

**UPPER BEAR CREEK RESERVOIR
CRAPPIE MANAGEMENT REPORT**

FALL 2009

Prepared By

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Introduction

Upper Bear Creek Reservoir (UBCR), a 1,850 acre Tennessee Valley Authority impoundment, is one of four TVA reservoirs in the Franklin County area. The reservoir contains an excellent fishery for white crappie.

Standardized sampling for crappie using trapnets has met limited success; therefore, crappie were sampled using shoreline electrofishing in the fall. Due to the limitations of electrofishing, small age 0 and age 1 crappie are not as vulnerable as older individuals, which limits our ability to predict future fishing success. Electrofishing allows us to sample the crappie population as a whole and can give us insight into the growth and mortality dynamics of the population.

Methods

Fall electrofishing was conducted on November 2 and 3, 2009. Sampling was conducted along the shoreline of Little Bear Creek and Bear Creek arms. The upper and middle sections of both arms were sampled exclusively due to the lack of success in the lower reservoir in the past.

Total lengths (mm) and weight (g) were recorded from all crappie collected. Otoliths were removed from all crappie ≥ 100 mm TL and aged by district personnel at the district office. Data analysis was conducted with ADWFF Data Analysis and Report Utilities (Slipke, 2004) and Fisheries Analysis and Simulation Tools (F.A.S.T.) program (Slipke and Maceina, 2006).

Results and Discussion

One hundred and twenty nine white crappie were collected in the fall of 2009. The 2008, 2007 and 2005 year classes were well represented composing 34%, 31% and 19% of the sample, respectively (Table 3). The UBCR white crappie collection included eight year classes (ages 1+ to 8+).

The RSD values observed in 2009 were 33%, 31%, 33% and 3 % for the stock-quality, quality-preferred, preferred-memorable and memorable-trophy size categories, respectively. The values observed in 2009 for the quality-preferred, preferred-memorable and memorable-trophy RSD categories were below that observed in the 2006 spring sample (Ekema et al. 2006) (Table 2). We would expect to see larger individuals in the spring due to spawning. Relative weight (Wr) values (67-81) were low for all categories (Table 2). This is similar to that observed in other low productive systems such as Smith Reservoir (Floyd and Ekema 2006). The values were also lower than that observed in the spring of 2006; however, Wr values generally run lower in the fall than in the spring.

Growth of UBCR white crappie are moderate with fish reaching mean total length-at-age of nine inches by age 2+ and exceeding 10 inches by age 3+ (Table 3). This is similar to that observed in 2006 (Ekema et al. 2006). Although growth was moderate, there were usually a wide range of lengths within each year class (Table 4). Mortality computations did not meet the standards outlined in the Reservoir Manual (1999).

Conclusions

The overall crappie population in UBCR is characterized by moderate growth with low relative weights.

The strong 2008 and 2007 year classes should provide excellent angling opportunities for the next couple of years. The 2005 year class should provide fair numbers of 10 inch and larger fish this spring. 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.

Ekema P. D., K. B. Floyd and G. R. Selby. 2006. Upper Bear Creek Reservoir management report. Alabama Department Conservation and Natural Resources. Montgomery, AL.

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Slipke, J. W. 2004. ADWFF data and report utilities: Version 2.2. Alabama Division of Wildlife and Freshwater Fisheries. Montgomery, Alabama.

Slipke, J. W. and M. J. Maceina. 2006. Fisheries analysis and simulation tools (FAST). Auburn University, Auburn, Alabama.

APPENDIX A
TABLES AND FIGURES

TABLE 1. Reservoir morphometric, physical and chemical characteristics.

Surface area	1,850 acres
Drainage area	115 sq. mi.
Full pool elevation	797 feet-msl
Mean annual fluxuation	4 feet
Shoreline distance	105 miles
Mean depth	14 feet
Maximum depth	70 feet
Outlet depth	variable
Thermocline depth	13 feet
Oxygen-cline (summer)	3.25-6.5 feet
Growing season	220 frost free days
Year of Impoundment	1978

TABLE 2. Total number, CPE, percent of sample and Wr of white crappie from Upper Bear Creek Reservoir, 2006 and 2009.

