

GAINESVILLE RESERVOIR CRAPPIE MANAGEMENT REPORT FY 2006

Prepared by

Jay B. Haffner
District Fisheries Biologist

Jerry L. Moss
District Fisheries Supervisor

Jim M. Piper
Biologist Aide

Alabama Department of Conservation
and Natural Resources

Division of Wildlife and
Freshwater Fisheries

March 8, 2006

Introduction

Crappie were previously sampled from 1991-94 and in 1995, 1998, and 2002 (Haffner et al. 2003). In 2002, the white crappie population exhibited satisfactory size structure, high annual mortality, variable recruitment, and rapid growth. Black crappie were incidental in our collection. The strong 2001 year-class had begun to recruit and enhance an already high-quality fishery.

Methods

Crappie were collected according to the guidelines of the Alabama Reservoir Management Manual (1999) from 12 trap nets on November 15, 2005.

Results and Discussion

Black and White Crappie

A total of 591 white crappie and 6 black crappie were captured. The CPE of white crappie (49.3) was the highest catch rate ever recorded at Gainesville and more than two and a half times the lake average (Table 2). It was the highest CPE ever recorded on any reservoir in west-Alabama.

The PSD for white crappie was 53 and the RSD-P was 18. The RSD value of S-Q white crappie was well above the lake and statewide average. Nearly all the individuals from the very large 2004 year-class recruited to a S-Q size and 3 other year classes contributed to this increment RSD size category. With S-Q fish dominating the collection, not surprisingly RSD values for Q-P, P-M, and M-T fish fell below the lake and statewide average (Figure 3).

Catch rates for all white crappie RSD size categories were extraordinary high and at least double the lake and statewide average (Figure 4). Mean W_r values of white crappie ranged from 72 to 85 and were less than the lake average and substantially less than the statewide average for most RSD categories (Figure 3). A reliable estimate of crappie mortality could not be calculated due to variable recruitment.

The white crappie sample included seven age classes (ages 0+ to 6+). Young-of-year white crappie comprised 38.9% of the collection. Five strong year classes (2001-05) were present in our collection and 5 year-classes (1999-2003) contributed to this outstanding fishery. Growth rates of white crappie were below the lake average and slower than white crappie from reservoirs up and downstream in the drainage (Figure 5).

The black crappie sample consisted of 6 fish ranging in total length from 165 - 281 mm. Four year-classes (2000 and 2002-04) were represented.

Summary

The CPE of white crappie was the highest catch rate ever recorded at Gainesville. Recruitment was excellent. Five strong year classes were identified and an equal number contributed to the fishery. Growth of white crappie was slow.

Conclusions

1. Resample crappie in 2008.
2. Maintain the 9-inch minimum-length limit regulation on all crappie.

Literature Cited

- Alabama reservoir management program 1999. Alabama Department of Conservation and Natural Resources. 77 pp.
- Haffner, J. B., J. L. Moss, and J. M. Piper. 2003. Management report for Gainesville Reservoir. 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 AT GAINESVILLE RESERVOIR.

Surface area	6,400 acres
Drainage area	7,142 sq. mi.
Full pool elevation	109 feet-msl
Mean annual fluctuation	3 feet
Shoreline distance	200 miles
Shoreline development index	17.8
Mean depth	6.7 feet
Maximum depth	51 feet
Outlet depth	Surface
Thermocline depth	None
Stratification index	None
Total dissolved solids	79 mg/l
Chlorophyll a	9.7 mg/m ³
Retention time	2 days
Morphoedaphic index	11.8 TDS/mean depth(ft) (Ryder 1965)
Growing season	235 frost free days (Jenkins 1967)
Reservoir age	28 years

TABLE 2. RELATIVE STOCK DENSITY (RSD), CATCH PER EFFORT (CPE) AND RELATIVE WEIGHT (Wr) OF WHITE CRAPPIE TRAP NETTED AT GAINESVILLE RESERVOIR.

