

SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION



FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

ELMORE CITY LAKE

2025

SURVEY REPORT

State: Oklahoma

Project Title: Fish Management Survey Report

Period Covered: 2025

Prepared by: OFRL

Date Prepared: January 2025

ABSTRACT

Elmore City Lake was surveyed by spring electrofishing in 2023 and 2025 to assess the Largemouth Bass population. Hoop netting for Channel Catfish was completed in 2021 and 2025. Additional sampling occurred in 2024 and 2025 as part of ongoing research to estimate the population size. Trap netting for White Crappie occurred in 2024 also. Flathead populations were assessed in 2025 via summer electrofishing. The fishery consists of Largemouth Bass, various sunfish species, White Crappie, Channel and Flathead Catfish. No regulation changes are recommended at this time.

INTRODUCTION

Elmore City Lake is in Garvin County, one mile north of Elmore City on SH 74 and one-half mile east on Kay Buse Parkway. The lake consists of 2.4 miles of shoreline and is 69 acres in size. Impoundment was completed in 1966. Fish habitat consists primarily of flooded timber and some aquatic vegetation. Average secchi depth is 49 centimeters. The lake is classified as eutrophic.

Our primary management goal is to establish relevant baseline data considering the lack of sampling until recently. There are two boat ramps with docks available for loading/unloading purposes, as well as a fishing dock. There are two fish attractor sites that are periodically loaded with brush, typically cedar trees. The fishery consists of Largemouth Bass, various Sunfish species, White Crappie, Channel Catfish and Flathead Catfish. In efforts to enhance fishing, Channel Catfish are periodically stocked (Appendix 1).

Aquatic Nuisance Species

There are no known ANS in Elmore City Lake.

RESULTS

Hoop Net (Gear 33)

The lake was sampled for Channel Catfish using tandem hoop net sets from September 9-11, 2025. Eighteen randomly selected sites were sampled for a total of 1,267 units of effort. Mean water temperature was 25.6 °C and a total of 104 fish were caught.

Channel Catfish had a mean total length (TL) of 351 mm (range 215 – 549 mm TL). The length-frequency distribution is peaks from 320-350 mm TL compared to the 2021 sample which had four distinct size groupings presumed to represent previous stocking events (Figure 1). Channel Catfish had a mean CPUE of 2 and a standard error (SE) of 1, resulting in a 95% confidence interval (CI) from 1 to 3 Channel Catfish per hoop net set (Table 1). This was considerably lower than the 2021 sample's mean CPUE of 10 Channel Catfish per hoop net set. Relative standard error (RSE) for Channel Catfish hoop netting was 35.81, suggesting only large changes in relative abundance would be readily detectable (i.e., ~72%). Similarly, sub stock, stock, and quality size Channel Catfish RSE values suggested the gear would be unlikely to track changes in relative abundance for these size categories (Table 1). No preferred, memorable, or trophy sized fish were caught. The overall relative weight (Wr) was acceptable (93.2) and above the statewide 50th percentile value (88.00). Substock, stock, and quality sized fish Wr ranged 92.04-103.64 and were above the acceptable threshold (i.e., ≥ 90). As part of an ongoing research project related to Channel Catfish, abundance was estimated in Summer 2025. Hoop nets and trap nets were used to capture fish across three distinct sampling events and fish were marked by clipping the fish's left pelvic fin initially followed by the right pelvic fin if necessary (i.e., a second recapture of the same fish). Abundance was estimated using the Schnabel Method. The population was estimated at 1,156 individuals (CI: 927 – 1,459) in 2025 compared to 2,203 individuals (CI: 1,450 – 3,500) in 2024.

Flathead Catfish Electrofishing (Gear 98)

The entirety of the lake was sampled for Flathead Catfish using low-frequency electrofishing on three separate occasions during the Summer of 2025. Forty-three sites were samples for a total of 215 minutes of effort. Mean water temperature was 29.7 °C and a total of 30 fish were caught.

