SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

Sardis LAKE

2022

SURVEY REPORT

State: Oklahoma

Project Title: Sardis Fish Management Survey Report

Period Covered: 2022

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Sardis

ABSTRACT

Sardis Reservoir was sampled in 2022 for Bass, Catfish, White Bass, and Crappie. Spring boat electrofishing was difficult due to high water temperatures which suppressed catch rates. Largemouth Bass that were collected tended to be larger but under weight and likely in post-spawn condition. Few Spotted Bass were collected but numbers were similar to previous samples. Blue Catfish were collected utilizing Summer catfish electrofishing and had high catch rates with the bulk of the sample consisting of fish in the sub-stock size. The crappie population in Sardis is mostly White Crappie which is characterized by a number of smaller, slower growing fish compared to other regional reservoirs. Crappie are likely stunted in Sardis due to high reproduction leading to competition for forage at smaller sizes. Few Black Crappie were collected but had better growth than White Crappie likely owing to differences in diet at smaller sizes. White Bass were sampled with electrofishing creeks during the White Bass spawn and revealed good numbers of larger White Bass. The population is mostly made up of 2, 4, and 5 year old fish. Night-time seining was utilized for young of year sportfish and forage fish. The most commonly collected fish were Inland Silversides making over 60% of the sample with Bluegill making up the most common sportfish with just over 8% of the Sample. Staff will continue to monitor Bass, Catfish, and Crappie while looking to expand our understanding of the White Bass population trends and instituting new sampling techniques to evaulate the Walleye population.

INTRODUCTION

Sardis Reservoir, an impoundment of Jack Fork, Buffalo, and Anderson Creeks, is located 3.0 mi. north of Clayton in Pushmataha County, Oklahoma. The impoundment was completed in 1982 by the U.S. Army Corps of Engineers and covers 5,811 surface hectares. Sardis Reservoir has a mean depth of 21.3 ft., a maximum depth of 49.5 ft., a shoreline development ratio of 6.9, a water exchange rate of 0.9, and a secchi disc visibility of around 28.3 in. (OWRB; 2008 BUMP Report). Turbidity is primarily from suspended clay particles. Fish habitat consists primarily of aquatic vegetation, rock, and flooded timber. Major fisheries include largemouth and spotted bass, crappie, white bass, walleye, channel catfish, blue catfish, and flathead catfish.

An outbreak of epistylus impacted black bass causing some mortality during the summer of 1991. This parasitic outgrowth was noticed to a lesser degree in 1992 samples and has not

been found since. Largemouth bass virus (LMBV) caused significant mortality at infected lakes in the early 2000s. Of 36 samples collected from Sardis Reservoir, 7 tested positive for LMBV. Certified Florida largemouth bass (FLMB) were stocked in Sardis Reservoir since 1993 to improve the potential of catching a trophy.

RESULTS

Largemouth Bass

Largemouth Bass were collected in 2022 for Bass DNA sampling. Environmental conditions negatively impacted collections with a cool spring rapidly warming causing water temperatures to surpass targeted sampling guidelines. Water temperatures were 80 degrees while temperatures between 65 and 75 are preferred. Due to these poor conditions bass were targeted for DNA collection and not routine sampling resulting in much lower catch rates. Bass catch rates have been dropping since 2004 but this could be due to the impact of Largemouth bass virus or an artifact of the change in sampling methodology (15 to 10 minute stations). Catch rates were 7.64 in 2022 down from 40.5 in 2004 (Table 1). The size structure of the Bass population appears to be up from the last two samples in 2012 and 2019 with catch rates of Memorable fish higher in 2022 than in 2004 (table 2). The Proportional Stock Density (PSD; Table 3) supports that idea that size structure has improved with a PSD of 85 in 2022 compared to 81 in 2019 and a low of 66 in 2004. However, the small sample size in 2022 could have caused the high PSD value. Largemouth Bass Relative Weight (Wr) was 91 in 2022 and satisfactory (table 4). Relative weight is down from the previous sample which was influenced by high readings from sub-stock size fish. Relative weight is higher than readings in the 2000's but inline with values from the last 10 years. Bass age data was not collected with every sample but was collected in 2008, 2019, and 2022. Bass growth rates (table 5) have dropped since 2008 but are still acceptable. Largemouth bass growth rates for age 1 and 2 fish are good but growth slows down until fish reach 8 years old before picking up. Largemouth Bass do not seem to have an issue increasing weight with age although weight at age is lower in 2022 than compared to previous samples. Bass still appear fairly healthy and this is likely an artifact of and appear to overall be healthy (table 6). The Von Bertalanffy growth curve (table 7) is similar between years although the L infinity is lower in the current sample compared to previous years. Mortality estimates in 2022 were lower than previous samples owing to the small sample size (table 8). Based on previous samples Largemouth Bass have an average mortality rate of approximately 30%.

