

**MULBERRY FORK RIVER CRAPPIE MANAGEMENT
REPORT**

FALL 2009

Prepared By

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Introduction

The Mulberry Fork River (MFR) in Walker County is riverine in nature, but flow and temperature are influenced by generation at Bankhead and Lewis Smith dams. The upper portion of the Mulberry Fork is more riverine, with the lower section being influenced by the operation of Bankhead Dam. The Sipsey Fork River, a major tributary, supplies cool water year round from Lewis Smith Dam. Water temperatures in the Sipsey Fork can range from 5°-15°c from normal.

Although a part of Bankhead Reservoir, the Mulberry Fork is not part of the reservoir sampling schedule. Fish collections are rarely collected above the confluence of the Locust and Mulberry Fork. Discussions with local anglers and marina operators revealed that the upper Mulberry Fork has a diverse sportfish fauna and is readily utilized by the citizens of Walker, Cullman and Jefferson counties.

The Mulberry Fork was sampled to collect baseline biological data on the important sportfish.

Methods

The MFR was sampled in the fall 28 and 29 October, 2009 with daytime non-standardized electrofishing in the Cordova, AL and Gorgas, AL areas.

The MFR in the Cordova area is riverine in nature and shows little reservoir influence from Bankhead Dam. There is normally a continuous flow and there is very little overbank area. Sampling in this area was in tributary streams and the main river. That portion of the MFR in the Gorgas area shows signs of reservoir influence. Flow is not as noticeable and there is more overbank area, especially in the tributary streams. Sampling was conducted in both tributary streams and the main river channel.

Total length (TL) and weight (g) were collected from all crappie collected. Otoliths were removed from all crappie ≥ 100 mm TL and aged by district personnel. Data analysis was conducted with ADWFF Data Analysis and Report Utilities (Slipke 2004) and Fisheries Analysis and Simulation Tools (F.A.S.T.) program (Slipke and Maceina 2006).

Results and Discussion

White Crappie

One hundred and nine white crappie were collected in the fall of 2009. The 2005 year class was large composing 40% of the sample. The 2006 year class was also strong comprising 23% of the sample. All other year classes were well represented except for the 2008 and 2009. One of the drawbacks from electrofishing for crappie is the low representation of younger age classes. This makes it difficult to determine or predict future angling opportunities. Altogether the 2009 sample included ten year classes (Table 2).

The relative stock density (RSD) values for white crappie were 1%, 11%, 20%, 67% and 1% for the stock-quality, quality-preferred, preferred-memorable, memorable-trophy and trophy categories, respectively (Table 1). Relative weight (Wr) values were below 90 for all categories except the trophy category (Table 1). This is similar to that observed for the stock-quality and quality-preferred categories observed from Bankhead Reservoir samples, but are lower than those observed from the preferred memorable and memorable-trophy size categories (Moss et al., 2006).

Growth of white crappie was rapid with mean total length-at-age exceeding 9 inches in 1.5 years and 10 inches by age 2. Although the average growth rate was fast,

there was usually a wide range of length groups within each year class (Table 3).

Estimated total annual survival rates was 34% ($Z=-0.10811$, $r^2=0.8939$) for age 4 – age 7 white crappie (Figure 3).

Black Crappie

A total of 77 black crappie were collected in the fall of 2009. The 2005, 2007 and 2008 year classes dominated the sample comprising 26%, 23% and 22% of the sample respectively. The black crappie collection included eight year classes (Table 4). All year classes were well represented except age 0+. Again, this can be due to the bias of electrofishing in collecting small crappie.

The RSD values for black crappie were 22%, 43%, 22% and 14% for the stock-quality, quality-preferred, preferred-memorable and memorable-trophy size categories, respectively (Table 1). Values for the quality-preferred, preferred-memorable and memorable-trophy size categories approached or exceeded statewide means while the values for stock-quality categories were below state means.

