

Summary of Lake Owen Macrophyte PI Survey-2019

- **High diversity, plants very deep (clear water) coverage limited to near shore.**

Total number of sites whole lake grid	1556
Total number of sites with vegetation	435
Total number of sites shallower than the maximum depth of plants (less than 27.2 ft)	637
Frequency of occurrence at sites shallower than the maximum depth of plants	68.3%
Frequency of occurrence in the entire lake	27.9%
Simpson Diversity Index	0.93
Maximum depth of plants	27.20 ft.
Mean depth of plants	8.35 ft
The average number of all species per site (shallower than maximum depth with plants)	1.85
The average number of all species per site (vegetated sites only)	2.73
Species Richness	42
Species Richness (including visuals)	43

- **No one species dominating (highest relative freq. 12%)**
- **Common species in Wisconsin lakes.**

Species	FOO-veg	FOO-littoral	Rel. freq.	# sampled	Mean density	# viewed
<i>Vallisneria americana</i> , Wild celery	33.79	23.08	12.35	147	1.05	4
<i>Elodea canadensis</i> , Common waterweed	28.05	19.15	10.25	122	1.05	
<i>Potamogeton robbinsii</i> , Fern pondweed	25.29	17.27	9.24	110	1.07	
<i>Potamogeton gramineus</i> , Variable pondweed	23.91	16.33	8.74	104	1.02	2
<i>Myriophyllum sibiricum</i> , Northern water-milfoil	23.45	16.01	8.57	102	1.11	3

- **Two species of special concern. Species of special concern are species whose distribution is limited or they have specific habitat needs. These species are typically sensitive to changes in the lake that may be attributed to human activity.**
- **Large number of sensitive species. Plants are assigned conservatism values, which represent how tolerant they are to changes in habitat. Those with high conservatism values are considered more sensitive.**



Figure 8: Pictures of *Littorella uniflora* (left) and *Najas gracillima* (right) which are the species of special concern. Paul Skawinski, *Aquatic Plants of the Upper Midwest*, used with permission.

- **Three species of invasive plants observed; non were sampled.**



Figure 9: Pictures of the yellow iris (left) and aquatic for-get-me-not (middle) and non-native common reed (right). Photos from Wisconsin DNR website-invasive species.



This is map shows location of non-native common reed grass (*Phragmites*).

- **Comparison of data to 2013. All very similar. Most differences are increases in desirable results.**

Statistic	Lake Owen 2013	Lake Owen 2019
Species richness	38	42
Simpson's diversity index	0.91	0.93
Maximum depth with plants	22.9 ft	27.2 ft
Mean conservatism value	6.81	6.80
Floristic quality index	38.50	43.00
Sample points with plants	393	435

- **Nine species with increases in frequency of occurrence (FOO)*.**

Species with a significant increase from 2013-2019	P-value
<i>Potamogeton gramineus</i> , Variable pondweed	0.0001
<i>3har asp.</i> , Muskgrasses	7 X 10 ⁻⁵
<i>Potamogeton zosteriformis</i> , Flat-stem pondweed	0.02
<i>Najas flexilis</i> , Slender naiad	0.05
<i>Bidens beckii</i> , Water marigold	0.003
<i>Potamogeton pusillus</i> , Small pondweed	0.0004
<i>Potamogeton strictifolius</i> , Stiff pondweed	0.0006
<i>Potamogeton praelongus</i> , White-stem pondweed	0.003
<i>Polygonum amphibium</i> , Water smartweed	0.01

- **Two species with decreases in FOO*.**

Species with a significant decrease from 2013-2019	P-value
<i>Potamogeton amplifolius</i> , Large-leaf pondweed	0.002
<i>Potamogeton foliosus</i> , Leafy pondweed	0.04

*There are numerous causes for differences, such as identification error. These causes are articulated in the full report.

- **Areas to keep a focus for monitoring.**

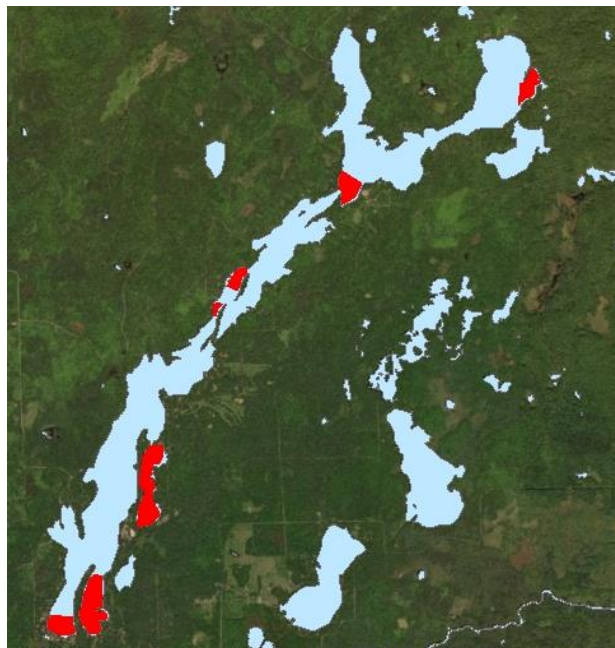


Figure 13: Areas of high concern for AIS susceptibility, Lake Owen. These locations are based upon present plant habitat such is sediment type and coverage of plants. Although Lake Owen has relatively limited locations AIS could be successful, there are some and this maps shows those locations.