Brady Creek Reservoir

2022 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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Contents

Survey and Management Summary

Fish populations in Brady Creek Reservoir were surveyed in 2020 and 2022 using electrofishing, 2020 and 2022 using trap netting, 2021 using tandem hoop netting, and in 2023 using gill netting. Historical data are presented with the 2020-2023 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: Brady Creek Reservoir is a 2,021-acre impoundment on Brady Creek located in the Colorado River basin. It was constructed in 1963 to provide water for municipal, recreational, and flood control purposes. From 2000 to 2018, water levels ranged from 2 to 16 feet below conservation pool elevation before filling in October 2018. From 2018 to 2023, the water level decreased to 11 feet below conservation pool. Boat and angler access is adequate, however launching larger boats becomes restricted at lower water levels.

Management History Important sport fishes have included Largemouth Bass, White Bass, White Crappie, and Blue and Channel Catfishes. Smallmouth Bass were stocked in 1984 and 1986, but a self-sustaining population failed to develop. Bluegill and Largemouth Bass were stocked in 2016 and 2017 to help these populations recover from the golden alga fish kills in 2012 and 2014. Angler harvest of sport fishes has been managed under statewide length and daily bag limits. Management of the reservoir was transferred from the San Antonio district office to the San Angelo district office in 2011.

Fish Community

- **Prey species:** Electrofishing catch rate of Gizzard Shad decreased from previous surveys, and less than 40% were available as prey to most sport fish in 2022 based on their size. Electrofishing catch of Bluegill was high, but few Bluegills were over 6-inches in length.
- **Catfishes:** Channel Catfish relative abundance increased, and individuals up to 22 inches were observed in sampling. Blue Catfish were present in the reservoir in low abundance. Blue Catfish up to 26 inches were observed in sampling. Flathead Catfish were present in the reservoir in low abundance.
- **Temperate basses:** White Bass continued to be present in the reservoir in low abundance. Most of the White Bass observed during sampling were available to anglers.
- **Largemouth Bass:** Largemouth Bass abundance increased with many legal-sized fish available to anglers. Largemouth Bass up to 22 inches were observed in sampling. Largemouth Bass had slower than average growth (age at 14 inches long was 3.8 years), and they tended to be thin for most lengths.
- **White Crappie:** White Crappie were moderately abundant with legal-size fish available to anglers. White Crappie up to 13 inches were observed in sampling. Most crappie reached legal size within three years.

Management Strategies: Conduct additional electrofishing and trap net surveys in 2024, and general monitoring surveys with trap nets, gill nets, and electrofishing surveys in 2026-2027. Access and vegetation surveys will be conducted in 2026-2027.

Introduction

This document is a summary of fisheries data collected from Brady Creek Reservoir from 2020-2023. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2020-2023 data for comparison.

Reservoir Description

Brady Creek Reservoir is a 2,021-acre impoundment on Brady Creek located in the Colorado River basin about 5 miles west of Brady, Texas. It was constructed in 1963 to provide water for municipal, recreational, and flood control purposes. Severe water level fluctuations of 15+ feet are common (Figure 1). In 2022, habitat consisted primarily of submerged terrestrial vegetation and limited areas of standing timber. Additionally, limited stands of emergent vegetation were observed. Sparse hydrilla stands have been present historically but have not been documented since 2010 (Table 6). Golden alga impacted the reservoir in 2012 and 2014, and reduced abundance of fish populations. Other descriptive characteristics for Brady Creek Reservoir are contained in Table 1.

Angler Access

Brady Creek Reservoir has four public boat ramps and no private boat ramps (Table 2). Shoreline fishing access is limited to the shores of Brady City Park and the crappie house located within the city park.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Wright 2019) included:

1. Stock Florida strain Largemouth Bass, Channel Catfish, and Threadfin Shad in 2020. Monitor sportfish populations with electrofishing and trap netting in 2020 and 2022 and with tandem hoop nets in 2021 and 2023. Assess Largemouth Bass genetics in 2022. Conduct a spring quarter creel survey in 2022.

   Action: Florida Largemouth Bass were stocked in 2020, however Channel Catfish and Threadfin Shad were not. All monitoring surveys were conducted as planned. The spring quarter creel survey was moved to Champion Creek Reservoir due to better water levels and more angler activity.

2. Cooperate with the City of Brady to post invasive species awareness and fishing regulation signage, educate the public about invasive species, and track existing and future inter-basin water transfers to facilitate potential invasive species responses.

   Action: The San Angelo District continued to work with the City of Brady to post signage and to educate the public on invasive species threats through media outlets.

Harvest regulation history: All sport fishes have been and are currently managed with statewide regulations. Current regulations are found in Table 3.

