

Stillhouse Hollow Reservoir

2021 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-4

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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Survey and Management Summary

Fish populations in Stillhouse Hollow Reservoir were surveyed with fall electrofishing in 2021; scheduled spring gill netting was not conducted in 2022 due to widespread coverage of Hydrilla. Historical data are presented with the 2021 data for comparison. This report summarizes the results of that survey 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 flood control, municipal water supply and recreation. The reservoir is classified as oligotrophic and has a maximum depth of 107 feet. Water level was less than one foot below conservation pool (622 feet msl) during 2021 vegetation and electrofishing surveys. Fish habitat at the time of sampling consisted mainly of rock and limestone bluff shorelines, flooded timber and dead trees and stumps. Some native aquatic plants were present in low abundance and Hydrilla coverage was significant.

Management History: Important sport fishes include Largemouth and Smallmouth Bass, Channel Catfish and White Bass. Sport fishes in Stillhouse Hollow Reservoir have always been managed with statewide regulations. Management plans from 2013/2014 included posting aquatic invasive species (AIS) signage at access points and partnering with the USACE to introduce native vegetation into the reservoir. Aquatic 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. Low water from 2014 to 2016 prevented native vegetation plantings from happening and the strategy was then discarded. More recently, management efforts have focused on maintaining AIS signage at access points, providing technical support and informational materials for the “Clean, Drain and Dry” campaign and making a speaking point about AIS during conversations and presentations with constituents. Additional recent efforts include using Brazos River Authority (BRA) funding to build and deploy fish attracting structures in the upper half of the reservoir, stocking and monitoring genetics of Largemouth Bass and collecting genetics of Spotted Bass to determine if any Guadalupe genetics are found in the reservoir. Management efforts from 2021-2022 include aquatic vegetation, boater access and electrofishing surveys.

Fish Community

- **Prey species:** Threadfin Shad were present in the reservoir. Electrofishing catch of Gizzard Shad was higher than the previous two surveys, and most were available as prey to sport fish. Electrofishing catch of Bluegill was high, and fish six inches and longer were more plentiful than in previous surveys. Redear and Longear Sunfish also contributed to the prey base.
- **Channel Catfish:** Channel Catfish were collected in modest numbers in 2018. Most exceeded 18 inches and were in good condition. Flathead Catfish were also present in the reservoir.
- **Black Basses:** Largemouth Bass were abundant and body condition was fair across length classes. More legal-length fish were available to anglers than in the previous two surveys.
- **White Bass:** White Bass were collected in low numbers during the 2018 gill netting survey and were generally in poor body condition.

Management Strategies: Continue managing Stillhouse Hollow Reservoir with existing regulations. Conduct monitoring surveys with fall electrofishing and spring gill netting in 2025 and 2026 respectively, and an additional gill netting survey in spring 2024 (Table 8). Conduct aquatic vegetation and access surveys in late summer 2025 (Table 8). Continue efforts to educate the public about AIS issues and protect the reservoir from zebra mussel introductions. Coordinate with the BRA on future artificial habitat projects pending funding and reservoir priorities.

Introduction

This document is a summary of fisheries data collected from Stillhouse Hollow Reservoir in 2021. 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 are presented with the 2021 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 United States Army Corps of Engineers (USACE). Primary water uses include flood control, municipal water supply and recreation. The reservoir is classified as oligotrophic based on chlorophyll a (1.6 mg/m³) and total phosphorous (15.7 mg/m³), has a shoreline length of 58 miles, a mean depth of 37 feet and a maximum depth of 107 feet (Table 1). Fish habitat at the time of sampling consisted mainly of rock and limestone bluff shorelines, flooded timber and dead trees and stumps. Aquatic vegetation is dominated by Hydrilla out to approximately 20 feet in depth and coverage is significant. Conservation pool elevation is 622 feet above mean sea level [MSL]. Water level increased to nearly 15 feet above conservation pool on two occasions during 2018 and early 2019, and to nearly eight feet above conservation pool once during early 2019 (Figure 1). Water level was less than one foot below conservation pool during the 2021 vegetation and electrofishing surveys (Figure 2).

Angler Access

Stillhouse Hollow Reservoir has four public boat ramps. Bank fishing is limited to day-use and camping areas on the reservoir. 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 (Table 2).

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Tibbs and Baird 2018) included:

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

Action: Smallmouth Bass stockings were requested annually since the last report however, reservoir priorities have prevented the species from being stocked into Stillhouse Hollow since 2018.
2. Working with the BRA to use dedicated habitat funding to build and deploy several artificial fish reefs in the upper half of the reservoir.

Action: The BRA funded this work, and four freshwater reefs were built and deployed into the upper end of the reservoir in September 2018. Each of the four reefs were comprised of five Georgia Structures and 10 Fishhiding Structures in close proximity. A map of the locations with coordinates was uploaded to the TPWD website as well.
3. Stocking Florida Largemouth Bass in 2019 and 2021, and then collecting genetics from age-0 fish in fall 2021 to document the impact of these stockings.

Action: Florida Largemouth Bass were stocked at roughly 10 fish/acre in 2019 and 2021, and an electrofishing survey was conducted in fall 2021 to document the impact of these stockings. Survey and genetic results are included in this report.
4. Collecting genetics from up to 30 Spotted Bass in fall 2021 to determine if any Guadalupe Bass genetics are present in the reservoir.

Action: An electrofishing survey was conducted in fall 2021 however, no Spotted Bass were observed. No additional efforts were made to collect genetic data on Spotted Bass. Survey results are included in this report.

5. Cooperating with the USACE to maintain appropriate AIS signage at access points around the reservoir and ensure that USACE staff and marina owners are aware of the AIS threats and have information to provide to their customers.

Action: New AIS signage was posted at Stillhouse Hollow Reservoir boat ramps during 2016 to alert constituents of the reservoir's newly infested zebra mussel status, and signage has been maintained ever since. District staff have made a speaking point about AIS and zebra mussels, how to prevent their spread, and potential effects on other Texas Reservoirs while speaking to constituents during conversations and presentations also.

