



## **Chickahominy Lake 2012 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. This cypress-laden lake provides a spectacular backdrop for photographers and great place for bird watchers. The lake has historically been one of the best all around fisheries in Virginia. The lake's forage base is primarily based upon the populations of gizzard shad and blueback herring. A decent population of golden shiners is also present. 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 late spring to early fall time period. The boat lock area on Walkers Dam suffered a major, structural collapse during April 2007. Chickahominy Lake became a fully tidal reach of the Chickahominy River. The initial stages of dam repair were able to close the breached section around the end of October 2007 to allow the lake to return to its full pool level. The City of Newport News is currently building a new boat lock on the dam as well as a new fish ladder.

The Virginia Department of Game and Inland Fisheries conducted an electrofishing survey of Chickahominy Lake on April 14<sup>th</sup> and 18<sup>th</sup>, 2011. The previous spring survey was conducted on April 1<sup>st</sup>, 9<sup>th</sup>, and 16<sup>th</sup>, 2010. The 2011 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 17 fish species collected. Predator species such as bass, black crappies, chain pickerel, bowfin and yellow perch were collected during each run. Species such as bluegills, redear sunfish and other non-predator species were collected over the course of two runs. 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 is centered around bass in the 8 to 16 inch range with an abundance of bass less than 12 inches in length. A total of 315 largemouth bass were collected for a CPUE (Catch Per Unit of Effort) of 105 bass/hr. The catch rate showed a slight decline when compared to the 2010 rate (CPUE: 115.3 bass/hr). The 2011 survey covered 9 sample runs for a combined effort of 3 hours. The 2010 survey

consisted of 7 sample runs for a combined effort of 2.33 hours. The abundance of bass less than 12 inches in length brought the mean size down to 11.3 inches.

Figure 1. Length frequency distribution of largemouth bass collected from Chickahominy Lake on April 14<sup>th</sup> and 18<sup>th</sup>, 2011 (N: 315, CPUE: 105 f/hr)

