Wheeler Branch Reservoir

2017 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-3

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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July 31, 2018

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Survey and Management Summary

Fish populations in Wheeler Branch Reservoir were surveyed with one or more of the following gears annually since the last report: fall electrofishing, spring bass-only electrofishing and spring gill netting. Historical data are presented with the 2017-2018 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. Habitat features consist of flooded cedars around the periphery, flooded standing timber in deeper water, brush piles, rock piles and ledges.

Management History: Wheeler Branch opened to the public on September 1, 2011. Prior to opening, the reservoir was stocked with Florida Largemouth Bass, Smallmouth Bass, Walleye, Bluegill, Threadfin Shad, Inland Silverside, Longear and Redear Sunfish – and sampled extensively with electrofishing and gill netting. Three important regulations were proposed and initiated September 1, 2011: 1) fishing by pole and line only; two poles per angler, 2) a 14 to 21-inch slot length limit, 5 fish bag only one of which can exceed 21 inches for Largemouth Bass, and 3) a 18-inch minimum length limit, 3 fish bag for Smallmouth Bass. Since the reservoir's opening, Wheeler Branch has been sampled annually with one or more gears including fall electrofishing, spring gill netting, and spring bass-only electrofishing. Additionally, a year-long angler creel survey was implemented from June 2013 through May 2014. A public relations campaign began within the district to inform and educate constituents about zebra mussels in order to prevent their spread into Wheeler Branch Reservoir. Somervell County employees were trained about zebra mussels, and how to inspect boats and trailers entering the reservoir.

Fish Community

- **Prey species:** The forage base consisted primarily of Bluegill. Gizzard Shad are present in low density.
- **Channel Catfish:** Channel Catfish were collected in good numbers, and all individuals approached or exceeded the preferred size category of 24 inches.
- **Black basses:** Largemouth Bass catch rate declined, but size structure improved. Smallmouth Bass are present in the reservoir but weren't collected in the most recent electrofishing survey.
- **Walleye:** Walleye were collected in low numbers in the 2015 and 2017 gill netting surveys, but none were collected in the 2018 gill netting survey.

Management Strategies: Continue managing Wheeler Branch Reservoir with existing regulations. Conduct general monitoring with electrofishing and gill netting biennially. Conduct an aquatic vegetation and access survey during summer 2021. Continue efforts to educate the public about invasive species and protect the reservoir from zebra mussel introductions. Stock Walleye fry and Smallmouth Bass fingerlings annually and fingerling Channel Catfish in 2021.

Introduction

This document is a summary of fisheries data collected from Wheeler Branch Reservoir in 2017-2018. 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 is presented with the 2017-2018 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. Habitat features consist of flooded cedars around the periphery, flooded standing timber in deeper water, brush piles, rock piles and ledges (See Table 1 for other descriptive characteristics for Wheeler Branch Reservoir).

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. (See Table 2 for additional boat ramp characteristics).

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Tibbs and Baird 2014) included:

1. Monitor Threadfin Shad abundance and investigate supplemental stockings.

   Action: No Threadfin Shad were collected in the most recent survey. Management stockings or purchase from a private hatchery isn't feasible due to invasive species concerns.

2. Monitor Smallmouth Bass abundance and request annual stockings. Evaluate progress in 2017 report to determine if stocking should be continued.

   Action: Smallmouth Bass were sampled with fall electrofishing at night in 2016 and 2017. None were collected. Smallmouth Bass were requested every year but stocked only in 2018.

3. Monitor Walleye abundance and request annual stockings.

   Action: Walleye were sampled with gill netting in spring, 2015, 2017, and 2018. Low numbers were present in all years but 2018 when none were collected. Walleye fry were requested and stocked annually.

4. Monitor Channel Catfish abundance and request stockings.

   Action: Channel Catfish were sampled with spring gill netting in 2015, 2017, and 2018. The population improved a great deal since the last report although natural recruitment was not documented. A stocking was requested in 2017 and completed.

Harvest regulation history: Sport fishes in Wheeler Branch are managed with three special regulations. The first regulation is a gear restriction, pole and line fishing only (maximum of two poles per angler). 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 (Table 3). Total black bass bag is 5 in any combination.

