SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

Claremore City Lake

2024-2025

SURVEY REPORT

State: Oklahoma

Project Title: Oklahoma Fisheries Management Program

Study Title: Surveys and Recommendations – Claremore City Lake

Period Covered: 1 January 2024 – 31 December 2025

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Date Prepared:

Claremore City Lake

ABSTRACT

Claremore Lake was sampled in 2024 by spring electrofishing to assess black bass populations and conditions. Overall Largemouth Bass catch rate was C/f = 90, and overall relative rate (W_r) was 102, showing a healthy population of fish in 2024 and consistent with previous samples. It is recommended that the City of Claremore adopt the current statewide regulation for Largemouth Bass to help keep the population balanced by encouraging the harvest of smaller fish and protect the larger fish from overharvest.

Claremore Lake was sampled in 2023 by fall experimental gill netting to assess sportfish populations and conditions and by fall trap netting to continue monitoring crappie populations growth rates and conditions. Crappie catch rates are slightly down from previous samples (C/f = 7.53) but relative weights (W_r) are excellent for fish greater than 8 inches. Also, catch rates for crappie greater than 10 inches has increased from previous samples (C/f = 2.93) providing anglers with larger, more desirable fish to catch. Channel catfish catch rates (C/f = 11.58) were less than previous samples but still above the threshold for a quality fishery, but relative weights for all sizes were poor.

INTRODUCTION

Claremore City Lake impounds the Dog Creek, in Claremore City Park in Rogers County, Oklahoma. Claremore City Lake was constructed in 1930 by the city of Claremore with a surface area of 174 hectares (429 acres). In 1970, the spillway was raised 1.52 meters, increasing surface areas to 251 hectares (621 acres). Claremore Lake has a mean depth of 1.5 meters, a maximum depth of 7.4 meters, a shoreline length of 17.8 miles, and capacity of 5,188 acre-feet. Secchi disk depth is approximately 16 inches. The primary purposes of Claremore Lake are as a municipal water supply lake and for recreation including fishing, boating, and waterfowl hunting. Primary fish species sought after by anglers include White Crappie, Largemouth Bass, Channel Catfish, and various sunfish species.

In 2015, the City of Claremore changed the crappie regulations from a 10-inch minimum length with a bag limit of 15, to removing the minimum length, allowing angler to keep smaller fish. This change was made due to the anglers not being able to catch very many larger, keeper size crappie as there seemed to be a stunted population. By allowing anglers to keep smaller fish, the angling pressure will hopefully reduce the numbers of small, stunted fish, and help improve growth rates. Claremore Lake has been sampled every other year since 2013 by experimental gill netting to monitor population trends and trap netted yearly between 2014 through 2017, and every three years until 2023 to monitor age and growth.

In 2024, Claremore Lake was sampled by spring electrofishing to monitor black bass populations. In 2023, Claremore Lake was sampled by fall experimental gill nets to monitor sportfish populations and gizzard shad populations as a forage base for sportfish. Also in 2023, Claremore Lake was sampled by fall trap netting to monitor crappie age and growth.

RESULTS

Largemouth Bass

1. Largemouth Bass were last sampled in spring of 2024 where catch rates (C/f) were well above the threshold for a quality fishery (C/f = 90.0) and consistent with recent samples (Table 1, Figure 1).
2. Relative weights (W_r) were poor for fish less than eight inches (W_r = 86). Relative weights for fish between 8 and 13 inches were good (W_r = 96) and relative weights for fish ≥14 inches were excellent (W_r =108) as well as for fish ≥16 inches (W_r = 111).
3. Claremore Lake is scheduled to be sampled again by spring electrofishing in 2026 to continue monitoring largemouth bass population trends.

Crappie

1. Crappie were sampled in 2023 by fall experimental gill netting to determine population trends and condition. Catch rates for crappie in 2023 were slightly lower than previous samples (C/f = 7.53) but still above that of a quality fishery. Catch rates for smaller fish less than eight inches was lower than previous samples (C/f = 2.63) and fish greater than 10 inches was higher than previous samples (C/f = 2.93) showing an increase in larger, more desirable fish for anglers to catch, showing that the rule change of 2015 may be having the desired effect.
2. Relative weights for fish less than eight inches were good (W_r = 90) and were excellent for fish greater than eight inches (W_r = 100) and fish greater than 10 inches (W_r = 103) showing that the fish are overall healthy for their size.
3. Crappie were sampled in 2023 by fall trap netting to determine age and growth rates for the population as well as estimated mortality rates. Growth data for crappie show that the fish are growing at a satisfactory rate (Figure 6) with fish at two years of age reaching a mean length of 209 mm (8.2 inches) and three-year-old fish having a mean length of 253 mm (10 inches; Table 4).
4. Three, four, and five-year-old fish all made up a small portion of the trap net sample which was dominated by zero to two-year-old fish (Figure 6), possibly due to higher harvest of the larger, older fish.
5. White Crappie mortality rates (Figure 6, Table 5) show that natural mortality may be the dominant factor affecting the overall population. Even though there is a large amount of angling pressure and harvest of White Crappie, sample numbers, growth rates, and mortality calculations suggest that current fishing pressure may not be the dominant factor affecting the overall population.
6. As crappie are the most sought-after fish in Claremore Lake, sampling by experimental gill netting will continue every other year beginning again in 2025 and trap netting will be conducted again within the next five years to continue monitoring age and growth and mortality.

Channel Catfish

1. Channel Catfish were sampled in 2023 by fall experimental gill netting to determine population trends and condition. Catch rates (C/f = 11.28) are slightly lower than previous samples but still well above the threshold for a quality fishery (Table 5). Most catfish caught were greater than or equal to 12 inches (C/f = 10.47) with most of those being greater than or equal to 16 inches (C/f = 1.86).
2. Relative weights for all size groups were just below the threshold for acceptable values but consistent with previous samples.
3. Channel catfish are one of the most sought-after fish in Claremore Lake and sampling should continue every other year beginning in 2025 to continue monitoring population trends and health.

