

Loon Lake Association

Water Quality and Lake Policy Committee

Aquatic Plant Presence and Diversity Data 1988-2011

November 18, 2011

On the next page is a table showing results from aquatic plant studies performed at Loon Lake by various public agencies and private firms over the past twenty three years. For each study a number indicating the relative presence of each plant species found is shown. Studies were based on as few as three and as many as forty-eight sampling sites.

Trends:

The native aquatic plant population consists of more than eighteen native species. There are two invasive species (the recent lab report by Grand Valley State University found native and not Eurasian watermilfoil). A diverse plant population is less susceptible to invasive species and provides a variety of habitat beneficial to the fishery and waterfowl – as stated in the 2005 study report from the DEQ.

During this time, however some species are increasing in presence, some holding constant and others are decreasing. Species on the increase are Chara algae on the lake floor, three pondweed varieties, and wild celery. Curly leaf pondweed is an invasive and is among the increasing species. Decreasing species are Milfoil, Pickerel weed, Yellow water lily, Bulrush, Southern naiad, four pondweed varieties and Elodea. If more species are decreasing than increasing, we will see a decrease in the diversity of the plant population in the future for the lake. Unnecessary chemical treatment of aquatic plants can contribute to a decrease in diversity.

Floristic Quality Index

A way to measure the diversity based on which plants are native to Michigan was developed in the mid 1990's. It assigns a "coefficient of conservatism" to each plant species with higher values for plants that were prominent before European settlement began in the 1800's.

Definition: Coefficients of conservatism range from 0 - 10 and represent an estimated probability that a plant is likely to occur in a landscape relatively unaltered from what is believed to be pre-European settlement condition. Floristic Quality Assessment with Wetland Categories, Michigan DNR 2001

Using this statistic, the plant studies show an average Floristic Quality Index (FQI) of 20.4 over the five surveys. The more recent studies have somewhat higher index values. The index does not consider the density of each species, only its presence. The more species present with high coefficients of conservatism or C Values produce a higher index. County lake management professionals in northeast Illinois use the FQI for setting priorities. They say by actively managing the plant population, a deep, glacial lake like Loon Lake could reach an FQI in the 30+ range. Diversity of the plant population should be considered as one of the goals for the Loon Lake Aquatic Plant Management program.

Loon Lake Aquatic Vegetation and Water Quality Data

Date of Survey			Sept. 1988	Sept. 1998	Sept. 2002	Sept. 2005	June 2011	Aug. 2011
Surveyor			MI DNR	MI DNR	Lapham Assoc.	MI DEQ	Lapham Assoc.	Lapham Assoc.
Number of AVAS samples			3	30	48	43	48	48
Submerged plants	Scientific Name	C Value	% Vegetation Cover					
EURASIAN MILFOIL	Myriophyllum spicatum	0		39	68			
Northern Milfoil	Myriophyllum sibiricum	10	Found	43		1	29	26
Chara	Chara globularis	Algae	Sparse	12	57	14	38	54
Thinleaf Pondweed	Potamogeton spp.	5			1	F*		
Flatstem Pondweed	Pot. zosteriformis	5	Sparse	21	18	1	F	F
Illinois Pondweed	Potamogeton illinoensis	5		5	11	F		4
Largeleaf Pondweed	Potamogeton amplifolius	6		12	47	2	4	4
Richardson's Pondweed	Pot. richardsonii	5			2		1	1
CURLYLEAF PONDWEED	Potamogeton crispus	0			F		9	3
Sago Pondweed	Potamogeton pectinatus	3		11	F	F	2	4
Whitestem Pondweed	Potamogeton praelongus	8				F	8	7
Wild Celery	Vallisneria Americana	7	Sparse	F	17	3	F	38
Coontail	Ceratophyllum demersum	1		F	4	1	7	3
Southern Naiad	Najas guadalupensis	7		4	10	1	2	1
Common Waterweed	Elodea canadensis	1			28	F	5	F
Water Stargrass	Zosterella dubia	5				F		
Arrowhead	Sagittaria latifolia	1				F	2	F
Emergent plants								
White Water Lily	Nymphaea odorata	6		3	1	1	4	2
Yellow Water Lily	Nuphar variegata	7	Sparse	11	F	F	3	F
Pickerelweed	Pontederia cordata	8	Moderate	6	2	1	F	1
Broad Leaved Cattail	Typha latifolia	1		1	1	1	F	2
Bulrush	Schoenoplectus acutus	5	Moderate	18	3	4	5	2
PURPLE LOOSESTRIFE	Lythrum salicaria	0			F	F	F	F
Star Duckweed	Lemna trisulca	6				F		
Swamp Loosestrife	Decodon verticillatus	7			F	F	F	F
Total Coverage				186	270	30	119	152
Total Native Species			6	14	17	21	19	
Native Floristic Quality Index			17.1	19.7	19.8	23.3	21.9	
* F = Found or less than 0.5%								
ALL CAPS = Invasive Species; Chara not counted in Native FQI								
Water Quality								
Nitrogen					not det		not detected	
Phosphorous					0.014 mg/L		0.020 mg/L (1 site)	
Clarity	Secchi disk depth					13 feet	13 feet	14 feet