

# Bridgeport Reservoir

## 2017 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 Bridgeport Reservoir were surveyed in 2017 using electrofishing, trap netting and in 2018 using gill netting. Habitat, vegetation, and angler access was surveyed in 2017. 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:** Bridgeport Reservoir is an 11,954-acre impoundment located on the West Fork Trinity River approximately 8 miles west of Bridgeport, Texas. Water level fell to 24 feet below conservation elevation before returning to full pool in 2015. Bridgeport Reservoir has increasing productivity and is now classified as eutrophic. Habitat features consisted mainly of rocky shoreline and submerged boulders. There was some standing timber and a small amount of pondweed present in the reservoir.

**Management History:** Important sport fish included Channel Catfish, White Bass, Palmetto Bass, Spotted Bass, Largemouth Bass, and crappie. Palmetto Bass have been stocked since 1994 and biennially since 2002. Largemouth Bass were managed with a 14- to 18-inch slot length limit from 1993 to 2018. In a state-wide effort to consolidate regulations for Largemouth Bass, the reservoir will be managed with the 14-inch minimum length limit beginning in September 2018. Zebra mussels have infested Bridgeport Reservoir, and signage has been installed to inform the public of their establishment and risk of spread.

### Fish Community

- **Prey species:** Threadfin Shad and Gizzard Shad were present in moderate abundance, and multiple sunfish species including Bluegill, Longear Sunfish, Redear Sunfish, and others provide adequate forage for sport fishes.
- **Catfish:** Bridgeport Reservoir maintains a quality Channel Catfish population with many available for harvest. Catch rate was more than double the long-term average. Blue Catfish were also collected for the first time in 2018.
- **Temperate Basses:** White Bass were collected in moderate abundance, and Palmetto Bass stockings in 2015 and 2017 have been successful at maintaining the fishery.
- **Black Basses:** Largemouth Bass abundance increased since the reservoir returned to the conservation elevation. Spotted Bass abundance declined from previous surveys. Smallmouth Bass were not collected in the 2017 survey.
- **Crappie:** White Crappie and Black Crappie were both present in the reservoir, and catch rate of White Crappie was the highest on record. Black Crappie are low in abundance.

**Management Strategies:** Stock Palmetto Bass fingerlings at 5/acre in 2019 and 2021, and fry in 2020 and 2022. Inform the public about the negative impacts of aquatic invasive species. Conduct general monitoring surveys with trap nets, gill nets, and electrofishing in 2021 and 2022. Access and vegetation surveys will be conducted in 2021.

## Introduction

This document is a summary of fisheries data collected from Bridgeport 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 fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2017-2018 data for comparison.

## Reservoir Description

Bridgeport Reservoir is an 11,954-acre impoundment constructed in 1932 on the West Fork Trinity River. It is located in Wise County approximately 8 miles west of Bridgeport, Texas. The reservoir is operated and controlled by the Tarrant Regional Water District. Primary water uses included municipal and industrial water supply and recreation. Bridgeport Reservoir is now classified as slightly eutrophic with a mean TSI Chl *a* of 50.5 (Texas Commission on Environmental Quality 2018). Water level declined from 2010 to 2015 before rapidly refilling in June 2015 (Figure 1). At its lowest point, the reservoir was approximately 24 feet below conservation elevation. Other descriptive characteristics for Bridgeport Reservoir are in Table 1.

## Angler Access

Boat access consisted of five public boat ramps (Table 2) and several private boat ramps. Bank fishing access was restricted to the Wise County Park, the boat ramp site near the US Highway 380 Bridge, and the boat ramp site near the dam.

## Management History

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Hysmith and Moczygemba 2014) included:

1. Stock Palmetto Bass at 5/acre in 2015 and 2017, and monitor the population during a standard gill net survey in 2018.

**Action:** Palmetto Bass were stocked in 2015 and 2017, and recruitment was documented during a 2018 spring gill net survey.

2. Encourage Tarrant Regional Water District to consider extensions on boat ramps at Wise County Park and Dam site ramp.

**Action:** Tarrant Regional Water District was informed about potential improvements to boat access sites; however, the reservoir gained 24 feet in elevation in 2015, returning to the conservation elevation. Extensions to boat ramps will be unnecessary except in times of severe drought.

3. Educate and inform the public about zebra mussels and other invasive species.

**Action:** Zebra mussel signage at boat ramps has been installed and maintained. Boat ramp stencils informing boaters about zebra mussels were replaced in 2018. The status of the zebra mussel population was discussed through social media and various media outlets.

**Harvest regulation history:** Largemouth Bass have been managed with a 14- to 18-inch slot length limit since 1993; however, the length limit will change to the 14-inch minimum effective 1 September 2018. All other sport fishes are managed with statewide regulations (Table 3).

**Stocking history:** Florida Largemouth Bass were last stocked in 2008. Smallmouth Bass were stocked between 1982 and 1985. Palmetto Bass were stocked in 2015 and 2017. The complete stocking history is listed in Table 4.

**Water transfer:** Bridgeport Reservoir is primarily used for municipal and industrial water supply and recreation. Other than downstream releases to Eagle Mountain Reservoir, raw water is not transferred to another public reservoir.

## Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Bridgeport Reservoir (Texas Parks and Wildlife Department [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 2015).

*Electrofishing* – Black Basses, Sunfishes, Gizzard Shad, and Threadfin Shad were collected by electrofishing (1.8 hours at 20, 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 (12 net nights at 12 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 10.0 to 10.8 inches).

*Gill netting* – Channel Catfish, Blue Catfish, Palmetto Bass, and White Bass were collected by gill netting (15 net nights at 15 stations). CPUE for gill netting was recorded as the number of fish caught per net night (fish/nn). Ages for Channel Catfish were determined using otoliths from 9 randomly-selected fish (range 11.2 to 12.7 inches).

*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 X SE of the estimate/estimate) was calculated for all CPUE statistics. Ages for Channel Catfish, White Crappie, and Largemouth Bass were determined using Category 2 protocol according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2015).

*Habitat* – A structural habitat survey and vegetation survey was conducted in 2017. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2015).

*Water level* – Source for water level data was the United States Geological Survey (USGS 2018).

## Results and Discussion

**Habitat:** A few areas of emergent and floating-leaved vegetation were present following a period of extreme drought prior to 2015 (Table 6). The littoral zone of Bridgeport Reservoir consists primarily of

rocky and natural shoreline, and some standing timber was available as structure (Figure 7). Hydrilla was not observed during the 2017 vegetation survey.

**Prey species:** Catch rate of Gizzard Shad (60.0/h; Figure 2, Appendix A, and Appendix C) has increased over previous surveys (39.5/h and 46.0/h; 2009 and 2013, respectively). However, the proportion available as forage has declined as IOV shifted from 55 in 2013 to 25 in 2017. The catch rate of Threadfin Shad (177.1/h) was above the historical average of 114.7/h (Appendix C). The CPUE of Bluegill (153.1/h) and Longear Sunfish (156.0/h) indicate adequate forage for sport fishes (Figure 3 and Figure 4). The majority of Bluegill were available as forage for sportfish species (PSD=6); fish >6-inches were not observed, which was consistent with previous surveys. Other species such as Redear Sunfish, Green Sunfish, Warmouth, and Orangespotted Sunfish provide a diverse forage base (Appendix C).

**Catfish:** Although not stocked by TPWD, Blue Catfish were collected for the first time in the 2018 gill net survey. The method of introduction into the reservoir is unknown. The sample of 24 individuals ranged from 8- to 27- inches, and a bimodal distribution suggested natural recruitment has occurred, and this fishery will continue to develop (Figure 5).

The gill net total CPUE of Channel Catfish (9.0/nn) was the highest on record (Figure 6); and sampling indicated a robust population with many fish available for harvest. Size distribution (PSD=36) of Channel Catfish was adequate. Body condition ( $W_r$ ) was  $\geq 100$  for some size classes (Figure 6). Channel Catfish reached legal length (12 inches) in 3.7 years ( $N=9$ ; range = 3-4 years).

**Temperate Bass:** Gill net catch rate for White Bass has been variable at Bridgeport Reservoir. This variability may be due to upstream spawning activity in March when sampling was conducted. A 2013 fall creel survey suggested angler catch rate is relatively high (2.5/h) and many fish were harvested (Hysmith and Moczygemba 2014). Gill net CPUE (2.7/nn) of White Bass was similar to the catch rate of Palmetto Bass (2.7/nn), and indicated both species contribute to the morone fishery (Figures 7 and 8). Recruitment of Palmetto Bass stocked in 2015 and 2017 was also evident (Figure 8).

**Black Bass:** Spotted Bass remain in moderate relative abundance in Bridgeport Reservoir, and they provide anglers an additional resource. Spotted Bass up to 13-inches were collected; however, the overall CPUE (24.6/h; Figure 9) was down from previous surveys in 2013 (56.0/h) and 2009 (46.0/h).