Stocking history: Florida Largemouth Bass, Blue and Channel Catfishes, Smallmouth Bass, and Threadfin Shad have been stocked into the reservoir. Blue Catfish were last stocked in 1981. Smallmouth Bass stockings were conducted in the mid-1980s; however, a fishery did not result. Recently, Florida Largemouth Bass and Bluegill were stocked following golden alga fish kills in 2012 and 2014. The complete stocking history is in Table 4.

Vegetation/habitat management history: There has been no significant vegetation or habitat management on this reservoir.

Water transfer: Brady Creek Reservoir is primarily used for municipal water supply, recreation, and to a lesser extent, flood control. No interbasin transfers are known to exist.

Methods

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

Electrofishing – Largemouth Bass, sunfishes, and Gizzard Shad were collected by electrofishing (1 hour at 12, 5-min stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing. Ages for Largemouth Bass were determined using otoliths from 19 randomly selected fish (range 13.0 to 14.9 inches).

Trap netting – Crappie were collected using trap nets (10 net nights at 10 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn). Ages for crappie were determined using otoliths from 23 randomly selected fish (range 9.0 to 10.9 inches).

Gill netting – Channel Catfish, and White Bass were collected by gill netting (10 net nights at 10 stations). CPUE for gill netting was recorded as the number of fish caught per net night (fish/nn).

Tandem hoop nets – Channel Catfish were collected using 10 tandem hoop-net series at 10 stations. Nets were baited with soap and deployed for 2-night soak durations. CPUE for tandem hoop netting was recorded as the number of fish caught per tandem hoop net series (fish/series).

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 since 2005. Electrophoresis analysis was used prior to 2005.

Statistics – Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], and condition indices [relative weight (W_r)] were calculated for target fishes according to Anderson and Neumann (1996). Index of Vulnerability (IOV) was calculated for Gizzard Shad (DiCenzo et al. 1996). Standard error (SE) was calculated for structural indices and IOV. Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE and creel statistics.

Habitat – A vegetation survey was conducted in 2022. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Water level – Source for water level data was the United States Geological Survey (USGS 2023).

Results and Discussion

Habitat: The last structural habitat survey was conducted in 2010 which showed 85% of the littoral area consisted of natural and rocky shoreline (Dennis and Myers 2011); this survey was conducted at 1370 surface acres (55.3% capacity). Trace amounts of emergent vegetation (bulrush) were observed in 2022, but no floating or submerged vegetation was present. Historically, Brady Creek Reservoir supported emergent and submerged native vegetation (Table 6). Fluctuating water levels have limited native vegetation in recent years. The reservoir refilled in fall 2018 resulting in abundant flooded terrestrial habitat, but water levels have since decreased to 11 feet below conservation pool in recent years.

Prey species: Electrofishing catch rates of Gizzard Shad were 259.0/h and 55.0/h, in 2020 and 2022, respectively. Index of Vulnerability (IOV) for Gizzard Shad was adequate in 2020 at 78 but was low in 2022 at 36 (Figure 2). Total CPUE for Bluegill in 2022 was 201.0/h, down from 364.0/h in 2020 (Figure 3).

Other sunfish species observed include Green Sunfish, Warmouth, and Longear Sunfish (Appendix A). The decline in prey abundance in recent years is likely due to decreased water levels and loss of habitat.

Channel Catfish: Channel Catfish were sampled with gill nets in the spring and hoops nets in the summer. The total gill net catch rate of Channel Catfish was 7.3/nn in 2023 (Figure 4). Channel Catfish ranged from 6 to 22 inches. Spring caught Channel Catfish were in good condition as relative weights ranged from 88 to 110 among all inch groups. The total tandem baited hoop net catch rate of Channel Catfish was 3.7/series in 2023, down from 5.6/series and 5.7/series in 2021 and 2019, respectively (Figure 5). Channel Catfish ranged from 8 to 18 inches during the survey period. Condition was inadequate for most inch classes in the 2023 hoop net survey, relative weights ranged from 76 to 90. Channel Catfish age at 12 inches long was 5.0 years in 2023 (N = 13, range 5-7 years).

White Bass: White Bass were sampled in the spring with gill nets. The gill net catch rate of White Bass was 2.8/nn in 2023 (Figure 6). Individuals observed in sampling ranged from 7 to 13 inches; most were of legal length and were available for anglers to harvest. Size structure of the White Bass population was high, PSD was 82, indicating a higher proportion of large individuals in the population as opposed to small. Body condition of White Bass was inadequate, likely resulting from the lack of appropriately sized Gizzard Shad (IOV = 36). Relative weights for most inch classes were under 90 and ranged from 84 to 92.

