

# Millers Creek Reservoir

## 2019 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-4

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

*Prepared by:*

Robert Mauk, District Management Supervisor

Inland Fisheries Division  
Wichita Falls District, Wichita Falls, Texas

Carter Smith  
Executive Director

Craig Bonds  
Director, Inland Fisheries

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## Survey and Management Summary

Fish populations in Millers Creek Reservoir were surveyed in 2017-2019 using electrofishing, low-frequency electrofishing, and trap netting. Historical data are presented with the 2017-2020 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:** Millers Creek is a 1,794-acre impoundment located in Baylor County on Millers Creek in the Brazos River Basin approximately 77 miles southwest of Wichita Falls, Texas. The reservoir was completed in 1974 and is owned and operated by the North Central Texas Municipal Water Authority in Munday, Texas. The shoreline habitat consists of natural and rocky shoreline. Shoreline and boat access are adequate.

**Management History:** Important sport fish include White Bass, Largemouth Bass, White Crappie, and catfish. The management plan from the 2016 survey report included ceasing the stocking of Palmetto Bass because of lack of fishing pressure targeting them. Florida Largemouth Bass were last stocked in 2016 in response to the reservoir refilling after a severe drought.

### Fish Community

- **Prey species:** Electrofishing catch rate of Gizzard Shad was very high, and most of the shad were available as prey to most sport fish. Electrofishing catch rate of Bluegill was above the historical average, but all were 6-inches long or less.
- **Catfishes:** The Blue Catfish population was surveyed using low-frequency electrofishing for the first time and found an abundant population with many sub-legal length fish soon to recruit into the fishery. There was also many legal-length Blue Catfish available to anglers. Channel Catfish and Flathead Catfish were present in the reservoir, but the populations were not examined because of the coronavirus pandemic and concerns for workers safety.
- **Temperate basses:** White Bass and Palmetto Bass were present in the reservoir, but the population was not surveyed because of the coronavirus pandemic and concerns for workers safety.
- **Largemouth Bass:** Largemouth Bass abundance was at the historical average catch rate for the reservoir. Good numbers of legal-length bass were sampled with good body condition.
- **White Crappie:** The White Crappie abundance estimate was near the historical average with legal-size fish available to anglers. Body condition was considered excellent.

**Management Strategies:** Collect data on trophy-sized Largemouth Bass from volunteer reporting program and a 2021 spring Largemouth Bass only electrofishing survey. Inform the public about the negative impacts of aquatic invasive species. Conduct general monitoring low-frequency electrofishing, electrofishing, and trap net survey in 2023. Access and vegetation surveys will be conducted in 2023.

## Introduction

This document is a summary of fisheries data collected from Millers Creek Reservoir in 2017-2020. 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 2019-2020 data for comparison.

## Reservoir Description

Millers Creek Reservoir is a 1,794-acre impoundment constructed in 1974 on Millers Creek. It is located in Baylor County approximately 77 miles southwest of Wichita Falls and is operated and controlled by North Central Texas Municipal Water Authority. Primary uses include municipal water supply and recreation. Maximum depth is 46 feet, mean depth when full is 14 feet, and conductivity in July 2019 was 659 uS/cm. Habitat consisted of natural or rocky shoreline. Reservoir elevation was above capacity during the survey work, recovering from a 4.5 year-long drought which lowered the water level nearly 23 feet (Figure 1). Other descriptive characteristics for Millers Creek are in Table 1.

## Angler Access

Millers Creek Reservoir has one public boat ramp and no private boat ramps. Additional boat ramp characteristics are in Table 2. Shoreline access is excellent with much of the north bank accessible to shoreline anglers and a fishing dock located near the public ramp.

## Management History

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Mauk and Lang 2016) included:

1. Cease stocking Palmetto Bass into Millers Creek Reservoir because of low angler effort.
 

**Action:** Stocking requests for Palmetto Bass ceased in 2017; however, hatchery surplus fry were stocked in 2017. No requests have been made nor are future requests planned.
2. Millers Creek Reservoir is recognized as an excellent angling destination with many anglers traveling to the reservoir from outside the district. News releases on the reservoir published in the local newspaper were not available to the target audience, which was those living outside the district, that utilize the reservoir.
 

**Action:** Sent news releases to the Lubbock area news outlets and kept the Millers Creek Reservoir webpage up to date. Also publicized Millers Creek on the district's Facebook page.
3. Invasive species is a concern throughout Texas so we must always remind our constituents including the managing authorities, the public, and the media about the possibility of infestations and work with them to minimize the threat.
 

**Action:** Publicized the threat through presentations and the media. Maintained signage at the boat ramp to remind users of the threat invasives pose.

**Harvest regulation history:** Sport fish species in Millers Creek Reservoir have always been managed with statewide regulations. Current regulations are found in Table 3.

**Stocking history:** Millers Creek Reservoir had been stocked frequently with Palmetto Bass since 1980 though stocking requests for this species ended in 2017. Florida Largemouth Bass fingerlings were stocked in 2016 following a severe drought that negatively impacted the population. The complete stocking history is in Table 4.

**Vegetation/habitat management history:** Millers Creek has no significant vegetation management history. Noxious vegetation has not been observed at the reservoir. Artificial structures were placed around the public fishing pier in 2019.