Shad

1. Gizzard Shad were last sampled by experimental gill netting in 2023 to determine population trends. Catch rates for Gizzard Shad (C/f = 15.8) were down from the previous sample, but still well above the threshold for a quality fishery (Table 7).
2. Gizzard Shad populations are known to fluctuate dramatically within reservoirs and usually not a concern unless there are multiple consecutive samples with below acceptable catch rates.
3. Since Gizzard Shad is the dominant forage for most sportfish in Claremore Lake, sampling will continue every other year starting in 2025 to continue monitoring population trends.

Non-game Fish

Non-game fish species represented in the 2022 fall experimental gill net sample include Bluegill Sunfish, Green Sunfish, Warmouth Sunfish, Common Carp, Freshwater Drum, and goldfish.

RECOMMENDATIONS

Fish Attractor Structures

1. If enough Shelbyville Cube structures are available, Claremore Lake may receive a few to enhance fishing near popular fishing areas.

Fish Stockings

1. No new fish stockings are currently recommended.

Fish Surveys

1. With the statewide regulation changes for Largemouth Bass, additional electrofishing surveys should be conducted in 2024 and again within five years after that to monitor potential changes in the population.
2. Continue with fall experimental gill net surveys twice within the next five years to continue monitoring crappie and Channel Catfish populations.
3. Continue with fall trap net surveys again within the next five years to continue monitoring crappie growth rates and mortality rates because of the regulation changes made in 2015.

Fishing Regulations

1. Current regulations for Claremore Lake are set by the City of Claremore. Fishing regulations from the City of Claremore website are:
    - The minimum size and the number of game fish that may be taken are governed by the Oklahoma Department of Wildlife Conservation (ODWC) Regulations.
    - All Black, Kentucky and Spotted Bass between 12 inches and 15 inches must immediately be returned unharmed to the water.
    - There is a 6 per person per day limit on all other bass. There is a 15 per person/per day limit on crappie (Black & White) with no length restrictions.
2. We will work with the City of Claremore to update the black bass regulations to the new statewide regulation of six fish limit, only one over 16 inches and no limit on spotted bass. This will help with keeping the bass population in good condition by protecting the larger fish from overharvest and keeping the smaller fish from becoming overpopulated.
3. We will maintain the current crappie regulation to continue protecting the overharvest of larger fish (greater than 10 inches) while allowing people to continue harvesting smaller fish (less than 10 inches).

Table 1. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **Largemouth Bass** collected by spring electrofishing from Claremore Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥40)		<8 inches (15-45)		8-13-inches (15-30)		≥14 inches (≥10)		≥16 inches (≥8)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r	C/f	W_r
1981	83	55.32	44.68		27.32		3.32			
1983	92	13.64	6.24		4.28		1.04			
1984	67	19.16	6.56		10.84		0.84			
1986	99	39.60	6.89	102	10.67	92	4.44	97	2.22	103
1990	137	60.89	28.0	85	16.89	91	16.00	92	11.56	93
1997	124	70.86	14.29	116	20.57	98	36.0	94	24.0	95
1998	98	56.00	16.00	88	16.0	92	24.0	92	14.86	98
2007	71	47.33	22.0	80	12.67	91	11.33	103	7.33	102
2015	200	100	34	86	45	90	21	100	11	102
2019	156	72.0	18.0	83	19.85	97	30.0	105	18.92	107
2021	156	78.0	32.0	93	20.0	98	23.0	109	17.0	110
2024	180	90.0	18.5	86	27.5	96	36.0	108	21.0	111

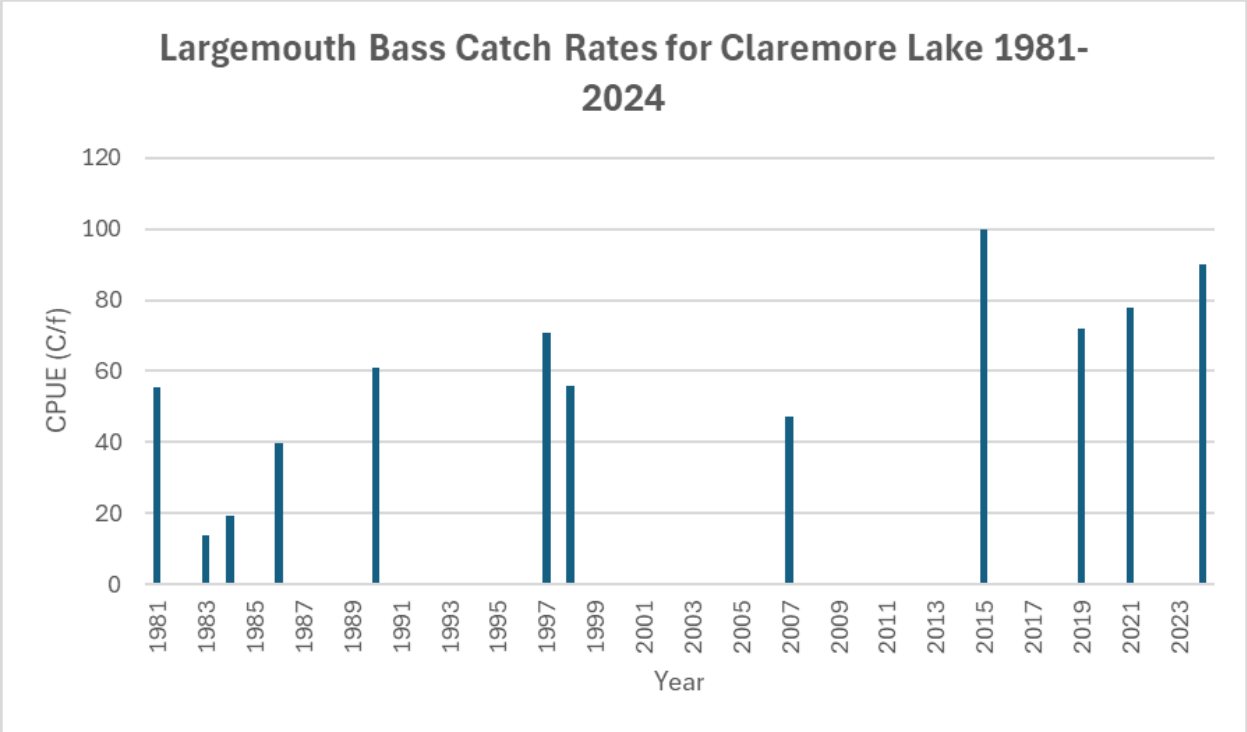

Figure 1. Total catch per unit effort (CPUE; C/f) for **Largemouth Bass** in Claremore Lake from spring electrofishing surveys from 1981 - 2024.

