

Eurasian water-milfoil (*Myriophyllum spicatum*) SCUBA Dive Monitoring Survey Sand Bar Lake – WBIC: 2494900 Bayfield County, Wisconsin

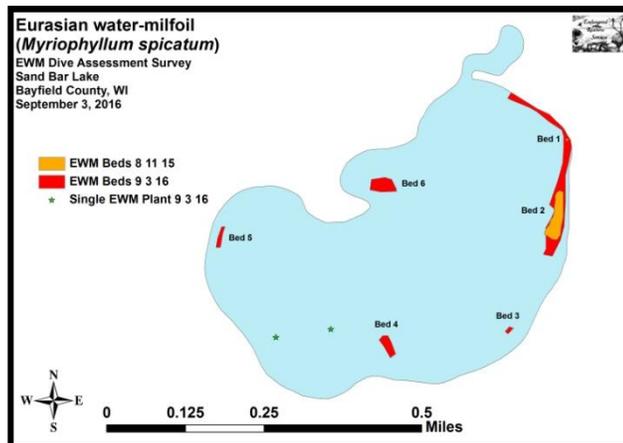


6ft EWM Towers with Rooted Branch Preparing to Fall Off (Berg 2016)



EWM (Berg 2007)

Project Initiated by: The Wisconsin Department of Natural Resources
and the Town of Barnes – Aquatic Invasive Species Committee



Sand Bar EWM Bed Map 9/3/16

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INTRODUCTION:

Sand Bar Lake (WBIC 2494900) is a 127 acre seepage lake on the west-central edge of Bayfield County, Wisconsin in the Town of Barnes (T45N R9W S19/20). It reaches a maximum depth of 49ft on the east side and has an average depth of approximately 25ft (WDNR 2015). The lake is oligotrophic in nature with Secchi readings from 2000 to 2013 averaging 17.7ft (WDNR 2016). This good to very good water clarity produced a littoral zone that extended to at least 25ft in the summer of 2016. The bottom substrate is predominately sand along the shoreline, but this gradually transitions to sandy muck at most depths over 6ft (Figure 1) (Holt et al. 1972).

