

Eurasian Watermilfoil in Rock Lake 2010-2022

Prepared by Jefferson County Land and Water Conservation Department

Whole lake aquatic plant surveys were completed on Rock Lake in 2010, 2017, and 2022. Using data from those surveys we can understand the changes in the population of the invasive Eurasian Watermilfoil (EWM) on Rock Lake. Rock Lake also has the hybrid on the invasive watermilfoil and the native Northern watermilfoil. The hybrid is treated as invasive in management efforts and for that reason has been lumped in with EWM for analysis purposes.

The 2022 survey showed that the frequency of occurrence of EWM in vegetated areas of Rock Lake increased from the 2017 survey. In 2022 EWM's frequency of occurrence was 30.4% which means if you randomly sampled 100 locations in the lake where plants were growing, 30 of those locations would have EWM present. In the 2010 survey EWM's frequency of occurrence was 22.8%, which is higher than the occurrence of 18.8% in 2017.

While the frequency of occurrence of EWM in Rock Lake was higher in 2022 than the last two surveys, the floristic quality index for the plant community was the highest in 2022 (Table 1). The floristic quality index is a measure of the diversity of the entire plant community in the lake. A high value indicates that the plant community is healthy and is more likely to resist the spread of an invasive species because there are a large number of healthy native plants to compete with for resources. While the diversity of the plant community increased, the density overall decreased, meaning there were fewer plants overall in the 2022 survey as compared to 2017 or 2010.

In 2010 and 2017, EWM was the fifth most common plant in the aquatic plant community, in 2022 it had become the third most common plant in the aquatic plant community in Rock Lake. The most common plants in Rock lake were still native species, and there were 34 native species total observed in Rock Lake, the same number observed during the 2010 and 2017 surveys.

During aquatic plant surveys each species on the rake is given a 'total rake fullness' (TRF) rating that is an estimate of the mass of the plants on the rake on scale of 1-3. A total rake fullness of 1 would be a couple plants on the sampling rake where as a 3 would be all the tines of the rake are covered by plants on the rake. This measure gives us an indication of the density of vegetation in Rock Lake. In 2022 the average TRF rating for EWM was 1.5, in 2017 it was 1.18, and in 2010 it was 1.25. This indicates that the density of the EWM plants in the lake has remained similar across surveys. So, while the EWM is more common through the lake as a whole, the density of the EWM in those locations has remained similar to past surveys. We are not observing extremely thick beds of only EWM, it still appears to be intermingled with native vegetation at a moderate density.

Table 1	2022	2017	2010
EWM littoral frequency of occurrence	30.4%	18.8%	22.8%
EWM average TRF	1.5	1.18	1.25
EWM average depth	11.0	9.2	10.0
Rock Lake Floristic Quality Index	29.2	25.7	28.6

One other difference of note in the EWM population of Rock Lake is the depths at which it is found to be growing. In 2010 the average depth of EWM was 10.0 ft, in 2017 it was 9.2 ft, and in 2022 it was 11.0 ft. Currently EWM is growing deeper in Rock Lake than in previous years. Not only is the average depth deeper, it appears to have largely migrated out of shallower areas and is colonizing along deeper depths contours. In the 2022 survey 82.2% of the EWM in Rock Lake was growing between 8 and 15 ft in depth as compared to 55% of the EWM population growing in that range in 2017 and 65% in 2010 (Figure 2).

