

# Lake Jeanette Largemouth Bass Survey, 2011

## SUMMARY REPORT

### PIEDMONT FISHERIES INVESTIGATIONS

Federal Aid in Fish Restoration  
Project F-23

Project Type: Technical Guidance

Period Covered: June 2011

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Funds from the Sport Fish Restoration Program are used for fisheries management and research, aquatic education, and boating access facilities. The program is administered cooperatively by the N.C. Wildlife Resources Commission and the U.S. Fish and Wildlife Service.

## Background

Lake Jeanette is a 101-ha impoundment owned by International Textile Group (ITG) and operated by the Lake Jeanette Association. The reservoir is leased by the Guilford Wildlife Club for angling activities. The reservoir's initial purpose was to provide water resources for Cone Mills but has recently been used for recreational activities for the Guilford Wildlife Club. Lake Jeanette provides angling opportunities for largemouth bass *Micropterus salmoides* throughout the reservoir. The largemouth bass population is currently governed by the statewide minimum size limit of 14" and creel limit of 5 fish per day with an exception that 2 fish in the daily creel may be less than 14" in length. The reservoir also provides angling opportunities for crappie *Pomoxis* sp., sunfish *Lepomis* sp., channel catfish *Ictalurus punctatus*, and bullhead catfish *Ameiurus* sp.

The objective of this survey was to obtain stock assessment data needed to evaluate and manage largemouth bass in Lake Jeanette.

## Methods

### *Field Collections*

Largemouth bass were sampled on 1 June 2011 using shoreline electrofishing at randomly chosen sites. Fish were collected using a Smith-Root 7.5 GPP boat electrofisher. Sampling was conducted using 500–1000 V and 3–4 amps of pulse DC electrical current. All fish collected were measured (total length, mm) and weighed (g). A subsample of fish was sacrificed for age determination using sagittal otoliths and the remaining fish were returned to the reservoir.

### *Data Assessment*

The largemouth bass population was assessed by evaluating several parameters: 1) Size Structure; 2) Age Structure; 3) Growth; and 4) Body Condition. Information from these categories was used to develop management recommendations to maintain and improve the largemouth bass fishery.

*Size Structure.*—The size structure of a largemouth bass population represents the percentage of small, medium, and large size fish in the population. Proportional Stock Density (PSD) and Proportional Stock Density-Preferred (PSD-P) are indices used to express the proportion of quality and preferred size fish, respectively. PSD is an estimate of the number of largemouth bass greater than 300 mm divided by the number of largemouth bass greater than 200 mm. PSD-P is the number of largemouth bass greater than 380 mm divided by the number of fish greater than 200 mm (Gabelhouse 1984; Guy et al. 2007).

*Age Structure.*—Age structure provides information on the different ages of largemouth bass in the sample and the percentage of largemouth bass within each age group. Age-length keys are used to expand age information from the subsample of sacrificed fish to the entire sample. Lack of 1 or 2 year old fish or very low percentages of fish within these age groups may indicate problems with recruitment; that is, reproduction is failing or small largemouth bass are not surviving their first year. Lack of

older fish (5 years and greater) may indicate high mortality (death rate) caused by either natural events or overharvest by anglers.

*Growth.*—Growth of largemouth bass was modeled using the von Bertalanffy growth curve:

$$L_t = L_{inf} (1 - e^{-k(t-t_0)})$$

where  $L_t$  = length at time  $t$ ,  $L_{inf}$  = maximum length,  $k$  = growth coefficient, and  $t_0$  = the theoretical age at which the fish would have zero length (Ricker 1975). Fast growth might be due to high harvest rates, poor recruitment, or the ability of the reservoir to support more fish. Slow growth might indicate overcrowding or an insufficient food supply.

*Body Condition.*—Relative weight is a parameter that provides an indication of body condition compared to a national average; a value of 100 is considered ideal. The Henson (1991) equation for standard weight was used to determine body condition. Low relative weight values mean fish are skinnier than average and high values indicate that fish are heavier than average.

## Results

*Size Structure.*—A total of 86 largemouth bass were collected from Lake Jeanette. PSD was 85 and the PSD-P was 48. Forty-five percent of the largemouth bass collected were greater than 356 mm (14 inches) (Figure 1).

