



## Virginia Department of Game and Inland Fisheries 2013 Harrison Lake Management Report

Harrison Lake is an 82-acre impoundment located on U.S. Fish and Wildlife Service land in Charles City County. Harrison Lake serves as the main water supply for the Harrison Lake National Fish Hatchery. The lake provides anglers with a peaceful setting to try their luck on a variety of fish species. The lake is a valuable public resource for the Charles City County area. Access to the lake is free with the lake being open during daylight hours only. Facilities include a gravel boat ramp, courtesy pier and a few small fishing piers located from the peninsula adjacent to the dam.

The Virginia Department of Game and Inland Fisheries sampled Harrison Lake on April 2, 2012. The previous DGIF electrofishing survey was conducted on March 30<sup>th</sup> and May 5<sup>th</sup>, 2010. The electrofishing effort of 3,600 seconds (1 hour) was used to attain a representative sample of all encountered fish species. The electrofishing effort 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. Effort was made to stick to the bank and shoreline brush as close as possible. The sample revealed a diverse assemblage with 14 species collected. The most abundant species were the bluegill, redear sunfish, largemouth bass, creek chubsucker, black crappie and warmouth.

Table 1. Summary of the primary fish species collected by electrofishing of Harrison Lake, April 2, 2012.

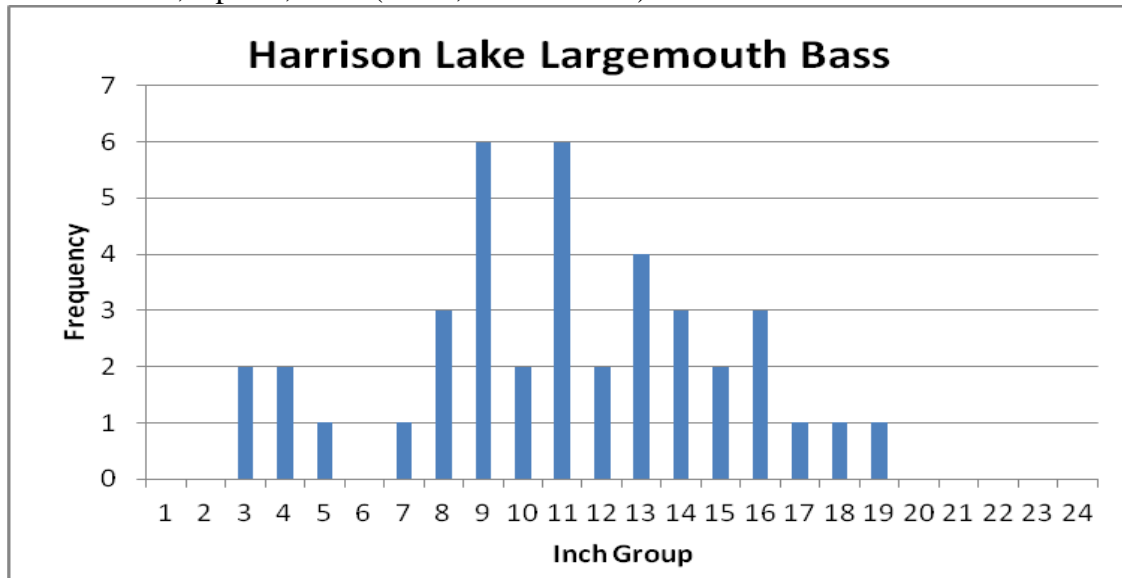
Species	# Collected	Largest Length	Average Length
Largemouth Bass	40	19.88"	11.57"
Bluegill	295	8.15"	3.03"
Black Crappie	18	10.16"	8.17"
Redear Sunfish	87	9.84"	7.16"
Chain Pickerel	15	14.49"	7.9"
Bowfin	13	31.3"	23.05"
Warmouth	18	7.36"	5.33"