The catch rate of Largemouth Bass (96.6/h) was approximately double that in 2009 and (47.0/h) and 2013 (35.0/h) (Figure 10), and was indicative of increased habitat and recruitment following high lake levels in 2015. Stock CPUE of Largemouth Bass was 52.6/h. Largemouth Bass reached legal length (14-inches) in 1.9 years ( $N=13$ ; range = 1-2 years), and body condition ( $W_{r \geq 85}$ ) suggested adequate forage was available. PSD-stock (56) was in the desired target range (40-60) for Largemouth Bass.

Smallmouth Bass were not collected in the 2017 electrofishing survey.

**Crappie:** The total CPUE of crappie (22.3/nn) was similar to 2013 (17.3/nn) and indicated a robust fishery exists at Bridgeport Reservoir with many legal length fish available for harvest (Figure 11). The population consisted primarily of White Crappie; only nine Black Crappie were collected in trap nets. The combined PSD for White Crappie and Black Crappie was 84.0. White Crappie ( $N=13$ ) reached legal length (10 inches) in 2 years. Body condition of crappie was excellent ( $W_{r \geq 90}$ ) for most size classes.

# Fisheries Management Plan for Bridgeport Reservoir

Prepared – July 2018

**ISSUE 1:** Percent directed angler effort for Palmetto Bass has ranged from 20.0 to 22.1% in creel surveys in fall 2003 and 2013, respectively. Palmetto Bass abundance was relatively low due to biennial stockings of 5 fish/acre, and the reservoir could support and benefit from additional stockings.

## MANAGEMENT STRATEGIES

1. Stock Palmetto Bass fingerlings at 5/acre in 2019 and 2021, and Palmetto Bass fry at 50/acre in 2020 and 2022.
2. Conduct a creel survey in summer and fall 2021 to monitor trends in angler effort and harvest of Palmetto Bass.
3. Conduct gill netting in spring 2022 to determine success of the 2020 fry stockings.

**ISSUE 2:** A 14- to 18-inch slot length limit for Largemouth Bass has been in effect at Bridgeport Reservoir since 1993, although has not resulted in notable recruitment of fish  $\geq$ 18-inches. The statewide 14-inch minimum length limit will be implemented on 1 September 2018, as part of a statewide effort to simplify regulations for Largemouth Bass. A potential increase in angler effort is anticipated, and warrants monitoring.

## MANAGEMENT STRATEGIES

1. Monitor trends the Largemouth Bass population with standard electrofishing in fall 2021.
2. Estimate effort and harvest for Largemouth Bass during a summer and fall 2021 creel survey.

**ISSUE 3:** Anecdotally, Smallmouth Bass provided a supplemental fishery at Bridgeport. Smallmouth Bass were not observed during the 2017 electrofishing survey, and recruitment has likely suffered because of extreme drought in the past decade.

## MANAGEMENT STRATEGIES

1. Request Smallmouth Bass fingerlings for stocking at Bridgeport Reservoir or consider management stockings.
2. Monitor recruitment of the Smallmouth Bass population with standard electrofishing in fall 2021.
3. Estimate effort and harvest for Smallmouth Bass during a summer and fall 2021 creel survey.

**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 controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate marina owners about invasive species, and provide them with posters, literature, etc... so that they can in turn 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.
5. 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)

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

Important sport fish in Bridgeport Reservoir include Largemouth Bass, Spotted Bass, Palmetto Bass, White Crappie, Channel Catfish, and White Bass. Important forage species include Bluegill, Longear Sunfish, Gizzard Shad, and Threadfin Shad.

### Low-density fisheries

Smallmouth Bass are present in Bridgeport Reservoir in low density. CPUE has ranged from 3 to 4 Smallmouth Bass per hour of electrofishing. Smallmouth Bass will be collected during sampling for other Black Bass species, and changes in relative abundance will be documented.

Black Crappie are present in Bridgeport Reservoir; however, their abundance is much lower than White Crappie. CPUE has averaged 0.3/nn in trap net surveys. Black Crappie will be collected along with White Crappie and any change in relative abundance will be documented.

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

**Black Bass:** Largemouth Bass are one of the most popular fisheries at Bridgeport Reservoir. Electrofishing catch rates have remained consistent as well as the size structure and condition of the bass population. 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.

Twenty-four randomly selected 5-min electrofishing sites will be sampled in fall 2021. The anticipated effort to meet an RSE of  $CPUE-S \leq 25$  is between 20 and 24 stations with 80% confidence. Thirteen Largemouth between 13.0 and 14.9 inches will be collected to estimate age at the minimum length limit (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).

A sufficient number of Spotted Bass are typically collected to allow evaluation of CPUE and size structure with a high degree of precision. However, no additional effort will be expended, beyond that necessary to achieve objectives for Largemouth Bass.

**Temperate Bass:** Palmetto Bass and White Bass provide a popular fishery in Bridgeport Reservoir. Gill net catch rates are historically variable. It may be unlikely that high precision ( $RSE \leq 25$ ) trend data can be collected with reasonable effort. However, data collection from gill net sampling while targeting Channel Catfish should also be sufficient to document recruitment of Palmetto Bass fry and fingerlings stocked. To evaluate success of fry stockings, we will collect otoliths from a minimum of ten Palmetto Bass per centimeter group to determine age class.

**Catfish:** Channel Catfish provide the third most popular fishery at Bridgeport Reservoir. Blue Catfish were also observed in gill nets for the first time in 2018. Trend data is needed to monitor Channel Catfish populations and document abundance and size structure of the developing Blue Catfish fishery. Catch



rates suggest that trend data for monitoring Channel Catfish relative abundance, body condition, and time required for fish to grow to the minimum length (12-inches) can be obtained with reasonable effort.

Fifteen randomly selected gill-net stations will be sampled in Spring 2022 to obtain trend data. The anticipated effort to meet an RSE of  $CPUE-S \leq 25$  and collect at least 50 Channel Catfish, and 13 fish between 11.0 and 12.9 inches (to estimate age at the MLL), is 15 stations with 80% confidence. Additional random stations and net nights may be added if we determine objectives can be met with reasonable additional effort. Additional effort will not be expended for Blue Catfish, beyond that necessary to meet objectives for Channel Catfish.

**White Crappie:** Crappie were the most sought-after sport fish during a spring creel survey at Bridgeport Reservoir. We will collect trend data on size structure, age at the MLL (10-inches), and body condition of White Crappie with trap nets in Fall 2021 to monitor trends in the population. Trap net catch rate for White Crappie is variable at Bridgeport Reservoir, and obtaining high precision data to estimate relative abundance with reasonable effort is unlikely. However, we estimate that we can collect at least 50 stock-size fish to evaluate size structure of the White Crappie population with between 10 and 15 net nights. This level of sampling should also provide a sufficient number of White Crappie between 9.0 and 10.9 inches to estimate growth to legal length (10-inches). We plan to sample a minimum of 10 random shoreline trap net stations; however, an additional 5 net nights will be sampled if objectives are not met with the initial 10 sampling stations.

**Sunfish and Shad:** Bluegill, Longear Sunfish, along with Gizzard and Threadfin Shad are the primary forage at Bridgeport Reservoir. We intend to collect trend data on abundance, size structure, and prey availability for forage species (along with sampling for Largemouth Bass) in Fall 2021. No additional effort will be expended, beyond that necessary to achieve objectives for Largemouth Bass.

**Angler Creel:** A creel survey will be conducted in summer and fall 2021 to estimate effort and harvest for sportfish species. The focus of the survey will be to evaluate trends in effort for Palmetto Bass as well as trends in effort for Largemouth Bass following implementation of the statewide minimum length limit (14-inches) in 2018.

## Literature Cited

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## Tables and Figures

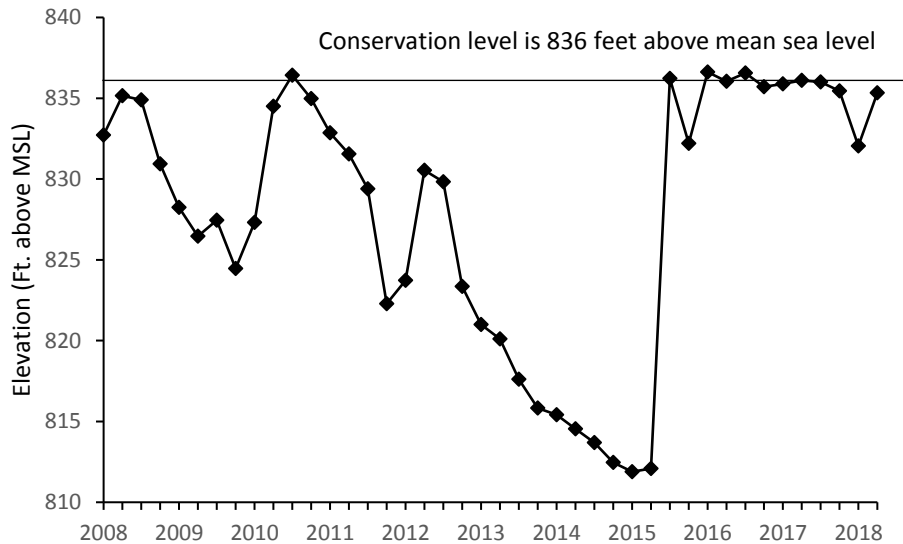


Figure 1. Monthly average water level elevations in feet above mean sea level (msl) recorded for Bridgeport Reservoir, Texas, June 2008-May 2018.

