

**PICKWICK RESERVOIR CRAPPIE
MANAGEMENT REPORT**

Fall 2007

Prepared By

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Introduction

The reservoir management objective for Pickwick Reservoir is to collect baseline biological data on the important sport fish. Reservoirs are sampled periodically to establish trends in growth, recruitment and mortality and to identify any potential problems with the major sport fish populations.

Although Pickwick Reservoir has been routinely sampled since 1990, few crappie have been collected using standard methods. Pickwick has traditionally provided a substantial crappie fishery. Creel surveys conducted by Mississippi Department of Wildlife, Fisheries and Parks personnel and Alabama Fisheries section personnel have shown that up to half of the anglers interviewed were fishing for crappie during the spring (Floyd and Ekema 1997, Larry Pugh MWFP, personal communication). During the fall of 2007 we attempted to collect crappie with electrofishing gear to provide a more thorough look at the various population parameters that are needed to manage this important fishery resource.

Methods

Pickwick Reservoir was sampled in the fall with daytime electrofishing in Bear Creek, Shoal Creek, and Little Bear Creek embayments and along the shoreline at the Port of Florence (Figure 1). Collections were made between October 31, 2007 and November 11, 2007. A total of twelve collection sites were sampled.

Total length (mm) and weight (g) were recorded 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).

Results and Discussion

Seventy-four white crappie were collected in the fall of 2007. The 2007 year class dominated the sample comprising 47% of the entire collection (Table 3). The 2005 and 2004 were also fairly large comprising 22% and 15% of the sample. The Pickwick white crappie collection consisted of six year classes ages 0+- 4+ and age 6+. No individuals from the 2002 year class (age 5+) were collected.

The RSD values for white crappies in the fall of 2007 were 33%, 13%, 14% and 40% for the Stock, Quality, Preferred and Memorable size categories, respectively (Table 2 and Figure 3). The RSD-P value was 54 indicating that a high percentage of the sample population is harvestable size. PSD of the white crappie is 67. Relative weight (Wr) values are above 90 for all size categories and show a positive correlation to size (Table 2).

Growth of white crappie was rapid with mean-total-length-at-age exceeding 276 mm TL by age 1+ and 303 mm TL by age 2+. Although the average growth rate was fast, there was usually a wide range of length groups within each age group (Table 3). While mortality computations did not meet standards outlined in the Reservoir Manual (1999), estimated total annual survival rate from weighted catch curves regression was 67% ($Z = -0.3988$, $r^2 = 0.5315$, Adjusted $r^2 = 0.4144$).

A total of 32 black crappie were collected in the fall of 2007. The 2006 and 2005 age classes dominated the collection comprising 31% and 28% of the sample, respectively (Table 4). Five year classes were represented (0+ to 4+).

Growth of black crappie was similar to the white crappie where fish reached harvestable size by their second growing season. Although mean-length-at-age indicated

fast growth, there was a range of size groups within a year class. Estimated total annual survival rates for black crappie from weighted and un-weighted catch curve regression ranged from 67% and 66% ($Z = -0.4075$, $r^2 = 0.9296$, Adjusted $r^2 = 0.8944$ and $Z = -0.4200$, $r^2 = 0.9395$, Adjusted $r^2 = 0.9093$, respectively). This mortality estimate is similar to that observed for white crappie.

Conclusion

The overall crappie population in Pickwick Reservoir is characterized by fast growth and moderate relative weights. The strong 2006, 2005 and 2004 year classes should continue to provide adequate angling opportunities. No major changes in the management of crappie are warranted at this time.

Literature Cited

- Alabama reservoir management manual. 1999. Alabama Department of Conservation and Natural Resources. 77pp.
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- Jenkins, R. M. 1967. The influence of some environmental factors on the standing crop and harvest of fishes in U. S. reservoirs. pp. 291-298 in Reservoir Fisheries Resource Symposium. Southern Division American Fisheries Society, Bethesda, Maryland, U.S.A.
- Ryder, R. A. 1965. A method for estimating the potential fish production of North-American temperate lakes. Transaction of the American Fisheries Society. 94:214-218.
- Slipke, J. W. 2004. ADWFF data and report utilities: Version 2.2. Alabama Division of Wildlife and Freshwater Fisheries. Montgomery, Alabama.

