

# Oak in Focus—Red Oak

Red Oak (Northern Red Oak)

*Quercus rubra* L.

(*Quercus borealis* F. Michx.)



Maryland's oaks have put forth an abundant acorn crop during the Maryland Native Plant Society's *Year of the Oak* and you almost need a hard hat when walking in the woods this fall! Now that we've had three consecutive years of bountiful acorn production, it's difficult to remember the fall of 2009 when many of us were worried about the historic dearth of acorns in our native woodlands. The acorns of the red oak (*Q. rubra*) are quite distinctive and help to distinguish the tree from its closest look-alike, the black oak (*Q. velutina*). The red oak acorn's shallow cap looks like a beret, while the black oak cap looks more like a ski hat. The red oak is, not surprisingly, in the red or black oak group, which is distinguished from the round-lobed white oak group by its pointed-lobed, bristle-tipped leaves, acorns maturing in two years rather than one, and pubescent inner acorn shells. There are 12 oaks in the red oak group native to Maryland, and MNPS board member and Botanical Society of Washington president Dr. Christopher Puttock has created a wonderful key for them and for the white oak group, which he presented to our members during the September monthly meeting. Of the red oak group, *Q. rubra* is the most common species in Maryland. Its autumn color is variable, but MNPS board member and Montgomery County forest ecologist and botanist Carole Bergmann notes that its leaves, especially on young trees, often turn a brilliant red. In addition to its prevalence in area woodlands, the tree is also commonly planted as a street, park and backyard tree.

**Native Habitat and Range:** Grows in a wide variety of soils and habitats; southeastern Canada, Michigan and Minnesota; south to eastern Oklahoma, Alabama and Georgia.

**Leaves:** Simple, alternate, deciduous. 4-10 in. (10-25.3 cm.) long. 7 to 11 toothed, bristle-tipped lobes are cut about halfway to the midrib. Dull, medium green above, paler below and glabrous, except for occasional small tufts of brownish hairs in the vein axils. Petiole up to 2 in. (5 cm.) long.

**Fruit:** Acorn, maturing in two years. Oblong-ovoid, 2/3-1 in. (about 1.5-2.5 cm.) long, sessile or nearly so. Enclosed for less than 1/3 of its length in reddish-brown, saucer-shaped cap with many small, closely appressed scales. As previously mentioned, the cap resembles a beret.

**Bark and Twigs:** MNPS board member, author and long-time teacher Cris Fleming has taught her woody plant students a great diagnostic trick during many years of teaching. In Cris's words: "I find the bark pattern of *Q. rubra* very distinctive. The furrows with smooth light gray bark running between the long parallel ridges of thick dark gray bark always remind me of ski tracks through deep snow." Twigs are reddish-brown, becoming glabrous, with scaly, ovoid, reddish-brown winter buds. Buds have scales that may have some pubescence.

**Growth Habit:** Medium to tall tree with large branches forming a rounded crown.

**Similar Species:** The black oak (*Q. velutina*) is less common than the red oak in native woodlands. Many of its leaves are similar in shape (though some may be more deeply sinused, especially when sun-exposed) but they are dark, glossy green above and usually have "scurfy" (dandruff-like) pubescence below in addition to hair tufts in the vein axils. However, the pubescence may be gone this time of year. The black oak has very dark, broken, shallowly blocky bark (without "ski tracks") and exceptionally large angled buds covered with gray-white pubescence, an excellent fall and winter diagnostic. The scarlet oak (*Q. coccinea*), the pin oak (*Q. palustris*) and the Shumard oak (*Q. shumardii*) have leaves that are usually cut more than halfway to the midrib. The southern red oak (*Q. falcata*) has narrower leaves.

**Ethnobotanical and Wildlife Lore:** Alonso Abugattas, Natural Resources Manager for Arlington County Parks, shared a wealth of information about the red oak and oaks in general for Oak in Focus. In Alonso's words: "According to ethnobotanist Daniel Moerman, at least 12 Native American Indian tribes used red oak medicinally for such things as treating diarrhea, coughs, mouth sores, chapped skin, fevers, tooth aches, and sore throats. Over 600 insect species use oaks as their only host plants, not capable of feeding on anything else, with the most specific being the gall making Cynapid wasps. Tallamy records 532 species of moths and butterflies using *Quercus* (which is why gypsy moth spraying can have such devastating effects on Lepidoptera populations). About 50 species of leaf miners also use this genus, at least 27 species of treehoppers, and at least 57 species of beetles. That doesn't include the 60+ species of birds and dozens of mammals that also eat the fruit, which [in the red oak group] takes 2 years to mature. People did not eat red oak acorns as much due to the bitterness associated with tannins, but they could be eaten if it was repeatedly leached out. People used it more for tanning (tannins) leather and for furniture (because the red oak group absorbs moisture better for stains and such as opposed to the water-tight white oaks). It is the state tree of New Jersey, fast growing, and I think is the northern most growing of the red oaks. MNPS board member, master gardener and habitat steward Marney Bruce adds: "The acorns from the red oak, which mature during their second growing season, are bitter because of the tannin content, so squirrels tend to bury them. Well, we know the squirrels forget where they bury most acorns, so this helps the tree regenerate. Red oaks also tend to drop their leaves after the acorns fall, thus burying them themselves. In contrast, white oak acorns germinate quickly after they hit the ground. They are much more tasty to wildlife, so are consumed on the spot. It is interesting to see the different 'strategies' these two trees have to reproduce. The acorns are a very important food source for birds and mammals but not so much to humans anymore. However, the nutmeats of red oak acorns were an important food source for Native Americans. They used various tactics to dissolve the water-soluble tannins before pounding them into a meal."

