

ES **EnviroScience**
INCORPORATED

Lake St. Helen, MI

“The Milfoil had really started to affect our tourism. It was so thick that we had ducks walking on top of it. It would knock propellers from the boat. We had to do something. We didn’t want to use chemicals. We knew that harvesting didn’t work because the Milfoil will just replant itself and start all over again if we couldn’t pick up all the pieces. So we wanted to do a biological, a natural approach and using the weevil was a natural approach. For over 5 years we put weevils into the lake and the rest is history I guess you have to say. Our lake has never been better. We no longer have any thick Milfoil patches and weevils are doing a fantastic job of saving our lake and making our lake usable again.”

- John Bawol

President, St. Helen Lake Association, MI

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

Phone: 800.940.4025 | Fax: 330.688.3858 | Email: info@EnviroScienceInc.com
www.EnviroScienceInc.com



MILFOIL SOLUTION

The Natural Choice for Eurasian Watermilfoil Control

Milfoil Solution®, formerly known as The MiddFoil® 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.

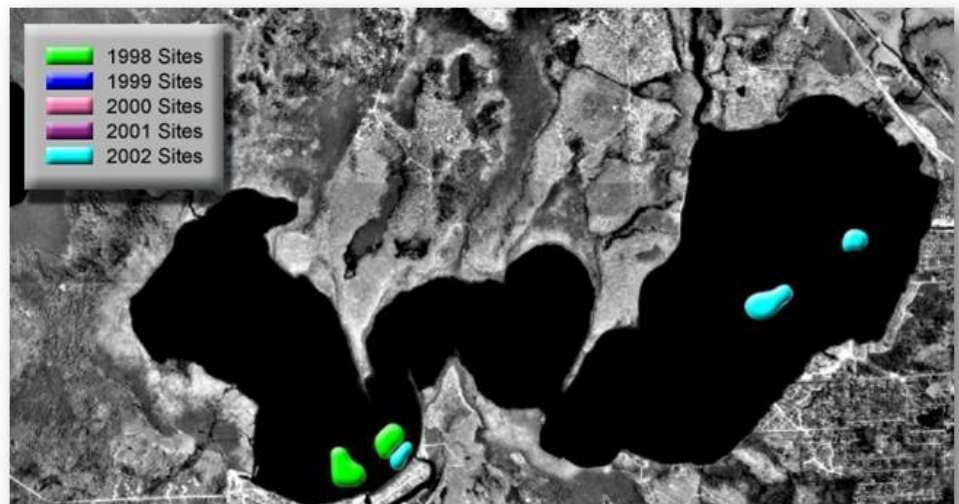
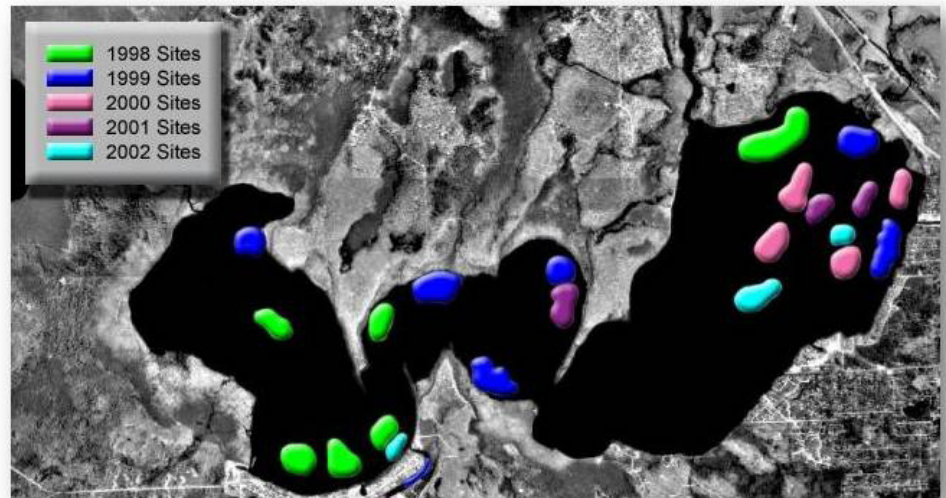


LAKE ST. HELEN, MI

Lake Management and The Milfoil Solution®

Successful Multi-Year Stocking Program 1998-2003

Lake St. Helen is a 2,400 acre public lake located in Roscommon County, Michigan. EnviroScience, Inc. began a five-year weevil stocking program in 1998. At the start of the project an estimated 70% of the lake was covered with topped-out milfoil.



