

# Stillhouse Hollow 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 Stillhouse Hollow Reservoir were surveyed with one or more of the following gears annually since the last report: fall electrofishing and spring gill netting. Historical data are presented with the 2017-2018 data for comparison. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

**Reservoir Description:** Stillhouse Hollow Reservoir is a 6,430 acre reservoir located in Bell County, Texas. The impoundment was created in 1968 and is operated by the United States Army Corps of Engineers (USACE). Primary water uses include municipal water supply and recreation. Water levels returned to conservation pool (622msl) in late Spring, 2015. Habitat features mainly consisted of natural and rocky shorelines.

**Management History:** Sport fishes in Stillhouse Hollow Reservoir have always been managed with statewide regulations. Important sport fish include Largemouth and Smallmouth Bass. The management plan from the 2009 survey report included forming a partnership with the USACE to introduce native vegetation into the reservoir and post invasive species signage at access points throughout the reservoir. Low reservoir levels have prevented native vegetation plantings since the last report. However, Invasive species signage was posted at all access points during summer 2013 and zebra mussel outreach interns were hired in 2014 and 2015 to interface with boaters at Stillhouse Hollow ramps. Zebra mussels were discovered in Summer, 2016 and a reproducing population is now established in the reservoir.

### Fish Community

- **Prey species:** The forage base consisted primarily of Gizzard Shad, Bluegill and Redear Sunfish.
- **Channel Catfish:** Channel Catfish were collected in modest numbers. Most exceeded 18 inches and were in good condition.
- **Black basses:** Largemouth Bass catch rate was similar to previous years, with no fish larger than 18 inches collected. Smallmouth Bass are present in the reservoir but weren't collected in the most recent electrofishing survey.
- **White Bass:** White Bass were collected in low numbers in the 2018 gill netting survey and were generally in poor body condition.

**Management Strategies:** Continue managing Stillhouse Hollow Reservoir with existing regulations. Conduct general monitoring with electrofishing and gill netting in 2021 and 2022 respectively. Conduct aquatic vegetation and access surveys during summer 2021. Continue efforts to educate the public about invasive species and zebra mussel issues and protect the reservoir from zebra mussel introductions. Continue stocking Smallmouth Bass and seek opportunities to add additional habitat in the form of artificial structures.

## Introduction

This document is a summary of fisheries data collected from Stillhouse Hollow Reservoir in 2017-2018. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data is presented with the 2017-2018 data for comparison.

## Reservoir Description

Stillhouse Hollow Reservoir is a 6,430 acre reservoir located in Bell County, Texas. The impoundment was created in 1968 and is operated by the USACE. Primary water uses include flood control, municipal water supply and recreation. The reservoir has a shoreline length of 58 miles, a mean depth of 37 feet and a maximum depth of 107 feet. Water levels were 1 to 4 feet below conservation pool (622 msl) during 2017 and 2018 sampling. The reservoir is classified as oligotrophic based on chlorophyll a ( $1.6 \text{ mg/m}^3$ ) and total phosphorous ( $15.7 \text{ mg/m}^3$ ). Fish habitat at the time of sampling consisted mainly of rocky shorelines, flooded timber and stumps. Submerged native aquatic plants were sparse but Hydrilla was present in about half of the reservoir during this sampling period.

## Angler Access

Stillhouse Hollow Reservoir has four public boat ramps and no private boat ramps. Overall, boat and bank access to the reservoir are good, though availability of handicap facilities is limited. All boat ramps were usable as of the date of this report. See Table 2 for additional boat ramp characteristics. Shoreline access is limited to the public boat ramp and camping areas.

## Management History

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

1. Monitor the Smallmouth Bass in 2017 and request annual stocking.
 

**Action:** Smallmouth Bass were not collected in the Fall, 2017 electrofishing survey. Stockings were requested annually but the only time fish were available during the report period was in 2018.
2. Increase awareness of invasive species such as zebra mussels and hydrilla.
 

**Action:** Interns conducted zebra mussel awareness efforts during Summer 2014 and 2015. District staff conducted zebra mussel awareness efforts during one or more major holidays during Summer 2016 and 2017. Outreach via news releases and social media such as Facebook increased awareness of our "Clean. Drain. Dry" campaign.
3. Work with the USACE to plant native vegetation.
 

**Action:** This was not completed due to extreme water level changes from 2014-2016. In addition, the hydrilla also recovered as did the American pondweed. A project to add several fish reefs consisting of artificial habitat was planned and funded through the Brazos River Authority (BRA) for placement in Fall 2018.

**Harvest regulation history:** Sport fishes in Stillhouse Hollow Reservoir have always been managed with statewide regulations (Table 3).

**Stocking history:** Largemouth Bass were first introduced to Stillhouse Hollow in 1968. Walleye and Palmetto Bass fisheries were attempted during the 70s and early 80s; however, those efforts were discontinued. Florida Largemouth Bass were stocked in 1993 and 1994. Smallmouth Bass were introduced in 1974 and stocked through 1977. The program was revitalized in 1992, and Smallmouth Bass were stocked through 2000. The loss of hatchery brood fish curtailed stockings from 2001 through 2008, though stocking requests were maintained. Nearly 80,000 fingerling Smallmouth Bass were stocked in 2009, 23,242 were stocked in 2011, and 53,330 were stocked in 2018 (Table 4).

**Vegetation/habitat management history:** No vegetation/habitat management actions have been completed on Stillhouse Hollow Reservoir, even after the discovery of hydrilla in 1995. Hydrilla has been monitored annually since its discovery. Hydrilla coverage was high in 2006 (19%; 1,216 acres). Only trace amounts of hydrilla were observed in 2009 and 2010, although the 2009 report incorrectly listed coverage at 3%. In 2011, coverage topped 24% (1,549 acres) due to rapidly decreasing water levels during the growing season. High water in 2012 reduced coverage back to trace amounts. Hydrilla coverage and structural habitat were measured in 2013 using side scan sonar, but those data were unable to be processed. Since hydrilla has never posed a threat to access and control efforts are unlikely, Stillhouse Hollow was classified a Tier III infestation, requiring hydrilla to be monitored only every 4 years. In 2017, 59% of sampled transects from shoreline points contained hydrilla.

