



Fish Caught in a Trapnet in Bass lake, October, 2012

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## Fish Survey of Bass Lake (ID #27-0098) Hennepin County, Minnesota in 2012

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Survey Dates: October 9 - 10, 2012

**MnDNR Permit Number: 18557**

Prepared for:  
City of Plymouth and  
MnDNR



Prepared by:  
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Blue Water Science  
St. Paul, MN

December 2012

# Introduction

Bass Lake (ID: 27-98) is a 174-acre shallow lake, located in Hennepin County, Minnesota. In October 2012, the City of Plymouth sponsored a fish survey conducted by Blue Water Science under permit number 18557 granted from the MnDNR. The objectives were to characterize the fish community in Bass Lake and compare results to the previous survey from 1991.

# Methods

Six standard trapnets were monitored for two days. 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, October 8, 2012. Six nets were fished for the following 2 days (October 9, 10). However, three nets were found with significant holes likely caused by muskrats or beavers over the two days. All fish had escaped and the nets were empty. These net lifts were not included in the catch statistics. Therefore the number of lifts (net days) was adjusted to nine net days. Trapnet locations are shown in Figure 1 and pictures of a typical trapnet operation are shown in Figure 2.

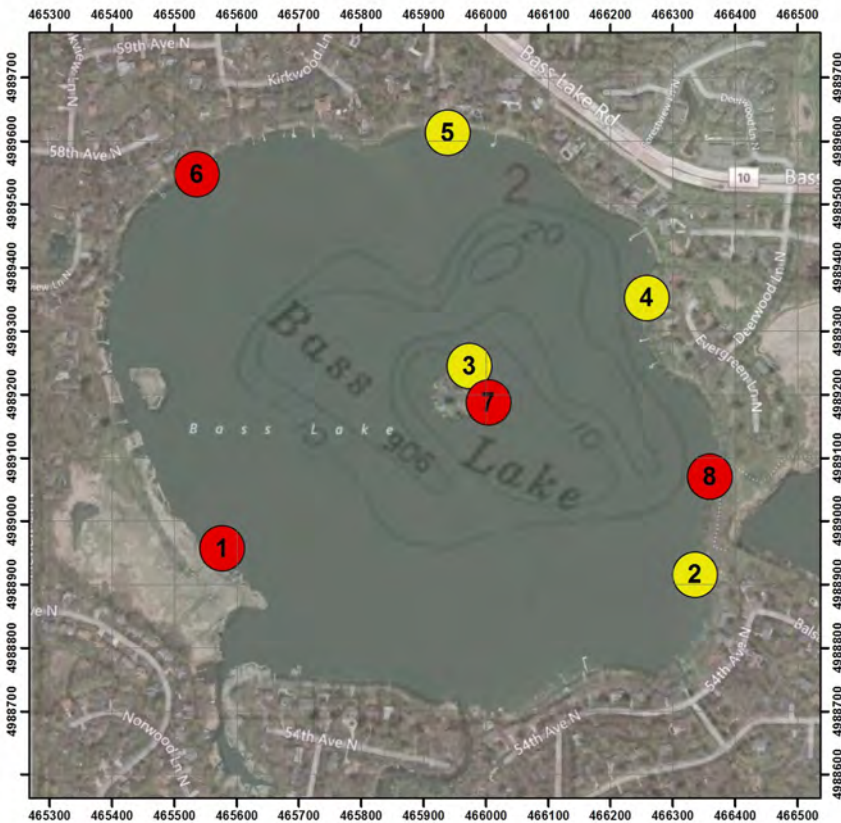


Figure 1. Map of trapnet sets in Bass Lake. Nets number 1 and 6 were moved after the first sampling day to Net 7 and 8 locations for the second sampling day. Nets 2, 3, 4, and 5 (yellow circles) were in place for both days of sampling.



**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.**



**A dip net is used to remove the fish from the back of the trapnet.**



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

**Figure 2. Trapnet set and fish sampling in the Bass Lake fish survey.**

# Results

**Fish Results:** A total of eight fish species were sampled in Bass Lake on October 9 and 10, 2012. Bluegill sunfish were the most abundant species followed by pumpkinseed sunfish, and then black crappies. Net 3 was the most productive (Table 1).

