Department of Natural Resources

INTRA-DEPARTMENT

MEMORANDUM

Green Bay
Station

Cedar Lake Case File

Date February 19, 1975

IN REPLY REFER TO: _____

TO: Lee Kernen

FROM: Brian Belonger

SUBJECT: Cedar Lake - Manitowoc Co. - 1974 Survey Results

Cedar Lake is a 141 acre lake with a maximum depth of 21 feet. It is a landlocked seepage lake in the terminal moraine of the Lake Michigan glacier. The water is clear, hard, and alkaline. The littoral bottom is composed of both gravel and muck.

In an attempt to get as complete a picture as possible of the fish population in Cedar Lake in Manitowoc County, fyke nets, shallow seine, and boom shocker were used for sampling in 1974.

Sampling consisted of 5 fyke nets fished 10 days, from April 10th through 19th, except one net was removed on April 15th because many golden shinners were gilling in the leed. The nets were set when the lake was still partially ice-covered. (Map 1) The shallow seine survey consisted of one pull of 1,700 feet of 14 foot deep seine in the area indicated on the attached map number 2. The boomshocker survey consisted of one trip around the entire shoreline with an A.C. unit, starting at dusk, 7:30 P.M. and ending at 10:00 P.M.

During the surveys a total of 1,188 fish of 14 species were measured and are represented on the attached length frequency table number 1. The fish measured constituted all of the game fish caught and a subsample of other species. The bluegill sample from the boomshocker survey was bias towards larger fish because 2 - 3 inch bluegills which were very abundant during the boomshocker survey, are not well represented in the length frequency table.

Northern pike, walleye, and large mouth bass were floy tagged to provide information on growth and harvest rates.

Sampling of the Cedar Lake fish population dates back to 1945 when three fyke nets were fished on June 26 and 27, 1945, probably by Mackenthun. The other sampling in its order of occurrence were as follows: June 10 - 11, 1953, seine, Probst; April 18 - 25, 1956, 5 fyke nets, Cline; June 1, 1961, seine, Schultz; and July 18, 1961, boomshocker, Schultz. The data from these surveys is represented on the attached tables 2, 3 and 4, and will be discussed under reference to particular species.

No work was done on Cedar Lake for several years because of the closure of the access. The access across the resort on the north shore of the lake was based on the assumption that the town road extended to the water's edge. This was disputed by the owner of the property. On February 20, 1974, a ten-year agreement was obtained from Mr. Raymond Zywicki to maintain access and parking on his property in return for management of the lake. As a result, the above-mentioned surveys were conducted in 1974.

STOCKING HISTORY

Stocking records for Cedar Lake date back to 1934. From then until 1945 when the first sampling was done, the following species had been stocked; large mouth bass, perch, bluegills, sunfish, and walleye pike. The first northern pike were stocked in 1956. In 1973 the Cedar Lake Advancement Association stocked 3,000 walleye approximately 3 - 4 inches long, and 100 northern pike (length unknown). Prior to this time the most recent walleye plant was 1957 when 122 - 7 to 9 inchers were stocked. The most recent northern pike plant was 1966 when 300 - 6 to 16 inchers were stocked.

From 1956 through 1960, 3,292 - 10 to 18 inch long northern pike were stocked in Cedar Lake. This is an annual average stocking rate of 4.6 northerns per acre. The data relating to the effect of this stocking on the panfish population is inconclusive. When comparing the percentage of bluegills six inches and over measured from the shallow seine surveys - 1953 - 1961 - 1974, the 1961 survey produced the highest percentage - 72.0%, 6 inches or over. This corresponds with extensive northern pike stocking. Unfortunately, wind conditions made it impossible to sample the same locations in 1974 as that used in 1961. Location of the seine pull could have an effect on the average size of bluegills. Bluegills are considered here because they comprise most of the pan fish and have the largest number in the samples. A contradiction to the possible beneficial effect of northern pike stocking on the bluegill population is the fact that the highest percentage of bluegills six inches and over from any year was actually produced from the 1974 fyke net survey when 73.6% of the bluegills sampled were six inches and over. This occurred after several years of no northern pike stocking. Gear bias and location differences make comparisons extremely risky.

