

**Eurasian water milfoil (*Myriophyllum spicatum*)
June Littoral Zone and Bed Mapping Surveys, and
September Littoral Zone Survey and
Herbicide Assessment Dive Survey
Horseshoe Lake (WBIC: 2470000)
Washburn County, Wisconsin**

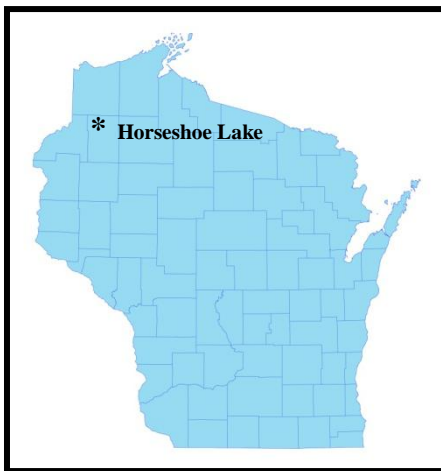


Eurasian water milfoil (Berg 2007)



Small purple bladderwort (Horky, 2011)

Project Initiated by: Horseshoe Lake Property Owners Association
and the Wisconsin Department of Natural Resources



2012 EWM Treatment Areas

Surveys Conducted by and Report Prepared by:
Endangered Resource Services, LLC
Matthew S. Berg, Research Biologist
St. Croix Falls, Wisconsin
June 2 and September 1, 2012

June 2nd Meandering Littoral Zone Survey:

On June 2nd, Ed Wink and I conducted a meandering shoreline survey of the lake's visible littoral zone. We again found no plants in the west basin, but noted fragments had washed up at the public boat landing on the southeast side of the east basin. After touring the three known beds, we were disappointed to see that the 2011 Diquat treatment that had appeared to be a success was actually a failure. Plants that were completely pale and flopped over during our dive assessment in October of 2011 were all back and growing. The giant tower in Bed 1 on the north side of the lake looked as though it was never touched, and it was canopied and actively fragmenting. All the beds as originally mapped in June 2011 were intact, and what were only scattered plants in the past had merged into solid beds. Because of this, we expanded the original treatment area in all directions and merged Beds 1 and 2 into a single Bed (Table 1) (Figure 1) (Appendix I).

**Table 1: EWM Bed Mapping Survey Summary
Horseshoe Lake, Washburn Co.
June 2, 2012**

| Bed Number | June 2012 Area in Acres | June 2011 Area in Acres | Change in Area | June 2012 Est. Mean Rakefull |
|--------------|-------------------------|-------------------------|----------------|------------------------------|
| 1 and 2 | 3.18 | 0.35 | +2.83 | <1-3 |
| 3 | 0.55 | 0.18 | +0.37 | <1-2 |
| Total | 3.73 | 0.53 | +3.20 | |

