

# Mineral Wells Reservoir

## 2018 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

Prepared by:

Greg Cummings, Assistant District Management Supervisor  
and  
Dan Bennett, District Management Supervisor

Inland Fisheries Division  
Denison District, Pottsboro, Texas

Carter Smith  
Executive Director

Craig Bonds  
Director, Inland Fisheries

July 31, 2019



## Contents

Survey and Management Summary .....	1
Introduction.....	2
Reservoir Description .....	2
Angler Access.....	2
Management History .....	2
Methods.....	4
Results and Discussion.....	4
Fisheries Management Plan for Mineral Wells Reservoir, Texas .....	6
Objective-Based Sampling Plan and Schedule (2019–2023).....	7
Literature Cited.....	8
Tables and Figures .....	9
Water Level .....	9
Reservoir Characteristics .....	9
Boat Ramp Characteristics.....	10
Harvest Regulations .....	10
Stocking History.....	11
Objective-based sampling plan for 2018-2019.....	12
Aquatic Vegetation Survey .....	13
Gizzard Shad .....	14
Bluegill .....	15
Longear Sunfish .....	16
Largemouth Bass .....	17
White Crappie .....	19
Proposed Sampling Schedule .....	20
APPENDIX A – Catch rates for all species from all gear types .....	21
APPENDIX B – Map of sampling locations.....	22
APPENDIX C – Historical catch statistics .....	23

## Survey and Management Summary

Fish populations in Mineral Wells Reservoir were surveyed in 2018 using electrofishing and trap netting. Aquatic vegetation and angler access were surveyed in 2018. Historical data are presented with the 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:** Mineral Wells Reservoir is a 440-acre impoundment located on Rock Creek, a tributary to the Brazos River in Parker County, situated at the east edge of Mineral Wells. The reservoir was constructed in 1920 by the U.S. Army Corps of Engineers (USACE). Water level declined from conservation elevation (863 feet above mean sea level) from January 2012 until late April 2015, when rains caused the reservoir to rise and flow over the spillway. Mineral Wells Reservoir has moderate primary productivity. Habitat features consisted mainly of rocky shoreline with native emergent vegetation.

**Management History:** Important sport fish include Largemouth Bass and White Crappie. The management plan from the 2014 survey report recommended installation of fish attractors around the six fishing piers, promotion of the fishing opportunities available at the reservoir, and cooperating with Lake Mineral Wells State Park with invasive species education and prevention. Stocking of advanced fingerling Channel Catfish and monitoring with gillnets has been discontinued since a catch card survey indicated low directed effort and harvest for that species (Moczygemba 2015).

### Fish Community

- **Prey species:** Threadfin Shad abundance remained high. Electrofishing catch of Gizzard Shad was below the historical average, but most were available as forage. Electrofishing catch of Bluegill was the highest on record, with most fish  $\leq 4$  inches in length.
- **Catfishes:** Channel Catfish were present in the reservoir. Flathead Catfish have been present in previous surveys.
- **Largemouth Bass:** Largemouth Bass abundance has increased since 2014. Electrofishing catch rate was slightly higher than historical average. Most bass reached legal size after two and a half years.
- **White Crappie:** White Crappie trap net catch per unit effort (CPUE) has declined since 2014; yet, catch of stock size and larger fish increased. Legal size crappie were available to anglers, and most reached legal size in two and a half years. White Crappie are the most sought-after fish in Mineral Wells Reservoir.

**Management Strategies:** Continue promoting fishing opportunities available at Mineral Wells Reservoir. Investigate extending the boat ramp. Inform the public about the negative impacts of aquatic invasive species. Conduct general monitoring surveys with trap nets and electrofishing in 2022. Access and vegetation surveys will be conducted in 2022.

## Introduction

This document is a summary of fisheries data collected from Mineral Wells Reservoir in 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 fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2018 data for comparison.

## Reservoir Description

Mineral Wells Reservoir is a 440-acre impoundment constructed in 1920 on Rock Creek, a tributary to the Brazos River in Parker County. It was constructed by the USACE and is located at the east edge of Mineral Wells. Historically, the reservoir was used as a water supply and recreation area for the Fort Wolters Army Base. It is located within the boundaries of Lake Mineral Wells State Park and is now used for recreation and emergency water supply for the City of Mineral Wells. Chl-a measurements were not available for Mineral Wells Reservoir, however historical Secchi disk transparency suggested eutrophic conditions as per Carlson's Trophic State Index (Texas Commission on Environmental Quality 2018). Structural habitat consisted of rocks and boulders and natural shoreline. Water level declined from January 2012 to April 2015, when the reservoir filled and went over the spillway. Since 2015, the reservoir has generally remained within one foot of conservation elevation (863 feet above mean sea level), dropping below conservation pool several times in 2018 (Figure 1). Other descriptive characteristics for Mineral Wells Reservoir are in Table 1.

## Angler Access

Boat access consisted of one public boat ramp with parking and boarding pier. Additional boat ramp characteristics are in Table 2. Bank anglers can fish off five piers adjacent to various campgrounds. A larger T-shaped pier is available near the concession building. Further information about Mineral Wells Reservoir and its facilities can be obtained by visiting the Texas Parks and Wildlife Department (TPWD) web site at <http://www.tpwd.texas.gov> and navigating within the fishing web page.

## Management History

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Moczygemba and Hysmith 2015) included:

1. Install fish attractors around the six fishing piers.

**Action:** Artificial fish habitat structures have been placed around the five fishing piers adjacent to park campgrounds and the T-shaped fishing pier near the concession building.

2. Promote fishing opportunities at Mineral Wells Reservoir.

**Action:** District Facebook posts have notified anglers that fish attractors have been placed in the reservoir. The TPWD website has a description of fish attractor locations on the Mineral Wells Reservoir fishing page. Lake Mineral Wells State Park offers a free Tackle Loaner Program and a fishing tip sheet to assist anglers that visit the park.

3. Cooperate with state park staff to educate the public about invasive species.

**Action:** Signage was posted at the boat ramp. The State Park offers brochures that summarize steps to prevent the transfer of aquatic invasive species.

**Harvest regulation history:** With the exception of Channel Catfish, sport fishes in Mineral Wells Reservoir are currently managed with statewide regulations. Channel Catfish are managed under Community Fishing Lake rules which include no minimum length limit and a 5 fish daily bag limit. Fishing is by pole and line only, with only two poles allowed per angler. Current regulations are found in Table 3.

