



**Field Guide to
Native Oak Species of
Eastern North America**
Abbreviated Michigan Version

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FHTET-2003-01
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Front Cover:

Clockwise from top left: white oak (*Q. alba*) acorns; willow oak (*Q. phellos*) leaves and acorns; Georgia oak (*Q. georgiana*) leaf; chinkapin oak (*Q. muehlenbergii*) acorns; scarlet oak (*Q. coccinea*) leaf; Texas live oak (*Q. fusiformis*) acorns; runner oak (*Q. pumila*) leaves and acorns; background bur oak (*Q. macrocarpa*) bark. (Design, D. Binion)

Back Cover:

Swamp chestnut oak (*Q. michauxii*) leaves and acorns. (Design, D. Binion)

**FOREST HEALTH
TECHNOLOGY ENTERPRISE TEAM**

**TECHNOLOGY
TRANSFER**

Oak Identification

**Field Guide to
Native Oak Species of
Eastern North America**

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can be found in the original complete
publication.

THIS IS AN INCOMPLETE VERSION that has
been edited to include only the descriptions
of oak species that commonly occur in
MICHIGAN.

The complete version of this publication can be found at
<https://www.fs.fed.us/foresthealth/technology/pdfs/fieldguide.pdf>

SPECIES DESCRIPTIONS



Mature bur oak, *Q. macrocarpa* (Photo, G. Sternberg)

Quercus alba Linnaeus

White oak
eastern white oak,
stave oak,
forked-leaf white oak

GROWTH FORM: popular and long-lived shade tree, which grows to 100 feet (30.5 m), with a wide-spreading rounded crown and with numerous horizontal branches. **BARK:** light gray, shallow furrows forming scaly ridges or plates. **TWIGS**

and BUDS: slender to stout, gray to reddish-green

twigs with star-shaped pith; buds are reddish-brown and broadly oval and hairless. **LEAVES:** petiole $\frac{3}{8}$ - 1 inch (10 - 25 mm) in length; obovate to elliptical leaves, 4 - 8 inches (101 - 203 mm) long, $2\frac{3}{4}$ - $4\frac{3}{4}$ inches (70 - 121 mm) wide, margin with 5 - 9 lobes that are widest beyond middle, deep sinuses extending a third or more to midrib; base acute to cuneate, apex broadly rounded; dull or shiny grayish green above, light green with slight pubescence which becomes smooth

beneath as they mature.

ACORNS: annual; 1 - 3 acorns on peduncle up to $1\frac{1}{4}$ inch (32 mm) long, light gray pubescent cup, enclosing $\frac{1}{4}$ of the nut; light brown, oblong nut, up to 1 inch (25 mm) long; germinates in the fall after dropping to the ground. **HABITAT:** dry upland slopes to well-drained loam in bottomlands;



may grow as a shrub at 4,500 feet (1,372 m) elevation in the southern Appalachian Mountains and reaches maximum potential height on lower slopes of the Allegheny Mountains and bottomlands of the Ohio Basin.



DISTRIBUTION: eastern Canada and the United States from Quebec and Ontario west to Minnesota, south to Texas, east to Florida, and north to Maine.



COMMENTARY: White oak is one of the most important species in the white oak group. The wood is used for furniture, flooring, and specialty items such as wine and whiskey barrels. Used for shipbuilding in colonial times. Continues to be displaced in the market place by several species of red oaks. Acorns are a favorite food source for birds, squirrels, and deer. Used as medication by Native Americans. The largest known white oak specimen had a circumference of 32 feet and grew in the Wye Oak State Park, Talbot County, Maryland. It was destroyed during a storm on June 6, 2002.

Quercus bicolor Willdenow

Swamp white oak white oak

GROWTH FORM: large tree that grows to 100 feet (30.5 m) with an irregular crown. **BARK:** dark gray, deep furrows forming scaly or flat-ridges. **TWIGS and BUDS:** smooth, light brown twigs; buds light orangish-brown, smooth, ovoid and blunt. **LEAVES:** petiole from $\frac{3}{8}$ - 1 inch (10 - 25 mm) long; leaves are narrowly elliptical to obovate,

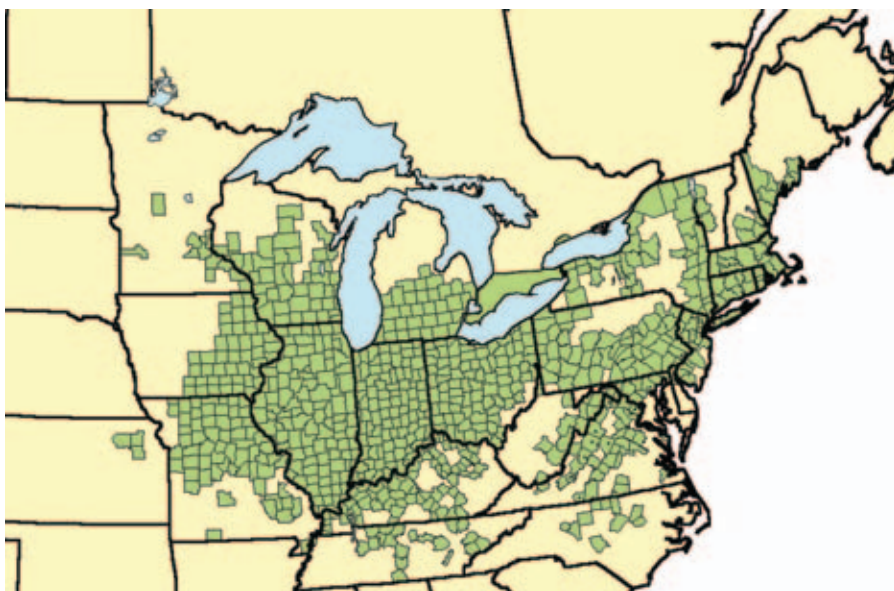


varies up to 7 inches (178 mm) long and $4 \frac{3}{8}$ inches (111 mm) wide; base cuneate to acute, rounded apex; margin with 10 - 20 lobes with shallow sinuses, distal half of blade may have teeth; glossy dark green above with white velvety pubescence beneath.

ACORNS: annual; 1 - 2 acorns on peduncle up to 4 inches (101 mm) long; grayish-green cup with scales covered with fine gray tomentum, cup rim often has spinose bristles, cup covers $\frac{1}{2}$ to $\frac{3}{4}$ of the nut; oblong or ovoid, light brown nut, up to 1 $\frac{1}{4}$ inches (32 mm) long. **HABITAT:** poorly-drained mineral soils.



DISTRIBUTION: Minnesota south to Nebraska, east to North Carolina, and north to Quebec and Maine.



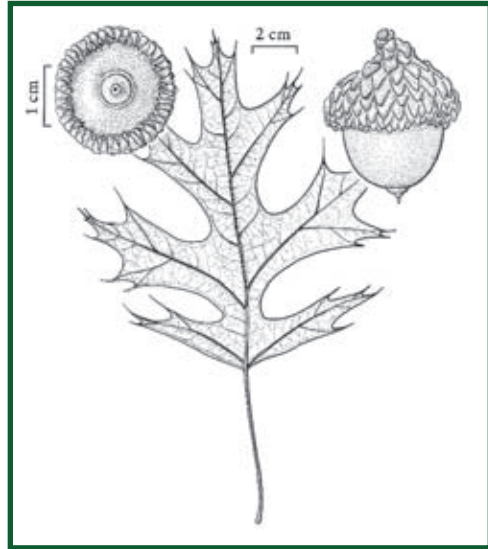
COMMENTARY: The scientific name refers to the difference in coloration between upper and lower leaf surface. Swamp white oak produces a hard wood that has been used for construction, cabinet making, boat building, railroad ties, fencing, and cooperage. The Iroquois peoples used this oak as medicine. The two largest known specimens grow in Highland County, Virginia, and Washington County, Ohio.

Quercus coccinea Muenchhausen

Scarlet oak
black oak, red oak,
Spanish oak

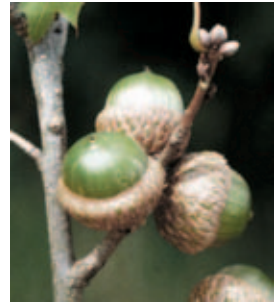
GROWTH FORM: fast growing large tree that can obtain a height of 120 feet (36.6 m), with frequent downward arching branches, trunk usually enlarged at the base, and usually retains dead branches. **BARK:** brown with fine fissures and scaly ridges, inner bark is red to orangish-pink. **TWIGS and BUDS:** twigs are smooth

reddish-brown; clustered terminal buds are ovoid and reddish-brown with pubescence near the apex, 5-angled in cross section. **LEAVES:** smooth petiole $\frac{3}{4}$ - $2\frac{3}{8}$ inches (19 - 60 mm) in length; leaves are elliptic to obovate, $2\frac{3}{4}$ - $6\frac{1}{4}$ inches (70 - 159 mm) long, $3 - 5\frac{1}{8}$ inches (76 - 130 mm) wide, margins with 5 - 9 lobes extending more than $\frac{1}{2}$ the distance to the midrib, base truncate, apex acute; upper surface a glossy light green, with tufts of axillary tomentum beneath,



secondary veins raised on both surfaces. **ACORNS:** biennial; cup is a glossy dark reddish-brown, inner surface is smooth and light brown, covering $\frac{1}{3} - \frac{1}{2}$ the nut; bluntly oblong nut, $\frac{1}{2} - \frac{7}{8}$ inches (13 - 22 mm) in length, smooth

with concentric rings at apex. **HABITAT:** found in a variety of habitats including poor soils in mixed forests, especially on upland ridges; this oak is probably a climax tree on dry soils. **DISTRIBUTION:** range extends from Maine west to Michigan, south to Missouri and Mississippi, and east to South Carolina and the eastern Atlantic coast.

