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BIG WOLF LAKE

Jackson County (T3S, RI-2W; Sections 19, and 24)
Surveyed September 9-18, 1991

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Environment

Big Wolf Lake is located in central Jackson County approximately 8 miles southeast of the city of Jackson (Figure 1). This lake is one of nine in a chain of lakes, collectively called the Michigan Center Chain. From east to west, the lakes in this chain include Mellencamp, Little Wolf, Big Wolf, Olcott, Little Olcott, Moon, Price, Round, and Center Lake. There are some relatively narrow and low bridges between these lakes, but most fishing boats are able to access all of the lakes in the chain. Big Wolf Lake is part of the Grand Headwaters watershed within the Grand River Basin. There are two inlets to Big Wolf Lake. Willow Creek enters the lake on the northeast end and a navigable channel exists on the southeast end, connecting to Little Wolf Lake. The outlet of this chain of lakes is located on Center Lake's northwest end. The outlet flows in a westerly direction for approximately 2 miles before emptying into the Grand Rivar.

Marl and pulpy peat are the predominant substrate types. There are some scattered areas of sand, gravel and fibrous peat near shore. White and yellow water lily, *Myriophyllum* or milfoil, and several species of pondweed are the most abundant aquatic plants found in the lake. All are moderately abundant.

Big Wolf Lake is approximately 376 acres in size and has a maximum depth of 45 feet. Because of the extensive shoal areas that are characteristic of this lake, more than 50% of the water is less than 10 feet deep. Several submerged islands exist throughout the lake and serve as prime spawning areas for many fish species. Bluegills in particular make use of these areas and, in the spring, large numbers of them are harvested by anglers.

The terrain surrounding Big Wolf Lake is gently rolling and is mainly farm fields with scattered woodland areas. The shoreline is approximately 70% developed with about 200 mostly permanent residences. The remaining undeveloped shoreline is a combination of sedge and cattail marsh and upland hardwoods.

The Michigan Center Chain is served by three boat launching sites. There is a DNR public launch with parking for 30 cars located on the north end of Center Lake, just off Napoleon Road. A second boat launch, owned by Leoni Township, is located on the extreme west end of Center Lake off Hoyer Road. The third boat ramp, a fee launch site, is located at the Wolf Lake Marina on Wolf Lake's west end. Boats can be rented from Butterfield Landing which is located on Little Wolf Lake. The DNR has recently

purchased land on the southwest part of Wolf Lake and plans to develop a state access site in 1993.

History

Bluegills and largemouth bass were stocked in Big Wolf Lake in the late 1930's and early 1940's. The practice of stocking bass and bluegills was popular in many area lakes during this time period but was discontinued after research showed that stocking these species was not necessary. Walleye fingerlings were stocked in 1983, 1985, 1988, 1989, and 1991. In most cases, subsequent electrofishing and netting surveys resulted in the capture of few walleye. Tiger muskellunge were stocked in Michigan Center Lake every other year from 1967 through 1978. Tigers were also stocked each year from 1979 through 1983. A few tiger muskellunge were reportedly caught by Big Wolf Lake anglers during the years muskies were stocked in Center Lake. This stocking program was discontinued in 1984 because of poor angler returns.

A pike marsh was constructed on the north end of Michigan Center Lake in the early 1970's but it was only used for one or two years. Use of this pike marsh resumed in 1982 and it has been operated every year since. Annual production over the last 10 years has averaged approximately 4,500 4-inch pike fingerlings. All have been stocked into Michigan Center Lake, but because of the connecting channels, Big Wolf Lake has undoubtedly benefited from this pike rearing facility. Anglers occasionally report catching northern pike in Big Wolf Lake.

Historically, Big Wolf Lake has received intense fishing pressure throughout the spring and summer months, mainly for bluegills, crappie, and largemouth bass. Anglers are quite successful, despite intensive use of the lake by power boats and jet skis. There is a steady winter fishery for yellow perch.

