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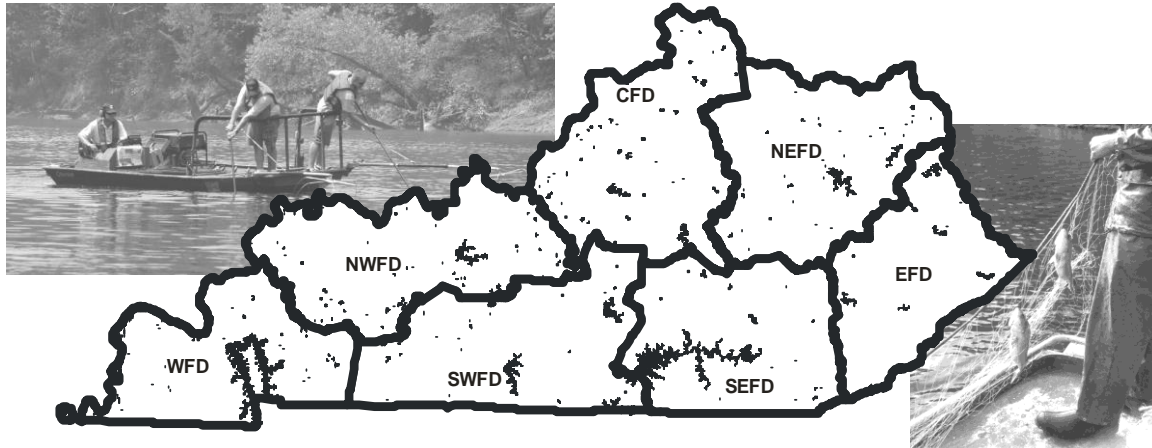
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ANNUAL PERFORMANCE REPORT

District Fisheries Management

Projects 1-4



Project Leader: *Adam Martin*, Western Fishery District Biologist
Assistant Project Leader: *Nick Simpson*, WFD Assistant Biologist

Project Leader: *Jeremy Shiflet*, Northwestern Fishery District Biologist
Assistant Project Leader: *Madelyn Ruble*, NWFD Assistant Biologist

Project Leader: *Eric Cummins*, Southwestern Fishery District Biologist
Assistant Project Leader: *Kayla Boles*, SWFD Assistant Biologist

Project Leader: *Jeff Crosby*, Central Fishery District Biologist
Assistant Project Leader: *David Baker*, CFD Assistant Biologist

Project Leader: *Tom Timmermann*, Northeastern Fishery District Biologist
Assistant Project Leader: *Justin Heflin*, NEFD Assistant Biologist

Project Leader: *Marcy Anderson*, Southeastern Fishery District Biologist
Assistant Project Leader: *Bradley Hartman*, SEFD Assistant Biologist

Project Leader: *Kevin Frey*, Eastern Fishery District Biologist
Assistant Project Leader: *Jason Russell*, EFD Assistant Biologist



**Department of Fish and Wildlife Resources
Fisheries Division**



TABLE OF CONTENTS

Project 1 - District Fisheries Management, Lake and Tailwater Sampling

WFD.....	1
NWFD.....	64
SWFD	112
CFD.....	157
NEFD	252
SEFD.....	316
EFD	391

Project 2 – Stream Surveys

CFD.....	470
NEFD	476
SEFD.....	481
EFD	487

Project 3 – Technical Guidance

WFD.....	467
NWFD.....	468
SWFD	469
CFD.....	473
NEFD	479
SEFD.....	484
EFD	489

Project 4 – Habitat Summary	490
-----------------------------------	-----

Fish Production for all Hatcheries.....	493
-----------------------------------------	-----

Trout Stocking Numbers.....	502
-----------------------------	-----

WESTERN FISHERY DISTRICT

Project 1: Lake and Tailwater Fishery Surveys

FINDINGS

Sampling conditions for each survey event are listed in Table 1.

Kentucky Lake

During the spring, 346 black bass were collected by diurnal electrofishing (120 PPS, DC current). During this sampling period, 338 largemouth bass (33.8 fish/hr) were collected from Blood River, Jonathan Creek, and Big Bear (Table 2). The catch rates (fish/hr) for largemouth bass between embayments were very similar this year (31.4 to 38.0 fish/hr). The highest catch rates came from Blood River. Unlike previous years, Sugar Bay was not sampled. This was done in order to avoid interference with the ongoing snorkel surveys of the bass spawning habitat in that embayment.

The spring bass data was used to complete the lake specific assessment (Table 3). The lake specific assessment suggests that the largemouth bass population rated “Poor”. Growth will be reassessed in 2020. The catch rate of age-1 largemouth bass in the sample was low indicating a poor spawn in 2018. Our habitat plan is focused on increasing recruitment of largemouth bass in the reservoir, and we are hopeful that improving habitat can help the bass population recover.

The size structure parameters used to assess the fishery by standards set in the Kentucky Lake Fish Management Plan (KLFMP) showed a below average catch of <8.0-in bass (Table 4). The catch rate of intermediate-size bass (12.0-14.9 in) which was 11.9 fish/hr was below the plan recommendation. The catch rate of harvestable-size bass (>15.0 in) was also down from previous years’ data, and below the plan recommendation. The catch rate of trophy-size largemouth bass (>20.0 in) was consistent with the last 10 years, but was still below the KLFMP recommendation. The size distribution was skewed heavily towards 12.0- to 14.9-in fish which was expected based on the strong spawn in 2016.

Proportional Size Distribution (PSD) values were calculated for black bass collected from each embayment sampled during the spring (Table 5). The average PSD and RSD₁₅ values for largemouth bass were 66 and 22, respectively. These average values were used in the KLFMP assessment. The PSD value is within the assessment preferred range (55-75; Table 4). The RSD₁₅ value was 22, which also falls inside the targeted range (RSD₁₅ of 20-40).

During October, 440 black bass were collected by diurnal electrofishing (120 PPS, DC current) from three embayments; Blood River, Jonathan Creek, and Sugar Bay (Table 6). Largemouth bass comprised 65% (58.6 fish/hr) of this sample. During the 2017 fall sample, the largemouth bass catch rate was 44.6 fish/hr. Smallmouth bass comprised 35% (32.4 fish/hr) of this sample. However, based on length frequency it appears that the majority of those smallmouth were young-of-year.

Length and weight data were recorded from all bass collected during the fall sample to calculate relative weight values. The mean relative weight for harvestable-size largemouth bass was 93 (Table 7). This value was up from the 2017 estimated relative weight value of 88, but is still below the preferred range of 95-105. The relative weight of largemouth bass is one parameter that is being watched as an indicator of the effects of the population of silver and bighead carp in the lake. As silver and bighead carp numbers continue to increase, they could impact the plankton levels and hence the upper levels of the food chain.

Length-weight equations for black bass species at Kentucky Lake are:

$$\begin{aligned} \text{Largemouth bass} & \text{Log}_{10}(\text{weight}) = -3.51112 + 3.17381 \times \text{Log}_{10}(\text{length}) \\ \text{Smallmouth bass} & \text{Log}_{10}(\text{weight}) = -3.52281 + 3.15839 \times \text{Log}_{10}(\text{length}) \end{aligned}$$

Otoliths were collected from a subsample of largemouth bass (<12.0 in) during fall sampling in 2019. Otoliths were used to age bass so that the catch rate and growth of age-0 could be evaluated. The catch rate of age-0 largemouth bass during the fall sample was 37.1 fish/hr (Table 8). The 2019 year class appears to be average, with slow growth. The mean length of the age-0 largemouth bass was (3.9 in) at time of capture in the fall. The age-length key from 2016 was also used to assess the age frequency of largemouth bass > age-1. Few older fish were collected this fall (Table 9). The low catch rates may have been impacted by unusually warm sampling conditions (Table 1).

In order to better understand the hatch timing and duration of the bass spawn, shoreline seining was conducted in Sugar Bay on 11 July, 2019. A 50' seine with ¼-in mesh was used to collect YOY largemouth and smallmouth bass until a total of 100 specimens of each species was collected. Each bass was measured for total length in mm and the sagittal otoliths were removed. Otoliths were mounted convex side up using thermoplastic cement, sanded with 1200 grit sandpaper, and polished with 0.3-micron alumina powder.

Each otolith was aged independently by two readers using a compound microscope at 100x-400x magnification. Reader agreement was typically within 1-2 days, but if the difference between readers was less than 10% of the fish's age, the counts were averaged and accepted. The results of the hatch date analysis are provided in Table 10. This sampling will be continued in the future to better understand the relationship between hatch timing, environmental variables, and fall mean length at age-0.

Trap nets were fished for crappie in Blood River and Jonathan Creek embayments for 80 net-nights (nn) during October and November. In addition, Ledbetter Bay was sampled for 30 nn. This is the third time Ledbetter Bay has been sampled for crappie. Otoliths were collected from a subsample of the entire population and used to assign ages and calculate mean lengths at age. The combined sampling effort yielded 1,597 crappie (14.5 fish/nn), of which 5.9 fish/nn (40%) were white crappie and 8.6 fish/nn (60%) were black crappie (Table 11). The Blood River and Jonathan Creek data is listed as "sub-total" on this table. The total catch rate of crappie > age-0 was 10.2 fish/nn which is below the goal of 20.0 fish/nn set in the KLFMP (Table 12). The low total catch rate is a reflection of the weak spawns in 2016 and 2017. However, the catch rate of 9.0 fish/nn for age-0 crappie this fall was an encouraging sign of an above average spawn in 2019.

The number of crappie >8.0 in and >10.0 in collected in trap nets was 6.6 and 3.0 fish/nn, respectively (Table 12). The KLFMP objective for crappie is to maintain a catch rate of at least 10.0 fish/nn for crappie >8.0 in and 4.0 fish/nn for crappie >10.0 in. Neither objective was met this year.

Crappie at Kentucky Lake had slightly lower growth rates in 2019. The growth management objective in the KLFMP is for age-2 crappie collected in the fall to reach 9.5 inches in length. The average length of the age-2 crappie collected this year was 8.5 in (Table 12). It is certainly reasonable to suggest that growth patterns are being negatively influenced by the presence of silver carp. However, growth rates in 2018 were above average.

Another management objective in the KLFMP is to maintain a catch rate of age-1 crappie of at least 11.0 fish/nn (Table 12). The catch rate for this age group of crappie was 3.4 fish/nn. Although still below the management objective, this was the highest catch rate observed since 2015. For a discussion of the potential impacts of environmental factors on the 2017 spawn, please refer to the 2017 Annual Performance Report.

These parameters are also used as part of the calculation for ranking the crappie fishery at Kentucky Lake. Overall, the crappie population at Kentucky Lake rated "fair" this year (Table 13). The crappie fishery will be assessed with a creel survey in 2020.

The fall trap netting data was used to calculate proportional size distributions and length-weight equations for crappie. PSD and RSD₁₀ values are reported in Table 14. The PSD values are high, and reflect a higher proportion of 8.0- to 10.0-in crappie in the Jonathan Creek population from a good year class in 2014 and a lower proportion of small fish due to recent weak year classes.

The mean relative weights of keeper-size (>10.0 in) white crappie and black crappie were (86) and (85), respectively (Table 15). These relative weights are not ideal, however, angler complaints about weights have been nonexistent this year. This is in stark contrast to 2017 when skinny crappie were a major source of complaints and concerns. However, relative weights for white and black crappie in 2017 were (89) and (85), respectively. One

possible explanation for the lack of complaints is that in 2017, many >14.0-in white crappie were extremely emaciated. In our 2019 sampling we did not observe the same trend of obviously emaciated fish. It is likely that anglers perceive average relative weights in the high 80's as acceptable as long as there are relatively few individuals exhibiting more extreme levels of emaciation.

Length-weight equations for white and black crappie are listed below.

$$\text{White crappie } \text{Log}_{10}(\text{weight}) = -3.74199 + 3.37829 \times \text{Log}_{10}(\text{length})$$

$$\text{Black crappie } \text{Log}_{10}(\text{weight}) = -3.68324 + 3.38032 \times \text{Log}_{10}(\text{length})$$

Tables 16 and 17 list the back-calculated lengths at age for white and black crappie, respectively. The age frequencies for white and black crappie collected are listed in Tables 18 and 19, respectively.

During the spring of 2019, ichthyoplankton sampling was conducted in the Jonathan Creek embayment of Kentucky Lake. Samples were conducted using a rectangular neuston net with a 100-micron mesh size, towed 50 feet behind a boat, at a speed of 1.5 mph. Tow duration was either 5 or 3 minutes depending on an a priori assessment of the expected concentration of ichthyoplankton and lepto-dora to prevent clogging. A General Oceanics flowmeter was attached inside the mouth of the net to record the volume of water sampled during each run. Sampling was begun just after dusk and always followed the same site order. Each sampling event started closest to the main lake site and then progressed farther into the embayment (Appendix A).

Ichthyoplankton samples were preserved immediately in 95% ethanol and stored in mason jars. All larval fish were sorted and identified to the lowest practical taxon using “A Practical Key to Identify Families, Genera, and Species of Fish Larvae Commonly Collected in Tennessee Reservoirs” (Sammons, 1999), “Preliminary Guide to the Identification of Larval Fishes in the Tennessee River” (TVA, 1976), and “Early Development of Four Cyprinids Native to the Yangtze River, China” (Chapman, and Wang, 2006) (Bolu Yi, et al. 1988). Once identified, fish were counted and measured for total length. In cases of more than 100 individuals in a sample, a random subsample of at least 30 individuals was measured and used to extrapolate the lengths of the fish from the entire sample. Larval crappies were not identified to species due to overlapping myomere counts between both species and their hybrids (Spier and Ackerson, 2004).

The geometric mean and median of the 6 sample sites were used to evaluate overall densities during each week (Table 20). The standard error and coefficients of variation of the mean and geometric mean were used to evaluate sample accuracy. In 2015 the peak weekly density of crappie occurred on May 12th and was 70.50 crappie/1000m³. In 2016 the peak weekly density of crappie occurred on May 19th and was only 3.88 crappie/1000m³. In 2017 the peak weekly density of crappie occurred on May 19th and was 31.99 crappie/1000 m³. In 2018 the peak weekly density of crappie occurred on May 19th and was 27.74 crappie/1000 m³. In 2019 the peak weekly density of crappie occurred on May 20th and was 150.18 crappie/1000 m³ (Table 21). Based on these results, the spawn of crappie in Jonathan Creek in 2019 appears to have been the best since larval sampling began in 2015. This will still need to be verified with trap netting in 2020. For the fourth year in a row the peak weekly density has occurred on May 19th or 20th.

In order to determine the hatch dates of crappies more precisely, based on growth rates, all crappie that were 8–11 mm in total length were assumed to represent a one-week cohort (Table 21). Just like last year, crappie in the 8–11 mm range appeared to be fully recruited to the gear and were well represented in the sample. It is possible that crappie shorter than 8 mm were not located in the pelagic sample sites yet, and that crappie over 11 mm were more likely to avoid capture. This length range was also chosen because an 8 mm crappie would grow to 11.8 mm in one week (our sample interval), based on a growth rate of 0.67 mm per day after swim up. This was our estimated daily growth rate from daily otolith ring counts of Jonathan Creek crappie collected later in the year (next section).

In addition to weekly cohorts, we also estimated daily cohorts of hatched crappie. All crappie that were captured outside of the 8–11 mm length range were excluded from the hatch date analysis to minimize the effects of gear bias and the longer exposure to natural mortality of older fish (Table 22). A hatch date was then back-calculated for each individual fish using the assumed growth rate (0.67 mm/day) and the total length of each fish. A total length at hatch (4 mm) was factored into the regression for hatch date. This technique has been employed in other systems

(Mitzner 1991). An incubation period of 95 hours (based on temperature) was also factored into the regression so that the day when fertilization occurred could be estimated.

The estimated hatching densities indicated that the spawn in Jonathan Creek lasted at least 32 days and extended at least until the middle of May (Table 22). Because of our limited larval sampling window, we cannot be sure that crappie did not spawn before or after our sampling window. The literature reports most crappie spawns to be relatively short (1-2 months; Mitzner 1991 and Travnicek, et. al.1996). There appear to have been two strong peaks in spawning activity in 2019. The first occurred around April 21st and the second occurred around May 5th. Both peaks occurred immediately following a period of increased discharge through the dam. Discharge continued to fall during and after the first spawning peak, while an increase in discharge occurred immediately following the second spawning peak. Lake elevation rose following each spawning period, reaching 359.8 after the early period and 360.6 after the later period (summer pool = 359.0 ft). Rising water temperature was generally steady in 2019 from 62-76 F during ichthyoplankton sampling. Similar to prior years' surveys, we found much higher densities of larval crappie farther into the embayment (Table 20; Appendix A).

In June 2019 an effort was made to capture YOY crappie using a benthic otter trawl. Crappie were identified to species using dorsal fin counts, and a subsample of otoliths was collected from approximately 200 crappie for daily ring count analysis. The subsample was collected randomly without regard to crappie species or size. Crappie trawling has typically been conducted in the fall to assess year class strength. However, an earlier sample was necessary for accurate daily ring counts since those counts can become unreliable in fish >100 days old (Sweatman and Kohler, 1991). Trawling runs were conducted in Jonathan Creek because this is where the larval sampling occurred during the spring. To evaluate whether hatching periods and growth rates differed by embayment, trawling was also conducted at Blood River embayment. Otoliths were mounted convex side up using thermoplastic cement, sanded with 1200 grit sandpaper, and polished with 0.3-micron alumina powder.

Each otolith was aged independently by two readers using a compound microscope at 100x-400x magnification. Reader agreement was typically within 1-2 days, but if the difference between readers was less than 10% of the fish's age, the counts were averaged and accepted. In 2019, no fish were excluded from Jonathan Creek or Blood River based on reader disagreement. We were able to estimate an average daily growth rate for both species of crappie by using the equation described by Sweatman and Kohler (1991), $[(\text{total length mm}-4\text{mm})/\#\text{days old}-4 \text{ days}]$. This growth rate estimate was coupled with the larval data to provide an accurate estimate of crappie hatch dates in Jonathan Creek as described earlier (Table 22). There is no way to practically differentiate between crappie species in the larval samples. Thusly, the estimated growth rate used in the larval hatch date back calculation combined both species together.

Differences in growth rates and hatch dates between species and embayments were initially compared with an F-test for variances. Due to unequal variances, the hatch dates and growth rates were then compared using T-tests for unequal variances. In Jonathan Creek the mean hatch date of white crappie (May 8th) (n=82) was not significantly different than the mean hatch date of black crappie (May 9th) (n=16) ($t=1.79$ $df=28$ $P=.12$) (Table 23). Daily growth rates for black crappie (0.65mm/day) were not significantly different than white crappie (0.675mm/day) ($t=-1.28$ $df=27$ $P=0.1$).

In Blood River, the average white crappie hatch date (May 11th) (n=89) did not differ significantly from the average hatch date of black crappie (May 10th) (n=9) ($t=-1.3$ $df=12$ $P=0.1$) (Table 23). Daily growth rates for black crappie (0.65 mm/day) were not significantly different than white crappie (.69 mm/day) ($t=-1.27$ $df=9$ $P=0.1$).

When both species were grouped together, the daily growth rates of crappie in Blood River (0.69mm/day) and Jonathan Creek (0.67mm/day) were not significantly different ($t=1.34$ $df=196$ $P= 0.08$). The average crappie in Blood River hatched significantly later (May 11th), than the average crappie in Jonathan Creek (May 8th) ($t=5.48$ $df=189$ $P=<0.0006$). The slight difference in hatch dates may be due to differences in embayment morphology or unknown temperature differences and is consistent with prior years.

The catfish population was sampled at Kentucky Lake during June by using low pulse (15 PPS) electrofishing along the main lake river channel. A chase boat was utilized to help collect catfish around the electrofishing boat. One dipper was used in each boat. A total of 114 catfish were collected during 39 electrofishing runs (Table 24). Each run lasted 300 seconds, for a total sample time of 3.24 hours over a three-day period. Of the samples, blue catfish

had the highest catch rate at 21.8 fish/hr and made up 59% of the catfish collected. The catch rate was much lower than observed in most previous years, but consistent with the last two years' results. Relative weight values are listed in Table 25. The relative weight values are all high, suggesting the fish are healthy.

Otoliths were collected from a subsample of blue catfish in 2019. That age data was used to calculate age frequencies. Age frequency data for blue catfish is presented in Table 26. Bumpiness around the catch-at-age curve suggests variable recruitment, but low conductivity seems to be depressing our catch rates in recent years making it difficult to draw conclusions. The catfish fishery will be assessed using a creel survey in 2020.

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Lake Barkley

Black bass were collected by diurnal electrofishing (120 PPS, DC current) during the spring at sampling sites historically used on Lake Barkley. A total of 426 black bass were collected at a rate of 56.8 fish/hr (Table 27). Spotted and smallmouth bass accounted for about 6% of the total black bass sampled. Catch rates increased slightly over last year and were still below the long term average. At best, sampling yielded only fair results in most embayments, while areas such as Fords Bay and Donaldson Bay had near record low catch rates. Although sampling during some years (2011, 2012, 2016) can be affected by weather conditions, several below average spawns in recent years has likely reduced the overall numbers of bass in Lake Barkley when compared to long-term average catch rates. This might explain the drop in intermediate and large-size bass during the most recent studies. The largemouth bass catch rate was 53.3 fish/hr which falls below the ten-year average of 69.4 fish/hr (Table 28).

The overall PSD and RSD₁₅ values for largemouth bass at Lake Barkley, along with values for individual embayments are listed in Table 29. The PSD value (79) is greater than the objective goal (PSD of 55-75) established in the Barkley Lake Fish Management Plan (BLFMP). This value indicates a bass fishery that is slightly skewed towards larger fish. The RSD₁₅ (38) was within the set goal (20-40). The spring catch rates of small (<8.0 in), medium (8.0-14.9 in), and larger (>15.0 in) largemouth bass all remain lower than historical and 10-year average (Table 28).

The lake specific assessment score for Lake Barkley was “poor” (Table 30). The score was “fair” or “poor” for most of the last decade. Seasonal flooding as well as the occasional drought may have affected sampling in some years which in turn negatively influenced the assessment score. However, spring catch rates of most size classes of largemouth bass have been below average during this time as well. The fishery showed improvement in these ratings in 2017 and was rated as “good”. However, low catch rates of 12.0- to 14.9-in largemouth bass and largemouth bass >15.0 in have since negatively affected the score. We calculated age-3 largemouth bass mean length at capture as outlined by Murphy and Willis (1996) in addition to the traditional method. This method uses a weighted average based on the age-length key and includes all sampled fish per age class. Although differences are slight, we do feel that this calculation more accurately describes this metric, as all spring sampled bass are included in the calculation. The annual mortality of largemouth bass older than a year was 30% as determined using catch-curve regression of fall-caught largemouth (Table 30).

Black bass were sampled in October to collect length-weight data to assess condition factors and to determine the strength of the 2019 year-class. A total of 1054 bass were collected, with 73% being largemouth bass (Table 31). Largemouth bass were caught at a rate of 81.7 fish/hr. This catch rate was much higher than the previous 3 years and almost equal to the most recent 10-year average. Well above average catch rates of small fish (<8.0 in) largely influenced overall catch rates. Catch rates of intermediate and large-size largemouth bass were down for all inch class groupings. Relative weights were determined for all bass, but few smallmouth bass were collected (Table 32). The relative weight for harvestable-size (>15.0 in) largemouth bass was 98 which is average for Lake Barkley and within the acceptable range. The length-weight equation for largemouth bass at Lake Barkley is:

$$\text{Largemouth BassLog10 (weight)} = -3.531 + 3.2171x \text{Log10 (length)}$$

During 2019, largemouth bass age and growth data was collected in the fall. This age and growth data was coupled with fall 2019 data to yield an estimate of the age distribution for largemouth bass. Catch rates for fall-caught fish by age-class are shown in Table 33. Ages ranged from 0-11 with age-0 being the most abundant.

Mean length of the age-0 cohort of largemouth bass was 4.1 in (Table 34). This is the shortest mean age-0 length on record since 1984. It has been suggested that bass which reach at least 5.0 in by the fall will have a better chance of survival during their first winter. This year’s catch rate of age-0 largemouth bass (64.4 fish/hr) was the third highest catch rate on record since 1984.

Trap nets were fished for crappie in Little River and Donaldson Creek embayments for 80 net-nights (nn) during October and November. A total of 1706 crappie were collected at a rate of 21.3 fish/nn (Table 35). Additionally, Crooked Creek (LBL) was sampled for 30 net-nights and Eddy Bay was sampled for 40 net-nights. Crooked Creek (16.2 fish/nn) and Eddy Bay (12.4 fish/nn) both provided reasonable samples and will remain on the sampling schedule in the future if possible.

White crappie accounted for 69% of the total catch and were caught at 12.4 fish/nn. Black crappie accounted for the remaining 31% of the total catch and were collected at a rate of 5.6 fish/nn (Table 35). Donaldson Creek contained higher proportions of black crappie than Little River, Crooked Creek, and Eddy Bay. The mean relative weights for keeper-size (>10.0 in) black and white crappie were 96 and 99, respectively (Table 36). For historical comparisons, only data from Little River and Donaldson Creek were used in the standardized population parameters of Lake Barkley crappie in Table 37. The catch rate of harvestable-size (>10.0 in) crappie was 0.5 fish/nn, which is lower than the ten-year average of 1.6 fish/nn. The catch rate of quality-size (>8.0 in) crappie was 1.0 fish/nn, which is below the management objective (4.0 fish/nn) set in the BLFMP. The catch rate of age-1 crappie (3.6 fish/nn) was also below the management objective (5.0 fish/nn).

The length-weight equations of white and black crappie from Lake Barkley are:

$$\begin{aligned} \text{White crappieLog10 (weight)} &= -3.5821 + 3.2088 x \text{Log10 (length)} \\ \text{Black crappieLog10 (weight)} &= -3.5804 + 3.2925 x \text{Log10 (length)} \end{aligned}$$

Crappie collected in trap nets were used to determine stock densities. The PSD (21) and RSD₁₀ (10) of white crappie were lower than almost all recent samples and suggests a size distribution of white crappie skewed towards more small fish (Table 38). The PSD (34) and RSD₁₀ (21) of black crappie both suggest a size distribution of black

crappie skewed towards more small fish. However, both values increased from 2018, suggesting a slight shift towards more large black crappie in the population in 2019.

Otoliths from 359 crappie were used for age and growth analysis. Ages ranged from 0-8 years for white crappie and 0-5 years for black crappie (Tables 39 and 40). Growth continues to be good as crappie generally reached 10.0 in between age 1 and 2. The average lengths of age-2 white crappie and black crappie at capture were 10.1 in and 9.3 in, respectively (Table 37). In addition, we calculated age-2 crappie mean length at capture as outlined by Murphy and Willis (1996) going back to 2010. This method uses a weighted average based on the age-length key and includes all sampled fish per age class. Although differences are slight, we do feel that this calculation more accurately describes this metric, as all crappie are included in the calculation (Table 37).

Age frequencies were estimated by combining catch data with age data. Three quarters of white crappies captured were age-0 fish while age-1 fish made up another 23% of the catch (Table 41). Few white crappies older than age-2 were collected, suggesting that fish from the relatively strong spawns in 2014 and 2015 are finishing their life cycles followed by below average spawns in 2016 and 2017 and an average spawn in 2018. The black crappie catch in Little River and Donaldson Creek was also dominated by age-0 fish (Table 42). A good black crappie spawn in 2017 did not result in good recruitment as that year class was not well represented in 2018 or 2019. Catch rates of age-0 black and white crappie were well above average in 2019 and rank as the second and third highest age-0 catch rates respectively dating back to 1985. This preliminary age-0 data suggests that 2019 could have been a good crappie spawn.

Assessment of the crappie population yielded a rating of “Fair” at Lake Barkley in 2019 (Table 43). The catch of age-1 crappie was higher than the previous two surveys but remains below the 10-year average; however, catches of age-0 fish were above average. The catch rate of crappie >8.0 in and the average length of age-2 crappie were both at 10-year lows in 2019. As expected, the population of larger fish dropped in 2019, due to combined effects of mortality of the stronger 2014 and 2015 year classes and in response to the weaker 2016 and 2017 year classes. We are hopeful to see more large fish in the next couple years following a decent spawn in 2018 and what appears to potentially be a good spawn in 2019.

The catfish population was sampled along the main lake river channel at Lake Barkley in June with low-pulse (15 PPS) electrofishing while utilizing a chase boat to collect fish further away from the electrofishing boat. One dipper was positioned in each boat for a total of two dippers at all times. A total of 965 catfish were collected during 43 electrofishing runs (Table 44). Each run lasted 300 seconds, for a total sample time of 3.6 hours over a three-day period. Blue catfish had the highest catch rate at 250.3 fish/hr and made up 89% of the catfish collected. Flathead catfish and channel catfish are likely underrepresented using this method as these fish were often observed but were much harder to approach and dip than blue catfish. Relative weight values were all within or greater than ideal values of 95-105, with the exception of flathead catfish less than 30 in and are listed in Table 45.

Otoliths from 135 blue catfish were extracted and analyzed in 2019. Age data from blue catfish collected in 2019 was used to calculate an age frequency for the population (Table 46). Of the blue catfish, 68% of the sample consisted of age 1-3 fish.

Literature Cited

Murphy, B. R. and D. W. E. Willis. 1996. Fisheries techniques, second edition. American Fisheries Society, Bethesda, MD.

Lake Beshear

Largemouth bass were collected by diurnal electrofishing (120 PPS, DC current) during April at Lake Beshear. Ninety-two largemouth bass were collected at a rate of 36.8 fish/hr (Table 47). The catch rate of harvestable-size (>12.0 in) largemouth bass was 28.0 fish/hr (Table 48). This year's sample falls below the objective in the Lake Beshear Fish Management Plan (LBFMP) to maintain a catch rate of at least 45.0 fish/hr for harvestable-size largemouth bass. The catch of age-1 fish was low this year (4.0 fish/hr), but low recruitment is typical in Lake Beshear. Other objectives are to maintain high catch rates of bass >15.0 and >20.0 in. Ideally, these

catch rates should be greater than 30.0 and 3.0 fish/hr, respectively. The catch rates per hour for these length groups of bass were 23.2 and 4.8, respectively. Lake Beshear continues to have a quality bass fishery with good numbers of bass >15.0 in. However, the lower catch this spring is a potential concern for the future. The fishery rated as “fair” in 2018 (Table 49).

Largemouth bass were collected by diurnal electrofishing (120 PPS, DC current) in October (Table 47). The catch rate (100.0 fish/hr) was an improvement over last year, but the catch was skewed towards smaller fish. Relative weight data suggests that larger bass (>15.0 in) are healthy with regard to their length-weight ratio. The average relative weight value was 101 for these larger bass and 83 for all sizes of bass. The length-weight equation for largemouth bass at Lake Beshear is:

$$\text{Log}_{10}(\text{weight}) = -3.53131 + 3.15235 \times \text{Log}_{10}(\text{length})$$

Otoliths were removed from a subsample of largemouth bass <10.0 in to determine the mean fall length of the age-0 cohort and determine their catch rate. The catch rate for age-0 largemouth bass was 63.2 fish/hr (Table 50). The average length of an age-0 bass was 4.7 in.

Lake Pennyrile

Electrofishing for all species of sportfish in Lake Pennyrile was conducted on May 3, 2019. Twenty-five largemouth bass were captured at a rate of 25.0 fish/hr (Table 51). This catch rate is well below the 10-year average of 101.4 fish/hr (Table 52). The majority of largemouth bass were still below 15.0 in. Only 1 (4%) bass over 15.0 in was captured in this year’s sample, while only 6 (24%) were 12.0 in or larger. The catch rate of fish >15.0 in (1.0 fish/hr) is below the 10-year average of 2.9 fish/hr (Table 52). The catch rate of largemouth bass 8.0-11.9 in was 9.0 fish/hr which falls well below the management objective of 80.0 fish/hr. A high catch rate of intermediate-size largemouth bass is desirable in order to maintain good numbers of large sunfish in this system.

The catch rate of bluegill >8.0 in was below average at 10.0 fish/hr. (Table 53). The catch rate for large-size (>8.0 in) redear was also below average at 15.0 fish/hr. Catch rates of large bluegill and redear over the previous four-year period (2015-2018) had been above the 10-year average. We will continue to monitor Lake Pennyrile in 2020 to see if this negative trend continues or if the sample in 2019 may have been poor for some reason.

PSD and RSD₁₅ values for largemouth bass, bluegill and redear sunfish are listed in Table 54. The PSD value for largemouth bass (40) suggests a population skewed toward small bass. The largemouth bass fishery is likely stunted which is our goal when managing for large panfish. PSD’s and RSD’s were slightly above average for bluegill in 2019 and slightly below average for redear in 2019 and suggest more balanced populations.

In 2019 a small sample of bass from Lake Pennyrile were aged using otoliths. Bass ranged from 1-9 years old, and most fish were age-1 or age-2 (Table 55). The largemouth bass population was rated as “poor” due to generally low catch rates (Table 56). Due to the shift in management focus towards trophy sunfish, it is unlikely that the largemouth bass population will ever be rated highly.

Lake Blythe

Electrofishing for all species of sportfish in Lake Blythe was conducted on May 13, 2019. This survey was the first electrofishing survey at Lake Blythe since 2006. One hundred and ten largemouth bass were captured at a rate of 110.0 fish/hr (Table 57). Small (<8.0 in; 39.0 fish/hr) and intermediate-size (8.0-11.9 in; 45.0 fish/hr) fish made up the majority of the sample (Table 58). The PSD (37) and RSD₁₅ (24; Table 59) of largemouth bass suggest an unbalanced population skewed towards more small fish. However, there were relatively high catch rates for fish >15.0 in (17.0 fish/hr) and >20.0 in (6.0 fish/hr) in 2019 when compared to the 2006 survey.

The catch rate of bluegill was 238.0 fish/hr (Table 57). The PSD (12) of bluegill suggests an unbalanced population skewed towards small fish (Table 59). The catch rate of redear sunfish was 49.0 fish/hr (Table 57). The PSD (26) and RSD₉ (2) of redear suggests an unbalanced population skewed towards small fish (Table 59). The catch rate of

white crappie was 27.0 fish/hr (Table 57). The PSD (33) and RSD_{10} (4) of white crappie suggests an unbalanced population skewed towards small fish (Table 59). The catch rate of channel catfish was 37.0 fish/hr (Table 57). The PSD (54) of channel catfish suggests a balanced distribution of sizes among the population (Table 59).

In 2019, a small subsample of white crappie from Lake Blythe were aged using otoliths. Crappie ranged from 3-9 years old and most fish were age-3 (Table 60).

Ballard County Wildlife Management Area Lakes

Gravel Pit Lake was created as a public fishing opportunity that would not routinely be connected to the river during flood events. This lake was sampled by electrofishing on 8 May 2019. Eighty-one largemouth bass were captured at a rate of 162.0 fish/hr (Table 61). Small (<8.0 in; 92.0 fish/hr) and intermediate-size (8.0-11.9 in; 44.0 fish/hr) fish made up the majority of the sample (Table 62). The PSD (37; Table 63) of largemouth bass suggest an unbalanced population skewed towards more small fish.

The catch rate of bluegill was 110.0 fish/hr (Table 61). The PSD (18) of bluegill suggests an unbalanced population skewed towards small fish (Table 63). The catch rate of white crappie was 8.0 fish/hr (Table 61).

In 2019 a small subsample of largemouth bass from Gravel Pit Lake were aged using otoliths. Largemouth bass ranged from 1-3 years old and most fish were age 1 (Table 64).

This lake has good numbers of intermediate-size panfish and low numbers of catfish. The largemouth bass population is stunted but provides a great opportunity to catch high numbers of fish. Four white crappie were captured and removed. It is suspected that anglers independently stocked the crappie. Channel catfish stocking could be considered in the future. This lake will be monitored more routinely in the future.

Appendix A. 2019 Larval fish sample sites in Jonathan Creek embayment, Kentucky Lake

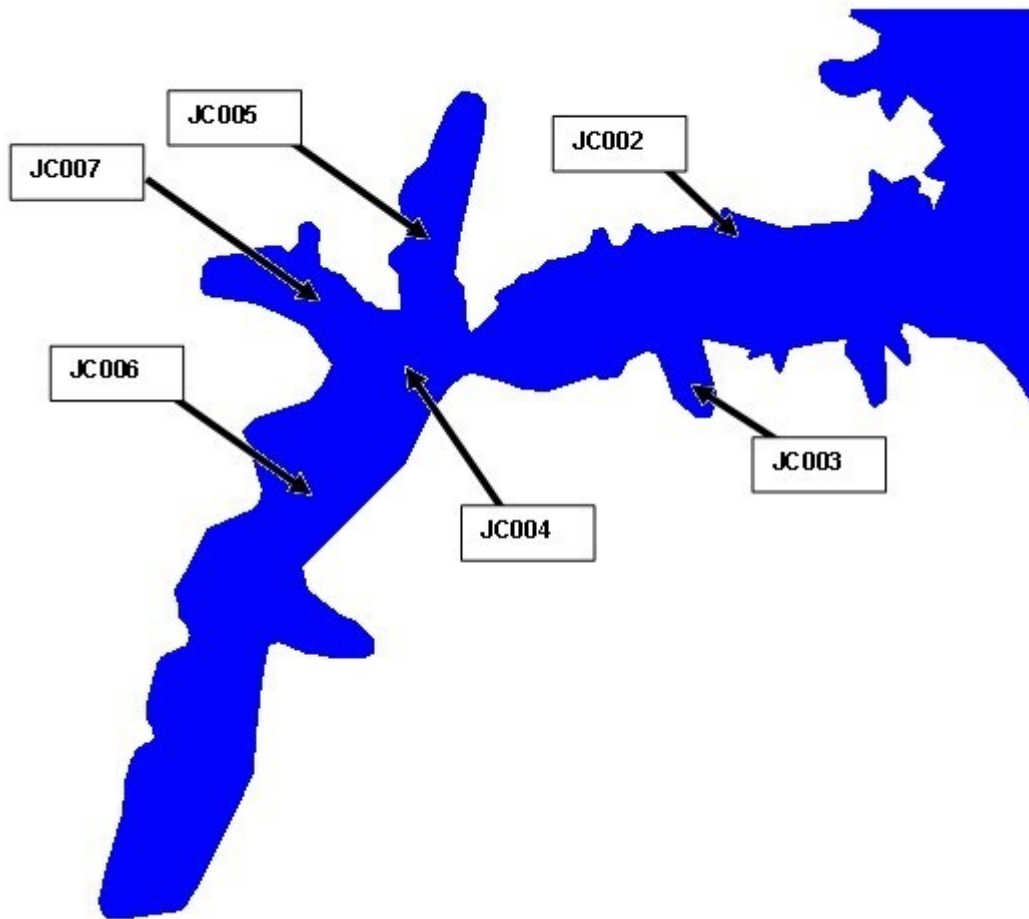


Table 1. 2019 yearly summary of sampling conditions by waterbody, species sampled, and date.

Water body	Location	Species	Date	Effort	Gear	Weather	Water temp. °F	Water level	Secchi (in)	Water conditions	Pertinent sampling comments
Barkley	Nickel Branch	black bass	4/24/2019	2.0 hr	electrofishing	sunny	63.0	359.5		elevation falling	good sample/bass up shallow
Barkley	Eddy Bay	black bass	4/29/2019	2.5 hr	electrofishing	partly cloudy	64.5	359.1		stable	bass deep in the bushes
Barkley	Donaldson Bay	black bass	5/1/2019	1.5 hr	electrofishing	overcast/breezy	68.7	359.4		elevation rising	bass tough to find
Barkley	Little River	black bass	5/7/2019	1.5 hr	electrofishing	partly cloudy	70.0	359.1	37	stable	fish kill in Dyers Creek- 2 runs skipped
Lake Pennyrile		sportfish	5/3/2019	1.0 hr	electrofishing	cloudy	70.1	normal		calm	good sample
Lake Blythe		sportfish	5/13/2019	1.0 hr	electrofishing	cloudy	64.0	high	16	calm	good sample
Barkley	Nickel Branch	catfish	6/17/2019	1.67 hr	electrofishing	cloudy/light wind	77.9	360.0		stable	good sample
Barkley	Cravens Bay	catfish	6/19/2019	0.92 hr	electrofishing	sunny/storm nearing	80.0			choppy	sample cut short-too much wind
Barkley	Devils Elbow	catfish	6/21/2019	1 hr	electrofishing	sunny/breezy	79.4	359.3		falling/choppy	sample cut short-too much wind
Cumberland R.	Tilene	community	9/27/2019	1.75 hr	electrofishing	partly cloudy	78.9	normal		calm	0.5 hr lowpulse
Ohio River	Birdsville	community	9/25/2019	1.5 hr	electrofishing	partly cloudy/breezy	79.4	12.4		calm	0.5 hr lowpulse
Ohio River	Below Smithland Dam	community	10/1/2019	1.5 hr	electrofishing	sunny/no wind	80.5	12.1		calm	0.25 hr lowpulse
Barkley	Nickel Branch	black bass	10/7/2019	2.5 hr	electrofishing	cloudy/after storm	75.8	354.5		stable	fair sample/water temps above normal
Barkley	Donaldson Bay	black bass	10/9/2019	2.43 hr	electrofishing	sunny/ light wind	71.0	354.8		stable	fair sample/very few big bass up shallow
Barkley	Eddy Bay	black bass	10/14/2019	2.0 hr	electrofishing	sunny	67.3	355.1		stable	fair sample
Barkley	Little River	black bass	10/16/2019	2.5 hr	electrofishing	sunny/windy	66.5	354.8		elevation falling	fair sample
Barkley	Crooked Creek	crappie	10-23 - 10/25	30 nn	trapnet	variable	60.0	354.9	17	falling slightly	fair sample
Barkley	Donaldson Bay	crappie	10-29 - 11-1	40 nn	trapnet	variable	58.2	354.0	22	rising	fair sample
Barkley	Little River	crappie	11-5 - 11-8	40 nn	trapnet	variable	51.4	355.0	22	stable	fair sample
Barkley	Eddy Bay	crappie	11-5 - 11-8	40 nn	trapnet	variable	51.0	354.5		stable	fair sample
Kentucky	Jonathan Creek	crappie	4/1/2019	6 tows	neustonic tow net	dusk	53.9	355.22			
Kentucky	Jonathan Creek	crappie	4/8/2019	6 tows	neustonic tow net	dusk	62.5	356			
Kentucky	Jonathan Creek	crappie	4/15/2019	6 tows	neustonic tow net	dusk	63.1	357.61			
Kentucky	Jonathan Creek	crappie	4/22/2019	6 tows	neustonic tow net	dusk	64.5	359.0			lots of debris on the surface
Kentucky	Jonathan Creek	crappie	4/29/2019	6 tows	neustonic tow net	dusk	64.9	359.0			
Kentucky	Jonathan Creek	crappie	5/6/2019	6 tows	neustonic tow net	dusk		359.1			
Kentucky	Jonathan Creek	crappie	5/13/2019	6 tows	neustonic tow net	dusk	67.5	360.2			
Kentucky	Jonathan Creek	crappie	5/20/2019	6 tows	neustonic tow net	dusk	75.8	359.5			
Kentucky	Jonathan Creek	crappie	5/28/2019	6 tows	neustonic tow net	dusk		358.9			
Kentucky	Jonathan Creek	crappie	6/3/2019	6 tows	neustonic tow net	dusk	80.3	359.1			
Kentucky	Jonathan Creek	crappie	6/10/2019	6 tows	neustonic tow net	dusk	79.5	359.3			
Lake Beshear		black bass	4/22/2019	2.5 hr	electrofishing	sunny	63.3			stable	fair sample
Kentucky	Big bear	black bass	4/30/2019	2.5 hr	electrofishing	cloudy	65.7	359.3		rising slightly	fair sample, fish only on point bushes
Kentucky	Jonathan Creek	black bass	4/25/2019	2.5 hr	electrofishing	sunny/ windy	64.8	359.5		rising slightly	fair sample lots of crappie in bushes
Kentucky	Jonathan Creek	black bass	5/6/2019	2.5 hr	electrofishing	sunny/ light wind	69.7	359.1		falling	second sample, very few in bushes
Kentucky	Blood River	black bass	4/23/2019	2.5 hr	electrofishing	cloudy	65.0	359.1		rising	fair sample, few fish in bushes
Ballard WMA	gravel pit pond	sportfish	5/8/2019	.5 hr	electrofishing	cloudy	74.8	normal	36	calm	fair sample
Kentucky	Fenton	catfish	7/18/2019	1.58 hr	low pulse	after cold front	79.4	359.7		choppy	fair sample, still low amps...

Table 1 (cont).

Water body	Location	Species	Date	Effort	Gear	Weather	Water temp. °F	Water level	Secchi (in)	Water conditions	Pertinent sampling comments
Kentucky	Little Bear	cattfish	6/20/2019	.58 hr	low pulse	windy	77.4	359.3		white caps	wind picked up too much to complete
Kentucky	Patterson Landing	cattfish	6/25/2019	1.08 hr	low pulse	sunny	81.7	360.5		rising slightly	still unable to achieve more than 2 amps
Lake Beshear		black bass	10/8/2019	2.5 hr	electrofishing	sunny	72.0			calm	hot water, very biased towards small fish
Kentucky	Jonathan Creek	black bass	10/15/2019	2.5 hr	electrofishing	cloudy	65.0	354.9		cam	fair sample/ few big fish shallow
Kentucky	Blood River	black bass	10/10/2019	2.32 hr	electrofishing	cloudy	72.1	354.9		stable	unseasonably warm, few adults shallow
Kentucky	Sugar Bay	black bass	10/17/2019	2.5 hr	electrofishing	sunny	69.2	354.8		stable	repeat sample only used for Wr
Kentucky	Ledbetter	crappie	10/23 - 10/25	30 nn	trapnet	sunny	62.0	354.7	40	steady	fair sample
Kentucky	Jonathan	crappie	10/29 - 11/01	40 nn	trapnet	variable/rainy	61.4	354.4		steady/rising slightly	fair sample
Kentucky	Blood River	crappie	11/05 - 11/8	40 nn	trapnet	variable	54.0	355.5	20	water rising	fair sample

Table 2. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 10.0 hours (20- 30-minute runs) of diurnal electrofishing at Kentucky Lake during April-May 2019.

Area	Inch class																			Total	CPUE	Std err
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			
Blood River																						
Largemouth bass	2	3	2	3	2	4	8	17	18	13	2	5	3	4	3	3	1	1	1	95	38.0	5.8
Jonathan Creek																						
Smallmouth bass		3	1					1												5	1.0	0.5
Spotted bass	1							1												2	0.4	0.3
Largemouth bass	1	2	5	6	2	6	13	32	26	16	10	3	9	9	8	5	3	1		157	31.4	5.1
Big Bear																						
Smallmouth bass		1																		1	0.4	0.4
Largemouth bass	1	4	3	3	1	1	5	12	21	10	3	5	3	5	6	1		2		86	34.4	4.3
Total																						
Smallmouth bass		4	1					1												6	0.6	0.3
Spotted bass	1							1												2	0.2	0.1
Largemouth bass	4	9	10	12	5	11	26	61	65	39	15	13	15	18	17	9	4	4	1	338	33.8	3.0

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Table 3. Lake specific assessment for largemouth bass collected at Kentucky Lake from 2010-2019. This table includes the parameter estimates and the individual scores as well as the total score and assessment rating. The final two columns list the instantaneous mortality (Z) and % annual mortality (A). Only data collected from Blood River, Big Bear, Jonathan Creek, and Sugar Bay were used for historical comparison.

Year	Mean length	****Mean	CPUE	Length group			Total score	Assessment rating	Z	A
	age-3 at capture	length age-3 at capture		12.0-14.9 in	>15.0 in	>20.0 in				
2019	13.2**		3.29	11.9	8.1	0.9				
Score	2		1	1	1	1	6	P		
2018	13.2**		24.7	7.9	12.2	1.3			***0.456	36.6
Score	2		2	1	1	2	8	F		
2017	13.2**		95.8	14.1	16.4	1.1			***0.513	40.1
Score	2		4	2	3	2	13	G		
2016	13.2	13.7	4.0	25.9	19.1	0.8			***0.410	33.7
Score	2		1	4	3	1	11	F		
2015	13.9**		10.2	22.0	15.6	1.2			0.408	33.5
Score	4		1	3	2	2	12	G		
2014	13.9**		32.6	15.0	15.7	0.9			0.452	36.3
Score	4		2	1	2	1	10	F		
2013	13.9**		40.2	9.6	15.8	0.8			0.446	35.9
Score	4		2	1	2	1	10	F		
2012*	13.9	14.2	35.6	26.9	17.5	0.8			0.588	44.5
Score	4		2	2	2	1	11	F		
2011*	12.9	12.4	7.4	34.0	8.6	0.9				
Score	3		1	2	1	1	8	F		
2010*	13.8		34.4	42.9	12.4	1.3				
Score	4		2	3	1	1	11	F		
Average	13.5	13.4	28.8	21.0	14.1	1.0	10.4		0.379	37.229

Data from 1985 to 2009 is listed in previous annual reports.

Assessment quartiles were updated in 2015, previous years' APR's will list rating based on old assessment ranges.

** age and growth data was not collected this year, therefore used previous age data set estimates.

2010*, 2011* and 2013* samples were hampered by high water levels during flooding, sample was later than normal; overall a poor sample and not all embayments were sampled.

2012* sample was hampered by low water levels during drought.

*** mortality rates were calculated from fall caught and aged fish.

****Mean length calculated using a weighted average applied to the entire sample

Rating
5-7 = Poor (P)
8-11 = Fair (F)
12-16 = Good (G)
17-20 = Excellent (E)

(Kentucky Bass Database.xls)

Table 4. Spring diurnal electrofishing CPUE (fish/hr) of each length group of largemouth bass collected at Kentucky Lake during May 2010-2019.

Year	Mean length	*Mean	Length group																
	age-3 at capture (in)	length age-3 at capture	Age-1													Total		PSD	RSD ₁₅
			CPUE	Std err	<8.0 in		12.0-14.9 in		≥15.0 in		≥18.0 in		≥20.0 in		CPUE	Std err			
2019	13.2	**13.7	3.3	0.6	3.5	0.6	11.9	1.6	8.1	1.0	3.5	0.6	0.9	0.3	33.8	3.0	66	22	
2018	13.2	**13.7	24.7	3.5	23.7	3.4	7.9	1.1	12.2	1.5	5.0	0.9	1.3	<0.1	66.7	5.3	47	28	
2017	13.2	**13.7	95.8	10.6	66.4	7.1	14.1	1.7	16.4	1.7	3.3	0.7	1.1	0.3	136.3	11.8	44	23	
2016	13.2	**13.7	4.0	0.7	11.8	2.0	25.9	2.4	19.1	2.4	2.9	0.7	0.8	0.3	63.2	5.7	88	37	
2015	13.9	14.2	10.2	1.1	3.9	0.7	22.4	2.1	14.1	1.3	5.3	0.6	1.1	0.3	60.4	4.2	65	25	
2014	13.9	14.2	32.6	6.2	26.4	5.5	15.0	1.4	15.7	1.7	4.2	0.6	0.9	0.3	78.1	7.1	59	30	
2013	13.9	14.2	40.2	7.0	30.5	6.4	9.6	1.3	15.8	1.6	3.3	0.5	0.8	0.3	78.2	7.1	53	33	
2012	13.9	14.2	35.6	5.3	25.6	4.0	26.9	3.5	17.5	2.2	2.7	0.6	0.8	0.3	86.2	6.7	73	29	
2011	12.4	12.4	7.4	1.6	5.1	1.1	34.0	5.4	8.6	2.0	3.7	1.0	0.9	0.6	61.1	7.7	76	15	
2010	13.8	13.5	34.4	5.9	29.7	5.5	42.9	3.6	12.4	1.6	3.7	1.0	1.3	0.4	121.6	11.0	60	14	
Average	13.3	13.5	28.8		22.7		21.1		14.0		3.8		1.0		78.6		63.2	25.6	
KLFMP	≥ 12.0 in		≥ 30				> 22		≥ 18				≥ 2				55-75	20-40	

(Kentucky Bass Database.xls)

Data for 1985-2009 is listed in previous annual reports; KLFMP - Kentucky Lake Fish Management Plan objective goal.

*Mean length calculated using a w weighted average applied to the entire spring sample

**mean length in spring estimated by backcalculating lengths of fall aged fish and then estimating length frequency from spring sample

Table 5. PSD and RSD₁₅ values calculated for largemouth bass collected during diurnal electrofishing at Kentucky Lake during April-May 2019; 95% confidence limits are shown in parentheses.

Area	No. ≥8.0 in	PSD	RSD ₁₅
Blood River	85	64 (+/-10)	25 (+/-9)
Jonathan Creek	143	63 (+/-8)	27 (+/-7)
Big Bear	75	75 (+/-10)	29 (+/-10)
Total	303	66 (+/-6)	22 (+/-10)

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Table 6. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 7.32 hours of diurnal electrofishing at Kentucky Lake during October 2019.

Area / Species	Inch class																		Total	CPUE	Std err
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
Blood River																					
Smallmouth bass	2	27	38	6															73	33.1	10.1
Largemouth bass	6	66	31	8	3	1	1		2				1						119	51.7	9.7
Jonathan Creek																					
Smallmouth bass		15	44	10					4	1		1	1	1		1			79	31.6	9.4
Spotted bass		5	1						1		1		1						9	3.6	2.2
Largemouth bass	11	74	17	8	6	2		3	4	5	9	11	10		1	3	1	2	167	66.8	8.5
Sugar Bay																					
Smallmouth bass	1	26	22	7	1	1	1	1	1				1						62	24.8	4.8
Spotted bass									1	1	2	3							7	2.9	2.8
Largemouth bass		6	13	5	5	1	1	6	6	4	3	3	1	1		2			57	22.8	3.9
*TOTAL																					
Smallmouth bass	2	42	82	16					4	1		1	1	1	1		1		152	32.4	6.6
Spotted bass		6	1						1		1		1						10	1.9	1.1
Largemouth bass	17	140	48	16	9	3	1	3	6	5	9	11	11		1	3	1	2	286	58.6	6.7

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*TOTAL only for Blood River and Jonathan Creek for historical comparisons

Table 7. Number of bass and relative weight (Wr) for each length group of black bass collected at Kentucky Lake during October 2019.

Species	Area	Length group									Total		
		8.0-11.9 in			12.0-14.9 in			≥15.0 in			No.	Wr	Std err
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err			
Largemouth bass	Blood River	3	92	4	1	99					4	93	3
	Jonathan Creek	12	92	3	30	91	1	7	89	4	49	91	1
	Sugar Bay	17	95	1	7	84	4	3	100	1	27	93	2
	Total	32	94	1	38	90	1	10	93	3	80	92	1

Species	Area	Length group									Total		
		7.0-10.9 in			11.0-13.9 in			≥14.0 in			No.	Wr	Std err
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err			
Spotted bass	Total	3	78	7	7	79	3				10	79	3
Smallmouth bass	Total	8	92	5	2	83	5	4	76	3	14	86	3

wfdwrk2.d19

Table 8. Age-0 CPUE (fish/hr) and mean length (in) of largemouth bass collected in the fall, and CPUE of age-1 largemouth bass collected the following spring during diurnal electrofishing at Kentucky Lake.

Year class	Age 0 ^A		Age 0 ^A		Age 0 ≥5.0 in ^A		Age 1 ^B	
	Mean length	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
2019	3.9	0.1	37.1	5.9	5.4	1.8		
2018	5.7	0.1	18.6	2.8	13.0	2.5	3.3	0.6
2017	5.9	0.1	28.9	5.2	18.2	3.6	24.7	3.5
2016	6.4	0.1	58.4	7.4	47.9	5.3	95.8	10.6
2015	4.6	0.1	32.6	8.6	9.1	1.5	4.0	0.7
2014	4.1	0.1	20.2	7.9	3.8	1.0	10.2	1.1
2013	5.7	0.1	31.3	5.2	21.5	4.1	32.6	6.2
2012	6.4	0.1	63.0	13.9	55.9	12.5	40.2	7.0
2011	5.7	0.1	75.9	8.3	54.1	6.4	35.6	5.3
2010	5.7	0.1	24.3	4.9	17.4	2.6	7.4	1.6
Average	5.4		39.0		24.6		28.2	

^A Data collected by fall (October) diurnal electrofishing. Mean lengths were determined by analysis of otoliths removed from a subsample of LMB <8.0 in and extrapolated to the entire catch of the fall sample. Since 2010, bass up to 10.0 in have been collected for analysis.

^B Data from diurnal electrofishing samples collected the following spring (April/May).

*2010, 2011 and 2013 spring data was poor due to high water levels.

*2012 spring data was poor due to low water levels.

Data from 1990 to 2009 is listed in previous year reports.

wfdwrky.dxx, wfdwragk.dxx, wfdpsdky.dxx

Table 9. Age frequency and CPUE (fish/hr) of largemouth bass collected during diurnal electrofishing at Kentucky Lake in October 2019.

Age	Inch class																		Total	%	CPUE	Std err	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20					
0	17	146	61	21	14	3														262	76.2	37.1	5.9
1							2	10	11	4	3									30	8.7	3.9	0.8
2									1	2	3	2	1							9	2.6	1.1	0.3
3										2	2	7	3							14	4.1	1.8	0.6
4										1	3	4	4			2				14	4.1	1.8	0.5
5											2	1	5		1	3	1			13	3.8	1.5	0.4
8																			1	1	0.3	0.2	0.1
11																			1	1	0.3	0.1	0.1
Total	17	146	61	21	14	3	2	10	12	9	13	14	13	0	1	5	1	2		344	100		
%	5	42	18	6	4	1	1	3	3	3	4	4	4	0	0	1	0	1		95			

wfdwrk2.d19 and wfdlbkag.d16

Table 10. Estimated hatch dates of black bass in Sugar Bay, derived using daily ring counts of juveniles in 2019. "# hatch" represents the time when bass actually hatched on the nest. "#spawned" represents the estimated time when bass eggs were fertilized. Elevation (mean feet above sea level) and mean daily discharge (cubic feet/second) at Kentucky Dam also provided. Temperature readings (1 meter below surface) taken at Hancock Biological Station in main channel. Environmental variables were provided by TVA and Murray State University.

	Largemouth Bass		Smallmouth Bass		Environmental variables		
	#hatch	#spawned	#hatch	#spawned	Elevation	Discharge (cfs)	Temp. F
5-Apr		1			355.88	17562	59.4
6-Apr					356.18	25202	59.7
7-Apr					356.09	54365	59.7
8-Apr	1				356.18	77169	62.2
9-Apr		1			356.61	91189	63
10-Apr					357.1	90510	61.3
11-Apr		2			357.08	87971	61.7
12-Apr	1	1			357.12	90867	61.3
13-Apr					357.47	93030	61
14-Apr	2	2			357.65	117400	61.3
15-Apr	1	2			357.54	132531	62.2
16-Apr		3			357.51	127848	62.6
17-Apr	2	1			357.24	123489	63
18-Apr	2	2			356.76	110933	60.6
19-Apr	3	5			357.44	114539	59.7
20-Apr	1	2			358.3	119455	61.5
21-Apr	2	2			358.81	113699	61.9
22-Apr	5	3			359.25	96672	62.4
23-Apr	2	8			359.63	88418	63.9
24-Apr	2	8			359.82	87878	64.9
25-Apr	3	11			359.59	88048	64.9
26-Apr	8	6			359.62	74204	64.2
27-Apr	8	9			359.15	58502	64
28-Apr	11	8			359.19	58019	65.1
29-Apr	6	4			359.32	45444	66.2
30-Apr	9	4			359.45	44881	66.9
1-May	8	1			359.37	52579	68
2-May	4	1			359.4	52075	69.4
3-May	4	2			359.41	56800	69.8
4-May	1				359.19	77475	69.8
5-May	1				359.09	68054	71.2
6-May	2				359.22	48375	72.7
7-May		2			359.64	40105	72.9
8-May					360.07	39439	71.2
9-May					360.35	51822	70.5
10-May	2				360.59	76753	69.4
11-May					360.52	90639	68.7
12-May					360.3	95084	68.4
13-May					360.03	99078	69.6
14-May					359.75	98227	69.3
15-May					359.53	83145	70.3

Table 11. Species composition, relative abundance, and CPUE (fish/nn) of crappie collected by trap nets fished during 110 net-nights of effort at three embayments of Kentucky Lake during October-November 2019. The Sub-Total is used for historical comparison and excludes the data for an embayment which historically had not been sampled.

Area	Species	Inch class													Total	CPUE	Std err
		1	2	3	4	5	6	7	8	9	10	11	12	13			
Blood River	White crappie	2	56	113	5	67	29	5			2	1			280	7.0	1.1
	Black crappie		158	83	6	27	14	8	9	32	20	4	4	1	366	9.2	1.3
Jonathan Cr.	White crappie		133	45	1	44	8	2	10	21	33	38	17	1	353	8.8	1.2
	Black crappie		99	18	8	40	16	20	53	159	103	16			532	13.3	2.1
Sub-Total	White crappie		189	158	6	111	37	7	10	21	35	39	17	1	631	7.9	0.8
	Black crappie		257	101	14	67	30	28	62	191	123	20	4	1	898	11.2	1.3
Ledbetter	White crappie		7	6			1	1	2						17	0.6	0.2
	Black crappie		28	8	1	1	1	3	3			1	3		49	1.6	0.3
TOTAL	White crappie	2	196	164	6	111	38	8	12	21	35	39	17	1	650	5.9	0.4
	Black crappie		285	109	15	68	31	31	65	191	123	21	7	1	947	8.6	0.6

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Table 12. Crappie population parameters used to manage the population at Kentucky Lake, with values determined from fall trap netting at Blood River and Jonathan Creek.

Year	Total CPUE (fish/nn) excluding age-0			CPUE (fish/nn) age-0			Mean length (in) age-2 at capture				CPUE (fish/nn) ≥8.0 in			CPUE (fish/nn) age-1			CPUE (fish/nn) ≥10.0 in		
	WC	BC	Crappie	WC	BC	Crappie	WC	BC	Crappie	*Crappie	WC	BC	Crappie	WC	BC	Crappie	WC	BC	Crappie
2019	3.5	6.7	10.2	4.4	4.6	9.0	9.1	7.9	8.0	8.5	1.5	5.0	6.6	2.0	1.4	3.4	1.2	1.9	3.0
2018	2.8	5.6	8.4	1.4	1.7	3.1	10.7	9.5	9.9	9.8	2.2	4.3	6.5	0.7	0.9	1.6	1.5	1.2	2.6
2017	3.6	9.6	13.1	0.4	0.7	1.1	9.6	8.2	8.9	8.7	3.4	7.3	10.6	0.3	1.2	1.5	1.1	1.2	2.4
2016	1.7	6.3	8.0	0.2	0.7	0.9	10.0	9.3	9.7	8.9	1.4	3.8	5.3	0.8	2.1	2.9	0.5	0.9	1.4
2015	7.7	15.0	22.7	2.2	2.1	4.3	9.7	8.8	9.2	8.4	4.4	4.9	9.3	4.1	5.8	9.9	1.2	0.5	1.7
2014	3.6	6.7	10.3	1.7	1.2	2.9	10.3	8.8	9.7	8.8	1.7	2.3	3.9	2.4	4.3	6.7	1.2	1.1	2.3
2013	2.5	7.4	9.9	2.5	3.1	5.5	10.4	8.8	9.4	9.5	2.4	6.3	8.7	0.5	1.8	2.3	1.7	2.9	4.6
2012 ^A	4.2	8.7	12.9	0.0	0.2	0.2	10.5	9.6	10.0	9.7	3.4	7.0	10.4	2.8	2.5	5.3	1.4	3.1	4.5
2011	3.2	15.6	18.8	2.3	1.1	3.4	10.5	9.6	10.0	9.3	2.0	10.3	12.3	2.3	6.7	9.0	0.9	2.5	3.4
2010 ^A	5.2	13.5	18.7	9.1	3.7	12.8	11.5	10.4	10.6	10.6	2.7	5.7	8.4	4.1	9.0	13.0	1.9	3.3	5.2
Average	3.8	9.5	13.3	2.4	1.9	4.3	10.2	9.1	9.5	9.2	2.5	5.7	8.2	2.0	3.6	5.6	1.3	1.8	3.1
KLFMP	≥ 20			≥ 8			≥ 9.5 in				≥ 10			≥ 11			≥ 4		

^A Indicates year where age and growth data was not collected. Age and growth data from the previous year was used to calculate the appropriate value.

*Mean length calculated using a weighted average applied to the entire fall trapnet sample

Data from 1985 to 2009 is listed in previous annual reports.

KLFMP - Kentucky Lake Fish Management Plan objective goal.

Kentucky Lake Crappie Database

Table 13. Lake specific assessment for crappie collected at Kentucky Lake (Blood River and Jonathan Creek) from 2010-2019. This table includes the individual scores for each parameter, as well as the total scores and assessment ratings. The final columns list the instantaneous mortality (Z) and annual mortality (A).

Year	CPUE age-1 and older	CPUE age-1	CPUE age-0	CPUE ≥ 8.0 in	Mean length age-2 at capture	*Mean length age-2 at	Total score	Assessment rating	Z	A
2019	10.2	3.4	9.0	6.6	8.0	8.5			0.643	47.4
Score	1	1	4	2	1		9	F		
2018	8.4	1.6	3.1	6.5	9.9	9.8			0.504	39.6
Score	1	1	2	2	3		9	F		
2017	13.1	1.5	1.1	10.6	8.9	8.7			0.805	55.3
Score	1	1	1	3	1		7	P		
2016	8.0	2.9	0.9	5.3	9.7	8.9			1.072	65.8
Score	1	1	1	1	2		6	P		
2015	22.7	9.9	4.3	9.3	9.2	8.4			0.925	60.3
Score	4	3	3	3	1		14	G		
2014	10.5	6.7	2.9	3.9	9.7	8.8			0.910	59.7
Score	1	1	2	1	2		7	P		
2013	9.9	2.3	5.5	8.7	9.4	9.5			0.657	48.2
Score	1	1	3	2	1		8	P		
2012	13.0	5.3	0.5	10.4	10.0	9.7			1.028	64.2
Score	1	1	1	3	3		9	F		
2011	18.8	9.0	3.4	12.3	10.0	9.3			0.916	60.0
Score	3	2	2	3	3		13	F		
2010	18.7	13.0	12.8	8.4	10.6	10.6			0.556	42.6
Score	3	3	4	2	4		16	F		
Average	13.3	5.6	4.4	8.2	9.5	9.2			0.8	54.3

*Mean length calculated using a weighted average applied to the entire fall trapnet sample

Rating

1 - 7 = Poor (P)

8 - 12 = Fair (F)

13 - 17 = Good (G)

18 - 20 = Excellent (E)

Assessment Quartiles updated in 2016.

Kentucky Lake Crappie Database

Table 14. Proportional stock density (PSD) and relative stock density (RSD_{10}) of white and black crappie collected with trap nets (120 net-nights) at Kentucky Lake (Blood River, Jonathan Creek and Ledbetter Bay) during October and November 2019. 95% confidence intervals are shown in parentheses.

Location	Species	N	PSD	RSD_{10}
Blood River	White crappie	104	3 (+ 3)	3 (+ 3)
	Black crappie	119	59 (+ 11)	24 (+ 8)
Jonathan Creek	White crappie	174	69 (+ 7)	51 (+ 8)
	Black crappie	407	81 (+ 4)	29 (+ 4)
Sub Total	White crappie	278	44 (+ 6)	33 (+ 5)
	Black crappie	526	76 (+ 4)	28 (+ 4)
Ledbetter	White crappie	4	50 (+ 56)	
	Black crappie	12	58 (+ 29)	33 (+ 28)
Total	White crappie	282	44 (+ 6)	33 (+ 6)
	Black crappie	538	76 (+ 4)	28 (+ 4)

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Table 15. Number of fish and the relative weight (Wr) values for each length group of black and white crappie collected at Kentucky Lake during trapnetting in October and November 2019.

Species	Area	Length group								
		5.0-7.9 in			8.0-9.9 in			≥ 10.0 in		
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err
White crappie	Blood River	99	81	1				3	86	7
	Jonathan Creek	42	81	2	31	81	2	89	86	1
	Ledbetter	2	83	3	2	79	2			
	Total	143	81	1	33	81	1	92	86	1

Species	Area	Length group								
		5.0-7.9 in			8.0-9.9 in			≥ 10.0 in		
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err
Black crappie	Blood River	49	85	1	41	84	1	29	88	1
	Jonathan Creek	69	83	1	211	85	<1	118	84	<1
	Ledbetter	5	86	2	3	91	3	4	94	2
	Total	123	84	1	255	85	<1	151	85	<1

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Table 16. Mean back-calculated length (in) at each annulus of white crappie including the range in length at each age and the 95% confidence interval of each age group. Otoliths were collected from Kentucky Lake (Blood River, Jonathan Creek and Ledbetter Bay) in fall 2019.

Year class	N	Age						
		1	2	3	4	5	6	7
2018	55	3.5						
2017	5	3.4	7.2					
2016	2	4.0	7.5	9.8				
2015	24	4.4	7.4	8.9	9.9			
2014	26	3.8	6.3	8.4	9.3	10.0		
2012	1	3.2	5.2	7.1	8.4	9.7	10.3	11.1
Mean	113	3.8	6.9	8.7	9.6	10.0		
Smallest		2.8	5.2	6.9	7.4	8.2		
Largest		6.3	9.1	10.5	11.6	12.0		
Std err		0.1	0.1	0.1	0.2	0.2		
Low 95% CI		3.7	6.6	8.4	9.3	9.7		
High 95% CI		3.9	7.1	8.9	9.9	10.4		

* Intercept = 0.

wfdtnagk.d19

Table 17. Mean back-calculated length (in) at each annulus of black crappie including the range in length at each age and the 95% confidence interval of each age group. Otoliths were collected from Kentucky Lake (Blood River, Jonathan Creek and Ledbetter Bay) in fall 2019.

Year class	N	Age						
		1	2	3	4	5	6	7
2018	58	3.4						
2017	32	3.7	6.2					
2016	13	4.1	6.8	8.2				
2015	39	4.4	6.9	8.3	9.1			
2014	17	4.0	6.4	8.3	9.3	9.9		
2013	7	3.7	6.2	8.0	9.0	9.7	10.1	
2012	1	4.0	7.2	9.0	9.8	10.5	11.0	11.4
Mean	167	3.9	6.5	8.3	9.1	9.9	10.3	
Smallest		2.4	4.7	6.6	7.2	8.4	8.9	
Largest		8.8	9.7	11.2	12.2	12.1	11.3	
Std err		0.1	0.1	0.1	0.1	0.2	0.3	
Low 95% CI		3.7	6.4	8.1	8.9	9.6	9.6	
High 95% CI		4.0	6.7	8.5	9.4	10.2	10.9	

* Intercept = 0.

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Table 18. Age frequency and CPUE (fish/nn) of white crappie collected in trap nets fished for 80 net-nights in Kentucky Lake (Blood River and Jonathan Creek) during October and November 2019.

Age	Inch class												Total	%	CPUE	Std err	
	2	3	4	5	6	7	8	9	10	11	12	13					
0	189	158	5											352	56	4.4	0.6
1			1	111	37	6	4							159	25	2.0	0.3
2							3	4						7	1	0.1	0.0
3									3	3				6	1	0.1	0.0
4						1	2	6	13	20	9	1		52	8	0.7	0.1
5							1	11	19	14	9	1		55	9	0.7	0.11
6														0	0	0.0	
7										3				3	0	0.0	0.01
Total	189	158	6	111	37	7	10	21	35	40	18	2		634		7.93	
%	30	25	1	18	6	1	2	3	6	6		0					

wfdtpntk.d19, wfdtnagk.d19

Table 19. Age frequency and CPUE (fish/nn) of black crappie collected in trap nets fished for 80 net-nights in Kentucky Lake (Blood River and Jonathan Creek) during October and November 2019.

Age	Inch class												Total	%	CPUE	Std err	
	2	3	4	5	6	7	8	9	10	11	12	13					
0	257	101	4	3										365	41	4.6	0.4
1			10	64	17	11	8				1			111	12	1.4	0.2
2					11	13	28	8	11		1			72	8	0.9	0.1
3					2	1	11	32	5		1			52	6	0.7	0.4
4						2	11	103	70	7	1			194	22	2.4	0.1
5							3	24	37	7		1		72	8.0	0.9	0.1
6								24		4	1			29	3.2	0.4	1.1
7										1				1	0.1	0.0	2.1
Total	257	101	14	67	30	27	61	191	123	19	5	1		896		11.2	
%	29	11	2	7	3	3	7	21	14	2	1	0					

wfdtpntk.d19, wfdtnagk.d19

Table 20. Length frequency, CPUE (fish/1000M³), median catch, and geometric mean catch (standard error given in parentheses) of each 0.5 mm class of crappie collected during nocturnal neustonic tow net sampling (72 tows) at 6 sample sites in the Jonathan Creek embayment of Kentucky Lake from 1 April-10 June 2019. See Appendix A for sample site locations.

Date	Location	mm class											CPUE	*Median	*Geometric Mean					
		5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10				10.5	11	11.5		
4/1/2019	JC002															0	0.0	0.0		
	JC003															0				
	JC004															0				
	JC006															0				
	JC007															0				
4/8/2019	JC005															0				
	JC002															0	0.0	0.0		
	JC003															0				
	JC004															0				
	JC006															0				
4/15/2019	JC007															0				
	JC005															0				
	JC002															0	0.0	0.0		
	JC003															0				
	JC004															0				
4/22/2019	JC006															0				
	JC007															0				
	JC005															0				
	JC002															0	0.0	0.0		
	JC003															0				
4/29/2019	JC004															0				
	JC006															0				
	JC007															0				
	JC005															0				
	JC002															0	11.7	6.22 (4.83)		
5/6/2019	JC003					9.7	19	3.2								32				
	JC004					5.8	5.8									12				
	JC006															0				
	JC007						2.9	2.9	5.8							12				
	JC005						6.6	3.3								10				
5/13/2019	JC002															3	214.5	92.03 (51.34)		
	JC003					3.53	11	7.1	3.5	7.1	3.5	3.5				39				
	JC004						32	38	90	32	74	29	16	3.2	3.2	317				
	JC006						11	11	45	22	41	52	75		3.7	262				
	JC007						3.27	9.8	20	88	26	23	36	16	3.27	226				
5/20/2019	JC005						9.6	9.6	45	35	48	26	22	6.42		202				
	JC002					3.3		3.3								7	84.9	51.69 (21.20)		
	JC003						5.61	17		36	31	14	2.8	5.6		112				
	JC004						5.72	2.9	2.9	17	17	20	11	8.6	8.6	94				
	JC006							2.7		2.7		13		2.7		21				
5/28/2019	JC007					8.1		16		19		16		5.4		71				
	JC005						5.82	2.9	8.7	17	23	47	8.7	2.91	8.7	5.82	134			
	JC002							12	6.1	3	6.1	6.1				33	154.2	150.18 (161.25)		
	JC003								14		2.8	2.8				20				
	JC004							24	45	214	153	232	39	63	33.1	54	27.1	885		
6/3/2019	JC006						3.08	3.1		49	28	25	3.1	9.24	3.1	6.16	129			
	JC007							8.9	8.9	15	24	45	8.9	6	5.96	3	125			
	JC005						3.69	11	33	129	144	185	92	30	25.8	15	11.1	679		
	JC002																	3	50.8	37.31 (21.06)
	JC003																	32		
6/10/2019	JC004																	62		
	JC006																	42		
	JC007																	0		
	JC005																	5		
	JC002																	0	2.7	2.85 (2.52)
6/10/2019	JC003																	0		
	JC004																	3		
	JC006																	3		
	JC007																	0		
	JC005																	0		
6/10/2019	JC002																	0	0.0	1.89 (1.72)
	JC003																	0		
	JC004																	0		
	JC006																	0		
	JC007																	0		
JC005																	0			

*includes all lengths of yoy crappie collected

Table 21. Geometric mean catch rates for pelagic larval fish captured in neuston tow nets from 1-April -10 June 2019 (six tows per sample night). Standard errors given in parentheses. Temperature (degrees Fahrenheit) and water elevation (feet above sea level) also provided.

Day	Geometric Mean (Standard Error)					Temp	Elevation
	Pomoxis spp.		Clupeid spp.	Lepomis spp.	Atherinidae		
	8.0-11.0mm	Total Catch	Total Catch		Total Catch		
4/1/2019	0.0	0.0	0.0	0.0	0.0	55.9	355.0
4/8/2019	0.0	0.0	0.0	0.0	0.0	62.2	356.2
4/15/2019	0.0	0.0	0.0	0.0	0.0	62.2	357.5
□	0.0	0.0	1.26 (0.49)	0.0	0.0	62.4	359.3
4/29/2019	2.37 (1.39)	6.22 (4.83)	2.08 (3.25)	0.0	0.0	66.2	359.3
5/6/2019	73.44 (44.45)	92.03 (51.34)	155.68 (49.87)	5.18 (2.09)	0.0	72.7	359.2
5/13/2019	23.56 (18.05)	51.69 (21.20)	213.06 (114.32)	2.34 (1.11)	0.0	69.6	360.0
5/20/2019	113.29 (137.62)	150.18 (161.25)	2369.78 (1901.47)	8.11 (3.70)	1.79 (1.07)	76.3	359.28
5/28/2019	7.81 (9.53)	37.31 (21.06)	668.31 (193.10)	19.69 (10.31)	22.73 (44.90)	79.3	358.9
6/3/2019	1.61 (0.66)	2.85 (2.52)	133.62 (65.53)	6.14 (3.39)	71.67 (34.68)	80.8	359.1
6/10/2019	0.0	1.89 (1.72)	315.26 (124.85)	2.08 (0.75)	31.25 (27.15)	80.2	359.8

Table 22. Estimated crappie hatch dates in Jonathan Creek, derived using larval fish lengths back calculated using a growth rate derived from the daily ring counts of juveniles in 2019. Hatch dates from Jonathan Creek and Blood River derived solely from daily ring counts of juveniles also provided. "# hatch" represents the time when crappie actually hatched on the nest. "#spawned" represents the estimated time when crappie eggs were fertilized. Elevation (mean feet above sea level) and mean daily discharge (cubic feet/second) at Kentucky Dam also provided. Temperature readings (1 meter below surface) taken at Hancock Biological Station in main channel. Environmental variables were provided by TVA and Murray State University.

	Jonathan Creek				Blood River		Environmental variables		
	Back calculated estimate larval crappie	Back calculated estimate larval crappie	Juvenile Daily ring count	Juvenile Daily ring count	Juvenile Daily ring count	Juvenile Daily ring count	Elevation	Discharge (cfs)	Temp. F
	# hatch / 1000m ³	# spawned / 1000m ³	# hatch	# spawned	# hatch	# spawned			
15-Apr		1.4					357.54	132531	62.2
16-Apr		2.0					357.51	127848	62.6
17-Apr		0.0					357.24	123489	63
18-Apr	1.4	1.6					356.76	110933	60.6
19-Apr	2.0	2.3					357.44	114539	59.7
20-Apr	0.0	9.0					358.3	119455	61.5
21-Apr	1.6	33.4					358.81	113699	61.9
22-Apr	2.3	13.5					359.25	96672	62.4
23-Apr	9.0	20.6					359.63	88418	63.9
24-Apr	33.4	0.0					359.82	87878	64.9
25-Apr	13.5	2.9					359.59	88048	64.9
26-Apr	20.6	1.3		1		1	359.62	74204	64.2
27-Apr	0.0	4.2		3		2	359.15	58502	64
28-Apr	2.9	15.2		2		1	359.19	58019	65.1
29-Apr	1.3	4.9	1	1	1	1	359.32	45444	66.2
30-Apr	4.2	9.9	3	2	2	3	359.45	44881	66.9
1-May	15.2	0.0	2	6	1	1	359.37	52579	68
2-May	4.9	4.9	1	7	1	2	359.4	52075	69.4
3-May	9.9	6.3	2	9	3	1	359.41	56800	69.8
4-May	0.0	4.9	6	11	1	2	359.19	77475	69.8
5-May	4.9	42.5	7	11	2	3	359.09	68054	71.2
6-May	6.3	22.0	9	10	1	9	359.22	48375	72.7
7-May	4.9	33.3	11	10	2	12	359.64	40105	72.9
8-May	42.5	0.0	11	11	3	11	360.07	39439	71.2
9-May	22.0	0.0	10	5	9	12	360.35	51822	70.5
10-May	33.3	2.6	10	2	12	6	360.59	76753	69.4
11-May	0.0	2.0	11	5	11	6	360.52	90639	68.7
12-May	0.0	2.9	5	1	12	9	360.3	95084	68.4
13-May	2.6	5.4	2		6	3	360.03	99078	69.6
14-May	2.0	1.4	5	1	6	7	359.75	98227	69.3
15-May	2.9	2.9	1	1	9	2	359.53	83145	70.3
16-May	5.4	1.6			3	2	359.64	68278	71.2
17-May	1.4		1	1	7	1	359.76	68422	72.5
18-May	2.9		1		2	1	359.79	68626	72
19-May	1.6				2		359.54	67004	73.9
20-May			1		1	2	359.28	62722	76.3
21-May					1		358.98	49859	75.4
22-May							358.86	36671	75.6
23-May					2		358.9	23637	77

Table 23. Estimated hatch dates of black and white crappie in Jonathan Creek and Blood River, derived using daily ring counts of juveniles in 2019. "# hatch" represents the time when crappie actually hatched on the nest. Elevation (mean feet above sea level) and mean daily discharge (cubic feet/second) at Kentucky Dam also provided. Temperature readings (1 meter below surface) taken at Hancock Biological Station in main channel. Environmental variables were provided by TVA and Murray State University.

	Jonathan Creek		Blood River		Environmental variables		
	White Crappie #hatch	Black Crappie #hatch	White Crappie #hatch	Black Crappie #hatch	Elevation	Discharge (cfs)	Temp. F
29-Apr	1		1		359.32	45444	66.2
30-Apr	3		2		359.45	44881	66.9
1-May	2		1		359.37	52579	68
2-May	1		1		359.4	52075	69.4
3-May	2		2	1	359.41	56800	69.8
4-May	6		1		359.19	77475	69.8
5-May	5	2	2		359.09	68054	71.2
6-May	6	3	1		359.22	48375	72.7
7-May	10	1	2		359.64	40105	72.9
8-May	10	1	2	1	360.07	39439	71.2
9-May	8	2	7	2	360.35	51822	70.5
10-May	7	3	9	3	360.59	76753	69.4
11-May	10	1	11		360.52	90639	68.7
12-May	3	2	11	1	360.3	95084	68.4
13-May	1	1	5	1	360.03	99078	69.6
14-May	4	1	6		359.75	98227	69.3
15-May	1		8	1	359.53	83145	70.3
16-May			3		359.64	68278	71.2
17-May	1		7		359.76	68422	72.5
18-May	1		2		359.79	68626	72
19-May			2		359.54	67004	73.9
20-May	1		1		359.28	62722	76.3
21-May			1		358.98	49859	75.4
22-May					358.86	36671	75.6
23-May			2		358.9	23637	77

Table 24. Length frequency and CPUE (fish/hr) of channel, blue, and flathead catfish collected from Kentucky Lake in June 2019 using low pulse (15 PPS) electrofishing along the main river channel. A chase boat was used. A total of 3.24 hours of sampling consisting of 39- 300-second runs.

Species	Inch class																				Total	CPUE	Std err							
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				25	26	27	28	32	39	40
Blue catfish	1	13	13	4			1		6	1	1	4	1	1	2		5	5	4	1	2	2	1					68	21.8	7.8
Channel catfish	6	8	6	1																								21	6.7	1.8
Flathead catfish		1			1	1	1	3	1		1	2		1	1	1				2	1			3	2	2	1	25	8.0	1.9

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Table 25. Relative weight (Wr) of each length group of blue, channel, and flathead catfish collected from Kentucky Lake during June 2019. Fish were collected using low pulse (15 PPS) electrofishing.

Species	Length group									Total		
	12.0-19.9 in			20.0-29.9 in			≥30.0 in			N	Wr	Std err
	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err
Blue catfish	15	105	6	20	2	2				35	99	3

Flathead catfish	Length group									Total		
	12.0-19.9 in			20.0-29.9 in			≥30.0 in			N	Wr	Std err
	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err
	5	88	2	4	89	2	5	96	2	14	91	1

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Table 26. Age frequency and CPUE (fish/hr) of blue catfish collected from low pulse (15 PPS) electrofishing at Kentucky Lake in June 2019.

Age	Inch class																	*Total	%	CPUE	Std err	
	4	5	6	7	10	12	13	14	15	16	17	18	20	21	22	25	26					27
1	1	13	13	4															31	46	9.6	7.4
2					1														1	1	0.3	0.3
3						6	1	1											8	12	2.5	1.3
4									3	1									4	6	1.2	0.6
5									1		1			1					3	4	0.9	0.4
6												2	3	2					7	10	2.2	0.8
7													2	1	2				5	7	1.5	0.5
8														1		1		1	3	4	0.9	0.3
9															2		2		4	6	1.2	0.7
10																1			1	1	0.3	0.2
12																		1	1	1	0.3	0.2
Total	1	13	13	4	1	6	1	1	4	1	1	2	5	5	4	2	2	2	68			
%	1	19	19	6	1	9	1	1	6	1	1	3	7	7	6	3	3	3				

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Table 27. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 7.5 hours (15- 30-minute runs) of diurnal electrofishing at Lake Barkley from 24 April to 7 May 2019.

Area	Species	Inch class																			Total	CPUE	Std err
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Lower																							
Donaldson Cr.	Spotted bass							1													1	1.0	1.0
	Largemouth bass					1	1	1		1			1						2		7	7.0	5.0
Fords	Largemouth bass											1	1		1	1				4	8.0	0.0	
Middle																							
Little River	Spotted bass									3		1								4	2.7	2.7	
	Largemouth bass				1			1		1	2	2	2	3	7	4	5	6	2	2	38	25.3	11.0
Eddy Cr.	Smallmouth bass	1	1	3	2	2			2											11	4.4	1.9	
	Spotted bass									1										1	0.4	0.4	
	Largemouth bass		1	7	9	13	6	4	1	12	17	22	12	13	9	9	10	10	5	160	64.0	13.3	
Upper																							
Nickell Cr.	Smallmouth bass	1	3	2					1			2								9	9.0	7.0	
	Largemouth bass			2	4	14	8	4	3	9	10	15	9	6	2	2	2			90	90.0	12.0	
Willow	Largemouth bass	1	2	9	11	13	6	2	2	4	16	13	5	4	5	5	3			101	101.0	27.0	
Total	Smallmouth bass	2	4	5	2	2			3			2								20	2.7	1.2	
	Spotted bass							1		4		1								6	0.8	0.6	
	Largemouth bass	1	3	18	25	41	21	12	6	26	46	52	29	28	23	21	21	16	9	2	400	53.3	10.4

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Table 28. Spring diurnal electrofishing CPUE (fish/hr) of each length group of largemouth bass collected at Lake Barkley during late April/early May since 2010. Mean length at capture of age-3 fish also provided.

Year	Mean length age-3 at capture	Mean length age-3 at capture**	Age-1		Length group										Total	
					<8.0 in		8.0-11.9 in		12.0 -14.9 in		≥15.0 in		≥20.0 in			
					CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err		
2019	12.9	13.1	14.6	3.96	11.7	3.5	8.7	2.4	16.9	3.9	16.0	3.1	1.5	0.7	53.3	10.4
2018			10.9	1.4	10.8	1.4	11.0	2.2	5.7	1.1	17.4	2.9	1.1	0.4	44.9	5.8
2017			26.5	5.1	19.0	3.8	11.7	2.5	9.7	1.3	26.8	3.5	1.7	0.5	67.2	6.2
2016			10.8	1.8	6.6	1.2	6.0	1.2	14.9	2.3	22.2	3.2	1.0	0.4	49.7	4.9
2015*	13.4	13.6	10.3	1.3	8.5	1.3	15.1	2.1	29.7	4.0	26.3	3.0	1.7	0.4	79.6	7.1
2014			22.2	3.7	21.4	3.6	13.5	1.7	22.8	2.5	23.5	4.1	1.4	0.3	81.2	7.5
2013			18.2	2.7	14.6	2.3	16.2	2.4	22.9	3.2	19.3	2.1	0.7	0.3	73.0	7.9
2012	13.0	13.5	10.0	1.7	8.7	1.8	13.1	2.0	32.4	5.4	24.1	5.0	1.5	0.5	78.4	10.6
2011	Did not sample due to flooding															
2010			17.1	1.8	15.5	1.5	34.3	3.4	28.4	2.4	18.9	1.9	2.2	0.5	97.1	5.4
Average	13.1	13.4	15.6		13.0		14.4		20.4		21.6		1.4		69.4	

(Revised_Barkley_Bass_Database.xlsx)

Data is available since 1985 in previous annual reports

* back-calculated fall age data used in 2015 and 2019

**Mean length calculated using a weighted average applied to the spring sample

Table 29. PSD and RSD₁₅ values calculated for largemouth bass collected during 7.5 hours (15- 30-minutes runs) of spring diurnal electrofishing at each area of Lake Barkley from 24 April to 7 May 2019. 95% confidence intervals are shown in parentheses.

Area	No. ≥ 8.0 in	PSD	RSD ₁₅
Donaldson	6	67 (+/-41)	50 (+/-44)
Fords	4	100 (+/-0)	75 (+/-49)
Little River	37	95 (+/-7)	78 (+/-13)
Eddy Creek	130	82 (+/-7)	43 (+/-9)
Nickell	70	66 (+/-11)	17 (+/-9)
Willow	65	78 (+/-10)	26 (+/-11)
Total	312	79 (+/-5)	38 (+/-5)

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Table 30. Lake specific assessment for largemouth bass collected at Lake Barkley from 2010-2019. This table includes the parameter estimates and the individual scores as well as the total scores and assessment ratings. The final two columns list the instantaneous mortality rate (Z) and the annual mortality (A).

Year	Mean length age-3 at capture	Mean length age-3 at capture***	CPUE age-1	Length group			Total score	Assessment rating	Z	A
				12.0-14.9 in	≥15.0 in	≥20.0 in				
				CPUE	CPUE	CPUE				
2019**	12.9	13.1	14.6	16.9	16.0	1.5			0.360	30.2
Score	2		1	1	1	1	6	P		
2018	13.4	13.6	10.9	5.7	17.4	1.1			0.306	26.3
Score	4		1	1	1	1	8	F		
2017	13.4	13.6	26.5	9.7	26.8	1.7			0.322	27.5
Score	4		3	1	3	2	13	G		
2016	13.4	13.6	10.8	14.9	22.2	1.7			0.402	33.1
Score	4		1	1	2	1	9	F		
2015**	13.4	13.6	10.3	29.7	26.3	1.7			0.472	38.0
Score	4		1	2	2	1	10	F		
2014	13.0	13.5	22.2	22.8	23.5	1.4			0.649	47.8
Score	3		2	1	2	1	9	F		
2013	13.0	13.5	18.2	22.9	19.3	0.7			0.282	25.0
Score	3		1	1	1	1	7	P		
2012	13.0	13.5	10.0	32.4	24.1	1.5			0.431	35.0
Score	3		1	2	2	1	9	F		
2011	*	*	*	*	*	*				
2010 ^A	12.7	13.0	17.1	28.4	18.9	2.2			0.400	33.0
Score	2		1	1	1	2	7	P		
Average	13.0	13.3	15.6	20.4	21.6	1.5	8.7		0.4	32.9

Older data is listed in previous annual reports.

(Revised_Barkley_bass_Database.xlsx)

* data not available

** used back calculated lengths from fall

*** Mean length calculated using a weighted average applied to the spring sample

^A age and growth data was not collected. Previous year data used for age estimates.

Rating

5-7 = Poor (P)

8-11 = Fair (F)

12-16 = Good (G)

17-20 = Excellent (E)

Table 31. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 9.43 hours of diurnal electrofishing (18- 30-minute runs and 1- 26-minute run) for black bass in each area of Lake Barkley October 7, 9, 14, and 16, 2019.

Area / Species	Inch class																				Total	CPUE	Std err			
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21						
Demumbers Bay																										
Smallmouth bass		13	20	9									1											43	43.0	15.0
Largemouth bass	9	20	14	6	3	1		1	1	2	1	3	1	1										63	63.0	17.0
Donaldson Bay																										
Smallmouth bass		16	12	6	1	1	2	1				1												40	40.0	16.0
Spotted bass		4	3	1																				8	8.0	6.0
Largemouth bass	4	5	1	2	2	2	1				1		1		2									21	21.0	9.0
Eddy Creek																										
Smallmouth bass		27	20	4	1		1	1	1	2	1	2	2											62	31.0	6.2
Largemouth bass	13	107	23	14	10	4	2	4	8	7	10	10	13	10	3	2		1	2	1				244	122.0	18.5
Fords Bay																										
Smallmouth bass		3	10	7										1										21	14.7	2.6
Spotted bass	1	10	2																					13	9.1	5.8
Largemouth bass	6	29	15	6	4	2	2	1	3		1		1	3	2	1								76	53.1	13.5
Little River																										
Smallmouth bass		11	16	6					1	1				1	1		1	1						39	15.6	3.3
Spotted bass			2	2								1												5	2.0	0.9
Largemouth bass	9	138	78	29	11	6	2	3	3	6		2	5	14	4	7	3	2						322	128.8	33.0
Nickell Branch																										
Smallmouth bass	4	14	14	10		1	1	1	2															47	47.0	17.0
Largemouth bass		4	1	3			1	2			2		1	1				1						16	16.0	8.0
Willow Creek																										
Smallmouth bass		4	1							1														6	12.0	0.0
Largemouth bass	3	7	6	4	1	1			1	2	2		1											28	56.0	0.0
Total																										
Smallmouth bass	4	88	93	42	2	2	4	3	4	4	1	3	3	2	1		1	1						258	27.4	3.9
Spotted bass	1	14	7	3								1												26	2.8	1.3
Largemouth bass	44	310	138	64	31	16	8	11	16	17	17	15	23	29	11	10	3	4	2	1				770	81.7	13.8

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Table 32. Number of fish and the relative weight (Wr) values for each length group of largemouth and smallmouth bass collected at Lake Barkley during 9.43 hours of diurnal electrofishing (18- 30-minute runs and 1- 26-minute run) in October 2019.

Species	Area	Length group								
		8.0-11.9 in			12.0-14.9 in			≥15.0 in		
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err
Largemouth bass	Demumbers Bay	4	90	3	5	91	6	1	98	
	Donaldson Bay	1	96		2	95	7	2	96	2
	Eddy Creek	21	96	2	33	98	2	19	98	2
	Fords Bay	6	101	3	2	96	9	6	93	2
	Little River	14	107	2	7	103	5	30	101	2
	Nickell Branch	3	92	4	3	94	2	2	80	19
	Willow Creek	3	90	2	3	93	7			
	Total	52	98	1	55	97	2	60	98	1

Species	Area	Length group								
		7.0-10.9 in			11.0-13.9 in			≥14.0 in		
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err
Smallmouth bass	Demumbers Bay							1	72	
	Donaldson Bay	4	93	3	1	91				
	Eddy Creek	3	90	2	4	89	2	2	89	2
	Fords Bay							1	95	
	Little River	1	88		1	95		4	86	5
	Nickell Branch	5	92	4						
	Willow Creek				1	86				
	Total	13	91	2	7	93	1	8	86	3

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Table 33. Age frequency and CPUE (fish/hr) of largemouth bass collected during diurnal electrofishing at Lake Barkley in October 2019.

Age	Inch class																				Total	%	CPUE	Std err	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
0	44	310	138	64	31	16	7														610	79	64.4	11.7	
1							1	11	16	12	7										47	6	5.0	1.0	
2											3	8	2								13	2	1.4	0.4	
3										5	5	6	13	15	3						47	6	4.9	0.9	
4											2	2	6	12	4	4					30	4	3.1	0.5	
5														3	2	2	1	2			10	1	1.1	0.3	
6															1	2					3	0	0.3	0.1	
7																1					1	0	0.1	0.1	
8													2			1	1				4	1	0.4	0.1	
9																	1				2	0	0.2	0.1	
11																			2	1	1	4	1	0.4	0.2
Total	44	310	138	64	31	16	8	11	16	17	17	16	23	30	10	10	3	4	2	1	771	100	81.2	13.8	
%	9	67	30	14	7	3	2	2	3	4	4	3	5	6	2	2	1	1	0	0	100				

wfdwrb.d19, wfdwragb.d19

Table 34. Age-0 CPUE (fish/hr) and mean length (in) of largemouth bass collected in the fall and CPUE of age-1 largemouth bass collected the following spring during diurnal electrofishing at Lake Barkley.

Year class	Age-0 ^A		Age-0 ^A		Age-0 \geq 5.0 in ^A		Age-1 ^B	
	Mean length	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
2019	4.1	0.1	64.4	11.7	12.7	1.9		
2018	6.3	0.2	9.6	2.1	7.6	1.5	14.6	4.0
2017	4.8	0.1	25.1	4.8	10.2	3.0	10.9	1.4
2016	5.5	0.9	22.7	4.5	14.9	3.1	26.5	5.0
2015	4.7	0.1	46.4	6.5	16.6	6.5	10.8	1.8
2014	4.8	0.1	24.8	4.4	11.0	1.9	10.3	2.0
2013	5.8	0.1	55.0	8.7	43.3	6.0	22.2	3.7
2012	6.1	0.1	40.6	6.9	35.7	5.7	22.2	2.7
2011	5.5	0.1	18.6	2.7	13.4	2.4	10.0	1.7
2010	6.5	0.1	46.0	7.8	42.0	6.9	*	
2009	5.6	0.1	37.6	4.8	29.2	3.4	17.1	1.8
Average	5.4		35.5		21.5		16.1	

^A Data collected by fall (October) diurnal electrofishing. Mean lengths were determined by analysis of otoliths, removed from a subsample of LMB <12.0 in.

^B Data collected during the following spring (April/May) diurnal electrofishing sample.

* Data not collected in spring of 2011 due to flood conditions.

wfdwrb.dxx, wfdpsdb.dxx

Table 35. Length frequency and CPUE (fish/nn) of each inch class of white and black crappie collected by trap nets (150 net-nights) at Lake Barkley from 23 October-8 November 2019. Sub-Total is shown for comparisons with historical data which included only Little River and Donaldson Creek.

Area	Species	Inch class														Total	CPUE	Std err
		2	3	4	5	6	7	8	9	10	11	12	13	14	15			
Little River	White crappie	185	288	35	29	98	52	10	3	3				1		704	17.6	1.7
	Black crappie	21	76	17	3	1	3			1	1					123	3.1	0.6
Donaldson Creek	White crappie	77	218	19	5	28	9	10	8	17	6	1				398	10.0	1.4
	Black crappie	267	150	6	16	12	9	3	6	9		2	1			481	12.0	1.6
Sub-Total	White crappie	262	506	54	34	126	61	20	11	20	6	1		1		1,102	13.8	1.2
	Black crappie	288	226	23	19	13	12	3	6	10	1	2	1			604	7.6	1.0
Crooked Creek	White crappie	82	189	4	17	31	19	10	4	2		1			1	360	12.0	2.5
	Black crappie	33	62	5	7	5	3	5	4	1	2					127	4.2	0.7
Eddy Bay	White crappie	38	131	35	10	83	58	19	8	10	1	1				394	9.9	1.5
	Black crappie	18	58	6	3	6	5	2	2	1						101	2.5	0.5
TOTAL	White crappie	382	826	93	61	240	138	49	23	32	7	3		1	1	1,856	12.4	0.9
	Black crappie	339	346	34	29	24	20	10	12	12	3	2	1			832	5.6	0.6

wfdtpntb.d19 wfdtpnb1.d19

Table 36. Number of fish and the relative weight (Wr) values for each length group of black and white crappie collected by trap nets (150 net-nights) at Lake Barkley from 23 October-8 November 2019.

Species	Area	Length group								
		5.0-7.9 in			8.0-9.9 in			≥10.0 in		
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err
Black crappie	Crooked Creek	14	91	2	9	85	2	3	96	8
	Eddy Bay	13	86	2	4	91	5	1	112	
	Little River	6	88	5				2	91	3
	Donaldson Bay	33	89	2	9	91	3	11	95	2
	Total	66	89	1	22	88	2	17	96	2

Species	Area	Length group								
		5.0-7.9 in			8.0-9.9 in			≥10.0 in		
		No.	Wr	Std err	No.	Wr	Std err	No.	Wr	Std err
White crappie	Crooked Creek	66	83	1	13	86	3	4	87	8
	Eddy Bay	148	84	1	27	91	2	12	103	5
	Little River	97	81	1	12	82	2	4	97	3
	Donaldson Bay	36	84	1	18	90	3	21	100	1
	Total	347	83	0	70	88	1	41	99	2

wfdpntb.d19

Table 37. Crappie population parameters used to manage the population at Lake Barkley for 2010-2019, with values determined from fall trap netting. To allow for historical comparisons, only data from Little River and Donaldson Creek are presented.

Year	Total CPUE (fish/nn) excluding age-0			CPUE (fish/nn) age-2			Mean length (in) age-2 at capture				CPUE (fish/nn) ≥8.0 in			CPUE (fish/nn) age-1			CPUE (fish/nn) ≥10.0 in		
	WC	BC	Crappie	WC	BC	Crappie	WC	BC	*Crappie	*Crappie	WC	BC	Crappie	WC	BC	Crappie	WC	BC	Crappie
2019	3.5	0.8	4.3	0.3	0.3	0.6	10.1	9.3	9.7	10.0	0.7	0.3	1.0	3.1	0.5	3.6	0.4	0.2	0.5
2018	1.8	0.5	2.3	0.1	0.0	0.1	11.8	10.9	11.5	11.5	1.1	0.2	1.3	1.5	0.5	2.0	0.5	0.1	0.6
2017	1.5	1.6	3.1	0.6	0.4	1.0	11.2	9.9	10.7	10.5	1.4	1.0	2.4	0.7	1.1	1.7	1.0	0.3	1.3
2016	6.2	3.5	9.7	2.0	0.6	2.6	10.6	9.5	10.3	9.9	3.6	1.3	4.9	4.1	2.6	6.7	1.4	0.4	1.8
2015	11.4	3.1	14.4	0.3	1.6	1.9	11.6	9.9	10.5	10.1	3.2	1.9	5.1	10.8	1.4	12.2	0.9	0.9	1.8
2014	1.5	2.1	3.5	0.1	0.0	0.1	11.8	9.6	11.4	11.5	1.3	0.6	1.9	1.1	1.9	3.0	0.7	0.1	0.8
2013	2.2	0.8	3.0	0.8	0.4	1.2	11.1	10.6	10.9	11.0	2.2	0.8	3.0	0.3	0.0	0.4	1.9	0.6	2.5
2012	4.1	2.6	6.7	2.9	1.5	4.4	10.9	10.0	10.5	10.5	4.0	2.2	6.3	1.1	0.9	2.0	2.8	0.9	3.7
2011 ^A	4.6	2.8	7.4	0.3	0.2	0.5	11.6	10.5	11.1	10.4	3.0	0.7	3.6	4.2	2.6	6.8	0.8	0.2	1.0
2010	4.1	3.1	7.2	0.3	0.4	0.7	11.6	10.5	11.0	10.5	3.1	2.1	5.2	3.5	2.5	6.1	1.3	0.5	1.8
Average	4.1	2.1	6.2	0.8	0.5	1.3	11.2	10.1	10.8	10.6	2.4	1.1	3.5	3.0	1.4	4.5	1.2	0.4	1.6

*Mean length calculated using a weighted average applied to the whole fall trapnet sample

^A Indicates year where age and growth data was not collected. Age and growth data from the previous year was used to calculate the appropriate value.

Data is available from 1985 in previous annual reports.

Revised_Barkley_Crappie_Database

Table 38. Proportional stock density (PSD) and relative stock density (RSD₁₀) of white and black crappie collected by trap-nets (150 net-nights) at Lake Barkley from 23 October-8 November 2019. Sub-Total uses only data collected from Little River and Donaldson Creek. Numbers in parentheses represent 95% confidence intervals.

Location	Species	N	PSD	RSD ₁₀
Little River	White crappie	196	9 (+/-4)	2 (+/-2)
	Black crappie	9	22 (+/-29)	22 (+/-29)
Donaldson	White crappie	84	50 (+/-11)	29 (+/-10)
	Black crappie	58	36 (+/-12)	21 (+/-11)
Sub-Total	White crappie	280	21 (+/-5)	10 (+/-4)
	Black crappie	67	34 (+/-11)	21 (+/-10)
Crooked Creek	White crappie	85	21 (+/-9)	5 (+/-5)
	Black crappie	27	44 (+/-19)	11 (+/-12)
Eddy Bay	White crappie	190	21 (+/-6)	6 (+/-3)
	Black crappie	19	26 (+/-20)	5 (+/-10)
Total	White crappie	555	21 (+/-3)	8 (+/-2)
	Black crappie	113	35 (+/-9)	16 (+/-7)

wfdtpntb.d19 wfdtpnb1.d19

Table 39. Mean back-calculated length (in) at each annulus of white crappie including the range in length at each age and the 95% confidence interval of each age group. Otoliths were collected from Lake Barkley (Little River, Donaldson Creek, Crooked Creek, and Eddy Bay) from 23 October-8 November 2019.

Year class	N	Age								
		1	2	3	4	5	6	7	8	
2018	156	3.7								
2017	34	3.4	7.2							
2016	1	5.9	9.8	10.8						
2015	1	4.8	9.0	9.8	11.2					
2014	1	4.2	9.1	10.5	11.9	13.4				
2011	1	4.2	8.8	10.6	11.8	12.6	13.2	13.9	14.5	
Mean	194	3.7	7.4	10.4	11.6	13.0	13.2	13.9	14.5	
Smallest		2.4	5.6	9.8	11.2	12.6	13.2	13.9	14.5	
Largest		7.4	10.4	10.8	11.9	13.4	13.2	13.9	14.5	
Std err		0.1	0.2	0.2	0.2	0.4				
Low 95% CI		3.6	6.9	10.0	11.2	12.2				
High 95% CI		3.8	7.8	10.9	12.0	13.7				

* Intercept = 0.

wfdtnagb.d19

Table 40. Mean back-calculated length (in) at each annulus of black crappie including the range in length at each age and the 95% confidence interval of each age group. Otoliths were collected from Lake Barkley (Little River, Donaldson Creek, Crooked Creek, and Eddy Bay) from 23 October-8 November 2019.

Year class	N	Age				
		1	2	3	4	5
2018	56	3.5				
2017	32	3.6	7.0			
2016	1	4.1	8.7	10.3		
2015	2	4.6	8.8	10.6	11.9	
2014	1	5.0	7.5	9.0	10.1	11.2
Mean	92	3.6	7.2	10.1	11.3	11.2
Smallest		2.7	5.1	9.0	10.1	11.2
Largest		5.4	9.6	11.0	12.3	11.2
Std err		0.1	0.2	0.4	0.6	
Low 95% CI		3.4	6.8	9.3	10.0	
High 95% CI		3.7	7.6	11.0	12.6	

* Intercept = 0.

wfdtnagb.d19

Table 41. Age frequency and CPUE (fish/nn) of white crappie collected during 150 net-nights at Lake Barkley (Little River, Donaldson Creek, Crooked Creek, and Eddy Bay) from 23 October-8 November 2019. Little River and Donaldson Creek also shown separately for historical comparison.

Little River and Donaldson Creek																		
Age	Inch class														Total	%	CPUE	Std err
	2	3	4	5	6	7	8	9	10	11	12	13	14	15				
0	262	506	54	3											825	75	10.3	1.0
1				31	126	59	18	8	7	1					250	23	3.1	0.4
2							2	2	4	13	4	1			26	2	0.3	0.1
3											1				1	0	<0.1	0.0
4										1					1	0	<0.1	0.0
5														1	1	0	<0.1	0.0
Total	262	506	54	34	126	61	20	12	20	7	1	0	1	0	1,104		13.8	1.2
%	24	46	5	3	11	6	2	1	2	1	0	0	0	0				

Lake Barkley Total																		
Age	Inch class														Total	%	CPUE	Std err
	2	3	4	5	6	7	8	9	10	11	12	13	14	15				
0	382	826	93	6											1307	70	8.7	0.8
1				55	240	134	43	16	12	1					501	27	3.3	0.3
2							4	6	7	20	5	3			45	2	0.3	<0.1
3											1				1	0	<0.1	0.0
4										1					1	0	<0.1	0.0
5														1	1	0	<0.1	0.0
8															1	0	<0.1	0.0
Total	382	826	93	61	240	138	49	23	32	8	3	0	1	1	1,857		12.4	0.9
%	21	44	5	3	13	7	3	1	2	0	0	0	0	0				

wfdtpnb1.d19 wfdtnagb.d19

Table 42. Age frequency and CPUE (fish/nn) of black crappie collected during 150 net-nights at Lake Barkley (Little River, Donaldson Creek, Crooked Creek, and Eddy Bay) from 23 October-8 November 2019. Little River and Donaldson Creek also shown separately for historical comparison.

Little River and Donaldson Creek

Age	Inch class												Total	%	CPUE	Std err
	2	3	4	5	6	7	8	9	10	11	12	13				
0	288	226	22	2									538	89	6.7	0.9
1			1	17	12	10	1	1					42	7	0.5	0.1
2					1	2	2	5	10	1			21	3	0.3	0.1
3										1			1	0	<0.1	0.0
4											1	1	2	0	<0.1	0.0
5											1		1	0	<0.1	0.0
Total	288	226	23	19	13	12	3	6	10	2	2	1	605		7.6	1.0
%	48	37	4	3	2	2	0	1	2	0	0	0				

Lake Barkley Total

Age	Inch class												Total	%	CPUE	Std err
	2	3	4	5	6	7	8	9	10	11	12	13				
0	339	346	32	4									721	87	4.8	0.6
1			2	25	23	16	2	1					69	8	0.5	0.1
2					1	4	8	11	12	2			38	5	0.3	0.0
3										2			2	0	<0.1	0.0
4											1	1	2	0	<0.1	0.0
5											1		1	0	<0.1	0.0
Total	339	346	34	29	24	20	10	12	12	4	2	1	832		5.5	0.6
%	41	42	4	3	3	2	1	1	1	0	0	0				

wfdtpnb1.d19 wfdtnagb.d19

Table 43. Lake specific assessment for crappie collected at Lake Barkley (Little River and Donaldson Creek) from 2010-2019. This table includes the parameter estimates and the individual scores as well as the total scores and assessment ratings. The final columns list the instantaneous mortality (Z) and annual mortality (A).

Year	CPUE age-1 and older	CPUE age-1	CPUE age-0	CPUE ≥ 8.0 in	Mean length age-2 at capture	*Mean length age-2 at capture	Total score	Assessment rating	Z	A
2019	4.3	3.6	17.0	1.0	9.7	10.0			1.561	79.0
Score	2	2	4	1	1		10	F		
2018	2.3	2.0	7.6	1.3	11.5	11.5			0.849	57.2
Score	1	2	4	1	4		12	F		
2017	3.1	1.7	7.9	2.4	10.7	10.5			0.949	61.0
Score	1	2	4	1	3		11	F		
2016	9.7	6.7	1.5	4.9	10.3	10.0			1.472	77.0
Score	4	4	1	3	2		14	G		
2015	14.5	12.2	5.0	5.1	10.5	10.1			0.680	49.3
Score	4	4	3	3	3		17	G		
2014	3.5	3.0	9.2	1.9	11.2	11.5			0.418	34.2
Score	1	2	4	1	4		12	F		
2013	3.0	0.4	2.8	3.0	10.9	11.0			0.788	54.5
Score	1	1	2	2	4		10	F		
2012	6.7	2.0	0.4	6.3	10.5	10.5			0.857	57.6
Score	2	2	1	4	3		12	F		
2011	7.4	6.8	10.0	3.6	10.9	10.4			1.188	69.5
Score	3	4	4	2	4		17	G		
2010	7.2	6.3	23.3	5.2	10.9	10.5			1.209	70.1
Score	3	4	4	3	4		18	E		
Average	6.2	4.5	8.5	3.5	10.7		13.3		0.997	60.94

Rating

- 1 - 7 = Poor (P)
- 8 - 12 = Fair (F)
- 13 - 17 = Good (G)
- 18 - 20 = Excellent (E)

*Mean length calculated using a weighted average applied to the entire fall trapnet sample (Revised_Barkley_Crappie_Database.xlsx)

Table 44. Length frequency and CPUE (fish/hr) of channel, blue, and flathead catfish collected from Lake Barkley in June 2019 using low pulse (15 PPS) electrofishing along the main lake river channel. A chase boat was used during a total of 3.58 hours of sampling consisting of 43- 300-second runs.

Species	Inch class																																	Total	CPUE	Std err		
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	36	39	44					
Blue catfish	3	35	21	60	62	107	169	118	71	52	30	42	43	20	10	3	5	1	1	3	3		1												861	250.3	30.6	
Channel catfish	1	2	23	18	9	3	11	5	6	6																									84	24.4	5.1	
Flathead catfish			1									1	1	1	1		1		1	1	1	2		1	2					1	2	1	1	1	1	20	5.2	1.6

wfdcatb.d19

Table 45. Relative weight (Wr) of each length group of blue, channel, and flathead catfish collected from Lake Barkley during June 2019. Fish were collected using low pulse (15 PPS) electrofishing.

Species	Length group											
	12.0-19.9 in			20.0-29.9 in			≥30.0 in			Total		
Blue catfish	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err
		183	97	1	14	101	4	1	84		198	97

Channel catfish	Length group											
	11.0-15.9 in			16.0-23.9 in			≥24.0 in			Total		
Channel catfish	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err
		7	97	4							7	97

Flathead catfish	Length group											
	12.0-19.9 in			20.0-29.9 in			≥30.0 in			Total		
Flathead catfish	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err	N	Wr	Std err
		3	91	2	6	94	3	7	114	4	16	102

wfdcatb.d19

Table 46. Age frequency and CPUE (fish/hr) of blue catfish collected from low pulse (15 PPS) electrofishing at Lake Barkley in June 2019. Age and growth data from 2019 was used to calculate the appropriate values.

Age	Inch class																				Total	%	CPUE	Std err					
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23					24	26	32		
1	3	35	11																					49	6	13.7	4.4		
2			11	45	62	24	14																		156	18	43.5	8.0	
3				15		83	155	89	39	5																386	45	107.7	14.7
4								30	26	36	14	11	4													121	14	33.8	4.5
5									6	10	14	21	27	2		2										82	9	22.9	3.9
6											3	5	4	2												14	2	3.9	0.7
7												5	4	8	8		1									26	3	7.3	1.7
8													4	8	1	2	3	1	1	2						22	3	6.1	1.4
9															1		1		1	2						5	1	1.4	0.4
10																					3					3	0	0.8	0.5
12																							1			1	0	0.3	0.3
13																								1		1	0	0.3	0.3
Total	3	35	22	60	62	107	169	119	71	51	31	42	43	20	10	4	5	1	2	4	3	1	1	866		250.3	30.6		
%	0	4	3	7	7	12	20	14	8	6	4	5	5	2	1	0	1	0	0	0	0	0	0						

wfdcatb.d19 and wfdcatag.d19

Table 47. Species composition, relative abundance, and CPUE (fish/hr) of largemouth bass collected during diurnal electrofishing at Lake Beshear during 2019.

Season	Inch class																				Total	CPUE	Std err	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21				
Spring			1	3	4	2		3	5	1	3	1	7	4	10	4	4	16	12	9	3	92	36.8	5.0
Fall		2	37	53	46	20	10	30	16	7	10	6	3	2	1		4	3				250	100.0	14.7

wfdpsdlb.d19 and wfdwrlb.d19

Table 48. Spring diurnal electrofishing CPUE (fish/hr) of each length group of largemouth bass collected at Lake Beshear during April or May of 2010 to 2019.

Year	Mean length age-3 at capture	*Mean length age-3 at capture	Age-1		Length group												Total		PSD	RSD ₁₅
			CPUE	Std err	<8.0 in	≥12.0 in	12.0-14.9 in	≥15.0 in	≥18.0 in	≥20.0 in	CPUE	Std err								
2019	13.8	13.8	4.0	2.2	4.0	2.2	28.0	4.8	4.8	1.4	23.2	3.7	16.0	3.9	4.8	1.0	36.8	5.0	85	71
2018	13.8	13.8	6.0	1.3	6.8	0.8	43.6	2.7	5.6	1.0	38.0	3.0	24.4	2.0	8.0	1.8	59.6	4.6	83	72
2017 ^A	13.8	13.8	6.4	1.3	20.0	3.9	43.6	3.1	12.0	2.4	31.6	4.6	19.2	4.2	4.8	2.4	72.8	5.9	69	50
2016 ^{AB}	13.8	13.8	30.4	4.0	16.4	3.4	67.2	8.3	10.8	2.3	56.4	7.0	32.8	4.8	5.6	1.2	102.8	6.5	78	65
2015 ^B	13.8	13.8	4.4	1.5	4.4	1.5	78.4	4.5	17.6	3.5	60.8	3.4	28.0	3.0	8.0	0.6	91.6	3.9	90	70
2014 ^A	13.3	13.4	1.9	0.9	3.2	1.4	61.6	5.6	18.0	2.3	43.6	6.1	20.4	2.3	4.4	1.2	83.6	6.8	77	54
2013 ^A	13.3	13.4	33.8	9.6	37.5	10.3	63.0	11.8	18.0	5.5	45.0	7.2	23.5	5.6	6.0	1.4	127.0	18.4	70	50
2012 ^A	13.3	13.4	27.6	5.5	34.4	4.9	46.8	3.6	8.8	2.2	38.0	4.6	18.4	1.8	4.4	1.0	114.8	7.0	58	47
2011	13.3	13.4	11.7	2.2	13.5	1.7	65.0	9.2	17.5	4.8	47.5	5.9	23.5	3.0	5.5	1.7	92.5	10.3	82	60
2010 ^A	13.8	13.9	22.3	4.9	9.0	1.7	51.0	6.9	11.3	1.3	39.7	6.1	14.0	3.8	3.7	1.9	82.7	15.7	69	54
Average	13.6	13.7	14.9		14.9		54.8		12.4		42.4		22.0		5.5		86.4		75.1	57.9
LBFMP	≥ 12.0 in		≥ 10		≥ 45		≥ 15		≥ 30		≥ 3								55 - 75	20 - 40

(Lake Beshear Bass Database.xls)

Data for 1985-2009 is listed in previous year reports.

^A age and growth data was not collected. Previous year data used for age estimates.

^B age and growth data was collected in the Fall. Mean length age-3 was calculated from back calculations. Spring CPUE age-1 was determined from back-calculations and extrapolation with spring data. Mortality was determined from fall age frequency data.

LBFMP - Lake Beshear Fish Management Plan objective goal.

*mean length calculated using a weighted average applied to entire catch

Table 49. Lake specific assessment for largemouth bass collected at Lake Beshear from 2010-2019. This table includes the parameter estimates and the individual score as well as the total score and assessment rating. The final two columns list the instantaneous mortality (Z) and annual mortality (A).

Year	Mean length age-3 at capture	*Mean length age-3 at capture	CPUE age-1	Length group			Total score	Assessment rating	Z	A
				12.0-14.9 in CPUE	>15.0 in CPUE	>20.0 in CPUE				
2019	13.8	13.8	4	4.8	23.2	4.8				
Score	3		2	1	1	3	10	F		
2018	13.8	13.8	6.0	5.6	38.0	8				
Score	3		3	1	3	4	14	G		
2017	13.8	13.8	6.4	12.0	31.6	4.8			0.349	29.4
Score	3		3	3	2	3	14	G		
2016	13.8	13.8	30.4	10.8	56.4	5.6			0.423	34.5
Score	3		4	2	4	4	17	E		
2015 ^B	13.8	13.8	4.4	17.6	60.8	8.0			0.457	36.7
Score	3		2	4	4	4	17	E		
2014 ^A	13.3	13.4	1.9	18.0	43.6	4.4			0.145	13.5
Score	3		1	4	4	3	15	G		
2013 ^A	13.3	13.4	33.8	18.0	45.0	6.0			0.355	29.9
Score	3		4	4	4	4	19	E		
2012 ^A	13.3	13.4	27.6	8.8	38.0	4.4			0.291	25.2
Score	3		4	2	3	3	15	G		
2011	13.3	13.4	11.7	17.5	47.5	5.5			0.194	17.6
Score	3		3	4	4	4	18	G		
2010 ^A	13.8	13.9	22.3	11.3	39.7	3.7			0.297	25.7
Score	3		4	3	3	2	15	G		
Average	13.6	13.7	14.9	12.4	42.4	5.5	15.4		0.314	26.563

Data from 1985 to 2009 is listed in previous year reports.

^A age and growth data was not collected. Previous year data used for age estimates.

^B age and growth data was collected in the Fall. Mean length age-3 was calculated from back calculations. Spring CPUE age-1 was determined from back-calculations and extrapolation with spring data. Mortality was determined from fall age frequency data.

Assessment Quartiles were updated in 2016

Rating

- 1-7 = Poor (P)
- 8-11 = Fair (F)
- 12-16 = Good (G)
- 17-20 = Excellent (E)

Lake Beshear Bass Data Base

Table 50. Age-0 CPUE (fish/hr) and mean length (in) of largemouth bass collected in the fall, and CPUE of age-1 largemouth bass collected the following spring during diurnal electrofishing at Lake Beshear.

Year class	Age 0 ^A		Age 0 ^A		Age 0 \geq 5.0 in ^A		Age 1 ^B	
	Mean length	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
2019	4.7	0.1	63.2	9.9	26.4	10.3		
2018	5.3	0.1	50.7	4.3	29.6		4.0	2.2
2017	4.1	0.1	38.0	2.9	6.5	1.9	6.0	1.3
2016	4.4	0.1	50.5	6.0	10.0	4.0	6.4	1.3
2015	3.9	0.1	34.5	7.0	3.5	1.5	30.4	4.0
2014	4.8	0.1	24.8	4.4	11.0	1.9	4.4	1.5
2013	4.1	0.1	25.0	7.0	4.5	2.6	1.9	0.9
2012	6.3	0.1	34.0	8.8	33.2	7.4	33.8	9.6
2011	5.0	0.1	41.6	14.8	23.6	7.6	27.6	5.5
2010	4.9	0.1	54.0	4.6	22.0	4.5	11.7	2.2
2009	3.6	0.1	24.8	5.3	2.0	0.6	22.3	4.9
Average	4.6		37.8		14.6		14.9	

^A Data collected by fall (October) diurnal electrofishing. Mean lengths were determined by analysis of otoliths removed from a subsample of LMB <10.0 in, which were extrapolated to the entire catch of the fall sample, and length frequencies.

