

BARTLETT'S FERRY RESERVOIR

MANAGEMENT REPORT

FALL 2006

Prepared by

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Introduction

Bartlett's Ferry Reservoir, also known as Lake Harding, is a 5,850 acre impoundment on the Chattahoochee River east of Opelika, immediately downstream from the much larger West Point Reservoir. Much of this reservoir lies within the state of Georgia; however, Halawakee Creek, the largest tributary on the impoundment, is located entirely in Alabama. Bartlett's Ferry was previously sampled for crappie by trap-netting in 1990, 1993, 1996, 1999, and 2002. Crappie catch rates in this reservoir have been historically sporadic and for some years poor sampling success rendered summary statistics invalid. This is somewhat typical of crappie populations statewide since they have such variable year-class strength.

Refer to "An Angler's Guide to Interpreting Alabama Wildlife and Freshwater Fisheries Reservoir Reports" for a detailed description of fisheries terms used in this report. The Angler's Guide is available on the Department's website at:

<http://www.outdooralabama.com/fishing/freshwater/where/reservoirs/guide.pdf>.

Methods

Crappie were collected via fall trap-netting according to the guidelines outlined in the Alabama Reservoir Management Manual (1999). Forty net-nights of effort were exerted by District-IV personnel from November 6-8, 2006.

Results and Discussion

The fall 2006 trap-netting sample consisted of 241 total crappie. Based on sampling efficiency data from previous reports (Higginbotham et al. 1991, 1994; Jernigan et al. 1997, 2000; McHugh et al. 2003), nets were concentrated in Halawakee Creek away from the main

Chattahoochee River channel (Figure 1). Black and white crappie were collected at the rates of 1.65 and 4.38 per net-night, respectively with white crappie outnumbering black crappie approximately 3:1. Quality size fish (8-10 inches) of both species were abundant in our samples. The combined stock-trophy CPUE for both species was 5.95 fish per net-night, which exceeds the statewide average. This value is also the highest crappie CPUE ever recorded at Bartlett's Ferry Reservoir and negates the question posed in the 2003 reservoir report (McHugh et al. 2003) concerning the possibility of long-term low crappie catch rates as was observed during fall 2002.

Black crappie CPUE for the 2006 sample (N = 66) exceeded the lake average for all size categories except sub-stock (Table 2). Individual RSD values fell within or above the statewide 25th-75th percentiles (Figure 4). Six year classes were represented, although 1 and 2 year old fish made up the majority of the sample. According to the von Bertalanffy growth equation, black crappie take 1.88 years to reach 9 inches in total length. A total annual mortality estimate was calculated at 63%; however, this estimate should be interpreted with caution since trap-netting can underestimate the abundance of older fish (Figure 6).

White crappie CPUE during 2006 (N = 175) also exceeded the lake average for all sizes except sub-stock (Table 2). In addition, two trophy size-class fish were collected for the first time at this reservoir. Individual RSD values fell within or above the statewide 25th-75th percentiles (Figure 5). Fish from five separate year classes were represented in the sample; however, 73% of all fish collected were age-1. Growth curve estimates revealed that white crappie take 1.25 years to reach 9 inches indicating that white crappie growth appears superior to black crappie in Bartlett's Ferry Reservoir. This is similar to results seen in Jones Bluff Reservoir (Abernethy et al. 2006) where both species of crappie are abundant. An estimate of total annual mortality for

white crappie was determined to be 61%. This estimate should also be interpreted with caution due to reasons previously stated (Figure 7).

Conclusions

- Increased crappie abundance during fall 2006 suggests that the low catch-rates observed during fall 2002 sampling was not a long-term decline in the population.
- The fish population should be re-sampled again in approximately 3-4 years according to reservoir program guidelines.

Literature Cited

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TABLE 1. Bartlett's Ferry Reservoir morphometric, physical, and chemical characteristics.

