EURASIAN WATERMILFOIL
(*Myriophyllum spicatum*)

Description: Eurasian watermilfoil is an aquatic herb that is a member of the Haloragaceae or watermilfoil family. Stems of the plant are vinelike, glabrous, leafless towards the base, and branched near the surface of the water. The plant can grow approximately 5 to 9 feet in length. Leaves are featherlike, can grow up to approximately 10 inches long, and are whorled about the stem in fours. Leaflets grow in pairs with more than 12 on each leaf. Flowers are tiny, pink in color and occur on reddish spikes that stand several inches above the water. Fruit of the plant is a hard, segmented capsule that contains four tiny seeds.

Eurasian watermilfoil

Plant Images:

Stem and leaves

Flowers

Distribution and Habitat: Eurasian watermilfoil is native to Eurasia and Africa. The plant is found in ponds, lakes, rivers, irrigation canals, and other waterways. Eurasian watermilfoil typically grows abundantly at water depths of 3 to 14 feet, but can also grow at depths up to approximately 20 feet depending upon sunlight penetration. The plant prefers eutrophic lakes and waterways that are enriched with nutrients. Eurasian watermilfoil will grow in sand, acidic peat, highly alkaline soil, and thrive in water with a salinity of up to ten parts per thousand (10 ppt).

Life History/Ecology: Eurasian watermilfoil is a submersed, rooted, aquatic perennial. The plant spreads primarily by plant fragments but can also reproduce by seed production. In late winter and early spring, plants develop axillary buds that differ from normal vegetative buds in size and ease of detachment. The plant undergoes auto-fragmentation during the growing season and abscising fragments often develop roots at the nodes before separation from the parent plants. Plants typically die

back to propagating root crowns in the fall and overwinter in an evergreen form. Root crowns begin to grow in the spring as temperatures increase. Once vegetation of Eurasian watermilfoil reaches the water surface, shoots branch profusely forming a dense canopy above leafless vertical stems on the water surface. Plants typically flower upon reaching the surface usually occurring from June to September with timing directly related to water temperature. Spikes emerge and produce three to ten whorls of flowers resulting in a potential of 12 to 40 seeds per spike. Seeds exhibit a prolonged dormancy and germination tends to be extremely erratic.

History of Introduction: Eurasian watermilfoil is native to Europe, Asia, and northern Africa. The plant was possibly introduced to North America in the Chesapeake Bay area during the 1880s in the form of shipping ballast, however, the exact location and timing of introduction has been disputed. The plant was also was once commonly sold as an aquarium plant, but later was considered a weedy species in the 1930s. Eurasian watermilfoil has been recorded within all states in the continental United States except Maine, Montana, and Wyoming. In North Dakota, Eurasian watermilfoil has been reported in the Sheyenne River in Barnes County, immediately downstream from Valley City.

Effects of Invasion: Eurasian watermilfoil can drastically alter the ecology of a waterbody. The ability of Eurasian watermilfoil to spread rapidly by fragmentation allows the plant to quickly colonize new habitats. Light is an extremely important factor for Eurasian watermilfoil growth. The plant out-competes other plants for required nutrients, therefore replacing desirable species. Stands of the plant can become very dense on the surface of the water, therefore, curtailing recreational activities, creating habitats favorable for the production of blood-sucking insects, and clogging industrial and potable water supply systems. Eurasian watermilfoil may restrict flow metering devices in flood control channels and alter temperature profiles in shallow water. Beach quality is degraded by the spread of the plant and maintenance is increased. The plant can support the weight of frogs and wading birds but has little value as a waterfowl food. Eurasian watermilfoil also reduces the quality of sport fisheries, and reduces the aesthetic appeal of bodies of water. The plant is primarily spread from waterbody to waterbody through boating activities.

Control:
Management objectives for Eurasian watermilfoil control should involve prevention and maintenance. Once established, Eurasian watermilfoil is difficult to completely eradicate. Therefore, 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. Populations of established Eurasian watermilfoil 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 can potentially enhance the rate of spread through fragments that are produced and capable of producing new plants. Harvesting consists of cutting Eurasian 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 Eurasian 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 that limits sunlight penetration, can reduce infestations by reducing aquatic plant growth.

Water level manipulation, such as overwatering or drawdown can be an effective control measure to reduce the growth of Eurasian watermilfoil. Overwatering or raising the water level reduces plant access to sufficient light. Drawdown or lowering the water level can expose Eurasian watermilfoil to below freezing temperatures or can cause dehydration.

Chemical - The most common herbicide used for Eurasian watermilfoil control is 2,4-D. Other herbicides include diquat, fluridone, triclopyr, and copper. Systemic herbicides that are taken up throughout the entire plant are the most successful on Eurasian watermilfoil.

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

Biological - No biological control agents are available in North Dakota for Eurasian watermilfoil, but research is being conducted on a North American weevil, *Euhyrchiopsis lecontei*, in various states throughout the United States. The weevil lays eggs on Eurasian watermilfoil meristems and the larvae feed on and bore down through the stem, suppressing the growth of the plant.

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Eurasian watermilfoil and stem and leaves photographs courtesy of Virginia Tech Weed Guide.

Flowers photograph courtesy of Mehrhoff, Leslie J./IPANE.