### Largemouth Bass

Harrison Lake provides a fair bass fishery. A total of 40 largemouth bass were collected for a CPUE (Catch Per Unit of Effort) of 40 f/hr. This catch rate showed a decline when compared to the 2010 survey (CPUE: 56.7 f/hr). This catch rate is below the rate of most impoundments within the region. The size distribution of the collected bass can be seen on the enclosed length frequency graph. The majority of the bass sample consisted of bass in the 8 to 14 inch range. The high proportion of bass in this size range shows what the average fisherman will most likely be catching. The assemblage of older bass (15 to 19 inch range) most likely represents a combination of a few year-classes. The

sample showed limited recruitment from the 2011 year class with a total of 5 bass in the 3 – 5 inch range. The average sized bass measured 11.57 inches, which showed an increase from the 2010 survey (mean TL: 10.2 inches). Our sampling efforts are just a representative picture of the fish community collected along the shoreline on the sample days. There may be larger bass that eluded the shocking boat by hanging in deeper water or escaping from the electric field.

Figure 1. Length frequency of largemouth bass collected from the electrofishing of Harrison Lake, April 2, 2012 (N: 40, CPUE: 40/hr)



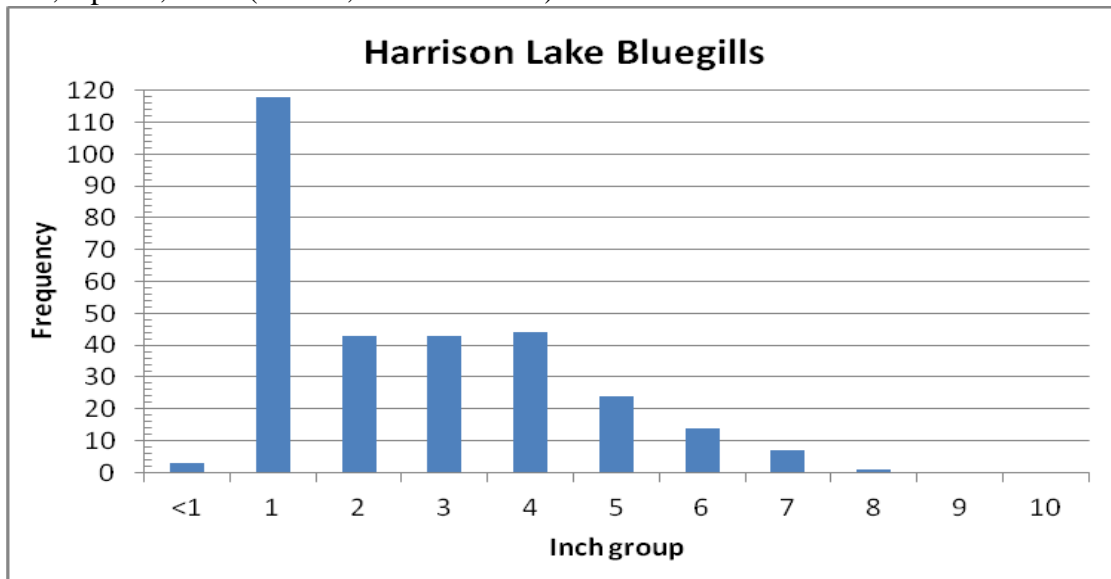
With largemouth bass being the most popular game fish in this country, it has been considered that a “preferred” bass is one that is over 15 inches in length. It is through this size classification that population dynamics are analyzed. The PSD (Proportional Stock Density) is the proportion of stock-sized bass (8 inches or larger) that are also equal to or greater than 12 inches (quality size). The sample showed a PSD value of 51, which is a direct reflection of the 18 quality-sized bass. A total of 35 were of stock size or larger. A balanced bass/bluegill fishery has a bass PSD value within the 40 – 60 range. The PSD value is slightly less than the 2010 survey (PSD: 53). The RSD-P (Relative Stock Density of Preferred bass) is the proportion of bass of stock-sized bass that are also equal to or greater than 15 inches in length. The RSD-P value of 23 is a direct reflection of the collection of 8 preferred-sized bass. The RSD-P value is well above that encountered during the 2010 survey (RSD-P: 5).

