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## *Conserving the Forests, Lakes and Streams of Northeast Michigan*

### **Eurasian watermilfoil in Higgins Lake: 2007 Update provided by Huron Pines to the Higgins Lake Foundation**

Higgins Lake is a popular recreation resource located in Roscommon County near where I-75 and M-27 come together. It is a 9,831 acre oligotrophic lake that is 140 feet at its deepest point. It has a hydrologic retention time of approximately 12 years. The TSI score for Higgins Lake is 30 (Carlson's Trophic-State Index).

Eurasian watermilfoil (*Myriophyllum spicatum*) is an invasive exotic species with the potential to disrupt a lake's ecological system and interfere with recreation. It is generally thought to have first entered lakes in North America in the 1940s. Eurasian watermilfoil (EWM) is a concern because it can rapidly colonize lakes and spreads easily by fragmentation. This plant can grow up to the surface of the water and form extremely dense mats, inhibiting boating and swimming. It also crowds out some of the more ecologically beneficial aquatic plants that would otherwise grow. Once established, Eurasian watermilfoil is very difficult to remove and can be spread from lake to lake by boat traffic.

This brief update is a follow-up to a detailed 2002 EWM survey conducted by Huron Pines Council and the subsequent reconnaissance in 2003 and 2005 which were conducted to help characterize what, if any, change in EWM distribution was occurring within the lake.

Effective control of Eurasian watermilfoil in Higgins Lake should continue to be based on the concept of long-term management for protecting water quality. EWM has been detected early enough, that, if concerned residents can stay on top of it with the integrated approach, it may never become a nuisance. It will be necessary to work closely with the public -- a well-coordinated public relations/outreach campaign is a key part of the integrated approach to management. Education, prevention, and monitoring, along with experimental control options such as weevils, light barriers, and physical removal of the small plant beds that are starting to colonize, along with limited chemical treatment, can prevent the type of costly lake problems seen elsewhere. The above strategy, based on the EWM survey results and the type of lake, is tailor-made for the long-term health of this lake ecosystem.

Map 1 of this report highlights the sites of interest in Higgins Lake and recommended action for 2008.



## **METHOD**

The survey was a rapid visual assessment of sites identified in previous years by staff as sites of interest. One Huron Pines staff member accompanied lake representatives by watercraft on August 28<sup>th</sup> and September 9<sup>th</sup> to the priority sites.

Due to depth of water, much of the lake is not suitable for EWM growth. Based on staff interpretation of Higgins Lake aerial photos, approximately 3,129 acres of the lake could be classified as potential habitat for EWM. Embayments, the drop-off, areas with debris on the lake bottom where EWM can gain a hold, boat hoists and boat launches are the most likely locations for the establishment of EWM weed beds within this priority area. Higgins Lake has very few native aquatic plants.

A view bucket with a transparent bottom was used identify the presence of EWM. The high water clarity of Higgins Lake contributes to the relative ease of locating weed beds in the lake. Characteristics recorded about each site included size of weed bed, location of the site, density of growth, depth of water, condition of plants, as well as a recommendation for treatment.

## **RESULTS AND RECOMMENDATIONS**

**Site 1:** Known locally as the “car body site,” this EWM location was reduced by more than half its size from 2002 to 2005. The only treatment at this site has been the use of benthic barriers – first applied in 2003, maintained through 2004, and used on a small section of the site in 2005. Continued monitoring is needed at this site. There are several other small sites in the area, a couple of which have had benthic barrier treatment in the past and should also have continued monitoring. Two of these sites are labeled on Map 1 of this report (#’s 701 and 702).

**GPS Coordinates:            N 44.46478            W 84.68343**

**Site 6:** This location, which includes the original sites 5 and 7 from the 2002 inventory, did not receive treatment in 2003. However, approximately 6,000 milfoil weevils (*Euhrychiopsis lecontei*) were stocked in July 2004. In 2005, weevils were found on the plants in a density higher than 2004, but there appeared to be little visible impact to the plants themselves, based on the observation of Huron Pines’ staff. In 2007, little visible impact was observed from the weevils, although the site appears to be better contained than the similar drop-off EWM sites (#’s 40, 37 and 35).