**Water transfer:** Stillhouse Hollow Reservoir's primary purpose is flood control; other important functions are municipal water supply and recreation. There are currently three permanent pumping stations on the reservoir. The first is operated by the Brazos River Authority (BRA) and transfers untreated water to Lake Georgetown to be used for municipal water supply. The other two are operated by the town of Kempner and Central Texas Water Supply, both of which pull water from the lake, treat it, and deliver it for use as municipal water. There is a proposal to install a pumping station on Belton Reservoir, and pump untreated water directly to Stillhouse Hollow, thereby increasing the water transfer capabilities of Stillhouse Hollow. Currently, a fourth pumping station is being considered that would provide municipal water from Stillhouse Hollow to the City of Killeen. A reproducing zebra mussel population was documented on July 25, 2016 by Waco district staff. The population is expanding and the reservoir is considered infested. The presence of zebra mussels in Stillhouse Hollow and Belton Reservoirs will certainly play a role in future water transfer projects.

## Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Stillhouse Hollow Reservoir (Tibbs and Baird 2014). Primary components of the OBS plan are listed in Table 5. All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2015).

**Electrofishing** – Largemouth Bass, Smallmouth Bass, sunfishes, and Gizzard Shad were collected by night-time electrofishing (1.1 hour at 13, 5-min stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

**Gill netting** – Channel Catfish and White Bass were collected by gill netting (15 net nights at 5 stations). CPUE for gill netting was recorded as the number of fish caught per net night (fish/nn).

**Statistics** – Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. (2007)], and condition indices [relative weight ( $Wr$ )] 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 ( $RSE = 100 \times SE$  of the estimate/estimate) was calculated for all CPUE and creel statistics.

**Habitat** – A structural habitat survey was conducted in 2010. Vegetation surveys were conducted using an adaptation of the point method in 2017 (TPWD, Inland Fisheries Division, unpublished manual revised 2015). Sixty-three points were randomly generated on the shoreline. A transect was made from each point out to deep water, and all encountered vegetation on that transect was recorded.

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

## Results and Discussion

**Habitat:** Littoral zone structural habitat consisted primarily of natural and rocky shoreline (Table 6). Non-native vegetation species consisted of Hydrilla, which was found in 59% of transects, and Giant Cane, which was found in 11% of transects. Buttonbush was found in 33% of transects and American Pondweed was found in 8% of transects (Table 7). Hydrilla is the primary fisheries habitat in the reservoir and currently is causing no access issues.

**Prey species:** The electrofishing catch rate of Gizzard Shad was 28.6/h with an IOV of 0 (Figure 2), similar to the sample in 2013. The catch rate of Bluegill was 98.8/h, similar to the previous two surveys (Figure 3). There is not an abundance of forage in the reservoir.

**Channel Catfish:** The gill net catch rate of Channel Catfish was 2.3/nn in 2018 (Figure 4) like the 2014 survey. Our sampling precision goal was met, but the target number of stock length fish was not. All fish exceeded 15 inches in length, body condition was adequate, and generally improved with length.

**White Bass:** The gill netting catch rate for White Bass in 2018 was 1.1/nn, much reduced from 2014 (8.4/nn) and like the 2010 survey (1.3/nn) (Figure 5). Condition was poor and decreased with length.

**Black Bass:** Smallmouth Bass were not represented in the 2017 electrofishing survey (Figure 6). Electrofishing catch rates have always been low, although anecdotal evidence indicates anglers do catch them consistently. The last three surveys documented natural reproduction and recruitment. No Smallmouth Bass were stocked from 2012-2017 due to insufficient hatchery production.

The electrofishing catch rate of stock-length Largemouth Bass was 49.8/h in 2017, midway between 2009 (68.7/h) and 2013 (34.0/h) (Figure 7). No Largemouth Bass larger than 18 inches were observed in the 2017 survey. Condition was good across all sizes except for a single anomalous 17-inch fish that may have been a measurement error. The OBS goals of  $RSE < 25$  and  $N \geq 50$  stock-sized fish were met.

# Fisheries Management Plan for Stillhouse Hollow Reservoir, Texas

Prepared – July 2018

**ISSUE 1:** Smallmouth Bass catch declined from already low catch rates in 2013, likely due to a lack of stocking. Natural reproduction has been documented in the last three surveys, but appears insufficient to maintain a quality fishery.

## MANAGEMENT STRATEGY

1. Request Smallmouth Bass stockings annually at 25 fish/acre.

**ISSUE 2:** Although Hydrilla does provide good fisheries habitat when present, historically the abundance of this exotic plant has varied widely. High water levels have negatively impacted Hydrilla survival many times in the past. Alternative habitats need to be explored.

## MANAGEMENT STRATEGIES

1. Work with the Brazos River Authority (BRA) to use dedicated habitat funding to install several artificial fish reefs in the upper half of the reservoir.

**ISSUE 3:** Florida Largemouth Bass have not been stocked since 1994. The most recent genetic testing in 2013 showed Florida introgression at 71%, but only 3.7% of collected bass were of pure Florida genotype. Documented increases in aquatic habitat availability within the reservoir, coupled with several entries of 10 lb + Largemouth Bass into the 2018 Sharelunker program suggest that additional stocking of Florida Largemouth Bass might benefit the reservoir.

## MANAGEMENT STRATEGIES

1. Stock Florida Largemouth Bass in 2019 and 2021.
2. Collect Largemouth Bass genetics from Age 0 fish in Fall, 2021 to document impact of 2021 stocking.

**ISSUE 4:** Recent collections of Guadalupe Bass and Guadalupe/Spotted Bass hybrids by the Habitat Branch has raised the possibility that some might be present in Stillhouse Hollow Reservoir.

## MANAGEMENT STRATEGIES

1. Collect genetics from up to 30 Spotted Bass in Fall, 2021 to determine if any Guadalupe genetics are present in the reservoir.

**ISSUE 5:** A reproducing zebra mussel mussels (*Dreissena polymorpha*) population was documented on July 25, 2016 by Waco district staff. The population is expanding and the reservoir is considered infested. Many other invasive species threaten aquatic habitats

and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. 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 USACE to maintain appropriate signage at access points around the reservoir.
2. Continue educating marina owners about zebra mussels and other 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 using media and the internet.
4. Make a speaking point about zebra mussels and other 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)

Important sport and forage fishes: Abundant and/or important sport fishes in Stillhouse Hollow Reservoir include Largemouth Bass, Smallmouth Bass, Channel Catfish, and White Bass. Important forage fishes include Bluegill and Gizzard Shad.