Spotted Bass

Spotted Bass abundance was similar to previous abundances in 2012 although sample sizes were low with only one or two fish caught in most length categories (table 9; Figure 3). Several sizes were missing from the 2022 sample given environmental challenges related to sampling (table 10). However abundances of stock, quality, and preferred size fish is similar between samples as is Spotted Bass PSD (table 11). Relative Weight did drop in 2022 compared to 2012 with the dip driven by the low Wr of preferred size fish which is an artifact of small sample size (table 12). Age data was not previously collected to the 2022 sample. Based on age data from 2022 available in tables 13, Spotted Bass growth rates are fair with bass growing quickly for the first

two years before slowing down. Spotted bass weight gain follows a similar trend (table 14). Spotted Bass were only collected from 5 age classes with the age 2 year class constituting the bulk of the sample (figure 4) Maximum length from the Von Bertalanffy growth curve for Spotted bass is 427 mm (table 15). The estimated mortality rate for Spotted bass is 17% which is lower than Largemouth Bass (table 16).

Catfish

Blue Catfish were sampled summer of 2022 with boat electrofishing. Catch Per Unit Effort was 187 with the bulk of Blue Catfish being smaller catfish in the sub-stock size class (table 17, 18). Larger fish were not collected in this sample, likely due to gear sampling bias (figure 5). Proportional Size Density is low at 15 (table 19). Relative weight for Blue catfish is fair at 93.6 (table 20). However, the relative weight for stock and quality size fish is low at 84.17 and 83.73, respectively. The higher average Wr is due to the good condition of sub-stock sized fish which had a relative weight of 94.86. Age data reveals that growth rates of Blue Catfish is good (table 21). Blue catfish growth plateaus once fish hit approximately 400- 500 mm as the average fish length for ages 5-24 fall within these approximate lengths. However according to the length frequency chart the vast majority of sampled individuals were less than 4 years old (figure 6). Weight gain of Blue Catfish is slow, with fish younger than 4 years old weighing less than 200g (table 22). The Von Bertalanffy estimates for Blue Catfish estimates 747 mm as the maximum length, however the largest fish was considerably smaller than the estimate (table 23). The mortality rate for Blue Catfish is 22%. The lack of larger fish in the sample bias many of the population metrics and I recommend the use of large mesh gillnets to sample Blue Catfish. The high abundance of smaller individuals paired with slow weight gain and the lower estimated mortality rate indicate a likelihood of stunting in the Blue Catfish in Sardis. Staff will continue to monitor the population via large mesh gillnets and evaluate whether catfish electrofishing should be used as a monitoring tool.

Crappie

Crappie were sampled in fall of 2022 using trap nets. Over 400 White Crappie were sampled compared to only 15 Black Crappie. It is common for one crappie species to dominate a lake rather than a 50/50 balance. In most Southeast Oklahoma reservoirs White Crappie dominate the system as exhibited by Sardis. White Crappie CPUE in 2022 was 13.82 which is much lower than the high in 2011 of 30 and as well as the last sample in 2018 (table 25). The majority of the sample consisted of under 150 mm with the greatest percentage of fish being those under 100 mm (figure 7). While all size classes had a lower catch rate the greatest drop was in the sub-stock and stock size classes (table 26). Catch rates of sub-stock size fish were similar between 2011 and 2018 but declined significantly in 2022. This could be a result of a large year classes in 2011 and 2018 or a smaller than usual year class in 2022. Total PSD in 2022 was 41 which is the same as 2011 but slightly lower than 2018 but mostly similar in all size classes (table 27). White Crappie Wr in 2022 was similar between 2022 and 2011 and 2018 (table 28). Relative weights by size class were better in 2022 compared to 2011 with the exception of sub-stock and stock size

fish but mostly similar to 2018 results. Age data was collected in 2011, 2018, and 2022 with 2022. The majority of White Crappie collected were age-0 and age-1 which constituted over 70% of the sample (figure 8). Growth rates based on length at age is similar between 2011 and 2022 with the exception of age 1 and 2 fish which had a lower length at age (table 29). Growth rates in 2018 showed similar results to 2011 with 2018 results showing fish length decreasing at age 4 but increasing at age 5. White Crappie weight at age is similar between the 2022 sample and the 2011 sample but lower than the 2018 sample (table 30). The main difference between the 2022 sample and 2011 sample is age 1 and 2 fish in 2022 weigh less than both the 2011 and 2018 samples. The Von Bertalanffy metrics for White Crappie show a maximum length of 565 mm in 2022 which is approximately 210 mm longer than the estimates for 2011 and 2018 samples (table 31). Given the similarity in estimates in 2011 and 2018, 352 mm and 357 mm respectively, the maximum length is likely around 350 mm while the estimate in 2022 is a real estimate but an error from the way estimates are calculated with this model. Estimates of mortality (table 32) are lower in 2022 than in previous samples. This is due to the presence of older fish in 2022 than in other years biasing the estimate. Still mortality rates of White Crappie are likely greater than 75% in Sardis lake.