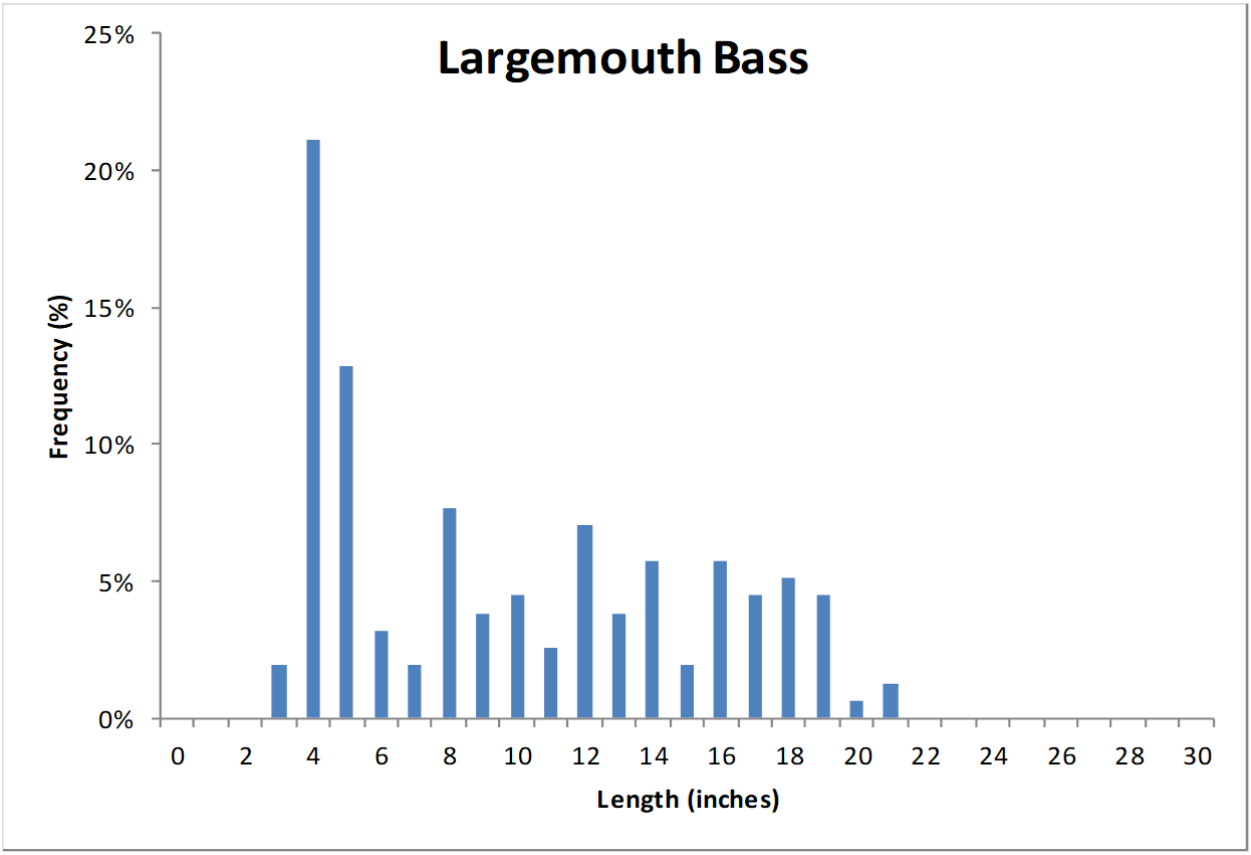

Figure 2. Length frequency plot of largemouth bass from Claremore Lake sampled by spring electrofishing in 2021.

