

# Wheeler Branch Reservoir

## 2021 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

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INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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## Survey and Management Summary

Fish populations in Wheeler Branch Reservoir were surveyed in 2021 using electrofishing and in 2020 and 2022 using gill netting. Historical data are presented with the 2020-2022 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:** Wheeler Branch Reservoir is a 180-acre impoundment located within the Paluxy River system in Somervell County, Texas. Maximum depth is 85 feet. Water level is maintained by pumping water from the Paluxy River during periods of high flow. Wheeler Branch Reservoir is an oligotrophic reservoir with water transparencies typically ranging from 10 to 15 feet. Natural habitat features consist of flooded cedars and aquatic vegetation around the periphery, flooded standing timber in deeper water, brush piles, rock piles and ledges.

**Management History:** Since the reservoir's opening, Wheeler Branch has been sampled extensively with electrofishing and gill netting, and a year-long angler creel survey was conducted from June 2013 through May 2014. Also in 2013, a public relations campaign began within the district to inform and educate constituents about aquatic invasive species (AIS), in order to prevent their spread into Wheeler Branch Reservoir. Somervell County employees were trained on AIS, and how to inspect boats and trailers entering the reservoir. Recent management efforts include attempting to improve the stocking success of Walleye and Smallmouth Bass, monitoring Channel Catfish abundance, maintaining AIS signage at access points, and including AIS speaking points during conversations and presentations with constituents.

### Fish Community

- **Prey species:** No Threadfin or Gizzard Shad were observed with electrofishing. The prey base consists mainly of Bluegill and Redbreast Sunfish. Longear Sunfish, Green Sunfish and Warmouth were also observed. The electrofishing catch rate for Bluegill was low compared to the previous two surveys, but Bluegill up to 8-inches in length were observed.
- **Channel Catfish:** The catch rate of Channel Catfish was the lowest in three surveys; only nine individuals were observed during 2020 and 2022 gill netting combined. Body condition was good. No Blue Catfish or Flathead Catfish were observed.
- **Black basses:** The catch rate and percentage of legal-length Largemouth Bass was the highest in three surveys. Body condition was optimal for stock-length fish but decreased for most of the remaining length classes. No Smallmouth or Spotted Bass were observed.
- **Walleye:** Six Walleye were collected during the 2020 gill netting survey and only one was observed during the 2022 gill netting survey. The fish were all over 16 inches, and body condition was variable.

**Management Strategies:** Continue managing Wheeler Branch Reservoir with existing regulations. Conduct monitoring surveys with fall electrofishing in 2025 and spring gill netting in 2024 and 2026. Conduct a vegetation and access survey during late summer 2025. Continue efforts to educate the public about AIS issues and protect the reservoir from AIS introductions. Stock Walleye fry with Oxygen-filled bags and advanced fingerling Channel Catfish through 2026.

## Introduction

This document is a summary of fisheries data collected from Wheeler Branch Reservoir from 2020-2022. 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 species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2020-2022 data for comparison.

## Reservoir Description

Wheeler Branch Reservoir is a 180-acre impoundment located within the Paluxy River system in Somervell County, Texas. The reservoir began filling in 2007 and the controlling authority is the Somervell Water District (SWD). The primary purpose of the reservoir is to provide drinking water to Somervell County residents. Maximum depth is 85 feet. Water level is maintained by pumping water from the Paluxy River during periods of high flow. Glen Rose City Lake (9 acres) was impounded on the Paluxy to provide a pool of water from which to pump. The pump has a capacity of 13,000 gallons per minute. Wheeler Branch Reservoir is an oligotrophic reservoir, with water transparencies typically ranging from 10 to 15 feet. Natural habitat features consist of flooded cedars and aquatic vegetation (pondweed and cattail) around the periphery, flooded standing timber in deeper water, brush piles, rock piles and bedrock ledges, while man-made habitat features consist of rip-rap along the dam and a variety of sunken vehicles used for SCUBA training purposes by local law enforcement and clubs. Other descriptive characteristics for Wheeler Branch Reservoir are in Table 1.

## Angler Access

Wheeler Branch Reservoir has one double-lane boat ramp. Boats are limited to canoes, kayaks, and open-hulled Jon-boats with no gas propulsion. All of the facilities are in great shape. Shoreline access is very good. Additional boat ramp characteristics are in Table 2.

## Management History

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Tibbs and Baird 2018) included:

1. Discontinuing Smallmouth Bass stockings.

**Action:** Smallmouth Bass stockings were officially discontinued in 2018 however, two separate stockings of Smallmouth Bass Broodfish, from TPWD Hatcheries, were approved by the stocking coordinator in 2021 in hopes that stocking fully mature adults might trigger successful spawns in the future.

2. Stocking 9-inch Channel Catfish fingerlings in 2020 and 2-inch Channel Catfish fingerlings in 2022. Continue this stocking regime every two years thereafter, alternating between sizes; evaluate recruitment of stocked fish with gill netting in 2020 and 2022.

**Action:** The stocking schedule was carried out (as of the date of this report) and gill netting surveys were conducted in spring 2020 and 2022 to evaluate Channel Catfish recruitment from stockings. Survey results are included in this report.

3. Stocking Walleye fry in 2019 and 2020 using Oxygen-filled bags to transport them to the reservoir. Evaluate recruitment of stocked fish with gill netting in 2020 and 2022.

**Action:** Oxygen-filled bags were used to transport Walleye fry during 2019 however, Walleye fry weren't available in 2020. Gill netting surveys were conducted in spring 2020 and 2022 as scheduled to evaluate Walleye recruitment from stockings. Survey results are included in this report.