Stocking history: Bluegill, Threadfin Shad, Redear and Longear Sunfish, Inland Silverside, and Fathead Minnow were stocked in 2007, 2008 and 2009 to establish a prey base. Sport fish were stocked in spring 2007 and 2008 and included Florida Largemouth Bass, Smallmouth Bass, Channel Catfish, and Walleye. Tibbs and Baird (2010) reported the source of initial brood stock. Table 4 reports only the hatchery stocking history since establishment stockings.

Vegetation/habitat management history: No exotic invasive species have established a presence in Wheeler Branch Reservoir. In recent years, American pondweed has become a significant contributor of fisheries habitat. It has also become problematic in the swimming beach area. Chemical treatments have been considered in the past but none have been implemented as of the date of this report.

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 2014). 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 2015).

Electrofishing – Largemouth Bass, Smallmouth Bass, sunfishes, and Gizzard Shad were collected by night electrofishing (0.7 hour at 8, 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.

Gill netting – Channel Catfish and Walleye were collected by gill netting (5 net nights at 5 stations). 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). 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.

Habitat – A structural habitat survey was conducted in 2010. Vegetation surveys were conducted using an adaptation of the point method in 2017 (TPWD, Inland Fisheries Division, unpublished manual revised 2015). Twenty-five points were randomly 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 shoreline (Table 6). American pondweed was found in 100% of the points sampled during the 2017 vegetation survey (Table 7). Also encountered was cattail (64% of points) and southern naiad (24% of points)

Prey species: Electrofishing catch rates of Bluegill and Gizzard Shad were 96.0/h and 3.0/h, respectively. Total CPUE of Bluegill in 2017 was reduced from surveys in 2012 and 2013 (Figure 1). Gizzard shad have never been a significant forage resource in the reservoir.

Channel Catfish: The gill net catch rate of Channel Catfish was 5.0/nn in 2018. This is a large improvement over the 2015 and 2017 surveys (Figure 2). All collected fish exceeded 18 inches in length and body condition was excellent. It is possible that Channel Catfish catch rate increased due to the survey being conducted a month later than previous samples which were primarily targeting Walleye.

Black Bass: The OBS goals of RSE < 25 and N ≥ 50 stock-sized fish were met. The electrofishing catch rate of stock-length Largemouth Bass was 52.5/h in 2017, similar to 2012 (60.0/h) and 2013 (36.0/h) (Figure 3). Catch of Largemouth Bass larger than 18 inches was 4.5/hr in 2017, compared to 0.0/h in the previous two surveys. Condition varied, with 10 to 15-inch Largemouth Bass W*r*'s lower than desired in the recent three surveys.

Smallmouth Bass were not represented in the 2017 electrofishing survey. Only 13 Smallmouth Bass have been collected in the last three spring and last three fall electrofishing surveys, and none have exceeded 15 inches. Although no Smallmouth were stocked in 2015-2017 some larger fish should have been collected if the population was satisfactory. Smallmouth Bass fingerings are difficult and costly to produce and work well in other reservoirs, so it seems logical to cease stocking Smallmouth Bass entirely.

Walleye: The gill netting catch rate for Walleye in 2017 was 0.6/nn, similar to 2015 (0.6/nn) and 2014 (0.4/nn) (Figure 4). No Walleye were collected in the 2018 gill netting survey, which was conducted a month later than the previous surveys targeting Walleye. The fishery has been receiving annual stockings of Walleye fry since 2008.

Fisheries Management Plan for Wheeler Branch Reservoir, Texas

Prepared – July 2018

ISSUE 1: Smallmouth Bass populations have continued the decline noted in the previous report. The last report noted that 10% of Wheeler Branch anglers fish exclusively or in part for Smallmouth Bass resulting in 2.2 h/acre of pressure but also documented a catch rate of only 0.03 fish/hour. Spring electrofishing has proven ineffective in improving the quantity and quality of catch data collected further confirming the conclusion that the population is very small. A poor fishery negatively affects angler satisfaction and expending resources on such a fishery with no documented improvement does not serve our angler's interests.

MANAGEMENT STRATEGY

1. Discontinue stocking Smallmouth Bass.

ISSUE 2: Channel Catfish were the second most highly-sought species in the 2014 creel and they continue to be a popular species with bank and boat anglers in 2018. Sampling data shows almost no recruitment of smaller fish. Fingerlings stocked in 2013 were documented recruiting into the fishery with the 2018 gill netting survey. The fishery will need to be sustained through consistent stockings.

