

# **ALICEVILLE RESERVOIR SPRING MANAGEMENT REPORT FY 2009**

Prepared by

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## **Introduction**

Aliceville Reservoir was previously sampled in 1988, 1990, 1994, 1999, 2002 and 2006 (Moss et. al. 2006). In 2006, the largemouth bass population was dominated by 1-, 2- and 3-year old fish. Larger fish were less abundant than in previous collections. Growth and relative weights were satisfactory.

## **Methods**

Largemouth bass were collected by electrofishing on April 10, 13 and 16, 2009 according to the guidelines of the Alabama Reservoir Management Manual (1999).

## **Results and Discussion**

### **Largemouth Bass**

The CPH of largemouth bass (N=262) was 74.6, slightly above the lake average and the highest CPH since 1999 (Table 2). The proportional stock density (PSD) was 43 and the RSD-P was 19. The RSD and CPH of S-Q and P- M fish were substantially greater than recent collections and the lake average, primarily due to the strong 2007 and 2003 year-classes, respectively (Table 2). The RSD and CPH of Q-P and M-T fish were less than recent collections and the lake average (Figures 3 and 4). The CPH of substock fish was also below the lake average as with the substock ratio (Table 2). Mean relative weight (Wr) values of largemouth bass ranged from 88 to 91 and were similar to previous collections.

The largemouth bass collection included eight age classes (ages 1-9) with 4 moderately strong year-classes and 1 very strong year-class (2003) represented (Table 3). Nearly half of all the fish in the collection were age-2. In 2008, growth rates of 1 to 5-year old largemouth bass were quite similar to recent collections (Figure 5). Growth rates of older fish were below average. Annual survival (S) of largemouth bass (ages 2-9) was calculated to be 52%,  $r^2=0.96$  (Figure 6).

In 2008, BAIT data was reported from 359 anglers that fished in 15 tournaments. Overall, Aliceville ranked 8<sup>th</sup> out of 20 reservoirs with 5 or more tournament reports (Abernethy 2009). The number of bass weighed-in/angler-day jumped to 2.88, but was slightly less than the statewide average of 3.06. The pounds of bass weighed-in/angler-day rose sharply to 5.74 in 2008 and was near the statewide average of 5.79. Remarkably, 28 bass 5 pounds or larger were caught by tournament anglers in 2008; it took an average of

111 hours for tournament anglers to catch a bass 5 lbs or larger, compared to the statewide average of 271 hours. The average weight of a bass weighed-in by Aliceville anglers was 1.99 pounds and the percent success of Aliceville anglers (87.2%) was slightly above the statewide average (84.46%).

### **Aquatic Plants**

Historically, three exotic plant species have adversely impacted recreational activities on Aliceville Reservoir. Water hyacinths became established on the Tennessee-Tombigbee Waterway in the 1990's and within a few years had become problematic. In the winter of 2008-2009, the density of water hyacinths fell dramatically due to cold temperatures and flooding. Since then, water hyacinth populations have expanded, though not at an alarming rate. Beginning in 2005, large floating mats of Cuban bulrush choked several backwater areas of Aliceville and the USACE has aggressively sprayed them. Recent floodwaters pushed mats of Cuban bulrush out of backwater areas and downstream. Presently, Cuban bulrush is rapidly increasing in the backs of many sloughs and the USACE is spraying it by boat and helicopter. For nearly two decades, hydrilla has been found on the Waterway. As a result of USACE control measures and floodwaters during the winter of 2008-2009, hydrilla is not rapidly expanding its range at Aliceville, but remains problematic (Danny Hartley, USACE, personal communication).

### **Summary**

The CPH of largemouth bass in 2009 was the highest CPH since 1999. Nearly half of all the fish in the collection were age-2. The abundance of bass  $\geq$  380 mm was well above the lake average, in large part because of the strong 2003 year-class. Fish age-5 and younger are growing at a satisfactory rate while older fish are growing slowly.