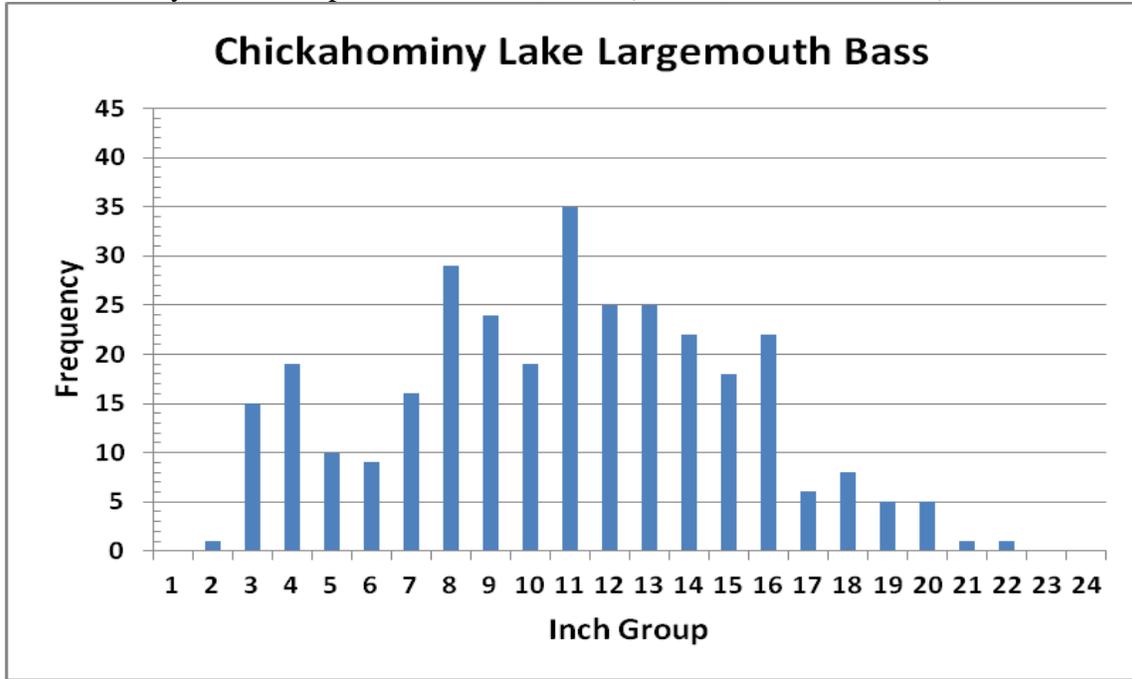
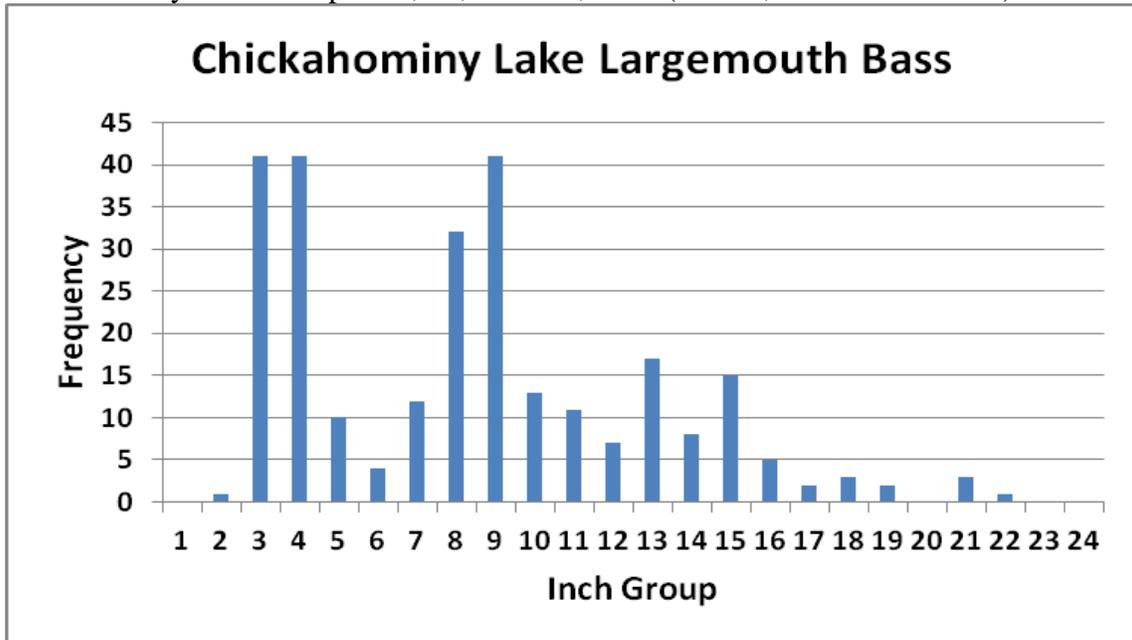


Figure 2. Length frequency distribution of largemouth bass collected from Chickahominy Lake on April 1<sup>st</sup>, 9<sup>th</sup>, and 16<sup>th</sup>, 2010 (N: 269, CPUE: 115.3 f/hr)



The 2011 distribution showed a high proportion of bass to be less than 12 inches in length. A closer look into the data revealed that 177 bass (56.2%) were less than 12

inches in size. This percentage is much less than the 2010 survey which had 76.6% of collected bass measured at less than 12 inches in length. The recruitment from both the 2009 and 2008 spawning seasons continues to support a large proportion of the population. The survey provided a respectable abundance of bass in the 13 to 16 inch range. The largest bass measured 22.1 inches and weighed 6.05 pounds.

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 – 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 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 61, which is a direct reflection of the 149 quality-sized bass. The sample had a total of 246 bass that were stock size or larger. The RSD-P value of 27 is a direct reflection of the 66 preferred-sized bass collected. The 2011 PSD and RSD-P values were greater than the 2010 values (PSD: 39, RSD-P: 19). The collection of 6 memorable-sized bass yielded a RSD-M value of 2 which was similar to the 2010 survey (RSD-M: 2).

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 (>8”, >12”, >15”, >20”) were 94, 94, 96 and 98. The relative weight values for stock and quality-sized bass fell below the desired range of 95 to 100. The 2011 relative weight values were similar to the 2010 values (stock: 93, quality: 94, preferred: 97 and memorable: 109) except for the decline in relative weight for memorable-sized bass.