Growth of black crappie was slower than that observed for white crappie. Black crappie reach harvestable size by age 2 and 10 inches at age 3. Although mean-length-at-age indicate moderate growth rates, there was a wide range of lengths within each year class (Table 5). Estimated total annual survival rate from weighted catch curve regression was 41% ($Z= -0.8919$, $r^2=0.9246$) for black crappie (Figure 6).

Conclusions

The white and black crappie populations are characterized by fast to moderate growth rates and low W_r . The strong 2005 and 2006 year classes should continue to provide good fishing for the next couple of years. No changes in the current management are warranted at this time.

Literature Cited

- Moss, J. L., J. B. Haffner and J. M. Piper. 2005. Bankhead Reservoir management report. Alabama Department of Conservation and Natural Resources. Montgomery, Alabama.
- Slipke, J. W. 2004. ADWFF data and report utilities: Version 2.2. Alabama Division of Wildlife and Freshwater Fisheries. Montgomery, Alabama.
- Slipke, J. W. and M. J. Maccina. 2006. Fisheries analysis and simulation tools (FAST). Auburn University, Auburn, Alabama.

APPENDIX A
TABLES AND FIGURES

TABLE 1. Relative stock density (RSD), catch per hour (CPE) and relative weight (Wr) of black and white crappie from the Mulberry Fork River, fall 2009.

Species	Year	SUBSTOCK		RSD S-Q		RSD Q-P		RSDP-M		RSD M-T		RSD-T		TOTAL PSD													
		no.	cpe ratio	no.	cpe pct.	Wr	no.	cpe pct.	Wr	no.	cpe pct.	Wr	no.	cpe pct.	Wr	no.	cpe										
White Crappie	2009	3	0.7	3	1	0.2	1	69	12	2.6	11	83	21	4.6	20	87	71	15.4	67	88	1	0.2	1	91	109	23.7	99
Black Crappie	2009	3	0.7	4	16	3.5	22	76	32	7.0	43	84	16	3.5	22	89	10	2.2	14	87	0	0.0	0	**	77	16.7	78

TABLE 2. Age composition and mean length of white crappie from the Mulberry Fork River, fall 2009.

Age	Year Class	Number	Percent	CPE	Mean TL	SE
0	2009	3	2.8	0.7	105.0	9.2
1	2008	1	0.9	0.2	231.0	**
2	2007	14	12.8	3.0	252.1	8.7
3	2006	25	22.9	5.4	299.8	7.6
4	2005	44	40.4	9.6	325.1	4.3
5	2004	10	9.2	2.2	326.7	8.1
6	2003	9	8.3	2.0	329.4	12.4
7	2002	1	0.9	0.2	362.0	**
8	2001	0	0.0	0.0	**	**
9	2000	1	0.9	0.2	343.0	**
10	1999	1	0.9	0.2	362.0	**
Total		109	100.0	23.7		

TABLE 3. Length at age distribution for white crappie from the Mulberry Fork River, fall 2009.

Length (mm)	Age - 0	Age - 1	Age - 2	Age - 3	Age - 4	Age - 5	Age - 6	Age - 7	Age - 8	Age - 9	Age - 10	Total
90	2											2
100												0
110												0
120	1											1
130												0
140												0
150												0
160												0
170												0
180												0
190			1									1
200												0
210			1									1
220			2	2								4
230		1	1		2							4
240			2				1					3
250			1	3	1							5
260			1	1								2
270			1			1						2
280			2	2	1							5
290			1	4	1		1					7
300			1	2	3	2						8
310				3	5		1					9
320				2	9	2						13
330				1	9	1	2					13
340				2	8	3	1			1		15
350				2	3		1					6
360				1	1	1	2	1			1	7
370												0
380					1							1

TABLE 4. Age composition and mean length of black crappie from the Mulberry Fork River, fall 2009.

