

**EUFAULA RESERVOIR  
MANAGEMENT REPORT**

**FALL 2007**

**Prepared by**

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## **Introduction**

Lake Eufaula (Figure 1) is a 45,181-acre impoundment on the Chattahoochee River, located in Russell, Barbour, and Henry Counties, Alabama. Pertinent characteristics of the lake are listed in Table 1, and a more in depth description of the reservoir can be found in Newman et al. (1986). In order to predict and evaluate population trends, sampling is periodically conducted on Alabama Reservoirs. Black crappie are sampled annually at Lake Eufaula by the Alabama Division of Wildlife and Freshwater Fisheries (ADWFF) so that population metrics can be evaluated. There are no minimum length limit restrictions for crappie from Lake Eufaula, but the creel limit is 30 crappie per day.

The increase of spotted bass at Lake Eufaula has led to more intense sampling effort by ADWFF, and spotted bass were a target species in Fall 2007. However, catch rates were extremely low (N=3), and spotted bass will be targeted again during Spring 2008.

Readers are encouraged to use the tables and figures provided in Appendix A to facilitate a clearer understanding of data reported in the text.

## **Methods**

Crappie were collected by electrofishing and trap-nets from October 30, 2007 to December 21, 2007. Sampling locations depicted in Figure 1 are only general locations where sampling occurred, and are not meant to represent exact trap net or electrofishing sites. Both electrofishing and trap-netting were conducted, since adult crappie are more vulnerable to electrofishing, and small (age-0) crappie are captured more effectively in trap nets. The ability to collect age-0 crappie is important to document strong year-classes, and will continue to be conducted each fall to monitor successful crappie reproduction.

Total length of all crappie was measured to the nearest millimeter, and weight was recorded to the nearest gram. Sagittal otoliths were removed from crappie and read whole view by District VI personnel for age analysis. Catch per effort (CPE) was computed as the number of crappie collected per hour of electrofishing. Trap-net catch rate was recorded as the number of crappie caught per net night. Stock density indices and relative weight were calculated according to Anderson and Nuemann (1996).

## **Results and Discussion**

### **Black Crappie**

As indicated by Weathers et al. (2006), crappie are less abundant and have been larger on average in size during the last two years in Lake Eufaula. During fall sampling, black crappie (N=49) were captured at a rate of 10.7 fish per hour of electrofishing, and 0.002 per net night of trap netting. Electrofishing catch rates (10.7/hr) were much lower than the lake average of 70 fish per hour (Table 2). Only 2 crappie were collected during 81 net nights of trap-net sampling (CPE = 0.002/netnight), which is likely indicative of another poor year-class of crappie. Table 2 includes 2 crappie collected in trap-nets, since electrofishing CPE will not change appreciably with the inclusion of these 2 fish. Spring sampling in 2008 will include crappie as a target species, since the drought in 2007 likely impacted catch rates.

Black crappie ranged from age-1 to age-12, and fish age-6 were most abundant, indicating that during 2001 a strong year-class of crappie developed (Table 3). Figure 2, reveals a bimodal distribution, with the largest mode occurring at 325 millimeters. The length-at-age distribution reveals that weak year classes have occurred during the last 2 years (Figure 2; Table 3). Sample size was too small to fit a von Bertalanffy growth curve to the age data, or estimate mortality using catch-curve analysis. Growth and mortality will be evaluated from the Spring 2008 crappie sample.

Stock density indices were calculated to evaluate trends, but the sample was inadequate, and did not meet the requirement of at least 100 fish set forth in the Alabama Reservoir Management Manual (Cook 1999). Quality (RSD-Q) and memorable (RSD-M) size black crappie were most abundant, hence they made up 25% and 44% of the sample, respectively (Table 2; Figure 3). The abundance of crappie from stock size through preferred size in 2007 was lower than the lake and statewide averages (Figure 3). The high abundance of preferred size crappie that was observed in Fall 2006 have now moved into the memorable and trophy size groups, as the number of large crappie are at a five year high (Weathers et al 2006; Table 2; Figure 3). Relative weights for all RSD categories were similar to or slightly less than the lake averages (Table 2). Reduced condition of crappie is most likely due to weak year-classes of shad that have been observed the last few years (Holley et al. 2007).