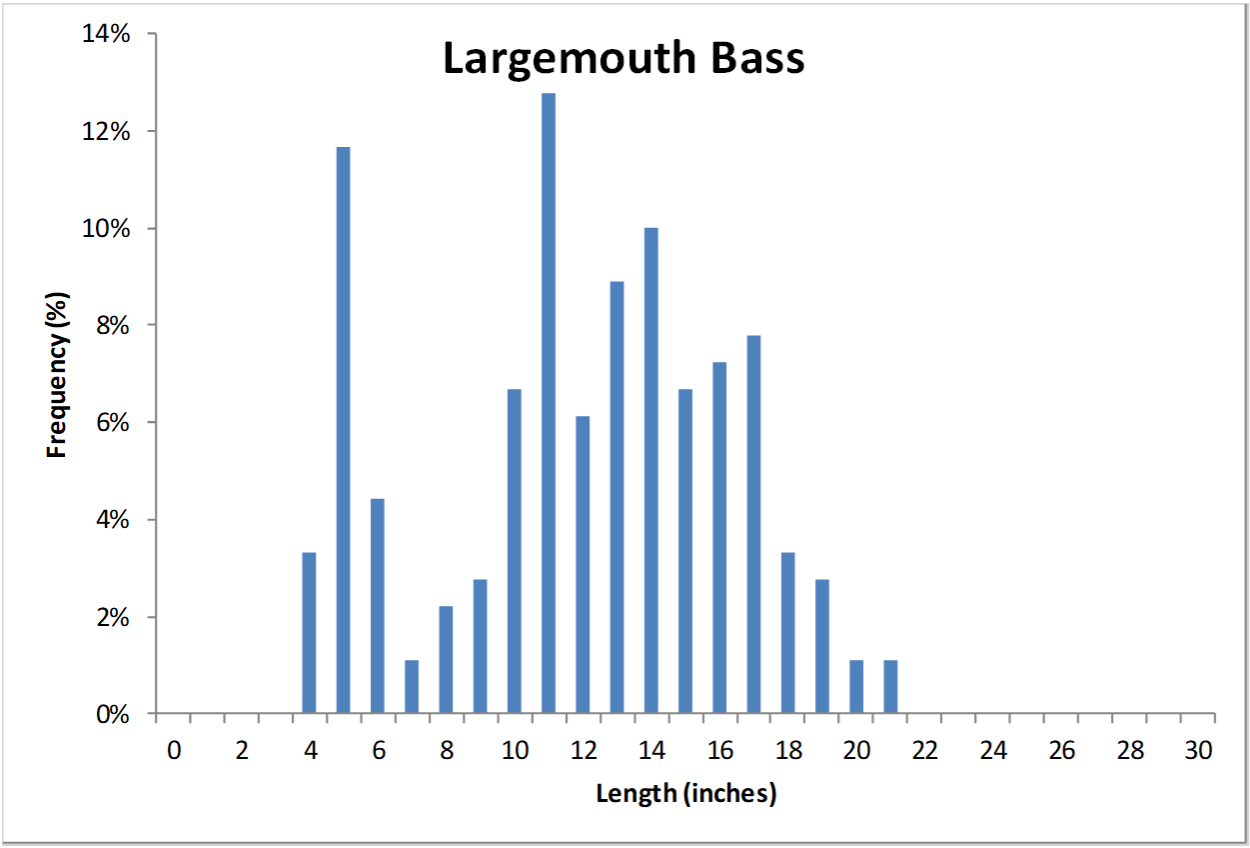

Figure 3. Length frequency plot of largemouth bass from Claremore Lake sampled by spring electrofishing in 2024.

Table 2. Total number (No.), catch rates (C/f), and relative weights (Wr) by size groups of **Crappie** collected by fall gill netting from Claremore Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable Wr values are ≥90.

	Total (≥4.8)		<8 inches (1.2-7.2)		≥8 inches (1.9)		≥ 10 inches (>0.96)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1990	93	23.52	19.92	103	3.6	91	2.64	91
1997	74	19.92	11.52	101	8.4	105	4.8	105
1998	74	19.2	11.28	103	7.68	111	4.32	108
2008	82	20.64	18.48	93	2.64	105	0.72	103
2013	55	11.9	7.93	93	3.55	94	0.83	94
2015	34	7.1	3.97	87	3.13	87	0.83	93
2017	38	7.99	4.47	140	2.9	96	1.37	101
2019	58	11.52	6.91	101	4.22	104	1.73	106
2021	48	9.44	5.71	94	3.74	107	0.81	104
2023	37	7.53	2.63	90	4.7	100	2.93	103

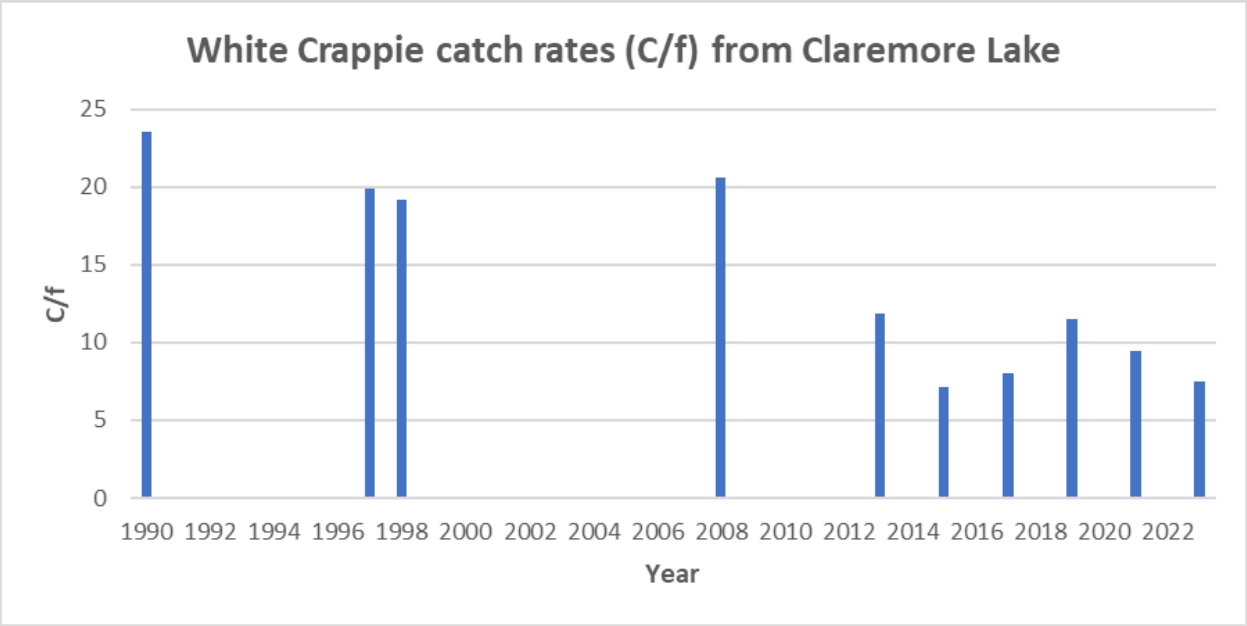

Figure 4. Total catch per unit effort (CPUE; C/f) for **White Crappie** in Claremore Lake from fall experimental gill net surveys from 1990 - 2023.

