



Softshell Turtle from Goose Lake, July 2012

Fish Survey of Goose Lake (ID #62-0034), Ramsey County, Minnesota in 2012

Survey Dates: July 16-18, 2012

MnDNR Permit Number: 18362

Prepared for:
VLAWMO and MnDNR



Prepared by:
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Blue Water Science

November 2012

Introduction

Goose Lake (ID: 62-0034) is a 145-acre shallow lake, located in Ramsey County, Minnesota. In July 2012, VLAWMO contracted for a fish survey with Blue Water Science with a permit number 18362 granted from the MnDNR. The last fish survey was conducted 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 two days for a total of twelve 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 Monday morning July 16, 2012. Six nets were fished for the following 2 days (July 17, 18). Trapnet locations are shown in Figure 1 and pictures of a typical trapnet operation are shown in Figure 2.

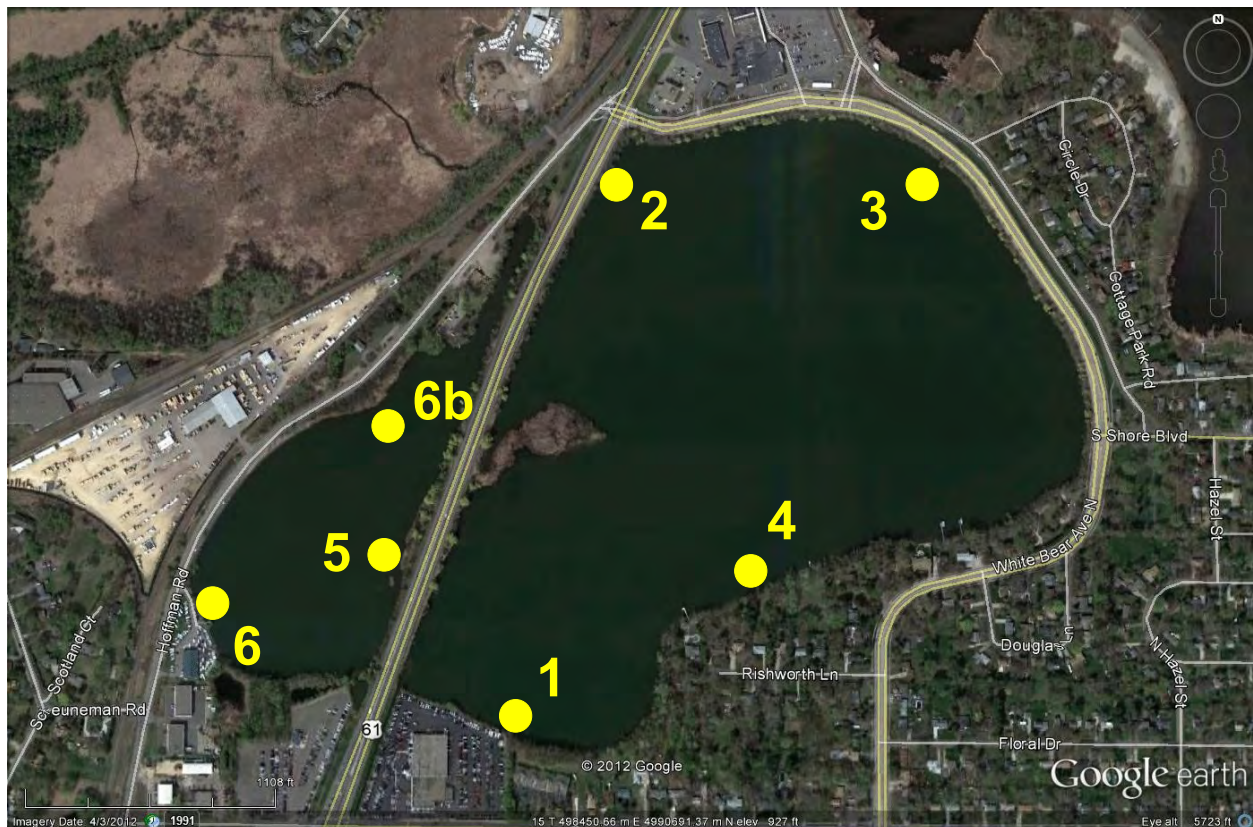


Figure 1. Map of trapnet sets. Net 6b was set on the July 16 but was moved on July 17 because of tampering. Net 6 had one day of netting results and the other five nets had two days of netting results for a total of eleven lifts.