^B Data collected during the following spring (April/May) diurnal electrofishing sample.

WFDWRLB.Dxx, WFDWRAGB.Dxx, WFDPSDLB.Dxx

Table 51. Species composition, relative abundance, and CPUE (fish/hr) of fish collected during 1.0 hour (4- 900s-runs) of diurnal electrofishing at Lake Pennyrile on 3 May, 2019.

Species	Inch class																Total	CPUE	Std err
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	18				
Largemouth bass				3	4	2	1	3	1	4	1	1	3	1	1	25	25.0	7.9	
Bluegill	2	15	33	13	8	16	21	10								118	118.0	15.2	
Redear sunfish			4	6	4	11	10	9	6							50	50.0	6.2	
Longear sunfish		4	9	6	3	3										25	25.0	4.4	
Yellow bullhead								2	1							3	3.0	1.0	
Warmouth		1	1	3	7	3	3									18	18.0	4.2	

wfdpsdp.d19

Table 52. Spring, diurnal electrofishing CPUE (fish/hr) of each length group of largemouth bass collected at Pennyrile Lake from 2010-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	Std err
	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err		
2019	10.0	2.0	9.0	5.3	5.0	3.0	1.0	1.0			25.0	7.9
2018	29.0	5.0	63.0	16.8	7.0	2.5	2.0	2.0	1.0	1.0	101.0	21.3
2017	35.0	11.0	67.0	9.7	4.0	1.6	5.0	1.9	1.0	1.0	111.0	18.4
2016	44.0	9.7	62.0	6.2	13.0	3.0	3.0	1.9	1.0	1.0	122.0	10.0
2015	44.0	3.6	68.8	8.1	8.8	2.9	3.2	1.5	0.8	0.8	124.8	10.6
2014	17.0	3.0	36.0	5.2	7.0	3.0	1.0	1.0			61.0	8.2
2013	63.0	11.8	48.0	4.9	11.0	3.0	2.0	1.2	1.0	1.0	124.0	12.3
2012*												
2011	32.0	10.4	68.0	7.7	12.0	2.5	1.6	1.0	0.8	0.8	113.6	18.3
2010	46.4	9.3	64.3	10.7	12.5	3.3	7.1	1.6	4.5	1.8	130.4	17.0
Mean	35.6		54.0		8.9		2.9		1.4		101.4	

wfdpsdp.dxx

Data from 1990 to 2009 is listed in previous year reports.

*Did not sample

Table 53. Spring electrofishing CPUE (fish/hr) for each length group of bluegill and redear sunfish collected at Lake Pennyrite during May from 2010-2019.

Species	Year	Length group								Total	
		<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		CPUE	Std err
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err		
Bluegill	2019	17.0	5.3	54.0	3.5	37.0	7.9	10.0	4.2	118.0	15.2
	2018	35.0	12.8	94.0	20.8	134.0	9.0	27.0	7.7	290.0	35.2
	2017	6.0	2.58	87.0	13.3	42.0	22.5	19.0	9.2	154.0	35.4
	2016	45.0	16.4	65.0	3.4	51.0	12.3	41.0	18.4	202.0	49.1
	2015	30.4	3.0	84.0	11.4	64.8	13.9	32.0	5.7	211.2	
	2014			12.0	4.3	15.0	6.6			27.0	7.9
	2013*	1.0	1.0	18.0	5.8	21.0	6.2			40.0	12.1
	2012	Did Not Sample									
	2011	1.6	1.0	36.8	20.2	41.6	14.2	5.6	1.6	85.6	35.7
	2010	3.6	1.9	81.3	17.2	40.2	6.2	6.3	2.7	131.3	17.0
	Mean	17.4		59.1		49.6		20.1		139.9	
Redear sunfish	Year	Length group								Total	
		<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		CPUE	Std err
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err		
	2019			14.0	1.2	21.0	2.5	15.0	7.2	50.0	6.2
	2018	2.0	1.2	33.0	12.8	24.0	5.4	27.0	4.1	86.0	19.1
	2017			15.0	3.0	14.0	10.4	25.0	18.4	54.0	30.4
	2016			16.0	5.9	15.0	3.0	30.0	7.4	61.0	15.8
	2015	0.8	0.8	12.0	2.5	4.8	1.5	32.8	15.3	50.4	
	2014			8.0	5.4	17.0	5.7	8.0	3.7	33.0	12.5
	2013*			4.0	2.3	9.0	5.5	12.0	2.8	25.0	6.6
	2012	Did Not Sample									
	2011			9.6	4.5	17.6	8.1	28.0	11.9	55.2	21.4
	2010			3.6	1.9	8.9	2.3	17.9	5.0	30.4	5.4
	Mean	1.4		12.8		14.6		21.7		49.4	

wfdpsdp.dxx

Data from 1990 to 2009 is listed in previous year reports.

*2013 sample collected in June due to water conditions at normal sample time in May

Table 54. PSD and RSD values obtained for largemouth bass, bluegill and redear sunfish collected during 1.0 hour of diurnal electrofishing (4 - 900s-runs) at Lake Pennyrite on 3 May 2019. 95% confidence intervals are in parentheses.

Species	N	PSD	RSD*
Largemouth bass	15	40 (+/-26)	7 (+/-13)
Bluegill	101	47 (+/-10)	10 (+/-6)
Redear sunfish	46	54 (+/-15)	13 (+/-10)

* Largemouth = RSD₁₅, Bluegill = RSD₈, Redear sunfish = RSD₉.
wfdpsdp.d19

Table 55. Age frequency and CPUE (fish/hr) of largemouth bass collected during diurnal electrofishing at Lake Pennyrite on 3 May, 2019.

Age	Inch class												Total	%	CPUE	Std err	
	4	5	6	7	8	9	10	11	12	13	14	18					
1	3	4	2											9	38	9.0	1.9
2				1	3									4	17	4.0	4.0
3							2							2	8	2.4	1.4
4							1	1						2	8	1.8	0.8
5									1	1				2	8	2.0	1.6
6										1	1			2	8	2.0	1.3
7							1			1				2	8	1.8	0.7
9													1	1	4	1.0	1.0
Total	3	4	2	1	3	0	4	1	1	3	1	1	24	100	25.0	7.9	
%	13	17	8	4	13	0	17	4	4	13	4	4	100				

wfdpsdp.d19

Table 56. Lake specific assessment for largemouth bass collected at Pennyrile Lake from 2010-2019. This table includes the parameter estimates and the individual scores as well as the total scores and assessment ratings. The final columns list the instantaneous mortality (Z) and annual mortality (A) in years when age and growth was collected.

Year	Age-1 CPUE	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Mean length	Total score	Assessment rating	Z	A
					age-3 at capture				
2019	9.0	5.0	1.0	0.0	10.5				
Score	1	1	1	1	2	6	P	0.164	15.1
2018	29.0	7.0	2.0	1.0	11.7				
Score	1	1	2	4	4	12	F		
2017	28.0	4.0	5.0	1.0	11.7				
Score	1	1	4	4	4	14	G		
2016	38.0	13.0	3.0	1.0	11.7				
Score	2	2	2	4	4	14	G		
2015	36.0	8.8	3.2	0.8	11.7				
Score	2	1	2	4	4	13	G		
2014	19.8	7.0	1.0	0.0	11.7				
Score	1	1	1	1	4	8	P		
2013	10.6	11.0	2.0	1.0	11.7				
Score	1	2	2	4	4	13	G		
2012	Did not sample								
Score									
2011	31.0	12.0	1.6	0.8	11.7			0.488	38.6
Score	1	2	1	4	4	12	F		
2010	36.1	12.3	7.1	4.5	0.0				
Score	2	2	4	4	1	13	G		
Average	28.4	8.6	3.0	1.5	11.5				

Rating

- 1 - 7 = Poor (P)
- 8 - 12 = Fair (F)
- 13 - 17 = Good (G)
- 18 - 20 = Excellent (E)

Table 57. Species composition, relative abundance, and CPUE (fish/hr) of fish collected during 1.0 hour (4- 900s-runs) of diurnal electrofishing at the Lake Blythe on 13 May 2019.

Species	Inch class																					Total	CPUE	Std err
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Golden shiner					1	1	1															3	3.0	3.0
Channel catfish											1		1	15	13	2	2	1	2			37	37.0	8.5
Warmouth		1			2	3	1															7	7.0	3.4
Bluegill	1	18	79	85	29	24	2															238	238.0	32.4
Longear sunfish		4	19	25	5																	53	53.0	5.7
Redear sunfish			4	1	10	16	17		1													49	49.0	4.4
Largemouth bass				9	10	10	10	8	12	15	10	6	3			1	4	1	5	4	2	110	110.0	22.1
White crappie							18	5	3						1							27	27.0	17.7
Black crappie								2		1												3	3.0	1.9

wfdpsdbl.d19

Table 58. Spring electrofishing CPUE (fish/hr) for each length group of sportfish collected at Lake Blythe in 2019 and 2006.

Species	Year	Length group									
		<8.0 in		8.0-11.9 in		12.0-14.9 in		>12.0 in		Total	
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
Largemouth bass	2019	39.0	10.1	45.0	11.7	9.0	5.7	26.0	10.4	110.0	22.1
	2006	67.0	18.4	74.0	13.1	1.0	1.0	3.0	1.9	144.0	28.8
Bluegill	Length group										
		<3.0 in		3.0-5.9 in		6.0-7.9 in		>8.0 in		Total	
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
Bluegill	2019	19.0	8.5	193.0	18.4	26.0	7.4			238.0	32.4
	2006	8.0	6.7	45.0	13.6	36.0	9.5	2.0	2.0	91.0	24.0
Redear sunfish	Length group										
		<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		Total	
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
Redear sunfish	2019			15.0	3.4	33.0	1.9	1.0	1.0	49.0	4.4
	2006			11.0	3.0	17.0	6.4	3.0	1.9	31.0	8.7
White crappie	Length group										
		≥8.0 in		≥10.0 in						Total	
		CPUE	Std err	CPUE	Std err					CPUE	Std err
White crappie	2019	9.0	1.0	1.0	1.0					27.0	17.7
	2006	6.0	1.2							6.0	1.2
Black crappie	Length group										
		≥8.0 in		≥10.0 in						Total	
		CPUE	Std err	CPUE	Std err					CPUE	Std err
Black crappie	2019	3.0	1.9	1.0	1.0					3.0	1.9
	2006	2.0	1.2							2.0	1.2
Channel catfish	Length group										
		<12.0 in		≥12.0 in		≥15.0 in		≥20.0 in		Total	
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
Channel catfish	2019			37.0	8.5	35.0	6.8	2.0	1.2	37.0	8.5
	2006			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

wfdpsdbl.d19

Table 59. PSD and RSD values obtained for sportfish collected during 1.0 hour of diurnal electrofishing (4- 900s-runs) at Lake Blythe on 13 May 2019. 95% confidence intervals are in parentheses.

Species	N	PSD	RSD*
Largemouth bass	71	37 (+/-11)	24 (+/-10)
Bluegill	219	12 (+/-4)	
Redear sunfish	45	26 (+/-15)	2 (+/-4)
White crappie	27	33 (+/-18)	4 (+/-7)
Black crappie	3	100 (+/-0)	33 (+/-65)
Channel catfish	37	54 (+/-16.3)	

* Largemouth = RSD₁₅, Bluegill = RSD₈, Channel Catfish = RSD₈, Crappie =RSD₁₀, Redear =RSD₉.

wfdpsdbl.d19

Table 60. Age frequency and CPUE (fish/hr) of white crappie collected during diurnal electrofishing at Lake Blythe on 13 May, 2019.

Age	Inch class				Total	%	CPUE	Std err
	7	8	9	15				
3	14	1	2		17	61	17.2	14.5
4			1		1	4	0.8	0.3
5	4		1		5	18	4.4	3.7
8		4			4	14	3.8	0.8
9				1	1	4	1.0	1.0
Total	18	5	4	1	28	82	27.0	17.7
%	64	18	14	4	100			

wfdpsdbl.d19

Table 61. Species composition, relative abundance, and CPUE (fish/hr) of fish collected during 0.5 hour (2- 900s-runs) of diurnal electrofishing at the Ballard WMA gravel pit pond on 8 May 2019.

Species	Inch class																Total	CPUE	Std err
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	20			
Largemouth bass		2		5	20	12	7	6		2	14	9	3	1			81	162.0	62.0
Bluegill	2	14	19	7	6	3		4									55	110.0	2.0
White crappie										2	1	1					4	8.0	8.0
Warmouth							2										2	4.0	0.0
Channel catfish																1	1	2.0	2.0

Ballard.d19

Table 62. Spring electrofishing CPUE (fish/hr) for each length group of sportfish collected at the Ballard WMA gravel pit pond 8 May 2019.

Species	Year	Length group									
		<8.0 in		8.0-11.9 in		12.0-14.9 in		>12.0 in		Total	
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
Largemouth bass	2019	92.0	48.0	44.0	8.0	26.0	6.0	26.0	6.0	162.0	62.0

	Year	Length group								Total	
		<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		CPUE	Std err
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
Bluegill	2019	32.0	8.0	64.0	16.0	6.0	2.0	8.0	4.0	110.0	2.0

	Year	Length group				Total	
		≥8.0 in		≥10.0 in		CPUE	Std err
		CPUE	Std err	CPUE	Std err	CPUE	Std err
White crappie	2019	8.0	8.0	8.0	8.0	8.0	8.0

	Year	Length group								Total	
		<12.0 in		≥12.0 in		≥15.0 in		≥20.0 in		CPUE	Std err
		CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err	CPUE	Std err
Channel catfish	2019			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

Ballard.d19

Table 63. PSD and RSD values obtained for sportfish collected during 0.5 hour of diurnal electrofishing (2 - 900s-runs) at the Ballard WMA gravel pit pond on 8 May 2019. 95% confidence intervals are in parentheses.

Species	N	PSD	RSD*
Largemouth bass	81	37 (+/-12)	
Bluegill	55	18 (+/-12)	10 (+/-10)
White Crappie	4	100 (+/-0)	100 (+/-0)
Channel Catfish	1	100	

* Largemouth = RSD₁₅, Bluegill = RSD₈, Channel catfish = RSD₈, White crappie = RSD₁₀.

Ballard.d19

Table 64. Age frequency and CPUE (fish/hr) of largemouth bass collected during diurnal electrofishing at the Ballard WMA gravel pit pond on 8 May, 2019.

Age	Inch class								Total	%	CPUE	Std err
	4	5	6	7	8	9	10	11				
1	5	20	12	7	6				50	75	100.0	52.0
2							1	4	5	7	9.0	1.0
3							1	11	12	18	23.0	7.0
Total	5	20	12	7	6	0	2	15	67	100	162.0	62.0
%	1	4	3	2	1	0	0	3	100			

Ballard.d19

NORTHWESTERN FISHERY DISTRICT

Project 1: Lake and Tailwater Fishery Surveys

FINDINGS

Table 1 presents a summary of conditions encountered while sampling at state-owned or managed lakes and ACOE reservoirs during the 2019 field season.

Nolin River Lake

Black bass Sampling

Diurnal boat electrofishing to sample the black bass population at Nolin River Lake was conducted on 17 April 2019. Due to poor weather and water conditions, only two samples were conducted. All bass on the main lake had spawned and moved offshore. One sample in the back of Barton's Run yielded decent results but similar locations/conditions were unavailable; therefore, sampling was concluded after only 1.0 hour of sampling. Tables 2 and 3 present the basic sampling results. Other standard tables (CPUE by length group and the population assessment) were not completed due to low sample size.

Crappie Sampling

Trap netting to assess the crappie populations at Nolin River Lake was conducted during two consecutive weeks, October 28-November 1 and November 4-6 (Tables 4-9). Low catch rates resulting from stable weather/water conditions during the first week necessitated a second week of sampling. A total of 953 crappie (861 white crappie, 90%) were collected during 75 net-nights of sampling for a total CPUE of 12.7 fish/nn. Weights were taken and otoliths removed from a representative sample of each inch class. All catch rates used in the population assessment are similar to previous samples, and mostly in the upper range of expected values. Length at age data is highly variable, especially for age-1 fish (Table 8). Age-1 fish comprise approximately 81% of crappie collected in 2019. Growth rate is similar to previous collections and among the highest observed since 2001. Body condition (92-98) is very good for all three length groups displayed (Table 6) and is evident when handling fish. The crappie population at Nolin is stable and performing even better than the data acknowledges. While the 2019 sample is not composed of many larger fish (> 10.0 in), anecdotal information from anglers describes a fast-growing population with good numbers of fish greater than ten inches available for harvest.

Dissolved Oxygen – Temperature Profiles

Profiles were completed 10 July 2019 (Table 10) to document water temperature and dissolved oxygen levels at Nolin River Lake. Profiles were conducted at four sites (Dam (site 1), Briar Creek (site 2), Ponderosa (site 3), Barton's Run (site 4)) along the main channel of the lake.

Profiles have been conducted intermittently since 2011. Recent interest in following the walleye population and associated water quality parameters more closely will require profiles to be taken at more regular intervals moving forward. Plans for 2020 include taking profiles during June, July, August, and September.

Rough River Lake

Black bass Sampling

Diurnal boat electrofishing to sample the black bass population at Rough River Lake was conducted in April 2019 (Tables 11-14). Data are presented in a slightly different fashion than in previous annual reports. Previous samples were categorized as "Upper", "Mid", or "Lower" lake. After deliberation it was determined that previous sample locations did not fit well into those categories and a change was warranted. Beginning in 2019, and moving forward, electrofishing samples will be separated by North and South Forks.

Catch rates are consistent with previous samples. Total CPUE for 2019 is higher than any previous collection and can be attributed to increased catch of fish less than 8.0 in. Catch rate for fish ≥ 20.0 in is down from the previous three samples but within the range of observed values through time. This could be due to sampling inefficiency, conditions, or population changes. The largemouth bass population at Rough River Lake is relatively stable and performing consistently (Assessment rating = Good). The black bass population will be monitored more frequently moving forward to evaluate potential negative influences of tournaments.

Hybrid Striped Bass Sampling

Gill netting to assess the hybrid striped bass population was conducted during the last week of October and first week of November (Tables 15-19). Northwestern Fisheries District staff fished sampling nets on the South Fork and the Urban Fisheries Research Section fished sampling nets on the North Fork. A total of 423 hybrids were collected in 14 net-nights (30.2 fish/nn) over the two-week sampling period.

Catch rates in 2019 are down across the board, and represent the lowest or nearly the lowest, values ever observed (Table 19). The catch rate for age-1 and greater and specifically for age-1 fish decreased dramatically from the 2018 observation. Catch rate for fish ≥ 15.0 in also decreased which is the opposite of what was expected due to the record high catch rate for age-1 fish in 2018. Based on the statewide assessment, the hybrid population scored the lowest it ever has, although it remains "Good".

The mean length at age 2+ at capture dropped a bit compared with recent samples but is still well within the expected range (Table 19). Growth remains somewhat variable, but it appears overall growth is slowing a bit over the last six years or so (Table 17). The age composition of the hybrid population in 2019 continues to differ from what has been typically found in previous years (Table 18). In 2018, age-0 (31.7%) and age-1 (59.8%) fish accounted for 91.5% of the population. In 2019 age-0 fish accounted for 58.3% of the sample and age-1 fish accounted for only 10.7% the sample. This trend for higher catch of age-0 fish has been ongoing since 2017. Previous samples collected age-0 fish at a much lower rate, typically $\leq 20\%$. In previous surveys, a higher percentage of age-2 to age-5 fish have been present in the population (50-65%). However, in samples (2017-2019), age-2 and older fish have made up 31% or less of the catch and as little as 7.9% of the catch in 2018. Mortality estimates for 2019 and 2018 are the highest recorded for the past two decades (Table 19). This is corroborated with creel data showing more than a threefold increase in the total number of hybrids caught and harvested from the 2005 to the 2019 survey (Table 34).

On average, body condition decreases with size (Table 16). There has been an abundance of forage available year-round over the past decade, which should preclude high relative weights for the larger fish (≥ 15.0 in) which are feeding exclusively on shad. This leads to the hypothesis that poor water quality conditions (temperature and dissolved oxygen; Tables 23-24) leads to enough stress during the summer months to reduce foraging to the point that fish are losing weight. Stress due to high temperature and low D.O. will affect larger fish to a greater extent. As water quality improves in the early fall fish resume feeding and gain back some, but not all, of the weight lost during the stressful period. The extent of the poor water quality is evident when Temp/D.O. profile data is color coded (Tables 22-25).

At present there does not appear to be anything that can be done to reduce or alleviate this decline in water quality. Perhaps, if the new outlet tower scheduled for construction is equipped with multi-stage withdrawal gates, we may be able to work with the United States Army Corps of Engineers (USACE) to use the lower gates for summer discharges. This will be discussed with the USACE during the construction and operational procedure revision phase of their project.

Gill netting as part of the project to detect differences in survival and growth rate of reciprocal and original crosses was completed in 2019. The research showed no significant difference in performance of the two crosses at early ages. NWFD will continue to monitor growth and longevity of the crosses through regularly scheduled standard sampling and alternative data collection methods (angler caught fish, short net sets while trap netting). Reciprocal cross hybrid striped bass will be stocking moving forward until data shows a need for change. The hybrid striped bass population continues to be relatively stable and thriving despite increased catch/harvest and poor summer water quality.

In response to frequent angler complaints about not being able to find or catch fish during the summer months, a radio telemetry project was initiated in 2018 to determine summer locations and patterns. Hybrid striped bass were collected for tagging via electrofishing from the upper lake/river area (Eveleigh to Adkins Camp boat ramps). Forty hybrid striped bass from 15.8-22.3 in were surgically implanted with VEMCO V13T transmitters (13x43mm, 12.0 g air). Twelve VEMCO VR2W receivers were deployed throughout the lake on May 11, 2018. Receivers will remain in place through 2020. All data will be compiled, analyzed and reported in 2020.

Channel Catfish Sampling

Gill netting to assess the channel catfish population was conducted concurrently with hybrid striped bass sampling. A total of 92 channel catfish were collected over 14 net-nights for a CPUE of 6.6 fish per net-night (Table 20). The catch rate and length distribution documented in 2019 is similar to previous collections. Weights were recorded for each catfish sampled and indicate condition (W_r) is good and similar to previous collections (Table 21).

Dissolved Oxygen – Temperature Profiles

Dissolved oxygen and temperature profiles were conducted June – September in 2019 (Tables 22-25) to document seasonal changes in water temperature and dissolved oxygen levels throughout the water column. Profiles were conducted at five sites (upper, middle, and lower South Fork and middle and lower North Fork) along the main channel of the lake. Profiles are color coded by water quality category taken from Kilpatrick 2003 (M.S. thesis, Virginia Tech). Blue indicates “Optimal” conditions where water temperature is between 70.7 and 77.9° F and dissolved oxygen is ≥ 4.5 ppm. Green indicates “Sub-optimal” condition where water temperature is < 70.7 or between 77.9 and 80.6° F and dissolved oxygen is between 2.0 and 4.4 ppm. Orange indicates “Poor” conditions where water temperature is greater than 80.6° F and dissolved oxygen is less than 2.0 ppm.

Profiles have been conducted since 2013 as part of ongoing projects documenting survival and growth of stocked original and reciprocal hybrid striped bass, and documenting seasonal movement and habitat use with radio telemetry equipment. Profiles are highly variable relative to weather and water conditions. Historically, June profiles show some amount of sub-optimal conditions, July profiles show the entire water column is “poor” habitat, August is highly variable and can provide either some or zero “sub-optimal” habitat, and September has generally rebounded to hold some of each category. There seems to be little doubt fish are significantly stressed during July/August of each year. However, creel data shows that anglers continue to fish for and catch fish during that period with an estimated 3,793 hybrids caught during July and 2,000 fish harvested. Fish caught during July range from 10.0 to 23.0 inches in length with the majority of fish caught and/or harvested (61.3%) being less than 15.0 in.

D.O./temp profiles will continue to be conducted through 2020.

Creel Survey

A random, stratified, roving, creel survey scheduled for 16 days per month was conducted at Rough River Lake from April 01 to October 31, 2019 to estimate angling pressure and angler catch/harvest statistics (Tables 26-35). The survey did not begin until April 8th due to lake conditions. For survey purposes, the lake is divided into two sections, North Fork and South Fork, with one section being surveyed per day (6-hour time period) during either a morning or afternoon time period. Each section is further divided into three equal subsections that the clerk spends an equal amount of time in (2 hrs), while interviewing and progressively counting anglers in each. Creel interviews and angler attitude surveys were collected using an iPad with GPS capability in 2019, which allowed for the collection of coordinates associated with each interview (Figures 1 and 2). Figure 1 provides points of reference for each angler creel interview conducted in 2019.

The results of recent creel surveys conducted at Rough River Lake (2010 and 2018), described a decline in the estimated angling effort from each preceding survey with the high in 2005. However, the 2019 survey revealed an increase in pressure to 25.72 man-hours per acre (man-hr/ac) from the 22.95 man-hr/ac in 2018 and 24.50 man-hr/ac in 2010 (Table 26).

Additionally, 2019 estimates for the total number of fish caught (477,916) and harvested (158,107) were again increases from 2018 (371,981 fish caught and 133,895 harvested) which was a substantial increase from 2010

(213,787 fish caught and 68,683 harvested). There was an estimated 99,037 pounds of fish harvested in 2019, up slightly from 2018, and more than double estimates from 2010 and 2005. Overall catch rate and harvest rate (fish/hr) also increased from 2018, which was again more than double estimates from 2010 and 2005. Black bass were the most sought-after species in 2019, as they have been in every survey, with an estimated 13.37 man-hours expended per acre by black bass anglers (Table 27). Black bass are followed by crappie with 6.87 man-hr/ac, hybrid striped bass at 1.83 man-hr/ac, panfish at 1.46 man-hr/ac, and catfish at 0.72 man-hr/ac. Those anglers indicating they were fishing for “Anything” expended 1.48 man-hr/ac.

In 2019, an estimated 22.98 largemouth bass were caught and 1.92 largemouth bass were harvested per acre with harvested fish averaging 14.1 inches in length. The estimated 22.98 fish/acre caught is the highest ever recorded topping 2018’s record high of 20.85 fish/acre. Fish harvested per acre and average length of harvested fish are similar to prior estimates. Black bass catch and harvest statistics along with monthly black bass angling success are presented in Tables 29 and 30. On average, May and September have higher numbers of black bass fishing trips and fish caught than other months of the survey period; however, April and October are generally very similar. Table 31 is an extension of Table 30 and provides historic creel values for comparative purposes. The “mean” represents the average of the months included in the creel survey period.

The estimated 6.87 hours per acre expended by crappie anglers in 2019 is within the range of values estimated for the previous four surveys. Creel results corroborate sampling results which show black crappie comprise \leq 13% of the population (7% 2019, 4% 2018, 3% 2010, 13% 2005). The estimated number of crappie caught per acre (44.17), harvested per acre (20.24), and harvested per hour (2.73) are the highest values recorded to date for those parameters. Those parameters have nearly quadrupled since the 2005 survey. The mean length of harvested white crappie in 2019 was similar to previous observations. Anglers are catching and harvesting a tremendous amount of crappie in similar numbers of trips and hours fished to recent creel surveys. Monthly crappie angling success is presented in Table 32. April is far and away the month with the most trips, hours fished, number of fish caught and number of fish harvested. October is the next closest month in regards to the same parameters mentioned above. Table 33 is, again, an extension of Table 32 and provides historic values for the same parameters for comparative purposes. Once more, the mean represents the average of the months included in the creel survey period. In general, all values are on an increasing trend since 2005. All parameter values for 2019 are the highest recorded in the 2000s.

The 1.83 angler-hours per acre and 4.19 hybrid striped bass caught per acre estimated in 2019 are similar to past survey estimates, however, the 2.14 hybrid striped bass harvested per acre, and 1.13 hybrid striped bass harvested per hour exceed values recorded in previous surveys. The mean length of 14.9 in of harvested hybrid striped bass is similar to previous surveys but the lowest documented since 1997. In general, catch and harvest of hybrid striped bass has more than tripled from 2005 to 2019, while number of fishing trips and hours fished specifically for hybrids has been cut in half. Anglers are catching and harvesting more fish in fewer trips and hours than in 2005. Table 34 provides monthly hybrid angling success. The month of June displayed the highest use and catch and harvest by numbers, with May barely outstepping June only in hybrids harvested per hour. May and June are the hottest months for hybrid striped bass fishing at Rough River Lake. Table 35 provides historic values for the same parameters found in Table 34 for comparison. Hybrid fishing success has been very good the past two years with more than three times the fish caught in half the number of hours fished in 2019/2018 versus 2005.

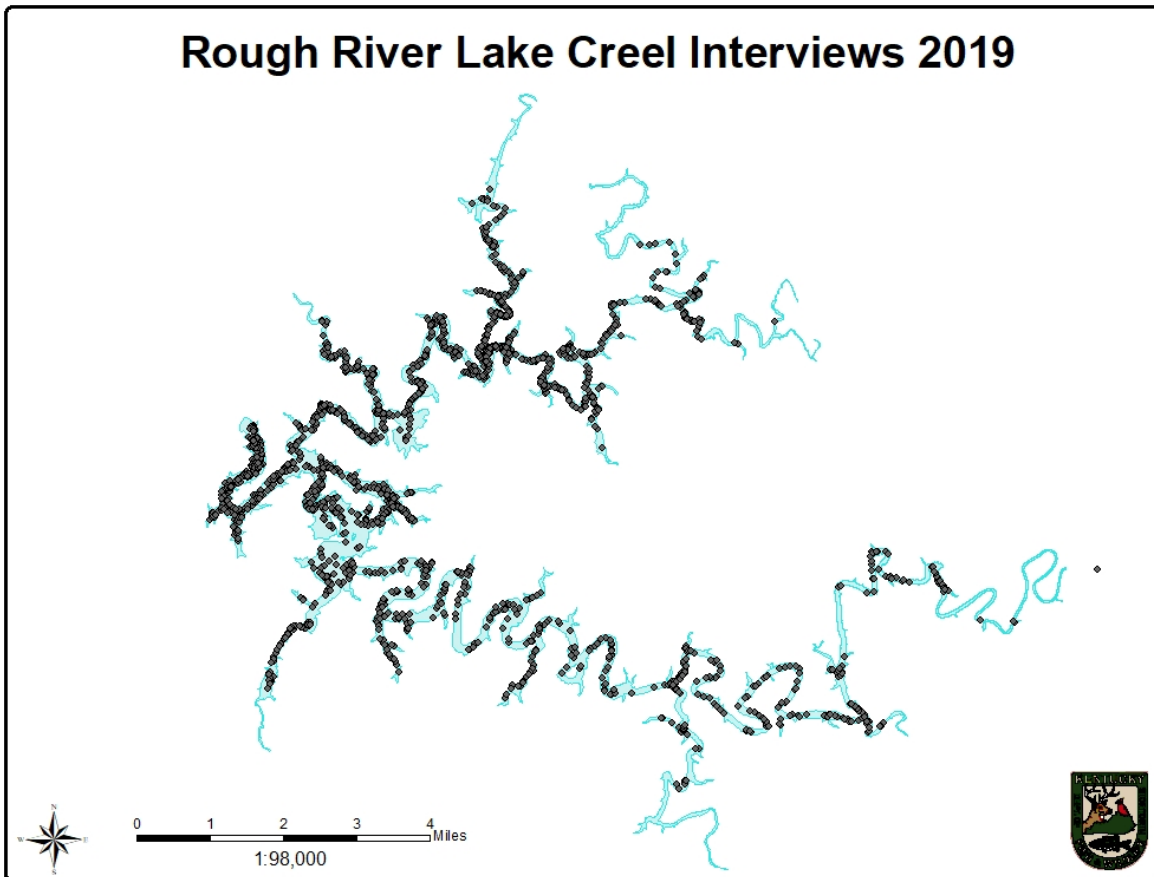


Figure 1: Distribution of creel interviews at Rough River Lake in 2019 (N = 2076). An additional 19 surveys were collected (Total = 2095) but did not generate an accurate GPS location. Those surveys were not included on the map.

An angler attitude (AA) survey was conducted during the creel survey to gather information from anglers regarding smart phone usage and hybrid striped bass angling (Figures 2 and 3). The angler attitude survey conducted in 2018 gathered the standard information on angler preferences and satisfaction, therefore, that information was not collected again in 2019. It was decided to focus on a few specific questions and reduce the amount of time spent interviewing each angler since they just went through the full questionnaire in 2018. A total of 483 angler attitude surveys were completed in 2019. Those survey points are visually represented in Figure 2. Each respondent was first asked for his or her home zip code. Seventy-four percent of respondents were Kentucky residents, 20% were Indiana residents, and the remaining 6% provided home zip codes from seven other states. Questions two and three asked anglers if they owned a smartphone and, if so, if they regularly use it as a fishing tool. Eighty-six percent of respondents did own a smartphone and 58% said they regularly use it as a fishing tool. Question three is a bit vague as it leaves the definition of fishing tool open to interpretation. Affirmative responses could include things such as using their smartphone to check the weather, using a mobile app such as Navionics for navigation or depth charts, or using the KDFWR website to find fish habitat structures, among other things. The purpose of this questions was to see how many of our anglers could potentially benefit from, or be reached, via the publication of a KDFWR fishing and boating mobile app. Question four asked the angler if they fished for hybrid striped bass at Rough River Lake. If they responded in the affirmative, they were then asked three to four additional questions related specifically to their hybrid striped bass fishing trips. According to the 2018 Angler Attitude survey, only 18.2% of respondents (N = 142) indicated they fished for hybrid striped bass. However, according to the 2019 survey, 77.2% of respondents (N = 373) indicated that they fished for hybrid striped bass at Rough River Lake, with 85.5% claiming to fish for them

five times or more each year (N = 319). This is a dramatic increase from the 2018 survey with no defined explanation. A great majority of anglers who target hybrids do so in the spring and summer (98.6% and 86.5%, respectively) with 60% fishing for them in the fall as well. Fishing the “jumps” (96%) or casting (82%) are the primary ways in which anglers target hybrids, however, approximately a quarter of anglers also troll (24%) or still fish with live/organic bait (25.8%).

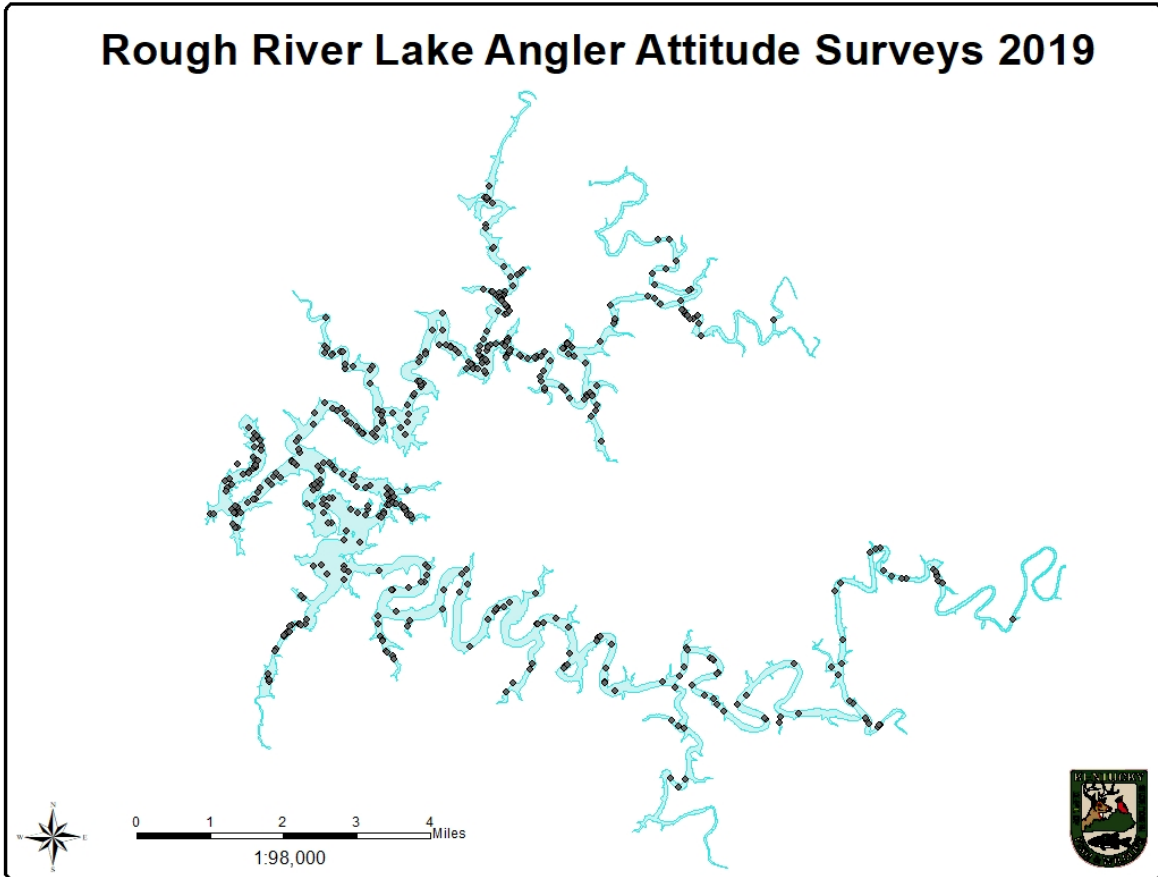


Figure 2. Distribution of Angler Attitude Surveys collected at Rough River Lake in 2019 (N = 483).

ROUGH RIVER LAKE ANGLER ATTITUDE SURVEY 2019 (N = 483)

Have you been surveyed this year? Yes - stop survey No – continue

1. Home Zip Code: **137 unique zip codes**
2. Do you own a smartphone? (N =483) Yes **86.1%** No **13.9%**
3. If YES, do you use it regularly as a fishing tool? (N = 410) Yes **57.8%** No **42.2%**
4. Do you fish for hybrid striped bass at Rough River Lake? (N = 483) Yes **77.2%** No **22.8%**

Hybrid Striped Bass Anglers (complete the following if answered YES to Question 4)

5. On average, how many times do you fish for hybrid striped bass at Rough River Lake in a year? (N = 370)
 First time **0.3%** 1 to 4 **14.2%** 5 to 10 **58.7%** More than 10 **26.85**
6. When do you fish for hybrid striped bass at Rough River Lake? (check all that apply) (N = 370)
 Spring **98.6%** Summer **86.5%** Fall **59.5%** Winter **3.0%**
7. How do you fish for hybrid striped bass at Rough River Lake? (check all that apply) (N = 373)
 Jump Fishing **96.0%** Casting **82.0%** Trolling **24.1%** Live Bait **22.3%** Organic Bait **3.5%**
 Other **0.5%**
Other: Jigs on bottom (2 responses)

Figure 3. Results of Angler Attitude Survey conducted at Rough River Lake in 2019 (N = 483).

Lake Malone

No fish sampling was conducted at Lake Malone in 2019. Sampling to assess the largemouth bass population will be conducted spring and fall 2020, with a subsample collected for age and growth analyses. If time allows, hoop netting to assess the channel catfish population will be conducted late summer/early fall. Once more, a subsample will be collected for age and growth analyses. Black-nose or black crappie were scheduled to be stocked in 2020 but will likely be postponed to 2021 due to spawning and harvest restrictions imposed due to the Covid-19 pandemic.

Dissolved Oxygen – Temperature Profile

A dissolved oxygen and temperature profile were conducted 12 September 2019 while on the lake replacing buoys and checking on the spillway tower. The profile was conducted mid-channel where the two main arms of the lake converge (Table 36). A sufficient level of dissolved oxygen was present to a depth of 10-12 feet.

Mauzy Lake

Largemouth Bass Sampling

Sampling to evaluate the largemouth bass population was not conducted in 2019. Excessive aquatic vegetation (coontail) spread throughout the lake and impeded sampling efforts, fertilization efforts, and public fishing opportunity. Two attempts were made in October to sample largemouth bass but were unsuccessful due to excessive vegetation. Largemouth bass sampling is scheduled for spring and fall 2020.

Three applications of fertilizer were applied in 2019 but the intended phytoplankton bloom was not achieved. The first application of 132.5 gallons of liquid 9-18-9 was applied 23 April (secchi 42 in). A second application of 120 gallons of liquid 9-18-9 was applied 14 May (secchi 72 in). A third application of 475 pounds of PondPro 10-52-4 crystal fertilizer was applied 31 May (secchi 60 in). Once the fertilization efforts were deemed futile, several attempts to control vegetation using aquatic herbicides were attempted. Effort was focused on boat and bank access points primarily, with adjacent areas targeted as well. Very little control was achieved due to the excessive levels of vegetation that had developed prior to major restorative efforts. Fertilization will be initiated spring 2020 with hopes

of getting ahead of the issue and providing maintenance treatments with chemical as needed. If 2020 efforts are unsuccessful, a biological treatment, such as grass carp, should be considered.

Bluegill/Redear Sunfish Sampling

Electrofishing to assess the bluegill and redear sunfish populations was conducted in May (Tables 37-41). In 2018, bluegill catch rate was the lowest documented since 2000. Catch rates in 2019 for 6.0- to 7.9-in bluegill dropped back down to within the expected range while < 3.0-in and 3.0- to 5.9-in bluegill catch increased to similar values from 2014 to present. Bluegill CPUE has generally been declining since 2005 (Table 38).

Beginning in 2014, catch rates for redear sunfish topped those of bluegill. Redear sunfish CPUE in 2019 increased but remains similar to previous samples (Table 38). The increase is due to a dramatic increase in the catch rate for 3.0- to 5.9-in redear. Catch rates for 6.0- to 7.9-in and \geq 8.0-in redear sunfish decreased to the lowest values observed since 2014. Some of the decline may be attributed to sampling inefficiency attributable to extensive aquatic vegetation. We have yet to see a redear top the 9.0-in mark, which is surprising given the amount of vegetation present the past several years.

Across all species, growth continues to decline or remain constant at undesirable levels. Additionally, there are numerous undesirable species present in the lake (gizzard shad, crappie spp., flathead catfish, spotted gar, etc.). Ultimately, Mauzy Lake would benefit from another, more complete, renovation. Plans to dredge and deepen extensive shallow areas, upgrade existing bank fishing access, install fish habitat, lime the lake basin, renovate the fishery, and construct a headwater wetland will be created in 2020 and will then be in place to move forward when possible. Mauzy Lake is wholly contained within a WMA and renovation efforts could easily be accomplished.

Carpenter Lake

Largemouth Bass

Largemouth bass were sampled at Carpenter Lake in April 2019 (Tables 42-44). Total CPUE was a bit lower than typically found but within reason. Catch rate for fish 12.0-14.9 in dropped dramatically from 2017 and 2018 highs. We did see an uptick in CPUE for fish \geq 15.0 in, which should be due to some fish in the 12.0- to 14.9-in range moving up. Bass were sampled via electrofishing again in October 2019 (Tables 45 and 46). Body condition is suboptimal, but within the range established in previous samples. The bass population at Carpenter is relatively stable and performing as expected; however, we will continue to monitor the bass population annually.

Bluegill/Redear Sunfish Sampling

Electrofishing to assess the bluegill and redear sunfish populations was conducted in May (Tables 39, 48-50). Total catch rate for bluegill is within the range of previous collections. Beginning in 2011, the total catch rate for bluegill increased substantially and has mostly lingered within this “new” range since. Catch rates for all length groups are similar to previous samples. Age and growth data collected in 2018 shows population growth is decent but not what it was prior to the introduction of gizzard shad in 2005. Bluegill greater than 8.0 in have not been collected in Carpenter Lake since 2007.

Seventy-seven redear sunfish were collected in May in conjunction with bluegill sampling. Total catch rate is the highest of record and catch rates for standard length groups are all within expected ranges. Redear sunfish less than 3.0 in have not been collected since 2010. That is likely a result of sampling inefficiencies rather than lack of reproduction as evidenced by annual collection of 3.0- to 5.9-in fish each year. Numbers are moderate but may be increasing. Sampling in 2020 should provide insight on the population trend. Some quality fish are available to anglers annually.

Gizzard shad are most likely negatively affecting the bluegill and redear sunfish populations. After two failed shad eradication efforts, saugeye were stocked at 70 fish/acre in May 2019. This stocking is an attempt to reduce the gizzard shad and crappie populations and increase bass predation on the bluegill. Increased predation on the bluegill should positively affect their growth and produce bluegill greater than 8.0 inches in the future. A second saugeye stocking is scheduled for 2020 at an increased rate of 100 fish/acre. The saugeye population will initially be sampled

in spring and fall during standard largemouth bass/bluegill operations. If this does not prove effective, we will look into developing a sampling protocol that best fits Carpenter Lake.

New Kingfisher Lakes

Largemouth Bass

Electrofishing to assess the largemouth bass population at New Kingfisher Lake was conducted in April (Tables 44, 51-53). A total of 51 largemouth bass were collected in 0.375 hours of spring sampling. There are multiple large fish in the population that are doing extremely well. In fact, 45% of fish captured were greater than 15.0 in (23 out of 51). However, a noticeable gap remains in the length frequency table. Largemouth bass recruitment seems to be limited, possibly due to egg and fry predation by the overabundant sunfish population. Advanced largemouth bass fingerlings were stocked in fall 2019 (1,600). Catch rates for fish greater than 15.0 in and greater than 20.0 in remain high and the largemouth bass fishery should continue to grow over the next few years as multiple year classes develop and stabilize. Sampling to monitor the development of the bass population will continue in the spring and fall of 2020.

Bluegill/Redear Sunfish Sampling

The sunfish population was sampled via electrofishing in May (Tables 39, 54-56). Total bluegill CPUE declined significantly from the 2018 sample. Table 55 displays the progression of bluegill from the 3.0- to 5.9-in length group into the 6.0- to 7.9-in length group. The first bluegill greater than 8.0 in was sampled in New Kingfisher in 2018 and another (or the same one!) was captured again in 2019. Growth appears to be slower than ideal due to the sheer number of sunfish in the lake. Total sunfish CPUE does not account for the presence of green sunfish and warmouth, which are prolific throughout the rock-lined shoreline. A shoreline rotenone treatment was conducted in summer 2019 in an attempt to reduce undesirable sunfish. Another shoreline rotenone application may be attempted in summer 2020 pending spring sampling results. We are hopeful the advanced fingerling bass stocked in the fall will begin to reduce sunfish numbers to a reasonable level and growth will then improve. Age-growth data will be collected in a few years after populations have stabilized.

Gizzard Shad were documented in both spring and fall samples. The bluegill population will be monitored to ensure adequate growth and size structure develops. If not, shad control methods (winter rotenone treatments and/or saugeye stocking) will be employed.

Old Kingfisher Lake

Largemouth Bass

Electrofishing to assess the largemouth bass population was conducted at Old Kingfisher Lake in April (Tables 44, 57-59). A total of 29 bass were collected in April ranging from 6.0 to 20.7 in. Total CPUE declined again from 2018 to 2019; however, when dealing with low collection numbers it only takes not collecting a few fish to make a significant impact on catch rate. Growth does not appear to be fast enough that fish are skipping inch classes, but age and growth analyses will not be conducted until the population begins to stabilize. The large group of fish < 8.0 in documented in 2017 is present in the larger length groups. Like New Kingfisher, noticeable gaps remain in the length distribution; therefore, 1,000 advanced fingerling largemouth bass were stocked in fall 2019. Sampling to monitor the development of the bass population will continue in the spring and fall of 2020.

Bluegill/Redear Sunfish Sampling

The sunfish population at Old Kingfisher Lake was sampled via electrofishing in May (Tables 39, 60-62). Total bluegill CPUE was 626.7 fish/hr, which is roughly half of the 2018 total CPUE (1149.7 fish/hr). Catch rate for bluegill < 3.0 in increased slightly while catch rates for bluegill 3.0-5.9 in and 6.0-7.9 in declined. Total numbers are decreasing into the desired range. There is an abundance of green sunfish and warmouth residing amongst the shoreline riprap. A shoreline rotenone treatment was conducted along the riprap of both Kingfisher lakes in 2019. A second shoreline rotenone will be conducted in 2020 if the number of green sunfish and warmouth increase or

remain similar. As the largemouth bass population grows and stabilizes, sunfish growth and size structure will improve. Age-growth data will be collected after populations have stabilized.

Gizzard shad were documented at both Old and New Kingfisher lakes in 2018. Given the high productivity of the Kingfisher lakes, it is likely the shad populations will expand quickly. They will be monitored along with the sunfish to determine if shad control strategies need to be employed. Two potential options for controlling shad are winter shad eradications and saugeye stocking.

Old and New Kingfisher lakes are now connected by a six-foot metal culvert and should presumably develop nearly identical fish populations. If, after several years, both Old and New Kingfisher show similar population characteristics, sampling data may be combined and reported together as Kingfisher Lake.

*Old and New Kingfisher were drawn down December 2012 to complete renovation work. The lakes were allowed to dry during 2013 and renovation work was completed during the Summer of 2014. As water levels increased, channel catfish, bluegill and advanced fingerling largemouth bass were stocked in fall of 2015.

Washburn Lake

Fish sampling was not conducted at Washburn Lake in 2019. Excessive aquatic vegetation has been a problem in recent years. Grass carp were stocked in 2018 and extensive vegetation control using herbicides was implemented. In 2019, the new 10-52-4 powder fertilizer was used with excellent results. The combination of grass carp and fertilization was able to keep the aquatic vegetation minimized in 2019.

Despite a decent sunfish fishery, Washburn Lake needs another renovation. Plans to dredge and deepen extensive shallow areas, create more bank fishing access, install fish habitat, lime the lake, renovate the fishery, create a headwater wetland, and replace the existing water control structure will be created in 2020. The current water control tower leaks profusely and could fail at any time, requiring plans to be in place to move forward with a renovation when necessary. This renovation will require more planning, cooperation, and financial commitment than the renovation at Mauzy due to the proximity of private landowners and county roads serving as two of the lake boundaries. The feasibility of surveying and marking the property boundary will also be explored in 2020.

Table 1. Annual summary of sampling conditions by waterbody, species sampled and date for Northwestern Fishery District lakes during 2019.

Water body	Species	Date	Time (24hr)	Gear	Weather	Water temp. F	Water level	Secchi (in)	Conditions	Pertinent sampling comments
Nolin River Lake	LMB	4/17	930	Shock	Mostly cloudy, light breeze, 68°	62.2	512.12	22"	Fair	Muddy, lots debris, bass offshore main lake
Nolin River Lake	WB/WE	7/10	930	Temp/DO	Sunny, HOT, 90°	86.5-87.7	515.21	30-54"	Good	
Nolin River Lake	Crappie	10/28-11/1	930	Trap net	Sunny to cloudy, calm to WINDY, 40-60°	61-63	508.9-507.7	16-30"	Fair	
Nolin River Lake	Crappie	11/4-6	930	Trap net	Cloudy to sunny, 50s	52-56	506.3-504.9	11-28"	Good	
Rough River Lake	HSB	4/9	930	Deploy	-	60.1	495.97	-	Good	DL/Deploy VR2W for HSB telemetry project
Rough River Lake	HSB	4/10	930	Shock	-	60.3	495.68	14"	Good	Collect HSB for telemetry project
Rough River Lake	HSB	4/11	931	Shock	-	60.3	495.33	-	Good	Collect HSB for telemetry project
Rough River Lake	HSB	6/4	930	Temp/DO	Sunny, calm, 80s	79.5-81.0	495.6	28-40"	Good	
Rough River Lake	HSB	7/9	1030	Temp/DO	Sunny, 80s	86.5-90.0	508.16	47-60"	Good	
Rough River Lake	HSB	8/30	900	Temp/DO	Mostly sunny, 80s	80-82.2	495.38	26-72"	Good	
Rough River Lake	HSB	9/24	1030	Temp/DO	Sunny, windy, 70s	79.6-80.6	495.08	-	Good	
Rough River Lake	LMB	4/12	930	Shock	Sunny, 65°	64.6	495.96	36"	Fair	
Rough River Lake	LMB	4/16	930	Shock	Sunny, windy, 55°	60-62	496.91	25-29"	Fair	
Rough River Lake	HSB	10/24-25	930	Gill Net	Sunny, 60s	65-67	492.2-491	24-30"	Fair	Urban crew ran nets on NF
Rough River Lake	HSB	11/14-15	930	Gill Net	Sunny, blue skies, breezy, low 40s	44-46	481.3-480.3	12"	Good	Two nets on SF
Lake Malone	ALL	9/12	1030	Temp/DO	Mostly sunny, 80s	85.1	pool	60"	Good	
Mauzy Lake	LMB	10/9-10	1030	Shock	Partly to mostly sunny, 70s	71	pool	37-39"	Poor	Boat motor problems due to excessive SAV
Mauzy Lake	BG/RE	5/10	1000	Shock	Cloudy, cool, 60s	71.4	pool	54"	Fair	
Carpenter Lake	LMB	4/15	900	Shock	Sunny, breezy, 50°	62.2	pool	30"	Good	
Carpenter Lake	BG/RE	5/8	900	Shock	Partly cloudy, windy, 80s	74.0	pool	32"	Good	
Carpenter Lake	ALL	10/18	1100	Temp/DO	Sunny, clear 40°	63.3	- 12"	30"	Fair	
Carpenter Lake	LMB	10/18	900	Shock	Sunny, clear 40°	63.3	- 12"	30"	Fair	LMB and Saugeye collection
New Kingfisher Lake	LMB	4/15	1300	Shock	Sunny, light breeze 50s	64.8	pool	38"	Good	
New Kingfisher Lake	BG/RE	5/8	1300	Shock	Partly cloudy, windy, 80s	77.2	pool	28"	Good	
Old Kingfisher Lake	LMB	4/15	1130	Shock	Sunny, light breeze 50s	62.8	pool	22"	Good	
Old Kingfisher Lake	BG/RE	5/8	1130	Shock	Sunny, light breeze, 75°	75	pool	22"	Good	

Table 2. Length frequency and CPUE (fish/hr) for black bass collected in 1.0 hr of diurnal electrofishing at Nolin River Lake during April 2019. *Note only two samples conducted due to poor sampling conditions.

Species	Inch class																		Total	CPUE	SE	
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				21
Largemouth bass	2	15	12	5	12	5	2	5	12	8	9	12	4	3	3	1	2	2	1	115	115.0	63.0
Spotted bass	1						1		1											3	3.0	3.0

nwd1psd.d19

Table 3. PSD and RSD values obtained for each black bass species taken in spring electrofishing samples in upper Nolin River Lake during April 2019; 95% confidence intervals are in parentheses. *Note only 1.0 hr of sampling.

Area	Species	No. \geq stock		
		size ^a	PSD	RSD ^b
Upper	Largemouth bass	69	65 (\pm 11)	23 (\pm 10)
	Spotted bass	3	-	-

^a Largemouth bass = 8.0 in, spotted bass = 7.0 in

^b Largemouth bass = RSD₁₅, spotted bass = RSD₁₄.
nwd1psd.d19

Table 4. Length frequency and CPUE (fish/nn) for each species of crappie collected in 75 net-nights of sampling at Nolin River Lake during October-November 2019.

Species	Inch class											Total	CPUE	SE
	2	3	4	5	6	7	8	9	10	11	12			
White crappie	1	43	88	35	226	206	103	105	37	11	6	861	11.5	2.2
Black crappie		3	2	11	59	11	4				2	92	1.2	0.5

nwd1tn.d19

Table 5. PSD and RSD₁₀ values calculated for crappie collected in trap nets from Nolin River Lake during November 2019; 95% confidence limits are in parentheses.

Lake/Species	No.	PSD	RSD ₁₀
White crappie	729	36 (\pm 4)	7 (\pm 2)
Black crappie	87	7 (\pm 5)	2 (\pm 3)

nwd1tn.d19

Table 6. Number of fish and the relative weight (Wr) for each length group of crappie collected at Nolin River Lake during October-November 2019. Standard errors are in parentheses.

Species	Length group					
	5.0 - 7.9 in		8.0 - 9.9 in		\geq 10.0 in	
	No.	Wr	No.	Wr	No.	Wr
White crappie	62	92 (1)	52	98 (1)	42	96 (1)
Black crappie	5	-	2	-	2	-

nwd1tn.d19

Table 7. Mean back calculated lengths (in) at each annulus for white crappie collected at Nolin River Lake in October-November 2019.

Year class	No.	Age					
		1	2	3	4	5	6
2018	80	5.2					
2017	4	4.3	9.6				
2016	10	5.0	8.5	10.7			
2015	1	5.4	9.3	10.9	12.1		
2014	1	4.5	7.8	10.0	10.7	11.3	
2013	1	5.0	8.9	9.4	10.1	10.7	10.9
Mean		5.2	8.8	10.6	11.0	11.0	10.9
No.		97	17	12	3	2	1
Smallest		3.0	7.8	9.4	10.1	10.7	10.9
Largest		7.2	10.1	11.6	12.1	11.3	10.9
Std error		0.1	0.2	0.2	0.6	0.3	
95% CI (±)		0.2	0.3	0.4	1.2	0.5	

nwd1wca.d19

Table 8. Age-frequency and CPUE (fish/nn) per inch class of white crappie trap netted for 75 net-nights at Nolin River Lake in November 2018.

Age	Inch class											No.	CPUE	SE	Age %
	2	3	4	5	6	7	8	9	10	11	12				
0	1	43	88	14								146	2.0	0.8	17.0
1				21	226	206	103	105	35			696	9.3	1.7	80.8
2										2	2	4	0.3	0.1	0.5
3									2	7	3	12	0.2	0.1	1.4
4											1	1	<0.1	<0.1	0.1
5										1		1	<0.1	<0.1	0.1
6										1		1	<0.1	<0.1	0.1
Total	1	43	88	35	226	206	103	105	37	11	6	861			
(%)	0.1	5.0	10.2	4.1	26.2	24.0	12.0	12.2	4.3	1.3	0.7				100.0

nwd1tn.d19, nwd1wca.d19

Table 9. Population assessment for white crappie based on fall trapnetting at Nolin River Lake from 2001-2019 (scoring based on statewide assessment).

Year	CPUE				Mean length age 2+ at capture	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
	(excluding age 0)	CPUE age 1	CPUE age 0	CPUE ≥ 8.0 in					
2019	9.7 (3)	9.3 (4)	2.0 (3)	3.5 (3)	10.9 (4)	2.600	92.6	17	Excellent
2018*	1.6	0.2	36.4	1.6	10.7				
2017									
2016	5.6 (2)	2.6 (2)	5.6 (4)	3.3 (3)	10.7 (4)	1.112	67.1	15	Good
2015									
2014	14.0 (3)	9.5 (4)	1.5 (2)	10.4 (4)	10.2 (3)	1.140	68.2	16	Good
2013									
2012	6.7 (3)	4.5 (3)	1.1 (2)	3.2 (2)	10.1 (3)	1.112	67.1	13	Good
2011	5.7 (2)	4.4 (3)	1.6 (3)	3.5 (3)	10.9 (4)	1.274	72.3	15	Good
2010	6.7 (3)			6.0 (4)					
2009	14.1 (3)	11.7 (4)	1.2 (2)	8.9 (4)	10.4 (4)	1.638	80.6	17	Excellent
2008	6.0 (2)	3.5 (3)	2.4 (3)	4.8 (3)	10.4 (4)	0.976	62.3	15	Good
2007	7.4 (3)	3.7 (3)	0.4 (1)	6.1 (4)	10.4 (4)	0.882	58.6	15	Good
2006	5.9 (2)	3.2 (2)	2.0 (3)	4.4 (3)	9.7 (3)	0.876	58.3	13	Good
2005	8.8 (3)	3.6 (3)	1.4 (2)	7.4 (4)	9.7 (3)	0.749	52.7	15	Good
2004	8.6 (3)	4.2 (3)	5.1 (4)	6.9 (4)	9.7 (3)	0.630	46.7	17	Excellent
2003	13.2 (3)	8.0 (4)	2.0 (3)	8.7 (4)	9.8 (3)	1.107	66.9	17	Excellent
2002	12.0 (3)	10.0 (4)	4.3 (4)	8.8 (4)	9.5 (2)	1.571	79.2	17	Excellent
2001	10.2 (3)	4.8 (3)	2.6 (3)	3.9 (3)	9.1 (2)	0.910	59.7	14	Good

* One day of sampling

Table 10. Dissolved oxygen (ppm) and temperature profile conducted at three sites at Nolin River Lake on 10 July 2019.

Depth	Location							
	Site: 1	10:53am	Site: 2	10:18am	Site: 3	9:43am	Site: 4	11:12am
	Temp	DO	Temp	DO	Temp	DO	Temp	DO
Surface	89.0	10.30	89.0	12.68	88.1	13.74	88.9	10.21
2	88.6	10.25	88.7	12.94	87.8	14.03	88.7	10.25
4	88.2	10.17	88.1	12.66	87.4	13.18	88.1	10.36
6	87.4	10.82	87.1	12.51	85.6	10.31	87.5	11.29
8	86.4	11.21	86.0	10.58	84.3	8.34	86.5	11.67
10	85.3	10.44	83.7	5.57	82.3	8.15	83.9	10.51
12	82.8	8.44	81.2	1.57	78.5	7.33	81.7	7.86
14	78.2	1.27	79.2	0.67	74.5	4.82	79.8	4.47
16	77.3	0.39	76.9	0.86	73.8	4.92	78.1	0.96
18					73.2	4.32		
20	74.9	0.30	75.1	2.19	73.1	4.23	74.7	0.39
22					73.1	4.19		
24					73.0	4.16		
25	73.0	0.27	73.6	2.19			72.8	0.31
26					72.8	3.63		
28					72.5	3.01		
30	71.9	0.24	72.8	2.01	72.3	2.08	71.8	0.36
32					30' deep			
34								
35	71.2	0.48	71.3	0.75			71.2	0.48
38								
40			70.2	0.23			70.3	0.75
45							69.8	0.92
50	70' deep		60' deep				70' deep	

Secchi

40"

30"

54"

Table 11. Species composition, length frequency, and CPUE (fish/hr) of black bass collected during 4.5 hours of 30-minute diurnal electrofishing runs at Rough River Lake in April 2019.

Area	Species	Inch class																			Total	CPUE	SE	
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				21
North Fork	Largemouth bass		16	31	39	14	14	19	15	37	30	21	12	13	16	6	14	6	6	2	2	313	156.5	11.0
	Spotted bass						1	1	1		3		1	1								8	4.0	1.4
South Fork	Largemouth bass	1	17	61	36	24	25	13	27	44	31	34	29	15	9	2	1	5	2			376	150.4	22.2
	Spotted bass		2	1	1	4	5	1	3	2	3	2	4	2								30	12.0	6.4
Total	Largemouth bass	1	33	92	75	38	39	32	42	81	61	55	41	28	25	8	15	11	8	2	2	689	153.1	12.6
	Spotted bass		2	1	1	4	6	2	4	2	6	2	5	3								38	8.4	3.7

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Table 12. PSD and RSD values obtained for each black bass species taken in spring electrofishing samples on each arm of Rough River Lake during April 2019; 95% confidence intervals are in parentheses.

Area	Species	No. \geq stock		
		size ^a	PSD	RSD ^b
North Fork	Largemouth bass	199	49 (\pm 7)	26 (\pm 6)
	Spotted bass	8	-	-
South Fork	Largemouth bass	212	46 (\pm 6)	9 (\pm 4)
	Spotted bass	22	50 (\pm 21)	9 (\pm 12)
Total	Largemouth bass	411	47 (\pm 4)	17 (\pm 4)
	Spotted bass	30	53 (\pm 18)	10 (\pm 11)

^a Largemouth bass = 8.0 in, Spotted Bass = 7.0 in

^b Largemouth bass = RSD₁₅, Spotted Bass = RSD₁₄.

nwd2psd.d19

Table 13. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Rough River Lake during 1999-2019.

Year	Length group										Total	
	< 8.0 in		8.0 - 11.9 in		12.0 - 14.9 in		≥ 15.0 in		≥ 20.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	61.8	9.0	48.0	4.2	27.6	3.3	15.8	3.4	0.9	0.4	153.1	12.6
2016	30.7	7.5	18.4	2.9	29.3	4.7	23.3	2.5	2.0	0.8	101.8	9.0
2013	20.9	3.1	49.6	5.0	32.4	3.6	31.3	3.6	3.3	0.6	134.2	8.1
2012	25.8	4.3	52.4	11.7	29.3	4.3	32.0	7.2	3.6	1.4	139.6	22.3
2009	29.1	3.2	47.8	4.2	42.7	4.3	17.6	2.5	0.7	0.3	137.1	7.0
2007	26.4	3.5	27.3	4.7	27.8	4.1	13.1	1.2	0.2	0.2	94.7	8.9
2006	21.1	2.6	28.7	10.1	28.2	4.4	11.3	2.8	0.4	0.3	89.3	16.7
2005	26.9	6.2	34.0	7.6	38.9	5.2	14.2	2.5	0.7	0.3	114.0	41.7
2004	31.1	3.9	35.6	5.1	12.9	2.2	9.8	1.1	0.2	0.2	89.3	9.5
2003	61.6	7.0	27.8	6.9	20.0	5.6	18.4	3.2	0.7	0.3	127.8	15.4
2002	7.3	1.7	7.1	2.3	2.0	0.9	1.6	0.4	0.0	0.0	18.0	3.8
2001	30.7	7.5	21.3	4.5	16.4	5.0	3.1	1.7	0.0	0.0	71.6	11.2
2000	15.1	3.5	32.9	4.3	21.8	2.8	5.3	2.1	1.8	1.0	75.1	6.4
1999	n/d		28.4	2.1	21.3	4.1	8.9	2.4	0.4	0.4	58.7	4.6

^a Unable to sample due to high water some years

nwd2psd.d19

Table 14. Population assessment for largemouth bass based on spring electrofishing at Rough River Lake from 1999-2019 (scoring based on statewide assessment).

Year	Mean length					Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
	age 3 at capture	CPUE age 1	CPUE 12.0-14.9 in	CPUE ≥ 15.0 in	CPUE ≥ 20.0 in				
2019	13.2* (3)	46.0 (4)	27.6 (3)	15.8 (3)	0.9 (3)			16	Good
2016		33.8 (3)	29.3 (3)	23.3 (4)	2.0 (4)			≥ 15	G-E
2013	12.3 (2)		32.4 (4)	31.3 (4)	3.27 (4)			≥ 15	G-E
2012		36.4 (3)	29.3 (3)	32.0 (4)	3.6 (4)			≥ 15	G-E
2009	12.6 (3)	28.4 (3)	42.7 (4)	17.6 (3)	0.67 (3)	0.884	58.7	16	Good
2007	13.6 (4)	27.1 (3)	27.8 (3)	13.1 (3)	0.2 (2)	0.576	42.3	15	Good
2006	13.6 (4)	22.0 (2)	28.2 (3)	11.3 (2)	0.4 (2)	0.773	53.8	13	Good
2005	13.6 (4)	28.0 (3)	38.9 (4)	14.2 (3)	0.7 (3)	0.759	53.2	15	Good
2004	13.6 (4)	38.8 (3)	12.9 (1)	9.8 (2)	0.2 (2)	0.862	57.8	12	Fair
2003	12.5 (3)	44.3 (4)	20.0 (2)	18.4 (3)	0.7 (3)	0.797	54.9	15	Good
2002	12.5 (3)	7.9 (1)	2.0 (1)	1.6 (1)	0.0 (1)			7	Poor
2001	12.5 (3)	28.0 (3)	16.4 (2)	3.1 (1)	0.0 (1)			10	Fair
2000	12.5 (3)	10.5 (1)	21.8 (2)	5.3 (1)	1.8 (4)			11	Fair
1999	12.5 (3)	3.0 (1)	21.3 (2)	8.9 (2)	0.4 (2)			10	Fair

^a Unable to sample due to high water some years

* Back calculated from 2018 age-growth table

Table 15. Length frequency and CPUE (fish/nn) for hybrid striped bass collected in 14 net-nights of sampling at Rough River Lake during October-November 2019.

Species	Inch class																Total	CPUE	SE			
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				23	24	
Hybrid striped bass	8	40	114	78	5		2	14	32	34	45	21	12	4	6			5	3	423	30.2	7.1

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Table 16. Number of fish and the relative weight (Wr) for each length group of hybrid striped bass collected at Rough River Lake during fall samples 2006 - 2019. Standard errors are in parentheses.

Year	Length group					
	8.0 - 11.9 in		12.0 - 14.9 in		≥ 15.0 in	
	No.	Wr	No.	Wr	No.	Wr
2019	225	95 (1)	16	87 (1)	162	83 (1)
2018	156	93 (1)	176	87 (1)	179	86 (1)
2017	172	93 (1)	2	88 (5)	201	86 (1)
2016	31	90 (2)	8	86 (7)	126	81 (1)
2014	56	95 (1)	51	88 (1)	142	82 (1)
2012	3	88 (2)	70	81 (1)	170	82 (1)
2010	14	83 (2)	124	90 (6)	223	83 (1)
2008	38	91 (1)	51	78 (1)	149	85 (4)
2006	21	96 (2)	65	89 (1)	108	81 (1)

nwd2gn.d19

Table 17. Mean back calculated lengths (in) at each annulus for hybrid striped bass collected at Rough River Lake in October-November 2019.

Year class	No.	Age										
		1	2	3	4	5	6	7	8	9	10	11
2018	40	10.6										
2017	75	10.5	15.7									
2016	13	11	16	17.9								
2015	12	10.5	16.5	18.1	19.9							
2014	4	10.2	16.6	18.8	20.2	20.9						
2013	3	11.1	16.4	19.0	20.7	21.7	22.4					
2012	2	8.1	15.0	18.5	20.5	21.9	23.1	23.7				
2008	1	6.7	10.8	13.2	14.3	15.3	16.4	17.5	18.3	19.1	19.9	21.0
Mean		10.5	15.8	18.3	19.9	20.8	21.6	21.6	18.3	19.1	19.9	21.0
No.		150	110	35	22	10	6	3	1	1	1	1
Smallest		6.7	10.8	13.2	14.3	15.3	16.4	17.5	18.3	19.1	19.9	21.0
Largest		12.6	17.7	20.1	22.8	23.7	23.5	24.0	18.3	19.1	19.9	21.0
SE		0.1	0.1	0.2	0.3	0.8	1.1	2.1				
95% CI (±)		0.2	0.2	0.4	0.7	1.6	2.4	4.1				

nwd2hsba.d19

Table 18. Age-frequency and CPUE (fish/nn) per inch class of hybrid striped bass collected in 14 net-nights of sampling at Rough River Lake during November 2019.

Age	Inch class																		No.	CPUE	SE	Age (%)	
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
0	8	40	114	78	5														245	17.5	4.9	58.3	
1							2	14	28	1									45	3.2	0.9	10.7	
2									4	33	44	12							93	6.6	2.9	22.1	
3											1	7	7						15	1.1	0.7	3.6	
4												1	2	4	5				12	0.9	0.6	2.9	
5													2					1	1	4	0.3	0.2	1.0
6															1			1	1	3	0.2	0.2	0.7
7																		1	1	2	0.1	0.1	0.5
11																		1		1	0.1	0.1	0.2
Total	8	40	114	78	5		2	14	32	34	45	20	11	4	6			4	3	420			
(%)	1.9	9.5	27.1	19	1.2		0.5	3.3	7.6	8.1	10.7	4.8	2.6	1.0	1.4			1.0	0.7				100.0

nwd2gn.d19, nwd2hsba.d19

Table 19. Population assessment for hybrid striped bass based on fall gill net sampling at Rough River Lake from 1999-2019 (scoring based on statewide assessment).

Year	CPUE	Mean length	CPUE		Instantaneous	Annual	Total score	Assessment rating
	(excluding age 0)	age 2+ at capture	CPUE ≥ 15.0 in	CPUE age 1	mortality (z)	mortality (A)%		
2019	12.7 (3)	17.2 (2)	11.6 (3)	3.2 (2)	0.738	52.2	10	Good
2018	35.5 (4)	18.2 (3)	17.9 (4)	31.1 (4)	1.698	81.7	15	Excellent
2017	16.8 (3)	18.5 (3)	16.7 (4)	8.2 (4)	0.635	47.0	14	Excellent
2016	22.3 (3)	17.6 (3)	21.0 (4)	4.8 (3)	0.523	40.7	13	Good
2014	43.8 (4)	16.8 (2)	32.6 (4)	14.2 (4)	0.457	36.7	14	Excellent
2012	35.1 (4)	16.7 (2)	25.1 (4)	11.6 (4)	0.717	51.2	14	Excellent
2010	60.2 (4)	16.8 (2)	34.5 (4)	28.9 (4)	0.525	40.8	14	Excellent
2008	25.1 (4)	16.3 (1)	19.3 (4)	6.3 (3)	0.544	42.0	12	Good
2006	23.7 (4)	16.9 (2)	14.5 (4)	8.9 (4)	0.447	36.1	14	Excellent
2003	33.9 (4)	16.5 (2)	30.9 (4)	3.1 (2)	0.680	49.8	12	Good
2001	29.9 (4)	15.9 (1)	16.8 (4)	13.1 (4)			13	Good
1999	26.4 (4)	16.5 (2)	18.5 (4)	8.1 (4)			14	Excellent

Table 20. Length frequency and CPUE (fish/nn) for channel catfish collected in 14 net-nights of sampling at Rough River Lake during October-November 2019.

Species	Inch class																	Total	CPUE	SE		
	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25				26	27
Channel catfish	1	8	3	3		2	1	4	4	5	16	9	8	11	9	4	1	2	1	92	6.6	0.9

nwd2gn.d19

Table 21. Number of fish and the relative weight (Wr) for each length group of channel catfish collected at Rough River Lake during samples 2006 - 2019. Standard errors are in parentheses.

Year	Length group					
	11.0-15.9 in		16.0-23.9 in		≥ 24.0 in	
	No.	Wr	No.	Wr	No.	Wr
2019	9	87 (4)	66	88 (1)	8	92 (3)
2018	4	78 (4)	64	85 (1)	6	94 (5)
2017	12	83 (3)	41	90 (1)	2	103 (3)
2016	8	86 (3)	104	95 (1)	13	93 (2)
2014	4	79 (1)	12	91 (3)	3	75 (3)
2012	2	82 (1)	1	88 (0)	2	93 (7)
2010	14	76 (1)	19	79 (2)	14	86 (3)
2008	15	82 (1)	31	87 (2)	2	94 (6)
2006	18	89 (2)	23	96 (1)	0	-

nwd2gn.d19

Table 22. Dissolved oxygen (ppm) and temperature profile conducted at three sites on Rough River Lake on 04 June 2019.

Depth	Location									
	Site: 1 1:25pm		Site: 2 11:43am		Site: 3 11:04am		Site: 5 1:55pm		Site: 6 2:20pm	
	Temp	DO	Temp	DO	Temp	DO	Temp	DO	Temp	DO
Surface	79.5	8.8	80.4	10.1	79.9	12.0	81.0	8.6	80.6	9.8
2	79.4	8.8	80.2	10.2	79.3	12.3	80.1	8.7	80.4	9.8
4	79.2	8.8	79.9	10.2	78.7	12.3	79.5	8.7	79.6	9.7
6	79.1	8.8	79.2	9.5	77.8	10.3	78.8	8.7	78.8	8.9
8	79.0	8.9	78.7	7.9	75.8	6.4	78.4	7.8	78.6	8.0
10	78.4	8.5	77.7	3.8	70.4	2.6	78.0	6.7	77.8	4.0
12	77.6	6.7	75.0	1.2	68.2	2.4	76.3	2.0	75.9	0.5
14	75.8	2.6	72.5	0.5	66.4	2.4	75.8	1.4	74.1	0.3
16	74.4	0.4	71.9	0.4	66.0	2.3	73.3	0.4	72.7	0.3
18	71.9	0.3	71.0	0.3	65.8	2.2	71.5	0.3	72.1	0.3
20	70.6	0.2	70.1	0.3	65.6	2.1	69.0	0.2	70.4	0.2
22					65.7	2.0				
24					65.6	1.9				
25			64.3	0.2						
26					24' deep					
27										
28										
29										
30	64.5	0.2					63.8	0.2		
35			30' deep						29' deep	
40										
45							44' deep			
50	49' deep									
55										
Secchi	40"		28"		28"		40"		40"	

	Temp, F	D.O.
Optimal	70.7 - 77.9	≥ 4.5
Suboptimal	< 70.7, 77.9 - 80.6	2.0 - 4.4
Poor	> 80.6	< 2.0

Table 23. Dissolved oxygen (ppm) and temperature profile conducted at three sites on Rough River Lake on 09 July 2019.

Depth	Location									
	Site: 1 10:30am		Site: 2 11:51am		Site: 3 12:21pm		Site: 5		Site: 6	
	Temp	DO	Temp	DO	Temp	DO	Temp	DO	Temp	DO
Surface	86.5	7.70	88.7	7.62	90.0	8.58	87.7	7.43	87.5	7.75
2	86.0	7.72	88.1	7.71	88.3	8.69	86.7	7.47	86.8	7.90
4	85.6	7.61	87.0	7.52	86.7	7.97	85.6	7.60	86.0	7.82
6	85.1	7.58	86.2	8.48	85.4	5.64	85.3	7.15	85.5	7.47
8	85.0	7.43	84.7	5.19	84.3	3.96	84.1	4.86	83.8	3.65
10	81.8	3.14	83.1	3.64	82.2	1.58	81.7	1.68	81.3	1.07
12	78.9	0.52	79.7	0.68	79.7	0.59	80.3	0.52	79.2	0.39
14	77.2	0.28	77.2	0.41	77.4	0.67	77.3	0.26	76.4	0.29
16										
18										
20	71.9	0.21	73.2	0.29	72.4	1.59	73.0	0.22	73.2	0.24
22										
24										
25	70.6	0.20	70.4	0.23	68.7	0.54	71.0	0.20		
26					36' deep					
27										
28										
29										
30	69.6	0.19								
35			42' deep						41' deep	
40										
45							56' deep			
50	59' deep									
55										
Secchi	60"		47"				54"			

	Temp, F	D.O.
Optimal	70.7 - 77.9	≥ 4.5
Suboptimal	< 70.7, 77.9 - 80.6	2.0 - 4.4
Poor	> 80.6	< 2.0

Table 24. Dissolved oxygen (ppm) and temperature profile conducted at three sites on Rough River Lake on 30 August 2019.

Depth	Location									
	Site: 1 9:14am		Site: 2 9:47am		Site: 3 10:19am		Site: 5 11:37am		Site: 6 12:00pm	
	Temp	DO	Temp	DO	Temp	DO	Temp	DO	Temp	DO
Surface	80.0	6.33	80.9	6.67	80.1	8.90	81.5	6.35	82.2	6.46
2	80.2	6.27	80.8	6.44	79.8	8.68	81.5	6.39	81.9	6.48
4	80.2	6.25	80.6	5.89	79.2	7.63	81.0	6.34	81.2	6.22
6	80.2	6.19	80.5	5.19	79.0	6.62	80.7	6.25	80.8	5.78
8	80.1	6.17	80.2	4.03	78.9	6.13	80.5	5.90	80.4	5.27
10	80.1	6.11	80.2	3.87	78.8	4.95	80.1	2.65	80.3	4.75
12	80.1	6.04	80.1	3.67	78.6	4.75	80.0	2.19	80.1	3.10
14	80.1	5.99	80.0	3.44	77.8	2.46	79.9	1.85	79.8	1.76
16	80.1	5.86	79.9	3.11	77.7	2.38	79.8	0.92	79.4	1.35
18	79.8	4.26	79.8	2.31	77.6	2.16	79.7	0.35	79.7	0.70
20	79.7	3.72	79.6	0.70	77.5	1.80	79.6	0.27	79.7	0.30
22	79.2	1.35								
24										
25	77.5	0.28	77.7	0.25	76.1	0.34	78.8	0.25	78.0	0.24
26					25' deep					
27										
28										
29										
30										
35			30' deep						30' deep	
40										
45							45' deep			
50	43' deep									
55										
Secchi	72"		40"		26"		42"		41"	

	Temp, F	D.O.
Optimal	70.7 - 77.9	≥ 4.5
Suboptimal	< 70.7, 77.9 - 80.6	2.0 - 4.4
Poor	> 80.6	< 2.0

Table 25. Dissolved oxygen (ppm) and temperature profile conducted at three sites on Rough River Lake on 24 September 2019.

Depth	Location									
	Site: 1 10:23 AM	Site: 2 10:56 AM	Site: 3 11:31 AM	Site: 5 12:56 PM	Site: 6 1:19 PM					
	Temp	DO	Temp	DO	Temp	DO	Temp	DO	Temp	DO
Surface	79.6	4.85	80.1	4.64	80.0	6.51	80.4	5.72	80.6	5.71
2	79.7	4.78	80.1	4.62	79.8	6.51	80.4	5.48	80.5	5.63
4	79.6	4.68	80.1	4.62	79.6	6.49	80.4	5.50	80.1	5.01
6	79.5	4.69	80.0	4.54	79.4	5.98	80.4	5.54	79.7	4.53
8	79.4	4.78	79.9	3.80	78.8	5.15	79.9	5.10	79.8	4.68
10	79.4	4.72	79.8	3.96	78.7	5.09	79.8	4.85	79.8	4.27
12	79.4	4.59	79.8	3.90	78.6	4.37	79.8	4.75	79.7	3.88
14	79.4	4.58	79.7	3.81	78.5	4.26	79.8	4.59	79.7	3.61
16	79.3	4.57	79.7	3.63	78.4	4.54	79.8	4.57	79.7	3.87
18	79.3	4.55	79.7	4.00	77.7	1.10	79.7	4.54	79.6	3.93
20	79.3	4.53	79.6	4.09	76.1	0.32	79.7	3.19	79.5	4.05
22	79.3	4.49	79.6	4.07	75.8	0.27	79.4	3.12	79.4	3.73
24	77.7	0.37	78.0	0.39			78.7	0.32	78.9	0.53
25	77.4	0.29	77.8	0.30	75.4	0.21	78.0	0.28	78.5	0.32
26										
27					25' deep					
28										
29										
30	75.2	0.3	76.6	0.25						
35			30' deep						28' deep	
40										
45							43' deep			
50	51' deep									
55										
Secchi	56"		36"		25"		50"		34"	

	Temp, F	D.O.
Optimal	70.7 - 77.9	≥ 4.5
Suboptimal	< 70.7, 77.9 - 80.6	2.0 - 4.4
Poor	> 80.6	< 2.0

Site 1: at North/South Fork split
 Site 2: Middle South Fork
 Site 3: Upper South Fork
 Site 5: Lower North Fork
 Site 6: Upper North Fork

Table 26. Fishery statistics derived from creel survey at Rough River Lake (5,200 acres) during 01 April - 31 Oct., 2005, 2010, 2018 and 2019.

	2019	2018	2010	2005
<u>Fishing trips</u>				
No. of fishing trips (per acre)	29,417 (5.77)	29,586 (5.80)	24,259 (4.76)	35,293 (6.92)
<u>Fishing pressure</u>				
Total man-hours (S.E.)	131,183 (2,323.41)	117,059 (2,423.66)	124,935 (2,475.62)	147,472 (3,996.55)
Man-hours/acre	25.72	22.95	24.50	28.92
<u>Catch/harvest</u>				
No. of fish caught (S.E.)	477,916 (27,816.12)	371,981 (23,738.02)	213,787 (16,418.48)	220,423 (19,062.71)
No. of fish harvested (S.E.)	158,107 (11,314.43)	133,895 (10,857.79)	68,683 (6,086.67)	59,590 (6,328.44)
Lb. of fish harvested	99,037	97,699	41,618	41,903
<u>Harvest rates</u>				
Fish/hour	1.21	1.15	0.55	0.41
Fish/acre	31.00	26.25	13.47	11.68
Lb/acre	19.42	19.16	8.16	8.22
<u>Catch rates</u>				
Fish/hour	3.64	3.31	1.71	1.47
Fish/acre	93.71	72.94	41.92	43.22
<u>Miscellaneous characteristics (%)</u>				
Male	90.1%	90.1%	89.2%	82.5%
Female	9.9%	10.0%	10.8%	17.6%
Resident	87.9%	95.0%	98.6%	91.5%
Non-resident	12.1%	5.0%	1.4%	8.5%
<u>Method (%)</u>				
Still fishing	23.3%	26.8%	40.5%	7.9%
Casting	70.8%	67.3%	53.2%	86.9%
Trolling	4.4%	4.0%	5.0%	5.2%
Spider-Rig	0.5%	0.5%	-	-
Crappie Casting	-	0.1%	-	-
Crappie-Still < 3	-	0.3%	-	-
Jugging\Trotline	0.8%	1.1%	0.6%	-
Noodling/Hand grabbing	0.1%	-	0.3%	-
Fly fishing	-	-	0.1%	-
<u>Mode (%)</u>				
Boat	93.5%	91.9%	90.1%	83.3%
Bank	3.5%	3.9%	6.9%	8.7%
Dock	2.5%	4.1%	3.0%	8.0%
Other	0.5%	0.1%	-	-

^aS.E. = standard error

Table 27. Fish harvest statistics derived from a creel survey at Rough River Lake (5,100 acres) during 08 April through 29 October 2019.

	Black bass group	Largemouth bass	Spotted bass	Crappie group	White crappie	Black crappie	Panfish group	Bluegill	Longear sunfish	Catfish group	Channel catfish	Flathead catfish	Hybrid striped bass	Morone group	Carp	Drum
No. caught	155,176	117,197	37,979	225,274	209,136	16,138	67,787	65,340	2,446	6,456	5,838	618	21,361	21,361	258	1,455
(per acre)	30.43	22.98	7.44	44.17	41.01	3.16	13.29	12.81	0.48	1.27	1.14	0.12	4.19	4.19	0.0506	0.2852
No. harvested	9,806	8,815	991	103,201	88,907	14,294	29,104	26,854	2,250	4,899	4,464	435.47	10,891	10,891	20.68	62.06
(per acre)	1.92	1.72	0.19	20.24	17.43	2.80	5.71	5.27	0.44	0.96	0.88	0.09	2.14	2.14	0.0041	0.0122
% of total no. harvested	6.20	5.58	0.63	65.27	56.23	9.04	18.41	16.98	1.42	3.10	2.82	0.28	6.89	6.89	0.01	0.04
Lb. harvested	13,947	13,089	858	51,223	43,345	7,879	4,203	3,925	278	11,454	8,849	2605.20	17,884	17,884	117.5	87.3
(per acre)	2.73	2.57	0.17	10.04	8.50	1.54	0.82	0.77	0.05	2.25	1.74	0.51	3.51	3.51	0.023	0.171
% of total lb harvested	14.08	5.58	0.87	51.72	43.77	7.96	4.24	3.96	0.28	11.57	8.94	2.63	18.06	18.06	0.12	0.09
Mean length (in)		14.13	12.71		10.15	9.93		6.29	6.00		18.11	23.42	14.88		23.00	15.00
Mean weight (lb)		1.44	0.87		0.48	0.52		0.16	0.13		1.91	5.61	1.67		5.68	1.45
No. of fishing trips for that species	15,285			7,857			1,668			820				2,093		
% of all trips	51.96			26.71			5.67			2.79				7.12		
Hours fished for that species	68,165			35,036			7,437			3,659				9,335		
(per acre)	13.37			6.87			1.46			0.72				1.83		
No. harvested fishing for that species	8,806			100,190			22,761			3,507				9,075		
Lb. harvested fishing for that species	12,917			49,813			3,362			9,553				14,992		
No./hour harvested fishing for that species	0.13			2.73			3.60			0.81				1.13		
% success fishing for that species	23.95			97.02			96.36			89.29				83.01		

Table 29. Black bass catch and harvest statistics derived from a creel survey at Rough River Lake (5,100 a) from 08 April - October 29, 2019.

	Largemouth bass						Spotted bass			
	Harvest			Catch and Release			Harvest Total	Catch and Release		
	<15.0 in	≥15.0 in	Total	<15.0 in	≥15.0 in	Total		8.0-14.9 in	≥15.0 in	Total
Total no. of bass	4,580	4,235	8,815	100,868	7,513	108,381	945	36,210	68	36,278
% of black bass harvested by no.			89.89							10.11
Total weight of fish (lb)			13,089							857.50
% of bass harvested by weight			93.85							6.15
Mean length			14.13							12.71
Mean weight			1.44							0.87
Rate (f/hr)			0.07							0.01

Table 30. Monthly black bass angling success at Rough River Lake (5,100 a) from 08 April - 29 Oct. 2019 creel survey period; data does not include bass < 8.0 in that were caught and released.

Month	Total no. of bass caught	Total no. of bass harvested	No. of black bass fishing trips	Hours fished by bass anglers	Bass caught by bass anglers	Bass caught/hour by bass anglers	Bass harvested by bass anglers	Bass harvested/hour by bass anglers
Apr	18,725	1,003	1,506	6,717	17,701	2.80	777	0.12
May	35,122	2,552	2,597	11,581	33,950	2.77	2,384	0.19
Jun	20,802	786	1,858	8,288	18,465	2.14	579	0.07
Jul	10,070	314	1,292	5,764	7,638	1.24	235	0.04
Aug	19,530	898	2,582	11,516	18,597	1.68	826	0.07
Sep	32,393	1,980	3,088	13,771	31,685	2.14	1,835	0.12
Oct	18,533	2,274	2,361	10,527	17,959	1.64	2,170	0.20
Total	155,176	9,807	15,284	68,164	145,995	2.14	8,806	0.13
Mean	22,168	1,401	2,183	9,738	20,856	2.07	1,258	0.12

Table 31. Black bass angling success at Rough River Lake (5,100 a) during 01 April - 31 Oct. 2005, 2010, 2018 and 2019 creel survey periods. (Mean = monthly average)

Year		Total no. of bass caught	Total no. of bass harvested	No. of black bass fishing trips	Hours fished by bass anglers	Bass caught by anglers	Bass caught/hour by bass anglers	Bass harvested by bass anglers	Bass harvested/hour by bass anglers
2019	Total	155,176	9,807	15,284	68,164	145,995	2.14	8,806	0.13
	Mean	22,168	1,401	2,183	9,738	20,856	2.07	1,258	0.12
2018	Total	134,796	9,858	14,853	58,765	126,898	2.18	8,747	0.13
	Mean	19,257	1,408	2,122	8,395	18,128	1.98	1,250	0.13
2010	Total	41,785	6,503	8,526	43,911	37,614	0.77	5,577	0.12
	Mean	5,970	929	1,218	6,273	5,373	0.74	797	0.11
2005	Total	52,762	6,806	12,208	51,009	43,618	0.76	5,748	0.10
	Mean	7,537	972	1,744	7,287	6,231	0.70	821	0.09

Table 32. Monthly crappie angling success at Rough River Lake (5,100 a) from 08 April - 29 Oct. 2019 creel survey period.

Month	Total no. of crappie caught	Total no. of crappie harvested	No. of crappie fishing trips	Hours fished by crappie anglers	Crappie caught by anglers	Crappie caught/hour by crappie anglers	Crappie harvested by crappie anglers	Crappie harvested/hour by crappie anglers
April	73,653	39,436	2,548	11,363	72,385	5.82	38,515	3.10
May	26,608	12,362	1,056	4,710	25,458	5.41	11,924	2.53
June	10,835	4,694	360	1,604	8,851	4.41	3,950	1.97
July	5,205	2,276	330	1,473	5,100	3.48	2,249	1.54
Aug	23,156	9,585	635	2,833	22,510	6.33	9,478	2.67
Sept	28,203	10,589	954	4,257	27,245	6.57	10,339	2.49
Oct	57,613	24,258	1,972	8,795	56,070	6.56	23,735	2.78
Total	225,274	103,200	7,857	35,036	217,619	5.87	100,190	2.73
Mean	32,182	14,743	1,122	5,005	31,088	5.51	14,313	2.44

Table 33. Crappie angling success at Rough River Lake (5,100 a) during 01 April - 31 Oct. 2005, 2010, 2018, and 2019 creel survey periods. (Mean = monthly average)

Year		Total no. of crappie caught	Total no. of crappie harvested	No. of crappie fishing trips	Hours fished by crappie anglers	Crappie caught by crappie anglers	Crappie caught/hour by crappie anglers	Crappie harvested by crappie anglers	Crappie harvested/hour by crappie anglers
2019	Total	225,274	103,200	7,857	35,036	217,619	5.87	100,190	2.73
	Mean	32,182	14,743	1,122	5,005	31,088	5.51	14,313	2.44
2018	Total	161,778	91,616	7,182	28,414	145,017	5.25	83,485	2.99
	Mean	23,111	13,088	1,026	4,059	20,717	5.24	11,926	2.99
2010	Total	140,191	46,560	8,025	41,330	132,213	3.08	44,109	1.02
	Mean	20,027	6,651	1,146	5,904	18,888	2.74	6,301	0.72
2005	Total	56,606	25,324	6,920	28,917	53,652	1.67	24,006	0.77
	Mean	8,086	3,618	989	4,131	7,665	1.55	3,429	0.60

Table 34. Monthly hybrid striped bass angling success at Rough River Lake (5,100 a) from 08 April - 29 Oct. 2019 creel survey period.

Month	Total no. of hybrid striped bass caught	Total no. of hybrid striped bass harvested	No. of hybrid striped bass fishing trips	Hours fished by hybrid striped bass anglers	Hybrid striped bass caught by HSB anglers	Hybrid striped bass caught/hour by HSB anglers	Hybrid striped bass harvested by HSB anglers	Hybrid striped bass harvested/hour by HSB anglers
April	2,620	900	113	504	818	2.11	409	1.05
May	4,665	2,468	348	1,552	3,305	2.16	2,259	1.48
June	7,920	4,322	683	3,048	5,997	2.25	3,660	1.37
July	3,793	2,066	632	2,818	2,878	1.16	1,936	0.78
Aug	1,436	826	246	1,097	1,005	1.17	790	0.92
Sept	563	125	56	250	167	0.73	21	0.09
Oct	366	183	15	67	0	0.00	0	0.00
Total	21,361	10,891	2,093	9,335	14,170	1.78	9,075	1.13
Mean	3,052	1,556	299	1,334	2,024	1.37	1,296	0.81

Table 35. Hybrid striped bass angling success at Rough River Lake (5,100 a) during 01 April - 31 Oct. 2005, 2010, 2018, and 2019 creel survey periods. (Mean = monthly average)

Year		Total number of hybrid striped bass caught	Total no. of hybrid striped bass harvested	No. of hybrid striped bass fishing trips	Hours fished by hybrid striped bass anglers	Hybrid striped bass caught by hybrid striped bass anglers	Hybrid striped bass caught/hour by hybrid striped bass anglers	Hybrid striped bass harvested by hybrid striped bass anglers	Hybrid striped bass harvested/hour by hybrid striped bass anglers
2019	Total	21,361	10,891	2,093	9,335	14,170	1.78	9,075	1.13
	Mean	3,052	1,556	299	1,334	2,024	1.37	1,296	0.81
2018	Total	21,828	7,770	1,807	7,151	16,488	2.28	6,677	0.91
	Mean	3,118	1,110	254	1,007	2,355	1.96	1,113	0.77
2010	Total	6,184	3,504	1,609	8,288	4,385	0.74	2,887	0.48
	Mean	883	501	230	1,184	626	0.61	412	0.40
2005	Total	6,048	3,086	4,701	19,644	4,368	0.26	2,579	0.15
	Mean	864	441	661	2,761	624	0.34	368	0.21

Table 36. Dissolved oxygen (ppm) and temperature profile conducted Lake Malone on 12 September 2019.

Location		
	Split	10:38 AM
Depth (ft)	Temp	DO
Surface	85.1	8.07
2	83.7	8.27
4	83.2	8.27
6	82.7	8.11
8	81.5	7.98
10	80.0	6.10
12	77.8	0.90
14	74.0	0.33
16	68.3	0.26
18	63.1	0.22
20	59.3	0.19
22		
24		
25	54.0	0.16
26		
28	27 ft deep	
Secchi	60"	

Table 37. Length frequency and CPUE (fish/hr) for bluegill and redear sunfish collected during 0.75 hours of electrofishing at Mauzy Lake in May 2019.

Species	Inch class								Total	CPUE	SE
	1	2	3	4	5	6	7	8			
Bluegill	2	10	19	28	26	25	9		119	158.7	26.4
Redear sunfish			12	47	96	76	80	12	323	430.7	43.5

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Table 38. Spring electrofishing CPUE (fish/hr) for each length group of bluegill (2000-2019) and redear sunfish (2007-2019) collected at Mauzy Lake.

Year	Bluegill											
	Length group										Total	
	< 3.0 in		3.0-5.9 in		6.0-7.9 in		≥ 8.0 in		≥ 10.0 in		CPUE	SE
2019	16.0	3.6	97.3	18.9	45.3	14.6	0.0		0.0		158.7	26.4
2018	3.4	2.4	52.6	13.3	74.3	19.5	0.0		0.0		130.3	27.8
2017	13.3	7.9	197.3	24.4	37.3	9.61	0.0		0.0		248.0	30.8
2015	17.3	12.1	165.3	27.1	44.0	7.1	0.0		0.0		226.7	31.2
2014	10.3	2.3	253.7	55.6	104.0	21.0	0.0		0.0		368.0	69.1
2013	91.2	21.1	417.6	54.0	73.6	11.1	0.0		0.0		582.4	60.9
2012	23.0	7.8	553.0	108.5	55.0	14.3	0.0		0.0		631.0	126.7
2011	182.4	72.9	726.4	144.1	216.0	51.4	121.6	43.3	0.0		1246.4	195.0
2010	238.4	76.5	280.0	41.0	97.6	34.0	0.0		0.0		616.0	74.4
2009 ^a												
2008 ^a												
2007	101.3	11.1	621.3	39.6	38.7	8.9	0.0		0.0		761.3	44.5
2006	96.0	27.9	614.0	137.7	10.0	7.6	0.0		0.0		720.0	163.4
2005	289.7	45.5	596.2	101.3	14.1	5.8	0.0		0.0		900.0	86.6
2004	101.1	18.0	84.6	17.5	64.8	12.0	1.1	1.1	0.0		251.7	36.1
2003 ^b												
2002	9.3	3.5	94.7	19.6	125.3	29.2	1.3	1.3	0.0		230.7	48.0
2001	5.3	3.5	65.3	16.2	137.3	27.9	1.3	1.3	0.0		209.3	40.7
2000	1.3	1.3	52.0	4.0	73.3	5.3	4.0	2.3	0.0		130.7	10.9

Year	Redear											
	Length group										Total	
	< 3.0 in		3.0-5.9 in		6.0-7.9 in		≥ 8.0 in		≥ 10.0 in		CPUE	SE
2019	0.0		206.7	20.7	208.0	27.3	16.0	5.1	0.0		430.7	43.5
2018	0.0		41.1	10.8	258.3	39.2	78.9	20.3	0.0		378.3	52.5
2017	0.0		109.3	22.9	304.0	50.6	37.3	16.2	0.0		450.7	54.4
2015	0.0		140.0	17.4	254.7	53.9	18.7	7.4	0.0		413.3	59.5
2014	1.1	1.1	112.0	19.7	208.0	26.1	27.4	6.0	0.0		348.6	33.1
2013	0.0		72.0	11.0	161.6	26.0	65.6	15.5	0.0		299.2	40.8
2012	0.0		107.0	13.7	39.0	7.6	33.0	8.6	0.0		179.0	21.9
2011	3.2	2.0	8.0	6.2	32.0	32.0	35.2	26.4	0.0		78.4	65.3
2010	0.0		16.0	10.1	240.0	48.3		7.3	0.0		270.4	61.0
2009 ^a												
2008 ^a												
2007	2.7	1.7	41.3	13.1	14.7	3.8	6.7	5.2	0.0		65.3	12.6

^a Lake drawn down for repairs in 2008-2009

^b Lake renovated in 2003

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Table 39. PSD and RSD values obtained for bluegill and redear sunfish collected in spring electrofishing samples at NWFD state-owned lakes during 2019; 95% confidence intervals are in parentheses.

Lake	Species	No.	PSD	RSD ^a
Mauzy	Bluegill	107	32 (± 9)	0
	Redear sunfish	311	30 (± 5)	0
Carpenter	Bluegill	265	29 (± 5)	0
	Redear sunfish	71	79 (± 10)	11 (± 7)
New Kingfisher	Bluegill	221	24 (± 6)	0
	Redear sunfish	32	100 (± 0)	6 (± 8)
Old Kingfisher	Bluegill	231	24 (± 6)	0
	Redear sunfish	9	89 (± 21)	0

^a Bluegill = RSD₈, Redear = RSD₉

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nwd5bg.d19

nwd6bg.d19

nwd7bg.d19

Table 40. Population assessment for bluegill based on spring electrofishing at Mauzy Lake from 2001-2019 (scoring based on statewide assessment).

Year	Mean length age-2 at capture	Years to 6.0 in	CPUE ≥ 6.0 in	CPUE ≥ 8.0 in	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
2019			45.3 (2)	0.0 (1)			≥ 5	P - F
2018	3.1 (1)*	≥5 (1)	74.3 (3)	0.0 (1)			5	Poor
2017			37.3 (2)	0.0 (1)			≥ 5	P - F
2015	3.4 (1)	≥5 (1)	44.0 (2)	0.0 (1)			5	Poor
2014			104.0 (4)	0.0 (1)			≥ 7	F - G
2013			73.6 (3)	0.0 (1)			≥ 6	P - F
2012	4.0 (2)	4-4+ (2)	55.0 (2)	0.0 (1)	0.884	58.7	7	Fair
2011			337.6 (4)	121.6 (4)			≥ 10	Good
2010			97.6 (3)	0.0 (1)			≥ 6	P - F
2009 ^a								
2008 ^a								
2007	3.3 (1)	4-4+ (2)	38.7 (2)	0.0 (1)	0.642	35.8	6	Poor
2006	3.7 (1)	4-4+ (2)	10.0 (1)	0.0 (1)	0.755	53.0	5	Poor
2005	4.3 (3)	2-2+ (4)	14.1 (1)	0.0 (1)			9	Fair
2004	4.3 (3)	2-2+ (4)	65.9 (3)	1.1 (2)			12	Good
2003 ^b				0.0 (1)				
2002	4.3 (3)	2-2+ (4)	126.7 (4)	1.3 (2)			13	Good
2001	4.3 (3)	2-2+ (4)	138.7 (4)	1.3 (2)			13	Good

^a Lake drawn down for repairs in 2009

^b Lake renovated in 2003

* Back calculated from age table

Table 41. Population assessment for redear sunfish based on spring electrofishing at Mauzy Lake from 2007-2019 (scoring based on statewide assessment).

Year	Mean length age-3 at capture	Years to 8.0 in	CPUE ≥ 8.0 in	CPUE ≥ 10.0 in	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
2019			16.0 (3)	0.0 (1)			≥ 6	P - F
2018	6.2 (1)*	≥ 6 (1)	78.9 (4)	0.0 (1)			7	Fair
2017			37.3 (4)	0.0 (1)			≥ 7	F - G
2015	5.9 (1)	≥ 6 (1)	18.7 (3)	0.0 (1)			6	Poor
2014			27.4 (4)	0.0 (1)			≥ 7	F - G
2013			65.6 (4)	0.0 (1)			≥ 7	F - G
2012	7.6 (3)	4-4+ (3)	33.0 (4)	0.0 (1)			11	Good
2011			35.2 (4)	0.0 (1)			≥ 7	F - G
2010			14.4 (3)	0.0 (1)			≥ 6	P - G
2009 ^a								
2008 ^a								
2007	8.2 (4)	3-3+ (4)	6.7 (2)	0.0 (1)	0.790	54.6	11	Good

^a Lake drawn down for repairs in 2009

* Back calculated from age table

Table 42. Length frequency and CPUE (fish/hr) of largemouth bass collected during 1.0 hour of 15-minute diurnal electrofishing runs at Carpenter Lake in April 2019.

Species	Inch class																				Total	CPUE	SE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21				
Largemouth bass	1	4	17	14	1	5	9	4	11	10	3	8	18	22	11	4	4	5	1	152	152.0	30.1	

nwd5psd.d19

Table 43. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Carpenter Lake 1999-2019.

Year	Length group										Total	
	< 8.0 in		8.0-11.9 in		12.0-14.9 in		≥ 15.0 in		≥ 20.0 in			
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	37.0	10.4	29.0	12.3	21.0	9.3	65.0	3.4	6.0	1.2	152.0	30.1
2018	40.0	9.2	17.3	7.4	108.0	12.0	49.3	13.1	1.3	1.3	214.7	10.4
2017	32.0	2.3	44.0	12.9	100.0	20.8	24.0	4.6	5.3	2.7	200.0	38.6
2016	97.3	31.5	57.3	5.8	65.3	11.4	33.3	5.3	12.0	6.1	254.3	41.9
2015	21.3	5.8	86.7	3.5	12.0	2.3	17.3	2.7	0.0		137.3	4.8
2014	16.0	6.7	131.2	17.6	48.0	13.2	30.4	5.9	12.8	5.4	225.6	37.0
2013	80.0	26.2	138.7	9.6	20.0	4.0	22.7	1.3	5.3	1.3	261.3	38.5
2012	40.0	16.7	74.7	15.0	46.7	7.4	22.7	12.7	1.3	1.3	184.0	46.7
2011	182.7	15.4	166.7	9.6	73.3	13.1	9.3	3.5	4.0	4.0	432.0	30.2
2010	73.3	19.4	198.7	39.6	10.7	5.8	12.0	4.6	2.7		294.7	34.7
2009	102.7	18.7	166.7	26.3	18.7	4.8	8.0	2.3	0.0		296.0	27.2
2008	136.0	17.7	229.0	28.8	9.0	2.5	11.0	4.1	1.0	1.0	385.0	50.3
2007	45.3	7.4	128.0	24.3	12.0	2.3	10.7	3.5	1.3		196.0	31.8
2006	97.3	12.0	134.7	8.7	24.0	1.3	9.3	2.3	0.0		265.3	55.4
2005	157.3	3.5	165.3	48.6	30.7	3.5	2.7	1.3	0.0		356.0	54.6
2004	80.0	16.7	128.0	28.0	22.7	3.5	21.3	8.7	2.7		252.0	47.7
2003	181.3	49.3	97.3	11.4	18.7	4.8	36.0	12.2	1.3		333.3	63.4

nwd5psd.d19

Table 44. PSD and RSD₁₅ values obtained for largemouth bass taken in spring electrofishing samples at NWFD state-owned lakes during 2019; 95% confidence intervals are in parentheses.

Lake	Species	No. \geq 8.0 in	PSD	RSD ₁₅
Carpenter	Largemouth bass	115	75 (\pm 8)	57 (\pm 9)
New Kingfisher	Largemouth bass	33	76 (\pm 15)	70 (\pm 16)
Old Kingfisher	Largemouth bass	26	50 (\pm 20)	46 (\pm 20)

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nwd6psd.d19
nwd7psd.d19

Table 45. Length frequency and CPUE (fish/hr) of largemouth bass collected during 1.0 hour of 15-minute diurnal electrofishing runs at Carpenter Lake in October 2019.

Species	Inch class																	Total	CPUE	SE
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21			
Largemouth bass	2	10	1	2	10	7	1	3	5	4	4	7	7	4	2	2	1	72	72.0	22.1

nwd5lmb.d19

Table 46. Number of fish and relative weight (Wr) for each length group of largemouth bass collected at Carpenter Lake during October 2019. Standard errors are in parentheses.

Length group					
8.0-11.9 in		12.0-14.9 in		\geq 15.0 in	
No.	Wr	No.	Wr	No.	Wr
21	84 (2)	13	85 (2)	23	94 (2)

nwd5lmb.d19

Table 47. Population assessment for largemouth bass based on spring electrofishing at Carpenter Lake from 2001-2019 (scoring based on statewide assessment).

Year	Mean length	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥ 15.0 in	CPUE ≥ 20.0 in	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
	age-3 at capture								
2019		37.0 (3)	21.0 (2)	65.0 (4)	6.0 (4)			≥ 14	Good
2018	11.3 (3)*	40.0 (3)	108.0 (4)	49.3 (4)	1.3 (2)			16	Good
2017		34.7 (3)	100.0 (4)	24.0 (3)	5.3 (4)			≥ 15	G - E
2016		97.3 (4)	65.3 (4)	33.3 (4)	12.0 (4)			≥ 17	Excellent
2015	10.6 (2)*		12.0 (1)	17.3 (3)	0.0 (1)			≥ 8	P - F
2014		16.0 (2)	48.0 (4)	30.4 (4)	12.8 (4)			≥ 15	G - E
2013		69.3 (4)	20.0 (2)	22.7 (3)	5.3 (4)			≥ 14	Good
2012		12.0 (2)	46.7 (4)	22.7 (3)	1.3 (2)			≥ 12	F - G
2011		182.7 (4)	73.3 (4)	9.3 (2)	4.0 (4)			≥ 15	G - E
2010	10.1 (1)	72.0 (4)	10.7 (1)	12.0 (2)	2.7 (3)	0.438	35.5	11	Fair
2009	10.3 (2)	97.9 (4)	18.7 (2)	8.0 (2)	0.0 (1)			11	Fair
2008	10.3 (2)	120.3 (4)	9.0 (1)	11.0 (2)	1.0 (2)	0.561	42.9	11	Fair
2007	10.3 (2)	39.9 (3)	12.0 (1)	10.7 (2)	1.3 (2)	0.560	42.9	10	Fair
2006	11.6 (4)	78.7 (4)	24.0 (2)	9.3 (2)	0.0 (1)	1.160	68.7	13	Good
2005	11.6 (4)	132.0 (4)	30.7 (3)	2.7 (1)	0.0 (1)			13	Good
2004	11.6 (4)	56.0 (4)	22.7 (2)	21.3 (3)	2.7 (3)	1.155	68.5	16	Good
2003	11.6 (4)	162.7 (4)	54.7 (4)	36.0 (4)	1.3 (2)	0.943	61.1	18	Excellent
2002	11.6 (4)	12.0 (2)	12.0 (1)	21.3 (3)	0.0 (1)			11	Fair
2001	11.6 (4)	8.0 (2)	90.7 (4)	66.7 (4)	1.3 (2)			16	Good

* Back calculated from age table

Table 48. Length frequency and CPUE (fish/hr) of bluegill and redear sunfish collected during 0.75 hours of electrofishing at Carpenter Lake in May 2019.

Species	Inch class									Total	CPUE	SE
	1	2	3	4	5	6	7	8	9			
Bluegill	1	3	28	92	67	67	11			269	358.7	81.9
Redear sunfish			6	1	1	13	42	6	8	77	102.7	27.3

nwd5bg.d19

Table 49. Spring electrofishing CPUE (fish/hr) for each length group of bluegill (1999-2019) and redear sunfish (2010-2019) collected at Carpenter Lake.

Bluegill	Length group										Total	
	< 3.0 in		3.0-5.9 in		6.0-7.9 in		≥ 8.0 in		≥ 10.0 in		CPUE	SE
Year	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	5.3	4.0	249.3	51.8	104.0	34.8	0.0		0.0		358.7	81.9
2018	17.3	6.0	528.0	85.3	49.3	8.1	0.0		0.0		594.7	93.9
2017	89.3	27.9	348.0	38.8	170.7	22.0	0.0		0.0		608.0	84.3
2016	8.0	3.6	133.3	30.5	156.0	25.0	0.0		0.0		297.3	52.5
2015	2.7	1.7	125.3	17.9	220.0	52.9	0.0		0.0		348.0	65.5
2014	5.3	4.0	352.0	34.6	332.0	34.1	1.3		0.0		690.7	49.7
2013	20.0	9.2	138.7	27.1	312.0	42.5	0.0		0.0		470.7	70.8
2012	1.6	1.6	144.0	31.9	147.2	22.3	0.0		0.0		292.8	49.7
2011	16.0	10.4	400.0	157.5	180.8	50.5	0.0		0.0		596.8	214.4
2010	10.7	6.4	100.0	18.6	101.3	19.0	0.0		0.0		212.0	30.8
2009	17.3	9.6	124.0	24.4	140.0	17.9	0.0		0.0		281.3	42.9
2008	0.0		88.0	18.8	150.0	50.7	0.0		0.0		238.0	68.5
2007	2.7	2.7	61.3	17.7	168.0	38.5	1.3	1.3	0.0		233.3	9.1
2006	1.3	1.3	57.3	10.0	102.7	12.1	0.0		0.0		161.3	21.3
2005	12.1	9.8	190.1	17.1	98.9	6.8	18.7	9.0	0.0		319.8	23.1
2004	12.3	4.6	26.2	7.1	46.2	11.4	1.5	1.5	0.0		86.2	20.4
2003	7.7	2.8	102.6	23.0	47.4	13.2	3.9	1.7	0.0		161.5	34.1
2002	2.3		8.1		17.2		1.2		0.0		28.7	0.0
2001			198.7	74.7	152.0	22.7	41.3	12.7	0.0		392.0	108.9

nwd5bg.d19

Redear	Length group										Total	
	< 3.0 in		3.0-5.9 in		6.0-7.9 in		≥ 8.0 in		≥ 10.0 in		CPUE	Std. err.
Year	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	0.0		10.7	4.9	73.3	22.7	18.7	3.4	0.0		102.7	27.3
2018	0.0		21.3	3.4	16.0	4.1	16.0	2.9	1.3	1.3	53.3	6.4
2017	0.0		29.3	19.0	17.3	5.2	22.7	10.0	1.3	1.3	69.3	19.8
2016	0.0		1.3	1.3	8.0	2.9	12.0	6.4	2.7	1.7	21.3	7.9
2015	0.0		2.7	2.7	10.7	3.4	40.0	9.9	1.3	1.3	53.3	11.4
2014	0.0		0.0		10.7	4.0	72.0	11.7	0.0		82.7	11.4
2013	0.0		1.3	1.3	9.3	2.5	12.0	2.7	0.0		22.7	2.5
2012	0.0		8.0	3.6	41.6	20.3	6.4	3.0	0.0		56.0	25.2
2011	0.0		32.0	24.4	28.8	17.6	16.0	5.7	0.0		76.8	43.1
2010	0.0		2.7	2.7	16.0	4.6	9.3	2.5	0.0		28.0	6.5

nwd5bg.d19

Table 50. Population assessment for bluegill based on spring electrofishing at Carpenter Lake from 2001-2019 (scoring based on statewide assessment).

Year	Mean length age-2 at capture	Years to 6.0 in	CPUE ≥ 6.0 in	CPUE ≥ 8.0 in	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
2019			104.0 (4)	0.0 (1)			≥ 7	F - G
2018	4.8 (4)*	3-3+ (3)	49.3 (2)	0.0 (1)			10	Good
2017			170.7 (4)	0.0 (1)			≥ 7	F - G
2016			156.0 (4)	0.0 (1)			≥ 7	F - G
2015	4.9 (4)	4-4+ (2)	220.0 (4)	0.0 (1)			11	Good
2014			333.3 (4)	1.3 (2)			≥ 8	F - E
2013			312.0 (4)	0.0 (1)			≥ 7	F - G
2012			147.2 (4)	0.0 (1)			≥ 7	F - G
2011			180.8 (4)	0.0 (1)			≥ 7	F - G
2010	4.9 (4)	3-3+ (3)	101.3 (4)	0.0 (1)	0.615	45.9	12	Good
2009	4.6 (3)	3-3+ (3)	140.0 (4)	0.0 (1)			11	Good
2008	4.6 (3)	3-3+ (3)	150.0 (4)	0.0 (1)	0.571	43.9	11	Good
2007	4.6 (3)	3-3+ (3)	169.3 (4)	1.3 (2)	0.386	32.0	12	Good
2006	5.6 (4)	2-2+ (4)	84.6 (3)	0.0 (1)	1.657	80.9	12	Good
2005	5.6 (4)	2-2+ (4)	117.6 (4)	18.7 (4)			16	Excellent
2004	5.6 (4)	2-2+ (4)	47.7 (2)	1.5 (2)			12	Good
2003	5.6 (4)	2-2+ (4)	53.3 (2)	4.0 (3)	1.427	76.0	13	Good
2002	5.6 (4)	2-2+ (4)	18.4 (1)	1.2 (2)			11	Good
2001			145.7 (4)	41.3 (4)			≥ 10	G - E

* Back calculated from age table

Table 51. Length frequency and CPUE (fish/hr) of largemouth bass collected during 0.375 hours of 7.5-minute diurnal electrofishing at New Kingfisher Lake in April 2019.

Species	Inch class																Total	CPUE	SE	
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19				20
Largemouth bass	2	10	5	1	1		2	5		2		1	3	6	5	4	4	51	136.0	12.2

nwd6psd.d19

Table 52. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at New Kingfisher Lake during 2003-2019.

Year	Length group										Total	
	< 8.0 in		8.0 - 11.9 in		12.0 - 14.9 in		≥ 15.0 in		≥ 20.0 in		CPUE	SE
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE		
2019	48.0	24.4	21.3	9.6	5.3	2.7	61.3	2.7	10.7	7.1	136.0	12.2
2018	10.7	5.3	32.0	4.6	10.7	10.7	104.0	12.2	5.3	2.7	157.3	29.7
2017 ^b	56.0	21.2	2.7	2.7	26.7	2.7	61.3	30.1			146.7	43.7
2012-2016	No sampling - Renovation											
2011	213.3	75.9	128.0	28.1	24.0	4.6	16.0	8.0			381.3	99.6
2010	178.7	48.5	112.0	25.5	34.7	9.6	16.0	8.0			341.3	84.2
2009	109.3	37.3	24.7	2.7	21.3	2.7	0.0				165.3	37.3
2008 ^a	282.7	37.3	240.0	33.3	56.0	9.2	0.0				578.7	71.8
2007	98.7	27.8	392.0	92.7	21.3	2.7	2.7	2.7			514.7	112.8
2006	189.3	14.1	333.3	46.3	10.7	2.7	0.0				533.3	62.9
2005	287.2	97.4	428.2	53.5	41.0	6.8	12.8	5.1			769.2	141.2
2004	161.5	45.1	243.6	45.6	12.8	6.8	2.6	2.6			420.5	92.5
2003	105.6	28.2	425.0	55.5	8.3	4.8	0.0				538.9	59.8

^a Major fish kill 9/5/08

^b First standardized sample since renovation

nwd6psd.d19

Table 53. Population assessment for largemouth bass based on spring electrofishing at New Kingfisher Lake from 2003-2019 (scoring based on statewide assessment).

Year	Mean length				Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating	
	age-3 at capture	CPUE age 1	CPUE 12.0-14.9 in	CPUE ≥ 15.0 in					CPUE ≥ 20.0 in
2019			5.3 (1)	61.3 (4)	10.7 (4)		≥ 11	F - G	
2018		10.7 (2)	10.7 (1)	104.0 (4)	5.33 (4)		≥ 12	F - G	
2017 ^b			26.7 (3)	61.3 (4)	0.0 (1)		≥ 10	F - G	
2012-2016	No sampling - Renovation								
2011		192.0 (4)	24.0 (2)	16.0 (2)	0.0 (1)		≥ 10	F - G	
2010			34.7 (2)	16.0 (2)	0.0 (1)		≥ 7	P - G	
2009	10.5 (2)	77.3 (4)	21.3 (2)	0.0 (1)	0.0 (1)		10	Fair	
2008 ^a	10.5 (2)	250.7 (4)	56.0 (4)	0.0 (1)	0.0 (1)	0.562	43.0	12	Fair
2007	10.5 (2)	96.0 (4)	21.3 (2)	2.7 (1)	0.0 (1)	0.608	39.2	10	Fair
2006	11.0 (3)	149.3 (4)	10.7 (1)	0.0 (1)	0.0 (1)	1.335	73.7	10	Fair
2005	11.0 (3)	248.7 (4)	41.0 (3)	12.8 (2)	0.0 (1)			13	Good
2004	11.0 (3)	94.9 (4)	12.8 (1)	2.6 (1)	0.0 (1)	1.230	70.8	10	Fair
2003	11.0 (3)	100.0 (4)	8.3 (1)	0.0 (1)	0.0 (1)	1.330	73.6	10	Fair

^a Major fish kill 9/5/08

^b First standardized sample since renovation

Table 54. Length frequency and CPUE (fish/hr) of bluegill and redear sunfish collected in 0.375 hours of 7.5-minute diurnal electrofishing runs at New Kingfisher Lake in May 2019.

Species	Inch class								Total	CPUE	SE
	2	3	4	5	6	7	8	9			
Bluegill	16	24	67	77	49	3	1		237	632.0	72.2
Redear sunfish						11	19	2	32	85.3	42.9

nwd6bg.d19

Table 55. Spring electrofishing CPUE (fish/hr) for each length group of bluegill collected at New Kingfisher Lake during 2003-2019.

Year	Length group										Total	
	< 3.0 in		3.0-5.9 in		6.0-7.9 in		≥ 8.0 in		≥ 10.0 in			
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	42.7	13.3	448.0	48.0	138.7	34.7	2.7	2.7	0.0		632.0	72.2
2018	21.3	17.5	885.3	314.5	72.0	12.2	2.7	2.7	0.0		981.3	335.4
2017 ^b	18.7	5.3	853.3	203.7	85.3	28.2	0.0		0.0		957.3	222.3
2012-2016	No sampling											
2011	8.0	4.6	338.7	37.3	413.3	97.6	0.0		0.0		760.0	92.3
2010	130.7	27.1	274.7	30.8	80.0	21.2	0.0		0.0		485.3	47.2
2009	194.7	21.3	338.7	35.3	74.7	30.1	0.0		0.0		608.0	53.3
2008 ^a	42.7	5.3	242.7	65.5	37.3	14.9	0.0		0.0		322.7	85.2
2007	5.3	2.7	69.3	26.3	45.3	5.3	0.0		0.0		120.0	33.3
2006	16.0	13.5	104.0	33.8	14.0	2.0	0.0		0.0		134.0	44.0
2005	0.0		53.9	7.7	12.8	6.8	10.3	6.8	0.0		76.9	8.9
2004	0.0		15.4	8.9	23.1	11.8	0.0		0.0		38.5	4.4
2003	12.8	6.8	56.4	2.6	15.4	7.7	5.1	2.6	0.0		89.7	5.1

^a Major fish kill 9/5/08

^b First standardized sample since renovation

nwd6bg.d19

Table 56. Population assessment for bluegill based on spring electrofishing at New Kingfisher Lake from 2001-2019 (scoring based on statewide assessment).