*Age Structure and Growth.*—Approximately 40% of the sample consisted of 1 and 2 year old fish (Figure 2). Adult mortality and overharvest is not a concern with 33% of fish captured being 5 years old or greater. Fish reached 356 mm (14 in.) between 3 and 4 years of age and  $L_{inf}$  was estimated to be 522 mm (20.5 in.) (Figure 3). The largest fish captured in 2011 measured 582 mm (22.9 in.) and weighed 2547 g (5.6 lbs.).

*Body Condition.*—Mean relative weights ranged from 88 to 94 across size classes (Figure 4).

## Summary

Lake Jeanette provides an average largemouth bass fishery. This survey is a snapshot of the actual conditions of the largemouth bass population. A more intensive survey maybe required if problems within the fishery are observed. Overall, the size structure of the Lake Jeanette largemouth bass population is excellent. PSD and PSD-P values indicate that there is a high proportion of quality and preferred size fish in the population. Age structure indicates that recruitment to the fishery is good with 40% of fish sampled between ages 1 and 2. The population also displays average growth with fish reaching 356 mm (14 in.) between ages 3 and 4. Mean relative weights (body condition) are good but could improve. Generally, mean relative weights for largemouth bass in Piedmont reservoirs are close or even above a score of 100. The slightly lower mean relative weights could indicate that the population maybe slightly overcrowded for the given food supply. After consultation with both the Guilford Wildlife Club and the

Lake Jeanette Association, harvest of largemouth bass may be limited or nonexistent. Harvest of smaller largemouth bass may alleviate the less than average condition. Please contact me at any time if you have further questions.

### **Recommendations**

1. To increase body condition of largemouth bass encourage anglers to harvest smaller largemouth bass until a noticeable increase in condition occurs.
2. Maintain the current minimum size limit of 14 inches and creel limit of 5 fish/day with the exception that two fish may be less than the minimum size limit of 14 inches. Encouraging anglers to harvest smaller fish will allow the remaining population to increase in overall size and condition.

### **References**

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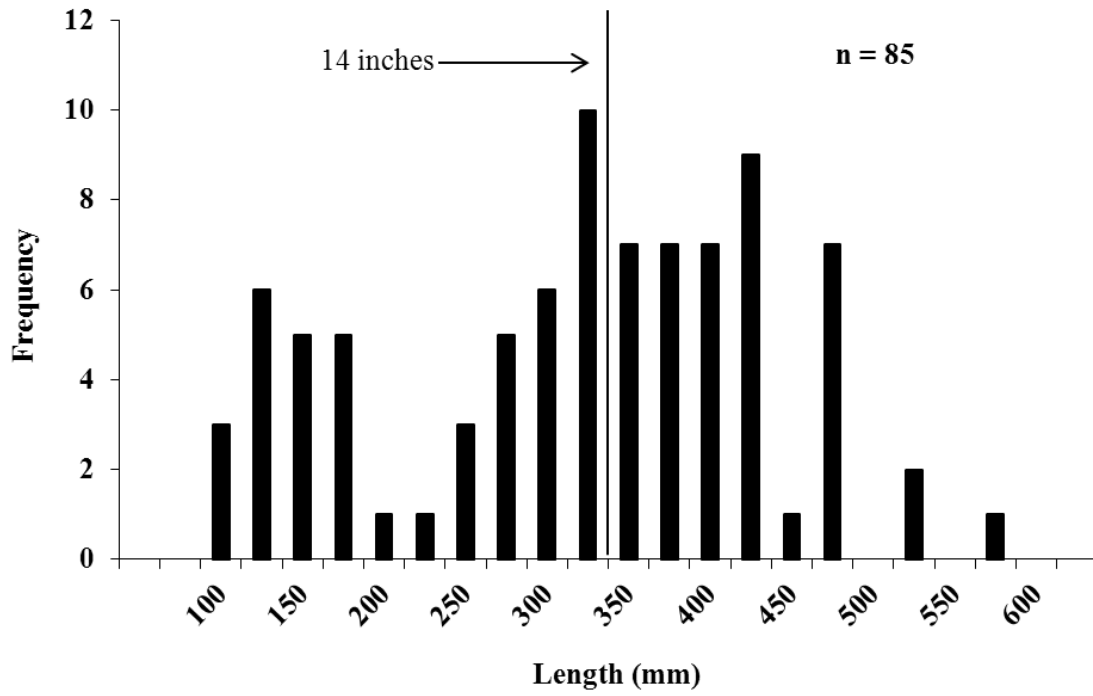


FIGURE 1.—Largemouth bass size structure in Lake Jeanette, 2011.

