



Lee Hall Reservoir 2010

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 April 16, 2009. The reservoir was last sampled on April 16, 2008. The 2009 sample consisted of shocking along 4 historical shoreline regions with some additional shoreline areas covered for the collection of stocked largemouth bass. The combination of these four 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. A total effort of 6,603 seconds (1.83 hours) was used for the collection of largemouth bass, chain pickerel and black crappies. From that survey time, 4,800 seconds of effort was used to evaluate the full community fish assemblage of the reservoir. A total of 16 fish species were collected.

Species	# Collected	Catch Rate (CPUE)	Largest Length	Average Length
Largemouth Bass	64	34.9/hr	20.0"	12.5"
Bluegill	357	267.8/hr	6.0"	4.5"
Yellow Perch	114	85.5/hr	8.5"	4.8"
Pumpkinseed Sunfish	118	88.5/hr	5.4"	3.6"
Redear Sunfish	78	58.5/hr	8.1"	6.0"
Chain Pickerel	7	3.8/hr	22.5"	11.4"
Black Crappie	4	2.2/hr	15.6"	10.8"

Table 1. Summary of the primary fish species collected by electrofishing of Lee Hall Reservoir, April 16, 2008.

Largemouth Bass

The electrofishing survey produced a total of 64 largemouth bass for a CPUE (Catch Per Unit of Effort) of 34.9 f/hr. This catch rate showed a decrease from the 2008 survey (CPUE = 43.5 f/hr). The increased electrofishing effort within the middle reservoir basin was able to collect a total of 39 bass. The remaining 25 bass were collected from the reservoir basin within I-64 and the railroad tracks. The best area for larger bass was along the flooded tree lines adjacent to the highway. The size distribution of the collected bass can be seen on the enclosed length frequency histogram. The combination of the 2008 supplemental bass stocking and good natural recruitment was revealed by the presence of numerous bass in the 6 to 9 inch range. The average sized

bass measured 12.5 inches. This mean total length is very close to the 2008 average of 12.7 inches. The largest bass measured 20 inches and weighed 4.83 pounds.

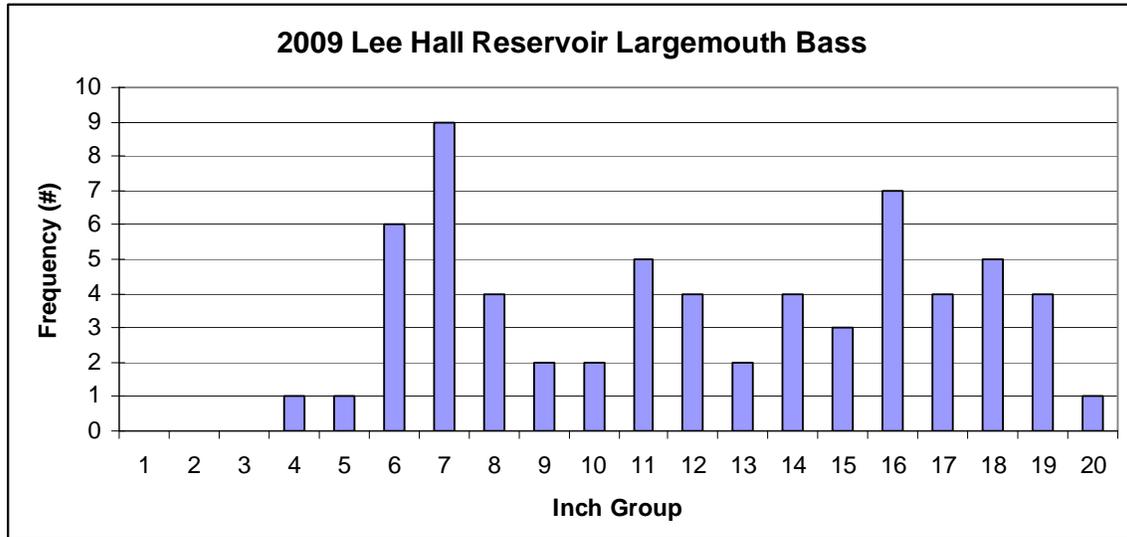


Figure 1: Length frequency distribution of largemouth bass collected from electrofishing Lee Hall Reservoir, April 16, 2009. (N = 64, CPUE = 34.9 f/h)

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 2009 value for PSD (72) was less than the 2008 value (PSD: 82). The 2009 RSD-P value (51) showed a slight increase from 2008 (RSD-P: 49). The decreased PSD value actually shows a more favorable bass population when it comes to the overall balance of the fishery. The 2009 PSD value represents the collection of 47 stock-sized bass in which 34 of those bass were of quality-size (greater than 12 inches). A total of 24 preferred-sized bass were collected. These values are still above the desired ranges (PSD: 40 – 70, 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 (>8”, >12”, >15”) were 99, 103, 106 respectively. The 2009 values were similar to the 2008 sample (stock: 101, quality: 103,

preferred: 104). The abundance of yellow perch and small sunfish provides a sufficient forage base for the largemouth bass.

