

MAGICIAN LAKE

Cass County (T5S, R16W, Sec. 3, 4)
Van Buren County (T4S, R16W, Sec. 34, 35)
Surveyed September 21-24, and October 6, 1993

James L. Dexter, Jr.

Environment

Magician Lake lies mostly in northwestern Cass County, about 6 miles northwest of the City of Dowagiac. It is in an area known as the "Sister Lakes", which include Round, Crooked, Dewey, and Magician lakes. Magician Lake is natural, having been formed during the last glacial period.

The topography of the watershed is that of hills and depressions. This area lies at the lower end lobe of the Kalamazoo moraine. The soils are classified as Spinks - Oshtemo - Ormas Association, which are level to steep, well-drained, sandy (loamy) soils located on glacial outwash plains and moraines. The watershed has been estimated at 2,050 acres in size (Water Quality Investigators 1994). Active and fallow farms, woodlots, and residential homes are the primary features of the watershed. Considering the small size of the watershed, one could call it quite urbanized. There are no inlets to the lake, and one outlet. The outlet is known as Silver Creek, and it is located on the eastern shore of Magician Lake. It drains south to the Dowagiac River, which then feeds into the St. Joseph River watershed of Lake Michigan.

Magician Lake is 498 acres in size, of which 429 acres occur in Cass County. The remaining 69 acres are in Van Buren County. It is up to 60 feet deep, although no official lake map has ever been made. Roughly 70% of the lake is less than 20 feet deep (Water Quality Investigators 1994). Aquatic vegetation is common, with most of the shoal areas having *Chara* interspersed with common to abundant submergent plants.

Water quality conditions were surveyed August 12, 1993. The water had a light green color, and a Secchi disc reading of 7.5 feet. Within the water column (at 54' depth), alkalinity ranged from 120-151 ppm, and pH was 8.3. These values indicate the water is hard and well buffered. Water temperature varied from 78°F at the surface to 45°F at the bottom, with a thermocline occurring at 14-48 feet (an uncommon profile). Oxygen levels, however, dropped below 3 ppm between 18-19 feet, effectively prohibiting most fish from using the water column deeper than 19 feet in midsummer.

The only historical water quality data is from August 21, 1985 (also in 54 feet of water). All results were very similar, except that oxygen levels during that survey were above 3 ppm to about 23 feet.

A later survey (September 3, 1994), by Water Quality Investigators (1994), found 3 ppm of oxygen at 29 feet. The sample was taken over the deepest portion of the lake. The Secchi disc reading was 11 feet, and conductivity was 360 mhos/cm at 25°C. The estimated flushing rate was 2.8 years.

Development around Magician Lake is quite complete. There are four islands in the lake that cover about 70 acres. These are not developed much. The State owns an access site on the north side of

the lake. It has parking suitable for 10 vehicles with trailers, and it has hard surfaced ramps.

Fishery Resource

The first fishery survey of Magician Lake was conducted in 1887. The lake at that time contained a typical warmwater fish community with bluegill, yellow perch, rock bass, bullheads, and crappie.

Records on fish stocking at Magician Lake go back to 1934. Between 1934 and 1945 various combinations of bluegill, large and smallmouth bass, yellow perch, and walleye were stocked. The lake has a history of good fishing. There is one comment in the files that poor fishing occurred in 1954 and that the lake was "infested with gar". In 1962, a seine survey was conducted by the Fish Division. All game species collected in that survey were growing above state average rates except for bluegill, which were growing at the state average rate. The seine sample covered 20 acres (3 hauls). The seine, with dimensions of 1600' x 30', captured over 5,000 fish in 2 days. It was a very impressive, and collected what appeared to be a representative sample of the lake's fishes.

In the 1960's, an investigation was conducted to assess the possibility of adding a northern pike spawning marsh. In 1973 it is noted that a marsh was not needed, most likely due to the results of a full survey conducted in 1972. Both fyke nets and boomshocking were utilized in that survey. Again the fish community appeared unchanged and game fish showed good growth rates. Some anglers, however, did say that fishing success had declined. Based on the 1972 survey and the perceived suitability of the lake for walleye, walleye stocking was initiated in 1975 and continues today (Appendix 1). Stocking levels of spring fingerlings increased substantially in 1991 due to a change in the regional minimum stocking levels.

In 1985, a general boomshocking survey found only one walleye and slower growing bluegill. Other gamefish were still growing at state average rates. In 1991, the first "Serns" indexing survey for young-of-year (YOY) walleye survival was conducted. This survey found excellent survival (estimate of 3.6 YOY walleye per acre) and growth rates above state averages.