Harvest regulation history: Sport fishes in Stillhouse Hollow Reservoir have always been managed with statewide regulations. The statewide catfish regulation, 25 fish bag (in any combination), 12-inch minimum length limit, was replaced on September 1, 2021, with a 25 fish bag (in any combination – only 10 can be 20 inches or greater in length), and no minimum length limit (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, and again in 2019 and 2021. 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. Although Smallmouth Bass stockings have been requested annually since 2018, statewide and district priorities have prevented the species from being stocked since 2018 (Table 4).

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 presence of zebra mussels in Stillhouse Hollow and Belton Reservoirs continue to 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 (1.0 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.

Gill netting – Gill netting was not conducted during this survey period due to the extensive coverage of hydrilla and the inability to set shoreline-based nets or nets in water shallower than 20 feet in most of the reservoir. Channel Catfish and White Bass figures from Tibbs and Baird (2018) are included in this report.

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 ($RSE = 100 \times SE$ of the estimate/estimate) was calculated for all CPUE statistics.

Habitat – A structural habitat survey was not conducted during this survey period; refer to Tibbs and Baird (2010) for the most recent structural habitat information collected. Vegetation surveys were conducted using an adaptation of the point method in 2017 and 2021 (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. Refer to Tibbs and Baird (2014) for prior vegetation coverage.

Water level – The source for water level data was the United States Geological Survey (USGS 2022).

Results and Discussion

Habitat: Littoral zone structural habitat consisted primarily of natural and rocky shorelines and flooded timber. Hydrilla was found in 76% of the random points sampled during the 2021 vegetation survey which was an increase from 2017, when 59% contained hydrilla. Giant reed, button bush and pondweed were each found at approximately 15% of sampled points (Table 6). No vegetation management actions have been completed on Stillhouse Hollow Reservoir, even after the discovery of hydrilla in 1995. Hydrilla was monitored annually until 2013 when its status was reclassified to Tier III status, only requiring monitoring every four years. Refer to Tibbs and Baird (2014) for a review of hydrilla coverages prior to 2013. Although hydrilla is widespread in the reservoir, there are no known access issues to date, and Largemouth Bass anglers utilize it heavily.

Prey species: The electrofishing catch rate of Gizzard Shad (37.0/h) was similar to the previous two surveys however, the IOV (41) was much improved (Figure 3). Threadfin Shad were observed in good numbers (Appendix A). The catch rate of Bluegill was 294.0/h, much higher than the previous two surveys (Figure 4). There is not an abundance of forage in the reservoir but this year was a definite improvement. Redear and Longear Sunfish also contributed moderately to the prey base.

Channel Catfish: The gill net catch rate of Channel Catfish was 2.3/nn in 2018 (Figure 5) 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. Text and Figure from Tibbs and Baird (2018).

White Bass: The gill net 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 6). Condition was poor and decreased with length. Text and Figure from Tibbs and Baird (2018).

Black Basses: The electrofishing catch rate of Largemouth Bass was 91.0/h in 2021 which was an increase over 2017 (61.8/h, Figure 7). Condition was fair to good across all length classes. More legal-length bass were observed in 2021 than in the previous two surveys (PSD-14 = 50; PSD-18 = 6; Figure 7). The OBS goals of RSE < 25 and N ≥ 50 stock-sized fish were not met in 2021. Genetic samples collected showed an increase in pure Florida Largemouth Bass compared to the previous survey in 2013 (11.5% vs 3.7%) but the percentage of Florida Largemouth Bass Alleles remained similar.

Only one Smallmouth Bass was collected in the 2021 electrofishing survey (Appendix A). Electrofishing catch rates have always been low, although anecdotal evidence indicates anglers do catch them. Only a single stocking has occurred since 2011; 53,330 fingerlings in 2018 (Table 4).

Fisheries Management Plan for Stillhouse Hollow Reservoir, Texas

Prepared – July 2022

ISSUE 1: Hydrilla was found in 59% of random points sampled during the 2017 vegetation survey, and 76% of random points sampled during the 2021 vegetation survey. To date, no boat ramps have been affected and the swimming beach area remains clear.

MANAGEMENT STRATEGY

1. Monitor the hydrilla coverage annually through 2025 and propose a plan to treat the vegetation around boat ramps and swimming areas if necessary and if the USACE requests our assistance.

ISSUE 2: Largemouth Bass anglers seek out reservoirs with hydrilla to fish. Recent increases in hydrilla coverage in Stillhouse have improved prey availability as well as the Largemouth Bass population. The most recent stocking also was reflected by increased pure Florida genetics. Since 2018, anglers have reported a total of 31 fish to the Sharelunker Program, including one Legend class (>13 pounds). In comparison, the three reservoirs closest to Stillhouse have reported a combined total of 5 fish to the Sharelunker Program (Belton – 5, Georgetown – 0, Granger – 0). Stocking the reservoir with the new Lone Star Bass fingerlings should continue to improve this developing fishery.

MANAGEMENT STRATEGIES

1. Stock Lone Star Bass fingerlings, which are 2nd generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to ≥ 13 pounds, at a rate of 1,000/km shoreline in 2023 and 2024.

ISSUE 3: There has not been a recent angler survey completed on Stillhouse Hollow Reservoir. Quantifying effort for the Largemouth Bass fisheries would yield important information useful to managing the reservoir and informing future decisions on hydrilla management.

MANAGEMENT STRATEGY

1. Complete a creel survey in spring and fall, 2025.

ISSUE 4: Smallmouth Bass are still present in the reservoir but catch rates are very low. Although inconsistent stocking has been an issue, the recent stocking in 2018 was poorly represented in the electrofishing sample (N=1) and strong historical stockings did not yield the same good results as it did at Belton or Whitney Reservoirs. Natural reproduction is insufficient to maintain a quality fishery. It is difficult to justify continued stockings into Stillhouse Hollow Reservoir when it is compared to other reservoirs within the district.

