

BIRD DOG PIT
Warrick County
2008 Fish Management Report

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2009

EXECUTIVE SUMMARY

- A general survey was conducted on April 21 (electrofishing) and June 23 to 24, 2008 (netting).
- Submersed vegetation was found at 71% of the littoral sites to a maximum depth of 8.0 ft. Four native species, American pondweed, coontail, chara, and naiad spp. and one non-native species, curlyleaf pondweed, were collected. Coontail was the most frequently occurring (38%), followed by chara (15%), and American pondweed (10%). Other plants observed include American lotus, creeping water primrose, filamentous algae, water lily, watershield, and water willow.
- A total of 519 fish, representing six species, was collected that weighed an estimated 127 lbs. Redear sunfish ranked first by number (47%), followed by bluegill (33%), and largemouth bass (13%). Redear sunfish ranked first by weight (43%), followed by largemouth bass (37%), and bluegill (11%). Other species collected were white crappie, gizzard shad, and golden shiner.
- Largemouth reached 14.0 in during their fifth year of growth. Largemouth bass averaged 12.1 in at age 4 and 14.2 in at age 5 which was normal when compared to district averages. Bluegill growth was good, averaging 5.8 in at age 3 and 7.2 in at age 4.
- Bird Dog Pit provides good fishing for redear sunfish and largemouth bass. Fifteen percent of the redear collected were 8.0 in or longer. Ten percent of the largemouth collected were 14.0 in or longer.
- This is the first time gizzard shad have been collected from Bird Dog Pit. They ranged in length from 7.0 to 15.3 in indicating these fish came from an outside source. These fish most likely entered this pit from floodwaters in the early spring of 2008. The flood was severe and connected some pits that are not normally connected. It is recommended that a general fisheries survey be conducted in 2011 to determine the affects of gizzard shad on the fishery.
- Excessive aquatic vegetation has been a problem at Bird Dog Pit in the past. Submerged and emergent vegetation treatments have taken place annually since the last survey to improve bluegill and largemouth bass growth. The bluegill population has responded with improved growth and reduced numbers. The largemouth bass size structure and growth also improved. An unexpected bonus was the increased redear sunfish population. It is recommended that both submerged and emergent vegetation control continue annually to improve the fishery and fishing access.

INTRODUCTION

Bird Dog Pit is a 24.7-acre reclaimed strip pit located at Blue Grass Fish and Wildlife Area. The property is in northwest Warrick County about 1.0 mi east of Interstate 164. Boat access is provided by a gravel boat ramp and shoreline fishing is available along the north side of the pit and near the boat ramp. No outboard motors are permitted.

The 2005 survey revealed slow growing bluegill, largemouth bass, and redear sunfish. Excessive vegetation was identified as a negative influence on Bird Dog Pit's fishery because it hindered largemouth bass predation on bluegill. It was recommended that annual control of submerged and emergent aquatic vegetation continue.

METHODS

A general survey was conducted on April 21 (electrofishing) and June 23 to 24, 2008 (netting). Some of the lake's physical and chemical characteristics were measured. Submersed aquatic vegetation was sampled on July 15 using guidelines written by the Indiana Department of Natural Resources (2006).

Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.50 h, one trap net lift, and two experimental-mesh gill net lifts. All fish collected were measured to the nearest 0.1 in TL. Average weights were estimated by using the Fish Management District 7 averages. Scale samples from the electrofishing survey were taken 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, bluegill, and redear sunfish (Anderson and Neumann 1996). The bluegill fishing potential index (BGFP) was used to classify the quality of the bluegill fishery (Ball and Tousignant 1996). All sampling was done in accordance with the Division of Fish and Wildlife sampling guidelines (Shipman et al. 2001).

RESULTS

Bird Dog Pit has a maximum depth of 26.0 ft. The Secchi disk depth was 2.5 ft and the conductivity was 188 μ S. Dissolved oxygen was not measured due to the meter being broken.

