

SURVEY REPORT

OKLAHOMA DEPARTMENT OF WILDLIFE CONSERVATION



FISH MANAGEMENT SURVEY AND RECOMMENDATIONS

FOR

SKIATOOK LAKE

2025

SURVEY REPORT

State: Oklahoma

Project Title: Skiatook Lake Fish Management Survey Report

Period Covered: This report discusses survey results from 2025.

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Skiatook Lake

ABSTRACT

Skiatook Lake was surveyed using trap nets to determine the status of White Crappie populations and experimental gillnets to determine the status of the Hybrid Striped Bass, Walleye, and White Perch populations during the 2025 fall sampling season.

Recommendations include black bass electrofishing in spring of 2026, maintain annual stocking rates of Threadfin Shad, Hybrid Striped Bass (100,000) and Walleye (100,000), and continue to monitor White Perch abundance.

INTRODUCTION

Skiatook Lake is a multipurpose lake used for flood control, water quality control, water supply, recreation, and fish and wildlife management. Impoundment occurred in 1984. Skiatook Lake is one of five projects in the Bird Creek Basin to meet the water resource needs of the area. Skiatook Lake impounds Hominy Creek, a tributary of Bird Creek, in Osage county. Skiatook Lake is roughly 5 miles west of Skiatook, Oklahoma, and is in the Verdigris River Basin. Skiatook Lake has a surface area of 10,190 surface acres, 187 miles of shoreline, a mean depth of 32 feet, shoreline development ratio of 11.3, and a low water exchange rate of .5. Skiatook Lake has a 350 square mile watershed and drains mostly grassland and cross-timber areas.

Fish habitat consists primarily of rocky shorelines and flooded timber. Some limestone rock can be found in the lower pool, but sandstone is the primary rock that can be found on the shoreline. A total of 4.9 miles of rip-rap habitat can be found. There are five major areas of flooded timber: the upper end of Hominy Creek, Wildhorse Creek, Bull Creek, Cedar Creek, and Turkey Creek.

Skiatook Lake is stocked with Hybrid Striped Bass and Walleye annually. Hybridized fish species do not have the ability to reproduce and sustain their populations as other game fish can. In contrast, Walleye can reproduce naturally, but not much is known about their reproductive success in Skiatook Lake, as it has been a challenge to catch Walleye in any abundance. These put and take fisheries are subject to greater control by fisheries managers who must request annual introductions to maintain their abundances in satisfactory levels for the angling public. Populations must be monitored closely to ensure this limited resource is used most efficiently. Skiatook Lake is a premier fishery in the state and supports many Hybrid Striped Bass fishing guides. Sampling Hybrid Striped Bass in Skiatook Lake allows for better continuous understanding of the condition of the species and allows us to adequately communicate with anglers of the fishery. Gillnet samples are used to determine Hybrid Striped Bass and Walleye abundance, growth rates, and length frequencies. No natural reproduction of Hybrid Striped Bass allows for evaluation of stocking rates, bag limits, and determination of continued stockings.

The aquatic nuisance species, White Perch was first documented in Skiatook Lake in 2015. White Perch are associated with negative impacts of sportfish and angler dissatisfaction. Maintaining knowledge of abundance of White Perch in Skiatook Lake will better allow managers to adapt in years to come, in hopes of limiting the negative effects of this invasive species.

Crappie was the second most sought after fish species in Oklahoma according to the most recent angler survey. In addition to being highly sought after, advancements in forward facing sonar require these populations to be monitored. White Crappie is the predominate crappie species in Skiatook Lake. While Black Crappie are present, their population is relatively low in abundance. Although crappie populations are generally self-sustaining, their growth can be volatile due to periods of high recruitment often resulting in stunting. Closely monitoring crappie populations allows for better forecasting of their recruitment/growth and allows us to adequately communicate with anglers of the fishery. Trap net samples are used to determine White Crappie growth rates and length frequencies.

