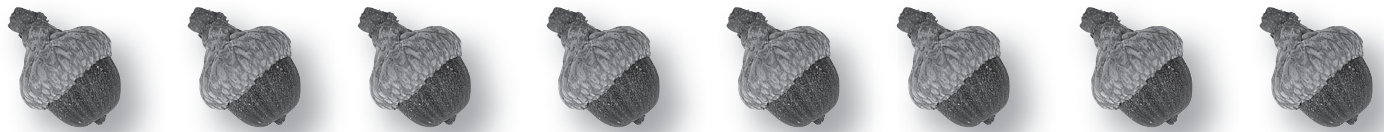




State of Illinois
Department of Natural Resources



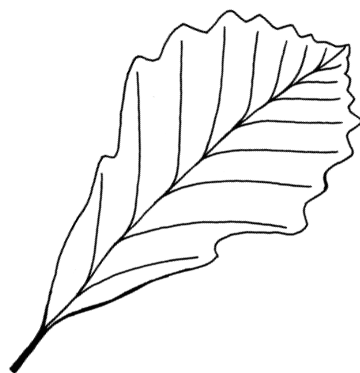
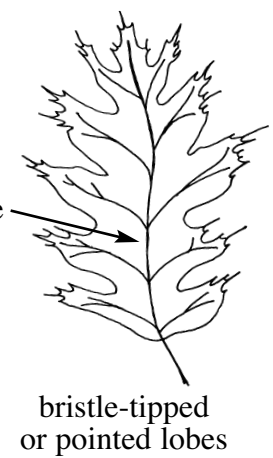
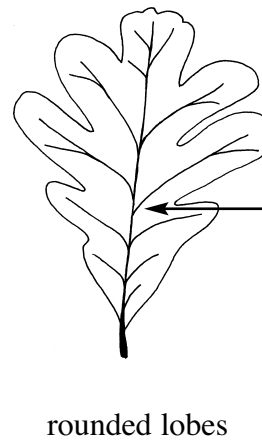
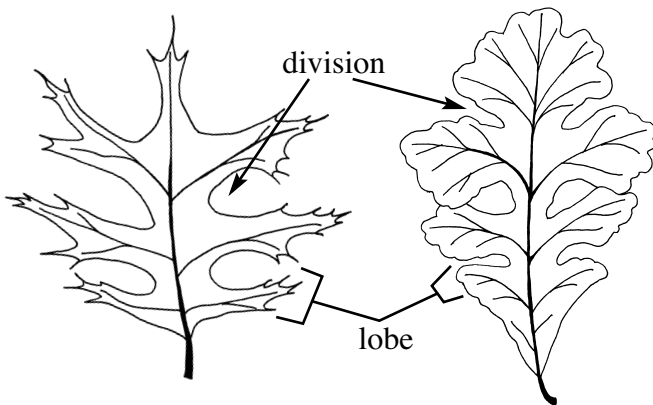
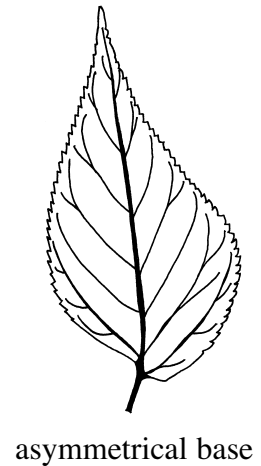
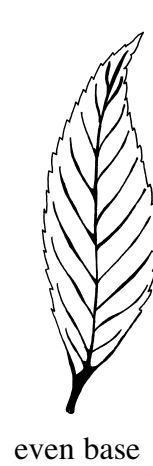
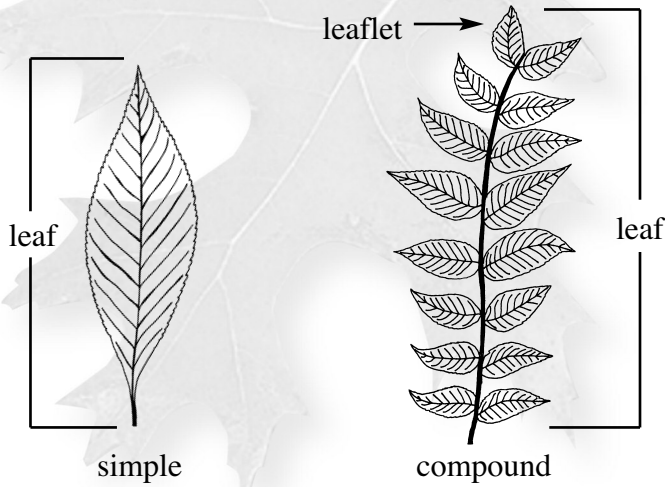
Illinois Trees

An Identification
and Activity Book



Identification Characteristics

NOTE: No leaf, fruit or seed in this booklet is drawn in its actual size nor shown in proportion to actual size.



wavy edge



toothed edge



smooth edge

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Using This Activity Book - For the Educator

This activity book is designed to supplement the information provided in the *Illinois Trees* poster from the Illinois Department of Natural Resources (IDNR). When using this book, students will become familiar with identification characteristics of leaves (page 2) and will be able to identify tree species by using a dichotomous key to these leaves (page 5). Students will also become familiar with traits of the tree species and key vocabulary words. Although it is not necessary to have a copy of the *Illinois Trees* poster to complete this activity book, if you are a teacher and would like a copy for your classroom, you may obtain one from the IDNR through the publications order form at <https://dnr2.illinois.gov/teachkids/>.

Using This Activity Book - For the Student

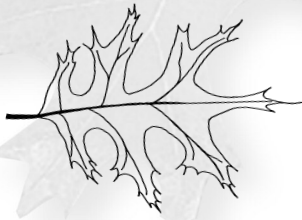
This activity book is designed to help you learn more about the tree species included on the *Illinois Trees* poster from the Illinois Department of Natural Resources. If you study the tree identification characteristics (page 2) and follow the directions (pages 4 and 5), you'll be able to identify the 15 tree species just by looking at their leaves. There are more activities for you to complete as you progress through the book, too. Once you identify all of the species, can you find leaves from trees in your area to match them?

Forest Facts

- *The white oak, Quercus alba, is the State Tree of Illinois. Found throughout the state, the white oak is an excellent shade tree, and its wood is used for lumber, barrels, flooring, furniture and construction.*
- *Known for its strength, white oak wood was used in the construction of the U.S.S. Constitution. During a naval battle in the War of 1812, soldiers reported that cannon balls bounced off the hull of this ship, leading to its nickname of "Old Ironsides."*
- *More than 250 species of trees (native and introduced) have been found growing in Illinois.*
- *More than 75 percent of the wildlife habitat in Illinois is in the forests. More than 420 vertebrate species use forest habitats. About 120 bird species nest in Illinois forests.*
- *Ninety-eight percent of Illinois forests are composed of hardwood species, and 43 percent of the hardwood species are white and red oak.*
- *In 1820, forests covered 13.8 million acres of Illinois (38 percent of the state). The United States Forest Service 1998 inventory estimated that 4.33 million acres of forests (12 percent of the state) exist in the state.*

Leaf Identification

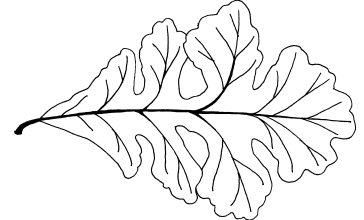
A tree can often be identified just by looking at one of its leaves, if you know what to look for. On this page are drawings of leaves from 15 different tree species. Use the “Key” on the next page to help you identify each species. Then find the matching leaf in the booklet and fill in the tree’s “Common Name.” The “Identification Characteristics” on page two should help you understand some of the terms. Start with number 1 at the top of the Key for each leaf. You have two choices, 1a and 1b. Select the one that describes this leaf. Your choice will tell you which number to go to next. Again, you have a choice of a or b. When you have made your choice, you will find the name of the tree or be directed to another number. Answers can be found on page 23.



