Performance Report

State: Oklahoma

Project Title: Fisheries Management Survey

Southwest Region Fisheries Management

Clear Creek Lake

Abstract

Clear Creek Lake was surveyed in 2022 via spring electrofishing for Largemouth Bass to determine population structure, Florida Largemouth Bass genetics, and evaluate the dynamics of the fishery for needs and possible improvements to the lake to enhance the system as a whole.

Clear Creek Lake had not been evaluated for Largemouth Bass since 1994. In the early 2000's, dam inspections showed leakage of Clear Creek and subsequently a project to renovate the dam was established and completed in 2020. Along with dam renovations, southwest Oklahoma experienced a major drought in 2010-2012. The need to sample this lake was a priority for 2022 in order to start collecting up-to-date baseline data for future management goals. Upon sampling our recommendations were to 1) provide more usable habitat to the impoundment to enhance recruitment 2) sample the lake more routinely to evaluate all species present and lastly provide stocking recommendations for any excess Largemouth Bass, Sunfish, and Channel Catfish that may be provided by ODWC hatchery system.

Introduction

Clear Creek Lake is a small impoundment (560 acres) that is owned and operated by the city of Duncan for a water source and recreation area. The City of Duncan manages this lake and sets bag and length limits for the fishery, and as of 2019 began asking advice to improve the fishery of all four of the City of Duncan owed lakes. Knowing that Clear Creek is a recovering fishery it should be a priority for developing into an established fishery.

Management issues that seem to be present are bag/length limits for crappie, lack of usable habitat, and lack of proper management. Current limits on fish stocks are more anecdotally fitting than management based driven, current limits are Crappie bag limit 20 with minimum length 8", Black Bass bag limit 5 with minimum length 14", Channel/Blue Catfish bag limit 15 all daily. These regulations are slightly varied from ODWC regulations and the lake fish stocks could potentially benefit by adapting to current statewide regulations. Through personal communications with city of Duncan officials and local anglers the crappie population is plentiful with large fish but there seems to be some "stunting" issue with fish being smaller than city regulations, during this survey we only collected large fish. By changing the regulation of a minimum the crappie population could improve to seeing larger fish by allowing harvest of smaller fish out of the population and increased growth rates on available resources. In turn

the bass population could benefit from more crappie harvest by reducing the amount of biomass of smaller crappie by freeing up resources that smaller bass could utilize into the recruitment stages.

Results

Our electrofishing samples were conducted in April of 2022 when water temperatures were 60.2^{0}F and consistent with our spring electrofishing standard sampling protocols (SSP). Being a smaller lake, we were able to sample all available shoreline which consisted of 20 sample sites with each timed site being a 10 minute units of effort that included bare bank, areas with some water willow/vegetation, rip rap dam, and channels within 2-8 foot of water. These sampling efforts were set in place to collect a total of 100 largemouth bass for genetic evaluation of Florida strain genetics that are present in the population. In the duration of the 200 minute sample we collected a total of 25 largemouth bass.

Largemouth bass samples are measured in catch per unit effort (CPUE) and were very low based off of similar sized bodies of water and duration of time sampled with 7.50fish/hr 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 Clear Creek Lake was on average a 93(Figure 1) which would be considered the acceptable level to population present. The length frequency of fish (Figure 2) was normally distributed with overall size structure showing good growth and even distribution among small to large fish with no stockpiling of smaller sized fish. This trimodal range shows that growth is continual growth and good recruitment among all age ranges.

Age and growth data was collected (Figure 3) resulting in Age 0 averaging 7”, Age 1 averaging 11”, Age 2 averaging 14”, Age 3 averaging 14”, And Age 4-6 averaging 17”. Not seeing the classic stockpiling of smaller fish can be shown by the younger fish age at growth being more rapid than lakes where this occurs. There is rapid growth among individuals between that age 1-3 range but growth seems to slow from age 3 and beyond. The sample size of larger individuals was low which resulted in clumping of growth rates among older year classes.

Not having recent data to compare the sample to, it is hard to determine the overall extent of the largemouth bass population at Clear Creek Lake. Based on this small sample set the population of largemouth bass is low but the individuals within the lake are at the acceptable range for health. While conducting this electrofishing survey it was noted the forage base of Gizzard Shad and Sunfish was moderate suggesting that fish may be either utilizing these species along with other forage (either small crappie, bullheads, or cannibalizing on small largemouth bass), . This lake has the potential to become a balanced largemouth bass fishery if habitat is improved and potential adjustments to regulations. The best management plan should utilize the forage present, provide more habitat, and sample routinely for stocking recommendations in order to create a quality fishery.

