Lake Ferdelman

Presque Isle County, T33N, R4E, S21
Ocqueoc River watershed, last surveyed 2008

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Environment

Lake Ferdelman is located in the east half of Presque Isle County approximately 12 miles south of Millersburg. It is a 33-acre nearly-landlocked lake with a maximum depth of about 29 feet. Nearly half of the lake is less than 5 feet deep. The substrate is mostly marl, with some sand and pulpy peat or flocculent. Water clarity is high. The riparian zone is flat on the south shore and relatively hilly on the north side of the lake. The riparian area consists of red pine, white cedar, spruce, and some hardwood trees. The shallow depths are typical of the western half of the lake. The lake is nearly undeveloped with only one cottage and a public access site. The shoreline is nearly 75% state-owned and the small unimproved access site on the south shore allows parking for approximately 4 trailers.

History

Lake Ferdelman has an extensive history of fish management on its small waters. The earliest known fish management records date back to 1962. A fish assessment with a seine was completed in June of this year. Yellow perch ages 1-6 were abundant, although growth of this species was considered poor. Other species collected in the seines included rock bass, pumpkinseed, largemouth bass, white suckers, and golden shiners.

The Michigan Department of Conservation (MDOC) decided to chemically reclaim the fish population in 1963 in attempts to remove the stunted yellow perch population. Fishing pressure at the time was considered low due to poor gamefish population structure. Recommendations were made to: 1) chemically reclaim the fish population, 2) construct an adjacent northern pike spawning marsh, and 3) plant adult bluegill, fingerling largemouth bass, adult northern pike, and legal-size rainbow trout.

A limnological profile of water temperature and dissolved oxygen was made at Lake Ferdelman in late-August of 1963 as a preliminary step to fish eradication. Dissolved oxygen was sufficient throughout the water column and only slight thermal stratication was found. Alkalinity was low (approx. 100ppm). Personnel treated the lake with over 40 gallons of the piscicide rotenone on September 9 to remove much of the current fish community. By September 18 the fish kill had become evident. A sample of over 1,100 dead fish was dominated by minnows and pumpkinseed. The treatment was considered to have been effective for removing pumpkinseed up to 8 inches, largemouth bass up to 16 inches, and yellow perch up to 8 inches. No northern pike were collected in the sample. Following the treatment, MDOC sampled the lake with experimental gill nets in late-September but caught no fish. Subsequently, six rainbow trout were held in two fish holding cages in the lake in late-October of the same year. The fish remained alive and thus it was belived that the chemical had broken down enough to allow for fish survival again.

Rainbow and brook trout were stocked in Lake Ferdelman the next year following the fish eradication of 1963. In 1964, MDOC used 10 experimental gill net lifts to examine the fish community following

the eradication. The October fish survey only produced a few fish, including 10 rainbow trout which ranged from 13-15 inches.

By 1966, fishing pressure was considered low at Lake Ferdelman according to lake managers. It was estimated that the lake only produced about 0-10 trips per acre/year. Some largemouth bass were stocked at this time along with sporadic rainbow trout plants. For a few years, fishing for rainbow trout was considered "good" as was trout growth. Most fish caught by the few anglers were 12-14 inches.

A more inclusive fish community survey was made at Lake Ferdelman in mid-May 1970. Fish managers used 3 trap-net lifts, 1 experimental gill-net lift, and 30 minutes of electrofishing to evaluate the fish community, nearly seven years after the last fish eradication. Species captured in the 1970 survey included: bluegill, rock bass, yellow perch, pumpkinseed, yellow bullhead, and white sucker. Yellow perch were considered highly abundant and small. Bluegill growth was slow and rock bass growth was fast.

A second fish eradication was ordered by fish managers in 1971 as a result of the composition and poor size structure of the fish community. A bioassay was made in April of this year to determine the concentration of Antimycin A which was to be used in a total lake treatment. Twenty units of chemical were used at 3ppb in early May 1971. The fish kill was noted for days, but it was not considered to be a complete (100%) fish kill. Rainbow trout were stocked later in the summer of 1971 and continued through the 1970s on a near annual basis.

