# Lake Curtis
# 2010

Lake Curtis is a 91-acre Department owned 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 within this lake. Northern pike, walleye, and blue catfish are no longer stocked into this impoundment due to poor survival, low return to the creel, and changes in management philosophy.

Department fisheries biologists routinely sample the fishery with a variety of gears; including electrofishing, trap nets, and gill nets. Recent electrofishing samples were conducted in 2003, 2005, and 2009 which allows for comparisons over time. In 2009, the electrofishing catch rate or catch per unit effort (CPUE) of largemouth bass was 108 fish/hr. Catch rates for largemouth were 138/hr in 2005 and 131/hr in 2003, respectively. The CPUE of "preferred" bass (those 15" and greater) also decreased from 18/hour in 2005 to 6/hour in 2009. 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:

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

Minimum quality length for largemouth bass (LMB) is 12" and minimum stock length is 8". Previous year's samples resulted in largemouth bass PSD values of 22 in 2003 and 40 in 2005. In 2009, largemouth bass PSD was 29 which was below the preferred 40-70 for a balanced population, but adequate numbers of adult bass should provide satisfactory angling experiences.

Bluegill (BLG) PSD values were 39 in 2005 but dropped to 13 in 2009. In most cases, PSD values of balanced bluegill populations fall between 20 and 60, which means at this time the bluegill fishery at Lake Curtis is out of balance. The 2009 PSD values are indicative of a fishery that may be suffering from poor growth rates for both bass and bluegill. The 2009 bluegill CPUE was 183.0 fish/hr of electrofishing, double that of 2005's CPUE of 91 fish/hr. This could be a result of a decline in the size structure of the predator population resulting in an increase of the prey population.

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

RSD = (# of fish $\geq$ specified length / # of fish $\geq$ min stock length) x 100

RSD-P was used to further evaluate the 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 18 in 2005, but decreased to 5 in 2009 which falls out of the desired range of 10-40, indicating that the fishery may be slightly out of balance. This means that there currently are fewer 15" and larger bass than in 2005, likely a result of slowing growth rates, sampling variability due to complex habitat and perhaps unsampled harvest. Lake Curtis currently ranks as the 17$^{th}$ best of 19 impoundments in the district and 25$^{th}$ best of 33 impoundments in the region for largemouth bass based on catch rates of "preferred" fish.

RSD-P was also calculated for the bluegill fishery, which is the proportion of fish over three inches that are also 8" in length. The 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" bluegill available for harvest.

Other species collected in low numbers during routine sampling includes 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. Anglers should expect to find fair fishing for all species.

Future fisheries management activities will include the continuation of channel catfish stocking annually at 15 fish per acre because of limited or no natural reproduction. Lake fertilization will also continue using liquid 10-34-0 fertilizer in order to maintain the standing crop of fish within the lake. The fishery is scheduled to be resampled in 2012 and age and growth analysis will be conducted for bass and bluegill from that sample.

Lake Curtis has a large parking lot, boat ramp, courtesy pier, and several handicapped accessible fishing piers. Rental boats are available from the Stafford County Parks and Recreation Department at the adjacent Curtis Memorial Park. 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).

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