

# **WARRIOR RESERVOIR SPRING MANAGEMENT REPORT 2007**

Prepared by

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## **Introduction**

The Alabama Reservoir Management Program was established in 1986 with the objective of collecting baseline information on important sportfish species in the State's reservoirs. Reservoirs are sampled periodically to establish trends in growth, recruitment, mortality and to identify problems with the major sport fisheries.

Warrior Reservoir was previously sampled in 2003 (Moss et al. 2003), 2000 (Haffner et al. 2000), 1994 (Moss et al. 1995), 1989 (Moss and McHugh 1990) and 1986 (McHugh and Moss 1987). A popular bass fishery exists at Warrior Reservoir and fish exhibited satisfactory growth, size structure and recruitment.

## **Methods**

Warrior Reservoir was sampled in spring 2007 according to the guidelines of the Alabama Reservoir Management Manual (Alabama Reservoir Management Manual 1999). Electrofishing samples were collected at four sites on Warrior Reservoir to assess the fish population. Total length (mm) and weight (g) were recorded for all target species collected during sampling activities. Bass tournament information was collected through the Bass Angling Information Team (Abernethy, D. L. 2007).

## **Results and Discussion**

### **Largemouth Bass**

The electrofishing catch per hour (CPH) of largemouth bass (N= 231) in 2007 was 114.1 fish/hr, a catch rate well above the lake average of 93.7 fish/hr, and represents the highest catch rate recorded from Warrior Reservoir to date (Table 2). Catch rates for stock and quality size fish were above statewide means, while preferred and memorable size fish were at or slightly below the statewide average for largemouth bass (Figure 3). RSD values for Warrior largemouth bass were 56%, 29%, 13%, and 2% for stock, quality, preferred and memorable size fish, respectively. RSD values were slightly below the statewide average for all RSD categories except stock size fish, which were above the 75% percentile of RSD values for largemouth bass, statewide (Figure 4). The substock ratio (SSR) for largemouth bass in Warrior Reservoir was 48 as compared to the reservoir mean of 32.

Relative condition ( $W_r$ ) of largemouth bass from Warrior Reservoir approximated statewide values and was similar to previous collections. Nine age classes were represented in the 2007 collection; however, 80% of the sample was comprised of fish younger than Age 4 (Figure 2). Growth of largemouth bass in Warrior Reservoir was below statewide means for fish Age 3 and older. The annual mortality estimate for largemouth bass (Ages 3 - 9) in Warrior Reservoir was 43% (confidence Interval range = 31.8 – 52.6 and r-square = 0.93).

Warrior Lake was not ranked among 20 Alabama reservoirs reporting five or more tournaments in the 2006 BAIT report. Only three tournament reports were received by the Division of Wildlife and Freshwater Fisheries and this provided limited information concerning bass tournament activity. Information in the BAIT report indicated that 78 anglers caught 176 bass weighting 289 pounds having an average weight of 1.64 pounds with 776 total hours of angling effort. However, the quality of fishing on Warrior Reservoir improved in 2006, with increases in average weight of bass, number of bass per angler day, and pounds per angler day.

### **Summary**

Overall, the largemouth bass population in Warrior Reservoir exhibited satisfactory size structure and remained remarkably similar to samples collected over the past 10 – 15 years. Catch rates were near or above state wide means and have been steadily increasing over the last several collections. The overall catch rate for largemouth mouth established a new lake record for Warrior Reservoir when compared to previous collections. Larger fish were less abundant and their electrofishing catch rates were near or somewhat less than CPH values, statewide. RSD values for largemouth bass were below statewide means except for stock size fish, which were well represented in the 2007 collection.

### **Recommendations**

- 1) Resample Warrior Reservoir in FY 2010.
- 2) Encourage local bass clubs to participate in the BAIT tournament program since the annual report indicates there has been a lack of compliance in this reservoir.
- 3) Data analysis indicates that there is no need to change the current black bass management regulations for Warrior Reservoir.

- 4) Encourage the Corps of Engineers to monitor the spread of exotic aquatic plants such as Cuban bulrush and water hyacinths.