### **Summary**

The low catch rates observed for crappie in the fall sample were likely due to environmental conditions associated with the drought that persisted during 2007. It appears that crappie did not move into the creeks until late winter, as anglers reported good catches of crappie in the tributaries during late February, 2008. Anglers also reported catching crappie in the river channel during Fall, 2007, which makes sampling inefficient when crappie are holding at depths greater than 15-20 feet.

Although the sample size was small, the general trend of larger than average size crappie, and lower abundance is still apparent. Anglers should see many crappie in excess of 12 inches, as memorable and trophy size crappie (12 inches and greater) made up about 45% of the sample. Although catch rates will probably be lower in Spring 2008, than in previous years for anglers, the chance to catch a large crappie should excite anglers who target them, or are interested in catching a large crappie.

## Conclusions

1. District VI Fisheries personnel should continue standardized crappie sampling on Lake Eufaula in 2008. The potential for water allocation changes is critical to monitor sportfish trends. Additionally, an increase in submersed plant (hydrilla) abundance warrants the need to closely monitor sportfish populations.
2. Further harvest restrictions such as minimum size limits for crappie in Lake Eufaula are not recommended at this time.
3. During standardized spring sampling, crappie and spotted bass will be collected due to low catch rates in Fall 2007.
4. Anglers interested in catching large crappie should be satisfied with the current fishery.

## LITERATURE CITED

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Appendix A  
Tables and Figures

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

Surface area	45,181 acres
Drainage area	7,460 sq. mi.
Full pool elevation	190 feet-msl
Mean annual fluxuation	6 feet
Shoreline distance	515 miles
Shoreline development index	17.3 (Welch 1948)
Mean depth	20.4 feet
Maximum depth	93 feet
Outlet depth	65 feet
Total dissolved solids	84 mg/l
Morphoedaphic index	4.1 TDS/mean depth(ft) (Ryder 1965)
Growing season	249 frost free days (Jenkins 1967)
Date of Impoundment	1962

Table 2. Relative stock density, catch per effort, and relative weight of black crappie from Lake Eufaula, Fall 2007.

Black Crappie			TOTAL NUMBER, CPE, PERCENT OF SAMPLE AND Wr																									
			SUBSTOCK				RSD-S				RSD-Q				RSD-P				RSD-M				RSD-T				TOTAL S-T	
Year	Gear	Samples	no.	cpe	ratio	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	Effort				
2003	E	3				10	8	10	80	31	24	31	83	38	30	38	91	21	17	21	95				100	79	1.3	
2004	E	3				4	1	4	73	28	10	28	83	40	14	40	87	28	10	28	91	1	0	1	101	101	36	2.8
2005	E	3				8	3	8	87	65	23	66	85	15	5	15	89	11	4	11	91				99	35	2.8	
2006	E	2				5	2	5	80	36	13	36	85	40	14	40	92	18	6	18	86	1	0	1	89	100	35	2.8
2007	E	4	1	1	2	6	1	12	81	12	3	25	80	8	2	17	80	21	5	44	87	1	1	2	86	49	11	4.6
<b>LAKE AVERAGE</b>						3	8	80		15	37	83		13	30	88		8	24	90		0	1	92		39	3	

Table 3. Age composition, cpe at-age, mean total length, range of length-at-age, and standard error of mean total length for black crappie collected from Lake Eufaula, Fall 2007.

The + sign associated with age indicates that fish had completed an additional ½ year of growth, and will be considered an additional year older in Spring 2008.