The next fish community analysis occurred in late-June 1976 and included the use of 7 gill-net lifts and 3 trap-net lifts. Largemouth bass, pumpkinseed, and yellow perch were considered abundant again, despite the eradication efforts years prior. Bluegill were considered scarce while neither suckers or bullheads were collected. A total of 10 northern pike were collected and ranged in size from 17-31 inches. This was the first time (1976) northern pike were collected in Lake Ferdelman. Growth of largemouth bass, pumpkinseed, bluegill, and perch were at or above the statewide average. Rainbow trout were not collected in the survey, and simultaneous catch reports for this species by anglers had been minimal. It was also obvious that the fish eradications would only limit the slow growing species for a short time period before they became abundant again. Despite this, recommendations were again made to chemically re-treat the lake in future years.

The next fish community survey was completed in mid-July of 1978. Effort consisted of 100 minutes of alternating current (A.C.) electrofishing at night in the littoral zones. The purpose of this survey was to evaluate the overall fish community prior to chemical treatment. Few desirable fish species were found in the 1978 survey. Yellow perch again were most abundant with ages 1-6 reprsented. Growth of perch was more than a half-inch slower than perch statewide. Only 7 bluegill were collected in the survey. Pumpkinseed were common but growth was average. Largemouth bass and rock bass were present.

The third and last chemical reclamation of the Lake Ferdelman fish community occurred in late-September of 1978. Eighty gallons of rotenone was applied with 15 gallons were pumped into deeper areas of the lake. A subsample of dead fish produced many perch, largemouth bass, pumpkinseed and other species. Four experimental gill-nets were used to survey the lake on November 1, 1978 but captured no fish. Despite this, the kill was considered to probably not be 100%.

Largemouth bass were stocked into Lake Ferdelman as fall fingerlings in 1979. Efforts to stock rainbow trout continued into the 1980s (Table 1). A survey of the trout population and stocking efforts was made in mid-October 1983 and utilized 6 experimental gill-net lifts (overnight lifts). Only 4 rainbow trout were collected and ranged in length from 10-12 inches. All were age-1 fish. The nets also captured small numbers of yellow perch up to 11 inches, as well as bullheads, largemouth bass, rock bass, and two large northern pike. This latter species was thought to have been brought in by the public.

The rainbow trout stocking efforts continued through the mid 1980s (Table 1). A follow-up trout evaluation was made in early-November of 1987. Six experimental gill-net lifts again only captured 4 rainbow trout (14-15 inches). Some fish were age-2, which indicated some annual holdover or survival of stocked fish. Yellow perch were again abundant with some large fish available to anglers (up to 14 inches). Growth of perch was considered excellent and well above statewide average. Largemouth bass, rock bass, and some bluegill were collected in the gill-nets.

Despite the marginal trout survival and increasing warm water fish composition, a plan was made in 1988 to continue stocking rainbow trout annually into Lake Ferdelman at a rate of 46/acre (1,500 trout annually). A third trout stocking and survival evaluation was again made with 6 gill-net lifts in late-October of 1990. Only 2 rainbow trout were collected, with fish up to 20 inches. The nets also captured 1 northern pike, 1 largemouth bass, 8 bluegill, and 15 yellow perch.

Trout stocking efforts continued annually at Lake Ferdelman in the early 1990s through 1993. Management plans for the lake called for discontinuation of stocking trout and cited that "trout plants have not provided a trout fishery in recent years". Emphasis would now be put on the warm water, naturally sustaining fish community.

Current Status

The most recent fish community survey of Lake Ferdelman was made from May 27-29, 2008. Effort consisted of: 4 experimental gill-net lifts, 4 large mesh trap-net lifts, 4 large mesh fyke-net lifts, 2 small mesh fyke-net lifts, 2 mini fyke-net lifts, and 1 seine haul. A total of 947 fish were captured during the three day survey (Table 2). The most abundant species in the catch were bluegill and bluntnose minnow. Panfish such as black crappie, bluegill, pumpkinseed, and rock bass made up 54% of the survey catch by number and 50% by weight. Largmeouth bass, the top predator, comprised 7% of the total catch by number but 40% by weight. This latter percentage by number would be considerably higher if the minnow catch was disregarded.

Bluegills are currently the most abundant panfish in Lake Ferdelman, with good numbers in the 6 through 8 inch length range (Table 3). Very few bluegills larger than 9 inches can be found in the lake. Growth of this species was near the statewide average and ten year classes (age 0-9, 11) were found indicating consistent recruitment. The 1999 and 2000 bluegill year classes appeared to be very strong. It takes about eight years for a Lake Ferdelman bluegill to reach 8 inches in length (preferred catch size). Average growth rates indicate that the lack of 9 inch and larger bluegill may be attributed to high harvest of larger fish or competition among panfish. Based on previous catch information, bluegills are much more dominant in Lake Ferdelman today than in past decades for reasons that are poorly understood.

