



Fisheries Research Fact Sheet

An Overview of the Lake Gaston Largemouth Bass Fishery (2010-2016)

May 2018



Lake Gaston is a 8,215-ha reservoir on the Roanoke River, located upstream of Roanoke Rapids Lake and downstream of Kerr Lake on the Virginia-North Carolina border. Lake Gaston is owned and operated by Dominion Energy. The dam was completed in 1963 and is used for hydropower production, flood control, water supply and recreation. The lake has a maximum depth of 29m and a mean depth of 6m. Lake Gaston and Roanoke Rapids Lake are subject to licensing by the Federal Energy Regulatory Commission.

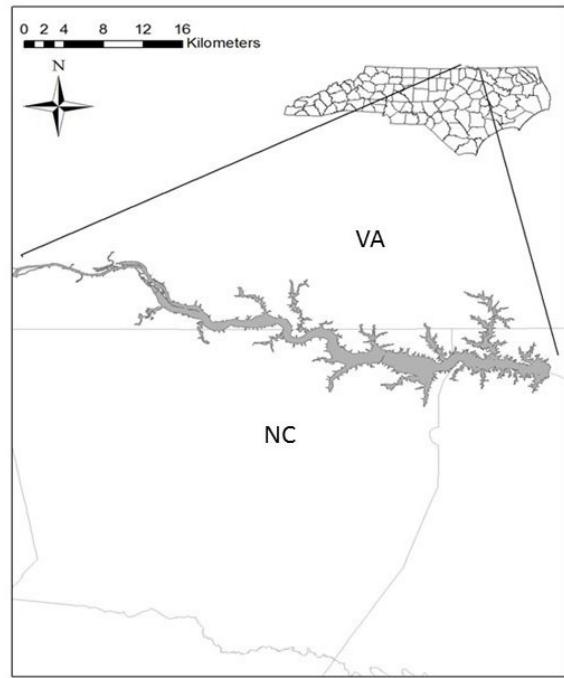
Lake Gaston supports multiple sportfish populations, but Largemouth Bass is the most targeted fishery by anglers on the reservoir. During a 2007–2008 creel survey at Lake Gaston, Largemouth Bass fishing accounted for 78% of the directed angling effort. Routine survey and inventory of fisheries resources is necessary for the development of management strategies. This information allows managers to adapt management to the unique characteristics of each system and determine if current size and creel regulations are adequately protecting the fisheries. The Largemouth Bass fishery in Lake Gaston is currently managed by a 14-inch minimum size limit and five fish daily creel limit, except that two fish may be less than 14 inches. The N.C. Wildlife Resources Commission samples the Largemouth Bass population in Lake Gaston on a biennial basis and normally conducts sampling on even years.

Objectives:

- Give an overview of the Largemouth Bass fishery in Lake Gaston since 2010.
- Monitor changes in size structure, condition, recruitment and growth within the Largemouth Bass fishery to determine if current size and creel regulations are adequately protecting the fishery.

Methods:

- Every two years, Largemouth Bass are collected from shoreline areas during the spring using an electrofishing boat.
- All fish are counted, measured and weighed. During the majority of sample years, a sub-set of Largemouth Bass are sacrificed and otoliths (ear bones) are removed for age and growth analysis.
- The Largemouth Bass fishery is assessed by evaluating relative abundance or catch per unit of effort (CPUE, which is the number of Largemouth Bass caught per hour of electrofishing); size structure; age structure; growth; and body condition.



Map of Lake Gaston showing the location on the North Carolina and Virginia border.



Former NCWRC Fisheries Biologist Bill Collart measuring a Largemouth Bass collected in Lake Gaston.
(NCWRC photo)



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Results:

- Survey results indicate that the abundance of Largemouth Bass and the size structure of the fishery has remained stable with some variation since 2010, with smaller fish indicating good recruitment and larger fish available for anglers (Table 1; Figure 1). Catch per unit effort values for all years were in the upper part of the range that is considered average for a Piedmont reservoir (30 to 60 fish per hour). However, during the most recent survey approximately 8% of the sample was determined to be Spotted Bass ranging in size from 4 to 22 inches.
- Age structure data showed Largemouth Bass ranging from age 1 to age 12, with the majority of fish age 5 or less during all sample years (Figure 2).
- Growth rates have been consistent over the past several sample years, with Largemouth Bass surpassing 14 inches by age 3, which is a typical growth rate for a Piedmont reservoir.
- Body Conditions, or plumpness, for Largemouth Bass ranged from 88 to 92, which is within the average range for a Piedmont reservoir and indicates sufficient forage available.

