SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

Wayne Wallace LAKE

2024

SURVEY REPORT

State: Oklahoma

Project Title: Wayne Wallace Lake Fish Management Survey Report

Period Covered: 2024

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Wayne Wallace

ABSTRACT

Wayne Wallace is a popular fishing location within Robbers Cave State Park for Largemouth Bass, Crappie, and Channel Catfish. While most of the results of recent surveys are positive many of the measurements of fish body condition are low. This indicates an issue with abundance of predatory type fishes or an issue with lack of forage base. Since the abundance of predatory fishes is not high focus should be given to improving forage base.

INTRODUCTION

Lake Wayne Wallace impounds the Fourche Maline Creek, 8 km north of Wilburton in Latimer County, Oklahoma (Figure 1) within the boundaries of Robbers Cave State Park. Wayne Wallace Reservoir covers 94 acres and was constructed by the Oklahoma Department of Wildlife Conservation (ODWC). Fish habitat consists primarily of rock and vegetation. Major fisheries include largemouth bass, spotted bass, white crappie and channel catfish. During the fall of 1990, a new gate valve stem was installed in the drain structure to replace one that was damaged during an attempted lake level drawdown.

RESULTS

Largemouth Bass

Largemouth Bass were sampled using shoreline electrofishing in spring 2024. Catch per unit effort (CPUE) is similar to 2021 but below 2012 results (table 1). The length frequency histogram shows a peak at around 280 to 300 mm with frequency dropping off quite quickly on either side. This likely indicates a large year class working through the system (Figure 1). Largemouth Bass CPUE by size class is very similar to 2021 with a slight shift towards larger bass in the sample (table 2). PSD has also improved to the highest level since prior to 20212 (table 3). Relative weights have remained steady since 2012 but are below acceptable levels (85) (table 4). This could be indicative of issues relating to stunting and inadequate forage base. Age data was not collected prior to 2018 but have been collected with every sample since then. Age 3 fish were the most common and would correspond to the fish between 280 and 300 mm that are so prevalent in the length frequency histogram (figure 2). Mean length at age has improved slightly since 2021 but is lower than 2018 for age 2 and 3 year old bass (table 5). Mean weight at age has improved for age 4 and older fish but is lower in 2024 for age 2 and 3 fish compared to previous samples (table 6). Von Bertalanffy estimates for L infinity is up from 2018 (table 7). Mortality estimates seem stable from 2018 to 2024 and average around 36% (table 8).

Crappie

Crappie were sampled Fall of 2024. However, only 3 crappie were collected likely owing to poor weather conditions which affected the distribution of crappie in the lake. There have been no complaints about crappie fishing at the lake and the crappie that were collected were in fair condition.

Catfish

Channel Catfish were collected fall of 2024 using gill nets. Only 25 individuals were collected which is below the threshold for age analysis. 80% of the collected catfish were smaller stock and quality size fish with only 20% reaching the preferred size class. Most of the fish were approximately 400 mm (Figure 3). Based on observations most of the fish seemed slightly under weight.

Seining

Summer seining was conducted during the summer of 2021. 40% of the sample were Bigeye shiner, with inland silverside, and Mosquito fish being the second and third most sampled fish respectively at 21% and 16% (figure 4). The most common sampled Sportfish was Largemouth Bass which made up 13% of the sample. Results indicate a strong forage base for game fish but it is concerning that no shad were collected.

Recommendations

1. Bass relative weight is low and coupled with the lack of shad in the system warrants more attention. Efforts to increase bass relative weight by transporting shad if samples continue to reveal no shad, or to remove Largemouth Bass biomass should be considered.
2. Based on research lab catfish spawning results work on increasing channel catfish opportunities. Care should be taken to ensure healthy weight of catfish considering slightly poor condition.

Table 1: Largemouth Bass Catch Per Unit Effort (CPUE) by year. Note an error in the system has miscalculated 2018 CPUE and due to bugs in the OFAT system can not be corrected at time of writing.

