LAKE TUSCALOOSA
CRAPPIE MANAGEMENT REPORT
FY 2008

Prepared by

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Introduction

Crappies were previously sampled at Lake Tuscaloosa in 1990, 1992, and 2003 (Moss et al. 2004). In 2003, white crappie exhibited modest size structure, slow growth, variable recruitment and low abundance. Black crappies were incidental in the collection.

Methods

Crappies were collected from trap nets set in the Binion and Turkey Creek areas according to the guidelines of the Alabama Reservoir Management Manual (1999). Fifteen nets were set on December 4 and run on December 5 and 6, 2007. The following week, 10 nets were set on December 10 and run on December 11 and 13, 2007.

Results and Discussion

Black and White Crappie

A total of 135 white crappies and 5 black crappies were captured. The CPE of white crappie was 2.3 (Table 2). The PSD for white crappie was 70 and the RSD-P was 17.

Mean Wr values of white crappie ranged from 82 to 88. The annual survival rate of harvestable size white crappie (fish ≥ 229 mm) was estimated to be 33% (adjusted r^2=0.998) based on catch curve analysis of 2 to 4-year old fish.

The white crappie sample included five age classes (ages 0+ to 4+). Young-of-year white crappie comprised less than 1% of the collection. Only 2 strong year-classes (2005-06) were present in our collection and 4 year-classes (2003-06) contributed to the fishery. Growth rates of white crappie in 2007 were similar to previous collections (Figure 5).

The black crappie sample consisted of 5 fish ranging in total length from 192 - 294 mm. Three year-classes were represented in the collection (Figure 6).

Summary

The CPE of white crappie was 2.3, nearly identical to the 2003 collection. Recruitment was variable. Two moderately strong year-classes were present in the collection but young-of-year fish were not well represented. Growth of white crappie was similar to previous collections. Black crappies were again incidental in the collection.

Conclusions

1. Resample crappie in 2011.
2. Maintain the 9-inch minimum-length limit regulation on all crappie.
3. Continue to monitor this watershed for exotic introductions.

Literature Cited

Alabama reservoir management program 1999. Alabama Department of Conservation and Natural Resources. 77 pp.

Moss, J. L., J. B. Haffner, and J. M. Piper. 2004. Management report for Lake Tuscaloosa. Alabama Department of Conservation and Natural Resources. Montgomery, AL. 16 pp.

Jenkins, R. M. 1967. The influence of some environmental factors on the standing crop and harvest of fishes in U.S. reservoirs. Pages 298-321 in Reservoir Fishery Resources Symposium. Southern Division American Fisheries Society, Bethesda, Maryland, USA.

Ryder, R. A. 1965. A method for estimating the potential fish production of north-temperate lakes. Transactions of the American Fisheries Society. 94:213-218.

Welch , P. S. 1948. Limnological Methods. McGraw-Hill. pp. 93-94.

Appendix 1

Tables and Figures

Table 1. Morphometric, physical, and chemical characteristics of Lake Tuscaloosa.

Surface area	5,885	acres
Drainage area	418	sq. mi.
Full pool elevation	223	feet-msl
Mean annual fluxuation	1	feet
Shoreline distance	177	miles
Shoreline development index	16.5	(Welch 1948)
Mean depth	22	feet
Maximum depth	92	feet
Thermocline depth	21	feet
Total dissolved solids	46	mg/l
Morphoedaphic index	2.1	TDS/mean depth(ft) (Ryder 1965)
Growing season	235	frost free days (Jenkins 1967)
Year of impoundment	1973	

Table 2. Incremental relative stock density (RSD), catch per effort (CPE) and relative weight (Wr) of white crappie trap netted at Lake Tuscaloosa.

	Total [1]	Substock [2]			RSD S - Q				RSD Q - P				RSD P - M				RSD M - T				Total	
Year	effort	No.	CPE	SSR	No.	CPE	PCT.	Wr	No.	CPE	PCT.	Wr	No.	CPE	PCT.	Wr	No.	CPE	PCT.	Wr	No.	CPE
1990	30	9	0.3	20	21	0.7	48		15	0.5	34		6	0.2	14		2	0.1	5		53	1.8
1992	20	58	2.9	46	67	3.4	53		42	2.1	33		13	0.7	10		4	0.2	3		184	9.2
2003	45	39	0.9	56	22	0.5	31	74	29	0.6	41	75	12	0.3	17	81	7	0.2	10	83	109	2.4
2007	60	2	0.0	2	40	0.7	30	82	70	1.2	53	88	19	0.3	14	88	4	0.1	3	83	135	2.3
Average			1.0	31		1.3	41	78		1.1	40	82		0.4	14	85		0.1	5	83		3.9

[1] effort in net-nights

[2] SSR denotes substock ratio; the number of substock size fish per 100 stock size fish.