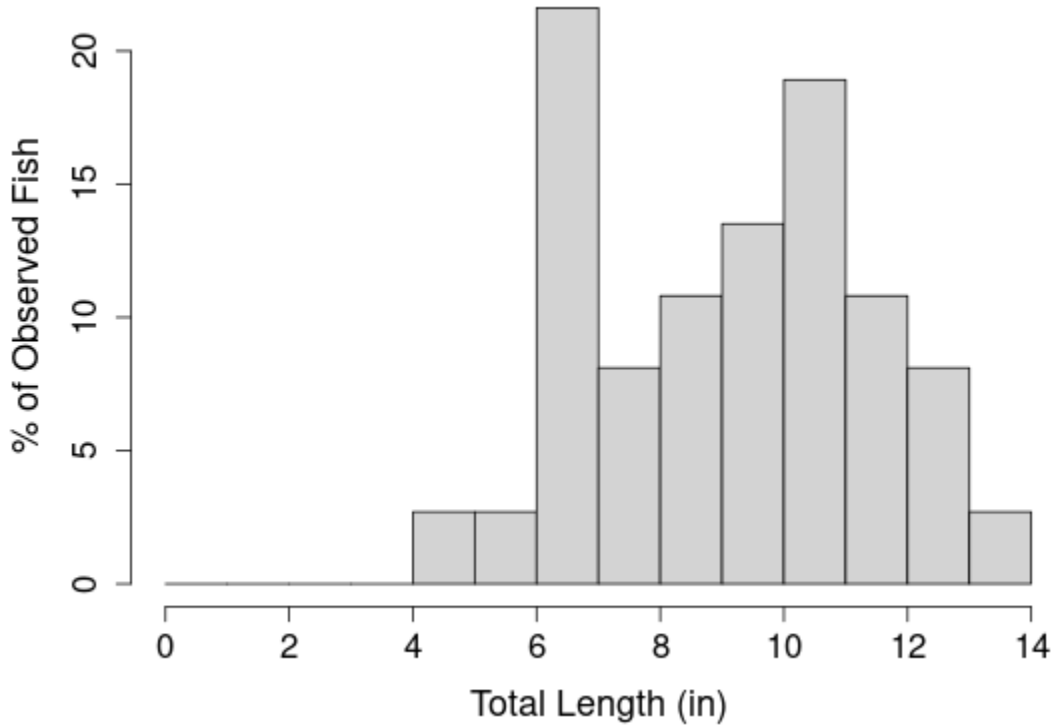

Figure 5. Length frequencies for **White Crappie** collected by fall experimental gill net survey from Claremore Lake in 2023.

Table 3. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **Crappie** collected by fall trap netting from Claremore City Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥4.8)		<8 inches (1.2-7.2)		≥8 inches (1.9)		≥ 10 inches (>0.96)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
2014	408	42.35	31.57	80	10.78	84	1.91	93
2015	459	45.14	31.71	84	13.42	89	3.73	98
2016	105	21.91	6.68	85	15.23	88	6.26	93
2017	322	22.21	12.65	95	9.57	93	2.0	101
2020	548	45.99	30.79	99	15.2	95	6.1	101
2023	623	63.61	48.49	92	15.11	93	5.26	99

Table 4. Mean length at age of **Crappie** collected from Claremore Lake. Numbers in parentheses represent values for acceptable growth rates.

Year	Age 1 (≥160mm) (6.3 inches)	Age 2 (≥200 mm) (8 inches)	Age 3 (≥225 mm) (9 inches)	Age 4 (≥250 mm) (10 inches)
2014	181	239	266	231
2015	173	226	259	243
2016	193	244	253	323
2017	203	242	238	269
2020	179	248	289	275
2023	174	209	249	296

