

Jackson Lake

Montmorency County, T31N, R2E, S11/14
Black River Watershed, last surveyed 2013

Tim A. Cwalinski, Senior Fisheries Biologist

Environment

Jackson Lake is a 25-acre natural lake located approximately 8 miles north of the town of Atlanta, Michigan in central Montmorency County (Figure 1). This seepage driven lake has no obvious inlet or outlet but is within the Canada Creek watershed, which is a tributary to the Black River.

Jackson Lake is a relatively shallow lake with a maximum depth of 26 feet (Figure 2). The majority of the lake is less than 15 feet deep. The bottom substrate is primarily sand and marl, with pulpy peat in the deeper zones. Submergent and emergent aquatic vegetation is nearly absent today, which is contradictory to historical observations. Shoreline development is minimal, nearly the entire riparian zone is owned by the State of Michigan state forest system. A small state forest campground exists along the north shore while a handful of private cottages can be found along the southeast shore. The lake-shoreline interface is predominantly wetland and upland forest consisting of oak, aspen, and conifer trees.

A small unimproved public-access boat launch is located on the southwest shore immediately adjacent to Michigan Highway 33. This access site has parking for approximately two trailers, but is more suitable for cartop boats and canoes.

History

Despite its small size, Jackson Lake has been the focus of various surveys or observation by the State of Michigan for nearly a century. Michigan Department of Conservation (MDOC) first inspected the lake in 1925. It was noted as having high water clarity, a sand and muck bottom, and some aquatic vegetation. Fish species observed included largemouth bass, bluegill, pumpkinseed, yellow perch, and Iowa darters. In-lake habitat enhancement was undertaken by MDOC in 1933 when brush shelters were installed (a common practice during that era). Minnow spawning beds were also created in the shallows, but this was later deemed to be unsuccessful in enhancing minnow populations. In the mid-1930s lake depths were mapped, providing us the depth map we use today (Figure 1). Some low level stocking efforts were also attempted in the mid to late 1930s by MDOC at Jackson Lake. The stocking efforts included species such as yellow perch, walleye, bluegill, largemouth bass, and smallmouth bass (Table 1).

A more comprehensive aquatic survey of Jackson Lake was made in early September of 1937 by MDOC and was summarized by Perry (1942). The lake was lightly thermally stratified from top to bottom with warm water prevailing throughout the water column (78F surface, 70F bottom). Perry (1942) suggested the lake had good cover with brush shelters and dead-head timber. The shoals were wide and most of the bottom materials were soft. The lake shoreline at this time was completely undeveloped. Seven species of aquatic vegetation were collected, and plankton levels were considered moderate based on one plankton tow. Fish species observed during this survey were largemouth and

smallmouth bass (only young smallmouth bass), bluegill, pumpkinseed, yellow perch, and central mudminnows. No walleye were collected from recent stocking events (Table 1). Angler reports were limited during this period. Perry (1942) indicated that although the survey catch reports were relatively low, they were suitable for Jackson Lake, suggesting that Jackson Lake had low biological productivity even during the 1930s. He also suggested that the present spawning habitat was sufficient for this small lake, and that no water level manipulation should be considered. Perry also felt that the current warm water fish community was suitable for this lake, and that walleye should not be stocked in the future.

Fisheries data or surveys were limited at Jackson Lake for the next couple decades following the 1937 survey. A "light" fish kill was observed in July of 1947 at Jackson Lake and killed an assortment of bluegill, pumpkinseed, smallmouth bass, and bullheads. Fishing pressure was considered light during this time. Another fish kill event occurred in early July of 1965 when 50-75 bluegill 4-6 inches long were found dead along with small numbers of yellow perch and pumpkinseed.

The next fish assessment came in early July of 1968 by MDOC. Surveyors used gill nets and collected small numbers of yellow perch, fair numbers of largemouth bass, and a few northern pike. It was the first time pike were collected in Jackson Lake. Their introduction was attributed to local anglers illegally stocking this species. Growth of bass was considered excellent based on aging samples, while northern pike growth was poor. A dissolved oxygen and temperature profile was also made on July 1 and showed little thermal stratification and no thermocline. The surface water was 69F, while the bottom temperature was 63F at 20 feet deep. Good levels of dissolved oxygen were found throughout the water column.