In Summary:

- The Largemouth Bass fishery at Lake Gaston is a quality fishery with ample proportions of adult fish available for anglers and juvenile fish indicating successful reproduction. Body condition for the majority of fish sampled were good to excellent indicating plenty of forage available. The presence of Spotted Bass, however, is a major concern. Spotted Bass can compete with Largemouth Bass for food and habitat and are unable to attain the size potential of Largemouth Bass. Additionally, hybridization and possible loss of pure Largemouth Bass distinctness is a concern.

What's next?:

- Continue sampling Largemouth Bass at Lake Gaston in the spring biennially.
- Continue to evaluate relative abundance, size distribution, and age and growth data.
- Continue to track the percentage of Spotted Bass in the fishery.
- Conduct genetic analysis to determine the strain of Largemouth Bass (northern versus Florida) along with any Spotted Bass hybridization.

For more information, please contact:

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Sample Size	2010	2012	2014	2016
CPUE (fish/hr)	36.1	66.5	60.9	57.0
% ≥ 14 inches	39	51	63	44
% ≥ 20 inches	2	3	3	4
Avg Length @ Age 3	14.0 in	15.5 in	n/a	15.6 in
Largest Fish	22.8 in 6.4 lbs	21.4 in 4.6 lbs	21.3 in 6.0 lbs	22.8 6.1 lbs

Table 1: Largemouth Bass catch rates, percentage ≥ 14 inches, percentage ≥ 20 inches, average length of age three fish, and largest fish sampled during spring sampling at Lake Gaston.

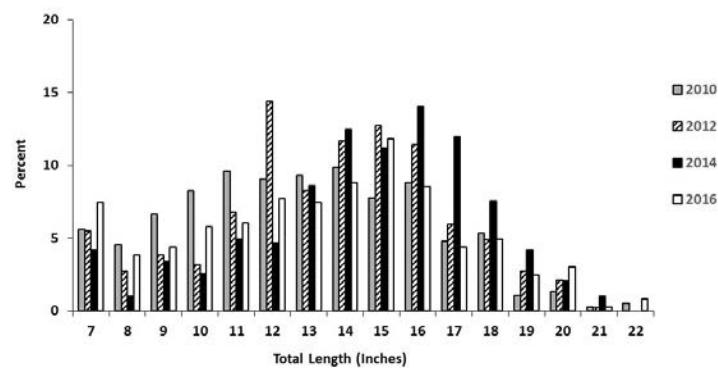


Figure 1: Length distributions for Largemouth Bass collected during spring sampling at Lake Gaston.

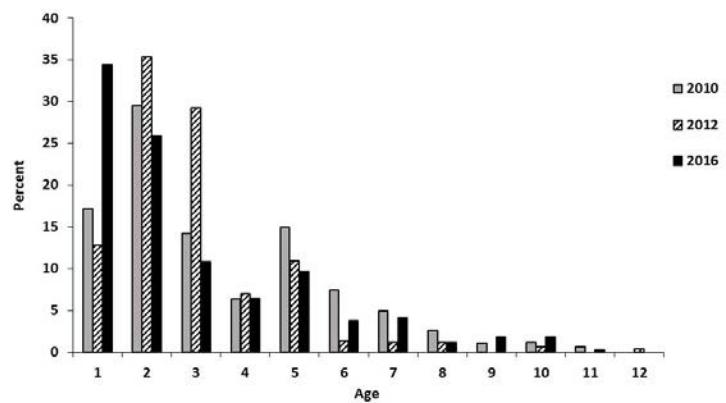


Figure 2: Age distribution for Largemouth Bass collected during spring sampling at Lake Gaston.