APPENDIX A
TABLES AND FIGURES

TABLE 1.-Pickwick Reservoir morphometric, physical and chemical characteristics.

Surface area	43100 acres
Drainage area	32820 sq. mi.
Full pool elevation	414 feet-msl
Mean annual fluctuation	6 feet
Shoreline distance	496 miles
Shoreline development index	14.1
Mean depth	21.4 feet
Maximum depth (at mouth of Bear Creek)	59 feet
Outlet depth	57 feet
Total dissolved solids	92.6 mg/l
Morphoedaphic index	4.3 TDS/mean depth(ft) (Ryder 1965)
Growing season	188 frost free days (Jenkins 1967)
Reservoir age (1938)	69 years

Table 2. Relative Stock Density, catch per unit effort and relative weight (Wr) of white and black crappie from Pickwick Reservoir, fall 2007.

Species	Gear	Year	Number Samples	TOTAL NUMBER, CPE, PERCENT OF SAMPLE AND Wr																				
				SUBSTOCK			RSD-S			RSD-Q			RSD-P			RSD-M			TOTAL					
				no.	cpe	ratio	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe				
White Crappie	Electro	2008	12	2	0.2	3	24	2.3	33	91	9	0.9	13	94	10	1.0	14	95	29	2.8	40	97	74	7.0
Black Crappie	Electro	2008	12	3	0.3	10	2	0.2	7	97	5	0.5	17	95	16	1.5	55	97	6	0.6	21	106	32	3.0

Table 3. Age composition and mean length of white crappie from Pickwick Reservoir, fall 2007.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	TL Range
0	2007	35	47.3	3.5	176.1	5.3	74 - 211
1	2006	7	9.5	0.7	276.4	4.5	266 - 300
2	2005	16	21.6	1.6	303.9	2.8	277 - 316
3	2004	11	14.9	1.1	329.6	4.3	306 - 354
4	2003	3	4.1	0.3	329.7	19.0	292 - 253
5	2002	0	0.0	0.0	0.0		
6	2001	2	2.7	0.2	321.0	21.0	330 - 342
Total		74	100.0	7.4			

Table 4. Age composition and mean length of black crappie from Pickwick Reservoir, fall 2007.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	TL Range
0	2007	5	15.6	0.5	135.2	18.3	96 - 191
1	2006	10	31.3	1.0	253.1	7.2	213 - 283
2	2005	9	28.1	0.9	278.4	5.5	248 - 301
3	2004	5	15.6	0.5	293.0	8.1	277 - 321
4	2003	3	9.4	0.3	344.7	9.6	329 - 362
Total		32	100.0	3.0			