The average number of bluegills caught per net was relatively high with the average haul of 77.5 fish per net (Table 1). Black crappies were found at moderate numbers and within a typical range for a lake like Bass, as defined by the MnDNR. Northern pike had a low abundance with an average catch of 0.1 fish per net.

**Table 1. Bass Lake trapnet results for the fish survey conducted in October 2012.**

	October 9-10, 2012												Total Catch	Number per Net (n=9)	Normal Range (MnDNR)
	Net 1	Net 2		Net 3		Net 4		Net 5		Net 6	Net 7	Net 8			
	Day 1	Day 1 (holes)	Day 2 (holes)	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2	Day 1	Day 2 (holes)	Day 2			
Bluegill sunfish ( <i>Lepomis macrochirus</i> )	2	0	0	155	258	69	49	22	57	82	0	3	698	77.5	3.5-57
Black crappies ( <i>Pomoxis nigromaculatus</i> )	0	0	0	21	22	11	13	0	0	0	0	0	67	7.4	2.1-24.1
Green Sunfish ( <i>Lepomis cyanellus</i> )	0	0	0	0	0	1	0	0	0	0	0	0	1	0.1	--
Hybrid sunfish	0	0	0	9	0	0	0	0	0	0	0	0	9	1	--
Largemouth Bass ( <i>Micropterus salmoides</i> )	1	0	0	2	1	0	1	0	1		0	3	9	1	0.2-0.8
Northern Pike ( <i>Esox lucius</i> )	0	0	0	0	0	0	0	1	0	0	0	0	1	0.1	--
Pumpkinseed sunfish ( <i>Lepomis gibbosus</i> )	0	0	0	15	24	2	4	1	12	19	0	0	77	8.5	0.7-6.5
Yellow Perch ( <i>Perca flavescens</i> )	0	0	0	0	0	0	0	0	0	1	0	1	2	2	--
<b>TOTAL FISH</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>203</b>	<b>305</b>	<b>93</b>	<b>67</b>	<b>24</b>	<b>70</b>	<b>102</b>	<b>0</b>	<b>7</b>	<b>862</b>		



**Figure 3. Net damage from Bass Lake. Results from this net were not included in the statistics.**

**Fish Lengths:** Fish lengths are shown in Figure 3 and Table 2. Bluegill sunfish lengths were well distributed over a range of 3 inches to 8.5 inches with the majority of the population around 6 inches. Largemouth bass were present with lengths measured up to 9.5 inches. At these lengths, the bass population does not have the capacity to capture and ingest medium-sized fish like sunfish to keep them from becoming overpopulated and producing stunted growth conditions.

Currently, the bluegill population is abundant, but not stunted, but that could change in the future. The northern pike, which is another potential predator, has a low density in Bass Lake.