## Literature Cited

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# APPENDIX A

## Tables and Figures

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

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|                             |  |
|-----------------------------|--|
| Surface area                | 8,580 acres                            |
| Drainage area               | 5,828 sq. mi.                          |
| Full pool elevation         | 96 feet-msl                            |
| Mean annual fluxuation      | 1 - 2 feet                             |
| Shoreline distance          | 300 miles                              |
| Shoreline development index | 23.7 (Welch 1952)                      |
| Mean depth                  | 23 feet                                |
| Maximum depth               | 50 feet                                |
| Outlet depth                | 10 feet                                |
| Thermocline depth           | None                                   |
| Stratification index        | 62.9 (cfs*365)/dsf                     |
| Total dissolved solids      | 106 mg/l                               |
| Morphoedaphic index         | 4.6 TDS/mean depth(ft)<br>(Ryder 1965) |
| Growing season              | 235 frost free days<br>(Jenkins 1967)  |
| Year impounded              | 1948                                   |

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Table 2. Incremental relative stock density (RSD), catch per effort (CPE) and relative weight (Wr) of largemouth bass captured during spring sampling electrofishing surveys at Warrior Reservoir in 2007.

| YEAR           | 1            |      | 2    |     | RSD S - Q |      |      |    | RSD Q - P |      |      |    | RSD P - M |      |      |    | RSD M - T |     |      |     | TOTAL |       |
|----------------|--------------|------|------|-----|-----------|------|------|----|-----------|------|------|----|-----------|------|------|----|-----------|-----|------|-----|-------|-------|
|                | TOTAL EFFORT | NO.  | CPE  | SSR | NO.       | CPE  | PCT. | Wr | NO.       | CPE  | PCT. | Wr | NO.       | CPE  | PCT. | Wr | NO.       | CPE | PCT. | Wr  | NO.   | CPE   |
| 1989           | 1.67         | 38   | 22.8 | 38  | 40        | 24.0 | 40   |    | 39        | 23.4 | 39   |    | 19        | 11.4 | 19   |    | 2         | 1.2 | 2    |     | 138   | 82.6  |
| 1994           | 1.47         | 16   | 10.9 | 15  | 51        | 34.7 | 47   | 92 | 36        | 24.5 | 33   | 91 | 19        | 12.9 | 18   | 91 | 2         | 1.4 | 2    | 101 | 124   | 84.4  |
| 2000           | 1.35         | 17   | 12.6 | 17  | 46        | 34.1 | 47   | 85 | 27        | 20.0 | 28   | 88 | 24        | 17.8 | 24   | 84 | 1         | 0.7 | 1    | 79  | 115   | 85.2  |
| 2003           | 1.39         | 42   | 30.2 | 42  | 56        | 40.3 | 56   | 86 | 29        | 20.9 | 29   | 91 | 12        | 8.6  | 12   | 88 | 3         | 2.2 | 3    | 93  | 142   | 102.2 |
| 2007           | 2.02         | 75   | 37.0 | 48  | 88        | 43.5 | 56   | 91 | 45        | 22.2 | 29   | 91 | 20        | 9.9  | 13   | 89 | 3         | 1.5 | 2    | 91  | 231   | 114.1 |
| <b>AVERAGE</b> |              | 22.7 | 32   |     | 35.3      | 49   | 89   |    | 22.2      | 32   | 90   |    | 12.1      | 17   | 88   |    | 1.4       | 2   | 91   |     | 93.7  |       |

<sup>1</sup>  
Effort is in hours.

<sup>2</sup>  
SSR denotes substock ratio; The number of substock fish per 100 fish stock size and larger.

Table 3. Age composition and mean total length (mm) of largemouth bass at Warrior Reservoir, March 2007.

| Age          | Year Class | Number | Percent | CPE   | Mean TL | SE | Range     |
|--------------|------------|--------|---------|-------|---------|----|-----------|
| 1            | 2006       | 103    | 44.6    | 50.9  | 178     | 3  | 105 - 255 |
| 2            | 2005       | 39     | 16.9    | 19.3  | 270     | 3  | 221 - 296 |
| 3            | 2004       | 43     | 18.6    | 21.2  | 304     | 5  | 243 - 380 |
| 4            | 2003       | 22     | 9.5     | 10.9  | 350     | 8  | 288 - 418 |
| 5            | 2002       | 12     | 5.2     | 5.9   | 399     | 13 | 311 - 466 |
| 6            | 2001       | 6      | 2.6     | 3.0   | 376     | 16 | 330 - 440 |
| 7            | 2000       | 2      | 0.9     | 1.0   | 435     | 5  | 430 - 439 |
| 8            | 1999       | 2      | 0.9     | 1.0   | 497     | 67 | 430 - 563 |
| 9            | 1998       | 2      | 0.9     | 1.0   | 546     | 2  | 544 - 547 |
| <b>Total</b> |            | 231    | 100.0   | 114.1 |         |    |           |