Table 3. Age composition, catch per effort (CPE) and mean total length (TL, mm) of white crappie trap netted at Lake Tuscaloosa, December 2007.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	Range
0+	2007	1	0.7	0.0	63		
1+	2006	68	50.4	1.1	194	3	124 - 236
2+	2005	52	38.5	0.9	232	4	146 - 289
3+	2004	11	8.1	0.2	268	9	225 - 306
4+	2003	3	2.2	0.1	318	16	300 - 350
Total		135	100.0	2.3			

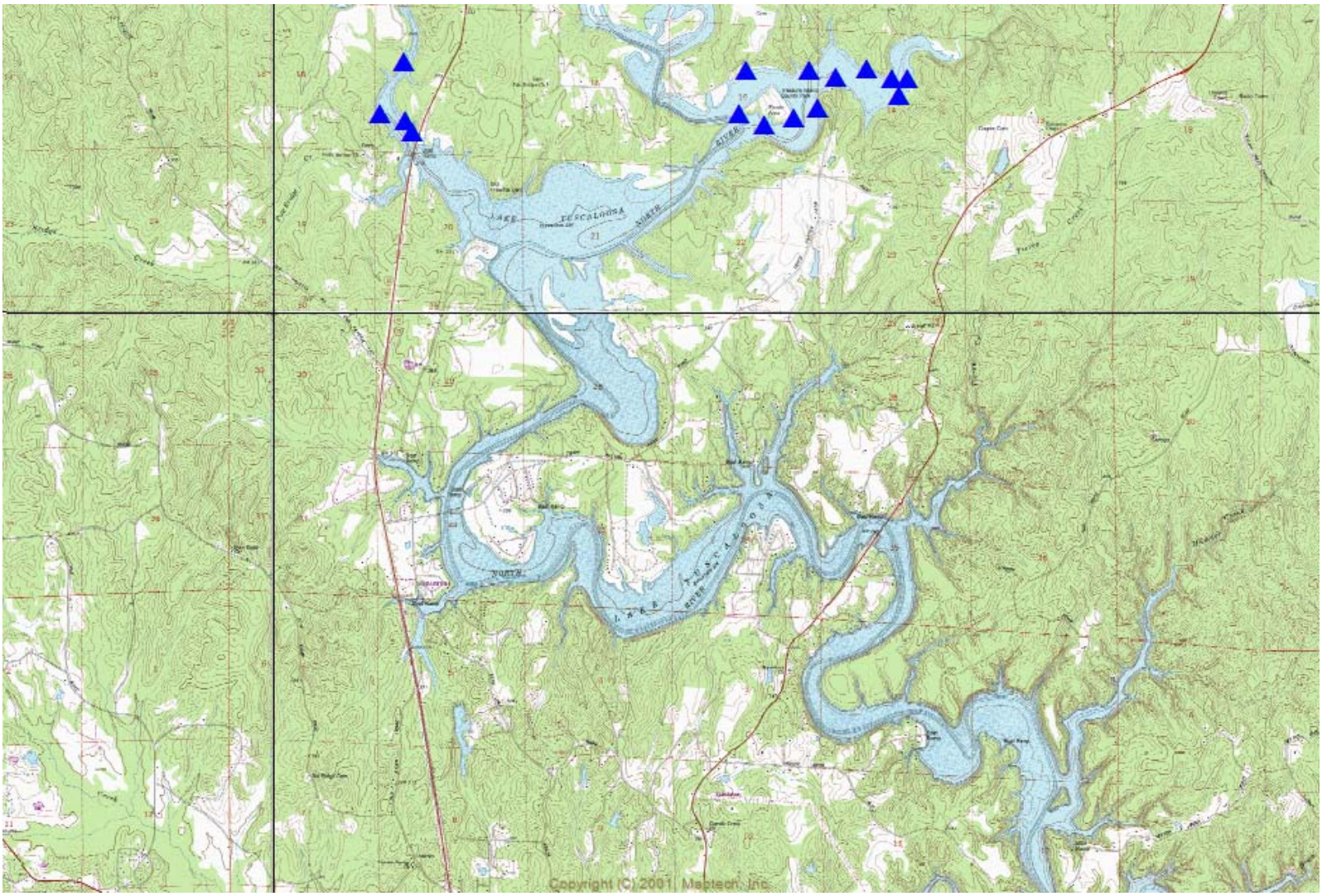

Figure 1. Trap net locations at Lake Tuscaloosa, December 2007.