Clear Creek	Electrofishing - Bass Summary Statistics			2022
	# Samples = 20			
Species	CPUE	Standard Deviation	Standard Error	Relative Weight W_r
Largemouth Bass	7.50	9.31	2.08	93
Spotted Bass	1.80	4.81	1.08	95

Clear Creek	Electrofishing - Bass Summary Statistics			2022
	# Samples = 20			
Species	CPUE	Standard Deviation	Standard Error	Relative Weight W_r
Largemouth Bass <8	0.30	1.34	0.30	80
Largemouth Bass >=8<13	1.80	4.40	0.98	93
Largemouth Bass >=8<14	2.10	4.47	1.00	94
Largemouth Bass >=12	5.70	7.66	1.71	93
Largemouth Bass >=14	5.10	7.09	1.59	93
Largemouth Bass >=13<16	2.70	5.32	1.19	97
Largemouth Bass >=16	2.70	4.12	0.92	90
Spotted Bass >=8<13	0.30	1.34	0.30	106
Spotted Bass >=8<14	1.20	3.69	0.83	97
Spotted Bass >=12	1.50	4.30	0.96	93
Spotted Bass >=14	0.60	1.85	0.41	91
Spotted Bass >=13<16	1.20	4.18	0.93	93
Spotted Bass >=16	0.30	1.34	0.30	92

Figure 1: Catch per unit effort and relative weights of Largemouth and Spotted Bass at Clear Creek Lake

