Lake Brazos

2024 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-5

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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Survey and Management Summary

Fish populations in Lake Brazos were surveyed using electrofishing in 2024 and trap netting and gill netting in 2025. For comparison, historical data are presented with the 2024-2025 data. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

Reservoir Description: Lake Brazos is a 523-acre impoundment of the Brazos River located in downtown Waco, McLennan County, Texas. Bank and boat access on the reservoir are good, and include ADA-compliant facilities such as walkways, picnic shelters and fishing piers. Habitat features consisted mainly of natural shoreline, limited bulkheading, piers, bridge pilings and emergent aquatic vegetation.

Management History: Important sport fish include Largemouth Bass, catfishes, temperate basses and White Crappie. The management plan from 2008 recommended annual monitoring of giant reed and working with the City of Waco on control efforts if necessary. Giant reed was monitored annually through 2014, at which time it was determined that it was not increasing in coverage and there was little probability that it would require treatment. Management plans from 2009 and 2013 included addition of new fish habitat, and to date, over 50 bamboo crappie condos have been placed into the reservoir (Tibbs and Baird 2009; Tibbs and Baird 2013). More recent management efforts focused on posting appropriate aquatic invasive species (AIS) signage at access points and providing technical support and informational materials for the Texas Parks and Wildlife Department's (TPWD) "Clean, Drain and Dry" campaign. A roving creel survey was conducted from June 1, 2018 through May 31, 2019 to determine the extent game fishes were sought and harvested. Management efforts from 2024-2025 include aquatic vegetation, boater access, electrofishing, trap netting, and gill netting surveys.

Fish Community

- **Prey species:** Collected prey species included Gizzard Shad, Threadfin Shad, Bluegill, and a variety of other sunfish species. The catch rate for Gizzard Shad was lower than previous years, while catch rates increased for most sunfish species. Most Gizzard Shad (83%) were available as prey to sport fish.
- **Catfishes:** Collected catfishes included Blue, Channel, and Flathead catfishes. The catch rate for Flathead Catfish was above average, Blue Catfish catch rate was at historical average, and Channel Catfish catch rate was below historical average. Condition of Channel Catfish was excellent, while Blue Catfish condition varied among size classes.
- **Temperate Bass:** Collected temperate bass included Striped Bass and Hybrid striped bass (HSB). Striped Bass were collected in low numbers and body condition was average. HSB catch rate improved from the previous survey and a low-density population currently exists.
- **Largemouth Bass:** Largemouth Bass catch rate increased in comparison to previous surveys. Relative weights varied among size classes but were mostly average or slightly below. Proportional size distribution decreased compared to previous surveys.
- **Crappie:** White and Black Crappie are present in the reservoir, though White Crappie makes up most of the crappie community. White Crappie catch rate was the highest on record and body condition was at or above average (W_r = 90) across most length categories. One Black Crappie was sampled in 2025.

Management Strategies: The sport fishes in Lake Brazos will continue to be managed with statewide regulations. We will continue to maintain AIS efforts. Access, vegetation, and electrofishing surveys will be conducted in summer and fall 2028 and trap netting and gill netting surveys will be conducted in spring 2029. Promoting the fishery and the unique opportunities it provides to urban anglers will also be a priority.

Introduction

This document is a summary of fisheries data collected from Lake Brazos in 2024-2025. The purpose of this document is to provide fisheries information and management recommendations for protecting and improving Lake Brazos sport fisheries. Information on other fish species was collected, but this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2024-2025 data for comparison.

Reservoir Description

Lake Brazos is a 523-acre impoundment of the Brazos River located in downtown Waco, McLennan County, Texas. The reservoir was constructed by the City of Waco in 1965 to serve as a municipal water source and to stimulate economic development in the downtown area. Other water uses include recreation. The reservoir is eutrophic with an average reservoir depth of 12.3 feet, and water transparencies typically ranging from 1 to 3 feet. Habitat at time of sampling consisted mainly of natural shoreline, limited bulkheading, piers, bridge pilings and emergent aquatic vegetation. Littoral vegetation is dominated by water willow, with some giant reed and cattail. Lake Brazos is at a constant level during normal conditions and was slightly below full pool during the 2024 and 2025 surveys. Other descriptive characteristics for Lake Brazos are in Table 1.

Angler Access

Bank and boat access to Lake Brazos is good. Boat access consists of two, two-lane ramps (Brazos Park East I and II) and two paddle craft launches (Brazos Park East III, Bosque Park), and a single lane ramp at the McLennan Community College (MCC) campus. All four ramps were useable during recent surveys, and there are currently no access issues. Shoreline access is excellent throughout the lower two-thirds of the reservoir. Additional boat ramp characteristics are in Table 2.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Tibbs and Baird 2021) included:

1. Begin spring trap netting for crappies in spring 2025 and continue to collect data on crappies during gill netting efforts.

   Action: Crappies were sampled with trap nets and gill nets in 2025. Trap netting effort was set at 10 net-nights and yielded above average catch rates for White Crappie and Black Crappie.

2. Highlight the unique fishery of Lake Brazos through presentations and social media when available. Work with agency partners to post new signage at access points and popular bank fishing sites showcasing sportfishing opportunities for anglers.

   Action: An electrofishing demonstration was provided for a Baylor University class in late summer 2024. Numerous social media posts have been made in previous years highlighting the Lake Brazos fishery.

3. Cooperate with the City of Waco to post appropriate AIS signage at access points. Educate the public on AIS through media and internet. Make a speaking point about AIS in public presentations. Keep track of existing and future water basin transfers to facilitate AIS response.

   Action: Aquatic invasive species signage was posted at Lake Brazos access points during summer 2013 and have been maintained as needed. District staff have made a speaking point about AIS, how to prevent their spread, and potential effects on Lake Brazos while speaking to anglers over the past several years. Interbasin water transfers are updated as needed.

Harvest regulation history: Sport fishes in Lake Brazos have always been managed with statewide regulations. The statewide regulation for Blue and Channel Catfish changed on September 1, 2021, and now the regulation is no minimum length limit; daily bag of 25 (in any combination – only 10 can be 20 inches or greater in length). The current harvest regulations are listed in Table 3.

Stocking history: Lake Brazos has historically been stocked with Blue Catfish, Bluegill, Channel Catfish, and Largemouth Bass species. Striped Bass have also migrated into Lake Brazos from Whitney Reservoir, and HSB have migrated in from Waco Reservoir. The complete stocking history is in Table 4.

Water Transfer: No interbasin water transfers are known to exist within Lake Brazos.

Vegetation/habitat management history: Vegetation/habitat management actions have been limited to the addition of fish habitat (crappie condos) near fishing piers, and past, annual monitoring of giant reed shoreline coverage. No new aquatic vegetation issues exist.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Lake Brazos (Tibbs and Baird 2021). Primary components of the OBS plan are listed in Table 5. All survey sites were randomly selected, and surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Common names of fishes and their hybrids in this report are used following Page et al. (2023) with an exception for Largemouth Bass. While we recognize recent changes to black bass names, Texas reservoirs contain a mix of Florida Bass, Largemouth Bass, and their intergrade offspring. Therefore, Largemouth Bass is used in this report for simplicity as well as consistency with previous reports.

Electrofishing – Largemouth Bass, Spotted Bass, sunfishes, and Gizzard and Threadfin Shad were collected by daytime electrofishing (1.0 hour at 12, 5-min stations) in fall 2024. Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing. Electrofishing in 2024 was conducted using a Smith-Root Apex electrofisher, while previous surveys used a GPP 7.5 electrofisher.

Trap netting – White and Black Crappie were collected by trap netting (10 net nights at 10 stations in late winter 2025). Catch per unit effort (CPUE) for trap netting was recorded as the number of fish caught per net-night (fish/nn).

Gill netting – Catfishes and temperate basses were collected by spring gill netting (5 net nights at 5 stations) in spring 2025. Catch per unit effort (CPUE) for gill netting was recorded as the number of fish caught per net-night (fish/nn).

Genetics – Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022). Micro-satellite DNA analysis was used to determine genetic composition of individual fish from 2005 to present, and by electrophoresis for previous years.

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 Neumann et al. (2012). HSB PSD was calculated according to Dumont and Neely (2011). Texas Parks and Wildlife Department has stocked both HSB crosses (palmetto bass and sunshine bass) in the past in other reservoirs. Most HSB currently produced by TPWD hatcheries are sunshine bass. Even though PSD length categories and standard weight equation were developed based on palmetto bass populations, they are applied to sunshine bass under the assumption that there is little difference in the growth of the two hybrids. Index of Vulnerability (IOV) was calculated for Gizzard Shad (DiCenzo et al. 1996). Standard error (SE) was calculated for structural indices and IOV. Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE and creel statistics.