**Stocking history:** Mineral Wells Reservoir was last stocked in 2012 with ShareLunker and Florida Largemouth Bass adults. The complete stocking history is in Table 4.

**Vegetation/habitat management history:** In 2015, artificial fish habitat was placed near the six fishing piers located along the shoreline of Mineral Wells Reservoir. This consisted of crappie condos purchased with TPWD Largemouth Bass conservation license plate funds. The condos were composed of thin PVC pipe inserted vertically into a concrete base held in a metal tub. They provide habitat for crappie, catfish, sunfish, and bass.

**Water transfer:** The City of Mineral Wells has water rights to Mineral Wells Reservoir and maintains an operational pump in the lake. However, the City of Mineral Wells only exercises the water rights as a contingency during severe drought conditions or emergency water demands. There are no known interbasin water transfers.

## Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Mineral Wells Reservoir (TPWD unpublished). 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. Ages for Largemouth Bass were determined using otoliths from 13 randomly-selected fish (range 13.0 to 14.9 inches).

**Trap netting** – Crappie were collected using trap nets (8 net nights at 8 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn). Ages for White Crappie were determined using otoliths from 13 randomly-selected fish (range 9.0 to 10.9 inches).

**Genetics** – Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017). Micro-satellite DNA analysis was used to determine genetic composition of individual fish.

**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 vegetation survey was conducted in 2018 to monitor aquatic vegetation. Habitat was assessed with a modified 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 2019).

## Results and Discussion

**Habitat:** A habitat survey was last conducted in 2014 (Moczygemba and Hysmith 2015). Littoral zone structural habitat consisted primarily of rocks and boulders. An aquatic vegetation survey was conducted in 2018. Native emergent vegetation in the form of bulrush and water willow provided overhead cover along shorelines (Table 6). American lotus has been observed in the upper portion of the reservoir, but was isolated from the main reservoir in 2018. If the water level rises above flood stage, it could spread further

**Prey species:** Gizzard Shad electrofishing catch rate was 117.0/h, lower than the previous survey in 2014 (202.0/h; Figure 2). Gizzard Shad IOV was good, indicating that 79% of Gizzard Shad were available to existing predators; this was similar to the IOV estimate in 2014. Threadfin Shad CPUE has remained elevated since 2010 (Appendix C). The Threadfin Shad catch rate of 931.0/h in 2018 was lower than the record of 2657.0/h in 2014, but still higher than the historical average. Electrofishing catch rates of Bluegill and Longear Sunfish were 585.0/h and 222.0/h, respectively (Figures 3 and 4). Total CPUE of Bluegill and Longear Sunfish in 2018 were record highs for the reservoir (Appendix C), and size structure of both continued to be dominated by small individuals.

**Channel Catfish:** A 2012 catch card survey showed low directed fishing effort and total harvest for Channel Catfish (Moczygemba 2015). As a result, Channel Catfish were not targeted by sampling in 2018, and were not collected during electrofishing or trap netting surveys. Due to observed catfish angling effort, a stocking of surplus Channel Catfish was conducted in 2018. However, regular Channel Catfish stockings have been discontinued.

**Largemouth Bass:** The electrofishing catch rate of Largemouth Bass was 155.0/h in 2018, higher than the 65.0/h in 2014 (Figure 5). Size structure was similar to previous survey as PSD was 64 in 2018 and 71 in 2014. Elevated water levels appeared to improve recruitment. Body condition in 2018 was average, with mean relative weight ( $W_r$ ) ranging from 87 to 118. Growth of Largemouth Bass was good. Average age at 14 inches (13.0 to 14.9 inches) was 2.4 years (N = 13; range = 2 – 3 years). Florida Largemouth Bass influence has remained relatively constant as Florida alleles have increased from 38 to 40% and Florida genotype has remained zero (Table 7). In 2018, all Largemouth Bass sampled (n=30) were intergrades. In 2012, 78 adult Florida Largemouth Bass (including 5 ShareLunker offspring) were stocked into Mineral Wells Reservoir.

**White Crappie:** The trap net catch rate of White Crappie was 13.5/nn in 2018, lower than in 2014 (24.0/nn) and lower than the historical average (19.9/nn; Appendix C). Size structure has improved as PSD was 89 in 2018 compared to 72 in 2014 (Figure 7). Body condition in 2018 was similar to previous sampling years with  $W_r$  over 90 for most size classes. Mean age at legal length for White Crappie was 2.5 years (N = 13, range = 2-4 years).

# Fisheries Management Plan for Mineral Wells Reservoir, Texas

Prepared – July 2019

**ISSUE 1:** Largemouth Bass and White Crappie populations at Mineral Wells Reservoir have improved and fishing is a popular activity for park attendees. Promotion of fishing opportunities should continue.

## MANAGEMENT STRATEGIES

1. Continue working relationship with Lake Mineral Wells State Park to promote fishing at the park and attract new anglers.
2. Post significant catches on State Park and Inland Fisheries social media.
3. Seek partnerships and opportunities to enhance fisheries by procuring additional fish habitat structures to place around piers and other locations in the reservoir.
4. Continue to advertise fish habitat structure locations and how to fish them effectively.

**ISSUE 2:** The only boat ramp available for the reservoir is unusable at low water levels, limiting access during periods of low rainfall.

1. Seek funding to assist the State Park to lengthen the boat ramp when the lake level declines enough for construction.

**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 State Park to update signage at the boat ramp.
2. Provide the State Park with posters and literature to educate their customers.
3. Educate the public about invasive species through the use of media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.



## Objective-Based Sampling Plan and Schedule (2019–2023)

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

Important sport fish in Mineral Wells Reservoir include Largemouth Bass and White Crappie. Important forage species include Bluegill, Longear Sunfish, Gizzard Shad, and Threadfin Shad.

### Low-density fisheries

**Spotted Bass:** Spotted Bass are present in Mineral Wells Reservoir in low density. Spotted Bass CPUE has ranged from 0.0 to 9.0/h of electrofishing and they were last collected in 2006. Spotted Bass will be collected during sampling for Largemouth Bass and documented.