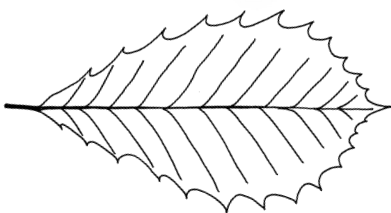
page 6



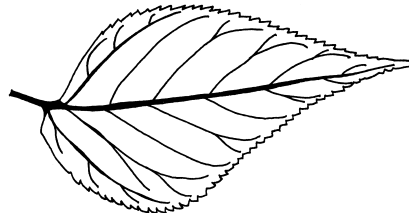
page 7



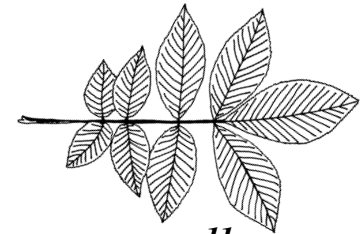
page 8



page 9



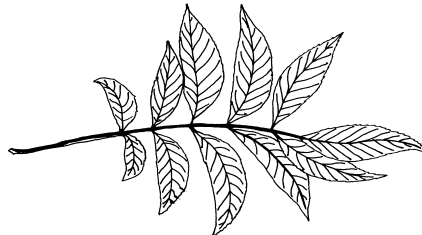
page 10



page 11



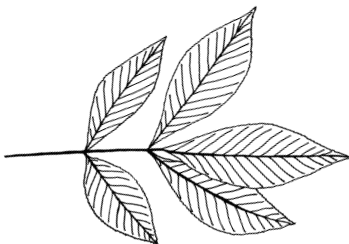
page 12



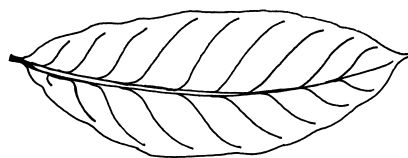
page 13



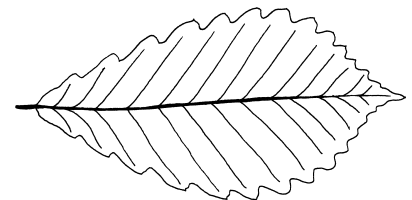
page 14



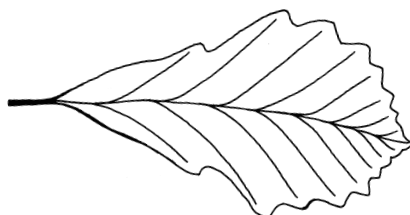
page 15



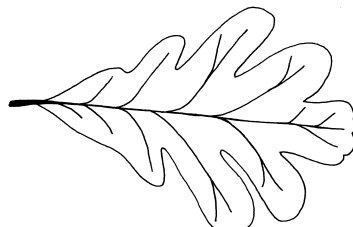
page 16



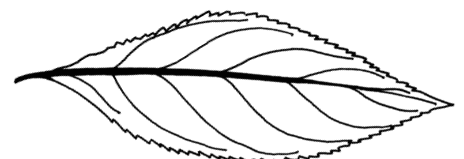
page 17



page 18

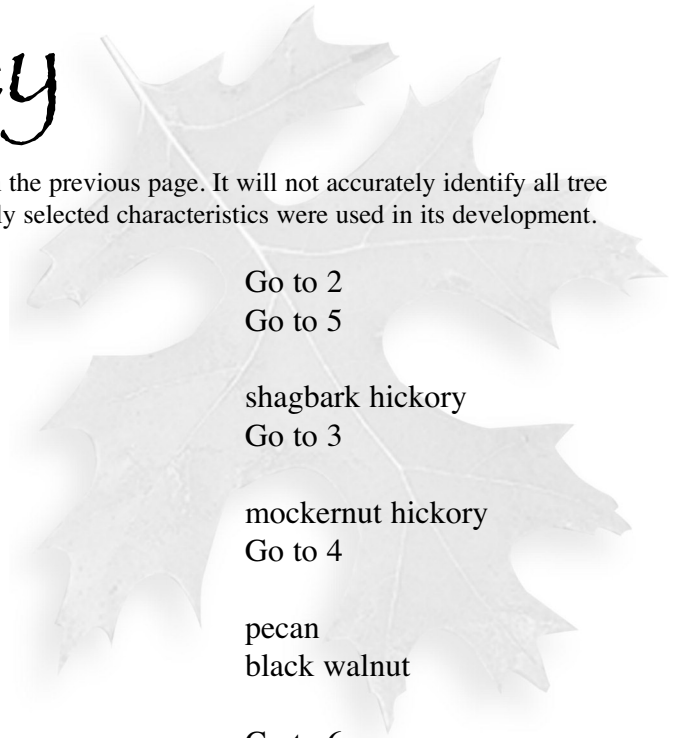


page 19



page 20

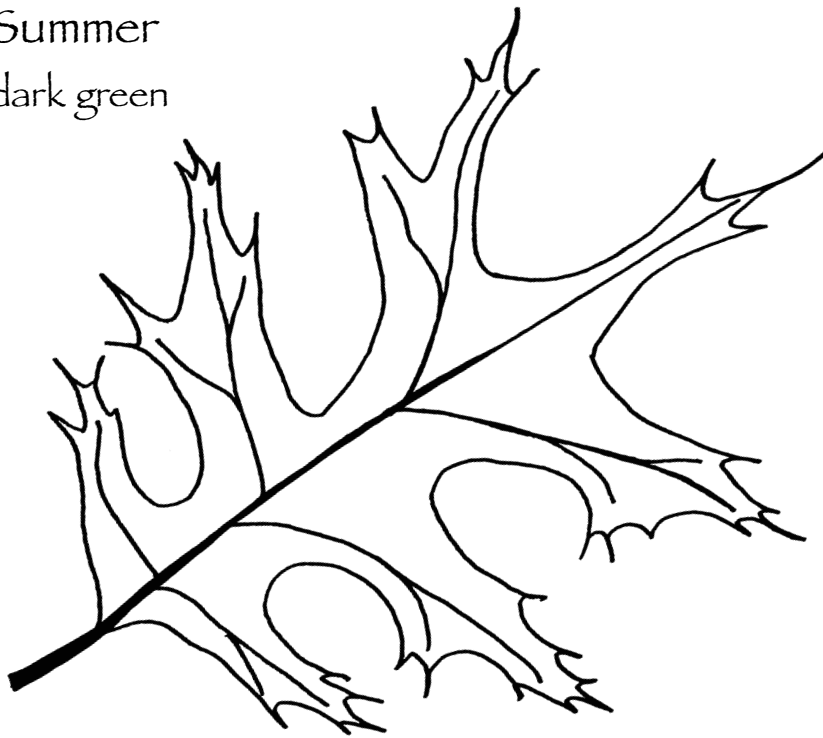
Key



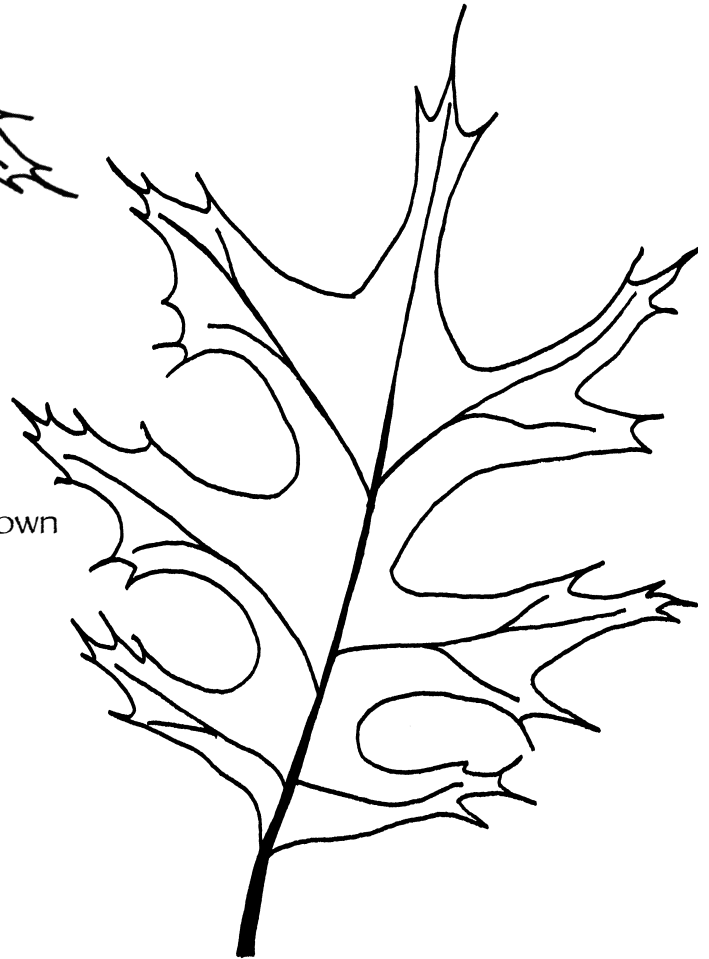
Please note: This key was developed only for the illustrations used on the previous page. It will not accurately identify all tree species and may not identify these 15 species from the wild, since only selected characteristics were used in its development.

- | | |
|--|--------------------|
| 1a) compound leaf | Go to 2 |
| 1b) simple leaf | Go to 5 |
| 2a) five leaflets present | shagbark hickory |
| 2b) more than five leaflets present | Go to 3 |
| 3a) nine leaflets present | mockernut hickory |
| 3b) more than nine leaflets present | Go to 4 |
| 4a) 11 leaflets present | pecan |
| 4b) more than 11 leaflets present | black walnut |
| 5a) leaf without lobes | Go to 6 |
| 5b) leaf with lobes | Go to 11 |
| 6a) leaf edge smooth | shingle oak |
| 6b) leaf not as described in 6a | Go to 7 |
| 7a) leaf base asymmetrical (not even) | hackberry |
| 7b) leaf base even on both sides | Go to 8 |
| 8a) leaf edge finely-toothed | wild black cherry |
| 8b) leaf not as described in 8a | Go to 9 |
| 9a) leaf edge with large, sharp teeth (points) | chinkapin oak |
| 9b) leaf edge wavy | Go to 10 |
| 10a) leaf wavy along all edges | swamp chestnut oak |
| 10b) leaf wavy along only part of edges | swamp white oak |
| 11a) leaf with rounded lobes | Go to 12 |
| 11b) leaf with pointed tips on lobes | Go to 13 |
| 12a) divisions in leaf reach almost to midline of leaf | bur oak |
| 12b) divisions in leaf are shallow | white oak |
| 13a) leaf with 11 lobes | northern red oak |
| 13b) leaf not as described in 13a | Go to 14 |
| 14a) leaf with five lobes | pin oak |
| 14b) leaf with seven lobes | black oak |

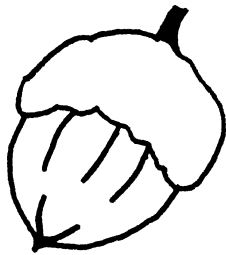
Summer
dark green



Fall
yellow-brown



Acorn
red-brown



Common Name: _____

Scientific Name: *Quercus velutina*

Illinois Habitat: This tree grows in upland forests statewide.

Flowering: Flowering occurs in April and May as the leaves unfold. Male and female flowers are separate but on the same tree. Flowers do not have petals. Male flowers develop in drooping clusters, while female flowers are in groups of one to four.

Uses: The wood is used in construction, for fuel and for making fence posts.

General Description: This tree may grow to a height of 80 feet and a diameter of about three and one-half feet.

Bark: The bark is black, with deep ridges. The inner bark is yellow or orange.

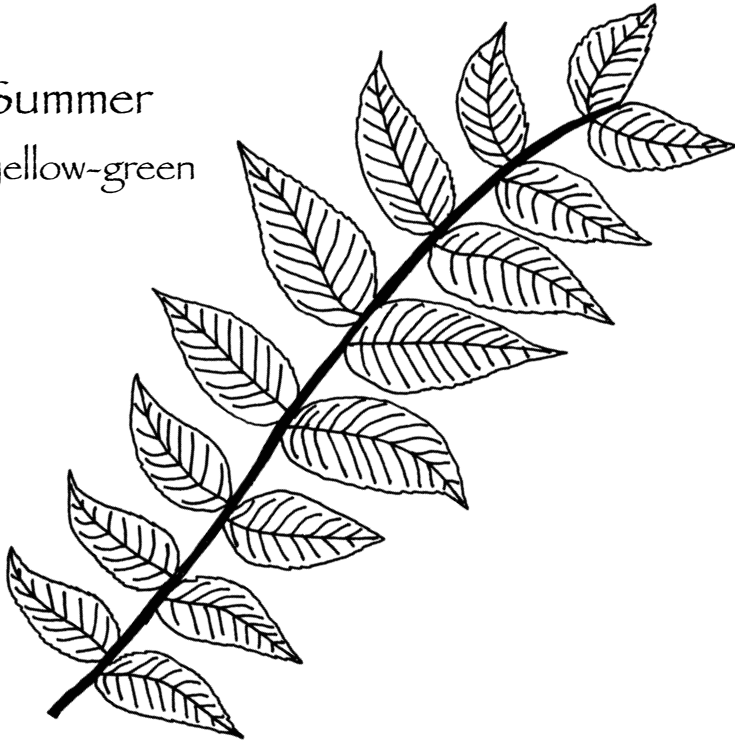
Leaf: Leaves are arranged alternately on the stem. Each leaf has seven to nine shallow lobes, each lobe bristle-tipped. A leaf may be 10 inches long and eight inches wide with a five-inch leafstalk.

Fruit: The acorn may be up to three-fourths inch in length. Acorns develop singly or in pairs. The acorn is not more than one-half enclosed by the cup. The cup has a ragged edge.

Fill Me In!

U__l__n__ forests are those that grow on land which is not likely to be flooded.

