

Identifying Oak Trees Native to Tennessee

Using 'Brief Recognizable Features'



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Identifying Oak Trees Native to Tennessee



Using ‘Brief Recognizable Features’

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Introduction

From the bottomland swamps in the west to the mountain peaks in the east, Tennessee is enriched with a medley of forest trees like few other states. Diversity in soil types, climate and elevation give Tennessee an environmental gradient that provides habitats for approximately 190 native forest trees and large shrubs.

Oak trees are an important component of many Tennessee forests and are of particular interest to landowners, homeowners, the forest industry, students and outdoor enthusiasts alike. Oaks are deserving of special recognition, due to their important role in Tennessee’s history, both ancient and modern. Unmatched in economic and biological value, oaks provide not only fine lumber for wood products, but also acorns and foliage that feed an array of wildlife. Due to their handsome and sturdy appearance, oaks are also a welcome addition to the landscaping of yards and homesteads.

Twenty distinct species of oak are native to Tennessee. Correctly identifying oaks can sometimes be challenging, even for well-trained foresters and botanists. Close observation of several physical traits and clues is often required in addition to looking at the leaves. Introduced species (those not native to Tennessee), such as sawtooth oak, are not addressed in this publication.

Purpose

This publication on identifying oak trees will introduce you to brief recognizable features or “BRFs.” BRFs (pronounced briefs) are easy to remember and will help you distinguish between different oak species. Using BRFs, this publication summarizes key features that will allow speedy and accurate identification of Tennessee oaks.

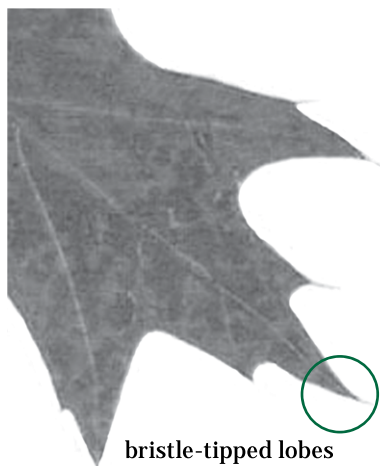
Getting Started

First, determine whether your unknown tree is an oak. The best indication is the presence of acorns and acorn caps beneath the tree. Next, decide if your tree is an upland or bottomland oak. Soil moisture is a significant factor in determining where specific oak trees are most likely to be found growing. Foresters typically classify forest sites as upland or bottomland; upland sites are higher in elevation than bottomland sites, and often occur on hilly terrain with good water drainage. Bottomland sites are wet for some or all of the year, and include land adjacent to creeks, rivers and swamps. Be aware that trees will sometimes wander away from sites where they are usually found. Some bottomland oaks like willow, water and pin oaks can survive on upland sites, and are often planted around homes.

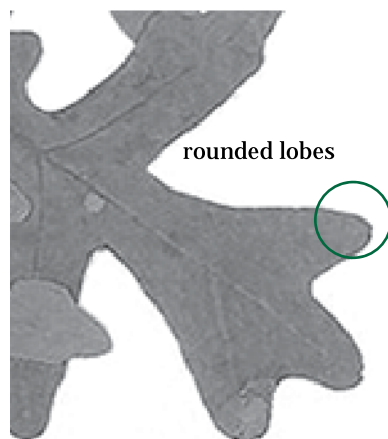
The next step in identifying your tree is to determine if your tree belongs to the Red oak or

White oak group. Of the 20 oak species found in Tennessee, 12 are members of the red oak group and eight are in the white oak group. General characteristics of each can be summarized as follows:

The red oaks - leaf tip and lobes are usually bristle-tipped; acorns mature at the end of two growing seasons; inner shell of nut is usually woolly or silky; acorns usually germinate in the spring and normally taste bitter; bark is gray, black or brownish-black.



The white oaks - leaf tip and lobes are usually rounded; if lobes are pointed they do not have bristle-tips; acorns mature in a single season; inner shell of nut is smooth; acorns usually germinate in the fall and often taste sweet; bark is gray, whitish-gray or with shades of cream.



Tennessee oaks can be categorized based on site and species groups as follows.

Upland	
Bristle-Tipped (Red Oaks)	Rounded-Tipped (White Oaks)
Northern red oak Southern red oak Black oak Scarlet oak Blackjack oak Shingle oak	White oak Chestnut oak Post oak Chinkapin oak* *saw-toothed but lacks bristle
Bottomland	
Pin oak Water oak Cherrybark oak Nuttall oak Willow oak Shumard oak	Swamp chestnut oak Bur oak Overcup oak Swamp white oak

The most visible characteristics of a tree include leaves, fruit and bark. These characteristics will be used heavily in the BRFs that are highlighted on the following pages. Miscellaneous other clues are given, if it makes tree identification easier. Sometimes, differences are quite subtle, and correct identification might require professional assistance.

