

**Eurasian water milfoil (*Myriophyllum spicatum*)
Fall Meandering Littoral Zone/Bed Mapping Survey
Big Trade Lake - WBIC: 2638700
Burnett County, Wisconsin**



Northern water milfoil



Fall 2012EWM Survey Tracks on Big Trade Lake

Project Sponsored by:

Round-Trade Lake Improvement Association, Inc., Short, Elliot
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Eurasian and Northern water milfoil Leaflet Comparison

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INTRODUCTION:

Big Trade Lake (WBIC 2638700) is a 327 acre drainage lake in southwest/south-central Burnett County, Wisconsin in the Town of Trade Lake (T37N R18W S20 SW SW). It reaches a maximum depth of 39ft in the west-central bay and has an average depth of approximately 20ft. Big Trade Lake is eutrophic in nature with poor to very poor water clarity. From 1986 to 2012, summer Secchi readings have ranged from 2.6-6.1ft with an average of 4.0ft (WDNR 2012). The bottom substrate is predominately muck with scattered gravel and sandy areas primarily along the shoreline (Bush et al 1968).



Figure 1: Big Trade Lake Aerial Photo

In 2009, the Wisconsin Department of Natural Resources (WDNR) confirmed the presence of Eurasian water milfoil (*Myriophyllum spicatum*) in Little Trade Lake which is connected to Big Trade Lake via the Trade River channel. Although never found in Big Trade Lake, it is likely only a matter of time before boats or currents spread it downstream. In 2010, the Round-Trade Lake Improvement Association, Inc. (RTLIA) began active management of the infestation in Little Trade Lake. Per WDNR guidelines, this requires the Association to develop an Aquatic Plant Management Plan (APMP) to guide future management. In anticipation of developing that plan, the WDNR and Short, Elliot, Hendrickson, Inc. (SEH) commissioned 2011 and 2012 fall EWM surveys of Big Trade Lake to look for any EWM that may have spread downstream from Little Trade. This report is the summary analysis of that field survey conducted on September 29, 2012.

METHODS:

Fall EWM Survey:

During the survey, we searched the lake's entire visible littoral zone. Initial transects were run parallel to shore and additional transects were added away from shore at intervals of 10-20m depending on search condition visibility until we could no longer see plants. Special attention was paid to the numerous and sometime expansive beds of Northern water milfoil (*Myriophyllum sibiricum*) as this sister species both looks like and favors the same habitat as Eurasian water milfoil (Appendix I).

As EWM had never been found in the lake before, we recorded each individual plant found in isolation as well as each bed found. We defined a bed based on the following two criteria: EWM plants made up greater than 50% of all aquatic plants in the area, and the EWM had canopied at the surface or was close enough to the surface that it would likely interfere with normal boat traffic.

Upon locating a bed, we used a GPS unit (Garmin 76CSX) to record a string of waypoints that circled around the perimeter of the area. We also visually estimated the average rake fullness rating of EWM within the bed (Figure 2). These waypoints were then uploaded into ArcMap 9.3.1 where we created bed shapefiles using the WDNR's Forestry Tools Extension and determined the total acreage of the bed to the nearest hundredth of an acre. The resulting data will be used to determine if, where, and how to treat EWM in 2013.

<u>Rating</u>	<u>Coverage</u>	<u>Description</u>
1		A few plants on rake head
2		Rake head is about 1/2 full Can easily see top of rake head
3		Overflowing Cannot see top of rake head

Figure 2: Rake Fullness Ratings (UWEX, 2010)

RESULTS:

Fall EWM Survey:

On September 29th, we surveyed Big Trade Lake for EWM. Conditions were ideal with calm winds and bright sunshine. Despite poor water clarity, we were able to see down approximately four-five feet making it possible to see the tops of aquatic plants throughout the entire littoral zone as we never found plants growing in water deeper than 9ft and most native Northern water milfoil growth ended in 5ft of water. As most of the lake dropped off rapidly from shore, we were able to motor around the outside edge of the littoral zone in a single transect for most of the lake (Figure 3) (Appendix II).

