

**WRITTEN FINDINGS OF THE
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD
(NOVEMBER 2007)**

Scientific Name: *Myriophyllum heterophyllum* Michx.

Common Name: variable-leaf milfoil, two-leaved watermilfoil; broadleaf watermilfoil

Family: Haloragaceae

Legal Status: Class A noxious weed

Description and variation:

Overall Habit: *M. heterophyllum* is a submersed, rooted macrophyte, typically with both submerged and emergent leaves growing from a stout stem up to 3mm in diameter and 100 cm in length. Stem color ranges from dark red to reddish-brown.

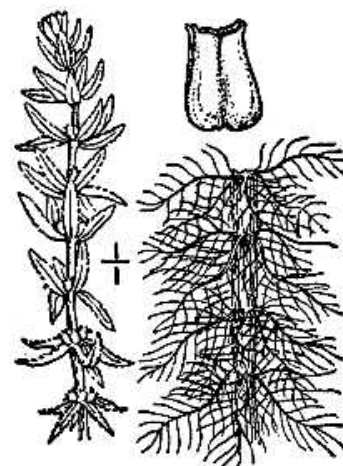
Leaves: Submerged leaves between 2-4 cm, pinnately dissected into 7-11 leaflets and arranged into whorls of 4-5 leaves. Emergent spikes 5-15 cm with persistent, lanceolate to oblong and prominently serrated bracts that are reflexed, extend past the flowers, and are 4-18 mm in length. The emergent stem typically occurs later in the growing season, i.e., late summer.

Flowers: Inflorescence is a spike 5-35 cm long, consisting of flowers in whorls of four. Flowers have four stamens and petals are 1.5-3 mm. Fruits are 1.1-1.5 mm in length and almost perfectly round with four chambers. Each carpel is either rounded or has two keels along the dorsal side and is rough to bumpy with the tip curved into a upward-pointing beak.

Note: Phenotypically, it is difficult to differentiate between *M. heterophyllum* and the native species western milfoil, *M. hippuroides*. DNA analysis is required, although *M. heterophyllum* populations have been observed to grow more aggressively than the native species.

Habitat: Freshwater ponds, lakes, ditches and other still or flowing aquatic systems. It can grow in water up to 1.8 meters deep (NatureServe, 2007).

Geographic distribution: Native distribution is not consistent among sources; however, there is consensus that it is non-native in some states and native and even endangered in others. According to USDA/ARS, *Myriophyllum heterophyllum* is native to Ontario and Quebec in eastern Canada and is also native to several states—primarily eastern—in the United States including Connecticut, Massachusetts, West

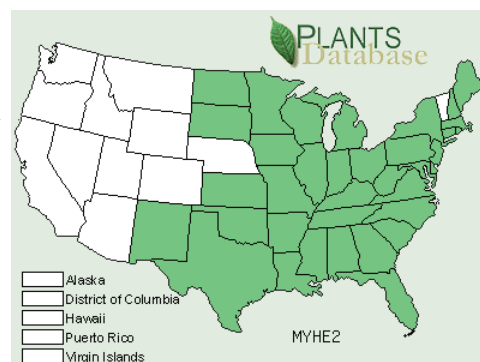


Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 2: 616. Courtesy of [Kentucky Native Plant Society](#). Scanned by [Om-nitek Inc.](#) [Usage Requirements](#).



Photo by Jenifer Parson, WA Dept. of Ecology

Virginia, Wisconsin, Alabama, Florida, Georgia, Kentucky, Tennessee, Virginia, and New Mexico and is naturalized in other areas (USDA, ARS, NGRP, 2007). However, other sources do not regard it native to the New England states. NatureServe (2007) deems this species “almost certainly exotic in eastern New York and New England (excluding Vermont)” but also notes that it is native to other parts of the U.S. Here, it is also noted that this species is non-native in British Columbia. According to USDA/NRCS, the plant is widely distributed throughout much of the U.S. except for the western states. Here it is noted that *M. heterophyllum* is an endangered species in Ohio and Pennsylvania and is of special concern in Kentucky but is considered invasive in Connecticut, Maine, Vermont, and Massachusetts (USDA/NRCS, 2007).



History and Distribution in Washington: *Myriophyllum heterophyllum* has been confirmed through DNA analyses in a total of four lakes in Thurston and Pierce counties. In Thurston County, the two infested lakes, Blue Lake and Clear Lake, are connected. In Pierce County this species has been confirmed in two additional lakes. All lakes are privately owned.

Biology:

Growth and development: Perennial species

Reproduction: Reproduction is primarily through vegetative fragments, although it may also reproduce via seed production (Parsons, 2007). This species can be easily introduced into new bodies of water through inadvertent transport of plant fragments on boat propellers or trailers or by deliberate dumping of aquariums.

Control:

Response to herbicides: Two aquatic herbicides that are currently approved for use in Washington are recommended: diquat dibromide (Reward) and 2,4-D (Aqua Kleen and Navigate) (New Hampshire Dept. of Environmental Services, 2004).

Response to cultural methods: NatureServe notes the use of drawdown to control this species where applicable, although this non-select technique impacts native macrophytes and macroinvertebrates (NatureServe, 2007).

Response to mechanical methods: Small, recently detected infestations may be successfully eradicated through careful and thorough hand-pulling or through tarping (New Hampshire Department of Environmental Services (NHDES), 2002).

Biological control potential: None found

Economic Importance:

Detrimental: Like many nonnative, invasive aquatic species, *Myriophyllum heterophyllum* has many negative ecological and economic impacts. For example, this species displaces native submerged macrophytes and dense mats reduce sunlight, can restrict water movement, and, particularly when decomposing, reduce available oxygen (NatureServe, 2007; NHDES, 2002). The dense mats can impede swimming, boating and fishing (Thum and Lennon, 2006; NH fact-sheet). Moreover, dense mats along lake shoreline have been reported to reduce property values 20-40% (Halstead et al. 2003, *cited in* Thum and Lennon, 2006). In at least the eastern U.S., this species may hybridize with the native watermilfoil *M. pinnatum*, resulting in a more aggressive hybrid *Myriophyllum heterophyllum* x *pinnatum* and also reducing the abundance of the native species (NatureServe, 2007).

Beneficial: This species is often found in the aquarium trade.

Rationale for listing:

Myriophyllum heterophyllum is a nonnative, invasive, aquatic species that can be difficult to control once established. It is listed as a Class A noxious weed in Vermont, listed as Invasive in Connecticut and Maine, and is prohibited in Vermont and Massachusetts (USDA/NRCS, 2007).

Its limited distribution of four lakes in two adjacent counties makes it a good candidate for a Class A noxious weed. Eradication now while its populations are still limited will help prevent this species from spreading from these lakes into others via stem fragments.

References:

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Submitted to the WSNWCB on 30 April 2007.

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