**GPS Coordinates:            N 44.46726            W 84.69125**

**Site 12:** This location, in the boat basin and boat approach (channel) at South Higgins State Park, was the largest site of EWM in Higgins Lake. It is receiving chemical treatment every other year, which has helped to control the spread of EWM. It is an important site, given the amount of boat traffic entering and exiting the lake at this location. In 2007, there



were a few EWM plants in the boat channel, but growth was minimal throughout the large boat basin.

**GPS Coordinates:            N 44.42650            W 84.68166**

**Site 15:** This is a success story from 2005 for the benthic barrier treatment program. The site went from approximately 400 square feet in size to nothing more than a small patch about 4 square feet in size. In 2007, no EWM growth was observed.

**GPS Coordinates:            N 44.46074            W 84.70879**

**Site 22:** This site, outside of B&B Marina, did not work well for the benthic barrier treatment in 2003. This is due to its use as a fishing spot – boat anchors dragged across the lake bottom dislodged the material several times. In 2004, approximately 4000 weevils were stocked at this site. While the density of weevils at this site in 2005 was higher than when they were planted in 2004, Huron Pines staff did not observe a visible impact from this treatment. The site appears to not be increasing in size, at least not appreciably. The plants at this site are not yet close to the water's surface, so there is still some time to “do something” at this location.

**GPS Coordinates:            N 44.50822            W 84.74210**

**Site 24:** This is a very small patch of EWM just inside the protected swim area at Camp Westminster. No change has occurred at this site through the years. Some other plant species are located nearby, but the EWM area could easily be covered by a barrier next year and eliminated.

**GPS Coordinates:            N 44.51006            W 84.74693**

**Site 25:** This is the North State Park Boat Launch, which had heavy EWM growth in its channel during the 2002 and 2003 surveys. This site was chemically treated in July 2004 and is on an every other year schedule for treatment, which should continue.

**GPS Coordinates:            N 44.51054            W 84.76061**

**Site 26:** The DNR West Boat Launch is being treated with chemicals on an every other year schedule, which seems to keep the EWM in check. This program should continue.

**GPS Coordinates:            N44.47959            W 84.77786**



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**Site 29:** This was a large site in the southeast section of Higgins Lake, several hundred feet out from Chaney Point. Five years ago it was similar in size to Site 30, which is now visible on aerial photos of the lake. Site 29, however, received aggressive treatment through the years by the volunteer SCUBA divers (it was one of the very first sites treated with benthic barriers). The size of the site was reduced in 2005 by at least 95% and continues, in 2007, to be drastically reduced from what it once was. It should be closely looked at next year and may need the benthic barrier treatment again within a couple of years.

**GPS Coordinates:            N 44.45227            W 84.67485**

**Site 30:** This is a larger site which appears to be growing very slowly. The benthic barrier treatment would be appropriate at this location, as it's been used effectively at nearby site 29. This site, along with Site 22 in the north section of the lake, is clearly visible on the newer aerial photos that are available.

**GPS Coordinates:            N 44.45329            W 84.67522**

**Site 35:** This location is along the drop-off at Point Detroit and is a rather large site. Benthic barriers have been used here in the past but with limited success due to the size of the site and the challenges associated with installing and keeping them in place along a drop-off. One year of spot chemical treatment at this site would be appropriate for knocking back the EWM growth.

**GPS Coordinates:            N 44.47168            W 84.70442**

**Site 37:** This site is located along a drop-off between Pt. Detroit and the island. It is a rather extensive weed bed. Due to the drop-off, the proximity of the plants to the surface, and the size of the site, this should be considered a candidate for spot chemical treatment. Currently, one benthic barrier appeared to be in place at this site, but the impact at this location is minimal because the site is several hundred feet long.

**GPS Coordinates:            N 44.45510            W 84.67498**

**Site 39:** This is a rather small, near-shore location along Treasure Island. A benthic barrier was attempted here in 2003 and 2004. There is some EWM at this site, but where the barrier was placed, the plants have not returned. This is a success site for the Benthic Barrier program but the site should continue to be monitored.

**GPS Coordinates:            N 44.47850            W 84.72665**



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**Site 40:** This site, along the drop-off near Treasure Island, has increased in size in recent years. It is several hundred feet long and has not received any sort of treatment in the past. EWM plants in this patch are close enough to the surface of the water that, if this site is left untreated, the plants will likely grow enough in the next year or two that they will be chopped up by boats and spread throughout the lake. The drop-off and the size of this site pose challenges that can probably not be overcome through the use of the bottom barriers, therefore, this site is recommended for spot chemical treatment.

