

LAKE LAVINE

*Branch County (T8S, R6W, Sections 17, 18, 19, and 20)
Surveyed June 1989*

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Environment

Lake Lavine, nearly 87 acres in size, is located in south-central Branch County approximately 0.5 miles north of the Indiana state line. The nearest town is Kinderhook, 3 miles to the northeast. The only outlet is located on the lake's northwest end, and is approximately 15 feet wide and 1 foot deep where it leaves the lake. Lake Lavine is part of the headwaters of the Prairie River watershed. The Prairie River flows westerly, joining the St. Joseph River just south of the community of Three Rivers.

Approximately 90% of this lake's substrate is comprised of organic matter. The remaining 10% consists of scattered areas of sand, found mainly on the eastern and northwestern shores. White and yellow water lily, common bulrush, and several varieties of pondweed are the major aquatic plants found in the lake; all are moderately abundant.

Lake Lavine is a relatively deep lake (71 feet maximum) with steep drop-offs. Approximately 80% of the lake's surface area has water greater than 10 feet in depth. The water is usually colorless. The latest limnology survey was in September of 1985. Temperatures ranged from 74°F at the surface to 46°F at the 50-foot depth. On the day of the survey, the thermocline occupied the layer of water between the 19-and 27-foot depths. Dissolved oxygen concentrations in this layer of water were high, 5.0 ppm to 8.5 ppm.

The terrain surrounding Lake Lavine is gently rolling woodlands, farm fields, and vineyards. The shoreline is moderately developed, and about 40 summer and permanent homes presently exist on this lake. A state-owned public fishing site with a gravel boat ramp is located on the lake's southeastern shore. The undeveloped shoreline areas are predominantly wooded with buttonbush, red-osier dogwood, and red maple.

Fishery Resource

Lake Lavine has been managed as a two-story rainbow trout lake from 1947 to the present. The only interruption in annual trout stocking occurred in 1970, 1971, and 1972. Rainbow trout continue to provide a unique fishing opportunity popular with many anglers.

This lake has historically yielded consistent catches of large bluegills and large yellow perch. Although relatively few largemouth bass exist in the lake, this species is sought by many area anglers.

Lake Lavine was last surveyed in June of 1989 with four standard 6x3-foot trap nets and three 125-foot experimental gill nets (Table 1). Species captured in descending order of abundance included bluegills (432), yellow perch (127), bullhead (54), pumpkinseed sunfish (19), lake chubsucker (14),

bowfin (11), largemouth bass (9), black crappie (8), rainbow trout (2), green sunfish (1), and brown trout (1).

Bluegills predominated in trap nets, comprising nearly 84% by number and 63% by weight of the total catch. Eighty-eight percent of all bluegills caught in trap nets were of acceptable size to anglers. (Table 1). Based on growth analysis using fish scales, bluegills caught during the 1989 survey exhibited near state-average growth rates (Table 2). However, the 432 bluegills in the sample averaged 7.5 inches each, which is an unusually large average size.

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 only the bluegill population is adequately sampled because bluegills are usually the most abundant fish. Recently, 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 Lake Lavine was calculated as 6.3, or "excellent."

Yellow perch averaged 9.3 inches each and were growing nearly 1 inch above the state average rate (Table 2). Few perch were caught in trap nets. However, this species comprised more than 75% by number and 71% by weight of the total gill net catch. Ninety-one percent of all perch caught in gill nets were of acceptable size to anglers (Table 1).

Table 2 shows that a generally even age composition exists for both bluegills and perch in the IV, V, and VI age groups. Although fewer age II and III individuals of either species were caught with either gear, these smaller fish are much less vulnerable to netting. The longevity of bluegill (8 years) and perch (7 years) in Lake Lavine appears to be average.

Black crappie and largemouth bass growth trends were somewhat below the state average, although not enough fish per age group were captured to be statistically significant.

Only two rainbow trout were caught during the 1989 trap net and gill net survey; however, anglers report good success in catching them in the evening during the summer and early fall. A few rainbows are reportedly caught in the winter by ice anglers fishing for panfish.