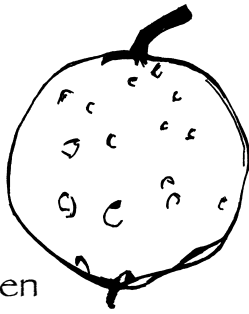
Summer
yellow-green



Fall
yellow



Fruit
green or
yellow-green



Nut
dark brown

Common Name: _____

Scientific Name: *Juglans nigra*

Illinois Habitat: This tree grows in rich woodlands statewide.

Flowering: Flowering occurs in April and May, when the leaves are partly grown. Male and female flowers are separate but on the same tree. Male flowers develop in yellow-green catkins. Female flowers are arranged in small spikes. The flowers do not have petals.

Uses: The wood of this tree is used for making furniture, cabinets and in interior finishing. The nuts are used in cooking and as food by wildlife.

General Description: This tree may grow to a height of 150 feet and a trunk diameter of five feet. The pith (inside the twigs) is divided by partitions.

Bark: The bark is thick and black with deep ridges.

Leaf: Leaves are arranged alternately on the stem. A leaf may have from 15 to 23 leaflets. Each leaflet may be up to three and one-half inches long and one and one-half inches wide. The leaflet is toothed along the edges and is smooth above and hairy below.

Fruit: The spherical fruits develop singly or in pairs. Each fruit may be up to two inches in diameter. The husk on the fruit is thick, and the enclosed nut is hard, dark brown and deeply ridged. The seed tastes sweet.

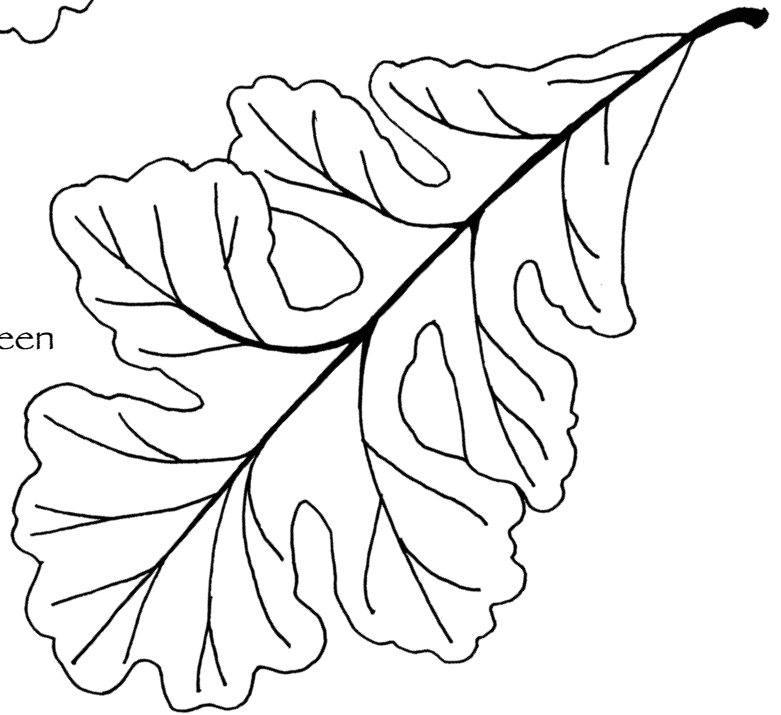
Fill Me In!

Rich w__od__an__s are those that have many nutrients in the soil.

Summer
dark green



Fall
yellow-green



Acorn
dark brown



Common Name: _____

Scientific Name: *Quercus macrocarpa*

Illinois Habitat: This tree may be found statewide growing almost anywhere.

Flowering: Flowering occurs in April and May, as its leaves unfold. Male and female flowers are separate but on the same tree. Flowers do not have petals. Male flowers develop in drooping catkins. Female flowers are arranged in small clusters.

Uses: The wood is used in making cabinets, for shipbuilding, for fenceposts and for fuel.

General Description: This tree may grow to 120 feet tall with a trunk diameter of five feet. It is also known as the mossy-cup oak.

Bark: The bark is dark brown or yellow-brown with deep ridges.

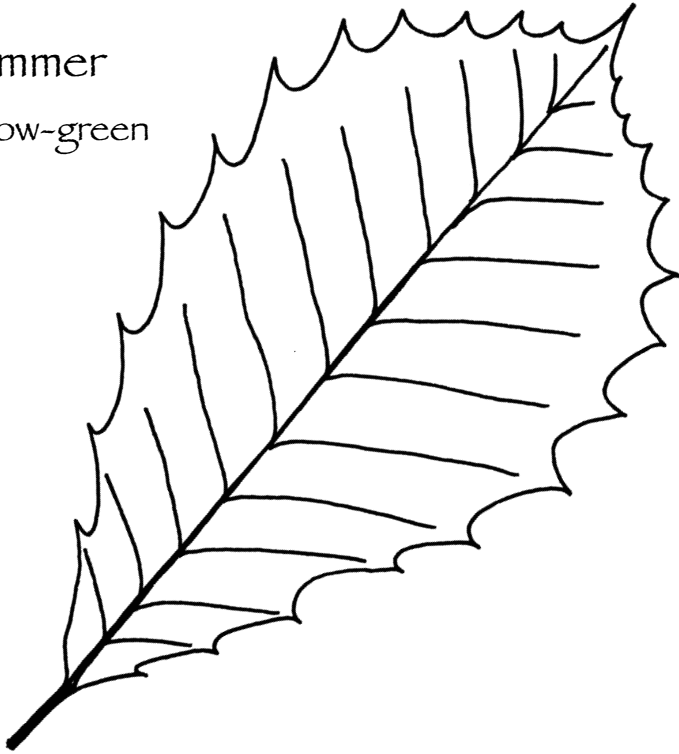
Leaf: Leaves are arranged alternately along the stem. The leaf is broad at the upper end and coarsely round-toothed. Each leaf has five to seven lobes. The leaf is smooth or slightly hairy on the upper surface and hairy on the lower surface. A single leaf may be 14 inches long and seven inches wide with a one-inch leaf stalk.

Fruit: The acorn usually grows solitary. It may be up to one and three-fourths inches long. The hairy cup covers one-half to nearly all of the acorn and has a fringe of long scales.

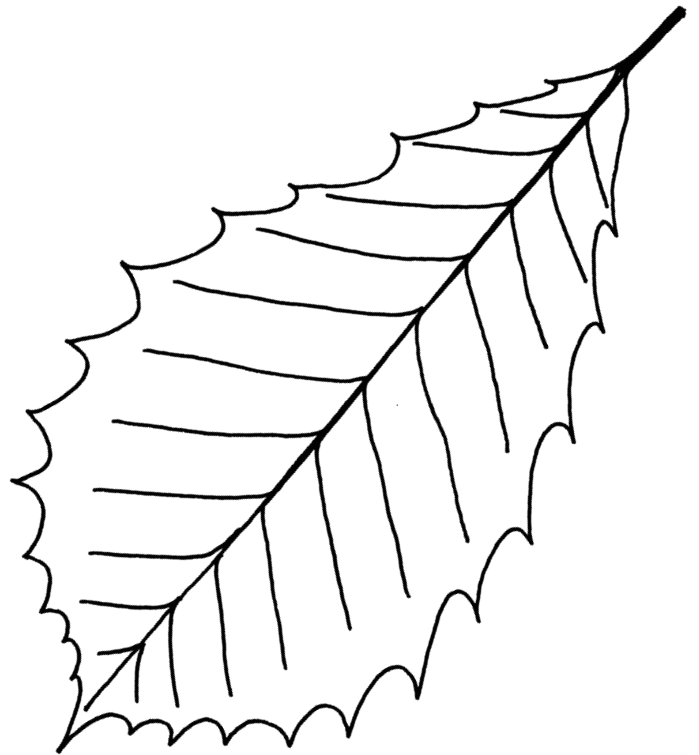
Fill Me In!

The tiny flowers of this tree have no p__t__ls.

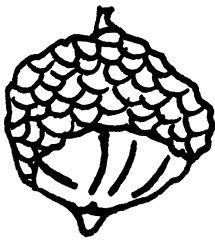
Summer
yellow-green



Fall
yellow



Acorn
red-brown



Common Name: _____

Scientific Name: *Quercus muhlenbergii*

Illinois Habitat: This tree grows on low, rich slopes, wooded hillsides and dry cliffs statewide.

Flowering: Flowering occurs in April and May. Male and female flowers are separate but on the same tree. Flowers do not have petals. Male flowers develop in catkins. Female flowers are arranged in small groups.

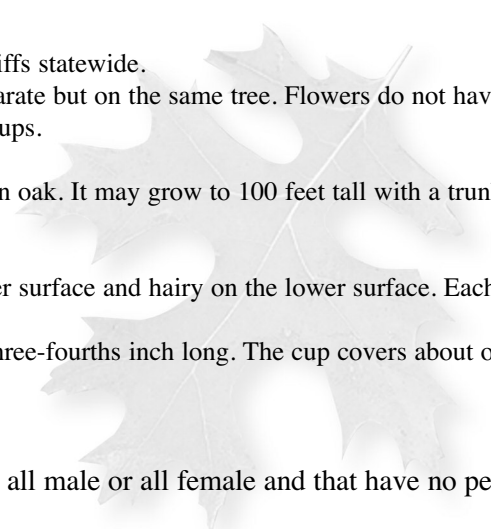
Uses: The wood is used for fuel and for making fence posts and railroad ties.

General Description: This tree is also known as yellow chestnut oak or chinkapin oak. It may grow to 100 feet tall with a trunk diameter of four feet.

Bark: The bark is pale gray with scaly ridges.

Leaf: Leaves are arranged alternately on the stem. The leaf is smooth on the upper surface and hairy on the lower surface. Each leaf may be up to eight inches long and five inches wide.

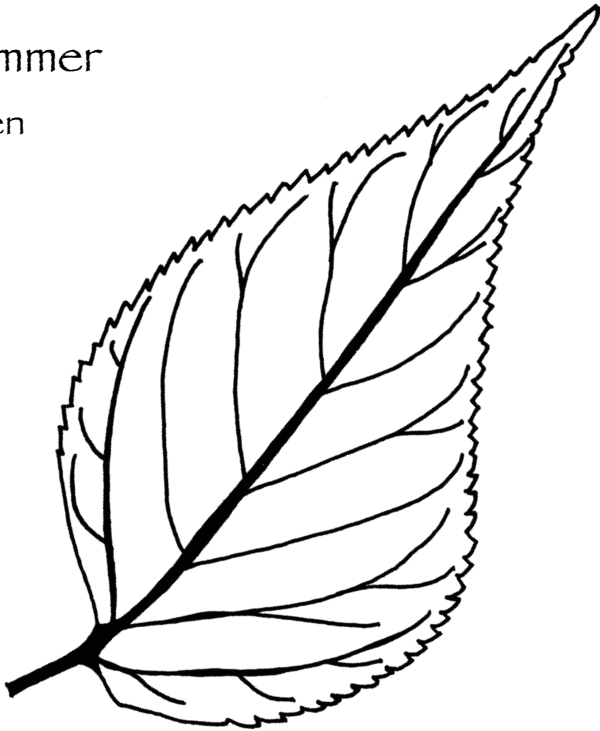
Fruit: Acorns are borne in groups of one or two. Each acorn is ovoid and up to three-fourths inch long. The cup covers about one-half of the acorn. The cup has hairy scales.



