



Heron Resting on a Trapnet in Goose Lake, September 2017

---

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

## Summary

The first recorded Goose Lake fish survey occurred in 1986. The 1986 results indicated a sparse fishery with moderate numbers of black bullheads and only two other species in low numbers (brown bullheads and white suckers)(Table 1). It is likely that winterkill was a frequent occurrence and limited fish. In 2012, fish were more abundant, especially in the East Goose basin (Table 1). Black bullheads had a high density and may have been adversely impacting water quality. The VLAWMO sponsored bullhead removal by commercial fishermen and bullhead numbers were reduced based on the 2017 survey results. Black bullheads are not likely to be impacting water quality at this time. Also in 2017, black crappies had a very high density whereas bluegill sunfish, yellow perch, and largemouth bass decreased compared to the 2012 survey.

**Table 1. Three fish surveys have been conducted on Goose Lake since 1986. The first survey was conducted on June 30, 1986 by the Minnesota Department of Natural Resources (MnDNR). The second fish survey was conducted on July 17-18, 2012 Blue Water Science (BWS). The third survey was conducted on September 7-8, 2017 by BWS.**

	1986 Goose Fish/Net MnDNR	2012 West Goose Fish/Net (n=3) BWS	2012 East Goose Fish/Net (n=8) BWS	2012 Goose Fish/Net (n=11) BWS	2017 West Goose Fish/Net (n=4) BWS	2017 East Goose Fish/Net (n=8) BWS	2017 Goose Fish/Net (n=12) BWS	Typical Range (MnDNR)
Black bullhead	48	14	105	80	17	24	22	11.5 - 132.6
Black crappies	--	3.0	44	33	12	219	150	2.4 - 15.1
Bluegills	--	68	154	131	44	21	28	1.9 - 29.5
Brown bullhead	0.4	--	--	--				0.4 - 4.5
Golden shiner	--	1.3	--	0.4	6.8	0.5	2.6	0.2 - 1.1
Green sunfish	--	0.3	1.3	0.7	0.5		0.2	0.2 - 1.9
Hybrid sunfish	--	1.0	0.9	0.9	1.8	0.6	1.0	NA
Largemouth bass	--	1.7	21	16		1.0	0.7	0.3 - 1.2
Pumpkinseed	--	2.3	12	10	2.5	1.0	1.5	0.8 - 8.4
White sucker	0.4	--	0.1	0.1				0.3 - 2.6
Yellow bullhead					0.3		0.1	NA
Yellow perch	--	0.3	55	40	1.0	0.1	0.4	0.3 - 3.8
Painted turtle	--	16	0.4	4.5	1.5	0.4	0.9	--
Snapping turtle	--	3.7	--	1.0	0.8	0.1	0.3	--
Softshell turtle	--	--	0.3	0.2				--
Number of fish species	3		10			10		
TOTAL FISH	49	92	393	312	85	267	206	--



[left] Map of trapnet sets in 2017. [right] Fish from a single trapnet in 2017.

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

## Introduction

Goose Lake (ID: 62-0034) is a 145-acre shallow lake, 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 last fish surveys were conducted in 2012 by Blue Water Science and in 1986 by the MnDNR. The primary objective of this survey was to characterize the fish community in Goose Lake.

## Methods

Six standard trapnets were sampled for 2 days for a total of 12 lifts to survey fish in Goose Lake. The 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 3/8 inch. Six standard trap nets were set on Wednesday morning September 6, 2017. Six 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.



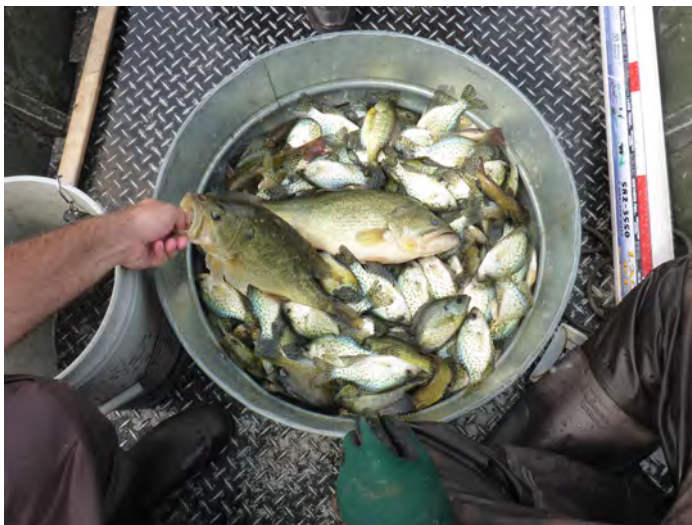
Figure 1. Map of trapnet sets in 2017.