MANAGEMENT STRATEGIES

1. Discontinue requesting Smallmouth Bass stockings.

ISSUE 5: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels 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 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 AIS are significant. Additionally, the potential for AIS 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 AIS signage at access points around the reservoir.
2. Contact and educate marina owners about AIS, and provide them with posters, literature, etc... so that they can in turn educate their customers.
3. Educate the public about AIS through the use of media and the internet.
4. Make a speaking point about AIS 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 (2022–2026)

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

Sport fishes with low-density populations: Flathead Catfish, Smallmouth Bass, Blue Catfish 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 most recent catch rate of Largemouth Bass was 91 fish/h, and 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 2025. 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. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group \geq stock-length. 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.

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.

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. Index of Vulnerability (IOV) will be calculated for Gizzard Shad to assess the relative proportion of individuals in the population suitable as prey for sport fish.

Spring Gill Netting: The gill net survey will be used to evaluate Channel Catfish and White Bass. The 2018 survey increased the number of net sets from 10 to 15, but the goal of an RSE < 25 and $N \geq 50$ stock-size fish still was not met for these species. Gill netting was not conducted during spring 2022 due to extensive coverage of hydrilla and the inability to set shoreline-based nets. Therefore, we will sample overnight with 10 random gill netting stations in spring 2024 and spring 2026. The goal of the gill netting survey will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the Channel Catfish and White Bass populations and make comparisons with historical and future data. No catch per unit effort target precision, target sample sizes or relative weights will be assigned.

Angler Creel: This survey will be used to evaluate angler effort, success, preferences, and economic impact in spring and fall, 2025. The purpose would be to document angler response to the improved Largemouth Bass fishery and the extensive hydrilla presence. This will help determine the direction of future fisheries efforts.

Literature Cited

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Tables and Figures

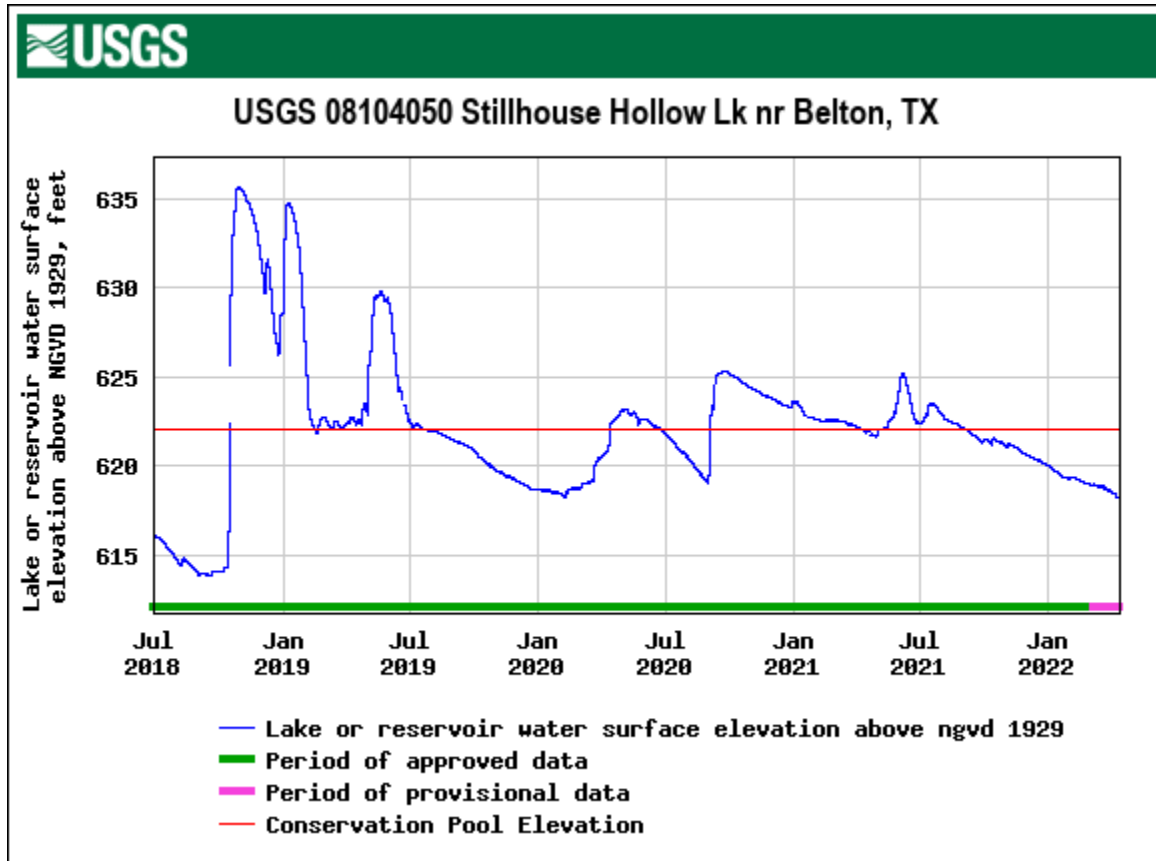


Figure 1. Daily mean water levels for Stillhouse Hollow Reservoir from July 2018 through April 2022. The red line indicates Conservation pool (622 feet msl). Figure from the USGS website.

