



## 2016 Laurel Bed Lake Fisheries Management Report

Laurel Bed Lake is a 330-acre impoundment located in the Clinch Mountain Wildlife Management Area in Russell County. It is the largest Department-owned lake west of the Blue Ridge. The lake has a maximum depth of about 40 feet and an average depth of 15 feet. The mountain top setting (3,600 feet elevation) and the unique mixed hardwood forest surrounding the lake provide a setting with unparalleled beauty.

During the 1970's and 1980's Laurel Bed provided a productive and popular brook trout fishery. During the early 1990's, however, low pH (acidic) water and other factors severely limited brook trout survival and growth. The lake suffered from low pH because there is very little limestone in the watershed to buffer acid precipitation. Most fish need water with a pH from 6.0 to 9.0 in order to survive and prosper. The pH of rain and snow in the lake's vicinity is about 5.0. Without anything to buffer the low pH precipitation, the lake's water also had a pH of about 5.0. Another factor that complicated fisheries management at Laurel Bed Lake was the unauthorized stocking of rock bass in the early 1980's. Rock bass can survive and reproduce in low pH water, so they soon became overabundant (relative abundance = 266 fish per hour) and stunted at a small size (four to five inches). Stocked brook trout no longer grew well, because insects were scarce due to the low pH water and because rock bass competed with brook trout for the limited food.

In 1996 the lake was drained to allow structural repairs. This offered biologists an opportunity to reclaim the brook trout fishery. Rock bass were removed from the lake during the draining process, and when the lake re-filled in 1997 limestone dust was added to improve the lake's pH. Fingerling brook trout were stocked. Although considerable effort was expended to remove rock bass, they were collected in the 1998 sample. Because biologists were concerned that the rock bass would again overpopulate the lake, smallmouth bass were stocked with the hope that they might feed on the rock bass and keep the population at a manageable level. Bluegills were collected in 2006 at a very low catch rate (2.7 per hour) in the 2006 electrofishing sample. The source of these bluegills is unknown. The lake was partially drained in 2008 and 2013 to complete repairs to the dam and spillway structure.

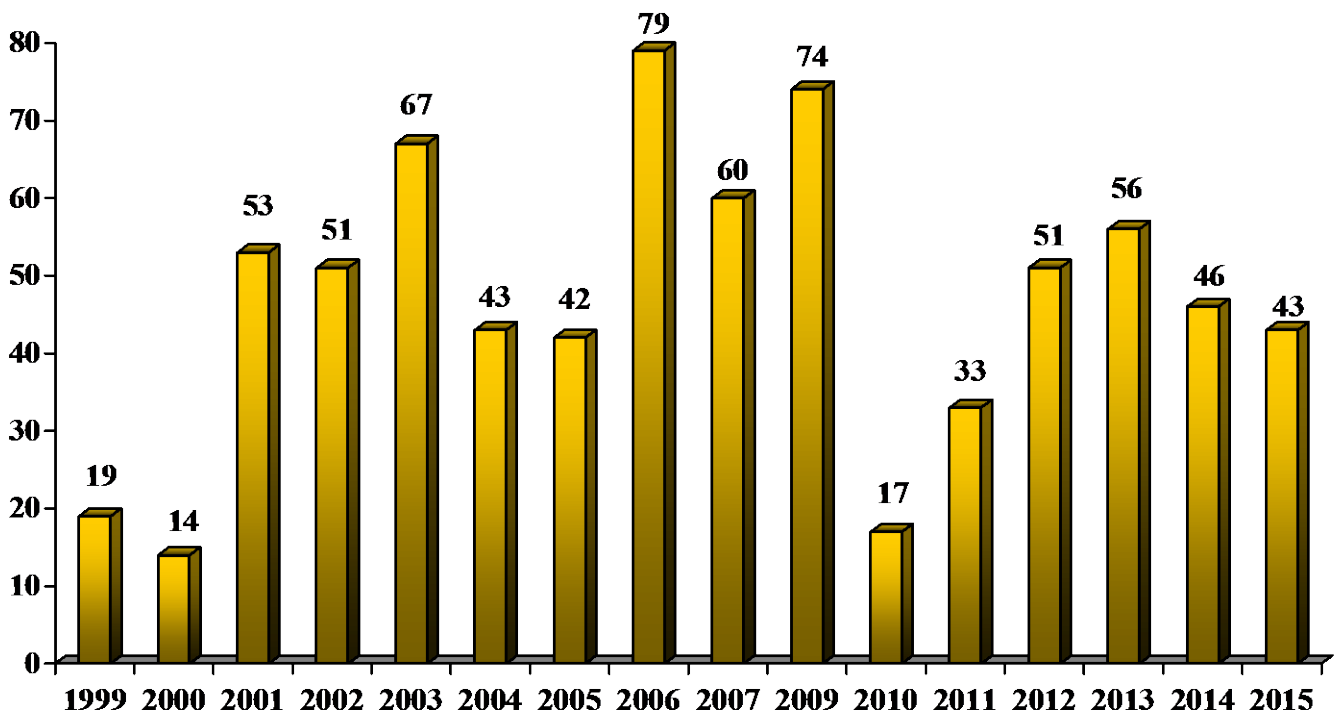
Laurel Bed Lake is currently managed for brook trout, rainbow trout, smallmouth bass and rock bass. Routine fisheries management activities include fish population sampling, water quality sampling, fish stocking, fish attractor construction, and water quality improvement (liming). The lake's fish populations are sampled each year. Biologists use an electrofishing boat to collect smallmouth bass and rock bass in the spring. Water samples are collected periodically to insure that the lake's pH remains above 6.0. Fingerling brook and rainbow trout (six to eight inches) are stocked each year.