Habitat – The 2008 structural habitat survey was conducted according to Baird and Tibbs (2009). The 2016, 2020 and 2024 vegetation surveys were conducted using an adaptation of the point method (TPWD, Inland Fisheries Division, unpublished manual revised 2022). One hundred vegetation points were randomly generated on the shoreline. Aquatic vegetation has always been found close to the shore in Lake Brazos, so stratifying the random points to exclude deep-water areas increased precision and resulted in better data.

Water level – Water level for Lake Brazos is not available. Water is released regularly from Lake Whitney for power production during the summer, so water levels in Lake Brazos remain constant most of the time due to the dam design.

Results and Discussion

Habitat: The 2008 structural habitat survey estimated 26.7 miles of natural shoreline, 4.1 miles of bulkheaded shoreline, 3.5 miles of boulder/rip-rap shoreline and 1.0 mile of rock bluff shoreline (Table 6; Baird and Tibbs 2009). The littoral zone vegetation encountered during summer 2024 was dominated by water willow and giant reed. The presence of both at survey sites decreased slightly compared to 2020. The complete summer 2024 vegetation survey is in Table 7.

Prey species: Gizzard Shad and Threadfin Shad catch rates were 166.0/h and 40.0/h, respectively. This was similar to the historical average for Threadfin Shad but well below the historical average for Gizzard Shad (Figure 1; Appendices A and B). The Index of Vulnerability (IOV) for Gizzard Shad was excellent, indicating that 83% of individuals were available as prey to predators; this was lower than IOV estimates for 2020 but higher than 2016. The total CPUE of Gizzard Shad in 2024 was considerably lower than 2020 and 2016 (Figure 1). Bluegill (141.0/h) and Longear Sunfish (82.0/h) were abundant and available as forage for sport fish. Bluegill seldom reach preferred size classes in Lake Brazos, though Longear Sunfish collected were mostly at or above preferred size (Figures 2 and 3). Other forage species collected were Redear Sunfish (17.0/h), Redbreast Sunfish (9.0/h), Green Sunfish (2.0/h), and Warmouth (1.0/h; Appendices A and B).

Catfishes: Blue and Channel Catfish were collected with gill nets at rates of 6.2 and 0.8/nn, respectively, in 2025. Catch rates for Blue Catfish were at historical average, while Channel Catfish catch rates were below average (Figures 4 and 5; Appendices A and B). The size structure objective of collecting a minimum of 50 stock-length fish was not met for blues (N = 22) or channels (N = 4). The abundance objective of achieving an RSE equal to or less than 25 was only met for blues (Figures 4 and 5). PSD indices for Blue Catfish and Channel Catfish increased in 2025, illustrating a higher proportion of stock-length fish in the population compared to the 2021 sample (Figures 4 and 5). Mean relative weight for Blue Catfish was poor for most size classes. Mean relative weight of Channel Catfish was at or above average for all size classes. One Flathead Catfish was collected in 2025, and historical catch rates are included in Appendix B.

Temperate Bass: The OBS plan for Lake Brazos' three species of temperate basses included collecting a minimum of 50 stock length fish of each species, with a sample RSE equal to or less than 25, to allow comparison of trend data, population structure indices and length-frequency histograms among years (Table 5). The OBS objectives were not met for any of these species. No White Bass were collected in 2025 compared to 0.6/nn in 2021 and none in 2017 (Appendices A and B). The Striped Bass fishery in Lake Brazos is dependent on migration from Whitney Reservoir, a mainstem reservoir on the Brazos River upstream of Lake Brazos. The gill net catch rate for Striped Bass was 1.0/nn in 2025 compared to 2.8/nn and 0.6/nn in 2021 and 2013, respectively (Figure 6; Appendices A and B). 60% of the collected Striped Bass were legal length and mean relative weight ranged from fair to average. HSB were first stocked in Waco Reservoir in 2009, through a cooperative effort between TPWD and the City of Waco. Lake Brazos' HSB fishery is completely dependent on HSB migration through the Waco Reservoir dam, which is just upstream in the Bosque arm of Lake Brazos; therefore, this fishery is low-density. HSB were collected with gill nets at a rate of 0.6/nn in 2025 which translated to only 3 individuals with an RSE of 41 (Figure 7; Appendices A and B). Mean relative weight was below 80 for all size classes.

Black Bass: Largemouth Bass were collected at a rate of 66.0 fish/h, which is above historical average (Figure 8; Appendices A and B). The OBS goal for Largemouth Bass abundance (CPUE – Stock; RSE ≤

25) was met as RSE = 19 (Figure 8). The OBS goal for size structure (PSD and length-frequency; N ≥ 50 stock) was not met as only 42 stock-length individuals were collected (Figure 8). Approximately 8% of collected individuals reached preferred length (15-inches) yet none were memorable length (20-inches; Figure 8). Body condition was average (W_r = 90) for most size classes with few exceptions. Florida Largemouth Bass influence increased from 2016 (39%) to 2024 (47%; Table 8). Three Spotted Bass were collected during 2024 fall electrofishing (Appendices A and B).

Crappie: White Crappie were collected with late winter trap nets (2025). Trap net CPUE was 9.3/nn, nearly double the historical average (Figure 9; Appendices A and B). The abundance objective (CPUE – Stock; RSE-Stock ≤ 25) was not met (Figure 9; Appendices A and B). The size structure objective (N ≥ 50 stock) was met in the trap netting survey (Figure 9; Appendices A and B). The PSD for trap netting was 43%. Mean relative weight was average in the trap net sample (Figure 9; Appendices A and B). One Black Crappie was collected in 2025 and historical catch rates are extremely low (Appendices A and B).

Fisheries Management Plan for Lake Brazos, Texas

Prepared – July 2025

ISSUE 1: Sampling objectives for temperate bass species have historically not been met in Lake Brazos. The HSB population is currently entirely dependent on migration from Waco Reservoir, and Striped Bass are dependent on migration from Whitney Reservoir. Directed angler effort towards temperate bass was observed as 1% in the 2018-2019 angler creel. It is likely that lofty objectives are impossible to meet with low abundance populations of these species.

MANAGEMENT STRATEGIES

1. Change monitoring of Striped Bass, HSB, and White Bass to exploratory monitoring of presence/absence and remove specific objectives for abundance, size structure, and condition in future reports.
2. Continue to collect temperate basses with spring gill netting and reassess objectives if populations improve.

ISSUE 2: High utilization and a large proportion of bank anglers coupled with a diversity of species to fish for make Lake Brazos a unique fishery. For example, three popular species of Temperate Bass can be found in Lake Brazos yet directed angler effort observed during the 2018-2019 angler creel was only 1% for the entire group. Blue Catfish over 10 lbs have been collected in recent surveys, yet few larger catfish of any species were documented in the creel. This indicates awareness of certain angling opportunities may be low.

MANAGEMENT STRATEGIES

3. Highlight this unique fishery through presentations and social media when applicable.
4. Work with partners to post new signage at access points and popular bank fishing sites around the reservoir showcasing sportfish opportunities for anglers.

ISSUE 3: Many AIS 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 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 controlling authority to maintain AIS signage at access points.
2. Educate the public about AIS through the use of media and the internet.
3. Make a speaking point about AIS when presenting to constituent and user groups.
4. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential AIS responses.

Objective-Based Sampling Plan and Schedule (2025–2029)

Sport fish, forage fish, and other important fishes

Sport fishes in Lake Brazos include Largemouth Bass, Channel Catfish, Blue Catfish, and White Crappie. Important forage fish species include Gizzard Shad, Threadfin Shad, Bluegill, Redear and Longear Sunfish.

Low-density fisheries

Spotted Bass, Flathead Catfish, temperate basses, and Black Crappie occur in low abundance in Lake Brazos and are generally caught incidentally to other 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 monitor Largemouth Bass and primary forage species (Bluegill, Longear Sunfish, Redear Sunfish, Gizzard Shad and Threadfin Shad). A minimum of 12, random five-minute daytime electrofishing stations will be sampled in fall 2028. The objectives of the Largemouth Bass survey will be general monitoring (i.e., CPUE, size structure and mean relative weight) and prevalence of Northern and Florida Largemouth Bass alleles (i.e., fin clips from 30 random individuals) to characterize the Largemouth Bass population and make comparisons with historical and future data. Abundance target precision will be RSE ≤ 25 for $CPUE_{Total}$ and $CPUE_{Stock}$, and target sample size for size structure will be N ≥ 50 stock, allowing us to calculate PSDs with 80% confidence. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group ≥ stock-length. If objectives are not met in 12 stations, but catch rates indicate they're attainable, sampling will continue at random stations until the objectives are met. Since the primary forage species objectives are exploratory, no target precision or target sampling sizes will be sought for these species; additional sampling will not be necessary beyond that which is done for Largemouth Bass.