**Channel Catfish:** Channel Catfish are present in Mineral Wells Reservoir and are the fourth most popular fishery after “anything”. Advanced fingerling Channel Catfish stockings were discontinued because of low directed effort observed through the catch-card survey in 2012. The survey documented 79% legal release of Channel Catfish and suggested the population could be sustained without supplemental stocking. Since stockings have stopped and Channel Catfish make up a small portion of directed effort and harvest, gill netting has been discontinued. Channel Catfish observed during electrofishing and trap netting may be collected and documented.

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

**Largemouth Bass:** Largemouth Bass are one of the most popular fisheries at Mineral Wells Reservoir. Sampling once every four years to collect long-term monitoring trend data will allow for determination of any large-scale changes in the Largemouth Bass population that may spur further investigation.

A minimum of 12 randomly selected 5-min electrofishing sites will be sampled in the fall of 2022 to achieve our objectives of collecting  $\geq 50$  stock-size fish with an RSE of  $CPUE-S \leq 25$  to evaluate size structure and CPUE. Based on previous surveys, we should meet objectives in the original 12 random stations; however, 6 additional random stations will be generated in the event additional sampling is necessary. Thirteen Largemouth Bass between 13.0 and 14.9 inches will be collected to estimate age at 14-inches. Relative weight of Largemouth Bass  $\geq 8$ ” TL will be determined from their length/weight data (maximum of 10 fish weighed and measured per inch class). Fin clips from a minimum of 30 individuals will be taken to assess FLMB genetics.

**White Crappie:** Crappie were the most sought after and harvested sport fish during a 2012 catch-card survey at Mineral Wells Reservoir. Sampling once every four years to collect long-term monitoring trend data will allow for determination of any large-scale changes in the White Crappie population that may spur further investigation.

A minimum of five randomly selected trap nets will be set in fall of 2022 to collect trend data on size structure, age at the MLL (10-inches), and body condition of White Crappie. It is estimated that at least 50 stock-size White Crappie with an RSE of  $CPUE-S \leq 25$  can be collected with between 5 and 10 net nights. Additional net nights will be sampled if objectives are not met with the initial sampling stations, with a maximum effort of 10 net nights.

**Sunfish and Shad:** Bluegill, Longear Sunfish, along with Gizzard and Threadfin Shad are the primary forage at Mineral Wells Reservoir. We intend to collect trend data on abundance, size structure, and prey availability for forage species (along with sampling for Largemouth Bass) once every four years. No additional effort will be expended, beyond that necessary to achieve objectives for Largemouth Bass.

The proposed sampling schedule for important sport fish and forage is located in Table 8.

## 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 32(7): 348.
- Moczygemba, J. 2015. A Catch-Card Survey of Anglers Fishing Lake Mineral Wells. Texas Parks and Wildlife Department, Management Data Series Number 285.
- Moczygemba, J., and B. Hysmith. 2015. Statewide freshwater fisheries monitoring and management program survey report for Mineral Wells Reservoir, 2014. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-5, Austin.
- Texas Commission on Environmental Quality. 2018. Trophic classification of Texas reservoirs. Draft 2016 Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d), Austin. 15 pp.
- United States Geological Society (USGS). 2018. National water information system: Web interface. Available: <http://waterdata.usgs.gov/tx/nwis> (February 2018).

## Tables and Figures

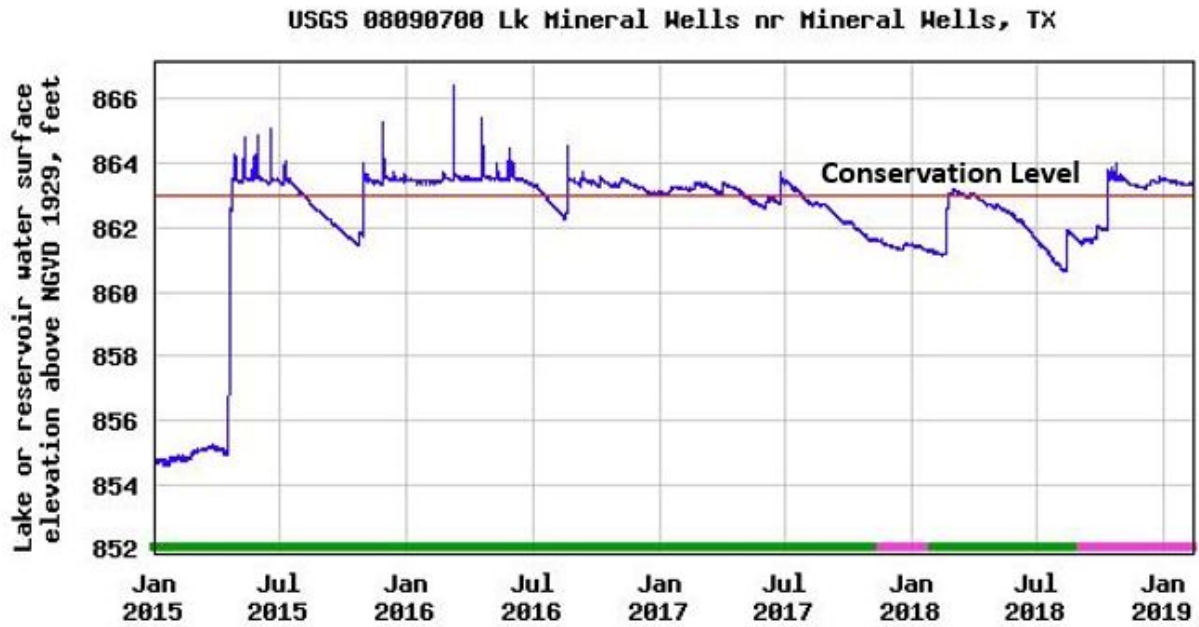


Figure 1. USGS real time water data for USGS 07315950 Mineral Wells Reservoir near Mineral Wells, Texas, January 2015 – January 2019.

Table 1. Characteristics of Mineral Wells Reservoir, Texas.

