SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION

FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

PAULS VALLEY LAKE

2024

SURVEY REPORT

State: Oklahoma

Project Title: Pauls Valley Lake Fish Management Survey Report

Period Covered: 2024

Prepared by: Oklahoma Fishery Reasearch Laboratory

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Pauls Valley Lake

ABSTRACT

Pauls Valley Lake was surveyed by fall gill netting in 2024 to monitor trends in fish populations. The fishery supports self-sustaining populations of Largemouth Bass, Blue, Channel, and Flathead Catfish, White Crappie, and a variety of Sunfish species. Channel Catfish and Saugeye are stocked occasionally to provide additional angling opportunity. With no representation from the recent Saugeye fry stocking (2021), we recommend fingerling only stockings in the future and the continued monitoring of Saugeye population dynamics and growth rates to evaluate stocking success if regular stockings continue. Pauls Valley is not considered a high priority Saugeye fishery and receives fish only when surplus are available. No regulation changes are recommended at this time.

INTRODUCTION

Pauls Valley Lake is located in Garvin County, 2 miles east of US 77 on East County Road 1550 NE of the city of Pauls Valley. The lake is 750 acres, has a maximum depth of 29.9 feet and has 8.2 miles of shoreline. The lake is owned by the city and impoundment was completed in 1954 for the purposes of providing municipal water supply and numerous recreational activities including fishing, boating, swimming, hiking, and camping. It is classified as mesotrophic with an average secchi disc visibility of around 18 inches. There are a variety of fish habitats including naturally occurring submerged timber, rock structure, and aquatic vegetation (water willow, bulrush, cattails, lotus), as well as fish attractor sites consisting of natural brush piles (cedar trees). Primary forage species include Gizzard Shad and Sunfish.

State mandated fishing regulations are same as statewide for all species (Fishing Regulations | Oklahoma Department of Wildlife Conservation (wildlifedepartment.com)). The city of Pauls Valley requires a fishing permit and city mandated restrictions include "One twenty-five (25) hook line per person, tagged with name and address; must be checked every twenty-four (24) hours or removed. Lines may be left without hooks. Owner must have a regular annual fishing permit. Trot lines must be placed at least 100 feet from the bank" and "Jug lines will be limited to 2 hooks per jug, with no more than 10 lines per person. Limb lines are not permitted" (Permits — Pauls Valley).

Fish attractor sites have been constructed from brush piles to improve angler success and are periodically refurbished. Sites were most recently refurbished in 2017. To see locations of fish attractor sites please visit: Fish Attractors Map (arcgis.com).

Pauls Valley Lake has been previously surveyed by spring electrofishing (1983, 1993, 1997, 1999, 2002, 2003, 2006, 2012), summer hoop netting (2023), fall nighttime electrofishing (2008), fall gill netting (1983, 1993, 2024), and fall trap netting (1998, 2000, 2002, 2005, 2008) to monitor trends in fish populations. Channel Catfish and Saugeye have been stocked occasionally to provide and maintain additional angling opportunity (Appendix 1).

Aquatic Nuisance Species

There are no known ANS in Pauls Valley Lake.

RESULTS

Fall Experimental Gill Net (gear 23)

Overview

The lake was sampled using fall experimental gill nets from November 20-21, 2024. Eight randomly selected sites were sampled for a total of 189 units of effort. Mean water temperature was 15.7 C and pool elevation was normal at 274.3 m. A total of 487 fish were caught with 11 species represented. White Crappie (n = 210), Gizzard Shad (n = 161), Channel Catfish (n = 46), Blue Catfish (n = 30), and Saugeye (n = 19) were the most commonly encountered species in the sample (Table 1).

Blue Catfish

Blue Catfish had a mean total length (TL) of 387 mm (range 347-557). The length-frequency distribution peaked at 360 mm TL and this bin (360-370 mm TL) represented 37 % of the sample (Figure 1). Blue Catfish had a mean catch per unit effort (CPUE) of 3.83 (2.69-4.96 95% confidence interval (CI)) with a standard error (SE) of 0.58 (Table 2). The relative standard error (RSE) was 15.12. No substock, preferred, memorable, or trophy size fish were caught (Table 3). Stock, and quality size fish had a mean CPUE of 3.57 and 0.26 respectively and a SE of 0.70 and 0.17 respectively (Table 3). Stock and quality size fish had a RSE of 19.60 and 65.49 respectively (Table 3). The overall relative weight (Wr) was moderate at 87.59. The maximum weight for an individual in this sample was 1665 g and proportional size distribution (PSD) was low at 7. PSD S-Q was high at 93.