The lake was limed in 1997, 1998, 1999, 2001, 2003, 2005, 2007, 2009, 2011, and 2014 to keep pH levels in the desirable range. Water samples collected from the lake are sent to James Madison University for chemical analysis. Since the first direct lake

liming in 1997, the pH of water in Laurel Bed Lake has remained above 6.0. Periodic liming will be necessary to keep the pH at a level that will support fish and aquatic insect life.

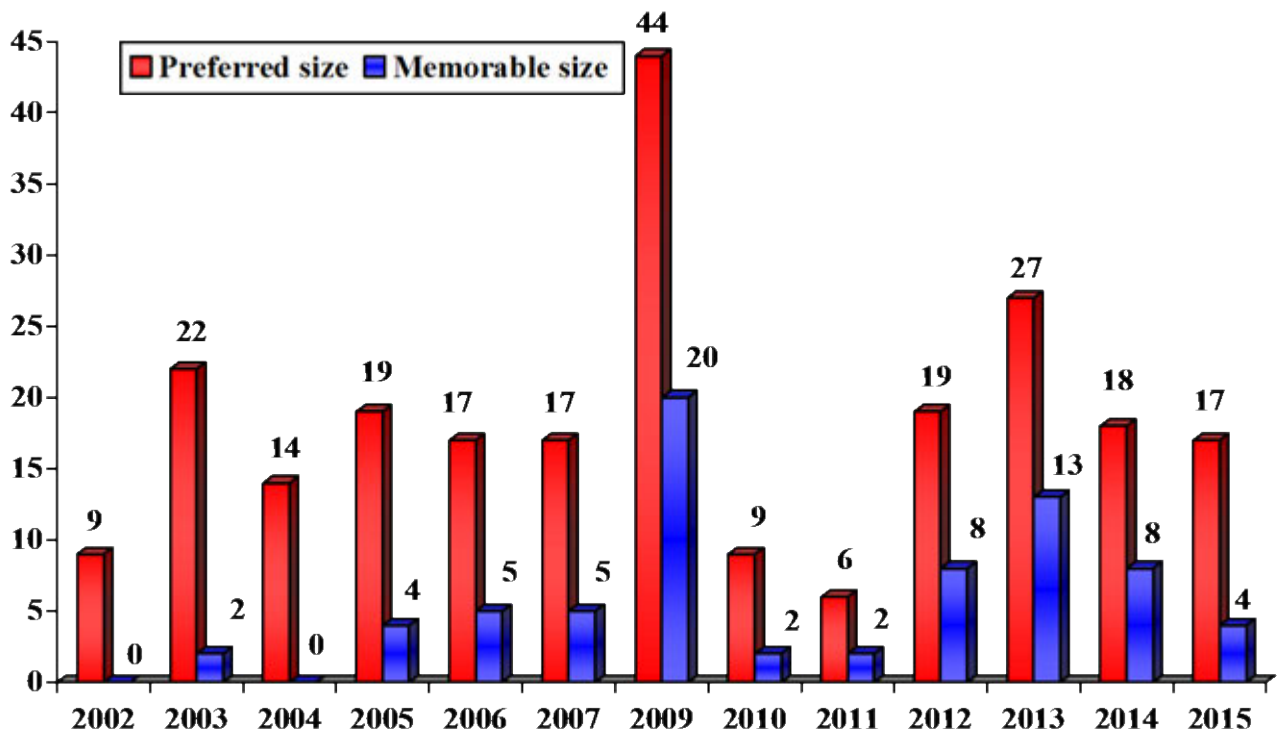
### Smallmouth bass

Smallmouth bass have prospered in Laurel Bed Lake since the first stocking in 1998. Relative abundance (number of fish collected per hour of sampling) varies from year to year (Figure 1). In some years overall abundance is high, most likely as a result of catching more young fish from good spawns in the previous year. Anglers have reported good catches of all size smallmouth bass in 2015, and this trend should hold on in 2016. The abundance and size of smallmouth bass available in Laurel Bed Lake should provide excellent fishing opportunities in the coming years.



