

COOSA RIVER
MANAGEMENT REPORT
2005-06

Prepared by

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September 1, 2006

Introduction

The Coosa River, between Jordan Dam and Crommelin Landing in the City of Wetumpka, is a very unique fishery that contains an unusually high proportion of large spotted bass. This section of river has been sampled periodically (McHugh and Reeves 1992, 1995; McHugh 1997, 2000, 2003) by fall electrofishing in order to determine the status of the spotted bass population. Largemouth bass also exist in this stretch of river, but are not abundant. The sampling in this report was conducted in fall 2005 to determine if any changes had occurred to the population since the last sample. A spring creel survey was also conducted during 2006 to describe angler and catch statistics. Surveys were conducted at either Crommelin Landing or the Jordan Dam access area (Figure 1) on randomly selected weekend days from March to May.

Refer to “An Angler’s Guide to Interpreting Alabama Wildlife and Freshwater Fisheries Reservoir Reports” for a detailed description of fisheries terms used in this report. The Angler’s Guide is available on the Department’s website at:

<http://www.outdooralabama.com/fishing/freshwater/where/reservoirs/guide.pdf>.

Methods

Fall electrofishing samples were conducted on October 10, 14, and 17, 2005 by Alabama Wildlife and Freshwater Fisheries personnel. Sampling primarily followed the procedures used in standardized reservoir sampling (Alabama Reservoir Management Plan 1999). Nine fixed sites (Figure 1) were sampled for a total of 30 minutes per site. Only largemouth and spotted bass were collected during the 2005 sample, although the presence of non-target species was documented (Table 1). Length (mm) and weight (g) were recorded for all spotted and largemouth bass. Otoliths were removed from a maximum of ten spotted bass from each 25mm group

between 125mm and 400mm in total length. Otoliths were removed from all spotted bass greater than 400mm in total length, since age disparity can be significant with larger fish. Due to the small sample size, no otoliths were removed from largemouth bass. Otoliths were placed in vials with a solution of alcohol and glycerine to improve clarity. Ages were determined by viewing the otoliths under a dissecting scope. Otoliths from older fish were sectioned in order to increase aging accuracy (Maceina 1988).

Results and Discussion

The fall 2005 electrofishing collection consisted of 181 total spotted bass and 22 largemouth bass. Black bass from the Coosa River had not been aged since 1991 in order to avoid unnecessary mortality and potential degradation of this unique fishery. In 2005, only 66% (N = 120) of the spotted bass collected were sacrificed in order to determine ages. All other fish were released unharmed. An additional 23 species were observed, but not collected (Table 1).

Spotted bass were collected at a similar rate to past samples (McHugh and Reeves 1992, 1995; McHugh 1997, 2000, 2003) and the size structure of the population remained relatively unchanged (Table 2). A valid mortality rate could not be accurately computed; however, based on the size and age structure of the sample (Figures 2-4), mortality appears low. Unlike most reservoir samples, memorable (> 430 mm) and trophy (>510 mm) size spotted bass are relatively common in collections from this stretch of river. These two size categories comprised 26% of the total spotted bass sample greater than 305 mm in total length.

Growth rates of spotted bass in the Coosa River are excellent. Von Bertalanffy growth curves suggested that growth of spotted bass in the Coosa River closely resembled or surpassed the maximum growth achieved in reservoirs statewide (Table 4). Fast growth, low to moderate

recruitment, and seemingly low mortality has allowed this stretch of river to remain one of the premier spotted bass fisheries in the entire state.

The largemouth bass sample was somewhat small (N = 22); however, also contained a high percentage of big fish (Figure 5). The RSD of stock and quality size fish fell below the statewide 25th percentile; however, the RSD for the preferred and memorable size groups was above the statewide 75th percentile. This suggests that small fish have great difficulty recruiting to the fishery, but have the potential to reach large sizes if they make it through this bottleneck.

The 2006 spring creel survey revealed that 98% of the anglers utilizing this fishery were from Elmore and Montgomery Counties. Catch rates of bass were somewhat low, but this is characteristic of fisheries with low recruitment and an abundance of larger fish. Bass harvest, as well as crappie, remained low confirming that catch-and-release is practiced regularly. Bank anglers were much more likely to utilize the Jordan Dam access area, whereas boat anglers typically used the Wetumpka landing and fished downstream of this site (Table 5).

Overall, the 2005 sample suggests that the Coosa River black bass population is not heavily exploited and population characteristics have changed little in recent years. Exploitation apparently remains low due to one or more reasons: 1) the fishery is not widely known outside the Elmore and Montgomery County region, 2) boating access is limited, especially for larger boats, due to numerous rocks and shallow water which pose navigational hazards, and 3) catch-and-release is practiced regularly by local anglers. Although this fishery presently contains an exceptional abundance of large spotted bass, it remains vulnerable to any change in angler characteristics.