Late winter trap netting: This survey will be used to monitor White Crappie. A minimum of 10 randomly selected trap net stations will be sampled in February/March 2029. The objectives of the White Crappie survey will be general monitoring (i.e., CPUE, size structure and mean relative weight) to characterize the population and make comparisons with historical and future data. Abundance target precision will be RSE ≤ 25 for $CPUE_{Total}$ and $CPUE_{Stock}$, and target sample size for size structure will be N ≥ 50 stock, allowing us to calculate PSDs with 80% confidence. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group ≥ stock-length. If objectives are not met in 10 stations, but catch rates indicate they're attainable, sampling will continue at random stations until the objectives are met.

Spring gill netting: This survey will be used to monitor catfishes and temperate basses. A minimum of 5 randomly selected gill net stations will be sampled in spring 2029. The objectives of these surveys will be general monitoring of Blue Catfish and Channel Catfish (i.e., CPUE, size structure and mean relative weight) to characterize populations and make comparisons with historical and future data. Abundance target precision will be a RSE ≤ 25 for $CPUE_{Total}$ and $CPUE_{Stock}$, and target sample size for size structure will be N ≥ 50 stock, allowing us to calculate PSDs with 80% confidence. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group ≥ stock-length. Temperate basses will be monitored with exploratory presence/absence. If objectives are not met in 5 stations, but catch rates indicate they're attainable, sampling will continue at random stations until the objectives are met.

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Tables and Figures

Table 1. Characteristics of Lake Brazos, Texas.

Characteristic	Description
Year Constructed	1965
Controlling authority	City of Waco
County	McLennan
Reservoir type	Main Stem Brazos River
Shoreline Development Index (SDI)	N/A
Conductivity	813 µS/cm

Table 2. Boat ramp characteristics for Lake Brazos, Texas. There is currently no source for water level data on Lake Brazos. Latitude and longitude reported in decimal-degrees.

Boat ramp	Latitude/Longitude (dd)	Parking capacity (N)	Condition
Brazos Park East I	31.5897/-97.1543	53	Good
Brazos Park East II	31.5829/-97.1511	15	Poor
Brazos Park East III Paddle Craft	31.5886/-97.1546	7	Good
Bosque Park Paddle Craft	31.5850/-97.1932	40	Excellent
McClennan Community College	31.5940/-97.1701	5	Good

Table 3. Harvest regulations for Lake Brazos, Texas.

Species	Bag Limit	Length limit
Catfish: Channel Catfish, Blue Catfish and hybrids	25 (10 ≥ 20 inches)	No minimum
Catfish, Flathead	5	18 – inch minimum
Bass, White	25	10 – inch minimum
Bass, Striped and HSB	5 (any combination)	18 – inch minimum
Bass, Largemouth, Smallmouth and hybrids	5[a]	14 – inch minimum
Bass, Spotted, Guadalupe and hybrids[2]	5[a]	No minimum
Crappie: White Crappie, Black Crappie and hybrids	25 (in any combination)	10 – inch minimum

[a] Daily bag limit for all black bass (Largemouth, Smallmouth, Spotted, Guadalupe and hybrids) = 5 fish in any combination.

Table 4. Stocking history of Lake Brazos, Texas. Life stages are 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)
Blue Catfish	2008	47,400	FGL	2.0
	2009	47,491	FGL	2.0
	2021	44,975	FGL	2.1
	2023	24,785	FGL	2.2
	Total	164,651		
Bluegill	2007	10,203	AFGL	2.0
	2008	47,890	AFGL	2.1
	Total	58,093		
Channel Catfish	1989	2,700	FGL	3.9
	1990	5,456	FGL	2.4
	2006	19,609	AFGL	8.5
	2007	99,090	FGL	2.4
	2018	7,386	AFGL	10.1
	2021	50,031	FGL	2.3
	2023	24,166	FGL	2.2
	Total	208,438		
Florida Largemouth Bass	2007	35,640	FRY	0.3
	2008	49,860	FGL	1.7
	2010	47,025	FGL	1.8
	2020	52,958	FGL	1.7
	Total	185,483		
Largemouth Bass	2007	12,712	FGL	1.1
	Total	12,712		
Lone Star Bass[b]	2023	49,108	FGL	1.6
	2025	51,152	FGL	1.8
	Total	100,260		

[b] Lone Star Bass are 2nd generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to ≥ 13 pounds.

Table 5. Objective-based sampling plan components for Lake Brazos, Texas 2021 – 2025.

Gear/target species	Survey objective	Metrics	Sampling objective
Electrofishing			
Largemouth Bass	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	5/inch group (min)
	Genetics	% FLMB	N = 30, any age
Bluegill	Exploratory	Presence/Absence	Practical Effort
Longear Sunfish	Exploratory	Presence/Absence	Practical Effort
Gizzard Shad	Exploratory	Presence/Absence	Practical Effort
Threadfin Shad	Exploratory	Presence/Absence	Practical Effort
Trap Nets			
White Crappie	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	5/inch group (min)
Gill Nets			
Channel Catfish	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size Structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	5/inch group (min)
Blue Catfish	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size Structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	5/inch group (min)
HSB	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size Structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	5/inch group (min)
White Bass	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size Structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	5/inch group (min)
Striped Bass	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size Structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	5/inch group (min)

Table 6. Survey of structural habitat types, Lake Brazos, Texas, 2009. Shoreline habitat type units are in miles.

Habitat type	Estimate	% of total
Bulkhead	4.1	11.2
Gravel shoreline (rocks < 4”)	0.1	Trace
Gravel shoreline (rocks > 4”)	3.5	9.5
Rock bluff	1.0	2.7
Natural	26.7	72.6
Giant reed	0.9	2.4
Boat docks and ramps	0.5	1.4

Table 7. Survey of aquatic vegetation, Lake Brazos, Texas, 2011-2024. The percentage of total reservoir area is listed for 2011 through 2013, while percentage of randomly-selected points where species occurred is listed for 2016, 2020 and 2024. The number of points where species were located out of total points surveyed is in parentheses.

Vegetation	2011	2012	2013	2016	2020	2024
<u>Native emergent</u>						
Cattail				8.3% (3 of 36)	19.4% (7 of 36)	
Common buttonbush				2.8% (1 of 36)		
Water-willow				31% (11 of 36)	38.9% (14 of 36)	31% (31 of 100)
<u>Non-native</u>						
Giant reed	6.2 (1.2)	7.5 (1.4)	7.5 (1.4)	19.4% (7 of 36)	27.8% (10 of 36)	10% (10 of 100)