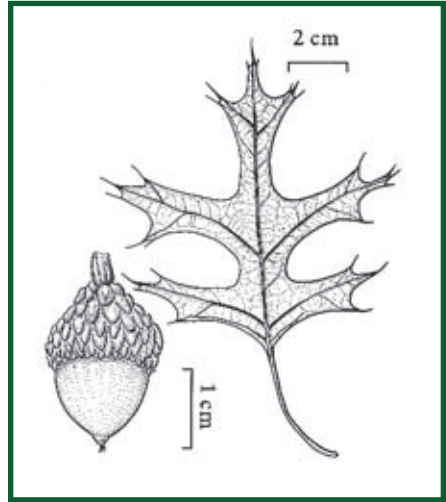


COMMENTARY: Scarlet oak lumber is marketed as red oak but is of poorer quality than *Q. rubra* or *Q. velutina*. This species is very susceptible to fire damage because of its thin bark. Such injuries often result in heart rot. Grows rapidly and begins to bear fruit at age 20. Acorns provide food for squirrels, chipmunks, mice, deer, wild turkey, bluejays, and redheaded woodpeckers. Extensively planted as an ornamental tree because of its brilliant autumn color, and has been introduced into Canada and Europe. The largest known scarlet oak grows in Powell County, Kentucky.

Quercus ellipsoidalis Hill

Northern pin oak
jack oak, Hill's oak,
black oak

GROWTH FORM: medium tree grows to 66 feet (20.1 m), rarely to 130 feet (39.6 m), with a narrow crown. **BARK:** dark gray-brown with shallow fissures producing thin plates, inner bark orange in color. **TWIGS and BUDS:** twigs are first covered with hairs and then become smooth and reddish-brown; terminal buds are a shiny reddish-brown with scales ciliated along the margin, slightly angled in cross section. **LEAVES:** smooth petiole $\frac{3}{4}$ - 2 inches (19 - 51 mm); leaves are elliptical, $2\frac{3}{4}$ - $5\frac{1}{8}$ inches (70 - 130 mm) long, and 2 - 4 inches (51 - 101 mm) wide, the base is truncate and the apex is acute, margins



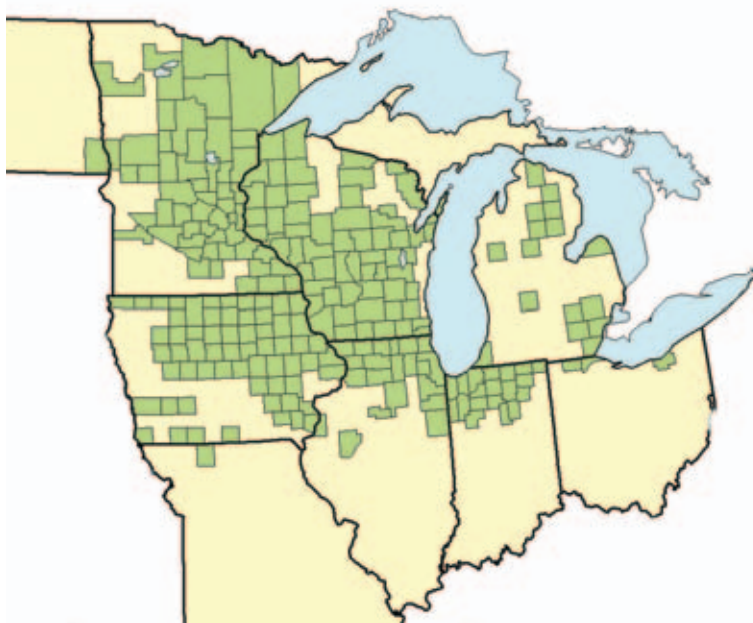
have 5 - 7 deep lobes extending more than $\frac{1}{2}$ the distance to midrib with bristle-pointed teeth, upper surface is a shiny light green and paler below with minute axillary tufts of tomentum along the midvein.

ACORNS: biennial; outer surface of cup is grayish-brown or reddish-brown and pubescent, inner surface is light brown and smooth, cup covers $\frac{1}{3}$ - $\frac{1}{2}$ of the nut; elliptical to ovoid nut $\frac{1}{2}$ - $\frac{3}{4}$ inches (13 - 19 mm) long, concentric apical rings are infrequent.



HABITAT: dry sandy soils sites in the northern and central boreal forest region; found associated with species of pine, oak, hickory, aspen, and black cherry.

DISTRIBUTION: occurs from Ontario south to northern Missouri, and east to Ohio and Michigan.



COMMENTARY: Northern pin oak is reduced to shrubby growth at the edge of its range. The largest known specimen grows in Bay Village, Cuyahoga County, Ohio.

Quercus imbricaria Michaux

Shingle oak laurel oak

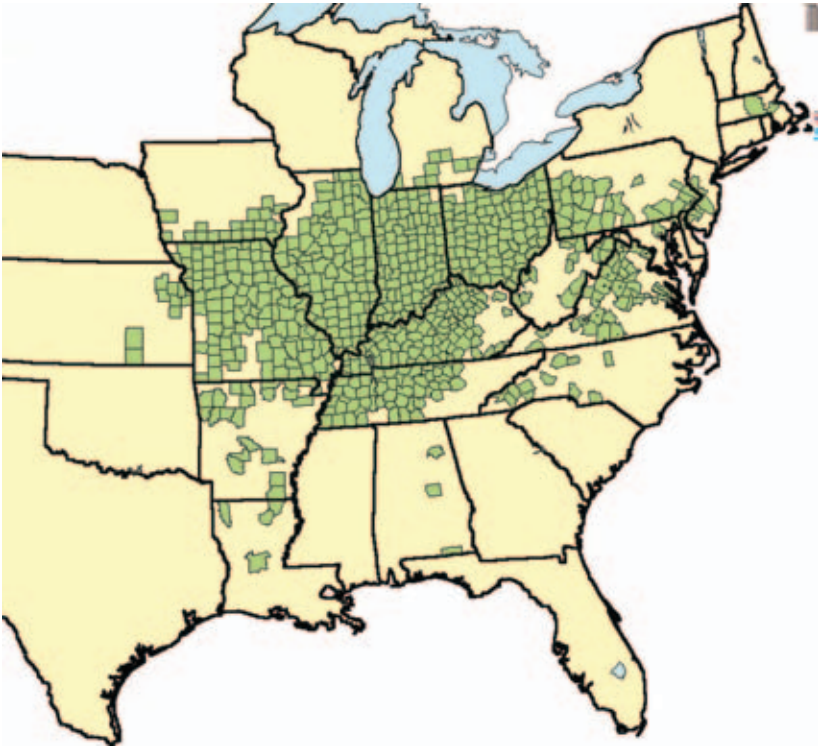
GROWTH FORM: medium tree which normally grows to 65 feet (19.8 m), occasionally to 105 feet (32 m), and has a rounded crown. **BARK:** grayish-brown with shallow fissures becoming scaly ridges, pinkish inner bark. **TWIGS and BUDS:** twigs are smooth and brown or slightly pubescent; large terminal bud is brown and 5-angled in cross-section, scales are pubescent with ciliated edges. **LEAVES:** smooth petiole to $\frac{3}{4}$ inch (19 mm); ovate and widest near the middle, $3\frac{1}{8}$ - 8 inches (79 - 203 mm) long, $\frac{5}{8}$ - 3 inches (16 - 76 mm) wide, margin entire and may be slightly wavy and turned under, base obtuse, apex obtuse and tipped with one bristle, shiny dark green above, light whitish-green with uniform pubescence below. **ACORNS:** biennial;



1 - 2 formed on stout peduncle, cup minutely pubescent on outer surface, inner surface is



smooth and tan to reddish-brown, enclosing up to ½ of nut; nearly round nut, ⅜ - ¾ inch (10 - 19 mm) long, chestnut-brown with faint stripes, and concentric rings around apex. **HABITAT:** moderately dry to moist soils. **DISTRIBUTION:** Iowa south to Louisiana, east to North Carolina, and north to Massachusetts.