Characteristic	Description
Year constructed	1920
Controlling authority	Palo Pinto Co. Municipal Water District No. 1
County	Parker
Reservoir type	Tributary
Shoreline Development Index	1.9
Conductivity	266 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for Mineral Wells Reservoir, Texas, August, 2018. Reservoir elevation at time of survey was near conservation level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
South Ramp	32.81466 -98.03900	Y	16	857	Good to 3 or 4 ft. low. Extension is feasible

Table 3. Harvest regulations for Mineral Wells Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	5 (in any combination)	None
Catfish, Flathead	5	18-inch minimum
Bass, Largemouth	5 <sup>a</sup>	14-inch minimum
Bass: Spotted	5 <sup>a</sup>	None
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

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

Table 4. Stocking history of Mineral Wells Reservoir, Texas. FGL = fingerling; FRY = fry; AFGL = advanced fingerling; ADL = adults; UNK = unknown.

Species	Year	Number	Life Stage	Species	Year	Number	Life Stage
Blue Catfish	1988	12	ADL	Rainbow Trout	1984	11,243	ADL
	Total	12			1985	17,943	ADL
Channel Catfish	1971	15,000	AFGL		Total	29,186	
	1972	100,000	AFGL	ShareLunker Largemouth Bass	2012	5	ADL
	1987	32,800	FGL		Total	5	
	1989	18,786	AFGL	Threadfin Shad	1984	800	AFGL
	1991	9,985	AFGL		1985	3,400	AFGL
	1992	9,948	AFGL		Total	4,200	
	1993	16,580	AFGL				
	1993	11,040	FRY				
	1994	35,638	AFGL				
	1995	17,064	AFGL				
	1996	16,575	AFGL				
	2005	11,210	AFGL				
	2008	11,095	AFGL				
	2009	11,760	AFGL				
	2010	11,163	AFGL				
	2011	11,034	AFGL				
	2018	11,008	AFGL				
	Total	350,686					
Florida Largemouth Bass	1986	32,794	FRY				
	1987	5,065	FGL				
	1990	66,443	FRY				
	1997	66,300	FGL				
	2005	1,421	ADL				
	2012	73	ADL				
	Total	172,096					
Largemouth Bass	1967	60,000	UNK				
	1972	80,000	UNK				
	Total	140,000					

Table 5. Objective-based sampling plan components for Mineral Wells Reservoir, Texas 2018.

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
	Age-and-growth	Age at 14 inches	$N = 13, 13.0 - 14.9$ inches
	Condition	$W_r$	10 fish/inch group (max)
	Genetics	% FLMB	$N = 30$ , any age
Bluegill <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$
Gizzard Shad <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq 25$
	Size structure	Length frequency	$N \geq 50$
	Prey availability	IOV	$N \geq 50$
<i>Trap netting</i>			
White Crappie	Size structure	PSD, length frequency	$N = 50$
	Age-and-growth	Age at 10 inches	$N = 13, 9.0 - 10.9$ inches

<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 aquatic vegetation, Mineral Wells Reservoir, Texas, 2010, 2014, and 2018. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2010	2014	2018
Native floating-leaved <sup>a</sup>	Not surveyed	Not surveyed	3.5 (0.8)
Native emergent <sup>b</sup>	8.1 (1.8)	0.15 (<0.1)	8.6 (2.0)

<sup>a</sup> American lotus

<sup>b</sup> bulrush and water willow

## Gizzard Shad

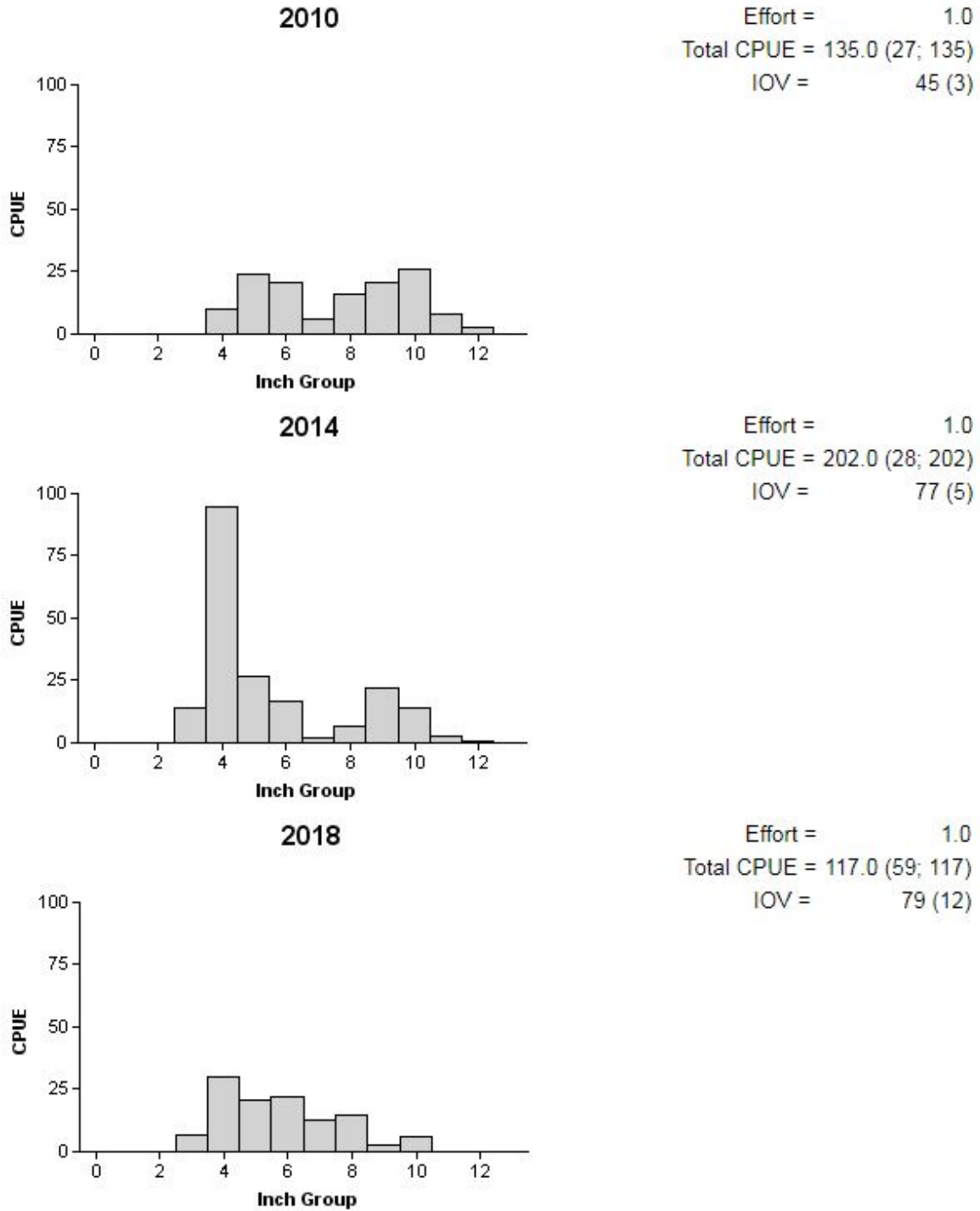


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Mineral Wells Reservoir, Texas, 2010, 2014, and 2018.