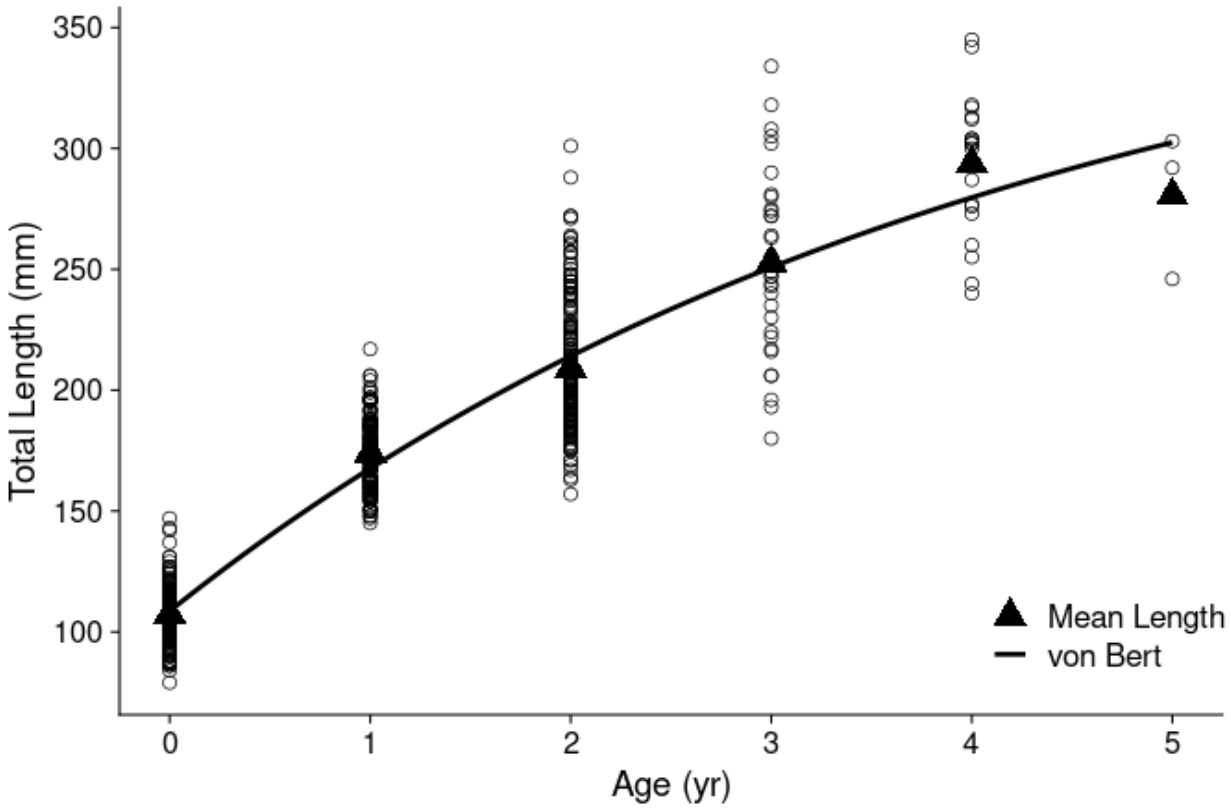

Figure 6. Von Bertalanffy growth plot for White Crappie collected and aged by fall trap net sampling on Claremore Lake, 2023.

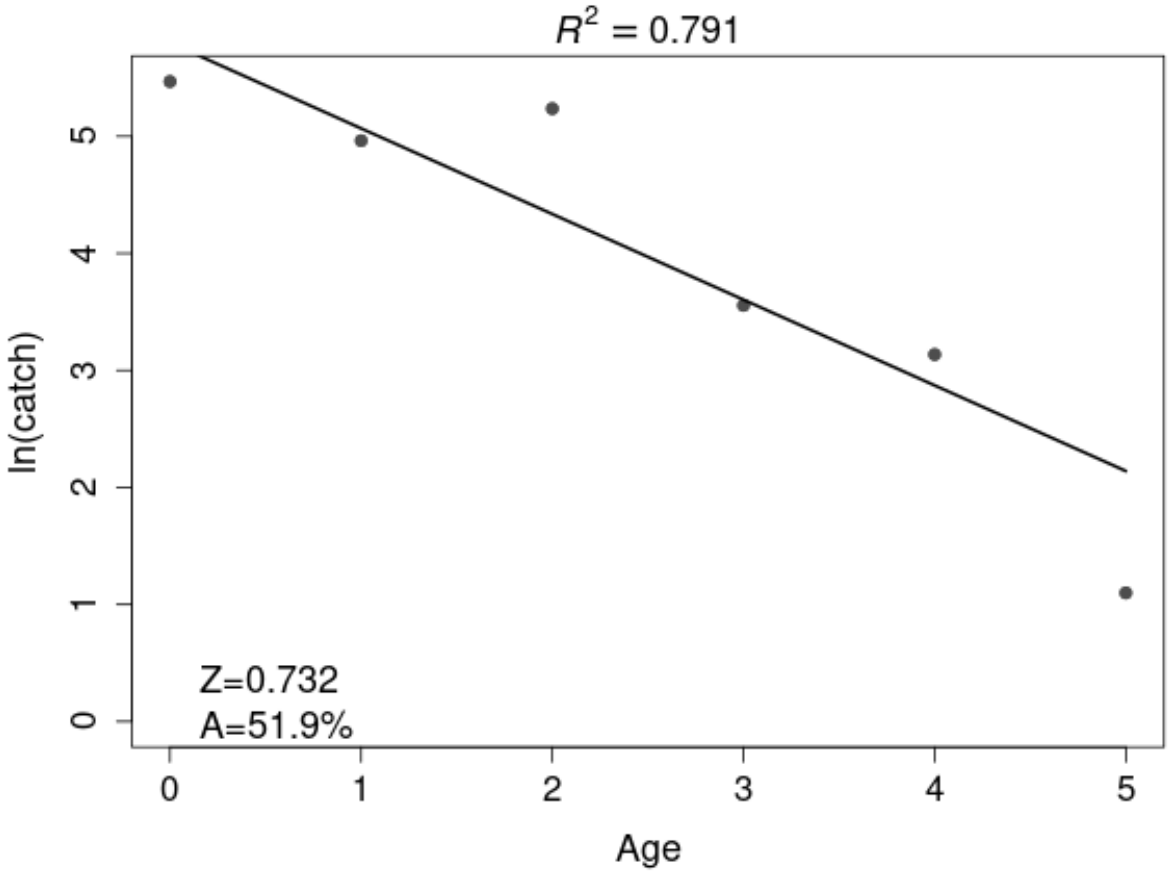

Figure 7. Catch curve plot (mortality) for White Crappie collected by fall trap netting on Claremore Lake, 2023.

Table 5. Estimated natural and fishing mortality rates for White Crappie collected by fall trap netting on Claremore Lake, 2023.

Method	Est. Inst. Nat. Mort (M)	Est. Inst. Fishing Mort. (F)	Instantaneous Total Mort. (Z)	Annualized total Mort. (A)	Est. Annual. Nat. Mort. (v)	Est. Exploitation / Annual. Fish. Mort. (u)
Hoenig NLS (Then et al. 2015)	0.738	-0.006	0.732	51.90%	52.30%	-0.40%
Pauly NLS-T (Then et al. 2015)	0.375	0.357	0.732	51.90%	26.60%	25.30%

