



**Lake Curtis Management Report**

*Popular Format*

**Federal Aid Project - F111R**

**March 2018**

**Mike Isel, Fisheries Biologist**

**Virginia Department of Game and Inland Fisheries**

**1320 Belman Road**

**Fredericksburg, VA 22401**

Lake Curtis is a 91-acre Department owned public fishing lake in Stafford County. With exception of the dam site, all timber was left standing in the lake basin creating excellent fish habitat. Curtis Memorial Park (~ 500 acres) is a multi-use facility bordering the lake which offers tennis courts, a swimming pool, a golf course, and a picnic area. These accommodations make Lake Curtis truly an ideal destination for family activities, offering something for everyone. Beginning in 1978, Lake Curtis was initially stocked with Largemouth Bass, Redear Sunfish, Bluegill, Channel Catfish, and Tiger Musky. Walleye, Blue Catfish, and Northern Pike were stocked in the 1980's. Currently, populations of Largemouth Bass, Redear Sunfish, Black Crappie, Bluegill, and Warmouth are maintained by natural reproduction. Channel Catfish have been stocked annually since 1986 because of limited or no natural reproduction. Northern Pike, Walleye, and Blue Catfish are no longer stocked due to poor survival, low return to the creel, and changes in management philosophy.

Department fisheries biologists sample the fishery approximately every 3-5 years with electrofishing gear. Recent electrofishing samples were conducted in 2009, 2012, and 2016 which allow for comparisons over time. In 2016, electrofishing catch rate or catch per unit effort (CPUE) of Largemouth Bass (LMB) was 41 fish/hr which was a decrease from the catch rate of 69 fish/hr in 2012. Some of this discrepancy may be accounted for by netter inexperience and extremely abnormal spring weather patterns. The CPUE of "preferred" bass (those 15" and greater) also decreased from 5/hr in 2012 to 2/hr in 2016. Proportional Stock Density (PSD) and Relative Stock Density (RSD) are numerical descriptors of length-frequency data that are used to describe the size structure of a fishery. PSD is calculated by the formula:

$$\text{PSD} = (\# \text{ of fish} \geq \text{min. quality length} / \# \text{ of fish} \geq \text{min. stock length}) \times 100$$

Minimum quality length for LMB is 12”, and minimum stock length is 8”. Previous surveys resulted in largemouth bass PSD of 42 in 2012. In 2016, Largemouth Bass PSD was 18, below the preferred 40-70 for a balanced population. Catch rates of 8-12” bass should provide improved angling in coming years as they recruit to “preferred” size.

Bluegill (BLG) PSD values were 14 in 2012 but increased to 60 in 2016. In most cases, PSD values of balanced bluegill populations fall between 20 and 60 which suggests the bluegill fishery in Lake Curtis was in balance. The increased PSD of 2016 was likely a result of decreased LMB abundance, allowing Bluegill to grow into that 6-8” range. The 2016 BLG catch rate was an astounding 342 fish/hr, more than double 2012’s CPUE of 134 fish/hr. This also was likely a result of a decline in LMB size structure and abundance.

Relative Stock Density is the percentage of a specified size category or length in a sample. RSD is calculated by the formula:

$$\text{RSD} = (\# \text{ of fish } \geq \text{ specified length} / \# \text{ of fish } \geq \text{ min stock length}) \times 100$$

RSD-P was used to further evaluate fish populations in Lake Curtis. RSD-P is the “relative stock density of preferred fish”, which is the proportion of bass in a population over eight inches that are also at least 15”. The Lake Curtis bass fishery had an RSD-P of 16 in 2012 but only 9 in 2016 which was outside of the desired range of 10-40, suggesting that the fishery may have been slightly out of balance. Thus, there are likely fewer 15” and larger bass present than in 2012; possibly a result of slowing growth rates, sampling variability due to complex habitat and/or unusual weather patterns in spring 2016. Lake Curtis currently ranks as the 20<sup>th</sup> best of 21 impoundments in the district for Largemouth Bass based on catch rates of “preferred” fish.

RSD-P was also calculated for Bluegill, which is the proportion of fish over 3” that are also 8” in length. Bluegill RSD-P for Lake Curtis was zero, which is below the

desired range of 5-20. For anglers, this means that there are very few 8" and larger BLG available.

Other species collected in low numbers during routine sampling included Black Crappie, Redear Sunfish, and Warmouth. Channel Catfish were not present in the sample as a result of their lack of vulnerability to the electrofishing sampling gear used. Anglers should expect to find fair fishing for all species.

Future fisheries management activities will include the continuation of channel catfish stocking annually at 20 fish per acre because of limited or no natural reproduction. Lake fertilization will also continue using granular 10-52-4 fertilizer in order to maintain the standing crop of fish within the lake. The fishery should be resampled in the 2020-21 timeframe.

Lake Curtis has a large parking lot, boat ramp, courtesy pier, and several handicapped accessible fishing piers. Anglers can reach Lake Curtis from I-95 and Fredericksburg by taking Rt. 17 north to Rt. 616 north. Follow Rt. 616 to Rt. 622, then turn left (west) to reach the boat ramp. Curtis Memorial Park can be reached by continuing on Rt. 622 and then turn left on Rt. 612. Additional information about the lake can be obtained by contacting the DGIF Regional Office in Fredericksburg (540-899-4169) or for information pertaining to Curtis Memorial Park, contact Stafford County Parks and Recreation Department (540-752-5632).