Year	Mean length		CPUE ≥ 6.0 in	CPUE ≥ 8.0 in	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
	age-2 at capture	Years to 6.0 in						
2019			141.3 (4)	2.7 (3)			≥ 9	F-E
2018			74.7 (3)	2.7 (3)			≥ 8	F - G
2017 ^b			85.3 (3)	0.0 (1)			≥ 6	P - G
2012-2016			No sampling					
2011			413.3 (4)	0.0 (1)			≥ 7	F - G
2010			80.0 (4)	0.0 (1)			≥ 7	F - G
2009	4.3 (2)	3-3+ (3)	74.7 (3)	0.0 (1)			9	Fair
2008 ^a	4.3 (2)	3-3+ (3)	37.3 (2)	0.0 (1)	2.140	88.2	8	Fair
2007	4.3 (2)	3-3+ (3)	45.3 (2)	0.0 (1)	0.574	42.6	8	Fair
2006	5.7 (4)	2-2+ (4)	14.0 (1)	0.0 (1)	1.587	79.5	10	Good
2005	5.7 (4)	2-2+ (4)	23.1 (1)	10.3 (3)			12	Good
2004	5.7 (4)	2-2+ (4)	23.1 (1)	0.0 (1)			10	Good
2003	5.7 (4)	2-2+ (4)	21.6 (1)	5.4 (2)	0.865	57.9	11	Good

^a Major fish kill 9/5/08

^b First standardized sample since renovation

Table 57. Length frequency and CPUE (fish/hr) of largemouth bass collected during 0.3725 hours of diurnal electrofishing at Old Kingfisher Lake in April 2019.

Species	Inch class															Total	CPUE	SE
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Largemouth bass	3		1	6	6		1			2		2	4	3	1	29	77.8	0.0

nwd7psd.d19

Table 58. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Old Kingfisher Lake during April 2019.

Year	Length group											
	< 8.0 in		8.0-11.9 in		12.0-14.9 in		≥ 15.0 in		≥ 20.0 in		Total	
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	8.0	0.0	34.9	0.0	2.7	0.0	32.2	0.0	2.7	0.0	77.8	0.0
2018	58.1	0.0	9.7	0.0	9.7	0.0	35.5	0.0	3.2	0.0	112.9	0.0
*2017	148.3	0.0	3.2	0.0	28.4	0.0	47.3	0.0	3.2	0.0	227.1	0.0

*First standardized sample since renovation

nwd7psd.d19

Table 59. Population assessment for largemouth bass based on spring electrofishing at Old Kingfisher Lake 2017-2019 (scoring based on statewide assessment).

Year	Mean length		CPUE 12.0-14.9 in	CPUE ≥ 15.0 in	CPUE ≥ 20.0 in	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
	age-3 at capture	CPUE age 1							
2019			2.7 (1)	32.2 (4)	2.7 (3)			≥ 10	F - G
2018			9.7 (1)	35.5 (4)	3.2 (3)			≥ 10	F - G
2017*			28.4 (3)	47.3 (4)	3.2 (3)			≥ 12	F - E

*First standardized sample since renovation

Table 60. Length frequency and CPUE (fish/hr) of bluegill and redear sunfish collected in 0.375 hours of 7.5-minute diurnal electrofishing at Old Kingfisher Lake in May 2019.

Species	Inch class							Total	CPUE	SE
	2	3	4	5	6	7	8			
Bluegill	4	14	58	103	55	1		235	626.7	82.7
Redear sunfish				1		2	6	9	24.0	4.6

nwd7bg.d19

Table 61. Spring electrofishing CPUE (fish/hr) for each length group of bluegill collected at Old Kingfisher Lake during 2017-2019.

Year	Length group										Total	
	< 3.0 in		3.0-5.9 in		6.0-7.9 in		≥ 8.0 in		≥ 10.0 in		CPUE	SE
2019	10.7	5.3	466.7	44.4	149.3	50.9	0.0		0.0		626.7	82.7
2018	6.8	0.0	952.4	0.0	190.5	0.0	0.0		0.0		1149.7	0.0
2017*	58.7	14.1	965.3	100.6	309.3	72.2	0.0		0.0		1333.3	178.0

*First standardized sample since renovation
nwd7bg.d19

Table 62. Population assessment for bluegill based on spring electrofishing at Old Kingfisher Lake for 2017-2019 (scoring based on statewide assessment).

Year	Mean length age-2+ at capture	Years to 6.0 in	CPUE ≥ 6.0 in	CPUE ≥ 8.0 in	Instantaneous mortality (z)	Annual mortality (A)%	Total score	Assessment rating
2019			149.3 (4)	0.0 (1)			≥ 7	F - G
2018			190.5 (4)	0.0 (1)			≥ 7	P - G
2017			309.3 (4)	0.0 (1)			≥ 7	F - G

*First standardized sample since renovation
nwd7bg.d19

SOUTHWESTERN FISHERY DISTRICT

Project 1: Lake and Tailwater Fishery Surveys

FINDINGS

Lake sampling conditions are summarized in Table 1.

Barren River Lake (10,000 acres)

Black Bass

Black bass were not sampled in the spring due to high water levels (10-20 ft above summer pool)

Fall young of year sampling (Tables 2 and 3) suggested a lower than normal 2019 year-class. Largemouth bass made up the majority of the fall sample (95%), while spotted bass only made up 5% of the sample (Table 2). Smallmouth bass remain poorly represented in samples. Age-0 CPUE (116.8 fish/hr; Table 3) and age-0 CPUE ≥ 5.0 in (27.8 fish/hr) were depressed compared to the past 10 years. Age-0 largemouth bass mean length (4.2 in) was average compared to most years.

Crappie

Trap netting for crappie yielded 1294 total crappie (545 black crappie and 749 white crappie) in 90 net-nights (Table 4). The crappie population appears to remain an even mix of both species (58% white and 42% black). Age-0 catch rates of both species represented 37% of total crappie catch (42% of white crappie and 30% of black crappie catch rate; Tables 5 and 6). The population is carried by the 2018 year class with 86% of the fish sampled from this year class when the 2019 young of year are removed from the total (Tables 5 and 6). White crappie reached harvestable size (9.0 in) in 2.1 years and 10.0 inches in 2.6 years (calculated from Von Bertalanffy equation; FAST 3.0 software). Black crappie reached harvestable size (9.0 in) in 3.5 years and 10.0 inches in 4.4 years (calculated from Von Bertalanffy equation; FAST 3.0 software). The assessment rating remained “Fair” for black crappie and “Good” for white crappie (Tables 7 and 8) and resulted in an overall crappie assessment rating of “Fair” (Table 9). It should be noted that the mean length at age-2 parameter for white crappie and all crappie is based on only one age 2+ white crappie available for aging. Crappie size structure indices were lower than previous year values (White – PSD: 26, RSD: 11 and Black – PSD:16, RSD: 7; Table 10). The length-weight equations for black crappie (n=148) and white crappie (n=310) were similar to prior years:

$$\begin{aligned}\text{Black crappie } \log_{10}(\text{weight}) &= -5.7175 + 3.3739 * \log_{10}(\text{Length}) \\ \text{White crappie } \log_{10}(\text{weight}) &= -6.0576 + 3.4916 * \log_{10}(\text{Length})\end{aligned}$$

Creel Survey: Results of a daytime creel survey (mid-Feb – June) on the Barren River Lake tailwater are presented in Tables 11-21. Angler trips and hours fished in 2019 (6,751 and 10,298, respectively) were nearly half of those estimated during 2001 (11,909 and 20,539, respectively) despite the 2019 survey starting earlier (mid-February) than the 2001 survey (early-March). Overall, 2019 angler catch rate (0.67 fish/hr vs 0.68 fish/hr), trip length (1.53 hrs vs 1.72 hrs) and harvest rate (0.47 fish/hr vs 0.46 fish/hr) were similar to the 2001 survey. Angler pursuit by species remained similar between the two surveys with slight variations in percentage of trips for each species. During both surveys, anglers pursuing “any species” accounted for the majority of the fishing effort (Table 12).

Crappie angler trips (1,095) decreased by 847 from the 2001 creel and the number of hours fished for crappie decreased by 1,628 (1,670 hours in 2019; Table 14). Crappie catch rate (0.48 fish/hr) and harvest rate (0.41 fish/hr) was down when compared to the previous creel survey (1.05 and 0.90 fish/hr, respectively; Table 14). The crappie catch was dominated by black crappie at 81% (1,089 fish) and 81% of the black crappie caught were harvested (900 fish; Table 19). When comparing between the two surveys, only March – June data from the 2001 creel survey was used.

Bass angler trips (109) and the hours fished for bass (167) decreased from the 2001 creel survey (267 and 461, respectively) but the catch rate (0.51 fish/hr) was up from 2001 (0.22 fish/hr; Table 15). The estimated 701

largemouth bass caught is an increase from the 209 caught in 2001, along with the estimated harvest for 2019 (237) when compared to 2001 (43; Table 15). The black bass catch was dominated by largemouth bass at 70% (493 fish) and 59% of the largemouth bass caught were harvested (139 fish; Table 18). When comparing between the two surveys, only March – June data from the 2001 creel survey was used.

Catfish angler trips (833) and the hours fished for catfish (1,271) decreased from the 2001 creel survey (2,558 and 4,412, respectively; Table 16). The estimated 1,554 catfish caught and the estimated harvest for 2019 (1,222) decreased from the 3,920 caught and 3,136 harvested in 2001 (Table 16). Anglers mostly caught channel catfish (775) and blue catfish (717) and very few flathead catfish (60). Of those channel catfish caught, 47% were harvested while 49% of the blue catfish caught were harvested and only 4% of the flathead catfish caught were harvested (Table 20). When comparing between the two surveys, only March – June data from the 2001 creel survey was used.

Morone angler trips (1,669) and the hours fished for morone (2,545) both decreased from the 2001 creel survey (2,502 and 4,315, respectively; Table 17). Both the catch rate (0.44 fish/hr) and harvest rate (0.33 fish/hr) was up from 2001 (Table 17). The morone catch was dominated by hybrid striped bass (75%) and the majority (96%) of the fish harvested were ≥ 15.0 in (Table 21). When comparing between the two surveys, only March – June data from the 2001 creel survey was used.

Briggs Lake (18 acres)

Sunfish

The sunfish population was sampled by diurnal electrofishing on May 6 (Table 22). Overall CPUE of bluegill (312.0 fish/hr) was higher than the average from previous years (Table 23). Redear sunfish CPUE (104.0 fish/hr) was lower than the average from previous years (Table 24). The catch rate of the ≥ 10.0 -in length group (12.0 fish/hr) tied with two previous years for its' highest CPUE ever recorded at the lake. Size structure indices for bluegill (PSD = 39) dipped from 2017 (PSD = 44) while indices for redear sunfish (PSD = 79) continued to reflect a high-quality fishery (Table 25). The population assessments for both bluegill and redear sunfish remain "Excellent", similar to previous years (Tables 26 and 27). Age and growth assessment of bluegill (n=55) indicated that they reach 6.0 inches in 2.9 years (von Bertalanffy growth curve) which is similar to prior age samples (2012 and 2007; Table 26) and back calculated lengths (Table 28). The age and growth assessment for redear sunfish (n=84) indicated that they reach 10.0 inches in 3.4 years (von Bertalanffy growth curve), which is slightly longer than the last sample in 2007 (Table 27) and slower than back calculated lengths (Table 29). Sampling of smaller-size redear sunfish remains enigmatic and a poor predictor of year class strength.

Channel Catfish

Channel catfish were sampled with tandem set hoop nets in early September (31.8 fish/set-night; Table 30). Increased numbers of fish are most likely the result of doubling of the stocking rate (50 fish/acre). Only two fish were aged (2+ and 3+ years) due to most of the sampled fish being 16.0-in or less (last year's stockers according to previous age data). Channel catfish relative weight ($W_r = 82$; Table 31) suggests fish are in fair condition.

Fagan Branch Reservoir (140 acres)

Black Bass

Largemouth bass were sampled by nocturnal electrofishing in April (Tables 32-35). The overall largemouth bass catch rate (440.0 fish/hr; Table 32) was the highest recorded over the last 20 years of sampling. The majority of the fish sampled were in the <8.0-in and 8.0- to 11.9-in length groups (102.0 and 287.0 fish/hr, respectively), while the 12.0- to 14.9-in length group (45.0 fish/hr) was slightly lower than average (Table 33). The bass population rates as "Fair" based on assessment parameters (Table 35). The lake's low productivity and its obligation to remain so (back up water supply lake for city of Lebanon) remains a handicap for bass growth and size structure improvements. Removal of stockpiled bass is slated for 2020.

Sunfish

Bluegill and redear sunfish were sampled by nocturnal electrofishing in April (Tables 36-41). Despite the lake's low productivity, it has historically supported a good bluegill and redear sunfish fishery. Overall CPUE for bluegill (356.0 fish/hr) was slightly higher than average when compared to previous years, but the overall redear sunfish CPUE (354.0 fish/hr) was the highest recorded over the last 22 years of sampling (Tables 36-38). The majority of the bluegill sampled were in the 3.0- to 5.9-in and 6.0- to 7.9-in length groups (144.0 and 142.0 fish/hr, respectively), and both were well above average compared to previous years (Table 37). The majority of the redear sunfish sampled were in the 6.0- to 7.9-in and ≥ 8.0 -in length groups (154.0 and 136.0 fish/hr, respectively), and catch was nearly triple the highest we've ever noted in the last 22 years (Table 38). Size structure for both populations (bluegill PSD = 54, redear PSD = 62) was down from the previous sample in 2016 (bluegill PSD = 77, redear sunfish PSD = 89; Table 39). The bluegill and redear sunfish population assessments remain "Good", similar to previous years (Tables 40 and 41).

Channel Catfish

Channel catfish were sampled with tandem set hoop nets in early September with moderate success (8.2 fish/set-night) with all sizes represented up to the 21.0-inch class (Table 42). Condition of channel catfish ($W_r = 83-86$) was good for all length groups sampled (Table 43). Due to poor growth from previous years, catfish within the 10.0- to 14.0-inch range were aged and the majority were found to be 2+ years old (Table 44). A reduction in stocking rate and frequency were likely contributing factors to improved condition indices and growth of fish as the lake is highly oligotrophic (secchi depths range from 12-25 feet).

Marion County Lake (25 acres)

Black Bass

Nocturnal largemouth bass electrofishing samples were collected in April (Tables 45-48). The overall catch rate of bass (413.0 fish/hr) increased from the 2016 sample and was above the management objective of 385.0 fish/hr (Tables 45 and 46). Bass PSD (9) was very low and the population is dominated by fish <12.0 in (241.0 fish/hr) with very poor numbers of fish ≥ 15.0 in (8.0 fish/hr; Tables 46-47). The bass population assessment decreased to "Fair" even though the lake is managed for quality-size sunfish (Table 48). Removal of stockpiled bass is slated for 2020.

Channel catfish

Channel catfish were sampled with tandem set hoop nets in mid-September with moderate results (13.8 fish/set-night; Table 49). The majority of the fish sampled were the previous year's stocked fish (age-2+) and the age frequency indicates good growth with no stunting of older fish (Table 51). Condition of channel catfish was generally below 90 and is similar to values seen in 2015 (Table 50).

Green River Lake (8,210 Acres)

Muskie

Muskellunge sampling remains problematic as multiple attempts (Table 1) with several gears were made in 2019. Diurnal electrofishing attempts yielded poor results (n=10 fish). Fyke netting (4ft x 6ft nets from MDC; 66 net nights) in early- to mid-April was used as a trial run for sampling of larger muskie (age-2+). Muskie from 28.0-48.0 in (n=43) were collected, with the upper reservoir/river sites being the most productive and consistent catch-wise. Fyke netting data, along with muskie growth rates and condition data may be presented in the Fish Habitat Branch APR.

Black Bass

Nocturnal bass electrofishing was conducted on the upper and lower ends of each lake arm (Green River and Robinson Creek) during late-April (Table 1 and 52). The overall largemouth bass CPUE of 140.5 fish/hr was similar to 2018 (137.2; Table 53) as were most size group catch rates. Largemouth bass ≥ 15.0 in (37.5 fish/hr) was similar to previous years, remaining at above average levels (Table 53). The catch rate for smaller largemouth bass (< 8.0 in; 26.7 fish/hr) was well above average and is the result of a very good 2018 year-class (34.33 fish/hr; Table 57). Largemouth bass size structure indices (PSD = 69; RSD=33; Table 54) were similar to previous years. The population assessment for largemouth bass remained “Excellent”; similar to the last ten years (Table 55).

Spotted bass catch rate (79.2 fish/hr; Table 52) was the highest recorded at Green River Lake since sampling for spotted bass began in the mid-1980’s. The bump in catch of spotted bass was the result of an unusually high catch from the Lone Valley sample (181.3 fish/hr; Table 52), which eclipsed the largemouth catch rate for this area. Well above average representation of smaller spotted bass (2.0-5.0 in) and their congeners in the 2019 spring sampling will be interesting to follow, although the fall CPUE of this year class was low. This may have been due to the early fall sample date. The population continues to produce notable numbers of fish > 12.0 inches in length (PSD =33; Table 54), which was rare prior to alewife introduction in 2004 when few spotted bass achieved such lengths.

Fall YOY sampling (Tables 56-57) suggests a “lean” 2019 year class as age-0 CPUE > 5.0 in (9.8 fish/hr) and average mean length (3.5 in) were both well below average. The high overall catch rate of age-0 largemouth (108.0 fish/hr) was likely due to earlier sampling (Table 1). Fall samples are typically collected late-October to early November. Even with the high fall catch rate, survival to 2020 may be low due to the predominance of smaller-size bass (2.0-3.0 in).

Shanty Hollow Lake (136 acres)

Sunfish

Sunfish (bluegill and redear) were sampled by diurnal electrofishing on April 20 (Table 58). Catch rates of intermediate-size bluegill improved immensely, returning to expected historic values (Table 59). A hiatus on fertilization from 2013-2015 dampened bluegill numbers across all size groups in 2015 and 2017 samples. A slight dip in bluegill size structure (PSD = 24) from 2017 (PSD = 31) is likely due to increased production of smaller size groups and a lag of larger size group recruitment due to the fertilization lull (Table 61). The bluegill population assessment remains “Good”, similar to recent years (Table 62).

The redear sunfish population remains low density (CPUE = 16.0 fish/hr; Table 58 and 60), but with good size structure (PSD = 65, RSD = 41; Table 61). The population assessment rated “Good”, similar to previous years (Table 63).

Spurlington Lake (25 acres)

Black Bass

Results of nocturnal largemouth bass electrofishing collected on April 16 are shown in Tables 64-67. Larger bass length groups were well above normal (≥ 15.0 in = 184.0 fish/hr, ≥ 20.0 in = 14.0 fish/hr; Table 65), while intermediate-size fish (8.0- to 11.9-in) dipped below population norms (Table 65). The bass population, though still diverse, is dominated by larger fish (PSD = 80, RSD = 47; Table 66). The largemouth bass population assessment remains “Good”, similar to previous years (Table 67).

Table 1. Lake sampling conditions in the Southwestern Fisheries District in 2019.

Lake	Date	Species	Weather	Water temp. surface (F)	Conductivity (umhos)	Secchi (in.)	Comments
Barren River	10/5	YOY bass	sunny/calm	54	181	18	summer pool & steady w/ 110 cfs outflow
	11/8	YOY bass	cloudy	55-57	158	22	10-ft below summer pool & falling with 3356 cfs outflow
	11/8	YOY bass	cloudy	58-63	140	25	10-ft below summer pool & falling with 3356 cfs outflow
	11/10	YOY bass	sunny/windy	52-53	195	11	11-ft below summer pool & falling with 3317 cfs outflow
	10/23-10/25	Crappie	rainy and cloudy	61-65			4 to 5-ft below summer pool & falling with 2230 cfs outflow
	10/29-10/31	Crappie	cloudy/calm to rainy/windy	58-61			6 to 7-ft below summer pool & falling with 2630 to 470 cfs outflow
Briggs	5/6	Bluegill & Redear	partly cloudy/calm	75-76		54	Normal
	9/6-9/9	Channel catfish	cloudy/calm to rainy/windy	78-79		42	Normal
	9/23	Bluegill & Redear Age	cloudy/calm to rainy/windy				Normal
Fagan Branch	4/30	Bass, Bluegill & Redear	cloudy/windy	67	171		Normal
	9/13-9/16	Channel catfish	cloudy/calm to sunny/calm	81			Below normal
Green River	1/16	Muskie EF	cloudy/calm		110	18	winter pool & steady with 436 cfs outflow
	1/28	Muskie EF	cloudy/windy		118	18	10-ft above winter pool & rising w/ 3618 cfs outflow
	4/3	Muskie EF	cloudy/calm				3-ft below summer pool & falling w/ 3000 cfs outflow
	4/4	Muskie EF	cloudy/windy/light rain				3-ft below summer pool & falling w/ 3000 cfs outflow
	4/3-4/4	Muskie Nets	cloudy/windy-calm/light rain				3-ft below summer pool & falling w/ 3000 cfs outflow
	4/10-4/11	Muskie Nets	cloudy/calm to cloudy/windy				3-ft below summer pool & falling w/ 1600 cfs outflow
	4/22	Bass	fair/calm	67-68			1-ft above summer pool & rising w/ 467 cfs outflow
	4/23	Bass	cloudy/windy		108		2-ft above summer pool & rising w/ 468 cfs outflow
	4/24	Bass	cloudy/calm	67-68	114		2-ft above summer pool & rising w/ 468 cfs outflow
	4/29	Bass	cloudy/windy	68-73	102	78	1-ft above summer pool & falling w/ 2319 cfs outflow
	9/26	YOY bass	cloudy/calm	78	98	54	summer pool & steady w/ 57 cfs outflow
	9/26	YOY bass	cloudy/calm			48	summer pool & steady w/ 57 cfs outflow
	9/27	YOY bass	cloudy/calm	74-78	97		summer pool & steady w/ 57 cfs outflow
	10/8	YOY bass	cloudy/calm	75-76	103	30	summer pool & steady w/ 57 cfs outflow
Marion	4/16	Bass	cloudy/calm	63-65	103		Normal
	9/13-9/16	Channel catfish	cloudy/calm to sunny/calm			102	Normal
Shanty Hollow	5/20	Bluegill & Redear	sunny/calm	76-77		29	Normal
Spurlington	4/16	Bass	cloudy/calm		163		Normal
West Fork Drakes Cr.	9/6-9/9	Channel catfish	sunny/calm to cloudy/calm	76-79			Normal
	9/24	Bluegill & Redear Age	sunny/calm				Normal

Table 2. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 6.0 hours (12- 0.50-hour runs) of diurnal electrofishing at Barren River Lake on October 5 and November 8-10, 2019.

Area	Species	Inch class																		Total	CPUE	Std err
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
Peninsula	Smallmouth bass			1																1	0.7	0.7
	Spotted bass		9	6	1	3	3				1	1	2	2	2					30	20.0	7.6
	Largemouth bass		19	18	19	10	5	21	9	13	13	10	14	23	20	14	2	5		215	143.3	24.3
Beaver Creek	Smallmouth bass																			0		
	Spotted bass		5	2								1			1					9	6.0	3.1
	Largemouth bass	37	168	64	28	12	10	10	34	29	28	12	13	6	3	5	1		1	461	307.3	35.8
Peter Creek	Smallmouth bass																			0		
	Spotted bass		10	2		1	3		1		1	1	2	1	1					23	15.3	5.7
	Largemouth bass	7	83	61	34	4	13	23	13	23	29	13	4	15	8	12	3	2	4	351	234.0	17.3
Walnut Creek	Smallmouth bass																			0		
	Spotted bass		1	3			1	3	2	1			1							12	8.0	7.0
	Largemouth bass		44	33	13	20	10	14	32	63	40	12	10	8	8	5	3	3	1	319	212.7	51.7
TOTAL	Smallmouth bass			1															1	0.2	0.2	
	Spotted bass		25	13	1	4	7	3	3	1	2	3	5	3	4					74	12.3	3.1
	Largemouth bass	44	314	176	94	46	38	68	88	128	110	47	41	52	39	36	9	10	5	1	1346	224.3

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Table 3. Indices of year-class strength at age-0 and age-1 and mean length (in) of largemouth bass collected during diurnal fall electrofishing at Barren River Lake 2009-2019.

Year-class	Age-0 ^A		Age-0 ^A		Age-0 \geq 5.0 in ^A		Age-1 ^B	
	Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	4.2	<0.1	116.8	20.7	27.8	6.0	ND	
2018	3.9	<0.1	215.2	24.1	48.8	13.2	ND	
2017	4.0	<0.1	150.2	36.3	23.5	3.8	ND	
2016	4.3	<0.1	191.8	38.9	46.5	13.9	39.5	12.1
2015	3.8	<0.1	167.7	23.5	18.7	3.4	8.0	1.7
2014	4.4	<0.1	108.5	27.5	33.0	6.3	19.2	na
2013	3.9	<0.1	369.3	92.2	61.5	10.0	44.5	13.1
2012	5.1	<0.1	70.0	16.7	32.7	11.0	ND	
2011	4.5	<0.1	175.5	33.7	65.7	10.8	43.8	9.4
2010	5.7	<0.1	166.6	19.1	105.0	18.7	ND	
2009	3.2	<0.1	401.3	76.1	36.8	8.6	35.7	5.2

^A Data collected by fall (September-November) diurnal electrofishing. Mean lengths were determined by analysis of otoliths removed from a subsample of LMB <10.0 in, and extrapolated to the entire catch of the fall sample.

^B Data collected during the following spring (April/May) diurnal electrofishing sample.

ND = no data available

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Table 4. Length frequency and CPUE (fish/nn) of each inch class of white and black crappie collected by trap net (90 net-nights) at Barren River Lake from late October 2019.

Location	Species	Inch class													Total	CPUE	Std. error	
		2	3	4	5	6	7	8	9	10	11	12	13	14				15
Beaver Creek	White crappie		16	161	58	141	100	37	12	9	14	13	10		1	572	12.7	2.9
	Black crappie	1	56	42	142	59	11	9	6	8	6	2				342	7.6	1.8
Walnut Creek	White crappie		14	47	16	14	48	15	13	6	1	1	2			177	3.9	0.9
	Black crappie	10	77	10	60	14	7	8	7	3	7					203	4.5	1.0
TOTAL	White crappie		30	208	74	155	148	52	25	15	15	14	12		1	749	8.3	1.6
	Black crappie	11	133	52	202	73	18	17	13	11	13	2				545	6.1	1.0

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Table 5. Age frequency and CPUE (fish/nn) of black crappie collected during 90 net-nights at Barren River Lake from late October 2019.

Age	Inch class											Total	Percent	CPUE	Std. error	
	2	3	4	5	6	7	8	9	10	11	12					
0+	11	133	21										165	30	1.8	0.4
1+			31	202	69	1	3		1				307	56	3.4	0.7
2+					4	14	10	10	5				43	8	0.5	0.1
3+						1	1	1	2	4			9	2	0.1	<0.1
4+						1	2	1	1	7	1		13	2	0.1	<0.1
5+						1	1	1	2	2			7	1	0.1	<0.1
6+											1		1	0	<0.1	<0.1
Total	11	133	52	202	73	18	17	13	11	13	2		545	100		
%	2	24	10	37	13	3	3	2	2	2	0		100			

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Table 6. Age frequency and CPUE (fish/nn) of white crappie collected during 90 net-nights at Barren River Lake from late October 2019.

Age	Inch class													Total	Percent	CPUE	Std. error	
	3	4	5	6	7	8	9	10	11	12	13	14	15					
0+	30	208	74												312	42	3.5	0.8
1+				155	148	52	25	14	3						397	53	4.4	0.8
2+									1						1	0	<0.1	<0.1
3+									1	1	1				3	0	<0.1	<0.1
4+								1	9	12	11				33	4	0.4	0.1
5+									1	1					2	0	<0.1	<0.1
9+														1	1	0	<0.1	<0.1
Total	30	208	74	155	148	52	25	15	15	14	12	0	1	749	100			
%	4	28	10	21	20	7	3	2	2	2	2	0	0	100				

swdbrltn.d19; swdbrlag.d19

Table 7. Black crappie assessment from trap netting at Barren River Lake from 2007 - 2019 (scoring based on statewide assessment).

Year	CPUE excluding age-0		CPUE age-1		CPUE age-0		CPUE ≥8.0 in		Mean length age 2+		Total score	Rating
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score		
2019	4.2	3	3.4	3	1.8	3	0.6	1	8.5	2	12	F
2017	3.7	3	1.4	2	2.4	4	1.3	2	8.0	1	12	F
2015	3.1	2	1.4	2	7.0	4	0.4	1	7.8	1	10	F
2013	9.7	4	0.7	2	12.3	4	8.5	4	8.7	2	16	G
2012	5.2	3	1.0	2	0.1	1	3.3	3	8.3	1	10	F
2011	5.3	3	2.3	3	0.2	1	3.1	3	9.0	2	12	F
2010	5.7	3	1.4	2	0.8	2	3.6	4	8.7	2	13	G
2009*	5.9	3	4.3	4	0.4	2	0.6	1	8.0	1	11	F
2008*	1.8	2	0.2	1	1.4	3	1.6	3	9.7	3	12	F
2007	6.6	3	3.2	3	0.2	1	1.3	2	8.5	2	11	F

* Age assessment data extrapolated from previous age data

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Table 8. White crappie assessment from trap netting at Barren River Lake from 2009 - 2019 (scoring based on statewide assessment).

Year	CPUE excluding age-0		CPUE age-1		CPUE age-0		CPUE ≥ 8.0 in		Mean length age 2+		Total score	Rating
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score		
2019	4.9	2	4.4	3	3.5	3	1.5	2	11.5 [^]	4	14	G
2017	4.2	2	0.4	1	0.2	1	4.0	3	9.7	3	10	F
2015	7.0	3	3.7	3	4.8	4	3.6	3	10.2	3	16	G
2013	5.6	2	0.2	1	11.9	4	5.6	3	10.1	3	13	G
2012	7.5	3	2.5	2	0.1	1	6.5	4	9.9	3	13	G
2011	4.7	2	4.5	3	0.2	1	2.8	2	10.9	4	12	F
2010	0.7	1	0.3	1	0.6	2	0.7	1	10.9	4	9	F
2009*	4.4	2	4.0	3	<0.1	1	4.0	3	10.2	3	12	F
2008*	0.0	1	0.0	1	0.2	1	0.0	1	10.8	4	8	P
2007	0.4	1	0.3	1	0.8	2	0.3	1	11.2	4	9	F

* Age assessment data extrapolated from previous age data

[^]number based on only one age 2+ fish

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Table 9. Population assessment for all crappie from Barren River Lake trap net data collected from 2007-2019 (scoring based on statewide assessment).

Parameter	Year																			
	2019		2017		2015		2013		2012		2011		2010		2009		2008		2007	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Population density (CPUE age-1 and older)	9.1	3	8.0	3	10.1	3	15.4	4	12.7	3	10.0	3	6.4	2	10.3	3	1.8	1	7.0	2
Recruitment (CPUE age-1)	7.8	3	1.8	2	5.0	3	0.9	1	3.5	2	6.8	3	1.7	2	8.3	4	0.2	1	3.6	2
Recruitment (CPUE age-0)	5.3	4	2.7	3	11.7	4	24.2	4	0.2	1	0.5	1	1.4	2	0.4	1	1.6	2	1.0	2
Size structure (CPUE ≥8.0 in)	2.1	1	5.3	3	4.0	2	14.1	4	9.8	4	5.8	3	4.3	3	4.6	3	1.6	1	1.6	1
Growth (Mean length age-2 at capture)	8.5*	1	9.0	1	9.1	1	9.5	2	9.3	2	9.0	1	8.9	1	9.1	1	9.8	3	8.6	1
Instantaneous mortality (Z)																			-1.59	
Annual mortality (A)%																			79.9	
Total score:	12		12		13		15		12		11		10		12		8		8	
Assessment rating:	Fair		Fair		Good		Good		Fair		Fair		Fair		Fair		Poor		Poor	

*number weighted by black crappie because only one white crappie was aged 2+
swdbrtn.D07 - D19

Table 10. Proportional stock density (PSD) and relative stock density (RSD₁₀) of white and black crappie collected by trap nets (90 net-nights) at Barren River lake from late October 2019. Numbers in parentheses represent 95% confidence intervals.

Species	Number ≥5.0 in	PSD	RSD ₁₀
White crappie	511	26 (4)	11 (3)
Black crappie	349	16 (4)	7 (3)

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Table 11. Fish harvest statistics derived from a creel survey at Barren River Lake Tailwater from 19 February through 30 June 2019.

<u>Fishing trips</u>			
	Number of fishing trips	6,751	
	Average trip length	1.53	
<u>Fishing pressure</u>			
	Total man-hours (SE)	10,298	(282.5)
<u>Catch/harvest</u>			
	Number of fish caught (SE)	7,233	(736.7)
	Number of fish harvested (SE)	4,912	(589.2)
	Pounds of fish harvested	6,146	
<u>Harvest rates</u>			
	Fish/hour	0.46	
	Pounds/hour	0.52	
<u>Catch rates</u>			
	Fish/hour	0.69	
<u>Miscellaneous characteristics (%)</u>			
	Male	89.59	
	Female	10.41	
	Resident	97.68	
	Non-resident	2.32	
<u>Method (%)</u>			
	Still fishing	35.34	
	Casting	64.42	
	Trolling	0.23	
<u>Mode (%)</u>			
	Boat	3.71	
	Bank	96.29	

Table 12. Fish harvest statistics derived from a creel survey at Barren River Lake Tailwater from 19 February to 30 June 2019.

	Blue catfish	Channel catfish	Flathead catfish	Hybrid striped bass	White bass	Yellow bass	Bluegill	Smallmouth bass	Spotted bass	Largemouth bass	White crappie	Black crappie	Walleye	
No. caught	718	776	60	1,362	425	23	1,269	21	187	494	249	1,090	184	
No. Harvested	596	576	49	940	296	23	905	16	82	139	218	900	88	
% total harvest	12.1	11.7	1.0	19.1	6.02	0.5	18.4	0.32	1.7	2.8	4.4	18.3	1.8	
Lb harvested	768.5	522.6	171.8	3,344.2	214.8	7.9	116.6	39.1	80.6	273.9	92.3	344.1	115.3	
% of total lb harvested	12.5	8.5	2.8	54.4	3.50	0.13	1.9	0.64	1.3	4.5	1.5	5.6	1.9	
Mean length (in)	15.0	13.9	19.6	19.0	11.7	9.3	6.1	17.5	13.8	15.3	9.7	9.0	15.7	
Mean weight (lb)	1.1	0.9	3.1	3.5	0.7	0.3	0.1	2.5	1.1	1.9	0.4	0.4	1.2	
	Catfish group			Morone group			Panfish group		Black bass group			Crappie group		Anything
No. of fishing trips for that species	833			1,678			41		156			1,095		2,929
% of all trips	12.4			24.92			0.6		2.3			16.3		43.5
Hours fishing for that species	1,270.9			2,559.2			62.7		237.3			1,670.4		4,467.5
No. harvested fishing for that species	783			744			307		19			839		
Lb harvested fishing for that species	1,172.3			2,634.4			39.7		25.4			346.2		
No./hour harvested for that species	0.6			0.3			4.1		0.1			0.4		
% success fishing for that species	26.9			24.3			66.7		6.5			27.6		20.3

Table 13. Length distribution and species composition (released fish lengths were estimates) for each species of fish harvested at Barren River Lake from 19 February to 30 June 2019.

Species	Status	Inch class																												
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Blue	Harvest					5			22	93	16	120	77	60	49	98		22	11								5	5	5	8
catfish	Released						16		5	53		11	5	16					15											
Channel	Harvest				11		34		50	17	95		50	140	73	34	39		17	6	6		4							
catfish	Released				16	11	53		68		47		4																	
Flathead	Harvest										5						16		5	5			11					7		
carfish	Released												6			5														
Hybrid	Harvet										5	21	15	36	72	57	222	62	258	41	62	15	31	31	11					
striped bass	Released					5			5	41		10	36	10	81	91	15	86	15	5	5	10	6							
White	Harvest						28	6	28	17	102	57	46	11																
bass	Released					5	15		20		50	35	3																	
Yellow	Harvet								12	11																				
bass	Released																													
Bluegill	Harvest			322	444	111	27																							
	Released		5	246	107	6																								
Smallmouth	Harvest													5		10														
bass	Released										5																			
Spotted	Harvest									11	16	16	22	11	5															
bass	Released	5			16		32		11		21	5		15																
Largemouth	Harvest										17		28	22	11	39	11	6	5											
bass	Released						81		16	43	145		16	38			15													
White	Harvest						25	81	40	51	20																			
crappie	Released				5	5		5	16																					
Black	Harvest		11		23	57	171	319	245	46	28																			
crappie	Released	5			30	75	35	30	5		5		4																	
Walleye	Harvest										6		11	11	17	33		10												
	Released								5		16		11		37	11	5	11												

Table 14. Monthly crappie angling success at Barren River Lake Tailwater during the 2019 daytime creel survey period (February 19 - June 30).

Month	Total number of crappie caught	Total number of crappie harvested	Number of crappie fishing trips	Hours fished by crappie anglers	Number caught by crappie anglers	Number caught/hour by crappie anglers	Number harvested by crappie anglers	Number harvested/hour by crappie anglers
February	402	351	404	616	358	0.53	307	0.46
March	261	160	313	478	215	0.38	156	0.28
April	413	387	216	329	236	0.49	211	0.44
May	226	220	121	185	165	0.77	165	0.77
June	38	0	40	62	5	0.11	0	0
Total	1,339	1,118	1,095	1,670	979	0.48	839	0.41

Table 15. Monthly black bass angling success at Barren River Lake Tailwater during the 2019 daytime creel survey period (February 19 - June 30).

Month	Total number of black bass caught	Total number of black bass harvested	Number of black bass fishing trips	Hours fished by black bass anglers	Number caught by black bass anglers	Number caught/hour by black bass anglers	Number harvested by black bass anglers	Number harvested/hour by black bass anglers
February	197	51	22	34	15	0.47	15	0.47
March	164	13	63	96	100	0.82	4	0.03
April	170	119	0	0	0	0	0	0
May	121	22	24	37	11	0.24	0	0
June	48	32	0	0	0	0	0	0
Total	701	237	109	167	126	0.51	19	0.05

Table 16. Monthly catfish angling success at Barren River Lake Tailwater during the 2019 daytime creel survey period (February 19 - June 30).

Month	Total number of catfish caught	Total number of catfish harvested	Number of catfish fishing trips	Hours fished by catfish anglers	Number caught by catfish anglers	Number caught/hour by catfish anglers	Number harvested by catfish anglers	Number harvested/hour by catfish anglers
February	175	175	34	51	44	1.0	44	1.0
March	72	51	107	164	38	0.29	38	0.29
April	232	165	159	243	124	0.56	93	0.42
May	484	369	272	415	282	0.67	243	0.58
June	591	462	261	398	414	0.88	365	0.78
Total	1,554	1,222	833	1,271	902	0.69	783	0.60

Table 17. Monthly morone angling success at Barren River Lake Tailwater during the 2019 daytime creel survey period (February 19 - June 30).

Month	Total number of morone caught	Total number of morone harvested	Number of morone fishing trips	Hours fished by morone anglers	Number caught by morone anglers	Number caught/hour by morone anglers	Number harvested by morone anglers	Number harvested/hour by morone anglers
February	292	249	191	291	103	0.57	88	0.49
March	379	240	349	532	223	0.44	151	0.30
April	815	557	915	1,396	532	0.43	439	0.35
May	264	171	214	326	133	0.44	66	0.22
June	59	43	0	0	0	0	0	0
Total	1,810	1,259	1,669	2,545	991	0.44	744	0.33

Table 18. Black bass catch and harvest statistics for all anglers derived from a 2019 (February 19 - June 30) daytime creel survey at Barren River Lake Tailwater for each species.

	Largemouth bass						Spotted bass						Smallmouth bass					
	Harvest			Catch and release			Harvest			Catch and release			Harvest			Catch and release		
	12.0-14.9 in	≥15.0 in	Total	12.0-14.9 in	≥15.0 in	Total	12.0-14.9 in	≥15.0 in	Total	12.0-14.9 in	≥15.0 in	Total	12.0-14.9 in	≥15.0 in	Total	12.0-14.9 in	≥15.0 in	Total
Total number of bass	45	94	139	161	53	354	54	16	82	26	15	105	0	15	16	5	0	5
% of black bass harvested by number	58.9						26.0			5.4								
Total weight of fish (lb)	273.9			128.0	41.4	169.4	80.6			11.0	6.2	17.2	39.1			4.4	0.0	4.4
% of bass harvested by weight	69.6						20.5			9.9								
Mean length (in)	15.3						13.8			17.5								
Mean weight (lb)	1.9						1.1			2.5								
Rate (fish/hour)	0.01						0.01			0.002								

Table 19. Crappie catch and harvest statistics for all anglers derived from a 2019 (February 19 - June 30) daytime creel survey at Barren River Lake Tailwater for each species.

	White crappie						Black crappie					
	Harvest			Catch and release			Harvest			Catch and release		
	≥9.0 in	Total	<9.0 in	≥9.0 in	Total	≥9.0 in	Total	<9.0 in	≥9.0 in	Total		
Total number of crappie	192	218	15	17	31	638	900	175	15	189		
% of crappie harvested by number	19.5						80.5					
Total weight of fish (lb)	92.3			6.0	3.6	9.6	344.1	39.0	2.5	41.5		
% of crappie harvested by weight	21.2						78.8					
Mean length (in)	9.7						9.0					
Mean weight (lb)	0.4						0.4					
Rate (fish/hour)	0.02						0.08					

Table 20. Catfish catch and harvest statistics for all anglers derived from a 2019 (February 19 - June 30) daytime creel survey at Barren River Lake Tailwater for each species.

	Blue catfish						Channel catfish						Flathead catfish					
	Harvest			Catch and release			Harvest			Catch and release			Harvest			Catch and release		
	8.0-11.9 in	≥12.0 in	Total	8.0-11.9 in	≥12.0 in	Total	8.0-11.9 in	≥12.0 in	Total	8.0-11.9 in	≥12.0 in	Total	8.0-11.9 in	≥12.0 in	Total	8.0-11.9 in	≥12.0 in	Total
Total number of catfish	22	569	596	21	101	121	101	464	576	121	52	199	0	49	49	0	11	11
% of catfish harvested by number			48.8						47.2						4.0			
Total weight of fish (lb)			768.5	17.0	82.2	99.2			522.6	36.0	14.9	50.9			171.6	0.0	19.5	19.5
% of catfish harvested by weight			52.5						35.7						11.7			
Mean length (in)			15.0						13.9						19.6			
Mean weight (lb)			1.1						0.9						3.1			
Rate (fish/hour)			0.06						0.05						0.005			

Table 21. Morone catch and harvest statistics for all anglers derived from a 2019 (February 19 - June 30) daytime creel survey at Barren River Lake Tailwater for each species.

	Hybrid striped bass						Yellow bass						White bass					
	Harvest			Catch and release			Harvest			Catch and release			Harvest			Catch and release		
	12.0-14.9 in	≥15.0 in	Total	12.0-14.9 in	≥15.0 in	Total	<12.0 in	≥12.0 in	Total	<12.0 in	≥12.0 in	Total	12.0-14.9 in	≥15.0 in	Total	12.0-14.9 in	≥15.0 in	Total
Total number of morone	41	898	939	51	361	421	23	0	23	0	0	0	205	11	295	85	4	128
% of morone harvested by number			74.6						1.9						23.5			
Total weight of fish (lb)			3,344.2	139.0	986.6	1,125.6			7.9	0.0	0.0	0.0			214.8	54.0	2.5	56.5
% of morone harvested by weight			93.8						0.2						6.0			
Mean length (in)			19.0						9.3						11.7			
Mean weight (lb)			3.5						0.3						0.7			
Rate (fish/hour)			0.09						0.002						0.03			

Table 22. Length frequency and CPUE (fish/hr) of bluegill, redear sunfish and warmouth collected in 0.5 hours (4- 450-sec runs) of diurnal electrofishing at Briggs Lake on 6 May 2019.

Species	Inch class											Total	CPUE	Std. error
	1	2	3	4	5	6	7	8	9	10	11			
Bluegill	1	6	21	51	19	19	32	7				156	312.0	126.7
Redear sunfish				1	1	9	12	20	3	5	1	52	104.0	19.0
Warmouth				1	1	1						3	6.0	2.0

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Table 23. Spring electrofishing CPUE (fish/hr) for each length group of bluegill collected at Briggs Lake from mid-April to mid-May 2008-2019. Standard errors are in parentheses.

Year	Length group				Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	
2019	14.0 (6.0)	182.0 (69.7)	102.0 (47.5)	14.0 (8.3)	312.0 (126.7)
2017	16.0 (8.6)	114.0 (38.1)	70.0 (15.8)	18.0 (8.3)	218.0 (63.5)
2015*	174.0 (59.5)	112.0 (23.8)	170.0 (26.6)	108.0 (25.4)	564.0 (104.4)
2014	3.2 (2.0)	27.2 (10.3)	128.0 (25.7)	9.6 (4.7)	168.0 (32.4)
2013	4.8 (2.0)	40.0 (13.6)	81.6 (26.5)	19.2 (4.1)	145.6 (43.1)
2012	56.0 (32.2)	158.0 (32.7)	62.0 (21.3)	16.0 (7.3)	292.0 (53.7)
2011	66.0 (15.1)	94.0 (39.2)	60.0 (19.7)	24.0 (3.3)	244.0 (60.7)
2010	20.8 (14.2)	94.4 (38.0)	153.6 (81.0)	52.8 (41.9)	321.6 (159.3)
2009	19.2 (10.3)	137.6 (19.5)	17.6 (6.9)	19.2 (6.5)	193.6 (21.5)
2008	288.0 (175.0)	106.0 (31.2)	70.0 (18.9)	16.0 (5.7)	384.0 (96.2)

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* nocturnal electrofishing used due to high water clarity

Table 24. Spring electrofishing CPUE (fish/hr) for each length group of redear sunfish collected at Briggs Lake during mid-April to mid-May 2008-2019. Standard errors are in parentheses.

Year	Length group					Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	≥10.0 in	
2019	na	4.0 (2.3)	42.0 (9.5)	58.0 (11.5)	12.0 (5.2)	104.0 (19.0)
2017	na	20.0 (8.3)	56.0 (7.3)	126.0 (38.8)	2.0 (2.0)	202.0 (50.5)
2015*	na	34.0 (15.5)	72.0 (5.7)	108.0 (21.0)	12.0 (5.2)	214.0 (20.8)
2014	1.6 (1.6)	8.0 (3.6)	96.0 (12.9)	67.2 (13.1)	8.0 (4.4)	178.2 (24.0)
2013	1.6 (1.6)	41.6 (16.7)	48.0 (18.8)	56.0 (11.9)	6.4 (3.9)	147.2 (37.6)
2012	4.0 (2.3)	58.0 (19.2)	94.0 (33.1)	6.0 (3.8)	2.0 (2.0)	162.0 (49.9)
2011	na	4.0 (4.0)	14.0 (2.0)	28.0 (10.6)	12.0 (4.0)	46.0 (14.4)
2010	na	9.6 (3.9)	16.0 (7.2)	17.6 (9.6)	1.6 (1.6)	43.2 (19.9)
2009	1.6 (1.6)	8.0 (6.2)	54.4 (14.8)	17.6 (12.0)	4.8 (3.2)	81.6 (25.1)
2008	1.6 (1.6)	3.2 (2.0)	na	4.0 (2.3)	na	8.0 (3.6)

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* nocturnal electrofishing used due to high water clarity

Table 25. Proportional stock density (PSD) and relative stock density (RSD) of bluegill and redear sunfish collected by diurnal electrofishing at Briggs Lake on 6 May 2019. Numbers in parentheses represent 95% confidence intervals.

Species	N	PSD	RSD ^a
Bluegill	149	39 (8)	5 (3)
Redear sunfish	52	79 (11)	17 (10)

^a Bluegill=RSD₈; redear sunfish=RSD₉

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Table 26. Bluegill population assessment for Briggs Lake 2009 - 2019 (scoring based on statewide assessment).

Parameter	Year																	
	2019		2017		2015		2014		2013		2012		2011		2010		2009	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Growth																		
Mean length age-2 at capture	4.6	3	4.7*	3	4.7*	3	4.7*	3	4.7*	3	4.7	3	4.9*	4	4.9*	4	4.9*	4
Growth																		
Years to 6.0 in	2.9	4	2.6*	4	2.6*	4	2.6*	4	2.6*	4	2.6	4	2.7*	4	2.7*	4	2.7*	4
Size structure																		
CPUE \geq 6.0 in	116.0	4	88.0	3	278.0	4	137.6	4	100.8	4	78.0	3	84.0	3	206.4	4	36.8	2
Size structure																		
CPUE \geq 8.0 in	14.0	4	18.0	4	108.0	4	9.6	4	19.2	4	16.0	4	24.0	4	52.8	4	19.2	4
Instantaneous mortality (z)	-0.39																	
Annual mortality (A)%	32.3																	
Total score:	15		14		15		15		15		14		15		16		14	
Assessment rating:	Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent	

*No age data collected; values carried over from 2007 and 2012 (spring collected), 2019 fall collection

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Table 27. Redear sunfish population assessment for Briggs Lake 2009 - 2019 (scoring based on statewide assessment).

Parameter	Year																	
	2019		2017		2015		2014		2013		2012		2011		2010		2009	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Growth																		
Mean length age-3 at capture	8.2	4	8.6*	4	8.6*	4	8.6*	4	8.6*	4	8.6*	4	8.6*	4	8.6*	4	8.6*	4
Growth																		
Years to 8.0 in	2.6	4	2.7*	4	2.7*	4	2.7*	4	2.7*	4	2.7*	4	2.7*	4	2.7*	4	2.7*	4
Size structure																		
CPUE \geq 8.0 in	58.0	4	126.0	4	108.0	4	67.2	4	62.4	4	6.0	2	28.0	4	17.6	3	17.6	3
Size structure																		
CPUE \geq 10.0 in	12.0	4	2.0	4	12.0	4	8.0	4	6.4	4	2.0	4	12.0	4	1.6	3	4.8	4
Instantaneous mortality (z)	-0.533																	
Annual mortality (A)%	41.3																	
Total score:	16		16		16		16		16		14		16		14		15	
Assessment rating:	Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent	

*No age data collected, values carried over from 2007

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Table 28. Mean back calculated length (in) at each annulus for bluegill collected from Briggs Lake in early to mid-September 2019, including the range of bluegill at each age and the 95% confidence interval for each age.

Year class	No.	Age				
		1	2	3	4	5
2018	11	2.9				
2017	23	2.8	4.8			
2016	11	2.8	5.1	6.4		
2015	6	3.0	5.0	6.5	7.2	
2014	4	2.9	5.0	6.3	7.1	7.5
Mean		2.9	4.9	6.4	7.2	7.5
No.		55	44	21	10	4
Smallest		1.6	3.8	5.3	6.6	6.9
Largest		4.6	6.2	7.6	7.9	7.9
Std error		0.1	0.1	0.1	0.1	0.2
95% CI (+/-)		0.2	0.2	0.2	0.2	0.5

Otoliths were used for age-growth determinations; intercept = 0
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Table 29. Mean back calculated length (in) at each annulus for redear sunfish collected from Briggs Lake in early to mid-September 2019, including the range of redear sunfish at each age and the 95% confidence interval for each age.

Year class	No.	Age						
		1	2	3	4	5	6	7
2018	28	3.5						
2017	24	3.8	6.3					
2016	14	3.3	6.6	8.1				
2015	8	3.7	6.6	8.1	8.9			
2014	7	3.4	6.2	8.1	9.0	9.7		
2013	2	3.5	6.2	7.8	8.7	9.4	9.9	
2012	1	4.2	7.4	9.3	10.0	10.6	11.0	11.3
Mean		3.6	6.4	8.1	9.0	9.7	10.2	11.3
No.		84	56	32	18	10	3	1
Smallest		2.5	4.8	7.4	8.1	8.8	9.5	11.3
Largest		5.1	8.1	9.3	10.0	10.6	11.0	11.3
Std error		0.1	0.1	0.1	0.1	0.1	0.2	0.4
95% CI (+/-)		0.1	0.2	0.2	0.2	0.4	0.9	

Otoliths were used for age-growth determinations; intercept = 0
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Table 30. Length frequency and CPUE (fish/set-night) of channel catfish collected during 4 sets of tandem hoop nets (2 sets with 2 nets each) at Briggs Lake during early September 2019.

Species	Inch class							Total	CPUE	Std err
	12	13	14	15	16	17	18			
Channel catfish	4	51	44	25	1		2	127	31.8	13.9

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Table 31. Relative weight (Wr) for each length group of channel catfish collected by 4 nights of tandem set hoopnets (2 sets with 2 nets each) at Briggs Lake from 6-9, September 2019. Standard errors are in parentheses.

	Length group		
	11.0-15.9 in	16.0-23.9 in	≥24.0 in
Wr	82 (1)	84 (16)	
N	71	3	0

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Table 32. Black bass relative abundance and CPUE (fish/hr) collected during 1.0 hour (4- 0.25-hour runs) of nocturnal electrofishing at Fagan Branch Reservoir on 30 April 2019.

Species	Inch class																	Total	CPUE	Std err
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
Largemouth bass	1	13	11	9	68	106	71	66	44	30	12	3	4		1		1	440	440.0	39.8

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Table 33. Spring nocturnal electrofishing CPUE of each length group of largemouth bass collected at Fagan Branch Reservoir 1999-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	Std. error
	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error		
2019	102.0	6.0	287.0	35.0	45.0	8.7	6.0	2.0			440.0	39.8
2016	82.0	11.4	174.0	25.2	17.0	4.1	6.0	1.2	2.0	1.2	279.0	29.7
2013	56.0	5.2	143.0	4.1	37.0	4.4	5.0	1.9	2.0	2.0	240.0	7.7
2010	80.8	15.5	152.8	9.0	80.8	6.0	13.6	3.5	0.8	0.8	328.0	20.0
2007	84.8	18.2	202.4	4.5	72.8	5.6	8.0	3.6	0.8	0.8	368.0	24.3
2005	105.6	19.2	173.6	19.7	76.8	4.6	15.2	2.9			371.2	39.1
2002	16.0	5.6	50.5	9.2	99.7	6.0	8.0	3.2			174.2	12.9
2001	23.3	4.3	34.0	3.8	110.7	8.1	2.7	1.3			170.7	7.6
2000	10.0	3.8	88.0	9.4	64.0	13.8	0.7	0.7			162.7	18.6
1999	2.7	1.3	149.3	14.0	17.3	1.3	1.3	0.8	0.7	0.7	170.7	13.7

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Table 34. PSD and RSD₁₅ values for largemouth bass collected during 1.0 hour (4-0.25-hour runs) of nocturnal electrofishing at Fagan Branch Reservoir on 30 April 2019. 95% confidence intervals are in parentheses.

Species	No. of fish ≥stock size	PSD	RSD ₁₅
Largemouth bass	338	15 (4)	2 (1)

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Table 37. Spring electrofishing CPUE (fish/hr) for each length group of bluegill collected at Fagan Branch Reservoir from 1997-2019. Standard errors are in parentheses.

Year	Length group				Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	
2019*	40.0 (12.7)	144.0 (56.4)	142.0 (24.7)	30.0 (11.9)	356.0 (93.4)
2016	16.5 (6.2)	53.9 (5.5)	115.3 (5.1)	62.9 (11.6)	248.5 (13.5)
2013	46.4 (12.3)	52.4 (5.1)	83.8 (34.1)	28.4 (6.6)	212.0 (25.6)
2010	220.0 (47.6)	526.0 (63.4)	242.0 (39.7)	14.0 (8.3)	1002.0 (96.0)
2007	76.0 (11.6)	50.0 (20.8)	78.0 (24.1)	36.0 (20.8)	240.2 (47.8)
2005	74.3 (18.9)	198.2 (30.6)	42.8 (11.9)	42.8 (11.9)	319.8 (37.6)
2001	99.1 (46.1)	102.1 (48.9)	105.1 (32.7)	22.5 (9.5)	328.8 (97.9)
2000	16.7 (6.5)	32.0 (8.3)	47.3 (6.4)	6.7 (2.2)	102.7 (10.8)
1999	5.3 (2.2)	20.0 (8.3)	46.0 (9.6)	4.0 (2.1)	75.3 (14.0)
1997	7.2 (2.0)	31.2 (9.4)	108.8 (12.0)	11.2 (3.4)	158.4 (8.3)

swdlclbg.d97 - d19

*based on 4 runs of 450s vs the normal 600s

Table 38. Spring electrofishing CPUE (fish/hr) for each length group of redear sunfish collected at Fagan Branch Reservoir from 1997-2019. Standard errors are in parentheses.

Year	Length group					Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	≥10.0 in	
2019*		64.0 (16.0)	154.0 (30.0)	136.0 (34.1)	8.0 (3.3)	354.0 (37.2)
2016	3.0 (1.7)	1.5 (1.5)	10.5 (5.1)	41.9 (10.1)	1.5 (1.5)	56.9 (9.0)
2013	1.5 (1.5)	25.5 (8.9)	62.9 (24.5)	31.4 (6.2)	1.5 (1.5)	120.0 (31.2)
2010		86.0 (18.3)	40.0 (19.6)	42.0 (7.6)	4.0 (2.3)	168.0 (40.3)
2007	12.0 (12.0)	40.0 (17.0)	36.0 (20.0)	114.0 (43.0)	16.0 (8.6)	202.0 (69.5)
2005		24.8 (10.0)	58.6 (16.7)	31.5 (9.4)	2.3 (2.3)	114.9 (22.2)
2001		3.0 (1.0)	27.0 (6.6)	9.0 (2.3)	3.0 (1.9)	39.0 (9.2)
2000			1.3 (0.8)	4.7 (1.2)	1.3 (1.3)	6.0 (0.9)
1999	1.3 (1.3)	1.3 (1.3)	10.0 (3.1)	8.0 (2.5)	4.0 (1.5)	20.7 (5.4)
1997		2.4 (1.6)	25.6 (6.8)	12.8 (4.6)		40.8 (10.0)

swdlclbg.d97 - d19

*based on 4 runs of 450s vs the normal 600s

Table 39. Proportional stock density (PSD) and relative stock density (RSD) of bluegill and redear sunfish collected by nocturnal electrofishing at Fagan Branch Reservoir on 30 April 2019. Numbers in parentheses represent 95% confidence intervals.

Species	No. of fish	PSD	RSD ^a
	≥stock size		
Bluegill	158	54 (8)	9 (5)
Redear sunfish	177	62 (7)	18 (6)

^a Bluegill=RSD₈; redear=RSD₉

swdlclbg.d19

Table 40. Bluegill population assessments from 1997-2019 at Fagan Branch Reservoir (scoring based on statewide assessment).

Parameter	Year																			
	2019		2016		2013		2010		2007		2005		2001		2000		1999		1997	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Mean length age-2 at capture	2.9*	1	2.9*	1	2.9*	1	2.9	1	2.9*	1	2.9*	1	2.9*	1	2.9*	1	2.9*	1	2.9*	1
Years to 6.0 in	3.8*	3	3.8*	3	3.8*	3	3.8	3	3.8*	3	3.8*	3	3.8*	3	3.8*	3	3.8*	3	3.8*	3
CPUE \geq 6.0 in	172.0	4	178.1	4	112.3	4	256.0	4	114.0	4	47.3	2	127.6	4	54.0	2	50.0	2	120.0	4
CPUE \geq 8.0 in	30.0	4	62.9	4	28.4	4	14.0	4	36.0	4	4.5	3	22.5	4	6.7	4	4.0	3	11.2	4
Instantaneous mortality (z)							-1.03													
Annual mortality (A)							64.2													
Total score:	12		12		12		12		12		9		12		10		9		12	
Assessment rating	Good		Good		Good		Good		Good		Fair		Good		Good		Fair		Good	

*No age data, values carried over from years with age data

swdlclag.d10

swdlclbg.d97 - d19

Table 41. Redear sunfish population assessments from 1997-2019 at Fagan Branch Reservoir (scoring based on statewide assessment).

Parameter	Year																			
	2019		2016		2013		2010		2007		2005		2001		2000		1999		1997	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Mean length age-3 at capture	5.7*	1	5.7*	1	5.7*	1	5.7	1	5.7*	1	5.7*	1	5.7*	1	5.7*	1	5.7*	1	5.7*	1
Years to 8.0 in	4.6*	3	4.6*	3	4.6*	3	4.6	3	4.6*	3	4.6*	3	4.6*	3	4.6*	3	4.6*	3	4.6*	3
CPUE ≥8.0 in	290.0	4	41.9	4	31.4	4	40.0	4	36.0	4	58.6	4	27.0	4	1.3	1	10.0	3	25.6	4
CPUE ≥10.0 in	8.0	4	1.5	3	1.5	3	4.0	4	16.0	4	2.3	4	3.0	4	1.3	3	4.0	4	0.0	1
Instantaneous mortality (z)							-0.784													
Annual mortality (A)							54.3													
Total score:	12		11		11		12		12		12		12		8		11		9	
Assessment rating	Good		Good		Good		Good		Good		Good		Good		Fair		Good		Fair	

*No age data, values carried over from years with age data

swdlclag.d10

swdlclbg.d97 - d19

Table 42. Length frequency and CPUE (fish/set-night) of channel catfish collected during 6 sets of tandem hoop nets (2 sets with 3 nets each) at Fagan Branch Reservoir during early September 2019.

Species	Inch class											Total	CPUE	Std err	
	10	11	12	13	14	15	16	17	18	19	20				21
Channel catfish	1	4	13	6	1	3	5	6	5	2	2	1	49	8.2	7.4

swdlclcc.d19

Table 43. Relative weight (Wr) for each length group of channel catfish collected by tandem set hoopnets (2 sets with 3 nets each) at Fagan Branch Reservoir from 10-16 September 2019. Standard errors are in parentheses.

	Length group		
	11.0-15.9 in	16.0-23.9 in	≥24.0 in
Wr	83 (1)	86 (1)	
N	27	21	0

swdlclcc.D19

Table 44. Age frequency and CPUE (fish/set-night) of channel catfish collected from tandem hoopnetting at Fagan Branch Reservoir in early September 2019.

Age	Inch class											Total	Percent	CPUE	Std. error	
	10	11	12	13	14	15	16	17	18	19	20					21
1+			1										1	5	0.2	0.2
2+	1	4	11		1								17	77	2.8	2.5
3+			1										1	5	0.2	0.2
4+											2		2	9	0.3	0.3
9+												1	1	5	0.2	0.2
Total	1	4	13	0	1	0	0	0	0	0	2	1	22	100		
%	5	18	59	0	5	0	0	0	0	0	9	5	100			

swlclcc.D19, swdlclag.D19

Table 45. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 1 hour (4 - 0.250-hour runs) of nocturnal electrofishing at Marion Co. Lake on 16 April 2019.

Species	Inch class																Total	CPUE	Std err		
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19				20	
Largemouth bass	2	40	78	28	19	103	72	47	14	2			2		1	1	3	1	413	413.0	40.1

swdmclbb.d19

Table 46. Spring nocturnal electrofishing CPUE (fish/hr) of each length group of largemouth bass collected at Marion County Lake 2004-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019*	148.0	25.5	241.0	9.2	16.0	5.7	8.0	4.3	1.0	1.0	413.0	40.1
2016	110.9	45.9	181.7	18.7	14.9	4.4	25.1	6.4	4.6	2.4	332.6	45.9
2013	56.0	12.1	121.1	19.2	51.4	8.0	14.9	4.8	3.4	3.4	243.4	30.4
2010	140.6	24.1	316.6	22.2	11.4	4.9	2.3	2.3			470.9	44.7
2009	125.0	19.3	472.0	43.0	12.0	3.4	11.0	3.7	4.0	2.1	620.0	56.0
2008	209.1	28.5	385.1	30.4	16.0	3.9	16.0	3.5	3.4	1.6	626.3	50.0
2007	221.0	23.9	371.0	32.2	28.0	6.9	12.0	3.0	1.0	1.0	632.0	47.7
2006	112.0	20.8	170.3	30.6	59.4	5.5	38.9	4.1			380.6	53.8
2005	101.7	17.7	123.4	13.4	133.7	20.2	9.1	2.7	1.1	1.1	368.0	44.8
2004	110.3	16.9	197.4	25.8	62.8	9.8	7.7	3.4	5.3	2.7	378.2	36.6

swdmclbb.d99 - d19

*based on 4 runs of 900s vs the normal 7 runs of 450s

Table 47. PSD and RSD₁₅ values obtained for largemouth bass collected during 1.0 hour (4 - 0.250-hour runs) of spring nocturnal electrofishing at Marion County Lake on 16 April 2019. 95% confidence intervals are in parentheses.

Species	No. of fish ≥stock size	PSD	RSD ₁₅
Largemouth bass	265	9 (3)	3 (2)

swdmclbb.d19

Table 48. Population assessment of largemouth bass based on nocturnal spring sampling at Marion County Lake from 2004-2019 (scoring based on statewide assessment).

Parameter	Year																			
	2019		2016		2013		2010		2009		2008		2007		2006		2005		2004	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Mean length age-3 at capture	10.7*	2	10.7*	2	10.7*	2	10.7*	2	10.7	2	11.9*	4	11.9*	4	11.9*	4	11.9*	4	11.9	4
Spring CPUE age-1	55.0*	4	55.0*	4	55.0*	4	55.0*	4	55.0	4	201.1	4	7.0	1	19.4	2	101.7	4	117.3	4
Spring CPUE 12.0-14.9 in	16.0	2	14.9	2	51.4	4	11.4	1	12.0	1	16.0	2	28.0	3	59.4	4	133.7	4	65.3	4
Spring CPUE ≥15.0 in	8.0	2	25.1	3	14.9	3	2.3	1	11.0	2	16.0	3	12.0	2	38.9	4	9.1	2	8.0	2
Spring CPUE ≥20.0 in	1.0	2	4.6	4	3.4	3	0.0	1	4.0	4	3.4	3	1.0	2	0.0	1	1.1	2	5.3	4
Instantaneous mortality (z)																				
Annual mortality (A)%																				
Total score	12		15		16		9		13		16		12		15		16		18	
Assessment rating	Fair		Good		Good		Fair		Good		Good		Fair		Good		Good		Excellent	

*No age data or too little for calculation, values carried over from years with age data

swdmclbb.d04-d19

Table 49. Length frequency and CPUE (fish/set) of channel catfish collected during 4 sets of tandem hoop net sampling (2 sets with 2 nets each) at Marion County Lake from 10-16 September 2019.

Species	Inch class														Total	CPUE	Std err
	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
Channel catfish	1			9	31	6	3	1			1	1	1	1	55	13.8	4.1

swdmclcc.d19

Table 50. Relative weight (Wr) for each length group of channel catfish collected during 4 sets of tandem set hoopnets (2 sets with 2 nets each) at Marion County Lake from 10-16 September 2019. Standard errors are in parentheses.

	Length group		
	11.0-15.9 in	16.0-23.9 in	≥24.0 in
Wr	84 (1)	82 (1)	100
N	41	13	1

swdmclcc.D19

Table 51. Age frequency and CPUE (fish/set-night) of channel catfish collected from tandem hoopnetting at Marion County Lake in early September 2019.

Age	Inch class									Total	Percent	CPUE	Std. error
	16	17	18	19	20	21	22	23	24				
2+	6	3								9	69	2.3	1.0
3+			1				1	1		3	23	0.8	0.3
4+									1	1	8	0.3	0.3
Total	6	3	1	0	0	0	1	1	1	13	100		
%	46	23	8				8	8	8	100			

swmclcc.D19, swdmclag.D19

Table 52. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 6.0 hours (12- 0.50-hour runs) of nocturnal electrofishing at Green River Lake from April 22-29, 2019.

Area	Species	Inch class																			Total	CPUE	Std err
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Green River Arm																							
Holmes Bend	Smallmouth bass								1			1									2	1.3	1.3
	Spotted bass				1			4	1	2	2	1	1		1						13	8.7	2.9
	Largemouth bass				2	5	6	7	7	20	39	35	21	20	23	14	7	3	10	5	224	149.3	14.3
Ramp 1	Smallmouth bass		4	4	4	4	15	3	1		2										37	24.7	19.7
	Spotted bass	2	11	6	6	16	24	22	12	10	10	11	8	3	1						142	94.7	16.8
	Largemouth bass	2	9	6	19	16	15	4	5	6	20	26	15	21	10	7	17	4	5	2	2	211	140.7
Robinson Creek Arm																							
Smith Ridge	Smallmouth bass																				0		
	Spotted bass			1	2		5	14	11	7	4	1	1		1			1			48	32.0	4.2
	Largemouth bass		1	4	10	7	23	34	19	8	9	10	13	13	9	3	6	6	3	3	181	120.7	7.7
Lone Valley	Smallmouth bass		13	5	4	8	11	1	7	3	1	2	3	3	1	2	1				65	43.3	9.8
	Spotted bass	4	22	15	24	23	19	39	28	32	16	16	17	7	8	1	1				272	181.3	24.3
	Largemouth bass	4	10	1	6	4	10	3	14	10	9	16	18	36	34	12	11	16	8	5	227	151.3	7.0
TOTAL	Smallmouth bass		17	9	8	12	26	4	9	3	3	3	3	3	1	2	1				104	17.3	7.2
	Spotted bass	6	33	22	33	39	48	79	52	51	32	29	27	10	11	1	1	1			475	79.2	21.1
	Largemouth bass	6	20	11	37	32	54	48	45	44	77	87	67	90	76	36	41	29	26	15	2	843	140.5

swdgrlbb.d19

Table 53. Spring diurnal electrofishing CPUE (fish/hr) of largemouth bass by length group collected at Green River Lake during late-April to early-mid May since 1997.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	Std. error
	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	26.7	4.8	35.7	3.8	40.7	3.9	37.5	4.6	2.8	0.5	140.5	5.6
2018	13.3	3.8	37.8	6.4	40.2	4.2	45.8	4.4	2.7	0.7	137.2	16.1
2017	21.8	5.9	41.5	6.3	40.8	6.4	59.8	4.7	4.0	0.9	164.0	11.7
2016	15.0	3.7	13.0	2.7	25.0	4.7	40.0	5.8	2.5	0.7	93.5	9.1
2015	9.2	1.8	23.3	6.0	23.7	3.7	51.7	5.9	2.7	0.7	107.8	15.0
2014	no data due to flooding											
2013	4.2	0.7	23.7	3.7	44.0	4.8	52.8	5.3	3.3	0.7	124.7	11.7
2012	16.5	4.3	54.8	6.3	35.3	6.4	38.0	5.4	1.3	0.5	144.7	16.3
2011	no data due to flooding											
2010	no data due to flooding											
2009	7.2	1.8	11.3	3.4	13.0	2.7	42.8	7.9	1.7	0.8	74.3	12.3
2008	22.8	9.5	25.8	4.7	27.8	4.0	30.2	2.7	0.8	0.4	106.7	17.0
2007	3.8	1.0	20.5	2.5	33.7	5.8	22.2	3.6	0.5	0.3	80.2	10.3
2006	15.1	2.0	44.4	3.6	23.1	2.8	18.9	2.1	0.3	0.2	96.2	5.3
2005	67.8	8.0	30.7	2.8	11.7	1.9	16.8	2.5	1.5	0.7	127.0	12.5
2004	17.3	2.7	22.8	2.1	11.6	1.8	15.6	2.6	0.9	0.3	67.3	6.4
2003	5.8	1.4	12.3	2.1	5.8	1.8	18.2	3.0	1.8	0.7	42.2	4.1
2002	5.0	1.1	9.5	1.5	20.5	2.5	13.0	2.5	1.2	0.4	48.0	4.2
2001	10.2	2.5	26.7	3.0	32.2	6.5	12.5	1.5	1.7	0.4	81.5	7.8
2000	2.5	0.9	41.0	4.4	24.2	3.4	14.7	3.4	3.2	1.0	82.3	8.6
1999	21.4	3.8	53.5	7.2	19.4	4.0	14.3	1.7	2.8	0.8	108.6	12.5
1998	33.5	7.7	9.0	1.8	8.8	2.0	17.5	1.8	2.0	0.7	68.8	8.6
1997	3.7	1.0	22.3	2.5	23.3	2.8	23.2	2.1	1.2	0.5	72.5	5.2

swdgrlbb.D97-D19

Table 54. PSD and RSD values for each black bass species collected during 6.0 hours (12- 0.50-hour runs) of nocturnal electrofishing by area at Green River Lake from April 22 - 29, 2019. 95% confidence intervals are in parentheses.

Area	Species	No. \geq stock size	PSD	RSD ^A
Green River Arm				
Holmes Bend	Largemouth bass	211	65 (6)	29 (6)
	Spotted bass	12	42 (29)	8 (16)
	Smallmouth bass	2	*	*
Ramp 1	Largemouth bass	144	76 (7)	33 (8)
	Spotted bass	101	33 (11)	4 (4)
	Smallmouth bass	21	10 (13)	*
Robinson Creek Arm				
Smith Ridge	Largemouth bass	136	49 (9)	22 (7)
	Spotted bass	45	18 (11)	5 (6)
	Smallmouth bass	0	*	*
Lone Valley	Largemouth bass	192	81 (6)	45 (7)
	Spotted bass	184	36 (7)	9 (4)
	Smallmouth bass	35	37 (16)	20 (13)
Total	Largemouth bass	683	69 (4)	33 (4)
	Spotted bass	342	33 (5)	7 (3)
	Smallmouth bass	58	28 (12)	12 (8)

^A Largemouth bass = RSD₁₅, spotted bass and smallmouth bass = RSD₁₄.

swdgrlbb.d19

Table 55. Population assessment of largemouth bass based on nocturnal spring sampling at Green River Lake from 2003-2019 (scoring based on statewide assessment).

Parameter	2019		2018		2017		2016		2015		2013		2012		2009		2003	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Mean length age-3 at capture	13.1	4	13.1	4	13.1	4	13.1	4	13.1	4	14.6	4	14.6	4	14.6	4	14.4	4
Spring CPUE age-1	34.3	3	17.7	2	34.5	3	17.3	2	16.0	2	3.8	1	15.5	2	7.2	1	7.3	1
Spring CPUE 12.0-14.9 in	40.7	4	40.2	4	40.8	4	25.0	3	23.7	3	44.0	4	35.3	4	13.0	1	5.8	1
Spring CPUE \geq 15.0 in	37.5	4	45.8	4	59.8	4	40.0	4	51.7	4	52.8	4	39.3	4	42.8	4	18.2	3
Spring CPUE \geq 20.0 in	2.8	4	2.7	4	4.0	4	2.5	4	2.7	4	3.3	4	1.3	4	1.7	4	1.8	4
Instantaneous mortality (z)									-0.473						-0.610			-0.477
Annual mortality (A)%									37.71						45.7			37.90
Total score	19		18		19		17		17		17		18		14		13	
Assessment rating	Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Excellent		Good		Good	

swdgrlag.D03, D09, 15

swdgrlbb.D02-D19

Table 56. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 6.0 hours (12- 0.50-hour runs) of diurnal electrofishing at Green River Lake from September 26 - October 8, 2019.

Area	Species	Inch class																		Total	CPUE	Std err
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
Green River Arm																						
Holmes Bend	Smallmouth bass		6	2			1										1			10	6.7	0.7
	Spotted bass	3	110	20	1	2	4	2	1	1	1			1						146	97.3	26.7
	Largemouth bass	12	221	29	5	2	2		4	4	2	3	2	1		1	1			289	192.7	37.4
Ramp 1	Smallmouth bass	3	33	2	1	4		1	1	1		1	1						48	32.0	19.2	
	Spotted bass	21	21	6	3	5	2	1	4		1		1		1				66	44.0	10.6	
	Largemouth bass	32	34		3	2			1	1		2	3				1		1	80	53.3	13.4
Robinson Creek Arm																						
Smith Ridge	Smallmouth bass		1				1												2	1.3	0.7	
	Spotted bass	5	139	38	11	11	7	3	4	5	1	1	6	3					234	156.0	7.6	
	Largemouth bass	7	60	27	20	18	4		6	3	3	2	3	2	2	5			162	108.0	8.1	
Lone Valley	Smallmouth bass	19	63	11	8	4	3	1			1								110	73.3	29.7	
	Spotted bass	120	106	12	12	3	2	3	1	3			1	1					264	176.0	20.0	
	Largemouth bass	108	59	1	1	2		1					1		1				174	116.0	55.2	
TOTAL	Smallmouth bass	22	103	15	9	8	5	2	1	1	1	1	1				1		170	28.3	11.4	
	Spotted bass	149	376	76	27	21	15	9	10	9	3	1	8	5	1				710	118.3	17.4	
	Largemouth bass	159	374	57	29	24	6	1	11	8	5	7	9	3	3	6	2		1	705	117.5	20.9

swdgrlyy.d19

Table 57. Largemouth bass mean length (in) at age-0 and catch rates at age 0 and age 1 collected at Green River Lake since 2002.

Year class	Age 0 ^A		Age 0 ^A		Age 0 \geq 5.0 in ^A		Age 1 ^B	
	Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	3.5	<0.1	108.0	20.3	9.8	3.4		
2018	5.2	0.1	72.2	9.4	36.8	6.9	34.3	5.6
2017	4.8	0.1	19.0	6.6	7.0	2.5	17.7	4.5
2016	5.1	0.1	55.3	8.7	30.3	7.9	34.7	8.8
2015	5.7	0.1	65.0	22.6	44.7	15.8	17.5	4.2
2014	data collected too late for comparision to other years							
2013	5.9	0.1	26.0	15.4	19.3	12.9	ND	
2012	4.2	0.1	16.5	4.2	5.0	2.0	3.8	0.8
2011	3.9	0.1	28.8	7.5	5.8	1.5	15.5	4.0
2010	4.8	0.1	45.0	8.1	18.3	4.9	ND	
2009	3.7	0.1	66.8	9.8	11.5	3.9	ND	
2008	4.8	0.1	23.7	5.8	11.5	3.6	7.2	1.8
2007	4.2	0.1	21.8	5.3	5.8	2.2	22.8	9.5
2006	4.3	0.1	13.5	3.4	3.7	1.2	3.8	1.0
2005	5.2	0.1	31.7	7.4	16.8	4.3	14.3	2.4
2004	5.0	0.1	60.8	9.0	28.0	3.6	65.3	7.7
2003	3.9	0.1	32.8	9.7	5.5	1.2	11.9	2.1
2002	3.9	0.1	32.7	9.7	5.3	1.2	7.3	1.6

^A Data collected by fall (late-Sept through early November) diurnal electrofishing. Mean lengths were determined by otoliths taken from a subsample of LMB <9.0 in and extrapolated to the entire catch of the fall sample.

^B Data collected during the following spring (May) nocturnal electrofishing.

swdgrlbb.D02 - D19

swdgrlag. D02 - D19

swdgrlyy. D02 - D13, 15-19

ND = no data due to spring flooding

Table 58. Length frequency and CPUE (fish/hr) of each inch class of bluegill and redear sunfish collected by 1.5 hours (12 runs; 450 sec./run) of diurnal electrofishing at Shanty Hollow Lake on 20 April 2019.

Species	Inch class												Total	CPUE	Std. error	
	1	2	3	4	5	6	7	8	9	10	11	12				
Bluegill	4	145	175	147	58	58	54	8						649	432.7	53.7
Redear sunfish		3	4	1		5	3	1	6	1				24	16.0	4.3
Warmouth		1	1	1	3	3	1							10	6.7	3.8
Black crappie				2	7	1					1	1		12	8.0	4.3

swdshlbg.d19

Table 59. Spring electrofishing CPUE (fish/hr) for each length group of bluegill collected at Shanty Hollow Lake from 2001 -2019.

Year	Length group								Total	
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		CPUE	Std. error
2019	99.3	(16.5)	253.3	(26.0)	74.7	(21.0)	5.3	(1.8)	432.7	(53.7)
2017	23.2	(8.0)	97.6	(9.8)	41.6	(5.8)	3.2	(2.4)	165.6	(26.7)
2015	38.7	(14.6)	51.3	(9.6)	67.3	(10.5)	3.3	(1.2)	160.7	(26.7)
2012	192.8	(25.9)	452.0	(70.1)	59.2	(11.5)	0.8	(0.8)	704.8	(82.6)
2010	66.0	(11.2)	181.3	(24.6)	29.3	(5.8)	0.7	(0.7)	277.3	(27.5)
2009	16.0	(8.1)	184.0	(41.7)	28.7	(8.0)	*		228.7	(51.2)
2008	115.1	(23.9)	142.8	(11.5)	108.9	(18.4)	*		366.8	(31.5)
2007	197.1	(33.0)	321.5	(38.2)	94.6	(18.2)	0.7	(0.7)	613.8	(64.2)
2006	134.0	(45.3)	78.7	(8.9)	98.7	(13.9)	12.7	(4.7)	324.0	(50.2)
2005	76.3	(16.5)	194.5	(23.2)	124.3	(15.3)	1.2	(0.8)	396.3	(43.3)
2004	85.7	(26.7)	285.2	(53.0)	157.1	(27.6)	*		590.8	(100.1)
2003	43.3	(10.4)	346.7	(34.6)	106.0	(17.0)	5.3	(2.8)	501.3	(47.6)
2002	78.0	(15.2)	391.3	(55.2)	121.3	(15.0)	10.7	(2.8)	601.3	(67.1)
2001	99.9	(28.2)	224.7	(57.5)	239.4	(67.8)	4.4	(3.5)	573.3	(153.3)

swdshlbg.D01 - D19

* lake fertilization suspended 2012 - 2015

Table 60. Spring electrofishing CPUE (fish/hr) for each length group of redear sunfish collected at Shanty Hollow Lake from 2001 - 2019.

Year	Length group										Total	
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		≥10.0 in			
	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	2.0	1.4	0.8	0.8	5.3	1.8	5.3	2.7	*		16.0	4.3
2017	*		9.6	2.0	3.2	1.8	6.4	1.1	*		19.2	3.6
2015	*		3.3	1.5	6.0	2.2	16.0	3.6	0.7	0.7	25.3	4.2
2012	4.0	2.2	20.8	5.6	5.6	2.4	9.6	3.1	*		40.0	8.2
2010	*		12.7	3.4	8.7	2.3	2.0	1.4	*		23.3	4.1
2009	3.3	2.1	16.0	3.6	6.0	4.0	6.0	3.7	*		31.3	9.2
2008	1.2	0.8	3.1	1.9	9.2	3.0	11.7	6.2	*		25.2	9.2
2007	1.5	1.0	9.5	2.8	34.2	6.4	2.9	1.2	*		48.0	7.3
2006	*		8.0	3.3	6.0	2.2	8.7	2.9	*		22.7	5.6
2005	1.2	1.2	3.7	1.5	9.2	2.7	3.7	1.5	*		17.9	3.8
2004	1.2	0.8	8.0	2.6	8.0	2.2	9.9	3.2	*		27.1	4.8
2003	*		2.7	1.1	1.3	0.9	10.7	6.0	*		14.7	5.9
2002	*		3.3	1.2	6.7	2.2	6.7	3.1	*		16.9	5.1
2001	*		0.8	0.8	13.8	5.3	42.1	8.7	*		60.0	8.3

wdshlbg.D01 - D1

Table 61. Proportional stock density (PSD) and relative stock density (RSD) of bluegill and redear sunfish collected by diurnal electrofishing at Shanty Hollow Lake on 20 April 2019. Numbers in parentheses represent 95% confidence intervals.

Species	N	PSD	RSD ^a
Bluegill	500	24 (4)	2 (1)
Redear	17	65 (24)	41 (24)

^a Bluegill=RSD₈; redear sunfish=RSD₉

swdshlbg.D19

Table 62. Bluegill population assessments from 2002 - 2019 at Shanty Hollow Lake (scoring based on statewide assessment).

Parameter	Year															
	2019		2017		2015		2012		2010		2009		2008		2002	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Mean length age-2 at capture	5.6*	4	5.6*	4	5.6	4	3.7*	1	3.7*	1	3.7*	1	3.7	1	4.8	3
Years to 6.0 in	3.0*	3	3.0*	3	3.0	3	2.7*	4	2.7*	4	2.7*	4	2.7	4	2.6	4
CPUE \geq 6.0 in	74.7	3	44.8	2	70.7	3	60.0	3	30.0	2	28.7	2	108.9	4	132.0	4
CPUE \geq 8.0 in	5.3	4	3.2	3	3.3	3	0.8	1	0.7	1	0.0	1	0.0	1	10.7	4
Instantaneous mortality (z)													NA			
Annual mortality (A)														-0.75	-1.014	
														52.9	63.8	
Total score:	14		12		13		9		8		8		10		15	
Assessment rating:	Excellent		Good		Good		Good		Fair		Fair		Good		Excellent	

*No age data collected, value carried over from years with age data

swdshlag.d02 & 08 (spring collected), d15 (fall collected)

swdshlbg.D02 - D19

Table 63. Redear sunfish population assessments from 2007 - 2019 at Shanty Hollow Lake (scoring based on statewide assessment).

Parameter	Year															
	2019		2017		2015		2012		2010		2009		2008		2007	
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score
Mean length age-3 at capture	8.8*	4	8.8*	4	8.4	4	7.8	4	7.8	4	7.8	4	7.8	4	7.8	4
Years to 8.0 in	3.7	4	3.7	4	3.7	4	3.7	4	3.7	4	3.7	4	3.7	4	3.7	4
CPUE \geq 8.0 in	5.3	2	6.4	2	16.0	3	9.6	2	2.0	2	6.0	2	11.7	3	2.9	2
CPUE \geq 10.0 in	0.7	2	0.0	1	0.7	2	0.0	1	0.0	1	0.0	1	0.0	1	0.0	1
Instantaneous mortality (z)																
Annual mortality (A)																
Total score:	12		11		13		11		11		11		12		11	
Assessment rating:	Good		Good		Good		Good		Good		Good		Good		Good	
ND - data collected																
swdshlag.d02, 08, 15, 18																
swdshlbg.D02 - D19																

Table 64. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 0.50 hours (4- 0.125-hour runs) of nocturnal electrofishing at Spurlington Lake on 16 April, 2019.

Species	Inch class																							Total	CPUE	Std err
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Largemouth bass	1	1		1	1	12	13	13	9	4	13	26	26	44	26	11	3	1	2	3	1	1	212	424.0	33.9	

swdsp1bb.D19

Table 65. Spring nocturnal electrofishing CPUE (fish/hr) of each length group of largemouth bass collected at Spurlington Lake during mid-April to early-May since 2002.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		>20.0 in			
	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	32.0	3.3	78.0	15.1	130.0	13.6	184.0	24.0	14.0	6.8	424.0	33.9
2016	20.0	10.1	96.0	16.7	206.0	8.9	84.0	12.4	4.0	2.3	406.0	27.8
2013	22.0	8.3	160.0	25.9	96.0	5.7	44.0	11.6	4.0	4.0	322.0	42.0
2010	10.0	7.6	136.0	20.7	68.0	12.4	34.0	6.0	4.0	2.3	247.0	24.0
2009	6.0	6.0	128.0	9.8	118.0	26.2	58.0	10.0	2.0	2.0	310.0	45.3
2008	46.0	20.8	150.0	26.0	164.0	15.5	32.0	7.3	2.0	2.0	392.0	46.7
2007	12.0	5.2	92.0	6.9	66.0	6.0	14.0	3.8	2.0	2.0	184.0	3.3
2006	30.4	11.7	168.0	26.9	137.6	22.7	28.8	7.4	4.8	3.2	364.8	19.7
2005	42.0	13.2	130.0	26.2	146.0	12.4	20.0	2.3	2.0	2.0	338.0	23.2
2004	28.9	6.6	200.0	40.6	109.6	10.6	19.2	5.0	1.9	1.9	372.0	39.8
2003	61.5	14.4	233.9	29.2	123.1	11.4	12.3	3.1	1.5	1.5	448.0	47.2
2002	21.6	3.9	145.1	14.1	174.5	22.1	35.3	3.4	2.9	2.9	384.0	32.8

swdsplbb. D02 - D19

Table 66. PSD and RSD₁₅ values obtained for largemouth bass collected during 0.50 hours (4- 0.125-hour runs) of spring nocturnal electrofishing at Spurlington Lake on 16 May 2019. 95% confidence intervals are in parentheses.

Species	No. ≥8.0 in	PSD	RSD ₁₅
Largemouth bass	196	80 (6)	47 (7)

swdsplbb.D19

Table 67. Population assessment of largemouth bass based on nocturnal spring sampling at Spurlington Lake from 2004-2019 (scoring based on statewide assessment).

Parameter	2019		2016		2013		2010		2009		2008		2007		2006		2004		
	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	
Mean length age-3 at capture	10.5	2	10.5	2	10.5	2	10.5	2	10.5	2	10.5	2	10.5	2	10.5	2	10.5	2	
Spring CPUE age-1	8.0	1	20.0	2	22.0	2	10.0	1	6.0	1	46.0	3	2.0	1	16.0	2	0.0	1	
Spring CPUE 12.0-14.9 in	130.0	4	206.0	4	96.0	4	68.0	4	118.0	4	164.0	4	66.0	4	137.6	4	109.6	4	
Spring CPUE \geq 15.0 in	184.0	4	84.0	4	44.0	4	34.0	4	58.0	4	32.0	4	14.0	2	28.8	3	19.2	3	
Spring CPUE \geq 20.0 in	14.0	4	4.0	4	4.0	4	4.0	4	2.0	3	2.0	3	2.0	3	4.8	4	1.9	2	
Instantaneous mortality (z)																			-0.563
Annual mortality (A)%																			43.1
Total score		15		16		16		17		15		16		12		15		12	
Assessment rating		Good		Good		Good		Excellent		Good		Good		Fair		Good		Fair	

swdsplag.D04

swdsplbb.D02-D19

CENTRAL FISHERIES DISTRICT
Project 1: Lake and Tailwater Fishery Surveys
FINDINGS

Lake sampling conditions for 2019 are summarized in Table 1.

Taylorsville Lake (3,050 acres)

Spring nocturnal electrofishing was completed in April 2019 to assess the black bass population. Three sections (Big Beech Creek, Ashes/Jacks Creek, and Van Buren area) of Taylorsville Lake were sampled for 7.5 hours (2.5 hours per section; 30-minute runs). Length distribution and CPUE for largemouth bass are presented in Tables 2 and 3. The catch rate of bass collected in 2019 (164.5 fish/hr) was higher than the lake's historic average of 119.6 fish/hr. Catch rate for keeper bass (≥ 15.0 in) was 19.6 fish/hr; higher than the lake average (19.0 fish/hr). The Ashes Creek area recorded its highest catch rate for largemouth bass. The PSD for largemouth bass was 46, which was lower than the lake's average of 56 (Table 4). Additionally, the RSD_{15} value was 14; which is less than the lake's average of 22. The largemouth bass population assessment score, based on spring electrofishing data, was "Excellent", which is above the average rating of "Good" at Taylorsville Lake (Table 5).

Length frequency, relative weights, and index for year class strength at age-0 and age-1 of largemouth bass based on September electrofishing are presented in Tables 6–8. Average body condition for largemouth bass in 2019 ($W_r=94$; Table 7) was acceptable, but lower than the lake's historic average ($W_r=96$). Catch rate of age-0 largemouth bass in the fall of 2019 (18.0 fish/hr) was lower than the lake's historic average of 41.1 fish/hr (Table 8). The year class strength model indicated below average recruitment for young-of-the-year largemouth bass in 2019. A total of 29,729 (9.7 fish/acre) surplus largemouth bass (1.7 in) were stocked into Taylorsville Lake in June 2019. An additional 30,503 (10.0 fish/acre) largemouth bass (4.1-4.9 in) were stocked into Taylorsville Lake in October 2019 due to below average recruitment.

Trap netting effort for crappie (Table 9) resulted in the collection of 587 white crappie and 45 black crappie. Crappie were sampled with trap nets for 36 net-nights. PSD and RSD_{10} values are shown in Table 10. The crappie population assessment scores (Tables 11 and 12) rated white crappie as "Good" and black crappie as "Fair". Historically, the crappie population at Taylorsville Lake has been very cyclic with peaks occurring every 7 to 9 years. Significant spawns have occurred in 2013, 2015 and 2019 based off trap net data. Body condition of white and black crappie in the fall of 2019 was good (Table 13).

Fall gill netting for hybrid striped bass, white bass, and saugeye was conducted in October 2019 (Tables 14–22). Hybrid striped bass were captured in 10 net-nights for a CPUE of 7.1 fish/nn. The hybrid striped bass population has exhibited notable fluctuations since 1990, which appeared to be negatively correlated with the amount of tailwater discharge (due to rainfall). It is theorized that above-normal discharge leads to escapement of hybrid striped bass but has little effect on the white bass density in the lake. Additionally, a late fall water quality issue with low oxygen in the lower portion of Taylorsville Lake may be causing additional stress on the hybrid striped bass. Age and growth studies were completed for hybrid striped bass using otoliths (Tables 15 and 16). Data indicate hybrid striped bass have good growth, reaching 15.0 in between age 1 and age 2. The relative weight (W_r) index for hybrid striped bass (87) continues to show a lower than expected body condition at Taylorsville Lake (Table 17). The average W_r for Taylorsville Lake is 86. The population assessment for hybrid striped bass was rated at "Fair" (Table 18). Taylorsville Lake was stocked with 62,124 (20.4 fish/acre; 1.5 in) hybrid striped bass in June 2019. The 2019 hybrid striped bass stocking in Taylorsville Lake included both crosses of hybrid striped bass (31,074 reciprocal cross hybrids (no OTC mark) and 31,050 original cross hybrid striped bass (OTC marked)). Data for white bass collected during fall 2019 gillnetting studies are presented in Tables 14 and 19–22. Age and growth studies indicate white bass reach 11.6 in by age 2 and a good year class was produced in 2019 (Tables 19 and 20). Relative weight values ($W_r=88$) revealed acceptable body condition for all sizes of white bass (Table 21). The white bass population assessment was rated "Fair"; an above average rating for white bass at Taylorsville Lake (Table 22).

Saugeye were collected during fall gill netting conducted in October 2019. A total of 97 saugeye were collected ranging from the 9.0- to 23.0-in size class (Table 14). Taylorsville Lake was stocked with 250,000 saugeye fry (82.0 fish/acre; 0.25 in) in April 2019 and 49,890 (16.4 fish/acre; 1.5 in) saugeye in May 2019.

Summer diurnal low-pulse electrofishing was completed in July 2019 to assess the blue catfish population. Two sections (Lower Lake: Big Beech Creek and Ashes/Jacks Creek, and Upper Lake: Chowning Lane and Van Buren areas) of Taylorsville Lake were sampled for 3.0 hours (15-minute runs). One hundred and eighty-seven blue catfish were collected in the lower section compared to 149 blue catfish collected in the upper section of the lake (Table 23). The number of blue catfish collected in 2019 (112.0 fish/hr) was lower than the lake's historic average of 127.5 fish/hr (Table 24). Relative weight values revealed good body condition for all sizes of blue catfish (Table 25). No blue catfish were stocked in 2019 to evaluate natural reproduction.

Herrington Lake (2,410 acres)

Spring diurnal electrofishing studies were completed in April 2019 to monitor the black bass population. Upper, middle, and lower sections were sampled for a total of 7.5 hours (2.5 hours per section). Species composition, relative abundance, and CPUE of black bass collected in the spring are presented in Table 26. Largemouth bass (89.2%) dominated the black bass fishery at Herrington Lake. Numbers of largemouth bass collected in 2019 (137.7 fish/hr) was higher than the lake's historic average of 117.5 fish/hr (Table 27). Fluctuations in the overall catch rates over the past couple of years seem to be related to lake level during sampling. The higher the lake level the lower the catch rate of bass at Herrington Lake. The lake level during the 2019 spring electrofishing sample was low, which may have led to a slight increase in the catch rate for largemouth bass. Catch rate for keeper bass (≥ 12.0 in) was 77.5 fish/hr, higher than the lake's historic average (48.5 fish/hr). The PSD for largemouth bass was 74, comparable to the lake's average of 57 (Table 28). Additionally, the RSD₁₅ value was 36, which is higher than the lake average of 24. The largemouth bass population assessment score, based on spring electrofishing data, was "Excellent", which is an above average rating for Herrington Lake (Table 29).

Length frequency, relative weights and index of year class strength at age-0 and age-1 of largemouth bass based on September electrofishing at Herrington Lake are presented in Tables 30-32. Largemouth bass condition ($W_r=93$) was higher than the lake's historic average ($W_r=92$; Table 31). The year class strength model for Herrington Lake indicated a below average recruitment year for young-of-year largemouth bass based on age-1 CPUE (Table 32). Age-0 CPUE (23.6 fish/hr) was less than the lake average (35.0 fish/hr). Therefore, Herrington Lake was stocked with 30,128 (12.5 fish/acre; 1.9 in) surplus largemouth bass in June 2019 and with an additional 26,787 (11.1 fish/acre; 4.2-4.6 in) largemouth bass in October 2019.

Gill netting for hybrid striped bass and white bass was completed in October and November 2019. During the 24 net-night sampling period, 79 hybrid striped bass and 35 white bass were collected (Table 33). Otoliths were taken from both species for age and growth determinations. Results of these studies indicated excellent growth rates for both hybrids (Tables 34-35) and white bass (Tables 38-39). Hybrid striped bass reach 15.0 in between age-1 and age-2 (Table 34), as they have historically. Of the hybrid striped bass sampled, 59% were age-1+ or older (Table 35). Condition of hybrid striped bass in 2019 ($W_r=95$) was higher than the lake's historic average ($W_r=93$; Table 36). The population assessment for hybrid striped bass indicated a "Fair" population (Table 37). White bass age and growth determinations showed they reached 12.0 in between age-1 and age-2 (Table 38). Of the white bass sampled, 57% were age-1+ and older (Table 39). The white bass population assessment indicated a "Fair" population, which is an average rating (Table 40). Body condition of white bass ($W_r=95$) was lower than the lake's historic average ($W_r=96$; Table 41). Herrington Lake was stocked with 51,254 (21.3 fish/acre; 1.5 in) hybrid striped bass in June 2019. The hybrid striped bass stocking was divided into 26,103 reciprocal cross hybrids (no mark) and 25,151 original cross hybrids (OTC marked).

Guist Creek Lake (317 acres)

Spring nocturnal electrofishing studies were completed for length frequency, CPUE and population assessment for largemouth bass in April 2019 (Table 42). Total largemouth bass catch rate (189.7 fish/hr) was higher than the lake average of 168.1 fish/hr (Table 43). The PSD for largemouth bass was 75 compared to the lake

average of 66 (Table 44). The RSD_{15} was 41 compared to the lake average of 40. Largemouth bass ranging from 4.0-11.0 in, which were removed from Beaver Lake, were stocked at 4.8 fish/acre (1,537 fish) at Guist Creek Lake in November 2019.

Saugeye were collected during the spring largemouth bass sample (Table 42). Sampling yielded 6 saugeye (2.0 fish/hr) ranging in size from the 17.0- to 20.0-in size class. During October, electrofishing was completed targeting saugeye. Five saugeye (3.3 fish/hr) were sampled from the 13.0- to 23.0-in size class (Table 46). Guist Creek Lake was stocked with 22,190 (70.0 fish/acre; 1.5 in) saugeye in 2019. Saugeye have been stocked annually into Guist Creek Lake since 2013.

Guist Creek Lake was stocked with 19,054 (60.1 fish/acre; 1.8 in) hybrid striped bass in June 2019.

Guist Creek Lake was stocked with 3,170 (10.0 fish/acre; 8.2 in) channel catfish in October 2019.

A roving daytime angler creel survey was conducted at Guist Creek Lake from mid-March through October in 2020. This was the fifth creel survey conducted on Guist Creek Lake since 1990, which the current standard creel methodology has been implemented. The last creel survey conducted at this lake was in 2011. Table 47 provides descriptive statistical parameters of the lake fishery during the present survey (2019) and the last 2 surveys (2011 and 2005). The number of fishing trips in 2019 (4,105 trips) was below the average of 5,416 trips from five creel survey results; however, it was similar to the last two creel surveys. Likewise, fishing pressure (man-hours) in 2019 (19,090 hrs) was lower than the lake average of 25,633 hrs and slightly lower than the last 2 surveys. Conversely, numbers and pounds of fish caught and harvested have increased over the past 5 creel surveys. Other parameters such as gender, residency, method and mode were similar to surveys completed in past years.

Numbers of largemouth bass caught in 2019 (4,015 fish) was below the lake average (4,513 fish) (Tables 48 and 49). The bass harvest (941 bass) was slightly higher than the lake average of 729 bass harvested annually during past creel surveys. In 2019, 23.9% of largemouth bass caught were harvested. This number is elevated due to the fact this creel considers the tournament angler's fish in the livewell, a harvested fish. In most cases, tournament anglers are required to release their fish after weigh-in. Therefore, all tournament anglers harvested bass were changed to released which indicated that only 8.7% of largemouth bass were actually harvested. Mean length of largemouth bass harvested (13.5 in) was less than the lake average of 14.6 inches. The number of fishing trips for black bass (1,778 trips) was a little less than the lake average of 2,271 trips annually. Black bass continued to be the most sought-after group fished for in Guist Creek Lake, with 47% of all the trips in 2019 targeting largemouth bass. Catch rate of bass by bass fishermen (0.42 fish/hr) was slightly less than the lake average of 0.48 fish/hr. Bass angler success rate (18.5%) was higher than the lake average of 13.3%. Black bass catch, harvest and monthly angling success are shown in Tables 50 and 51.

Crappie were the second most sought-after group at Guist Creek Lake in 2019. The number of crappie caught (7,235 fish) was significantly higher than the lake average of 2,568 fish caught annually during past creel surveys. Additionally, the number of crappie caught at Guist Creek Lake has been on an increasing trend over the past several creel surveys. The number of crappie harvested (2,984 fish) was almost 3 times the lake average of 1,141 fish. Mean length of white crappie harvested was 9.4 inches in 2019, which is slightly higher than the lake average of 9.1 in. The number of fishing trips for crappie (323 trips) held steady to the lake average of 345 trips. Harvest rate by crappie anglers (1.9 fish/hr) was significantly higher than the average harvest rate of 0.6 fish/hr. Percent success of crappie anglers (62.2%) was also significantly higher than the lake average of 35.6%. Crappie catch, harvest and monthly angling success are shown in Tables 52 and 53.

Panfish (bluegill) were the third most sought after fish group at Guist Creek Lake in 2019. The number of panfish caught in 2019 (22,086 fish) was significantly higher than the lake average catch of 15,910 fish. Pounds harvested in 2019 (1,703 lbs) was also significantly higher than the lake average of 610 lbs harvested during the past creel surveys. The average length of harvested bluegill in 2019 was 5.7 in, which is slightly larger than the average size of 5.5 in. Trips for panfish (395 trips) in 2019 were lower than the lake average of 441 trips. The harvest rate for panfish was 4.71 fish/hr (1.73 fish/hr lake average). The percentage of successful panfish anglers was 75% which was significantly higher than the lake's average of 39%. Panfish catch, harvest and monthly angling success are shown in Tables 54 and 55.

The fourth most sought-after group was the catfish with 312 trips by catfish anglers compared to an average of 410 historically. Catfish numbers (1,337 fish) caught were lower than the lake average catch of 2,504 fish annually. However, pounds of catfish (1,315 lbs) harvested were higher than the creel average of 747 lbs. Mean length of channel catfish harvested by catfish anglers was 15.0 in (lake average = 13.3 in). Harvest rate by catfish anglers (0.47 fish/hr) was slightly higher than the lake's average of 0.40 fish/hr. Success rate for catfish anglers in 2019 (64.2%) was almost double the average of 36.8% historically. Catfish catch, harvest and monthly angling success are shown in Tables 56 and 57.

The *Morone* group (hybrid striped bass, white bass, and yellow bass) was the fifth most sought-after group at Guist Creek Lake in 2019. Yellow bass made up the majority of the fish caught in this group; however, hybrid striped bass were the most sought-after fish in this group. The number of hybrid striped bass caught (1,337 fish) was higher than the lake average of 1,010 fish. Additionally, the number of hybrid striped bass (99 fish) harvested was essentially equal to the lake average of 103 fish harvested during past creel surveys. Pounds of hybrid striped bass harvested in 2019 totaled 371 lbs (1.2 lbs/acre), whereas the average is 336 lbs (1.1 lbs/acre) annually. The number of trips for *Morones* (184 trips) was lower than the average number of trips (233 trips) to Guist Creek Lake to target *Morones*. Hours spent fishing for *Morones* (855 hrs) was also lower than the average hours spent fishing (1,176 hrs) for these fish. However, harvest rate for *Morone* fishermen (0.18 fish/hr) was higher than the historic annual harvest rate of 0.13 fish/hr. Success rate for these anglers (22.1%) in 2019 was also higher than the annual average success rate of 19.1%. *Morone* catch, harvest and monthly angling success are shown in Tables 58 and 59.

The least sought-after fish group at Guist Creek Lake was the saugeye. Saugeye have been stocked into Guist Creek Lake since 2015. There were 62 trips for saugeye in 2019, which represented 1.5% of the trips taken to Guist Creek Lake. A total of 106 saugeye were caught, of which, 40 were harvested. Pounds of saugeye harvested in 2019 totaled 98 lbs (0.3 lbs/acre). Mean length and weight of saugeye harvested by saugeye anglers was 19.6 in and 2.39 lbs. Harvest rate by saugeye anglers was 0.08 fish/hr and success rate for saugeye anglers was 21.4%.

An angler attitude survey was conducted at Guist Creek Lake during the creel survey. Surveys were completed in the field by the creel clerk. A total of 394 surveys were completed by anglers (67 surveys in 2011). The attitude survey reflected the largest majority of anglers fish for largemouth bass (41.1%) followed by crappie (16.9%), bluegill (15.4%), channel catfish (8.6%), saugeye (3.1%), hybrid striped bass (2.6%), and anything (12.2%). Most anglers expressed satisfaction for their species of preference in 2019. Most anglers (87.3%) were also satisfied with the current regulations on Guist Creek Lake.

A.J. Jolly Lake (175 acres)

Spring diurnal electrofishing was completed in April 2019 to assess the black bass population (Table 60). Results indicated largemouth bass catch rate (71.5 fish/hr) was lower than the lake's historic average (86.7 fish/hr; Table 61). The PSD for largemouth bass was 49 and the RSD_{15} was 30 (Table 62). The population assessment indicated a "Fair" bass population, which is less than the average rating since 2010 (Table 63). Fall diurnal electrofishing was conducted for age and growth, relative weights and to index year class strength of age-0 largemouth bass in October (Tables 64-67). Age and growth studies indicate that largemouth bass reach 12.0 in at age 3 and 15.0 in between age 4 and age 5 (Table 65). Relative weights indicated acceptable body condition ($W_r = 93$; Table 66). Fall sampling indicated an above average number of age-0 bass (47.5 fish/hr; average= 25.3 fish/hr) and above average size of age-0 bass (4.8 in; average=4.6 in; Table 67). Largemouth bass were not stocked during 2019.

A.J. Jolly Lake was stocked with 12,400 (70.9 fish/acre; 1.5 in) saugeye in 2019. Saugeye have been stocked annually since 2013. Saugeye were collected during the spring largemouth bass sample (Table 60). Sampling yielded 20 saugeye (10.0 fish/hr) ranging in size from the 8.0- to 17.0-in size class. Additionally, saugeye were collected during the fall largemouth bass sample (Table 64). Sampling yielded 10 saugeye (5.0 fish/hr) ranging in size from the 7.0- to 18.0-in size class.

Spring diurnal electrofishing was completed in April 2019 to assess the white and black crappie population at A.J. Jolly Lake. White crappie (351.0 fish/hr) were more abundant than black crappie (6.0 fish/hr) and

the majority of the sample was comprised of the 6.0- to 7.0-in size classes (Table 68). Diurnal fall crappie electrofishing was completed in October 2019 for age and growth, and relative weight. Age and growth studies indicated slow growth for both white and black crappie. White crappie on average are 7.0 in at age 3 while black crappie average 6.5 in at age 3 (Tables 69 and 70). Relative weights indicated below average condition for white crappie ($W_r = 86$) and acceptable body condition for black crappie ($W_r = 95$) (Table 71)

Channel catfish (1,750 fish; 7.6 in) and blue catfish (1,750 fish; 8.3 in) were stocked into A.J. Jolly Lake in October 2019.

On June 4, 2019 a total of 138 common carp were removed from AJ Jolly Lake. The average weight of a common carp removed from AJ Jolly Lake was 3.8 lbs. Therefore, it was estimated that 521 lbs of common carp were removed. The nine-year total for common carp removed from AJ Jolly Lake is 2,262 fish at an estimated weight of 7,434 lbs (3.3 lbs average weight per fish).

Beaver Lake (158 acres)

During April, October and November an effort was made to reduce the crowded largemouth bass population at Beaver Lake. Three thousand two hundred and eighty-eight (20.8 fish/acre) largemouth bass were removed from Beaver Lake during six separate events. Largemouth bass removed ranged in size from 4.0 to 11.0 in (<8.0 in = 1,770 (53.8%); 8.0-10.9 in = 1,330 (40.5%); 11.0 in = 188 (5.7%)).

A spring diurnal electrofishing sample was completed in April 2019 to assess the black bass population (Table 72). The CPUE for all sizes was 265.0 fish/hr, greater than the lake average of 255.0 fish/hr (Table 73). The PSD and RSD₁₅ for largemouth bass were 20 and 6, respectively, compared to the current lake average of 27 and 4 (Table 74). The population assessment score indicated a “Good” bass population (Table 75), which is the average assessment rating for Beaver Lake. Fall diurnal electrofishing was conducted for relative weights and index of age-0 year class strength of largemouth bass (Tables 76-78). The overall relative weight indicates below average condition due to overcrowding of largemouth bass ($W_r = 84$); the lake average is 85 (Table 77). Fall sampling indicated above average numbers of age-0 bass, (209.3 fish/hr; average = 137.8 fish/hr) and the average size of largemouth bass (5.1 in) was higher than the lake’s average of 4.3 in (Table 78).

Spring diurnal electrofishing was completed in May 2019 to assess the panfish populations (Tables 79-87). Length frequency results showed a good size distribution of bluegill up to the 8.0-in size class (Table 79). The PSD for bluegill was 57 compared to the lake average of 31 (Table 80). The RSD₈ was 4, compared to the lake average of 1. CPUE for all length groups of bluegill was 222.4 fish/hr, compared to the lake average of 252.8 fish/hr (Table 81). The population assessment for bluegill indicated an “Excellent” population rating, which has been the rating at Beaver Lake since 2017 (Table 82). The redear sunfish catch rate was 24.0 fish/hr, which is lower than the lake’s average catch rate (66.6 fish/hr) for all sizes. The catch rate of redear sunfish ≥ 8.0 in was 10.4 fish/hr and was lower than the lake average of 22.5 fish/hr (Table 83). Redear sunfish PSD and RSD₉ were 51 and 30, respectively (Table 80). The population assessment indicated a “Good” redear sunfish fishery (Table 84). Age and growth studies indicate that on average bluegill reach 6.0 in between age 2 and age 3 (Table 85). Redear sunfish on average reach 8.0 in between age 2 and age 3 (Table 86). Relative weights for bluegill and redear sunfish were collected during the fall diurnal electrofishing sample. Overall, relative weight data for bluegill was fair while the body condition of redear sunfish was good (Table 87). Redear sunfish (48,470 fish; 306.7 fish/acre) were stocked in September 2019 at an average size of 1.3 in.

Channel catfish were sampled in October 2019 using tandem hoop nets. Length frequency results for channel catfish showed a size distribution between the 13.0 and 28.0-in size classes (Table 88). The PSD and RSD₂₄ values for channel catfish were 87 and 5, respectively (Table 89). Relative weights indicated acceptable body condition for channel catfish ($W_r = 94$), which was higher than the lake average ($W_r = 89$) (Table 90). Overall, catch rates at Beaver Lake remain lower than the lake average of 42.6 fish/hr (Table 91).

No applications of aquatic herbicides were completed at Beaver Lake in 2019. Results from a soil test completed in 2019 indicated that there is no liming requirement at Beaver Lake. The test did reflect the need for fertilization. Therefore, in April, 80 gallons of liquid 9-18-19 fertilizer was applied in the Beaver Creek Arm and 300 lbs of granular 10-52-4 fertilizer was applied in the Salt Lick Arm of Beaver Lake.

Benjy Kinman Lake (88 acres)

A spring nocturnal electrofishing sample was completed in April 2019 at Benjy Kinman Lake to assess the black bass population (Table 92). The CPUE for all sizes was 219.5 fish/hr, compared to the lake average of 144.2 fish/hr (Table 93). The PSD and RSD₁₅ values for largemouth bass were 11 and 2, respectively (Table 94). The population assessment score indicated a “Fair” bass population (Table 95). Fall largemouth bass sampling was conducted for relative weights and index of year class strength at age-0 in September 2019 (Tables 96-98). Relative weights indicated below average body condition for bass ($W_r = 87$) with larger fish exhibiting better condition compared to smaller length groups (Table 97). The better condition of larger fish is due to the gizzard shad forage base. Fall sampling indicated above average numbers of age-0 bass, (124.7 fish/hr; average = 71.3 fish/hr) and the average size of largemouth bass (5.1 in) was higher than the lake’s average of 4.6 in (Table 98).

Relative weights for bluegill and redear sunfish were collected during the fall bass sample at Benjy Kinman Lake (Table 99). Overall, relative weights were good for both species. Benjy Kinman Lake was stocked with 20,000 (227.3 fish/acre; 1.2 in) redear sunfish in September 2019.

Channel catfish were sampled in October 2019 using tandem hoop nets. Length frequency results for channel catfish showed a size distribution between the 16.0-in and 24.0-in size class (Table 100). PSD and RSD₂₄ values were 100 and 5, respectively (Table 101). Size distribution has improved since the initial sample in 2015 (Table 102). Relative weights indicated a good body condition for channel catfish ($W_r = 105$) (Table 103).

Relative weights were collected at Benjy Kinman Lake for white and black crappie during the fall 2019 sample. White crappie ($W_r = 83$) and black crappie ($W_r = 87$) relative weights indicate below average body condition (Table 104).

Seven rough fish removal events took place from May 2019- December 2019 resulting in a total of 192 bigmouth buffalo, smallmouth buffalo, common carp, freshwater drum and longnose gar being removed from Benjy Kinman Lake. The average weight of rough fish removed in 2019 was 10.0 lbs. Therefore, it was estimated that 1,920 lbs of rough fish were removed. The six-year total for rough fish removed from Benjy Kinman Lake is 4,145 fish (47.1 fish/acre) at an estimated weight of 31,621 lbs (359.3 lbs/acre).

A soil test completed during the fall of 2017 at Kinman Lake resulted in a soil pH level of 5.3. Based on the pH it was recommended to apply 5 tons/acre of agricultural lime. Therefore, 121 tons of agricultural lime was applied in winter 2017 and 97 tons of agricultural lime was applied in winter 2018. An additional 203 tons of agriculture lime was applied in the lower lake in December 2019. Therefore, a total of 421 tons of lime has been applied at Benjy Kinman Lake over the past three winters, which equals a rate of 4.8 tons per acre.

Three hundred and seventy-five pounds of granular fertilizer (10-52-4) was applied in April 2019 at Benjy Kinman Lake. A second treatment of 250 pounds was applied in May 2019. Initial water clarities averaged 44.5 inches across four stations (upper, middle, lower, at ramp). Prior to the second treatment water clarities averaged 34.3 inches. After two treatments water clarities averaged 25.8 in during May, 39.3 in during June, 34.0 in during July, and 35 in during both August and September.

Water willow collected from the spillway at Elmer Davis Lake was used to create nine water willow beds at Benjy Kinman Lake in August 2019. Water willow beds were planted on main lake points (3 sites) and protected coves (6 sites).

Two time-lapse cameras were installed at Benjy Kinman Lake at the boat ramp and paddlecraft access, from March 2019-February 2020 to estimate total usage (trips) and pressure (hours) at this public access area. However, due to a camera malfunction, no data was collected for November 2019. This approach differs from previous daytime roving creel surveys in that these counts capture all usage types (boat anglers, bank anglers and recreational boaters). However, the primary usage of this site was by anglers. The time-lapse camera recorded a picture of the entire fishing area (parking lot, boat ramp and fishing pier) every 10-minutes during daylight hours throughout the study period. Images were analyzed by randomly selecting 16 days each month, which included an a.m. or p.m. period. During those selected dates and times, individual vehicles were selected for each fishing type

(trailer boat, carry-down boat, bank), party size per vehicle and total trip lengths were recorded. A total individual vehicle count was also collected for the entire day. From these counts, monthly averages were calculated.

Overall, it was estimated that 4,724 trips were taken to Benjy Kinman Lake from March 2019-February 2020. Monthly trip totals ranged from 42 trips in February 2020 to 878 trips in May (Figure 1). Eighty percent of the trips to Benjy Kinman Lake occurred from April-September 2019. The average trip length for the year was 3.5 hours. Trip lengths ranged from 2.3 hours in February 2020 to 5.0 hours in September 2019. May (3,706 hours) and July (3,089 hours) recorded the highest usage rates (Figure 2). It was estimated that Benjy Kinman Lake received 18,904 hours of recreational pressure during this 12-month study period (Table 105).

An angler attitude survey was conducted at Benjy Kinman Lake while personnel completed annual fish surveys, site maintenance and downloaded pictures from the time-lapse camera. Eighty-eight surveys were completed by anglers. The attitude survey reflected the largest majority of anglers fish for largemouth bass (42.1%) and crappie (40.9%). Most anglers expressed satisfaction for their species of preference in 2019, except for catfish anglers, which were neutral. Most anglers (91.7%) are satisfied with the current regulations at Benjy Kinman Lake. Overall, anglers (100.0%) were satisfied with the facilities (parking lot, boat ramp, fishing pier, courtesy dock and restroom) at Benjy Kinman Lake. Eighty-five percent of anglers indicated that they own a smart phone but only 64% of those anglers used it to obtain fishing information.

Boltz Lake (92 acres)

Spring nocturnal electrofishing was completed in April 2019 to assess the black bass population (Table 106). Results indicated largemouth bass catch rates (187.0 fish/hr) were lower than the lake's historic average (192.9 fish/hr; Table 107). The PSD for largemouth bass was 60 compared to the lake average of 45 (Table 108). The RSD₁₅ was 10, lower than the lake average of 17. The population assessment indicated a "Good" bass population (Table 109).

Saugeye were collected during the spring largemouth bass sample (Table 106). Sampling yielded 24 saugeye (12.0 fish/hr) ranging in size from the 13.0- to 16.0-in size class.

Blue catfish (920 fish; 10.0 fish/acre) were stocked in October 2019 at an average size of 7.5 in.

Bullock Pen Lake (134 acres)

Spring nocturnal electrofishing was completed in April 2019 to assess the black bass population (Table 110). The total catch rate of largemouth bass (196.0 fish/hr) was much higher than the lake's average catch rate of 143.9 fish/hr (Table 111). The PSD for largemouth bass was 63, lower than the lake average of 70 (Table 112). The RSD₁₅ for largemouth bass was 36, lower than the lake average of 40. The population assessment for largemouth bass was rated "Excellent"; which is better than the lake's average rating of "Good" (Table 113). Fall diurnal electrofishing was conducted in September to determine length frequency, relative weights and index of age-0 year class strength for largemouth bass (Tables 114-116). Relative weights indicated acceptable body condition for bass ($W_r = 91$) but were lower than the lake's average ($W_r = 94$). Larger fish exhibited better condition compared to smaller length groups, which is a function of the shad forage base (Table 115). Age-0 CPUE (46.7 fish/hr) was higher than the lake average (21.7 fish/hr); therefore, no largemouth bass were stocked in 2019 (Table 116).

Saugeye were collected during the spring largemouth bass sample. Only two saugeye (1.0 fish/hr) were collected (Table 110). Two saugeye were collected (1.3 fish/hr) during the fall largemouth bass sample (Table 114). Bullock Pen Lake was stocked with 10,170 (75.9 fish/acre; 1.5 in) saugeye in May 2019.

Channel catfish (2,200 fish; 8.0 in) and blue catfish (1,460 fish; 7.5 in) were stocked into Bullock Pen Lake during October 2019.

In 2019, KDFWR completed construction of a new concrete boat ramp, paved parking lot and installation of a courtesy dock at the property purchased in 2017 adjacent to the old ramp.

Corinth Lake (96 acres)

During June an effort was made to reduce the crowded largemouth bass population at Corinth Lake. Two hundred and sixty-two (2.7 fish/acre) largemouth bass were removed from Corinth Lake. Largemouth bass removed ranged in size from 4.0 to 11.0 in (<8.0 in = 36 (13.7%); 8.0-10.9 in = 184 (70.2%); 11.0 in = 42 (16.0%)).

Spring nocturnal electrofishing was completed in April 2019 to assess the black bass population (Table 117). The total catch rate of largemouth bass (320.0 fish/hr) was higher than the lake's average catch rate of 246.6 fish/hr (Table 118). The PSD for largemouth bass was 34, higher than the lake average of 22 (Table 119). The RSD₁₅ for largemouth bass was 9, higher than the lake average of 7. The population assessment for largemouth bass was rated "Good"; the average rating since 2005 (Table 120). Fall diurnal electrofishing for largemouth bass was conducted to determine length frequency, relative weight, age and growth and year class strength (Tables 121-124). Relative weights of largemouth bass continue to be below average across all length groups. The overall relative weight in 2019 ($W_r = 84$) was equal to the historic average relative weight at Corinth Lake ($W_r = 84$; Table 122). Age and growth studies show that, on average, largemouth bass reach the 12.0-in size limit between age 4 and age 5 (Table 123). The year class strength model indicated that 2019 was an above average recruitment year for young-of-year largemouth bass. Age-0 CPUE (107.3 fish/hr) was higher than the lake average (87.7 fish/hr); therefore, no largemouth bass were not stocked in 2019 (Table 124).

Fall diurnal electrofishing for bluegill and redear sunfish was conducted for relative weights. Relative weights indicated fair condition for bluegill (87) and good condition for redear sunfish (94; Table 125).

One hundred gallons of liquid 9-18-9 fertilizer was applied on May 8, 2019.

Elmer Davis Lake (149 acres)

Spring diurnal electrofishing studies were conducted in April 2019 for length frequency, PSD and CPUE for largemouth bass (Table 126). The total catch rate (290.0 fish/hr) was lower than the historical lake average of 307.6 fish/hr (Table 127). Largemouth bass PSD and RSD₁₅ were 59 (average = 33) and 15 (average = 8), respectively (Table 128). The population assessment indicated an "Excellent" bass population, which has been the average rating since 2016 (Table 129). Fall electrofishing evaluated largemouth bass relative weight and index of year class strength at age-0 (Tables 130-132). Largemouth bass relative weight ($W_r = 89$) was higher than the historical lake average ($W_r = 87$; Table 131). The year class strength model indicated that 2019 was an above average year for young-of-year largemouth bass. Age-0 CPUE (151.3 fish/hr) was higher than the lake average (140.9 fish/hr; Table 132). Therefore, no largemouth bass were stocked during 2019.