Recommendations

- The black bass population should be sampled again in 3-5 years, unless unanticipated changes occur that could affect the integrity of the fishery. If this is the case, sampling should be conducted more frequently.
- The Coosa River spotted bass population is comprised of a large percentage of memorable and trophy size fish. Although exploitation is currently low, limited recruitment leaves the fishery at risk to any changes in angler behavior. Consideration will be given to the implementation of a restrictive size limit if angler harvest increases significantly in the future.

Literature Cited

Alabama Reservoir Management Program. 1999. Alabama Department of Conservation and Natural Resources, Montgomery.

Maceina, M. J. 1988. Simple grinding procedure to section otoliths. North American Journal of Fisheries Management 8:141-143.

McHugh, J. J. 2003. Coosa River Management Report 2002. Alabama Department of Conservation and Natural Resources, Montgomery.

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McHugh, J. J. 1997. Coosa River Management Report 1996. Alabama Department of Conservation and Natural Resources, Montgomery.

McHugh, J. J. and W. C. Reeves. 1995. Coosa River Management Report 1994. Alabama Department of Conservation and Natural Resources, Montgomery.

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TABLE 1. Non-target species observed during routine sampling of the Coosa River, fall 2005.

| Species |
|---------------------|
| American Eel |
| Black Crappie |
| Blacktail Redhorse |
| Blue Catfish |
| Bluegill |
| Bowfin |
| Brook Silverside |
| Channel Catfish |
| Flathead Catfish |
| Freshwater Drum |
| Gizzard Shad |
| Green Sunfish |
| Hybrid Striped Bass |
| Logperch |
| Longear Sunfish |
| Longnose Gar |
| Quillback |
| Redbreast Sunfish |
| Redear Sunfish |
| Smallmouth Buffalo |
| Spotted Gar |
| Warmouth |
| White Crappie |

TABLE 2. Relative stock density (RSD), catch per hour (CPH), substock ratio (SSR), and relative weight (Wr) of target species from the Coosa River

| SPOTTED BASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|------|----------------|---------------------|----------|------|-----|-------|------|------|----|-------|-----|------|----|-------|-----|------|-----|-------|-----|------|-----|-------|-----|------|-----|-------|------|
| Year | Gear | No. of Samples | Total Effort (hrs.) | Substock | | | RSD-S | | | | RSD-Q | | | | RSD-P | | | | RSD-M | | | | RSD-T | | | | Total | |
| | | | | No. | CPH | SSR | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH |
| 1991 | EF | 9 | 4.50 | 157 | 35.0 | 201 | 42 | 9.3 | 54 | 86 | 10 | 2.2 | 13 | 91 | 6 | 1.3 | 8 | 93 | 13 | 2.9 | 17 | 104 | 7 | 1.5 | 9 | 102 | 235 | 52.4 |
| 1992 | EF | 9 | 4.50 | 118 | 26.2 | 93 | 70 | 15.5 | 55 | 85 | 12 | 2.6 | 9 | 89 | 13 | 2.8 | 10 | 103 | 18 | 4.0 | 14 | 116 | 14 | 3.1 | 11 | 113 | 245 | 54.4 |
| 1994 | EF | 9 | 4.50 | 57 | 12.6 | 45 | 57 | 12.6 | 45 | 88 | 21 | 4.6 | 17 | 92 | 11 | 2.4 | 9 | 98 | 22 | 4.8 | 17 | 106 | 16 | 3.5 | 13 | 107 | 184 | 40.9 |
| 1996 | EF | 9 | 4.50 | 24 | 5.3 | 32 | 47 | 10.4 | 62 | 81 | 8 | 1.7 | 11 | 84 | 5 | 1.1 | 7 | 89 | 11 | 2.4 | 14 | 100 | 5 | 1.1 | 7 | 112 | 100 | 22.2 |
| 1999 | EF | 9 | 4.50 | 66 | 14.6 | 59 | 63 | 14.0 | 57 | 81 | 20 | 4.4 | 18 | 84 | 2 | 0.4 | 2 | 112 | 17 | 3.7 | 15 | 108 | 9 | 2.0 | 8 | 111 | 177 | 39.3 |
| 2002 | EF | 9 | 4.50 | 123 | 27.3 | 82 | 80 | 17.7 | 53 | 82 | 20 | 4.4 | 13 | 83 | 12 | 2.6 | 8 | 87 | 22 | 4.8 | 15 | 93 | 16 | 3.5 | 11 | 102 | 273 | 60.7 |
| 2005 | EF | 9 | 4.50 | 72 | 16.0 | 66 | 50 | 11.1 | 46 | 83 | 18 | 4.0 | 17 | 82 | 13 | 2.9 | 12 | 85 | 18 | 4.0 | 17 | 96 | 10 | 2.2 | 9 | 99 | 181 | 40.2 |
| AVERAGE | | | | 88 | 19.6 | 83 | 58 | 12.9 | 53 | 84 | 16 | 3.4 | 14 | 86 | 9 | 1.9 | 8 | 95 | 17 | 3.8 | 16 | 103 | 11 | 2.4 | 10 | 107 | 199 | 44.3 |

