McCormick Lake

Montmorency County, T30N, R02E, Sections 30/31
Thunder Bay River watershed, last surveyed 2021

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Environment

McCormick Lake is a 100-acre natural lake located in southwestern Montmorency County in Michigan's northern Lower Peninsula (Figures 1 and 2) (Photo 1). The lake has a small drainage area, with Sheridan Creek entering on the south shore and Stanniger Creek on the west shore (enters the lake just north of the access site). Both creeks are designated trout streams and have cold thermal regimes. A small control structure exists on the north shore of McCormick Lake and releases water to which is the beginning of the Thunder Bay River. Steep surrounding hillsides and sharp in-lake drop-offs characterize the lake basin. A Department of Natural Resources (DNR) access site is provided along the west shore with a hard-surfaced ramp appropriate for use by small to medium sized boats (Photo 2). The access site is maintained by the DNR Parks and Recreation Division and has parking for approximately five boat trailers.

Maximum depth of McCormick Lake is 78 feet (Figure 3) and bottom type consisting primarily of silt, gravel and sand. The most recent dissolved oxygen and temperature profile of McCormick Lake was completed in August of 2004. Results indicated a strong summer thermocline was established with high dissolved oxygen present below the thermocline (Table 1). A thermocline is a summer separation among upper warm water layers and cool and colder deeper water layers.

History

McCormick Lake is managed by the DNR Fisheries Division as a Type B trout lake which is open to fishing with all tackle all year. It is also a designated trout lake and very popular among anglers, both during the open water and ice fishing seasons (Photo 3). The daily possession limit is 5 trout, of which no more than 3 can be 15-inches or larger. Minimum harvest size is 10 inches for Brook Trout, and 12 inches for both Brown and Rainbow trout. This inland system was unique in that it had a self-sustaining Rainbow Smelt population that provided for a recreational fishery through approximately 2005. Local residents prior to 1955 illegally transferred this species into McCormick Lake according to historical records. Smelt runs in the tributary streams were documented on many occasions until the population crashed due to unknown causes in recent decades.

A significant number of fish have been stocked in McCormick Lake dating back to 1948; a total of 198,500 Rainbow Trout of various sizes were stocked between 1948 and 1967. Nearly the same number of small fingerling Brook Trout were stocked in the 1950s followed by 17,937 yearling Splake from 1968-1971. Surplus fall fingerling Brook Trout (10,000) were again stocked in the lake in 2008. Since 1980, DNR Fisheries Division has focused on Brown Trout management at McCormick Lake with periodic stocking of Rainbow Trout to add catch diversity and to satisfy angler requests in recent years. Brown trout are typically stocked at an annual rate of 40-50/acre (Table 2).

Fish records date back to 1925 at McCormick Lake when lake residents noted the exploitation of Northern Pike and bass (file records). Other species observed included Brook Trout, White Sucker, darter species, and Yellow Perch. Fisheries biologists utilized gill-nets to survey the fish population in 1943 and collected seven species including Brook, Brown and Rainbow trout, Cisco, Rock Bass and Yellow Perch. Near-shore seine surveys were conducted in 1955 but records did not provide a catch summary. Aquatic vegetation surveys were completed by the Institute for Fishery Research the same year which documented the presence of eleven species of plants.

In June 1966, a fish survey utilizing electrofishing gear collected six species of fish including Brook and Rainbow trout. A temperature and oxygen profile of the lake was completed in August of the same year which documented suitable trout habitat down to 40 feet. A follow-up fish survey was conducted in October 1971 with 16 gill-net lifts. Excellent numbers and sizes of Rainbow Trout and Splake were noted as collected by the biologists of that period. Brown and Brook trout were found in lower numbers, however large Brown Trout were collected. An additional fish survey was conducted in October 1979 utilizing 12 gill-net lifts. Good numbers of all trout were collected while a good forage base including Rainbow Smelt, Creek Chub, Common and Golden shiner, and White Sucker were noted.

In 1982, DNR assessed angler hours at McCormick Lake for the May through July months (Ryckman and Lockwood 1985). Pressure for this time period was noted as 13 angler hours per acre. DNR again assessed the trout fishery at McCormick Lake in November 1987 with 10 gill-net lifts. Eight species of fish were collected in the nets with the catch dominated by Brown Trout and White Suckers. Thirty-two Brown Trout were collected ranging in length from 6-25 inches. Rainbow Trout were also collected but in lower numbers.

A similar survey was completed by DNR in October 1992 with effort consisting of six gill-net lifts. Good survival of Brown and Rainbow trout was indicated by the catch of these species. Brown Trout ranged in length from 7-24 inches (ages 2-4) and Rainbow Trout from 6-18 inches (ages 1-3). Seven Brook Trout were collected and ranged in length from 6-8 inches and were all age-1. A good amount of Brook and Rainbow trout natural reproduction was occurring either in McCormick Lake or in its tributaries (more likely) based on catches since these species were not stocked in this timeframe. The amount of Brown Trout natural reproduction (if any) in McCormick Lake tributaries was unknown at the time. Many small Yellow Perch were also collected during the 1992 survey.

From 1995-1997, angler catches were higher for Rainbow Trout in comparison to Brown Trout based on angler reports. This was despite the fact that Rainbow Trout were not stocked, while Brown Trout were stocked annually (Table 2).

In 2001, a July netting survey to evaluate Brown Trout stocking efforts was completed at McCormick Lake. Effort consisted of six inland gill-net lifts. Nets were placed in various locations with depths ranging from 5-50 feet deep. A water temperature and oxygen profile was also completed on July 17. Water conditions suitable for trout were found throughout the entire water column. Secchi disk (device for measuring water clarity) readings were six feet indicating moderate clarity.

Nearly 200 fish were collected in the gill-nets through the survey period with the catch dominated by 7-16 inch White Suckers and small Yellow Perch. Rainbow Smelt were again captured in McCormick

Lake in good numbers with sizes ranging from 4-8 inches. Smelt were considered to provide a good food source for managed trout. Nine Brown Trout were collected and ranged from 9-27 inches and represented by ages 3 through 6 and age-8. Seven naturally reproduced Rainbow Trout were collected ranging in length from 11-14 inches. All the rainbow trout were age-3 indicating a strong 1998 year class. Catches of trout were considered satisfactory as were sizes and ages. Trout age-2 and older demonstrated the ability of trout to survive to older ages.