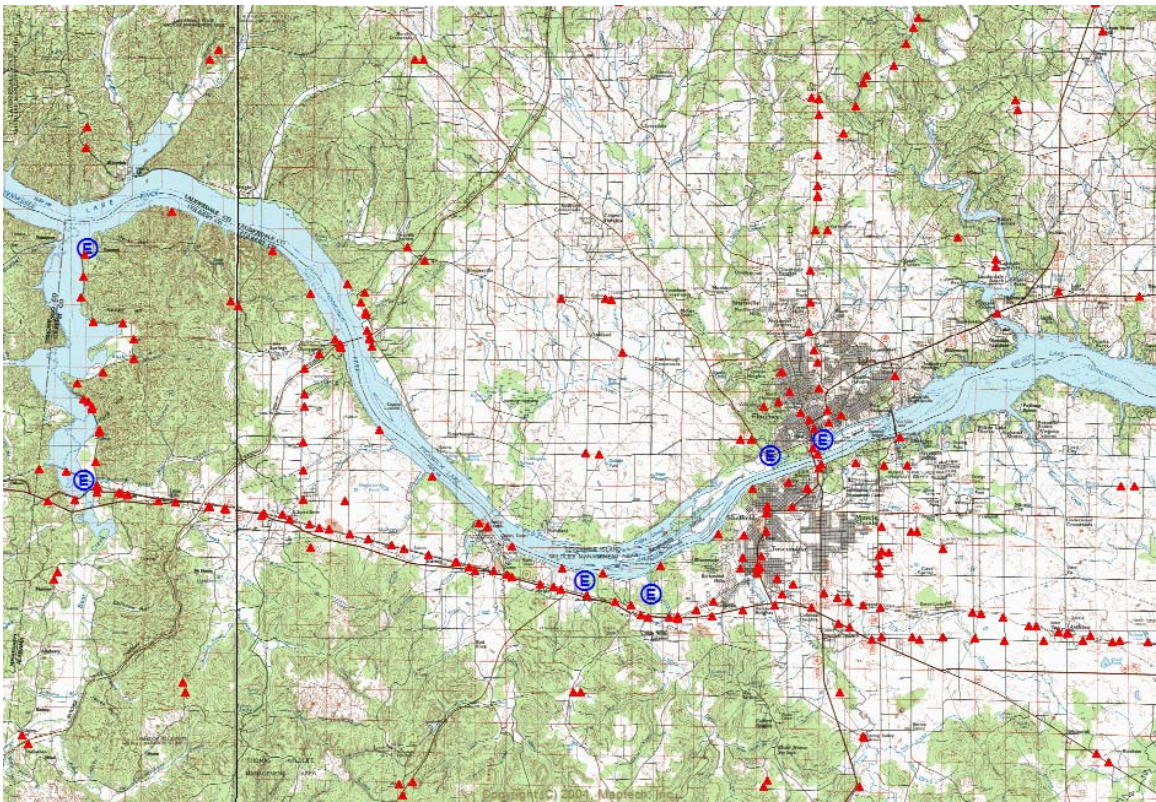


Figure 1. Electrofishing sites for fall 2007.

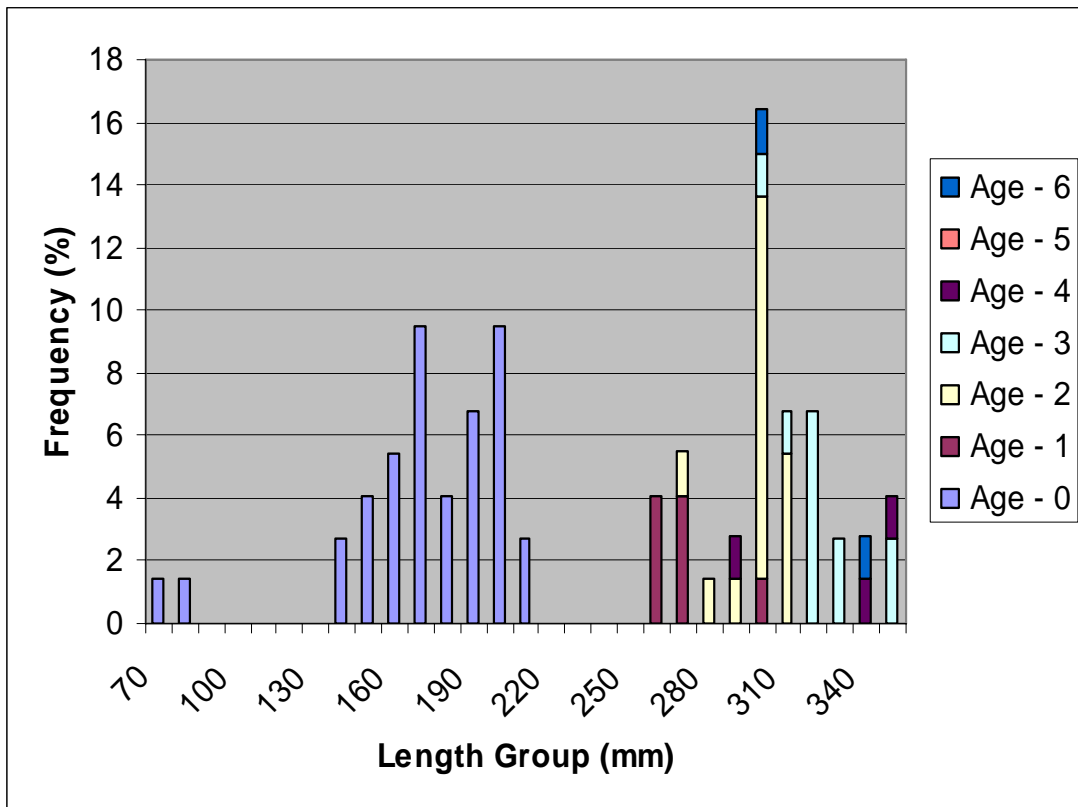


Figure 2. Length-at-Age frequency distribution for white crappie (n = 74) from Pickwick Reservoir, fall 2007.