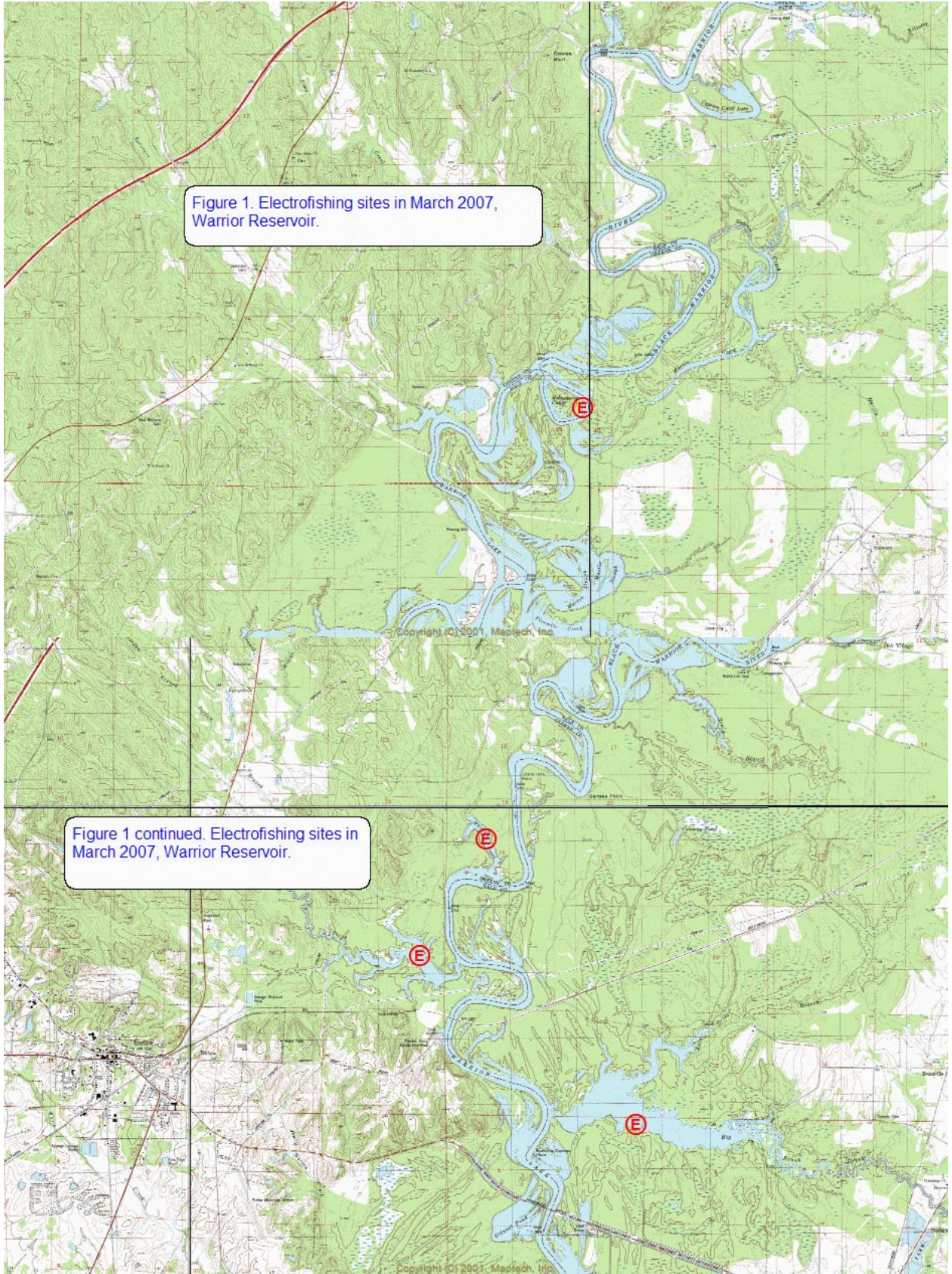


Figure 1. Electrofishing sites in March 2007, Warrior Reservoir.