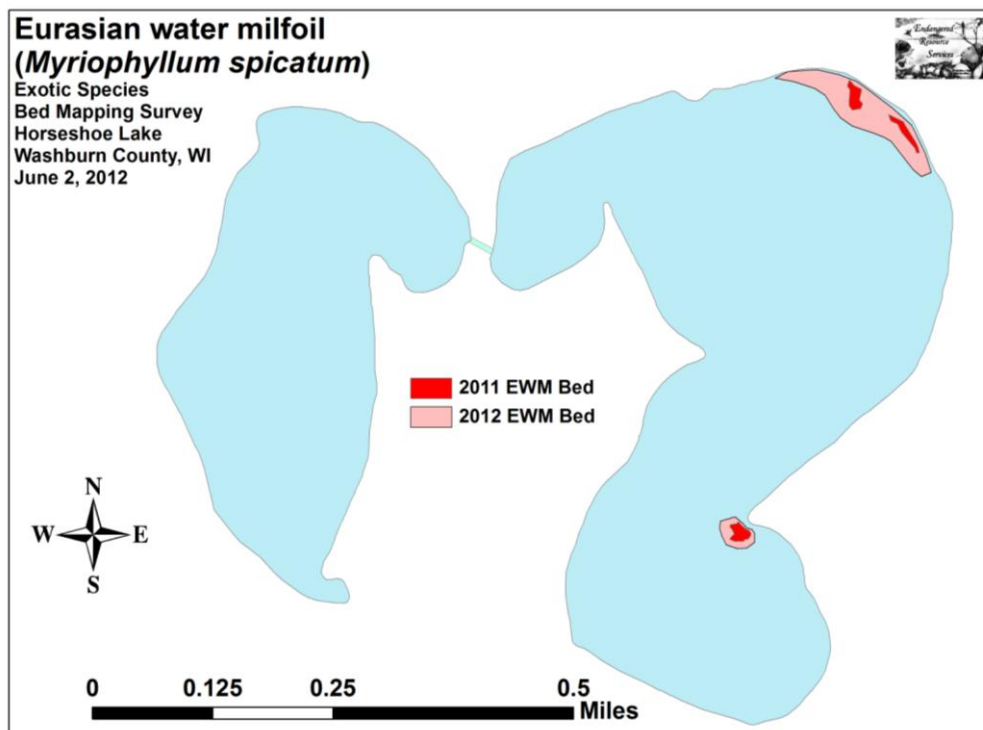


Figure 1: Horseshoe Lake EWM Beds June 2, 2012

June 29th Chemical Treatment:

On June 29th, Dale Dressel with Northern Aquatics Services treated the two Beds with Navigate (2-4,D) at concentrations of 2.5ppm and 4.0ppm (Figure 2) (Appendix II).

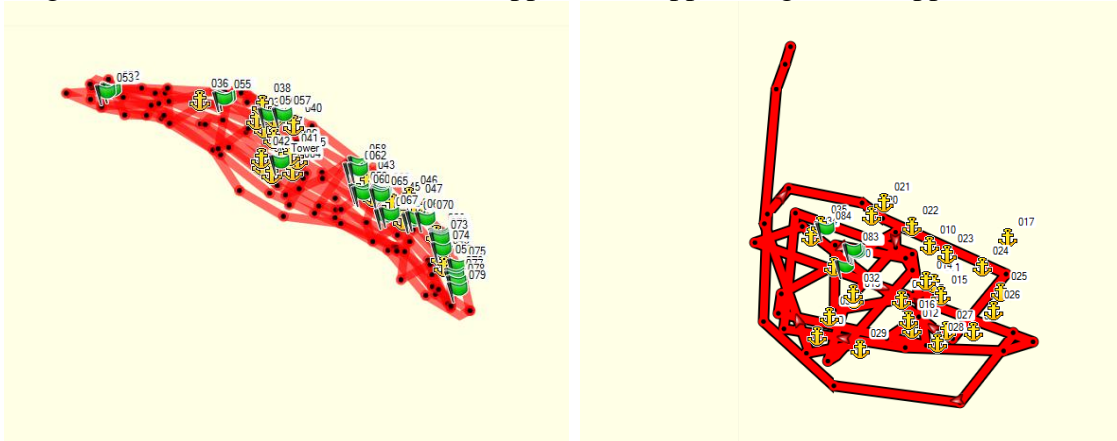


Figure 2: Treatment Tracks in Relation to Plants Marked on June 2, 2012



September 1st Meandering Littoral Zone Survey:

On the September 1st, my son Noah and I did a follow up search of the lake's visible littoral zone. Water clarity was fair, and we were able to see the bottom in up to 6ft of water. Although we searched around the perimeter of the entire lake, we saw no rooted EWM plants. We also saw no evidence of floating fragments of plants (Figure 3) (Appendix III).

