McCollum Lake

Oscoda/Alcona counties
Thunder Bay River watershed, surveyed in 2010

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Environment

McCollum Lake is a 224-acre natural lake located along the border of northern Oscoda and Alcona county in Michigan's northern Lower Peninsula. A small inlet enters the lake along the south shore, while McGinn Creek (a designated trout stream) is the outlet along the north shore. A small control structure exists on the outlet and there is no court established legal lake level. This outlet flows to Wolf Creek which eventually flows to the Lower South Branch Thunder Bay River. The lake has a main basin and a finger connected to the south and separated by a peninsula of land. The shoreline of McCollum Lake is mostly developed with some natural timber in the riparian zone. Lake bottom type consists primarily of sand and muck, with some isolated marl and gravel habitat. Emergent and submersed vegetation is fairly abundant in certain parts of the lake. Water clarity is rated as good and maximum depth is approximately 60 feet, with a large amount of the lake shallower than 30 feet.

Most of the land around McCollum Lake is privately owned except for a small tract of state land along the southwest shore. A state forest campground is located along the southwest shore which is the also the location of a public boat ramp. This hard surfaced ramp provides good boating access and parking for approximately six boat trailers. Little is known about the presence of exotic species in McCollum Lake. No zebra mussels were observed during the 2010 MDNR fish survey. Three Michigan Master Angler awards have been awarded (two largemouth bass, and one bluegill) to anglers fishing McCollum Lake.

History

Stocking records indicate four species of fish were stocked into McCollum Lake from 1922-1945. Such stocking efforts were made prior to managers having good knowledge of the lake morphology and fish carrying capacity. Smallmouth bass adults and fingerlings were stocked in most years between 1922 and 1944. Largemouth bass fingerlings were stocked in 1936, 1941, and from 1943-1945. Bluegill fingerlings or yearlings were stocked annually from 1931-1945, and yellow perch were stocked in most years from 1930-1942.

The first documented fisheries survey for McCollum Lake was in 1927 when Michigan Department of Conservation (MDOC) personnel conducted near-shore seining. Historical surveys were less extensive at this lake compared to other larger local waterbodies. However, the 1927 seining effort resulted in the collection of yellow perch, darters, bluegill, largemouth bass, suckers, and shiners. The survey results led to recommendations to stock walleye and rainbow trout. Aquatic vegetation was considered abundant.

The second documented biological survey for McCollum Lake was in September 1949. The survey was completed by MDOC and involved fish surveying and a limnological survey. The lake alkalinity ranged from 103ppm at the surface to 157ppm at the bottom. This indicated a moderately fertile lake.

The lake pH ranged from 8.4 at the surface to 7.2 at the bottom, and was typical for a northern Michigan lake. The survey biologists noted that sand and gravel were the dominant substrate, with pulpy peat in the organic deep sections. There were 25 cottages on the lake, two boat liveries, and no public access. McCollum Lake was considered by anglers to be a good fishing lake. MDOC personnel used seines to conduct a basic inventory of the fish community. Rock bass, largemouth bass, bluegill and pumpkinseed sunfish were commonly captured, while black crappie yellow perch, northern pike, and walleye were taken in lesser numbers. Non-game fish species such as white suckers and bullheads were abundant.

The next fish community survey was done by MDOC in late-April of 1958. They used shoreline seining to examine the diversity of the fish community. At this time, fishing was considered good by the residents, and winter angling pressure was considered high. Results of the seining showed that the fish community was in good condition. Bluegill were common but slightly thin, and yellow perch and largemouth bass were common in the survey catch. Black crappie were not collected, although angler reports suggest that they were an important component of the fishery. Angler reports and shoreline seining suggested that predators such as northern pike were not abundant in McCollum Lake, and bluegill were common but slow growing. It was believed that increasing the abundance of predatory fish, such as northern pike, would enhance fishing for both predators and their prey (bluegill). As a result, MDOC biologists began reconnaissance and construction of a northern pike spawning marsh in 1961 on the western side of the lake at a small inlet. A drop box was installed in the culvert leading into the lake which created a one-acre northern pike spawning marsh consisting of flooded vegetation. In the first year of its development, managers transferred 17 adult northern pike into the spawning marsh from Higgins Lake (Roscommon County). It was estimated that a successful hatch of fry was made from that broodstock source, which eventually entered the main lake as fingerlings.

In 1963 adult northern pike were netted in McCollum Lake and transferred to the spawning marsh from April 5 through April 13. Forty-nine females, averaging nearly 20 inches in length, and 50 males, averaging more than 18 inches in length, were transferred. An additional five northern pike of unknown gender were also transferred. From 1963-1989 northern pike where intermittently transferred from McCollum Lake to the spawning marsh. These efforts produced variable numbers of spring fingerlings each year (Table 1).