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 ten fish species were sampled in Goose Lake on July 17-18, 2012. Bluegill sunfish were the most abundant species followed by black bullheads. Nets 1 through 4, on the east side of the lake, were the most productive (Table 1).

The average number of bluegills caught per net was high with the average haul of 131 fish per net (Tables 1 and 2). Largemouth bass had a high population with an average of 15 fish per net.

Table 1. 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

Table 2. 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	--

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 but the most common size was in the 8 to 10 inch range. 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. However, if the largemouth bass move into the 12 to 16 inch range, the predator control component will be enhanced. In the meantime, commercial fishing for bullheads may be necessary to remove the adult bullhead population (bullheads 6 inches or greater) which would reduce the spawning output and help bring the black bullhead population down. 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 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	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	
Total	42	182	9	135	205	179	4	0	1	10	3	7	5	165	7	36	0	1	1	177
% of the Total Catch Measured	100%	22%	100%	39%	100%	15%	100%	--	100%	100%	100%	100%	100%	100%	100%	38%	--	100%	100%	40%

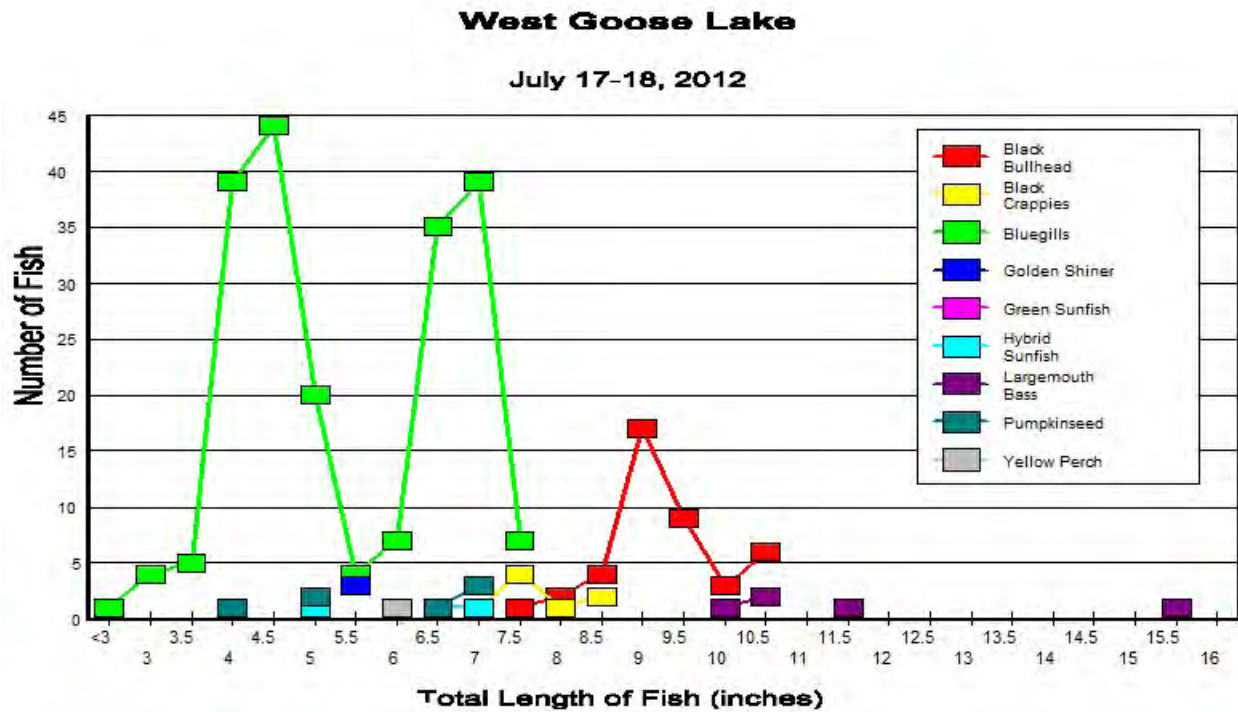
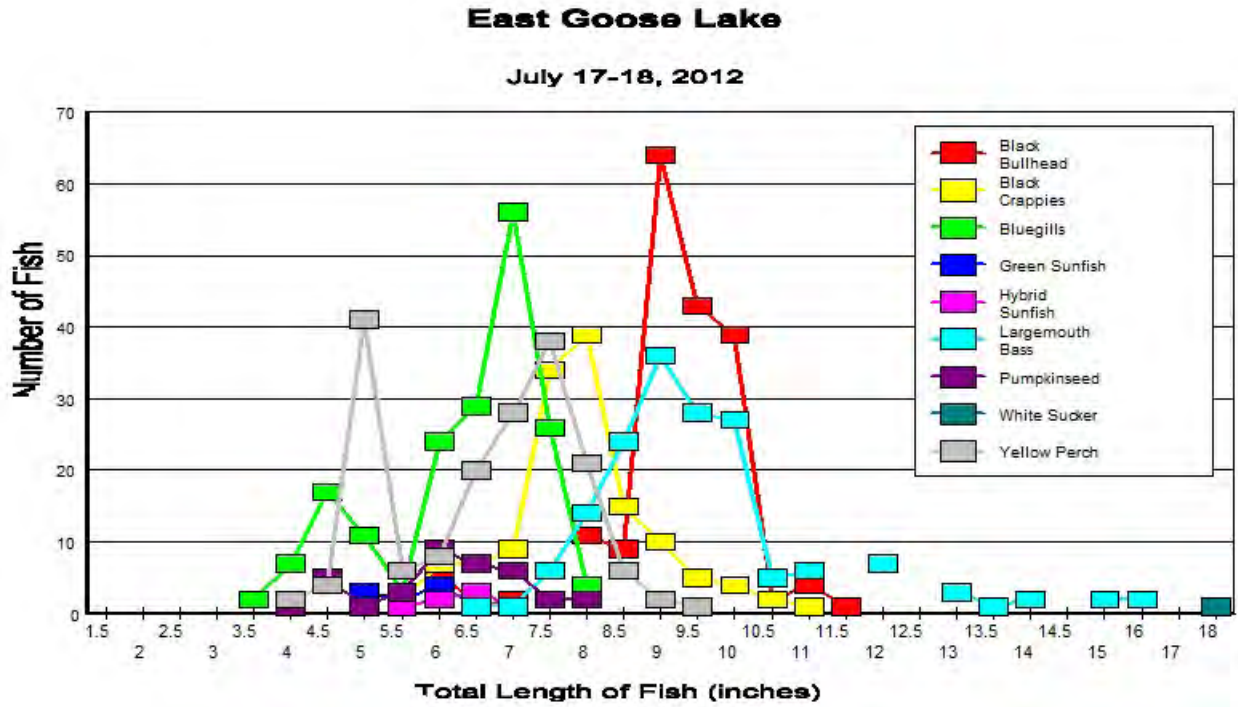


Figure 3. Length distribution of fish from the July 2012 survey in Goose Lake.

Turtle Results: Painted, snapping, and softshell 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 two netting days.

