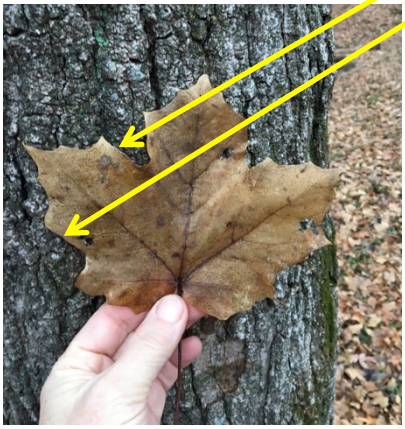


BRANCHING/LEAFING PATTERN: Opposite

SIZE, SHAPE AND LOCATION

Mature Size	Height: 60-100 ft.	Width: 40-50 ft.
Shape	Dense, round compact crown.	
Location	Well-drained, moist rich loam soils of bottomlands and lower slopes with north and east exposures. Full sun to part shade.	

OBSERVABLE LEAVES: Found fallen, 3 of the 5 -7 lobes are large, with the center lobe and often the other 2 large lobes having parallel sides. Margins are smooth.




OBSERVABLE FRUIT AND FLOWERS: Double winged samaras ("helicopters") hang in clusters and mature in late summer and fall and may occasionally be found on the ground in winter (photo not available).

TWIGS AND BUDS: Twigs are slender, fairly straight and colored light brown or gray. Terminal bud is pointy and dark brown or red. Lateral buds are opposite.

Terminal Bud Close-up

ICNC MAP LOCATION: Sense of Wonder Trail-#23

OTHER FACTS OF INTEREST: Sugar Maples are prized for their brilliant red-yellow-orange fall foliage, quality wood suitable for furniture making, and sap that is high in sugar content from which maple syrup and sugar are produced. The maple leaf prominent on the Canadian flag most closely resembles the Sugar Maple.

MULBERRY, WHITE

BARK: Smooth and light orange brown on young trees, becoming furrowed and gray-brown on older trees with flattened scaly ridges and tannish coloration in between ridges. Mature bark may have a more orange tint.

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 30-50 ft.	Width: 25-35 ft.
Shape	Wide-spreading branches and wide rounded shape.	
Location	Occurs on lowlands, valleys, streams and moist sheltered slopes, as well as fencerows. A shade tolerant tree that commonly grows in the understory of woodlands.	

OBSERVABLE LEAVES: Generally not available.

OBSERVABLE FRUIT AND FLOWERS: Generally not available. Edible berries ripen in early summer, first appearing as white and then turning pale pink to dark red.

TWIGS AND BUDS: Twigs are slender, pale tan to brown, and smooth. Leaf scars are irregular oval in shape and have many vascular bundle scars. Buds are ¼ inch long and light reddish-brown in color. Bud scales have mostly light brown borders, but some have darker borders.


Twig with Leaf and Bundle Scars


Lateral Bud with Darker Scale Border


Term. Bud with Light Border

ICNC MAP LOCATION: Woodland Trail and Christiansen Prairie-#24.

OTHER FACTS OF INTEREST: Native to Asia, White Mulberry was introduced in the United States in colonial days to facilitate silk production and has become very common in Iowa. Considered by some to be an invasive species, it sometimes hybridizes with Red Mulberry, which is native to the southeastern 2/3 of Iowa, but is not common. The two species are very similar and practically indistinguishable in winter without leaves. Red Mulberry buds are greenish brown with mostly darker scale borders. Also, the trunk bark of Red Mulberry may have less of an orange tint.

OAK, BLACK
(Red Oak Group)

BARK: Dark grey, thick, and deeply furrowed with narrow ridges. Inner bark may be orange or yellow.



