



## **Chickahominy Lake 2015 Fisheries Management Report Virginia Department of Game and Inland Fisheries**

Chickahominy Lake is a 1230-acre water supply reservoir located along the New Kent-Charles City county line. The low-head dam of this reservoir is known locally as Walkers Dam. This dam was completed in 1943 and it incorporates twin Denil fish ladders to allow for the passage of anadromous fish such as blueback herring and striped bass. Recent dam repairs have constructed a new fish ladder near the north shore of the lake. This cypress-laden lake provides a spectacular backdrop for photographers and great place for bird watchers. The lake's forage base is primarily based upon the populations of gizzard shad, golden shiner and blueback herring. Chickahominy Lake has a plentiful supply of fish habitat in the form of cypress trees, water lilies and submerged aquatic vegetation. Hydrilla and various other forms of submerged aquatic vegetation have been able to grow rather dense in numerous, shallow areas of the lake. The abundance of vegetation serves as a nursery area for many juvenile fish. Anglers must be willing to adjust to the heavy vegetation during the summer to mid-fall time period.

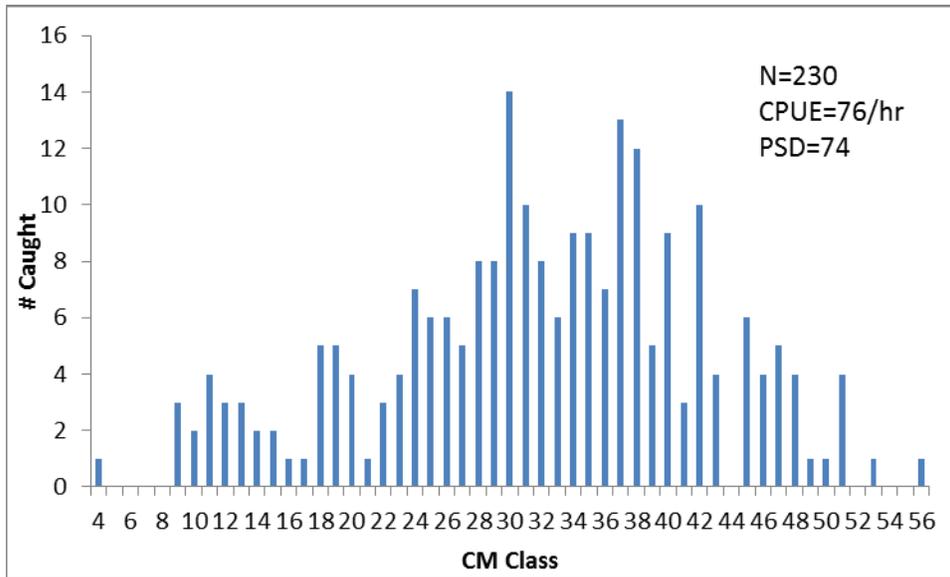
The Virginia Department of Game and Inland Fisheries conducted an electrofishing survey of Chickahominy Lake on April 14<sup>th</sup> and 22<sup>nd</sup>, and May 30<sup>th</sup>, 2014. The electrofishing survey consisted of covering nine historical shoreline sections. Each survey run consists of 20 minutes of electrofishing effort. The combination of the 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 sample showed great diversity with 18 fish species collected. Predator species such as bass, black crappies, chain pickerel, bowfin and yellow perch were collected during each run (three hours effort). Species such as bluegills, redear sunfish and other non-predator species were collected over the course of three runs (1 hour effort). This report will concentrate primarily upon the species of largemouth bass, bluegill, black crappie, bowfin, chain pickerel, redear sunfish and yellow perch.

### **Largemouth Bass**

The largemouth bass population within Chickahominy Lake appears to be in decent shape. The overall size structure in the 28 to 42 centimeter range (11 – 16 inch range). A total of 230 largemouth bass were collected for a CPUE (Catch Per Unit of Effort) of 76.7 fish/hr. The catch rate showed a decline when compared to the 2013 survey (CPUE = 96 fish/hr). The mean CPUE from recent spring survey years (2006 – 2013) was 77 bass/hr. The 2014 CPUE almost matched up with the recent mean catch rate. The survey revealed a decline in the CPUE of Preferred-size bass from 31 fish/hr in 2013 to 23 fish/hr in 2014. The catch rate of preferred-sized bass (fish  $\geq$  15 inches in total length) can vary from year to year based on whether or not a large proportion of the

female bass are encountered during the survey. The female bass will usually be your larger fish that are staging in and around the spawning grounds.

