

**SURVEY REPORT**  
**OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION**



**FISH MANAGEMENT SURVEY AND RECOMMENDATIONS**  
**FOR**  
**CLEVELAND LAKE**  
**2025**

## **SURVEY REPORT**

**State:** Oklahoma

**Project Title:** Cleveland Lake Fish Management Survey Report

**Period Covered:** This report discusses survey results from 2025.

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**Date Prepared:** June 2025

### **Kaw Lake**

#### **ABSTRACT**

Cleveland Lake was sampled in the spring of 2025 to evaluate the Largemouth Bass (LMB) fishery. While not being stocked with Florida LMB since 2019 sampling was conducted again in 2023 to see what growth the population did have 4 years after stocking was discontinued due to poor geneflow. Due to increases in preferred sized LMB and increased abundance of older fish it was determined that collecting DNA data again on Cleveland Lake would be insightful to determine if geneflow has changed from the last time DNA was collected in 2019.

## **Current Management Practices**

### **Monitoring of Heavily Utilized Black Bass Populations**

Largemouth bass was the most sought after species in Oklahoma according to the most recent angler survey. The NCR has high profile largemouth bass fisheries that are utilized by both recreational and tournament anglers. The introduction of Florida Largemouth Bass genetics into largemouth bass populations can be a valuable management tool to improve growth rates. These black bass populations require monitoring for constituent interaction, evaluation of recent regulation changes, and evaluation of genetic contribution of FLMB. FLMB stocking was ceased after the last stocking in 2019.

#### **2025**

Cleveland was sampled for black bass in the spring of 2025. A total of fifteen samples were conducted using an ETS Electrofishing systems unit. A total of 168 Largemouth Bass were collected. Fish were measured (mm) and weighed (g). Otoliths were collected from 161 LMB for aging. DNA was collected from 100 LMB ranging from 304.8mm (12 in) to 531mm (20.9 in).

Catch Per Unit Effort (CPUE) for Largemouth Bass was 67 with a C.V. of .16, this was not significantly different from the last survey conducted in 2023 (CPUE = 96, C.V. = .14) and 2019 (CPUE = 78, C.V. = .15). Length-Frequencies indicate a wider distribution of Largemouth bass than in 2019 and 2023 (Figure 1), with a noticeable decrease in abundance of LMB 75mm to 200mm, while 200mm to 350mm had a noticeable increase in abundance. Proportional Size Distributions (PSD), PSD - Preferred and PSD – Memorable did not significantly change when compared to 2023, but PSD – Preferred remained significantly larger like the 2023 sample when compared to the 2019 survey (Table 1). Relative Weights (Wr) were good at  $95.44 \pm 1.57$  but not significantly different from Wr in 2019 ( $Wr = 95.58 \pm 2.57$ ) or 2023 ( $Wr = 92.56 \pm 1.83$ ). Age Frequencies indicate the large year class from 2015 is still present in high number for their age (Figure 2). Most concerning was no age 1 LMB were collected in the 2025 sample. NCR staff will monitor this to see if this apparent missing age class shows up in future years samples. It should be noted that YOY LMB fry were seen while sampling, indicating spawning was successful in 2025. Mean length at age showed significant decrease at age-2 and age-3 compared to 2019 but age 3 and 7 showed a significant increase compared to 2023 (Table 2). Von Bertalanffy Growth Equations found  $L_{\infty}$  was significantly lower compared to 2023 but not 2019, this is most

likely due to 2025 having older fish for the model to use and stabilize upper growth potential (Figure 3, Table 3).

Largemouth Bass in Cleveland Lake has not received a stocking of Florida strain LMB since 2019. DNA samples taken in 2019 indicated that the geneflow of FLMB in the lake was not sufficient to continue with stockings. Those that were stocked may have contributed more now that 6 years have gone by and most of those stocked fish will be reaching the end of life. Catch rates of LMB were in the 66<sup>th</sup> percentile compared to Oklahoma lakes. Largemouth Bass are now reaching preferred size at age 4 compared to age 5 in 2019. This increase in growth brings the LMB in Cleveland to the 47<sup>th</sup> percentile among lakes in the North Central Region and increase from the 38<sup>th</sup> percentile in 2023. As LMB get older in Cleveland their growth increases to the 89<sup>th</sup> percentile in their 7<sup>th</sup> year compared to LMB statewide. Additionally, the DNA sample taken in 2025 from Cleveland Lake will further reveal the amount of geneflow the FLMB contributed to the Lake.