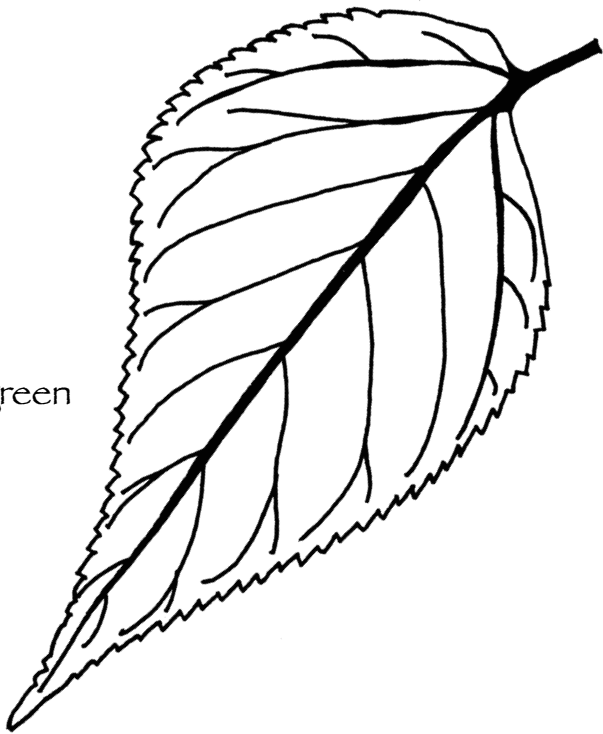
Fill Me In!

A c__t__in is a spike of flowers that are either all male or all female and that have no petals.

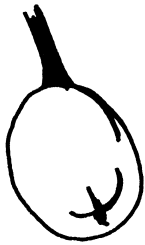
Summer
green



Fall
yellow-green



Fruit
dark purple



Common Name: _____

Scientific Name: *Celtis occidentalis*

Illinois Habitat: This tree grows in bottomland woodlands statewide.

Flowering: Flowering occurs in April and May after its leaves are partially grown. The green-yellow flowers are arranged in drooping clusters (sometimes singly). There are no petals.

Uses: The wood is used for fence posts and furniture.

General Description: This tree may grow to 80 feet tall with a trunk diameter of five feet.

Bark: The bark is gray and “warty,” becoming scaly and rough on old trees.

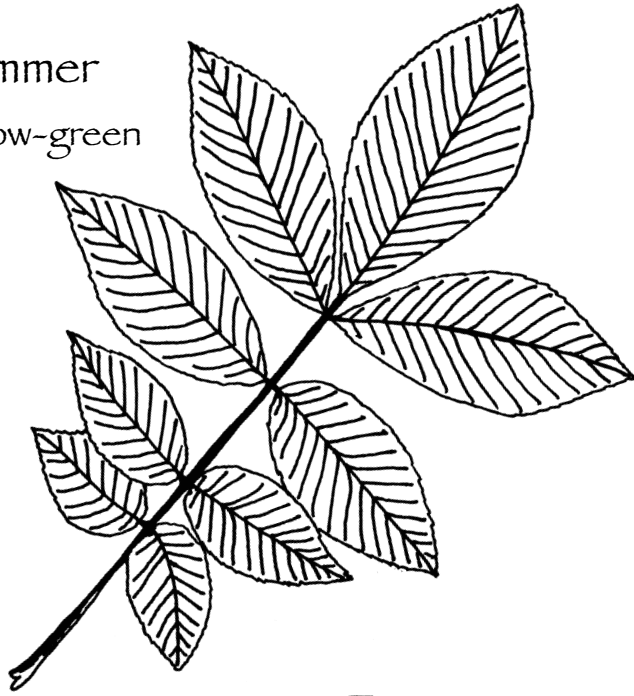
Leaf: Leaves are arranged alternately on the stem. Each leaf is uneven at its base. Leaves are usually coarsely toothed. A single leaf may be six inches long and three inches wide.

Fruit: The fruit is about one-third inch in diameter and contains one seed. Fruits ripen in September and October.

Fill Me In!

Bot_oml_n_ woodlands are found along streams and rivers. They are often covered by flood waters.

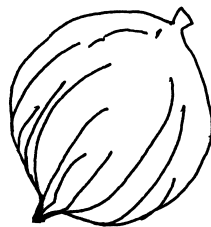
Summer
yellow-green



Fall
yellow-brown



Fruit
red-brown



Nut
red-brown

Common Name: _____

Scientific Name: *Carya tomentosa*

Illinois Habitat: This tree grows on dry, wooded slopes and in shaded woods in the southern two-thirds of the state.

Flowering: Flowering occurs in the spring after the leaves begin to unfold. Male and female flowers are separate but on the same tree. Flowers do not have petals. Male flowers develop in drooping catkins. Female flowers are arranged in groups of two to five.

Uses: The wood is used for tool handles, as fuel and for fence posts.

General Description: Also known as white hickory, this tree may grow to a height of 90 feet and a trunk diameter of three feet.

Bark: The bark is dark gray with shallow furrows, often producing a diamond-shaped pattern.

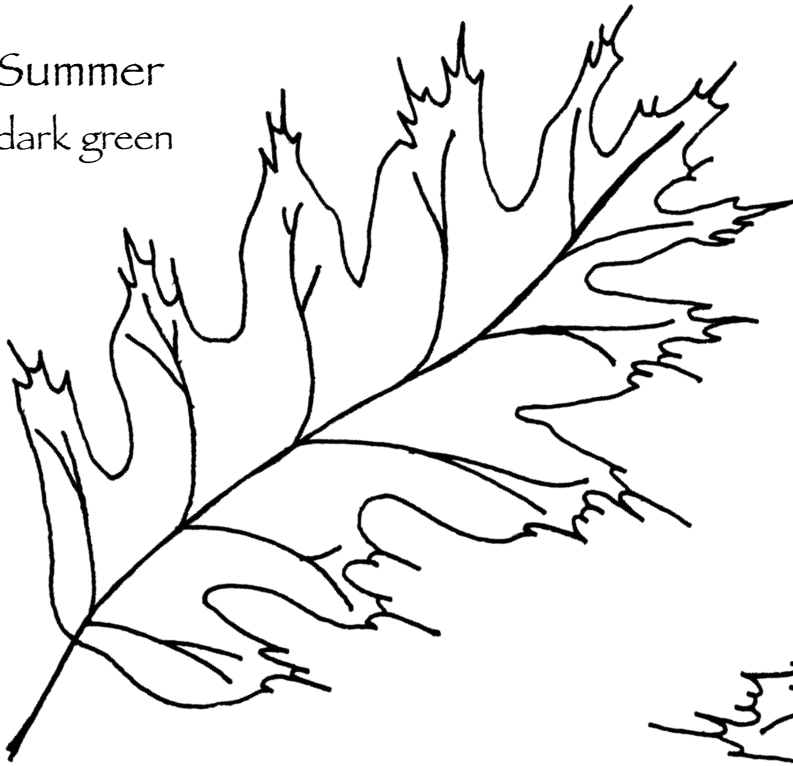
Leaf: Leaves are arranged alternately along the stem. Each leaf has five to nine leaflets. A leaflet may be up to eight inches long and four inches wide. The leaflet is finely toothed along the edge and is hairy on the upper and lower surfaces. Leafstalks and twigs are also hairy.

Fruit: The fruit is about two inches wide. The nut has a small, sweet seed.

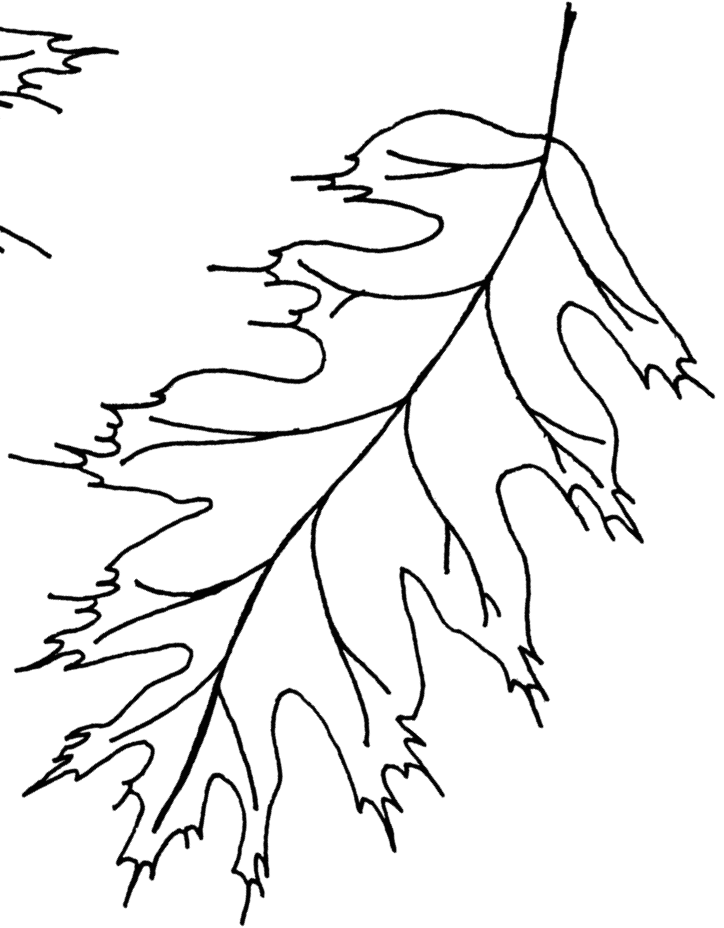
Fill Me In!

This tree has a compound leaf, meaning that its leaf is made of several lea__le__s.

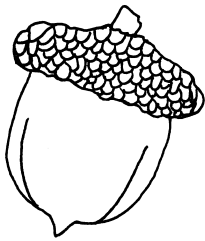
Summer
dark green



Fall
red



Acorn
pale brown



Common Name: _____
Scientific Name: *Quercus rubra*

Illinois Habitat: This tree grows statewide in rich, upland woods, along river banks and on well-drained slopes.

Flowering: Flowering occurs in April and May as its leaves unfold. Male and female flowers are separate but on the same tree. The flowers do not have petals. Male flowers develop in drooping catkins. Female flowers are arranged in groups of one to three.

Uses: The wood is used for interior finishing, for making furniture, as fuel and for fence posts.

General Description: This tree may grow to a height of 80 feet and a trunk diameter of three feet.

Bark: The bark is gray-brown, red-brown, black or gray. Dark stripes can be seen in the bark.

