Naconiche Reservoir

2023 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-5

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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Survey and Management Summary

Fish populations in Naconiche Reservoir were surveyed in 2023-2024 using electrofishing. Anglers were surveyed from March through May 2024 with a creel survey. Historical data are presented with the 2023-2024 data for comparison. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

Reservoir Description: Naconiche Reservoir is an impoundment of Naconiche and Telesco creeks, tributaries of the Attoyac Bayou in the Neches River Basin. The lake was constructed by the County of Nacogdoches for recreation and flood control. This reservoir has a surface area of 692 acres at conservation pool (348 feet above mean sea level), a shoreline length of 22.7 miles, and an average depth of 13 feet. Access is available with a two-lane boat ramp and a lighted fishing pier. Bank access is adequate. Primary fish habitat is timber and hydrilla.

Management History: Important sport fish include Largemouth Bass and Black Crappie. The reservoir was opened to the public in September 2012 with an 18-inch minimum length limit for Largemouth Bass and changed to a 16-inch maximum length limit in 2016. Florida Largemouth Bass were stocked annually from 2011-2021, and Lone Star Bass (2nd generation offspring of pure Florida-strain ShareLunker Largemouth Bass (fish ≥ 13 pounds)) have been stocked annually from 2022-2024. Hydrilla was first observed as the reservoir began to fill in 2008 and annual vegetation surveys have been conducted since 2012. Giant salvinia was first observed in 2015. Herbicide treatments, use of a containment boom, and introduction of giant salvinia weevils have limited coverage to < 20 surface acres in 2023. PVC cube (Georgia DNR) fish attractors were added to the reservoir in 2017 at two sites (each site consists of 5 individual structures) to improve angling catch rates.

Fish Community

- **Prey species:** Threadfin Shad and Bluegill were the most abundant prey species and provided ample forage for sport fish**.** Gizzard Shad have been observed in past surveys, but none were observed during the 2023 survey.
- **Catfishes:** Although Channel Catfish were stocked in 2009 and 2011, only two adult fish were collected from gill net surveys in 2014 and 2016, combined. Channel Catfish abundance is low with little to no angler effort and gill net surveys have been discontinued.
- **Largemouth Bass:** Fall and spring electrofishing surveys reflected an abundant Largemouth Bass population over the last three survey years, however we noticed a declining trend this year. Fish condition was stable and desirable, with slightly slower growth rates observed. The Largemouth Bass fishery was most popular (95% of fishing effort), and the angler success was high.
- **Crappies:** The crappie fishery was the second most popular (3.2% of fishing effort). Since 2016, angler catch rate and total harvest have remained low, reflecting a small population abundance. Estimated harvest was low during the 2024 spring quarter creel survey.

Management Strategies: Request annual stockings of Lone Star Bass to maximize trophy fish abundance. Manage hydrilla coverage at the boat ramp, fishing pier, and swimming area for access. Coordinate with lakeside homeowners to control hydrilla (at homeowner expense) adjacent to their property for access. Survey giant salvinia coverage at minimum annually to monitor effects of herbicide treatments and salvinia weevil releases.

Introduction

This document is a summary of fisheries data collected from Naconiche Reservoir in 2023-2024. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2023-2024 data for comparison.

Reservoir Description

Naconiche Reservoir was impounded in 2009 on Naconiche and Telesco creeks, tributaries of the Attoyac Bayou in the Neches River Basin. It is located in Nacogdoches County approximately 14 miles northeast of Nacogdoches and is operated and controlled by the County of Nacogdoches for recreation and flood control. This reservoir has a surface area of 692 acres at conservation pool (348 feet above mean sea level), a shoreline length of 22.7 miles, and an average depth of 13 feet. Naconiche Reservoir was eutrophic with a mean TSI chl-*a* of 55.22 (Texas Commission on Environmental Quality 2020). The lake opened for public fishing on September 1, 2012. Aquatic habitat consisted of standing timber, hydrilla, and trace amounts of emergent plants. The majority of the land surrounding the reservoir is used for agriculture, timber production, and residential development. Other descriptive characteristics for Naconiche Reservoir are in Table 1.

Angler Access

Naconiche Reservoir has one public boat ramp. Additional boat ramp characteristics are in Table 2. Shoreline access is good, and an ADA-approved fishing pier is available.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Ashe and Driscoll 2020) included:

1. Stock FLMB annually at a rate of 100 fish/acre. To promote the ShareLunker Program as opportunities arise and continue to collect angler catch data for Largemouth Bass $\geq$ 8 pounds from the park manager.

   Action: FLMB had been stocked annually from 2011-2021 and Lone Star Bass (2nd generation offspring of pure Florida-strain ShareLunker Largemouth Bass ((fish ≥ 13 pounds)) have been stocked from 2022-2024. Signage promoting the ShareLunker Program is present at the boat ramp. Additionally, creel clerks have informed anglers of the program during the 2024 spring quarter creel survey. A new park ranger has taken the position since the previous report and did not collect / record data of Largemouth Bass $\geq$ 8 pounds.

2. Document giant salvinia coverage and distribution as needed and conduct necessary control measures. Maintain giant salvinia signage regarding plant presence and prevention of transport.

   Action: Vegetation surveys have been conducted annually. Aquatic Habitat Enhancement (AHE) personnel have deployed containment booms to minimize spread of giant salvinia and have conducted herbicide treatments and introduced giant salvinia weevils as biological control measures. Signage has been maintained informing the public of giant salvinia presence and measures to take to prevent transport.

3. Monitor hydrilla annually and continue herbicide treatments at the public boat ramp, swimming area, and fishing pier. Continue to cooperate with homeowners by facilitating herbicide treatment proposals of hydrilla adjacent to their property.

   Action: Vegetation surveys have been conducted annually and AHE personnel have applied herbicide treatments as needed at the boat ramp, swimming area, and fishing pier. Cooperated with homeowners to allow herbicide treatments of hydrilla adjacent to personal property.

Harvest regulation history: Sport fishes in Naconiche Reservoir are currently managed with statewide regulations with the exception of Largemouth Bass (Table 3). The reservoir was opened in 2012 with an 18-inch minimum length limit for Largemouth Bass to protect the population as it developed. In 2016, the Largemouth Bass regulation was changed to a 16-inch maximum length limit to protect larger fish and maximize trophy potential.

Stocking history: Sharelunker Largemouth Bass (2009, 2011, and 2012), Florida Largemouth Bass (2011 – 2021) and Lone Star Bass (2022-2024) were stocked to enhance trophy fish potential (Table 4). Threadfin Shad were successfully introduced in 2010. Bluegill and Channel Catfish were stocked in 2009 and 2011 and White and Black Crappie were stocked in 2010.

Vegetation/habitat management history: Naconiche Reservoir reached conservation pool in 2009. The controlling authority cleared all the timber in the lower basin but left a considerable amount in the two creek arms for fish habitat. Hydrilla was observed as the lake was beginning to fill in 2008. Since 2012, overall hydrilla coverage has varied from approximately 5 to 25% of the reservoir surface area and is considered beneficial habitat. Annual treatments have been required around the boat ramp, swimming area, and the fishing pier. Giant salvinia was discovered in 2015. Initial attempts to eradicate giant salvinia via manual removal failed. Coverage quickly expanded, particularly in the upper reaches of each creek arm. In 2018, containment booms were deployed in each creek to restrict movement of plants to the lower part of the reservoir. Dense timber present above the booms prevents herbicide treatments, and salvinia weevils have been introduced in these areas. Numerous herbicide treatments are required each year to control giant salvinia coverage. Artificial fish habitats (Georgia DNR-style PVC structures) were added in 2017 at two sites in the reservoir to aid angler catch rates. Locations for the fish attractor sites can be found on the TPWD website (https://tpwd.texas.gov/fishboat/fish/recreational/lakes/naconiche/structure.phtml).