## **RECOMMENDATIONS**

1. Evaluate LMB population in 2028, collect otoliths for age analysis.
2. Potentially collect DNA from LMB population to determine geneflow of FLMB after results from 2025 DNA analysis are completed and returned.

## Figures and Tables

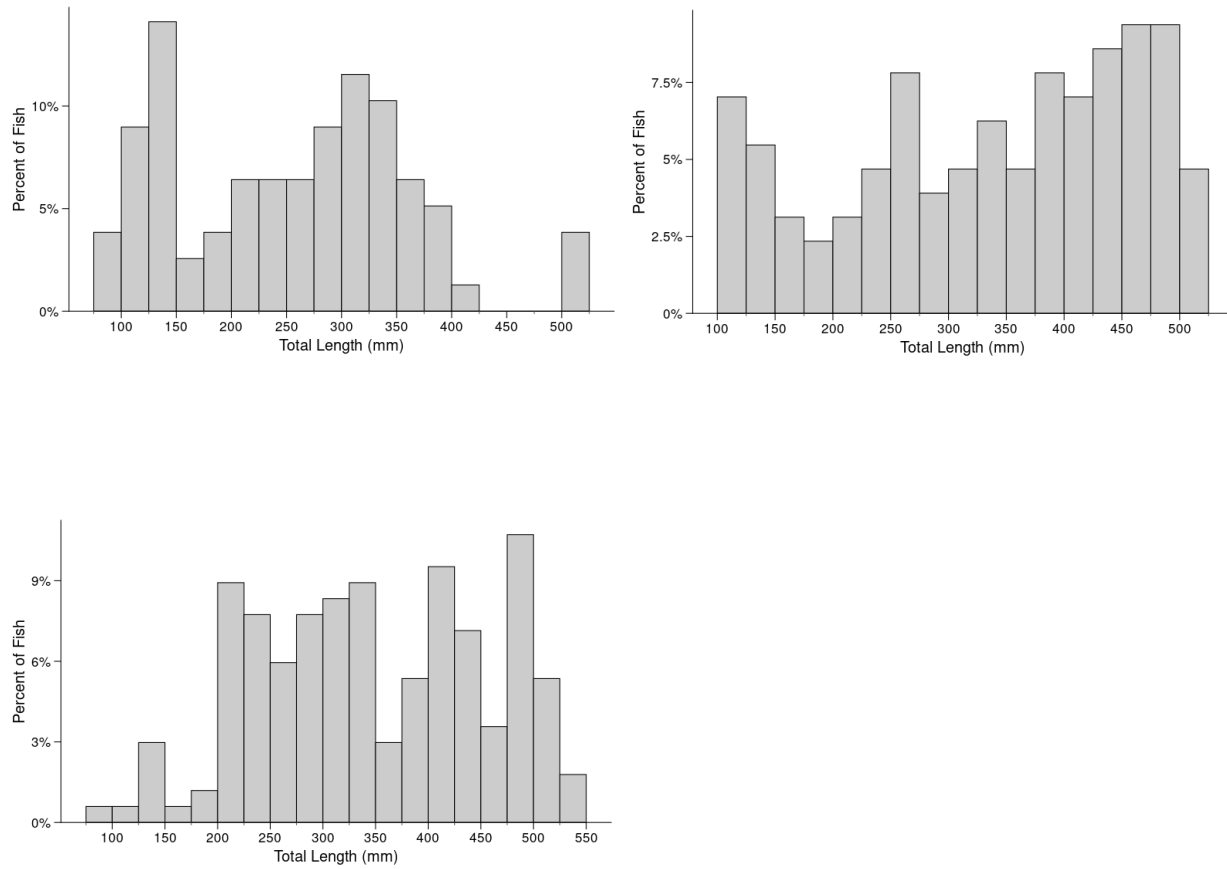


Figure 1. Lengths Frequencies of Largemouth Bass in Cleveland Lake 2019 (top left), 2023 (top right) and 2025 (bottom left).