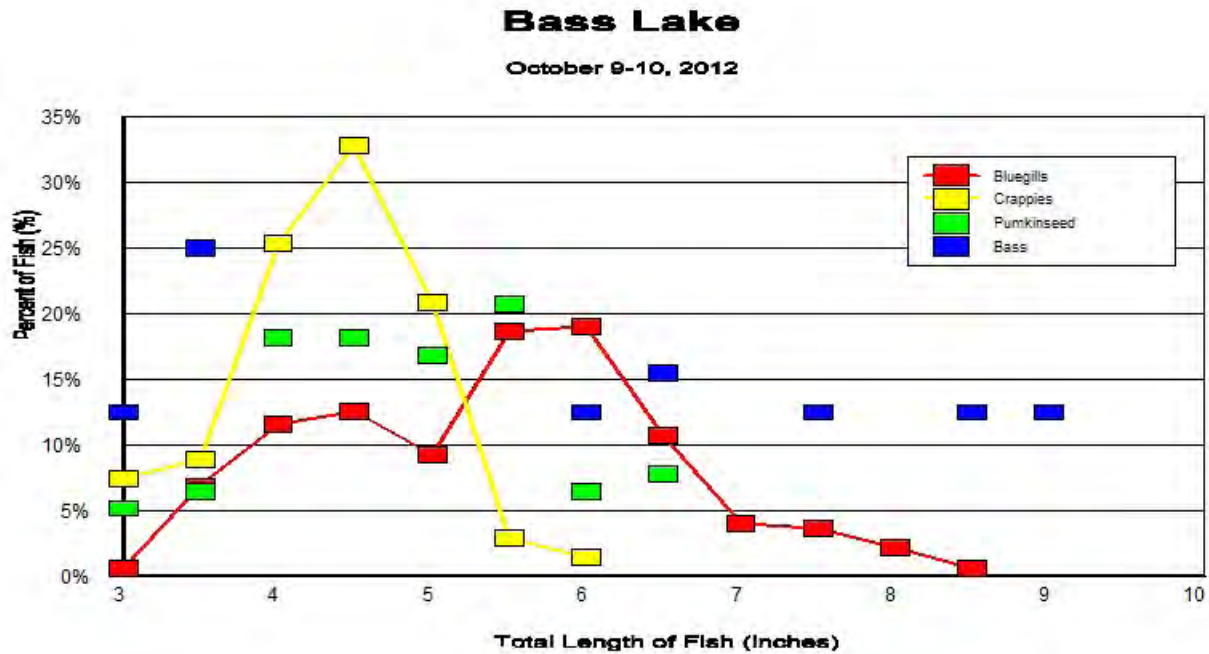


Figure 3. Length distribution of fish from the August 2012 survey in Bass Lake.

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

Length (inches)	Largemouth Bass	Bluegill Sunfish	Black Crappies	Hybrid Sunfish	Perch	Pumpkinseed Sunfish
1.5						
2						
2.5						
3		3 (0.6%)				
3.5	1 (12.5%)	34 (6.9%)				4 (5.2%)
4	2 (25%)	57 (11.6%)				5 (6.5%)
4.5		62 (12.6)				14 (18.2%)
5		46 (9.3%)		2 (20%)		14 (18.2%)
5.5		92 (18.7%)		3 (30%)		13 (16.9%)
6		94 (19.1%)		5 (50%)	1 (50%)	16 (20.8%)
6.5	1 (12.5%)	53 (10.8%)				5 (6.5%)
7	1 (12.5%)	20 (4.1%)	5 (7.5%)			6 (7.8%)
7.5		18 (3.7%)	6 (9%)		1 (50%)	
8	1 (12.5%)	11 (2.2%)	17 (25.4%)			
8.5		3 (0.6%)	22 (32.8%)			
9	1 (12.5%)		14 (20.9%)			
9.5	1 (12.5%)		2 (3%)			
10			1 (1.5%)			
10.5						
11						
11.5						
12						
12.5						
13						
13.5						
<b>Number of fish measured</b>	<b>8</b>	<b>493</b>	<b>67</b>	<b>10</b>	<b>2</b>	<b>77</b>

Also: 1 Carp @ 25" and 1 Pike @ 28"



**Figure 4. One northern pike was collected in the fish survey conducted on Bass Lake during 2012.**

# Representative Fish Species of Bass Lake



**Black bullhead**



**Common carp**



**Largemouth bass**



**Northern pike**



**Yellow perch**



**Bluegill sunfish**



**Black crappie**



**Pumpkinseed sunfish**

## Comparison of the 1991 to 2012 Trapnet Fish Survey

The last fish survey was conducted on Bass Lake by the MnDNR in 1991 (Table 3). Nearly the same fish species were present in 1991 compared to 2012 with some changes. Largemouth bass and northern pike continue to be present in low to moderate numbers based on survey results from 1991 and 2012. It appears black bullheads were abundant in 1991 but were not sampled in 2012. Also, bluegill sunfish were much more abundant in 1991 compared to 2012.

**Table 3. Historical trapnet fish survey records.**

	Trapnet Results		
	Fish per Net 1991 (MnDNR)	Fish per Net (n=9) 2012 (Blue Water Science)	Normal Range (MnDNR)
Black bullheads*	60.3	0	1.5-58
Bluegills	179.8	77.5	3.5-57
Black Crappies	22.3	7.4	2.1-24.1
Hybrid sunfish	0.5	1	--
Largemouth bass	1.0	1.0	0.2-0.8
Northern pike	0.5	0.1	--
Pumpkinseeds	4.3	8.5	0.7-6.5
Common Carp	1.3	0.1	--
TOTAL FISH/NET	270	95.6	



**Figure 5. The bluegills in Bass Lake in 2012 ranged in size from 3 to 8.5 inches.**



## Discussion

**General Findings In This Survey:** The overall catch per net was moderate in 2012 and the abundance of bluegills has decreased since 1991. No black bullheads were sampled in 2012, although they were abundant in 1991.