Largemouth Bass: Largemouth Bass are historically the primary sportfish sought by anglers fishing Brady Creek Reservoir. The total electrofishing catch rate of Largemouth Bass was 113.0/h in 2022, which was similar to 128.0/h in 2020 and higher than 30.0/h in 2018 (Figure 7). CPUE-Stock ranged from 6.0 to 18.0 fish/h from 2014 to 2018 (Wright 2019) but increased to 91.0 and 76.0 fish/h in 2020 and 2022, respectively. Largemouth Bass PSD was 63 in 2022, which was higher than 46 in 2020. Greater numbers of legal-size fish were observed in 2022 compared to 2020; CPUE-14 increased from 19.0 fish/h to 24.0 fish/h in 2020 and 2022, respectively. Largemouth Bass from 3 to 20 inches were observed in 2022. Body condition in 2022 was poor for sub-legal bass but was adequate for most inch classes of legal-size bass (Figure 7). Decline in water level since summer 2019 has negatively affected Gizzard Shad abundance, and to a lesser extent Bluegill abundance. An increase in intraspecific competition resulting from greater recruitment, coupled with decreases in prey species abundance, has likely led to lower Largemouth Bass relative weights in recent surveys. Since 2003, Florida alleles have ranged from 63 to 81% and Florida genotype has ranged from 0 to 23% (Table 7). Florida Largemouth Bass influence was lower than the previous genetic analysis; 2022 analysis indicated 72% Florida alleles in the population, down from 81% in 2018 (Table 7). Successful Largemouth Bass stockings in 2016 and 2017 following the golden alga fish kill in 2014 were significant in increasing Florida genetics in the population. Largemouth Bass age at 14 inches long was 3.8 years in 2022 (N = 19, range 3-4 years).

White Crappie: The total trap net catch rate of White Crappie was 11.2/nn and 5.1/nn in 2022 and 2020, respectively (Figure 8). Crappie up to 13 inches were collected in 2022 and the collection of small crappie indicated successful reproduction had occurred. Twenty-two percent of the White Crappie collected in 2022 were legal size. The abundance of legal-size fish has increased over the last three surveys; CPUE-10 was 2.5 fish/nn in 2022, up from 1.1 and 0.3 fish/nn in 2020 and 2018, respectively. White Crappie condition was good for most inch classes; relative weights ranged from 82 to 122. White Crappie reached legal length in 2.4 years (N = 23, range 1-3 years).

Fisheries Management Plan for Brady Creek Reservoir, Texas

Prepared – July 2023

ISSUE 1: Brady Creek Reservoir has not received a Florida Largemouth Bass stocking since 2020 and has a history of consistently producing fish ≥ 8 pounds. Anglers have entered 3 Lunker Class (8+ pounds) and 1 Elite Class (10+ pounds) fish into the Toyota ShareLunker program from 2020-2023. Genetic analysis in 2022 showed a decrease in Florida alleles in the Largemouth Bass population. The population had 72% Florida alleles in 2022, down from 81% in 2018. Currently, the reservoir water level is low and lacks adequate habitat for stocking. However, monitoring is necessary to maintain trend data on the Largemouth Bass population.

MANAGEMENT STRATEGIES

1. Contingent upon a significant water level rise during the next 4-year period, we will request stockings of Lone Star Bass fingerlings which are 2nd generation offspring of pure Florida strain ShareLunker Largemouth Bass that were over 13 pounds, at a rate of 1,000/km shoreline.
2. Monitor Largemouth Bass and prey populations with fall electrofishing surveys in 2024 and 2026.
3. Assess Largemouth Bass genetics in fall 2026 if stocked. If no stocking occurs, no genetic analysis will be conducted.

ISSUE 2: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (Dreissena polymorpha) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches, and plugging engine cooling systems. Giant salvinia (Salvinia molesta) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate marina owners about invasive species, and provide them with posters, literature, etc… so that they can in turn educate their customers.
3. Educate the public about invasive species through the use of media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.
5. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses

Objective-Based Sampling Plan and Schedule (2023–2027)

Sport fish, forage fish, and other important fishes

Primary sport fishes in Brady Creek Reservoir include Largemouth Bass, White Crappie, and Channel Catfish. Known important forage species include Bluegill and Gizzard and Threadfin Shad.

Survey objectives, fisheries metrics, and sampling objectives

Largemouth Bass: Largemouth Bass are a primary sport fish in Brady Creek Reservoir. Largemouth Bass are managed with the statewide 14-in MLL regulation. Over the next survey period, objectives will be to collect data on abundance, size structure, condition, and growth. A minimum of 12 randomly selected 5-min electrofishing sites will be sampled in fall 2024 and 2026 (Table 8), but sampling will continue at random sites until we achieve a CPUE-Stock RSE ≤25 and 50 stock-size fish are collected. Exclusive of the original 12 random stations, another 6 random stations will be determined in the event extra sampling is necessary. A maximum of 18 stations will be sampled. Otoliths from 13 fish between 13.0 and 14.9 inches will be collected in 2024 and 2026 to determine mean age at 14 inches to monitor large-scale changes in growth. Relative weight of Largemouth Bass > 8 inches (total length) will be determined from their length/weight data. A genetic sample of 30 fish will be collected during electrofishing in 2026 if stocking is received.