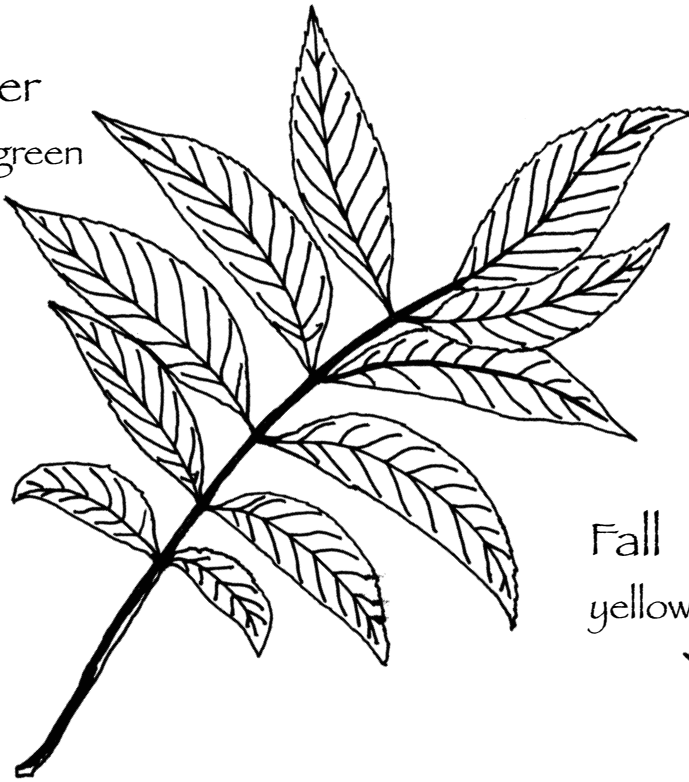
Leaf: Leaves are arranged alternately on the stem. A leaf has seven to 11 shallow lobes, each tipped by bristles. A leaf may be 10 inches long and up to six inches wide on a two-inch leafstalk.

Fruit: Acorns may be solitary or in pairs. The acorn is ovoid, up to one and one-half inches long and covered less than one-fourth by the cup. The cup has tight scales.

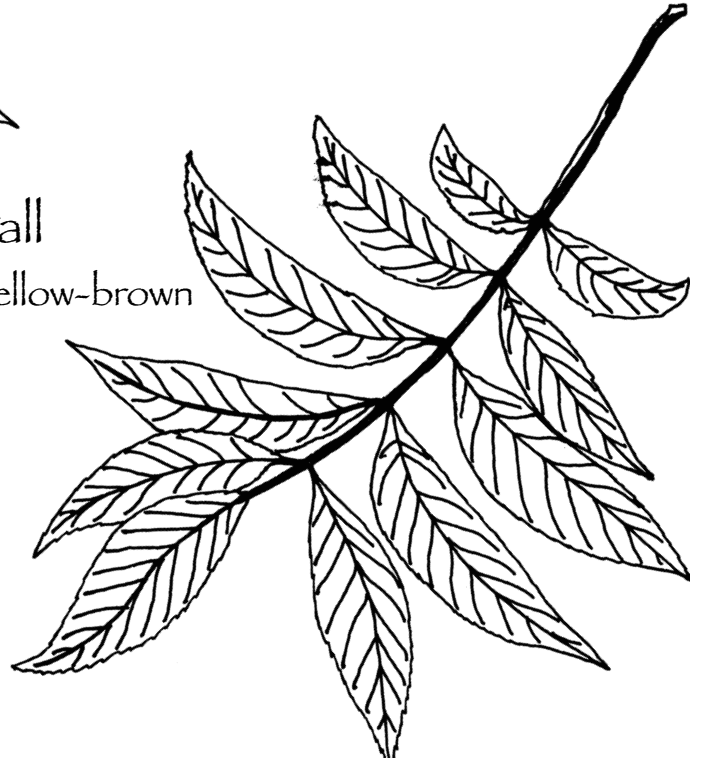
Fill Me In!

The wood of this tree is important for making __ur__i__ure.

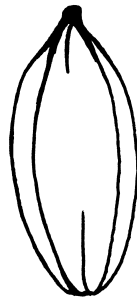
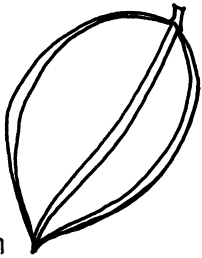
Summer
yellow-green



Fall
yellow-brown



Fruit
green-brown



Nut
red-brown with black marks

Common Name: _____

Scientific Name: *Carya illinoensis*

Illinois Habitat: This tree grows in the southern three-fourths of the state and along the Mississippi River. It is found in moist woods, particularly along rivers.

Flowering: Flowering occurs in April and May when the leaves are partly grown. Male and female flowers are separate but on the same tree. Male flowers develop in drooping, yellow-green catkins. Female flowers are arranged in shorter spikes. The flowers do not have petals.

Uses: The wood is used for interior finishing, for furniture, as fuel and for tool handles. Nuts provide food for wildlife and are used in cooking.

General Description: This tree may grow to a height of 150 feet and a trunk diameter of three feet. Its rounded crown spreads widely. The trunk is relatively short and straight.

Bark: The bark is red-brown with platelike scales.

Leaf: Leaves are arranged alternately along the stem. Each leaf has nine to 19 lance-shaped leaflets. Leaflets are double-toothed, smooth on the upper side and smooth or hairy on the lower side. A leaflet may be eight inches long and three inches wide.

Fruit: The ellipsoid nut is pointed at the tip. The nut is up to two inches long and one inch wide. The thin husk has four wings. The seed is sweet to the taste.

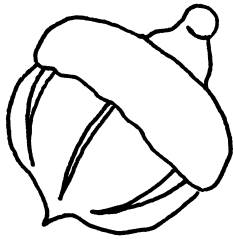
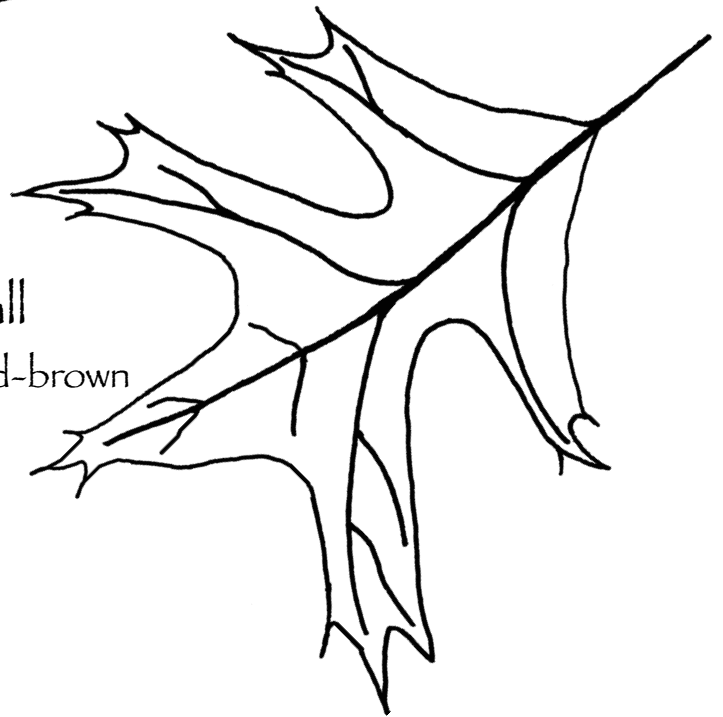
Fill Me In!

The nuts of this tree provide food for w__l__l__fe species, such as squirrels.

Summer
dark green



Fall
red-brown



Acorn
pale brown with dark lines

Common Name: _____

Scientific Name: *Quercus palustris*

Illinois Habitat: This tree grows in floodplain woods, along streams, at the edges of swamps and near ponds throughout Illinois.

Flowering: Flowering occurs from April through May. Male flowers develop on slender, drooping catkins. Female flowers are arranged in clusters. Male and female flowers are separate but on the same tree.

Uses: The acorns are a source of food for many wildlife species. The wood is used in general construction, for fuel and for fence posts. The tree is often planted as an ornamental.

General Description: This tree may grow to a height of 75 feet and a trunk diameter of about three feet. The narrowly rounded or oblong crown is supported by a straight trunk. Pinlike stubs develop low on the trunk. The lower branches droop.

Bark: The bark is light or dark brown with a few shallow ridges.

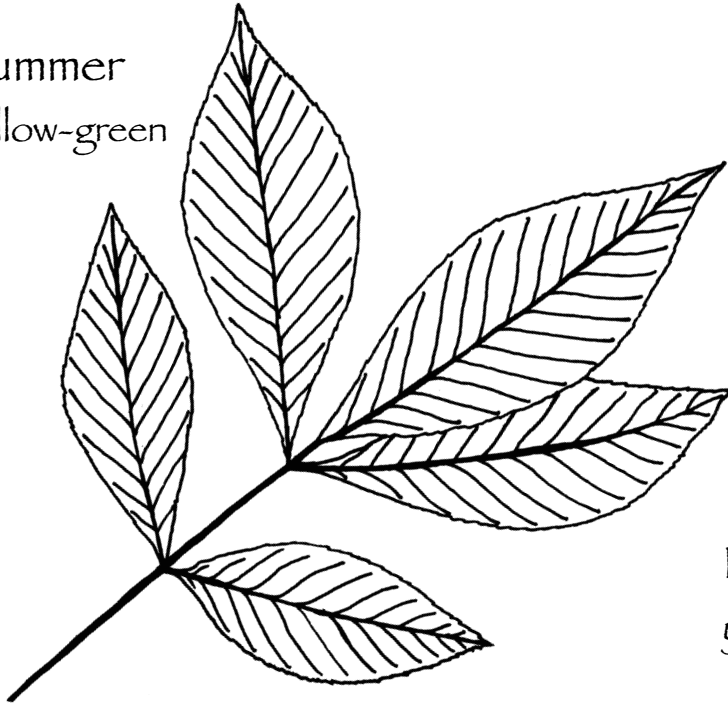
Leaf: A leaf may be up to seven inches long and is divided more than half way to the middle into five to seven lobes, each tipped with a bristle. Leaves are arranged alternately along the stem. The leafstalk may be up to two inches long.

Fruit: Acorns grow in clusters of one to four. An acorn may be up to one-half inch wide. The cup encloses less than one-fourth of the acorn.