A few definitions are needed to assist you:

- lobes** - rounded divisions of a leaf separated by spaces or sinuses;
- sinus** - the gap or space between two lobes;
- pubescent** - short, fine, soft hairs;
- tip** - often refers to the apex or tip of a leaf, leaf lobe or acorn;
- midvein** - the central, main vein in a leaf;
- petiole** - the small stalk attaching the leaf to the twig;
- cup** - the cap of an acorn;
- lance-shaped** - long and narrow, resembling a spear point.

Let's begin with the upland red oaks.

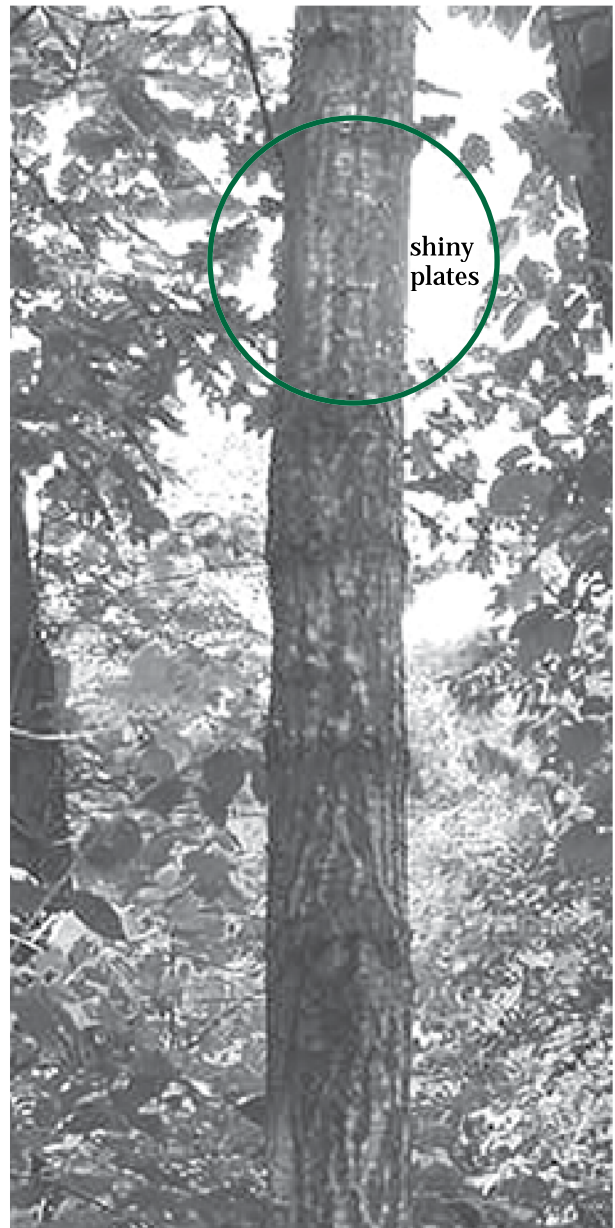
Upland Red Oaks

1. Northern red oak (*Quercus rubra*)

Leaves - seven to 11 lobes, shallow sinuses (cutting in less than $\frac{1}{2}$ way to the midvein).

Acorn - oval; 1" long, $\frac{3}{4}$ " diameter; cup is flat, shallow and saucer-shaped with tight, overlapping scales.

Bark - mature bark is gray-black with long, smooth, shiny plates, especially higher up on trunk, resembling "ski trails."



Upland Red Oaks *continued*

2. Southern red oak (*Quercus falcata*)

Leaves - normally with three narrow but deep lobes (occasionally five to seven lobes); leaf often shaped like a turkey track, and if turned upside down, the base bell-shaped; rust-colored pubescence underneath; shiny above; leathery.

Acorn - $\frac{1}{2}$ " to $\frac{3}{8}$ " long; often rounded with pubescent, reddish-brown scaly cup that covers $\frac{1}{3}$ of the fruit.

Bark - dark and deeply furrowed when mature.

Twig - new twigs have orange pubescence; 2nd year twigs become smooth and dark red.

Buds - reddish-brown; pointed and pubescent.



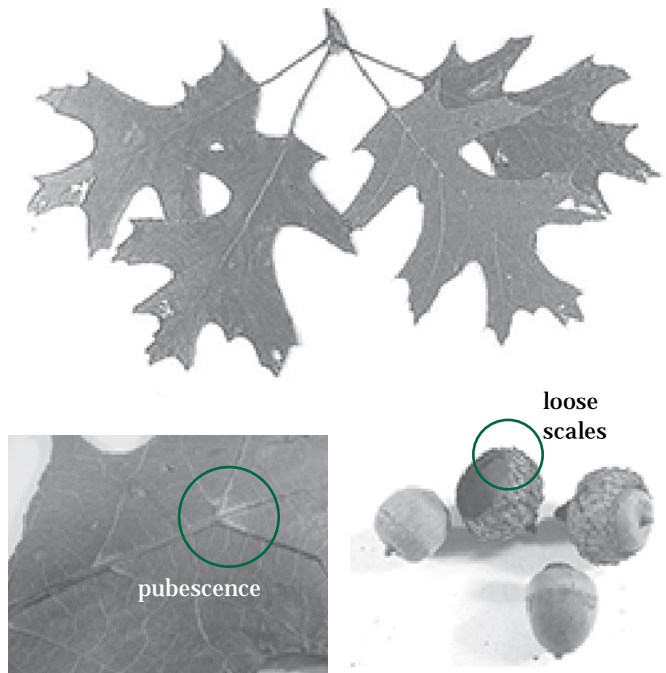
3. Black oak (*Quercus velutina*)