Figure 1. Length frequency distribution of largemouth bass collected from Chickahominy Lake on April 14<sup>th</sup> and 22<sup>nd</sup>, and May 30<sup>th</sup>, 2014



The 2014 length distribution showed a high proportion of collected bass to be greater than 11 inches in length. Recruitment of juvenile bass has not been as strong over the last few years, but the presence of various year classes can be observed by the distribution peaks. The largest bass measured 22.13 inches and weighed 6.57 pounds. Although not collected in the survey, Chickahominy Lake has the potential to produce a few bass in the 7 to 8 pound range each year.

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 stock-sized bass (8 inches or larger) that are also equal to or greater than 12 inches (quality size). A balanced bass/bluegill fishery has a bass PSD value within the 40 – 60 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 also equal to or greater than 15 inches in length. 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 sample showed a PSD value of 74, which is a direct reflection of the 146 quality-sized bass. The sample had a total of 198 bass that were stock size or larger. The RSD-P value of 35 is a direct reflection of the 70 preferred-sized bass collected. The 2014 PSD and RSD-P values were less than the 2013 values (PSD = 79, RSD-P = 37). The collection of 7 memorable-sized bass yielded a RSD-M value of 3 which was the same as 2013.

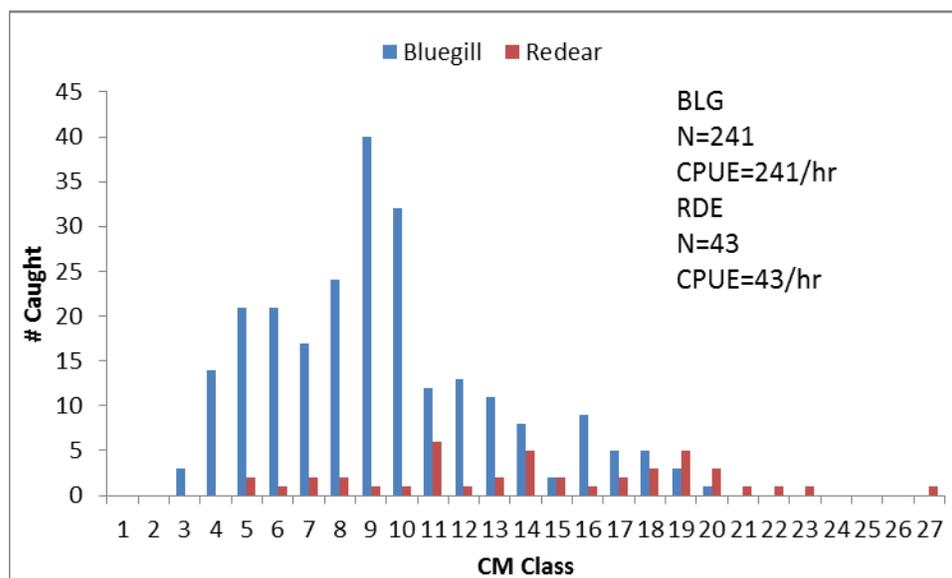
Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. The higher the value, the better the condition of the fish in terms of overall body mass. Weights were taken on all collected bass. The relative weight values for stock, quality, preferred and memorable bass ( $\geq 8''$ ,  $\geq 12''$ ,  $\geq 15''$ ,  $\geq 20''$ ) were 95, 94, 95 and 101. The 2014 relative weight values were reasonably close the desired range, but showed a decline from 2013 (stock = 97, quality = 98, preferred = 99, memorable = 106). The decline in relative weight values is most likely a reflection of Chickahominy Lake being a predator heavy system that has put a strain on the forage base.

### Bluegill and Redear Sunfish

The electrofishing survey was similar to past surveys when it comes to the bluegill fishery that continues to be dominated by fish less than 6 inches in length. Electrofishing effort collected 241 bluegill over the course of three sample runs (1 hour). The catch rate (CPUE) of 241 fish/hr showed a major decline when compared to the 2013 survey (CPUE = 577 fish/hr). The size distribution can be seen on the attached length frequency graph that combines the bluegill with the redear sunfish. The collected bluegill ranged in size from 3 to 20 centimeters (1.5 to 8 inches) with the majority of fish in the 2 to 4 inch range. There was a limited abundance of bluegills greater than six inches in length. Some areas of the lake hold larger than average bluegills, but the sites sampled on 5/30/14 were not holding any of the larger specimens.

The PSD for bluegill is the proportion of bluegill over 3.15 inches (stock size) that are also at least 5.9 inches (quality size). The bluegill PSD value was 15. The collection consisted of 25 quality-sized bluegill from the total of 165 stock-sized fish. The PSD value (15) was the same as 2013 and fell below the desired 20 - 40 range that would represent more of a balanced bluegill population.

