Beyond Herbicides:
Control of Eurasian Watermilfoil in Mohican Lake

Aquatic invasive species such as Eurasian Watermilfoil (*Myriophyllum spicatum*) have become increasingly common in lakes, streams, and rivers in recent years. A rapid response when first detected can sometimes lead to eradication of the invader and prevent its establishment in a particular lake. More often, these invasive species quickly establish large enough populations that eradication is impossible. In these more common situations, the focus becomes long-term management and an effort to minimize the negative impacts of these unwanted invasives.

Eurasian Watermilfoil © Chris Evans, University of Illinois, Bugwood.org

Eurasian Watermilfoil has invaded Mohican Lake of Lumberland, NY in recent years, and it is unreasonable to expect eradication now that it has become established. Because it is now established, there are risks to Mohican Lake that must be considered: risks to the fish and general ecology of the lake, risks to the other native aquatic plants now competing with Eurasian Watermilfoil, and risks to recreational enjoyment of the lake. But there are also risks in choosing management actions that exacerbate the problem or which cause more harm than good.

At least four management strategies for control of Eurasian Watermilfoil are currently available:

⇒ A native aquatic beetle known as a weevil has been shown to effectively control Eurasian Watermilfoil while leaving native species of aquatic plants unharmed. This weevil (family Curculionidae, species *Euhrychiopsis lecontei*) feeds effectively on the growing tips of the milfoil plant, can complete multiple generations in a single growing season, and has been shown to be an effective natural control agent when weevil populations are augmented through stocking. Although some variability in response has been noted, Mohican Lake would be a strong candidate for weevil control in part because of the largely natural shoreline that would allow the beetles to successfully survive the winters in leaf-litter along the shoreline, and then successfully launch their attacks on milfoil the following spring.

⇒ An aquatic caterpillar (family Crambidae, species *Acentria ephemerella*) can reach high densities on Eurasian Watermilfoil, and effectively attacks the growing tips of milfoil plants. Unlike the milfoil

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weevil, this caterpillar (and its adult form, a moth) are not native to New York, but this species has become naturalized over the last 100 years and is now considered a non-native resident species. It also has the advantage over the weevil in not needing shoreline over-wintering sites and instead is an entirely aquatic species. This caterpillar has been effective at controlling Eurasian Milfoil in New York's Cayuga Lake.

⇒ Use of chemical herbicides to control harmful growths of invasive plant species can also be considered an option for control of Eurasian Watermilfoil. But the use of chemical herbicides has many problems both from the human and the ecological perspective, and the use of chemical herbicides must be carefully considered and evaluated relative to other management options.

⇒ Finally, individuals along the shoreline and the broader lake community can look at manual control methods for reducing milfoil growth or eliminating dense beds of milfoil. Although manual removal on a lake-wide basis would be expensive and time-consuming, more localized efforts by individuals and professionals could be a key part of the long-term control and management of the Eurasian Watermilfoil in Mohican Lake.

For Mohican Lake, the herbicides Endothall (trade-name Aquathol K) and 2,4-D (trade-name Navigate) have been proposed as a means of controlling Eurasian Watermilfoil and other aquatic plants. Because the State of New York recognizes no safe levels for human ingestion for Endothall, and the optimal time for application is near the Memorial Day weekend, the first cause for concern with this herbicide is the unwanted exposure by anyone boating or swimming in the lake in areas near the herbicide application. Just as importantly, this herbicide is a strong, broad-scale herbicide that will harm both native and invasive aquatic plants.

The herbicide 2,4-D likewise has broad negative effects on many non-target species of native aquatic plants, and also requires a number of recreational and other prohibitions following its use. The impacts on the native aquatic plants in Mohican Lake (and downstream in the Mill Brook watershed) need to be carefully evaluated, particularly in the context of detailed aquatic plant surveys in the areas of herbicide application. The introduction of 2,4-D, in particular, to the mixture of harmful chemicals being introduced into Mohican Lake raises significant concerns since New York state regulations require its use only on emergent and floating leaved plants (mostly native species at Mohican Lake; see NYCRR 327.6).

All non-chemical responses should be given priority consideration in how to address the Mohican Lake Eurasion Watermilfoil situation. Given that Eurasion Watermilfoil is a problem for many New York state lakes, it would be beneficial for the NYSDEC to develop, with public and scientific input, a comprehensive management plan that would include, but not be limited to, Mohican Lake.

In the near term, NYSDEC should be advancing a public decisionmaking process that ensures full consideration of the array of management options available for Mohican Lake and that ensures priority consideration for the non-toxic, non-chemical strategies.