Diurnal spring electrofishing for length frequency, CPUE, and population assessment data was conducted for bluegill and redear sunfish in April and May 2019 (Tables 133 and 134). Only data collected in May 2019 was used for historical CPUE and population assessment tables. The total bluegill catch rate (450.4 fish/hr) remains higher than the lake average of 255.3 fish/hr (Table 135). The PSD value for bluegill (20) was lower than the lake average of 34 (Table 136). The RSD₈ (3) was higher than the lake average of 2. The population assessment for bluegill was "Good" (Table 137). The total catch rate of redear sunfish (76.8 fish/hr) was higher than the lake average of 69.5 fish/hr (Table 138). The PSD for redear sunfish was 89 compared to the lake average of 57. The RSD₉ was 20 compared to the lake average of 19 (Table 136). The redear sunfish population assessment indicated a "Good" population, which is equal to the lake's average rating (Table 139). Age and growth results indicate that bluegill reach 6.0 in between age 2 and age 3 (Table 140). Redear sunfish reach 8.0 in between age 3 and age 4 (Table 141). The relative weight index reflects good condition for bluegill ($W_r = 97$) and redear sunfish ($W_r = 100$; Table 142). Elmer Davis Lake was stocked with 30,858 (207.1 fish/acre) redear sunfish in September 2019.

Channel catfish (1,645 fish; 8.0 in) were stocked into Elmer Davis in October 2019.

Kincaid Lake (183 acres)

Spring diurnal electrofishing studies were conducted in May 2019 for PSD, length frequency and CPUE for largemouth bass (Table 143). Total catch rate (187.5 fish/hr) was lower than the lake average of 216.1 fish/hr (Table 144). Largemouth bass PSD and RSD_{15} were 69 (average = 68) and 50 (average = 45), respectively (Table 145). The population assessment indicated a “Good” bass population, which is the average assessment at Kincaid Lake (Table 146).

Channel catfish (2,430 fish; 8.0 in) were stocked into Kincaid Lake in October 2019.

McNeely Lake (51 acres)

Spring diurnal electrofishing studies were conducted in April 2019 for PSD, length frequency and CPUE for largemouth bass (Table 147). Total catch rate in 2019 (372.0 fish/hr) was higher than the lake average of 229.2 fish/hr (Table 148). Largemouth bass PSD and RSD_{15} was 26 (average = 34) and 10 (average = 10), respectively (Table 149). The population assessment indicated an “Excellent” bass population, compared to the lake average assessment of “Good” (Table 150). Diurnal fall electrofishing for largemouth bass in October 2019 was completed to collect length frequency, relative weight values, and to index the year class strength at age-0 (Table 151). Relative weights were less than the lake average ($W_r = 89$) in fall 2019 (Table 152). CPUE for age-0 bass (171.3 fish/hr) is higher than the lake average of 125.9 fish/hr (Table 153).

Bluegill and redear sunfish were sampled in May 2019 for length frequency, CPUE and population assessment (Table 154). Catch rate for bluegill (452.0 fish/hr) was higher than the lake average catch rate of 336.0 fish/hr (Table 156). The bluegill PSD was 64 compared the lake average of 42 (Table 155). RSD_8 was 1, compared to the lake average of 0.4. The population assessment for bluegill has remained “Excellent” since 2013 (Table 157). The total catch rate for redear sunfish (171.0 fish/hr) was higher than the lake average (56.6 fish/hr) (Table 158). The PSD for redear sunfish was 69 compared to the lake average of 48 and the RSD_9 was 9 compared to the lake average of 8 (Table 155). The redear sunfish fishery was rated “Excellent”, which has been the average rating since 2013 (Table 159). Relative weights and age and growth for bluegill and redear sunfish were collected during the fall diurnal electrofishing sample. Age and growth studies showed that bluegill continue to reach 6.0 in between age 3 and 4 (Table 160). Redear sunfish reach 6.0 in between age 1 and age 2, and 8.0 in between age 3 and age 4 (Table 161). Overall, condition for both bluegill (94) and redear sunfish (92) was good (Table 162).

Channel catfish were not sampled at McNeely Lake in 2019. McNeely Lake was stocked with 1,275 (25.0 fish/acre; 8.2 in) channel catfish in October 2019.

Currently, McNeely Lake does not contain a population of gizzard shad.

Doe Run Lake

Relative abundance and CPUE of fish collected at Doe Run Lake in May 2019 are shown in Table 163. Largemouth bass were collected from the 4.0- to 19.0-in size classes. Bluegill were collected up to the 7.0-in size class and white crappie up to 13.0-in size class. An abundant population of common carp and gizzard shad are also present in the lake.

General Butler State Park Lake

Length frequency, relative abundance, and CPUE of fishes collected at General Butler State Park Lake in May 2019 are shown in Table 164. Largemouth bass were collected from the 4.0- to 19.0-in size classes. Bluegill were collected up to the 8.0-in size class. White crappie were abundant with most less than 9.0 in. Redear sunfish and channel catfish were also collected.

Largemouth bass (614 fish; 3.0-11.0 in) removed from Corinth Lake (262 fish) and Beaver Lake (352 fish) were stocked at General Butler State Park Lake in 2019.

Channel catfish (710 fish; 8.2 in) were stocked at General Butler State Park Lake in October 2019.

Rough fish removals were completed in May and September 2019 at General Butler State Park Lake. During these two events, 376 bigmouth buffalo, common carp and smallmouth buffalo were removed with an average weight of 11.43 lbs. Therefore, it was estimated that 4,298 lbs of fish were removed.

Jericho Lake (126 acres)

Relative abundance and CPUE of largemouth bass collected in May 2019 are shown in Table 165. Largemouth bass were collected from the 3.0- to 21.0-in size classes. Excellent numbers of bass were present above the 12.0-in size limit.

Channel catfish (2,015 fish; 7.6 in) were stocked at Jericho Lake in October 2019.

Lower Thomas Lake

Length frequency, relative abundance, and CPUE of fishes collected at Lower Thomas Lake in May 2019 are shown in Table 166. Largemouth bass were collected from the 3.0- to 19.0-in size classes. Bluegill and redear sunfish were collected up to the 8.0-in size class. Black crappie were also collected.

Channel catfish (380 fish; 8.2 in) were stocked at Lower Thomas Lake in October 2019.

Kentucky River WMA (Boone tract: Prather Pond and 6-acre pond)

The presence of gizzard shad in Prather Pond and the 6-acre Boone Tract, Kentucky River WMA pond negatively impacted the management of panfish in each of these waterbodies. Therefore, a low concentration (0.2 ppm) of rotenone was applied on December 27, 2019 to selectively eradicate gizzard shad. The gizzard shad eradication appeared to be successful, however additional sampling will be required during 2020 to completely evaluate the success of the treatment. A minimal number of non-target species were observed dead after the eradication which included largemouth bass, bluegill, crappie, rainbow trout, bullhead catfish, and channel catfish.

Table 1. Yearly summary of sampling conditions by waterbody, species sampled and date.

Water body	Species	Date	Time (24hr)	Gear	Weather	Water temp. F	Water level	Secchi (In)	Conditions	Pertinent sampling comments
Elmer Davis Lake	BLG/RES	4/4	1100	Shock	Sunny/warm	55	Full	31	Good	Good sample
Herrington Lake (Cane Run)	LMB	4/9	1100	Shock	Sunny/warm	60	731.49	27	Good	Good sample
Herrington Lake (Gwinn Island)	LMB	4/10	1000	Shock	Sunny/mild	62	732.01	50	Good	Good sample
Herrington Lake (Kings Mill)	LMB	4/12	1000	Shock	Cloudy/breezy	62	731.63	22	Good	Good sample
Beaver Lake	LMB	4/15	1000	Shock	Cool	58	Full	22	Stained	Major cold front
Elmer Davis Lake	LMB	4/16	1300	Shock	Clear/breezy	58	Full	48	Good	Good sample
Corinth Lake	LMB	4/16	1900	Shock	Clear	63	Full	42	Good	Nocturnal sample
Benjy Kinman Lake	LMB	4/17	1900	Shock	Clear	63	Full	36	Good	Nocturnal sample
McNeely Lake	LMB	4/17	1000	Shock		64	Full	38	Good	Good sample
Bullock Pen Lake	LMB	4/18	1100	Shock	Sunny	62	Full	22	Good	Good sample
Doe Run Lake	Sport fish	4/22	1200	Shock	Clear/sunny	62	Full	---	Good	Large number of common carp & gizzard shad
Boltz Lake	LMB	4/22	2000	Shock	---	61	Full	19	Good	Nocturnal sample
Jericho Lake	LMB	4/23	1100	Shock	Clear/sunny	---	Full	19	Good	Good sample
AJ Jolly Lake	LMB/Crappie/Saugeye	4/24	1000	Shock	Sunny	60	Full	8	Poor	Very muddy
General Butler Lake	Sport fish	4/25	1300	Shock	---	69	Full	18	Good	Good sample
Guist Creek Lake	LMB	4/25	1900	Shock	Raining	66	Full	---	Good	Nocturnal sample
Lower Thomas Lake	Sport fish	4/25	1000	Shock	Cloudy/Rain	---	Full	35	Good	Good sample
Taylorville Lake (Big Beech)	LMB/Saugeye	4/29	2000	Shock	Partly cloudy	64	552.9 ft	20	Good	Good sample
Taylorville Lake (Chowning Lane)	LMB/Saugeye	4/30	2000	Shock	Calm/clear	70	552.3 ft	27	Good	Good sample
Taylorville Lake (Ashes/Jacks Creek)	LMB/Saugeye	4/30	2000	Shock	Calm/clear	67	552.3 ft	---	Good	Good sample
Kincaid Lake	LMB	5/1	1100	Shock	Mostly cloudy	70	Full	15	Good	Good sample
Beaver Lake	BLG/RES	5/6	1030	Shock	---	71	Full	66	Good	Good sample
McNeely Lake	BLG/RES	5/16	1100	Shock	Sunny/warm	69	Full	54	Good	Good sample
Elmer Davis Lake	BLG/RES	5/17	1100	Shock	Mostly cloudy	69	Full	24	Good	Good sample
Taylorville Lake (Lower Lake)	Blue catfish	7/15	830	Shock	Partly cloudy	86	546.8 ft	36	Good	Good sample
Taylorville Lake (Upper Lake)	Blue catfish	7/16	845	Shock	Sunny/breezy	85	546.8 ft	26	Good	Good sample
Taylorville Lake (Big Beech)	LMB/Saugeye	9/18	0900	Shock	Sunny warm	76	546.7	38	Good	Good sample
Taylorville Lake (Ashes/Jacks)	LMB/Saugeye	9/19	0900	Shock	Sunny warm	81	546.6	-	Good	Good sample
Taylorville Lake (Van Buren)	LMB/Saugeye	9/19	1200	Shock	Sunny warm	82	546.6	28	Good	Good sample

Table 1 (cont.).

Water body	Species	Date	Time (24hr)	Gear	Weather	Water temp. F	Water level	Secchi (in)	Conditions	Pertinent sampling comments
Herrington Lake (Cane Run)	Black bass	9/20	830	Shock	Sunny/warm	79	735.9	58-	Good	Good sample
Herrington Lake (Gwinn Island)	Black bass	9/23	1000	Shock	Cloudy/breezy	78	735.5	70	Good	Good sample
Herrington Lake (Kings Mill)	Black bass	9/24	1000	Shock	Mostly sunny	77	735.5	38	Good	Good sample
Bullock Pen Lake	LMB/Saugeye	9/25	1030	Shock	Mostly sunny	75	~36 in low	29	Good	Good sample
Beaver Lake	LMB/BLG/RES	9/26	1030	Shock	Mostly cloudy	75	~20 in low	26	Good	Good sample
Benjy Kinman Lake	LMB/BLG/RES	9/27	1030	Shock	Mostly sunny	68	Full	30	Good	Good sample
Elmer Davis Lake	LMB/BLG/RES	9/30	1030	Shock	---	76	~12 in low	24	Good	Good sample
McNeely Lake	LMB/BLG/RES	10/1	1100	Shock	Sunny	77	~12 in low	--	Good	Good sample
Corinth Lake	LMB/BLG/RES	10/2	800	Shock	Mostly sunny	76	Full	66	Good	Good sample
AJ Jolly Lake	LMB/Saugeye	10/9	900	Shock	Sunny	68	~24 in low	14	Good	Urban Branch completed sample
Guist Creek Lake	Saugeye	10/9	1100	Shock	Cloudy/overcast	67	~60 in low	---	Fair	Not able to sample normal sites due to water level
Beaver Lake	Channel catfish	10/10	1000	Hoop net	Sunny/calm	69	~18 in low	---	Good	Good sample
Benjy Kinman Lake	Channel catfish	10/11	1000	Hop Net	Overcast/windy	71	Full	---	Fair	Middle of turnover/low dissolved oxygen
Herrington Lake	Morones	10/22	1100	Gillnet	Windy	68	733.7	---	Good	Good sample
		10/23			Clear/sunny	68	733.6			
		10/24			Sunny/cold	68	733.5			
		11/19			Cloudy	60	727.4			
		11/20			Cloudy	60	727.4			
Taylorville Lake	Morones/ crappie	10/29	1030	Gillnet	Overcast	63	547.2	---	Good	Good sample
		10/30		Trapnet	Cloudy/rain	63	547.2			
		10/31			Rain/wind	63	551.0			

Table 2. Length distribution and CPUE (fish/hr) of black bass and saugeye collected in 7.5 hours of 30-minute electrofishing runs in Taylorsville Lake in April 2019; numbers in parentheses are standard errors.

Species	Inch class																				Total	CPUE	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Van Buren																							
Largemouth bass				14	25	33	83	30	36	60	54	38	31	15	6	3	3					431	172.4 (21.1)
Saugeye								1	2				1	3	1	2	1					11	4.4 (1.8)
Ashes Creek																							
Largemouth bass	1		3	15	11	23	17	36	81	68	54	52	34	25	13	11	8				1	453	181.2 (6.6)
Saugeye									1	1		2	7	10	8	1						30	12.0 (3.5)
Big Beech Creek																							
Largemouth bass			6	4	5	15	21	17	63	69	34	30	24	20	21	15	4	1	1			350	140 (15.8)
Saugeye								3	1			3	4	12	3		1					27	10.8 (4.2)
Total																							
Largemouth bass	1		9	33	41	71	121	83	180	197	142	120	89	60	40	29	15	1	1	1	1,234	164.5 (9.3)	
Saugeye								4	4	1		5	12	25	12	3	2				68	9.1 (2.0)	

Dataset = cfdpstvl.d19

Table 3. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Taylorsville Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	20.7 (2.6)	77.5 (5.4)	46.8 (3.6)	19.6 (2.0)	0.3 (0.2)	164.5 (9.3)
2018	24.7 (3.6)	83.5 (7.6)	41.3 (4.1)	35.3 (3.6)	0.4 (0.2)	184.4 (14.5)
2017	22.5 (2.7)	27.2 (2.5)	74.4 (4.7)	46.9 (3.6)	0.5 (0.3)	171.1 (7.5)
2016	15.9 (2.5)	59.2 (4.8)	98.8 (6.6)	44.8 (3.4)	0.9 (0.4)	218.7 (13.2)
2015	18.5 (3.9)	39.3 (5.3)	32.7 (3.2)	19.3 (2.7)	0.3 (0.2)	109.9 (11.7)
2014	17.1 (2.8)	40.5 (7.6)	35.1 (4.1)	21.3 (2.3)	0.5 (0.3)	114.0 (13.4)
2013	19.6 (2.1)	49.9 (4.6)	42.0 (4.5)	22.1 (2.9)	0.4 (0.2)	133.6 (10.5)
2012	27.9 (4.0)	59.1 (6.0)	36.9 (3.0)	14.5 (1.2)	0.3 (0.2)	138.4 (8.6)
2011	Sampling was not conducted due to extreme weather and lake conditions.					
2010	45.7 (8.3)	36.3 (2.7)	49.7 (5.1)	16.4 (1.8)	0.3 (0.2)	148.1 (12.4)

Dataset = cfdpstvl.d19-.d10

Table 4. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in each area of Taylorsville Lake in 2019; confidence intervals are in parentheses.

Area	Species	No. ≥8.0 in	PSD	RSD ₁₅
Big Beech	Largemouth bass	320	47 (± 5)	19 (± 3)
Ashes Creek	Largemouth bass	400	50 (± 5)	15 (± 3)
Van Buren	Largemouth bass	359	42 (± 5)	8 (± 3)
Total	Largemouth bass	1,079	46 (± 3)	14 (± 2)

Dataset = cfdpstvl.d19

Table 5. Population assessment for largemouth bass collected during spring electrofishing at Taylorsville Lake from 2010-2019 (scoring based on statewide assessment).

Year	Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating	
2019	Value 13.4* Score 4	42.8 4	46.8 4	19.6 3	0.3 2			17	Excellent	
2018	Value 13.4 Score 4	26.3 3	41.3 4	35.3 4	0.4 2			17	Excellent	
2017	Value 12.9* Score 3	21.2 2	74.4 4	46.9 4	0.5 3			16	Good	
2016	Value 12.9* Score 3	24.6 3	98.8 4	44.8 4	0.9 3			17	Excellent	
2015	Value 12.9* Score 3	16.8 2	32.7 4	19.3 3	0.3 2			14	Good	
2014	Value 12.9 Score 3	23.6 3	35.1 4	21.3 4	0.5 3			17	Excellent	
2013	Value 13.1* Score 3	17.2 2	42.0 4	22.1 4	0.4 2			15	Good	
2012	Value 13.1* Score 3	28.1 3	39.9 4	14.5 3	0.3 2			15	Good	
2011	Value Score	Sampling was not conducted due to extreme weather and lake conditions.								
2010	Value 13.1 Score 3	49.5 4	49.7 4	16.4 3	0.3 2	0.574	43.7	16	Good	

* Age data not collected

^Calculations based on age data gathered in previous years

Table 6. Length distribution and CPUE (fish/hr) of largemouth bass and saugeye collected in 4.5 hours of 15-minute electrofishing runs for black bass in Taylorsville Lake in September 2019; numbers in parentheses are standard errors.

Species	Inch class																		Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
Van Buren																				
Largemouth bass		1	3	9	14	4	4	10	30	20	12	9	2		1				119	79.3 (12.5)
Saugeye					1		1				1	1					1		5	3.3 (1.2)
Ashes Creek																				
Largemouth bass	5	4	10	9	9	3	6	10	13	16	11	9	2		3	2			107	71.3 (10.4)
Saugeye														1	3	2	2		8	5.3 (2.5)
Big Beech Creek																				
Largemouth bass		3	4	7	3	1	3	8	15	18	7	13	7	8	1	2	1		101	67.3 (16.4)
Saugeye											1	2	1	2				1	7	4.7 (1.9)
Total																				
Largemouth bass	5	8	17	25	26	8	13	28	58	54	30	31	11	8	2	2	1		327	72.7 (7.3)
Saugeye					1		1				1	2	2	2	5	3	2	1	20	4.4 (1.1)

Dataset = cfdwrtvl.d19

Table 7. Numbers of fish and the relative weight (W_r) for each length group of largemouth bass collected at Taylorsville Lake in September 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Van Buren	20	104 (5)	17	96 (2)	3	97 (6)	40	100 (3)
	Ashes	30	93 (2)	31	93 (1)	2	96 (3)	63	93 (1)
	Big Beech	21	97 (2)	28	92 (2)	19	88 (3)	68	92 (1)
	Total	71	97 (2)	76	93 (1)	24	90 (2)	171	94 (1)

Dataset = cfdwrtvl.d19

Table 8. Indices of year class strength at age-0 and age-1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at Taylorsville Lake. Age-1 CPUE and standard error could not be calculated in 2010 due to prolonged flood conditions in the spring.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1 (natural)	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	6.1	0.1	18.0	2.5	15.1	2.5		
2018*	Total	6.3	0.1	23.7	3.2	22.0	2.9	42.8	6.0
2017	Total	5.2	0.1	46.2	3.9	26.2	3.7	27.7	3.7
2016	Total	5.0	0.1	49.3	7.1	21.3	2.7	25.1	2.6
2015	Total	6.0	0.1	14.4	2.1	12.7	2.1	24.6	3.0
2014	Total	5.5	0.1	21.1	4.3	15.4	3.0	16.8	3.7
2013	Total	4.9	0.1	50.0	6.0	23.8	4.3	23.6	3.7
2012	Total	5.1	0.1	54.4	5.3	27.8	3.3	17.2	2.2
2011	Total	4.8	0.1	40.4	2.8	17.8	1.6	27.5	3.8
2010	Total	5.2	0.1	45.2	4.9	27.7	3.3	*	*

Dataset = cfdwrtvl.d19

*Data only collected at Van Buren and Ashes Creek due to YOY stocking

Table 9. Length distribution and CPUE (fish/nn) of each species of crappie collected at Taylorsville Lake in 36 net-nights in October 2019.

Species	Inch class												Total	CPUE	Std. error
	2	3	4	5	6	7	8	9	10	11	12	13			
White crappie	1	18	177	117	4	6	29	82	81	57	14	1	587	16.3	2.8
Black crappie		1	1		2	7	6	6	15	6	1		45	1.3	0.4

Dataset = cfdntnvl.d19

Table 10. PSD and RSD₁₀ values calculated for crappie collected at Taylorsville Lake in 36 net-nights during October 2019.

Species	No. \geq 5.0 in	PSD	RSD ₁₀
White crappie	391	68 (\pm 5)	39 (\pm 5)
Black crappie	43	79 (\pm 12)	51 (\pm 15)

Dataset = cfdntnvl.d19

Table 11. Population assessment for white crappie collected during fall trap netting at Taylorsville Lake from 2010-2019 (scoring based on statewide assessment).

Year		CPUE age-1 and older	Mean length age-2+ at capture	CPUE ≥ 8.0 in	CPUE age-1+	CPUE age-0+	Total score	Assessment rating
2019*	Value	7.5	9.7*	7.3	0.9*	8.8		
	Score	3	3	4	1	4	15	Good
2018	Value	11.0	9.7	11.0	0.9	0.6		
	Score	3	3	4	1	2	13	Good
2017	Value	12.5	9.3	10.8	2.2	0.3		
	Score	3	2	4	2	1	12	Fair
2016	Value	16.8	11.3	7.9	16.4	0.4		
	Score	4	4	4	4	1	17	Excellent
2015	Value	5.6	10.5	3.5	4.4	16.9		
	Score	2	4	3	3	4	16	Good
2014	Value	2.9	10.9	2.2	2.5	0.4		
	Score	2	4	2	2	1	11	Fair
2013	Value	1.7	10.2	1.4	1.3	6.7		
	Score	1	3	1	2	4	11	Fair
2012	Value	0.7	10.1	0.6	0.5	1.1		
	Score	1	3	1	1	2	8	Poor
2011	Value	0.7	11.0	0.6	0.6	1.0		
	Score	1	4	1	1	2	9	Fair
2010	Value	0.4	9.5	0.3	0.4	1.0		
	Score	1	2	1	1	2	7	Poor

* Age data not collected

Table 12. Population assessment for black crappie collected during fall trap netting at Taylorsville Lake from 2010-2019 (scoring based on statewide assessment).

Year		CPUE age-1 and older	Mean length age-2 at capture	CPUE ≥8.0 in	CPUE age-1+	CPUE age-0+	Total score	Assessment rating
2019*	Value	1.2	9.8*	0.9	0.8*	0.1		
	Score	1	4	2	2	1	10	Fair
2018	Value	2.3	9.8	2.4	0.8	0.1		
	Score	2	4	3	2	1	12	Fair
2017	Value	3.8	9.4	3.4	0.7	0		
	Score	3	3	3	2	1	12	Fair
2016	Value	4.8	9.0	3.0	2.1	0.1		
	Score	3	2	3	3	1	12	Fair
2015	Value	8.6	9.2	2.0	6.0	1.2		
	Score	3	3	3	4	3	16	Good
2014	Value	6.3	9.3	2.4	5.2	0.9		
	Score	3	3	3	4	2	15	Good
2013	Value	4.5	9.1	4.1	0.9	2.2		
	Score	3	3	4	2	4	16	Good
2012	Value	9.8	9.6	1.7	9.3	0.9		
	Score	4	3	3	4	2	16	Good
2011	Value	0.8	9.8	0.5	0.5	2.5		
	Score	1	4	1	1	4	11	Fair
2010	Value	3.2	8.4	1.3	3.1	0.5		
	Score	2	2	2	3	2	11	Fair

* Age data not collected

Table 13. Number of fish and the relative weight (Wr) for each length group of crappie at Taylorsville Lake in October 2019.

Species	Area	Length group						Total	
		5.0–7.9 in		8.0–9.9 in		≥10.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
White crappie	Total	47	86 (4)	58	98 (1)	85	99 (1)	190	95 (1)
Black crappie	Total	9	92 (8)	12	98 (3)	22	96 (2)	43	96 (2)

Dataset = cfdtnvl.d19

Table 14. Length distribution and CPUE (fish/nn) of white bass, hybrid striped bass, and saugeye collected during 10 net-nights of gill netting in Taylorsville Lake in October 2019: numbers in parentheses are standard errors.

Species	Inch class																Total	CPUE						
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			22	23	24	25	26	
White bass	1	66	35	1	15	36	5	1															160	16.0 (4.5)
Hybrid striped bass		2	2	7	9	2	1	4	8	5		2	3	1		3	5	5	6	3	3		71	7.1 (2.6)
Reciprocal		1		6	8	2	1	3	4	3		2	1	1		1	3	4	6	3	3		52	5.2 (1.9)
Original		1	2	1	1			1	4	2				2		2	2	1					19	1.9 (0.8)
Saugeye				5	12	9		1	12	15	6	5	13	14	4			1					97	9.7 (3.5)

Dataset = cfdgntvl.d19

Table 15. Mean back calculated lengths (in) at each annulus for otoliths from hybrid striped bass gill netted at Taylorsville Lake in 2019.

Year class	No.	Age						
		1	2	3	4	5	6	7
2018	15	10.2						
2017	6	10.7	16.3					
2016	6	9.7	16.0	20.1				
2015	3	11.5	17.4	20.5	22.8			
2014	4	9.9	16.9	20.3	22.1	23.8		
2013	8	13.0	17.4	20.4	22.2	23.3	24.2	
2012	3	8.1	15.4	18.6	20.4	22.1	23.3	23.8
Mean	45	10.6	16.6	20.1	22.0	23.2	23.9	23.8
Smallest		7.1	14.8	18.0	19.7	21.3	22.3	22.7
Largest		16.5	19.3	21.6	23.5	25.4	25.5	24.8
Std error		0.3	0.2	0.2	0.3	0.3	0.3	0.6
95% ConLo		10.1	16.2	19.7	21.4	22.6	23.3	22.6
95% ConHi		11.2	17.0	20.5	22.5	23.8	24.5	25.0

Intercept Value = 0.00

Dataset = cfdagntvl.d19

Table 16. Age frequency and CPUE (fish/nn) per inch class of hybrid striped bass gill netted for 10 net-nights at Taylorsville Lake in 2019.

Age	Inch class																										Total	%	CPUE	Std err		
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26												
0+	2	2	7	9	2																						22	31	2.2	1.0		
1+						1	4	8	5																			18	25	1.8	0.7	
2+											2	3	1															6	8	0.6	0.4	
3+															3	2	1											6	8	0.6	0.3	
4+																1		1	1									3	4	0.3	0.2	
5+																1	1	1		1									4	6	0.4	0.2
6+																1	2	3	1	2									9	13	0.9	0.4
7+																	1	1	1									3	4	0.3	0.2	
Total	2	2	7	9	2	1	4	8	5	2	3	1	3	5	5	6	3	3	71	100	7.1	2.6										
%	3	3	10	13	3	1	6	11	7	3	4	1	4	7	7	8	4	4	100													

Dataset = cfdagtv1.d19 and cfdgntv1.d19

Table 17. Number of fish and the relative weight (W_r) for each length group of hybrid striped bass collected at Taylorsville Lake in October 2019.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in			
		No.	Wr	No.	Wr	No.	Wr	No.	Wr
Hybrid striped bass	Total	20	92 (1)	13	88 (2)	36	84 (1)	69	87 (1)

Dataset = cfdgntv1.d19

Table 18. Population assessment for hybrid striped bass collected during fall gill netting at Taylorsville Lake from 2010-2019 (scoring based on statewide assessment).

Year		CPUE (excluding age-0)	Mean length age-2+ at capture	CPUE ≥15.0 in	CPUE age-1+	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	4.9	18.4	3.6	1.8	-	-	9	Fair
	Score	2	3	2	2				
2018	Value	6.7	17.9	2.9	5.1	-	-	10	Good
	Score	2	3	2	3				
2017	Value	10.0	18.0	7.8	2.8	-	-	11	Good
	Score	3	3	3	2				
2016	Value	12.2	16.8	9.5	3.2	-	-	10	Good
	Score	3	2	3	2				
2015	Value	5.1	18.0	3.4	1.8	-	-	9	Fair
	Score	2	3	2	2				
2014	Value	10.9	17.5	3.0	8.4	-	-	12	Good
	Score	3	3	2	4				
2013	Value	3.5	18.3	1.5	2.0	-	-	8	Fair
	Score	2	3	1	2				
2012	Value	2.2	17.0	0.8	1.3	-	-	6	Poor
	Score	1	2	1	2				
2011	Value	11.5	16.4	3.1	7.9	-	-	10	Good
	Score	3	2	2	3				
2010	Value	3.8	16.7	1.0	2.9	-	-	7	Fair
	Score	2	2	1	2				

Table 19. Mean back calculated lengths (in) at each annulus for otoliths from white bass gill netted at Taylorsville Lake in 2019.

Year class	No.	Age	
		1	2
2018	41	9.0	
2017	5	8.4	11.6
Mean	46	8.9	11.6
Smallest		6.3	11.1
Largest		10.3	12.2
Std error		0.1	0.2
95% ConLo		8.7	11.2
95% ConHi		9.1	12.0

Intercept Value = 0.00

Dataset = cfdagtv1.d19

Table 20. Age frequency and CPUE (fish/nn) per inch class of white bass gill netted for 10 net-nights at Taylorsville Lake in 2019.

Age	Inch class								Total	%	CPUE	Std err
	6	7	8	9	10	11	12	13				
0+	1	66	35	1					103	64	10.3	2.3
1+					15	36	1		52	33	5.2	2.8
2+							4	1	5	3	0.5	0.2
Total	1	66	35	1	15	36	5	1	160	100	16.0	4.5
%	2	41	22	1	9	23	3	1	100			

Dataset = cfdagntvl.d19 and cfdgntvl.d19

Table 21. Number of fish and the relative weight (W_r) for each length group of white bass collected at Taylorsville Lake in October 2019.

Species	Area	Length group						Total	
		6.0–8.9 in		9.0–11.9 in		≥12.0 in		No.	W_r
		No.	W_r	No.	W_r	No.	W_r		
White bass	Total	84	85 (4)	48	93 (1)	6	90 (4)	138	88 (2)

Dataset = cfdgntvl.d19

Table 22. Population assessment for white bass collected during fall gill netting at Taylorsville Lake from 2010-2019 (scoring based on statewide assessment).

Year		CPUE (excluding age-0)	Mean length age-2+ at capture	CPUE ≥12.0 in	CPUE age-1+	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	5.7	12.7	0.6	5.2			8	Fair
	Score	2	2	1	3				
2018	Value	2.4	13.0	0.8	1.8			6	Poor
	Score	1	2	1	2				
2017	Value	1.4	10.5	0.3	1.1			4	Poor
	Score	1	1	1	1				
2016	Value	3.4	12.0	1.5	1.0			6	Poor
	Score	2	1	2	1				
2015	Value	3.2	12.5	0.8	1.3			5	Poor
	Score	1	2	1	1				
2014	Value	4.5	11.3*	0.5	4.5			7	Fair
	Score	2	1	1	3				
2013	Value	1.4	11.3*	0.0	1.4	-	-	4	Poor
	Score	1	1	1	1				
2012	Value	3.3	11.3	0.5	2.2	1.037	64.5	6	Poor
	Score	2	1	1	2				
2011	Value	18.4	11.9	5.0	8.9	1.506	77.8	12	Good
	Score	4	1	3	4				
2010	Value	11.0	12.1	1.8	7.8	1.920	85.3	10	Good
	Score	3	1	2	4				

* Age data not collected because no fish were captured at this age

Table 23. Length distribution and CPUE (fish/hr) of blue catfish collected in 3.0 hours of 15-minute electrofishing runs for blue catfish in Taylorsville Lake in July 2019; numbers in parentheses are standard errors.

Area	Inch class																												Total	CPUE
	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34			
Upper	2			2	12	31	32	20	15	9	6	6	4	2	2	1		1		1	1		1		1		1	149	99.3 (33.5)	
Lower		1	4	12	18	33	32	26	15	6	9	7	7	6	5	1	1		2	2								187	124.7 (29.8)	
Total	2	1	4	14	30	64	64	46	30	15	15	13	11	8	7	2	1	1	2	3	1		1		1		1	336	112.0 (21.7)	

Dataset = cfdpstvl.d19

Table 24. Electrofishing CPUE (fish/hr) for each length group of blue catfish collected from Taylorsville Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group				Total
	<12.0 in	12.0-19.9 in	20.0-29.9 in	≥30.0 in	
2019	7.0 (3.5)	92.3 (17.5)	12.0 (3.3)	0.7 (0.5)	112.0 (21.7)
2018	45.7 (8.5)	111.7 (16.1)	15.7 (3.4)	2.3 (0.9)	175.3 (21.8)
2017	87.3 (23.7)	118.0 (21.2)	9.0 (5.5)	2.3 (1.3)	216.7 (30.8)
2016	35.3 (15.4)	53.0 (21.5)	6.7 (2.7)	1.7 (1.2)	96.7 (31.5)
2015	31.4 (16.0)	47.1 (16.6)	4.6 (2.1)	1.9 (1.0)	84.9 (24.6)
2014	31.1 (11.3)	119.4 (21.1)	11.4 (2.5)	5.2 (1.7)	167.1 (27.5)
2013	4.0 (1.6)	42.0 (6.5)	11.0 (2.6)	3.0 (0.9)	60.0 (8.2)
2012	28.3 (9.1)	58.3 (15.7)	15.0 (4.7)	2.3 (1.2)	104.0 (22.8)
2011	3.9 (3.1)	14.0 (2.9)	8.1 (5.0)	1.1 (0.6)	27.1 (5.9)
2010	25.9 (12.2)	73.4 (13.5)	16.2 (4.2)	0.7 (0.4)	116.1 (21.2)

Dataset = cfdpstvl.d19-.d10

Table 25. Numbers of fish and the relative weight (W_r) for each length group of blue catfish collected at Taylorsville Lake on 15 and 16 July 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		12.0-19.9 in		20.0-29.9 in		≥30.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Blue catfish	Upper	131	95 (1)	12	92 (3)	2	107 (1)	145	95 (1)
	Lower	146	94 (1)	24	89 (2)	0		170	94 (1)
	Total	277	95 (1)	36	90 (1)	2	107 (1)	315	94 (1)

Dataset = cfdpstvl.d19

Table 26. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected in 7.5 hours of 15-minute electrofishing runs in Herrington Lake, April 2019; numbers in parentheses are standard errors.

Location/Species	Inch class																		Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
Upper																				
Largemouth bass	2	8	17	13	14	15	11	14	15	24	19	24	31	22	12	11	2	2	256	102.4 (8.8)
Spotted bass			1		1	1		2	2	6		1							14	5.6 (2.1)
Smallmouth bass		2	1	2	1														6	2.4 (1.1)
Middle																				
Largemouth bass		23	62	32	40	31	19	14	26	37	42	48	55	24	15	10	4	2	484	193.6 (12.5)
Spotted bass					16	14	3	6	13	7	6	1	1						67	26.8 (4.7)
Lower																				
Largemouth bass		1	6	16	11	6	11	20	25	36	29	41	45	23	11	7	5		293	117.2 (11.8)
Spotted bass			2		7			10	4	7	4	4							38	15.2 (3.7)
Total																				
Largemouth bass	2	32	85	61	65	52	41	48	66	97	90	113	131	69	38	28	11	4	1,033	137.7 (9.7)
Spotted bass			3		24	15	3	18	19	20	10	6	1						119	15.9 (2.6)
Smallmouth bass		2	1	2	1														6	0.8 (0.4)

Dataset = cfdpsher.d19

Table 27. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Herrington Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	32.7 (4.8)	27.6 (2.6)	40.0 (3.7)	37.5 (3.1)	0.5 (0.3)	137.7 (9.7)
2018	45.3 (7.9)	50.8 (5.9)	58.5 (5.1)	29.9 (3.1)	1.5 (0.5)	184.5 (13.8)
2017	26.4 (3.0)	40.5 (4.4)	30.8 (3.6)	16.3 (1.6)	1.2 (0.4)	114.0 (6.5)
2016	32.8 (4.7)	43.1 (5.5)	16.4 (1.9)	17.7 (2.1)	1.1 (0.4)	110.0 (9.0)
2015	32.9 (3.4)	16.8 (2.2)	20.9 (1.9)	17.6 (2.5)	0.8 (0.3)	88.3 (6.1)
2014	30.1 (4.1)	20.5 (2.0)	28.5 (2.7)	18.0 (2.4)	1.3 (0.4)	97.2 (6.4)
2013	11.7 (2.2)	29.6 (4.0)	18.5 (2.7)	12.9 (1.9)	1.5 (0.6)	72.8 (7.0)
2012	69.6 (10.1)	70.7 (10.9)	40.9 (4.6)	14.8 (2.1)	1.1 (0.5)	196.0 (23.7)
2011	24.5 (3.7)	22.7 (2.0)	10.9 (1.3)	10.8 (1.5)	0.3 (0.2)	68.9 (1.4)
2010	41.5 (4.4)	34.0 (4.4)	28.7 (3.2)	25.1 (2.3)	0.9 (0.3)	129.2 (10.2)

Dataset = cfdpsher.d19- .d10

Table 28. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in each area of Herrington Lake in 2019; confidence intervals are in parentheses.

Area	Species	No. ≥8.0 in	PSD	RSD ₁₅
Lower	Largemouth bass	259	76 (± 5)	35 (± 6)
Middle	Largemouth bass	327	72 (± 5)	34 (± 5)
Upper	Largemouth bass	202	73 (± 6)	40 (± 7)
Total	Largemouth bass	788	74 (± 3)	36 (± 3)

Dataset = cfdpsher.d19

Table 29. Population assessment for largemouth bass collected during spring electrofishing at Herrington Lake from 2010-2019 (scoring based on statewide assessment).

Year	Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value 13.4* Score 4	20.5 2	40.0 4	37.5 4	0.5 3			17	Excellent
2018	Value 13.4* Score 4	39.6 3	58.5 4	29.9 4	1.5 4			19	Excellent
2017	Value 13.4* Score 4	31.1 3	30.8 3	16.3 3	1.2 3			16	Good
2016	Value 13.4* Score 4	59.2 4	16.4 2	17.7 3	1.1 3			16	Good
2015	Value 13.4 Score 4	36.8 3	20.9 2	17.6 3	0.8 3			15	Good
2014	Value 13.8* Score 4	33.9 3	28.5 3	18.0 3	1.3 4			17	Excellent
2013	Value 13.8* Score 4	15.1 2	18.5 2	12.9 2	1.5 4			14	Good
2012	Value 13.8* Score 4	111.7 4	40.9 4	14.8 3	1.1 3			18	Excellent
2011	Value 13.8 Score 4	18.7 2	10.9 1	10.8 2	0.3 2	0.539	41.7%	11	Fair
2010	Value 13.7* Score 4	49.6^ 4	28.7 3	25.1 4	0.9 3			18	Excellent

* Age data not collected; ^ calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 30. Length distribution and CPUE (fish/hr) of black bass collected in 4.5 hours of 15-minute electrofishing runs in Herrington Lake in September 2019; numbers in parentheses are standard errors.

Species	Inch class																		Total	CPUE		
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20	21
Lower																						
Largemouth bass	11	2	2	2	5	2		7	5	8	3	6	4	8	4	4	2			75	50.0 (20.3)	
Spotted bass	1				3	3	3	4	1	1	1									17	11.3 (3.6)	
Middle																						
Largemouth bass	2	7	2	6	6	4	6	9	6	6	3	5		4	2	3	3			75	50.0 (14.3)	
Spotted bass	2						1				1	2	1							7	4.7 (1.2)	
Upper																						
Largemouth bass		11	16	17	7	4	1	3		6	2	5	10	8	8			2	1	1	101	67.3 (11.0)
Spotted bass										1										1	0.7 (0.7)	
Smallmouth bass		1																		1	0.7 (0.7)	
Total																						
Largemouth bass	13	20	20	25	18	10	7	19	11	20	8	16	14	20	14	7	5	2	1	1	251	55.8 (8.7)
Spotted bass	3				3	4	3	4	1	3	3	1								25	5.6 (1.6)	
Smallmouth bass		1																		1	0.2 (0.2)	

Dataset = cfdwrher.d19

Table 31. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at Herrington Lake on 20, 23-24 September 2019. Standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Lower	20	92 (3)	13	93 (3)	18	92 (2)	51	92 (2)
	Middle	27	92 (2)	8	89 (3)	13	92 (3)	48	91 (1)
	Upper	10	98 (1)	17	91 (2)	19	97 (2)	46	95 (1)
	Total	57	93 (1)	38	91 (1)	50	94 (1)	145	93 (1)

Dataset = cfdwrher.d19

Table 32. Indices of year class strength at age-0 and age-1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at Herrington Lake.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1 (natural)	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	4.9	0.1	23.6	4.3	11.8	2.0		
2018	Total	5.8	0.1	11.6	1.6	9.3	1.5	20.5	3.8
2017	Total	5.0	0.1	26.0	4.2	13.3	3.5	42.5	7.7
2016	Total	5.4	0.1	24.9	3.6	16.7	2.8	39.1	4.2
2015	Total	5.2	0.1	67.8	10.3	44.8	7.9	59.7	7.8
2014	Total	4.7	0.1	36.9	6.0	20.0	3.5	38.4	3.9
2013	Total	4.5	0.1	49.1	4.9	19.3	3.1	33.9	4.3
2012	Total	5.4	0.1	33.6	6.2	21.8	4.9	11.3	2.1
2011	Total	5.8	0.1	54.5	7.8	43.8	6.7	111.7	17.7
2010	Total	5.8	0.1	22.0	3.4	17.6	3.3	26.6	3.6

Dataset = cfdwrher.d19

Table 33. Length distribution and CPUE (fish/nn) of white bass and hybrid striped bass collected during 24 net-nights of gill netting in Herrington Lake in October and November 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE	
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			28
White bass	1	4	6	4	1		5	4	6	3	1								35	1.5 (0.3)
Hybrid striped bass	1	1	1	9	13	7			1	6	13	8	6	7	2	1	2	1	79	3.3 (1.0)
Reciprocal	1	1		5	8	3			1	1	8	7	4	6	2		1		48	2.0 (0.6)
Original			1	4	5	4				5	5	1	2	1		1	1	1	31	1.3 (0.4)

Dataset = cfdgnher.d19

Table 34. Mean back calculated lengths (in) at each annulus for otoliths from hybrid striped bass gill netted at Herrington Lake in 2019.

Year class	No.	Age						
		1	2	3	4	5	6	7
2018	25	13.4						
2017	18	13.9	18.6					
2016	2	14.7	19.9	21.9				
2015	1	15.3	19.7	21.4	22.5			
2012	1	14.9	20.1	22.8	24.7	25.5	26.8	27.5
Mean	47	13.7	18.9	22.0	23.6	25.5	26.8	27.5
Smallest		10.4	17.4	21.4	22.5	25.5	26.8	27.5
Largest		15.5	20.4	22.7	24.7	25.5	26.8	27.5
Std error		0.1	0.2	0.3	1.1			
95% ConLo		13.4	18.5	21.4	21.5			
95% ConHi		14.0	19.3	22.7	25.7			

Intercept Value = 0.00

Dataset = cfdagher.d19

Table 35. Age frequency and CPUE (fish/nn) per inch class of hybrid striped bass gill netted for 24 net-nights at Herrington Lake in 2019.

Age	Inch class																	Total	CPUE		Std err		
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		28	%		CPUE	
0+	1	1	1	9	13	7														32	41	1.3	0.5
1+									1	6	13	5								25	32	1.0	0.4
2+												3	6	7	2					18	23	0.8	0.5
3+																1	1			2	3	0.1	0.1
4+																	1			1	1	0.1	0.1
7+																		1		1	1	0.1	0.1
Total	1	1	1	9	13	7			1	6	13	8	6	7	2	1	2	1		79	100	3.3	1.0
%	1	1	1	11	16	9			1	8	16	10	8	9	3	1	3	1		100			

Dataset = cfdagher.d19 and cfdgnher.d19

Table 36. Number of fish and the relative weight (W_r) for each length group of hybrid striped bass collected at Herrington Lake in October and November 2019.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Hybrid striped bass	Total	24	97 (1)	7	98 (2)	47	93 (1)	78	95 (1)

Dataset = cfdgnher.d19

Table 37. Population assessment for hybrid striped bass collected during fall gill netting at Herrington Lake from 2010-2019 (scoring based on statewide assessments).

Year		CPUE (excluding age-0)	Mean length age-2+ at capture	CPUE ≥15.0 in	CPUE age-1+	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	2.0	20.0	2.0	1.0			7	Fair
	Score	1	4	1	1				
2018	Value	8.6	21.4	8.5	7.4			13	Good
	Score	3	4	3	3				
2017	Value	3.1	21.1	3.1	0.7			8	Fair
	Score	1	4	2	1				
2016	Value	4.3	20.1	4.2	4.0			11	Good
	Score	2	4	2	3				
2015	Value	2.8	21.2	1.9	1.1			8	Fair
	Score	1	4	1	2				
2014	Value	2.8	20.9	2.8	1.6			9	Fair
	Score	1	4	2	2				
2013	Value	1.8	20.6	1.8	0.8	-	-	7	Fair
	Score	1	4	1	1				
2012	Value	1.1	19.6	1.0	0.8	-	-	7	Fair
	Score	1	4	1	1				
2011	Value	5.3	19.7	5.3	3.7	-	-	12	Good
	Score	2	4	3	3				
2010	Value	5.3	20.0	4.7	4.9	1.211	70.2	11	Good
	Score	2	4	2	3				

Table 38. Mean back calculated lengths (in) at each annulus for otoliths from white bass gill netted at Herrington Lake in 2019.

Year class	No.	Age				
		1	2	3	4	5
2018	2	9.8				
2017	5	9.9	12.7			
2016	1	11.4	13.9	14.9		
2015	6	10.8	13.1	14.4	15.0	
2014	6	9.1	13.0	14.0	14.8	15.6
Mean	20	10.0	13.0	14.3	14.9	15.6
Smallest		8.6	11.0	13.0	13.6	14.4
Largest		11.9	14.0	15.9	16.4	16.3
Std error		0.2	0.1	0.2	0.2	0.3
95% ConLo		9.6	12.4	13.8	14.5	15.1
95% ConHi		10.4	12.9	14.7	15.4	16.1

Intercept Value = 0.00

Dataset = cfdagher.d19

Table 39. Age frequency and CPUE (fish/nn) per inch class of white bass gill netted for 24 net-nights at Herrington Lake in 2019.

Age	Inch class										Total	% CPUE	Std err		
	7	8	9	10	11	12	13	14	15	16				17	
0+	1	4	6	4								15	43	0.6	0.2
1+					1		1					2	6	0.1	0.1
2+							4	1				5	14	0.2	0.1
3+									1			1	3	0.1	0.1
4+								2	3		1	6	17	0.3	0.1
5+								1	2	3		6	17	0.3	0.1
Total	1	4	6	4	1		5	4	6	3	1	35	100	1.5	0.3
%	3	11	17	11	3		14	11	17	9	3	100			

Dataset = cfdagher.d19 and cfdgnher.d19

Table 40. Population assessment for white bass collected during fall gill netting at Herrington Lake from 2010-2019 (scoring based on statewide assessment).

Year		CPUE (excluding age-0)	Mean length age-2+ at capture	CPUE ≥12.0 in	CPUE age-1+	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	0.9	13.9	0.8	0.1				
	Score	1	4	1	1			7	Fair
2018	Value	2.9	14.2	2.8	0.7				
	Score	1	4	2	1			8	Fair
2017	Value	2.3	14.1	2.3	0.4				
	Score	1	4	2	1			8	Fair
2016	Value	5.2	13.3	4.4	1.0				
	Score	2	2	3	1			8	Fair
2015	Value	5.7	13.9	4.8	5.3				
	Score	2	4	3	3			12	Good
2014	Value	0.9	14.0	0.8	0.3				
	Score	1	4	1	1			7	Fair
2013	Value	2.2	14.1	2.2	0.3	-	-		
	Score	1	4	2	1			8	Fair
2012	Value	9.8	13.7	5.9	5.4	0.975	62.3		
	Score	3	4	3	3			13	Good
2011	Value	10.8	13.7	9.2	4.4	0.877	58.4		
	Score	3	4	4	3			14	Excellent
2010	Value	7.9	13.6	4.0	6.2	1.351	74.1		
	Score	3	3	3	3			12	Good

Table 41. Number of fish and the relative weight (Wr) for each length group of white bass collected at Herrington Lake in October and November 2019.

Species	Area	Length group						Total	
		6.0–8.9 in		9.0–11.9 in		≥12.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
White bass	Total	5	99 (4)	11	100 (2)	19	91 (1)	35	95 (1)

Dataset = cfdgnher.d19

Table 42. Species composition, relative abundance, and CPUE (fish/hr) of black bass and saugeye collected in 3.0 hours of 15-minute nocturnal electrofishing runs in Guist Creek Lake, April 2019; numbers in parentheses are standard errors.

Species	Inch class																			Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Largemouth bass	3	13	28	6	18	33	27	32	35	65	64	42	48	36	54	24	22	14	5	569	189.7 (13.9)
Saugeye															4		1	1		6	2.0 (0.9)

Dataset = cfdpsgcl.d19

Table 43. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Guist Creek Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	22.7 (5.1)	42.3 (5.7)	57.0 (6.7)	67.7 (5.1)	6.3 (1.2)	189.7 (13.9)
2018	11.0 (1.9)	111.7 (10.3)	64.7 (5.6)	64.3 (8.1)	5.3 (1.4)	251.7 (18.3)
2017	13.0 (3.3)	57.3 (7.3)	36.0 (5.0)	70.0 (11.2)	5.7 (1.7)	176.3 (21.2)
2016	No Sample					
2015	28.7 (8.4)	86.0 (6.5)	47.0 (4.9)	63.7 (10.2)	3.3 (1.2)	225.3 (22.2)
2014	13.3 (2.4)	43.3 (5.4)	32.7 (4.6)	49.3 (6.8)	4.3 (1.3)	138.7 (15.8)
2013	21.3 (7.0)	44.0 (5.1)	51.0 (5.4)	63.0 (7.4)	5.7 (2.0)	179.3 (11.6)
2012	19.7 (5.2)	81.7 (7.5)	30.0 (4.1)	36.7 (3.8)	4.7 (1.2)	168.0 (7.2)
2011	34.3 (2.6)	67.7 (7.0)	35.0 (3.9)	50.3 (4.7)	5.3 (1.6)	187.3 (9.7)
2010	46.8 (4.1)	25.3 (2.6)	26.3 (2.9)	47.3 (4.6)	3.0 (0.8)	145.8 (8.4)

Dataset = cfdpsgcl.d19- d10

Table 44. PSD and RSD₁₅ values obtained for largemouth bass from spring nocturnal electrofishing samples in Guist Creek Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥8.0 in	PSD	RSD ₁₅
Largemouth bass	501	75 (± 4)	41 (± 4)

Dataset = cfdpsgcl.d19

Table 45. Population assessment for largemouth bass collected during spring electrofishing at Guist Creek Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	12.5*	16.0	57.0	67.7	6.3			18	Excellent
	Score	4	2	4	4	4				
2018	Value	12.5*	7.0	64.7	64.3	5.3			17	Excellent
	Score	4	1	4	4	4				
2017	Value	12.5	12.7	36.0	70.0	5.7			17	Excellent
	Score	4	2	3	4	4				
2016	Value									
	Score									
2015	Value	12.2*	13.0	47.0	63.7	3.3			17	Excellent
	Score	4	2	4	4	3				
2014	Value	12.2*	3.7	32.7	49.3	4.3			16	Good
	Score	4	1	3	4	4				
2013	Value	12.2	17.0	51.0	63.0	5.7			18	Excellent
	Score	4	2	4	4	4				
2012	Value	11.0*	13.3	30.0	36.7	4.7			16	Good
	Score	3	2	3	4	4				
2011	Value	11.0*	16.4	34.7	50.7	5.7			16	Good
	Score	3	2	3	4	4				
2010	Value	11.0*	31.5 [^]	26.3	47.3	3.0			16	Good
	Score	3	3	3	4	3				

* Age data not collected

[^]Calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 46. Length distribution and CPUE (fish/hr) of saugeye collected in 1.5 hours of 15-minute electrofishing runs in Guist Creek Lake in October 2019; numbers in parentheses are standard errors.

Species	Inch class											Total	CPUE	
	13	14	15	16	17	18	19	20	21	22	23			
Saugeye	2						1	1				1	5	3.3 (1.2)

Dataset = cfdwrgcl.d19

Table 47. Fishery statistics derived from a daytime creel survey at Guist Creek Lake (317 acres) from 19 March through 28 October 2019.

	2019 (3/19 to 10/28)		2011 (3/19 to 10/30)		2005 (4/7 to 10/30)	
Fishing Trips						
No. of fishing trips (per acre)	4,105	(13.0)	4,325	(13.6)	3,965	(12.5)
Fishing Pressure						
Total man-hours (S.E.) ^a	19,090	(575)	21,036	(581)	21,550	(691)
Man-hours/acre	60.2		66.4		68.0	
Catch / Harvest						
No. of fish caught (S.E.)	37,967	(3,928)	30,379	(2,450)	28,802	(2,794)
No. of fish harvested (S.E.)	23,793	(2,988)	12,351	(1,247)	4,577	(705)
Lb of fish harvested	5,357		3,954		2,521	
Harvest Rates						
Fish/hour	1.2		0.6		0.2	
Lb/hour	1.3		0.5		0.3	
Fish/acre	75.0		39.0		14.4	
Lb/acre	16.9		12.5		8.0	
Catch Rates						
Fish/hour	1.9		1.5		1.3	
Fish/acre	119.8		95.8		90.9	
Miscellaneous Characteristics						
Male	85.5		89.5		89.8	
Female	14.5		10.6		10.2	
Resident	98.9		99.9		97.9	
Non-resident	1.1		0.1		2.1	
Method (%)						
Still fishing	45.7		51.9		44.9	
Casting	49.6		42.6		48.3	
Fly	0.0		0.5		0.6	
Trolling	4.7		5.0		6.2	
Mode (%)						
Boat	80.3		82.0		80.0	
Bank	17.0		16.3		19.0	
Dock	2.7		1.7		1.0	

^a S.E. = Standard Error

Table 48. Fish harvest derived from a creel survey on Guist Creek Lake (317 acres) from 19 March through 28 October 2019.

	Black bass group	Largemouth bass	Crappie group	White crappie	Black crappie	Catfish group	Channel catfish	Flathead catfish	Blue catfish	Morone group	Hybrid striped bass	Yellow bass
No. caught (per acre)	4,015.6 (12.7)	4,015.6 (12.7)	7,235.0 (22.8)	6,962.8 (22.0)	272.1 (0.9)	1,336.3 (4.2)	1,156.5 (3.6)	131.6 (0.4)	48.3 (0.2)	3,180.5 (10.0)	1,336.7 (4.2)	1,818.8 (5.7)
No. harvested (per acre)	941.2 (3.0)	941.2 (3.0)	2,984.2 (9.4)	2,875.9 (9.1)	108.3 (0.3)	1,034.4 (3.3)	902.1 (2.8)	87.7 (0.3)	44.6 (0.1)	1,328.6 (4.2)	99.3 (0.3)	1,204.3 (3.8)
% of total no. harvested	3.9	3.9	12.2	11.8	0.4	4.2	3.6	0.4	0.2	5.4	0.4	4.9
Lb harvested (per acre)	1,169.8 (3.7)	1,169.8 (3.7)	1,252.2 (4.0)	1,177.7 (3.7)	74.5 (0.3)	1,314.7 (4.1)	1,007.7 (3.2)	231.2 (0.7)	75.8 (0.2)	534.8 (1.7)	370.7 (1.2)	157.2 (0.5)
% of total lb harvested	19.3	19.3	20.6	19.4	1.2	21.7	16.6	3.8	1.2	8.8	6.1	2.6
Mean length (in)		13.5		9.4	10.2		15.0	20.0	17.1		18.2	7.1
Mean weight (lb)		1.24		0.37	0.57		1.09	3.59	1.71		3.18	0.14
No. of fishing trips for that species	1,917.5		322.8			312.0				183.9		
% of all trips	46.8		7.9			7.6				4.5		
Hours fished for that species (per acre)	8,918.0 (28.1)		1,501.1 (4.7)			1,450.9 (4.6)				855.4 (2.7)		
No. harvested fishing for that species	897		2,915			775				246		
Lb harvested fishing for that species	1,113.7		1,220.0			1,033.5				356.6		
No./hour harvested fishing for that species	0.113		1.929			0.467				0.175		
% success fishing for that species	18.5		62.2			64.2				22.1		

t = < 0.05

Table 48 (cont).

	White bass	Panfish group	Bluegill	Green sunfish	Warmouth	Rock bass	Redear sunfish	Longear sunfish	Saugeye	Drum	Anything
No. caught (per acre)	25.0 (0.1)	22,086.2 (69.7)	20,998.6 (66.2)	553.7 (1.7)	410.5 (1.3)	94.3 (0.3)	18.1 (0.1)	10.9 (t)	105.9 (0.3)	7.3 (t)	
No. harvested (per acre)	25.0 (0.1)	18,055.8 (57.0)	17,186.7 (54.2)	499.3 (1.6)	291.0 (0.9)	57.0 (0.2)	18.1 (0.1)	3.6 (t)	40.2 (0.1)	0	
% of total no. harvested	0.1	74.0	70.5	2.0	1.2	0.2	0.1	t	0.2	0	
Lb harvested (per acre)	6.9 (t)	1,702.6 (5.4)	1,570.4 (5.0)	85.7 (0.3)	31.3 (0.1)	11.7 (t)	3.3 (t)	0.2 (t)	98.2 (0.3)	0	
% of total lb harvested	0.1	28.0	25.9	1.4	0.5	0.2	0.1	t	1.6	0	
Mean length (in)	8.8		5.7	6.4	5.6	6.3	6.4	4.0	19.6		
Mean weight (lb)	0.35		0.12	0.17	0.12	0.19	0.18	0.04	2.39		
No. of fishing trips for that species		394.5							62.3		903.5
% of all trips		9.6							1.5		22.1
Hours fished for that species (per acre)		1,834.6 (5.8)							289.8 (0.9)		4,202.0 (13.3)
No. harvested fishing for that species		8,330							27		
Lb harvested fishing for that species		819.6							69.8		
No./hour harvested fishing for that species		4.703							0.076		
% success fishing for that species		75.4							21.4		51.7

t = < 0.05

Table 49. Length distribution (length of released fish are estimated) for each species of fish harvested at Guist Creek Lake (317 acres) from 19 March through 28 October 2019.

	Inch class																																								
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	33													
Largemouth bass																																									
Harvested										136	85	48	48	4	11	7	4	4	2																						
Released						202	178	594	319	1,075	485	222	295	66	101	36	36	36	12	6																					
White crappie																																									
Harvested					256	388	506	904	509	270	35	3	5																												
Released		124	662	699	1507	695	241	70	73	11			5																												
Black crappie																																									
Harvested									56	24	21	3	4																												
Released			18		79	6	36	25																																	
Channel catfish																																									
Harvested										84	218	59	253	55	74	69	30	20	25		10	5																			
Released				9	43	26	52	34	22	13	26		4	4	4	4		9	4																						
Flathead catfish																																									
Harvested											8	4	20		24	4		4	12			4	4												4						
Released							5	5		10	5			5																						5			4		
Blue catfish																																									
Harvested												7	14	3	3	3	3	7				5																			
Released													4																												
Hybrid striped bass																																									
Harvested											4		12	4	20	16	8	8	8		4	4	4	4	3																
Released	13		31	13	172	225	225	189	18	53	79	18	48	31	4	40		13	4	18	4	9	13	4	4	4	4	4	4	4	4	4	4	4	4	4	5				
Yellow bass																																									
Harvested			86	215	550	263	90																																		
Released	8	8	77	139	278	7	23	8																																	
White bass																																									
Harvested					18			4	3																																
Bluegill																																									
Harvested		3,981	7,235	4,003	1,480	456	18	14																																	
Released	66	1,097	1,730	656	244	19																																			
Green sunfish																																									
Harvested		15	82	178	224																																				
Released		25	29																																						
Warmouth																																									
Harvested			205	77	4	5																																			
Released			75	45																																					

Table 49 (cont.).

	Inch Class																											
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	33
Rock bass																												
Harvested		3	3	13	32	6																						
Released			6	6	22	3																						
Redear sunfish																												
Harvested				11	7																							
Longear sunfish																												
Harvested		4																										
Released		7																										
Saugeye																												
Harvested														4	9	4		4	13	6								
Released								4	4	4			16	4	8	4		4	8	10								
Drum																												
Released						4		3																				

Table 50. Black bass catch and harvest statistics derived from a creel survey at Guist Creek Lake (317 acres) for black bass caught and released by all anglers from 19 March through 28 October 2019.

	Largemouth bass			Total
	Harvest	Catch and Release		
		12.0 – 14.9 in	≥15.0 in	
Total no of bass	941.2	1,268	449	4,016
% of black bass harvested by no.	100.0%			
Total weight of fish (lbs)	1,169.8	1,092	387	3,817
% of black bass harvest by weight	100.0%			
Mean length	13.5			
Mean weight	1.24			
Rate (fish/h)	0.060			

Table 51. Monthly black bass angling success at Guist Creek Lake during the 2019 creel survey.

Month	Total no. of black bass caught by all anglers	Total no. of black bass harvested by all anglers	No. of fishing trips for black bass	Hours fished by black bass anglers	Black bass caught by black bass anglers	Black bass caught/hr by black bass anglers	Black bass harvested by black bass anglers	Black bass harvested/hr by black bass anglers
March	178	-	140	652.5	165	0.25	-	-
April	450	126	226	1,049.0	437	0.41	126	0.12
May	289	-	103	478.0	274	0.50	-	-
June	667	87	235	1,092.4	641	0.57	87	0.08
July	1,010	190	492	2,288.3	973	0.38	168	0.07
August	585	140	297	1,380.2	548	0.43	126	0.10
September	550	289	287	1,335.1	543	0.37	282	0.19
October	287	107	138	642.6	287	0.35	108	0.13
Total	4,016	941	1,918	8,918.0	3,868		897	
Mean						0.41		0.11

Table 52. Crappie catch and harvest statistics derived from a creel survey at Guist Creek Lake (317 acres) for crappie caught and released by all anglers from 19 March through 28 October 2019.

	White crappie				Black crappie			
	Harvest	Catch and Release		Total	Harvest	Catch and Release		Total
		<10.0 in	≥10.0 in			<10.0 in	≥10.0 in	
Total no of crappie	2,876	3,928	159	6,963	108	139	25	272
% of crappie harvested by no.	96.4%				3.6%			
Total weight of fish (lbs)	1,178	485	20	1,682	75	30	5	110
% of crappie harvest by weight	94.1%				5.9%			
Mean length	9.4				10.2			
Mean weight	0.37				0.57			
Rate (fish/hr)	0.180				0.007			

Table 53. Monthly crappie angling success at Guist Creek Lake during the 2019 creel survey.

Month	Total no. of crappie caught by all anglers	Total no. of crappie harvested by all anglers	No. of fishing trips for crappie	Hours fished by crappie anglers	Crappie caught by crappie anglers	Crappie caught/hr by crappie anglers	Crappie harvested by crappie anglers	Crappie harvested/hr by crappie anglers
March	218	-	33	154	218	1.09	-	-
April	3,381	1,178	109	507	3,339	5.35	1,172	1.88
May	352	310	42	196	345	2.04	303	1.79
June	243	109	15	69	236	2.34	102	1.01
July	1,054	285	46	216	981	4.25	249	1.08
August	711	241	23	108	700	5.35	237	1.81
September	540	310	20	92	524	5.58	300	3.19
October	736	552	35	161	737	4.39	552	3.29
Total	7,235	2,984	323	1,501	7,080		2,915	
Mean						4.49		1.93

Table 54. Panfish catch and harvest statistics derived from a creel survey at Guist Creek Lake (317 acres) for panfish caught and released by all anglers from 19 March through 28 October 2019.

	<u>Bluegill</u> Catch and Release				<u>Green sunfish</u> Catch and Release				<u>Longear sunfish</u> Catch and Release				<u>Warmouth</u> Catch and Release			
	Harvest	6.0-7.9 in	≥8.0 in	Total	Harvest	6.0-7.9 in	≥8.0 in	Total	Harvest	6.0-7.9 in	≥8.0 in	Total	Harvest	6.0-7.9 in	≥8.0 in	Total
Total no	17,187	900	19	20,999	499	-	-	554	4	-	-	11	291	45	-	411
% of panfish harvested by no.	95.2				2.8				0.02				1.6			
Total weight of fish (lbs)	1,570	71	3	1,874	86	-	-	89	0.2	-	-	1	31	5	-	44
% of panfish harvest by weight	92.2				5.0				0.01				1.8			
Mean length	5.7				6.4				4.0				5.6			
Mean weight	0.12				0.17				0.04				0.12			
Rate (fish/h)	0.825				0.021				0.0002				0.015			

	<u>Redear sunfish</u> Catch and Release				<u>-0</u> Catch and Release			
	Harvest	6.0-7.9 in	≥8.0 in	Total	Harvest	6.0-7.9 in	≥8.0 in	Total
Total no	18	-	-	18	57	28	3	94
% of panfish harvested by no.	0.1				0.3			
Total weight of fish (lbs)	3	-	-	3	12	5	2	19
% of panfish harvest by weight	0.2				0.7			
Mean length	6.4				6.3			
Mean weight	0.18				0.19			
Rate (fish/h)	0.001				0.004			

Table 55. Monthly panfish angling success at Guist Creek Lake during the 2019 creel survey.

Month	Total no. of panfish caught by all anglers	Total no. of panfish harvested by all anglers	No. of fishing trips for panfish	Hours fished by panfish anglers	Panfish caught by panfish anglers	Panfish caught/hr by panfish anglers	Panfish harvested by panfish anglers	Panfish harvested/hr by panfish anglers
March	482	26	12	58	211	4.27	-	-
April	1,547	735	41	192	951	4.84	508	2.58
May	1,647	915	44	206	1,295	7.19	845	4.69
June	3,838	3,070	59	276	1,501	5.35	1,258	4.48
July	8,358	7,450	82	381	3,139	7.53	2,634	6.32
August	4,197	4,078	85	394	2,230	5.47	2,230	5.47
September	1,398	1,192	46	214	821	6.26	670	5.11
October	620	590	24	113	199	4.14	185	3.85
Total	22,086	18,056	394	1,835	10,347		8,330	
Mean						5.77		4.70

Table 56. Catfish catch and harvest statistics derived from a creel survey at Guist Creek Lake (317 acres) from 19 March through 28 October 2019.

	Harvest	Channel catfish Catch and Release			Harvest	Flathead catfish Catch and Release			Harvest	Blue catfish Catch and Release		
		8.0 – 11.9 in	≥12.0 in	Total		8.0 – 11.9 in	≥12.0 in	Total		8.0 – 11.9 in	≥12.0 in	Total
Total no of catfish	902	134	68	1,156	88	10	34	132	45	-	4	49
% of catfish harvested by no.	87.2%				8.5%				4.3%			
Total weight of fish (lbs)	1,008	62	31	1,125	231	24	85	340	76	-	4	80
% of catfish harvest by weight	76.6%				17.6%				5.8%			
Mean length	15.0				20.0				17.1			
Mean weight	1.09				3.59				1.71			
Rate (fish/h)	0.039				0.005				0.003			

Table 57. Monthly catfish angling success at Guist Creek Lake during the 2019 creel survey.

Month	Total no. of catfish caught by all anglers	Total no. of catfish harvested by all anglers	No. of fishing trips for catfish	Hours fished by catfish anglers	Catfish caught by catfish anglers	Catfish caught/hr by catfish anglers	Catfish harvested by catfish anglers	Catfish harvested/hr by catfish anglers
March	73	66	17	77	40	0.45	40	0.45
April	87	65	43	201	65	0.42	55	0.36
May	246	211	16	76	204	2.18	190	2.03
June	239	210	59	276	138	0.46	130	0.43
July	388	285	67	298	234	0.69	205	0.60
August	185	130	72	335	141	0.43	108	0.32
September	63	29	18	84	19	0.28	16	0.24
October	55	39	22	104	37	0.52	31	0.44
Total	1,336	1,034	312	1,451	878		775	
Mean						0.53		0.47

Table 58. Temperate bass (*Morones*) catch and harvest statistics derived from a creel survey at Guist Creek Lake (317 acres) from 19 March through 28 October 2019.

	Harvest	<u>Hybrid striped bass</u> <u>Catch and Release</u>			Harvest	<u>Yellow bass</u> <u>Catch and Release</u>			Harvest	<u>White bass</u> <u>Catch and Release</u>		
		12.0 – 14.9 in	≥15.0 in	Total		12.0 – 14.9 in	≥15.0 in	Total		12.0 – 14.9 in	≥15.0 in	Total
Total no of <i>Morones</i>	99	150	201	1,337	1,204			1,819	25			25
% of <i>Morones</i> harvested by no.	7.5%				90.6%				1.9%			
Total weight of fish (lbs)	371	99	129	1,179	157			231	7			7
% of <i>Morones</i> harvest by weight	69.3%				29.4%				1.3%			
Mean length	18.2				7.1				8.8			
Mean weight	3.18				0.14				0.35			
Rate (fish/h)	0.005				0.055				0.002			

Table 59. Monthly *Morone* angling success at Guist Creek Lake during the 2019 creel survey.

Month	Total no. of Morones caught by all anglers	Total no. of Morones harvested by all anglers	No. of fishing trips for Morones	Hours fished by Morones anglers	Morones caught by Morone anglers	Morones caught/hr by Morone anglers	Morones harvested by Morone anglers	Morones harvested/hr by Morone anglers
March	46	-	4	19	7	0.25	-	-
April	178	6	2	9	32	6.67	-	-
May	21	7	12	54	14	0.22	-	-
June	649	174	36	167	77	0.24	4	0.01
July	1,281	688	57	265	241	0.66	146	0.40
August	678	285	36	168	215	0.98	26	0.12
September	149	52	23	107	52	0.30	10	0.06
October	179	116	14	66	77	0.95	60	0.75
Total	3,181	1,329	184	855	715		246	
Mean						0.56		0.17

GUIST CREEK LAKE ANGLER ATTITUDE SURVEY 2019
(based on 394 surveys)

8. Have you been surveyed this year? Yes - stop survey No – continue
9. On average, how many times do you fish Guist Creek Lake in a year? (n=376)
First Time **12.2%** 1-4 times **21.3%** 5-10 times **26.1%** More than 10 times **40.4%**
10. Which species of fish do you fish for at Guist Creek Lake ? (check all that apply; n=384)
Bass **44.4%** Crappie **23.1%** Bluegill **21.1%** Catfish **16.5%** Saugeye **5.1%** Hybrid Striped Bass **3.8%**
Yellow Bass **3.0%** Anything **11.9%**
11. Which one species do you fish for most at Guist Creek Lake? (check only one; n=384)
Bass **41.1%** Crappie **16.9%** Bluegill **15.4%** Catfish **8.6%** Saugeye **3.1%** Hybrid Striped Bass **2.6%**
Anything **12.2%**

-Answer the following questions for each species you fish for – (see question 3)

Bass Anglers

12. In general, what level of satisfaction or dissatisfaction do you have with bass fishing at Guist Creek Lake? (n=180)
Very satisfied **78.3%** Somewhat satisfied **20.6%** Neutral **1.1%** Somewhat dissatisfied **0.0%** Very dissatisfied **0.0%**
- 5a. If you responded with somewhat or very satisfied in question (5) – what is the single most important reason for your satisfaction? (n=177)
Size of fish **54.8%** Number of fish **44.1%** Size limit **1.1%**
- 5b. If you responded with somewhat or very dissatisfied in question (5) – what is the single most important reason for your dissatisfaction? (n=0)
13. Do you fish in bass tournaments on Guist Creek Lake? (n=161)
Yes **28.6%** No **71.4%**

Crappie Anglers

14. In general, what level of satisfaction or dissatisfaction do you have with the crappie fishing at Guist Creek Lake? (n=85)
Very satisfied **90.6%** Somewhat satisfied **9.4%** Neutral **0.0%** Somewhat dissatisfied **0.0%** Very dissatisfied **0.0%**
- 7a. If you responded with somewhat or very satisfied in question (7) – what is the single most important reason for your satisfaction? (n=85)
Number of fish **63.5%** Size of fish **35.3%** Size limit **1.2%**
- 7b. If you responded with somewhat or very dissatisfied in question (7) – what is the single most important reason for your dissatisfaction? (n=0)

Hybrid Striped Bass Anglers

15. In general, what level of satisfaction or dissatisfaction do you have with the hybrid striped bass fishing at Guist Creek Lake? (n=22)
Very satisfied **77.3%** Somewhat satisfied **9.1%** Neutral **0.0%** Somewhat dissatisfied **0.0%** Very dissatisfied **13.6%**
- 8a. If you responded with somewhat or very satisfied in question (8) – what is the single most important reason for your satisfaction? (n=19)
Size of fish **68.4%** Number of fish **31.6%**
- 8b. If you responded with somewhat or very dissatisfied in question (8) – what is the single most important reason for your dissatisfaction? (n=3)
Number of fish **100.0%**

Saugeye Anglers

16. In general, what level of satisfaction or dissatisfaction do you have with saugeye fishing at Guist Creek Lake? (n=20)
Very satisfied **60.0%** Somewhat satisfied **10.0%** Neutral **30.0%** Somewhat dissatisfied **0.0%** Very dissatisfied **0.0%**
- 9a. If you responded with somewhat or very satisfied in question (9) – what is the single most important reason for your satisfaction? (n=14)
Size of fish **50.0%** Number of fish **28.6%** Low angler pressure **14.3%** Size limit **7.1%**
- 9b. If you responded with somewhat or very dissatisfied in question (9) – what is the single most important reason for your dissatisfaction? (n=0)

Catfish Anglers

17. In general, what level of satisfaction or dissatisfaction do you have with catfish fishing at Guist Creek Lake? (n=70)
Very satisfied **95.7%** Somewhat satisfied **4.3%** Neutral **0.0%** Somewhat dissatisfied **0.0%** Very dissatisfied **0.0%**
- 10a. If you responded with somewhat or very satisfied in question (10) – what is the single most important reason for your satisfaction? (n=67)
Number of fish **50.7%** Size of fish **49.3%**
- 10b. If you responded with somewhat or very satisfied in question (10) – what is the single most important reason for your satisfaction? (n=0)

All Anglers

18. Are you satisfied with the current size and creel limits on all sport fish at Guist Creek Lake? (n=379)
Yes **87.3%** No **12.7%**
- 11a. If not, which species are you dissatisfied with and what size and creel limits would you prefer?
Largemouth bass 15" size limit (n=28) **Crappie 9" size limit** (n=12) **Crappie 10" size limit** (n=1)
19. Do you own a smartphone? (n=388)
Yes **85.3%** No **14.7%**
- 12a. If yes, do you use it regularly as a fishing tool? (n=354)
Yes **73.7%** No **26.3%**

Table 60. Length frequency, relative abundance, and CPUE (fish/hr) of largemouth bass and saugeye collected in 2.0 hours of 15-minute electrofishing runs in A.J. Jolly Lake, April 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
Largemouth bass	10	21	7	5	10	19	10	12	6	7	6	7	6	3	5	6	3	143	71.5 (10.0)
Saugeye					4	1	2	3	4		3	1	1	1				20	10.0 (5.6)

Dataset = cfdpsajj.d19

Table 61. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from A.J. Jolly Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	21.5 (4.4)	25.5 (5.2)	9.5 (3.2)	15.0 (3.2)	1.5 (0.7)	71.5 (10.0)
2018	19.6 (2.9)	38.0 (5.5)	30.8 (4.0)	21.6 (4.9)	0.8 (0.8)	110.0 (12.0)
2017	34.4 (3.9)	50.4 (6.7)	22.0 (3.6)	24.8 (2.4)	0.4 (0.4)	131.6 (10.5)
2016	18.0 (3.4)	30.0 (4.2)	19.6 (4.2)	27.2 (9.8)	1.2 (0.9)	94.8 (16.3)
2015	43.2 (6.8)	24.8 (5.1)	12.4 (2.2)	15.2 (4.2)	0.8 (0.5)	95.6 (7.4)
2014	13.6 (2.8)	21.2 (2.9)	16.0 (3.2)	24.0 (5.1)	2.0 (0.9)	74.8 (9.1)
2013	11.6 (2.6)	23.2 (3.7)	24.0 (5.1)	17.2 (2.9)	1.6 (0.9)	76.0 (9.9)
2012	35.6 (6.0)	32.4 (6.9)	19.6 (2.4)	20.0 (4.8)	0.4 (0.4)	107.6 (14.5)
2011	26.8 (5.0)	12.8 (3.3)	12.4 (2.9)	20.4 (3.4)	0.8 (0.8)	72.4 (10.1)
2010	12.4 (2.6)	22.8 (4.0)	20.8 (3.8)	21.2 (3.7)	1.6 (0.9)	77.2 (8.9)

Dataset = cfdpsajj.d10 – d19

Table 62. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in A.J. Jolly Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥ 8.0 in	PSD	RSD ₁₅
Largemouth bass	100	49 (± 10)	30 (± 9)

Dataset = cfdpsajj.d19

Table 63. Population assessment for largemouth bass collected during spring electrofishing at A.J. Jolly Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥ 15.0 in	CPUE ≥ 20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	11.2	20.5	9.5	15.0	1.5				
	Score	3	2	1	3	2			11	Fair
2018	Value	12.3*	16.0	30.8	21.6	0.8				
	Score	4	2	3	3	2			14	Good
2017	Value	12.3*	30.0	22.0	24.8	0.4				
	Score	4	3	2	3	2			14	Good
2016	Value	12.3*	5.2	19.6	27.2	1.2				
	Score	4	1	2	4	2			13	Good
2015	Value	12.3	38.8	12.4	15.2	0.8				
	Score	4	3	1	3	2			13	Good
2014	Value	11.9*	8.0	16.0	24.0	2.0				
	Score	4	2	2	3	3			14	Good
2013	Value	11.9*	10.4	24.0	17.2	1.6				
	Score	4	2	2	3	3			14	Good
2012	Value	11.9*	27.2	19.6	20.0	0.4				
	Score	4	3	2	3	2			14	Good
2011	Value	11.9	26.0	12.4	20.4	0.8				
	Score	4	3	1	3	2			13	Good
2010	Value	11.8*	4.0	20.8	21.2	1.6				
	Score	4	1	2	3	3			13	Good

* Age data not collected

Table 64. Length distribution and CPUE (fish/hr) of largemouth bass and saugeye collected in 2.0 hours of 15-minute electrofishing runs for black bass in A.J. Jolly Lake in October 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Largemouth bass	9	44	38	4	12	12	12	4	9	4	8	3	2	3	2	6	1	173	86.5 (13.2)
Saugeye					1	1			1	2			1		3	1		10	5.0 (1.5)

Dataset = cfdwrajj.d19

Table 65. Mean back calculated lengths (in) at each annulus for otoliths from largemouth bass collected in the fall from A.J. Jolly Lake in 2019.

Year	No.	Age							
		1	2	3	4	5	6	7	8
2018	31	5.5							
2017	15	5.7	9.2						
2016	8	5.6	8.9	11.2					
2015	3	4.8	9.7	11.7	13.0				
2014	3	4.7	8.6	11.8	14.1	15.4			
2013	2	5.3	9.2	12.0	14.0	15.6	16.9		
2012	5	6.1	10.2	13.2	14.8	16.1	16.9	17.5	
2011	2	4.7	9.7	12.5	14.4	16.6	17.7	18.3	19.0
Mean	69	5.5	9.3	12.0	14.2	15.9	17.1	17.7	19.0
Smallest		2.8	7.7	10.1	12.7	14.8	16.0	16.5	18.7
Largest		8.5	12.2	14.3	15.6	16.8	17.8	18.4	19.2
Std Error		0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
95% ConLo		5.3	9.0	11.5	13.7	15.5	16.7	17.2	18.5
95% ConHi		5.7	9.5	12.4	14.6	16.3	17.4	18.2	19.4

Intercept value = 0.00

Dataset = cfdagajj.d19

Table 66. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at A.J. Jolly Lake on 9 October 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Total	37	90 (2)	15	93 (2)	14	102 (3)	66	93(1)

Table 67. Indices of year class strength at age-0 and age-1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at A.J. Jolly Lake.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	4.8	0.1	47.5	9.1	21.0	4.7		
2018	Total	5.3	0.1	42.5	6.2	27.5	4.5	20.5	4.2
2017	Total	5.4	0.1	37.5	5.4	27.0	3.7	16.4	2.8
2016	Total	5.1	0.1	44.0	4.5	25.5	4.8	28.0	2.5
2015	Total	4.3	0.1	21.5	5.7	5.5	2.8	5.2	2.1
2014	Total	4.5	0.2	19.5	5.9	8.0	2.8	38.8	6.4
2013	Total	4.5	0.1	23.0	3.4	6.0	2.3	8.0	2.0
2012	Total	4.9	0.1	22.0	3.6	12.0	2.9	10.4	2.2
2011	Total	4.9	0.1	22.0	3.6	13.5	4.2	27.2	4.8
2010	Total	5.2	0.1	42.4	5.2	26.8	4.1	26.0	4.6

Table 68. Length distribution and CPUE (fish/hr) of white crappie collected in 1.0 hour of 15-minute electrofishing runs for crappie in A.J. Jolly Lake in April 2019; numbers in parentheses are standard errors.

Species	Inch class									Total	CPUE
	4	5	6	7	8	9	10	11	12		
White crappie	1	5	208	122	3	3	4	4	1	351	351.0 (85.1)
Black crappie	1		1	4						6	6.0 (3.5)

Dataset = cfdpsajj.d19

Table 69. Mean back calculated lengths (in) at each annulus for otoliths from white crappie sampled at A.J. Jolly Lake in the fall of 2019.

Year class	No.	Age				
		1	2	3	4	5
2018	1	4.3				
2017	11	4.3	6.1			
2016	7	4.4	5.8	6.5		
2015	6	4.7	6.0	6.7	7.5	
2014	5	5.5	7.1	8.0	9.0	10.3
Mean	30	4.6	6.2	7.0	8.2	10.3
Smallest		3.6	5.3	5.8	6.2	9.0
Largest		6.2	7.8	8.8	9.6	11.1
Std Error		0.1	0.1	0.2	0.4	0.4
95% ConLo		4.3	6.0	6.6	7.5	9.5
95% ConHi		4.8	6.4	7.4	8.9	11.0

Intercept Value = 0.00

Dataset = cfdagajj.d19

Table 70. Mean back calculated lengths (in) at each annulus for otoliths from black crappie sampled at A.J. Jolly Lake in the fall of 2019.

Year class	No.	Age						
		1	2	3	4	5	6	7
2018	5	4.6						
2017	7	4.4	6.4					
2016	2	4.5	6.0	6.8				
2015	2	4.1	5.7	6.4	6.9			
2014	2	3.6	5.5	6.1	6.7	7.0		
2013	1	3.8	5.3	5.9	6.2	6.5	6.9	
2012	1	5.7	6.7	7.5	8.1	9.5	10.5	11.2
Mean	20	4.4	6.1	6.5	6.9	7.5	8.7	11.2
Smallest		3.6	5.3	5.9	6.2	6.5	6.9	11.2
Largest		5.7	6.9	7.5	8.1	9.5	10.5	11.2
Std Error		0.1	0.1	0.2	0.3	0.7	1.8	
95% ConLo		4.2	5.8	6.1	6.4	6.1	5.2	
95% ConHi		4.6	6.3	6.9	7.4	8.9	12.2	

Intercept Value = 0.00
Dataset = cfdagajj.d19

Table 71. Number of fish and the relative weight (Wr) for each length group of white and black crappie at AJ Jolly Lake in October 2019

Species	Area	Length group						Total	
		5.0–7.9 in		8.0–9.9 in		≥10.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
White crappie	Total	21	86 (1)	4	85 (7)	5	90 (5)	30	86 (1)
Black crappie	Total	18	95 (2)	1	98	1	95	20	95 (2)

Dataset = cfdwrajj.d19

Table 72. Length frequency, relative abundance, and CPUE (fish/hr) of largemouth bass collected in 2.0 hours of 15-minute electrofishing runs in Beaver Lake, April 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE		
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20	21
Largemouth bass	1	35	103	72	24	25	85	62	64	30	6	4	3	3	4	3	3	1	2	530	265.0 (22.5)

Dataset = cfdpsbvr.d19

Table 73. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Beaver Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	117.5 (16.8)	118.0 (11.8)	20.0 (4.9)	9.5 (2.1)	1.5 (0.7)	265.0 (22.5)
2018	130.0 (12.1)	223.0 (18.4)	30.0 (5.4)	3.5 (1.6)	0.0 (0.0)	386.5 (23.7)
2017	279.0 (37.2)	160.5 (16.5)	35.5 (5.1)	5.0 (1.8)	0.5 (0.5)	480.0 (45.1)
2016	106.5 (21.4)	104.0 (13.2)	38.0 (2.4)	15.0 (2.9)	4.5 (1.8)	263.5 (31.0)
2015	64.8 (9.5)	126.5 (19.9)	22.8 (4.1)	12.5 (1.8)	2.8 (0.8)	226.5 (31.3)
2014	73.5 (10.7)	116.0 (12.5)	21.0 (3.3)	14.5 (2.7)	2.0 (1.1)	225.0 (21.2)
2013	60.0 (8.8)	137.3 (12.3)	48.7 (9.3)	16.7 (2.4)	1.3 (0.8)	262.7 (16.4)
2012	97.0 (11.6)	81.5 (6.4)	73.5 (6.8)	14.0 (2.9)	2.5 (1.1)	266.0 (12.5)
2011	23.5 (5.8)	56.0 (8.2)	70.5 (5.9)	6.5 (1.5)	0.0 (0.0)	156.5 (13.7)
2010	76.7 (6.8)	99.8 (8.5)	58.9 (4.5)	2.9 (0.7)	0.2 (0.2)	238.2 (14.3)

Dataset = cfdpsbvr.d10 - .d19

Table 74. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in Beaver Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥8.0 in	PSD	RSD ₁₅
Largemouth bass	295	20 (± 5)	6 (± 3)

Dataset = cfdpsbvr.d19

Table 75. Population assessment for largemouth bass collected during spring electrofishing at Beaver Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	11.3*	117.5	20.0	9.5	1.5				
	Score	3	4	2	2	2			13	Good
2018	Value	11.3	126.5	30.0	3.5	0.0				
	Score	3	4	3	1	1			12	Fair
2017	Value	10.8*	279.0	35.5	5.0	0.5				
	Score	3	4	3	1	2			13	Good
2016	Value	10.8*	103.0	38.0	15.0	4.5				
	Score	3	4	3	3	4			17	Excellent
2015	Value	10.8*	46.3	22.8	12.5	2.8				
	Score	3	3	2	2	3			13	Good
2014	Value	10.8	47.3	21.0	14.5	2.0				
	Score	3	3	2	3	3			14	Good
2013	Value	10.7*	50.0	48.7	16.7	1.3				
	Score	2	3	4	3	2			14	Good
2012	Value	10.7*	94.5	73.5	14.0	2.5				
	Score	2	4	4	3	3			16	Good
2011	Value	10.7*	23.4	70.5	6.5	0.0				
	Score	2	3	4	2	1			12	Fair
2010	Value	10.7	76.7	58.9	2.9	0.2	0.293	25.4		
	Score	2	4	4	1	1			12	Fair

* Age data not collected

^Calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 76. Length distribution and CPUE (fish/hr) of largemouth bass collected in 1.5 hours of 15-minute electrofishing runs for black bass in Beaver Lake in September 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Largemouth bass	5	130	134	45	21	111	73	39	49	15	11	3	1	1	1	2	3	644	429.3 (29.1)

Dataset = cfdwrivr.d19

Table 77. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at Beaver Lake in fall 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Total	103	83 (1)	77	82 (1)	57	88 (1)	237	84 (1)

Dataset = cfdwrivr.d19

Table 78. Indices of year class strength at age-0 and age-1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at Beaver Lake.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	5.1	0.1	209.3	29.7	119.3	20.3		
2018	Total	5.2	0.1	196.0	31.6	118.7	26.8	117.5	16.8
2017	Total	4.8	0.1	227.3	23.1	84.0	13.0	126.5	11.8
2016	Total	5.6	0.1	370.0	34.9	320.0	25.8	279.0	37.2
2015	Total	4.2	0.1	184.5	23.6	28.5	4.4	103.0	20.9
2014	Total	4.1	0.1	94.7	15.0	14.0	3.5	46.3	7.6
2013	Total	3.8	0.1	78.7	6.2	3.3	2.2	47.3	7.4
2012	Total	4.3	0.1	124.6	24.6	17.7	4.0	50.0	7.1
2011	Total	4.2	0.1	142.0	23.9	18.0	4.1	94.5	11.1
2010	Total	4.0	0.1	38.7	14.1	4.7	2.2	23.4	5.4

Table 79. Species composition, relative abundance, and CPUE (fish/hr) of bluegill and redear sunfish collected in 1.25 hours of 7.5-minute electrofishing runs in Beaver Lake, May 2019; numbers in parentheses are standard errors.

Species	Inch class								Total	CPUE
	2	3	4	5	6	7	8	9		
Bluegill	2	21	58	39	71	76	11		278	222.4 (16.0)
Redear sunfish		3	4	7	2	1	5	8	30	24.0 (4.6)

Dataset = cfdpsbvr.d19

Table 80. PSD and RSD values calculated for sunfish collected during 1.25 hours of electrofishing at Beaver Lake during May 2019. Fish were collected in 7.5-minute runs.

Species	No. \geq stock size	PSD	RSD ^a
Bluegill	276	57 (\pm 6)	4 (\pm 2)
Redear sunfish	27	51 (\pm 19)	30 (\pm 18)

^aBluegill = RSD₈; Redear = RSD₉

Dataset = cfdpsbvr.d19

Table 81. Electrofishing CPUE (fish/hr) for each length group of bluegill collected from Beaver Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group				Total
	<3.0 in	3.0–5.9 in	6.0-7.9 in	≥8.0 in	
2019	1.6 (1.1)	94.4 (10.6)	117.6 (16.0)	8.8 (2.5)	222.4 (16.0)
2018	0.8 (0.8)	150.4 (18.5)	150.4 (28.9)	12.8 (3.0)	314.4 (43.0)
2017	4.0 (1.8)	136.8 (23.5)	247.2 (66.1)	14.4 (3.5)	402.4 (87.8)
2016	33.6 (12.0)	213.6 (30.6)	201.6 (45.1)	1.6 (1.1)	450.4 (81.4)
2015	0.0 (0.0)	160.8 (16.6)	212.0 (37.0)	0.0	372.8 (44.9)
2014	1.6 (1.6)	252.8 (33.4)	252.8 (56.6)	0.0	507.2 (37.4)
2013	1.6 (1.1)	192.8 (16.5)	77.6 (9.8)	1.6 (1.6)	273.6 (23.4)
2012	5.6 (2.1)	131.2 (26.1)	59.2 (15.1)	0.0	196.0 (32.1)
2011	68.4 (20.3)	299.2 (47.8)	51.6 (8.1)	5.2 (1.9)	424.4 (70.4)
2010	35.6 (8.2)	134.8 (10.6)	24.4 (5.9)	4.4 (1.5)	199.2 (17.5)

Dataset = cfdpsbvr.d10 - .d19

Table 82. Population assessment for bluegill collected during spring electrofishing at Beaver Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-2 at capture	Years to 6.0 in	CPUE ≥6.0 in	CPUE ≥8.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	4.6	2-2*	126.4	8.8	-	-	15	Excellent
	Score	3	4	4	4				
2018	Value	4.4*	2-2*	163.2	12.8	-	-	15	Excellent
	Score	3	4	4	4				
2017	Value	4.4	2-2+	261.6	14.4	-	-	15	Excellent
	Score	3	4	4	4				
2016	Value	4.7*	3-3*	203.2	1.6	-	-	13	Good
	Score	3	3	4	3				
2015	Value	4.7	3-3+	212.0	0.0	-	-	11	Good
	Score	3	3	4	1				
2014	Value	4.7*	2-2+	252.8	0.0	-	-	12	Good
	Score	3	4	4	1				
2013	Value	4.7	2-2+	79.2	1.6	-	-	13	Good
	Score	3	4	3	3				
2012	Value	4.8	2-2+	59.2	0.0	-	-	12	Good
	Score	4	4	3	1				
2011	Value	4.7	2-2+	56.8	5.2	0.834	55.6	14	Excellent
	Score	3	4	3	4				
2010	Value	4.5	3-3+	28.8	4.4	0.594	44.8	10	Good
	Score	3	3	1	3				

* Age data not collected

Table 83. Electrofishing CPUE (fish/hr) for each length group of redear sunfish collected from Beaver Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	≥10.0 in	
2019	0.0	11.2 (3.2)	2.4 (1.2)	10.4 (4.5)	0.0	24.0 (4.6)
2018	0.0	7.2 (3.3)	5.6 (1.7)	4.0 (2.2)	0.0	16.8 (4.5)
2017	0.0	4.0 (2.2)	4.8 (2.1)	7.2 (2.8)	4.0 (2.2)	16.0 (2.9)
2016	0.8 (0.8)	4.8 (1.8)	3.2 (1.8)	2.4 (1.7)	0.0	11.2 (2.1)
2015	0.0	1.6 (1.1)	3.2 (1.3)	1.6 (1.1)	0.0	6.4 (1.6)
2014	0.0	3.2 (2.0)	6.4 (1.6)	12.8 (5.4)	4.8 (3.2)	22.4 (3.0)
2013	0.0	6.4 (2.6)	3.2 (1.3)	12.0 (4.7)	2.4 (1.7)	21.6 (5.2)
2012	0.0	5.6 (1.7)	28.8 (4.3)	68.0 (12.9)	9.6 (2.6)	102.4 (14.1)
2011	0.0	13.6 (3.4)	11.2 (2.0)	23.2 (4.9)	0.0	48.0 (6.3)
2010	0.4 (0.4)	21.6 (3.9)	27.6 (4.4)	33.6 (7.0)	1.2 (0.9)	83.2 (10.5)

Dataset = cfdpsbvr.d10 – .d19

Table 84. Population assessment for redear sunfish collected during spring electrofishing at Beaver Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Years to 8.0 in	CPUE ≥8.0 in	CPUE ≥10.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	8.6	2-2*	10.4	0.0			12	Good
	Score	4	4	3	1				
2018	Value	10.1*	2-2*	4.0	0.0			11	Good
	Score	4	4	2	1				
2017	Value	10.1	2-2+	7.2	4.0			14	Excellent
	Score	4	4	2	4				
2016	Value	7.0*	3-3*	2.4	0.0			8	Fair
	Score	2	4	1	1				
2015	Value	7.0	3-3+	1.6	0.0			8	Fair
	Score	2	4	1	1				
2014	Value	8.8*	2-2+	12.8	4.8			15	Excellent
	Score	4	4	3	4				
2013	Value	8.8	2-2+	12.0	2.4			15	Excellent
	Score	4	4	3	4				
2012	Value	7.5	3-3+	68.0	9.6	0.342	29.0	14	Excellent
	Score	2	4	4	4				
2011	Value	7.6	3-3+	23.2	1.6	0.398	32.8	14	Excellent
	Score	3	4	4	3				
2010	Value	7.5	4-4+	33.6	1.2	0.435	35.3	12	Good
	Score	2	3	4	3				

* Age data not collected

Table 85. Mean back calculated lengths (in) at each annulus for otoliths from bluegill collected from Beaver Lake in 2019.

Year	No.	Age					
		1	2	3	4	5	6
2018	28	2.7					
2017	7	2.1	4.6				
2016	10	2.2	4.6	6.3			
2015	3	2.6	4.9	6.3	6.9		
2014	1	1.9	5.1	6.3	6.6	6.9	
2013	1	3.7	5.1	6.1	6.6	6.9	7.2
Mean	50	2.5	4.7	6.3	6.8	6.9	7.2
Smallest		1.4	3.5	5.6	6.6	6.9	7.2
Largest		4.0	5.8	6.7	7.3	6.9	7.2
Std error		0.1	0.1	0.1	0.1	0.1	
95% ConLo		2.3	4.4	6.1	6.5	6.9	
95% ConHi		2.7	5.0	6.4	7.0	6.9	

Intercept value = 0.00
 Dataset = cfdagbvr.d19

Table 86. Mean back calculated lengths (in) at each annulus for otoliths from redear sunfish collected from Beaver Lake in 2019.

Year	No.	Age		
		1	2	3
2018	21	3.6		
2017	8	2.5	5.4	
2016	4	3.8	7.2	8.6
Mean	33	3.3	6.0	8.6
Smallest		1.9	4.0	7.9
Largest		6.5	7.8	9.1
Std error		0.2	0.3	0.3
95% ConLo		2.9	5.4	8.0
95% ConHi		3.7	6.7	9.1

Intercept value = 0.00
 Dataset = cfdagbvr.d19

Table 87. Number of fish and the relative weight (Wr) for each length group of bluegill and redear sunfish collected at Beaver Lake during September and October 2019; standard errors are in parentheses.

Species	Length group							
	No.	Wr	No.	Wr	No.	Wr	No.	Wr
Bluegill	3.0–5.9 in		6.0–7.9 in		≥8.0 in		Total	
	73	88 (2)	52	80 (1)			125	84 (1)
Redear sunfish	1.0–3.9 in		4.0–6.9 in		7.0–9.0 in		≥9.0 in	
			58	95 (2)	44	99 (2)	8	97 (3)
							110	96 (2)

Dataset = cfdwrbrvr.d19

Table 88. Length composition, relative abundance, and CPUE (fish/set-night) of channel catfish at Beaver Lake sampled on 7 October 2019. Channel catfish were collected using 3 set-nights of baited, tandem hoop nets (72 hours soak time).

Species	Inch class																Total	Average per set
	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
Channel catfish	1	1	9	21	16	9	6	9	5	4		2	1			1	85	28.3 (2.7)

Dataset = cfdhnbvr.d19

Table 89. PSD and RSD₂₄ values obtained for channel catfish from tandem hoop net samples in Beaver Lake in 2019; confidence intervals are in parentheses.

Species	No. \geq stock size	PSD	RSD ₂₄
Channel catfish	85	87 (\pm 7)	5 (\pm 5)

Dataset = cfdhnbvr.d19

Table 90. Number of fish and the relative weight (Wr) for each length group of channel catfish collected at Beaver Lake in October 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		11.0–15.9 in		16.0–23.9 in		\geq 24.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Channel catfish	Total	11	96 (4)	70	93 (1)	4	105 (2)	85	94 (1)

Dataset = cfdhnbvr.d19

Table 91. CPUE (fish/set-night) for each length group of channel catfish collected by hoop net from Beaver Lake from 2007-2019 numbers in parentheses are standard errors.

Year	Length group			Total
	\geq 12.0 in	\geq 15.0 in	\geq 20.0 in	
2019	28.3 (2.7)	27.7 (2.4)	7.3 (2.6)	28.3 (2.7)
2017	22.7 (12.2)	21.3 (11.0)	5.7 (3.2)	22.7 (12.2)
2015	16.0 (3.5)	14.3 (3.3)	1.7 (0.3)	16.0 (3.5)
2011	44.8 (14.0)	28.0 (8.7)	1.0 (0.6)	72.8 (24.5)
2010	40.0 (8.2)	25.6 (5.4)	0.6 (0.2)	41.8 (8.8)
2009	71.4 (17.2)	21.6 (5.1)	1.6 (0.9)	94.8 (29.1)
2008	14.0 (4.1)	5.4 (2.0)	0.8 (0.6)	28.2 (8.8)
2007	35.8 (12.6)	6.2 (2.8)	0.4 (0.2)	36.4 (12.8)

Dataset = cfdhnbvr.d17 - .d07

Table 92. Length distribution and CPUE (fish/hr) of largemouth bass collected in 2.0 hours of 15-minute electrofishing runs for black bass in Benjy Kinman Lake during April 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE	
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			21
Largemouth bass	11	68	58	11	93	82	55	29	7	9	3	3	4	1	1	2		1	438	219.5 (25.2)

Dataset = cfdpsbkl.d19

Table 93. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Benjy Kinman Lake during 2015-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	74.0 (13.2)	130.0 (15.5)	9.5 (3.4)	6.0 (1.5)	0.5 (0.5)	219.5 (25.2)
2018	31.5 (6.3)	73.5 (11.0)	13.5 (1.1)	9.5 (2.7)	1.0 (0.7)	128.0 (14.1)
2017	27.0 (7.0)	66.0 (10.7)	22.5 (3.5)	4.5 (1.8)	1.0 (0.7)	120.0 (18.6)
2016	23.0 (7.0)	82.0 (11.5)	15.0 (2.9)	7.0 (2.4)	1.0 (0.7)	127.0 (18.6)
2015	12.0 (2.4)	84.2 (5.1)	17.4 (1.7)	12.9 (1.8)	4.7 (1.0)	126.6 (7.8)

Dataset = cfdpsbkl.d19-.d15

Table 94. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing sample in Benjy Kinman Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥8.0 in	PSD	RSD ₁₅
Largemouth bass	291	11 (± 4)	2 (± 2)

Dataset = cfdpsbkl.d19

Table 95. Population assessment for largemouth bass collected during spring electrofishing at Benjy Kinman Lake from 2015-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	10.7*	70.5	9.5	6.0	0.5			11	Fair
	Score	2	4	1	2	2				
2018	Value	10.7*	29.5	13.5	9.5	1.0			11	Fair
	Score	2	3	2	2	2				
2017	Value	10.7	24.0	22.5	4.5	1.0			10	Fair
	Score	2	3	2	1	2				
2016	Value	10.1*	51.1	15.0	7.0	1.0			10	Fair
	Score	1	3	2	2	2				
2015	Value	10.1*	11.1	17.4	12.9	4.7			11	Fair
	Score	1	2	2	2	4				

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

* Age data not collected (data collected in 2014)

Table 96. Length distribution and CPUE (fish/hr) of largemouth bass collected in 1.5 hours of 15-minute electrofishing runs for black bass in Benjy Kinman Lake in September 2019; numbers in parentheses are standard errors.

Species	Inch class														Total	CPUE							
	3	4	5	6	7	8	9	10	11	12	13	14	15	16			17	18	19	20	21	22	
Largemouth bass	7	67	90	23	11	62	41	25	7	7	4	2	2	3	1		1				1	354	236.0 (44.3)

Dataset = cfdwrbkl.d19

Table 97. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at Benjy Kinman Lake during fall 2019. Standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Total	90	83 (1)	39	85 (1)	36	97 (1)	165	87 (1)

Dataset = cfdwrbkl.d19

Table 98. Indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected in the fall in electrofishing samples at Benjy Kinman Lake.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	5.1	0.1	124.7	37.5	75.3	30.7		
2018	Total	4.9	0.1	73.3	3.8	39.3	4.7	70.5	13.7
2017	Total	4.7	0.1	92.7	13.8	38.7	7.4	29.5	6.4
2016	Total	4.7	0.1	43.3	6.0	15.3	3.2	24.0	5.9
2015	Total	4.0	0.1	78.0	16.2	8.7	2.4	51.1	9.1
2014	Total	4.2	0.1	16.0	5.4	2.5	1.3	11.1	2.2

Table 99. Number of fish and the relative weight (Wr) for each length group of bluegill and redear sunfish collected at Benjy Kinman Lake during September 2019; standard errors are in parentheses.

Species	Length group						Total	Wr
	No.	Wr	No.	Wr	No.	Wr		
Bluegill	3.0–5.9 in		6.0–7.9 in		\geq 8.0 in		62	92 (1)
	33	95 (2)	29	90 (1)				
Redear sunfish	1.0–3.9 in		4.0–6.9 in		7.0–9.0 in		23	97 (1)
			19	97 (1)	4	97 (3)		

Dataset = cfdwrbl.d19

Table 100. Length composition, relative abundance, and CPUE (fish/set) of channel catfish at Benjy Kinman Lake. Channel catfish were collected using baited, tandem hoop nets (72 hours soak time) that were set on 8 October 2019. Nets were pulled three days after setting them, and 3 sets of tandem nets were used for the sampling event.

Species	Inch class									Total	Average per set
	16	17	18	19	20	21	22	23	24		
Channel catfish	1	2	1	4	3	4	1	3	1	20	6.7 (3.7)

Dataset = cfdhnbkl.d19

Table 101. PSD and RSD₂₄ values obtained for channel catfish from tandem hoop net samples in Benjy Kinman Lake in 2019; confidence intervals are in parentheses.

Species	No. \geq stock size	PSD	RSD ₂₄
Channel catfish	20	100 (\pm 1)	5 (\pm 9)

Dataset = cfdhnbkl.d19

Table 102. CPUE (fish/set) for each length group of channel catfish collected by hoop net from Benjy Kinman Lake from 2015-2019; numbers in parentheses are standard errors.

Year	Length group			Total
	\geq 12.0 in	\geq 15.0 in	\geq 20.0 in	
2019	6.7 (3.7)	6.7 (3.7)	4.0 (2.5)	6.7 (3.7)
2018	14.3 (8.4)	13.0 (7.0)	3.7 (2.3)	14.3 (8.4)
2015	3.3 (2.0)	0.0	0.0	7.3 (3.7)

Dataset = cfdhnbkl.d15-.d19

Table 103. Number of fish and the relative weight (Wr) for each length group of channel catfish collected at Benjy Kinman Lake in October 2019; standard errors are in parentheses.

Species	Length group						Total	
	11.0–15.9 in		16.0–23.9 in		\geq 24.0 in		No.	Wr
	No.	Wr	No.	Wr	No.	Wr		
Channel catfish			19	104 (3)	1	130	20	105 (4)

Dataset = cfdhnbkl.d19

Table 104. Number of fish and the relative weight (Wr) for each length group of crappie at Benjy Kinman Lake in fall 2019.

Species	Area	Length group						Total	
		5.0–7.9 in		8.0–9.9 in		\geq 10.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
White crappie	Total	0		10	83 (3)	8	83 (3)	18	83 (2)
Black crappie	Total	1	97	22	87 (2)	12	86 (2)	43	87 (1)

Dataset = cfdwrbkl.d19

Table 105. Trail camera counts used to derive usage statistics in 2019-2020 at Benjy Kinman Lake (88 acres).

Total Trips*	2019-2020
No. of trips	4,724
Trips/acre	53.7
Pressure*	
Total man-hours	18,904
Man-hours/acre	214.8

*Usage hours (angler and non-angler usage combined)

Figure 1. Number of trips per month at Benjy Kinman Lake from March 2019 through February 2020.

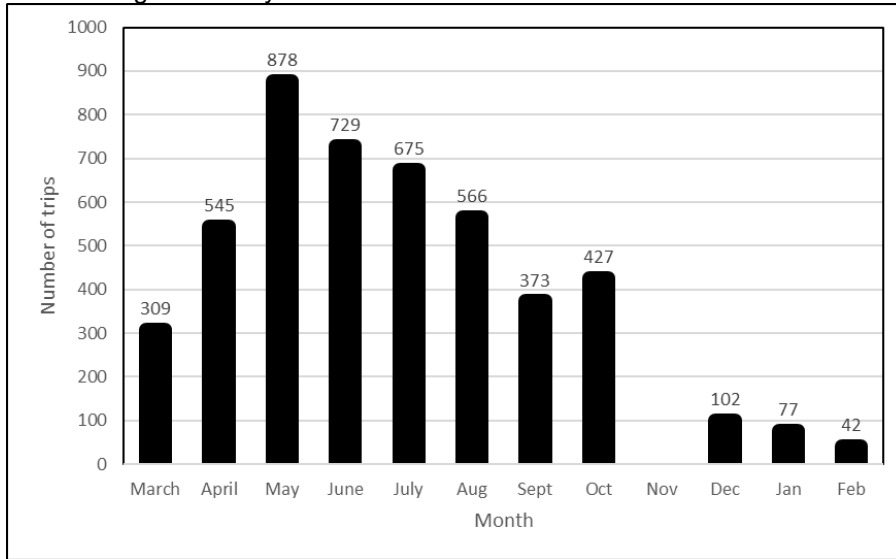
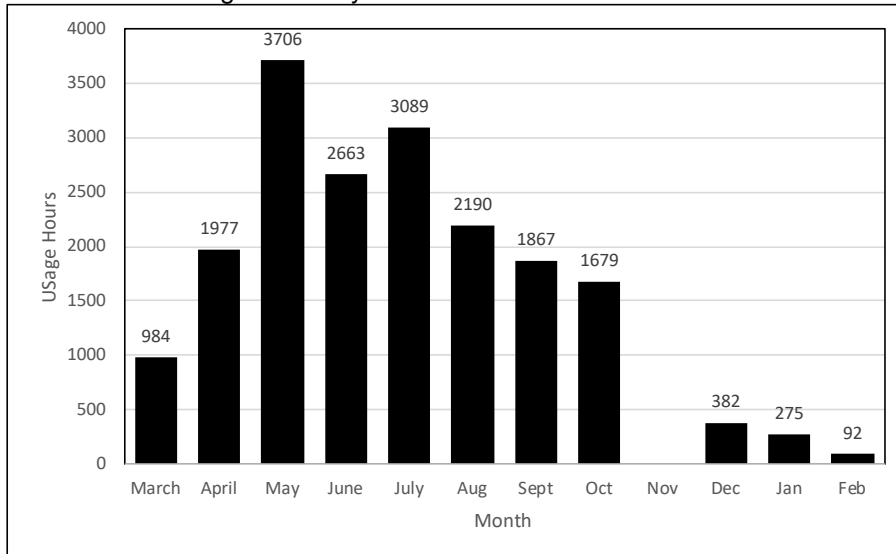


Figure 2. Number of usage hours by month at Benjy Kinman Lake from March 2019 through February 2020.



BENJY KINMAN LAKE ANGLER ATTITUDE SURVEY 2019
(based on 88 surveys)

1. On average how many times do you fish Benjy Kinman Lake in a year? (n=88)
First time **27.3%** 1 to 4 **40.9%** 5 to 10 **6.8%** More than 10 **25.0%**
2. Which species of fish do you fish for at Benjy Kinman Lake (**check all that apply**)?
Bass **60.2%** Crappie **64.8%** Bluegill/Redear sunfish **39.8%** Channel Catfish **9.1%** Anything **0.0%**
3. Which **ONE** species do you fish for most at Benjy Kinman Lake (**check only one**)?
Bass **42.1%** Crappie **40.9%** Bluegill/Redear sunfish **13.6%** Channel Catfish **3.4%** Anything **0.0%**

-Answer the following questions for each species you fish for – (see question 3)

Bass Anglers

4. In general, what level of satisfaction or dissatisfaction do you have with bass fishing at Benjy Kinman Lake? (n=45)
Very satisfied **13.3%** Somewhat satisfied **51.1%** Neutral **11.1%** Somewhat dissatisfied **24.5%** Very dissatisfied **0.0%**
- 4a. If you responded with very or somewhat satisfied in question 4 - What is the single most important reason for your Satisfaction? (n=29)
Number of fish **79.4%** Size of fish **13.9%** Other reasons **0.7%**
- 4b. If you responded with somewhat or very dissatisfied in question 4 - What is the single most important reason for your Dissatisfaction? (n=10)
Number of fish **40.0%** Size of fish **60.0%**

Crappie Anglers

5. In general, what level of satisfaction or dissatisfaction do you have with crappie fishing at Benjy Kinman Lake? (n=49)
Very satisfied **22.4%** Somewhat satisfied **32.7%** Neutral **16.3%** Somewhat dissatisfied **28.6%** Very dissatisfied **0.0%**
- 5a. If you responded with very or somewhat satisfied in question 5)- What is the single most important reason for your Satisfaction? (n=27)
Number of fish **59.3%** Size of fish **33.3%** Low angler pressure **3.7%** Other reasons **3.7%**
- 5b. If you responded with somewhat or very dissatisfied in question 5 - What is the single most important reason for your Dissatisfaction? (n=13)
Number of fish **46.2%** Size of fish **53.8%**

Bluegill/Redear Sunfish Anglers

6. In general, what level of satisfaction or dissatisfaction do you have with bluegill/redear sunfish fishing at Benjy Kinman Lake? (n=32)
Very satisfied **15.6%** Somewhat satisfied **50.0%** Neutral **18.8%** Somewhat dissatisfied **15.6%** Very dissatisfied **0.0%**
- 6a. If you responded with very or somewhat satisfied in question 6 - What is the single most important reason for your Satisfaction? (n=21)
Number of fish **61.9%** Size of fish **33.3%** Low angler pressure **4.8%**
- 6b. If you responded with somewhat or very dissatisfied in question 6 - What is the single most important reason for your Dissatisfaction? (n=3)
Number of fish **33.3%** Size of fish **66.7%**

Channel Catfish Anglers

7. In general, what level of satisfaction or dissatisfaction do you have with channel catfish fishing at Benjy Kinman Lake? (n=5)
Very satisfied **20.0%** Somewhat satisfied **20.0%** Neutral **60.0%** Somewhat dissatisfied **0.0%** Very dissatisfied **0.0%**
- 7a. If you responded with very or somewhat satisfied in question 7 - What is the single most important reason for your Satisfaction? (n=2)
Number of fish **50.0%** Size of fish **50.0%**
- 7b. If you responded with somewhat or very dissatisfied in question 7 - What is the single most important reason for your Dissatisfaction? (n=0)

All Anglers

8. Are you satisfied with the current size and creel limits on all sport fish at Benjy Kinman Lake? (n=84)
Yes **91.7%** No **8.3%**
- 8a. If not, which species are you dissatisfied with and what size and creel limits would you prefer? (n=7)
Largemouth bass slot limit (n=2) Largemouth bass catch and release only (n=2) Crappie 9 inch size limit (n=2)
Crappie 10 inch size limit (n=1)
9. In general, what level of satisfaction or dissatisfaction do you have with the current facilities (parking lot, boat ramp, fishing pier, courtesy dock) at Benjy Kinman Lake? (n=88)
Very satisfied **79.5%** Somewhat satisfied **20.5%** Neutral **0.0%** Somewhat dissatisfied **0.0%** Very dissatisfied **0.0%**
- 9a. If you responded with somewhat or very dissatisfied in question 9 - What is the single most important reason for your Dissatisfaction? (n=0)
10. Do you own a smart phone? (n=88)
Yes **85.2%** No **14.8%**
- 10a. If yes, do you use it regularly as a fishing tool? (n=75)
Yes **64.0%** No **36.0%**

Table 106. Species composition, relative abundance, and CPUE (fish/hr) of largemouth bass collected in 2.0 hours of 15-minute nocturnal electrofishing runs in Boltz Lake, April 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE	
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20
Largemouth bass	2	11	5	10	14	6	25	51	50	80	49	37	22	4	3	2	2	1	374	187.0 (12.8)
Saugeye											1	3	9	11					24	12.0 (3.2)

Dataset = cfdpsbol.d19

Table 107. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Boltz Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	21.0 (4.1)	66.0 (6.4)	83.0 (3.2)	17.0 (5.2)	0.5 (0.5)	187.0 (12.8)
2018	14.0 (3.2)	97.5 (7.6)	82.5 (9.7)	25.5 (2.9)	1.5 (1.1)	219.5 (12.7)
2017	29.0 (5.5)	131.5 (9.1)	40.0 (4.3)	18.0 (1.5)	0.5 (0.5)	218.5 (13.0)
2016	No Sample					
2015	47.5 (6.9)	79.5 (8.4)	22.0 (4.3)	21.5 (3.5)	2.0 (1.1)	170.5 (14.1)
2014	68.5 (10.5)	73.0 (6.5)	18.5 (3.5)	16.0 (3.6)	2.5 (0.7)	176.0 (17.2)
2013	66.5 (14.6)	67.5 (6.7)	17.5 (2.0)	13.5 (2.6)	2.5 (1.1)	165.0 (13.6)
2012	4.5 (1.2)	35.0 (4.0)	15.5 (2.8)	11.0 (2.5)	2.5 (1.5)	66.0 (4.9)
2011	13.0 (3.8)	55.5 (4.6)	33.0 (5.7)	19.0 (4.2)	3.5 (1.2)	120.5 (7.4)
2010	50.5 (5.6)	51.0 (4.9)	32.5 (4.4)	24.5 (2.4)	4.0 (1.3)	148.5 (10.7)

Dataset = cfdpsbol.d10 - .d19

Table 108. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in Boltz Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥8.0 in	PSD	RSD ₁₅
Largemouth bass	332	60 (± 5)	10 (± 3)

Dataset = cfdpsbol.d19

Table 109. Population assessment for largemouth bass collected during spring electrofishing at Boltz Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length	CPUE	CPUE	CPUE	CPUE	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
		age-3 at capture	age-1	12.0-14.9 in	≥15.0 in	≥20.0 in				
2019	Value	11.4*	8.0	83.0	17.0	0.5			14	Good
	Score	3	2	4	3	2				
2018	Value	11.4*	14.0	85.2	25.5	1.5			14	Good
	Score	3	2	4	3	2				
2017	Value	11.4*	26.0	40.0	18.0	0.5			14	Good
	Score	3	3	3	3	2				
2015	Value	11.4	29.5	22.0	21.5	2.0			13	Good
	Score	3	2	2	3	3				
2014	Value	10.7*	57.0	18.5	16.0	2.5			11	Fair
	Score	2	3	1	2	3				
2013	Value	10.7*	21.5	17.5	13.5	2.5			10	Fair
	Score	2	2	1	2	3				
2012	Value	10.7*	3.5	15.5	11.0	2.5			9	Fair
	Score	2	1	1	2	3				
2011	Value	10.7	8.6	33.0	19.0	3.5	0.378	31.5	11	Fair
	Score	2	1	2	3	3				
2010	Value	10.3	16.7	32.5	24.5	4.0	0.290	25.2	13	Good
	Score	2	2	2	3	4				

* Age data not collected

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 110. Length frequency, relative abundance, and CPUE (fish/hr) of largemouth bass and saugeye collected in 2.0 hours of 15-minute diurnal electrofishing runs in Bullock Pen Lake, April 2019; numbers in parentheses are standard errors.

Location/Species	Inch class																				Total	CPUE			
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			23	24	
Largemouth bass	3	7	15	10	13	43	31	30	22	35	27	33	23	28	25	21	13	9	4					392	196.0 (14.3)
Saugeye																		1				1		2	1.0 (0.7)

Dataset = cfdpsbpl.d19

Table 111. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Bullock Pen Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	24.0 (2.6)	63.0 (6.2)	47.5 (7.3)	61.5 (8.3)	6.5 (1.7)	196.0 (14.3)
2018	20.0 (3.9)	59.5 (7.6)	67.5 (4.4)	78.0 (10.3)	11.0 (3.0)	225.0 (11.7)
2017	23.0 (4.7)	40.0 (4.9)	66.0 (5.9)	75.5 (7.7)	12.5 (3.9)	204.5 (13.9)
2016	No sample					
2015	No sample					
2014	13.0 (2.7)	61.5 (8.5)	57.0 (6.9)	58.0 (3.2)	4.5 (1.4)	189.5 (14.0)
2013	No sample					
2012	25.5 (2.4)	80.5 (7.9)	43.0 (4.1)	63.5 (10.0)	3.0 (1.3)	212.5 (9.4)
2011	22.0 (4.3)	39.0 (5.4)	31.0 (3.3)	43.0 (6.4)	0.5 (0.5)	135.0 (11.2)
2010	33.0 (7.1)	26.8 (3.7)	28.3 (3.4)	44.3 (6.2)	1.8 (0.6)	132.3 (13.9)

Dataset = cfdpsbpl.d19 - .d91

Table 112. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in Bullock Pen Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥8.0 in	PSD	RSD ₁₅
Largemouth bass	344	63 (± 5)	36 (± 5)

Dataset = cfdpsbpl.d19

Table 113. Population assessment for largemouth bass collected during spring electrofishing at Bullock Pen Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE age-1	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	11.5	17.2	47.5	61.5	6.5				
	Score	3	2	4	4	4			17	Excellent
2018	Value	11.5	15.5	67.5	78.0	11.0				
	Score	3	2	4	4	4			17	Excellent
2017	Value	10.5*	21.0	66.0	75.5	12.5				
	Score	2	2	4	4	4			16	Good
2014	Value	10.5*	2.5	57.0	58.0	4.5				
	Score	2	1	4	4	4			15	Good
2012	Value	10.5*	9.5	43.0	63.5	3.0				
	Score	2	2	3	4	3			14	Good
2011	Value	10.5	5.1	31.0	43.0	0.5	0.422	34.4		
	Score	2	1	3	4	2			12	Fair
2010	Value	10.2*	6.4^	28.3	44.3	1.8				
	Score	2	1	3	4	3			13	Good

* Age data not collected

^Calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 114. Length distribution and CPUE (fish/hr) of largemouth bass collected in 1.5 hours of 15-minute electrofishing runs for black bass in Bullock Pen Lake in September 2019; numbers in parentheses are standard errors.

Species	Inch class																			Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Largemouth bass	20	39	11		35	52	16	20	20	28	28	18	12	22	12	9	7	8	2	359	239.3 (25.3)
Saugeye										1								1		2	1.3 (0.8)

Dataset = cfdwrblp.d19

Table 115. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at Bullock Pen Lake on 25 September 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Total	82	88 (1)	71	90 (1)	72	97 (1)	225	91 (1)

Dataset = cfdwrblp.d19

Table 116. Indices of year class strength at age 0 and age 1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at Bullock Pen Lake.