Gizzard Shad

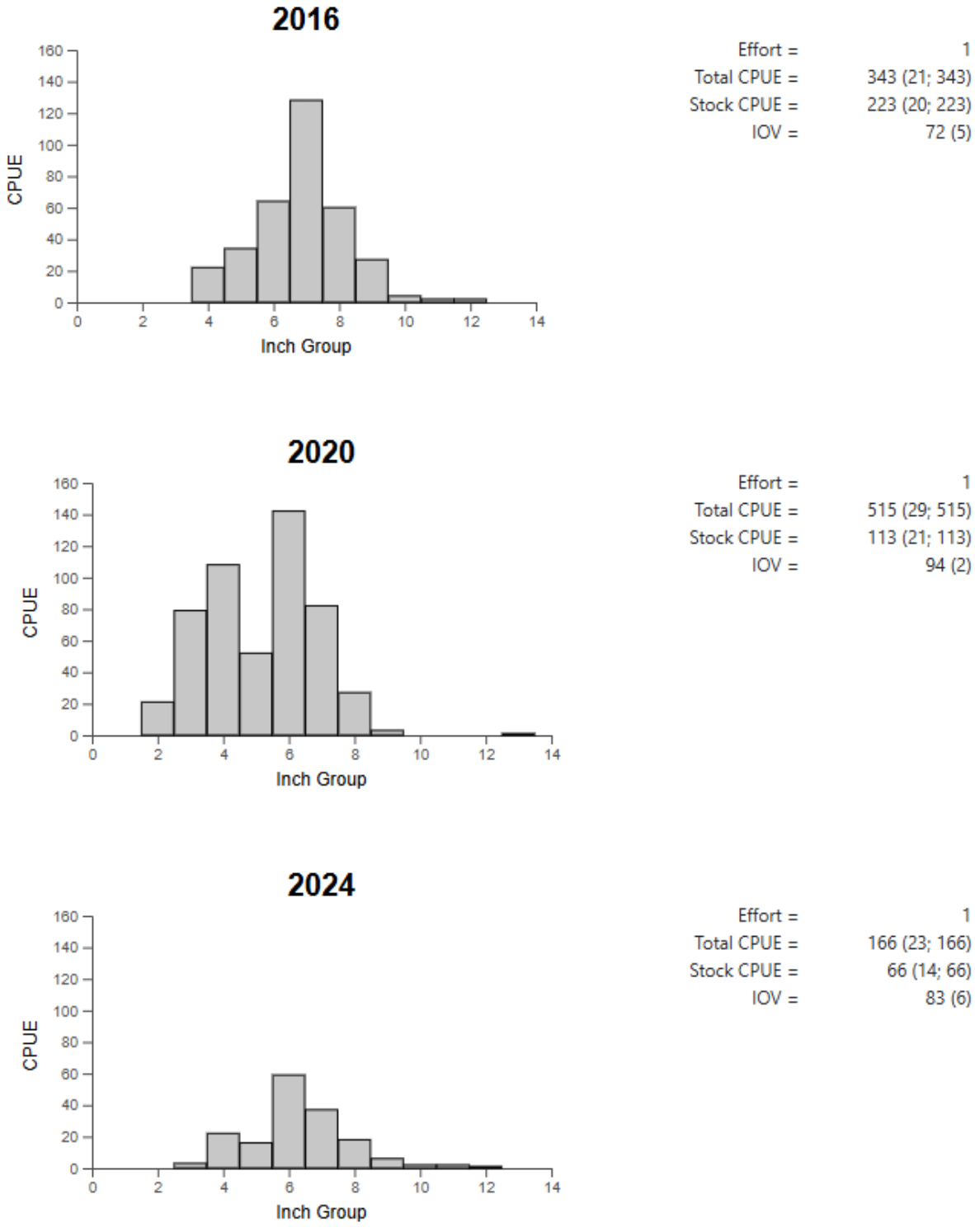


Figure1. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lake Brazos, Texas, 2016, 2020 and 2024.

Bluegill

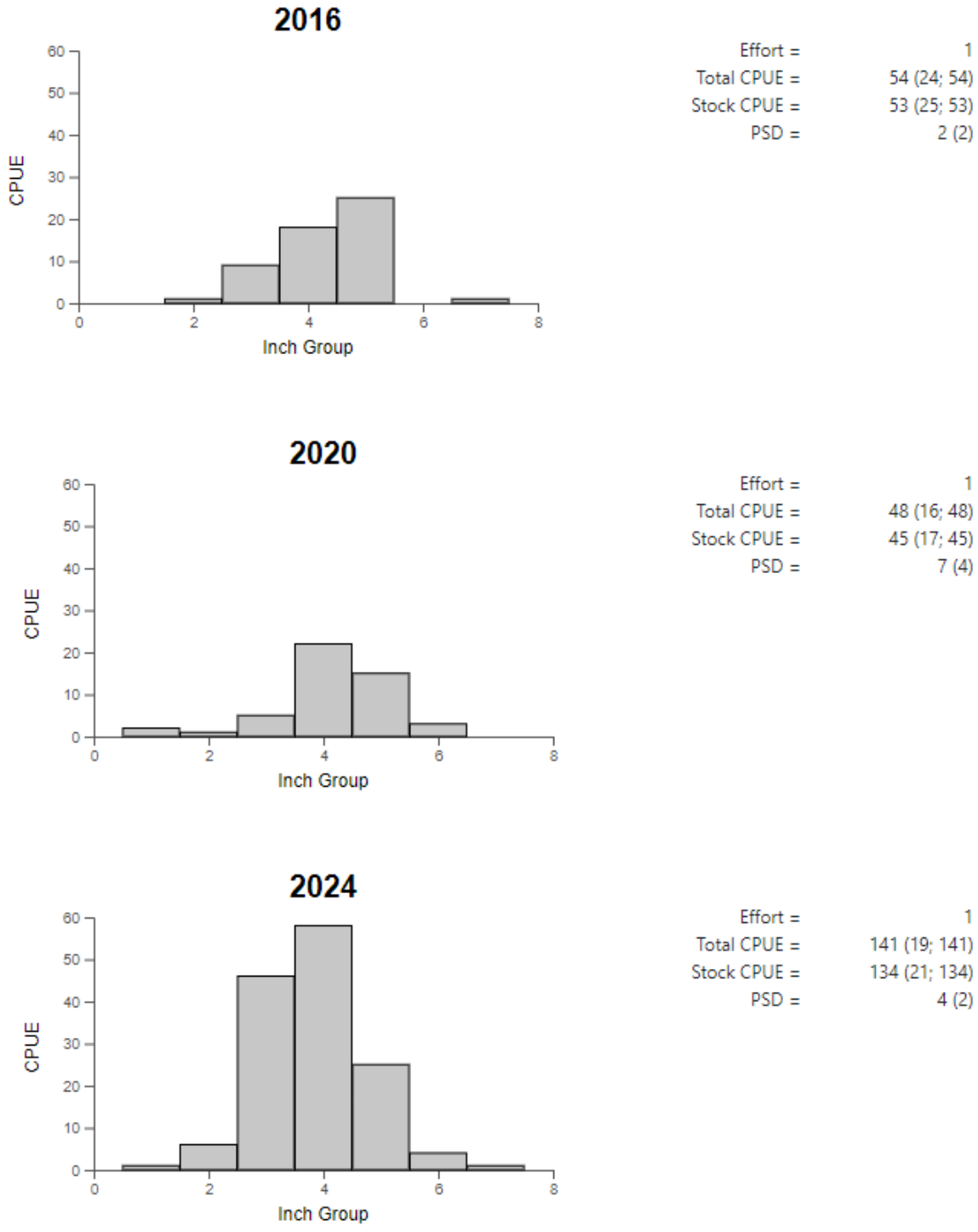


Figure 2. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Brazos, Texas, 2016, 2020 and 2024.