Largemouth Bass Stocking Project Continued

Lee Hall Reservoir was stocked again with a supplemental stocking of largemouth bass in 2009. This is the second year of a three stocking program. Largemouth bass brood stock was collected from the Chickahominy River for use at the DGIF King & Queen Fish Hatchery. Naturally spawned bass fingerlings were allowed to grow in several hatchery ponds to a size of 3 inches before stocking into Lee Hall Reservoir. A total of 3,700 bass fingerlings (16/acre) were tagged with injected magnetic wire before being stocked into the reservoir on July 2nd. This second stocking comes on the heels of the 2008 stocking in which 5,817 largemouth bass were introduced into the reservoir. Production problems and cannibalism within the ponds did not allow for a complete stocking of 25 bass/acre in 2009. This supplemental stocking was used to assist the bass population which has normally suffered from poor recruitment. The increased numbers of largemouth bass will hopefully be able to control the abundance of sunfish that are present.

An electrofishing survey was conducted on September 17, 2009 to determine the success and growth rate of the 2009 stocked bass. A total of 116 largemouth bass were collected for a CPUE of 61.5 f/hr. A total of 24 tagged bass were collected and identified. Of these 24 tagged bass, six bass were from the 2008 stocking. The average length for the recovered 2008 bass was 11.4 inches. The 18 tagged bass from the 2009 stocking revealed an average length of 6.6 inches. Percent contribution of the stocked bass to the 2009 year class was calculated to be 42.9%. The 2008 fall survey revealed an even greater contribution of 56.3% to the 2008 year class.

Bluegill

Lee Hall Reservoir bluegill population consists primarily of bluegills less than 6 inches in length. The electrofishing sample collected 357 bluegills (CPUE = 267.8 f/h). This catch rate showed a major decrease from the high catch rate of 2008 (N = 617, CPUE = 462.8 f/h). The bluegills ranged in size from 5 to 15 centimeter range (2 to 6 inch range). The average sized bluegill measured approximately 4.5 inches. The largest bluegill measured only 6 inches. The bluegill PSD value of 1 was better than the 2008 survey (PSD = 0), but left plenty of room for improvement. The sample collected two quality-sized bluegills and a total of 340 stock-sized bluegills. Bluegill growth rates are most likely feeling the pressure from direct competition from other sunfish species as well as the yellow perch population. The stunted nature of the bluegill population continues with every passing year. The limited numbers of predator fish species cannot effectively control the numbers of bluegill that are present. Juvenile bass and chain pickerel are keeping the abundance of juvenile bluegills in check. Very few bluegills less than 3 inches (7 cm) in size were collected. The size distribution of bluegills is presented on the length frequency histogram. Collected bluegills were measured by centimeter groups.

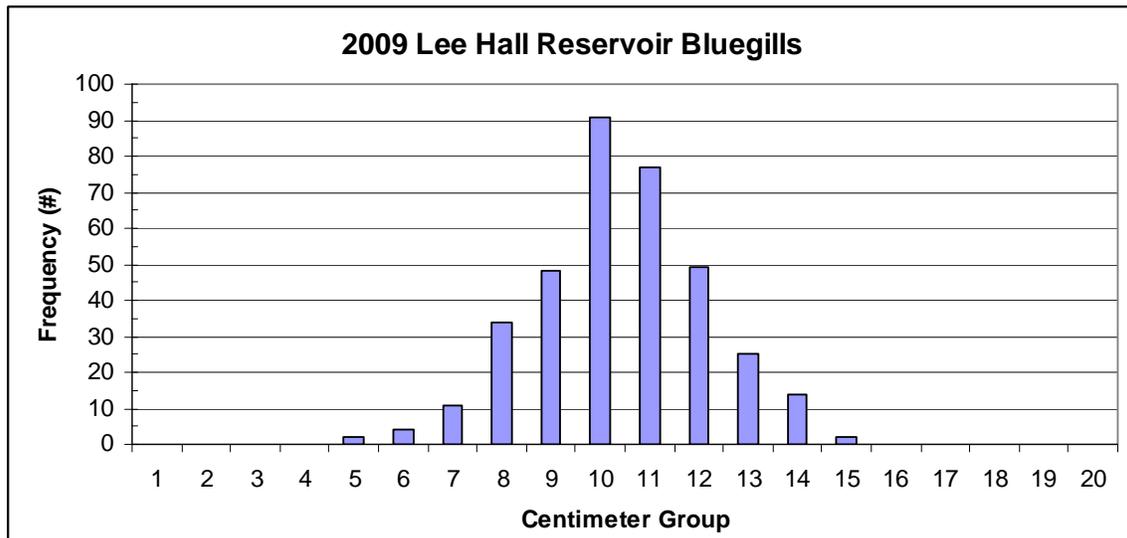


Figure 2. Length distribution of bluegills collected from electrofishing Lee Hall Reservoir, April 16, 2009. (N = 357, CPUE = 267.8 f/h)