Use of the marsh changed in 1969 when attempts were made by MDOC to raise walleye fry in the marsh instead of northern pike fry. That spring, the pond was fertilized, filled with water, and 100,000 walleye fry were released into the marsh. However, production was considered to be very minimal due to the presence of heavy algae growth and predators such as mudminnows and predaceous beetles. After 1969, the marsh continued to produce northern pike fry from transferred adults.

A more extensive fish community survey of McCollum Lake was made in late July of 1970. Biologists used trap-nets, gill-nets, and electroshocking to survey the fish community. Angler accounts were variable at that time with reports of both good and poor fishing. Some anglers considered bluegill to be "absent" from the McCollum Lake fish community and overall fishing pressure was thought to be high. Fisheries managers considered McCollum Lake to be one of the best bluegill lakes in the region. The survey results showed bluegill to be very abundant, but dominated by a small size structure. Some large bluegill were present. Other species commonly captured were yellow perch, rock bass, black

crappie, pumpkinseed sunfish, green sunfish, largemouth bass, northern pike, and bullheads. No walleye were caught during this survey.

Three fish surveys were made over a three year period from 1983-1985 in McCollum Lake. The first one was done in late August of 1983. Michigan Department of Natural Resources (MDNR) personnel conducted 39 fyke (small and large mesh) net lifts and 6 experimental gill net lifts to examine species composition. Panfish such as bluegill, pumpkinseed sunfish, rock bass, yellow perch, and black crappie were common and growing about average. Very few large bluegill were captured. Largemouth bass were collected in good numbers and exhibited average growth (when compared to statewide averages). Northern pike were abundant but growth rates were very poor. Because of this, the northern pike marsh was not operated for the next two years.

The 1984 and 1985 surveys were done over one night each in June with the purpose of examining bluegill densities and growth rates. Biologists used boomshocking gear to collect fish. Bluegill numbers were good and growth rates were average, which is consistent with what had been observed in historical surveys.

In April 1989, MDNR personnel placed survey nets at the mouth of the northern pike marsh. Fair numbers of pike were collected and some were transferred to the marsh for broodstock. Many other species commonly collected in the past were also collected in this survey.

In October 1991, MDNR personnel electrofished an unknown distance of the lakes shoreline. The purpose of the survey was to evaluate a walleye stocking initiative that occurred in 1988. Only one walleye was collected and it was 15 inches in length. Therefore, survival of the 1988 year class was questioned, and stocking of walleye was discontinued. Fair numbers of bluegill, largemouth bass, and northern pike were also collected, but growth was considered poor for each species. Northern pike growth was considered extremely poor, with fish growing about four inches smaller than the statewide average at age. Yellow perch, pumpkinseed sunfish, and black crappie were also collected in good numbers and growth for these species was considered average.

Current Status

Two fisheries surveys were conducted in McCollum Lake by MDNRE personnel in 2010. The first survey was done immediately after ice-out from March 29 through April 2. The purpose was to estimate the number of northern pike in McCollum Lake and examine their size structure. Pike and walleye were marked during this period with a fin clip. Population estimates for pike in smaller inland lakes are generally lacking throughout Michigan. Having such data for smaller lakes statewide would enable managers to set appropriate size limits for this species. Currently, Fisheries Division is reviewing its regulations for northern pike in Michigan. The second survey was made in the summer and utilized a variety of gear types to examine the entire fish community. During the summer survey, Fisheries Division personnel noted the ratio of marked to unmarked pike and were able to establish a baseline pike population estimate.

After ice out in the spring of 2010, trap and fyke nets were randomly placed around the perimeter of McCollum Lake. Fisheries Division personnel marked 241 northern pike and 49 walleye during this period. Part of a dorsal spine was removed from each fish to serve as the mark. The dorsal spine clip was also used to determine the age of each collected fish. . Northern pike ranging from 11-41 inches

and walleye ranging from 20-30 inches were collected and marked (Table 2). Less than 6% of the pike sampled were legal size (24 inches and larger). Pike 14-22 inches (Table 2) dominated the catch. The age and growth analysis indicated extremely slow growth for this species (Table 3). Overall, pike growth was more than 3 inches slower, by age, in McCollum Lake when compared to statewide averages for this species. This slow growth was also evident for fish age 6 or less (Table 3). Growth is highly variable between the genders in this lake, which is common across Michigan. Female northern pike typically grow faster and obtain larger sizes than male northern pike. Pike may reach legal size in McCollum Lake anywhere after age 4, and is gender dependent.