| LARGEMOUTH BASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|------|----------------|---------------------|----------|-----|-----|-------|-----|------|----|-------|-----|------|----|-------|-----|------|----|-------|-----|------|-----|-------|-----|------|----|-------|-----|
| Year | Gear | No. of Samples | Total Effort (hrs.) | Substock | | | RSD-S | | | | RSD-Q | | | | RSD-P | | | | RSD-M | | | | RSD-T | | | | Total | |
| | | | | No. | CPH | SSR | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH | Pct. | Wr | No. | CPH |
| 1991 | EF | 9 | 4.50 | 13 | 2.9 | 65 | 4 | 0.8 | 20 | 84 | 10 | 2.2 | 50 | 88 | 3 | 0.6 | 15 | 92 | 3 | 0.6 | 15 | 92 | | | | | 33 | 7.1 |
| 1992 | EF | 9 | 4.50 | 9 | 2.0 | 35 | 4 | 0.8 | 15 | 86 | 3 | 0.6 | 12 | 87 | 14 | 3.1 | 54 | 96 | 5 | 1.1 | 19 | 94 | | | | | 35 | 7.8 |
| 1994 | EF | 9 | 4.50 | 16 | 3.5 | 84 | 6 | 1.3 | 32 | 88 | 8 | 1.7 | 42 | 84 | 3 | 0.6 | 16 | 99 | 2 | 0.4 | 11 | 97 | | | | | 35 | 7.8 |
| 1996 | EF | 9 | 4.50 | 1 | 0.2 | 7 | 6 | 1.3 | 40 | 86 | 6 | 1.3 | 40 | 84 | 2 | 0.4 | 13 | 98 | 1 | 0.2 | 7 | 89 | | | | | 16 | 3.6 |
| 1999 | EF | 9 | 4.50 | 5 | 1.1 | 36 | 4 | 0.8 | 29 | 84 | 4 | 0.8 | 29 | 73 | 5 | 1.1 | 36 | 91 | 1 | 0.2 | 7 | 104 | | | | | 19 | 4.2 |
| 2002 | EF | 9 | 4.50 | 11 | 2.4 | 58 | 4 | 0.8 | 21 | 77 | 4 | 0.8 | 21 | 82 | 8 | 1.7 | 42 | 91 | 3 | 0.6 | 16 | 86 | | | | | 30 | 6.7 |
| 2005 | EF | 9 | 4.50 | 0 | 0.0 | 0 | 6 | 1.3 | 27 | 83 | 3 | 0.7 | 14 | 84 | 7 | 1.6 | 32 | 90 | 6 | 1.3 | 27 | 93 | | | | | 22 | 4.9 |
| AVERAGE | | | | 8 | 1.7 | 41 | 5 | 1.0 | 26 | 84 | 5 | 1.2 | 30 | 83 | 6 | 1.3 | 30 | 94 | 3 | 0.6 | 15 | 94 | | | | | 27 | 6.0 |

TABLE 3. Age composition and mean total length of spotted bass from the Coosa River, fall 2005.

| Age | Year Class | Number | Percent | CPH | Mean TL | Standard Error | Length Range (mm) |
|-------|------------|--------|---------|------|---------|----------------|-------------------|
| 0 | 2005 | 36 | 19.9 | 8.0 | 109.5 | 2.7 | 81 - 149 |
| 1 | 2004 | 63 | 34.8 | 14.0 | 176.7 | 3.2 | 135 - 267 |
| 2 | 2003 | 32 | 17.7 | 7.1 | 266.3 | 5.5 | 204 - 327 |
| 3 | 2002 | 21 | 11.6 | 4.7 | 356.0 | 11.2 | 255 - 444 |
| 4 | 2001 | 7 | 3.9 | 1.6 | 432.7 | 9.4 | 382 - 455 |
| 5 | 2000 | 7 | 3.9 | 1.6 | 476.9 | 9.3 | 438 - 516 |
| 6 | 1999 | 1 | 0.6 | 0.2 | 482.0 | - | 482 |
| 7 | 1998 | 3 | 1.7 | 0.7 | 503.7 | 29.4 | 468 - 562 |
| 8 | 1997 | 5 | 2.8 | 1.1 | 506.4 | 14.5 | 455 - 534 |
| 9 | 1996 | 1 | 0.6 | 0.2 | 541.0 | - | 541 |
| 10 | 1995 | 4 | 2.2 | 0.9 | 531.8 | 12.5 | 500 - 556 |
| 11 | 1994 | 1 | 0.6 | 0.2 | 536.0 | - | 536 |
| Total | | 181 | 100 | 40.2 | | | |

