

WBIC 38700

**LONG LAKE MACROPHYTE SURVEY**  
**Fond du Lac County**

**1988**

**by Mary Gansberg, Mark Sesing,  
and Carl Molter**

# INTRODUCTION

## Long Lake Macrophyte Survey

A macrophyte survey was conducted on Long Lake during the second week of August 1988.

Long Lake is a medium-sized drainage lake of medium depth in the Town of Osceola, Fond du Lac County, Wisconsin. It has a surface area of 427.3 acres and a water volume of 7,208.6 acre-feet at a surface water elevation of 1,008.06 feet above mean sea level. The Kettle Moraine State Forest borders the east shore of the lake, and the Village of Dundee is located near the lake outlet.

Long Lake has provided fishing, boating, camping and swimming for many years. Provisions for the protection, development and wise use of this resource are important to Long Lake's continued existence as a recreational asset.

Long Lake is an elongated lake with a large central basin. The lake lies on a north-south axis. Tittle Lake, a 16.71-acre basin, is located off the north-west shore of Long Lake on the inlet stream, Watercress Creek. A broad channel of water--about a hundred feet in width--connects Tittle Lake to Long Lake.

Long Lake is located geologically in the terminal moraine of the Green Bay lobe of the Wisconsin glacier. The inlet and outlet walleyes are terraced with outwash sand and gravel.

The deepest points in the lake (47 feet) is centrally located in the basin. The shoreline is mostly bordered by upland, but there are several large wetlands located along inlet stream and scattered along the east and west shores. Maps 1 and 1A illustrate the configuration of the lake basin.

Eleven percent of the lake area is under 3 feet deep, while 41 percent of the lake area is over 20 feet deep. The lake's mean depth is 17 feet. Off the east and west shores is a shelf which extends 200 feet out from the shore-line, then drops sharply into deep water. Off the south and north shores, the lake bottom slopes gradually drop to depths of 20 and 30 feet. The shore development factor is 1.76, indicative of a lake with an elongated shape.

Long Lake has been selected as part of the Ambient Long Term Lakes Study. In order to observe any long-term changes in aquatic macrophyte populations, a survey will be conducted every three years.

## Methods and Procedures

The methodology proposed by the Department was followed as spelled out in the Monitoring Methods for Ambient Long Term Lakes. There was one exception. The depths were in feet rather than meters with the sample depths as follows:

1	-	0	-	1.5
2	-	1.5	-	6
3	-	6.0	-	12.0
4	-	12.0	-	18.0

One full day was spent on the general survey which involved riding around the perimeter of the lake picking out our transects, collecting herbarium specimens, noting the general visible macrophyte growth areas, and last of all, a picture of each sample site was taken.

Our observation of macrophyte specimens were made using a double-headed garden rake. The depth of the maximum weed growth was determined with a Lowrance strip chart.

Twenty-five transects were established approximately 1,000 feet apart. The actual sampling took us two and one-half days. Each sample station was a circle approximately 6-8 feet in diameter, split into quadrants. Each quadrant was sampled by pulling a rake across the bottom toward the boat. A Lowrance strip chart was obtained by starting at about 20-25 foot depth and going toward the shoreline.

## Summary

A large variety of plants were found in Long Lake. Chara and milfoil were by far the most abundant species. Chara was very dense in most areas up to 6 feet of water. The milfoil was found primarily from 6-12 feet of water. There were scattered beds of Amplifolius, Coontail, and Sago.

There were 18 species of plants identified. Most of them were submergent with a few emergent such as cattails and bulrushes. The east shoreline on each side of the state park had most of these emergents.

As you will notice when you look at the macrophyte growth area map, the south end of the lake is very shallow. The growth of chara was so dense, it was impossible to sample in most of the areas even though it has cottages on the west shoreline. It was also impossible to get to the east shoreline north of the state park because of the dense cattail growth.

The maximum rooting depth for the macrophytes was 12-15 feet. Therefore, less than 50 percent of the lake has potential for macrophyte growth.

