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CISCO LAKE

Gogebic County (T44, 45N, R41W, Sec. 4,5,8,9,32,33)
Surveyed June, 1992

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Environment

Cisco Lake is located approximately 13 miles southwest of Watersmeet in Gogebic County and is part of the Cisco Lake Chain. The lake is 506 acres in size and has a maximum depth of 20 feet (see map of Cisco Lake). Aquatic vegetation is abundant and consists mainly of submergent and emergent types. Additional fish cover in the lake includes logs and rocks. The shoals are gradual in flooded areas but quite steep in the main basin and are composed primarily of sand in the main basin and pulpy peat in the remaining areas. Spawning substrate is sufficient for the reproduction of all species inhabiting the lake. The state maintains a public access site on the northeast shore. There are inlets from both Thousand Island Lake and Lindsley Lake. The lake outlets to the north and is the origin of the Cisco Branch of the Ontonagon River.

Being a part of the Cisco Lake Chain, the water level is held artificially high by a dam on the outlet of Cisco Lake. The dam was constructed sometime prior to the 1930s and probably originated as a logging dam. In 1937 the Copper District Power Company purchased the dam and subsequently, in 1948, the Upper Peninsula Power Company purchased the dam. The purpose of the dam to this day is to provide water for power generation at Victoria Dam many miles downstream on the Ontonagon River. The elevated water level also permits the passage of boat traffic through several lakes in the Chain which would not be otherwise possible.

During the late 1930s, a structure known as a Barr Fish Lock was installed on the downstream side of the dam to lift fish from the river below into the lake. It met with limited success and is not operable at this time.

Chemical-physical parameters of the lake, measured since 1971, include pH readings between 6.8 and 7.8, Secchi disk readings of 4.6 to 14.0 feet, and an methyl orange alkalinity of 54 ppm (1971). The lake appears to be homothermous most of the time and sufficient oxygen is present for fish at all depths.

Fishery Resource

Cisco Lake has a history of fish management dating back to the early 1930s. Several species of fish, including yellow perch, walleye, and rainbow trout have been stocked through the years.

Walleye fingerlings were stocked annually from 1982 to the present, except for 1990 and 1991 when no plants were made. Most were sponsored by the Cisco Chain Riparians Association. Fry plants were made in 1985 and 1986. The most recent plant of 28,000 fingerling walleyes was made in 1992 by the MDNR.

Fishery surveys have generally found quite good populations of walleye, smallmouth bass, bluegill, yellow perch, and rock bass. Northern pike also inhabit the lake, but complaints have occurred over the years of numerous small pike and presently there is no size limit for that species. Occasionally, muskys have been reported. In general, the fishing on Thousand Island, as well as the rest of the lakes in the Chain, has been quite good.

In recent years, surveys were conducted in July 1988, May 1990, and June 1992. Fyke nets were used to sample the fish population. The nets were fished for 2 days in 1988 and 1990 and for 3 days in 1990.

These closely spaced surveys have enabled us to track changes that have taken place since a survey in 1975. Walleyes, the primary predator here, have shown an increase in size (15.9 inches to 18.0 inches) during this time period. However, their relative abundance has declined from 26.6% by weight of the catch in 1975 to 16.5% in 1992. Their numerical abundance (CPE) dropped to 2.7 walleye per net-night in 1992. This is a substantial drop from a CPE of 8.6 in 1990. Walleye CPE was 4.9 in 1975 and 3.1 in 1988.

In the spring of 1991, members of the Lac Vieux Desert Indian tribe began spearing this lake. A total of 88 adult walleyes were speared with an average length of 16.3 inches. The lake was again speared in 1992 and 114 walleyes were harvested; they also averaged 16.3 inches. A safe spearing quota of 117 fish has been set for 1993.

The bluegill and pumpkinseed population has dramatically increased in recent years. Combined, they only represented 8.1% of the collection by weight in 1975 compared to 44.1% in 1992. The average length of the pumpkinseeds has remained stable during this period. On the other hand, bluegill average size increased from 6.5 inches in 1975 to 7.5 inches in 1990 but declined to 6.0 inches in the most recent survey.

