



A Bucket of Fish from Long Lake, Apple Valley, October 2019

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## Fish Survey of Long Lake (ID# 19-0022), Apple Valley, Minnesota in 2019

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Survey Dates: October 1-3, 2019

Permit Number: 29292

Prepared for:  
City of Apple Valley and  
MnDNR



Prepared by:  
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# Fish Survey of Long Lake (ID# 19-0022), Apple Valley, Minnesota in 2019

## Summary

Long Lake, a 34-acre lake, is located in Apple Valley and is a shallow lake that is susceptible to winterkill.

On October 1, 2019 4 trapnets were deployed and then sampled for the next two days in Long Lake.

In Long Lake, because it is only 4 to 5 feet deep, winterkill probably occurs on an annual basis. However, fish are likely re-introduced from other ponds draining to Long Lake. In 2019, following a 2018-2019 winter drawdown, 7 fish species were found in Long Lake and the dominant fish were black bullheads and fathead minnows (Table S1). Goldfish were common as well. Fish densities may have impacts on water quality in Long Lake.

**Table S1. Comparison of fish surveys for Long Lake from 2006 to 2019.**

	Long Lake (fish per trapnet)				
	2006 (BWS)	2008 (BWS)	2018 (BWS)	2019 (Oct 2-3) (BWS) (standard trapnets)	Typical Range (MnDNR)
Black bullhead	7	4	39	334	2 - 61
Black bullhead young of year		2	239	266	--
Bluegills	1.6		0.3	0.4	2 - 30
Bluegill young of year				59	--
Fathead minnows	2,575	5,639	0.3	1,764	--
Goldfish	0.1	1	1.4	2.9	NA
Green sunfish				28	0.2 - 12
Hybrid sunfish				0.1	NA
Pumpkinseed sunfish			9.9	0.5	1 - 8
Pumpkinseed sunfish young of year			68	0.3	--

**Recommendations:** It would appear that reducing the bullhead population in Long Lake could reduce lake phosphorus levels and maybe increase aquatic plant coverage. A drawdown may benefit Long Lake by controlling curlyleaf pondweed and reducing bullhead densities. However, drawdown benefits may be relatively short term. Bullheads and other fish are likely re-introduced from ponds in the watershed that drain into Long Lake. A fish barrier to curtail unwanted fish introductions into Long Lake would be one option in an attempt to keep the bullhead population at a lower density in Long Lake.

# Fish Survey of Long Lake (ID# 19-0022), Apple Valley, Minnesota in 2019

## Introduction

Long Lake (ID# 19-0022), a shallow 34-acre lake, located in Apple Valley, Minnesota. Long Lake has a maximum depth of 4 feet. Long Lake is susceptible to winterkill conditions.

In 2019, the City of Apple Valley contracted for a fish survey (MnDNR permit number 29292). The objectives were to characterize the existing fish community, determine if fish could be contributing to poor water quality in Long Lake.

## Methods

Trapnets were used to survey fish in Long Lake. Two MnDNR-style with a 3 x 5 feet square frame with five hoops, two funnel mouth openings and a 50-foot lead. Net mesh size was ½ inch (bar length). One MnDNR-style trapnet with a 4 x 6 feet square frame with five hoops, two funnel mouth openings and a 50-foot lead with a net mesh size was 3/8 inch (bar length) and one 2 x 3 feet square frame with two funnel mouth openings and 25-foot lead. The net mesh size was 3/8 inch (bar length). In Long Lake, 4 trapnets were set on Tuesday morning October 1, 2019. The 4 trapnets were fished for the following 2 days (October 2 and 3). Trapnet locations are shown in Figure 1.



Figure 1. Map of trapnet sets.

# Results

In 2019, fathead minnows were the dominant fish in Long Lake (Table 1). The next most abundant fish were black bullheads.

Long Lake lacked predator species such as largemouth bass and walleyes in the 2019 fish survey. In Long Lake, the fish community was dominated by fathead minnows and black bullheads which could be adversely impacting water quality.

**Table 1. Number of fish caught in trapnets for the Long Lake fish survey conducted October 2-3, 2019.**

LONG	Day 1 10.2.19									
	Black bullhead ADULT	Black bullhead YOY	Bluegill ADULT	Bluegill YOY	Fathead minnow	Green sunfish	Goldfish	Hybrid sunfish	Pumpkinseed ADULTS	Pumpkinseed YOY
1 (2x3')	32	200		175	10914	50				
2 (4x6')	389		1	15		8	3		2	
3 (3x5')	84	1927		42	5	31	5			1
4 (3x5')	765			25		26	3			1
Total fish caught	1270	2127	1	257	10919	115	11	0	2	2
Avg/lift	318	532	0.25	64.3	2730	28.8	2.75	0	0.50	0.50

