



Sunfish and Crappies from Pike Lake in 2015

Fish Survey of Pike Lake (ID #27-0111), City of Plymouth, Hennepin County, Minnesota in 2015

Survey Dates: October 6-8, 2015

MnDNR Permit Number: 20691

Prepared for:
City of Plymouth and
MnDNR



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December 2015

Fish Survey of Pike Lake (ID #27-0111), City of Plymouth, Hennepin County, Minnesota in 2015

Summary

Pike Lake is a 58 acre lake located within the Cities of Plymouth and Maple Grove, Hennepin County, Minnesota.

On October 6-8, 2015, a fish survey using standard trapnets was conducted in Pike Lake. The objective of the fish survey was to characterize existing fish conditions and to determine if fish densities were high enough to be contributing to the observed poor water quality in Pike Lake.

Results of the 2015 fish survey are shown in Table S1. A total of 6 species were observed. The fish catch was dominated by bluegill sunfish and young bluegills (YOY - young-of-the-year) were numerous as well. The MnDNR does not generally include young-of-the-year fish in the catch statistics, so the YOY fish are not shown in Table S1.

Results from 2015 are somewhat comparable to the last recorded MnDNR survey in 1993. The gamefish population is low. Largemouth bass were present in low numbers in both surveys and northern pike and walleyes were not sampled. It appears Pike Lake may experience occasional fish winterkills, but fish are reintroduced from Eagle Lake through the connecting channel from Eagle to Pike Lakes. Overall, the fish population in Pike Lake has a low density and is not likely contributing significantly to poor water quality.

Table S1. Pike Lake trapnet results for the fish survey conducted in 1993 by the MNDNR and in 2015 by Blue Water Science. Fish data are shown as fish/trapnet.

	1993 July 19 (MnDNR)	2015 October 6-8 (8 nets) (Blue Water Science)	DNR Range
Black Bullhead	8.5	0.1	0.7 - 25.7
Black Crappie	4.5	1.5	1.8 - 21.2
Bluegill	22	23	7.5 - 62.5
Brown Bullhead	1.5	--	0.2 - 1.4
Common Carp	0.5	--	0.4 - 2.0
Green Sunfish	--	0.1	NA
Largemouth Bass	0.5	0.3	0.2 - 0.7
Pumpkinseed	--	2.3	NA
Yellow bullhead	2.5	--	0.9 - 5.7
Yellow Perch	1.0	--	0.3 - 1.7

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Introduction

Pike Lake (MnDNR ID: 27-0111) is a 58-acre shallow lake, located within the Cities of Plymouth and Maple Grove, in Hennepin County, Minnesota. In October 2015, the City of Plymouth sponsored a fish survey conducted by Blue Water Science under permit number 20691 granted from the MnDNR. The objectives were to characterize the fish community in Pike Lake and assess potential water quality impacts from the fish.

Methods

Four standard trapnets were set for 2 days to survey fish in Pike Lake. The standard trapnet was a MnDNR-style with a 4 x 6 feet square frame with two funnel mouth openings and 50-foot lead.

Net mesh size was ½ inch (bar length). The trapnets were set on Tuesday morning October 6, 2015. The nets were fished for the following 2 days (October 7-8). Trapnet locations are shown in Figure 1 and pictures of a typical trapnet are shown in Figure 2.



Figure 1. Map of trapnet sets in Pike 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 buoy marks the end of the back hoop. This picture is to show what a net set-up looks like. The picture is from a fish survey conducted in another lake.



Fish are emptied out of the back of the trapnet with a net. This picture is from a fish survey that was conducted in the summer on another lake.



Fish are transferred to tubs, then they are counted, measured, and released. Pike Lake was dominated by bluegill sunfish.

Figure 2. Fish sampling in the Pike Lake fish survey.

Results

Fish Results: A total of 6 fish species were sampled in Pike Lake on October 6-8, 2015. The fish catch was dominated by bluegill sunfish. The number of bluegill sunfish caught per net averaged 23.0 per net (Table 1). This is within the normal range of 7.5-62.5 bluegill sunfish per lift for a lake like Pike Lake. The young-of-the-year (YOY) catch of bluegill sunfish indicates there is spawning in Pike Lake and that the bluegill population will be sustainable (Table 1).

Turtle Results: Painted turtles were also sampled in the trapnets and were common in Pike Lake. Turtles likely do well because the majority of the shoreline is in a natural state. No snapping turtles were sampled in this survey.

Table 1. Pike Lake trapnet results for the fish survey conducted in October 2015.

	Fish Captured (October 7-8, 2015)								Total Catch	2015 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 bullhead (<i>Ameiurus melas</i>)	1								1	0.1	0.7 - 25.7
Black crappies (<i>Pomoxis nigromaculatus</i>)		1	1	2			2	6	12	1.5	1.8 - 21.2
Bluegill sunfish (<i>Lepomis macrochirus</i>)	25	14	22	14	3	4	43	59	184	23.0	7.5 - 62.5
Green Sunfish (<i>Lepomis cyanellus</i>)		1							1	0.1	NA
Pumpkinseed sunfish (<i>Lepomis gibbosus</i>)	1		1		3	1	9	3	18	2.3	NA
Largemouth bass (<i>Micropterus salmoides</i>)			1					1	2	0.3	0.2 - 0.7
TOTAL FISH	27	16	25	16	6	5	54	69	218	27	--
Turtles - painted	4						4	4	12	1.5	--
Bluegill sunfish YOY (<i>Lepomis macrochirus</i>)	3			1	2	6	53	9	74	9.3	NA
Pumpkinseed sunfish YOY (<i>Lepomis gibbosus</i>)							2		2	0.3	NA



Adult bluegill sunfish.