Figure 2. Length frequency distribution of bluegill and redear sunfish collected during the electrofishing survey of Chickahominy Lake on May 30<sup>th</sup>, 2014.

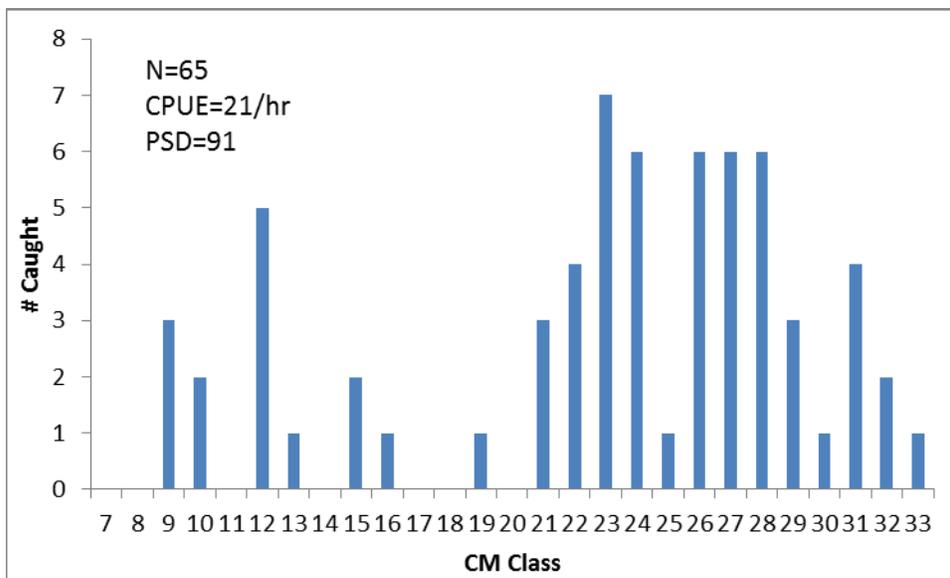


The redear sunfish population appears to be in fair shape. A total of 43 redear sunfish were collected during the full community runs on May 30, 2014. This late spring survey date most likely missed a fair number of the spawning fish that were up in the shallows a few weeks earlier. The CPUE of 43 fish/hr showed a major decline from the 2013 survey (CPUE = 120 fish/hr). The majority of the size distribution ranged from 4 to 8 inches. The largest redear sunfish measured an impressive 10.83 inches in total length. This large specimen provides some of the potential that the fishery can show every once in a while. Chickahominy Lake has historically been one of the few reservoirs where visible signs of redear sunfish recruitment were easily observed. The collection unfortunately showed a limited abundance of juvenile redear sunfish. The abundance of largemouth bass and other predator species may have had a major influence on the survival rate of juvenile redear sunfish.

### Black Crappie

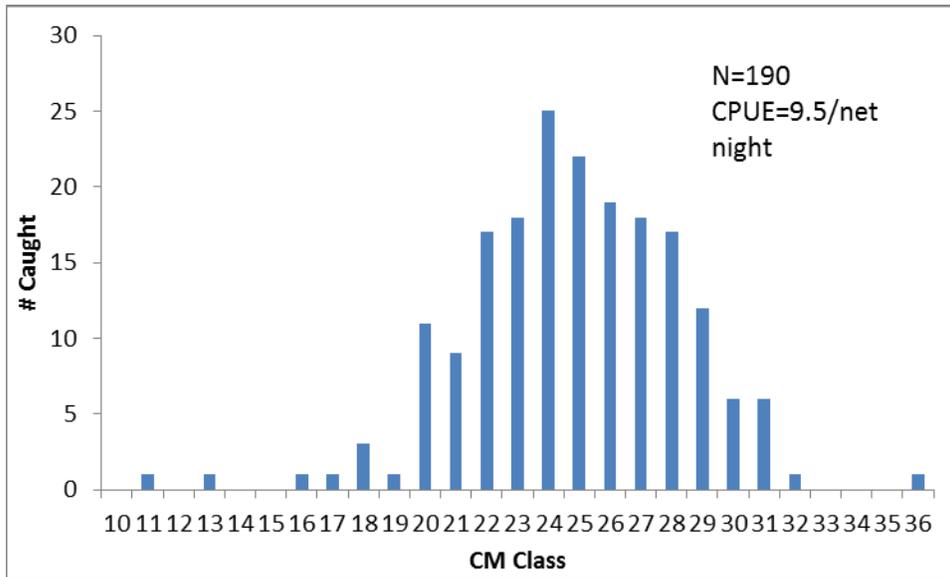
The electrofishing survey collected a total of 65 black crappie (CPUE = 21 fish/hr). The catch rate showed an increase from the 2013 survey (CPUE = 12 fish/hr). The largest crappie measured 13.07 inches and weighed 1.16 pounds. The length frequency distribution was similar to past surveys with the majority of crappie measured in the 22 to 31 centimeter range (9 to 12 inch range). A limited abundance of juvenile black crappie were collected, with the isolated distribution peaks most likely representing several years classes of recruitment. Relative weight data of collected crappie revealed less than ideal values (stock = 87, quality = 86, preferred = 83, memorable = 80). The competition for small forage fish is high due to the abundance of predator fish in the system.