Leaves - finely pubescent on undersurface (especially at the vein angles); five to nine lobes; leaves on lower branches are noticeably broader than those at the top of the tree.

Acorn - $\frac{1}{2}$ " long; oval with bowl-shaped, chestnut brown cup; cup with loose, overlapping scales at fringe, giving a ragged appearance.

Bark - dark and deeply furrowed when mature with blocky ridges; sometimes with orange inner bark and lacking long, smooth, shiny plates higher up on trunk (as with northern red oak).

Other - petiole unusually long, up to 5"; buds with gray pubescence.



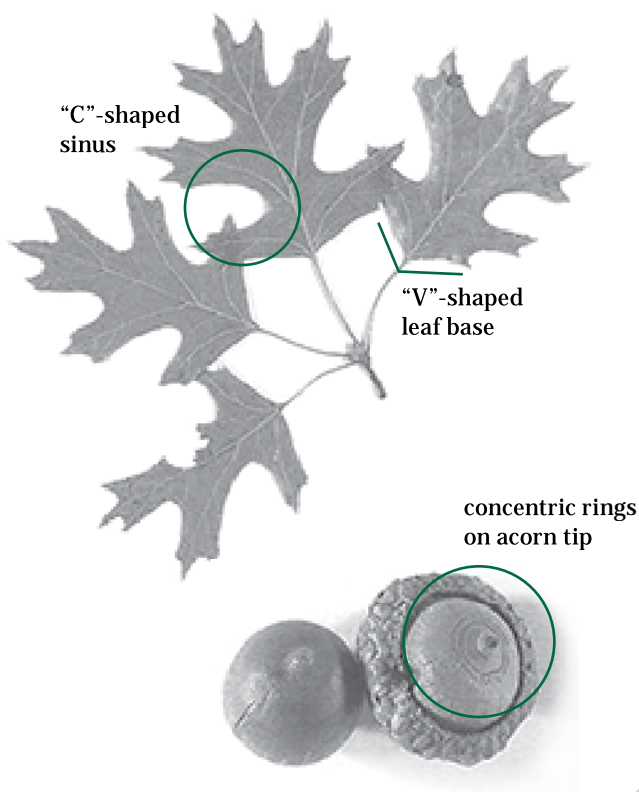
Upland Red Oaks *continued*

4. Scarlet oak (*Quercus coccinea*)

Leaves - seven (rarely nine) lobes with very deep sinuses; each lobe ending with several sharp bristle tips; sinuses wide, round, "C"-shaped forming half-circles; tufts of hair where side veins join midvein beneath; leaf base normally not flattened (rather v-shaped).

Acorn - $\frac{1}{2}$ " to 1" long; egg-shaped, often with two to four concentric rings encircling the tip; cup bowl-shaped with tightly pressed scales and without ragged edge (as with Black oak).

Other - dead branches tend to hang on and are attached to the main trunk at right angles; gray-white hairs on upper half of bud. Sometimes the bark pattern is similar to northern red oak in the mid and upper trunk, but more blocky near the base.



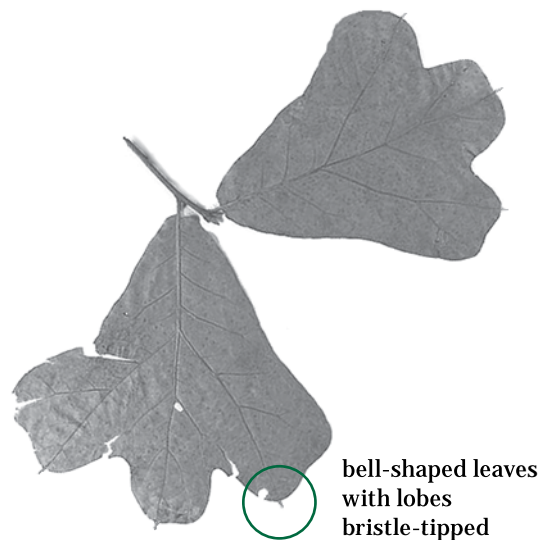
5. Blackjack oak (*Quercus marilandica*)

Leaves - three very shallow lobes mostly near the tip of leaf, each having a prominent bristle tip; bell-shaped; leathery; noticeably wider at the tip of leaf, tapering toward the base; orange pubescence beneath with thick orange midvein.