### **Conclusions**

1. Resample Aliceville Reservoir in 2012 and perform a creel survey.
2. Encourage the USACE to maintain an aggressive aquatic plant management program directed at preventing the spread of Cuban bulrush, water hyacinths, hydrilla and Eurasian watermilfoil.
3. Encourage more local bass clubs to participate in the Bass Angler Information Team (BAIT) Program.
4. Encourage the USACE to perform periodic, maintenance dredging of the mouths of major tributaries, in order to keep them open and accessible to anglers and boaters.

## Literature Cited

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

# Appendix 1

## Tables and Figures

Table 1. Morphometric, physical, and chemical characteristics of Aliceville Reservoir.

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Surface area	8,300 acres
Drainage area	5,785 sq. mi.
Full pool elevation	136 feet-msl
Mean annual fluxuation	2 feet
Shoreline distance	148 miles
Shoreline development index	11.3 (Welch 1948)
Mean depth	7.2 feet
Maximum depth	42 feet
Outlet depth	Surface
Thermocline depth	None
Total dissolved solids	68 mg/l
Morphoedaphic index	9.4 TDS/mean depth(ft) (Ryder 1965)
Growing season	235 frost free days (Jenkins 1967)
Reservoir age	31 years

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Table 2. Incremental relative stock density (RSD) catch per hour (CPH) and relative weight (Wr) of largemouth bass from spring electrofishing surveys at Aliceville Reservoir.

Year	No. of samples	Total effort	Substock			RSD S - Q				RSD Q - P				RSD P - M				RSD M - T				Total	
			No.	CPH	SSR	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPE	Pct.	Wr	No.	CPH
1988	9	4.39	15	3.4	15	37	8.4	37	84	38	8.7	38	86	20	4.6	20	86	4	0.9	4	89	114	26.0
1990	5	2.19	65	29.7	65	62	28.3	62	82	24	11.0	24	85	12	5.5	12	87	2	0.9	2	95	165	75.3
1994	4	2.11	24	11.4	24	53	25.1	52	88	19	9.0	19	89	27	12.8	27	93	2	0.9	2	111	125	59.2
1999	3	1.46	27	18.5	24	49	33.6	44	84	45	30.8	41	86	11	7.5	10	81	6	4.1	5	76	138	94.3
2002	3	2.03	14	6.9	14	49	24.1	48	86	39	19.2	38	85	14	6.9	14	91	1	0.5	1	94	117	57.5
2006	4	2.06	24	11.7	26	43	20.9	46	86	35	17.0	37	89	15	7.3	16	91	1	0.5	1	94	118	57.3
2009	7	3.51	36	10.2	16	128	36.4	57	90	54	15.4	24	90	43	12.2	19	91	1	0.3	0	88	262	74.6
<b>Lake average</b>			13.1	26		25.3	49	86		15.9	32	87		8.1	17	89		1.2	2	92		63.5	

Table 3. Age composition and mean total length (mm) of largemouth bass from Aliceville Reservoir, April 2009.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	Range
1	2008	41	15.6	11.7	168	5	86 - 216
2	2007	130	49.6	37.0	275	2	220 - 323
3	2006	43	16.4	12.2	338	7	272 - 390
4	2005	23	8.8	6.5	387	7	318 - 459
5	2004	7	2.7	2.0	440	11	393 - 485
6	2003	11	4.2	3.1	426	8	394 - 488
7	2002	4	1.5	1.1	425	43	340 - 508
8	2001	2	0.8	0.6	451	40	411 - 492
9	2000	1	0.4	0.3	513		
<b>Total</b>		262	100.0	74.6			

