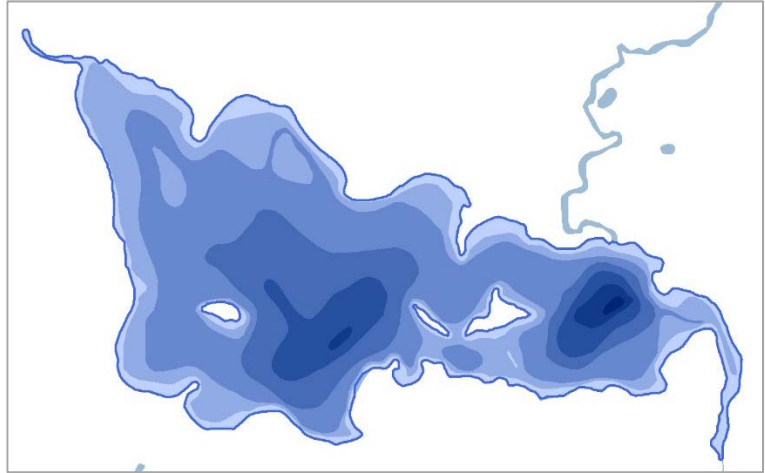


## INTRODUCTION

Little Bearskin Lake, Oneida County, is an approximate 164-acre, meso-eutrophic drainage lake with a maximum depth of 27 feet and a mean depth of eight feet (Figure 1). Eurasian water milfoil (EWM; *Myriophyllum spicatum*) was first documented in the lake in 2008. In 2009, DNA analysis confirmed that the milfoil was hybrid water milfoil (HWM), a cross between EWM and the indigenous northern water milfoil (*M. sibiricum*).



**Figure 1. Little Bearskin Lake, Oneida County, Wisconsin.**

To assess the extent of the HWM population within Little Bearskin Lake, the Wisconsin Department of Natural Resources (WDNR) Bureau of Science Services conducted a whole-lake aquatic point-intercept survey in 2009 and found that HWM was widespread throughout the lake, with approximately 13% of the 396 littoral sampling locations containing HWM. A subsequent point-intercept survey conducted by the WDNR in 2011 found that HWM littoral occurrence had increased to 22%, a 67% increase from 2009 and 2010. Concerned about the rapid increase in HWM within the lake, the Little Bearskin Lake Association (LBLA) successfully applied for a WDNR Lake Management Planning Grant in 2012 to aid in funding the development of a comprehensive lake management plan. While baseline studies conducted in 2012 as a part of this planning project assessed the lake's water quality, watershed, aquatic plant community, and other aspects, one of the primary objectives was to develop a monitoring and control strategy for HWM.

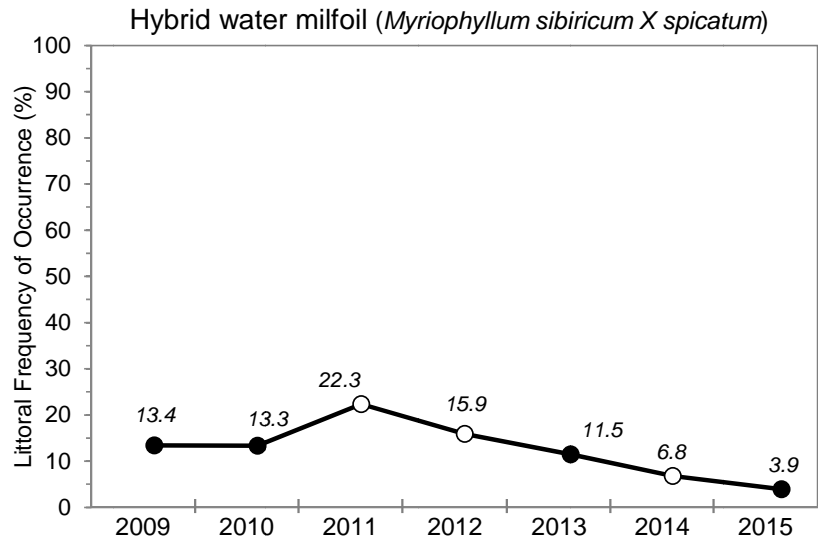
In 2012, the LBLA agreed to be one of a number of lakes in northern Wisconsin to participate in a University of Wisconsin-Extension study to evaluate control of EWM/HWM using biological methods, specifically the milfoil weevil (*Euhrychiopsis lecontei*). This goal of this four-year study was to assess the effects to EWM/HWM within pre-defined beds following annual application of weevils. For this reason, an HWM control and monitoring plan was not included within the Little Bearskin Lake Comprehensive Management Plan, and an HWM management strategy was going to be developed following the completion of the weevil study.

