

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION



FISH MANAGEMENT SURVEY REPORT

LAKE ARBUCKLE

2025

EXECUTIVE SUMMARY

Electrofishing was conducted in spring of 2025 to evaluate the status of the black bass fishery at Lake Arbuckle. Lake Arbuckle contains largemouth, spotted, and smallmouth bass species. Comparisons with historical data are complicated due to a change of sampling protocol (random site selection) in 2014 and faulty wiring on electrofishing equipment in 2020 resulting in reverse polarity and likely reduced sampling efficiency.

Catch rates for largemouth bass were above acceptable levels in 2025 with 77.3 fish/hr (Table 1, Figure 1). Relative weight was 91 and exceeded acceptable levels for overall fish condition. The largest individual collected was 23.5 inches and weighed 11.5 lbs. Like previous years, spotted bass and smallmouth catch rates were relatively low and highly variable. A total of 14 spotted bass and 4 smallmouth were collected in the 2025 survey. Spotted bass trend data is included in Figure 2.

Overall size distribution for largemouth bass is indicative of a balanced quality population (Figure 3) and PSD values exceed acceptable levels (Table 2). Largemouth growth was evaluated in 2009 and 2020 with age-3 fish averaging 14.1 inches both years (Table 3, Figure 4). Annual mortality estimates are variable between samples and have ranged from 26 – 42 (Table 4). Florida bass have been stocked annually since 2010. Historical stocking records are included in Table 5.

Table 1. Effort, overall fish per hour (CPUE), variability, relative weights (Wr), and CPUE by size groups of black bass collected by electrofishing from Lake Arbuckle. 2014 data was collected with random site selection, and 2020 data was collected with faulty wiring on electrofishing unit.

Year	Spp.	# Samples	# Fish	Total CPUE	Range (U/L 95% CI)	RSE	Samples needed RSE = 20	Wr	CPUE < 8 in	CPUE ≥ 8 in	CPUE ≥ 14 in	CPUE ≥ 16 in
2009	Largemouth	18	556	123.6	±18.9	7.8	3	91	10.4	112.9	52.7	24.0
2009	Spotted	18	31	6.9	±4.3	31.8	45	92	0.9	6.0	0.7	-
2009	Smallmouth	18	9	2.0	±1.6	40.4	74	85	0.4	1.6	0.7	0.2
2014	Largemouth	18	143	47.7	±14.9	15.9	11	88	-	47.7	32.3	15.0
2014	Spotted	18	18	6.0	±4.2	33.3	50	94	1.3	4.7	1.0	-
2014	Smallmouth	18	10	3.3	±2.6	39.1	69	87	1.0	2.3	1.3	0.3
2017	Largemouth	18	254	84.7	±10.3	6.2	2	94	14.7	70.0	40.3	34.0
2017	Spotted	18	42	14.0	±7.3	26.6	32	95	3.3	10.7	5.3	0.7
2017	Smallmouth	18	16	5.3	±4.7	45.4	93	83	2.3	3.0	1.3	0.7
2020	Largemouth	18	124	41.3	±11.7	14.5	9	92	1.3	40.0	29.0	18.3
2020	Spotted	18	8	2.7	±2.2	41.6	78	89	-	2.7	0.3	-
2020	Smallmouth	18	1	0.3	±0.7	100.0	450	76	0.3	-	-	-
2025	Largemouth	18	232	77.3	±16.7	11.0	5	91	5.0	72.3	42.3	18.3
2025	Spotted	18	14	4.7	±4.6	50.5	115	90	-	4.7	1.0	0.3
2025	Smallmouth	18	4	1.3	±1.5	58.2	152	84	-	1.3	0.3	-

Figure 1. Fish per hour (CPUE) trend data for largemouth bass and largemouth bass greater than 16 inches collected by electrofishing from Lake Arbuckle. Error bars represent standard error estimates. 2014 data was collected with random site selection, and 2020 data was collected with faulty wiring on electrofishing unit.