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



**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 in the Goose Lake fish survey.**

## Results

**Fish Per Net:** A total of 10 fish species were sampled in Goose Lake on September 7-8, 2017. Black crappies were the most abundant species followed by bluegill sunfish. Nets 1 through 4, on the east side of the lake, were the most productive (Table 1).

The average number of black crappies caught per net was high with the average haul of 150 fish per net (Tables 1 and 2).

**Table 1. Goose Lake fish survey results from September 7-8, 2017 using 6 nets monitored for 2 days for a total of 12 lifts are shown below.**

Fish Species	East Goose								West Goose				Total Catch	Fish per Net (n=12)
	Net 1		Net 2		Net 3		Net 4		Net 5		Net 6			
	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2		
Black bullheads	9	21	56	65	9	6	11	13	5	5	7	52	259	22
Black crappies	251	200	382	265	262	194	102	97		4	20	23	1800	150
Bluegills	8	10	31	16	10	6	55	30	20	19	73	62	340	28
Golden shiner	1	1			1	1					10	17	31	2.6
Green sunfish										2			2	0.2
Hybrid sunfish		1	3					1	2	2	3		12	1.0
Largemouth bass	1	1	2	2	1	1							8	0.7
Pumpkinseed		1	1	1		1	2	2		2	3	5	18	1.5
Yellow bullhead											1		1	0.1
Yellow perch	1								2	1		1	5	0.4
<b>TOTAL FISH</b>	<b>271</b>	<b>235</b>	<b>475</b>	<b>349</b>	<b>283</b>	<b>209</b>	<b>170</b>	<b>143</b>	<b>29</b>	<b>35</b>	<b>117</b>	<b>160</b>	<b>2476</b>	<b>206</b>

**Table 2. Goose Lake fish survey trapnet results from September 7-8, 2017.**

	West Goose Fish per Net (n=4)	East Goose Fish per Net (n=8)	Goose Fish per Net (n=12)	Typical Range (MnDNR)
Black bullhead	17	24	22	11.5 - 132.6
Black crappies	12	219	150	2.4 - 15.1
Bluegills	44	21	28	1.9 - 29.5
Golden shiner	6.8	0.5	2.6	0.2 - 1.1
Green sunfish	0.5		0.2	0.2 - 1.9
Hybrid sunfish	1.8	0.6	1.0	NA
Largemouth bass		1.0	0.7	0.3 - 1.2
Pumpkinseed	2.5	1.0	1.5	0.8 - 8.4
Yellow bullhead	0.3		0.1	NA
Yellow perch	1.0	0.1	0.4	0.3 - 3.8
Painted turtle	1.5	0.4	0.9	--
Snapping turtle	0.8	0.1	0.3	--
<b>TOTAL FISH</b>		<b>267</b>	<b>206</b>	<b>--</b>

**Fish Length:** Fish lengths are shown in Table 3 and Figure 3. Bluegill lengths ranged from 3.5 inches up to 8 inches with the majority of the population less than 6 inches in West Goose while a majority of the population was 6 inches or greater in East Goose. Largemouth bass were present with lengths up to 16 inches. At these lengths, the bass population has some capacity to capture and ingest small to medium-sized fish and should keep sunfish and bullheads from becoming overpopulated and from producing stunted growth conditions. Adult bullheads are not easily controlled by fish predation, but the existing fish predation pressure may control the young-of-the-year.