Surface area	5,850 surface acres
Drainage area	4,200 square miles
Full pool elevation	521 feet-msl
Mean annual fluxuation	1.1 feet
Shoreline distance	156 miles
Shoreline development index	14.6
Mean depth	32 feet
Maximum depth	111 feet
Outlet depth	surface
Thermocline Depth	6-7 feet
Total dissolved solids	97.9 mg/l (ADEM 2005)
Chlorophyll-a	8.0 µg/l (ADEM 2005)
Morphoedaphic index	3.06 TDS/mean depth (Ryder 1965)
Growing season	220 frost free days (Jenkins 1967)
Year of Impoundment	1926

TABLE 2. Relative stock density (RSD), catch per effort (CPE), substock ratio (SSR), and relative weight (Wr) of fall collected target species from Bartlett's Ferry Reservoir.

BLACK CRAPPIE

Year	Gear	No. of Samples	Substock			RSD _{S-Q}				RSD _{Q-P}				RSD _{P-M}				RSD _{M-T}				RSD _T				Total	
			No.	CPE	SSR	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE
1996	TN	80	29	0.36	88	9	0.11	27	72	18	0.23	55	82	6	0.08	18	88	0	0.00	0	-	0	0.00	0	-	62	0.78
1999	TN	60	10	0.17	16	16	0.27	26	70	24	0.40	39	81	14	0.23	23	89	7	0.12	11	87	0	0.00	0	-	71	1.18
2002	TN	60	0	0.00	0	6	0.10	29	74	8	0.13	38	90	7	0.12	33	93	0	0.00	0	-	0	0.00	0	-	21	0.35
2006	TN	40	3	0.08	5	16	0.40	25	77	30	0.75	48	86	15	0.38	24	89	2	0.05	3	94	0	0.00	0	-	66	1.65
LAKE AVERAGE				0.15	27		0.22	27	73		0.38	45	85		0.20	25	90		0.04	4	91		0.00	0	-		0.99

WHITE CRAPPIE

Year	Gear	No. of Samples	Substock			RSD _{S-Q}				RSD _{Q-P}				RSD _{P-M}				RSD _{M-T}				RSD _T				Total	
			No.	CPE	SSR	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE
1996	TN	80	14	0.18	34	2	0.03	5	76	27	0.34	66	85	4	0.05	10	79	8	0.10	20	94	0	0.00	0	-	55	0.69
1999	TN	60	10	0.17	9	43	0.72	38	71	28	0.47	25	82	28	0.47	25	85	15	0.25	13	91	0	0.00	0	-	124	2.07
2002	TN	60	4	0.07	14	3	0.05	10	80	23	0.38	79	89	1	0.02	3	100	2	0.03	7	90	0	0.00	0	-	33	0.55
2006	TN	40	0	0.00	0	35	0.88	20	85	94	2.35	54	89	34	0.85	19	91	10	0.25	6	91	2	0.05	1	87	175	4.38
LAKE AVERAGE				0.10	14		0.42	18	78		0.88	56	86		0.35	14	89		0.16	11	92		0.01	0	87		1.92

TABLE 3. Age composition and mean length of black crappie collected from Bartlett's Ferry Reservoir, fall 2006.

Annulus	Year Class	Number	Percent	CPE	Mean Length	Standard Error	Length Range
0	2006	2	3.0	0.1	88.5	6.5	82 - 95
1	2005	29	43.9	0.7	200.9	6.8	123 - 259
2	2004	26	39.4	0.7	240.5	7.1	164 - 297
3	2003	7	10.6	0.2	241.7	13.4	195 - 303
4	2002	1	1.5	0.0	230.0		
5	2001	1	1.5	0.0	326.0		
Total		66	100	1.7			

TABLE 4. Age composition and mean length of white crappie collected from Bartlett's Ferry Reservoir, fall 2006.