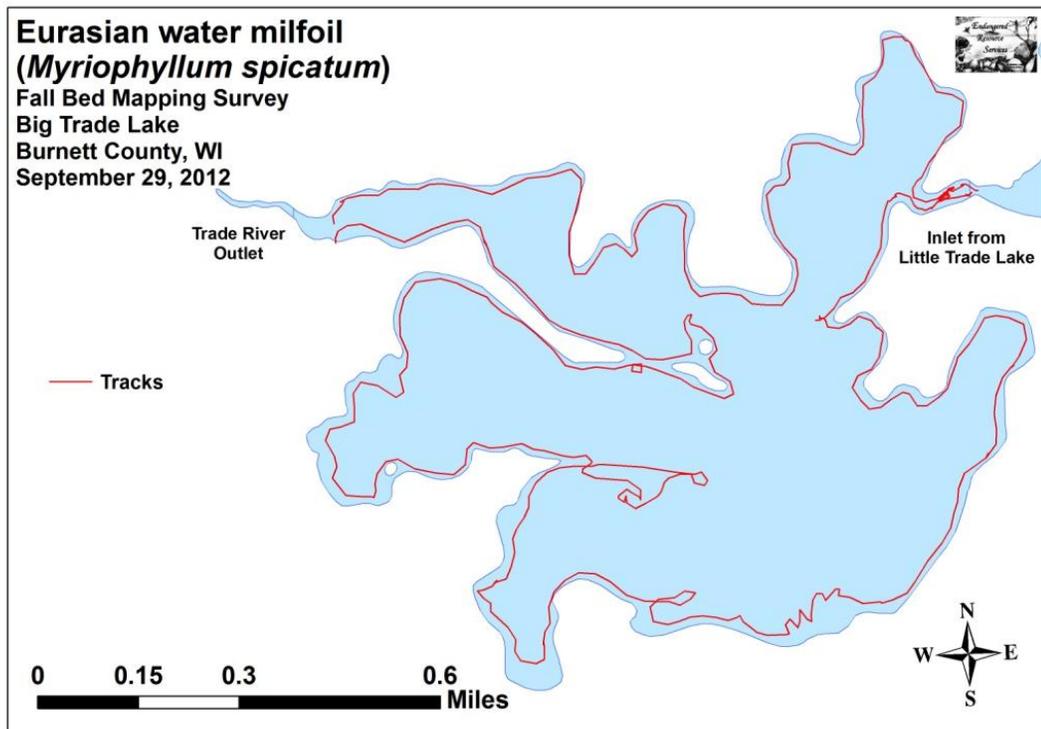


Figure 3: Big Trade Lake Fall 2012 EWM Survey Tracks

We located two small beds in the 2-3ft muck flats on the margins of the channel outlet from Little Trade Lake. Together, they totaled just 0.06 surface acres (Table 1), but we also located five additional plants adjacent to these beds indicating they are spreading (Figure 4) (Appendix II). The total number of plants in the beds and the adjacent area was <50 – as it was more a collection of clusters than a solid bed of plants. We removed all of them with a rake and disposed of them away from the lake. Unfortunately, the channel was dominated by Coontail (*Ceratophyllum demersum*), White water lily (*Nymphaea odorata*), and “duckweeds” (*Lemna*, *Spirodela* and *Wolffia*) making it extremely difficult to locate plants away from the two beds. At the time of the survey, EWM plants were actively fragmenting, and, although we collected everything we saw, we have no doubt plants will be back in numbers next spring.

**Table 1: Fall EWM Bed Summary
Big Trade Lake, Burnett Co. September 29, 2012**

Bed Number	2012 Fall Bed Acreage	Mean Rake Fullness
1	0.02	<1-2
2	0.04	<1-2
Total Acres	0.06	