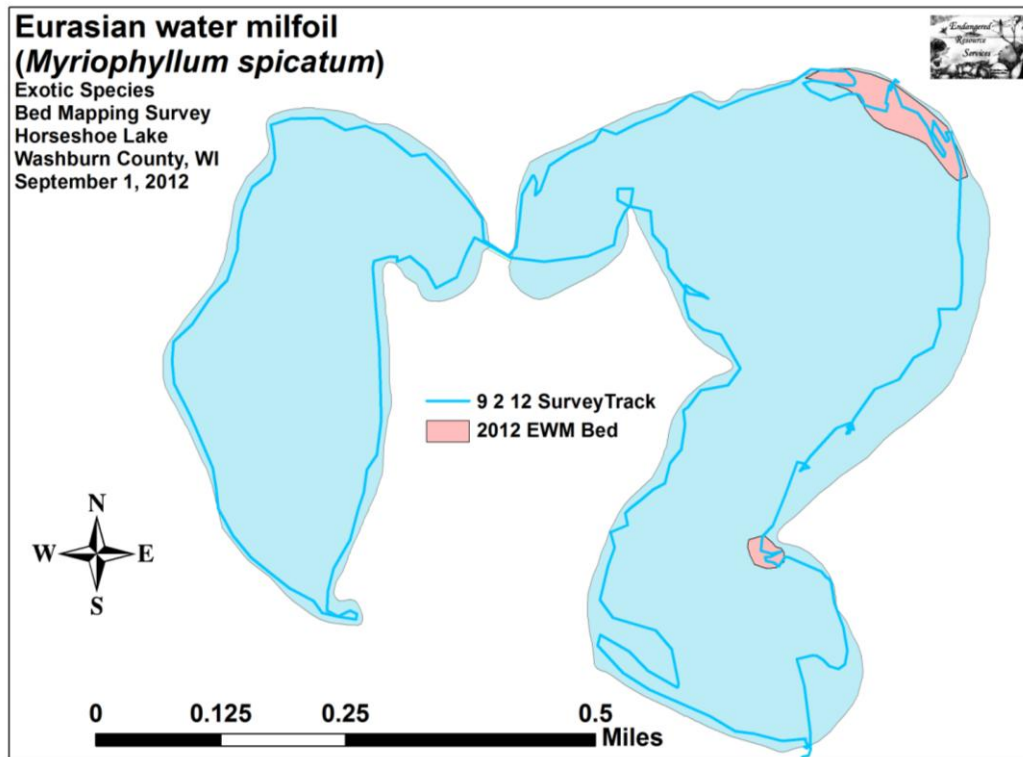


Figure 3: Horseshoe Lake September 1, 2012 Littoral Transect Survey

September 1st Dive Assessment Survey:

Noah and I used SCUBA to assess the treatment of the three beds. Starting at the marker buoys and expanding outward swimming 5-10m squares, we swam to the edge of the littoral zone near Beds 1 and 2 and out 50m from the center of Bed 3. We saw no evidence of any EWM plants or fragments with the exception of a single 4inch strand of rotten tissue where the tower was in Bed 1. The bottom in these areas was covered with large amounts of plant debris, but natives species (primarily Muskgrass (*Chara* sp.), White-stem pondweed (*Potamogeton praelongus*), Large-leaf pondweed (*Potamogeton amplifolius*), and Wild celery (*Vallisneria americana*)) were rapidly filling in the areas vacated by EWM.

Future Management Considerations:

Although the survey indicated exceptional control, this should not be taken to mean that EWM has been eradicated from the lake. It is highly likely that plants are growing in deeper water beyond what we or anyone else can see with the lake's current clarity. This will likely require any such new bed to canopy before it is discovered. Because of this, we continue to recommend early season meandering surveys to capitalize on the lake's usual improved clarity in May. We continue to expect that the most likely areas for EWM to reappear will be the areas of the east basin we identified in 2011.

