Know Your Oaks

Geordie Elkins' tried-and-true 'o.k. fun oak key'

Illustrations by Roberta Soprano

Highstead

general identification

- mostly trees (some large shrubs)
- branches and leaves alternate
- simple leaf with toothed/lobed margin
- fruit is an acorn
- buds on the tips of branches are in clusters
- bud scales are shingle-like

oaks in america

Oaks in America are divided into two subgenera; the red/black group and the white group.

red/black group

Bristle-tip lobe and apex, acorns mature in two years and a layer of soft hair inside the shell of the nut

white group

No bristle tip on lobes or apex, acorns mature in one year and no soft hair inside nut shell

identification hints

- Collect as much plant material as you can (e.g. leaves, buds, fruit), and note bark and habitat.

- Base your identification on a combination of traits. There is a great deal of natural variation in oaks. A single trait on a single plant may be atypical of the species.

- Oaks naturally hybridize. There will be some plants that you may not key out. Sometimes experts have trouble identifying certain plants.

lobes and sinuses

acorn

acorn caps

bowl- or cup-shaped cap

saucer-shaped cap

round teeth

The Oak Key

1. Foliage with bristle tips on the lobes, soft hair on the inside shell of the nut, acorns mature in two years (mature acorns on old growth).

2. Sinus above lobe generally less than or equal to 1/2 distance from bristle tip to midrib

3. Leaves small, 5–10 cm, lobes triangular, shrub or small tree . . . . ***Q. ilicifolia***

3. Leaves large, more than 10 cm, large tree

4. Foliage dark green, very glossy on top. Terminal bud large, 4 or 5 angled, covered with downy beige or yellow pubescence. Acorn cap bowl-shaped with fray scales on edges. . . . . ***Q. velutina***

4. Foliage dull green, not glossy. Terminal bud reddish-brown, usually smooth or with some hair on the tip. Acorn cap saucer-shaped with appressed scales. . . . . ***Q. rubra***

2. Sinus above lobe generally more than 1/2 distance from bristle tip to midrib

5. Terminal bud large, 4 or 5 angled, covered with downy beige or yellow pubescence. Acorn cap bowl-shaped with fray scales on edges. Top of leaf dark green, shiny, bottom typically with pubescence all over. . . . . ***Q. velutina***

5. Terminal bud other

6. Main terminal bud small, 3 mm or less, typically smooth or sparsely hairy. Acorn small and round with saucer-shaped cap. Cap covers less than 1/2 nut. Distinct pubescence in vein axils under leaf. . . . . ***Q. palustris***

6. Main terminal bud larger, 3–6 mm, typically with pubescence on top 1/2. Acorn cap cup-shaped, covering 1/2 of nut. . . . . ***Q. coccinea***

1. Foliage with rounded teeth or lobes, no bristle tips. No hair on inside of nut shell. Acorns develop in one year (mature acorns on new growth).

7. Leaf margin deeply lobed

8. Underside of leaf with little or no pubescence (soft hair) . . . . . .*Q. alba*

8. Underside of leaf with soft pubescence

9. Leaf small 10-15 cm. Leaf with middle lobes cross shaped. Acorn small, with bowl-shaped cup covering 1/3 - 1/2 of the nut. Scales mostly flat. . . . . .*Q. stellata*

9. Leaf large, 15-30 cm, with middle sinus the deepest. Acorn larger, cup covering 1/3 - 2/3 of the nut with outside scales forming a fringe around the edge of the cup. Twigs often with corky bark. . . . . .*Q. macrocarpa*

7. Leaf margin with teeth (not lobed)

10. Leaf margin with rounded teeth

11. Underside of the leaf is densely pubescent and whitish in color. Acorn on thin stem 2-7 cm long. Typically growing in wet or moist locations. . . . . .*Q. bicolor*

11. Underside of the leaf sparsely pubescent or smooth. Acorn with no stem or short stout stem, less than 2 cm. Bark deeply furrowed. . . . .*Q. prinus*

10. Leaf margin with pointed teeth (not bristle tips)

12. Tree, large leaf, 10-20 cm and many teeth (8-14) . .*Q. muehlenbergii*

12. Shrub, small leaf, 4-10 cm and fewer teeth (5-8) . . . . . .*Q. prinoides*

notes

White Oak Group

Quercus alba- white oak.