	Day 2 10.3.19									
	Black bullhead ADULT	Black bullhead YOY	Bluegill ADULT	Bluegill YOY	Fathead minnow	Green sunfish	Goldfish	Hybrid sunfish	Pumpkinseed ADULTS	Pumpkinseed YOY
1 (2x3')	171			90	3175	31	1			
2 (4x6')	226		1	5		18	4		1	
3 (3x5')	425			40	5	37	2	1		
4 (3x5')	576		1	80	10	24	5		1	
Total fish caught	1398	0	2	215	3190	110	12	1	2	0
Avg/lift	350	0	0.50	53.8	798	27.5	3.00	0.25	0.50	0

	TOTAL 2019									
	Black bullhead ADULT	Black bullhead YOY	Bluegill ADULT	Bluegill YOY	Fathead minnow	Green sunfish	Goldfish	Hybrid sunfish	Pumpkinseed ADULTS	Pumpkinseed YOY
1 (2x3')	203	200	0	265	147089	81	1	0	0	0
2 (4x6')	615	0	2	20	0	26	7	0	3	0
3 (3x5')	509	1927	0	82	10	68	7	1	0	1
4 (3x5')	1341	0	1	105	10	50	8	0	1	1
Total fish caught	2668	2127	3	472	14109	225	23	1	4	2
Avg/lift	334	266	0.38	59	1764	28.1	2.88	0.13	0.5	0.25



The length distribution of fish species for Long Lake is shown in Table 2. Several year classes of bullheads and green sunfish indicate fish immigration into Long Lake is occurring. Goldfish were somewhat common as well.

**Table 2. Length frequency of fish in Long Lake (total length) in 2019.**

Long	Black bullhead	Bluegill	Fathead minnow	Green sunfish	Goldfish	Hybrid sunfish	Pumpkinseed
<3	2127	465	14109				
3		7		12	1		2
3.5				9	1		2
4	2	1		43	1		
4.5	35			33	4	1	1
5	37			19	7		
5.5	18			1	3		
6	6				4		1
6.5	6			3	2		
7	13						
7.5	44	2					
8	46						
8.5	30						
9	14						
9.5	3						
10							
<b>Measured</b>	<b>2381</b>	<b>475</b>	<b>14109</b>	<b>120</b>	<b>23</b>	<b>1</b>	<b>6</b>
<b>Counted</b>	2414			105			
<b>TOTAL</b>	<b>4795</b>	<b>475</b>	<b>14109</b>	<b>225</b>	<b>23</b>	<b>1</b>	<b>6</b>
fish/net (8 nets)	599	59	1764	28	2.9	0.1	0.8



**Figure 2. Pictures of some of the fish caught during the Long Lake fish survey in 2019. All fish were returned to Long Lake.**

### Comparison of Results of Fish Surveys from 2006, 2008, 2018, and 2019:

Because Long Lake is shallow it probably winterkills on an annual basis. Also, there have been periodic drawdowns that would also reduce, if not eliminate, the fish community. That is why it is not surprising to find the fish community dominated by minnows and black bullheads in previous surveys (Table 3).

**Table 3. Comparison of fish surveys for Long Lake from 2006 to 2019.**

	Long Lake (fish per trapnet)				
	2006 (BWS)	2008 (BWS)	2018 (BWS)	2019 (Oct 2-3) (BWS)	Typical Range (MnDNR)
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**Conclusions and Recommendations:** It would appear that reducing the bullhead population and the minnow population in Long Lake could reduce lake phosphorus levels and maybe increase aquatic plant coverage. A drawdown may benefit Long Lake. Installation of a fish barrier to reduce the immigration of bullheads into Long Lake could help as well.

# Appendix: Notification of MnDNR of Fish Survey

**From:** Steve McComas [<mailto:mccomas@pclink.com>]

**Sent:** Monday, September 30, 2019 2:04 PM

**To:** DeBates, TJ (DNR) <[timothy.debates@state.mn.us](mailto:timothy.debates@state.mn.us)>; Peterson, Jason R (DNR) <[jason.r.peterson@state.mn.us](mailto:jason.r.peterson@state.mn.us)>

**Cc:** Jessica Schaum <[jschaum@ci.apple-valley.mn.us](mailto:jschaum@ci.apple-valley.mn.us)>

**Subject:** Fish survey on Farquar (19-002300) and Long (19-002500) Lake, starting October 1, 2019

Hello all,

Blue Water Science will be conducting fish surveys in Farquar Lake (MN ID 19-002300) and Long Lake (MN ID 19-002500), Dakota County, starting on Tuesday, October 1, 2019. 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, October 3, 2019. 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: 29292.

Thank you,

**Steve McComas**

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