**Locations and Habitats in Maryland and Nearby:** Common in western and central Maryland but not common on the Coastal Plain. Botanist, ecologist and MNPS board member Rod Simmons tells Oak in Focus that, while (northern) red oak (*Q. rubra*) is dominant in the mountains and inner piedmont, "southern red oak (*Q. falcata*) rules on the outer coastal plain and much of the Western Shore vs. (northern) red oak."

# Botany Quiz

Cris Fleming notes: “In the publication *The Natural Communities of Maryland*, January 2011, The Maryland Natural Heritage Program lists seven ecological communities with *Quercus rubra* as dominant or co-dominant. These community groups are acidic oak-hickory forest, basic mesic forest, basic oak-hickory forest, chestnut oak forest, dry-mesic calcareous forest, mixed oak-heath forest, and northern hardwood forest.”

Carole Bergmann adds: “I think that *Quercus rubra* is one of the most common oaks in the Maryland piedmont. I find it regularly in Howard, Baltimore, Frederick, Carroll, Montgomery counties in pretty much the same combinations in all areas.

\*in floodplains—basically scattered, not a primary tree, but definitely present in many spots along with the sycamore, green ash, musclemo, box-elder, red maple, tulip trees, etc.

\*in toe of slope/sloped areas between floodplain and uplands—more of a presence, sometimes one of the more important forest components along with tulip tree, red maple, tupelo, etc.

\*in mesic uplands—an important component of the very common “mixed oak/hickory” forests, along with white oak, pignut and mockernut, beech, etc.

\*in drier uplands where chestnut oak is the main oak, you still find red and white oak with the *Kalmia*, *Vaccinium* etc. All in all, I find *Q. rubra* all over except in wetlands/swamps in the Piedmont.”

Simmons, a noted expert on oak species and hybrids, reports on some of the *Quercus rubra* plant communities of northern Virginia and Washington, D.C.: “In the City of Alexandria and much of the greater Washington, D.C. area along the fall line and inner coastal plain, dry, weathered, acidic summits, hilltops, terrace tops, and upper slopes of hills and ridges are typically vegetated by Oak-Heath Forest. Terrace and ridge summits and north facing upper slopes are usually characterized by dominant stands of Chestnut Oak (*Quercus montana*) and Mountain Laurel (*Kalmia latifolia*), occasionally intermingled with lesser concentrations of deciduous heaths and other plants. Often co-dominant and intermixed with the above on mid to lower north facing slopes — especially on very steep slopes and above streams — are Witch Hazel (*Hamamelis virginiana*) and Northern Red Oak (*Quercus rubra*). Excellent regional examples of Oak-Heath Forest slope variants occur in the City of Alexandria at Monticello Park (no terrace; entire eastern half of park is slope variant), the high, steep ridge above the “waterfall” at the Winkler Botanical Preserve (largest remaining example in Alexandria), and Dora Kelley Nature Park; Glen Carlyn Park in Arlington County; Rock Creek Park, Ft. Dupont Park, and other D.C. parks; and elsewhere.”

Historic red oaks are planted throughout Washington, D.C., perhaps most notably between Union Station and the Capitol in a historic Daughters of the American Revolution planting, and on the White House and Capitol grounds.

~ Melanie Choukas-Bradley

Oak in Focus is adapted from City of Trees: The Complete Field Guide to the Trees of Washington, D.C., Melanie Choukas-Bradley with illustrations by Polly Alexander (University of Virginia Press). Also Abugattas, Carole Bergmann, Marney Bruce, Cris Fleming, Karyn Molines and Rod Simmons contributed to this article.

1. Match the acorn with the oak species.

- A. *Quercus prinus* (Chestnut Oak)
- B. *Q. rubra* (Northern Red Oak)
- C. *Q. acutissima* (Sawtooth Oak)
- D. *Q. alba* (White Oak)



2. These deep blue (occasionally white) flowers are a common sight in damp shady areas in late summer and fall. Sometimes reaching over 2 feet high, the racemes are crowded with irregularly shaped, downward hanging flowers and coarsely veined leaves. This plant grows well in the garden. Plant one, and the following spring you’ll have rosettes growing up from rhizomes just beneath the surface of the soil.

3. In what genus is each of the following plants currently classified?

- a. *Aster cordifolius* L. (Blue Wood Aster);
- b. *Aster ericoides* L. (White Heath Aster);
- c. *Aster lateriflorus* L. (Britton) (Calico Aster)

4. This vine is a common invader of shrubs. You might not notice it until the fall when it bursts into bloom with a profusion of fragrant white flowers overtopping shrubs and fences. The leaves are opposite, compound, with (usually) 5 leaflets whose margins are entire.

4. *Clematis ternifolia* (Sweet Autumn Clematis), native to Japan. The native look-alike, *Clematis virginiana* (Virgin’s Bower), has (usually) 3-toothed or lobed leaflets.

3. All three are classified in the genus *Symphoricarpon* [sim-fee-AH-tri-kum].

2. *Lobelia siphilitica* (Great Blue Lobelia)

1. A-1, B-3, C-4, D-2. *Q. acutissima* is native to Asia, and is seen to escape from cultivation in our area, e.g., at the US National Arboretum.

Answer to Botany Quiz