A general fish community survey was conducted at McCormick Lake by DNR Fisheries Division in early-June 2004. Sampling effort consisted of 14 inland gill-net lifts, 4 large mesh fyke-net lifts, 4 large mesh trap-net lifts, and 2 small mesh mini-fyke net lifts. Sampling procedures followed the statewide Status and Trends protocol where sampling effort is a standard product of lake size. However, procedures were modified to account for more gill-net lifts and less trap- and fyke-net lifts as a result of the steep in-lake drop-offs which are less suitable to near shore netting. Surface water temperature throughout the four-day lake survey ranged from 58-61°F. Near-shore woody debris was noted as abundant, while vegetation recorded included: various pondweed species, milfoil species, bulrushes, and cattails.

A total of 519 fish were captured during the early-June survey at McCormick Lake (Table 3). The catch was dominated by small Rock Bass and an abundant White Sucker population. Suckers ranged in length from 7-20 inches with various year classes present based on length-frequency analysis. Rock Bass were small in size, and dominated by 5-6 inch fish. Green and Pumpkinseed sunfish were present, but collected in low numbers and small sizes. Smallmouth Bass were collected in relatively low numbers and ranged in length from 5-12 inches. Reports of good angler catches of adult Smallmouth Bass up to two pounds in weight were reported as recently as 2002. Large bass may have been under-sampled during the 2004 survey. Stunted Yellow Perch were relatively common in the catch as well (Table 3).

Due to the unproductive nature of McCormick Lake, warm water species of fish (like sunfish and perch) grew poorly in its waters and were not overly abundant. Cold water species such as trout and smelt were considered more suitable to the lake environment. Adult Rainbow Smelt were again collected in 2004 with all fish in the 8-9 inch size range. This was nearing the period when smelt were believed to have disappeared from the McCormick Lake fish community. This fish species may have provided the bulk of the fish forage base for McCormick Lake trout. At the time (2004), both the trout and smelt fishery were popular at McCormick Lake all year long.

Only one rainbow trout was collected during the 2004 fish community survey which was down from the catch in 2001. Despite this, Rainbow Trout remained an important part of the fishery at McCormick Lake according to angler reports. The abundance of this species was considered to be dictated by the level of natural reproduction (since this species was not stocked at this time) and recruitment from tributaries.

Fourteen Brown Trout were collected during the early-June fish community survey. Five year-classes of this species were documented ranging from age 1-5 (Table 4). Growth of this species was below average in McCormick Lake (Table 3), despite having Rainbow Smelt as a forage base. Angler reports for Brown Trout were generally poor at the time of the survey, although fisheries surveys continued to document their presence.

In addition to the 2004 fish survey, limnological parameters were measured in McCormick Lake on August 9, 2004. Profiles were taken in 75 feet of water (Table 1). Water temperature ranged from 70°F at the top to 41°F at the bottom, indicating that the lake stratifies thermally. Dissolved oxygen was suitable to most fish (greater than or equal to 6 ppm) down to 33 feet deep which had a corresponding water temperature of 46ºF. A highly oxygenated, cold water zone continued to exist in McCormick Lake. Suitable oxygen levels and cold water temperatures offered good trout habitat. Secchi disk reading was 20 feet, indicating higher water clarity than what was measured in 2001 (6 feet).

Various other parameters such as nitrogen, phosphorus, and alkalinity were also collected in 2004 at McCormick Lake. The lake has a relatively high alkalinity value for a northern Michigan waterbody. Total phosphorus levels in McCormick Lake were very low, indicating low nutrient status in the lake. High secchi disk readings and low total phosphorus levels indicate that McCormick Lake was slightly oligotrophic.

Current Status

Recent surveys at McCormick Lake have focused on evaluating stocking efforts, primarily of Brown Trout. From 2010-2013, DNR Fisheries Division was evaluating differences in survival of two different strains of stocked Brown Trout. These included the Wild Rose and Sturgeon River strains. The Wild Rose strain had been in the hatchery system for decades and was considered more domesticated. The Sturgeon River strain was a recent addition to the state hatchery system that was developed from a wild source and was considered less domesticated. The study involved stocking both strains in a set of Michigan lakes and rivers, having both strains individually clipped, and evaluating survival and growth. McCormick Lake was part of this study. During this period, a total of 5,000 yearling Brown Trout were stocked in the lake, including 2,500 of each strain. (Table 2) Wild Rose strain brown trout were 2-3 inches larger at stocking each year of the study than the Sturgeon River strain (Table 2).

2010

In year one of this study, DNR used both fall nighttime electrofishing (one full lake circuit) gear and 4 gill-net lifts (3 straight run nets) to survey the trout population in this lake, with emphasis on Brown Trout. Both gears were used to determine which one would allow us to sample more efficiently.

Good numbers of unmarked age-2 and age-3 Brown Trout were collected in 2010 (Table 5), but relatively few age-1 Brown Trout were collected. Of the age-1 Brown Trout, most were not marked, or possible wild fish. Only two yearling marked Brown Trout were collected both from the Sturgeon River strain. Very acceptable numbers of Brook and Rainbow trout were collected with rainbows ranging in length up to 19 inches (Table 5).

2011

In year two of this study, we used only fall nighttime electrofishing to sample the trout population in the lake. Effort was one complete lake circuit. We caught considerably fewer trout (Table 6) than the year before. Despite this, the catch of wild, unmarked Brown Trout age-1 and 2 (n=12) was still greater than marked Brown Trout (6) age-1 and 2. Only six marked Brown Trout were collected, including 4 from the Wild Rose strain (all age-2) and 2 from the Sturgeon River strain (both age-1).

2012
We used one complete nighttime circuit with electrofishing to sample McCormick Lake trout in October 2021. More trout (approximately 25) were missed due to gear limitations with a new boat. Decent numbers of Rainbow Trout were again collected, like in 2010. Very few Sturgeon River strain Brown Trout were collected (Table 3) compared to unmarked fish and Wild Rose strain fish (Table 7).

2013
In the final year of the strain evaluation study DNR used one complete nighttime circuit with electrofishing to sample McCormick Lake trout in October 2013. Very few trout were collected at all. Three unmarked Brown Trout were collected, while one Brown Trout of each stocked strain was captured. Also collected were three Rainbow Trout (Table 8).

The conclusion from the strain evaluation study was that survival of all stocked trout, regardless of strain, was generally low statewide. Survival of Wild Rose strain Brown Trout was relatively higher in lakes compared to Sturgeon River strain Brown Trout (MDNR 2016). McCormick Lake was one of the study lakes where survival of stocked Brown Trout (Wild Rose strain) was relatively higher. Also noted was the significant number of unclipped (wild) Brown Trout of certain ages that were sampled during the survey years at this lake, possibly indicating: 1) natural reproduction contributing greatly to the McCormick Lake fishery and Brown Trout population, or 2) poor marking of fish prior to stocking or fin regeneration.