BRANCHING/LEAFING PATTERN: Alternate

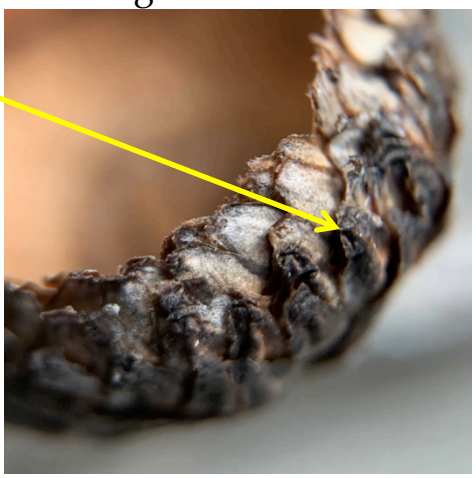
SIZE, SHAPE AND LOCATION

Mature Size	Height: 50-80 ft.	Width: 40-60 ft.
Shape	Broad with an irregular rounded crown	
Location	Upland woods and sandy lowlands near water. Prefers moist, well-drained soils but tolerates adverse conditions.	

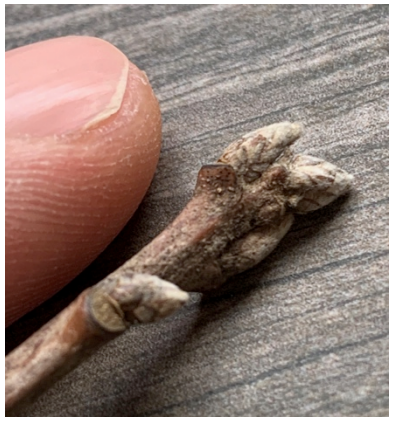
OBSERVABLE LEAVES: Persisting on branches into winter and also easily found on the ground, leaves are 5-11 inches long with 5-7 bristle tipped lobes. U-shaped sinuses extend far towards the mid-rib on "sun" leaves, shallower on "shade" leaves.


OBSERVABLE FRUIT AND FLOWERS: Acorns are ½ to ¾ inch in length, red-brown in color, and may be found on the ground in winter. The caps cover about ½ of the acorn's length or less, have loose outer scales, and may remain on twigs.





TWIGS AND BUDS: Twigs are stout and red-brown to gray in color. Buds are large, up to ½ inch in length, pointed, and with grayish wooly bud scales. Terminal buds are clustered.


ICNC MAP LOCATION: Connector on east border of Stimple Prairie-#24B

OTHER POINTS OF INTEREST: Black Oak is not usually planted as an ornamental because it is not as attractive as other oaks. Its wood is dense and strong, but not as commonly used as Red Oak because it has more low-lying branches and thus more knots. Nevertheless, its wood has been used for furniture, pallets, and railroad ties. The inner bark is orange-yellow in color and was once used as a source for yellow dye and for tannins to tan leather. Acorns are a good source of wild animal food.

OAK, BUR
(White Oak Group)

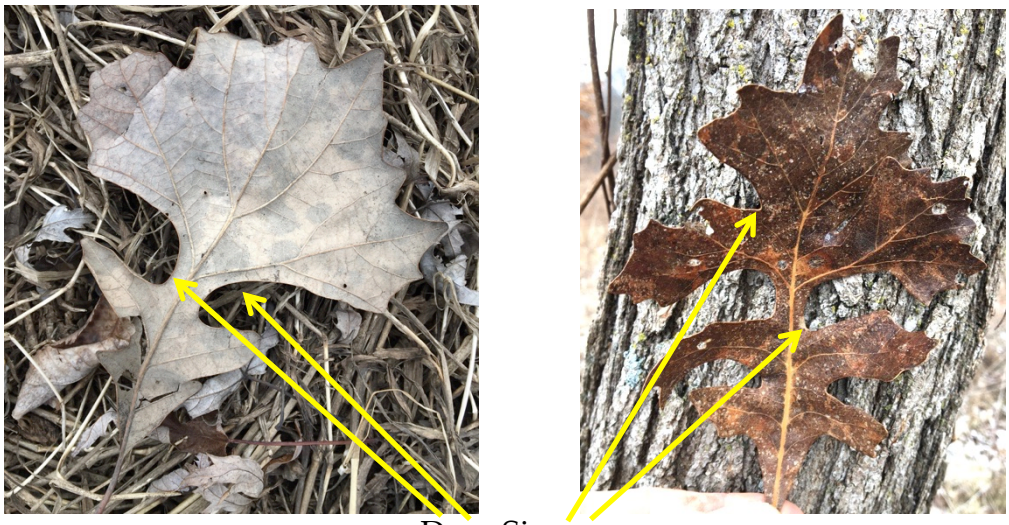
BARK: Dark gray, rough, and deeply ridged on mature trees. Branches may show corky textured ridges.

BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 50-100 ft.	Width: 40-70 ft.
Shape	Broad and rounded. Branches grow in a variety of angles.	
Location	Prefers moist well-drained soil. Grows on a variety of sites, from bottomland to dry uplands. Tolerant of adverse soil conditions. Prefers full sun to partial shade. Drought resistant due to its extensive root system.	

OBSERVABLE LEAVES: As a member of the White Oak group, leaves are round lobed, variable in shape, but having deep sinuses near the middle appearing to nearly divide the leaf in two. Some leaves may persist on the tree in winter but most are found on the ground.



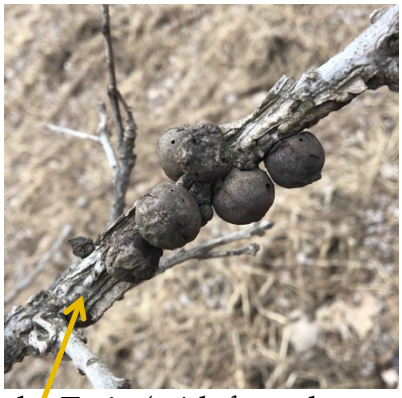
Deep Sinuses

OBSERVABLE FRUIT AND FLOWERS: Acorns, found on the ground, are ¾ to 1½ inches long, enclosed half or more in a deep cup that is prominently fringed on the margin.

Fringed Acorn Cup

Cup Fringe Close-up

TWIGS AND BUDS: Twigs are stout, smooth on new growth, but developing corky ridges as they mature. Buds are clustered and often covered with light gray hairs.



Corky Twig (with fungal growth)

Terminal Bud Cluster

ICNC MAP LOCATION: Bena Trail-#25

OTHER FACTS OF INTEREST: Bur Oak is a long-lived tree capable of surviving up to 300 years in the right setting. It was known for growing at the prairie/forest border and competed well with prairie grasses due to its thick fire-resistant bark and tolerance of drought. Consequently, groves of Bur Oak were favorite homestead sites for early settlers in Iowa. Because it and other Oaks require nearly full sun to establish, more shade tolerant seedlings, such as Maple and Basswood, are known to replace groves of Oaks. Wildlife prefer Bur Oak acorns to other Oaks because of its lower levels of tannins. Bur Oak hybridizes with Swamp White Oak and White Oak, which can complicate identification when these species are in the same geographic area.

OAK, NORTHERN RED
(Red Oak Group)

BARK: Mature trees are deeply furrowed in vertical lines with light colored ridges that are flat on top and that may form a loose diamond pattern. Young trees are smoother.

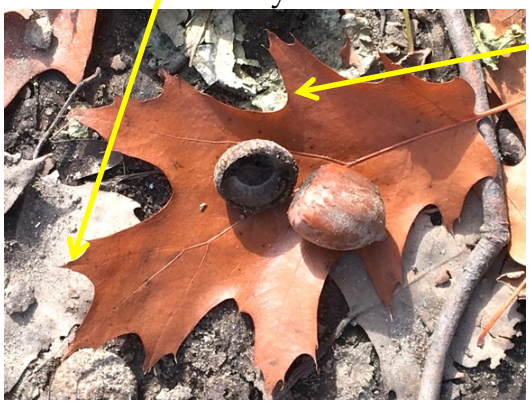


BRANCHING/LEAFING PATTERN: Alternate

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 40-70 ft.
Shape	Broad and rounded. Branches tend to point upwards like a "V".	
Location	Prefers moist, well-drained soils. Tolerant of adverse soil conditions. Prefers full sun to partial shade.	

OBSERVABLE LEAVES: Leaves persist into winter and are found on the ground also. They have 7 to 11 pointed lobes and are 5 to 9 inches long. Sinuses are U-shaped and extend less than half the way to the mid-vein.




OBSERVABLE FRUIT AND FLOWERS: Acorns occur in pairs or singly, are up to 1½ inches long, brown-gray with gray stripes. The cup covers about ¼ of the acorn.

TWIGS AND BUDS: Twigs are stout, reddish to greenish brown, and without hair. Buds are clustered at the ends of twigs, rounded in shape with a sharp point, and colored reddish brown with a light shine.

