

RAPID RESPONSE GRANT FINAL REPORT BERRY LAKE

AIRR-044-08

Brian Ewart

EWM Control Activities



Figure 1 Michelle Nault (DNR Bureau of Science Services) examines a strand of EWM while surveying Berry Lake's aquatic plants (Photo Brian Ewart)

On June 12, 2007 a DNR aquatic plant survey team engaged in mapping Berry Lake's macrophyte communities (rooted aquatic plants) discovered Eurasian watermilfoil near the boat landing (Figure 2). The DNR Bureau of Science Services team headed by Michelle Nault, reported the plants as "submerged at the time and not topped out" and "a relatively recent introduction."

The DNR followed its usual procedures for verifying a new find before announcing the bad news to the community in late July.

On July 23, 2007, Hauxwell notified key agency personnel and Berry Lake stakeholders about the find. Hauxwell suggested "now might be the time

for snorkelers or divers to carefully handpull all plants they can find by the roots."

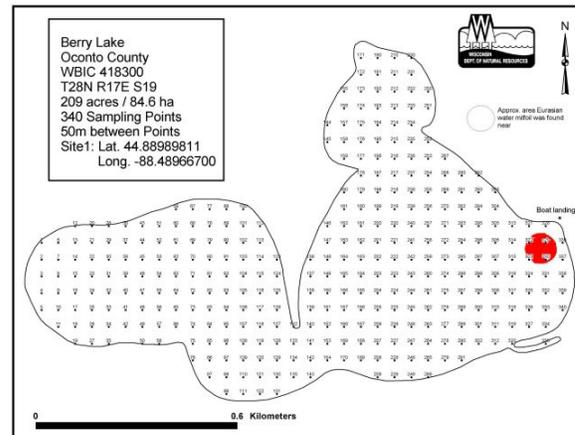


Figure 2 DNR 2007 P/I grid showing area where EWM was first found (DNR map)

On August 3 the DNR authorized expenditures for a rapid response grant with reimbursement contingent upon the submission of a qualifying grant application.

On August 4, DNR Northeast Region Aquatic Species Coordinator, Brenda Nordin, conducted a public meeting on Aquatic Invasive Species at Berry Lake.

On August 11, 2007, riparian property owners, Town of Underhill residents, Audubon Society members and others were mobilized to conduct an EWM pull (Figure 3).

Either the original "few plants" described by the DNR had expanded considerably during the 42 days between discovery and announcement or the DNR had not seen a more substantial colony nearby. Whatever the reason, the EWM the Berry Lake community identified near the landing was not a few plants but a colony approximately 8' x 12'.

The stand had emerged in a location previously disturbed during the installation a dry hydrant.



Figure 3 First community EWM pull - August 11, 2007 (Photo Brian Ewart)

On August 25, 2007, a second Community mobilization revisited the original site to pull the remainder of the EWM. They also worked on two additional sites found in the interim. A very large amount of EWM biomass was pulled and removed from the lake. However, despite their best efforts, the frustrated volunteers concluded the core colonies were now too large, too deep and growing faster than they could be pulled.

The two events removed a considerable amount of EWM biomass but much of the original colony remained. The problem was compounded when two more colonies of substantial size were found while the second community pulling event was in progress.

From August through October Berry Lake riparians and Town residents surveyed the entire Lake for EWM. EWM was identified in two additional locations resulting in a total of four EWM sites in the East Basin. No EWM was found in the West Basin.



Figure 4 Monitoring for EWM - September 2007 (Photo Brian Ewart)

With the found EWM stands mounting and the summer rapidly ending, there was widespread agreement that chemical treatments would be required.

Additional monitoring by community members found EWM stands in two other east basin locations. A chemical treatment permit was acquired for a fall treatment.