Table 1. Characteristics of Bridgeport Reservoir, Texas.

Characteristic	Description
Year constructed	1932
Controlling authority	Tarrant Regional Water District
Counties	Wise and Jack
Reservoir type	Mainstream
Shoreline development index	10.6
Conductivity	361 $\mu$ mhos/cm

Table 2. Boat ramp characteristics for Bridgeport Reservoir, Texas, October, 2017. Reservoir elevation at time of survey was 835.4 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Wise County Park Primary Ramps	33.27869, -97.85441	Y	20	819.7	Adequate. Extension is not feasible
Wise County Park Secondary Ramps US 380	33.27875, -97.85678	Y	20	818.7	Adequate. Extension is feasible
	33.17187, -97.85956	Y	10	819.0	Adequate. Extension is feasible
Runaway Bay	33.17275, -97.86107	Y	5	820.7	Adequate. Extension is not feasible
Dam	33.21879, -97.83066	Y	10	818.7	Adequate. Extension is feasible

Table 3. Harvest regulations for Bridgeport Reservoir, Texas.

Species	Bag Limit	Length Limit
Catfish, Channel	25	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Palmetto	5	18-inch minimum
Bass, Largemouth <sup>a</sup> and Smallmouth	5 (in any combination)	14-inch minimum (effective Sept. 1, 2018)
Bass, Spotted		No Limit
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

<sup>a</sup> The 14- to 18-inch slot length limit for Largemouth Bass will change to the statewide 14-inch minimum length limit effective 9-1-2018.

Table 4. Stocking history of Bridgeport, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK).

Year	Number	Size	Year	Number	Size
<u>Channel Catfish</u>			<u>Walleye</u>		
1972	<u>52,000</u>	AFGL	1974	204,000	FRY
Total	52,000		1975	247,000	FRY
<u>Coppernose Bluegill</u>			1984	4,692,000	FRY
1983	<u>130,000</u>	UNK	1992	<u>7,834,586</u>	FRY
Total	130,000		Total	12,977,586	
<u>Florida Largemouth Bass</u>			<u>Palmetto Bass</u>		
1982	1,439	FGL	1983	130,144	UNK
1985	10,700	FGL	1994	195,693	FGL
1988	10,000	FGL	1995	339,300	FGL
1990	326,430	FRY	1996	100,700	FGL
1997	125,264	FGL	1997	112,206	FGL
2007	299,781	FGL	1998	132,599	FGL
2008	<u>300,049</u>	FGL	1999	65,004	FGL
Total	1,073,663		2002	65,005	FGL
<u>Largemouth Bass</u>			2005	71,788	FGL
1970	<u>250,000</u>	UNK	2007	63,879	FGL
Total	250,000		2009	60,820	FGL
<u>Mixed Largemouth Bass</u>			2011	59,931	FGL
1988	<u>12,750</u>	FGL	2013	59,756	FGL
Total	12,750		2015	34,153	FGL
<u>Smallmouth Bass</u>			2017	<u>57,318</u>	FGL
1982	104	UNK	Total	1,548,296	
1983	130,034	UNK			
1984	50,826	FGL			
1985	<u>33,172</u>	FGL			
Total	214,136				
<u>Threadfin Shad</u>					
1984	4,500	ADL			
1985	<u>4,300</u>	ADL			
Total	8,800				

Table 5. Objective-based sampling plan components for Bridgeport Reservoir, Texas 2017 – 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)
Spotted 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	RSE $\leq 25$
	Size structure	PSD, length frequency	N $\geq 50$
Gizzard Shad <sup>a</sup>	Abundance	CPUE - Total	RSE $\leq 25$
	Size structure	PSD, length frequency	N $\geq 50$
	Prey availability	IOV	N $\geq 50$
<i>Trap netting</i>			
Crappie	Abundance	CPUE - Total	RSE-Stock $\leq 25$
	Size structure	PSD, length frequency	N = 50
	Age-and-growth	Age at 10 inches	N = 13, 9.0 – 10.9 inches
<i>Gill netting</i>			
White Bass	Abundance	CPUE - Total	RSE-Total $\leq 30$
Palmetto Bass	Recruitment of 2015 & 2017 stockings	CPUE - Total	RSE-Total $\leq 50$
Channel Catfish	Abundance	CPUE - Stock	RSE-Stock $\leq 25$
	Size structure	PSD, length frequency	N $\geq 50$ Stock

<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 for Bridgeport Reservoir, Texas, 2009, 2013 and 2017. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2009	2013	2017
Native submersed <sup>a</sup>	0.6(<0.1)	0.0	7.3 (<0.1)
Native floating <sup>b</sup>	0.0	0.0	<0.1 (<0.1)
Non-native			
Floating Yellow Heart	2.0(<0.1)	0.0	0.0
Hydrilla	2.0(<0.1)	<0.1(<0.1)	0.0

<sup>a</sup> American Pondweed

<sup>b</sup> American Lotus

Table 7. Survey of structural habitat types for Bridgeport Reservoir, October 2017. Shoreline habitat type units are in miles and standing timber is in acres.

Habitat type	Estimate	% of total
Natural	25.0	15.0
Rocky	145.2	85.0
Boat Houses	8.4	<0.1
Standing Timber	115.0	1.0

### Gizzard Shad

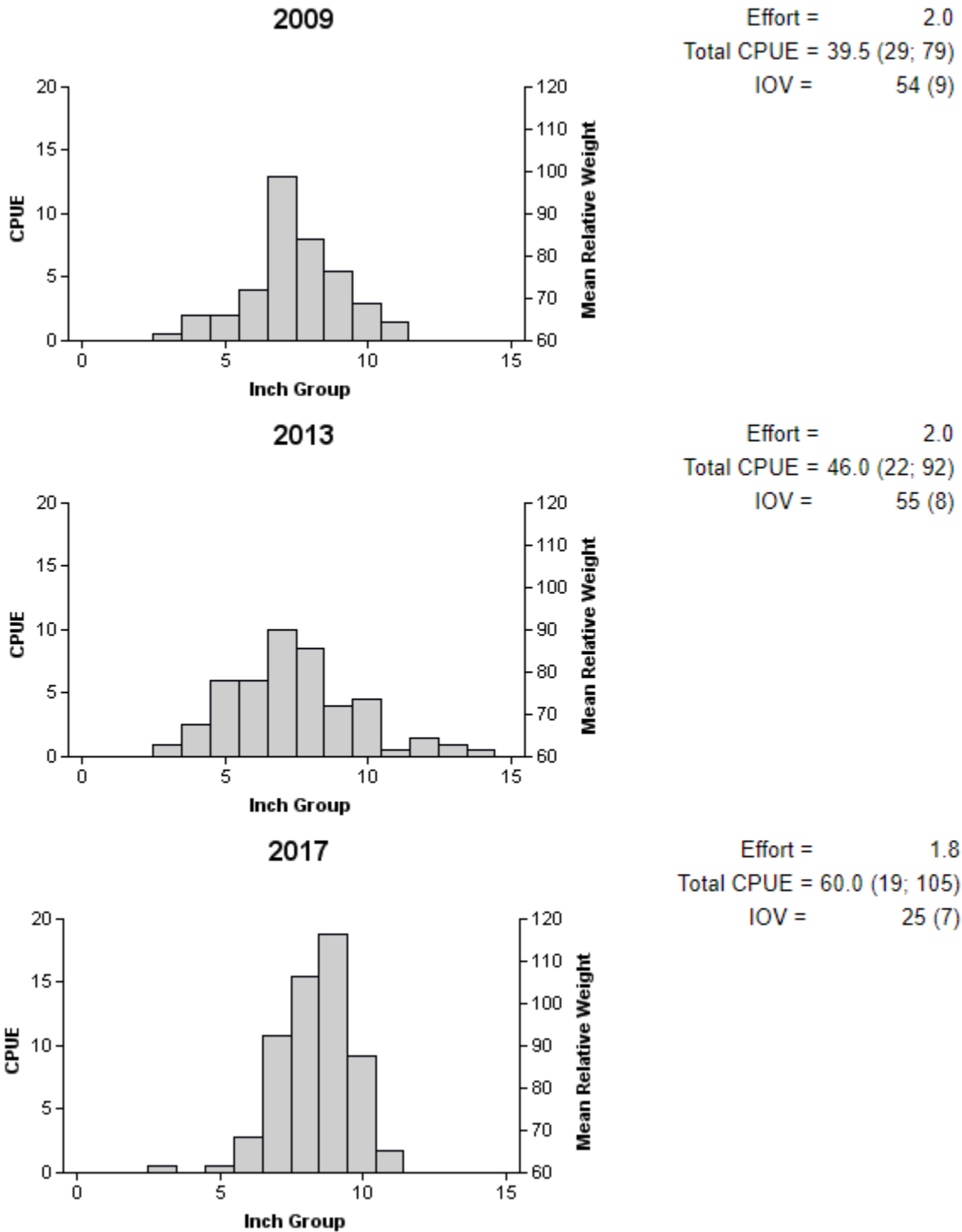


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Bridgeport Reservoir, Texas, 2009, 2013, and 2017.