ICNC MAP LOCATION: Woodland Trail-#26

OTHER FACTS OF INTEREST: Similar to Black Oak (also in the Red Oak group with which it hybridizes), but having slightly smoother bark, lighter colored bark ridges, and less lower branches. It is a popular landscaping tree due to its fast growth rates and wide adaptability to sites. Its wood is in high demand in the furniture and housing industries.

OAK, PIN
(Red Oak Group)

BARK: Gray brown in color and slightly ridged, the bark on younger trees is smooth and light gray to brown.

Low Branches Angled Down

BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 70-80 ft.	Width: 25-40 ft.
Shape	Broad, rounded, pyramidal crown. Lower branches tend to point down.	
Location	Prefers moist, well-drained acidic soils. Not tolerant of non-acidic soils and is prone to iron deficiency.	

OBSERVABLE LEAVES: Often persisting on the tree and easily found on the ground, leaves have 5 to 7 lobes, are 3-6 inches long, and have deep circular or U-shaped sinuses. Leaves are smaller and sinuses are deeper than those of Northern Red Oak.

OBSERVABLE FRUIT AND FLOWERS: Acorns may be found on the ground and are small, hemispherical in shape, light brown and often have dark vertical stripes. The cup covers only the base and is scaled (photo not available).

TWIGS AND BUDS: Twigs are slender, smooth, and green to red brown in color. Buds are about 1/8 inch long, red-brown, shiny, sharp pointed and angled. Terminal bud may be clustered.

ICNC MAP LOCATION: Bena Trail-# 27

OTHER FACTS OF INTEREST: Wood is heavy and hard, similar to Red Oak, but more knotty and of lower quality. It has many of the same uses as Red Oak.

OAK, SWAMP WHITE
(White Oak Group)

BARK: Mature trunks are gray to reddish-brown in color with deep furrows and broad flat ridges. The bark of small branches is smooth but separates into large papery scales.

BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 40-70 ft.
Shape	Broadly rounded with open irregular crown.	
Location	Bottomlands and moist sites with acidic, iron rich soils. Prefers part to full sun.	

OBSERVABLE LEAVES: Leaves may persist into winter and are easily found on the ground. They are large, 5 to 7 inches long and 4 inches wide, with a rounded tip and 10-20 rounded lobes with shallow sinuses.

OBSERVABLE FRUIT AND FLOWERS: Acorns may be found on the ground, are oval, light brown, and typically 1¼ inches long. They occur in pairs on a long stalk measuring up to 4 inches. The cup encloses about 1/3 of the nut and is thick, light brown, hairy, and has a rough surface.


Acorn Cup Pairs on Stalks


Acorn Cup Close-up

TWIGS AND BUDS: Twigs are moderately stout, smooth, and light brown in color. Terminal buds are short, blunt and light brown with thread-like stipules often present.

ICNC MAP LOCATION: Bena Trail, Wood Duck Way-#28

OTHER FACTS OF INTEREST: Swamp White Oak hybridizes with Bur Oak and White Oak, which can complicate identification when these species are in the same geographic area. Its wood resembles that of other white oaks; heavy, hard, and durable but due to its prevalence to retain its lower branches the wood is less valuable. The acorns are a good food source for wildlife frequenting bottomlands.

OAK, WHITE
(White Oak Group)

BARK: On mature trees, bark is light ashy gray in color, separating into small scaly plates. Old trees are deeply furrowed with rectangular blocks. Coloration may be patchy on mature trees with different shades of gray.

BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 50-75 ft.
Shape	Wide-spreading crown with dense foliage and many horizontal branches.	
Location	Prefers well-drained, drier, slightly acidic soils. Tolerant of adverse soil conditions. Full to part sun-intolerant of shade.	

OBSERVABLE LEAVES: 5-7 rounded lobes, with sinuses varying from shallow to deep. Leaves on the same tree may vary considerably and often persist into winter.

OBSERVABLE FRUIT AND FLOWERS: Acorns are oval, up to ¾ inch long, with ¼ covered by a minutely hairy cap.

TWIGS AND BUDS: Twigs are moderately stout and can be colored red with a purplish tinge. Buds are clustered at the tips, blunt to oval in shape and usually brown or reddish brown in color.