## Bluegill

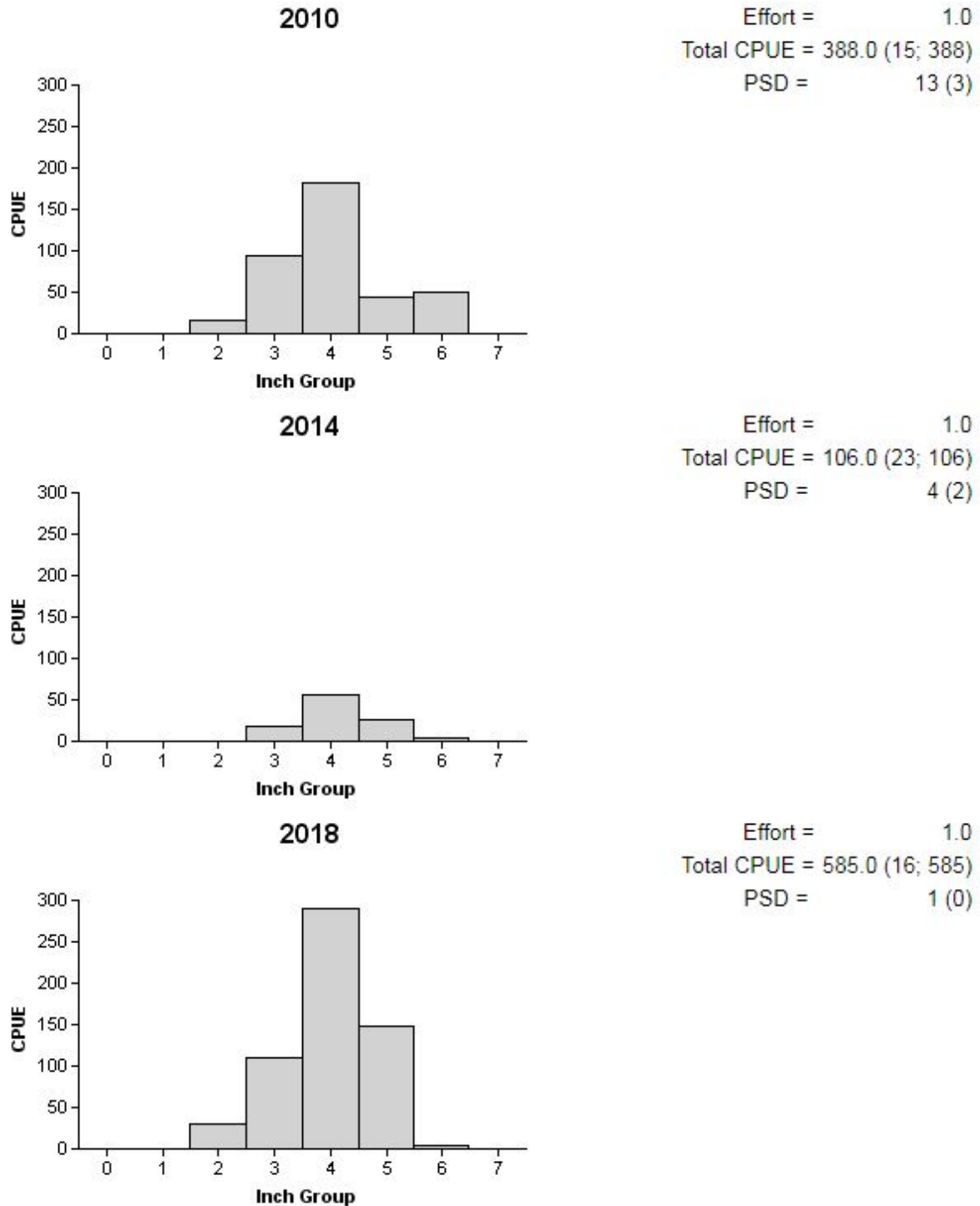


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mineral Wells Reservoir, Texas, 2010, 2014, and 2018.

