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## White Oak Part of Global Oak Presence

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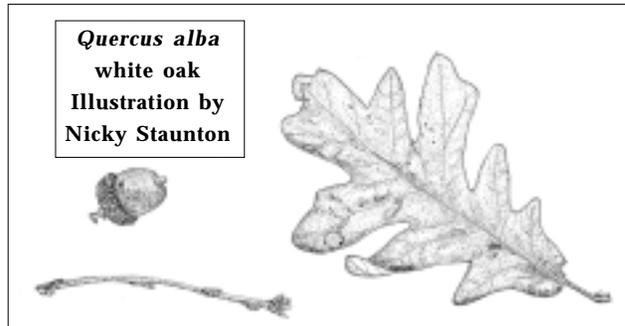
# White oak part of global oak presence

As we act locally celebrating white oak, *Quercus alba*, as the 2011 VNPS Wildflower of the Year, it is perhaps appropriate to think globally for a few moments and consider the breadth of diversity encompassed by the oaks. *Quercus* is a big genus, easily the largest in its family, the Fagaceae. Approximately 400 species of oak are known, and they are widely distributed in the northern hemisphere. We tend to think of oaks as temperate zone trees, but in the New World, their range extends south through the mountains of Central America to Colombia and in the Old World, into the tropics of southeast Asia.

As might be expected of such a large and widespread genus, several subgroups of oaks can be recognized. Oak subgroups were first distinguished on the basis of morphological features; in recent years molecular (DNA) characters and the details of pollen structure have reinforced the definition of these groups. Specialists do quibble about the details, but recognition of six prominent subgroups seems well established in recent literature. Yes, six! Only two of these subgroups are found in eastern North America. It is remarkable how many of the references for oaks in our region refer to our two local subgroups as if they were the only subgroups of oak. In truth, the many oaks that grace our woods represent just a fraction of oak diversity on a global scale—hence the motivation for outlining this broader perspective of the genus. Two of the six major groups of oaks occur only in the New World, three are restricted to the Old World, and one, the white-oak group, is found in both.

While the composition of oak subgroups seems to be nearing consensus among botanists, the subgroups' nomenclature remains chaotic. Suffice it to say that application of for-

mal names depends on numerous details: the degree of lumping or splitting among subgroups, for one thing, and the rank in the taxonomic hierarchy—subgenus, section, or subsection—to which any subgroup is assigned, for another. Different botanists see these things differently and, accordingly, they wedge oak natural



diversity into the categories of classification to fit their particular interpretation. Consequently, we still see some proliferation of oak subgroup names. For the discussion that follows, names will be used in a strictly informal fashion independent of taxonomic rank, with an attempt to include frequently used synonymous (or nearly synonymous) alternative group names.

**Intermediate or golden-cup oaks (*Protobalanus*):** *Protobalanus* constitutes the smallest subgeneric group of oaks, consisting of just five species that range from southern Oregon to northern Mexico. Leaves are entire or toothed and evergreen, acorns take two seasons to reach maturity, and acorn caps are densely glandular hairy, so much so that the individual bracts are indistinct except for their tips. *Quercus chrysolepis* (canyon live oak, maul oak), a highly variable species, is the most widespread member of the group.

**Red/black oaks (*Lobatae*, *Erythrobalanus*):** The red/black oak group is also restricted to the New World, with some 195 species, only 35 of which occur north of Mexico—which means that the true center of diversity of “our” red/

black oaks is well to our south! Leaves may be deciduous or evergreen, lobed, toothed, or entire; toothed leaves have prominent bristletips; acorns take two years to reach maturity for most species. Included here are familiar trees like the red, scarlet, pin, black, blackjack, willow, water, turkey oaks, and a plethora of trees from high-altitude regions of Mexico and Central America.

**White oaks (*Quercus*, *Lepidobalanus*, *Leucobalanus*, *Mesobalanus*):** Species belonging to the white oak group occur both in the New and Old Worlds; it is thus geographically the most widespread subgroup of oaks. Some 200 species have been recognized, with 51 found across the breadth of

North America north of Mexico. Leaves may be deciduous or evergreen, lobed, toothed, or entire; when present, leaf teeth are never bristle-tipped; acorns mature within a single season. The white oak group includes many familiar local species including white, burr, post, chestnut, and swamp chestnut oaks. The evergreen live oaks (*Quercus virginiana* and close relatives) of the southeast and Gulf coast also belong here, as do many more species from Mexico, Central America, Europe, and Asia. *Quercus robur*, the English white oak, is perhaps the best-known exotic species of this group; it and some of its hybrids are sometimes cultivated as specimen trees in the U.S. Also notable is the gall or dyer's oak, *Quercus lusitanica*, from the Iberian Peninsula and nearby northwest Africa; insect-induced galls that form on this (and some related species) yield tannins used as a dark-colored dyestuff.

**Cycle-cup oaks (*Cyclobalanopsis*):** Cycle-cup oaks encompass about 150 species found in tropical and subtropical regions of southeast Asia. These evergreen oaks have remarkably distinctive acorn caps that consist

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of a series of ringlike ridges. Whereas our familiar acorn caps look scaly, cycle-cup acorn caps look as if they have been turned on a lathe. In some species the acorns are borne in remarkably dense clusters. *Quercus myrsinifolia*, the Chinese evergreen oak, is rarely cultivated in our region, but several specimens are visible from my office window on the University of Richmond campus. Sometimes the cycle-cup oaks are split out as a separate genus.

**Cerris oaks (*Cerris*):** As a group, cerris oaks are strictly Eurasian. The leaves are evergreen or deciduous, bear bristle-tipped lobes, and the acorns mature in two seasons. A few species from this group are sparingly cultivated in the U.S., most prominently, *Quercus acutissima*, the sawtooth oak, and less frequently, *Q. cerris*, the European Turkey (or Turkish) oak. *Quercus suber*, from which cork is harvested commercially in southwestern Europe and northwestern Africa, also belongs here.

Cork oaks, incidentally, make prodigious quantities of outer bark, i.e., cork, an adaptation by which the trees are insulated from sporadic fires that sweep through this species' natural habitat.

**Holm or holly oak & relatives (*Ilex*):** The holly oaks are also strictly Eurasian, sometimes included within the cerris oak group, but distinguishable by details of pollen structure. Holly oak, *Quercus ilex*, is so named because its spiny leaves resemble those of holly; in fact, some sources indicate that *ilex* is the classical Latin name for this oak, which only later came to be applied as the genus name for hollies. *Quercus ilex* is also notable as one of several oaks that supports the growth of truffles. Another interesting species from this group is *Q. coccifera*, the kermes oak; this tree is host to the kermes scale insect, which can be harvested and processed to yield the natural red dye called crimson.

That's just a brief overview of oak diversity. When you think about it, it

is a remarkable genus indeed that stoppers the bottle of wine that we sip while dining on truffles that grow upon its roots and also furnishes the table and chair from which we enjoy these sublime refreshments.

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