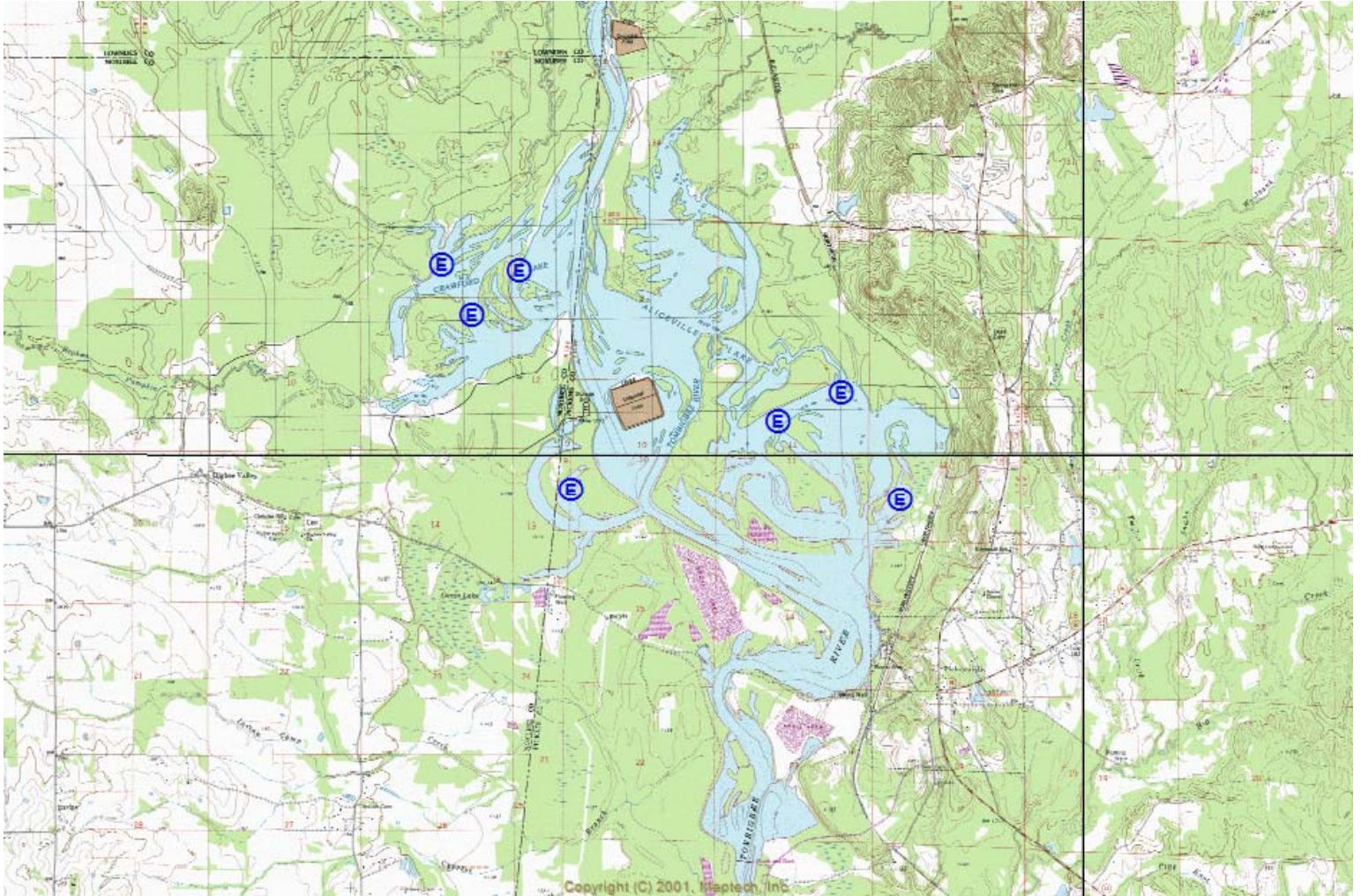


Figure 1. Electrofishing sites at Aliceville Reservoir, April 2009.

