Performance Report

State: Oklahoma

Project Title: Fisheries Management Survey

Southwest Region Fisheries Management

Lake Elmer Thomas

Abstract

Lake Elmer Thomas was surveyed in 2023 via electrofishing for Largemouth 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. Southwest region considers Elmer Thomas to be a high priority bass fishery and routine sampling occurs to monitor current trends in the population.

Elmer Thomas Lake has long been a quality Largemouth Bass fishery to many anglers and entities in southwest Oklahoma. Electrofishing surveys have been conducted here in 2023, 2021, 2018, 2017, and 2016 to continually assess the bass population. Elmer Thomas has an above average population of Largemouth Bass and a limited population of Smallmouth Bass along with a balanced population of Channel Catfish, Redear, and Bluegill Sunfish.

Introduction

Lake Elmer Thomas is a small impoundment (472 acres) that is owned and operated jointly by the Fort Sill and United States Fish and Wildlife Service (USFWS) for water storage and as a recreational area. This highly used fishery is managed by both Ft. Sill and USFWS along with ODWC who conducts surveys and compiles data for Bass, Channel Catfish, and Sunfish. Elmer Thomas is a clear lake with average depths of 9 feet with high abundance of invasive Eurasian Milfoil vegetation.

Management issues that seem to be present are dense mats of Eurasian Milfoil and lack of usable habitat. Current limits on fish stocks is the amount of milfoil that is present, 44% of the lake is ringed with dense mats of this vegetation; this overabundance of vegetation leads to smaller forage fish not being accessible by larger fish resulting in lower body conditions and stockpiling of smaller fish taking up needed resources. Conversely, deep water habitat such as cedar trees used for thermal cover and predation avoidance is lacking within the lake. This unbalanced combination of habitat needs can lead to slower growth rates and high abundance of stunted fish within the population.

Elmer Thomas has continually been a lake with high catch rates and acceptable ranges of fish health. This combination has led Elmer Thomas to being a sought after bass fishing destination in southwest Oklahoma. Our management objectives has been geared towards maintaining a quality bass

fishery by evaluating the fishery and stocking Florida Largemouth Bass and Channel Catfish to allow anglers an opportunity to catch sizeable fish and enhance the genetic variation to maximize growth potential.

The most recent stocking events at Elmer Thomas includes yearly (2016-present) with 7-10" Channel Catfish and 2018 30,067 1.5" certified Florida Largemouth Bass. We have conducted both hoop netting surveys for channel catfish (2021) and electrofishing surveys for largemouth bass which included an evaluation of Florida Largemouth Bass genetic study and paper published on impacts to young of the year fish at Elmer Thomas due to the high amounts of Eurasian Milfoil.

Results

Our electrofishing samples were conducted in June of 2023 when water temperatures were 70^0F which are slightly above our spring electrofishing standard sampling protocols (SSP) but were sufficient enough to conduct a survey. Being a smaller lake, we were able to sample all available shoreline which consisted of 10 sample sites with each timed site being a 10 minute units of effort that included bare bank/cobble, dense mats of vegetation, and deep drops near the dam and southeast bluff area. In the duration of the 100 minute sample we collected a total of 49 largemouth and 2 Smallmouth Bass.

Largemouth bass samples are measured in catch per unit effort (CPUE) and were low based off of similar sized bodies of water with 29 fish/hr for largemouth and 1.20 for smallmouth bass CPUE (Figure 1). When measuring fish body condition (body mass/length) relative weight (Wr) is the metric that is used to describe how fit the population is, the relative weight for Elmer Thomas was on average a 88 respectively for both large and smallmouth bass (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 lacking by having a higher abundance of smaller than larger fishes on an equally distributed range. Age and growth data was not collected from this sample set do to previous age and growth data that was collected in 2016, 2018, and 2021. In 2018 we conducted preliminary surveys for fin clips for Florida Largemouth Bass (FLMB) genetics and submitted samples to Southcentral Region for a upcoming statewide FLMB genetic project; in 2021 this statewide evaluation for FLMB was started and Elmer Thomas was a top tier list and sampled with fin clip (genetic tissue), length/weight, sex, and age of each fish collected.