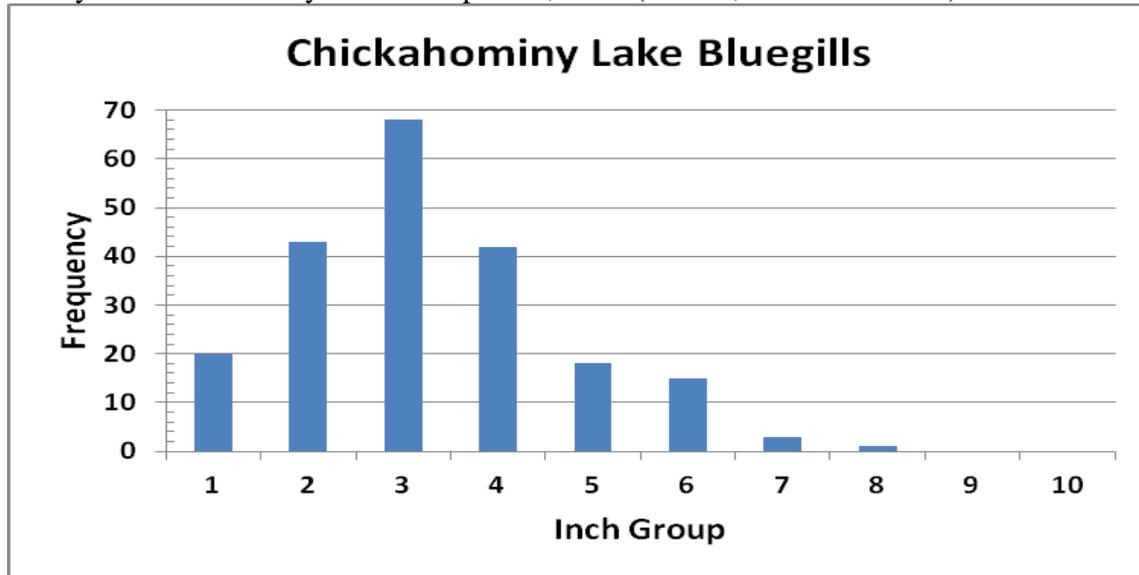
## **Bluegill**

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 was able to collect 210 bluegills over the course of two sample runs (0.66 hour). The catch rate (CPUE) of 315 bluegills/hr showed a major decline when compared to the 2010 survey (564 bluegills/hr). The size distribution can be seen on the attached length frequency graph. The collected bluegills ranged in size from 1 to 8 inches with the majority of fish in the 2 to 4 inch range. There was a limited abundance of bluegills in the 7 to 8 inch range. The mean size for bluegills measured 3.73 inches. Some areas of the lake hold larger than average bluegills, but the sites sampled on 4/14/11 were not holding any of the larger specimens.

The PSD for bluegills is the proportion of bluegills over 3.15 inches (stock size) that are also at least 5.9 inches (quality size). The bluegill PSD value was 14. The

collection consisted of only 19 quality-sized bluegills greater than 5.9 inches in length. The 2011 PSD value showed a minor increase from the 2010 survey (PSD: 13) and fell below the desired 20 - 60 range that would represent more of a balanced bluegill population.

Figure 3. Length frequency distribution of bluegills collected during the electrofishing survey of Chickahominy Lake on April 14, 2011 (N: 210, CPUE: 315 f/hr)