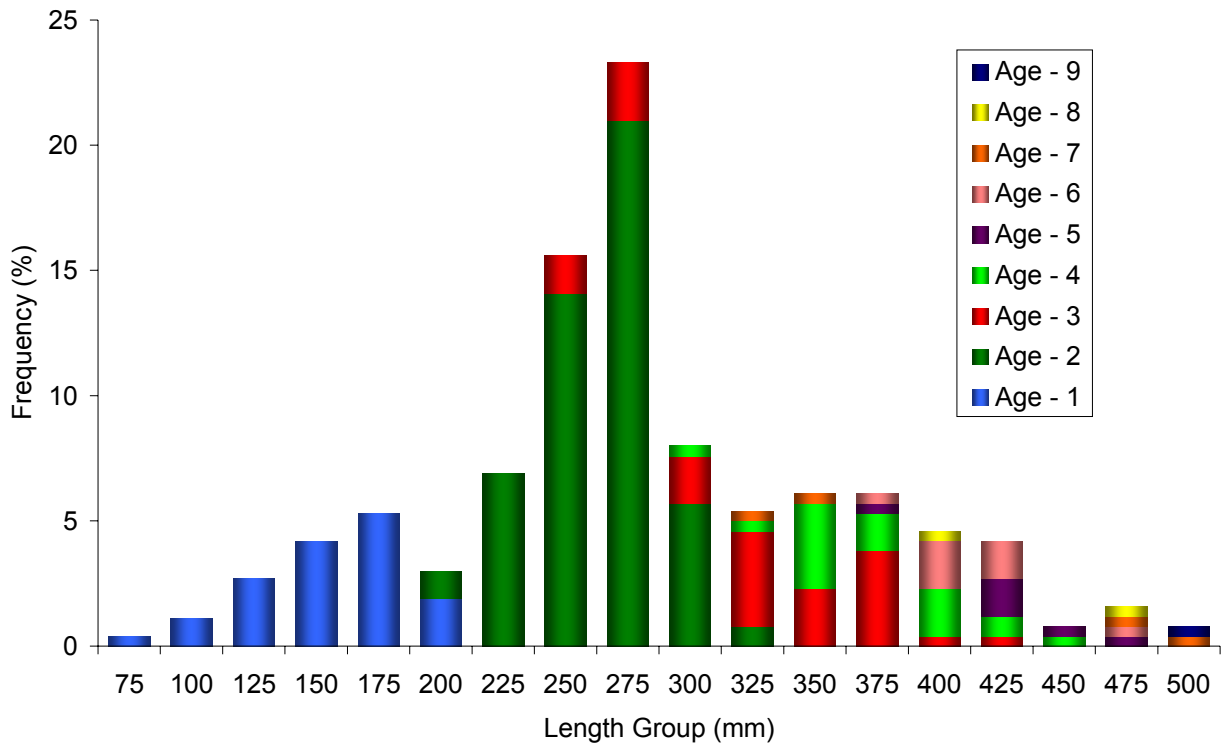


Figure 2. Length at age frequency of largemouth bass (N=262) at Aliceville Reservoir, April 2009.