Sport fishes with low-density populations: Flathead Catfish, Blue Catfish, Spotted Bass and crappie spp. typically occur in low abundance in Stillhouse Hollow Reservoir and are generally caught incidentally to targeted species. We will continue collecting and reporting data for these species, and upgrade their status if appropriate.

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

**Fall Electrofishing:** This survey will be used to evaluate Largemouth Bass, Smallmouth Bass and primary forage species (Bluegill and Gizzard Shad). Largemouth Bass are the predominant black bass and sport fish in the reservoir, and their popularity justifies sampling time and effort. The average historical catch rate of Largemouth Bass is 82 fish/h, and the three most recent standard night-time surveys have produced good catches with good precision estimates. A 2005 comparison between daytime and nighttime electrofishing, found that Stillhouse Hollow catch rates were adversely affected by a switch to daytime sampling (Tibbs and Baird, unpublished). Therefore, a minimum of 12 random five-minute night-time electrofishing stations will be sampled in fall 2021. The goals of the Largemouth Bass survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Largemouth Bass population and make comparisons with historical and future data. Catch per unit effort target precision will be an RSE < 25. Target sample size will be an  $N \geq 50$  stock-sized fish to determine population size structure, allowing us to calculate proportional size distribution with 80% confidence. If sampling objectives aren't achieved with the initial 12 stations and if catch rates indicate collecting our size structure target is reasonable, sampling will continue at random stations until that target is reached. Genetics of the Largemouth Bass population will also be assessed.

Despite documented popularity from fishing websites and discussions with anglers, Smallmouth Bass electrofishing catch rates are typically low for this reservoir. Because of this, we will sample Smallmouth Bass but no catch per unit effort target precision, target sample sizes or relative weights will be assigned. The goal of the electrofishing survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Smallmouth Bass population and make comparisons with historical and future data.

Recent data indicates that Guadalupe Bass may occur in the Lampasas Basin. We will collect genetic samples from up to 30 Spotted Bass in Fall 2021 to evaluate presence/absence/hybridization.

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

**Spring Gill Netting:** The gill net survey will be used to evaluate Channel Catfish and White Bass. Channel Catfish are the predominant catfish species in the reservoir. The 2018 survey increased the number of samples from 10 to 15 and although the goal of RSE < 25 was met, the goal of  $N \geq 50$  stock-size fish was not. Therefore, we will sample overnight with 10 random gill netting stations in Spring 2022. The goal of the gill netting survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Channel Catfish population and make comparisons with historical and future data. No catch per unit effort target precision, target sample sizes or relative weights will be assigned.

White Bass will also be sampled in Spring, 2022 with the same goals as Channel Catfish and no precision or target sample sizes assigned.

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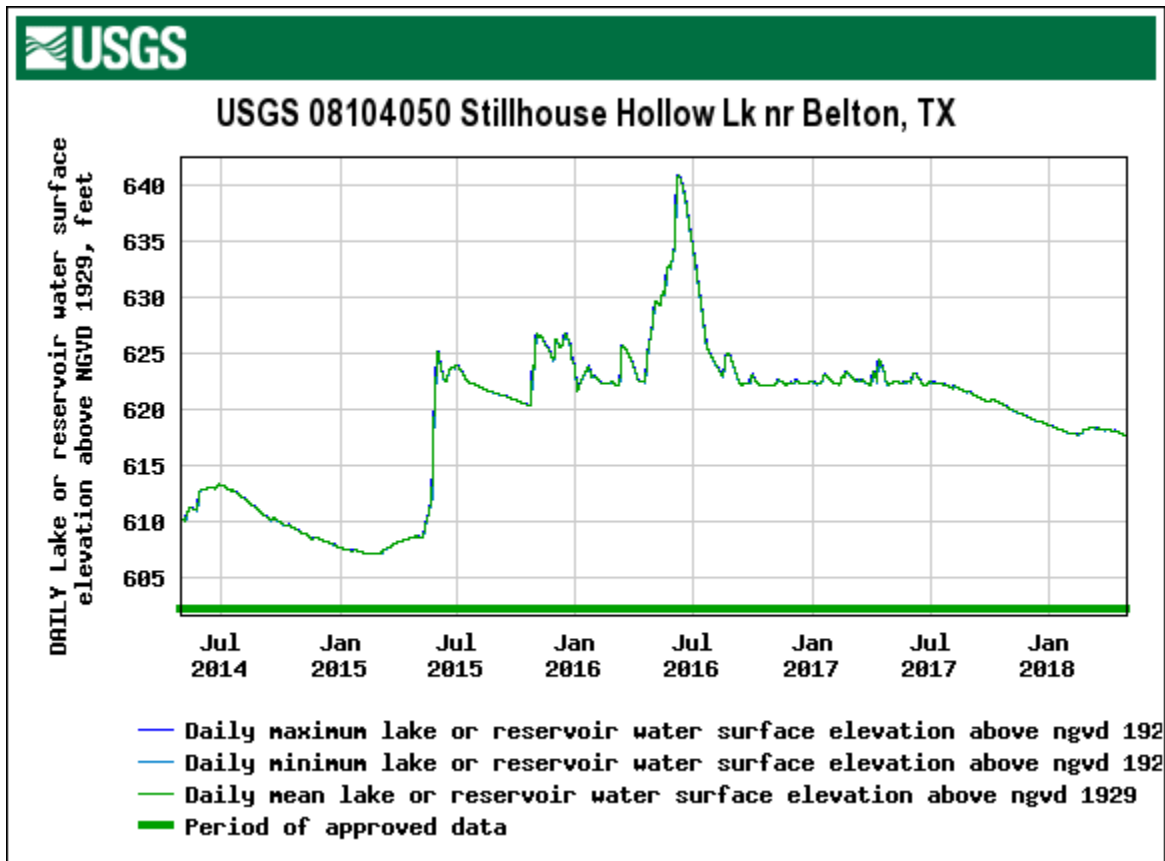


Figure 1. Daily mean water levels for Stillhouse Hollow Reservoir, from May 1, 2014 through May 1, 2018. Conservation pool level (622 feet above mean sea level).

Table 1. Characteristics of Stillhouse Hollow Reservoir, Texas.

