



Gem Lake Crappies, September, 2011

Fish Survey of Gem Lake (ID #62-0037), Ramsey County, Minnesota in 2011

Survey Dates: September 26-28, 2011

MnDNR Permit Number: 17693

Prepared for:

VLAWMO and MnDNR

Prepared by:

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Introduction

Gem Lake is a 20-acre lake, located in Ramsey County, Minnesota. In September 2011, VLAWMO sponsored a fish survey conducted by Blue Water Science under permit number 17693 granted from the MnDNR. The objective was to characterize the fish community in Gem Lake.

Methods

Two standard trapnets and one mini-trapnet were used for two days for a total of four standard lifts and two mini-trapnet lifts to survey fish in Gem 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 3/8 inch. The mini-trapnet was a MnDNR-style with a 2 x 3 feet square frame with one funnel mouth opening and a 25-foot lead. Net mesh size was 1/8 inch. The trapnets were set on Monday morning September 26, 2011. The nets were fished for the following 2 days (September 27 and 28). Trapnet locations are shown in Figure 1 and pictures of a typical trapnet are shown in Figures 2 and 3.



Figure 1. Map of trapnet locations in Gem Lake.



Figure 2. 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 flag marks the end of the back hoop.



Figure 3. Fish are transferred to tubs, then they are counted and measured and released.

Results

In the standard trapnets, black crappies were the only species of fish sampled in Gem Lake on September 27 and 28, 2011. The number of crappies caught per net was high with the average haul of 37 fish per net (Table 1).

In the mini-trapnet sets, two minnow species were caught, but in low numbers (Table 1).

Table 1. Gem Lake trapnet results for the fish survey conducted in September 2011.

	September 27 and 28, 2011				Total Catch (standard)	Fish per Net (n=4)	MnDNR Normal Range	Sept 27 & 28, 2011		Total Catch (mini)
	Standard Trapnet 1		Standard Trapnet 2					Mini-Trapnet 3		
	Day 1	Day 2	Day 1	Day 2				Day 1	Day 2	
Black crappies	28	71	21	29	149	37	2 - 18	7	0	7
Painted turtle	0	0	3	0	3	0.75	NA	0	0	0
Fathead minnow	0	0	0	0	0	--		7	6	13
Mud minnow	0	0	0	0	0	--		0	1	1
TOTAL FISH	28	71	21	29	149			14	7	14

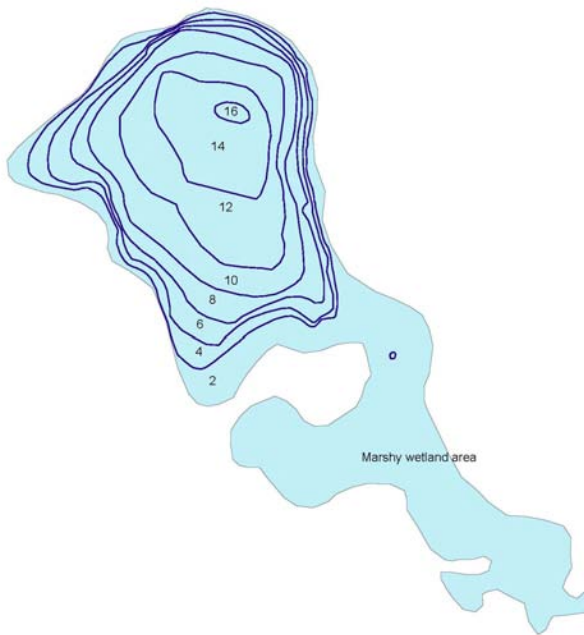


Figure 4. [left] Gem Lake is shallow and prone to winterkill events. [right] Much of the Gem Lake shoreline is lined with natural vegetation.

Although black crappies were the only species, there were at least a couple of year classes present.

Black crappie lengths are shown in Table 2 and ranged from less than 3 inches up to 9.5 inches in length with the majority of the population was less than 6 inches. However, 27% of the crappies were 8 to 9 inches long.

Table 2. Length frequency of fish species (as total length) for the Gem Lake fish survey.

	Black Crappies	
	Standard Nets	Mini Nets
<3	4 (3%)	0
3	28 (19%)	1
3.5	10 (7%)	0
4	35 (24%)	0
4.5	13 (9%)	0
5	10 (7%)	0
5.5	4 (3%)	0
6	0	0
6.5	0	0
7	0	0
7.5	4 (3%)	0
8	20 (13%)	0
8.5	14 (9%)	1
9	7 (5%)	4
9.5	0	1
10	0	0
Total	149	7

Representative Black Crappies of Gem Lake



Figure 5. [left] Smaller sized black crappies. [right] Normal size distribution of black crappies from a standard fyke net.

Conclusions and Recommendations

The fish community was represented by a single species, black crappies, in the standard trapnet sets and the black crappie abundance was above average for trapnet catches. Gem Lake is relatively shallow and it is likely that winterkills have occurred in the past. A few years ago winterkill probably killed all the fish in the lake and then crappies were introduced, either intentionally or unintentionally. Because Gem Lake is land-locked, immigration of other fish species is unlikely. If there is another severe winterkill, the existing population of crappies will probably be eliminated and minnows will be the dominant species.

Without a winter aeration system, significant fish stocking is not recommended. However, a limited stocking program could be considered to support limited recreational fishing but with the caveat that a future winterkill is inevitable. A limited stocking program would involve two to three breeding pairs of largemouth bass and several dozen bluegill sunfish.

Without winter aeration a boom and bust fishery is likely which is a natural occurrence for shallow lakes like Gem Lake. Therefore, a winter aeration system is not recommended for Gem Lake. Not necessarily because of the costs or liability concerns but rather because this shallow lake is in a natural setting and letting nature take it's course is a good management strategy for a lake like Gem Lake that is more conducive to wildlife rather than a recreational fishery.



Several year classes of crappies were observed in Gem Lake including many in the 8-9 inch range.



Painted turtles were common.



Fathead minnows and crappies from a mini-trapnet.



Minnows were present, but in low numbers. Mudminnow is shown on top and a fathead minnow is on the bottom.

Figure 6. Representative fish pictures.

Appendix A

Minnesota DNR Fish Survey Notification

Steve McComas

From: Steve McComas <mccomas@pclink.com>
Sent: Friday, September 23, 2011 1:14 PM
To: Gerald Johnson; Greg Salo
Cc: Brian Corcoran
Subject: Fish survey notification

Hello all,

Blue Water Science will be conducting a fish survey in Gem Lake (MN ID 62-37), Ramsey County, starting on Monday, September 26. We will set 3 fyke nets on Monday. The nets will be monitored daily and all fish will be weighed and measured and returned to the lake. The nets will be removed from the lake on Wednesday, September 28. The fish survey is sponsored by the Vadnais Lake Area Water Management Organization with the objective to examine possible winterkill effects from last winter on the fish community structure.

This survey is being conducted under the permit number: 17693

Best regards,

Steve McComas

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