

## Assessment of Largemouth Bass at Falls of the Neuse Reservoir, 2007

Falls of the Neuse Reservoir (Falls Lake) is a 12,491-acre flood control and water supply reservoir located 12 miles northwest of Raleigh in the upper portion of the Neuse River basin. Falls Lake was impounded in 1982 and is managed by the United States Army Corp of Engineers. Falls Lake supports a multi-species fishery consisting of largemouth bass, black and white crappie, yellow and white perch, white bass, sunfishes, and catfishes. Additionally, gizzard and threadfin shad play an important role in the lake's food web.

Largemouth bass support major recreational fishing opportunities in Falls Lake. Largemouth bass populations in the lake are sampled every two years by Commission biologists to determine if size and creel regulations adequately protect bass stocks. Current regulations for bass in Falls Lake include a 16-inch minimum size limit and a five fish daily creel limit.

Largemouth bass were collected from shoreline areas in early May 2005 and 2007 using boat electrofishing. In 2005, length and weight were measured on all largemouth bass collected and fish were returned to the lake. In 2007, in addition to length and weight information, otoliths (ear bones) were collected from a small sub-sample of largemouth bass to determine age distribution and growth rates. All other fish were returned to the lake.

### Sampling Results

A total of 535 largemouth bass were collected from Falls Lake in 2005, while 341 were collected in 2007. The overall catch rates for largemouth bass from electrofishing was 88 fish per hour in 2005 and 67 fish per hour in 2007. These values are above the average catch rates for similar Piedmont reservoirs indicating that largemouth bass are very abundant in Falls Lake.

Approximately 20% of the largemouth bass collected in 2005 and 2007 were greater than the 16-inch size limit (Figure 1). Only one trophy size (> 25 inches) largemouth bass was collected in 2005, while no trophy size largemouth bass were captured in 2007. However, approximately 30% of the largemouth bass collected in 2005 and in 2007 were between 14 and 16 inches.

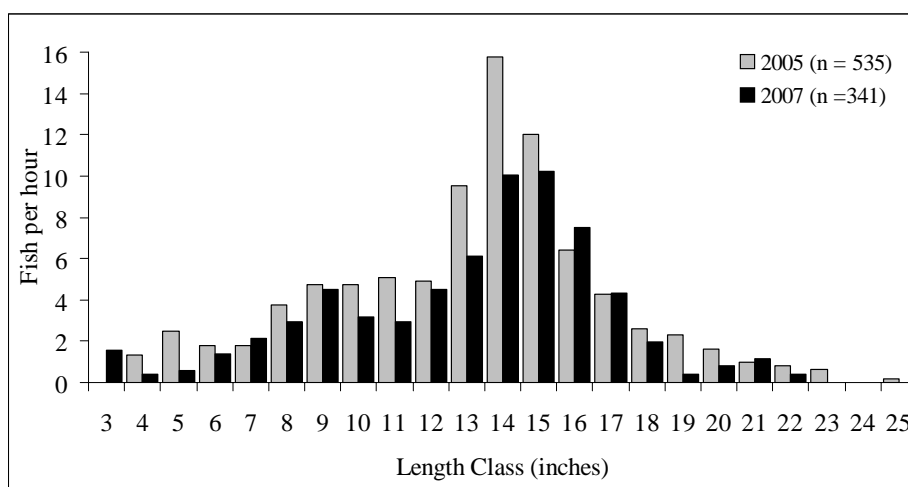
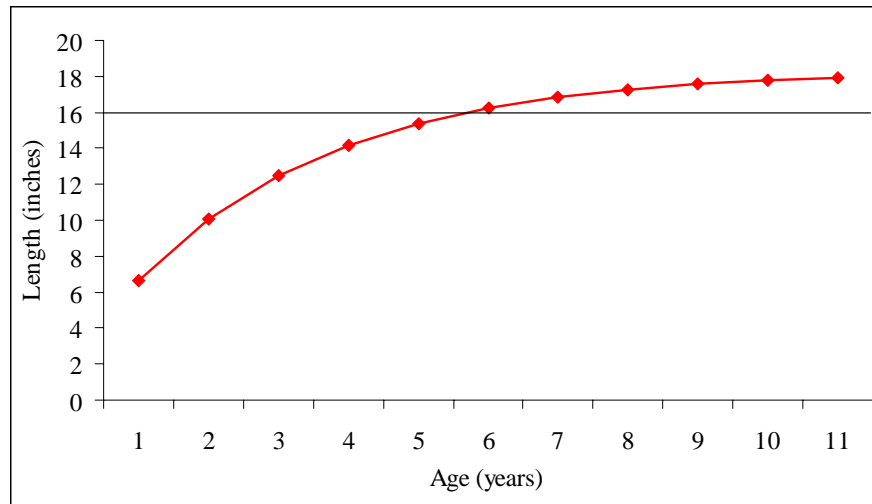


Figure 1.—Largemouth bass length distributions from Falls Lake in 2005 and 2007.

The percentage of 1 and 2-year old largemouth bass in our sample was approximately 28%, which suggests good reproduction and survival of young fish. Additionally, adult mortality and harvest does not appear excessive with 34% of the fish collected being 5 years old or greater.

Growth for younger largemouth bass is similar to the average growth of largemouth bass from other Piedmont reservoirs (approaching 14 inches around 3 to 4 years of age), but after age 4, growth slows substantially (Figure 2). On average, largemouth bass in Falls Lake do not reach harvestable size (16 inches) until almost 6 years of age; however, it can take as long as 9 years for some fish.



**Figure 2.**—Growth curve for largemouth bass in Falls Lake in 2007. Horizontal line indicates the 16-inch minimum length limit.

Largemouth bass body condition as measured by relative weight is considered good and suggests that forage overall is adequate. Relative weight values were greater than 90 for most largemouth bass in 2005 and 2007. The ideal values for relative weight is 100; but, in most cases values in the lower 90s indicate that sufficient forage exists to support the current structure of the largemouth bass population. Because Falls Lake has ample nutrients and an excellent forage base, relative weight values could be greater than 100.

## Conclusions

Falls Lake supports a quality largemouth bass fishery. However, the population is dominated by fish just under 16 inches. Population modeling indicates that lowering the minimum size limit to 14 inches would allow anglers to take more largemouth bass without harming the population. Reducing the number of largemouth bass less than 16 inches would decrease competition for forage and could improve growth rates and condition for the remaining fish. The lower length limit would allow for the needed harvest of fish in smaller size classes and provide more opportunities to the harvest-oriented anglers as well as to the tournament anglers.