



FIELD NOTES

Lake: Huron River Chain of Lakes, Livingston and Washtenaw Counties, MI
Dates of Observation: 31 May, 14 – 17 June, 10 August, 23 August 2017
Activity: Aquatic Vegetation Surveys and Observations

Key Points

The goal of the HRCL lake vegetation management program is to protect, preserve, and if possible improve the diversity of the plant community and to stabilize the ecosystem. Attainment of this goal will also provide sustainable conditions that will enhance recreation and the support the desirable aesthetic attributes of the lake and river system. Ebrid milfoil, curly leaf pondweed, starry stonewort, and flowering rush are all present in the Huron River Chain of Lakes system and are listed on the Michigan aquatic invasive species list. Any of these species possess the ability to overwhelm desirable vegetation, spoil critical habitats, and destabilize the lake ecosystem. There are; however, other species present in the lake that seem to extirpate other species and form monocultures that are not consistent with the goal of the lake management program. One of these, variable milfoil, is thought to be a native Michigan aquatic plant species and has not been observed to grow to nuisance levels until the past decade. Now it has been observed to grow to extreme nuisance levels in lakes throughout the Michigan lower peninsula. It has the capacity to out-compete all other species, including ebrid milfoil, and forms dense monocultures that reduce the biodiversity of aquatic plant communities. Genetic analysis performed at the University of Connecticut and Grand Valley State University reveal that the plant found in Michigan is indeed variable milfoil and not the hybrid type that has been found at nuisance levels in New England. It is currently listed as an aquatic invasive species in New England and the Pacific Northwest States. It is not known why this formerly inconspicuous plant has become so invasive in Michigan in the last decade, but it would be reasonable to include this on the Michigan aquatic invasive species list.

- ~ **Zukey Lake:** Dense growth of variable milfoil was found to totally dominate the drop off zones AROS 600's and was observed growing in dense patches in Tier 4 (AROS 400's and 500's) during the LakeScan™ VS 3.0 survey in June. Some of these patches were observed to constitute a significant nuisance. It is strongly recommended that a management intervention strategy or technology (MIST) program be created and applied to the variable milfoil in Zukey Lake. The variable milfoil had begun seasonal decline on 23 August is no longer susceptible to treatment. Ebrid milfoil, curly leaf pondweed, starry stonewort and flowering rush have also been observed in the lake, but these were not observed a unequivocal nuisance levels except in the canal areas. It appeared that a broad-spectrum control approach had successfully enabled relatively unobstructed navigation in those canals.
- ~ **Strawberry Lake:** Strawberry lake has become infested with dense ebrid watermilfoil. Nuisance growth ranges from ecological nuisance levels to unequivocal nuisance levels that interfere with boating. Most of this growth is concentrated in water depths that range from 4' to 10' deep. A ebrid species selective management response (MIST) is recommended and will need to be applied to the lake each year. No other species currently rivals ebrid milfoil in the level of nuisance growth. Ebrid milfoil growth had begun to decline in many areas around the lake and treatment is not currently recommended because of the growth stage of the plant.
- ~ **Strawberry/Gallagher/Loon Lakes Connector:** The nearshore areas in this channel are clogged with a mixture of native pondweeds, flowering rush, and accumulated aquatic plant debris that seem to be generated by boating in other parts of the lake. The critical habitat value of the nearshore areas appears to be severely compromised by the accumulation of these debris. Broad spectrum aquatic plant control can provide reasonable access for

boaters and boat docks located along much of the shoreline of these conveyances. Declining plant growth is susceptible to aquatic herbicides so no treatment strategy is recommended at this time. A broad spectrum treatment approach is recommended for June each year and needs to be adjusted for the emergence of plants that begin growth in the later part of the spring or early summer.