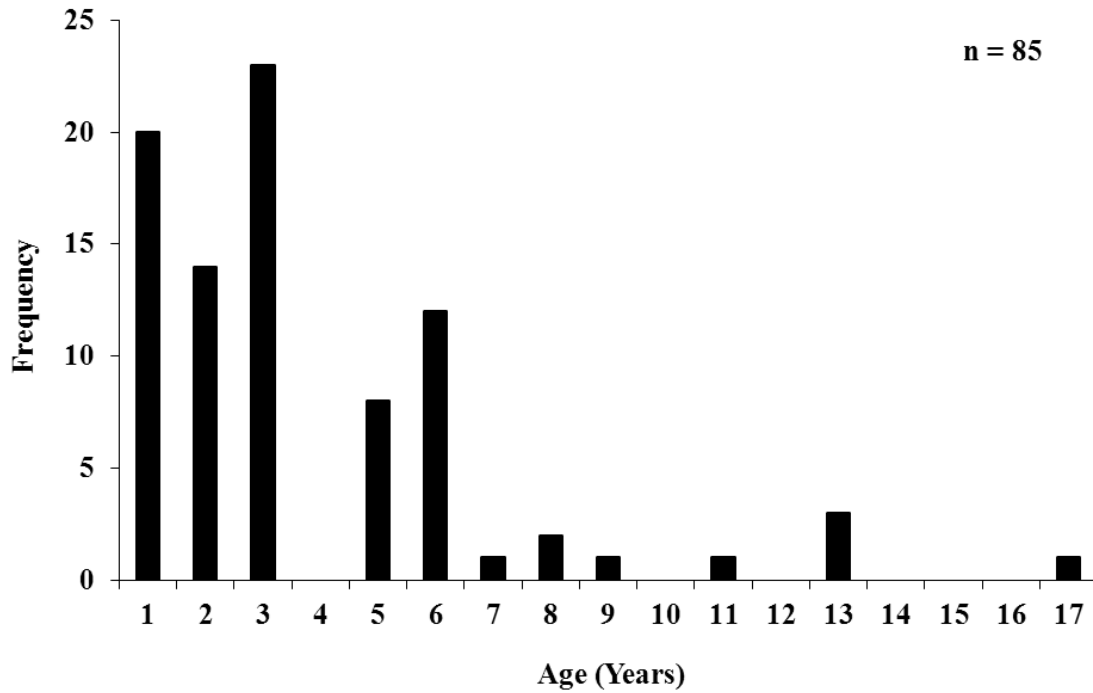


FIGURE 2.—Largemouth bass age structure in Lake Jeanette, 2011.