Figure 3. Length frequency distribution of black crappie collected during the electrofishing survey of Chickahominy Lake on April 14<sup>th</sup> and 22<sup>nd</sup>, and May 30<sup>th</sup>, 2014.



The trap net survey collected a total of 190 black crappie over the course of 20 net nights. The catch rate of 9.5 fish/net night showed a favorable increase when compared to the 2013 trap net survey (CPUE = 4 fish/net night). The trap net collection was similar to past years with the majority of the black crappie in the 22 to 30 centimeter range (9 to 12 inch range) with a few fish pushing past the 12 inch mark. The largest crappie collected during the trap net survey measured 14.5 inches in total length. Johnston and Lacey Creeks continue to be some of the better areas to find early season black crappie schools.

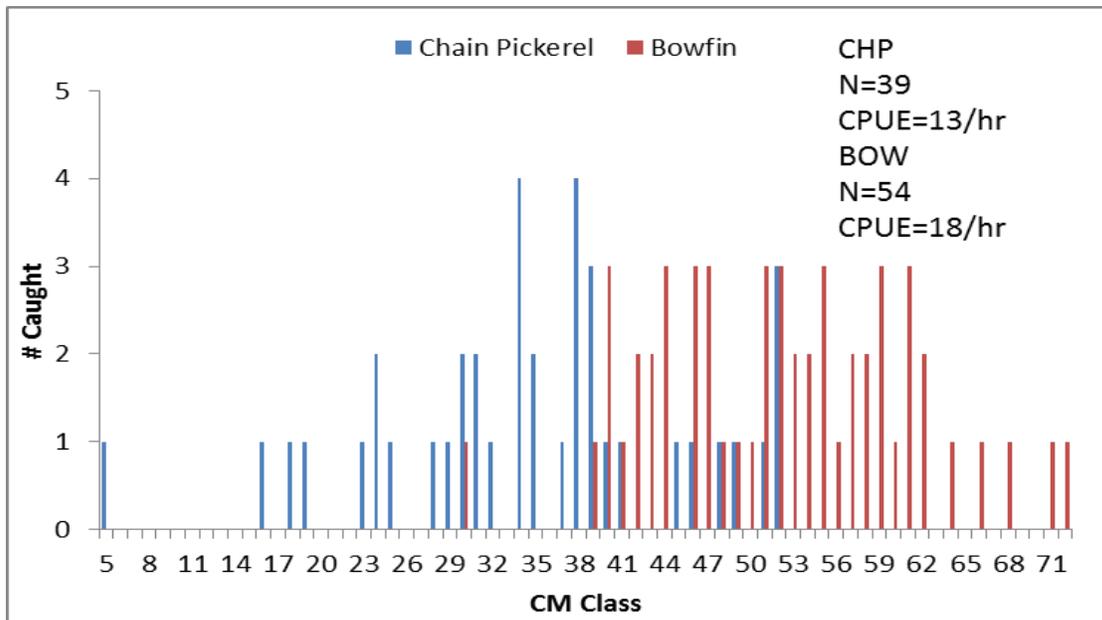
Figure 4. Length frequency distribution of black crappie collected during the trap net survey of Chickahominy Lake on March 10<sup>th</sup> – 12<sup>th</sup>, 2014.



### Bowfin and Chain Pickerel

The electrofishing survey revealed a decent abundance of bowfin present along the sites sampled. A total of 54 bowfin were collected (CPUE = 18 fish/hr). The catch rate showed a minor increase from the 2013 survey (CPUE = 17.33 fish/hr). The largest bowfin measured 28.54 inches and weighed 7.82 pounds. A large proportion of the sample consisted of bowfin in the 50 to 62 centimeter range (20 to 24 inch range). Certain areas of the lake hold greater concentrations of bowfin than others. Bowfin will congregate in areas where they can target prey species such as creek chubsuckers and golden shiners. The 2014 trap net survey collected 21 additional bowfin ranging in size from 13 to 25 inches. The bowfin fishery should still provide plenty of excitement for the average angler that fishes Chickahominy Lake. DGIF fisheries staff tagged numerous bowfin several years ago. Anglers should keep their eyes open for any tags near the dorsal fin on the fish's left hand side. Each tagged fish has a specific tag number that will allow for data collection on growth and survival rate along with broad range movements upon recapture. There are no rewards for these tagged fish, but any information that can be passed along will be greatly appreciated.