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

Length (inches)	Black Bullhead		Black Crappies		Bluegills		Golden Shiner		Green Sunfish		Hybrid Sunfish		Largemouth Bass		Pumpkin-seed		Yellow Bullhead		Yellow Perch		
	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	
<3						1															
3			2			2			1						1	1					
3.5						7									0						
4						8									3						
4.5	1	6			7	3			1		1										
5	13	64	1		29	2	1					1			3					1	
5.5	28	56	11		64	10	1								3	2					
6	5	34	27	19	55	41	10	2							2	1			2		
6.5	4	14	4	204	11	60	12				1				1				2		
7		12	1	31	4	24	3	2			2	3				1					
7.5	7	2	1		3	7					3						1				
8	6				1	1						1									
8.5	3	1																			
9	1																				
9.5		1																			
10																					
10.5																					
11																					
11.5																					
12	1																				
12.5																					
13																					
13.5																					
14														1							
14.5														1							
15														5							
15.5																					
16														1							
<b>Total (measured)</b>	<b>69</b>	<b>190</b>	<b>47</b>	<b>254</b>	<b>174</b>	<b>166</b>	<b>27</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>5</b>		<b>8</b>	<b>10</b>	<b>8</b>	<b>1</b>		<b>4</b>	<b>1</b>	
<b>Total (Counted)</b>				<b>1499</b>																	
<b>Total Fish</b>				<b>1753</b>																	
<b>% of the Total Catch Measured</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>14%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Turtle Results:** Painted and snapping turtles were sampled in the trapnets and were common in Goose Lake. Turtles will do well in Goose 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	Snapping Turtles
East Goose Lake, September 2017		
1	3	1
2	2	
3		
4		
West Goose Lake, September 2017		
5	6	2
6		1
Total Turtle (12 nets)	11	4
<b>Turtle/Trapnet (12 lifts)</b>	<b>0.9</b>	<b>0.3</b>



**Figure 3. A snapping turtle that was caught in Goose Lake in 2017.**



**Figure 4. [left] Bluegill sunfish and black crappie were both present in Goose Lake. Black crappies were the most abundant fish sampled in 2017. [right] Largemouth bass catch rate was lower in 2017 compared to 2012.**

## Representative Fish Species of Goose Lake



Hybrid sunfish



Bluegill sunfish



Black crappie



Pumpkinseed sunfish



Largemouth bass



Yellow perch



Golden shiner

Figure 5. Representative fish species found in Goose Lake in 2012 and 2017.



## Comparison of 1986, 2012, and 2017 Fish Surveys

The oldest recorded Goose Lake fish survey on the MnDNR Lakefinder website occurred in 1986. The 1986 results indicated a sparse fishery with moderate numbers of black bullheads and only two other species in low numbers (brown bullheads and white suckers)(Table 5). It is likely that winterkill was a frequent occurrence and severely limited fish. In 2012, fish were abundant, especially in the East Goose basin (Table 5). Black bullheads and bluegills sunfish were the dominant species. A variety of fish lengths represented a number of year classes which indicate that winterkill may not be as common compared to the 1980s.

In 2017, the fish community was different compared to 2012. Black bullhead numbers were lower as were largemouth bass. Black crappies numbers increased dramatically. Maybe the decline in bullheads results in better crappie recruitment.

**Table 5. Three fish surveys have been conducted on Goose Lake since 1986. The first survey was conducted on June 30, 1986 by the Minnesota Department of Natural Resources (MnDNR). The second fish survey was conducted on July 17-18, 2012 Blue Water Science (BWS). The thrid survey was conducted on September 7-8, 2017 by BWS.**