RESULTS

Hybrid Striped Bass

We sampled Skiatook Lake to assess the status of Hybrid Striped Bass using experimental gillnets. We sampled a total of 32 net nights in the fall of 2025. The minimum number of net nights was 15 per standard sampling procedures, but we continued sampling until a suitable coefficient of variation was achieved for Hybrid Striped Bass ($CV = 0.19$). Otoliths were collected and catch per unit effort, mean length at age, length frequencies, and age frequencies were calculated for Hybrid Striped Bass.

A total of 117 Hybrid Striped Bass were collected. Lengths ranged from 212mm to 584mm, and weights ranged from 98g to 2128g. Ages ranged from 0 to 8 years old, although we collected no age 6 or 7 individuals (i.e., 2019 and 2018 stock years respectively) (Table 1). In theory, age 6 individuals should be present in the population, since Skiatook Lake received a typical stocking rate in 2019 (99,937 Hybrid Striped Bass, 40mm in length). In 2018 no Hybrid Striped Bass were stocked in Skiatook Lake. If we follow this nonexistent cohort over the years, it remains absent in each of our subsequent samples (i.e., no age 2 individuals collected in 2020, no age 5 individuals collected in 2023, and no age 7 individuals collected in 2025) (Table 1).

Hybrid Striped Bass catch per unit effort (CPUE) was similar in 2025 and 2023 (Table 2). In 2023 we see the dominant peak of the length frequency graph was around 400mm, followed by smaller yet strong 500mm peak. Currently, in 2025 we see a similar length distribution (Figure 1). As expected, age frequency graphs indicate that the majority of Hybrid Striped Bass were age 1 in 2025, but we see that age 2 individuals were exceptionally low in our sample (Figure 2). Growth at all ages has significantly decreased since 2023 (Table 1). L infinity or asymptotic length has significantly decreased from 573.1mm in 2023 to 534.4mm in 2025, although it has been reported lower in recent years (e.g., 516.8mm in 2020). Overall relative weight has significantly decreased from 86.7 in 2023 to 76.3 in 2025 (Table 3). For reference, if we look back to our 2020 sample, we had a significantly higher overall relative weight of 84.7. While relative weights have decreased across all size classes in 2025, we see that larger fish are affected most (Table 3). Hybrid Striped Bass appear to be maintaining fair growth, but relative weights are poor in Skiatook Lake. Relative weights of Hybrid Striped Bass may fluctuate seasonally in Skiatook Lake and are likely correlated with forage abundance. Shad populations in Skiatook Lake are prone to winter mortality events, triggered by extended cold periods or sudden drops in water temperatures. During the winter of 2024-2025 we received reports of a shad kill in Skiatook Lake. In spring of 2025 we stocked 5,000 adult Threadfin Shad in Skiatook Lake. Additionally, we utilized the nursery pond to spawn and grow Threadfin Shad, which were stocked in the summer of 2025 to supplement the forage base of Skiatook Lake. Supplemental Threadfin Shad inputs from the nursery pond and annual spring stockings are likely beneficial to the Hybrid Striped Bass population, aiming to lessen the impacts of winter shad kills in Skiatook Lake. With a large population of Hybrid Striped Bass age 0 and 1, Skiatook Lake should continue to be a satisfactory Hybrid Striped Bass fishing location for the next several years, although targeting quality fish may prove more challenging, considering decreased growth rates, and low relative weights.