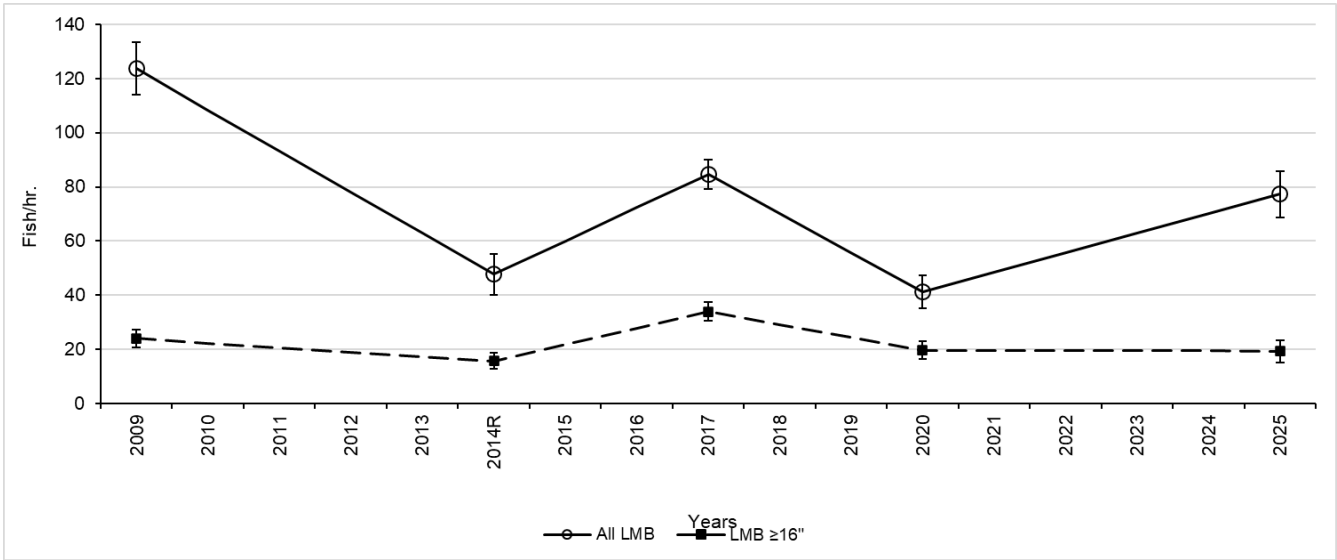


Figure 2. Fish per hour (CPUE) trend data for spotted bass collected by electrofishing from Lake Arbuckle. Error bars represent standard error estimates.

