



Lake Bonaparte, NY

“As president of the Scugog Lake Stewards, a 17,000 acre lake in Southern Ontario, my experience with milfoil weevils and EnviroScience Inc. has been extremely positive. *Our early results indicate that the weevils are off to a strong start, and all of the EnviroScience staff are both knowledgeable and an absolute pleasure to work with.* I believe that weevils hold a great deal of promise for the many large Ontario lakes and waterways dealing with both Eurasian watermilfoil and its recently identified hybrid with native Northern watermilfoil.”

- Jamie Ross, June 2010

EnviroScience, Inc. | 3781 Darrow Road | Stow, Ohio 44224

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www.EnviroScienceInc.com



MILFOIL SOLUTION

The Natural Choice for Eurasian Watermilfoil Control

Milfoil Solution®, formerly known as The MidFoil® Process, is the only environmentally sound and effective long-term control for Eurasian watermilfoil, one of the most intensively managed invasive aquatic weeds in North America.

Our strong network of university, faculty and research staff allows us to provide world class expertise and service. In addition to our broad range of Lake Management services, EnviroScience is the exclusive provider of the Milfoil Solution® management program for Eurasian watermilfoil control. Milfoil Solution® is the only natural, non-chemical alternative for controlling the growth of Eurasian watermilfoil.



LAKE BONAPARTE, NY

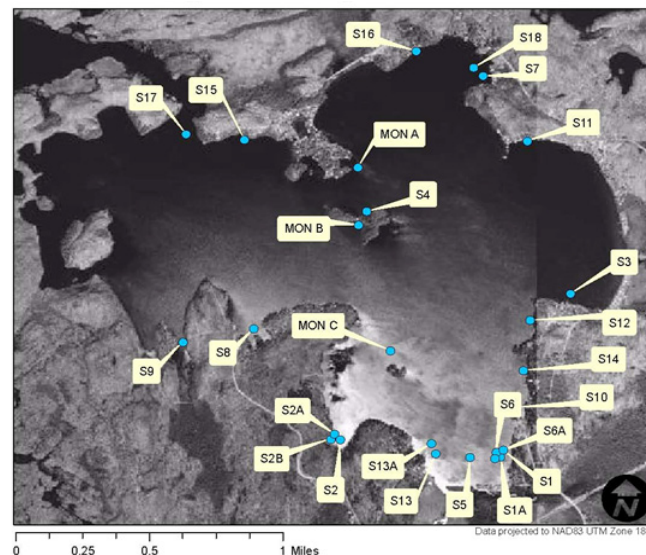
Lake Management and The Milfoil Solution®

Lake Bonaparte, Lewis County, is a picturesque water body in upstate New York. Its 1,286 acres are encompassed by 24 miles of steep forested shoreline with many lakefront properties as well as a large amount of undisturbed land owned by Fort Drum, a U.S. Army military reservation. In 2001, Eurasian watermilfoil (*Myriophyllum spicatum*), was identified in many of the bays throughout the lake and quickly began to dominate the plant community in these areas. The Lake Bonaparte Conservation Club explored various management techniques - chemical, mechanical, and biological - to address the problem. They invited an EnviroScience representative to present our biological control program in October 2001. On a tour of the lake during her visit the biologist observed milfoil weevils (*Euhrychiopsis lecontei*) on the Eurasian watermilfoil (EWM), which meant an indigenous population of the native beetle existed in the lake. The LBCC voted to move forward with a Milfoil Solution® plan for 2002. With continued support from the LBCC and the Town of Diana in Harrisville, NY, a program continued through 2009.

A total of 182,000 milfoil weevils were stocked 2002-2008 for an average of 26,000 weevils per year. Surveys were conducted at the beginning and end of the season each year to monitor and evaluate progress and develop annual strategies for further stocking and expansion throughout the lake. A total of 23 stocking and three monitoring sites were established by 2008. A final follow-up survey of the entire lake occurred in August 2009.

Lake Bonaparte, NY

Milfoil Solution® Stocking and Monitoring Site Locations



● Site Locations

Figure 1. Lake Bonaparte Stocking and Monitoring Locations



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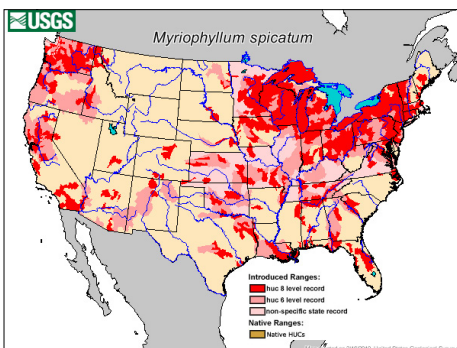


The Milfoil Weevil

A Native Insect

The milfoil weevil (*Euhrychiopsis lecontei*) is a beetle native to North America that specializes on Eurasian watermilfoil (EWM). As part of the Milfoil Solution® program, it is intentionally introduced into the water body where this invasive plant is a problem in order to establish a resident population to control EWM on a long-term basis.

As adults they seek out healthy milfoil to lay eggs. In general, two to three more generations will continue to reproduce and move throughout the lake in one season. In the fall, the adults move to shore to over winter and return in the early spring as soon as the ice melts off the water. The native weevil is a specialist on EWM and its native host Northern watermilfoil, and does not damage any other aquatic plants. As EWM decreases in the treated lake, the beetle population gradually declines to a self-sustaining level.