- ~ **Gallagher Lake:** Vast deep areas prevent weed growth from interfering with most of the recreational uses of Gallagher Lake. However, over 50% of the near shore observations sites were infested with ebrid watermilfoil, curly leaf pondweed, variable milfoil, sago pondweed or weedy broadleaf hybrid pondweed. Ebrid milfoil was by far the dominant weed in the lake. This infestation interferes with access to the lake and it also serves to suppress the potential biodiversity of the plant community in these critical nearshore areas. Ebrid milfoil has begun to decline in the HRCL and treatment is not recommended because positive outcomes are unlikely. Optimal treatment will occur in mid June.
- ~ **Gallagher Lake Island Canal:** The Gallagher Lake Island Canal is occupied by a wide range of undesirable and undesirable plants. Boat traffic seems to be the principal mechanism to reduce nuisance conditions in the canal. There is a large number of boats along the edges of the canal and these will complicate any treatment done to this canal. Control is recommended to prevent the accumulation of substantial amounts of plant biomass along these shorelines.
- ~ **Loon Lake:** Most of Loon Lake is shallow weed growth produces a greater impediment to navigation and swimming in all near-shore areas. Near-shore areas were infested with ebrid milfoil, variable milfoil, curly leaf pondweed and starry stonewort. Despite the presence of these highly invasive species, there were still a good number of desirable species present in this lake. Selective management is critical for this system. It was under independent contract in 2017 and treatment appeared to be reasonably successful. No treatment can be recommended at this time because of the growth stage of the plants. However, mid June treatment will be required each year to support positive conditions in the lake.
- ~ **Whitewood Lake:** Whitewood Lake is characterized by vast areas of undeveloped shoreline. Unlike the other lakes, it was dominated by the exotic, invasive plant, curly leaf pondweed. Nuisance conditions were observed at over 40% of all AROS. Milfoil species were also present at nuisance levels. Plant growth was in decline and not particularly susceptible to treatment at this time. Mid-June treatment will be required each year to selectively manage and suppress nearshore invasive species production. MDEQ permit conditions will limit treatment to inhabited shoreline areas.
- ~ **Tamarack Lake:** The plant community in Tamarack Lake has been completely overwhelmed by the exotic invasive alga species, starry stonewort. Starry stonewort growth is always unpredictable. It blooms and crashes for a variety of complex reasons, but the end result is that it is nearly impossible to predict when it will either grow rapidly upward (bloom) or decline or die off (crash). Either event is very significant from an ecological perspective and have negative implications for recreation. Starry stonewort was a very significant nuisance in the early summer but growth seemed to have stalled in early August. On 23 August it had receded from the near shore areas of the lake and had been replaced by the nuisance production of ebrid milfoil and a mixture of native pondweeds. Treatment was recommended and conducted on 15 August. Ebrid milfoil and all but a broad leaf pondweed had collapsed by 23 August along the shoreline and the treatment was considered to be successful. Starry stonewort was also treated in a few areas in the lake on 15 August. Starry stonewort was not observed to be active in most of the lake on 23 August and it is not known if it will finally crash and collapse or if it will begin exponential growth when the water begins to cool. Residents of this lake must monitor conditions because starry stonewort could easily grow from its current position in the water column to the water surface in a matter of days. The County must be alerted if resurgent growth is observed in Tamarack Lake.
- ~ **The Tamarack Lake Canal or Connector** was managed under an agreement with an independent contractor that was established before the HRCL special assessment district had been established. This area of the system appeared to have been effectively managed and nuisance conditions were not generally obvious during the summer.

- ~ **BaseLine Lake was generally free of nuisance conditions on 23 August. There was virtually no plant growth observed in Tier 3, next to the shore of the lake. A mixed plant community, dominated by flowering rush and several Michigan Native pondweeds occupied approximately 6 acres slightly more than 300' from the south shoreline. Native plant control is not allowed by MDEQ permit more than 300's from shore. Furthermore, the restrictions placed on herbicide concentrations applied to areas more than 300' from shore would inhibit the control of the nuisance growth of the exotic invasive species found in this band of vegetation. The nuisance plants in BaseLine Lake are beginning to exhibit signs of seasonal collapse and treatment is not recommended because there is little chance that treatment would result in acceptable outcomes.**
- ~ **The Portage/BaseLine Lake connector supports an unusually dense growth of flowering rush. It appears that the firmly rooted flowering rush provides anchorage for other plants, particularly the exotic and invasive species starry stonewort. The water flow in this area of the system is significant and it would be unrealistic to expect that any herbicide or herbicide combo could be applied to this area of the lake and expect any sort of positive result. Consequently, harvesting operations were recommended and initiated on 07 August. Operations were completed in three days. Conditions were reviewed on 10 August and again on 23 August. Floating plant fragments drifted from the channel and resulted in significant nuisance conditions just after the harvest had been completed. None of these impairments were evident by 23 August when the water had cleared sufficiently to reveal that the harvesting operation had been extremely successful. The amount of flowering rush had been reduced to a level where starry stonewort was no longer able to colonized the center of the river channel.**
- ~ **Portage Lake was relatively free of nuisance conditions during the early summer LakeScan™ VS 3.0 survey and during the 23 August condition assessment except for the many canals that border the lake. When the canals are considered as a part of the lake nearly one half of the lake supported equivocal or unequivocal nuisance vegetation production. Nearly all of the canals were managed by independent contractors under agreements that were established before the Huron River Chain of Lakes special assessment district was established. Most of the canals had been effectively managed and nuisance conditions were reduced by several treatments made to these areas. There were areas in the main body of Portage Lake that also supported nuisance conditions. Variable milfoil constituted a significant nuisance along the northern shore of the lake. Again, plant growth had begun a normal seasonal decline and would be resistant to treatment.**
- ~ **Significant weed growth occupied most of Little Portage Lake in the early summer. By 23 August the weed growth had subsided and nuisance conditions were found in the long canal at the south end of the lake and near the homes on the south shore. Contractors were deployed and they concluded that weed growth would drop from the water column before any harvesting or herbicide treatment could be engaged. MDEQ permit conditions require that a combination of mechanical harvesting and herbicide applications well be needed to provide reasonable lake access to the residents on the Little Portage shore.**

Narrative

Plant nuisance conditions existed throughout the HRCL system throughout most of the summer of 2017. Complications prevented the issuance of MDEQ herbicide application permits before many of the plants in the lake had begun to decline for the season and become resistant to management. Some areas in the system remained under plant management agreements that were in place before the HRCL special assessment district had been established. Nuisance conditions in these areas were adequately addressed. MDEQ permits have only been issued for a few of the lakes in the system. There is concern for downstream waters and the presence of rare and endangered species that will complicate the 2018 lake management program. These issues are currently being negotiated and plants are being developed to provide adequate management of nuisance conditions during the first full year of the HRCL management program in 2018.