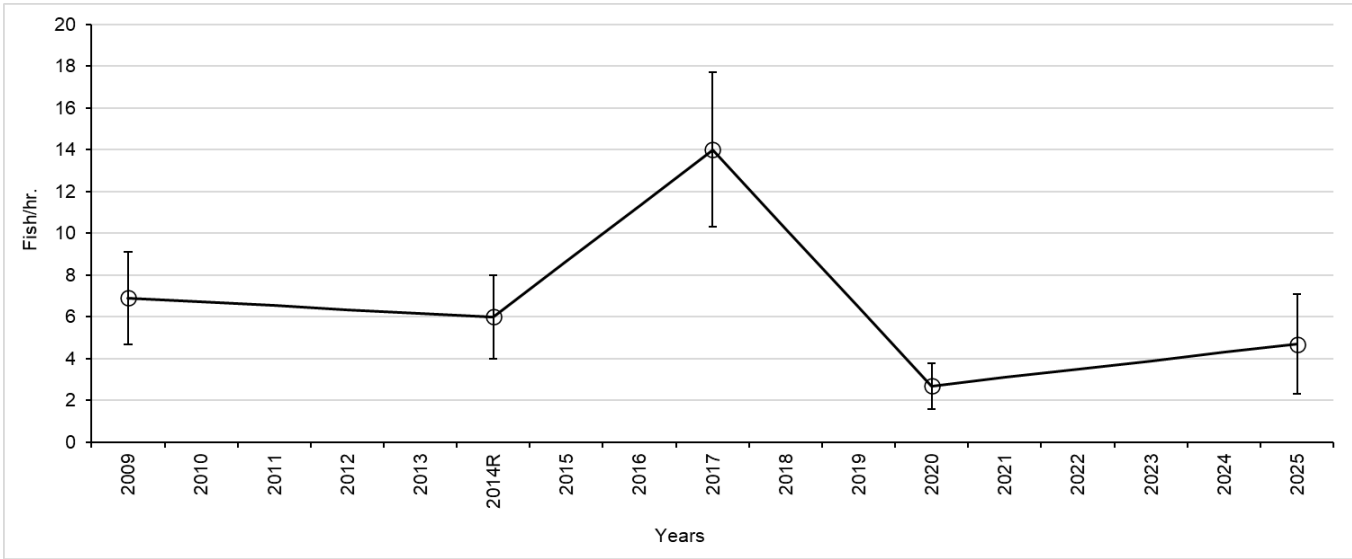


Figure 3. 2025 length frequency distribution for largemouth bass collected by electrofishing at Lake Arbuckle. N = 232.

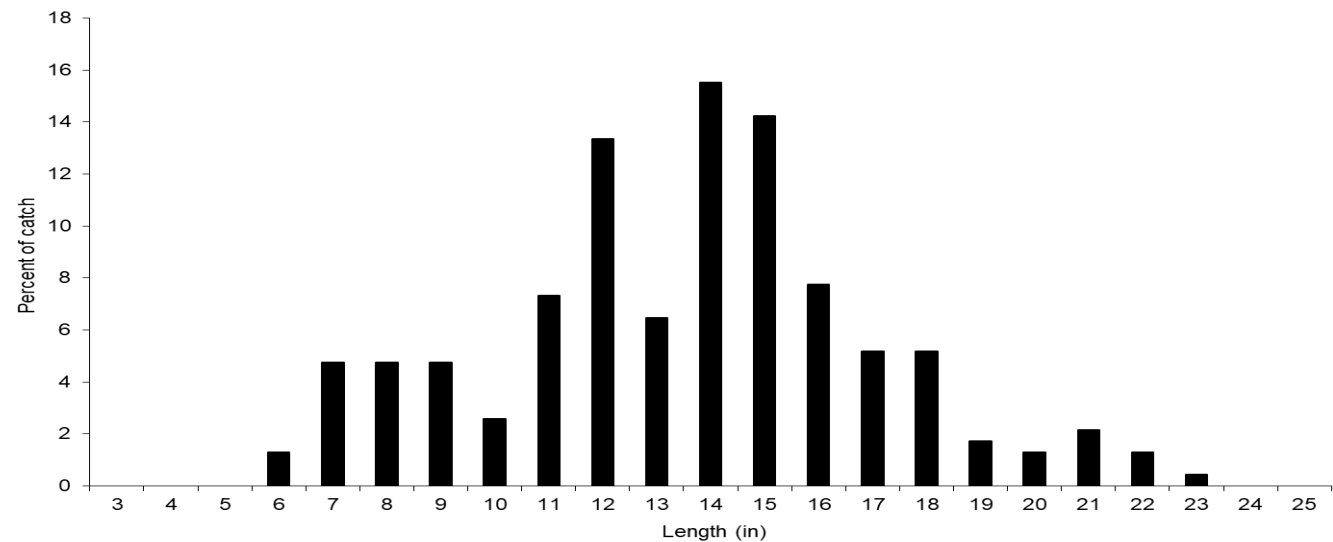


Table 2. Proportional Stock Density (PSD) categories and PSD metrics and variability for largemouth bass collected by electrofishing from Lake Arbuckle.

Category	Stock	Quality	Preferred	Memorable	Trophy
Size (in)	7.9	11.8	15.0	20.1	24.8

Year	PSD	Range (U/L 95% CI)	PSD-P	Range (U/L 95% CI)	PSD-M	Range (U/L 95% CI)	PSD-T	Range (U/L 95% CI)
2009	73	±6	34	±7	3	±3	-	-
2014	97	±5	50	±12	9	±7	-	-
2017	66	±10	52	±10	8	±6	-	-
2020	93	±6	61	±12	15	±9	-	-
2025	80	±7	41	±10	5	±5	-	-

Table 3. Number of largemouth bass, mean length at age, and variability of largemouth bass collected by electrofishing from Lake Arbuckle.