Table 1. Mean length at age of Hybrid Striped Bass in Skiatook Lake collected using gillnets from 2020, 2023, and 2025 (gray fill denotes age class absences due to no stocking of Hybrid Striped Bass in 2018)

Year	Sample Size (N)	Age-0	Age-1	Age-2	Age-3	Age-4	Age-5	Age-6	Age-7	Age-8
2020	156	-	367.9	-	473.4	502.5	510.7	-	-	-
2023	156	259.3	411.7	475.7	524.6	549.6	-	553.9	599.0	-
2025	117	242.7	400.3	470.3	479.1	521.5	538.2	-	-	562.5

Table 2. Catch per unit effort of Hybrid Striped Bass in Skiatook Lake sampled with gillnets

Lake	Year	Samples	Species	L 95% CI	CPUE	U 95% CI
Skiatook	2023	36	Hybrid Striped Bass	2.59	4.56	6.70
Skiatook	2025	32	Hybrid Striped Bass	2.62	4.10	5.59

Table 3. Relative weights of Hybrid Striped Bass in Skiatook Lake from 2023 and 2025

Year	Overall	Substock < 200mm	Stock 200-299mm	Quality 300-379mm	Preferred 380-510mm
2023	86.7	84.2	85.0	88.1	84.4
2024	76.3	81.8	79.4	76.4	68.2
Difference	-10.4	-2.4	-5.6	-11.7	-16.2

Figure 1. Hybrid Striped Bass length frequencies for Skiatook Lake 2023 (left) and 2025 (right)

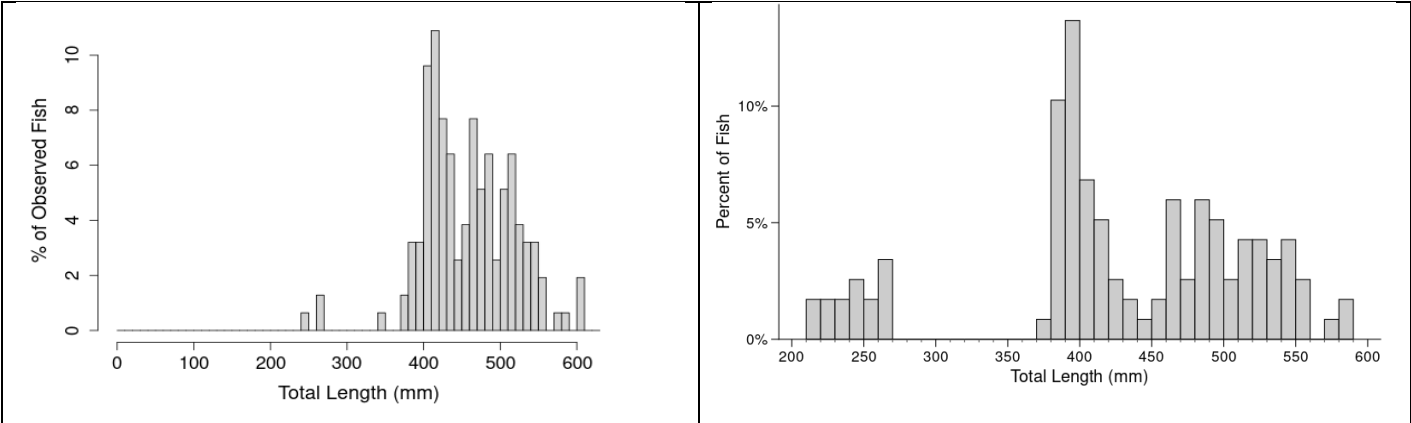
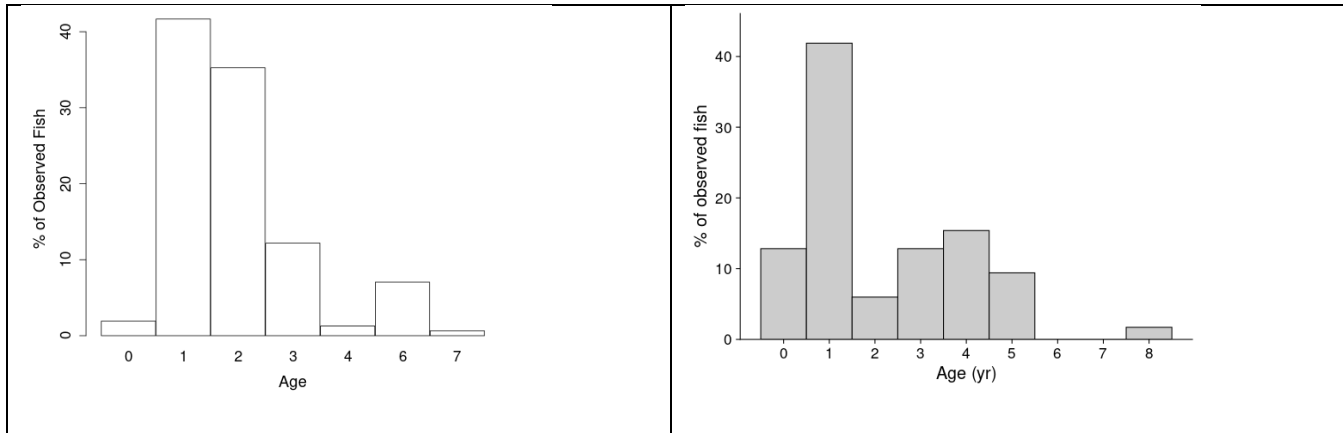