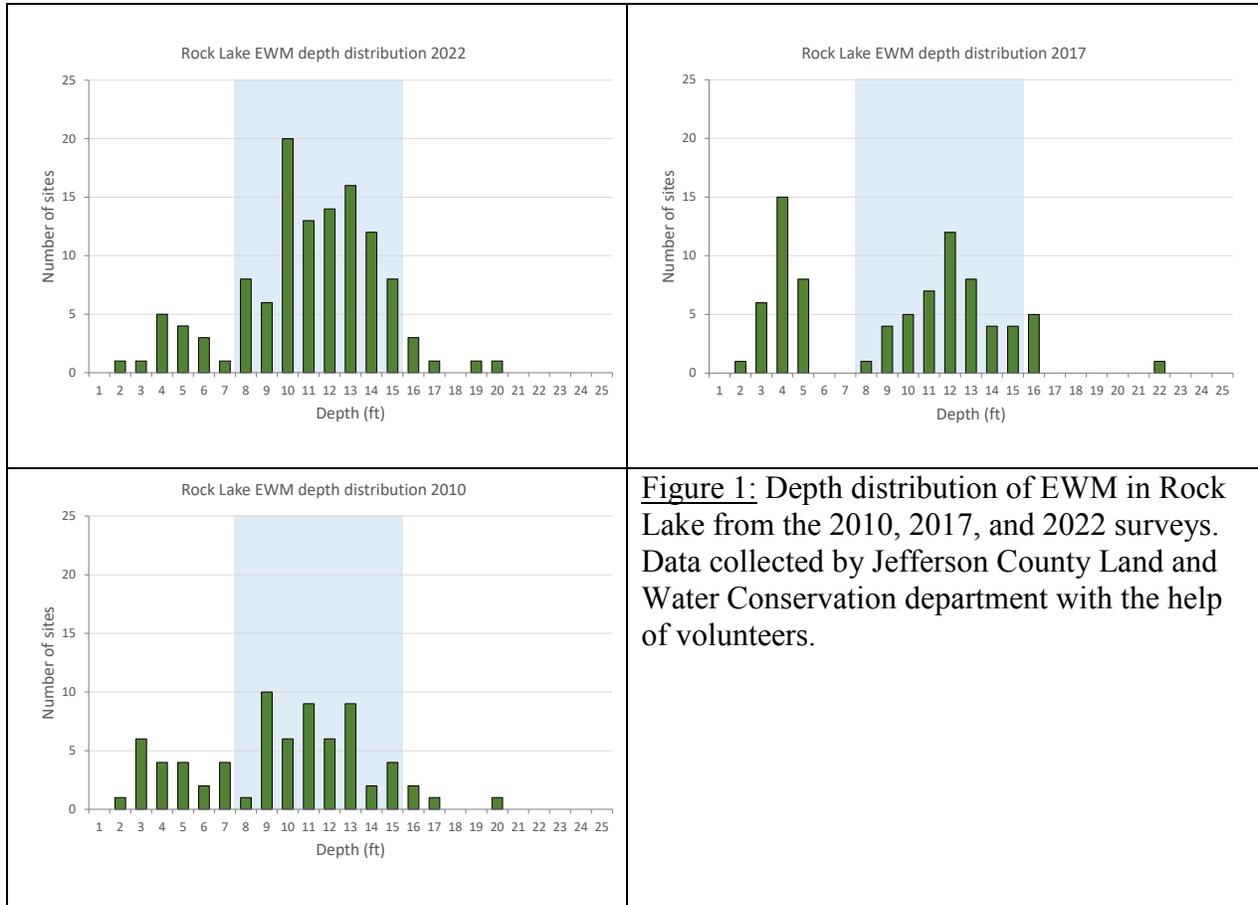


Figure 1: Depth distribution of EWM in Rock Lake from the 2010, 2017, and 2022 surveys. Data collected by Jefferson County Land and Water Conservation department with the help of volunteers.

EWM in Rock Lake has consistently occupied the 8-15 ft depth contour around the lake in a nearly continuous ring (Figure 2). In the 2010 survey the density of EWM around Rock Lake was pretty uniform with a mix of TRF ratings of 1 and 2 all around the lake. In 2017 the EWM population declined, there was less EWM in the lake overall, and the majority of it was found along that same depth contour but mostly in the Northern half of the lake and to a lesser extent along the eastern shoreline. In the 2022 survey, the EWM population was found to have increased, becoming more widespread and denser than in both the previous surveys, but the bulk of it was still concentrated in the northern and eastern halves of the lake shore. It was also found that the EWM population was even more constricted to the 8-15ft depth contour than in previous surveys.