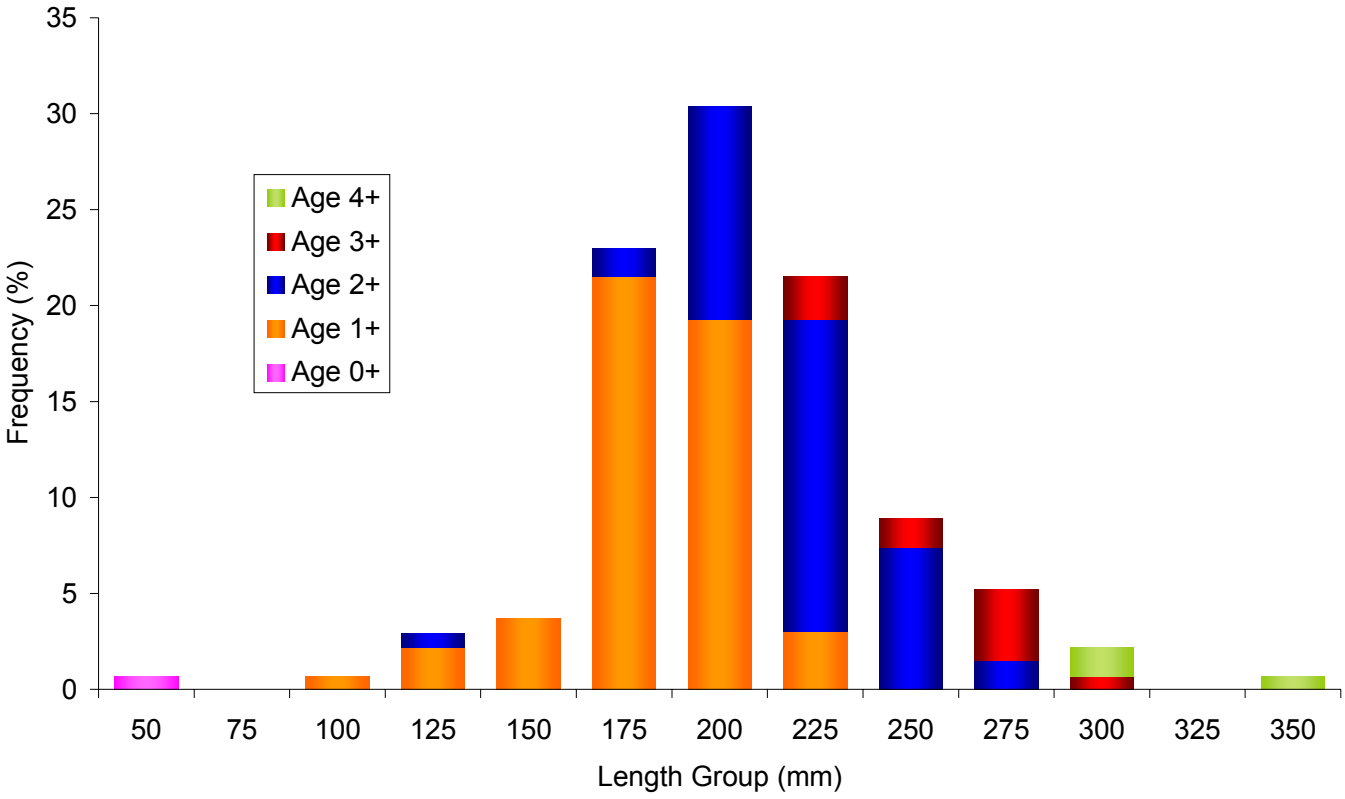

Figure 2. Length at age frequency of white crappie (N=135) trap netted at Lake Tuscaloosa, December 2007.