Black Crappie data is not included in this survey given low sample size of this species in the reservoir does not meet standards for accurate estimates but general population dynamics are briefly described. Black Crappie numbers in 2018 are similar to previous samples overall and in different size classes. Overall PSD is lower than the last decade but sample size is not enough for conclusions to be drawn. Relative weight is low but mean length at age is better than White Crappie. Given life history differences between the two crappie species Black Crappie likely grow better by delaying the switch to insectivory and piscivory thus avoiding the competition for forage faced by White Crappie in Sardis reservoir. This allows Black Crappie to switch to reach larger sizes at an earlier age resulting in faster growth later on given their advanced size compared to White Crappie. Estimates for Black Crappie Von Bertalanffy are not available while estimates of mortality are much lower than White Crappie given the smaller sample of Black Crappie and truncated age structure sampled.

Given the smaller size of crappie in Sardis compared to other lakes and the fairly high abundance as well as the high mortality rate, Sardis likely has a stunted crappie population. The high number of smaller individuals is due to consistent high reproduction resulting in competition for forage at a smaller size leading to slow growth rates and high mortality. Once fish escape this recruitment bottleneck growth and size improve but result in lower numbers of larger fish compared to other regional reservoirs.

White Bass

White Bass where sampled spring of 2022 during the White Bass spawn using boat electrofishing. Often White Bass are sampled via fall gill netting but returns are poor. Spawn electrofishing of White Bass has yield collections 6 times greater than fall gill netting with a few caveats. Given that fish are in breeding condition weight and all weight derived metrics are biased given much of it is tied up in gonadal weight. White Bass CPUE was 148 (table 33),

however this catch rate represents sampling areas where fish were located in unusually high abundance and these results have no previous data to compare to yet. The majority of fish collected were in the Preferred size class category (300 mm) with 20% of the sample consisting of individuals greater than 380 mm (table 34). Almost all fish fell between 300 and 400 mm (figure 9). White Bass PSD was 100 (table 35), but is again biased as sampling was conducted in areas fish were spawning and many of the smaller individuals would not have reached sexual maturity and are not represented in proportion to their abundance. Relative weight was acceptable at 91.94 but is again biased as much of the weight is gonadal (table 36). Age data was collected and fish sex was recorded so future sex specific growth curves could be constructed and compared. Age data indicates that Ages 2, 4, and 5 made up approximately 90% of the sample (Figure 10). Given the lack of comparable data it is unclear if these represent above average year class strength or if years that make up a smaller percentage represent below average year class strength. Mean length at age of White Bass good with individuals reaching 247 mm at age 1 and averaging 400 mm at age 6 (table 37). Care must be taken when comparing these results to other lakes and regions as a fish captured in the fall would be much longer at the same age as fall captured fish have an extra summer of growth. The same caveat applies to mean length at weight with the additional bias from extra gonadal weight (table 38). Mean weight at age reached 173.33 g at age 1 and 1004 grams at age 7, although sample size at this age was limited. The Von Bertalanffy metrics shows a maximum length of 407.49 mm which was exceeded by our sample similar to the estimate (table 39). The mortality rate for White Bass is 36.8% (table 40).

Seining

Staff seined Sardis at night during July of 2022 to collect young of year of important sportfish species and forage species. 1028 fish were collected representing 16 different species (table 41). 13.91% of the fish by count were sportfish. The most commonly collected fish were Inland Silversides representing 61.5% of the sample followed by Red Shiner with 14.59%, and bluegill being the third most commonly collected species with 8.17% of the sample and the most abundant sportfish collected. Only 3 Gizzard Shad were collected.

Recommendations

1. Continue to monitor Largemouth Bass, Blue Catfish, and Crappie growth and conditions as scheduling allows.
2. Collect additional White Bass data to compare trends.
3. Collect data on Walleye which have not been targeted for sampling in Sardis.

Table 1: Largemouth Bass Catch Per Unit Effort (CPUE) across time.

Total CPUE	2004	2006	2008	2012	2019	2022
Mean	40.5	45.83	36.83	30.25	19.06	7.64
Count	24	24	24	24	17	11
SE	3.52	5.18	3.46	3.3	2.31	3.53
L 95% CI	33.59	35.69	30.04	23.78	14.52	0.71
U 95% CI	47.41	55.98	43.62	36.72	23.6	14.56

Table 2: Largemouth Bass CPUE by size class across time.

CPUE Size	2004		2006		2008		2012		2019		2022	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Substock	13.5	1.73	10.17	1.36	8.17	1.37	10.25	1.89	7.06	1.87	0.55	0.55
Stock	9.17	1.84	13.33	1.66	13.33	2.4	5.25	1.37	2.12	0.72	1.09	0.73
Quality	8.83	1.3	10	1.54	9.67	1.52	9	1.81	4.94	1.48	2.73	1.69
Preferred	7.83	1.49	10.67	2.31	3.5	0.81	5.25	1.04	3.53	1.04	1.64	1.64
Memorable	1.17	0.56	1.67	0.76	2.17	0.54	0.5	0.35	0.71	0.48	1.64	1.17
Trophy	.	.	.	.	.	.	.	.	.	.	.	.

