SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

Cedar LAKE

2023

SURVEY REPORT

State: Oklahoma

Project Title: Cedar Lake Fish Management Survey Report

Period Covered: 2022-2023

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Cedar Lake

ABSTRACT

Cedar Lake was sampled in 2022 for Largemouth Bass and in 2023 with Gill nets and Trap nets for catfish and crappie. Bass catch rates were satisfactory but several population metrics were lower than ideal. Few catfish and crappie were collected in the standard survey. Low crappie numbers are not concerning since Cedar lake is not managed for crappie. Likewise low catfish numbers are not concerning as catfish have not been stocked in several years. Staff recommends stocking catfish and installing catfish spawning boxes in an attempt to establish a self-sustaining population.

INTRODUCTION

Cedar lake is a small 86 acre lake located in Le Flore county in Southeastern Oklahoma and is owned and operated by the United States Forest Service (USFS) and is within the Ouachita National Forest. The lake was impounded in 1937. The Civilian Conservation Corp constructed the dam on Big Cedar Creek. The lake has aquatic vegetation around 75% of the lake which limits shoreline access. The lake is known for its largemouth bass fishing and produced several state records including a 14 lb 12.3 oz bass in 2012 And another state record Largemouth Bass weighing 14 lb 13.7 oz in 2013. Channel Catfish have been stocked in the lake until 2017. Cedar lake is stocked with Florida Bass on average every 2 to 3 years. This has contributed to the trophy potential of the lake. The USFS limes and fertilizes the lake every 2 or so years in an effort to assist the productivity of the lake. Cedar lakes location within the national forest means that it is surrounded by timber and there are very few agricultural inputs which limit the nutrient flow into the lake.

RESULTS

<u>Largemouth Bass</u>

Largemouth Bass were collected in spring 2022 via routine spring electrofishing. Prior to this most of the sampling was conducted by the USFS who used similar methods. Raw data is not available for these periods but basic results and summary tables are.

Catch rates (table 1) were similar between 2022 and 2008, 82 and 84 respectively, with 2022 having more smaller bass as indicated by table 2. There was a lack of medium sized fish in our more recent sample with Memorable size fish being again similar between years (Table 2). Proportional Stocking Density is low due to the high number of these smaller fish as well (table 3). Figure 1 shows a

large percentage of our sample were 5 year old fish and likely the result of a fantastic recruitment year in 2017.

Relative Weight (Wr) was much lower compared to previous samples (Table 4). This was driven by lower body condition of stock and quality size fish. Average Wr is below target goals but was likely driven by the large abundance of smaller size fish. Relative weight of Memorable size fish is good. Relative weight is expected to improve as the large 2017 year class moves through.

Age data was not collected prior to 2022 by the USFS or ODWC. Bass growth was good for ages 1 and 2 but results show growth rates slow between age 3 and age 6 (Table 5). Weight at age data shows that weight gain is also low between ages 3 and 6 before picking back up at age 9 (Table 6).

The Von Bert equation (table 7) shows an L infinity of 4623.129. The mortality rate at Cedar lake for Largemouth Bass is just under 25% (table 8).

While the largemouth bass population in Cedar lake is healthy, the growth rate and body condition is less than desirable. Owing to the lack of age data from previous samples it is impossible to compare the current sample to historical conditions. Given the low mortality rate, and large 5 year old age class it is likely that a strong recruitment event took place in 2017 and the abundance of fish has caused density dependent effects. Staff will continue to monitor conditions incase issues with growth rates and Wr persist. If metrics do not improve staff may recommend artificial removal of intermediate size bass, or other management actions to limit the recruitment of bass.

Channel Catfish

Cedar lake was gill netted for Channel Catfish in 2023. Only one Catfish was collected measuring 644 mm and weighing 3208 grams. Previously Channel catfish were routinely stocked in Cedar lake but have since ceased. This sample was completed to evaluate the catfish population at Cedar lake to evaluate whether stockings should resume. It is recommended that channel catfish stockings resume for the period of evaluation recommended by the ODWC catfish committee with the addition of catfish spawning structures in an effort to establish a self-sustaining population. ODWC will continue to monitor the catfish population at Cedar lake as they are stocked and evaluate whether the population can be sustained or if stockings efforts should stop.

Crappie

Only 9 crappie were collected during trap netting in 2023. As such no tables or charts are presented. Crappie have never been present in large numbers at Cedar lake but have always been fairly health. The average size in this sample was 295 mm with the largest specimen reaching 360 mm. Relative weights were high for all size classes. The crappie population in Cedar lake is very small but that is to be expected in a lake managed for Trophy Largemouth Bass. The crappie that are present are large and healthy and present a unique catch for the lake.