ICNC MAP LOCATION: Woodland Trail-#29**.**

OTHER FACTS OF INTEREST: White Oaks are remarkable for their ability to synchronize and periodically produce large crops of acorns over a large geographic area. White Oaks are slow growing and may live 300-500 years. They are prone to hybridize with Swamp White Oak and Bur Oak, complicating identification when these species occur in the same area. Its wood is used to make barrels for aging bourbon whiskey.

PINE, SCOTCH

BARK: The base of mature trunks are grayish brown to brown in color, but on the upper trunk and larger branches the bark is bright orange and flaky, with the outer bark peeling off in large scales.

BRANCHING/LEAFING PATTERN: N/A-coniferous. Branching is open and appears sparse.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 30-60 ft.	Width: 20-40 ft.
Shape	Irregular pyramidal, taking on many shapes as they mature, including a flat, wide spreading top of crooked branches.	
Location	Prefers sandy and well-drained soils, but tolerant of poor and dry soils. Prefers full sun.	

OBSERVABLE LEAVES: Needles are 1½ to 3 inches long and may have a bluish tint. They come in bundles of two and spiral away from the twig.

OBSERVABLE FRUIT AND FLOWERS: Cones are small, about 1 to 1½ inch long, and may remain on the branches for multiple years.

TWIGS AND BUDS: Twigs are light brown, moderately thick, and marked by wavy lines running along their lengths. Terminal buds are reddish brown.

Terminal Bud

Twig Close-up

ICNC MAP LOCATION: Sense of Wonder Trail (destroyed in derecho)-#30

OTHER FACTS OF INTEREST: Scotch Pines are a European species brought to the United States by the English. They have been planted widely in Iowa for windbreaks and ornamental use.

PINE, WHITE

BARK: The bark on young trees is smooth and light gray, becoming dark gray to black with flat plates separated by shallow fissures on older trees.

BRANCHING/LEAFING PATTERN: N/A-coniferous

SIZE, SHAPE AND LOCATION

Mature Size	Height: 100-200 ft.	Width: 40-50 ft.
Shape	Pyramidal. Upper branches gracefully arch upwards.	
Location	Prefers well-drained, slightly acidic upland soils, but are adaptable. Intermediate shade tolerance.	

OBSERVABLE LEAVES: Needles occur in bundles of five, 3-5 inches long and are bluish green with fine white lines (stomata) running lengthwise. They are soft and flexible.

OBSERVABLE FRUIT AND FLOWERS: Cones are 3-8 inches long and are approximately 3-4 times longer than wide. They taper gradually, have cone scales without prickles and are light tan to whitish in color on outer edge of the scales.

TWIGS AND BUDS: Twigs are slender, orange-brown, smooth or slightly hairy and becoming gray. The terminal buds are ovoid in shape, about 3/8 of an inch long, tapering to an abrupt slender tip, and have light brown scales.

ICNC MAP LOCATION: Woodland Trail-#31 (Founder's Grove)

OTHER FACTS OF INTEREST: White Pine grows quickly and has an average lifespan of 100-150 years, but can live beyond 300. By towering over other trees, they may form a super-canopy in mature forests, but are also prone to wind damage. Native to N.E. Iowa and the only pine native to Iowa (before pioneer settlement), they have been widely planted elsewhere in the state (including at Founder's Grove at ICNC). White Pine was the backbone of the lumber industry in the Midwest during the 1800s when the pine forests of Wisconsin and Minnesota supplied lumber to build homes and barns on the Iowa prairies.

SPRUCE, NORWAY

BARK: Red-brown, later turning gray with flaking scales or plates.

BRANCHING/LEAFING PATTERN: N/A-coniferous.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100 ft.	Width: 40-50 ft.
Shape	Pyramidal with branches drooping.	
Location	Prefers moist, cool areas, but is adaptable. Often found near streams or lakes.	

OBSERVABLE LEAVES: Needles are single, angular or four-sided, yellow-green in color and slightly curved. More needles appear on the top side of the twigs and usually point forward. Foliage appears to droop on mature trees, particularly the lower heavier branches.

OBSERVABLE FRUIT AND FLOWERS: Cones are 4 to 7 inches long, light brown and hang down.