A total of 49 pike were collected during the recapture run (summer part) of this population estimate. Fourteen northern pike had already been tagged in the spring survey, while an additional 35 were unmarked. Using a Chapman-Peterson population estimate, we estimated 467 pike (of sizes we caught) in McCollum Lake at the time of the summer survey, with only 15 legal sized fish (24 inches and larger). The estimated density of northern pike 14 inches and larger in McCollum Lake was 2.0 pike/acre. This is slightly lower (3.3/acre) than the estimate of the same size pike at 25 medium and small lakes across Michigan (Kregg Smith, MDNRE, personal communication) but is still very good and acceptable. However, the estimated density of legal size northern pike in McCollum Lake was much lower (0.1/acre) than the estimated density of legal size northern pike for the same set of study lakes statewide (1.1/acre). This estimate suggests that longevity is needed to produce larger pike in McCollum Lake. Growth is slow, but fish can get large simply by living longer and escaping angler harvest after 24 inches.

A surprising number of large walleye were caught during the spring marking event (Table 2). The fish ranged in length from 20-30 inches and were captured near a shallow shoal which might serve as a spawning ground for this species. These fish were represented by ten year classes (age 5-15) with age 9 being the most prominent. All these are believed to be wild fish that are descendents of the 1988 stocked group. Anglers report catching large walleye in McCollum Lake occasionally, but not on any routine basis. The apparent lack of young fish was obvious from the age breakdown (Table 3). Growth of this species appears very good for McCollum Lake. Only one walleye was collected during the summer survey and it was unmarked. The population estimate for legal size walleye (15 inches and larger) was 51 fish, or about 0.2 per acre, which is a very low estimate for any waterbody that supports a sport fishery for walleye.

Only northern pike and walleye were collected and measured during the week following ice-out, yet many other species were actually collected in the 16 large mesh trap net lifts, and 15 large mesh fyke net lifts. Fisheries Division personnel observed good numbers and size distributions of black crappie and bluegill, and fair numbers of pumpkinseed sunfish, largemouth bass, and even a few common white suckers.

The summer fish community survey was done by MDNRE personnel from June 1-4, and June 29, 2010. Sampling design was based on the MDNRE Status and Trends lake survey protocol where effort is a product of lake size (Wehrly et al. 2009 in DRAFT). Effort consisted of 8 large mesh trap net lifts, 5 large mesh fyke net lifts, 4 experimental gill net lifts, 3 maxi-mini fyke net lifts, and 30 minutes of nighttime direct current shoreline electrofishing. A limnological lake profile (Table 4) was collected by the U.S. Geological Survey (USGS) on August 26, 2010. This showed that McCollum Lake has a strong thermal stratification in the summer months with low dissolved oxygen below the thermocline.

Therefore, much of the lake below a certain depth is not conducive to game fish survival during most of the summer, and most fish will inhabit shallower sections of the lake (less than 20 feet deep). The pH of the lake was normal ranging from slightly basic at the top, to slightly acidic or neutral at the bottom.

Nearly 2,500 fish (16 different species) were captured during the summer survey.(Table 5) Largemouth bass dominated the catch by number, but most of these fish (more than 1,000) were one inch in length. If we remove these young bass from the catch, the most dominant species is bluegill. Bluegill were collected in large numbers with most ranging between 3 and 7 inches (Table 6). Twelve percent of the bluegill collected were 8 inches and larger. This is a very acceptable percentage. However, growth rates of bluegill were slow, about one inch below state average. Eleven year classes (Table 7) of bluegill were captured, including fish up to age 12. Therefore, having large numbers of bluegill in the lake ensures that some will obtain larger sizes (8 inch and greater) through longevity (assuming overharvest does not occur). This will be a common theme for McCollum Lake panfish. Bluegill grow about an inch or more a year in this lake. Therefore, it takes about 8 years for a bluegill to reach 8 inches (Table 7). In addition, it appears that bluegill grow significantly slower today than in the past, especially for fish older than age 3. This may be a product of increased recruitment or lack of quality predators in the lake.

Pumpkinseed sunfish were also common in the catch and can reach sizes desirable to anglers (Table 6). Fair numbers of large (8 inch and larger) pumpkinseed sunfish were collected. Their growth was slightly below statewide average and they get large simply by being abundant and living long. Many year classes were collected, and growth for this species also seems slower than in past years (Table 7). Rock bass were the next most abundant panfish (Table 5) with a variety of sizes and ages represented (Tables 6 and 7). Growth rates for rock bass are over an inch slower than the statewide average but get large by living long. Again, growth rates are slower today than in the past (Table 7).