Weevils were applied to two beds of HWM in Little Bearskin Lake in the first year of the project (2013); however, the company that had raised and supplied the weevils for the study decided to no longer continue weevil production. While weevils were no longer able to be applied in the study's remaining years, the WDNR had requested that the assessment of the HWM/EWM beds continue through 2015 to determine if there were any longer-term effects from the first year's application. Because the application of weevils was no longer taking place in Little Bearskin Lake, the LBLA secured a WDNR Aquatic Invasive Species Education, Planning, and Prevention (EPP) Grant in February of 2014 to aid in funding a two-year project (2014-2015). This project's objective was to assess the HWM population in Little Bearskin Lake in 2014 and 2015 and develop a plan for HWM management in Little Bearskin Lake. This report serves as the final report for the 2014-2015 HWM

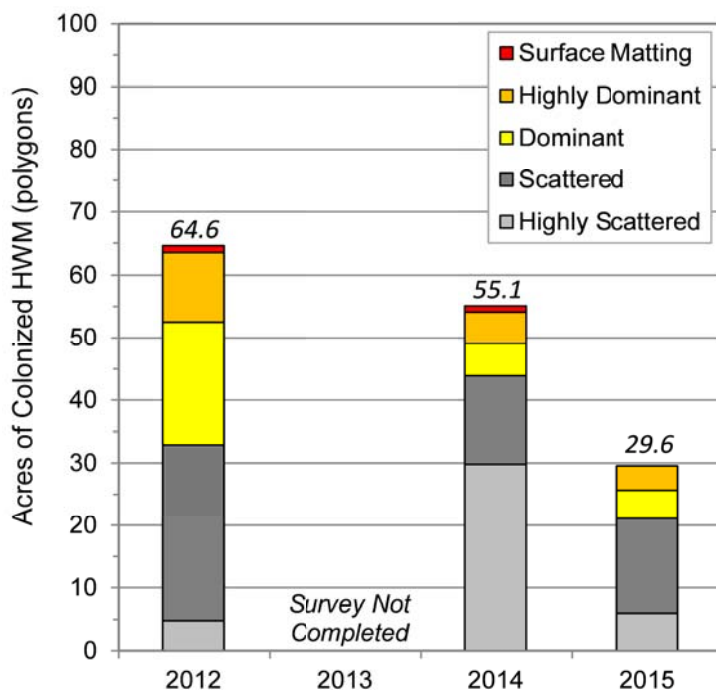
Monitoring and Control Strategy Development Project and outlines how the LBLA will move forward with HWM management.

## 2015 HWM MONITORING RESULTS

The WDNR has been completing whole-lake point-intercept surveys on Little Bearskin Lake annually since 2009, with the most recent survey being completed on August 26, 2015. Figure 1 displays the littoral frequency of occurrence of HWM in Little Bearskin Lake from 2009-2015. In 2015, HWM has a littoral occurrence of approximately 4%, the lowest occurrence recorded since 2009. This represents a reduction in occurrence of approximately 83% from its highest occurrence in 2011. The HWM occurrence of 4% in 2015 was not statistically different from its occurrence of 7% in 2014 (Chi-Square  $\alpha = 0.05$ ). It is not known why the HWM



**Figure 1. Little Bearskin Lake hybrid water milfoil littoral frequency of occurrence from 2009-2015.** Open circle indicates that occurrence is statistically different from previous survey (Chi-Square  $\alpha = 0.05$ ). Created using data from WDNR 2009-2015 whole-lake point-intercept surveys.