COMMENTARY: The common name of this oak refers to the use of its wood as shingles by early settlers. The Cherokee people used the bark of shingle oak as medication. The largest shingle oak grows in Cincinnati, Hamilton County, Ohio.

Quercus macrocarpa Michaux

Bur oak

mossy-cup oak, blue oak,
prairie oak,
mossy-overcup oak

GROWTH FORM: slow growing, large tree that grows to 100 feet (30.5 m), with a massive trunk, broad crown, and large branches.

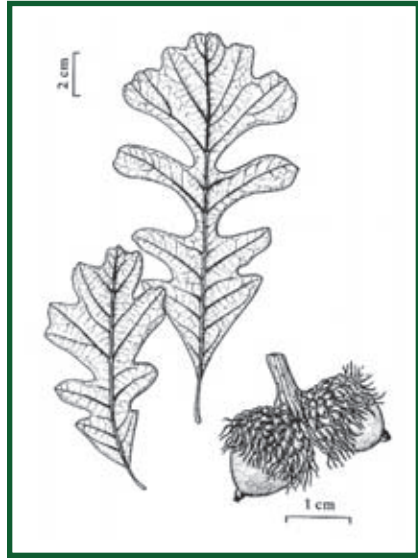
BARK: thick light gray bark, deep furrows producing scaly ridges, fire resistant. **TWIGS and BUDS:**

pubescent light brown twigs with corky wings or ridges; ovoid light brown to gray buds, smooth $\frac{1}{4}$ inch (6 mm) long. **LEAVES:** petiole

$\frac{5}{8}$ - 1 inch (16 - 25 mm) in length; leaf blade is obovate to narrowly elliptical in outline, $2\frac{3}{4}$ - 6 inches (70 - 152 mm) long, 2 - 5 inches (51 - 127 mm) wide, 5 - 7 lobed with center sinuses nearly reaching midrib, base rounded to cuneate, rounded apex; dark green above, grayish-green with finely dense pubescence below.

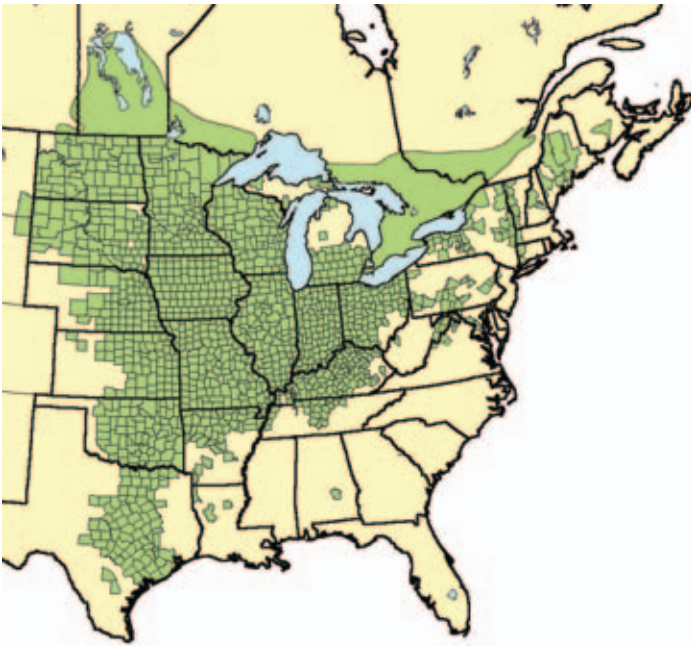
ACORNS: annual; 1 - 3 acorns on stout peduncle $\frac{1}{4}$ - $\frac{3}{4}$ inch (6 - 19 mm)

long; deep cup with grayish pubescent scales, scales near cup rim forming a fringe around the nut, enclosing $\frac{1}{2}$ - $\frac{7}{8}$ of nut; light brown, broadly elliptical nut, finely pubescent, 1 - 2 inches (25 - 51 mm)



long. **HABITAT:** widely distributed and capable of withstanding a wide range of harsh conditions (one of the most drought resistant oaks) throughout eastern North America; usually found on limestone or calcareous clay.

DISTRIBUTION: Saskatchewan east to New Brunswick, southwest to Texas, and north to Montana.



COMMENTARY: Bur oak extends farther north than any other oak species and becomes shrubby at the northern and eastern limits of its range. This oak's wood quality is similar to white oak and is often used for construction, flooring, and cooperage. The common name is derived from the bur-like fringe of the acorn cup. Many bur oaks are historically important and one has been designated as a National Historic Landmark in Kansas. Native Americans used bur oak as medication for heart problems and other ailments. The largest known specimen grows near Parris, Bourbon County, Kentucky.

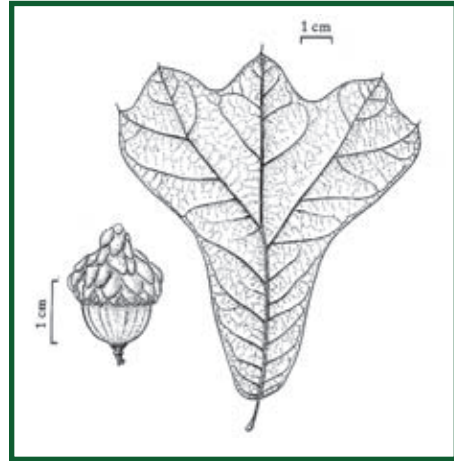
Quercus marilandica Muenchhausen

Blackjack oak
barren oak, black oak,
jack oak

GROWTH FORM: small to medium sized tree usually between 15 - 45 feet (4.6 - 19.8 m), occasionally to 95 feet (28.9 m), with an open irregular spreading crown of crooked branches and some dead twigs, slow growing and short lived.

BARK: thick rough bark, nearly black, with deep furrows, mature bark forming irregular or rectangular plates, orange inner bark.

TWIGS and BUDS: light brown twigs, finely pubescent; narrowly ovoid pointed buds, reddish-brown pubescent scales, 5-angled in cross section. **LEAVES:** pubescent petiole $\frac{1}{4}$ - $\frac{3}{4}$ inch (6 - 19 mm) long; leaf broadly triangular and widest near tip, $2\frac{3}{4}$ - 8 inches (70 - 203 mm) long, $2\frac{3}{4}$ - 8 inches (70 - 203 mm) wide, leathery, base rounded, thickened blade with 3 - 5 broad lobes, with 1 - 3 bristle-tipped teeth, apex obtuse; glossy yellowish-green above, pale green with dense brown pubescence (scurfy) below, secondary veins raised



on both surfaces.

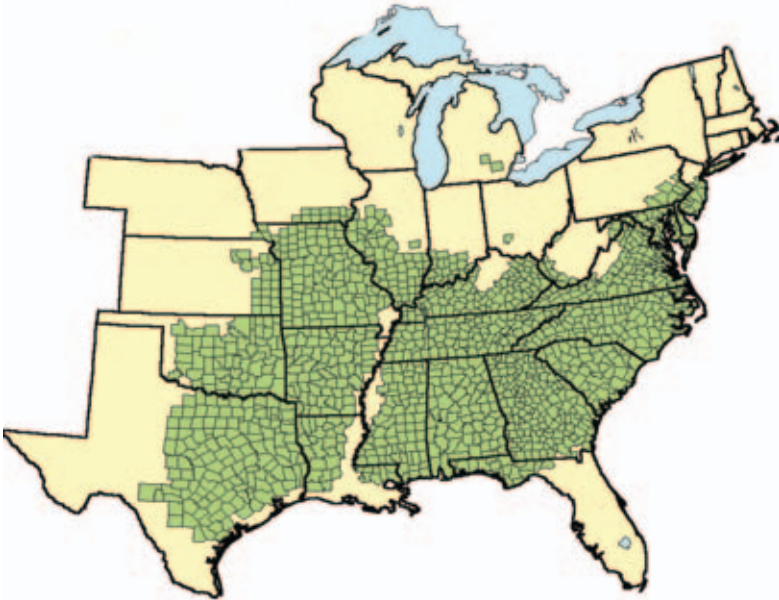
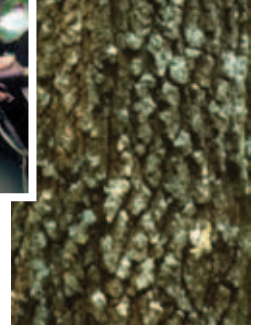
ACORNS:

biennial, 1 - 2 acorns on a short stalk, reddish-brown top-shaped cup with pubescent scales, inner surface pubescent, enclosing $\frac{1}{3}$ - $\frac{2}{3}$

of the nut; long elliptical nut, $\frac{1}{2}$ - $\frac{3}{4}$ inches (13 - 19 mm) in length, often faintly striped, ends in a stout point at the tip.

HABITAT: usually exists on rather poor sites with dry sandy or clay soils in the central and southern forest regions.

DISTRIBUTION: Iowa east to New Jersey and Long Island, New York, south to Florida, west to Texas, and north to Nebraska.