**Water transfer:** Water is not transferred from the reservoir except through the North Central Texas Municipal Water Authority pump station. Water is pumped to the treatment plant from the reservoir for local municipalities. No interbasin 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 Millers Creek Reservoir (Mauk and Lang 2016). 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, sunfishes, Gizzard Shad, and Threadfin Shad were collected by electrofishing (1 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.

**Trap netting** – Crappie were collected using trap nets (5 net nights at 5 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn).

**Low-frequency electrofishing** – Blue Catfish were collected by low-frequency electrofishing at 10 stations. The minimum duration of electrofishing at each station was 3 minutes. CPUE for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

**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). Palmetto Bass PSD was calculated according to Dumont and Neely (2011). 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 =  $100 \times \text{SE of the estimate/estimate}$ ) was calculated for all CPUE and creel statistics.

**Habitat** – A structural habitat survey was conducted in 2015. Vegetation surveys were conducted every four years during 2003–2019. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

**Water level** – Source for water level data was the United States Geological Survey (USGS 2020).

## Results and Discussion

**Habitat:** A habitat survey was last completed in 2015 (Mauk and Lang 2016) and consisted primarily of natural or rocky shoreline (Table 6). Native emergent vegetation was present, but coverage was < 0.1% of the reservoir's surface area (Table 7).

**Prey species:** Electrofishing catch rate of Gizzard Shad was 1,024.0/h, an increase over the 2017 (855.0) and 2015 (266.0/hr) surveys. Index of Vulnerability (IOV) for Gizzard Shad was considered good, being nearly identical to the 2017 survey, indicating that 87% of Gizzard Shad were available to existing predators (Figure 2). Total CPUE of Gizzard Shad was above the historical average (805.8/hr) and the reservoir typically has a high abundance of Gizzard Shad (Figure 2). Electrofishing catch rate of Bluegill was 186.0/h. Total CPUE of Bluegill (186.0/hr) in 2019 was higher than previous total CPUE from surveys in 2017 (12.0./hr) and 2015 (92.0/hr). Both, the 2015 and 2017 abundance were significantly lower than the historical average because the reservoir had recently filled after years of drought, which had lowered the elevation by 23 feet. The size structure of the population continued to be dominated by small individuals (Figure 3).

**Blue Catfish:** A low-frequency electrofishing survey was conducted in 2019 to examine the Blue Catfish population. This is the first survey of its kind performed at this reservoir. The resulting CPUE of 462.0/hr was considered good (Figure 4). The majority of the catfish were below the legal length of 12-inches indicating many fish could recruit into the fishery. A good size range of legal length catfish were also sampled, ranging from 3-28 inches. Body condition was considered adequate as measured by  $W_r$  with values ranging from 80-90 across most inch groups. Catfish are a popular species to target at the

reservoir and the Blue Catfish population is becoming more popular as the population continues to grow after being introduced in 1990.

**Channel Catfish:** A planned gill net survey was not completed due to the coronavirus pandemic. The safety of the public and our employees was deemed more important than the data that would have been collected. Channel Catfish are present in the reservoir as evidenced by fish being captured in a trap net and others observed during the electrofishing survey.

**White Bass:** A planned gill net survey was not completed due to the coronavirus pandemic. The safety of the public and our employees was deemed more important than the data that would have been collected. White Bass are present as evidenced by observed them during the electrofishing survey.

**Palmetto Bass:** A planned gill net survey was not completed due to the coronavirus pandemic. The safety of the public and our employees was deemed more important than the data that would have been collected. During 2019, anecdotal reports from anglers of Palmetto Bass catch and harvest have been received by the office. Requests for Palmetto Bass ended after 2016 (Mauk and Lang 2016) because of a lack of targeted effort for the species. However; hatchery surplus fry were stocked in 2017.

**Largemouth Bass:** The electrofishing catch rate of Largemouth Bass was 49.0/h in 2019, lower than the 90.0/hr in 2017 which was the highest CPUE recorded for the reservoir and came after a 2015 stocking (Figure 5). The 2019 CPUE was about the average CPUE (48.0/hr) throughout the survey years. PSD was high (85), indicating a good portion of the stock length bass were above quality length of 12-inches. Body condition was considered good to excellent as measured by  $W_r$  with values ranging from 90-110 across most inch groups. This is similar to 2017 (range 93-121), especially for bass 14 inches or greater (Figure 5). It would indicate that there was plenty of prey species of edible size for the predators and that the reservoir could possibly maintain a larger population of bass. The 2019 Gizzard Shad abundance was quite high and with the cessation of Palmetto Bass stocking, competition for Gizzard Shad should lessen. This should result in Largemouth Bass continuing to exhibit excellent body condition.

**White Crappie:** The trap net catch rate of White Crappie was 43.8/nn in 2019, a decrease from 2015 (90.0/nn; Figure 6). The 2015 CPUE consisted of mainly three-inch crappie with few legal length fish, the result of the reservoir having just refilled resulting in successful reproduction. The CPUE of  $\geq 10$ -inch crappie in 2019 (9.6/nn) increased since the previous survey in 2015 (1.9/nn). The increase in abundance of legal-length fish could be argued to be more important than the decrease in total CPUE. The PSD increased from 20 in 2015 to 70 in 2019 further indicating a more balanced size structure of crappie in 2019 (Figure 12). Mean  $W_r$  ranged from 92 to 109 with all legal length crappie exhibiting  $W_r$ 's over 100 in 2019 (Figure 6).