Age	Year Class	Number	Percent	CPE	Mean TL	SE
0	2009	2	2.6	0.4	88.0	11.0
1	2008	17	22.1	3.7	170.9	6.4
2	2007	18	23.4	3.9	217.1	3.2
3	2006	9	11.7	2.0	273.3	11.6
4	2005	20	26.0	4.3	266.0	7.0
5	2004	7	9.1	1.5	271.7	17.3
6	2003	2	2.6	0.4	286.5	20.5
7	2002	2	2.6	0.4	267.5	31.5
Total		77	100.0	16.7		

TABLE 5. Length at age distribution for black crappie from the Mulberry Fork River, fall 2009.

Length (mm)	Age - 0	Age - 1	Age - 2	Age - 3	Age - 4	Age - 5	Age - 6	Age - 7	Total
70	1								1
80									0
90	1								1
100									0
110									0
120		1							1
130		1							1
140		1							1
150		2							2
160		3							3
170		5							5
180		2							2
190			1			1			2
200			6						6
210		1	4	1					6
220			3		1				4
230		1	2		6			1	10
240			2	2	1	1			6
250					1	1			2
260				1	2		1		4
270					3	1			4
280				1	1	1			3
290				2				1	3
300				1	3		1		5
310					2				2
320				1		1			2
330						1			1
Total	2	17	18	9	20	7	2	2	77

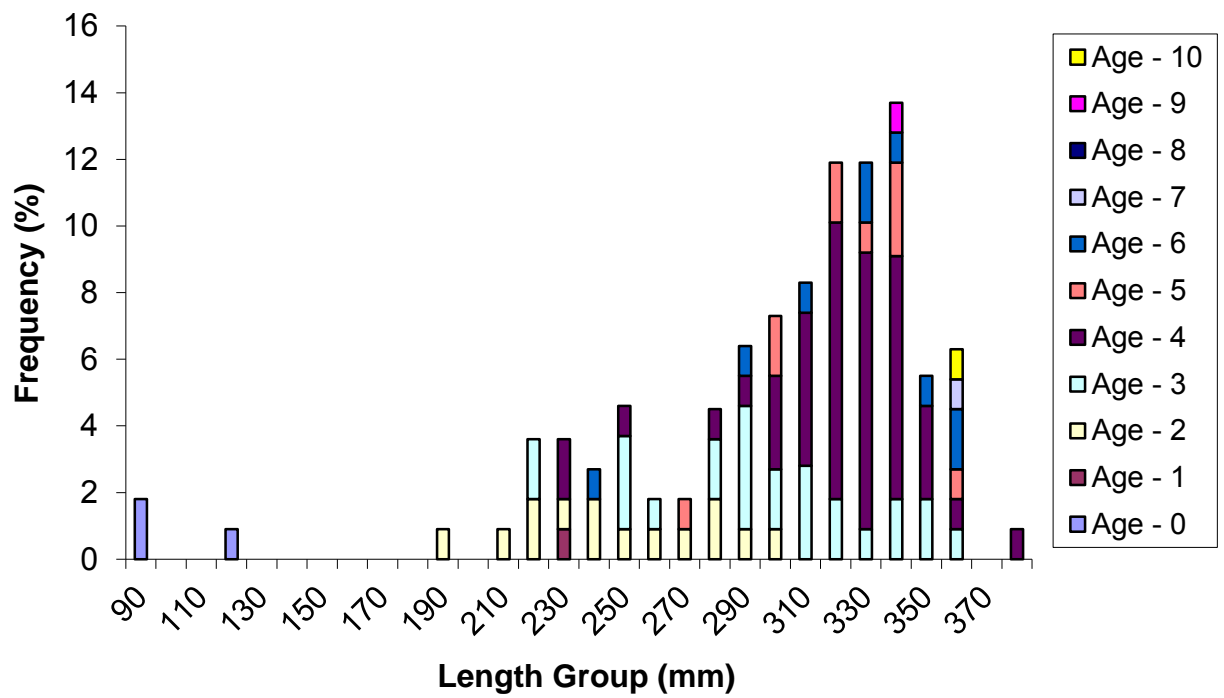


FIGURE 1. Length-at-age frequency of white crappie (n=109) from Mulberry Fork River, fall 2009.

