

BOONVILLE CITY LAKE

Warrick County

2008 Supplemental Report

Michelle L. Cain

Assistant Fisheries Biologist



Fisheries Section  
Indiana Department of Natural Resources  
Division of Fish and Wildlife  
I. G. C.-South, Room W273  
402 W. Washington Street  
Indianapolis, IN 46204

2008

## EXECUTIVE SUMMARY

- A supplemental fish survey was conducted on May 13, 2008.
- A total of 295 fish, representing six species, was sampled that weighed an estimated 113 lbs. Largemouth bass dominated the sample by number (49%), followed by bluegill (27%), and redear sunfish (20%). Largemouth bass ranked first by weight (61%), followed by redear sunfish (17%), bluegill (10%), and common carp (10%). Channel catfish and warmouth were also collected.
- Largemouth bass growth was good at all ages with age-2 and age-3 bass averaging 9.9 and 10.4 in. Bluegill grew fast at all ages with age-2 and age-3 fish averaging 5.5 and 6.5 in.
- Boonville City Lake can be considered an urban fishery due to its small size, the heavy fishing pressure received, and its location in the middle of a residential area. Its fishery is well suited to its users. The lake has large numbers of largemouth bass, bluegill, and redear sunfish. The Department of Natural Resources has also annually stocked 1,140 channel catfish since 1995. What makes this lake an exceptional urban fishery, is that along with abundant fish populations there is also quality size fish to catch.
- Few channel catfish were collected indicating they are being utilized. It is recommended that the channel catfish stockings continue.

## INTRODUCTION

Boonville City Lake is a 8.5 acre impoundment located in Boonville City Park on the south side of Boonville. The lake was constructed in the early 1920's. Angler access consists of bank fishing around the entire shoreline. Fishing pressure is high due to the lake's location.

The 2002 survey revealed that the past predator-prey imbalance was no longer a problem with bluegill now outnumbering bass. It was recommended that catfish stockings continue.

## METHODS

A supplemental fish survey was conducted on May 13, 2008. Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.25 h. All fish collected were measured to the nearest 0.1 in TL. Average weights were estimated by using the Fish Management District 7 averages. Scales were removed from a subsample of sport fish for age and growth analysis. Proportional stock density (PSD) and relative stock density (RSD) indices were calculated for largemouth bass and bluegill (Anderson and Neumann 1996). The bluegill fishing potential index (BGFP) was used to classify the quality of the bluegill fishery (Ball and Tousignant 1996).

## RESULTS

Boonville City Lake has a maximum depth of 10.0 ft. The water temperature was 68°F at the time of survey.

A total of 295 fish, representing six species, was sampled that weighed an estimated 113 lbs. Largemouth bass dominated the sample by number (49%), followed by bluegill (27%), and redear sunfish (20%). Largemouth bass ranked first by weight (61%), followed by redear sunfish (17%), bluegill (10%), and common carp (10%). Channel catfish and warmouth were also collected.

A total of 144 largemouth bass was sampled that weighed 69 lbs. They ranged in length from 6.2 to 20.6 in. The largemouth electrofishing rate was 576.0/h compared to 176.0/h in 2002. Growth was good at all ages with age-2 and age-3 bass averaging 9.9 and 10.4 in compared to 9.2 and 11.0 in in 2002.

The largemouth bass PSD slightly decreased from 7 (2002) to 6. The suggested PSD range indicating a balanced largemouth bass fishery is 40 to 70 (Anderson and Neumann 1996). The RSD-14 and RSD-15 both increased from 0 to 4.

A total of 80 bluegill was sampled that weighed 11 lbs. They ranged in length from 1.2 to 7.6 in. The bluegill electrofishing rate was 320.0/h compared to 484.0/h in 2002. Bluegill grew fast at all ages averaging 5.5 in at age 2 and 6.5 at age 3. In 2002, bluegill averaged 3.5 in at age 2 and 5.3 in at age 3, which is average for southwest Indiana.