A one-time stocking of Blue Catfish occurred in 1985 (Appendix 1). Along with a few recent angler reports, this sample is the first documented confirmation of the presence of Blue Catfish in Pauls Valley Lake since fish were stocked. To further examine the population structure, additional sampling through targeted methods including low frequency electrofishing (gear 98) and large mesh gill nets is warranted.

Channel Catfish

Channel Catfish had a mean TL of 368 mm (range 162-517). The length-frequency distribution was left skewed and peaked at approximately 340 mm TL (Figure 1). Channel Catfish had a mean CPUE of 5.82 (3.64-8.01 95% CI) with a SE of 1.11 (Table 2). The RSE was 19.14. No preferred, memorable, or trophy sized fish were caught (Table 3). Substock, stock, and quality sized fish had mean CPUEs ranging 0.13-4.42 and SE ranged 0.13-1.09 (Table 3). Stock size fish had a RSE of 24.75 while all other sizes had a RSE > 25 (Table 3). The overall Wr was moderate at 85.72. The maximum weight for an individual in this sample was 1225 g and PSD was moderately low at 22. PSD S-Q was high at 78.

Gizzard Shad

Gizzard Shad had a mean TL of 186 mm (range 124-390; Table 1). The length-frequency distribution is bimodal with peaks at 140 mm and 190 mm TL (Figure 1). Gizzard Shad had a mean CPUE 20.31 (15.41-25.21 95% CI) with a SE of 2.50 (Table 2). The RSE was 12.31. Substock, stock and quality size fish were caught, with mean CPUEs of 7.96, 11.58, and 0.77 respectively (Table 3). PSD-Q was low at 6 while PSD-S-Q was high at 94.

Saugeye

Saugeye were present in the sample. However, only two stockings have occurred in the past three years (Appendix 1) and only 19 fish were caught. Also, it appears that the 2021 fry stocking failed, as only age-1 fish were encountered in the sample. A limited amount of older, large fish are potentially still in the system but would be a minimum of eight years old (previous stocking ended in 2016), are at or close to their maximum age, and are unlikely to be encountered with this gear type. Fish from this sample had a mean TL of 382 mm (range 328-438) and CPUE was 2.38 (0.69-4.08 95% CI). The percentage of fish $\geq$ 356 mm TL (14 inches, statewide minimum harvest length) was 74. Pending the continuation of stockings, further sampling to determine additional information including age, growth, and mortality metrics will be conducted.

White Crappie

White Crappie sampled had a mean TL of 184 mm (range 110-324; Table 1). Roughly 60 % of the fish sampled were between 160-180 mm TL (Figure 1). White Crappie had a mean CPUE of 26.37 (16.84-35.90 95% CI) with a SE of 4.86 (Table 2). The RSE was 18.44. No trophy size fish were caught (Table 3). Substock, stock, quality, preferred, and memorable sized fish had mean CPUEs ranging from 0.12-20.14 and SE ranging 0.12-3.59 (Table 3). Stock size fish had a RSE = 17.80 and all other sizes had a RSE >25 (Table 3). The overall Wr was moderate at 88.26. The maximum weight for this sample was 550 g. PSD and PSD-P were poor at 21 and 7 respectively. PSD S-Q was high at 79.

RECOMMENDATIONS

1. Continue to monitor population dynamics for self-sustaining sportfish species (Largemouth, Crappie spp., Catfish spp.) and specifically sample Blue and Flathead Catfish through targeted methods (low-frequency electrofishing and large gill nets) to establish baseline population information.
2. With no representation from the recent fry stocking (2021), we recommend fingerling only stockings in the future and the continued monitoring of Saugeye population dynamics and growth rates to evaluate stocking success if regular stockings continue. Pauls Valley is not considered a high priority Saugeye fishery and receives fish only when surplus are available.
3. No regulation changes are recommended at this time.