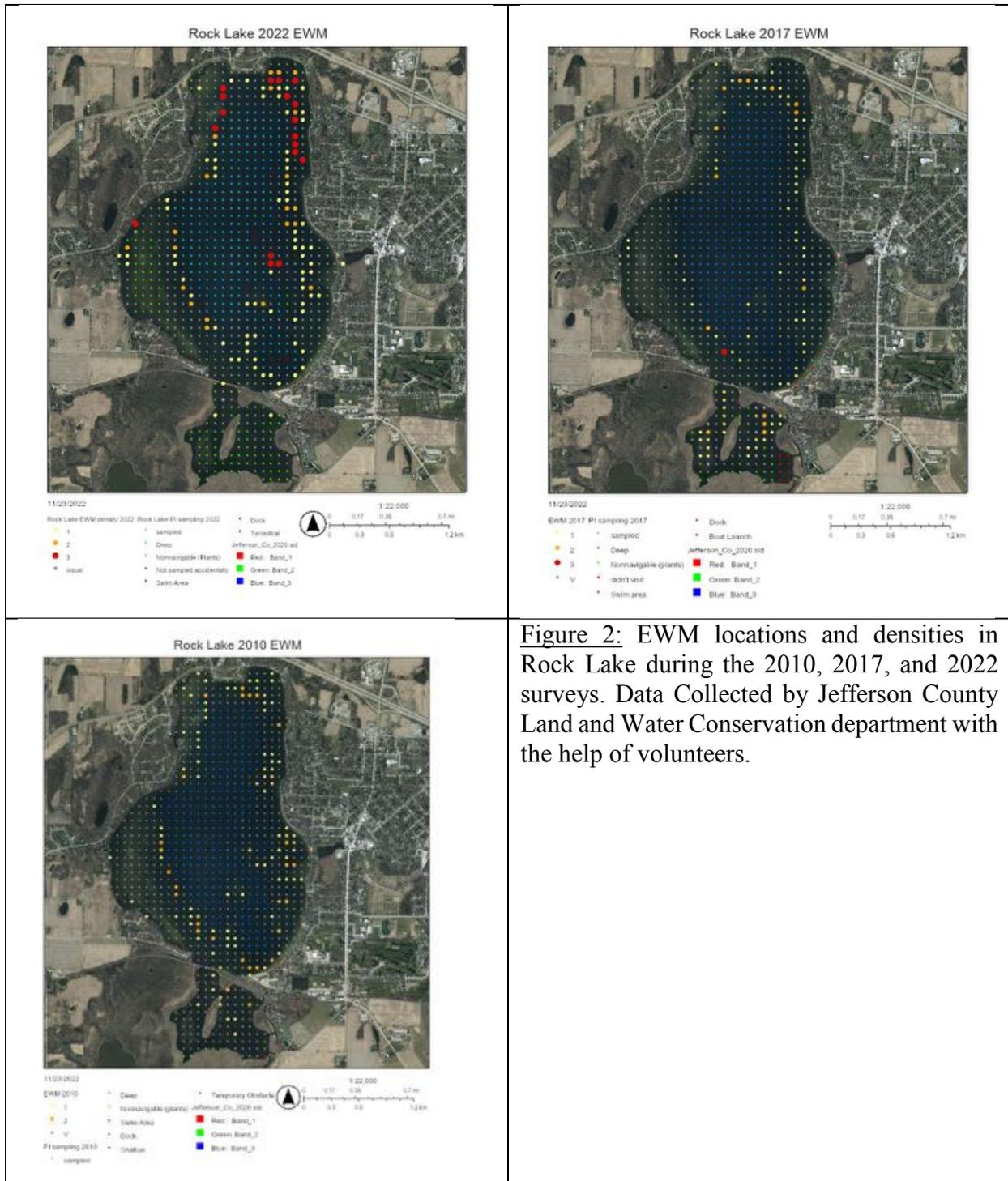


Figure 2: EWM locations and densities in Rock Lake during the 2010, 2017, and 2022 surveys. Data Collected by Jefferson County Land and Water Conservation department with the help of volunteers.

While there have been some fluctuations in the occurrence, density, and average depth of the EWM population in Rock Lake overall it has remained fairly stable over the last 12 years. The health of the plant community has also increased over that same time scale, EWM alone does not appear to be causing navigation issues. Currently there are no major management activities taking place on Rock Lake targeted at EWM, based on the data in this report there does not seem to be a

need to implement any new management activities on Rock Lake to control EWM. Because of the depth of the EWM population on Rock Lake manual removal by hand will not have any significant impact on the EWM population in Rock lake as this activity takes place in 4-5 feet of water max.

Hand pulling and raking may be an effective tool for individual property owners who have a nuisance amount of EWM around their individual property. Hand pulling and raking can be done by the property owner from shore across a 30ft width that must include any piers or boat lifts, out to a depth necessary for navigation. Individual property owners do not need a permit to complete this work UNLESS their property resides in one of the four designated sensitive areas on Rock Lake. The four designated sensitive areas on Rock Lake are Schultz bay, Korth Bay, Marsh Lake, and the Millpond and can be seen on the map is Figure 3.

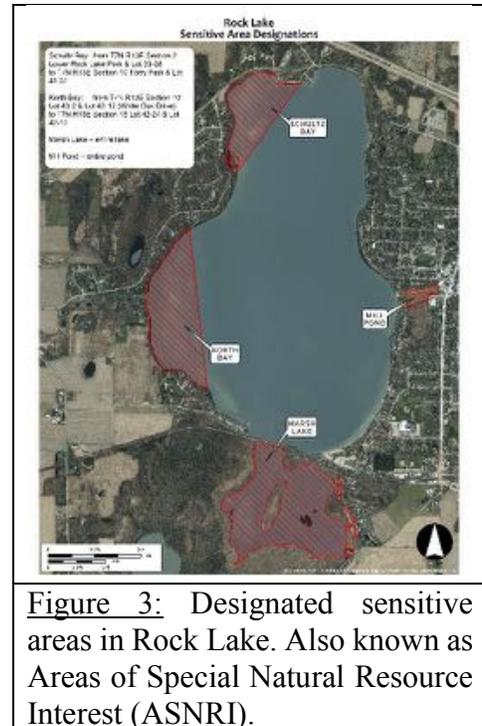


Figure 3: Designated sensitive areas in Rock Lake. Also known as Areas of Special Natural Resource Interest (ASNRI).