Total CPUE	2012	2018	2021	2024
Mean	85	324	66	67
Count	6	1	6	6
SE	8.11	.	8.2	13.63
L 95% CI	69.1	.	49.93	40.28
U 95% CI	100.9	.	82.07	93.72

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

CPUE Size	2012		2018		2021		2024	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Substock	15	5.08	Unavailable		4	2	9	4.02
Stock	30	2.68			30	7.59	22	8.29
Quality	36	6.2			20	3.35	15	4.02
Preferred	4	2.53			11	2.86	18	4.10
Memorable	.	.			1	1	3	1.34
Trophy	.	.			.	.	.	.

Table 3: Largemouth Bass Proportional Stock Density by year.

PSD	2012	2018	2021	2024
PSD	57	42	52	62
PSD-P	6	17	19	36
PSD-M	.	.	2	5
PSD-T	.	.	.	.
PSD S-Q	43	58	48	38
PSD Q-P	51	25	32	26
PSD P-M	6	17	19	31
PSD M-T	.	.	2	5

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

Wr	2012		2018		2021		2024	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Substock	92.13	2.01	97.79	.	71.76	4.97	78.69	7.13
Stock	83.1	1.06	86.94	2.01	81.06	1.98	79.95	1.48
Quality	81.03	0.8	86.97	1.65	84.94	1.27	78.33	2.57
Preferred	85.58	1.62	85.28	1.59	90.38	3.16	83.34	3.18
Memorable	.	.	.	.	82.91	.	102.81	1.35
Trophy	.	.	.	.	.	.	.	.
Total	83.31	0.7	86.87	1.24	83.25	1.25	81.52	1.45

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

Mean Length at Age	2018		2021		2024	
	Mean	SE	Mean	SE	Mean	SE
1	136.5	16.5	.	.	149.38	6.88
2	264.07	3.4	244.86	6.69	243.17	5.77
3	310.75	4.37	314.38	10.8	291.92	3.58
4	364.67	8.69	305	34.53	405.29	22.33
5	397	16.56	369.92	6.35	404.8	12
6	420	.	390	.	505	.
7	402	.	438.5	22.85	448	.
8	.	.	.	.	481.29	17.19
9	.	.	550	.	.	.
10	.	.	.	.	.	.

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

Mean Weight at Age	2018		2021		2024	
	Mean	SE	Mean	SE	Mean	SE
1	28	13	.	.	33	5.07
2	220.77	9.71	170.79	15.27	164.67	12.25
3	363.75	18.78	406.88	48.15	269.15	11.17
4	633.83	52.71	369.67	144.86	885.71	241.31
5	838.33	73.3	670.15	57.11	885.5	85.61
6	952	.	752	.	1968	.
7	874	.	1230.5	236.59	1172	.
8	.	.	.	.	1712.29	222.44
9	.	.	2290	.	.	.
10	.	.	.	.	.	.

Table 7: Largemouth Bass Von Bertalanffy growth metrics.

Von Bert	2018	2021	2024
L inf	419.4	1194.71	569.212
K	0.54	0.04	0.239
t0	0.21	-3.06	-0.221

Table 8: Largemouth Bass mortality estimates.

Mortality Table	2018	2021	2024
Instantaneous	0.54	0.4	0.43
Annualized	41.78	33.24	35.05