Table 1. Sample size, mean TL (mm) mean weight (g), and associated ranges for each species represented.

Species	Number	Mean TL (range)	Mean Weight (range)
Blue Catfish	30	387 (347-557)	506 (330-1665)
Bluegill Sunfish	2	120 (107-132)	28 (15-40)
Channel Catfish	46	368 (162-517)	432 (35-1225)
Common Carp	7	380 (321-446)	718 (445-1080)
Flathead Catfish	1	499	1480
Freshwater Drum	8	262 (194-310)	224 (70-345)
Gizzard Shad	161	186 (124-390)	-
Largemouth Bass	2	267 (265-269)	255 (240-270)
Redear Sunfish	1	110	20
Saugeye	19	382 (328-438)	527 (330-795)
White Crappie	210	184 (110-324)	82 (15-550)

Table 2. Total catch per unit effort for each species sampled.

Species	Mean	Count	RSE	SE	L 95% CI	U 95% CI	N RSE = 12.5 (25% range)	N RSE = 20 (40% range)
Blue Catfish	3.83	8	15.12	0.58	2.69	4.96	12	5
Bluegill Sunfish	0.25	8	100.00	0.25	-0.24	0.74	512	200
Channel Catfish	5.82	8	19.14	1.11	3.64	8.01	19	7
Common Carp	0.90	8	54.66	0.49	-0.06	1.86	153	60
Flathead Catfish	0.13	8	100.00	0.13	-0.12	0.37	512	200
Freshwater Drum	1.02	8	38.60	0.39	0.25	1.80	76	30
Gizzard Shad	20.31	8	12.31	2.50	15.41	25.21	8	3
Largemouth Bass	0.25	8	100.00	0.25	-0.24	0.74	512	200
Redear Sunfish	0.13	8	100.00	0.13	-0.12	0.37	512	200
Saugeye	2.38	8	36.29	0.86	0.69	4.08	67	26
White Crappie	26.37	8	18.44	4.86	16.84	35.90	17	7

Table 3. Catch per unit effort by size category.

Species	Size Category	Mean	RSE	SE	L 95% CI	U 95% CI	N RSE = 12.5 (25% range)	N RSE = 20 (40% range)
Blue Catfish	stock	3.57	19.60	0.70	2.20	4.94	20	8
Blue Catfish	quality	0.26	65.49	0.17	-0.07	0.58	220	86
Channel Catfish	substock	0.13	100.00	0.13	-0.13	0.39	512	200
Channel Catfish	stock	4.42	24.75	1.09	2.28	6.57	31	12
Channel Catfish	quality	1.27	36.58	0.47	0.36	2.18	69	27
Gizzard Shad	substock	7.96	33.29	2.65	2.77	13.16	57	22
Gizzard Shad	stock	11.58	14.94	1.73	8.19	14.97	11	4
Gizzard Shad	quality	0.77	55.42	0.42	-0.07	1.60	157	61
Saugeye	stock	0.25	100.00	0.25	-0.24	0.74	512	200
Saugeye	quality	2.13	32.50	0.69	0.77	3.49	54	21
White Crappie	substock	0.87	53.30	0.46	-0.04	1.77	145	57
White Crappie	stock	20.14	17.80	3.59	13.11	27.17	16	6
White Crappie	quality	3.49	29.81	1.04	1.45	5.52	45	18
White Crappie	preferred	1.75	35.40	0.62	0.54	2.97	64	25
White Crappie	memorable	0.13	100.00	0.13	-0.12	0.37	512	200

