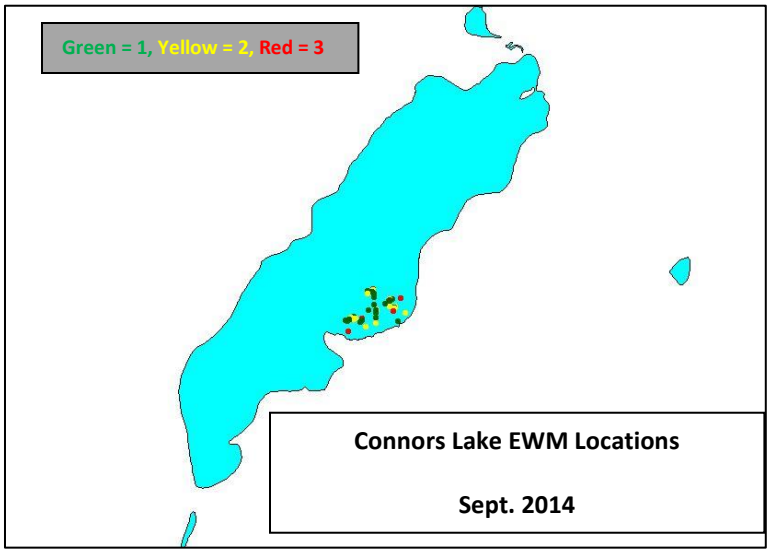
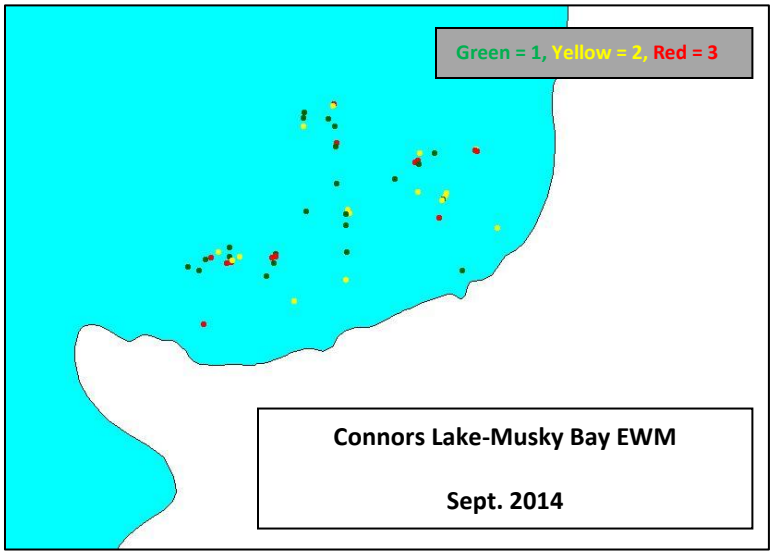
2015 EWM Survey/Treatment Analysis

Connors Lake, Sawyer County, WI

Survey Conducted and analyzed by: Ecological Integrity Service-Amery, WI

In Sept, 2014 Eurasian water milfoil (EWM) was surveyed in Connors Lake. The survey involved using a HD underwater camera, surface viewing scope and a 13-tine rake to verify all milfoils observed or sampled. Each location (Lat/Long) EWM was located was recorded from a handheld GPS and mapped in GIS. The density of the EWM was also recorded, determined by a rake sample (rating 0-3) as defined by the Wisconsin DNR aquatic macrophyte sampling protocol. The map below shows the EWM survey results followed by a close up of Musky Bay, which is the only area EWM was found.