4. Cooperating with the SWD to maintain appropriate AIS signage at access points around the

reservoir and ensure that staff are aware of the AIS threat and have information to provide to their customers.

**Action:** New AIS signage was posted at the Wheeler Branch Reservoir boat ramp during summer 2013 and has been maintained as needed. District staff have made a speaking point about AIS, how to prevent their spread, and potential effects on Wheeler Branch Reservoir while speaking to constituents ever since.

**Harvest regulation history:** Sport fishes in Wheeler Branch are managed with two special regulations. The first regulation is a gear restriction, pole and line fishing only. The second is a 14 to 21-inch slot length limit for Largemouth Bass, 5 fish bag (only one allowed over 21 inches). The 18-inch minimum length limit for Smallmouth Bass, 3 fish bag was removed and replaced with the 14-inch statewide minimum, 5 fish bag on September 1, 2017. The total black bass bag is 5 in any combination. The statewide catfish regulation, 25 fish bag (in any combination), 12-inch minimum length limit, was replaced on September 1, 2021, with a 25 fish bag (in any combination – only 10 can be 20 inches or greater in length), no minimum length limit (Table 3).

**Stocking history:** Florida Largemouth Bass were stocked in 2007 and 2011. Channel Catfish, Smallmouth Bass, and Walleye have been stocked nearly annually since 2008 however, official Smallmouth Bass stockings were stopped in 2018 due to poor recruitment. The complete stocking history is in Table 4.

**Water transfer:** Wheeler Branch Reservoir was primarily designed to supply municipal water for the City of Glen Rose and is currently being utilized in that capacity. When monthly bypass flows (3.1 to 27.2 cubic feet per second) are exceeded in the Paluxy River, SWD pumps untreated water into the reservoir from an impounded portion of the river known as Glen Rose City Lake. This approach was taken because the Wheeler Branch watershed is insufficient to reliably recharge the reservoir.

## Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Wheeler Branch Reservoir (Tibbs and Baird 2018). Primary components of the OBS plan are listed in Table 5. All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

**Electrofishing** – Largemouth Bass and sunfishes were collected by fall nighttime electrofishing (0.7 hour at 8, 5-min stations) in 2021. Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

**Gill netting** – Channel Catfish and Walleye were collected by early spring gill netting (5 net nights at 5 stations) in 2020 and 2022. Catch per unit effort for gill netting was recorded as the number of fish caught per net night (fish/nn).

**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 Anderson and Neumann (1996). Standard error (SE) was calculated for structural indices. Relative standard error ( $RSE = 100 \times SE$  of the estimate/estimate) was calculated for all CPUE statistics.

**Habitat** – A structural habitat survey was not conducted during this survey period; refer to Tibbs and Baird (2010) for the most recent structural habitat information collected. Vegetation surveys were conducted using an adaptation of the point method during 2013, 2017 and 2021 (TPWD, Inland Fisheries Division, unpublished manual revised 2017). Twenty-five random points were generated on the shoreline. Aquatic vegetation has always been found close to the shore in Wheeler Branch Reservoir, so stratifying the random points to exclude deep-water areas increased precision and resulted in better data.

**Water level** – There is currently no source for water level data for Wheeler Branch Reservoir.

## Results and Discussion

**Habitat:** Littoral zone structural habitat consisted primarily of natural and rocky shorelines and flooded timber. American pondweed was found in 100% of the random points sampled during the 2021 vegetation survey, and cattail was found at 72% of points (Table 6). American pondweed, although a significant contributor of fisheries habitat, has become problematic in recent years and is currently at its highest recorded coverage. Chemical treatments have been considered in the past, but none have been implemented as of the date of this report.

**Prey species:** Threadfin and Gizzard Shad were not observed in the fall 2021 electrofishing survey (Appendix A), but the catch rate of Bluegill (52.5/h) was about one-half the 2017 catch rate (96.0/h) and only one-quarter of the 2013 catch rate (220.0/h; Figure 1). Despite low catch rate, individuals up to eight inches in length were sampled. Other sunfishes collected included Redbreast Sunfish, Green Sunfish, Longear Sunfish and Warmouth (Appendix A).

**Channel Catfish:** Channel Catfish were the only catfish species observed during the 2020 and 2022 gill netting surveys (Appendix A). Only nine individuals were collected from the combined surveys (0.4/nn in 2022 and 1.4/nn in 2020), and this is a large decrease in catch rate since 2018 (5.0/nn; Figure 2). Recent sampling data show no recruitment of stock-length fish (Figure 2). Nearly all catfish collected in 2018 had optimal body condition however, body condition was far worse, and varied moderately, for individuals collected in the 2020 and 2022 surveys (Figure 2). Only one sampled individual reached the memorable (28-inch) length class.

**Largemouth Bass:** Largemouth Bass were the only black bass species observed in the fall 2021 electrofishing survey (Appendix A). The Largemouth Bass catch (93.0/h) exceeded those of the previous two surveys (55.5/h and 72.0/h) and showed good recruitment and growth of individuals (Figure 3). Body condition generally decreased with increasing length (from 9-18 inches; Figure 3). One possible explanation for this could be that the expanded coverage of pondweed throughout the reservoir is making sunfishes and other prey items harder to find and capture (Table 6). The objective based sampling (OBS) goals of a RSE < 25 and an  $N \geq 50$  for stock-length fish were both met (Table 5). The proportion of fish graduating into the slot length (PSD-14; 44) has increased over the past two surveys (40, 28) but individuals over the slot length (21-inch, plus) remain absent from surveys (Figure 3). Genetic analysis of Largemouth Bass was not conducted during this survey period; refer to Tibbs and Baird (2014) for the most recent genetics information collected.