Year	# Aged	# Fish with Length-Age Key	Age-1 (N)	Range (U/L 95% CI)	Age-2 (N)	Range (U/L 95% CI)	Age-3 (N)	Range (U/L 95% CI)	Age-4 (N)	Range (U/L 95% CI)	Age-5 (N)	Range (U/L 95% CI)	Age-6 (N)	Range (U/L 95% CI)	Age-7 (N)	Range (U/L 95% CI)
2009	263	551	7.2 (48)	±0.3	11.4 (219)	±0.2	14.1 (94)	±0.2	15.7 (77)	±0.3	16.4 (72)	±0.3	18.3 (15)	±1.1	18.9 (12)	±0.8
2020	171	173	8.3 (9)	±0.8	12.5 (17)	±0.5	14.1 (38)	±0.3	16.0 (27)	±0.6	17.0 (41)	±0.5	20.5 (9)	±0.7	22.0 (5)	±0.4

Figure 4. 2020 Length at age data for largemouth bass collected from Lake Arbuckle by electrofishing.

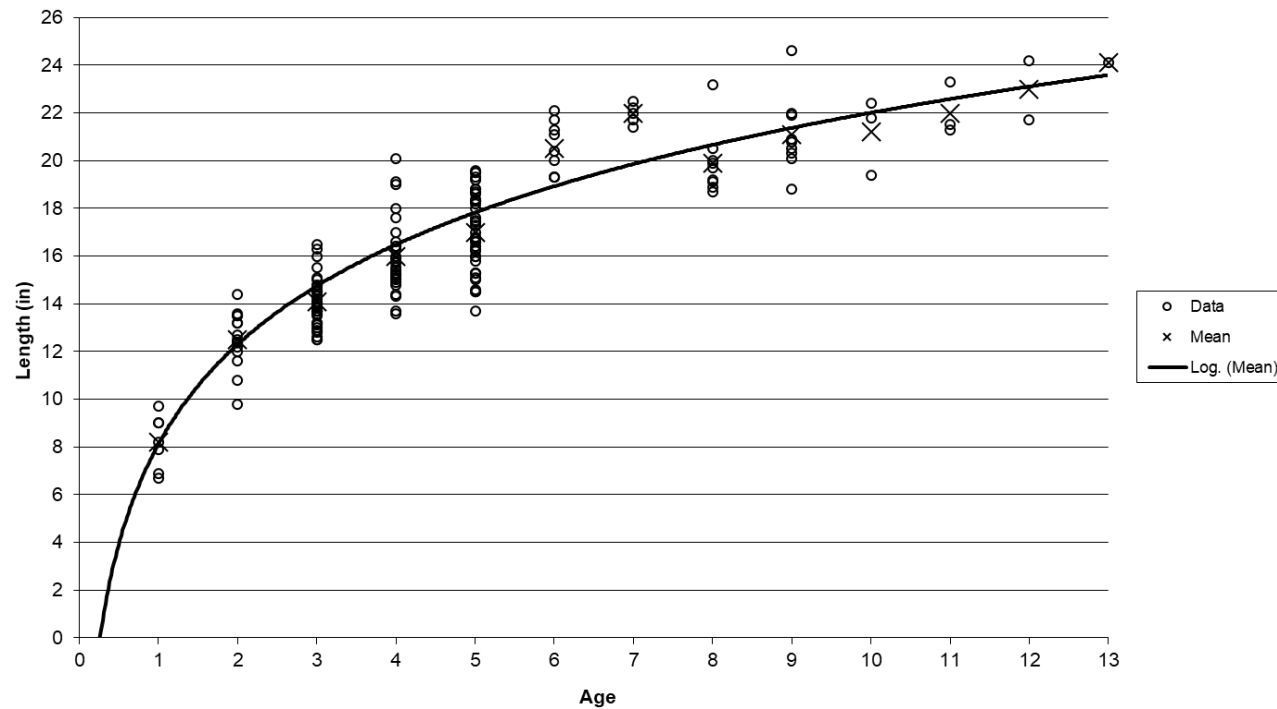


Table 4. Mortality estimates, variability, and maximum observed age of largemouth bass collected by electrofishing from Lake Arbuckle.