Characteristic	Description
Year constructed	1968
Controlling authority	United States Army Corps of Engineers
County	Bell
Reservoir type	Mainstem
Shoreline Development Index (SDI)	5.2
Conductivity	490 $\mu$ S /cm

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

Boat ramp	Latitude; Longitude	Public?	Parking capacity	Condition
Stillhouse Park	31.038344 °N -97.533717 °W	Y	43 trailers, 56 vehicles	4 lanes; Good
Dana Peak	31.029200 °N -97.599019 °W	Y	37 trailers	4 lanes; Good
Cedar Gap	31.01445 °N -97.650369 °W	Y	54 trailers, 15 vehicles	1 lane; Good
Union Grove	31.007217 °N -97.608453 °W	Y	18 trailers, 19 vehicles	4 lanes; Good

Table 3. Harvest regulations for Stillhouse Hollow Reservoir, Texas 2017.

Species	Bag Limit	Length limit (inches)
Catfish: Channel and Blue	25 (any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass: Largemouth and Smallmouth	5 <sup>a</sup>	14-inch minimum
Bass, Spotted	5 <sup>a</sup>	No minimum
Crappie: White and Black	25 (any combination)	10-inch minimum

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

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

<b>Species</b>	<b>Year</b>	<b>Number</b>	<b>Life Stage</b>	<b>Mean TL (in)</b>
Channel Catfish	1968	<u>322,800</u>	AFGL	7.9
	Total	322,800		
Flathead Catfish	1968	<u>2,000</u>		UNK
	Total	2,000		
Florida Largemouth Bass	1993	322,026	FGL	1.2
	1994	<u>321,167</u>	FGL	1.2
	Total	643,193		
Largemouth Bass	1968	<u>735,000</u>	FRY	0.7
	Total	735,000		
Palmetto Bass (striped X White Bass hybrid)	1978	39,225	UNK	UNK
	1982	<u>54,527</u>	UNK	UNK
	Total	<u>93,752</u>		
Smallmouth Bass	1974	129,000	UNK	UNK
	1975	65,000	UNK	UNK
	1976	125,000	UNK	UNK
	1977	100,000	UNK	UNK
	1986	471	ADL	10.7
	1992	58	ADL	10.7
	1992	35,249	FGL	1.3
	1993	141,055	FGL	1.3
	1994	161,043	FGL	1.2
	1997	160,766	FGL	1.0
	1999	97,048	FGL	1.4
	2000	159,026	FGL	1.5
	2009	10,175	AFGL	5.5
	2009	69,866	FGL	1.4
	2011	23,242	FGL	1.9
	2018	<u>53,330</u>	FGL	1.8
	Total	1,330,329		

<b>Species</b>	<b>Year</b>	<b>Number</b>	<b>Life Stage</b>	<b>Mean TL (in)</b>
Walleye	1974	150,000	FRY	0.2
	1975	126,240	FRY	0.2
	1976	100,000	FRY	0.2
Total		376,240		

Table 5. Objective-based sampling plan components for Stillhouse Hollow 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
	Condition	$W_r$	10 fish/inch group (max)
Smallmouth Bass	Abundance	CPUE–Stock	None
	Size structure	PSD, length frequency	None
	Condition	$W_r$	None
Bluegill <sup>a</sup>	Abundance	CPUE–Total	None
	Size structure	PSD, length frequency	None
Longear Sunfish <sup>a</sup>	Abundance	CPUE–Total	None
	Size structure	PSD, length frequency	None
<i>Gill netting</i>			
Channel Catfish	Abundance	CPUE–stock	RSE-Stock $\leq 25$
	Size structure	Length frequency	$N \geq 50$ stock
	Condition	$W_r$	10 fish/inch group (max)

<sup>a</sup> No additional effort will be expended to achieve an RSE  $\leq 25$  for CPUE of Bluegill and Longear Sunfish 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, Stillhouse Hollow Reservoir, Texas, 2010. Shoreline habitat type units are in miles.

Habitat type	Estimate	% of total
Bulk heading	0.1	0.2
Boat docks/piers	trace	0.0
Natural	30.0	47.8
Rock bluff	1.8	2.9
Rocky shoreline (rocks > 4 inches)	24.3	38.7
Gravel shoreline (rocks < 4 inches)	6.5	10.4

Table 7. Survey of aquatic vegetation, Stillhouse Hollow Reservoir, Texas, 2010 – 2017. Surface area (acres) is listed with percent of total reservoir surface area in parentheses. The values in 2017 represent the percentage of 63 randomly selected points with vegetation present during a habitat and access survey on September 7, 2017.

Vegetation	2010	2011	2012	2017
Hydrilla (Non-native)	trace	1549 (24.1)	trace	59% (37 of 63)
giant reed (Non-native)				11% (7 of 63)
buttonbush				33% (21 of 63)
pondweed				8% (5 of 63)