## Bluegill

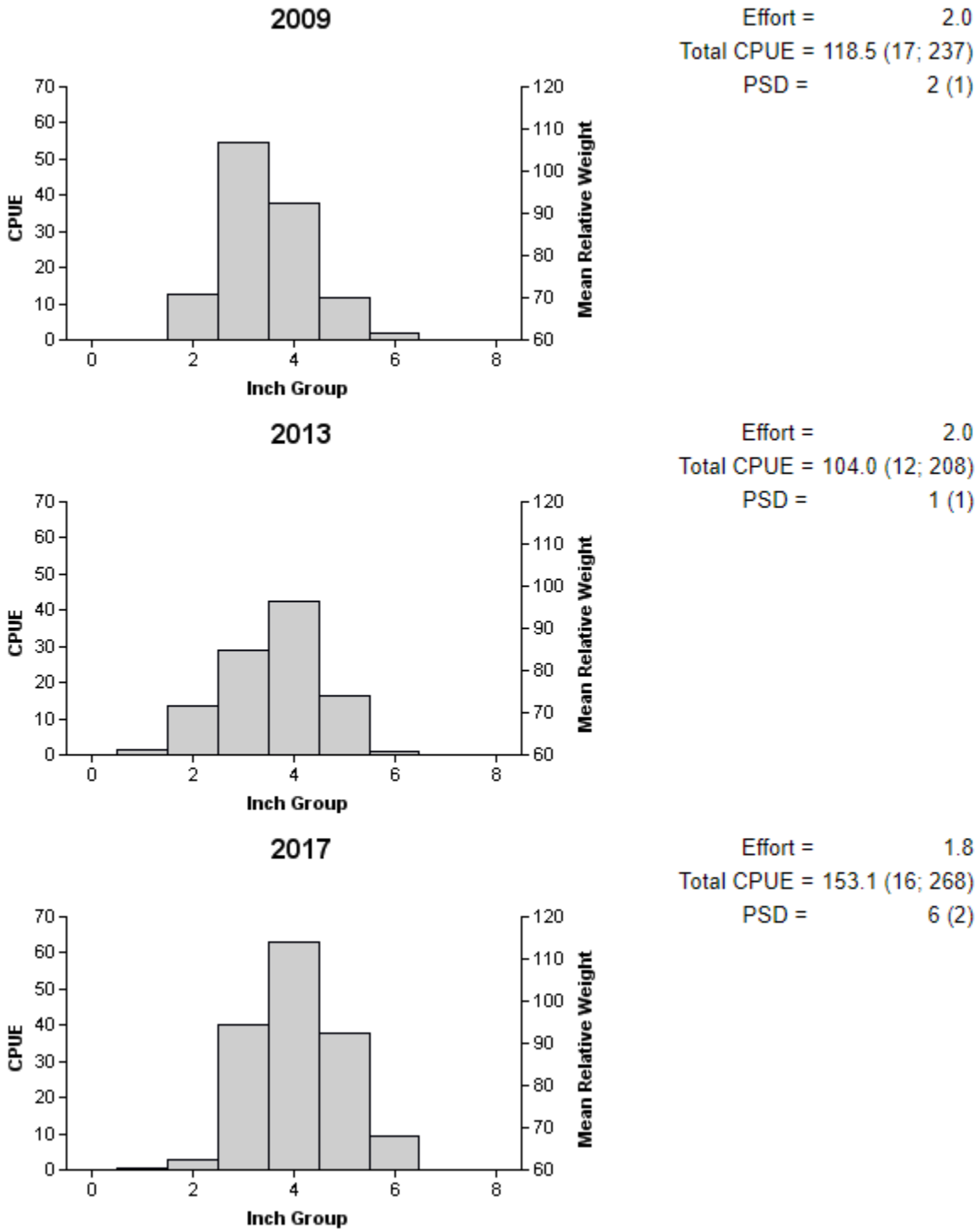


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Bridgeport Reservoir, Texas, 2009, 2013, and 2017.

## Longear Sunfish

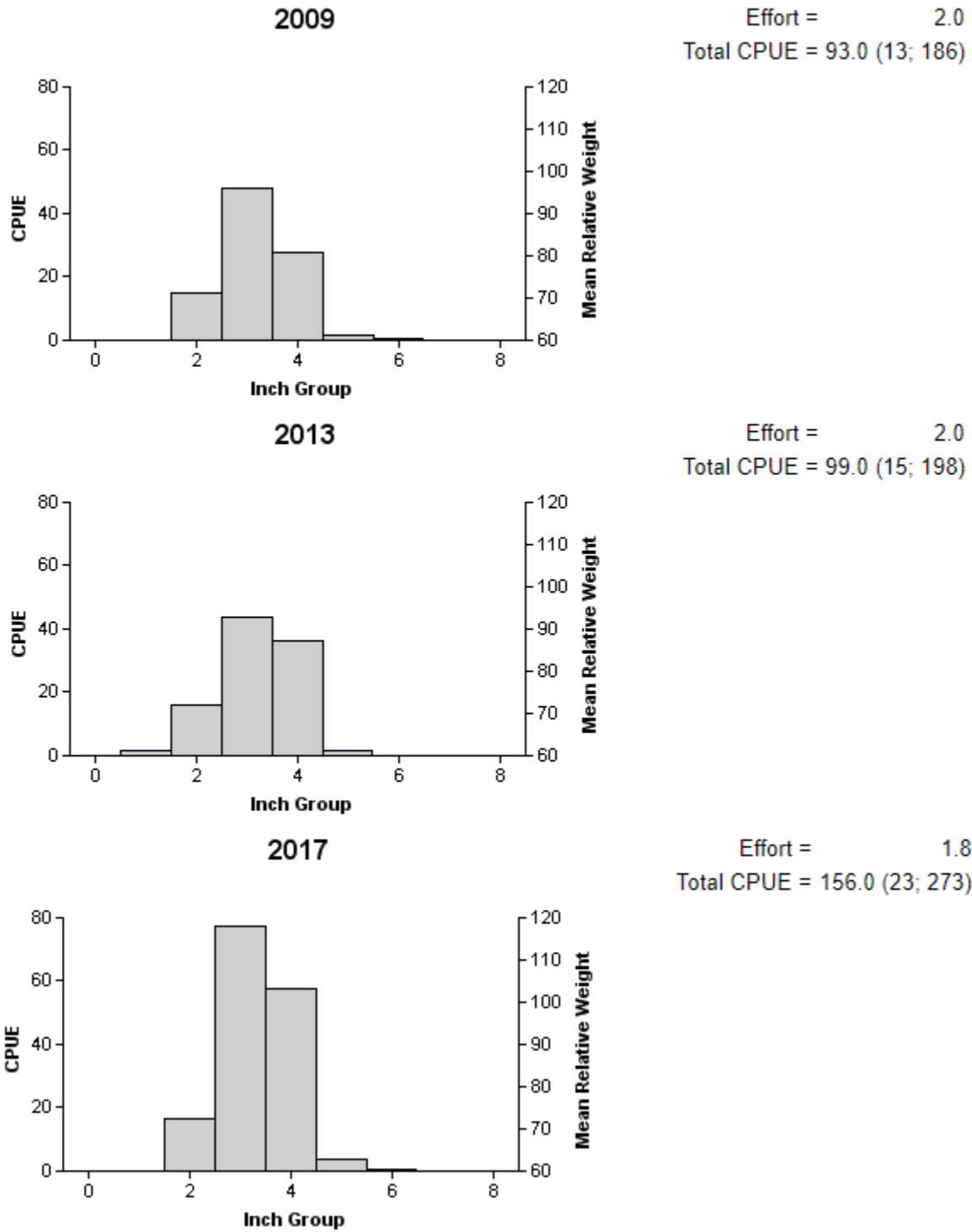


Figure 4. Number of Longear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE) for fall electrofishing surveys, Bridgeport Reservoir, Texas, 2009, 2013, and 2017.