Table 3: Largemouth Bass PSD by size class across time.

PSD	2004	2006	2008	2012	2019	2022
Total	66	63	53	74	81	85
PSD-P	33	35	20	29	38	46
PSD-M	4	5	8	2	6	23
PSD-T	.	.	.	.	.	
PSD S-Q	34	37	47	26	19	15
PSD Q-P	33	28	34	45	44	38
PSD P-M	29	30	12	26	31	23
PSD M-T	4	5	8	2	6	23

Table 4: Largemouth Bass Wr by size class across time.

Wr	2004		2006		2008		2012		2019		2022	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Substock	86.96	2.67	86.7	2.4	82.99	2.65	97.53	2.53	189.41	75.84	.	.
Stock	87.84	3.14	84.58	0.84	84.14	0.93	87.98	1.13	192.45	119.86	98.7	8.44
Quality	84.91	2.03	83.51	0.86	82.11	0.95	87	1.2	92.43	19.45	88.61	4.12
Preferred	87.43	1.17	88.5	0.94	86.8	1.96	90.89	2.47	58.71	12.87	97.26	3.66
Memorable	88.12	2.74	91.21	3.34	97.27	3.1	106.53	1.91	116.25	5.45	86.94	7.34
Trophy	.	.	.	.	.	.	.	.	.	.	.	.
Total	86.8	1.17	85.89	0.56	84.46	84.46	90.72	0.99	134.65	32.19	91.77	2.76

Table 5: Largemouth Bass Length at age across time.

Mean Length at Age	2008		2019		2022	
	Mean	SE	Mean	SE	Mean	SE
1	183.9	3.77	171.5	3.42	125	.
2	293.86	3.1	296.42	7.41	278	14
3	371.16	9.9	363.4	10.69	344	5.86
4	410.18	12.99	411	9.76	376.5	19.5
5	466.5	27.76	.	.	435	50
6	500.33	29.94	522	26.5	.	.
7	567.5	8.26	.	.	.	.
8	564.5	5.5	.	.	541.5	13.5
9	.	.	.	.	.	.
10	.	.	.	.	.	.
11	595.5	8.5	.	.	.	.
12	.	.	.	.	.	.
13	.	.	618	.	.	.

Table 6: Largemouth Bass weight at age across time.

Mean Weight at Age	2008		2019		2022	
	Mean	SE	Mean	SE	Mean	SE
1	72.5	4.73	102.65	32.66	116	
2	304.11	10.52	489.33	161.36	271.67	22.05
3	653.16	68.51	501.9	105.77	514.67	8.67
4	1005.45	110.23	709.33	221.3	814	126
5	1715	372.57	.	.	1320	546
6	1863.33	307.7	1964	1078		
7	2890	250.1	.	.		
8	2810	290		.	2461	391
9	.	.	.	.		
10	.	.	.	.		
11	3700	290	.	.		
12	.	.	.	.		
13	.	.	4923	NA		

Table 7: Largemouth Bass maximum length.

Von Bert	2008	2019	2022
L inf	623.63	625.21	607.25
K	0.27	0.27	0.256
t0	-0.29	-0.19	-0.171

Table 8: Largemouth Bass mortality estimates.

Mortality Table	2008	2019	2022
Instantaneous	0.5	0.26	0.05
Annualized	39.3	22.53	5.3

Table 9: Spotted Bass Catch Per Unit Effort (CPUE) across time.

Total CPUE	2012	2022
Mean	4.5	4.91
Count	24	11
SE	1.16	1.95
L 95% CI	2.23	1.08
U 95% CI	6.77	8.73

Table 10: Spotted Bass Catch CPUE by size class across time.

CPUE Size	2012		2022	
	Mean	SE	Mean	SE
Substock	1.75	0.57		
Stock	1	0.59	1.64	0.85
Quality	1.25	0.51	2.73	1.48
Preferred	0.25	0.25	0.55	0.55
Memorable	0.25	0.25		
Trophy	0	.		

Table 11: Spotted Bass PSD across time.

PSD	2012	2022
PSD-Q	64	67
PSD-P	18	11
PSD-M	9	.
PSD-T	.	.
PSD S-Q	36	33
PSD Q-P	45	56
PSD P-M	9	11
PSD M-T	9	.

Table 12: Spotted Bass Wr by size class across time.

Wr	2012		2022	
	Mean	SE	Mean	SE
Substock	89.83	2.57	.	.
Stock	93.07	2.58	99.36	5.12
Quality	92.06	4.47	89.11	3.28
Preferred	100.57	NA	42.14	.
Memorable	110.32	NA	.	.
Trophy	.	.	.	.
Total	93.78	7.06	87.31	6.31

Table 13: Spotted Bass length at age across time.