The bluegill PSD increased from 39 (2002) to 57. The suggested PSD range indicating a balanced bluegill fishery is 20 to 60 (Anderson and Neumann 1996). The RSD-7 was 17 and RSD-8 was 0 compared to the 2002 values of 4 and 0. The BGFP index value increased from 15 (2002) to 19 classifying the lake as having “good” bluegill fishing.

A total of 60 redear sunfish was collected that weighed 19 lbs. They ranged in length from 4.0 to 10.1 in. The redear electrofishing rate was 240.0/h compared to 64.0/h in 2002. Redear grew good at all ages averaging 7.5 in at age 3 and 8.4 in at age 4.

A total of five channel catfish was collected that weighed 1 lb. They ranged in length from 6.8 to 12.2 in.

## DISCUSSION

Boonville City Lake can be considered an urban fishery due to its small size, heavy fishing pressure, and its location in the middle of a residential area. Its fishery is well suited to its users. The lake has large numbers of largemouth bass, bluegill, and redear sunfish. The Department of Natural Resources has also annually stocked 1,140 channel catfish since 1995. What makes this lake an exceptional urban fishery, is that along with abundant fish populations there is also quality size fish to catch.

The redear sunfish population has greatly improved since the 2002 survey. Thirty five percent of the redear were greater an 8.0 in.

Few channel catfish were collected indicating that they are being utilized. It is recommended that the channel catfish stockings continue.

## RECOMMENDATIONS

- It is recommended at channel catfish stockings continue.

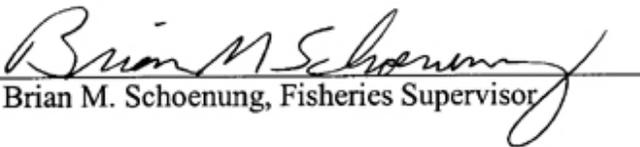
## LITERATURE CITED

Anderson, R. O. and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.

Ball, R. L. and J. N. Tousignant. 1996. The development of an objective rating system to assess bluegill fishing in lakes and ponds. Research report. Indiana Department of Natural Resources. Indianapolis. 18 pp.

Submitted by: Michelle L. Cain, Assistant Fisheries Biologist  
Date: August 7, 2008

Approved by: Daniel P. Carnahan, Fisheries Biologist

Approved by:   
Brian M. Schoenung, Fisheries Supervisor

Date: December 22, 2008

# LAKE SURVEY REPORT

Type of Survey	<input type="checkbox"/> Initial Survey	<input checked="" type="checkbox"/> Re-Survey
----------------	---	---

Lake Name Boonville City Lake	County Warrick	Date of survey (Month, day, year) May 13, 2008
Biologist's name Michelle L. Cain		Date of approval (Month, day, year) December 22, 2008

LOCATION		
Quadrangle Name Boonville	Range 8W	Section 35
Township Name 5S	Nearest Town Boonville	

ACCESSIBILITY					
State owned public access site		Privately owned public access site		Other access site Bank fishing only, City owned.	
Surface acres 8.5	Maximum depth 10.0	Average depth 6.0	Acre feet 51.0	Water level 406 MSL	Extreme fluctuations Minimal
Location of benchmark State road 62 at railroad crossing east of Boonville.					

INLETS		
Name Runoff	Location	Origin

OUTLETS			
Name Unnamed		Location Southwest corner of lake	
Water level control Concrete drop box			
<b>POOL</b>	<b>ELEVATION (Feet MSL)</b>	<b>ACRES</b>	<b>Bottom type</b> <input type="checkbox"/> Boulder <input type="checkbox"/> Gravel <input type="checkbox"/> Sand <input checked="" type="checkbox"/> Muck <input checked="" type="checkbox"/> Clay <input type="checkbox"/> Marl
TOP OF DAM			
TOP OF FLOOD CONTROL POOL			
TOP OF CONSERVATION POOL	406	8.5	
TOP OF MINIMUM POOL			
STREAMBED			

Watershed use City of Boonville, mainly residential
Development of shoreline City park
Previous surveys and investigations Fish Management surveys 1981, 1984, 1987, 1994, and 2002.
Pre-impoundment renovation summary 1982.

