



Trapnet Set in Wilkinson Lake, September 2017

Fish Survey of Wilkinson Lake (ID #62-0043), Ramsey County, Minnesota in 2017

Survey Dates: September 6-8, 2017

MnDNR Permit Number: 23281

Prepared for:
VLAWMO and MnDNR



Prepared by:
Steve McComas
Blue Water Science

February 2018

Fish Survey of Wilkinson Lake (ID #62-0034), Ramsey County, Minnesota in 2017

Summary

Results of the trapnet survey in 2017 found the fish community of Wilkinson Lake (105 acres, average depth 2 feet) was dominated by small black bullheads (Table S1). Green sunfish and pumpkinseed sunfish were abundant and yellow perch were common. Largemouth bass were sampled, but all 7 fish were less than 5-inches long.

The presence of minnows and the absence of large predators such as largemouth bass indicates the potential for frequent winterkills in Wilkinson Lake. Fish re-introductions from Deep Lake as well as Pleasant Lake which are connected to Wilkinson Lake are likely.

Table S1. Fish survey results for September 2017.

	Fish/Net Sept 7-8, 2017 (n=8)	Typical Range (MnDNR)
Black bullhead	3.4	0.7 - 26
<i>Black bullhead < 3.5 inches</i>	341	NA
Black crappies	4.0	1.8 - 21
Bluegills	2.1	7.5 - 63
<i>Bluegills < 3 inches</i>	21	NA
Golden shiner	2.5	0.4 - 3.9
Green sunfish	31	0.4 - 3.8
Hybrid sunfish	1.3	NA
Largemouth bass	0.9	0.2 - 0.8
Pumpkinseed	34	0.7 - 4.2
Yellow perch	4.8	0.4 - 3.5
Minnow - fathead	25	NA
Minnows - mud	0.8	NA
Minnow - shiner	1.4	NA
Minnow - stickleback	0.4	NA
Painted turtle	1.3	--
Number of fish species	13	
TOTAL FISH PER NET	473	--



Figure S1. Small black bullheads dominated the catch in 2017.

Fish Survey of Wilkinson Lake (ID #62-0034), Ramsey County, Minnesota in 2017

Introduction

Wilkinson Lake (ID: 62-0043) is a 105-acre shallow lake (average depth is 2 feet), located in Ramsey County, Minnesota. In September 2017, VLAWMO contracted for a fish survey with Blue Water Science with a permit number 23281 granted from the MnDNR. The primary objective of this survey was to characterize the fish community in Wilkinson Lake.

Methods

Three standard trapnets and 1 mini-trapnet were sampled for 2 days for a total of 8 lifts to survey fish in Wilkinson Lake. The standard trapnet was a MnDNR-style with a 3 x 5 feet square frame with two funnel mouth openings and 50-foot lead. Net mesh size was 3/8 inch. The mini-trapnet was a MnDNR-style with a 2 x 3 feet square frame with two funnel mouth openings and 25-foot lead. Net mesh size was 3/8 inch (bar length). The trapnets were set on Wednesday morning September 6, 2017. Four nets were fished for the following 2 days (September 7 and 8). Trapnet locations are shown in Figure 1 and pictures of a typical trapnet operation are shown in Figure 2.



Figure 1. Map of trapnet sets in 2017.



A trapnet is a live fish trap. Fish run into the 50-foot lead net (standard size net) or 25-foot lead net (min-trapnet) and follow it back through a series of hoops with funnel mouths. Fish end up in the back hoop. The net is underwater, the only part visible is the flag indicating the back of the net.



The back hoop of the trapnet is propped up on the bow (front end) of the survey boat. A dip net is used to remove the fish from the back of the trapnet.



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

Figure 2. Trapnet set and fish sampling methods for the Wilkinson Lake fish survey.

Results

Fish Per Net: A total of 13 fish species were sampled in Wilkinson Lake on September 7-8, 2017. Black bullheads were the most abundant species followed by green sunfish and pumpkinseed sunfish (Tables 1 and 2). Largemouth bass were present with slightly above average numbers, but were less than 5 inches in length.

Table 1. Wilkinson Lake fish survey results from September 7-8, 2017 using 4 nets monitored for 2 days for a total of 8 lifts are shown below.

Fish Species	Wilkinson								Total Catch	Fish per Net (n=8)
	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	2	6	4	9			3	3	27	3.4
<i>Black bullhead < 3.5 inches</i>	247		44	17	27	19	225	290	2725	341
Black crappies	8	9		2	1		5	7	32	4.0
Bluegills	3	6	3				2	3	17	2.1
<i>Bluegills < 3 inches</i>	36		2	1	69	3	21	36	168	21
Golden shiner	11	7			1		1		20	2.5
Green sunfish	67	34	27	36	13	1	33	36	247	31
Hybrid sunfish	3	2					3	2	10	1.3
Largemouth bass	3	1		1			1	1	7	0.9
Pumpkinseed	35	27	18	19	46	4	63	57	269	34
Yellow perch	2	2	3				18	13	38	4.8
Minnow - fathead					141	62			203	25
Minnows - mud		1	2	2				1	6	0.8
Minnow - shiner					10	1			11	1.4
Minnow - stickleback						3			3	0.4
TOTAL FISH	417	95	103	87	308	93	375	449	3783	473

Table 2. Fish survey results for September 2017.