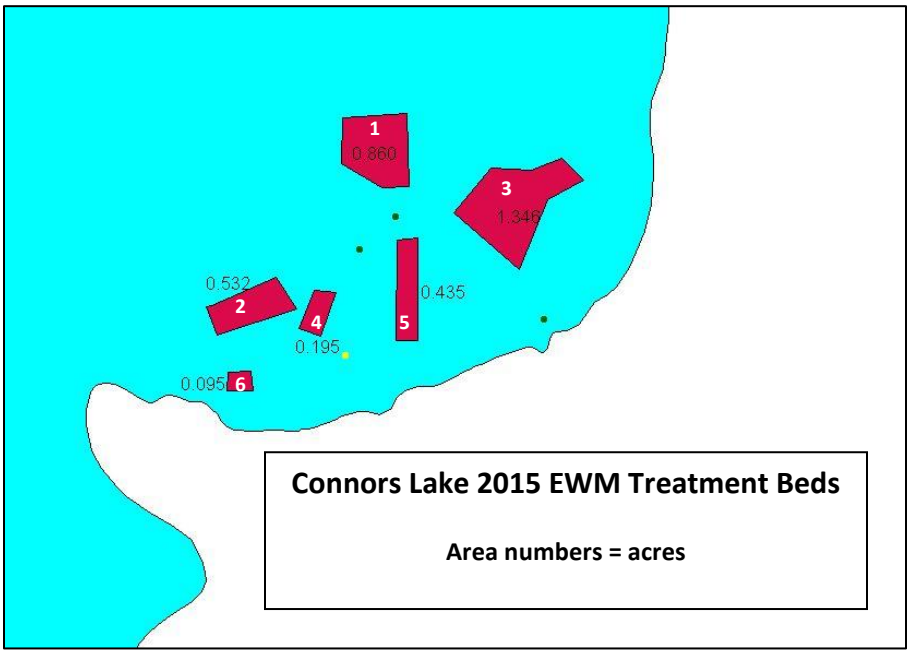




These EWM survey results were used to recommend treatment beds for 2015. These beds were evaluated and a discussion occurred to determine if all of Musky Bay should be treated. In the end, the Association determined that treating the smaller beds would be the best practice.

On June 8, 2015 there were six EWM beds, totaling 3.46 acres treated with the herbicide 2,4-D (Navigate granular). The beds were delineated from the results of a survey conducted in fall, 2014. After treatment in June 2015, a survey was conducted to evaluate the treatment beds as well as survey for EWM throughout the entire lake.

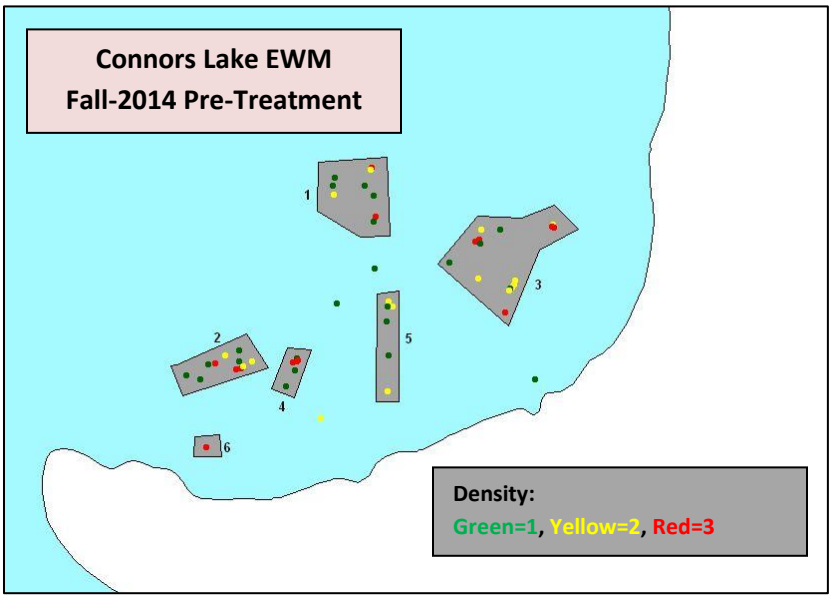
The map below shows the location and area of each treatment bed.