### Gizzard Shad

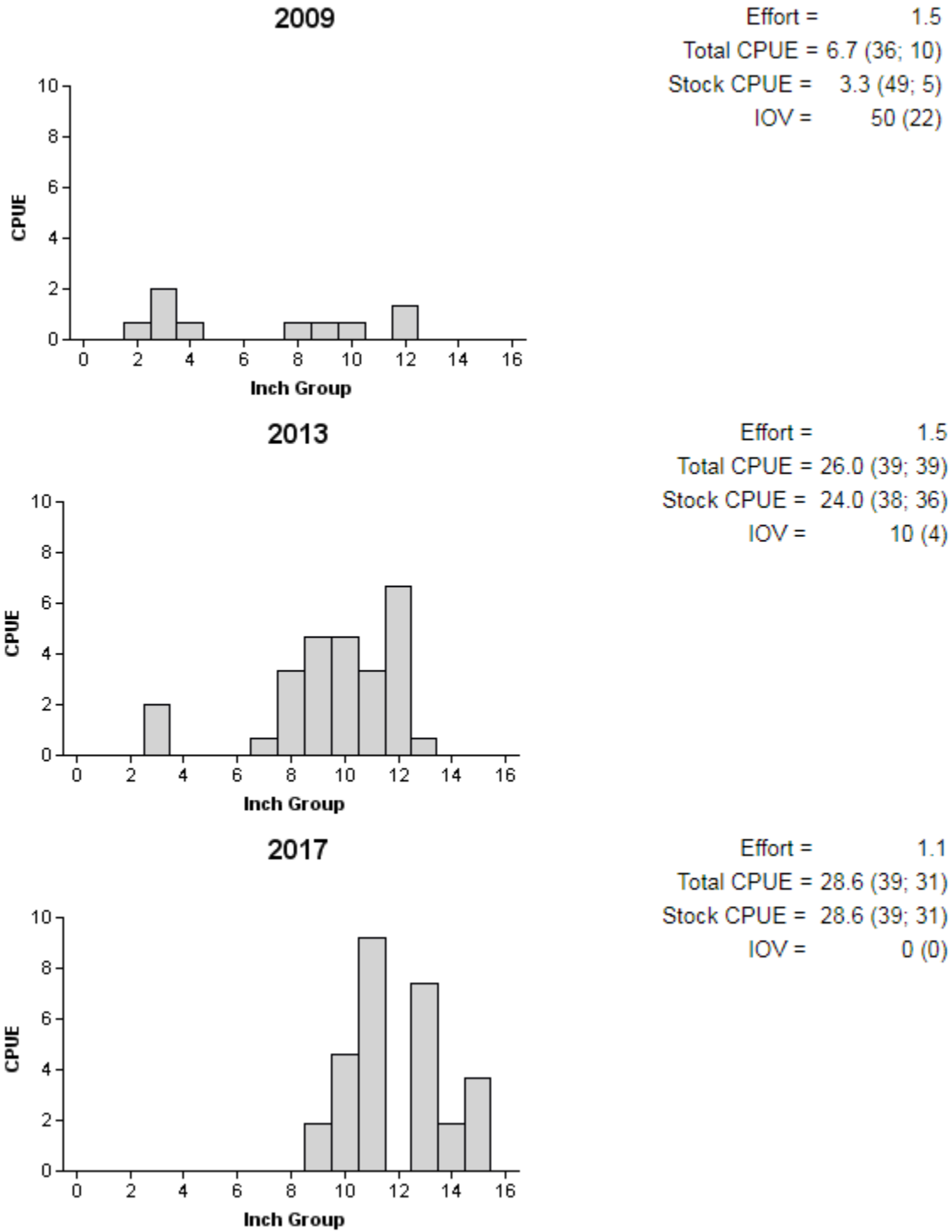


Figure 2. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Stillhouse Hollow Reservoir, Texas, 2009, 2013, and 2017.



## Bluegill

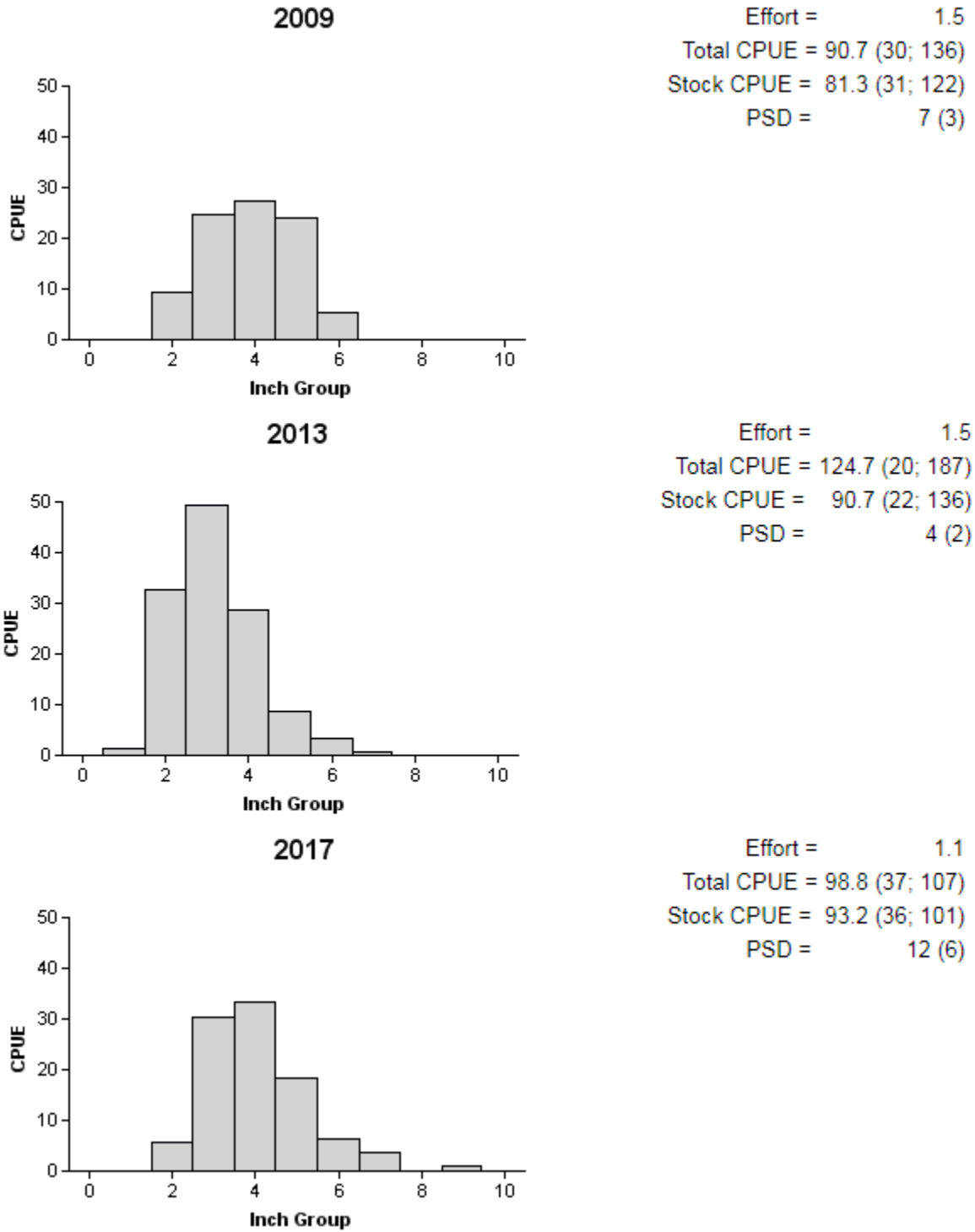


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Stillhouse Hollow Reservoir, Texas, 2009, 2013, and 2017.