Figure 1 continued. Electrofishing sites in March 2007, Warrior Reservoir.

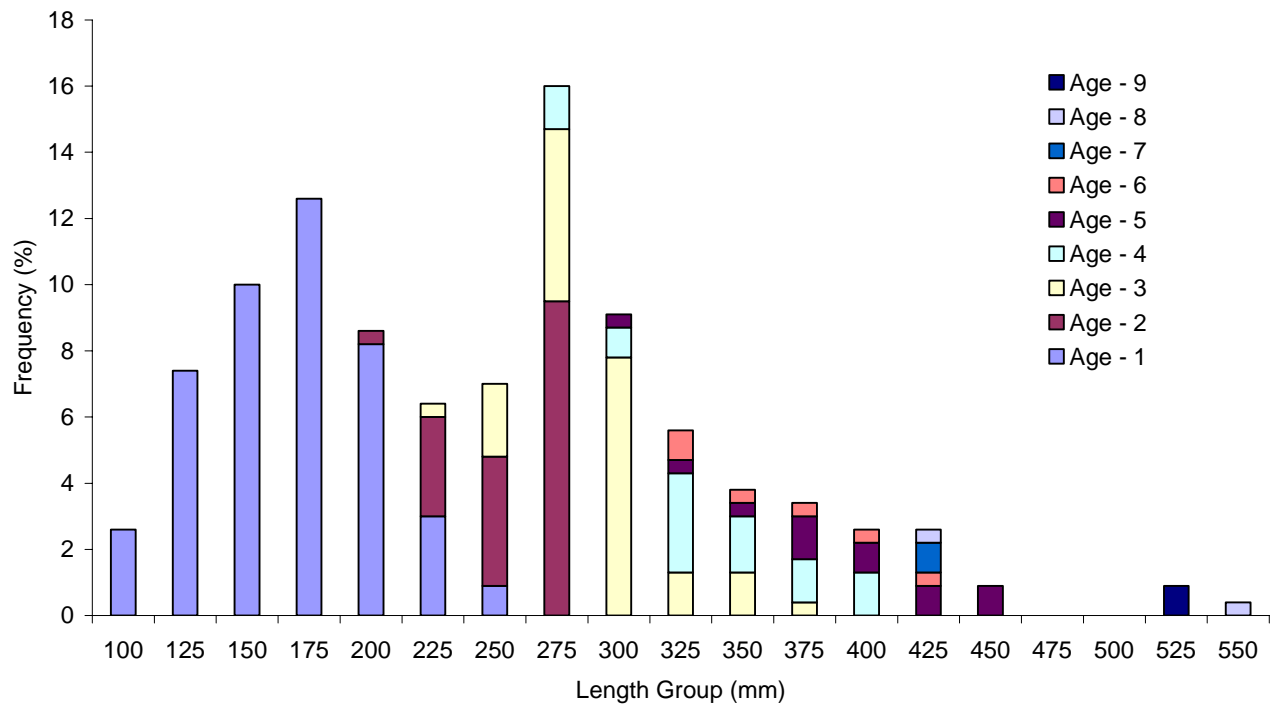


Figure 2. Length at age frequency of largemouth bass (N=231) at Warrior Reservoir, March 2007.