Largemouth bass are present in Bass Lake, but no bass were found to be over 10 inches in length.

Bass Lake offers fair fishing opportunities based on the sizes of bluegills and crappies found in this survey.



**Figure 6.** The size distribution of sunfish in Bass Lake indicates that the fish are not stunted.

## Discussion

**Gamefish Control to Prevent Bluegill Stunting:** Based on the lengths of the primary piscivore, largemouth bass, the existing fish community in Bass Lake would exert low piscivore predation pressure on forage fish. High predation pressure is preferred because it may prevent the development of stunted sunfish populations. Based on theoretical piscivore lengths and converting their length to mouth gape width (Figure 8) it is apparent that the piscivore lengths in Bass Lake, when converted to gape widths, will not produce much predation pressure on stunted bluegills (typically around 4-inches) and bluegills could increase in number in the future.



Figure 7. Gamefish (piscivores) usually select prey that can be swallowed, which is a function of the piscivore gape versus the prey body depth. This 24-inch northern pike from White Bear Lake made a mistake. It attempted to ingest a seven inch bluegill. The 24-inch pike has a 2.0 inch gape, but a 7-inch bluegill has a body depth of 2.3 inches. This pike was found floating and basically choked on the bluegill.

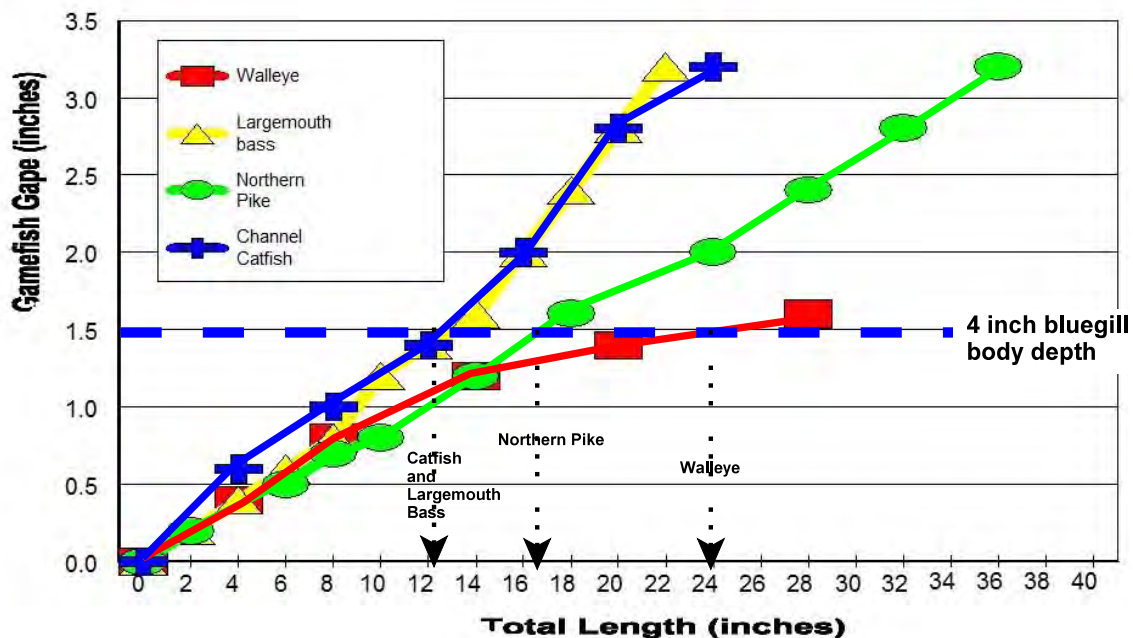


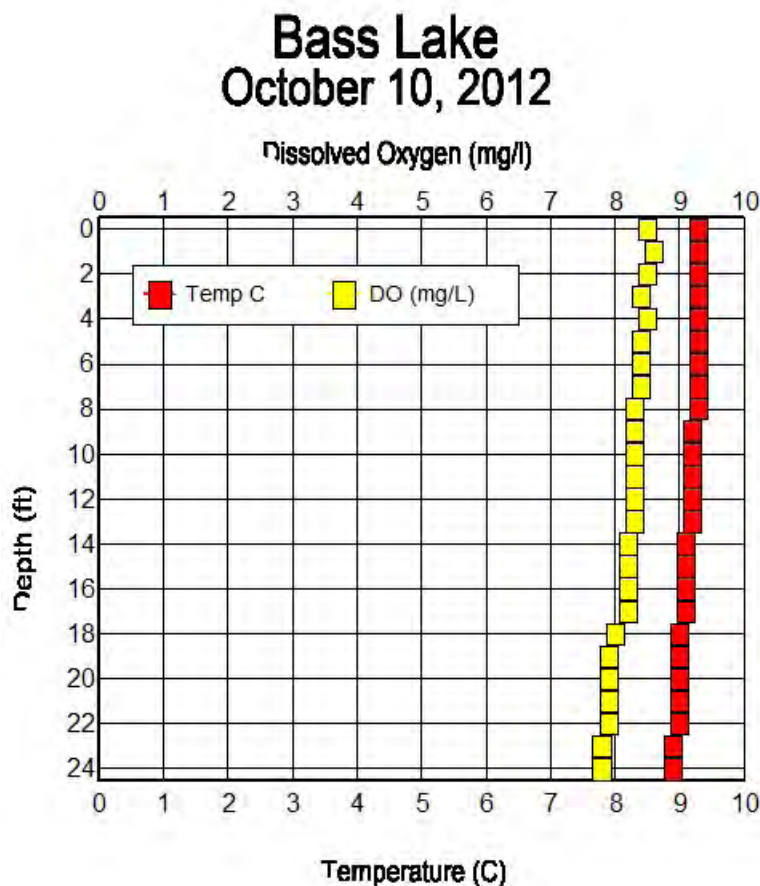
Figure 8. Gamefish gape increases as a function of its total length. The gape determines the size of the prey fish that can be swallowed. For example, a 4-inch bluegill has a body depth of 1.5 inches. To ingest a 4-inch bluegill it would take a 12-inch bass that has a gape of 1.5 inches. There are northern pike in Bass Lake that should be able to ingest 4-inch bluegills or smaller.