Michigan Department of Natural Resources (MDNR) Fisheries Division personnel again surveyed Jackson Lake in mid-September of 1975. Fisheries survey effort was more extensive and utilized 12 trap net lifts and 9 experimental gill net lifts. Largemouth bass, bluegill, and yellow perch were common in the catches. Most largemouth bass were in the 10-14 inch size range while relatively fair numbers of 8 inch bluegill were collected. Yellow perch were dominated by slow growing fish in the 4-6 inch size range. Thirteen northern pike were collected during the survey week and many were 20 inches or larger. It was apparent that pike were finding some suitable spawning habitat along the perimeter of Jackson Lake. Pumpkinseed sunfish were caught in lesser numbers than in previous surveys while bullheads were still common. No smallmouth bass, white suckers, or rock bass were collected during this survey. A total of 175 fish were collected at the lake during the week-long survey, which is a relatively low number if compared to other nearby lakes. Despite this, biologists felt that the current population of fish in Jackson Lake was suitably balanced for a small natural lake with such low productivity. Angler reports for this time suggested virtually no winter fishing activity, but acceptable catches of bluegill and bass during the open water season.

Current Status

The most recent fish community survey of Jackson Lake was made from May 20-23, 2013. Effort consisted of: 1 experimental gill-net lift, 3 large mesh trap-net lifts, 5 large mesh fyke-net lifts, and 1 mini fyke-net lift. A total of 97 fish were captured during the three day survey (Table 2), and not far from the overall catch in 1975. The most abundant species in the catch were largemouth bass and bluegill. This survey was prior to any spawning activity for these species due to a cold spring. Panfish such as bluegill, rock bass, and yellow perch made up 46% of the total catch by number, and 17% by

weight. Predators such as largemouth bass and northern pike comprised 37% of the total catch by number, and 57% by weight.

Bluegills are currently the most abundant panfish in Jackson Lake, with a relatively even distribution of sizes from 4-11 inches (Table 3). Relatively good numbers of large bluegill were collected (Table 3). Bluegill grow moderately fast in Jackson Lake when compared to the statewide average for this species. Growth rates also appear slightly faster for older fish when comparing data from the 1975 survey with the 2013 survey (Table 4). Rock bass were found for the first time in Jackson Lake during the recent survey. They were captured in relatively good numbers although their sizes were relatively small. It is unfortunate that they have made it into the lake for they will compete for limited forage with bluegill and largemouth bass. Rock bass growth was considered average to slightly above the statewide average. Only three yellow perch were captured during the survey, while no pumpkinseed sunfish were found.

The predator population is restricted to largemouth bass and northern pike, both of which appear adequate in numbers and sizes. Bass between 7 and 16 inches were captured during the survey. Seven year-classes of bass were represented in the survey, with younger fish (age 2 and 3) the most common (Table 4). No large bass (18 inches and larger) were collected during the survey, but it is presumed a small number of them do exist in Jackson Lake. Bass growth is average here when compared to growth rates of largemouth bass across Michigan.

Northern pike were collected in relatively common numbers in both the 1975 and 2013 surveys of Jackson Lake. Nearly half of the recent catch of pike were legal size (24 inches and larger) (Table 3). This species spawns on submersed aquatic vegetation often, or flooded wetlands, neither of which is abundant at Jackson Lake. Production thus is probably limited to wet springs when the shoreline can be flooded.

Other species captured in the survey were low numbers of bullheads, bluntnose minnows, Iowa darters, and mimic shiners.

Analysis and Discussion

The current fish community of Jackson Lake can be generally characterized as having the following: 1) a lake low in production and having a fish community naturally low in diversity, 2) a panfish population low in diversity and dominated by good growing bluegill which are likely in low abundance, and 3) a predator population comprised of two species including largemouth bass and northern pike which have average growth rates.