Water transfer: No interbasin water transfers are known to exist.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Naconiche Reservoir (Ashe and Driscoll 2020). Primary components of the OBS plan are listed in Table 5. All electrofishing survey sites were biologist-selected (due to dense standing timber) through the spring of 2022 and fall of 2023 and were conducted during nighttime hours. In the spring of 2024 electrofishing survey sites were randomly selected, however the survey was conducted during daylight hours due to dense standing timber that impedes navigation. All surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Common names of fishes and their hybrids in this report are used following Page et al. (2023) with an exception for Largemouth Bass. While we recognize recent changes to black bass names, Texas reservoirs contain a mix of Florida Bass, Largemouth Bass, and their intergrade offspring. Therefore, Largemouth Bass is used in this report for simplicity as well as consistency with previous reports.

Electrofishing – Largemouth Bass, sunfishes, and Threadfin Shad were collected by electrofishing (1.0 hour at 12, 5-min stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing. Age at legal length for Largemouth Bass was determined using otoliths from 13 randomly-selected fish (range 13.0 to 14.9 inches; category II, TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Statistics – Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], and condition indices [relative weight (W_r)] were calculated for target fishes according to Neumann et al. (2012). Index of Vulnerability (IOV) was calculated for Gizzard Shad (DiCenzo et al. 1996). Standard error (SE) was calculated for structural indices and IOV. Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE and creel statistics.

Creel survey – A spring quarter access-point creel survey was conducted from March through May 20 24. Angler interviews were conducted on 5 weekend days and 4 weekdays per quarter to assess angler use and fish catch/harvest statistics.

Habitat – Vegetation surveys were conducted in 2020–2023 to monitor hydrilla and giant salvinia coverages. Coverages were calculated with the digital shapefile method.

Results and Discussion

Habitat: A structural habitat survey conducted in 2012 indicated that the littoral zone included primarily standing timber and natural shoreline (Ashe and Driscoll 2012) with little to no significant change since that time regarding land use practices, shoreline development, or timber coverage within the reservoir. Standing timber was abundant and comprised 588 acres (85% of reservoir surface area). Hydrilla coverage has exceeded 100 acres in 2016-2018 (Ashe and Driscoll 2020) but has since declined to 27 acres in 2023 (Table 6). High inflows in the winter and spring of 2019 coupled with winter freezes in 2021 and 2022 followed by low water conditions in 2023 due to drought likely reduced hydrilla abundance. Even though giant salvinia coverage exceeded 100 acres in 2020, management efforts and environmental conditions have reduced coverage to 19 acres in 2023. Beneficial habitat has been critical to support the quality sport fishery at this reservoir.

Creel: Directed fishing effort during spring 2024 was highest for Largemouth Bass (95%), followed by effort for crappie (3.2%) and sunfish (1.6%) (Table 7). Total spring effort in 2016 was 16,322 h and in 2020 effort increased significantly to 27,976 h and remained similar for the 2024 creel survey with 26,569 h of directed fishing effort (Table 8). Direct expenditures have steadily increased over the past three surveys with $64,702, $168,636, and $207,455 in 2016, 2020, and 2024, respectively.

Prey species: Electrofishing surveys indicated an adequate forage base for sport fishes. Forage species consisted of Threadfin Shad, Warmouth, Bluegill, Longear Sunfish and Redear Sunfish (Appendix A). Gizzard Shad have been collected in previous surveys, but none were observed during 2023 fall electrofishing (Figure 1). Gizzard Shad have routinely been collected in low abundance and primarily as larger individuals with low IOV, indicating that they are not a significant forage base for Largemouth Bass. Bluegill was the most abundant sunfish species with 177.0/h collected during the 2023 fall electrofishing survey (Figure 2), which was less than 2019 (471.6/h), but similar to 2015 (110.4/h). Overall abundance of Redear Sunfish was relatively low over the last three surveys (< 35 fish/h) (Figure 3). Catch of larger fish (≥ 7 inches) decreased from 2019 to 2023. Few anglers sought sunfish (0 – 1.6% of total fishing effort) (Table 7), and total estimated harvest ranged from 0 – 1,524 fish (Table 9). Most sunfish harvested during the 2024 creel survey were Bluegill (1,135 fish) with some Redear Sunfish also observed harvested (389 fish) (Figures 4 and 5).

Channel Catfish: Although Channel Catfish were stocked in 2009 and 2011, only two total fish were collected from both the 2014 and 2016 gill net surveys combined. Gill net surveys were discontinued in 2020. Few anglers targeted Channel Catfish (0 – 0.4% of directed effort) (Table 7). Channel Catfish recruitment is likely limited by Largemouth Bass predation. No harvest of Channel Catfish has been observed during the past three creel surveys.

Largemouth Bass: Fall and spring electrofishing surveys reflect an abundant Largemouth Bass population with desirable size structure (Figures 4-6). In 2023, the fall catch rate was 117.0/h, which was less than the 182.4/h observed in 2019, but similar to 2015 (96.0/h) (Figure 4). The higher catch rate observed in 2019 was likely driven primarily by increased sampling efficiency due to a reduction in hydrilla coverage. Spring electrofishing also reflected an abundant but variable population with adequate catch rates in 2020, 2022, and 2024 (231.6/h, 135.0/h, and 99.0/h, respectively) (Figures 5 and 6). Note that in the spring of 2024 survey stations were randomly selected as opposed to biologist selected and sampling was conducted during daylight hours which may account for the slightly lower catch rates observed. The 16-inch maximum length limit has been effective at maintaining the proportions of fish ≥ 16 inches in the population (PSD-16 values have remained similar over the last three fall and spring survey years; range = 18-21 and 35-42, respectively). Growth of Largemouth Bass was good; average age at 14 inches (13.0 to 14.9 inches) was 2.7 years (N = 13; range = 2 – 5 years). Body condition from the past three fall electrofishing surveys was adequate (relative weight > 85) for nearly all size classes of fish (Figure 4).

In spring 2024, directed fishing effort (25,229 h; 36.5 h/acre) was similar to 2020 (24,217 h; 35.0h/acre) but substantially greater than 2016 (13,991 h; 20.2 h/acre) (Table 10). Angler catch rates remained similar over the past three surveys (0.6 – 0.9 fish/h). Nearly all legal-size Largemouth Bass that were caught were released (87.2 to 98.7%). Total estimated catch in 2024 was 22,637 fish; 8.2% were 4.0 – 6.9 pounds and 0.9% were 7.0 – 9.9 pounds, no fish greater than 10 pounds were reported as caught during the creel survey. Since July 2020 there have been 16 (8-9.9 lb), 6 (10-12.9 lb), and 1 (≥ 13 lb) Largemouth Bass submitted to the TPWD ShareLunker Program indicating a trophy population.

Crappies: Trap netting for crappie was discontinued in 2011 due to poor catch rates and sampling efficiency. White and Black Crappie adults were stocked in 2010, but the population was primarily comprised of Black Crappie (only one White Crappie has been observed from creel surveys). The crappie fishery was the second most popular (3.2 – 10.7% of directed effort) (Table 7). Creel data reflect small population abundance. Angler catch rates of Black Crappie were low, ranging from 0.1 to 0.7 fish/h (Table 11). Harvest has consistently been low over the past three creel surveys with 307, 0, and 97 fish estimated as harvested in 2016, 2020, and 2024 respectively. During the 2024 creel survey only three crappie were observed as harvested.

Fisheries Management Plan for Naconiche Reservoir, Texas

Prepared – July 2024

ISSUE 1: Nearly all (95%) angling effort is directed at Largemouth Bass. Electrofishing catch rates and size structure reflect a quality population. The reservoir supports a population of trophy-sized fish with 33 Largemouth Bass ≥ 8 pounds submitted to the TPWD ShareLunker Program. The 16-inch maximum length limit has been effective in increasing numbers of larger fish. In 2024, the spring quarter creel estimated catch was 22,637 fish; 8.2% were 4.0 – 6.9 pounds and 0.9% were 7.0-9.9 pounds. The current lake record is 14.12 pounds.

MANAGEMENT STRATEGIES

1. Reattempt to monitor angler catch data for Largemouth Bass ≥ 8 pounds from the park manager.
2. Increase angler awareness and participation in the TPWD ShareLunker Program by promoting when opportunities arise.
3. Continue annual stocking of Lone Star Bass to maintain and improve the trophy Largemouth Bass population.
4. Manage beneficial aquatic vegetation coverage to optimal levels to sustain a quality bass fishery.