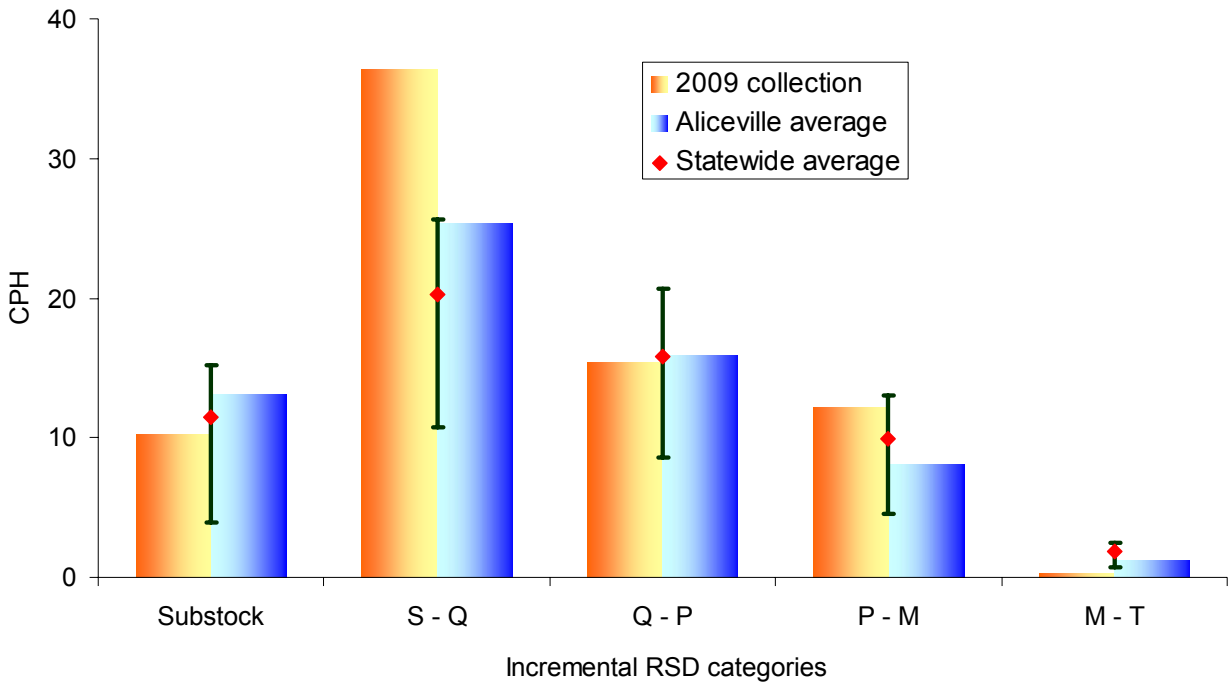


Figure 3. Catch per hour (CPH) of largemouth bass (N=262) at Aliceville Reservoir, April 2009, and the lake and statewide averages. Error bars represent the 25th and 75th percentile of CPH values, statewide.