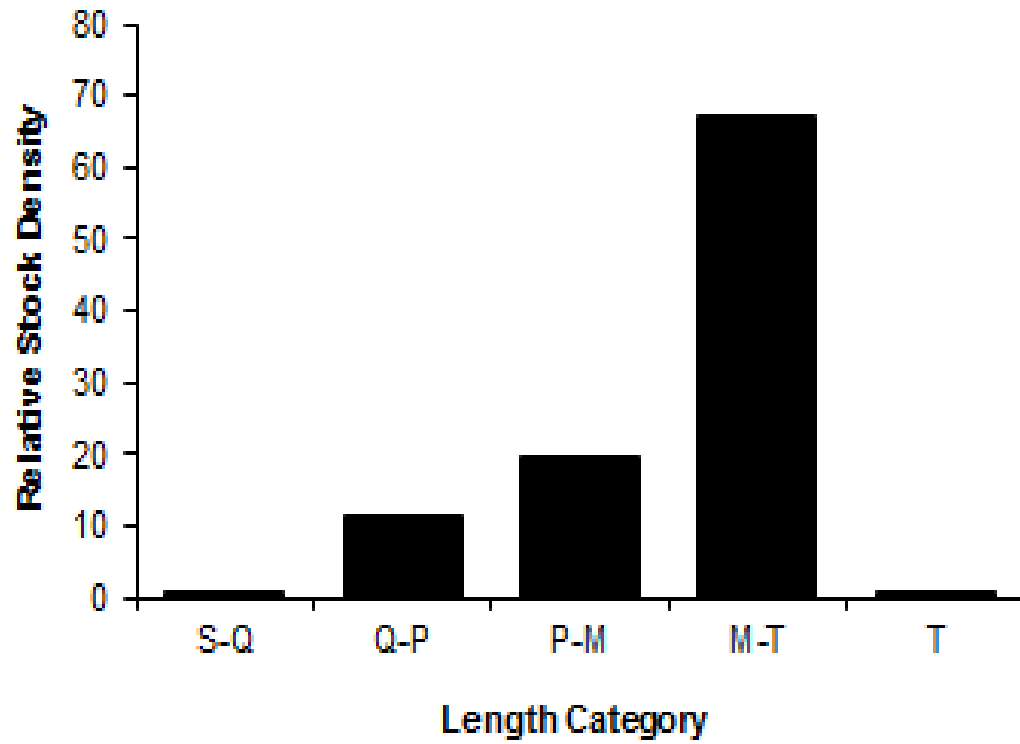


FIGURE 2. Relative stock density (RSD) of white crappie from Mulberry Fork River, fall 2009.