# LONG LAKE SITE IDENTIFICATION

## Long Lake Macrophyte Survey 8/16/88 -- Carl, Mark and Mary

1. 1,600 feet south of boat landing. Straight across from brown house with red roof. Flag pole south of house.
2. 800 feet south of boat landing, last house end of wetland. Water lily, sedge, cattail, purple loosestrife, from shore to 1.5 feet deep. Maximum weed depth between 12 and 18 feet.
3. Straight out from the south end of the pavilion, 200 feet north of boat landing.
4. 200 feet north of beach, right between the two beaches.
5. Straight across from Mr. Ed's Resort, 1,000 feet from site #4, 700 feet from northern most beach. Some spike rush 2 to 3 feet deep.
6. 700 feet north of site #4. No distinguishing features. Lots of loosestrife between sites #6 and #8. Missed #7.
7. 1,500 feet north of site #6 (missed site #7). From the shore to one foot, sedge and lilies. Lots of jello-like algae growing on the plants.
8. 1,000 feet north of site #8, 200 feet south of beginning of houses right on shore.
9. 1,000 feet of sixth cottage from the end (brown-wood type cottage off shore). Some cattail near shore.
10. 1,500 feet north of site #10. At blue-green house 100 feet back off of shore near brown boathouse.
11. 100 feet north of site #11, just south of the natural inlet, north of the man-made ditch.
12. 1,000 feet west of site #12, right at sandy hill, at the scout camp.
13. Near channel entrance to Tittle (see map).
14. At point south of channel entrance to Tittle Lake.
15. East of two white and green cottages, midway between the two points.
16. Benson's Point.
17. Long cabin (south of Benson's Beach by seven cottages).
18. Between two frame clapboard cottages (old structures), ninth house north of where houses start on map.
19. 400 feet north of Mr. Ed's beach.
20. 1,000 feet south of Mr. Ed's Resort on west shore.
21. Between first and second cottage north of point.
22. Loosestrife at point across from boat landing.
23. First cottage south of first wetland point. Loosestrife everywhere.
24. Site is ninth cottage south of loosestrife wetland point (2,000 feet south of point.)

Macrophytes Identified in Long Lake

*Lemna perpusilla*  
*Nymphaea odorata*  
*Vallisneria americana*  
*Nuphar variegatum*  
*Sagittaria cuneata*  
*Najas flexilis*  
*Chara aspera*  
*Ceratophyllum demersum*  
*Scirpus americanus*  
*Anacharis canadensis*  
*Potamogeton zosteriformis*  
*Potamogeton pusillus*  
*Potamogeton richardsonii*  
*Potamogeton illoensis*  
*Potamogeton pectinatus*  
*Myriophyllum exalbescens*  
*Utricularia purpurea*  
*Filamentous*

CXM:kas  
C\WRS\LONG.CXM

2 LONG LAKE DATA 1988

Station No. & DEPTH	1				2				3				4				5				6			
	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18
Lemna perpusilla																								
Nymphaea odorata																								
Vallisneria americana																							1	
Nuphar variegatum	5																						1	
Sagittaria cuneata												1												
Najas flexilis						1						1				1								
Chara aspera	3	4			5	4				2											5	1		
Ceratophyllum demersum	1					1	1																	
Scirpus americanus	2																						1	
Anacharis canadensis																4								
Potamogeton zosteriformis	1				1							1				1								
Potamogeton pusillus																								
Potamogeton richardsonii												1				3								
Potamogeton illoensis	1				2							1				1	2				2	1		
Potamogeton pectinatus												1				1								
Myriophyllum exalbescens	2	1			2	3	5			3				3				5	2		1	4	1	
Utricularia purpurea	1																							

Species Density: 1. Trace; 2. Sparse; 3. Moderately Dense; 4. Dense; 5. Very Dense

LONG LAKE DATA 1988

Station No. + DEPTH	7				8				9				10				11				12			
	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18
Lemna perpusilla																					1			
Nymphaea odorata																								
Vallisneria americana																								
Nuphar variegatum													1								1			
Sagittaria cuneata																								
Najas flexilis													3	1										
Chara aspera	5				5				5				3	5										
Ceratophyllum demersum																								
Scirpus americanus																								
Anacharis canadensis																								
Potamogeton zosteriformis	1				1				1				1				2				1			
Potamogeton pusillus																								
Potamogeton richardsonii									1															
Potamogeton illoensis	1	1			1				1				2	1			2	1			2	1		
Potamogeton pectinatus	1				1				1															
Myriophyllum exalbescens	2	4	2		2	5	1		1	5	3		3	4			4	5	5		2	5	1	
Utricularia purpurea																								