**Walleye:** This fishery has received annual stockings of Walleye fry since 2008, with the exception of 2020. Seven Walleye were observed in the last two spring gill netting surveys, six in 2020 and one in 2022 respectively (Figure 4). All of these individuals were between 18 and 21 inches in length and had fair to good body condition (Figure 4). One possible explanation for low numbers of Walleye in 2022 gill netting, is the expansive coverage of American pondweed which prevented gill nets from being set and tethered perpendicular to the shoreline; these nets had to instead be set as pelagic sets in deeper water (Appendix B). Historically, pelagic net sets collect fewer Walleye on Wheeler Branch Reservoir (Appendix B).

# Fisheries Management Plan for Wheeler Branch Reservoir, Texas

Prepared – July 2022

**ISSUE 1:** American pondweed was found at 25 percent of random shoreline points in 2013 and had become problematic in the swimming beach area. Chemical treatments were considered at the time but not implemented. American pondweed expanded to 100 percent of random shoreline points by 2017 and has remained at 100 percent through the 2021 vegetation survey. Although American pondweed is native, it is currently causing access and angling issues for constituents.

## MANAGEMENT STRATEGIES

1. Speak with SWD staff about chemical treatment options and perform spot treatments of American pondweed to keep public access and high use areas clear of vegetation.
2. Monitor American pondweed coverage as needed and evaluate results in the 2026 report.

**ISSUE 2:** Channel Catfish were the second most sought species in the 2014 creel and they continue to be a popular species with bank and boat anglers. Sampling data from the past three gill netting surveys show no recruitment of smaller fish and the population will need to be sustained through consistent stockings.

## MANAGEMENT STRATEGIES

1. Stock 9-inch Channel Catfish fingerlings every two years at 25/acre.
2. Stock supplemental Channel Catfish fingerlings, advanced fingerlings and/or adults when available.
3. Evaluate recruitment of stocked Channel Catfish with gill netting in spring 2024 and 2026.

**ISSUE 3:** Walleye are a popular bonus fish at Wheeler Branch although few anglers fish for them exclusively. In response to lower-than-expected recruitment, the stocking approach was changed in 2017, from using truck boxes and hauling containers, to oxygen-filled bags, similar to the successful hybrid striped bass stockings performed in the district. Gill netting surveys in 2020 and 2022 were meant to evaluate these changes in stocking practices in terms of Walleye recruitment. The 2020 gill netting survey showed promising results with 6 individuals collected however, the 2022 gill netting survey only collected a single Walleye. Due to the increased coverage of pondweed in 2022, most of our gill net sets had to be pelagic sets instead of shore-based sets, and the only Walleye caught during the survey was collected from the shore-based set. Further evaluation is needed.

## MANAGEMENT STRATEGIES

1. Stock Walleye fry annually using oxygen-filled bags to transport them to the reservoir.
2. Discuss the stocking of Threadfin Shad with the SWD, and if agreeable, stock annually through 2024. Purchase Threadfin Shad from a trusted, private grower to avoid the potential spread of AIS.
3. Evaluate recruitment of stocked Walleye with gill netting in spring 2024 and 2026.



**ISSUE 4:** With Smallmouth Bass stockings officially discontinued in 2018, there is opportunity to improve the Largemouth Bass fishery. Stocking additional Lone Star Bass fingerlings should improve Largemouth Bass genetics and help grow larger bass for anglers. These fingerlings might also take advantage of the extensive coverage of American pondweed currently in the reservoir.

#### MANAGEMENT STRATEGIES

1. Stock Lone Star Bass fingerlings, which are 2<sup>nd</sup> generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to  $\geq 13$  pounds, at a rate of 1,000/km shoreline in 2023 and 2024.
2. Evaluate recruitment of stocked Lone Star Bass with electrofishing in fall 2025.

**ISSUE 5:** Many AIS threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches, and plugging engine cooling systems. Giant salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of AIS are significant. Additionally, the potential for AIS to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state

#### MANAGEMENT STRATEGIES

1. Cooperate with the SWD to maintain AIS signage at access points around the reservoir.
2. Educate the public about AIS through the use of media and the internet.
3. Make a speaking point about AIS when presenting to constituent and user groups.
4. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential AIS responses.

## Objective-Based Sampling Plan and Schedule (2022–2026)

Important sport and forage fishes: Abundant and/or important sport fishes in Wheeler Branch Reservoir include Largemouth Bass and Channel Catfish. Important forage fishes include Bluegill.

Sport fishes with low-density populations: Smallmouth Bass and crappies occur in low abundance in Wheeler Branch Reservoir and are generally caught incidentally to other targeted species. We will continue collecting and reporting data for these species and upgrade their status if appropriate.

### Survey objectives, fisheries metrics, and sampling objectives

**Fall Electrofishing:** This survey will be used to evaluate Largemouth Bass, Smallmouth Bass and Bluegill. Black bass were the most sought species group by anglers in Wheeler Branch Reservoir during the 2013-14 creel survey (74% directed effort combined). A minimum of 8, random 5-minute nighttime electrofishing stations will be sampled in fall 2025. The goal of this electrofishing survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Largemouth Bass population and make comparisons with historical and future data. Catch per unit effort target precision will be an RSE < 25. Target sample size will be an  $N \geq 50$  stock-sized fish to determine population size structure, allowing us to calculate PSD with 80% confidence. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group  $\geq$  stock-length. If catch rates indicate collecting our size structure target is reasonable, sampling will continue at random stations until that target is reached.