YEAR	1		2				RSD-S				RSD-Q				RSD-P				RSD-M				TOTAL	
	TOTAL EFFORT	NO.	CPE	SSR	NO.	CPE	PCT.	Wr	NO.	CPE	PCT.	Wr	NO.	CPE	PCT.	Wr	NO.	CPE	PCT.	Wr	NO.	CPE		
1991	32	128	4.0	60	122	3.8	57	79	68	2.1	32	87	13	0.4	6	92	11	0.3	5	92	342	10.7		
1992	32	81	2.5	57	59	1.8	41	75	36	1.1	25	84	41	1.3	29	88	7	0.2	5	90	224	7.0		
1993	32	296	9.3	455	20	0.6	31	76	36	1.1	55	91	7	0.2	11	91	2	0.1	3	93	361	11.3		
1994	32	82	2.6	32	154	4.8	61	74	50	1.6	20	80	35	1.1	14	87	15	0.5	6	92	336	10.5		
1995	15	20	1.3	12	48	3.2	28	79	68	4.5	40	85	37	2.5	22	93	16	1.1	9	100	189	12.6		
1998	11	64	5.8	42	41	3.7	27	72	56	5.1	36	81	47	4.3	31	87	10	0.9	6	84	218	19.8		
2002	9	41	4.6	19	124	13.8	57	82	68	7.6	31	88	15	1.7	7	93	10	1.1	5	95	258	28.7		
2005	12	215	17.9	57	213	17.8	57	72	94	7.8	25	74	53	4.4	14	82	16	1.3	4	85	591	49.3		
LAKE AVERAGE		6.0	92		6.2	45	76		3.9	33	84		2.0	17	89		0.7	5	91		18.7			