TWIGS AND BUDS: Slender and pliable, the light brown twigs have forward pointing needles, with more usually appearing on the top side. Terminal buds are dark brown, scaly, and bullet shaped.

ICNC MAP LOCATION: Sense of Wonder Trail-#32 (north of barn)

OTHER FACTS OF INTEREST: Native to Europe and fast growing, Norway Spruce has been planted widely in Iowa for windbreaks and ornamental use.

SYCAMORE

BARK: Distinctive for its mottled colored trunk and branches, appearing in a camouflage pattern at mid-tree, transitioning to all white in upper branches.



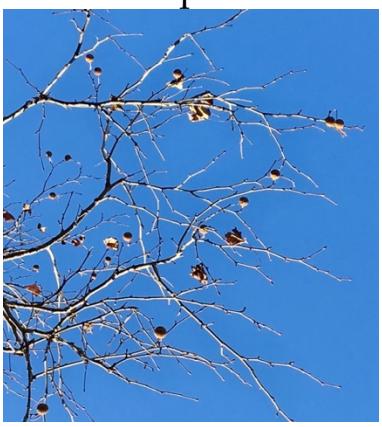
BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 75-100+ ft.	Width: 75-100+ ft.
Shape	Large tree with massive trunk, wide spreading crown and large crooked branches.	
Location	Prefers deep, moist, rich soil. Commonly found in bottomlands and near water features. Prefers part shade to full sun.	

OBSERVABLE LEAVES: Leaves frequently persist into winter and are also found on the ground. They are large (4-7 inches), broadly ovate with 3 or 5 shallow, broad, short-pointed lobes. Leaf edges are wavy with scattered teeth.


OBSERVABLE FRUIT AND FLOWERS: Fruit appears as individual brown spherical clusters on long stalks composed of many narrow nutlets or "achenes" with hair tufts. The fruit often persists on the tree into winter.



TWIGS AND BUDS: Twigs are green to yellow-brown, slender, zigzag shaped and may have ring scars at leaf nodes encircling the buds. Buds are blunt-pointed and red-brown.


ICNC MAP LOCATION: Blue Bird Trail-#33

OTHER FACTS OF INTEREST: One of the tallest trees in North America, stately, and fast growing, Sycamores are a popular ornamental. They are, however, susceptible to a fungal disease, anthracnose, that is not fatal but causes leaf and bud loss. Its wood is hard, strong, and resistant to shock, although subject to quick decay when exposed to moisture. It is used for veneers, flooring, and butcher blocks because it is hard to split.

WALNUT, BLACK

BARK: Medium to dark gray with mostly vertical interlacing furrows. Shaving the bark surface reveals a dark brown colored inner bark.

Dark Brown Inner Bark

BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 50-75 ft.	Width: 50-70 ft.
Shape	Typically has a full, well-formed trunk with few lower branches. The crown is oval to rounded and somewhat open.	
Location	Rich, well-drained soils of bottomlands and lower slopes. Tolerant of drier soils in which it will grow more slowly. Prefers part shade to full sun.	

OBSERVABLE LEAVES: Generally not available. However, the stem-like rachises to which the leaflets were once attached may persist on the tree and be prominent on the ground also (see reference in photo below).

OBSERVABLE FRUIT AND FLOWERS: Hard yellow-green fruit husk about 1½-2 inches in diameter, turning black as it decomposes in winter. The nut is brown with an irregular-ridged shell.


Black Husk with Nut Piece


Black Husk with Full Nut


Full Nut Halved with Rachises

TWIGS AND BUDS: Twigs are stout and gray-green or light brown in color. Terminal bud is light brown with many tiny white hairs covering the surface. Leaf scars are notable for their 3 vascular bundle scars creating a "monkey face" appearance.

ICNC MAP LOCATION: Bluebird Trail and Christiansen Prairie Trail-#34

OTHER FACTS OF INTEREST: Black Walnut is the highest valued native wood grown in Iowa. It is used for furniture, gunstocks and veneer. It is also prized for its nuts, which provide a distinctive taste for baked products. Black Walnut produces a growth-inhibiting toxin called juglone, which affects surrounding plants.