ISSUE 2: Giant salvinia was discovered in 2015. Coverage expanded quickly, particularly in the upper reaches of each creek arm. Numerous herbicide treatments are required each year to control plant abundance in addition to the release of Giant salvinia weevils.

MANAGEMENT STRATEGIES

1. The TPWD AHE office oversees management of giant salvinia at Naconiche Reservoir. Assist AHE staff with implementation of management strategies.
2. Continue herbicide treatments and salvinia weevil introductions when appropriate, and maintain containment booms.
3. Monitor giant salvinia coverage as needed to document plant distribution and effects of control measures (i.e., herbicides and weevils).
4. Maintain all giant salvinia signage regarding plant presence and prevention of transport to other waters.
5. Continue to assist TPWD AHE personnel maintain floating booms to confine giant salvinia.
6. Educate the public about giant salvinia and other invasive species via news releases and presentations.

ISSUE 3: Hydrilla is present in Naconiche Reservoir. Although it provides beneficial fish habitat, critical to our trophy bass management, it can impede public access to the swimming area, boat ramp, and fishing pier.

MANAGEMENT STRATEGIES

1. Monitor hydrilla coverage annually.
2. Continue to approve herbicide treatments at the boat ramp, swimming area, and fishing pier as needed.
3. Continue cooperating with lakeside homeowners by reviewing herbicide treatment proposals of hydrilla adjacent to their property to open access.

Objective-Based Sampling Plan and Schedule (2024–2028)

Sport fish, forage fish, and other important fishes
Sport fishes in Naconiche Reservoir include Largemouth Bass, Spotted Bass, crappies, and Channel Catfish. Important forage species include Bluegill and Threadfin Shad.

Low-density fisheries
Although 70,444 Channel Catfish fingerlings were stocked in 2009 and 72,393 stocked in 2011, only two fish were collected from 2014 and 2016 gill net surveys. Less than 1% of angling effort was directed at catfishes during the 2016, 2020, and 2024 creel surveys. No future directed sampling is planned. A spring quarter creel survey will be conducted every four years (next survey in 2028) to detect any large-scale changes in the catfish population that may warrant additional sampling.

Spotted Bass abundance is low in the reservoir with one fish collected in 2012 spring electrofishing survey with no other fish sampled since that time nor reported in creel surveys. Although no future directed sampling is planned, Spotted Bass catch will be recorded from electrofishing surveys directed at Largemouth Bass (see below).

Survey objectives, fisheries metrics, and sampling objectives
Largemouth Bass: Largemouth Bass are the most popular sport fish in Naconiche Reservoir, accounting for approximately 95% of the annual angling effort. Impounded in 2009, the reservoir currently supports a high-quality fishery. Largemouth Bass were managed with an 18-in MLL regulation until 2016 when a 16-in maximum length limit went into effect. From 2010 to 2014, trend data on CPUE, size structure, and body condition were collected annually with fall (2010 – 2013) and spring electrofishing (2013 and 2014). Beginning in 2015, fall electrofishing was conducted every four years, and spring electrofishing was conducted biennially. Continuation of fall electrofishing in 2027 (every four years thereafter) and spring (bass-only) electrofishing in 2026 (every two years thereafter) will allow for determination of any large-scale changes in the Largemouth Bass population that may spur further investigation. Prior to the spring of 2024 biologist-selected 5-min electrofishing sites were sampled at night due to lack of suitable sampling water resulting from dense, inundated timber. Beginning in spring 2024 electrofishing sites were randomly selected, however sampling was conducted in daylight hours due to dense inundated timber and navigation hazards. All future electrofishing sites will be randomly selected and sampled during daylight hours. These 12 sites should ensure that sampling objectives are achieved (> 50 stock-size fish; RSE $\leq$ 25), as simulations indicated that only 4 sites were required. In addition, average age of Largemouth Bass between 13.0 and 14.9 in (Category 2; N = 13) will be estimated in 2027, and every four years thereafter. A spring quarter creel survey will be conducted every four years (next survey in 2028) to collect angler trend data, catch rates, and fishing effort.

Crappies: The crappie fishery is the second most popular at Naconiche Reservoir. Although an abundant crappie population has been established, 2011 trap netting resulted in a catch rate of 1.0/nn. No additional trap netting is planned. A spring quarter creel survey will be conducted every four years to detect any large-scale changes in the crappie population that may warrant additional sampling.

Prey species: Bluegill and Threadfin Shad are the primary forage at Lake Naconiche. Fall electrofishing every four years, sampling 12 sites per survey year should result in sufficient numbers of Bluegill for size structure (50 fish minimum) and relative abundance (RSE $\leq$ 25 of CPUE-Total) given past results. No additional effort will be expended to achieve an RSE $\leq$ 25 for Threadfin Shad or Gizzard Shad, but Largemouth Bass body condition (fish $\geq$ 8" TL) will be used to provide additional information on forage abundance and vulnerability.

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Tables and Figures

Table 1. Characteristics of Naconiche Reservoir, Texas.

Characteristic	Description
Year constructed	2009
Controlling authority	County of Nacogdoches
County	Nacogdoches
Reservoir type	Tributary
Shoreline Development Index	3.55
Conductivity	100 µS/cm

Table 2. Boat ramp characteristics for Naconiche Reservoir, Texas, March 2024. Reservoir elevation at time of survey was 348 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Naconiche Park	31.76980 -94.58539	Y	50	343	Excellent. No access issues

Table 3. Harvest regulations for Naconiche Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (only 10 ≥ 20 inches)	None
Catfish, Flathead	5	18-inch minimum
Bass, Largemouth	5[a, b]	16-inch maximum
Bass: Spotted	5[a]	None
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

[a] Bag limit for Largemouth Bass and Spotted Bass = 5 fish in any combination.

[b] Only fish 24 inches or greater may be retained alive in a livewell and immediately weighed using personal scales. Bass weighing 13 pounds or more may be donated to the ShareLunker Program; otherwise fish must be immediately released

Table 4. Stocking history of Naconiche Reservoir, Texas. FGL = fingerling; AFGL = advanced fingerling; ADL = adults.

Species	Year	Number	Size
Black Crappie	2010	266	FGL
Bluegill	2009	79,480	AFGL
	2011	67,369	AFGL
	Total	146,849	
Channel Catfish	2009	70,444	FGL
	2011	72,393	FGL
	Total	142,837	
Florida Largemouth Bass	2011	15	ADL
	2011	6,729	AFGL
	2011	73,135	FGL
	2012	233	ADL
	2012	75,214	FGL
	2013	69	ADL
	2013	73,080	FGL
	2014	75,696	FGL
	2015	99	ADL
	2015	74,381	FGL
	2016	69,633	FGL
	2017	64,433	FGL
	2018	69,280	FGL
	2019	40,149	FGL
	2020	36,817	FGL
	2021	68	ADL
	Total	659,031	
Lone Star Bass	2022	36,864	FGL

Species	Year	Number	Size
	2023	36,864	FGL
	2024	33,730	FGL
	Total	107,458	
ShareLunker Largemouth Bass	2009	173	ADL
	2009	27,927	AFGL
	2009	67,462	FGL
	2011	2,020	AFGL
	2012	173	ADL
	2024	21,368	FGL
	Total	119,123	
Threadfin Shad	2010	2,500	AFGL
	2011	4,000	FGL
	Total	6,500	
White Crappie	2010	89	ADL

[a] ShareLunker Largemouth Bass are 1st generation offspring from angler-donated Largemouth Bass ≥ 13 pounds from the Toyota ShareLunker program.

[b] Lone Star Bass are 2nd generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to ≥ 13 pounds.

Table 5. Objective-based sampling plan components for Naconiche Reservoir, Texas 2023–2024.