## Conclusions and Recommendations

The trapnet survey in 2012 found the fish community was composed of eight species. The bluegill sunfish abundance was above average for trapnet catches in 2012. The northern pike are present but at low numbers.

Recommendations and future considerations include the following:

- In Bass Lake, largemouth bass are the dominant gamefish.
- If any stocking was considered, largemouth bass in large sizes (greater than 8 inches) would be preferred. Bass should be a factor in controlling excessive numbers of bluegill sunfish.
- Water quality in Bass Lake is fair and fishing has the potential to be good for panfish. In three to four years another fish survey should be conducted to evaluate conditions and re-evaluate recommendations.



**Figure 9. Dissolved oxygen and temperature profile for Bass Lake on October 10, 2012. The lake was mixed, meaning temperature and dissolved oxygen was fairly uniform from top to bottom.**

# Appendix A

## Minnesota DNR Fish Survey Notification and 1991 Minnesota DNR Fish Survey of Bass Lake

**From:** Steve McComas [mailto:mccomas@pdink.com]  
**Sent:** Friday, October 05, 2012 8:29 AM  
**To:** Daryl Ellison ; Greg Salo  
**Cc:** Kevin Springob  
**Subject:** Fish survey on Bass Lake, Hennepin County

Hello all,

Blue Water Science will be conducting a fish survey in Bass Lake (27-98), Hennepin County, starting on Monday, October 8, 2012. We will set 6 standard 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, October 10, 2012. The fish survey is sponsored by the City of Plymouth with the objectives to characterize the existing fish community structure, assess potential impacts of fish on water quality, and update the fish community from the last survey.