Flathead Catfish had a mean total length (TL) of 717 mm (range 182-1,160). The length-frequency distribution is sparse with slight peaks at approximately 225, 825, and 1,000 mm TL (Figure 2). Flathead Catfish had a mean catch per unit effort (CPUE) of 8 with a standard error (SE) of 2, resulting in a 95% confidence interval (CI) from 5 to 12 (Table 1). Relative standard error (RSE) for Flathead Catfish was 19.4, suggesting low-frequency electrofishing has potential to detect changes in relative abundance. However, RSE for Flathead Catfish from sub stock to trophy individuals suggested relative abundance of size categories was unlikely to be detectable by low-frequency electrofishing (Table 1). The overall relative weight (Wr) was above acceptable (105.86) and above the statewide 50th percentile value (96.00). All size categories Wr ranged from 90.41-114.80 and were above the acceptable threshold (i.e., ≥ 90). Abundance was also estimated. Fish were individually marked with an opercular tag. Abundance was estimated using the Schnabel Method. The population was estimated at 33 individuals (CI: 5 – 40).

Electrofishing- Bass, Random (44.02)

Overview

Elmore City Lake was sampled via boat-mounted electrofishing on May 8, 2025 to assess the Largemouth Bass population. The entirety of the shoreline was sampled for 120 minutes total (12, 10-minute runs). The average water temperature was 20 °C. A total of 50 Largemouth Bass were collected.

Largemouth Bass

The average total length (TL) of Largemouth Bass at Elmore City Lake was 309 mm with a minimum TL of 100 mm and a maximum TL of 521mm (Table 2). Mean catch per unit effort (CPUE) was 25 with a standard error (SE) of 2.54, resulting in a 95% confidence interval (CI) from 20 to 30 (Table 1). Relative standard error (RSE) for Largemouth Bass was 10.16, suggesting the gear could reliably track changes in relative abundance. Out of all size classes of Largemouth Bass sampled, only stock (20.00) and preferred (12.19) size classes of Largemouth Bass exhibited RSE values that were low enough to be likely to reliably track relative abundance. The overall mean relative weight (Wr) was 90.09 which is above the acceptable threshold (i.e., ≥ 90). The applicable size classes were substock, stock, quality, preferred, and memorable; stock and memorable were the only size classes with acceptable Wr values.

RECOMENDATIONS

1. Continue to monitor population dynamics for sportfish species (Largemouth Bass, White Crappie, Sunfish Spp., Catfish Spp.).
2. No regulation changes are recommended at this time.

Table 1. Channel Catfish, Flathead Catfish, and Largemouth Bass catch per unit effort for the total sample (all sizes) and broken down by size category for Elmore City Lake.

	Mean	Count	RSE	SE	L 95% CI	U 95% CI	N RSE = 12.5 (25% range)	N RSE = 20 (40% range)
Channel Catfish								
Total	1.97	10	35.81	0.71	0.59	3.36	148	58
Substock	0.09	-	63.91	0.06	0.00	0.21	471	184
Stock	1.56	-	37.56	0.59	0.41	2.71	163	63
Quality	0.32	-	38.59	0.12	0.08	0.56	172	67
Flathead Catfish								
Total	8.37	43	19.40	1.62	5.19	11.55	104	40
Substock	1.95	-	40.53	0.79	0.40	3.51	452	177
Stock	0.28	-	100.00	0.28	0	0.83	2752	1075
Quality	0.56	-	69.86	0.39	0	1.32	1343	525
Preferred	2.79	-	28.03	0.78	1.26	4.32	216	84
Memorable	1.67	-	38.32	0.64	0.42	2.93	404	158
Trophy	1.12	-	48.18	0.54	0.06	2.17	639	250
Largemouth Bass								
Total	25	12	10.16	2.54	20.02	29.98	8	3
Substock	4.50	-	37.15	1.67	1.22	7.78	106	41
Stock	7.50	-	20.00	1.50	4.56	10.44	31	12
Quality	3.00	-	46.06	1.38	0.29	5.71	163	64
Preferred	9.50	-	12.19	1.16	7.23	11.77	11	4
Memorable	0.50	-	100.00	0.50	-0.48	1.48	768	300
Trophy	0	-						

Table 2. Sample size, mean TL (mm), mean weight (g), and associated ranges for Largemouth Bass.