Gear/target species	Survey objective	Metrics	Sampling objective
Electrofishing			
Largemouth Bass	Abundance	CPUE–Stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Age-and-growth	Age at 14 inches	N = 13, 13.0 – 14.9 inches
	Condition	W_r	10 fish/inch group (max)
Bluegill [a]	Abundance	CPUE–Total	
	Size structure	PSD, length frequency	N ≥ 50
Gizzard Shad [a]	Abundance	CPUE–Total	
	Size structure	PSD, length frequency	
	Prey availability	IOV	
Threadfin Shad [a]	Abundance	CPUE–Total	
Creel Survey [b]			
Largemouth Bass	Trend information on angler utilization	Angler effort, CPUE, total harvest and size composition	
Crappies	Trend information on angler utilization	Angler effort, CPUE, total harvest and size composition	
Catfishes	Trend information on angler utilization	Angler effort, CPUE, total harvest and size composition	

[a] No additional effort will be expended to achieve an RSE ≤ 25 for CPUE of Bluegill, Gizzard Shad, and Threadfin Shad if not reached from designated Largemouth Bass sampling effort. Instead, Largemouth Bass body condition can provide information on forage abundance, vulnerability, or both relative to predator density.

[b] Angler utilization data and associated statistics will be calculated for all sport fish.

Table 6. Survey of aquatic vegetation, Naconiche Reservoir, Texas, 2020–2023. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2020	2021	2022	2023
Alligatorweed				Trace
Bladderwort		3 (< 1)	16 (2)	
Bulltongue arrowhead				Trace
Cattail				Trace
Coontail				Trace
Giant salvinia (Tier II)*	117 (17)	25 (4)	88 (13)	19 (3)
Hydrilla (Tier III)*	9 (1)	6 (1)	5 (1)	27 (4)
Pondweed				Trace
Southern naiad			Trace	Trace
Torpedograss		Trace		Trace
Water primrose				Trace
Water shield				Trace
White waterlily	11 (2)	3 (<1)	Trace	Trace

*Tier II is Maintenance, Tier III is Watch Status

Table 7. Percent directed angler effort by species for Naconiche Reservoir, Texas, 2016, 2020, and 2024. Survey periods were from 1 March through 31 May.

Species	2016	2020	2024
Anything	3.2	3.8	0.2
Largemouth Bass	85.7	86.6	95.0
Crappies	10.7	9.3	3.2
Catfishes	0.4	0.0	0.0
Sunfishes	0.0	0.3	1.6

Table 8. Total fishing effort (h) for all species and total directed expenditures at Naconiche Reservoir, Texas, 2016, 2020, and 2024. Survey periods were from 1 March through 31 May. Relative standard error is in parentheses.

Statistic	2016	2020	2024
Total fishing effort	16,322 (18)	27,976 (24)	26,569 (12)
Total directed expenditures	$64,702 (42)	$168,636 (59)	$207,455 (37)

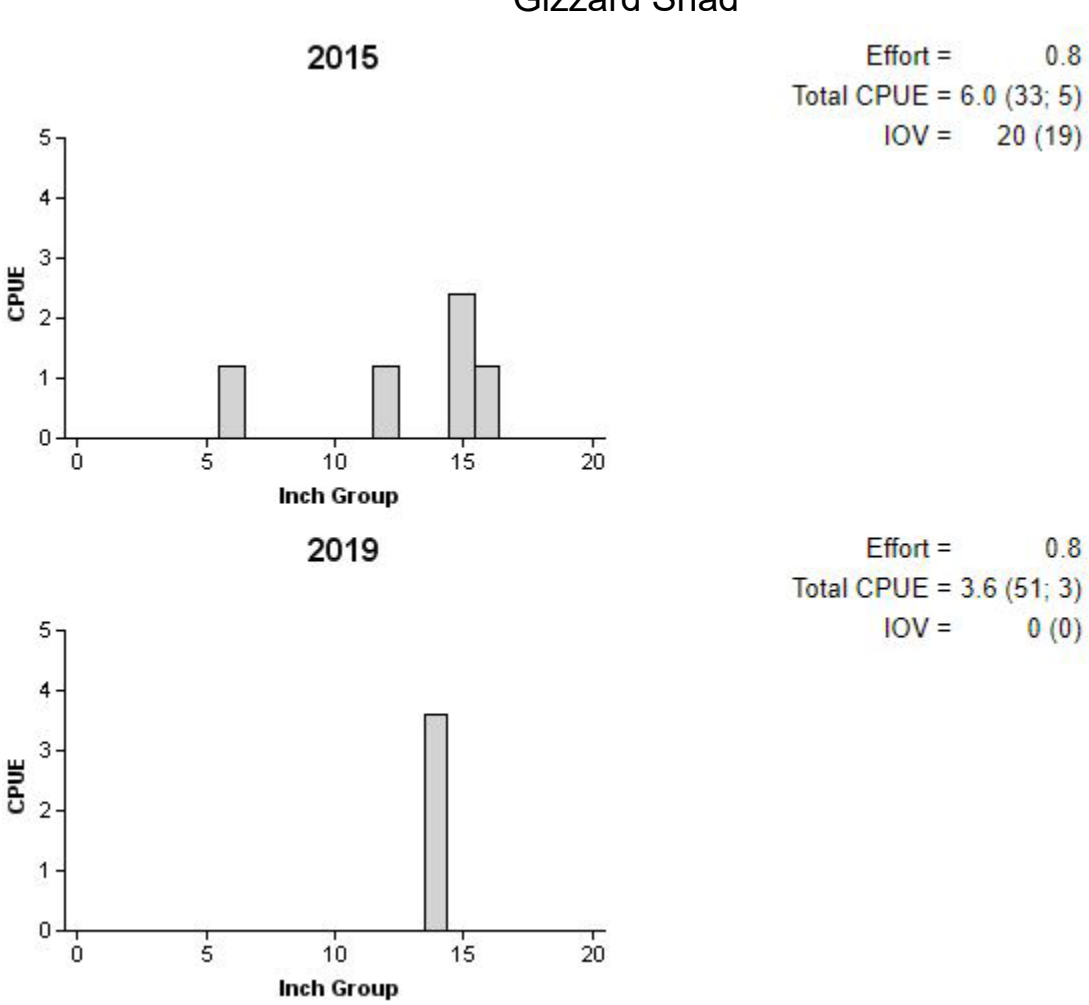


Figure 1. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Naconiche Reservoir, Texas, 2015 and 2019. No Gizzard Shad were collected in 2023.