This survey is being conducted under the permit number: 18557

Cordially,

**Steve McComas**  
**BLUE WATER SCIENCE**  
550 South Snelling Avenue  
St. Paul, MN 55116  
**651 690 9602**  
[mccomas@pdink.com](mailto:mccomas@pdink.com)

**Name: BASS**

Nearest Town: PLYMOUTH  
Primary County: Hennepin

Survey Date: 07/08/1991  
Inventory Number: 27-0098-00

**Public Access Information**

Ownership	Type	Description
City	Carry-in	Timber Shores Park on lake's east side. Public fishing opportunities from LAKE IS OWNED AND OPERATED BY THE BASS LAKE IMPVMT

**Lake Characteristics**

Lake Area (acres): 174.00  
Littoral Area (acres): 143.00  
Maximum Depth (ft): 31.00  
Water Clarity (ft): N/A

Dominant Bottom Substrate: N/A  
Abundance of Aquatic Plants: N/A  
Maximum Depth of Plant Growth (ft): N/A

**Fish Sampled for the 1991 Survey Year**

Species	Gear Used	Number of fish per net		Average Fish Weight (lbs)	Normal Range (lbs)
		Caught	Normal Range		
<i>Walleye</i>	Gill net	0.5	0.8 - 3.8	2.60	1.4 - 3.0
<i>Pumpkinseed Sunfish</i>	Gill net	3.5	N/A - N/A	0.19	N/A - N/A
<i>Northern Pike</i>	Gill net	6.0	2.0 - 10.8	2.72	1.7 - 3.1
<i>Largemouth Bass</i>	Gill net	0.5	0.3 - 0.6	2.00	0.5 - 1.5
<i>Golden Shiner</i>	Gill net	27.5	0.6 - 2.8	0.13	0.1 - 0.2
<i>Brown Bullhead</i>	Gill net	3.5	0.8 - 7.0	0.53	0.3 - 0.8
<i>Bluegill</i>	Gill net	9.0	N/A - N/A	0.17	N/A - N/A
<i>Black Crappie</i>	Gill net	38.5	1.7 - 17.5	0.16	0.1 - 0.3
<i>Black Bullhead</i>	Gill net	32.5	7.7 - 104.7	0.25	0.2 - 0.5
<i>White Sucker</i>	Trap net	0.3	0.2 - 1.2	2.50	1.3 - 2.5
<i>White Crappie</i>	Trap net	0.3	0.4 - 14.4	0.30	0.2 - 0.4
<i>Pumpkinseed Sunfish</i>	Trap net	4.3	0.7 - 6.5	0.22	0.1 - 0.2
<i>Northern Pike</i>	Trap net	0.5	N/A - N/A	1.25	N/A - N/A
<i>Largemouth Bass</i>	Trap net	1.0	0.2 - 0.8	1.45	0.3 - 1.5
<i>Hybrid Sunfish</i>	Trap net	0.5	N/A - N/A	0.25	N/A - N/A
<i>Golden Shiner</i>	Trap net	0.5	0.3 - 1.6	0.20	0.1 - 0.1
<i>Common Carp</i>	Trap net	1.3	0.4 - 2.4	4.78	1.8 - 5.1
<i>Brown Bullhead</i>	Trap net	2.8	0.4 - 5.1	0.54	0.4 - 0.9
<i>Bluegill</i>	Trap net	179.8	3.5 - 57.1	0.17	0.1 - 0.3
<i>Black Crappie</i>	Trap net	22.3	2.1 - 24.1	0.18	0.2 - 0.4
<i>Black Bullhead</i>	Trap net	60.3	1.5 - 58.0	0.29	0.2 - 0.5

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

**Length of Selected Species Sampled for All Gear for the 1991 Survey Year**

Species	Number of fish caught in each category (inches)								Total
	0-5	6-8	9-11	12-14	15-19	20-24	25-29	30+	
<i>White Crappie</i>	0	1	0	0	0	0	0	0	1
<i>Walleye</i>	0	0	0	0	1	0	0	0	1
<i>Pumpkinseed Sunfish</i>	6	18	0	0	0	0	0	0	24
<i>Northern Pike</i>	0	0	0	0	6	4	4	0	14
<i>Largemouth Bass</i>	0	2	0	0	3	0	0	0	5
<i>Hybrid Sunfish</i>	0	2	0	0	0	0	0	0	2
<i>Brown Bullhead</i>	0	1	16	0	0	0	0	0	17
<i>Bluegill</i>	59	128	0	0	0	0	0	0	187
<i>Black Crappie</i>	15	150	1	0	0	0	0	0	166
<i>Black Bullhead</i>	0	157	15	0	0	0	0	0	172

