

Lombard Lake

*Hillsdale County (T5S, R1W, Sec. 14, 23)
Surveyed May 2, 1991*

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Environment

Lombard Lake is located in the Somerset State Game Area, approximately 15 miles south of the city of Jackson. The game area was purchased by the State of Michigan in 1991 with the goal of creating a variety of recreational opportunities in an area where there is little public land. This game area is located in northeastern Hillsdale County and spans approximately 642 acres. Open water and wetlands occupy more than half of the entire property.

Lombard Lake was originally only 12 acres in size, but now covers an area of approximately 281 acres. A dam was constructed in late 1953 on what was then the "Olson" property, and the surrounding low areas were flooded to create a larger open water area. The dam, located on the northwest end of Lombard Lake, was constructed from the gravelly clay soils located near the dam site. It is 275 feet in length and has a structural height of 6 feet. The control structure for this dam is concrete with wood stop logs. Shortly after the main dam was built, a second water impounding embankment was constructed approximately 3000 feet to the east. This embankment is 285 feet in length and 5 feet in height. In October of 1991, both embankments were repaired to conform with current State of Michigan dam safety standards.

There are three distinct open water areas in Lombard Lake (Figure 1). The southwest arm of the flooding covers an area of approximately 73 acres, and the southeastern arm is approximately 76 acres in size. Both of these basins are extremely shallow and have very little fisheries value. Because of the lack of deep water in these basins, they are susceptible to frequent winterkill. These shallow basins are connected to the main part of Lombard Lake via culverts. These culverts are approximately 3 feet in diameter and are located under the existing gravel road that physically separates these basins from one another. The main part of the lake covers an area of approximately 132 acres. It was this part of Lombard Lake that was surveyed and will be the focus of discussion throughout the remainder of this report.

There are no inlets to Lombard Lake other than two agricultural tiles which enter the lake at the south end. The only outlet is at the dam on the northwest end of the lake. Water leaves the lake flowing in a northwesterly direction and empties into Goose Creek. This creek flows eastward and eventually empties into Somerset Lake. From Somerset Lake, water flows eastward and into the River Raisin in southwestern Jackson County.

The predominant upland soil types in this area are well-drained loam and clay loam. The lowland soils are mainly muck and peat and much of what is now Lombard Lake covers these soils. Both emergent and submergent aquatic plants were very abundant during the May 1991 fishery survey of this lake. Lily pads were the predominate type above water and coontail dominated the submergent plant community. Other aquatic plants observed included arrow weed, cattail, purple loosestrife, milfoil, elodea, bladderwort, and various pondweeds.

Lombard Lake gradually drops off to a maximum depth of 18 feet. Approximately 80% of the lake is less than 5 feet deep. The water is moderately clear. The shoreline of the lake is bordered by woods and agricultural land. The wooded areas include a mixture of native hardwoods and planted conifers-soft maple, swamp white oak, elm, ash, cottonwood, scotch pine, white pine, Austrian pine, and white and Norway spruce. No homes or other buildings exist along this lake. In the summer of 1991, a 10 car parking lot was constructed by D.N.R. Wildlife Division personnel just north of Stearns Road and approximately 3/8 mile from Lombard Lake. Boats must be carried, or otherwise transported, from the parking lot to the lake. To maintain the quiet seclusion in this area, no outboard motors are allowed on Lombard Lake.

History

The Lombard Lake property was privately owned for many years, and only recently was it acquired by the State of Michigan for public use. Therefore, very little historical information regarding the lake's fisheries resources is available.

Mr. Henry Merkle, the lake's previous owner, reported several winterkills during the last 14 years. Mr. Merkle also reported that bass, perch, and bluegill fishing was quite good several years ago, and that very large northern pike were present. However, no northern pike were taken in our recent netting. Mr. Dennis Custard, a retired Michigan State Police Officer, who trapped this area as recently as 5-10 years ago, reported catching good numbers of large northern pike by casting Daredevil spoons in the deeper parts of the lake. He also reported making several catches of 10-13 inch yellow perch in past years and noted that they were sometimes heavily infested with yellow grubs. The local Conservation Officer, Bob Like, confirmed angler reports of perch and pike in Lombard Lake.

