

LYNNVILLE PARK LAKE
Gibson and Warrick Counties
2009 Fish Management Report

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EXECUTIVE SUMMARY

- Lynnville Park Lake is a 143-acre strip pit located in Lynnville Park near the Town of Lynnville. The pit was donated to the Town of Lynnville in 1964 by Peabody Coal Company and is used as a water supply for Lynnville and the surrounding cottages.
- Submersed vegetation was found at 42% of the littoral sites to a maximum depth of 6.5 ft. Four native species; chara, coontail, slender naiad, and small pondweed; and one non-native species, Eurasian watermilfoil, were collected.
- A general survey was conducted on May 12 (electrofishing) and May 26 and 27 (netting), 2009. Submersed aquatic vegetation was sampled on July 27, 2009.
- A total of 355 fish, representing nine species, was collected that weighed an estimated 115 lbs. Largemouth bass ranked first by number, followed by longear sunfish, bluegill, and gizzard shad. Gizzard shad ranked first by weight, followed by largemouth bass, and longear sunfish.
- A total of 102 largemouth bass was sampled that weighed 29 lbs. Growth was normal for age 1 through age 3 and slow for age-4 bass. Bass averaged 10.4 in at age 3 and 11.2 in at age 4 versus 10.8 in at age 3 and 11.8 in at age 4 in 2001. However, no fish over 12.0 in were collected. This may be due to simply not sampling the areas where the big bass were located.
- A total of 72 bluegill was sampled that weighed 8 lbs. Bluegill growth was good. Bluegill averaged 7.2 in at age 4 and 8.1 in at age 5.
- Lynnville Park Lake has good bluegill fishing for a lake with gizzard shad. Seventeen percent of the bluegill collected were 7.0 in or longer. Most lakes with established gizzard shad populations don't have many bluegill over 6.5 in.
- All electrofishing catch rates substantially increased since 2001 due to a switch from a Smith-Root type VI-A electrofisher to a 5.0 GPP electrofishing unit. The new system allows for electrofishing in waters with high conductivity due to its higher amperage output.
- The channel catfish catch rate was low indicating that these fish are being utilized and stockings should continue. Also, the proximity of camping and the abundant shoreline access makes this lake ideal for catfish anglers.

INTRODUCTION

Lynnville Park Lake is a 143-acre strip pit located in Lynnville Park near the Town of Lynnville. The pit was donated to the Town of Lynnville in 1964 by Peabody Coal Company and is used as a water supply for Lynnville and the surrounding cottages. The shoreline consists of a city park with campgrounds, residences, and forested areas. A concrete boat ramp is located within the park and outboard motors over 10 hp are prohibited. A permit is required to enter the park. An annual permit is \$20.00 and a daily permit is \$2.00.

The 2001 general survey revealed the best fishing was for bluegill, redear sunfish, and small largemouth bass. However, only 137 fish were collected due to the high water conductivity making the electrofishing system less efficient. Also, the very clear water was thought to affect the net catches by allowing the fish to see the net and avoid it. It was recommended that channel catfish stockings continue.

METHODS

A general survey was conducted on May 12 (electrofishing) and May 26 and 27 (netting), 2009. Some physical and chemical characteristics of the water were measured as per standard sampling guidelines (Shipman 2001). Submersed aquatic vegetation was sampled on July 27, 2009, using guidelines written by the Indiana Department of Natural Resources (2006).

Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.75 h, two trap net lifts, and four experimental-mesh gill net lifts. All fish collected were measured to the nearest 0.1 in TL. Average weights by half-inch groups for Fish Management District 7 were used to estimate weights. Fish scale samples were taken from sport fish for age and growth analysis. Proportional stock density (PSD) was calculated for largemouth bass (Anderson and Neumann 1996).

RESULTS

Lynnville Park Lake has a maximum depth of 44.0 ft. The Secchi disk depth was 13.5 ft and the conductivity was 751 μ S (5/12/09). Dissolved oxygen concentrations were marginal for fish survival below 10.0 ft.

Submersed vegetation was found at 42% of the littoral sites to a maximum depth of 6.5 ft. Four native species; chara, coontail, slender naiad, and small pondweed; and one non-native species, Eurasian watermilfoil, were collected. Eurasian watermilfoil and slender naiad were the

most frequently occurring (10%), followed by small pondweed (8%), and chara (6%). Emergent plants observed were cattail spp. and duckweed spp.

A total of 355 fish, representing nine species, was collected that weighed an estimated 115 lbs. Largemouth bass ranked first by number (29%), followed by longear sunfish (25%), bluegill (20%), and gizzard shad (19%). Gizzard shad ranked first by weight (49%), followed by largemouth bass (25%), and longear sunfish (9%). Other species collected were black crappie, channel catfish, green sunfish, warmouth, and yellow bullhead. Species collected in past surveys include blackstripe topminnow, black bullhead, common carp, flathead catfish, golden shiner, hybrid sunfish, western mosquitofish, redear sunfish, and white crappie.