# Fisheries Management Plan for Millers Creek Reservoir, Texas

Prepared – July 2020

**ISSUE 1:** Previous creel surveys have determined that most anglers utilizing the reservoir travel from outside the district, specifically Amarillo and Lubbock areas. Promoting angling at this reservoir within the district has been mostly unsuccessful in increasing angling effort.

## MANAGEMENT STRATEGIES

1. Continue targeting the Lubbock and Amarillo areas with news releases regarding the excellent fishing opportunities to be found at the reservoir.
2. Promote Millers Creek Reservoir fisheries on districts Facebook.

**ISSUE 2:** Largemouth Bass are a popular species with anglers at the reservoir but collecting data on larger size bass ( $\geq 8$  lbs.) using standardized electrofishing and creel surveys has been ineffective. Anecdotally, anglers report catching big bass but as to actual proof of their presence, we only have a 2004 reservoir record of over 11 lbs.

## MANAGEMENT STRATEGIES

1. Collect data on trophy-sized Largemouth Bass from volunteer reporting ShareLunker program and promote Sharelunker program to increase participation.
2. Conduct an additional 2021 spring Largemouth Bass only electrofishing survey to attempt to collect data on larger size bass.

**ISSUE 3:** 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 controlling authority to post appropriate signage at access points around the reservoir.
2. Educate the public about invasive species through the use of 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 (2020–2023)

### Sport fish, forage fish, and other important fishes

Sport fishes in Millers Creek Reservoir have historically included Blue Catfish, Channel Catfish, Flathead Catfish, White Bass, Palmetto Bass, Largemouth Bass, and White Crappie. The primary forage species has been Bluegill and Gizzard Shad.

### Negligible fisheries

Requested Palmetto Bass stockings ceased four years ago (though an excess fry stocking did occur in 2017) and they are considered a negligible species. White Bass are present, but not targeted by many with a moderate abundance (historical average of 3.2/nn). Channel Catfish have historically been present but in low abundance in gill net surveys (CPUE 0.2/nn in 2016, historical average of 1.4/nn).

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

**Largemouth Bass:** Abundance was considered average in the electrofishing survey completed in 2019. To attempt to collect data on larger size bass, an additional spring Largemouth Bass only electrofishing survey will occur in 2021 with the goal of collecting data on larger size bass. The objective of the 2023 electrofishing survey will be general monitoring of this fishery, sampling 12 random sites to collect a meaningful estimate of CPUE with CPUE-S RSE  $\leq 25$  with no additional sampling if RSE is not achieved. This amount of sampling has historically been enough to achieve this objective. Fifty stock-length bass will be collected to examine size structure. All stock-length bass will be measured and weighed for relative weight analysis. In 2023, a mean length at age category 2 analysis will be completed collecting 13 Largemouth Bass between the lengths of 13.0 to 14.9 inches in length. Thirty bass for genetic analysis will also be collected since it was last completed in 2011 and the reservoir was greatly impacted by the drought that ended in 2015.

**Bluegill and Gizzard Shad:** These species will be collected while electrofishing for Largemouth Bass and the objective is general monitoring. Survey objectives are general monitoring of abundance with a goal of a meaningful CPUE estimate with CPUE-S RSE  $\leq 25$ . Collection of 50 fish for size structure estimate and Gizzard Shad IOV will also be completed. If objectives are not met, no additional electrofishing will occur except that expended for Largemouth Bass.

**White Crappie:** White Crappie will be surveyed using 7 random trap net sites in 2023, this is an increase of two nets over the 2019 survey to improve CPUE estimate by targeting CPUE-S RSE  $\leq 25$ . It will also allow size structure and body condition estimates to be made by collecting  $\geq 50$  stock-size crappie to be. No extra sampling will occur if objectives are not met. All stock-length crappie will be measured and weighed for relative weight analysis. Thirteen crappie between 9.0 to 10.9 inches in length will be collected for category 2 age and growth analysis.

**Blue Catfish:** Low-frequency electrofishing was first completed in 2019 and captured a good length frequency of Blue Catfish. It also resulted in the capture of more individuals than gill net surveys have historically (10.9/nn). It is recommended to continue monitoring the Blue Catfish population with the use of low-frequency electrofishing. Survey objectives are general monitoring of abundance with a goal of a meaningful CPUE estimate with CPUE-S RSE  $\leq 25$ . This was attained in the 2019 survey with 10 sites, so it is recommended to continue survey work with 10 random sites. Collection of 50 stock-length catfish for size structure estimate will also be an objective. All stock-length and greater will be measured and weighed for relative weight reporting.

