Fisheries Research Fact Sheet

Lake Tillery Black Crappie Population Assessment-2017

December 2018

The N.C. Wildlife Resources Commission recently conducted a trap net survey at Lake Tillery to determine the status of the crappie population and to evaluate the management of the fishery. Located in Stanly and Montgomery counties, Lake Tillery is between Badin Lake and Blewett Falls Lake on the Yadkin-Pee Dee River chain of reservoirs. The reservoir is 5,261 acres and is a popular destination for anglers with several species of interest including Largemouth Bass, Striped Bass, White Bass, White Perch, Black Crappie, Bluegill, Flathead Catfish and Blue Catfish. Lake Tillery generally produces a quality crappie fishery and the population is surveyed every three years by fisheries staff. The minimum size limit is 8 inches and the daily creel limit for Black Crappies and White Crappies in combination is 20 fish per person.

Project Objective:

- Determine the status of the crappie population by analyzing relative abundance, length distribution, age distribution and growth.
- Compare these parameters with those from previous surveys to monitor population trends and develop management actions to maintain or improve the fishery.

Methods:

- In November 2017, 12 trap nets were set perpendicular to the shore with the leading panel tied to a shoreline tree, usually on or near a point. The trap nets were checked daily for four days to remove any fish collected.
- Crappies were identified to species, weighed and measured. Otoliths (ear stones) were removed from a subsample of the catch to determine age and the rest of the fish were released back into the lake unharmed.

Results:

- Fisheries biologists collected 498 Black Crappies over 48 net-nights for a catch rate of approximately 10 fish per net-night (Table 1). This is considered average for a Piedmont reservoir. Catch rates are used as an indicator of relative abundance and often fluctuate depending on the strength of the most recent year-classes. For example, two weak year-classes preceded the 2008 survey while a very strong year-class preceded the 2011 survey. This led to a catch rate increase of nearly 1,000 percent from the 2008 to 2011 surveys. Although boom and bust scenarios are common with crappie populations, recruitment has been fairly consistent at Lake Tillery over the past several years and no consecutive weak year-classes have been produced since 2007–2008.

Year	Fish per net night	% Harvestable (over 8 in.)	% Age 3 and older	Mean length at Age 2 (in)	% 1 lb and larger
2017	10.4	82	28	10.7	11
2014	7.4	72	17	10.7	11
2011	34.5	47	0.3	9.4	0.1
2008	3.2	98	23	10.9	15

Table 1. Mean number of fish caught per net night, percent of fish that were 8 in and longer, percent of fish that were age 3 and older, mean total length of age-2 fish at time of capture, and percent of fish that were greater than one pound from Black Crappies collected in Lake Tillery with trap nets, November 2008, 2011, 2014, and 2017.

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- Black Crappie growth was excellent in 2017.The average age-1 crappie was greater than 8 inches while age-2 crappies averaged nearly 11 inches (Figure 1). Growth rates have been consistently higher than the Piedmont average (8–10 inches) of age-2 Black Crappies over the past several years with the exception of 2011, when additional competition from the 2010 year-class likely led to slower growth (Table 1).
- Over 11 percent of the fish collected weighed a pound or more and the largest crappie weighed 1.5 pounds.
- Length distribution analysis indicates that 82 percent of the population was larger than the minimum length limit of 8 inches (Figure 2). This is excellent and primarily reflects the fast growth at Lake Tillery. Because this value is typically high at Lake Tillery, it also indicates that a relatively small portion of the population is affected by the minimum length limit most years.
- Age distribution analysis is useful to evaluate harvest potential in relation to recruitment. In 2017, the proportion of Black Crappies age 3 and older was somewhat high at 28 percent (Figure 3). Although higher values (over 40–50 percent) are usually associated with crowding and slow growth, in this case it simply means that a surplus of larger, older fish was available for harvest. The oldest fish collected were from the 2010 year class (age 7).

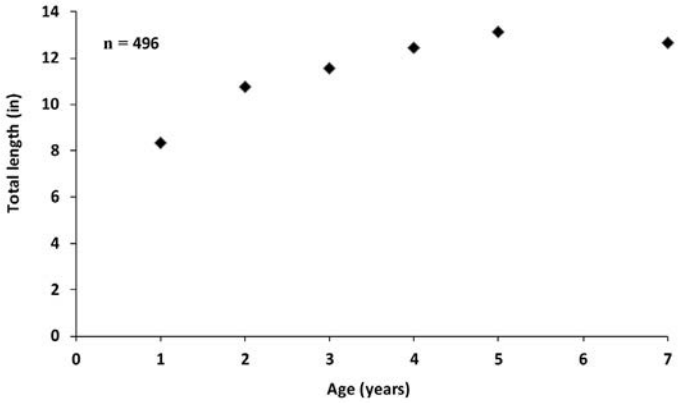

Figure 1. Mean total length at age at time of capture of Black Crappies collected from Lake Tillery with trap nets, Nov. 2017.

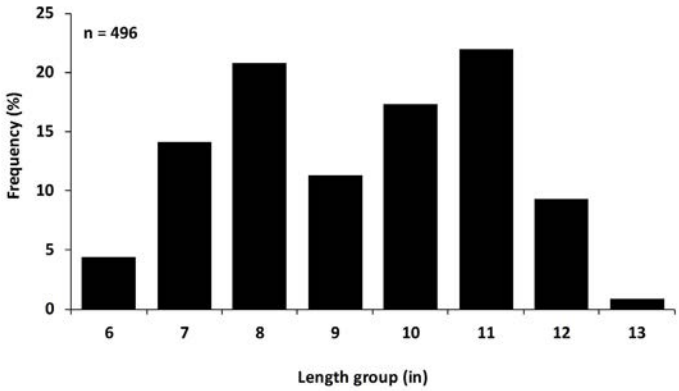

Figure 2. Length frequency distribution of Black Crappies collected from Lake Tillery with trap nets, Nov. 2017.

What's Next:

- Fisheries biologists will consider removing harvest restrictions on crappies at Lake Tillery. Because of fast growth, the minimum length limit only affects a small portion of the population in most years. Further, in years when smaller fish predominate, such as after a very large year-class is formed, the population could benefit by not having harvest restrictions. Although studies have indicated that anglers generally do not desire to harvest crappies less than 8 inches, a significant increase in the harvest of 6- to 8-inch crappies would likely reduce competition and improve growth.
- Future trap net surveys will be important to help guide management actions. Currently the reservoir is sampled every three years and the next survey is planned for fall 2020.

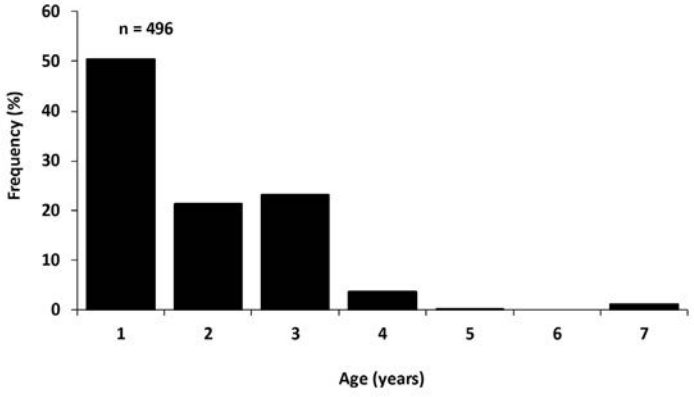

Figure 3. Age frequency distribution of Black Crappies collected from Lake Tillery with trap nets, Nov. 2017.

For more information, contact:

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