



## North Fork Holston River 2014

From its origin in the southeast corner of Bland County, the North Fork of the Holston River flows more than 100 miles through Southwest Virginia before crossing the Tennessee State line near the community of Yuma. The river boasts an outstanding smallmouth bass population, and supports populations of many other fish species.

Sport fish populations are sampled in the North Fork Holston River using boat-mounted electrofishing gear. This sampling equipment generates a controlled field of electricity around the boat that immobilizes the fish. The fish can then be collected with dipnets and placed in a livewell on the boat to recover. This method does not kill the fish, but only stuns the fish so that they can be collected, counted, measured and released. These population samples are typically conducted during April and May, when most fish are in shallow water.

The relative abundance of each fish species is calculated as the number of fish collected per hour of sampling. This is also referred to as the catch rate or catch per unit of effort (CPE). The total length and weight of individual fish are measured to determine the condition of the fish and also to evaluate the size structure of the populations. A balanced size structure with representative numbers of both large and small fish is ideal. Mostly small fish in the population might mean that growth is slow or few fish are surviving to older ages. Mostly large fish in the population might mean that natural reproduction is lacking and there are not enough young fish being recruited to replace older fish that die. Periodically fish are collected for the purpose of determining the age structure of the populations. These data provide biologists with the information necessary to calculate average growth rates and mortality rates for the population. Age data are not collected each year, because it requires killing the fish.

All of these data together are used to make management decisions about the fishery. Biologists use the data to make stocking recommendations and regulation proposals. The relative abundance of a particular species or the size structure of that species may not always correspond with what you catch as an angler. The electrofishing method tends to collect average and small fish better than really big fish. It is likely that you will catch more or bigger fish in your efforts than biologists collect in sampling. The data collected in sampling is best used to track trends in the population from year to year and also to compare to another location on the river or other rivers in Virginia.

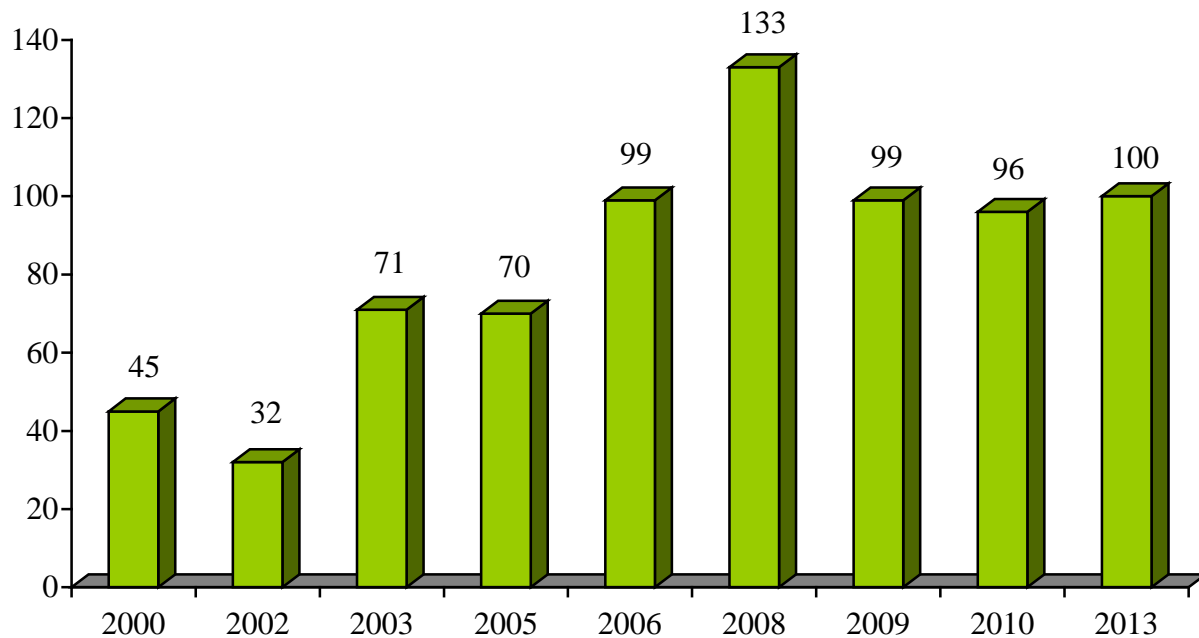
Routine sampling locations include: Saltville, Clinch Mountain Wildlife Management Area Boat Landing, Mendota, and Weber City. Other locations are sampled when boat access is suitable and the schedule allows.