	Fish/Net Sept 7-8, 2017 (n=8)	Typical Range (MnDNR)
Black bullhead	3.4	0.7 - 26
<i>Black bullhead < 3.5 inches</i>	341	NA
Black crappies	4.0	1.8 - 21
Bluegills	2.1	7.5 - 63
<i>Bluegills < 3 inches</i>	21	NA
Golden shiner	2.5	0.4 - 3.9
Green sunfish	31	0.4 - 3.8
Hybrid sunfish	1.3	NA
Largemouth bass	0.9	0.2 - 0.8
Pumpkinseed	34	0.7 - 4.2
Yellow perch	4.8	0.4 - 3.5
Minnow - fathead	25	NA
Minnows - mud	0.8	NA
Minnow - shiner	1.4	NA
Minnow - stickleback	0.4	NA
Painted turtle	1.3	--
Number of fish species	13	
TOTAL FISH PER NET	473	--

Fish Length: Fish lengths are shown in Table 3. Bluegill lengths ranged from <3 inches up to 7 inches with the majority of the population less than 3 inches in Wilkinson Lake. Largemouth bass were present with lengths up to 5 inches. Yellow perch were present with lengths up to 10.5 inches. Because some yellow perch and black crappie lengths were found at 10 inches, these fish were 4 years old or older indicating they may have migrated into Wilkinson from Deep Lake after winterkills.

Largemouth bass, green sunfish, and yellow perch will put pressure on small bullheads and sunfish. However, adult bullheads are not easily controlled by fish predation. The existing fish predation pressure may not be enough control the young-of-the-year bullheads. Winterkills appear to happen frequently in Wilkinson Lake but there are re-introductions as well.

Table 3. Length frequency of fish species (as total length) for the West and East Wilkinson Lake fish survey for September 2017.

	Black bullhead	Black crappie	Bluegills	Golden shiner	Green sunfish	Hybrid sunfish	Large-mouth bass	Minnows-fathead	Minnows - mud	Minnows - shiner	Minnows-stickleback	Pumpkin-seed	Yellow perch
<3	869	5	168		31		1	203		11	3		
3		13			37		1					25	1
3.5		2			38							74	1
4			1		54		3		3			76	1
4.5			2		34	1			2			46	
5		1	1	1	21	4	2		1			40	1
5.5	2	1	3	8	21	4						5	6
6	2		5	9	7							1	13
6.5	6	5	4	2	1							2	5
7	4	1	1		3	1							7
7.5	5												2
8	7												
8.5													
9													
9.5		3											
10		1											
10.5													1
11	1												
11.5													
Measured fish	896*	32	185	20	247	10	7	203	6	11	3	269	38
TOTALS	2752	32	185	20	247	10	7	203	6	11	3	269	38

*additional 1,856 black bullheads estimated based on weight

Turtle Results: Painted turtles were sampled in the trapnets and were common in Wilkinson Lake. Turtles will do well in Wilkinson Lake because of the large percentage of a natural shoreline area.

Table 4. Painted turtle and snapping turtle catch per net for the 2 netting days.

Net	Painted Turtles	
	September 7, 2017	September 8, 2017
1	6	1
2		2
3		1
4		
Total Turtle (8 nets)	6	4
Turtle/Trapnet (8 lifts)	0.8	0.5



Figure 3. Fish sampled from 1 net in Wilkinson Lake in 2017. Five turtles are visible in this sample.

Representative Fish Species of Wilkinson Lake



Black crappie



Bluegill sunfish



Golden shiner



Green sunfish



Hybrid sunfish



Largemouth bass



Pumpkinseed sunfish



Yellow perch

Figure 4. Representative fish species found in Wilkinson Lake in 2017.

Conclusions and Recommendations

The trapnet survey in 2017 found the fish community was composed of 13 species. Black bullheads were the dominant fish species. The largemouth bass population has a size range up to 5 inches. It appears Wilkinson Lake frequently experiences winterkills but there is fish reintroduction from Deep Lake which is also connected to Pleasant Lake.

Recommendations and future considerations include the following:

- It appears Wilkinson Lake has the potential to winterkill almost annually.
- Natural winterkill should keep the Wilkinson Lake fish community somewhat managed through “boom and bust” cycles.
- The fish barrier at the outlet should prevent carp migration into Wilkinson Lake. Carp are present in Deep Lake as well as Pleasant Lake.
- At this point, the best management approach for Wilkinson Lake is to let natural conditions impact the Wilkinson Lake fish community.



Figure 4. [left] Yellow perch were common in Wilkinson Lake in 2017. [right] Mud minnows are low oxygen specialist and can survive in Wilkinson Lake.



Figure 5. Fish barrier at the outlet of Wilkinson Lake.

Appendix A

Minnesota DNR Fish Survey Notification

From: Steve McComas [mailto:mccomas@pclink.com]
Sent: Tuesday, September 05, 2017 10:10 AM
To: DeBates, TJ (DNR); Capt. Jason Peterson
Cc: Brian Corcoran; Kristine Jenson
Subject: Fish survey notification for Goose Lake and Wilkinson Lake, Ramsey County

Hello all,

Blue Water Science will be conducting fish surveys in Goose Lake (MN ID 62-003400) and Wilkinson Lake (MN ID 62-004300), Ramsey County, starting on Wednesday, September 6, 2017. We will set 6 standard trap nets in Goose Lake and 4 standard trap nets in Wilkinson Lake. The nets will be monitored daily on Thursday and Friday and all fish will be weighed and measured and returned to the lakes. The nets will be removed from the lakes on Friday, September 8. The fish survey is sponsored by the Vadnais Lake Area Water Organization 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: 23281.

Thank you,

Steve McComas

BLUE WATER SCIENCE

550 South Snelling Avenue

St. Paul, MN 55116

651 690 9602

mccomas@pclink.com