SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

TAFT LAKE

2023

SURVEY REPORT

State: Oklahoma

Project Title: Taft Lake Fish Management Survey Report

Period Covered: 2023.

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Date Prepared: December 2023

TAFT Lake

ABSTRACT

Taft lake was surveyed by spring boat electrofishing to monitor Largemouth Bass (LMB) size structure, body condition and growth rates. LMB catch rates declined sharply between the 2019 and 2023 electrofishing samples, however LMB abundance remained high at 141 bass per hour. A subset of bass were taken for age and growth data as well as fin clip tissue to evaluate Florida Largemouth Bass (FLMB) allele composition. Recommendations include stocking of FLMB fry/fingerlings when available as well as stocking threadfin shad as supplemental forage. No regulation changes are recommended.

INTRODUCTION

Taft Lake impounds Pecan Creek, approximately 6 miles west of Muskogee in Muskogee County, Oklahoma. Taft lake covers approximately 53 acres and was constructed by the State of Oklahoma for water supply for a hospital. Taft Lake has a mean depth of 10 ft. and a maximum depth of 33 ft, a secchi depth of approximately 72 inches in the main pool in August, turbidity is primarily from plankton. Fish habitat mainly consists of water willow which encircles the lake and some submerged aquatic vegetation. Located near metropolitan areas it is assumed that Taft receives moderate pressure, with the focus being on Largemouth bass and catfish, but this assumption needs to be studied to determine actual use. Access is limited to two areas for parking and bank fishing and a primitive boat ramp for small battery powered water craft. Taft lake follows statewide creel and size limits but has a special area regulation that only allows rod and reel as method of take and only two rods and reels per person.

There were numerous stockings to Taft lake from 2006-2017 which included Florida largemouth bass, channel catfish, threadfin shad and adult black crappie. These stockings are detailed in Appendix I. A 14 inch minimum length limit on black bass was placed on Taft in 1987 and was recently replaced in 2022 with a new statewide regulation that allows for harvest of any size with only one being over 16 inches. Florida Largemouth bass were stocked in Taft for an ODWC research project from 1987-1989. In 1992 gel electrophoresis indicated that 34% of age 0 bass showed the Florida gene. Since then FLMB stockings have continued with Taft being a tier III lake and receiving supplemental FLMB when available. The most recent FLMB fin clip sampling was collected in 2015 and was deemed contaminated due to a liquid being in the bottle containing the fin clips and was not processed (personal communication, ODWC).

Management priorities for Taft lake are to continue to monitor FLMB genetic introgression with the native population, link age and growth with genetic samples to determine if there is a difference in growth rates between the different FLMB allele holders. The goal of the FLMB program in Taft is to produce trophy (< 8lb) bass. To this end, East central management has, on occasion, stocked threadfin shad to supplement the forage base. These shad are collected and transferred from Tenkiller lake when conditions allow.

Fish attractors were added to Taft lake at two locations utilizing pallet structures. These areas are marked with buoys (Appendix II).

Taft lake has produced a channel catfish at 35 pounds 15 ounces which has been the state record from 2005 to present.

Largemouth Bass

Largemouth Bass (LMB) were surveyed in the spring of 2023 via boat electrofishing. The entire shoreline of Taft lake was sampled in discrete 10 minute units of effort. Overall LMB abundance, measured as catch per unit effort (CPUE), was moderate to high at 142 bass per hour. This is a sharp drop from the catch rate of the 2019 sample and it was realized in the Quality size class with a 100 bass/hr lower catch rate (Table 1). LMB body condition, measured as relative weight (Wr) was slightly below the acceptable level of >90 with an overall Wr of 85. All size categories except the trophy category were below the acceptable level (Table 1). The Length frequency histogram show a bell curve with most fish occurring in the 9-14” inch groups (Figure 1). Otoliths aged show LMB growth to be slow to moderate with bass nearly reaching 14” by age 4. The oldest fish aged was 12 years and was also the largest fish in the sample at 10.3 lbs (Table 2). LMB ages were represented by individuals aged 1-12 with only the 11 year old class missing. LMB aged 2-6 comprised the majority of the aged fish (Figure 2). Proportional size distribution (PSD) were slightly higher than balanced in the quality size range, however the other PSD values fell within the balanced population levels (Table 3). This is similar to previous sample PSDs and shows that Taft should have good LMB fishing in the coming years, with the quality sized fish recruiting into the larger size categories. Fin clips were taken and linked to specific fish to identify growth characteristics between northern, F1 and FLMB. Clips are currently awaiting genetic analysis using