TOTAL NUMBER, CPE, PERCENT OF SAMPLE AND Wr																														
Year	Effort (hr)	Gear	Number Samples	SUBSTOCK			RSD S-Q				RSD Q-P				RSD P-Q				RSD M-T				RSD-T				TOTAL			PSD
				no.	cpe	pct.	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	
2006	3.3	E	7	0	0.0	0	5	1.5	5	75	40	12.0	39	80	49	14.9	48	88	7	2.1	7	93	1	0.3	1	92	102	30.8	95	
2009	4.8	E	2	0	0.0	0	43	9.0	33	67	40	8.3	31	72	42	8.8	33	77	4	0.8	3	81	0	0.0	0	0	129	26.9	67	

TABLE 3. Age composition and mean length of white crappie from Upper Bear Creek Reservoir, fall 2009.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	Range
1+	2008	44	34.1	9.2	178.9	3.9	140-265
2+	2007	40	31.0	8.3	233.6	4.2	183-278
3+	2006	8	6.2	1.7	265.6	6.3	235-293
4+	2005	24	18.6	5.0	260.3	6.9	193-351
5+	2004	8	6.2	1.7	276.5	7.4	244-303
6+	2003	3	2.3	0.6	311.3	31.9	275-375
7+	2002	1	0.8	0.2	274.0	**	**
8+	2001	1	0.8	0.2	252.0	**	**
Total		129	100.0	26.9			

TABLE 4. Length at age for white crappie from Upper Bear Creek Reservoir, fall 2009.

Length (mm)	Age - 1	Age - 2	Age - 3	Age - 4	Age - 5	Age - 6	Age - 7	Age - 8	Total
140	2								2
150	11								11
160	4								4
170	9								9
180	5	2							7
190	7	2		1					10
200	1	4							5
210	2	8		2					12
220	1	3		2					6
230	1	3	1	1					6
240		7		3	1				11
250		1	2	2	1			1	7
260	1	5	2	3	1				12
270		5	1	4	1	1	1		13
280			1	3	2	1			7
290			1	1	1				3
300				1	1				2
310									0
320									0
330									0
340									0
350				1					1
360									0
370						1			1
Total	44	40	8	24	8	3	1	1	129