**GPS Coordinates:            N 44.47758            W 84.72150**

**Sites 703, 704, 705, and 707:** These sites (shown up close on Map 2) were all created in the last couple of years when brush bundles (Large Woody Debris) were hauled out to this location and sunk to the bottom. Due to their proximity to sites 29 & 30, and the year-to-year site monitoring Huron Pines staff members have done in this section of the lake in particular, it was clear that these were recently created. The woody debris is tied to bricks and was clearly placed for fish habitat. This impact from anglers, probably at the end of ice fishing season, created enough of a habitat area for EWM plants to grow, where before there were no plants. EWM was the first plant to colonize the site and is now abundant at this location. These sites, once the woody debris is moved (i.e., sunk into the deep section of the lake) are important sites for the benthic barrier treatment, as they can be contained in 2008 before it grows too large. Woody debris would not naturally occur on the lake bottom several hundred feet from the shoreline and should not be hauled out to create fish habitat in Higgins Lake -- the potential risk to the lake from the colonization of EWM via these sites outweighs the fishery benefit these sites have with regard to holding fish. A map of these sites is included with this report.

**GPS Coordinates:            N 44.45374            W 84.67471 (Site 703)**  
**N 44.45257            W 84.67411 (Site 704)**  
**N 44.45213            W 84.67483 (Site 705)**  
**N 44.45320            W 84.67502 (Site 707)**

### SUMMARY

As in 2005, Huron Pines staff members were impressed with the effectiveness of the benthic barrier as a EWM control measure. In two specific areas (sites 15 and 39) the barrier treatment has not been used for at least two full years and the EWM has still not returned. For smaller sites in the 400 square foot range, that are not along the lake's drop-off, this seems to be the best available method for controlling EWM in Higgins Lake.

Chemical treatment use for EWM control in the lake has been very limited, exclusive to the three DNR boat launch sites on an every other year basis. This should continue, along with a slight increase through the use of spot treatment at three additional locations. Three sites in the north basin of the lake (sites 35, 37, and 40) are all fairly extensive growths along the



drop-off. They present a real challenge through any other control measure and appear to be gradually increasing in size.

While we have not observed significant impact from the weevil placement in 2004 at site numbers 6 and 22, it is worth noting that Site 6 appears to be stable in size while comparable sites along the drop-off are increasing, namely sites 35, 37 and 40. This may or may not be due to the planting of the milfoil weevils and it would be worth further study. Huron Pines would recommend collecting plant samples from Site 6 and two other control sites in the lake and sending in the plants for a biologist to essentially count milfoil weevils and, if they're found on plants at the control sites, compare the density of weevils from Site 6 to the other control sites.

The southeast section of the lake, between the shoreline and the drop-off and out from Chaney Point Drive, continues to see the placement of Large Woody Debris structures (brush bundles) on the bottom of the lake. These are likely placed by anglers looking to increase habitat. Unfortunately, once this material is placed on the lake bottom, it quickly transforms the site into an area that is easy for plants to establish. At this point in time, EWM is quickly establishing itself at these locations and completely taking over. Several new sites were discovered this year and there are likely a few more that have not been found. While this activity is not being permitted by the Michigan Department of Environmental Quality at this time, it seems that an education effort targeted to landowners and recreational users (ice fisherman) is needed. The unnatural placement of woody material in an area of the lake that would otherwise not have these brush bundles is creating a problem that will need to be addressed in order for the EWM control program to continue effectively.

Huron Pines is a not-for-profit organization that conserves the forests, lakes and streams of Northeast Michigan by bringing together technical, financial, and people resources. Our organization is thankful to the following groups/individuals for making the above report possible:

- Higgins Lake Foundation for providing project funding and Bill Baker from HLF for taking the time to look at EWM sites and provide information
- Steve Rodock from the US Department of Agriculture-NRCS for technical assistance in the creation of the project maps
- Laurie Smith Tudor, Marv Bolton, and Rick Meeks from the Higgins Lake Property Owner's Association for supplying project information and for their continued efforts in the control of EWM through the SCUBA volunteer – benthic barrier program. Special thanks to all of the other divers who have also made that effort a success.
- Pat and Vicki Springstead for providing their watercraft, fuel, and time