### Smallmouth bass

Smallmouth bass relative abundance (number of fish collected per hour of sampling) in the North Fork Holston River varies from year to year (Figure 1). The catch rate for smallmouth in the North Fork is above average compared to other rivers in the

state. The 2013 catch rate of 100 smallmouth bass per hour was good and consistent with similar collections since 2006. With the exception of the low catch rates in 2000 and 2002 and high catch rate in 2008, the relative abundance has been steady at 70 to 100 fish per hour of sampling. Sampling catch rates can be affected by river levels, water clarity and weather, but sampling under the same conditions each year helps to minimize these factors.

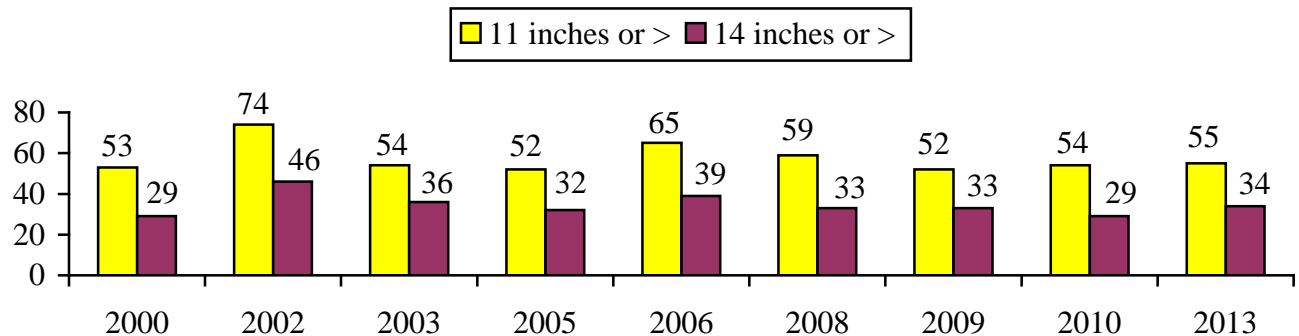
The abundance of smallmouth bass populations in rivers is heavily influenced by reproductive success. In years with good spawning conditions and survival, strong year classes are produced. Strong year classes increase the population abundance and create better fishing opportunities. These strong year classes usually persist for 10 years or more, until most of the individual fish die of old age or other causes. When two or more strong year classes are produced in quick succession, the fishing can be extraordinary. Of course, when average or weak year classes are produced the population declines and fishing is not as good. Population samples indicate that smallmouth recruitment in the North Fork was fairly consistent in recent years.



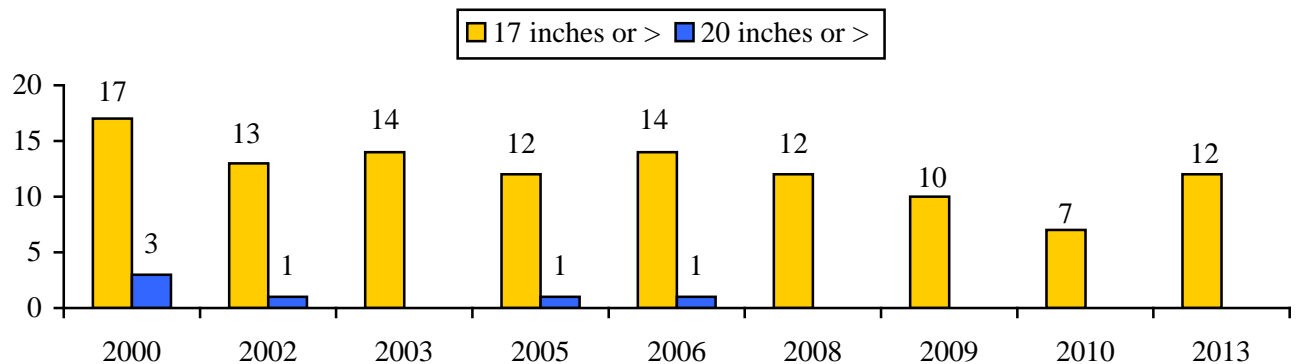
**Figure 1.** Number of smallmouth bass collected per hour of sampling in the North Fork Holston River from 2000 to 2013.