Bluegill

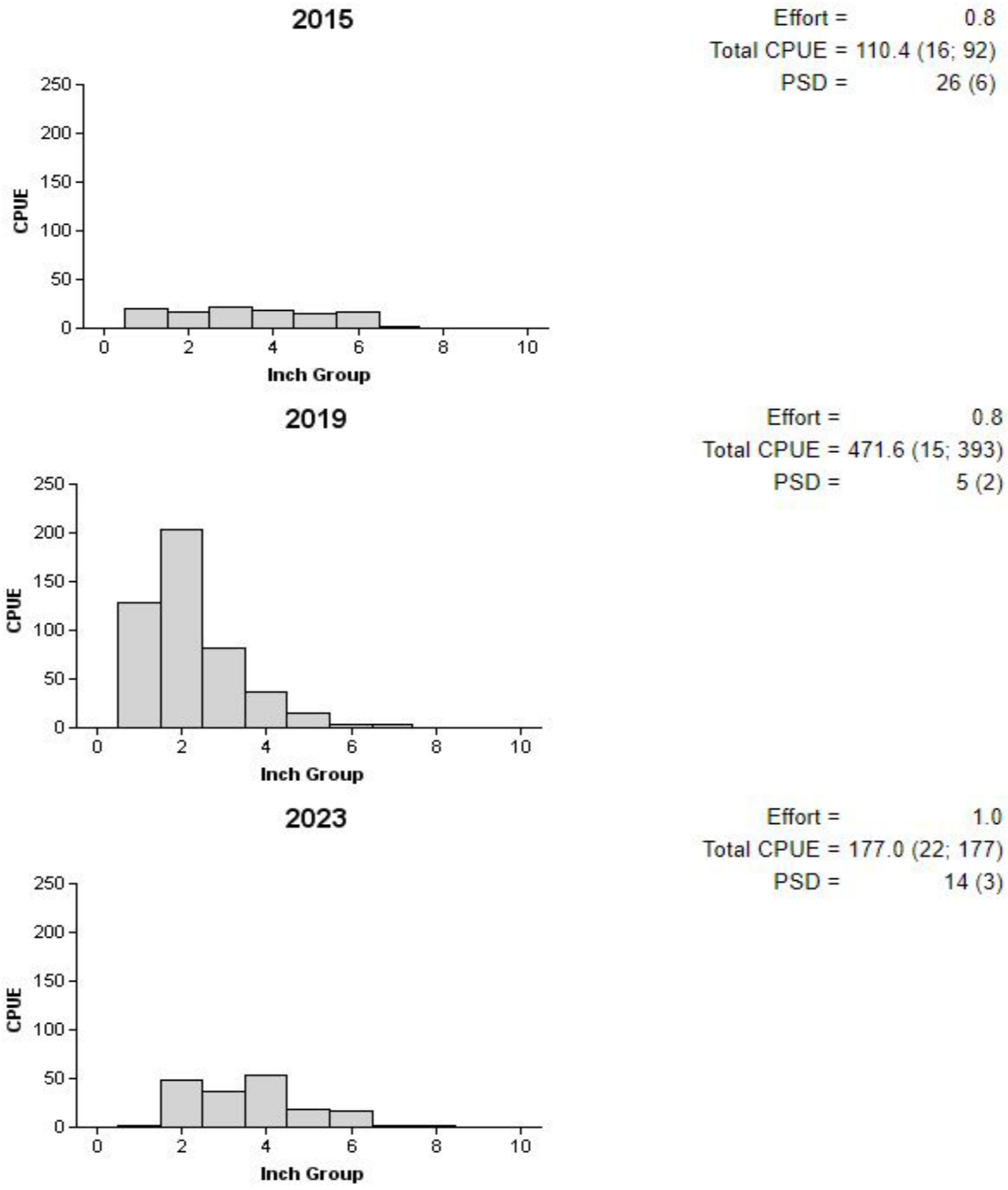


Figure 2. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Naconiche Reservoir, Texas, 2015, 2019, and 2023.

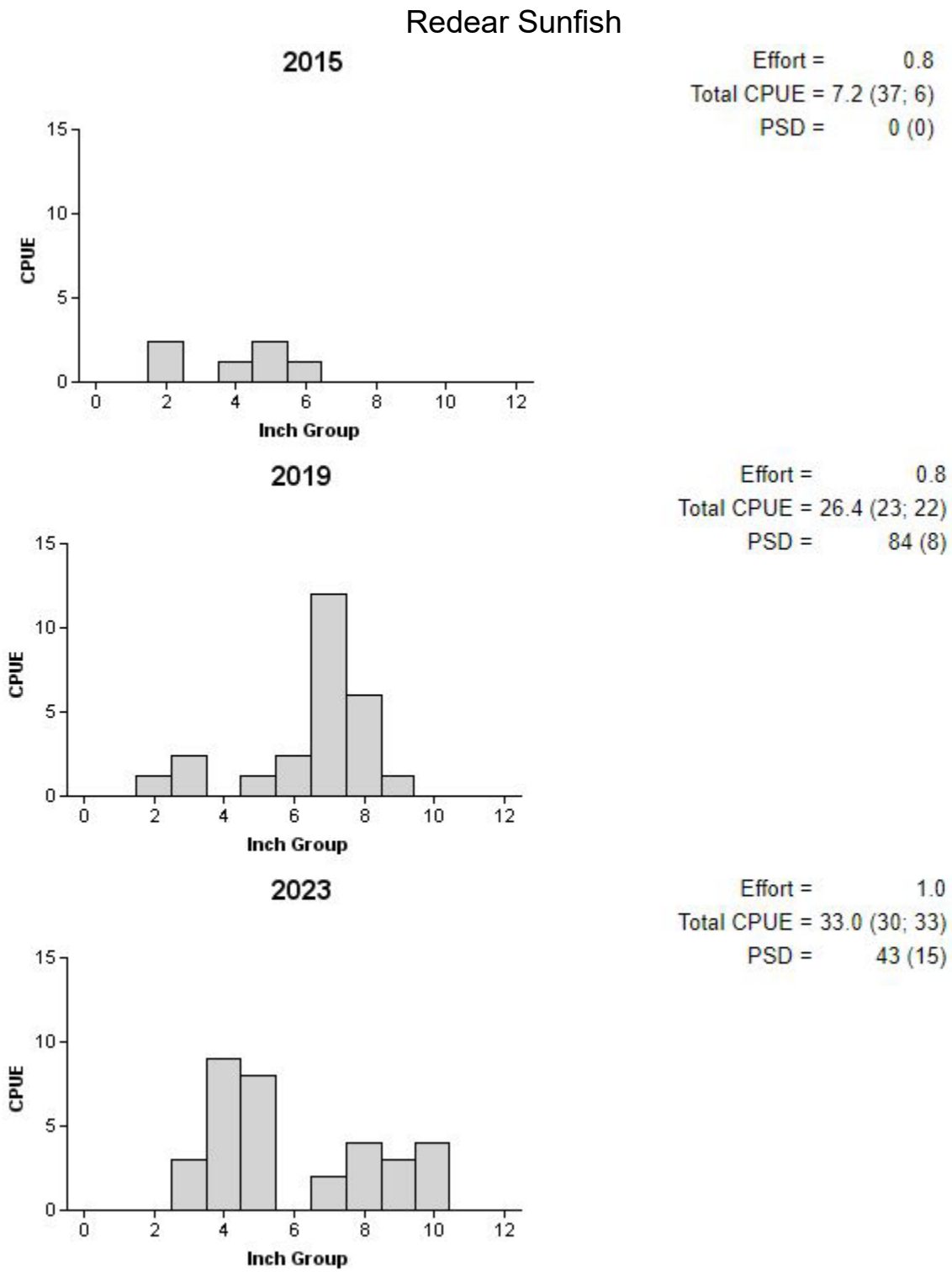


Figure 3. Number of Redear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Naconiche Reservoir, Texas, 2015, 2019, and 2023.

Table 9. Creel survey statistics for sunfishes at Naconiche Reservoir, Texas, from March 1 through May 31, 2016, 2020, and 2024. Total catch per hour is for anglers targeting sunfish and total harvest is the estimated number of sunfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year		
	2016	2020	2024
Surface area (acres)	692	692	692
Directed effort (h)	0 (0)	97.2 (172)	438.9 (77)
Directed effort/acre	0 (0)	0.1 (172)	0.6 (77)
Total catch per hour	0 (0)	4.3	2.4
Total harvest	0 (0)	610 (71)	1,524 (76)
Harvest/acre	0 (0)	0.9 (71)	2.2 (76)
Percent legal released		80.8	62.6

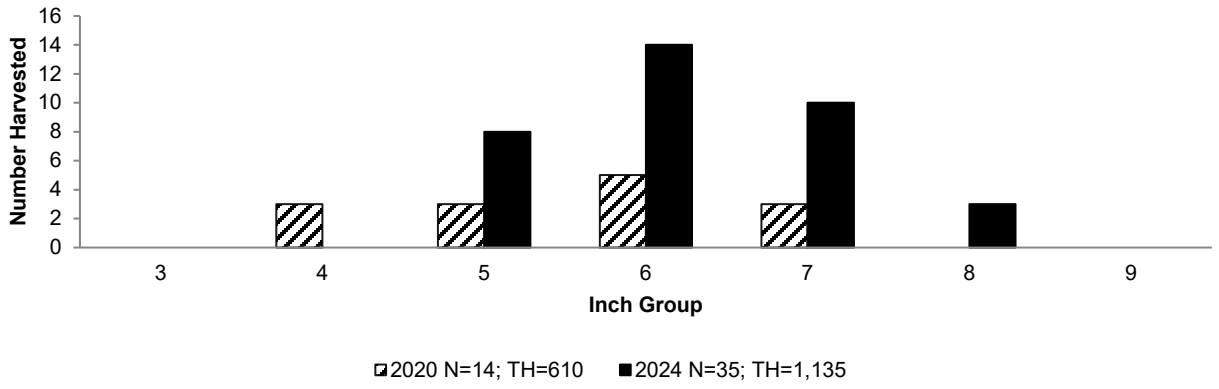


Figure 4. Length frequency of harvested Bluegill observed during creel surveys at Naconiche Reservoir, Texas, March 1st through May 31st 2020 and 2024, all anglers combined. N is the number of harvested Bluegill observed during creel surveys, and TH is the total estimated harvest for the creel period. No harvest was observed in 2016.