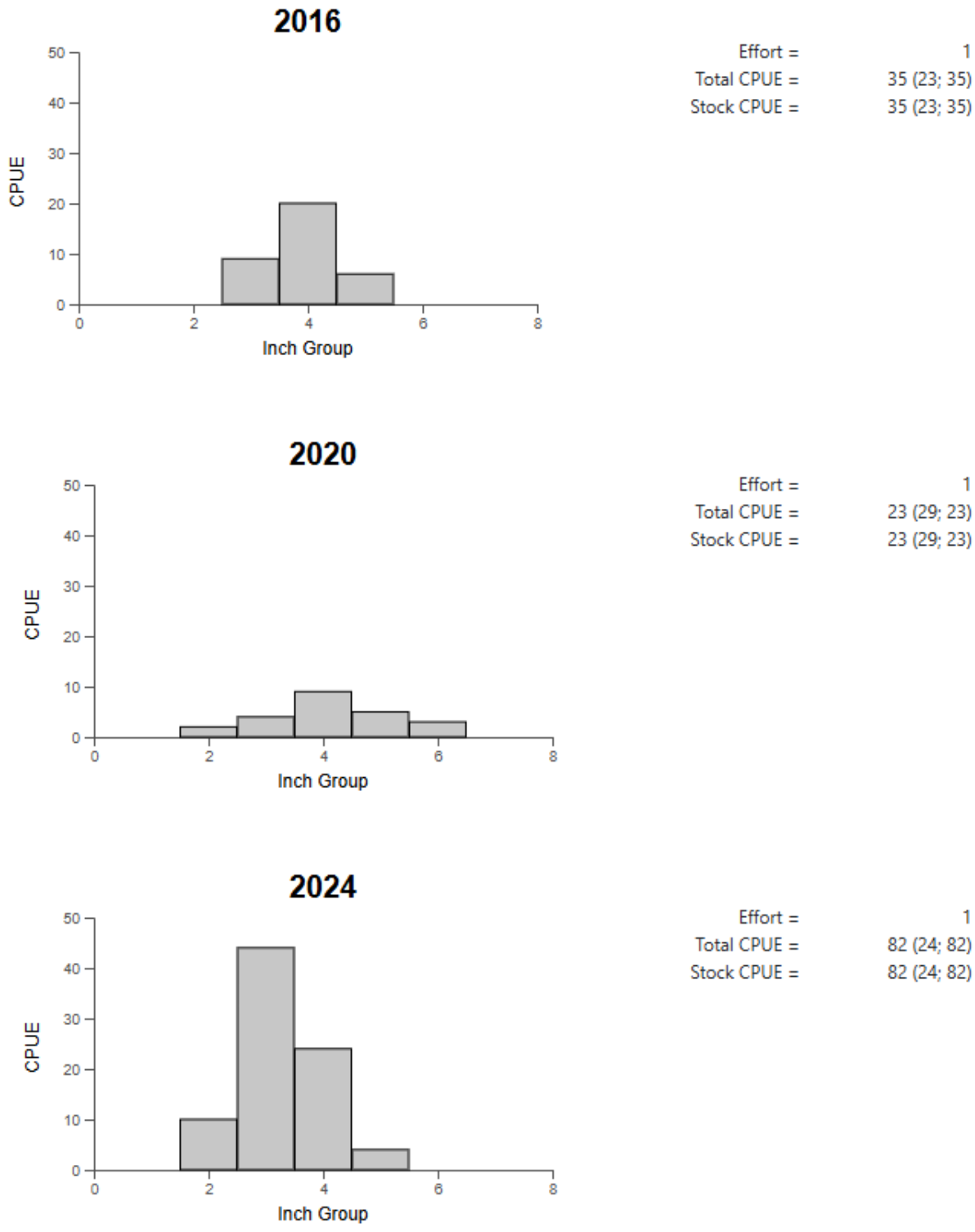


Figure 3. Number of Longear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE are in parentheses) for fall electrofishing surveys, Lake Brazos, Texas, 2016, 2020 and 2024.

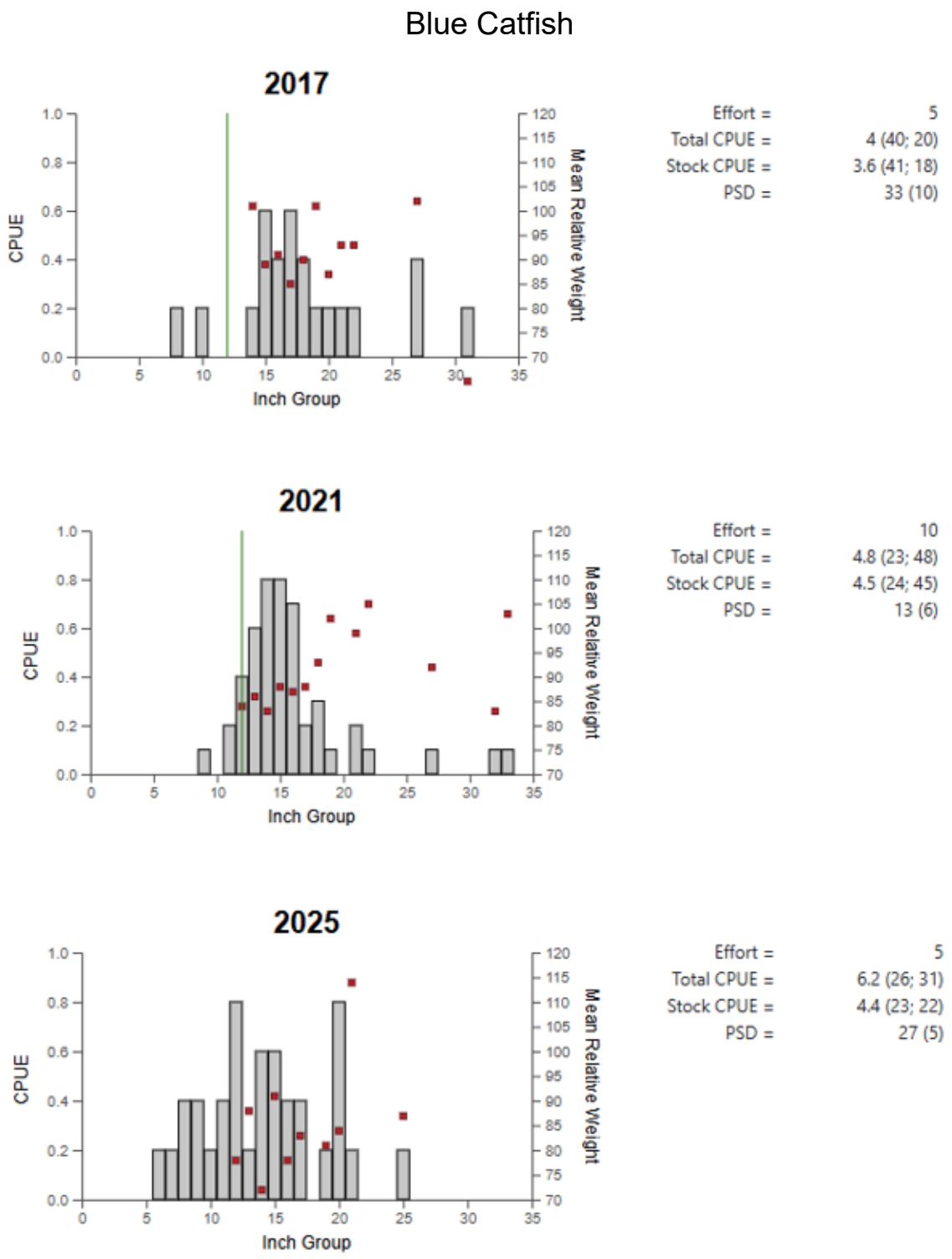


Figure 4. Number of Blue Catfish caught per net night (CPUE, bars), mean relative weights (squares) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill net surveys, Lake Brazos, Texas, 2017, 2021, and 2025. The minimum length limit (vertical line) for Blue Catfish was 12-inches during 2017 and 2021; there was none after September 1, 2021.

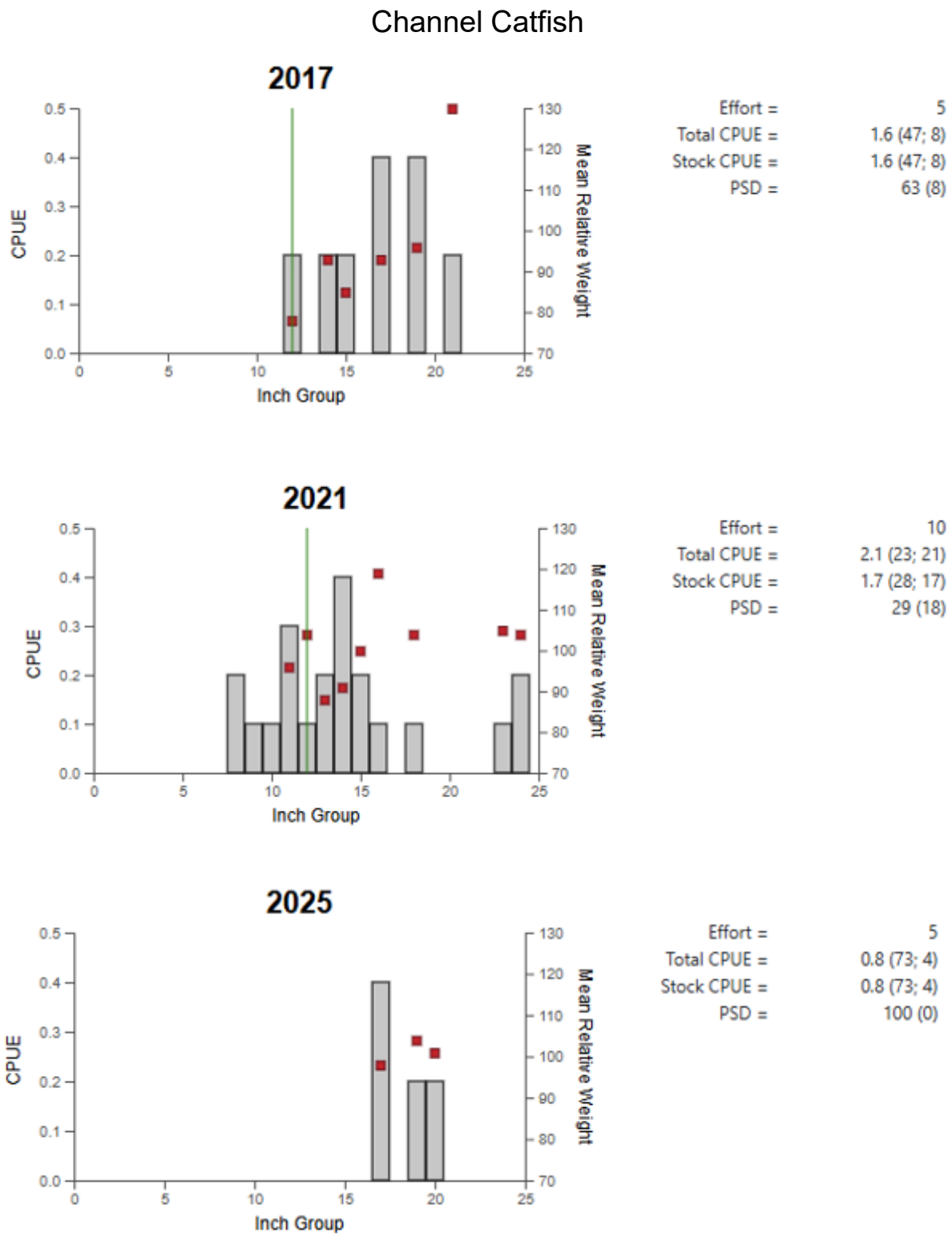


Figure 5. Number of Channel Catfish caught per net night (CPUE, bars), mean relative weights (squares) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill net surveys, Lake Brazos, Texas, 2017, 2021, and 2025. The minimum length limit (vertical line) for Channel Catfish was 12-inches during 2017 and 2021; there was none after September 1, 2021.