TABLE 4. Number of years to reach a specific age according to the von Bertalanffy growth equation for fish collected in the Coosa River compared to statewide data.

| Total Length | Years | | | |
|--------------|------------------|------------------|----------------|-------------------|
| | Coosa River 1991 | Coosa River 2005 | Statewide mean | Statewide maximum |
| 304 mm | 2.27 | 2.15 | 2.61 | 2.25 |
| 432 mm | 4.55 | 4.51 | 5.20 | 4.32 |

TABLE 5. Fishery statistics for the Coosa River access area creel survey, March through May 2006.

| | | No. anglers | Hours |
|--------------------|---------------------------------------|-------------|-------------|
| Fishing for: | Bass | 60 | 303.6 |
| | Crappie | 11 | 63.6 |
| | Catfish | 47 | 170.0 |
| | Anything | 73 | 296.1 |
| | TOTAL | 191 | 833.3 |
| Fishing From: | Access Area: | Wetumpka | Jordan Dam |
| | Boat | 103 | 17 |
| | Bank | 25 | 46 |
| Harvested: | Largemouth bass | 1 | |
| | Spotted bass | 12 | |
| | Black crappie | 3 | |
| | White crappie | 2 | |
| Released: | Bass >12 inches | 51 | |
| | Bass <12 inches | 65 | |
| | Crappie >9 inches | 7 | |
| | Crappie <9 inches | 13 | |
| Catch and harvest: | | CPH | HPH |
| | Bass ¹ | 0.25 | 0.02 |
| | Bass ² | 0.13 | 0.01 |
| | Crappie ³ | 0.16 | 0.03 |
| County origin: | | | No. parties |
| | Elmore | | 62 |
| | Montgomery | | 26 |
| | Lee | | 1 |
| | Unknown | | 1 |
| Comments: | | | No. parties |
| | Not catching fish | | 6 |
| | Some bass have sores | | 1 |
| | Charge more for out-of-state licenses | | 1 |
| | Ban commercial fishing | | 1 |

¹Includes only bass anglers and fish of all sizes.

²Includes only bass anglers and fish 12 inches and larger.

³Includes only crappie anglers and fish of all sizes.