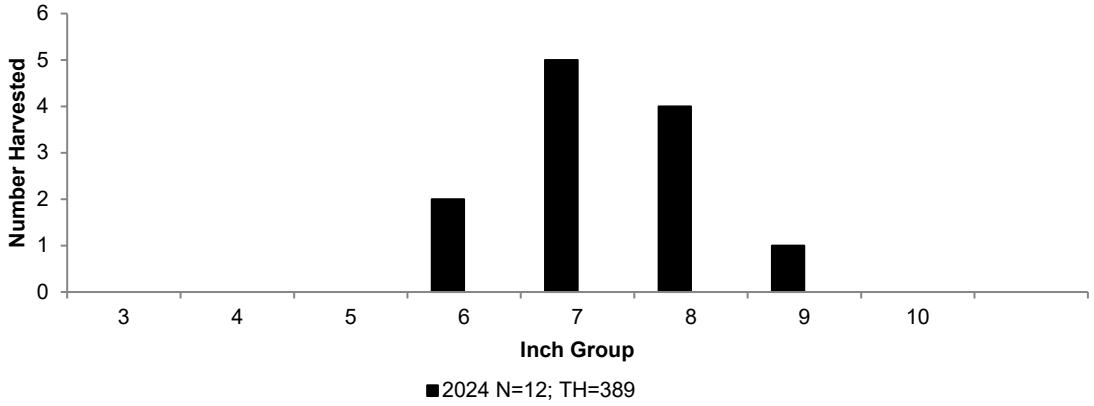


Figure 5. Length frequency of harvested Redear Sunfish observed during creel surveys at Naconiche Reservoir, Texas, March 1st through May 31st, 2024, all anglers combined. N is the number of harvested Bluegill observed during creel surveys, and TH is the total estimated harvest for the creel period. No harvest was observed in 2016 and 2020.

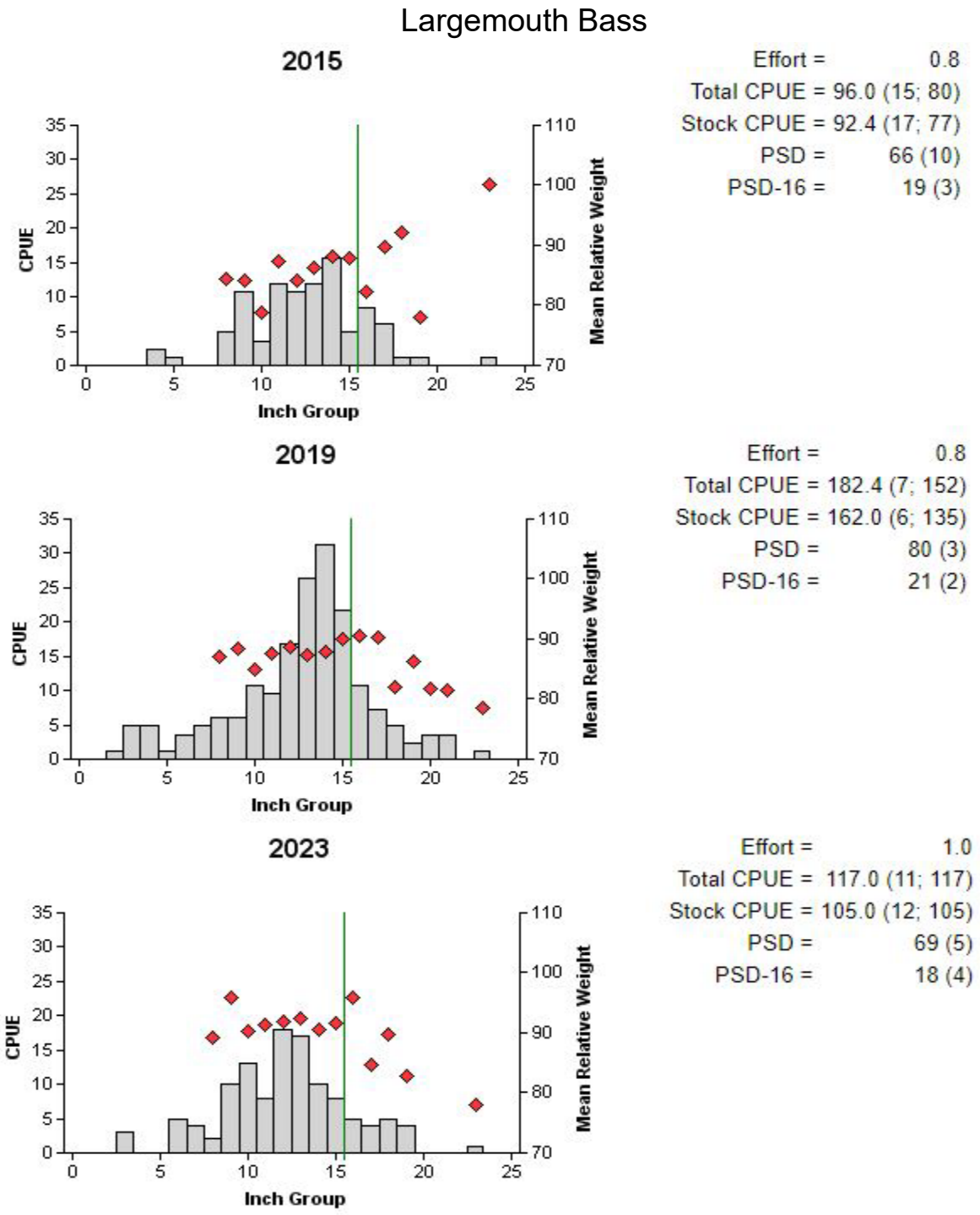


Figure 6. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Naconiche Reservoir, Texas, 2015, 2019, and 2023. Vertical lines represent the maximum length limit. These surveys were conducted at night at biologist selected stations.

