



Lee Hall Reservoir 2016 Fisheries Management Report Virginia Department of Game and Inland Fisheries

This 230-acre reservoir is owned by the City of Newport News and forms part of the City’s water supply network, receiving water from the Chickahominy River and Diascund and Little Creek Reservoirs. The reservoir is located in Newport News Park, which was opened for recreational activities in 1966. With a total area of about 8,000 acres, it is one of the largest municipal parks east of the Mississippi.

The Virginia Department of Game and Inland Fisheries conducted an electrofishing survey of Lee Hall Reservoir on May 19, 2015. The reservoir was last sampled on May 9, 2013. The 2015 survey consisted of sampling along 4 historical shoreline regions. The combination of these sampling runs provides a picture of the present fish assemblage. Electrofishing efforts consisted of shocking along the shoreline habitat as close as possible, with the majority of the effort concentrated in the 2 to 4 foot depth range. The excessive amounts of curly leaf pondweed made for a difficult time of observing shocked fish. The growth rate of curly leaf pondweed has become extremely high over the last 4 to 5 years that large sections of the reservoir are covered from the early spring to early summer time frame. Each survey run consisted of 1200 seconds of effort for a combined total effort of 4,800 seconds (1.33 hour). Full community sampling was conducted on each survey run. Lee Hall Reservoir is rich with species diversity with a total of 14 fish species collected.

Table 1. Summary of the primary fish species collected by electrofishing of Lee Hall Reservoir, May 19, 2015.

Species	# Collected	Catch Rate (CPUE #/hr)	Largest Length	Average Length
Largemouth Bass	119	89.3	20.67"	10.73**
Bluegill	130	97.5	6.97"	3.41"
Yellow Perch	33	24.8	12.1"	6.73"
Pumpkinseed Sunfish	8	6	5.7"	4.05"
Redear Sunfish	34	25.5	8.5"	4.61"
Chain Pickerel	3	2.3	15.08"	9.24"
Black Crappie	14	10.5	11.28"	8.05"

Mean Largemouth Bass length based on the 96 bass collected that were not from the 2015 year class. Twenty three bass in the 2 to 3 centimeter range were collected.

Largemouth Bass

The electrofishing survey produced a total of 119 largemouth bass for a CPUE (Catch Per Unit of Effort) of 89 fish/hr. This catch rate showed a decrease from the 2013 survey (CPUE = 120 fish/hr). Removing the total of 23 juvenile bass (YOY – Young of Year in the 2 to 3 centimeter range) revealed an even lower catch rate of 72 bass/hr. Lee

Hall Reservoir has historically produced bass catch rates that fall well below other impoundments in Region 1, District 1. The electrofishing survey consisted of two sample runs within the middle reservoir basin and two runs in the reservoir basin between Interstate 64 and the railroad tracks. This area is usually good for holding larger bass along the flooded tree lines adjacent to Interstate 64. The size distribution of the collected bass can be seen on the enclosed length frequency histogram under Figure 1. The overall distribution revealed several year classes present, but no single year class presented in mass abundance. The average sized bass measured 10.73 inches based on the 96 bass that were in the 7 to 52 centimeter range. The survey date in mid-May allowed for the collection of YOY (Young of Year) bass in the 2 and 3 centimeter range. The largest bass measured 20.67 inches and weighed 5.34 pounds.

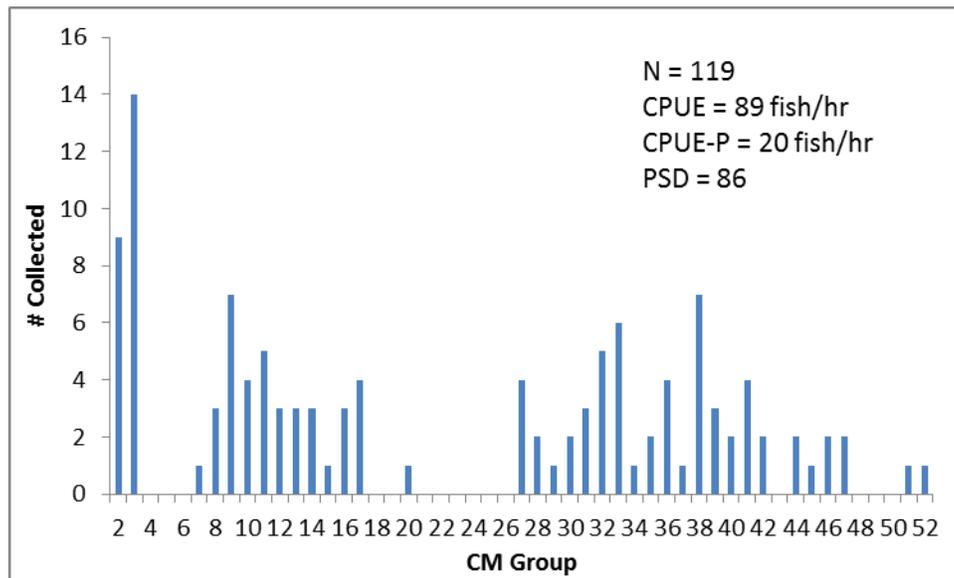


Figure 1. Length frequency distribution of largemouth bass collected from electrofishing Lee Hall Reservoir, May 19, 2015