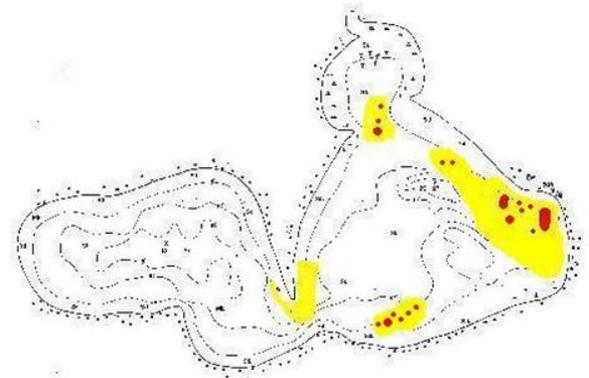


Figure 5 October 25, 2007 EWM spot treatments (red) and areas of concern (yellow) (DNR map & B Ewart)

All of the stands with a total of 3.7 acres were chemically treated with 500 lbs of Navigate (aquatic formulated 2,4-D) by Aquatic Biologists, Inc. (ABI) on October 25, 2007.



Figure 6 ABI broadcasting Navigate in Berry Lake's east basin - October 25, 2007 (Photo Brian Ewart)

Between ice-out (late April) and June of 2008, volunteers conducted surveys for EWM and paid especially close attention to the sites which were treated the previous fall. Weather conditions (wind, precipitation, and lighting) were very poor through most of the period. Nevertheless, the surveys revealed most but not all of the EWM had been eliminated. A few strands of EWM appeared at the treated sites.

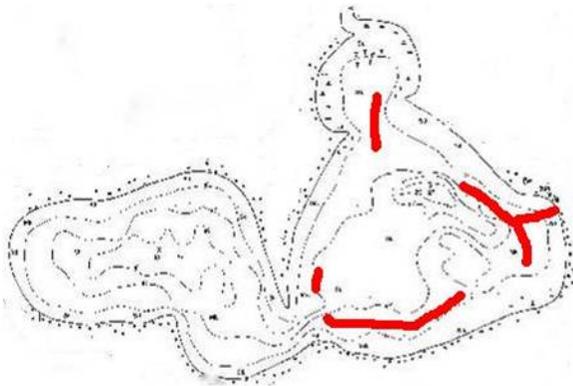


Figure 7 June 16, 2008 EWM spot treatment areas (DNR map & B Ewart)

On June 16, 2008, four .33 acre locations totaling 1.33 acres were treated with 200 lbs of Navigate by ABI on June 16, 2008 (Figure 7). Post treatment surveys by volunteers did not find any evidence of EWM.

The combination of the 2007 fall and 2008 spring treatments appeared to have been very effective in eliminating all of the known EWM.

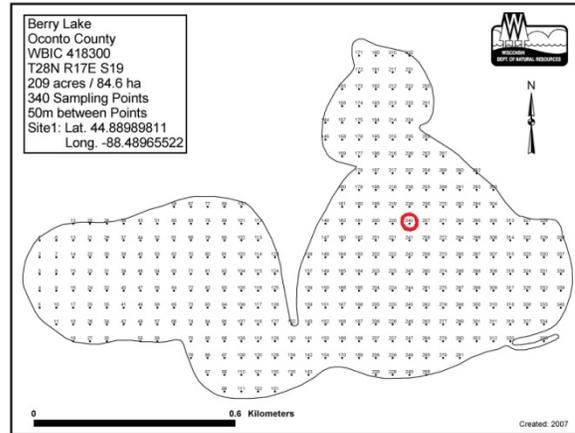


Figure 1 2008 P/I survey with Point 240 enhanced with red circle (DNR)

The July 2, 2008 whole lake P/I survey conducted by Jannet Hauxwell's DNR team found no evidence of EWM except for "one sprig" of dead and apparently treated EWM near P/I point 240 (Jannet Hauxwell, personal communication, July 3, 2008). The treated sprig could have been from the 2008 spring treatment since treatment had taken place north and east of 240 two weeks earlier (see Figure 8).

During the summer of 2008, volunteers continued to monitoring for EWM but with the aid of improved organization and the enhanced recording and communication enabled by a collaborative website.

To distribute the monitoring responsibility, the Berry Lake AIS grant coordinator divided the lake into monitoring sections (Figure 9). Berry Lake riparian property owners took responsibility for sections adjacent to their properties. The lake's AIS grant coordinator also created a collaborative website which allowed EWM monitors to record and share their monitoring information. The website proved very useful for the monitors who employed it.