White Crappie: Catch rates of White Crappie have historically been high prior to golden alga fish kills. CPUE-Stock was 5.0 fish/nn in 2020 and increased to 7.3 fish/nn in 2022. We will sample 10 trap net sets in fall 2024 and 2026 (Table 8) to monitor trends in abundance, size structure, condition, and growth. Otoliths from 13 fish between 9.0 and 10.9 inches will be collected to determine mean age at 10 inches in 2024 and 2026. No additional sampling will be conducted beyond the original 10 random stations.

Channel Catfish: Historically, gill nets have been ineffective at capturing adequate numbers of Channel Catfish in Brady Creek Reservoir; however, the gill net catch rate of stock size Channel Catfish was 6.2 fish/nn in 2023. Tandem baited hoop nets have been the primary Channel Catfish sampling gear for Brady Creek Reservoir in recent years. CPUE-Stock was 1.2 and 1.8 fish/nn in 2021 and 2023 tandem hoop net surveys, respectively, down from 4.1 fish/nn in 2019. Samples collected with hoop nets have shown limited size distribution and lower catch rates as compared to gill nets fished in the same season. We will sample with 10 gill nets in spring 2027 (Table 8) to monitor Channel Catfish in Brady Creek Reservoir. Survey objectives will be to estimate size structure (PSD; 50 fish minimum) and relative abundance (RSE ≤ 25 of CPUE-Total). No additional effort will be expended if objectives are not meet beyond the original 10 net sets.

Blue Catfish: Blue Catfish have historically had very low catch rates (< 1.0/nn). As per the Channel Catfish sampling effort, any Blue Catfish sampled during gill netting will be weighed and measured for total length to provide limited data on presence/absence, length frequency, and condition. However, no sampling objectives will be made for Blue Catfish**.**

White Bass: White Bass have historically had low catch rates (< 2.8/nn). As per the Channel Catfish sampling effort, any White Bass sampled during gill netting will be weighed and measured for total length to provide limited data on presence/absence, length frequency, and condition. However, no sampling objectives will be made for White Bass.

Sunfish and Shad: Sunfish and Gizzard Shad are important forage fish in Brady Creek Reservoir. From 2003 to 2022 total catch rates of Bluegill have ranged from 4.0 fish/h to 364.0 fish/h while Gizzard Shad have ranged from 8.0 fish/h to 801.0 fish/h. Threadfin Shad have historically been present in lower abundance, but none were collected in 2020 or 2022. Continuation of sampling, as per Largemouth Bass above, will allow for monitoring of large-scale changes in Bluegill and Gizzard Shad relative abundance and size structure. Sampling effort based on achieving sampling objectives for Largemouth Bass should result in sufficient numbers of Gizzard Shad and Bluegill for size structure estimation (PSD and IOV; 50

fish minimum) and relative abundance estimates (RSE ≤ 25 of CPUE-Total). No additional effort will be expended if objectives are not meet beyond the effort for Largemouth Bass.

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Tables and Figures

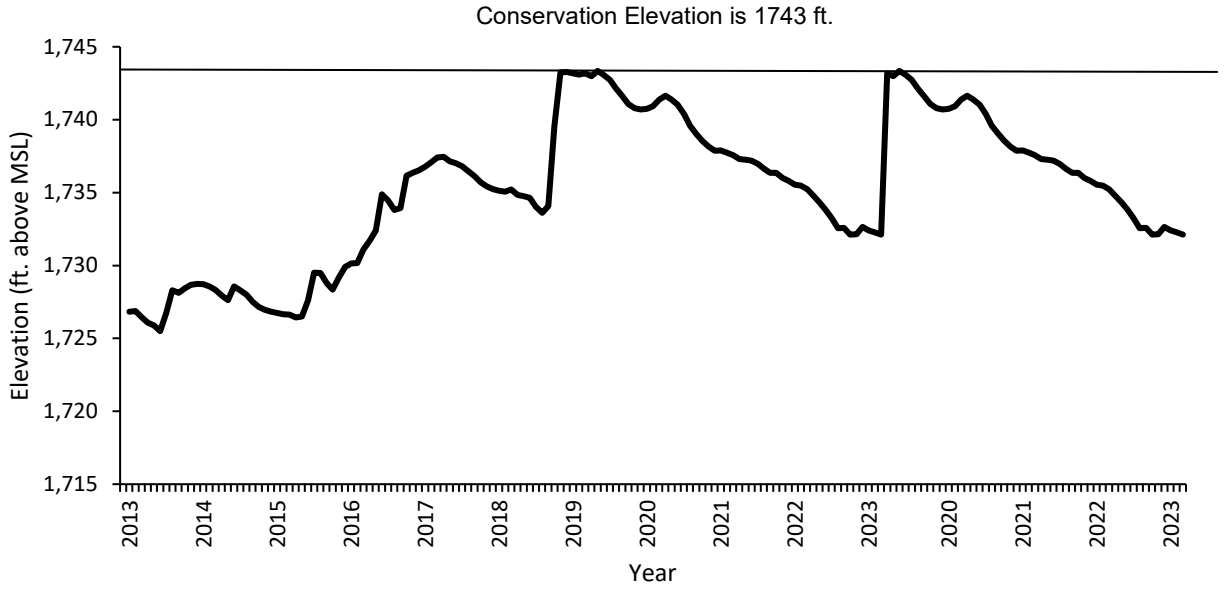


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Brady Creek Reservoir, Texas.