MANAGEMENT STRATEGIES

1. Stock 9-inch fingerlings in 2020 and 2-inch fingerlings in 2022. Continue this approach every two years thereafter, alternating between sizes.
2. Evaluate recruitment of previously stocked fish with gill netting in spring 2020 and 2022.

ISSUE 3: Walleye are a popular bonus fish at Wheeler Branch although few anglers fish for them exclusively. Recruitment has been lower than expected so in 2017, the stocking approach was changed from using a truck box and hauling containers to oxygen-filled bags like the initial stocking.

MANAGEMENT STRATEGIES

1. Stock Walleye fry annually in 2019 and 2020 using oxygen-filled bags to transport them to the reservoir.
2. Evaluate recruitment of previously stocked fish with gill netting in Spring 2020 and 2022 concurrent with the Channel Catfish stocking evaluations. If improved recruitment is not documented in the 2020 sample, discontinue stockings of Walleye fry.

ISSUE 4: Many invasive species 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 invasive species are significant. Additionally, the potential for invasive species 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 Somervell Water district to post appropriate signage at the boat ramp.
2. Educate the public about invasive species using media and the internet.
3. Make a speaking point about invasive species when presenting to constituent and user groups.
4. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

Objective-Based Sampling Plan and Schedule (2018–2022)

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

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

Survey objectives, fisheries metrics, and sampling objectives

Fall Electrofishing: This survey will be used to evaluate Largemouth 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), and the popularity of bass fishing at this reservoir justifies sampling time and effort. A minimum of 8, random 5-minute nighttime electrofishing stations will be sampled in fall 2019 and 2021. The goals of the Largemouth Bass 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 ≥ 50 stock-sized fish to determine population size structure, allowing us to calculate proportional size distribution (PSD) with 80% confidence. If catch rates indicate collecting our size structure target is reasonable, sampling will continue at random stations until that target is reached.

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 net 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. Walleye were sought by only 4% of anglers, but generated a lot of interest on fishing websites. A minimum of 5 random gill netting stations will be sampled over-night in early February 2020 and 2022 to optimize Walleye collection while still collecting enough Channel Catfish to manage the population. The goal of the gill netting survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Channel Catfish and Walleye populations and make comparisons with historical and future data. No catch per unit effort target precision, target sample size or relative weights will be assigned.

Literature Cited

Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

DiCenzo, V. J., M. J. Maceina, and M. R. Stimpert. 1996. Relations between reservoir trophic state and Gizzard Shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.

Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional Size Distribution (PSD): A Further Refinement of Population Size Structure Index Terminology. Fisheries volume 32, number 7: 348.

Tibbs, J., and M. S. Baird. 2010. Statewide freshwater fisheries monitoring and management program survey report for Wheeler Branch Reservoir, 2009. Texas Parks and Wildlife Department, Federal Aid Report F-30-R-35, Austin.

Tibbs, J., and M. S. Baird. 2014. Statewide freshwater fisheries monitoring and management program survey report for Wheeler Branch Reservoir, 2013. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-4, Austin.

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 µS/cm

Table 2. Boat ramp characteristics for Wheeler Branch Reservoir, Texas, 2017. Latitude and longitude are in decimal degrees.

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

Table 3. Harvest regulations for Wheeler Branch Reservoir, Texas, 2017.

Species	Bag Limit	Length limit (inches)
Catfish, Channel	25	12-inch minimum
Bass, Largemouth	5[a] (only one >21 inches)	14- 21-inch slot
Bass, Smallmouth	5[ab]	14-inch minimum
Sunfish	No limit	No limit
Walleye	5	Only 2 can be less than 16 inches

[a] Daily bag for Largemouth Bass and Smallmouth Bass = 5 fish in any combination.

[b] This regulation changed from a bag limit of 3 and 18-inch minimum on September 1, 2017.

Table 4. Stocking history of Wheeler Branch Reservoir, Texas. FRY = fry; FGL = fingerling; AFGL = advanced fingerling; ADL = adults.