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## Tables and Figures

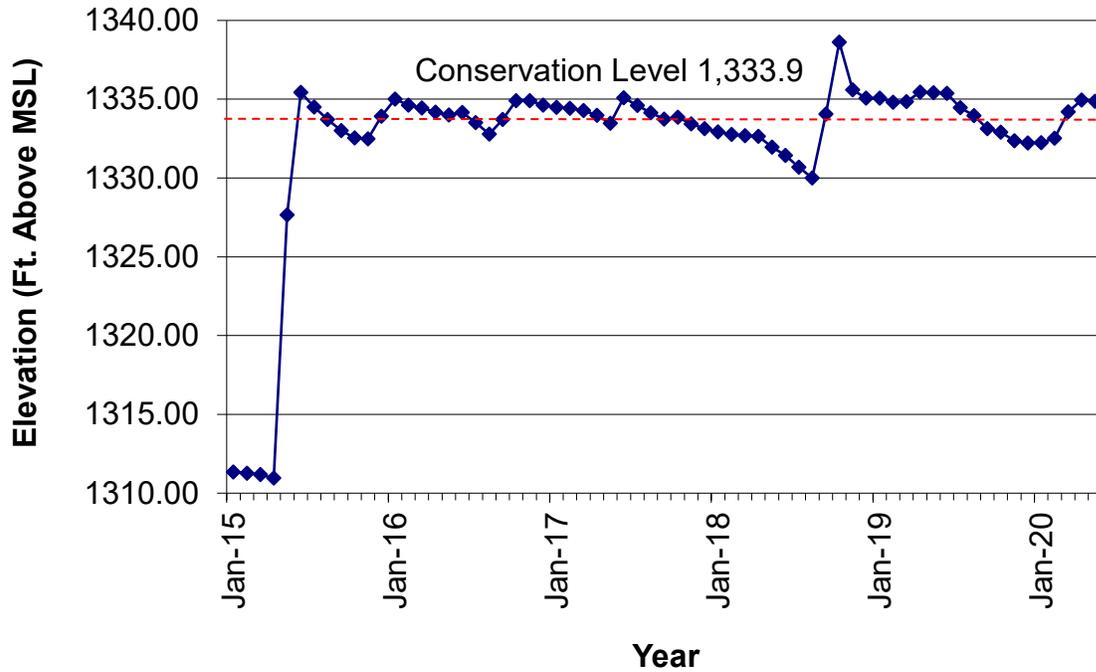


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Millers Creek Reservoir, Texas. The dashed line indicates the conservation pool elevation (1,333.9 ft. above MSL).

Table 1. Characteristics of Millers Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1974
Controlling authority	North Central Texas Municipal Water Authority
County	Baylor
Reservoir type	Tributary
Shoreline Development Index	3.64
Conductivity	659 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for Millers Creek Reservoir, Texas, July 2019. Reservoir elevation at time of survey was 1,334.3 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Millers Creek Boat Ramp	33. 41711 -99.38057	Y	50	1,319	Good

Table 3. Harvest regulations for Millers Creek Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (in any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Palmetto	5	18-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

Table 4. Stocking history for Millers Creek Reservoir, Texas. FGL = Fingerling; AFGL = advanced fingerling; UNK = unknown; and ADL = adults.

<b>Species</b>	<b>Year</b>	<b>Number</b>	<b>Life Stage</b>	<b>Mean TL (in)</b>
Blue Catfish	1990	19,354	FGL	2.0
	1991	19,000	FGL	2.1
	Total	38,354		
Channel Catfish	1974	62,500	AFGL	7.9
	1980	750	UNK	0.0
	Total	63,250		
Florida Largemouth Bass	1985	93,341	FRY	1.0
	2012	87,759	FGL	1.6
	2015	16,080	FGL	1.6
	2016	182,467	FGL	1.8
	Total	379,647		
Largemouth Bass	1974	25,000	UNK	0.0
	Total	25,000		
Palmetto Bass (Striped X White Bass hybrid)	1980	12,376	UNK	0.0
	1982	21,036	UNK	0.0
	1994	24,900	FGL	1.6
	1995	30,457	FGL	1.1
	1997	16,256	FGL	1.1
	1999	23,048	FGL	1.3
	2002	23,090	FGL	1.3
	2004	18,013	FGL	1.7
	2006	19,000	FGL	1.7
	2008	18,600	FGL	1.6
	2009	16,510	FGL	1.3
	2012	6,605	FGL	2.1
	2013	7,533		0.0
	2015	9,501	FGL	2.1
	2016	27,539	FGL	1.5
2017	250,505	FRY	0.2	
	Total	524,969		
White Crappie	1994	479	ADL	6.0
	1994	3,094	AFGL	5.0
	Total	3,573		

Table 5. Objective-based sampling plan components for Millers Creek Reservoir, Texas 2017–2020.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Stock	RSE–Stock $\leq$ 25
Bluegill <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq$ 25
Gizzard Shad <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq$ 25
<i>Low-frequency electrofishing</i>			
Blue Catfish	Abundance	CPUE–Stock	RSE–Stock $\leq$ 25
<i>Trap netting</i>			
White Crappie	Abundance	CPUE–Stock	RSE–Stock $\leq$ 25

<sup>a</sup> No additional effort will be expended to achieve an RSE  $\leq$  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, Millers Creek Reservoir, Texas, 2015. Shoreline habitat type units are in miles and standing timber is acres.