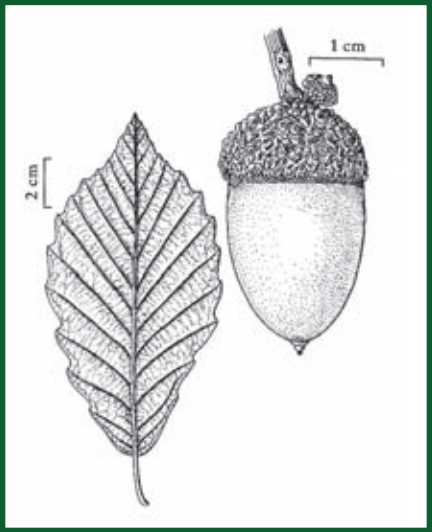
COMMENTARY: Blackjack oak is one of the few species of red oaks that shares the white oak group characteristic of vessels blocked by tyloses. This oak is considered a pioneer species. It is not a high value timber species, but the wood is used for railroad ties, fence posts, and charcoal. The Latin name originated from the description of specimens collected in Maryland. Western populations in Texas and Oklahoma are often recognized as *Q. marilandica* var. *asheri*. Choctaw people used blackjack oak as medication to aid in childbirth. The largest known specimen grows in Peach County, Georgia.

Quercus montana Willdenow

Chestnut oak

rock chestnut oak,
mountain chestnut oak,
rock oak, tanbark oak

GROWTH FORM: medium to large tree, 65 - 145 feet (19.8 - 44.2 m), broad open and irregular crown, chestnut like foliage. **BARK:** dark reddish-brown to dark gray, mature bark with deep v-shaped furrows producing broad ridges. **TWIGS and BUDS:** stout twigs, dark green to reddish-brown; light brown to reddish-brown ovoid bud, pointed apex, bud scales may have slight pubescence. **LEAVES:** yellow petiole $\frac{3}{8}$ - $1\frac{1}{4}$ inches (10 - 32 mm) long; leaf blade obovate, $4\frac{3}{4}$ - 8 inches (121 - 203 mm) long, $2\frac{3}{8}$ - 4 inches (60 - 101 mm) wide, margins have 10 - 14 rounded teeth, base subacute, apex broadly acuminate; thick firm blade, shiny dark yellowish-green above,



light green with slight pubescence along veins below.

ACORNS: annual; 1 - 2 acorns on peduncle $\frac{3}{8}$ - 1 inch (10 - 25 mm) long; cup has gray scales

with red tips, pubescent inner surface, encloses $\frac{1}{3}$ - $\frac{1}{2}$ of nut; chestnut-brown, long oval nut, $\frac{3}{4}$ - $1\frac{1}{2}$ inches (19 - 38 mm) long. **HABITAT:** shallow soils, dry sandy soils, and rocky upland forests. **DISTRIBUTION:** southern Ontario, south to Louisiana, east to Georgia, and north to Maine.



COMMENTARY: The bark of chestnut oak has a high tannin concentration and was once used for tanning leather. Thus the common name ‘tanbark oak.’ Acorns provide a food source for turkey, rough grouse, songbirds, deer, and small mammals. This species is commonly referred to as *Q. prinus* in forestry literature. The largest known chestnut oak grows in the Great Smoky Mountains National Park, Tennessee.

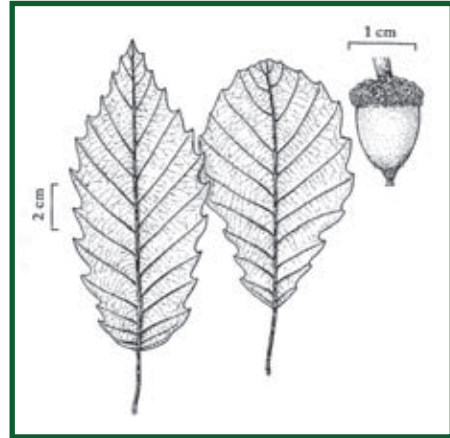
Quercus muehlenbergii Engelm

Chinkapin oak

chestnut oak,
yellow chestnut oak,
yellow oak,
rock chestnut oak, rock oak

GROWTH FORM: medium to large tree 45 - 110 feet (19.8 - 33.5 m), narrow rounded crown. **BARK:** light gray, thin and scaly. **TWIGS and BUDS:** slender, brown twigs turning gray in second year;

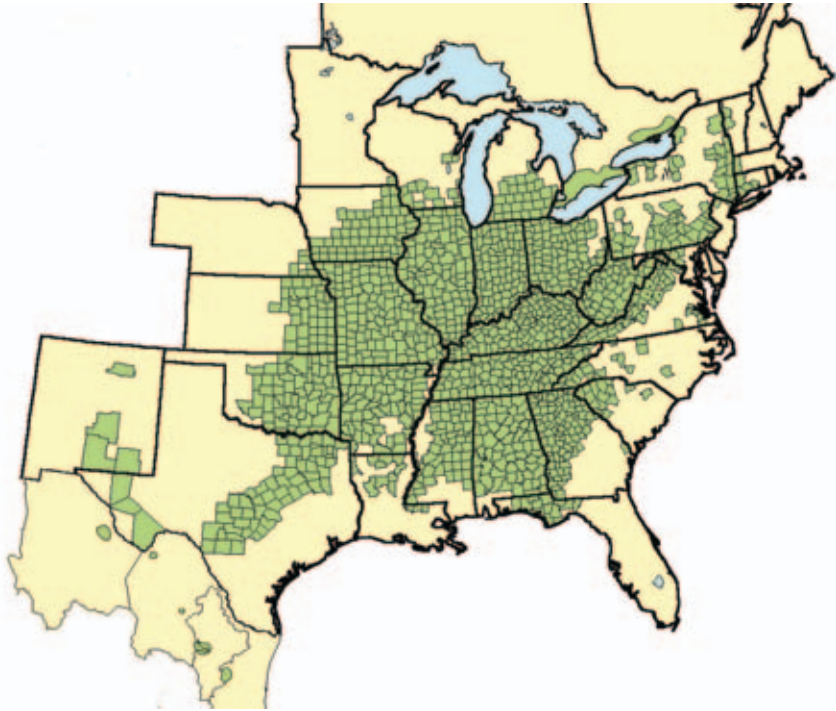
reddish-brown terminal bud, broadly ovate with a blunt apex, sparsely pubescent. **LEAVES:** smooth petiole $\frac{3}{8}$ - $1\frac{1}{4}$ inches (10 - 32 mm) long; leaf blade obovate to oblanceolate, 2 - 6 inches (51 - 152 mm) long, $1\frac{1}{2}$ - $3\frac{1}{8}$ inches (38 - 79 mm) wide, thickened and leathery, margins regularly undulate, numerous parallel side veins, each ending in a tooth or shallow lobe, base truncate or cuneate, apex pointed; shiny dark green above, light green with minute pubescence below. **ACORNS:** annual; 1 - 2 acorns on peduncle $\frac{1}{4}$ inch (6 mm) in length; thin cup with gray pubescence, covering $\frac{1}{4}$ - $\frac{1}{2}$ of the nut;



oblong to ovoid nut, $\frac{5}{8}$ - 1 inch (15 - 25 mm) long.

HABITAT: limestone and calcareous soils in mixed deciduous and pine forests.

DISTRIBUTION: Vermont west to Ontario and Minnesota, southwest to New Mexico and northeastern Mexico (Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas), east to Florida, and north to Massachusetts.



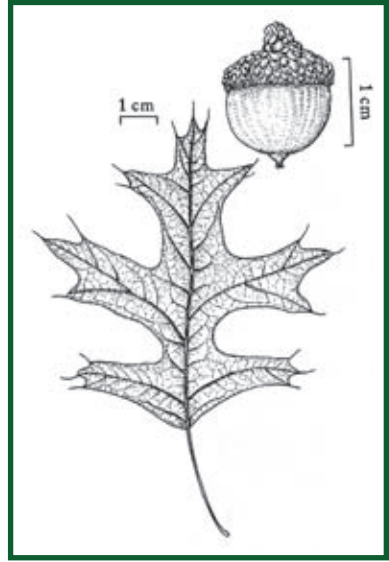
COMMENTARY: Chinkapin oak was named after the botanist Henry Muehlenberg. This oak's shrubby growth is associated with poor environmental conditions at the extreme edges of its distribution. This oak species is localized throughout its range and seems dependent upon soil type and a pH above 6.0. It can readily reproduce by sprouts. Chinkapin oak can be separated from *Q. prinoides* on the same site by its single stem and sparse acorn production. The largest known chinkapin oak grows in Clark County, Kentucky.