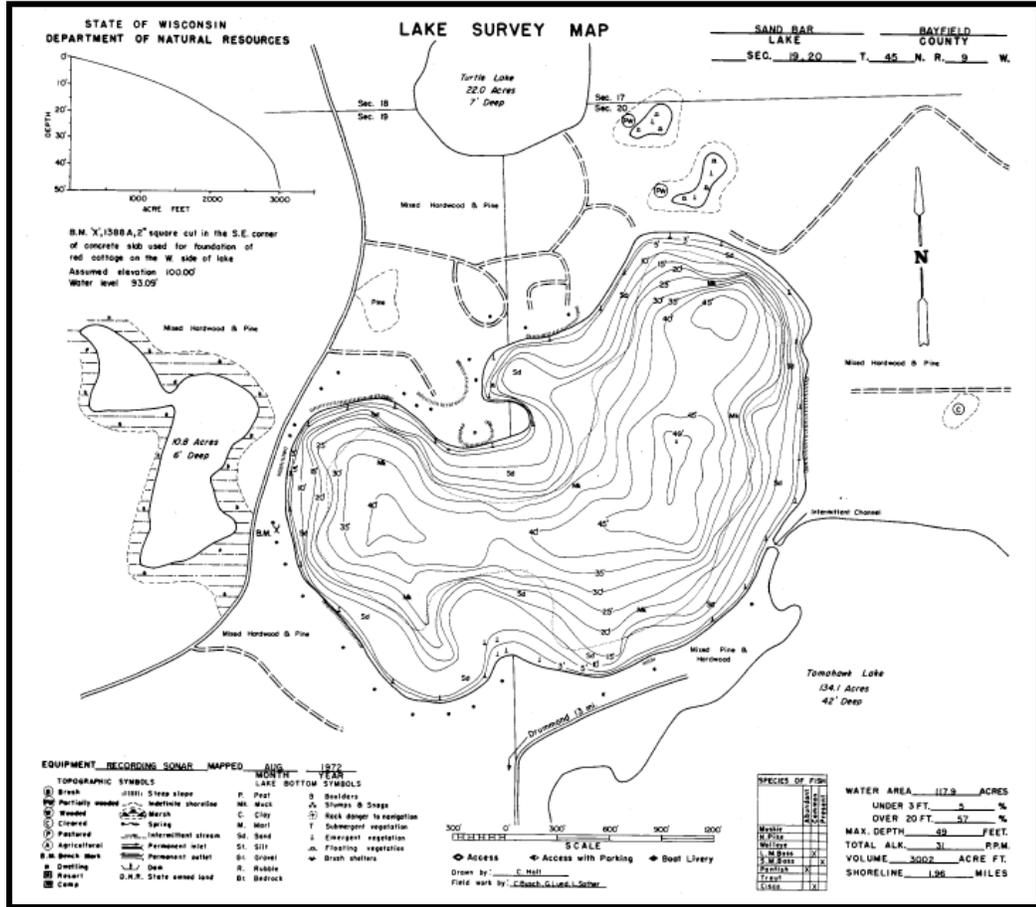


Figure 1: Sand Bar Lake Bathymetric Map

Eurasian water-milfoil (*Myriophyllum spicatum*) (EWM) is an exotic invasive plant species that is a growing problem in the lakes and rivers of northwestern Wisconsin. First identified in Tomahawk and Sand Bar Lakes in 2004, the Town of Barnes – Aquatic Invasive Species Committee (TOB) and the Wisconsin Department of Natural Resources (WDNR) have used herbicide applications in both bed and whole lake treatments to control the infestation. The most recent herbicide application – a whole lake treatment - occurred on June 21, 2013. In her posttreatment survey, Michelle Nault, WDNR, found a few near dead EWM plants on the north side of the lake. However, a late summer dive survey in 2013, and two summer dive surveys in 2014 failed to locate any surviving EWM. Another dive survey in June 2015 did find small amounts of EWM, and a follow-up in August 2015 found it was again rapidly spreading away from these initial locations. In an effort to quantify the continued expansion of EWM, we were asked by the TOB to conduct an additional follow-up dive on September 3, 2016. This report is the summary analysis of that survey.

METHODS:

Ingemar Eckstrom, Sand Bar Lake resident and TOB volunteer, chaperoned us around the lake during the survey. Although we toured the shoreline of the entire lake, we focused our time underwater in areas that had previously supported high numbers of canopied EWM plants prior to treatment; especially along the north and eastern shorelines. At each stopping point, we dove meandering transects that zigzagged through the bathymetric rings from 5-20ft so as to scan the entire littoral zone. In between previous high density areas, while Ingemar motored at idle speed, we hung on to one of the pontoons and used goggles to scan for EWM.

Results:

2014-2015 Surveys:

The June 30, 2014 survey (red transects) focused on areas near where Michelle Nault found dead fragments of EWM posttreatment in summer 2013; while the August 30, 2014 (grey transects) focused on areas that had the highest densities of EWM pretreatment (Figure 2). During the June 17th survey, we found a single EWM plant in 8ft of water in the midlake bay along the north shoreline. Unfortunately, it was only a few feet tall, mixed in with other plants, and we were unable to relocate it and remove it after we initially drifted over it. On the eastern shoreline, we also found approximately 30 plants that were scattered in 6-7ft of water. Although we also search along the rest of the lake's shoreline, the track back on our GPS was turned off so our survey graph doesn't reflect this (Figure 2).

