



Sunfish Were Abundant but Small in Lac Lavon Lake, September, 2020

Fish Survey of Lac Lavon Lake (ID #19-044600), Dakota County, Minnesota in 2020

Survey Dates: September 15-17, 2020

MnDNR Permit Number: 29777

Prepared for:
Cities of Apple Valley and
Burnsville and MnDNR



Prepared by:
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November 2020

Fish Survey of Lac Lavon Lake (ID #19-044600), Dakota County, Minnesota in 2020

Summary

Lac Lavon Lake has been surveyed 7 times over the past 42 years. The MnDNR surveyed in 1978, 1984, 1989, 1995, 1999, and 2004 and Blue Water Science conducted a fish survey in 2020. Results from all 7 surveys are shown in Table S1.

In 2020 the Lac Lavon Lake fish community 10 fish species were sampled and bluegill sunfish were the most abundant species (Table S1). Largemouth bass, a good predator on bluegill sunfish, were present at below regional ranges. It does not appear they are able to keep bluegill sunfish under control. Stocking predator fish species such as bass, pike, or walleyes could possibly control the stunted bluegills.

Compared to previous fish surveys, the 2020 survey had the highest number of fish species. The two dominant gamefish species, largemouth bass and northern pike have fluctuated over the years. Bass densities seemed to peak in the 1984 and 1989 surveys. Bluegill numbers have also fluctuated.

Table S1. Historical trapnet fish survey records.

	Trapnet Results							
	Fish per net 1978 (MnDNR)	Fish per Net 1984 (MnDNR)	Fish per Net 1989 (MnDNR)	Fish per Net 1995 (MnDNR)	Fish per Net 1999 (MnDNR)	Fish per Net 2004 (MnDNR)	Fish per Net 2020 (BWS) (n=8)	Normal Range (MnDNR)
Black bullheads	0.40	0.50			0.12	0.11		0.7 - 16.4
Black crappie			1.40	1.44	1.62	0.56	1.4	0.7 - 4.30
Bluegill sunfish	97.40	73.25	30.00	62.22	49.75	36.78	68.0	2.9 - 41.2
Golden shiner					0.12			0.5 - 3.2
Green sunfish	0.20	0.50	0.20	0.33		0.22	1.5	0.3 - 2.8
Hybrid sunfish	6.00	22.50	0.80	2.78	3.12	2.00	2.9	NA
Largemouth bass	0.40	2.25	2.40	0.22	0.12	0.11	0.3	0.4 - 2.0
Northern pike	0.40		0.20	0.33	0.12	0.44	0.3	NA
Pumpkinseed				0.75	4.62	3.33	20.9	1.5 - 7.4
White sucker					0.38	0.22	0.1	0.3 - 1.3
Yellow bullhead							1.4	0.4 - 0.7
Yellow perch							0.1	0.1 - 0.3
TOTAL FISH	105	99	35	68	60	44	97	--
Number of Fish Species	6	5	6	7	9	9	10	--

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Introduction

Lac Lavon Lake (ID: 19-044600) is a 66-acre shallow lake, located in Dakota County, Minnesota. In September 2020, the Cities of Apple Valley and Burnsville sponsored a fish survey conducted by Blue Water Science under permit number 29777 granted from the MnDNR. The objectives were to characterize the fish community in Lac Lavon Lake.

Methods

Trapnets were used to survey fish in Lac Lavon Lake. Two MnDNR-style trapnets with a 3 x 5 feet square frame with five hoops, two funnel mouth openings and a 50-foot lead. Net mesh size was 3/8 inch (bar length). Also, two MnDNR-style trapnets with a 4 x 6 feet square frame with five hoops, two funnel mouth openings and a 50-foot lead. Net mesh size was 1/2 inch (bar length). In Lac Lavon Lake, trapnets were set on Tuesday morning September 15, 2020. The 4 nets were fished for the following 2 days (September 16 and 17). Trapnet locations are shown in Figure 1.