Figure 5. Length frequency distribution of bowfin and chain pickerel collected during the electrofishing of Chickahominy Lake on April 14<sup>th</sup> and 22<sup>nd</sup>, and May 30<sup>th</sup>, 2014



The chain pickerel population of Chickahominy Lake has historically provided a lot of action for anglers over the years. Catch rates encountered during the electrofishing surveys are most likely underestimating the strength of the chain pickerel population. The massive amount of habitat that is present in the lake provides plenty of hiding spots for the chain pickerel. The survey collected a total of 39 chain pickerel for a CPUE of 13 fish/hr. This catch rate showed an increase from 2013 (CPUE = 10 fish/hr). The size distribution ranged from 5 to 52 centimeters (2 to 21 inches). The largest chain pickerel measured 20.55 inches and weighed 2.26 pounds.

Anglers have still been able to catch a few larger chain pickerel in the 2 to 4 pound range. Numbers of reported chain pickerel citations has dropped severely. Early season electrofishing surveys during February and March were not conducted on Chickahominy Lake. The majority of the chain pickerel spawning season usually takes place toward the beginning of March in a lot of the backwater coves and marsh areas. This would be the best opportunity to catch some of the larger chain pickerel in a pre-spawn pattern as they are one of the first species to spawn. There are some large chain pickerel out there. It is just a matter of finding where they are hiding.

### Yellow Perch

A total of 40 yellow perch were collected during the electrofishing survey. The CPUE of 13 fish/hr showed an unfavorable decline when compared to the 2013 survey (CPUE = 18 fish/hr). The size distribution ranged from 4 to 11 inches with the majority of fish in the 6 to 7 inch range. A handful of perch in the 10 to 11 inch range show the remains of decent year class of fish that have managed to survive long enough to reach respectable size. Yellow perch have historically been hard to collect from Chickahominy Lake. Electrofishing efforts have yielded low catch rates. The majority of the yellow

perch movements into and around the shoreline come early in the spring before the lake is sampled. Anglers have been having better success with the yellow perch population. If you are able to find a few yellow perch, there is a good chance that a school of perch is holding reasonably close.

### **Remaining Species**

The remaining species collected during the electrofishing survey were in low abundance. These species were brown bullhead (9), common carp (3), blue catfish (1), creek chubsucker (31), flier (6), longnose gar (2), blueback herring (2), gizzard shad (27), golden shiner (44), bluespotted sunfish (4) and warmouth (7). These fish add to the diversity of the overall fishery and may provide some limited angling opportunities.

The remaining species collected during trap netting that were not specifically mentioned within the text are: largemouth bass (1), brown bullhead (3), creek chubsucker (84), American eel (1), flier (27), pirate perch (2), white perch (2), yellow perch (1), chain pickerel (3), gizzard shad (1), redear sunfish (19) and warmouth (2). All of these species were collected in limited abundance except for the creek chubsuckers. The total of 84 creek chubsuckers collected in the trap nets showed an increase from the 64 collected in 2013. The majority of collected creek chubsuckers were adult-sized fish in the 10 to 14 inch range.

### **Summary**

Chickahominy Lake provides a variety of fish species for anglers to target. The combined efforts of the electrofishing and trap net surveys revealed the presence of numerous fish species. The majority of the angling action will come from the abundant largemouth bass and black crappie populations. The lake produces a decent number of 2 to 4 pound bass with the potential to grow a few trophies in the 5 to 6 pound range. The lake offers plenty of opportunities to catch a mixed bag of sunfish species in the form of bluegill, redear sunfish, flier and warmouth. A few larger bluegill can be a surprise for light tackle anglers. Certain areas of the lake will hold some larger redear sunfish during the spring season as the fish prepare for the spawn. The bowfin population is still strong with an abundance of fish in the 20 to 24 inch range. The chain pickerel population is not as strong as it used to be with overall catch rates not that impressive. Anglers that fish the lake on a consistent basis can possibly find a few larger pickerel when the conditions are perfect. The yellow perch fishery had seen some great improvements over the last few years, but appears to have shown a recent decline.