Fisheries biologists of the past established certain size classifications to describe the fish they collected. It is through these size classifications that population dynamics are analyzed. The size designations are stock, quality, preferred, memorable, and trophy. The PSD (Proportional Stock Density) is the proportion of bass in the population over 12 inches (quality size) in relation to the total number of stock-sized bass (8 inches and greater). A balanced bass/bluegill fishery has a bass PSD value within the 40 – 70 range. With largemouth bass being the most popular game fish in this country, it has been considered that a “preferred” bass is one that is over 15 inches in length. The RSD-P (Relative Stock Density of Preferred bass) is the proportion of stock-sized bass that are 15 inches or greater. The PSD and RSD-P values represent the distribution of collected fish, but one must take into account the total number of bass collected along with the total of stock-sized bass in the sample.

The 2015 value for PSD (86) showed a major increase from the 2013 survey (PSD = 67). The 2015 RSD-P value (46) also showed an increase from 2013 (RSD-P = 33). The 2015 PSD value represents the collection of 59 stock-sized bass in which 51 of those

bass were of quality-size (greater than 12 inches). A total of 27 preferred-sized bass were collected. The PSD value was above the desired range (PSD = 40–60) and the RSD-P value was above the desired range (RSD-P = 10–40) that would represent a balanced bass population.

Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. A higher relative weight value indicates fish with a better body condition. The relative weight values for stock, quality, and preferred bass ($\geq 8''$, $\geq 12''$, $\geq 15''$) were 95, 94, 95 respectively. The 2015 values showed a decline when compared to the 2013 sample (stock: 97, quality: 98, preferred: 103). The abundance of yellow perch and small sunfish found in past surveys was not detected during the 2015 survey. The excessive curly leaf pondweed growth complicated the survey and may have hidden numerous smaller fish.

Bluegill and Redear Sunfish

Lee Hall Reservoir bluegill population has historically consisted primarily of bluegill less than 6 inches in length. The 2015 survey revealed more of the same with a high proportion of bluegill less than 12 centimeters (5 inches) in length. The sample collected only 130 bluegill (CPUE = 97.5 fish/hr) over the course of the four electrofishing runs. This catch rate showed a major decline from 2013 (CPUE = 187.5 fish/hr). The bluegills ranged in size from 3 to 17 centimeter range (1.5 to 6 inch range). The average sized bluegill measured only 3.41 inches. The largest bluegill measured 6.97 inches.

The bluegill PSD value of 7 showed a decline from the 2013 PSD value of 16. These values leave plenty of room for improvement when it comes to reaching the desired PSD range of 20-40. The 2015 sample collected five quality-sized bluegill from a total of 68 stock-sized bluegill. Bluegill growth rates are most likely suffering from the impact of Copper Sulfate applications and the high flow through nature of this terminal reservoir. The various predator species within the fishery may have combined their efforts to crop down the overall bluegill population that used to be extremely abundant.

The redear sunfish population appears to be in fair shape. The survey collected a total of 34 redear sunfish. The catch rate of 25.5 redear sunfish/hr showed a decline when compared to the 2013 survey (CPUE = 80 fish/hr). The majority of the sample consisted of redear sunfish in the 7 to 12 centimeter range (3 to 5 inches). The average size redear sunfish was 4.61 inches in length. The largest redear sunfish measured 8.5 inches. The redear sunfish have the potential to grow to larger sizes than the bluegill and pumpkinseed sunfish that are present in Lee Hall Reservoir. The redear sunfish population may be stronger than what was represented during the 2015 survey. The mid-May sample time is usually when most adult redear sunfish will be spawning. Taking this into account, the schools of redear sunfish may have just not been encountered during the survey runs.