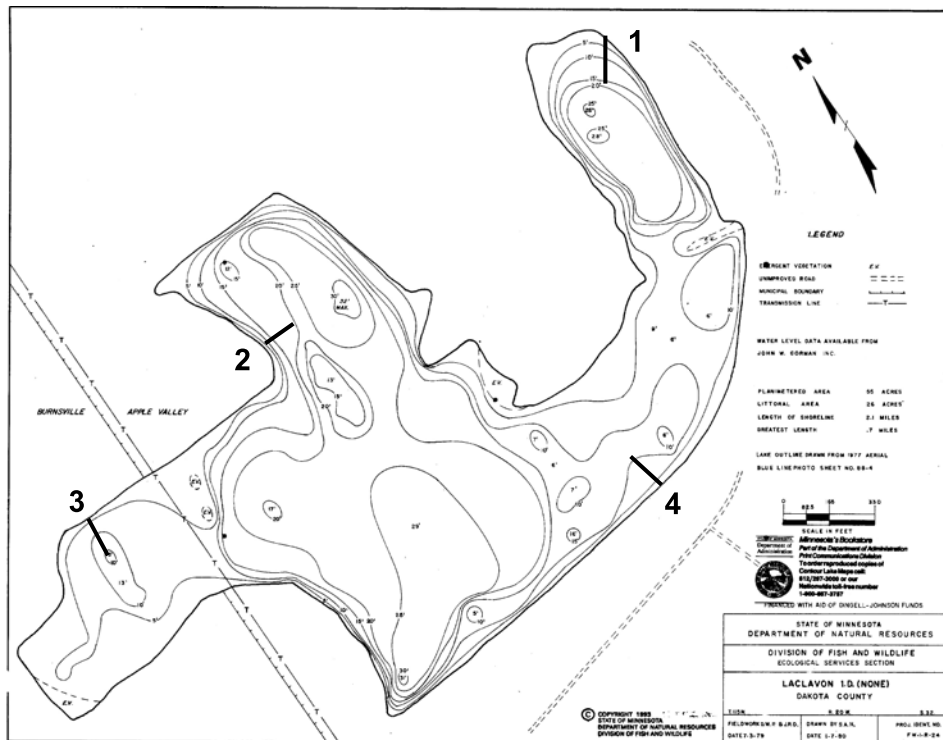


Figure 1. Map of trapnet sets in Lac Lavon Lake.



A trapnet is a live fish trap. Fish run into the 50-foot lead net and follow it back through a series of hoops with funnel mouths. Fish end up in the back hoop.



A dip net is used to remove the fish from the back pocket of the trapnet.



Fish are transferred to tubs, then they are counted, measured, and released.

Figure 2. Trapnet set and fish sampling in the Lac Lavon Lake fish survey.

Results

Fish Results: A total of 10 fish species were sampled in Lac Lavon Lake on September 16-17, 2020. Bluegill sunfish were the most abundant species followed by pumpkinseed sunfish. Nets 1 and 2, were the most productive (Table 1). The number of bluegills caught per net was above average with a haul of 68 fish per net (Table 1). Largemouth bass catch per net had an average of 0.3 fish per net which is below the normal range compiled by the MnDNR. Pumpkinseed sunfish were above the normal range which is somewhat rare in metro lakes.

Turtle Results: Painted turtles were also sampled in the trapnets and were common in Lac Lavon Lake. Painted turtles likely do well because there is adequate habitat.

Table 1. Lac Lavon Lake trapnet results for the fish survey conducted in September 2020. Fish less than 3.5 inches were excluded from the statistics.

	Fish Captured (September 16-17, 2020)								Total Catch	Fish per Net (n=8)	Normal Range (MnDNR)
	Net 1		Net 2		Net 3		Net 4				
	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2			
Black crappies (<i>Pomoxis nigromaculatus</i>)	6	1		1			2	1	11	1.4	0.7 - 4.3
Bluegill sunfish (<i>Lepomis macrochirus</i>)	118	30	186	71	23	5	45	66	544	68	2.9 - 41.2
Green sunfish (<i>L. cyanellus</i>)			1	8		3			12	1.5	0.3 - 2.8
Hybrid sunfish (<i>L. sp</i>)		1	8	7		3	1	3	23	2.9	NA
Largemouth bass (<i>Micropterus salmoides</i>)		1		1					2	0.3	0.4 - 2.0
Northern pike (<i>Esox lucius</i>)		1	1						2	0.3	NA
Pumpkinseed sunfish (<i>Lepomis gibbosus</i>)	17	17	12	29	20	7	37	28	167	21	1.5 - 7.4
White sucker (<i>Catostomus commersoni</i>)								1	1	0.1	0.3 - 1.3
Yellow bullhead (<i>A. natalis</i>)	1		1				9		11	1.4	0.4 - 0.7
Yellow perch (<i>Perca flavescens</i>)						1			1	0.1	0.1 - 0.3
TOTAL FISH	142	51	209	117	43	18	94	99	773	97	--
Turtles - painted	7	4							11	1.4	--

Fish Lengths: Fish lengths are shown in Table 2. Bluegill sunfish lengths ranged from <3 inches up to 8.5 inches with the majority of the population (53%) 4 inches or less. Bluegill were abundant indicating successful spawning conditions but stunted conditions were evident.

Table 2. Length frequency of fish species (as total length) for the Lac Lavon Lake fish survey.