microsatellite DNA at Auburn University Fish lab. The previous FLMB fin clip samples were considered invalid and were not processed by the genetics lab at OU in Norman, Ok. Taft has implemented the new statewide black bass regulation which allows for harvest of 6 black bass/day no size restriction, only one of which may be >16". This regulation allows harvest of smaller individuals to reduce intraspecific competition for resources while protecting larger fish. Recommendations include continued monitoring of LMB populations using boat electrofishing and collection of otoliths. Stocking of FLMB fingerlings should occur on a 3 year rotation to maintain FLMB genetic influence. Threadfin and gizzard shad transfers should continue to occur to provide additional forage for smaller size class LMB.

Table 1. Total catch per unit of effort (CPUE), and relative weights (Wr) by size groups of Largemouth bass collected by spring electrofishing from Taft Lake. Acceptable Wr values are ≥90

Year	Total CPUE	Total Wr	Stock	Wr	Quality	Wr	Preferred	Wr	Memorable	Wr	Trophy	Wr
			7.9		11.8		15		20.1			
2016	230.6	86	44.6	83	90	87	54.9	86	2.6	88		
2019	278	88	23	93	141	88	68	88	7.5	95		
2023	142	85	32	87	42	84	41	86	4.5	83	1	100

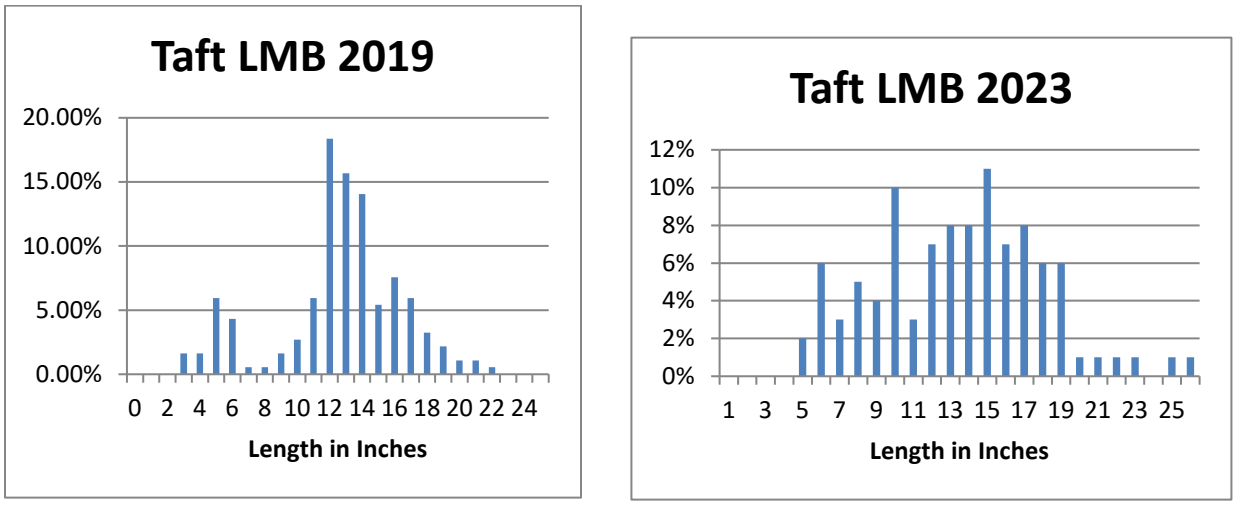

Figure 1. Largemouth Bass Length Frequencies for Taft lake 2019 & 2023

Table 2. Mean Total Length at age (inches) and L infinity (estimated mean maximum length) for Largemouth bass from Taft Lake.

Year	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12
2016	6.24	9.46	12.66	13.23	14.67	15.33	17.14	17.34	16.97			
2019	6.12	10.65	12.88	13.52	16.15	16.79	17.5	17.7	19.44			
2023	5.6	8.8	11.8	13.8	15.3	16.7	17.7	16.6		21.7	19.4	21.5