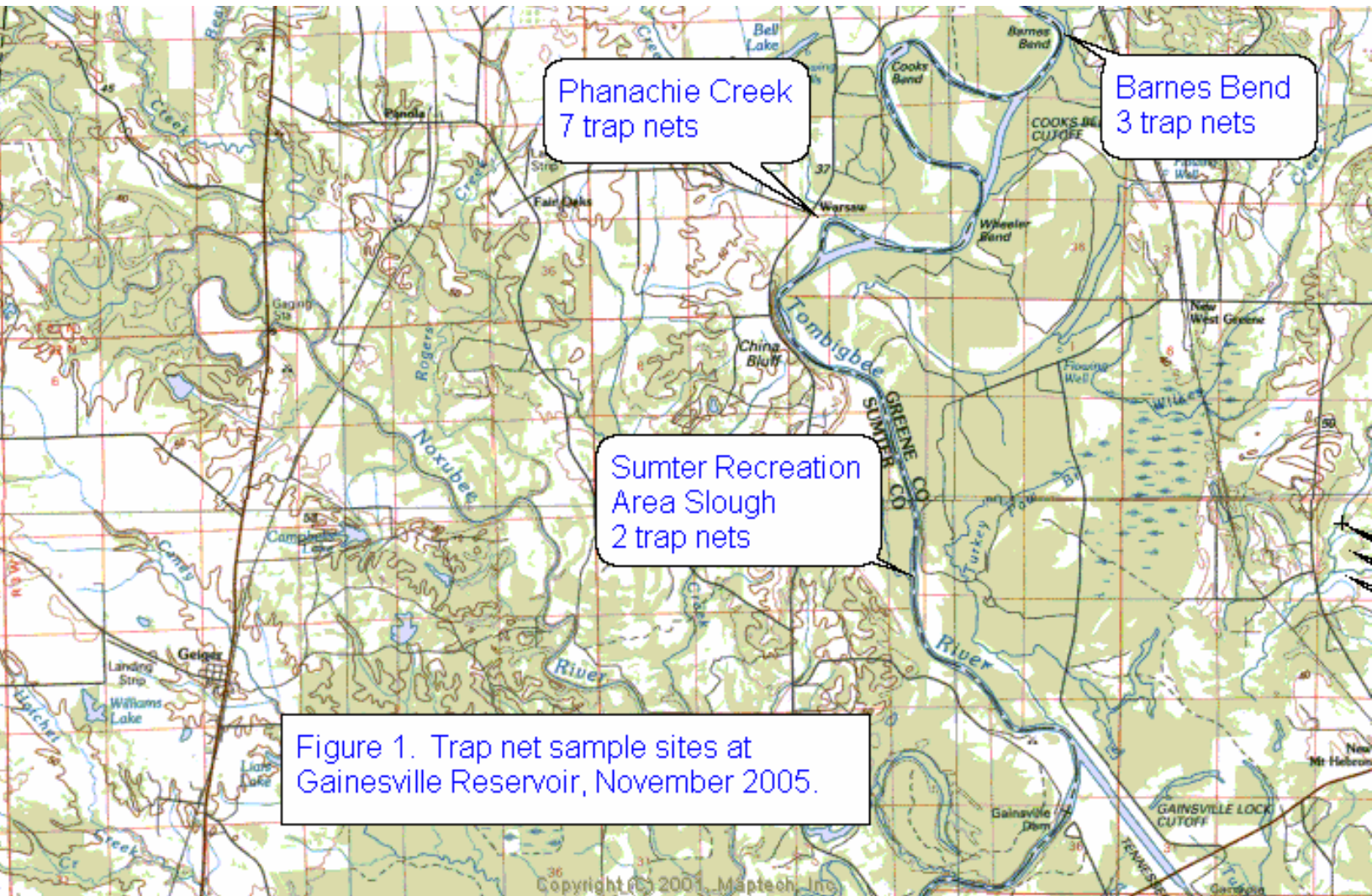
1
EFFORT IS IN NET-NIGHTS

2
SSR DENOTES SUBSTOCK RATIO; THE NUMBER OF SUBSTOCK SIZE FISH PER 100 FISH STOCK SIZE AND LARGER.

TABLE 3. AGE COMPOSITION AND MEAN TOTAL LENGTH (mm) OF WHITE CRAPPIE AT GAINESVILLE RESERVOIR, NOVEMBER 2005.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	Range
0	2005	230	38.9	19.2	100	1	74 - 153
1	2004	174	29.4	14.5	177	1	143 - 217
2	2003	138	23.4	11.5	224	3	190 - 299
3	2002	29	4.9	2.4	244	9	197 - 317
4	2001	16	2.7	1.3	298	6	251 - 330
5	2000	2	0.3	0.2	296	20	276 - 315
6	1999	2	0.3	0.2	346	24	322 - 370
Total		591	100.0	49.3			

GAINESVILLE RESERVOIR



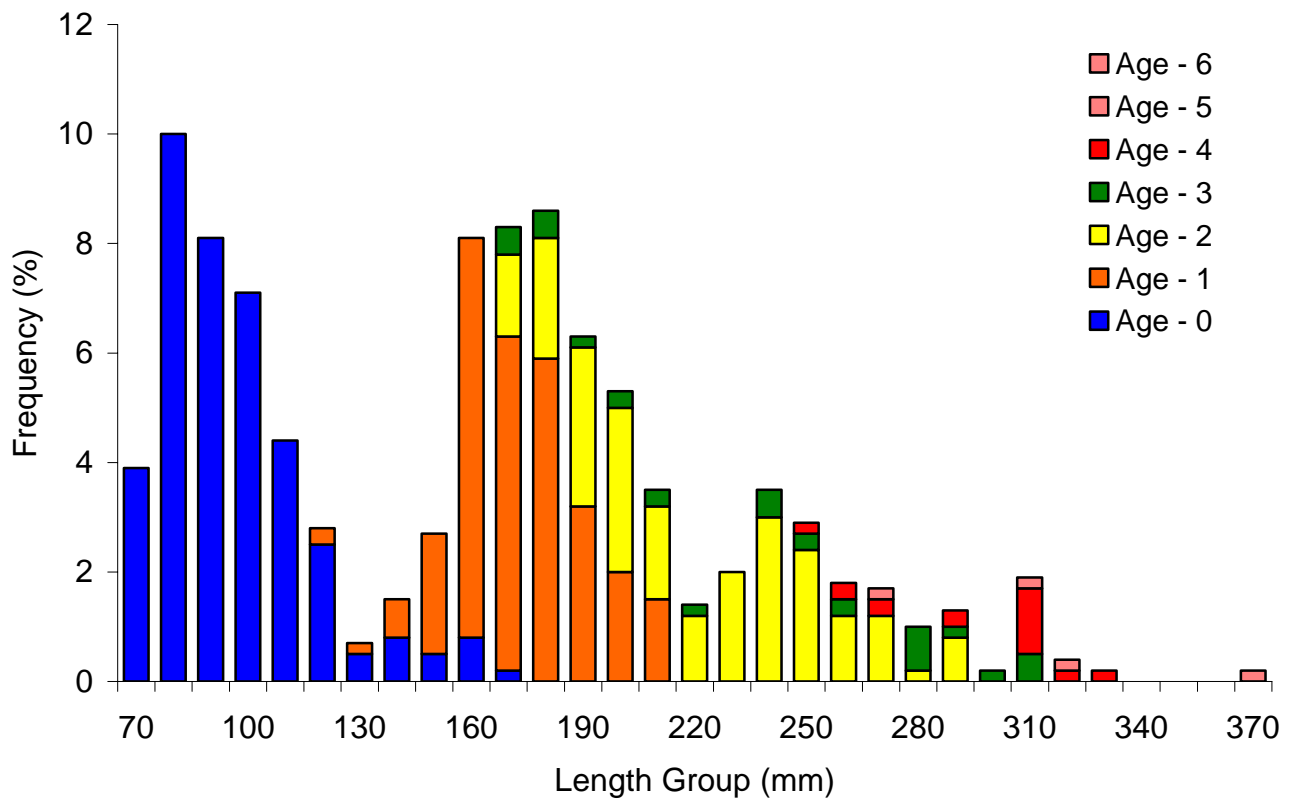


Figure 2. Length at age frequency of white crappie (N=591) at Gainesville Reservoir, November 2005.