Walleye

Walleye stocking in Cedar Lake has consisted of 337,930 walleye fry in 1936, 122 7 - 9½ inchers in 1956, and 3,000 - 3 inchers stocked by the Lake Association in 1973. These fish have never shown up well in any of the surveys, indicating no natural reproduction and poor survival of stocked fish. The 1956 fyke net survey by Cline was designed to determine the status of the walleye population resulting from the 1936 plant. The survey failed to produce a single walleye. The only surveys ever to produce walleyes were the fyke net and boom shocker surveys of 1974. Then a total of only 13 walleyes were caught. Except for a 12 incher, probably from the Lake Association plant, the walleyes ranged from 21 to 31 inches long. The length frequency indicates the fish were old and very likely from the last plant in 1956. Several of the larger fish were thin and blind in one or both eyes, also evidence of their age. The fact that only one of the 3,000 walleyes

stocked by the Association showed up, especially in the fall boom shocker survey, leads me to believe there was poor survival on this stocking also.

Large Mouth Bass

Large mouth bass have not shown up well in the three fyke net surveys, but the shallow seine surveys and boom shocker surveys have indicated a good population over the years. Differences in the length frequency distribution are probably related to sampling time and location more than actual changes in the population. The largest single sample of large mouth bass was the 119 caught during the shallow seine survey of 1974. This was followed by the 117 caught by seine survey in 1953. Although only 32 were caught by seine in 1961, the 70 caught by boom shocker the same year indicates the population was better than the seine survey indicated. The total 1974 sample was 175 large mouth from 4 to 20 inches long, with an average length of 8.9 inches. The largest to show up in any surveys were two 21 inchers in 1953.

Pan Fish

The pan fish population is strongly dominated by bluegills, although there are fair populations of black crappie and perch. Small populations of punkinseeds, warmouth, what appear to be punkinseed x warmouth, rock bass, and green sunfish also exist in decreasing order of abundance.

Although the pan fish are not exceptionally large, they are of respectable size. More than one-half of the bluegills from each sample have been six inches long or over, except in 1956 when the sample was small. In 1974, 73.6% of the fyke net bluegills, 53.6% of the seine bluegills, and 70% of the boom shocker sampled bluegills were six inches long or larger. Black crappies have rather consistently ranged from 6.0 to 9.9 inches long, and perch from 5.0 to 8.9 inches long.

MANAGEMENT

Because northern pike natural reproduction does not appear to be supporting as large a population as the lake has potential for and because public access to the lake has been assured for at least ten years, northern pike stocking at a rate of three R L rush lake fish per acre has been re-established. One hundred of these fish have been tagged, as well as 84 of the northerns captured during the fyke net survey in 1974, to follow harvest rates. Stocking will be re-evaluated in several years based on tag returns.

A shallow seine survey should be repeated in several years at both the 1961 and 1974 locations. This would give some insight into the relationship of samples from the two areas for better evaluating the past surveys as well as checking on any possible effects of northern pike stocking on pan fish or large mouth bass populations, since they show up well in shallow seine surveys at Cedar Lake.

BB Brian J. Belonger

BB:jp
attach.

NOTED:

_____ _____
Date

Map 1.

WISCONSIN CONSERVATION DEPARTMENT

LAKE SURVEY MAP

CEDAR LAKE — MANITOWOC COUNTY

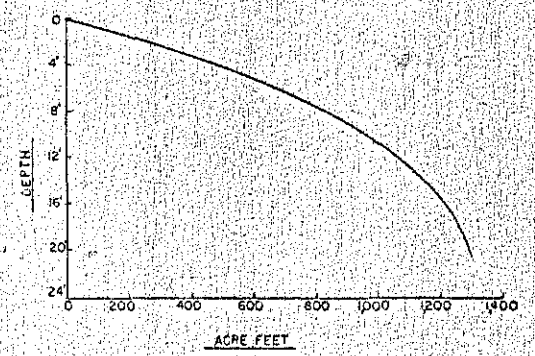
SEC. 23,24 T. 17 N. R. 21 E.