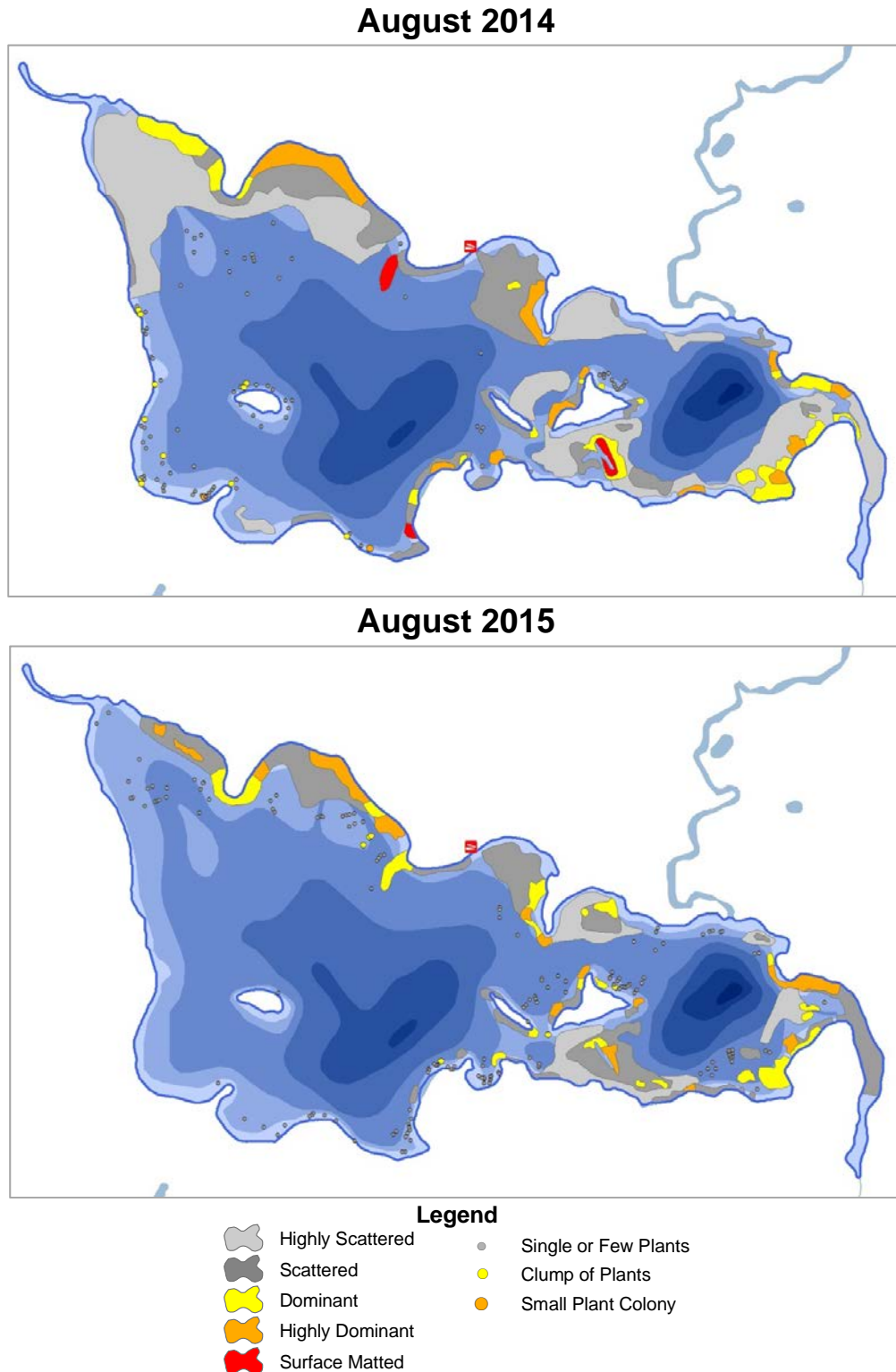


**Figure 2. Little Bearskin Lake acreage HWM colonies in 2012, 2014, and 2015.** Created from Onterra 2012, 2014, and 2015 HWM Peak-Biomass Survey data.

population has been in decline in Little Bearskin Lake since 2011, but it is known from similar studies conducted on other lakes that like other aquatic plants, populations of EWM/HWM can naturally fluctuate from year to year.

On August 31, 2015, Onterra ecologists completed the HWM Peak-Biomass Survey on Little Bearskin Lake, a meander-based survey of the lake’s littoral zone to map areas of HWM. This survey located approximately 30 acres of colonized HWM, the majority of which was found to be *scattered* (Figure 2 and Figure 3). This represents a decline in HWM acreage of approximately 35 and 25 acres from 2012 and 2014, respectively (Figure 2 and Figure 3). While most of the areas containing *dominant* and *highly dominant* HWM in 2014 were present in 2015, the largest decline was noted in

areas containing *highly scattered* HWM. The observed decline in HWM from the 2015 HWM Peak-Biomass Survey aligns with the decline captured in the WDNR’s point-intercept survey.



**Figure 3. Little Bearskin Lake 2014 and 2015 hybrid water milfoil locations.**  
Created using data from Onterra 2014 and 2015 HWM Peak-Biomass Surveys.

## CONCLUSIONS AND DISCUSSION

The goal of the 2014-2015 HWM Monitoring and Control Strategy Development Project was to assess Little Bearskin Lake's HWM population and develop a control strategy, if warranted. However, as discussed, assessments of the HWM population in Little Bearskin Lake by both the WDNR and Onterra indicate that the population is currently at its lowest level since monitoring began in 2009. The reason(s) for its decline since 2011 is unknown; however, it is believed the population will continue to fluctuate naturally over time. Given the lower level of HWM within the lake in 2015, a control strategy utilizing herbicides is not warranted in 2016.

The summer of 2015 was the final year that the WDNR will be conducting whole-lake point-intercept surveys on Little Bearskin Lake and was also the final year of assessments by Onterra under the 2014 WDNR AIS-EPP Grant. This is the final report for this two-year project. The Little Bearskin Lake Comprehensive Management Plan finalized in 2015 calls for the development of a HWM monitoring strategy following the completion of the assessments in 2015 as part of the AIS-EPP Grant. In order to enact a HWM control strategy if warranted, monitoring of Little Bearskin Lake's HWM population needs to continue into the future. To continue this monitoring, it is recommended that a whole-lake point-intercept survey and HWM Peak-Biomass Survey be completed in three years in 2018. Funding for these studies will likely be able to be provided by a WDNR AIS Grant, like the one secured in 2014. With the results of the studies completed in 2018, an HWM control strategy would be developed if it is warranted.