Acorn - oblong $\frac{3}{8}$ " to $\frac{3}{4}$ " long; light brown and sharply pointed at tip; cup is shaped like a top and thick, covering half the acorn, with rusty scales.

Buds - large for oak, up to $\frac{1}{2}$ " long; narrow, cone-shaped and somewhat woolly.
Petiole - short, stout, $\frac{1}{2}$ " long.

Other - very drought-tolerant and often found on rocky or shallow soils.



Upland Red Oaks *continued*

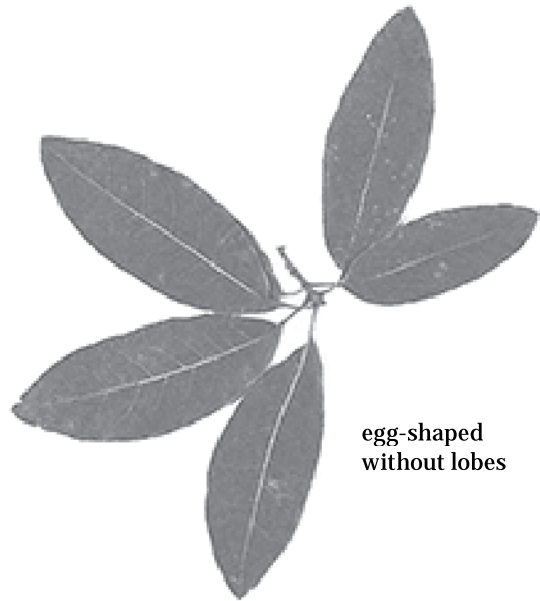
6. Shingle oak (*Quercus imbricaria*)

Leaves - oval or egg-shaped without any lobes; brown pubescence below; 4" to 6" long and 1" to 2" wide; midvein yellow; persistent in winter.

Acorn - $\frac{1}{2}$ " to $\frac{3}{4}$ " long; nearly round with stout stalk; dark brown; pubescent with reddish-brown cup enclosing less than half the acorn.

Twig - first reddish-green becoming dark brown; smooth.

Other - could be confused with willow oak, but leaves are longer and broader (see page 13).



egg-shaped
without lobes

Upland White Oaks

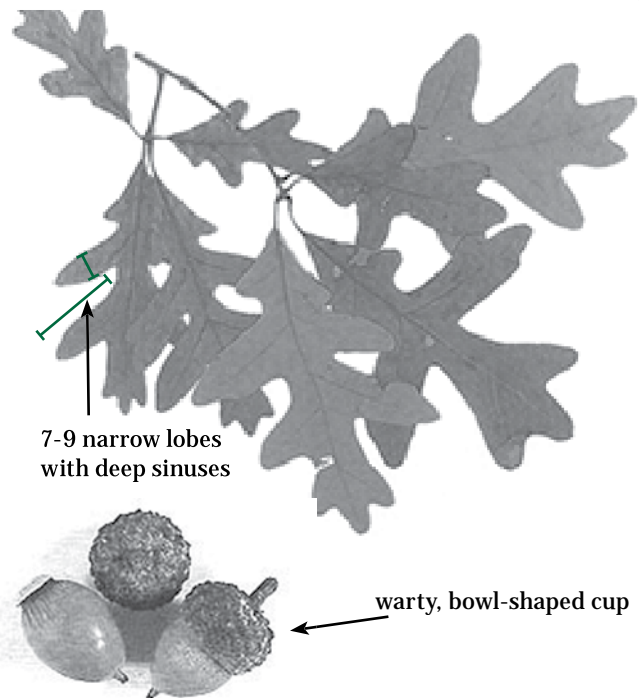
1. White oak (*Quercus alba*)

Leaves - mostly with seven to nine narrow lobes having deep sinuses (occasionally shallow); base wedge-shaped; midvein yellow; widest near middle, then tapering to base.

Acorn - $\frac{3}{8}$ " to $1\frac{1}{4}$ " long; oblong; light brown; cup is thick, warty and bowl-shaped; cup scales slightly fused together.

Bark - gray or whitish gray with patches; both deeply furrowed or somewhat scaly and overlapping.

Buds - nearly rounded, reddish-brown or gray, $\frac{1}{8}$ " long.



