



Status of Largemouth Bass and Sunfish in Lake Phelps -2019

March 2020



Photo: Katy Potoka

The N.C. Wildlife Resources Commission (NCWRC) conducts annual electrofishing surveys for Largemouth Bass and Pumpkinseed at Lake Phelps. Lake Phelps is the second largest naturally formed lake (6,480 ha) in North Carolina and is surrounded by Pettigrew State Park, Pocosin Lakes National Wildlife Refuge and a small portion of privately owned land. Over the past few decades, Lake Phelps has provided excellent fishing opportunities for Largemouth Bass and Pumpkinseed. Since 2002, Largemouth Bass in Lake Phelps have been managed under trophy bass regulations, with a minimum size limit of 14 inches and a protective slot limit between 16 and 20 inches. The daily creel limit for Largemouth Bass is five fish per day. An aggregate of 30 sunfish per day can be harvested with no minimum length limit.

Project Objective:

- These yearly surveys are conducted to assess the condition of Largemouth Bass and sunfish populations within the lake.
- The data collected will be used to further evaluate the effectiveness of current management regulations.

Methods:

- Shoreline electrofishing occurred at 12 sites in May 2019. Each site was sampled for approximately 20 minutes of electrofishing time.
- At each site, all fish were netted for the first five minutes, after which only Largemouth Bass were netted.
- Once netted, fish were placed into an oxygenated holding tank until they could be identified, measured and weighed. All fish were returned to the lake alive.

Results:

- Staff collected 167 Largemouth Bass (8 inches or greater) in 3.8 hours of sampling. Mean catch per unit effort (CPUE) was 46.9 fish per hour (fish/h) of electrofishing. CPUE has been stable since 2010, except in 2015 when sampling occurred in June (Figure 2).
- Largemouth Bass ranged in length from 4 to 22 inches, with most of the fish over 12 inches. Fish that were available for harvest considering the existing regulations made up 19% of the total catch. Fish that were within the 16–20 inch protective slot were 19% of the total catch with only 2% of

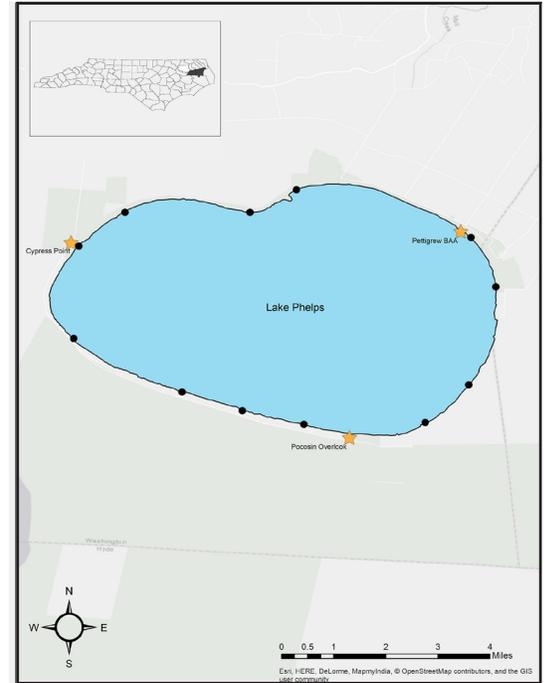


Figure 1: Lake Phelps access areas (stars) and 2019 sampling locations (dots).

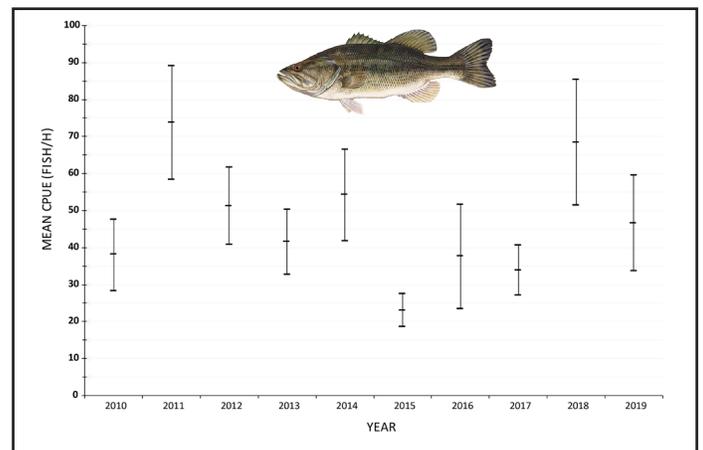


Figure 2: Mean CPUE of Largemouth Bass from 2010 to 2019. Error bars indicate the variance around the data.



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the fish above the upper end of the slot (Figure 3). The large percentage of fish under 8 inches is an indicator of successful spawning and recruitment.

