

Performance Report

State: Oklahoma

Project Title: Fisheries Management Survey

Southwest Region Fisheries Management

Lake Lawtonka

Abstract

Lake Lawtonka was surveyed in 2025 via electrofishing for Largemouth and Smallmouth Bass to determine population structure and dynamics to evaluate the fishery for needs and possible improvements to the lake to enhance the system as a whole. Along with the routine spring SSP sampling we continued our Florida Largemouth Bass genetic evaluation and monitoring of the Smallmouth Bass recruitment. Southwest region considers Lake Lawtonka to be the highest priority bass fishery and routine sampling occurs to monitor current trends in the population.

Lake Lawtonka has long been a quality Black Bass fishery to many anglers and entities in Southwest Oklahoma. Electrofishing surveys have been conducted here in 2016, 2018, 2019, 2020, 2021, and 2023 to continually assess the bass population. Lawtonka has an above average population of Largemouth Bass and a limited population of Smallmouth Bass along with a good population of Channel Catfish, Blue Catfish, and Saugeye.

Introduction

Lake Lawtonka is a medium size impoundment (2400 acres) that is main catchment of Medicine Creek. The lake is owned and operated by the City of Lawton Oklahoma mainly for water storage as well as recreational activities such as boat, camping, and fishing. This highly used fisheries regulations are set by the City of Lawton but managed jointly with ODWC who conducts surveys and compiles data for Bass, Channel Catfish, and Saugeye. Lake Lawtonka is a clear lake with average depths of 10 feet with moderate water quality and conductivity levels being consistently lower than other lakes in southwest Oklahoma.

Management issues that are present combine water quality issues of a high eutrophic system (runoff from local agriculture and housing development increasing nutrient loads), invasive species (Eurasian Milfoil and Zebra Mussels), large biomasses of common carp, and drought related issues. In recent years we have noted that invasive milfoils are starting to take over areas of the lake such as School House Slough, Robinson Landing, and northern shallow flats area around Jackson Creek. While sampling we collect and remove as many common carp as possible to reduce the amount of biomass that competes with other fish. There is a moderate amount of woody habitat (cedar trees and cut willow

trees) that are found in many cove areas of the lake but native vegetation is lacking in most areas, ODWC has increased habitat efforts including spider blocks and Shelbyville cubes. The City of Lawton routinely pumps in water from Lake Ellsworth for the use of municipal water for the Lawton and Ft. Sill communities leading to fluctuating water levels throughout the year, mainly mid-summer. Lake Lawtonka is a historically a clean system that houses several oddity species not normally found in SW Oklahoma such as Golden Redhorse, Southern Redbelly Dace, and Spotted Suckers.

Lake Lawtonka historically has higher catch rates and acceptable ranges of fish health with Largemouth specifically but Smallmouth Bass data shows a more unstable trend with more cyclic events of adult and young of year fish. This combination has led Lake Lawtonka to being a sought after bass fishing destination in southwest Oklahoma. Over the past 7 years Lake Lawtonka has been a surrogate lake for a statewide evaluation of Florida Largemouth Bass genetics study since we have known stockings and a large population with various size ranges to sample. While conducting genetic samples, we collaborated on nationwide study looking at blotchy bass syndrome in which we collected Smallmouth Bass that show signs of having this pigmentation issue. Our management objectives has been geared towards maintaining a quality fishery by 1) evaluating the fishery, 2) addressing habitat issues, and 3) continued stocking Florida Largemouth Bass, Saugeye, and Channel Catfish to allow anglers an opportunity to catch sizeable fish and enhance the genetic variation to maximize growth potential.

The most recent stockings at Lake Lawtonka 2024 were 85,700 fingerling Saugeye and 10,395 7" Channel Catfish. *121,153 certified Florida fingerling Largemouth Bass were stocking in 2023*

Results

Our electrofishing samples were conducted in April of 2025 when water temperatures were 60-65°F which fall within our range for spring electrofishing standard sampling protocols (SSP). Being a moderate sized lake, we were able to sample much of available shoreline and areas where known bass populations tend to be found with that consisting of 18 sample sites with each timed site being a 10 minute units of effort that included bare bank/cobble, woody cedar trees, and deep drops near the dam area. In the duration of the 180 minute sample we collected a total of 107 largemouth and 19 smallmouth bass.