## Blue Catfish

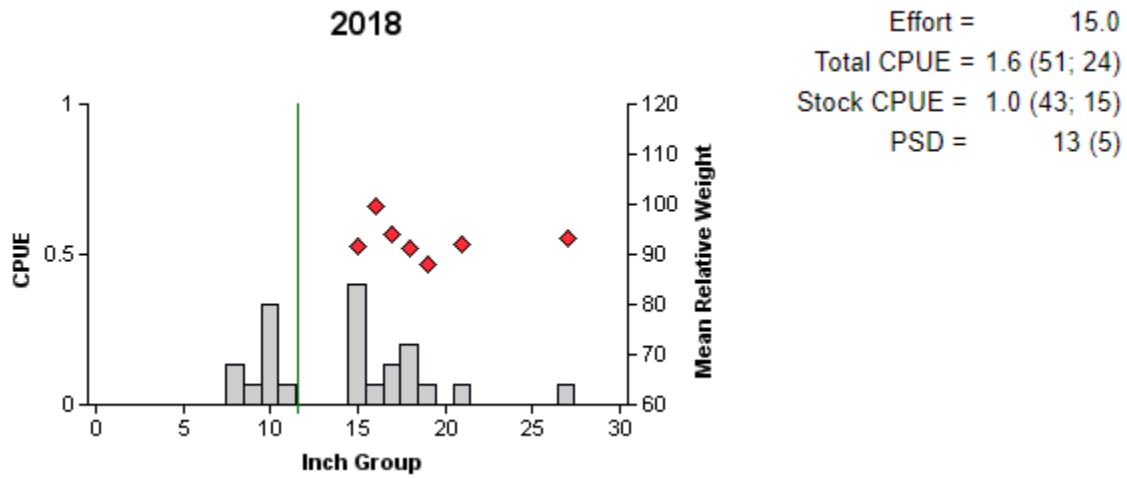


Figure 5. Number of Blue Catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net survey, Bridgeport Reservoir, Texas, 2018. Vertical line represents minimum length limit at time of collection.

## Channel Catfish

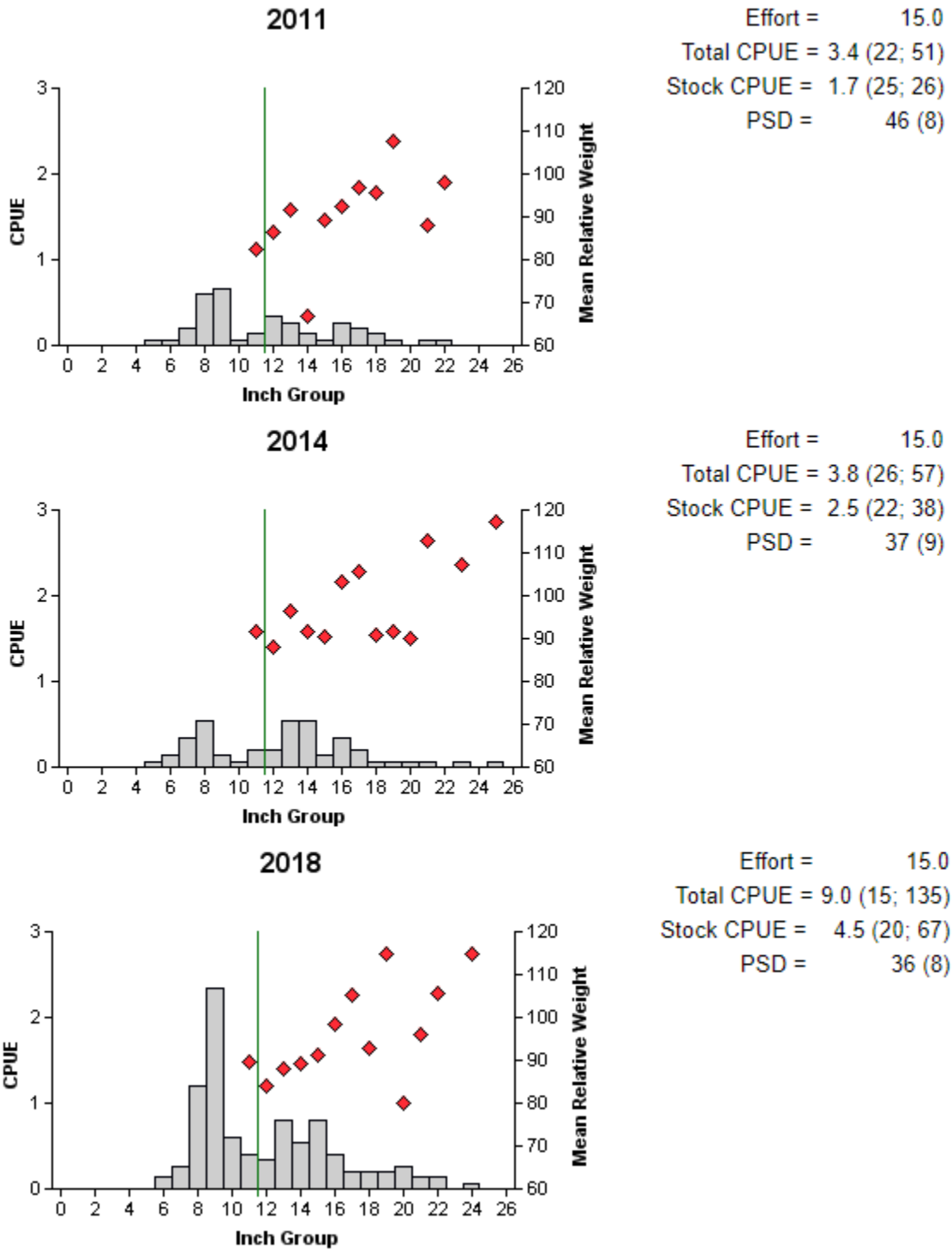


Figure 6. Number of Channel Catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Bridgeport Reservoir, Texas, 2011, 2014, and 2018. Vertical lines represent minimum length limit at time of collection.

## White Bass

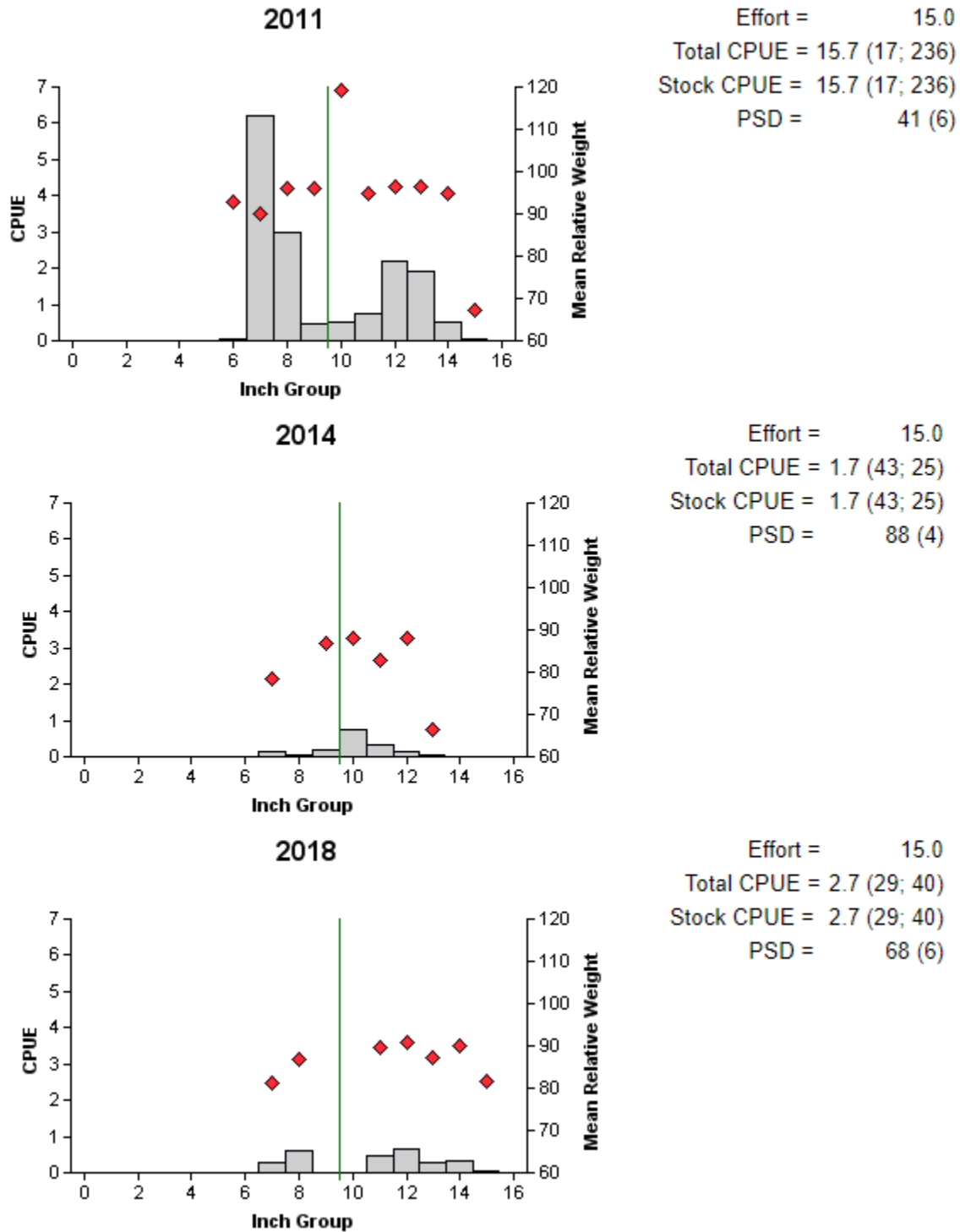


Figure 7. Number of White Bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Bridgeport Reservoir, Texas, 2011, 2014, and 2018. Vertical lines represent minimum length limit at time of collection.