Species	Year	Number	Size
Bluegill	2007	42,040	AFGL
	2008	18,550	AFGL
	Total	60,590	
Channel Catfish	2007	5,591	FGL
	2008	9,439	FGL
	2013	18,133	FGL
	2017	18,532	FGL
	Total	51,695	
Florida Largemouth Bass	2007	4,689	FGL
	2011	18,413	FGL
	Total	23,102	
Smallmouth Bass	2007	426	ADL
	2007	4,074	FGL
	2008	4,263	AFGL
	2009	5,222	FGL
	2011	4,819	FGL
	2013	4,481	FGL
	2014	4,546	FGL
	2018	4,537	FGL
	Total	32,368	
Walleye	2008	570,280	FRY
	2009	182,512	FRY
	2010	379,250	FRY
	2011	367,450	FRY
	2012	380,000	FRY
	2013	873,900	FRY
	2014	792,450	FRY
	2015	365,550	FRY
	2016	352,010	FRY
	2017	357,780	FRY
	2018	217,918	FRY
	Total	4,839,100	

Table 5. Objective-based sampling plan components for Wheeler Branch Reservoir, Texas 2017–2018.

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
	Condition	W_r	10 fish/inch group (max)
Smallmouth Bass	Abundance	CPUE–Stock	None
	Size structure	PSD, length frequency	None
	Condition	W_r	None
Bluegill [a]	Abundance	CPUE–Total	None
	Size structure	PSD, length frequency	None
Longear Sunfish [a]	Abundance	CPUE–Total	None
	Size structure	PSD, length frequency	None
Gill netting			
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

[a] No additional effort will be expended to achieve an RSE ≤ 25 for CPUE of Bluegill and Gizzard 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.

Table 6. Survey of structural habitat types, Wheeler Branch Reservoir, Texas, 2010. Shoreline habitat type units are in miles.

Habitat type	Estimate	% of total
Bulkhead	0.2	6.7
Natural shoreline	2.1	59.4
Rocky shoreline (rocks > 4 inches)	1.2	33.8

Table 7. Survey of aquatic vegetation, Wheeler Branch Reservoir, Texas, 2013 and 2017. The value represents the percentage of randomly selected points with vegetation present during a habitat and access survey on September 6, 2017.

Vegetation	2013	2017
Southern Naiad	10.0% (3 of 30)	24.0% (6 of 25)
American Pondweed	23.3% (7 of 30)	100% (25 of 25)
Cattail	3.3% (1 of 30)	64.0% (16 of 25)