The 2013-14 creel survey indicated that more than 10% of anglers fish for Smallmouth Bass. Despite this, average electrofishing catch rates have been very low for this species and Smallmouth have been downgraded to low-density status in this report. We will still collect data from Smallmouth but no catch per unit effort target precision, target sample sizes or relative weights will be assigned. The goal of the electrofishing survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Smallmouth population and make comparisons with historical and future data.

The goals of the Bluegill survey will be general monitoring (using CPUE and size structure as metrics) to characterize the population and make comparisons with historical and future data. Since trend data show large variations in catch of forage species, no catch per unit effort target precision, target sample sizes or relative weights will be assigned.

**Spring Gill Netting:** The gill netting survey will be used to evaluate Channel Catfish and Walleye. Channel Catfish were the second-most sought species group by anglers in Wheeler Branch Reservoir during the 2013-2014 creel survey with 14% of the directed effort. A minimum of 5 random gill netting stations will be sampled over-night in spring 2026. The goal of this gill netting survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Channel Catfish population and make comparisons with historical and future data. No catch per unit effort target precision, target sample size or relative weights will be assigned.

Only 4% of anglers fish exclusively for Walleye and average gill netting catch rates have been consistently low for the species. Walleye have been downgraded to low-density status in this report. We will still collect data from Walleye but no catch per unit effort target precision, target sample sizes or relative weights will be assigned. The goal of the gill netting survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Walleye population and make comparisons with historical and future data.

## Literature Cited

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## Tables and Figures

Table 1. Characteristics of Wheeler Branch Reservoir, Texas.

Characteristic	Description
Year constructed	2007
Controlling authority	Somervell Water District
County	Somervell
Reservoir type	Mainstem
Conductivity	400 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for Wheeler Branch Reservoir, Texas. Latitude and longitude are in decimal degrees.

Boat ramp	Latitude; Longitude	Public?	Parking capacity	Condition
Wheeler Branch	32.261208° N - 97.765422° W	Y	20 with trailers, 26 car only	Excellent, no issues

Table 3. Harvest regulations for Wheeler Branch Reservoir, Texas.

Species	Bag Limit	Length limit (inches)
Catfish, Channel	25 <sup>a</sup>	No minimum
Bass, Largemouth	(only one >21 inches)	14- 21-inch slot
Bass, Smallmouth	5 <sup>bc</sup>	14-inch minimum
Sunfish	No limit	No minimum
Walleye	5	Only 2 can be less than 16 inches

<sup>a</sup> Daily bag for Channel and Blue = 25 in any combination; only 10 can be 20 inches or greater.

<sup>b</sup> This regulation changed from a bag limit of 3 and 18-inch minimum on September 1, 2017.

<sup>c</sup> Daily bag for Largemouth Bass and Smallmouth Bass = 5 fish in any combination.

Table 4. Stocking history for Wheeler Branch Reservoir, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

<b>Species</b>	<b>Year</b>	<b>Number</b>	<b>Life Stage</b>	<b>Mean TL (in)</b>
Bluegill	2007	42,040	AFGL	2.5
	2008	18,550	AFGL	2.4
	Total	<u>60,590</u>		
Channel Catfish	2007	5,591	FGL	2.2
	2008	9,439	FGL	3.0
	2013	18,133	FGL	3.1
	2017	18,532	FGL	2.9
	2018	2,775	ADL	15.0
	2019	2,041	AFGL	10.0
	2020	3,223	ADL	14.0
	2022	<u>21,522</u>	FGL	3.0
Total	81,256			
Fathead Minnow	2007	16,750	FGL	
	Total	<u>16,750</u>		
Florida Largemouth Bass	2007	4,689	FGL	2.0
	2011	18,413	FGL	1.7
	Total	<u>23,102</u>		
Lone Star Bass <sup>a</sup>	2022	<u>19,348</u>	FGL	1.7
	Total	19,348		
Inland Silversides	2007	200	ADL	
	Total	<u>200</u>		
Smallmouth Bass	2007	426	ADL	8.4
	2007	4,074	FGL	1.7
	2008	4,263	AFGL	5.9
	2009	5,222	FGL	1.4
	2011	4,819	FGL	1.9
	2013	4,481	FGL	1.9
	2014	4,546	FGL	1.5
	2018	4,537	FGL	1.9
	2021	32	ADL	0.0
	2021	<u>246</u>	ADL	9.0
Total	32,646			

Table 4. Stocking history for Wheeler Branch Reservoir, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

<b>Species</b>	<b>Year</b>	<b>Number</b>	<b>Life Stage</b>	<b>Mean TL (in)</b>
Threadfin Shad	2007	1,500	ADL	
	2009	1,500	ADL	
	Total	3,000		
Walleye	2008	570,280	FRY	0.3
	2009	182,512	FRY	0.4
	2010	379,250	FRY	0.3
	2011	367,450	FRY	0.3
	2012	380,000	FRY	0.2
	2013	873,900	FRY	0.3
	2014	792,450	FRY	0.3
	2015	365,550	FRY	0.2
	2016	352,010	FRY	0.3
	2017	357,780	FRY	0.3
	2018	217,918	FRY	0.3
	2019	186,580	FRY	0.3
	2021	362,200	FRY	0.3
2022	357,128	FRY	0.3	
Total	5,745,008			

<sup>a</sup> Lone Star Bass are 2<sup>nd</sup> generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to  $\geq 13$  pounds.