## Palmetto Bass

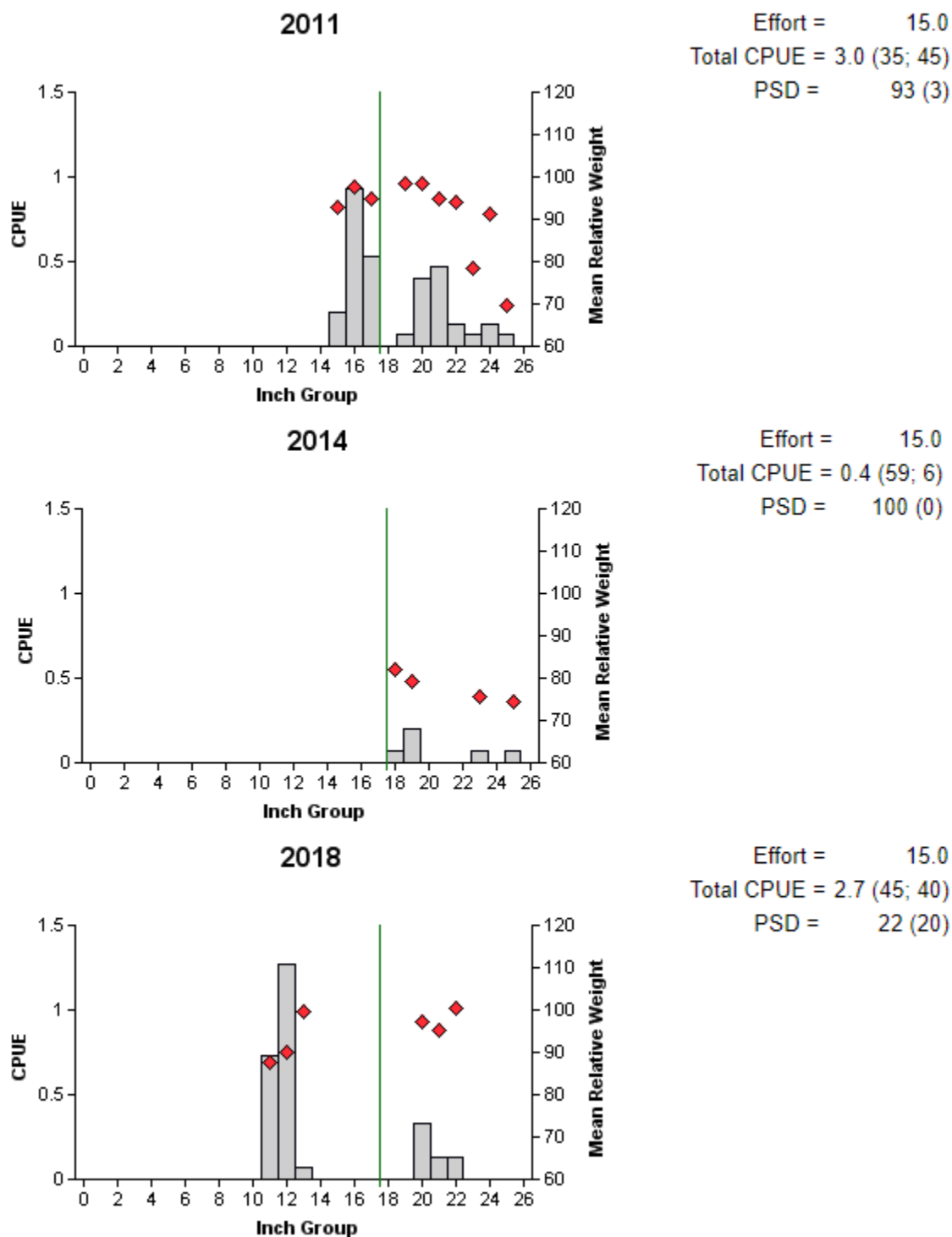


Figure 8. Number of Palmetto Bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Bridgeport Reservoir, Texas, 2011, 2014, and 2018. Vertical lines represent minimum length limit at time of collection.

## Spotted Bass

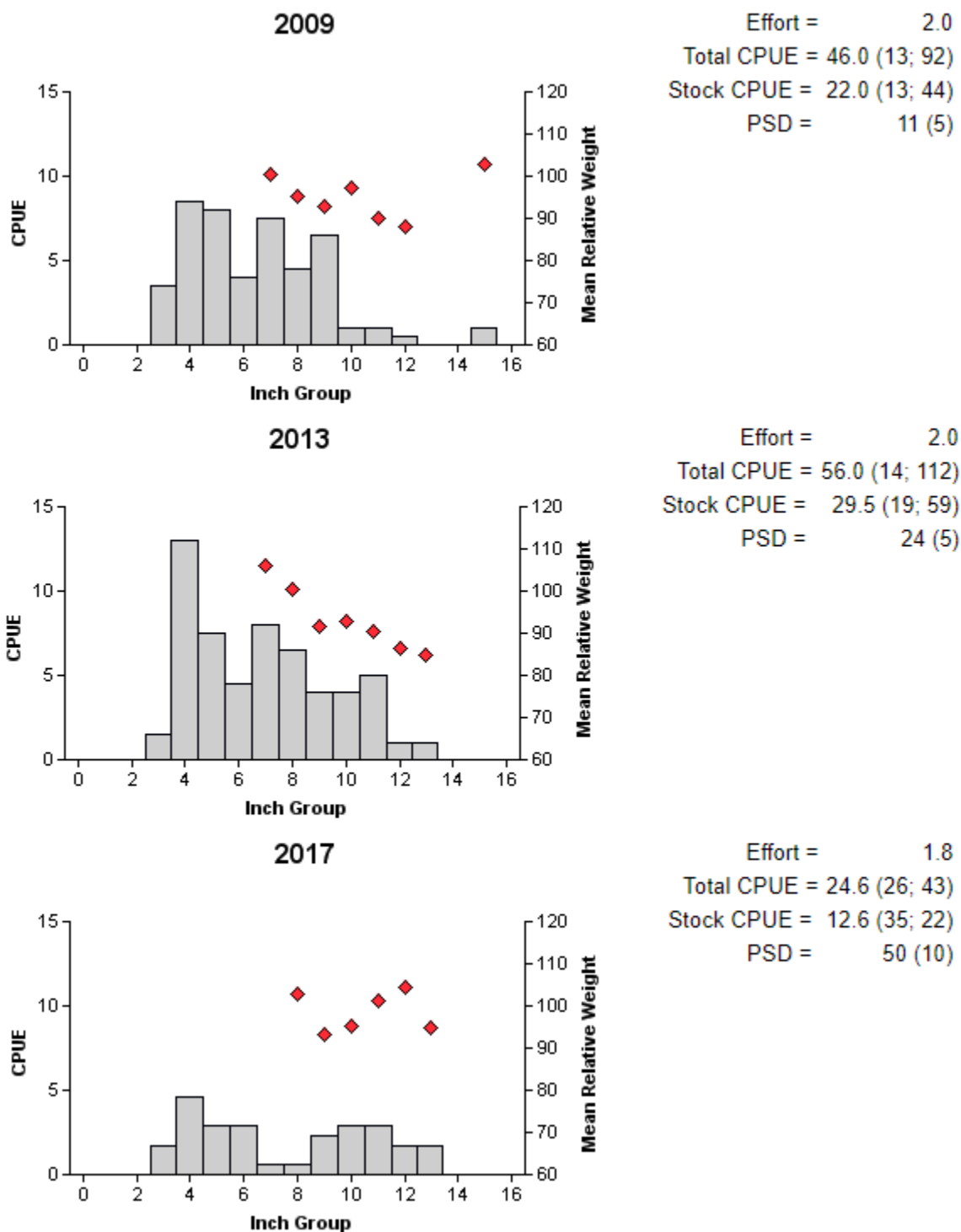


Figure 9. Number of Spotted Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Bridgeport Reservoir, Texas, 2009, 2013, and 2017.