During the spring, large numbers of carp cruise the shallows and become challenging targets for hook-and-line anglers, archers and spear fishermen. For approximately 30 years, a carp carnival has been held on the Michigan Center Chain of lakes, usually over the Memorial Day holiday weekend. The current state record carp (61.5 pounds) was speared with a bowfishing arrow from Big Wolf Lake in 1974.

Fishery Resource

Big Wolf Lake was last surveyed in September of 1991 with five standard 8 x 5 x 3-foot trap nets, three 125-foot experimental gill nets, and five standard frame, small mesh fyke nets. All gear was fished for 2 nights, except that only two gill nets were fished the second night of the survey. Gamefish species captured in descending order of abundance included bluegill, black crappie, pumpkinseed, yellow perch, bullhead, largemouth bass, walleye, northern pike, and rock bass (Tables la, 1b and 1c).

Bluegills comprised nearly 60% of all fish caught in trap nets and averaged 6.4 inches long. Over 75% of the bluegills caught were at least 6-inches long, an acceptable size to anglers (Table la).

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 the most abundant. 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. On a scale of 1 to 7, (Schneider 1990), the quality of the bluegill population in Big Wolf Lake was calculated as 4.0 or "average".

Based on growth analysis using fish scales, bluegills caught during the 1991 survey exhibited growth rates that were slightly below the state average (Table 2). Although bluegills are somewhat slow growing, growth is not considered to be poor.

Black crappie caught in trap nets averaged 8.0 inches long. Nearly 80% were 7 inches long or what anglers consider to be "keeper" size. Fish scale analysis showed that crappies were growing just above the state average rate.

Pumpkinseed sunfish averaged 6.0 inches in length and just over half were of acceptable size to anglers. Fish scale analysis confirmed that these fish were growing near the state average rate.

Twenty-eight walleyes (ages I-VI) were captured in trap and gill nets and they averaged nearly 13-inches in length. Eight of these fish were legal size (15 inches) but only one was larger than 16 inches. Walleyes caught during the present survey exhibited growth rates that were 1.3-inches above the state average.

Although relatively few yellow perch were caught during the present survey, consistent angler reports of good summer and winter perch catches suggests that a much larger population of this species exists. Since bluegills are reported to be difficult to locate in winter, anglers concentrate on the more available perch. Yellow perch were caught with all gear types and averaged 7.7 inches. Over 90% of all perch caught were at least 7 inches long, or what most anglers consider to be a size they will keep. Relative to the state average, the perch in Wolf Lake are somewhat growing but this growth is not considered poor.

Relatively few bullheads were caught, but they averaged over 11 inches and over 3/4 pound each. Anglers report occasional good catches of bullheads after dark using a variety of baits. Bullheads are abundant and large in size but are sought by only a few anglers, despite being fun to catch and good to eat.

In general, few largemouth bass are caught during surveys using trap, gill, and fyke nets. Only 29 largemouth bass averaging 7.2 inches were captured; they ranged in size

from 2- to 18-inches. Verified by scale analysis, bass caught during the present survey exhibited growth rates that were 1.2-inches below the state average rate. Moderately slow growth of bass is typical in lakes within this district with similar morphology. Intense competition for food resources coupled with relatively high recruitment of bass are factors which may account for the observed slow growth patterns. Additionally, removal of the faster growing bass by anglers in heavily fished southern Michigan lakes may also contribute to slow growth.

Largemouth bass are one of the most sought after gamefish in many southern Michigan lakes. Numerous bass clubs, as well as local anglers, fish the Big Wolf/Michigan Center Lake chain for this species during the open water months.

Only eight northern pike were captured but they averaged an impressive 27 inches. For most age groups, pike growth trends were well above state average rates, although not enough fish per age group were captured to be statistically significant.