Young of the year bluegill sunfish.

Fish Lengths: Fish lengths are shown in Table 2. Bluegill sunfish lengths ranged from 2 inches up to 7.5 inches. The small-sized bluegills indicate they are likely spawning in Pike Lake. The larger bluegills, over 4 inches, indicate they are 2 to 5 years old. These bluegills are either overwintering in Pike Lake or migrating into Pike Lake, from Eagle Lake. Black crappies ranged from 7 to 9 inches in length which is a typical size distribution (Table 2).

Table 2. Length frequency of fish species (as total length) for the Pike Lake fish survey. Blue shading indicates bluegills and pumpkinseed sunfish were young-of-the-year. Young-of-the-year were not included in statics of fish per net.

size (inches)	Black bullheads	Black crappies	Bluegills	Green sunfish	Largemouth bass	Pumpkinseed
<3			74			2
3			9			3
3.5						6
4			3	1	1	
4.5			5		1	
5			5			3
5.5			13			3
6			42			1
6.5			72			2
7		1	30			
7.5		2	5			
8		6				
8.5		2				
9		1				
9.5						
10						
10.5						
11						
11.5						
12						
12.5						
13						
13.5	1					

Previous Fish Surveys: In 1993 a MnDNR fish survey (Table 3) found bluegill sunfish were the dominant fish and that was still the case in 2015 (Table 4). Overall, the species composition in Pike Lake has been relatively stable from 1993 to 2015 (Table 4).

Table 3. Fish sampled in 1993 by the MnDNR.

Species	Gear Used	Number of fish per net		Average Fish Weight (lbs)	Normal Range (lbs)
		Caught	Normal Range		
Black Bullhead	Gill net	13.0	2.5 - 45.0	0.42	0.3 - 0.7
	Trap net	8.5	0.7 - 25.7	0.41	0.3 - 0.6
Black Crappie	Gill net	13.5	2.5 - 16.5	0.12	0.1 - 0.3
	Trap net	4.5	1.8 - 21.2	0.18	0.2 - 0.3
Bluegill	Gill net	6.5	N/A - N/A	0.21	N/A - N/A
	Trap net	22.0	7.5 - 62.5	0.20	0.1 - 0.3
Brown Bullhead	Gill net	0.5	0.4 - 2.0	0.77	0.5 - 1.0
	Trap net	1.5	0.2 - 1.4	0.59	0.5 - 1.0
Common Carp	Gill net	0.5	0.3 - 3.0	4.52	1.9 - 5.2
	Trap net	0.5	0.4 - 2.0	2.59	2.6 - 6.0
Golden Shiner	Gill net	8.5	0.3 - 1.5	0.10	0.1 - 0.1
Largemouth Bass	Trap net	0.5	0.2 - 0.7	1.19	0.2 - 0.9
Northern Pike	Gill net	3.5	1.5 - 7.3	3.16	2.0 - 3.5
Pumpkinseed	Gill net	0.5	N/A - N/A	0.14	N/A - N/A
Yellow Bullhead	Trap net	2.5	0.9 - 5.7	0.56	0.5 - 0.8
Yellow Perch	Gill net	27.5	2.0 - 27.9	0.09	0.1 - 0.2
	Trap net	1.0	0.3 - 1.7	0.05	0.1 - 0.2

Normal Ranges represent typical catches for lakes with similar physical and chemical characteristics.

Table 4. Pike Lake trapnet results for the fish survey conducted in 1993 by the MNDNR and in 2015 by Blue Water Science. Fish data are shown as fish/trapnet.

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Representative Fish Species of Pike Lake



Black bullhead



Black crappie



Bluegill sunfish



Green sunfish



Largemouth bass



Pumpkinseed

Conclusions

One of the objectives of this fish survey was to determine if fish were having an impact on water quality of Pike. It appears that with a low fish density and no evidence of carp, fish are not adversely impacting water quality.

Phosphorus release from the sediments is a possibility but the magnitude is undetermined at this time. This shallow lake is well-mixed throughout the summer therefore phosphorus release from anoxic conditions is unlikely but possible. Watershed nutrient inputs are a potential nutrient source as well.

Appendix: Minnesota DNR Fish Survey Notification

From: Steve McComas [mailto:mccomas@pdink.com]
Sent: Monday, October 05, 2015 2:37 PM
To: 'Ellison, Daryl G (DNR)'; Capt. Jason Peterson
Cc: Derek Asche; Ben Scharenbroich
Subject: Fish survey notification for Pike Lake, Hennepin County

Hello all,

Blue Water Science will be conducting a fish survey in Pike Lake (MN ID 27--011100), Hennepin County, starting on Tuesday, October 6, 2015. We will set 4 standard fyke nets in Pike Lake. The nets will be monitored daily on Wednesday and Thursday and all fish will be weighed and measured and returned to the lake. The nets will be removed from the lake on Thursday, October 8. The fish surveys are sponsored by the City of Plymouth 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: 20691.

Thank you,
Steve McComas
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