**Figure 1.** Number of smallmouth bass collected per hour of sampling in Laurel Bed Lake 1999-2015.

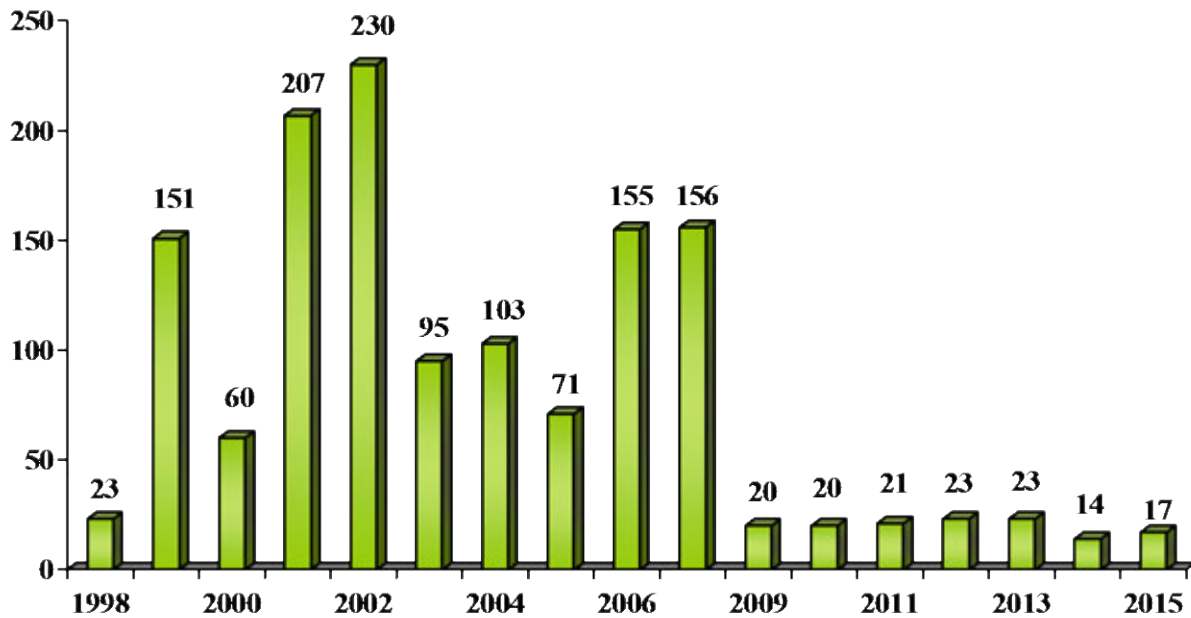
The size structure of the smallmouth bass population has fluctuated based on electrofishing samples collected from 2002-2015 (Figure 2). The lowest recorded catch of smallmouth bass over 14 inches was made in 2011 but recovered in 2012-15. This is probably the result of sampling variation and not a decline in the size structure of the population. The electrofishing catch rates for smallmouth bass over 17 inches also declined in 2010-2011 however, they rebounded in 2012.



**Figure 2.** Number of preferred size (red columns) and memorable size (blue columns) smallmouth collected per hour of electrofishing in Laurel Bed Lake 2002-2015. Preferred size for smallmouth bass is 14 inches and memorable size is 17 inches.