7-9 narrow lobes
with deep sinuses

warty, bowl-shaped cup

Upland White Oaks *continued*

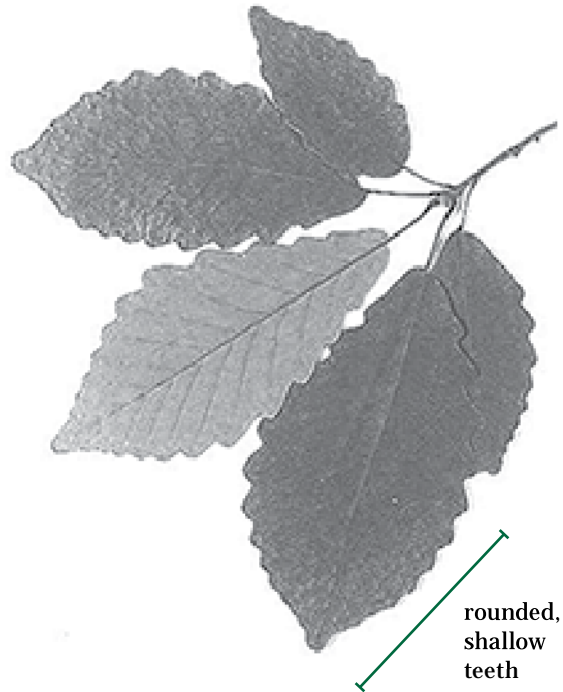
2. Chestnut oak (*Quercus montana*)

Leaves - margin with 10 to 16 rounded, shallow teeth on each side; inverted egg-shape (wider near apex); base wedge-shaped; stout yellow mid-vein; underside often pubescent.

Acorn - $\frac{3}{4}$ " to $1\frac{1}{4}$ " long; oval, bright, shiny brown; cup thin, enclosing $\frac{1}{3}$ of fruit.

Bark - gray; becoming thick and deeply furrowed into broad or narrow ridges (resembling flattened gear teeth) with age.

Twig - stout; purplish-brown, becoming reddish brown with age.



deeply furrowed bark



Upland White Oaks *continued*

3. Post oak (*Quercus stellata*)

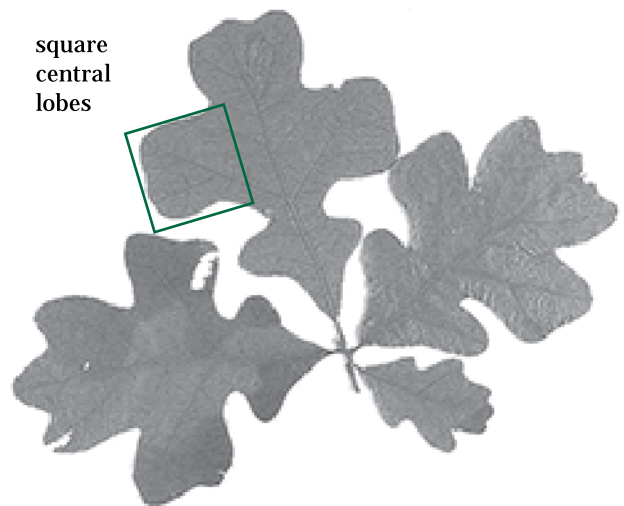
Leaves - leathery; three main lobes (two large central lobes squarish on ends) with broad sinuses, giving the leaf the appearance of a cross or "+"; waxy above and pubescent below.

Acorn - $\frac{1}{2}$ " to $\frac{3}{4}$ " long; elliptical; pubescent at tip; with fine lines; cup covers $\frac{1}{3}$ of acorn.

Bark - gray or light brown divided into flat, squarish-plates.

Twig - stout, brown with pubescence.

Other - often having a flattened appearance to crown if growing on a dry site.

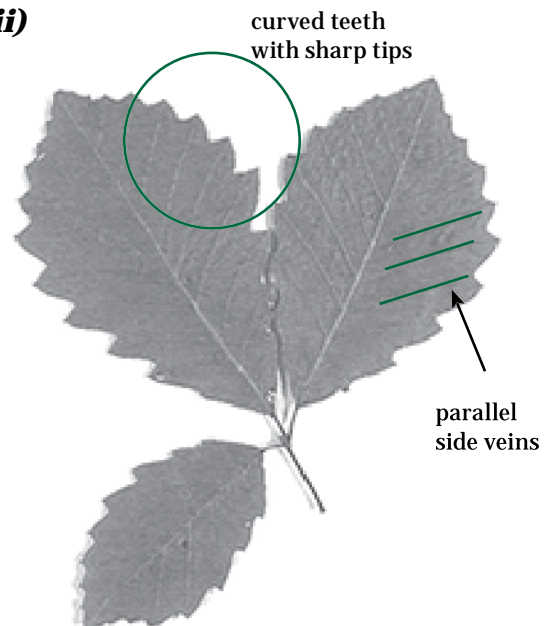


4. Chinquapin oak (*Quercus muehlenbergii*)

Leaves - margins coarsely saw-toothed; stout yellow midvein; many parallel side-veins ending in a curved tooth with a sharp tip.

Acorn - $\frac{1}{2}$ " to 1" long; egg-shaped; dark brown to black; cup bowl-shaped enclosing up to $\frac{1}{2}$ of the fruit; scales brown, mostly fused together.