Species Density: 1. Trace; 2. Sparse; 3. Moderately Dense; 4. Dense; 5. Very Dense

13

14

LONG LAKE DATA 1988

15

16

17

18

Station No. + Depth	13			14			15			16			17			18			
	1.5	6	12 18	1.5	6	12 18	1.5	6	12 18	1.5	6	12 18	1.5	6	12 18	1.5	6	12 18	
<i>Lemna perpusilla</i>																			
<i>Nymphaea odorata</i>																			
<i>Vallisneria americana</i>													1			1			
<i>Nuphar variegatum</i>				2						2									
<i>Sagittaria cuneata</i>																			
<i>Najas flexilis</i>																			
<i>Chara aspera</i>		5								3				4		5			
<i>Ceratophyllum demersum</i>			3			2			3		1	1						1	
<i>Scirpus americanus</i>																			
<i>Anacharis canadensis</i>													1						
<i>Potamogeton zosteriformis</i>					1								3			1			
<i>Potamogeton pusillus</i>																			
<i>Potamogeton richardsonii</i>													2						
<i>Potamogeton illoensis</i>							2				1		2			1			
<i>Potamogeton pectinatus</i>					1		1						2						
<i>Myriophyllum exalbescens</i>					3	4			3	1		1	5	1		1	2	1	3
<i>Utricularia purpurea</i>																			
FILAMENTOUS					3	1						1							

Species Density: 1. Trace; 2. Sparse; 3. Moderately Dense; 4. Dense; 5. Very Dense



19

20 LONG LAKE DATA 1988 21

22

23

24

Station No. & Depth	19				20				21				22				23				24			
	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18
<i>Lemna perpusilla</i>																								
<i>Nymphaea odorata</i>																								
<i>Vallisneria americana</i>																								
<i>Nuphar variegatum</i>								1					2								2			
<i>Sagittaria cuneata</i>																								
<i>Najas flexilis</i>		2				1				2				2				1		1		1		
<i>Chara aspera</i>										1	2			5				5	1			5	1	
<i>Ceratophyllum demersum</i>																		1		1		1		
<i>Scirpus americanus</i>																								
<i>Anacharis canadensis</i>																								
<i>Potamogeton zosteriformis</i>																								
<i>Potamogeton pusillus</i>																								
<i>Potamogeton richardsonii</i>																								
<i>Potamogeton illoensis</i>		1				2	1			2				2				1	1					
<i>Potamogeton pectinatus</i>																								
<i>Myriophyllum exalbescens</i>						4				2	2			1	2	3		1	2	1		1	3	1
<i>Utricularia purpurea</i>																								

FILAMENTOUS

2 1

1

Species Density: 1. Trace; 2. Sparse; 3. Moderately Dense; 4. Dense; 5. Very Dense