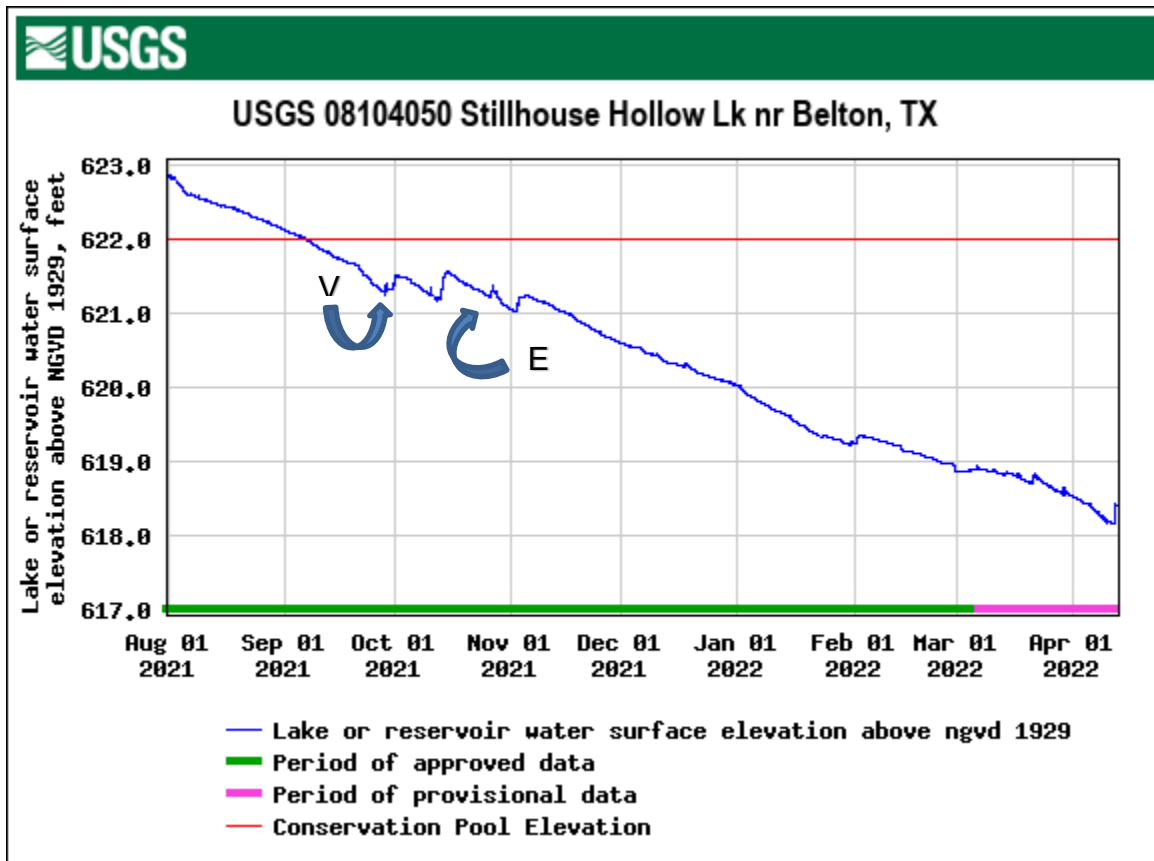


Figure 2. Daily mean water levels for Stillhouse Hollow Reservoir from August 2021 through April 2022. The red line indicates Conservation pool (622 feet msl). Vegetation and electrofishing surveys are indicated by V and EF. Figure from the USGS website.

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 μ S /cm

Table 2. Boat ramp characteristics for Stillhouse Hollow Reservoir, Texas. 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.

Species	Bag Limit	Length limit (inches)
Catfish: Channels and Blues	25 ^B	No Limit
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass: Largemouth and Smallmouth	5 ^A	14-inch minimum
Bass, Spotted	5 ^A	No minimum
Crappie: White and Black	25 (any combination)	10-inch minimum

^A Daily bag limit for Largemouth Bass, Spotted Bass and Smallmouth Bass = 5 fish in any combination.

^B Daily bag for Channels and Blues = 25 in any combination; only 10 can be 20 inches or greater.

Table 4. Stocking history for Stillhouse Hollow, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
Channel Catfish	1968	322,800	AFGL	7.9
	2022	123,165	FGL	
	Total	445,965		
Flathead Catfish	1968	2,000		0.0
	Total	2,000		
Florida Largemouth Bass	1993	322,026	FGL	1.2
	1994	321,167	FGL	1.2
	2019	65,593	FGL	1.6
	2021	63,326	FGL	1.7
	Total	772,112		
Largemouth Bass	1968	735,000	FRY	0.7
	Total	735,000		
Palmetto Bass (Striped X White Bass hybrid)	1978	39,225	UNK	0.0
	1982	54,527	UNK	0.0
	Total	93,752		
Smallmouth Bass	1974	129,000	UNK	0.0
	1975	65,000	UNK	0.0
	1976	125,000	UNK	0.0
	1977	100,000	UNK	0.0
	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	53,330	FGL	1.8

Table 4. Stocking history for Stillhouse Hollow, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
	Total	1,330,329		
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 2021. Gill netting was not conducted during spring 2022, so OBS components for Channel Catfish and White Bass detailed in this report are from 2018 sampling.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Stock	RSE–Stock ≤ 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 ^A	Abundance	CPUE–Total	None
	Size structure	PSD, length frequency	None
Gizzard Shad ^A	Abundance	CPUE–Total	None
	Size structure	PSD, length frequency	None
<i>Gill netting</i>			
Channel Catfish	Abundance	CPUE–stock	None
	Size structure	Length frequency	None
	Condition	W_r	None
White Bass	Abundance	CPUE–stock	None
	Size structure	Length frequency	None
	Condition	W_r	None

^A No additional effort will be expended to achieve an RSE ≤ 25 for CPUE of Bluegill and Gizzard Shad if not reached from designated Largemouth Bass sampling effort. Instead, Largemouth Bass body condition can provide information on forage abundance, vulnerability, or both relative to predator density.

Table 6 Survey of aquatic vegetation, Stillhouse Hollow Reservoir, Texas, 2017 and 2021. The data show percentages of randomly selected shoreline points (Total of 63) where species occurred. Water level was near full pool during the surveys.