Quercus palustris Muenchhausen

Pin oak

swamp oak, Spanish oak,
swamp Spanish oak, water oak

GROWTH FORM: medium to large tree 50 - 130 feet (15.2 - 39.6 m), somewhat conical crown with horizontal inner branches and lower branches angled downward. **BARK:** gray-brown, smooth juvenile bark, mature bark with broad scaly ridges, pink inner bark. **TWIGS and BUDS:** twigs shiny chestnut-brown; ovoid bud with pointed apex, chestnut-brown scales. **LEAVES:** smooth petiole $\frac{3}{4}$ - $2\frac{1}{2}$ inches (19 - 63 mm) long; elliptical to oblong leaf, 2 - $6\frac{1}{4}$ inches (51 - 159 mm) long, 2 - $4\frac{3}{4}$ inches (51 - 121 mm) wide, base truncate, apex acute, margin with 5 - 7 lobes with 1 - 3 bristle-tipped teeth, deep sinuses nearly to the midvein, basal lobes somewhat recurved; glossy dark green above, light green below with axillary tufts or tomentum next to raised veins.



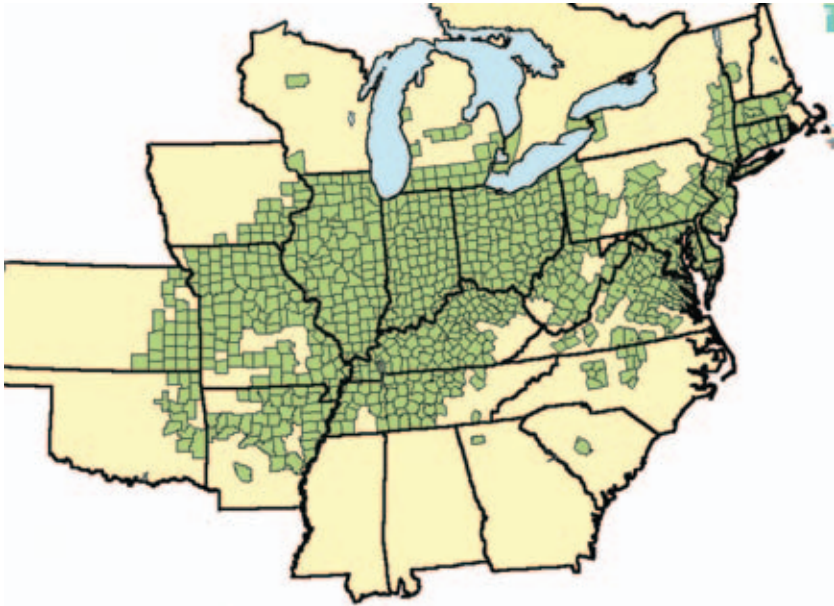
ACORNS:

biennial, clusters of 1 - 2 acorns on each peduncle, thin reddish-brown cup, smooth scales, enclosing $\frac{1}{4}$ of the nut; rounded nut, $\frac{5}{8}$ inch (16 mm) in length, light brown and often striped.

HABITAT: wet-site species found in nearly pure stands on poorly-drained soils; usually tolerates intermittent flooding during the dormant season but not during the growing season; extensive stands



of pin oak are found on glacial till, with excessive moisture during the winter and spring; not adapted to alkaline soils. **DISTRIBUTION:** Vermont and Ontario, south to North Carolina, west to Oklahoma, and north to Wisconsin.

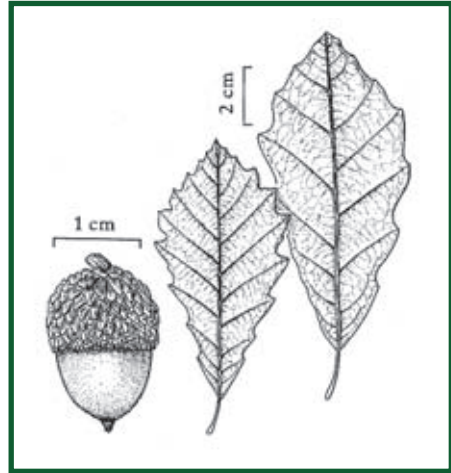


COMMENTARY: Pin oak is extensively planted as an ornamental in North America and has been introduced into central and western Europe as a shade tree. It is noted for a shallow root system that allows easy transplanting. Native Americans used bark from this tree for medicine. The largest known pin oak grows in Bell County, Kentucky.

Quercus prinoides Willdenow

Dwarf chinkapin oak scrub chestnut oak

GROWTH FORM: rhizomatous shrub or a small tree to 25 feet (7.6 m). **BARK:** thin gray bark with furrows and scaly ridges. **TWIGS and BUDS:** grayish twigs, broadly rounded bud brown to chestnut-brown with a blunt apex, scales have some pubescence. **LEAVES:** short-petiole $\frac{1}{4}$ - $\frac{5}{8}$ inch (6 - 16 mm); leathery leaves are obovate, $1\frac{1}{2}$ - $5\frac{1}{2}$ inches (38 - 140 mm), $\frac{3}{4}$ - $2\frac{1}{2}$ inches (19 - 63 mm), margin undulate or toothed with 3 - 8 pair of short rounded teeth, base cuneate, apex rounded; shiny dark green above, light green below with slight pubescence. **ACORNS:** annual;



1 - 2 acorns on peduncle up to $\frac{3}{8}$ inch (10 mm), thin cup with short gray pubescent scales, covering up to $\frac{1}{3}$ of nut; oblong to oval light brown nut, up to $\frac{3}{4}$ inch (19 mm) long.

HABITAT: dry rocky soils such as sandstone or shale outcrops associated with oak pine types. **DISTRIBUTION:** New Hampshire and Florida, westward to Iowa and Oklahoma.



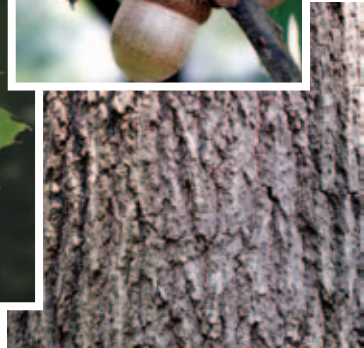
COMMENTARY: Dwarf Chinkapin oak can produce acorns at 3 - 5 years. The largest known dwarf chinkapin oak is growing in Richardson County, Nebraska.

Quercus rubra Linnaeus

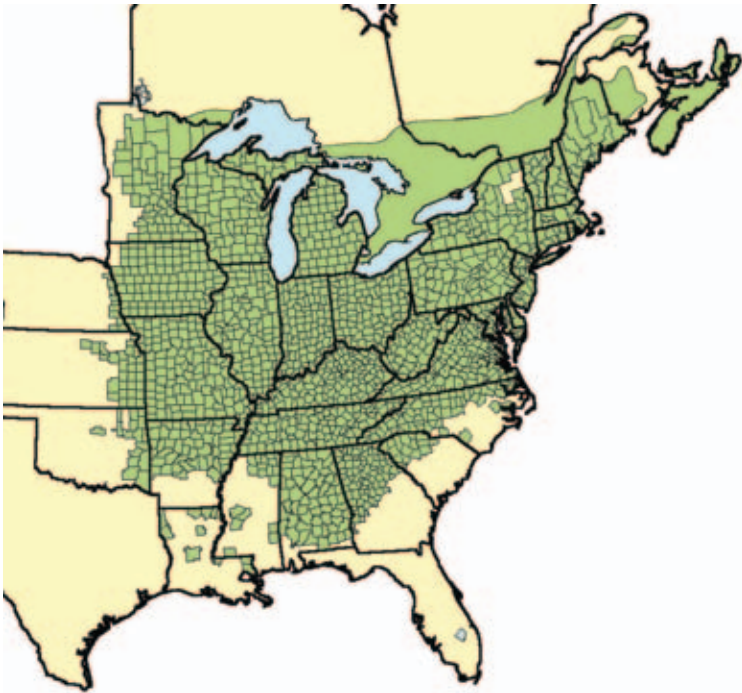
Northern red oak

red oak, gray oak, eastern red oak,
mountain red oak

GROWTH FORM: medium to large tree that grows to 100 feet (30.5 m), rounded crown with large branches; fast growing tree that transplants easily, often forming pure stands. **BARK:** mature bark dark gray to black, shallow furrows separating wide scaly ridges, upper trunk has flat, shiny plate-like ridges, inner bark pink. **TWIGS and BUDS:** smooth, reddish-brown twigs; ovoid buds are pointed with pubescent chestnut-brown scales. **LEAVES:** smooth reddish petiole 1 - 2 inches (25 - 51 mm) long; elliptical leaves, 4 $\frac{3}{4}$ - 8 inches (121 - 203 mm) long, 2 $\frac{3}{8}$ - 4 $\frac{3}{4}$ inches (60 - 121 mm) wide, margin with 7 - 11 lobes, each with 1 - 3 bristle-tipped teeth, sinuses are less than $\frac{1}{2}$ distance to the midrib, base broadly cuneate, apex acute; dull to lustrous dark green above, gray to light yellowish-green below with short axillary tufts of brown tomentum.