Bluegill

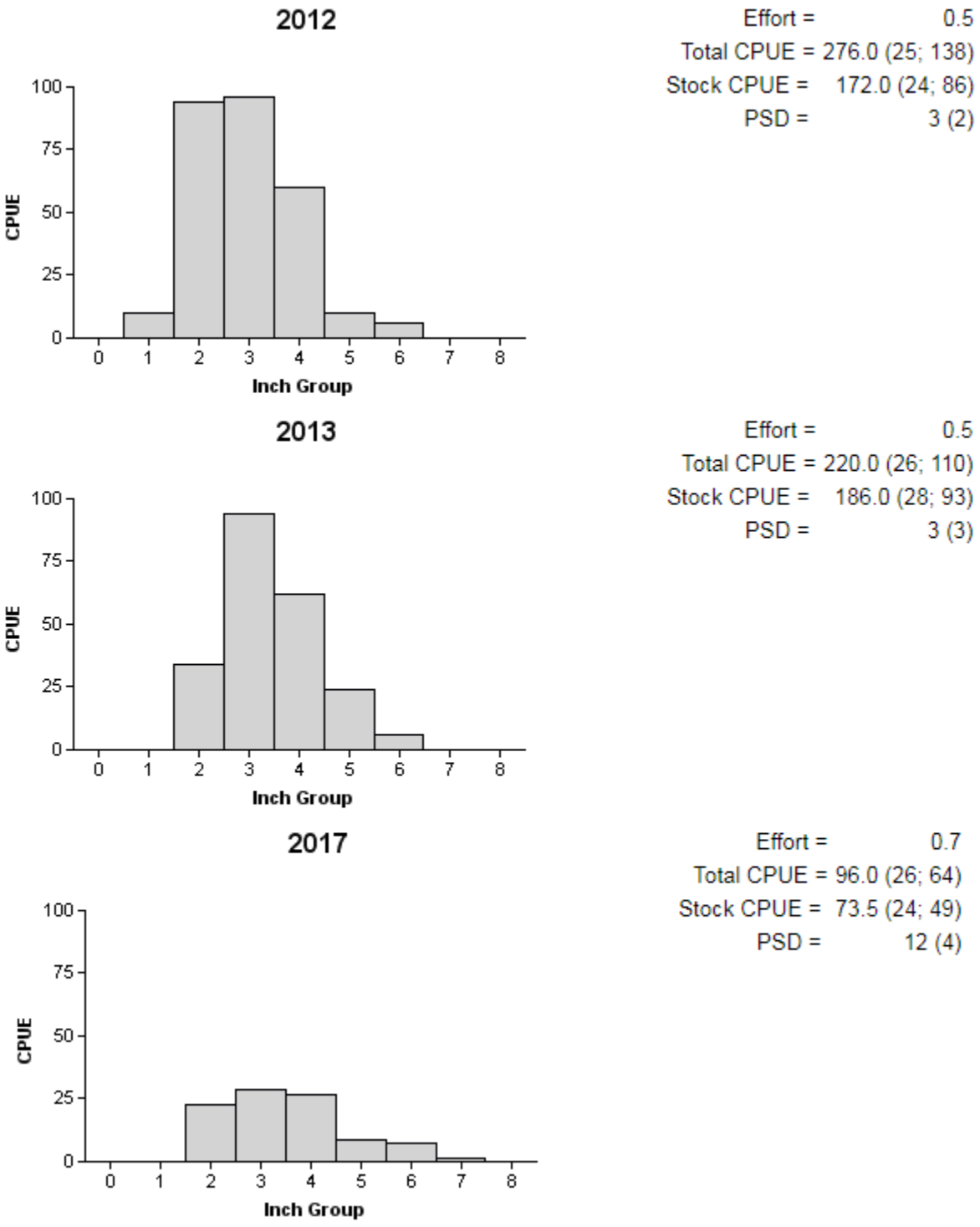


Figure 1. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2012, 2013, and 2017.