Age	Year Class	Number	Percent	CPE	Mean TL	Range	SE
1+	2006	3	6.1	0.7	164.7	128-199	20.5
2+	2005	3	6.1	0.7	188.0	180-196	4.6
3+	2004	8	16.3	1.8	224.9	201-257	7.4
4+	2003	7	14.3	1.5	256.4	193-322	18.6
5+	2002	4	8.2	0.9	291.3	207-344	32.5
6+	2001	9	18.4	2.0	295.9	223-353	15.3
7+	2000	8	16.3	1.8	332.3	289-377	9.8
8+	1999	6	12.2	1.3	354.0	325-402	11.4
9+	1998	0	—	—	—	—	—
10+	1997	0	—	—	—	—	—
11+	1996	0	—	—	—	—	—
12+	1995	1	2.0	0.2	371.0	371.0	—
Total		49	100.0	10.7			

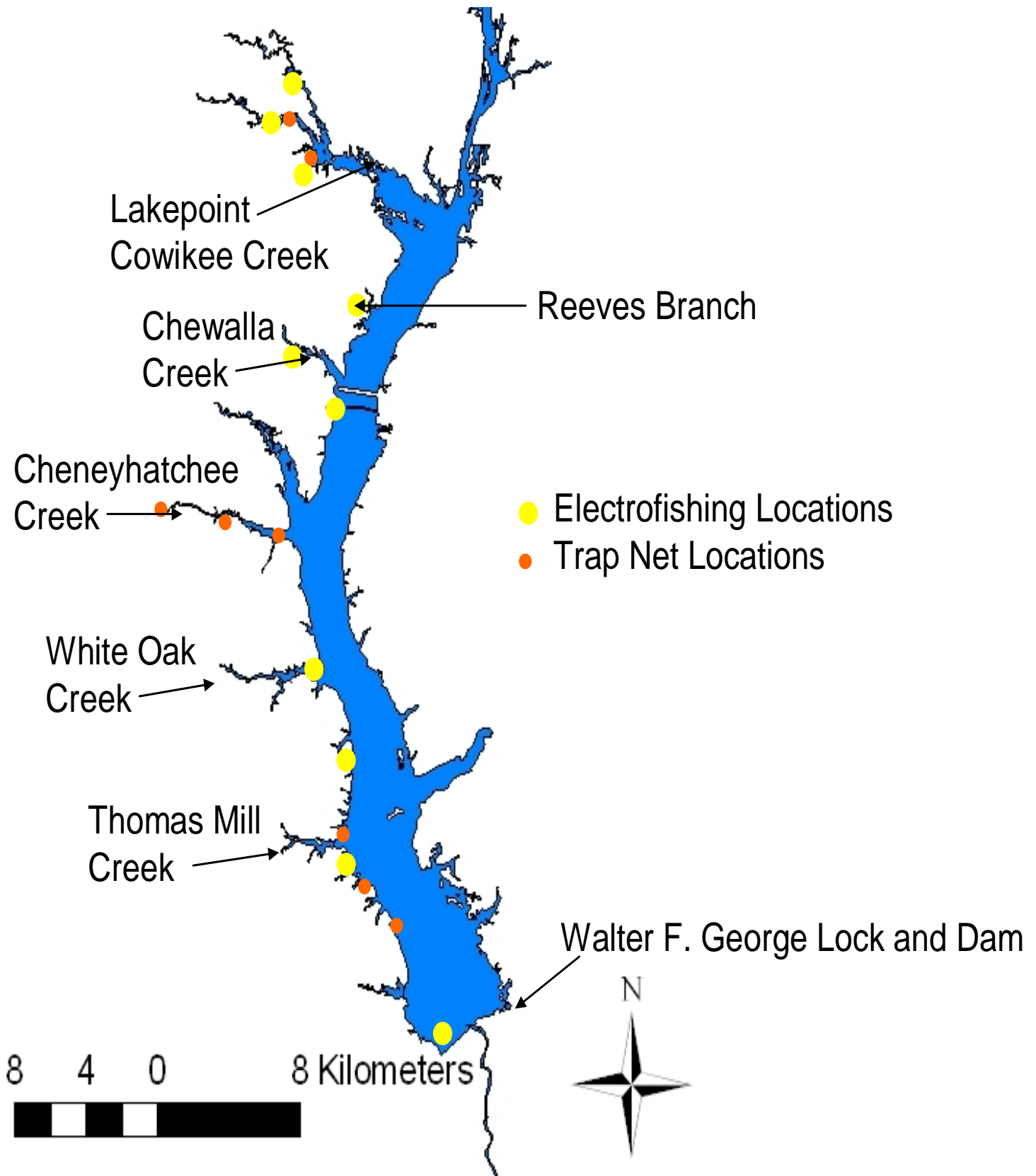


Figure 1. Electrofishing and trap-net sampling locations on Lake Eufaula, Fall 2007.