Year class	Area	Age 0		Age 0		Age 0 \geq 5.0 in		Age 1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	4.3	(0.1)	46.7	(10.7)	7.3	(3.2)		
2018	Total	4.2	(0.1)	34.0	(6.0)	2.0	(1.4)	17.2	(2.9)
2017	Total	4.0	(0.1)	32.7	(6.4)	6.0	(2.5)	15.5	(3.9)
2016				No Sample					
2015				No Sample					
2014	Total	4.0	(0.2)	16.0	(3.1)	4.0	(1.5)	---	
2013	Total	4.0	(0.2)	14.7	(2.0)	1.3	(0.8)	2.5	(0.7)
2012	Total	4.0	(0.1)	22.7	(5.2)	1.3	(0.8)	NS	NS
2011	Total	3.8	(0.1)	38.0	(4.2)	5.3	(2.0)	9.5	(1.1)
2010	Total	4.8	(0.1)	42.7	(8.0)	20.0	(3.7)	5.1	(1.6)

Table 117. Length frequency, relative abundance, and CPUE (fish/hr) of largemouth bass collected in 2.0 hours of 15-minute nocturnal electrofishing runs in Corinth Lake, April 2019; numbers in parentheses are standard errors.

Species	Inch class																			Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Largemouth bass	1	4	13	8	22	76	116	120	77	68	59	24	21	7	9	8	2	4	1	640	320.0 (25.9)

Dataset = cfdpscor.d19

Table 118. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Corinth Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	24.0 (4.2)	194.5 (16.6)	75.5 (9.2)	26.0 (6.0)	2.5 (1.0)	320.0 (25.9)
2018	45.0 (6.1)	145.0 (8.5)	66.5 (7.8)	20.0 (3.7)	3.0 (1.3)	276.5 (15.6)
2017	107.0 (11.9)	226.5 (24.0)	26.0 (4.4)	21.0 (4.6)	5.0 (2.0)	380.5 (39.7)
2016	No Sample					
2015	93.0 (4.5)	141.0 (3.8)	38.0 (4.1)	16.0 (3.1)	3.5 (1.2)	288.0 (9.0)
2014	33.0 (5.5)	152.5 (9.7)	17.0 (3.8)	15.0 (2.6)	3.0 (1.5)	189.5 (14.0)
2013	24.5 (4.5)	161.0 (15.3)	22.5 (5.4)	24.5 (6.6)	4.5 (1.9)	232.5 (17.3)
2012	32.5 (6.1)	175.0 (15.3)	37.0 (4.9)	23.5 (4.0)	8.5 (2.3)	268.0 (21.2)
2011	90.0 (9.8)	177.0 (11.2)	37.0 (5.2)	33.0 (3.9)	8.5 (2.1)	337.0 (19.3)
2010	77.5 (7.0)	60.0 (8.3)	8.5 (1.6)	21.0 (4.9)	4.0 (1.3)	167.0 (13.6)

Dataset = cfdpscor.d10 – .d19

Table 119. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in Corinth Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥ 8.0 in	PSD	RSD ₁₅
Largemouth bass	592	34 (± 4)	9 (± 2)

Dataset = cfdpscor.d19

Table 120. Population assessment for largemouth bass collected during spring electrofishing at Corinth Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE >15.0 in	CPUE >20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	10.3	11.0	75.5	26.0	2.5				
	Score	2	2	4	3	3			14	Good
2018	Value	10.8*	4.5	66.5	20.0	3.0				
	Score	3	1	4	3	3			14	Good
2017	Value	10.8*	19.5	26.0	21.0	5.0				
	Score	3	2	3	3	4			15	Good
2015	Value	10.8	29.9	38.0	16.0	3.5				
	Score	3	2	3	2	3			13	Good
2014	Value	11.1*	29.0	17.0	15.0	3.0				
	Score	3	2	1	2	3			11	Fair
2013	Value	11.1*	13.0	22.5	24.5	4.5				
	Score	3	1	2	3	4			13	Good
2012	Value	11.1*	24.5	37.0	23.5	8.5				
	Score	3	2	3	3	4			15	Good
2011	Value	11.1	90.2	37.0	33.0	8.5	0.515	40.2		
	Score	3	4	3	4	4			18	Excellent
2010	Value	11.1*	46.2 [^]	8.5	21.0	4.0				
	Score	3	3	1	3	4			14	Good

* Age data not collected

[^]Calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 121. Length distribution and CPUE (fish/hr) of largemouth bass collected in 1.5 hours of 15-minute electrofishing runs for black bass in Corinth Lake on 2 October 2019; numbers in parentheses are standard errors.

Species	Inch class																Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
Largemouth bass	16	69	60	16	7	49	39	58	47	31	16	9	5	2	2	1	427	284.7 (25.0)

Dataset = cfdwrcor.d19

Table 122. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at Corinth Lake on 2 October 2019; standard errors are in parentheses.

Species	Area	Length group							
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		Total	
		No.	Wr	No.	Wr	No.	Wr	No.	Wr
Largemouth bass	Total	104	84 (1)	50	84 (1)	10	84 (3)	164	84 (1)

Dataset = cfdwrcor.d19

Table 123. Mean back calculated lengths (in) at each annulus for otoliths from largemouth bass collected in the fall from Corinth Lake in 2019.

Year	No.	Age								
		1	2	3	4	5	6	7	8	9
2018	26	5.6								
2017	10	5.1	8.5							
2016	17	5.1	8.1	10.3						
2015	10	5.3	8.6	10.4	11.9					
2014	7	4.5	8.0	10.2	11.7	13.0				
2013	7	5.0	7.9	10.1	11.9	13.4	14.7			
2012	3	5.2	8.2	9.8	11.5	12.6	13.7	14.9		
2010	1	5.8	10.5	12.2	13.0	13.7	14.9	16.0	16.5	17.7
Mean	81	5.3	8.3	10.3	11.9	13.1	14.5	15.2	16.5	17.7
Smallest		3.7	6.0	7.8	10.0	11.3	12.5	13.7	16.5	17.7
Largest		7.7	10.5	12.2	14.0	14.9	16.2	16.5	16.5	17.7
Std Error		0.1	0.1	0.1	0.2	0.2	0.4	0.7		
95% ConLo		5.1	8.1	10.0	11.5	12.7	13.8	13.9		
95% ConHi		5.4	8.5	10.5	12.2	13.6	15.2	16.4		

Intercept value = 0.00

Dataset = cfdagcor.d19

Table 124. Indices of year class strength at age-0 and age-1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at Corinth Lake.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	4.9	0.1	107.3	20.0	50.7	9.9		
2018	Total	4.1	0.1	62.7	8.1	4.7	1.9	11.0	2.6
2017	Total	4.1	0.1	35.3	3.9	1.3	0.8	4.0	0.8
2016	Total	4.1	0.1	30.0	3.5	1.3	0.8	19.5	4.0
2015	Total	4.4	0.1	35.3	5.7	2.0	1.4	NS	
2014	Total	3.4	0.04	56.7	8.9	0.0		29.9	2.5
2013	Total	4.2	0.1	170.7	18.6	34.7	7.4	29.0	4.3
2012	Total	5.0	0.1	52.9	5.0	26.2	3.0	13.0	4.6
2011	Total	4.3	0.1	116.7	22.0	22.0	3.7	24.5	4.9
2010	Total	5.9	0.04	140.0	9.9	134.0	8.2	90.2	9.8

Dataset = cfdwrcor.d10-.d19

Table 125. Number of fish and the relative weight (Wr) for each length group of bluegill and redear sunfish collected at Corinth Lake on 2 October 2019; standard errors are in parentheses.

Species	Length group								No.	Wr
	No.	Wr	No.	Wr	No.	Wr	No.	Wr		
Bluegill	3.0–5.9 in		6.0–7.9 in		\geq 8.0 in				98	87 (1)
	69	88 (2)	29	83 (1)	0					
Redear sunfish	1.0–3.9 in		4.0–6.9 in		7.0–9.0 in		\geq 9.0 in		95	94 (1)
	1	124	53	94 (1)	39	92 (1)	2	92 (1)		

Dataset = cfdwrcor.d19

Table 126. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected in 2.0 hours of 15-minute electrofishing runs in Elmer Davis Lake, April 2019; numbers in parentheses are standard errors.

Species	Inch class																				Total	CPUE		
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22			23	24
Largemouth bass	18	39	46	22	35	53	66	22	32	58	79	46	26	10	6	5	4	7	4		1	1	580	290.0 (15.5)

Dataset = cfdpselm.d19

Table 127. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Elmer Davis Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	80.0 (10.5)	86.5 (8.9)	91.5 (7.9)	32.0 (4.3)	6.5 (2.1)	290.0 (15.5)
2018	91.0 (10.4)	87.0 (12.6)	125.0 (8.8)	28.5 (3.3)	3.5 (1.9)	331.5 (23.6)
2017	65.5 (10.6)	87.5 (5.5)	95.5 (5.9)	31.0 (2.8)	8.0 (1.9)	279.5 (14.4)
2016	57.5 (6.3)	113.0 (10.6)	126.0 (7.9)	44.5 (2.8)	8.0 (1.3)	341.0 (18.1)
2015	34.5 (5.5)	119.0 (7.0)	78.5 (8.9)	19.5 (4.9)	4.0 (1.7)	251.5 (18.3)
2014	27.5 (4.1)	113.5 (13.8)	75.0 (14.2)	23.5 (4.0)	4.5 (1.4)	239.5 (31.7)
2013	No Sample					
2012	83.5 (8.8)	197.5 (10.9)	85.5 (7.3)	27.5 (3.7)	4.5 (1.2)	394.0 (12.4)
2011	51.0 (6.2)	152.5 (20.4)	69.5 (8.1)	23.0 (4.5)	3.5 (1.2)	296.0 (30.9)
2010	41.0 (5.0)	147.5 (17.9)	71.5 (12.3)	24.0 (5.0)	3.0 (1.3)	284.0 (33.5)

Dataset = cfdpselm.d10 – .d19

Table 128. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in Elmer Davis Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥ 8.0 in	PSD	RSD ₁₅
Largemouth bass	420	59 (± 5)	15 (± 3)

Dataset = cfdpselm.d19

Table 129. Population assessment for largemouth bass collected during spring electrofishing at Elmer Davis Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE age-1	Spring CPUE 12.0-14.9 in	Spring CPUE ≥ 15.0 in	Spring CPUE ≥ 20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	10.7*	60.0	91.5	32.0	6.5			18	Excellent
	Score	2	4	4	4	4				
2018	Value	10.7*	91.0	125.0	28.5	3.5			17	Excellent
	Score	2	4	4	4	3				
2017	Value	10.7*	60.5	95.5	31.0	8.0			18	Excellent
	Score	2	4	4	4	4				
2016	Value	10.7	46.5	126.0	44.5	8.0			17	Excellent
	Score	2	3	4	4	4				
2015	Value	10.5*	28.0	78.5	19.5	4.0			16	Good
	Score	2	3	4	3	4				
2014	Value	10.5*	8.0	75.0	23.5	4.5			15	Good
	Score	2	2	4	3	4				
2013					No Sample					
2012	Value	10.5	78.0	85.5	27.5	4.5	0.392	32.5	18	Excellent
	Score	2	4	4	4	4				
2011	Value	9.8*	32.4	69.5	23.0	3.5			14	Good
	Score	1	3	4	3	3				
2010	Value	9.8*	29.0 [^]	71.5	24.0	3.0			14	Good
	Score	1	3	4	3	3				

* Age data not collected

[^]Calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 130. Length distribution and CPUE (fish/hr) of largemouth bass collected in 1.50 hours of 15-minute electrofishing runs for black bass in Elmer Davis Lake in September 2019; numbers in parentheses are standard errors.

Species	Inch class																			Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Largemouth bass	60	92	56	19	7	16	25	56	39	25	33	16	9	6	2	2	1		1	465	310.0 (19.2)

Dataset = cfdwreilm.d19

Table 131. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at Elmer Davis Lake on 30 September 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Total	92	90 (1)	66	87 (1)	20	90 (2)	178	89 (1)

Dataset = cfdwreilm.d19

Table 132. Indices of year class strength at age-0 and age-1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at Elmer Davis Lake.

Year class	Area	Age-0		Age-0		Age-0 ≥5.0 in		Age-1	
		Mean length	Std. error	CPUE	Std. Error	CPUE	Std. error	CPUE	Std. error
2019	Total	4.6	(0.1)	151.3	(16.6)	50.0	(8.1)		
2018	Total	3.9	(0.1)	100.7	(23.3)	8.7	(1.9)	60.0	(8.6)
2017	Total	3.9	(0.1)	366.4	(74.7)	71.2	(15.9)	91.0	(10.4)
2016	Total	4.4	(0.1)	80.0	(7.6)	24.7	(4.9)	60.5	(10.8)
2015	Total	4.0	(0.1)	77.3	(9.1)	11.3	(3.5)	46.5	(6.2)
2014	Total							28.0	(5.3)
2013	Total	3.5	(0.1)	20.0	(6.9)	0.0	(0.0)	8.0	(2.3)
2012	Total	3.4	(0.1)	56.0	(7.5)	6.0	(1.7)	NS	NS
2011	Total	4.0	(0.1)	74.0	(13.8)	14.7	(3.2)	78.0	(8.9)
2010	Total	4.7	(0.1)	108.0	(14.1)	34.7	(3.2)	32.4	(3.9)

Dataset= cfdwreilm.d10 - .d19

Table 133. Species composition, relative abundance, and CPUE (fish/hr) of bluegill collected in 1.0 hour of 7.5-minute electrofishing runs in April 2019 and 1.25 hours of 7.5-minute electrofishing runs in May 2019 at Elmer Davis Lake; numbers in parentheses are standard errors.

Month	Inch class							Total	CPUE
	2	3	4	5	6	7	8		
April	4	131	120	56	87	75	23	496	496.0 (115.8)
May	7	199	217	30	26	67	17	563	450.4 (56.5)
Total	11	330	337	86	113	142	40	1,059	470.7 (58.5)

Dataset = cfdpselm.d19

Table 134. Species composition, relative abundance, and CPUE (fish/hr) of redear sunfish collected in 1.0 hour of 7.5-minute electrofishing runs in April 2019 and 1.25 hours of 7.5-minute electrofishing runs in May 2019 at Elmer Davis Lake; numbers in parentheses are standard errors.

Month	Inch class									Total	CPUE
	3	4	5	6	7	8	9	10	11		
April	2		3	7	9	7		2	1	31	31.0 (8.6)
May	11	7		2	23	36	1	14	2	96	76.8 (18.9)
Total	13	7	3	9	32	43	1	16	3	127	56.4 (12.2)

Dataset = cfdpselm.d19

Table 135. Electrofishing CPUE (fish/hr) for each length group of bluegill collected from Elmer Davis Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group				Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	
2019	5.6 (2.1)	356.8 (52.2)	74.4 (12.1)	13.6 (2.4)	450.4 (56.5)
2018	24.8 (6.4)	156.0 (15.5)	56.0 (5.3)	5.6 (2.4)	242.4 (18.2)
2017	12.0 (3.4)	84.8 (11.4)	96.0 (19.6)	1.6 (1.6)	194.4 (26.5)
2016	No Sample				
2015	0.8 (0.8)	27.2 (5.0)	18.4 (7.4)	0.0 (0.0)	46.4 (9.6)
2014	17.6 (7.4)	117.6 (25.5)	33.6 (10.2)	0.0 (0.0)	168.8 (26.5)
2013	49.6 (18.2)	179.2 (28.4)	54.4 (14.8)	0.8 (0.8)	284.0 (56.5)
2012	42.4 (7.3)	254.4 (39.6)	68.8 (15.0)	0.8 (0.8)	366.4 (57.9)
2011	112.4 (19.6)	226.0 (18.9)	50.0 (7.3)	5.6 (2.5)	394.0 (36.2)
2010	51.6 (12.8)	126.8 (16.2)	26.8 (4.1)	0.0 (0.0)	205.2 (23.4)

Dataset = cfdpselm.d10 - .d19

Table 136. PSD and RSD values calculated for sunfish collected during 1.25 hours of electrofishing at Elmer Davis Lake during May 2019. Fish were collected in 7.5-minute runs.

Species	No. ≥stock size	PSD	RSD ^a
Bluegill	556	20 (± 3)	3(± 1)
Redear sunfish	85	89 (± 7)	20 (± 9)

^aBluegill = RSD₈; Redear = RSD₉

Dataset = cfdpselm.d19

Table 137. Population assessment for bluegill collected during spring electrofishing at Elmer Davis Lake from 2010-2019 (scoring based on statewide assessments).

Year		Mean length age-2 at capture	Years to 6.0 in	CPUE ≥6.0 in	CPUE ≥8.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	4.5	4-4+*	88.0	13.6	-	-	12	Good
	Score	3	2	3	4				
2018	Value	3.8*	4-4+*	61.6	5.6	-	-	10	Good
	Score	1	2	3	4				
2017	Value	3.8*	4-4+*	97.6	1.6	-	-	9	Fair
	Score	1	2	3	3				
2015	Value	3.8	4-4+	18.4	0.0	-	-	5	Poor
	Score	1	2	1	1				
2014	Value	4.1*	3-3+*	33.6	0.0	-	-	8	Fair
	Score	2	3	2	1				
2013	Value	4.1	3-3+	55.2	0.8	-	-	9	Fair
	Score	2	3	2	2				
2012	Value	4.2	2-2+	69.6	0.8	1.305	72.9	11	Good
	Score	2	4	3	2				
2011	Value	4.4	2-2+	55.6	5.6	*	*	13	Good
	Score	3	4	2	4				
2010	Value	4.3	2-2+	26.8	0.0	1.471	77.0	9	Fair
	Score	3	4	1	1				

* Age data not collected

Table 138. Electrofishing CPUE (fish/hr) for each length group of redear sunfish collected from Elmer Davis Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	≥10.0 in	
2019	0.0	14.4 (4.1)	20.0 (6.9)	42.4 (10.1)	12.8 (4.7)	76.8 (18.9)
2018	0.0	10.4 (2.7)	0.8 (0.8)	20.0 (5.0)	10.4 (2.9)	31.2 (5.4)
2017	0.0	0.8 (0.8)	4.0 (1.8)	43.2 (13.0)	0.8 (0.8)	48.0 (13.2)
2016	NS					
2015	0.0	11.2 (3.0)	61.6 (8.9)	13.6 (4.0)	0.0	86.4 (13.1)
2014	0.8 (0.8)	146.4 (37.0)	56.8 (19.7)	27.2 (7.8)	0.8 (0.8)	231.2 (53.2)
2013	32.8 (16.3)	149.6 (40.1)	39.2 (13.6)	20.8 (5.6)	0.8 (0.8)	242.4 (67.2)
2012	5.6 (2.6)	31.2 (5.3)	44.0 (9.3)	31.2 (7.2)	4.8 (1.3)	112.0 (11.6)
2011	4.8 (1.7)	22.4 (4.5)	6.8 (2.0)	58.0 (8.5)	2.4 (1.3)	92.0 (10.3)
2010	1.2 (0.9)	3.2 (1.4)	23.6 (2.7)	13.2 (2.9)	0.8 (0.6)	41.2 (4.7)

Dataset = cfdpselm.d10 - .d19

Table 139. Population assessment for redear sunfish collected during spring electrofishing at Elmer Davis Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Years to 8.0 in	CPUE ≥8.0 in	CPUE ≥10.0 in	Total score	Assessment rating
2019	Value	6.9	4-4*	42.4	12.8	13	Good
	Score	2	3	4	4		
2018	Value	6.7*	4-4*	20.0	10.4	12	Good
	Score	2	3	3	4		
2017	Value	6.7*	4-4*	43.2	0.8	11	Good
	Score	2	3	4	2		
2015	Value	6.7	4-4+	13.6	0.0	9	Fair
	Score	2	3	3	1		
2014	Value	7.7*	3-3*	27.2	0.8	13	Good
	Score	3	4	4	2		
2013	Value	7.7	3-3+	20.8	0.8	12	Good
	Score	3	4	3	2		
2012	Value	7.7	3-3+	31.2	4.8	15	Excellent
	Score	3	4	4	4		
2011	Value	8.7	2-2+	58.0	2.4	16	Excellent
	Score	4	4	4	4		
2010	Value	8.4	2-2+	13.2	1.2	14	Excellent
	Score	4	4	3	3		

* Age data not collected

Table 140. Mean back calculated lengths (in) at each annulus for otoliths from bluegill collected from Elmer Davis Lake in 2019.

Year	No.	Age				
		1	2	3	4	5
2018	17	2.6				
2017	24	2.7	4.5			
2016	5	2.6	5.3	6.7		
2015	4	3.7	5.4	6.9	7.6	
2014	5	3.0	5.1	6.3	7.2	7.6
Mean	55	2.8	4.8	6.6	7.3	7.6
Smallest		1.7	3.1	5.9	6.8	7.4
Largest		5.0	7.4	7.3	7.8	7.9
Std error		0.1	0.2	0.1	0.1	0.1
95% ConLo		2.5	4.5	6.4	7.1	7.4
95% ConHi		3.0	5.1	6.8	7.6	7.8

Intercept value = 0.00

Dataset = cfdagelm.d19

Table 141. Mean back calculated lengths (in) at each annulus for otoliths from redear sunfish collected from Elmer Davis Lake in 2019.

Year	No.	Age						
		1	2	3	4	5	6	7
2018	38	3.1						
2017	8	3.8	6.9					
2015	1	3.5	4.9	7.6	9.1			
2014	1	2.9	4.7	6.4	7.8	8.2		
2012	1	2.6	5.0	6.6	7.6	8.6	9.6	10.6
Mean	49	3.2	6.4	6.9	8.1	8.4	9.6	10.6
Smallest		2.1	4.7	6.4	7.6	8.2	9.6	10.6
Largest		5.6	8.3	7.6	9.1	8.6	9.6	10.6
Std error		0.1	0.4	0.4	0.5	0.2		
95% ConLo		3.0	5.6	6.1	7.2	8.0		
95% ConHi		3.4	7.2	7.6	9.1	8.8		

Intercept value = 0.00

Dataset = cfdagelm.d19

Table 142. Number of fish and the relative weight (Wr) for each length group of bluegill and redear sunfish collected at Elmer Davis Lake on 30 September 2019; standard errors are in parentheses.

Species	Length group								No.	Wr
	No.	Wr	No.	Wr	No.	Wr	No.	Wr		
Bluegill	3.0–5.9 in		6.0–7.9 in		≥8.0 in				133	97 (1)
	75	102 (2)	50	91 (1)	8	91 (2)				
Redear sunfish	1.0–3.9 in		4.0–6.9 in		7.0–9.0 in		≥9.0 in		55	100 (2)
	16	90 (4)	26	102 (2)	8	108 (2)	5	110 (1)		

Dataset = cfdwreilm.d19

Table 143. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected in 2.0 hours of 15-minute electrofishing runs in Kincaid Lake, May 2019; numbers in parentheses are standard errors.

Species	Inch class																			Total	CPUE	
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			22
Largemouth bass	6	3	5	9	10	34	22	22	29	16	18	29	21	33	34	30	24	19	7	4	375	187.5 (15.2)

Dataset = cfdpskin.d19

Table 144. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Kincaid Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	16.5 (3.2)	53.5 (7.4)	31.5 (4.4)	86.0 (6.5)	15.0 (2.6)	187.5 (15.2)
2018	No Sample					
2017	20.0 (2.8)	41.5 (3.1)	53.0 (5.6)	106.5 (4.1)	14.0 (1.5)	221.0 (10.4)
2016	No Sample					
2015	16.0 (5.8)	52.0 (5.9)	47.5 (7.4)	79.5 (6.3)	8.5 (11.9)	195.0 (22.3)
2014	No Sample					
2013	34.5 (4.3)	91.5 (11.0)	69.0 (6.3)	83.0 (6.3)	10.5 (2.5)	278.0 (19.6)
2012	12.0 (2.5)	52.0 (5.8)	41.0 (6.7)	63.0 (5.6)	8.5 (1.2)	168.0 (11.1)
2011	22.0 (3.2)	62.0 (7.9)	59.0 (8.4)	99.0 (4.9)	14.5 (2.1)	242.0 (16.9)
2010	14.8 (1.9)	72.0 (4.9)	61.5 (5.2)	69.3 (4.3)	7.8 (1.4)	217.5 (9.3)

Dataset = cfdpskin.d10- .d19

Table 145. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in Kincaid Lake in 2019; confidence intervals are in parentheses.

Species	No. ≥ 8.0 in	PSD	RSD ₁₅
Largemouth bass	342	69 (± 5)	50 (± 5)

Dataset = cfdpskin.d19

Table 146. Population assessment for largemouth bass collected during spring electrofishing at Kincaid Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥ 15.0 in	CPUE ≥ 20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	11.6*	4.5	31.5	86.0	15.0				
	Score	4	1	3	4	4			16	Good
2018					No Sample					
2017	Value	11.6	2.0	53.0	106.5	14.0				
	Score	4	1	4	4	4			17	Excellent
2016					No Sample					
2015	Value	11.7*	0.5	47.5	79.5	8.5				
	Score	4	1	3	4	4			16	Good
2015					No Sample					
2013	Value	11.7	1.0	69.0	83.0	10.5				
	Score	4	1	4	4	4			17	Excellent
2012	Value	9.9*	4.5	41.0	63.0	8.5				
	Score	1	1	3	4	4			13	Good
2011	Value	9.9*	5.0	59.0	99.0	14.5				
	Score	1	1	4	4	4			14	Good
2010	Value	9.9*	1.3^	61.5	69.3	7.8				
	Score	1	1	4	4	4			14	Good

* Age data not collected

^Calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 147. Species composition, relative abundance, and CPUE (fish/hr) of largemouth bass collected in 1.0 hour of 15-minute electrofishing runs for black bass in McNeely Lake in April 2019; numbers in parentheses are standard errors.

Species	Inch class																				Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Largemouth bass	2	36	47	9	3	48	60	65	32	21	14	8	13	5	3	1	2	1	1	1	372	372.0 (46.1)

Dataset = cfdpsmcl.d19

Table 148. Electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from McNeely Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<8.0 in	8.0-11.9 in	12.0-14.9 in	≥15.0 in	≥20.0 in	
2019	97.0 (30.9)	205.0 (19.3)	43.0 (5.7)	27.0 (3.4)	3.0 (1.0)	372.0 (46.1)
2018	73.3 (25.5)	173.3 (16.6)	72.0 (7.9)	25.3 (2.5)	2.7 (1.3)	344.0 (41.4)
2017	No Sample					
2016	46.0 (12.9)	130.0 (10.4)	44.0 (4.3)	9.0 (3.0)	0.0	229.0 (15.8)
2015	110.0 (27.8)	198.0 (18.5)	33.0 (7.6)	13.0 (5.3)	2.0 (1.2)	354.0 (43.1)
2014	26.0 (6.2)	167.0 (11.8)	18.0 (2.6)	21.0 (3.0)	3.0 (1.0)	232.0 (16.3)
2013	No Sample					
2012	40.8 (7.5)	109.6 (12.9)	31.2 (8.4)	21.6 (6.1)	0.8 (0.8)	203.2 (24.0)
2011	76.0 (14.9)	64.7 (14.5)	27.3 (4.2)	14.7 (2.7)	2.7 (2.0)	182.7 (18.8)
2010	49.3 (2.2)	92.7 (11.5)	14.7 (2.0)	14.0 (3.5)	1.3 (0.8)	170.7 (12.8)

Dataset = cfdpsmcl.d19 – d96

Table 149. PSD and RSD₁₅ values obtained for largemouth bass from spring electrofishing samples in McNeely Lake in April 2019; confidence intervals are in parentheses.

Species	No. ≥ 8.0 in	PSD	RSD ₁₅
Largemouth bass	275	26 (± 5)	10 (± 4)

Dataset = cfdpsmcl.d19

Table 150. Population assessment for largemouth bass collected during spring electrofishing at McNeely Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE age-1	Spring CPUE 12.0-14.9 in	Spring CPUE ≥ 15.0 in	Spring CPUE ≥ 20.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value	10.9*	94.0	43.0	27.0	3.0			17	Excellent
	Score	3	4	3	4	3				
2018	Value	10.9*	70.0	72.0	25.3	2.7			17	Excellent
	Score	3	4	4	3	3				
2017							No Sample			
2016	Value	10.9	38.0	44.0	9.0	0.0			12	Fair
	Score	3	3	3	2	1				
2015	Value	10.5*	109.0	33.0	13.0	2.0			14	Good
	Score	2	4	3	2	3				
2014	Value	10.5*	18.0	18.0	21.0	3.0			12	Fair
	Score	2	2	2	3	3				
2013							No Sample			
2012	Value	10.5	15.2	31.2	21.6	0.8	0.356	30.0	12	Fair
	Score	2	2	3	3	2				
2011	Value	11.4*	72.0	27.3	14.7	2.7			16	Good
	Score	3	4	3	3	3				
2010	Value	11.4*	50.8^	14.7	14.0	1.3			13	Good
	Score	3	3	2	3	2				

* Age data not collected

^Calculations based on age data gathered in previous years

-Instantaneous and annual mortality not calculated in years where age and growth data are not collected

Table 151. Length distribution and CPUE (fish/hr) of largemouth bass collected in 1.50 hours of 15-minute electrofishing runs in McNeely Lake in October 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Largemouth bass	10	115	121	11	26	83	56	60	28	11	3	6	2	2	5		1	540	360.0 (25.8)

Dataset = cfdwrml.d19

Table 152. Number of fish and the relative weight (Wr) for each length group of largemouth bass collected at McNeely Lake on 1 October 2019; standard errors are in parentheses.

Species	Area	Length group						Total	
		8.0–11.9 in		12.0–14.9 in		≥15.0 in		No.	Wr
		No.	Wr	No.	Wr	No.	Wr		
Largemouth bass	Total	98	85 (1)	20	86 (1)	10	100 (3)	128	86 (1)

Dataset = cfdwrml.d19

Table 153. Indices of year class strength at age-0 and age-1 and mean length (in) of largemouth bass collected in the fall in electrofishing samples at McNeely Lake.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	5.0	(0.04)	171.3	(16.0)	88.0	(17.3)		
2018	Total	NS						94.0	30.4
2017	Total	4.4	(0.05)	177.6	(11.6)	32.8	(4.1)	70.0	26.1
2016	Total	5.0	(0.05)	96.0	(21.1)	56.8	(14.3)	NS	NS
2015	Total	4.2	(0.04)	126.4	(14.9)	12.0	(4.2)	38.0	13.1
2014	Total	NS						109.0	27.8
2013	Total	4.2	(0.04)	86.0	(11.5)	7.3	(2.8)	18.0	7.8
2012	Total	5.0	(0.04)	242.0	(10.0)	124.0	(11.0)	NS	NS
2011	Total	4.3	(0.05)	116.0	(12.8)	20.8	(6.6)	15.2	(6.4)
2010	Total	5.2	(0.04)	169.6	(15.1)	106.4	(12.2)	72.0	(14.2)

Dataset = cfdwrmcl.d19-.d10

Table 154. Species composition, relative abundance, and CPUE (fish/hr) of bluegill and redear sunfish collected in 1.0 hour of 7.5-minute electrofishing runs in McNeely Lake, May 2019; numbers in parentheses are standard errors.

Species	Inch class									Total	CPUE
	2	3	4	5	6	7	8	9	10		
Bluegill	1	20	88	55	147	139	2			452	452.0 (42.2)
Redear sunfish		1		25	27	55	48	14	1	171	171.0 (16.4)

Dataset = cfdpsmcl.d19

Table 155. PSD and RSD values calculated for sunfish collected during 1.0 hour of electrofishing at McNeely Lake during May 2019. Fish were collected in 7.5-minute runs.

Species	No. \geq stock size	PSD	RSD ^a
Bluegill	451	64 (\pm 4)	1 (\pm 1)
Redear sunfish	170	69 (\pm 7)	9 (\pm 4)

^aBluegill = RSD₈; Redear = RSD₉

Dataset = cfdpsmcl.d19

Table 156. Electrofishing CPUE (fish/hr) for each length group of bluegill collected from McNeely Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group				Total
	<3.0 in	3.0–5.9 in	6.0-7.9 in	≥8.0 in	
2019	1.0 (1.0)	163.0 (31.4)	286.0 (16.2)	2.0 (1.3)	452.0 (42.2)
2018			No Sample		
2017	2.4 (1.2)	87.2 (12.0)	166.4 (25.4)	4.8 (1.3)	260.8 (29.5)
2016			No Sample		
2015	1.6 (1.1)	97.6 (22.1)	118.4 (19.9)	8.0 (2.7)	225.6 (32.6)
2014			No Sample		
2013	5.6 (2.9)	137.6 (16.7)	276.8 (30.1)	0.8 (0.8)	420.8 (33.4)
2012	4.0 (2.1)	325.0 (47.6)	203.0 (21.5)	1.0 (1.0)	533.0 (61.8)
2011	9.6 (3.1)	318.4 (39.4)	156.8 (27.0)	1.6 (1.6)	486.4 (43.5)
2010	7.2 (2.2)	104.0 (17.5)	96.0 (12.3)	0.0	207.2 (27.6)

Dataset = cfdpsmcl.d10 - .d19

Table 157. Population assessment for bluegill collected during spring electrofishing at McNeely Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-2 at capture	Years to 6.0 in	CPUE ≥6.0 in	CPUE ≥8.0 in	Instantaneous mortality (z)	Annual mortality (AM)	Total score	Assessment rating
2019	Value Score	4.6 3	2-2+* 4	288.0 4	2.0 3	-	-	14	Excellent
2018					No Sample				
2017	Value Score	5.4* 4	2-2+* 4	171.2 4	4.8 4	-	-	16	Excellent
2016					No Sample				
2015	Value Score	5.4 4	2-2+ 4	126.4 4	8.0 4	-	-	16	Excellent
2014					No Sample				
2013	Value Score	5.8 4	2-2+ 4	277.6 4	0.8 2	-	-	14	Excellent
2012	Value Score	4.6 3	2-2+ 4	204.0 4	1.0 2	0.922	60.2	13	Good
2011	Value Score	4.5 3	2-2+ 4	158.4 4	1.6 3	1.001	63.3	14	Excellent
2010	Value Score	4.7 3	2-2+* 4	96.0 3	0.0 1	0.610	46.0	11	Good

* Age and growth data was not collected.

Table 158. Electrofishing CPUE (fish/hr) for each length group of redear sunfish collected from McNeely Lake from 2010-2019; numbers in parentheses are standard errors.

Year	Length group					Total
	<3.0 in	3.0-5.9 in	6.0-7.9 in	≥8.0 in	≥10.0 in	
2019	0.0	26.0 (2.9)	82.0 (13.0)	63.0 (12.2)	1.0 (1.0)	171.0 (16.4)
2018	No Sample					
2017	0.0	9.6 (3.5)	34.4 (5.1)	30.4 (8.3)	0.0	74.4 (13.2)
2016	No Sample					
2015	0.0	3.2 (2.4)	16.8 (4.4)	13.6 (4.6)	2.4 (1.7)	33.6 (6.7)
2014	No Sample					
2013	0.0	13.6 (3.8)	27.2 (6.3)	52.8 (10.6)	2.4 (1.7)	93.6 (14.3)
2012	0.0	21.0 (5.4)	62.0 (7.1)	34.0 (6.0)	0.0	117.0 (13.2)
2011	0.8 (0.8)	20.8 (5.9)	16.8 (3.0)	21.6 (4.6)	0.0	60.0 (9.0)
2010	0.0	9.6 (4.1)	16.0 (4.1)	8.8 (3.3)	0.8 (0.8)	34.4 (6.4)

Dataset = cfdpsmcl.d10 - .d19

Table 159. Population assessment for redear sunfish collected during spring electrofishing at McNeely Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Years to 8.0 in	CPUE ≥8.0 in	CPUE ≥10.0 in	Total score	Assessment rating
2019	Value	7.8	3-3+	63.0	1.0	14	Excellent
	Score	3	4	4	3		
2018	No Sample						
2017	Value	8.2*	3-3+*	30.4	0.0	13	Good
	Score	4	4	4	1		
2016	No Sample						
2015	Value	8.2	3-3+	13.6	2.4	15	Excellent
	Score	4	4	3	4		
2014	No Sample						
2013	Value	8.2	2-2+	52.8	2.4	16	Excellent
	Score	4	4	4	4		
2012	Value	8.1	3-3+	34.0	0.0	13	Good
	Score	4	4	4	1		
2011	Value	8.0	3-3+	21.6	0.0	11	Good
	Score	3	4	3	1		
2010	Value	8.1	2-2+	8.8	0.8	13	Good
	Score	4	4	3	2		

* Age data not collected

Table 160. Mean back calculated lengths (in) at each annulus for bluegill otoliths collected from McNeely Lake in 2019.

Year	No.	Age			
		1	2	3	4
2018	27	2.7			
2017	8	2.5	4.6		
2016	8	2.5	4.5	5.9	
2015	1	2.2	4.6	5.6	6.5
Mean	44	2.6	4.6	5.9	6.5
Smallest		1.7	3.5	5.1	6.5
Largest		4.1	5.7	6.8	6.5
Std error		0.1	0.2	0.2	
95% ConLo		2.4	4.3	5.6	
95% ConHi		2.8	4.9	6.2	

Intercept value = 0.00

Dataset = cfdagmcl.d19

Table 161. Mean back calculated lengths (in) at each annulus for redear sunfish otoliths collected from McNeely Lake in 2019.

Year	No.	Age				
		1	2	3	4	5
2018	27	3.5				
2017	12	3.1	6.1			
2016	9	3.0	6.4	7.8		
2015	2	3.1	6.2	7.7	8.6	
2014	1	2.3	5.2	7.2	8.2	9.1
Mean	51	3.3	6.2	7.7	8.5	9.1
Smallest		2.3	5.2	7.2	8.2	9.1
Largest		4.4	7.2	8.5	8.7	9.1
Std error		0.1	0.1	0.1	0.1	
95% ConLo		3.2	6.0	7.6	8.2	
95% ConHi		3.4	6.4	7.9	8.7	

Intercept value = 0.00

Dataset = cfdagmcl.d19

Table 162. Number of fish and the relative weight (Wr) for each length group of bluegill and redear sunfish collected at McNeely during October 2019; standard errors are in parentheses.

Species	Length group						No.	Wr
	No.	Wr	No.	Wr	No.	Wr		
Bluegill	3.0–5.9 in		6.0–7.9 in		≥8.0 in		73	94 (2)
	62	96 (2)	11	81 (2)				
Redear sunfish	1.0–3.9 in		4.0–6.9 in		7.0–9.0 in		≥9.0 in	
			45	93 (1)	39	92 (1)	2	91 (2)
						86	92 (1)	

Dataset = cfdwrmcl.d19

Table 163. Species composition, relative abundance, and CPUE (fish/hr) of fish collected in 0.75 hours of electrofishing in Doe Run Lake, May 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Largemouth bass		1	2	3	1	1	1	1	4	3	3	1	1	5	2	4	2	35	46.7 (11.4)
Bluegill	3	16	37	11	1													68	90.7 (26.0)
White crappie			1	6	8	5		1			1							22	29.3 (8.7)

Dataset = cfdpsdoe.d19

Table 164. Species composition, relative abundance, and CPUE (fish/hr) of fish collected in 0.75 hours of 7.5-minute of electrofishing at General Butler State Park Lake, May 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE		
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			19	
Largemouth bass				5	22	8	1	5	6	11	1			1	1	1		1	1	64	85.3 (21.1)
Bluegill	2	17	27	56	18		2													122	162.7 (33.2)
Redear sunfish	2		3	11	14	12														42	56.0 (10.3)
White crappie			2		6	98	75	5												186	248.0 (37.1)
Channel catfish										1	2									3	4.0 (1.8)

Dataset= cfdpsgbs.d19

Table 165. Species composition, relative abundance, and CPUE (fish/hr) of largemouth bass collected in 1.25 hours of electrofishing in Jericho Lake, May 2019; numbers in parentheses are standard errors.

Species	Inch class																			Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Largemouth bass	1	2	1	3	4	17	14	18	14	23	22	28	27	30	26	24	11	1	2	268	219.8 (37.5)

Dataset = cfdpsjer .d19

Table 166. Species composition, relative abundance, and CPUE (fish/hr) of all fish species collected in 0.50 hours of 7.5-minute electrofishing in Lower Thomas Lake, May 2019.

Species	Inch class																	Total	CPUE		
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			19	
Largemouth bass		1	23	48	21	5	7	16	16	17	11	1		4			2	2	2	176	352.0 (50.7)
Bluegill	1	30	19	13	27	33	2													125	250.0 (98.7)
Redear sunfish	2	5	7	32	34	70	6													156	312.0 (42.2)
Black crappie					6	1														7	14.0 (6.0)

Dataset = cfdpslth.d19

NORTHEASTERN FISHERY DISTRICT

Project 1: Lake and Tailwaters Fishery Surveys

FINDINGS

All sampling conditions can be found in Table 1.

Cave Run Lake (8,720a)

Black bass sampling (Spring)

On April 22-24, the upper, middle and lower sections of Cave Run Lake were nocturnally electrofished for assessment of the black bass population. In total, 1,877 fish were captured. The majority of these fish were largemouth bass (80%), followed by spotted bass (18%) and smallmouth bass (2%; Table 2). As is normally the case, the percentage of the population represented by spotted and smallmouth bass increases as you head from the upper sections of the lake to the lower sections of the lake. Catch rates were higher than the 1990-2018 average for all length groups of largemouth bass (Table 3). PSD and RSD₁₅ values for largemouth bass demonstrate that the majority of the fish in the lake are smaller than 12.0 in (Table 4). Overall, the largemouth bass population was rated as “excellent” (Table 5) and the spotted bass population was rated as “fair” (Table 6). It should be noted, however, that the parameter “Spring CPUE age-1” continues to be excessively high for this largemouth bass population.

Crappie sampling

Over the last week of October, crappie were sampled in the lower two-thirds of Cave Run Lake with trap nets. In 55 net-nights, 163 crappie were collected (Table 7). PSD and RSD₁₀ showed a close to even split on the sizes of the fish (Table 8). Relative weights were similar to those observed in the upper section, with the exception of the larger fish (≥ 10.0 in) which were slightly lower (Table 9). The overall assessment of the white crappie fishery in the lower two-thirds of Cave Run Lake was “poor” (Table 10). The purpose of this assessment was to try and find locations on the lower portions of the lake where crappie could be adequately sampled which would lend more credence to our overall lake samples and this was successful. However, it should be noted that 3 of the 5 parameters by which we judge crappie population health are either determined by catch rates of age-1 and less fish or potentially heavily influenced by catch rate of these fish. Based off of this single sample in the lower portions of the lake, catching juvenile fish is difficult and would impact any judgement based off of these samples. Future population assessments will split effort between the upper section and the lower two-thirds of the lake.

Creel Survey

From 01 March to 31 October, a roving creel survey was conducted on Cave Run Lake. There were almost 69,000 angling trips made on the lake during this time (Table 11). While the number of trips were much higher than previous years, all catch rate parameters (fish per hour and fish per acre) as well as harvest rate parameters (fish per hour, fish per acre and pounds per acre) were similar to previous years. This showed that trends remained similar year to year. As in previous years, the majority of anglers were male residents casting from a boat. Crappie made up the majority of the fish caught (157,465) followed by black bass (66,655) and panfish (39,053; Table 12). The majority of the trips made on Cave Run Lake were for black bass (39.3%), followed by crappie (19.8%) and muskie (18.3%). Table 13 shows the number of fish harvested and released by inch class. As has been the case in previous years, the majority of largemouth bass caught are released (85%) and that trend held true for fish under the slot limit as well. The best months for largemouth bass fishing are April, May and June while the best month for muskie fishing is September (Table 14). The majority of the crappie caught on the lake were caught in May and September (Table 15). Similar numbers of largemouth bass were caught as in previous years for each “grouping” of fish (under, in and over the slot limit; Table 16) and the percentage of fish caught by these size groupings were also similar to previous years (Table 17). Catch rates of white crappie were also similar to previous years with the exception of the “Trophy” catch (≥ 15.0 in) which was among the highest recorded on the lake (Table 18).

Angler Attitude Survey

In conjunction with the creel survey, anglers were asked a series of questions pertaining to their attitudes towards fishing on Cave Run Lake (Table 19). As has been the case in previous years, the most fished for species were bass,

crappie and muskie and the majority of those anglers are satisfied with their fishing experience. For bass anglers, only 17% said that their catch rate of larger bass (over 15.0 in) has decreased and the majority of the anglers do not fish tournaments (64%). Bass anglers, in general, support the slot limit (79%) with a slight majority (58%) of tournament anglers showing support. Very few muskie anglers claimed that their catches have decreased over the last three years (14%) and the majority of muskie anglers kept “very few” muskie (92%). Over 90% of anglers rated the lake’s habitat as excellent or good and around 50% of the anglers surveyed knew about hydrilla in the lake.

Grayson Lake (1,512a)

Black bass sampling (Spring/Fall)

The Grayson Lake black bass population was nocturnally electrofished on April 15, 25 and 29. In total, 1,266 fish were collected ranging in size from 3.0 to 21.0 in (Table 20). The majority of these fish (81%) were largemouth bass and the remainder were spotted bass (19%). Catch rates by length group were either higher than or not different than the average from 1999-2018 (Table 21). The majority of the largemouth bass population that is over 8.0 in is under 12.0 in as demonstrated by PSD values (Table 22). The overall assessment of the largemouth bass fishery at Grayson Lake was “good” (Table 23).

In September, Grayson Lake was nocturnally electrofished to determine spawning strength of largemouth bass. Indices of year class strength for largemouth bass continue to be on the high end (Table 24) and the lake was once again not stocked with young of year largemouth bass in 2019.

Greenbo Lake (181a)

Black bass sampling (Spring)

On 30 April, Greenbo Lake was nocturnally electrofished to assess the black bass population. In total, 264 largemouth bass were collected ranging from 2.0 to 23.0 in (Table 25). Catch rate was significantly down across all length groups (Table 26). However, PSD and RSD₁₅ show good numbers of both quality and preferred largemouth (Table 27). High numbers of 12.0- to 15.0-in and greater than 20.0-in largemouth bass carried the assessment to a “good” rating again this year (Table 28).

Sunfish

On 16 May, Greenbo Lake was diurnally electrofished to assess the sunfish population. A total of 152 bluegill were collected ranging from 3.0 to 8.0 in, and 126 redear sunfish were collected ranging from 3.0 to 10.0 in (Table 29). The overall numbers across all sizes of bluegill were down this year (Table 30). PSD and RSD values for both bluegill and redear were both slightly below the ten-year average (Tables 31 and 34). The bluegill assessment for the ≥6.0-in category rated “fair” and the ≥8.0-in category rated “poor” (Table 32). A record high number of redear were caught across all length groups (Table 33). The assessment for greater than ≥8.0-in redear was “excellent” and the ≥10.0-in redear category rated “good” (Table 35).

Miscellaneous

Hydrilla and Elodea continue to be a problem at Greenbo Lake. The fall largemouth bass sample was not attempted due to excessive weed coverage. In a continued effort to reduce the amount of vegetation, grass carp were stocked for a fourth straight year (200 fish with an 11.0-in mean length). Additionally, 982 largemouth bass averaging 4.4 in were also stocked into the lake.

Lake Carnico (114a)

Black bass sampling (Spring/Fall)

On 22 April, Lake Carnico was diurnally electrofished to assess the largemouth bass population. A total of 144 fish were collected ranging from 3.0 to 19.0 in (Table 36). The 15.0-in and greater catch rate has been high for two consecutive years. Also the 12.0- to 15.0-in length group catch rate is the highest recorded and should lead to good numbers of big fish for years to come (Table 37). The PSD and RSD₁₅ values were also at an all-time high (Table

38). These numbers are carried by the great catch rates of fish in the 13.0- to 17.0-in classes (Table 37). The overall largemouth bass assessment was rated as “good” (Table 39).

Miscellaneous

To combat excessive vegetation growth, 340 grass carp were stocked. Those fish averaged 11.0 in.

Lake Reba (76a)

Black bass sampling (Spring/Fall)

On 15 April, Lake Reba was diurnally electrofished for assessment of the largemouth bass fishery. In total, 449 fish were collected ranging in size from 3.0 to 19.0 in (Table 40). The overall catch rate of fish was nearly double the 1995-2018 average, but this trend was mainly due to the catch rates of smaller fish (<8.0-in and 8.0- to 11.9-in) being extremely high (Table 41). Catch rates of larger fish (≥ 15.0 -in and ≥ 20.0 -in) were lower than average (Table 41). PSD and RSD₁₅ values echoed this ratio of high numbers of smaller fish to larger fish (Table 42). The overall assessment of the largemouth bass fishery at Lake Reba was “fair” (Table 43).

Lake Reba was once again diurnally electrofished in the fall to collect indices related to spawning class strength and based on these values the lake was not stocked in 2019 (Table 44).

Sunfish

On 07 May, Lake Reba was diurnally electrofished for an assessment of the sunfish (bluegill and redear sunfish) populations. In total, 233 bluegill and redear sunfish were captured ranging in size from 3.0 to 10.0 in (Table 45). Overall catch rates of bluegill were lower than the previous 10-year average, and this was mainly driven by lower catch rates of smaller fish (3.0- to 5.9-in). However, the catch rate of fish over 8.0 in was much higher than any previous years (Table 46). PSD and RSD₈ values reflected this trend with both parameters reaching their highest level ever recorded on the lake (Table 47). Catch rates of bluegill over 6.0 in and 8.0 in scored “good” and “excellent”, respectively (Table 48). A similar trend showed for catches of redear sunfish, with overall lower than average catch rates, much lower rates for smaller-sized fish, and record catch rates of larger fish (Table 49). Similarly, PSD and RSD₉ values were the highest ever recorded on the lake (Table 50). Catch rates of redear sunfish over 8.0 in and 10.0 in both scored as “excellent” (Table 51).

Miscellaneous

Starting at the end of March, a camera was set up to determine boating and paddle craft usage at Lake Reba. This camera was set to take pictures of the ramp area every 10 minutes and usage was broken into motorized boats and paddle craft. Counts were used to determine weekly (Table 52) and monthly (Table 53) averages. Paddle craft made up the majority of boating usage starting at the end of May and running through the end of August. Weekend paddle craft usage dominated boating from the time of camera placement in late March through the end of September (with the exception of 2 weekends). Overall, slightly more paddle craft users made use of the lake than motorized boaters (2,383 motorized boaters (44%) versus 2,606 paddle craft users (56%)).

Smoky Valley (36a)

Black bass sampling (Spring/Fall)

On 29 April, Smoky Valley Lake was diurnally electrofished for assessment of the largemouth bass fishery. In total, 213 fish were captured ranging in size from 3.0 to 22.0 in (Table 54). Catch rates were generally higher than the ten-year average for all length groups of largemouth bass except for the 8.0- to 11.9-in length group, which was lower (Table 55). PSD and RSD₁₅ values for largemouth bass were much higher than in previous years (Table 56). Overall, the largemouth bass population was rated as “good” (Table 57).

Sunfish

On 15 May, Smoky Valley Lake was diurnally electrofished for an assessment of the sunfish (bluegill) population. In total, 158 bluegill were captured ranging in size from 2.0 to 8.0 in (Table 58). Overall catch rates of bluegill were close to or slightly higher than the average of the previous ten years (Table 59). Similarly, PSD and RSD₈ values

were close to or slightly higher than the ten-year average (Table 60). A subsample of individual fish was collected for determination of age and growth characteristics. This data showed that bluegill can reach 8.0 in by their fourth year, but most take longer (Table 61). The majority of the fish captured were 1 or 2 years old (68%) and ranged in size up to 5.0 in (Table 62). The overall assessment of the bluegill population at Smoky Valley Lake was “good” (Table 63).

Lake Wilgreen (131a)

Black bass sampling (Fall)

On 09 October, Lake Wilgreen was diurnally electrofished to determine relative weights and age and growth characteristics of the largemouth bass population. In total, 267 fish were captured ranging in size from 2.0 to 20.0 in (Table 64). Data showed that relative weights were similar to previous years and there was a slight increase in condition as the fish grow longer (Table 65). Back calculated lengths show that some fish can reach 12.0 in by their third year, but most take four years (Table 66). Mean length at age 3 was 10.9 in and this is considered “good” growth (Table 67).

Table 1: Yearly summary of sampling conditions by waterbody, species sampled and date.

Water body	Species	Date (2019)	Time 24hr	Gear	Weather	Water Temp (°F)	Water level	Secchi (in)	Conditions	Pertinent sampling comments
Cave Run Lake	LMB	4/22	2000	electro	nocturnal	64	731.43	45	good	middle section
Cave Run Lake	LMB	4/23	2000	electro	nocturnal	65	731.06	-	good	low er section
Cave Run Lake	LMB	4/24	2000	electro	nocturnal	69	730.45	42	good	upper section
Cave Run Lake	BC/WC	10/29	900	trap net	sunny, cool	61	728.07	-	good	low er 2 sections only
Cave Run Lake	BC/WC	10/30	900	trap net	sunny, cool	63	727.11	-	good	low er 2 sections only
Cave Run Lake	BC/WC	10/31	900	trap net	spooky	-	727.74	-	good	low er 2 sections only
Cave Run Lake	BC/WC	11/1	900	trap net	sunny/cold	61	727.94	-	good	low er 2 sections only
Grayson Lake	LMB	4/15	2000	electro	nocturnal	59	640.76	42	good	middle section (Bruin)
Grayson Lake	LMB	4/25	2000	electro	nocturnal	69	-	30	good	upper section (Caney)
Grayson Lake	LMB	4/29	2030	electro	nocturnal	67	-	33	good	low er section (Dam/Deer Creek)
Grayson Lake	LMB	9/23	2000	electro	nocturnal	79	644.84	60	good	middle section (Bruin)
Grayson Lake	LMB	9/24	2000	electro	nocturnal	76	644.80	24	good	upper section (Caney)
Greenbo Lake	LMB	4/30	830	electro	sunny	69	normal	108	good	
Greenbo Lake	Sunfish	5/8	830	electro	sunny	70	normal	156	good	
Lake Carnico	LMB	4/22	830	electro	sunny	59	normal	72	good	
Lake Reba	LMB	4/15	930	electro	post front	59	normal	36	fair	sampled post cold front, big fish deeper
Lake Reba	Sunfish	5/7	930	electro	sunny	71	normal	36	good	
Lake Reba	LMB	9/23	930	electro	sunny/w indy	78	normal	39	good	
Smoky Valley	LMB	4/29	900	electro	sunny	61	normal	42	good	
Smoky Valley	Sunfish	5/15	900	electro	sunny	62	normal	38	good	
Lake Wilgreen	LMB	10/9	930	electro	sunny	70	~1' low	36	fair	

Table 2. Length frequency and CPUE (fish/hr) of black bass collected in 1.5 hours (4.5 hours total) of 30-minute nocturnal electrofishing runs in each area of Cave Run Lake from 22 - 24 April.

Area	Species	Inch class																		Total	CPUE	Std. error
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Upper	Largemouth bass	1	17	44	43	38	4	18	48	21	21	10	11	10	13	6	3	1	1	310	206.7	13.3
	Spotted bass		1	2		2	6	9	3	1										24	16.0	2.0
	Smallmouth bass																			0		
Middle	Largemouth bass	3	41	146	152	53	15	48	47	42	28	28	17	8	6	6	5	5	1	651	434.0	15.7
	Spotted bass	1	27	22	9	23	58	43	20	9	2									214	142.7	11.6
	Smallmouth bass			3		3	4	4	4			2	1						1	22	14.7	2.9
Lower	Largemouth bass	4	38	129	94	32	29	56	37	36	25	20	13	9	10	6	4	1	1	544	362.7	43.5
	Spotted bass	2	9	8	11	16	17	18	13	4	1	1		1						101	67.3	28.3
	Smallmouth bass	1		1			5	2		1							1			11	7.3	2.9
Total	Largemouth bass	8	96	319	289	123	48	122	132	99	74	58	41	27	29	18	12	7	3	1505	334.4	57.9
	Spotted bass	3	37	32	20	41	81	70	36	14	3	1		1						339	75.3	20.4
	Smallmouth bass	1		4		3	9	6	4	1		2	1				1			33	7.3	57.9

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Table 3. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Cave Run Lake from 1990-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	185.6	45.1	89.1	13.6	38.4	3.5	21.3	2.2	0.7	0.3	334.4	57.9
2018	34.3	4.9	85.0	13.9	28.0	3.5	16.0	2.5	0.3	0.2	163.3	18.5
2017	73.5	8.0	55.3	7.4	32.3	3.0	21.5	2.8	0.5	0.3	182.7	15.4
2016	83.8	12.7	99.7	9.2	64.3	8.4	25.5	2.9	1.3	0.6	273.3	22.8
2015*												
2014	59.0	7.5	69.3	10.6	23.8	3.4	20.0	3.1	2.0	0.7	172.0	12.9
2013	93.0	6.1	56.7	5.0	20.7	2.3	17.7	2.3	1.5	0.4	188.0	10.1
2012	46.0	6.7	88.0	4.9	25.5	3.6	18.3	2.4	1.3	0.4	177.8	10.7
2011*												
2010*												
2009*												
2008	25.8	6.2	23.3	2.6	8.3	1.8	3.5	1.0	0.5	0.5	61.0	8.5
2007	67.5	7.2	43.3	3.5	19.9	2.8	7.9	1.3	0.3	0.2	138.7	10.7
2006	50.7	10.1	48.5	7.7	14.7	2.0	10.2	1.4	0.2	0.2	124.0	19.1
2005	75.0	13.1	41.7	6.4	14.7	2.7	7.2	1.6	0.7	0.4	138.5	22.2
2004	29.0	3.0	60.7	5.9	26.0	3.0	14.1	13.5	0.3	0.2	129.8	10.1
2003	41.0	6.0	64.6	5.2	24.8	2.3	20.3	2.9	0.8	0.3	150.6	13.0
2002*												
2001	22.8	3.7	54.7	5.4	27.6	2.3	12.6	1.6	0.3	0.2	117.7	8.6
2000	45.1	4.9	78.3	6.5	26.8	2.9	9.0	1.5	0.4	0.3	159.3	10.7
1999	67.6	7.2	51.3	3.5	21.6	1.8	8.6	1.5			149.0	8.7
1998	18.7	3.5	17.9	2.9	20.6	2.1	6.9	1.5			64.0	7.6
1997	37.1	3.6	50.4	5.2	24.6	2.6	4.4	0.8	0.1	0.1	116.5	10.4
1996	58.9	6.5	42.4	4.0	15.3	1.5	4.0	0.7			116.1	9.5
1995	27.8	5.3	80.5	11.5	36.6	3.9	6.4	0.7	0.1	0.1	151.3	17.9
1994	62.5	7.0	54.7	7.9	38.8	3.1	3.7	0.6	0.3	0.2	159.6	15.5
1993	47.1	5.4	110.7	10.3	36.2	4.8	4.9	0.8	0.3	0.1	198.8	15.3
1992	52.0	4.3	77.9	5.1	21.9	1.8	2.8	0.6	0.2	0.1	152.8	6.8
1991	32.5	4.7	64.5	4.9	31.0	2.1	6.3	1.0	0.4	0.2	134.3	7.2
1990	23.3	2.7	43.0	2.7	18.5	2.2	3.4	0.9	0.2	0.1	88.2	5.8

* = No sample due to high water

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Table 4. PSD and RSD values obtained for largemouth and spotted bass taken in spring electrofishing samples in each area of Cave Run Lake.

Area	Species	No. ≥ 8.0 in	PSD		RSD _a	
			Value	$\pm 95\%$ CI	Value	$\pm 95\%$ CI
Upper	Largemouth bass	167	45	± 8	20	± 6
	Spotted bass	21	5	± 9	-	-
Middle	Largemouth bass	256	41	± 6	12	± 4
	Spotted bass	155	7	± 4	-	-
Lower	Largemouth bass	247	36	± 6	13	± 4
	Spotted bass	71	10	± 7	1	± 3
Total	Largemouth bass	774	34	± 3	12	± 2
	Spotted bass	283	10	± 3	1	± 1

^a Largemouth bass = RSD₁₅, spotted bass = RSD₁₄

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Table 5. Population assessment of largemouth bass based on samples collected at Cave Run Lake 2005-2019 (scoring based on statewide assessment).

Year	Mean length age-3	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Spring CPUE age-1	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%	
2019	Value	38.4	21.3	0.7	170.2	17	Excellent			
	Score 2	4	4	3	4					
2018	Value	11.9	28.0	16.0	0.3	35.8	13	Good	0.612	45.8%
	Score 2	3	3	3	2					
2017	Value	32.3	21.5	0.5	72.0	17	Excellent			
	Score 2	4	4	3	4					
2016	Value	11.2	64.3	25.5	1.3	81.3	18	Excellent	-0.743	52.4%
	Score 2	4	4	4	4					
2015*	Value									
	Score									
2014	Value	23.8	20.0	2.0	59.0	17	Excellent			
	Score 2	3	4	4	4					
2013	Value	20.7	17.7	1.5	91.3	15	Good			
	Score 2	2	3	4	4					
2012	Value	11.8	25.5	18.3	1.3	45.3	16	Good	0.852	57.3%
	Score 2	3	3	4	4					
2011*	Value									
	Score									
2010*	Value									
	Score									
2009*	Value									
	Score									
2008	Value	8.3	3.5	0.5	24.9	10	Fair	0.786	54.4%	
	Score 2	1	1	3	3					
2007	Value	12.4	19.9	7.9	0.3	66.5	12	Fair	0.703	51.0%
	Score 2	2	2	2	4					
2006	Value	14.7	10.2	0.2	49.2	11	Fair	0.799	55.0%	
	Score 2	1	2	2	4					
2005	Value	14.7	7.2	0.7	43.0	12	Fair	0.897	59.0%	
	Score 2	1	2	3	4					

* = Lake was not sampled due to high water

nedpsdcr.d00 - d19

Table 6. Population assessment of spotted bass based on samples collected at Cave Run Lake 2000-2019 (scoring based on statewide assessment).

Year	Mean Length age-3	Spring CPUE 11.0-13.9	Spring CPUE ≥14.0 in	Spring CPUE age-1	Total score	Assessment rating	
2019	Value Score	4.0 1	0.2 1	16.0 4	7	Fair	
2018	Value Score	4.2 1	0.3 1	39.5 4	7	Fair	
2017	Value Score	8.7 1	5.0 1	0.5 2	27.2 4	8	Fair
2016	Value Score	(1)	5.3 1	0.8 2	24.8 4	8	Fair
2015*	Value Score						
2014	Value Score	(1)	1.8 1	0.3 1	10.8 4	7	Fair
2013	Value Score	(1)	4.2 1	0.3 1	11.8 4	7	Fair
2012	Value Score	(1)	7.0 2	0.2 1	20.0 4	8	Fair
2011*	Value Score						
2010*	Value Score						
2009*	Value Score						
2008	Value Score	(1)	0.7 1	0.0 1	7.8 4	7	Fair
2007	Value Score	(1)	2.3 1	0.2 1	13.6 4	7	Fair
2006	Value Score	(1)	2.8 1	0.3 1	15.3 4	7	Fair
2005	Value Score	(1)	1.7 1	0.3 1	9.2 4	7	Fair
2004	Value Score	(1)	2.9 1	0.4 2	5.9 4	8	Fair
2003	Value Score	(1)	3.0 1	0.4 2	13.3 4	8	Fair
2002*	Value Score						
2001	Value Score	(1)	2.5 1	0.3 1	9.0 4	7	Fair
2000	Value Score	(1)	2.7 1	0.0 1	13.6 4	7	Fair

* = Lake was not sampled due to high water
nedpsdcr.d00 - d18

Table 7. Length frequency and CPUE (fish/nn) for black and white crappie collected in 55 net-nights of sampling in the middle and lower sections of Cave Run Lake from 29 October to 01 November.

Species	Inch class										Total	CPUE	Std. error
	2	3	4	5	6	7	8	9	10	11			
White crappie		17	1	2	16	18	12	15	7	4	92	1.7	0.5
Black crappie	6	19	3	5	5	6	5	18	3	1	71	1.3	0.5

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Table 8. PSD and RSD₁₀ values obtained for black and white crappie in the middle and lower sections of Cave Run Lake.

Species	No. ≥5.0 in	PSD		RSD ₁₀	
		Value	± 95% CI	Value	± 95% CI
White crappie	74	51	± 11	15	± 8
Black crappie	43	63	± 8	9	± 9

nedctncr.d19

Table 9. Number of fish and mean relative weight (W_r) values for length groups of white crappie collected in the middle and lower sections of Cave Run Lake as compared to the upper section.

Location	Species (year)	Length group									Total		
		5.0 - 7.9 in			8.0 - 9.9 in			≥10.0 in			No.	W_r	s.e.
		No.	W_r	s.e.	No.	W_r	s.e.	No.	W_r	s.e.			
Middle/Lower	White crappie (only 2019)	36	93	2	27	85	2	11	80	2	74	88	1
Upper	White crappie (\bar{x} of last 3 years)	178	86	n/a	40	83	n/a	24	87	n/a	243	86	n/a

nedctncr.d19, d18, d16, d15

Table 10. Population assessment of white crappie based on samples collected at Cave Run Lake in 2019 compared to previous years (scoring based on statewide assessment). Location of the sample (U = Upper Lake, M = Middle Lake, L = Lower Lake) is also included.

Year	Location		Overall CPUE excluding age-0	Mean length age-2	Fall CPUE ≥8.0 in	CPUE age-1	CPUE age-0	Total score	Assessment rating
2019	M/L Only	Value	1.4		1.2	0.1	0.3	5	Poor
		Score	1	1	1	1	1		
2018	U Only	Value	10.8		2.2	2.8	1.5	9	Fair
		Score	2	1	2	2	2		
2017	U Only	Value		7.4	1.1	0.4	0.1	6	Poor
		Score	2	1	1	1	1		
2016	U Only	Value	2.7		1.2	1.1	0.9	8	Poor
		Score	2	1	1	2	2		
2015	U Only	Value	3.8		2.0	1.4	1.5	9	Fair
		Score	2	1	2	2	2		
2014	U Only	Value	4.6		0.7	2.2	2.8	9	Fair
		Score	2	1	1	2	3		
2013	U Only	Value	21.4		3.4	11.6	17.3	16	Good
		Score	4	1	3	4	4		
2012	All Sections	Value	3.6		1.4	0.9	2.5	8	Poor
		Score	2	1	1	1	3		
2011	U Only	Value	106.4		3.3	59.2	56.0	16	Good
		Score	4	1	3	4	4		
2010	U Only	Value	2.0		0.6	0.6	1.3	6	Poor
		Score	1	1	1	1	2		
2009	U Only	Value	2.8		0.6	0.7	0.6	7	Poor
		Score	2	1	1	1	2		
2008	U Only	Value	6.9		0.7	5.1	3.8	11	Fair
		Score	3	1	1	3	3		
2007	U Only	Value	2.2		0.9	0.7	1.7	7	Poor
		Score	1	1	1	1	3		
2006	U Only	Value	9.3		3.0	4.2	6.4	13	Good
		Score	3	1	2	3	4		
2005	U Only	Value	1.6		0.7	0.2	0.1	5	Poor
		Score	1	1	1	1	1		
2004	U Only	Value	4.4		0.8	1.1	0.6	8	Poor
		Score	2	1	1	2	2		
2003	U Only	Value	1.7		0.4	0.6	0.1	5	Poor
		Score	1	1	1	1	1		
2002	U Only	Value	1.6		0.4	0.4	0.3	5	Poor
		Score	1	1	1	1	1		
2001	U Only	Value	1.6		0.4	0.4	0.3	5	Poor
		Score	1	1	1	1	1		
2000	U Only	Value	1.6		0.4	0.4	0.3	5	Poor
		Score	1	1	1	1	1		

necdtnr.d92-19; nedaagcr.d92-99, d01-04, 07, 12

Table 11. Fishery statistics derived from a daytime creel survey at Cave Run Lake during 2019 (March through October) as compared to findings from 2014, 2007, 2003, and 1998.

	2019	2014	2007	2003	1998
Fishing trips					
No. of fishing trips (per acre)	68,949 (08.3)	30,264 (03.7)	23,316 (02.8)	26,208 (03.2)	33,354 (04.0)
Fishing pressure					
Total man-hours (S.E.)	307,842 (8,550)	122,001 (2,383)	120,079 (2,644)	177,202 (2,653)	134,650 (2,311)
Man hours/acre	37.2	14.8	14.5	21.4	16.3
Catch/harvest					
No. of fish caught (S.E.)	276,930 (30,502)	86,386 (9,683)	130,113 (10,507)	187,881 (11,843)	128,352 (12,798)
No. of fish harvested (S.E.)	93,423 (11,194)	42,465 (5,235)	61,966 (5,672)	99,936 (7,249)	64,507 (6,564)
Lbs. of fish harvested	48,937	24,898	29,248	54,818	31,197
Harvest rate					
Fish/hour	0.3	0.4	0.5	0.5	0.5
Fish/acre	11.3	5.1	7.5	12.1	7.8
Lbs/acre	5.9	3.0	3.5	6.6	3.8
Catch rates					
Fish/hour	0.9	0.7	1.1	1.0	1.0
Fish/acre	33.5	10.5	15.7	22.7	15.5
Misc. characteristics (%)					
Male	86.7	88.5	89.4	90.1	86.8
Female	13.3	11.5	10.6	9.9	13.2
Resident	83.8	84.6	91.0	91.3	85.5
Non-resident	16.2	15.4	9.0	8.7	14.2
Method (%)					
Still fishing	30.4	25.4	40.5	34.2	37.9
Casting	60.2	72.1	56.7	57.6	58.1
Fly fishing	8.6	0.0	0.0	0.0	t
Trolling	0.1	2.4	2.8	7.7	6.9
Spider Rig	0.6	0.2	0.0	0.0	0.0
Hand Fishing	0.1	N/A	N/A	N/A	N/A
Mode (%)					
Boat	86.9	94.4	90.6	92.4	94.0
Bank	9.3	5.5	9.3	7.4	5.6
Dock	0.8	t	t	t	t
Exemption Tournamnet	3.0	N/A	N/A	N/A	N/A

(S.E.) = Standard error

t < 0.5%

Table 12. Fish harvest statistics derived from the 2019 creel survey at Cave Run Lake.

	White Crappie	Black Crappie	Crappie Group	Largemouth Bass	Spotted Bass	Smallmouth Bass	Black Bass Group	Bluegill	Warmouth	Redear Sunfish	Panfish Group	Muskie	Channel Catfish	Flathead Catfish	Catfish Group	White Bass	Drum	Anything
Number caught (per acre)	124,531 15.1	32,934 4.0	157,465 19.0	57,942 7.0	7,231 0.9	1,481 0.2	66,655 8.1	38,630 4.7	343 0.0	80 0.0	39,053 4.7	2,320 0.3	3,144 0.4	194 0.0	3,337 0.4	8,059 1.0	40 0.0	
Number harvested (per acre)	49,693 6.0	11,451 1.4	61,144 7.4	13,261 1.6	1,287 0.2	35 0.0	14,583 1.8	14,266 1.7	38 0.0	0	14,305 1.7	59 0.0	2,109 0.3	155 0.0	2,265 2.7	1,067 0.1	0	
% of total number harvested	53.2	12.3	65.4	14.2	1.4	0.0	15.6	15.3	0.0		15.3	0.1	2.3	0.2	2.4	1.1		
Pounds harvested (per acre)	20,379.8 2.5	6,438.1 0.8	26,817.9 3.2	13,443.6 1.6	734.3 0.1	132.3 0.0	14,310.2 1.7	2,107.6 0.3	3.3 0.0		2,110.9 0.3	1,025.5 0.1	3,620.6 0.4	411.8 0.1	4,032.4 0.5	639.8 0.1		
% of total pounds harvested	41.7	13.2	54.8	27.5	1.5	0.3	29.2	4.3	0.0		4.3	2.1	7.4	0.8	8.2	1.3		
Mean length (in)	9.95	10.15		13.25	10.47	20.00		5.86	5.00			40.50	16.91	20.33		11.73		
Mean weight (lb)	0.45	0.56		1.26	0.52	3.78		0.13	0.09			17.34	1.55	3.64		0.71		
Number fishing trips for that species			13,682.7				27,096.4				3,276.3	12,593.1			1,505.2			10,795.2
% of all trips			19.8				39.3				4.8	18.3			2.2			15.7
Hours fished for that species (per acre)			61,090.3 (7.4)				120,979.6 (14.6)				14,628.0 (1.8)	56,225.4 (6.8)			6,720.4 (0.8)			48,198.4 (5.8)
Number harvested fishing for that species			59,354				13,985				11,529	59			1,477			
Pounds harvested fishing for that species			26,852.9				13,616.4				1,862.3	1,024.0			2,798.2			
Number harvested per hour fishing for that species			1.0				0.1				1.0	0.0			0.2			
% success fishing for that species			41.3				14.0				29.8	0.4			23.2			6.9

Table 14. Monthly black bass and muskie angling success at Cave Run Lake during the 2019 creel survey period.

Month	Total no. caught		Total no. harvested		Total no. of trips for		Hours fished for		Catch fishing for		Catch per hour fishing for		No. harvested fishing for		No. harvested per hour fishing for	
	Bass	Muskie	Bass	Muskie	Bass	Muskie	Bass	Muskie	Bass	Muskie	Bass	Muskie	Bass	Muskie	Bass	Muskie
Mar	87	260	29	29	1,332.50	2,139.27	5,948.67	9,551.39	87	116	0.02	0.01	29	29	0.01	0.004
Apr	12,483	482	3,769	30	5,204.58	2,869.45	23,237.36	12,811.47	12,180	301	0.49	0.02	3,708	30	0.15	0.002
May	22,100	517	6,439	0	6,658.49	2,052.44	29,728.74	9,163.70	18,880	358	0.56	0.03	6,161	0	0.18	0
Jun	10,121	175	981	0	3,285.79	966.41	14,670.37	4,314.81	8,895	175	0.59	0.03	840	0	0.06	0
Jul	4,003	38	343	0	1,853.21	409.84	8,274.19	18,29.87	3,050	38	0.37	0.01	305	0	0.04	0
Aug	5,416	120	361	0	2,590.96	760.84	11,568.08	3,396.98	4,934	120	0.38	0.03	281	0	0.02	0
Sep	10,005	313	2,293	0	4,516.01	1,086.56	20,163.01	4,851.25	9,484	261	0.38	0.06	2,293	0	0.09	0
Oct	2,440	414	368	0	1,654.99	2,308.28	7,389.18	10,305.97	1,841	230	0.29	0.02	368	0	0.06	0
Total	66,655	2,320	14,583	59	27,096	12,593	120,980	56,225	59,351	1,599			13,985	59		
Mean											0.38	0.02			0.07	0.001

Table 15. Monthly crappie angling success at Cave Run Lake during the 2019 creel survey period.

	Trips		Hours		Catch		Harvest		Harvest	
	Fishing For	Fishing For	Fishing for	Total Catch	Fishing for	Total Catch	Mean Length (In)*	Mean Weight (lb)*		
March	337.78	1,508.11	87	116	58	58	11.0	-	0.63	-
April	2,651.76	11,839.57	24,393	24,393	10,040	10,040	9.7	10.1	0.42	0.55
May	3,460.50	15,450.42	38,397	41,298	11,924	12,203	9.4	10.3	0.37	0.59
June	1,217.68	5,436.67	14,113	15,584	6,059	7,074	9.4	10.1	0.37	0.55
July	926.61	4,137.10	15,363	16,925	4,956	5,451	10.0	9.8	0.45	0.49
August	1,686.18	7,528.43	18,214	18,215	7,462	7,462	9.5	10.6	0.38	0.64
September	2,139.16	9,550.90	33,244	33,245	15,632	15,632	9.6	10.0	0.40	0.53
October	1,263.02	5,639.11	7,689	7,690	3,223	3,223	10.9	-	0.61	-
Total	13,682.69	61,090.31	151,500	157,465	59,354	61,144				
Mean							9.9	10.2	0.45	0.56

* The first column is white crappie and the second column (in italics) is black crappie. Both of these numbers are based off of the fish harvested.

Table 16. Total catch and catch rates of largemouth bass in length groups relating to the slot limit regulation from 2019, 2014, 2007, 2003, 1998 and 1994.

Year	Hours Fishing		Harvested				Catch and Release					Total (Harvested and Catch and Release)				
			<13.0"	≥16.0"	≥20.0"	Total	<13.0"	"Slot"	≥16.0"	≥20.0"	Total	<13.0"	"Slot"	≥16.0"	≥20.0"	Total
2019	120,980	Total	4,595	2,352	111	6,947	30,432	11,066	3,183	378	44,681	35,027	12,149	5,535	489	52,711
		per hour	0.038	0.019	0.001	0.057	0.252	0.091	0.026	0.003	0.369	0.290	0.100	0.046	0.004	0.436
2014	43,004	Total	1,813	837	120	2,650	5,562	3,812	1,574	389	10,948	7,375	3,812	2,411	509	13,598
		per hour	0.042	0.019	0.003	0.062	0.129	0.089	0.037	0.009	0.255	0.171	0.089	0.056	0.012	0.316
2007	34,497	Total	4,568	195	20	4,763	15,226	2,930	1,318	59	19,474	19,794	2,930	1,513	79	24,237
		per hour	0.132	0.006	0.001	0.138	0.441	0.085	0.038	0.002	0.565	0.574	0.085	0.044	0.002	0.703
2003	55,956	Total	6,860	783	71	7,643	18,872	4,722	3,215	188	26,809	25,732	4,722	3,998	259	34,452
		per hour	0.123	0.014	0.001	0.137	0.337	0.084	0.057	0.003	0.479	0.460	0.084	0.071	0.005	0.616
1998	47,813	Total	3,760	874	21	4,634	4,172	6,183	766	41	11,121	7,932	6,183	1,640	62	15,755
		per hour	0.079	0.018	0.000	0.097	0.087	0.129	0.016	0.001	0.233	0.166	0.129	0.034	0.001	0.330
Average (14, 07, 03, 98)		Total	4,250	672	58	4,923	10,958	4,412	1,718	169	17,088	15,208	4,412	2,391	227	22,011
		per hour	0.094	0.014	0.001	0.108	0.249	0.097	0.037	0.004	0.383	0.343	0.097	0.051	0.005	0.491
1994*	35,389	Total	0	874	117	874	11,206	5,588	514	58	17,308	11,206	6,170	1,388	175	18,764
		per hour	0.000	0.025	0.003	0.025	0.317	0.158	0.015	0.002	0.489	0.317	0.174	0.039	0.005	0.530

* Lake was under a 15.0 in. minimum size limit.

Table 17. Number of hours to catch specific-size largemouth bass and percentage of catch for those size classes of largemouth bass in 2019, 2014, 2007, 2003, 1998 and 1994 creels.

	Hours to Catch					% of Total Catch				
	≤12.9 in	13.0-15.9 in	≥16.0 in	≥20.0 in	Total	≤12.9 in	13.0-15.9 in	≥16.0 in	≥20.0 in	Total
2019	3.4	10.0	21.7	250.0	2.3	66.5	23.0	10.5	0.9	
2014	5.8	11.3	17.8	84.5	3.2	54.2	28.0	17.7	3.7	
2007	1.7	11.8	22.8	436.7	1.4	81.7	12.1	6.3	0.3	
2003	2.2	11.9	14.0	216.1	1.6	74.7	13.7	11.6	0.8	
1998	6.0	7.7	29.2	771.2	3.0	50.4	39.2	10.4	0.4	
Average (14, 07, 03, 98)	3.9	10.7	20.9	377.1	2.3	65.2	23.3	11.5	1.3	
1994*	3.2	5.7	25.5	202.2	1.9	59.7	30.9	7.4	0.9	

* Lake was under a 15.0-in minimum size limit.

Table 18. Angler catch, catch rate, harvest, harvest rate, catch by size class, catch rate by size class, and percentages of catch over selected sizes for black and white crappie at Cave Run Lake.

Year	Angler Hours	Total Catch	Total Harvest	"Preferred" Catch (≥10.0 in)	"Memorable" Catch (≥12.0 in)	"Trophy" Catch (≥15.0 in)	% Catch ≥10.0 in	% Catch ≥12.0 in	% Catch ≥15.0 in
2019	61,090	157,465 CR= 2.6	61,144 HR= 1.0	38,961 CR= 0.64	8,578 CR= 0.140	389 CR= 0.0064	24.7	5.4	0.2
2014	23,020	56,608 CR= 2.5	31,627 HR= 1.4	17,052 CR= 0.74	3,644 CR= 0.158	62 CR= 0.0027	30.1	6.4	0.1
2007	34,175	79,620 CR= 2.3	43,874 HR= 1.3	17,174 CR= 0.50	2,531 CR= 0.074	63 CR= 0.0018	21.6	3.2	0.1
2003	43,541	118,010 CR= 2.7	73,342 HR= 1.7	41,922 CR= 0.96	5,560 CR= 0.128	286 CR= 0.0066	35.5	4.7	0.2
1998	33,907	87,157 CR= 2.6	47,533 HR= 1.4	17,832 CR= 0.53	3,100 CR= 0.091	78 CR= 0.0023	20.5	3.6	0.1
1994	27,411	81,013 CR= 3.0	38,889 HR= 1.4	25,019 CR= 0.91	7,932 CR= 0.289	128 CR= 0.0047	30.9	9.8	0.2
1993	12,701	17,405 CR= 1.4	15,325 HR= 1.2	14,574 CR= 1.15	4,269 CR= 0.336	27 CR= 0.0021	83.7	24.5	0.2

Table 19. Angler attitude survey conducted during 2019 creel survey on Cave Run Lake.

1. Which species do you fish for at Cave Run Lake (check all that apply; N=694)?

Bass = 50.9%; **Crappie** = 34.1%; **Muskie** = 29.3%; **Other** = 13.8% (Includes: anything (5.6%), sunfish (4.8%), catfish (4.6%) and white bass (0.2%))

2. Which species do you fish for most at Cave Run Lake (check only one; N=694)?

Bass = 43.7%; **Crappie** = 26.1%; **Muskie** = 21.9%; **Other** = 8.4% (Includes: anything (3.8%), sunfish (2.6%), catfish (1.7%) and white bass (0.3%))

3. On average, how many times do you fish Cave Run Lake in a year (N=694)?

First Time 11.2% **1 - 4** 23.3% **5 - 10** 13.0% **≥ 10** 52.4%

Bass Anglers

4. What level of satisfaction do you have with bass fishing at Cave Run Lake (N=340)?

Very Satisfied	11.8%	Somewhat Satisfied	56.5%	Total	68.2%
Very Dissatisfied	6.8%	Somewhat Dissatisfied	8.5%	Total	15.3%
Neutral	13.8%	No Opinion	2.6%		

4a. If you responded with somewhat or very dissatisfied in question 4 - what is the single most important reason for your dissatisfaction?

**Note: These numbers are percentages ONLY of those who were dissatisfied (15.3% or 52 anglers)*

Number of fish	50.0%
Size of fish	30.8%
Regulations	5.8%
Too many weeds	5.8%
Other	5.8% (includes: too many muskie, not enough grass and too much rain)
Too many anglers	1.9%

5. Over the last 3 years has your catch rate of largemouth bass over 15 inches at Cave Run Lake (N=334):

Increased	26.9%	Stayed the Same	41.0%
Declined	16.8%	I don't know	15.3%

6. Do you fish bass tournaments on Cave Run Lake (N=336)?

Yes = 36.0% **No** = 64.0%

6a. About how many bass tournamnets did you fish on Cave Run Lake in the last 12 months (N=120)?

1 - 4 = 39.2%	5 - 10 = 21.7%	11 - 15 = 15.8%
16 - 20 = 12.5%	≥ 20 = 10.8%	

7. Do you support or oppose the current 13 - 16 inch slot limit on largemouth bass at Cave Run Lake?

(Answers include all bass anglers; N = 338)

Support	78.7%	Oppose	15.1%	No Opinion	6.2%
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7a. Do you support or oppose the current 13 - 16 inch slot limit on largemouth bass at Cave Run Lake?

(Answers include only tournament bass anglers; N=121)

Support	57.9%	Oppose	33.1%	No Opinion	5.8%
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Muskie Anglers

8. What level of satisfaction do you have with muskie fishing at Cave Run Lake (N=195)?

Very Satisfied	40.5%	Somewhat Satisfied	37.4%	Total	77.9%
Very Dissatisfied	0.5%	Somewhat Dissatisfied	5.6%	Total	6.2%
Neutral	14.4%	No Opinion	1.5%		

Table 19 (cont)

8a. If you responded with somewhat or very dissatisfied in question 8 - what is the single most important reason for your dissatisfaction?

*Note: These numbers are percentages **ONLY** of those who were dissatisfied (6.2% or 12 anglers)

Number of fish	75.0%
Other	16.7% (includes: lack of weeds and can't catch them)
Size of fish	8.3%

9. Over the last 3 years has your catch rate of muskie greater than 36 inches at Cave Run Lake (N=192):

Increased	22.9%	Stayed the Same	37.0%
Declined	14.1%	I don't know	26.0%

10. About what percentage of legal muskie did you keep in the last 3 years at Cave Run Lake (N=182)?

Almost all	1.1%	About 75%	0.5%	About 50%	1.6%
About 25%	4.4%	Very Few	92.3%		

Crappie Anglers

11. What level of satisfaction do you have with crappie fishing at Cave Run Lake (N=228)?

Very Satisfied	36.0%	Somewhat Satisfied	48.2%	Total	84.2%
Very Dissatisfied	0.9%	Somewhat Dissatisfied	5.3%	Total	6.1%
Neutral	8.8%	No Opinion	0.9%		

11a. If you responded with somewhat or very dissatisfied in question 11 - what is the single most important reason for your dissatisfaction?

*Note: These numbers are percentages **ONLY** of those who were dissatisfied (12.5% or 14 anglers)

Number of fish	64.3%
Size of fish	35.7%

All Anglers

12. Do you support or oppose the current 13 - 16 inch slot limit on largemouth bass at Cave Run Lake (N=677)?

Support	56.6%	Oppose	13.9%	No Opinion	29.5%
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12a. What largemouth bass size limit do you prefer at Cave Run Lake (N= 94)?

15 inch minimum size limit	52.1%
12 inch minimum size limit	26.6%
20 inch minimum size limit	9.6%
Other	6.4% (includes: 14", 16" MSL, C&R, 14/16", 14/17" Slot)
No size limit	5.3%

13. Do you support or oppose the current 36 in. minimum size limit on muskie at Cave Run Lake (N=674)?

Support	45.8%	Oppose	16.5%	No Opinion	37.7%
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13a. What muskie size limit do you prefer at Cave Run Lake (N= 111)?

30 inch minimum size limit	30.6%
45 inch minimum size limit	26.1%
40 inch minimum size limit	14.4%
Catch and release only	10.8%
No size limit	9.9%
Other	8.1% (includes: 48" MSL, 50" MSL and "Slot")

Table 19 (cont)

14. How would you rate the existing fish habitat on Cave Run Lake (both natural and department placed; N=667)?					
Excellent	35.4%	Good	57.1%	Fair	3.1%
Poor	1.0%	No opinion	3.3%		
15. Do you regularly fish department placed habitat (N=xxx)?					
Yes	33.9%	No	60.7%		
15a. If yes, do we feel like it has improved your fishing (N=233)?					
Yes	80.7%	No	19.3%		
15b. If yes, what species of fish have you seen an increase in your angling success (N=184)?					
Bass only	35.3%	Crappie only	32.1%		
Muskie only	16.3%	All species	9.8%		
Bass and crappie only	6.5%				
16. Are you aware that the invasive plant, hydrilla, is present in Cave Run Lake (N=674)?					
Yes	56.2%	No	43.8%		
17. Do you feel like you could properly distinguish hydrilla from the variety of other weeds present in Cave Run Lake?					
<i>*Note: These numbers are percentages ONLY of those who were aware that hydrilla was in the lake (56.2% or 379 anglers).</i>					
Yes, 100% of the time	69.5%	Maybe just half	28.6%		
What is hydrilla?	3.3%				
18. How would you say this weed has impacted your fishing and boating experience on Cave Run Lake?					
<i>*Note: These numbers are percentages ONLY of those who were aware that hydrilla was in the lake (56.2% or 379 anglers).</i>					
It's helped my fishing	76.4%	It's helped my boating	9.1%		
It's hurt my fishing	23.4%	It's hurt my boating	32.1%		
19. With the understanding that the primary means of introduction of this weed is through boaters, do you Take precautions to prevent it's spread (like inspecting and cleaning your boat before launching in new waters; N=665)?					
Yes	68.4%	No	31.6%		
20. Do you own a smart phone (N=690)?					
Yes	88.3%	No	11.7%		
20a. Do you regularly use it as a fishing tool (N=600)?					
Yes	61.5%	No	38.5%		

Table 20. Length frequency and CPUE (fish/hr) of black bass collected in 4.0 hours (1.5 hours in upper and lower sections and 1.0 hour in the middle section) of nocturnal electrofishing (30-minute runs) at Grayson Lake on 15, 25, and 29 of April.

Area/Species	Inch class																			Total	CPUE	Std. error
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Upper																						
Largemouth bass		13	50	21	1	3	13	23	12	7	1	6	4	4	5	2	6	6		177	118.0	9.9
Spotted bass						1	4	4	1		1									11	7.3	0.7
Middle																						
Largemouth bass	2	115	183	46	5	25	55	33	17	14	1	1	1			1				499	499.0	89.0
Spotted bass		4	9	3	3	7	4	3	2											35	35.0	17.0
Lower																						
Largemouth bass	2	41	61	33	9	33	63	39	28	18	6	6	2	1		3	2		1	348	232.0	26.1
Spotted bass	8	59	9	8	36	41	23	7	4	1										196	130.7	15.1
Total																						
Largemouth bass	4	169	294	100	15	61	131	95	57	39	8	13	7	5	5	6	8	6	1	1024	256.0	59.4
Spotted bass	8	63	18	11	39	49	31	14	7	1	1									242	60.5	21.8

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Table 21. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Grayson Lake from 1999-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	145.5	47.4	86.0	17.1	15.0	2.2	9.5	3.0	1.8	1.0	256.0	59.4
2018	130.4	26.9	117.6	22.1	16.7	3.9	8.4	1.7	1.1	0.5	273.1	51.4
2017	90.9	13.7	107.1	17.9	19.8	2.3	8.9	1.3	0.9	0.5	226.7	25.5
2016	178.3	15.4	93.7	7.4	15.7	2.4	11.0	1.5	1.7	1.0	298.7	16.1
2015	55.1	14.2	90.9	12.5	18.9	4.0	14.9	2.6	3.3	0.9	179.8	27.8
2014	53.5	10.7	97.3	11.3	12.7	1.6	13.5	2.0	2.2	0.7	176.9	18.3
2013	75.2	11.3	78.2	5.7	13.2	1.5	16.3	2.1	1.5	0.4	182.8	14.4
2012	67.0	11.4	91.0	6.5	16.8	2.2	13.3	2.8	0.3	0.3	188.0	16.1
2011*												
2010*												
2009	22.8	4.0	41.0	4.2	17.0	2.7	12.7	2.0	0.8	0.3	93.5	10.3
2008	25.7	7.2	22.5	4.4	11.5	2.5	3.7	0.9	0.3	0.2	63.3	11.5
2007	48.0	8.0	46.8	3.8	16.0	2.1	5.0	0.8	0.2	0.2	115.8	11.6
2006	18.8	2.9	55.5	7.4	23.7	3.9	5.3	1.1	0.3	0.2	103.3	10.1
2005	50.1	8.0	70.2	7.9	25.1	3.7	2.9	0.5	0.2	0.2	148.3	15.9
2004	162.3	22.0	77.8	10.1	12.9	1.4	2.9	0.6	0.3	0.2	255.9	31.9
2003	128.3	10.7	79.5	6.5	6.3	0.8	2.2	0.6	0.7	0.4	216.3	15.1
2002	132.5	17.9	54.5	5.5	4.8	1.4	3.0	0.8	0.8	0.4	194.8	22.7
2001	220.8	30.6	54.2	3.2	6.7	0.9	2.2	0.5	0.2	0.2	283.9	30.2
2000	143.3	20.6	65.7	5.9	13.4	1.5	6.7	1.0	0.3	0.2	229.1	25.9
1999	172.7	21.6	102.4	10.1	24.1	2.1	4.6	0.7	0.2	0.2	303.8	31.3

* = No sample due to high water

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Table 22. PSD and RSD values obtained for spotted and largemouth bass taken in spring electrofishing samples in each area of Grayson Lake.

Area	Species	No. ≥ 8.0 in	PSD		RSD _a	
			Value	$\pm 95\%$ CI	Value	$\pm 95\%$ CI
Upper	Spotted bass	11	18	± 24	-	
	Largemouth bass	92	45	± 10	29	± 9
Middle	Spotted bass	19	12	± 5	-	
	Largemouth bass	148	12	± 5	1	± 2
Lower	Spotted bass	112	4	± 4	-	
	Largemouth bass	202	19	± 5	4	± 3
Total	Spotted bass	142	6	± 4	-	
	Largemouth bass	442	22	± 4	9	± 3

^a Largemouth bass = RSD₁₅, spotted bass = RSD₁₄

nedpsdgl.d19

Table 23. Population assessment of largemouth bass based on samples collected at Grayson Lake from 2003-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Spring CPUE age-1	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value		15.0	9.5	1.8	142.8	13	Good		
	Score	2	1	2	4	4				
2018	Value		16.7	8.4	1.1	126.9	13	Good		
	Score	2	2	2	3	4				
2017	Value	12.2	19.8	8.9	0.9	85.1	13	Good		
	Score	2	2	2	3	4				
2016	Value		15.7	11.0	1.7	169.3	12	Fair		
	Score	2	1	2	3	4				
2015	Value		18.9	14.9	3.3	53.8	15	Good		
	Score	2	2	3	4	4				
2014	Value		12.7	13.5	2.2	46.9	14	Good		
	Score	2	1	3	4	4				
2013	Value		13.2	16.3	1.5	73.2	14	Good		
	Score	2	1	3	4	4				
2012	Value		16.8	13.3	0.3	48.5	13	Good		
	Score	2	2	3	2	4				
2011	Value									
2010	Score									
2009	Value		17.0	12.7	0.8	19.9	11	Fair	-0.361	30.30%
	Score	2	2	2	3	2				
2008	Value	11.6	11.5	3.7	0.3	21.3	8	Poor	-0.445	35.90%
	Score	2	1	1	2	2				
2007	Value		16.0	5.0	0.2	45.9	9	Fair	-0.538	41.60%
	Score	1	1	1	2	4				
2006	Value		23.7	5.3	0.3	17.3	9	Fair	-5.350	41.50%
	Score	1	3	1	2	2				
2005	Value		25.1	2.9	0.2	46.8	11	Fair	-0.731	51.90%
	Score	1	3	1	2	4				
2004	Value		12.9	2.9	0.3	40.4	8	Poor		
	Score	1	1	1	2	3				
2003	Value		6.3	2.2	0.7	125.2	10	Fair		
	Score	1	1	1	3	4				

nedpsdgl.d02-d19; nedaaggl.d03,d08,d17

Table 24. Indices of year class strength at age 0 and age 1 and mean lengths (in) of largemouth bass collected in September while nocturnal electrofishing at Grayson Lake.

Year class	Area	Age 0		Age 0		Age 0 ≥5.0 in		Age 1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	4.8	<01	167.7	36.5	67.7	14.3		
2018	Total	4.9	<01	164.2	39.3	74.2	19.8	142.8	47.3
2017	Total	5.2	<01	91.1	20.1	63.1	15.3	126.9	28.0
2016	Total	4.7	<01	116.4	24.1	38.9	9.7	85.1	12.7
2015	Total	4.8	<01	126.0	16.7	48.7	8.6	169.3	15.1
2014	Total	4.6	<01	101.8	15.7	31.8	8.3	53.8	14.3
2013	Total	4.3	<01	81.3	11.2	15.3	3.3	46.9	9.5
2012	Total	4.5	<01	139.1	23.0	41.8	6.1	65.7	9.1
2011	Total	4.0	<01	83.6	15.0	11.1	2.6	48.5	12.0
2010	Total	4.8	<01	98.2	17.3	42.0	6.9	*	*
2009	Total	4.1	0.1	33.1	5.7	4.2	1.4	*	*
2008	Total	4.1	<01	66.0	16.4	8.7	2.8	19.9	3.8
2007	Total	4.3	0.1	44.9	9.2	12.9	2.8	29.8	10.0
2006	Total	4.1	<01	87.1	17.9	12.0	2.6	45.9	8.0
2005	Total	4.0	<01	72.3	17.0	11.7	2.2	17.3	2.8
2004	Total	4.3	0.1	40.4	5.7	11.3	2.1	46.8	7.8
2003	Total	4.3	<01	59.1	6.8	10.4	1.7	158.9	21.7

* No sample collected due to high water

nedbsigl.d19-d18, d16-d13 nedwrsigl.d17,d12 - d03; nedpsdgl.d19-d12, d09 - d04
nedaaggl.d03, d08, d17

Table 25. Length frequency and CPUE (fish/hr) of black bass collected in 1.5 hours of nocturnal electrofishing (6- 15-minute runs) at Greenbo Lake (Greenup Co.) on 30 April.

Species	Inch class																							Total	CPUE	Std. error
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Largemouth bass	1	9	15	11	3	11	10	22	22	31	38	44	24	7	6	1	3	1	1	1	1	2	264	176.0	15.2	

nedpsdgb.d19

Table 26. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Greenbo Lake.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		>20.0 in		CPUE	s.e.
	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.		
2019	31.7	3.9	35.3	6.1	47.7	4.1	9.0	2.2	3.3	1.6	176.0	15.2
2018	63.3	7.8	72.7	10.8	95.3	7.62	20	5	7.3	3.3	251.3	22.8
2017	24.0	5.6	78.0	13.1	82.7	10.7	16.0	2.3	4.0	1.5	200.7	17.2
2016	40.7	7.8	103.3	5.5	76.7	7.6	18.0	5.5	6.0	2.9	238.7	15.0
2015	38.7	4.8	68.0	7.7	58.0	8.1	12.7	3.0	2.0	1.4	177.3	16.8
2014	28.0	7.2	52.7	3.0	116.0	16.1	7.3	1.6	3.3	1.2	204.0	16.0
2013	14.0	1.7	78.7	7.4	75.3	17.3	8.7	2.2	1.3	0.8	176.7	22.4
2012	25.3	4.8	111.3	11.8	64.7	8.0	8.7	2.8	2.0	0.9	210.0	21.1
2011	46.0	13.1	91.3	9.3	58.0	8.9	6.7	3.2	1.3	0.8	202.0	14.8
2010	78.0	12.9	87.3	3.5	45.3	9.3	13.3	5.8	2.0	1.4	224.0	11.3
2009	44.7	9.4	60.0	8.7	50.0	8.0	18.0	3.4	2.7	1.3	172.7	16.7

nedpsdgb.d09 - d19

Table 27. Largemouth bass PSD and RSD₁₅ values from spring electrofishing at Greenbo Lake.

Year	No. ≥8.0 in	PSD		RSD ₁₅	
		Value	± 95% CI	Value	± 95% CI
2019	214	60	± 6	11	± 4
2018	282	61	± 6	11	± 4
2017	265	56	± 6	9	± 3
2016	297	48	± 6	8	± 3
2015	208	51	± 7	9	± 4
2014	264	70	± 6	4	± 2
2013	244	52	± 6	5	± 3
2012	277	40	± 6	5	± 3
2011	234	51	± 6	4	± 3
2010	219	40	± 7	9	± 4
2009	192	53	± 7	14	± 5

nedpsdgb.d09 - d19

Table 28. Population assessment of largemouth bass based on samples collected at Greenbo Lake from 2009-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE age-1	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value		25.3	47.7	9.0	3.3	14	Good	-	-
	Score	3	2	4	2	3				
2018	Value		22.7	95.3	20.0	7.3	16	Good	-	-
	Score	3	2	4	3	4				
2017	Value		6.0	82.7	16.0	4.0	14	Good	-	-
	Score	3	1	4	2	4				
2016	Value		14.7	76.7	18.0	6.0	16	Good	-1.17	0.688
	Score	3	2	4	3	4				
2015	Value	11.2	38.7	58.0	12.6	2.0	15	Good	-	-
	Score	3	3	4	2	3				
2014	Value	11.2	21.3	116.0	7.3	3.3	14	Good	-	-
	Score	3	2	4	2	3				
2013	Value	11.2	3.8	75.3	8.7	1.3	12	Fair	-	-
	Score	3	1	4	2	2				
2012	Value	11.2	2.0	64.7	8.7	2.0	13	Good	-0.812	56.60%
	Score	3	1	4	2	3				
2011	Value	10.7	9.5	58.0	6.7	1.3	12	Fair	-	-
	Score	2	2	4	2	2				
2010	Value	10.7	5.3	45.3	13.3	2.0	13	Good	-0.597	45.00%
	Score	2	1	4	3	3				
2009	Value	10.7	3.2	50.0	18.0	2.7	13	Good	-0.415	34.00%
	Score	2	1	4	3	3				

nedpsdgb.d09-d19

Table 29. Length frequency and CPUE (fish/hr) for sunfish collected in 1.25 hours of diurnal electrofishing (5- 15-minute runs) at Greenbo (Greenup Co.) on 8 May.

	Inch class								Total	CPUE	Std. error
	3	4	5	6	7	8	9	10			
Bluegill	37	44	39	22	6	4			152	121.6	19.1
Redear sunfish	16	43	26	14	4	4	12	7	126	100.8	25.9

nedsungb.d19

Table 30. Spring electrofishing CPUE (fish/hr) for each length group of bluegill collected at Greenbo Lake.

Year	Length group										Total		Total (excluding < 3.0 in)
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥6.0 in		≥8.0 in		CPUE	s.e.	
2019			96.0	25.1	22.4	6.4	26.6	6.1	3.2	1.5	121.6	29.1	121.6
2018 ^a													
2017	173.6	58.04	217.6	27.85	34.4	11.77	44.0	14.6	9.6	3.71	435.2	62.5	261.6
2016 ^a													
2015			92.0	6.3	28.0	12.7	41.6	17.8	13.6	5.3	133.6	12.4	133.6
2014 ^a	-		-		-				-		-		
2013			96.8	21.9	97.6	19.2	121.6	23.3	24.0	5.2	218.4	31.6	218.4
2012			276.0	65.6	70.4	5.9	77.6	4.8	7.2	2.5	353.6	66.7	353.6
2011	693.6	115.6	340.8	60.2	37.6	7.2	51.2	11.3	13.6	4.8	1085.6	164.2	392.0
2010	721.6	226.2	176.8	40.4	68.0	10.0	92.0	15.9	24.0	6.3	990.4	255.8	268.8
2009	103.2	35.9	194.4	35.6	35.2	9.6	40.8	10.4	5.6	2.7	338.4	76.8	235.2

nedsungb.d19, d17, d15, d13 - d09

* Beginning in 2012, and except for 2017, < 3.0-in fish were not collected.

^a = sample not collected

Table 31. Bluegill PSD and RSD₈ values from spring electrofishing at Greenbo Lake.

Year	No. ≥3.0 in	PSD		RSD ₈	
		Value	± 95% CI	Value	± 95% CI
2019	152	21	± 7	3	± 3
2018 ^a					
2017	327	17	± 4	4	± 2
2016 ^a					
2015	167	31	± 7	10	± 4
2014 ^a					
2013	273	56	± 6	11	± 4
2012	442	22	± 4	2	± 1
2011	490	13	± 3	3	± 2
2010	336	34	± 10	9	± 6
2009	294	17	± 4	2	± 2

nedpsdgb.d09 - d19

^a = sample not collected

Table 32. Population assessment of bluegill based on samples collected at Greenbo Lake from 2009-2019 (scoring based on statewide assessment).

Year		Mean length age-2 at capture	Years to 6.0 in 3-3+	CPUE ≥6.0 in	CPUE ≥8.0 in	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value Score			25.6 2	3.2 1				
2018	Value Score								
2017	Value Score	4.7 3	3-3+ 3	44.0 2	9.6 2	10	Fair	-0.872	-58.20%
2016 ^a	Value Score								
2015	Value Score			41.6 2	17.8 3				
2014 ^a	Value Score								
2013	Value Score			121.6 4	24.0 4				
2012	Value Score			77.6 4	7.2 2				
2011	Value Score	4.9 3	3.0 3	51.2 3	13.6 3	12	Good	-1.150	68.30%
2010	Value Score			92.0 4	24.0 4				
2009	Value Score			40.8 2	5.6 2				

nedsungb.d09-19; nedaaggb.d11, d08,d17

^a = sample not collected

Table 33. Spring electrofishing CPUE (fish/hr) for each length group of redear sunfish collected at Greenbo Lake.

Year	Length group												Total (excluding <3.0 in)		
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥6.0 in		≥8.0 in		≥10.0 in			Total	
	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.		CPUE	s.e.
2019			68.0	25.0	14.4	4.1	32.8	11.6	18.4	8.4	5.6	3.7	100.8	25.9	100.8
2018 ^a	-		-		-		-		-		-		-		-
2017	6.4	4.7	21.6	7.2	2.4	1.0	20.8	5.9	18.4	6.3	1.6	1.0	48.8	7.3	42.4
2016 ^a	-		-		-		-		-		-		-		-
2015			11.2	2.3	6.4	2.0	14.4	6.0	8.0	5.1	1.6	1.6	25.6	7.1	25.6
2014 ^a	-		-		-		-		-		-		-		-
2013			1.6	1.1	3.2	1.8	6.4	3.1	3.2	2.4	2.4	2.4	8.0	2.9	8.0
2012			4.8	4.8	0.8	0.8	1.6	1.1	0.8	0.8	0.8	0.8	6.4	4.7	6.4
2011	0.8	0.8	3.2	1.8	6.4	2.0	10.4	3.6	4.0	2.5			14.4	4.1	13.6
2010	4.8	2.1	11.2	4.2	8.0	2.4	12.0	3.2	4.0	2.2	0.8	0.8	28.0	7.3	23.2
2009	0.8	0.8	0.8	0.8	2.4	1.2	2.4	1.2					4.0	1.8	3.2

nedsungb.d19 - d09

* Beginning in 2012, and except for 2017, < 3.0-in fish were not collected.

^a = sample not collected

Table 34. Redear sunfish PSD and RSD₉ values from spring electrofishing at Greenbo Lake.

Year	No. ≥4.0 in	PSD		RSD ₉	
		Value	± 95% CI	Value	± 95% CI
2019	110	25	± 8	17	± 7
2018 ^a					
2017	53	45	± 14	25	± 12
2016 ^a					
2015	26	54	± 20	23	± 17
2014 ^a					
2013	8	63	± 36	50	± 37
2012	5	20	± 39	20	± 39
2011	17	41	± 24	12	± 16
2010	22	32	± 20	23	± 18
2009	4	25	± 49	0	± 0

nedsungb.d19, d17, d15, d13 - d09

^a = sample not collected

Table 35. Population assessment of redear sunfish based on samples collected at Greenbo Lake from 2009-2019 (scoring based on statewide assessment).

Year	Mean length age-3 at capture	Years to 8.0 in	CPUE ≥8.0 in	CPUE ≥10.0 in	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value		18.4	3.71				
	Score		4	3				
2018	Value							
	Score							
2017	Value	8.2	3	18.4	1.6	13	Good	0.975
	Score	4	4	4	1			62.30%
2016 ^a	Value							
	Score							
2015	Value		8.0	1.6				
	Score		2	1				
2014 ^a	Value							
	Score							
2013	Value		3.2	2.4				
	Score		1	2				
2012	Value		0.8	0.8				
	Score		1	1				
2011	Value	9.7	3	4.0	0.0	12	Good	-0.271
	Score	4	4	3	1			23.70%
2010	Value		4.0	0.8				
	Score		3	1				
2009	Value		0.0	0.0				
	Score		1	1				

nedsungb.d19,d17,d15, d13 - d09; nedaaggb.d17, d11

^a = sample not collected

Table 36. Length frequency and CPUE (fish/hr) of black bass collected in 1.5 hour (6- 15-minute runs) of diurnal electrofishing for largemouth bass in Lake Carnico on 22 April.

Species	Inch class																	Total	CPUE	Std. error
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			
Largemouth bass	1	6	11	14	3	2	5	3	1	5	11	16	27	12	18	7	2	144	96.0	6.0

nedpsdlc.d19

Table 37. Spring electrofishing CPUE (fish/hr) for various length groups of largemouth bass collected at Lake Carnico from 2004-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	s.e.
	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.		
2019	23.3	6.2	7.3	3.5	21.3	5.0	44.0	5.6	0.0	0.0	96.0	6.0
2018 ^a	-	-	-	-	-	-	-	-	-	-	-	-
2017	10.0	0.9	18.0	3.7	38.7	6.1	54.7	5.5	0.7	0.7	121.3	13.8
2016 ^a	-	-	-	-	-	-	-	-	-	-	-	-
2015	7.3	1.6	21.3	2.2	22.0	3.5	22.0	4.2	2.7	1.3	72.7	8.2
2014 ^a	-	-	-	-	-	-	-	-	-	-	-	-
2013	40.0	6.2	77.3	8.6	34.7	4.7	22.0	4.7	2.0	1.4	174.0	13.4
2012	52.0	7.9	44.7	10.8	23.3	3.3	14.7	2.5	-	-	134.7	15.9
2011	22.0	3.7	24.0	5.8	24.0	2.3	9.3	2.0	-	-	79.3	8.9
2010	20.0	5.9	26.7	4.0	28.0	4.7	12.0	3.4	1.3	0.8	86.7	9.2
2009	38.7	7.0	29.3	5.2	18.7	2.9	8.7	1.6	1.3	0.8	95.3	10.8
2008	2.7	0.8	16.0	4.5	9.3	2.5	8.0	2.1	1.3	0.8	36.0	7.3
2007	40.0	8.1	108.7	9.0	31.3	3.9	14.7	2.5	1.3	1.3	194.7	10.3
2006	28.7	5.1	41.3	8.6	18.0	3.7	9.3	2.9	0.7	0.7	97.3	18.1
2005	24.0	5.6	64.7	8.5	24.7	3.3	14.0	1.7	0.7	0.7	127.3	12.6
2004	56.7	13.4	121.3	15.6	36.0	5.2	19.3	3.0	0.7	0.7	233.3	34.7

nedpsdlc.d19 - d04

^a = sample not collected

Table 38. Largemouth bass PSD and RSD₁₅ values from spring electrofishing at Lake Carnico.

Year	No. ≥8.0 in	PSD		RSD ₁₅	
		Value	± 95% CI	Value	± 95% CI
2019	109	90	± 6	61	± 9
2018 ^a					
2017	167	84	± 6	49	± 8
2016 ^a					
2015	24	67	± 9	34	± 9
2014 ^a					
2013	201	42	± 7	16	± 5
2012	124	46	± 9	18	± 7
2011	86	58	± 10	16	± 8
2010	100	60	± 19	18	± 15
2009	85	48	± 11	15	± 8
2008	50	52	± 14	24	± 12
2007	232	30	± 6	10	± 4
2006	103	40	± 10	14	± 7
2005	155	37	± 8	14	± 6
2004	265	31	± 6	11	± 4

nedpsdlc.d19-d04

^a = sample not collected

Table 39. Population assessment of largemouth bass based on samples collected at Lake Carnico from 2004-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE age-1	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value		21.3	21.3	44.0	0.0	13	Good		
	Score	4	2	2	4	1				
2018 ^a	Value	-	-	-	-	-	-	-	-	-
	Score	-	-	-	-	-	-	-	-	-
2017	Value	11.5	4.0	38.7	54.7	0.7	13	Good	-1.014	63.70%
	Score	4	1	3	4	1				
2016 ^a	Value	-	-	-	-	-	-	-	-	-
	Score	-	-	-	-	-	-	-	-	-
2015	Value		4.0	22.0	22.0	2.7	12	Fair	-	-
	Score	3	1	2	3	3				
2014 ^a	Value	-	-	-	-	-	-	-	-	-
	Score	-	-	-	-	-	-	-	-	-
2013	Value		20.0	34.7	22.0	2.0	13	Good	-	-
	Score	3	2	2	3	3				
2012	Value		16.0	23.3	14.7	0.0	9	Fair	-0.504	39.60%
	Score	3	2	2	2	0				
2011	Value		9.3	24.0	9.3	0.0	9	Fair	-0.419	34.20%
	Score	3	1	2	2	1				
2010	Value		18.7	28.0	12.0	1.3	11	Fair	-0.552	42.50%
	Score	3	2	2	2	2				
2009	Value		18.0	18.7	8.7	1.3	10	Fair	-0.599	45.10%
	Score	3	2	1	2	2				
2008	Value	11.0	2.7	9.3	8.0	1.3	9	Fair	-0.673	49.00%
	Score	3	1	1	2	2				
2007	Value		39.5	31.3	14.7	1.3	12	Fair	-0.679	49.30%
	Score	4	2	2	2	2				
2006	Value		27.5	18.0	9.3	0.7	10	Fair	-0.505	39.60%
	Score	4	2	1	2	1				
2005	Value		23.2	24.7	14.0	0.7	11	Fair	-0.511	40.00%
	Score	4	2	2	2	1				
2004	Value	12.2	54.1	36.0	19.3	0.7	14	Good	-0.631	46.90%
	Score	4	3	3	3	1				

nedpsdlc.d19 - d04; nedaaglc.d04,d08, d17

^a = sample not collected

Table 40. Length frequency and CPUE (fish/hr) of black bass collected in 1 hour (4- 15-minute runs) of diurnal electrofishing for largemouth bass in Lake Reba on 15 April.

Species	Inch class															Total	CPUE	Std. error	
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				19
Largemouth bass	20	107	55	5	45	88	42	48	22	9	3	2	1		1	1	449	449.0	30.6

nedpsdlr.d19

Table 41. Spring electrofishing CPUE (fish/hr) for various length groups of largemouth bass collected at Lake Reba from 1995-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.
2019	187.0	55.2	223.0	34.7	34.0	9.3	5.0	3.0	0.0	0.0	449.0	30.6
2018	193.0	45.5	56.0	8.2	29.0	6.8	8.0	8.0	0.0	0.0	286.0	28.3
2017	373.6	51.5	175.2	19.9	94.4	21.2	21.6	2.4	4.8	0.8	664.8	53.0
2016	108.0	15.8	102.0	23.7	41.0	10.0	13.0	1.9	2.0	1.2	264.0	19.5
2015	103.2	26.5	84.0	9.2	96.8	12.9	33.6	5.7	4.0	1.8	317.6	23.0
2014	56.0	11.0	144.0	12.4	95.0	10.8	75.0	18.1	7.0	5.7	370.0	22.7
2013	60.1	7.8	102.4	7.7	63.3	11.0	27.1	8.7	0.0		252.9	26.9
2012	103.3	16.5	90.7	9.0	68.0	8.2	16.7	4.2	1.3	0.8	278.7	13.5
2011	66.0	11.4	108.7	16.8	106.0	18.6	25.3	6.1	2.0	1.4	306.0	35.8
2010	67.7	8.1	118.3	19.4	57.7	8.0	6.8	1.7	0.7	0.7	246.0	26.8
2009	47.3	7.6	238.7	12.9	92.7	7.3	26.0	3.2	0.7	0.7	404.7	23.4
2008	77.3	18.4	208.0	28.4	34.0	6.3	12.7	2.6	0.0		332.0	47.1
2007	134.7	20.9	216.7	45.9	60.7	5.2	18.7	4.1	0.7	0.7	430.7	52.2
2006	189.3	18.9	70.7	13.5	26.0	4.9	6.0	2.3	0.0		292.0	27.1
2005	53.3	9.3	57.3	8.1	45.3	4.3	13.3	2.2	0.7	0.7	169.3	16.4
2004	30.0	8.9	125.3	21.5	51.3	9.2	6.7	2.2	0.0		213.3	26.0
2003	110.0	17.9	126.0	10.9	52.0	6.1	8.0	2.5	0.7	0.7	296.0	27.3
2002	138.0	33.6	140.0	31.3	31.0	6.6	5.0	1.0	0.0		314.0	67.0
2001	196.0	25.0	32.0	15.1	9.3	5.3	4.0	2.3	0.0		241.3	32.4
2000	104.1	17.3	35.1	6.6	4.6	0.6	8.0	3.3	0.0		151.7	11.3
1999	122.7	29.4	10.0	3.5	8.0	2.1	18.0	4.7	0.7	0.7	158.7	27.3
1998	76.0	23.7	10.0	2.6	23.0	5.5	21.0	3.4	2.0	1.2	130.0	28.5
1997												
1996	104.0	32.2	7.0	3.4	15.0	5.7	14.0	2.6	0.0		140.0	28.8
1995	160.0	52.9	21.0	7.7	74.0	7.4	3.0	1.9	0.0		258.0	61.5

nedpsdlr.d95 - Present

Table 42. Largemouth bass PSD and RSD₁₅ values from spring electrofishing at Lake Reba.

Year	No. ≥ 8.0 in	PSD		RSD ₁₅	
		Value	$\pm 95\%$ CI	Value	$\pm 95\%$ CI
2019	262	15	± 4	2	± 2
2018	93	40	± 10	9	± 6
2017	364	40	± 5	7	± 3
2016	156	35	± 7	8	± 4
2015	268	61	± 6	16	± 4
2014	314	54	± 6	24	± 5
2013	243	47	± 6	14	± 4
2012	263	48	± 6	10	± 4
2011	360	55	± 5	11	± 3
2010	270	35	± 6	4	± 2
2009	536	33	± 4	7	± 2
2008	382	18	± 4	5	± 2
2007	444	27	± 4	6	± 2
2006	154	31	± 7	6	± 4
2005	174	51	± 7	11	± 5
2004	275	32	± 6	4	± 2
2003	279	32	± 5	4	± 2
2002	176	20	± 6	3	± 2
2001	33	30	± 16	9	± 10
2000	43	28	± 14	19	± 12
1999	98	72	± 12	50	± 13
1998	26	81	± 10	39	± 13
1997					
1996	54	96	± 8	62	± 19
1995	54	79	± 8	3	± 3

nedpsdlr.d19 - d98, d96 - d95

Table 43. Population assessment of largemouth bass based on samples collected at Lake Reba from 2003-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Spring CPUE age-1	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value		34.0	5.0	0.0	162.0	12	Fair		
	Score	3	3	1	1	4				
2018	Value		29.0	8.0	0.0	184.0	13	Good		
	Score	3	3	2	1	4				
2017	Value		94.4	21.6	4.8	321.6	18	Excellent		
	Score	3	4	3	4	4				
2016	Value		41.0	13.0	2.0	101.0	15	Good		
	Score	3	3	2	3	4				
2015	Value	11.0	96.8	33.6	4.0	72.8	19	Excellent	-0.464	37.10%
	Score	3	4	4	4	4				
2014	Value		95.0	75.0	7.0	50.0	18	Excellent		
	Score	3	4	4	4	3				
2013	Value		63.3	27.1	0.0	28.4	15	Good		
	Score	3	4	4	1	3				
2012	Value		68.0	16.7	1.3	76.0	16	Good		
	Score	3	4	3	2	4				
2011	Value		106.0	25.3	2.0	52.7	16	Good		
	Score	3	4	3	3	3				
2010	Value	11.4	57.7	6.8	0.7	47.1	14	Good	-1.019	63.90%
	Score	3	4	2	2	3				
2009	Value		92.7	26.0	0.7	65.3	16	Good	-0.162	15.00%
	Score	3	4	3	2	4				
2008	Value		34.0	12.7	0.0	113.0	13	Good	-1.030	64.30%
	Score	3	3	2	1	4				
2007	Value		60.7	18.7	0.7	183.7	16	Good	-1.040	65.00%
	Score	3	4	3	2	4				
2006	Value	11.2	26.0	6.0	0.0	192.0	13	Good	-0.790	55.00%
	Score	3	3	2	1	4				
2005	Value		45.3	13.3	0.7	41.2	13	Good	-0.250	22.00%
	Score	1	4	3	2	3				
2004	Value		51.3	6.7	0.0	23.2	11	Fair	-0.290	25.00%
	Score	1	4	2	1	3				
2003	Value		52.0	8.0	0.7	52.1	12	Fair	-0.500	39.00%
	Score	1	4	2	2	3				

nedpsdlr.d17

Table 44. Indices of year class strength at age 0 and age 1 and mean lengths (in) of largemouth bass while diurnal electrofishing at Lake Reba

Year class	Area	Age 0		Age 0		Age 0 ≥5.0 in		Age 1	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Total	4.8	0.1	373.0	28.7	153.0	22.0		
2018	Total	4.8	0.0	318.0	43.0	126.0	27.4	162.0	46.7
2017	Total	4.8	0.1	501.3	123.3	196.0	34.2	184.0	42.3
2016	Total	5.1	0.1	490.0	43.9	279.0	8.1	321.6	48.5
2015	Total	4.5	0.6	116.0	34.5	35.2	10.2	101.0	15.2
2014	Total	4.1	0.1	375.0	29.6	74.0	16.5	100.0	27.3
2013	Total	3.9	0.1	80.0	16.4	12.0	4.4	50.0	8.9
2012	Total	4.5	0.1	129.1	16.8	37.2	6.0	54.6	9.4
2011	Total	4.4	0.0	334.9	44.8	84.4	19.5	76.0	14.9
2010	Total	3.9	0.1	58.7	18.9	10.7	4.8	57.3	10.5
2009	Total	4.0	0.1	58.7	15.6	11.3	8.1	47.1	7.0
2008	Total	4.2	0.1	58.7	15.6	11.3	8.1	65.3	7.1
2007	Total	4.3	0.1	44.0	11.2	5.3	2.2	113.0	27.2
2006	Total	4.3	0.0	175.3	35.9	30.0	8.7	183.7	22.1
2005	Total	5.2	0.1	225.0	48.6	133.0	30.2	192.0	19.5
2004	Total	4.2	0.1	76.7	9.6	15.3	1.9	61.0	10.4
2003	Total	3.7	0.2	23.3	4.8	0.7	0.7	47.3	14.0

nedbsilr.d19-d16, nedwslr.d15, nedbsilr.d14 - d12, nedwslr.d11 - d03, nedpsdlr.d18-d02

Table 45. Length frequency and CPUE (fish/hr) for sunfish collected in 1.17 hours of diurnal electrofishing (9-7.5-minute runs and 1- 2.4-minute run) at Lake Reba on 7 May 2019.

