Performance Report

State: Oklahoma

Project Title: Fisheries Management Survey

Southwest Region Fisheries Management

Lake Elmer Thomas

Abstract

Lake Elmer Thomas was surveyed in 2024 via hoop netting for Channel Catfish to determine population structure and dynamics to evaluate the fishery for needs and possible improvements to the lake to enhance the Channel catfish fishery. Southwest region considers Elmer Thomas to be a moderate/low priority catfish fishery and routine sampling occurs to monitor current trends in the population.

Elmer Thomas Lake has long been a quality catfish fishery to management staff and anglers in southwest Oklahoma. Channel Catfish and hoop net surveys were conducted at Elmer Thomas 2024, 2021, and 2015 to continually monitor the population. Elmer Thomas has an above average population of Channel Catfish and a limited population of Smallmouth Bass along with a very well balanced population of Largemouth Bass, 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 (2015, 2021) and electrofishing surveys for largemouth bass (2015, 2016, 2018, 2020, 2021, 2023) 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 hoop netting samples were conducted between July and August of 2024 when water temperatures were averaged 85^0F which are suitable with fish division's standard sampling protocols (SSP). Being a smaller lake, we were able to sample all available shoreline habitats which consisted of 45 sample sites with site being a 72 hour set unit of effort that included bare bank/cobble, dense mats of vegetation, and deep drops near the dam and southeast bluff area. Nets were placed sub randomly where nets could 1) fish adequately for depth 2) areas with less milfoil presence and 3) avoid high traffic/fishing use areas. In the duration of the 2 week period sample we collected a total of 31 channel catfish, numerous brood stock Redear and Bluegill Sunfish.

Channel Catfish samples are measured in catch per unit effort (CPUE) and were low based off of past surveys with 1.20 (Figure 1, Table 1) comparatively. 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 75 (Figure 2, Table 1) showing a slight decrease from the 2021 survey. The length frequency of fish (Figure 3) was normally distributed throughout larger fish but overall size structure was lacking smaller stocked based size. Age and growth data was not collected from this sample set, rather a PSD metric was used to determine stock length categories. All previous surveys have not taken otoliths for aging of fish, only PSD metrics but it should be noted that a following sample should consider 1) use of smaller mesh nets to account for reproduction and 2) use of otolith collection for larger fish in the population.

The growth trends that we have found since 2015-2024 show the catfish within Elmer Thomas are proficient in growing and holding larger fish in the population. The lack of smaller fish, less than 15" could be related to either gear bias towards larger fish or lack of natural recruitment. When looking at negative impacts of overabundance of the Eurasian Milfoil, the channel catfish present seem to be doing well and no interruption of growth rates, although there was a noticeable decline of abundance overall. The catch curves show a higher amount of larger 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 shown a slight decline that follows a trend of increasing non-native milfoil within the last 10 years.

The catfish dynamic at Elmer Thomas has a small data set but does show a population geared towards larger fish in the system with a fluctuating abundance but a slightly lower abundance over time. Stocking efforts within the last 9 years have increase and those trends were very present during the 2021 survey. 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 and possible shallow water spawning habitat that Channel Catfish, 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 cover. This lake has the potential to become a better balanced channel catfish fishery if stocking continues along with 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.

Total CPUE

Species	Mean	Count	RSE	SE	L 95% CI	U 95% CI	N RSE = 12.5 (25% range)	N RSE = 20 (40% range)
Channel Catfish	1.20	25	41.94	0.50	0.21	2.19	281	110

CPUE by PSD Size Category

PSD Size Category References (mm)

	substock	stock	quality	preferred	memorable	trophy
Channel Catfish	0	280	410	610	710	910

PSD Size Category References (in)

	substock	stock	quality	preferred	memorable	trophy
Channel Catfish	0.0	11.0	16.1	24.0	28.0	35.8

CPUE by PSD Size Category

Species	Size Category	Mean	RSE	SE	L 95% CI	U 95% CI	N RSE = 12.5 (25% range)	N RSE = 20 (40% range)
Channel Catfish	substock	0.00						
Channel Catfish	stock	0.00						
Channel Catfish	quality	1.12	41.98	0.47	0.20	2.04	282	110
Channel Catfish	preferred	0.08	100.00	0.08	-0.08	0.24	1600	625
Channel Catfish	memorable	0.00						
Channel Catfish	trophy	0.00						

Figure 1: Catch per unit effort of Channel Catfish at Lake Elmer Thomas 2024 hoop net samples

Relative Weight (Wr)

Details of standard weight equation

Species	Model Type	Reference Percentile	Min.TL	Intercept	Slope	Source
Channel Catfish	linear	75	70	-5.800	3.294	Brown et al. (1995)