Recommendations

1. Monitor body condition and growth rates of Largemouth Bass population.
2. Stock Channel catfish and install spawning habitat.
3. Monitor stocked catfish and evaluate ability to self-sustain.
4. Maintain shoreline access for anglers.

Table 1: Largemouth Bass Catch Per Unit Effort (CPUE) by year.

Total CPUE	2008	2022
Mean	84	82
Count	5	6
SE	20.2	14.83
L 95% CI	44.41	52.92
U 95% CI	123.59	111.07

Table 2: Largemouth Bass CPUE across size classes by year.

CPUE Size	2008		2022	
	Mean	SE	Mean	SE
Sub-stock	8	1.79	16	3.35
Stock	9.6	4.12	45	10.48
Quality	40	9.21	16	4.29
Preferred	21.6	6.52	.	.
Memorable	4.8	2.33	5	2.86
Trophy	.	.	.	.

Table 3: Largemouth Bass proportional Stock Density by year.

PSD	2008	2022
PSD	87	32
PSD-P	35	8
PSD-M	6	8
PSD-T	.	.
PSD S-Q	13	68
PSD Q-P	53	24
PSD P-M	28	8
PSD M-T	6	.

Table 4: Largemouth Bass Relative weight with standard errors across PSD classes by year.

Wr	2008		2022	
	Mean	SE	Mean	SE
Substock	88.74	.	86.83	5.26
Stock	88.22	.	82.86	1.16
Quality	89.75	.	74.53	2.58
Preferred	90.29	.	.	.
Memorable	96.81	.	94.62	4.70
Trophy	.	.	.	.
Total	90.05	.	81.92	1.21

Table 5: Largemouth Bass Mean length at age with standard errors.

Mean Length at Age	2022	
	Mean	SE
1	134.0	3.76
2	221.5	4.37
3	261.1	5.29
4	285.5	4.36
5	305.6	4.08
6	313.5	8.29
7	.	.
8	.	.
9	536.0	10.00
10	.	.
11	617.5	0.05
12	.	.
13	560.0	.

Table 6: Largemouth Bass Mean weight at age with standard errors.

Mean Weight at Age	2022	
	Mean	SE
1	24.53333	2.288411
2	125.2941	9.111953
3	200.5455	12.25514
4	273.6667	13.79291
5	307	12.95263
6	341	29.03446
7	.	.
8	.	.
9	2365	24.1
10	.	.
11	3990	12.76
12	.	.
13	2648	.

Table 7: Largemouth Bass Von Bertalanffy growth metrics.

Von Bert	2022
L inf	4623.129
K	0.009
t0	-2.784

Table 8: Largemouth Bass mortality estimates.

Mortality Table	2022
Instantaneous	0.285503
Annualized	24.84

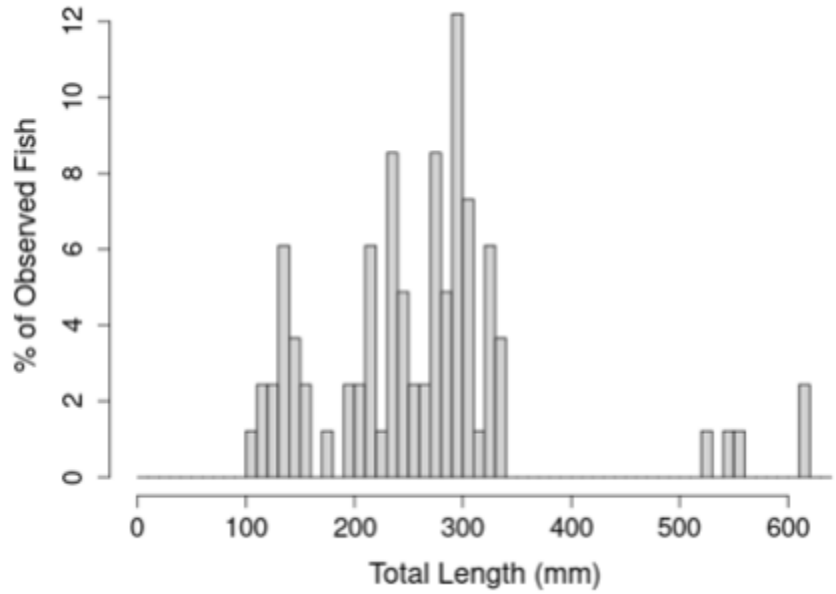

Figure 1: Largemouth Bass length frequency histogram.