Species	Inch class								Total	CPUE	Std. error
	3	4	5	6	7	8	9	10			
Bluegill	8	28	26	29	21	16	5		133	113.7	13.8
Redear sunfish	1	6	6	2	30	28	11	16	100	85.5	15.5

nedsunlr.d19

Table 46. Spring electrofishing CPUE (fish/hr) for various length groups of bluegill collected at Lake Reba from 1995-2019.

Year	Length group										Total		Total CPUE (excluding <3.0 in)
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥6.0 in		≥8.0 in		CPUE	s.e.	
	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.	CPUE	s.e.			
2019			53.0	9.5	42.7	4.5	60.7	6.2	18.0	4.1	113.7	13.8	113.7
2018 ^a													
2017			161.5	24.1	49.2	7.7	52.3	7.8	3.1	1.7	281.5	46.7	213.9
2016 ^a													
2015			418.0	83.2	83.0	25.1	84.0	25.1	1.0	1.0	502.0	78.8	502.0
2014 ^a													
2013			371.0	84.6	44.0	15.3	44.0	15.3			415.0	415.0	415.0
2012			151.0	26.4	38.0	14.7	38.0	14.7			189.0	36.6	189.0
2011	2169.0	361.1	919.0	141.7	98.0	26.5	99.0	26.7	1.0	1.0	3187.0	448.7	1018.0
2010	514.4	138.5	375.2	35.5	21.6	4.8	21.6	4.8			911.2	144.8	396.8
2009	527.0	93.0	200.0	19.7	22.0	6.4	22.0	6.4			749.0	100.5	222.0
2008	188.0	41.9	194.0	41.1	71.0	11.6	71.0	11.6			453.0	59.1	265.0
2007			73.0	10.8	29.0	7.7	29.0	7.7			102.0	10.9	102.0
2006	843.2	140.7	228.8	22.9	79.2	20.3	79.2	20.3			1151.2	158.5	308.0
2005	279.2	37.0	308.0	42.7	97.6	19.4	97.6	19.4			684.8	74.4	405.6
2004	199.2	39.4	187.2	27.0	23.2	7.0	23.2	7.0			409.6	58.2	210.4
2003	178.4	27.9	356.0	49.7	49.5	20.1	49.5	20.1			584.0	75.3	405.6
2002	266.0	39.7	703.0	102.0	29.0	10.4	29.0	10.4			998.0	138.3	732.0
2001			1210.7	207.6	89.3	16.7	89.3	16.7			1300.0	220.3	1300.0
2000	7.0	4.7	1181.3	152.3	303.5	13.0	303.5	13.0			1327.0	124.5	1320.0
1999	74.0	74.0	700.0	120.0	48.0	16.0	48.0	16.0			822.0	30.0	748.0
1998			1032.0		4.0		4.0				1036.0	0.0	1036.0
1997 ^a													
1996	16.0	12.0	722.0	110.0	22.0	18.0	22.0	18.0			760.0	140.0	744.0
1995			338.0	54.0	32.0	0.0	32.0	0.0			1370.0	54.0	1370.0

nedsunlr.d19, d17, d15, d13 - d98, d96 - d95

^a = Sample not collected

Table 47. Bluegill PSD and RSD_8 values from spring electrofishing at Lake Reba.

Year	No. ≥3.0 in	PSD		RSD_8	
		Value	± 95% CI	Value	± 95% CI
2019	133	53	± 9	16	± 6
2018 ^a					
2017	278	24	± 5	1	± 1
2016 ^a					
2015	502	17	± 3	0	± 0
2014 ^a					
2013	415	11	± 3		
2012	189	20	± 6		
2011	1018	10	± 2	0	± 0
2010	496	5	± 2		
2009	222	10	± 4		
2008	265	27	± 5		
2007	102	28	± 9		
2006	385	26	± 4		
2005	507	24	± 4		
2004	263	11	± 4		
2003	507	12	± 3		
2002	732	4	± 1		
2001	975	7	± 2		
2000	1320	21	± 2		
1999	374	6	± 2		
1998	259	0	± 1		
1997 ^a					
1996	372	3	± 2		
1995	685	2	± 1		

nedsunlr.d19, d17, d15, d13 - d98, d96 - d95

**No BG over 8.0 in sampled from 1995 - 2010 and 2012-2013 to be able to determine RSD_8*

^a = Sample not collected

Table 48. Population assessment of bluegill based on samples collected at Lake Reba from 1995-2019 (scoring based on statewide assessment).

Year		Mean length age-2 at capture	Years to 6.0 in	Spring CPUE ≥6.0 in	Spring CPUE ≥8.0 in	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value			60.7	18.0				
	Score			3	4				
2018 ^a	Value								
	Score								
2017	Value	6.1	3+	52.3	3.1	12	Good	-0.956	61.50%
	Score	4	3	2	3				
2016 ^a	Value								
	Score								
2015	Value			84.0	1.0				
	Score			4	1				
2014 ^a	Value								
	Score								
2013	Value			44.0	0.0				
	Score			2	1				
2012	Value	4.0	3+	38.0	0.0	8	Fair	-0.112	10.60%
	Score	2	3	2	1				
2011	Value			99.0	1.0				
	Score			4	1				
2010	Value			21.6	0.0				
	Score			1	1				
2009	Value			22.0	0.0				
	Score			1	1				
2008	Value	4.0	3+	71.0	0.0	9	Fair	-0.719	51.30%
	Score	2	3	3	1				
2007	Value			29.0	0.0				
	Score			2	1				
2006	Value			79.2	0.0				
	Score			4	1				
2005	Value			97.6	0.0				
	Score			4	1				
2004	Value			23.2	0.0				
	Score			1	1				
2003	Value	4.1	3+	49.6	0.0	8	Fair	-0.422	34.40%
	Score	2	3	2	1				
2002	Value			29.0	0.0				
	Score			2	1				
2001	Value			89.3	0.0				
	Score			4	1				
2000	Value	5.0	4+	303.5	0.0	11	Good		
	Score	4	2	4	1				
1999	Value			48.0	0.0				
	Score			2	1				
1998	Value			4.0	0.0				
	Score			1	1				
1997 ^a	Value								
	Score								
1996	Value			22.0	0.0				
	Score			1	1				
1995	Value			32.0	0.0				
	Score			2	1				

nedsunlr.d19, d17, d15, d13 - d98, d96 - d95

^a = Sample not collected

Table 49. Spring electrofishing CPUE (fish/hr) for various length groups of redear sunfish collected at Lake Reba from 1995-2019.

Year	Length group												Total		Total CPUE (excluding <3.0 in)
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥6.0 in		≥8.0 in		≥10.0 in		CPUE	s.e.	
2019			11.1	3.2	27.4	7.4	74.4	13.1	47.0	6.6	13.7	3.3	85.5	15.5	85.5
2018 ^a															
2017			11.5	4.3	12.3	4.0	50.8	7.6	38.5	5.6	0.8	0.8	63.9	9.9	62.3
2016 ^a															
2015			54.0	7.7	198.0	56.5	231.0	56.9	33.0	6.3			285.0	58.6	285.0
2014 ^a															
2013			98.0	26.2	143.0	23.6	145.0	23.5	2.0	1.3			243.0	21.2	243.0
2012			79.0	15.2	94.0	24.5	95.0	25.2	1.0	1.0			174.0	33.5	174.0
2011	31.0	12.6	146.0	19.6	204.0	57.8	210.0	59.4	6.0	3.3			387.0	48.7	356.0
2010	14.4	5.8	101.6	19.2	28.0	7.4	28.8	7.9	0.8	0.8			144.8	28.2	130.4
2009	184.0	52.9	150.0	22.9	60.0	4.5	60.0	4.5					394.0	65.7	210.0
2008	10.0	5.0	134.0	18.3	225.0	18.0	226.0	18.5	1.0	1.0			370.0	33.0	360.0
2007			122.0	16.3	33.0	5.9	35.0	5.0	2.0	1.3			157.0	20.3	157.0
2006	111.2	30.7	121.6	17.2	205.6	44.7	206.4	44.8	0.8	0.8			439.2	51.5	328.0
2005	16.8	5.9	39.2	5.5	196.0	33.4	196.0	33.4					252.0	30.7	235.2
2004	17.6	4.6	59.2	18.3	67.2	13.7	67.2	13.7					144.0	30.4	126.4
2003	13.6	5.7	119.2	19.8	178.4	68.8	178.4	68.8					311.2	82.9	297.6
2002	11.0	1.9	424.0	124.1	151.0	47.9	152.0	48.7	1.0	1.0			587.0	160.3	576.0
2001			220.0	46.1	84.0	32.7	85.3	32.4	1.3	1.3			305.3	39.4	305.3
2000			125.8	39.3	134.9	39.6	134.9	39.6					245.0	74.9	245.0
1999	2.0	2.0	92.0	36.0	122.0	22.0	122.0	22.0					216.0	60.0	214.0
1998			80.0		44.0		44.0						124.0	0.0	124.0
1997 ^a															
1996			44.0	20.0	14.0	10.0	14.0	10.0					58.0	30.0	58.0
1995															

nedsunlr.d19, d17, d15, d13 - d98, d96 - d95

^a = Sample not collected

Table 50. Redear sunfish PSD and RSD₉ values from spring electrofishing at Lake Reba.

Year	No. ≥ 3.0 in	PSD		RSD ₉	
		Value	± 95% CI	Value	± 95% CI
2019	99	86	± 7	27	± 9
2018 ^a					
2017	77	81	± 10	25	± 10
2016 ^a					
2015	265	62	± 6		
2014 ^a					
2013	237	26	± 6		
2012	139	21	± 7		
2011	310	22	± 5	0	± 0
2010	118	8	± 5		
2009	175	4	± 3		
2008	342	11	± 3		
2007	141	10	± 5		
2006	297	49	± 6		
2005	264	19	± 5		
2004	146	4	± 3		
2003	359	4	± 2		
2002	452	6	± 2		
2001	158	9	± 4		
2000	216	29	± 6		
1999	91	4	± 4		
1998	27	4	± 7		
1997 ^a					
1996	28	4	± 7		
1995					

nedsunlr.d19, d17, d15, d13 - d98, d96 - d95

**No RE over 9.0 in sampled from 1995 - 2010, 2012-2013 or 2015 to be able to determine RSD₉*

^a = Sample not collected

Table 51. Population assessment of redear sunfish based on samples collected at Lake Reba from 1995-2019 (scoring based on statewide assessment).

Year	Mean length age-3 at capture	Years to 8.0 in	Spring CPUE ≥8.0 in	Spring CPUE ≥10.0 in	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%	
2019	Value		47.0	13.7					
	Score		4	4					
2018 ^a	Value								
	Score								
2017	Value	8.3	4+	38.5	0.8	13	Good	-0.512	40.00%
	Score	4	3	4	2				
2016 ^a	Value								
	Score								
2015	Value		33.0	0.0					
	Score		4	1					
2014 ^a	Value								
	Score								
2013	Value		2.0	0.0					
	Score		1	1					
2012	Value	5.8	>6	1.0	0.0	5	Poor	-0.963	61.80%
	Score	2	1	1	1				
2011	Value		6.0	0.0					
	Score		2	1					
2010	Value		0.8	0.0					
	Score		1	1					
2009	Value		0.0	0.0					
	Score		1	1					
2008	Value	6.3	>7	1.0	0.0	6	Poor	-0.810	55.70%
	Score	3	1	1	1				
2007	Value		2.0	0.0					
	Score		1	1					
2006	Value		0.8	0.0					
	Score		1	1					
2005	Value		0.0	0.0					
	Score		1	1					
2004	Value		0.0	0.0					
	Score		1	1					
2003	Value	6.5	>6	0.0	0.0	7	Fair	-0.322	27.90%
	Score	4	1	1	1				
2002	Value		1.0	0.0					
	Score		1	1					
2001	Value		1.3	0.0					
	Score		1	1					
2000	Value		0.0	0.0					
	Score		1	1					
1999	Value		0.0	0.0					
	Score		1	1					
1998	Value		0.0	0.0					
	Score		1	1					
1997 ^a	Value								
	Score								
1996	Value								
	Score								
1995	Value								
	Score								

nedsunlr.d19, d17, d15, d13 - d98, d96 - d95

^a = Sample not collected

Table 52. Weekly boat and paddlecraft usage at Lake Reba. Data is analyzed by entire week, weekend day and weekday day. %PC is the percentage of total vessel's that are paddlecraft.

Month	Week of Year	Weekly Average (n=7)				Weekend Average (n=2)				Weekday Average (n=5)			
		Boat	Paddle	Both	% PC	Boat	Paddle	Both	% PC	Boat	Paddle	Both	% PC
Jan	1 (n=5)												
Jan	2												
Jan	3												
Jan	4												
Jan/Feb	5												
Feb	6												
Feb	7												
Feb	8												
Feb/Mar	9												
Mar	10												
Mar	11												
Mar	12												
Mar	13												
Mar/Apr	14	8	8	16	52	12	12	24	51	6	7	13	53
Apr	15	9	8	17	46	13	17	30	57	8	4	12	36
Apr	16	9	6	15	38	5	1	5	10	11	8	19	41
Apr	17	15	14	29	49	20	25	45	56	13	10	23	43
Apr/May	18	14	11	24	44	16	11	27	40	13	11	24	47
May	19	20	12	32	38	16	17	33	52	22	10	32	32
May	20	13	10	22	43	11	19	30	63	13	6	19	31
May	21	21	21	42	49	19	52	70	74	22	8	30	27
May/June	22	13	25	38	65	15	39	54	72	13	20	32	60
Jun	23	11	17	28	59	11	37	48	77	12	9	20	43
Jun	24	10	12	22	54	12	28	40	71	10	5	15	35
Jun	25	11	15	26	57	14	16	30	54	10	14	24	58
Jun	26	13	17	30	57	15	33	48	69	12	10	22	47
Jun/Jul	27	11	15	26	57	10	25	35	71	12	11	22	48
Jul	28	5	19	24	78	8	28	35	79	4	16	20	78
Jul	29	10	13	23	58	6	29	35	84	12	7	19	38
Jul	30	8	10	18	55	7	18	25	72	9	7	16	44
Jul/Aug	31	5	8	13	60	8	17	24	69	4	4	8	50
Aug	32	6	7	13	51	12	15	26	56	4	4	8	45
Aug	33	9	10	19	54	5	25	30	83	10	5	15	32
Aug	34	4	14	18	77	9	34	43	80	2	6	8	71
Aug	35	9	7	17	44	11	22	32	67	9	2	11	17
Sep	36	12	10	22	44	10	9	19	49	14	10	23	42
Sep	37	14	8	22	36	12	20	32	63	15	3	18	17
Sep	38	9	6	15	40	4	14	17	79	12	3	15	22
Sep	39	11	6	17	37	17	8	25	31	8	6	14	42
Sep/Oct	40	8	2	11	22	11	7	18	40	8	1	8	7
Oct	41	10	2	12	15	12	2	13	12	9	2	11	16
Oct	42	11	3	14	22	13	6	19	30	10	2	12	18
Oct	43	3	4	7	55	2	3	4	63	4	5	9	53
Oct/Nov	44	8	4	12	32	9	7	16	45	8	2	10	24
Nov	45	6	1	6	11	7	2	9	24	5	0	6	4
Nov	46	2	0	2	0	5	0	5	0	1	0	1	0
Nov	47	3	0	3	0	5	0	5	0	2	0	2	0
Nov	48	1	0	1	0	0	0	0	0	1	0	1	0
Dec	49	2	0	3	0	4	0	4	0	1	0	1	0
Dec	50	3	0	3	0	3	0	3	0	4	0	4	0
Dec	51	1	0	1	0	4	1	5	22	0	0	0	100
Dec	52	9	2	11	18	16	2	18	11	6	2	8	22
Dec	53 (n=3)	0	0	0	-	0	0	0	-	0	0	0	-

Table 53. Monthly boat and paddlecraft usage at Lake Reba.

Month	Number of Days	Total Boats	Total Paddle	Overall Total	Mean Boat	Mean Paddle	Mean Total
January	0						
February	0						
March*	6	46	46	92	7.7	7.7	15.3
April	30	330	279	609	11	9.3	20.3
May	31	508	479	987	16.4	15.5	31.8
June	30	348	782	830	11.6	16.1	27.7
July	31	236	407	643	7.6	13.1	20.7
August	31	229	294	523	7.4	9.5	16.9
September	30	334	211	545	11.1	7	18.2
October	31	266	99	365	8.6	3.2	11.8
November	30	86	9	95	2.9	0.3	3.2
December	31	107	16	123	3.5	0.5	4.0
Total	281	2,490	2,622	4,812	8.9	9.3	17.1

*Camera placed on 3/26, only 6 of 31 days surveyed this month

Table 54. Length frequency and CPUE (fish/hr) for largemouth bass collected in 0.75 hours of nocturnal electrofishing (3- 15 minute runs) at Smoky Valley Lake (Carter Co.) on 29 April.

Species	Inch class																						Total	CPUE	Std. error
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22					
Largemouth bass	7	19	46	25	4	7	18	22	33	17	7	4	3									1	213	284.0	66.1

nedpsdsv.d19

Table 55. Spring electrofishing CPUE (fish/hr) for various length groups of largemouth bass collected at Smoky Valley Lake from 1990-2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	S.E.
2019	134.7	43.7	106.7	32.7	37.3	16.2	5.3	5.3	1.3	1.3	284.0	66.1
2018	127.7	30.1	178.7	28.2	36.0	9.2	4.0	2.3			341.3	59.3
2017 ^a												
2016	110.6	29.5	125.2	21.1	18.1	4.9	2.0	1.2			256.0	52.8
2015	46.1	14.3	86.4	13.2	13.4	2.2	2.0	1.2			147.9	26.5
2014	71.1	16.6	177.4	28.8	24.4	5.5	1.0	1.0			273.9	42.6
2013	100.9	8.5	109.8	11.5	8.9	1.9	2.0	1.2			221.6	6.5
2012	112.1	21.8	98.9	22.3	12.8	2.0	1.0	1.0			224.7	41.4
2011	150.0	34.0	69.0	8.7	10.0	6.2					229.5	31.8
2010	47.7	9.3	65.9	7.8	3.3	1.1	1.0	1.0			117.9	15.3
2009	97.0	6.6	145.0	23.7	14.0	2.6	1.0	1.0			383.0	153.4
2008	155.0	23.3	199.0	34.4	46.0	7.8					607.0	260.2
2007	119.0	21.8	229.0	32.5	37.0	6.4	2.0	1.2			573.0	223.4
2006	112.0	12.8	256.0	33.8	62.0	8.7	4.0	1.6			633.5	234.4
2005	54.4	10.2	190.4	22.7	63.2	9.1	0.8	0.8			397.6	90.9
2004 ^a												
2003 ^a												
2002 ^a												
2001	117.3	11.6	180.0	14.1	46.7	12.7	2.7	2.7			346.7	11.6
2000	68.0	13.0	218.0	22.1	69.0	13.7	1.0	1.0			356.0	46.8
1999 ^a												
1998	135.0	32.2	132.0	25.5	75.0	15.1	3.0	1.0			546.0	264.9
1997	46.0	8.9	63.0	6.0	39.0	4.1	3.0	1.9			151.0	3.8
1996	30.0	5.8	77.0	11.5	50.0	7.8	3.0	1.9			160.0	14.3
1995	41.0	14.4	104.0	21.9	84.0	17.7	2.0	2.0			231.0	43.7
1994	72.0	5.9	104.0	14.5	94.0	10.5	7.0	1.9	1.0	1.0	277.0	13.2
1993	34.7	18.3	58.7	28.6	24.7	13.9	4.0	4.0			122.0	63.1
1992	43.4	8.9	96.1	10.9	94.0	6.8	7.3	3.5	1.8	1.0	261.0	36.8
1991	18.0	2.6	129.0	17.1	18.0	2.0	6.0	1.2	1.0	1.0	171.0	16.9
1990	58.7	9.7	109.2	21.8	34.1	1.2	18.6	5.8	2.4	1.2	352.0	158.0

nedpsdsv.d19

^a = Sample not collected

Table 56. Largemouth bass PSD and RSD₁₅ values from spring electrofishing at Smoky Valley Lake.

Year	No. ≥8.0 in	PSD		RSD ₁₅	
		Value	± 95% CI	Value	± 95% CI
2019	112	29	± 8	4	± 3
2018	164	18	± 6	2	± 2
2017 ^a					
2016	137	14	± 6	1	± 2
2015	91	15	± 7	2	± 3
2014	156	12	± 5	1	± 1
2013	105	10	± 6	2	± 3
2012	101	13	± 7	1	± 2
2011	70	14	± 8		
2010	67	6	± 6	1	± 3
2009	160	9	± 5	1	± 1
2008	245	19	± 5		± 0
2007	268	15	± 4	1	± 1
2006	322	20	± 4	1	± 1
2005	318	25	± 5	0	± 1
2004 ^a					
2003 ^a					
2002 ^a					
2001	172	22	± 6	1	± 2
2000	288	24	± 5	0	± 1
1999 ^a					
1998	210	37	± 7	1	± 2
1997	105	40	± 9	3	± 3
1996	130	41	± 8	2	± 3
1995	190	45	± 7	1	± 1
1994	205	49	± 7	3	± 2
1993	131	33	± 8	5	± 4
1992	213	51	± 7	4	± 3
1991	153	16	± 6	4	± 3
1990	194	30	± 6	11	± 4

nedpsdsv.d19

^a = Sample not collected

Table 57. Population assessment of largemouth bass based on samples collected at Smoky Valley lake from 2005-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Spring CPUE age-1	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
2019	Value		37.3	5.3	1.3	129.3	14	Good		
	Score	4	3	1	2	4				
2018	Value	11.9	36.0	4.0	0.0	61.3	13	Good	-0.780	53.70%
	Score	4	3	1	1	4				
2017 ^a	Value									
	Score									
2016	Value	11.0	18.1	2.0	0.0	47.3	10	Fair	-0.273	23.90%
	Score	3	2	1	1	3				
2015	Value		13.4	2.0	0.0	36.7	10	Fair		
	Score	3	2	1	1	3				
2014	Value		24.4	1.0	0.0	70.1	11	Fair		
	Score	3	2	1	1	4				
2013	Value		8.9	2.0	0.0	80.0	10	Fair		
	Score	3	1	1	1	4				
2012	Value	11.5	12.8	1.0	0.0	68.0	10	Fair	-0.936	60.80%
	Score	3	1	1	1	4				
2011	Value		10.0	0.0	0.0	150.5	7	Poor		
	Score	1	1	0	1	4				
2010	Value	9.6	3.3	1.0	0.0	34.9	7	Poor	-0.787	54.50%
	Score	1	1	1	1	3				
2009	Value		14.0	1.0	0.0	9.0	7	Poor	-0.223	20.00%
	Score	1	2	1	1	2				
2008	Value		46.0	0.0	0.0	56.0	10	Fair	-0.550	22.50%
	Score	1	4	0	1	4				
2007	Value	9.6	37.0	2.0	0.0	7.0	7	Poor	-0.513	40.10%
	Score	1	3	1	1	1				
2006	Value		62.0	4.0	0.0	70.1	13	Good	-0.579	43.90%
	Score	3	4	1	1	4				
2005	Value	11.0	36.2	8.0	0.0	19.1	11	Fair	-0.353	29.80%
	Score	3	3	2	1	2				

nedpsdsv.d19

^a = Sample not collected

Table 58. Length frequency and CPUE (fish/hr) for sunfish collected in 0.75 hours of diurnal electrofishing (3- 15-minute runs) at Smoky Valley Lake on 15 May 2019.

Species	Inch class							Total	CPUE	Std. error
	2	3	4	5	6	7	8			
Bluegill	18	52	37	24	10	13	4	158	210.7	101.2

nedsunsv.d19

Table 59. Spring electrofishing CPUE (fish/hr) for various length groups of bluegill collected at Smoky Valley Lake from 1990-2019.

Year	Length group										Total		Total CPUE (excluding <3.0 in)
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥6.0 in		≥8.0 in		CPUE	s.e.	
2019	24.0	20.1	150.7	71.6	30.7	10.9	36.0	10.6	5.3	1.3	210.7	101.2	186.7
2018 _a													
2017 _a													
2016	29.3	11.4	93.3	36.3	33.3	21.5	33.3	21.5	0.0		156.0	40.1	126.7
2015 _a													
2014			164.0	41.6	40.0	18.0	40.0	18.0	0.0		204.0	44.2	204.0
2013 _a													
2012			210.6	53.0	25.6	5.4	26.6	5.8	1.0	1.0	237.1	47.4	237.1
2011	742.0	78.1	105.0	23.7	12.0	5.9	13.0	6.6	1.0	1.0	860.0	60.0	118.0
2010	216.9	69.4	167.0	36.8	28.6	6.0	29.6	5.6	1.0	1.0	384.0	97.4	167.1
2009	203.0	34.5	214.0	44.3	24.0	10.7	25.0	11.7	1.0	1.0	442.0	64.4	239.0
2008			53.0	14.4	31.0	13.7	31.0	13.7			84.0	22.7	84.0
2007			89.1	17.1	10.3	5.2	11.4	5.2	1.1	1.1	67.4	13.3	67.4
2006	464.0	116.5	88.0	15.2	16.0	4.3	16.0	4.3			584.0	125.8	120.0
2005	164.0	41.5	169.0	30.3	38.0	8.9	42.0	8.9	4.0	3.0	307.0	70.1	143.0
2004	24.8	6.8	139.3	22.0	25.6	4.8	26.5	4.8	0.9	0.9	190.6	27.3	165.8
2003	200.0	61.1	102.0	30.3	107.0	34.0	111.0	34.0	4.0	2.1	345.0	106.9	145.0
2002													
2001			152.0	12.9	48.0	12.7	53.3	12.7	5.3	3.5	205.3	11.6	205.3
2000			128.0	44.6	66.0	20.3	67.0	20.3	1.0	1.0	195.0	61.0	195.0
1999													
1998			116.0	4.0	90.0	2.0	90.0	2.0			206.0	6.0	206.0
1997			98.0	46.0	86.0	42.0	90.0	42.0	4.0	4.0	188.0	88.0	188.0
1996													
1995			78.0	2.0	58.0	4.0	60.0	4.0	2.0	2.0	138.0	2.0	138.0
1994			190.0	10.0	52.0	12.0	56.0	12.0	4.0	4.0	246.0	22.0	246.0
1993	97.0	37.0	68.0	16.0	19.0	8.0	20.0	8.0	1.0	1.0	370.0	90.0	273.0
1992	144.0	96.8	105.3	13.5	46.7	17.0	54.7	17.0	8.0	2.3	304.0	76.1	160.0
1991	6.0	2.0	98.0	2.0	46.0	34.0	50.0	34.0	4.0	4.0	154.0	34.0	148.0
1990	76.0	20.0	642.0	154.0	182.0	32.0	184.0	32.0	2.0	2.0	902.0	206.0	826.0

nedsunsv.d19, d16, d14; nedsunsv.d12-d03; nedpsdsv.d01-d00; nedsunsv.d98-d97; d95-d90

_a = Lake was not sampled

Table 60. Bluegill PSD and RSD₈ values from spring electrofishing at Smoky Valley Lake.

Year	No. ≥ 3.0 in	PSD		RSD ₈	
		Value	$\pm 95\%$ CI	Value	$\pm 95\%$ CI
2019	140	19	± 7	3	± 3
2018 _a					
2017 _a					
2016	95	26	± 9	-	-
2015 _a					
2014	153	20	± 6	-	-
2013 _a					
2012	231	11	± 4	0	± 1
2011	118	11	± 6	1	± 2
2010	185	15	± 5	1	± 1
2009	239	10	± 4	0	± 1
2008	84	37	± 10		
2007	88	11	± 7	1	± 2
2006	104	15	± 7		
2005	211	20	± 5	2	± 2
2004	194	16	± 5	1	± 1
2003	213	52	± 7	2	± 2
2002					
2001	154	26	± 7	3	± 3
2000	195	34	± 7	1	± 1
1999					
1998	103	44	± 10		
1997	94	48	± 10	2	± 3
1996					
1995	69	43	± 12	1	± 3
1994	123	23	± 7	2	± 2
1993	88	23	± 9	1	± 2
1992	120	34	± 9	5	± 4
1991	74	34	± 11	3	± 4
1990	413	22	± 4	0	± 0

nedsunsv.d19, d16, d14; nedsunsv.d12-d03; nedpsdsv.d01-d00;

_a = Lake was not sampled

- = No fish over 8.0 in captured to determine RSD₈

Table 61. Mean back calculated lengths (in) at each annulus for bluegill collected from Smoky Valley Lake in May 2019, includes 95% confidence interval (CI) for mean length for each age class.

Year	No.	Age							
		1	2	3	4	5	6	7	8
2018	13	2.9							
2017	18	2.6	4.2						
2016	12	2.5	4.1	5.6					
2015	8	2.4	4.4	6.0	6.9				
2014	3	2.4	3.7	5.1	6.2	7.2			
2013	1	2.2	4.1	5.2	6.7	7.4	8.0		
2012	3	2.2	3.5	4.9	5.8	6.6	7.2	7.6	
2011	2	2.5	4.0	5.0	6.0	6.5	7.0	7.3	7.6
Mean		2.6	4.1	5.5	6.5	6.9	7.3	7.5	7.6
Number		60	47	29	17	9	6	5	2
Smallest		1.8	3.0	4.0	5.4	6.0	6.5	6.8	7.0
Largest		4.6	5.2	7.0	8.0	7.5	8.0	8.0	8.2
Std. error		0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.6
95% CI									
(±)		0.2	0.3	0.6	0.7	0.6	0.8	0.8	2.4

nedaagsv.d19

Table 62. Age frequency and CPUE of bluegill sampled from Smoky Valley Lake in 2019.

Age	Inch class							Total	%	CPUE	Std. error
	2	3	4	5	6	7	8				
1	18	24						42	26	55.5	40.0
2		28	30	8				66	42	88.9	41.8
3			7	13	6			26	16	34.2	13.2
4				3	4	3	1	11	7	15.2	5.0
5						5		5	3	6.5	2.5
6							1	1	1	1.3	0.3
7						3	1	4	3	5.7	1.9
8						2	1	3	2	3.5	1.0
Total	18	52	37	24	10	13	4	158	100		
%	11	33	23	15	6	8	3	100			

nedsunsv.d19; nedaagsv.d19

Table 63. Population assessment of bluegill based on samples collected at Smoky Valley lake from 2000-2019 (scoring based on statewide assessment).

Year		Mean length age-2 at capture	Years to 6.0 in 3-3+	Spring CPUE ≥6.0 in 36.0 2	Spring CPUE ≥8.0 in 5.3 4	Total score 11	Assessment rating Good	Instantaneous mortality (z) -0.739	Annual mortality (A)% 52.20%
2019	Value Score	4.2 2	3-3+ 3	36.0 2	5.3 4	11	Good	-0.739	52.20%
2018 _a	Value Score								
2017 _a	Value Score								
2016	Value Score	3.6 1	3-3+ 3	33.3 2	0.0 1	7	Fair	-0.528	41.00%
2015 _a	Value Score								
2014	Value Score			4.0 1	0.0 1				
2013 _a	Value Score								
2012	Value Score	4.1 2	3-3+ 3	26.6 1	1.0 2	8	Fair	-1.277	72.10%
2011	Value Score			13.0 1	1.0 2				
2010	Value Score			29.6 2	1.0 2				
2009	Value Score			25.0 1	1.0 2				
2008	Value Score	3.9 2	4-4+ 2	31.0 2	0.0 1	7	Fair	-0.722	51.50%
2007	Value Score			11.4 1	1.1 2				
2006	Value Score			16.0 1	0.0 1				
2005	Value Score			42.0 2	4.0 3				
2004	Value Score			26.5 1	0.9 2				
2003	Value Score	3.2 1	4-4+ 2	111.0 4	4.0 3	10	Good	-0.523	40.70%
2002 _a	Value Score								
2001	Value Score	4.7 3	4-4+ 2	53.3 2	5.3 4	11	Good		
2000	Value Score			67.0 3	1.0 2				

nedsunsv.d19, d16, d14, d12-d03, d01-d00

_a = Lake was not sampled

Table 64. Length frequency and CPUE (fish/hr) for largemouth bass collected in 1.0 hour of nocturnal electrofishing (4- 15-minute runs) at Lake Wilgreen (Madison Co.) on 09 October.

Species	Inch class																		Total	CPUE	Std. error
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Largemouth bass	24	46	18	8	19	17	15	17	14	10	7	15	9	12	22	8	5	1	267	267.0	40.9

nedwrslw.d19

Table 65. Number of fish and relative weights (Wr) for each length group of largemouth bass captured at Lake Wilgreen

Year	Length group								
	8.0-11.9 in			12.0-14.9 in			≥15.0 in		
	No.	Wr	se	No.	Wr	se	No.	Wr	se
2019	60	85	1.0	32	91	1.4	57	101	1.3
2018									
2017									
2016	55	86	1.1	35	92	2.1	43	96	1.8
2015									
2014									
2013									
2012									
2011	213	87	0.6	34	93	1.7	14	101	3.1
2010	172	84	0.9	44	92	1.4	21	98	1.9
2009	109	84	0.7	42	92	1.7	27	100	1.7
2008	203	87	4.0	52	89	1.1	9	97	3.6
2007	232	84	0.7	54	86	1.8	4	72	21.6
2006	198	90	0.6	86	90	0.9	8	96	3.7
2005									
2004	306	88	0.4	116	88	0.7	4	99	9.3
2003									
2002	119	85	0.6	25	83	1.6	3	98	4.3
2001									
2000									
1999									
1998									
1997	126	97	0.9	24	93	1.6	2	102	10.4
1996									
1995									
1994	299	96	0.5	25	85	1.4	6	93	2.4

nedwrslw.d19, d16, d11-d06, d04, d02, d97, d94

Table 66. Mean back calculated lengths (in) at each annulus for largemouth bass collected from Lake Wilgreen in October 2019; includes 95% confidence interval (CI) for mean length for each age class.

Year	No.	Age								
		1	2	3	4	5	6	7	8	
2018	29	4.8								
2017	15	4.7	8.4							
2016	24	5.1	8.5	10.9						
2015	9	5.2	9.3	11.6	13.5					
2014	3	4.8	8.3	1.7	12.6	14.0				
2013	6	5.1	8.7	10.8	12.8	14.5	15.7			
2012	1	5.2	7.7	9.0	11.0	12.9	14.2	15.4		
2011	1	5.5	8.2	11.0	12.4	14.2	15.5	16.4	16.8	
Mean		4.9	8.6	11.0	13.0	14.2	15.5	15.9	16.8	
Number		88	59	44	20	11	8	2	1	
Smallest		3.4	5.8	7.9	9.1	10.2	13.6	15.4		
Largest		6.7	11.9	14.3	16.1	16.4	16.7	16.4		
Std. error		0.1	0.1	0.2	0.4	0.5	0.4	0.5		
95% CI										
(±)		0.3	0.5	0.7	1.5	2.0	1.5	1.9		

nedaaglw.d19

Table 67. Population assessment of largemouth bass based on samples collected at Lake Wilgreen from 2005-2019 (scoring based on statewide assessment).

Year		Mean length	Spring CPUE 12.0-14.9 in	Spring CPUE ≥15.0 in	Spring CPUE ≥20.0 in	Spring CPUE age-1	Total score	Assessment rating	Instantaneous mortality (z)	Annual mortality (A)%
		age-3 at capture								
2019	Value	10.9							-0.391*	32.40%*
	Score	3								
2018	Value		21.3	42.0	2.7	10.7	15	Good		
	Score	4	2	4	3	2				
2017 _a	Value									
	Score									
2016	Value	11.7	80.0	164.0	6.7	48.7	19	Excellent	-0.278	24.30%
	Score	4	4	4	4	3				
2015 _a	Value									
	Score									
2014	Value		49.3	117.3	8.7	9.3	18	Excellent		
	Score	4	4	4	4	2				
2013 _a	Value									
	Score									
2012	Value		46.7	78.7	10.7	30.7	19	Excellent		
	Score	4	4	4	4	3				
2011	Value		25.3	42.0	3.3	55.3	17	Excellent		
	Score	4	2	4	3	4				
2010	Value		53.3	51.3	1.3	6.0	15	Good		
	Score	4	4	4	2	1				
2009	Value		52.0	50.0	1.3	6.0	15	Good		
	Score	4	4	4	2	1				
2008	Value	12.6	18.7	10.7	0.7	5.3	11	Fair	-0.633	46.90%
	Score	4	2	2	2	1				
2007	Value		115.3	18.7	2.7	230.0	18	Excellent		
	Score	4	4	3	3	4				
2006	Value		148.0	22.0	2.7	58.1	18	Excellent		
	Score	4	4	3	3	4				
2005	Value		108.7	6.0	0.0	81.2	15	Good		
	Score	4	4	2	1	4				

nedpsdlw.d19

_a = Lake was not sampled

* = data determined by applying 2019 age and growth to 2018 spring catch data.

SOUTHEASTERN FISHERY DISTRICT

Project 1: Lake and Tailwater Fishery Surveys

FINDINGS

Conditions encountered during sampling at southeastern district lakes are listed in Table 1.

Lake Cumberland (50,250 acres)

Lake levels in Lake Cumberland rose to 705 msl in 2013 and 723 msl in 2014 with the completion of repairs to Wolf Creek Dam. Sampling completed after 2013 was conducted in areas that were sampled prior to 2007. Samples from 2007-2012 were conducted in areas farther downstream in the embayments due to reduced water levels during repairs; therefore, any comparisons of the 2007-2012 data should be interpreted accordingly.

Black Bass Sampling (Spring)

Diurnal electrofishing studies were conducted at Wolf Creek dam, and in the Faubush Creek, Fishing Creek, and Lily Creek embayments of Lake Cumberland during April 2019 to assess the black bass populations. The length-frequency and catch-per-unit-effort (CPUE) of the black bass species collected in each area is shown in Table 2, and the catch-per-hour (by area and length group) of the three black bass species are shown in Tables 3-6. Largemouth bass catch rates increased greatly in 2019, with increases in catch rates in all size classes, except for fish greater than 20.0 in. Catch rates of smallmouth and spotted bass continued to improve in 2019 and were the highest observed rates in the last 10 years. Table 7 compares the catch-per-hour by length group of black bass in Lake Cumberland to other SEFD lakes sampled in 2019.

Largemouth bass catch rates greatly exceeded three of the four CPUE management objectives, with only the catch rate of fish greater than 20.0 in failing to meet the objective (Table 8). Spotted bass exceeded all three catch rate management objectives (Table 9), while the smallmouth bass population only met one of the CPUE management objectives (Tables 10).

Largemouth bass populations exhibited excellent size structure, with a PSD value of 78 and an RSD_{15} value of 55 (Table 11), and there are also strong numbers of fish in the smaller size groups. Smallmouth bass and spotted bass populations were also very good, with a PSD value of 74 and an RSD_{14} value of 54 for smallmouth bass and a PSD value of 63 and an RSD_{14} value of 16 for spotted bass (Table 11). Table 12 compares the size structure of black bass populations in Lake Cumberland to other SEFD lakes sampled in 2019.

Black Bass Sampling (Fall)

Diurnal electrofishing was conducted in the Fishing Creek embayment during 20 September 2019 to index the largemouth bass year class strength (Tables 13 and 14). Catch rates of age-0 largemouth bass were lower in 2019 and were the lowest rates observed over the last 10 years (Table 14). Additional largemouth bass (23,710) were stocked in October in the upper portion of the lake to supplement the 2019-year class. Table 15 compares the CPUE of age-0 largemouth bass in Lake Cumberland to other SEFD lakes sampled in fall 2019. Relative weight (W_r) values for largemouth bass and spotted bass collected during September sampling are shown in Table 16. Table 17 compares W_r values for black bass in Lake Cumberland to other SEFD lakes sampled in fall 2019.

Crappie Sampling

Fall trap netting was conducted in the Fishing Creek and Wolf Creek embayments of Lake Cumberland during October 2019 to assess the crappie population. Length frequency and CPUE for black and white crappie from each area are shown in Table 18. The PSD and RSD_{10} values for white and black crappie are shown in Table 19. Age-growth data from white and black crappie collected in 2019 are shown in Tables 20 and 21, respectively. Age-0 white crappie (93%) dominated the white crappie catch (Table 22). Age-1 black crappie (2018-year class) comprised 49% of the black crappie catch, and age-0 fish comprised an additional 41% of the catch (Table 23). The crappie population assessments (white and black) are shown in Table 24. White crappie rated fair, with the CPUE of age-0 fish and the mean length at age-2+ at capture helping to boost the score (Table 24). Due to low number of age-1 and older fish, mortality rates were not calculated for white crappie. Black crappie rated excellent (Table 24).

The crappie population met all five management objectives, with high catch rates of age-0 and age-1 fish influencing the overall scores (Table 25). Relative weight (Wr) values for black and white crappie are shown in Table 26. Although the number of larger crappie was relatively low in the trap net samples, angler reports and observed crappie collected during other routine sampling at the lake indicates that the crappie population is doing well.

Striped Bass Sampling

Gill nets were used in early December 2019 to evaluate the striped bass population in Lake Cumberland. Twenty net-nights captured 139 striped bass for a catch rate of 7.0 fish/nn. Length-frequency and CPUE of striped bass are shown in Table 27. Striped bass ranged from 9.0 to 35.0 in with the mode being the 21.0-in class (27 fish). Three of the four management objectives were met for the striped bass population, with the CPUE of age-1 fish failing to meet the objective (Table 28). The age-growth data for striped bass collected during 2019 is shown in Table 29. Eleven year-classes were represented in the catch (Table 30). The 2017-year class (age-2) was the most abundant year class collected (46%; Table 30). The 2016-year class (age-3 fish) comprised an additional 24% of the population, which coincides with the increased (pulsed) stocking rate in 2016. The mean length of age-2+ fish at capture (2017 year class) was 22.0 in, which exceeded the growth objective (21.0 in) for the striped bass fishery (Table 28). The striped bass assessment score was 11 (rating=good; Table 31). Striped bass relative weight (Wr) values are shown in Table 32. Relative weight values were poor for larger-sized fish in 2019, which was the result of low dissolved oxygen levels and high water temperatures in the late summer and early fall.

Cumberland Tailwater

Trout Sampling (Fall)

Nocturnal electrofishing sampling was conducted November 3 and 4 2019 to assess the trout population in the Lake Cumberland tailwater. Electrofishing was completed in seven different areas of the tailwater. Table 33 has the length-frequency and CPUE for the four trout species that were collected in each area. Cutthroat trout, which were introduced in March 2019, and brook trout were observed in low numbers during the sample. Catch rates of rainbow trout greater than 20.0 in improved slightly in 2019, while catch rates of other size classes declined (Table 34). Brown trout catch rates continue to decline and remain at or below the 25-year average for the tailwater (Table 35). Relative weight (Wr) values for each trout species is shown in Table 36.

Laurel River Lake (6,060 acres)

Black Bass Sampling (Spring)

Electrofishing sampling was conducted during April and May 2019 to assess the black bass population in Laurel River Lake. Electrofishing was conducted in four areas of the lake: 1) dam, 2) Spruce Creek, 3) Laurel River arm, and 4) upper Craigs Creek. Length-frequency and CPUE of the three black bass species collected in each area is shown in Table 37. The catch-per-hour (by area and length group) of the three black bass species are shown in Tables 38-41. Catch rates for largemouth bass increased in 2019, which was due to increases in catch rates of fish less than 12.0 in (Table 39). Catch rates of ≥ 15.0 -in largemouth bass decreased in 2019, which marks the second year of declining catches of largemouth bass over 15.0 in (Table 39). Catch rates of spotted bass decreased slightly in 2019 (Table 40). Smallmouth bass catch rates were consistent with previous years, and there was an increase in the catch rate of smallmouth bass larger than 14.0 in and 17.0 in (Table 41). Table 7 compares the catch-per-hour by length group of black bass in Laurel River Lake to other SEFD lakes sampled in 2019.

The largemouth bass population met three of the four catch rate objectives, with the CPUE of 12.0- to 14.9-in fish falling just short of the objective (Table 42). Spotted bass met one of the three catch rate management objectives (Table 43). The smallmouth bass population met one of the catch rate management objectives (Table 44).

Largemouth bass exhibited an excellent size structure, having a PSD value of 67 and an RSD₁₅ value of 33 (Table 45). Smallmouth and spotted bass had a good size structure, with smallmouth bass having a PSD value of 79 and an RSD₁₄ value of 71 and spotted bass population having a PSD of 51 and an RSD₁₄ of 8 (Table 45). Table 12 compares the size structure values of black bass populations in Laurel River Lake to other SEFD lakes sampled in 2019.

Black Bass Sampling (Fall)

Diurnal electrofishing was conducted in the Laurel River arm on 25 September 2019 to index largemouth bass year class strength (Tables 46 and 47). Age-0 catch rates in 2019 were lower than rates observed in 2018; however, no additional largemouth bass were stocked (Table 47). Table 15 compares the CPUE of age-0 largemouth bass in Laurel River Lake to other SEFD lakes sampled in fall 2019. Relative weight (Wr) values for largemouth and spotted bass collected during September sampling are shown in Table 48. Table 17 compares Wr values for black bass in Laurel River Lake to other SEFD lakes sampled in fall 2019.

Walleye Sampling

Gill nets were used in November 2019 to evaluate the walleye population in Laurel River Lake. A total of 112 walleye were captured in 8 net-nights for a catch rate of 14.0 fish/nn. Length frequency and CPUE of walleye is shown in Table 49. Walleye ranged from 10.0-24.0 in with the mode being the 19.0-in class (34 fish). Two of the three catch rate management objectives for walleye were met in 2019, with the CPUE of age-1+ fish falling short for the second consecutive sampling period (Table 50). Age-growth data for male and female walleye are shown in Tables 51 and 52, respectively. The age-growth for both sexes combined is shown in Table 53. Ten year-classes were represented in the catch, with age-2 (2017-year class) walleye comprising 50% of the catch (Table 54). The walleye assessment score was 12 (rating=good; Table 55). Mean length of age-2+ walleye at capture (18.9 in) surpassed the growth objective of 18.0 in (Table 50). Relative weight (Wr) values for walleye are shown in Table 56.

Cedar Creek Lake (784 acres; Lincoln Co.)

Black Bass Sampling (Spring)

Diurnal electrofishing was conducted on 25 April 2019 to assess the largemouth bass population in Cedar Creek Lake. The length-frequency and CPUE of largemouth bass is shown in Table 57. Size structure of largemouth bass was good (PSD=71, RSD₁₅=56; Table 58). Table 12 compares the size structure values of largemouth bass populations in Cedar Creek Lake to other SEFD lakes sampled in 2019. The catch-per-hour (by length group) of largemouth bass for 2010-2019 is shown in Table 59. Catch rates of largemouth bass in Cedar Creek Lake increased in 2019, with increased catch rates in all size classes. Increased recruitment in recent years has helped to bolster the population and improve catch rates. Table 7 compares the catch-per-hour by length group of largemouth bass in Cedar Creek Lake to other SEFD lakes sampled in 2019. All four CPUE management objectives were met or exceeded for the largemouth bass population (Table 60).

Black Bass Sampling (Fall)

Diurnal electrofishing was conducted on 23 September 2019 to index the largemouth bass year-class strength (Tables 61 and 62). Catch rates of age-0 bass in 2019 were high, but the average size of age-0 fish was small, which may lead to reduced overwinter survival (Table 62). Table 15 compares the CPUE of age-0 largemouth bass in Cedar Creek Lake to other SEFD lakes sampled in fall 2019. Relative weight (Wr) values for largemouth bass are found in Table 63. Table 17 compares Wr values for largemouth bass in Cedar Creek Lake to other SEFD lakes sampled in fall 2019.

Bluegill/Redear Sunfish Sampling

Diurnal electrofishing was conducted on 16 May 2019 to assess the bluegill and redear sunfish populations in Cedar Creek Lake. The length-frequency and CPUE of bluegill and redear sunfish is shown in Table 64. The catch-per-hour (by length group) of bluegill and redear sunfish is shown in Table 65. Catch rates remain variable for the sunfish population in the lake. PSD and RSD values for bluegill and redear sunfish are shown in Table 66.

Bert T. Combs Lake (36 acres; Clay Co.)

Largemouth Bass Sampling (Spring)

Diurnal electrofishing was conducted on 18 April 2019 at Bert T. Combs Lake to assess the black bass population. Length frequency and CPUE for black bass is shown in Table 67. Catch-per-hour (by length group) for largemouth bass is shown in Table 68. The catch rates for the largemouth bass population increased over previous sampling

efforts, with increases occurring in all size classes. Table 7 compares the catch-per-hour by length group of largemouth bass in Bert T. Combs Lake to other SEFD lakes sampled in 2019. The largemouth bass size structure was poor, with a PSD value of 25 ($RSD_{15}=1$; Table 69). Table 12 compares the size structure values of largemouth bass populations in Bert T. Combs Lake to other SEFD lakes sampled in 2019.

Largemouth Bass Sampling (Fall)

Largemouth bass were collected on 3 October 2019 to assess growth and condition. Age-growth data from largemouth bass collected in 2019 from Bert T. Combs Lake is shown in Table 70. Growth rates for largemouth bass in Bert T. Combs Lake are low, with bass only reaching 9.8 in by age-3. Relative weight values for largemouth bass are in Table 71. Table 17 compares the relative weight values of largemouth bass in Bert T. Combs to other SEFD lakes in 2019.

Bluegill/Redear Sunfish Sampling

Diurnal electrofishing was conducted on 14 May 2019 at Bert T. Combs Lake to assess the bluegill and redear sunfish population. Length-frequency and CPUE for bluegill is shown in Table 72. Although redear sunfish were stocked in the lake in 2018, none were collected during sampling. Catch-per-hour (by length group) for bluegill is in Table 73. The bluegill population exhibited a poor size structure ($PSD=11$, $RSD_8=8$; Table 74). The bluegill population assessment score was 9 (rating=fair; Table 75). Age-growth for bluegill collected during fall 2019 is shown in Table 76. Relative weight values for bluegill are in Table 77.

Laurel Creek Reservoir (43 acres; McCreary Co.)

Largemouth Bass Sampling (Spring)

Diurnal electrofishing was conducted on 19 April 2019 at Laurel Creek Reservoir to assess the largemouth bass population. Length frequency and CPUE for largemouth bass is shown in Table 78. Catch-per-hour (by length group) for largemouth bass is shown in Table 79. Table 7 compares the catch-per-hour by length group of largemouth bass in Laurel Creek Reservoir to other SEFD lakes sampled in 2019. The largemouth bass size structure was marginal, with a PSD value of 51 ($RSD_{15}=1$; Table 80). Table 12 compares the size structure values of largemouth bass populations in Laurel Creek Reservoir to other SEFD lakes sampled in 2019. The age-growth assessment was unable to be conducted in the fall due to low water levels, which prevented boat launching.

Liberty Lake (81 acres; Casey Co.)

Largemouth Bass Sampling (Spring)

Diurnal electrofishing was conducted on 16 April 2019 at Liberty Lake to assess the black bass population. Length frequency and CPUE for black bass is shown in Table 81. Catch-per-hour (by length group) for largemouth and spotted bass is shown in Table 82. Table 7 compares the catch-per-hour by length group of black bass in Liberty Lake to other SEFD lakes sampled in 2019. Largemouth and spotted bass both exhibited poor size structure, with largemouth bass having a PSD value of 23 ($RSD_{15}=7$) and spotted bass having a PSD value of 24 ($RSD_{14}=0$; Table 83). Table 12 compares the size structure values of black bass populations in Liberty Lake to other SEFD lakes sampled in 2019.

Wood Creek Lake (625 acres; Laurel Co.)

Black Bass Sampling (Spring)

Diurnal electrofishing was conducted on 29 April 2019 in the Pump Station and Dock areas of Wood Creek Lake to assess the black bass population. Length frequency and CPUE for black bass are shown in Table 84. The size structure for largemouth and spotted bass was poor, with largemouth bass having a PSD value of 16 ($RSD_{15}=2$) and spotted bass having a PSD of 17 ($RSD_{14}=0$; Table 85). Table 12 compares the size structure values of black bass populations in Wood Creek Lake to other SEFD lakes sampled in 2019. Catch-per-hour (by length group) for largemouth and spotted bass are shown in Tables 86 and 87, respectively. The largemouth bass catch rate continues to increase, due in large part to increasing numbers of bass 8.0-11.9 in. The spotted bass catch rate continues to decrease. Table 7 compares the catch-per-hour by length group of black bass in Wood Creek Lake to other SEFD lakes sampled in 2019. A largemouth bass population assessment is shown in Table 88. Two of the four catch rate

management objectives were met for the largemouth bass population, with catch rates of fish greater than 15.0 in and 20.0 in failing to meet the objectives (Table 88).

Black Bass Sampling (Fall)

Diurnal electrofishing was conducted on 24 September 2019 in the Pump Station and Dock areas of Wood Creek Lake to index largemouth bass year class strength (Tables 89 and 90). Catch rates of age-0 largemouth bass in 2019 were above average (Table 90); thus, no additional age-0 bass were stocked in the lake during the fall. Table 15 compares the CPUE of age-0 largemouth bass in Wood Creek Lake to other SEFD lakes sampled in fall 2019. Relative weight values for largemouth and spotted bass are shown in Table 91. Table 17 compares W_r values for black bass in Wood Creek Lake to other SEFD lakes sampled in fall 2019.

Age-growth data from largemouth bass collected in 2019 from Wood Creek Lake is shown in Table 92. Growth rates for largemouth bass in Wood Creek Lake have slowed, with bass only reaching 10.1 in by age-3. Previous growth rates for largemouth bass were slightly higher, with bass attaining lengths of 11.3 in by age-3.

Table 1. Summary of sampling conditions by waterbody, species sampled, and date for the Southeastern Fisheries District in 2019.

Water body	Location	Species	Date	Time (24hr)	Gear	Weather	Water temp. F	Water level	Secchi (in)	Conditions	Pertinent sampling comments
Lake Cumberland											
	Dam	Black bass	4/23/2019	925	shock	Clear, sunny, increasing winds, 60s	61	724	48	good	
	Faubush Creek	Black bass	4/30/2019	840	shock	Sunny, calm, 50s	64	722	42	good	
	Fishing Creek	Black bass	4/30/2019	1200	shock	Sunny with a few clouds, calm, warm	69	722	36	good	
	Lily Creek	Black bass	4/23/2019	1250	shock	Clear, sunny, windy, 70s	67	724	42	good	
	Fishing Creek	Black bass	9/20/2019	900	shock	Sunny, some clouds, mid 60s	79	697	18	poor	murky water; low water & trees made it hard to stay on bank
	Fishing Creek	Crappie	10/22-10/25		trap net	Sunny, 60s	66	692	18	good	lake was lower than usual
	Wolf Creek	Crappie	10/28-10/31		trap net	Cloudy, rain, windy, 60s and temps falling	66	692	36	good	lake was lower than usual; upstream sites not usable
	Beaver Creek	Striped bass	12/3-12/5		gill net	Cloudy, windy, sunny, 50s	52	697	48-72	fair	water murky in the upper portion
	Lily/Wolf	Striped bass	12/3-12/5		gill net	Cloudy, windy, sunny, 50s	53	697		good	
Cumberland Tailwater											
	Above Helms	Trout	11/3/2019	1830	shock	Clear, nice	64.5	3520 cfs			
	Below Helms	Trout	11/3/2019	1750	shock	Clear, 50s	60.3	3520 cfs			
	Rainbow Run	Trout	11/3/2019	1800	shock	Clear	65.2	3520 cfs			
	Big Willis	Trout	11/3/2019	1800	shock	Clear, cool	61	3520 cfs			
	Crocus Creek	Trout	11/3/2019	1745	shock	Clear	62	3520 cfs			
	Hwy 61 Traces	Trout	11/4/2019	1815	shock	Clear, mid 50s	60.8	3670 cfs			
	Cloyds	Trout	11/4/2019	1800	shock	Clear, 50s	58	3670 cfs			
Laurel River Lake											
	Dam	Black bass	4/17/2019	930	shock	Sun with some clouds, 60s	57	1014	96	good	
	Spruce Creek	Black bass	5/2/2019	1055	shock	Increasing clouds with rain in the area, 80s	68	1015	72	good	
	Craig's Creek	Black bass	4/17/2019	1145	shock	Sunny with some wind, 70s	60	1014	42	good	decreased water clarity in the upper areas
	312 Bridge	Black bass	5/2/2019	815	shock	Some clouds	69	1015	36	good	
	312 Bridge	Black bass	9/25/2019	900	shock	Mostly sunny, 50s, calm		1006	30	fair	Lake is a little low
		Walleye	11/18-11/19		gill net	Mostly sunny, 50s,	54	1002	120	good	
Cedar Creek Lake											
		LMB	4/25/2019	950	shock	Overcast, increasing clouds, high 60s	66	full	24	good	
		LMB	9/23/2019	900	shock	Mostly cloudy, breezy	76	full	48	good	
		BLG/redear	5/16/2019	835	shock	Sunny, warm	66	full	42	good	
Bert T. Combs Lake											
		LMB	4/18/2019	1000	shock	Mostly sunny, low 70s, windy	63	full	48	good	overhanging trees prevented boat from being near shore
		BLG/redear	5/14/2019	1030	shock	Mostly sunny, mid 50s, breezy	66	full	60	good	
		LMB/BLG	10/3/2019	940	shock	Clear and sunny, 60s	75	8 ft low	108	good	fish collected for age-growth and condition
Laurel Creek Reservoir											
		LMB	4/19/2019	845	shock	Cloudy, intermittent showers	64	full	48	fair	only did 8 runs instead of 10 due to the weather
Liberty Lake											
		LMB	4/16/2019	1000	shock	Clear, 70s, increasing winds	58	full	36	good	
Wood Creek Lake											
		Black bass	4/29/2019	1000	shock	Clear, sunny, 70s, gusty winds	64	full	60	good	vegetation not as thick as previous years
		Black bass	9/24/2019	900	shock	Sunny, 60s, calm	75	a little low	72	good	

Table 2. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 6.0 hours of 15-minute diurnal electrofishing runs for black bass in Lake Cumberland during April 2019; standard error is in parentheses.

Area	Species	Inch class																			Total	CPUE
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Dam	Largemouth bass	1	2	4	3	10	12	1	2	4	5		5	17	19	13	8	6			112	74.7 (13.3)
	Spotted bass	6	7	4	7	11	8	10	9	7	27	22	12	6	1						137	91.3 (14.8)
	Smallmouth bass		1	1	2	6	2	1		2		2	3		1	3	5	5			34	22.7 (7.5)
Faubush Creek	Largemouth bass			3	7	17	5	1	1	3	4	3	5	19	13	13	2				96	64.0 (16.0)
	Spotted bass	6	3	4	6	4	10	13	10	8	12	14	5	7							102	68.0 (16.6)
	Smallmouth bass	1							1								1				3	2.0 (0.9)
Fishing Creek	Largemouth bass		2	8	20	26	22	9	4	9	14	17	29	35	23	20	3				241	160.7 (29.9)
	Spotted bass	1		1	1		1	2	3	3	1	6	1								20	13.3 (8.1)
	Smallmouth bass																				0	0.0 (0.0)
Lily Creek	Largemouth bass			2	2	5	10	2	1	1	2	3	5	6	8	9	5	1		1	63	42.0 (8.7)
	Spotted bass	8	3	2	10	13	18	15	8	17	23	26	17	7	3						170	113.3 (11.9)
	Smallmouth bass		1		1	1	3	3	1	1	4	5	7	4	1	3	2	1	1		39	26.0 (7.8)
Total	Largemouth bass	1	4	17	32	58	49	13	8	17	25	23	44	77	63	55	18	7		1	512	85.3 (12.8)
	Spotted bass	21	13	11	24	28	37	40	30	35	63	68	35	20	4						429	71.5 (9.9)
	Smallmouth bass	1	2	1	3	7	5	4	2	3	4	7	10	4	2	6	8	6	1		76	12.7 (3.5)

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Table 3. Comparison of catch-per-hour of black bass (by area) captured during spring electrofishing on Lake Cumberland during the period of 2015-2019.

Species/Area	Stock					Quality					Preferred				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Largemouth bass															
Dam	12.0	46.7	54.7	34.7	61.3	11.3	28.0	45.3	28.7	48.7	8.0	23.3	31.3	26.0	42.0
Faubush Creek	-	14.7	63.3	48.0	46.0	-	14.0	59.3	41.3	39.3	-	8.0	38.7	25.3	31.3
Fishing Creek	61.3	41.3	30.0	38.0	123.3	41.3	25.3	26.0	31.3	94.0	11.3	8.7	10.7	12.7	54.0
Lily Creek	44.0	25.3	28.7	20.0	36.0	32.0	23.3	28.0	18.0	26.7	10.0	11.3	20.7	12.7	20.0
Mean	31.5	32.0	44.2	35.2	66.7	22.2	22.7	39.7	29.8	52.2	8.0	12.8	25.3	19.2	36.8
Spotted bass															
Dam	26.0	41.3	48.7	101.3	75.3	16.7	26.7	43.3	78.0	50.0	6.0	10.0	16.0	27.3	12.7
Faubush Creek	-	22.0	13.3	15.3	55.3	-	12.0	5.3	6.0	30.7	-	1.3	0.0	3.3	8.0
Fishing Creek	12.7	8.0	9.3	11.3	11.3	6.0	1.3	8.0	3.3	7.3	0.7	0.0	0.0	1.3	0.7
Lily Creek	42.0	19.3	40.7	96.0	98.0	31.3	12.7	21.3	50.0	62.0	6.7	2.7	6.0	19.3	18.0
Mean	22.0	22.7	28.0	56.0	60.0	13.8	13.2	19.5	34.3	37.5	3.5	3.5	5.5	12.8	9.8
Smallmouth bass															
Dam	2.7	8.0	8.7	3.3	20.0	2.0	3.3	6.7	2.0	14.0	2.0	2.0	4.7	2.0	11.3
Faubush Creek	-	8.7	0.7	4.0	1.3	-	6.0	0.7	1.3	0.7	-	4.0	0.7	1.3	0.7
Fishing Creek	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.7	0.0
Lily Creek	18.0	4.7	3.3	21.3	24.7	16.0	4.7	2.0	14.0	19.3	12.7	4.0	1.3	8.0	12.7
Mean	7.8	5.3	3.2	7.3	11.5	6.8	3.5	2.3	4.5	8.5	5.2	2.5	1.7	3.0	6.2

Largemouth bass - ≥ 8.0 in = stock, ≥ 12.0 in = quality, ≥ 15.0 in = preferred.

Smallmouth bass and spotted bass - ≥ 7.0 in = stock, ≥ 11.0 in = quality, ≥ 14.0 in = preferred.

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Table 4. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Lake Cumberland April 2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	Std. err.
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
2019	18.7	3.4	14.5	2.9	15.3	3.7	36.8	5.2	0.2	0.2	85.3	12.8
2018	4.3	0.8	5.3	1.0	10.7	1.6	19.2	2.8	0.3	0.2	39.5	3.9
2017	2.8	0.7	4.5	1.4	14.3	2.4	25.3	3.5	0.2	0.2	47.0	5.6
2016	5.0	1.8	9.3	3.3	9.8	1.5	12.8	2.4	0.5	0.4	37.0	6.4
2015	6.3	2.3	9.3	2.6	14.2	3.4	8.0	1.7	0.0	0.0	37.8	7.8
2014	9.5	3.7	12.8	4.4	9.7	2.4	8.2	2.0	0.3	0.2	40.2	8.5
2013	1.8	1.1	8.2	2.6	8.2	1.8	4.7	1.1	0.2	0.2	22.8	5.0
2012	15.3	3.8	21.0	3.7	21.7	4.9	11.7	2.4	0.2	0.2	69.7	13.0
2011	5.7	2.7	6.5	2.2	5.2	1.7	3.7	1.1	0.2	0.2	21.0	6.3
2010	12.3	3.0	23.3	5.3	13.7	3.3	10.7	2.0	0.5	0.3	60.0	11.7
2009	20.3	6.5	9.7	3.5	8.5	2.8	8.2	2.3	0.5	0.3	46.7	12.5

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Table 5. Spring electrofishing CPUE (fish/hr) for each length group of spotted bass collected at Lake Cumberland during April 2019.

Year	Length group										Total	
	<8.0 in		8.0-10.9 in		11.0-13.9 in		≥14.0 in		≥17.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	16.2	3.0	17.8	2.7	27.7	4.3	9.8	2.1	0.0	0.0	71.5	9.9
2018	12.8	2.4	15.5	3.2	21.5	5.3	12.8	3.3	0.3	0.3	62.7	11.7
2017	6.5	1.3	6.7	1.4	14.0	2.4	5.5	2.2	0.0	0.0	32.7	5.2
2016	4.8	1.9	7.2	1.2	9.7	2.4	3.5	1.2	0.0	0.0	25.2	4.5
2015	4.2	1.2	6.0	1.2	10.3	2.5	3.5	1.0	0.0	0.0	24.0	4.2
2014	7.2	1.9	11.2	2.5	7.7	2.4	2.3	1.2	0.0	0.0	28.3	6.0
2013	1.8	0.6	7.7	1.6	9.8	2.4	1.5	0.7	0.0	0.0	20.8	3.8
2012	27.3	4.7	20.5	3.9	8.8	2.6	0.7	0.5	0.0	0.0	57.3	10.1
2011	8.7	1.7	12.2	2.1	5.7	2.4	0.3	0.2	0.0	0.0	26.8	4.6
2010	28.3	4.0	26.7	5.5	12.2	2.6	0.8	0.4	0.0	0.0	68.0	9.2
2009	22.7	4.3	20.5	5.1	10.0	2.1	1.0	0.4	0.0	0.0	54.2	10.3

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Table 6. Spring electrofishing CPUE (fish/hr) for each length group of smallmouth bass collected at Lake Cumberland during April 2019.

Year	Length group										Total	
	<8.0 in		8.0-10.9 in		11.0-13.9 in		≥14.0 in		≥17.0 in		CPUE	Std. err.
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
2019	2.3	1.4	1.8	0.5	2.3	0.9	6.2	2.3	3.5	1.4	12.7	3.5
2018	2.8	0.8	1.8	0.8	1.5	0.7	3.0	1.0	1.7	0.6	9.2	2.4
2017	0.5	0.3	0.7	0.3	0.7	0.4	1.7	0.9	1.2	0.7	3.5	1.4
2016	4.2	2.2	1.2	0.6	1.0	0.4	2.5	0.8	1.0	0.4	8.8	2.6
2015	1.2	0.7	1.0	0.4	1.7	0.6	5.2	1.8	2.0	0.8	9.0	2.4
2014	1.2	0.6	3.2	1.5	1.7	0.7	2.0	1.1	0.8	0.4	8.0	2.8
2013	1.0	0.6	2.3	0.6	0.3	0.2	1.7	0.5	0.3	0.2	5.3	1.3
2012	4.3	1.4	2.3	0.7	0.3	0.2	1.7	0.7	0.5	0.3	8.7	2.1
2011	0.5	0.4	0.3	0.2	0.7	0.3	0.2	0.2	0.2	0.2	1.7	0.5
2010	2.8	0.7	2.5	0.8	1.2	0.4	3.7	1.2	2.3	1.0	10.2	1.9
2009	3.5	1.3	1.5	0.6	0.2	0.2	0.7	0.3	0.2	0.2	5.8	1.5

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Table 7. Catch-per-hour of black bass captured during spring electrofishing on lakes in the Southeastern Fishery District during 2019.

Species/Lake	Stock*	Quality*	Preferred*
Largemouth bass			
Lake Cumberland	66.7	52.2	36.8
Laurel River Lake	55.8	37.7	18.7
Cedar Creek Lake	136.0	96.7	76.7
Bert T. Combs Lake	147.2	36.8	1.6
Laurel Creek Reservoir	198.0	101.0	2.0
Liberty Lake	108.6	25.1	8.0
Wood Creek Lake	213.3	34.7	4.7
Spotted bass			
Lake Cumberland	60.0	37.5	9.8
Laurel River Lake	15.5	7.8	1.2
Liberty Lake	24.0	5.7	0.0
Wood Creek Lake	8.0	1.3	0.0
Smallmouth bass			
Lake Cumberland	11.5	8.5	6.2
Laurel River Lake	2.3	1.8	1.7

*Largemouth bass - ≥ 8.0 in = stock, ≥ 12.0 in = quality, ≥ 15.0 in = preferred

*Smallmouth and spotted bass - ≥ 7.0 in = stock, ≥ 11.0 in = quality, ≥ 14.0 in = preferred

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Table 8. Population assessment for largemouth bass based on spring electrofishing at Lake Cumberland from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Total score	Assessment rating
Management objective		≥13.0 in	≥5.0 fish/hr	≥10.0 fish/hr	≥8.0 fish/hr	≥0.5 fish/hr		
2019	Value		29.0	15.3	36.8	0.2		
	Score	4	3	1	4	2	14	G
2018	Value		6.3	10.7	19.2	0.3		
	Score	4	1	1	3	2	11	F
2017	Value		3.8	14.3	25.3	0.2		
	Score	4	1	1	4	2	12	F
2016	Value	13.7	9.2	9.8	12.8	0.5		
	Score	4	1	1	2	3	11	F
2015	Value		8.3	14.2	8.0	0.0		
	Score	4	1	1	2	1	9	F
2014	Value		12.8	9.7	8.2	0.3		
	Score	4	2	1	2	2	11	F
2013	Value		6.6	8.2	4.7	0.2		
	Score	4	1	1	1	2	9	F
2012	Value	14.0	21.0	21.7	11.7	0.2		
	Score	4	2	2	2	2	12	F
2011	Value		6.8	5.2	3.7	0.2		
	Score	4	1	1	1	2	9	F
2010	Value		11.5	13.7	10.7	0.5		
	Score	4	1	1	2	3	11	F

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Table 9. Population assessment for spotted bass based on spring electrofishing at Lake Cumberland from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 11.0-13.9 in	CPUE ≥14.0 in	Total score	Assessment rating
Management objective		≥9.6 in	≥4.0 fish/hr	≥7.0 fish/hr	≥2.0 fish/hr		
2019	Value		7.5	27.7	9.8		
	Score	3	4	4	4	15	E
2018	Value		2.5	21.5	12.8		
	Score	3	3	4	4	14	E
2017	Value		0.6	14.0	5.5		
	Score	3	1	4	4	12	G
2016	Value		1.2	9.7	3.5		
	Score	3	2	3	4	12	G
2015	Value		1.7	10.3	3.5		
	Score	3	2	4	4	13	G
2014	Value		1.2	7.7	2.3		
	Score	3	2	2	3	10	G
2013	Value	11.1	0.0	9.8	1.5		
	Score	3	1	3	3	10	G
2012	Value		14.0	8.8	0.7		
	Score	3	4	3	2	12	G
2011	Value		3.9	5.7	0.3		
	Score	3	3	2	1	9	F
2010	Value		9.7	12.2	0.8		
	Score	3	4	4	2	13	G

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Table 10. Population assessment for smallmouth bass based on spring electrofishing at Lake Cumberland from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 11.0-13.9 in	CPUE ≥14.0 in	Total score	Assessment rating
Management objective		≥11.0 in	≥2.0 fish/hr	≥3.0 fish/hr	≥2.0 fish/hr		
2019	Value		0.5	2.3	6.2		
	Score	1	2	4	4	11	G
2018	Value		1.0	1.5	3.0		
	Score	1	2	3	4	10	G
2017	Value		0.0	0.7	1.7		
	Score	1	1	2	3	7	F
2016	Value		2.8	1.0	2.5		
	Score	1	3	3	4	11	G
2015	Value		0.3	1.7	5.2		
	Score	1	1	3	4	9	F
2014	Value		0.2	1.7	2.0		
	Score	1	1	3	4	9	F
2013	Value		0.3	0.3	1.7		
	Score	1	1	2	3	7	F
2012	Value		2.5	0.3	1.7		
	Score	1	3	2	3	9	F
2011	Value		0.0	0.7	0.2		
	Score	1	1	2	1	5	P
2010	Value	11.3	0.7	1.2	3.7		
	Score	1	2	3	4	10	G

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Table 11. PSD and RSD values obtained for each black bass species taken in spring electrofishing samples at Lake Cumberland during April 2019; 95% confidence limits are in parentheses.

Year	Area	Largemouth bass			Spotted bass			Smallmouth bass		
		No. \geq stock size	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)	No. \geq stock size	PSD (+/- 95%)	RSD ₁₄ (+/- 95%)	No. \geq stock size	PSD (+/- 95%)	RSD ₁₄ (+/- 95%)
2019	Dam	92	79 (\pm 8)	68 (\pm 10)	113	66 (\pm 9)	17 (\pm 7)	30	70 (\pm 17)	57 (\pm 18)
	Faubush Creek	69	86 (\pm 8)	68 (\pm 11)	83	55 (\pm 11)	14 (\pm 8)	2	50 (\pm 98)	50 (\pm 98)
	Fishing Creek	185	76 (\pm 6)	44 (\pm 7)	17	65 (\pm 23)	6 (\pm 12)	0	0 (\pm 0)	0 (\pm 0)
	Lily Creek	54	74 (\pm 12)	56 (\pm 13)	147	63 (\pm 8)	18 (\pm 6)	37	78 (\pm 13)	51 (\pm 16)
	Total	400	78 (\pm 4)	55 (\pm 5)	360	63 (\pm 5)	16 (\pm 4)	69	74 (\pm 10)	54 (\pm 12)
2018	Total	211	85 (\pm 5)	55 (\pm 7)	336	61 (\pm 5)	23 (\pm 5)	44	61 (\pm 15)	41 (\pm 15)
2017	Total	265	90 (\pm 4)	57 (\pm 6)	168	70 (\pm 7)	20 (\pm 6)	19	74 (\pm 20)	53 (\pm 23)
2016	Total	192	71 (\pm 6)	40 (\pm 7)	136	58 (\pm 8)	15 (\pm 6)	32	66 (\pm 17)	47 (\pm 18)
2015	Total	189	70 (\pm 7)	25 (\pm 6)	132	63 (\pm 8)	16 (\pm 6)	47	87 (\pm 10)	66 (\pm 14)
2014	Total	184	58 (\pm 7)	27 (\pm 6)	150	40 (\pm 8)	9 (\pm 5)	45	49 (\pm 15)	27 (\pm 13)
2013	Total	126	61 (\pm 9)	22 (\pm 7)	121	56 (\pm 9)	7 (\pm 5)	27	44 (\pm 19)	37 (\pm 19)
2012	Total	326	61 (\pm 5)	21 (\pm 4)	224	25 (\pm 6)	2 (\pm 2)	33	36 (\pm 17)	30 (\pm 16)
2011	Total	92	58 (\pm 10)	24 (\pm 9)	124	29 (\pm 8)	2 (\pm 2)	8	63 (\pm 36)	13 (\pm 25)
2010	Total	286	51 (\pm 6)	22 (\pm 5)	293	27 (\pm 5)	2 (\pm 1)	51	57 (\pm 14)	43 (\pm 14)
2009	Total	158	63 (\pm 8)	31 (\pm 7)	230	29 (\pm 6)	3 (\pm 2)	17	29 (\pm 22)	24 (\pm 21)

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Table 12. PSD and RSD values obtained for each black bass species taken in spring electrofishing samples at Lake Cumberland, Laurel River Lake, Cedar Creek Lake, Bert T. Combs Lake, Laurel Creek Reservoir, Liberty Lake, and Wood Creek Lake during 2019; 95% confidence limits are in parentheses.

Lake	Largemouth bass		Smallmouth bass		Spotted bass	
	PSD	RSD ₁₅	PSD	RSD ₁₄	PSD	RSD ₁₄
Lake Cumberland	78 (± 4)	55 (± 5)	74 (± 10)	54 (± 12)	63 (± 5)	16 (± 4)
Laurel River Lake	67 (± 5)	33 (± 5)	79 (± 22)	71 (± 25)	51 (± 10)	8 (± 5)
Cedar Creek Lake	71 (± 6)	56 (± 7)				
Bert T. Combs Lake	25 (± 6)	1 (± 2)				
Laurel Creek Reservoir	51 (± 7)	1 (± 1)				
Liberty Lake	23 (± 6)	7 (± 4)			24 (± 13)	0 (± 0)
Wood Creek Lake	16 (± 4)	2 (± 2)			17 (± 22)	0 (± 0)

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Table 13. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 1.5 hours of 15-minute diurnal electrofishing runs for black bass in Fishing Creek of Lake Cumberland on 20 September 2019; standard error is in parentheses.

Species	Inch class														Total	CPUE
	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Largemouth bass	1	2	2	3	2	2	3	8	10	2	6	4	3	1	49	32.7 (12.4)
Spotted bass		2	1	1	4	2	8	2	8	8	2	1			39	26.0 (7.3)

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Table 14. Indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected in the fall (September and October) in electrofishing samples in the Fishing Creek area of Lake Cumberland.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1 ^a	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
Lake Cumberland									
2019	Fishing Creek	5.8	0.4	6.7	4.5	4.7	3.2		
2018	Fishing Creek	6.2	0.2	17.3	2.9	15.3	2.2	58.0	11.0
2017	Fishing Creek	4.2	0.5	11.3	4.4	3.3	1.6	6.7	2.0
2016	Fishing Creek	6.8	0.2	20.0	9.2	19.3	8.7	4.0	2.1
2015	Fishing Creek	5.1	0.2	18.7	14.1	8.7	6.4	13.3	4.9
2014	Fishing Creek	6.7	0.2	9.3	2.2	9.3	2.2	26.0	4.9
2013	Fishing Creek	6.1	0.1	80.0	23.8	61.3	15.9	26.0	13.6
2012	Fishing Creek	6.1	0.1	96.7	24.6	80.0	19.6	21.8	6.2
2011	Fishing Creek	6.1	0.1	114.7	25.1	102.0	23.2	46.5	7.0
2010	Fishing Creek	5.8	0.1	85.3	9.4	67.3	8.4	16.7	11.5

^a Age-1 largemouth bass CPUE based only on Fishing Creek location
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Table 15. Year class strength at age-0 and mean lengths (in) of largemouth bass collected in September 2019 in electrofishing samples at Lake Cumberland, Laurel River Lake, Cedar Creek Lake, and Wood Creek Lake.

Lake	Area	Age-0		Age-0		Age-0 \geq 5.0 in	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error
Lake Cumberland	Fishing Creek	5.8	0.4	6.7	4.5	4.7	3.2
Laurel River Lake	Laurel River Arm	4.2	0.4	12.7	4.1	5.3	2.7
Cedar Creek Lake		3.3	0.1	113.3	14.9	2.0	0.9
Wood Creek Lake		4.5	0.1	45.3	14.3	9.3	3.8

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sedyoywc.d19

Table 16. Number of fish and mean relative weight (Wr) for each length group of black bass collected in Fishing Creek of Lake Cumberland on 20 September 2019. Standard error is in parentheses.

Species	Length group					
	8.0-11.9 in		12.0-14.9 in		≥15.0 in	
	No.	Wr	No.	Wr	No.	Wr
Largemouth bass	23	90 (1)	12	89 (2)	4	86 (5)
	7.0-10.9 in		11.0-13.9 in		≥14.0 in	
	No.	Wr	No.	Wr	No.	Wr
Spotted bass	16	99 (2)	18	96 (5)	1	81 (-)

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Table 17. Number of fish and mean relative weight (Wr) for each length group of black bass collected in Lake Cumberland, Laurel River Lake, Cedar Creek Lake, Bert T. Combs Lake, and Wood Creek Lake during September and October 2019. Standard error is in parentheses.

Species	Location	Length group					
		No.	Wr	No.	Wr	No.	Wr
Largemouth bass		8.0-11.9 in		12.0-14.9 in		≥15.0 in	
	Lake Cumberland (Fishing Creek)	23	90 (1)	12	89 (2)	4	86 (5)
	Laurel River Lake (Laurel River Arm)	8	98 (3)	9	93 (4)	6	96 (4)
	Cedar Creek Lake	45	89 (2)	14	94 (3)	16	90 (3)
	Bert T. Combs Lake	29	84 (2)	19	79 (2)	3	101 (2)
	Wood Creek Lake	121	87 (1)	11	79 (2)	3	86 (7)
Spotted bass		7.0-10.9 in		11.0-13.9 in		≥14.0 in	
	Lake Cumberland (Fishing Creek)	16	99 (2)	18	96 (5)	1	81 (-)
	Laurel River Lake (Laurel River Arm)	7	107 (5)	9	106 (4)	2	95 (13)
	Wood Creek Lake	4	96 (3)	1	82 (-)	0	0 (0)

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Table 18. Length frequency and CPUE (fish/nn) for each species of crappie collected in the Fishing Creek (27 net-nights) and Wolf Creek (27 net-nights) embayments of Lake Cumberland in 54 net-nights from 22-25 and 28-31 October 2019.

Area	Species	Inch class													Total	CPUE	Std. error
		2	3	4	5	6	7	8	9	10	11	12	13	14			
Fishing Creek																	
	White crappie	117	152	43		1	1		1	3	6	5	4		333	12.3	2.3
	Black crappie	90	194	25	103	23	3	1	3	4	2	1			449	16.6	3.4
Wolf Creek																	
	White crappie		9	6	1	1	1		1					1	20	0.7	0.3
	Black crappie	9	67	10	87	81	149	37	19	48	11	2	2	1	523	19.4	5.3
Total																	
	White crappie	117	161	49	1	2	2		2	3	6	5	4	1	353	6.5	1.4
	Black crappie	99	261	35	190	104	152	38	22	52	13	3	2	1	972	18.0	3.1

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Table 19. PSD and RSD₁₀ values calculated for crappie collected in trapnets at Lake Cumberland in October 2019; 95% confidence limits are in parentheses.

Species	No. stock size	PSD	RSD ₁₀
White crappie			
Fishing Creek	21	90 (± 13)	86 (± 15)
Wolf Creek	5	40 (± 48)	20 (± 39)
Total	26	81 (± 15)	73 (± 17)
Black crappie			
Fishing Creek	140	8 (± 4)	5 (± 4)
Wolf Creek	437	27 (± 4)	15 (± 3)
Total	577	23 (± 3)	12 (± 3)

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Table 20. Mean back calculated lengths (in) at each annulus for white crappie collected from Lake Cumberland during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age				
		1	2	3	4	5
2018	5	4.4				
2017	1	4.4	8.6			
2016	2	4.7	7.8	10.4		
2015	12	4.3	7.4	10.1	11.7	
2014	4	3.2	5.5	8.6	10.4	11.3
Mean		4.2	7.1	9.8	11.4	11.3
Number		24	19	18	16	4
Smallest		2.6	3.8	6.4	8.7	9.7
Largest		5.8	9.4	12.3	13.6	12.6
Std error		0.2	0.4	0.3	0.3	0.6
95% CI ±		0.3	0.8	0.7	0.6	1.3

Otoliths were used for age-growth determinations; Intercept = 0

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Table 21. Mean back calculated lengths (in) at each annulus for black crappie collected from Lake Cumberland during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age					
		1	2	3	4	5	6
2018	43	3.8					
2017	22	3.9	8.3				
2016	2	4.4	6.9	10.5			
2015	8	4.2	6.5	8.4	10.6		
2014	4	3.1	5.2	7.6	9.5	11.2	
2013	1	4.6	6.4	8.9	11.5	12.7	13.5
Mean		3.9	7.4	8.5	10.3	11.5	13.5
Number		80	37	15	13	5	1
Smallest		2.1	3.9	6.0	7.7	9.9	13.5
Largest		5.3	9.8	11.4	12.7	13.0	13.5
Std error		0.1	0.2	0.4	0.4	0.6	
95% CI ±		0.2	0.5	0.8	0.9	1.2	

Otoliths were used for age-growth determinations; Intercept = 0
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Table 22. Age-frequency and CPUE (fish/nn) of white crappie trap-netted at Lake Cumberland in 54 net-nights in October 2019.

Age	Inch class												Total	%	CPUE	Std error	
	2	3	4	5	6	7	9	10	11	12	13	14					
0+	117	161	49	1	1									329	93.2	6.1	1.3
1+					1	2	2							5	1.4	0.1	0.0
2+								1						1	0.3	0.0	0.0
3+									2					2	0.6	0.0	0.0
4+								1	3	4	3	1		12	3.4	0.2	0.1
5+								1	1	1	1			4	1.1	0.1	0.0
Total	117	161	49	1	2	2	2	3	6	5	4	1		353	100.0	6.5	
%	33.1	45.6	13.9	0.3	0.6	0.6	0.6	0.8	1.7	1.4	1.1	0.3					

CPUE of ≥ 8.0 in (quality size) crappie = 0.4 fish/nn

CPUE of ≥ 10.0 in (preferred size) crappie = 0.4 fish/nn

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Table 23. Age-frequency and CPUE (fish/nn) of black crappie trap-netted at Lake Cumberland in 54 net-nights in October 2019.

Age	Inch class												Total	%	CPUE	Std error	
	2	3	4	5	6	7	8	9	10	11	12	13					14
0+	99	261	16	19										395	40.6	7.3	1.7
1+			19	171	104	152	34							480	49.3	8.9	1.9
2+							4	20	47	4				75	7.7	1.4	0.4
3+										3				3	0.3	0.1	0.0
4+								2	5	4	2	1		14	1.4	0.3	0.1
5+										3	1	1		5	0.5	0.1	0.0
6+													1	1	0.1	0.0	0.0
Total	99	261	35	190	104	152	38	22	52	14	3	2	1	973	100.0	18.0	
%	10.2	26.8	3.6	19.5	10.7	15.6	3.9	2.3	5.3	1.4	0.3	0.2	0.1				

CPUE of ≥ 8.0 in (quality size) crappie = 2.4 fish/nn

CPUE of ≥ 10.0 in (preferred size) crappie = 1.3 fish/nn

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Table 24. Population assessment for white and black crappie from Lake Cumberland trap net data collected in October 2019 (scoring based on statewide assessment).

Parameter	Species			
	White crappie		Black crappie	
	Assessment value	Assessment score	Assessment value	Assessment score
CPUE age-1 and older	0.4	1	10.7	4
CPUE age-1	0.1	1	8.9	4
CPUE age-0	6.1	4	7.3	4
CPUE \geq 8.0 in	0.4	1	2.4	3
Mean length age-2 at capture	10.5	4	10.2	4
Instantaneous mortality (Z)			1.219	
Annual mortality (A)			70.5	
Total score:		11		19
Assessment rating:		F		E

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Table 25. Population assessment for crappie based on fall trap netting at Lake Cumberland from 2001-2019 (scoring based on statewide assessment).

Year		CPUE ≥ age-1			CPUE age-1			CPUE age-0			CPUE ≥ 8.0 in			Mean length age-2 at capture			Total Score	Assesment rating
		WC	BC	ALL	WC	BC	ALL	WC	BC	ALL	WC	BC	ALL	WC	BC	ALL		
Management objective		≥ 5.0 fish/nn			≥ 3.0 fish/nn			≥ 3.0 fish/nn			≥ 2.0 fish/nn			≥ 9.6 in				
2019	Value	0.4	10.7	11.1	0.1	8.9	9.0	6.1	7.3	13.4	0.4	2.4	2.8	10.5	10.2	10.2		
	Score			3			4			4			2			4	17	E
2017	Value	1.5	3.2	4.6	0.3	0.4	0.8	0.0	0.2	0.2	1.1	1.4	2.6	9.4	7.7	8.5		
	Score			2			1			1			2			1	7	P
2015	Value	0.2	3.7	3.9	0.1	1.4	1.5	0.4	0.3	0.7	0.1	1.6	1.7	11.9*	8.4	8.5		
	Score			1			1			1			1			1	5	P
2013	Value	0.2	0.9	1.1	0.0	0.1	0.1	0.0	34.2	34.2	0.2	0.8	1.0	11.9	9.7	9.9		
	Score			1			1			4			1			3	10	F
2011	Value	2.8	2.7	5.5	2.3	2.2	4.5	0.2	23.3	23.5	1.4	0.7	2.0	10.7	9.8	10.2		
	Score			2			3			4			1			4	14	G
2009	Value	0.8	0.7	1.5	0.8	0.6	1.4	0.6	7.3	7.9	0.6	0.3	0.9	-	-	-		
	Score			1			1			4			1			0	7	P
2007	Value	0.3	7.0	7.3	0.2	6.7	6.9	0.0	0.2	0.3	0.3	0.5	0.8	11.2	9.4	9.9		
	Score			3			3			1			1			3	11	F
2005	Value	0.5	5.2	5.7	0.1	2.8	3.0	0.2	1.2	1.4	0.5	1.4	1.9	10.6	8.1	8.8		
	Score			2			2			2			1			1	8	P
2003	Value	2.3	3.5	5.8	1.8	2.7	4.5	0.2	4.5	4.7	1.2	1.2	2.4	10.4	9.8	10.1		
	Score			2			3			4			2			3	14	G
2001	Value	0.4	0.6	1.0	0.1	0.4	0.6	0.3	4.0	4.3	0.3	0.2	0.5	10.4	9.3	9.7		
	Score			1			1			3			1			3	9	F

* No age-2 fish collected. Data is from age-2 white crappie collected in 2013.

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Table 26. Number of fish and mean relative weight (Wr) for each length group of crappie collected in Lake Cumberland in October 2019. Standard error is in parentheses.

Species	Location	Length group					
		5.0-7.9 in		8.0-9.9 in		≥10.0 in	
		No.	Wr	No.	Wr	No.	Wr
White crappie							
	Fishing Creek	2	82 (10)	1	96 (-)	18	89 (2)
	Wolf Creek	3	86 (4)	1	86 (-)	1	76 (-)
	Lake Cumberland	5	84 (4)	2	91 (5)	19	88 (2)
Black crappie							
	Fishing Creek	129	90 (1)	4	89 (8)	7	92 (2)
	Wolf Creek	317	94 (0)	56	94 (1)	64	91 (1)
	Lake Cumberland	446	93 (0)	60	94 (1)	71	91 (1)

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Table 27. Length frequency and CPUE (fish/nn) of striped bass collected at Lake Cumberland in 20 net-nights on 3-5 December 2019.

Species	Inch class																	Total	CPUE	Std. error		
	9	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				33	35
Striped bass	1	2	5	7	2	7	27	21	20	5	11	5	6	11	5	1	1	1	1	139	7.0	1.4

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Table 28. Population assessment for striped bass based on fall gill netting at Lake Cumberland from 2008-2019.

Year		CPUE ≥age 1	Mean length age-2 at capture	CPUE ≥24.0 in	CPUE age-1	Total score	Assesment rating
Management objective		≥4.0 fish/nn	≥21.0 in	≥1.0 fish/nn	≥2.0 fish/nn		
2019	Value	6.9	22.0	2.4	0.7	11	G
	Score	4	2	4	1		
2017	Value	4.0	24.3	1.7	2.2	13	G
	Score	2	4	4	3		
2016	Value	5.0	22.8	2.7	0.9	12	G
	Score	3	4	4	1		
2015	Value	4.6	22.3	1.5	0.9	11	G
	Score	3	3	4	1		
2014	Value	6.1	21.9	0.6	5.2	11	G
	Score	4	2	1	4		
2013	Value	7.2	22.1	2.8	2.6	14	E
	Score	4	3	4	3		
2012	Value	7.3	20.6	1.9	0.8	10	G
	Score	4	1	4	1		
2011	Value	5.9	20.5	1.2	0.6	9	F
	Score	4	1	3	1		
2009	Value	4.0	21.6	1.2	1.8	10	G
	Score	2	2	3	3		
2008	Value	9.2	22.1	1.5	2.7	15	E
	Score	4	3	4	4		

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Table 29. Mean back calculated lengths (in) at each annulus for striped bass collected from Lake Cumberland during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age											
		1	2	3	4	5	6	7	8	9	10	11	
2018	14	11.0											
2017	34	11.9	18.5										
2016	24	12.9	19.3	22.8									
2015	4	10.2	18.6	23.1	26.2								
2014	3	9.2	18.1	23.2	25.3	26.7							
2013	7	12.2	18.6	22.2	24.8	26.5	27.3						
2012	2	13.3	19.5	23.6	25.7	27.8	29.5	31.0					
2011	1	11.5	17.8	21.5	22.9	24.7	26.1	27.5	28.1				
2009	5	13.0	18.6	21.4	23.0	24.5	25.9	26.8	27.6	28.4	28.7		
2008	3	11.9	18.4	21.8	23.1	24.7	26.0	27.3	28.3	29.3	29.9	30.6	
Mean		12.0	18.8	22.5	24.6	25.8	26.9	27.8	27.9	28.7	29.1	30.6	
Number		97	83	49	25	21	18	11	9	8	8	3	
Smallest		6.9	15.3	20.4	22.3	23.7	24.6	25.2	25.8	26.7	27.0	27.9	
Largest		15.6	21.1	25.2	28.0	28.5	30.3	31.5	31.2	32.4	33.7	35.0	
Std error		0.2	0.1	0.2	0.3	0.3	0.3	0.6	0.5	0.6	0.7	2.2	
95% CI ±		0.4	0.3	0.4	0.7	0.6	0.7	1.2	1.0	1.3	1.5	4.3	

Otoliths were used for age-growth determinations; Intercept = 0
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Table 30. Age-frequency and CPUE (fish/nn) of striped bass gill netted for 20 net-nights at Lake Cumberland in December 2019.

Age	Inch class																		Total	%	CPUE	Std error		
	9	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33					35	
0	1																				1	0.7	0.1	0.1
1+		2	5	7																	14	10.1	0.7	0.2
2+					2	7	24	17	14												64	46.4	3.2	0.7
3+							3	4	6	5	10	3	2								33	23.9	1.7	0.4
4+												1	1	1	1						4	2.9	0.2	0.1
5+											1			2							3	2.2	0.2	0.1
6+												1	2	4	1						8	5.8	0.4	0.1
7+																	1	1			2	1.4	0.1	0.1
8+														1							1	0.7	0.1	0.0
10+													1	1	2	1					5	3.6	0.3	0.1
11+														1	1						3	2.2	0.2	0.1
Total	1	2	5	7	2	7	27	21	20	5	11	5	6	10	5	1	1	1	1		138	100.0	6.9	
%	0.7	1.4	3.6	5.1	1.4	5.1	19.6	15.2	14.5	3.6	8.0	3.6	4.3	7.2	3.6	0.7	0.7	0.7	0.7					

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Table 31. Population assessment for striped bass gill netted at Lake Cumberland in December 2019.

Parameter	Actual value	Assessment score
Population density (CPUE age 1 and older)	6.9	4
Growth rate (Mean length age 2+ at capture)	22.0	2
Size structure (CPUE \geq 24.0 in)	2.4	4
Recruitment (CPUE age 1)	0.7	1
Instantaneous mortality (Z)	0.303	
Annual mortality (A)	26.1	
Total score		11
Assessment rating		G

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Table 32. Number of fish and mean relative weight (Wr) for each length group of striped bass collected in Lake Cumberland in December 2019. Standard error is in parentheses.

Length group					
12.0-19.9 in		20.0-29.9 in		\geq 30.0 in	
No.	Wr	No.	Wr	No.	Wr
16	98 (2)	113	83 (1)	4	71 (2)

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Table 33. Species composition, relative abundance, and CPUE (fish/hr) of trout collected during 8.75 hours of 15-minute nocturnal electrofishing runs for trout in Cumberland tailwater during November 2019; standard error is in parentheses.

Area	Species	Inch class														Total	CPUE					
		6	7	8	9	10	11	12	13	14	15	16	17	18	19			20	21	22	23	25
Above Helms	Rainbow trout		2	51	58	80	29	12	4	7	5	2	5	1	1		1		1		259	207.2 (39.9)
	Brown trout			5	4	10	3	3	1			2							1		29	23.2 (9.0)
	Brook trout					2															2	1.6 (1.0)
	Cutthroat trout																				0	0.0 (0.0)
Below Helms	Rainbow trout		3	9	41	54	14	8	5		3	1	2	1							141	112.8 (11.2)
	Brown trout				9	8	1	4	2	3											27	21.6 (6.0)
	Brook trout																				0	0.0 (0.0)
	Cutthroat trout																				0	0.0 (0.0)
Rainbow Run	Rainbow trout			1	7	9	2	5	7	5	3			1					1		41	32.8 (3.4)
	Brown trout				4	8	3	7		1	1				2	1				1	28	22.4 (6.0)
	Brook trout						1														1	0.8 (0.8)
	Cutthroat trout																				0	0.0 (0.0)
Big Willis	Rainbow trout	1		1	7	5	5	7	3	3	4	1		1							38	30.4 (7.8)
	Brown trout				1	6	3	3	2	1	1			1							18	14.4 (4.7)
	Brook trout																				0	0.0 (0.0)
	Cutthroat trout			1																	1	0.8 (0.8)
Crocus Creek	Rainbow trout			4	11	9	10	6	3	8	7	3	6	5	1						73	58.4 (18.4)
	Brown trout				6	3	2	1	1	1											14	11.2 (2.9)
	Brook trout																				0	0.0 (0.0)
	Cutthroat trout																				0	0.0 (0.0)
Hwy 61 Bridge	Rainbow trout		1	5	16	6	3		1		2	1	3	1	1						40	32.0 (9.5)
	Brown trout				3	4	2	1	2	2							1	1			16	12.8 (6.7)
	Brook trout																				0	0.0 (0.0)
	Cutthroat trout																				0	0.0 (0.0)
Cloyd's Landing	Rainbow trout			2	3	5	3	2	5	4	5	6	2	4	3				1		45	36.0 (7.3)
	Brown trout									1											1	0.8 (0.8)
	Brook trout																				0	0.0 (0.0)
	Cutthroat trout																				0	0.0 (0.0)
Total	Rainbow trout	1	6	73	143	168	66	40	28	27	29	14	18	14	6		2	1	1		637	72.8 (12.2)
	Brown trout			5	27	39	14	19	8	8	2	3	1		2	1	2	1		1	133	15.2 (2.3)
	Brook trout					2	1														3	0.3 (0.2)
	Cutthroat trout			1																	1	0.1 (0.1)

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Table 34. Fall electrofishing mean CPUE (fish/hr) of 15.0-17.9 in, 18.0-19.9 in, and ≥ 20.0 in rainbow trout in the Lake Cumberland tailwater from 2000 to 2019. Data collected from sample sites 1-5 each year. *2011 sampling was conducted in February.

Year	Length group					
	15.0-17.9 in		18.0-19.9 in		≥ 20.0 in	
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	6.7	1.4	1.8	0.6	0.5	0.3
2018	13.1	2.2	1.9	0.6	0.2	0.2
2017	21.8	2.4	1.4	0.5	0.0	
2016	6.2	1.3	1.0	0.4	0.5	0.3
2015	9.0	1.9	1.3	0.6	0.2	0.2
2014	8.6	1.1	3.0	0.7	0.2	0.2
2013	23.2	3.6	0.5	0.3	0.0	
2012	0.5	0.3	0.2	0.2	0.0	
2011	1.1	0.6	0.0		0.2	0.2
2010	1.3	0.5	0.3	0.2	0.0	
2009	5.4	1.6	0.5	0.3	0.0	
2008	18.1	4.3	1.4	0.5	0.0	
2007	25.0	3.5	6.4	1.3	0.6	0.3
2006	29.3	3.0	4.3	1.2	0.3	0.2
2005	9.3	2.4	2.1	0.8	0.0	
2004	2.2	0.8	0.6	0.4	0.0	
2003	2.1	0.7	1.0	0.4	0.2	0.2
2002	10.7	2.4	1.4	0.7	1.0	0.6
2001	21.0	3.7	5.5	1.3	0.7	0.4
2000	9.4	1.3	1.4	0.7	0.5	0.4

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Table 35. Fall electrofishing mean CPUE (fish/hr) of 15.0-17.9 in, 18.0-19.9 in, and ≥ 20.0 in brown trout in the Lake Cumberland tailwater from 2000 to 2019. Data collected from sample sites 1-5 each year. *2011 sampling was conducted in February.

Year	Length group					
	15.0-17.9 in		18.0-19.9 in		≥ 20.0 in	
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	1.0	0.4	0.3	0.2	0.5	0.4
2018	1.0	0.5	0.5	0.3	2.2	0.6
2017	1.4	0.5	1.4	0.5	2.6	0.7
2016	4.5	1.1	3.0	0.8	2.2	0.8
2015	5.6	1.8	1.9	0.7	1.9	0.7
2014	7.2	2.1	1.4	0.6	1.6	0.8
2013	2.4	0.8	1.1	0.6	4.6	1.5
2012	2.6	0.8	3.2	1.2	2.7	0.9
2011	6.6	1.2	3.4	0.9	4.0	1.2
2010	3.7	0.9	1.3	0.5	0.6	0.4
2009	9.1	2.0	5.3	1.7	2.7	1.1
2008	14.1	2.9	6.4	1.0	2.6	0.7
2007	29.0	6.2	5.8	1.3	3.4	0.7
2006	30.2	10.1	5.6	1.5	5.0	1.5
2005	14.9	3.1	7.0	1.7	9.3	2.4
2004	11.8	3.3	7.7	2.0	3.2	0.9
2003	20.2	5.0	3.8	1.4	1.9	0.7
2002	31.2	6.6	5.6	1.1	2.9	0.9
2001	30.2	8.7	5.8	1.5	5.2	1.3
2000	18.9	4.7	6.6	1.6	9.0	2.5

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Table 36. Number of fish and mean relative weight (Wr) for each species of trout collected in the Cumberland tailwater during November 2019. Standard error is in parentheses.

Location	Species			
	Rainbow trout		Brown trout	
	No.	Wr	No.	Wr
Above Helms	177	79 (1)	29	90 (2)
Below Helms	138	84 (1)	27	84 (2)
Rainbow Run	41	91 (2)	28	98 (3)
Big Willis	37	91 (2)	18	92 (2)
Crocus Creek	72	90 (1)	14	87 (2)
Hwy 61	39	95 (2)	16	93 (3)
Cloyds	45	101 (2)	1	103 (0)
Total	549	87 (1)	133	91 (1)

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Table 37. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 6.0 hours of 15-minute electrofishing runs for black bass in Laurel River Lake during April and May 2019; standard error is in parentheses.

Area	Species	Inch class																		Total	CPUE
		2	3	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
Dam	Largemouth bass			1	1	8	2	4	2	1	5	9	10	1	8	2	1	1		56	37.3 (8.2)
	Spotted bass				2	1			2	2										7	4.7 (2.2)
	Smallmouth bass					2		1					1				2			6	4.0 (1.5)
Spruce Creek	Largemouth bass				1	2	4	2	1	5	5	9	12	15	5	10	4	3	1	79	52.7 (6.8)
	Spotted bass	2				2	3		1	5	8	5	2							28	18.7 (3.2)
	Smallmouth bass								1			1			1				3	2.0 (1.4)	
Laurel River Arm	Largemouth bass		5	2	2	7	9	12	11	9	8	11	10	5	12	8	9	3	4	127	84.7 (9.2)
	Spotted bass			2	2	3	3	5	8	9	2	2	1	1						38	25.3 (6.4)
	Smallmouth bass											1			1		1		3	2.0 (1.4)	
Upper Craigs Creek	Largemouth bass	2	1		5	17	22	13	8	4	4	15	16	10	4	4	2			127	84.7 (13.7)
	Spotted bass	2	1	1		3	6	3	6	1	2	4	2	1						32	21.3 (4.0)
	Smallmouth bass			1											1			1	3	2.0 (0.9)	
Total	Largemouth bass	2	6	3	9	34	37	31	22	19	22	44	48	31	29	24	16	7	5	389	64.8 (6.3)
	Spotted bass	4	1	3	4	9	12	8	17	17	12	11	5	2						105	17.5 (2.6)
	Smallmouth bass			1		2		1	1			3		1	2	2	2	2		15	2.5 (0.6)

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Table 38. Comparison of catch-per-hour of black bass (by area) captured during spring electrofishing on Laurel River Lake during the period of 2015-2019.

Species/Area	Stock					Quality					Preferred				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Largemouth bass															
Dam	59.3	74.0	54.7	47.3	30.7	45.3	53.3	39.3	36.7	24.7	21.3	21.3	17.3	16.0	8.7
Spruce Creek	54.0	48.7	72.7	50.7	50.7	42.0	45.3	38.0	39.3	42.7	27.3	22.0	29.3	18.0	25.3
Laurel River Arm	87.3	109.3	85.3	75.3	74.0	54.7	70.0	56.7	50.7	46.7	16.0	34.0	21.3	33.3	27.3
Craigs Cr. headwaters	44.0	24.0	69.3	51.3	68.0	36.7	14.7	50.0	36.7	36.7	22.0	5.3	28.0	12.0	13.3
Mean	61.2	64.0	70.5	56.2	55.8	44.7	45.8	46.0	40.8	37.7	21.7	20.7	24.0	19.8	18.7
Spotted bass															
Dam	8.7	9.3	4.0	2.0	3.3	7.3	4.7	4.0	0.7	1.3	2.7	2.7	0.7	0.0	0.0
Spruce Creek	10.7	8.7	24.0	30.0	17.3	7.3	6.0	12.0	12.7	13.3	6.0	4.0	5.3	6.7	1.3
Laurel River Arm	7.3	24.0	18.7	15.3	22.7	4.0	11.3	8.7	3.3	10.0	0.7	1.3	1.3	1.3	1.3
Craigs Cr. headwaters	20.0	17.3	19.3	30.7	18.7	14.0	5.3	12.7	16.0	6.7	4.0	1.3	4.7	4.0	2.0
Mean	11.7	14.8	16.5	19.5	15.5	8.2	6.8	9.3	8.2	7.8	3.3	2.3	3.0	3.0	1.2
Smallmouth bass															
Dam	0.0	7.3	2.0	0.7	4.0	0.0	4.0	1.3	0.0	2.0	0.0	4.0	1.3	0.0	2.0
Spruce Creek	2.0	1.3	2.0	4.0	2.0	2.0	1.3	2.0	2.7	2.0	2.0	1.3	2.0	2.7	1.3
Laurel River Arm	0.0	0.0	2.7	0.7	2.0	0.0	0.0	2.7	0.0	2.0	0.0	0.0	0.0	0.0	2.0
Craigs Cr. headwaters	6.7	6.0	0.0	1.3	1.3	4.0	4.7	0.0	1.3	1.3	3.3	2.7	0.0	0.7	1.3
Mean	2.2	3.7	1.7	1.7	2.3	1.5	2.5	1.5	1.0	1.8	1.3	2.0	0.8	0.8	1.7

Largemouth bass - ≥ 8.0 in = stock, ≥ 12.0 in = quality, ≥ 15.0 in = preferred.

Smallmouth bass and spotted bass - ≥ 7.0 in = stock, ≥ 11.0 in = quality, ≥ 14.0 in = preferred.

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Table 39. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Laurel River Lake during April and May 2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	9.0	1.9	18.2	3.4	19.0	1.8	18.7	2.4	0.8	0.3	64.8	6.3
2018	3.2	0.8	15.3	2.2	21.0	2.2	19.8	2.2	0.5	0.3	59.3	4.9
2017	8.7	1.3	24.5	3.0	22.0	2.6	24.0	2.2	0.2	0.2	79.2	5.2
2016	6.5	1.5	18.2	3.3	25.2	2.9	20.7	3.0	0.8	0.3	70.5	7.9
2015	11.5	2.6	16.5	2.5	23.0	3.2	21.7	2.2	1.2	0.5	72.7	7.1
2014	5.8	1.2	20.0	4.9	16.8	2.5	21.5	2.6	0.8	0.3	64.2	7.9
2013	5.0	1.2	13.3	2.1	26.3	3.0	21.2	2.1	1.2	0.4	65.8	4.6
2012	6.0	1.2	23.3	3.6	18.8	2.9	18.3	2.0	0.2	0.2	66.5	7.6
2011	11.5	3.7	19.8	4.1	26.7	4.7	20.0	2.9	0.8	0.3	78.0	11.6
2010	15.8	3.0	31.0	4.4	20.7	3.1	21.2	2.4	0.8	0.4	88.7	8.4

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Table 40. Spring electrofishing CPUE (fish/hr) for each length group of spotted bass collected at Laurel River Lake during April and May 2019.

Year	Length group										Total	
	<8.0 in		8.0-10.9 in		11.0-13.9 in		≥14.0 in		≥17.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	3.5	0.8	6.2	1.4	6.7	1.6	1.2	0.4	0.0	0.0	17.5	2.6
2018	4.2	0.9	8.5	1.4	5.2	1.2	3.0	1.0	0.0	0.0	20.8	3.2
2017	4.8	1.1	5.3	0.9	6.3	1.5	3.0	0.8	0.0	0.0	19.5	3.2
2016	4.0	0.9	6.3	1.4	4.5	1.1	2.3	0.7	0.0	0.0	17.2	2.4
2015	2.0	0.7	2.8	0.7	4.8	1.0	3.3	0.9	0.0	0.0	13.0	1.9
2014	3.0	0.7	8.2	1.7	6.3	1.5	3.8	1.2	0.0	0.0	21.3	3.6
2013	3.3	0.8	4.8	1.4	10.8	2.9	2.2	0.7	0.0	0.0	21.2	3.9
2012	6.3	1.6	8.3	1.8	6.8	1.6	1.7	0.5	0.0	0.0	23.2	3.3
2011	7.3	1.4	9.2	1.3	7.5	1.7	2.0	0.5	0.0	0.0	26.0	3.5
2010	25.2	4.2	13.0	2.3	9.0	2.0	4.8	1.2	0.0	0.0	52.0	6.1

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Table 41. Spring electrofishing CPUE (fish/hr) for each length group of smallmouth bass collected at Laurel River Lake during April and May 2019.

Year	Length group										Total	
	<8.0 in		8.0-10.9 in		11.0-13.9 in		≥14.0 in		≥17.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	0.5	0.3	0.2	0.2	0.2	0.2	1.7	0.6	1.0	0.4	2.5	0.6
2018	2.0	0.8	0.2	0.2	0.2	0.2	0.8	0.3	0.2	0.2	3.2	0.9
2017	0.7	0.4	0.2	0.2	0.7	0.4	0.8	0.4	0.2	0.2	2.3	0.7
2016	0.5	0.3	1.0	0.5	0.5	0.4	2.0	0.6	1.2	0.5	4.0	1.1
2015	0.3	0.3	0.3	0.3	0.2	0.2	1.3	0.5	0.5	0.3	2.2	0.9
2014	0.7	0.3	0.5	0.3	0.5	0.4	2.3	0.6	1.0	0.4	4.0	0.9
2013	0.3	0.2	0.2	0.2	1.0	0.6	0.8	0.4	0.0	0.0	2.3	0.8
2012	0.3	0.2	0.2	0.2	0.3	0.2	1.0	0.4	0.5	0.3	1.8	0.6
2011	1.0	0.4	1.7	0.5	0.5	0.3	0.8	0.4	0.7	0.3	4.0	1.1
2010	10.2	2.2	1.2	0.5	0.7	0.4	2.8	0.7	1.2	0.4	14.8	3.0

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Table 42. Population assessment for largemouth bass based on spring electrofishing at Laurel River Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in	Total score	Assessment rating
Management objective		≥13.0 in	≥10.0 fish/hr	≥20.0 fish/hr	≥10.0 fish/hr	≥0.5 fish/hr		
2019	Value		15.5	19.0	18.7	0.8		
	Score	4	2	2	3	3	14	G
2018	Value	13.4	1.5	21.0	19.8	0.5		
	Score	4	1	2	3	3	13	G
2017	Value		4.3	22.0	24.0	0.2		
	Score	3	1	2	4	2	12	F
2016	Value		3.3	25.2	20.7	0.8		
	Score	3	1	3	4	3	14	G
2015	Value		1.3	23.0	21.7	1.2		
	Score	3	1	3	4	3	14	G
2014	Value		1.6	16.8	21.5	0.8		
	Score	3	1	2	4	3	13	G
2013	Value	13.1	1.2	26.3	21.2	1.2		
	Score	3	1	3	4	3	14	G
2012	Value		3.3	18.8	18.3	0.2		
	Score	3	1	2	3	2	11	F
2011	Value		9.2	26.7	20.0	0.8		
	Score	3	1	3	4	3	14	G
2010	Value		6.5	20.7	21.2	0.8		
	Score	3	1	2	4	3	13	G

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Table 43. Population assessment for spotted bass based on spring electrofishing at Laurel River Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 11.0-13.9 in	CPUE ≥14.0 in	Total score	Assessment rating
Management objective		≥11.0 in	≥3.0 fish/hr	≥7.0 fish/hr	≥1.0 fish/hr		
2019	Value		0.8	6.7	1.2		
	Score	1	1	2	2	6	P
2018	Value		0.7	5.2	3.0		
	Score	1	1	1	4	7	F
2017	Value		1.3	6.3	3.0		
	Score	1	2	2	4	9	F
2016	Value		1.0	4.5	2.3		
	Score	1	2	1	3	7	F
2015	Value		0.3	4.8	3.3		
	Score	1	1	1	4	7	F
2014	Value		0.5	6.3	3.8		
	Score	1	1	2	4	8	F
2013	Value		0.3	10.8	2.2		
	Score	1	1	4	3	9	F
2012	Value	10.0	0.5	6.8	1.7		
	Score	1	1	2	3	7	F
2011	Value		0.8	7.5	2.0		
	Score	2	1	2	3	8	F
2010	Value		2.5	9.0	4.8		
	Score	2	3	3	4	12	G

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Table 44. Population assessment for smallmouth bass based on spring electrofishing at Laurel River Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length age-3 at capture	CPUE age-1	CPUE 11.0-13.9 in	CPUE ≥14.0 in	Total score	Assessment rating
Management objective		≥13.0 in	≥3.0 fish/hr	≥1.5 fish/hr	≥1.0 fish/hr		
2019	Value		0.2	0.2	1.7		
	Score	3	1	1	3	8	F
2018	Value		1.3	0.2	0.8		
	Score	3	2	1	2	8	F
2017	Value		0.3	0.7	0.8		
	Score	3	1	2	2	8	F
2016	Value		0.2	0.5	2.0		
	Score	3	1	2	4	10	G
2015	Value		0.0	0.2	1.3		
	Score	3	1	1	3	8	F
2014	Value		0.0	0.5	2.3		
	Score	3	1	2	4	10	G
2013	Value	13.2	0.0	1.0	0.8		
	Score	3	1	3	2	9	F
2012	Value		0.0	0.3	1.0		
	Score	4	1	2	3	10	G
2011	Value		0.3	0.5	0.8		
	Score	4	1	2	2	9	F
2010	Value		3.8	0.7	2.8		
	Score	4	4	2	4	14	E

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Table 45. PSD and RSD values obtained for each black bass species taken in spring electrofishing samples at Laurel River Lake during April and May 2019; 95% confidence limits are in parentheses.

Year	Area	Largemouth bass			Spotted bass			Smallmouth bass		
		No. \geq stock size	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)	No. \geq stock size	PSD (+/- 95%)	RSD ₁₄ (+/- 95%)	No. \geq stock size	PSD (+/- 95%)	RSD ₁₄ (+/- 95%)
2019	Dam	46	80 (± 12)	28 (± 13)	5	40 (± 48)	0 (± 0)	6	50 (± 44)	50 (± 44)
	Spruce Creek	76	84 (± 8)	50 (± 11)	26	77 (± 17)	8 (± 10)	3	100 (± 0)	67 (± 65)
	Laurel River Arm	111	63 (± 9)	37 (± 9)	34	44 (± 17)	6 (± 8)	3	100 (± 0)	100 (± 0)
	Upper Craigs Creek	102	54 (± 10)	20 (± 8)	28	36 (± 18)	11 (± 12)	2	100 (± 0)	100 (± 0)
	Total	335	67 (± 5)	33 (± 5)	93	51 (± 10)	8 (± 5)	14	79 (± 22)	71 (± 25)
2018	Total	337	73 (± 5)	35 (± 5)	117	42 (± 9)	15 (± 7)	10	60 (± 32)	50 (± 33)
2017	Total	423	65 (± 5)	34 (± 5)	99	57 (± 10)	18 (± 8)	10	90 (± 20)	50 (± 33)
2016	Total	384	72 (± 5)	32 (± 5)	89	46 (± 10)	16 (± 8)	22	68 (± 20)	55 (± 21)
2015	Total	367	73 (± 5)	35 (± 5)	70	70 (± 11)	29 (± 11)	13	69 (± 26)	62 (± 28)
2014	Total	350	66 (± 5)	37 (± 5)	120	51 (± 9)	19 (± 7)	22	77 (± 18)	64 (± 21)
2013	Total	365	78 (± 4)	35 (± 5)	114	68 (± 9)	11 (± 6)	13	85 (± 20)	38 (± 28)
2012	Total	363	61 (± 5)	30 (± 5)	124	41 (± 9)	8 (± 5)	9	89 (± 22)	67 (± 33)
2011	Total	399	70 (± 4)	30 (± 5)	132	43 (± 8)	9 (± 5)	21	38 (± 21)	24 (± 19)
2010	Total	437	57 (± 5)	29 (± 4)	211	39 (± 7)	14 (± 5)	41	51 (± 15)	41 (± 15)

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Table 46. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 1.5 hours of 15-minute diurnal electrofishing runs for black bass in Laurel River Lake on 25 September 2019; standard error is in parentheses.

Area	Species	Inch class																Total	CPUE	
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18			19
Laurel River Arm	Largemouth bass	5	4	2	5	4	2	5	1	1	1	2	6	1	3	2	1	1	46	30.7 (8.1)
	Spotted bass	2	11	1	2	6	5	1		1	1	6	2	2				40	26.7 (3.5)	
	Smallmouth bass					1	2	2										5	3.3 (1.6)	

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Table 47. Indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected in the fall (September and October) in electrofishing samples at Laurel River Lake.

Year class	Area	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1 ^a	
		Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	Laurel River Arm	4.2	0.4	12.7	4.1	5.3	2.7		
2018	Laurel River Arm	4.2	0.3	21.3	7.6	6.7	3.7	17.3	5.5
2017	Laurel River Arm	3.6	0.3	7.3	2.4	1.3	1.3	2.0	1.4
2016	Laurel River Arm	3.4	0.1	24.0	4.8	2.7	1.3	4.7	1.9
2015	Laurel River Arm	3.5	0.1	5.3	2.0	0.0	0.0	6.7	2.5
2014	Laurel River Arm	4.4	0.1	19.3	4.3	4.0	1.0	4.0	1.5
2013	Laurel River Arm	4.0	0.1	21.3	6.6	2.7	1.3	6.7	2.2
2012	Laurel River Arm	4.6	0.1	11.3	3.6	3.3	1.9	4.0	2.1
2011 ^b	Laurel River Arm	4.1	0.3	10.7	5.6	3.3	1.9	6.0 ^c	0.9
2010 ^b	Laurel River Arm	5.4	0.4	2.7	0.8	2.0	0.9	31.5 ^d	7.5

^a Age-1 largemouth bass CPUE based only on Laurel River Arm location

^b Age-0 largemouth bass stocked in the fall

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Table 48. Number of fish and mean relative weight (Wr) for each length group of black bass collected at 312 Bridge in Laurel River Lake on 25 September 2019. Standard error is in parentheses.

Species	Length group					
	8.0-11.9 in		12.0-14.9 in		≥15.0 in	
	No.	Wr	No.	Wr	No.	Wr
Largemouth bass	8	98 (3)	9	93 (4)	6	96 (4)
Spotted bass	7.0-10.9 in		11.0-13.9 in		≥14.0 in	
	No.	Wr	No.	Wr	No.	Wr
	7	107 (5)	9	106 (4)	2	95 (13)

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Table 49. Length frequency and CPUE (fish/nn) of walleye collected from Laurel River Lake in 8 net-nights in November 2019.

Species	Inch class												Total	CPUE	Std. error
	10	12	13	16	17	18	19	20	21	22	23	24			
Walleye	1	5	1	1	8	29	34	14	8	7	3	1	112	14.0	2.5

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Table 50. Population assessment for walleye based on fall gill netting at Laurel River Lake from 1993-2019 (scoring based on statewide assessment).

Year		Parameters				Total score	Assessment rating
		CPUE ≥ age-1+	Mean length age-2+ at capture	CPUE ≥ 20.0 in	CPUE age-1+		
Management objective		≥10.0 fish/nn	≥18.0 in	≥2.5 fish/nn	≥4.0 fish/nn		
2019	Value	13.3	18.9	4.1	0.5		
	Score	4	3	4	1	12	G
2017	Value	11.4	19.2	5.3	1.3		
	Score	4	4	4	2	14	E
2015	Value	16.5	19.5	8.5	4.9		
	Score	4	4	4	4	16	E
2013	Value	18.5	19.4	7.9	4.6		
	Score	4	4	4	4	16	E
2011	Value	15.1	19.1	4.3	1.2		
	Score	4	4	4	2	14	E
2009	Value	15.3	19.0	7.2	5.1		
	Score	4	4	4	4	16	E
2007	Value	21.6	19.1	6.5	8.3		
	Score	4	4	4	4	16	E
2005	Value	25.1	19.5	9.3	8.0		
	Score	4	4	4	4	16	E
2002	Value	10.6	18.8	0.6	6.1		
	Score	4	4	2	4	14	E
1993	Value	4.3	18.6	0.5	2.4		
	Score	3	4	1	3	11	G

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Table 51. Mean back calculated lengths (in) at each annulus for male walleye collected from Laurel River Lake during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age								
		1	2	3	4	5	6	7	8	9
2018	2	12.7								
2017	21	11.9	17.0							
2016	7	10.8	16.5	18.8						
2015	8	10.5	16.4	18.8	20.2					
2014	5	8.9	15.3	18.0	19.5	20.4				
2013	3	10.8	16.0	18.1	19.8	20.7	21.6			
2012	3	12.0	16.9	19.0	20.2	21.0	21.7	22.2		
2011	2	11.2	15.5	17.1	18.2	19.2	20.1	20.5	21.1	
2010	1	11.8	15.8	17.7	18.8	19.9	20.6	21.0	21.4	21.7
Mean		11.2	16.5	18.5	19.7	20.4	21.2	21.4	21.2	21.7
Number		52	50	29	22	14	9	6	3	1
Smallest		4.6	11.2	15.4	16.8	17.9	19.0	19.3	20.0	21.7
Largest		14.1	18.6	20.2	21.3	22.0	22.4	22.7	22.1	21.7
Std error		0.3	0.2	0.2	0.2	0.3	0.3	0.5	0.6	
95% CI ±		0.6	0.4	0.5	0.5	0.6	0.7	0.9	1.2	

Otoliths were used for age-growth determinations; Intercept = 0
sedaglw.m.d19

Table 52. Mean back calculated lengths (in) at each annulus for female walleye collected from Laurel River Lake during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age					
		1	2	3	4	5	6
2018	1	13.2					
2017	2	13.0	17.7				
2016	2	10.2	17.1	21.0			
2015	1	13.8	19.7	22.5	23.9		
2013	1	8.0	15.9	18.2	19.7	20.5	21.2
Mean		11.6	17.5	20.7	21.8	20.5	21.2
Number		7	6	4	2	1	1
Smallest		7.4	15.3	18.2	19.7	20.5	21.2
Largest		13.8	19.7	22.5	23.9	20.5	21.2
Std error		1.0	0.7	1.0	2.1		
95% CI ±		2.0	1.4	2.0	4.1		

Otoliths were used for age-growth determinations;
Intercept = 0
sedaglw.f.d19

Table 53. Mean back calculated lengths (in) at each annulus for walleye (both sexes) collected from Laurel River Lake during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age								
		1	2	3	4	5	6	7	8	9
2018	3	12.8								
2017	23	12.0	17.1							
2016	9	10.7	16.6	19.3						
2015	9	10.8	16.8	19.2	20.6					
2014	5	8.9	15.3	18.0	19.5	20.4				
2013	4	10.1	16.0	18.2	19.7	20.6	21.5			
2012	3	12.0	16.9	19.0	20.2	21.0	21.7	22.2		
2011	2	11.2	15.5	17.1	18.2	19.2	20.1	20.5	21.1	
2010	1	11.8	15.8	17.7	18.8	19.9	20.6	21.0	21.4	21.7
Mean		11.3	16.6	18.7	19.9	20.4	21.2	21.4	21.2	21.7
Number		59	56	33	24	15	10	6	3	1
Smallest		4.6	11.2	15.4	16.8	17.9	19.0	19.3	20.0	21.7
Largest		14.1	19.7	22.5	23.9	22.0	22.4	22.7	22.1	21.7
Std error		0.3	0.2	0.3	0.3	0.3	0.3	0.5	0.6	
95% CI ±		0.6	0.4	0.5	0.5	0.5	0.6	0.9	1.2	

Otoliths were used for age-growth determinations; Intercept = 0
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Table 54. Age-frequency and CPUE (fish/nn) of walleye gill netted for 8 net-nights at Laurel River Lake during November 2019.