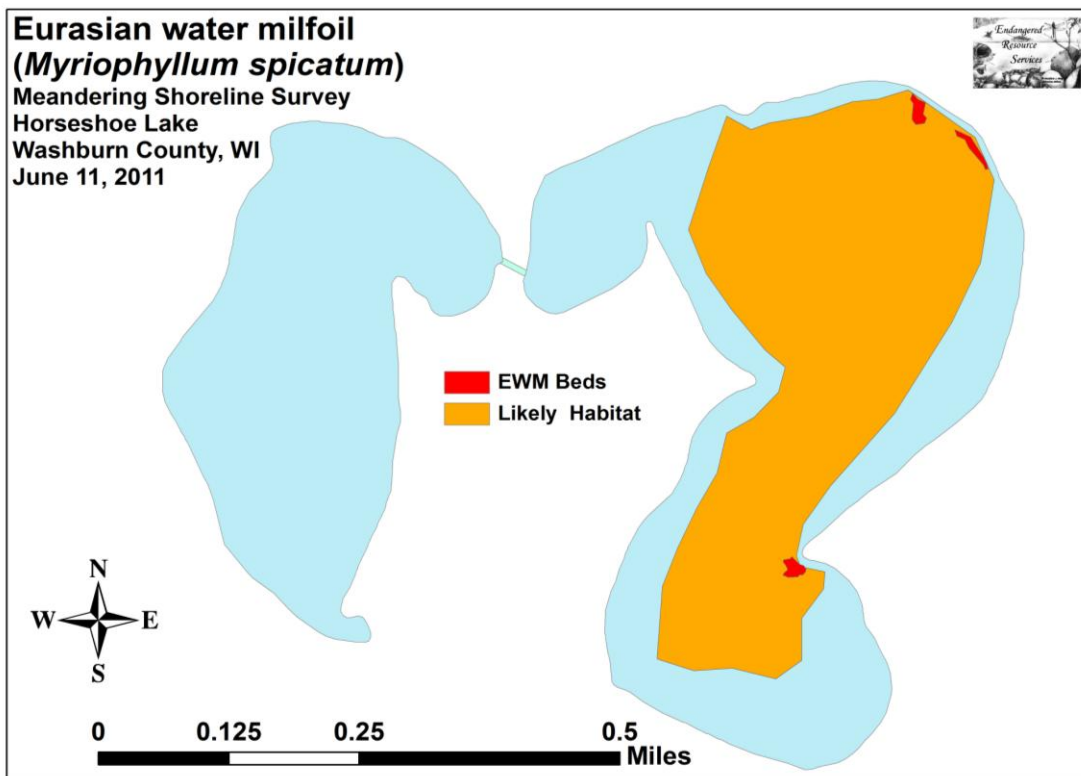
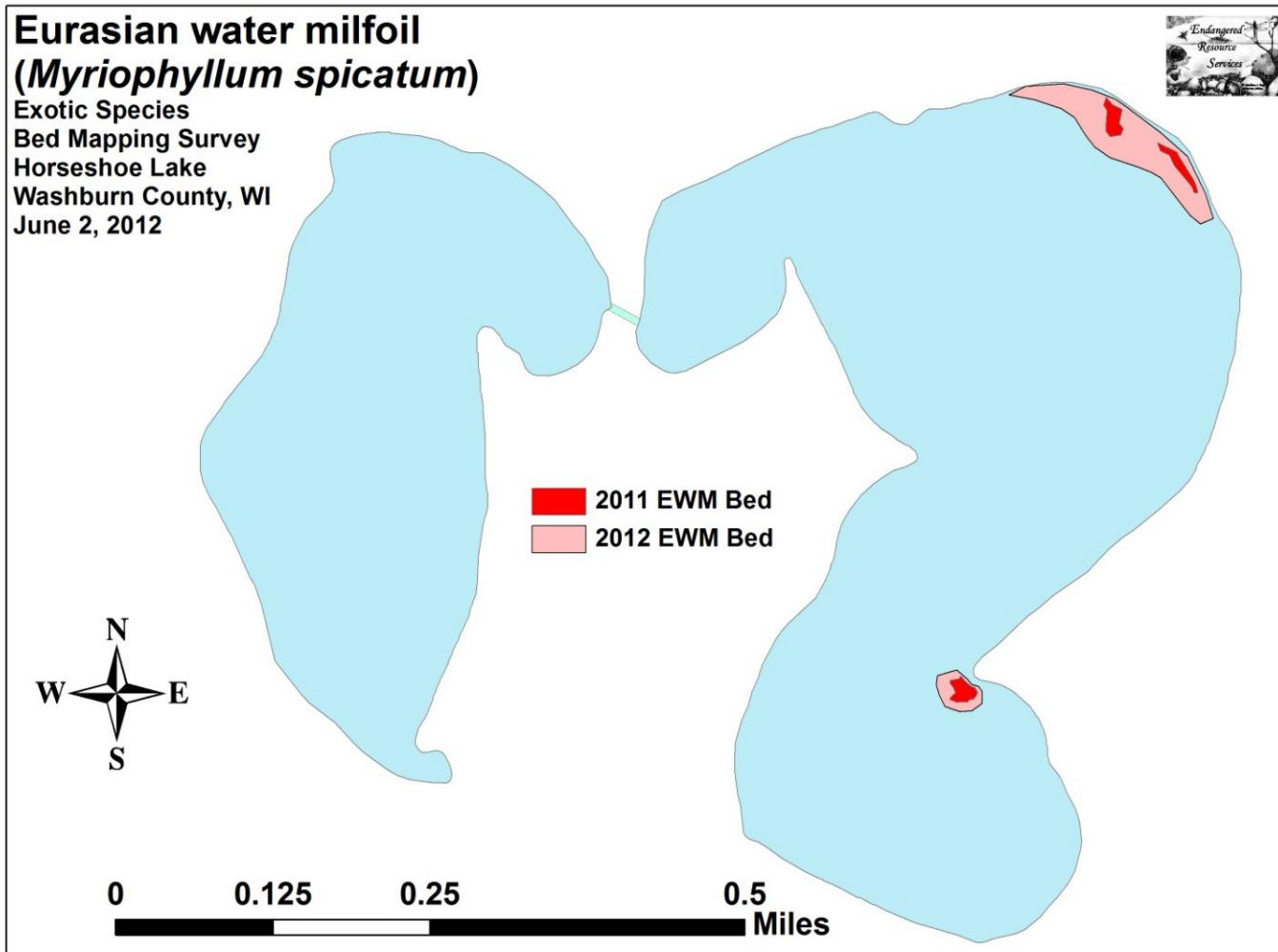