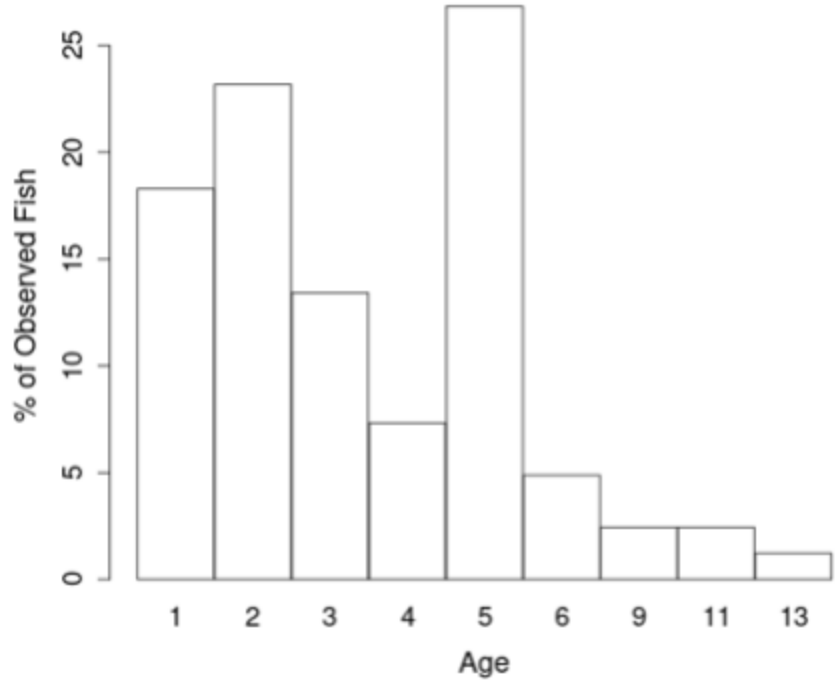

Figure 2: Largemouth Bass age frequency histogram.

Appendix 1. Species, number, and size of fish stocked since 2011.

Year	Water Body	Species	Number Stocked	Size (in)	Hatchery (origin)
2011	Cedar (USFWS)	Certified Florida Largemouth Bass	7,800	1.5	Durant SFH - ODWC
2011	Cedar (USFWS)	Channel Catfish	3,401	9	Durant SFH - ODWC
2012	Cedar (USFWS)	Channel Catfish	3,400	9	
2012	Cedar (USFWS)	Certified Florida Largemouth Bass	7,800	1.5	Durant SFH - ODWC
2012	Cedar (USFWS)	Channel Catfish	3,698	9	JA Manning SFH - ODWC
2013	Cedar (USFWS)	Certified Florida Largemouth Bass	10,000	1.5	
2013	Cedar (USFWS)	Channel Catfish	3,400	9	
2013	Cedar (USFWS)	Channel Catfish	3,402	9	JA Manning SFH - ODWC
2013	Cedar (USFWS)	Certified Florida Largemouth Bass	9,996	1.5	Durant SFH - ODWC
2014	Cedar (USFWS)	Certified Florida Largemouth Bass	15,000	1.5	
2014	Cedar (USFWS)	Channel Catfish	3,400	9	
2014	Cedar (USFWS)	Certified Florida Largemouth Bass	15,000	1.5	Durant SFH - ODWC
2014	Cedar (USFWS)	Channel Catfish	3,402	9	Durant SFH - ODWC
2015	Cedar (USFWS)	Certified Florida Largemouth Bass	15,000	1.5	
2015	Cedar (USFWS)	Channel Catfish	3,400	9	
2015	Cedar (USFWS)	Channel Catfish	3,493	9	Durant SFH - ODWC
2016	Cedar (USFWS)	Certified Florida Largemouth Bass	15,000	1.5	
2016	Cedar (USFWS)	Channel Catfish	3,400	9	
2016	Cedar (USFWS)	Certified Florida Largemouth Bass	14,998	1.5	Durant SFH - ODWC
2017	Cedar (USFWS)	Certified Florida Largemouth Bass	15,000	1.5	
2017	Cedar (USFWS)	Channel Catfish	3,400	9	
2017	Cedar (USFWS)	Certified Florida Largemouth Bass	15,015	1.5	Durant SFH - ODWC
2018	Cedar (USFWS)	Certified Florida Largemouth Bass	15,125	1.5	Durant SFH - ODWC
2021	Cedar (USFWS)	Certified Florida Largemouth Bass	30,251	1.5	Durant SFH - ODWC