Age	Inch class												Total	%	CPUE	Std error	
	10	12	13	16	17	18	19	20	21	22	23	24					
0	1	5	1											7	6.2	0.9	0.5
1				1	3									4	3.5	0.5	0.2
2					5	26	24	1						56	49.6	7.0	1.6
3						3	5	3	3		1			15	13.3	1.9	0.3
4							3	6	1	2		1		13	11.5	1.6	0.4
5							3	3	1	1				8	7.1	1.0	0.2
6									3		1			4	3.5	0.5	0.2
7										2	1			3	2.7	0.4	0.2
8								1		1				2	1.8	0.3	0.1
9										1				1	0.9	0.1	0.1
Total	1	5	1	1	8	29	35	14	8	7	3	1		113	100.0	14.1	
%	0.9	4.4	0.9	0.9	7.1	25.7	31.0	12.4	7.1	6.2	2.7	0.9					

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Table 55. Population assessment for walleye gill netted at Laurel River Lake in November 2019 (scoring based on statewide assessment).

Parameter	Actual value	Assessment score
Population density (CPUE age 1 and older)	13.3	4
Growth rate (Mean length age 2+ at capture)	18.9	3
Size structure (CPUE ≥ 20.0 in)	4.1	4
Recruitment (CPUE age 1)	0.5	1
Total score		12
Assessment rating		G
Instantaneous mortality (Z)	0.283	
Annual mortality (A)	24.6	

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Table 56. Number of fish and mean relative weight (Wr) for each length group of walleye collected in Laurel River Lake during November 2019. Standard error is in parentheses.

Length group					
10.0-14.9 in		15.0-19.9 in		≥ 20.0 in	
No.	Wr	No.	Wr	No.	Wr
7	89 (2)	72	89 (1)	33	92 (1)

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Table 57. Length frequency and CPUE (fish/hr) of largemouth bass collected at Cedar Creek Lake in 1.5 hours (0.75 hours in lower end; 0.75 hours upper end; 15-min runs) of diurnal electrofishing on 25 April 2019.

Area	Species	Inch class																			Total	CPUE	Std. error
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Lower	Largemouth bass	3	8	34	17	13	12	9	5	5	1	4	5	7	10	20	11	9	2	1	176	234.7	22.2
Upper	Largemouth bass	1	1	2	3	6	10	9	1	8	3	9	8	8	13	11	9	9	3	2	116	154.7	33.7
Total	Largemouth bass	4	9	36	20	19	22	18	6	13	4	13	13	15	23	31	20	18	5	3	292	194.7	25.4

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Table 58. PSD and RSD₁₅ values obtained for largemouth bass taken in spring electrofishing samples in each area of Cedar Creek Lake on 25 April 2019; 95% confidence levels are in parentheses.

Year	Lower Lake			Upper Lake			Total		
	No. \geq 8.0 in	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)	No. \geq 8.0 in	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)	No. \geq 8.0 in	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)
2019	101	69 (\pm 9)	59 (\pm 10)	103	73 (\pm 9)	53 (\pm 10)	204	71 (\pm 6)	56 (\pm 7)
2018	45	49 (\pm 15)	36 (\pm 14)	53	74 (\pm 12)	62 (\pm 13)	98	62 (\pm 10)	50 (\pm 10)
2017	37	54 (\pm 16)	30 (\pm 15)	81	72 (\pm 10)	52 (\pm 11)	118	66 (\pm 9)	45 (\pm 9)
2016 ^a	73	67 (\pm 11)	47 (\pm 12)	104	75 (\pm 8)	52 (\pm 10)	177	72 (\pm 7)	50 (\pm 7)
2015 ^b	95	79 (\pm 8)	52 (\pm 10)	107	81 (\pm 7)	53 (\pm 9)	202	80 (\pm 6)	52 (\pm 7)
2014	237	82 (\pm 5)	48 (\pm 6)	345	81 (\pm 4)	47 (\pm 5)	582	82 (\pm 3)	47 (\pm 4)
2013	448	69 (\pm 4)	33 (\pm 4)	299	66 (\pm 5)	36 (\pm 5)	747	68 (\pm 3)	34 (\pm 3)
2012	406	56 (\pm 5)	27 (\pm 4)	409	60 (\pm 5)	30 (\pm 4)	815	58 (\pm 3)	29 (\pm 3)
2011	283	55 (\pm 6)	22 (\pm 5)	172	62 (\pm 7)	31 (\pm 7)	455	57 (\pm 5)	25 (\pm 4)
2010	386	43 (\pm 5)	22 (\pm 4)	310	48 (\pm 6)	23 (\pm 5)	696	45 (\pm 4)	22 (\pm 3)

^a diurnal sampling beginning in 2016

^b sampling effort was reduced to 1.5 hours beginning in 2015
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Table 59. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected from Cedar Creek Lake from 2010-2019.

Year	Area	Length group										Total	Std. err.
		<8.0 in		8.0-11.9 in		12.0-14.9 in		>15.0 in		>20.0 in			
		CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
2019	Total	58.7	20.7	39.3	6.1	20.0	5.1	76.7	8.7	5.3	0.8	194.7	25.4
2018	Total	48.7	21.7	24.7	6.8	8.0	1.5	32.7	7.1	1.3	0.8	114.0	23.4
2017	Total	44.7	8.9	26.7	6.5	16.7	2.6	35.3	9.3	2.0	0.9	123.3	9.3
2016	Total	19.3	5.0	33.3	3.2	26.0	5.7	58.7	8.2	5.3	1.7	137.3	7.5
2015	Total	14.0	4.8	26.7	4.2	37.3	5.7	70.7	6.1	5.3	1.3	148.7	8.7
2014	Total	6.3	1.7	30.3	6.0	57.7	8.8	78.3	12.0	5.7	1.1	172.6	25.7
2013	Total	6.3	2.1	69.1	3.7	72.0	8.1	72.3	5.0	10.3	2.3	219.7	12.1
2012	Total	21.4	7.4	98.6	8.5	67.7	7.1	66.6	7.8	7.4	1.6	254.3	17.4
2011	Total	69.4	13.1	55.4	7.2	41.7	4.4	32.9	5.8	4.3	1.1	199.4	18.6
2010	Total	36.1	8.1	105.3	10.0	45.0	5.8	42.8	6.5	4.1	1.3	229.2	15.8

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Table 60. Population assessment for largemouth bass based on spring electrofishing at Cedar Creek Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length					Total score	Assesment rating
		age-3 at capture	CPUE age 1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in		
Management objective		≥11.5 in	≥16.0 fish/hr	≥20.0 fish/hr	≥30.0 fish/hr	≥4.0 fish/hr		
2019	Value Score	4	47.3 3	20.0 2	76.7 4	5.3 4	17	E
2018	Value Score	4	51.3 3	8.0 1	32.7 4	1.3 2	14	G
2017	Value Score	4	44.7 3	16.7 2	35.3 4	2.0 3	16	G
2016	Value Score	4	16.0 2	26.0 3	58.7 4	5.3 4	17	E
2015	Value Score	12.0 4	8.0 2	37.3 3	70.7 4	5.3 4	17	E
2014	Value Score	4	3.7 1	57.7 4	78.3 4	5.7 4	17	E
2013	Value Score	4	4.9 1	72.0 4	72.3 4	10.3 4	17	E
2012	Value Score	4	16.3 2	67.7 4	66.6 4	7.4 4	18	E
2011	Value Score	4	68.6 4	41.7 3	32.9 4	4.3 4	19	E
2010	Value Score	13.5 4	35.5 3	45.0 4	42.8 4	4.1 4	19	E

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Table 61. Length-frequency and CPUE (fish/hr) of largemouth bass collected during 1.5 hours of nocturnal electrofishing (0.75 hours in lower end; 0.75 hours in upper end; 15-minute runs) at Cedar Creek Lake on 23 September 2019; standard error is in parentheses.

Area	Inch class																		Total	CPUE	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			22
Lower	18	41	25	2	5	6	9	10	7	5	1	1	3	1		1	2	1	1	139	185.3 (29.4)
Upper	51	24	8	1	2	5	5	4	4	1	2	4	3	3	3	2	1	1		124	165.3 (13.5)
Total	69	65	33	3	7	11	14	14	11	6	3	5	6	4	3	3	3	2	1	263	175.3 (15.2)

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Table 62. Indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected in the fall (September and October) in electrofishing samples at Cedar Creek Lake.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	3.3	0.1	113.3	14.9	2.0	0.9		
2018	4.2	0.1	52.7	10.6	9.3	2.0	47.3	17.4
2017	4.0	0.1	68.7	15.8	10.7	3.8	51.3	21.9
2016	4.0	0.1	131.3	45.2	36.7	10.1	44.7	8.9
2015	3.4	0.1	50.0	18.6	4.0	1.5	16.0	4.5
2014	3.8	0.2	19.3	7.6	3.3	1.2	8.0	4.0
2013	3.5	0.2	9.4	3.9	0.3	0.3	3.7	1.2
2012	4.0	0.2	18.3	7.6	7.1	1.8	4.9	2.1
2011	4.2	0.1	27.1	4.0	6.0	1.1	16.3	6.5
2010	5.0	0.1	59.5	15.8	33.4	6.1	68.6	12.9

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Table 63. Number of fish and mean relative weight (Wr) for each length group of largemouth bass collected in Cedar Creek Lake on 23 September 2019. Standard error is in parentheses.

Species	Area	Length group					
		8.0-11.9 in		12.0-14.9 in		≥15.0 in	
		No.	Wr	No.	Wr	No.	Wr
Largemouth bass	Lower	31	87 (2)	5	91 (4)	6	93 (5)
	Upper	14	91 (2)	9	96 (4)	10	89 (4)
	Total	45	89 (2)	14	94 (3)	16	90 (3)

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Table 64. Length frequency and CPUE (fish/hr) of bluegill and redear sunfish collected at Cedar Creek Lake in 1.25 hours (7.5-min runs) of diurnal electrofishing on 16 May 2019.

Species	Inch class										Total	CPUE	Std. error
	1	2	3	4	5	6	7	8	9	10			
Bluegill	111	211	140	61	54	19	4	2			602	481.6	48.7
Redear sunfish		13	13	30	25	29	18	17	1	1	147	117.6	25.1

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Table 65. Spring electrofishing CPUE (fish/hr) for each length group of bluegill and redear sunfish collected at Cedar Creek from 2007-2019.

Species	Year	Length group										Total	
		<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		≥10.0 in		CPUE	Std. err.
		CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
Bluegill	2019	257.6	47.6	204.0	30.3	18.4	4.3	1.6	1.1			481.6	48.7
	2018	492.0	137.7	268.0	31.4	8.8	5.5	0.8	0.8			769.6	150.6
	2016	599.2	108.4	464.0	90.4	8.0	2.7	0.0	0.0			1071.2	164.8
	2015	372.0	51.8	510.4	66.9	12.8	4.8	0.0	0.0			895.2	110.5
	2014	396.5	60.6	367.5	98.4	27.5	5.9	1.0	0.7			792.5	116.2
	2013	410.0	102.7	318.5	48.2	21.5	4.6	0.0	0.0			750.0	126.4
	2012	65.1	14.0	206.9	40.8	16.5	5.3	0.0	0.0			288.5	52.7
	2011	301.0	45.9	411.0	56.7	21.0	4.8	0.0	0.0			733.0	81.1
	2010	411.7	106.5	426.1	48.6	20.3	3.9	0.0	0.0			858.1	145.7
	2009	579.6	92.4	217.2	22.8	20.4	7.8	0.0	0.0			817.2	95.6
Redear sunfish	2019	10.4	4.0	54.4	14.7	37.6	11.3	15.2	5.9	0.8	0.8	117.6	25.1
	2018	14.4	4.9	52.0	7.1	26.4	7.5	1.6	1.1	0.0	0.0	94.4	12.8
	2016	5.6	2.1	63.2	16.3	24.0	6.5	2.4	1.2	0.0	0.0	95.2	20.7
	2015	1.6	1.1	45.6	9.2	42.4	8.5	8.8	2.8	1.6	1.1	98.4	14.9
	2014	5.0	1.6	45.0	10.8	27.0	7.6	8.5	3.3	0.0	0.0	85.5	16.1
	2013	4.0	2.2	33.0	7.2	163.5	75.4	31.0	10.9	0.5	0.5	231.5	84.4
	2012	2.1	1.2	22.4	5.3	43.7	10.5	3.2	1.3	0.0	0.0	71.5	14.7
	2011	3.0	1.4	56.5	10.7	21.0	3.9	0.5	0.5	0.0	0.0	81.0	14.3
	2010	12.8	4.7	56.0	9.6	26.1	7.0	3.7	1.7	0.0	0.0	98.7	15.2
	2009	27.2	6.5	51.6	7.8	36.4	5.8	2.4	1.7	0.0	0.0	117.6	13.4

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Table 66 PSD and RSD values obtained for bluegill and redear sunfish taken in spring electrofishing samples in Cedar Creek Lake on 16 May 2019; 95% confidence levels are in parentheses.

Species	Year	No. \geq stock size	PSD	RSD ^a
Bluegill				
	2019	280	9 (\pm 3)	1 (\pm 1)
	2018	347	3 (\pm 2)	0 (\pm 1)
	2016	590	2 (\pm 1)	0 (\pm 0)
	2015	654	2 (\pm 1)	0 (\pm 0)
	2014	792	7 (\pm 2)	0 (\pm 0)
	2013	680	6 (\pm 2)	0 (\pm 0)
	2012	419	7 (\pm 3)	0 (\pm 0)
	2011	864	5 (\pm 1)	0 (\pm 0)
	2010	837	5 (\pm 1)	0 (\pm 0)
Redear sunfish				
	2019	121	31 (\pm 8)	2 (\pm 2)
	2018	82	20 (\pm 9)	0 (\pm 0)
	2016	73	19 (\pm 9)	0 (\pm 0)
	2015	115	29 (\pm 8)	4 (\pm 4)
	2014	144	34 (\pm 8)	1 (\pm 2)
	2013	434	65 (\pm 4)	1 (\pm 1)
	2012	124	35 (\pm 8)	1 (\pm 2)
	2011	140	6 (\pm 4)	0 (\pm 0)
	2010	135	28 (\pm 8)	0 (\pm 0)

^a Bluegill = RSD₈, redear sunfish = RSD₉

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Table 67. Length frequency and CPUE (fish/hr) of largemouth bass collected at Bert T. Combs Lake in 1.25 hours (7.5-min runs) of diurnal electrofishing on 18 April 2019.

Species	Inch class												Total	CPUE	Std. error	
	3	4	5	6	7	8	9	10	11	12	13	14				22
Largemouth bass	9	25	14	7	12	23	41	42	32	32	6	6	2	251	200.8	27.9

sedpsdbc.d19

Table 68. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Bert T. Combs Lake on 18 April 2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	Std. err.
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
2019	53.6	21.1	110.4	11.3	35.2	4.2	1.6	1.1	1.6	1.1	200.8	27.9
2015	15.2	5.3	67.2	11.0	14.4	5.4	0.8	0.8	0.0	0.0	97.6	18.5
2012	30.7	12.0	71.3	14.3	24.0	4.3	0.7	0.7	0.0	0.0	126.7	28.9
2009	21.3	9.3	45.3	7.9	38.7	5.8	6.0	0.9	4.0	1.5	111.3	16.2
2006	5.3	1.3	100.7	21.2	25.3	4.3	11.3	2.8	4.7	3.2	142.7	25.7

sedpsdbc.d19

Table 69. PSD and RSD₁₅ values obtained for largemouth bass taken in spring electrofishing samples in Bert T. Combs Lake on 18 April 2019; 95% confidence levels are in parentheses.

Year	No. \geq 8.0 in	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)
2019	184	25 (\pm 6)	1 (\pm 2)
2015	103	18 (\pm 8)	1 (\pm 2)
2012	144	26 (\pm 7)	1 (\pm 1)
2009	135	50 (\pm 8)	7 (\pm 4)
2006	206	27 (\pm 6)	8 (\pm 4)

sedpsdbc.d19

Table 70. Mean back calculated lengths (in) at each annulus for largemouth bass collected from Bert T. Combs Lake during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age								
		1	2	3	4	5	6	7	8	9
2018	15	5.2								
2017	1	3.9	7.8							
2016	15	5.0	8.1	9.8						
2015	7	4.3	8.7	10.2	11.1					
2014	3	4.2	7.9	10.6	11.4	11.8				
2013	2	4.1	7.1	9.1	10.2	10.8	11.4			
2012	9	4.5	7.6	9.5	10.8	11.6	12.4	13.0		
2011	5	4.9	7.9	9.8	10.9	11.7	12.1	12.6	12.9	
2010	1	5.5	8.7	11.6	12.3	13.2	13.9	14.5	14.9	15.2
Mean		4.8	8.0	9.9	11.0	11.6	12.3	13.0	13.3	15.2
Number		58	43	42	27	20	17	15	6	1
Smallest		3.1	5.7	7.6	9.5	10.3	10.7	11.2	11.4	15.2
Largest		6.8	10.8	12.3	13.7	13.3	14.9	16.0	14.9	15.2
Std error		0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.5	
95% CI \pm		0.2	0.3	0.3	0.4	0.5	0.6	0.7	1.0	

Otoliths were used for age-growth determinations; Intercept = 0
sedagbcl.d19

Table 71. Number of fish and mean relative weight (Wr) for each length group of largemouth bass collected at Bert T. Combs Lake on 3 October 2019. Standard error is in parentheses.

Species	Length group					
	8.0-11.9 in		12.0-14.9 in		≥15.0 in	
	No.	Wr	No.	Wr	No.	Wr
Largemouth bass	29	84 (2)	19	79 (2)	3	101 (2)

sedwrbc.d19

Table 72. Length frequency and CPUE (fish/hr) of bluegill collected at Bert T. Combs Lake in 1.0 hour (7.5-min runs) of daytime electrofishing on 14 May 2019.

Species	Inch class									Total	CPUE	Std. error
	1	2	3	4	5	6	7	8	9			
Bluegill	99	46	43	43	8	2	1	8	1	251	251.0	73.9

sedbgbc.d19

Table 73. Spring electrofishing CPUE (fish/hr) for each length group of bluegill collected at Bert T. Combs Lake on 14 May 2019.

Year	Length group								Total	
	<3.0 in		3.0-5.9 in		6.0-7.9 in		≥8.0 in		CPUE	Std. err.
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
2019	145.0	40.5	94.0	42.7	3.0	1.5	9.0	3.8	251.0	73.9
2012	61.0	30.0	30.0	7.5	9.0	3.2	6.0	3.3	106.0	32.2
2006	35.6	19.2	14.4	7.2	17.3	6.3	6.7	2.3	74.0	23.7

sedbgbc.d19

Table 74. PSD and RSD₈ values obtained for bluegill taken in spring electrofishing samples in Bert T. Combs Lake on 14 May 2019; 95% confidence levels are in parentheses.

Species	Year	No. \geq stock size	PSD	RSD ₈
Bluegill	2019	106	11 (\pm 6)	8 (\pm 5)
	2012	45	33 (\pm 14)	13 (\pm 10)
	2006	40	63 (\pm 15)	18 (\pm 12)

sedbgbc.d19

Table 75. Population assessment for bluegill collected from Bert T. Combs Lake in May 2019.

Parameter	Actual value	Assessment score
Mean length age-2 at capture	3.6	1
Years to 6.0 in	3-3+	3
Spring CPUE of \geq 6.0-in fish	12.0	1
Spring CPUE of \geq 8.0-in fish	9.0	4
Total score		9
Assessment rating		F

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Table 76. Mean back calculated lengths (in) at each annulus for bluegill collected from Bert T. Combs Lake during fall 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age								
		1	2	3	4	5	6	7	8	9
2018	25	2.2								
2017	11	1.7	3.6							
2016	11	1.6	2.7	4.4						
2015	1	1.4	3.0	4.3	6.2					
2014	2	1.9	3.9	5.9	7.3	7.8				
2012	1	1.6	2.8	4.4	6.8	7.5	7.9	8.2		
2010	1	2.2	3.7	5.7	7.0	7.4	7.6	7.8	8.1	8.3
Mean		1.9	3.2	4.7	6.9	7.6	7.8	8.0	8.1	8.3
Number		52	27	16	5	4	2	2	1	1
Smallest		1.1	2.2	3.5	6.2	7.4	7.6	7.8	8.1	8.3
Largest		3.9	4.4	6.0	7.3	7.8	7.9	8.2	8.1	8.3
Std error		0.1	0.1	0.2	0.2	0.1	0.2	0.2		
95% CI ±		0.2	0.2	0.4	0.4	0.2	0.3	0.3		

Otoliths were used for age-growth determinations; Intercept = 0
sedagbcb.d19

Table 77. Number of fish and mean relative weight (Wr) for each length group of bluegill collected at Bert T. Combs Lake on 3 October 2019. Standard error is in parentheses.

Species	Length group					
	3.0-5.9 in		6.0-7.9 in		≥8.0 in	
	No.	Wr	No.	Wr	No.	Wr
Bluegill	29	84 (2)	10	89 (2)	4	74 (3)

sedwrbc.d19

Table 78. Length frequency and CPUE (fish/hr) of largemouth bass collected at Laurel Creek Reservoir in 1.0 hour (7.5-min runs) of diurnal electrofishing on 19 April 2019.

Species	Inch class													Total	CPUE	Std. error
	4	5	6	7	8	9	10	11	12	13	14	15	17			
Largemouth bass	9	12	2	2	6	16	16	59	69	24	6	1	1	223	223.0	15.8

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Table 79. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Laurel Creek Reservoir on 19 April 2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019	25.0	1.8	97.0	9.7	99.0	13.1	2.0	1.3	0.0	0.0	223.0	15.8
2016	33.6	6.3	40.8	6.0	56.8	8.6	4.8	1.8	0.8	0.8	136.0	10.2
2013	24.8	5.7	108.8	10.2	54.4	6.3	4.0	2.2	0.8	0.8	192.0	12.9
2010	24.0	4.9	146.4	8.1	21.6	3.2	4.8	1.3	1.6	1.1	196.8	10.2
2007	4.0	1.1	105.0	9.6	24.0	3.2	1.0	1.0	1.0	1.0	134.0	11.5

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Table 80. PSD and RSD₁₅ values obtained for largemouth bass taken in spring electrofishing samples in Laurel Creek Reservoir on 19 April 2019; 95% confidence levels are in parentheses.

Year	No. ≥8.0 in	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)
2019	198	51 (± 7)	1 (± 1)
2016	128	60 (± 9)	5 (± 4)
2013	209	35 (± 6)	2 (± 2)
2010	216	15 (± 5)	3 (± 2)
2007	260	19 (± 5)	1 (± 1)

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Table 81. Length frequency and CPUE (fish/hr) of black bass collected at Liberty Lake in 1.75 hours (15.0-min runs) of electrofishing on 16 April 2019.

Species	Inch class																Total	CPUE	Std. error				
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17				18	19	20	21
Largemouth bass		3	9	10	8	6	18	55	59	14	20	8	2	7	1	1	1	1	1	2	226	129.1	14.8
Spotted bass	1	3	12	15	23	8	13	6	5	4	6										96	54.9	15.7

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Table 82. Spring electrofishing CPUE (fish/hr) for each length group of black bass collected at Liberty Lake on 16 April 2019.

Species	Year	Length group										Total	
		<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	Std. err.
		CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
Largemouth bass													
	2019	20.6	4.2	83.4	9.3	17.1	2.9	8.0	2.1	1.7	1.2	129.1	14.8
	2016	82.9	12.0	44.6	9.7	16.0	2.3	0.6	0.6	0.0	0.0	144.0	21.7
	2013	49.7	5.7	66.3	10.2	4.6	2.5	1.1	0.7	0.6	0.6	121.7	12.7
	2010	32.0	8.9	121.7	10.2	25.1	1.4	5.7	1.9	1.1	0.7	184.6	12.5
	2007	176.6	30.1	75.4	11.4	46.9	6.2	4.6	1.4	1.1	0.7	303.4	31.4
		<8.0 in		8.0-10.9 in		11.0-13.9 in		≥14.0 in		≥17.0 in		Total	
		CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
Spotted bass													
	2019	35.4	11.4	13.7	3.6	5.7	1.7	0.0	0.0	0.0	0.0	54.9	15.7
	2016	48.0	8.7	49.1	9.1	8.6	3.6	1.1	0.7	0.0	0.0	106.9	16.1
	2013	32.6	9.9	24.6	4.6	1.7	1.2	0.0	0.0	0.0	0.0	58.9	12.1
	2010	2.9	1.1	10.9	2.6	0.0	0.0	0.0	0.0	0.0	0.0	13.7	2.9
	2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Table 83. PSD and RSD values obtained for black bass taken in spring electrofishing samples in Liberty Lake on 16 April 2019; 95% confidence levels are in parentheses.

Year	Largemouth bass			Spotted bass		
	No. \geq stock size	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)	No. \geq stock size	PSD (+/- 95%)	RSD ₁₄ (+/- 95%)
2019	190	23 (\pm 6)	7 (\pm 4)	42	24 (\pm 13)	0 (\pm 0)
2016	107	27 (\pm 9)	1 (\pm 2)	130	13 (\pm 6)	2 (\pm 2)
2013	126	8 (\pm 5)	2 (\pm 2)	57	5 (\pm 6)	0 (\pm 0)
2010	267	20 (\pm 5)	4 (\pm 2)	23	0 (\pm 0)	0 (\pm 0)
2007	222	41 (\pm 6)	4 (\pm 2)	0	0 (\pm 0)	0 (\pm 0)

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Table 84. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 1.5 hours of 15-minute diurnal electrofishing runs for black bass in Wood Creek Lake on 29 April 2019; standard error is in parentheses.

Area	Species	Inch class														Total	CPUE	
		3	4	5	6	7	8	9	10	11	12	13	14	16	18			19
Pump Station	Largemouth bass		1		3	1	16	16	23	13	9	3	2	2	1		90	120.0 (16.0)
	Spotted bass				1	1	5	4		1	1						13	17.3 (6.7)
Dock	Largemouth bass	1	29	27	13	8	80	53	31	36	16	12	3	1		3	313	417.3 (10.9)
	Spotted bass			1													1	1.3 (1.3)
Total	Largemouth bass	1	30	27	16	9	96	69	54	49	25	15	5	3	1	3	403	268.7 (67.1)
	Spotted bass			1	1	1	5	4		1	1						14	9.3 (4.7)

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Table 85. PSD and RSD values obtained for each black bass species taken in spring electrofishing samples at Wood Creek Lake on 29 April 2019; 95% confidence limits are in parentheses.

Year	Area	Largemouth bass			Spotted bass		
		No. \geq stock size	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)	No. \geq stock size	PSD (+/- 95%)	RSD ₁₄ (+/- 95%)
2019*	Pump Station	85	20 (\pm 9)	4 (\pm 4)	12	17 (\pm 22)	0 (\pm 0)
	Dock	235	15 (\pm 5)	2 (\pm 2)	0	0 (\pm 0)	0 (\pm 0)
	Total	320	16 (\pm 4)	2 (\pm 2)	12	17 (\pm 22)	0 (\pm 0)
2018*	Total	223	33 (\pm 6)	12 (\pm 4)	17	41 (\pm 24)	6 (\pm 12)
2017*	Total	181	25 (\pm 6)	4 (\pm 3)	32	34 (\pm 17)	3 (\pm 6)
2016*	Total	110	42 (\pm 9)	8 (\pm 5)	23	26 (\pm 18)	0 (\pm 0)
2015	Total	259	41 (\pm 6)	10 (\pm 4)	37	30 (\pm 15)	0 (\pm 0)
2014	Total	334	34 (\pm 5)	10 (\pm 3)	61	21 (\pm 10)	0 (\pm 0)
2013	Total	256	23 (\pm 5)	9 (\pm 4)	79	14 (\pm 8)	1 (\pm 2)
2012	Total	215	20 (\pm 5)	5 (\pm 3)	60	17 (\pm 10)	0 (\pm 0)
2011	Total	185	39 (\pm 7)	16 (\pm 5)	47	17 (\pm 11)	0 (\pm 0)
2010	Total	181	52 (\pm 7)	15 (\pm 5)	55	20 (\pm 11)	0 (\pm 0)

* Lower lake area was not sampled
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Table 86. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Wood Creek Lake during April 2019.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	Std. err.
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.		
2019*	55.3	23.0	178.7	39.9	30.0	5.3	4.7	1.2	0.0	0.0	268.7	67.1
2018*	56.7	15.9	99.3	15.9	32.0	5.8	17.3	3.7	1.3	0.8	205.3	36.8
2017*	121.3	48.5	90.0	19.9	25.3	4.3	5.3	1.7	0.7	0.7	242.0	70.8
2016*	40.0	14.5	42.7	9.0	24.7	3.2	6.0	0.9	0.7	0.7	113.3	21.3
2015	11.7	2.4	51.3	10.6	26.3	6.0	8.7	2.0	1.3	0.6	98.0	15.8
2014	19.0	4.2	74.0	13.4	25.7	4.7	11.7	3.1	1.0	0.7	130.3	19.8
2013	16.7	5.4	65.3	12.1	12.0	1.8	8.0	1.6	1.0	0.5	102.0	17.7
2012	13.7	4.6	57.0	15.2	11.0	2.5	3.7	0.9	0.3	0.3	85.3	19.4
2011	28.3	5.8	37.7	5.9	14.3	3.3	9.7	2.7	1.0	0.5	90.0	12.9
2010	27.5	9.2	43.0	11.3	33.5	5.2	14.0	2.8	2.5	1.1	118.0	26.6

* Lower lake area was not sampled
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Table 87. Spring electrofishing CPUE (fish/hr) for each length group of spotted bass collected at Wood Creek Lake during April 2019.

Year	Length group										Total	
	<8.0 in		8.0-10.9 in		11.0-13.9 in		≥14.0 in		≥17.0 in			
	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.	CPUE	Std. err.
2019*	2.0	1.4	6.0	3.4	1.3	0.8	0.0	0.0	0.0	0.0	9.3	4.7
2018*	2.0	1.4	6.0	3.2	4.0	2.5	0.7	0.7	0.0	0.0	12.7	5.5
2017*	6.7	4.0	11.3	5.6	6.7	4.0	0.7	0.7	0.0	0.0	25.3	12.5
2016*	5.3	4.6	9.3	5.7	4.0	2.5	0.0	0.0	0.0	0.0	18.7	10.6
2015	4.3	1.7	7.3	2.1	3.7	0.9	0.0	0.0	0.0	0.0	15.3	3.9
2014	6.3	2.5	13.7	2.7	4.3	1.5	0.0	0.0	0.0	0.0	24.3	5.1
2013	6.0	2.0	19.7	5.4	3.3	1.7	0.3	0.3	0.0	0.0	29.3	7.0
2012	17.7	4.4	11.0	2.3	3.3	1.2	0.0	0.0	0.0	0.0	32.0	7.1
2011	16.3	4.2	9.0	2.8	2.7	1.2	0.0	0.0	0.0	0.0	28.0	7.3
2010	13.5	5.5	19.0	2.9	5.5	1.3	0.0	0.0	0.0	0.0	38.0	8.0

* Lower lake area was not sampled
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Table 88. Population assessment for largemouth bass based on spring electrofishing at Wood Creek Lake from 2010-2019 (scoring based on statewide assessment).

Year		Mean length					Total score	Assesment rating
		age-3 at capture	CPUE age 1	CPUE 12.0-14.9 in	CPUE ≥15.0 in	CPUE ≥20.0 in		
Management objectives		≥11.5 in	≥8.0 fish/hr	≥20.0 fish/hr	≥17.0 fish/hr	≥2.0 fish/hr		
2019	Value	10.1	44.7	30.0	4.7	0.0		
	Score	1	3	3	1	1	9	F
2018	Value		40.7	32.0	17.3	1.3		
	Score	3	3	3	3	2	14	G
2017	Value		105.3	25.3	5.3	0.7		
	Score	3	4	2	1	2	12	F
2016	Value		29.3	24.7	6.0	0.7		
	Score	3	3	2	2	2	12	F
2015	Value		5.0	26.3	8.7	1.3		
	Score	3	1	3	2	2	11	F
2014	Value	11.3	6.0	25.7	11.7	1.0		
	Score	3	1	3	2	2	11	F
2013	Value		14.0	12.0	8.0	1.0		
	Score	3	2	1	2	2	10	F
2012	Value		4.3	11.0	3.7	0.3		
	Score	3	1	1	1	2	8	P
2011	Value		24.8	14.3	9.7	1.0		
	Score	3	3	2	2	2	12	F
2010	Value	11.4	15.1	33.5	14.0	2.5		
	Score	3	2	3	3	3	14	G

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Table 89. Species composition, relative abundance, and CPUE (fish/hr) of black bass collected during 1.5 hours of 15-minute diurnal electrofishing runs for black bass in Wood Creek Lake on 24 September 2019; standard error is in parentheses.

Area	Species	Inch class															Total	CPUE	
		2	3	4	5	6	7	8	9	10	11	12	13	15	20	21			
Pump station	Largemouth bass		7	7	2		4	8	5	5	4	2						44	58.7 (14.9)
	Spotted bass	2	2		1	1		1	1	2	1							11	14.7 (7.1)
Dock	Largemouth bass		4	36	12	1	21	24	35	21	19	5	4	1	1	1		185	246.7 (23.3)
	Spotted bass																	0	0.0 (0.0)
Total	Largemouth bass		11	43	14	1	25	32	40	26	23	7	4	1	1	1		229	152.7 (43.8)
	Spotted bass	2	2		1	1		1	1	2	1							11	7.3 (4.6)

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Table 90. Indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected in fall (September and October) electrofishing samples at Wood Creek Lake.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	Std. error	CPUE	Std. error	CPUE	Std. error	CPUE	Std. error
2019	4.5	0.1	45.3	14.3	9.3	3.8		
2018	4.3	0.1	37.3	14.9	8.0	3.7	44.7	20.4
2017 ^a	4.1	0.2	16.0	4.4	2.7	1.3	40.7	12.7
2016	4.0	0.1	74.7	22.6	8.7	1.6	105.3	43.5
2015	4.2	0.1	32.7	7.8	8.0	2.2	29.3	12.8
2014 ^a	3.7	0.2	2.7	0.9	0.0	0.0	5.0	1.0
2013 ^a	3.4	0.2	11.3	3.0	1.0	0.5	6.0	1.7
2012	4.3	0.1	34.7	10.1	8.3	4.2	14.0	4.9
2011 ^a	4.0	0.1	12.3	4.1	0.7	0.7	4.3 ^b	1.6
2010	5.0	0.1	36.7	14.9	18.0	6.6	24.8	6.0

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^a Age-0 largemouth bass stocked in the fall

^b Includes fish stocked in fall 2011; CPUE stocked fish=1.0 fish/hr

Table 91. Number of fish and mean relative weight (Wr) for each length group of black bass collected at Wood Creek Lake during 24 September 2019. Standard error is in parentheses.

Species	Length group					
	8.0-11.9 in		12.0-14.9 in		\geq 15.0 in	
	No.	Wr	No.	Wr	No.	Wr
Largemouth bass	121	87 (1)	11	79 (2)	3	86 (7)
	7.0-10.9 in		11.0-13.9 in		\geq 14.0 in	
	No.	Wr	No.	Wr	No.	Wr
Spotted bass	4	96 (3)	1	82 (-)	0	-

sedyoywc.d19

Table 92. Mean back calculated lengths (in) at each annulus for largemouth bass collected from Wood Creek Lake during 2019, including the 95% confidence interval (CI) for each mean length per age group.

Year	No.	Age						
		1	2	3	4	5	6	7
2018	26	5.4						
2017	13	4.9	8.7					
2016	11	5.1	8.3	10.1				
2015	6	4.6	8.2	10.1	11.1			
2014	5	4.7	8.5	10.4	11.4	12.0		
2013	3	4.1	7.9	9.8	10.9	11.8	12.5	
2012	1	4.6	8.1	10.1	11.5	12.2	12.7	13.4
Mean		5.1	8.4	10.1	11.2	12.0	12.6	13.4
Number		65	39	26	15	9	4	1
Smallest		3.5	7.1	8.6	10.0	10.9	11.6	13.4
Largest		7.6	10.8	12.3	12.3	13.0	13.9	13.4
Std error		0.1	0.1	0.2	0.2	0.2	0.5	
95% CI \pm		0.3	0.2	0.3	0.4	0.5	1.0	

Otoliths were used for age-growth determinations; Intercept = 0
sedagwcl.d19

EASTERN FISHERY DISTRICT

Project 1: Lake and Tailwater Fishery Surveys

FINDINGS

Table 1 shows sampling conditions by water body for eastern fishery district lakes in 2019.

Buckhorn Lake

Muskellunge were sampled via boat electrofishing during mid-April (Tables 2-4). This was later than the normal sampling time of January-February. Like several other previous years, high water events and removal of wood debris from boat ramp access caused delays. A total of only 8 fish were collected from 13.3-36.5 in (Table 2). The largest weight was 13.74 lb for a female 36.5 in total length. Late sampling time resulting from the lake level being 16 ft above winter pool elevation is presumed to have allowed fish to disperse from the lower lake into other areas. Relative weights by length group are listed in Table 3 and the \log_{10} length-weight equation for muskellunge during 2019 sampling was $-4.37 + 3.51(\log_{10} \text{ length})$. An assessment rating of "Poor" was observed for the fishery (Table 4). The 2017-2019 sample events were conducted during poor conditions. During September, a total of 1,000 muskellunge (13.0 in) were stocked. These fish did not have any wire tag or fin clip for identification. Stocking sites included the marina and Trace Fork boat ramps. The normal stocking number is 405 fish/yr; however, in 2019 the lake received only 150 fish.

Black bass were sampled in the spring and fall via electrofishing (Tables 5-10). The spring largemouth bass assessment rating improved to "Good" (Table 8). This improvement in the assessment rating was the result of an increase in the CPUE ≥ 20.0 in category. Since 2015, most assessment ratings for largemouth bass at Buckhorn Lake have been "good" (Table 8). Recruitment has been good in recent years, and during fall sampling another above-average CPUE was observed for age-0 fish (Table 10). No supplemental stocking of largemouth bass was necessary. Fall sampling in 2020 will collect new age and growth information for largemouth bass in addition to standardized data.

White crappie were sampled with trap nets in the fall. A total of 719 fish were sampled from 2.6-13.4 in (Table 11). PSD, RSD, age and growth, and age frequency are listed in Tables 12-14. Mean age-2 length at capture was 7.4 in and the population assessment observed a rating of "Good" (Table 15). The population assessment total score was 16 with a range of 17-20 being necessary for an "Excellent" rating. Mean growth of age-2 fish at capture (7.4 in) is below the 9.0-in goal of the current minimum size regulation. The population will be monitored again in 2021.

Redear sunfish (24,600; 1.2 in) were stocked in the lake in September. Rainbow trout (5,000; 8.0-12.0 in) were stocked in the tailwater during the months of April-June and October-November.

Carr Creek Lake

Electrofishing was completed in the spring and fall for black bass (Tables 16-22). The spring largemouth bass population assessment continued to be "Good" (Table 19). New age and growth information was collected during the fall sample for largemouth bass (Table 21). This moved the mean age-3 length to 13.1 in versus the 13.5 in observed in 2013. Some of the spring age-1 CPUE's for largemouth bass have been high in recent years due to supplemental stocking in the spring instead of the fall (Table 22). Total age-0 largemouth bass numbers in the fall were considered average; however, a decision was made to stock fingerling largemouth bass in the fall of 2019 at a low rate. During March 2019, a total of 9,900 largemouth bass fingerlings (6.2 in) were stocked to supplement the 2018 age-0 class and 7,105 (4.5 in) bass were stocked in October to supplement the 2019 year class.

Walleye were sampled in the early spring with electrofishing (Tables 23-25). Additionally, during this sampling effort, broodfish were collected for Minor Clark Fish Hatchery. Due to multiple days sampling for broodfish, a total of 208 walleye were sampled (Table 23). The majority of fish ranged from the 18- through 22-in class (Table 23). The total relative weight value was at 100 (Table 25) and is good considering that a large proportion were males.

The \log_{10} length-weight equation for walleye during 2019 sampling was $-3.44 + 3.02(\log_{10} \text{ length})$. A total of 35,000 walleye (1.5 in) were stocked in May.

No spring data was collected for crappie. Tentative scheduling will include early spring electrofishing in 2020 to collect black and white crappie population data.

Grass carp (50; 11.0-in average) were stocked in July. A redear sunfish stocking program was initiated in October 2018 and stocking continued in 2019 with 14,200, 1.2-in fish stocked in September. Tailwater stockings included 1000 rainbow trout/month during the months of April, May, June, October and November.

During 2019, zebra mussels were documented for the first time in the lake and they became prolific in number by end of year. This follows several other recent invasive species introductions to Carr Creek Lake including purple loosestrife (2013), hydrilla (2008), and alewife (2000).

Cranks Creek Lake

Black bass data from spring and fall boat electrofishing at Cranks Creek Lake is presented in Tables 26-32. Largemouth bass are the dominant black bass species and continue to produce some trophy-size fish at this lake. CPUE of largemouth bass ≥ 20.0 in during the spring has often been greater than 5.0 fish/hr since 2010 (Table 27). This has increased the success rates of anglers for trophy fish compared to most eastern lakes. The population assessment of largemouth bass in the spring was “Good” (Table 29). Fall sampling consisted of two sample dates (Table 30). Multiple dates were utilized to obtain additional larger fish for age and growth determinations (Table 31). Mean length of age-3 fish at capture improved from 10.0 to 10.7 in between 2013 and 2019. Fall total CPUE of age-0 and age-0 ≥ 5.0 in was observed to be below average (Table 32). However, this lake’s weighted regression is highly density dependent and no supplemental stocking of largemouth bass fingerlings occurred.

Approximately 5,000 rainbow trout (1,250/mo) were stocked in the lake in January, April, May, and October. Additionally, 2,640 channel catfish were stocked in the lake. No vegetation controls were utilized in 2019, however, herbicides have been used some in the past and future work may include a low rate stocking of grass carp.

Dewey Lake

Black bass sampling was completed during the spring and fall (Tables 33-38). Due to poor sampling conditions in April, a second sampling event was conducted in early May for spring data. The May sample was used for spring data analysis in this report. Largemouth bass numbers ≥ 15.0 in continue to be very good (Table 34) and this is producing quality fishing for larger fish by bass anglers. PSD values are above 60 for lower and upper-lake fish (Table 35), showing a population with a greater proportion of larger fish. The population assessment for largemouth bass has remained “Good” since 2103 (Table 36). The total CPUE of age-0 and age-0 ≥ 5.0 -in fish was average (Table 38) and no supplemental age-0 fingerling bass were stocked.

A total of 9,000 blue catfish (5.0-9.0 in) were stocked in October. Approximately 634 muskellunge (12.6 in) were stocked in early fall. Rainbow trout (1,000/mo; 8.0-12.0 in) were stocked in the Dewey Lake tailwater in April, May, October, and November.

Fishtrap Lake

During 2019, both spring and fall electrofishing samples were completed for black bass (Tables 39-44). The spring assessment was “Good” for largemouth bass (Table 42). This lake experienced an extreme drawdown of approximately 42 ft during the winter of 2016-2017 for hydraulic gate repairs in the dam. Following this, in 2017, largemouth bass had a spring assessment of “Fair” and in 2018 were not sampled. Most prior assessment ratings were “Good” and possibly now, the fishery is trending that way again. Fall age-0 largemouth bass CPUE’s were below average (Table 44). A stocking of approximately 11,000 supplemental largemouth bass fingerlings (6.5 in) is planned for March 2020.

Trap nets were utilized in the fall to sample white crappie for population evaluation (Tables 45-49). A total of 20 net-nights were used (Table 45) and this included relocating nets in an effort to improve catch. The lower catch rate and moving nets to different locations was similar to results and tactics used in 2015 and 2017. However, crappie anglers had good success in each of the following years (2016 and 2018). The high PSD and RSD values from the trap netting (Table 46) match good angler success for keeper fish. Age and growth data is provided in Table 47 and age frequency results are shown in Table 48. The mean length of age-2 fish at capture was 10.2 in (Table 49). This is the highest value ever obtained from crappie trap netting at Fishtrap Lake. The assessment value obtained was “Fair” (Table 49). This rating is lower than previous years. If the 2019 sample sites would have been in ideal areas, a more historic rating of “Good” to “Excellent” would be expected.

Several fish stockings occurred during the year at Fishtrap Lake. A total of 11,000 blue catfish (6.0-9.0 in) were stocked in the lake during October. During June, 2,581 native-strain walleye (2.8 in) were stocked in the Levisa Fork River upstream of Fishtrap Lake (Lick Creek boat ramp, Biggs bridge, Feds Creek bridge). A total of 23,013 hybrid striped bass (1.6 in) were stocked in June. Rainbow trout (2000 fish/mo) were stocked in the tailwater in April, May, June, October and November.

Fishpond Lake

Largemouth bass were sampled via nocturnal electrofishing at Fishpond Lake (32 acres) on 29 April 2019 (Tables 50-52). Fish were collected from 4.0-23.0 in (Table 50) and smaller length groups showed increases in CPUE compared to 2017 (Table 51). This lake continues to provide trophy bass with good PSD and RSD₁₅ values (Table 52). Recent largemouth bass data has observed PSD values from 69 – 75 and RSD from 22 – 30; indicators of a trophy bass fishery. The PSD value of 41 in 2019 places the largemouth bass fishery in a more balanced state with support of greater numbers of larger panfish. However, with an RSD₁₅ value of 18 there is good opportunity for a high success rate of larger fish by anglers.

Additional management at Fishpond Lake entails fertilization and some fish stockings. Spring lake fertilization is conducted in order to increase zooplankton density for young-of-year fishes and to limit the filamentous algae growth. This year, fertilizer applications transitioned to a granular formulation of 10-52-4 to increase available phosphorous. Through water quality testing, it was determined that this lake has very hard water (>350mg/L), significantly limiting the effectiveness of fertilizer at typical rates. In order to be more effective, fertilizer rates will have to be increased in future applications. This lake is typically very clear and shoreline areas clog with filamentous algae without the addition of fertilizer in the spring. A total of 5,000 rainbow trout (8.0 in) are stocked annually during January, April, May, and October. Channel catfish (9.0 in) are stocked every other year. Largemouth bass will be sampled again in 2021.

Martins Fork Lake

During March, several days were utilized to electrofish for walleye broodfish; however, no adults were collected. The native strain walleye have been stocked annually since 2013. Spring and fall electrofishing was completed for black bass and native strain walleye (Tables 53-58). During spring, the largest fish collected were in the 19.0-in class for largemouth bass and 17.0-in class for walleye (Table 53). Total CPUE of largemouth bass in the spring sample was high compared to previous years (Table 54). This high CPUE for largemouth bass could be accounted for by a March stocking of small fish. The spring assessment total score for largemouth bass increased, but the rating remained “Fair” (Table 56). Walleye were collected during fall sampling; however, no large fish were observed once again (Table 57). Largemouth bass age-0 density in the fall was near average (Table 58) and no supplemental stocking of age-1 fingerlings took place in the fall.

A total of 4,628 largemouth bass (6.2 in) were stocked in March and 8,602 native strain walleye (2.8 in) were stocked in June. In addition, 6,680 redear sunfish (1.3 in.) were stocked in September. Rainbow trout (750 fish/mo) were stocked at the tailwater in April, May, June, October and November.

Paintsville Lake

Tables 59-64 provide spring and fall electrofishing data for black bass. The largemouth bass spring population assessment rated “Good” (Table 62). This rating moved up from “Fair” in 2018 with the parameters of CPUE ≥ 15.0 in and ≥ 20.0 in increasing in 2019 (Table 60). Age-0 largemouth bass CPUE was average (Table 64) and no supplemental stocking of fingerlings took place. The 12.0- to 15.0-in slot length limit for largemouth bass was replaced with a minimum length limit of 12.0 in beginning 1 March 2019. The slot length regulation was in effect for 17 years (2002-2018). Bass angler acceptance of the new regulation has been largely positive.

Spring electrofishing was not completed for walleye and crappie. Walleye broodfish collection was conducted in March with no broodstock captured.

The lake received a stocking of 4,500 rainbow trout (8.0-12.0 in) during February. The tailwater trout fishery received 20,000 rainbow trout from April to November and 300 brown trout in April.

A day (1 March-31 October) and night (1 June-31 August) creel survey was conducted at Paintsville Lake during 2019. The creel survey consisted of three time periods of 6 hrs each. Periods 1 and 2 were surveyed during the day and period 3 was surveyed at night. Dates, times, and order of surveys were randomized. Total angler counts were conducted at random times during each creel period. Prior day and night creel surveys occurred in 2003 and 2011. These prior surveys were each scheduled for the same calendar time periods as the 2019 survey. Data comparisons of these surveys follows in the text below.

Tables 65-73 contain data obtained during the 2019 creel survey. Estimated fishing trips were 9,610 for the day survey and 794 for the night survey in 2019 (Table 65) as compared to 8,002 day and 1,464 night trips in 2011 and 18,841 day and 1,713 night trips in 2003. With the continued decline in night fishing trips from 2003 to 2019, future surveys could possibly be conducted without the night period. Total angler hours amounted to 41,619 for the day and 2,744 for the night in 2019 (Table 65) as compared to 47,557 day and 7,540 night hours in 2011 and 107,725 day and 5,812 night hours in 2003.

During 2019, anglers caught an estimated 44,261 fish (48,971 in 2011 and 75,398 in 2003) and harvested 8,643 (14,428 in 2011 and 25,688 in 2003) during the day survey. Anglers caught an estimated 2,089 fish (9,462 in 2011 and 762 in 2003) and harvested 409 (1,964 in 2011 and 441 in 2003) during the night survey (Table 65). In 2019, angler catch rate was estimated at 1.04 fish/hour (0.85 in 2011 and 0.73 in 2003) during the day and 0.70 fish/hour (1.24 in 2011 and 0.43 in 2003) during the night (Table 65).

More largemouth bass were caught than any other species in the 2019 (Table 66), 2011, and 2003 day surveys. During the night surveys, largemouth bass was the most caught species in 2019 (Table 67) and 2003, while bluegill was the most caught species in 2011. Bluegill was the most harvested species during the 2019 (Table 66) and 2011 day surveys, while white crappie was the most harvested species in the 2003 day survey. The most harvested species during the night surveys was bluegill in 2019 (Table 67) and 2011, and largemouth bass in 2003.

The primary species/group fished for during 2019 was the black bass group at 72.1% (81.0% in 2011 and 56.0% in 2003), followed by crappie 16.2% (14.3% in 2011 and 31.7% in 2003) and bluegill 10.3% (2.4% in 2011 and 0.5% in 2003; Appendix A). Angler preference for walleye has continually declined through the years with no anglers targeting that species in 2019 (2.4% in 2011 and 6.9% in 2003; Appendix A). The trout fishery has shown a similar trend with no anglers targeting that species in 2019 (Appendix A) or 2011, but 20.2% targeting trout in 2003. The species showing the greatest angler satisfaction as represented by a “very satisfied” rating in 2019 were rainbow trout (40.0%), followed by crappie (14.3%) and largemouth bass (10.7%; Appendix A).

Yatesville Lake

Electrofishing was utilized to sample black bass during the spring and fall (Tables 74-79). During spring, the upper lake produced a greater CPUE for largemouth bass than the lower lake (Table 74). The spring assessment was “Fair” for largemouth bass (Table 77). All assessment parameters scored the same as in 2018 except CPUE ≥ 20.0 in, which lowered from a value of two to one (Table 77). This fishery continues to remain fairly stable. Due to

heavy tournament angling pressure from spring into fall, the bass population is watched closely. The assessments for largemouth bass have primarily held at “Good” since 2008 (Table 77). During the fall sample, upper and lower lake CPUE’s were comparable for largemouth bass (Table 78). The fall data observed above average numbers of age-0 largemouth bass (Table 79) and no supplemental stocking took place.

Rainbow trout (750 fish/mo) were stocked in the tailwater of Yatesville Lake in April, May and November.

Table 1: Summary of 2019 sampling conditions by waterbody, species sampled and date.

Water body	Species	Date	Time (24hr)	Gear	Weather	Water Temp (°F)	Water level (elev ft)	Secchi (in)	Pertinent sampling comments ^{a,b}
Buckhorn Lake	Musky	4-Apr	1100	shock	cloudy	53.0	761.8	12	outflow: 400cfs; bp: 30.37; cond: 425; 1 boat; whole lake; water muddy
Buckhorn Lake	LMB	16-May	1100	shock	pt. cloudy	69.0	782.5	80	outflow: 300CFS; bp: 30.02; cond: 274; 1 boat; whole lake; variable water clarity
Buckhorn Lake	LMB	20-Sep	1100	shock	cloudy	80.9	781.1	81	outflow: 40CFS; bp: 30.24; cond: 478; 1 boat; whole lake
Buckhorn Lake	crappie	18-Nov	1000	trap net	pt. cloudy	46.0	767.1		outflow: variable 267-259CFS; bp: 29.85; upper (middle) lake; slight turbidity
Carr Creek Lake	walleye	12-Mar	1000	shock	sunny	48.0	1017.3	12	broodfish collection; outflow: 567CFS; bp: 30.43; cond: 318; 2 boats; whole lake
Carr Creek Lake	walleye	15-Mar	1000	shock	pt. cloudy	47.7	1017.3	12	broodfish collection; outflow: 150CFS; bp: 29.96; cond: 301; 2 boats; whole lake
Carr Creek Lake	walleye	19-Mar	1000	shock	pt. cloudy	49.0	1017.5	16	broodfish collection; outflow: 150CFS; bp: 30.46; cond: 310; 2 boats; middle & lower lake
Carr Creek Lake	LMB	6-May	2000	shock	clear	72.0	1028.8	110	outflow: 309CFS; bp: 30.04; 2 boats; whole lake
Carr Creek Lake	LMB	12-Sep	2000	shock	pt. cloudy	83.2	1028.0	186	outflow: 5CFS; bp: 30.12; cond: 725; 2 boats; whole lake; LMB age & growth
Cranks Creek Lake	LMB	2-May	1100	shock	cloudy/rain	71.0	normal		bp: 30.18; 1 boat; whole lake; murky water
Cranks Creek Lake	LMB	10-Sep	2000	shock	clear	83.4	normal	66	bp: 30.18; 1 boat; whole lake; LMB age & growth; water clear
Cranks Creek Lake	LMB	7-Nov	1100	shock	clear	55.0	normal	104	bp: 30.39; cond; 350 1 boat; whole lake; LMB age & growth (second trip)
Dewey Lake	LMB	24-Apr	1000	shock	cloudy	64.0	650.7	73L/12U	outflow: 567CFS; bp: 30.01; cond: 494; 2 boats; whole lake
Dewey Lake	LMB	1-May	1000	shock	cloudy	74.0	650.6	40	outflow: 209CFS; bp: 30.13; cond: 424; 1 boat; (second trip)
Dewey Lake	LMB	18-Sep	2000	shock	clear	82.0	650.3	66	outflow: 32CFS; bp: 30.02; cond: 645; 2 boats; whole lake
Fishpond	LMB	29-Apr	2000	shock	clear	68.7	normal	201	bp: 30.02; cond: 584; 1 boat; whole lake; clear water
Fishtrap Lake	walleye	14-Mar	1000	shock	cloudy/rain	47.0	735.1		broodfish collection; outflow: 886CFS; cond: 475; 1 boat; (no fish collected)
Fishtrap Lake	LMB	9-May	1000	shock	cloudy/rain	73.5	757.7	96	outflow: 336CFS; bp: 29.86; cond: 389; 2 boats; whole lake; upper lake muddy
Fishtrap Lake	LMB	17-Sep	2000	shock	clear	82.5	756.3	100L/84U	outflow: 78.2CFS; bp: 30.05; cond: 774; 2 boats; whole lake
Fishtrap Lake	crappie	3-Dec	1000	trap net	cloudy	44.0	737.1		outflow: variable 370-892CFS; bp: 30.13; upper (middle) lake; white crappie age & growth
Martins Fk Lake	walleye	11-Mar	1100	shock	cloudy	48.3	1312.6	50	broodfish collection; bp: 30.35; cond: 113; 1 boat
Martins Fk Lake	walleye	13-Mar	1100	shock	pt. cloudy	49.0	1311.0	25	broodfish collection; outflow: 395; bp: 30.18; cond: 74; 1 boat; muddy water
Martins Fk Lake	walleye	20-Mar	1100	shock	sunny	52.5	1302.8	15	broodfish collection; outflow: 190; bp: 30.30; cond: 122; 1 boat; muddy water
Martins Fk Lake	LMB	2-May	1100	shock	cloudy	73.0	1309.9	67	bp: 30.18; cond: 133; 1 boat; whole lake; clear water
Martins Fk Lake	LMB	10-Sep	2000	shock	clear	83.4	1308.4	59	bp: 30.18; cond: 175; 1 boat; whole lake; clear water
Paintsville Lake	walleye	7-Mar	1000	shock	cloudy	43.5	709.8		broodfish collection; outflow: 28.5CFS; bp: 30.44; 1 boat; lower lake (no fish)
Paintsville Lake	walleye	18-Mar	1000	shock	cloudy	46.0	710.0	12	broodfish collection; outflow: 190CFS; bp: 30.36; cond: 78; 2 boats; lower lake (no fish)
Paintsville Lake	LMB	3-May	1000	shock	cloudy/rain	71.0	710.0	114	outflow: 74.9CFS; bp: 30.02; cond: 123; 1 boat; whole lake
Paintsville Lake	LMB	11-Sep	1000	shock	pt. cloudy	82.7	708.6	96	outflow: 15.2CFS; bp: 30.22; cond: 118; 1 boat; whole lake
Yatesville Lake	LMB	14-May	2000	shock	clear	71.0	630.0	48	outflow: 292CFS; bp: 30.01; cond: 166; 2 boats; whole lake; upper lake turbid
Yatesville Lake	LMB	23-Sep	1000	shock	cloudy/rain	79.5	630.0	75	outflow: 43.5CFS; bp: 30.03; cond: 159; 1 boat

^a cond = conductivity in µS/cm

^b bp = barometric pressure in inches

L= lower lake

U= upper lake

Table 2. Length frequency and electrofishing CPUE (fish/hr) of muskellunge collected during spring sampling on Buckhorn Lake from 1998-2019; numbers in parentheses are standard errors. Results from 2002 are from fall electrofishing.

Year	Inch class																																															Total	CPUE	
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47												
2019				1								1	1									1	1				1	2																	8	3.6 (2.2)				
2018		1	1			3				1				1		1							2		1		1	2																		14	3.1 (0.9)			
2017		3	7	1							1				1	1						2	2	1	1					2																22	6.8 (1.1)			
2016				2	2	4						2	1	2			1							1	1		1	1		1	1												1			21	7.0 (3.3)			
2015	no sample																																																	
2014	1	2	1	6	2							1	2	1	4									1		1				1		1														26	7.4 (1.9)			
2013			3	6	3							1												1	1			1																			16	4.3 (0.9)		
2012	1		1	8	20	2						1	2	1	6	1	1						1		2		1	3	2	2	1											1				57	13.4 (1.8)			
2011			4	5	17	14	3					2		3	3	1						1		3	1	3		3	2	1	1		1										1				69	12.6 (2.7)		
2010			1	4	13	18			1	1	1	1		6	6	10	6	1				2	3	2	1	3	2	1	2	1	4	3	1	1										1			96	12.9 (1.6)		
2009	1			2	4	11	12	6					1		1	3	2	3	1	1			1	1	4	3	3	3		1		2										1			1		68	17.6 (3.4)		
2008				2	6	10	6	1						1	1	3						1		1	5	2			1			1												1			43	8.3 (1.6)		
2007					1	1	2	1					2	3	6	2		1					1		2		1	2		1	2		1	1									1		1		32	13.7 (4.5)		
2006			1	8	10	6								1	2	3							1	1		1	3	2	1	1	1	1	1	1	1												45	14.2 (2.2)		
2005					4	5	2					1		2	2									1			1			2	1	1	3		1										1			27	6.3 (1.7)	
2004			2	9	23	16	2				1		6	7	19	9							3	5	6	6	6	4	5	7	5	8	3	1	1									1			155	16.7 (2.1)		
2003	1		5	2	1	1									2	1	1				1	1	2	1	1				1																1			22	7.1 (1.9)	
2002							1							2	1								3	1		1			2				1														12	6.0 (0.8)		
2001					4	1	1				1		1											1		1	1		1																	1			13	3.2 (0.7)
2000		1	3	2	3	1								4					1	2			7	1		1	1			2	1																31	8.2 (0.5)		
1999		1	1	2	3	3	1			1	3	6	6	11	4	4	3						3	2	1		2	1		1																	59	10.9 (4.4)		
1998	1	1	2	7	4	1	1				1	4	3	1	1	1							1		1	1			1	1																	33	6.6 (2.9)		

EFDBLMSS.D98-D10, D12, D14, D16-D19
LFRBHLSP.D11, D13

Table 3. Number of fish and relative weight (Wr) for each length group of muskellunge collected at Buckhorn Lake (710 acres) from spring electrofishing. Numbers in parentheses are standard errors.

Year	Length group								Total	
	≤19.9 in		20.0-29.9 in		30.0-37.9 in		≥38.0 in			
	No.	Wr	No.	Wr	No.	Wr	No.	Wr	No.	Wr
2019	1	72.3 (0.0)	2	90.7 (0.8)	0	(0.0)	5	91.7 (3.1)	8	89.0 (3.0)
2018	4	83.4 (3.6)	2	90.7 (3.9)	6	94.5 (2.6)	0	(0.0)	12	90.2 (2.6)
2017	0	(0.0)	5	81.2 (5.0)	4	84.1 (0.9)	2	97.6 (1.5)	11	85.2 (2.9)
2016	4	77.5 (4.5)	6	86.6 (2.2)	4	90.6 (3.3)	3	95.6 (2.0)	17	87.0 (2.1)
2014	2	79.5 (0.9)	8	95.1 (2.1)	2	92.7 (4.1)	3	92.4 (0.5)	15	92.2 (1.8)
2013	0	(0.0)	1	72.8 (0.0)	3	96.1 (1.9)	0	(0.0)	4	90.3 (6.0)
2012	22	82.0 (1.0)	12	91.3 (3.2)	8	96.1 (2.8)	4	91.8 (0.9)	46	87.8 (1.4)
2011	11	79.4 (1.3)	10	85.4 (1.9)	13	92.3 (1.5)	3	92.1 (4.2)	37	86.6 (1.3)
2010	20	79.0 (1.4)	33	93.5 (1.2)	15	96.2 (1.2)	10	97.4 (3.9)	78	90.8 (1.1)
2009	29	78.2 (1.1)	12	95.9 (3.9)	15	93.5 (2.9)	5	89.5 (3.5)	61	86.4 (1.6)
2008	16	83.0 (1.6)	6	97.5 (2.8)	9	95.6 (2.4)	3	96.6 (1.2)	34	90.1 (1.6)
2007	4	86.6 (2.4)	14	95.0 (1.6)	7	100.1 (1.8)	6	91.2 (4.9)	31	94.4 (1.4)
2006	6	89.6 (1.1)	6	106 (2.4)	9	93.7 (2.3)	5	93.0 (0.0)	26	95.5 (1.6)
2005	7	74.8 (5.0)	5	92.7 (3.5)	4	93.7 (1.8)	7	92.9 (2.4)	23	87.5 (2.5)
2004	10	58.4 (3.3)	15	68.8 (5.5)	19	78.2 (5.3)	4	97.5 (3.6)	48	72.8 (3.1)
2003	1	72.9 (0.0)	6	87.9 (3.5)	5	97.6 (2.4)	1	72.9 (0.0)	13	89.3 (3.0)

EFDBLMSS.D03-D19

Table 4. Population assessment for muskellunge from Buckhorn Lake (1,230 acres) captured during spring electrofishing from 2005-2019. Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2016	2017	2018	2019
CPUE age 1	2 (2.5)	4 (7.9)	1 (1.7)	3 (4.8)	4 (9.3)	3 (5.1)	4 (7.8)	4 (7.5)	2 (3.2)	2 (3.4)	2 (2.7)	2 (3.4)	1 (1.1)	1 (0.5)
CPUE \geq 20.0 in	2 (3.7)	3 (6.3)	4 (12.0)	2 (3.8)	4 (7.7)	4 (7.8)	2 (4.7)	3 (5.9)	1 (1.1)	2 (4.0)	2 (4.3)	1 (3.4)	1 (1.8)	1 (3.1)
CPUE \geq 30.0 in	2 (2.6)	4 (4.4)	4 (5.3)	2 (2.2)	4 (4.7)	3 (3.4)	2 (2.9)	2 (3.1)	1 (0.8)	1 (1.7)	2 (2.3)	1 (1.9)	1 (1.3)	2 (2.2)
CPUE \geq 36.0 in	4 (2.1)	4 (2.5)	4 (2.5)	1 (0.6)	3 (1.8)	3 (1.7)	2 (1.1)	4 (2.1)	1 (0.3)	2 (1.1)	3 (1.3)	1 (0.6)	1 (0.4)	2 (0.9)
CPUE \geq 40.0 in	4 (1.1)	4 (1.0)	4 (1.6)	3 (0.5)	4 (1.0)	3 (0.4)	3 (0.4)	2 (0.2)	1 (0.0)	4 (0.9)	2 (0.3)	1 (0.0)	1 (0.0)	1 (0.0)
Total score	14	19	17	11	19	16	13	15	6	11	11	6	5	7
Assessment	Good	Excellent	Excellent	Fair	Excellent	Good	Good	Good	Poor	Fair	Fair	Poor	Poor	Poor

EFDBLMSS.D05-D10, D12, D14, D16-D19

LFRBHLSP.D11, D13

Table 5. Species composition, relative abundance and CPUE (fish/hr) of black bass collected in approximately 1.5 hours of 15-minute electrofishing samples at Buckhorn Lake (1,230 acres) on 16 May 2019; numbers in parentheses are standard errors.

Area	Species	Inch class															Total	CPUE		
		3	4	5	6	7	8	9	10	11	12	13	14	15	17	18		20		(SE)
Lower	Largemouth bass	1	4	4	14	3	8	17	10	16	11	13	4	2			3	110	110.0	(6.2)
Upper	Largemouth bass		1	14	15	4	7	8	5	13	6	5	1	1	1	1		82	164.0	(44.0)
Total	Largemouth bass	1	5	18	29	7	15	25	15	29	17	18	5	3	1	1	3	192	128.0	(16.6)

EFDBLLSS.D19

Table 6. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Buckhorn Lake (1,230 acres). SE=standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	40.0	11.6	56.0	4.3	26.7	3.8	5.3	0.8	2.0	0.9	128.0	16.6
2018	46.4	7.0	59.2	6.4	28.4	4.0	2.8	1.3	0.4	0.4	136.8	11.3
2017	91.3	19.9	40.0	4.3	34.7	7.1	8.7	2.4	0.7	0.7	174.7	19.7
2016	no sample											
2015	56.4	6.0	29.8	5.2	27.1	5.3	3.6	1.2	0.9	0.6	116.9	9.1
2014	9.3	3.4	25.3	6.3	6.0	1.7	2.7	1.3	0.0		43.3	9.9
2013	no sample											
2012	32.5	6.3	26.5	5.3	7.5	0.9	3.5	1.2	0.5	0.5	70.0	8.3
2011	no sample											
2010	21.2	4.5	31.8	6.6	18.3	3.7	10.7	2.6	0.4	0.4	82.0	11.7
2009	41.2	3.5	32.0	7.7	17.2	4.8	14.5	3.0	0.0		104.8	13.2
2008	14.8	5.5	27.0	7.2	21.4	3.3	13.8	1.8	0.0		77.0	12.0
2007	14.5	4.3	26.0	2.7	20.5	3.3	14.0	2.4	0.5	0.5	75.0	6.0
2006	14.2	2.2	35.2	4.6	40.5	5.1	15.2	3.4	0.3	0.3	105.1	11.0
2005	17.0	3.5	45.0	5.1	38.3	5.5	8.3	1.2	0.3	0.3	108.7	7.9
2004	38.0	6.2	51.7	6.5	29.3	4.2	4.3	1.2	0.0		123.3	11.6
2003	22.7	3.5	18.7	2.3	28.3	3.8	6.3	1.2	0.0		76.0	6.9

EFDBLLSS.D03-D19

Table 7. PSD and RSD_{15} values for largemouth bass in each area of Buckhorn Lake (1,230 acres) on 16 May 2019. Number of fish (No.) is the number of stock-size or larger fish collected and numbers in parentheses are 95% confidence intervals.

Area	Largemouth bass		
	No.	PSD	RSD_{15}
Lower	84	39 (29-50)	6 (1-11)
Upper	48	31 (18-45)	6 (0-13)
Total	132	36 (28-45)	6 (2-10)

EFDBLLSS.D19

Table 8. Population assessment for largemouth bass collected during spring at Buckhorn Lake (1,230 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	Year										
	2006	2007	2008	2009	2010	2012	2014	2015	2017	2018	2019
Mean length age 3 at capture	3 (12.6)	3 (12.6)	3 (12.6)	3 (13.3)	3 (13.3)	3 (13.3)	2 (12.1)	2 (12.1)	2 (12.1)	2 (12.1)	2 (12.1)
Spring CPUE age 1	1 (11.2)	2 (13.0)	1 (11.2)	4 (43.8)	3 (26.1)	3 (36.1)	1 (8.7)	4 (56.0)	4 (90.7)	4 (48.4)	4 (48.7)
Spring CPUE 12.0-14.9 in	4 (40.5)	2 (20.5)	2 (21.4)	2 (17.2)	2 (18.3)	1 (7.5)	1 (6.0)	3 (27.1)	4 (34.7)	3 (28.4)	3 (26.7)
Spring CPUE \geq 15.0 in	3 (15.2)	3 (14.0)	3 (13.8)	3 (14.5)	2 (10.7)	1 (3.5)	1 (2.7)	1 (3.6)	2 (8.7)	1 (2.8)	1 (5.3)
Spring CPUE \geq 20.0 in	2 (0.3)	3 (0.5)	1 (0.0)	1 (0.0)	2 (0.4)	2 (0.5)	1 (0.0)	3 (0.9)	3 (0.7)	2 (0.4)	4 (2.0)
Total score	13	13	10	13	12	10	6	13	15	12	14
Assessment rating	Good	Good	Fair	Good	Fair	Fair	Poor	Good	Good	Fair	Good
Instantaneous mortality (z)	0.48	0.45	0.42	0.64	0.73	0.77					
Annual mortality (A)	38.00	36.40	34.20	47.40	51.80	54.90					

EFDBLLSS.D06-D10, D12, D14-D19

EFDBLLAS.D04, D09

EFDBLLAF.D14

Table 9. Species composition, relative abundance and CPUE (fish/hr) of black bass collected in approximately 1.5 hours of 15-minute electrofishing samples at Buckhorn Lake (1,230 acres) on 20 September 2019; numbers in parentheses are standard errors.

Area	Species	Inch class															Total	CPUE	
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			17
Lower	Largemouth bass	4	38	40	13	3	1	7	6	3	7		4	1				127	169.3 (17.3)
Upper	Largemouth bass		15	39	22	5		6	6	5	6	1	1		1		1	108	144.0 (24.4)
Total	Largemouth bass	4	53	79	35	8	1	13	12	8	13	1	5	1	1	0	1	235	156.7 (14.6)

EFDBLLSF.D19

Table 10. Indices of year class strength at age-0 and age-1 and mean lengths (in) of age-0 largemouth bass collected by electrofishing at Buckhorn Lake (1,230 acres). CPUE=fish/hr, SE=standard error.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	4.4	0.1	119.3	14.6	28.7	6.0		
2018	4.7	0.1	114.5	29.8	44.5	9.1	48.7	12.2
2017	4.6	0.1	161.6	20.1	49.6	9.4	48.4	7.9
2016	5.0	0.0	169.7	44.0	85.7	23.9	90.7	20.0
2015	4.2	0.1	80.0	15.9	17.6	2.0	no spring sample	
2014	4.4	0.1	86.5	24.9	26.5	8.6	56.0	6.0
2013	4.1	0.1	68.8	10.8	16.8	4.3	8.7	3.5
2012	5.0	0.2	39.0	9.6	21.0	7.2	no spring sample	
2011	4.5	0.1	126.7	26.7	42.0	10.0	36.1	6.5
2010	4.3	0.1	67.0	5.0	22.5	5.8	no spring sample	
2009			no fall sample				26.1	5.2
2008	4.9	0.1	21.4	3.7	9.9	2.3	43.8	3.5
2007	4.5	0.2	18.8	6.4	9.6	3.4	11.2	3.8
2006	4.2	0.2	17.6	4.1	5.3	1.9	13.0	3.7
2005	4.0	0.2	44.7	6.6	10.0	3.5	11.2	2.1
2004	3.6	0.0	176.7	34.0	9.3	4.6	16.3	3.5
2003	4.7	0.5	106.0	13.8	39.7	4.6	35.5	5.4
2002	4.5	0.1	99.3	7.4	38.7	2.6	19.2	3.3

EFDBLLSF.D02-D08, D10-D19
 EFDBLLAS.D04, D09
 EFDBLLAF.D14
 EFDBLLSS.D02-D19

Table 11. Length frequency and CPUE (fish/net-night) for white crappie collected at Buckhorn Lake (1,230 acres) in 21 net-nights on 19-21 November 2019. SE= standard error of CPUE.

Inch class													Total	CPUE	SE
2	3	4	5	6	7	8	9	10	11	12	13				
16	109	25	87	77	112	135	114	32	9	2	1	719	34.2	4.6	

EFDBLCTF.D19

Table 12. PSD and RSD₁₀ values calculated for white crappie collected in trap nets at Buckhorn Lake (1,230 acres) on 19-21 November 2019; 95% confidence intervals are in parentheses.

No. \geq stock size	PSD	RSD ₁₀
569	51 (47-56)	8 (6-10)

EFDBLCTF.D19

Table 13. Mean back-calculated length (in) at each annulus for white crappie collected from Buckhorn Lake (1,230 acres) in November 2019, including 95% confidence intervals.

Year class	No.	Age							
		1	2	3	4	5	6	7	8
2018	19	4.2							
2017	15	4.0	6.3						
2016	8	4.2	6.0	7.7					
2015	26	4.4	6.5	7.9	9.1				
2014	4	4.4	6.6	8.3	9.6	10.8			
2013	1	4.4	6.1	7.4	8.9	10.1	11.2		
2012	2	4.4	5.8	7.1	8.6	10.0	10.9	11.4	
2011	1	4.6	6.1	7.8	9.4	10.2	11.1	12.2	12.8
Mean	76	4.3	6.3	7.8	9.1	10.4	11.0	11.6	12.8
Smallest		3.6	5.3	6.8	7.8	9.4	10.8	11.3	12.8
Largest		5.3	7.3	9.1	10.5	11.6	11.2	12.2	12.8
STD error		0.0	0.1	0.1	0.1	0.3	0.1	0.3	
95% CI LO		4.2	6.2	7.7	8.9	9.9	10.8	11.1	
95% CI HI		4.4	6.5	8.0	9.4	10.9	11.2	12.2	

Intercept = 0

EFDBLCAF.D19

Table 14. Age frequency and CPUE (fish/nn) of white crappie collected by trap netting for 21 net-nights at Buckhorn Lake (1,230 acres) on 19-21 November 2019; numbers in parentheses are standard errors.

Age	Inch class												Total	Age%	CPUE		
	2	3	4	5	6	7	8	9	10	11	12	13				(SE)	
0	16	109	17											142	20	6.8	(1.6)
1			8	87	28	12								135	19	6.5	(1.2)
2					49	75	30							154	21	7.3	(1.1)
3						25	60	10	4					99	14	4.7	(0.7)
4							45	104	25	6				180	25	8.6	(1.5)
5									4	1	1			6	1	0.3	(0.1)
6										1				1	0	0.1	(0.0)
7										1	1			2	0	0.1	(0.0)
8													1	1	0	0.1	(0.1)
Total	16	109	25	87	77	112	135	114	33	9	2	1		720			
%	2	15	3	12	11	16	19	16	4	1	0	0					

CPUE of ≥ 8.0 in (quality size) = 14.0 fish/nn

CPUE of ≥ 10.0 in (preferred size) = 2.1 fish/nn

EFDBLCAF.D19

EFDBLCTF.D19

Table 15. Population assessment scores for white crappie collected from Buckhorn Lake (1,230 acres). Actual values are in parantheses. Scoring based on statewide assessment.

Parameter	Year								
	2006	2007	2008	2010	2011	2013	2015	2017	2019
CPUE age-1 and older	4 (191.4)	4 (32.5)	4 (60.7)	4 (54.0)	4 (299.7)	4 (52.1)	4 (54.6)	4 (42.2)	4 (27.4)
CPUE age 1	4 (58.6)	2 (3.0)	4 (14.5)	4 (32.9)	4 (155.8)	4 (28.4)	4 (12.3)	4 (8.6)	3 (6.5)
CPUE age 0	4 (29.8)	2 (0.6)	2 (0.4)	4 (22.3)	4 (51.0)	4 (50.0)	4 (10.0)	4 (20.7)	4 (6.8)
CPUE \geq 8.0 in	4 (17.8)	3 (5.5)	3 (5.9)	4 (12.6)	4 (54.7)	4 (10.9)	4 (27.3)	4 (15.3)	4 (14.0)
Mean length age-2 at capture	1 (7.1)	1 (6.3)	1 (6.3)	1 (7.7)	2 (8.2)	1 (6.9)	1 (7.2)	1 (7.5)	1 (7.4)
Total score	17	12	14	17	18	17	17	17	16
Assessment rating	Excellent	Fair	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good
Instantaneous mortality (z)	1.52	1.74	1.03	0.87	0.98	0.89	0.61	0.88	0.87
Annual Mortality (A)	78.00	82.50	64.40	58.20	62.40	59.30	45.90	58.40	58.20

EFDBLCTF.D06-D19

EFDBLCAF.D06-D19

Table 16. Species composition, relative abundance and CPUE (fish/hr) of black bass collected in approximately 2.0 hours of 15-minute electrofishing samples at Carr Creek Lake (710 acres) on 6 May 2019; numbers in parentheses are standard errors.

Area	Species	Inch class																	Total	CPUE		
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20	21
Lower	Smallmouth bass																				0	0.0
	Spotted bass					2	4	3	1	3		2	1	1							17	17.0 (4.4)
	Largemouth bass		1	12	32	2	10	9	7	4	5	7	6	4	4	2	1	1	1		108	108.0 (9.8)
Upper	Smallmouth bass																				0	0.0
	Spotted bass	1	1		1		2	1			1										7	7.0 (3.0)
	Largemouth bass		1	21	41	9	17	16	18	16	9	12	6	8	4	4	2	1		1	186	186.0 (53.5)
Total	Smallmouth bass																				0	0.0
	Spotted bass	1	1		1	2	6	4	1	3		3	1	1							24	12.0 (3.1)
	Largemouth bass		2	33	73	11	27	25	25	20	14	19	12	12	8	6	3	2	1	1	294	147.0 (29.2)

EFDCLLSS.D19

Table 17. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Carr Creek Lake (710 acres). SE=standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	SE
2019	59.5	20.6	48.5	9.5	22.5	3.2	16.5	2.9	1.0	0.7	147.0	29.2
2018	107.0	13.8	41.0	10.5	11.0	2.1	19.0	5.3	0.5	0.5	178.0	20.0
2017	28.5	6.6	25.5	7.1	12.5	3.3	17.0	3.1	0.5	0.5	83.5	12.6
2016	30.0	7.6	40.0	11.9	10.7	3.0	15.3	3.6	0.0		96.0	16.8
2015	69.5	23.2	18.5	4.1	15.5	3.7	22.0	6.1	1.0	0.7	125.5	28.5
2014	115.0	23.6	48.0	7.8	25.0	4.3	18.5	3.5	1.0	0.7	206.5	18.1
2013	113.3	51.4	20.0	4.5	16.0	3.7	16.7	2.2	2.7	1.3	166.0	53.2
2012	15.0	3.1	21.5	3.5	9.0	1.5	13.5	3.5	1.5	0.7	59.0	8.4
2011	11.0	4.4	10.5	2.6	5.5	1.3	16.0	4.5	1.0	1.0	43.0	9.8
2010	13.8	3.2	10.8	2.6	10.8	2.1	12.6	3.5	0.9	0.6	47.9	4.8
2009	5.1	0.7	10.3	2.6	17.1	3.0	16.0	3.4	0.6	0.6	48.6	6.1
2008	3.0	1.3	16.4	2.6	24.7	5.4	23.7	3.3	0.5	0.5	67.8	8.4
2007	8.0	1.9	20.8	4.7	18.6	3.4	15.7	3.6	0.5	0.5	63.0	5.5
2006	22.3	7.0	30.9	4.8	27.9	3.3	29.9	3.1	0.7	0.5	111.0	10.2
2005	20.0	2.7	19.8	1.6	24.8	2.4	14.0	1.8	0.3	0.3	78.6	4.9
2004	135.0	17.7	24.4	5.3	8.4	1.4	9.0	1.2	0.2	0.2	176.9	18.8
2003	67.6	11.3	15.9	2.2	11.1	1.5	10.7	1.5	0.4	0.3	105.2	14.4
2002	116.3	14.2	16.9	1.7	12.3	1.6	7.1	1.2	0.0		152.7	13.3

BBRPSCFL.D02-D05

EFDCLLSS.D02-D19

Table 18. PSD and RSD values for each species of black bass collected in each area of Carr Creek Lake (710 acres) on 6 May 2019. Number of fish (No.) is the number of stock-size or larger fish collected and numbers in parentheses are 95% confidence intervals.

Area	Smallmouth bass			Spotted bass			Largemouth bass		
	No.	PSD	RSD ₁₄	No.	PSD	RSD ₁₄	No.	PSD	RSD ₁₅
Lower	0			17	41 (17-65)	12 (0-28)	61	51 (38-63)	21 (11-32)
Upper	0			4	25 (0-74)		114	41 (32-50)	18 (11-25)
Total	0			21	38 (17-59)	10 (0-22)	175	45 (37-52)	19 (13-25)

EFDCLLSS.D19

Table 19. Population assessment for largemouth bass collected from Carr Creek Lake (710 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mean length age-3 at capture	4 (12.6)	4 (12.6)	4 (12.6)	4 (12.6)	4 (12.6)	4 (13.5)	4 (13.5)	4 (13.5)	4 (13.5)	4 (13.5)	4 (13.5)	4 (13.1)
Spring CPUE age-1	1 (2.4)	1 (3.1)	2 (10.0)	2 (9.0)	2 (13.9)	4 (114.7)	4 (116.0)	4 (71.0)	3 (35.3)	3 (31.0)	4 (111.5)	4 (64.0)
Spring CPUE 12.0-14.9 in	2 (24.7)	2 (17.1)	1 (10.8)	1 (5.5)	1 (9.0)	2 (16.0)	2 (25.0)	2 (15.5)	1 (10.7)	1 (12.5)	1 (11.0)	2 (22.5)
Spring CPUE \geq 15.0 in	3 (23.7)	3 (16.0)	2 (12.6)	3 (16.0)	3 (13.5)	3 (16.7)	3 (18.5)	3 (18.5)	3 (15.3)	3 (17.0)	3 (19.0)	3 (16.5)
Spring CPUE \geq 20.0 in	2 (0.5)	2 (0.6)	2 (0.9)	2 (1.0)	2 (1.5)	3 (2.7)	2 (1.0)	2 (1.0)	1 (0.0)	2 (0.5)	2 (0.5)	2 (1.0)
Total score	12	12	11	12	12	16	15	15	12	13	14	15
Assessment rating	Fair	Fair	Fair	Fair	Fair	Good	Good	Good	Fair	Good	Good	Good
Instantaneous mortality (z)	0.41	0.74	0.34	0.27	0.44							
Annual mortality (A)	33.50	52.30	29.10	23.80	35.80							
BBRPSCFL.D05												
EFDCLLSS.D08-D19												
EFDCLLAS.D08												
EFDCLLAF.D13, D19												

Table 20. Length frequency and electrofishing CPUE (fish/hr) of black bass collected in approximately 2.25 hours of 15-minute nocturnal electrofishing samples at Carr Creek Lake (710 acres) on 12 September 2019; numbers in parentheses are standard errors.

Area	Species	Inch class																	Total	CPUE		
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20	
Lower	Smallmouth bass																			0	0.0	
	Spotted bass	2	1	1	3		6	3	2		1									19	19.0 (8.1)	
	Largemouth bass		1		2	3	6	3	2		1	1	4		1	1			1	1	27	27.0 (4.1)
Upper	Smallmouth bass				1															1	0.8 (0.8)	
	Spotted bass		2	6	10	2	4	6	3	1		1								35	28.0 (10.7)	
	Largemouth bass	1	4	4	6	18	15	5	1	4	3		1	1	1					64	51.2 (10.5)	
Total	Smallmouth bass				1															1	0.4 (0.4)	
	Spotted bass	2	3	7	13	2	10	9	5	1	1	1								54	24.0 (6.7)	
	Largemouth bass	1	5	4	8	21	21	8	3	4	4	1	5	1	2	1			1	1	91	40.4 (7.2)

EFDCLLSF.D19

Table 21. Mean back-calculated length (in) at each annulus for largemouth bass collected from Carr Creek Lake (710 acres) on 12 September 2019, including 95% confidence intervals.

Year class	No.	Age				
		1	2	3	4	5
2018	35	6.4				
2017	9	5.8	9.9			
2016	6	6.7	10.2	13.1		
2015	1	7.2	12.8	14.7	18.3	
2014	1	7.2	11.8	15.0	16.1	16.7
Mean	52	6.3	10.3	13.6	17.2	16.7
Smallest		4.7	8.9	12.3	16.1	16.7
Largest		8.2	12.8	15.3	18.3	16.7
STD error		0.1	0.3	0.4	1.1	
95% CI LO		6.1	9.8	12.7	15.1	
95% CI HI		6.6	10.8	14.4	19.3	

Intercept = 0

EFDCLLAF.D19

Table 22. Indices of year class strength at age-0 and age-1 and mean lengths (in) of age-0 largemouth bass collected by electrofishing at Carr Creek Lake (710 acres). CPUE=fish/hr, SE=standard error.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	5.2	0.3	6.7	2.0	4.0	1.6		
2018	5.4	0.1	18.7	5.4	12.7	4.2	64.0	21.2
2017	3.9	0.2	19.3	5.8	4.7	1.9	111.5*	13.9
2016	4.6	0.1	32.0	7.9	10.4	3.0	31.0	6.4
2015	4.7	0.2	45.3	9.6	16.0	6.1	35.3	8.0
2014	4.4	0.3	13.3	4.2	5.3	1.7	71.0*	23.2
2013	4.4	0.2	14.0	4.6	4.8	1.8	116.0*	23.8
2012	4.3	0.2	34.5	10.9	11.5	4.0	114.7*	51.8
2011	4.6	0.1	17.6	5.7	7.2	3.0	13.2	2.6
2010	4.6	0.2	13.5	4.4	5.0	1.7	9.0	3.1
2009	3.6	0.3	12.5	2.8	3.5	1.6	10.0	2.5
2008	4.3	0.2	15.2	6.6	3.8	1.7	3.1	0.8
2007	3.7	0.5	5.0	2.2	1.0	0.7	2.4	1.2
2006	4.2	0.2	11.0	4.1	3.0	1.0	7.6	2.0
2005	4.7	0.1	15.8	6.7	5.6	1.7	21.3	6.7
2004	5.2	0.0	132.0	17.3	88.2	12.7	18.8	2.6
2003	4.4	0.1	14.0	5.4	5.8	2.3	133.8*	17.5

* Includes supplemental spring stocked fish

BBRWRCFL.D03-D05

BBRSCCFL.D03

EFDCLLSF.D03-D19

EFDCLLAS.D08

EFDCLLSS.D03-D19

EFDCLLAF.D13, D19

Table 23. Length frequency and CPUE (fish/hr) of walleye collected at Carr Creek Lake (710 acres) during daytime spring electrofishing.

Year	Inch class																		Total	CPUE	SE				
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				25	26	27	28
2019									1	7	9	18	39	58	39	25	9		1	1		1	208	16.6	2.7
2018								6	3	6	8	5	25	30	12	22	9	1		1			128	14.7	2.0
2017								1			6	7	18	13	13	9	2		1	1			71	21.9	3.1
2016									3	3	7	16	21	26	18	13	1	4	1				113	20.6	2.3
2015								2	3	7	9	13	14	11	12	7	3	1					82	21.6	17.4
2014									1		2	14	9	12	10	6	1		1				56	11.8	2.9
2013									3	2	8	11	13	16	21	9	2	2	1				88	10.7	1.4
2012								1	1	2	1	13	19	22	14	4	4	5	1				87	20.8	2.5
2011	1	1				1			2	6	8	8	5	15	7	11	5	5	2	3	1		81	15.4	5.2
2010								6	8	7	7	10	15	16	14	16	13	8	8	9		1	138	12.7	3.3
2009								1	4	3	9	18	21	17	15	13	10	11	2				124	21.3	1.3
2008									1	2	5	12	16	19	21	19	15	14	7	3	1	1	136	12.8	1.2
2007								1		1	2	4	3	11	15	8	4	4	5	2			60	32.9	7.4
2006											1	4	6	7	9	9	8	3	4	2	2		55	31.3	5.4
2005									1	1	2	10	2	10	6	5	4	3	1	1			46	28.2	5.0
2004											1	3	13	10	13	13	4	3	1				61	27.1	7.4
2003		2	1			1	1	2			3	7		4	2		1	1	1	1	1	1	28	26.7	8.5
2002																									
2001								2	4	3	14	8	6	2	2	1				2			44	20.4	4.7
2000								5	28	10	6	8	2	3	3	1		1	6	4	1		78	20.8	4.6

EFDCLWSS.D00-D19

Table 24. Spring electrofishing catch rate (fish/hr) for each age of walleye collected from Carr Creek Lake (710 acres) from 2009-2019.

Age	Year										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1											
2	2.0	2.1	1.3	1.6	1.0	0.9	3.2	1.8	1.5	1.7	0.9
3	7.2	3.2	5.0	7.8	4.2	4.5	9.1	8.1	9.0	5.2	6.6
4	5.5	2.6	3.6	5.1	2.6	3.6	5.2	5.2	5.7	3.7	4.3
5	2.4	1.4	1.6	2.9	1.2	1.3	1.6	2.4	2.4	1.6	2.1
6	0.8	0.3	0.4	0.9	0.5	0.4	0.6	0.8	0.8	0.3	0.6
7	0.8	0.4	0.4	0.5	0.1	0.1	0.2	0.2	0.2	0.4	0.2
8	1.0	0.9	0.7	0.8	0.5	0.5	0.6	0.8	0.9	0.5	0.6
9	1.4	0.8	1.0	1.2	0.5	0.5	0.7	1.0	0.9	1.0	0.9
10	0.3	0.2	0.3	0.1	0.1	0.2	0.2	0.3	0.4	0.3	0.3

EFDCLWSS.D09-D19

EFDCLWAS.D09

Table 25. Number of fish and relative weight (Wr) for each length group of walleye collected at Carr Creek Lake (710 acres) on 12-19 March 2019. Numbers in parentheses are standard errors.

Length group								Total	
≤ 9.9 in		10.0-14.9 in		15.0-19.9 in		≥20.0 in		No.	Wr
No.	Wr	No.	Wr	No.	Wr	No.	Wr	No.	Wr
				72	101.9	127	99.0	199	100.0
					(0.8)		(0.9)		(0.7)

EFDCLWSS.D19

Table 26. Length frequency and CPUE (fish/hr) of black bass collected in 1.25 hours of 15-min electrofishing runs at Cranks Creek Lake (219 acres) on 2 May 2019; numbers in parentheses are standard errors.

Species	Inch class																	Total	CPUE		
	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	20	21				23
SB		1		1	2	1	5	2				1							13	10.4	(6.4)
LMB	3	41	67	33	4	26	35	41	14	1	3	1	1	3	1	1	1	1	277	221.6	(21.9)

SB = spotted bass
LMB = largemouth bass
EFDCCCLSS.D19

Table 27. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Cranks Creek Lake (219 acres). SE=standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	118.4	21.9	92.8	6.3	4.0	1.8	6.4	2.0	2.4	1.0	221.6	21.9
2018	60.8	5.3	71.2	3.4	8.0	3.4	11.2	2.3	6.4	2.0	151.2	6.5
2017	76.8	14.3	62.4	13.9	18.4	2.7	15.2	3.9	8.8	3.8	172.8	17.8
2016							no sample					
2015	27.2	6.0	76.0	8.3	15.2	0.8	13.6	2.4	6.4	1.6	132.0	10.8
2014							no sample					
2013							no sample					
2012	34.4	12.0	32.8	4.6	5.6	2.4	8.8	2.3	2.4	1.0	81.6	14.5
2011	57.6	6.0	52.0	10.5	9.6	1.6	11.2	3.9	5.6	3.5	130.4	15.4
2010	80.8	27.6	43.2	10.4	9.6	3.0	14.4	2.0	4.8	2.3	148.0	41.2
2009							no sample					
2008	33.0	7.9	51.0	6.6	27.0	4.4	8.0	3.7	3.0	1.9	119.0	8.2
2007							no sample					
2006							no sample					
2005	59.2	16.6	70.4	10.5	4.0	1.3	6.4	2.0	2.4	1.0	140.0	17.3
2004	40.7	7.6	40.0	5.8	3.3	1.9	4.0	2.1	0.7	0.7	88.0	11.1
2003							no sample					
2002							no sample					
2001	20.0	6.4	22.0	8.3	2.7	1.3	2.0	0.9	0.7	0.7	46.7	13.8
2000	51.3	11.1	24.7	3.8	2.7	1.3	2.0	1.4	2.0	1.4	80.7	12.5

EFDCCLSS.D00-D19

Table 28. PSD and RSD values for each species of black bass in each area of Cranks Creek Lake (219 acres) on 2 May 2019. Number of fish (No.) is the number of stock-size or larger fish collected and numbers in parentheses are 95% confidence intervals.

	Largemouth bass			Spotted bass		
	No.	PSD	RSD ₁₅	No.	PSD	RSD ₁₄
Total	129	10 (5-15)	9 (2-10)	11	9 (-9-27)	9 (9-27)

EFDCCLSS.D19

Table 29. Population assessment for largemouth bass collected from Cranks Creek Lake (219 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	Year						
	2010	2011	2012	2015	2017	2018	2019
Mean length age 3 at capture	3 (11.2)	3 (11.2)	3 (11.2)	1 (10.0)	1 (10.0)	1 (10.0)	2 (10.7)
Spring CPUE age 1	4 (68.8)	3 (45.6)	3 (28.0)	2 (19.2)	4 (72.8)	3 (42.4)	4 (115.2)
Spring CPUE 12.0-14.9 in	1 (9.6)	1 (9.6)	1 (5.6)	2 (15.2)	2 (18.4)	1 (8.0)	1 (4.0)
Spring CPUE \geq 15.0 in	3 (14.4)	2 (11.2)	2 (8.8)	3 (13.6)	3 (15.2)	2 (11.2)	2 (6.4)
Spring CPUE \geq 20.0 in	4 (4.8)	4 (5.6)	3 (2.4)	4 (6.4)	4 (8.8)	4 (6.4)	4 (2.4)
Total score	15	13	12	12	14	11	13
Assessment rating	Good	Good	Fair	Fair	Good	Fair	Good
Instantaneous mortality (z)	0.49	0.56	0.53				
Annual mortality (A)	38.90	43.10	40.90				

EFDCCLAS.D08
 EFDCCLAF.D13,D19
 EFDCCLSS.D10-D19

Table 30. Length frequency and CPUE (fish/hr) of black bass collected in 2.25 hour of 15-min nocturnal electrofishing runs at Cranks Creek Lake (219 acres) on 10 September and 8 November 2019; numbers in parentheses are standard errors.

Month	Species	Inch class																		Total	CPUE					
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		21	23				
September	Spotted bass		1					1	1			1										4	3.2	(2.3)		
	Largemouth bass		12	10		1	26	24	14	17	1		1		1							1	108	86.4	(11.4)	
November	Spotted bass																					0	0.0	(0.0)		
	Largemouth bass		1	35	9	6	27	29	14	21	14	6	1	1								1	1	166	166.0	(47.7)
Total	Spotted bass		1					1	1			1										4	1.8	(5.1)		
	Largemouth bass		13	45	9	7	53	53	28	38	15	6	2	1	1							1	1	1	274	121.8

EFDDLLSF.D19

Table 31. Mean back-calculated length (in) at each annulus for largemouth bass collected from Cranks Creek Lake (219 acres) on 10 September and 8 November 2019, including 95% confidence intervals.

Year class	No.	Age						
		1	2	3	4	5	6	7
2018	18	5.0						
2017	9	5.1	8.0					
2016	10	5.2	8.6	10.7				
2015	3	5.1	9.0	11.1	12.4			
2012	1	5.9	9.1	11.8	14.5	16.1	17.5	18.8
Mean	41	5.1	8.4	10.9	12.9	16.1	17.5	18.8
Smallest		3.6	7.1	10.2	11.4	16.1	17.5	18.8
Largest		6.8	9.6	11.8	14.5	16.1	17.5	18.8
STD error		0.1	0.1	0.1	0.7			
95% CI LO		4.9	8.2	10.6	11.7			
95% CI HI		5.3	8.7	11.1	14.2			

Intercept = 0

EFDCCLAF.D19

Table 32. Indices of year class strength at age-0 and age-1 and mean lengths (in) of age-0 largemouth bass collected by electrofishing at Cranks Creek Lake (219 acres). CPUE=fish/hr, SE=standard error.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	3.9	0.1	17.6	9.9	0.0			
2018	4.4	0.1	58.0	6.6	19.0	10.3	115.2	22.1
2017	4.2	0.1	77.3	11.6	13.3	3.5	42.4	6.7
2016	4.1	0.1	70.4	29.7	2.4	1.0	72.8	12.6
2015	4.3	0.2	37.0	14.6	9.0	3.0		
2014	4.0	0.1	104.8	24.5	20.8	5.1	19.2	5.3
2013	3.9	0.2	11.2	5.4	0.8	0.8		
2012	4.1	0.1	66.4	27.4	10.4	5.3		
2011	5.3	0.1	51.2	5.4	34.4	5.3	28.0	10.7
2010	4.3	0.1	93.3	28.5	16.0	6.1	45.6	6.0
2009	3.9	0.1	64.0	29.8	7.2	4.8	68.8	26.1
2008								
2007	4.3	0.1	32.0	8.7	7.2	2.9	23.0	7.3
2006								
2005								
2004							50.4	15.3
2003							15.0	4.3
2002	5.1	0.1	34.4	10.6	20.8	7.7		
2001	5.0	0.1	27.3	5.2	13.3	3.0		
2000							14.3	4.8
1999							44.3	10.4

EFDCCLSF.D01-D02, D07, D09-D19

EFDCCLAS.D08

EFDCCLSS.D00-D01, D04-D05, D08, D10-D12, D15, D17-D19

EFDCCLAF.D13, D19

Table 33. Species composition, relative abundance and CPUE (fish/hr) of black bass collected in approximately 1 hour of 15-minute nocturnal electrofishing samples by area at Dewey Lake (1,100 acres) on 1 May 2019. Standard errors are in parentheses.

Area	Species	Inch class																	Total	CPUE	
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Lower	Spotted bass			4	5		1												10	20.0	(4.0)
	Largemouth bass	1		3	2	1	7	5	3	5	7	7	3	2	3	1	3	1	54	108.0	(8.0)
Upper	Spotted bass																		0	0.0	(0.0)
	Largemouth bass	1	1	3		2	3	2	9	4	5	6	4	2	5	1			48	96.0	(4.0)
Total	Spotted bass			4	5		1												10	10.0	(6.0)
	Largemouth bass	2	1	6	2	3	10	7	12	9	12	13	7	4	8	2	3	1	102	102.0	(5.0)

EFDDLSS.D19

Table 34. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Dewey Lake (1,100 acres). SE=standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	SE
2019	11.0	1.0	32.0	3.7	34.0	4.8	25.0	3.4	1.0	1.0	102.0	5.0
2018	30.0	9.0	32.0	2.5	28.0	5.7	23.2	4.3	1.6	0.7	113.2	8.6
2017	22.7	5.7	27.3	7.1	20.0	5.4	23.3	4.3	1.3	0.8	93.3	10.3
2016	22.5	3.1	25.5	4.9	47.0	5.4	24.0	3.5	1.0	0.7	119.0	9.9
2015	21.2	3.0	35.2	5.2	43.2	5.4	24.0	4.2	0.8	0.5	123.6	11.2
2014	12.4	2.6	40.4	8.1	31.2	6.6	20.0	2.1	1.2	0.9	104.0	16.2
2013	20.8	3.9	92.8	14.8	54.0	6.5	17.2	1.9	1.2	0.6	184.8	20.8
2012	27.2	4.6	63.2	7.0	34.9	3.9	10.7	2.5	0.4	0.4	136.0	8.6
2011	no sample											
2010	42.6	5.9	98.0	27.6	12.3	2.8	8.3	2.0	0.0	0.0	161.2	33.0
2009	83.7	12.7	62.8	6.3	18.8	1.9	14.4	3.4	0.5	0.5	179.8	16.9
2008	87.4	10.4	86.5	9.5	21.6	3.6	16.3	3.4	0.8	0.5	211.7	12.4
2007	54.9	9.6	80.8	9.8	35.1	5.0	30.2	4.1	1.5	0.7	200.9	19.9
2006	32.3	5.7	66.4	8.6	24.2	3.6	24.9	3.6	0.7		147.8	10.0
2005	39.3	5.0	59.2	6.3	31.0	3.2	24.5	1.9	0.3		153.9	12.8
2004	96.2	11.9	34.7	3.8	20.0	3.2	17.5	2.6	1.0		168.3	13.9
2003	71.1	10.1	55.6	4.4	23.1	1.8	22.0	2.1	0.7		171.8	14.6
2002	no sample											
2001	150.1	17.2	57.8	5.7	26.9	2.7	17.8	1.6	0.6		252.6	22.8
2000	62.2	4.7	44.0	4.4	23.6	3.5	10.3	1.3	0.1		140.1	9.5
1999	78.9		34.6		39.5		12.8		0.5		165.8	12.7
1998	20.1		51.4		43.2		7.2		0.6		122.0	8.5
1997	15.3		53.3		32.3		11.0		1.0		112.0	12.2
1996	no sample											
1995	46.6		59.6		28.5		3.6		0.0		138.3	16.9
1994	no sample											
1993	43.7		71.8		15.6		8.8		0.8		140.0	
1992	57.4		64.1		17.2		7.4		0.2		146.1	
1991	73.8		50.6		18.4		3.5		0.2		146.4	
1990	58.8		68.0		32.0		11.4		0.6		171.4	
1989	75.0		27.5		10.8		7.0		0.0		120.7	
1988	84.0		40.7		26.7		2.0		0.0		154.7	
1987	44.6		38.3		12.0		0.6		0.0		95.4	

EFDDLSS.D87-D19
BBRPSDEW.D03-D05

Table 35. PSD and RSD values for each species of black bass collected in each area of Dewey Lake (1,100 acres) on 1 May 2019. Numbers in parentheses are 95% confidence intervals.

Area	Largemouth bass			Spotted bass		
	No.	PSD	RSD ₁₅	No.	PSD	RSD ₁₄
Lower	48	67 (53-80)	27 (14-40)	6	0	0
Upper	43	63 (48-77)	28 (14-41)	0		
Total	91	65 (55-75)	27 (18-37)	6	0	0

EFDDLSS.D19

Table 36. Population assessment for largemouth bass collected from Dewey Lake (1,100 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	Year									
	2009	2010	2012	2013	2014	2015	2016	2017	2018	2019
Mean length age-3 at capture	2 (11.3)	2 (11.3)	2 (11.3)	2 (11.3)	2 (11.3)	2 (11.3)	2 (11.3)	2 (11.3)	2 (11.8)	2 (11.8)
Spring CPUE age-1	4 (55.6)	2 (16.4)	2 (19.5)	2 (20.8)	1 (10.8)	2 (17.2)	2 (20.5)	2 (21.3)	3 (29.2)	1 (11.0)
Spring CPUE 12.0-14.9 in	2 (18.8)	1 (12.3)	4 (34.9)	4 (54.0)	4 (31.2)	4 (43.2)	4 (47.0)	2 (20.0)	3 (28.0)	4 (34.0)
Spring CPUE \geq 15.0 in	3 (14.4)	2 (8.3)	2 (10.7)	3 (17.2)	4 (20.0)	4 (24.0)	4 (24.0)	4 (23.3)	4 (23.2)	4 (25.0)
Spring CPUE \geq 20.0 in	3 (0.5)	1 (0.0)	2 (0.4)	3 (1.2)	3 (1.2)	3 (0.8)	3 (1.0)	4 (1.3)	4 (1.6)	3 (1.0)
Total score	14	8	12	14	14	15	15	14	16	14
Assessment rating	Good	Poor	Fair	Good	Good	Good	Good	Good	Good	Good
Instantaneous mortality (z)	0.48	0.77	0.64							
Annual mortality (A)	38.40	53.90	35.80							

EFDDLSS.D09-D10, D13-D19

EFDDLAS.D08

EFDLLAF.D13, D18

Table 37. Length-frequency distribution of each black bass species captured during 2.0 hours of 15-minute nocturnal electrofishing runs at Dewey Lake (1,100 acres) on 18 September 2019. Standard errors are in parentheses.

Area	Species	Inch class																	Total	CPUE
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Lower	Spotted bass		2	3	5	2	2	5	2										21	21.0 (7.7)
	Largemouth bass	2	7	14	4	1	7	16	2	5	3	3	2	3				1	1	71
Upper	Spotted bass		1					1											2	2.0 (1.2)
	Largemouth bass	9	22	11	14	7	13	15	20	13	5	5	1	4	3			3	145	145.0 (41.0)
Total	Spotted bass		3	3	5	2	2	6	2										23	11.5 (5.1)
	Largemouth bass	11	29	25	18	8	20	31	22	18	8	8	3	7	3	0	4	1	216	108.0 (25.5)

EFDDLFSF.D19

Table 38. Indices of year class strength at age-0 and age-1 and mean lengths (in) of age-0 largemouth bass collected from electrofishing at Dewey Lake (1,100 acres). CPUE=fish/hr, SE=standard error.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	5.0	0.1	41.5	9.8	21.5	5.0		
2018	4.9	0.1	43.6	7.8	22.2	3.1	11.0	1.0
2017	4.6	0.1	50.0	9.4	16.5	3.6	29.2	9.0
2016	4.9	0.1	33.5	5.1	17.0	3.5	21.3	5.8
2015	3.7	0.2	38.7	9.9	7.3	3.0	20.5	3.2
2014	3.9	0.1	36.8	8.3	10.0	4.3	17.2	3.5
2013	3.4	0.2	25.2	6.3	3.2	0.8	10.8	2.8
2012	4.4	0.1	26.0	5.3	7.2	1.7	20.8	3.9
2011	4.6	0.1	37.2	9.3	14.8	3.6	19.5	4.4
2010	5.0	0.1	67.6	14.2	38.4	8.5	no sample	
2009	5.3	0.1	45.7	8.8	28.8	5.2	16.4	3.3
2008	5.0	0.1	54.9	14.3	30.0	7.4	55.6	12.1
2007	4.8	0.1	54.3	12.8	21.2	4.2	49.5	10.0
2006	5.1	0.1	39.0	9.9	21.3	5.8	49.0	9.2
2005	4.4	0.1	58.7	16.1	16.9	6.6	27.9	5.5
2004	5.2	0.1	45.2	7.1	25.4	4.6	24.8	4.1
2003	4.9	0.1	38.9	10.6	15.1	3.8	79.7	10.5
2002	5.0	0.0	75.6	14.2	37.6	9.4	61.2	9.4

BBRPSDEW.D03-D05

BBRDLLSF.D02

BBRWRDEW.D03-D04

BBRSCDEW.D03

EFDDLLSF.D02-D19

EFDDLLSS.D06-D10, D12-D19

EFDDLLAS.D08

EFDDLLAF.D13, D18

Table 39. Species composition, relative abundance and CPUE (fish/hr) of black bass collected in approximately 2.50 hours of 15-minute electrofishing samples at Fishtrap Lake (1,143 acres) on 9 May 2019; numbers in parentheses are standard errors.

Area	Species	Inch class																	Total	CPUE				
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20						
Lower	Smallmouth bass													1	1						2	1.6	(1.6)	
	Spotted bass							2	2	2	2											8	6.4	(3.9)
	Largemouth bass	7	9	15	9	7	5	6	6	18	13	12	3	1	3	3	3					120	96.0	(11.1)
Upper	Smallmouth bass									1												1	0.8	(0.8)
	Spotted bass																					0	0.0	
	Largemouth bass		13	26	6	2	2	4	12	12	14	9	1	1	1						1	104	83.2	(14.1)
Total	Smallmouth bass									1				1	1							3	1.2	(0.9)
	Spotted bass							2	2	2	2											8	3.2	(2.1)
	Largemouth bass	7	22	41	15	9	7	10	18	30	27	21	4	2	4	3	3	1				224	89.6	(8.7)

EFDLSS.D19

Table 40. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass at Fishtrap Lake (1,143 acres).

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		>15.0 in		>20.0 in		CPUE	S.E.
2019	34.0	5.7	17.6	1.9	31.2	5.9	6.8	1.7	0.4	0.4	89.6	8.7
2018	no sample											
2017	62.0	17.7	22.7	5.5	20.7	6.5	4.0	1.5	0.7	0.7	109.3	25.6
2016	no sample											
2015	23.6	3.5	48.4	6.8	33.6	4.6	18.0	2.6	2.4	0.9	123.6	8.6
2014	25.6	5.5	32.8	10.2	35.2	5.9	16.8	5.3	3.2	1.5	110.4	15.2
2013	no sample											
2012	54.7	9.0	20.7	1.9	12.0	2.3	12.7	4.3	3.3	2.6	100.0	9.4
2011	no sample											
2010	52.4	3.1	35.6	5.6	20.4	2.8	10.4	2.5	0.4	0.4	118.8	11.3
2009	44.2	10.7	61.4	11.8	20.4	4.8	9.9	2.4	0.6	0.6	135.9	15.1
2008	39.5	12.7	31.1	3.5	32.0	5.8	9.4	2.7	0.0		111.9	15.0
2007	28.7	4.7	53.9	8.3	33.0	3.5	7.9	1.9	1.2	0.9	123.5	13.5
2006	52.5	8.8	37.6	1.9	33.0	3.4	4.0	0.7	0.0		127.1	11.6
2005	61.8	10.2	67.6	10.0	38.9	6.5	14.9	2.0	0.0		183.3	20.8
2004	44.7	6.8	45.1	5.8	19.3	2.2	13.1	3.9	1.5		122.2	10.7
2003	43.0	4.4	25.0	7.6	16.0	4.9	11.0	3.4	2.0		95.0	4.1
2002	no sample											
2001	20.3	3.7	32.7	4.3	17.3	2.5	10.3	2.9	1.3		80.7	7.7
2000	28.7	4.2	29.0	2.3	19.0	2.6	23.0	4.3	3.4		99.7	9.9

EFDLSS.D00-D19

Table 41. PSD and RSD values for each species of black bass in each area of Fishtrap Lake (1,143 acres) collected on 9 May 2019. Number of fish (No.) is the number of stock-size or larger fish collected and numbers in parentheses are 95% confidence intervals.

Area	Smallmouth bass			Spotted bass			Largemouth bass		
	No.	PSD	RSD ₁₄	No.	PSD	RSD ₁₄	No.	PSD	RSD ₁₅
Lower	2	100 (100-100)	100 (100-100)	8	50 (13-87)	0	80	70 (60-80)	16 (8-24)
Upper	1	0	0	0			59	66 (54-78)	7 (0-13)
Total	3	67 (1-132)	67 (1-132)	8	50 (13-87)	0	139	68 (61-76)	12 (7-18)

EFDLSS.D19

Table 42. Spring population assessment for largemouth bass collected from Fishtrap Lake (1,143 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	Year									
	2006	2007	2008	2009	2010	2012	2014	2015	2017	2019
Mean length age 3 at capture	4 (13.6)	4 (13.6)	4 (13.6)	4 (13.6)	2 (11.7)	2 (11.7)	2 (11.7)	2 (11.7)	2 (11.8)	2 (11.8)
Spring CPUE age 1	4 (52.5)	3 (28.3)	3 (38.5)	4 (44.2)	4 (51.6)	4 (50.8)	3 (24.2)	2 (22.1)	4 (61.3)	3 (35.6)
Spring CPUE 12.0-14.9 in	4 (33.0)	4 (33.0)	4 (32.0)	2 (20.4)	2 (20.4)	1 (12.0)	4 (35.2)	4 (33.6)	2 (20.7)	4 (31.2)
Spring CPUE \geq 15.0 in	1 (4.0)	2 (7.9)	2 (9.4)	2 (9.9)	2 (10.4)	2 (12.7)	3 (16.8)	3 (18.0)	1 (4.0)	2 (6.8)
Spring CPUE \geq 20.0 in	1 (0.0)	3 (1.2)	1 (0.0)	3 (0.6)	2 (0.4)	4 (3.3)	4 (3.2)	4 (2.4)	3 (0.7)	2 (0.4)
Total score	14	16	14	15	12	13	16	15	12	13
Assessment rating	Good	Good	Good	Good	Fair	Good	Good	Good	Fair	Good
Instantaneous mortality (z)	0.83	0.72	0.59	0.67	0.66	0.50	0.43	0.52		
Annual mortality (A)	56.50	51.30	44.30	49.10	48.20	39.20	35.20	40.70		

EFDLLSS.D06-D19
EFDLLAS.D04, D10
EFDLLAF.D17

Table 44. Indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass electrofished at Fishtrap Lake (1,143 acres). CPUE=fish/hr, SE=standard error.

Year class	Age-0		Age-0		Age-0 ≥5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	4.8	0.1	58.5	19.55	24.5	12.3		
2018	5.0	0.0	184.5	24.5	88.0	14.0	35.6	5.4
2017	5.4	0.1	105.8	20.5	76.9	15.9	no sample	
2016	4.7	0.0	105.2	25.1	32.0	6.3	61.33*	17.9
2015	4.9	0.1	139.0	25.2	62.0	16.7	no sample	
2014	4.8	0.1	54.0	8.8	21.2	3.6	22.1	3.1
2013	4.6	0.1	63.5	16.4	19.5	5.2	24.2	6.2
2012	5.1	0.1	72.7	24.3	38.0	12.0	no sample	
2011	5.1	0.1	119.4	26.9	69.1	13.3	50.8	8.2
2010	5.2	0.1	111.6	16.4	61.6	8.4	no sample	
2009	4.8	0.1	83.3	15.1	39.3	5.4	51.6	3.2
2008	4.6	0.1	75.3	25.9	26.3	9.5	44.2	10.7
2007	5.1	0.1	114.2	23.7	63.5	11.0	38.5	12.1
2006	5.0	0.1	72.7	14.1	36.5	8.0	28.3	4.5
2005	4.5	0.1	108.0	41.3	24.0	11.1	52.5	8.8
2004	5.0	0.0	256.0	51.1	122.7	23.9	61.5	10.2
2003	5.1	0.0	106.2	32.9	59.6	15.9	35.4	6.0

* Includes supplemental spring stocked fish

EFDLFSF.D03-D19
 EFDLSS.D04-D19
 EFDLLAS.D04, D10
 EFDLLAF.D17

Table 45. Length frequency and CPUE (fish/nn) for white crappie collected at Fishtrap Lake (1,143 acres) in 20 net-nights on 4-6 December 2019.

Inch class											Total	CPUE	SE
3	4	5	6	7	8	9	10	11	12	13			
8	18	1	8	19	9	13	16	11	3	2	108	5.4	(1.3)

EFDLCTF.D19

Table 46. PSD and RSD values calculated for white crappie collected in trap nets at Fishtrap Lake (1,143 acres) on 4-6 December 2019; 95% confidence intervals are in parentheses.

No. \geq stock size	PSD	RSD ₁₀
82	66 (56-76)	39 (28-50)

EFDLCTF.D19

Table 47. Mean back-calculated length (in) at each annulus for white crappie collected from Fishtrap Lake (1,143 acres) on 4-6 December 2019, including 95% confidence intervals.

Year class	No.	Age									
		1	2	3	4	5	6	7	8	9	
2018	29	5.0									
2017	8	4.6	8.6								
2016	8	5.1	7.6	9.6							
2015	9	5.4	8.2	9.6	10.8						
2013	5	4.9	6.9	8.3	9.1	9.6	10.4				
2012	3	4.3	6.6	8.0	8.9	9.8	10.4	11.1			
2010	3	3.9	6.0	7.1	7.7	8.3	8.7	9.2	9.6	10.0	
Mean	65	4.9	7.7	8.9	9.6	9.3	10.0	10.2	9.6	10.0	
Smallest		3.7	5.5	6.9	7.5	7.8	8.2	8.6	9.0	9.3	
Largest		6.3	9.5	11.1	12.1	11.2	12.3	12.4	10.3	10.9	
STD error		0.1	0.2	0.2	0.3	0.3	0.4	0.6	0.4	0.5	
95% CI LO		4.8	7.3	8.5	9.0	8.7	9.2	9.1	8.8	9.1	
95% CI HI		5.1	8.0	9.4	10.3	9.9	10.7	11.3	10.4	11.0	

Intercept = 0

EFDLCAF.D19

Table 48. Age frequency and CPUE (fish/nn) of white crappie collected by trap netting for 20 net-nights at Fishtrap Lake (1,143 acres) on 4-6 December 2019; numbers in parentheses are standard errors.

Age	Inch class											Total	Age%	CPUE		
	3	4	5	6	7	8	9	10	11	12	13					
0	8	18	1										27	25	1.4	(0.3)
1				8	19	9	1						37	35	1.9	(0.9)
2							4	5	1				10	10	0.5	(0.2)
3							3	3	4				10	9	0.5	(0.1)
4							1	3	2	3			9	9	0.5	(0.2)
6							1	3	1		1		6	6	0.3	(0.1)
7								1	1		1		3	3	0.2	(0.1)
9							1	1	1				3	4	0.2	(0.1)
Total	8	18	1	8	19	9	11	16	10	3	2		105			
%	7	17	1	7	18	8	12	15	10	3	2					

CPUE of ≥ 8.0 in (quality size) = 2.70 fish/nn

CPUE of ≥ 10.0 in (preferred size) = 1.60 fish/nn

EFDLCAF.D19

EFDLCTF.D19

Table 49. Population assessment scores for white crappie collected from Fishtrap Lake (1,143 acres). Actual assessment values are in parentheses. Scoring based on statewide assessment.

Parameter	Year								
	2005	2007	2008	2010	2011	2013	2015	2017	2019
CPUE age-1 and older	4 (38.9)	3 (6.7)	4 (31.9)	4 (27.2)	4 (74.9)	4 (117.0)	4 (20.4)	3 (8.0)	2 (4.0)
CPUE age 1	2 (2.1)	2 (3.2)	4 (10.8)	4 (10.6)	4 (15.1)	4 (27.8)	2 (1.1)	1 (0.8)	2 (1.9)
CPUE age 0	4 (22.5)	3 (2.7)	4 (18.8)	3 (3.1)	4 (14.0)	4 (12.1)	2 (1.1)	2 (1.1)	2 (1.4)
CPUE \geq 8.0 in	4 (25.9)	2 (2.9)	4 (8.8)	4 (10.4)	4 (25.1)	4 (69.2)	4 (19.0)	4 (7.1)	2 (2.7)
Mean length age 2 at capture	2 (8.2)	2 (8.8)	1 (7.8)	1 (7.5)	1 (7.3)	2 (8.8)	2 (8.5)	3 (9.6)	3 (10.2)
Total score	16	12	17	16	17	18	14	13	11
Assessment rating	Good	Fair	Excellent	Good	Excellent	Excellent	Good	Good	Fair
Instantaneous mortality (z)	0.56	0.80	0.78	1.19	0.75	0.87	0.21	0.25	0.21
Annual Mortality (A)	43.10	54.90	54.40	69.7	53.00	58.20	19.00	22.10	18.70
EFDLCTF.D05-D19									
EFDLCAF.D05-D19									

Table 50. Length frequency and electrofishing CPUE (fish/hr) of black bass collected in approximately 0.75 hours of 7.5-min nocturnal electrofishing samples in Fishpond Lake (32 acres) on 29 April 2019; numbers in parentheses are standard errors.