Habitat type	Estimate	% of total
Natural	10.3 miles	60.0
Rocky	6.7 miles	39.4
Standing timber	55.2 acres	3.1
Flooded terrestrial	65.0 acres	3.6

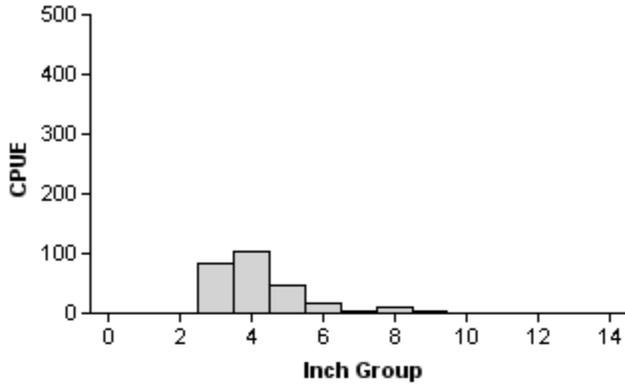
Table 7. Survey of aquatic vegetation, Millers Creek Reservoir, Texas, 2003–2019. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2003	2007	2011	2015	2019
Native submersed	<0.1 (<1.0)	0.1 (<1.0)			
Native emergent	0.3 (<0.1)	0.1 (<1.0)			0.2 (<0.1)

### Gizzard Shad

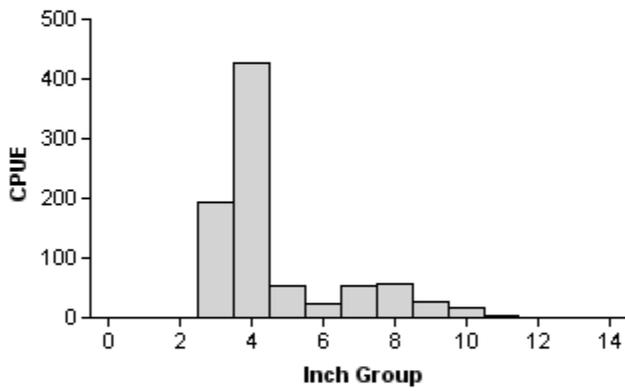
**2015**

Effort = 1.0  
 Total CPUE = 266.0 (18; 266)  
 IOV = 95 (1)



**2017**

Effort = 1.0  
 Total CPUE = 855.0 (22; 855)  
 IOV = 88 (3)



**2019**

Effort = 1.0  
 Total CPUE = 1,024.0 (11; 1024)  
 IOV = 87 (3)

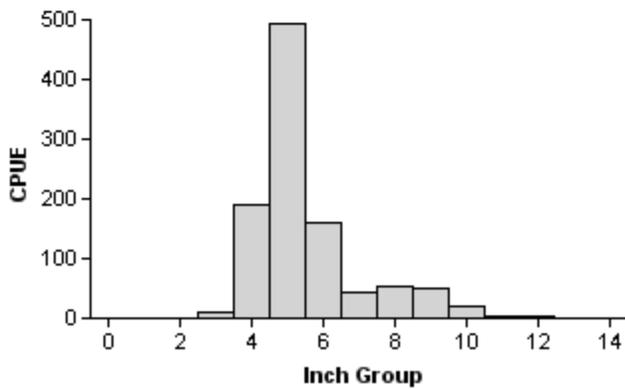
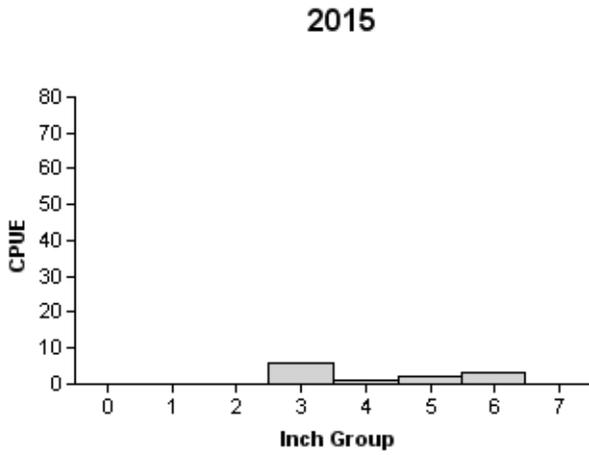
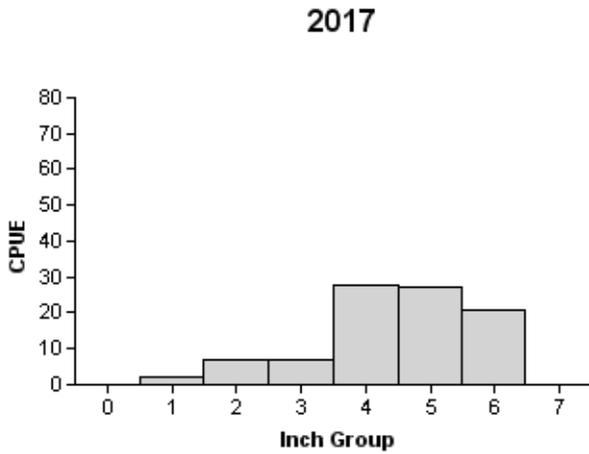


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Millers Creek Reservoir, Texas, 2015, 2017, and 2019.