Table 5. Objective-based sampling plan components for Wheeler Branch Reservoir, Texas 2020–2022.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Stock	RSE-Stock $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$ stock
	Condition	$W_r$	10 fish/inch group (max)
Bluegill <sup>a</sup>	Abundance	CPUE–Total	None
	Size structure	PSD, length frequency	None
<i>Gill netting</i>			
Channel Catfish	Abundance	CPUE–stock	None
	Size structure	Length frequency	None
	Condition	$W_r$	None
Walleye	Abundance	CPUE–stock	None
	Size structure	Length frequency	None
	Condition	$W_r$	None

<sup>a</sup> No additional effort will be expended to achieve an  $RSE \leq 25$  for CPUE of sunfishes 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.

Table 6. Survey of aquatic vegetation, Wheeler Branch Reservoir, Texas, 2013, 2017 and 2021. The data show percentages of randomly selected shoreline points where species occurred; 95% lower and upper confidence limits are in parenthesis. Water level was near full pool during the surveys.

Vegetation	2013	2017	2021
Southern Naiad	10.0% (2% - 26%)	24.0% (9% - 45%)	
American Pondweed	23.3% (9% - 42%)	100% (1% - 100%)	100% (1% - 100%)
Cattail	3.3% (<1% - 17%)	64.0% (16 of 25)	72.0% (51% - 88%)

## Bluegill

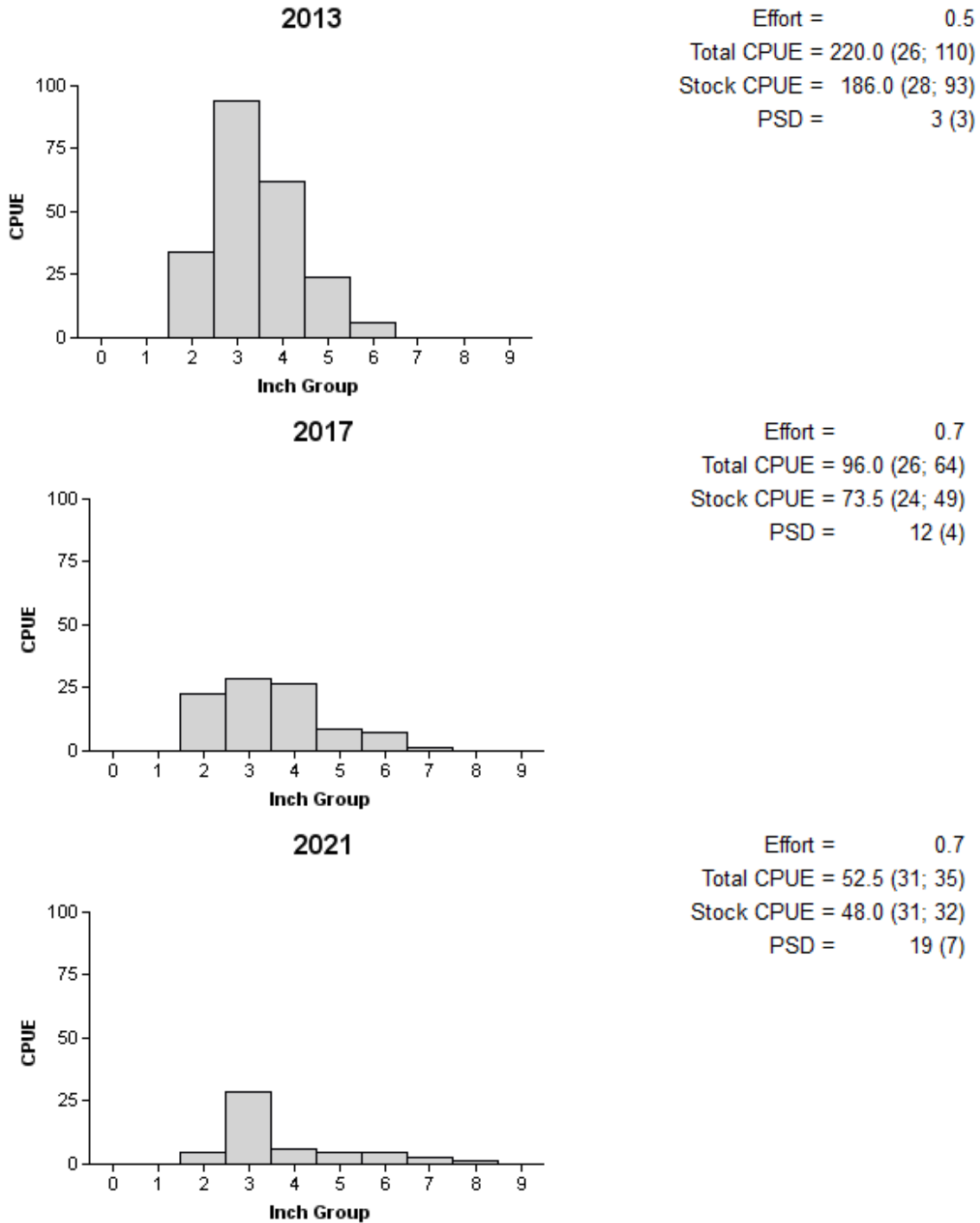


Figure 1. Number of Bluegill caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2013, 2017, and 2021.