Bark - pale-gray or creamy colored with finely-scaled ridges; resembles white oak, but flakes more easily.



Bottomland Red Oaks

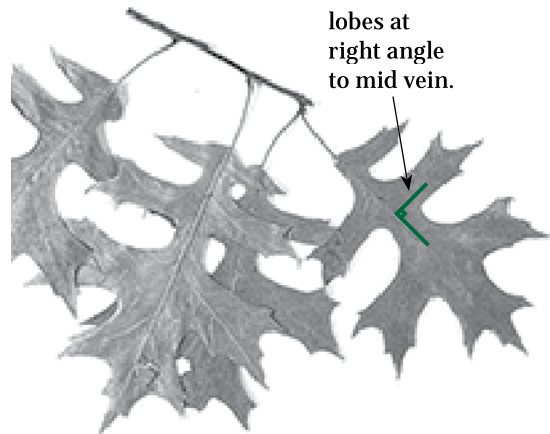
1. Pin oak (*Quercus palustris*)

Leaves - five to seven wide lobes with deep sinuses; lobes are at right angles to midvein; leaf base more-or-less flattened; underside with tufts of hair at vein angles (similar to black oak); persistent through winter.

Acorn - very small ($\frac{1}{2}$ " long); quite round, dark brown with mahogany red streaks from cup to tip; cup saucer-shaped, thin, red-brown, scaly.

Bark - light to dark brown; nearly smooth with scarce furrows and many small knots.

Other - having many short, side twigs that droop closer to the base; retaining dead (often pin-like) branches for many years.



drooping lower branches



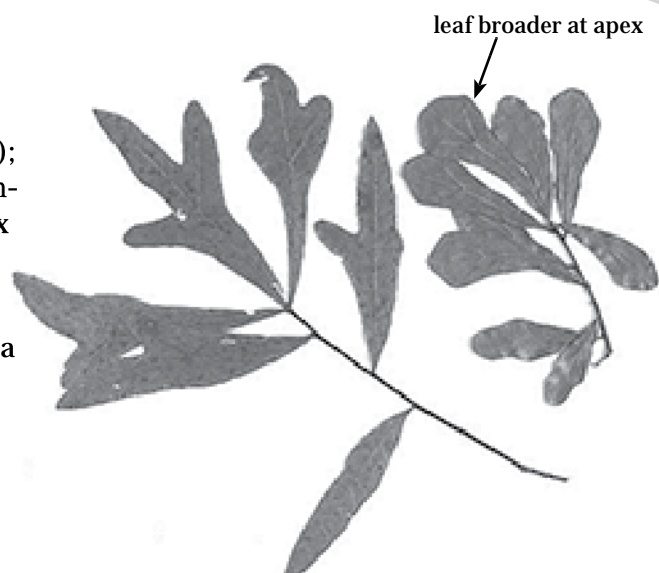
2. Water oak (*Quercus nigra*)

Leaves - variable in shape; mostly broader at apex (spatula or "duck-foot" shaped); 2" to 4" long, 1" to 2" wide; occasionally with three shallow lobes at apex only; pointed at base.

Acorn - $\frac{1}{2}$ " long; light brown to jet black with pubescent apex; barely enclosed by a thin cup; saucer-shaped.

Bark - grayish-black; mostly smooth with narrow, scaly ridges.

Petiole - short, stout, flattened.



Bottomland Red Oaks *continued*

3. Cherrybark oak (*Quercus pagoda*)

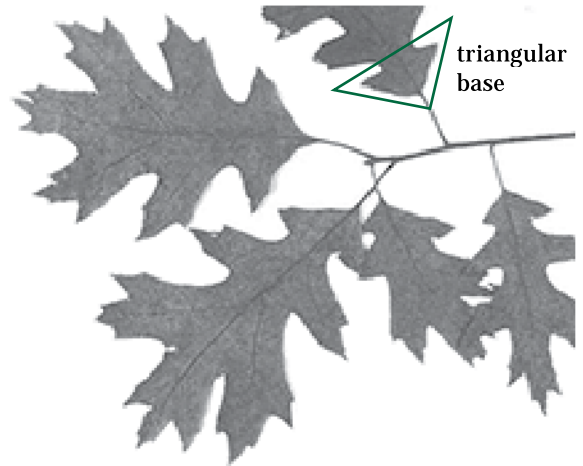
Leaves - five to 11 broad, shallow lobes; rust-colored pubescence beneath; first pair of lobes at base form an inverted triangle.

Acorn - $\frac{1}{2}$ " long; resembling a flattened ball.

Bark - gray-black, with tight flakes, resembling that of a black cherry tree.

Buds - pubescent, deep red-brown, pointed.