Sampling protocols for black bass are measured in catch per unit effort (CPUE) with 2025 largemouth samples being higher than 2023 samples and slightly above average since 2016 (Table 1.), while smallmouth bass were slightly lower than 2023 but on average what we expect when sampling (Table 2.). When measuring fish body condition (body mass/length) relative weight (Wr) is the metric that is used to describe how fit the population is, relative weight for largemouth was 98 and 89 for smallmouth respectively (Figure 1) which would be considered the acceptable level to population present. The length frequency of fish (Figure 2) was normally distributed but overall size structure was showing a classic stockpile of smaller (13-15 inch) fish than larger (18+ inch) fish on an equally distributed range but year class strength can be seen with both species of bass. Age and growth data

was not collected from this sample set but was collected in 2018 and 2021 for largemouth. In 2018 we conducted preliminary surveys for fin clips for Florida Largemouth Bass (FLMB) genetics and submitted samples to Southcentral Region for a statewide FLMB genetic project. In 2021 this statewide evaluation for FLMB was re-evaluated and Lawtonka was a top tier lake with fin clip (genetic tissue), length/weight, sex, and age of each fish collected, with results showing almost 99% of largemouth carried Florida genetics to some degree.

The growth trends that we have found since 2018-2025 (Figure 3) show largemouth in 2025 have good growth rates, great recruitment of younger fish (less than 8 inches), and that fish are reaching larger sizes continuing to grow but still a stockpile of 15 inch size fish. Smallmouth Bass, being very cyclic and being more difficult to sample makes achieving high catch rates difficult and less accurate when looking at smallmouth populations as a whole. The fish health indices (relative weights) show Lawtonka to have a high amount of large healthy individuals (Table 1 & 2). Although catch rates (CPUE) show a large variation among sampling years, factors such as timing and weather conditions could play a role in variance. When evaluating smallmouth bass, this population has more variance than largemouth due to conditions and smaller population structure. During our sampling trips we don't see many smallmouth due to that limited population and capture techniques.

Since we have sampled consecutively from 2016 and having comparative data it can be easier to determine the overall extent of the bass population at Lawtonka. Biologically we have noticed a rapid explosion of invasive vegetation (mainly milfoil) and water quality slightly diminish but the bass population remains strong. There is a lack of deep water habitat that Bass, Sunfish, and Crappie need on a yearly basis and a project has been established to sink more cedar trees and other woody habitat in critical areas for thermal cover. The smallmouth population is very low in abundance, the population as a whole will continue to be limited with the excessive amount of vegetation present due to restraints to spawning habitats present and cover for young of year to recruitment stage. In southwest Oklahoma we have noticed a very high increase in River Otter populations at all lakes and these animals have diminished fish populations on all bodies of water and we have seen similar results at Lawtonka as well. If we continue to add habitat, monitor the population and make adjustments where we see fit Lawtonka will remain a great bass fishery. The best management plan should utilize the forage present, provide more habitats, and sample routinely for stocking recommendations in order to create a quality fishery.

Lawtonka**Electrofishing - All Species Summary Statistics April 2025**

Species	# Samples = 18			
	CPUE	Standard Deviation	Standard Error	Relative Weight W_r
Largemouth Bass	35.67	32.76	7.72	98
Smallmouth Bass	6.33	7.55	1.78	89

Species	# Samples = 18			
	CPUE	Standard Deviation	Standard Error	Relative Weight W_r
Largemouth Bass <8	8.33	10.52	2.48	95
Largemouth Bass >=8<13	5.33	6.79	1.60	100
Largemouth Bass >=8<14	9.00	9.26	2.18	102
Largemouth Bass >=12	24.33	21.73	5.12	100
Largemouth Bass >=14	18.33	15.74	3.71	98
Largemouth Bass >=13<16	11.33	12.33	2.91	99
Largemouth Bass >=16	10.67	11.56	2.72	100
Largemouth Bass >=21	2.33	3.65	0.86	108
Smallmouth Bass <8	1.33	3.88	0.91	103
Smallmouth Bass >=8<13	2.67	4.70	1.11	88
Smallmouth Bass >=8<14	3.33	5.90	1.39	87
Smallmouth Bass >=12	4.00	5.04	1.19	85
Smallmouth Bass >=14	1.67	2.77	0.65	83
Smallmouth Bass >=13<16	0.67	1.94	0.46	82
Smallmouth Bass >=16	1.67	2.77	0.65	83

Figure 1: Catch per unit effort and relative weights of Largemouth and Smallmouth Bass at Lake Lawtonka 2025 samples