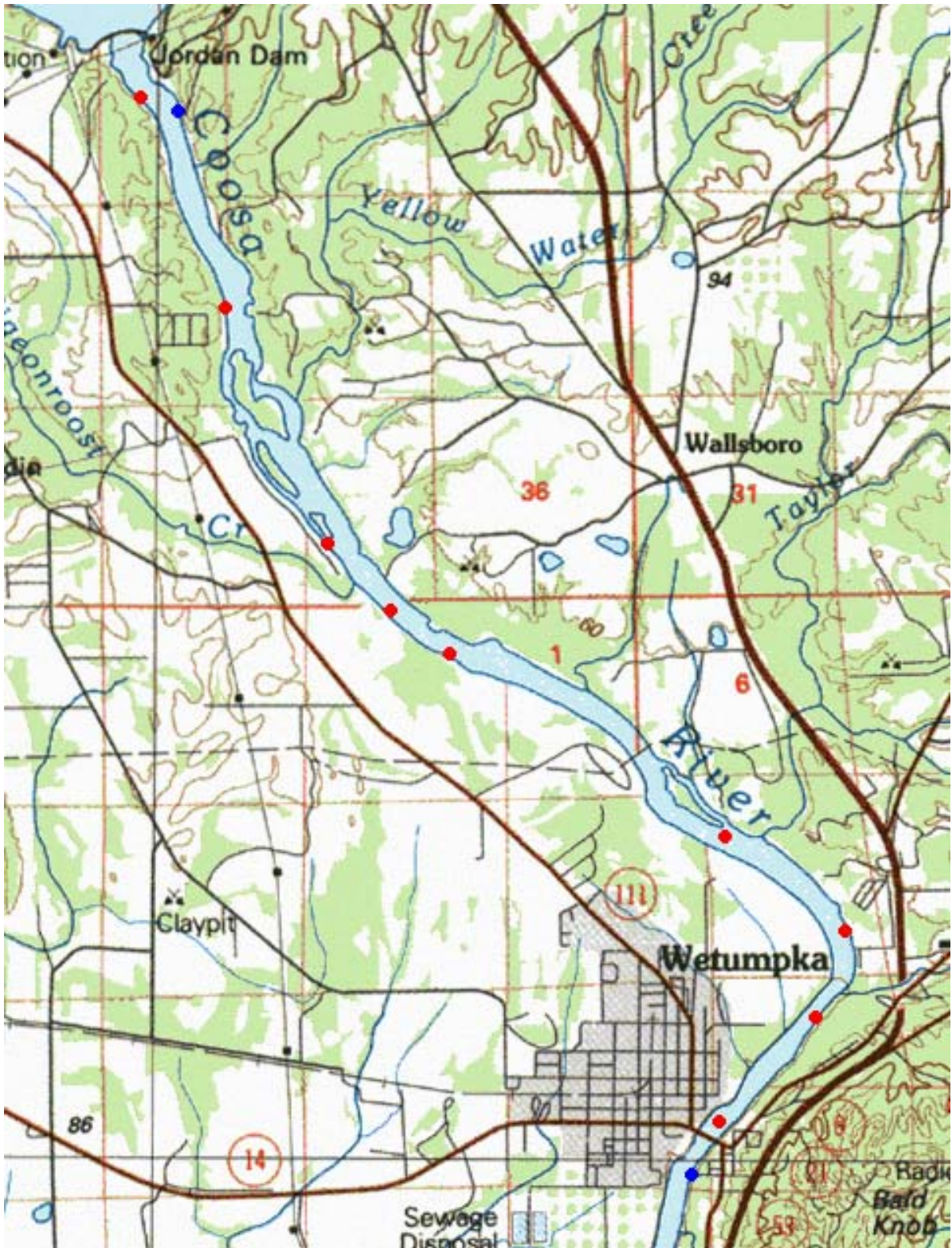


FIGURE 1. Fall 2005 electrofishing sampling sites (red) and access areas (blue) on the Coosa River.