Twig - pubescent when young.



tight,
flaky bark



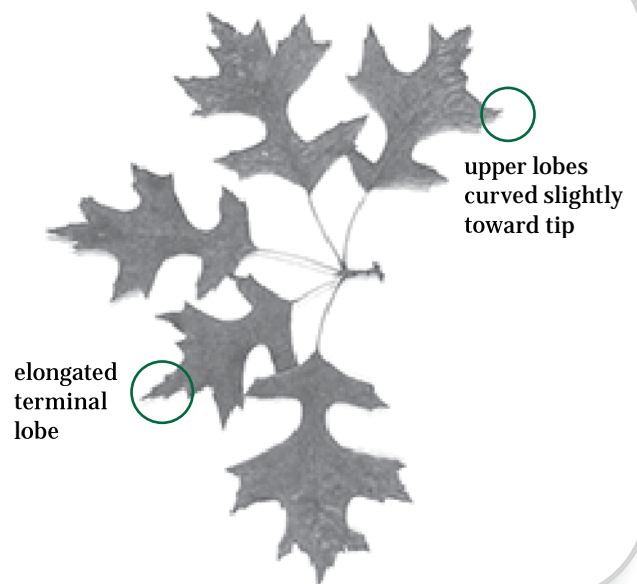
4. Nuttall oak (*Quercus nuttallii*)

Leaves - five to seven narrow, long, pointed lobes; wide sinuses; dull dark green above, paler with tufts of hair in vein angles below. The terminal lobe is usually elongated and the upper lobes usually curve slightly toward the leaf tip.

Acorn - $\frac{3}{4}$ " to $1\frac{1}{4}$ " long; longer than broad, dark striped; cup deep, scaly.

Bark - gray and smooth, becoming shallowly fissured with age.

Other - resembles pin oak except Nuttall has larger, longer acorn and fewer retained, dead side twigs.



Bottomland Red Oaks *continued*

5. Willow oak (*Quercus phellos*)

Leaves - 2" to 5" long and only 1/2" to 1" wide; long, narrow, lance-shaped without any lobes; margins sometimes wavy; resembling a willow tree.

Acorn - 1/2" long; bluntly pointed at apex; yellowish-brown; cup greenish-brown, thin, saucer-shaped.

Bark - dark gray, smooth and hard; becoming black and rougher with ridges and plates.

Other - petiole slender, short, 1/4" long.

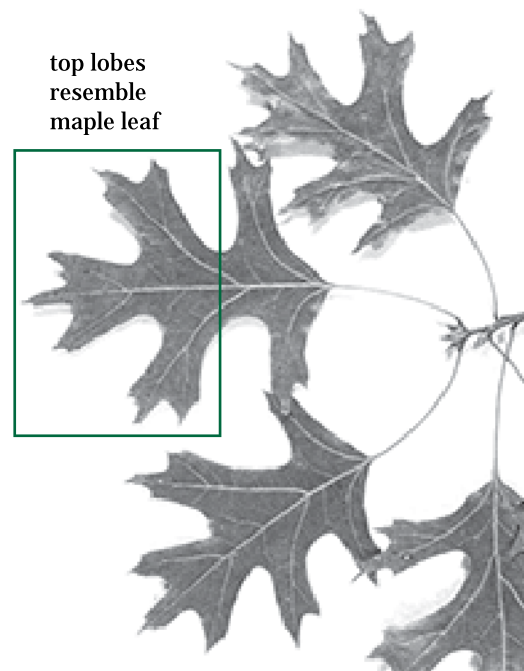


6. Shumard oak (*Quercus shumardii*)

Leaves - seven to nine lobes; top three lobes when viewed separate from rest of leaf resemble shape of maple leaf; large rounded sinuses; dark green and slightly pubescent above, dull green below with tufts of hairs at the vein angles.

Acorn - large, egg-shaped, up to 1 1/4" long and 1" wide; cup shallow with blunt, overlapping scales.

Bark - gray to dark gray; smooth becoming slightly furrowed with ridges.



Bottomland White Oaks

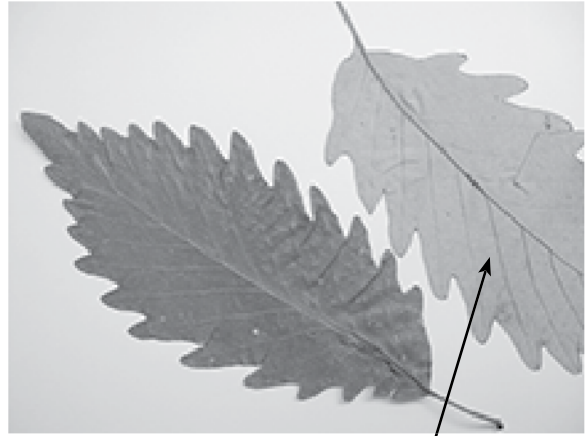
1. Swamp chestnut oak (*Quercus michauxii*)

Leaves - coarsely wavy-toothed (10 to 14 on each side); sinuses deeper than Chestnut or Chinquapin oaks; lobes pointing toward tip; often each tooth with fine tip; narrower at base and widest just above center; dark green above, pale with silvery pubescence below.