Vegetation	2017	2021
Hydrilla (Non-native)	59% (45.6 to 71.0)	76% (63.8 to 86.0)
giant reed (Non-native)	11% (4.6 to 21.6)	14% (6.8 to 25.4)
buttonbush	33% (22.0 to 46.3)	16% (7.9 to 27.3)
pondweed	8% (2.6 to 17.6)	16% (7.9 to 27.3)

Gizzard Shad

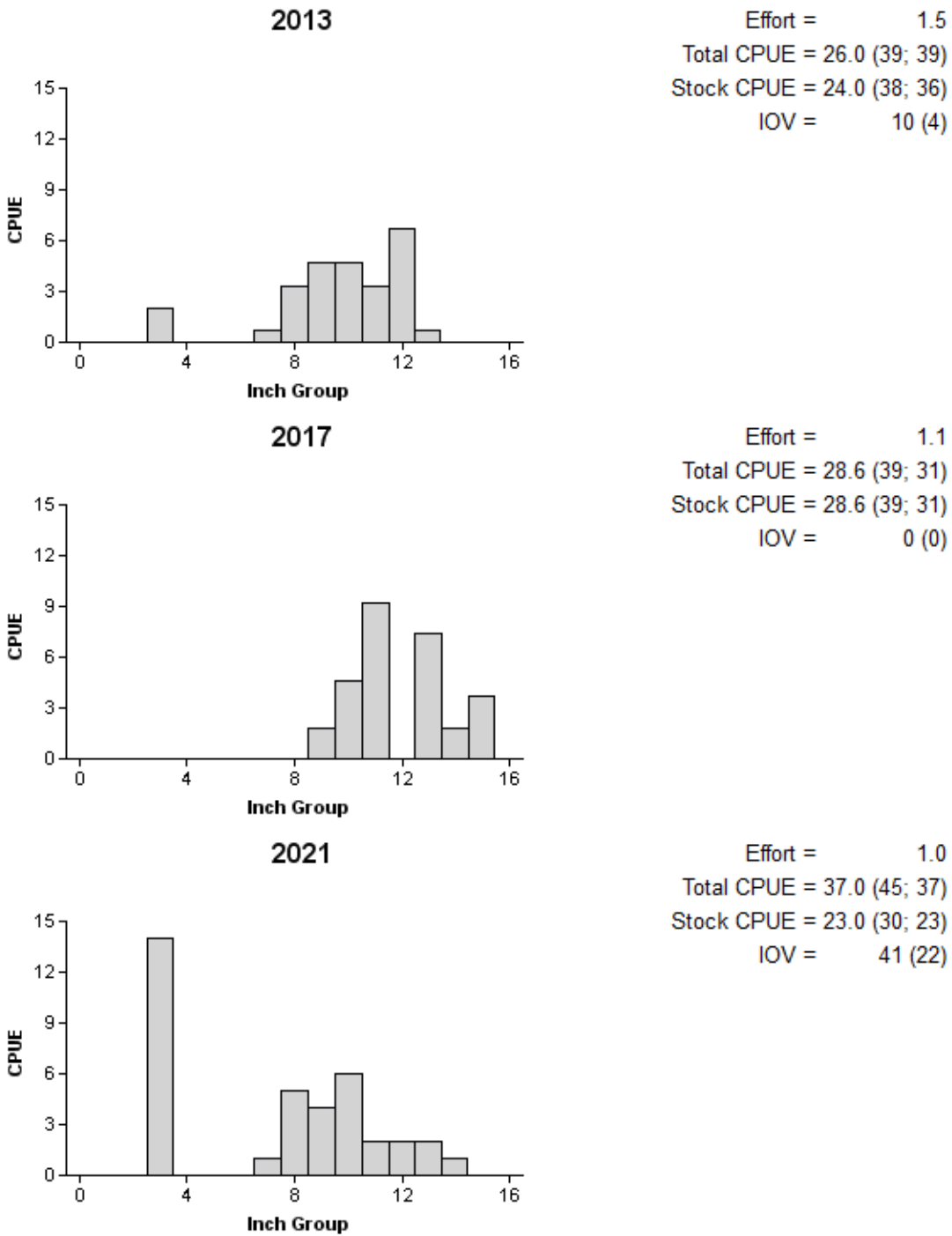


Figure 3 Number of Gizzard Shad caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for IOV are in parenthesis) for fall electrofishing surveys, Stillhouse Hollow Reservoir, Texas, 2013, 2017, and 2021.