During the first year of the project, a total of 13,500 weevils were stocked in four Eurasian watermilfoil beds. Four additional sites were established to monitor the weevil progress. Prior to stocking, the milfoil stems were beginning to form a mat on the surface of the water and the plants were healthy. Although the water level had dropped forty centimeters by the time of the follow-up survey, twelve weeks after stocking the milfoil plants in the sites, the milfoil was below the water surface, indicating the weevils had begun to control the EWM. The weevil density also increased in most sites over the course of the first summer. Initial data indicated the 1998 stocking event was successful and the establishment of a stable weevil population had occurred.



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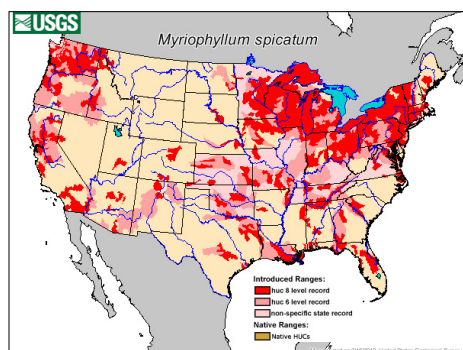


The Milfoil Weevil

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.



At the time the June 1999 stocking event, milfoil in the 1998 stocking and monitoring sites had virtually disappeared. An additional 16,000 weevils were stocked in six other areas of the lake. By the time of the second year's follow-up survey in August of 1999, many native species were present that were not in June. Coontail, Water lilies, American waterweed, Chara, Floating pondweed and various other Pondweed species were all reappearing. Three of the beds stocked in 1999 had been heavily damaged by weevils, while the remaining three sites suffered moderate damage.

An additional 14,000 weevils in five sites were stocked in June of 2000. By the time of the follow-up survey in August of 2000, one of the June stocking sites had virtually disappeared. The remaining stocking sites were either heavily damaged or moderately damaged indicating the weevils were healthy and controlling the EWM. There was also an overall increase in weevil densities over the summer of 2000. More native plant species were also returning. Robbins pondweed (a desirable native species) was not present prior to stocking in June, but was observed in August.

Lake St. Helen received an additional 19,000 weevils in May of 2001. The previous years' stocking sites (1998-2000) had virtually disappeared, therefore five new stocking sites were established. By the time of the follow-up survey in August of 2001 most of the stocking sites were extremely damaged and patchy. What little EWM that remained was approximately three feet from the water surface and losing buoyancy. Adults and larvae were present and having a dramatic effect on EWM.

The stocking of 62,500 weevils from 1998 through 2001 has resulted in heavy damage to all EWM beds in Lake St. Helen. Weevils had increased in density from 1999 to 2000 and also over the course of the summer of 2000 and 2001, indicating that a stable population of weevils was established and is thriving in the lake. As has happened in the past, several beds stocked during the first two years of the project had been decimated by the summer of 2001. There is a healthy community of native aquatic plants in Lake St. Helen. These native species should continue to increase the likelihood of a EWM decline as they begin to compete with the milfoil for resources. The overall data indicate that all four years of stocking have been successful. The weevil population is thriving and stabilizing, indicating that the MilFoil Solution in Lake St. Helen has been a complete success and will continue to be successful in the future.

In 2007, EnviroScience commissioned an independent follow-up survey of the lake by a third party environmental firm. This survey found that although milfoil was found in approximately one quarter of the 345 grid points sampled, the milfoil was generally very sparse. In contrast to the situation in 1998 where milfoil covered approximately 70% of this 2,200 acre lake, milfoil occupied approximately 50 total acres at the time of the 2007 survey. Less than 5 acres of that was topped out on the surface. A highly diverse and healthy native plant community containing 22 species was found and the consultant noted that these plants serve an important role in minimizing the spread and recolonization of milfoil. Although the consultant recommended that the association consider stocking additional weevils, to date, the association has not seen the need to do so.



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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

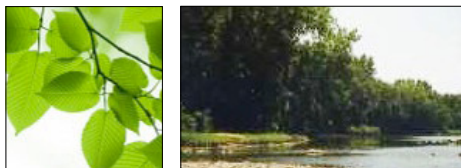
[Click here to read the complete Aquatic Plant Identification white paper](#)



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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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