Figure 4: Likely EWM Habitat for Future Monitoring

Appendix I: 2012 EWM Bed Map



Appendix II: 2012 EWM Treatment Record

Notice: Completion of this form is a condition of the permit and provides records required by WDNR (NR 107) and DATCP (ATCP 29.21 and 29.22). The Department may not issue you future permits unless you complete and submit this form. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

Submit this form: (1) immediately if any unusual circumstances occurred during treatment
 (2) as soon after treatment as possible, no later than 30 days
 (3) by October 1 if no treatment occurred

Completion of this form along with the permit satisfies the requirements of WDNR (NR 107) and DATCP (ATCP 29.21 and 29.22).

General Permit Information

| | | | | |
|------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------|--------------------|--------------------------|
| Permit Number <i>NOR-12-66-915</i> | Waterbody Name (including ponds, e.g., Smith Pond) <i>Horseshoe Lake</i> | | | |
| County <i>Washington</i> | Permit Holder Name (Customer Name) <i>Ed Wink</i> | | | |
| Permit Holder Address <i>127 14th Ave NW</i> | | City <i>New Brighton</i> | State <i>Ma</i> | ZIP Code <i>55112</i> |

Treatment Information

| | | | | |
|-------------------------------------------------|--------------------------------------|----------------------------------------------------------|--------------------------------|--------------------------------------|
| Treatment Date (mm/dd/yyyy) <i>6-29-2012</i> | Starting Time (24 hr) <i>0700</i> | Ending Time (24 hr) <i>830</i> | Water Temp (°C) <i>76°F</i> | Ambient Air Temp (°C) <i>75°F</i> |
| Wind Speed (mph) <i>Calm</i> | Wind Direction | Expected Duration of Chemical Residuals <i>2 days</i> | | |

Adverse Conditions Noted (i.e., dead fish, spawning fish, algae bloom, etc.)

If adverse conditions noted, indicate corrective actions taken

Onsite Supervision Present? Yes No If Yes, Supervisor Name

Mixing and Loading Site Location (if other than business site or from prepackaged retail container or applied with equipment with a total capacity of not more than 5 gallons liquid or 50 pounds dry)

Herbicide Treatment and Water Use Restrictions Signs Posted In Accordance With NR 107? Yes No

Applicator shall provide each customer with a free copy of each pesticide label used (if requested)