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, preferred-sized bass (>8”, >12”, >15”) were 89, 92 and 91 respectively. These values when compared to 2010, showed a slight decline for stock (Wr: 91) and preferred fish (Wr: 95), but a slight increase for quality-sized fish (Wr: 90). The bass are experiencing some difficulties in finding enough prey items to forage upon. The largest bass measured 19.88 inches and weighed 4.06 pounds.

## Bluegills

Harrison Lake's bluegill fishery continues to be dominated by fish less than 5 inches in length. Our electrofishing effort collected 297 bluegills for a CPUE of 297 f/hr. This CPUE showed a decline from the 2010 survey (CPUE: 339 f/hr). Bluegills ranged in size from < 1 inch to 8.15 inches. The majority of the bluegills were juvenile fish in the 1 to 4 inch range. The PSD for bluegill is the proportion of bluegill over 8 cm (stock size) that are also at least 15 cm (quality size). The bluegill PSD of 22 is a reflection of the 28 quality-sized bluegills greater than 5.9 inches. A total of 125 stock-sized bluegills were collected. The 2012 survey showed an increase in PSD value when compared to the 2010 survey (PSD: 18). The 2012 PSD value (22) is just within the optimal PSD range of 20 to 40 that would represent a balanced fishery. The presence of gizzard shad within Harrison Lake and the limited nutrients of the watershed may both have a factor in the low abundance of larger bluegills.

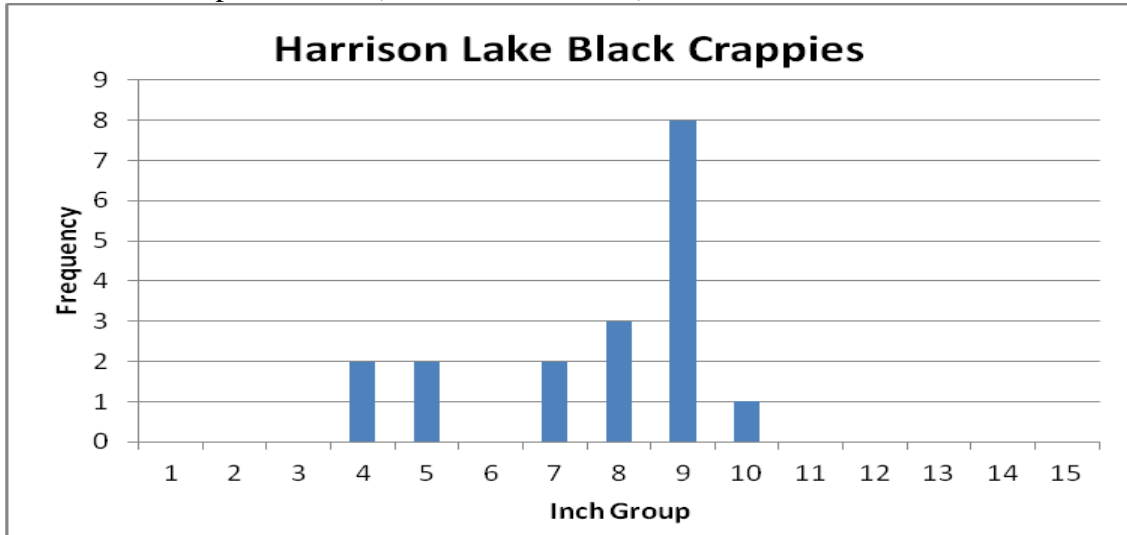
Figure 2. Length frequency of bluegills collected from the electrofishing of Harrison Lake, April 2, 2012 (N: 297, CPUE: 297/hr)



## Black Crappies

The sample provided a limited number of black crappies. A total of 18 crappies were collected (CPUE: 18 f/hr). This catch rate showed a decline from 2010 (CPUE: 26.2 f/hr). Black crappies tend to school in deeper water more than largemouth bass and bluegill. This makes it difficult to draw too many conclusions on the strength of the crappie population. If the population was really abundant, we most likely would have collected more crappies along the deeper edges of the shoreline cover. The black crappies ranged in size from 4 to 10 inches with the majority in the 8 to 9 inch range. The average size for crappie measured in at 8.17 inches which showed a slight increase from the 2010 survey (mean TL: 7.92 inches). The relative weight values for stock (89), quality (87) and preferred (86) sized fish showed a decline from the 2010 survey (Stock: 93, quality: 88 and preferred: 89). All values were below the desired range of 95-100, but not many waters have crappies within that relative weight range.