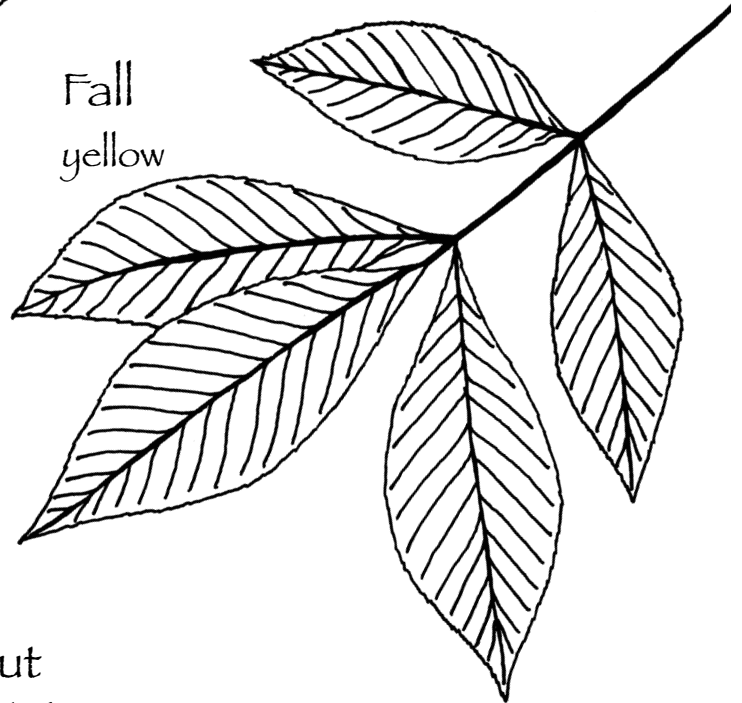
Fill Me In!

Plants that people grow to add beauty to their home or yard are called r ame tal plants.

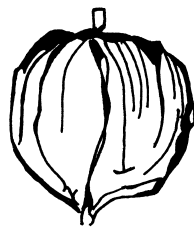
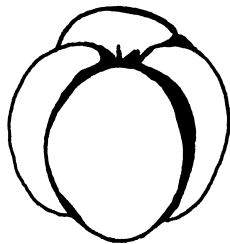
Summer
yellow-green



Fall
yellow



Fruit
yellow-green
to red-brown



Nut
pale brown

Common Name: _____

Scientific Name: *Carya ovata*

Illinois Habitat: This tree grows statewide in rich woods and upland woods.

Flowering: Flowering occurs during April and May after its leaves begin to unfold. Male and female flowers are separate but on the same tree. The flowers do not have petals. Male flowers develop in drooping catkins. Female flowers are arranged in groups of two to five.

Uses: The wood is used for tool handles, as fuel, for hickory-smoked cooking and for baseball bats. Nuts are used in cooking and as food by wildlife.

General Description: This tree may grow to a height of 80 feet and a trunk diameter of three and one-half feet. The crown is rounded with some of the branches hanging down.

Bark: The bark is gray. It separates into long, shredding scales giving the trunk a shaggy appearance.

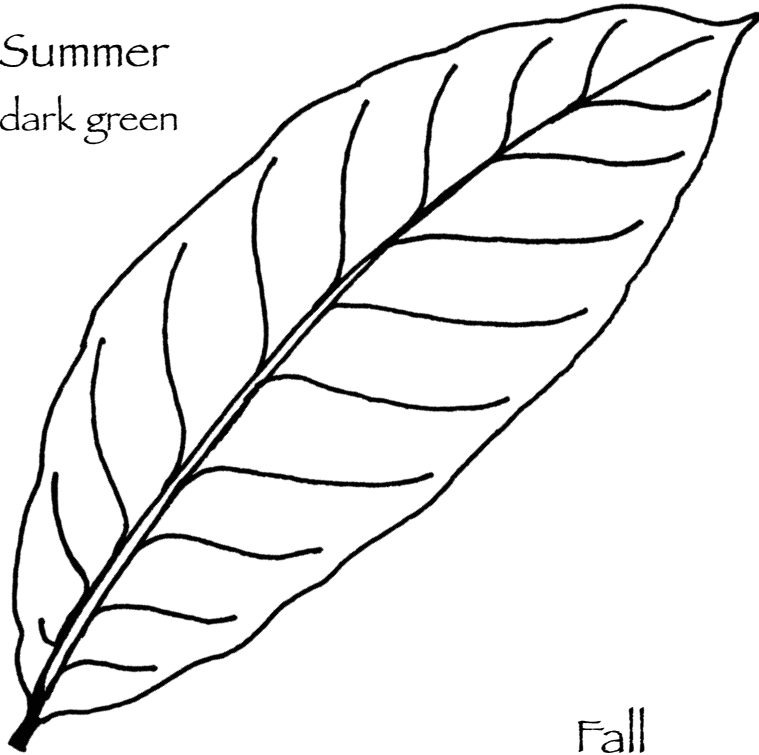
Leaf: Leaves are arranged alternately on the stem. A leaf has five to seven leaflets. The finely toothed leaflet may grow to 10 inches long and five inches wide. The leaf has a smooth upper surface and a smooth or somewhat hairy lower surface.

Fruit: The fruit grows to about two inches across. Its husk is about one-half inch thick. The four-angled, pale brown nut has meat that is sweet to the taste.

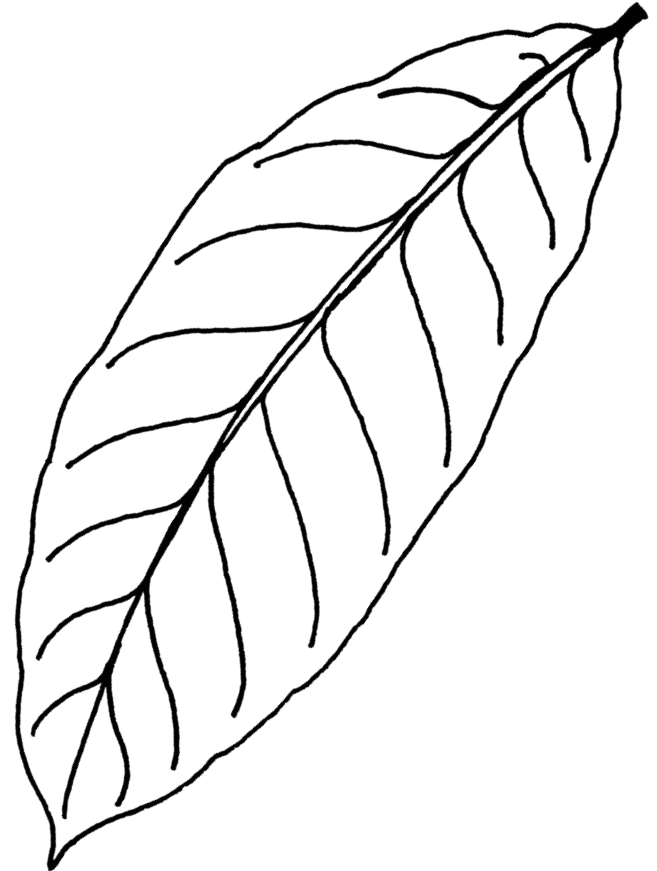
Fill Me In!

The wood of this tree is used to make _ase_al_b_t_.

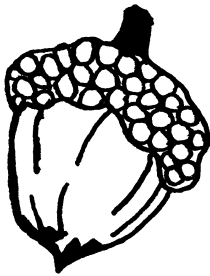
Summer
dark green



Fall
red-brown



Acorn
dark brown



Common Name: _____
Scientific Name: *Quercus imbricaria*

Illinois Habitat: This tree grows statewide in field edges and woods.

Flowering: Flowering occurs in April and May. Male and female flowers are separate but on the same tree. Flowers do not have petals. Male flowers develop in thin, yellow catkins. Female flowers are arranged in a small cluster.

Uses: The fruits, leaves, stems and buds provide a source of food for wildlife. The wood is used to produce shingles and for general construction.

General Description: Also known as Jack oak and laurel oak, this tree may grow to 70 feet tall with a trunk diameter of three feet. Its crown is rounded or oblong with many branches. The trunk is straight. The twigs show a star-shaped pith in cross-section.

Bark: The bark is dark brown with deep ridges.

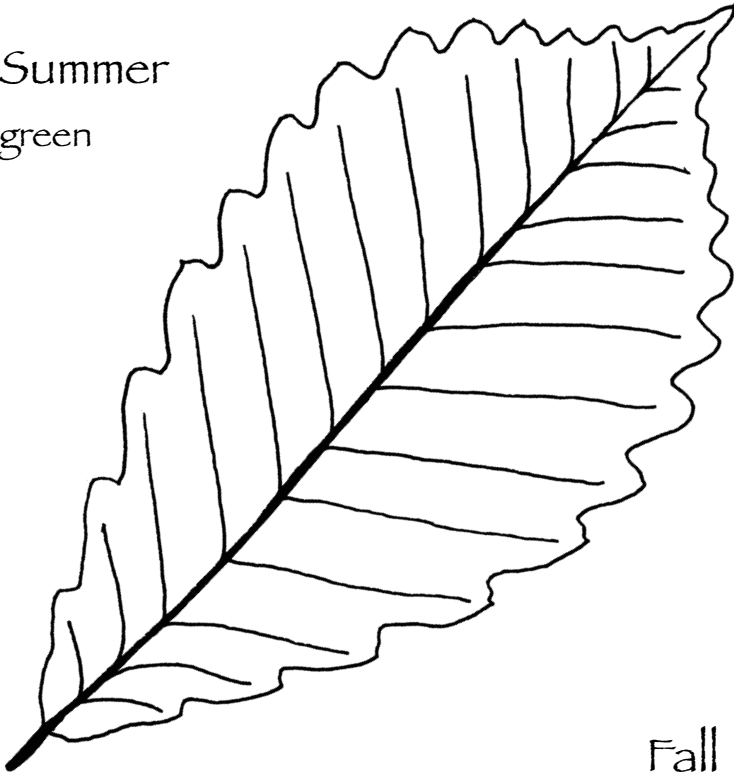
Leaf: Leaves are arranged alternately along the twigs. A leaf may be six inches long and two inches wide. Leaves are smooth and shiny on the upper surface and hairy on the lower surface. The hairy leafstalk is approximately one-half inch long.

Fruit: Acorns are borne solitary or in pairs on a short stalk. Less than half the acorn is enclosed by the slightly hairy cup.

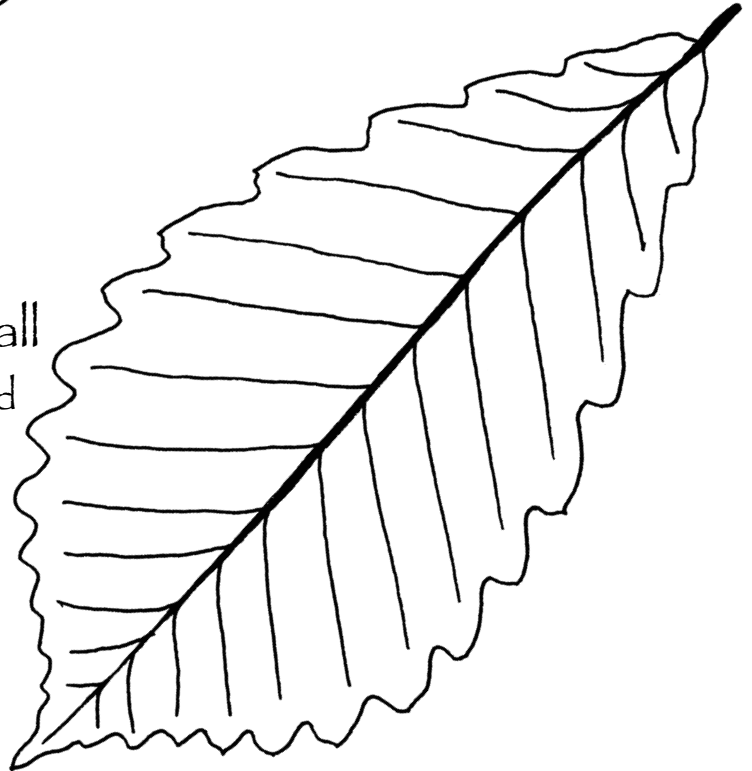
Fill Me In!