Submersed vegetation was found at 71% of the littoral sites to a maximum depth of 8.0 ft. Four native species, American pondweed, coontail, chara, and naiad spp., and one non-native species, curlyleaf pondweed, were collected. Coontail was the most frequently occurring (38%),

followed by chara (15%), and American pondweed (10%). Other plants observed include American lotus, creeping water primrose, filamentous algae, water lily, watershield, and water willow.

A total of 519 fish, representing six species, was collected that weighed an estimated 127 lbs. Redear sunfish ranked first by number (47%), followed by bluegill (33%), and largemouth bass (13%). Redear sunfish ranked first by weight (43%), followed by largemouth bass (37%), and bluegill (11%). Other species collected were white crappie, gizzard shad, and golden shiner. Species collected in past surveys include black bullhead, yellow bullhead, channel catfish, and blackstripe topminnow.

A total of 245 redear sunfish was collected that weighed 55 lbs. They ranged in length from 3.4 to 9.2 in. The catch rates were 474.0/electrofishing h, 6.0/trap net lift, and 1.0/gill net lift. The electrofishing catch rate in 2005 was 48.6/h. Redear sunfish grew slow. Age-3 and age-4 redear averaged 6.1 and 7.5 in compared to the district average of 7.0 and 8.0 in. The redear PSD was 44.

A total of 170 bluegill was sampled that weighed 14 lbs. They ranged in length from 1.2 to 8.0 in. The catch rates were 310.0/electrofishing h, 7.0/trap net lift, and 4.0/gill net lift. The 2005 electrofishing catch rate was 258.3/h. Bluegill growth was good, averaging 5.8 in at age 3 and 7.2 in at age 4. In 2005, bluegill averaged 4.7 in at age 3 and 5.8 in at age 4.

The bluegill PSD increased from 5 (2005) to 16. The suggested PSD range indicating a balanced bluegill fishery is 20 to 60 (Anderson and Neumann 1996). The RSD-7 and RSD-8 were both zero. The BGFP index increased from 9 to 13, classifying the bluegill fishery as "fair".

A total of 69 largemouth bass was sampled that weighed 46 lbs. They ranged in length from 1.6 to 16.1 in. The catch rates were 126.0/electrofishing h, 3.0/trap net lift, and 1.5/gill net lift. The electrofishing rate in 2005 was 98.6/h. Largemouth reached 14.0 in during their fifth year of growth. Largemouth bass growth improved since 2005, averaging 12.1 in at age 4 and 14.2 in at age 5. In 2005, largemouth bass averaged 11.3 in at age 4 and 12.5 in at age 5.

The largemouth bass PSD was the same as 2005 at 40. The suggested PSD range indicating a balanced largemouth bass fishery is 40 to 70 (Anderson and Neumann 1996). The RSD-14 and RSD-15 were 9 and 4 versus 9 and 0 in 2005.

Thirteen white crappie were collected that weighed 5.5 lbs. They ranged in length from 4.4 to 11.7 in. The catch rates were 22.0/electrofishing h, 0.0/trap net lift, and 1.0/gill net lift. Only one white crappie was collected in 2005. White crappie averaged 10.6 in at age 3 and 11.5 in at age 4.

DISCUSSION

Bird Dog Pit provides good fishing for redear sunfish and largemouth bass. Fifteen percent of the redear collected were 8.0 in or longer. The redear sunfish population has increased substantially since the 2005 survey from 48.6/electrofishing h to 474.0/h. Growth is slow due to the high numbers. Ten percent of the largemouth collected were 14.0 in or longer.

This is the first time gizzard shad have been collected from Bird Dog Pit. They ranged in length from 7.0 to 15.3 in indicating these fish came from an outside source. These fish most likely entered this pit from the floodwaters in the early spring of 2008. The flood was severe and connected some pits that are not normally connected. Gizzard shad are known to negatively affect panfish populations and young bass by competing for food resources. This results in stunted bluegill and redear sunfish populations. It is recommended that a general fisheries survey be conducted in 2011 to determine the affects of gizzard shad on the fishery.

The white crappie population increased from the 2005 survey. Crappie were collected up to 11.7 in and growth was good. By their second year of growth crappie were 9.0 in.