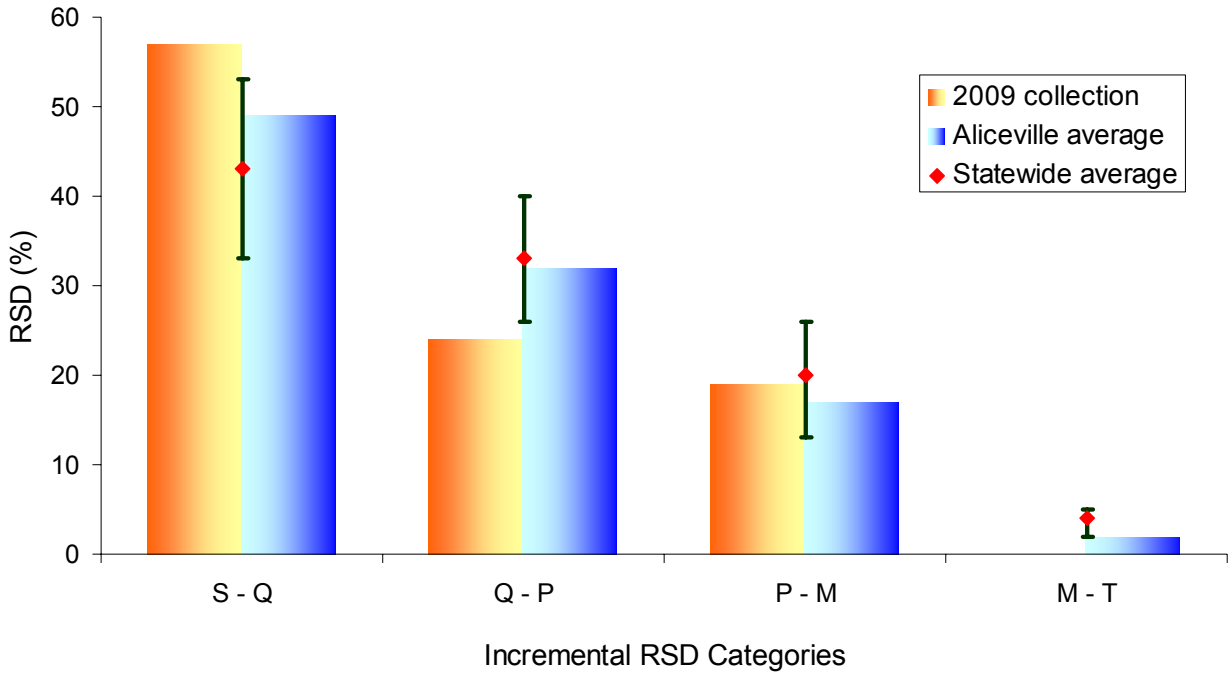


Figure 4. Relative stock density (RSD) of largemouth bass (N=262) at Aliceville Reservoir, April 2009, and the lake and statewide averages. Error bars represent the 25th and 75th percentile of RSD values, statewide.