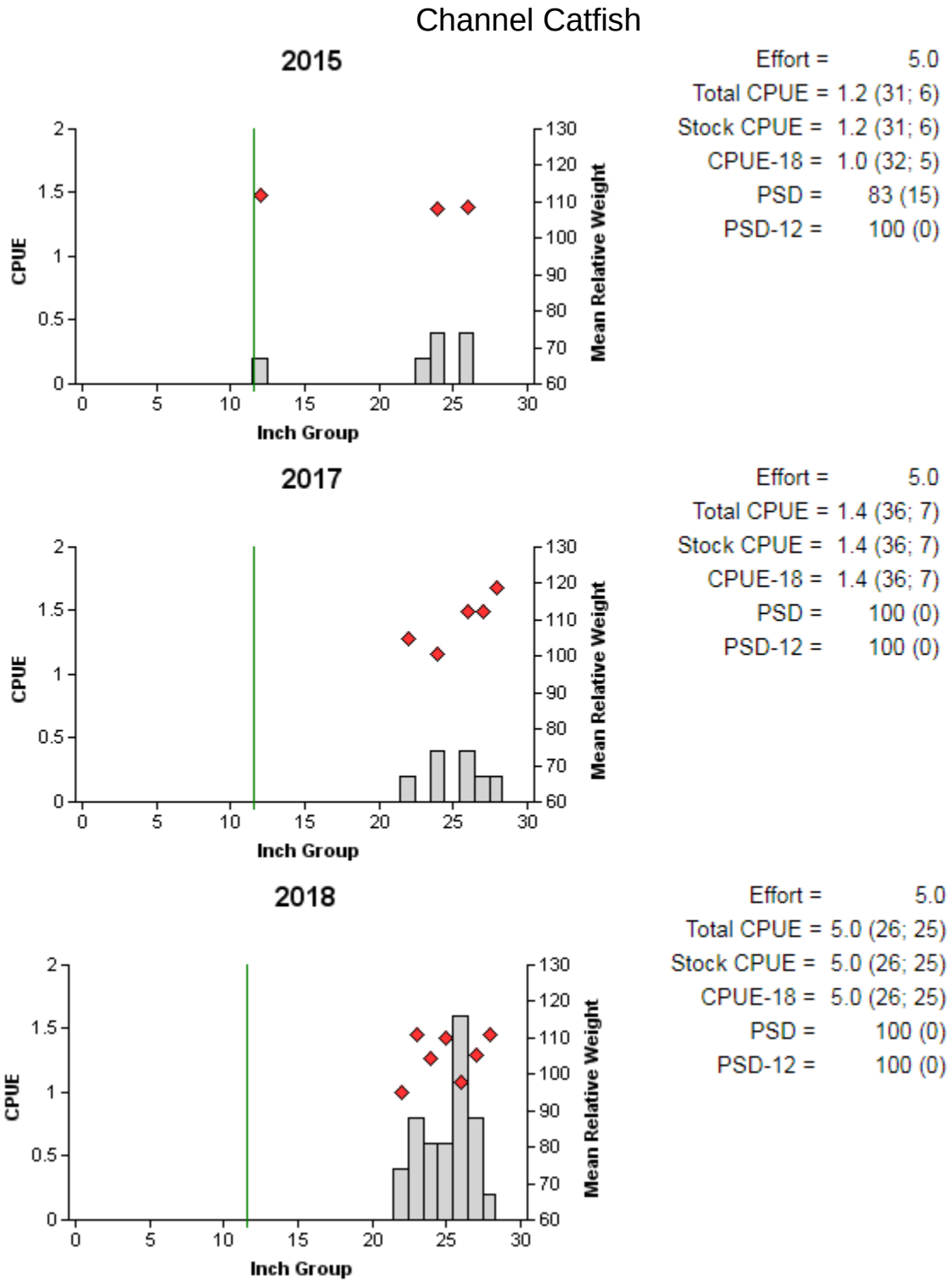


Figure 2. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Wheeler Branch Reservoir, Texas, 2015, 2017, and 2018. Vertical line indicates minimum length limit.