Figure 2. Hybrid Striped Bass age frequencies for Skiatook Lake 2023 (left) and 2025 (right)



Walleye

We sampled Skiatook Lake to assess the status of Walleye using experimental gillnets. We sampled a total of 32 net nights in fall of 2025. Walleye fingerlings have been stocked for several years, but low catch has made it difficult to assess the population. 21 Walleye were collected, and all were measured, weighed and had otoliths removed for aging data.

Catch per unit (CPUE) effort of Walleye was similar from 2020, 2023, and 2025 (Table 5). Growth appears to be consistent with the exception of age 1 fish (Table 4). In 2023, the majority of Walleye collected were age 1. In 2025, the majority of Walleye collected were age 0 followed closely by age 1, and while sample sizes are low, it appears in 2025 age 1 fish are smaller. Overall relative weight of Walleye remains similar (i.e., 87.1 in 2023 and 86.0 in 2025), but this will be something to continue to monitor in future samples. A large sample size in Skiatook Lake continues to be difficult to collect, and alternative methods for sampling may be needed.

Table 4. Mean Length at age of Walleye collected from Skiatook Lake in 2016, 2020, 2023, 2025

Year	Sample Size (N)	Age-0	Age-1	Age-2	Age-3	Age-4	Age-5	Age-6	Age-7	Age-8	Age-9
2016	13	293.3	414.2	507.5	-	-	-	-	-	-	-
2020	14	-	399.0	-	483.0	566.7	509.5	-	-	-	561.0
2023	26	306.0	440.2	-	501.4	537.0	-	-	647.0	598.0	555.0
2025	21	292.8	382.5	492.0	-	-	-	585.0	606.0	-	-

Table 5. Catch per unit effort of Walleye collected from Skiatook Lake in 2020, 2023, and 2025

Lake	Year	Samples	Species	L 95% CI	CPUE	U 95% CI
Skiatook	2020	25	Walleye	0.29	0.64	0.99
Skiatook	2023	36	Walleye	0.41	0.78	1.15
Skiatook	2025	32	Walleye	0.41	0.75	1.08

White Perch

We sampled Skiatook Lake to assess the status of White Perch using experimental gillnets. We sampled a total of 32 net nights in fall of 2025. 38 White Perch were collected, and all were measured, weighed, and had otoliths removed for aging data. Lengths ranged from 125mm to 245mm, and weights ranged from 18g to 222g. Ages ranged from 0 to 4 years old. 79% of the White Perch collected in 2025 were 1 or 2 years of age. Total catch and catch per unit effort (CPUE) of White Perch has decreased over the past 3 samples in Skiatook Lake (i.e., total catch of 89 in 2020, 58 individuals in 2023, 38 individuals in 2025) (Table 6).