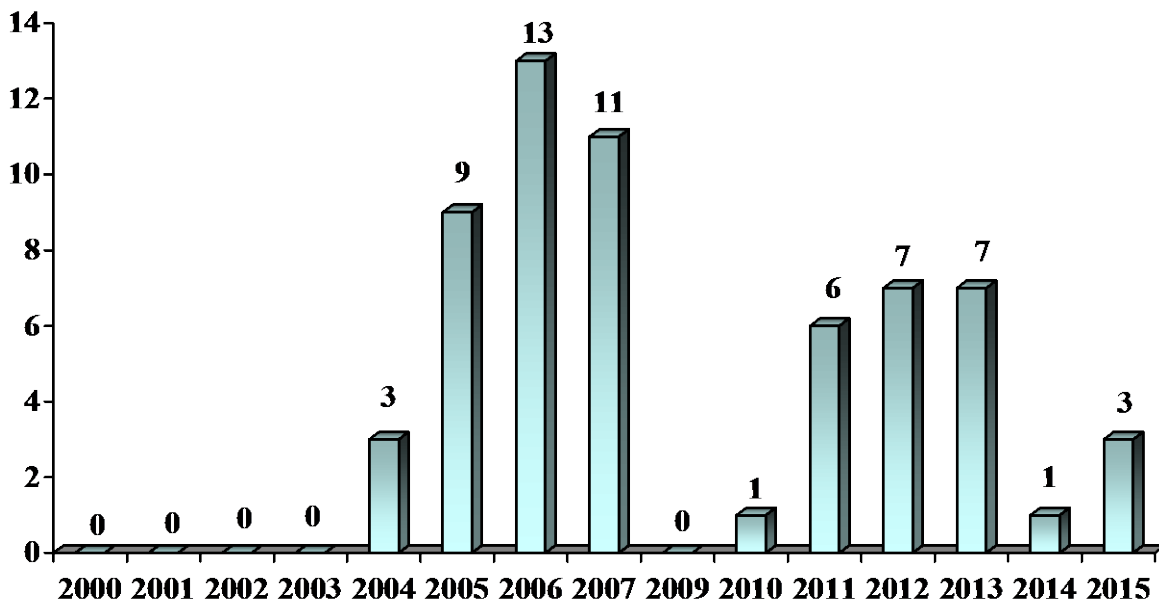
### Rock bass

The rock bass population in Laurel Bed Lake exploded from 1998 through 2002 (Figure 3). The relative abundance of rock bass then dropped to 95 fish per hour of sampling in 2003, and appeared stable at or below 100 fish per hour through 2005. However, the 2006 and 2007 sample yielded higher catch rates (155 per hour) for rock bass, followed by a sharp decline to less than 25 hour from 2009-2014. The sharp decline in 2009 could be the result of increased predation by smallmouth during the time that the lake was partially drained in 2008. It could also be the result of direct competition with bluegills. Bluegills were first collected in 2006 at a low density, but are now abundant.



**Figure 3.** Number of rock bass collected per hour of electrofishing in Laurel Bed Lake from 1998 – 2015.

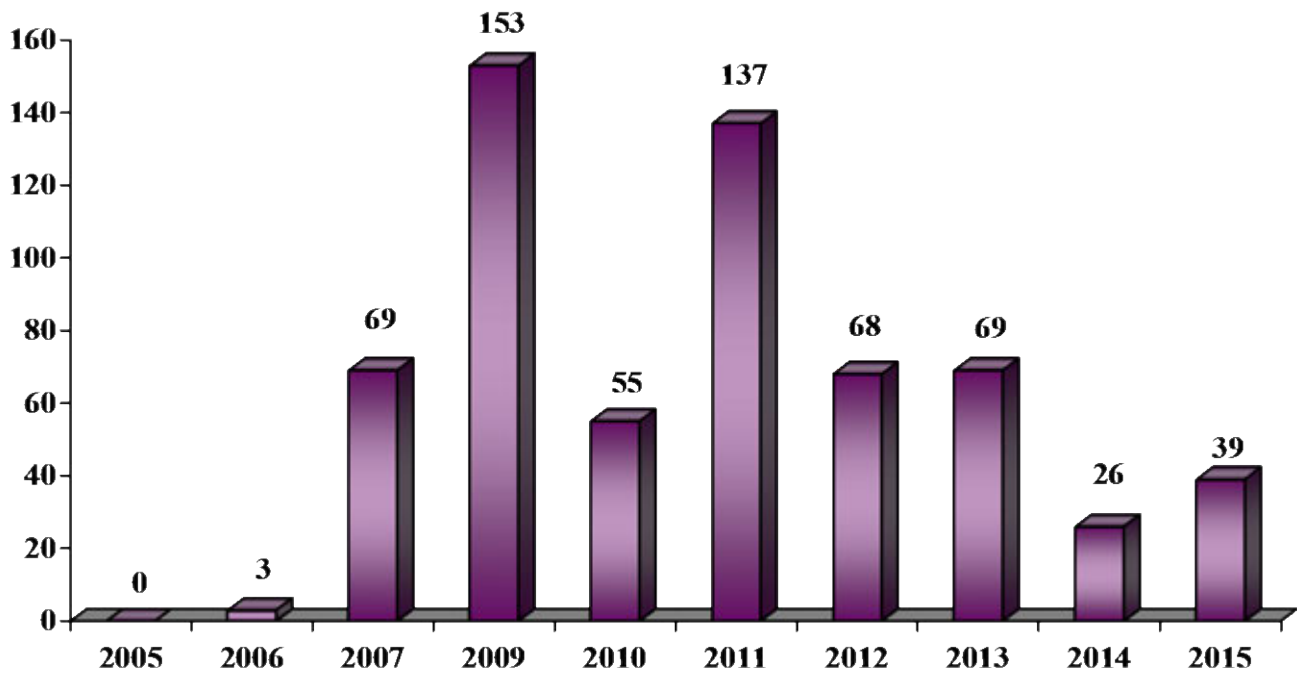
The number of preferred size (nine inches) rock bass collected per hour of sampling increased steadily from 2004 to 2006 (Figure 4). The catch rate dropped slightly in 2007 and plummeted to zero in 2009 and has increased slightly in 2010-2015. It appears these fluctuations are normal trends in the population.