SAMPLING EFFORT					
ELECTROFISHING	Day hours		Night hours		Total hours
			0.25		0.25
TRAP NETS	Number of traps		Number of Lifts		Total effort
GILL NETS	Number of nets		Number of Lifts		Total effort
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS					
Color			Turbidity		
			Feet		Inches (SECCHI DISK)
Alkalinity (ppm)*			pH		
Surface:		Bottom:	Surface:		Bottom:
Conductivity:			Air temperature:		
micromhos			°F		
Water chemistry GPS coordinates:					
N			W		

TEMPERATURE AND DISSOLVED OXYGEN (D.O.)								
DEPTH (FEET)	Degrees (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)
SURFACE	68		36			72		
2			38			74		
4			40			76		
6			42			78		
8			44			80		
10			46			82		
12			48			84		
14			50			86		
16			52			88		
18			54			90		
20			56			92		
22			58			94		
24			60			96		
26			62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS
No chemical characteristics measured.

\*ppm-parts per million



NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0	1	0.7	3.95	10
1.5					19.5				
2.0					20.0	1	0.7	4.72	11
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0	1	0.7	0.10	1	24.0				
6.5	4	2.8	0.10	1	24.5				
7.0	15	10.4	0.16	1	25.0				
7.5	13	9.0	0.20	1	25.5				
8.0	6	4.2	0.24	1, 2	26.0				
8.5	2	1.4	0.28	2	TOTAL	144			
9.0	5	3.5	0.33	2, 3					
9.5	25	17.4	0.39	2, 3					
10.0	32	22.2	0.46	2, 3					
10.5	24	16.7	0.53	2, 3					
11.0	8	5.6	0.62	3, 4					
11.5	2	1.4	0.71	3, 4					
12.0	3	2.1	0.80	3, 4					
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5	1	0.7	2.40	7					
17.0									
17.5									
18.0	1	0.7	3.19	8					
18.5									
ELECTROFISHING CATCH	576.0/h			GILL NET CATCH	N/A		TRAP NET CATCH	N/A	

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0	1	1.3	0.01	not aged	19.0				
1.5	6	7.5	0.01	0	19.5				
2.0	5	6.3	0.01	0, 1	20.0				
2.5	3	3.8	0.01	1	20.5				
3.0	2	2.5	0.02	1	21.0				
3.5	1	1.3	0.03	2	21.5				
4.0	3	3.8	0.05	1	22.0				
4.5	1	1.3	0.07	1	22.5				
5.0	8	10.0	0.09	2	23.0				
5.5	13	16.3	0.13	2, 3	23.5				
6.0	10	12.5	0.17	2, 3, 4	24.0				
6.5	16	20.0	0.22	3	24.5				
7.0	10	12.5	0.28	4	25.0				
7.5	1	1.3	0.34	4	25.5				
8.0					26.0				
8.5					TOTAL	80			
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									
ELECTROFISHING CATCH		320.0/h		GILL NET CATCH	N/A		TRAP NET CATCH		N/A

**NUMBER, PERCENTAGE, WEIGHT, AND AGE OF REDEAR SUNFISH**

TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0	2	3.3	0.05	1	22.0				
4.5	1	1.7	0.07	1	22.5				
5.0					23.0				
5.5					23.5				
6.0	3	5.0	0.17	2	24.0				
6.5	9	15.0	0.22	3	24.5				
7.0	11	18.3	0.27	2, 3	25.0				
7.5	13	21.7	0.33	2, 3, 4	25.5				
8.0	14	23.3	0.40	3, 4	26.0				
8.5	3	5.0	0.48	3, 4	TOTAL	60			
9.0	3	5.0	0.57	4					
9.5									
10.0	1	1.7	0.76	5					
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	240.0/h	GILL NET CATCH	N/A	TRAP NET CATCH	N/A
----------------------	---------	----------------	-----	----------------	-----