Fair numbers of black crappie were also collected with specimens up to 12 inches found. This species adds diversity to the panfish population and is often caught incidentally by anglers. Growth for this fish was considered slightly slow compared to the statewide average for black crappie. This species is not abundant in McCollum Lake, but are found in fair numbers. Many more crappie were netted during the April pike tagging study than during the summer survey, which is not uncommon. Five year classes of crappie were collected, which is more of a diverse age structure than from past surveys (Table 7). Yellow perch were another component of the panfish catch. Most of the perch that were collected were small but some fish larger than 8 inches were collected. A good age distribution of perch was found but growth was very slow, almost two inches slower than statewide average.

Largemouth bass were common in the survey and ranged in length from 1-21 inches. Numerous one-inch long age-0 bass were collected with a maxi-mini fyke net which skewed the catch to smaller sizes. The dominant sizes of largemouth bass were 8-12 inch fish (Table 6). Legal size bass (14 inch and larger) were caught in fair numbers. Nine year classes of this species (Table 7) were represented in the catch which is typical for most northern Michigan lakes that have a prolific largemouth bass population. It takes approximately seven years for a bass to reach legal size in McCollum Lake. Despite the ample panfish forage, bass grow very slow in McCollum Lake and typically have for many decades. The growth index for largemouth bass from this survey was -2.2 inches. Therefore, bass grow more than two inches slower at most ages than bass across the state of Michigan.

Two larger walleye were collected during the weeklong June survey, compared to 49 in the netting event following ice-out. This is common since pike and walleye are much more vulnerable to sampling gear during spawning, which is near ice out. Readers should refer to the catch and growth rates of walleye already discussed earlier in this document.

A total of 49 northern pike were collected during the early June survey, compared to 241 after ice left the lake earlier in the year. The size distribution was much like that of the spring catch, dominated by sublegal (less than 24 inches) pike. Only one legal northern pike was collected. Pike from the summer were not aged since a better sample size and distribution was available from the spring survey. Northern pike appear to grow slightly slower in McCollum Lake today than in past decades (Table 7), yet age and growth data from past surveys is somewhat limited.

A variety of other species were collected in Mccollum Lake in the June survey. Bullhead species are common, as they typically are throughout northern Michigan waterbodies. Other species such as green sunfish, white suckers, shiners, and mudminnows were caught in smaller numbers. There most likely are a few other species (e.g. darters) that are present in the lake but were not collected. White suckers are a large competing species often found in northern lakes, but they are found in relatively low abundance in McCollum Lake.

Analysis and Discussion

The current fish community of McCollum Lake can be generally characterized as having the following: 1) a panfish community considered high in diversity and abundance, slow growing, but with the ability for some individuals to live long and attain large sizes, 2) a predator population showing moderate diversity, with slow growing largemouth bass and northern pike dominating this community, 3) a small wild walleye population that is comprised of larger, older fish, 4) a non-game fish community typical of that for a northern Michigan lake with the exception that white suckers are uncommon, and 5) a minnow and shiner community that has not been well surveyed, but which is probably typical for a northern Michigan lake with such characteristics.

The McCollum Lake panfish community is diverse. Species typically targeted by anglers include bluegill, pumpkinseed sunfish, rock bass, black crappie, and yellow perch. Abundance of these species has probably changed very little over the last century. Growth for these species ranges from slightly below average to significantly below statewide average and appears slower today than in the past. Reproduction of panfish is prolific and maintains adequate enough numbers that longevity is attained, providing quality size fish to the creel. Aquatic vegetation is abundant at McCollum Lake and may limit predation on panfish.

The predator base of McCollum Lake is dominated by largemouth bass and northern pike. Walleye are occasionally caught by anglers, but their catches are probably incidental on most occasions. They are not abundant enough to produce any kind of consistent fishery. Walleye live long here and growth is good. Largemouth bass are abundant although their growth is very slow compared to statewide averages for this species. The bass population is dominated by sub-legal fish, although some individuals do live up to 10 years of age and attain quality size. The northern pike population is prolific. Sub-legal pike dominate the catch. Legal size pike are less common as a product of growth and probable harvest. Regardless, some pike do attain large sizes in this lake. In the general absence of

white suckers to feed on, most pike probably feed on the assemblage of panfish in the lake, but do very little to reduce their numbers.