Table 1. Characteristics of Brady Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1963
Controlling authority	City of Brady, Texas
County	McCulloch
Reservoir type	Tributary in the Colorado River basin
Shoreline Development Index	4.0
Conductivity	1,216 µS/cm

Table 2. Boat ramp characteristics for Brady Creek Reservoir, Texas, August, 2022. Reservoir elevation at time of survey was 1,733 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Brady Lake Park South	31.13658 -99.3845	Y	15	1726	Fair
Brady Lake Park North	31.14183 -99.39067	Y	10	1735	Fair
North Shore Ramp	31.13067 -99.38293	Y	30	1733	Fair
FM 2028 Ramp	31.119433 -99.39693	Y	30	1730	Fair

Table 3. Harvest regulations for Brady Creek Reservoir.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (only 10 ≥ 20 inches)	None
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

Table 4. Stocking history of Brady Creek Reservoir, Texas. FGL = fingerling; AFGL = advanced fingerling; ADL = adults; UNK = unknown.

Species	Year(s) Stocked	Number of Years	Number Stocked	Size
Threadfin Shad	1984	1	500	ADL
Blue Catfish	1978-1981	4	110,661	UNK
Channel Catfish	1980	1	35,000	UNK
	1999	1	400	ADL
	1987-2013	2	282,791	FGL
Bluegill	2013	1	2,316	FGL
	2016	1	50,772	FGL
Smallmouth Bass	1984-1986	2	76,240	FGL
Florida Largemouth Bass	1982-2019	8	731,416	FGL
	2020	1	144,897	FRY

Table 5. Objective-based sampling plan components for Brady Creek Reservoir, Texas 2022–2023.

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
	Age-and-growth	Age at 14 inches	N = 13, 13.0 – 14.9 inches
	Condition	W_r	10 fish/inch group (max)
	Genetics	% FLMB	N = 30, any age
Bluegill [a]	Abundance	CPUE–Total	RSE ≤ 25
	Size structure	PSD, length frequency	N ≥ 50
Gizzard Shad [a]	Abundance	CPUE–Total	RSE ≤ 25
	Size structure	PSD, length frequency	N ≥ 50
	Prey availability	IOV	N ≥ 50
Trap netting			
Crappie	Abundance	CPUE–Total	Exploratory
	Size structure	PSD, length frequency	Exploratory
Tandem hoop netting			
Channel Catfish	Abundance	CPUE–stock	Exploratory
	Size structure	PSD, length frequency	Exploratory

[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, Brady Creek Reservoir, Texas, 2006–2022. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2006	2010	2011	2014	2018	2022
Native submersed [a]	12.0 (0.9)	374.2 (27.6)	251.0 (19.0)	103.0 (12.6)	0.0 (0.0)	0.0 (0.0)
Native floating-leaved	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Native emergent [b]	0.0 (0.0)	40.5 (3.0)	13.0 (1.0)	13.0 (1.6)	Trace	Trace
Hydrilla	Trace	Trace	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Reservoir Surface Area (acres)	1290	1356	1322	820	1313	1190

[a] chara, sago pondweed, marine naiad, bladderwort, water stargrass, Illinois pondweed

