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Oak in Focus—White Oak

Quercus alba L.

Beech Family (*Fagaceae*)

by Melanie Choukas-Bradley



uring the “Year of the Oak,” the Maryland Native Plant Society is celebrating the 21 native oaks of Maryland and we are learning all we can about their identifying characteristics and their importance to our regional ecology. Surely none of our 21 species is more beloved than the white oak (*Quercus alba*), our official state tree. Abundant in woodlands throughout Maryland, the white oak has long been a friend to humankind, both as a forest and cultivated tree. Montgomery County Forest Ecologist and MNPS board member Carole Bergmann speaks for all of us when she says: “Such a beautiful tree! The pale gray shingled bark stands out so beautifully against a bright blue winter afternoon sky. The white oak is our state tree for a reason. I love that tree and always point it out on every walk I lead!” White oak acorns are edible after treating to remove tannin. Traditionally, a protein-rich meal was made from the crushed, ground acorns and used in baked goods. The acorns are an important food source for wildlife, including squirrels, raccoons, white-tailed deer, wild turkeys, and quail. Less well-known is the importance of oaks to insects, including butterflies and moths. MNPS President Kirsten Johnson observes: “Doug Tallamy says oaks support 534 Lepidopteran species – more than any other genus in the midatlantic. Thus oaks also support insect-eating birds and animals.” The white oak is, not surprisingly, in the white oak group, along with eight other Maryland oak species. Trees in the white oak group bear leaves with rounded (non-bristle-tipped) lobes or teeth (or apices in non-toothed or lobed species) and acorns maturing in one year. The acorns in the white oak group are purportedly “sweeter” than those in the red oak group.

Native Habitat and Range: A variety of habitats including upland woods; grows best in deep, rich, well-drained soils. Eastern U.S. and southeastern Canada from Maine and southern Quebec to Minnesota, south to eastern Texas and northern Florida.

Leaves: Simple, alternate, deciduous. 3 ½ to 9 inches (9-22.8 cm) long. Some leaves have narrow lobes separated by sinuses cut almost to the midrib; others have wider lobes and sinuses cut only about halfway to the midrib. Five to nine rounded lobes; lobes point upward and sometimes have one or more large, rounded teeth. Base wedge-shaped or slightly rounded. Pubescent at first, soon becoming glabrous; very pale and sometimes slightly glaucous below. Petiole ¼ to 1 inch (0.5-2.5 cm) long. Autumn color: deep wine-red some years. Dry leaves often remain on the tree through the winter.

Flowers: Male flowers in loose catkins sometimes called “aments.” Female flowers are tiny, with three-lobed stigmas. Trees are monoecious and spring-blooming.

Fruit: Acorn, maturing during the first year as all acorns in the white oak group do. Sessile or short-stalked. ½ to 1 inch (1.3-2.5 cm) long, enclosed for about one-quarter of its length by a bowl-shaped cup covered with thickened nubby scales.

Bark and Twigs: Bark pale ash-gray, with shaggy vertical scales; often slightly furrowed toward the base of the tree. Twigs reddish brown or

gray, glabrous or nearly so when mature (greenish or reddish and may be hairy when young), with scaly, reddish brown, ovoid or nearly round winter buds.

Growth Habit: Large tree with a full, rounded crown. Woodland trees are tall and straight; trees grown in the open may have a short, wide trunk and broadly spreading limbs.

Similar Species: Although *Quercus alba* is by far the most common of the trees in the white oak group growing in Maryland, it could be mistaken with other species. Chestnut oak (*Q. prinus*) has more shallowly lobed leaves and bark that is dark, thick, and separated into ridges and valleys. Swamp chestnut or basket oak (*Q. michauxii*) has leaves similar to chestnut oak, and bark similar to white oak. It is largely a tree of the coastal plain although a few specimens grow at Blockhouse Point and in other piedmont locations and it is planted in the Washington, D.C. area. Swamp white oak (*Q. bicolor*) has thick leaves with felt-like pubescence below and long-stalked acorns. Post oak (*Q. stellata*) has leaves with a large pair of lobes near the apex, giving the leaf a cross-shaped look. See www.mdflora.org for a full list of oaks native to MD and other resources related to the Year of the Oak.

Locations: The white oak can be found growing in woodlands throughout Maryland and it is a favorite cultivated tree. According to Botanist, Ecologist and MNPS board member Rod Simmons: “Most of the mature White Oaks we see in yards and along old neighborhoods and sections of cities are remnants of native forested areas dominated by upland oaks that were present when the houses and streets were built.”

Threats to the White Oak and other Oaks: Kirsten Johnson notes that the white oak and other oaks are threatened by deer and urbanization. On the latter, Rod Simmons agrees: “[The white oak] can tolerate the successive periods of drought and heat associated with climate change, but it cannot tolerate significant water table drops and loss of groundwater infiltration around its root zone that result from the now-constant practices of digging, trenching, paving, overbuilding, burying underground utilities, etc., that are the hallmarks of our over-developed and highly fragmented suburbs and neighborhoods.” Geologist and tree enthusiast Tony Fleming adds: “I think Rod hit the nail on the head: local environmental change is a well-documented culprit in plant and animal mortality, and it comes in a variety of packages, large and small. To my thinking, the most pervasive form of local environmental change is deforestation and urbanization: the [D.C.] metro area probably has considerably fewer forested areas now than 50 or 100 years ago. Regional deforestation creates a hotter, drier, and more wind-prone microclimate, not to mention less overall soil moisture availability as forested areas are converted to urban land cover. For the large trees that remain, the cumulative effect of all these local environmental changes amounts to death by 1,000 cuts.”

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). Carole Bergmann, Charlie Davis, Cris Fleming, Tony Fleming, Kirsten Johnson, Wesley M. Knapp, Rod Simmons, and Tina Thieme Brown contributed to this article.