The non-game fish community is dominated by minnows and bullheads, and to a lesser extent shiners, white suckers, and mudminnows. These species, mainly suckers and bullheads, all compete with game fish for food resources and are probably preyed on at times by predators. There is no cold water species niche available in McCollum Lake. Thermal stratification is evident with limited dissolved oxygen available for fish below the thermocline in the summer months. Thus, living space for fish during the summer is confined to the shallows and in open water less than 20 feet deep. This is natural for this lake.

Management Direction

1) The McCollum Lake aquatic community is diverse and should be monitored on a moderately consistent basis. Many of the game fish play a vital role not only in the fishery, but also for overall ecosystem balance. A complete fish community survey documenting changes should be accomplished no later than 2030 at McCollum Lake, or earlier if a low-level walleye stocking program is initiated.

2) Walleye have not been stocked by the Fisheries Division in McCollum Lake since 1988. No private stocking efforts exist for this waterbody either. Recent survey efforts documented that walleye can live long and attain large sizes in this lake. It has also documented that reproduction is occurring, but not enough to support a fishery. It is probable that this species helps reduce the prolific panfish population, but probably not significantly due to their (walleye) low densities. It is our belief that periodic walleye stocking would be necessary to create a fishery here. However, too much stocking could disrupt the panfish population and be a burden on the predator base. We will attempt to stock spring fingerling (1-2 inches) in McCollum Lake in the future at a rate of 50/acre every three years. Attempts will be made to have these fingerlings OTC (oxytetracycline) marked, which will enable managers to monitor the contribution of stocked fish to the lake. Fall juvenile walleye evaluations can be made in the stocked years to determine this contribution. This stocking will be done when fingerling fish are available from the State of Michigan, and it is possible that the time between stocking events could be more than three years.

3) Northern pike are native and common in McCollum Lake. A small rearing pond was once operated on the west shore, but has not been in operation for many years. The aquatic vegetation of the lake, especially in the south arm, is vital to spawning of this species and water levels should be maintained to provide such critical spawning habitat. Abundance is adequate currently, and growth is sub-standard. No consideration should be given to restoring the past rearing pond, since any contributions to the fishery would probably not be significant.

4) Anglers are urged to report catches of all species to the local MDNRE fisheries management unit. Such reports are useful for management of the fishery not only currently, but for future managers as well. Current standard State of Michigan fishing regulations are appropriate for McCollum Lake for most species. Future statewide changes in northern pike regulations may enhance the size structure of northern pike in this lake, and could be considered.

References

Wehrly, K.E., G.S. Carter, and J.E. Breck. 2009. Standardized Sampling Methods for the Inland Lakes Status and Trends Program in DRAFT. Michigan Department of Natural Resources and Environment, Fisheries Division. Lansing, MI.