Largemouth Bass

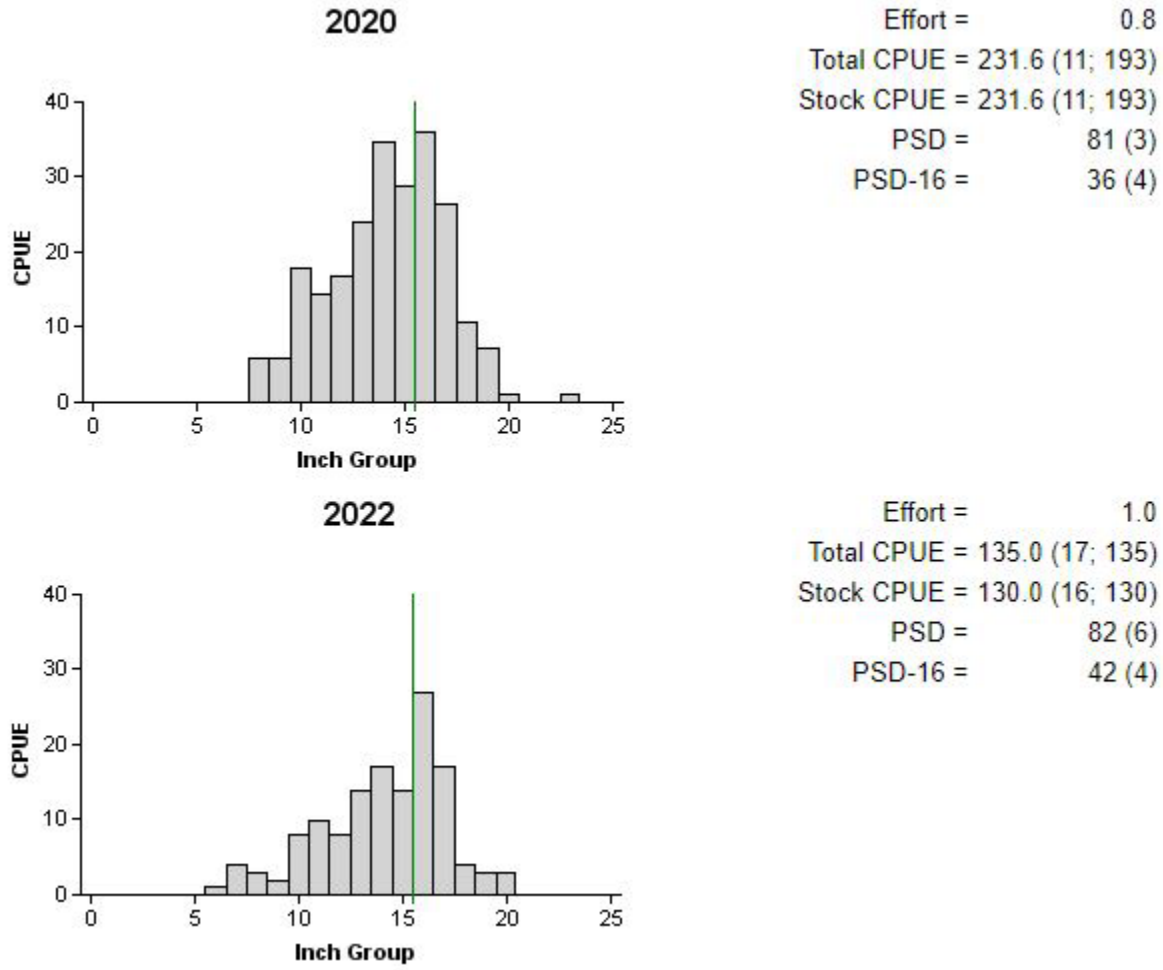
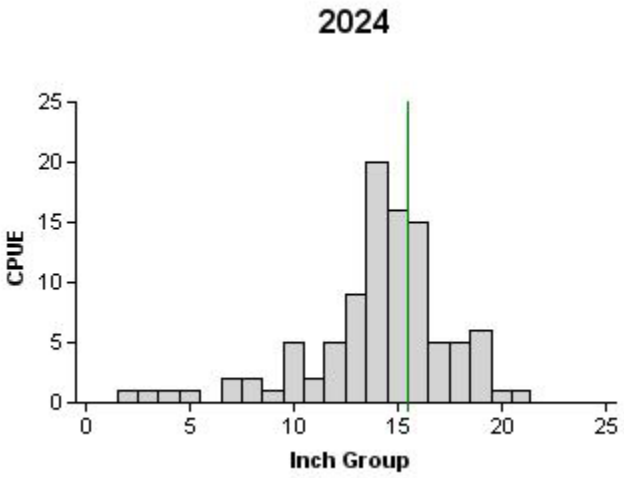


Figure 7. Number of Largemouth Bass caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring electrofishing surveys, Naconiche Reservoir, Texas, 2020 and 2022. Vertical lines represent the maximum length limit. These surveys were conducted at night at biologist selected stations.

Largemouth Bass



Effort = 1.0
Total CPUE = 99.0 (14; 99)
Stock CPUE = 93.0 (13; 93)
PSD = 89 (3)
PSD-16 = 35 (6)

Figure 8. Number of Largemouth Bass caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for the 2024 spring electrofishing survey, Naconiche Reservoir, Texas. The vertical line represents the maximum length limit. This survey was conducted during the day at randomly selected stations.

Table 10. Creel survey statistics for Largemouth Bass at Naconiche Reservoir, Texas, March 1 through May 31, 2016, 2020 and 2024. Catch rate is for all anglers targeting Largemouth Bass. The estimated number of fish caught by weight category is for all anglers and accounts for all Largemouth Bass caught. Relative standard errors (RSE) are in parentheses.

Statistic	2016	2020	2024
Surface area (acres)	692	692	692
Directed effort (h)	13,990.9 (19)	24,216.6 (25)	25,228.6 (12)
Directed effort/acre	20.2 (19)	35.0 (25)	36.5 (12)
Total catch per hour	0.7 (12)	0.6 (13)	0.9 (9)
Total catch	12,197 (27)	16,599 (31)	22,637 (16)
< 4.0 lbs	11,421 – 93.6%	15,464 – 93.2%	20,584 – 90.9%
≥ 4-6.9 lbs	751 – 6.2%	1,135 – 6.8%	1,854 – 8.2%
≥ 7-9.9 lbs	25 – 0.2%	0 – 0%	199 – 0.9%
≥ 10 lbs	0 – 0%	0 – 0%	0 – 0%
Total harvest	29 (60)	1,001 (64)	486 (65)
Harvest/acre	< 0.1 (60)	1.4 (64)	0.7 (65)
Percent legal released	98.7	87.2	96.3

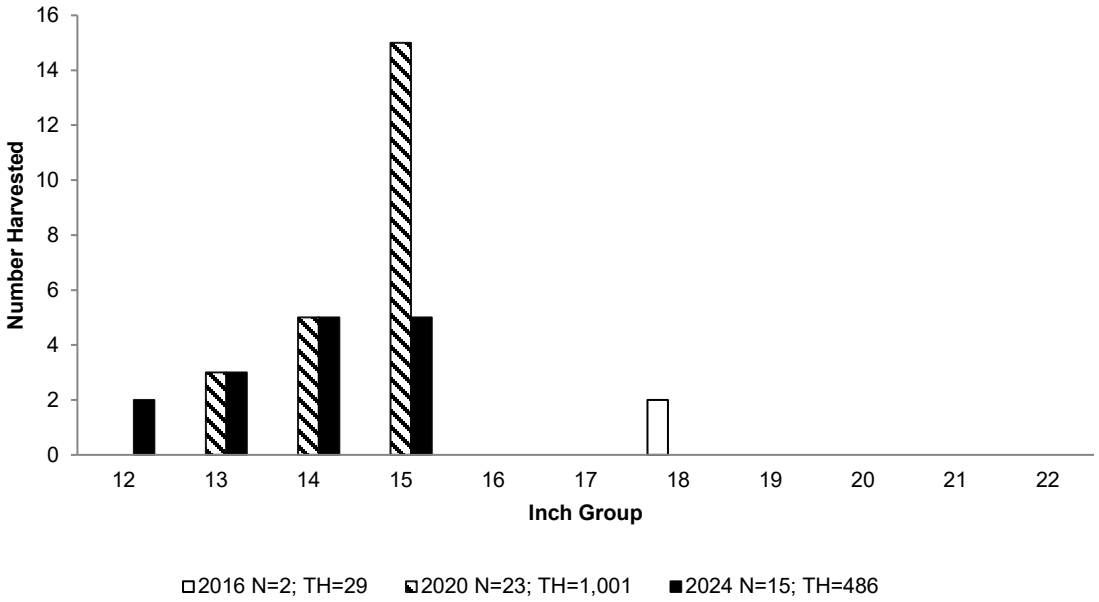


Figure 9. Length frequency of harvested Largemouth Bass observed during creel surveys at Naconiche Reservoir, Texas, March 1 through May 31st, 2016, 2020, and 2024, all anglers combined. N is the number of harvested Largemouth Bass observed during creel surveys, and TH is the estimated harvest for the creel period. From September 1, 2012 – August 31, 2016, Largemouth Bass harvest was regulated with an 18-inch minimum length limit. Since September 1, 2016, harvest has been regulated with a 16-inch maximum length limit.

Table 11. Creel survey statistics for crappie at Naconiche Reservoir, Texas, from March 1 through May 31, 2016, 2020 and 2024. Total catch per hour is for anglers targeting crappie and total harvest is the estimated number of crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year		
	2016	2020	2024
Surface area (acres)	692	692	692
Directed effort (h)	1,752.6 (35)	2,600.8 (38)	861.4 (55)
Directed effort/acre	2.5 (35)	3.8 (38)	1.24 (55)
Total catch per hour	0.7 (39)	0.1 (73)	0.3 (70)
Total harvest	307 (50)	0 (0)	97 (212)
Harvest/acre	0.4 (50)	0 (0)	0.1 (212)
Percent legal released	24.6	100	0.0

Proposed Sampling Schedule

Table 12. Proposed sampling schedule for Naconiche Reservoir, Texas. Survey period is June through May.