Following the strain evaluation stocking study, McCormick Lake would continue to be stocked with Brown Trout (Table 2). Only Wild Rose strain Brown Trout were stocked after 2014. In addition, managers began infrequently stocking yearling Rainbow Trout to add catch diversity at the request of anglers. It was believed that Rainbow Trout recruitment to the fishery from the tributaries was sufficient in some years, but fluctuated enough to warrant periodic stocking. Stocking commenced in 2017 with 1,110 yearlings (11/acre) and again in 2020 and 2021 (Table 2) with spaced out stocking events planned every 3 years (despite consecutive stocking in years 2020 and 2021).

The concept of possible wild trout contribution to the McCormick Lake fishery was on the minds of fisheries managers following the strain evaluation study (2010-2013). Two high quality groundwater fed trout streams enter McCormick Lake on the south end (Stanniger and Sheridan creeks). These streams were surveyed a decade earlier in October 2008 by DNR with backpack electrofishing gear. We documented an abundant Brown Trout population in Stanniger Creek, along with lesser numbers and sizes of Brook and juvenile Rainbow trout. Sheridan Creek exhibited a healthy Brook Trout and juvenile Rainbow Trout population, but no Brown Trout. These stream surveys were duplicated eleven years later in 2019 for comparison. The Stanniger Creek trout population continued to support all three species, with Brown Trout dominant as was the case in 2008. The Sheridan Creek population of trout had shifted slightly though in 2019. Brown Trout had become equally abundant as the Brook and Rainbow trout community. This indicated a possible shift towards increased wild Brown Trout production in the system.

During the period from 2014-2020, DNR had become aware of significant fishing pressure on McCormick Lake both during the open water and ice fishing periods. Questions arose regarding whether the stocking efforts (primarily for Brown Trout) were solely responsible for the increase in fishing pressure and catches, or if natural reproduction was increasing in the tributaries for trout and

supplementing the fishery. The 2010-2013 study showed that some wild (or at least unclipped) Brown Trout were found in McCormick Lake. In addition, Rainbow Smelt had essentially disappeared from McCormick Lake in the last decade. Smelt provided a popular fishery as early as the early 2000s at the lake. This led to questions such as: 1) Was the lack of smelt in the fish community causing an increase in trout catch rates, and 2) Was trout recruitment and survival increasing in the absence of predatorial smelt in McCormick Lake (predation on juvenile trout)?

2020/2021
DNR fisheries managers initiated a study to examine Brown Trout dynamics (stocked versus wild fish) in McCormick Lake and to evaluate angler pressure in the winter of 2020/2021. All yearling Brown Trout stocked (Table 2) in McCormick Lake in the spring of 2020 (n=5,000) were marked by removing their adipose fin. We used 6 gill-net overnight lifts to survey the lake from October 12-13, 2020. These included four experimental gill-net lifts, and 2 straight-run gill net lifts (3-inch mesh).

Six yearling Brown Trout were collected, two of which were wild fish while the remaining four were much larger and of stocked origin (Table 9). It is apparent that the stocked fish have a growth advantage over the wild fish through age-1. Due to the gill-net mesh sizes, wild age-1 Brown Trout may have been less vulnerable to the gill-nets. Fair numbers of unmarked brown trout 12-19 inches were collected ranging in age from 2-5, and demonstrating continued holdover of trout from year to year. It is unknown whether these are of stocked or wild origin since clipping was only initiated in 2020. Growth of age-3 and older brown trout in McCormick Lake is slow, despite some fish attaining larger sizes.

Acceptable numbers of Rainbow trout were collected in the survey (Table 9). Most fish were age-1 and likely of stocked origin, but a few fish from non-stocking years were represented. One larger rainbow from the 2017 stocking year was collected. Also collected in the gill-nets were White Sucker, Rock Bass, Smallmouth Bass, and Yellow Perch.

DNR conducted a creel survey on McCormick Lake January 1 through March 31, 2021. A creel clerk worked three weekdays and two weekend days which were randomly selected for sampling during each week of the survey season. These five days were split each week with another regional waterbody for essentially a part time creel survey of McCormick Lake. One of two shifts was selected each sample day and the entire waterbody was sampled each day when ice conditions were suitable. Roving counts of anglers were made four times a day. Ice conditions were dubious in the first two weeks of January and all of March. Thus, winter ice fishing conditions for the entire creel period were best for 1 ½ months. Based on creel interviews, anglers fishing on McCormick Lake during the winter creel period were from numerous Michigan counties showing the popularity of the lake (Figure 4).

A total of 666 fish were caught during the survey period (Table 10). Brown Trout harvest was 488 fish, while 85 were caught and released. Rainbow Trout harvest was 16, while none were released. Brook Trout harvest was 20, while 46 were caught and released. There was minimal harvest for panfish (11 Yellow Perch) which is no surprise since McCormick Lake is not known for its panfish fishery. No Rainbow Smelt were caught by anglers, adding to the theory that this species is now absent from the lake. Angler hours for the creel period were 3,271 and equates to 32.7 angler hours per acre. Angler trips for the creeled period was 625. We used the average trip expenditure of $39.00/day from the 2011 Michigan summary of the Natural Survey of Fishing, Hunting, and Wildlife -Associated Recreation

(U.S. Fish and Wildlife Service and U.S. Census Bureau. 2011). Multiplying 625 angler trips by $39.00 (2011 dollars) equates to the 2021 ice fishing season at McCormick Lake generating more than $24,000 to the regional economy for the short ice fishing season.

A sign was posted at McCormick Lake during the 2020 and 2021 fishing seasons asking anglers to report catches of Brown Trout to the local DNR manager, and to note if the fish caught were clipped (Photo 4). In addition, the creel clerk biosampled some fish during the winter creel period. Angler reports were submitted from April 2020 through mid-June 2021, with the vast majority of them from the brief 2021 ice fishing period. Some anglers also reported their catches of Rainbow Trout.

Angler reported and biosampled Brown Trout from the creel period totaled 205 fish. Adipose clipped fish dominated the sample with 181 fish ranging in length from 10-15 inches. Unclipped Brown Trout numbered 17 fish ranging in length from 12-18 inches. Most of the unclipped fish were larger Brown Trout that were likely from previous stocked years when clipping did not occur. An addition 7 Brown Trout with clip unknown. Thus, most of the Brown Trout reported were clipped fish, indicating that stocked fish contributed significantly to the fishery in recent years. A total of 24 Rainbow Trout were also reported ranging in length from 10-19 inches.