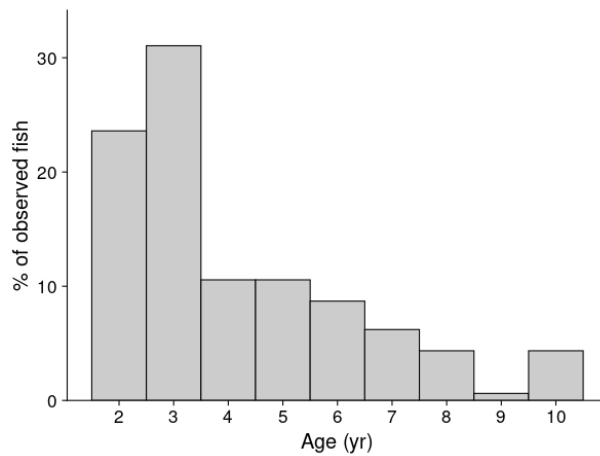
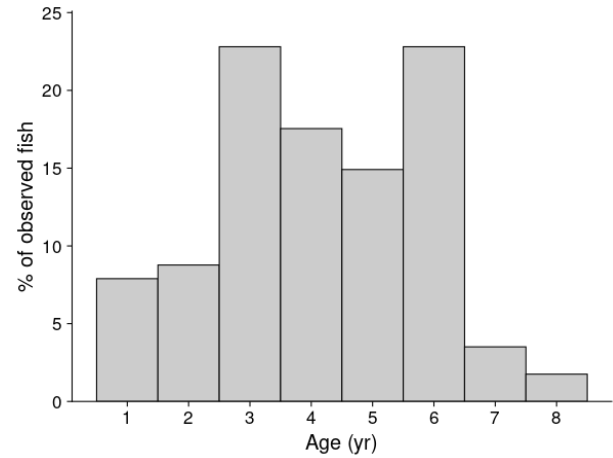
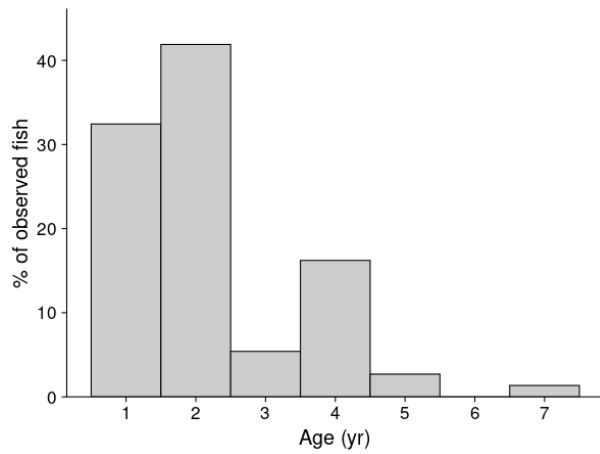


Figure 2. Age Frequencies of Largemouth Bass in Cleveland Lake 2019 (top left), 2023 (top right) and 2025 (bottom left).

