North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

Mr. Tim Grant, Director
Winston-Salem Recreation and Parks Department
Bryce A. Stuart Municipal Building
100 E. First Street
Suite 407
Winston-Salem, North Carolina 27101

December 22, 2015

Dear Mr. Grant,

As per our cooperative agreement, this is a summary of the fisheries management activities completed by the Division of Inland Fisheries on Salem Lake and Winston Lake during 2015.

Salem Lake

On April 23, North Carolina Wildlife Resources Commission (NCWRC) personnel conducted an electrofishing survey on Salem Lake. The overall objective of these surveys has been to monitor Largemouth Bass population characteristics over time. However, another reason for the 2015 survey was to continue evaluating the fishery following a drawdown of the lake that occurred between fall 2010 and summer 2012. During this period the 365 acre lake was reduced to approximately 80 acres.

Six survey sites, each containing approximately 300 m of shoreline, were electrofished. All Largemouth Bass were collected and measured. Largemouth Bass were not weighed in 2015 as a result of a scale malfunction. The size structure of Largemouth Bass was assessed with length-frequency histograms and calculations of proportional size distribution for quality (PSD) and preferred-size fish (PSD-P). The calculation of PSD and PSD-P values is explained in Appendix 1. Finally, catch per unit effort (CPUE) was calculated to assess fish densities.

Captured Largemouth Bass ranged from 125 mm (5 in.) to 558 mm (22 in.) in length (Figure 1). The percentage of fish > 200 mm (8 in.) in 2015 (97%) was similar to what was observed during the 2014 sample (92%). In contrast, the percentage of preferred-size fish (≥ 380 mm; 15 in.) improved from 29% in 2014 to 55% in 2015, and is the highest recorded at Salem Lake since 2003 (63%). The increase in preferred-size fish in 2015 was expected given the high percentages of fish < 200 mm in 2013 and 200–300 mm fish (8–12 in.) in 2014. The size structure of Largemouth Bass from the 2015 survey closely resembles size structures obtained prior to the fall 2010 drawdown, suggesting that the size structure of the population has recovered from the drawdown.

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In 2015, PSD was 91 and PSD-P was 57 (Figure 2). These values are above the desired ranges of 40–70 for PSD and 10–40 for PSD-P for a balanced Largemouth Bass – sunfish population, but nearly within the desired range (PSD = 50–80, PSD-P = 30–60) for lakes that are managed specifically for trophy bass. While PSD values in excess of 70% are often indicative of a Largemouth Bass population with low annual recruitment, PSD values at Salem Lake have exceeded 70 in every year but 2014, yet the proportion of larger fish in Salem Lake has been fairly consistent year to year. This suggests that sufficient numbers of smaller bass are being produced but are just not being collected effectively by our electrofishing gear in most years. In addition, the 2015 size index values are similar to the average PSD (84) and PSD-P (60) values obtained since NCWRC began sampling Salem Lake in 1982, further suggesting that the size structure of the Largemouth Bass population has recovered from the 2010 drawdown.

Catch rates during the 2015 survey (55 fish/hour) were lower than values obtained during the 2005–2007 and 2010 pre-drawdown surveys on Salem Lake (Figure 3). While improved water levels and an increase in shoreline habitat appears to have allowed the densities of Largemouth Bass to improve since the 2013 survey, future surveys are needed to confidently say that the densities of Largemouth Bass have fully recovered from the effects of the drawdown. Finally, while a scale malfunction prevented the collection of fish weights, fish condition appeared to be very good, as all fish were plump in appearance. This suggests that ample forage is available.

The improved size structure and proportional size distribution values obtained during the 2015 survey suggests the Salem Lake Largemouth Bass population has recovered from the drawdown event. However, future surveys are planned to continue monitoring these parameters, and will hopefully result in improved CPUE of Largemouth Bass. In addition to this survey, NCWRC also continued the supplemental stockings of Channel Catfish (4,000), Threadfin Shad (1,500) and Hybrid Striped Bass (3,000).

Winston Lake

Fisheries management activities on Winston Lake included the stocking of 1,000 Channel Catfish / month from April through September as part of the NCWRC's Community Fishing Program (CFP). No other management activities occurred at Winston Lake during 2015.

If you have any questions concerning this report or other issues regarding fisheries management on Salem Lake or Winston Lake, please do not hesitate to contact either myself (336-877-1087) or Kin Hodges (336-443-9436). We look forward to working with you in the future.