## Fish Stocking Activity

Fish Stocked by Species for the Last Ten Years

Year	Species	Size	Number	Pounds
2007	Walleye*	fingerlings	250	12.5

### Privately Stocked Fish

\* indicates privately stocked fish. Private stocking includes fish purchased by the DNR for stocking and fish purchased and stocked by private citizens and sporting groups.

### Stocking Fish Sizes

**Fry** - Newly hatched fish that are ready to be stocked usually called "swim-ups". Walleye fry are 1/3 of an inch or around 8 mm.

**Fingerling** - Fingerlings are one to six months old and can range from a size of one to twelve inches depending on the species. Walleye fingerlings range from three to eight inches each fall.

**Yearling** - Yearling fish are at least one year old. A one-year-old fish can range from three to twenty inches depending on the species. Walleye yearlings average from six to twelve inches.

**Adult** - Adult fish are fish that have reached maturity. Depending on the species, maturity can be reached at two years of age. Walleye reach maturity between the ages of four and six years.

### Fish Consumption Guidelines

No fish consumption guidelines are available for this lake. For more information, see the "[Fish Consumption Advice](#)" pages at the [Minnesota Department of Health](#).

### Status of the Fishery (as of 07/08/1991)

The fish population is dominated by bullheads and small centrarchids (members of the sunfish family). Both trap net and gill net samples of black bullhead, brown bullhead, golden shiner, pumpkinseed, bluegill, and black crappie were all higher than median values. Bluegills were the most-frequently caught fish, were quite abundant, and had an average weight of 3.9 fish per pound. Sixty-nine percent of bluegill were 6 inches or larger. Black bullheads were sampled in second-highest frequency, and averaged approximately 8 inches in length. Black crappies averaged 2.7 fish per pound; gill-netted fish were slightly larger than trap-netted fish. Golden shiners were also sampled frequently, with most 7.5-7.9 inches. The northern pike gill net catch was higher than the median value and northern pike trap net catch number was near the median value. Forty-one percent of northern pike were 21 inches or larger. Number of carp per net was below the median value, but carp size was above average because one very large fish was captured. White suckers, white crappies, and hybrid sunfish were present at below-median abundances. Largemouth bass were sampled in all gear types. Number of trap-netted largemouth bass was above the median level. Shoreline seining sampled several young-of-the-year largemouth bass, indicating natural reproduction of this species. Natural reproduction is re-establishing the lake's largemouth bass population, as there are year-classes of fish in addition to those from the 1979 and 1989 private-permit stockings. Northern pike are also likely to re-establish via natural reproduction, as there is potential spawning habitat in the lake's western marshy areas. Growth rate of largemouth bass is slightly below average. Northern pike growth rate appears to be above average through the first five years and average thereafter. Since November 1979, a wintertime aeration system has been permitted to decrease likelihood of fish-killing oxygen depletion.

For more information on this lake, contact:

Area Fisheries Supervisor  
7050 E Hwy 101, Suite 100  
Shakopee, MN 55379  
Phone: (952) 496-4141  
E-Mail: [MetroWest.Fisheries@state.mn.us](mailto:MetroWest.Fisheries@state.mn.us)

For general DNR Information, contact:

DNR Information Center  
500 Lafayette Road  
St. Paul, MN 55155-4040  
TDD: (651) 296-6157 or (888) MINNDNR  
Internet: [www.dnr.state.mn.us](http://www.dnr.state.mn.us)  
E-Mail: [info.dnr@state.mn.us](mailto:info.dnr@state.mn.us)

Lake maps can be obtained from:

Minnesota Bookstore  
660 Olive Street  
St. Paul, MN 55155  
(651) 297-3000 or (800) 657-3757  
To order, use [D0092](#) for the map-id.

Turn in Poachers (TIP):

Toll-free: (800) 652-9093