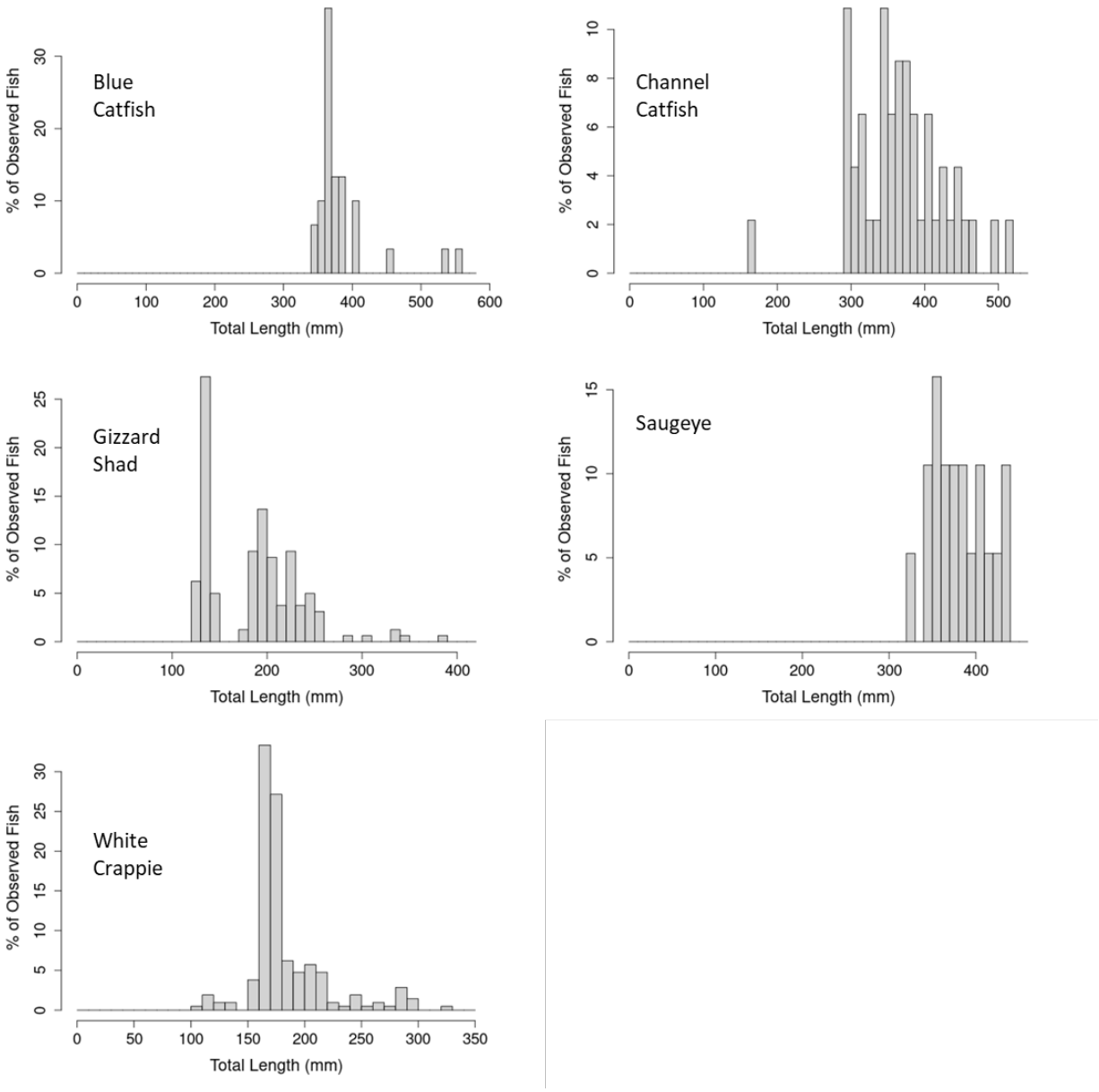

Figure 1. Length-frequency distributions for five fish species from Pauls Valley Lake.

Appendix 1. Species, number, and size of fish stocked in Pauls Valley Lake since 2012. *As a reference for this report, a single Blue Catfish stocking occurred in 1985.

Date	Species	Number	Size (inches)
*1985	Blue Catfish	15,012	fingerling
2015	Channel Catfish	30,000	7
2015	Channel Catfish	30,608	4
2016	Saugeye	7,500	1.5
2016	Saugeye	11,700	1.5
2021	Saugeye	93,000	Fry
2022	Channel Catfish	11,250	2.8
2023	Saugeye	15,008	3