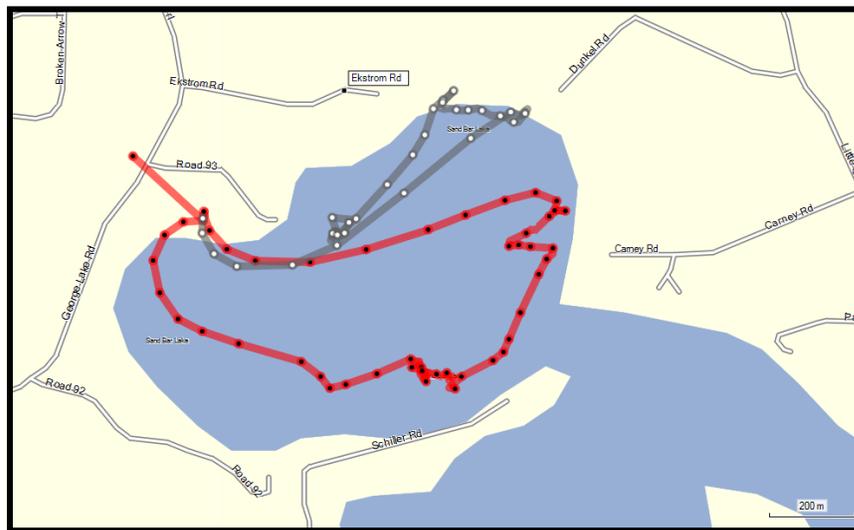


Figure 2: EWM Survey Tracks - Sand Bar Lake – 6/30 and 8/30/14

August

Despite the somewhat disappointing, but not unexpected discovery in June that EWM was back and spreading, we were still surprised at just how fast this expansion had occurred. What had been just a few 10's of plants in June was now many 100's of plants scatter across two beds totaling 0.81 acres (Figure 3) (Table 1). Similar to what we found in June, Bed 1 was a small pioneer area with just a few 10's of plants and covering only 0.01 acre. Bed 2, however, had exploded and the area was now covered by more or less continuous patches of plants that were merging and expanding rapidly in all directions both from the roots and via fragmentation.

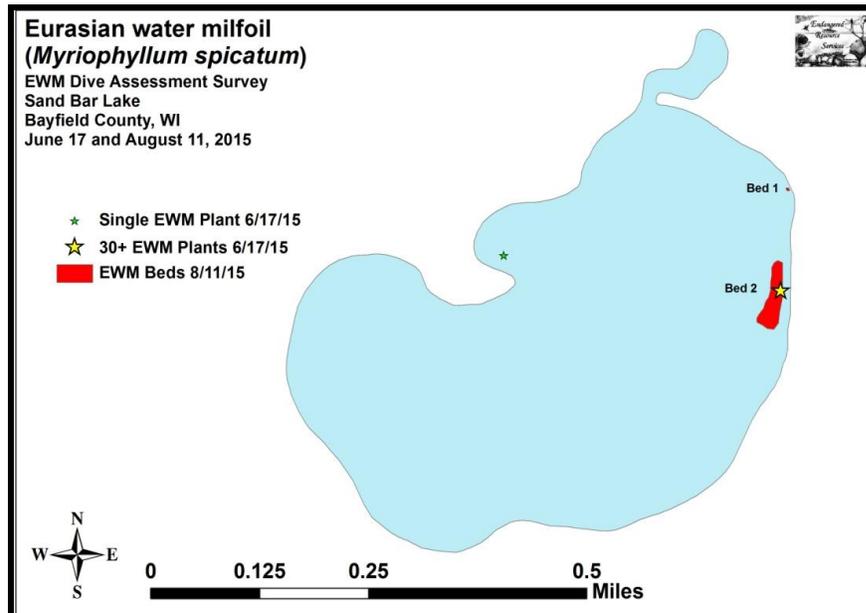


Figure 3: EWM Locations on Sand Bar Lake – 6/17 and 8/11/15

September 2016 Survey:

The summer of 2016 was a time of significant EWM expansion on the lake. By September 3rd, we found EWM had spread down the majority of the northeast shoreline and Beds 1 and 2 had merged together to cover 2.56 acres – more three times the size of the beds mapped in August 2015 (312%) (Table 1). Additionally, we found three other beds scattered along the southern (Beds 3 and 4) and western (Bed 5) shorelines. In the north-central bay, where we found a single plant in 2015, a 0.50 acre bed (Bed 6) of dense EWM had established and was spreading in all directions (Figure 4). This brought the total acreage on the lake to 3.53 acres.

Unlike Tomahawk Lake where EWM seemed to disappear in water over 8ft, on Sand Bar, we found EWM continued to at least 22ft (Figure 5). Although areas over 8ft tended to support lower densities, and areas over 20ft tended to have only sprouts that were just a few inches to a few feet tall, the fact these plants are there at all is troubling as it will make future control more difficult. It’s also further evidence of the incredible rate of fragmentation and expansion we saw on the lake. Based on this and the 10’s/perhaps 100’s of floating fragments we saw throughout the lake, we full expected another significant expansion next year and would not be surprised to see EWM established throughout the entire littoral zone by the end of 2017.

