



Southeast Exotic Pest Plant Council Invasive Plant Manual

Common Name: Eurasian Water-milfoil

Scientific Name: *Myriophyllum spicatum* L.

Eurasian water-milfoil is a perennial, aquatic, submersed herb that was accidentally introduced from Eurasia, probably in the 1940s. This plant can form large mats of floating vegetation on the water surface preventing light penetration thus outcompeting native plants and impeding water traffic. The preferred habitat for Eurasian water-milfoil is fresh or brackish water of fish ponds, lakes, slow-moving streams, reservoirs, and canals. Dispersal is primarily by fragmentation. It belongs to the primarily aquatic Haloragaceae family.

Height: The plant usually grows between 1-4 m (3.3-9.8 ft) but can extend up to 10 m (33 ft). The stems grow to the surface of the water and frequently form dense mats.

Stem: Stems are long, slender, branching, glabrous, and become leafless toward the base. Each floating node can become established if it comes in contact with mud.

Leaves: The grayish-green leaves are in whorls of three or four with 12-16 pairs of fine, thin leaflets up to 35 mm (1.4 in) long. These leaflets give the leaves a feathery appearance that is a distinguishing feature.

Flowers: The yellow flowers are on a spike that is produced 5-10 cm (2-4 in) above the water surface. The spike appears essentially naked and interrupted. Bracts are inconspicuous with the lower bracts usually toothed, sometimes entire, mostly exceeding the flowers. Stamen number is eight. Blooms July-September.

Seeds: Fruit is a schizocarp containing four seeds. Matures late July-September.

Life History

Seeds are usually viable, but are unimportant as a means of dispersal. Most regeneration is from rhizomes, fragmented stems, and axillary buds that develop throughout the year. Plant fragments can attach to objects in the water such as boats, trailers, or animals and be moved from one body of water to another. Motor boats can produce many fragments when traveling through the water. Flower spikes often stand above the water until after pollination and then re-submerge.

Origin and Distribution



Photo by Robert L. Johnson

Eurasian water-milfoil is a native of Eurasia and Africa. It occurs in thirty-three states east of the Mississippi River. It is abundant in the Chesapeake Bay, the tidal Potomac River, and several Tennessee Valley reservoirs. Two theories exist as to how it entered North America - it either escaped from an aquarium, or was released in shipping. This exotic aquatic plant species has been considered a problem in the United States since the 1940s. In the Tennessee Valley Authority reservoir system, a resort owner is thought to have introduced water-milfoil in 1953.



Photo by Robert L. Johnson

Similar Species

Several members of the Haloragaceae family are native to the southeastern United States, and a number of exotic milfoils are now widely naturalized. *M. spicatum* L. is distinguished by its distinctly whorled leaves, bracts, and flowers, and its deep branching.

Habitat

Typical water-milfoil habitat includes fresh to brackish water of fish ponds, lakes, slow-moving streams, reservoirs, and canals. It is tolerant of many water pollutants. Eurasian water-milfoil does not spread rapidly into habitats where native plants are well established and tends to exist in habitats where native species grow poorly or cannot adapt. By altering waterways, we have created an unnatural, disturbed environment where milfoil thrives. Although short-term habitat improvement in habitat for fish and waterfowl has been experienced in disturbed habitats, the long-term effects are considered to be more damaging.

Management Recommendations

Mechanical Controls

Harvesting: Large equipment exists to mechanically remove milfoil in larger areas. A sturdy handrake can be used for smaller areas, such as around docks, swimming areas and harbors. For the single harvest, harvesting should take place just before peak biomass is obtained. There may be substantial regrowth if done too early. Better results appear with multiple harvests in the same growing season. If multiple harvests are not possible, then sustaining annual harvests is an option. All fragments of milfoil plants must be removed to achieve adequate control.

Water Levels: Where water levels are under manual control, raising or lowering of the water can have an effect on the milfoil. By raising the water level, plants can be "drowned" by not having access to enough light. By lowering the water level, plants can be dehydrated and, at the right time of the year, frozen to death. This type of control is usually used in conjunction with herbicides and shade barriers.

Herbicidal Controls

Fluridone: Fluridone is a selective herbicide for milfoil and several other exotic aquatic weeds. There are no restrictions on swimming, fishing, or drinking after application and season-long control can be achieved with one application. Fluridone is available in liquid or granular form and can be used as a spot treatment or on an entire water-way. For best results, applications should be made before or during the early stages of active growth. Granular 2,4-D: This method is appropriate for large unmanageable areas of milfoil. This herbicide is formulated to release the active ingredient over several days. Apply granules at a rate of 100 lbs per acre of water. The herbicide granules will sink to the root zone and kill the plant.

Liquid DMA 2,4-D: Application of liquid DMA 2,4-D may be used for milfoil control in areas with low dilution potentials such as ponds and lakes. Application rates should be less than 2.0 parts per million (ppm). Subsurface application rate has to be adjusted proportionately for varying water depths.

Other Controls

Heat: The viability of milfoil fragments is severely reduced after being subjected to temperatures between 45-50°C in the cooling systems of thermal electricity generating systems.

Light: The amount of light reaching the plant can be limited by changing water levels using bankside plantings or floating plant species, light limiting dyes, or shade barriers.

Booms: Barriers are used to prevent the movement and spread of aquatic weeds in ponds and lakes. Usually the barrier is a suspended blocking screen that hangs vertically from a cable to a depth of about 4 meters, and the cable is suspended by drum floats. This will not eradicate milfoil, but it can limit its spread.

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Last updated on Wednesday, November 05, 2003 at 01:19 PM
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