Analysis and Discussion

The environment and fish community of McCormick Lake can be generally characterized as: 1) an oligotrophic conditions with good water clarity, a strong summer thermocline, and good dissolved oxygen levels throughout much of the water column including in parts of the colder, deeper water, 2) a panfish community with very limited diversity and dominated by small Yellow Perch and Rock Bass that do not support a fishery 3) a limited native predator population dominated by Smallmouth Bass, 4) a cold water species community dominated by Brown and Rainbow trout which continue to survive well and provide a quality fishery, 5) a non-game fish community dominated by white suckers.

McCormick Lake is known for its trout fishing. This fishery is supported by consistent stocking efforts but does have two high quality tributaries that supplement the lake with wild trout. It was thought at one time that wild trout contributions were significant enough to possibly support the fishery. Recent evaluations found this is not the case, and stocking will be needed to sustain the fishery into the future. Wild Brown Trout were apparently more predominant in the survey catches from 2010-2013. However, recent analysis shows stocked Brown Trout contribute more to the fishery and trout community. Wild trout contribution will likely continue to supplement the fishery, but stocking is currently needed to continue driving the fishery. Maintenance of the Sheridan and Stanniger creek watersheds will be key to maintaining input of wild fish. Non-native Rainbow Smelt, a once popular fishery in the lake, have disappeared from McCormick Lake in recent decades. They likely were an important forage base for trout in the past. However, the negative impacts (predation, competition) of this non-native on other native or desirable species (perch, bass, trout) have been suggested in the past. There has likely been less foraging pressure on the invertebrate and plankton communities in McCormick Lake with the disappearance of smelt, leaving more resources for trout, perch, and bass. In addition, when smelt are not available as trout forage, it is possible that angler catch rates of trout are higher (trout are more inclined to hit if natural prey is less abundant).

Management Direction

Recent trout and angler surveys show the high value of the stocking program, and no changes are needed. We will continue the annual yearling Brown Trout (Wild Rose strain) stocking program of approximately 40/acre. There have been frequent stocking evaluations in the last decade. We will continue with these stocking evaluations but they can be accomplished on a less frequent basis. We will also continue to stock McCormick Lake with Rainbow Trout, but less frequently than Brown Trout and at lesser numbers per stocking event. Rainbow Trout stocking was initiated at the requests of some anglers to add catch diversity and to bolster the small natural population present in the system. The current plan is to stock Eagle Lake strain yearling Rainbow Trout every third year at a rate of 10/acre.

References

Michigan Department of Natural Resources. 2016. Evaluation of the relative growth and survival of Wild Rose and Sturgeon River strain Brown Trout stocked into Michigan lakes and reservoir tailwaters. Study 230746, Project No. F-80-R-17, Lansing, MI.

Ryckman, J.R. and R.N. Lockwood. 1985. On-site creel surveys in Michigan 1975-82. Fisheries Research Report No. 1922, Institute of Fisheries Research, Ann Arbor, MI.

U.S. Fish and Wildlife Service and U.S. Census Bureau. 2011. National Survey of Fishing, Hunting, and Wildlife-Associated Recreation - Michigan.

Table 1.-Water temperature, dissolved oxygen, and pH profile for McCormick Lake, August 9, 2004.

Depth (ft)	Temperature (°F)*	Dissolved Oxygen (ppm)	pH
Surface	70	9.3	8.4
3	70	9.5	8.4
6	70	9.5	8.4
9	69	9.7	8.4
12	66	10.5	8.3
15	64	10.7	8.3
18	62	10.9	8.2
21	58	11.0	8.2
24	54	10.4	8.1
27	50	8.2	7.9
30	48	8.0	7.9
33	46	6.3	7.8
36	45	3.6	7.7
39	44	2.1	7.7
42	43	1.5	7.6
45	42	1.1	7.6
48	42	0.8	7.6
51	42	0.5	7.6
54	41	0.4	7.5
57	41	0.5	7.5
60	41	0.6	7.5
63	41	0.4	7.5
66	41	0.3	7.5
69	41	0.2	7.5
72	41	0.2	7.5
75	41	0.2	7.2

*The surface down to approximately 9 feet represent the upper warm water layer; 10-18 feet below the surface represent the cool water layer; the cold water layer is 20 feet below the surface and deeper.

Table 2.-Spring yearling Brown and Rainbow trout stocking history for McCormick Lake, Montmorency County from 1980 to the present.

Year(s)	Strain(s)	Number	Number/Acre	Avg Length (in)
Brown Trout				
1980	--	3,800	38	5.0
1981	Harrietta	4,000	40	7.0
1982	Harrietta	4,000	40	6.6
1983	Harrietta	4,000	40	5.3
1984	Harrietta	4,000	40	5.8
1985	--	4,000	40	7.0
1986	Plymouth Rock	4,000	40	5.7
1987	Harrietta	4,000	40	6.6
1988	Plymouth Rock	4,000	40	6.4
1989	Plymouth Rock	4,000	40	6.2
1990	Plymouth Rock	1,900	19	7.6
1991	Seeforellen	4,000	40	5.8
1992	Plymouth Rock	3,960	40	6.6
1993	Wild Rose	3,990	40	8.2
1994	Wild Rose	4,290	43	6.8
1995	Soda Lake	3,750	38	6.0
1996	Wild Rose	3,465	35	7.3
1997	Wild Rose	4,440	44	7.2
1998	Wild Rose	150	2	18.0
1998	Wild Rose	1,850	19	12.6
1999	Seeforellen	4,000	40	6.2
2000	Wild Rose	4,800	48	6.4
2001	Wild Rose	4,000	40	6.7
2002	Gilchrist Creek	4,500	45	4.9
2003	Wild Rose	5,500	55	7.1
2004	Gilchrist Creek	4,000	40	4.7
2005	Gilchrist Creek	4,000	40	5.8
2006	Seeforellen	4,600	46	4.8
2007	Wild Rose	4,600	46	7.7
2008	Gilchrist Creek	5,000	50	4.8
2009	Gilchrist Creek	6,000	60	7.1
2010*	Wild Rose	2,500	25	6.4
2010*	Sturgeon River	2,500	25	3.9
2011*	Wild Rose	2,500	25	7.3
2011*	Sturgeon River	2,500	25	4.1
2012*	Wild Rose	2,500	25	7.1
2012*	Sturgeon River	2,500	25	4.2
2013*	Wild Rose	2,500	25	7.3
2013*	Sturgeon River	2,500	25	5.0
2014	Wild Rose	2,325	23	7.8
2014	Sturgeon River	2,500	25	5.1
2015	Wild Rose	5,500	55	7.3