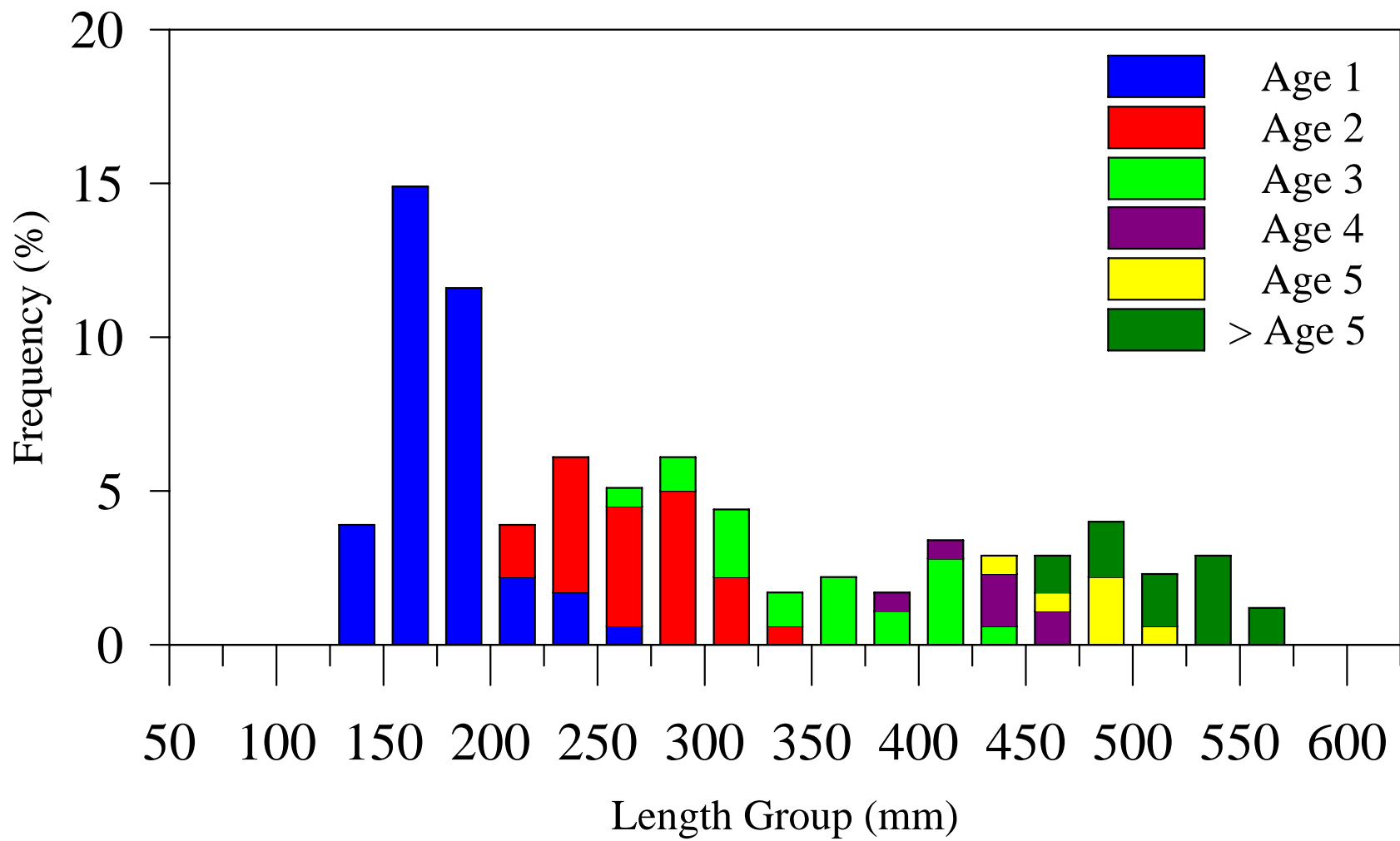


FIGURE 2. Length-at-age frequency of spotted bass (N=181) collected from the Coosa River, fall 2005.