## Channel Catfish

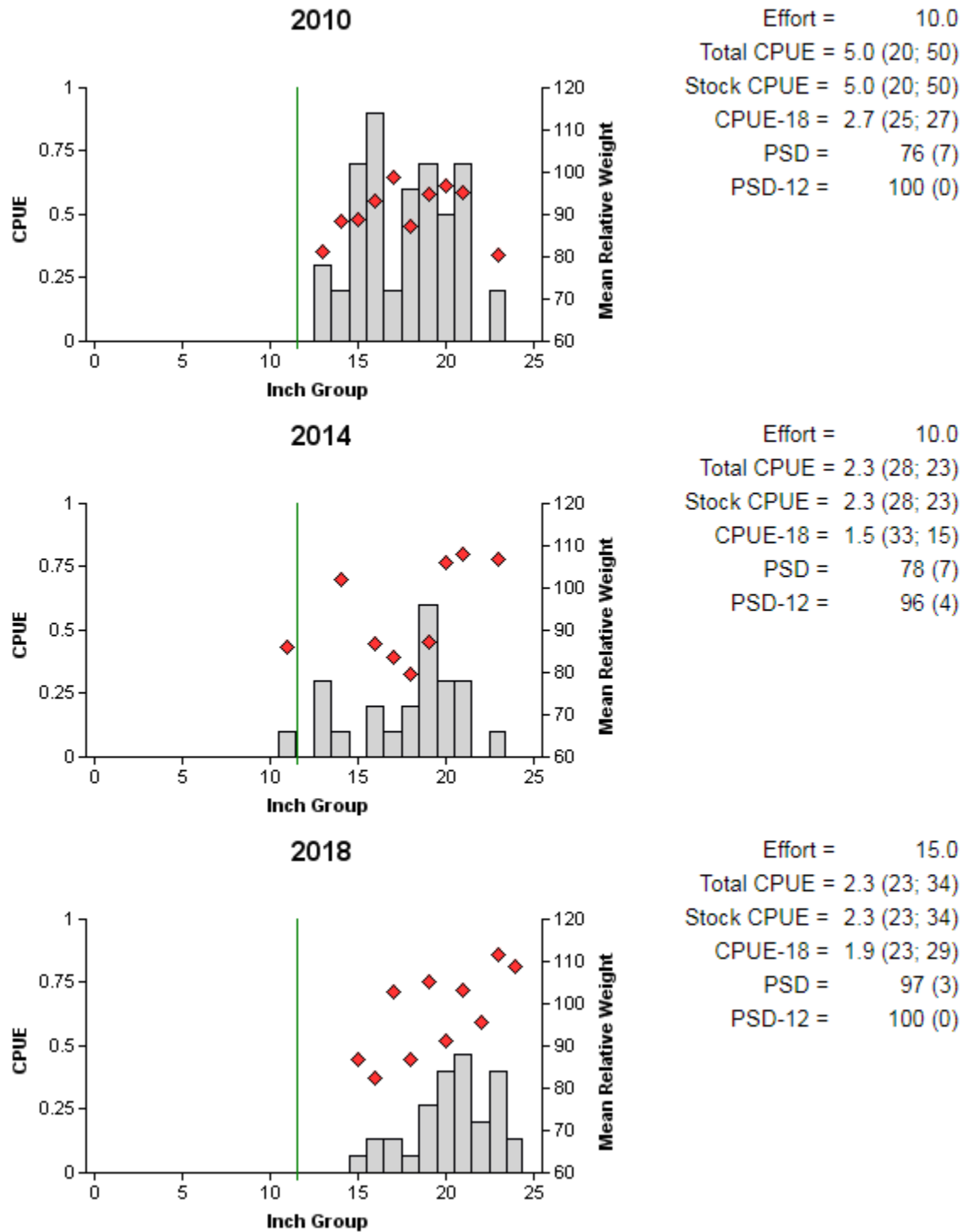


Figure 4. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Stillhouse Hollow Reservoir, Texas, 2010, 2014, and 2018.