Application June 9, 2015						
Bed	**Area(acres)**	**Herbicide**	**Target Conc**	**Dosage (lbs)**	**Wind (mph)**	**Water Temp(°F)**
1	0.86	Navigate©	4 ppm	222	0-5/N	68
2	0.53	Navigate©	4 ppm	136	0-5/N	68
3	1.35	Navigate©	4 ppm	364	0-5/N	68
4	0.195	Navigate©	4 ppm	62	0-5/N	68
5	0.435	Navigate©	4 ppm	125	0-5/N	68
6	0.095	Navigate©	4 ppm	26	0-5/N	68

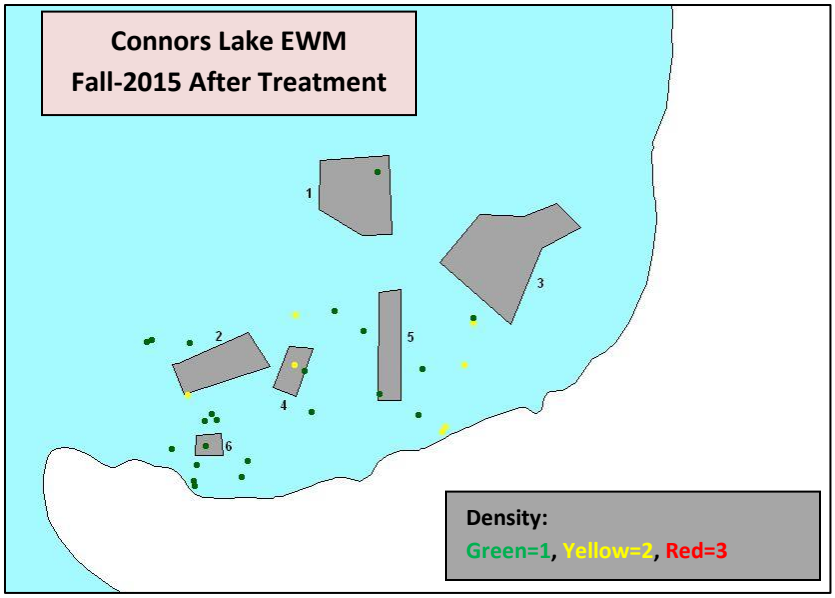
The herbicide treatment was determined to be successful. The pre-treatment frequency from 2014 showed a frequency of 100% within the treatment beds. After treatment that frequency was reduced to 9.1%. A chi-square analysis shows the frequency reduction was statistically significant.

