Demonstration Project: Use of Native Weevils as a Biological Control for an Invasive Exotic Plant (Eurasian Watermilfoil)

Eurasian watermilfoil (*Myriophyllum spicatum*) is an exotic aquatic plant that rapidly invades shoreline areas by forming dense mats across the surface of the water and can grow into fairly deep water. The plant is suspected to have been an accidental release from the aquarium trade and was first detected in Washington, D.C. in 1942. By 1950, it was found in Arizona, California, and Ohio. Eurasian watermilfoil is currently reported from 175 Indiana lakes and reservoirs (compared to 75 in Minnesota and 190 in Wisconsin). This nonnative milfoil crowds out desirable native vegetation, provides no desirable food for waterfowl or wildlife, and makes waterways unsuitable for boating, fishing, and swimming.

Traditional control methods may be less effective than biological control for this particular plant. Mechanical harvesting actually spreads milfoil, because the plant reproduces through fragmentation. Herbicides that are effective against milfoil are also very expensive and may have secondary effects on other plants or animals in the water. Control by either method is usually temporary due to repeated introduction of the plant via fragments transported by boat trailers from infected lakes.

Biological control of weeds can provide long-term control that only affects target plants without harming beneficial plants. Once established, biological controls can be self-maintaining, reducing the need for repeated treatments. Applications to lakes in Minnesota, Vermont, Illinois, and Ohio show that a native weevil (Euhrychiopsis lecontei) actually prefers the exotic species of milfoil over the native milfoil and has provided a successful means of milfoil control. The weevil lays its eggs on the tips of the milfoil plant. When the young hatch, they burrow down the stem, eating their way through the plant and slowing plant growth or shearing the top of the plant below the water surface. The weevil occurs in Minnesota, Wisconsin, and Illinois, and was discovered in northern Indiana at Saugany Lake, LaPorte County, in 1997.

Methods

Waters selected for demonstration should have an obvious infestation of Eurasian water milfoil with reason to believe that if the milfoil were controlled, native plant diversity would rebound. Weevils thrive in cooler waters (less than 86oF) and feed readily on milfoil growing on nutrient rich sediment. Weevils are apparently more successful if raised in the same region as the target lake. A supplier in Ohio cultures and markets weevils under the trade name MiddFoil®.

Due to possible regional variations, weevil treatment in two northern Indiana natural lakes could be compared with treatment of a southern reservoir. They are: Little Turkey Lake (Lagrange County), Round Lake (Whitley County), and Griffy Reservoir (Monroe County). The lakes have similar characteristics for use as experimental comparisons. Herbicide use will have to be restricted in conjunction with the weevil treatment, so

residents would need to be willing to put up with unpredictable lake conditions during the testing period. Lakes where watershed contributions to weed growth have been controlled will probably have more success using in-lake treatments. These lakes have participated in LARE or other programs through a diagnostic study and wetland construction or watershed treatment practices.

Anticipated and preliminary results
Studies conducted in lakes in Vermont, Minnesota, and Florida showed that weevil density increased and Eurasian milfoil decreased dramatically over a period of at least three to five years after introduction of the weevils. Plant abundance then cycles at a low level following stabilization of the weevil population.

Brian Breidert, IDNR Manager at Bodine State Fish Hatchery, lives on Saugany Lake and reports that since the discovery of weevils in that lake in 1997, milfoil abundance has decreased. After covering large areas in June, the plant drops from the surface in early July. These areas have also increased in beneficial native plant diversity, including the reestablishment of water lilies. Similar anecdotal results are reported from Flint Lake in Porter County.

Use of the weevil as a biological control agent may provide an additional effective method of aquatic plant control at over 175 lakes in Indiana. Testing of the method in a range of Indiana water bodies would determine eligibility as a cost-share practice through state-funded programs.

Cost of the project
The lake organizations and the LARE program will provide funding for pre- and post-practice monitoring which could include a survey of aquatic plant distributions and weevil populations before and for at least two years after the treatment, as well as measurements of selected water quality parameters.

On November 9, 1999, funding was approved by the Indiana State Soil Conservation Board for the project was up to $43,650. Each of the three lake organizations will contribute up to a maximum of $2,450 in local cost-share funds per lake. Therefore, the maximum amount available for the treatment and monitoring would be $51,000.

Contractors
Christina Brant, project manager at EnviroScience, Inc., of Stow, Ohio, (1-800-940-4025) has scheduled stocking of the weevils for June of 2000.

Dr. Robin Scribailo of Aquatic Restoration Systems, LLC, (219-926-2233 or 219-462-4197 ext. 5255) will conduct scientific monitoring to determine the extent of milfoil control achieved by the weevils and effects on native plant species in these lakes over three summer seasons from 2000 to 2002.

Lake organization contacts

Steve Cotter
Griffy Reservoir
Parks and Recreation Department
City of Bloomington Bloomington, IN 47402
Tel. 812-349-3736
cotters@city.bloomington.in.us

Todd Nichols
Tri-lakes (Round Lake) Property Owners Association
5653 North 350 E
Columbia City, IN 46725
Tel. 219-691-3662 (w)
Tel. 219-691-9992 (h)
todd3240@fwi.com

Harlan Stull
Little Turkey Lake Association
3215 South, 1075 East
Lagrange, IN 46761
Tel. 219-351-4130

Lillian Stoner
lstalil@aol.com

January 2000