Lac Lavon	Black crappie	Bluegill	Green sunfish	Hybrid sunfish	LM Bass	Northern pike	Pumpkins eed	White sucker	Yellow bullhead	Yellow perch
<3		3 (0.6)	1	1						
3		55 (10)	6	5	1		17			
3.5		108 (20)	5	5			31			
4		132 (24)		4			41			
4.5		89 (16)		5	1		17			1
5	1	87 (16)		1			25			
5.5		49 (9)					11			
6		15 (3)		2			10			
6.5	2	5 (1)					15			
7	1									
7.5	3									
8	2								1	
8.5	1	1							1	
9										
9.5										
10									1	
10.5									3	
11									1	
11.5									2	
12	1								2	
12.5										
13										
13.5										
14										
14.5										
15										
15.5										
16										
16.5										
17										
17.5						1				
18										
18.5										
19										
19.5										
20										
20.5										
21								1		
21.5										
22										
22.5						1				
TOTAL	11	544	12	23	2	2	167	1	11	1
fish/ net (8 nets)	1.4	68.0	1.5	2.9	0.3	0.3	20.9	0.1	1.4	0.1

Representative Fish Species Sampled in Lac Lavon Lake



Black Crappie



Bluegill



Green sunfish



Northern pike



Largemouth Bass



Pumpkinseed



White Sucker

Historical Trapnet Fish Survey Records for Lac Lavon Lake

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Figure 3. This tub of fish was dominated by bluegills and pumpkinseed sunfish from Lac Lavon Lake in 2020.

Discussion

General Findings In This Survey: Lac Lavon Lake has the potential for good panfish fishing although the size of bluegills found in this survey are small at this time.

Few small bullheads were captured in this survey. This could be the result of the largemouth bass controlling them.

Gamefish Control to Prevent Bluegill Stunting: The existing fish community in Lac Lavon Lake may not have adequate piscivore pressure (the dominant piscivore in Lac Lavon Lake is largemouth bass) to prevent the development of stunted sunfish populations. Based on theoretical piscivore lengths and converting fish length to gape width (Figure 5) it is apparent that the piscivore lengths in Lac Lavon Lake, when converted to gape widths, will likely not exert enough predation pressure to prevent stunted bluegill (typical around 4-inches).



Figure 4. Gamefish (piscivores) usually select prey that can be swallowed, which is a function of the piscivore gape versus the prey body depth. This 24-inch northern pike from White Bear Lake made a mistake. It attempted to ingest a seven inch bluegill. The 24-inch pike has a 2.0 inch gape, but a 7-inch bluegill has a body depth of 2.3 inches. This pike was found floating and basically choked on the bluegill.

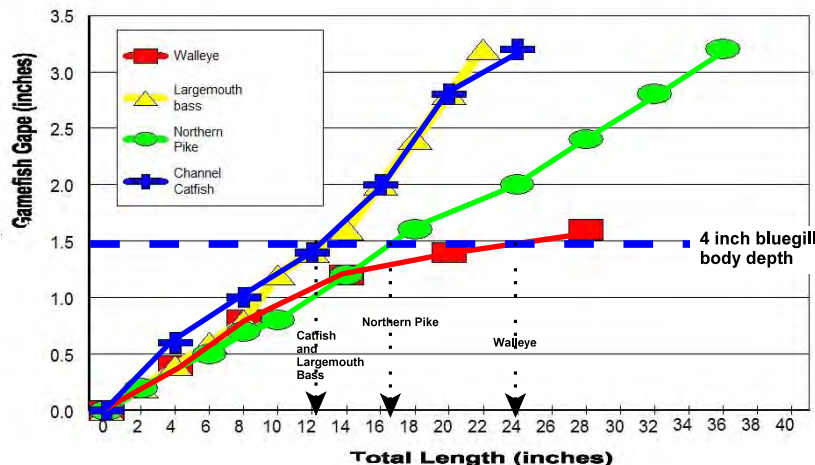


Figure 5. Gamefish gape increases as a function of its total length. The gape determines the size of the prey fish that can be swallowed. For example, a 4-inch bluegill has a body depth of 1.5 inches. To ingest a 4-inch bluegill it would take a 12-inch bass that has a gape of 1.5 inches. There are few bass in Lac Lavon Lake that could ingest a 4-inch bluegills.

Appendix A

Minnesota DNR Fish Survey Notification

From: Steve McComas [mailto:mccomas@pmlink.com]
Sent: Friday, September 11, 2020 11:17 AM
To: DeBates, TJ (DNR); Capt. Jason Peterson
Cc: Berger, Samantha; Caleb Ashling
Subject: Fish survey on Farquar (19-002300) and Lac Lavon (19-002500) Lake, starting September 15, 2020

Hello all,

Blue Water Science will be conducting fish surveys in Farquar Lake (MN ID 19-002300) and Lac Lavon Lake (MN ID 19-044600), Dakota County, starting on Tuesday, September 15, 2020. We will set 4 standard trap nets in each lake. The nets will be monitored daily on Wednesday and Thursday and all fish will be weighed and measured and returned to the lakes. The nets will be removed from the lakes on Thursday, September 17, 2020. The fish survey is sponsored by the City of Apple Valley with the objectives of characterizing the existing fish community structure and assessing potential impacts of fish on water quality.

This survey is being conducted under the permit number: 29777.

Thank you,

Steve McComas

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