[b] bulrush, cattail

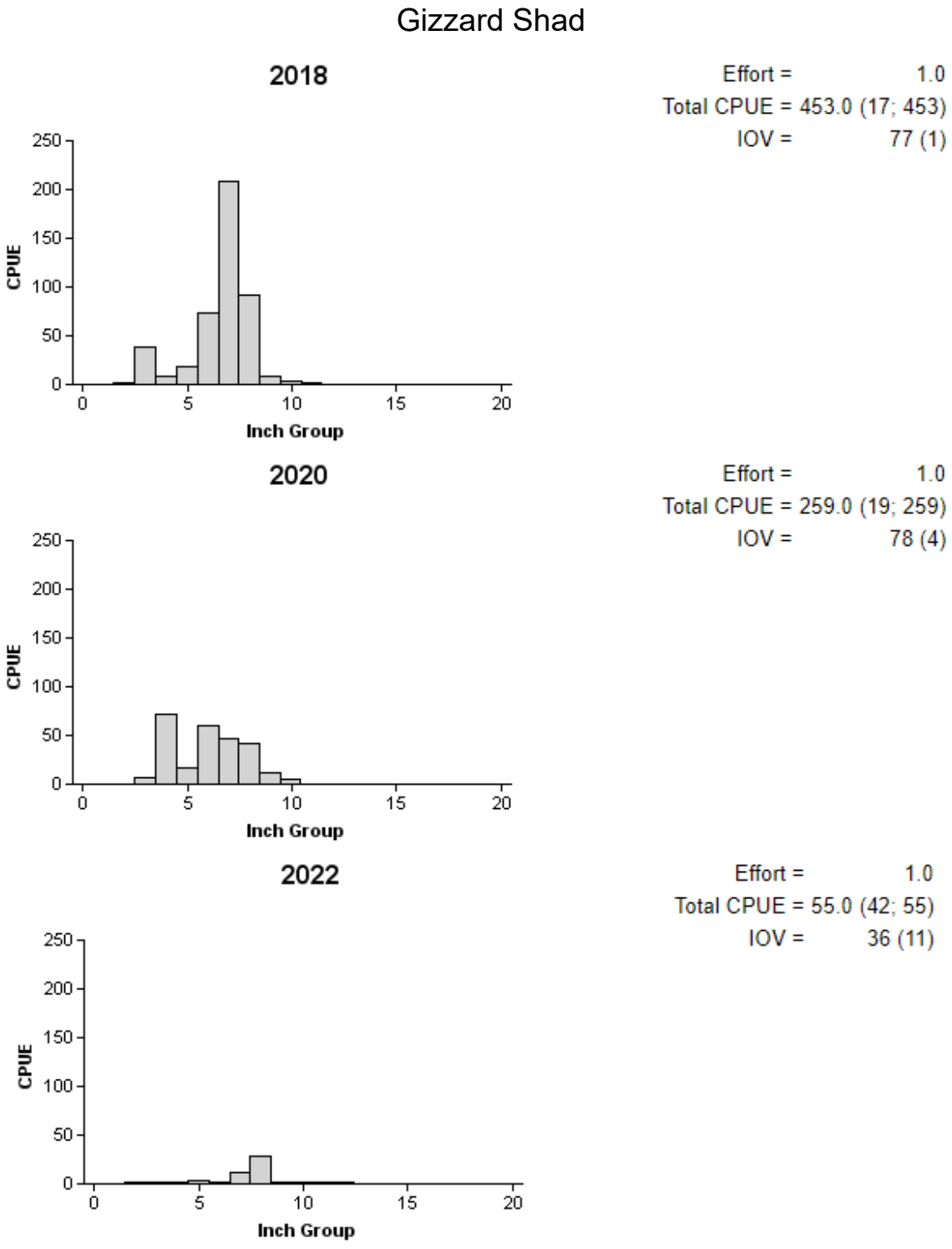


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Brady Creek Reservoir, Texas, 2018, 2020, and 2022.