ACORNS: biennial; 1 - 2 acorns are stalkless or on a very short peduncle, shallow or deep saucer shaped cup enclosing up to $\frac{1}{2}$ of nut, reddish-brown pubescent scales with dark margins, inner surface with ring of pubescence around scar; oblong to nearly oval nut, $\frac{5}{8}$ - $1\frac{1}{4}$ inches (16 - 32 mm) long, brown with gray stripes. **HABITAT:** variety of moist soils with a loam texture. **DISTRIBUTION:** Quebec and Nova Scotia, south to South Carolina and Georgia, west to Oklahoma, and north to Ontario.



COMMENTARY: Northern red oak is the most valuable timber species in the red oak group. It has been used in construction, flooring, and furniture. The British Royal Navy once used it in shipbuilding. With some taxonomic treatments, populations of northern red oak that had leaves with red petioles and smaller acorns were given the varietal designation of *Q. rubra* var. *borealis*. A source of food for wildlife, it starts fruiting at age 25 and produces substantial crops after 50 years. Acorns germinate in the spring following seedfall. Native Americans utilized northern red oak as medicine for numerous ailments. The largest known specimen grows in Monroe County, New York.

Quercus shumardii Buckley

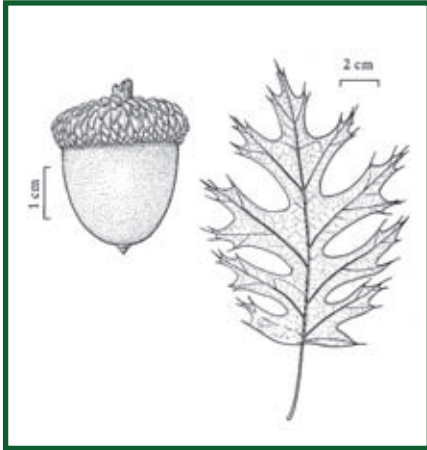
Shumard oak

spotted oak, swamp oak,
Schneck oak,
Schneck red oak,
Shumard red oak,
southern red oak,
swamp red oak

GROWTH FORM: one of the largest southern red oaks growing to 150 feet (45.7 m), large round open crown, usually has a clear bole with a buttressed base and shallow root system.

BARK: dark gray mature bark, shallow furrows, scaly exposed ridges are lighter gray, inner bark pink. **TWIGS and BUDS:** smooth gray to light brown twigs; ovoid buds with smooth gray scales, 5-angled in cross section. **LEAVES:**

petiole smooth,
 $\frac{3}{4}$ - $2\frac{3}{8}$ inches
(19 - 60 mm);
broadly elliptical
leaves, 4 - 8



inches (101 - 203 mm) long, $2\frac{3}{8}$ - 6 inches (60 - 152 mm) wide, margin with 5 - 9 lobes with 2 - 5 bristle-tipped teeth, deep sinuses more than half way to midvein, base truncate, apex acute; shiny dark green above, slight luster or dull green beneath with axillary tufts of tomentum, veins raised on both surfaces. **ACORNS:** biennial; 1 - 2 acorns on a peduncle, thick saucer shaped cup with blunt scales, inner surface pubescent around scar, covering up to $\frac{1}{3}$ of nut; ovoid to broadly oblong, brown mature nut, $\frac{1}{2}$ - $1\frac{1}{4}$ inches (13 - 32 mm) long. **HABITAT:** well-drained soils along streams and rivers. **DISTRIBUTION:** Pennsylvania south to Florida, west to Texas, north to Nebraska, and northeast to Michigan and Ontario.



COMMENTARY: Named after Benjamin F. Shumard, state geologist of Texas in mid-1800s. Shumard oak produces good quality timber for construction, flooring and furniture, and is often considered more valuable than northern red oak. Moderately fast growing with a shallow root system. The largest known Shumard oak grows in Overton Park Forest, Tennessee.

Quercus velutina Lamarck

Black oak

yellow oak, quercitron oak,
yellow-bark oak, smooth-bark oak

GROWTH FORM: medium to large tree, 50 - 110 feet (15.2 - 33.5 m) in height, open and wide spreading crown. **BARK:** thick dark brown to black bark with deep furrows, rough ridges, yellow or orange inner bark. **TWIGS and BUDS:** smooth to pubescent chestnut-brown twigs, pith star-shaped; ovoid buds with tan pubescence, 5-angled in cross sections. **LEAVES:** petiole 1 - 2 $\frac{3}{4}$ inches (25 - 70 mm) long, may have sparse pubescence; obovate leaf outline, 4 - 11 $\frac{3}{4}$ inches (101 - 298 mm) long, 3 - 6 inches (75 - 153 mm) wide, margin has 5 - 9 lobes ending in 1 - 4 bristle-tipped teeth, base obtuse to truncate, apex acute; glossy dark green to yellow green above, pale green with scurfy pubescence and axillary tomentum beneath, raised secondary veins on both surfaces. The pubescence



is shed during late summer.

ACORNS: biennial; 1 - 2 short stalked acorns on short peduncle; reddish-brown pubescent cup, thick top-shaped with fringed edge, pubescent inner surface covers up to

½ of nut; ovoid to elliptical nut, up to ¾ inch (19 mm) long, light reddish-brown with faint stripes. Nut germination is in the spring following seedfall.

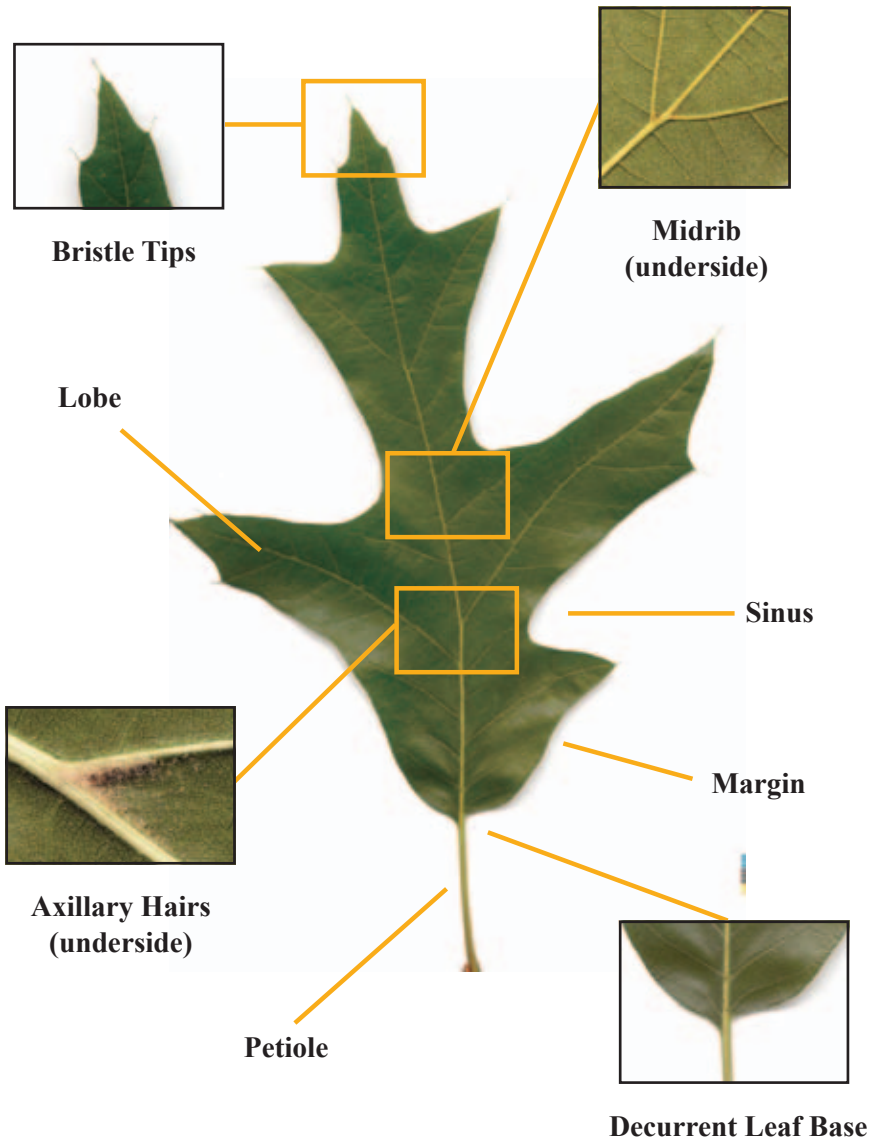
HABITAT: dry uplands but grows best on lower slopes in rich well-drained soils.

DISTRIBUTION: Maine west through Ontario to Minnesota, and south to Texas and Florida.



COMMENTARY: Black oak is a valuable timber species marketed as other red oaks. The bark was once used as a source for the yellow dye, quercitron, and for tannins to tan leather. Acorns are a food source for turkey, ruffed grouse, songbirds, deer, squirrels, and other small mammals. Black oaks begin to produce acorns at age 20, with optimum production at 40 - 75 years. The largest known specimen occurs in Westmoreland County, Virginia.

Leaf Characteristics



Illustrated examples of typical leaf characters used for field identification of oak species. Scanned image of southern red oak (*Quercus falcata*).