White Perch populations do not seem to have invaded Skiatook Lake as severely as other lakes in the North Central region. Methods for reducing White Perch populations are being investigated in other systems. Continued monitoring is needed to better understand how White Perch populations are changing in Skiatook Lake.

Table 6. Catch per unit effort of White Perch in Skiatook Lake sampled with gillnets

Lake	Year	Samples	Species	L 95% CI	CPUE	U 95% CI
Skiatook	2020	25	White Perch	2.29	3.99	5.69
Skiatook	2023	36	White Perch	1.10	1.76	2.41
Skiatook	2025	32	White Perch	0.72	1.31	1.90

White Crappie

We sampled Skiatook Lake in the fall of 2025 to assess the status of White Crappie using fixed site trap nets. We sampled a total of 36 net nights. There was no minimum number of net nights per standard sampling procedures, but sampling did not cease until a suitable number of otoliths were collected for each 20mm length bin. Length, weight, and otoliths were collected and mean length at age, length frequencies and age frequencies were calculated.

A total of 273 White Crappie were collected. Lengths ranged from 61mm to 340mm and weights ranged from 36g to 626g, although we did not weigh individuals less than 100mm per standard sampling procedures. Ages ranged from 0 to 7 years old. Age data (i.e., mean length at age table and von Bertalanffy curve) was supplemented by 35 White Crappie that were collected while experimental gillnetting in the fall of 2025.

Prior to this 2025 sample, the most recent White Crappie sample on Skiatook Lake was collected in 2011. Because of this, 2011 data should only be used for general reference. This 2025 White Crappie sample will serve as benchmark to compare future White Crappie samples from Skiatook Lake. When looking at mean length at age of White Crappie in 2025 (Table 7), we see that annual growth is consistently increasing each year from age 0-3, but growth levels off in older cohorts (i.e., similar mean lengths at ages 3,4,5, and 6). We see the strongest peak in the length frequencies was at 80mm (age 0) followed by a strong gradual curve that peaks at 275mm (age 1-7) (Figure 3). This pattern is reflected in our age frequencies where age 0 is the strongest cohort, followed by age 1, 2, and 4, although a low number age 3 fish (2022 cohort) were present in our sample (Figure 4). Skiatook Lake was subject to minor surface level fluctuations in the spring of 2022, but the chances that this would have impacted spawning success seems very unlikely here, due to the subtlety of the fluctuations. L infinity or asymptotic length was 295.1mm (Figure 5), and we see that mean length at age 1-4 fish all exceeded the 50th percentile when compared to previous White Crappie samples collected in the North Central and North East regions (i.e., age 1 > 95%, age 2 > 75%, age 3 > 75%, and age 4 > 50%) (Table 8). Overall relative weight of White Crappie in Skiatook Lake was 95.8, which is just above the 50th percentile when compared to previous White Crappie samples (n=35) collected in the North Central and North East regions. There is currently no minimum size limit for crappie in Skiatook Lake, and crappie are typically not considered for harvest by anglers until reaching approximately 254mm (10”). If we look at the mean length of age of White Crappie in 2025, we see that fish typically reached a preferred harvestable size of 254mm (10”) at age 2 (Table 7). For reference, age 2 fish had a mean weight of 248g (0.55 lbs). With White Crappie reaching harvestable sizes at young ages and quality relative weights in 2025, Skiatook Lake should continue to be a satisfactory crappie fishery for the next several years.