Yellow Perch

Similar to past survey years, the electrofishing survey encountered an abundance of yellow perch. The yellow perch population appears to be dominated by fish less than 6 inches in size. The sample collected 114 yellow perch (CPUE = 85.5 f/h) and showed an increase from 2008 (N = 85, CPUE = 63.8 f/h). The largest perch measured 8.5 inches. The high number of juvenile yellow perch brought the average size down to 4.8 inches. The majority of the sample consisted of yellow perch in the 4 to 6 inch size range. Compared to past surveys, there was an increase in 6 to 8 inch perch. The abundance of small yellow perch should provide a great forage base for the bass and chain pickerel.

Pumpkinseed Sunfish

The pumpkinseed sunfish population has not changed much from year to year. The collected pumpkinseed sunfish ranged in size from 5 to 13 centimeters (2 to 5.5 inches). The sample collected 118 pumpkinseed sunfish (CPUE = 88.5 f/h) and showed a slight decline from the 2008 sample (N = 126, CPUE = 94.5 f/h). Pumpkinseed sunfish are one of the more colorful sunfish species that tend to have a smaller size potential than other species like bluegills and redear sunfish. Anglers can expect to catch a fair number of pumpkinseed sunfish while fishing for bluegills on Lee Hall Reservoir.

Redear Sunfish

The redear sunfish population appears to be in fair shape with some larger fish present. The sample collected 78 redear sunfish (CPUE = 58.5 f/h). This catch rate showed a major decline when compared to the 2008 (CPUE = 116.3 f/h). The majority of the sample consisted of redear sunfish in the 12 to 17 centimeter range (5 to 7 inches). The average size redear sunfish was 6 inches in length. The largest redear sunfish measured 8.1 inches. The redear sunfish have the potential to grow to larger sizes than the bluegills and pumpkinseed sunfish that are present in Lee Hall Reservoir

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 crappies tend to school up tightly in waters deeper than bass and bluegill. So the typical shoreline electrofishing run would miss the black crappies if they were holding in deeper water. The 2009 survey collected only 4 black crappies for a CPUE of 2.2 f/hr. This catch rate is below the 2008 survey (CPUE: 12.8 f/h) that showed a little more promise. Past trap net surveys have been able to collect a higher abundance of black crappies with a decent size structure of fish in the 9 to 12 inch range. The 2009 survey did reveal a trophy black crappie that measured 15.6 inches and weighed 2.2 pounds.

Chain Pickerel

The electrofishing sample collected only 7 chain pickerel for a CPUE of 3.8 f/h. This catch rate falls below the 2008 sample (N = 8, CPUE = 6 f/h). The collected pickerel ranged in size from 7.5 to 22.5 inches. The limited sample size yielded an average size pickerel of 11.4 inches. It is too early to tell if the larger pickerel were hiding in deeper water or if they have been harvested by anglers. The electrofishing survey of September 17, 2009 collected a more impressive total of 74 chain pickerel (CPUE: 39.2 f/hr). These fish ranged in size from 5.5 to 19.5 inches with an abundance of fish less than 10 inches in length.

Additional Species

The 2009 electrofishing sample collected a total of 16 fish species. The sample collected limited numbers of American eels (11), golden shiners (8), bluespotted sunfish (5), brown bullhead (1), warmouth (1), common carp (1), tessellated darter (1) and white perch (1). These species of low abundance provide some diversity to the fishery and the chance of surprising an angler every once in a while. The survey produced a total of 122 eastern silvery minnows.

Summary

The 2009 electrofishing survey of Lee Hall Reservoir showed a decrease in the catch rate for largemouth bass. A total of 64 largemouth bass were collected over the 1.83 hours of effort set on collecting bass, chain pickerel and black crappie. Collected bass ranged in size from 4 to 20 inches with the average bass measured at 12.5 inches. The survey collected 357 bluegills with the majority of fish in the 3 to 5 inch range. Only two bluegills reached the 6 inch measurement mark. The survey showed the yellow perch and pumpkinseed sunfish populations to be dominated by fish less than 6 inches in length. The spring electrofishing survey showed a decreased presence of chain pickerel with only 7 collected. The fall survey provided increased catch rate of pickerel with 39.2 f/h.

The DGIF listing of citations showed anglers reported 4 citations caught from Lee Hall Reservoir during 2009. The citations were for 2 chain pickerel, 1 yellow perch and 1 largemouth bass.