

## GRASS LAKE

Jackson County (T2S, R2E, Sec. 29, 32)  
Surveyed May 1995

**Michael P. Herman**

### Environment

Grass Lake is located in west-central Jackson County approximately 8 miles east of the City of Jackson. It is approximately 348 acres in size but is one of the most shallow lakes in the county with an average depth of only about 4 feet. The deepest basin, only 13 feet, is located near the extreme northern end ([see map of Grass Lake](#)). The lake basin is comprised mainly of marl, although some sand, gravel, and peat are also present.

Grass Lake has an inlet on it's north end which directly connects to Mud Lake and Tims Lake. The only outlet of Grass Lake, located on it's south end, empties into the Grass Lake Drain. This drain flows into the Leoni Millpond and eventually enters Michigan Center Lake to the southwest. Grass Lake is part of the upper Grand River watershed. Several other lakes in close proximity to Grass Lake have similar physical features. Goose, Gilletts and Brills lakes are all rather large lakes which have extensive areas of shallow water and similar substrates.

The name "Grass Lake" may have originated from the vast bulrush beds which once covered this lake. Local residents have reported a significant reduction of bulrushes in the last few decades. Although the bulrush appears to be a very hearty plant, substrate disturbances, occasional "mowing" by motorboats, and low concentrations of any one of several aquatic plant herbicides are known to kill bulrushes. High-speed boating activity undoubtedly has resulted in a reduction of this plant in Grass Lake. Other vegetation types found in Grass Lake include the algae *Chara*, Eurasian milfoil (*Myriophyllum spicatum*), and several species of common pond weeds (*Potamogeton*). All of these are moderately abundant.

The majority of Grass Lake is bordered by sedge marsh habitat which has significantly restricted human development of the shoreline. Approximately 40 permanent and summer homes presently exist along this lake. There is a county park on the southeast side of the lake which has a gravel boat ramp and parking for approximately 12 cars. This site is maintained by the Jackson County Parks Division.

### History

Earlier in this century, the fishery resources of Grass Lake were apparently heavily influenced by winterkills. A winterkill can occur when thick coverings of ice and snow blanket shallow lakes which have somewhat enriched waters. Snow and ice restrict the amount of sunlight reaching the aquatic plants, thereby reducing photosynthesis and the amount of dissolved oxygen plants add to the water. During long winters the dissolved oxygen supply becomes depleted by the respiration (breathing) of aquatic animals, plants, and bacteria which are decomposing organic materials on the lake bottom. Fish die from suffocation if dissolved oxygen falls below a critical level before the ice breaks up and re-aeration can occur. The likelihood of winterkill is increased by any form of

fertilization (eg., from lawns, farms, septic systems, and waterfowl) which stimulates plant growth in the summer and, thereby, plant decomposition in the winter.

Major winterkills occurred at Grass lake in 1916 and 1936, and a few winterkilled fish were observed in the spring of 1945. Winter oxygen levels were measured by the Fisheries Division several times from 1948 through 1964. During that period, oxygen levels low enough to stress fish occurred only in the late 1940s and early 1950s. More recently, a mild winterkill was reported in the early 1980s.

Records indicate that bluegill, largemouth bass, and yellow perch were stocked in the late 1930s and early 1940s by the Fisheries Division. This was common practice until research demonstrated that stocking these species was unnecessary. The earliest fish growth data on record was taken from a few bluegills collected in 1957. Most of these were growing below state average rates. A fishery survey conducted in 1971 resulted in the capture of large numbers of warmwater fish species typical of lakes in the area. The survey report stated that bluegill and perch populations "appeared stunted," however fish growth was not analyzed. Fishing was reported as poor for panfish and fair for bass and pike.

Another extensive fishery survey was conducted in 1986 following several riparian complaints of poor fishing. Results were very similar to those of the 1971 survey. Bluegill and perch were rather small and slow growing when compared to average fish growth rates in Michigan. Some large bass and northern pike were represented in the fish sample.

Fisheries personnel from the Jackson District have successfully raised redear sunfish since 1984 and have stocked approximately 2.5 million fingerlings in over 30 area lakes. This fast-growing panfish, originally native to as far north as the Indiana-Michigan border, has become increasingly popular among anglers since their first introduction to a few southern Michigan lakes in the early 1950s. Preliminary evaluations have generally shown good survival of stocked redears, and their natural reproduction has been confirmed in several lakes. In the fall of 1987, approximately 35,000 redear sunfish fingerlings were stocked in Grass Lake from rearing ponds in the Jackson District.

A survey in 1990, just 3 years later, resulted in an impressive catch of redear sunfish. A total of 55 redears averaging nearly 8 inches long were caught in trap nets. These fish appeared very healthy and robust and fish scale analysis showed that they were growing 1 inch above the state average rate. As in 1986, the 1990 survey resulted in a good catch of pumpkinseeds that exhibited growth rates above the state average. The shallow, weedy habitat in Grass Lake seems to favor both redear and pumpkinseed. Both species utilize foods found in those areas of lakes, such as snails and aquatic insects.