White Bass

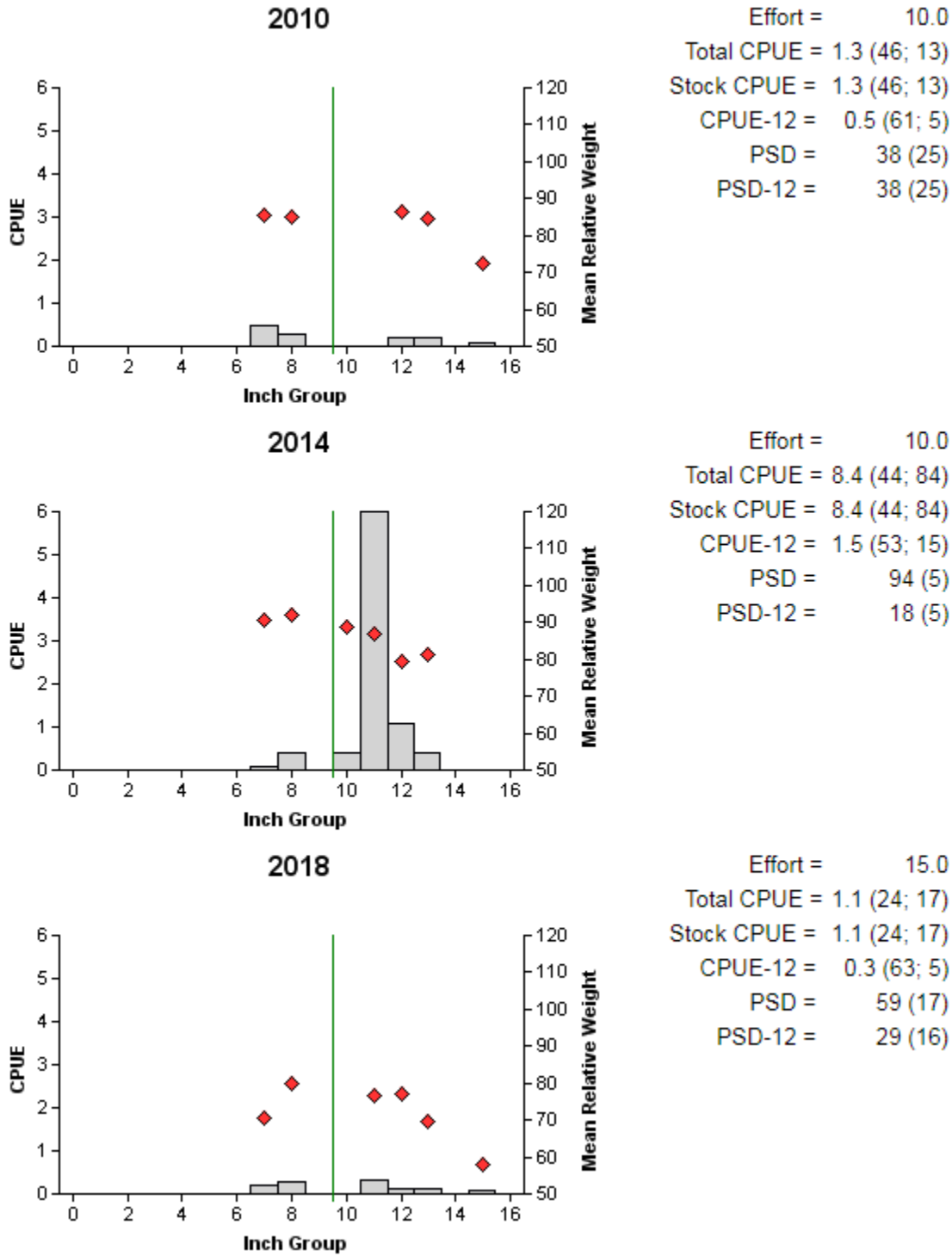


Figure 5. Number of White Bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Stillhouse Hollow Reservoir, Texas, 2010, 2014, and 2018.

## Smallmouth Bass

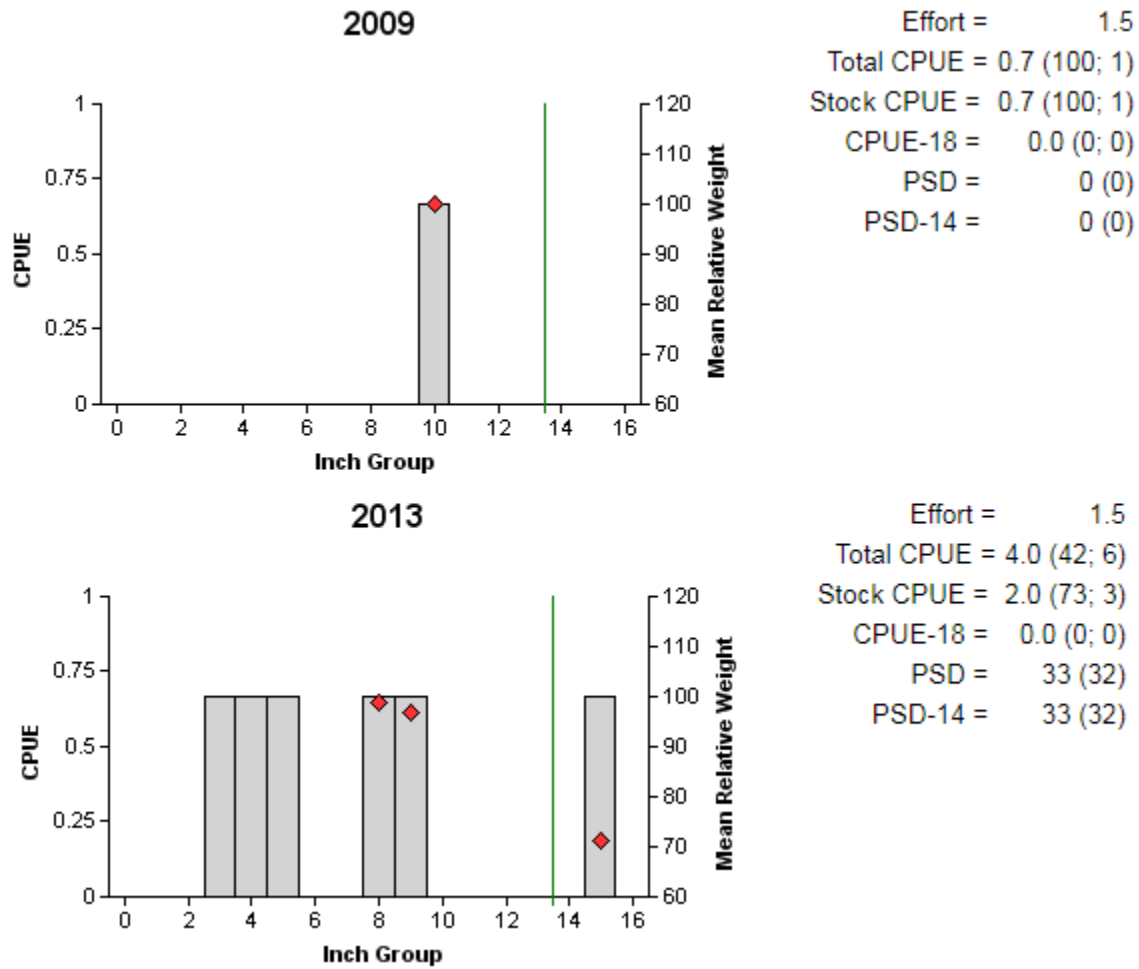


Figure 6. Number of Smallmouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Stillhouse Hollow Reservoir, Texas, 2009 and 2013. None were collected in 2017.

