



The Status of Largemouth Bass and Pumpkinseed in Lake Phelps - 2017

March 2018

The N.C. Wildlife Resources Commission (NCWRC) conducts annual electrofishing surveys for Largemouth Bass and Pumpkinseed at Lake Phelps. Lake Phelps (16,012 acres) is a naturally formed lake 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 anglers with excellent fisheries 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 (no harvest) between 16 and 20 inches. The daily creel limit for Largemouth Bass is 5 fish per day. An aggregate of 30 sunfish per day can be harvested with no minimum length limit.

Project Objectives:

- Conduct annual electrofishing surveys each May to assess the characteristics and condition of Largemouth Bass and sunfish populations within the lake. Data collected will be used to evaluate the effectiveness of the existing regulation framework.

Methods:

- Shoreline boat electrofishing occurred at 12 sites (Figure 1) in May 2017. Each site was surveyed for approximately 20 minutes; all fish were netted for the first 5 minutes and only Largemouth Bass were netted for the remaining 15 minutes.
- Fish were placed into an oxygenated holding tank until they could be identified, measured and weighed. All fish were returned to the lake alive.
- Relative abundance was indexed as the number of fish collected per hour of electrofishing and expressed as catch-per-unit-effort (fish/h).

Results so far:

- In 2017, we collected 176 Largemouth Bass; mean catch per unit effort (CPUE) was 43.6 fish/h. Relative abundance has remained stable since 2010, with the exception of the 2015 sample which was collected later in the spring (June; Figure 2).

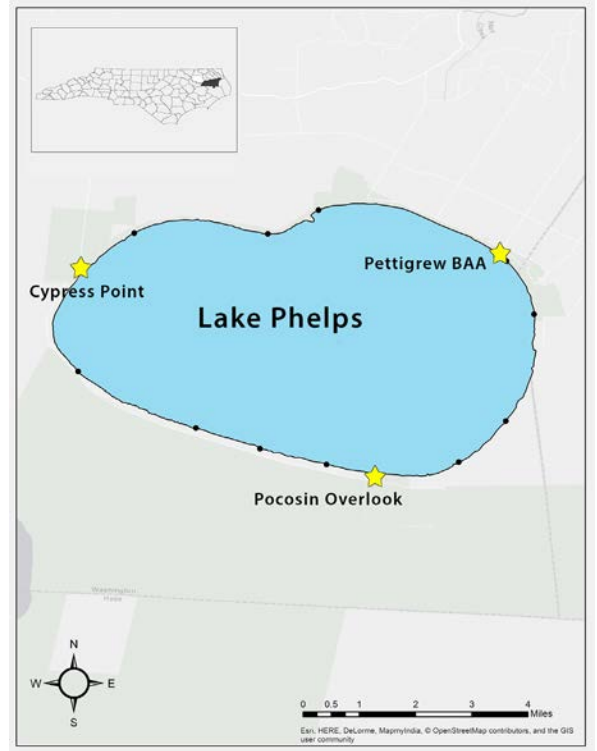


Figure 1: Sportfish sampling locations in Lake Phelps.

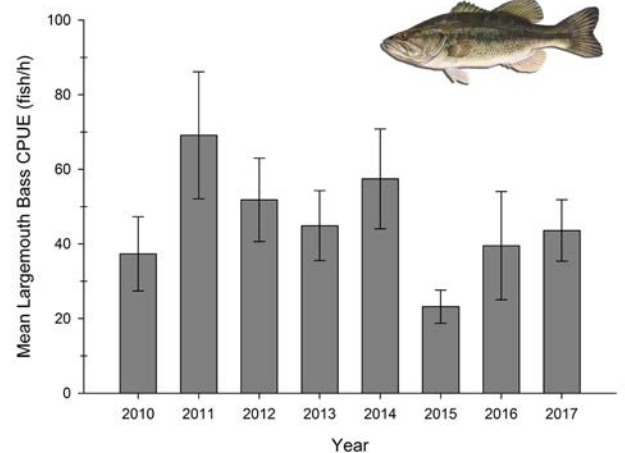


Figure 2: Mean relative abundance of Largemouth Bass from 2010 to 2017. Error bars indicate standard error around the estimate.



