Caribou Lake

Chippewa County, T42N R04E Sec. 31
Caribou Creek watershed, last surveyed 2006

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Environment

Caribou Lake is an 828-acre natural lake located in southeastern Chippewa County, about five miles west of DeTour Village. Maximum depth is about 20 feet, while most of the lake is less than 10 feet deep. Water levels are augmented by a lake-level control structure located at the lake's outlet at the south end of the lake. The court order mandates that the lake level be set at 638 feet above sea level from late April to early June, 637.5 feet from June to November, and 637.25 feet from November to April. Goetz (1985) reported that the reason for this unusual pattern of lake level controls was to flood a marsh area in the northwest corner of the lake for pike spawning. A public access site with a courtesy pier is located at the north end of the lake. The site is operated by the Department of Natural Resources Parks and Recreation Division and includes a hard-surfaced ramp with sufficient water depth to accommodate most trailerable boats.

History

Caribou Lake fisheries management dates back to 1937, when attempts were made to introduce bluegills and largemouth bass (Table 1). This continued until 1945, when it was recognized that the plants failed to contribute anything to the fishery.

The lake was mapped by the DNR Institute for Fisheries Research in 1952. The first fish survey was completed in 1953, and documented populations of smallmouth bass, rock bass, pumpkinseed, yellow perch, walleye, and northern pike. Growth rates for most species were reported to be average for the state of Michigan.

A public access site on Caribou Lake was constructed in 1960. An interview with an angler that year revealed that an unknown party stocked 15,000 brown trout in Caribou Lake in the summer of 1959. Pumpkinseeds were reportedly large and provided a good fishery. Northern pike were also noted as being mostly small and walleye averaged about two pounds.

A gill net and fyke net survey was conducted in 1964. Results showed that rock bass, northern pike, and walleye growth were all above the state average, while yellow perch were growing at about the state average. No pumpkinseeds were captured during the 1964 survey.

Angler reports from the mid-1960s indicated that the ice fishery for walleye was good, and that the open water fishery for walleye and pike was variable. Anglers also noted that walleye, smallmouth bass, perch, and northern pike were abundant during this time-period.

Construction of a pike spawning marsh on the north side of the road with a control structure that could be maintained at the road culvert was suggested. Several sites were inspected to determine the best

location for a spawning marsh. The site with the best potential was thought to be a small marsh north of Lake Shore Drive and just west of the public access site.

A trap net survey was conducted on Caribou Lake in April 1967, followed by a gill net and seine survey in June. Species composition was similar to previous surveys, with the addition of pumpkinseed. Rock bass, walleye, pumpkinseed, and yellow perch were the most abundant species in the catch, and small yellow perch were abundant in a seine haul. Growth was generally at or above state average for the gamefish species.

Tiger muskellunge (tiger musky), which are a hybrid cross between muskellunge and northern pike, were first stocked in Caribou Lake in 1967. Tiger musky were chosen to be planted for a number of reasons, including catchability (they are easier to catch than pure musky); growth potential; and the ability to raise them more intensively and reliably than pure musky (J. VanAmberg, MDNR, personal communication).

Fishing was reportedly good in 1968, although a complaint about the tiger muskies hitting too much was received.

A general netting survey conducted in 1970 resulted in the capture of tiger muskies, northern pike, walleye, and smallmouth bass. All were observed to be in good condition, but pike reproduction was noted as minimal. During this time-period, a few complaints were received about the tiger musky eliminating the perch and pumpkinseed sunfish, but other anglers were pleased with the tiger musky fishery. Good musky fishing was also reported in 1972, with fish up to 40 inches being caught.

A Caribou Lake fish kill was reported in August of 1973, when water temperatures reached nearly 80 degrees F. This fish kill included only white suckers.

A general survey using trap and fyke nets was conducted in 1974. A meager population of northern pike, moderate numbers of walleye, smallmouth bass and pumpkinseed sunfish, and good numbers of yellow perch and rock bass were observed. Growth rates of all game fish were near or above state average. Anglers reported good musky fishing success but only fair success for all other fish species.

Caribou Lake Association was formed in 1975. The Association currently has 49 active family memberships, and holds 3 formal meetings a year, in addition to work bees for maintenance and upkeep of the lake level control structure (C. Hiney, Caribou Lake Association, personal communication).

Growth rates of yellow perch caught in a 1979 boomshocking survey were below average, while walleye growth rates were acceptable. A 1981 survey showed that all fish species were growing at or above state average with the exception of tiger musky. The high numbers of predators in the lake were credited with keeping the panfish growth and numbers in balance. The gamefish populations were noted to be in excellent condition.