Table 2.-continued…				
Year(s)	**Strain(s)**	**Number**	**Number/Acre**	**Avg Length (in)**
Brown Trout				
2016	Wild Rose	5,000	50	7.5
2017	Wild Rose	5,200	52	7.4
2018	Wild Rose	5,000	50	7.4
2019	Wild Rose	4,500	45	7.5
2020**	Wild Rose	5,000	50	7.2
2021**	Wild Rose	5,000	50	6.7
Rainbow Trout				
2017	Eagle Lake	1,100	11	7.2
2020	Eagle Lake	1,056	10	7.5
2021	Eagle Lake	1,000	10	8.1

*Indicates years when Brown Trout were clipped by strain prior to stocking as part of a statewide strain evaluation study.
**Indicates years when Brown Trout were clipped prior to stocking to evaluate contribution of stocked fish to the fishery and fish community.

Table 3.-Species and relative abundance of fishes collected at McCormick Lake, June 1-4, 2004 in a general fish community survey.

Common Name	**Number**	**Length Range (inches)**	**Weight* (lbs)**	**Growth** (in)**
Rock Bass	149	2-6	12.7	-1.4
White Sucker	138	7-20	156.4	
Yellow Perch	66	6-9	8.6	-0.4
Bluntnose Minnow	61	Not measured	Not calculated	
Hybrid sunfish	39	Not measured	Not calculated	
Green Sunfish	21	4-5	0.2	
Pumpkinseed Sunfish	18	Not measured	Not calculated	
Brown Trout	14	6-22	17.4	-1.1
Smallmouth Bass	7	5-12	3.8	
Rainbow Smelt	4	8	0.5	
Central Mudminnow	1	Not measured	Not calculated	
Rainbow Trout	1	16	1.6	
TOTAL	**519**			
* Weight calculated, not measured				
**Growth rates compared to the statewide average for each major species				

Table 4.-Length- and age frequency of Brown Trout collected in the 2004 fish community survey at McCormick Lake.

Length (in)	Number Collected	Age(s)
6 - 6.9	3	I
7 - 7.9	2	I
8 - 8.9	1	II
9 - 9.9		
10 - 10.9		
11 - 11.9		
12 - 12.9	1	II
13 - 13.9		
14 - 14.9	4	II, III
15 - 15.9	1	II
16 - 16.9		
17 - 17.9		
18 - 18.9		
19 - 19.9		
20 - 20.9	1	IV
21 - 21.9		
22 - 22.9	1	V

Table 5.-Length-frequency of trout collected with four overnight gill-net lifts and one shoreline electrofishing full circuit in fall 2010 at McCormick Lake.

Size Range (in)	Brook Trout	Rainbow Trout	Brown Trout unmarked	Brown Trout (Sturgeon Rv strain)	Brown Trout (Wild Rose strain)
6 – 6.9	3	1		1	
7 – 7.9	2	1	2	1	
8 – 8.9	5	1	3		
9 – 9.9		1	3		
10 – 10.9	1				
11 – 11.9		1	1		
12 – 12.9			1		
13 – 13.9			3		
14 – 14.9		1	13		
15 – 15.9		1	27		
16 – 16.9			9		
17 – 17.9		2	3		
18 – 18.9		4			
19 – 19.9		1	1		

*Brown Trout 12-17 inches were ages 2 and 3

Table 6.-Length-frequency of trout collected with one full shoreline electrofishing circuit in fall 2011 at McCormick Lake.

Size Range (in)	Brook Trout	Rainbow Trout	Brown Trout unmarked	Brown Trout (Sturgeon Rv strain)	Brown Trout (Wild Rose strain)
5 – 5.9	1				
6 – 6.9	1				
7 – 7.9			4	1	
8 – 8.9			1		
9 – 9.9		1	4		
10 – 10.9	1		1		
11 – 11.9	1			1	
12 – 12.9	1				1
13 – 13.9			1		3
14 – 14.9			1		
15 – 15.9			1		
16 – 16.9			1		
17 – 17.9			1		
18 – 18.9			1		
19 – 19.9			1		

Table 7.-Length-frequency of trout collected with one shoreline electrofishing full circuit in fall 2012 at McCormick Lake.

Size Range (in)	Brook Trout	Rainbow Trout	Brown Trout unmarked	Brown Trout (Sturgeon Rv strain)	Brown Trout (Wild Rose strain)
5 – 5.9					
6 – 6.9			1		
7 – 7.9		1			
8 – 8.9					
9 – 9.9		1	1		
10 – 10.9					
11 – 11.9	1				3
12 – 12.9		1	1		7
13 – 13.9		2	1	1	
14 – 14.9		1	2		
15 – 15.9					1
16 – 16.9			2		
17 – 17.9		2	1		
18 – 18.9		2	1		
19 – 19.9		2			
20 – 20.9		1			

Table 8.-Length-frequency of trout collected with one shoreline electrofishing full circuit in fall 2013 at McCormick Lake.

Size Range (in)	Brook Trout	Rainbow Trout	Brown Trout unmarked	Brown Trout (Sturgeon Rv strain)	Brown Trout (Wild Rose strain)
5 – 5.9					
6 – 6.9					
7 – 7.9	1	1	1		
8 – 8.9				1	
9 – 9.9					
10 – 10.9					
11 – 11.9					
12 – 12.9					1
13 – 13.9					
14 – 14.9					
15 – 15.9		1			
16 – 16.9			2		
17 – 17.9					
18 – 18.9					
19 – 19.9					
20 – 20.9		1			

Table 9.-Length-frequency and ages of trout collected with six overnight gill-net lifts in fall 2020 at McCormick Lake. Unmarked Brown Trout 12 inches and larger could be either wild or stocked fish since clipping did not occur of stocked fish in 2019 or the years just before.

Size Range (in)	Brook Trout	Rainbow Trout	Brown Trout unmarked	Brown Trout (marked)
5 – 5.9				
6 – 6.9				
7 – 7.9			1 (1)	
8 – 8.9				
9 – 9.9			1 (1)	
10 – 10.9				
11 – 11.9				2 (I)
12 – 12.9			4 (II)	2 (I)
13 – 13.9		9 (I, II)	1 (III)	
14 – 14.9		4 (I, II, III)		
15 – 15.9			1 (IV)	
16 – 16.9			2 (IV, V)	
17 – 17.9			5 (IV, V)	
18 – 18.9			1 (V)	
19 – 19.9			1 (V)	
20 – 20.9		1 (IV)		

Table 10.-Estimated harvest and release of fish, angler hours, and angler trips for McCormick Lake from January 1-March 31, 2021. NAN=not enough information to make a calculation.