25

LONG LAKE DATA 1988

2

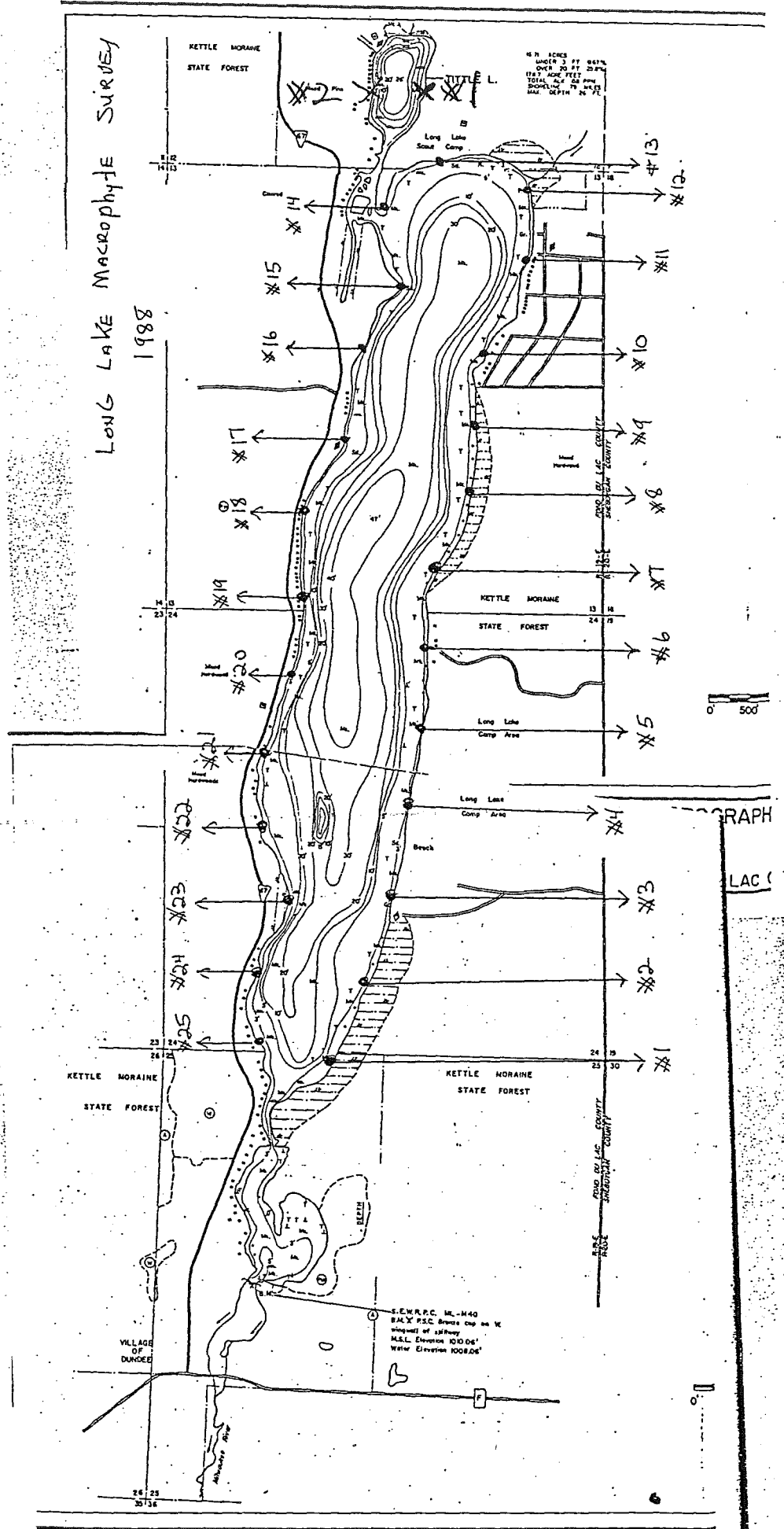
Station No. & Depth	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	1.5	6	12	18	
Lemna perpusilla																	
Nymphaea odorata																	
Vallisneria americana																	
Nuphar variegatum	1								1								
Sagittaria cuneata																	
Najas flexilis																	
Chara aspera	5				.				5								
Ceratophyllum demersum	4	4			1	2			1	1	1						
Scirpus americanus																	
Anacharis canadensis																	
Potamogeton zosteriformis	1				1	1			1								
Potamogeton pusillus																	
Potamogeton richardsonii																	
Potamogeton illoensis					1												
Potamogeton pectinatus																	
Myriophyllum exalbescens	2	1			1	1	5		3	2							
Utricularia purpurea																	
Filamentous	2				1				1								

Species Density: 1. Trace; 2. Sparse; 3. Moderately Dense; 4. Dense; 5. Very Dense

Note: Station 1 & 2 ARE "TITTLE LAKE", which is connected to  
LAKE MILWAUKEE

LONG LAKE

SAMPLE SITES



Long Lake

Macrophyte Potential  
Growth Area Map

LONG LAKE MACROPHYTE SURVEY  
1981