A total of 102 largemouth bass was sampled that weighed 29 lbs. They ranged in length from 4.7 to 11.7 in. The catch rates were 133.3/electrofishing h, 0/trap net lift, and 0.5/gill net lift. The electrofishing rate in 2001 was 15.0/h. Largemouth bass growth was normal for ages 1 through 3 and slow for age 4. Bass averaged 10.4 at age 3 and 11.2 in at age 4 versus 10.8 in at age 3 and 11.8 in at age 4 in 2001. No older bass were sampled.

The largemouth bass PSD was 0 due to no bass over 12.0 in being sampled. The suggested PSD range indicating a balanced largemouth bass fishery is 40 to 70 (Anderson and Neumann 1996). Stock density indices were not calculated in 2001 due to the small sample size.

A total of 72 bluegill was sampled that weighed 8 lbs. They ranged in length from 1.4 to 8.4 in. The catch rates were 88.0/electrofishing h, 3.0/trap net lift, and 0/gill net lift. The 2001 electrofishing catch rate was 14.0/h. Bluegill growth was good. Bluegill averaged 7.2 in at age 4 and 8.1 in at age 5 versus 7.4 in at age 4 and 8.0 in at age 5 in 2001. The district averages for bluegill are 6.5 at age 4 and 7.3 in at age 5.

Six channel catfish were sampled that weighed 7 lbs. They ranged in length from 12.3 to 17.8 in. The catch rates were 2.6/electrofishing h, 0/trap net lift, and 1.0/gill net lift.

DISCUSSION

All electrofishing catch rates substantially increased since 2001 due to a switch from a Smith-Root type VI-A electrofisher to a 5.0 GPP electrofishing unit. The new system is better for electrofishing in high conductive water due to its higher amperage output.

Lynnville Park Lake has good bluegill fishing for a lake with gizzard shad. Seventeen percent of the bluegill collected were 7.0 in or longer. Most lakes with established gizzard shad populations don't have many bluegill over 6.5 in.

No largemouth bass over 12.0 in were collected. The larger bass are there as indicated by no bass older than age 4 being sampled. Lynnville Park Lake is an old strip pit that has steep banks and deep, clear water. This type of lake is not conducive to sampling many fish, especially bigger bass. It is unlikely that sampling this pit again will result in a different outcome. Therefore, additional electrofishing is not recommended.

No redear sunfish were collected during this survey. Fifteen were collected in 2001. It is assumed that redear are still present in the lake.

The channel catfish catch rate was low indicating that these fish are being utilized and stockings should continue. Also, the proximity of camping and the abundant shoreline access makes this lake ideal for catfish anglers.

RECOMMENDATIONS

- Channel catfish stockings should continue.

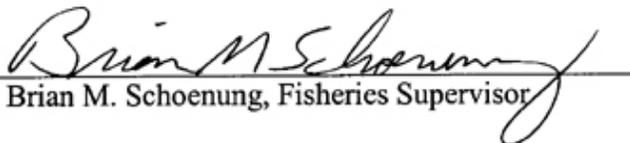
LITERATURE CITED

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- Indiana Department of Natural Resources. 2006. Tier II aquatic vegetation survey protocol. 9 pp.
- Shipman, S. T. 2001. Manual of fisheries survey methods. Fisheries Section. Indiana Division of Fish and Wildlife. Indianapolis, Indiana. 58 pp.

Submitted by: Michelle L. Cain, Assistant Fisheries Biologist

Date: November 16, 2009

Approved by: Daniel P. Carnahan, Fisheries Biologist

Approved by: 
Brian M. Schoenung, Fisheries Supervisor

Date: December 30, 2009

Appendix

Fish survey data

LAKE SURVEY REPORT

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

Lake Name Lynnville Park Lake	County Warrick, Gibson	Date of survey (Month, day, year) May 12 and 26-27, 2009
Biologist's name Michelle L. Cain		Date of approval (Month, day, year) December 30, 2009

LOCATION		
Quadrangle Name Lynnville	Range 8W	Section 4, 5, 6, 31, 32, 33
Township Name 3S, 4N	Nearest Town Lynnville	

ACCESSIBILITY					
State owned public access site		Privately owned public access site		Other access site Municipally owned	
Surface acres 142.6	Maximum depth 44.0	Average depth Unknown	Acre feet Unknown	Water level 450.0 MSL	Extreme fluctuations None
Location of benchmark SW1/4 of SE1/4 , S5, T4S, R8W					