The Jackson Lake panfish community is low in diversity compared to most other Michigan lakes. This is good since more panfish competitors would only hinder current growth rate of bluegill in this small unproductive lake. Cover is very limited in the littoral zone of this lake, and it would be very easy to find the limited number of nesting bluegill each spring and exploit them. Care should be taken by anglers to limit the exploitation of these fish at spawning time. Such actions could possibly increase bluegill numbers to some degree without hindering growth rates. Rock bass are now found in Jackson Lake, something that wasn't true decades ago. This species competes for a limited food supply with the more favorable bluegill. This could be a species that anglers focus on removing for harvest, making the lake a more balanced bluegill:bass community.

The predator base of Jackson Lake is dominated by largemouth bass, but again this species is not considered abundant. Northern pike also inhabit its waters, though in moderate to low numbers. To some degree these species also probably limit bluegill densities, though in a more natural manner. The addition of predators or other competing species in this lake is unnecessary and would only further limit the current popular game species.

In-lake habitat is limiting in Jackson Lake. There are large shallow, sandy/marl shoals that lead sharply into deep water. These shoals or littoral zones are low in production (vegetation, rotting wood) which ultimately hinders the plankton base and eventual fish community. Low species diversity is a consequence of this low production.

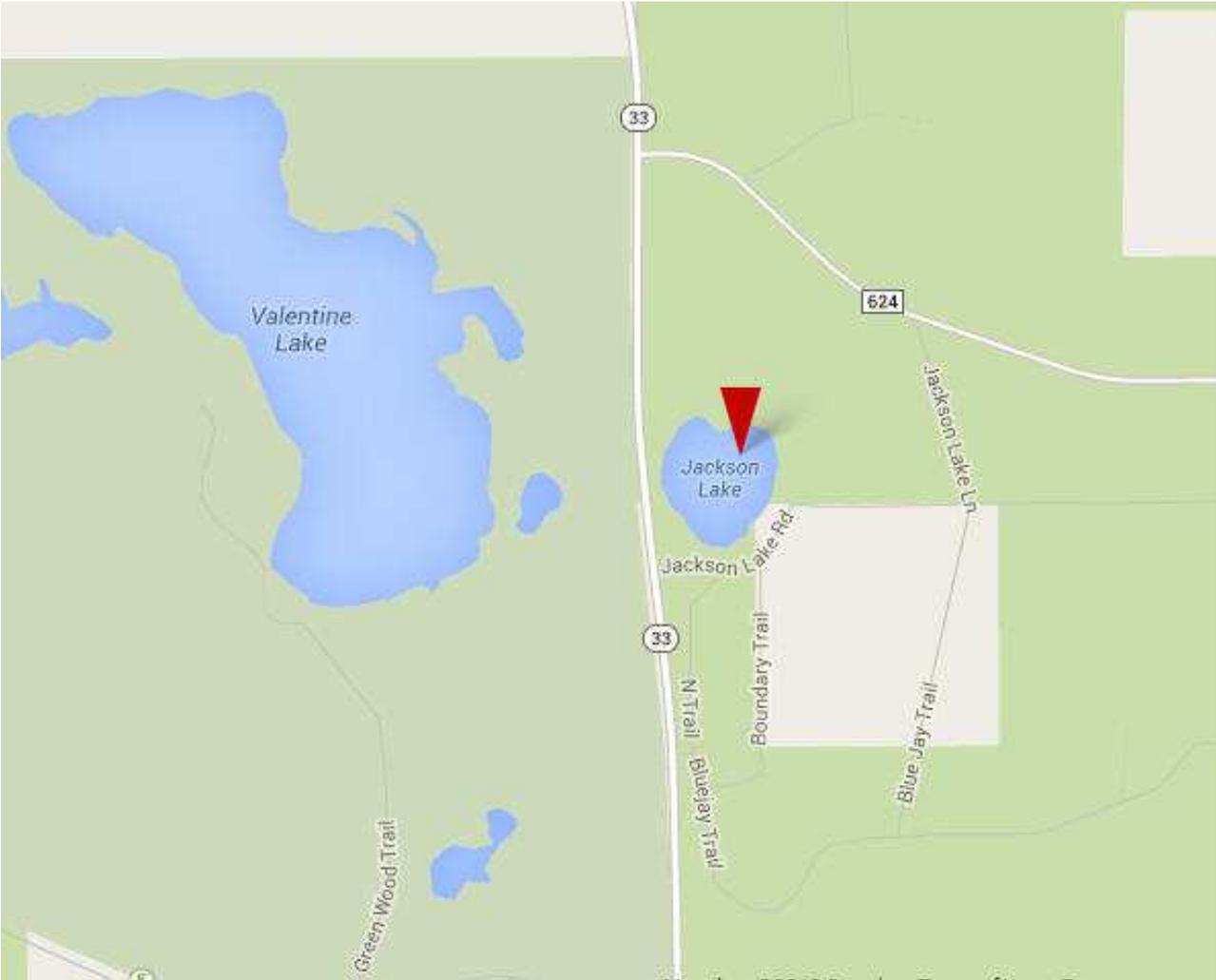
Management Direction

No change in fisheries management is recommended for Jackson Lake at this time. It was believed prior to the survey that this lake might be a suitable candidate for fish transfers from other lakes where fish "thinning" could be applied to reduce numbers. Based on the survey results, the lake is fairly healthy for its inherent fish productivity and no fish transfers are recommended. Current State of Michigan fishing regulations are appropriate at this waterbody. One project that could be attempted at this lake would be to enhance in-lake cover with the addition of whole trees and brush bundles. Such a management practice could be accomplished in accordance with DNR and would require a Department of Environmental Quality permit. A local sportsmans club could overtake such an activity.

References

Perry, L.E. 1942. A Fisheries Survey of Jackson Lake, Montmorency County. Michigan Department of Natural Resources, Lansing, MI.

Figure 1. Jackson Lake and its nearby surroundings in Montmorency County.