**Table 1: EWM Bed Summary
Sand Bar Lake, Bayfield Co. – September 3, 2016**

Bed Number	2016 Acreage	2015 Acreage	Change
1 and 2	2.56	0.81	+1.75
3	0.05	0	+0.05
4	0.29	0	+0.29
5	0.13	0	+0.13
6	0.50	0	+0.50
Sum	3.53	0.81	+2.72

Discussion and Considerations for Management:

The TOB now has a functional Diver Assisted Suction Harvest (DASH) system that will be available for use in the summer of 2017. But, due to the significant expansion of EWM in 2016 and the potential for further expansion in 2017, a bed or potentially lake-wide herbicide treatment may be necessary to “reset the clock” to the point a DASH system could keep up with expected EWM growth. Ideally, if an active management strategy is decided upon, it will begin/occur as early in the 2017 growing season as possible before the infestation can spread further.

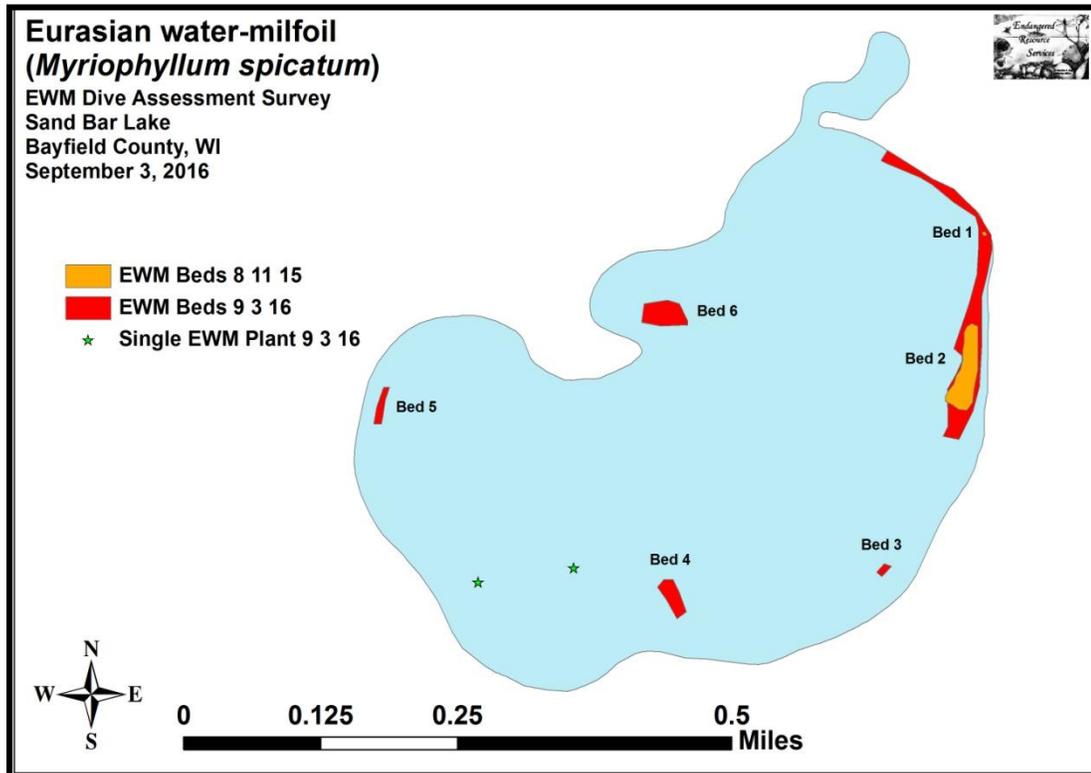


Figure 4: EWM Locations on Sand Bar Lake – 9/3/16



Figure 5: Dense EWM Towers in 6ft of Water/EWM Sprouts in 20ft Sand Bar Lake – 9/3/16

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- Holt, C., C. Busch, G. Lund, and L. Sather. 1972. Sand Bar Lake Bathymetric Map.
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