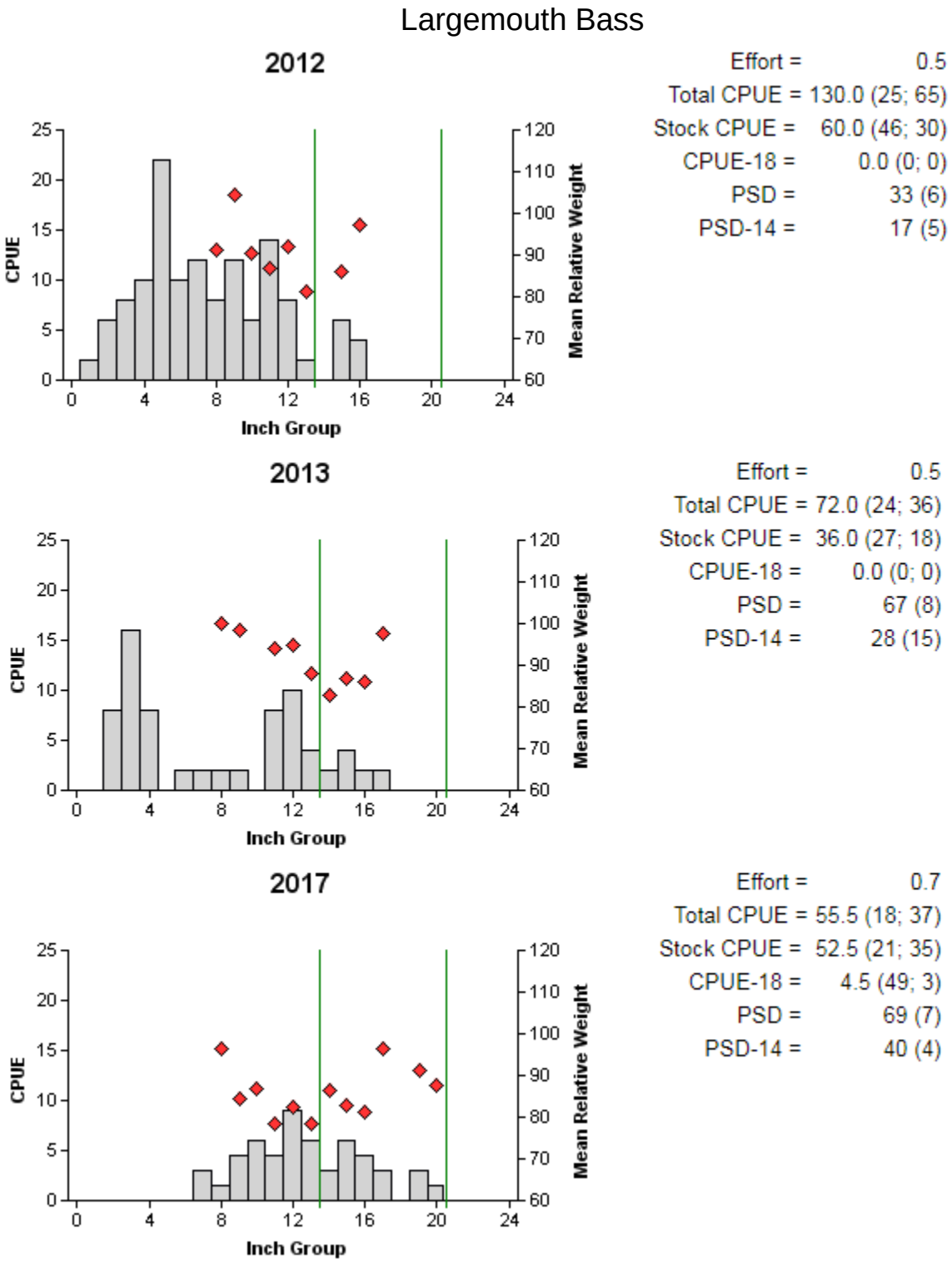


Figure 3. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2012, 2013, and 2017. Vertical lines indicate slot length limit.