Mean Length at Age	2022	
	Mean	SE
1	255	.
2	274	11
3	287.67	9.53
4	323	.
5	370.5	25.5

Table 14: Spotted Bass weight at age across time.

Mean Weight at Age	2022	
	Mean	SE
1	162	.
2	262	28
3	302.67	26.34
4	416	
5	429	45

Table 15: Spotted Bass Von Bertalanffy metrics.

Von Bert	2022
L inf	427.759
K	0.283
t0	-1.735

Table 16: Spotted Bass mortality estimates.

Mortality Table	2022
Instantaneous	0.19
Annualized	17.63

Table 17: Blue Catfish CPUE across time.

Total CPUE	2022
Mean	187
Count	18
SE	31.22
L 95% CI	125.81
U 95% CI	2.06

Table 18: Blue Catfish size class abundance across time.

CPUE Size	2022	
	Mean	SE
Substock	167	31.84
Stock	17	2.49
Quality	3	1.48
Preferred	.	.
Memorable	.	.
Trophy	.	.

Table 19: Blue Catfish size class abundance across time.

PSD	2022
PSD	15
PSD-P	
PSD-M	
PSD-T	
PSD S-Q	85
PSD Q-P	15
PSD P-M	
PSD M-T	

Table 20: Blue Catfish Wr by size class across time.

Wr	2022	
	Mean	SE
Substock	94.86	0.71
Stock	84.17	0.91
Quality	83.73	3.46
Preferred		
Memorable		
Trophy		
Total	93.6	0.65

Table 21: Blue Catfish mean length at age across time.

Mean Length at Age	2022	
	Mean	SE
1	187.29	1.53
2	205.86	1.6
3	245.79	4.24
4	295.88	11.33
5	435	
6	415	
7	401.5	5.75
8	423.64	10.15
9	479.78	14.54
10	474.5	27.5
11	486.75	29.77
12		
13	512.67	1.76
14	482	10.6
15	431	
24	498.5	26.5

Table 22: Blue Catfish mean weight at age across time.

Mean Weight at Age	2022	
	Mean	SE
1	42.78	1.33
2	60.31	1.6
3	112.23	6.14
4	194.5	25.24
5	630	.
6	620	.
7	516.25	25.84
8	643.45	73.79
9	1010.67	142.83
10	930	110
11	966.25	154.32
12	.	.
13	1183.33	24.04
14	990	52.92
15	622	.
24	940	180

Table 23: Blue Catfish Von Bertalanffy metrics.

Von Bert	2022
L inf	747.805
K	0.065
t0	-3.294

Table 24: Blue Catfish mortality estimate.

Mortality Table	2022
Instantaneous	0.25
Annualized	22.22

Table 25: White Crappie CPUE across time.

Total CPUE	2011	2018	2022
Mean	30.5	22.87	13.82
Count	15	30	30
SE	5.48	9.7	2.78
L 95% CI	19.75	3.85	8.37
U 95% CI	41.25	41.89	19.28

Table 26: White Crappie CPUE by size class across time.

CPUE Size	2011		2018		2022	
	Mean	SE	Mean	SE	Mean	SE
Substock	12.38	3.79	12.98	8.49	7.2	2.5
Stock	10.7	2.1	6.29	1.68	3.94	0.66
Quality	3.64	1.08	2.58	0.5	1.47	0.41
Preferred	3.11	0.73	0.8	0.18	0.9	0.34
Memorable	0.67	0.26	0.21	0.08	0.32	0.12
Trophy	0	.	0	.	.	.

Table 27: White Crappie PSD by size class across time.

PSD	2011	2018	2022
PSD	41	37	41
PSD-P	21	10	18
PSD-M	4	2	5
PSD-T	.	.	
PSD S-Q	59	63	59
PSD Q-P	20	27	22
PSD P-M	18	8	14
PSD M-T	4	2	5

Table 28: White Crappie Wr by size class across time.

Wr	2011		2018		2022	
	Mean	SE	Mean	SE	Mean	SE
Substock	89.63	3.14	83.55	2.92	84.19	1.64
Stock	82.98	0.74	82.36	0.6	78.31	0.76
Quality	81.73	1.12	84.56	1.31	86.72	0.97
Preferred	83.16	1.09	83.96	1.73	89.98	1.24
Memorable	80.56	1.64	89.22	4.02	81.04	2.23
Trophy	.	.	.	.	.	.
Total	83.28	0.56	83.28	0.54	82.26	0.59

Table 29: White Crappie mean length at age across time.

