Lake Evaluation Summary

Lake Name: Sage Lake
County: Ogemaw
Evaluated by: Mike Pichla
Date: September 2023
Year End Evaluation

2023 Service Timeline:	Date
Water Quality	April
Survey	May
Weed & Algae Treatment	May 24
Survey	June
Weed & Algae Treatment	June 21
Survey, Water Quality	July
Weed & Algae Treatment	July 20/25
Survey	August
Weed & Algae Treatment	August 16
AVAS Survey, Water Quality	Sept.13

2024 Recommended Management Program:

- Survey Program including annual AVAS survey
- Water quality evaluation (optional)
- Aggressive exotic plant control when/ where found
- Algae treatments around shoreline using Chelated copper
- Aggressive Wild Celery Treatments
- Nuisance Native Plant Control where needed

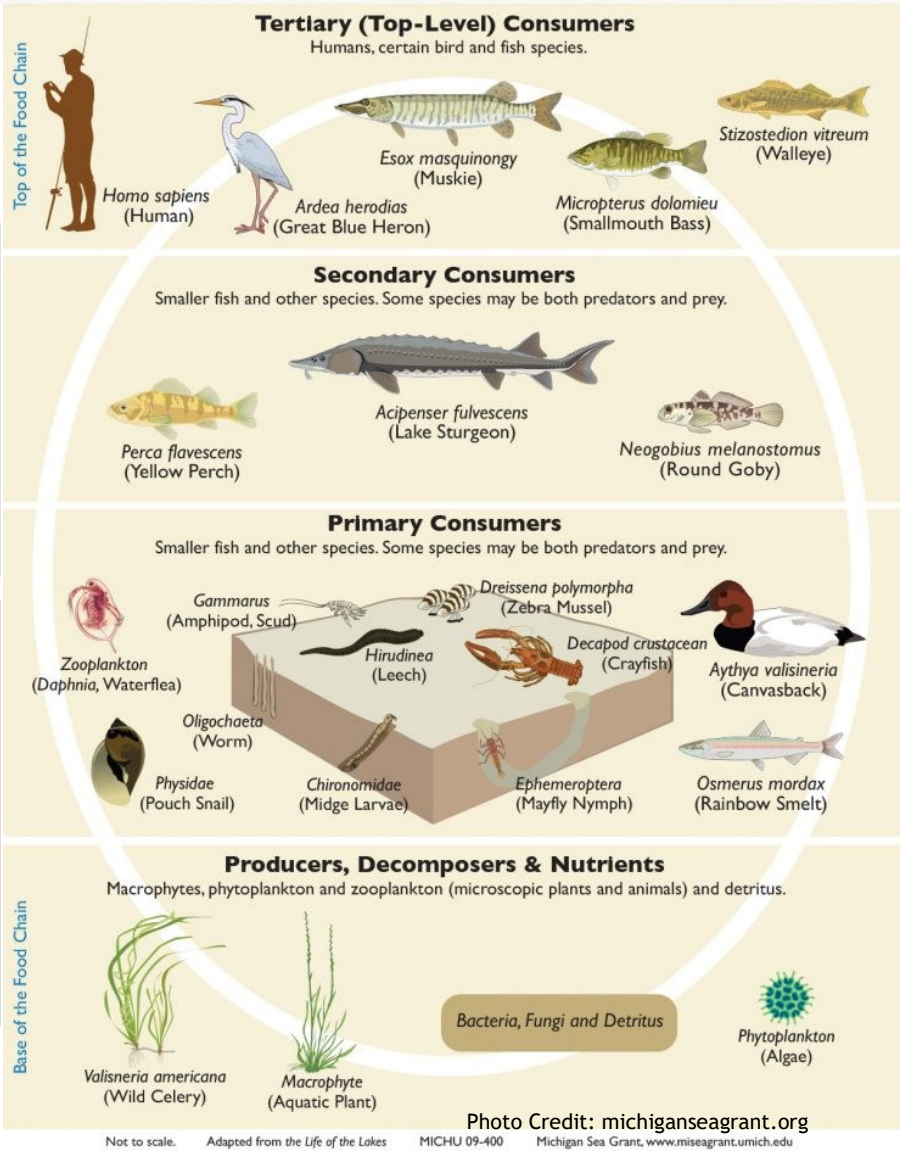


Photo Credit: michiganseagrant.org

Sage Lake was managed throughout the summer of 2023 utilizing a combination of systemic and contact herbicides for the control of Eurasian watermilfoil (EWM), curly leaf pondweed (CLP), starry stonewort (SSW) and various native species/algae. EWM has continued to respond well utilizing systemic herbicides. EWM populations on Sage lake in 2023 were extremely low in early summer. The population grew throughout the summer, but was treated when necessary and remained at a low level for the entire summer. It is important to keep in mind the goals of the program and aquatic plant management when evaluating lake conditions and treatments performed. One of those goals includes rotating active ingredients used to limiting plant resistance issues long term.

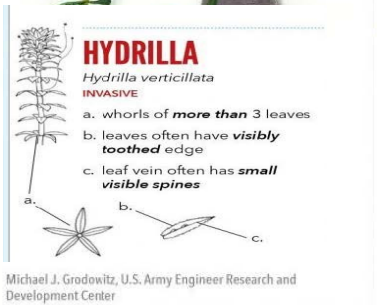
SSW was found in similar density and locations in 2023 as it was in 2022. Seclear G has continued to be a very effective herbicide to reduce its spread and keep biomass at a minimum.

Wild Celery is the biggest native issue on Sage Lake. PLM took a very aggressive approach this year to limit the amount of Wild Celery that made it to the surface. PLM will continue an aggressive approach to this difficult plant in 2024.

Nonnative milfoil Eurasian

Native milfoil Northern

Starry stonewort



Exotic aquatic plant species cause many of the most serious weed problems in lakes and ponds. Exotic plants are plant species that are not native to this area and have been introduced here inadvertently. Because they have few natural enemies in this region, they tend to grow unchecked often forming dense mats at the water's surface. These dense mats displace native vegetation, reducing diversity and can have serious implications to the aquatic habitat.