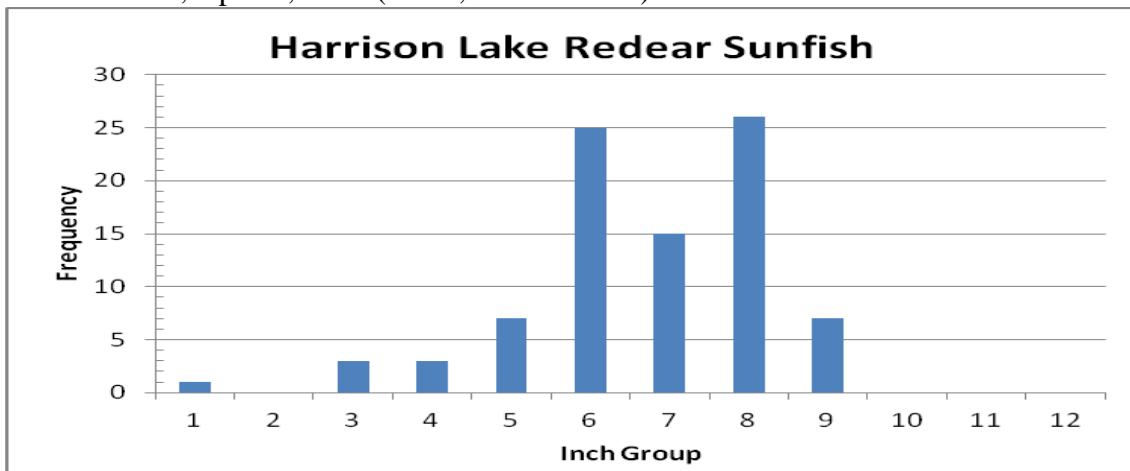
Figure 3. Length frequency of black crappies collected from the electrofishing of Harrison Lake, April 2, 2012 (N: 18, CPUE: 18/hr)



### Redear Sunfish

The sample revealed a decent population of redear sunfish. A total of 87 redear sunfish were collected (CPUE: 87 f/hr). This catch rate showed a decline from the 2010 survey (CPUE: 118.5 f/hr). The redear sunfish ranged in size from 1 to 9 inches with a large percentage of the sample in the 6 to 8 inch range. The upper flats of the lake are productive areas for redear sunfish. The largest redear sunfish measured 9.84 inches with the average size at 7.16 inches. Young anglers may have better success in catching decent redear sunfish in the 8 to 9 inch range when compared to the limited number of larger bluegills that are present.

Figure 4. Length frequency of redear sunfish collected from the electrofishing of Harrison Lake, April 2, 2012 (N: 87, CPUE: 87/hr)