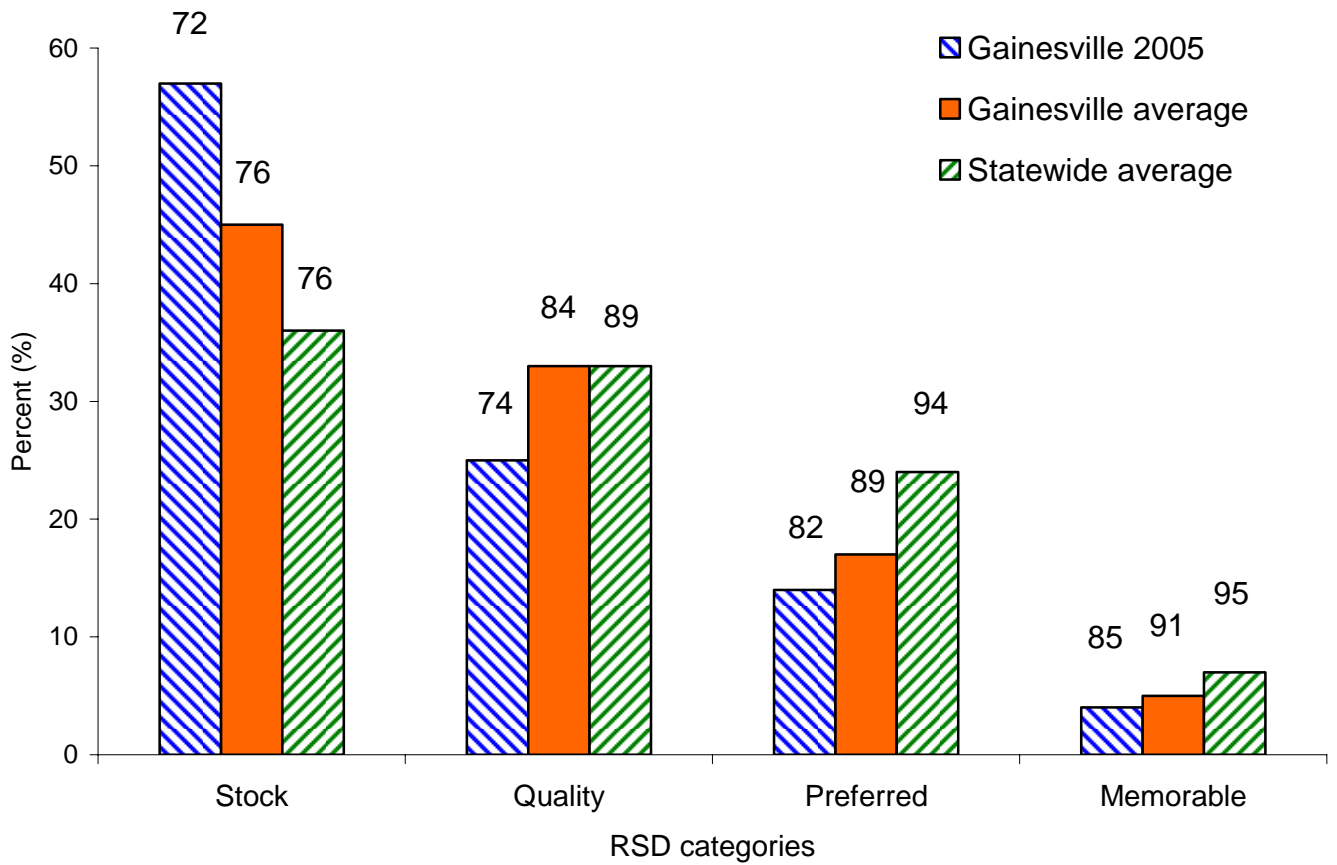


Figure 3. Relative stock density of white crappie at Gainesville Reservoir. Mean relative weight (W_r) values appear above each bar.