Sincerely,

Kevin Hining
District 7 Fisheries Biologist I

CC: Kin Hodges, District Fisheries Biologist
David Yow, Mountain Region Warmwater Fishery Research Coordinator

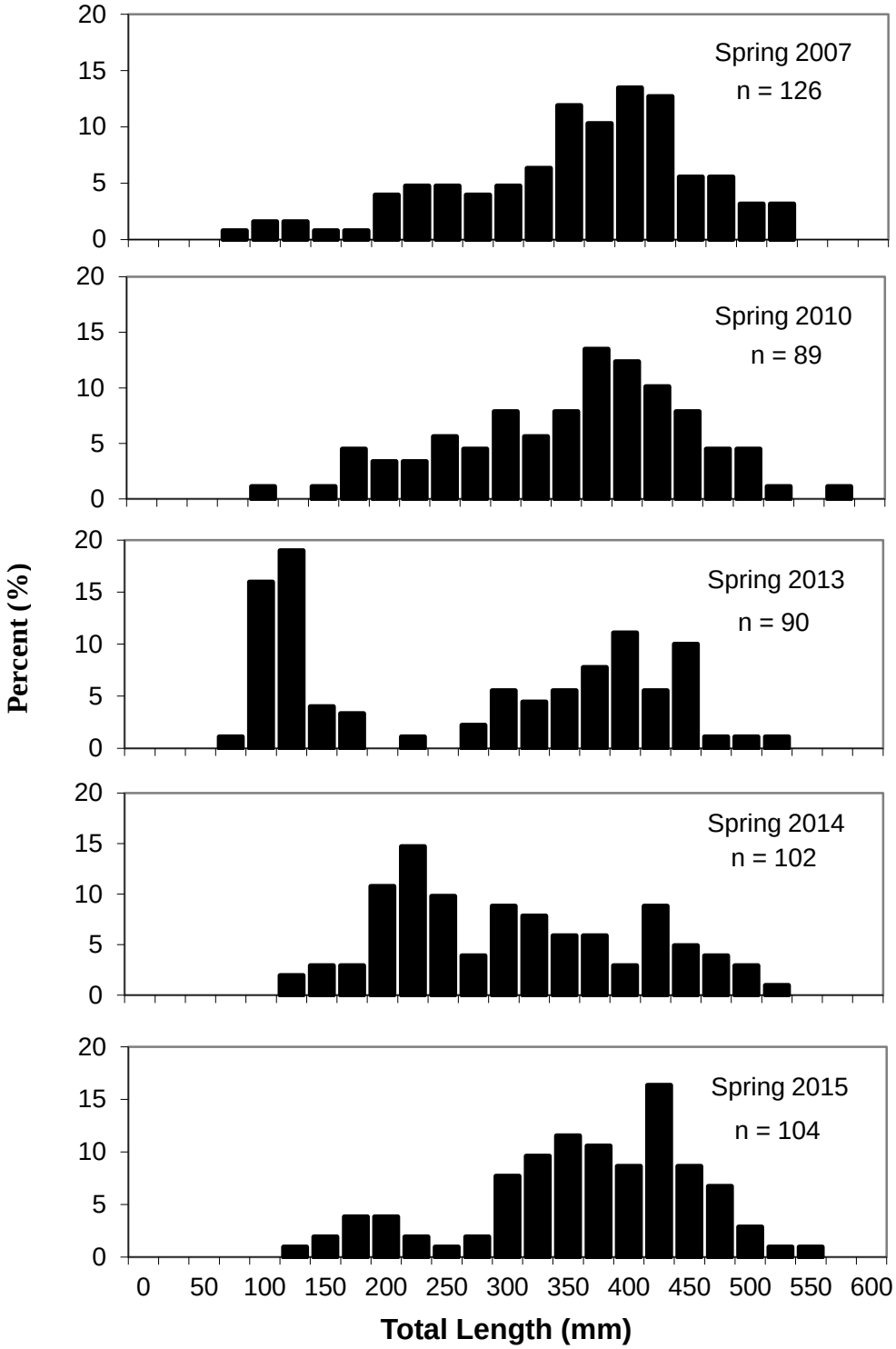

FIGURE 1.—Length-frequency distribution of Largemouth Bass collected from Salem Lake, 2007–2015.