Excessive aquatic vegetation has been a problem at Bird Dog Pit in the past. Submerged and emergent vegetation treatments have taken place annually since the last survey to improve bluegill and largemouth bass growth. The bluegill population has responded with improved growth and reduced numbers. The largemouth bass size structure and growth also improved. An unexpected bonus was the increased redear sunfish population. It is recommended that both submerged and emergent vegetation control continue annually to improve the fishery and fishing access.

RECOMMENDATIONS

- A general fisheries survey should be conducted in 2011 to determine the affects of gizzard shad on the fishery.
- Annual submerged and emergent aquatic vegetation herbicide treatments should continue.

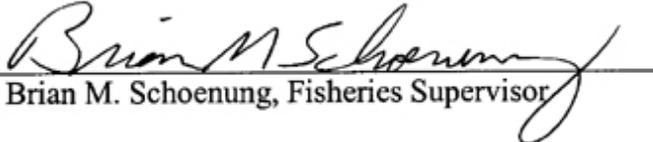
- Annual aquatic vegetation surveys should continue to assess the effectiveness of the annual herbicide treatments.

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, 2nd 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.
- Indiana Department of Natural Resources. 2006. Tier II aquatic vegetation survey protocol. 9 pp.
- Shipman, S., E. Braun, D. Carnahan, L. Koza, B. Schoenung, D. Keller, D. Kittaka, and T. Stefanavage. 2001. Manual of fishery survey methods. Indiana Department of Natural Resources. Indianapolis. 67 pp.

Submitted by: Michelle L. Cain, Assistant Fisheries Biologist
Date: February 13, 2009

Approved by: Daniel P. Carnahan, Fisheries Biologist

Approved by: 
Brian M. Schoenung, Fisheries Supervisor

Date: June 11, 2009

Appendix

Fisheries Survey Data

LAKE SURVEY REPORT

Type of Survey	<input type="checkbox"/> Initial Survey	<input checked="" type="checkbox"/> Re-Survey
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Lake Name Bird Dog Pit	County Warrick	Date of survey (Month, day, year) April 21 and June 23 to 24, 2008
Biologist's name Michelle L. Cain		Date of approval (Month, day, year) June 11, 2009

LOCATION		
Quadrangle Name Daylight	Range 9W	Section 8
Township Name 5S	Nearest Town Daylight	

ACCESSIBILITY					
State owned public access site Gravel boat ramp		Privately owned public access site		Other access site	
Surface acres 24.7	Maximum depth 26.0	Average depth 9.0	Acre feet 222.3	Water level Unknown	Extreme fluctuations None
Location of benchmark Unknown					

INLETS		
Name Runoff	Location	Origin

OUTLETS														
Name None	Location													
Water level control														
POOL	ELEVATION (Feet MSL)	ACRES												
TOP OF DAM														
TOP OF FLOOD CONTROL POOL														
TOP OF CONSERVATION POOL		24.7												
TOP OF MINIMUM POOL														
STREAMBED														
<table border="0"> <tr> <td>Bottom type</td> <td><input type="checkbox"/> Boulder</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Gravel</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Sand</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/> Muck</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Clay</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Marl</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
Relcained coal strip mined ground.

Development of shoreline
Boonville New Harmony road on north shoreline.

Previous surveys and investigations
Fish management surveys in 2000, 2002, and 2005.

Supplemental vegetation surveys in 2004, 2005, 2006, and 2007.

SAMPLING EFFORT					
ELECTROFISHING	Day hours		Night hours		Total hours
			0.5		0.5
TRAP NETS	Number of traps		Number of Lifts		Total effort
	1		1		1
GILL NETS	Number of nets		Number of Lifts		Total effort
	2		1		2
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS			
Color		Turbidity	
Brown		2 Feet 6 Inches (SECCHI DISK)	
Alkalinity (ppm)*		pH	
Surface: 68.4 Bottom:		Surface: 6.8 Bottom: 6.9	
Conductivity:		Air temperature:	
118 micromhos		72.3 °F	
Water chemistry GPS coordinates:			
N 38.095315		W -87.445326	

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	77.3	**	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
** DO meter broken.

