Report on the Aquatic Plant Community of Upper White Lake – 2018

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with the assistance of

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PURPOSE AND METHODS

The authors conducted a survey of White Lake's aquatic plant community in Summer, 2018, at 26 locations in the lake's shallow upper end (see map). The study sites included several places where human impact is likely, such as boat launches and marinas. The goals of the survey were twofold: a) to detect aquatic invasive plants, and b) to characterize the abundance and diversity of the aquatic plant community. As in previous years, the survey employed protocols endorsed by the Michigan Clean Water Corps (see micorps.net). The accompanying figures and table summarize the technical details.

MAJOR FINDINGS

- While the upper lake's plant community retains some diversity, it is dominated by two plant types---coontail (*Ceratophyllum demersum*) and milfoils (*Myriophyllum* spp.). These occur at severe nuisance levels, especially above The Narrows (see map)

- No new invasive aquatic plants were detected, although there is a constant threat of introductions from outside watercraft users and releases from water gardens, e.g.

- Curly leaf pondweed, an invasive species, has spread from near the river mouth, where it is abundant, to areas beyond The Narrows, where it remains sparse

- Milfoils---native, invasive, and hybrids---remain abundant, reaching nuisance levels at some sites. A study of the extent of milfoil hybridization is underway, with results expected in 2019; hybrids may be more resistant to herbicides and to predation by milfoil weevils

- Both free-floating single-cell algae as well as attached filamentous forms reach very high densities in this part of the lake, especially later in the season, with the latter forming dense floating mats

- Near the shore and more generally under calm conditions, the water's surface is often covered by free-floating duckweed and water meal

DISCUSSION

The aquatic plant community that characterizes areas of very dense growth at White Lake's upper end is quantitatively, but not qualitatively, different from the plant community elsewhere in the lake. That is, all the plant types that are found in the upper reaches mostly are also found wherever aquatic plants grow in White Lake.

To the extent that a single plant dominates areas of nuisance conditions, that plant is coontail (*Ceratophyllum demersum*), a common native species that grows to nuisance levels in many nutrient-rich water bodies. The major exception was observed in the lagoon area next to the causeway on the Montague side. Earlier in the season, the dominant plant there was densely

growing water marigold (*Megalodonta beckii),* a usually innocuous species. There is no readily apparent explanation for this anomaly.

Water milfoils---including invasive Eurasian (*Myriophyllum spicatum*), native (e.g., *M. sibiricum*), and their putative hybrids[1]---were present at all study sites but were seldom the dominant species, except at some locations late in the season when other species were dying back. The only other invasive aquatic plant found was curly leaf pondweed (*Potamogeton crispus*). It was not abundant at any of the study sites but bears watching because it is widely present in the White River and has the potential to become a nuisance; annual re-sampling is imperative to track possible further spread.

Under calm conditions, much of the water surface at the lake's upper end becomes almost completely obscured by 1) two tiny floating plants, duck weed (*Lemna* sp.) and water meal (*Wolffia* sp.), and by 2) mats of filamentous algae, including *Cladophora* and *Lyngbya* sp. (identifications pending confirmation by a professional phycologist).

Any attempt to account for the nuisance levels of plant growth at White Lake's upper end must remain largely speculative in the absence of more conclusive information. Clearly, over-growth is not possible without over-fertilization. The most likely sources of plant nutrients are to be found in the White River watershed, at sites both near---the flooded wetland and former ag fields below the Highway 31causeway---and far, such as fields that have come under cultivation in an attempt to grow ever more corn for ethanol production. Barring large-scale changes to land use and run-off management practices, coupled to changes in lake levels associated with the meteorological cycle, there does not seem to be much prospect of a long-term solution to the current nuisance plant growth. Temporary control measures to serve water-based recreation include selective mechanical harvesting and limited use of herbicides to maintain navigation channels and docking areas.

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[1]We made a separate collection of milfoil samples from six sites lakewide as requested by a consortium of academic researchers who are studying the extent of milfoil hybridization in water bodies all across the Great Lakes basin.

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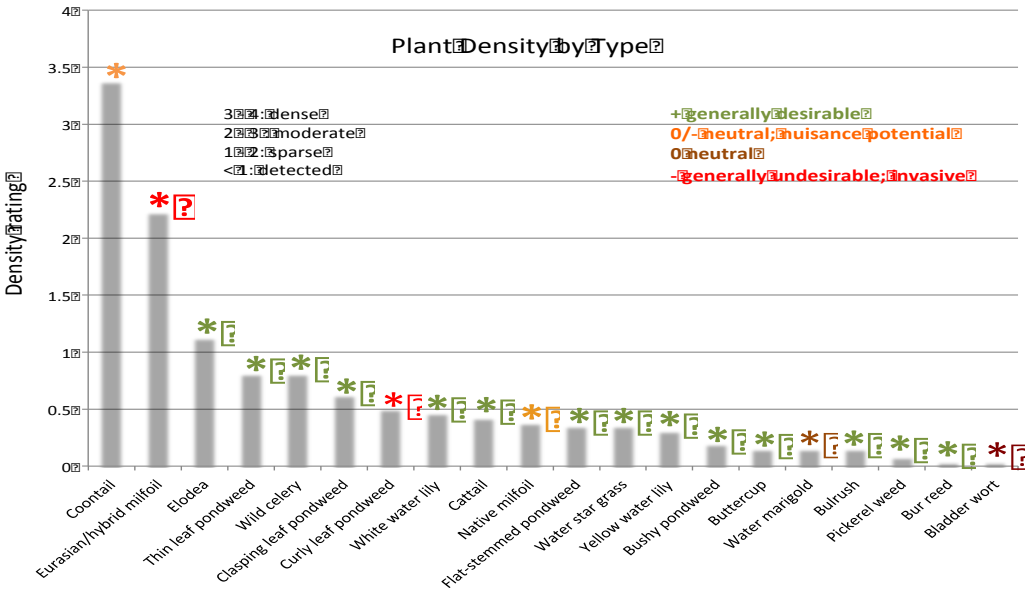
FIGURES

Sampling Sites



Plant Density Table

White Lake
2018

26 Sites

Common name	Density Rating	ID #	Desirability
Coontail	3.38	41	0/-
Eurasian/hybrid milfoil	2.23	50	-
Elodea	1.12	36	+
Thin leaf pondweed	0.81	32	+
Wild celery	0.81	34	+
Clasping leaf pondweed	0.62	42	+
Curly leaf pondweed	0.5	51	-
White water lily	0.46	12	+
Cattail	0.42	6	+
Native milfoil	0.38	40	0/-
Flat-stemmed pondweed	0.35	33	+
Water star grass	0.35	35	+
Yellow water lily	0.31	13	+
Bushy pondweed	0.19	21	+
Buttercup	0.15	49	+
Water marigold	0.15	47	0
Bulrush	0.15	7	+
Pickerel weed	0.08	10	+
Bur reed	0.04	?	+
Bladder wort	0.04	48	0

generally desirable +
neutral; nuisance potential 0/-
neutral 0
generally undesirable -