Fyke Net Locations

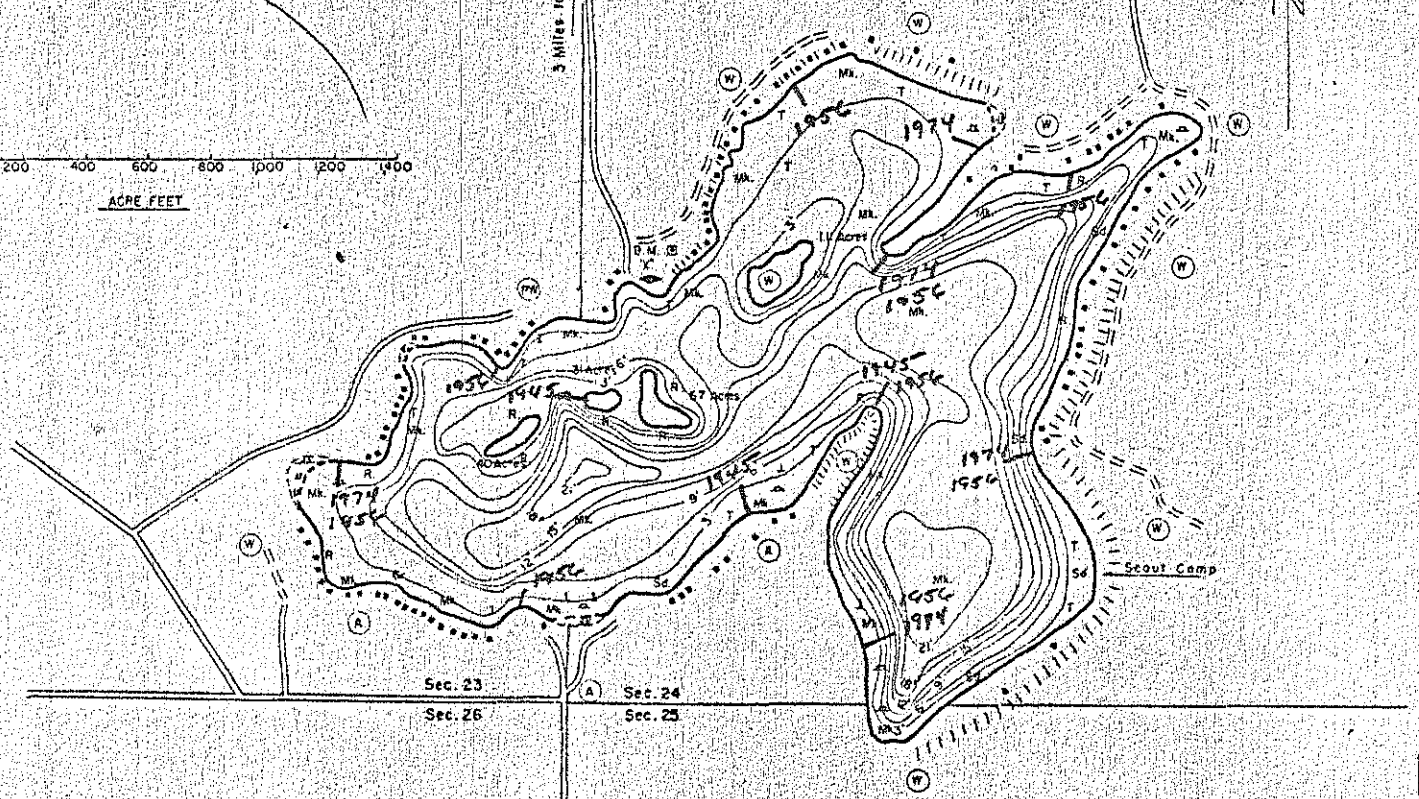
June 26-27, 1945 3 nets

April 18-25, 1956 5 nets - nets moved-all locations given

April 10-19, 1974 5 nets



B.M. 'X' Orange painted steel pipe at high water mark on east edge of public access on north shore.
Assumed elevation 100.00'
Water elevation 96.10'



EQUIPMENT RECORDING SONAR MAPPED AUG 1965 (MO. YR.)