### Channel Catfish

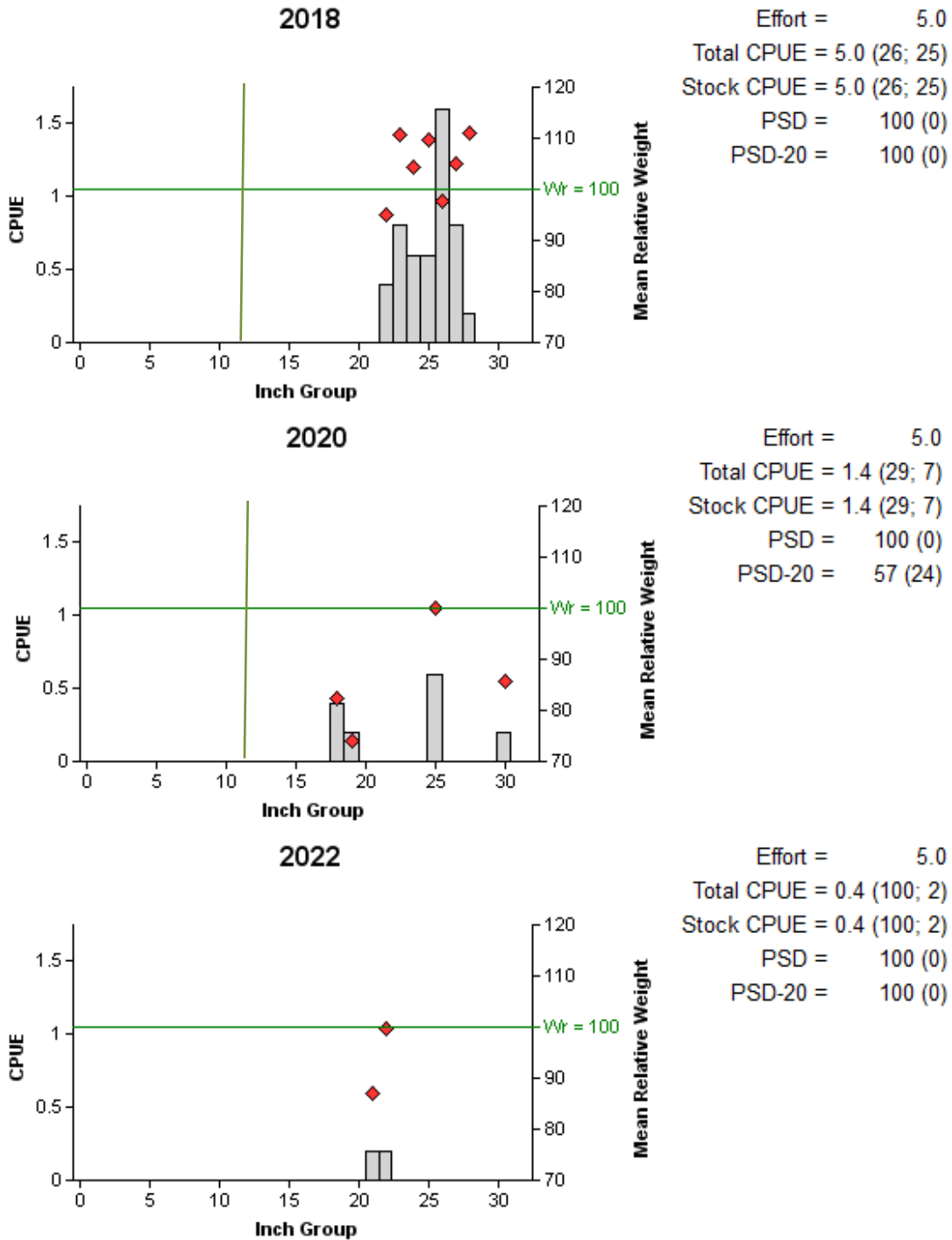


Figure 2. Number of Channel Catfish caught per net night (CPUE, bars), mean relative weight (diamonds) and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for spring gill net surveys, Wheeler Branch Reservoir, Texas, 2018, 2020, and 2022. Vertical line indicates the minimum length limit prior to September 1, 2021. Horizontal line represents optimal body condition.