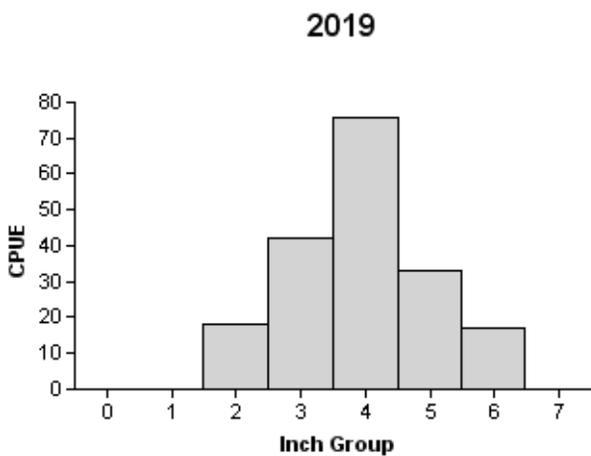
## Bluegill



Effort = 1.0  
 Total CPUE = 12.0 (35; 12)  
 Stock CPUE = 12.0 (35; 12)  
 PSD = 25 (12)



Effort = 1.0  
 Total CPUE = 92.0 (25; 92)  
 Stock CPUE = 83.0 (25; 83)  
 PSD = 25 (6)



Effort = 1.0  
 Total CPUE = 186.0 (19; 186)  
 Stock CPUE = 168.0 (18; 168)  
 PSD = 10 (3)

Figure 3. 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, Millers Creek Reservoir, Texas, 2015, 2017, and 2019.

## Blue Catfish

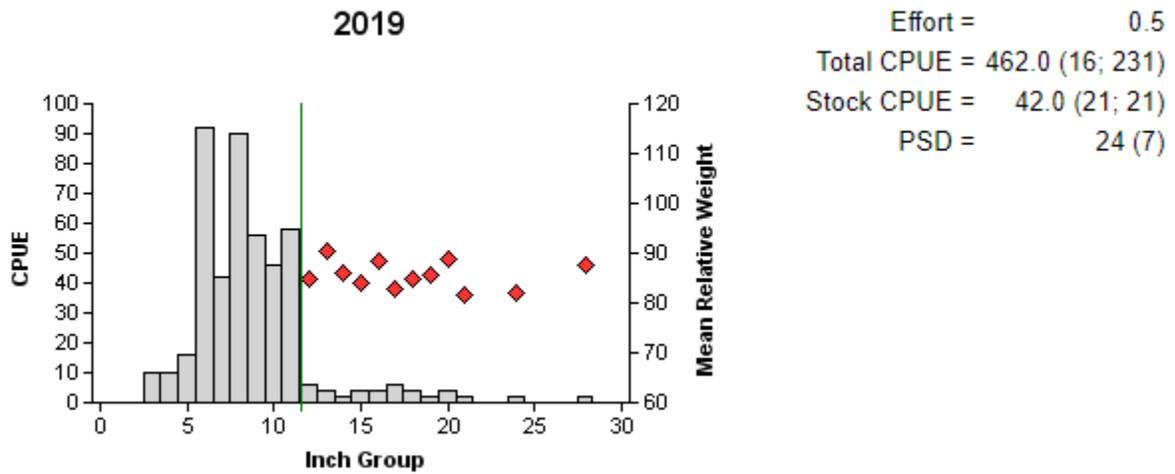


Figure 4. Number of Blue Catfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall low-frequency electrofishing survey, Millers Creek Reservoir, Texas, 2019. Vertical line indicates minimum length limit.