WATER ELEV. 96.10'

TOPOGRAPHIC SYMBOLS

(B) Brush; Steep slope; (P) Partially wooded; Indefinite shoreline; (W) Wooded; Marsh; (C) Cleared; Spring; (P) Pastured; Intermittent stream; (A) Agricultural; Permanent inlet; BM Bench Mark; Permanent outlet; Dwelling; Dam; Resort

LAKE BOTTOM SYMBOLS

P. Peat; Gr. Gravel; Stumps & Snags; Mk. Muck; R. Rubble; C. Clay; Br. Bedrock; M. Marl; T. Submergent vegetation; Sd. Sand; E. Emergent vegetation; St. Silt; Floating vegetation

440' 0 440' 880' 1320' 1760' 2200'
SCALE

◇ Access ◆ Access with Parking ◆ Boat Livery

Field work by M. Schmeige, T. Corbett Drawn by: J. Roth

SPECIES OF FISH

	Abundant	Common	Scarce
Muskie			
N. Pike		X	
Walleye			
L.M. Bass		X	
S.M. Bass			
Panfish		X	
Trout			

AREA 144.3 WITH ISLANDS 141.61 ACRES

UNDER 3FT. 24.2 %

OVER 20FT. 7.5 %

VOLUME 1302.33 ACRE FT.

TOTAL ALK. 115 PPM

SHORELINE 3.57 MILES

MAX. DEPTH 21 FEET

Map 2.

WISCONSIN CONSERVATION DEPARTMENT

LAKE SURVEY MAP

Shallow seine survey locations

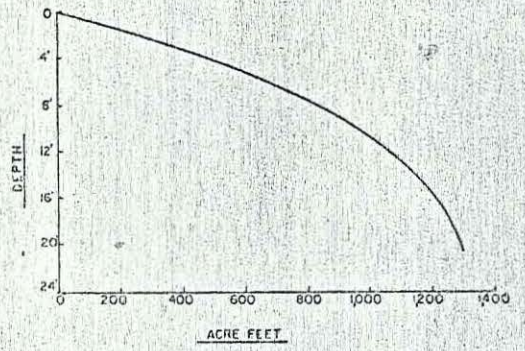
— 1953 June

— 1961 June

— 1974 May 1

CEDAR LAKE — MANITOWOC COUNTY

SEC. 23,24 T. 17 N. R. 21 E.



B.M. 'X' Orange painted steel pipe at high water mark on east edge of public access on north shore.
Assumed elevation 100.00'
Water elevation 96.10'

3 Miles to Rockville

May 6 1974

June 10, 1953

June 11 1953

June 1 1961

Scout Camp

Sec. 23 — Sec. 24

Sec. 26 — Sec. 25

Return - Clean lake
remove weed system
depth -

SPECIES OF FISH	Abundant	Common	Rare
Muskie			
N. Pike		X	
Walleye			
L.M. Bass	X		
S.M. Bass			
Panfish	X		
Trout			

EQUIPMENT RECORDING SONAR MAPPED AUG. MO. 1965 YR.