Size Category	Mean	Count	CV	SE	L 95% CI	U 95% CI
quality	89.09	28	9.63	1.62	85.91	92.27
preferred	97.41	2	2.85	1.96	93.56	101.25
Overall	89.64	30	9.55	1.56	86.58	92.71

Figure 2. Relative weights and size structure of Channel Catfish Elmer Thomas for 2024 samples

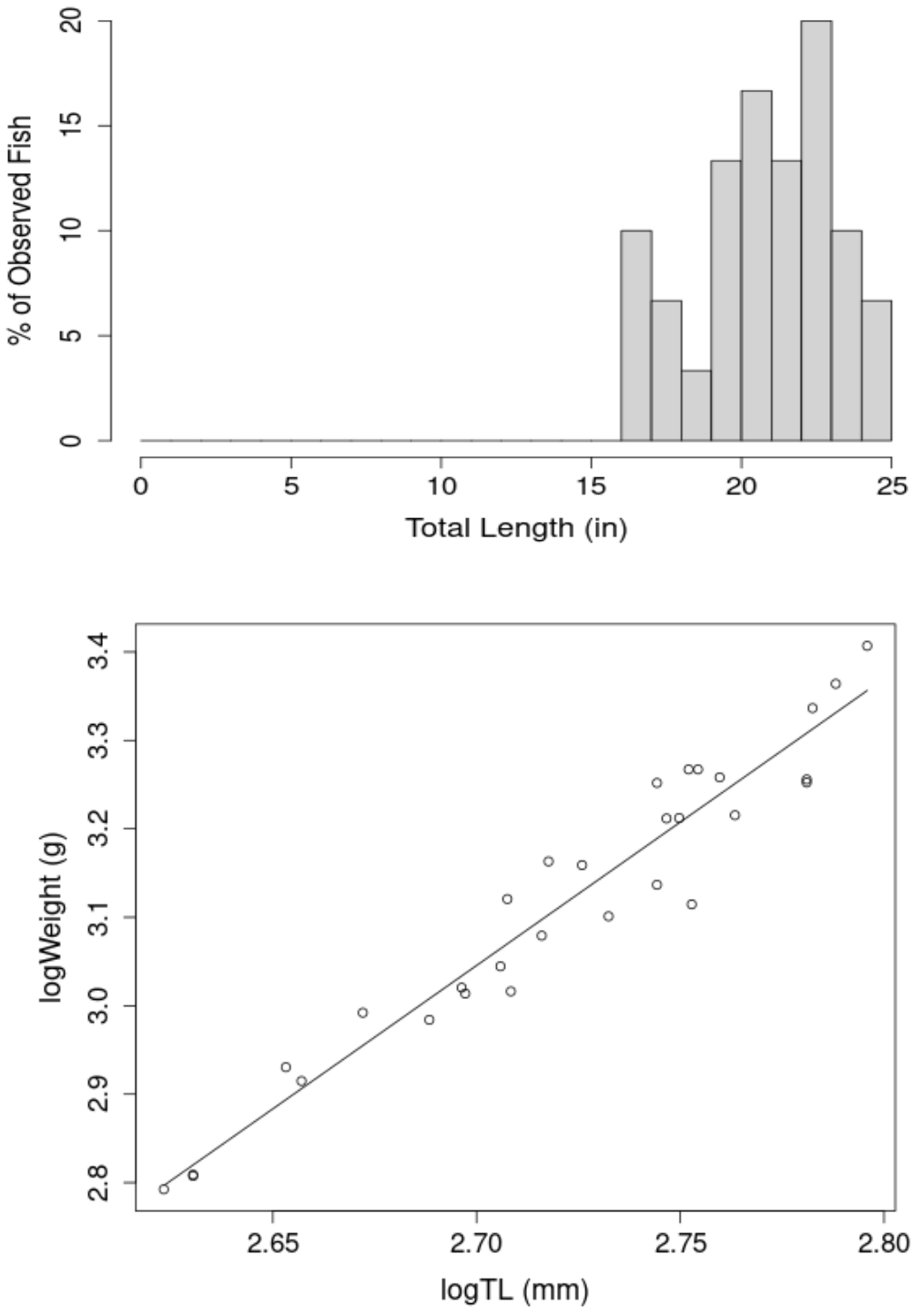

Figure 3. Length Frequency and Weight Regression of Channel Catfish at Lake Elmer Thomas 2024 hoop net samples

Year	Relative Weight (Wr)	Catch per Unit Effort (CPUE)
2015	-	3.00
2021	92	8.02
2024	75	1.2

Table 1. Relative weight and catch rate tables for Channel catfish at Elmer Thomas