Year	Annual Mortality	Lower 95% CI	Upper 95% CI	Observed Max Age
2009	42	34	49	11
2020	26	12	38	13

Table 5. Species, number and size of fish stocked in Lake Arbuckle from 1967 to 2025.

DATE	SPECIES	NUMBER	SIZE
1967	Northern pike	300,000	Fry
1967	Readeare sunfish	6,800	Fingerlings
1967	Largemouth bass	184,000	Fingerlings
1967	Channel catfish	340,525	Fingerlings
1968	Northern pike	1,000,000	Fry
1968	Blue catfish	100	Adults
1968	Flathead catfish	13,000	Fingerlings
1969	Blue catfish	50	Adults
1970	Northern pike	448,000	Fry
1970	Blue catfish	50	Adults
1971	Walleye	876,469	Fry
1972	Walleye	1,028,557	Fry
1972	Northern pike	63,851	Fry
1973	Walleye	553,253	Fry
1974	Florida bass	4,000	Fry
1975	Channel catfish	30,000	Fingerlings
1975	Threadfin shad	12,000	Adults
1975	Hybrid bass	15,000	Fry
1976	Threadfin shad	21,200	Adults
1976	Mississippi Silverside	7,000	Adults
1976	Florida bass	6,000	Fingerlings
1979	Channel catfish	23,500	Fingerlings
1980	Threadfin shad	9,500	Adults
1981	Channel catfish	58,900	Adults
1984	Walleye	235,000	Fry
1984	Threadfin shad	6,000	Adults
1985	Threadfin shad	4,750	Adults
1985	Walleye	245,000	Fry
1985	Blue catfish	24,150	Fingerlings
1986	Smallmouth bass	41,500	Fingerlings
1987	Smallmouth bass	30,080	Fingerlings
1987	Channel catfish	20,320	Fingerlings
1991	Smallmouth bass	13,200	Fingerlings
1991	Blue catfish	25,302	Fingerlings
1992	Channel catfish	44,625	Fingerlings
1996	Florida bass	50,098	Fingerlings
1997	Florida bass	47,028	Fingerlings
1998	Florida bass	47,096	Fingerlings
1999	Florida bass	48,125	Fingerlings
1999	Smallmouth bass	23,931	Fingerlings
2000	Florida bass	47,607	Fingerlings
2000	Smallmouth bass	47,420	Fingerlings
2001	Smallmouth bass	23,500	Fingerlings

Table 5. Continued.

DATE	SPECIES	NUMBER	SIZE
2003	Cert. Florida bass	47,290	Fingerlings
2005	Cert. Florida bass	47,110	Fingerlings
2010	Threadfin shad	4,890	Adults
2010	Cert. Florida bass	155,027	Fingerlings
2011	Cert. Florida bass	180,092	Fingerlings
2012	Cert. Florida bass	79,332	Fingerlings
2013	Cert. Florida bass	75,043	Fingerlings
2014	Cert. Florida bass	90,035	Fingerlings
2015	Cert. Florida bass	101,065	Fingerlings
2016	Cert. Florida bass	100,100	Fingerlings
2017	Cert. Florida bass	120,520	Fingerlings
2018	Cert. Florida bass	101,365	Fingerlings
2019	Cert. Florida bass	100,026	Fingerlings
2020	Cert. Florida bass	100,140	Fingerlings
2021	Cert. Florida bass	90,108	Fingerlings
2022	Cert. Florida bass	101,665	Fingerlings
2023	Cert. Florida bass	101,527	Fingerlings
2024	Cert. Florida bass	100,138	Fingerlings
2025	Cert. Florida bass	85,504	Fingerlings