**Figure 4.** Number of preferred size rock bass collected per hour of electrofishing in Laurel Bed Lake 2000-2015. Preferred size for rock bass is nine inches.

### Bluegills

Bluegills were first collected in Laurel Bed Lake in 2006 at the very low relative abundance of 2.7 fish per hour (Figure 5). At least two different age classes of bluegills were present in 2006, suggesting an earlier date of arrival. Electrofishing catch rates increased sharply in 2007 and more than doubled again in 2009 followed by a decrease in catch from 2010-2014. Catch rates increased slightly in 2015. Multiple year classes are present and the population appears to be established and self-supporting. Some large bluegills are already present and available for anglers. Biologists will continue to monitor the expansion of the bluegill population and its effect on other fish species in the lake.



**Figure 5.** Electrofishing catch rate (fish per hour) for bluegills at Laurel Bed Lake from 2005 to 2015. Bluegills were first collected in 2006.

### Brook Trout

Stocked brook trout survived and grew well in Laurel Bed Lake from 1998 through 2000. Since 2001 brook trout holdover has been low, even though the stocking rate was increased. It is unlikely that the changes in the brook trout population are related to water quality, because pH and other water quality parameters have remained stable. The poor holdover is probably a combination of limited summer habitat (low dissolved oxygen and warm water temperature), competition with rock bass and

smallmouth bass, and predation by smallmouth bass. Angler harvest may also be a factor, because brook trout are generally easier to catch than rainbow trout. The majority of the brook trout caught by anglers tend to be from the most recent stocking (stocked in the fall). However, anglers reported catching good numbers of 12-14 inch brook trout during the later spring and summer of 2014 and 2015. The best brook trout fishing occurs from November through early June. Biologists intend to continue the longstanding tradition of brook trout fishing at Laurel Bed Lake and are looking for ways to improve the fishery.

### Rainbow trout

In recent years, stocked rainbow trout have provided trout fishing opportunities throughout the fishing season and have been more consistent for anglers during the summer months. Rainbows that survive in the lake grow to 16 to 18 inches within a couple of years and provide more of a trophy component than the brook trout.

### Muskie

Anglers have reported catching muskie while fishing Laurel Bed Lake in the past three years. Biologists collected one muskie while sampling the lake in the fall of 2013. This fish measured 37 inches in length and weighed 14 pounds. Biologists will continue to collect data on muskie in the lake to determine the population characteristics.

In conclusion, the Laurel Bed Lake fishery has changed considerably since the late 1990's. The lake now offers quality seasonal fishing (April, May and June) for brook trout, and extended fishing opportunities for rainbow trout in some years. The smallmouth bass population has both good numbers and a good size structure. Rock bass are not as abundant as they were in the past, and they may have a difficult time competing with the newly established bluegill population in this lake environment in the future.

Because the smallmouth bass population was established to control rock bass, smallmouth bass are protected by catch-and-release regulations. No smallmouth bass can be kept by anglers at Laurel Bed Lake. Statewide fishing regulations apply for trout and bluegills in Laurel Bed Lake. Anglers can keep six trout that are larger than the seven-inch minimum size. Anglers can keep 50 bluegills of any size per day. There are no size or creel restrictions for rock bass in Laurel Bed Lake.

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