The growth trends that we have found since 2016-2023 (Figure 3) show the fish in 2023 were showing that classic stockpiling of individuals in 10" range which could be a prolonged effect of the negative impacts of overabundance of the Eurasian Milfoil. The growth curves in 2016-18 show a higher amount of larger individuals while growth trends in 2023 are loaded towards higher numbers of smaller individuals; this could be due to time of year sampling or a shift in growth rates due biological factors. The relative weights for the lake have remained constant in the last 7 years even though catch rates were lower in 2023 then years past (Table 1); this showing fish health is stable with increased risk of parasites and less forage availability.

while conversely the 3-7 year old fish (14 of 27 individuals collected) ranged from 12”-20” range, which suggest stockpiling of smaller individuals competing for resources leading to slower growth rate of older individuals.

Since we have sampled consecutively from 2016-present and having comparative data it can be easier to determine the overall extent of the largemouth bass population at Elmer Thomas (Table 1). Biologically we have noticed a rapid explosion of invasive vegetation (mainly milfoil) and seen adverse effects of foraging habits of all fish present. There is also 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. This lake has the potential to become a better balanced largemouth bass fishery if habitat is improved with a reduction of milfoil. 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.

Elmer Thomas	Electrofishing - All Species Summary Statistics		# Samples = 10	2023
Species	CPUE	Standard Deviation	Standard Error	Relative Weight W_r
Largemouth Bass	29.40	13.99	4.42	88
Smallmouth Bass	1.20	3.79	1.20	87

Elmer Thomas	Electrofishing - All Species Summary Statistics		# Samples = 10	2023
Species	CPUE	Standard Deviation	Standard Error	Relative Weight W_r
Largemouth Bass <8	3.60	5.06	1.60	87
Largemouth Bass >=8<13	14.40	12.39	3.92	87
Largemouth Bass >=8<14	16.20	12.98	4.10	87
Largemouth Bass >=12	13.20	9.72	3.07	89
Largemouth Bass >=14	9.60	9.03	2.86	90
Largemouth Bass >=13<16	7.80	7.51	2.37	87
Largemouth Bass >=16	3.60	5.06	1.60	94
Largemouth Bass >=21	1.20	2.53	0.80	96
Smallmouth Bass >=8<13	1.20	3.79	1.20	87
Smallmouth Bass >=8<14	1.20	3.79	1.20	87

Figure 1: Catch per unit effort and relative weights of Largemouth Bass at Lake Elmer Thomas 2023 samples

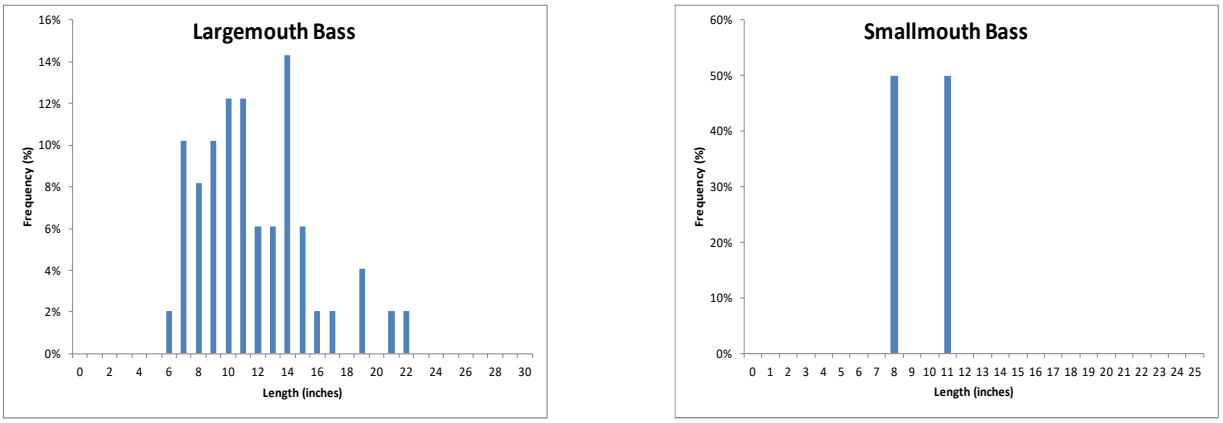

Figure 2. Length frequency and size structure of Largemouth and Smallmouth Bass in Elmer Thomas for 2023 samples