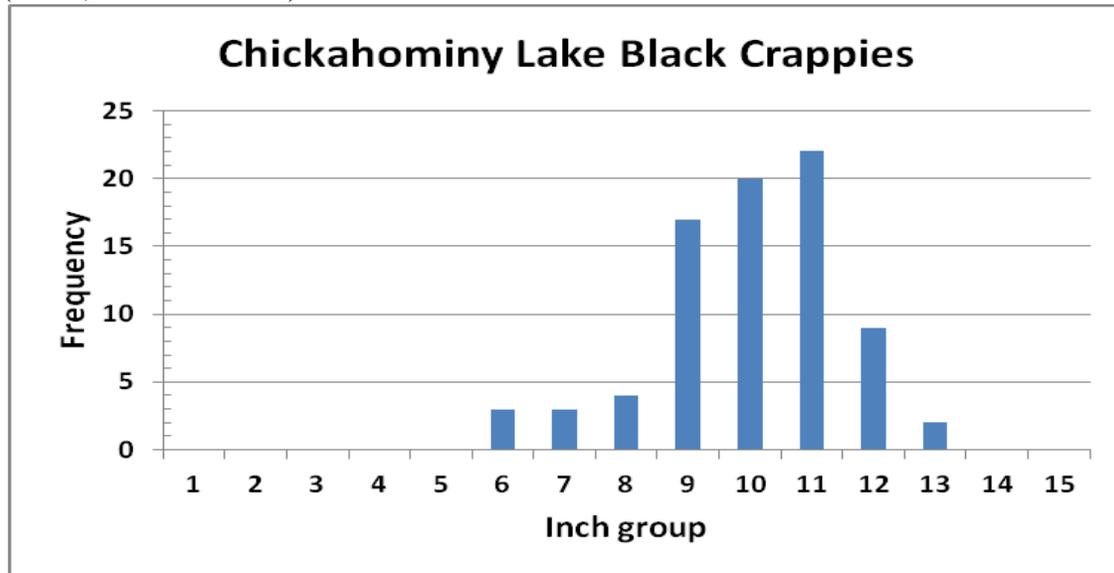


Trap net sampling was conducted on Chickahominy Lake on March 14<sup>th</sup> to 16<sup>th</sup>, 2010. The main purpose of this type of sampling is to collect the schooling fish such as black crappies that normally would not be fully represented in an electrofishing survey. The reservoir was divided in half with 10 trap nets set on the lower half of the reservoir the first night and then 10 nets reset to the upper half of the reservoir on the second night. A total of 20 net nights were used to assist with the evaluation of the fishery. The trap nets were able to collect 17 species of fish. The nets were successful in catching bluegills. A total of 1,408 bluegills were collected over the course of two nights. The catch rate of 70.4 bluegills/net night showed a major increase from the 2010 trap net survey (38.6 bluegills/net night). The bluegills ranged in size from 2 to 20 centimeters (1 to 8 inches) in length with the majority of the bluegills in the 4 to 8 centimeter range (2 to 3.5 inches). A total of only 4 bluegills were greater than 5.9 inches in length.

### **Black Crappie**

The electrofishing survey collected a total of 80 black crappies (CPUE: 26.7/hr). The catch rate showed a decline from the 2010 survey (CPUE: 38.1/hr). The largest crappie was an impressive male that measured 13.46 inches and weighed 1.26 pounds. The length frequency distribution was similar to past surveys with the majority of crappies measured in the 9 to 12 inch range. A limited abundance of juvenile black crappies were collected. Relative weight data of collected crappies revealed less than ideal values: stock: 85, quality: 84, preferred: 82 and memorable: 80.

Figure 4. Length frequency distribution of black crappies collected during the electrofishing survey of Chickahominy Lake on April 14<sup>th</sup> and 18<sup>th</sup>, 2011. (N: 89, CPUE: 38.1/hr)