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Results so far (continued):

- Largemouth Bass ranged in length from 4 to 21 inches, with the majority of fish under 14 inches (56.8%). In 2017, 20.5% of the fish collected were available for harvest, while 22.7% were in the protective slot length limit (Figure 3). In recent years, the increase in flooded shoreline habitat has contributed to productive spawning and recruitment, which is indicated by a large percent of undersized fish.
- Biologists collected 298 Pumpkinseed in 2017, with mean catch per unit effort calculated as 303.1 fish/h (Figure 4). The majority of Pumpkinseed collected in 2017 (84.8%) were larger than 6 inches (Figure 5). The number of Pumpkinseed less than 5 inches may be limited by excessive predation by Largemouth Bass. However, successful spawning and recruitment of Pumpkinseed are occurring.

What's next?:

- NCWRC staff will conduct their spring electrofishing survey in May 2018.
- A complete report of 2017 and 2018 data will be available in early 2019. This report will include management recommendations that will address the effectiveness of the existing Largemouth Bass regulation framework.
- Otoliths will be taken from a subsample of Largemouth Bass in May 2018 to provide biologists with age structure information.
- NCWRC will continue to partner with Pettigrew State Park and Pocosin Lakes National Wildlife Refuge to pursue opportunities for additional fishing access on Lake Phelps.

For more information, please contact:

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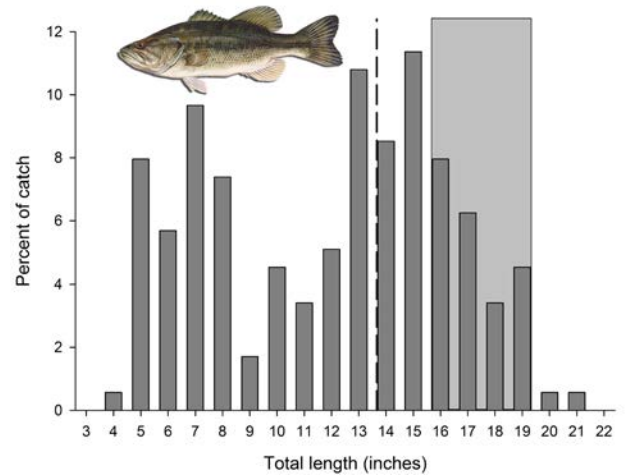


Figure 3: Length frequency distribution of Largemouth Bass from 2017. Dashed line indicates the minimum length limit of 14 inches, while the light gray box indicates the protective slot limit from 16-20 inches.

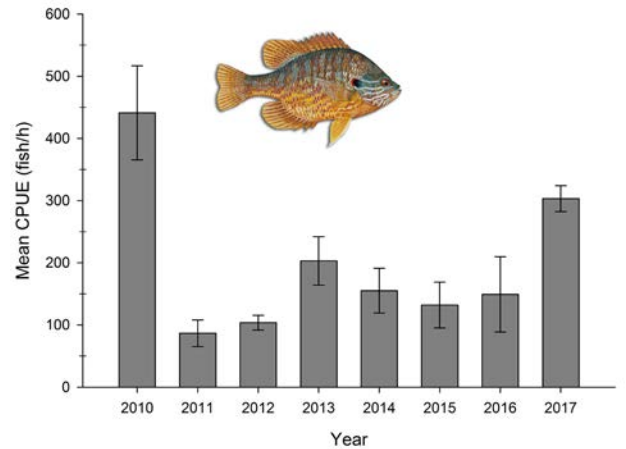


Figure 4: Mean relative abundance of Pumpkinseed from 2010 to 2017. Error bars indicate standard error.

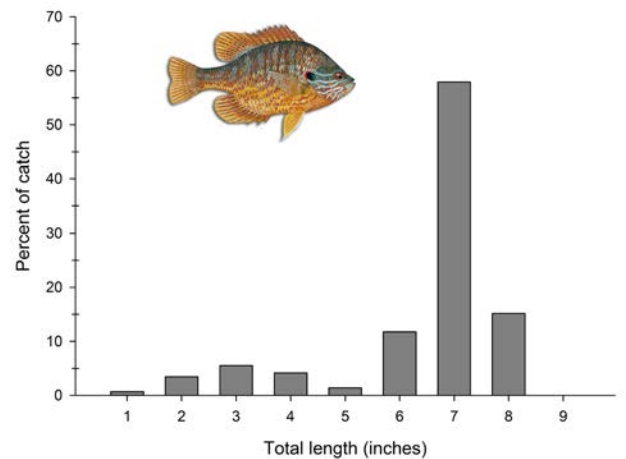


Figure 5: Length frequency of Pumpkinseed from 2017.