## Largemouth Bass

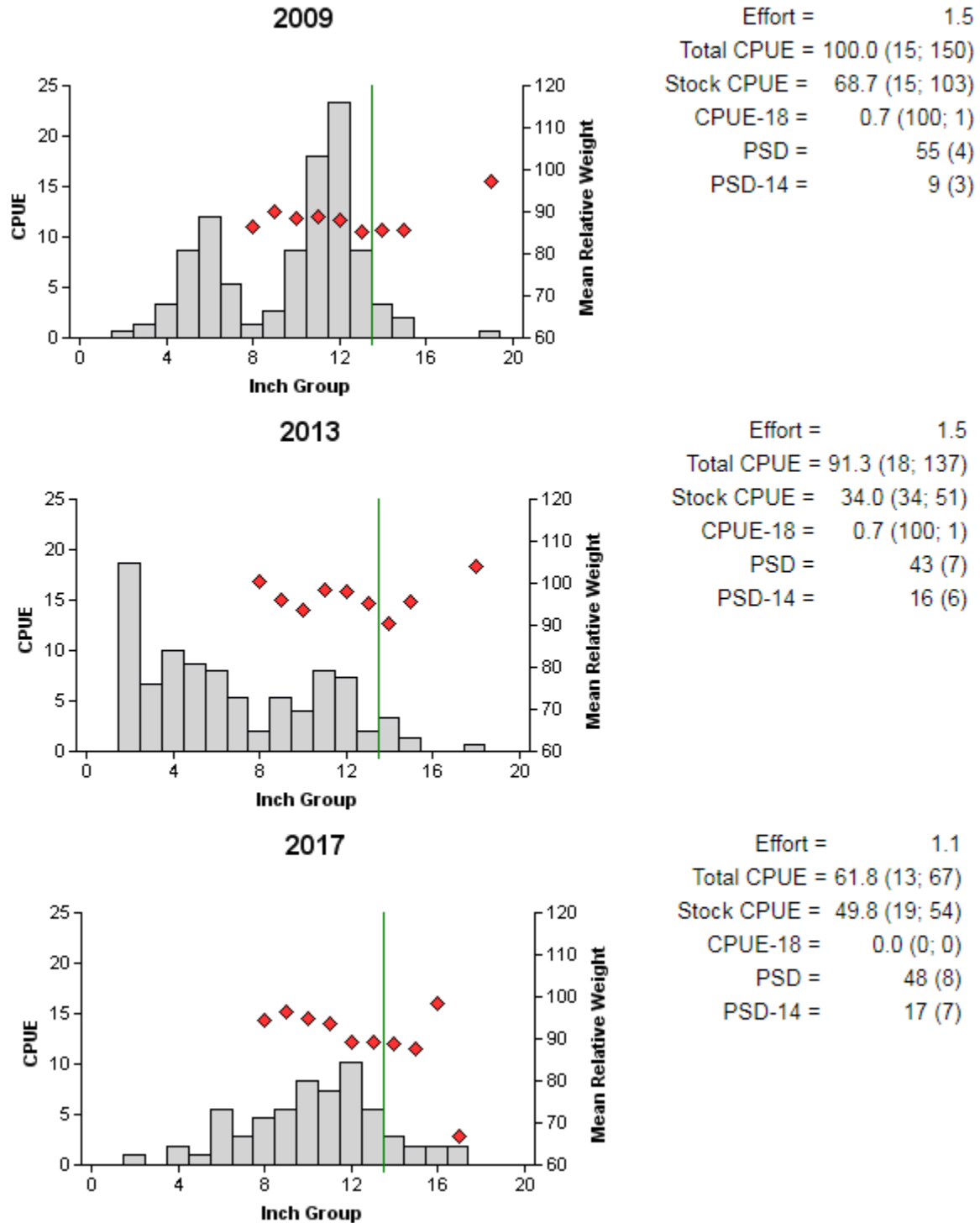


Figure 7. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Stillhouse Hollow Reservoir, Texas, 2009, 2013, and 2017.

## Proposed Sampling Schedule

Table 8. Proposed sampling schedule for Stillhouse Hollow 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.

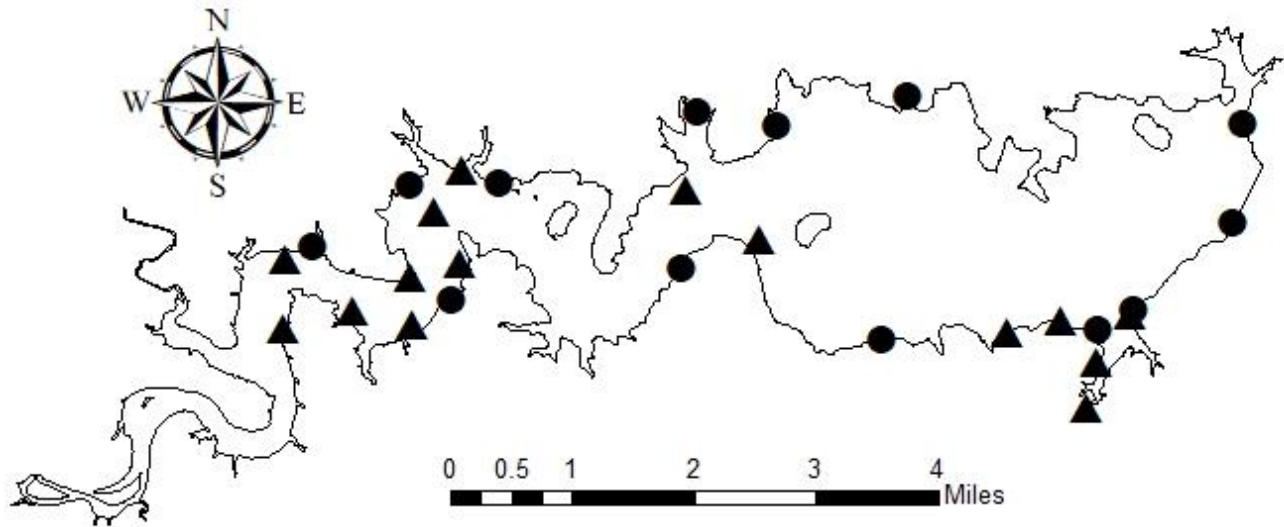
	Survey year			
	2018-2019	2019-2020	2020-2021	2021-2022
Angler access				S
Structural habitat				
Vegetation				S
Electrofishing – Fall				S
Gill netting				S
Report				S

## APPENDIX A – Catch rates for all species from all gear types

Number (N) and catch rate (CPUE) (RSE in parentheses) of all target species collected from all gear types from Stillhouse Hollow Reservoir, Texas, 2017-2018. Sampling effort was 15 net nights for gill netting, and 1.1 hours for electrofishing.

Species	Gill Netting		Electrofishing	
	N	CPUE	N	CPUE
Gizzard Shad			31	28.6 (39)
Channel Catfish	34	2.3 (23)		
Flathead Catfish	3	0.2 (72)		
White Bass	17	1.1 (24)		
Green Sunfish			8	7.4 (51)
Bluegill Sunfish			107	98.8 (37)
Longear Sunfish			5	4.6 (63)
Redear Sunfish			16	14.8 (28)
Spotted Bass			2	1.8 (100)
Largemouth Bass			67	61.8 (13)

## APPENDIX B – Map of sampling locations



Location of sampling sites, Stillhouse Hollow Reservoir, Texas, 2013-2018. Gill net and electrofishing stations are indicated by triangles and circles, respectively. Water level was near full pool at time of sampling.





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