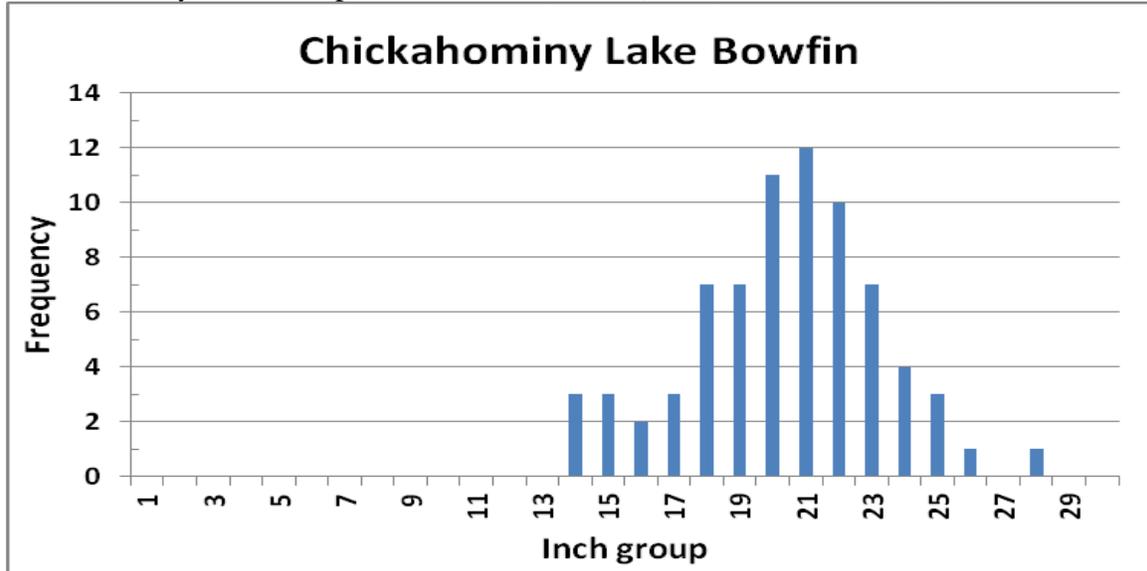


The trap net survey collected a total of 283 black crappies over the course of 20 net nights. The catch rate of 14.15 fish/net night showed a major increase when compared to the 2010 trap net survey (CPUE: 6.3 fish/net night). The lower lake nets yielded 159 black crappies on March 15<sup>th</sup> while the upper lake nets collected 124 black crappies on March 16<sup>th</sup>. The 2011 trap net collection was similar to past years with the majority of the black crappies in the 9 to 12 inch range. The largest crappie collected during the trap net survey measured 13 inches and weighed 1.26 pounds. Johnston and Lacey Creeks continue to be some of the better areas to find early season black crappie schools.

### **Bowfin**

The electrofishing survey revealed an increased abundance of bowfins present along the sites sampled. A total of 74 bowfins were collected (CPUE: 24.7/hr). The catch rate showed an increase from the 2010 survey (CPUE: 14.1/hr). Some survey areas such as Shingle Annie's Creek (2 bowfins) and Johnson Creek (4 bowfins) showed a low abundance of bowfins while other areas like Turkey Creek were more productive with 20 bowfins collected. The 2011 sample revealed an average-sized bowfin to be 20.83 inches in length. The largest bowfin measured 28.42 inches and weighed 7.4 pounds. A large proportion of the sample consisted of bowfins in the 19 to 23 inch range. Certain areas of the lake hold greater concentrations of bowfin than others. The 2011 trap net survey collected 5 additional bowfins. The bowfin fishery should still provide excitement for the average angler that fishes Chickahominy Lake. DGIF fisheries staff continued the bowfin tagging study in 2011 with the tagging of bowfins throughout the entire lake. 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.

Figure 5. Length frequency distribution of bowfins collected during the electrofishing of Chickahominy Lake on April 14<sup>th</sup> and 18<sup>th</sup>, 2011 (N: 74, CPUE: 24.7 f/hr)