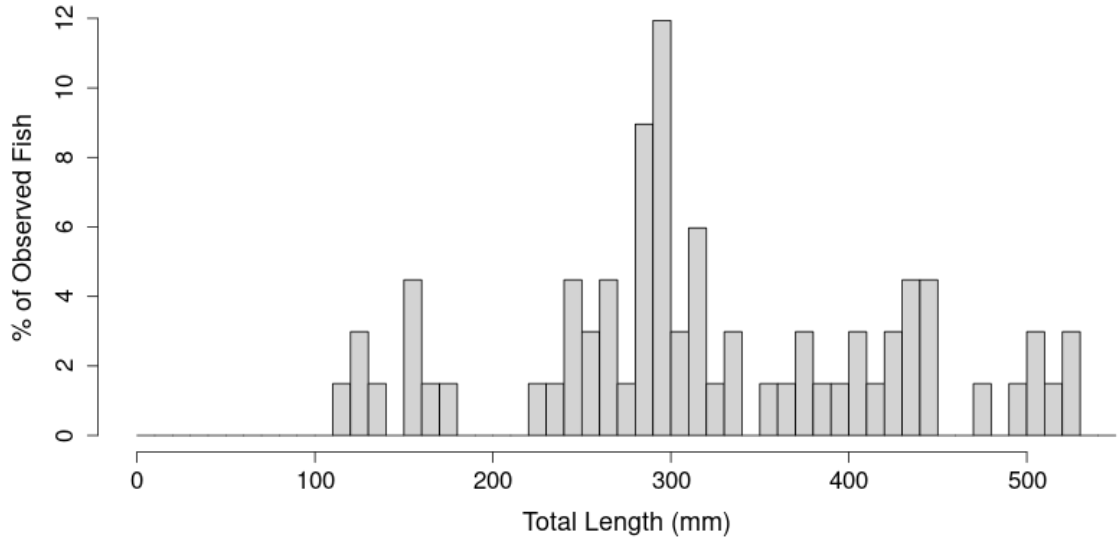

Figure 1: Largemouth Bass length frequency histogram.

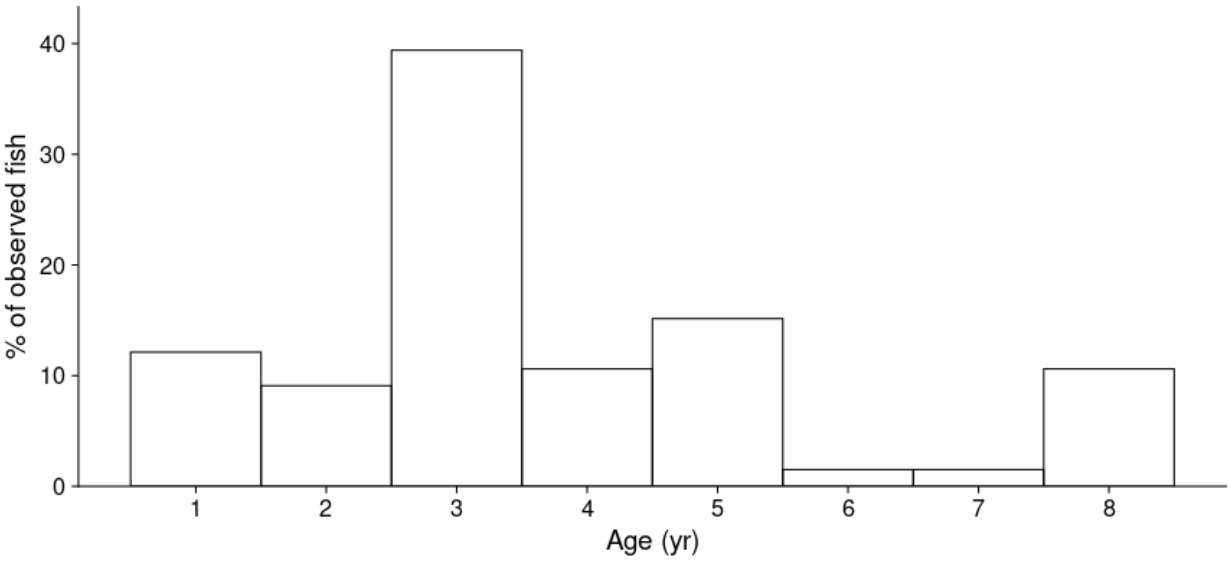

Figure 2: Largemouth Bass age frequency histogram.