INLETS		
Name None	Location	Origin

OUTLETS																
Name Unknown	Location SE1/4, SW1/4, S4, T4S, R8W															
Water level control None																
POOL	ELEVATION (Feet MSL)	ACRES														
TOP OF DAM																
TOP OF FLOOD CONTROL POOL																
TOP OF CONSERVATION POOL																
TOP OF MINIMUM POOL																
STREAMBED																
<table border="0"> <tr> <td>Bottom type</td> <td> </td> </tr> <tr> <td><input type="checkbox"/> Boulder</td> <td> </td> </tr> <tr> <td><input type="checkbox"/> Gravel</td> <td> </td> </tr> <tr> <td><input type="checkbox"/> Sand</td> <td> </td> </tr> <tr> <td><input checked="" type="checkbox"/> Muck</td> <td> </td> </tr> <tr> <td><input type="checkbox"/> Clay</td> <td> </td> </tr> <tr> <td><input type="checkbox"/> Marl</td> <td> </td> </tr> </table>			Bottom type		<input type="checkbox"/> Boulder		<input type="checkbox"/> Gravel		<input type="checkbox"/> Sand		<input checked="" type="checkbox"/> Muck		<input type="checkbox"/> Clay		<input type="checkbox"/> Marl	
Bottom type																
<input type="checkbox"/> Boulder																
<input type="checkbox"/> Gravel																
<input type="checkbox"/> Sand																
<input checked="" type="checkbox"/> Muck																
<input type="checkbox"/> Clay																
<input type="checkbox"/> Marl																

Watershed use City park, cottages, coal mine spoil, agriculture
Development of shoreline City park, cottages, picnic and camping areas
Previous surveys and investigations Fish Management surveys: 1988, 1991, 1997, and 2001.

SAMPLING EFFORT					
ELECTROFISHING	Day hours		Night hours		Total hours
	0		0.75		0.75
TRAP NETS	Number of traps		Number of Lifts		Total effort
	2		1		2 overnight sets
GILL NETS	Number of nets		Number of Lifts		Total effort
	4		1		4 overnight sets
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS					
Color			Turbidity		
Clear			13 Feet		6 Inches (SECCHI DISK)
Alkalinity (ppm)*			pH		
Surface: 136.8 Bottom: 427.5			Surface: 7.4		Bottom: 7.4
Conductivity:			Air temperature:		
751 (5/12) ; 791(5/26) micromhos			72 °F		
Water chemistry GPS coordinates:					
N 38.19397107			W -87.32963897		

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	75.2	6.1	36			72		
2	75.2	6.1	38			74		
4	75.2	6.0	40			76		
6	73.6	5.8	42			78		
8	69.1	5.3	44			80		
10	65.8	4.6	46			82		
12	59.7	3.1	48			84		
14	54.8	2.4	50			86		
16	50.4	2.0	52			88		
18	49.8	1.6	54			90		
20	48.0	1.6	56			92		
22	47.3	1.5	58			94		
24	46.6	1.6	60			96		
Bottom	46.2	2.0	62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS								

*ppm-parts per million

Occurrence and Abundance of Submersed Aquatic Plants - Overall

Lake: Lynnville Park Lake	Secchi (ft): 6.0	SE Mean Species / Site: 0.11
Date: 7/27/2009	Littoral Sites w/Plants: 13	Mean Natives / Site: 0.28
Littoral Depth (ft): 6.5	Number of Species: 5	SE Mean Natives / Site: 0.08
Littoral Sites: 31	Max. Species / Site: 3	Species Diversity: 0.78
Total Sites: 50	Mean Species / Site: 0.38	Native Diversity: 0.72

<u>Species</u>	Frequency of	<u>Score Frequency</u>				<u>Dominance</u>
	<u>Occurrence</u>	<u>0</u>	<u>1</u>	<u>3</u>	<u>5</u>	
Eurasian watermilfoil	10	90	8	2	0	2.8
Slender naiad	10	90	10	0	0	2.0
Small pondweed	8	92	8	0	0	1.6
Chara	6	94	4	0	2	2.8
Coontail	4	96	4	0	0	0.8

Other species noted:
Cattail spp., Duckweed spp.