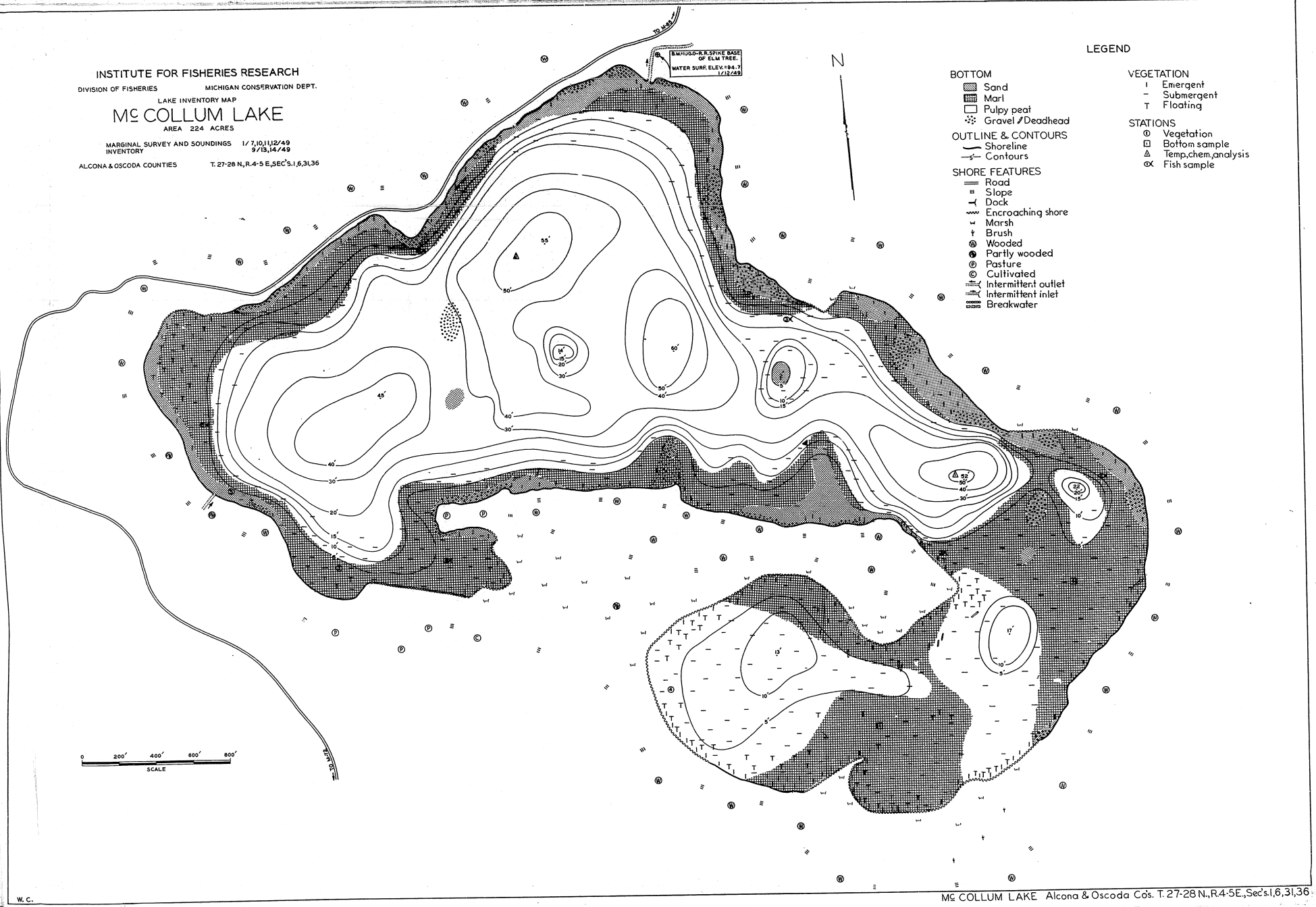

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Table 1.-Northern pike and walleye known stocking history for McCollum Lake, Oscoda/Alcona County.

Year	Species	Number	Avg. Length (in)
1963	Northern pike	--	--
1964	Northern pike	--	Spring fingerlings
1968	Northern pike	17,500	3.5
1971	Northern pike	500	Spring fingerlings
1972	Northern pike	2,755	Spring fingerlings
1973	Northern pike	340	Spring fingerlings
1974	Northern pike	4,680	Spring fingerlings
1975	Northern pike	6,225	Spring fingerling
1977	Northern pike	4,620	Spring fingerling
1978	Northern pike	48,000	Spring fingerling
1980	Northern pike	2,500	3.5
1982	Northern pike	790	2.9
1983	Northern pike	1,073	3.5
1986	Northern pike	4,000	2.4
1987	Northern pike	300	1.1
1989	Northern pike	2,500	3.5
1927	Walleye	206,000	--
1932	Walleye	200,000	--
1933	Walleye	450,000	--
1936	Walleye	240,000	--
1937	Walleye	127,000	--
1964	Walleye	50,000	Fry
1970	Walleye	200,000	Fry
1988	Walleye	10,538	1.8

Table 2. Length-frequency of northern pike and walleye collected and marked (fin clip) from March 29 through April 2, 2010 at McCollum Lake.

Length (in)	Northern pike	Walleye
11	3	
12	6	
13	5	
14	21	
15	23	
16	32	
17	15	
18	32	
19	30	
20	23	3
21	17	10
22	16	10
23	4	11
24	4	4
25	1	1
26		4
27	2	3
28		1
29		1
30	2	1
31		
32		
33		
34	2	
35	2	
36		
37		
38		
39		
40		
41	1	

Table 3. Age and growth of northern pike and walleye in McCollum Lake, April 2010. Dorsal spines used for this entire analysis.

Species/Age	No. Aged	Length Range (in)	Weighted mean length (in)	State Average Length (in)	Mean growth index* (in)
Northern pike					-3.5
Age II	15	11.5 – 17.3	14.3	17.7	
Age III	41	12.3 – 23.0	17.0	20.8	
Age IV	38	14.4 – 25.0	19.3	23.4	
Age V	16	16.6 – 30.3	21.9	25.5	
Age VI	6	22.0 – 34.5	24.7	27.3	
Age VII	3	34.0 – 41.3	36.8	29.3	
Age VIII	1	35.8	35.8	31.2	
Walleye					+0.7
Age V	4	21.2 – 23.6	22.3	17.6	
Age VI	4	20.3 – 24.0	22.2	19.2	
Age VII	5	21.2 – 22.0	21.7	20.6	
Age VIII	3	20.1 – 22.6	21.8	21.6	
Age IX	15	21.2 – 26.7	23.7	22.4	
Age X	6	21.1 – 25.2	22.8	23.1	
Age XI	5	23.2 – 30.5	25.1		
Age XII	4	24.3 – 29.9	27.4		
Age XIII	2	23.2 – 27.6	25.4		
Age XIV					
Age XV	1	28.8	28.8		