Applicator Information

| | | | |
|-----------------------------------------------------------------|----------------------------------|-----------------------------------------|--------------------------------------|
| Individual or Business Name <i>Northern Aquatic Services</i> | | Telephone Number <i>715 495 5252</i> | |
| Street Address <i>1061 240th St</i> | | | |
| City <i>Dresser</i> | State <i>WI</i> | ZIP Code <i>54009</i> | |
| Individuals Making Pesticide Application: | Last Name <i>Dressel</i> | First <i>Dale</i> | Certification # <i>061742</i> |
| | Last Name | First | Certification # |
| | Last Name | First | Certification # |
| Name of Person Completing Form <i>Dale Dressel</i> | Signature <i>Dale Dressel</i> | Date Signed <i>6-29-2012</i> | DNR Use Only Date Received |

Aquatic Plant Management Herbicide Treatment Record
Form 3200-111 (R 11/11) Page 2 of 2

| Treatment Site and Chemical Information (attach additional sheets if necessary) | | | | | | Herbicide Name: <u>Wynote</u> | | Herbicide Name: | | Herbicide Name: | |
|---------------------------------------------------------------------------------|-----------------|-------------------|-----------------------------------------------|----------|-----------|--------------------------------|----------------------------|--------------------------------|----------------------------|--------------------------------|----------------------------|
| Site No, Property Name, Address / Fire No | Treated Acreage | Permitted Acreage | Sensitive Area? <input type="checkbox"/> Y | Latitude | Longitude | EPA Reg No.: Amount Applied | Concentration (mg/l = ppm) | EPA Reg No.: Amount Applied | Concentration (mg/l = ppm) | EPA Reg No.: Amount Applied | Concentration (mg/l = ppm) |
| <u>B22 1</u> | <u>.55</u> | <u>.55</u> | <input type="checkbox"/> Y | | | <u>156</u> | <u>41</u> | | | | |
| <u>B22 2</u> | <u>3.12</u> | <u>3.12</u> | <input type="checkbox"/> Y | | | <u>886</u> | <u>2.5</u> | | | | |
| | | | <input type="checkbox"/> Y | | | | | | | | |
| | | | <input type="checkbox"/> Y | | | | | | | | |
| | | | <input type="checkbox"/> Y | | | | | | | | |
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| | | | <input type="checkbox"/> Y | | | | | | | | |
| | | | <input type="checkbox"/> Y | | | | | | | | |
| Totals | | | | | | | | | | | |

| Aquatics at Treatment Site: | | TS = Target Species | | SP = Species Present | |
|-------------------------------------------------------------|---------|---------------------------------------------------------|---------|---------------------------------------------------------|---------|
| TS SP | Site(s) | TS SP | Site(s) | TS SP | Site(s) |
| <input type="checkbox"/> Cattail | _____ | <input type="checkbox"/> Filamentous Algae | _____ | <input type="checkbox"/> Planktonic Algae | _____ |
| <input type="checkbox"/> Chara | _____ | <input type="checkbox"/> Flat-Stem Pondweed | _____ | <input type="checkbox"/> Purple Loosestrife | _____ |
| <input type="checkbox"/> Coontail | _____ | <input type="checkbox"/> Floating-Leaf Pondweed | _____ | <input checked="" type="checkbox"/> Richardson Pondweed | _____ |
| <input type="checkbox"/> Curly-Leaf Pondweed | _____ | <input type="checkbox"/> Illinois Pondweed | _____ | <input type="checkbox"/> Robbins Pondweed | _____ |
| <input type="checkbox"/> Duckweed | _____ | <input checked="" type="checkbox"/> Large-Leaf Pondweed | _____ | <input checked="" type="checkbox"/> Sago Pondweed | _____ |
| <input type="checkbox"/> Elodea | _____ | <input type="checkbox"/> Northern Milfoil | _____ | <input type="checkbox"/> Watershield | _____ |
| <input checked="" type="checkbox"/> Eurasian/hybrid Milfoil | _____ | <input type="checkbox"/> Phragmites | _____ | <input type="checkbox"/> White Water Lily | _____ |
| | | | | <input type="checkbox"/> White-Stem Pondweed | _____ |
| | | | | <input type="checkbox"/> Wild Celery | _____ |

Appendix III: 2012 September Visible Littoral Zone Survey