Fishery Resource

Lombard Lake was surveyed in early May of 1991 with three standard 8'x 5'x 3' trap nets and two experimental (125 foot) gill nets. Game fish species captured included bluegills, pumpkinseeds, yellow perch, largemouth bass, and bullhead. Catch and growth data for fish caught during this survey are outlined in the Tables 1a, 1b, and 2.

Based on growth analysis using fish scales, bluegills caught during the 1991 survey exhibited growth rates 1.4 inches above the state average. Nearly all of the bluegills caught with trap nets were 6 inches or larger, or what is considered to be an acceptable size to anglers. Bluegills comprised approximately 13% of the trap net catch by number and averaged 7.1 inches. The true average size for this species is likely somewhat higher, since bluegill were spawning at the time of this survey. Many large adult fish are quite restricted during the spawning period. This likely made them less vulnerable to netting.

Bluegills are targeted for sampling in inland lakes because of their role in determining fish community structure and overall sport fishing quality (Schneider 1981). 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 Lombard Lake was calculated as **5**, "Good".

In general, trap nets in District 13 lakes catch more bluegills than any other species. But, in this survey, pumpkinseeds comprised 61% of the total number (Table 1a). Over 200 pumpkinseeds with an average length of 5.7 inches were captured. Fish scale analysis confirmed that pumpkinseeds were currently growing just above the state average rate (Table 2). Although too few fish in age groups V, VI, and VII were captured to be statistically significant, growth rate trends of pumpkinseeds in all of these age groups indicate that a fast growing and healthy adult pumpkinseed population exists in Lombard Lake. Only 31% of the total pumpkinseed catch were of acceptable

size to anglers (6 inches or larger). However, six pumpkinseeds measured over 8 inches and two were over 9 inches. Eight- and nine-inch pumpkinseeds are rare in most District 13 lakes.

Yellow perch comprised nearly 35% of the total gill net catch by number and averaged 6.7 inches long (Table 1b). Scale analysis showed that perch were growing just above the state average rate. Only 23% of these fish were 7 inches or larger, or what anglers consider to be "keeper size". Although few perch over 9 inches were caught during this survey, frequent catches of large (10-14") perch were reported by several anglers in years past. The influx of fertilizers from the farm tiles that drain into Lombard Lake, coupled with its shallow basin morphology, contribute to the accelerated eutrophication of this water body. The resulting increase of macrophytes over the years may be a contributing factor to the apparent decline of large perch in this lake. Although perch are adaptable to a wide variety of habitats, they are most abundant in lakes with moderate vegetation.

Over 100 bullheads averaging over 7.5 inches in length were caught with trap and gill nets. More than half of these fish were of acceptable size to anglers (7 inches or larger). Bullheads were the most abundant fish caught with gill nets, comprising nearly 50% of the total gill net catch by number and weight.

The bowfin population in Lombard Lake appears very healthy. Twenty-four bowfin averaging over 19 inches long were caught with trap nets. These fish are very effective predators of small panfish and likely contribute to the above average growth rates of bluegill, pumpkinseed, and yellow perch.

Table 3 outlines age frequency estimates for bluegills, pumpkinseeds, and yellow perch caught during the May 1991 survey of Lombard Lake. Bluegills and pumpkinseeds younger than age III are poorly represented in the table because they were not fully vulnerable to the gear types used. The absence of bluegills older than age V and perch older than age VI may be attributed to the tendency of this lake to periodically winterkill. Additionally, it is possible that the majority of older bluegills were less vulnerable to nets because they were spawning when Lombard Lake was surveyed.

Analysis and Discussion

The 1991 spring fishery survey was the first ever conducted on Lombard Lake. Consequently, no past fish growth data is available for comparison. Bluegill, perch and pumpkinseed growth presently exceed state average rates; this is probably due to the tendency of this lake to periodically winterkill. During years when winters are severe, thick ice cover accompanied by deep snow inhibits sunlight from reaching oxygen producing plants in lakes. The resulting reduced oxygen levels create a stressful environment for fish which results in varying degrees of fish mortality. The existing above average fishery of this lake is likely the result of several recent mild winters and the absence of a winterkill during the past few years.