The most recent survey was conducted in September and October, 1993 using four standard trap nets (6'x3'x1.5"), four experimental gill nets (125'), and night-time boomshocking (240-V DC, 1 hour). Netting was conducted for 3 nights.

The fish community we found did not differ significantly from any previous survey except that walleye are now common (Table 1). Bluegill, yellow perch, largemouth bass, northern pike, and walleye are the mainstay of the fishery. Largemouth bass and black crappie did not appear to be very abundant.

Bluegill were the most abundant species collected by number and weight. Over 21% of those collected were of acceptable size (greater than 6.0 inches). Growth rates were at state average (Table 2), with younger bluegill exhibiting slow growth and older bluegill showing fast growth. This is slightly better growth than in past surveys. Age-frequency analysis (Table 3) shows variable recruitment levels of young bluegill, but this may be due to our sampling. Using Schneider's (1990) index for bluegill populations, the size distribution of this population ranked average (3.25) on a scale of 1-7, based on trap net and electroshocking data combined. This is identical to the bluegill rank based on 1962 data (Schneider 1990).

Yellow perch were also growing at the state average rate. Eight year classes of perch were collected, and recruitment of young perch was excellent. Only 8% of the perch were of acceptable size.

Although relatively few black crappie were collected, there were five year classes present (Table 2). Growth was well above state average, and 44% were of acceptable size.

More northern pike were collected than largemouth bass. A total of 38 pike, ranging from 8-24 inches, were collected (Table 1). Only 5% were of legal size. Seven year classes were collected. Growth rates of most year classes were below state average. Recruitment levels were impressive, especially of age III pike (1990 year class). Age frequency analysis shows fairly good survival through age IV, then a significant drop in survival. This is most likely due to angling pressure once pike become legal size.

The walleye stocking program at Magician Lake has been very successful. A total of 76 walleye were collected representing eight age classes. Growth rates for walleye were over 4 inches above the state average. Most walleye collected were age 0, although there was a strong showing from the 1991 stocking (age II, average size 16.8 inches). There may be some limited natural reproduction occurring at Magician Lake because we did identify one age I walleye (1992 year class). That was a non-stocking year. Other possibilities, less likely, are that we aged this fish wrong, or there was private, unpermitted stocking going on. Age-frequency analysis (Table 3) shows variable recruitment due to our alternate year stocking policy for this lake. Approximately 29% of the walleye were of legal size.

In 1992-1995, we conducted a voluntary postcard creel survey of walleye catch for Magician Lake. An example postcard is in Appendix 2. A total of 26 cards were returned over the 4-year period. Anglers reported a total catch of 49 walleye at a catch rate of 0.84/hour. What is interesting to note about these card returns is that almost every one reported they were specifically fishing for walleye. This is very uncommon among southern Michigan walleye lakes where we have conducted similar surveys. Even though card returns were rather low for a 4-year period, I highly suspect that many of the walleye anglers at Magician Lake wished to keep their good fishing a secret.

Only 36 largemouth bass were collected (Table 1). This is one of the poorest largemouth samples we have ever seen. Just over 5% of the bass collected were of legal size. Largemouth bass were represented by six age classes (0-V). Growth was average (Table 2). Age-frequency analysis (Table 3) shows steady but low recruitment, and low mortality until age IV, which is about the time they are large enough to be harvested by anglers.

The overall fishery of this lake is very good, with perhaps the exception of largemouth bass and black crappie. However, sampling gear biases may have led to our poor catches of these two species. Anglers have not complained about the present fishery for bass or crappie. Magician Lake is heavily used by Indiana anglers, and they really like it for walleye and bluegill. Even though the lake does have significant areas of weed beds, fishing for most species is very successful. There is not another lake in the immediate area that can compare to this lake in terms of the walleye fishery. Diamond Lake near Cassopolis has the closest good walleye fishery. Many area lakes offer similarly good populations of warmwater game fish, but the pike population appears to be especially noteworthy. Again, Diamond Lake is Magician Lake's closest competitor.

Management Direction

Magician Lake will continue to be managed as one of southwest Michigan's premier warmwater fisheries and stocked walleye waters. Currently, the stocking level is 50 spring fingerlings per acre on an odd year basis (total 24,900 sf). In the future, stocking may also occur in even years if enough walleye are available and if Serns indexing indicates poor survival of previously stocked walleye. Based on the number of anglers that fish Magician Lake specifically for walleye and our survey results, I can safely assume that a good walleye fishery has been created. Continued stocking will ensure this fishery will continue.