Analysis and Discussion

Lake Lavine has been successfully managed for more than 40 years as a two-story rainbow trout lake. The stocked trout apparently do not conflict with the warmwater species which coexist in the lake. Most of the trout are short-term residents of the lake. A significant portion of them may be removed by angling and natural mortality before the end of the summer.

The only growth information available for comparison is from a gill net survey of July, 1984. Growth trends for both bluegill and perch from the 1984 survey are generally consistent with growth rates from the most recent survey. Species composition has remained relatively unchanged since the lake was first surveyed in 1968.

Management Direction

Lake Lavine has a reputation for consistent catches of bluegill, perch and rainbow trout of acceptable size. Anglers are satisfied with the existing fishery, and the management of this lake as a two-story trout lake should continue. This lake should be surveyed and its fishery evaluated again in 1994.

Report completed: February 1990.

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 900-10, Ann Arbor.

Table 1.-Number, weight, catch per effort and percent legal size for species of fish taken with trap or gill nets from Lake Lavine, June 7, 1989.

<u>Species</u>	<u>Number of fish</u>	<u>Percent total number</u>	<u>Weight of fish</u>	<u>Percent total weight</u>	<u>Catch per effort</u> ¹	<u>Percent legal size</u> ²
Trap nets						
Bluegill	430	83.8	131.8	63.0	107.5	88.0
Yellow perch	3	0.6	1.1	0.5	0.8	100.0
Largemouth bass	4	0.8	7.2	3.4	1.0	75.0
Black crappie	8	1.6	2.2	1.1	2.0	75.0
Pumpkinseed	17	3.3	3.9	1.9	4.3	65.0
Rainbow trout	1	0.2	0.2	0.1	0.3	0.0
Bullhead	35	6.8	25.9	12.4	8.8	100.0
Bowfin	11	2.1	36.1	17.2	2.8	---
Lake chubsucker	4	0.8	0.9	0.4	1.0	---
Total	513	100.0	209.3	100.0	128.5	83.8
Gill nets						
Bluegill	2	1.2	0.2	0.3	0.7	0.0
Yellow perch	127	75.6	45.4	71.2	42.3	91.0
Largemouth bass	5	3.0	1.8	2.8	1.7	0.0
Pumpkinseed	1	0.6	0.2	0.3	0.3	100.0
Rainbow trout	1	0.6	2.7	4.2	0.3	100.0
Brown trout	1	0.6	2.5	3.9	0.3	100.0
Green sunfish	2	1.2	0.3	0.5	0.7	0.0
Bullhead	19	11.3	7.7	12.1	6.3	90.0
Lake chubsucker	10	5.9	3.0	4.7	3.3	---
Total	168		63.8	100.0	55.9	96.2

¹Number of fish per trap-net or gill-net night.

²Percent legal size or acceptable size to harvest.

Table 2.-Average total length (inches) at age, with ranges, for bluegill and yellow perch taken with trap and gill nets from Lake Lavine, June 7, 1989. Number of fish aged in parentheses.

<u>Species</u>	<u>II</u>	<u>III</u>	<u>Age</u> <u>IV</u>	<u>group</u> <u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	<u>Mean</u> <u>growth</u> <u>index</u> ¹
<i>Bluegill</i>								
Length	3.4	4.9	6.1	6.7	8.0	8.5	9.0	
Range	3.4	3.5-5.8	5.2-6.8	5.6-7.2	7.5-8.3	8.2-9.0	8.7-9.2	0.0
	(1)	(9)	(11)	(8)	(12)	(4)	(2)	
<i>Yellow perch</i>								
Length	6.3	7.6	9.0	9.5	10.7	11.5		
Range	5.9-6.9	6.8-8.2	8.2-11.5	8.5-10.3	9.6-11.9	10.9-12.0		+0.9
	(10)	(8)	(12)	(12)	(14)	(2)		

¹Mean growth index is the average deviation in mean length from the state average.

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Questions, comments and suggestions are always welcome! Send them to
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