Tree to 25 m with light gray bark in plates or scales

Leaf- elliptic and with deep round lobes, the sinus reaching 1/3 - 7/8 the way to the midrib. The top of the leaf is light green to gray-green, dull to slightly glossy.

Buds- red-brown, short (3 mm) and plump with a rounded top. Not hairy.

Acorn- short stemmed or up to 25 mm. Cap is cup-shaped with warty scales. The nut is light brown, oblong and smooth.

Habitat- moist forest on well-drained loam soils. May occur on drier sites.

Quercus prinus (Q. montana)- chestnut oak

Tree 15-24 m. The bark is light gray and deeply furrowed.

Leaf- elliptic or broader near the top. Regular and rounded teeth. The upper surface is yellow-green and the bottom is pale green and sometimes has small hairs.

Buds- pointy tipped, chestnut brown to 6 mm long and smooth

Acorn- usually on a short stout stalk 8-20 mm. The cap is cup-shaped, covering about 1/3 of the nut. It becomes thin near the edge. The scales are gray. The nut is yellow-brown and elliptic and smooth.

Habitat- rocky uplands, ridges and forests with shallow soils

Quercus bicolor- swamp white oak

Tree to 30 m. with dark gray scaly or flat ridged bark

Leaf- elliptic or widest at the top 1/3 of the leaf. Leaf margin is coarsely toothed with rounded teeth. The top surface is dark green, and the underside is whitish with downy hair.

Buds- light to dark brown. Rounded to oval shaped 2-3 mm and smooth.

Acorn- on a thin long stem 4-10 cm. The cap is cup-shaped with thickened, warty scales and it covers about 1/3 of the nut. The nut is chestnut colored.

Habitat- swamps and low forests

Quercus stellata- post oak

Tree to 20 m with light gray scaly bark

Leaf- elliptic or wider toward the top. Shallow or deep rounded lobes, typically forming a cross pattern. The top of the leaf is dark green, and the underside has fuzzy hair.

Buds- red-brown globe to oval shaped, 3-4 mm, and small hairs on bud scales

Acorn- directly on twig or on a short stem less than 6 mm. The cap is a deep saucer or shallow cup shape that covers about 1/3 of the nut. The nut is small and may be slightly hairy.

Habitat- very dry sites, sandy or gravely ridges. In Connecticut, only on the coast.

Quercus macrocarpa- bur oak

Tree to 30 m. The bark is dark gray and scaly or flat ridged.

Leaf- large leaf 70-150 mm long. Shallow rounded lobes at the top and bottom of the leaf and deep lobes in the middle. The top of the leaf is dark green and shiny, and the underside is pale green and furry.

Buds and twigs- buds have soft hair and are gray to yellow-brown and about 3 mm long. The twigs often have corky wings.

Acorn- typically on a stout stem. Cap is cup-shaped and covers 1/2 -7/8 of the nut. The cap scales are loose and fringed along the edge of the cup. The nut is light brown.

Habitat- moist bottomlands. Rare in Connecticut, typically in northwestern part of the state unless cultivated.

Quercus muehlenbergii- chinkapin oak

Tree 18-25 m with gray, thin-papery bark

Leaf- elliptic to lance-shaped 10-17 cm. The edge of the leaf is pointed toothed with small glands at the end of the points. The top surface of the leaf is dark green and leathery and the underside is smooth and light green.

Buds- red-brown and round to oval shaped, 3 mm

Acorn- 1.2-2.5 cm long. The cap is cup-shaped and covers about 1/2 the nut. The nut is brown.

Habitat- wide range, but typically on slopes in calcareous or limestone soils with a pH above 6.0

Quercus prinoides- dwarf chinkapin oak

Large shrub or small tree 1-5 m, sometimes spreads by rhizomes. The bark is gray with a thin and papery texture.

