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2019 Lake Keokee Fisheries Management Report

Lake Keokee is a 92-acre Department-owned impoundment located in Lee County, Virginia and lies within the Clinch Ranger District of the Jefferson National Forest. At normal pool elevation the reservoir has a maximum depth of 35 feet and a mean depth of 17 feet. The lake is surrounded by forested land, and provides a beautiful setting for a fishing trip.

Regulations

As of spring 2018 the fish populations in Lake Keokee were managed under the following regulations:

Species	Length Limit	Creel Limit
Largemouth bass	none	5 per day
Bream (all species combined)	none	50 per day
Crappie	none	25 per day
Catfish	18 inches	5 per day

Stocking

Approximately 690 catchable-size channel catfish (average length = 11 inches) were stocked into Lake Keokee in fall 2018.

Habitat

When the lake was constructed in 1975, much of the timber within the lake basin was left standing for fish habitat. Over time the trees deteriorated and toppled into the lake. Although trees and brush can provide good fish habitat, the accumulation of fallen timber and stumps just below the water's surface created navigational and safety hazards for boaters. In 2002, a cooperative project between VDGIF and the U.S. Forest Service, Clinch Ranger District was initiated to draw down the lake and remove much of the fallen timber. Unfortunately, significant navigation and safety hazards remained throughout much of the lake. In spring/summer 2018 the lake was drawn down about

4.5 feet to allow the tops of remaining stumps to be removed. Nearly 3,200 stumps were cut throughout the lake before the lake was refilled. The picture below shows one of the coves that was cleared.

Population Sampling

Fish populations at Lake Keokee are sampled each year in May using boat-mounted electrofishing gear. Fish collected during these population surveys are measured, weighed and released back into the lake. Sampling time is recorded so that the relative abundance (number of fish collected per hour of electrofishing) can be determined. Biologists get important information about the size structure of the population by looking at the length data. The abundance and size structure data allow biologists to compare the current sample collection to past results and to the results of samples collected at other lakes.

Largemouth Bass - The relative abundance (number collected per hour of sampling) of largemouth bass during the 2018 sample was approximately 72 fish/h, which represents a marked increase in abundance from the previous year (Figure 1).

Largemouth bass observed in the 2018 sample ranged in length from 3 – 14 inches with an average length of 10.4 inches (Figure 2). Fifteen percent of adult largemouth bass in 2018 were ≥ 12 inches in length. This was comparable to the proportion observed in 2017 (17%), but was still one of the lowest observed in recent years and represents a continued decline over the past seven years.

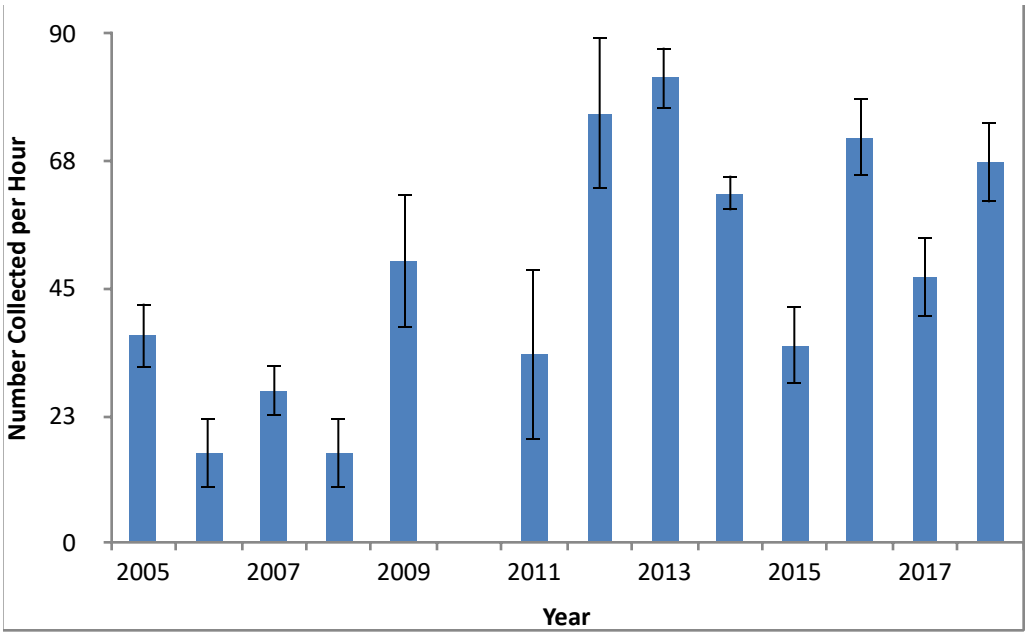

Figure 1. Number of adult largemouth bass collected per hour of sampling on Lake Keokee 2005-2018. The lake was not sampled in 2010. Error bars indicate standard error.