## Largemouth Bass

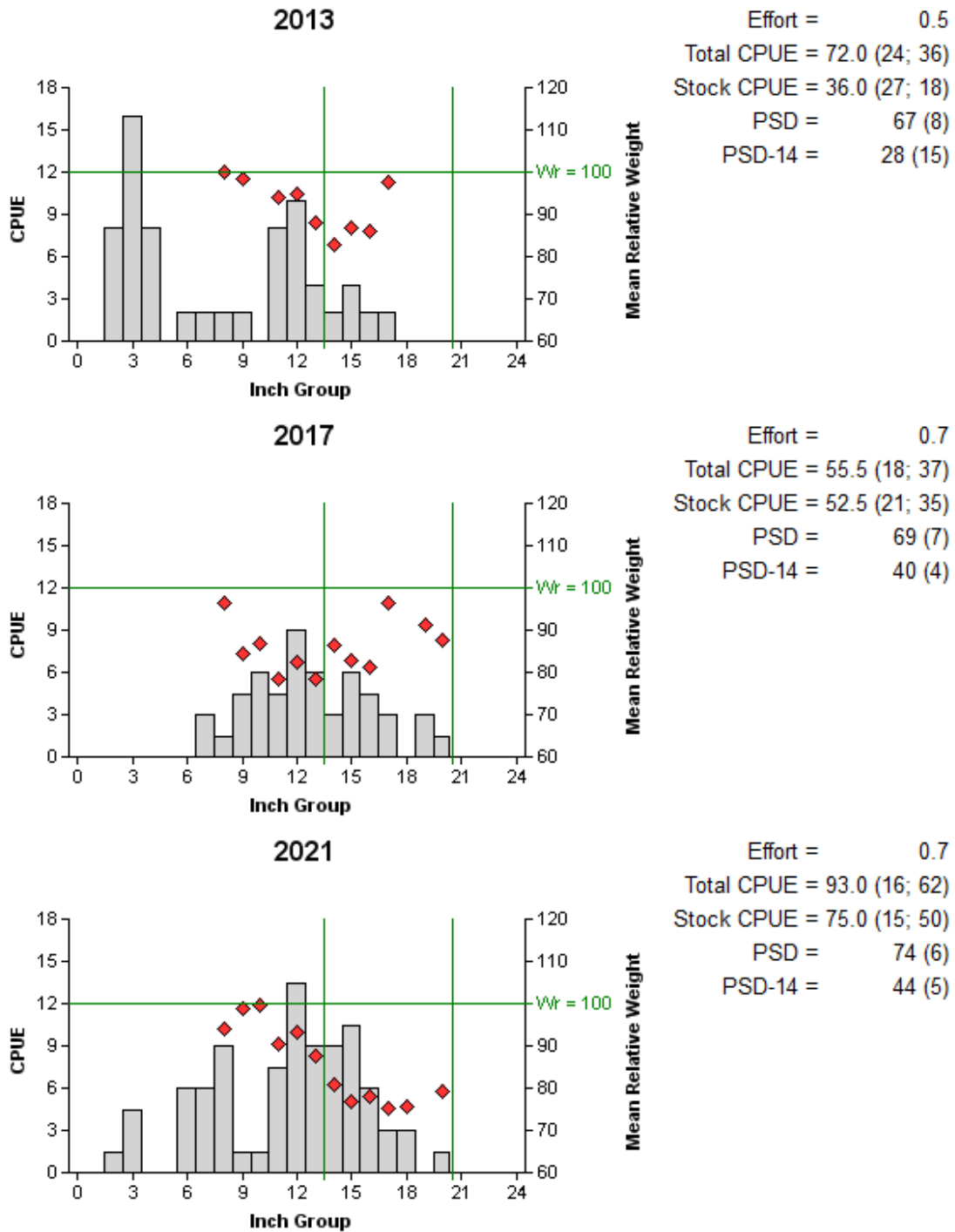


Figure 1. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2013, 2017, and 2021. Vertical green lines indicate the slot length limits, while the horizontal green line represents optimal body condition.

## Walleye

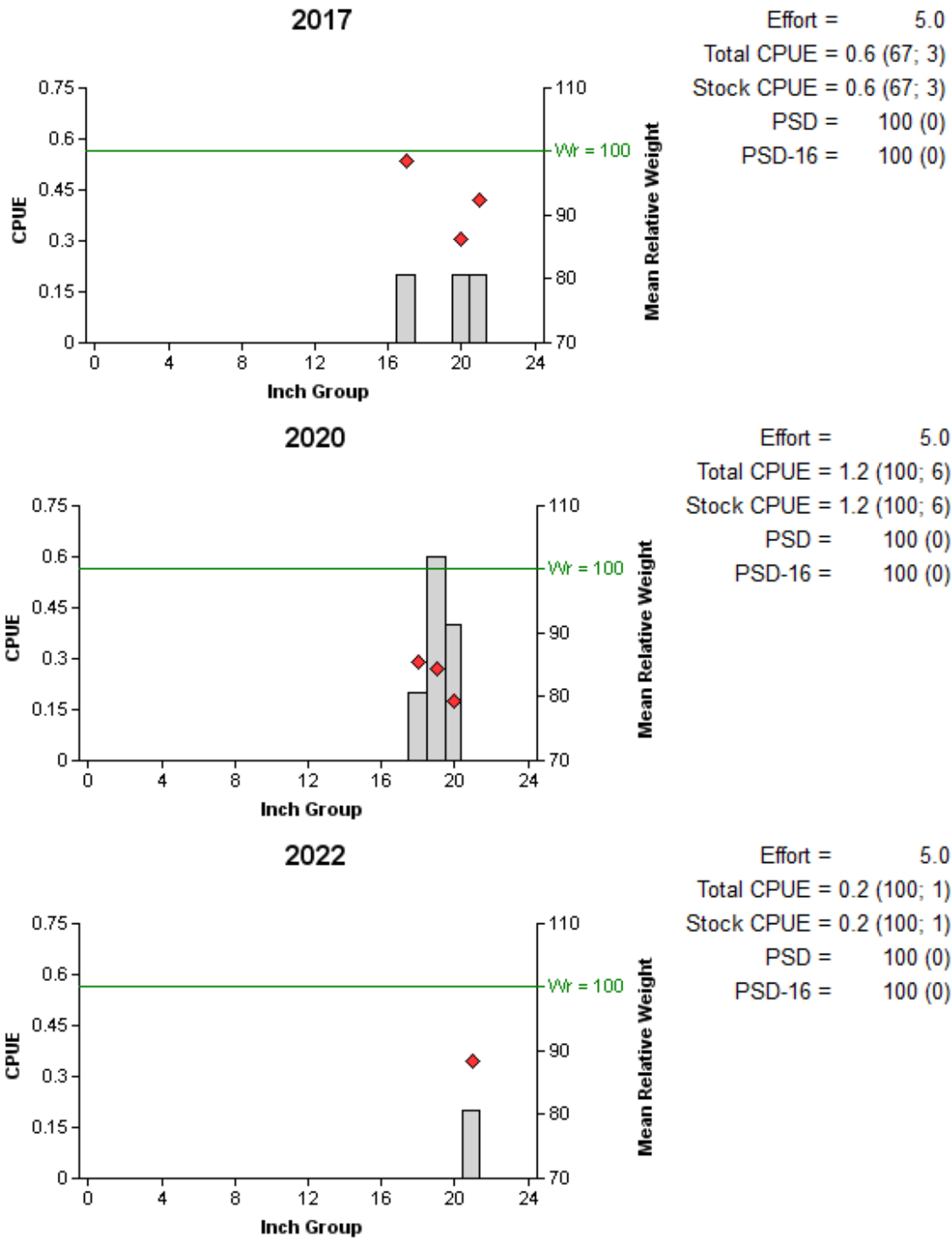


Figure 2. Number of Walleye caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for spring gill netting surveys, Wheeler Branch Reservoir, Texas, 2017, 2020, and 2022. The horizontal green line represents optimal body condition. None were caught in 2018.