	Survey year			
	2024-2025	2025-2026	2026-2027	2027-2028
Angler Access				X
Vegetation	X	X	X	X
Electrofishing – Fall				X
Electrofishing – Spring		X		X
Creel survey [a]				X
Report				X

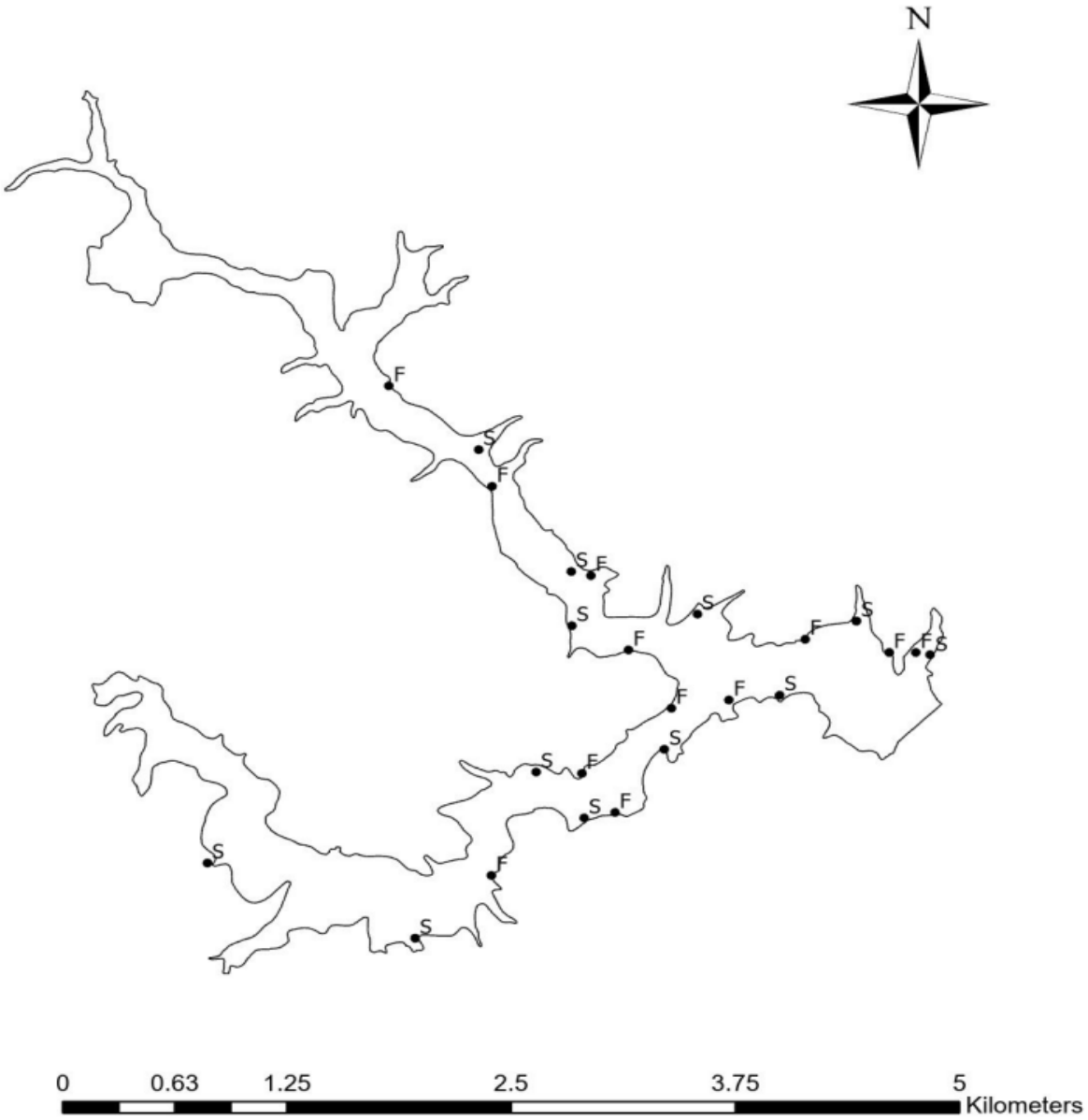
[a] Spring quarter creel survey

APPENDIX A – Catch rates for all species from all gear types

Number (N) and catch rate (CPUE) (RSE in parentheses) of all target species collected from all gear types from Naconiche Reservoir, Texas, 2023-2024. Sampling effort was 1.0 hours for fall and spring (bass-only) electrofishing.

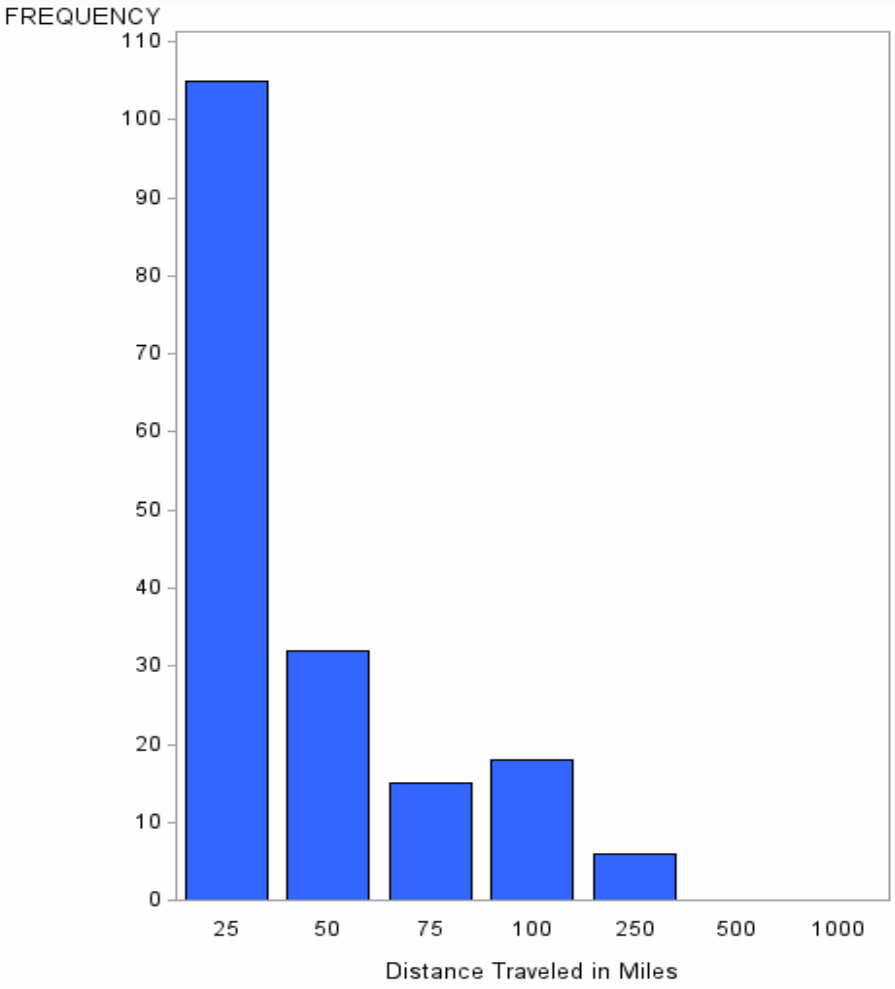
Species	Fall Electrofishing		Spring Electrofishing	
	N	CPUE	N	CPUE
Threadfin Shad	2,818	2,818.0 (46)		
Warmouth	4	4.0 (56)		
Bluegill	177	177.0 (22)		
Longear Sunfish	2	2.0 (100)		
Redear Sunfish	33	33.0 (30)		
Largemouth Bass	117	117.0 (11)	99	99.0 (14)

APPENDIX B – Map of sampling locations



Location of sampling sites, Naconiche Reservoir, Texas, 2023-2024. Fall electrofishing and spring electrofishing stations are indicated by F and S, respectively. Water level was near full pool at time of sampling.

APPENDIX C – reporting of creel ZIP code data



Frequency of anglers that traveled various distances (miles) to Naconiche Reservoir, Texas, as determined from the March through May 2024 creel survey.

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