WATER ELEV. 96.10'

TOPOGRAPHIC SYMBOLS

(B) Brush — Steep slope
(P.W.) Partially wooded — Indefinite shoreline
(W) Wooded — Marsh
(C) Cleared — Spring
(P) Pastured — Intermittent stream
(A) Agricultural — Permanent inlet
BM Bench Mark — Permanent outlet
D Dwelling — Dam
R Resort

LAKE BOTTOM SYMBOLS

P. Peat — Gr. Gravel — Stumps — S. Snags
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440' 0 440' 880' 1320' 1760' 2200'
SCALE

◇ Access ◆ Access with Parking ◆ Boat Livery

Field work by H. Schmude, T. Corbett Drawn by J. Rom

AREA 1443 WITH ISLANDS
141.81 ACRES
UNDER 3FT. 24.2 %
OVER 20FT. 7.6 %
VOLUME 1702.39 ACRE FT.
TOTAL ALK. 116 P.P.M.
SHORELINE 3.57 MILES
MAX. DEPTH 21 FEET

Table 1.

Cedar Lake Manitowoc Co.

Table 1.

DATA SHEET (BOND)
FORM 9500-25

Survey Results 1974

DEPARTMENT OF NATURAL RESOURCES

4/10 - 4/19 Five Fyke Nets
5/6 1,700' of 14' seine
9/23 Boom shocker

Length in inches	No. Pike	Walleye	Large mo. Bass	Blue Gill	Perch	Bl. Crappie	Pumpkinseed	Warmouth	Pumpkinseed X warmouth	Rock bass	Yellow Bullhead	White Sucker	
	M F UNK	M F UNK											
1													9 Carp
2				10			4						24-34"
3				7			3	1	1				3
4			5	17		1	8	1	2	2			Green Sun
5			1	132	4	0	16	3	3	6			2-3"
6			15	214	56	8	6	6	2				
7			34	80	116	52	1	1		1			35 Golden shiner
8			56		24	27				1			
9			31		2	3							3-4"
10			8								1		
11	1		5								1		
12	1	1	3								4		
13	2 3 3		4								3		
14	7 2 3		4								1		
15	9 2		3										
16	2 4		2										
17	3 1		1										
18	2 3											2	
19	4		2									3	
20	5 1		1									5	
21	2 1	1										4	
22	3 1	3										1	
23	4 3	1											
24	10 2	1 1											
25	8												
26	4 1												
27	3 1	2											
28		1											
29	2	1											
30	1												
31	2	1											
32	1												
33	1 1												
Total	107	13	175	460	202	91	38	12	8	10	10	15	47
Ave. Length	20.6	24.5	8.9	6.1	7.3	7.7	5.0	5.8	5.1	5.6	12.7	20.4	
									Grand Total — 1,188				
Fyke nets	97	10	14										
Seine	5	—	119										
Boomshocker	5	3	42										

Cedar Lake Manitowoc Co. Table 2

Length Frequency - %

DATA SHEET (BOND)
FORM 9500-25

DEPARTMENT OF NATURAL RESOURCES

Blue Gill Sample

	Fyke Net 5			Shallow Seine			Boom Shocker		
Length in Inches	June 1945	April 1956	April 1974	June 1953	June 1961	May 1974	July 18 1961	Sept 22 1974	
3.0-3.9								8.1	
3.0-3.9				2.8	4.6	1.5		5.3	
4.0-4.9	4.6	15.4	2.9	4.7	2.5	6.0		.8	
5.0-5.9	33.2	38.5	23.5	33.0	21.1	33.8		17.7	
6.0-6.9	35.9	34.6	44.9	36.2	43.2	43.3		53.7	
7.0-7.9	15.5	11.5	28.7	21.6	24.6	10.4		16.3	
8.0-8.9	10.8			1.7	4.2				
9.0-9.9				<.0					
Sample Size	259	26	136	813	235	201		123	
% 6" + over	62.2	46.1	73.6	59.5	72.0	53.6		70.0	

Black Crappie

3.0-3.9					1.5				
3.0-3.9					.5				
4.0-4.9								33.3	
5.0-5.9					2.0				
6.0-6.9	25.	51.7	4.6		31.5	17.9			
7.0-7.9	33.	31.0	50.0		39.5	64.3		33.3	
8.0-8.9	08.	3.5	40.9	47.4	22.0	17.8		33.3	
9.0-9.9	33.	6.9	4.6	49.1	4.0				
10.0-10.9				3.5					
11.0-11.9		3.5							
15.5		3.5							
Sample Size	12.	29	66	57	200	28		3	
% 6" & Over									