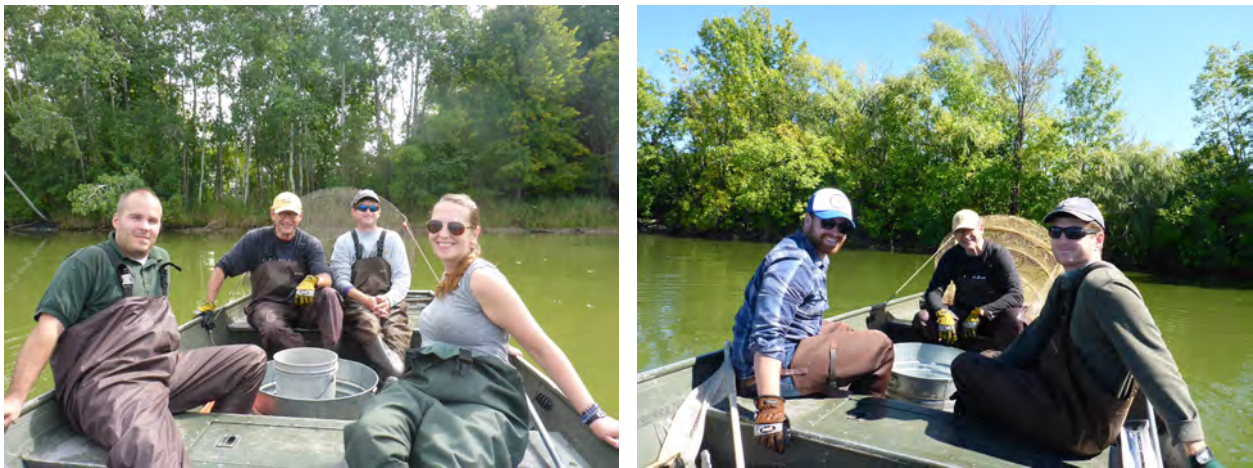
	1986 Goose Fish/Net MnDNR	2012 West Goose Fish/Net (n=3) BWS	2012 East Goose Fish/Net (n=8) BWS	2012 Goose Fish/Net (n=11) BWS	2017 West Goose Fish/Net (n=4) BWS	2017 East Goose Fish/Net (n=8) BWS	2017 Goose Fish/Net (n=12) BWS	Typical Range (MnDNR)
Black bullhead	48	14	105	80	17	24	22	11.5 - 132.6
Black crappies	--	3.0	44	33	12	219	150	2.4 - 15.1
Bluegills	--	68	154	131	44	21	28	1.9 - 29.5
Brown bullhead	0.4	--	--	--				0.4 - 4.5
Golden shiner	--	1.3	--	0.4	6.8	0.5	2.6	0.2 - 1.1
Green sunfish	--	0.3	1.3	0.7	0.5		0.2	0.2 - 1.9
Hybrid sunfish	--	1.0	0.9	0.9	1.8	0.6	1.0	NA
Largemouth bass	--	1.7	21	16		1.0	0.7	0.3 - 1.2
Pumpkinseed	--	2.3	12	10	2.5	1.0	1.5	0.8 - 8.4
White sucker	0.4	--	0.1	0.1				0.3 - 2.6
Yellow bullhead					0.3		0.1	NA
Yellow perch	--	0.3	55	40	1.0	0.1	0.4	0.3 - 3.8
Painted turtle	--	16	0.4	4.5	1.5	0.4	0.9	--
Snapping turtle	--	3.7	--	1.0	0.8	0.1	0.3	--
Softshell turtle	--	--	0.3	0.2				--
Number of fish species	3		10			10		
TOTAL FISH	49	92	393	312	85	267	206	--

## Conclusions and Recommendations

The trapnet survey in 2012 found the largemouth bass population had a high density and a size range from 6.5 to 16 inches indicating that several year classes of fish species were surviving over winter. Bluegills, yellow perch, and largemouth bass abundance (as fish/net) were above the typical MnDNR range for a lake like Goose. However bullheads were also abundant in 2012.

The fish community changed based on findings from the 2017 survey. It appears commercial fishing successfully reduced bullhead densities. In somewhat of a surprise, black crappie numbers increased dramatically while largemouth bass, bluegill, and yellow perch numbers decreased. Black crappies are now the top predator in Goose Lake. Largemouth bass are present and within a range typical for these types of shallow lakes.

No additional fish management is needed at this time but another survey in a few years would be informative.



**Figure 6. Fish surveying crew for the Goose Lake 2017 survey.**

**[left] Brian Corcoran (left-VLAWMO), Steve McComas (middle-left), Connor McComas (middle-right), and Kristine Jenson (right-VLAWMO).**

**[right] Nick Voss (left-VLAWMO), Steve McComas (center), and Connor McComas (right).**

# 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](mailto:mccomas@pclink.com)

# Appendix B

## 2012 Data

Goose Lake fish survey results from July 17-18, 2012 using six nets monitored for 2 days for a total of 11 lifts are shown below. One net in West Goose Lake was pulled to shore during the survey and was not counted for the survey. Nets 3 and 4 were the most productive.

