

Performance Report

State: Oklahoma

Project Title: Fisheries Management Survey

Southwest Region Fisheries Management

Fuqua Lake

Abstract

Fuqua Lake was surveyed in 2025 via spring electrofishing for Largemouth Bass to determine population structure and evaluate Florida Largemouth Bass genetics within the fishery. While sampling we evaluated the need for habitat and Florida genetics of the population, these considerations combined will aide in possible improvements to the lake to enhance the system.

Fuqua Lake was last sampled for Largemouth Bass and FLMB genetics in the spring of 2018 as standard SSP protocol for FLMB genetic evaluation. The need to sample this lake was a priority for 2025 in order to continue collecting up-to-date baseline data for future management goals and revisit the genetics to see if future FLMB stocking should continue. 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 both Florida or Northern strain.

Introduction

Fuqua Lake is a moderate size impoundment (1500 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 the city began asking advice to improve the fishery of all four of the City of Duncan owed lakes.

Management issues that seem to be present are bag/length limits for crappie, lack of usable habitat, lack of proper management, and largemouth bass regulations. Current limits on fish stocks are more anecdotally fitting than management driven, current bag limits for Crappie are 20 fish total 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 Largemouth populations good but all fish being caught a smaller than the length regulations, by changing this regulation all fish populations would 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 by reducing the amount of biomass of

smaller crappie and allowing smaller bass to utilize available resources. Another management issue we have identified is an overabundance of Common Carp; current restrictions on bowfishing for carps (common and grass) is detrimental to all species present with harvest needing to be allowed to reduce biomass.

Results

Our electrofishing samples were conducted in April of 2025 when water temperatures were 66°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 **eighteen** 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. In the duration of the **90** minute sample we collected a total of **27 largemouth bass**.

Largemouth bass samples are measured in catch per unit effort (CPUE) and were low based off of similar sized bodies of water with **16 fish/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 Duncan Lake was on average a 90 (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 collected (Figure 3) showing 1 and 2 year old fish were in the 10"-12" range (13 of 27 individuals collected) 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.

With sampled being conducted recently, data to compare 2018 samples (7 year span), it is hard to determine the overall extent of the largemouth bass population at Fuqua Lake but, we did see some classic stockpiling of 15" fish. 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 Silversides was very abundant and plentiful giving a strong backbone for increased growth of individuals present and reaching that recruitment stage. This lake has the potential to become a balanced largemouth bass fishery if habitat is improved and potential adjustments to regulations. We did notice a very high abundance of Common Carp present at the lake, this invasive species is very detrimental to fisheries as a whole. Currently there is a much need regulation change with the City of Duncan to mirror the state wide regulations for fishing to improve the fisheries management at Fuqua. Current regulations that are of high concern are Largemouth Bass limits, crappie minimum size restrictions, and no harvest by use of bow fishing. 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.

Duncan		Electrofishing - April			2023
Species	# Samples = 9			Relative Weight W_r	
	CPUE	Standard Deviation	Standard Error		
Largemouth Bass	16.67	12.65	4.22	90	

Duncan		Electrofishing - April			2023
Species	# Samples = 9			Relative Weight W_r	
	CPUE	Standard Deviation	Standard Error		
Largemouth Bass $\geq 8 < 13$	8.67	12.77	4.26	90	
Largemouth Bass $\geq 8 < 14$	9.33	12.41	4.14	91	
Largemouth Bass ≥ 12	12.67	7.00	2.33	90	
Largemouth Bass ≥ 14	7.33	6.56	2.19	90	
Largemouth Bass $\geq 13 < 16$	2.00	3.00	1.00	87	
Largemouth Bass ≥ 16	6.00	6.00	2.00	91	

Figure 1: Catch per unit effort and relative weights of Largemouth Bass at Duncan City Lake