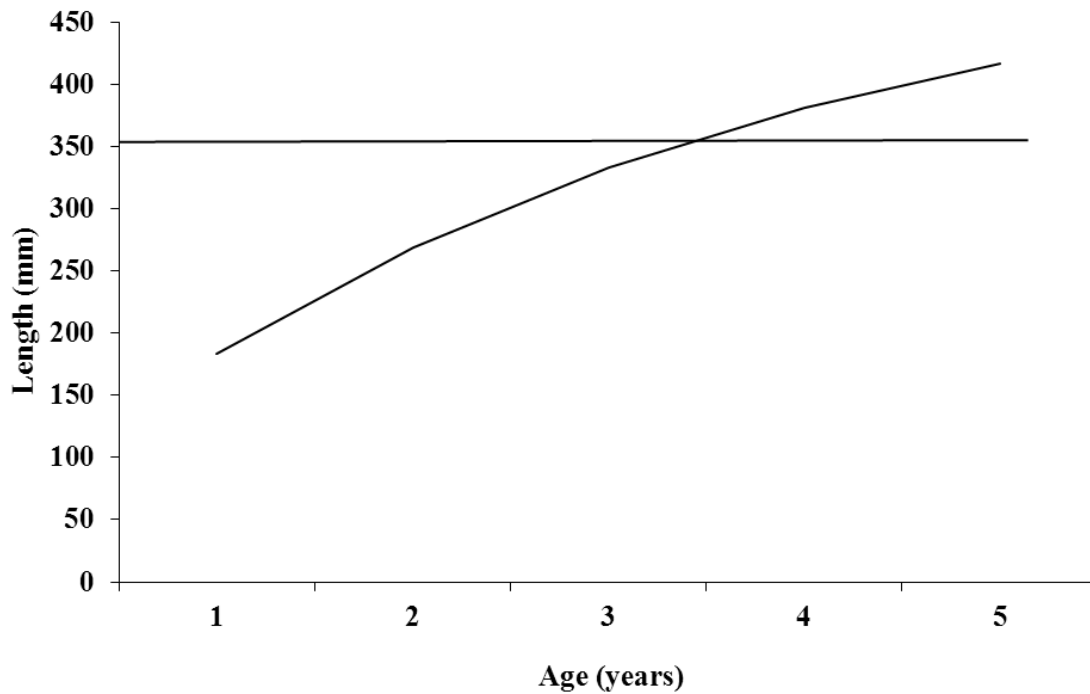


FIGURE 3.—von Bertalanffy growth curve for largemouth bass in Lake Jeanette, 2011. The 2011 estimated parameters for this model were:  $L_{inf} = 522.2$ ,  $k = 0.291$ ,  $t_0 = -0.49$ .

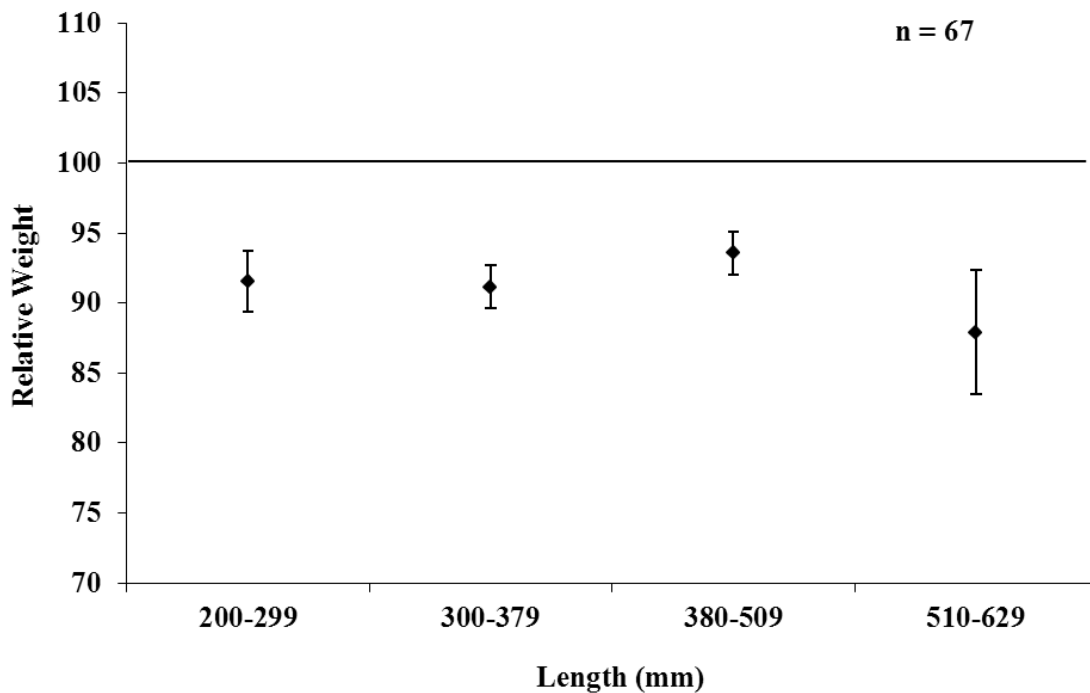


FIGURE 4.—Largemouth bass mean relative weights ( $\pm 1$  SE) by length class in Lake Jeanette, 2011. Horizontal line indicates ideal mean relative weight of 100.