Striped Bass

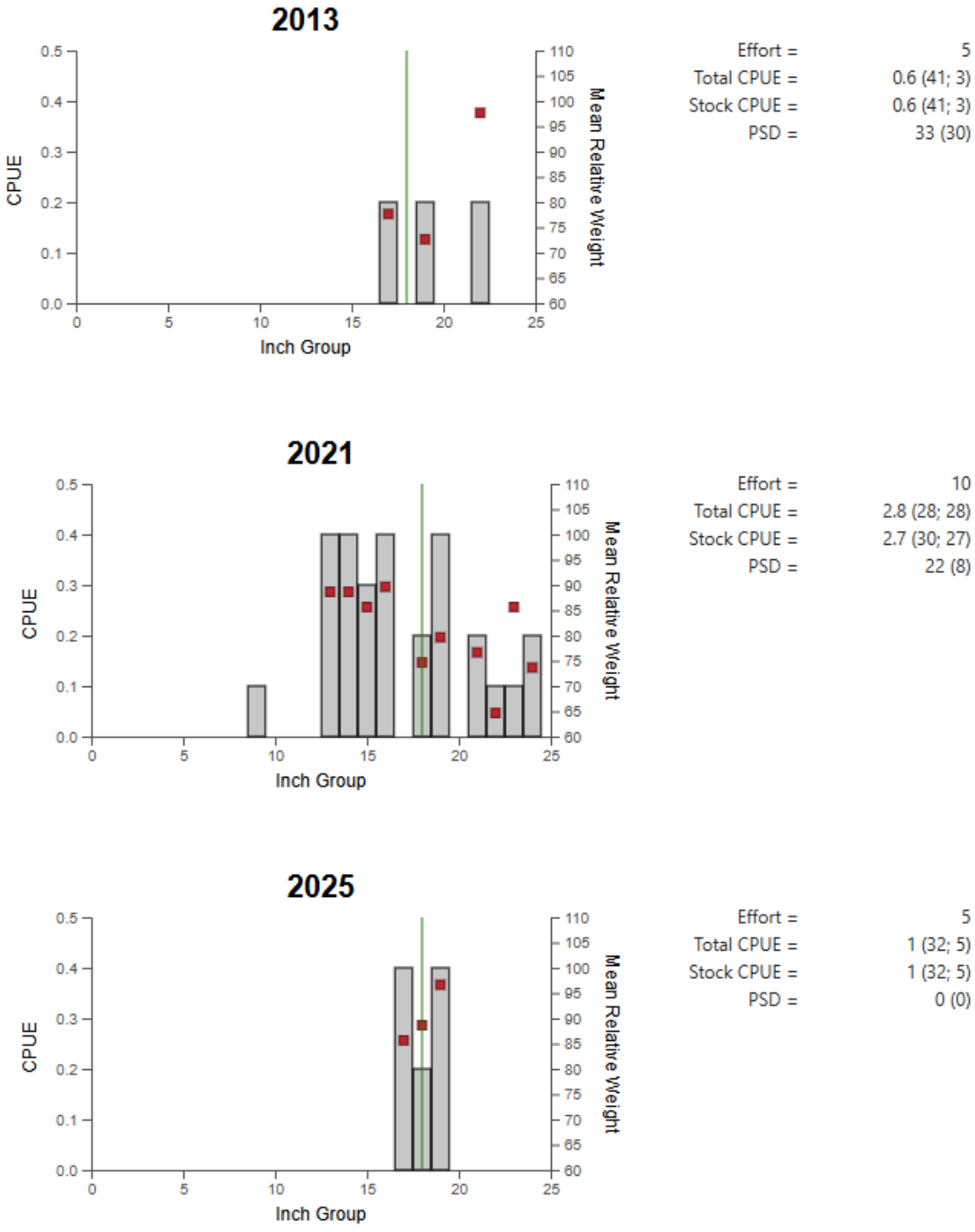


Figure 6. Number of Striped Bass caught per net night (CPUE, bars), mean relative weight (squares), and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill netting surveys, Lake Brazos, Texas, 2013, 2021, and 2025. The minimum length limit (vertical line) for Striped Bass was 18-inches for all three survey periods.

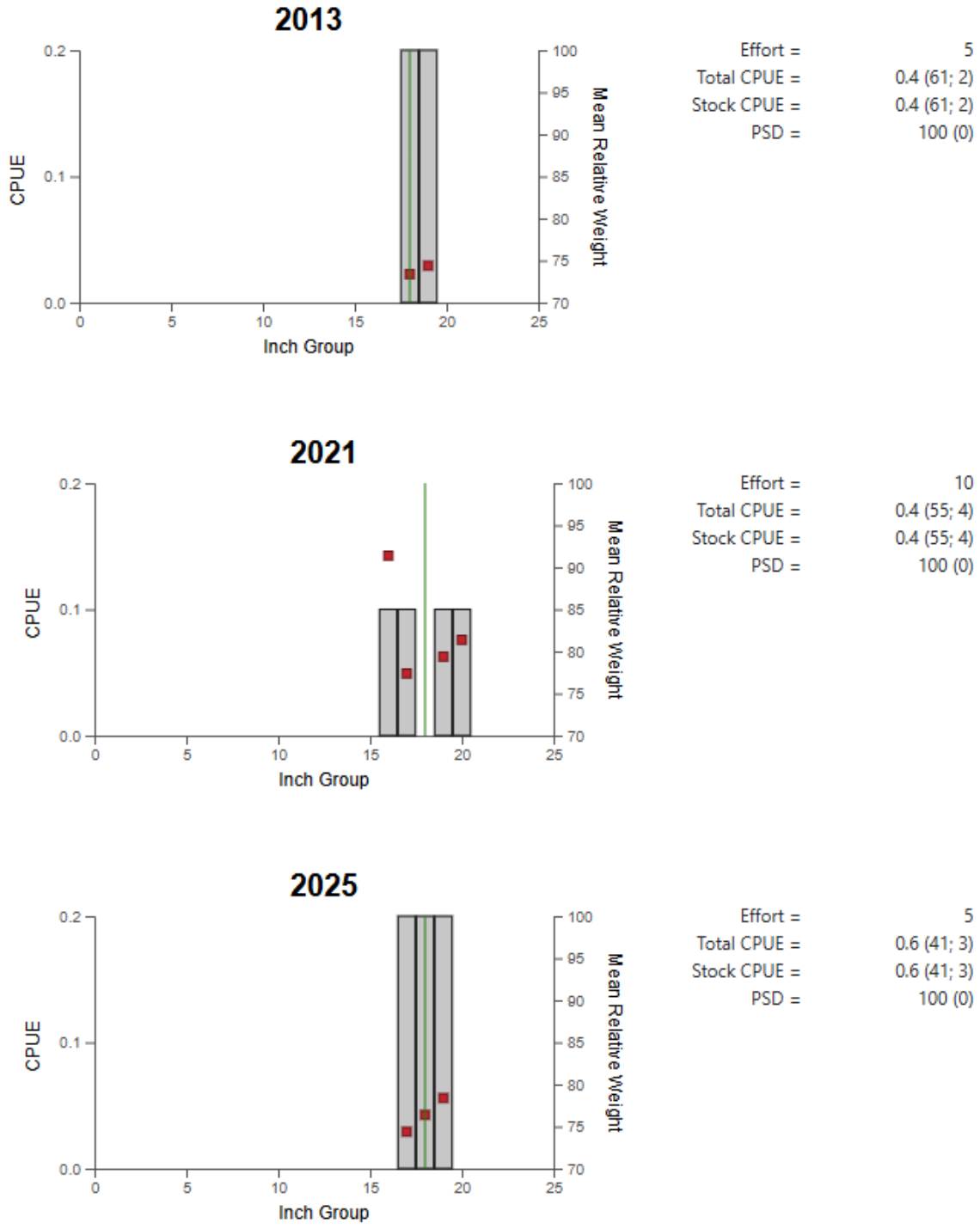


Figure 7. Number of HSB caught per net night (CPUE, bars), mean relative weight (squares), and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill netting surveys, Lake Brazos, Texas, 2013, 2021 and 2025. The minimum length limit (vertical line) for HSB was 18-inches for all survey periods.

