

SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION



FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

MULDROW CITY LAKE

2023

SURVEY REPORT

State: Oklahoma

Project Title: Muldrow City Lake Fish Management Survey Report

Period Covered: 2023.

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Date Prepared: March 2023

Muldrow City Lake

ABSTRACT

Muldrow city lake was surveyed in the spring of 2023 via boat electrofishing to monitor trends in the largemouth bass population. A subset of the largemouth bass sample was collected for age and growth data. LMB catch rates increased significantly to 191 bass per hour but LMB body condition was below acceptable levels. Largemouth Bass growth was slow to moderate. Muldrow city lake follows statewide regulations, no regulation changes for Muldrow are proposed at this time.

INTRODUCTION

Muldrow City Lake, a 75 acre reservoir, was constructed as a water supply lake and flood control for the city of Muldrow in 1965 and is located approximately 4.5 miles NE of Muldrow. It has an average depth of 14 feet and a springtime secchi reading of 28 inches. In 1987, a boat ramp and parking lot were constructed using Wallop-Breaux funds in cooperation with the city of Muldrow. This is the only access area on the lake for the public. In the past, Muldrow city lake has been heavily stocked with channel catfish (Appendix I). Fish habitat primarily consists of water willow and some submerged aquatic macrophytes in the upper end of the lake. Man-made structure includes 2 pallet structures and cedar trees near the parking lot access area. This site was placed in 2019, is marked with a buoy and is accessible to bank fisherman (Appendix II). Muldrow follows statewide regulations for length and creel limits as well as method of take restrictions.

Largemouth Bass

Largemouth Bass (LMB) were surveyed in the spring of 2023 via boat electrofishing. The entire shoreline was sampled in discrete 10 minute units and in a counter clockwise fashion. Catch rates measured as catch per unit of effort (CPUE) were high for the 2023 Muldrow sample at 191 bass per hour. The stock and quality size categories were the main contributor to the sample at 69.6 and 66 bass/hr respectively (Table 1). LMB body condition, measured as relative weight (Wr) were below acceptable levels, ≥ 90 , in all size categories except memorable. This indicates that competition for forage is high until the fish reaches larger sizes. The length frequency histogram shows that 72% of the bass sampled fall between 7"-14" in length (Figure 1). While there is some evidence that stockpiling might be occurring, the Proportional Size Distribution (PSD) falls within balanced levels (Table 2). Also, growth is slow to moderate but not stagnant with bass taking 4 years to reach 14" but continuing to grow into the memorable category (Table 3). A majority of LMB that were aged fell into the 2-4 year old range with a sharp decline in year class abundance beginning at age 5 (Figure 2). The largest fish collected was 23 inches long with a weight of 7 lbs. With the recent adoption of statewide black bass regulations which allow for harvest of <14" fish, Muldrow city LMB populations should be monitored in 2026 to see if harvest has shifted any population metrics. Refurbishing of habitat structures should be assessed in 2024.

Table 1. Total number (No.), catch per unit of effort (CPUE), and relative weights (Wr) by size groups of Largemouth bass collected by spring electrofishing from Muldrow city Lake. Acceptable Wr values are ≥ 90 .

Year	Total CPUE	Total Wr	Stock	Wr	Quality	Wr	Preferred	Wr	Memorable	Wr
			7.9		11.8		15		20.1	
2008	123	85	59	85	26	80	9	94	3	98
2012	63	90	26	89	12	87	5	90	2	99
2017	246	87	60	82	69	86	27	103		
2020	77	89	2	94	22	92	25	86	6	88
2023	191	84	69.6	83	66	84	31.2	87	4.8	92