### Longear Sunfish

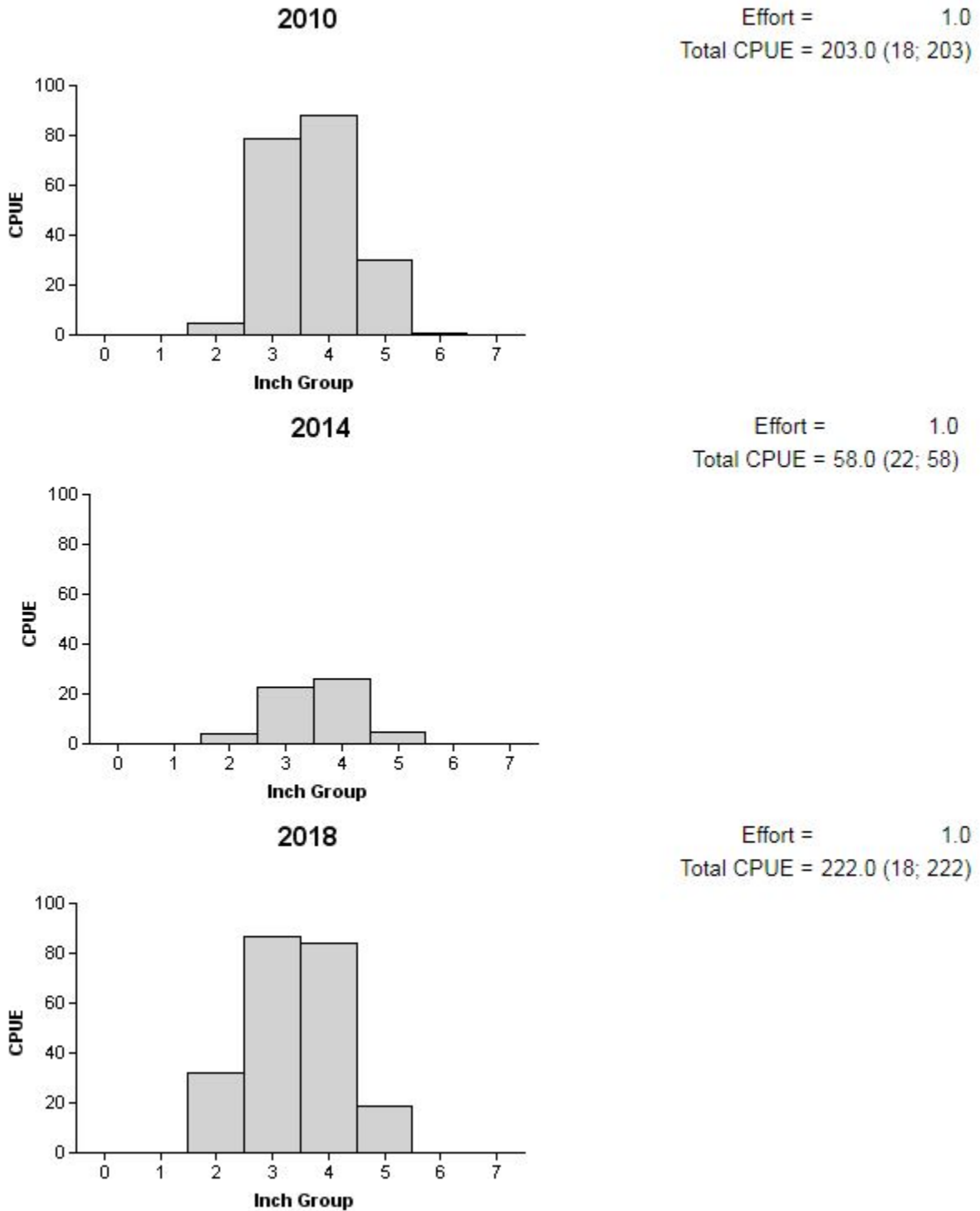


Figure 4. Number of Longear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mineral Wells Reservoir, Texas, 2010, 2014, and 2018.

## Largemouth Bass

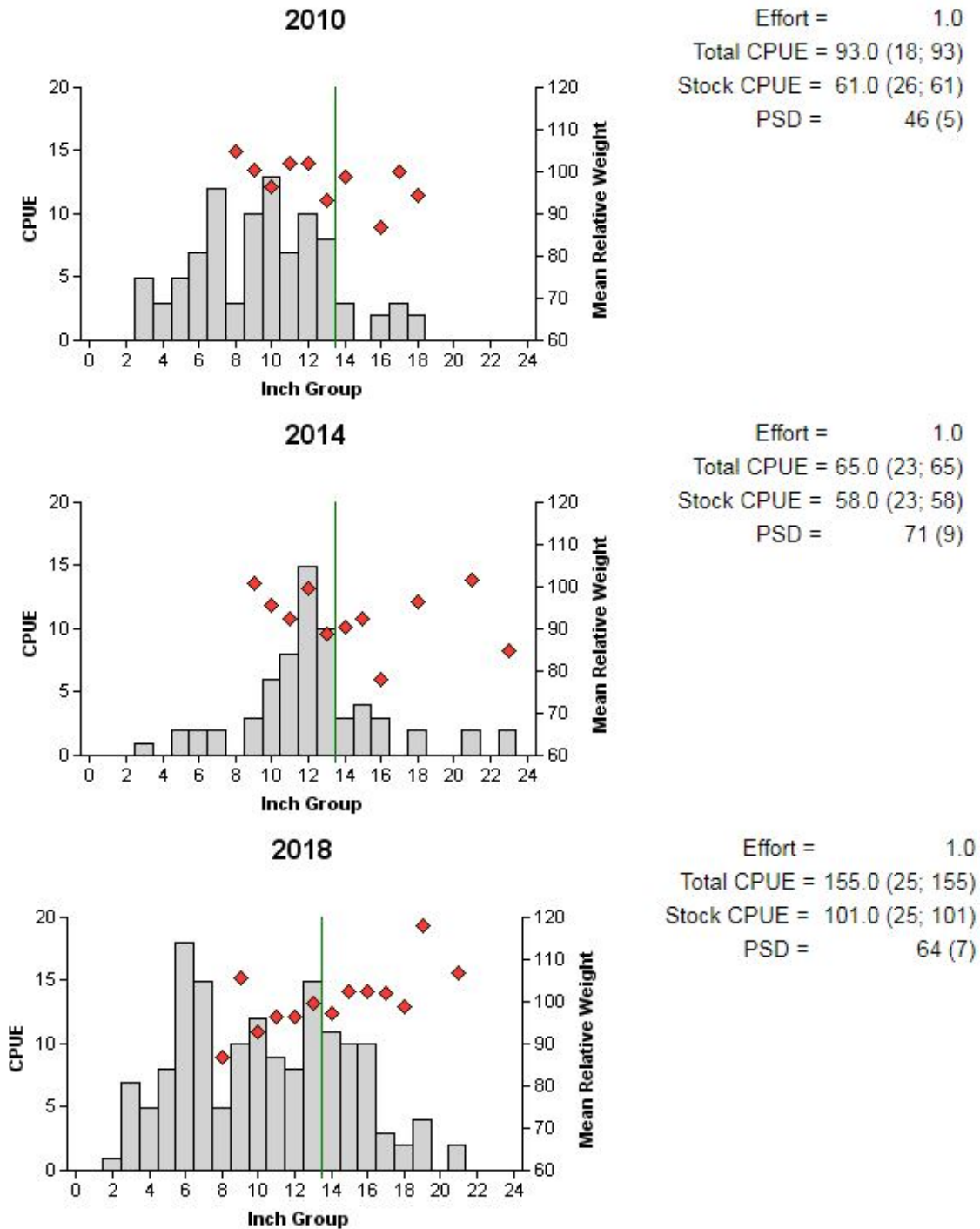


Figure 5. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mineral Wells Reservoir, Texas, 2010, 2014, and 2018. Vertical line indicates minimum length limit.