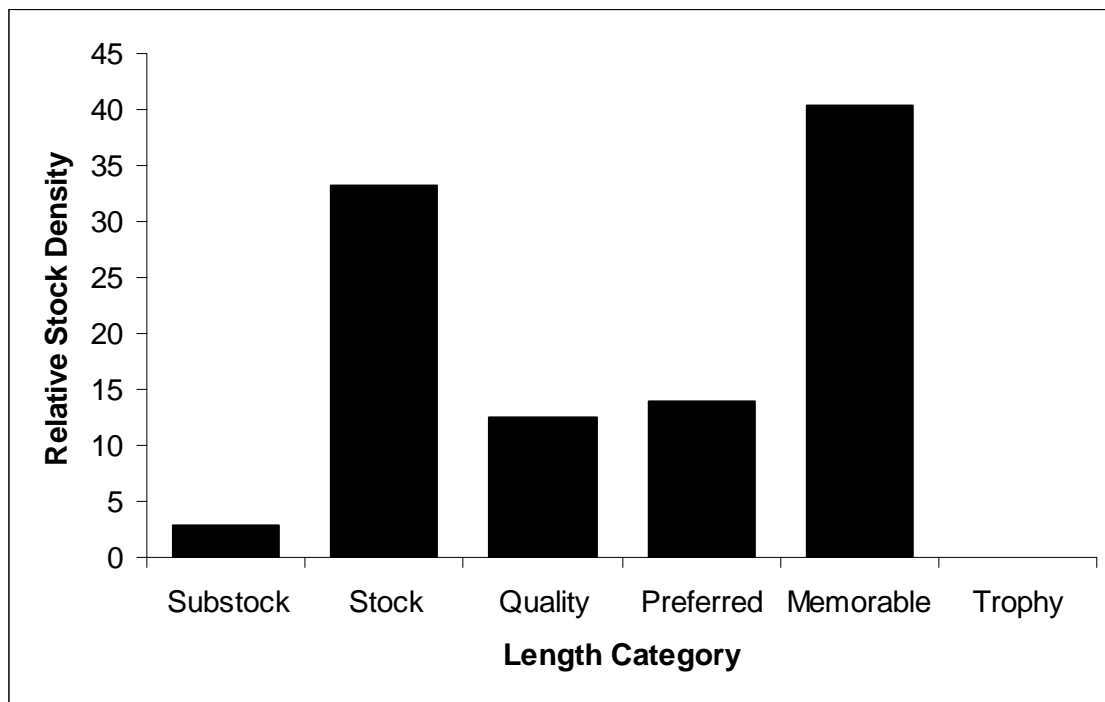


Figure 3. Relative Stock Density of white crappie from Pickwick Reservoir, fall 2007.