The species composition of Lombard Lake is comparable to other District 13 lakes with similar morphology. In general, panfish numbers, size, condition, and growth are good.

Management Direction

Lombard Lake presently contains relatively good numbers of acceptable size panfish and anglers seem satisfied with the existing fishery. No radical fishery management is recommended at this time.

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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.

Table 1a.-Number, weight, and length indices of fish collected from Lombard Lake with trap nets, May 2, 1991.

<u>Species</u>	<u>Number</u>	<u>Percent by number</u>	<u>Weight (pounds)</u>	<u>Percent by weight</u>	<u>Length range (inches)</u> ¹	<u>Average length</u>	<u>Percent legal size</u> ²
Pumpkinseed	220	61.1	36.6	27.6	3.5-9.5	5.7	31.4
Bluegill	46	12.8	12.3	9.3	4.5-7.5	7.1	97.8
Bullhead	30	8.3	10.1	7.6	6.5-10.5	8.3	80.0
Bowfin	24	6.7	67.6	50.9	11.5-25.5	19.1	-
Golden shiner	22	6.1	2.2	1.7	5.5-6.5	5.8	-
Lake chubsucker	8	2.2	0.5	0.4	4.5-8.5	6.3	-
Yellow perch	7	1.9	1.2	0.9	6.5-9.5	7.9	85.7
Warmouth	2	0.6	0.8	0.6	7.5-8.5	8.0	100.0
Largemouth bass	1	0.3	1.4	1.1	13.5	13.5	100.0
Total	360	100.0	132.7	100.0			

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

²Percent legal size or acceptable size for angling.

Table 1b.-Number, weight, and length indices of fish collected from Lombard Lake with gill nets, May 2, 1991.

<u>Species</u>	<u>Number</u>	<u>Percent by number</u>	<u>Weight (pounds)</u>	<u>Percent by weight</u>	<u>Length range (inches)</u> ¹	<u>Average length</u>	<u>Percent legal size</u> ²
Bullhead	92	49.7	19.2	42.5	5.5-9.5	7.3	65.2
Yellow perch	64	34.6	8.1	17.9	5.5-10.5	6.7	23.4
Lake chubsucker	13	7.0	2.6	5.8	5.5-8.5	7.3	-
Pumpkinseed	9	4.9	0.8	1.8	4.5-5.5	5.1	0
Bowfin	5	2.7	14.3	31.6	13.5-26.5	18.3	-
Golden shiner	2	1.1	0.2	0.4	6.0-6.9	6.5	-

Total 360 100.0 132.7 100.0

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

²Percent legal size or acceptable size for angling.

Table 2.-Average total length (inches) at age, and growth relative to the state average, for three species of fish sampled from Lombard Lake with trap and gill nets, May 2, 1991. Number of fish aged is given in parentheses.

<u>Species</u>	<u>Age</u>								<u>Mean growth index</u> ¹
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	
Bluegill	-	4.5	6.5	7.2	7.5	-	-	-	+1.4
	-	(1)	(8)	(9)	(3)				
Pumpkinseed	-	-	4.6	6.2	7.5	8.2	8.8	-	+0.2
			(14)	(19)	(3)	(3)	(4)		
Yellow perch	-	6.0	6.1	7.4	8.2	9.3	-	-	+0.1
		(18)	(2)	(5)	(14)	(1)			

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

Table 3.-Estimated age frequency (percent) of three species of fish caught from Lombard Lake with trap and gill nets, May 2, 1991.

<u>Species</u>	<u>Age</u>								<u>Number caught</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	
Bluegill	-	2.2	29.5	50.0	18.3	-	-	-	46
Pumpkinseed	-	-	37.5	58.2	1.3	1.3	1.7	-	229
Yellow perch	-	55.5	6.1	8.9	27.9	1.6	-	-	71

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

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