## Largemouth Bass

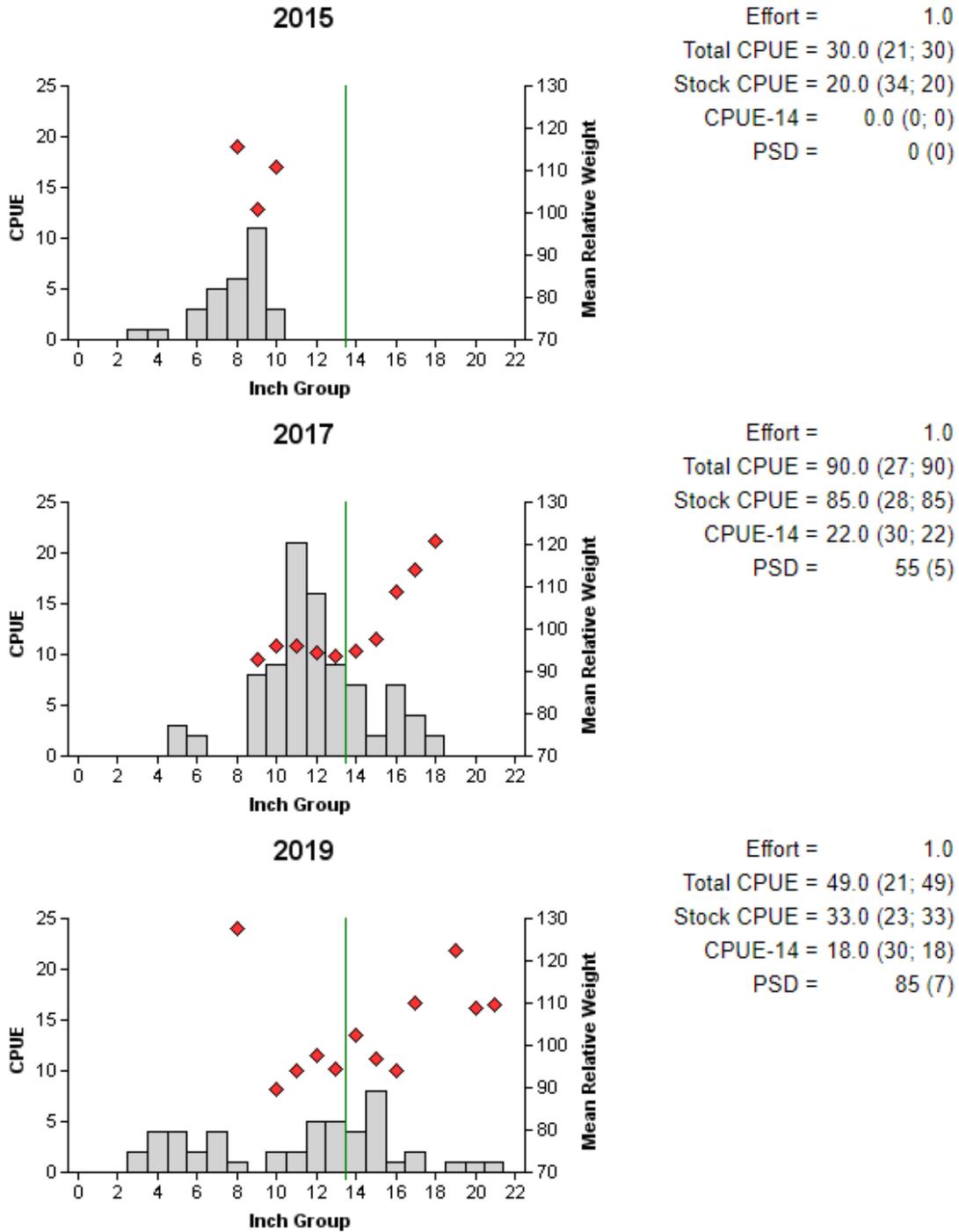


Figure 5. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Millers Creek Reservoir, Texas, 2015, 2017, and 2019. Vertical line indicates minimum length limit.

### White Crappie

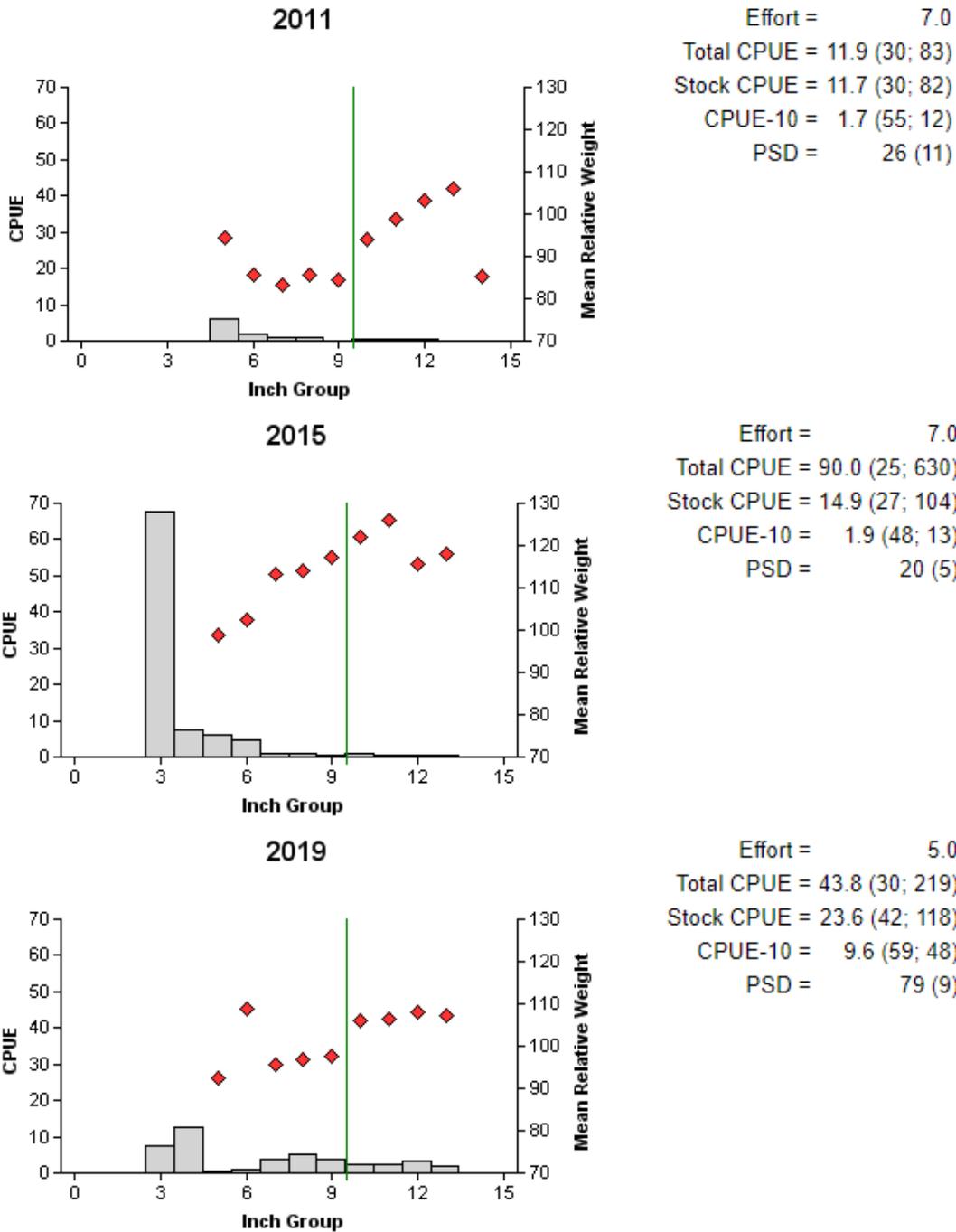


Figure 6. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Millers Creek Reservoir, Texas, 2011, 2015, and 2019. Vertical line indicates minimum length limit.

