



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife
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Alternate-flowered Water-milfoil

Myriophyllum alterniflorum DC.

State Status: Endangered

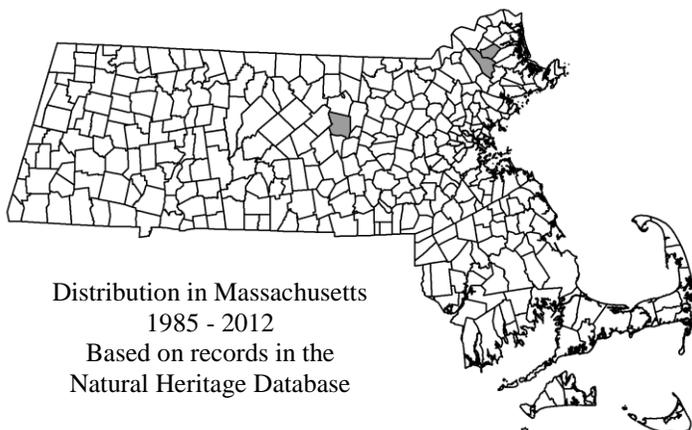
Federal Status: None

Description: Alternate-flowered Water-milfoil is a delicate, aquatic herb in the Water-milfoil family (Haloragaceae). It has slender, elongated stems, and is rooted to the substrate submersed in shallow water. Its leaves are delicate, feather-like, and arranged in whorls of three to five along the stem. The tips of stems are emergent and form slender terminal inflorescences. These erect spikes have greatly reduced leaves (bracts), with minute, inconspicuous flowers in the axils. Fruits are small (1.5–2 mm), nut-like, and split into four one-seeded segments that are rounded and granular on the back.

Aids to Identification: The identification of water-milfoils (*Myriophyllum* spp.) is difficult and requires careful examination of foliage, flower arrangement, floral bracts, and fruits. Alternate-flowered Water-milfoil is identified by its short (3–12 mm) leaves dissected into three to seven pairs of segments, short internodes (mostly < 1 cm), short spikes (2–5 cm tall), and an alternate arrangement of at least the uppermost floral bracts and flowers. The lowermost bracts and flowers may be opposite. The floral bracts have entire or minutely-toothed margins and are shorter or equal in length to the flowers. This species does not form winter buds (turions).



Alternate-flowered Water-milfoil has feather-like leaves arranged in whorls of three to five along slender stems. Photo by Jennifer Garrett.



Distribution in Massachusetts
1985 - 2012
Based on records in the
Natural Heritage Database

Similar species: Alternate-flowered Water-milfoil resembles other, more common, water-milfoils. It can be distinguished from Lowly Water-milfoil (*M. humile*) by its distinctly whorled foliage, emergent spikes, and short bracts. Lowly Water-milfoil has alternate leaves and spikes in the axils of submerged leaves or, if emergent, bracts that are longer than the flowers. Alternate-flowered Water-milfoil can be distinguished from other Water-milfoil species with whorled leaves, like Variable Water-milfoil (*M. heterophyllum*), Northern Water-milfoil (*M. sibiricum*), and Whorled Water-milfoil (*M. verticillatum*), by its smaller leaves with fewer segments, shorter spikes, and alternate arrangement of bracts and flowers. Northern Water-milfoil and Whorled Water-milfoil can also be separated by the presence of axillary winter buds late in the growing season.

Flowering and Fruiting in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Population Status in Massachusetts: Alternate-flowered Water-milfoil is listed under the Massachusetts Endangered Species Act as Endangered. 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 is currently known from Worcester and Essex Counties, and was found historically in Middlesex, Suffolk, and Norfolk Counties.

Range: Alternate-flowered Water-milfoil occurs in both North America and Europe. In North America, it occurs from Greenland to Newfoundland, west to Ontario and Minnesota, and south to Massachusetts and New York.

Habitat: Alternate-flowered Water-milfoil occurs in shallow waters of lakes, ponds, and slow streams. Plants found in association with Alternate-flowered Water-milfoil include Great Bladderwort (*Utricularia macrorhiza*), Purple Bladderwort (*U. purpurea*), Flat-leaved Bladderwort (*U. intermedia*), Tiny Pondweed (*Potamogeton pusillus*), Ribbon-leaf Pondweed (*P. epihydrus*), Robbins Pondweed (*P. robbinsii*), Perfoliate Pondweed (*P. perfoliatus*), Vasey's Pondweed (*P. vaseyi*), Water-marigold (*Bidens beckii*), Nuttall's Water-weed (*Elodea nuttallii*), Tape-grass (*Vallisneria americana*), Pipewort (*Eriocaulon aquaticum*), Bayonet-rush (*Juncus militaris*), Floating Heart (*Nymphoides cordata*), Grass-leaf Arrowhead (*Sagittaria graminea*), and Fanwort (*Cabomba caroliniana*).

Threats and Management Recommendations: As for many rare species, exact needs for management of Alternate-flowered Water-milfoil are not known. Because this species grows submersed in open water, any alteration of hydrological conditions, water quality, or erosion and sedimentation rates could impact extant populations. Competition from invasive aquatic species may also reduce the available habitat of Alternate-flowered Water-milfoil. Mechanical or non-specific chemical controls of invasive species may also threaten populations. All active management of rare plant populations (including invasive species removal) is subject to review under the Massachusetts Endangered Species Act, and should be planned in close consultation with the Massachusetts Natural Heritage & Endangered Species Program.

References and Additional Information:

- Aiken, S.G. 1981. A conspectus of *Myriophyllum* (Haloragaceae) in North America. *Brittonia* 33: 57-69.
- Crow, G.E., and C.B. Hellquist. 1983. Aquatic Vascular Plants of New England: Part 6. Trapaceae, Haloragaceae, Hippuridaceae. New Hampshire Agricultural Experiment Station. University of New Hampshire Station Bull. 524, Durham, NH.

Updated 2012
Map Updated 2012