Another summertime fish kill was reported in 1983, and was limited to juvenile yellow perch, pumpkinseed, and large white suckers. This fish kill was attributed to low water levels, high water temperatures, and associated low dissolved oxygen.

Boomshocker surveys were conducted on Caribou Lake in 1984 and 1988. Walleye growth was observed as poor in 1984, but had improved by 1988. Natural reproduction of walleye in Caribou Lake was noted for the first time in the 1988 survey. Walleye growth in 1991 was above average and had improved to one inch above state average in 1992.

A general survey to evaluate walleye and tiger musky introductions was conducted in 1986. The tiger musky and pike populations were reported to be stable since the 1981 survey. Numbers of small yellow perch had declined.

A manual removal of white suckers was conducted by the Caribou Lake Owners Association in 1989, 1990, and 1991, using nets loaned by Fisheries Division. A total of 3,201 suckers, weighing about 10,461 pounds were removed from the lake over this time-period.

A general survey was conducted in 1991. It was recommended that the tiger musky plants be discontinued due to poor catch reports and none showing up in the DNR fish surveys. The tiger musky program was also discontinued statewide in 1991 for the same reasons, as well as a lack of funding for maintaining the facility where they were raised (J. VanAmberg, MDNR, personal communication). Natural reproduction of walleye was reportedly strong, with year class abundance equal between stocked and non-stocked years. It was therefore recommended that the walleye stocking program be discontinued and the fishery re-evaluated in 1996. The recent manual removals significantly reduced the sucker population, such that sport fish comprised 99% of the catch. A walleye population estimate was conducted as part of the 1991 survey and resulted in an estimate of 2,487 legal size walleye or about 3.0 per acre.

A Sern's index boomshocker survey was conducted in 1992 to evaluate walleye recruitment. Large numbers of naturally-produced walleye were caught (123 YOY per mile), but the forage base was almost non-existent. Angler reports for walleye fishing were very good, but it was unknown whether the forage base could sustain such a large population.

In 1992, walleye were observed growing at one inch above the state average. By 1994, and in the absence of adequate forage to sustain them, walleye growth had declined to over one inch below the state average. This is a net reduction in walleye growth in excess of two inches in approximately two years.

Another general survey of Caribou Lake was conducted in 1995. Predators continued to dominate the fishery and comprised 62 percent of the survey catch. Walleye alone comprised 54 percent of the catch and walleye growth was noted as poor and nearly two inches below the state average.

A boomshocking survey in 1997 resulted in the collection of 55 young-of-the-year walleye in difficult survey conditions. These conditions included strong winds and poor visibility in the water.

A general survey of Caribou Lake was conducted in 2000, using fyke nets, trap nets, and gill nets. Predatory fish comprised 62 percent of the catch (by weight) during the survey. The presence of a few suckers was encouraging, and pumpkinseed sunfish and rock bass numbers had increased considerably since the last survey conducted in 1997.

Current Status

A general survey of Caribou Lake was conducted in June of 2006. The purpose of this survey was to investigate recent complaints of poor fishing. A total of 2,895 fish were captured, representing 8 species (Table 2). Total survey effort consisted of 14 large mesh fyke net lifts and 11 large mesh trap net lifts.

The catch was dominated by small rock bass, pumpkinseed sunfish and yellow perch that averaged 4-5 inches (Table 3). Walleye, northern pike, and smallmouth bass made up 5.7% of the catch by number and 28.4% of the catch by weight. This reflects a significant change when compared with the 1995 survey where 62% of the weighted catch was comprised of predator fish. While the lake appears to be overrun with small panfish, its predator-prey balance is still recovering from the intense management of the 80s and early 90s. The large number and size range of suckers, in combination with the abundant small panfish, indicate that the lake is now predator-poor.

Several 7-9 inch walleye were observed during this survey indicating that natural reproduction is still occurring. However, it was later discovered that some individuals had stocked fall fingerling walleye in 2005 without notifying the Department of Natural Resources. The Caribou Lake Association stocked 840 fall fingerling walleye (6-8 inches) in November 2006 with a permit from the DNR. Fish stocked at this size should be large enough to avoid predation by the abundant panfish population that existed in this lake in 2006. Walleye Age-1 to Age-14 were captured during this survey, although several year classes were missing (Table 4).