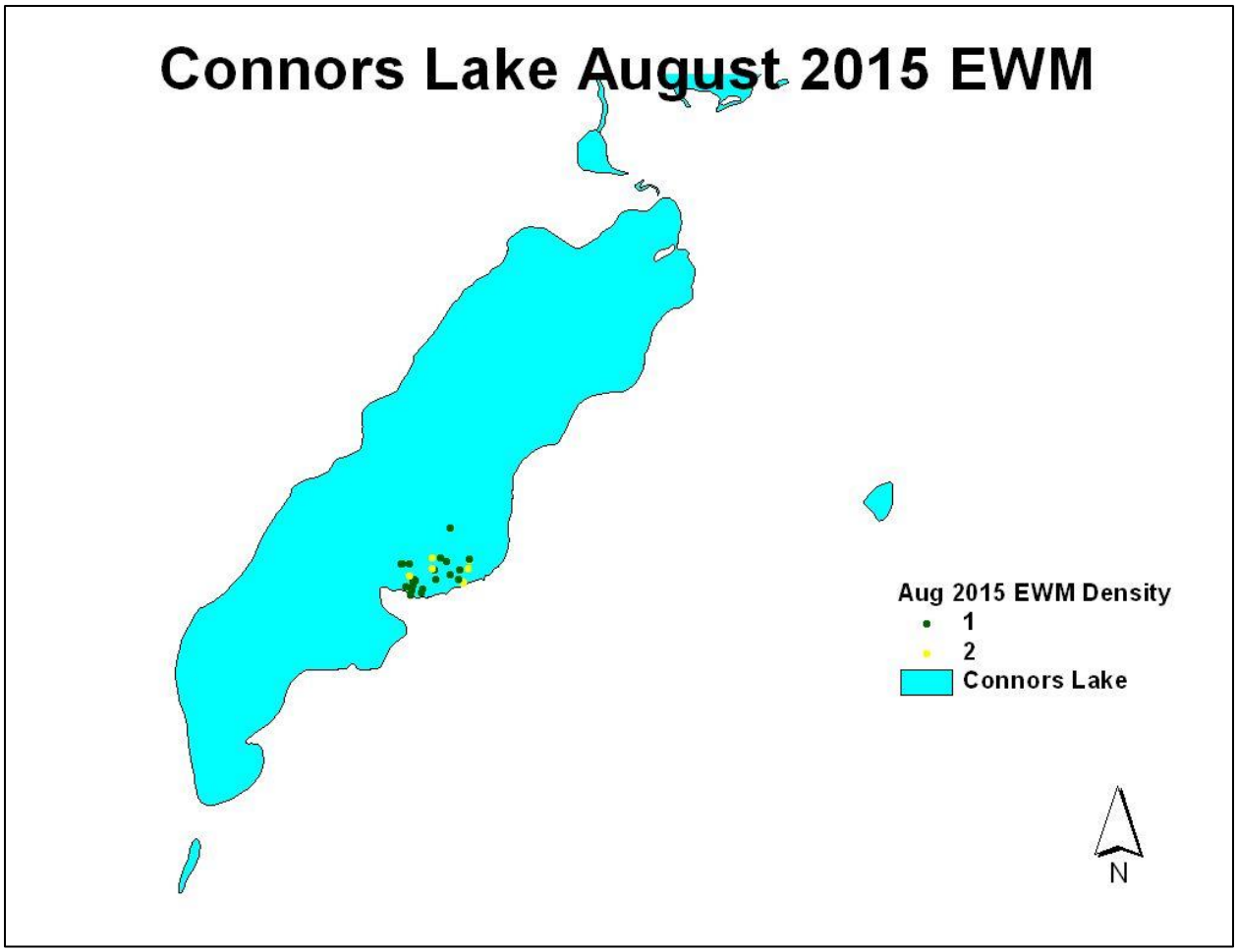
The maps below show the density maps of EWM from 2014 (before treatment) and 2015 (after treatment). Table 1 summarizes the frequency and density data. The density was also reduced substantially from a mean of 1.9 (scale of 0-3) prior to treatment to 0.11 after treatment.



Bed	Pre-treat freq. (from fall 2104)	Pre-treat mean density	Post-treat freq. (from fall 2015)	Post-treat mean density
1	100%	1.7	11.1%	0.11
2	100%	1.7	0.0%	0
3	100%	1.8	0.0%	0
4	100%	2.25	20%	0.4
5	100%	1.5	16.7%	0.17
6	100%	3	100%(only one pt)	1
All beds	**100%**	**1.9**	**9.1%***	**0.11**
Reduction statistically significant p=1.1 X 10^{-17}				

Table 1





This map shows the EWM surveyed in the entire lake in Sept, 2015. The EWM is limited in growth scattered throughout Musky Bay, which is where the EWM has most commonly been growing. The

EWM is widely scattered within this bay with only five locations with EWM having a density of “2”. No locations with a density of “3” were observed.

Due to the scattered nature of the EWM plants, there are two approaches to consider. One is to not treat the EWM in 2016 and monitor the results. If density increases, then herbicide could be used in 2017. Another option is to treat all of Musky Bay in 2016 as this larger treatment will increase efficacy of the herbicide. However, the EWM isn’t dominating the plants in this area and there are numerous native plants, so an early spring treatment would be paramount. It appears that this robust, native plant community may be keeping the EWM scattered and not reaching dense, monotypic growth. It is not recommended to treat small beds of EWM in this region in 2016 as the effectiveness will be reduced in small beds and the EWM growth is too limited to warrant such an application.

Future whole-lake EWM surveys should continue to make sure any spreading or increased growth is determined quickly if it should happen. Other AIS should be monitored at the same time.