Eurasian Watermilfoil
(Myriophyllum spicatum L.*)*

John D. Madsen and Charles H. Welling

Description

Eurasian watermilfoil (*Myriophyllum spicatum* L.) is an evergreen perennial submersed aquatic plant, and a member of the Haloragaceae (watermilfoil) family. Its appearance is similar to several native species of *Myriophyllum*, which has lead to significant confusion about its time of introduction and distribution, even among taxonomic experts. Eurasian watermilfoil grows submersed in 3-15 feet water depth. The only parts of the plant that may grow out of the water are the flower stalks (inflorescences), which may be only a few inches tall. However, the submersed shoots may form a dense canopy right at the water's surface, causing the infamous nuisance problem as well as impacting native plant and animal communities. Rooted in the bottom, the root crowns may have hundreds of stems growing from them up to the surface. Near the surface, each stem may branch multiple times to form a very dense mass.

Madsen

Welling

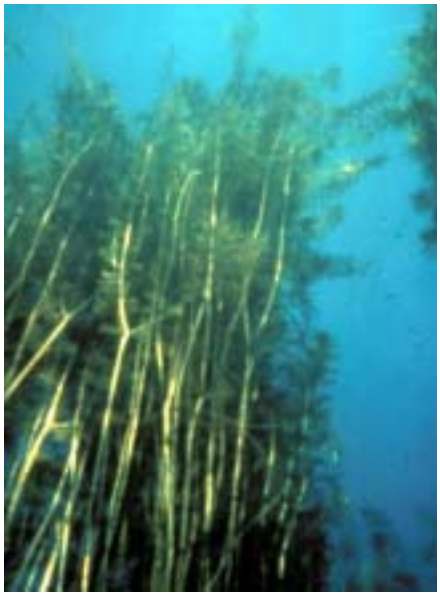
The leaves are pinnately compound, with 14-24 pairs of leaflets per leaf. While some have used this as a distinguishing characteristic, this is not necessarily a reliable feature to differentiate it from northern watermilfoil. The leaves typically occur in whorls of four leaves per node, with many nodes along the stem. The stems tend to be reddish in color, and the apical tip also tends to have a reddish hue. Since the plant is an evergreen perennial, green stems are commonly found under the ice in northern climates. The plants, however, tend to be quiescent, with little metabolic activity.

Distribution

Eurasian watermilfoil is native to Eurasia, as the name implies, though mostly in the European and western Asian portion of that continent. Although some reports have placed it in this country before the turn of the 20th century, the most authoritative treatment places it first in the U.S. in the 1940's in Chesapeake Bay. By 1960, the plant had spread throughout much of the northeastern United States. The current distribution places it in 45 of the 50 United States, and in southern Canada from Quebec to British Columbia. Eurasian watermilfoil is possibly the most widespread nonnative aquatic plant in North America.

Concerns

Eurasian watermilfoil has been highly successful in spreading throughout the United States because of a highly effective life history strategy. While it is true that pieces of the plant that break off can form new colonies of the plant, Eurasian watermilfoil, in fact, forms large numbers of stem fragments on its own. These stem fragments are loaded with starch, and can survive for many months (including over winter)



An underwater view of a Eurasian watermilfoil canopy. (photo by John D. Madsen)

before rooting in a new location. Thus, Eurasian watermilfoil can spread by fragments carried on boats and trailers, or by water movement, wind, and wave action.

The dense canopy of Eurasian watermilfoil not only creates a problem for human users of lakes, but also shades out native plants and can alter the predator/prey balance towards lower game fish growth.

One of the great urban myths concerning Eurasian watermilfoil is the "decline." Observations of Eurasian watermilfoil population declines have been so magnified by some as to create the illusion that this is an intrinsic characteristic of the population, and that Eurasian watermilfoil populations will always decline within five or ten years. While it is true that many populations have experienced declines, in many instances the populations recover or cycle between different population