Oak Groups*

Leaf blade entire, or lobed with shallow or deep sinuses; lobes and apex armed with bristled tip

Red Oak Group 123



Leaf blade entire, dentate, sinuate, or lobed with shallow or deep sinuses; lobes and apex without bristled tips, leaves without lobes lack bristle at apex but may have mucronate tip

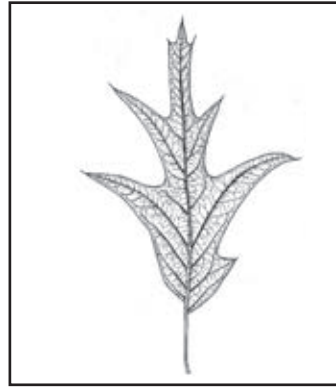
White Oak Group.....136



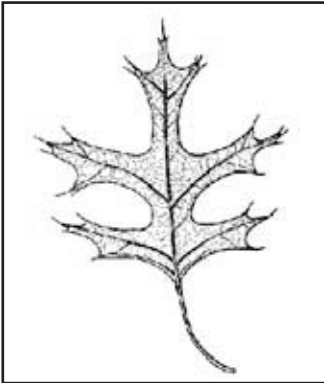
* Characteristics in this key are based upon mature leaves exposed to full sunlight. Oaks normally associated with southwestern species are included in this key if their distributions extended east of the 100th meridian.



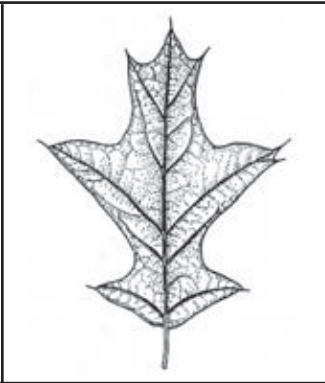
Q. coccinea [22]



Q. falcata [26]



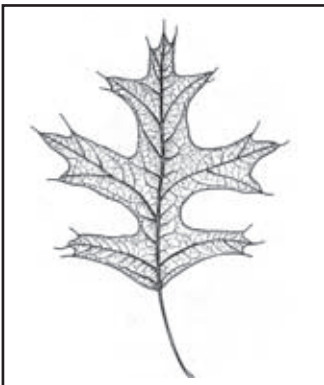
Q. ellipsoidalis [24]



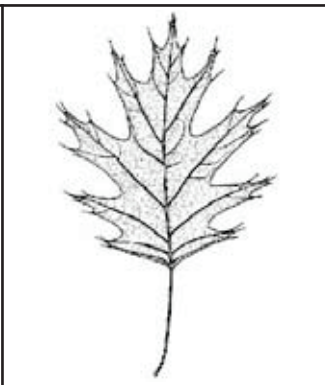
Q. ilicifolia [38]



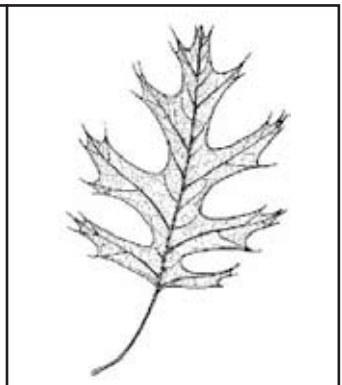
Q. imbricaria [40]



Q. palustris [78]



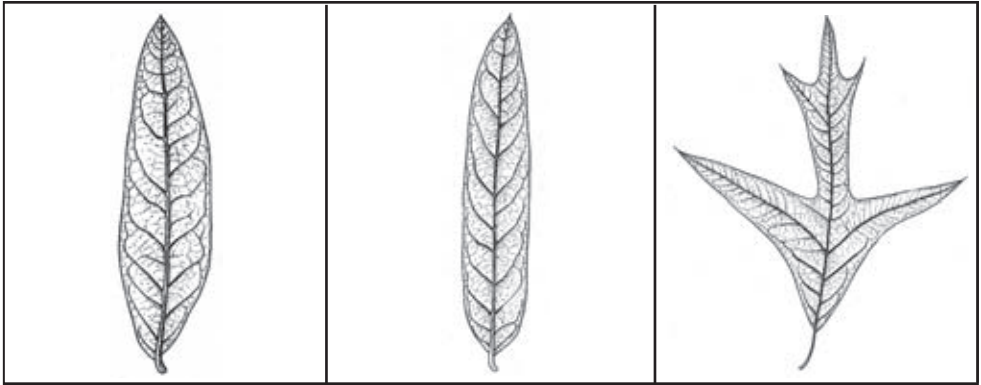
Q. rubra [88]



Q. velutina [102]

Common in Eastern Deciduous Forests

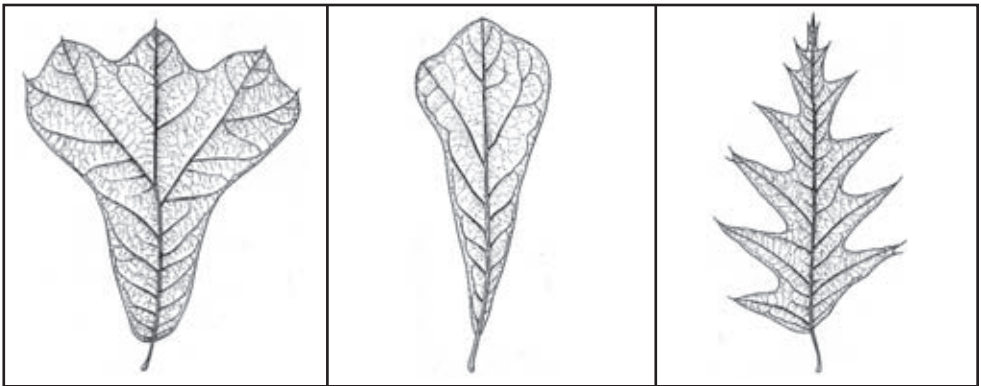
Red Oaks



Q. hemisphaerica [36]

Q. incana [42]

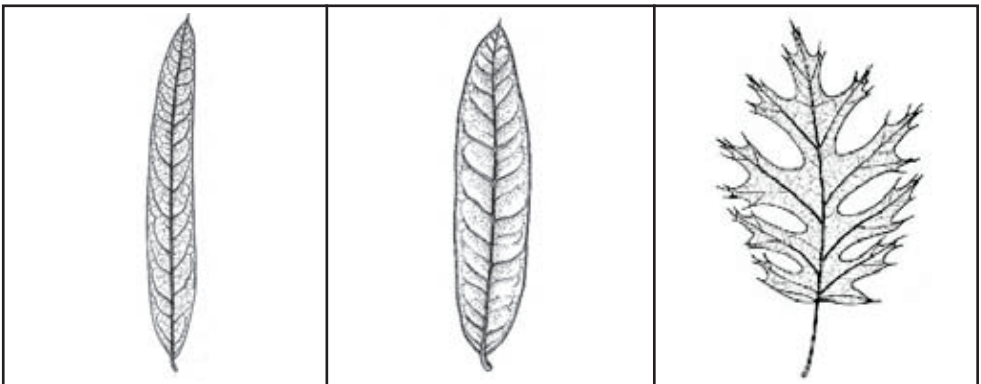
Q. laevis [48]



Q. marilandica [58]

Q. nigra [72]

Q. pagoda [76]



Q. phellos [80]

Q. pumila [84]

Q. shumardii [90]

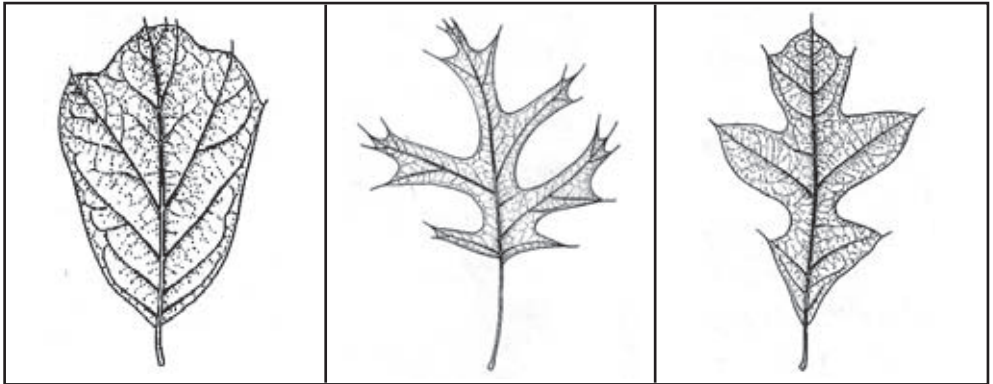
Common in Southeastern and Coastal Plain Mixed Forests