In order to evaluate the bluegill population in Cisco Lake, the method detailed in Schneider (1990) was used. The bluegill catch for surveys from 1971 to the present were examined and scored. The results are as follows:

Month-Year	**Gear**	**Score**	**Ranking**
Sept-1971	Fyke	5.5	Good-Excellent
Sept-1975	Fyke	5.0	Good
July-1988	Fyke	6.0	Excellent
May-1990	Fyke	5.7	Excellent-Good
June-1992	Fyke	4.2	Satisfactory

Using this method to evaluate survey data, the bluegill population still appears to be in decent shape. However, the number of large fish in the population is declining while abundance is increasing (Tables 1 and 2). There are various reasons for this, among them sampling variability. Increased sportfishing harvest may also be a contributing factor. Lowered predator abundance could be allowing excessive numbers of small bluegills to survive. Future surveys will allow us to track developments in the panfish community.

Yellow perch relative abundance has declined from 33.2% by weight in 1975 to 10.6% in 1990 and 11.1% in 1992. Perch have been replaced by expanding bluegill and pumpkinseed populations. The large walleye population that was present in the lake in the late 1970s and early 1980s was probably responsible for most of the decline. We suspect that perch numbers will rebound now that walleye numbers are low.

Northern pike size and abundance has stayed fairly constant from 1975 to 1992. They remain small and slow growing. There is no size limit on pike in the Cisco Chain.

Northern muskellunge are also native to the Cisco Chain and occasionally trophy specimens are taken. Single individuals were collected in the 1990 and 1992 surveys. Both largemouth and smallmouth bass numbers continue to be low.

Black crappie were found during the 1988 survey but were not encountered in 1975. Their population seemed to be increasing in the 1990 survey when they represented 8.7% by weight of the collection. But their relative abundance declined to 3.8% in the most recent survey. Average size has ranged between 9.1 and 11.0 inches.

Rock bass and brown bullhead have always been found in the lake, and their numbers and biomass have remained quite constant over the last 17 years. They are not anywhere near nuisance levels. White suckers are just about nonexistent, being taken in only the 1988 survey.

In general, it appears that the bulk of the fish populations are holding up fairly well over time although bluegill and sunfish populations are filling in where the perch has declined. Fishing opportunities on Cisco Lake, as well as the rest of the lakes in the Chain, have been quite good and should remain so.

Management Direction

A. Current management:

   Cisco Lake has a generally well-balanced fish community comprised of a variety of gamefish. It is producing a decent fishery at the present time. However, if future surveys show the predator biomass continuing to decline, additional fingerling walleye stockings are recommended. The primary predator is the walleye and a close watch should be maintained to assure this population is reproducing and healthy. If their abundance goes lower, the fish community of

the entire lake will be adversely effected. Surveys should be conducted at least every 3 years on this large, important lake.

B. Goals and expectations:

The management goal for Cisco Lake is the same as for the entire Cisco Chain, that being to maintain well-balanced and diverse species complexes in these lakes to provide good fishing for all user groups. To accomplish that goal, it may be necessary to stock fish (notably walleye) and to periodically manipulate the populations of species which may become overabundant or stunt (bluegill, perch, rock bass, etc.). Specific goals include:

1. Maintain the predator biomass at 30%, to provide an attractive sport fishery and control undesirable species while maintaining a balanced panfish community. Predators include walleye, northern pike, smallmouth bass, largemouth bass, and northern muskellunge.

2. Maintain high average size of panfish. Minimum targets are 7.0 inches for bluegill, 10.0 for black crappie, and 8.0 for yellow perch.

3. Determine if the walleye population is sustaining itself through natural reproduction.

C. Obstacles to attainment of goals:

Keeping a healthy population of walleyes in this lake is essential to maintaining the fish community in a well-balanced condition. If excessive numbers of this predator are withdrawn from the lake, for whatever reason, panfish species may become overabundant. Natural reproduction also appears to have declined over the last several years. This may be due to normal year-to-year variation but might be an indication of some other problem.

Report completed: March 1, 1993.

References

Schneider, J.C. 1990. Classifying bluegill populations from lake survey data. Michigan Department of Natural Resources, Fisheries Technical Report 90-10, Ann Arbor.

Table 1. Number, weight and length indices of fish collected from Cisco Lake with 3/4 inch mesh fyke nets, June 16-18, 1992.