* compared to the statewide average for the species

Table 4.-Water temperature and dissolved oxygen profile for McCollum Lake, August 26, 2010. Data collected by the U.S. Geological Survey.

Depth (ft)	Temperature (F)	Dissolved Oxygen (ppm)	pH
3	72	7.0	8.1
7	72	7.1	8.0
11	72	7.0	8.0
15	72	6.7	7.9
18	70	5.6	7.6
21	62	1.6	7.1
24	56	0.9	7.0
27	53	0.7	7.0
30	50	0.7	7.0
34	47	0.7	7.0
38	45	0.7	7.0
43	44	0.6	7.0
48	44	0.6	7.0
53	43	0.6	6.9
58	43	0.5	6.9

Table 5.-Species and relative abundance of fish collected with survey gear at McCollum Lake, June 1 – July 29, 2010.

Common Name	**Number**	**Length Range** *(inches)*	**Weight (lbs)***	**Growth**** (in)
Largemouth bass	1,148	0-21	100.3	-2.2
Bluegill	943	2-10	162.6	-0.9
Pumpkinseed sunfish	94	2-9	31.4	-0.8
Rock bass	94	2-11	27.1	-1.3
Bluntnose minnow	63	1-2	0.3	
Northern pike	49	13-24	75.0	
Black crappie	34	4-12	11.9	-0.7
Yellow perch	28	3-11	4.1	-1.9
Black bullhead	17	7-14	18.3	
Brown bullhead	16	8-15	16.1	
Green sunfish	4	2-3	0.1	
Walleye	2	21-30	12.7	
Mimic shiner	2	2	0.1	
White sucker	1	19.5	2.9	
Golden shiner	1	6	0.1	
Central mudminnow	1	2.4	0.1	
TOTAL	**2,497**		**450.3**	

*growth was calculated based on length-weight regressions, it was not measured in the field

**growth is compared to the statewide average for that species

Table 6.-Length-frequency distribution of certain game fishes collected during the June 2010 netting survey at McCollum Lake.

Length (in)	Bluegill	Black crappie	Pump. sunfish	Yellow perch	Rock bass	L. bass	N. pike
1						1,033	
2	39		2		2		
3	135		13	2	6	3	
4	149	1	6	11	8	3	
5	192	3	10	4	15	3	
6	189	7	8	2	26	2	
7	126	3	17	2	14	5	
8	85	8	33	3	7	10	
9	27	7	5	2	11	16	
10	1	3			4	15	
11		1		2	1	15	
12		1				17	
13						9	2
14						7	4
15						5	4
16						1	4
17						1	5
18							4
19						1	8
20						1	6
21						1	3
22							7
23							1
24							1
25							
26							

Table 7.-Comparison of mean length (inches) at age for various game fishes of McCollum Lake from 1949 to 2010. Number in parentheses represents number aged.