Species	Inch class																		Total	CPUE
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21	23		
Largemouth bass	1	1	11	10	14	20	16	26	10	10	10	3	3	4	5	2	3	3	152	202.7 (28.6)

EFDPLSS.D19

Table 51. Spring nocturnal electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Fishpond Lake (32 acres). S.E. = standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.	CPUE	S.E.
2019	30.7	10.8	101.3	19.1	40.0	2.9	30.7	9.1	8.0	4.1	202.7	28.7
2017	4.0	2.7	45.3	4.9	81.3	6.0	53.3	9.6	9.3	3.8	184.0	14.5
2015	14.9	4.4	38.9	8.5	58.3	7.1	30.9	7.7	11.4	3.0	142.9	15.2
2013	17.1	8.3	50.3	11.5	76.6	10.2	36.6	11.4	11.4	4.9	180.6	22.4
2012							no sample					
2011	17.1	5.9	35.4	6.7	28.6	6.0	28.6	4.6	4.6	2.4	109.7	13.5
2010	4.6	2.4	34.3	6.7	26.3	2.9	13.7	4.2	4.6	2.4	78.9	9.1
2009	11.4	2.4	43.4	6.7	64.0	10.6	21.7	4.2	10.3	2.9	140.6	15.5
2008	5.0	2.0	109.3	13.6	61.8	6.2	16.9	3.3	11.6	2.4	192.9	15.4
2007							no sample					
2006	31.9	5.5	168.1	9.9	14.7	3.8	30.4	2.4	7.9	2.9	245.0	12.5
2005							no sample					
2004	78.9	12.2	76.0	7.9	45.2	5.9	39.4	6.7	3.9	2.9	239.5	14.9
2003							no sample					
2002							no sample					
2001	28.0		118.0		32.0		8.7		4.0		186.7	
2000	5.9		246.4		11.1		7.4		0.7		270.7	
1999	193.6		107.2		19.2		24.8		0.8		344.8	
1998	11.7		29.6		49.4		21.5		0.0		112.2	
1997	4.0		33.3		32.7		6.0		0.7		76.0	
1996	2.3		99.6		25.5		10.4		1.2		137.8	
1995							no sample					
1994	57.0		28.0		0.0		5.0		0.0		90.0	
1993	9.0		83.0		42.0		0.0		0.0		134.0	
1992							no sample					
1991	216.3		192.3		62.8		10.7		0.7		80.0	
1990	19.2		43.6		14.1		2.6		0.0		79.5	

EFDPLSS.D90-D19

Table 52. PSD and RSD₁₅ values obtained for largemouth bass taken in spring nocturnal electrofishing samples in Fishpond Lake (32 acres) on 29 April 2019; 95% confidence intervals are in parentheses.

No. ≥ 8.0 in	PSD (+/- 95%)	RSD ₁₅ (+/- 95%)
129	41 (33-50)	18 (11-24)

EFDLSS.D19

Table 53. Length frequency and CPUE (fish/hr) of black bass and walleye collected in 1.25 hours of 15-min electrofishing runs in Martins Fork Lake (330 acres) on 2 May 2019; numbers in parentheses are standard errors.

Species	Inch class															Total	CPUE	
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	19			
LMB	1	26	51	14	7	18	35	20	4	3	8	5	7	5	1	205	164.0	(15.0)
SB				3	4	7	4		1							19	15.2	(3.7)
SMB							1	2								3	2.4	(1.6)
Coosa																0	0.0	0.0
Walleye								2	1	1				1		5	4.0	(4.0)

LMB = largemouth bass

SB = spotted bass

SMB = smallmouth bass

EFDMLSS.D19

Table 54. Spring electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Martins Fork Lake (330 acres). S.E. = standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	73.6	24.0	64.0	16.0	12.0	4.2	14.4	1.6	0.0		164.0	15.0
2018	19.2	7.7	38.4	3.7	15.2	3.9	6.4	1.6	0.0		79.2	8.7
2017							no sample					
2016							no sample					
2015	26.4	5.7	46.4	7.9	40.8	8.3	20.8	2.9	1.6	1.0	134.4	14.9
2014	38.0	6.6	46.0	12.5	11.0	6.2	11.0	2.5	1.0	1.0	106.0	18.9
2013							no sample					
2012	16.8	4.6	12.0	3.8	5.6	2.4	10.4	4.3	0.8	0.8	44.8	8.3
2011	23.2	5.6	34.4	9.7	16.8	3.9	16.0	3.4	0.8	0.8	90.4	12.8
2010	17.6	6.3	26.4	16.4	8.0	2.8	19.2	2.7	0.8	0.8	71.2	22.8
2009	11.2	4.1	19.9	3.3	9.6	2.0	11.2	1.5	1.6	1.0	51.8	7.4
2008	7.8	4.8	19.5	7.2	20.2	3.7	19.4	2.4	0.8	0.8	66.9	12.2
2007	7.9	3.3	48.6	13.3	15.7	2.6	21.1	5.3	1.6	1.0	93.3	19.3
2006	9.3	2.0	19.9	6.0	13.3	3.0	9.3	2.7	0.7		51.7	10.7
2005	4.8	2.3	23.2	6.0	17.6	4.8	4.8	2.0	0.0		50.4	10.8
2004	2.7	2.7	89.3	19.2	4.0	2.3	5.3	3.5	0.0		101.3	26.8
2003	14.0	3.7	22.0	3.8	3.3	1.2	5.3	2.0	0.0		68.0	15.7

EFDMLLSS.D03-D19

Table 55. PSD and RSD values obtained for each black bass species taken in spring nocturnal electrofishing samples in Martins Fork Lake (330 acres) on 2 May 2019; 95% confidence intervals are in parentheses.

Largemouth bass			Spotted bass			Smallmouth bass		
No.	PSD	RSD ₁₅	No.	PSD	RSD ₁₄	No.	PSD	RSD ₁₄
113	29	16	19	5	0	3	67	0
	(21-38)	(9-23)		(0-16)			(1-132)	

EFDMLLSS.D19

Table 56. Spring electrofishing population assessment for largemouth bass collected from Martins Fork Lake (330 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	Year									
	2007	2008	2009	2010	2011	2012	2014	2015	2018	2019
Mean length age-3 at capture	4 (14.3)	4 (14.3)	4 (11.8)	4 (11.8)	4 (11.8)	4 (11.8)	3 (10.9)	3 (10.9)	3 (10.9)	3 (10.9)
Spring CPUE age 1	2 (10.1)	2 (10.0)	1 (7.2)	1 (4.8)	2 (11.2)	2 (8.8)	3 (22.0)	3 (22.4)	2 (17.6)	4 (71.2)
Spring CPUE 12.0-14.9 in	2 (15.7)	2 (20.2)	1 (9.6)	1 (8.0)	2 (16.8)	1 (5.6)	1 (11.0)	3 (40.8)	2 (15.2)	1 (12.0)
Spring CPUE \geq 15.0 in	3 (21.1)	3 (19.4)	2 (11.2)	3 (19.2)	3 (16.0)	2 (10.4)	2 (11.0)	3 (20.8)	2 (6.4)	3 (14.4)
Spring CPUE >20.0 in	3 (1.6)	2 (0.8)	3 (1.6)	2 (0.8)	2 (0.8)	2 (0.8)	2 (1.0)	3 (1.6)	1 (0.0)	1 (0.0)
Total score	14	13	11	11	13	11	11	15	10	12
Assessment rating	Good	Good	Fair	Fair	Good	Fair	Fair	Good	Fair	Fair
Instantaneous mortality (z)	0.80	0.48	0.54	0.37	0.33	0.54				
Annual mortality (A)	55.10	38.40	41.60	31.30	28.40	41.60				

EFDMLLSS.D07-D12, D14-D15, D18-D19

EFDMLLAS.D03, D09

EFDMLLAF.D14

Table 57. Length frequency and CPUE (fish/hr) of black bass and walleye collected at Martins Fork Lake (330 acres) during 1.0 hour of 15-minute nocturnal electrofishing samples on 10 September 2019; numbers in parentheses are standard errors.

Species	Inch class														Total	CPUE	
	3	4	5	6	7	8	9	10	11	12	13	14	18	20			
Smallmouth bass	2	4	3		6	3										18	18.0 (9.0)
Spotted bass		13	11	1	13	14	11	1	2			1				67	67.0 (16.2)
Largemouth bass	3	22	12	9	3	23	15	11	5	4	1		1	1	110	110.0 (13.5)	
Coosa bass	4	6													10	10.0 (3.5)	
Walleye			1	1	2				1			1			6	6.0 (2.6)	

EFDMLLSF.D19

Table 58. Electrofishing indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected at Martins Fork Lake (330 acres); CPUE = fish/hr, SE = standard error.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	5.0	0.1	46.0	10.5	21.0	7.6		
2018	5.4	0.1	67.0	11.1	44.0	8.2	71.2	23.3
2017	4.5	0.1	95.0	24.6	25.0	4.4	17.6	7.4
2016	4.5	0.1	67.0	26.5	15.0	9.0	no sample	
2015	4.6	0.1	59.0	24.4	18.0	7.4	no sample	
2014	4.9	0.1	39.2	11.8	21.6	8.2	22.4	4.1
2013	4.0	0.2	21.0	6.6	6.0	1.2	22.0	5.3
2012	4.8	0.2	28.8	4.6	13.6	3.9	no sample	
2011	4.7	0.1	20.0	6.8	7.2	1.5	8.8	2.7
2010	5.2	0.2	40.0	11.6	26.7	9.3	11.2	3.4
2009	4.3	0.2	23.2	8.3	7.2	2.3	4.8	2.0
2008	4.4	0.2	31.9	14.3	10.3	2.7	7.2	2.9
2007	4.6	0.2	28.7	8.7	10.4	3.0	10.0	5.1
2006	4.5	0.1	38.4	14.5	11.2	3.2	10.1	3.4
2005	4.4	0.2	32.0	4.3	10.0	2.6	10.0	2.3
2004			no fall sample				24.6	5.9
2003			no fall sample				77.5	18.5
2002	5.5	0.1	34.4	8.6	25.6	7.9	15.3	3.6

EFDMLLSF.D02, D05-D19

EFDMLLS.D03-D19

EFDMLLAS.D03, D09

EFDMLLAF.D14

Table 59. Length frequency and CPUE (fish/hr) of black bass collected in approximately 1.75 hours of 15-minute electrofishing samples in Paintsville Lake (1,150 acres) on 3 May 2019; numbers in parentheses are standard errors.

Species/Area	Inch class																			Total	CPUE			
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					
Lower																								
SMB																					0	0.0		
SB						1															1	1.0	(1.0)	
LMB		4	18	27	16	23	18	5	10	5	5	4	5	1	2	3				1	1	148	148.0	(21.8)
Upper																								
SMB																						0	0.0	
SB					2		1															3	4.0	(2.3)
LMB	1	1	4	12	6	14	8	7	7	5	2		1	2	1	1	1	1	1			74	96.7	(13.9)
Total																								
SMB																						0	0.0	
SB					2	1	1															4	2.3	(1.2)
LMB	1	5	22	39	22	37	26	12	17	10	7	4	6	3	3	4	1	2	1			222	126.9	(16.2)

SMB = smallmouth bass

SB = spotted bass

LMB = largemouth bass

EFDPLLSS.D19

Table 60. Spring nocturnal electrofishing CPUE (fish/hr) for each length group of largemouth bass collected at Paintsville Lake (1,150 acres). SE = standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in		CPUE	SE
2019	50.9	16.4	52.6	5.0	12.0	2.5	11.4	3.0	1.7	1.2	126.9	16.2
2018	64.6	17.1	43.4	7.3	13.1	2.1	4.0	1.6	0.0		126.9	15.4
2017	35.2	5.3	61.2	11.3	6.4	1.4	6.4	1.5	0.8	0.5	109.2	16.3
2016	67.6	6.2	80.0	7.8	9.2	2.0	10.4	2.1	1.2	0.6	167.2	9.1
2015	83.6	7.4	68.4	11.5	17.8	3.6	10.7	3.0	2.7	1.5	180.4	15.4
2014	62.4	8.1	64.5	6.0	24.8	3.8	4.3	1.3	0.8	0.4	156.0	8.6
2013	58.6	4.9	60.0	5.6	4.6	1.1	4.0	1.0	0.3	0.3	127.1	7.0
2012	63.2	10.5	61.6	7.0	9.9	1.6	2.1	0.7	1.3	0.5	136.8	14.8
2011	40.6	7.2	56.9	5.1	9.4	1.9	3.7	0.9	1.1	0.5	110.6	11.6
2010	51.2	16.4	86.4	11.6	13.3	1.7	5.6	1.1	1.9	0.5	156.5	26.3
2009	28.1	8.0	69.2	24.6	6.2	2.6	2.3	1.0	0.0	0.0	105.9	16.4
2008	37.8	6.6	79.3	11.9	9.8	1.8	4.0	1.6	0.4	0.4	130.8	14.1
2007	39.8	9.5	81.6	23.0	11.1	3.1	6.5	0.8	0.0	0.0	139.0	20.5
2006	30.6	4.4	65.1	12.6	13.6	1.9	2.6	1.1	0.0	0.0	111.9	14.3
2005	80.4	31.9	133.3	38.9	35.1	6.0	6.2	1.2	0.4	0.4	255.1	72.7
2004	62.7	10.9	92.0	19.2	17.0	3.4	2.0	0.9	0.0	0.0	173.7	25.4
2003	106.0	21.2	71.0	10.8	19.7	5.7	3.0	1.3	0.3	0.3	199.7	35.2
2002	41.8	1.8	70.5	2.7	36.0	1.4	2.2	0.2	0.0	0.0	150.9	14.2
2001	42.3	5.5	63.0	10.8	46.7	4.8	4.3	0.9	0.7	0.5	156.3	17.5
2000	12.7	5.0	95.0	19.6	27.0	7.8	2.0	0.8	0.0	0.0	136.7	28.0
1999	36.3		65.7		36.7		2.3		0.0		141.0	12.1
1998	25.7		87.7		26.3		0.0		0.0		139.7	17.9
1997	29.0		40.0		26.3		1.0		0.3		96.3	11.5
1996							no sample					
1995							no sample					
1994	34.0		47.4		26.6		3.6		0.3		111.6	15.6
1993	16.4		26.3		22.5		2.8		0.6		68.0	
1992	16.4		44.0		21.3		0.7		0.0		82.4	
1991	26.6		33.1		12.0		0.4		0.4		72.0	
1990	34.0		31.3		2.7		2.0		0.0		70.0	
1989	15.4		16.0		3.4		0.9		0.0		36.3	
1988	6.8		10.6		1.6		0.3		0.0		19.3	

EFDPLLSS.D88-D19

Table 61. PSD and RSD values obtained for each black bass species taken in spring electrofishing samples in each area of Paintsville Lake (1,150 acres) on 3 May 2019; 95% confidence intervals are in parentheses.

Area	Largemouth bass			Spotted bass		
	No.	PSD	RSD ₁₅	No.	PSD	RSD ₁₄
Lower	83	33 (23-43)	16 (8-24)	1	0	0
Upper	50	28 (15-41)	14 (4-24)	3	0	0
Total	133	31 (23-39)	15 (9-21)	4	0	0

EFDPLLSS.D19

Table 62. Spring nocturnal electrofishing population assessment for largemouth bass collected in Paintsville Lake (1,150 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	Year											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mean length age-3 at capture	2 (11.7)	2 (11.7)	2 (11.7)	1 (10.6)	2 (11.2)	2 (11.2)	2 (11.2)	2 (11.2)	2 (11.2)	2 (11.2)	2 (11.9)	2 (11.9)
Spring CPUE age-1	4 (51.5)	3 (35.6)	4 (58.1)	3 (35.6)	4 (68.8)	4 (64.9)	4 (63.7)	4 (90.7)	4 (71.2)	3 (39.2)	4 (56.6)	4 (42.9)
Spring CPUE 12.0-14.9 in	1 (9.8)	1 (6.2)	1 (13.3)	1 (9.4)	1 (9.9)	1 (4.6)	3 (24.8)	2 (17.8)	1 (9.2)	1 (6.4)	1 (13.1)	1 (12.0)
Spring CPUE \geq 15.0 in	1 (4.0)	1 (2.3)	1 (5.6)	1 (3.7)	1 (2.1)	1 (4.0)	1 (4.3)	2 (10.7)	2 (10.4)	2 (6.4)	1 (4.0)	2 (11.4)
Spring CPUE \geq 20.0 in	2 (0.4)	1 (0.0)	4 (1.9)	3 (1.1)	4 (1.3)	2 (0.3)	3 (0.8)	4 (2.7)	3 (1.2)	3 (0.8)	1 (0.0)	4 (1.7)
Total score	10	8	12	9	10	10	13	14	12	11	9	13
Assessment rating	Fair	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good
Instantaneous mortality (z)	1.17	1.12	1.18	0.57								
Annual mortality (A)	69.10	67.40	69.40	83.70								

EFDPLLSS.D08-D19
EFDPLLAS.D06, D11
EFDPLLAF.D12, D18

Table 63. Length frequency and CPUE (fish/hr) of black bass collected in 1.5 hours of 15-minute nocturnal electrofishing samples in Paintsville Lake (1,150 acres) on 11 September 2019; numbers in parentheses are standard errors.

Area	Species	Inch class																		Total	CPUE	
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20
Lower	Smalmouth bass																				0	0.0
	Spotted bass																				0	0.0
	Largemouth bass	5	11	19	18	2			4	2		2	1							64	85.3 (9.6)	
Upper	Smalmouth bass																			0	0.0	
	Spotted bass		1					2												3	4.0 (2.3)	
	Largemouth bass	9	15	15	14	4		6	5	3			1						1	73	97.3 (25.8)	
Total	Smalmouth bass																			0	0.0	
	Spotted bass		1					2												3	2.0 (1.4)	
	Largemouth bass	14	26	34	32	6		6	9	5		2	2						1	137	91.3 (12.6)	

EFDPLLSF.D19

Table 64. Nocturnal electrofishing indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected at Paintsville Lake (1,150 acres); CPUE = fish/hr.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	4.4	0.1	74.7	9.3	25.3	4.5		
2018	4.6	0.1	50.9	9.8	22.9	7.8	42.9	15.9
2017	5.0	0.1	125.2	20.2	62.4	12.9	56.6	14.6
2016	5.0	0.1	70.0	6.3	34.0	8.6	39.2	6.1
2015	4.9	0.1	95.1	17.7	42.2	6.7	71.2	5.6
2014	4.8	0.1	60.0	11.0	27.0	7.3	90.7	7.4
2013	4.9	0.0	111.7	13.8	53.1	5.0	63.7	8.3
2012	5.0	0.1	58.1	10.6	32.3	7.3	64.9	5.0
2011	5.1	0.1	36.3	7.2	19.7	4.3	68.8	11.1
2010	4.6	0.1	86.4	19.5	31.5	6.9	35.6	6.7
2009	4.6	0.1	64.6	13.3	23.1	10.7	58.1	17.6
2008	4.6	0.1	24.8	8.8	8.1	5.2	35.6	9.7
2007	5.1	0.1	52.4	24.0	30.2	15.6	51.5	7.3
2006	4.9	0.1	72.4	12.0	33.6	5.1	44.0	8.4
2005	4.5	0.1	46.0	9.6	10.7	2.7	43.5	5.9
2004	5.1	0.1	65.7	10.8	37.3	8.6	75.6	29.2
2003	4.8	0.1	31.3	6.1	14.0	2.2	61.4	10.7
2002							95.2	20.1

EFDPLLSF.D03-D19

EFDPLLSS.D02-D19

EFDPLLAS.D03, D06, D11

EFDPLLAF.D12, D18

Table 65. Fish harvest statistics derived from day (1 March-31 October) and night (1 June-31 August) creel surveys at Paintsville Lake (1,150 acres) in 2019.

	Day	Night
<u>Fishing trips</u>		
No. of fishing trips (per acre)	9,610 (8.44)	794 (0.70)
<u>Fishing pressure</u>		
Total angler hours (S.E.) ^a	41,619 (1,774)	2,744 (405)
Man-hours/acre	36.54	2.41
<u>Catch/harvest</u>		
No. of fish caught (S.E.)	44,261 (6,107)	2,089 (8.69)
No. of fish harvested (S.E.)	8,643 (2,073)	409 (151)
Lb of fish harvested	1,823	368
<u>Harvest rates</u>		
Fish/hour	0.19	0.16
Fish/acre	7.59	0.36
Lb/acre	1.60	0.32
<u>Catch rate</u>		
Fish/hour	1.04	0.7
Fish/acre	38.86	1.83
<u>Miscellaneous characteristics (%)</u>		
Male	90.12	91.46
Female	9.88	8.54
Resident	96.80	96.34
Non-resident	3.20	3.66
<u>Method (%)</u>		
Still fishing	17.38	35.37
Casting	82.07	62.20
Trolling	0.27	
Jugging	0.27	
<u>Mode (%)</u>		
Boat	86.55	98.78
Bank	12.53	1.22
Dock	0.91	0.00

^aS.E. = standard error

Table 66. Fish harvest statistics derived from a day creel survey at Paintsville Lake (1,150 acres) from 1 March through 31 October 2019.

	Hybrid Morone	Rock Bass	White Bass	Channel catfish	Redear	Bluegill	Red Breast Sunfish	Spotted Bass	Largemouth Bass	White Crappie	Walleye	Rainbow Trout
No. caught	24	703	37	415	335	16,143	395	253	17,604	6,976	43	252
per acre	0.02	0.62	0.03	0.36	0.29	14.17	0.35	0.22	15.46	6.12	0.04	0.22
No. harvested	9.00			237	122	5,391	159	10	198	2,276	25	216
per acre	0.10			0.21	0.11	4.73	0.14	0.01	0.17	2.00	0.02	0.19
% of total no. harvested	0.00			2.74	1.41	62.37	1.84	0.12	2.29	26.33	0.29	2.50
Lb harvested	28.1			236.8	20.1	523.8		4.7	256.4	662.5	42.9	47.4
per acre	0.03			0.21	0.02	0.46		0.00	0.23	0.58	0.04	0.04
% of total lb harvested	1.54			12.99	1.10	28.74		0.26	14.07	36.35	2.35	2.60
Mean length (in)	18.00			14.60	6.40	5.20	7.20	10.00	13.60	8.70	17.50	8.40
Mean weight (lb)	2.97			1.00	0.19	0.10		0.45	135.00	0.29	1.72	0.20
				Catfish group	Panfish group	Black bass group	Crappie group	Anything				
No. of fishing trips for that species				48	253	6,832	803	1666				
% of all trips				0.50	2.64	71.15	8.36	17.35				
Hours fished for that species (per acre)				209.25	1,096.43	29,594.30	3,477.45	7,217.89				
				0.18	0.96	25.98	3.05	6.34				
No. harvested fishing for that species					2,082	61	1,897					
Lb harvested fishing for that species					192.20	101.90	581.10					
No./hour harvested fishing for that species					2.23	0.00	0.61					
% success fishing for that species					64.52	0.53	27.78	17.10				

Table 67. Fish harvest statistics derived from a night creel survey at Paintsville Lake (1,150 acres) from 1 June through 31 August 2019.

	Largemouth Bass	White Crappie	Bluegill	Channel catfish	Flathead Catfish	Walleye	Warmouth	Green Sunfish
No. caught	975	32	833	155	9	11	51	18
per acre	0.86	0.03	0.74	0.14	0.01	0.01	0.05	0.02
No. harvested	62	24	179	144				
per acre	0.06	0.02	0.16	0.13				
% of total no. harvested	15.16	5.87	43.77	35.21				
Lb harvested	106.3	2.7	17.8	240.9				
per acre	0.09	0	0.02	0.21				
% of total lb harvested	28.91	0.73	4.84	65.52				
Mean length (in)	15.10	6.70	5.50	16.90				
Mean weight (lb)	1.75	0.11	0.11	1.56				
		Black bass group	Catfish group	Panfish group	Anything			
No. of fishing trips for that species		478	181	51	55			
% of all trips		62.44	23.68	6.66	7.22			
Hours fished for that species		1,653.54	627.03	176.42	191.08			
(per acre)		1.45	0.55	0.15	0.17			
No. harvested fishing for that species		54	126	64	0			
Lb harvested fishing for that species		89.40	214.10	3.80	0.00			
No./hour harvested fishing for that species		0.03	0.18	0.47	0.00			
% success fishing for that species		10.42	56.25	20.00	0.00			

Table 68. Species composition and length distribution of each species of fish harvested (H) and released (R) from a daytime creel survey on Paintsville Lake (1,150 acres) from 1 March to 31 October 2019.

Species	Inch class																								
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	28
Common Carp	H																								
	R																		11			11			10
Rock Bass	H																								
	R		52	326	234	91																			
Walleye	H													12			12								
	R											18													
Channel Catfish	H										189				47										
	R						18							36		36	36	18						33	
Flathead Catfish	H																								
	R										15		14												
White Bass	H																								
	R									18		18													
Bluegill	H	267	676	2055	1830	493	28	41																	
	R	1085	5978	2830	582	277																			
Warmouth	H																								
	R		273																						
Green Sunfish	H																								
	R	21	287	234	10																				
Spotted Bass	H								10																
	R	40					67		81	13	13	28													
Largemouth Bass	H										61	92	15		15										15
	R						2550	1465	6186	2849	1709	909	597	407	339	285	54	27	28						
Hybrid Morone	H																9								
	R															14									
White Crappie	H			15	103	191	675	719	396	132	15	15	14												
	R		86	1003	1676	1003	616	186	100	14				15											
Redear Sunfish	H		20	30	10	51		10																	
	R			142	57	14																			
Rainbow Trout	H						126	36	53																
	R										36														
Redbreast Sunfish	H				45	34	80																		
	R		87	149																					

Table 69. Species composition and length distribution of each species of fish harvested (H) and released (R) from a night creel survey on Paintsville Lake (1,150 acres) from 1 June to 31 August 2019.

Species		Inch class																					
		4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Flathead	H																						
Catfish	R										8												
Channel	H												8	51	25	51							9
Catfish	R														11								
Walleye	H																						
	R									11													
Green	H																						
Sunfish	R	17																					
Bluegill	H	63	54	18	43																		
	R	365	182	60																			
Warmouth	H																						
	R	51																					
Largemouth	H									18		9		18	17								
Bass	R					73	73	353	114	114	93	31				52	10						
White	H			8	16																		
Crappie	R								8														

Table 70. Monthly black bass angling success at Paintsville Lake during the 2019 day and night creel survey period.

	Total no. of bass caught		Total no. of bass harvested		No. of black bass fishing trips		Hours fished by bass anglers		Bass caught by bass anglers		Bass caught/hour by bass anglers		Bass harvested by bass anglers		Bass harvested/hour by bass anglers	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
	March	444		0		1,139		4,935		435		0.08		0		0.00
April	4,865		91		1,304		5,665		4,133		0.67		0		0.00	
May	2,739		9		752		3,258		2,393		0.66		9		0.00	
June	3,011	744	58	22	1105	209	4,788	723	2,895	733	0.52	0.95	29	22	0.01	0.03
July	1,184	168	0	40	728	184	3,152	637	1,184	136	0.35	0.23	0	32	0.00	0.05
August	861	63	12	0	474	85	2,055	294	749	63	0.37	0.21	0	0	0.00	0.00
September	2,395		10		692		2,996		2,281		0.70		10		0.00	
October	2358		27		634		2746		2318		0.86		13		0.01	
Total	17,857	975	207	62	6,828	478	29,595	1,654	16,388	932			61	54		
Mean											0.53	0.46			0.00	0.03

Table 71. Monthly crappie angling success at Paintsville Lake during the 2019 creel survey period.

	Total no. of crappie caught		Total no. of crappie harvested		No. of crappie fishing trips		Hours fished by crappie anglers		Crappie caught by crappie anglers		Crappie caught/hour by crappie anglers		Crappie harvested by crappie anglers		Crappie harvested/hour by crappie anglers	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
	March	75		0		105		455		57		0.18		0		0.00
April	3,402		1170		381		1650		2,542		1.77		805		0.56	
May	383		93		49		212		280		1.90		93		0.63	
June	466		145		52		226		436		2.08		145		0.69	
July	47	32	0	24	0		0		0		0.00		0		0.00	
August	949		275		86		371		475		1.65		275		0.95	
September	702		217		52		225		620		2.58		217		0.90	
October	1005		375		78		339		978		2.44		362		0.90	
Total	7,029	32	2,275	24	803		3,478		5,388				1,897			
Mean											1.58				0.58	

Table 72. Monthly panfish angling success at Paintsville Lake during the 2019 creel survey period.

	Total no. of panfish caught		Total no. of panfish harvested		No. of panfish fishing trips		Hours fished by panfish anglers		Panfish caught by panfish anglers		Panfish caught/hour by Panfish anglers		Panfish harvested by panfish anglers		Panfish harvested/hour by panfish anglers	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
	March	0		0		0		0		0		0.00		0		0.00
April	914		146		21		89		182		3.23		91		1.61	
May	4,767		1337		54		236		747		3.23		308		1.33	
June	1,440	578	291	67	52	42	226	145	277	422	7.60	3.8	175		4.80	
July	3,315	248	1326	112	25	9	109	32	142	176	1.50	3.14	0	64	0.00	1.14
August	3,408	81	1498		47		202		812		4.58		662		3.73	
September	1,992		444		19		84		444		4.34		310		3.03	
October	2,707		630		35		150		1,393		5.53		536		2.13	
Total	18,543	907	5,672	179	253	51	1,096	177	3,997	598			2,082	64		
Mean											3.75	3.47			2.08	1.14

Table 73. Black bass catch and harvest statistics derived from a creel survey at Paintsville Lake (1,150 acres) for each species of black bass caught and released by all anglers from 1 March to 31 October 2019.

	Largemouth bass				Spotted bass				Smallmouth bass			
	Harvest	Catch & release		Total	Harvest	Catch & release		Total	Harvest	Catch & release		Total
		<12.0	≥12.0			<12.0	≥12.0			<12.0	≥12.0	
Total number	198	13,050	4,356	17,604	10	202	41	253	0	0	0	0
% harvested by number	95.1				4.9							
Total weight (lb)	256.4				4.7							
% harvested by weight	98.2				1.8							
Mean length (in)	13.6				10.0							
Mean weight (lb)	1.30				0.50							
Rate (fish/hour)	0.004				0.000							

Table 74. Species composition, relative abundance and CPUE (fish/hr) of black bass collected in approximately 3.0 hours of 15-minute nocturnal electrofishing samples at Yatesville Lake (2,280 acres) on 14 May 2019; numbers in parentheses are standard errors.

Area	Species	Inch class																	Total	CPUE	
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19			20
Lower	SB		3	1	7	7	3	4	2		2									29	19.3 (11.5)
	LMB		6	26	40	9	14	32	7	13	6	5	10	8	11	2	3	1		193	128.7 (18.5)
Upper	SB		1						1											2	1.3 (0.8)
	LMB	2	4	13	30	19	16	28	29	36	34	16	14	9	8	3	2			263	175.3 (8.2)
Total	SB		4	1	7	7	3	4	3		2									31	10.3 (6.1)
	LMB	2	10	39	70	28	30	60	36	49	40	21	24	17	19	5	5	1		456	152.0 (11.9)

SB = spotted bass

LMB = largemouth bass

EFDYLLSS.D19

Table 75. Spring nocturnal electrofishing CPUE (fish/hr) for each length group of largemouth bass at Yatesville Lake (2,280 acres). SE = standard error.

Year	Length group										Total	
	<8.0 in		8.0-11.9 in		12.0-14.9 in		≥15.0 in		≥20.0 in			
	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	49.7	5.2	58.3	6.6	28.3	5.4	15.7	3.1	0.0		152.0	11.9
2018	55.3	7.2	64.3	7.1	23.0	3.9	14.0	4.1	0.3	0.3	156.7	9.4
2017	76.7	11.1	55.3	8.7	37.3	4.8	21.0	4.1	0.7	0.7	190.3	17.0
2016	57.3	9.9	50.7	8.8	16.0	4.8	16.7	4.6	0.7	0.7	140.7	16.5
2015	57.3	7.3	67.3	5.4	23.0	3.1	23.3	3.8	0.7	0.5	171.0	8.6
2014	46.0	2.7	67.7	6.7	23.3	2.7	16.7	2.6	0.3	0.3	153.7	10.3
2013							no sample					
2012	23.2	2.8	49.2	7.4	21.6	2.6	8.4	2.1	0.8	0.5	102.4	10.3
2011							no sample					
2010	44.0	6.3	57.0	8.7	19.3	3.8	11.0	2.8	0.7	0.5	131.3	11.7
2009	28.6	5.4	68.3	7.5	30.6	2.8	16.6	3.2	0.0		144.1	9.7
2008	47.0	8.4	38.3	3.8	20.4	3.7	16.6	4.9	0.0		122.3	10.3
2007	47.7	5.9	62.3	5.7	31.3	4.2	15.8	2.7	0.0		157.1	10.7
2006	47.3	7.4	68.0	10.3	20.3	2.2	16.0	4.0	0.7		151.7	17.5
2005	43.7	7.8	61.3	6.6	42.0	4.7	21.7	2.1	0.3		168.7	15.4
2004	12.7	2.8	40.3	10.5	23.7	5.1	9.0	2.2	0.0		85.7	19.4
2003							no sample					
2002	54.3	7.8	50.0	4.4	19.3	2.9	16.7	3.2	0.0		140.3	7.4
2001	35.0	7.0	58.3	7.5	19.3	3.2	9.7	2.1	0.3		122.3	7.8
2000	63.3	8.0	55.7	7.9	9.3	1.1	7.0	1.6	0.0		135.5	13.7
1999	42.7		29.0		16.3		13.7		0.3		101.7	12.2
1998	10.7		25.7		16.3		5.7		0.0		58.3	7.2
1997	50.7		23.7		16.7		2.0		0.0		93.0	10.5
1996	21.5		65.5		7.8		1.5		0.0		96.3	11.5
1995							no sample					
1994							no sample					
1993	153.7		82.9		20.1		7.4		0.0		264.0	

EFDYLLSS.D93-D19

Table 76. PSD and RSD values for black bass species taken in spring electrofishing samples in each area of Yatesville Lake (2,280 acres) on 14 May 2019; 95% confidence intervals are in parentheses.

Area	Largemouth bass			Spotted bass		
	No.	PSD	RSD ₁₅	No.	PSD	RSD ₁₄
Lower	112	41 (32-50)	22 (15-30)	18	11 (0-26)	0
Upper	195	44 (37-51)	11 (7-16)	1	0	0
Total	307	43 (37-49)	15 (11-19)	19	11 (0-25)	0

EFDYLLSS.D19

Table 77. Spring nocturnal electrofishing population assessment for largemouth bass collected at Yatesville Lake (2,280 acres). Actual values are in parentheses. Scoring based on statewide assessment.

Parameter	Year									
	2008	2009	2010	2012	2014	2015	2016	2017	2018	2019
Mean length age-3 at capture	4 (13.5)	4 (13.5)	4 (13.5)	2 (12.4)	2 (12.4)	1 (11.1)	1 (11.1)	1 (11.1)	1 (11.1)	1 (11.1)
/										
Spring CPUE age-1	4 (45.0)	3 (28.2)	4 (42.6)	2 (19.4)	3 (37.0)	4 (54.3)	4 (56.7)	4 (73.3)	4 (51.3)	4 (46.0)
Spring CPUE 12.0-14.9 in	2 (20.4)	3 (30.6)	2 (19.3)	2 (21.6)	3 (23.3)	3 (23.0)	1 (16.0)	4 (37.3)	3 (23.0)	3 (28.3)
Spring CPUE \geq 15.0 in	3 (16.6)	3 (16.6)	2 (11.0)	2 (8.4)	3 (16.7)	4 (23.3)	3 (16.7)	4 (21.0)	3 (14.0)	3 (15.7)
Spring CPUE \geq 20.0 in	1 (0.0)	1 (0.0)	3 (0.7)	3 (0.8)	2 (0.3)	3 (0.7)	3 (0.7)	3 (0.7)	2 (0.3)	1 (0.0)
Total score	14	14	15	11	13	15	12	16	13	12
Assessment rating	Good	Good	Good	Fair	Good	Good	Fair	Good	Good	Fair
Instantaneous mortality (z)	0.70	0.91	1.22	0.79	0.77					
Annual mortality (A)	50.20	59.80	70.40	54.60	53.70					

EFDYLLSS.D08-D10, D12, D14-D19

EFDYLLAS.D06, D12

EFDYLLAF.D15

Table 78. Length frequency and nocturnal electrofishing CPUE (fish/hr) of black bass collected at Yatesville Lake (2,280 acres) during 1.5 hours of 15-minute samples on 23 September 2019; numbers in parentheses are standard errors.

Area	Species	Inch class													Total	CPUE	
		3	4	5	6	7	8	9	10	11	12	13	14	15			
Lower																	
	Spotted bass						1								1	1.3	(1.3)
	Largemouth bass	2	31	24	7	5	3	3	4	7				1	87	116.0	(20.0)
Upper																	
	Spotted bass		1	1	1										3	4.0	(4.0)
	Largemouth bass	6	37	9	12	3	7	6	7		2	1	1	1	92	122.7	(29.2)
Total																	
	Spotted bass		1	1	1		1								4	2.7	(2.0)
	Largemouth bass	8	68	33	19	8	10	9	11	7	2	1	1	2	179	119.3	(15.9)

EFDYLLSF.D19

Table 79. Fall electrofishing indices of year class strength at age-0 and age-1 and mean lengths (in) of largemouth bass collected during 2003-2019 at Yatesville Lake (2,280 acres); CPUE = fish/hr, SE = standard error.

Year class	Age-0		Age-0		Age-0 \geq 5.0 in		Age-1	
	Mean length	SE	CPUE	SE	CPUE	SE	CPUE	SE
2019	5.0	0.1	85.3	16.1	34.7	9.5		
2018	5.3	0.1	79.6	17.8	49.2	14.4	46.0	5.2
2017	5.1	0.1	84.4	8.7	46.4	7.1	51.3	7.1
2016	5.8	0.1	67.3	7.1	61.3	7.2	73.3	10.9
2015	5.0	0.1	92.0	11.3	48.7	9.9	56.7	9.9
2014	4.7	0.1	79.3	14.8	29.3	7.8	54.3	7.7
2013	5.2	0.1	39.6	5.8	25.6	5.0	37.0	2.9
2012	5.0	0.1	82.9	20.0	45.1	10.1	no sample	
2011	4.9	0.1	55.3	9.6	28.7	4.9	19.4	2.5
2010	5.1	0.1	78.6	11.5	45.1	8.7	no sample	
2009	4.9	0.1	32.7	6.5	16.3	4.0	42.6	6.4
2008	5.1	0.1	45.9	7.8	28.4	6.0	28.2	5.3
2007	5.3	0.1	37.4	10.6	23.2	6.1	45.0	8.1
2006	4.9	0.1	29.5	7.8	13.8	3.8	47.0	6.0
2005	4.7	0.1	47.0	12.3	20.0	7.1	45.9	7.2
2004	4.8	0.1	69.5	13.5	32.5	10.8	42.3	7.1
2003	5.3	0.1	46.0	6.3	29.3	4.4	12.7	2.8

EFDYLLSS.D03-D19

EFDYLLSF.D03-D19

EFDYLLAS.D05, D06, D12

EFDYLLAF.D15

Appendix A. Paintsville Lake Angler Attitude Survey 2019
 Frequency Table (N=68)

Q3. On average, how many times do you fish Paintsville Lake in a year?

	Frequency	Percent
First Time	1	1.4%
1 to 4	7	9.7%
5 to 10	16	22.2%
More than 10	48	66.7%
Total	72	

Q4. Which species of fish do you fish for at Paintsville Lake?

	Frequency	Percent
Bass	58	80.6%
Crappie	36	50.0%
Trout	6	8.3%
Walleye	7	9.7%
Bluegill/Redear	25	34.7%
Other	12	16.7%
Total	72	100.0%

Q5. Which one species do you fish for most at Paintsville Lake?

	Frequency	Percent
Bass	51	70.8%
Crappie	11	15.3%
Trout	1	1.4%
Walleye	0	0.0%
Bluegill/Redear	8	11.1%
Total	72	

Q6. In general, what level of satisfaction do you have with bass fishing at Paintsville Lake?

	Frequency	Percent
Very Satisfied	6	10.3%
Somewhat Satisfied	9	15.5%
Neutral	28	48.3%
Somewhat Dissatisfied	12	20.7%
Very Dissatisfied	3	5.2%
No Opinion	0	0.0%
Total	56	

Q6a. If you responded with somewhat or very Dissatisfied in Question (6) - What is the single most important reason for your Dissatisfaction?

	Frequency	Percent
Number of fish	7	46.7%
Size of fish	4	26.7%
Size limit	0	0.0%
Creel limit	0	0.0%
Too many anglers	4	26.7%
Total	15	

Q7. In general, what level of satisfaction do you have with crappie fishing at Paintsville Lake?

	Frequency	Percent
Very Satisfied	5	13.9%
Somewhat Satisfied	11	30.6%
Neutral	14	38.9%
Somewhat Dissatisfied	5	13.9%
Very Dissatisfied	1	2.8%
No Opinion	0	0.0%
Total	36	

Q7a. If you responded with somewhat or very Dissatisfied in Question (7) - What is the single most important reason for your Dissatisfaction?

	Frequency	Percent
Number of fish	3	50.0%
Size of fish	3	50.0%
Size limit	0	0.0%
Creel limit	0	0.0%
Too many anglers	0	0.0%
Total	6	

Q8. In general, what level of satisfaction do you have with trout fishing at Paintsville Lake?

	Frequency	Percent
Very Satisfied	2	33.3%
Somewhat Satisfied	1	16.7%
Neutral	0	0.0%
Somewhat Dissatisfied	3	50.0%
Very Dissatisfied	0	0.0%
No Opinion	0	0.0%
Total	6	

Q8a. If you responded with somewhat or very Dissatisfied in Question (8) - What is the single most important reason for your Dissatisfaction?

	Frequency	Percent
Number of fish	3	100.0%
Size of fish	0	0.0%
Size limit	0	0.0%
Creel limit	0	0.0%
Too many anglers	0	0.0%
Total	3	

Q9. In general, what level of satisfaction do you have with walleye fishing at Paintsville Lake?

	Frequency	Percent
Very Satisfied	0	0.0%
Somewhat Satisfied	2	28.6%
Neutral	1	14.3%
Somewhat Dissatisfied	3	42.9%
Very Dissatisfied	1	14.3%
No Opinion	0	0.0%
Total	7	

Q9a. If you responded with somewhat or very Dissatisfied in Question (9) - What is the single most important reason for your Dissatisfaction?

	Frequency	Percent
Number of fish	4	100.0%
Size of fish	0	0.0%
Size limit	0	0.0%
Creel limit	0	0.0%
Too many anglers	0	0.0%
Total	4	

Q10. In general, what level of satisfaction do you have with bluegill/redear fishing at Paintsville Lake?

	Frequency	Percent
Very Satisfied	11	45.8%
Somewhat Satisfied	6	25.0%
Neutral	3	12.5%
Somewhat Dissatisfied	4	16.7%
Very Dissatisfied	1	4.2%
No Opinion	0	0.0%
Total	24	

Q10a. If you responded with somewhat or very Dissatisfied in Question (8) - What is the single most important reason for your Dissatisfaction?

	Frequency	Percent
Number of fish	3	75.0%
Size of fish	1	25.0%
Size limit	0	0.0%
Creel limit	0	0.0%
Too many anglers	0	0.0%
Total	4	

Q11. Are you satisfied with the current size and creel limits at Paintsville Lake?

	Frequency	Percent
Yes	63	91.3%
No	6	8.7%
Total	69	
No Response	3	

Q11a. If you responded No to Question 10, which species are you dissatisfied with and what size and creel limits would you prefer?

	Frequency	Percent
Crappie, need size limit	2	33.3%
Crappie, 9"	1	16.7%
Crappie, 30 fish creel	1	16.7%
Bass, 15"	1	16.7%
Bass, should have left old slot limit in place	1	16.7%
Total	6	

Q12. Since 2006, water withdrawals from the lake have been changed to maintain cool water habitat. Since this time do you think you have seen any improvements in the smallmouth Bass fishery in Paintsville Lake?

	Frequency	Percent
Yes	10	13.9%
No	39	54.2%
No opinion	23	31.9%
Total	72	

Q13. Since 2006, water withdrawals from the lake have been changed to maintain cool water habitat. Since this time do you think you have seen any improvements in the trout fishery in Paintsville Lake?

	Frequency	Percent
Yes	8	11.1%
No	28	38.9%
No opinion	36	50.0%
Total	72	

Q14. Since 2006, water withdrawals from the lake have been changed to maintain cool water habitat. Since this time do you think you have seen any improvements in the walleye fishery in Paintsville Lake?

	Frequency	Percent
Yes	4	5.6%
No	41	56.9%
No opinion	27	37.5%
Total	72	

Q15. Have you caught any hybrid striped bass at Paintsville Lake?

	Frequency	Percent
Yes	26	36.1%
No	46	63.9%
Total	72	

Q16. Do you own a smart phone?

	Frequency	Percent
Yes	59	81.9%
No	13	18.1%
Total	72	

Q17. If yes, do you use it regularly as a fishing tool?

	Frequency	Percent
Yes	17	28.8%
No	42	71.2%
Total	59	

WESTERN FISHERY DISTRICT

Project 3: Technical Guidance

FINDINGS

Table 1. Technical guidance given to pond owners in the Western Fishery District during the 2019 project year (April 1, 2019 - March 31, 2020). Approximately 115 telephone calls to the office regarding technical guidance and stocking were also handled. Additionally, numerous emails were replied to requesting farm pond technical guidance information.

<u>County</u> Pond Owner	Date of Inspection	Findings	Management Recommendations
<u>Calloway</u>			
Randy Neale	17-May	stunted bass; crappie; filamentous algae	harvest small bass, large bluegill, and crappie; place cover for fish; stock grass carp; fertilize
Timothy Palmer	17-May	no bass; green sunfish	rotenone or drain pond; lime; install aerator; stock bass and bluegill
<u>Crittenden</u>			
Phillip Sharp	Sept	no fish survey; excessive vegetation	stock grass carp
<u>Graves</u>			
Andrew Finkelstein	31-May	no fish survey; low alkalinity; shallow; vegetation	continue stocking grass carp; lime; install aerator; deepen nearshore areas
Joe Keith	31-May	no fish survey; filamentous algae and creeping water primrose; feedlot just upstream	stock grass carp; clear levee; copper sulfate and 2, 4-D
Roger Sims	4-Oct	Few bass and catfish, no forage, shallow	restock bass, bluegill, and catfish, lime, deepen pond if possible, place cover for fish
<u>Marshall</u>			
Kevin Hunt	17-May	stunted bass; low alkalinity; thermocline at ~5 ft	harvest small bass and large bluegill; lime; install aerator

NORTHWESTERN FISHERY DISTRICT

Project 3: Technical Guidance

FINDINGS

Requests for technical guidance information were received via e-mails, phone calls, and office visits. Problems included unbalanced populations, new pond construction, stocking, fish disease and fish kills, water quality issues, aquatic vegetation control, and general pond management. The requested information was relayed via phone, e-mail, office visit, and referencing the Pond Management section of the web site. There were no on-site visits conducted in 2019.

SOUTHWESTERN FISHERY DISTRICT

Project 3: Technical Guidance

FINDINGS

Onsite technical guidance given during 2019: Numerous emails and phone calls taken but were not enumerated.

Table 1: Onsite technical guidance visits during 2019

County	Date	Landowner	Problem/Situation	Recommendations
Barren	6/11	Kenneth Harrell	Veg ID/DO test	None, all good
Butler	8/29	Brian Curtis	New pond advice and alkalinity tested low	Lime, add brush and rock piles

CENTRAL FISHERIES DISTRICT

Project 2: Trout Stream Fishery Surveys

FINDINGS

The Dix River (Herrington Lake tailwater) was electrofished for trout on three different days in 2019. Results from the electrofishing are presented in Table 1. The CPUE for rainbow trout was 9.6 ± 9.6 fish/hr. Rainbow trout were only seen during the sample conducted in May. These fish were collected 7 days after stocking. The July and November electrofishing studies resulted in no trout being sampled. Annual weather data and tailwater flow parameters for Herrington Lake tailwater are summarized in Table 2. Data is collected from the USGS 03286200 gauge and rainfall data is collected from the USGS 03285000 gauge or National Weather Service ID (DNK2). Tailwater observations appear to have a significant relationship to the performance of trout in Dix River Tailwater. During years of high flow and rainfall, there appears to be lower than average survival of trout from year to year and in some cases eliminating the overall trout population. During years of low flow or rainfall the trout appear to flourish, and high numbers of trout will survive to the next year. Overall, this Dix River tailwater trout fishery is strongly influenced by these yearly variations of weather and water conditions.

Royal Springs at Royal Springs Park in Georgetown, Kentucky was monitored for suitability for trout management (Figure 1). Water temperatures were monitored hourly at Royal Springs (1 site) by a Hobo TidbiT MX temperature logger (MX2203) from 8 April to 13 November 2019. The results showed that water temperatures in Royal Springs averaged 63.0°F (min = 53.6°F and max = 72.2°F) and temperatures exceeded 72°F for at least an hour on 3 different days between 13 August and 2 October.

West Hickman Creek at Veteran’s Park in Lexington, Kentucky was monitored for suitability for trout management (Figure 3). Water temperatures were monitored hourly on West Hickman (1 site) by a Hobo TidbiT MX temperature logger (MX2203) from 8 April to 13 November 2019. The results showed that water temperatures in this section of West Hickman Creek averaged 68.2°F (min = 36.7 °F and max = 82.8°F) and temperatures exceeded 72°F for at least an hour on 120 different days between 8 May and 4 October.

Table 1. Relative abundance and CPUE (fish/hr) of rainbow trout collected during 1.36 hours of diurnal electrofishing on the Dix River (Herrington Lake tailwater) on 15 May, 30 July, and 26 November, 2019.

Date	Species	Inch class				Total	CPUE	Std err
		7	8	9	10			
May 15, 2019	Rainbow trout	1	6	4	1	12	24.0	24.0
July 30, 2019	Rainbow trout					0	0	
November 26, 2019	Rainbow trout					0	0	
Total	Rainbow trout	1	6	4	1	12	9.6	9.6

Dataset = cfdlfdix.d19

Table 2. Annual weather data and tailwater parameters for Herrington Lake tailwater. Tailwater data is collected from USGS 03286200 gauge and rainfall data is collected from USGS 03285000 gauge or National Weather Service ID (DNK2).

Year	Annual average gauge height	Annual average discharge	Days over 10 feet gauge height	Annual rainfall for Danville, KY
2019	7.4	532.1	86	39.28
2018	8.1	938.3	122	60.19
2017	5.8	364.0	57	35.15
2016	--	283.6	--	33.57
2015	5.9 ^c	487.0	85 ^c	42.89
2014	^b	409.0	^b	43.82
2013	7.1	709.7	53	64.13
2012	5.7	361.8	11	41.18
2011	7.3	527.3	52	61.43
2010	6.0	373.9	40 ^a	45.34

Gauge height above 10 feet have probable backwater from Kentucky River.

^a In 2010, the gauging station was down for 29.6 days due to extremely high water conditions in the tailwater – 29 days are included.

^b In 2014, average gauge height was not recorded until August, therefore, the number of days the gauge exceeded 10 was not calculated. Additionally, the gauging station was down for about 20 days during high water events.

^c In 2015, the gauging station was down for 41 days during high water events.

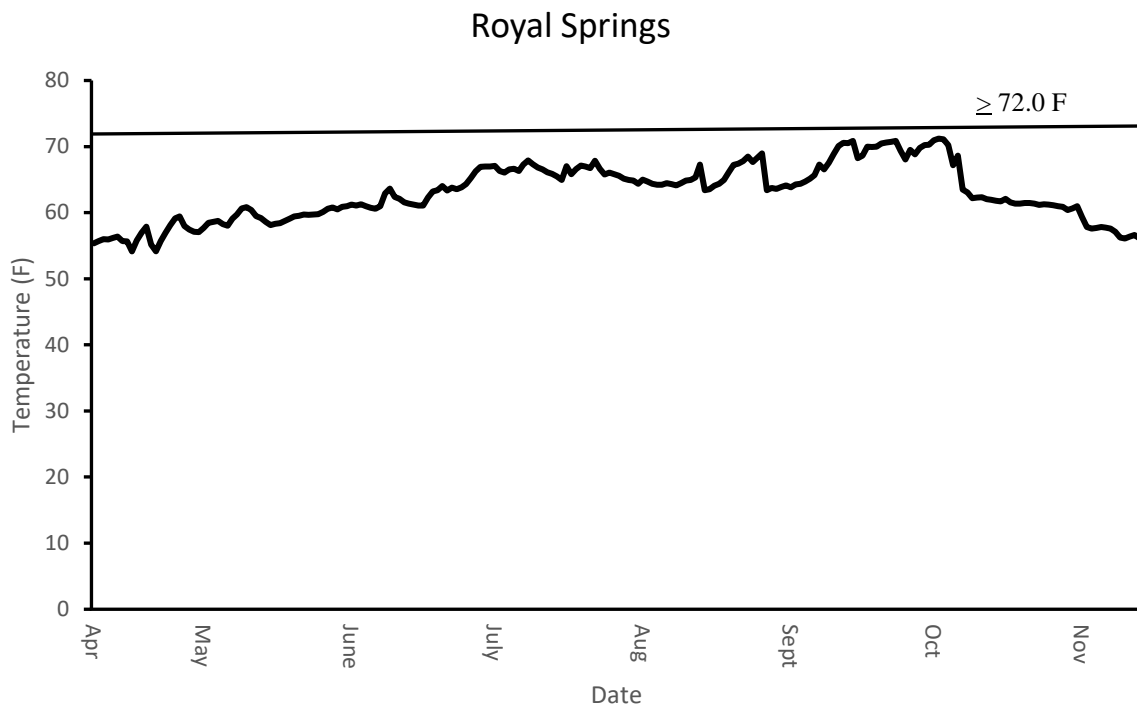


Figure 1. Daily average water temperatures observed in the trout section at Royal Springs (Scott Co.) from 8 April to 13 November 2019.

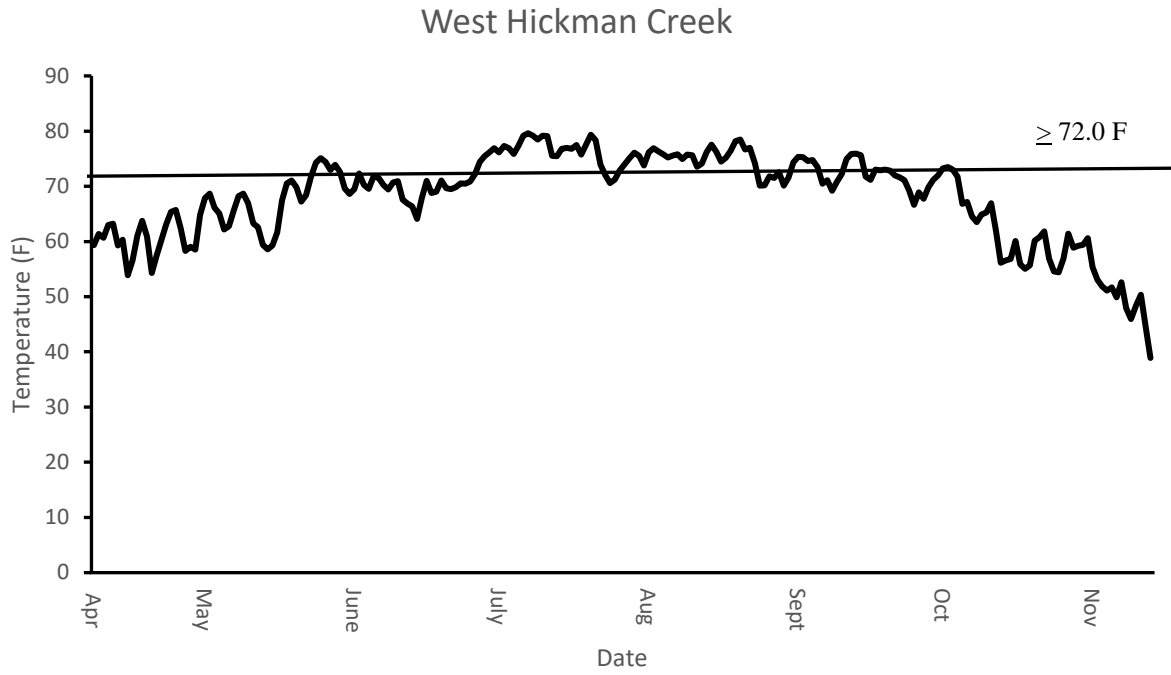


Figure 2. Daily average water temperatures observed in the trout section at West Hickman Creek (Fayette Co.) at Veteran's Park from 8 April to 13 November 2019.

CENTRAL FISHERIES DISTRICT

Project 3: Technical Guidance

FINDINGS

A total of 38 pond owners and 49 ponds were visited in 2019. Most common problems were unbalanced fish populations, excessive aquatic plant growth, lack of fish cover, and the presence of undesirable fish species (Table 1). During our 2019 technical guidance sampling, three landowners requested a Fisheries Special Management Permit (FMP) for their ponds. Finally, a total of 445 phone calls, 170 e-mails, and 7 walk-in office visits concerning farm pond problems were handled this year.

Table 1. Technical guidance in the Central Fishery District in 2019.

County	Name of lake / pond owner	Date sampled	Findings	Recommendations
Boone (1)	Gary Laney	6/11/19	Crowded LMB	Harvest LMB and stock RESF
Bullitt (3)	Greg Riggs	8/23/19	Good panfish / crowded bass	Lime and Fertilize; add cover
	Autumn Glen HOA	7/2/19	Good fish populations	Lime and Fertilize; add cover
	Randall Payne	8/19/19	Very muddy water conditions	Alum treatment
Campbell (1)	Kersten O Day Sportsman's Club	8/12/19	Pond #1 – Quality bass Pond #2 - limited fish production	Pond #1 – fix leak, add cover Pond #2 – Lime and Fertilize
Carroll (1)	Robert Stewart	6/26/19	Pond #1 – undesirable fish species – shad	Pond #1 – manage for LMB
			Pond #2 – unbalanced fish populations	Pond #2 – stock LMB
Fayette (2)	Andover Forest HOA	8/7/19	6 ponds: Excessive vegetation in most ponds	Herbicides for vegetation control
	Sally Steele	7/1/19	Good fish populations	Add cover
Henry (3)	Mark Short	8/16/19	Good fish populations	Add cover; harvest fish;
	Greg Black	6/26/19	No fish present	Stock LMB & BG;
	Jack Tolliver	8/13/19	Good fish populations	Harvest LMB, CCF, and BG
Jefferson (5)	Lisa McGrew	8/6/19	Limited fish populations	Stock LMB, BG, and CCF; add habitat
	Jeff Cunningham	8/6/19	No fish present	Stock LMB, BG, and CCF;
	Lake Forest Community Association	8/20/19	5 ponds; fair to good fish populations	Stock LMB, BG, and CCF; Herbicides for aquatic plant control
	Sojourn Community Church	6/6/19	Good fish populations;	Harvest crappie; Herbicides for aquatic plant control
	Kayla Cook	6/6/19	Unbalanced fish populations	Harvest LMB; stock BG; add cover
Jessamine (2)	Drew Wilson	6/4/19	Excessive aquatic vegetation present	Herbicides for aquatic plant control
	Bruce Drake	6/4/19	Crowded LMB	Harvest LMB; add fish habitat
Kenton (3)	Mike Del Prince	7/12/19	Not accessible due to vegetation and size	Herbicides for aquatic plant control
	Chris Jefferies	7/23/19	Unbalanced fish populations	Stock LMB and BG; add cover
	Villa Hills Civic Club	7/23/19	Good fish populations	Harvest blue and flathead catfish; add cover
Nelson (1)	Larry Freibert	8/23/19	Good fish populations	Harvest and add cover
Oldham (1)	Pamela Jo Connife	9/16/19	Good fish populations	Harvest BG and LMB

County	Name of lake / pond owner	Date sampled	Findings	Recommendations
Owen (1)	Elk Lake POA (8 acre lake)	6/11/19	Good fish populations	Harvest BG and crappie
Scott (2)	Dan Abner	6/12/19	Fish populations recovering from recent fish kill	None; allow time for recovery
	Mark Hyatt	6/12/19	Major leak	Referred to NRCS
Shelby (7)	Jack Tolliver	8/13/19	Good fish populations	Harvest LMB, RESF, and BG
	Heath Coperhaver	8/2/19	Fair fish populations	Harvest CCF and crappie; add cover
	Doyle Farms	8/2/19	Inaccessible due to aquatic vegetation	Herbicides for aquatic plant control
	Bud Ritsert	6/27/19	Balanced fish populations	Harvest crappie
	George Goetzinger	6/27/19	Good fish populations	Lime and fertilize
	David Moore	6/3/19	Inaccessible due to aquatic vegetation	Herbicides for aquatic plant control
Trimble (1)	Steve Metts	6/28/19	Limited fish population	Add cover; no harvest
	Chris Thoke	8/27/19	2 ponds; Pond #1 - Fair fish populations; Pond #2 – Good fish populations	Add cover
	Douglas Hamilton	7/24/19	Unbalanced fish populations	Stock LMB;
Washington (3)	Chad Filiatrfa	7/24/19	No fish observed;	Stock LMB and BG; add cover
	Kenny Graves	7/26/19	Unbalanced fish populations	Stock BG;
Woodford (2)	Annestes Farms	7/1/19	Good fish populations	Add cover
	Lake View Farms	7/22/19	Good fish populations	Add cover

NORTHEASTERN FISHERY DISTRICT

Project 2: Streams Fishery Surveys

Trout Stream Temperature Assessments

Temperature loggers were installed in all NEFD trout designated waters. Data collection spanned from May through November. Parched Corn, Chimney Top, and Dog Fork represent the coldest streams in the district. All three are at the upper temperature threshold for trout over-summering habitat (Table 1).

Trout Stream Usage (Camera Monitoring)

Trail cameras were placed on streams to assess the number of anglers using the trout-stocked waters. Cameras were installed early May and maintained throughout the year. East Fork Little Sandy received the most anglers in 2019 (Table 2).

Table 1. Monthly breakdown of minimum, average, and maximum temperatures on designated trout streams.

Stream Name	Year	Location	Months																				
			May			June			July			August			September			October			November		
			Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
Parched Corn	2019	Upper	51.8	57.7	63.0	57.2	60.7	63.9	63.6	65.7	67.6	63.6	65.9	68.0	61.7	64.5	66.5	51.0	57.1	65.5	41.1	45.3	54.3
		Lower	50.0	58.8	66.6	55.9	61.6	66.0	63.3	67.0	69.5	62.7	66.8	69.8	60.3	65.0	68.2	48.5	56.2	66.7	36.4	42.9	52.7
	2018	Upper	59.7	62.3	64.7	57.7	64.3	68.7	62.6	66.6	70.9	59.6	66.7	69.4	58.6	66.0	70.2	44.2	55.7	66.6	34.7	44.6	54.8
		Lower	59.9	62.5	65.1	58.0	64.4	69.1	63.0	66.7	71.2	60.0	66.8	70.1	58.7	66.0	70.2	44.1	55.6	66.6	36.5	45.2	54.6
Chimney Top	2019	Upper	51.4	58.1	64.5	55.7	61.3	68.4	61.5	66.3	70.9	60.9	66.4	71.3	58.1	65.2	69.5	47.5	56.7	67.8	35.8	44.2	51.5
		Lower																					
	2018	Upper	55.9	60.9	65.5	57.3	63.6	69.1	62.1	65.9	71.2	59.7	65.9	69.6	59.4	65.5	70.8	46.7	56.6	67.1	38.2	46.3	55.2
		Lower	56.1	61.9	67.1	57.7	64.6	71.3	62.4	66.7	72.6	59.6	66.7	71.4	59.3	65.9	71.6	45.8	56.5	67.7	37.4	46.1	55.7
MF Red	2019	Upper	55.4	65.8	76.6	60.2	68.8	77.9	67.9	75.3	81.9	67.0	73.8	81.1	61.6	70.6	78.3	50.8	60.6	75.6	36.5	45.1	54.3
		Lower	56.9	67.3	78.6	60.9	69.2	79.5	69.9	77.4	85.8	69.1	76.3	83.2	63.2	73.0	80.5	51.7	61.4	77.2	37.2	44.8	54.4
	2018	Upper	59.5	69.8	76.1	63.9	72.1	79.3	68.6	74.1	81.8	65.5	73.4	79.3	61.7	70.7	78.4	48.4	59.6	74.6	37.3	46.7	57.1
		Lower	60.7	71.8	80.0	66.5	74.6	83.9	70.0	76.5	85.8	67.6	75.2	82.0	61.8	71.2	81.8	49.1	59.9	75.0	36.8	46.6	56.8
EF Indian	2019	Upper	51.5	60.5	69.9	55.2	62.7	70.4	62.7	69.1	74.5	63.3	68.8	74.4	62.4	67.0	72.7	50.7	59.7	71.7	36.7	44.4	51.5
		Lower																					
	2018	Upper	54.1	63.9	70.1	59.8	66.7	76.3	64.5	69.1	76.5	61.4	68.5	74.9	59.3	66.8	74.3	46.1	56.7	67.7	36.4	46.2	56.4
		Lower																					
Swift Camp	2019	Upper																					
		Lower																					
	2018	Upper	62.1	68.0	71.7	63.4	70.2	77.4	67.4	71.9	79.2	64.3	71.6	75.7	61.3	69.0	75.4	44.9	57.0	69.6	33.9	44.6	55.2
		Lower																					
NF Triplett	2019	Upper																					
		Lower	55.4	66.7	78.4	62.2	69.3	80.8	69.3	76.3	83.3	67.5	74.8	81.6	64.8	72.8	79.6	50.0	60.5	77.5	36.7	44.8	54.5
	2018	Upper	55.7	69.2	75.7	67.8	72.7	78.8	67.9	75.5	82.9	67.3	73.9	79.1	61.8	70.8	79.3	48.0	59.3	72.1	37.6	47.6	58.6
		Lower	56.9	68.8	75.8	67.6	72.8	81.1	68.3	76.3	85.1	68.4	74.5	85.1	62.6	71.1	80.2	48.5	59.4	72.4	37.5	47.5	58.5
Craney	2019	Upper	56.2	62.3	69.8	60.3	65.1	73.9	64.8	72.2	79.0	65.2	72.4	79.9	63.0	69.8	76.8	49.4	58.8	71.3	37.5	44.0	53.3
		Lower	54.5	59.5	68.1	59.2	63.6	76.0	64.2	72.4	79.5	65.0	72.7	79.9	62.9	70.6	77.5	49.3	58.9	73.8	34.7	43.4	52.1
	2018	Upper	55.5	65.3	74.4	61.6	69.6	79.4	66.9	72.9	80.8	63.5	71.6	78.8	60.2	69.2	79.5	47.0	58.0	71.1	37.5	46.1	55.6
		Lower	54.7	64.6	74.4	60.8	69.1	78.9	66.8	72.9	80.4	63.0	71.3	78.1	60.0	68.9	78.8	46.6	57.7	70.1	37.9	46.3	55.7
Dog Fork	2019	Upper				59.9	62.5	66.0	60.7	65.7	69.5	60.8	65.5	69.1	57.3	67.5	63.8	46.7	66.1	55.3	34.3	42.3	49.4
		Lower																					
	2018	Upper																					
		Lower	60.4	63.1	64.9	58.4	64.2	69.0	62.2	66.0	71.1	60.2	66.4	69.2	58.5	65.5	69.4	44.8	55.4	65.8	35.1	44.6	54.0
Big Caney	2019	-	52.1	58.7	67.6	56.7	61.6	66.2	61.8	66.2	72.3	61.6	65.9	73.3	58.9	64.6	69.4	47.7	56.7	68.8	38.6	45.2	53.1
	2018	-	54.7	61.4	66.0	58.2	63.4	69.3	62.3	66.0	71.1	60.8	65.7	70.7	59.2	65.6	71.1	47.1	56.4	65.7	39.0	46.7	54.9
Laurel Creek	2019	-	54.4	62.3	66.3	58.5	64.7	72.0	62.9	67.2	73.2	59.9	66.9	72.3	58.8	66.0	73.0	44.9	55.9	66.2	38.3	46.2	55.3
	2018	-	54.4	62.3	66.3	58.5	64.7	72.0	62.9	67.2	73.2	59.9	66.9	72.3	58.8	66.0	73.0	44.9	55.9	66.2	38.3	46.2	55.3
EF Little Sandy	2019	-	56.6	66.2	76.7	63.1	70.2	80.8	68.9	75.8	82.9	67.5	73.6	81.8	57.7	70.6	78.5	49.7	60.3	76.7	35.8	44.3	57.2
	2018	-	65.9	71.7	77.2	65.3	73.7	81.6	70.3	76.0	85.4	67.0	74.2	80.1	63.2	72.0	82.4	47.6	59.4	73.0	36.6	46.7	57.2
Sturgeon Creek	2019	-	57.2	67.8	77.9	61.6	69.7	78.1	69.6	75.7	82.2	69.5	75.9	82.3	64.4	71.8	78.5	50.1	60.2	73.0	35.6	44.2	54.5
	2018	-	62.1	69.3	72.5	61.9	69.7	76.9	66.3	73.8	79.2	70.8	75.3	79.0	61.9	70.3	80.4	50.7	60.1	72.1	39.3	49.1	57.0
Station Creek	2019	-	58.8	67.7	76.5	59.4	66.6	75.7	71.1	76.9	81.6	73.0	76.7	80.1	67.4	74.1	81.7	55.9	63.3	79.1	39.9	46.4	56.4
	2018	-	62.5	73.5	75.9	66.3	71.8	78.5	69.7	75.5	81.8	68.7	74.8	80.7	63.8	72.7	80.7	36.1	47.1	57.7	35.1	45.2	57.7

Table 2. Cumulative angler counts on trout streams based on trail camera data.

Stream		Months														Year End	
Type	Stream	Location	Year Sampled	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total	Total
Put, Take																	
	EFk. Ltl Sandy	Total	2019			8	46*	34	17							105	105
	Station Camp	Total	2019			13	29*	50								92	92
	Triplett	Total	2018 Fall			*	*	65*	13	12	21	10	1	0	2	126	206
			2019 Spring	1	2	39*	38*									80	
Put, Grow, Take																	
	MFk. Red River	Upper	2019						25	4	1	0	0*	0	0	32	32
		Lower	2019						27	11	3	0	0*	0	0	46	46
	Dog Fork	Total	2018 Fall					1	0	0	0	1	1	0	0	3	5
			2019 Spring	2												2	
	Chimney Top	Upper	2018 Fall					0	0	0	1	0	4*	3	3	11	14
			2019 Spring	0	0	0	1	2								3	
	Chimney Top	Lower	2018 Fall					0	0	2	0	2	0*	3	1	8	18
			2019 Spring	0	0	0	5	5								10	
	Parched Corn	Total	2018 Fall					0	0	1	0	1	6	3	2	13	17
			2019 Spring	3	1											4	

* Stocked Month (P/T Streams)

NORTHEASTERN FISHERY DISTRICT

Project 3: Technical Guidance

FINDINGS

Table 1 provides a list of ponds visited (9) in 2019 and our findings and recommendations. In addition to on-site inspections, consultations were rendered via telephone (75-100) and/or written correspondence (~5). Most vegetation problems and a few population problems were resolved using email pictures, pond harvest log data, or the use of the “Managing Your Farm Ponds” web page. Technical guidance was provided to individuals from all counties in the NEFD. Typical problems responded to include: pond stocking, aquatic vegetation problems, undesirable species, fishing information, fish kills, farm pond management, fish pathogens, water quality, pond construction, structural problems with dams, and pond nuisances.

Table 1. On-site technical guidance provided by the Northeastern Fishery District during 2019

County	Name	Date	Findings	Recommendations
Bourbon	J. Potter	18-Sep	Fish Kill	None
Bracken	T. Teegarden	23-May	Unbalanced, stunted LMB	Harvest 50 LMB, eliminate harvest of BLG
	H. Hinkle	23-May	Stunted population, undesirable species	Harvest 50 LMB, eliminate harvest of BLG
	J. Parker	23-May	Unbalanced, veg problem(algae)	Remove redeer, apply Cutrine
Greenup	D. Floyd	9-Aug	Undesirable species	Remove all caught white crappie
	B. Brown	18-Sep	Fish Kill	Restock
Harrison	B. Hatfield	3-Oct	Unbalanced	Stock 40 LMB
Lewis	J. Gibson	9-Aug	Unfertilized, Too many Grass Carp	Fertilize, remove grass carp
Rowan	J. Cox	30-Aug	Fish Kill	Restock

SOUTHEASTERN FISHERY DISTRICT

Project 2: Stream Fishery Surveys – Trout Streams

FINDINGS

HOBO MX TidbiT 400 (MX2203) temperature data loggers were deployed in Rock Creek, Beaver Creek, and Elk Spring Creek, to evaluate current trout management strategies based upon water temperatures. Data loggers were deployed at one upstream and one downstream location within each of the three streams and water temperatures (°F) were recorded hourly from early-May to late-November. Trout stream information for each of these streams can be found in Table 1.

The upstream location of Rock Creek recorded a low number of days (10) with daily average temperatures equal to or exceeding 72°F, a maximum temperature of 76.9°F between June and September, a maximum temperature of 70.7°F during June, and zero days with an average temperature equal to or exceeding 73°F during June. The downstream location recorded a significant number of days (63) with daily average temperatures exceeding 72°F, a maximum temperature of 78.7°F between June and September, a maximum temperature of 72.3°F during June, and zero days with an average temperature equal to or exceeding 73°F during June (Table 2).

The upstream location of Beaver Creek recorded a significant number of days (58) with daily average temperatures equal to or exceeding 72°F, a maximum temperature of 84.8°F between June and September, a maximum temperature of 76.3°F during June, and zero days with an average temperature equal to or exceeding 73°F during June. The downstream location recorded a low number of days (6) with daily average temperatures equal to or exceeding 72°F, a maximum temperature of 72.0°F between June and September, a maximum temperature of 69.5°F during June, and zero days with an average temperature equal to or exceeding 73°F during June (Table 3). The higher water temperatures in the upstream location could be due to low water levels, temperature loggers being temporarily out of the water, or a combination of both.

The upstream location of Elk Spring Creek recorded zero days with daily average temperatures equal to or exceeding 72°F, a maximum temperature of 70.8°F between June and September, a maximum temperature of 70.8°F during June, and zero days with an average temperature equal to or exceeding 73°F during June. The downstream location recorded zero days with daily average temperatures equal to or exceeding 72°F, a maximum temperature of 72.0°F between June and September, a maximum temperature of 59.5°F during June, and zero days with an average temperature equal to or exceeding 73°F during June (Table 4).

As outlined in the 2019 Trout Streams Program in Kentucky (found on the Kentucky Department of Fish and Wildlife Resources website), trout streams are currently classified as Class I, II, III, and IV streams based on four water temperature parameters: 1) the number of days that the average daily water temperature equals or exceeds 72°F during the sampling period, 2) the maximum water temperature from June-September, 3) the number of days the average daily water temperature equals or exceeds 73°F in June, and 4) the maximum water temperature in June. Class I streams are exceptional trout streams, have a minimum number of days (<5) that the average daily water temperature exceeds 72°F during the year, and has a maximum water temperature between June and September that remains below 72°F. Class II streams are high quality streams, have a low number of days (<25) that the average daily water temperature exceeds 72°F during the year, and has a maximum water temperature between June and September that remains below 75°F. Class III and Class IV streams are general and marginal trout streams, respectively, and have a significant number of days (>25) that the average daily water temperature equals or exceeds 72°F during the year. Class III streams differ from Class IV streams by having a lower number of days that average water temperatures equal or exceed 73°F in June, have a lower maximum water temperature in June, and have the potential for stocking trout during June.

Based on these four water temperature parameters, Rock Creek and Beaver Creek are classified as Class IV trout streams, Elk Spring Creek is classified as a Class I trout stream, and changes to current management strategies are not recommended at this time (Tables 1 and 5).

Table 1. Southeastern Fisheries District trout stream information.

Stream Name	County	Miles of trout fishing water	Location of trout fishery	Type of trout fishery	Stocking Schedule
Rock Creek	McCreary	18.6	Confluence of White Oak Creek upstream to KY/TN border-Daniel Boone National Forest	Rainbow trout put-and-take with seasonal catch and release	March-June, September-December
Beaver Creek	Wayne	8.5	Highway 90 bridge upstream to Highway 200 bridge and Highway 167 bridge upstream to Rick Hollas Road Bridge	Rainbow trout put-and-take with seasonal catch and release between Highway 90 and Highway 200 bridge	April,May,October
Elk Spring Creek	Wayne	2.8	Mouth upstream 2.8 miles to upper end of Monticello Park	Rainbow trout put-grow-take with seasonal catch and release	April,May,June,October

Table 2. Water temperature data from Rock Creek, McCreary County, Kentucky, in 2019.

Month	Upstream		Downstream	
	Average temperature (range) °F	Number of days average temperature \geq 72 °F	Average temperature (range) °F	Number of days average temperature \geq 72 °F
May	67.7 (60.9-73.0)	0	70.5 (64.5-75.3)	4
June	64.6 (57.7-70.7)	0	66.8 (60.3-72.3)	0
July	70.2 (62.9-76.9)	5	72.1 (65.0-78.7)	18
August	70.6 (64.0-76.2)	5	73.7 (68.2-78.5)	28
September	68.4 (60.8-73.5)	0	71.4 (65.7-75.3)	11
October	58.3 (48.9-71.6)	0	60.6 (51.6-73.4)	2
November	46.8 (43.5-52.7)	0	48.4 (45.0-55.4)	0

Table 3. Water temperature data from Beaver Creek, Wayne County, Kentucky, in 2019.

Month	Upstream		Downstream	
	Average temperature (range) °F	Number of days average temperature \geq 72 °F	Average temperature (range) °F	Number of days average temperature \geq 72 °F
May	71.9 (65.9-79.0)	5	72.5 (66.0-80.0)	6
June	64.2 (58.0-76.3)	0	61.9 (58.3-69.5)	0
July	70.8 (64.0-79.0)	11	64.7 (60.9-71.2)	0
August	73.8 (65.5-84.8)	26	66.0 (61.0-72.0)	0
September	73.1 (62.2-84.3)	22	66.8 (56.0-71.2)	0
October	61.6 (49.9-83.2)	4	60.5 (53.1-70.1)	0
November	47.9 (37.6-55.5)	0	53.6 (48.3-57.2)	0

Table 4. Water temperature data from Elk Spring Creek, Wayne County, Kentucky, in 2019.

Month	Upstream		Downstream	
	Average temperature (range) °F	Number of days average temperature \geq 72 °F	Average temperature (range) °F	Number of days average temperature \geq 72 °F
May	61.7 (60.3-64.7)	0	64.7 (60.7-71.4)	0
June	61.0 (59.2-70.8)	0	61.9 (58.3-59.5)	0
July	62.4 (60.6-68.1)	0	64.7 (60.9-71.1)	0
August	62.9 (60.7-66.4)	0	66.0 (61.0-72.0)	0
September	62.6 (59.1-66.2)	0	66.8 (60.0-71.2)	0
October	60.4 (57.2-66.1)	0	60.5 (53.1-70.1)	0
November	57.0 (54.2-59.4)	0	53.6 (48.3-57.2)	0

Table 5. Southeastern Fisheries District stream assessments for trout management in 2019.

Stream	Number of days average temperature \geq 72 °F in the year	Maximum Temperature from June-September (°F)	Number of days average temperature \geq 73 °F in June	Maximum temperature in June (°F)	Stream classification rating
Rock Creek	63	78.7	0	72.3	IV
Beaver Creek	69	84.8	0	76.3	IV
Elk Spring Creek	0	72.0	0	70.8	I

SOUTHEASTERN FISHERY DISTRICT

Project 3: Technical Guidance

FINDINGS

Details of the technical guidance provided during 2019 are shown in Table 1. Technical guidance was provided through 14 on-site visits. Additional technical guidance requests were handled over the telephone, or by written correspondence. Topics encountered and responded to included: fish population balance, water quality problems, fish disease, fish stocking, and aquatic vegetation problems.

Several other requests for information (approximately 200) about area fisheries and miscellaneous information about fish management in lakes and ponds were handled over the telephone and email.

Table 1. Technical guidance provided in the Southeastern Fishery District during 2019.

County	Name of pond or pond owner	Date	Findings	Recommendations
Laurel	Scott Chaffin	6/24	Bass slightly overcrowded; crappie present; duckweed and cattails around pond	Remove skinny bass; do not harvest bluegill; stock fathead minnows to supplement food for bass; add lime; add cover; remove crappie; add gravel substrate for spawning
	Phillip Hendrickson	5/31	Low number of bass; green sunfish in the pond; muddy water	Remove green sunfish; add cover; add gravel for spawning substrate
	Leland McPhetridge	7/15	Green sunfish present; overpopulated bass; bladderwort, algae, and cattails are in pond	Remove green sunfish; remove any skinny bass; do not harvest bluegill; add cover; add lime; treat vegetation
	Landon Weaver	5/28	Some bass skinny; low number of bluegill of all sizes	Remove any skinny bass; do not harvest bluegill and consider stocking redear sunfish and channel catfish; add cover
Lincoln	Bob Reed	6/26	Slightly overcrowded bass population; crappie present	Remove skinny bass; do not harvest bluegill; monitor crappie; add cover
	Cliff Swaim	6/26	Overpopulated bass; wanting to add black crappie	Remove some of the skinny bass; if desired, stock 30 black crappie
McCreary	Rudy Young	8/20	Vegetation issues from watermeal, watershield, and pondweed	Gave recommendations for treatment options
Pulaski	Gavin Turpin	6/28	Filamentous algae and pondweed present	Suggested herbicides, grass carp, and pond liner options for controlling vegetation
	Kerry Wade	8/9	Fish dying in pond; low dissolved oxygen	Gave aeration recommendations

County	Name of pond or pond owner	Date	Findings	Recommendations
Russell	Tim Antle	6/25	Green sunfish and crappie present; larger bass somewhat thin	Remove green sunfish; do not harvest sunfish; add shallow water cover; add gravel for spawning; stock fathead minnows to supplement food for bass
	Vernon Nissley	6/25	Bass overcrowded; low sunfish numbers; green sunfish present	Remove skinny bass; do not harvest bluegill and redear sunfish; remove green sunfish; add lime; add cover
Wayne	Ralph Jackson	6/27	Pond 1: Some larger bass thin and slightly overcrowded; mid-sized bluegill absent; smartweed and willow around pond Ponds 2 & 3: did not sample due to poor launching conditions	Pond 1: Remove skinny bass; do not harvest sunfish; consider stocking additional bluegill; add cover, add lime; gave vegetation treatment options Ponds 2 & 3: suggested ways to control vegetation issues and informed owner of programs to assist with fencing out the cattle
Whitley	Alvin Gibson	7/1	Bass slightly overcrowded; no sunfish present	Remove skinny bass; stock bluegill; add cover; add lime
	Eric Laughter	6/17	Pond 1: No bass present; green sunfish present; pond covered in coontail	Pond 1: Remove vegetation with herbicides and stock grass carp to provide extended control; remove green sunfish; stock bass; add cover
		6/17	Pond 2: No bass present; some American pondweed around margins	Pond 2: Stock bass; add lime; add cover; consider adding gravel for spawning; can stock channel catfish if desired

EASTERN FISHERY DISTRICT

Project 2: Stream Surveys

FINDINGS

Trout Stream Assessments

Left Fork Beaver Creek in Floyd County and Right Fork Beaver Creek in Floyd and Knott counties were evaluated as part of the trout management plan. Streams were monitored with in-stream temperature recorders that recorded water temperature (°F) once every hour from 26 April – 17 October. Two sites were monitored in each stream.

Recorded minimum and maximum temperature ranges are shown in Tables 1 and 2. Temperature was monitored near trout stocking locations and all stream sites had supporting temperatures for trout during spring and fall seasons. Trout management objectives are different for each stream.

Left Fork Beaver Creek is managed as a put-take fishery with spring and fall stockings. Left Fork Beaver Creek is also managed as a seasonal catch and release stream from October through March. All trout must be released and only artificial baits may be used during this period in an effort to maintain angler catch opportunities through the winter. Rainbow trout are stocked in April, May, and October at a rate of 400 fish per month. Temperature data supports spring and fall stocking (Table 1) and the trout management program could continue as currently set. However, law enforcement and fish transportation staff have noticed low angler utilization of the stream and further investigation is warranted. Angler counts through remote camera use, or possibly other methods, could provide a better picture of the actual stream utilization.

Right Fork Beaver Creek is also managed as a put-take fishery but does not have a seasonal catch and release season. Rainbow trout are stocked in April, May, and October at a rate of 400 fish per month. Temperature data (Table 2) supports the current management strategies on this stream. Due to high angler utilization of this resource, the total number of fish stocked has been increased for 2020 and an extra stocking month has been added. The new stocking rate will be 500 rainbow trout/month during April, May, October and November. If any changes in production plans or reallocation of fish occur, this stream would be a favorable location for stocking a percentage of larger (12-inch) rainbow trout.

Table 1. Temperature data from Left Fork Beaver Creek, Floyd County, Kentucky (April 26 – October 17, 2019).

Month	Temperature Range (°F)	
	Downstream @ coal tipple dam near Hi Hat, KY	Upstream @ bridge to entrance of South Floyd HS football field
April	51.8-70.5	
May	52.6-80.0	
June	58.1-81.7	
July	64.9-85.1	No data, temp logger lost
August	65.8-84.8	
September	62.8-81.7	
October	52.3-79.1	

Table 2. Temperature data from Right Fork Beaver Creek, Floyd and Knott counties, Kentucky (April 26 – October 17, 2019).

Month	Temperature Range (°F)	
	Downstream @ bridge off Mill Creek Rd, Wayland, KY	Upstream @ Eric Thomas property
April	55.1-65.9	56.0-64.9
May	56.2-74.4	57.4-73.7
June	62.9-77.0	63.8-77.2
July	68.9-79.6	68.7-79.2
August	68.7-79.8	68.5-79.5
September	64.2-76.8	63.4-78.5
October	54.1-75.1	54.0-76.5

EASTERN FISHERY DISTRICT

Project 3: Technical Guidance

FINDINGS

Details of the technical guidance provided during 2019 are shown in Table 1. On-site technical guidance was provided for one pond. Additional technical guidance requests were handled over the telephone, walk-in visits, or by written correspondence. Topics encountered and responded to included: fish population balance, water quality problems, fish stocking, fish disease, and aquatic vegetation problems.

Several other requests for information about area fisheries and miscellaneous information about fish management in lakes and ponds were handled over the telephone, email, and walk-in visits.

Table 1. Pond technical guidance in the Eastern Fishery District during 2019.

Date	County	Owner	Problem	Recommendations
01/08	Letcher	Shane Amberg	Stocking info	Fish supplier list
01/31	Lawrence	C. Borders	Vegetation	Burn cattails, add grass carp
02/20	Lawrence	Terry Webb	Vegetation, follow up recomm.	Pond Pro fertilizer, herbicide as needed
03/26	Harlan	Matthew Huckleby	Vegetation (cattails, lilly pads)	Fish supplier list, herbicide - Shore Klear Plus
03/26	Hazard	D.Baker	Stocking info	Fish supplier list
04/25	Letcher	Troy Poff	Stocking info	Web site links: pond book, fish supplier list, consultation
04/25	Johnson	Kenneth Stanley	Stocking info	Mailed pond book, fish supplier list
05/10	Breathitt	Barbara Deaton	Fish kill	Stock catfish, reduce dye, feed less in summer
05/17	Lawrence	Terry Webb	Vegetation - follow up	Fertilizer - WeedTrine is working, no Aquashade
06/07	Harlan	Triston Curry	Algae, fertilization	Rates & types of fertilizer
06/10	Floyd	Chase Conley	Stocking info	Web site links: pond book, fish supplier list, consultation
06/07	Lawrence	Steve Curry	Vegetation (water shield, algae)	Herbicide - Shore Klear Plus
07/02	Harlan	Ashley Toll	Pond maintance - new property	Web site links: pond book, fish supplier list, consultation
07/08	Martin	Bruce Endicott	Stocking info	Web site links: fish supplier list, pond book, consultation
*07/11	Pike	Rose Coleman	Black water (algae)	Site visit, algicide - Cutrine Plus application at 1:9
08/01	Magoffin	Caine Arnett	Pond balance	Remove musky, remove crappie
08/02	Floyd	Lois White	Catfish with lesions	Reduce feed, potassium permanganate treatment (7lbs.)
08/13	Johnson	Robert Blanton	Vegetation (duck weed, water meal)	Herbicide - Reward, mechanical removal
08/30	Boyd	John Arthar	Pond balance	Discontinue feed, obesrvation, stock only if needed
09/05	Martin	John Kirk Jr	New pond stocking	Web site links: pond book, fish supplier list, consultation
09/26	Harlin	Joe Bennett	Stocking, pond balance, vegetation	Web site links: pond book, fish supplier list, fishing log

*on site visit

Project 4: Fish Habitat Improvement - Public Lakes Fertilization

Lake	County	Size (acres)
<u>Northwestern Fishery District</u>	Subtotal	<u>115</u>
Washburn Lake	Ohio	20
Mauzy Lake	Union	80
Honeycone Lake	Ohio	5
Lil Gill Lake	Ohio	10
<u>Southwestern Fishery District</u>	Subtotal	<u>204</u>
Marion County Lake	Marion	25
Spurlington Lake	Taylor	25
Briggs Lake	Logan	18
Shanty Hollow Lake	Warren	136
<u>Central Fishery District</u>	Subtotal	<u>318</u>
Beaver Lake	Anderson	146
Corinth Lake	Grant	84
Benjy Kinman Lake	Henry	88
<u>Eastern Fishery District</u>	Subtotal	<u>39.7</u>
Fishpond Lake	Knott	30.3
High Splint Lake	Harlan	6.9
Kingdom Come Lake	Harlan	2.5

Project 4: Fish Habitat Improvement - Fish Attractors

District / Lake	Fish Attractor Sites
<u>Western Fishery District</u>	
Barkley Lake	<p>353 hardwood units* were used to create new shallow water bass spawning bench sites; 112 gravel-filled plastic barrels were placed as bass spawning habitat; 82 Christmas tree** units were used to create new shallow water habitat sites; 45 plastic units*** were used to create 7 new shallow water fish attractor sites; Dozens of test plots of rye grass and triticale were planted</p> <p>*Hardwood: 1 tree = 1 unit **Christmas tree: 1 pallet and approximately 5 trees = 1 unit ***Plastic: 1 plastic porcupine-like attractor = 1 unit</p>
Kentucky Lake	<p>31 hardwood units* were used to create new shallow water bass spawning bench sites; 38 gravel-filled plastic barrels were placed as bass spawning habitat; Refurbished 304 hardwood shallow water stake beds and made 45 new sites (new site=~50 stakes, refurbished site=~30 stakes); 179 hardwood units* were used to refurbish 60 existing deepwater sites; 6 hardwood units* were used to create 2 new deepwater sites; 3 hardwood units* were used to refurbish 1 existing shallow water site; 40 Christmas tree units** were used to create new shallow fish habitat sites; 73 plastic units**** were used to refurbish 25 existing deepwater fish attractor sites; 62 cypress trees were planted (~3-6 ft tall); Dozens of test plots of rye grass and triticale were planted</p> <p>*Hardwood: 1 tree = 1 unit **Christmas tree: 1 pallet and approximately 5 trees = 1 unit ****Plastic: 1 plastic simulated tree attractor = 1 unit</p>
<u>Northwestern Fishery District</u>	
Nolin River Lake	<p>An additional 300 gas pipe structures were constructed and 125 cut to length in preparation for Phase 1 of the Nolin River Lake Habitat Improvement Project. Phase one was postponed due to high water conditions and should be completed Winter of 2020.</p>
Rough River Lake	<p>The structures prepped for RRL in 2018 (1,100 gas pipe structures were constructed, and 500 cut to length) are once again on hold waiting for suitable water and weather conditions.</p>
<u>Southwestern Fishery District</u>	
Barren River Lake	BRL fish habitat project (7 brush sites, 5 plastics sites, 1 rock bed)
Green River Lake	29 pallet tree sites (4 sites)
Spurlington Lake	Cedar stakebeds (2)
Metcalfe County Lake	Cedar brushpile (2)
Fagan Branch Reservoir	Plastic pallet trees (13; 2 sites)
Shanty Hollow Lake	Hardwood brushpiles (2)
Marion County Lake	X-mas tree brushpiles (3 around fishing pier) and plastic pallet trees (3)
Three Springs/Basil Griffen Lake	X-mas tree brushpiles (4)
West Fork Drakes Reservoir	Plastic pallet trees (4)

Project 4: Fish Habitat Improvement - Fish Attractors cont.

District / Lake	Fish Attractor Sites
<u>Central Fishery District</u>	
Benjy Kinman Lake	61 tons of shot rock
Boltz Lake	7 brush piles (380 trees); 4 shoreline transect (160 trees)
Bullock Pen Lake	8 brush piles (528 trees)
Corinth Lake	21 brush piles (1,080 trees)
Elmer Davis Lake	3 brush piles (403 trees)
Guist Creek Lake	6 brush piles (276 trees)
McNeely Lake	3 brush piles (60 trees)
Taylorville Lake	9 brush pile (793 trees)
<u>Northeastern Fishery District</u>	
Cave Run Lake	Tree Sites (~500 smaller cedar trees and ~100 larger cedar trees) -refreshed 13 sites in the Warix, Ramey's Creek, and Scott's Creek Areas. Plastic Sites (~20 FishHiding structures and 30 Gas Line structures) -added FishHiding structures to 2 existing habitat sites. -added Gas Line structures to 2 existing habitat sites.
Grayson Lake	Refurbished 4 brush sites (Christmas tree sites – 150+ trees)
<u>Southeastern Fishery District</u>	
Laurel River Lake	3 new brush sites (50 Christmas trees per site)
Cedar Creek Lake	2 new brush sites (30 cedar trees per site)
<u>Eastern Fishery District</u>	
Buckhorn Lake	500 lbs of winter wheat sowed
Carr Creek Lake	7 new deep water sites: 27 pallet structures; 22 plastic trees; 3 mega stake beds; 22 christmas trees; 100 scotch pines; 1 hinge cut hardwood
Dewey Lake	2 new shallow water brushpiles (20 christmas trees and hardwood); 13 refurbished shallow water brushpiles (88 christmas trees and hardwood drift); 2 new deep water brushpiles (38 christmas trees and hardwood 3 plastic trees); 1 refurbished deep water brushpile (3 plastic trees); 2 refurbished stake beds (25 christmas trees, hardwood); 15 hinge cut trees (hardwood); 1 new deep water site with 5 plastic trees
Fishtrap Lake	1 refurbished deep water brushpile (16 christmas trees); 2 shallow water brushpiles (16 christmas trees); 9 hinge cut hardwood trees
Yatesville Lake	1 refurbished shallow reef (40 cedar and Christmas trees, 2 plastic trees)

Minor Clark Fish Hatchery 2019 Sport Fish Production

Species	Planned			Actual				Notes
	Number	Size (in)	Location/Use	Number	Size (in)	Pounds	No./lb	
Muskellunge	100,000		Ohio DNR	114,000				Eggs
	0		West Virginia	57,360				Fry
	0		Licking River	328,540				Fry
Total Fry/Eggs				499,900				
	2,700	13	Cave Run Lake*	2,800	12.2	853.7	3.3	
	2,700	13	Green River Lake*	2,800	12.1	862.5	3.3	
	400	13	Buckhorn Lake*	1,000	12.4	322.6	3.1	
	375	13	Dewey Lake*	634	12.3	204.5	3.1	
	0		Levisa Fork	300	12.3	96.8	3.1	
			Hatchery Oxbow	2	12.3	0.7	3.1	
Total	6,175	13		7,536	12.2	2,340.8	3.2	*Right Pelvic Fin Clip
	398	9	Kentucky River Pool 11*	398	8.6	43.3	9.2	
	380	9	Kentucky River Pool 12**	380	8.6	41.3	9.2	
	182	9	Kentucky River Pool 13***	182	8.6	19.8	9.2	
	110	9	Kentucky River Pool 2	110	8.6	11.9	9.2	
	230	9	Kentucky River Pool 3	230	8.6	25.0	9.2	
	705	9	Barren River	705	8.6	76.6	9.2	
	500	9	Green River Pool 5	501	8.6	54.5	9.2	
	350	9	South Fork Kentucky River	350	8.6	38.0	9.2	
	375	9	North Fork Kentucky River	375	8.6	39.1	9.6	
	400	9	Licking River	400	8.2	37.6	10.6	
	200	9	Little Sandy River	200	8.6	20.8	9.6	
	110	9	Tygarts Creek	110	8.6	11.5	9.2	
	145	9	Drakes Creek	145	8.6	15.8	9.2	
	250	9	Green River Pool 4	250	8.6	27.2	9.2	
	195	9	Tug Fork	195	8.6	21.2	9.2	
	500	9	Levisa Fork	500	8.6	54.3	9.2	
	50	9	Kinniconick Creek	50	8.6	5.4	9.0	
	85	9	Red River	85	8.6	9.2	2.0	

Species	Planned			Actual				Notes
	Number	Size (in)	Location/Use	Number	Size (in)	Pounds	No./lb	
Muskellunge								
	30	9	West Fork Drakes Creek	30	8.6	3.3	9.2	
	15	9	Sexton Creek	15	8.6	1.6	9.6	
	30	9	Goose Creek	30	8.6	3.1	9.6	
	40	9	Redbird River	40	8.6	4.2	9.6	
	15	9	Station Camp	15	8.6	1.0	9.6	
	30	9	Triplett Creek	30	7.7	2.3	13.0	
	20	9	North Fork Triplett Creek	20	7.7	1.5	13.0	
	0		Kentucky River	1,278	8.6	133.1	9.6	
	0		Tennessee WRA	3,400	8.6	354.2	9.6	
Total				10,024	8.6	1,056.8	9.5	*Left Pectoral Fin Clip
Grand Total	11,230			517,460		3,397.6		**Right Pectoral Fin Clip ***Left Pelvic Fin Clip
Hybrid Striped Bass								
	200,000	1.5	Barren River Lake**	200,425	1.5	225.4	889	
	2,600	1.5	Sympson Lake***	2,691	1.5	2.6	1,035	
	15,000	1.5	Grayson Lake***	15,064	1.6	19.9	757	
	51,000	1.5	Rough River Lake*	51,233	1.5	49.5	1,035	
	51,000	1.5	Rough River Lake	52,086	1.5	52.6	990	
	30,000	1.5	Taylorsville Lake*	31,074	1.5	31.7	1,035	
	30,000	1.5	Taylorsville Lake	31,050	1.5	30.0	980	
	25,000	1.5	Herrington Lake*	25,151	1.5	24.3	1,035	
	25,000	1.5	Herrington Lake	26,102	1.5	26.8	990	
	23,000	1.5	Fishtrap Lake***	23,013	1.6	30.4	757	
	7,200	1.5	Lake Linville***	7,236	1.6	9.8	738	
	19,000	1.5	Guist Creek Lake	19,054	1.8	38.1	500	
	3,333	1.5	KY River Pool 4**	3,367	1.6	4.6	740	
	3,333	1.5	KY River Pool 5**	3,368	1.6	4.6	740	
	3,333	1.5	KY River Pool 6**	3,368	1.6	4.6	740	
	3,333	1.5	KY River Pool 7**	3,367	1.6	4.6	740	
	3,334	1.5	KY River Pool 8*	3,367	1.6	4.6	740	
	3,334	1.5	KY River Pool 9**	3,367	1.6	4.6	740	

Species	Planned			Actual				Notes
	Number	Size (in)	Location/Use	Number	Size (in)	Pounds	No./lb	
Hybrid Striped Bass			Ohio River					
	54,500	1.5	Markland Pool**	47,288	1.3	28.8	1,642	
	41,500	1.5	McAlpine Pool**	36,080	1.2	20.5	1,762	
	50,000	1.5	Cannelton Pool**	52,062	1.3	32.5	1,597	
	36,000	1.5	Newburg Pool**	31,328	1.3	17.8	1,760	
	43,700	1.5	Uniontown Pool**	38,052	1.3	21.6	1,762	
	60,500	1.5	Smithland Pool**	52,583	1.3	28.7	1,834	
	0		Kentucky Lake Tailwater	50,414	1.3	28.4	1,775	
	0		Barkley Lake Tailwater	50,867	1.3	29.0	1,754	
Total Recips	679,000			682,856	1.4	583.9		*OTC Marked Originals
Total Originals	106,000			180,169	1.6	191.9		** Mixed Originals/Recips
Grand Total	785,000			863,057		775.8		***Unmarked Originals
Walleye (Erie)								
	0	0	Licking River	1,077,7				Fry
	0	0	West Virginia	1,065,6				Fry
Total				2,143,3				
	350,000	1.5	Lake Cumberland	350,066	1.4	189.9	1,843	
	40,000	1.5	Dale Hollow Lake (KY)	40,624	1.4	20.8	1,953	
	260,000	1.5	Laurel River Lake	261,160	1.2	105.6	2,473	
	35,000	1.5	Carr Creek Lake	35,154	1.4	18.0	1,953	
	57,000	1.5	Paintsville Lake	57,028	1.4	29.2	1,953	
	200,000	1.5	Nolin River Lake	120,596	1.4	98.7	1,222	
	200,000	1.5	Green River Lake	200,620	1.4	147.7	1,358	
	10,000	1.5	Russell Fork	10,140	1.7	18.3	554	
	13,000	1.5	Licking River	7,917	2.9	37.7	210	
Total				1,083,3	1.4	665.9	1,627	
Grand Total				3,226,6				

Species	Planned			Actual				Notes
	Number	Size (in)	Location/Use	Number	Size (in)	Pounds	No./lb	
Walleye (Native)								
	20,000	2.5	Upper KY River	17,208	2.8	68.0	253	
	3,000	2.5	Upper Levisa Fork	2,581	2.8	10.2	253	
	6,400	2.5	Rockcastle River	5,515	2.8	21.8	253	
	19,800	2.5	Wood Creek Lake	17,035	2.5	51.5	331	
	16,000	2.5	Lower Barren	13,777	2.3	38.7	356	
	10,000	2.5	Martins Fork Lake	8,602	2.8	34.0	253	
	27,200	2.5	Upper Cumberland River	23,852	2.3	67.0	356	
Total	102,400			88,570	2.5	291.2	304	
Sauger								
			Kentucky River					
	5,000	1.5	Pool 2 Monterey	0				
	10,000	1.5	Pool 3 Steele Branch	0				
	10,000	1.5	Pool 4 Benson Creek Ramp	0				
	10,000	1.5	Pool 5 Tyrone Ramp	6,510	1.6	7.3	898	
	10,000	1.5	Pool 6 Oregon Ramp	6,511	1.6	7.3	898	
	15,000	1.5	Pool 8 Hunters Ferry	0				
	10,000	1.5	Pool 9 Boonesborough Ramp	0				
	10,000	1.5	Pool 10 College Hill Ramp	0				
	10,000	1.5	Pool 11 Irvine Ramp	0				
	10,000	1.5	Pool 12 Ravenna Ramp	0				
Total	100,000	1.5		13,021	1.6	14.6	898	See Pfeiffer Hatchery Sport Fish Production
Striped Bass								
	350,000	1.5	Lake Cumberland	132,022	1.6	152.3	867	
	50,000	1.5	Kentucky Lake tailwater	0				
	50,000	1.5	Barkley Lake tailwater	0				
			Ohio River					
	49,000	1.5	Markland Pool	0				
	38,000	1.5	McAlpine Pool	0				
	46,000	1.5	Cannelton Pool	0				
	33,000	1.5	Newburg Pool	0				
	40,000	1.5	Uniontown Pool	0				

Species	Planned			Actual				Notes
	Number	Size (in)	Location/Use	Number	Size (in)	Pounds	No./lb	
Striped Bass								
	55,000	1.5	Smithland Pool	0				
Total	711,000	1.5		132,022	1.6	152.3	867	
Largemouth Bass	0.0	0.0	Hatchery Oxbow	50,000				Fry
			Ohio River, Cannelton Pool					
	270	2.0	Yellowbank Creek	315	1.6	0.5	631	
	660	2.0	Town Creek	694	1.6	1.1	631	
	17,000	2.0	Tar Fork/Clover Creek	47,017	1.8	88.1	534	
			Ohio River, McAlpine Pool					
	7,050	2.0	Harrod's Creek	7,067	1.6	11.2	631	
			Ohio River, Markland Pool					
	38,200	2.0	Craig's Creek	38,226	1.8	85.0	450	
	2,474	2.0	Big Sugar Creek	2,486	1.8	5.3	471	
	2,535	2.0	Little Sugar Creek	2,543	1.8	5.4	471	
	16,064	2.0	Big Bone Creek	16,278	1.8	34.6	471	
	10,309	2.0	Gunpowder Creek	10,315	1.8	21.9	471	
	3,580	2.0	Woolper Creek	3,600	1.8	7.6	471	
			Ohio River, Meldahl Pool					
	3,853	2.0	Big Snag Creek	3,862	2.0	12.3	314	
	8,416	2.0	Big Locust Creek	8,471	2.0	27.0	314	
	2,705	2.0	Big Turtle Creek	2,732	2.0	8.7	314	
	7,943	2.0	Bracken Creek	7,944	2.0	25.3	314	
	2,265	2.0	Lawrence Creek	2,285	2.0	7.3	314	
			Ohio River, Greenup Pool					
	15,100	2.0	Little Sandy (Greenup Rp)	18,717	2.0	60.1	311	
	15,100	2.0	Little Sandy (Raccoon Rp)	11,547	1.6	18.3	631	

Species	Planned			Actual				Notes
	Number	Size (in)	Location/Use	Number	Size (in)	Pounds	No./lb	
Largemouth Bass	0		Taylorsville Lake	29,729	1.7	62.6	475	
	0		Herrington Lake	30,128	1.9	89.4	337	
Total	153,524			243,956	1.9	571.7	427	
	15,000	5.0	Carr Creek Lake	12,337	6.2	1121.5	11.0	
	0	5.0	Martins Fork Lake	2,191	6.2	199.2	9.0	
	100,000	5.0	Priority 1 lakes at 15/acre					
		5.0	Herrington Lake	26,787	4.5	938.1	28.6	
		5.0	Taylorsville Lake	30,503	4.7	1,171.5	26.0	
		5.0	Old Kingfisher Lake	1,002	4.3	33.4	30.0	
		5.0	New Kingfisher Lake	1,602	4.3	53.4	30.0	
		5.0	Lake Carnico	1,101	4.3	36.7	30.0	
		5.0	Greenbo Lake	982	4.4	33.9	29.0	
		5.0	Carr Creek Lake	7,105	4.5	262.3	27.1	
			Lake Cumberland	23,710	4.2	625.8	37.9	
			Oxbow	20				
			Overwinter For Spring	20,470	4.0	498.2	41.1	
Total	115,000			127,810		4,974.0		
Grand Total	268,524			421,766		5,545.7		
Grass Carp	0	0	Easy Walker lake	15	18.0	50.0	0.3	
	0		Old Flemingsburg Lake	29	18.0	96.6	0.3	
	0		Hatchery Oxbow	1	18.0	3.3	0.3	
Total				45		149.9		
Saugeye	0	0	Pfeiffer to grow out	717,500				Eggs
Total				717,500				

Peter W. Pfeiffer Fish Hatchery 2019 Sport Fish Production

Species	Planned			Actual				
	Number	Size (in)	Location/Use	Number	Size	Pounds	No./lb.	Notes
Channel Catfish								
	0		WV DNR	300,254	Fry	34	8,893.8	Surplus Fry
	0		KY River Pool 2	15,435	8	2,450	6.3	Fall stocker surplus
	0		KY River Pool 4	16,380	8	2,600	6.3	Fall stocker surplus
	0		KY River Pool 4	115,722	Fry	23	4,966.6	Surplus Fry
				447,791		5,107		
	300	8-10	Clarks River Refuge	300	8-10	250	1.2	Event
	800	15	Minor Clark Fish Hatchery	400	10-15	500	0.8	Event
	74,705	8-10	Public Fishing	68,755	8	9,432	7.3	
	121,800	15	FINS Program	35,815	12-24	34,507	1.0	HCF were used to fill remainder of FINS List
	197,605			105,270		44,689		
Blue Catfish								
	0		KY River Pool 4	33,610	Fry	9	3,931.0	Surplus Fry
	0		WV DNR	126,185	Fry	32	3,931.0	Surplus Fry
	0		OH DNR	146,575	Fry	21	7,030.0	Surplus Fry
				306,370		62		
	40,000	5-7	Barren River Lake	35,845	4-8	4,345	8.2	Hatched and stocked 2019
	8,800	5-7	Dewey Lake	9,000	4-8	1,090	8.3	Hatched and stocked 2019
	9,000	5-7	Fishtrap Lake	11,000	4-8	1,333	8.3	Hatched and stocked 2019
	920	5-7	Boltz Lake	920	4-8	112	8.2	Hatched and stocked 2019
	7,600	5-7	Lake Beshear	7,600	4-8	921	8.3	Hatched and stocked 2019
	950	5-7	Mill Creek Lake	950	4-8	115	8.3	Hatched and stocked 2019
	210	5-7	Metcalfe Co. Lake	210	4-8	26	8.1	Hatched and stocked 2019
	1,690	5-7	Wilgreen Lake	1,690	4-8	205	8.2	Hatched and stocked 2019
	1,750	5-7	A.J. Jolly Lake	1,750	4-8	212	8.3	Hatched and stocked 2019
	1,460	5-7	Bullock Pen Lake	1,460	4-8	177	8.2	Hatched and stocked 2019
	72,380			70,425		8,536		

Species	Planned			Actual				Notes
	Number	Size (in)	Location/Use	Number	Size	Pounds	No./lb.	
Hybrid Catfish	121,800	15	FINS Program	102,218	10-24	114,828	0.9	CCF were used to fill remainder of FINS List
				102,218		114,828		
Hybrid Sunfish	1,000	6-8	James. D Beville Lake	1,000	5-10	233	4.3	Fishing Event
	30,000	6-8	FINS Program	28,050	5-10	5,728	4.9	
	30,000			29,050		5,961		
Sauger	5,000	1.5	Kentucky River Pool 2	2,500	1.4	1.8	1,388.9	
	10,000	1.5	Kentucky River Pool 3					
	10,000	1.5	Kentucky River Pool 4					
	10,000	1.5	Kentucky River Pool 5					See Clark Hatchery Sport Fish Production
	10,000	1.5	Kentucky River Pool 6					
	15,000	1.5	Kentucky River Pool 8					
	10,000	1.5	Kentucky River Pool 9	10,042	1.4	8.5	1,181.4	
	10,000	1.5	Kentucky River Pool 10	10,000	1.4	6.5	1,538.5	
	10,000	1.5	Kentucky River Pool 11	10,000	1.4	6.5	1,538.5	
	10,000	1.5	Kentucky River Pool 12	10,000	1.4	6.7	1,492.5	
			Kentucky River Pool 13	5,000	1.4	3.7	1,351.4	
	100,000			47,542		33.7		
Saugeye	22,190	1.5	Guist Creek Lake	22,190	1.54	23.3	952.4	
	9,380	1.5	Bullock Pen Lake	10,170	1.54	9.4	1,087.7	
	11,830	1.5	Wilgreen Lake	12,280	1.54	12.9	951.9	
	4,900	1.5	Carpenter Lake	5,474	1.54	5.8	952.0	
	7,840	1.5	Lake Carnico	8,235	1.54	8.7	952.0	
	12,250	1.5	A.J. Jolly Lake	12,400	1.54	11.4	1,087.7	
	61,000	1.5	Taylorsville Lake	49,890	1.54	41.7	1,196.4	
	129,390			120,639		113.1		

Species	Planned		Location/Use	Actual				Notes
	Number	Size (in)		Number	Size	Pounds	No./lb.	
Redear Sunfish	33,300		FINS Lakes	40,333	3-5	1,149	35.1	2nd year of Phase II growout
	33,300			40,333		1,149		
			Benjy Kinman Lake	20,000	1.3	23.7	844	
			Cave Run Lake	40,240	1.3	47.7	844	
			Elmer Davis Lake	27,600	1.3	35.7	773	
			Peabody WMA	20,000	1.3	27.0	741	
	14,200	1.5	Carr Creek Lake	14,200	1.3	16.8	845	
	7,200	1.5	Smoky Valley Lake	7,200	1.3	11.0	655	
	22,400	1.5	Lake Carnico	22,400	1.3	34.1	657	
	6,680	1.5	Martin's Fork Lake	6,680	1.3	9.0	742	
	31,600	1.5	Beaver Lake	48,470	1.3	64.2	755	
	24,600	1.5	Buckhorn Lake	24,600	1.3	29.2	842	
	106,680			231,390		298.4		
Alligator Gar	8,000							Did not receive fry
	8,000			0		0		
Lake Sturgeon	6,000	8	Upper Cumberland River	5,681	6.7	182	31.2	
	6,000			5,681		182		
Bluegill	22,400	1.5	Lake Carnico	22,400	1-3	62.5	358.4	
	7,200	1.5	Smoky Valley Lake	7,200	1-3	20.1	358.2	
	29,600			29,600		82.6		
Grand Total				1,536,309		181,041		

Species	Waterbody	Actual Number	Length (in)
Brook Trout	Chimney Top Creek	300	7-8
Brook Trout	Lake Cumberland Tailwater	20,150	9-11
Total: 20,450			

Species	Waterbody	Actual Number	Length (in)
Brown Trout	Bark Camp Creek	500	8-12
Brown Trout	Big Caney Creek	250	8-12
Brown Trout	Chimney Top Creek	150	8-12
Brown Trout	Fort Campbell	3,250	8-12
Brown Trout	Greenbo Lake	2,000	8-12
Brown Trout	Indian Creek - East Fork	500	8-12
Brown Trout	Jennings Creek	500	8-12
Brown Trout	Lake Cumberland Tailwater	43,499	8-12
Brown Trout	Laurel Creek	250	8-12
Brown Trout	Laurel River Lake Tailwater	250	8-12
Brown Trout	Looney Creek	700	8-12
Brown Trout	Paintsville Lake Tailwater	300	8-12
Brown Trout	Roundstone Creek	200	8-12
Brown Trout	Sulphur Springs Creek	200	8-12
Brown Trout	Trammel Creek	600	8-12
Total: 53,149			

Species	Waterbody	Actual Number	Length (in)
Rainbow Trout	Alexandria Community Park Lake	3,300	8-16
Rainbow Trout	Anderson Co. Community Park Lake	1,025	8-16
Rainbow Trout	Bark Camp Creek	3,750	8-16
Rainbow Trout	Beaver Creek	1,500	8-16
Rainbow Trout	Beaver Creek - Left Fork	1,200	8-16
Rainbow Trout	Beaver Creek - Right Fork	1,700	8-16
Rainbow Trout	Bert T. Combs Lake	4,000	8-16
Rainbow Trout	Beulah Lake	4,000	8-16
Rainbow Trout	Big Bone Lick State Park	1,200	8-16
Rainbow Trout	Big Caney Creek	2,500	8-16
Rainbow Trout	Bloomfield Park Lake	1,000	8-16
Rainbow Trout	Boone Tract 6 Acre Lake	2,000	8-16
Rainbow Trout	Boulder Lake	400	8-16
Rainbow Trout	Brickyard Pond	3,300	8-16
Rainbow Trout	Buckhorn Lake Tailwater	5,000	8-16
Rainbow Trout	Buffalo Creek	500	8-16
Rainbow Trout	Camp Ernst Lake	3,300	8-16
Rainbow Trout	Cane Creek	3,750	8-16
Rainbow Trout	Cannon Creek Lake	5,000	8-16

Species	Waterbody	Actual Number	Length (in)
Rainbow Trout	Carr Creek Lake Tailwater	5,000	8-16
Rainbow Trout	Casey Creek	7,775	8-16
Rainbow Trout	Cave Run Lake Tailwater	6,800	8-16
Rainbow Trout	Cherokee Park Lake	1,750	8-16
Rainbow Trout	Clear Creek	1,200	8-16
Rainbow Trout	Clinton Rotary Park Lake	1,500	8-16
Rainbow Trout	Craney Creek	1,000	8-16
Rainbow Trout	Cranks Creek Lake	5,750	8-16
Rainbow Trout	Dewey Lake	1,000	8-16
Rainbow Trout	Dewey Lake Tailwater	3,000	8-16
Rainbow Trout	Eagle Lake (Morehead State)	2,050	8-16
Rainbow Trout	Easy Walker Park Pond	1,500	8-16
Rainbow Trout	Elk Spring Creek	1,600	8-16
Rainbow Trout	Fagan Branch Lake	1,500	8-16
Rainbow Trout	Fisherman's Park Lakes	2,000	8-16
Rainbow Trout	Fishpond Lake	4,800	8-16
Rainbow Trout	Fishtrap Lake Tailwater	10,000	8-16
Rainbow Trout	Flemingsburg City Reservoir (Old)	1,800	8-16
Rainbow Trout	Floyds Fork Creek	2,400	8-16
Rainbow Trout	Fort Campbell	2,400	8-16
Rainbow Trout	Goose Creek	1,000	8-16
Rainbow Trout	Grants Branch Lake	2,000	8-16
Rainbow Trout	Grayson Lake Tailwater	4,000	8-16
Rainbow Trout	Greasy Creek	400	8-16
Rainbow Trout	Greenbo Lake	10,025	8-16
Rainbow Trout	Gunpowder Creek Nature Park	800	8-16
Rainbow Trout	Hatchery Creek	28,200	8-16
Rainbow Trout	Herrington Lake Tailwater	2,700	8-16
Rainbow Trout	Higginson & Henry WMA	500	8-16
Rainbow Trout	Highsplint Lake	2,750	8-16
Rainbow Trout	Indian Creek - East Fork	4,000	8-16
Rainbow Trout	Jacobson Park Lake	6,000	8-16
Rainbow Trout	James Beville Park Lake	1,250	8-16
Rainbow Trout	Jennings Creek	6,750	8-16
Rainbow Trout	Kentucky Horse Park Lake	3,598	8-16
Rainbow Trout	Kess Creek Park Lake	1,500	8-16
Rainbow Trout	Kingdom Come State Park Lake	1,500	8-16
Rainbow Trout	Lake Cumberland Tailwater	147,063	8-16
Rainbow Trout	Lake Mingo	1,500	8-16
Rainbow Trout	Lake Montgomery	4,800	8-16
Rainbow Trout	Lake Pollywog	1,750	8-16
Rainbow Trout	Laurel Creek	3,250	8-16
Rainbow Trout	Laurel River Lake Tailwater	410	8-16
Rainbow Trout	Leary Lake	3,325	8-16

Species	Waterbody	Actual Number	Length (in)
Rainbow Trout	Little Sandy River - East Fork	400	8-16
Rainbow Trout	Logan Hubble Park	3,300	8-16
Rainbow Trout	Looney Creek	1,500	8-16
Rainbow Trout	Lower Sportsman's Lake	1,000	8-16
Rainbow Trout	Lusby Lake	1,000	8-16
Rainbow Trout	Lynn Camp Creek	2,500	8-16
Rainbow Trout	Madisonville Park	4,800	8-16
Rainbow Trout	Martin County Lake	3,750	8-16
Rainbow Trout	Martins Fork Lake	750	8-16
Rainbow Trout	Martins Fork Lake Tailwater	3,250	8-16
Rainbow Trout	Mason County Recreational Lake	3,300	8-16
Rainbow Trout	Middlesboro Canal	400	8-16
Rainbow Trout	Middleton Mills Park Lake	2,000	8-16
Rainbow Trout	Mike Miller Park Lake	2,500	8-16
Rainbow Trout	Miles Park Lakes	2,750	8-16
Rainbow Trout	Mill Creek Lake (Wolfe & Powell Co.)	4,500	8-16
Rainbow Trout	Millenium Park Pond	1,800	8-16
Rainbow Trout	Nolin River Lake Tailwater	8,000	8-16
Rainbow Trout	Otter Creek	11,510	8-16
Rainbow Trout	Paintsville Lake	9,975	8-16
Rainbow Trout	Paintsville Lake Tailwater	16,499	8-16
Rainbow Trout	Panbowl Lake	3,000	8-16
Rainbow Trout	Panther Creek Park Lake	2,500	8-16
Rainbow Trout	Peabody WMA	5,275	8-16
Rainbow Trout	Pikeville City Lake	2,000	8-16
Rainbow Trout	Prisoners Lake	1,750	8-16
Rainbow Trout	Red River - Middle Fork	2,700	8-16
Rainbow Trout	Rock Creek	14,725	8-16
Rainbow Trout	Roundstone Creek	2,825	8-16
Rainbow Trout	Royal Springs	1,200	8-16
Rainbow Trout	Russell Fork Creek	2,250	8-16
Rainbow Trout	Sandy Watkins Park	1,000	8-16
Rainbow Trout	Scott County Park Lake	1,000	8-16
Rainbow Trout	Sinking Creek	1,200	8-16
Rainbow Trout	Southgate Lake	1,000	8-16
Rainbow Trout	Southland Church Lake	1,025	8-16
Rainbow Trout	Station Camp Creek	750	8-16
Rainbow Trout	Sturgeon Creek	400	8-16
Rainbow Trout	Sulphur Springs Creek	3,300	8-16
Rainbow Trout	Swift Camp Creek	1,075	8-16
Rainbow Trout	Taylorville Lake Tailwater	3,000	8-16
Rainbow Trout	Three Springs Lake	3,300	8-16
Rainbow Trout	Tom Wallace Park Lake	3,300	8-16
Rainbow Trout	Trammel Creek	8,750	8-16

Species	Waterbody	Actual Number	Length (in)
Rainbow Trout	Triplett Creek	1,200	8-16
Rainbow Trout	Triplett Creek - North Fork	1,050	8-16
Rainbow Trout	Upper Sportsman's Lake	3,300	8-16
Rainbow Trout	War Fork Creek	2,000	8-16
Rainbow Trout	Waverly Park Lake	3,300	8-16
Rainbow Trout	Waymond Morris Park	4,800	8-16
Rainbow Trout	West Hickman Creek	1,000	8-16
Rainbow Trout	Whitehall Park Lake	4,800	8-16
Rainbow Trout	Wood Creek Lake	7,525	8-16
Rainbow Trout	Yatesville Lake Tailwater	2,500	8-16
Rainbow Trout	Yellow Creek Park Lake	2,000	8-16
		Total: 538,605	