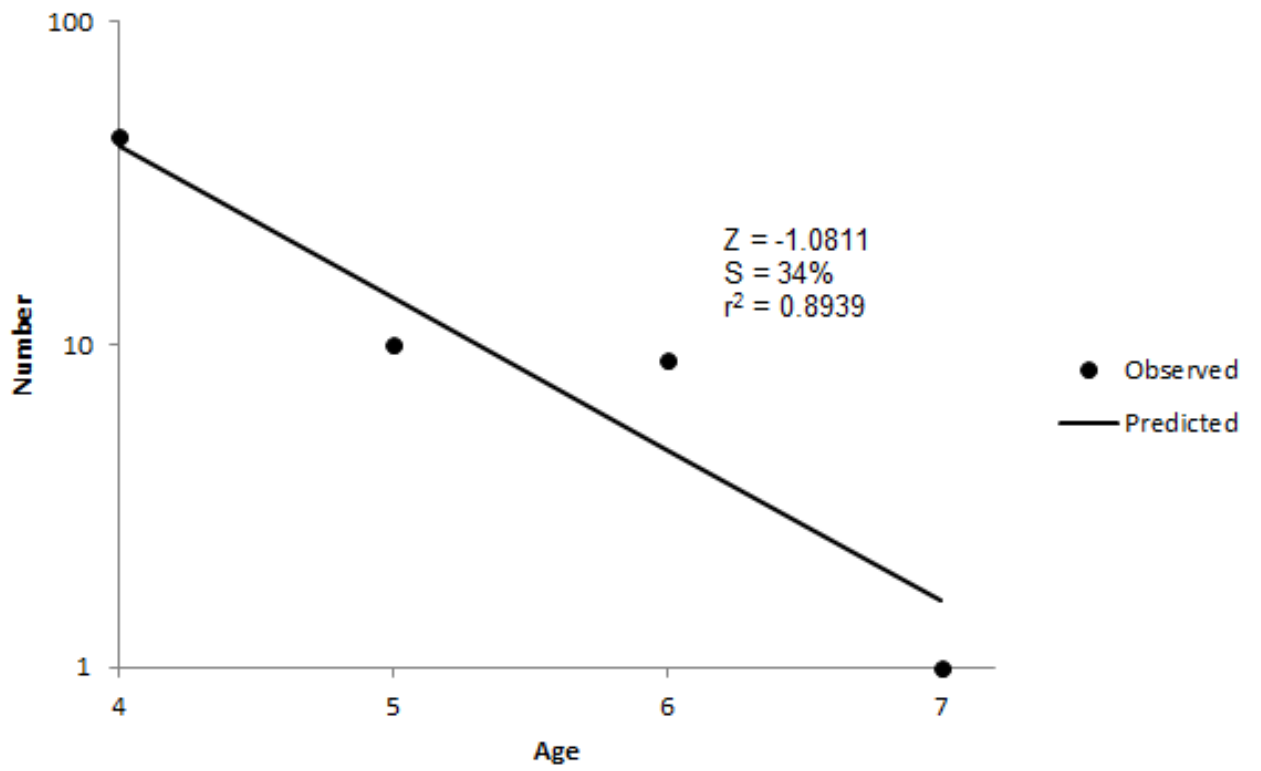


FIGURE 3. Catch curve regression and survival estimates for white crappie from Mulberry Fork River, fall 2009.