The most common exotic aquatic plant species in Michigan are Eurasian watermilfoil (Myriophyllum spicatum), Curlyleaf pondweed (Potamogeton crispus) and Starry stonewort (Nitellopsis obtusa). Other less common species include European frog-bit (Hydrocharis morsus-ranae), Cabomba (Cabomba caroliniana) and Parrot feather (Myriophyllum aquaticum). However, the majority of management efforts focus on the three main species.

The dreaded news we feared for over a decade was met with reality in September when Hydrilla was positively identified by the Water Resource Division of EGLE in two small waterbodies in Berrien Springs, Michigan. Hydrilla, widespread in southern states, has been a top "Watch List" species in Michigan for decades. PLM was contacted by EGLE, as part of their Rapid Response Plan for new exotic plants, to get these waterbodies treated as quickly as possible. PLM responded immediately with an herbicide treatment to systemically treat the infestation in hopes to prevent it from spreading regionally or state wide.

The graphs to the right shows the cumulative coverage of EWM and native plants in Sage Lake. EWM has fluctuated slightly since PLM took over management of Sage Lake, however has stayed between 1-3% cumulative cover, which is considered to be a very low infestation and is well below pre-PLM management levels. PLM has also been monitoring the native plant growth in Sage Lake since 2021. Our first year on the lake, we observed 18 different species of native submersed species. In 2022 and 2023, we observed 21 different native species in Sage Lake. The use of systemic herbicides in lowering the infestation of nonnative plants will help improve the native plant richness within the lake. Overtime, this data can be used to evaluate plant trends and be used as another evulation on the health of the lake and the success of the management program. Seasonal variance among native plants is expected and can be impacted by many factors including; seasonal weather pattern, natural plant biological tendencies, or surveyor technique, just to name a few. The goal of tracking plants long term is to be able to 1) identify plants for early detection and rapid response 2) review long term trends for lake health. The most dominant species' in Sage Lake are Chara, Wild celery and Richardsons pondweed. Richardsons pondweed is a great submersed species to have, and Chara is the number 1 species to have within a waterbody. Chara is a natural filter to help clean the water. It also provides excellent habitat as well as stabilizing the sediments. As this is a great plant to have, it should be encouraged unless it starts growing to the surface of the water. If that happens, limited management can help balance the community to allow for navigation while still promoting the plant for a healthy ecosystem.