Annulus	Year Class	Number	Percent	CPE	Mean Length	Standard Error	Length Range
0	2006	0	0.0	0.0			
1	2005	128	73.1	3.2	210.8	2.0	139 - 257
2	2004	38	21.7	1.0	273.2	4.0	216 - 319
3	2003	6	3.4	0.2	308.5	15.4	237 - 343
4	2002	2	1.1	0.1	339.5	53.5	286 - 393
5	2001	0	0.0	0.0			
6	2000	1	0.6	0.0	442.0		
Total		175	100	4.4			

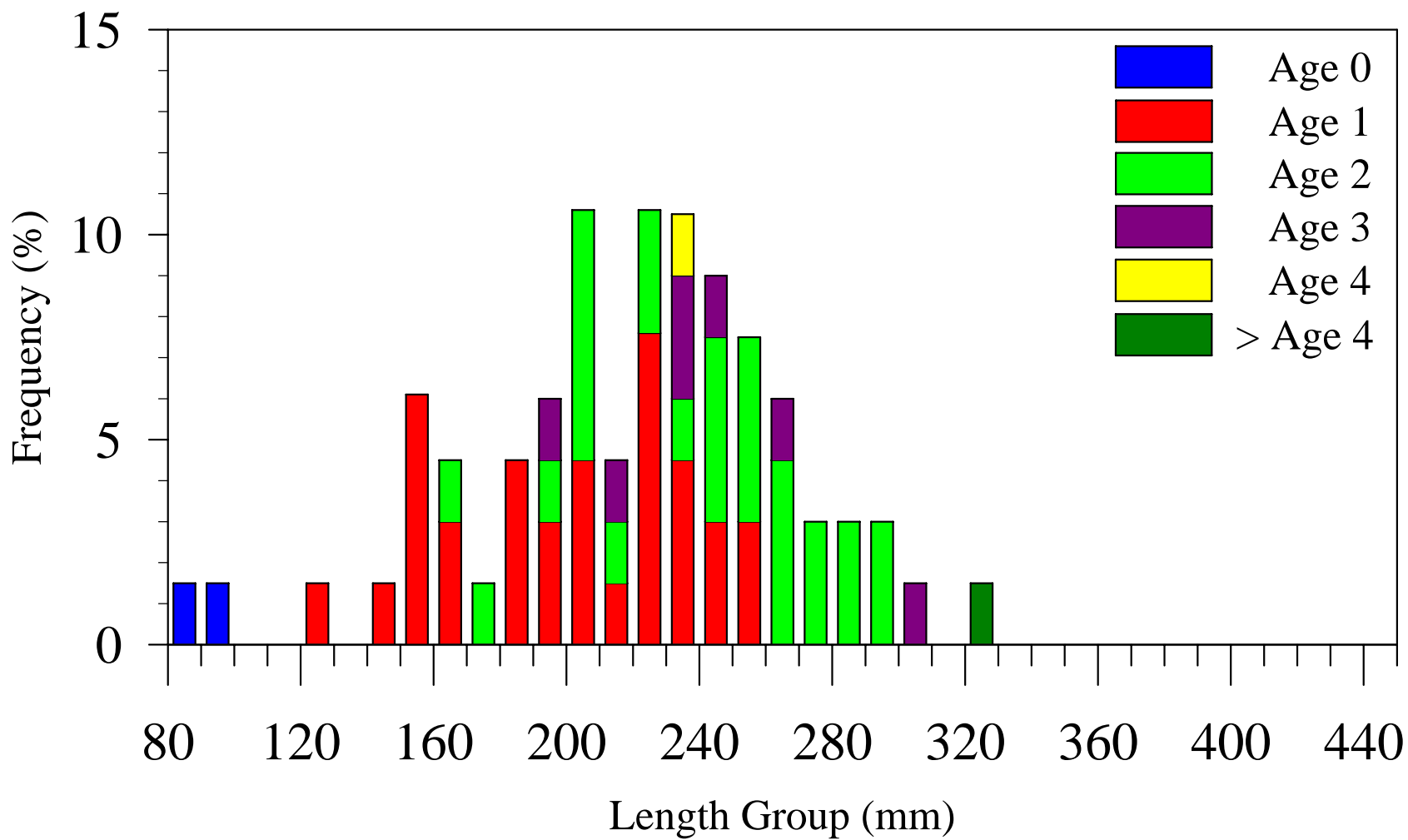


FIGURE 2. Length-at-age frequency of black crappie (N=66) collected from Barlett's Ferry Reservoir, fall 2006.