Proportional Stock Density (PSD) is an index that measures the percentage of adult fish that are 11 inches or larger in the population. Of the adult (all fish 7 inches or larger) smallmouth bass collected in 2013 the PSD measured 55 (figure 2). This means that approximately 55% of all adult smallmouth bass collected in 2013 were 11 inches or larger. The percentage of adult fish 14 inches or larger in the collection was 34% and the percentage of adult fish that were 17 inches or larger in the collection was 12%. The following figures show the size range of smallmouth bass by percentage for collections made from 2000-13.

Percent of smallmouth bass collected annually measuring 11 inches and larger or 14 inches and larger



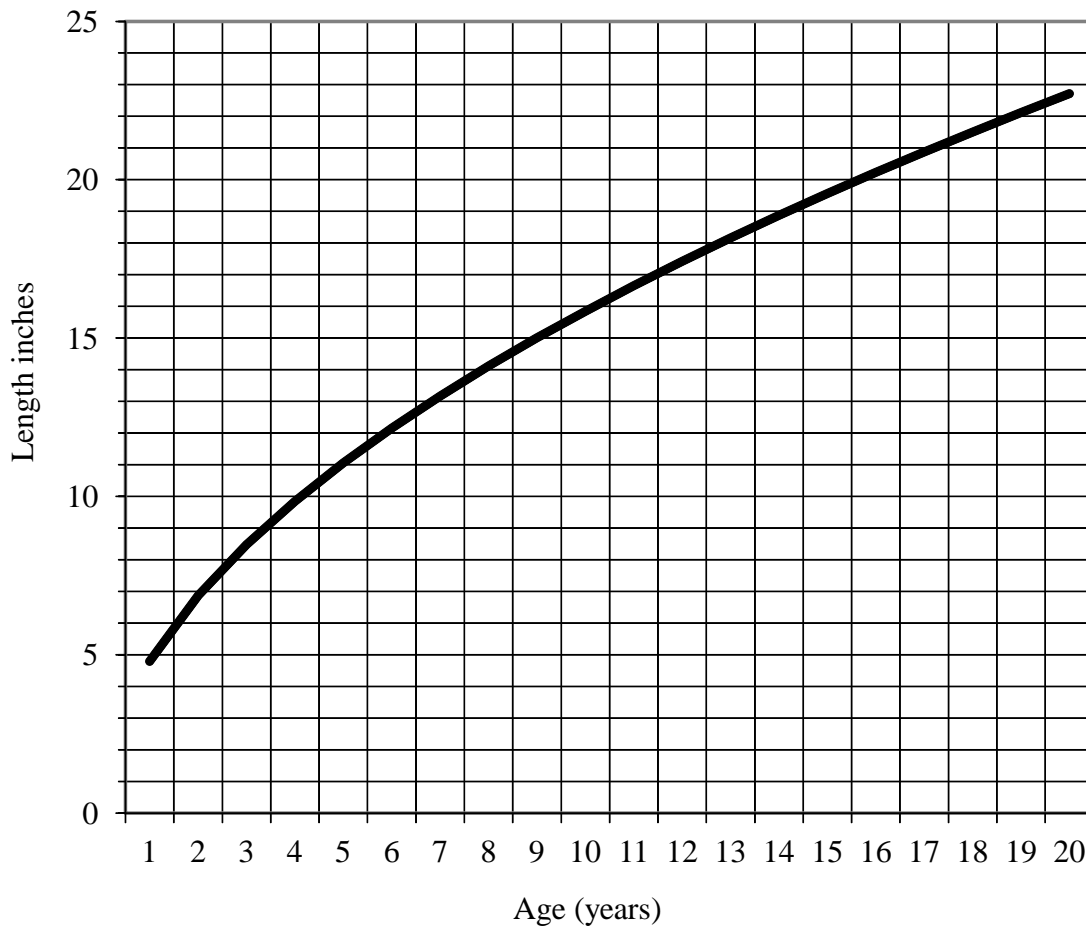
Percent of smallmouth bass collected annually measuring 17 inches and larger or 20 inches and larger



**Figure 2.** Percentage of smallmouth bass collected by size group in the North Fork Holston River from 2000-2013.

North Fork Holston smallmouth bass grow slowly, but enjoy a very high annual survival rate (79 percent). The high survival rate allows slow growing fish an opportunity to reach older ages and greater lengths. Smallmouth bass from one to seventeen years old were collected in 2003. One of the 17-year-old fish was 17 inches long and the other measured 20 inches long. If you would like to know how old a smallmouth from the North Fork Holston is, you can estimate its age using Figure 3.