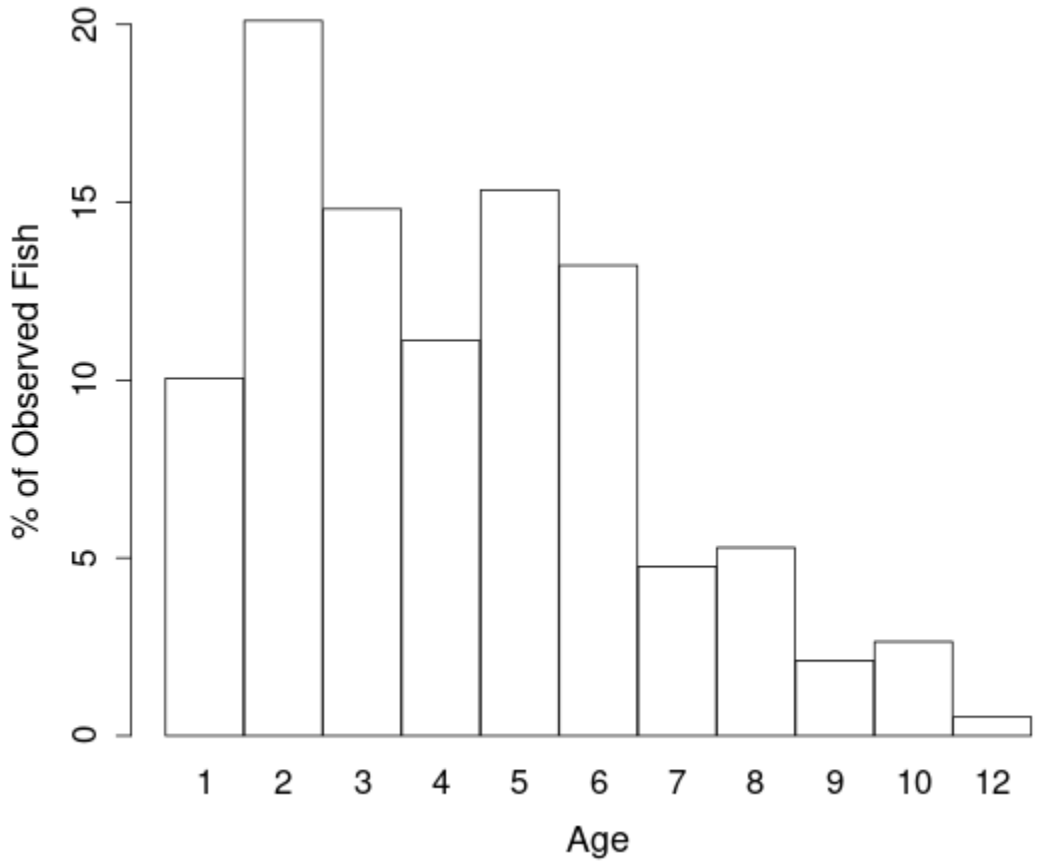

Figure 2. Largemouth Bass Age Frequencies for Taft 2023 sample

Table 3. Proportional Size Distribution (PSD) of Largemouth bass. Quality (PSD-Q), preferred (PSD-P) and memorable (PSD-M) lengths. PSD values indicate the proportion of fish in or above the quality, preferred or memorable size classes.

Year	PSD-Q	PSD-P	PSD-M
2016	77	30	1
2019	91	31	3
2023	73	39	4

Balanced PSD Values	
PSD-Q	40-70
PSD-P	10-40
PSD-M	0-10

Appendix I.

Taft Stocking History since 2000

YEAR	SPECIES	Number	Size (inches)
2000	Channel catfish	1380	7
2001	Channel catfish	1380	7
2004	Channel catfish	1380	5.5
2005	Channel catfish	3,044	7
2006	Channel catfish	3600	7
2007	Channel catfish	3480	7
2008	Fl. Largemouth	1800	3
2009	Black Crappie	56	Adult
2011	Threadfin	500	3
2012	Fl. Largemouth	12,179	1.5
2013	Channel catfish	3540	7
2013	Fl. Largemouth	130	6.5
2014	Channel catfish	3541	7
2015	Channel catfish	3654	6.75
2015	Threadfin	1000	3.5
2015	Fl. Largemouth	75000	0.75
2016	Threadfin	1500	3
2017	Threadfin	350	4
2018	Threadfin	1000	2.5
2020	Threadfin	2000	4.5
2021	Channel catfish	10800	3
2021	Threadfin	2100	3
2023	Fl. Largemouth	64,000	0.75

Appendix II. ODWC maintained habitat sites onTaft Lake

Area Name	Latitude	Longitude	Habitat type	Marked	Bank Access	Date installed
Site 1	35.7381	-95.5344	pallet structure	Y	N	10/10/2017
Site 2	35.73792	-95.5309	pallet structure	Y	Y	10/10/2017