Species	January	February	March	Total
HARVEST				
Yellow Perch	0	11	0	11
Rainbow Trout	16	0	0	16
Brown Trout	309	179	0	488
Brook Trout	20	0	0	20
Released				
Brown Trout	67	18	0	85
Brook Trout	29	18	0	46
Angler Hours	1,670	1,232	369	3,271
Angler Trips	362	263	NAN	625

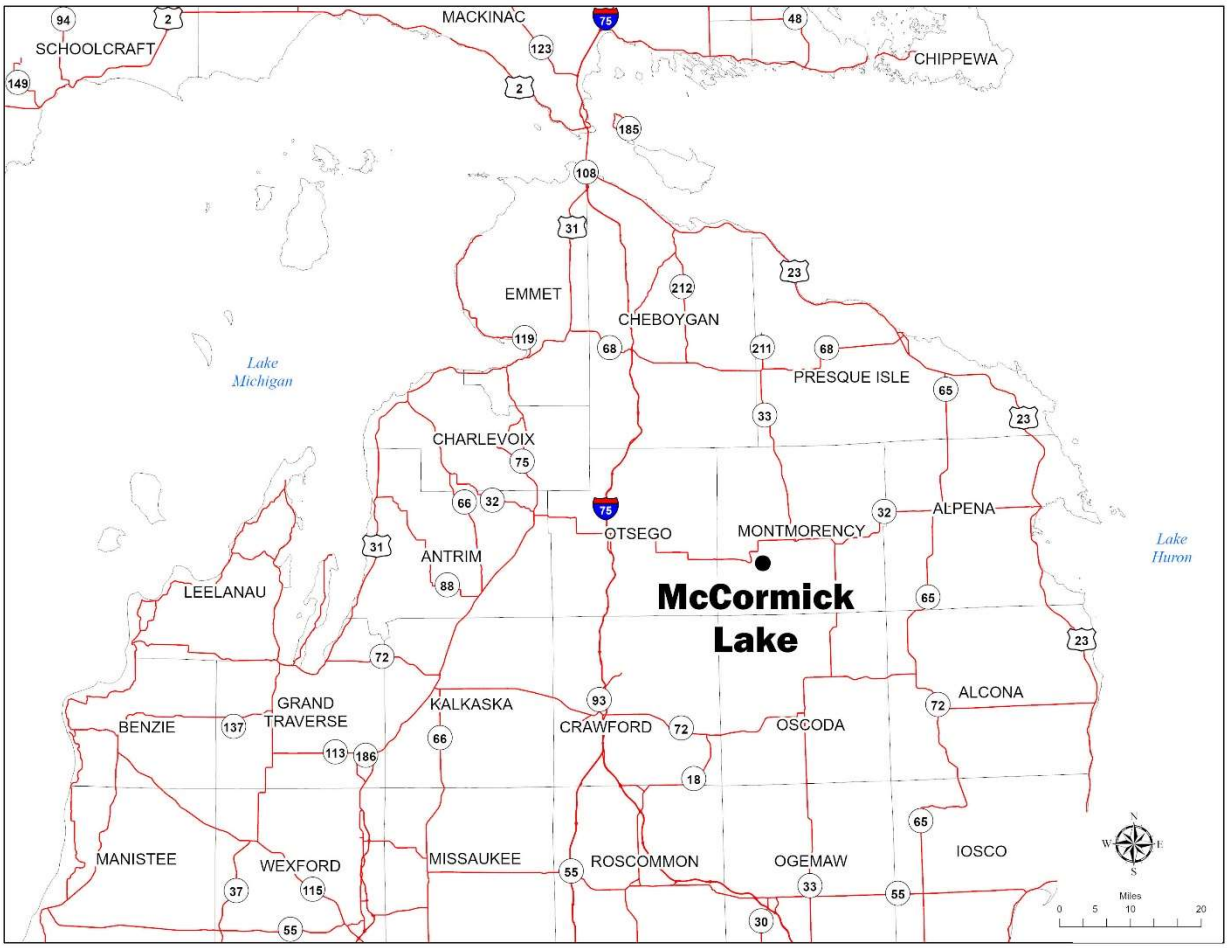


Figure 1.-General location of McCormick Lake in the northern Lower Peninsula of Michigan.