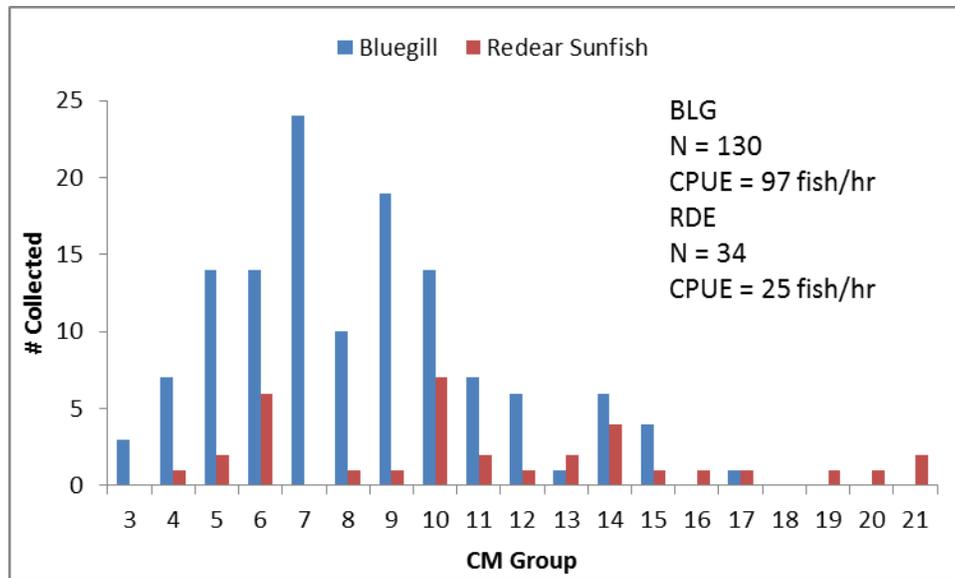


Figure 2. Length frequency distribution of bluegill and redear sunfish collected from electrofishing Lee Hall Reservoir, May 19, 2015

Yellow Perch

Similar to past survey years, the electrofishing survey encountered a fair abundance of yellow perch. Past surveys of Lee Hall Reservoir revealed a yellow perch population dominated by fish less than 6 inches in length. The 2015 survey revealed a yellow perch distribution from 3.5 to 12 inches. The sample collected 33 yellow perch (CPUE = 25 fish/hr) and showed a decline from the 2013 survey (CPUE = 44 fish/hr). The largest perch measured 12.1 inches and weighed 0.83 pound. The perch distribution consisted of 6 fish greater than 10 inches in total length. The average-sized yellow perch still left something to be desired at a length of 6.73 inches. These larger-sized yellow perch may surprise an angler every now and then. Lee Hall Reservoir, if given enough time, can produce a few yellow perch in the 12 inch citation-size range.

Black Crappie

The black crappie population in Lee Hall Reservoir has historically produced some larger fish over the years. Overall population density has shown a decrease in abundance. Black crappie tend to school up tightly in waters deeper than bass and bluegill. So the typical shoreline electrofishing run would miss the black crappie if they were holding in deeper water. The 2015 survey collected 14 black crappie for a CPUE of 10.5 fish/hr. This catch rate is poor and showed a decline when compared to the 2013 survey (CPUE = 21 fish/hr). The size distribution consisted of fish from 9 to 28 centimeters (3.5 to 11 inches). The limited sample size yielded an average black crappie length to be 8.05 inches with the largest crappie measured at 11.28 inches. Lee Hall Reservoir has the potential to produce citation-sized crappies (15”+ or 2 lbs+). Past glories could look back and smile with the banner year of 2007 with the report of 17 black crappie citations caught by anglers. Only 5 black crappie citations have been reported since the start of 2008.

Additional Species

The 2015 electrofishing sample collected a total of 14 fish species. The sample collected limited numbers of brown bullheads (20), creek chubsucker (1), American eels (17), goldfish (1), chain pickerel (3), pumpkinseed sunfish (8), golden shiners (28), bluespotted sunfish (2) and warmouth sunfish (2). These species will provide some diversity to the fishery and the chance of surprising an angler every once in a while.

Summary

The 2015 electrofishing survey of Lee Hall Reservoir showed a decline in the catch rate for largemouth bass when compared to the 2013 survey. The decrease in largemouth bass abundance (CPUE = 89 fish/hr) comes on the heels of the all-time record CPUE found during the 2013 survey (121 bass/hr). The largemouth bass population has shown improvements over the last few years when compared to past surveys before 2013. Collected bass ranged in size from 1 to 20 inches with the average bass measured at 10.73 inches. The survey revealed a decline in the catch of bluegill with only 130 bluegill collected (CPUE = 97.5 fish/hr). The majority of the bluegill were less than 4 inches in total length. Anglers should not expect to catch too many large bluegill from Lee Hall Reservoir. The redear sunfish population is not as abundant as the bluegill population, but the redear sunfish have a greater growth potential. The black crappie abundance showed a decline when compared to the 2013 survey. Some decent yellow perch in the 10 to 12 inch range were collected. The survey showed a limited abundance of chain pickerel with only 3 collected. The excessive growth of curly leaf pondweed made for a difficult time observing and netting the stunned fish. The stocking of triploid grass carp by Newport News Waterworks over the last few years will hopefully be beneficial in cropping down the growth of this aquatic plant.