Species	Age group	1949 Sept	1958 April	1970 July	1983 Aug	1985 June	2010 June
Yellow perch	I			3.2 (2)	4.0 (4)		
	II	5.7 (2)		4.7 (11)	5.9 (18)	3.5 (1)	4.1 (4)
	III	6.6 (11)	7.1 (8)	7.0 (8)	7.0 (9)	4.6 (1)	5.0 (17)
	IV	8.2 (4)	8.5 (9)	8.6 (7)	8.5 (3)	6.4 (10)	7.9 (2)
	V	8.8 (4)	9.7 (8)	9.3 (7)		8.1 (1)	9.8 (2)
	VI	9.5 (7)	10.7 (4)	10.7 (5)	10.7 (5)		8.8 (3)
	VII	10.2 (3)		11.9 (4)	12.5 (16)		9.2 (1)
	VIII	11.6 (2)	14.4 (1)	12.4 (4)	14.3 (1)		11.6 (1)
	IX	11.9 (1)		11.9 (1)			
	X	13.6 (1)					
Bluegill	I			2.1 (6)	2.3 (10)		2.0 (1)
	II	3.9 (1)		3.8 (18)	3.3 (15)		2.8 (10)
	III		4.6 (39)	4.7 (13)	5.1 (21)	4.8 (13)	3.5 (7)
	IV	6.3 (3)	5.5 (6)	7.0 (10)	6.8 (9)	6.4 (24)	4.3 (19)
	V	6.4 (6)	7.0 (18)	7.4 (6)	7.3 (1)	7.9 (8)	6.0 (25)
	VI		8.1 (6)	7.7 (6)		8.5 (4)	7.0 (11)
	VII						7.5 (16)
	VIII	9.7 (1)			9.3 (1)		7.9 (15)
	IX						9.1 (6)
	X						9.4 (2)
	XI						
	XII						10.7 (1)
Pumpkinseed	I			3.9 (4)	2.3 (3)	2.8 (1)	
sunfish	II	4.0 (3)		3.9 (13)	3.5 (9)	3.3 (1)	
	III	4.0 (1)	4.9 (15)	4.9 (8)	4.8 (15)		2.9 (5)
	IV	5.6 (4)		5.9 (5)	5.8 (14)	5.2 (5)	4.3 (12)
	V	5.6 (3)		6.2 (5)	7.0 (1)	6.3 (4)	5.5 (15)
	VI				7.1 (4)	7.6 (2)	6.9 (11)
	VII			8.4 (1)	8.3 (7)		7.8 (10)
	VIII						8.6 (10)
	IX						8.5 (3)

Table 7.-continued

Species	Age group	1949 Sept	1958 April	1970 July	1983 Aug	1985 June	2010 June
Rock bass	I				2.9 (6)		
	II	5.4 (1)		4.1 (2)	4.7 (11)		3.1 (4)
	III	6.1 (6)			6.3 (17)		4.0 (7)
	IV	6.1 (5)		6.5 (3)	7.3 (8)		5.1 (11)
	V	7.9 (1)		7.7 (5)	8.6 (7)		6.2 (15)
	VI		9.3 (1)	9.3 (1)	9.1 (5)		6.5 (3)
	VII		10.1 (1)	9.5 (1)	9.8 (5)		7.3 (11)
	VIII						8.3 (9)
	IX						8.5 (4)
	X						9.9 (6)
	XI						9.7 (2)
	XII						10.8 (1)
Black crappie	I						
	II	7.1 (2)	4.4 (1)	7.2 (10)	7.2 (22)		5.1 (2)
	III			8.9 (2)	9.2 (16)		6.5 (12)
	IV			10.6 (2)	10.2 (1)		8.6 (11)
	V				10.7 (1)		9.4 (6)
	VI						11.0 (3)
L. bass	I	6.5 (2)		4.5 (5)	5.4 (11)		3.9 (6)
	II	8.0 (3)	5.6 (8)	7.1 (12)	8.6 (15)	6.9 (7)	5.8 (5)
	III	9.9 (3)	8.1 (4)	8.6 (12)	11.7 (7)	10.1 (5)	8.0 (12)
	IV	11.7 (1)	10.6 (9)	10.9 (11)	13.7 (2)	11.2 (1)	9.7 (20)
	V	13.6 (1)	12.4 (5)	10.4 (4)	14.8 (2)	15.0 (3)	11.7 (21)
	VI	15.6 (1)	14.2 (7)	14.6 (3)	16.8 (1)		12.7 (13)
	VII	16.7 (1)				17.3 (1)	14.9 (8)
	VIII	17.4 (1)	16.8 (1)				15.2 (5)
	IX			19.1 (2)			
	X						20.5 (2)
	XI						
	XII					22.2 (1)	

Table 7.-continued (walleye and northern pike were aged with dorsal spines from the April tagging study.

Species	Age group	1949 Sept	1958 April	1970 July	1983 Aug	1985 June	2010 April
Walleye	I						
	II						
	III						
	IV						
	V						22.3 (4)
	VI						22.2 (4)
	VII						21.7 (5)
	VIII						21.8 (3)
	IX						23.7 (15)
	X						22.8 (6)
	XI						25.1 (5)
	XII						27.4 (4)
	XIII						25.4 (2)
	IX						
	XV						28.8 (1)
Northern pike	I			13.7 (7)	13.2 (18)		
	II			17.8 (9)	16.4 (28)	13.5 (1)	14.3 (15)
	III			20.8 (9)	19.6 (11)	16.5 (1)	17.0 (41)
	IV			26.1 (5)	24.3 (1)		19.3 (38)
	V			25.7 (2)			21.9 (16)
	VI						24.7 (6)
	VII				28.0 (1)		36.8 (3)
	VIII						35.8 (1)