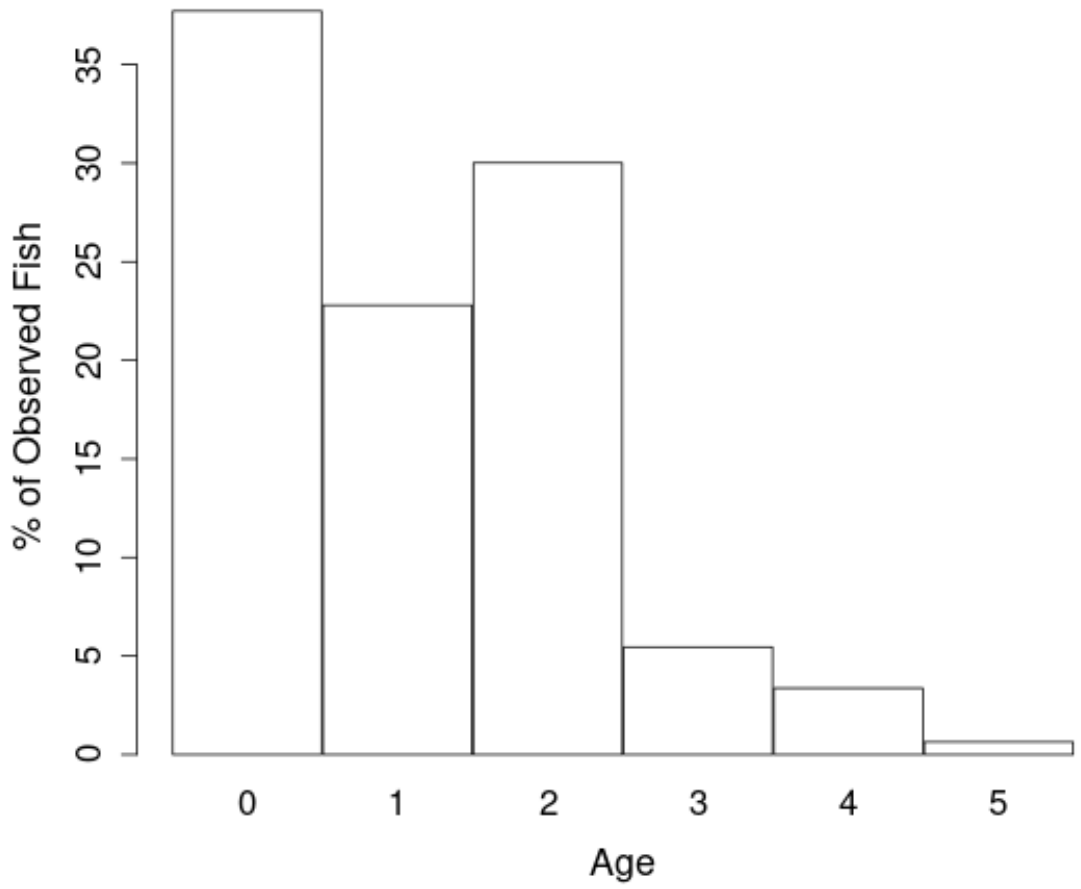

Figure 8. Age frequency histogram for White Crappie collected from fall trap net sampling on Claremore Lake, 2023.

Table 6. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **Channel Catfish** collected by fall experimental gill netting from Claremore Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥4.8)		<12 inches (≥2.4)		≥12 inches (≥2.4)		≥ 16 inches (≥1.2)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1990	56	14.16	0.3	134	7.2	95	2.64	100
1997	49	13.44			13.2	107	10.32	111
1998	120	30.96	0.71	103	13.92	105	10.56	109
2008	51	12.96	0.34	81	4.8	79	1.44	84
2013	85	17.74	9.81	97	7.93	82	4.59	83
2015	49	10.23	3.13	86	7.10	81	3.97	81
2017	92	18.33	5.52	88	12.81	86	9.43	87
2019	79	15.17	2.3	100	12.86	89	3.21	90

2021	71	14.27	2.03	82	12.24	88	9.84	90
2023	57	11.28	0.81	88	10.47	88	7.86	89

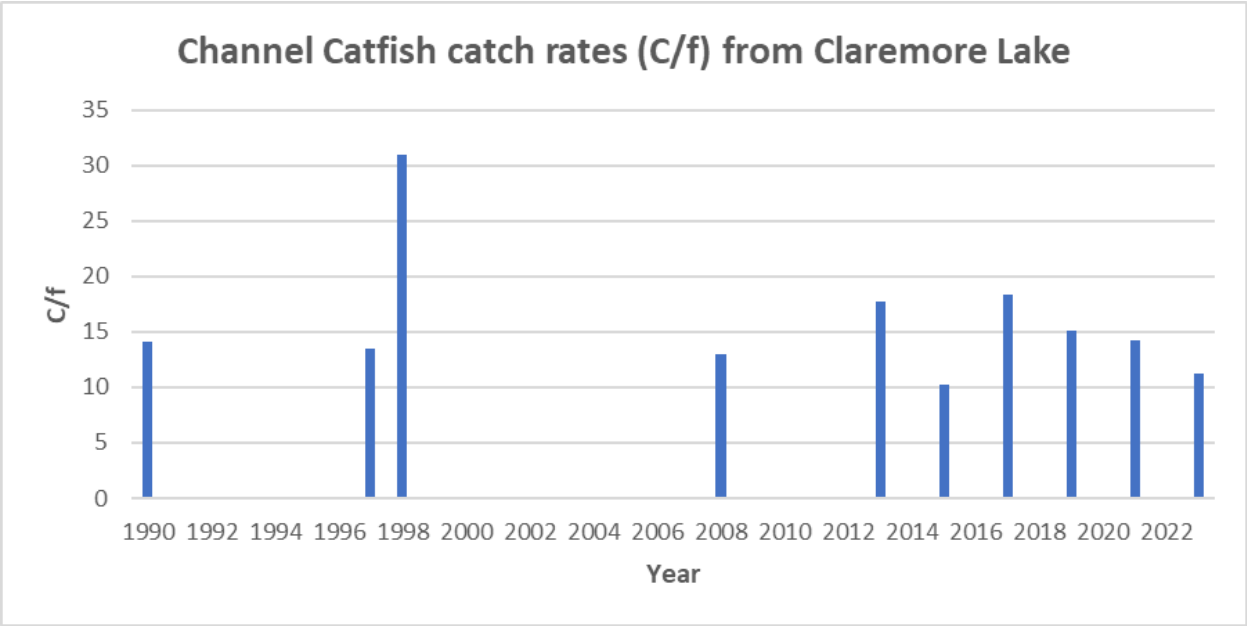

Figure 9. Total catch per unit effort (CPUE; C/f) for **Channel Catfish** in Claremore Lake from fall experimental gill net surveys from 1990 - 2023.