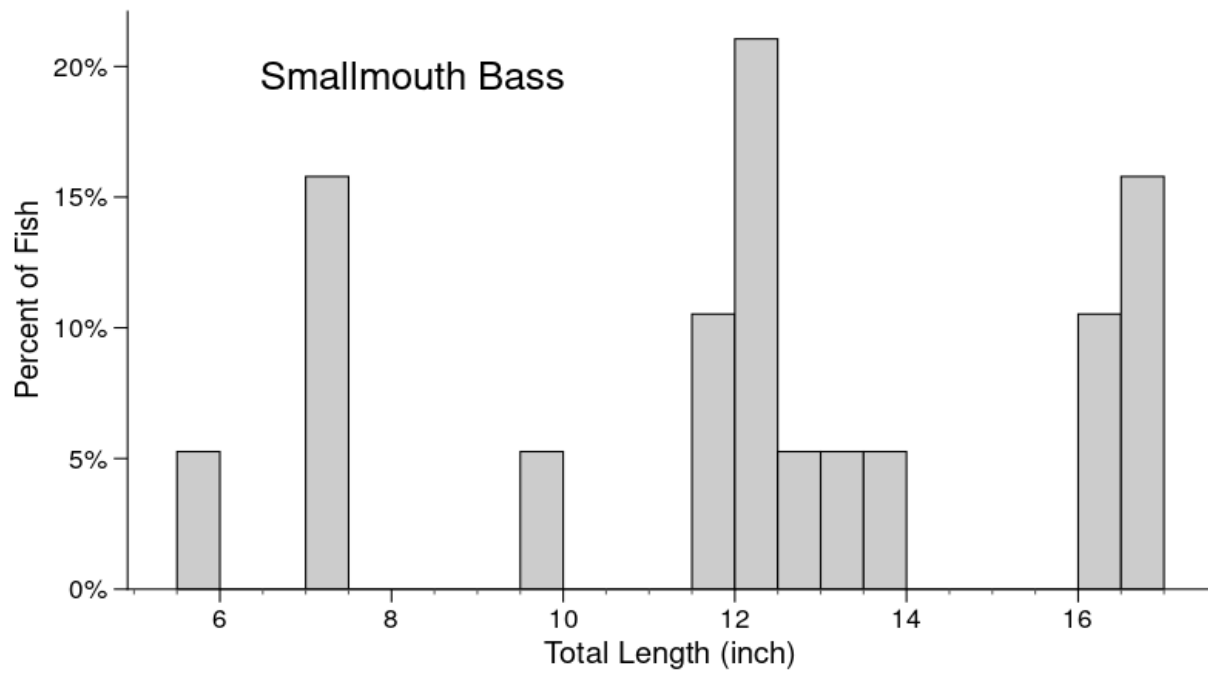
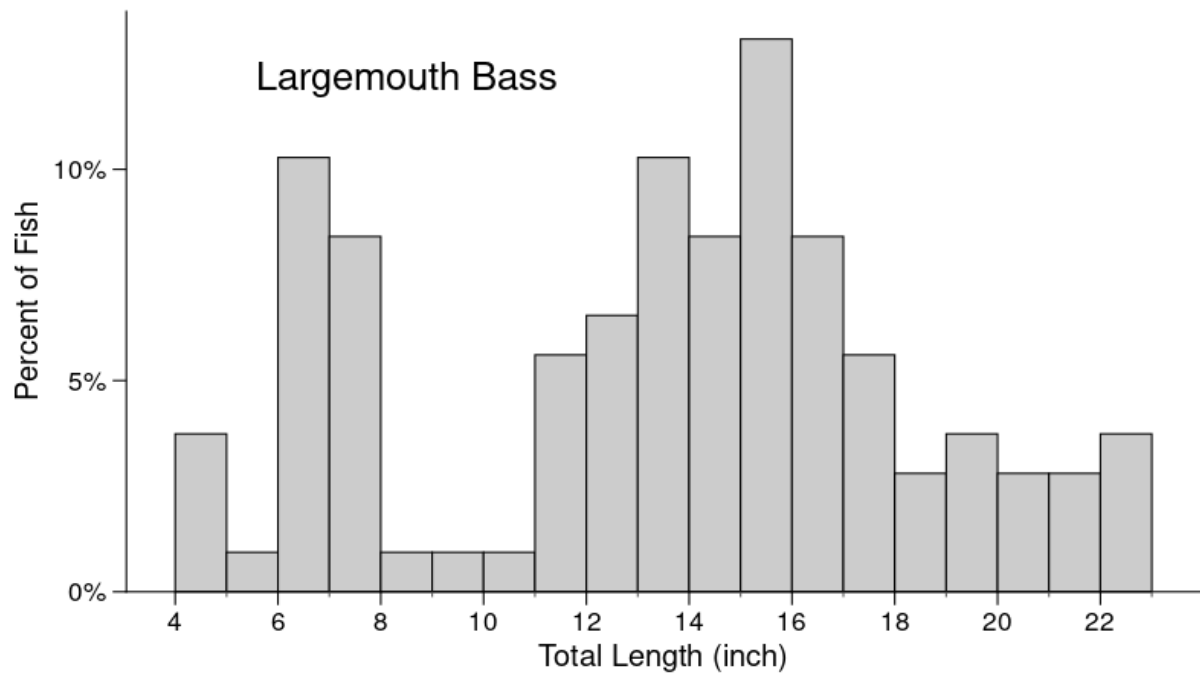