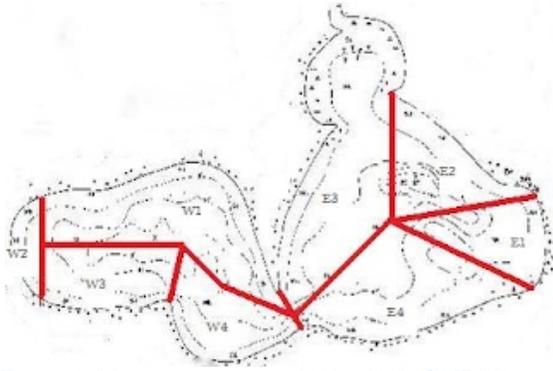


Figure 9 Monitoring zones - 2008 – 2012 (DNR Map & B Ewart)

Monitors reported an occasional fragment of EWM washed into the shallows of E-1 but the monitors were unable to find any growing rooted plants.

The lake's AIS grant coordinator located a milfoil in monitoring zone E-4 which he suspected may be a hybrid. He submitted it to the DNR with the request that it be genetically tested but testing could not be completed.



Figure 10 – A suspicious milfoil suspected to be a hybrid was found on the south shore of the east basin in 2008 (B Ewart)

A few EWM stands were reported just as the monitors were closing their summer homes and preparing to depart for the winter. On August 30, 2008, the E-1 monitor reported finding EWM. The E-2 monitor also reported finding a couple of stands.

The scuba divers were unable to work a dive into their schedule. Consultation with Aquatic Biologists and the DNR about a fall spot

treatment concluded that a fall treatment would be unlikely to achieve the desired results.

Spot treatments were considered for the spring of 2009 but due to the small number of plants and other factors, pulling was recommended over treatment.

In 2009, monitors did not report any stands large enough to treat with chemicals. In the East Basin, where EWM had been reported at the end of the previous boating season, the monitors reported that they were handling any EWM they found.

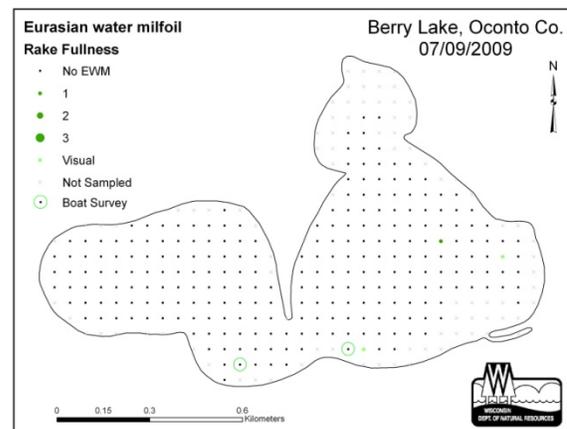


Figure 11 - 2009 aquatic plant survey (DNR Map)

One monitor discovered and marked the first EWM stand to be found in the west basin. Located near the Point, a SCUBA diver pulled it.

No other EWM stands were reported so it was assumed that monitors were pulling any EWM they found.

Extensive monitoring during the fall of 2009 confirmed the stands which had been reported in E-1 and E-2 as well as a number of scattered individual EWM plants in E-1 which had not been reported. Unfortunately, it was too late in the year to employ the only available methods for EWM removal: hand pulling and chemical treatment.

Even if the water had been warm and SCUBA divers in residence, it is unlikely that they would have been able to spend the time required to pull the individual stands and the scattered plants.

SCUBA divers have difficulty pulling the plants because of insufficient leverage in the soft muck.

The divers also have difficulty with visibility. Pulling one plant stirs-up so much muck that the diver cannot continue working in the same location. After pulling one plant the diver must go elsewhere until the clouds of mucky sediments settle.

Because it can take weeks for a diver to eliminate one modest EWM stand and because divers are not willing to spend their time at Berry Lake pulling EWM, some plants remained in place.

SCUBA diver limits and the inability of chemical treatments to address small stands or scattered plants made EWM control an all or nothing proposition.

To address this problem, a cottager fashioned a long handle rake in the fall of 2009. The long-handled rake received its first test on one of the EWM stands in E-2 just before ice-on at the end of November 2009. The rake proved highly effective at removing intact EWM plants from soft sediments in deep water.

Unfortunately, there was not enough time to pull more EWM before ice on.