Species	Number	Mean TL (range)	Mean Weight (range)
Largemouth Bass	50	309 (100-521)	579 (15-2090)

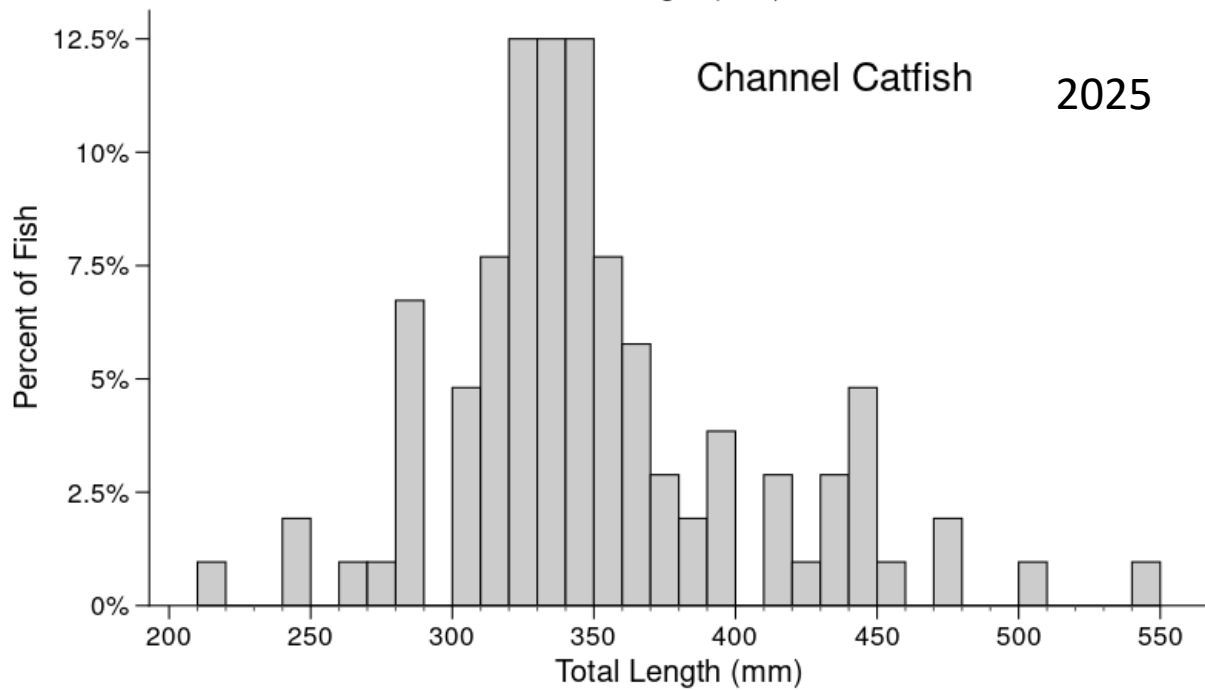
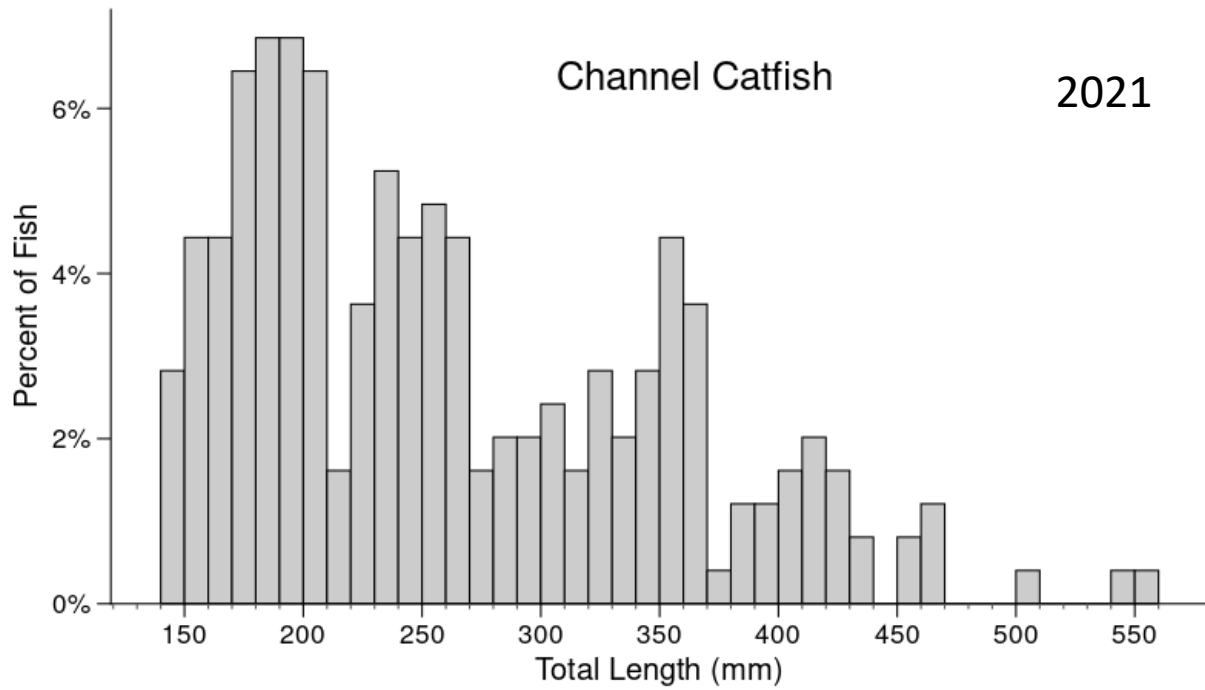