Acorn - quite large, 1" to 1½" long; oblong; cup encloses 1/3 of fruit; many overlapping, hairy, brown scales.

Bark - light gray with small scaly plates.

Note - resembles Chinquapin oak (upland oak) except typically found in poorly drained bottomland and flood plains.



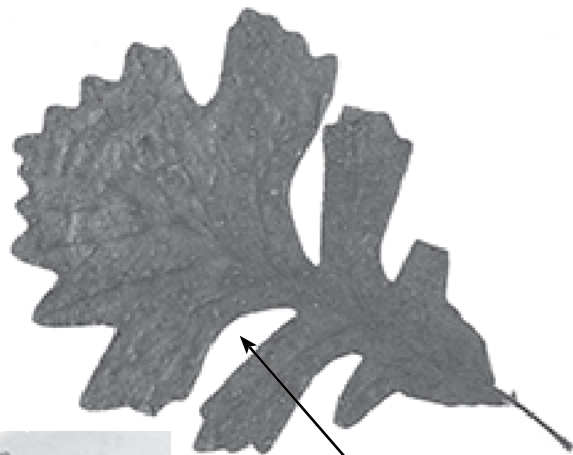
silvery, pubescent undersurface

2. Bur oak (*Quercus macrocarpa*)

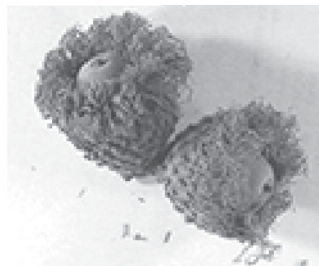
Leaves - 6" to 12" long, 3" to 6" wide, five to nine lobes, having an upside-down egg shape; very deep sinus at the mid-point extending nearly to midvein; pale pubescence below.

Acorn - very large, up to 2"; cup is fringed with loose ¼" to ⅓" hair-like scales; cup covers up to ¾" of fruit.

Bark - dark brown or yellow-brown; deeply furrowed.



deep sinus at midpoint



large (2") acorns with hair-like cup scales

Bottomland White Oaks *continued*

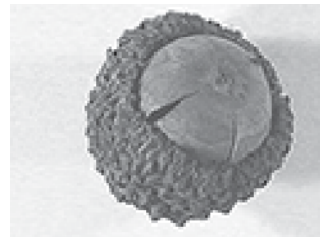
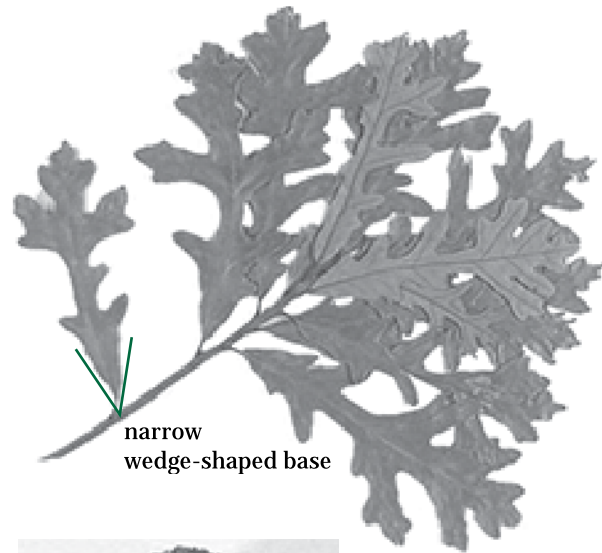
3. Overcup oak (*Quercus lyrata*)

Leaves - very irregular five to nine lobes; wider near apex than base; up to 10" long and 4" broad; base a distinct narrow wedge.

Acorn - 1/2" to 1" long with cup almost entirely enclosing fruit; usually broader than long.

Bark - gray or grayish-brown; with flat, squarish plates.

Other - leaf resembles spatula-shape as with Water oak, only much larger and with deeper sinuses.



acorn mostly enclosed by cup

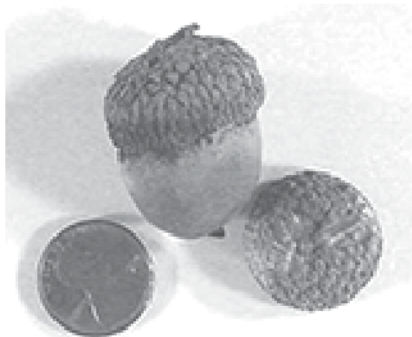
4. Swamp white oak (*Quercus bicolor*)

Leaves - Shallow sinuses with many shapes; dark lustrous green above, pale pubescent below; somewhat leathery.

Acorn - large acorn; born in pairs and often have long (2" to 4") stalks.

Bark - grayish-brown, deeply furrowed, becoming flaky.

Other - bark on branches usually flaky.



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