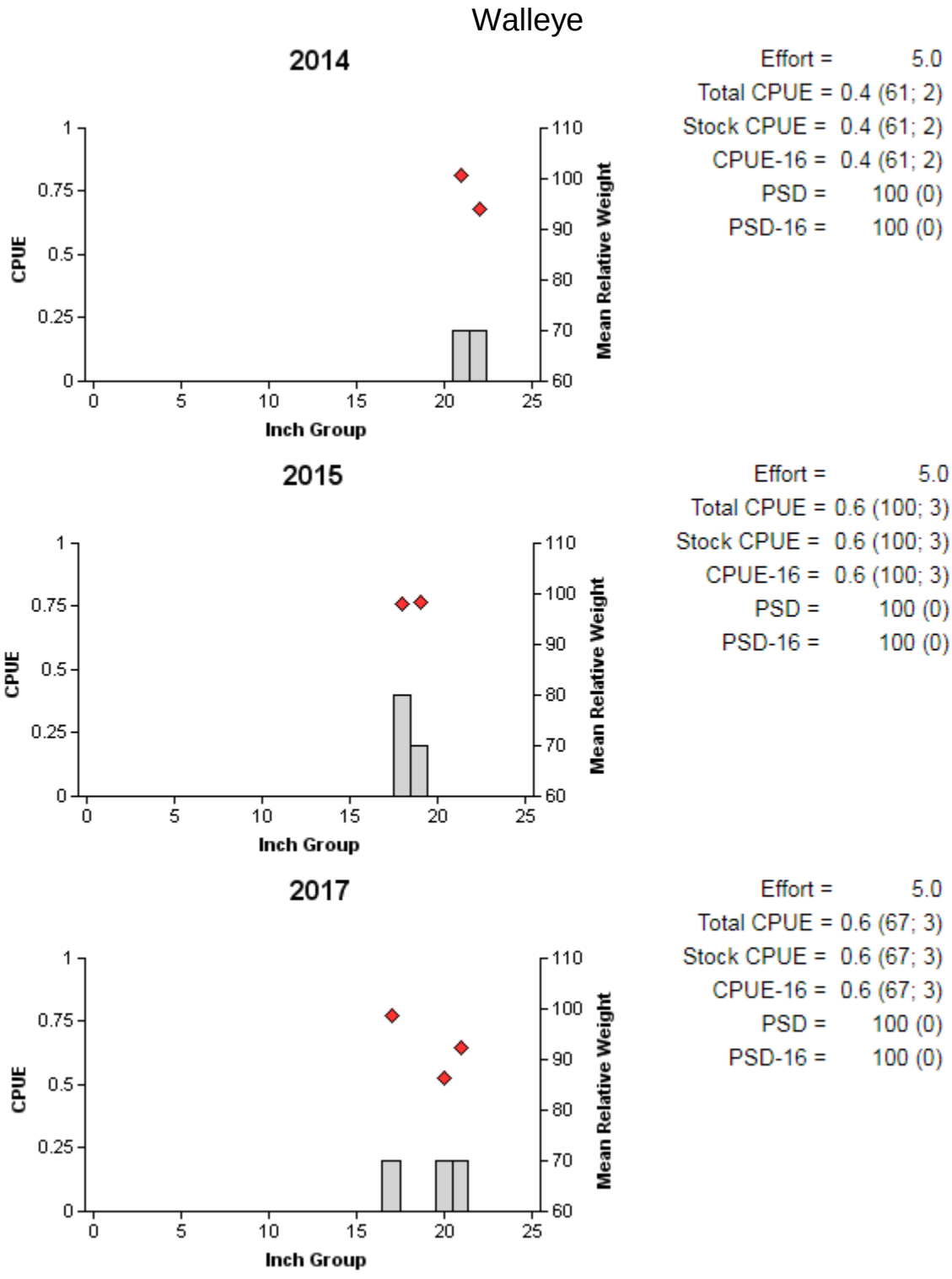


Figure 4. Number of Walleye caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting surveys, Wheeler Branch Reservoir, Texas, 2014, 2015, and 2017. None were caught in 2018.

Proposed Sampling Schedule

Table 8. 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. Standard survey denoted by S and additional survey denoted by A.

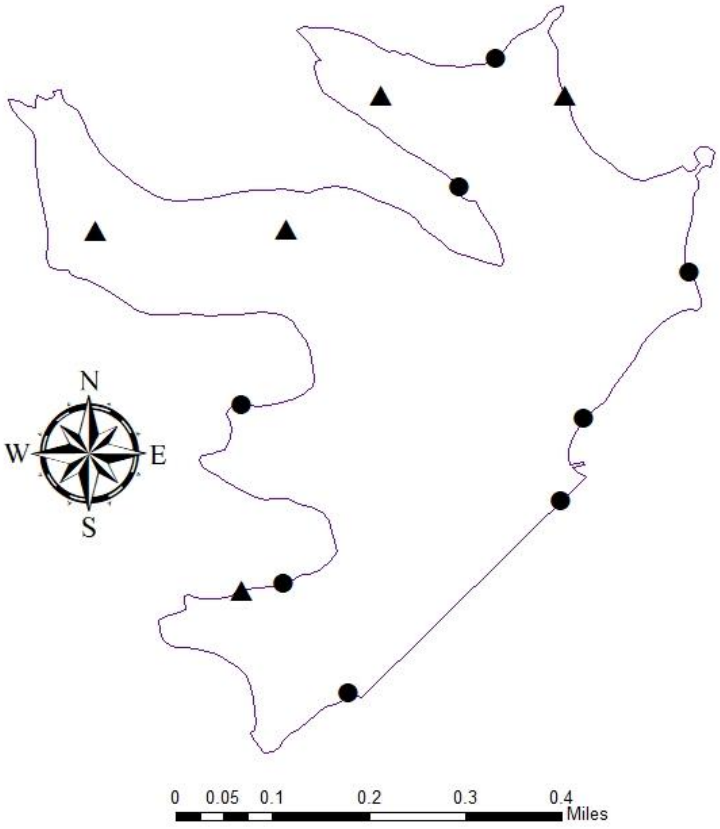
	Survey year			
	2018-2019	2019-2020	2020-2021	2021-2022
Angler access				S
Vegetation				S
Electrofishing – Fall		A		S
Gill netting		A		S
Report				S

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, 2017-2018. Sampling effort was 5 net nights for gill netting, and 0.7 hour for electrofishing.

Species	Gill Netting		Electrofishing	
	N	CPUE	N	CPUE
Gizzard Shad			2	3.0 (65)
Channel Catfish	25	5.0 (26)		
Walleye				
Redbreast Sunfish			4	4.5 (70)
Bluegill			64	96.0 (26)
Largemouth Bass	14	2.8 (17)	37	55.5 (18)
Black Crappie	2	0.4 (100)		

APPENDIX B – Map of sampling locations



Location of sampling sites, Wheeler Branch Reservoir, Texas, 2013-2018. Gill net and electrofishing stations are indicated by a triangle and circle, respectively. Water level was near full pool at time of sampling.

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