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				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5	7	6.9	0.04	1	22.5				
5.0	5	4.9	0.06	1	23.0				
5.5	6	5.9	0.08	1	23.5				
6.0					24.0				
6.5	1	1.0	0.13	2	24.5				
7.0	6	5.9	0.16	2	25.0				
7.5	18	17.6	0.20	2	25.5				
8.0	20	19.6	0.24	2	26.0				
8.5	2	2.0	0.28	2	TOTAL	102			
9.0	5	4.9	0.33	2					
9.5	5	4.9	0.39	2, 3					
10.0	13	12.7	0.46	3					
10.5	8	7.8	0.53	3, 4					
11.0	4	3.9	0.62	3, 4					
11.5	2	2.0	0.71	4					
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	133.3/h	GILL NET CATCH	0.5/lift	TRAP NET CATCH	0 /lift
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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	1.4	0.01	1	19.0				
1.5	7	9.7	0.01	1	19.5				
2.0	9	12.5	0.01	1	20.0				
2.5	11	15.3	0.01	1, 2	20.5				
3.0	9	12.5	0.02	2	21.0				
3.5	2	2.8	0.03	2	21.5				
4.0	1	1.4	0.05	not aged	22.0				
4.5	1	1.4	0.07	2	22.5				
5.0	2	2.8	0.09	2	23.0				
5.5	2	2.8	0.13	3	23.5				
6.0	7	9.7	0.17	2, 3	24.0				
6.5	8	11.1	0.22	3, 4	24.5				
7.0	3	4.2	0.28	4	25.0				
7.5	6	8.3	0.34	3, 4, 5	25.5				
8.0	3	4.2	0.41	4, 5	26.0				
8.5					TOTAL	72			
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	88.0/h	GILL NET CATCH	0/lift	TRAP NET CATCH	3.0/lift
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LARGEMOUTH BASS AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE			
			1	2	3	4
4.5	7	7	7			
5.0	5	5	5			
5.5	6	6	6			
6.0						
6.5	1	1		1		
7.0	6	5		6		
7.5	18	7		18		
8.0	20	9		20		
8.5	2	1		2		
9.0	5	5		5		
9.5	5	5		1	4	
10.0	13	8			13	
10.5	8	7			6	2
11.0	4	4			2	2
11.5	2	2				2
Totals	102	70	18	53	25	6

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	18	5.2	0.19	0.10	5.0	5.4
2	53	8.1	0.36	0.08	7.9	8.2
3	25	10.4	0.17	0.08	10.2	10.5
4	6	11.2	0.20	0.18	10.9	11.6

BLUEGILL AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE					
			1	2	3	4	5	
1.0	1	1	1					
1.5	7	4	7					
2.0	9	5	9					
2.5	11	5	9	2				
3.0	9	5		9				
3.5	2	2		2				
4.0	1							
4.5	1	1		1				
5.0	2	2		2				
5.5	2	2			2			
6.0	7	6		1	5	1		
6.5	8	6			4	4		
7.0	3	3				3		
7.5	6	6			1	4	1	
8.0	3	3				1	2	
Totals	72	51	26	17	12	13	3	

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	26	2.2	0.36	0.12	2.0	2.4
2	17	3.8	1.05	0.25	3.3	4.3
3	12	6.5	0.30	0.16	6.1	6.8
4	13	7.2	0.34	0.16	6.9	7.6
5	3	8.1	0.08	0.17	7.8	8.4

GPS LOCATION OF SAMPLING EQUIPMENT

GILL NETS			TRAP NETS			ELECTROFISHING									
1	N	38.193855	W	-87.327413	1	N	38.198717	W	-87.331218	1	N	38.201757	W	-87.331061	
	N		W		2	N	38.197849	W	-87.333766		N	38.203201	W	-87.330769	
2	N	38.196798	W	-87.332418	3	N		W		2	N	38.202624	W	-87.330369	
	N		W		4	N		W			N	38.200590	W	-87.330430	
3	N	38.197429	W	-87.333619	5	N		W		3	N	38.197814	W	-87.330186	
	N		W		6	N		W			N	38.195302	W	-87.329295	
4	N	38.197633	W	-87.334170	7	N		W		4	N		W		
	N		W		8	N		W			N		W		
5	N		W		9	N		W		5	N		W		
	N		W		10	N		W			N		W		
6	N		W		11	N		W		6	N		W		
	N		W		12	N		W			N		W		
7	N		W		13	N		W		7	N		W		
	N		W		14	N		W			N		W		
8	N		W		15	N		W		8	N		W		
	N		W		16	N		W			N		W		
9	N		W		17	N		W		9	N		W		
	N		W		18	N		W			N		W		
10	N		W		19	N		W		10	N		W		
	N		W		20	N		W			N		W		
11	N		W								11	N		W	
	N		W									N		W	
12	N		W								12	N		W	
	N		W									N		W	
13	N		W								13	N		W	
	N		W									N		W	
14	N		W								14	N		W	
	N		W									N		W	
15	N		W								15	N		W	
	N		W									N		W	
16	N		W								16	N		W	
	N		W									N		W	
17	N		W								17	N		W	
	N		W									N		W	
18	N		W								18	N		W	
	N		W									N		W	
19	N		W								19	N		W	
	N		W									N		W	
20	N		W								20	N		W	
	N		W									N		W	