The continued predominance of smaller largemouth bass in Lake Keokee is likely a result of slow growth. An analysis of length-at-age data from 2016, revealed that it takes approximately 5 years for a largemouth bass in Lake Keokee to reach 12 inches. Harvest can also limit the abundance of large fish in a population and the significant decline in fish above 10-11 inches may suggest this as the minimum length acceptable to anglers for harvest. However, a catch-curve analysis of abundance versus age group from the 2016 data results in a total annual mortality of 31%. Since total annual mortality includes mortality from natural sources as well as angler harvest, it does not appear that harvest related mortality on Lake Keokee is excessive.

Sunfish - The relative abundance of bluegill decreased in 2018 to 29 fish/h. However, the size structure of the bluegill population remains very good with 55% of adult bluegill measuring 6 inches or more and 22% exceeding 8 inches. The abundance of redear sunfish in the current sample (23 fish/h) was the highest observed in recent years. Eighty-three percent of the redear sampled in 2018 were ≥ 7 inches and 39% were ≥ 9 inches. Anglers frequently report catching large bluegill and redear.

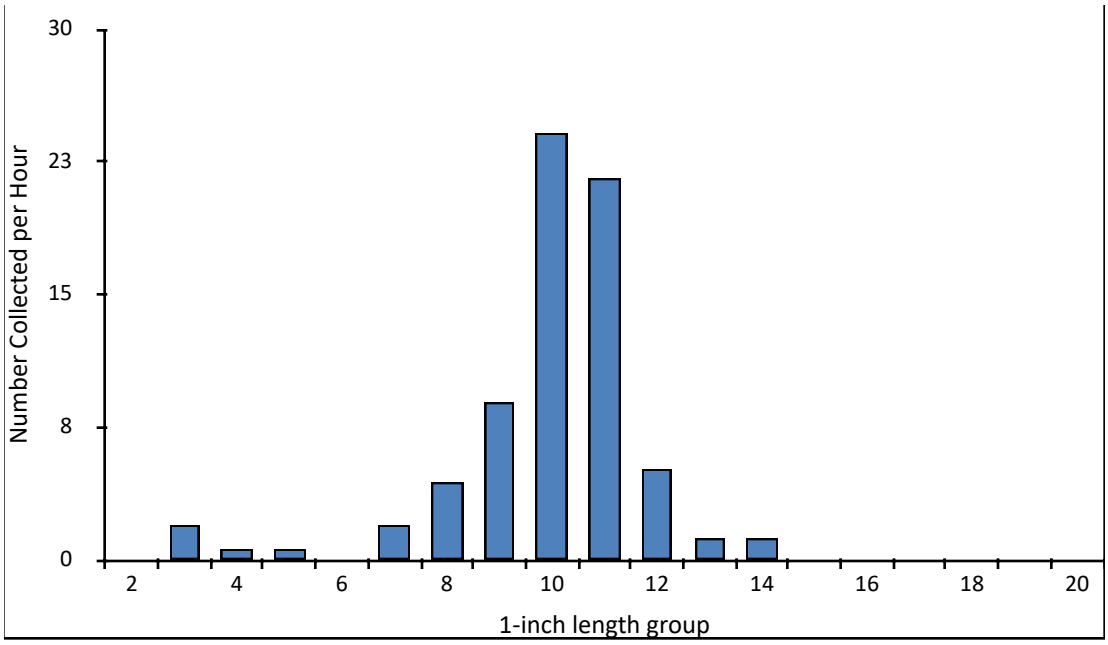

Figure 2. Length frequency distributions of largemouth bass collected during Lake Keokee electrofishing samples in spring 2018.

Crappie - Black crappie were first collected at Lake Keokee in the 2005 electrofishing sample. Crappie may have been present prior to 2005, but undetected by electrofishing because much of the shoreline was inaccessible. The black crappie catch rate in 2018 (13 fish/h) was the highest observed since 2014. Additionally, the size structure of the crappie population was good with 95% exceeding 8 inches, 70% exceeding 10 inches, and 10% exceeding 12 inches.

In summary, Lake Keokee offers good fishing for largemouth bass, although most of the fish caught will be small. Bluegills, redear sunfish, and crappie may provide a memorable day for the lucky or skillful angler. VDGIF biologists continue to seek solutions for improving the quality of the fishery.

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