Table 7. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Mineral Wells Reservoir, Texas, 2006, 2014, and 2018. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined with micro-satellite DNA analysis.

Year	Sample size	Number of fish			% FLMB alleles	% FLMB
		FLMB	Intergrade	NLMB		
2006	30	0	27	3	35.0	0.0
2014	30	0	30	0	38.0	0.0
2018	30	0	30	0	40.0	0.0

## White Crappie

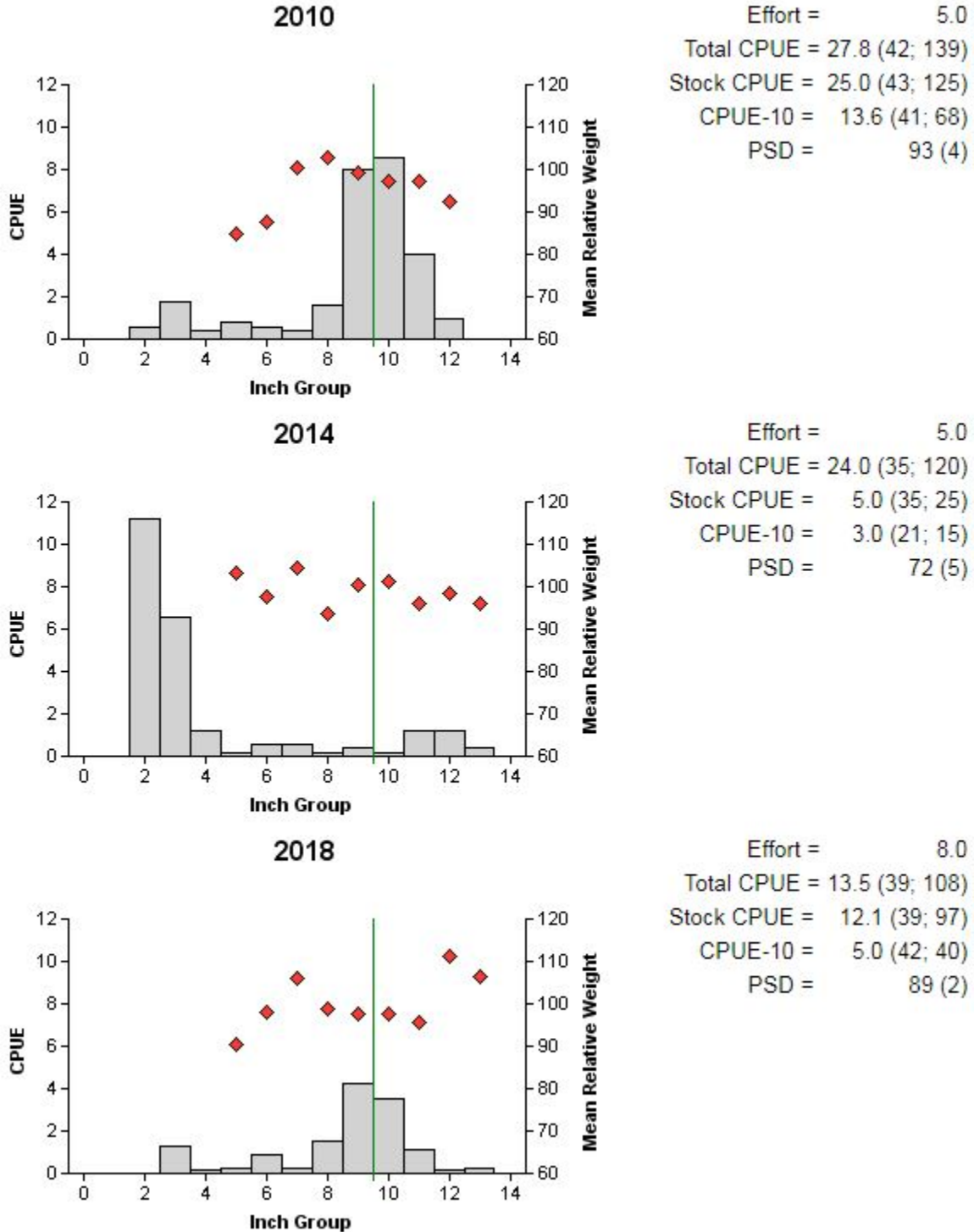


Figure 7. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Mineral Wells Reservoir, Texas, 2010, 2014, and 2018. Vertical line indicates minimum length limit.

## Proposed Sampling Schedule

Table 8. Proposed sampling schedule for Mineral Wells Reservoir, Texas. Survey period is June through May. Electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S.