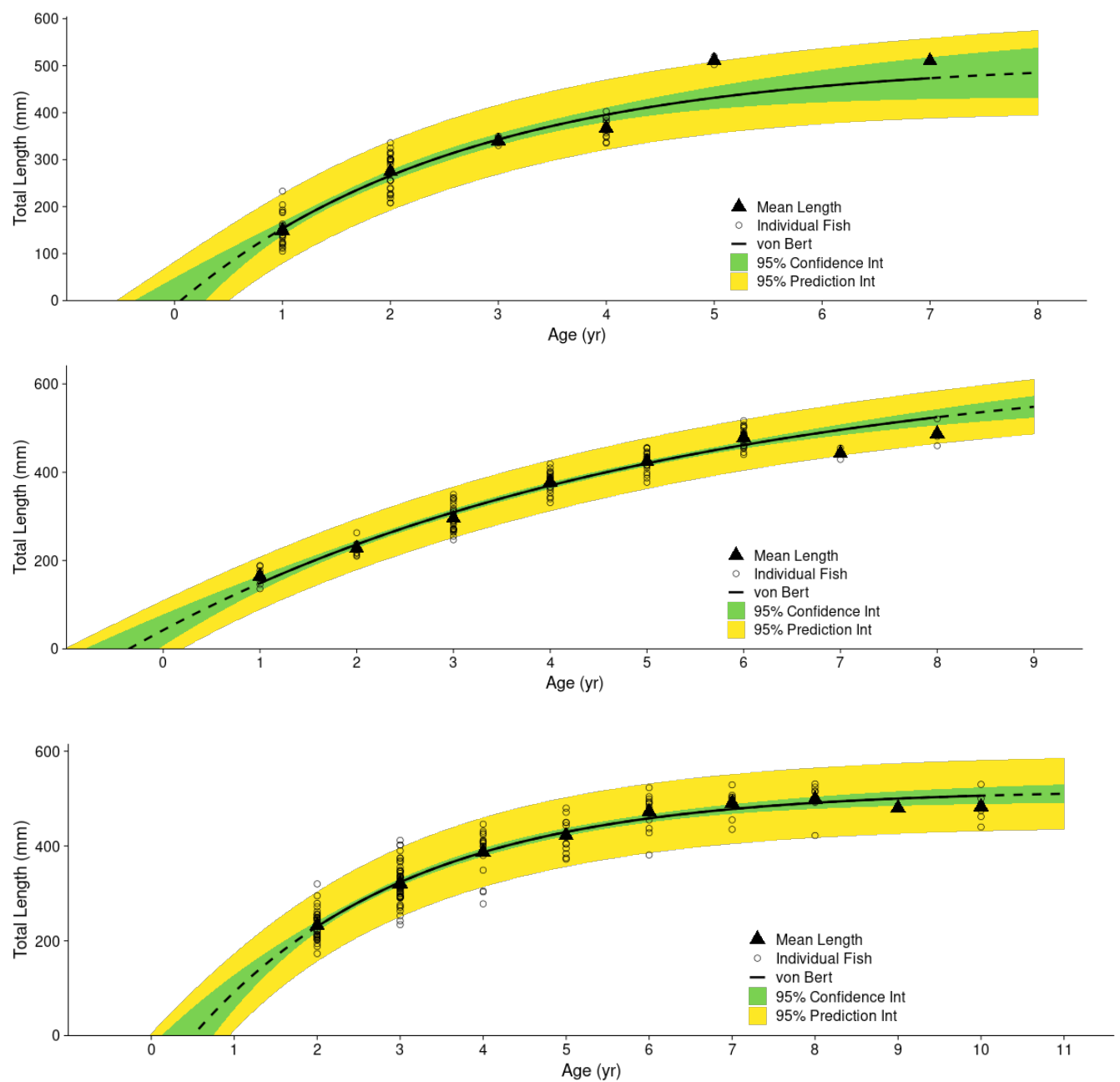


Figure 3. Von Bertalanffy Growth Equation for Largemouth Bass in Cleveland Lake 2019 (top), 2023 (middle) and 2025 (bottom).

Table 1. Proportional Size Distributions of Largemouth Bass in Cleveland Lake.

| Year | PSD    | PSD – P | PSD – M |
|------|--------|---------|---------|
| 2019 | 58± 19 | 15± 14  | 4± 7    |
| 2023 | 76± 11 | 56± 13  | 2± 4    |
| 2025 | 68± 10 | 45± 11  | 4± 5    |

Table 2. Mean Length-at-Age of Largemouth Bass in Cleveland Lake. Results are only from age classes that had at least 5 individuals age classes with fewer individuals were excluded from the table.

|      | Age-1            | Age-2            | Age-3            | Age-4            | Age-5            | Age-6            | Age-7            | Age-8            |
|------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 2019 | 139.11±<br>12.72 | 272.06±<br>13.01 | 348.17±<br>14.59 | 367.60±<br>14.24 |                  |                  |                  |                  |
| 2023 | 137.74±<br>10.45 | 234.46±<br>10.65 | 296.45±<br>10.52 | 377.95±<br>12.22 | 431.47±<br>11.16 | 478.17±<br>9.23  | 443.20±<br>22.66 |                  |
| 2025 | -                | 232.11±<br>9.61  | 320.66±<br>11.14 | 386.76±<br>23.24 | 421.82±<br>14.72 | 472.07±<br>19.16 | 490.30±<br>16.63 | 499.00±<br>27.33 |

Table 3. Theoretical maximum length ( $L_{\infty}$ ) of Largemouth Bass in Cleveland Lake.

|      | $L_{\infty}$ | Lower 95% CI | Upper 95% CI |
|------|--------------|--------------|--------------|
| 2019 | 516.94       | 429.256      | 852.420      |
| 2023 | 674.83       | 597.540      | 815.697      |
| 2025 | 518.70       | 496.436      | 546.444      |