### Chain Pickerel

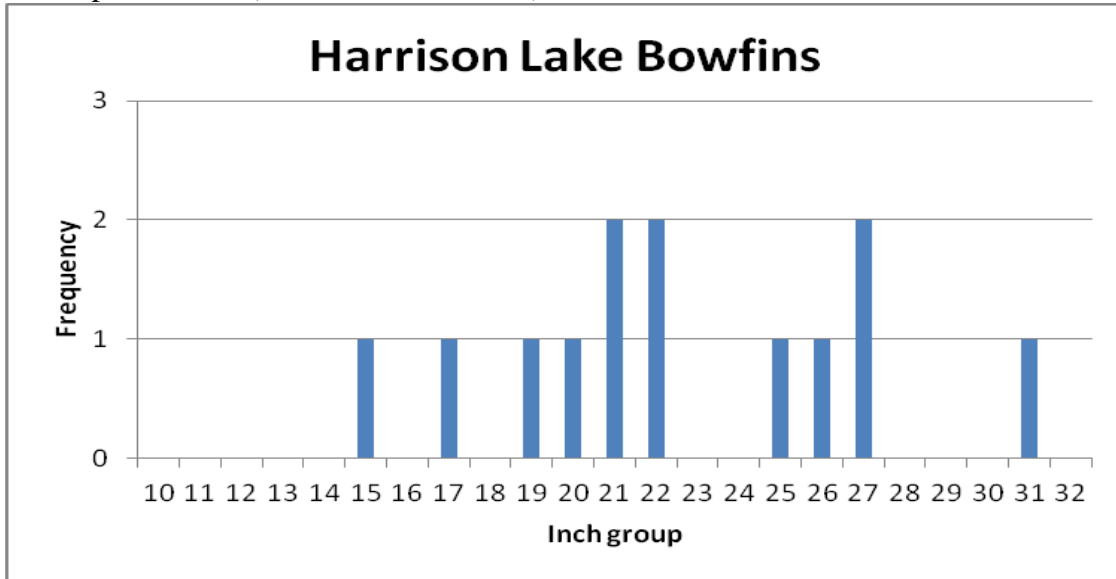
The sample revealed a limited number of chain pickerel with only 15 collected. The catch rate of 15 f/hr showed an increase from the 2010 survey (CPUE: 10.9/hr). The 2012 survey collected juvenile pickerel in the 1 to 14 inch range. Several year classes

were observed. Anglers have been able to catch a few larger chain pickerel from the lake over the last few years. The chance is always present to catch a larger pickerel, but anglers should not expect to catch too many large pickerel from the lake.

### **Bowfin**

Harrison Lake provides some angling opportunities for bowfin. The survey yielded 13 bowfins (CPUE: 13 f/hr), which was more successful than the 2010 survey (CPUE: 3.3/hr). The bowfins ranged in size from measured 15 to 31 inches with the average length of 23.05 inches. The bowfin population will provide some excitement for anglers that are trying to catch bass and chain pickerel. The survey provided a trophy female bowfin that measured a very impressive 31.3 inches and 10.65 pounds. Harrison Lake has produced some citation-sized bowfins over the last few years.

Figure 5. Length frequency of bowfins collected from the electrofishing of Harrison Lake, April 2, 2012 (N: 13, CPUE: 13 f/hr)



### **Additional Species**

Harrison Lake has more diversity in the form of 8 additional species. These species collected in limited abundance were brown bullhead (1), yellow bullhead (1), creek chubsucker (23), flier (6), pumpkinseed sunfish (1), gizzard shad (3), golden shiner (6) and warmouth (18). The juvenile creek chubsuckers will provide additional forage for the predator species. The warmouth, with the majority in the 5 to 7 inch range, can provide some excitement for panfish anglers. The remaining fish species will surprise anglers from time to time.

### **Sample Summary**

The electrofishing sample of Harrison Lake showed a diverse fishery consisting of 14 fish species. The largemouth bass population appears to be reasonably balanced even though a limited number of bass were collected. The length distribution graph

showed the presence of various year classes. The average-sized bass measured 11.57 inches in length. The largest bass measured at 19.88 inches and weighed just over 4 pounds. I would recommend that anglers release as many largemouth bass as possible to protect the current population.

The bluegill population appeared to be rather abundant with a CPUE of 297 fish/hr. The majority of the bluegills were less than 5 inches in length. The survey revealed an increased presence of quality-sized bluegills with 28 collected. Similar to past surveys, a limited number of 18 black crappies were collected. The redear sunfish population appears to be in good shape with a high percentage of fish in the 6 to 8 inch range. The survey did not yield much insight into the chain pickerel population with only 15 fish collected. The pickerel population appears to be dominated by fish less than 14 inches in length. The survey was conducted at the ideal time to reveal a decent abundance of bowfins with the 31.3 inch trophy providing the most excitement. Harrison Lake offers a wide variety of fish species for anglers to target. Anglers might want to keep an open mind and try fishing for these species with smaller lures or baits that would create strikes from crappies, warmouth and redear sunfish. The chance to catch larger fish in the form of bowfin and bass is available for anglers using larger lures and baits. One citation-sized largemouth bass was reported from Harrison Lake during the 2012 fishing season.

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