**LARGEMOUTH BASS AGE-LENGTH KEY**

Length group (in)	Total number	Sub-sample	AGE																	
			1	2	3	4	5	6	7	8	9	10	11							
6.0	1	1	1																	
6.5	4	4	4																	
7.0	15	5	15																	
7.5	13	6	13																	
8.0	6	6	3	3																
8.5	2	2		2																
9.0	5	4		4	1															
9.5	25	6		13	13															
10.0	32	6		11	21															
10.5	24	5		10	14															
11.0	8	6			5	3														
11.5	2	2			1	1														
12.0	3	3			1	2														
12.5																				
13.0																				
13.5																				
14.0																				
14.5																				
15.0																				
15.5																				
16.0																				
16.5	1	1									1									
17.0																				
17.5																				
18.0	1	1										1								
18.5																				
19.0	1	1																	1	
19.5																				
20.0																				
20.5	1	1																		1
Totals	144	60	36	42	57	6					1	1							1	1

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower	Upper
		TL	Var	SE	95%CI	95%CI
1	36	7.4	0.20	0.07	7.3	7.6
2	42	9.9	0.52	0.11	9.7	10.1
3	57	10.4	0.33	0.08	10.2	10.6
4	6	11.7	0.25	0.21	11.3	12.1
5						
6						
7	1	16.8				
8	1	18.3				
9						
10	1	19.3				
11	1	20.8				

**BLUEGILL AGE-LENGTH KEY**

Length group (in)	Total number	Sub-sample	AGE			
			1	2	3	4
1.0	1	0				
1.5	6	4				
2.0	5	5	2			
2.5	3	3	3			
3.0	2	2	2			
3.5	1	1		1		
4.0	3	3	3			
4.5	1	1	1			
5.0	8	5		8		
5.5	13	5		8	5	
6.0	10	6		3	5	2
6.5	16	6			16	
7.0	10	5				10
7.5	1	1				1
Totals	80	47	11	20	26	13

**AGE-LENGTH KEY SUMMARY**

Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	11	3.3	0.79	0.27	2.8	3.9
2	20	5.5	0.31	0.12	5.3	5.8
3	26	6.5	0.17	0.08	6.3	6.6
4	13	7.2	0.16	0.11	6.9	7.4

**REDEAR SUNFISH AGE-LENGTH KEY**

Length group (in)	Total number	Sub-sample	AGE					
			1	2	3	4	5	
4.0	2	2	2					
4.5	1	1	1					
5.0								
5.5								
6.0	3	3		3				
6.5	9	6			9			
7.0	11	5		2	9			
7.5	13	6		2	9	2		
8.0	14	5			6	8		
8.5	3	3			1	2		
9.0	3	2				3		
9.5								
10.0	1	1						1
Totals	60	34	3	7	33	16		1

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	3	4.4	0.08	0.17	4.1	4.8
2	7	7.0	0.48	0.25	6.5	7.5
3	33	7.5	0.34	0.10	7.3	7.7
4	16	8.4	0.24	0.12	8.2	8.7
5	1	10.3				

**GPS LOCATION OF SAMPLING EQUIPMENT**

GILL NETS			TRAP NETS			ELECTROFISHING		
1	N	W	1	N	W	1	N 38.041602	W -87.272386
2	N	W	2	N	W		N 38.041095	W -87.274172
3	N	W	3	N	W	2	N	W
4	N	W	4	N	W		N	W
5	N	W	5	N	W	3	N	W
6	N	W	6	N	W		N	W
7	N	W	7	N	W	4	N	W
8	N	W	8	N	W		N	W
9	N	W	9	N	W	5	N	W
10	N	W	10	N	W		N	W
11	N	W	11	N	W	6	N	W
12	N	W	12	N	W		N	W
13	N	W	13	N	W	7	N	W
14	N	W	14	N	W		N	W
15	N	W	15	N	W	8	N	W
16	N	W	16	N	W		N	W
17	N	W	17	N	W	9	N	W
18	N	W	18	N	W		N	W
19	N	W	19	N	W	10	N	W
20	N	W	20	N	W		N	W
						11	N	W
							N	W
						12	N	W
							N	W
						13	N	W
							N	W
						14	N	W
							N	W
						15	N	W
							N	W
						16	N	W
							N	W
						17	N	W
							N	W
						18	N	W
							N	W
						19	N	W
							N	W
						20	N	W
							N	W