Q. laurifolia [50]



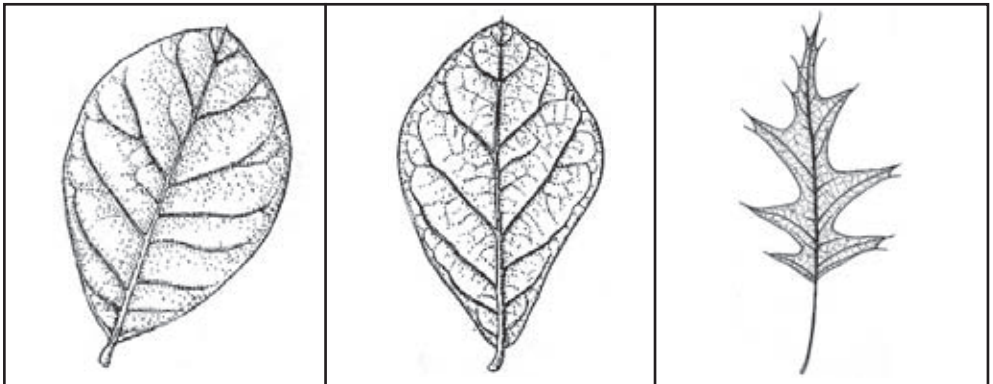
Q. acerifolia [6]



Q. arkansana [10]

Q. buckleyi [18]

Q. georgiana [32]



Q. inopina [44]

Q. myrtifolia [70]

Q. texana [98]

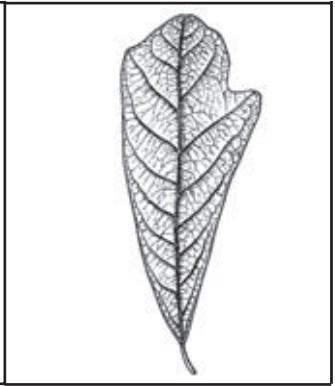
Uncommon with Restricted Distributions



Q. alba [8]



Q. bicolor [14]



Q. austrina [12]



Q. macrocarpa [54]



Q. montana [66]



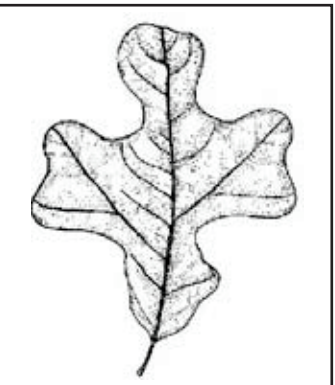
Q. margaretta [56]



Q. muehlenbergii [68]



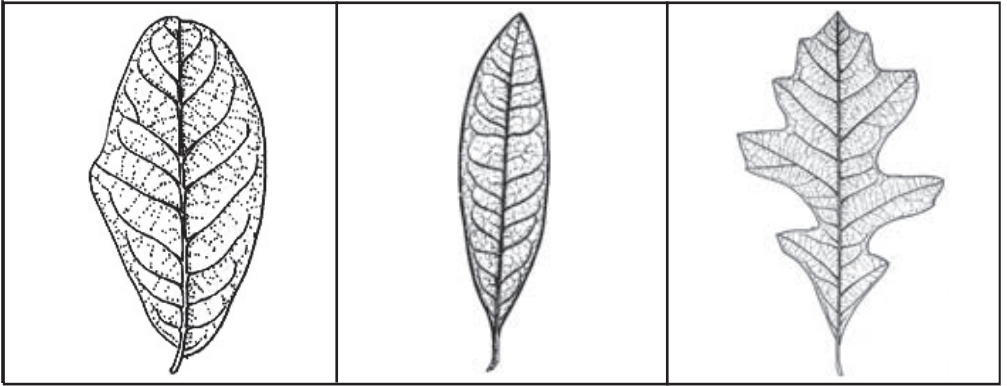
Q. prinoides [82]



Q. stellata [96]

Common in Eastern Deciduous Forests

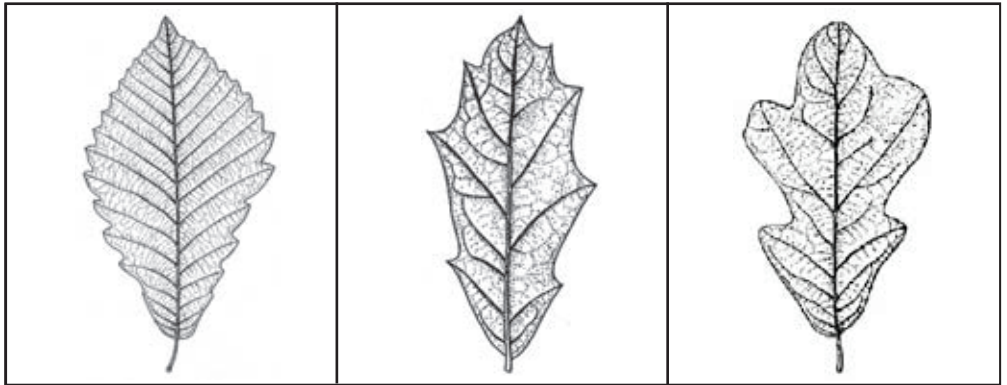
White Oaks



Q. chapmanii [20]

Q. geminata [30]

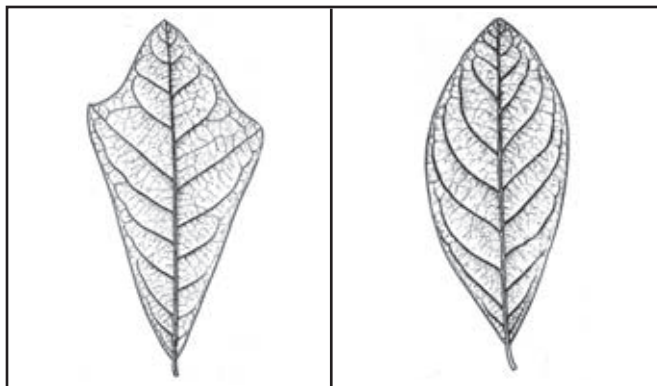
Q. lyrata [52]



Q. michauxii [60]

Q. minima [62]

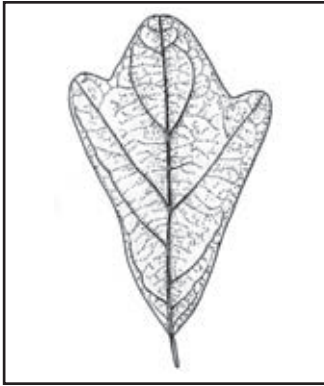
Q. similis [92]



Q. sinuata var. *sinuata* [94]

Q. virginiana [104]

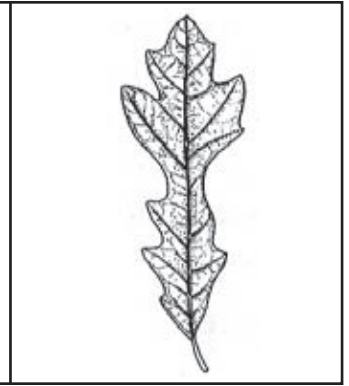
Common in Southeastern and Coastal Plain Mixed Forests



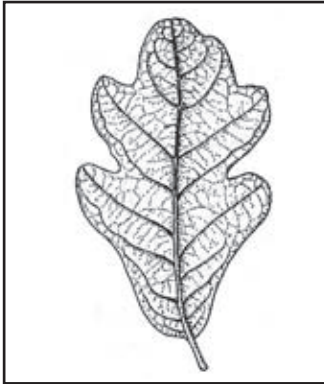
Q. boyntonii [16]



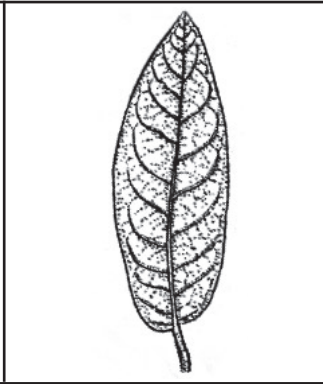
Q. fusiformis [28]



Q. havardii [34]



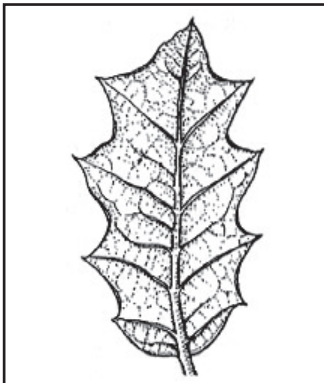
Q. laceyi [46]



Q. mohriana [64]



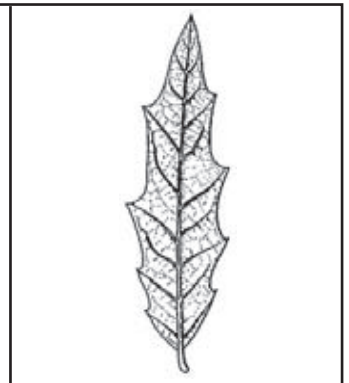
Q. oglethorpensis [74]



Q. pungens [86]



Q. sinuata var. *breviloba* [94]



Q. vaseyana [100]

Uncommon with Restricted Distributions

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