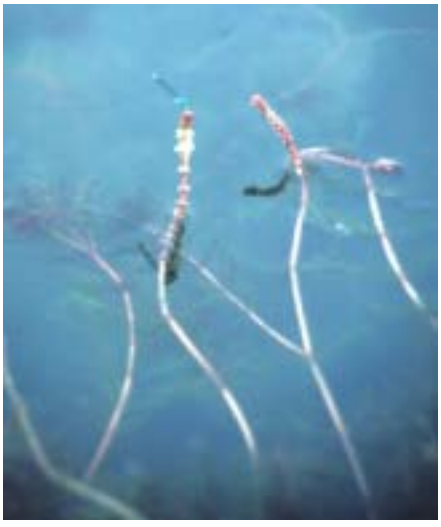
levels. Population cycles are common in most aquatic plant populations, so water users or managers should not hold out hope that a new infestation of Eurasian watermilfoil will disappear if they only wait patiently for a decade or two.

Eurasian watermilfoil causes problems in many parts of the United States and so is the target of management efforts in many parts of the country. The following section consists of a brief description of the approach in Minnesota, where the Department of Natural Resources (MnDNR) has a program focused on this particular exotic species.

Minnesota's Milfoil Program

The MnDNR milfoil program has two goals: first, to prevent spread to uninfested water bodies and, second, to manage the problems caused by the plant where it is established. Efforts to prevent further spread of milfoil in Minnesota have been focused on the unintentional transport of the plant on trailered watercraft, which is believed to be the primary means by which the exotic is spread. The MnDNR attempts to inform boaters and other users of Minnesota's lakes and rivers of the problem and the need to remove all aquatic plants from their watercraft before they leave the lake. Their experience is that it is possible to slow, but not stop the spread of milfoil. From eight Minnesota lakes known to have milfoil in 1988, the number increased to 73 in 1995 and 126 in 2001. Nevertheless, the MnDNR believes that the number of Minnesota lakes with milfoil in 2001 would have been significantly higher if no effort had been made to stop the spread.

The inflorescence of Eurasian watermilfoil. (photo by John D. Madsen)



U.S. states with known populations of Eurasian watermilfoil. Source*: U.S. Geological Survey Nonindigenous Aquatic Species Web site, <http://nas.er.usgs.gov/>.*

Efforts to manage the problems caused by the plant where it is established in Minnesota have evolved over the years. Initially, the MnDNR and local lake groups attempted to use herbicides to eliminate, or at least drastically reduce the abundance of the plant in individual lakes. Their experience, like that of other managers, is that it is possible to reduce the abundance of the plant in certain parts of lakes at least temporarily, which means that lake users get relief from the problems caused by the plant. Mechanical harvesting can also provide relief. Unfortunately, permanent eradication does not appear to be a realistic goal with available methods.

Long-lasting lake-wide reductions in the abundance of milfoil may be achieved with aggressive management, but that may raise other concerns. In Minnesota before the discovery of milfoil, the MnDNR limited the extent of control of submersed aquatic plants in order to balance the right of property owners to remove plants to gain access to the lake with the need to protect plants to maintain the benefits they provide. These benefits include promotion of water clarity and providing habitat for fish and wildlife.

Since the discovery of milfoil in Minnesota, the MnDNR and their constituents and cooperators have been wrestling with two basic questions. How much inadvertent harm to native plants and lake ecosystems might result if we are overly aggressive in controlling milfoil? On the other hand, how much harm might be done to native plants and lake ecosystems if milfoil is not controlled? It is hoped that current research in Minnesota and elsewhere will eventually give us better answers to these questions than we have now.

In summary, milfoil is a plant that Minnesotans would very much like to keep out of our lakes. Nevertheless, if the exotic does become established, the problems caused for users of the lake can be managed.

References

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John D. Madsen *is an assistant professor in the Department of Biological Sciences at Minnesota State University, Mankato (Department of Biological Sciences, S242 Trafton Science Center, Minnesota State University, Mankato, Mankato, MN 56001, 507/389-5728). He is a past editor of the Journal of Aquatic Plant Management. His e-mail is: john.madsen@mnsu.edu.*

Charles H. ("Chip") Welling *is the coordinator of the Eurasian Watermilfoil Program at the Minnesota Department of Natural Resources (500 Lafayette Road, Box 25, Saint Paul, MN 55155-4025. 651/297-8021), where he has worked since 1992. His e-mail is: chip.welling@dnr.state.mn.us.*

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