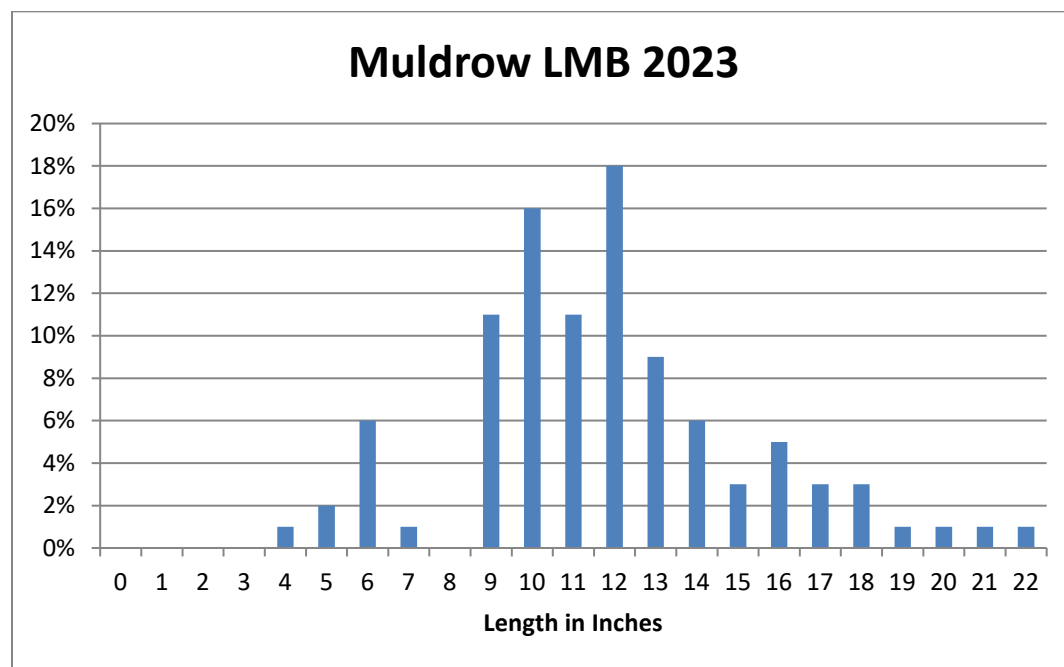


Figure 1. Largemouth Bass Length Frequencies for Muldrow city Lake

Table 2. Proportional Size Distribution (PSD) of Largemouth bass. Quality (PSD-Q), preferred (PSD-P) and memorable (PSD-M) lengths. PSD values indicate the proportion of fish in or above the quality, preferred or memorable size classes.

Year	PSD-Q	PSD-P	PSD-M	Balanced PSD Values	
2008	39	12	3	PSD-Q	40-70
2012	42	16	4	PSD-P	10-40
2017	62	17		PSD-M	0-10
2020	96	56	11		
2023	59	21	3		

Table 3. Mean Total Length at age (inches) for Largemouth bass from Muldrow City Lake.

Year	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9
2017	6.7	10.8	12.1	13.6					
2020	4.8	12.4	14.8	15.4	16	19	18.7	20.2	17.1
2023	6.3	10.2	12.4	14	17.3	18.3	18.8	20.9	

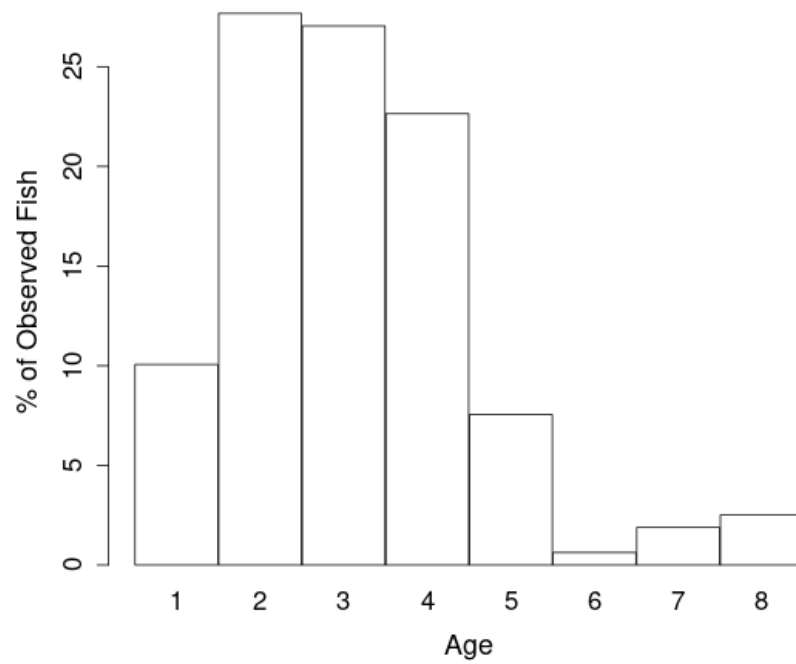


Figure 2. Muldrow 2023 Largemouth bass age frequency

Appendix I. Muldrow city lake recent stockings

Date	Species	Number	Size
9/22/2021	channel catfish	13,700	3"

Appendix II. Muldrow city habitat structures

Area	Type	Latitude	Longitude	Date
Boat Ramp	Pallets and Cedars	35.44693	-94.56137	12/10/2019