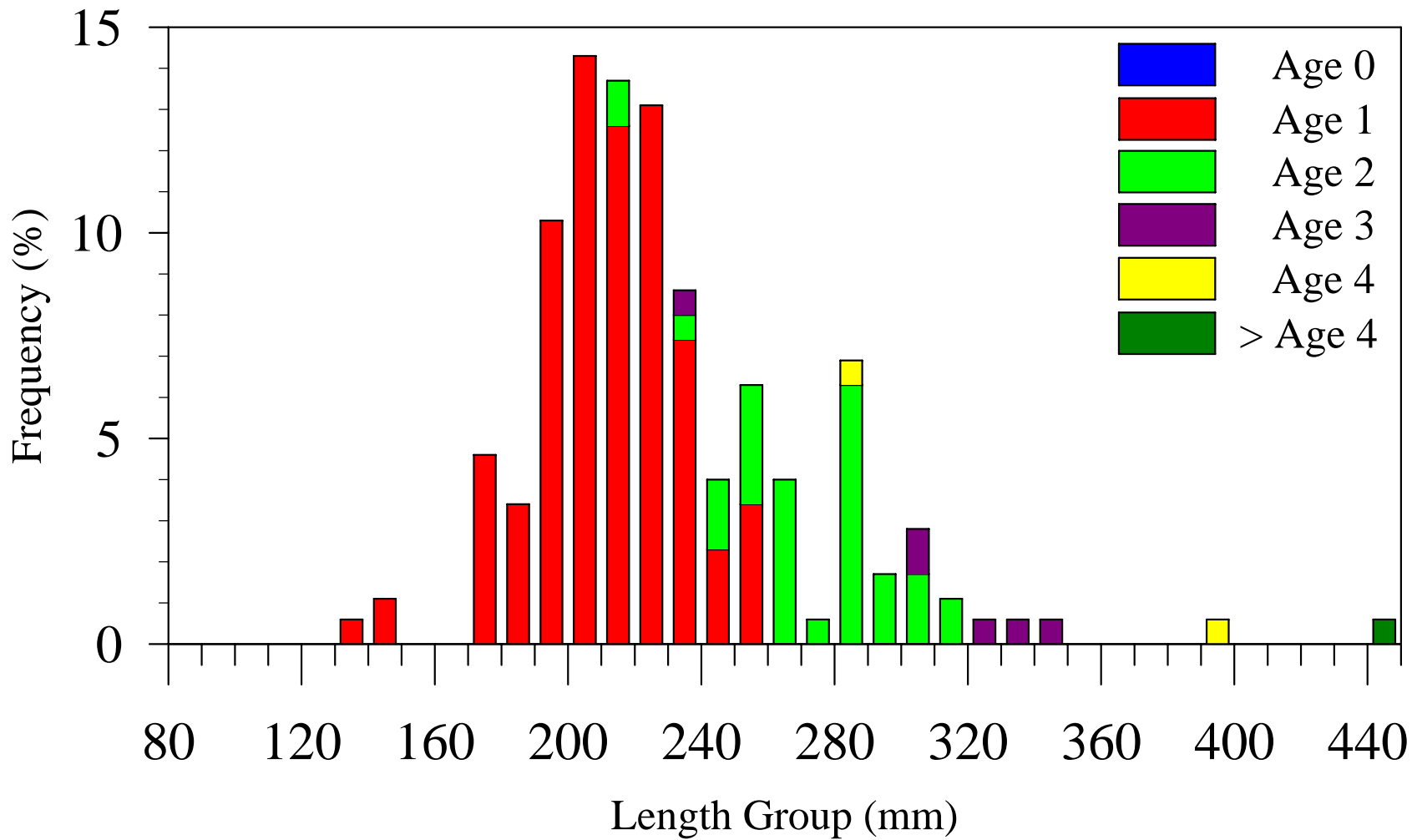


FIGURE 3. Length-at-age frequency of white crappie (N=175) collected from Bartlett's Ferry Reservoir, fall 2006.