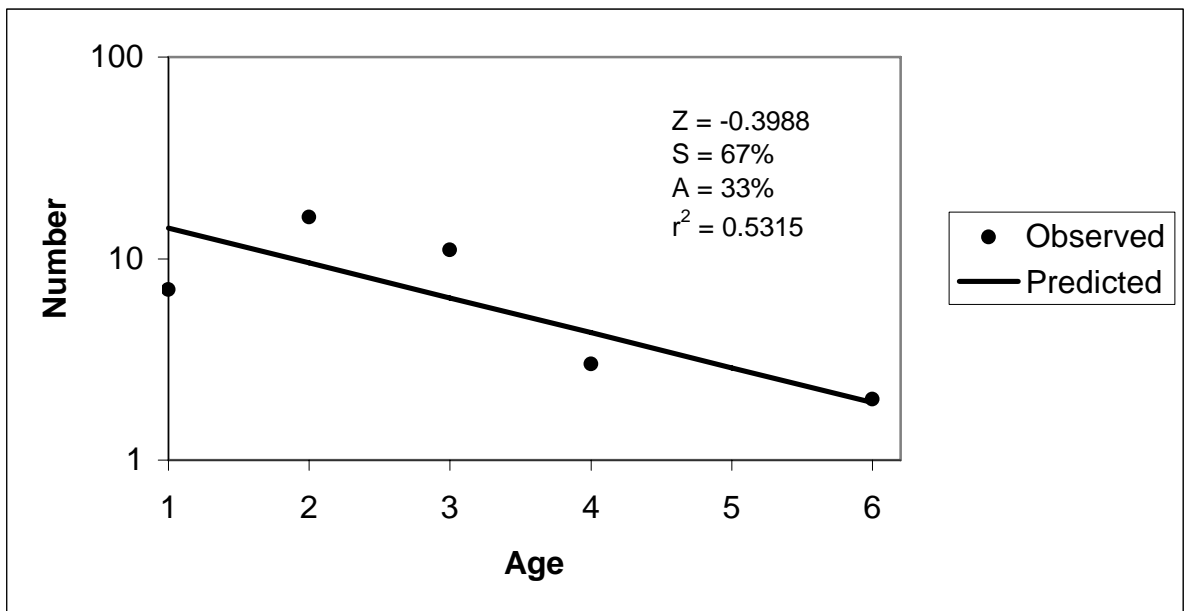


Figure 4. Catch-curve regression for white crappie from Pickwick Reservoir, fall 2007.

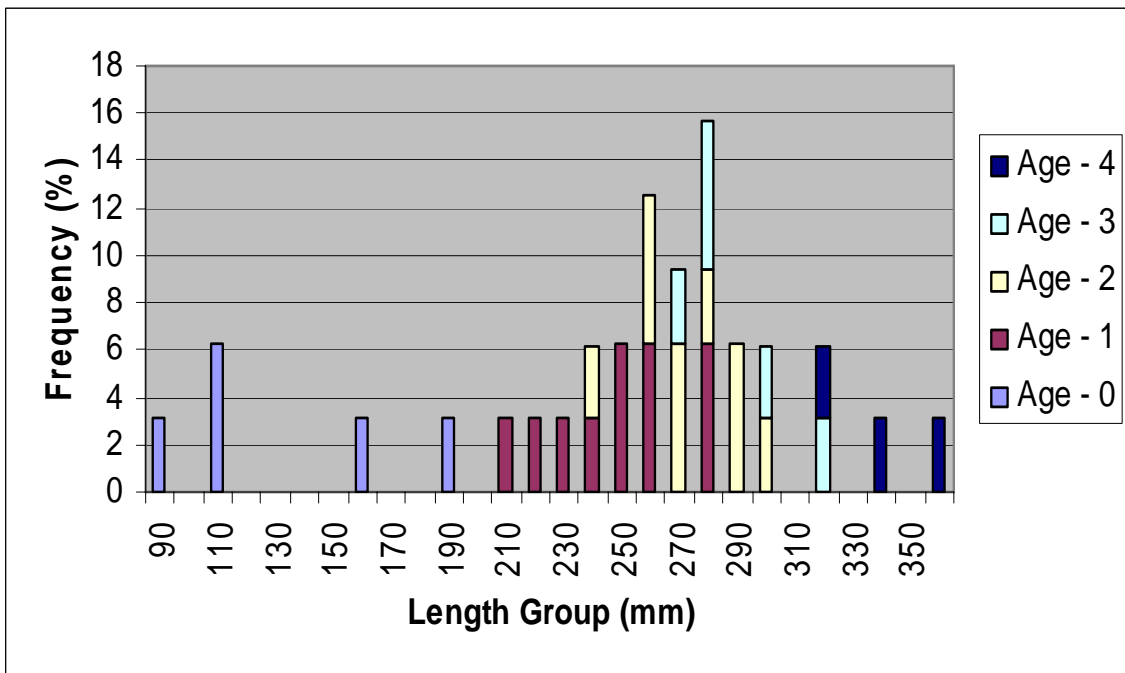


Figure 5. Length-at Age frequency distribution for black crappie (n = 32) from Pickwick Reservoir, fall 2007.