- Age distribution ranged from 1 to 10 years old. Age-1 to age-4 fish were the most frequently observed in samples (Figure 4). Low lake levels and poor spawning conditions documented from 2007-2009 likely limited the number of fish older than age 10.
- Natural mortality is the main source of total Largemouth Bass mortality in Lake Phelps (total mortality = natural mortality + fishing mortality). Estimates of fishing mortality are extremely low and are representative of a catch-and-release fishery. The low fishing mortality (very few bass being harvested from the lake) is likely impacting the effectiveness of the protective slot limit. If harvest rates were higher, biologists would expect less competition for available forage in the lake, which would increase growth and size of the bass.
- Staff collected 36 Bluegill and 112 Pumpkinseed in one hour of sampling. Mean catch per unit effort was 3.0 fish/h and 9.3 fish/h, respectively. Most of the Bluegill were 2–4 inches while most of the Pumpkinseed collected were 5–6 inches (Figure 5). Data suggest that Pumpkinseed grow rapidly and likely become too large for Largemouth Bass to prey on by age 3.
- Other species of interest collected in Lake Phelps included Black Crappie and White Perch.

What's Next:

- Staff will repeat the spring electrofishing survey of Lake Phelps in May 2020.
- A complete report of the 2018 and 2019 data, along with management recommendations, should be available by early 2020.
- Fish attractors and buoys deployed in the lake will continue to be maintained. For locations of the Lake Phelps attractors and to view locations of fish attractors in other bodies of water, visit www.ncpaws.org/ncwrcmaps/fishattractors

For more information, contact:

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Fish illustrations by Duane Raver

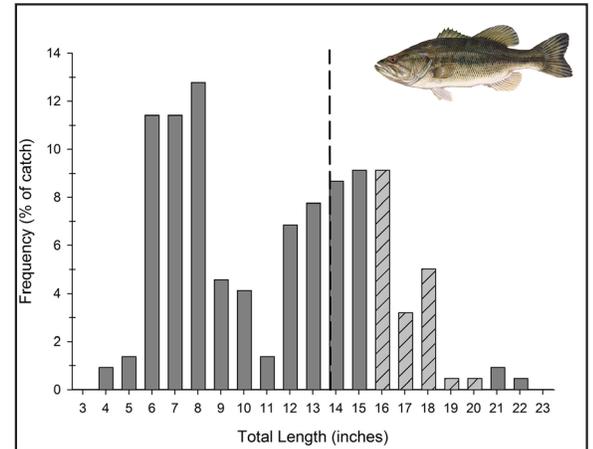


Figure 3: Length frequency distribution of Largemouth Bass. Dashed line indicates the minimum length limit of 14 inches, while the light gray bars indicates the protective slot limit from 16–20 inches.

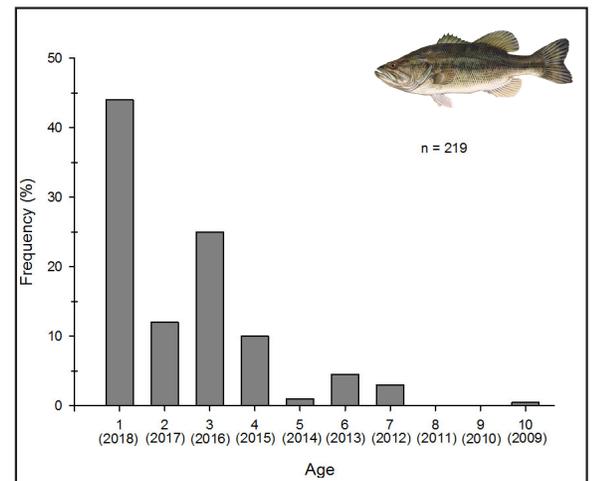


Figure 4: Age distribution of Largemouth Bass from Lake Phelps

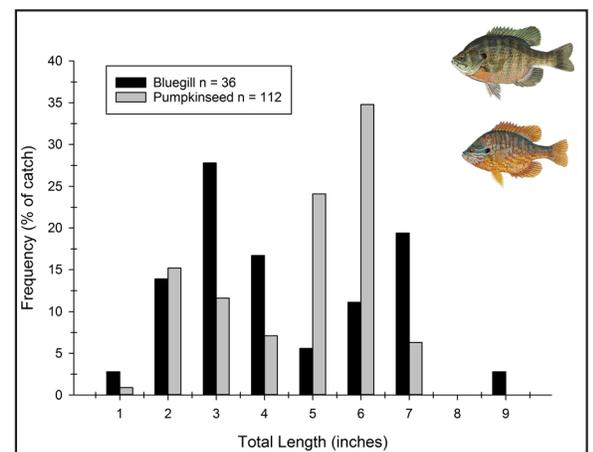


Figure 5: Length frequency distribution of Bluegill and Pumpkinseed.