Interviewed anglers report consistent bluegill and bass angling success during the open water months. Anglers also report that the early spring fishery for crappies is underutilized. Good numbers of 8-10-inch crappies are reportedly caught from shallow bays and channels during the month of April. Although winter fishing is only fair for bluegills, ice anglers report very good success in catching 7to 9-inch yellow perch, mainly in shallow water areas off the lake's north shore. A few northern pike are incidentally caught on tip-ups baited with shiners or small white suckers.

Analysis and Discussion

Survey records show that species composition has remained relatively unchanged since this lake was first surveyed in 1957. Growth trends for bluegill, largemouth bass, yellow perch, pumpkinseeds and black crappie are comparable to those from the 1987 trap and gill net survey of Big Wolf Lake. No other historical growth data is available for comparison.

Age composition and survival characteristics of all species listed in Table 2 appear to be normal based on scale sample frequencies. The longevity of all species appears to be low to average.

Big Wolf Lake was stocked with walleye fingerlings in 1983, 1985, 1987, 1988, 1989 and 1991. Although a few of these fish have survived to legal size, very few have been reported by anglers from any lakes in the chain. Based on this information, and the low number of walleyes captured in surveys since walleye have been stocked, it appears unlikely that they will ever create a significant fishery. A study to evaluate walleye stocking in Region III lakes is currently underway and will be completed in late 1992. The Walleye Management Committee will then make recommendations regarding future walleye stocking strategies.

Big Wolf Lake presently supports very good populations of bluegill, yellow perch, crappie, and largemouth bass for angling. Although most fish caught are not large in size, anglers are very satisfied with the existing fishery.

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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 900-10, Ann Arbor.

Table la.-Number, weight, and length indices of fish collected from Big Wolf Lake with trap nets, September 18&endash;20, 1991.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
Bluegill	430	58.0	70.3	18.4	4-7.5	6.4	75
Largemouth bass	17	2.3	10.2	2.7	6-11.5	10.1	6
Pumpkinseeds	58	7.8	9.9	2.6	4-6.5	6.0	57
Yellow perch	36	4.8	6.7	1.8	6-8.5	8.0	92
Black crappie	96	12.9	35.0	9.1	5-11.5	8.0	78
Walleye	24	3.2	20.7	5.5	8-25.5	12.3	25
Northern pike	6	0.8	32.6	8.5	21-34.5	29.0	100
Bullhead	27	3.6	21.1	5.6	8-12.5	11.2	100
Rock bass	3	0.4	0.7	0.2	5-7.5	6.5	33
Warmouth	2	0.3	0.4	0.1	4-7.5	6.0	50
Golden shiner	3	0.4	0.6	0.2	7-7.9	7.5	-
Bowfin	5	0.7	23.9	6.3	20-27.5	23.7	-
White sucker	3	0.4	9.9	2.6	20-22.5	21.5	-
Longnose gar	7	0.9	10.1	2.7	23-31.5	27.4	-
Shortnose gar	10	1.3	12.8	3.4	14-25.5	19.9	-
Carp	16	2.2	114.9	30.3	5-34.5	22.4	-
Total	743	100.0	379.8	100.0			

[1]Note some fish were measured to 0.1 inch, others to inch&endash;group: eg., "5"=5.0 to 5.9-inches; "12"=12.0 to 12.9-inches, etc.

[2]Percent legal size or acceptable size for angling.

Table 1b.-Number, weight, and length indices of fish collected from Big Wolf Lake with gill nets, September 18-20, 1991.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
Bluegill	9	16.6	1.1	2.8	5-7.5	6.6	89
Largemouth bass	1	1.9	0.4	1.0	10.5	10.5	0
Yellow perch	10	18.4	1.6	4.0	6-8.5	7.7	90
Black crappie	2	3.7	0.3	0.8	5-5.9	5.5	0
Northern pike	2	3.7	3.8	9.6	18-24.5	21.5	50
Walleye	4	7.4	3.1	7.8	14-16.5	15.3	33
Bullhead	5	9.3	3.8	9.6	9-12.5	11.3	100
Rock bass	2	3.7	0.2	0.5	4-5.5	5.0	0
Warmouth	5	9.3	1.5	3.8	4-7.5	6.5	60
White sucker	2	3.7	5.6	14.1	17-20.5	19.0	-
Longnose gar	5	9.3	7.5	18.9	23-24.5	26.1	-
Shortnose gar	7	13.0	10.8	27.1	18-23.5	20.1	-
Total	54	100.0	39.7	100.0			