Mean Length at Age	2011		2018		2022	
	Mean	SE	Mean	SE	Mean	SE
0	.	.	88.61	0.4	85.96	0.61
1	162.28	1.2	163.64	1.52	133.14	2.36
2	219.74	2.66	207.33	2.27	196.1	3.83
3	256.18	2.84	247.79	4.72	248.63	4.95
4	287.59	3.45	256	.	289.67	4.54
5	300	.	359.5	3.28	303.6	7.05
6	.	.	.	.	318	.
7	.	.	.	.	.	.
8	.	.	.	.	310	.
9	.	.	.	.	.	.
10	.	.	.	.	.	.

Table 30: White Crappie mean weight at age across time.

Mean Weight at Age	2011		2018		2022	
	Mean	SE	Mean	SE	Mean	SE
0	.	.	7.41	0.64	5.79	0.17
1	45.34	1.17	48.15	1.61	25.76	1.37
2	122.4	5.32	105.59	4.21	91.3	6.72
3	203.79	8.12	202.24	14.09	205.8	14.11
4	300.05	11.89	216	.	319.73	15.14
5	365	.	625	41.08	342.8	22.46
6	.	.	.	.	418	.
7	.	.	.	.	.	.
8	.	.	.	.	355	.
9	.	.	.	.	.	.
10	.	.	.	.	.	.

Table 31: White Crappie Von Bertalanffy estimates across time.

Von Bert	2011	2018	2022
L inf	352.24	357.21	565.676
K	0.35	0.3	0.129
t0	-0.74	-0.95	-1.215

Table 32: White Crappie mortality estimates across time.

Mortality Table	2011	2018	2022
Instantaneous	0.86	0.93	0.7
Annualized	57.51	62.56	50.32

Table 33: White Bass CPUE across time.

Total CPUE	2022
Mean	148
Count	6
SE	14.75
L 95% CI	119.09
U 95% CI	176.91

Table 34: White Bass CPUE by size class across time.

CPUE Size	2022	
	Mean	SE
Substock	.	.
Stock	.	.
Quality	8	3.69
Preferred	108	18.53
Memorable	32	7.54
Trophy	.	.

Table 35: White Bass PSD across time.

PSD	2022
PSD	100
PSD-P	95
PSD-M	22
PSD-T	
PSD S-Q	
PSD Q-P	5
PSD P-M	73
PSD M-T	22

Table 36: White Bass Relative weight by size class across time.

Wr	2022	
	Mean	SE
Substock	.	.
Stock	.	.
Quality	85.15	1.84
Preferred	92.19	0.54
Memorable	92.8	1.42
Trophy	.	.
Total	91.94	0.52

Table 37: White Bass mean length at age across time.

Mean Length at Age	2022	
	Mean	SE
1	247	14.05
2	315.95	1.94
3	349.67	11.85
4	364.45	2.98
5	383.36	3.3
6	400	4
7	425	.
8	.	.
9	.	.
10	.	.

Table 38: White Bass mean weight at age across time.

Mean Weight at Age	2022	
	Mean	SE
1	173.33	28.85
2	401.66	8.98
3	552.67	76.09
4	623.19	17.75
5	728.58	25.24
6	829	11
7	1004	.
8	.	.
9	.	.
10	.	.

Table 39: White Bass Von Bertalanffy metrics across time.

Von Bert	2022
L inf	407.486
K	0.436
t0	-1.38

Table 40: White Bass mortality estimates across time.

Mortality Table	2022
Instantaneous	0.46
Annualized	36.8

Table 41: Seining results species list and count.

Species	Count
Inland Silverside	633
Red shiner	150
Bluegill Sunfish	84
Bullhead Minnow	49
Mosquito Fish	41
White Bass	35
Largemouth Bass	15
Channel Catfish	5
Longear Sunfish	5
Gizzard Shad	3
Freshwater Drum	2
White Crappie	2
Logperch	1
Sunfish Spp.	1
Black Crappie	1
Orange-spotted Sunfish	1
Total fish	1028

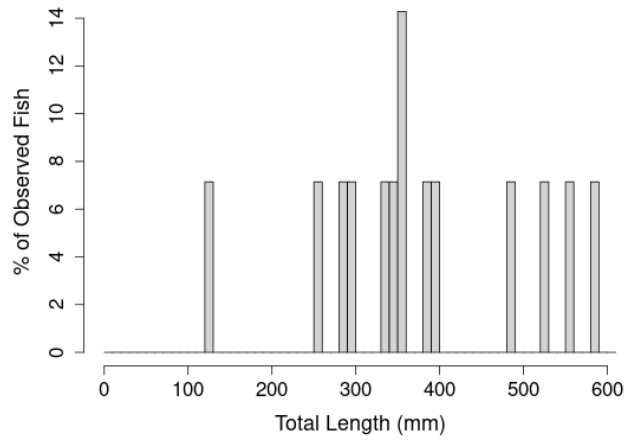

Figure 1: Largemouth Bass length frequency histogram.