The customized, long-term Milfoil Solution® program at Lake Bonaparte is a model for the successful use of a biological control. The results of the multiple-year program demonstrate measurable control in the following ways:

- EWM disappeared or was reduced by 50% in several sites including the southeast bay.
- Eurasian watermilfoil density decreased in the majority of the sites between 2002 and 2009.
- EWM was well below the water surface, from 1 to 10 feet, at non-nuisance levels (8/2009 survey)
- The weevil population in a number of sites reached a density of 0.5 weevils/stem or higher. Values ≥ 0.5 weevils/stem are considered of a critical density necessary to reduce EWM (Newman and Biesboer, 2000).
- Weevils and/or weevil damage continue to be observed in sites many years post-stocking.
- The number of native aquatic plant species identified in the lake increased over five-fold between 2002 and 2009. Native macrophytes have steadily filled in where EWM disappeared in Lake Bonaparte. They play a large part in keeping EWM from re-infesting those areas and promote a higher quality habitat for macro invertebrates and fish along with a more stable and healthy ecology.



Literature Cited

Newman, R.M. and Biesboer, D.D. 2000. A Decline of Eurasian Watermilfoil in Minnesota Associated with the Milfoil Weevil *Euhrychiopsis lecontei* J Aquat. Plant Manage. 38: 105-111.



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AQUATIC PLANT IDENTIFICATION

Why is Identification Important?

How to Send Us a Sample or Photograph for Identification

Send Digital Photos via E-mail:

Select the top 10-12 inches of 2-4 plant samples, lay them in a light colored pan of water deep enough so that the leaflets float freely from the stem, and take two or three photos. You may also want to send photographs of the entire infested area. Please send them to info@EnviroScienceInc.com

or Overnight a Sample in Mail:

Again, select the top 10-12 inches of 2-4 plants, place them in a large zip-lock bag with a damp (not wet) paper towel. Pack in small box with some material to prevent the contents from damage. Ship overnight or 2nd Day Air to:

EnviroScience, Inc.

Attn: Lake Management

3781 Darrow Rd.

Stow, OH 44224

Please include as much of the following information as possible:

Lake/County/State

Date Collected

Collector's name

Contact information: Name, organization, address, phone, and email

After identification, what's the next step?

If the plant sample is positively identified as Eurasian watermilfoil or a hybrid version of the plant species, than the next step is learn more about your waterbody and assess the extent of the milfoil infestation. If your community requires one of our representatives to attend a meeting or give a presentation, please contact us with a scheduled meeting date and we will be glad to give a presentation and answer all questions regarding our process. Our team prides itself on communicating all aspects of our program and providing full-personal attention to our clients.



Eurasian (left) vs. Northern watermilfoil

In addition to contacting us with any questions, one very important action you should take is to verify exactly which species of milfoil you are dealing with.

Differentiating between the various types of milfoil can be very difficult and require an expert. To complicate matters even more, Eurasian watermilfoil can hybridize with at least two of the native North American varieties of milfoil. Sometimes, the only way to definitively identify these hybrids is via genetic analysis.

Regardless, proper identification of your problem plant(s) is key to developing a successful management program. We can help by confirming the identity of the milfoil present in your lake. Where hybridization of the milfoil may be an issue, we can arrange for genetic testing of your samples.

Milfoil Species

Eurasian watermilfoil

(Myriophyllum spicatum)



- White to pink stem
- 3 to 6 leaves per whorl
- 14 to 20 pairs of leaflets

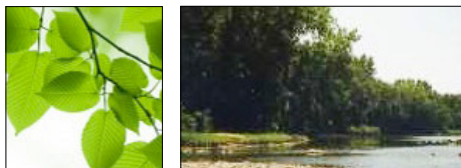
[Click here to read the complete Aquatic Plant Identification white paper](#)



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EnviroScience performs ecological monitoring, toxicology, commercial diving, lake management and emergency response for transportation and other industries.



ABOUT ENVIROSCIENCE, INC.

For over twenty years, EnviroScience has provided highly specialized services to federal, state, and municipal government agencies as well as industrial, engineering and private sector clients. From biomonitoring and environmental compliance support to underwater inspections and diving services, our reputation for excellence has been built one project at a time - with technically-sound protocols, detailed reports, and superior client service.

EnviroScience performs ecological monitoring, toxicology, commercial diving, lake management and emergency response for transportation and other industries.

EnviroScience has assembled a comprehensive team of biologists to provide environmental services throughout the United States. The company was created with the concept that a small, specialized biology firm could offer cost-effective, high quality services by eliminating the overhead of a larger parent company. This concept still holds true today, as our scientists explore the latest in environmental legislation and regulations and incorporate the most up to date technology to gather and report data. Despite tremendous growth, our services remain tightly focused and technically comprehensive. Since 1989, EnviroScience has supported environmental design and regulatory requirements servicing federal, state and municipal governments, as well as industrial, engineering and private clients.

EnviroScience continues to grow and currently consists of three divisions.

- **Bioassay:** Starting as a bioassay laboratory, the company gained a reputation for providing quality testing at competitive prices.
- **Ecological Biomonitoring:** As business expanded into surrounding states, clients began to request additional biomonitoring services. In response, EnviroScience formed a very specialized Ecological Division with a multi-disciplinary staff of highly trained biologists. The division offers a wide range of ecological services including aquatic surveys, wetland delineations, terrestrial surveys, and mussel surveys.
- **Milfoil Lake Management:** Aspiring to stay at the forefront of environmental design, EnviroScience added a Lake Management division featuring the exclusive Milfoil Solution® program. The division leads the way in biocontrol and is staffed with experts in watershed and lake management. All three of the divisions have been successful in working together to provide an extensive matrix of environmental services.

Contact us today for help with your environmental problems.

[Click here to read all of our white papers](#)



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