Analysis and Discussion

The high catch rates and abundance of predator fish that existed in Caribou Lake in the 1980s and early 1990s were unsustainable. There simply was not enough forage to sustain this fishery. Additionally, this problem was exacerbated by the manual removal of suckers during that same time period. Caribou Lake continues to slowly return to a balanced condition relative to predator and prey abundance This can be assisted by the stocking of walleye fingerlings in alternate years. Missing year classes of walleye indicate that natural reproduction is occurring but is not consistent.

A total of 130 smallmouth bass were captured during the 2006 survey and they ranged in size from 4 to 18 inches. Nearly 12% were over 14 inches or legal size. Smallmouth appear to be a strong component of the Caribou Lake sport fishery. Only one northern pike was captured during this survey but pike catches using entrapment gear are generally lower during this time of year.

Growth rates for all fish analyzed were below the state average, but that is not unexpected considering how far north this lake is located. Growth rates, particularly those of predators, are generally below state average in larger lakes throughout the state (P. Hanchin, DNR, personal communication).

Management Direction

One of the most important management actions to focus on in the future is to protect riparian habitat.

Wetlands contiguous with Caribou Lake and flooded vegetation represent important spawning habitat for northern pike. This habitat should be protected to not only provide spawning and nursery habitat for fish, but to also provide habitat for amphibians and reptiles and filter sediment and water-borne pollutants before they are allowed to reach the lake. Natural shoreline vegetation and large woody debris are also important lake habitat types and should also be protected and preserved.
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A walleye stocking program should be initiated for Caribou Lake at the rate of 50,000 spring fingerling walleye (60/acre) every other year. Follow-up fall walleye recruitment surveys should be conducted to monitor stocked fingerling survival as well as natural reproduction. Previous surveys have shown that walleye natural recruitment can sometimes be high in this lake. If natural recruitment is observed to be significant, an adjustment in the subsequent number of walleye fingerlings stocked can be made.

The current lake level management regime may be detrimental to the fish community. The higher water levels currently mandated for April through June, followed by a drawdown in June, were established to provide spring spawning habitat for northern pike. While this is accomplished, the mid-summer drawdown has the potential to increase water temperatures and decrease dissolved oxygen during the summer. Several summertime fish-kills have been observed on this lake and they may be attributed to the water level manipulations currently taking place. MDNR Fisheries Division would support and prefers a fixed-crest lake level operation on Caribou Lake. Such a structure would mimic natural water level fluctuations with the highest lake water levels occurring in the spring. Current lake levels suggest that the 638-ft. level may be appropriate for the fixed crest elevation.

References

Goetz, S.F. 1985. History of Caribou Lake. 12 pp.

Table 1. Stocking history for Caribou Lake, Chippewa County.

Year	Species	Number stocked	Life stage / avg. size
1938	Bluegill	15,750	4 month
1938	Smallmouth bass	142	adults
1939	Bluegill	20,000	4 month
1939	Largemouth bass	1,500	4 month
1940	Bluegill	9,000	3 month
1940	Black Bass	750	3 month
1941	Bluegill	18,000	4 month
1967	Tiger Musky	3,746	Fingerling
1968	Tiger Musky	2,000	Spring fingerling
1969	Tiger Musky	3,500	Fingerling
1971	Tiger Musky	2,000	Fall fingerling
1974	Tiger Musky	1,500	Fall fingerling
1976	Tiger Musky	3,000	Fall fingerling
1978	Walleye	1,550,000	Fry
1979	Walleye	1,000,000	Fry
1979	Tiger Musky	3,200	Fall fingerlings, 5.44 in.
1980	Walleye	1,000,000	Fry
1981	Tiger Musky	3,200	Fall fingerlings, 7.0 in.
1983	Walleye	1,000,000	Fry
1983	Tiger Musky	1,650	Fall fingerling, 7.52 in.
1985	Walleye	1,000,000	Fry
1985	Tiger Musky	1,155	Fall fingerling, 10.40 in.
1987	Walleye	288,256	Fry
1987	Tiger Musky	1,468	Fall fingerling, 11.28 in.
1988	Walleye	33,617	Spring fingerlings, 1.52 in.
1989	Walleye	700,000	Fry
1989	Tiger Musky	2,500	Fall fingerlings, 9.64 in.
1991	Walleye	700,000	Fry
1991	Tiger Musky	2,500	Fall fingerling, 9.36 in.
1992	Bluegill	10,000	Adults

Table 2. Number, percent, length range, and growth of fish species found in Caribou Lake, Chippewa County, Michigan, June 12-15, 2006. Growth is not reported for non-game fish and for species having a small sample size in our collection. Growth is compared to statewide averages.