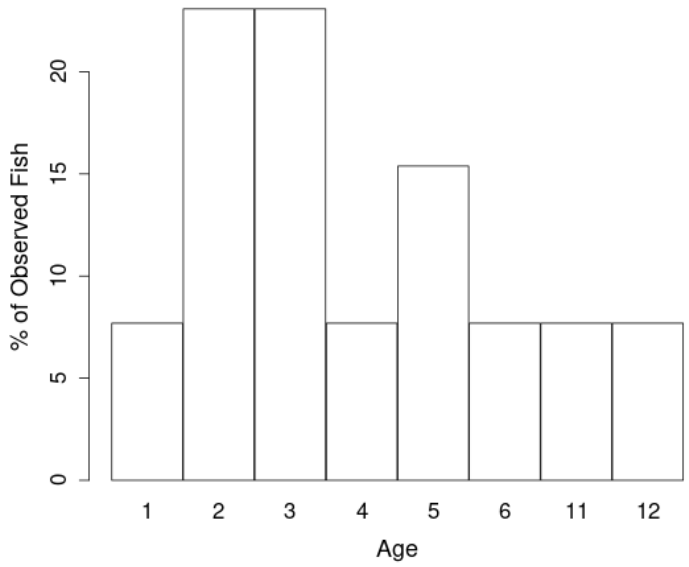

Figure 2: Largemouth Bass age frequency histogram.

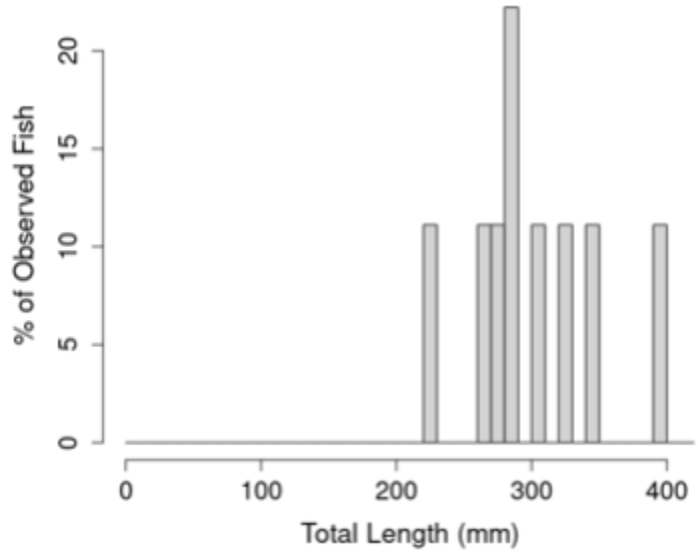

Figure 1: Spotted Bass length frequency histogram.

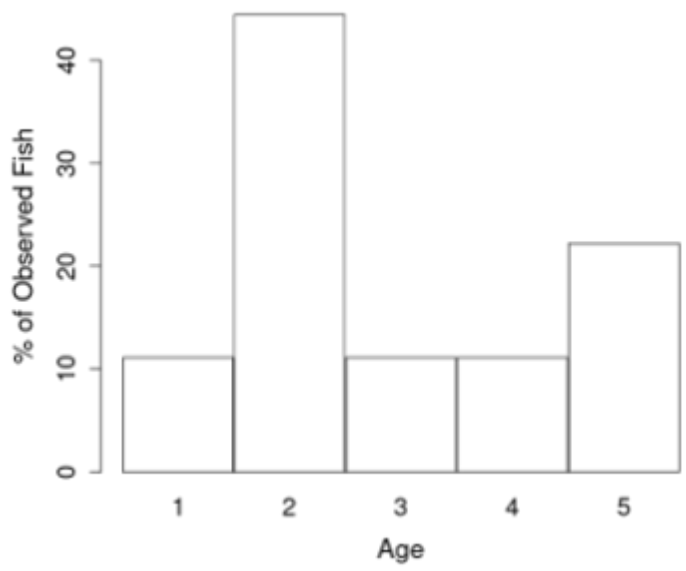

Figure 4: Spotted Bass age frequency histogram.

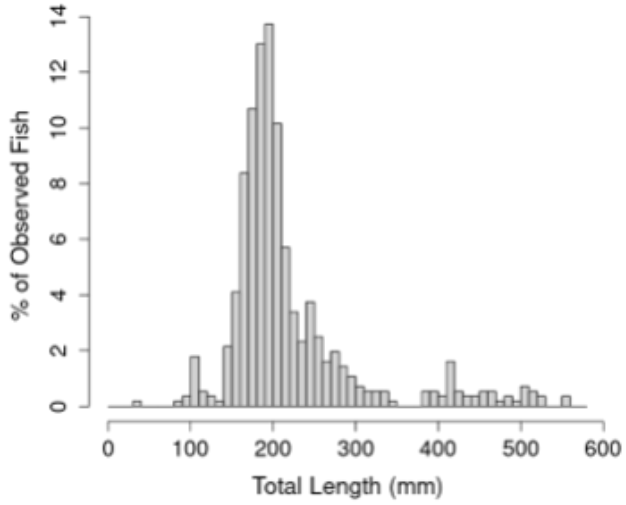

Figure 5: Blue Catfish Length frequency histogram.