Fish Species	East Goose								West Goose				Total Catch	Fish per Net (n=11)
	Net 1		Net 2		Net 3		Net 4		Net 5		Net 6			
	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2		
Black bullheads	99	150	7	53	68	290	101	71	5	7	--	31	882	80
Black crappies	39	20	22	1	79	17	99	73	5	1	--	3	359	33
Bluegills	197	142	25	25	197	233	188	224	62	79	--	64	1,436	131
Golden shiner	0	0	0	0	0	0	0	0	1	3	--	0	4	0.4
Green sunfish	0	1	0	0	7	1	0	1	0	1	--	0	8	0.7
Hybrid sunfish	0	7	0	0	0	0	0	0	0	3	--	0	10	0.9
Largemouth bass	16	9	1	0	25	19	54	41	2	0	--	3	170	15
Pumpkinseed	8	9	2	3	22	17	31	6	4	1	--	2	105	10
White sucker	0	0	0	0	0	0	1	0	0	0	--	0	1	0.1
Yellow perch	55	47	55	18	33	186	26	21	0	0	--	1	442	40
TOTAL FISH	414	385	112	100	431	763	500	437	79	95	--	104	3,420	311

Goose Lake fish survey trapnet results from July 17-18, 2012 using nets for 2 days for a total of 3 lifts are shown below. One net was pulled to shore during the survey and was not counted for the survey. Blue shading indicates where the number of fish caught, expressed as fish per net, were higher than the typical MnDNR range for a lake like Goose Lake.

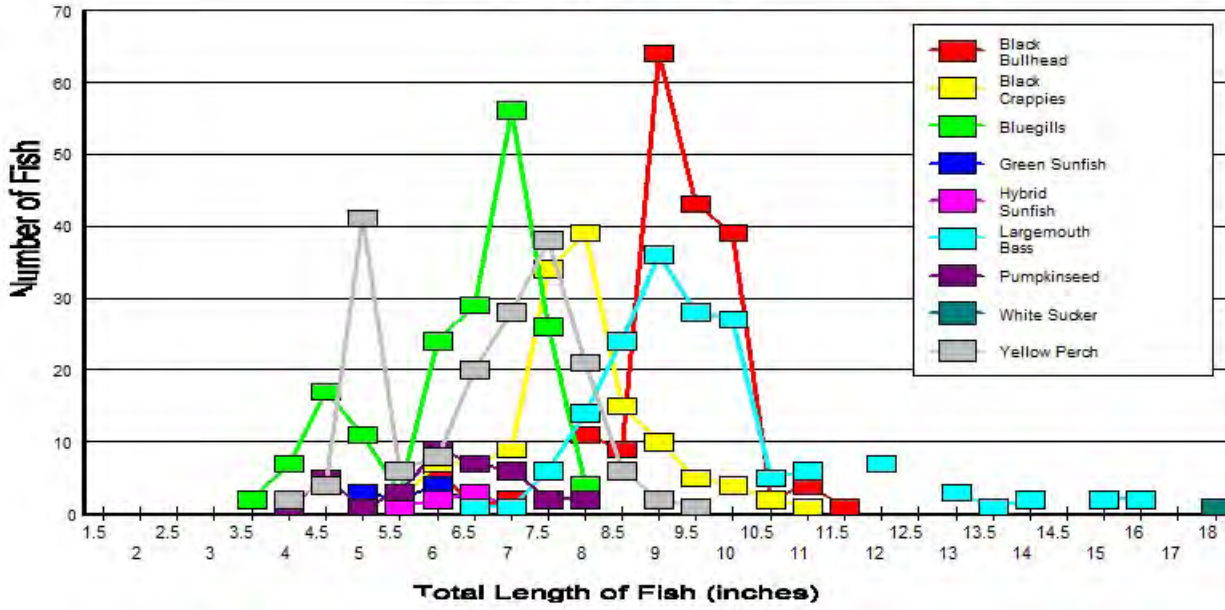
	West Goose Fish per Net (n=3)	East Goose Fish per Net (n=8)	Goose Fish per Net (n=11)	Typical Range (MnDNR)
Black bullhead	14	105	80	11.5 - 132.6
Black crappies	3.0	44	33	2.4 - 15.1
Bluegills	68	154	131	1.9 - 29.5
Golden shiner	1.3	0	0.4	0.2 - 1.1
Green sunfish	0.3	1.3	0.7	0.2 - 1.9
Hybrid sunfish	1.0	0.9	0.9	NA
Largemouth bass	1.7	21	16	0.3 - 1.2
Pumpkinseed	2.3	12	10	0.8 - 8.4
White sucker	0	0.1	0.1	0.3 - 2.6
Yellow perch	0.3	55	40	0.3 - 3.8
Painted turtle	16	0.4	4.5	--
Snapping turtle	3.7	0	1.0	--
Softshell turtle	0	0.3	0.2	--
TOTAL FISH	92	393	312	--

