



## Natural Heritage & Endangered Species Program

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Massachusetts Division of Fisheries & Wildlife

## Yellow Oak *Quercus muehlenbergii* Engelm.

State Status: **Threatened**

Federal Status: **None**

**DESCRIPTION:** Yellow Oak, a member of the Beech family (*Fagaceae*) is a deciduous tree with alternately arranged leaves, twigs and branches. It grows to a maximum height of about 30 m (about 100 feet) (20 m in New England) and has dark gray, thin, flaky to papery bark. The leaves are toothed, either without lobes or with shallow lobes, narrowly ovate or slightly wider toward the top, densely pubescent beneath, with 9 to 14 veins on each side. Each vein runs straight (and parallel to one another) to a tooth, which itself is sharp, upward arching, and often incurved, and tipped with a minute projection or papilla. Acorns are borne singly or in pairs and are unstalked or with very short (8 mm or 0.3 inches or less) stalked. The acorn is up to 2.5 cm (1 inch) long. It is enclosed up to one-half its length by a bowl-shaped cup. The acorns ripen in one growing season and seldom persist on the twig past October.

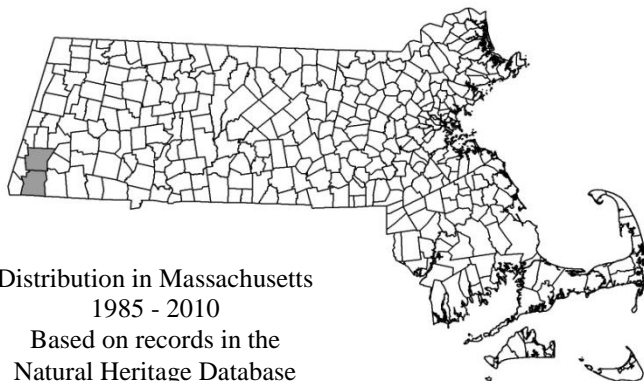


Yellow Oak leaf. Photo: Chris Evans, River to River CWMA, Bugwood.org

**AIDS TO IDENTIFICATION:** The genus *Quercus* in Massachusetts includes a large number of species. Among the most common native species are Chestnut, White, Red, Black, Scarlet, and Swamp White Oaks. Naturalists familiar with those and perhaps other less common oaks can distinguish Yellow Oak leaves from those of other oaks by their upward-arching and usually incurved, papilla-tipped teeth.



Yellow Oak trunk showing flaky bark. Photo: Patricia Swain, NHESP



**A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan**

## Massachusetts Division of Fisheries & Wildlife

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Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

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**SIMILAR SPECIES:** Yellow Oak leaves somewhat resemble those of Chestnut Oak (*Quercus montana*, formerly *Q. prinus*), Swamp White Oak (*Q. bicolor*), and Dwarf Chinkapin or Scrub Chestnut Oak (*Q. prinoides*) except, however, for the upward arching and usually incurved papilla-tipped teeth. Additionally, Dwarf Chinkapin Oak is shrub-like in habit, and is usually found on acidic sands or dry shales.

**HABITAT IN MASSACHUSETTS:** Yellow Oak is almost always found on dry soils of pH greater than 6.0. Populations have been recorded on lime cobbles, a dry calcareous wood, a high domed rocky outcrop, and an east-facing ten-degree slope. Good populations are often indicators of Yellow Oak Dry Calcareous Forests. Individual trees may not include the associates of the community type.

**PHENOLOGY:** Yellow Oak usually flowers in New England from May 21 to June 8. Acorns mature in one growing season and drop from the tree in September and October. Like other members of the White Oak group, acorns germinate shortly after dropping and require no cold stratification. Seed leaves or cotyledons remain below ground upon germination.

**RANGE IN MASSACHUSETTS:** Yellow Oak populations were observed and recorded by botanists in recent years (1988 or later) in southern Berkshire County in the towns of Egremont, Great Barrington, and Sheffield.

**THREATS:** Invasion by exotic species (both plant and animal), diseases, and logging are current or potential threats to all native tree species and Yellow Oak populations in Massachusetts are no exception. One population of Yellow Oak is currently threatened by invasion by Oriental Bittersweet (*Celastrus orbiculatus*). Gypsy Moth (*Lymantria dispar*) is one of several defoliating insects that can impact Yellow Oak. Yellow Oak are shade intolerant, and will be outcompeted by associated species such as Sugar Maple (*Acer saccharum*), depending on community composition.

High deer densities can reduce the number of seedlings dramatically, thereby limiting recruitment to the sapling and canopy stages.

#### **POPULATION STATUS IN MASSACHUSETTS:**

Yellow Oak is listed under the Massachusetts Endangered Species Act as Threatened. All listed species are protected from killing, collecting, possessing, or sale and from activities that would destroy habitat and thus directly or indirectly cause mortality or disrupt critical behaviors. This species has been reported at only eight locations, in the towns of Great Barrington and Sheffield. While individual tree vigor at these sites is generally good, regeneration is erratic.

#### **REFERENCES:**

- Sander, I.L. 1990. Chinkapin Oak. In *Silvics of North America*. U.S. Department of Agriculture, U.S. Forest Service Agricultural Handbook 654. Available via [http://www.na.fs.fed.us/spfo/pubs/silvics\\_manual/table\\_of\\_contents.htm](http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm). Accessed January 17, 2010.
- Tirmenstein, D. A. 1991. *Quercus muehlenbergii*. In: *Fire Effects Information System*, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer).

Updated 2015

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