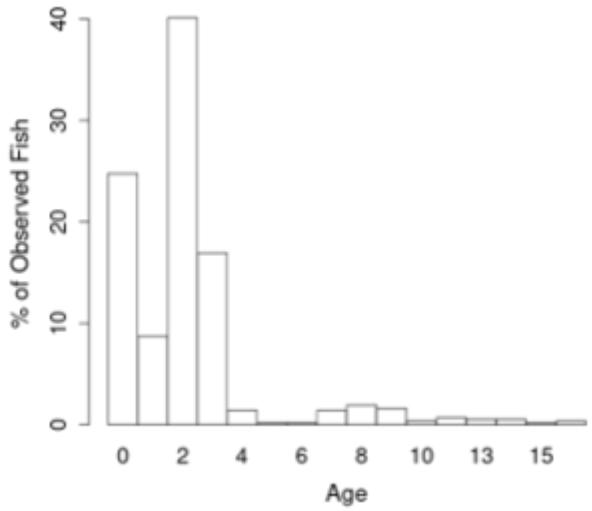

Figure 6: Blue Catfish age frequency histogram.

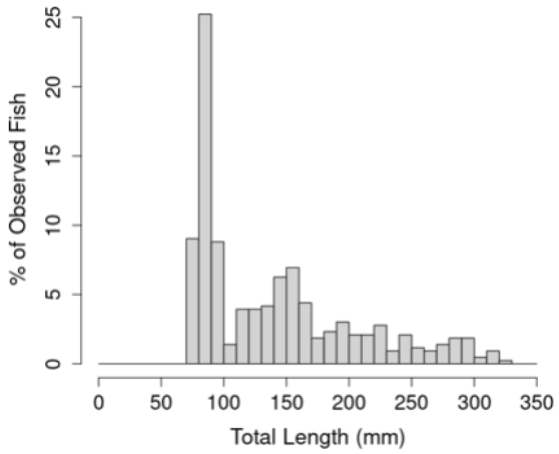

Figure 7: White Crappie length frequency histogram.

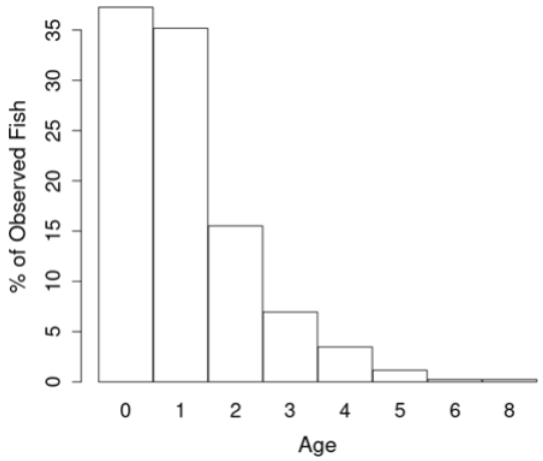

Figure 8: White Crappie age frequency histogram.

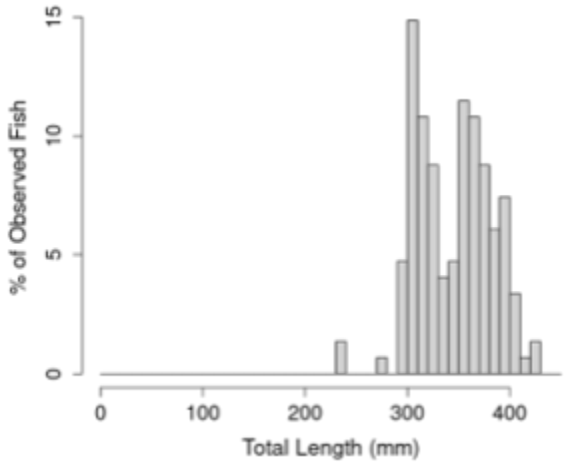

Figure 9: White Bass length frequency histogram.

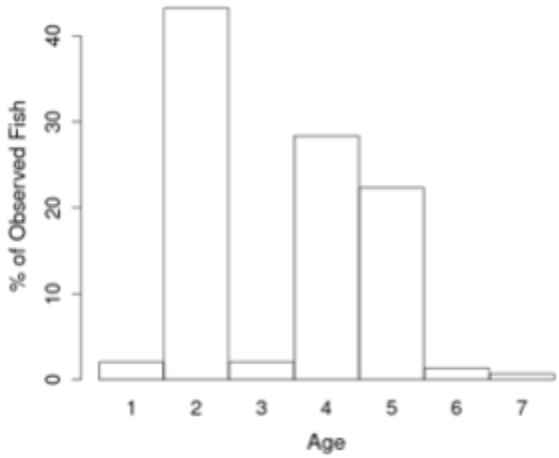

Figure 10: White Bass age frequency histogram.