**Length frequency of fish species (as total length) for the West and East Goose Lake fish survey for July 2012.**

Length (inches)	Black Bullhead		Black Crappies		Bluegills		Golden Shiner		Green Sunfish		Hybrid Sunfish		Largemouth Bass		Pumpkin -seed		White Sucker		Yellow Perch	
	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East
<3					1															
3					4															
3.5					5	2														
4					39	7									1	1				2
4.5					44	17										5				4
5					20	11				3	1				2	1				41
5.5				2	4	3	3			2		1				3				6
6		6	1	7	7	24			1	4		2				9			1	8
6.5		1		7	35	29				1		3		1	1	7				20
7		2	1	9	39	56	1				1	1		1	3	6				28
7.5	1		4	34	7	26								6		2				38
8	2	11	1	39		4								14		2				21
8.5	4	9	2	15										24						6
9	17	64		10										36						2
9.5	9	43		5										28						1
10	3	39		4									1	27						
10.5	6	2		2									2	5						
11		4		1										6						
11.5		1											1							
12														7						
12.5																				
13														3						
13.5														1						
14														2						
14.5																				
15														2						
15.5													1							
16														2						
16.5																				
17																				
17.5																				
18																		1		
<b>Total</b>	<b>42</b>	<b>182</b>	<b>9</b>	<b>135</b>	<b>205</b>	<b>179</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>165</b>	<b>7</b>	<b>36</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>177</b>
<b>% of the Total Catch Measured</b>	<b>100%</b>	<b>22%</b>	<b>100%</b>	<b>39%</b>	<b>100%</b>	<b>15%</b>	<b>100%</b>	<b>--</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>38%</b>	<b>--</b>	<b>100%</b>	<b>100%</b>	<b>40%</b>

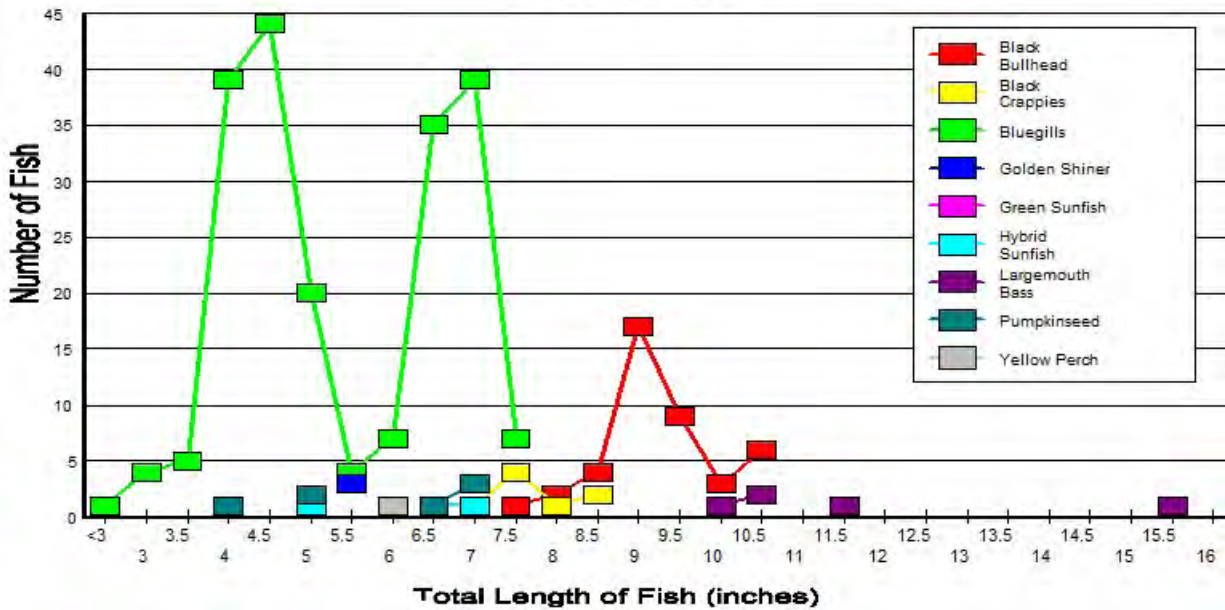
### East Goose Lake

July 17-18, 2012



### West Goose Lake

July 17-18, 2012



Length distribution of fish from the July 2012 survey in Goose Lake.