Largemouth Bass

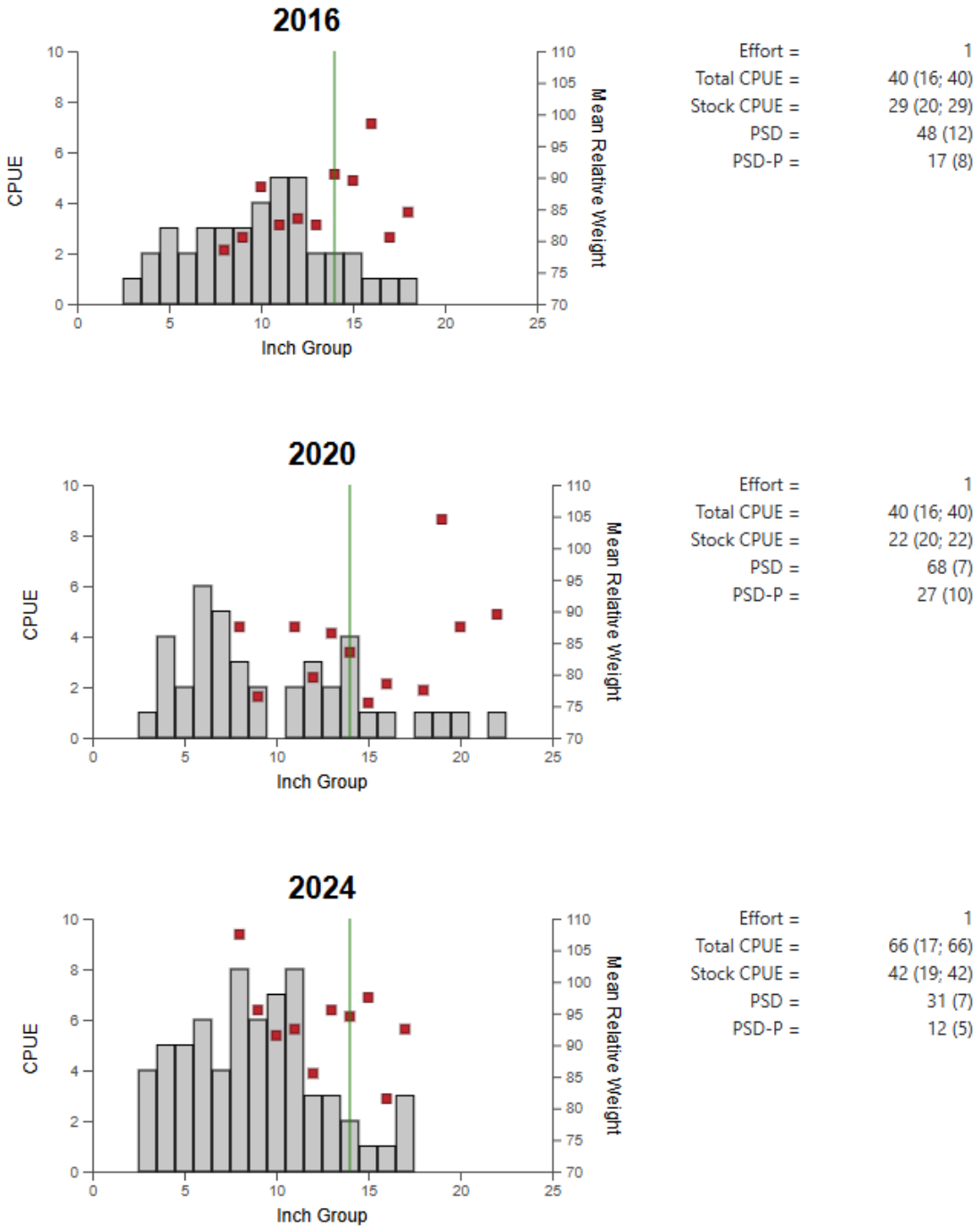


Figure 8. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weights (squares) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for fall electrofishing surveys, Lake Brazos, Texas, 2016, 2020 and 2024. The minimum length limit (vertical line) for Largemouth Bass was 14-inches for all three survey periods.

Table 8. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Lake Brazos, Texas, 2008, 2016 and 2024. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Hybrid = hybrid between a FLMB and a NLMB. Genetic composition was determined by electrophoresis prior to 2005 and with micro-satellite DNA analysis since 2005.

		Number of fish				
Year	Sample size	FLMB	Hybrid	NLMB	% FLMB alleles	% FLMB
2008	15	0	13	2	33	0
2016	30	0	29	1	39	0
2024	25	0	25	0	47	0

White Crappie

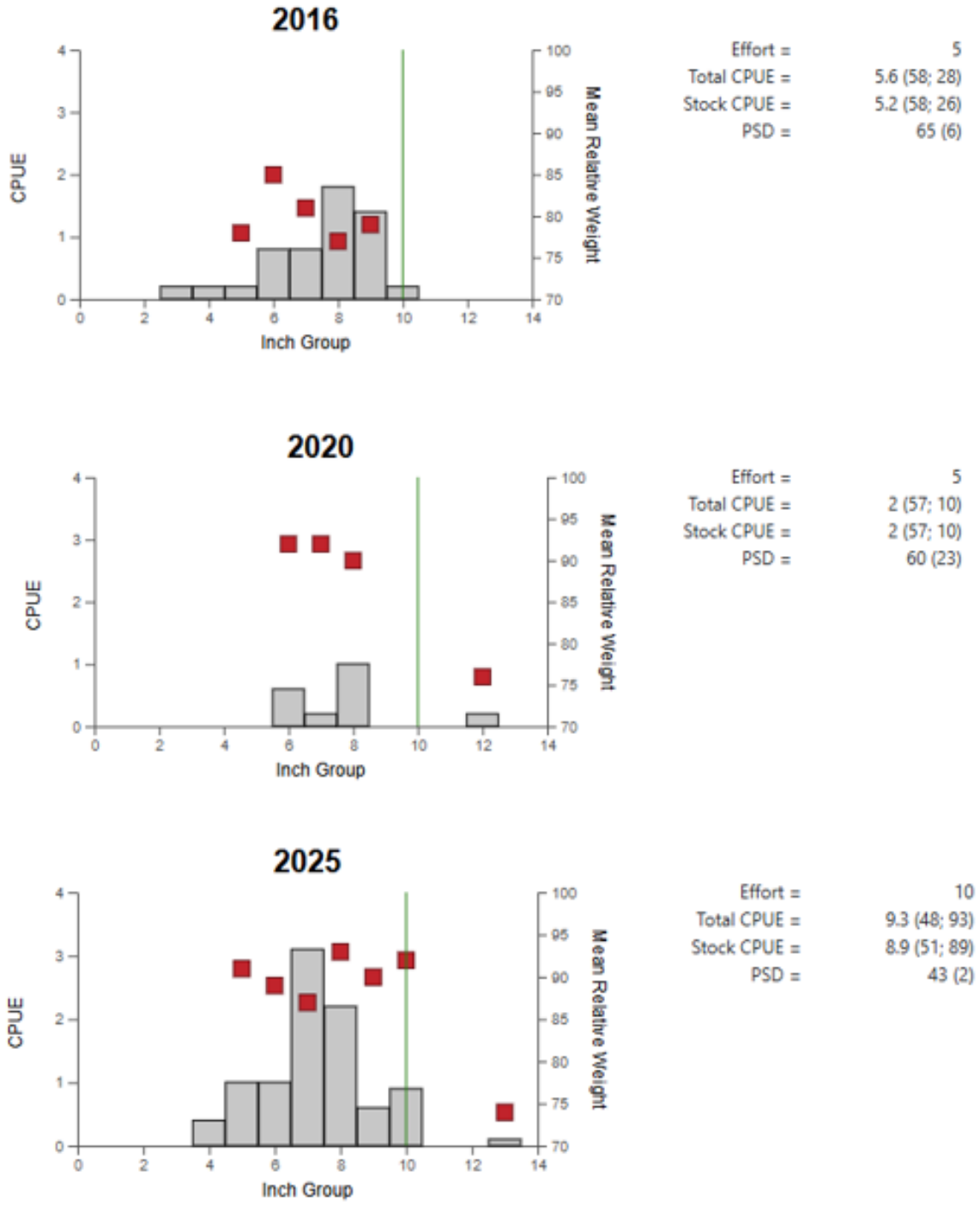


Figure 9. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (squares), and population indices (RSE and N for CPUE and SE for size structure in parentheses) for trap netting surveys, Lake Brazos, Texas, 2016, 2020 and 2025. 2016 and 2020 surveys took place in late fall, and 2025 survey took place in late winter. The minimum length limit (vertical line) for White Crappie was 10-inches for all three survey periods.