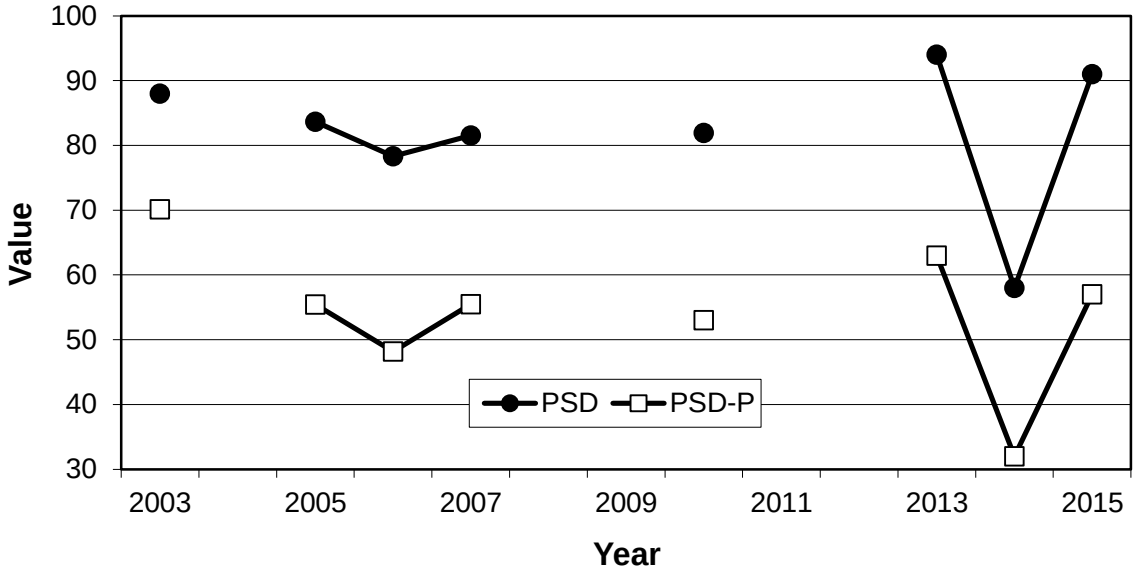

FIGURE 2.—Proportional size distribution for quality (PSD) and preferred-size (PSD-P) Largemouth Bass from Salem Lake, 2003–2015. Years with no value reported represent years when sampling did not occur.

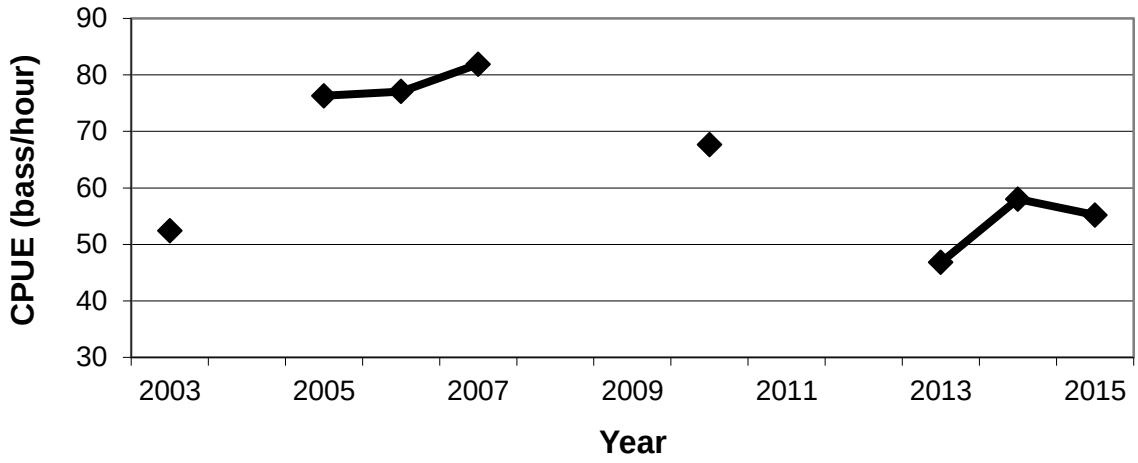

FIGURE 3.—Catch per unit effort (CPUE) of Largemouth Bass collected from Salem Lake, 2003–2015. Years with no value reported represent years when sampling did not occur.

Appendix 1

Proportional Size Distribution (PSD) is expressed as the percentage of the stock that is of quality size:

$$\text{PSD (\%)} = \frac{\text{number} \geq \text{quality size X 100}}{\text{number} \geq \text{stock size}}$$

where for largemouth bass quality size is defined as 300 mm (12 in.) and stock size is defined as 200 mm (8 in.). Balanced Largemouth Bass - Bluegill populations generally exhibit PSD values between 40 and 70%.

Proportional Size Distribution-Preferred (PSD-P) is expressed as the percentage of the stock that is of preferred size:

$$\text{PSD-P (\%)} = \frac{\text{number} \geq \text{preferred size X 100}}{\text{number} \geq \text{stock size}}$$

where for Largemouth Bass preferred size is defined as 380 mm (15 in.). PSD-P values ranging from 10 to 40 % are common in balanced Largemouth Bass - Bluegill populations.