Net	Painted Turtles	Snapping Turtles	Softshell Turtles
East Goose Lake, July 2012			
1	3	0	1
2	0	0	0
3	0	0	0
4	0	0	1
West Goose Lake, July 2012			
5	44	11	0
6	3	0	0
Total Turtle (11 nets)	50	11	2
Turtle/Trapnet (11 lifts)	4.5	1.0	0.2



Figure 4. Turtles from one net in West Goose Lake.

Representative Fish Species of Goose Lake



Hybrid sunfish



Bluegill sunfish



Black crappie



Pumpkinseed sunfish



Largemouth bass



Yellow perch



White sucker



Golden shiner

Figure 5. Representative fish species found in Goose Lake in July 2012.

Comparison of 1986 and 2012 Fish Surveys

The last 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 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). A variety of fish lengths represents a number of year classes which indicate that winterkill may not be as common compared to the 1980s. The Goose Lake fish population in 2012 was robust with the potential for high quality recreational fishery if yellow perch and largemouth bass can increase in length.

Table 5. Two 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).

	1986 Goose Fish per Net MnDNR	2012 West Goose Fish per Net (n=3) BWS	2012 East Goose Fish per Net (n=8) BWS	2012 Goose Fish per Net (n=11) BWS	Typical Range (MnDNR)
Black bullhead	48	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
Brown bullhead	0.4	--	--	--	0.4 - 4.5
Golden shiner	--	1.3	--	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	0.4	--	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	--	1.0	--
Softshell turtle	--	--	0.3	0.2	--
TOTAL FISH	49	92	393	312	--



Figure 6. Bullheads were abundant in East Goose Lake.

Conclusions and Recommendations

The trapnet survey in 2012 found the fish community was composed of ten species. The abundance of several species was above average for trapnet catches. Bluegills and black bullheads are not stunted indicating there may be some control from the piscivores. The largemouth bass population has a size range from 6.5 to 16 inches indicating that several year classes of the fish species are surviving over winter. Bluegills, yellow perch, and largemouth bass abundance (as fish/net) are above the typical range for a lake like Goose.

Recommendations and future considerations include the following:

- In Goose Lake, largemouth bass are the dominant gamefish with extremely high numbers. They may ultimately keep black bullheads and bluegill populations under control especially as the bass population increases in length.
- The black bullhead population is abundant in East Goose with the dominant size class in the 9 to 11 inch range. It is recommended that the best way to reduce this component of the bullhead population is by commercial fishing. Reducing black bullheads could improve water quality.
- Water quality is poor in Goose Lake but fishing has the potential to be very good for panfish and largemouth bass in the future. In three to four years recreational bass, perch, and bluegill fishing could be very productive if their lengths increase.
- Dissolved oxygen measurements should be taken over the winter months to assess potential winterkill conditions that could develop if there is a long, cold winter.



Figure 7. Fish surveying crew for the Goose Lake 2012 survey. Brian Corcoran (left) VLAWMO, Steve McComas (middle), and Connor McComas (right).

Appendix A

Minnesota DNR Fish Survey Notification

Steve McComas

From: Steve McComas <mccomas@pclink.com>
Sent: Friday, July 13, 2012 9:07 AM
To: Gerald Johnson; Greg Salo
Cc: Brian Corcoran
Subject: Fish survey on Goose Lake (62-0034)

Hello all,

Blue Water Science will be conducting a fish survey in Goose Lake (62-0034), Ramsey County, starting on Monday, July 16, 2012. We will set 6 fyke nets on Monday in the lake. The nets will be monitored daily and all fish will be weighed, measured, and returned to the lake. The nets will be removed from the lake on Wednesday, July 18, 2012. The fish survey is sponsored by the Vadnais Lake Area Water Management Organization with the objectives to characterize the existing fish community structure, assess potential impacts of fish on water quality, and determine potential winterkill effects on the fish community.

This survey is being conducted under the permit number: 18362

Best regards,

Steve McComas
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