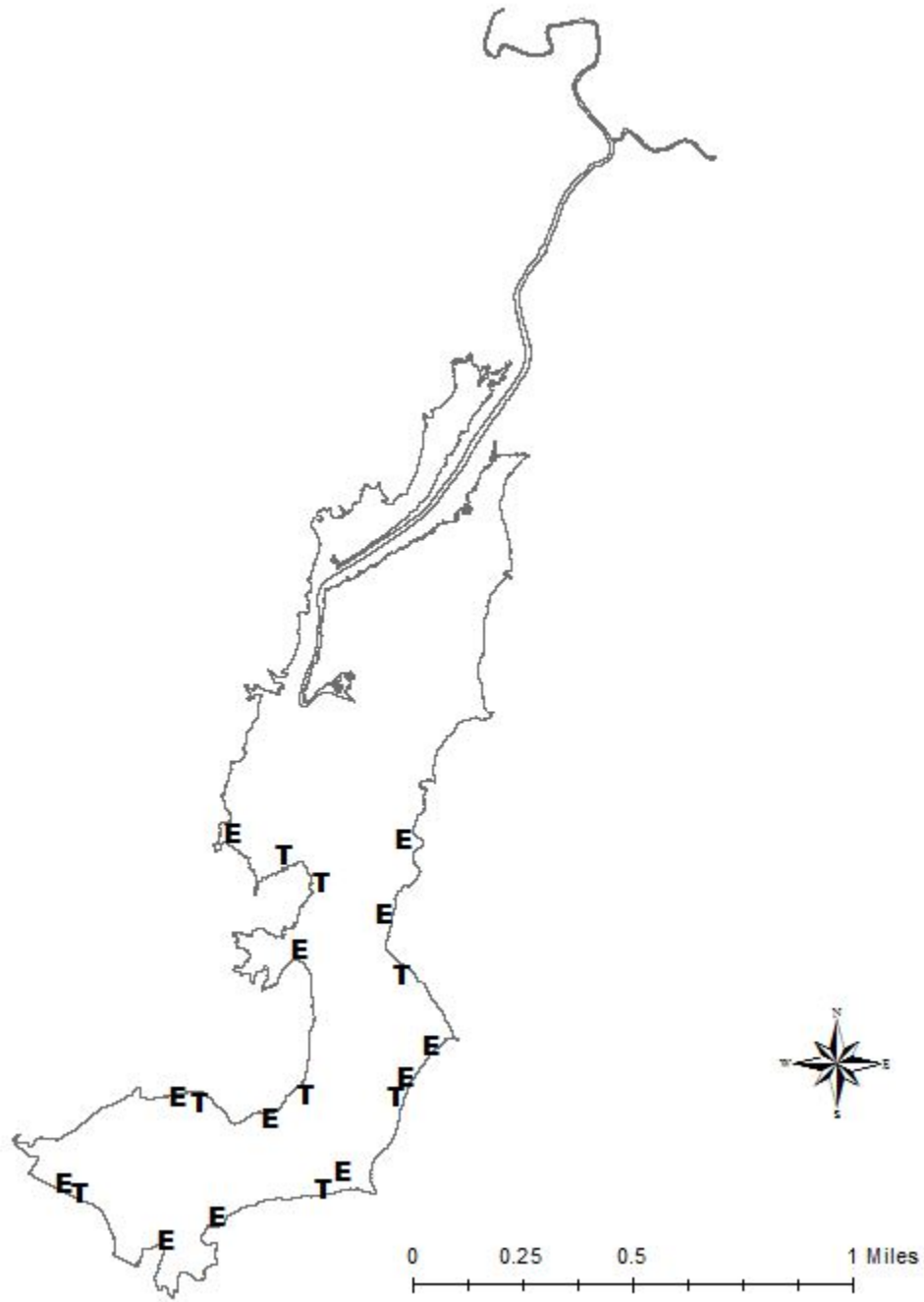
	Survey year			
	2019-2020	2020-2021	2021-2022	2022-2023
Angler Access				S
Structural Habitat				
Vegetation				S
Electrofishing – Fall				S
Trap netting				S
Creel survey				
Report				S

## 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 Mineral Wells Reservoir, Texas, 2018-2019. Sampling effort was 8 net nights for trap netting and 1 hour for electrofishing.

Species	Trap Netting		Electrofishing	
	N	CPUE	N	CPUE
Gizzard Shad			117	117.0 (59)
Threadfin Shad			931	931.0 (47)
Green Sunfish			44	44.0 (46)
Warmouth			19	19.0 (32)
Orangespotted Sunfish			3	3.0 (72)
Bluegill			585	585.0 (16)
Longear Sunfish			222	222.0 (18)
Redear Sunfish			1	1.0 (100)
Largemouth Bass			155	155.0 (25)
White Crappie	108	13.5 (39)		

## APPENDIX B – Map of sampling locations



Location of sampling sites, Mineral Wells Reservoir, Texas, 2018. Trap net and electrofishing stations are indicated by T and E, respectively. Water level was near full pool at time of sampling.



## APPENDIX C – Historical catch statistics

Historical catch rates of targeted species by gear type for Mineral Wells Reservoir, Texas, 1992 - 2018.

Gear	Species	Year								Avg.
		1992 <sup>a</sup>	1995 <sup>a</sup>	1998	2002	2006	2010	2014	2018	
Electrofishing (fish/hour)	Gizzard Shad	214.0	93.0	129.0	156.0	172.0	135.0	202.0	117.0	<b>152.3</b>
	Threadfin Shad	15.0	112.0	88.0	42.0	59.0	1091.0	2657.0	931.0	<b>624.4</b>
	Green Sunfish	0.0	12.0	42.0	17.0	26.0	8.0	4.0	44.0	<b>19.1</b>
	Warmouth		8.0	32.0	31.0	14.0	8.0	1.0	19.0	<b>14.5</b>
	Orangespotted Sunfish	0.0	0.0	3.0	1.0	0.0	2.0	0.0	3.0	<b>1.1</b>
	Bluegill	42.0	360.0	395.0	95.0	346.0	388.0	106.0	585.0	<b>289.6</b>
	Longear Sunfish	6.0	38.0	62.0	42.0	137.0	203.0	58.0	222.0	<b>96.0</b>
	Redear Sunfish	2.0	28.0	23.0	12.0	31.0	6.0	1.0	1.0	<b>13.0</b>
	Spotted Bass	69.0	0.0	6.0	9.0	2.0	0.0	0.0	0.0	<b>10.8</b>
Largemouth Bass	69.0	146.0	206.0	59.0	162.0	93.0	65.0	155.0	<b>119.4</b>	
Trap Netting (fish/net night)	White Crappie	28.1	34.5	4.3	16.8	10.4	27.8	24.0	13.5	<b>19.9</b>

<sup>a</sup>All sampling stations for all gear types were subjectively selected.



**Life's better outside.®**

In accordance with Texas State Depository Law, this publication is available at the Texas State Publications Clearinghouse and/or Texas Depository Libraries.

© Texas Parks and Wildlife, PWD RP T3200-1340 (08/19)

TPWD receives funds from the USFWS. TPWD prohibits discrimination on the basis of race, color, religion, national origin, disability, age, and gender, pursuant to state and federal law. To request an accommodation or obtain information in an alternative format, please contact TPWD on a Text Telephone (TTY) at (512) 389-8915 or by Relay Texas at 7-1-1 or (800) 735-2989 or by email at [accessibility@tpwd.texas.gov](mailto:accessibility@tpwd.texas.gov). If you believe you have been discriminated against by TPWD, please contact TPWD, 4200 Smith School Road, Austin, TX 78744, or the U.S. Fish and Wildlife Service, Office for Diversity and Workforce Management, 5275 Leesburg Pike, Falls Church, VA 22041.