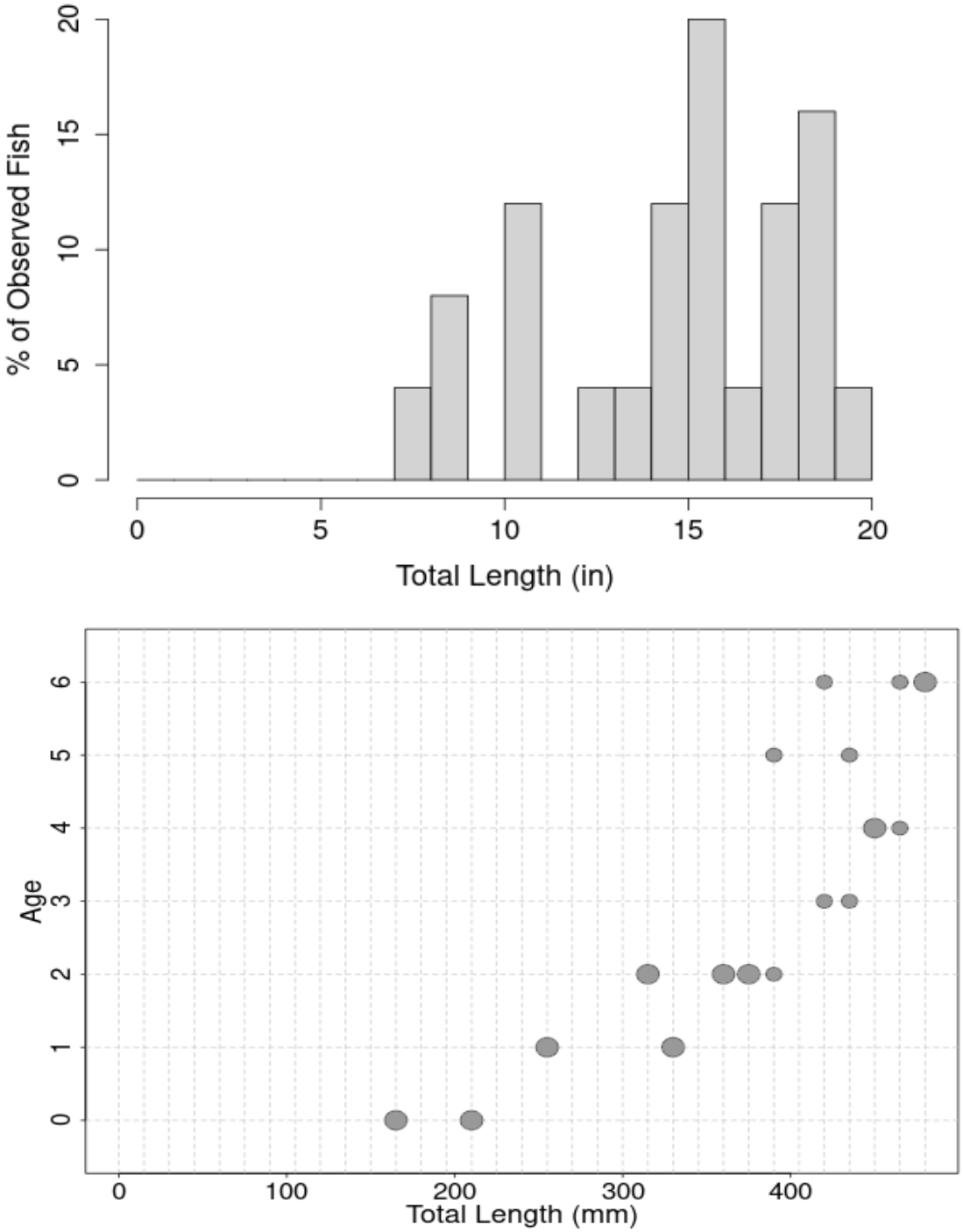

Figure 2. Length frequency and size structure of Largemouth Bass in Clear Creek Lake

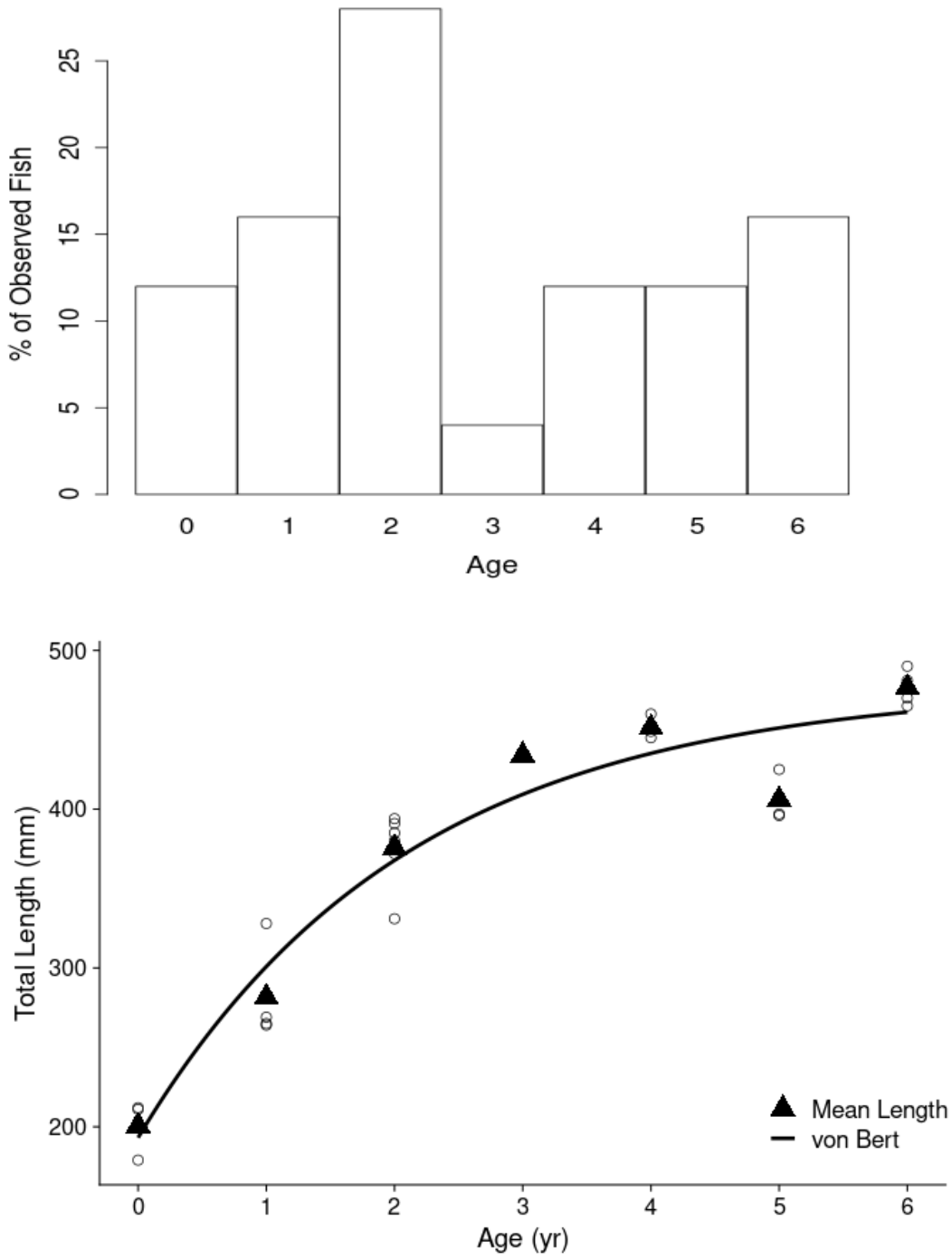

Figure 3. Age and growth of Largemouth Bass collected at Clear Creek Lake