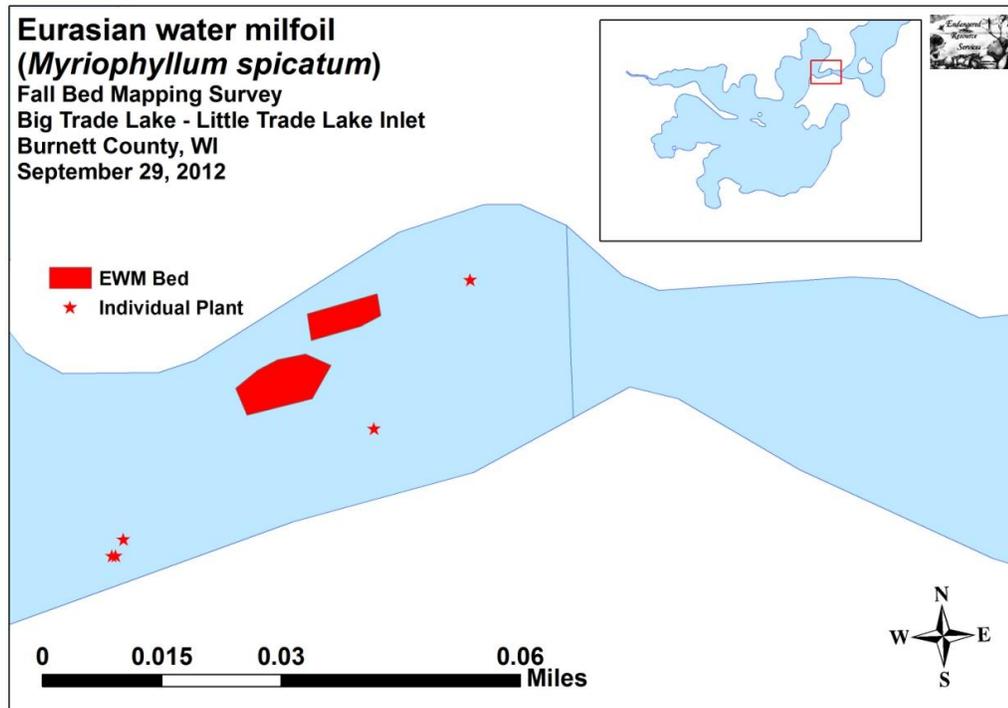


Figure 4: Big Trade Lake Fall 2012 EWM Beds

DISCUSSION AND CONSIDERATIONS FOR MANAGMENT:

The beds location complicates future control for several reasons. Flowing water in the channel will make it difficult to get herbicide into the area in a way that guarantees enough contact time to kill the plants. Also, in the spring, the channel is a solid mat of Curly-leaf pondweed (*Potamogeton crispus*) which transitions to a mat of Coontail/Water lilies as the CLP dies off by midsummer. The sheer biomass of these “other” plants will likely also make herbicide control challenging. Finally, the channel area is ecologically very important for the lake’s trophy musky population as we found fish spawning throughout the channel on both sides of the bridge in May 2012. When factoring in all these considerations and because EWM plants are currently few in number, hand or rake removal of any EWM found in 2013 may be the best current option. With the area’s water current, it’s highly likely that plants will continue to spread into Big Trade Lake. Because of this, regular inspections of the shoreline of Big Trade at the channel outlet are strongly encouraged as this is the most likely initial place for EWM to spread.

LITERATURE CITED

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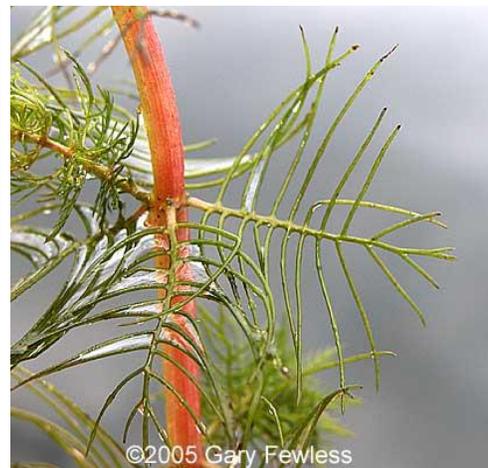
WDNR. [online]. 2012. Citizen Monitoring Lake Water Quality Database. Available from <http://dnr.wi.gov/lakes/CLMN/Station.aspx?id=073056> (2012, October).

Appendix I: Eurasian vs. Northern Water Milfoil Identification Guide

Eurasian water milfoil vs. Northern water milfoil



EWM Leaflets >26 NWM Leaflets < 22



EWM Leaflets Limp out of Water NWM Leaflets Stiff Out of Water

Appendix II: Fall 2012 Eurasian Water Milfoil Survey and Bed Maps