__i__h is the soft material found in the center of a twig or branch.

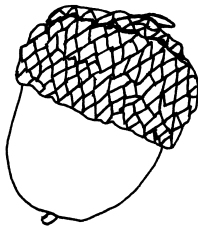
Summer
green



Fall
red



Acorn
brown



Common Name: _____

Scientific Name: *Quercus michauxii*

Illinois Habitat: This tree is found in the southern one-third of Illinois in low woods and swamps.

Flowering: Flowering occurs from April through May. Male and female flowers are separate but on the same tree. The flowers do not have petals. Male flowers develop in catkins. Female flowers are arranged in clusters.

Uses: The wood is used in general construction, as fuel and for fence posts.

General Description: Also known as the basket oak or the cow oak, this tree may attain a height of 100 feet and a trunk diameter of six feet. The crown is rounded.

Bark: The bark is gray and scaly.

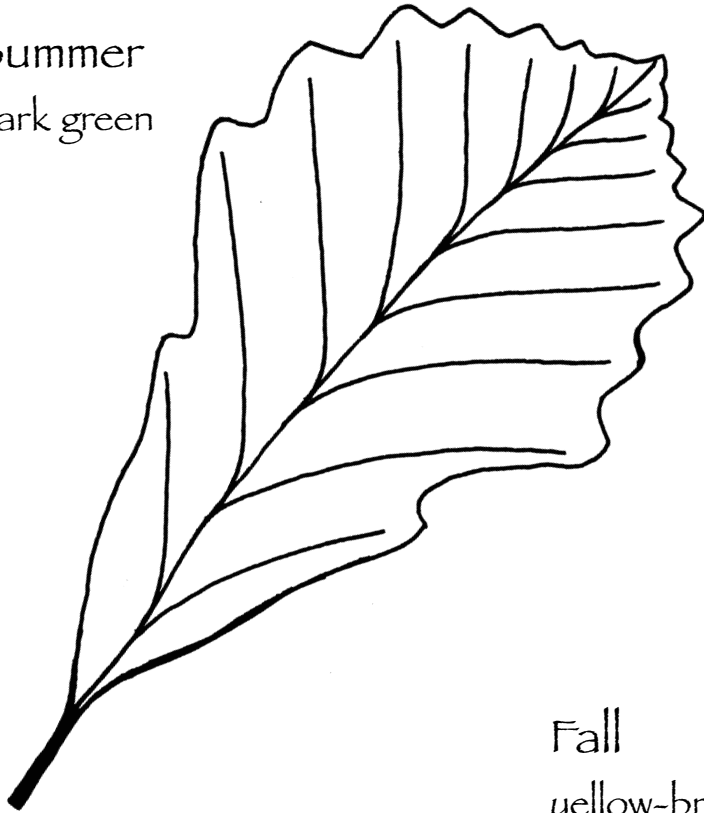
Leaf: Leaves are arranged alternately along the stem. The leaf is pointed at the tip and tapering at the base. A leaf may be 10 inches long and six inches wide. Leaf edges are scalloped. The hairy leafstalk may be one and one-half inches long.

Fruit: An acorn may grow to one and one-half inches long. Its shape is ovoid or ellipsoid. Acorns develop singly or in pairs and may or may not have a stalk. The thick, hairy cup encloses the acorn for about one-third of its length.

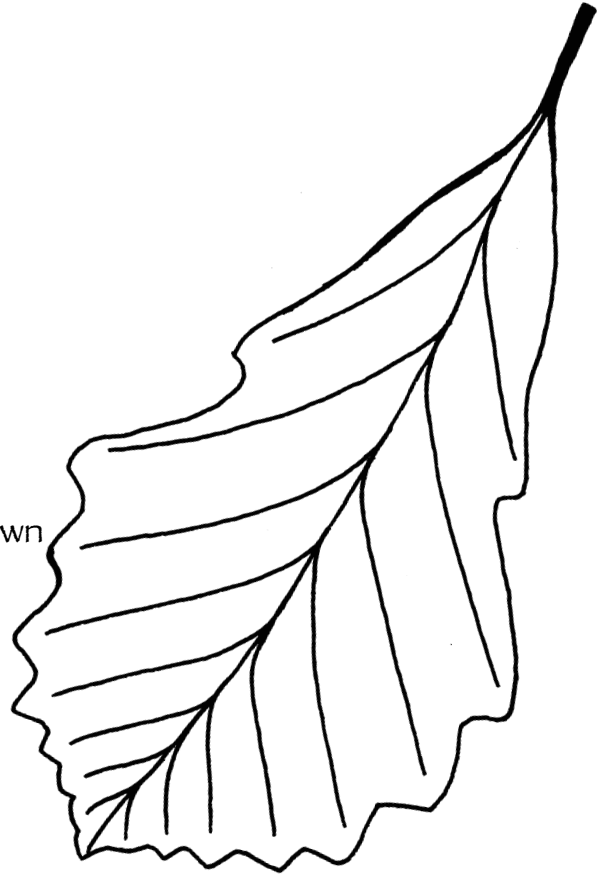
Fill Me In!

The di__m__t__r is the distance from a point on one side of a tree trunk straight across to a point on the opposite side of the trunk.

Summer
dark green



Fall
yellow-brown



Acorn
pale brown



Common Name: _____
Scientific Name: *Quercus bicolor*

Illinois Habitat: This tree may be found statewide growing in low woods and swamps.

Flowering: Flowering occurs from April through May. Male and female flowers are separate but on the same tree. The flowers have no petals. Male flowers develop in drooping catkins. Female flowers are arranged in groups of two to four.

Uses: The wood is used to make cabinets and fence posts and in interior finishing.

General Description: Also known as swamp oak, this tree may grow to a height of 70 feet with a trunk diameter of three feet. The crown is broad and rounded. Buds are clustered at twig tips.

Bark: The gray-brown bark is furrowed and flaky.

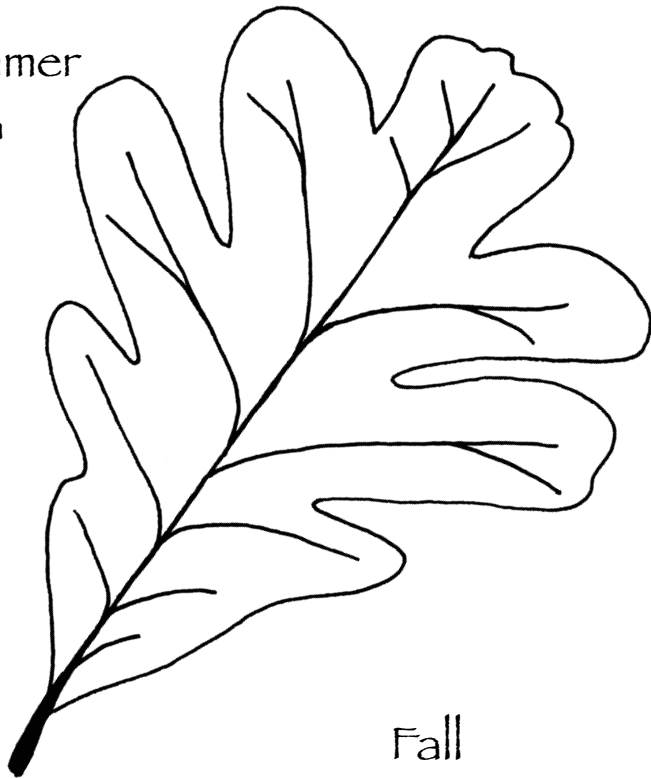
Leaf: Leaves are arranged alternately along the stem. The leaf blade is broadest near the tip. Each leaf may be six inches long and four inches wide. The leaf is white and hairy on the lower surface.

Fruit: Acorns develop in pairs on stalks one inch in length or longer. An acorn may be up to one and one-half inches long. The thick, hairy cup encloses the acorn for about one-third of its length.

Fill Me In!

The ridges or grooves seen in tree bark are also called fu_r_w_.

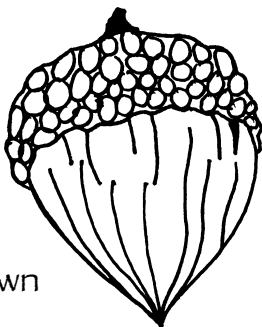
Summer
green



Fall
red-purple-brown



Acorn
green-brown



Common Name: _____
Scientific Name: *Quercus alba*

Illinois Habitat: This tree grows in moist woods, on wooded slopes and in dry woods statewide.

Flowering: Flowering occurs in April and May as its leaves begin to unfold. Male and female flowers are separate but on the same tree. The flowers do not have petals. Male flowers develop in drooping, yellow catkins. The red female flowers are arranged in small groups.

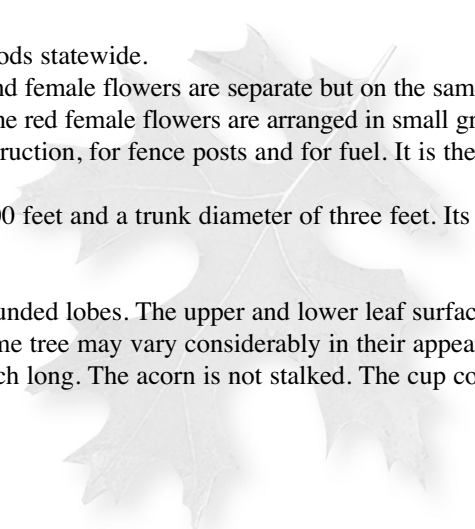
Uses: The wood is used in interior finishing, for making cabinets, for general construction, for fence posts and for fuel. It is the most important hardwood lumber tree in Illinois and the United States.

General Description: This species, Illinois' State Tree, may grow to a height of 100 feet and a trunk diameter of three feet. Its crown is very broad with horizontal branches. The trunk is short and thick.

Bark: The bark is gray or almost white with gray patches and shallow furrows.

Leaf: Leaves are arranged alternately along the stem. The leaf has seven to nine rounded lobes. The upper and lower leaf surfaces are smooth. A leaf may grow to 10 inches long and five inches wide. Leaves on the same tree may vary considerably in their appearance.