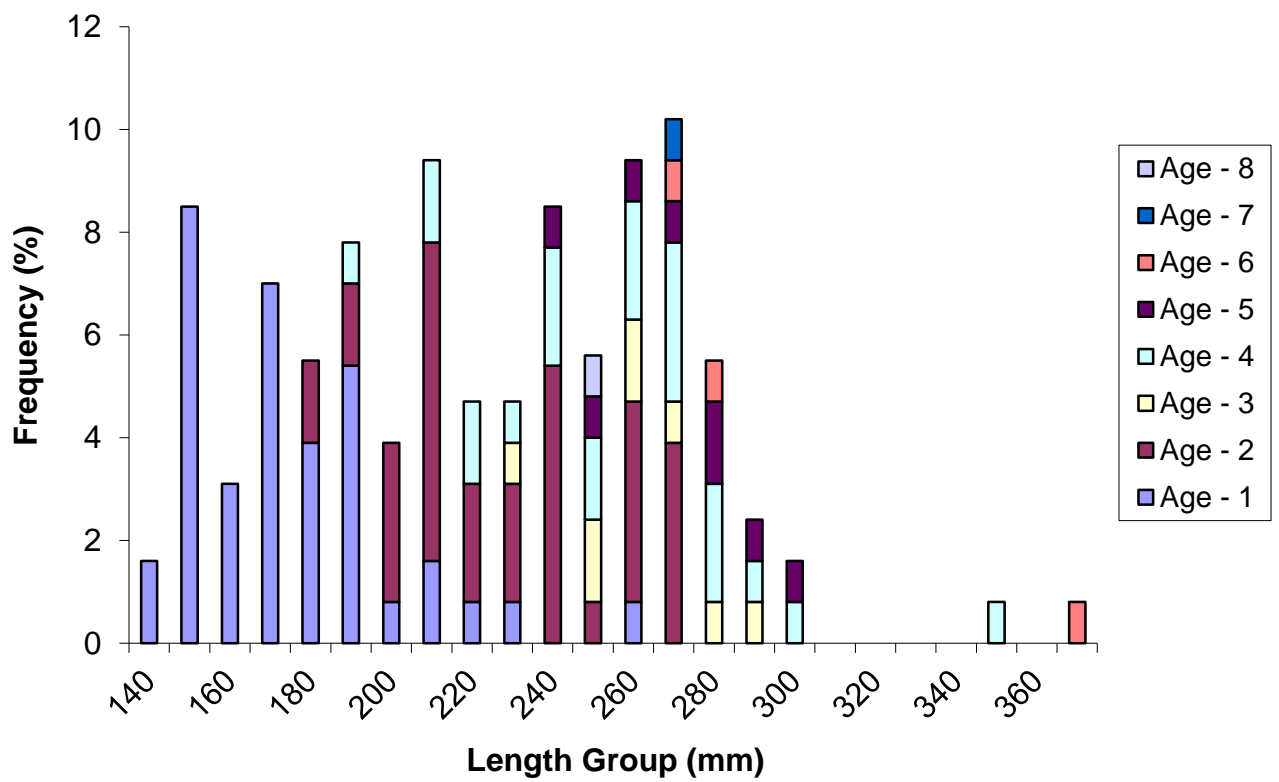


FIGURE 1. Length-at-age frequency of white crappie (n=129) from Upper Bear Creek Reservoir, fall 2009.

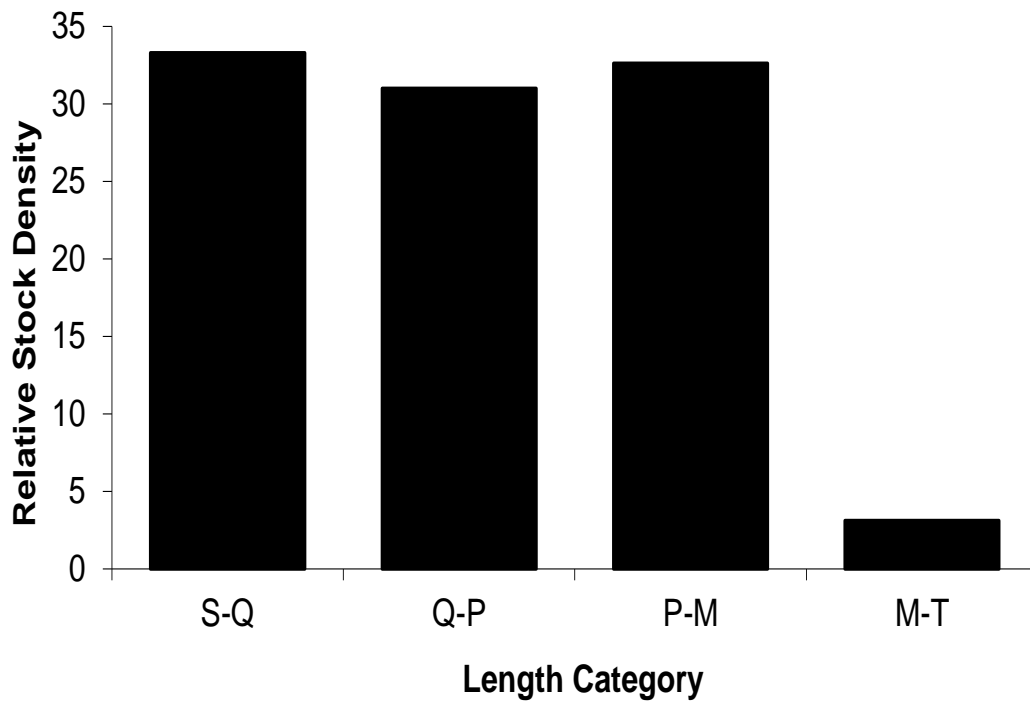


FIGURE 2. Relative stock density (RSD) of white crappie from Upper Bear Creek Reservoir, fall 2009.