Table 7. Mean length at age of White Crappie in Skiatook Lake collected with trap nets in 2011 and 2025

Year	Sample Size (N)	Age-0	Age-1	Age-2	Age-3	Age-4	Age-5	Age-6	Age-7
2011	138	-	154.4	197.6	233.9	320.0	347.5	-	-
2025	190	87.5	203.8	258.9	294.7	287.9	285.2	285.8	300.0

Table 8. Mean length at age percentiles from White Crappie samples in the North Central and North East regions from 2015-2023 (surveys with less than 100 aged fish were excluded from percentile calculations; gray fill denotes the percentile that our 2025 White Crappie sample from Skiatook Lake exceeded)

Age Class	5%	25%	50%	75%	95%	Surveys (N)
Age-1	109	147	168	182	196	16
Age-2	172	193	219	243	283	16
Age-3	189	206	245	282	301	15
Age-4	190	207	249	295	330	10

Figure 3. Age frequencies of White Crappie in Skiatook Lake collected with trap nets in 2025

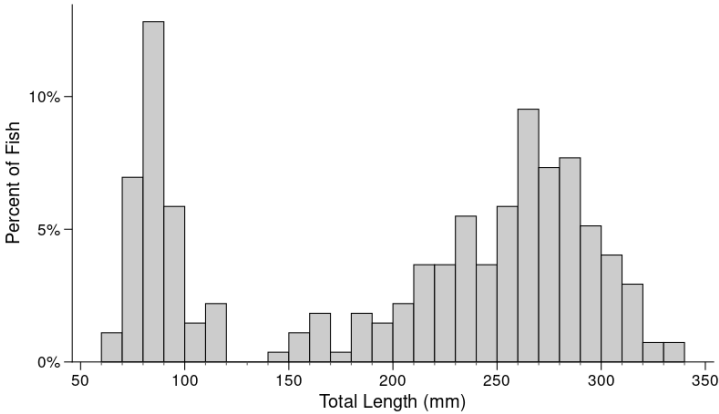


Figure 4. Age frequencies of White Crappie in Skiatook Lake collected with trap nets in 2025

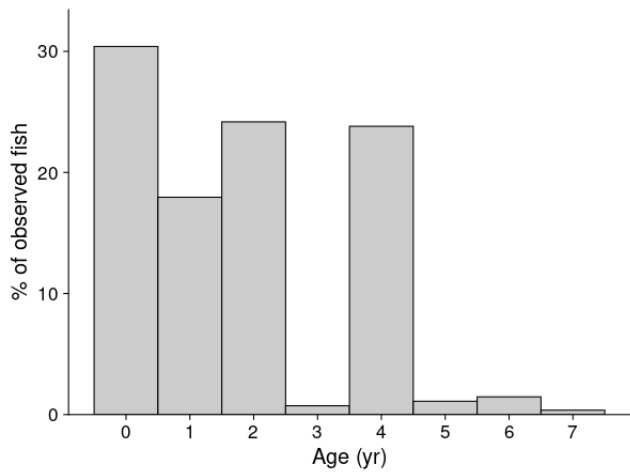
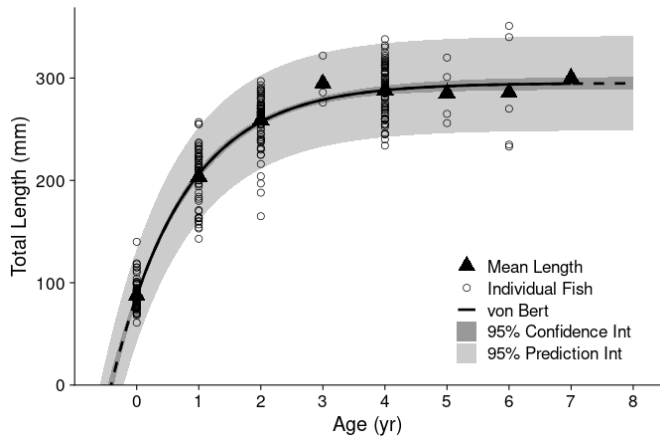


Figure 5. Von Bertalanffy growth curve of White Crappie in Skiatook Lake collected with trap nets and gillnets in 2025



RECOMMENDATIONS

1. Electrofish in spring of 2026 to monitor black bass populations
2. Maintain stocking rates of Threadfin Shad, Hybrid Striped Bass, and Walleye
3. Continue to monitor White Perch abundance