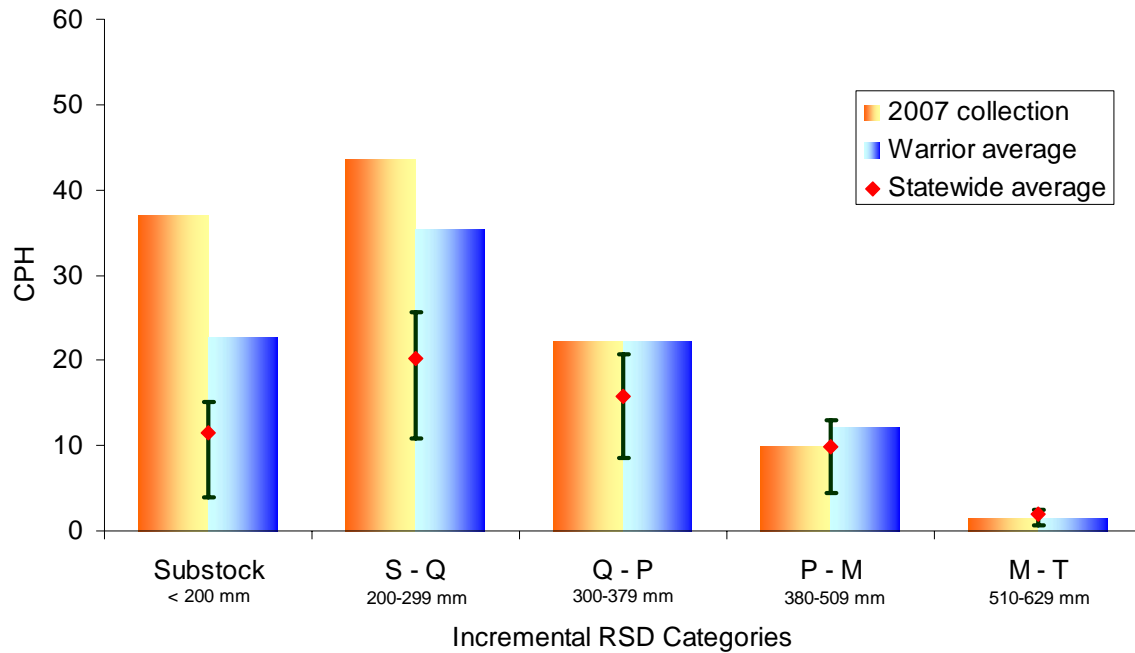


Figure 3. Catch per hour (CPH) of largemouth bass (N=231) at Warrior Reservoir, March 2007, and the Warrior and statewide averages. Error bars represent the 25th and 75th percentile of CPH values, statewide.

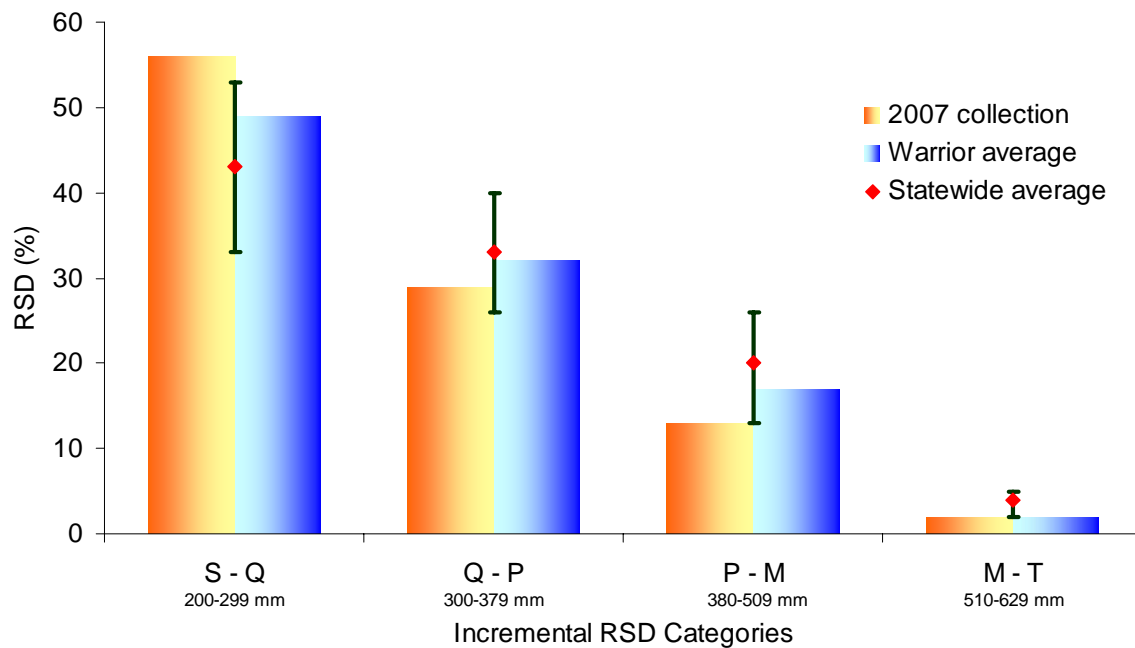


Figure 4. Relative stock density (RSD) of largemouth bass (N=231) at Warrior Reservoir, March 2007, and the Warrior and statewide averages. Error bars represent the 25th and 75th percentile of RSD values, statewide.