Proposed Sampling Schedule

Table 9. Proposed sampling schedule for Lake Brazos, Texas. Survey period is June through May. Gill net surveys are conducted in the spring while electrofishing and trap netting surveys are conducted in the fall and late winter respectively. Scheduled surveys are denoted by X.

	Survey year			
	2025-2026	2026-2027	2027-2028	2028-2029
Angler Access				X
Structural Habitat				X
Vegetation				X
Electrofishing – Fall				X
Trap netting				X
Gill netting				X
Report				X

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

Number (N), relative standard error (RSE), and catch per unit effort (CPUE) of all target species collected from all gear types from Lake Brazos, Texas, 2024-2025. Sampling effort was 5 net nights for gill netting, 10 net nights for trap netting, and 1 h for electrofishing.

Species	Gill Netting		Trap Netting		Electrofishing	
	N (RSE)	CPUE	N (RSE)	CPUE	N (RSE)	CPUE
Gizzard Shad					166 (23)	166.0
Threadfin Shad					40 (77)	40.0
Blue Catfish	31 (26)	6.2				
Channel Catfish	4 (73)	0.8				
Flathead Catfish	1 (100)	0.2				
Striped Bass	5 (32)	1.0				
HSB	3 (41)	0.6				
White Bass						
Bluegill					141 (19)	141.0
Longear Sunfish					82 (24)	82.0
Redear Sunfish					17 (39)	17.0
Redbreast Sunfish					9 (77)	9.0
Green Sunfish					2 (67)	2.0
Warmouth					1 (100)	1.0
Largemouth Bass					66 (17)	66.0
Spotted Bass					3 (100)	3.0
White Crappie	4 (73)	0.8	93 (48)	9.3		
Black Crappie			1 (100)	0.1		

APPENDIX B – Historical catch rates for targeted species

Catch rates (CPUE) of targeted species collected with electrofishing, trap netting and gill netting surveys on Lake Brazos, Texas, 2000 to present. Electrofishing stations were sampled with a 5.0 Smith-Root GPP (Gas Powered Pulsator) until 2010, a 7.5 Smith-Root GPP from 2010 to 2019, and a Smith-Root Apex unit thereafter. Species averages are in bold. Dashes represent no data available. Beginning in 2025, trap netting surveys were conducted in early spring instead of late fall.

Electrofishing

	2008	2012	2016	2020	2024	Average
Gizzard Shad	155.0	96.0	343.0	515.0	166.0	**255.0**
Threadfin Shad	21.0	17.0	116.0	34.0	40.0	**45.6**
Bluegill	50.0	119.0	54.0	48.0	141.0	**82.4**
Longear Sunfish	41.0	133.0	35.0	23.0	82.0	**62.8**
Redear Sunfish	12.0	5.0	14.0	8.0	17.0	**11.2**
Warmouth	0	2.0	0	0	1.0	**0.6**
Green Sunfish	5.0	0	0	2.0	2.0	**1.8**
Redbreast Sunfish	0	0	0	1.0	9.0	**2.0**
Largemouth Bass	20.0	63.0	40.0	40.0	66.0	**45.8**
Spotted Bass	13.0	13.0	0	0	3.0	**5.8**
Smallmouth Bass	0	2.0	0	0	0	**0.4**

Trap netting

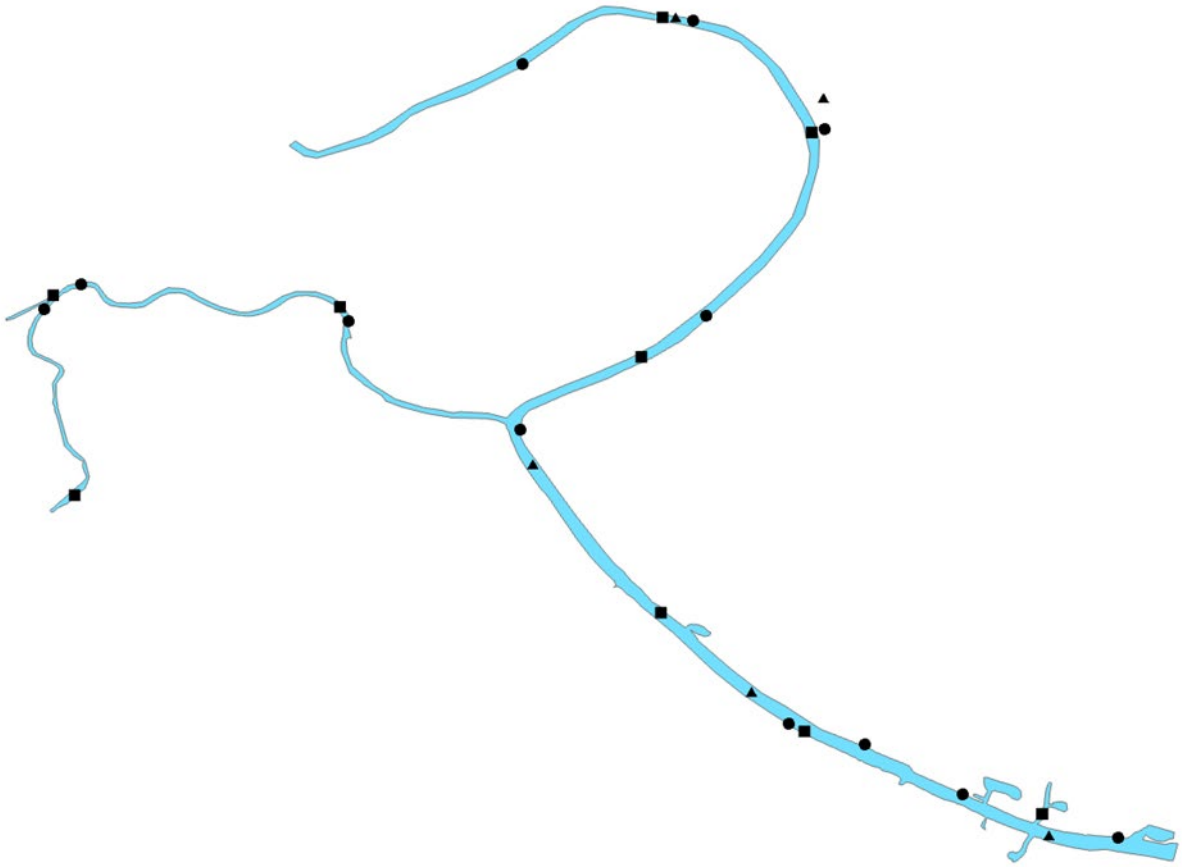
	2008	2012	2016	2020	2025	Average
White Crappie	4.2	2.6	5.6	2.0	9.3	**4.7**
Black Crappie	0.0	0.0	0.0	0.0	0.1	**0.02**

Gill netting

	2009	2013	2017	2021	2025	Average
Blue Catfish	5.2	10.7	4.8	4.8	6.2	**6.3**
Channel Catfish	7.4	2.8	2.0	2.1	0.8	**3.0**
Flathead Catfish	0.0	0.0	0.0	0.0	0.2	**0.04**
Striped Bass	0.6	0.5	0.0	2.8	1.0	**1.0**
White Bass	1.4	1.5	0.0	0.6	0.0	**0.7**
HSB	0.0	0.3	0.0	0.4	0.6	**0.3**
White Crappie	0.0	0.2	0.5	2.0	0.8	**0.7**
Black Crappie	0.0	0.0	0.0	0.0	0.0	**0.0**

APPENDIX C – Map of sampling locations

Location of sampling sites, Lake Brazos, Texas, 2024-2025. Electrofishing, trap netting and gill netting stations are indicated by circles, squares, and triangles respectively. Water level data is unavailable for Lake Brazos.



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