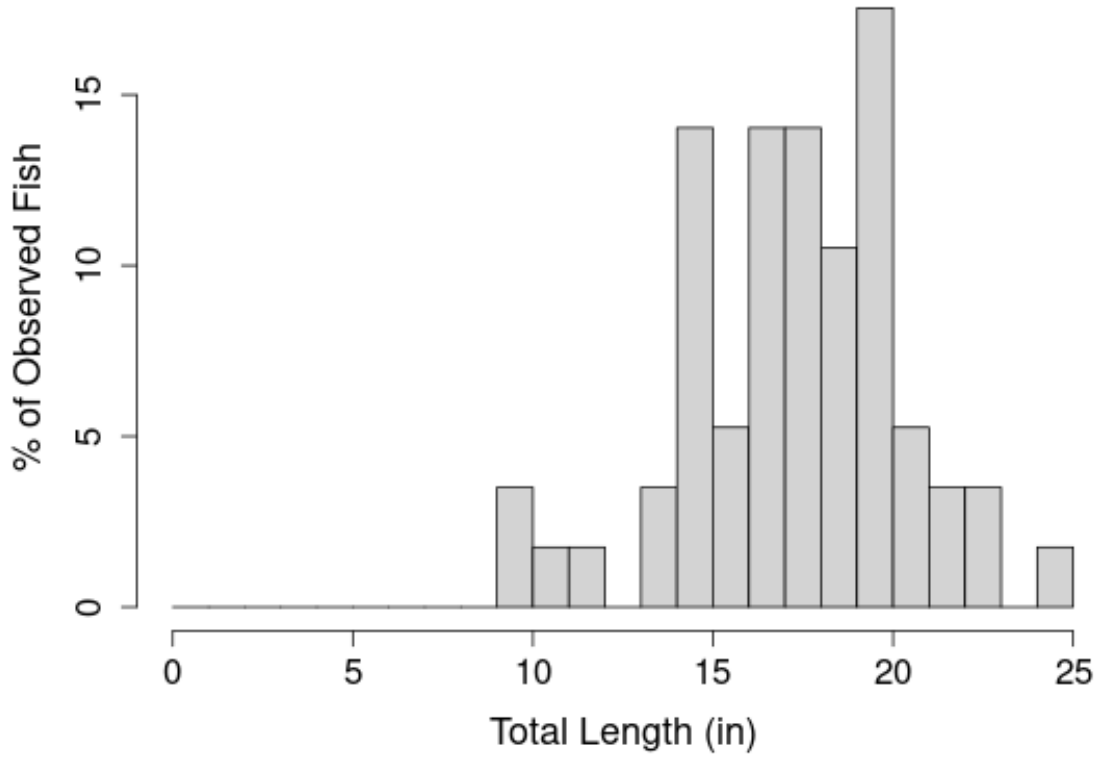

Figure 10. Length frequencies for **Channel Catfish** collected by fall experimental gill net survey from Claremore Lake in 2023.

Table 7. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **White Bass** collected by fall gill netting from Claremore City Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥4.8)		<8 inches (1.2-7.2)		8-12 inches (1.2-7.2)		≥ 12 inches (>2.4)	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1990	4	0.96			0.48	84	0.48	104
1997	33	8.88	2.4	86	4.08	115	2.4	99
1998	37	9.6	2.4	86	3.84	115	3.36	98
2008	2	0.48	0.24	95	0.24	95		
2013	26	5.43	0.42	160	2.30	94	2.71	92
2015	8	1.67			1.04	93	0.63	92
2017	16	3.16	0.6	94	1.0	89	1.56	96
2019	17	3.26	0.58	95	1.15	88	1.54	89
2021	0	0						
2023	0	0						

Table 8. Total number (No.), catch rates (C/f), and relative weights (W_r) by size groups of **Gizzard Shad** collected by fall gill netting from Claremore Lake. Numbers in parentheses represent acceptable C/f values for a quality fishery. Acceptable W_r values are ≥90.

	Total (≥10)		<3 inches		<6 inches		≥ 6 inches	
Year	No.	C/f	C/f	W_r	C/f	W_r	C/f	W_r
1990								
1997								
1998	103							
2008	56	14.16			8.64		5.52	
2013		7.93						
2014	36	51.27			7.42		0.44	
2015	20	1.94			1.15		0.29	
2017		3.72						
2019	34	8.83						
2021	115	27.54			8.08		14.65	
2023	69	15.80			1.37		12.28	

Table 9. Species, number, and size of fish stocked in Claremore Lake from 1973 - 1997.

Date	Species	Number	Size
1973	Walleye	52,000	Fry
1973	Channel Catfish	1,000	6-8 inches
1973	Largemouth Bass	5,000	Fingerlings
1976	Channel Catfish	60,060	3-6 inches
1978	Channel Catfish	23,600	5 inches
1978	Flathead Catfish	6,000	
1980	Largemouth Bass	666,600	Fingerlings
1981	Florida LMB	444,000	Fingerlings
1981	Channel Catfish	33,000	Fry
1981	Walleye	789,000	Fry
1982	Blue Catfish	45	Adults
1983	Smallmouth Bass	198	Sub-adults
1984	Florida LMB	24,206	2 inches
1985	Flathead Catfish	4,000	1 inch
1985	Channel Catfish	16	Adults
1985	Flathead Catfish	142	Adults
1985	Hybrid Striped Bass	10	Adults
1985	Channel Catfish	22,374	4 inches
1986	Grass Carp	420	15-18 inches
1986	Channel Catfish	9,042	4-6 inches
1987	Channel Catfish	9,000	Growouts
1988	Grass Carp	538	Sub-adults
1988	Flatheads	7,196	Fingerlings
1996	Threadfin Shad	250	Adults
1997	Threadfin Shad	250	Adults