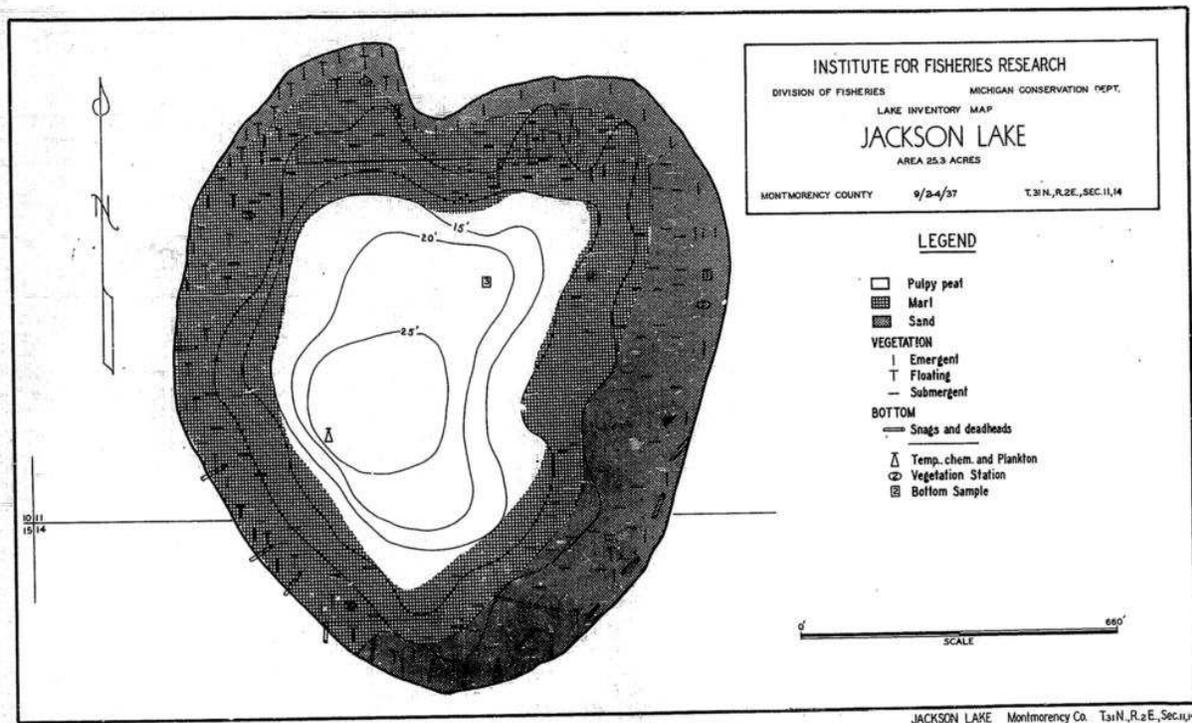


Figure 2. Jackson Lake bathymetric map.

Table 1. Michigan Department of Conservation stocking records for Jackson Lake.

Fish Species	Abundance	1933-1937	1938-1941
Yellow perch	Common	--	5,000 fingerlings
Walleye	--	840,000 fry	400,000 fry
Largemouth bass	Common	--	800 fingerlings
Smallmouth bass	Few	--	400 fingerlings
Bluegill	Common	11,100 fingerlings	27,000 fingerlings
Pumpkinseed	Common	--	--
Mudminnow	Few	--	--

Table 2.-Species and relative abundance of fishes collected with survey gear at Jackson Lake, May 20-23, 2013.

Common Name	Number	Percent	Length Range (inches)	Weight (lbs)*	Percent	Growth** (inches)
Largemouth bass	27	27.8	7-16	27.8	35.4	+0.3
Bluegill	23	23.7	4-11	9.9	12.6	+0.9
Rock bass	19	19.6	3-7	3.0	3.8	+0.5
Northern pike	9	9.3	20-32	29.5	37.5	
Black bullhead	7	7.2	12-15	8.0	10.2	
Bluntnose minnow	5	5.2	2	--	--	
Yellow perch	3	3.1	6	0.3	0.4	
Iowa darter	2	2.1	1	--	--	
Mimic shiner	2	2.1	1	--	--	
<i>TOTAL</i>	97			78.5		

* 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 2013 survey at Jackson Lake.