Common Name	Number	Percent by Number	Percent by Weight	Length Range (in.)	Growth
Black bullhead	17	0.6	2.3	7-13	--
White sucker	43	1.5	9.8	9-22	--
Northern pike	1	<0.1	1.4	31-31	--
Pumpkinseed	776	26.8	13.2	3-6	-0.6
Rock bass	1,596	55.1	41.1	3-10	-0.5
Smallmouth bass	130	4.5	12.2	4-18	-0.6
Walleye	35	1.2	14.8	7-26	-0.1
Yellow perch	292	10.1	5.1	4-10	-0.2

Table 3. Length-frequency distribution of sport fish collected at Caribou Lake during the 2006 general survey.

Length Group (inches)	Northern pike	Pumpkinseed	Rock bass	Smallmouth bass	Walleye	Yellow perch
1						
2						
3		86	160			
4		480	594	12		27
5		187	473	47		174
6		23	204	7		58
7			108	21	1	26
8			49	13	8	4
9			7	3	7	2
10			1	3		1
11				3		
12				1		
13				5		
14				3		
15				3		
16				5	1	
17				2		
18				2		
19					4	
20					1	
21					4	
22					1	
23					4	
24					2	
25						
26					2	
27						
28						
29						
30						
31	1					

Table 4.-Comparison of mean length (inches) at age for various game fishes of Caribou Lake from 1991 to 2006. Number in parentheses represents number aged. Growth comparison in last column was across all ages for 2006. Dorsal spines, in addition to scales, were used to age some of the walleye, northern pike, and smallmouth bass in 2006. Statewide growth comparisons are based on ages with scales.

Species	Age Group	1991 May	1995 June	1999 June	2006 May	2006 growth compared to state average
Northern pike	I	13.0 (1)				
	IV	22.7 (1)	23.6 (1)			
	V	23.3 (2)		31.9 (2)		
	VI	29.0 (1)				
	VIII	32.1 (1)			31.90 (1)	
Pumpkinseed	II		4 (2)	3.9 (12)	3.55 (2)	-0.6
	III				4.43 (22)	
	IV				5.8 (12)	
	V		6.7 (1)		6.3 (4)	
	VI	7.6 (1)				
	VII	7.6 (1)				
Rock bass	II			5.2 (2)	3.59 (9)	-0.5
	III				4.80 (20)	
	IV				6.01 (8)	
	V				6.88 (10)	
	VI				7.71 (7)	
	VII				8.22 (9)	
	VIII				8.77 (4)	
	IX				9.77 (2)	
Smallmouth bass	I		3.4 (12)	5.2 (2)	5.31 (23)	-0.6
	II	6.4 (6)	7.4 (19)	7.1 (32)	7.64 (20)	
	III	9.5 (22)	12.1 (2)	9.6 (23)	9.49 (11)	
	IV	11.6 (12)		12.3 (8)	13.63 (10)	
	V	12.8 (11)		14.0 (7)	15.20 (3)	
	VI	14.7 (1)	15.2 (1)	15.6 (4)	16.05 (4)	
	VII	17.2 (1)	16 (1)		16.95 (2)	
	VIII	18.6 (1)			17.30 (1)	
	IX			18.1 (3)	18.30 (1)	
	X				18.80 (1)	
Walleye	I		6.5 (2)	8.2 (4)	8.83 (17)	-0.1
	II	12.0 (1)	10.7 (2)	11.5 (1)		
	III	15.3 (11)	15.7 (1)	13.7 (5)		
	IV	17.0 (8)	17.9 (2)	16.8 (1)	16.00 (1)	
	V	18.0 (7)	18.3 (4)	17.8 (10)	21.10 (1)	
	VI	19.4 (6)	19.8 (3)	18.7 (8)	19.30 (2)	
	VII	20.5 (5)	20.1 (3)	19.7 (6)	20.11 (5)	
	VIII	21.4 (6)	21.3 (1)	19.4 (7)	22.53 (4)	

Table 4 – cont.-Comparison of mean length (inches) at age for various game fishes of Caribou Lake from 1991 to 2006. Number in parentheses represents number aged. Growth comparison in last column was across all ages for 2006. Dorsal spines, in addition to scales, were used to age some of the walleye, northern pike, and smallmouth bass in 2006. Statewide growth comparisons are based on ages with scales.