Bluegill

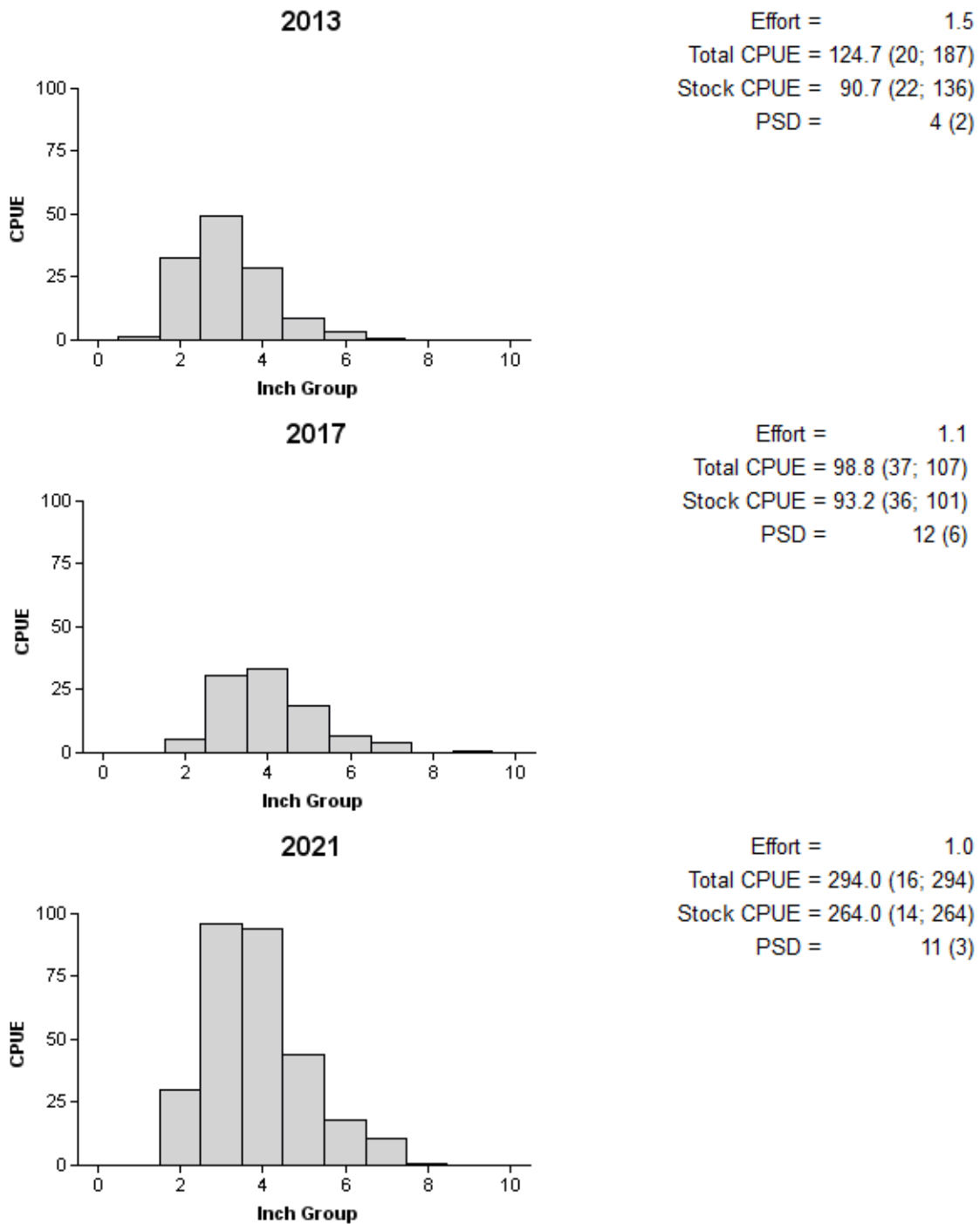


Figure 4 Number of Bluegill caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for fall electrofishing surveys, Stillhouse Hollow Reservoir, Texas, 2013, 2017, and 2021.

Channel Catfish

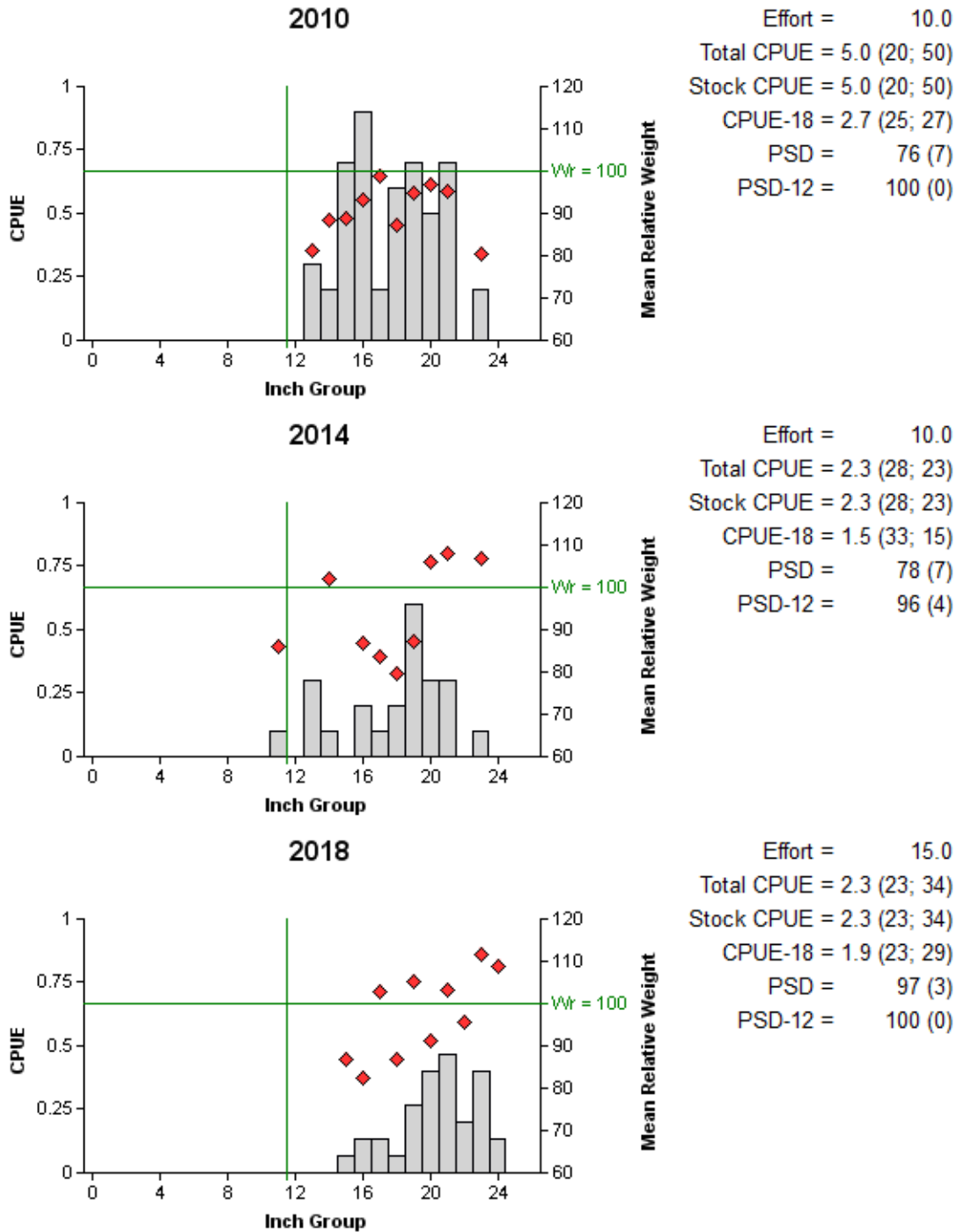


Figure 5 Number of Channel Catfish caught per net night (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for spring gill net surveys, Stillhouse Hollow Reservoir, Texas, 2010, 2014, and 2018. Gill netting was not conducted during 2022. Vertical green line indicates the minimum length limit, while the horizontal green line represents optimal condition. Figure from Tibbs and Baird (2018).