## Largemouth Bass

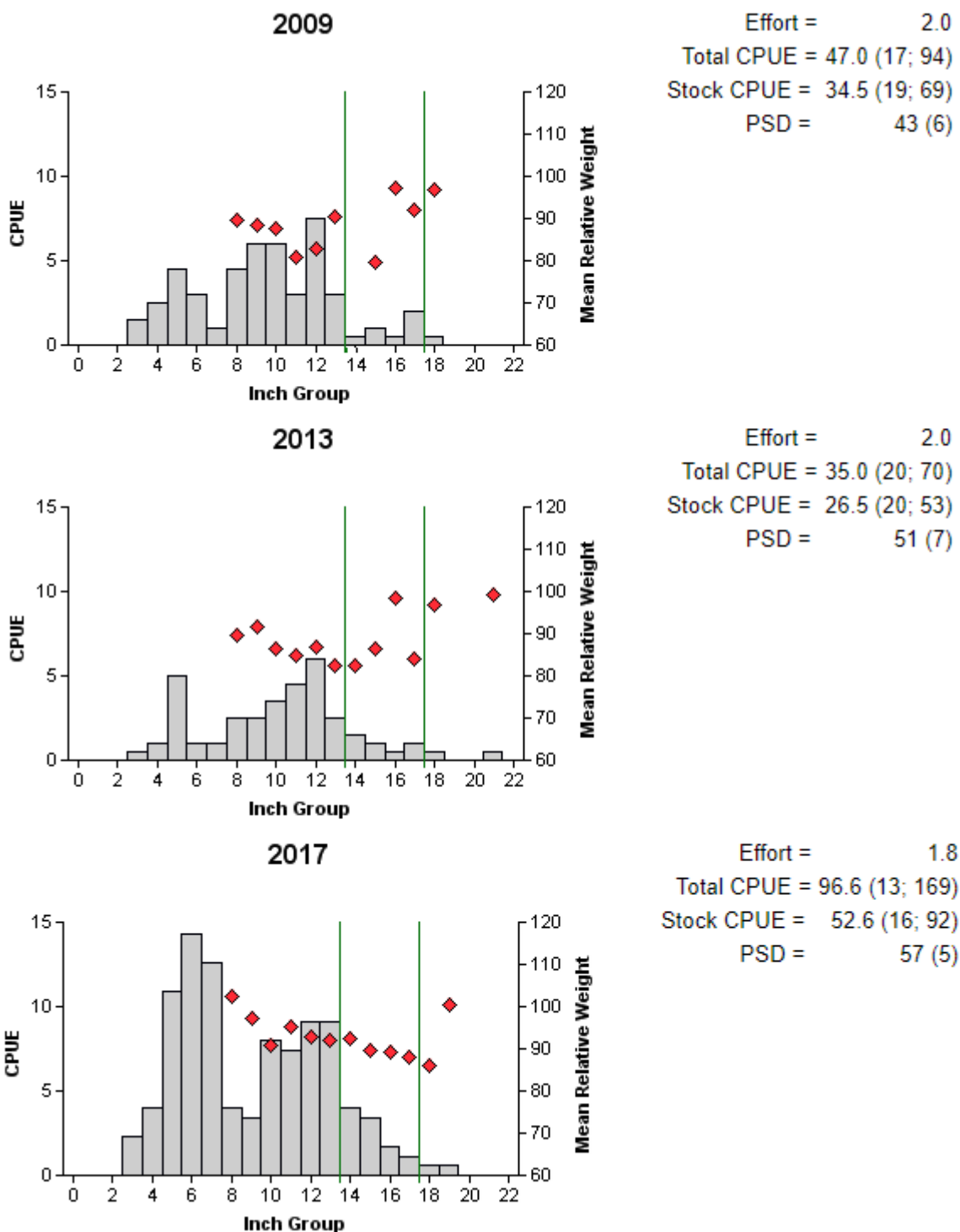
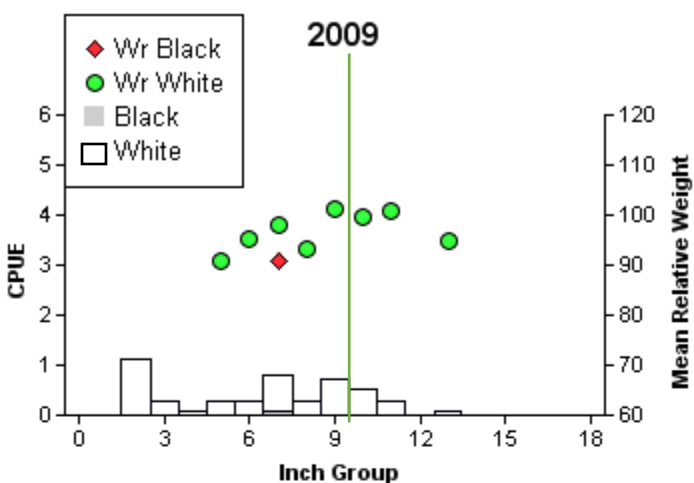


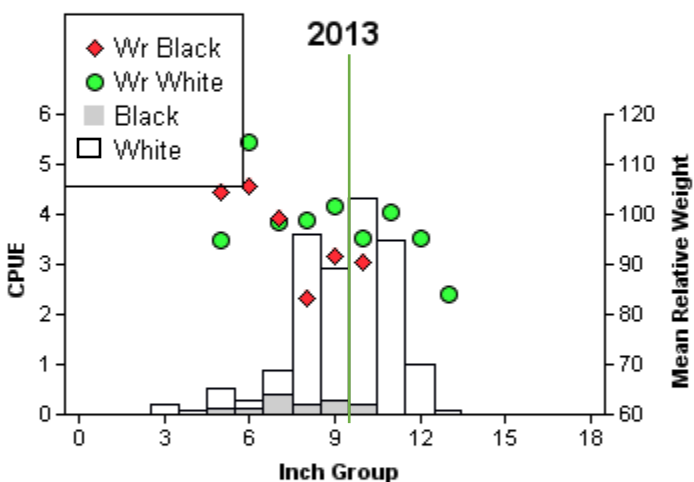
Figure 10. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Bridgeport Reservoir, Texas, 2009, 2013, and 2017. Vertical lines represent slot length limit at time of collection.



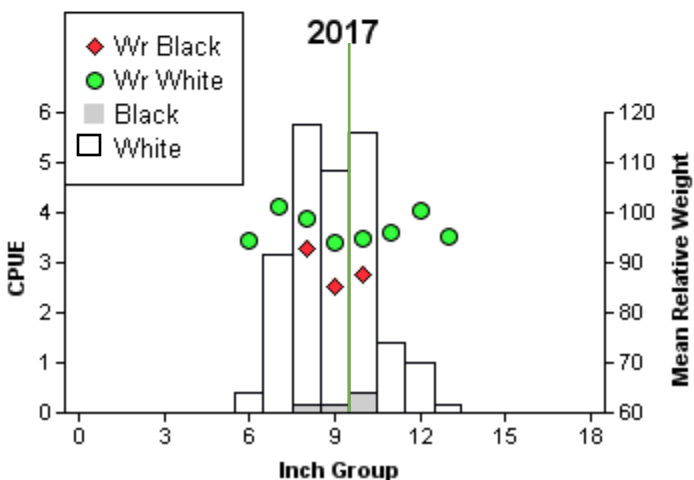
## Crappie



Effort = 15.0  
 Total CPUE = 4.7 (33; 70)  
 Stock CPUE = 3.2 (39; 48)  
 PSD = 58 (11)



Effort = 15.0  
 Total CPUE = 17.3 (35; 260)  
 Stock CPUE = 17.1 (36; 256)  
 PSD = 90 (4)



Effort = 12.0  
 Total CPUE = 22.3 (29; 268)  
 Stock CPUE = 22.3 (29; 268)  
 PSD = 84 (2)

Figure 11. Number of White Crappie and Black Crappie caught per net night (CPUE, bars), mean relative weight (circles and diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Bridgeport Reservoir, Texas, 2009, 2013, and 2017. Vertical lines represent minimum length limit at time of collection.

Table 8. Proposed sampling schedule for Bridgeport 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.