Results of the 1990 survey showed a persistence of the chronic problem of small bluegills in this lake. Bluegills averaged just 5.6 inches and appeared to be in only fair condition. In general, bluegill populations in most area lakes average 6 inches or larger. Bluegills exhibited growth rates that were nearly 1 inch below the state average, which represents a slight growth decline since the 1986 survey. Although only one northern pike was captured in 1990, several were captured during the 1986 survey. Gill nets, the primary gear type used to sample pike populations, were not used in the 1990 survey. Anglers interviewed during the 1990 survey reported consistent catches of northern pike.

In an effort to increase the chances for redear sunfish survival as well as to provide some genetic diversity to the existing population, more fingerling redear sunfish were stocked into Grass Lake in 1991 and 1992.

### **Fishery Resource**

Grass Lake was last surveyed in May of 1995 with four standard trap nets (8 x 5 x 3 foot, 1.5-inch

mesh) and two experimental gill nets (125-feet long, six panels). All of the nets were fished for 1 night. Gamefish species captured during this survey in descending order of abundance included bullhead, redear sunfish, bluegill, black crappie, pumpkinseed sunfish, yellow perch, northern pike and rock bass (Tables 1a and 1b). Analysis of growth rates and age composition may be found in tables 2 and 3.

Evaluation of the redear sunfish fingerlings previously stocked into this lake was the primary objective of the 1995 fisheries survey. Redear sunfish were found to have grown and survived very well in Grass Lake. Over 160 redears were captured in trap nets. They averaged nearly 9 inches in length and one-half pound in weight, with several fish over 10 inches long. Most of the redears caught in 1995 were four-years old and are likely survivors from fingerlings stocked in 1991. Five year classes of redears were represented in the 1995 fish sample indicating that natural reproduction is occurring (Table 3). Redears exhibit growth rates nearly 1 inch above the state average (Table 2). The goal of creating a "trophy" panfish has been achieved.

Bluegills comprised 16% of all fish caught in trap nets and they averaged 6 inches. Nearly 60% of the bluegills caught in trap nets were at least 6 inches long, an acceptable size to most anglers (Table 1a). Based on growth analysis using fish scales, bluegills caught in trap and gill nets during the 1995 survey exhibited growth rates that were approximately 0.7 inches below the state average (Table 2). The slow bluegill growth observed in 1995 was consistent with past surveys.

Grass Lake supports an excellent bullhead population. Bullheads were the most abundant fish species caught in trap nets and they averaged nearly 10 inches. This species is often overlooked by anglers even though they are fun to catch and are excellent table fare. Black crappie caught in trap nets averaged 8.5 inches and over 80% of them were larger than 7 inches, the size that anglers consider large enough to keep. Crappies exhibited above average growth rates and appeared to be in very good physical condition.

Pumpkinseed sunfish averaged over 6 inches and exhibited slightly above average growth rates. Over 70% of the pumpkinseeds caught during this survey were of acceptable size to anglers. A few yellow perch were captured, ranging in size from 6 to nearly 11 inches. Perch averaged nearly 8 inches and were represented by four age groups. Although not enough fish were captured to be statistically significant, all age groups of perch exhibited average or above average growth trends.

### **Analysis**

Bluegills are targeted for sampling in inland lakes because of their role in determining fish community structure and overall sportfishing quality (Schneider 1981). Even though the goal of lake surveys is to sample all fish species and all sizes present, many times the bluegill population is the only one adequately sampled because bluegills are typically one of the most abundant. A ranking system has been developed that allows fish managers to get an idea of the relative quality of a lake's fish population (Schneider 1990). On a scale of 1 to 7, the quality of the bluegill population in Grass Lake based on the trap net catch was calculated as 2.5, or marginally "acceptable".

Results of past surveys suggest that a stable fishery exists in Grass Lake. Survey records show that species composition has remained relatively unchanged with the notable exception of stocked redear sunfish. Even though bluegill growth has remained markedly poor since growth was first observed in the late 1950's, Grass Lake has consistently produced good numbers of bluegills that have been an acceptable size to anglers. Bluegills have generally been quite abundant and have provided anglers with significant angling opportunities throughout the years. Growth trends for perch, pumpkinseeds, largemouth bass, pike, and crappie are remarkably similar to those from past surveys of Grass Lake; that likewise suggests that a stable fishery exists. Age composition and survival characteristics of all species listed in Table 2 appear to be normal based on scale sample

frequencies. The longevity of black crappie appears to be above average.

Redear sunfish seem ideally suited to Grass Lake. The excellent growth exhibited by this species is unexpected based upon historical growth characteristics of most other species in the lake. Redear sunfish should continue to grow and attain very large sizes when compared to other panfish species. Redears do not seem to demonstrate growth stunting as do most other sunfishes.