Bluegill

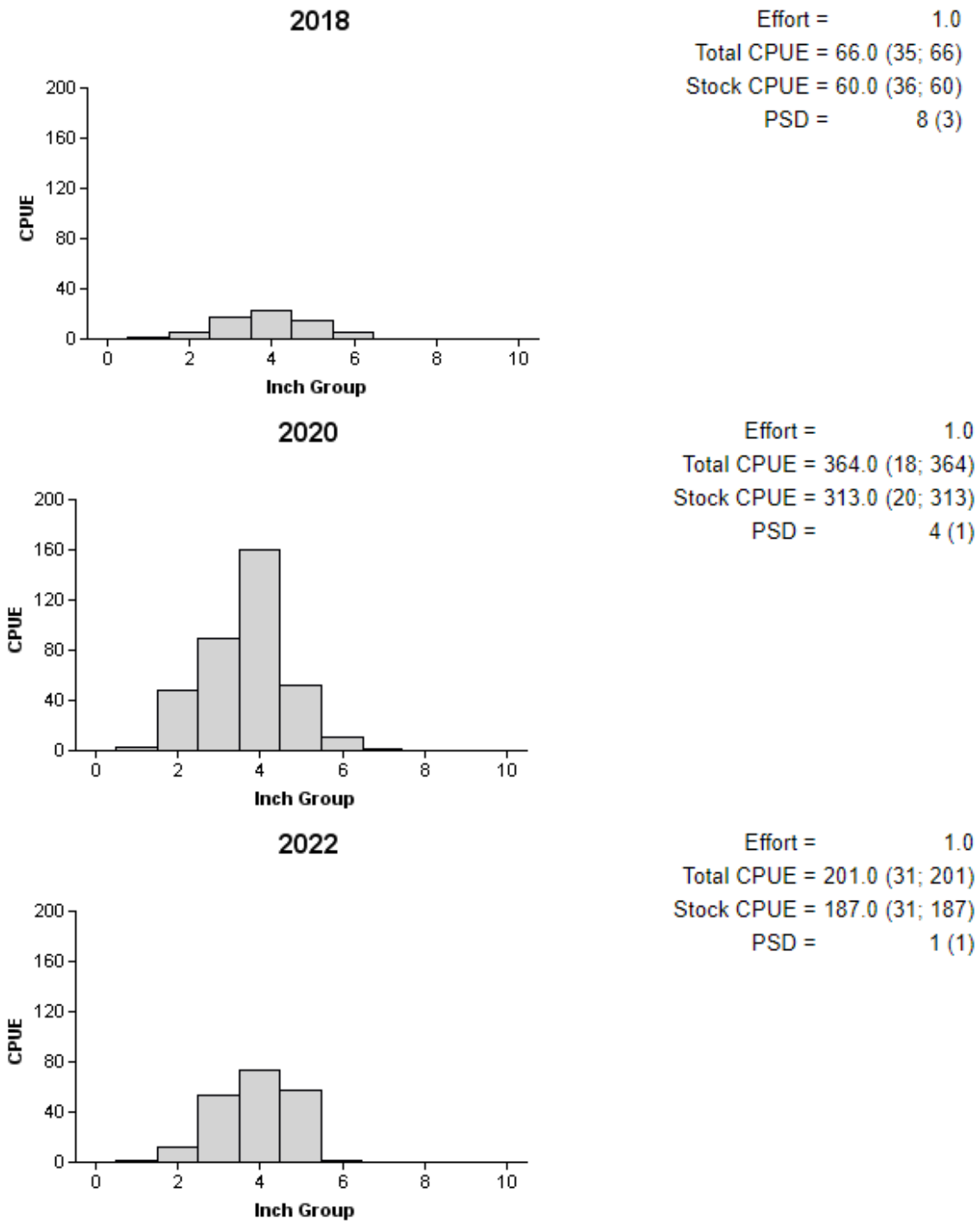


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Brady Creek Reservoir, Texas, 2018, 2020, and 2022.