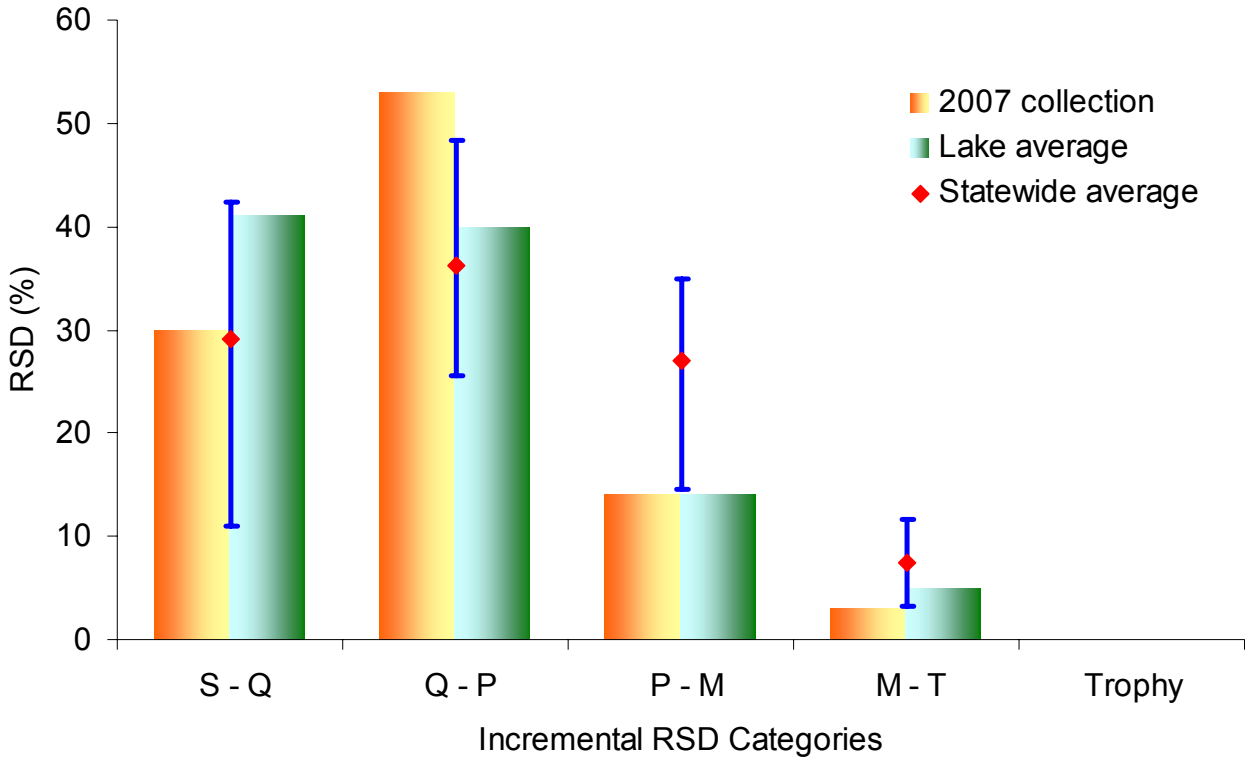

Figure 3. Relative stock density (RSD) of white crappie (N=135) trap netted at Lake Tuscaloosa, December 2007. Error bars represent the 25th and 75th percentile of RSD values of black and white crappie in upland reservoirs, statewide.