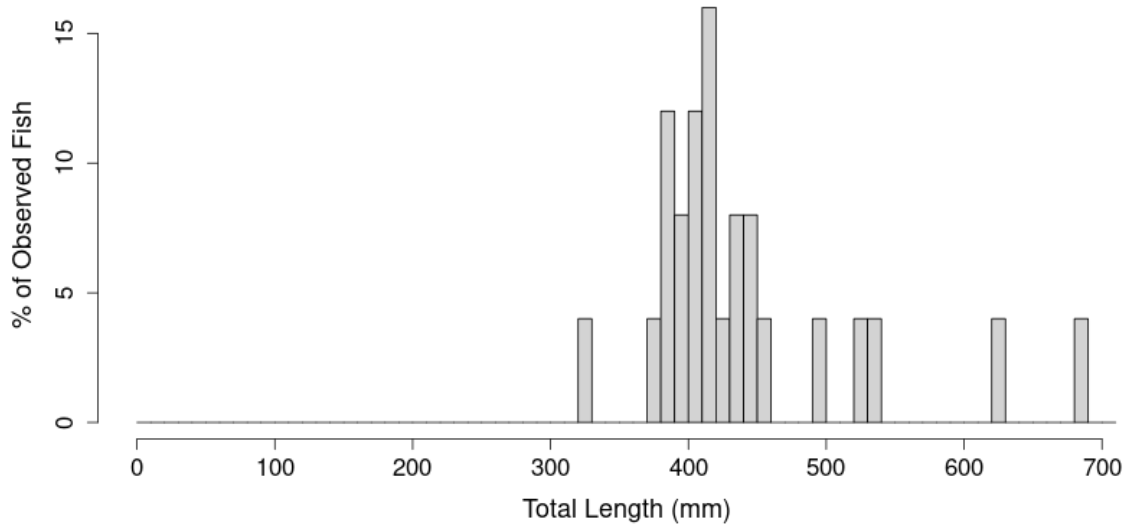

Figure 3: Channel Catfish length frequency histogram.

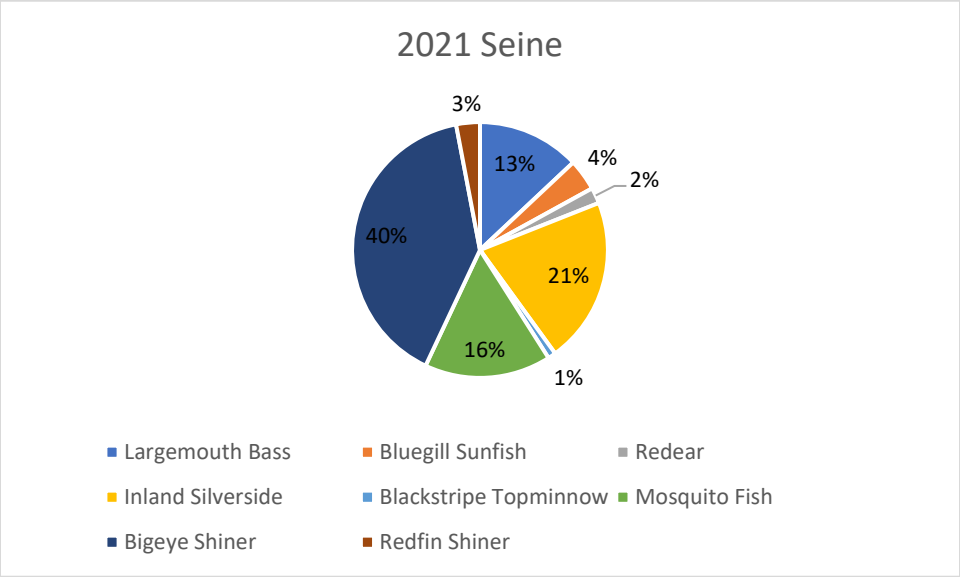

Figure 4: Seined fish composition results.