White Bass

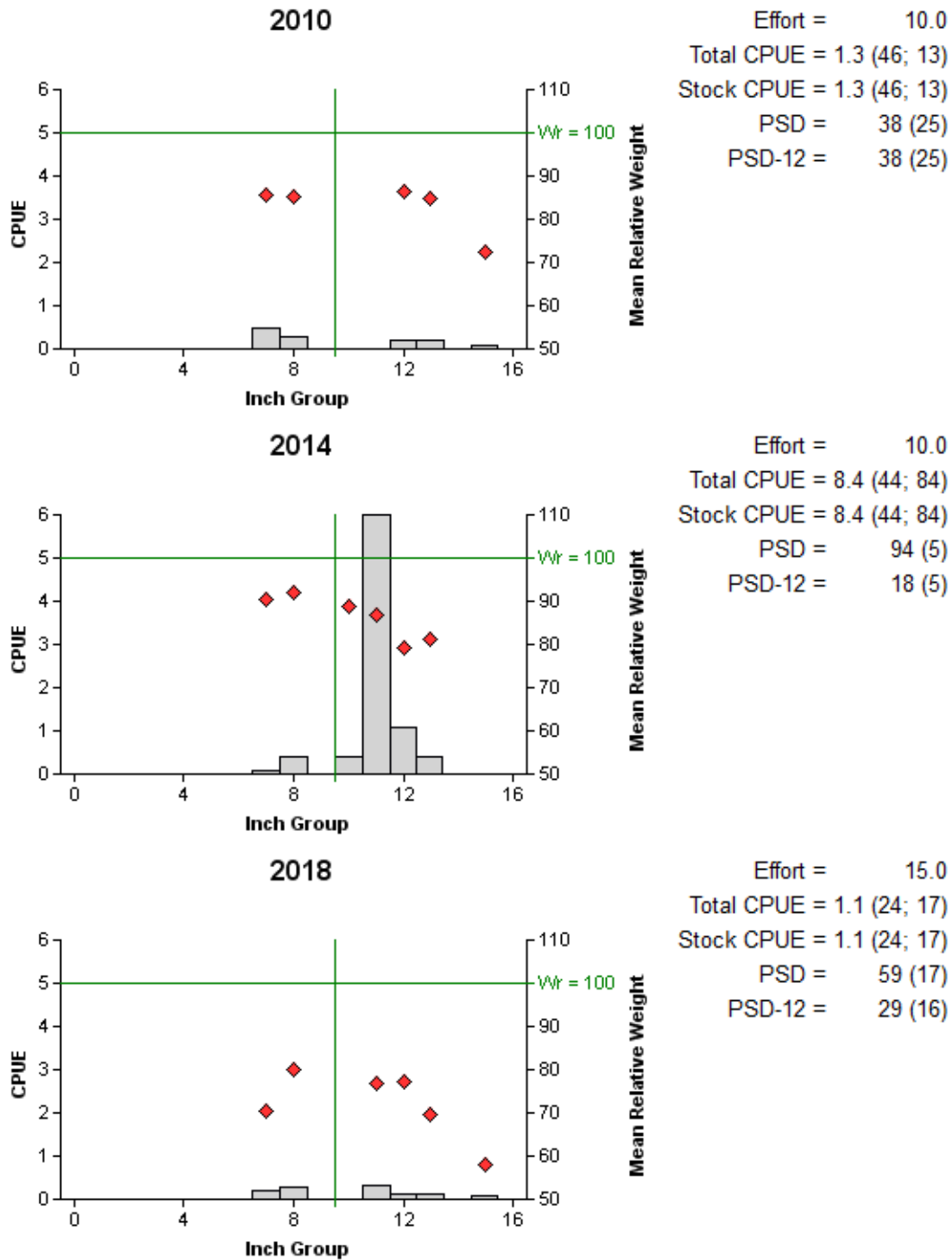


Figure 6 Number of White Bass caught per net night (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for spring gill net surveys, Stillhouse Hollow Reservoir, Texas, 2010, 2014, and 2018. Gill netting was not conducted during 2022. Vertical green line indicates the minimum length limit, while the horizontal green line represents optimal condition. Figure from Tibbs and Baird (2018).

