

Berkshire



Onota Lake Exotic Invasive Aquatic Species



What is an exotic invasive species?

An exotic invasive species is a species that is not native to Massachusetts and has the potential to establish and spread rapidly. This ability to become established and spread rapidly is a result of the lack of physical and biological constraints in the habitats to which they have been introduced. The range of impacts these organisms can have on aquatic systems is extensive, including the loss of habitat and community diversity, the localized or complete extinction of rare and endangered species, the spread of human pathogens, and the choking of waterways, water intakes, and wetland systems.

Eurasian watermilfoil
(*Myriophyllum spicatum*)



Threat of invasives in Massachusetts

The introduction and spread of aquatic invasive species in the freshwater environments of Massachusetts poses a serious threat to the ecology of native systems, and can effect the economic stability of the Commonwealth. Due to the proliferation of aquatic invaders Massachusetts has expended significant funds toward the management of aquatic invaders. In addition, municipalities and private landowners have also undertaken extensive control efforts. Infestations of lakes and ponds by aquatic macrophytes can even be linked to decreases in property values.

Invasive species include both plants and animals. At this time, there are no known invasive animals in the lakes and ponds of Massachusetts, although Zebra Mussels have been found in adjacent states.

The elimination of early infestations of aquatic invasive species has been identified through the *Massachusetts Lakes and Ponds Watershed Action Strategy* as crucial to maintaining and restoring lakes and ponds. Invasive species have the ability to spread aggressively throughout once introduced to a waterbody. Due to both the cost and manpower associated with the management of invasive exotic species, it is recommended that citizens, municipalities, and experts work together to identify new infestations before they become established and then work diligently to eradicate these infestations before they take hold.

Many lakes and ponds within Massachusetts are already infested with species like Eurasian watermilfoil, an aquatic plant known for its propensity for explosive growth and its ability to regenerate, and out-compete important native plants. In these cases aggressive lake management is in order.



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Priority Invasives in Massachusetts

- Water chestnut (*Trapa natans*)
- Hydrilla (*Hydrilla verticillata*)
- Curly leaf pondweed (*Potamogeton crispus*)
- Fanwort (*Cabomba caroliniana*)
- Lesser naiad (*Najas minor*)
- Waterweed (*Egeria densa*)
- Yellow floating-heart (*Nymphoides peltata*)
- Eurasian watermilfoil (*Myriophyllum spicatum*)
- Variable milfoil (*Myriophyllum heterophyllum*)

Why are exotic species harmful?

Exotic species continue to be significant problems in the Commonwealth and nationwide. Although not all exotic species are harmful, some threaten the diversity and abundance of native species, the ecological stability of aquatic habitats, and commercial and recreational activities.

Reduced habitat quality, reduced diversity of native plants and animals, and the impairment of uses such as swimming, fishing and boating can result when invasive species become established in a lake or pond. The secondary effects of invasive plants are degradation of fish and wildlife habitats, water quality impacts, threats to public safety, encroachment and potential loss of endangered species, and diminished property values.

There are two main factors that allow exotic species to take over new waters. Their natural predators are not present and native species don't have the ability to compete with them. Without the natural predators, parasites, pathogens, and competitors that would normally keep their numbers in check, invasive species can crowd out native ones. Under favorable conditions their populations explode and once firmly established, exotic species are difficult to manage and nearly impossible to eliminate.

Curlyleaf Pondweed
(*Potamogeton crispus*)



How are exotics spread?

Pathways are the means by which species are transported from one location to another. Natural pathways include wind, currents, and other forms of dispersal.

Man-made pathways are those pathways which are enhanced or created by human activity.

Certain human activities often unintentionally move organisms. Humans inadvertently spread invasive species through recreational boating, the ballast water of ships, and accidental releases associated with aquaculture industry, aquarium trade, or horticultural practices. In these and other unintentional pathways the movement of species is an indirect byproduct of our activities. The rate at which exotic species are introduced continues to increase in the Commonwealth and throughout the United States as humans assist in transporting them.

As the environmental and economic costs from new infestations continue to escalate prevention and control efforts are needed to address the problem of invasive species.

Four reasons to care about aquatic exotics:

- 1) Economy - costs of controlling exotics escalate each year
- 2) Health - some exotics may cause significant health problems through the spread of human pathogens
- 3) Ecology - exotics can profoundly alter the aquatic environment
- 4) Recreation - the proliferation of exotic plants can impair boating, swimming, fishing, navigation and flood control, and degrades water quality as well as fish and wildlife habitat

Case Study: A model program developed at Onota Lake, Pittsfield, MA

The Lake Onota Preservation Association (LOPA), the City of Pittsfield, and the Berkshire Regional Planning Commission (BRPC) have partnered together to develop what is hoped to be a model program for lake management. With funding awarded through the Department of Environmental Management Lake and Pond Grant Program, several trial methods for the control on Eurasian watermilfoil are being employed at Onota Lake.

This effort addresses the challenge of preventing the re-growth of E. watermilfoil without becoming dependent on repeated applications of herbicides. The primary problem facing Onota Lake is the re-growth of non-native, invasive Eurasian watermilfoil. Re-growth of milfoil to the dominant levels expected of this species would impair continued recreational use of Onota Lake. A combination of both watershed management techniques and in-lake management techniques are required since the milfoil is already established. There is an urgent need to address the growth of exotic weeds to nuisance levels in many lakes and ponds throughout the Commonwealth.

This particular project will demonstrate the efficacy of the application of a multi-faceted approach involving biological and mechanical techniques.

- **Assessment of erosion control and storm drain treatment needs:**
An assessment of erosion control and storm drain treatment needs for Burbank Park resulting in the preliminary design of best management practices.
- **Benthic barrier:**
A benthic barrier will be installed at the Burbank Park public swimming beach
- **Milfoil-eating Weevil trial:**
The first year in a multi-year trial of milfoil-eating weevils will be conducted. Weevils will be stocked at one site in the South end of the lake. Before and after annual follow-up monitoring surveys will be conducted.
- **Diver Harvesting:**
Trained Scuba divers will hand pull the milfoil plant in controlled areas where limited numbers of widely separated plants are in evidence.
- **Spot suction Harvesting:**
Individual milfoil plants will be selectively "suctioned up" using a pump.
- **Professional Macrophyte Survey:**
Early and late season macrophyte surveys will be conducted during 2002 season.
- **Chemical spot treatment:**
A limited treatment of herbicides will be applied to areas of milfoil re-growth that are not addressed through biological and mechanical methods. This treatment will be conducted after the early season survey and will be applied only to the areas of greatest concern.
- **Outreach:**
BRPC will work with support from LOPA to develop a meaningful public/citizen outreach and education campaign. LOPA will work with support from BRPC to expand LOPA membership.