Our goal into the next century will be to maintain the excellent health of the current fishery and continue the walleye stocking program. Additional surveys of the largemouth population may be required if we hear negative reports from anglers. I strongly believe, however, that this will not be

the case. No major obstacles to achieving our goal of maintaining the existing fishery are anticipated.

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References

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

Water Quality Investigators. 1994. Fusilier's Atlas and Gazetteer of Michigan Lakes, Volume 4. Dexter.

Table 1.--Number, weight, and length (inches) of fish collected from Magician Lake with trap nets, gill nets, and DC boomshocker, September 21-24 and October 6, 1993.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches) ¹	Average length	Percent legal size ²
Bluegill	954	57.1	90.1	19.1	2-8	4.4	22 (6)
Pumpkinseed	22	1.3	4.1	.9	4-7	6.0	46 (6)
Yellow perch	335	20.0	14.3	3.0	2-12	3.8	8 (7)
Black crappie	25	1.5	8.5	1.8	3-11	7.9	44 (7)
Yellow bullhead	17	1.0	13.3	2.8	7-14	11.6	100 (7)
Brown bullhead	11	.7	13.4	2.8	9-15	13.7	100 (7)
Warmouth	13	.8	3.8	.8	5-8	7.0	85 (6)
Rock bass	83	5.0	13	2.7	2-11	5.3	13 (7)
Largemouth bass	36	2.2	21.4	4.5	2-16	9.1	6 (14)
Hybrid sunfish	2	.1	.6	.1	7	7.5	100 (6)
Northern pike	38	2.3	69.9	14.8	8-24	19.9	5 (24)
Walleye	76	4.5	79.9	16.9	6-28	11.7	29 (15)
Bowfin	2	.1	6.2	1.3	16-23	20	
White sucker	3	.2	9.7	2.1	19-20	19.8	
Longnose gar	54	3.2	124.6	26.4	15-36+	28.6	
Total	1671	100.0	472.8	100.0			

¹Note some fish were measured to 0.1 inch, others to inch group: e.g., "5"=5.0 to 5.9 inch "12"=12.0 to 12.9 inches: etc.

²Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

Table 2.--Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Magician Lake with trap nets, gill nets, and DC boomshocker, September 21-24 and October 6, 1993. Number of fish aged is given in parentheses.

Species	Age								Mean growth index ¹
	0	I	II	III	IV	V	VI	VII	
Bluegill	1.4 (8)	2.1 (12)	3.9 (14)	5.0 (13)	6.2 (20)	7.4 (5)	7.4 (7)	8.2 (1)	-0.5
Yellow perch	2.5 (10)	4.0 (21)	6.4 (24)	8.0 (11)	9.2 (5)	9.0 (3)	- -	12.0 (1)	+0.5
Black crappie	3.1 (1)	6.2 (12)	9.6 (7)	10.8 (3)	11.5 (1)	- -	- -	- -	+1.5
Northern pike	8.8 (1)	14.0 (4)	20.5 (16)	20.5 (9)	21.7 (5)	21.0 (1)	22.9 (2)	-	-1.7
Walleye	8.0 (22)	14.3 (1)	16.8 (9)	- -	21.5 (4)	- -	22.3 (5)	24.6 (2)	+2.8
Largemouth bass	3.6 (9)	7.6 (5)	10.2 (9)	11.6 (5)	13.1 (5)	15.0 (1)	- -	- -	+0.6

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

Table 3.--Estimated age frequency (percent) of fish caught from Magician Lake with with trap nets, gill nets, and DC boomshocker, September 21-24 and October 6, 1993.

Species	Age								Number caught
	0	I	II	III	IV	V	VI	VII	
Bluegill	15	12	20	23	24	2	4	0	954
Yellow perch	45	38	11	3	1	1	0	0	335
Black crappie	4	52	28	12	4	-	-	-	25
Northern pike	3	10	42	22	12	2	5	-	38
Walleye	70	1	13	-	5	-	5	3	76

Appendix 1. The recent history of walleye stocking in Magician Lake, Cass County.

Year	Number	Size
1975	1,000,000	fry
1976	200,000	fry
1977	525,000	fry
1978	-	
1979	1,000,000	fry
1980	-	
1981	3,000,000	fry
1982	1,004,500	fry
1983	3,500	fall fingerlings
1984	10,000	spring fingerlings
1985	8,725	spring fingerlings
1986	8,806	spring fingerlings
1987	8,652	spring fingerlings
1988	-	
1989	8,532	spring fingerlings
1990	-	
1991	21,450	spring fingerlings
1992	-	
1993	22,056	spring fingerlings

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Web Author: [Tina M. Tincher, Librarian](#)

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