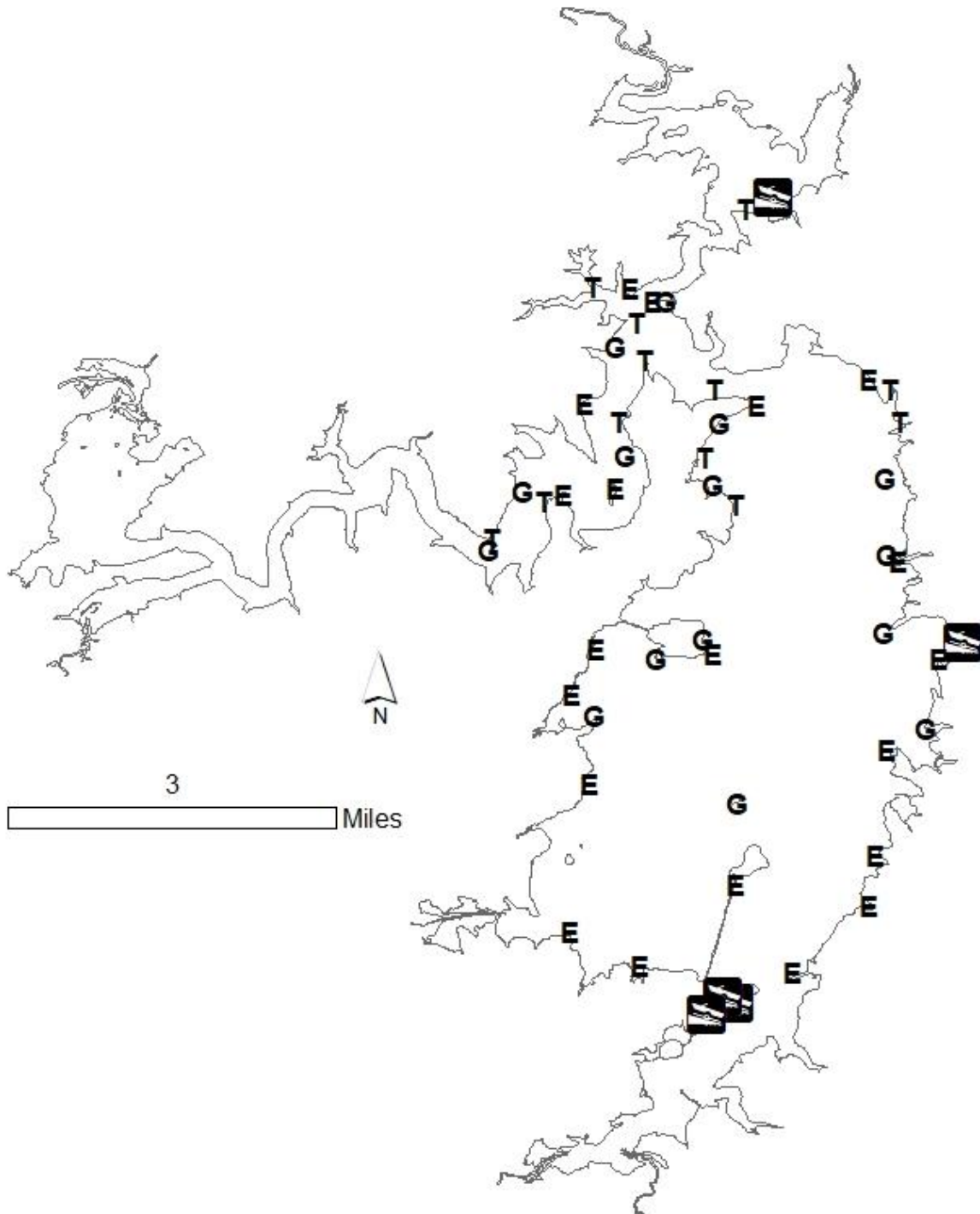
	Survey year			
	2018-2019	2019-2020	2020-2021	2021-2022
Angler Access				S
Vegetation				S
Electrofishing – Fall				S
Trap netting				S
Gill netting				S
Creel survey				S
Report				S

## Appendix A

Number (N), relative standard error (RSE) and catch rate (CPUE) of all target species collected from all gear types from Bridgeport Reservoir, Texas, 2017-2018. Sampling effort was 15 net nights for gill netting, 12 net nights for trap netting, and 1.8 hours for electrofishing.

Species	Gill Netting		Electrofishing		Trap Netting	
	N/RSE	CPUE	N/RSE	CPUE	N/RSE	CPUE
Gizzard Shad			105/19	60.0		
Threadfin Shad			310/61	177.1		
Blue Catfish	24/51	1.6				
Channel Catfish	135/15	9.0				
Flathead Catfish	1/100	0.1				
White Bass	40/29	2.7				
Palmetto Bass	40/45	2.7				
Green Sunfish			34/43	19.4		
Warmouth			9/59	5.1		
Orangespotted Sunfish			1/100	0.6		
Bluegill			268/16	153.1		
Longear Sunfish			273/23	156.0		
Redear Sunfish			25/45	14.3		
Spotted Bass			43/26	24.6		
Largemouth Bass			169/13	96.6		
White Crappie					259/29	21.6
Black Crappie					9/41	0.8

## Appendix B



*Location of electrofishing (E), trap netting (T), and gill netting (G) sites, Bridgeport Reservoir, Texas, 2017 and 2018. Boat ramps are also marked.*

## Appendix C

Historical catch rates of targeted species by gear type for Bridgeport Reservoir, Texas, 1995 - 2003.

Gear	Species	Year							
		1995	1996	1997	1998	1999	2001	2002	2003
Gill Netting (fish/net night)	Blue Catfish			0.0				0.0	
	Channel catfish			1.9				2.5	
	Flathead catfish			0.0				0.2	
	White Bass			4.3				2.7	
	Palmetto Bass			9.2				2.0	
Electrofishing (fish/hour)	Gizzard Shad			49.0			69.0		25.0
	Threadfin Shad			4.5			43.5		22.0
	Green Sunfish			37.0			23.0		
	Warmouth			5.5			2.0		
	Orangespotted Sunfish			0.0			0.0		
	Bluegill			42.0			109.0		
	Longear Sunfish			44.0			138.5		
	Redear Sunfish			10.5			10.5		
	Smallmouth Bass	0 <sup>a</sup>	1.0 <sup>a</sup>	2.0	6.5	6.0	1.0	0.0	1.1 <sup>b</sup> /1.0
	Spotted Bass	61.5 <sup>a</sup>	93.0 <sup>a</sup>	55.5	76.0	79.0	33.0	36.5	27.4 <sup>b</sup> /73.0
Largemouth Bass	72.0 <sup>a</sup>	63.5 <sup>a</sup>	63.0	119.5	107.5	89.0	40.5	44.0 <sup>b</sup> /56.0	
Trap Netting (fish/net night)	White Crappie			10.2			13.6		
	Black Crappie			0.0			0.0		

<sup>a</sup> Sampling stations were subjectively selected.

<sup>b</sup> Survey was conducted in spring.

### Appendix C (continued)

Historical catch rates of targeted species by gear type for Bridgeport Reservoir, Texas, 2004 - 2018.

Gear	Species	Year										Avg.
		2004	2005	2006	2008	2009	2011	2013	2014	2017	2018	
Gill Netting (fish/net night)	Blue Catfish	0.0		0.0	0 <sup>a</sup>		0.0		0.0		1.6	<b>1.6</b>
	Channel catfish	1.8		3.3	4 <sup>a</sup>		3.4		3.8		9.0	<b>3.7</b>
	Flathead catfish	0.1		0.3	0 <sup>a</sup>		0.2		0.1		0.1	<b>0.1</b>
	White Bass	4.3		2.1	15.3 <sup>a</sup>		15.7		1.7		2.7	<b>4.8</b>
	Palmetto Bass	1.5		0.9	19.6 <sup>a</sup>		3.0		0.4		2.7	<b>2.8</b>
Electrofishing (fish/hour)	Gizzard Shad		21.5	76.0	27.0	39.5		46.0		60.0		<b>45.9</b>
	Threadfin Shad		88.5	12.7	37.0	456.0		191.0		177.1		<b>114.7</b>
	Green Sunfish		61.0			53.5		35.5		19.4		<b>38.2</b>
	Warmouth		9.0			1.5		2.0		5.1		<b>4.2</b>
	Orangespotted Sunfish		0.0			2.0		1.5		0.6		<b>0.7</b>
	Bluegill		227.5			118.5		104.0		153.1		<b>125.7</b>
	Longear Sunfish		260.0			93.0		99.0		156.0		<b>131.8</b>
	Redear Sunfish		33.0			12.0		8.5		14.3		<b>14.8</b>
	Smallmouth Bass		1.0	1.3	3.0	4.0	4 <sup>b</sup>	3.0		0.0		<b>2.4</b>
	Spotted Bass		37.5	21.3	20.0	46.0		56.0		24.6		<b>46.5</b>
Trap Netting (fish/net night)	Largemouth Bass		92.0	18.7	77.5	47.0		35.0		96.6		<b>70.2</b>
	White Crappie		11.3 <sup>a</sup>			4.6		16.0		21.2		<b>13.1</b>
	Black Crappie		0.0 <sup>a</sup>			0.1		1.3		0.8		<b>0.4</b>

<sup>a</sup> Sampling stations were subjectively selected.

<sup>b</sup> Survey was conducted in spring.



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