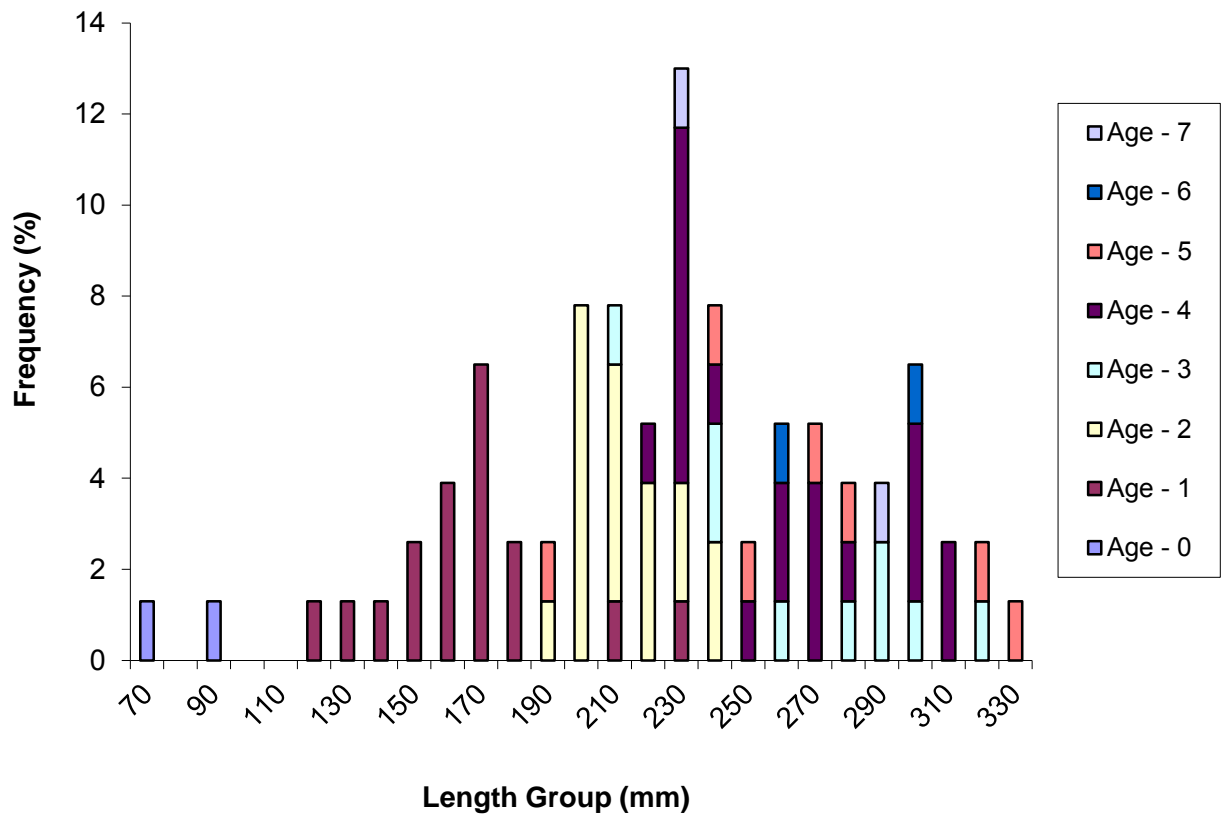


FIGURE 4. Length-at-age frequency of black crappie (n=77) from Mulberry Fork River, fall 2009.