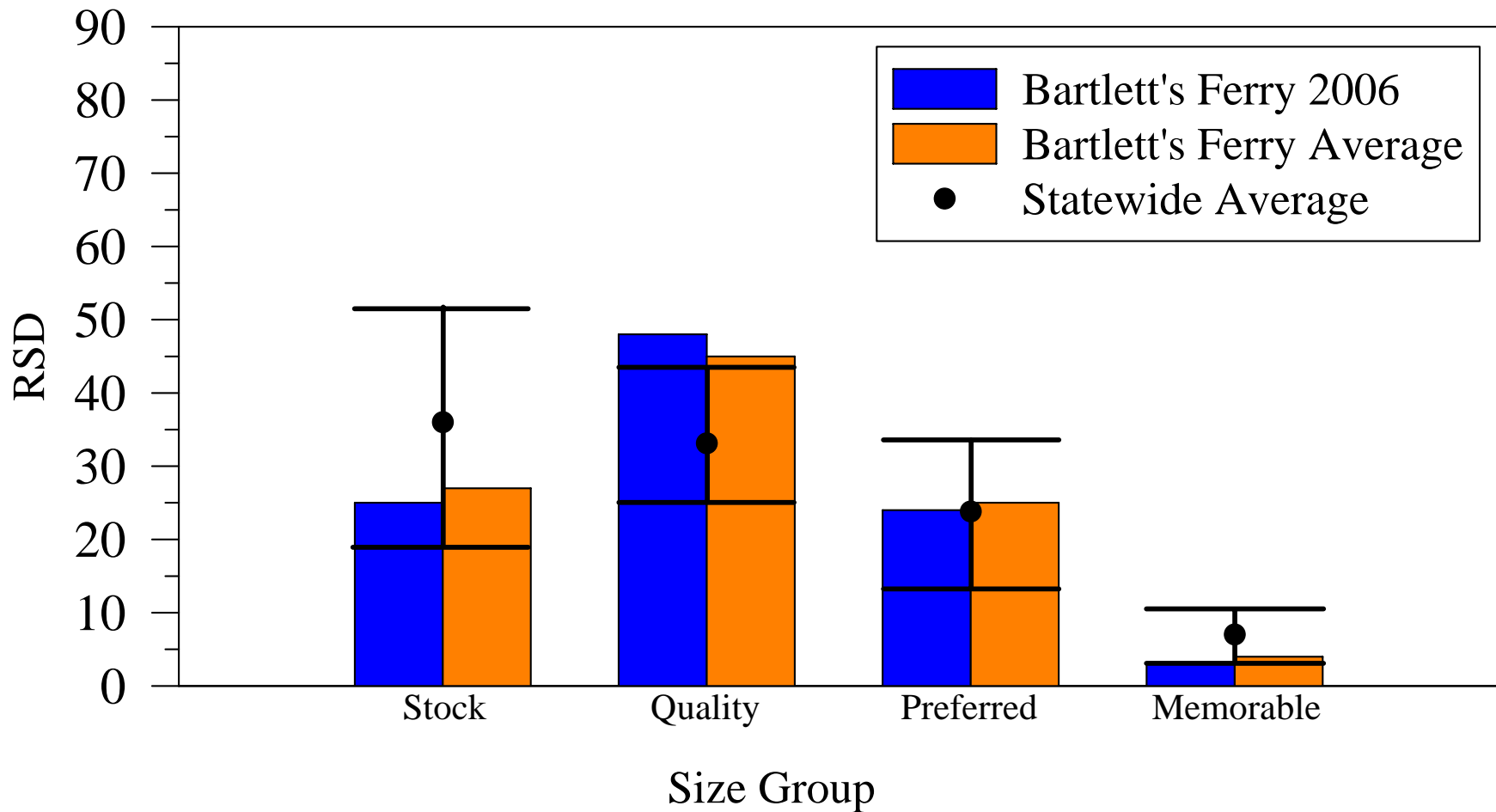


FIGURE 4. The 2006 and 4-year average relative stock density (RSD) of black crappie in Bartlett's Ferry Reservoir with statewide averages. The I-beam denotes the 25th and 75th percentiles of RSD values for crappie, statewide.