Figure 2. Length frequency and size structure of Largemouth and Smallmouth Bass Lake Lawtonka for 2025 samples

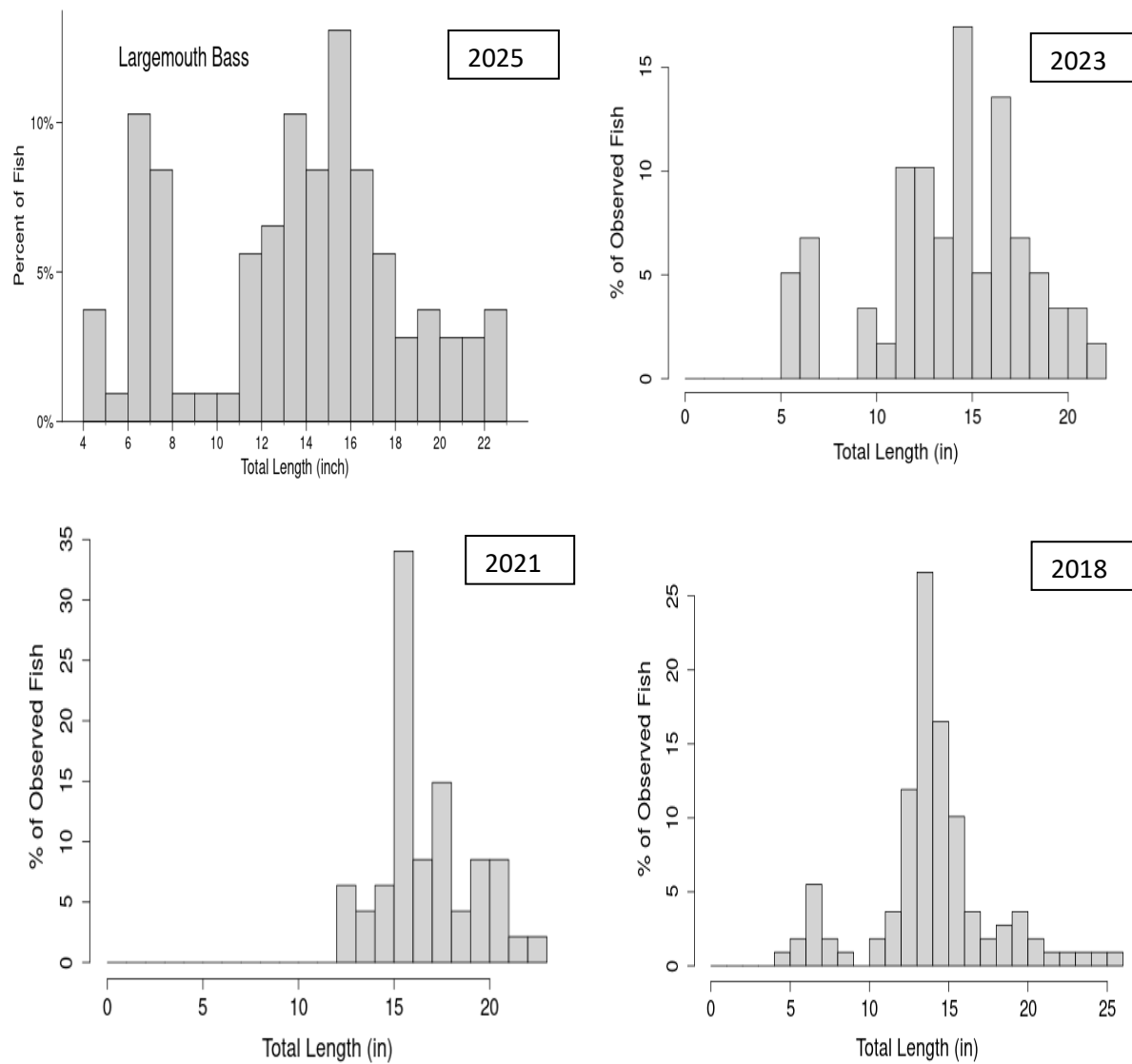


Figure 3. Length Frequency of Largemouth Bass at Lake Lawtonka 2018, 2021, 2023, 2025

Year	Relative Weight (Wr)	Catch per Unit Effort (CPUE)
2018	99	38
*2019	120	114
2021	103	12
2023	109	23
2025	98	36

Table 1. Relative weight and catch rate tables for Largemouth Bass at Lake Lawtonka 2018, 2019, 2021, 2023, 2025. *Denotes fall electrofishing sample

Year	Relative Weight (Wr)	Catch per Unit Effort (CPUE)
2020	113	4.2
2023	83	14
2025	89	7

Table 2. Relative weight and catch rate for Smallmouth Bass at Lake Lawtonka 2020, 2023, 2025