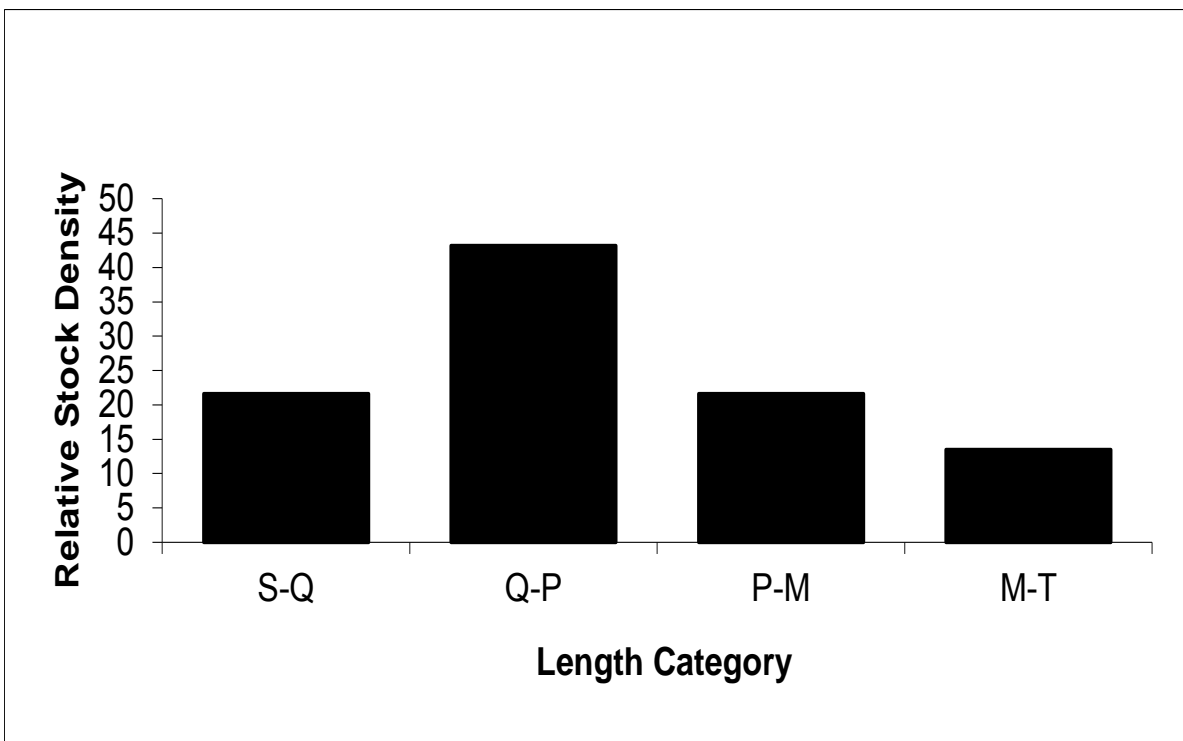


FIGURE 5. Relative stock density (RSD) of black crappie from Mulberry Fork River, fall 2009.

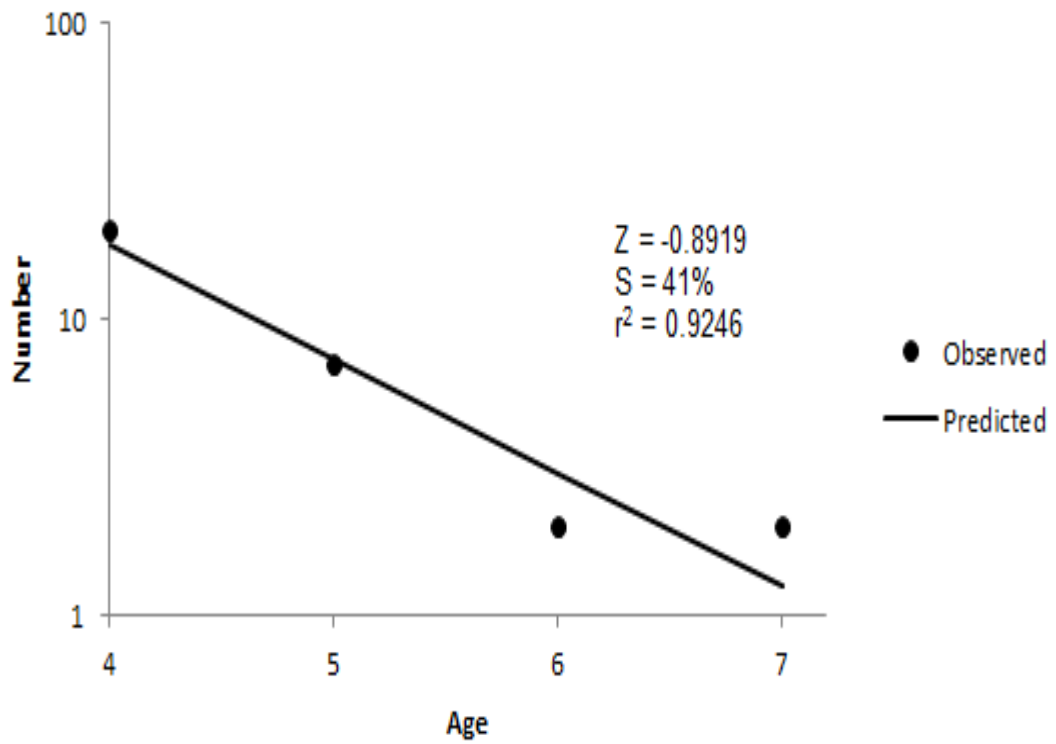


FIGURE 6. Catch curve regression and survival estimates for black crappie from Mulberry Fork River, fall 2009.