In 2010, it was assumed the SCUBA divers would address the scattered plants and the long handled rake would be employed on larger stands. Unfortunately, after it was too late to schedule chemical treatment, the EWM “took off.” It created meadows of EWM where there had been only individual plants. The task was much too large for even a small army of SCUBA divers and volunteers armed with long-handled rakes.

The dramatic increase in EWM is evident by Hauxwell’s 2010 aquatic plant survey map (Figure 12).

Samples of the suspected hybrid EWM were again collected and submitted to the DNR in 2010. Testing was conducted at a Grand Valley State University, Michigan lab. The sample proved positive as an EWM and northern milfoil hybrid.

This hybrid EWM appears to be persistent but not unusually aggressive.

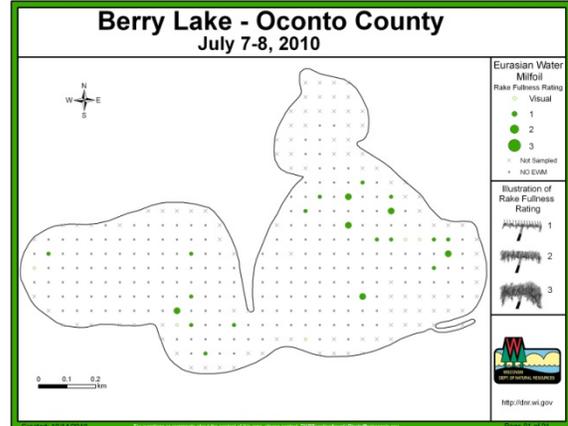


Figure 12 - 2010 aquatic plant survey (DNR Map)

The AIS grant coordinator met with the DNR and ABI in the fall of 2010 to discuss the EWM problem. A decision was made to conduct a whole lake treatment for the east basin in the spring of 2011.

Another lake group applied for an AIS control grant but did not receive the funding. Without funding for a spring treatment the EWM continued to expand.

In the fall of 2011, the last of the Rapid Response money was used to treat two small locations in the west basin.

Treatment has proven highly successful but there is not universal acceptance of chemical treatments. A comparatively small minority oppose all chemical treatment.

The use of the long handled rake and hand-pulling also have not been universally accepted. Some believe both cause unacceptable fragmentation.

Those who have actually engaged in hand pulling or pulling with a rake understand the process can be done with minimal, if any, fragmentation when applied to healthy, growing plants. The alternative is to allow the plant to disperse via auto-fragmentation.

Other methods are being explored.

Educational Activities

Educational activities concerning Eurasian water-milfoil in particular and aquatic species in general has been on-going at Berry Lake.

The first training session was conducted shortly after the Berry Lake community was informed about the presence of EWM. On August 4, DNR Northeast Region Aquatic Species Coordinator, Brenda Nordin, conducted a public meeting at Berry Lake. She provided a comprehensive background on aquatic invasive species, described the EWM situation at Berry Lake, and provided samples to educate those who would be pulling it.

The Berry Lake AIS Grant Coordinator sent e-mails to a list comprised of the vast majority of riparian property owners and paper copies to others prior to and following each chemical treatment. In addition, frequent e-mails describing developments both at Berry Lake and in addressing EWM elsewhere.

The Berry Lake AIS Grant Coordinator created and maintained an interactive website to facilitate education and communication between monitors.

The Berry Lake Association, Inc. created a website describing the EWM problem, providing identification information, showing EWM locations, and providing ways for riparian property owners to be involved in monitoring and hand pulling.

The Berry Lake Property Owners, Inc. sent e-mails providing information about aquatic invasive species.

The Berry Lake Property Owners, Inc. organized Clean Boats/Clean Waters training and scheduled inspections at the boat landing.

The Berry Lake AIS Grant Coordinator and later the Berry Lake Association, Inc., scheduled educational sessions about invasive species and the specific EWM problem at Berry Lake for each of the Annual Berry Lake Ice-Outs from 2008 through the present.

UW Madison aquatic plant educator, Susan Knight, gave two presentations to the Berry Lake community about aquatic plants, EWM, and invasive plants in 2010.

Other activities include the distribution of DNR/UW Extension fliers, wild cards, and information sheets. Articles about EWM and invasive species have been published in the Oconto County Times Herald, Shawano Leader, and Menominee Tribal News.