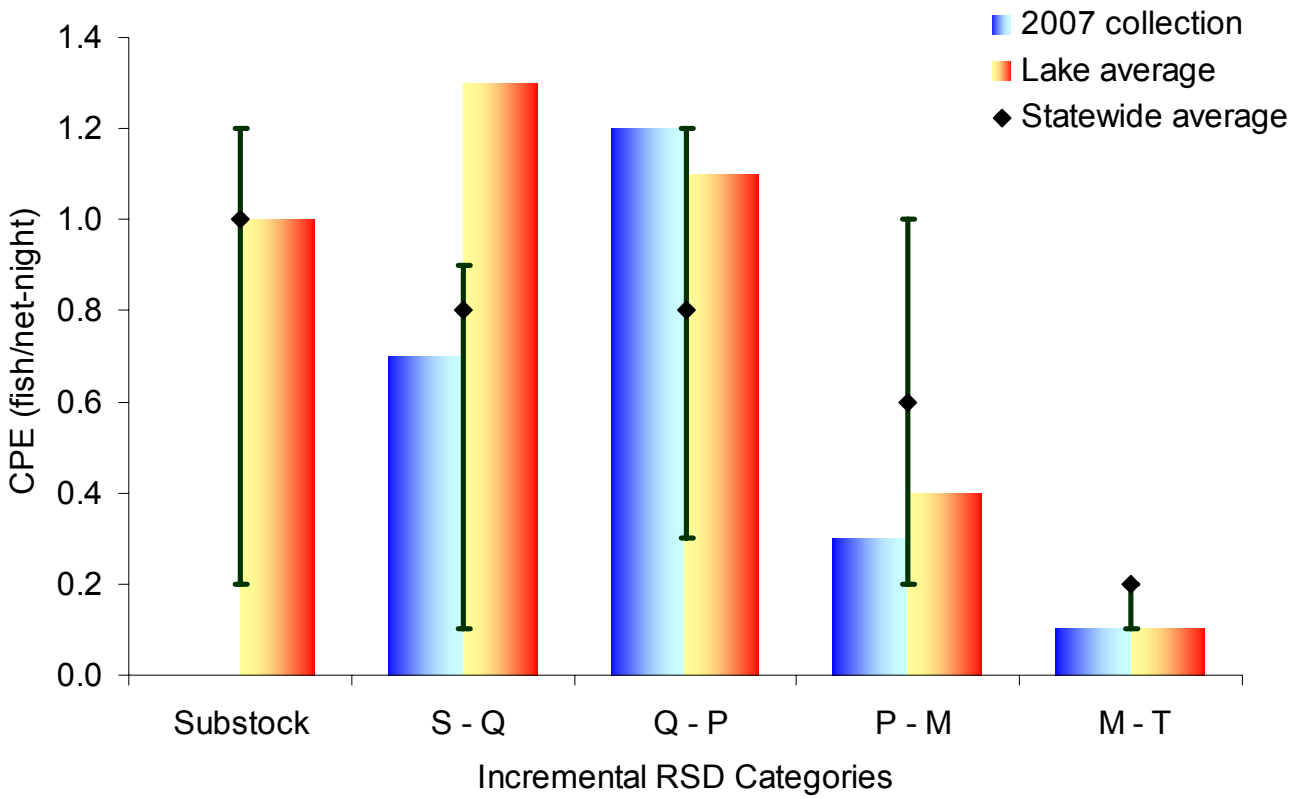

Figure 4. Catch per effort (CPE) of white crappie (N=135) trap netted at Lake Tuscaloosa, December 2007. Error bars represent the 25th and 75th percentile of CPE values of black and white crappie in upland reservoirs, statewide.