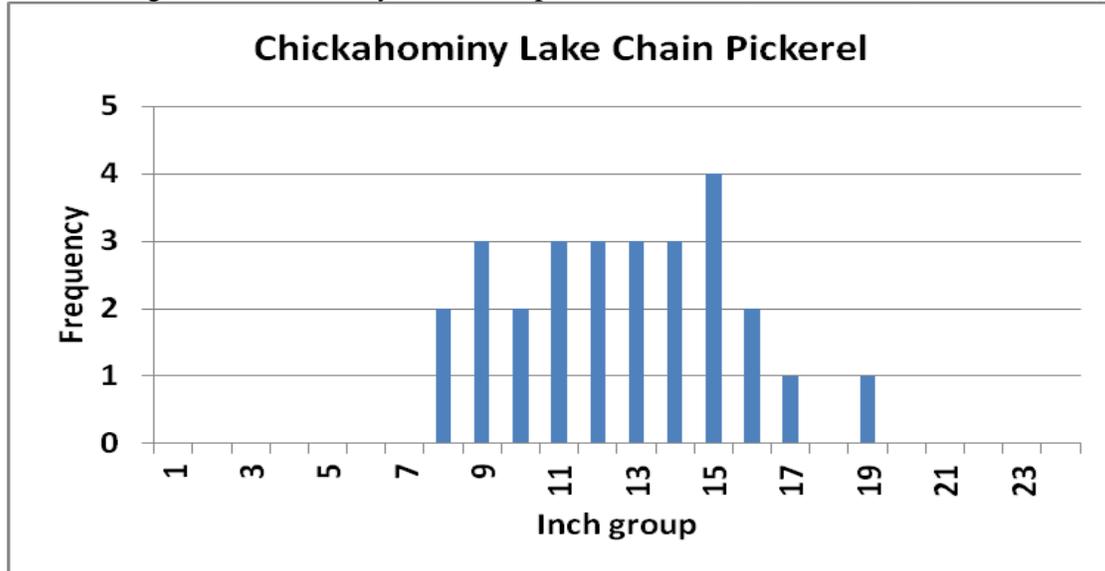


### Chain Pickerel

The chain pickerel population of Chickahominy Lake has historically provided a lot of action for anglers over the years. The sample collected a total of only 27 chain pickerel for a CPUE of 9/hr. The 2011 catch rate fell well below the 2010 survey (CPUE: 30/hr). The size distribution ranged from 8 to 19 inches with the majority in the 11 to 15 inch range. The largest chain pickerel measured 19.37 inches and weighed 1.5 pounds. The 2011 survey was similar to past survey years in revealing a low abundance of larger chain pickerel. This discouraging trend may be a reflection of the entire population or just a reflection of the sites sampled on those days. Future sampling will help to determine the strength of the chain pickerel fishery.

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.

Figure 6. Length frequency distribution of chain pickerel collected during the electrofishing of Chickahominy Lake on April 14<sup>th</sup> and 18<sup>th</sup>, 2011 (N: 27, CPUE: 9 f/hr)



### Redear Sunfish

The redear sunfish population appears to be in fair shape. A total of 77 redear sunfish were collected during the two complete community runs. The CPUE of 115.5/hr. showed a major decline from the 2010 sample (CPUE: 291/hr). The size distribution ranged from 2 to 7 inches with the majority in the 4 to 6 inch range. The largest redear sunfish measured only 7.6 inches. The trap net survey collected a total of only 66 redear sunfish (CPUE: 3.3 fish/net night). Chickahominy Lake has some potential to produce a fair number of redear sunfish in the 6 to 8 inch range. Chickahominy Lake has historically been one of the few reservoirs where visible signs of redear sunfish recruitment were easily observed. The 2011 survey showed very poor recruitment from the 2010 year class with only 8 redear sunfish less than 4 inches in length. The abundance of largemouth bass in the system may have had a major influence on the survival rate of juvenile redear sunfish.

### Yellow Perch

A total of 24 yellow perch were collected during the electrofishing survey. The CPUE of 8/hr showed an unfavorable decline when compared to the 2010 survey (CPUE: 18.9/hr). The size distribution ranged from 4 to 11 inches with the majority of fish in the 4 to 6 inch range. 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. Additional electrofishing surveys conducted in the late summer and early fall of 2010 collected an increased abundance of yellow perch along the shallow flats of the southern shoreline. It appears that schools of perch develop a feeding pattern of chasing bait along the vegetated flats. Anglers have been having better success with the yellow perch population. The additional electrofishing surveys of 2011 found limited success in finding the yellow perch. Angler reports have come back with positive results with fish in

the 10 to 12 inch range. A total of 14 citation yellow perch were reported by anglers during 2010. That total dropped to only 2 perch citations during 2011.

### **Remaining Species**

The remaining species collected during the electrofishing survey were in low abundance. These species were brown bullhead (4), yellow bullhead (1), creek chubsuckers (43), American eel (1), flier (3), longnose gar (2), blueback herring (12), gizzard shad (23), golden shiner (31) and warmouth (5). The survey collected a fair abundance of creek chubsuckers with the total of 43. The creek chubsuckers will provide extra forage for the predator species. 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, brown bullhead, yellow bullhead, creek chubsucker, flier, blueback herring, white perch, yellow perch, chain pickerel, golden shiner, bluespotted sunfish and warmouth. All of these species were collected in limited abundance except for the creek chubsuckers. A total of 64 creek chubsuckers were collected in the trap nets. The majority of collected creek chubsuckers were adult-sized fish in the 10 to 15 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 2009 and 2008 year classes of largemouth bass continue to show great survival. These year classes will be providing a lot of excitement for anglers for years to come.

The lake offers plenty of opportunities to catch bluegills and redear sunfish even though they are not all that large. A few larger bluegills 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 19 to 23 inch range. The chain pickerel population is not as strong as it used to be with overall catch rates down from past survey years. 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. Anglers reported 19 citation-sized fish from Chickahominy Lake during 2011. These citations were for 4 bowfins, 4 blue catfish, 3 chain pickerel, 2 largemouth bass, 2 sunfish, 2 yellow perch and 2 longnose gar.