*ppm-parts per million

Occurrence and Abundance of Submersed Aquatic Plants

Lake: Birddog Pit	Secchi (ft): 1.9	SE Mean Species / Site: 0.15
Date: 7/15/2008	Littoral Sites w/Plants: 20	Mean Natives / Site: 0.70
Littoral Depth (ft): 8.0	Number of Species: 5	SE Mean Natives / Site: 0.13
Littoral Sites: 28	Max. Species / Site: 4	Species Diversity: 0.69
Total Sites: 40	Mean Species / Site: 0.78	Native Diversity: 0.64

<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>	
American pondweed	10.0	90.0	7.5	2.5	0	3.0
Coontail	37.5	62.5	27.5	7.5	2.5	12.5
Chara	15.0	85.0	2.5	2.5	10.0	12.0
Curlyleaf pondweed	7.5	92.5	7.5	0	0	1.5
Naiad sp.	7.5	92.5	7.5	0	0	1.5

Other species observed:

American lotus, creeping water primrose, filamentous algae, water lily, watershield, water willow

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	1	0.4	0.02	2	21.0				
3.5	3	1.2	0.03	2	21.5				
4.0	5	2.0	0.05	2	22.0				
4.5	20	8.2	0.07	2, 3	22.5				
5.0	27	11.0	0.09	2, 3	23.0				
5.5	28	11.4	0.13	2, 3	23.5				
6.0	25	10.2	0.17	3	24.0				
6.5	31	12.7	0.22	3, 4	24.5				
7.0	36	14.7	0.27	3, 4	25.0				
7.5	31	12.7	0.33	4, 5	25.5				
8.0	25	10.2	0.40	4, 5	26.0				
8.5	9	3.7	0.48	4, 5, 6	TOTAL	245			
9.0	4	1.6	0.57	5, 6					
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	474.0/h	GILL NET CATCH	1.0/lift	TRAP NET CATCH	6.0/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	0.6	0.01	1	19.0				
1.5	2	1.2	0.01	1	19.5				
2.0	1	0.6	0.01	1	20.0				
2.5	15	8.8	0.01	1	20.5				
3.0	32	18.8	0.02	1	21.0				
3.5	13	7.6	0.03	2	21.5				
4.0	31	18.2	0.05	2	22.0				
4.5	22	12.9	0.07	2, 3	22.5				
5.0	12	7.1	0.09	2, 3	23.0				
5.5	12	7.1	0.13	2, 3	23.5				
6.0	10	5.9	0.17	3, 4	24.0				
6.5	8	4.7	0.22	3, 4	24.5				
7.0	5	2.9	0.28	3, 4	25.0				
7.5	5	2.9	0.34	4	25.5				
8.0	1	0.6	0.41	not aged	26.0				
8.5					TOTAL	170			
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	310.0/h	GILL NET CATCH	4.0/lift	TRAP NET CATCH	7.0/lift
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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	3	4.3	0.01	not aged	19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5	1	1.4	0.04	1	22.5				
5.0					23.0				
5.5	1	1.4	0.08	1	23.5				
6.0					24.0				
6.5					24.5				
7.0	2	2.9	0.16	2	25.0				
7.5	6	8.7	0.20	2, 3	25.5				
8.0	3	4.3	0.24	2	26.0				
8.5	4	5.8	0.28	2	TOTAL	69			
9.0									
9.5	2	2.9	0.39	2					
10.0	1	1.4	0.46	4					
10.5	3	4.3	0.53	3					
11.0	9	13.0	0.62	3, 4					
11.5	11	15.9	0.71	3, 4					
12.0	5	7.2	0.80	4					
12.5	6	8.7	0.91	4					
13.0	3	4.3	1.02	4, 5					
13.5	2	2.9	1.15	5					
14.0	2	2.9	1.31	5					
14.5	1	1.4	1.47	5					
15.0									
15.5	3	4.3	1.88	5, 6					
16.0	1	1.4	2.08	not aged					
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	126.0/h	GILL NET CATCH	1.5/lift	TRAP NET CATCH	3.0/lift
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NUMBER, PERCENTAGE, WEIGHT, AND AGE OF WHITE CRAPPIE