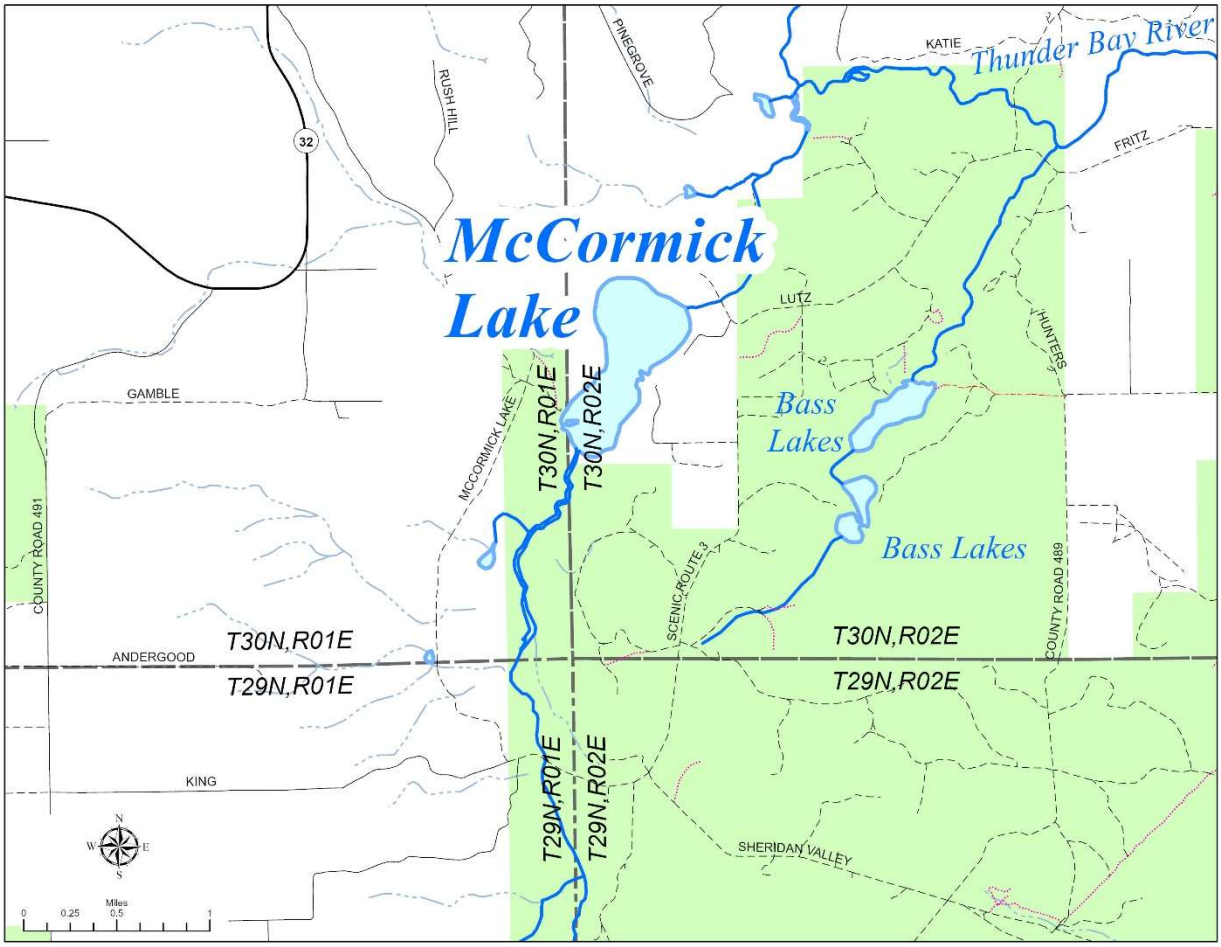


Figure 2.-McCormick Lake in Montmorency County. Sheridan Creek enters the lake on the south side, and the Thunder Bay River departs the lake on the north shore.

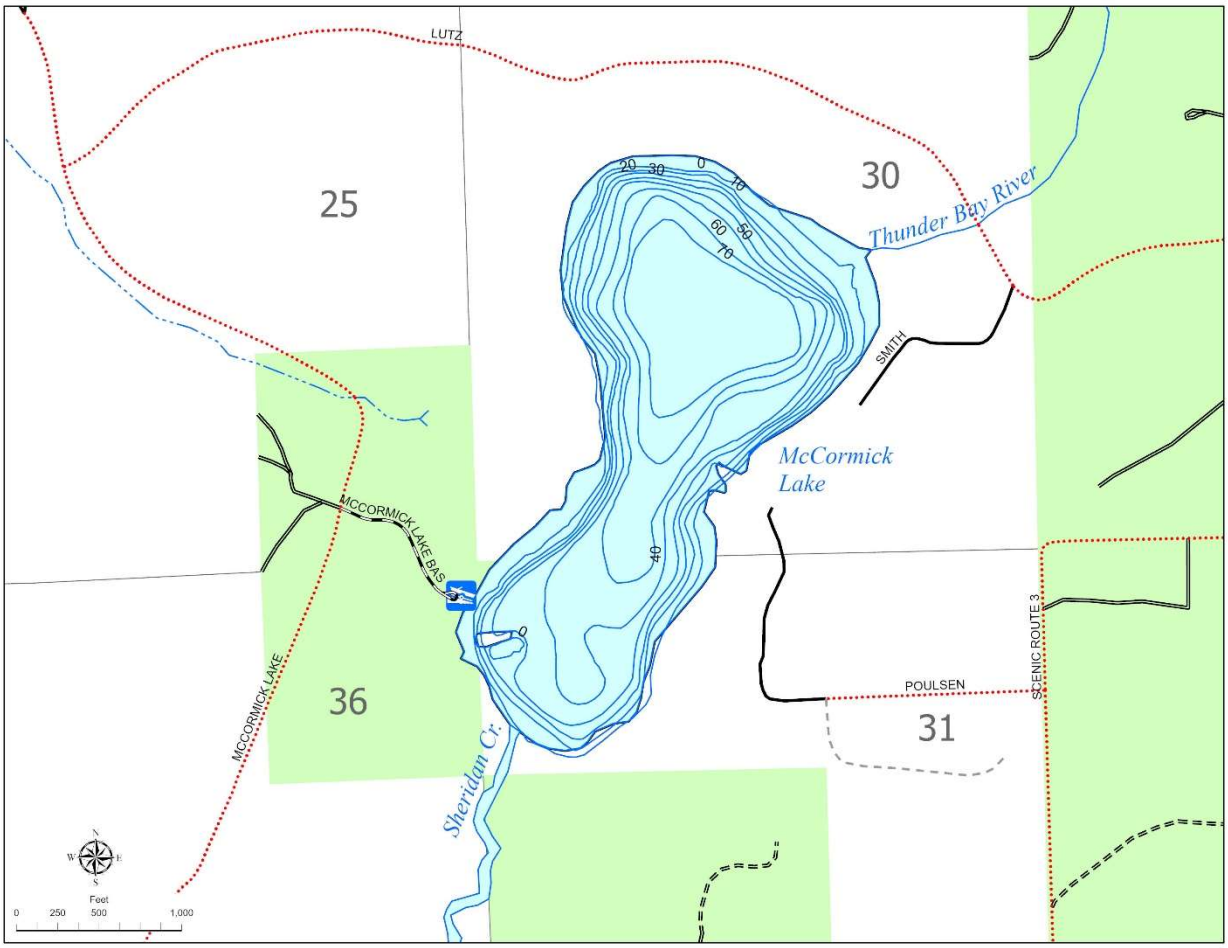


Figure 3.-Bathymetric map of McCormick Lake. Contour lines in lake are in foot measurements. DNR managed boating access site is on the southwest shore.

Figure 4. Distribution of anglers who fished McCormick Lake during the winter creel period based on interviews (n=87).