Leaf- elliptic to lance shaped, 5-9 cm. The edge of the leaf is toothed with pointed teeth, sometimes slightly rounded. Dark green above and light green below, appears smooth but with some minute hairs.

Buds- brown to red-brown, oval shaped 1-3 mm, sparsely hairy

Acorn- directly on branches or on short stems 3-8 mm. The cap is cup-shaped and gray with small hairs. It covers 1/4-1/3 of the nut. The nut is light brown and oblong to oval.

Habitat- dry rocky sites, ridges and sandy soils

Red/black Oak Group

Quercus rubra- red oak

Tree, 21-30 m. The bark is gray with wide ridges and shallow fissures.

Leaf- 12-20 cm, elliptic or wider near the top with 7-11 bristle-tipped lobes. The sinuses are less than 1/2 the distance to the midrib. The top is dull green and the underside is pale green.

Bud- oval to conical, red-brown scales, 4-7 mm. Smooth or with a few hairs near the tip.

Acorn- 1-2.5 cm long, the cap is saucer-shaped and covers about 1/4 of the nut. The nut is brownish and oval to oblong.

Habitat- moist slopes to well-drained upland soils

Quercus palustris- pin oak

Tree 20-25 m. Smooth gray-brown bark becoming scaly.

Leaf- elliptic, 7-13 cm with 5-7 bristle-tipped lobes. Deep sinuses and the lobes often widen near the outer end. The top of the leaf is dark green and shiny; the underside is dull green and has distinct tufts of hair in the vein axils.

Buds- small, 3-5 mm, oval shaped, red-brown and smooth or with a few hairs near the tip

Acorns- small, 1-1.7 cm, cap is saucer-shaped and covers about 1/4 of the nut. The nut is round to oval shaped.

Habitat- bottom lands and poorly drained clay

Quercus coccinea- scarlet oak

Tree, 20-30 m. The bark is dark gray to brown with small fissures.

Leaf- 8-17 cm long, the margin is deeply lobed with 5-9 lobes and sinuses are more than 1/2 way to the midrib. The upper surface is dark green, and the underside is yellow-green.

Bud- dark red-brown, 4-7 mm, cone shaped to oval with silvery hair on the top 1/3 of the bud.

Acorn- the cap is deeply cup-shaped and covers 1/3-1/2 of the nut. The nut is oblong and 12-22 mm long.

Habitat - poor soils, well-drained uplands and dry slopes.

Quercus velutina- black oak

Tree 15-25 m. The bark is dark brown to black with deep furrows; the inner bark is yellow.

Leaf- large, 10-20 cm. The upper surface is dark green and shiny. The underside typically has a rough, hairy texture with a yellow-green color, sometimes the rough hair will fall off the leaf surface late in the year. The margin is lobed with bristle tips. The sinuses are typically less than 1/3-1/2 the way to the center of the leaf. Note: There can be great variation in the shape of the leaves and the depth of the sinuses.

Buds- large, 6-12 mm. Elliptical to conical, 4-5 sided with soft beige or yellow hair.

Acorns- 10-20 mm, the cap is cup-shaped and has loose scales around the edge that looked frayed, it covers about 1/2 of the nut. The nut is yellow-brown and the flesh is yellowish.

Habitat- rocky upland and dry sites.

Quercus ilicifolia- bear oak

Large shrub or small tree to 6 m. The bark is dark gray with shallow ridges.

Leaf- elliptic or sometimes wider near the top. A small leaf 5-12 cm, with 3-5 bristle-tipped lobes and shallow sinuses. Shiny dark green above and pale green below with soft hairs.

Buds- red-brown, oval shaped, 2-5 mm, with soft hair near the tip.

Acorn- cup is saucer-shaped and covers 1/4-1/3 of the nut. The nut is typically covered with fine hairs and is 1-1.5 cm long.

Habitat- rocky outcrops and dry, sandy sites.

oak geobotany

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