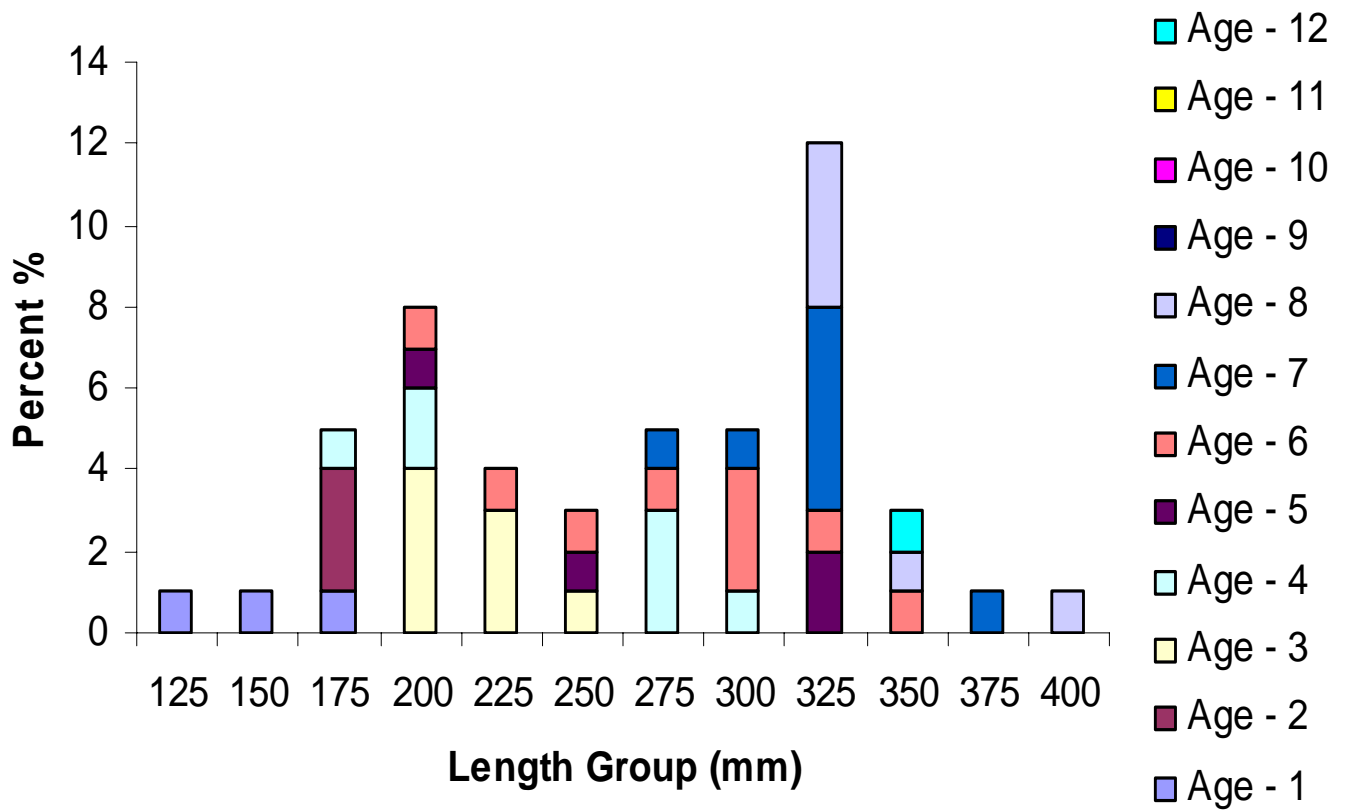


Figure 2. Length-at-age frequency for black crappie (N=49) collected from Lake Eufaula, Fall 2007.