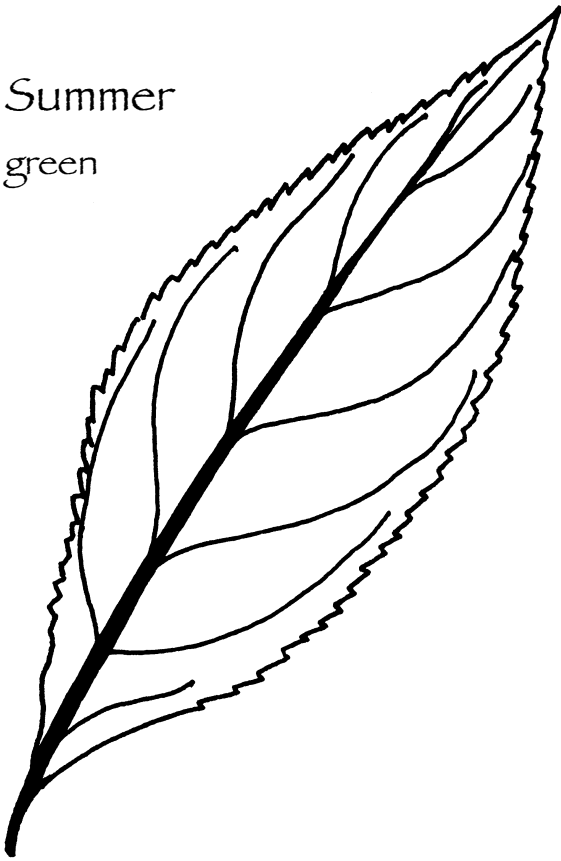
Fruit: Acorns may grow singly or in pairs. An acorn may be up to three-fourths inch long. The acorn is not stalked. The cup covers one-fourth of the acorn and has warty scales.



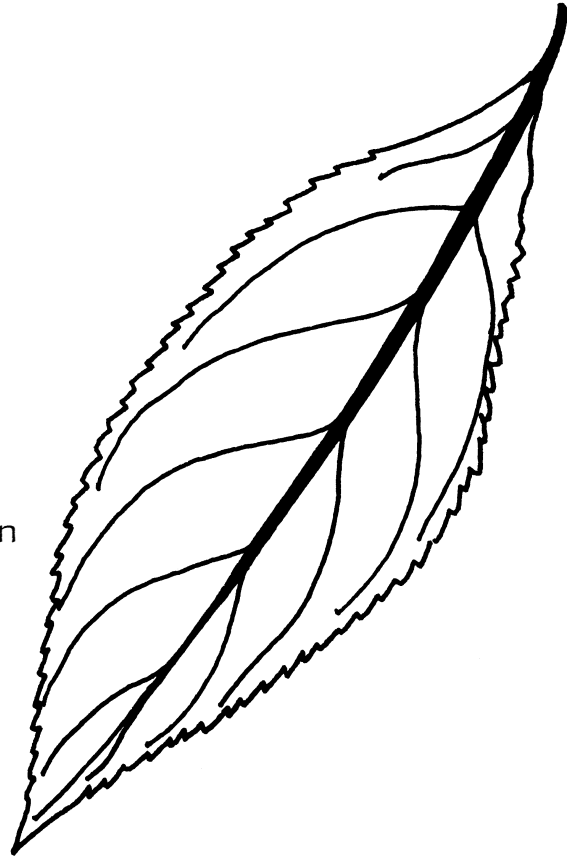
Fill Me In!

The w_i_e _a_ is Illinois' official State Tree.

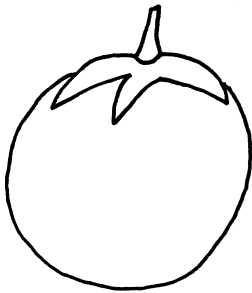
Summer
green



Fall
red-brown

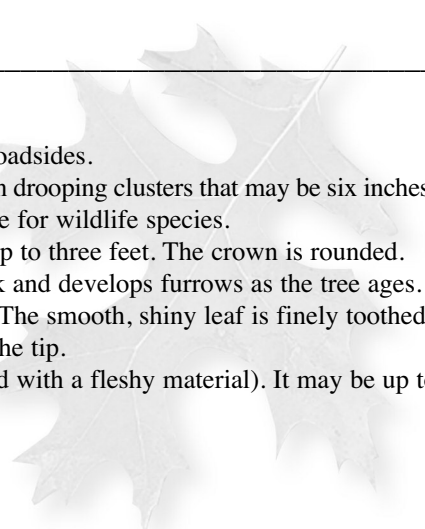


Fruit
dark purple



Common Name: _____
Scientific Name: *Prunus serotina*

Illinois Habitat: This tree is found statewide in wood edges, fence rows, thickets and roadsides.
Flowering: Flowering occurs in May. The flower has five, white petals. Flowers develop in drooping clusters that may be six inches long.
Uses: The wood is used to make cabinets and furniture. The fruit serves as a food source for wildlife species.
General Description: This tree may attain a height of 75 feet and a trunk diameter of up to three feet. The crown is rounded.
Bark: The bark is thin, smooth and red-brown on a young tree. The bark becomes black and develops furrows as the tree ages.
Leaf: Leaves are arranged alternately on the stem. A leaf may be up to six inches long. The smooth, shiny leaf is finely toothed along the edges. The leafstalk is about one inch long with one or more red glands near the tip.
Fruit: The fruit is a drupe (a seed enclosed in a hard, dry material that in turn is covered with a fleshy material). It may be up to one-half inch in diameter.



Fill Me In!

The fruit of this tree is a ru e.

Fall Colors



Fall is a beautiful season in Illinois. The changing colors of the leaves on deciduous trees bring new wonders each day. Did you ever think about why leaves change color?

Leaves change color in autumn as the hours of daylight decline and the angle of the sun gets lower in the sky. The green pigment chlorophyll dominates leaves in the spring and summer months. Chlorophyll absorbs the sun's energy and uses it to transform carbon dioxide and water into sugars. As the amount of daylight and the angle of the sun decrease, chlorophyll production is reduced, and it begins to disappear. Carotenoids, pigments which have been present in the leaves throughout the growing season, begin to appear in the fall. Carotenoids include both the orange pigment, carotene, and the yellow pigment, xanthophyll. Anthocyanins form in the leaves of some tree species in the fall and produce red and purple shades. These pigments develop from the sugars that are trapped in leaves. On warm, sunny fall days, the leaves produce sugars. At night, as the air cools, plant transport slows, and the sugars are unable to be transported from the leaves. The brighter the fall sunlight, the more sugars produced, and the more brilliant the colors.

Weather is the most important factor in how colorful leaves will be in the fall. Ample rainfall in the summer leads to healthy trees with many pigments and sugars in the leaves. These leaves will provide beautiful fall colors. Bright, sunny skies in late summer and early fall lead to more red, yellow, bronze and orange shades on leaves. Numerous cloudy days during this time period may cause the production of more gold and yellow tints. Anthocyanins react to soil chemistry, affecting the color the leaves in these trees will display. In certain soil types, the leaves may be red. If you transplant the same tree to a different type of soil, the next year its leaves may be purple. In drought conditions, leaves may drop from the trees without much color change at all. If the temperatures turn too cold, leaves can die before they change colors. However, in some years fall color is abundant even though weather conditions are not ideal.

Tree species that produce deep red, bronze and orange shades on autumn leaves include the red oak, sugar maple, flowering dogwood, persimmon, sweet gum, sumac and tupelo gum. Trees with bright orange and yellow tints on leaves in the fall include sugar maple, cottonwood, wild black cherry, ash, birch, hickory, sassafras and tulip tree. Deep purple and red shades are the fall colors of tree-climbing vines including Virginia creeper and poison ivy.

Fall Colors – Unscramble These Words!

Each of these scrambled words was used in the paragraphs about fall color in leaves. See if you can unscramble the word to fill in each sentence.

1. In the fall, leaves of _____ trees change color, die and fall to the ground. **u e s c d i d o u**
2. The _____ in a leaf gives it its characteristic color, such as orange from carotene. **m i e g n t p**
3. The green appearance of leaves in the spring and summer is due to the presence of _____. **o c r h o y p l l l h**
4. Orange and yellow colors are due to _____ pigments. **d a c r t n e o o i**
5. The orange pigment, _____, is responsible for the orange color in fall leaves as well as that in carrots. **a e o c t r e n**
6. _____ is one of the carotenoids, and it appears as yellow color in leaves. **n a x l t o p h h l y**
7. The _____ pigments form in the fall and produce red and purple colors in leaves. **n h o a c t i y a n n**
8. Leaves may fall from the trees without much color change when _____ conditions are present. **r o u d h t g**

What Do You Know?

Each of the words listed below was used in this booklet. Let's see how much you've learned. Can you match the word to its correct definition?

- | | |
|--------------------|--|
| 1. _____ catkin | A. leaf with only one large part |
| 2. _____ compound | B. leaf made of small parts |
| 3. _____ diameter | C. plants and animals that live on their own |
| 4. _____ drupe | D. one of the uses for wood |
| 5. _____ furniture | E. a fleshy fruit containing a dry material that covers the seed |
| 6. _____ furrow | F. part or division of a leaf |
| 7. _____ leaflet | G. a ridge or trench, particularly in tree bark |
| 8. _____ pith | H. a spike of flowers which have no petals and are either all male or all female |
| 9. _____ simple | I. the soft substance inside a twig |
| 10. _____ wildlife | J. distance from a point on one side of a tree trunk straight across to a point on the other side of the trunk |

What is Illinois' State Tree?

Answers:

Common Name: page 6 - black oak; page 7 - black walnut; page 8 - bur oak; page 9 - chinquapin oak; page 10 - hackberry; page 11 - mockernut hickory; page 12 - northern red oak; page 13 - pecan; page 14 - pin oak; page 15 - shagbark hickory; page 16 - shingle oak; page 17 - swamp chestnut oak; page 18 - swamp white oak; page 19 - white oak; page 20 - wild black cherry
Fill Me In! page 6 - Upland; page 7 - woodlands; page 8 - petals; page 9 - catkin; page 10 - Bottomland; page 11 - leaflets; page 12 - furniture; page 13 - wildlife; page 14 - ornamental; page 15 - baseball bats; page 16 - Pith; page 17 - diameter; page 18 - furrows; page 19 - white oak; page 20 - drupe
Unscramble These Words: 1 - deciduous; 2 - pigment; 3 - chlorophyll; 4 - carotenoid; 5 - carotene; 6 - xanthophyll; 7 - anthocyanin; 8 - drought. **page 23:** 1-H, 2-B, 3-J, 4-E, 5-D, 6-G, 7-F, 8-I, 9-A, 10-C; white oak



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Illinois Department of Natural Resources

Division of Education

One Natural Resources Way

Springfield, IL 62702-1271

217-524-4126

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dnr.teachkids@illinois.gov