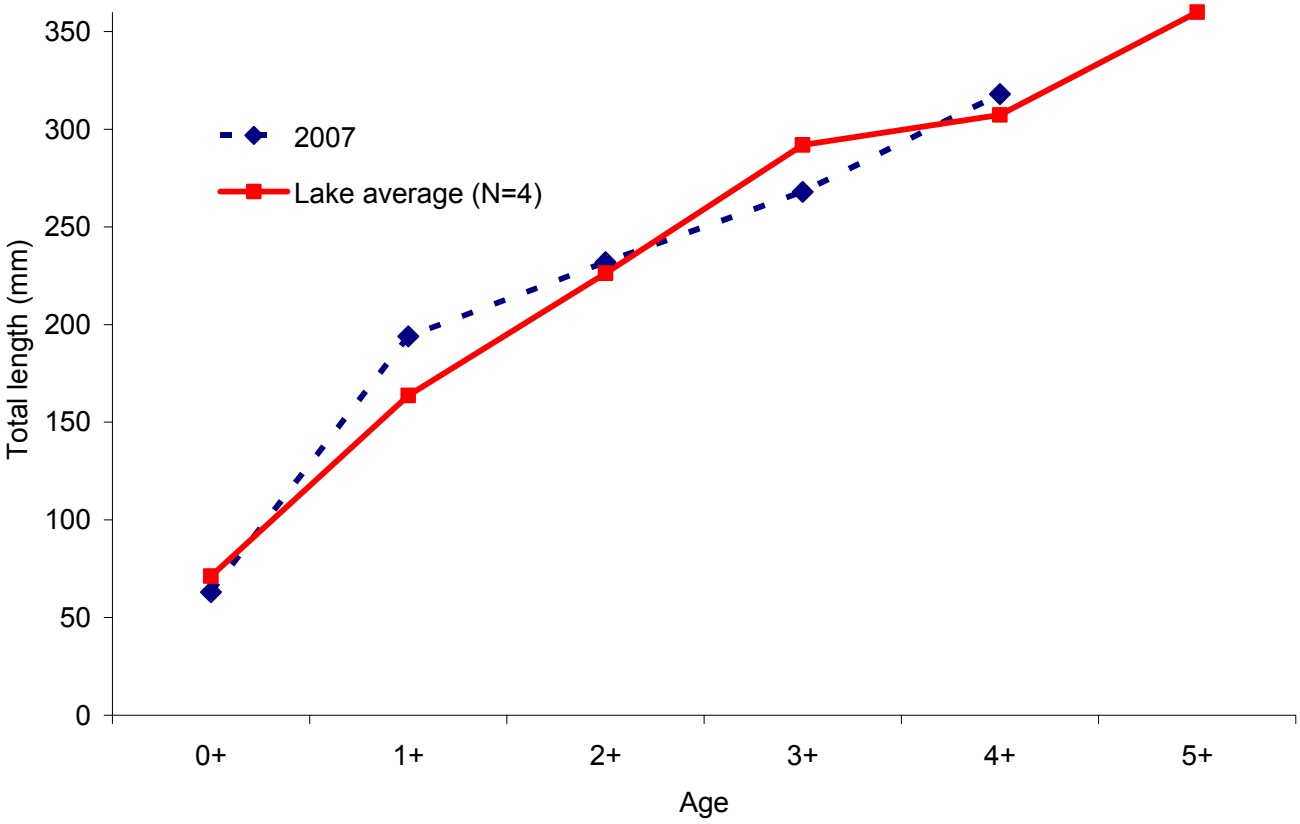

Figure 5. Length at capture of white crappie at Lake Tuscaloosa.