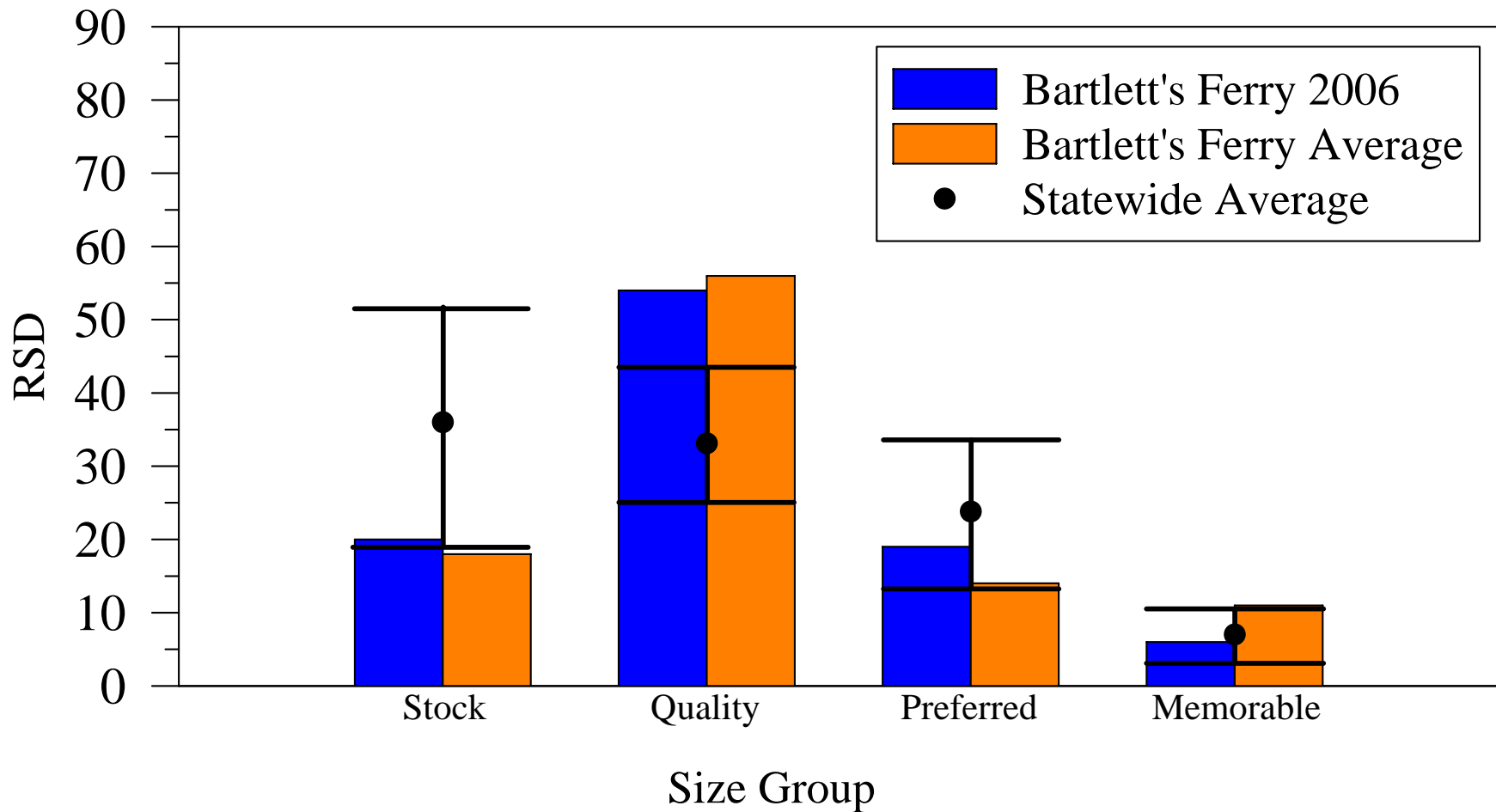


FIGURE 5. The 2006 and 4-year average relative stock density (RSD) of white crappie in Bartlett's Ferry Reservoir with statewide averages. The I-beam denotes the 25th and 75th percentiles of RSD values for crappie, statewide.