## Proposed Sampling Schedule

Table 7. Proposed sampling schedule for Wheeler Branch Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing surveys are conducted in the fall.

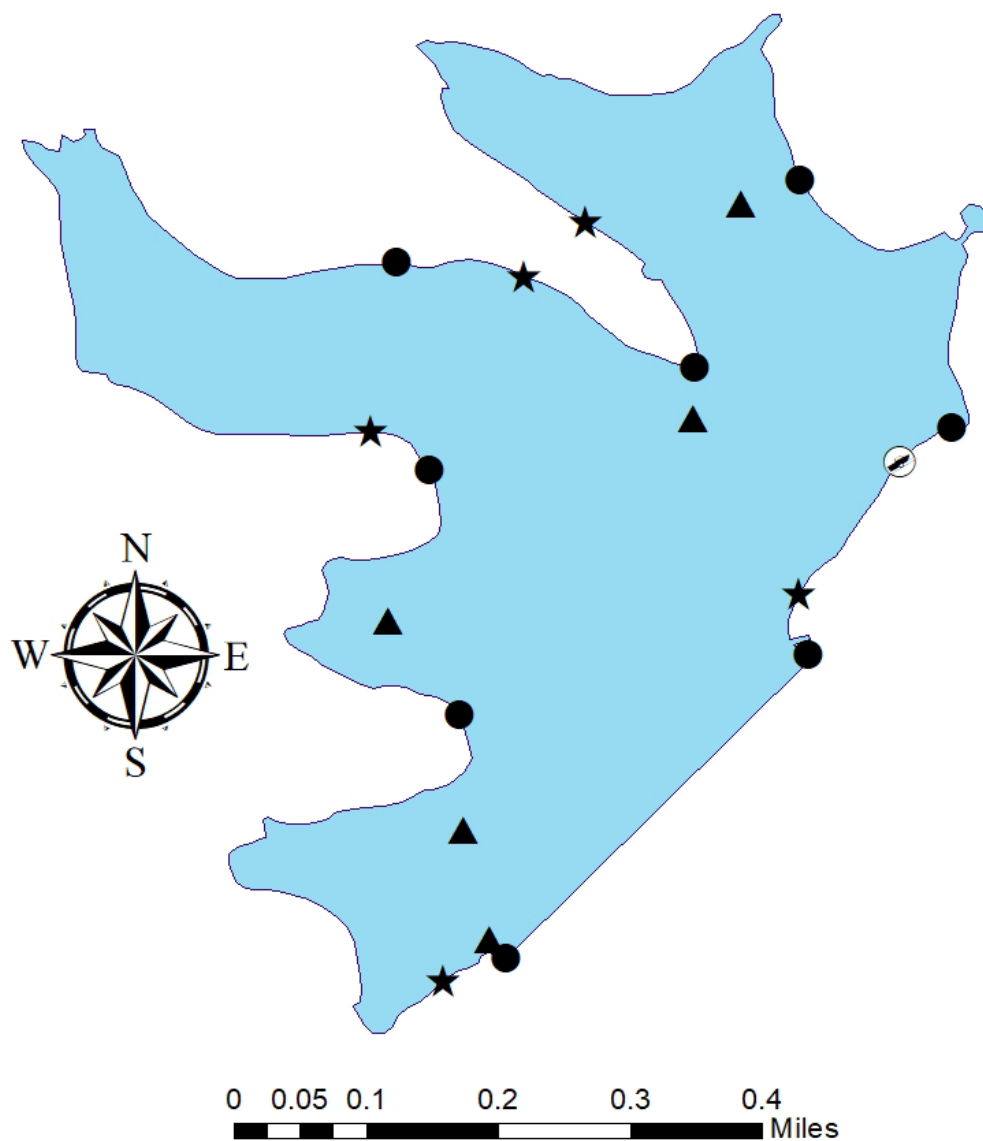
	Survey year			
	2022-2023	2023-2024	2024-2025	2025-2026
Angler access				X
Vegetation				X
Electrofishing – Fall				X
Gill netting		X		X
Report				X

## 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 Wheeler Branch Reservoir, Texas, 2020-2022. Sampling effort was 5 net nights for gill netting, and 0.7 hours for electrofishing.

Species	Gill Netting		Electrofishing	
	N	CPUE	N	CPUE
Channel Catfish	2	0.4 (100)		
Walleye	1	0.2 (100)		
Redbreast Sunfish			8	12.0 (73)
Green Sunfish			1	1.5 (100)
Warmouth			1	1.5 (100)
Bluegill			35	52.5 (31)
Longear Sunfish			1	1.5 (100)
Largemouth Bass	13	2.6 (63)	62	93.0 (16)
Black Crappie	1	0.2 (100)		

## APPENDIX B – Map of sampling locations



Location of sampling sites, Wheeler Branch Reservoir, Texas, 2020-2022. Electrofishing and gill netting stations are indicated by circles (2021) and triangles (2022), respectively. Stars represent 2020 gill netting sites for comparison. Water level was near full pool at time of sampling.



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