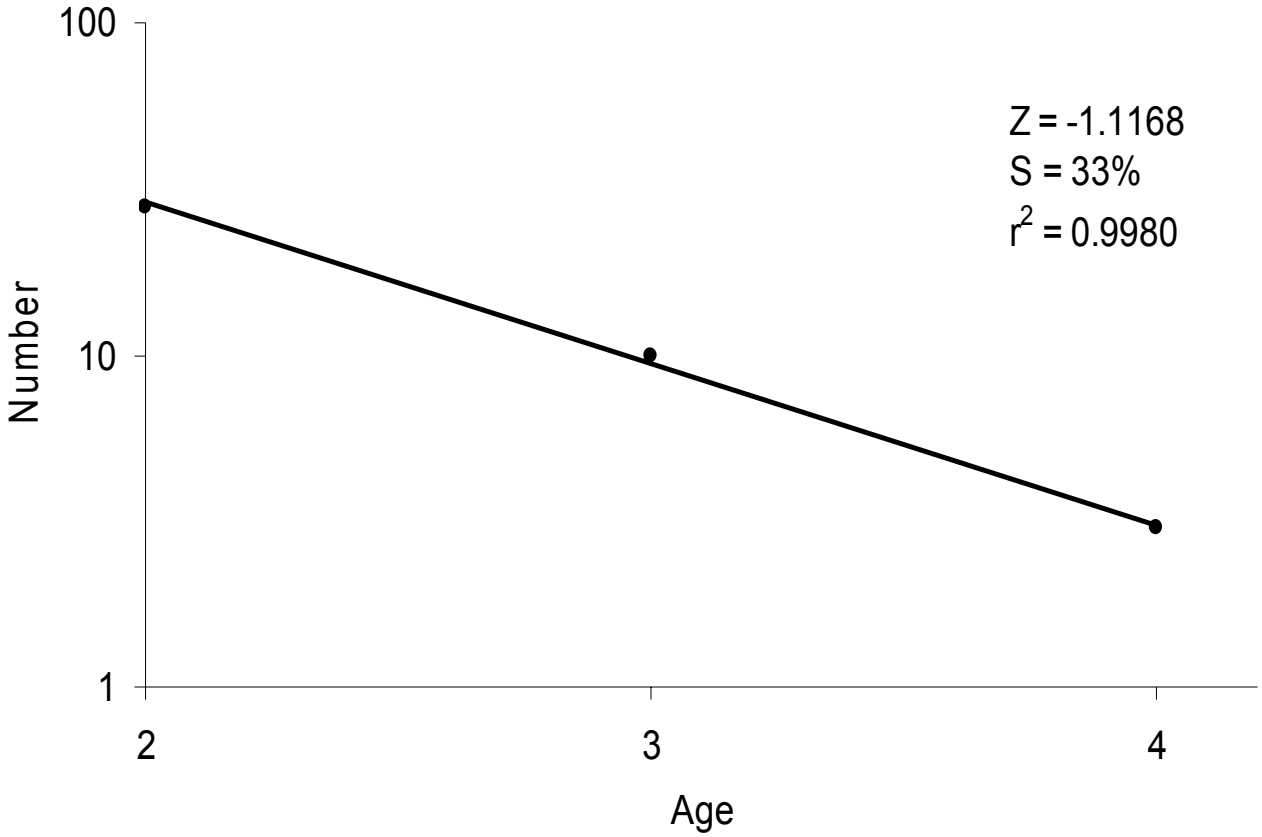

Figure 6. Annual survival (S) of white crappie ≥ 229 mm at Lake Tuscaloosa, December 2007.

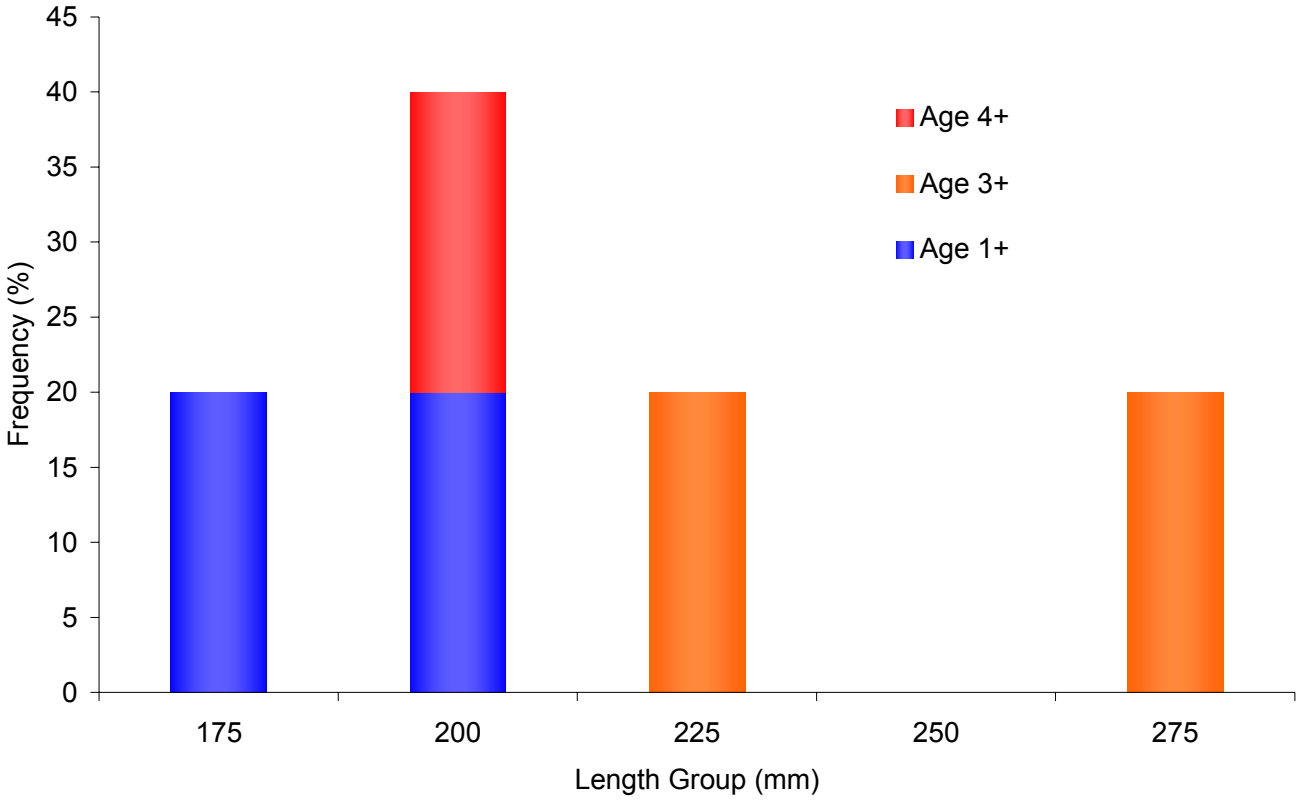

Figure 7. Length at age frequency of black crappie (N=5) trap netted at Lake Tuscaloosa, December 2007.