Species	Age Group	1991 May	1995 June	1999 June	2006 May	2006 growth compared to state average
Walleye	IX	22.2 (8)		19.9 (3)	21.30 (1)	
	X	21.8 (3)	22.5 (5)		23.50 (2)	
	XI		23.2 (1)	19.2 (1)	23.70 (1)	
	XII	27.1 (1)		23.6 (2)	25.50 (2)	
	XIII			24.8 (1)		
	XIV				26.60 (1)	
Yellow perch	I	3.1 (4)	3.6 (5)	4.1 (2)		
	II	4.4 (12)	5.4 (14)	5.9 (2)	5.52 (30)	-0.2
	III			7.9 (1)	6.59 (12)	
	IV				7.90 (4)	
	V				9.83 (3)	
	VII	11.1 (1)				
Bluegill	II		4.1 (1)			

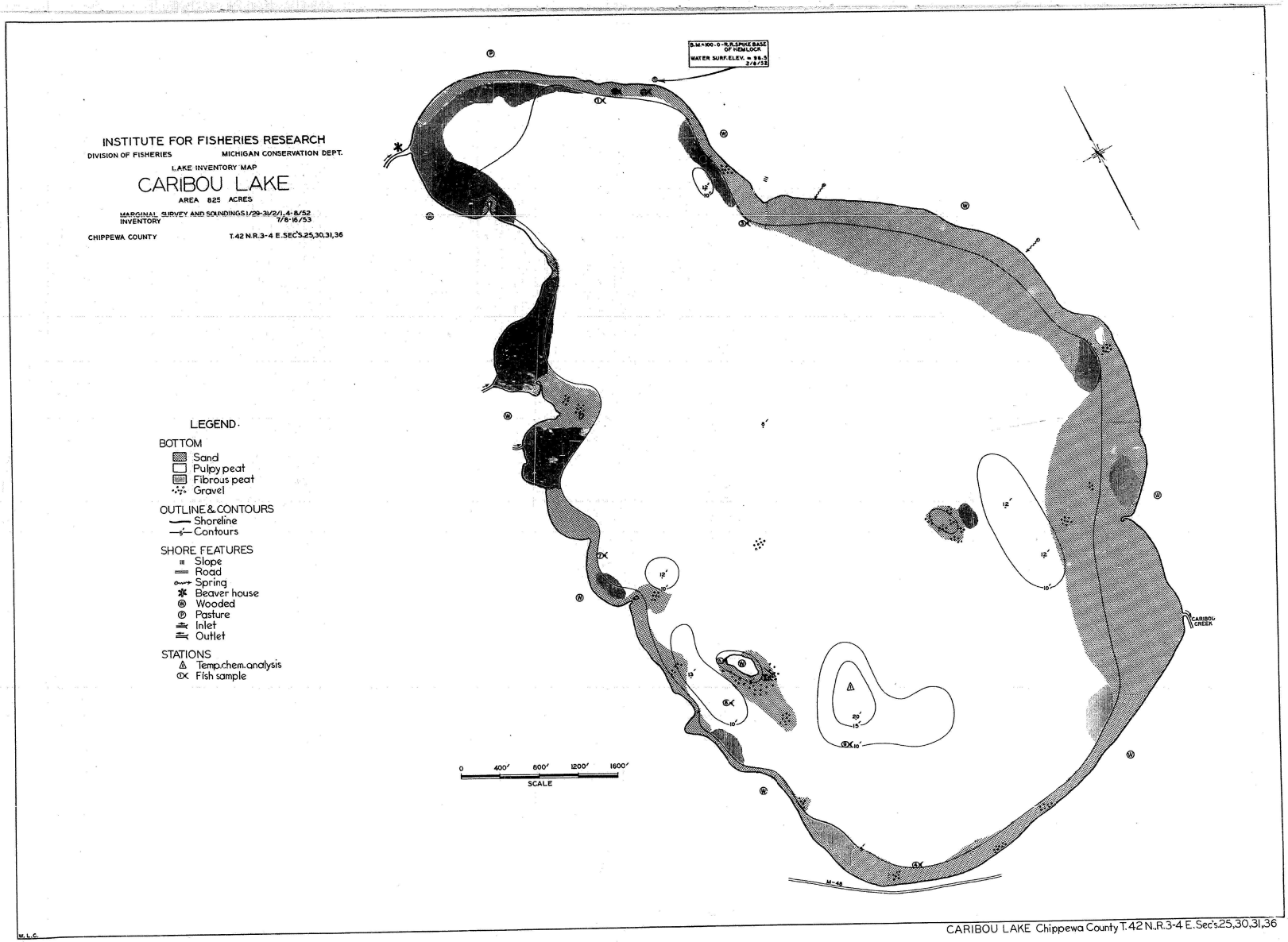

Figure 1. Map of Caribou Lake.