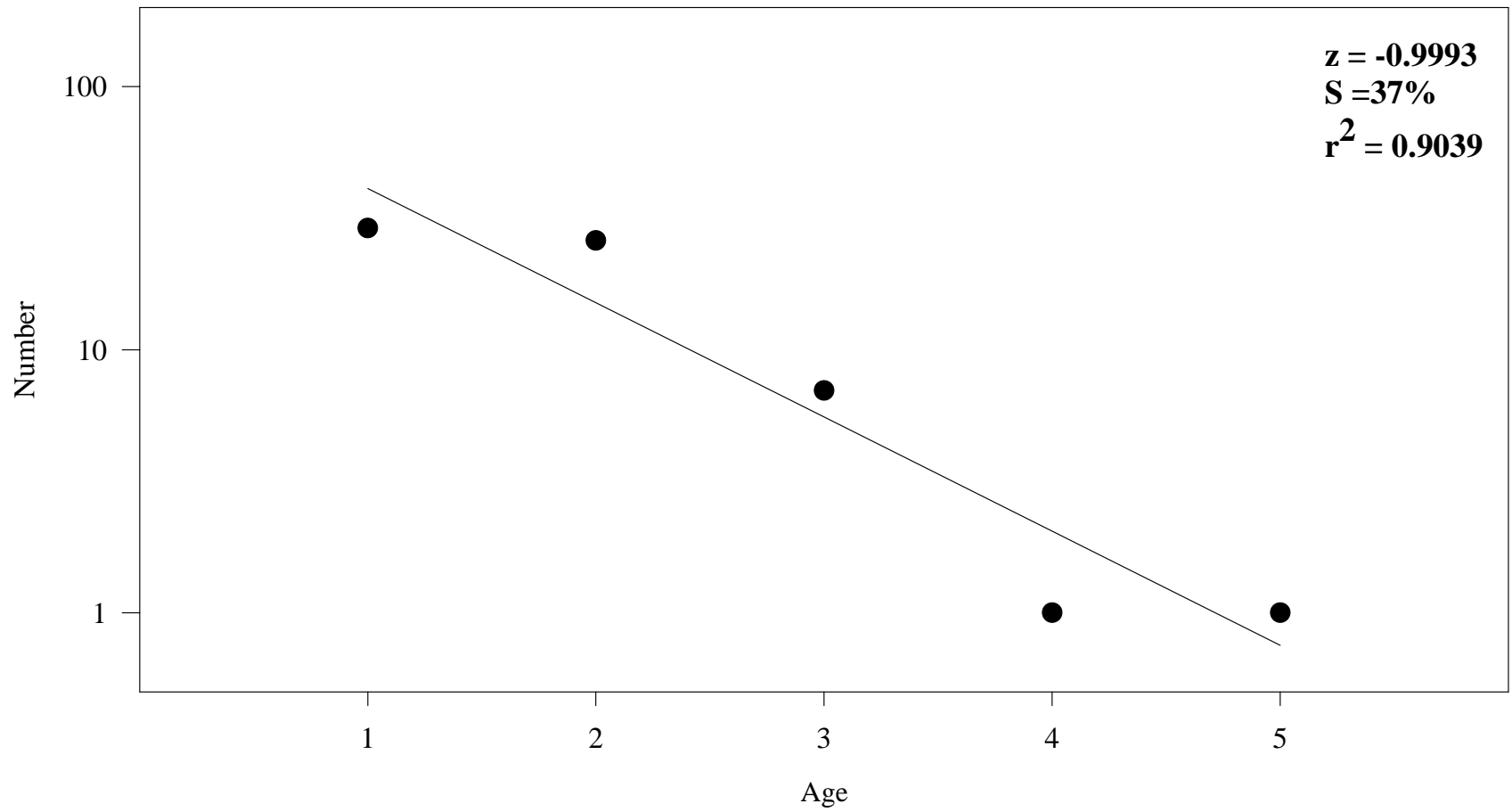


FIGURE 6. Total annual mortality regression for black crappie (ages 1-5) collected from Bartlett's Ferry Reservoir, fall 2006.