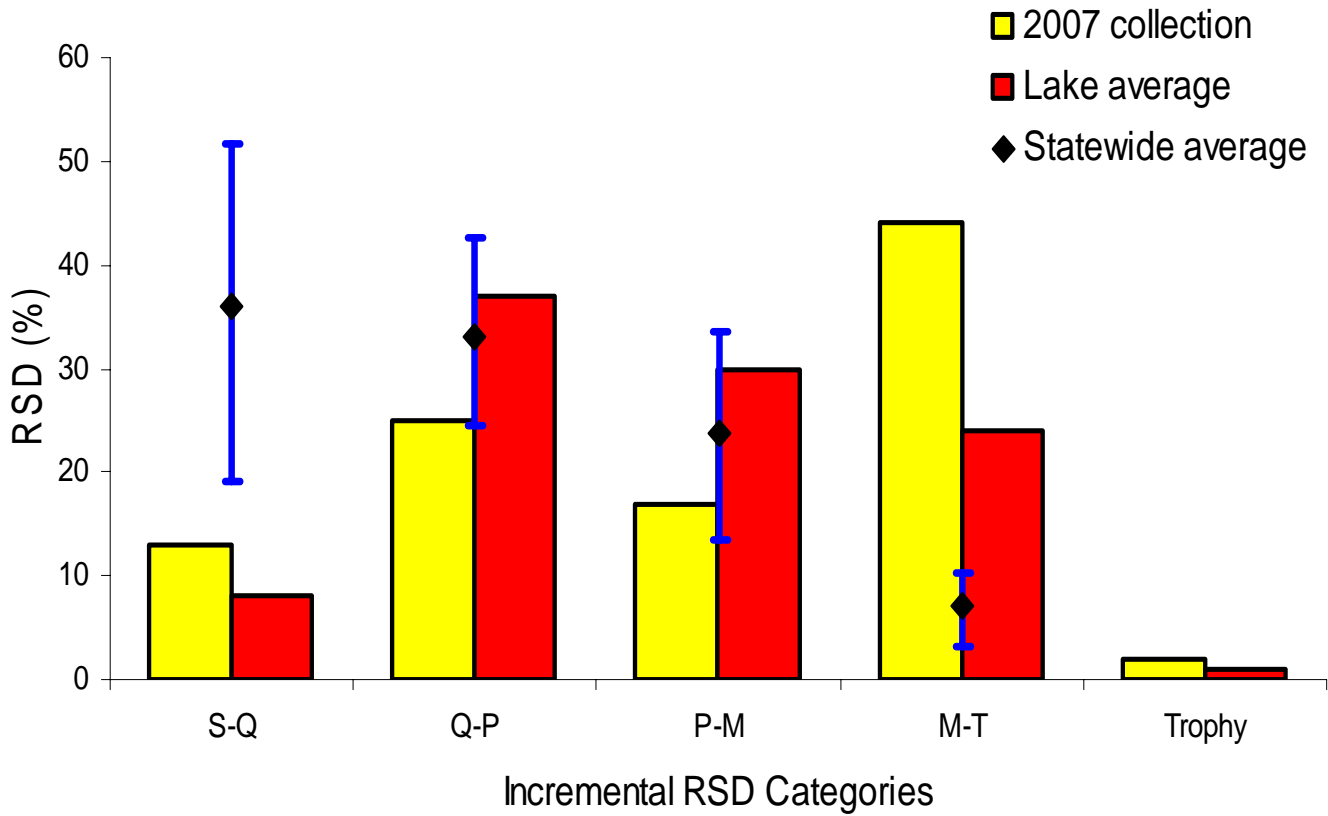


Figure 3. Relative stock densities (vertical yellow bars) for black crappie (N=49) collected from Lake Eufaula, Fall 2007. Red bars indicate the lake average for relative stock indices. Diamonds represent the statewide mean, and blue bars represent the interquartile range for each relative stock density indice.