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

[2]Percent legal size or acceptable size for angling.

Table 1c.-Number, weight, and length indices of fish collected from Big Wolf Lake with fyke nets[3], September 18-20, 1991.

Species	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
Bluegill	32	36.9	1.8	9.9	1-7.5	3.6	22
Largemouth bass	11	12.6	0.3	1.6	2-7.5	4.0	0
Yellow perch	7	8.0	1.5	8.2	7-9.5	8.4	100
Black crappie	4	4.6	1.2	6.6	7-9.5	8.8	100
Pumpkinseed	3	3.4	0.4	2.2	5-6.5	5.8	33
Bullhead	22	25.4	12.3	67.3	8-11.5	10.0	100
Bowfin	1	1.1	0.3	1.6	12.5	12.5	-
Rock bass	3	3.4	0.2	0.9	4-5.5	5.2	0
Warmouth	4	4.6	0.3	1.6	3-5.5	5.0	0
Bluntnose minnow	148	-	-	-	1.8-2.3	-	-
Spotfin shiner	259	-	-	-	1.5-3.2	-	-
Total	494	100.0	18.3	100.0			

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

[2]Percent legal size or acceptable size for angling.

[3]Standard frame, small mesh fyke nets.

Table 2.-Average total length (inches) at age, and growth relative to the state average, for six species of fish sampled from Big Wolf Lake with all gear, September 18-20, 1991. Number of fish aged is given in parentheses.

Species	Age										Mean growth index[1]
	0	I	II	III	IV	V	VI	VII	VIII	IX	
Bluegill	1.5 (11)	2.8 (7)	4.0 (8)	5.1 (13)	6.5 (15)	7.0 (8)	7.2 (1)	-	-	-	-0.5

Largemouth bass	3.1 (7)	4.7 (3)	7.7 (6)	9.2 (4)	10.3 (4)	11.2 (4)	-	-	-	18.6 (1)	-1.2
Yellow perch	-	-	6.7 (3)	7.2 (3)	8.0 (16)	8.3 (3) center>	-	-	-	-	-0.2
Pumpkinseed	-	-	4.7 (3)	5.4 (9)	5.9 (10)	6.5 (3)	6.7 (2)	-	-	-	-0.1
Black crappie	5.3 (1)	5.7 (12)	7.3 (20)	8.5 (8)	9.4 (9)	10.0 (4)	10.7 (4)	-	-	-	+0.2
Walleye	9.5 (14)	-	14.6 (6)	15.5 (7)	-	-	25.2 (1)	-	-	-	+1.3

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

Table 3.-Estimated age frequency (percent) of fish caught from Big Wolf Lake with trap nets, gill nets, and maxi-mini fyke nets[1], September 18-20, 1991.

Species	**Age**										**Number**
	0	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**caught**
Bluegill	2.5	1.3	3.1	14.7	54.3	22.1	2.0	-	-	-	471
Largemouth bass	24.1	10.3	20.7	13.8	13.8	13.8	-	-	-	3.0	29
Yellow perch	-	-	5.7	9.4	74.0	10.9	-	-	-	-	53
Pumpkinseeds	-	-	6.1	27.0	38.9	16.7	11.0	-	-	-	61
Black crappie	1.2	14.9	43.5	16.4	15.7	5.0	3.0	-	-	-	105

[1]Standard frame, small mesh fyke nets.

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