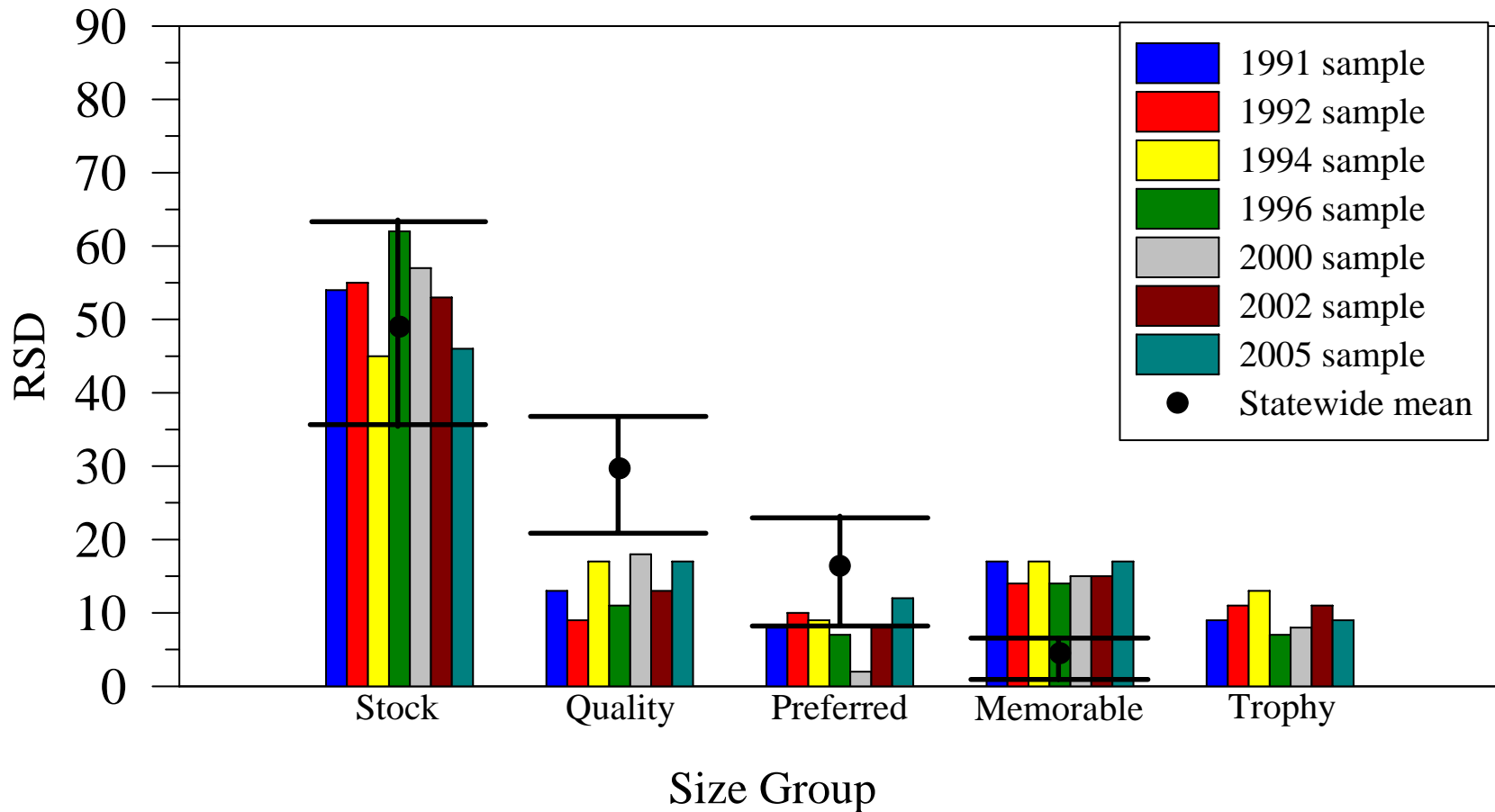


FIGURE 3. The relative stock density (RSD) of spotted bass in the Coosa River (1991-2005). The I-beam denotes the 25th and 75th percentiles of RSD values of spotted bass in reservoirs, statewide. Summary data does not exist for the trophy size group.

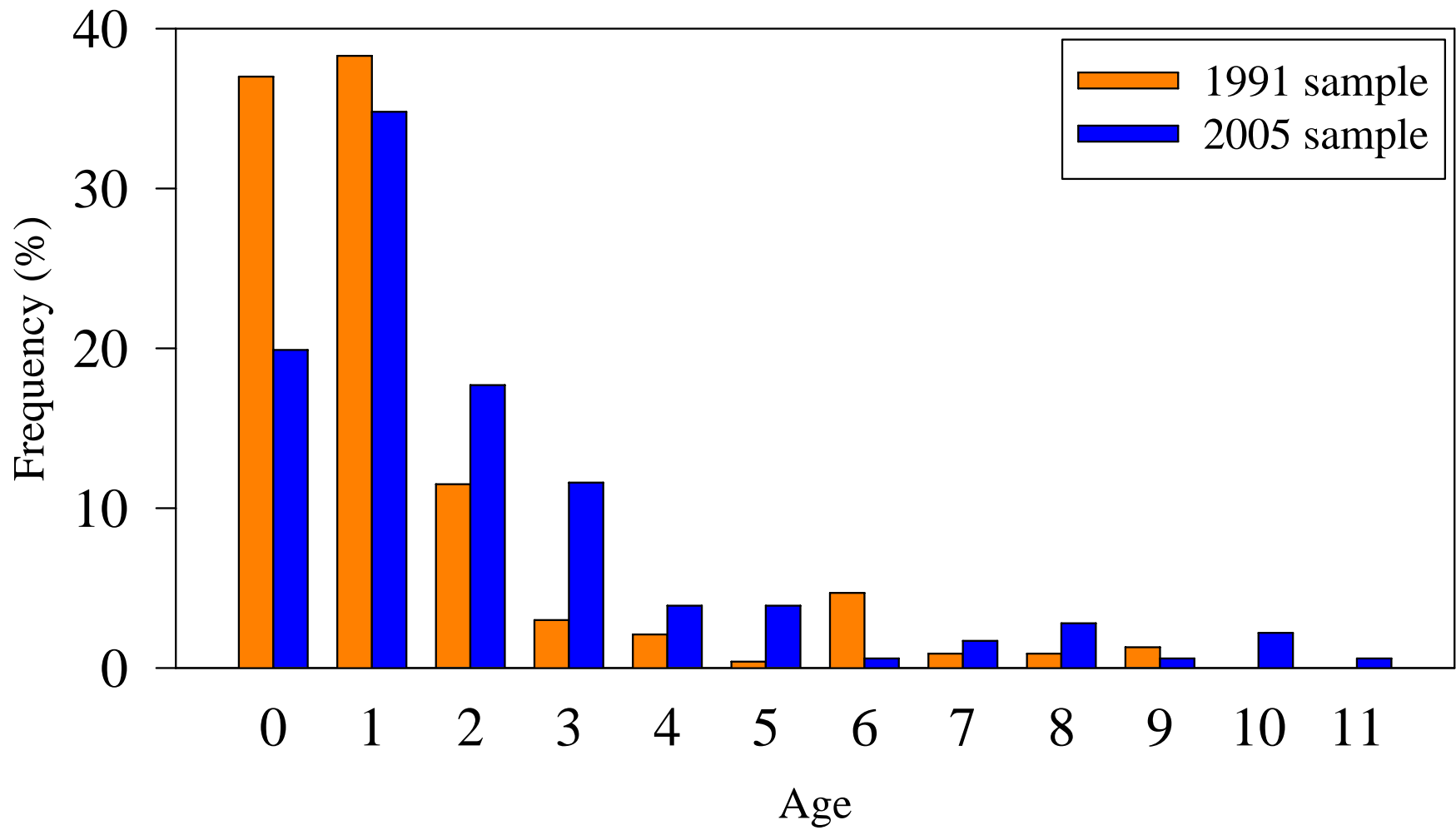


FIGURE 4. Age frequency distribution of spotted bass collected from the Coosa River, 1991 and 2005.