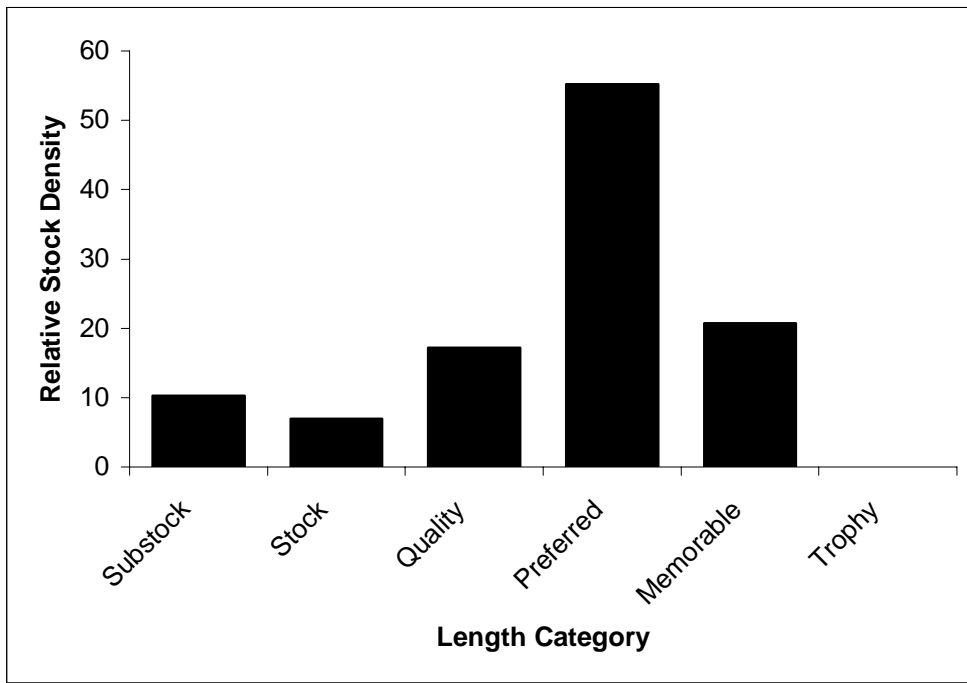


Figure 6. Relative Stock Density (RSD) of black crappie from Pickwick Reservoir, fall 2007.

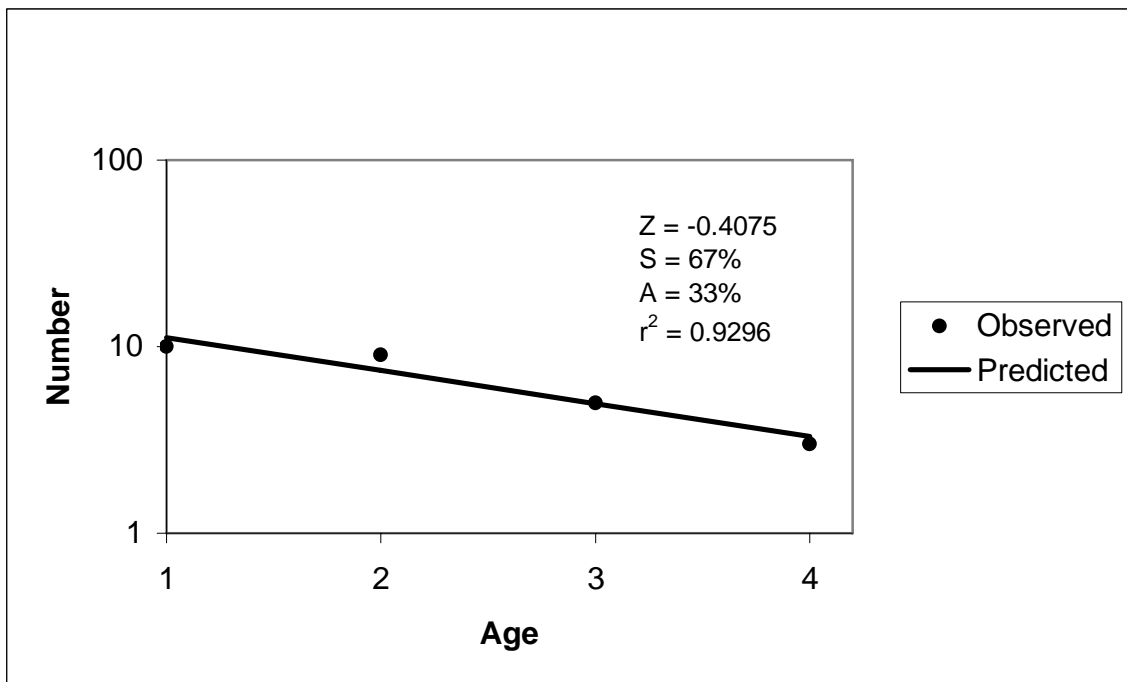


Figure 7. Catch-curve regression for black crappie from Pickwick Reservoir, fall 2007.