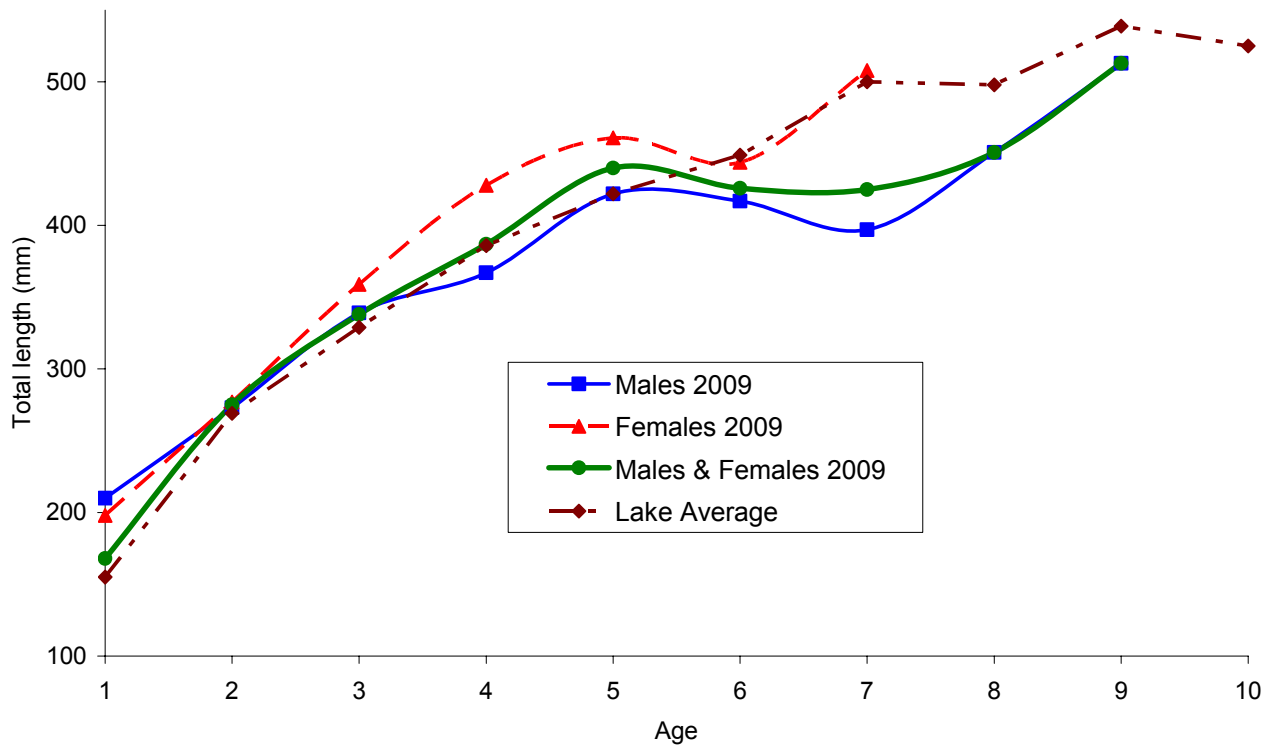


Figure 5. Growth of largemouth bass at Aliceville Reservoir.

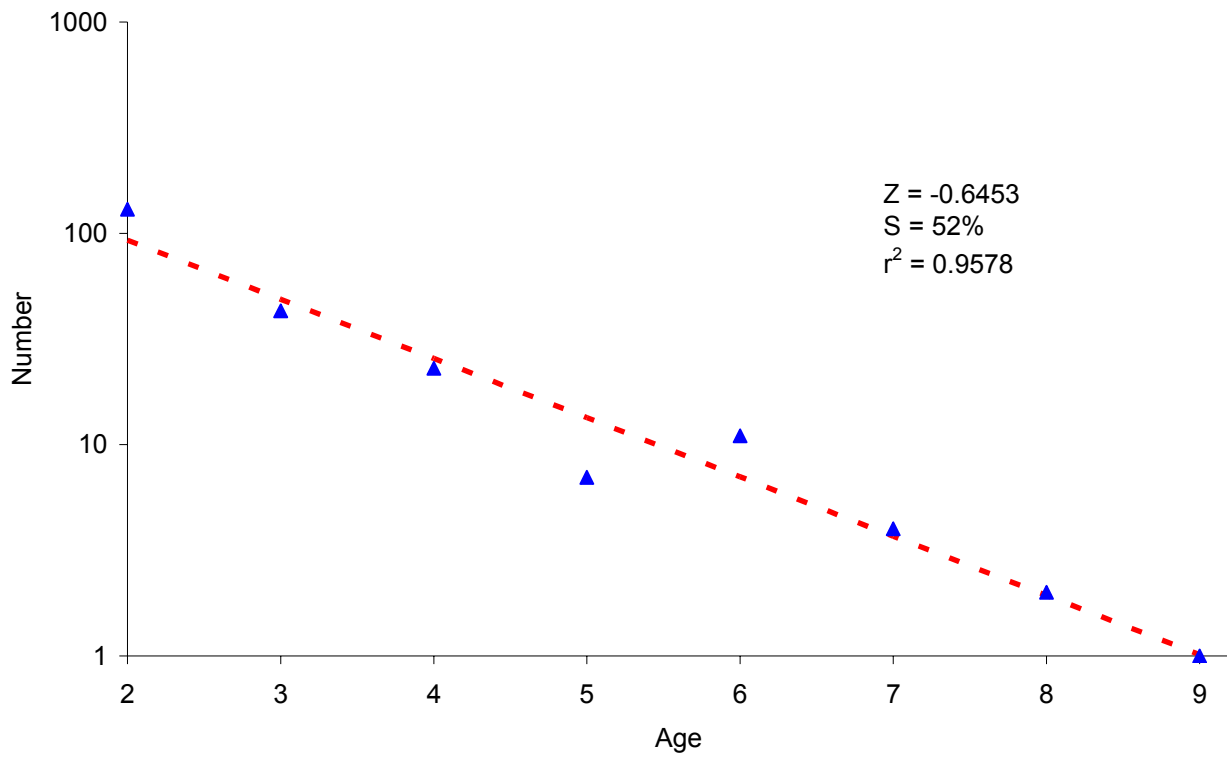


Figure 6. Catch curve regression and annual survival (S) of 2- to 9-year old largemouth bass (N=262) at Aliceville Reservoir, April 2009.