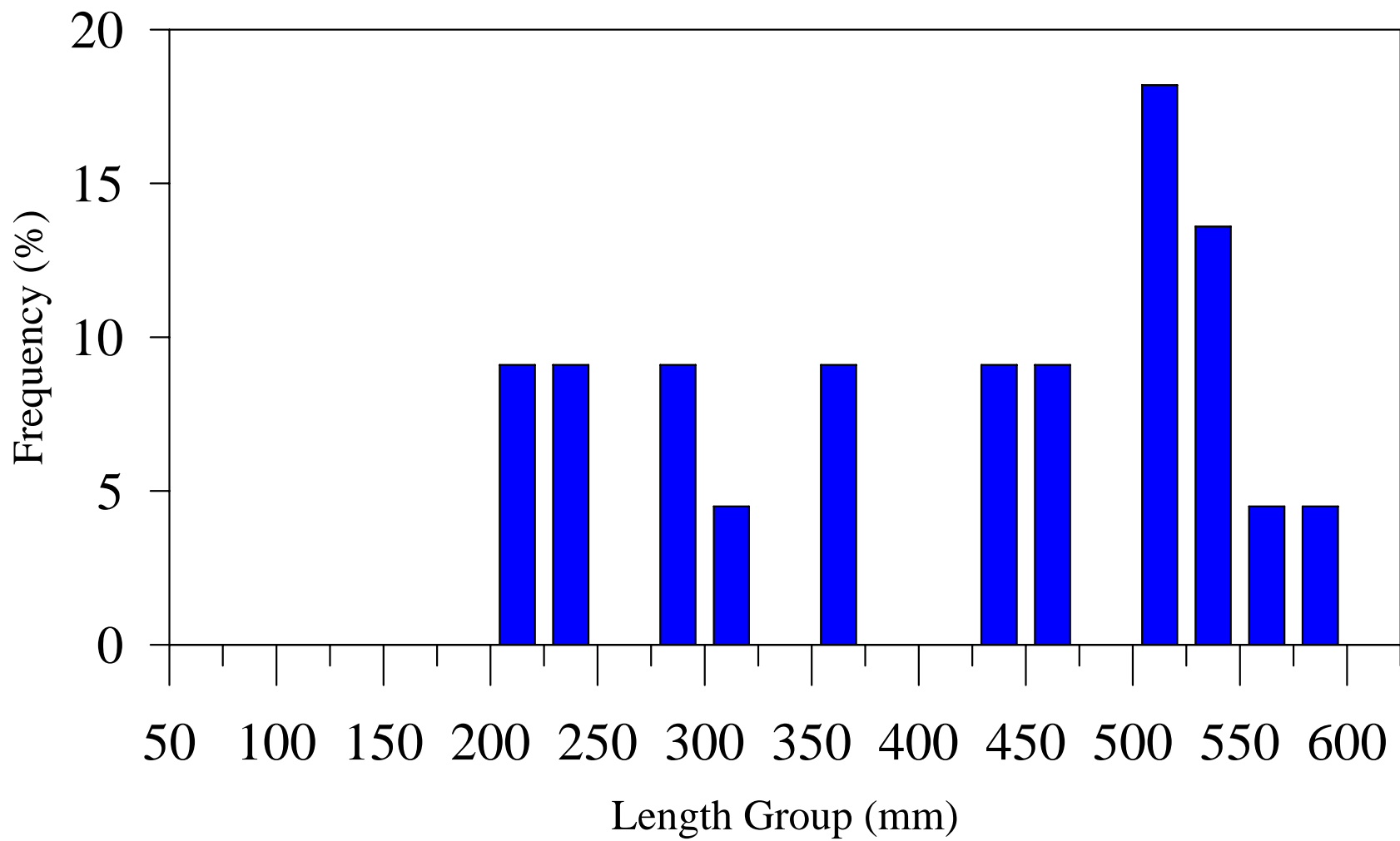


FIGURE 5. Length frequency distribution of largemouth bass (N=22) collected from the Coosa River, fall 2005.