WILLOW, BLACK

BARK: Mature trunks are dark brown to black and deeply furrowed. Often grows with multiple trunks.

BRANCHING/LEAFING PATTERN: Alternate.

SIZE, SHAPE AND LOCATION

Mature Size	Height: 30-60 ft.	Width: 25-60 ft.
Shape	Large, low branching tree with long branches and flexible stems that form a broad, open, round-topped crown.	
Location	Prefers moist soils. Found along ponds and streams. Needs full sun.	

OBSERVABLE LEAVES: A small number of leaves may persist into winter. They are narrow and taper-pointed with long, sharp curved tips and finely toothed margins.

OBSERVABLE FRUIT AND FLOWERS: Generally not available.

TWIGS AND BUDS: Twigs are very slender, yellowish-brown to red and very brittle at the base. Buds are reddish brown, ovoid, and small (less than ¼ inch long). Terminal buds are absent.

ICNC MAP LOCATION: Bena Trail-#35 (bridge over Bena Brook)

OTHER FACTS OF INTEREST: Willows are fast growing trees that can be used for riparian plantings to stabilize stream banks. Black willows are not typically used for shade or ornamental purposes. Native Americans and early settlers used willow bark to treat toothaches and other ailments. In 1829, a pain-relieving chemical, salicin, was effectively isolated from willow bark. It was from this chemical that the Bayer Company derived a stable form of acetylsalicylic acid, the first "aspirin", in the late 1800s. Willows are also known to produce a hormone that causes rapid rooting, in willows and other plants as well. "Willow Water" that is derived by soaking willow twigs in water, has been used to induce rapid rooting on newly planted trees and shrubs of all varieties. Many willow species are similar and difficult to distinguish in winter.

TREES INCLUDED IN THIS GUIDE

BROADLEAF (DECIDUOUS)	ICNC Location		Page #
	Trail	Loc.#	
Ash, Green	Wood Duck Way	1	25
Ash, White	Wood Duck Way	2	27
Aspen, Big-tooth	Bena	3	29
Basswood, American (Amer. Linden) (stump with shoots)	Woodland	4	31
Birch, River	Woodland	5	33
Black Locust	Woodland	6	35
Box Elder	Sense of Wonder	7	37
Buckeye, Ohio	Bluebird, Sense of Wonder, Wood Duck	7B	39
Catalpa, Northern	Bena	8	41
Cherry, Black	Connector trail to Amphitheater	11	47
Cherry, Choke (Chokecherry)	Not at ICNC	N/A	49
Cottonwood, Eastern	Wood Duck, Bluebird	13	51
Dogwood, Roughleaf	Bluebird	13B	53
Elm, American	Woodland	14	55
Elm, Slippery	Woodland	14B	57
Hackberry	Bluebird, Woodland	16	61
Hickory, Bitternut	Woodland	18	63
Hickory, Shagbark	Woodland	19	65
Honey Locust	Blue Bird, Woodland	20	67
Hophornbeam (Ironwood)	Woodland	21	69
Hornbeam, American	Off Bena at bank of brook	21B	71
Kentucky Coffee Tree	Bluebird	21C	73
Maple, Silver	Sense of Wonder, Wood Duck Way	22	77
Maple Sugar	Sense of Wonder	23	79
Mulberry, White	Woodland, Christiansen	24	81
Oak, Black	Connector on east side of Stimple Prairie	24B	83
Oak, Bur	Bena	25	85
Oak, Northern Red	Woodland	26	89

Oak, Pin	Bena	27	91
Oak, Swamp White	Bena, Wood Duck Way	28	93
Oak, White	Woodland	29	95
Sycamore	Blue Bird	33	105
Walnut, Black	Christiansen, Bluebird	34	107
Willow, Black	Bena	35	109

EVERGREEN (CONIFEROUS)	**ICNC Location**		**Page #**
	Trail	**Loc.#**	
Cedar, Eastern Red	Blue Bird	9	43
Cedar, Northern White	Sense of Wonder	10	45
Fir, Balsam	Sense of Wonder	15	59
Pine, Scotch (destroyed in derecho, original location designated)	Sense of Wonder	30	97
Pine, White	Woodland	31	101
Spruce, Norway	Sense of Wonder	32	103

ICNC TREE LOCATION MAP