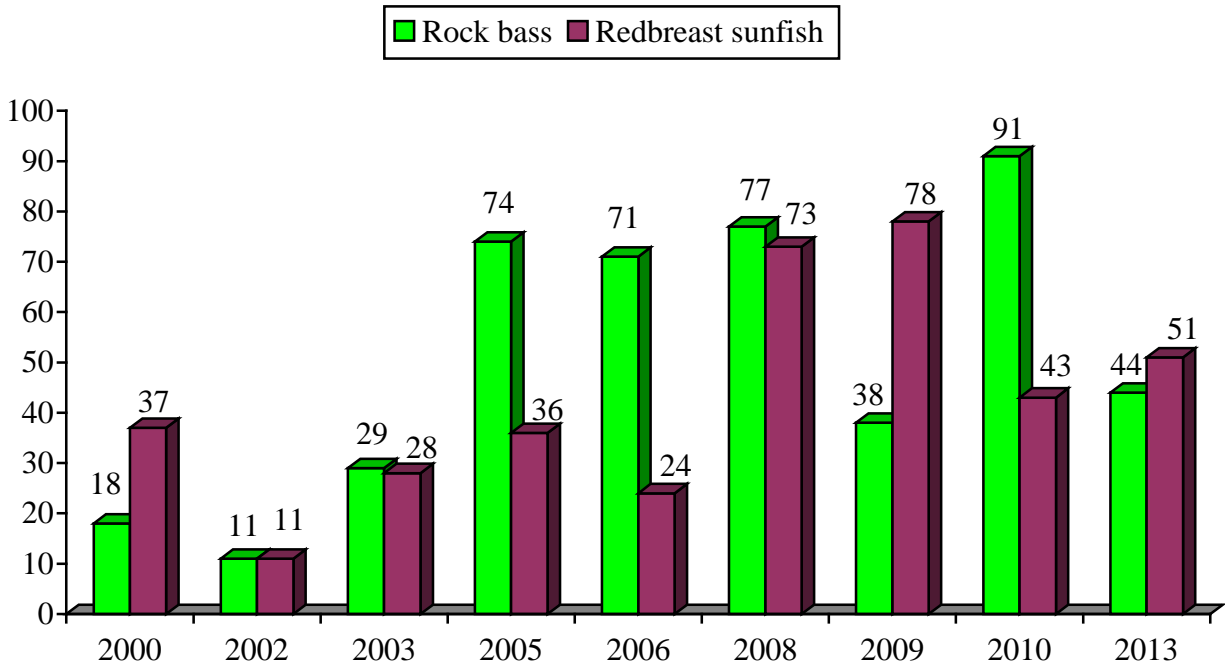
## How old is this smallmouth?



**Figure 3.** Use this chart to estimate the age of a smallmouth you catch in the North Fork Holston River. Find the length of your fish in inches on the vertical axis, and then follow the horizontal grid line across until it intersects with the curve. Then follow the vertical grid line down to estimate the age of your fish.

### Rock bass and Redbreast sunfish

Rock bass and redbreast sunfish catch rates fluctuate from year to year (Figure 4). Rock bass were collected at a rate of 44 fish per hour, and redbreast sunfish were collected at a rate of 51 fish per hour in 2013. The fluctuation in catch rates is most likely the result of spawning success. Good spawning success can lead to high catch rates in the following years, while poor spawning success leads to depressed catch rates. The size structure of the rock bass and redbreast sunfish populations is good in the North Fork Holston and has remained constant even though the catch rate is down. Anglers should find quality-sized rock bass and redbreast sunfish.



**Figure 4.** Number of rock bass and redbreast sunfish collected per hour of sampling in the North Fork Holston River from 2000 to 2013.

Other species

Other sport fish species collected in low numbers include largemouth bass, bluegill, black crappie, green sunfish, redear sunfish, and channel catfish. Various species of redhorse suckers, northern hog suckers, common carp, and minnows are also collected routinely.

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