Length (in)	Bluegill	Rock bass	Northern Pike	Largemouth bass
1				
2				
3		3		
4	2			
5	3	8		
6	3	5		
7	3	3		2
8	3			6
9	6			5
10	2			3
11	1			
12				
13				1
14				1
15				6
16				3
17				
18				
19				
20			1	
21			2	
22				
23			2	
24			3	
25				
26				
27				
28				
29				
30				
31				
32			1	

Table 4.-Mean length (inches) at age for various game fishes of Jackson Lake. Number in parentheses represents number aged.

Species	Age group	Sept 1975	May 2013
Bluegill	0	2.0 (2)	--
	I	--	--
	II	--	--
	III	--	5.9 (9)
	IV	--	7.7 (4)
	V	7.2 (3)	8.1 (1)
	VI	8.4 (4)	9.2 (4)
	VII	8.6 (5)	9.0 (4)
	VIII	9.0 (4)	10.6 (3)
Largemouth bass	I	8.2 (6)	--
	II	11.1 (13)	8.3 (8)
	III	13.1 (5)	9.7 (7)
	IV	14.8 (4)	9.2 (1)
	V	15.8 (2)	13.7 (1)
	VI	--	14.9 (2)
	VII	--	15.8 (5)
	VIII	--	15.9 (2)
	Northern pike	I	18.1 (5)
II		24.5 (3)	--
III		24.0 (1)	--
IV		--	20.4 (1)
V		33.5 (1)	21.7 (1)
VI		31.8 (2)	23.5 (4)
VII		--	24.2 (2)
VIII		--	--
IX		--	32.2 (1)
Yellow perch	I	4.1 (3)	--
	II	4.6 (10)	--
	III	5.8 (13)	6.1 (2)
	IV	7.1 (4)	6.6 (1)
	V	7.6 (2)	--
	VI	8.1 (3)	--
	VII	9.8 (1)	--
	VIII	--	--
	IX	--	--
	X	12.8 (1)	--