## Proposed Sampling Schedule

Table 8. Proposed sampling schedule for Millers Creek Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

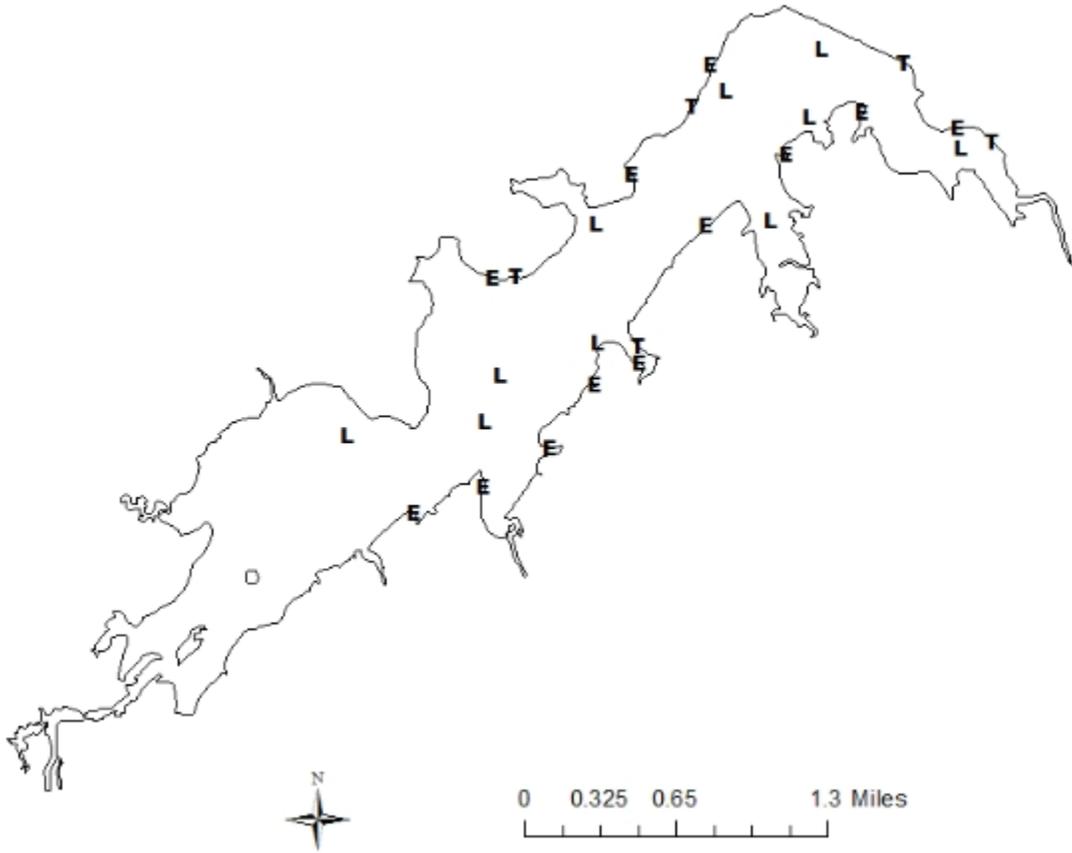
	Survey year			
	2020-2021	2021-2022	2022-2023	2023-2024
Angler Access				S
Structural Habitat				
Vegetation				S
Electrofishing – Fall				S
Electrofishing – Spring	A			
Electrofishing – Low frequency				S
Trap netting				S
Gill netting				
Baited tandem hoop netting				
Creel survey				
Report				S

## 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 Millers Creek Reservoir, Texas, 2019-2020. Sampling effort was 5 net nights for trap netting, 0.5 hour of low-frequency electrofishing, and 1 hour for electrofishing.

Species	Low-frequency Electrofishing		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad			9	1.8 (75)	1,024.0	1,024.0 (11)
Smallmouth Buffalo			1	0.2 (100)		
Blue Catfish	231	462.0 (16)	1	0.2 (100)		
Channel Catfish			1	0.2 (100)		
White Bass			5	1.0 (77)		
Green Sunfish			3	0.6(100)	21	21.0 (37)
Bluegill			63	12.6 (58)	186	186.0 (19)
Longear Sunfish			3	0.6 (100)	37	37.0 (39)
Largemouth Bass					49	49.0 (21)
White Crappie			219	43.8 (30)		

## APPENDIX B – Map of sampling locations



Location of sampling sites, Millers Creek Reservoir, Texas, 2019-2020. Trap net, electrofishing, and low-frequency electrofishing stations are indicated by T, E, and L, respectively. Water level was near full pool at time of sampling.



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