Other panfish were much scarcer in Lake Ferdelman based on recent survey results, including rock bass, black crappie, pumpkinseed, and yellow perch. Yellow perch were very common and typically slow growing in past decades but were noticeably lacking in 2008. An angler report indicated that this species was once very common and at times larger perch could be caught. Other panfish captured in the recent survey were typically small.

The predator population is restricted to largemouth bass which appear to be present in numbers and sizes which would support a fishery as well as serving the purpose of keeping the fish community in balance. Numerous ages (ages 0 through 9) of largemouth bass were collected but with poor numbers of legal size bass (14 inches or larger) (Table 3). Largemouth bass grew slowly when compared to the statewide averages for this species.

Analysis and Discussion

Lake Ferdelman had been managed as a coldwater (trout) species lake for many decades from the 1960s through the early 1990s. Managers stocked a variety of trout species and sizes throughout this period. Chemical reclamation was attempted on many occasions at considerable cost in order to remove the entire fish community, so that subsequently stocked trout would have the best chance at survival and growth. These efforts were met with limited success. Trout survival from year to year remained low and catches of trout continued to be poor. This was despite the fact that variables such as dissolved oxygen and water temperature remained adequate for trout survival. Trout stocking efforts ceased after 1993.

The warm-water fish community continually survived the reclamation efforts, and has developed into one that mimics a fairly balanced largemouth bass and bluegill community. Growth rates of bluegill and largemouth bass are at or slightly below statewide averages and appear adequate. The 2008 fish community survey documented a generally slow-growing warm-water fish community typical of most northern Michigan cool-water lakes which have limited nutrients and low alkalinity values. Overall productivity at Lake Ferdelman is naturally limited and has a direct effect on fish production and growth.

Management Direction

No change in fisheries management is recommended for Lake Ferdelman at this time. Despite adequate habitat conditions for trout, past trout stocking efforts never produced a consistent quality fishery. Trout survival may only be enhanced today with frequent eradications of the current prolific warm-water fish community. This would be a costly management technique for a waterbody the size and depth of Lake Ferdelman and the cost-to-benefit ratio would not be favorable. Growth of the current popular species such as bluegill and largemouth bass is sufficient to provide quality fishing.

References

Table 1. Recent rainbow trout stocking efforts at Lake Ferdelman, Presque Isle County.

Year	Strain	Number stocked	Number stocked per acre	Size (in)
1979	Steelhead	900	27	4.0
1980	Steelhead	1,000	30	3.9
1982	Harrietta	1,000	30	6.7
1983	Harrietta	1,000	30	6.8
1984	-	950	29	4.6
1985	-	1,000	30	5.8
1986	Shasta	1,000	30	7.5
1987	Shasta	1,012	31	7.3
1988	Eagle lake	1,500	46	6.3
1989	Shasta	1,500	46	7.1
1990	Shasta	1,500	46	6.6
1991	Arlee	1,210	37	7.1
1992	Shasta	1,498	45	7.1
1993	Shasta	1,240	38	7.4

Table 2.-Species and relative abundance of fishes collected with survey gear at Lake Ferdelman, May 27-29, 2008.

Common Name	Number	Percent	Length Range *(inches)*	Weight (lbs)*	Percent	Growth** (inches)
Bluegill	482	51	1 - 9	77.4	47	-0.2
Bluntnose minnow	364	38	1-5	2.2	1	
Largemouth bass	64	7	2 – 16	66.4	40	-1.4
Rock bass	16	2	1 – 7	1.5	1	-0.9
Brown bullhead	8	Less than 1	10 – 14	8.6	5	
Black crappie	6	Less than 1	6 – 10	3.1	2	
Yellow perch	5	Less than 1	2	0.02	Less than 1	
White sucker	1	Less than 1	23	5.1	3	
Pumpkinseed	1	Less than 1	-	0.01	Less than 1	
Total	947			164.3		

* calculated based on length-weight relationships

**based on a comparison to statewide growth for that species (inches)

Table 3.-Length-frequency distribution of certain game fishes collected during the late-May 2008 survey at Lake Ferdelman.

Length (in)	Bluegill	Rock bass	Black crappie	Largemouth bass
1	60	1		
2	28			2
3	46			
4	95	3		1
5	58	4		2
6	53	1	1	
7	66	2		
8	70			2
9	5		2	1
10			3	7
11				13
12				9
13				7
14				13
15				4
16				2
26				
27				
28				