



Oak

Quercus emoryi Torr.; *Quercus arizonica* L.; *Quercus gambelii* Nutt.;
Quercus turbinella Greene

Fagaceae

Species description

Oaks may be shrubs or trees, depending on the species; trees usually have rounded crowns, short trunks and stout branches, while the shrubs are smaller and more compact. We focus on Emory oak (*Quercus emoryi*) because it produces the only acorn that can be eaten fresh. The other species have more bitter acorns that must be boiled or leached before consuming. Emory oak may be evergreen to drought-deciduous and have an upright growth habit and irregular crown. Emory oak leaves are alternate, simple, lance-shaped, and entire or toothed on the margins. Acorns may be solitary or paired.



White oak (*Q. arizonica*) are evergreen trees with alternate, simple, oblong leaves that entire or toothed on the margins. The leaves are heart-shaped at base, fuzzy underneath, yellow-green to blue-green in color, and leathery in texture. The oblong acorns ripen in early fall. Gambel oak (*Q. gambelii*) is a small to medium-sized tree or thicket-forming clonal shrub. The alternate, simple, and deciduous leaves are pinnately lobed with a leathery texture, yellow-green in color, smooth above and fuzzy underneath. The 1-inch long acorns may grow singly or in small clusters. Turbinella oak, or shrub live oak (*Q. turbinella*) is a clump-forming clonal evergreen shrub. The leaves are leathery, blue-green, and persist through the winter. The acorns of this species are small, about a 1/2-inch long and slender.

Natural and cultural history

Oak trees and shrubs grow across the western U.S. and deep into Mexico in the montane, temperate regions. The different species grow in a vast array of habitats, including savannas, grasslands, and chaparrals. Emory oaks are distributed in Arizona, New Mexico, and Texas, and in northern Mexico from Chihuahua west to Sonora and south to Durango. Native Americans harvested acorns in great quantities when they were available, and relied on them as a winter food source.



Planting considerations and propagation techniques

Oaks are slow to moderate in their growth, and the trees may reach heights of 60 feet, with crown or canopy diameters of 40+ feet. Emory oak trees grow 30-70 feet tall with 75-foot canopy diameters, and trunks that reach up to 2.5 feet in diameter. Oak trees and shrubs are generally long-lived trees that are cold tolerant to below 0°F. Oaks grow best in sunny locations, though some species grow in forests with partial shade. They may be found at elevations of 3,000-8,000 feet. Oaks are monoecious (male and female flowers occur on the same tree) and wind pollinated. They grow best in rich sandy-loamy, gritty-loamy or sandy clay soil. Oaks may be propagate by sowing seed in a cold frame when seeds are ripe, or alternatively, by grafting.

Water needs

Oak trees are fairly drought tolerant once established.

Care

Oak trees need little care to grow and produce well. They may be minimally pruned to shape the tree and remove dead wood. Though fairly disease resistant, aphid infestations may cause honeydew, galls and distorted leaves. Aphids may be controlled with an insecticide or biologically with parasitic wasps or predators such as *Aphidoletes aphidimyza*. A powdery white coat on the trees indicates an infection of powdery mildew. Affected plants should be removed. To prevent powdery infection, improve ventilation, keep the roots moist, and do not water the plants from above. Signs such as stunted growth, fungal fruiting bodies in autumn, and plant dieback indicate an infection with honey fungus; these trees should also be remove entirely, including the roots.

Harvesting and processing

The acorns of Emory oak, called *bellotas* in Spanish, are sweeter than other species and are commonly gathered for commercial markets; these acorns are the only ones that can easily be eaten fresh. Acorns of other oak species most likely need to be washed or boiled in changes of water to remove bitterness before use. Acorns can be ground into flour to use in baking.

References and resources

Hodgson, W.C. 2001. *Quercus* – Oak. pp. 189-195. *Food Plants of the Sonoran Desert*. University of Arizona Press, Tucson, AZ.

Ladybird Johnson Wildflower Center. Native Plants Database (NPIN). 2015. *Quercus emoryi*. http://www.wildflower.org/plants/result.php?id_plant=QUEM

Pavek, Diane S. 1994. *Quercus emoryi*. In: *Fire Effects Information System*, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/>. Accessed June 17, 2015.

Plants for a Future (PFAF). n.d. *Quercus emoryi* - Torr. <http://www.pfaf.org/user/Plant.aspx?LatinName=Quercus+emoryi>

Simonin, Kevin A. 2000. *Quercus gambelii*. In: *Fire Effects Information System*, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2015, June 17].

Spellenberg, Richard, Christopher J. Earle, and Gil Nelson. *Trees of Western North America*. Princeton University Press, 2014.

Tirmenstein, D. 1999. *Quercus turbinella*. In: *Fire Effects Information System*, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> [2015, June 17].