Redear natural reproduction has been successful in Grass Lake and the growth and survival of this species should be monitored by surveying the lake again in approximately 5 years.

### Management Direction

Although the fishery of Grass Lake is somewhat average, this lake supports a variety of catchable gamefish that are available to anglers. Bluegill, black crappie, northern pike and redear sunfish are quite abundant and anglers are satisfied with the existing fishery. No radical fishery management is recommended at this time.

Report completed: December 30, 1996.

### References

Schneider, J.C. 1981. Fish communities in warmwater lakes. Michigan Department of Natural Resources, Fisheries Research Report 1890, Ann Arbor.

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

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**Table 1a.**-Number, weight and length of fish collected from Grass Lake with trap nets, May 10, 1995.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches) <sup>1</sup>	Average length	Percent legal size <sup>2</sup>
Bluegill	91	16.0	14.1	5.0	4-6	6.0	59
Redear sunfish	168	28.7	90.1	30.4	6-10	8.7	100
Pumpkinseed	29	5.0	5.8	2.0	4-7	6.2	72
Black crappie	37	6.0	14.4	5.0	5-11	8.5	81
Yellow perch	3	1.0	0.6	0.1	7-8	7.8	100
Golden shiner	4	1.0	1.0	0.3	7-8	7.8	--
Northern pike	1	0.1	5.2	2.0	28.1	28.1	100

Yellow

bullhead	197	34.0	74.5	25.0	7-11	9.2	100
Brown bullhead	29	5.0	16.2	6.0	8-12	10.5	100
Rock bass	2	0.1	0.3	0.1	4-6	5.5	50
Warmouth	1	0.1	0.2	0.1	6.5	6.5	--
Bowfin	20	3.0	70.4	24.0	15-25	21.1	--
Total	582	100.0	292.8	100.0			

<sup>1</sup>Note: some fish were measured to 0.1 inch, others to inch group: eg., "5" = 5.0-5.9 inches, "12" = 12.0-12.9 inches, etc.

<sup>2</sup>Percent legal size or acceptable size for angling.

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**Table 1b.**-Number, weight and length indices of fish collected from Grass Lake with gill nets, May 10, 1995.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches) <sup>1</sup>	Average length	Percent legal size <sup>2</sup>
Bluegill	1	1.3	0.1	0.1	5.5	5.5	0
Pumpkinseed	2	2.6	0.5	1.0	6.5	6.5	100
Black crappie	5	6.4	1.4	2.0	5-9	7.7	80
Yellow perch	12	15.4	2.5	5.0	6-10	7.7	50
Northern pike	3	3.8	12.2	23.0	21-32	25.2	33
Largemouth bass	1	1.3	1.0	2.0	12.5	12.5	0
Redear sunfish	1	1.3	0.3	1.0	7.5	7.5	100
Golden shiner	12	15.4	2.9	5.0	6-8	7.8	--
Bowfin	5	6.4	20.0	37.0	20-27	22.1	--
Yellow	36	46.2	12.9	23.9	7-11	9.0	100

bullhead

Total	78	100.0	53.8	100.0
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<sup>1</sup>Note: some fish were measured to 0.1 inch, others to inch group: eg., "5" = 5.0-5.9 inches, "12" = 12.0-12.9 inches, etc.

<sup>2</sup>Percent legal size or acceptable size for angling.

**Table 2.**-Average total length (inches) at age, and growth relative to the state average, for five species of fish sampled from Grass Lake with trap and gill nets, May 10, 1995. Number of fish aged is given in parentheses.

Species	I	II	III	Age IV	V	VI	VII	VIII	Mean Growth Index <sup>1</sup>
Bluegill			4.6 (1)	5.2 (12)	6.1 (11)	6.7 (1)	6.9 (1)		-0.7
Redear Sunfish			7.2 (3)	8.5 (26)	9.8 (3)	10.0 (1)			+0.9
Black crappie		5.7 (8)	7.8 (13)	9.5 (9)	10.2 (4)	10.7 (2)	11.6 (2)		+0.3
Pumpkinseed			5.0 (3)	5.5 (5)	6.5 (13)	6.8 (1)			+0.1
Yellow Perch			6.6 (7)	7.7 (3)	8.5 (3)	9.6 (2)			+0.1

<sup>1</sup>Mean growth index is the average deviation from the state average length at age.

**Table 3.**-Estimated age frequency (percent) of five species of fish caught from Grass Lake with trap and gill nets, May 10, 1995.

Species	I	II	III	Age IV	V	VI	VII	VIII	IX	Number caught
Bluegill			1	33	56	5	5			92
Redear sunfish			3	89	7	1				169
Black crappie		19	35	24	12	5	5			42

Yellow perch	47	20	20	13	15
Pumpkinseed	9	15	54	22	31

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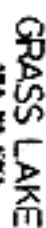
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