Largemouth Bass

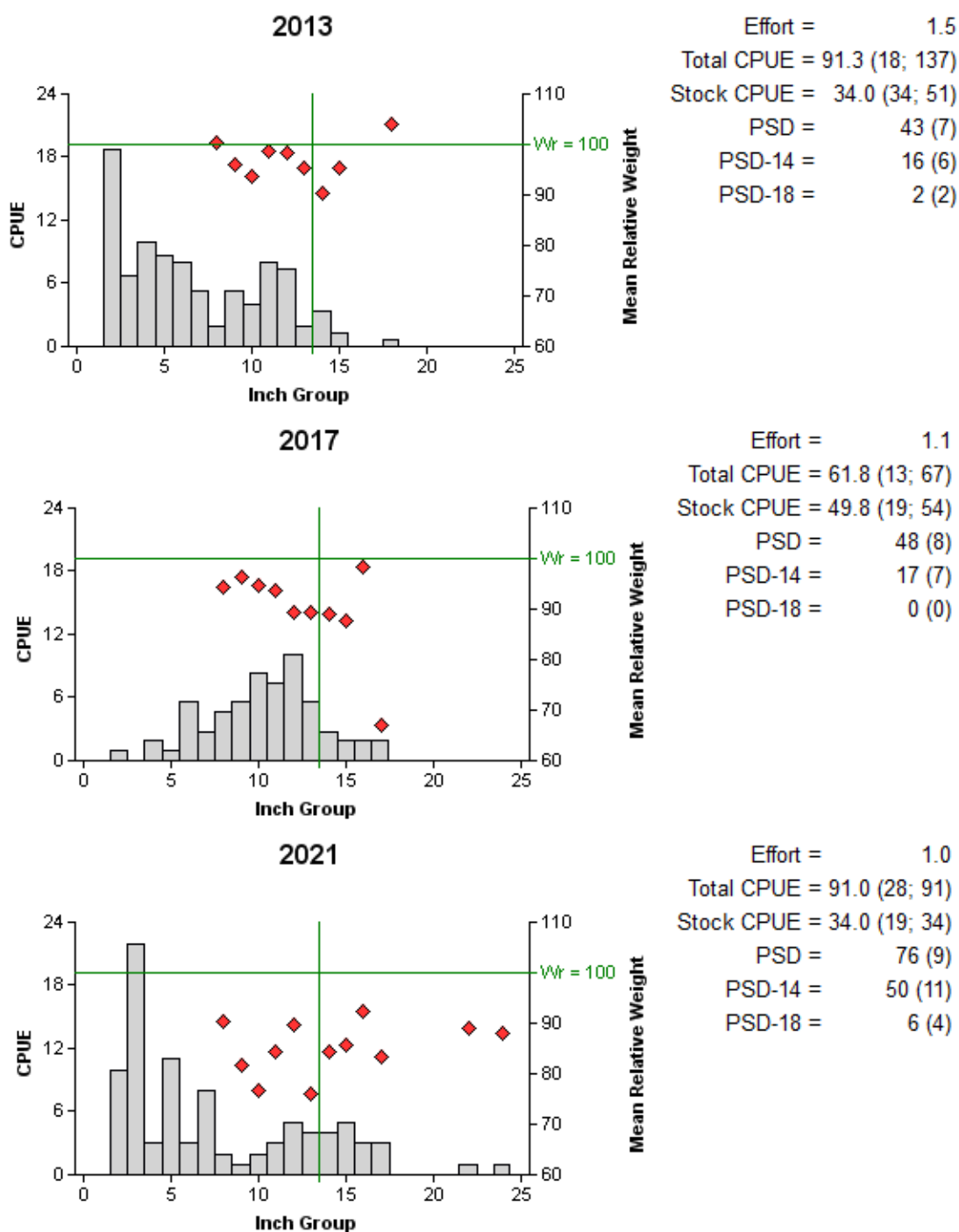


Figure 7 Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure in parenthesis) for fall electrofishing surveys, Stillhouse Hollow Reservoir, Texas, 2013, 2017, and 2021. Vertical green line indicates the minimum length limit, while the horizontal green line represents optimal condition.

Table 7 Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Stillhouse Hollow Reservoir, Texas, 2005, 2013, and 2021. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined by with micro-satellite DNA analysis.

Year	Sample size	Number of fish			% FLMB alleles	% FLMB
		FLMB	Intergrade	NLMB		
2005	30	2	28	0	60	6.7
2013	27	1	26	0	71	3.7
2021	26	3	23	0	68	11.5

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 surveys are conducted in the fall.

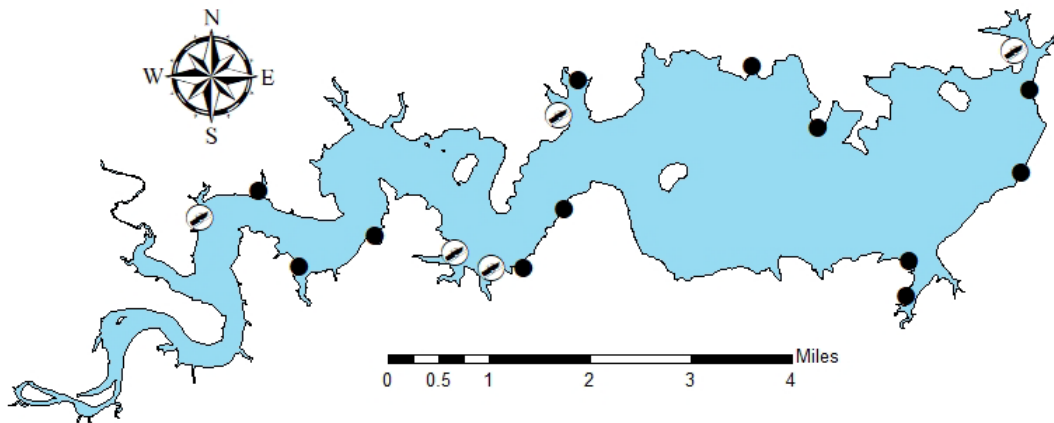
	Survey year			
	2022-2023	2023-2024	2024-2025	2025-2026
Angler access				X
Vegetation				X
Creel survey			X	X
Electrofishing – Fall				
Gill netting		X		X
Report				X

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 by electrofishing from Stillhouse Hollow Reservoir, Texas, 2021. Sampling effort was 1 hour (12, 5-minute stations). Gill netting data are from 2018.

Species	Gill Netting		Electrofishing	
	N	CPUE	N	CPUE
Gizzard Shad			37	37.0 (45)
Threadfin Shad			208	208.0 (208/99)
Channel Catfish	34	2.3 (23)		
Flathead Catfish	3	0.2 (72)		
White Bass	17	1.1 (24)		
Green Sunfish			1	1.0 (100)
Warmouth			1	1.0 (100)
Bluegill Sunfish			294	294.0 (16)
Longear Sunfish			13	13.0 (31)
Redear Sunfish			57	57.0 (21)
Smallmouth Bass			1	1.0 (100)
Largemouth Bass			91	91.0 (28)

APPENDIX B – Map of sampling locations



Location of sampling sites, Stillhouse Hollow Reservoir, Texas, 2021. Electrofishing stations are indicated by solid black circles. Boat ramps indicated by small boat in a circle. Water level was within one foot of conservation pool at time of sampling.



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