

TWOLEAF WATERMILFOIL

(*Myriophyllum heterophyllum*)

Description: Twoleaf watermilfoil, also referred to as water milfoil or variable-leaf milfoil, is an aquatic herb that is a member of the Haloragaceae or watermilfoil family. Stems of the plant are thick, robust, simple or branching, usually red-tinged, and can extend over 3 feet long. Leaves are alternate or primarily arranged in whorls of 4 to 6 and usually spaced less than 1/2 an inch apart on the stem. Submersed leaves are featherlike, pinnately divided, 1/2 to 2 inches long, with 5 to 14 divisions on each side of the midrib. Emerged leaves or bracts are lanceolate to elliptic or oblanceolate, rigid, 1/8 to 1/2 of an inch long, mostly serrate, with lower leaves more deeply toothed. The transition from submersed to emerged leaves is abrupt. Flowers are reddish, clustered in groups of 3 to 6 in axils of emerged leaves and are 1/32 to 1/8 of an inch long. Fruits are subglobose, 1/32 to 1/16 of an inch long, rounded or 2-keeled on the dorsal side, and beaked.



Twoleaf watermilfoil

Plant Images:



Flowers



Flowers



Infestation

Distribution and Habitat: Twoleaf watermilfoil is native to the United States and is distributed widely throughout the eastern and central states. The plant can establish in a wide range of habitats but is generally found in neutral to weakly acidic, slow moving waters. Twoleaf watermilfoil can adapt to silt-covered sandy substrates but thrives in areas with organic muck substrates. Ponds, lakes, rivers, swamps, and ditches are habitats where the plant typically flourishes. Twoleaf watermilfoil is most abundant in waters up to eight feet deep, but can grow at deeper depths if water quality remains adequate.

Life History/Ecology: Twoleaf watermilfoil is a submersed, rooted aquatic perennial. The plant spreads primarily by plant fragments but can also reproduce by seed production. Fragments break off of the parent plant, grow roots, and develop into a new plant. Twoleaf watermilfoil typically flowers upon reaching the surface, usually occurring from June to August with timing directly related to water temperature. Spikes emerge and whorls of flowers are produced.

History of Introduction: Twoleaf watermilfoil is native to the southern United States from Florida to central and northern Texas. The plant may also have been intentionally introduced into Connecticut in the 1930s, when the species was sold as an aquarium plant. Twoleaf watermilfoil is now found throughout the eastern United States, as far north as Maine and Quebec. The plant was also reported to the far south and west in New Mexico. In North Dakota, twoleaf watermilfoil has not been reported. The plant is quite rare in the northern great plains states. Twoleaf watermilfoil was reported in Brookings, South Dakota as of 1993.

Effects of Invasion: Twoleaf watermilfoil is a highly competitive species that is capable of rapid growth and spread. Once established, the plant is able to out-compete native vegetation for light and nutrients, thereby displacing desirable species and reducing biodiversity. Twoleaf watermilfoil can produce large, dense mats of vegetation on the surface of the water that can impede recreational activities, reduce the quality of sport fisheries, and impact real estate values. These dense mats can also affect the flow of moving waters. Overall, the plant can drastically alter the ecology of a waterbody. Twoleaf watermilfoil is primarily spread from waterbody to waterbody through boating activities.

Control:

Management objectives for twoleaf watermilfoil control should involve prevention and maintenance. Once established, twoleaf watermilfoil is difficult to completely eradicate. Management efforts should include keeping beaches free of plant growth, opening boat lanes from the shore to open water, maintaining favorable plant cover for fish populations, and restoring the diversity of submersed plant communities. Established populations of twoleaf watermilfoil that should also be maintained to prevent further spread by fragmentation. Control measures may need to be conducted early in the year before fragmentation occurs.

Mechanical - Cutting, harvesting, and rotovation may be used as a means to control the plant, but may tend to enhance the rate of spread through fragments that are produced and capable of producing new plants. Harvesting consists of cutting twoleaf watermilfoil approximately 5 feet below the surface of the water, collecting by conveyer, and storing until disposed on land. Harvesting creates open areas of water by removing surface mats. Harvesting should be repeated throughout the growing season. Under water rototilling dislodges twoleaf watermilfoil roots by churning up to 8 inches into the sediment. Floating roots are removed from the water. Cutting is similar to harvesting, but plants should be removed from the water to prevent regrowth. Rakes, drags, or nets can also be used to suppress or remove the plant. Aquashade, a non-toxic dye or colorant, can reduce infestations of the plant by limiting sunlight penetration, which reduces aquatic plant growth.

Water level manipulation, such as overwatering or drawdown can be an effective control measure to reduce the growth of the twoleaf watermilfoil. Overwatering or raising the water level leads to plants not having access to enough light. Drawdown or lowering the water level can expose twoleaf watermilfoil to below freezing temperatures or can lead to dehydration.

Chemical - The most common herbicide used for twoleaf watermilfoil control is 2,4-D. Other herbicides include diquat, fluridone, triclopyr, and copper. Systemic herbicides which are taken up

throughout the entire plant are the most successful on twoleaf watermilfoil. Herbicides may be more effective when applied during the spring or early summer and applications may have to be repeated to gain desired control.

Contact your local county extension agent for recommended use rates, locations and timing.

Biological - No biological control agents are available for twoleaf watermilfoil control. Grass carp may consume the plant, but generally are not considered an effective control measure for established stands of twoleaf watermilfoil.

References:

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Twoleaf watermilfoil, flowers, and infestation photographs courtesy of U. S. Army Corps of Engineers.