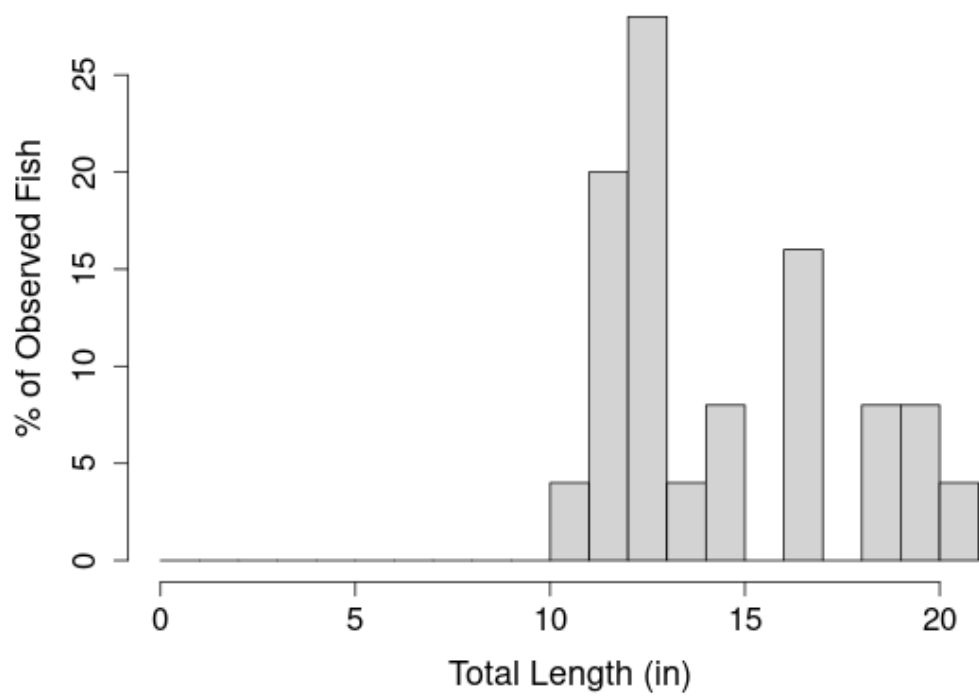
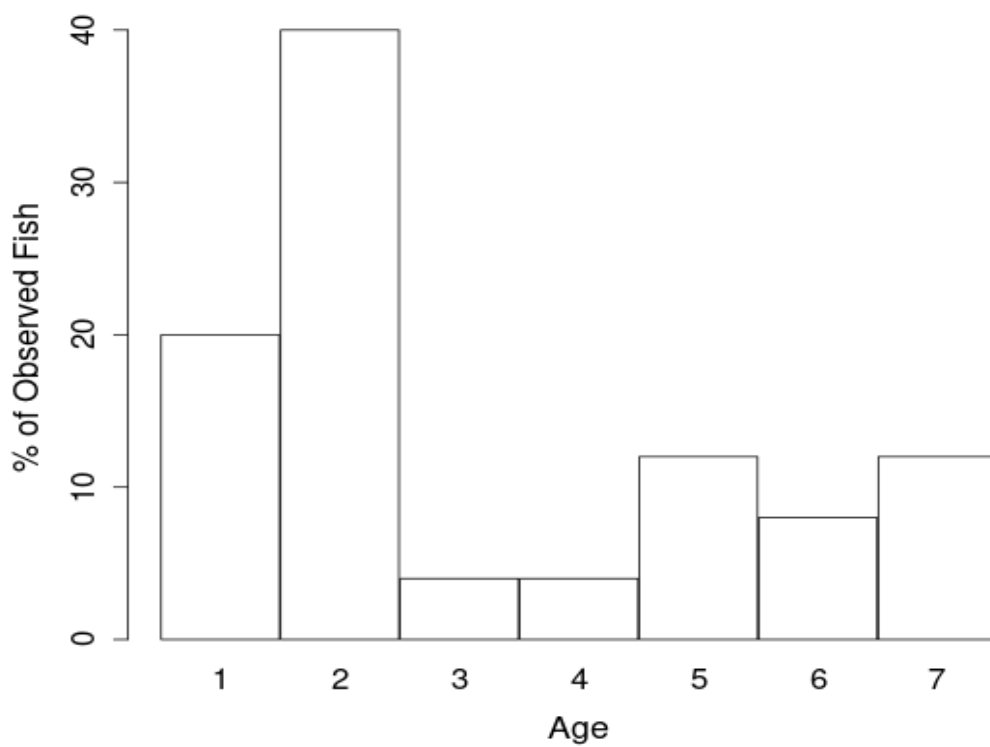


Figure 2. Length frequency and size structure of Largemouth Bass in Duncan City Lake



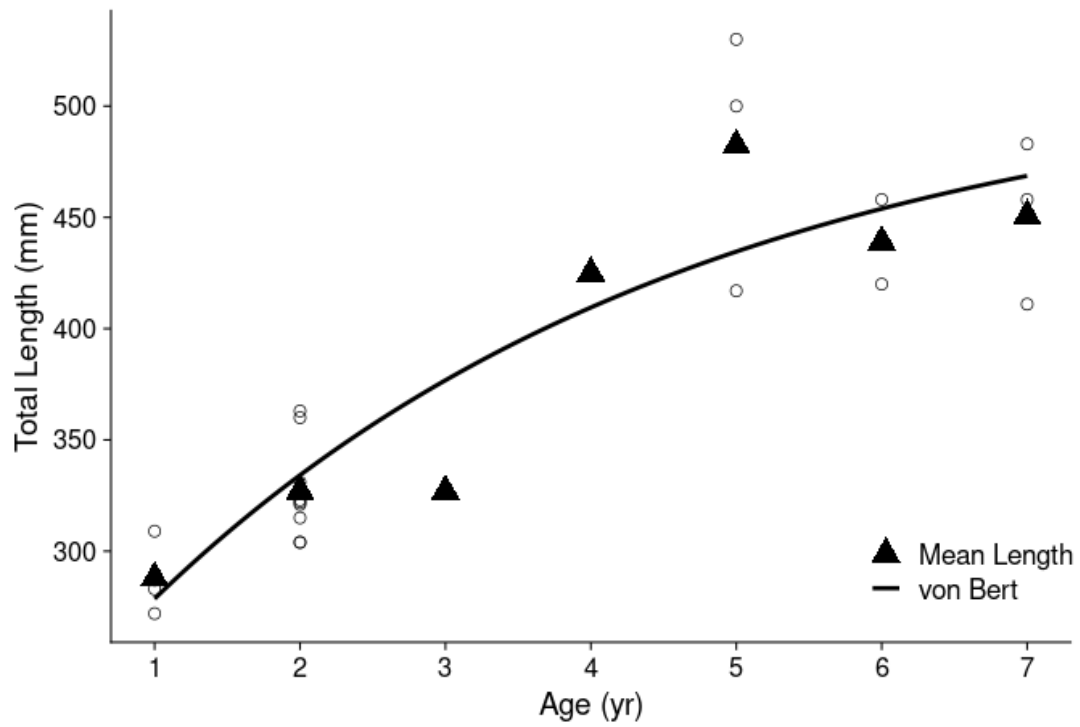


Figure 3. Age and growth of Largemouth Bass collected at Duncan City Lake