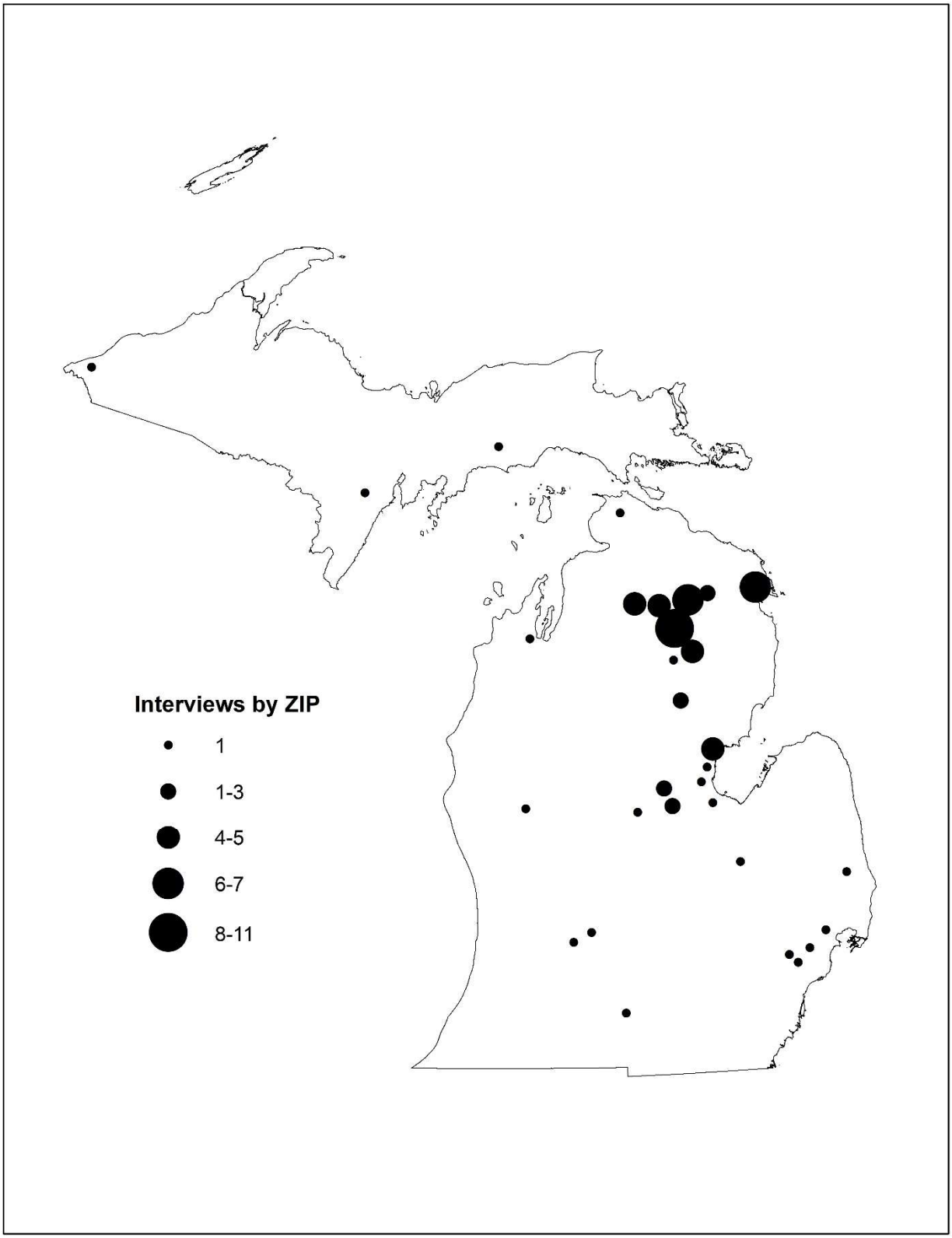
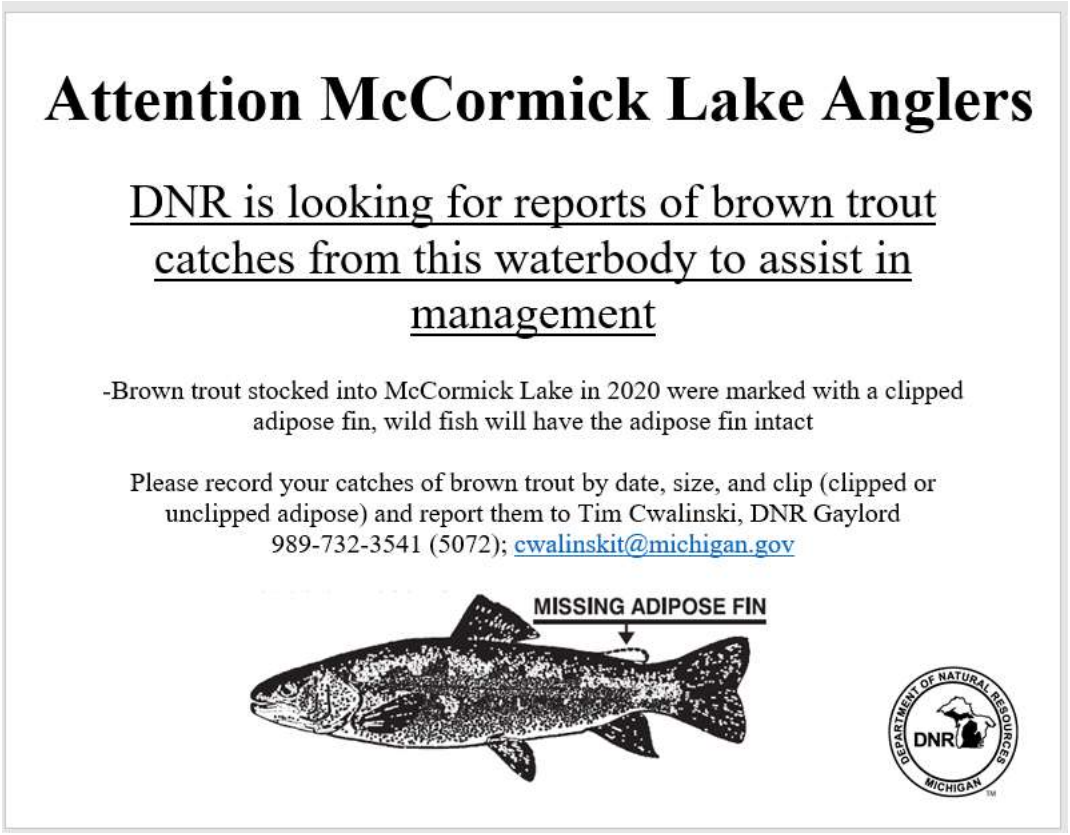


Photo 1.-Aerial view of McCormick Lake.

Photo 2.-DNR public access site on the southwest shore of McCormick Lake.

Photo 3.-Typical winter trout fishing activity at McCormick Lake.

Photo 4.-Sign posted at McCormick Lake during the 2020 and 2021 fishing seasons asking anglers for help in reporting catches of Brown Trout and if they were clipped or not.



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