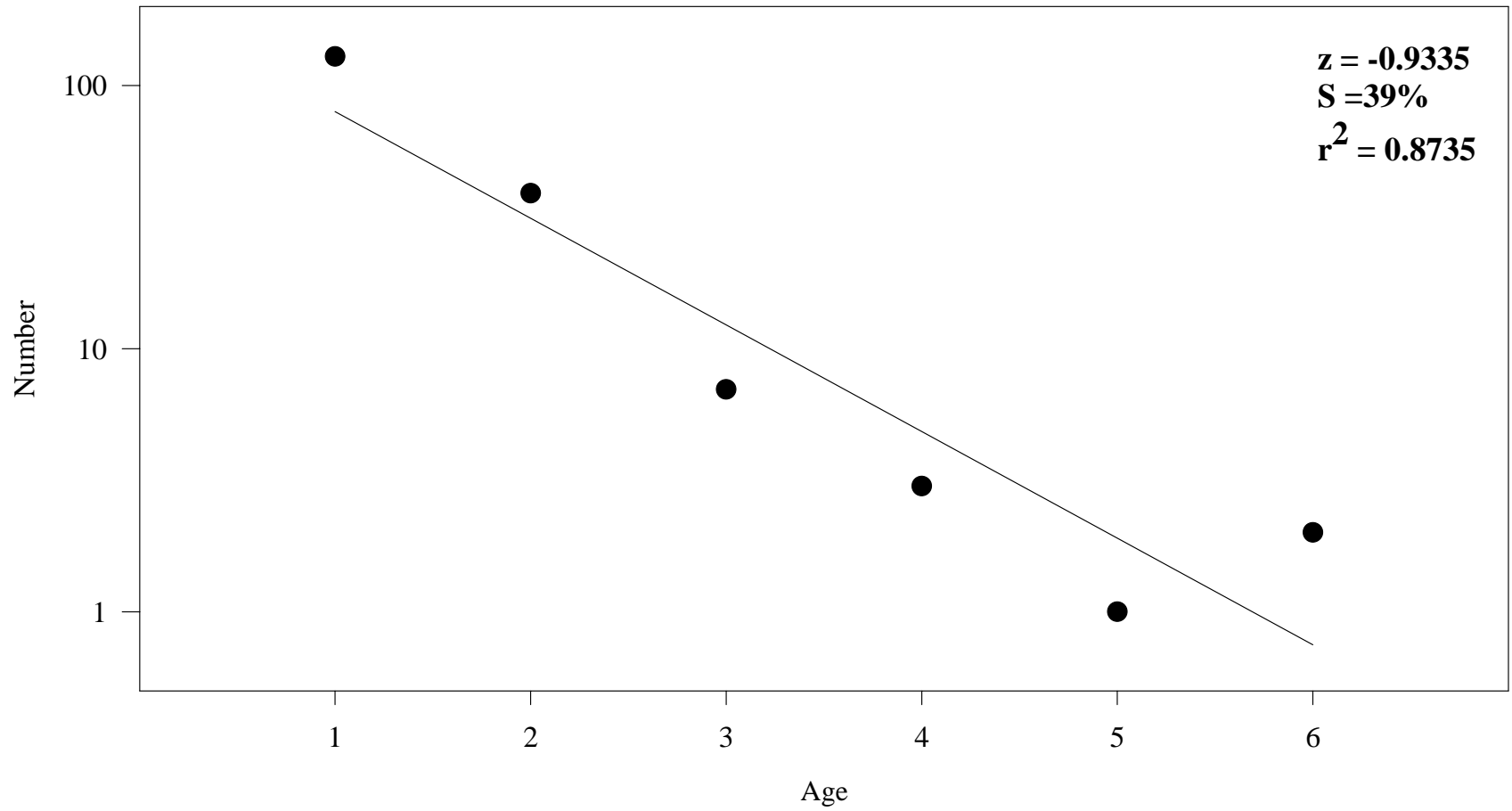


FIGURE 7. Total annual mortality regression for white crappie (ages 1-6) collected from Bartlett's Ferry Reservoir, fall 2006.