Species	Number	CPE	Percent by number	Weight (pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
Walleye	43	2.7	2.3	92.1	16.5	10-27	18.2	81
Northern pike	35	2.2	1.9	75.8	13.6	10-28	17.7	100[3]
Largemouth bass	14	0.1	0.1	2.6	0.5	12-15	14.0	100
N. Muskellunge	1	0.1	0.1	0.6	0.1	13.5	13.5	0
Bluegill	700	43.8	38.0	119.4	21.4	4-8	6.0	53
Pumpkinseed	588	36.8	31.9	126.3	22.8	4-7	6.3	74
Yellow perch	247	15.4	13.4	61.9	11.1	5-12	7.9	86
Black crappie	33	2.1	1.8	20.9	3.8	5-13	9.9	85
Rock bass	100	6.3	5.4	20.8	3.7	4-8	6.4	72
Brown bullhead	95	5.9	5.2	36.3	6.5	6-13	9.2	94
Total	1,844		100.1	556.7	100.0			

[1] Note some fish were measured to 0.1 inch, others to inch group: e.g., "5" = 5.0 to 5.9 inches; "12" = 12.0 to 12.9 inches; etc.
[2] Percent legal size or acceptable size for angling.
[3] No size limit on pike in this lake.

Table 2. Number, weight and length indices of fish collected from Cisco Lake with 3/4 inch mesh fyke nets, May 21-24, 1990.

Species	Number	CPE	Percent by number	Weight (pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
Walleye	69	8.6	10.4	94.1	26.6	7-26	15.1	43
Northern pike	37	4.6	5.6	31.0	8.7	11-22	15.8	100[3]
Smallmouth bass	5	0.6	0.8	8.4	2.3	10-16	13.5	80
Largemouth bass	1	0.1	0.1	0.8	0.2	11.5	11.5	0
N. muskellunge	1	0.1	0.1	23.0	6.5	46.5	46.5	100
Bluegill	106	13.2	16.0	35.7	10.1	3-9	7.5	81
Pumpkinseed	44	5.5	6.6	11.7	3.3	5-8	6.6	78
Yellow perch	142	17.8	21.4	37.8	10.7	5-12	8.1	85
Black crappie	74	9.2	11.2	30.8	8.7	6-11	9.1	96
Rock bass	89	11.1	13.4	29.6	8.4	5-9	7.4	93
Brown bullhead	95	11.9	14.3	51.5	14.5	6-13	9.5	98
Total	663		99.9	354.4	100.0			

[1] Note some fish were measured to 0.1 inch, others to inch group: e.g., "5" = 5.0 to 5.9 inches; "12" = 12.0 to 12.9 inches; etc.
[2] Percent legal size or acceptable size for angling.
[3] No size limit on pike in this lake.

Table 3.-Average total length (inches) at age, and growth relative to the state average, for three species of fish sampled from Cisco Lake with 3/4 inch mesh fyke nets, May 21-24, 1990. Number of fish aged is given in parentheses. All fish aged by spine analysis.

	Age										Mean growth
Species	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XIV**	**index[1]**
Walleye	9.0	12.1	13.7	14.9	17.6	19.0	17.9	20.0	24.0	26.5	-1.9
	(7)	(8)	(8)	(9)	(2)	(5)	(4)	(1)	(2)	(2)	
State Average	10.4	13.9	15.8	17.6	19.2	20.6	21.6	22.4	23.1	---	
Smallmouth bass	---	---	12.5	12.3	15.8	---	---	---	---	---	---
	---	---	(1)	(1)	(2)	---	---	---	---	---	
State Average	---	---	12.6	14.4	15.3	---	---	---	---	---	
Largemouth bass	---	---	11.8	---	---	---	---	---	---	---	---
	---	---	(1)	---	---	---	---	---	---	---	
State Average	---	---	11.6	---	---	---	---	---	---	---	

[1] Mean growth index is the average deviation from the state average length at age.

Table 4.-Estimated age frequency (percent) of three species of fish caught from Cisco Lake with 3/4" fyke net, May 29-31, 1990.

	Age										Number
Species	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XIV**	**caught**
Walleye	15	17	17	19	4	10	8	2	4	4	48
Smallmouth bass	---	---	25	25	50	---	---	---	---	---	4
Largemouth bass	---	---	100	---	---	---	---	---	---	---	1

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Questions, comments and suggestions are always welcome! Send them to tinchert@michigan.gov