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	1	7.7	0.02	not aged	22.0				
4.5	1	7.7	0.40	1	22.5				
5.0					23.0				
5.5					23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	13			
9.0	5	38.5	0.36	2					
9.5	2	15.4	0.44	not aged					
10.0									
10.5	2	15.4	0.61	3					
11.0	1	7.7	0.71	3					
11.5	1	7.7	0.82	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	22.0/h	GILL NET CATCH	1.0/lift	TRAP NET CATCH	0.0/lift
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REDEAR SUNFISH AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE						
			1	2	3	4	5	6	
3.0	1	1		1					
3.5	3	1		3					
4.0	5	4		5					
4.5	20	5		16	4				
5.0	27	5		16	11				
5.5	28	5		11	17				
6.0	25	5			25				
6.5	31	6			15	16			
7.0	36	5			7	29			
7.5	31	5				25	6		
8.0	25	6				17	8		
8.5	9	6				2	5	2	
9.0	4	4					1	3	
Totals	245	58	0	52	78	87	20	5	

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	0					
2	52	5.0	0.37	0.08	4.8	5.2
3	78	6.1	0.43	0.07	6.0	6.3
4	87	7.5	0.28	0.06	7.4	7.6
5	20	8.3	0.19	0.10	8.1	8.5
6	5	9.0	0.08	0.11	8.8	9.2

BLUEGILL AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE			
			1	2	3	4
1.0	1	1	1			
1.5	2	2	2			
2.0	1	1	1			
2.5	15	7	15			
3.0	32	5	32			
3.5	13	5		13		
4.0	31	5		31		
4.5	22	5		18	4	
5.0	12	5		7	5	
5.5	12	5		7	5	
6.0	10	7			9	1
6.5	8	5			3	5
7.0	5	5			1	4
7.5	5	4				5
8.0	1	0				
Totals	170	62	51	76	27	15

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	51	3.0	0.31	0.08	2.8	3.1
2	76	4.5	0.34	0.07	4.4	4.7
3	27	5.8	0.50	0.14	5.6	6.1
4	15	7.2	0.26	0.13	6.9	7.4

LARGEMOUTH BASS AGE-LENGTH KEY

Length group (in)	Total number	Sub-sample	AGE					
			1	2	3	4	5	6
1.5	3	0						
2.0								
2.5								
3.0								
3.5								
4.0								
4.5	1	1	1					
5.0								
5.5	1	1	1					
6.0								
6.5								
7.0	2	2		2				
7.5	6	5		5	1			
8.0	3	3		3				
8.5	4	4		4				
9.0								
9.5	2	2		2				
10.0	1	1				1		
10.5	3	3			3			
11.0	9	5			5	4		
11.5	11	7			8	3		
12.0	5	5				5		
12.5	6	6				6		
13.0	3	3				1	2	
13.5	2	2					2	
14.0	2	2					2	
14.5	1	1					1	
15.0	0	0						
15.5	3	2					1	2
16.0	1	0						
Totals	69	55	2	16	17	20	8	2

AGE-LENGTH KEY SUMMARY						
Age	Number	Mean			Lower 95%CI	Upper 95%CI
		TL	Var	SE		
1	2	5.3	0.50	0.50	4.3	6.3
2	16	8.3	0.59	0.19	7.9	8.7
3	17	11.1	1.05	0.24	10.7	11.6
4	20	12.1	0.55	0.17	11.8	12.4
5	8	14.2	0.82	0.31	13.6	14.8
6	2	15.8	0.00	0.00	15.8	15.8

GPS LOCATION OF SAMPLING EQUIPMENT

GILL NETS			TRAP NETS			ELECTROFISHING		
1	N 38.0947739	W -87.445384	1	N 38.093309	W -87.445683	1	N 38.097748	W -87.446813
	N	W	2	N	W		N 38.094814	W -87.446238
2	N 38.0943719	W -87.446112	3	N	W	2	N 38.098093	W -87.447381
	N	W	4	N	W		N 38.097480	W -87.444179
3	N	W	5	N	W	3	N	W
	N	W	6	N	W		N	W
4	N	W	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