Yellow Perch

3.0-3.9									
3.0-3.9									
4.0-4.9									
5.0-5.9				20.0	60.0	5.0			
6.0-6.9		41.0	36.7	55.0	20.0	17.5		7.7	
7.0-7.9		57.8	62.4	20.0	20.0	62.5		53.8	
8.0-8.9		1.2	.9	5.0		20.0		38.5	
9.0-9.9						2.5			
10.0-10.9									
11.0-11.9									
Sample Size		83	109	20	5	40		13	

Cedar Lake Manitowoc Co. Table 3

DATA SHEET (BOND)
FORM 9500-25

Length Frequency - %

DEPARTMENT OF NATURAL RESOURCES

Large Mouth Bass

Length in inches	Fyke Nets			Shallow Seine			Boom-shocker		
	June 1955	April 1956	April 1971	June 1955	June 1961	May 1971	July 1 1961	Sept 23 1974	
2.0 - 2.9									
3.0 - 3.9									
4.0 - 4.9				6.8		11.1	21.4		
5.0 - 5.9				11.1			1.4	2.4	
6.0 - 6.9				4.3	15.6	11.8		2.4	
7.0 - 7.9	25.0		21.4	6.0	12.5	29.2	15.7	2.4	
8.0 - 8.9	66.7		35.7	6.8		33.3	11.4	21.4	
9.0 - 9.9		16.7	14.3	26.5	21.9	15.1	5.7	26.2	
10.0 - 10.9				30.8	15.6	2.5	14.3	11.9	
11.0 - 11.9	8.3			2.6	3.1	.8	5.6	2.5	
12.0 - 12.9			7.1	1.7	9.4	.8	4.3	2.4	
13.0 - 13.9			7.1		3.1	.8	4.3	4.8	
14.0 - 14.9			7.1		3.1		5.7	7.1	
15.0 - 15.9		50.0			3.1	.8	4.3	4.8	
16.0 - 16.9				.9	3.1	.8	1.4	2.4	
17.0 - 17.9		16.7	7.1						
18.0 - 18.9				.9	3.1		1.4		
19.0 - 19.9		16.7			6.3	.8		2.4	
20.0 - 20.9						.8			
21.0 - 21.9				1.7					
Sample Size	12	6	14	117	32	119	70	42	
% over 11"				5.2	31.2	4.8	21.4	23.9	

Northern Pike

11								1	
12			1.0						
13			6.2		5	1		1	
14			12.4		1				
15			9.3	60.0	1				
16			4.1	20.0	1	2	1		
17			2.1		1	1	1		
18			2.1		1		1	2	
19			4.1	20.0	1		1		
20		1.6	6.2		1		2		
21		4.8	3.1						
22		13.1	4.1		1				
23		16.4	7.2						
24		6.6	12.4						
25		1.6	8.2						
26		3.3	5.2						
27		16.4	4.1						
28		4.9							
29		11.5	2.1						
30		11.9	1.0						
31		3.3	2.1			1			
32			1.0						
34			2.1						
Sample Size		61	97	5	13	5	6	5	

DATA SHEET (BOND)
FORM 9500-25

DEPARTMENT OF NATURAL RESOURCES

Cedar Lake Manitowoc Co. Table 4

Misc. Species

Species	Fyke Nets Number			Shallow seine			Boom shocker		
	June 1945	April 1956	April 1974	June 1953	June 1961	May 1974	July 1961	Sept. 1974	
Pumpkinseeds		21	2	5	9	15		21	
Warmouth	14		3	12			1	9	
Rock bass	14	1	2					2	
White bass	2								
White sucker		53	15						
Yellow Bullheads	7		10		1			1	
Green sunfish								3	
Goldfish			4					3	
Carp					6		18	6	
Brown Bullheads					1				
							1		
							1		
							1