Figure 1. Length-frequency distribution of Elmore City Lake Channel Catfish sampled in 2021 and 2025.

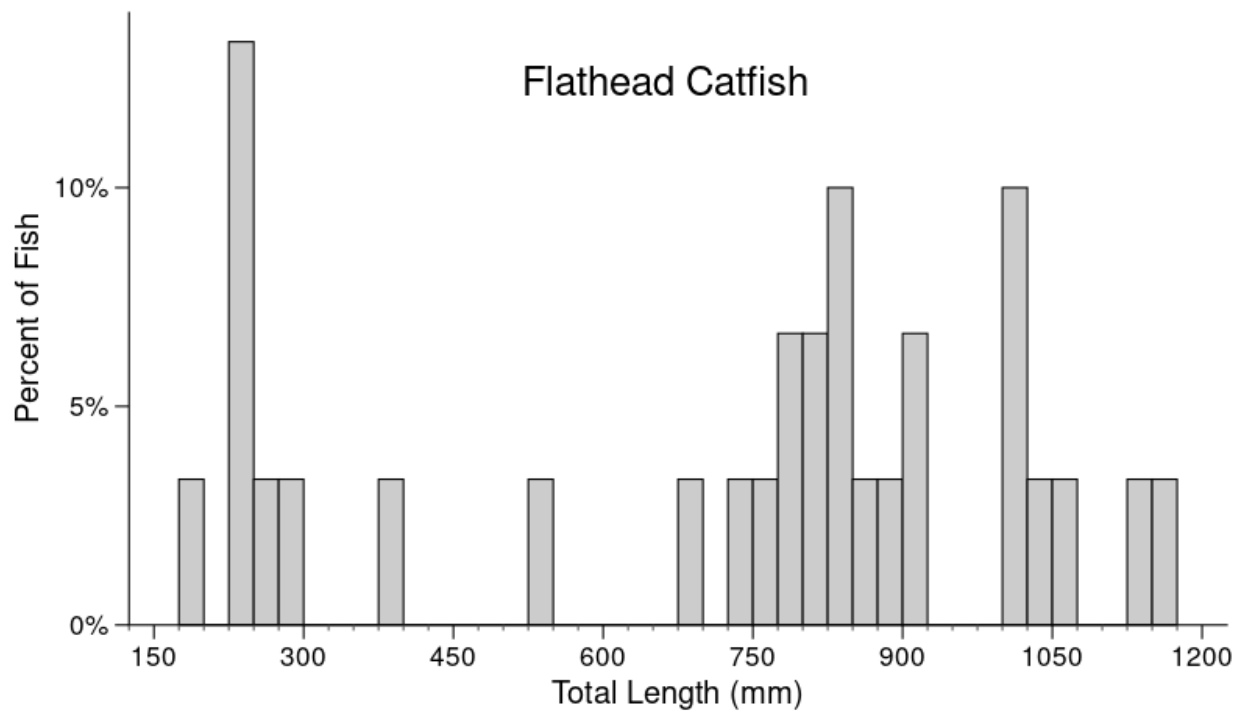


Figure 2. Length-frequency distribution of Elmore City Lake Flathead Catfish sampled in 2025.

Appendix 1. Species, number, and size of fish stocked in Elmore City Lake since 2014.

Date	Species	Number	Size (inches)
2014	Channel Catfish	3,600	7
2014	Channel Catfish	3,602	7
2017	Channel Catfish	2,400	7
2017	Channel Catfish	2,620	6.25
2018	Channel Catfish	2,400	7.2
2020	Channel Catfish	2,492	7
2021	Channel Catfish	2,405	6.46