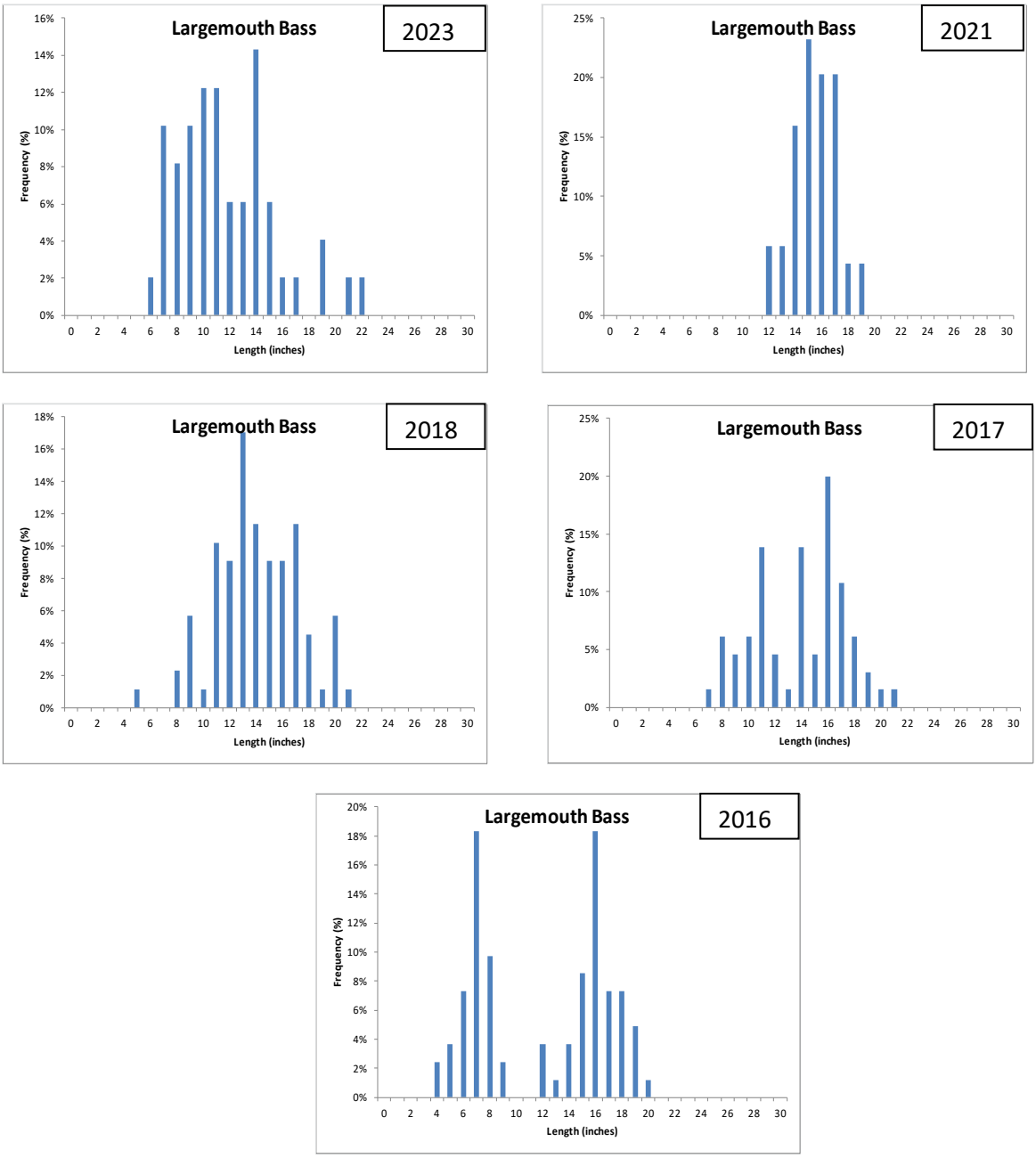

Figure 3. Length Frequency of Elmer Thomas Largemouth Bass 2016, 2017, 2018, 2021, 2023

Year	Relative Weight (Wr)	Catch per Unit Effort (CPUE)
2016	107	82
2017	90	65
2018	89	88
2021	92	60
2023	88	29

Table 1. Relative weight and catch rate tables for Largemouth Bass at Elmer Thomas