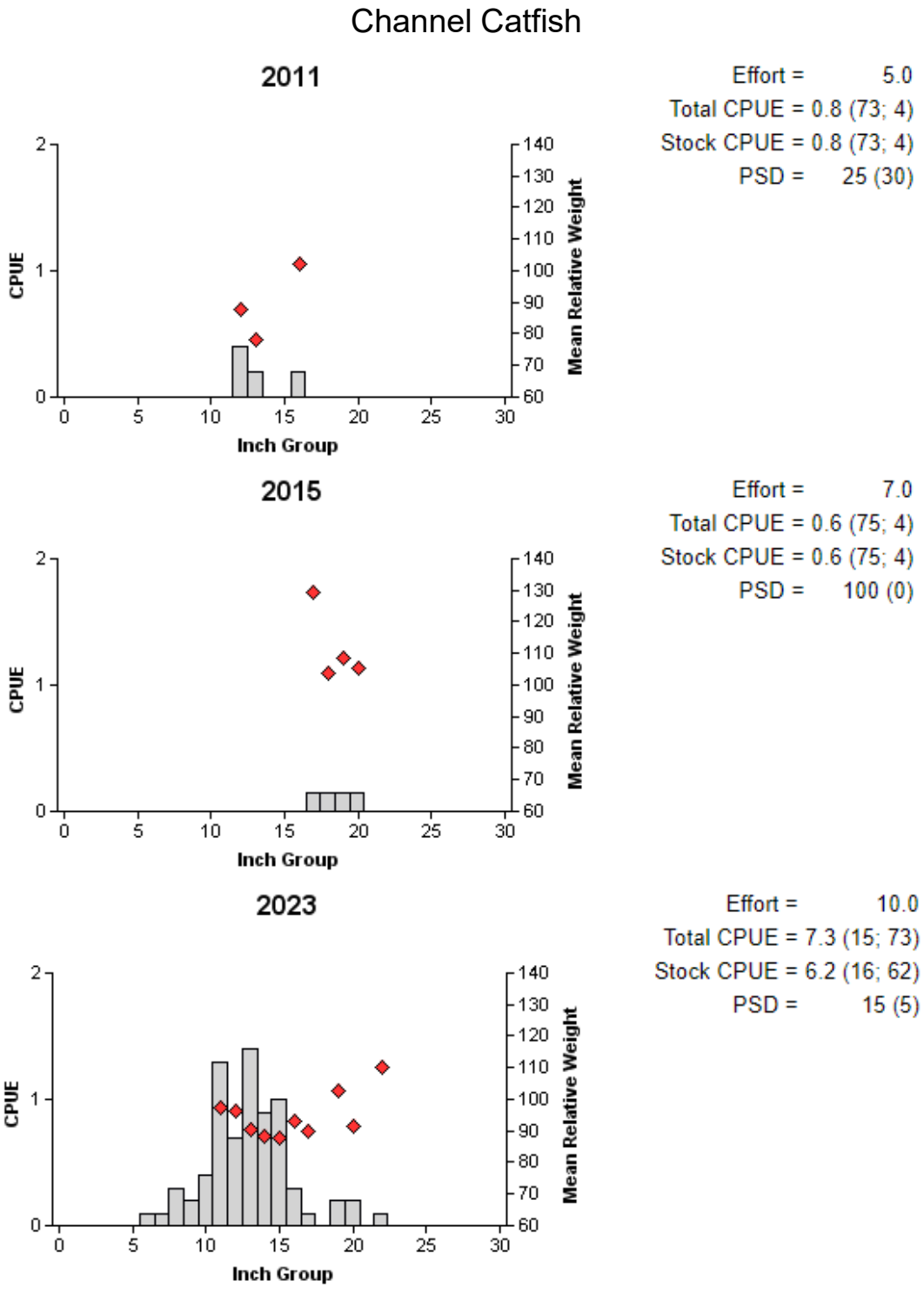


Figure 4. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting, Brady Creek Reservoir, Texas, 2011, 2015, and 2023.

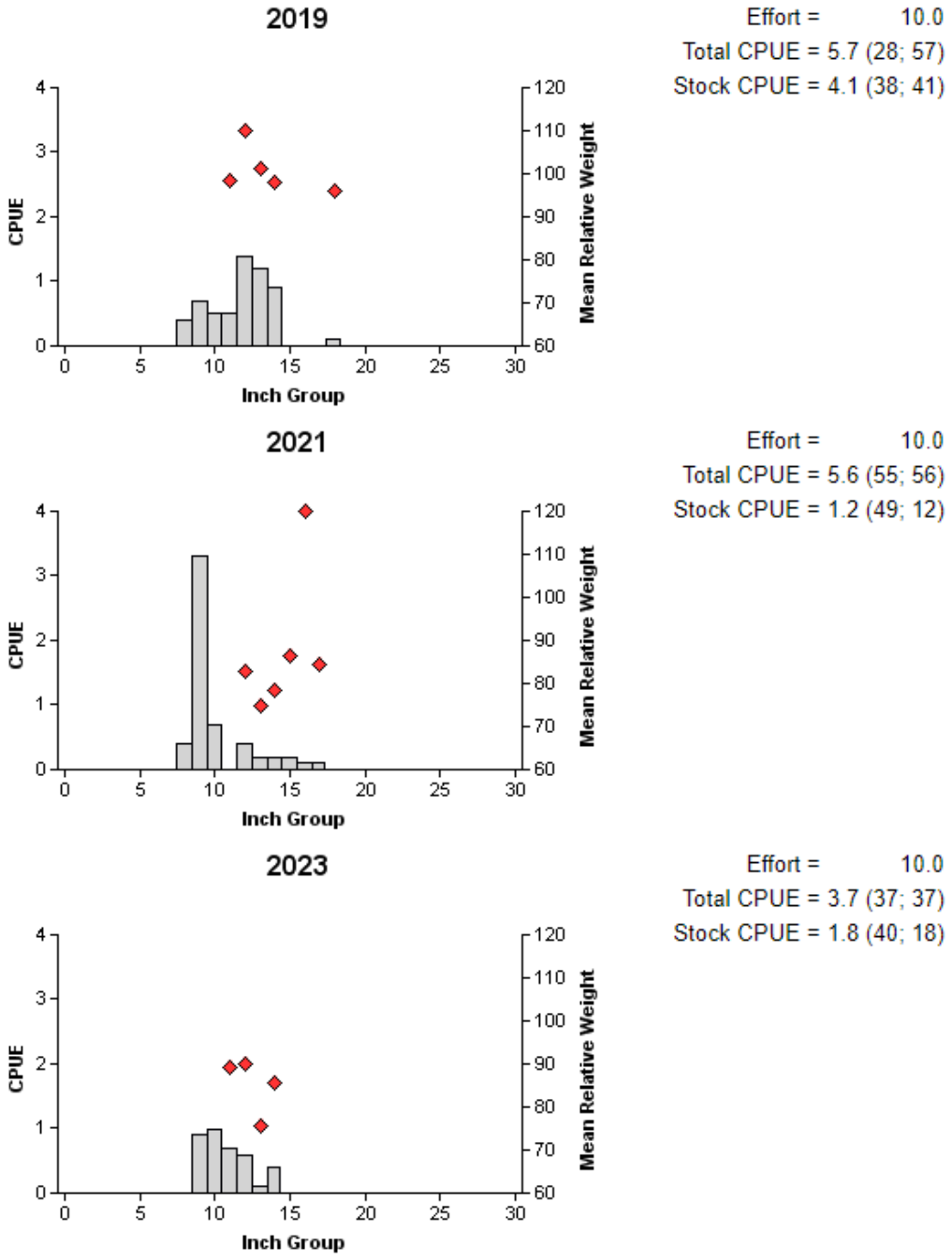


Figure 5. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring tandem hoop netting, Brady Creek Reservoir, Texas, 2019, 2021, and 2023.

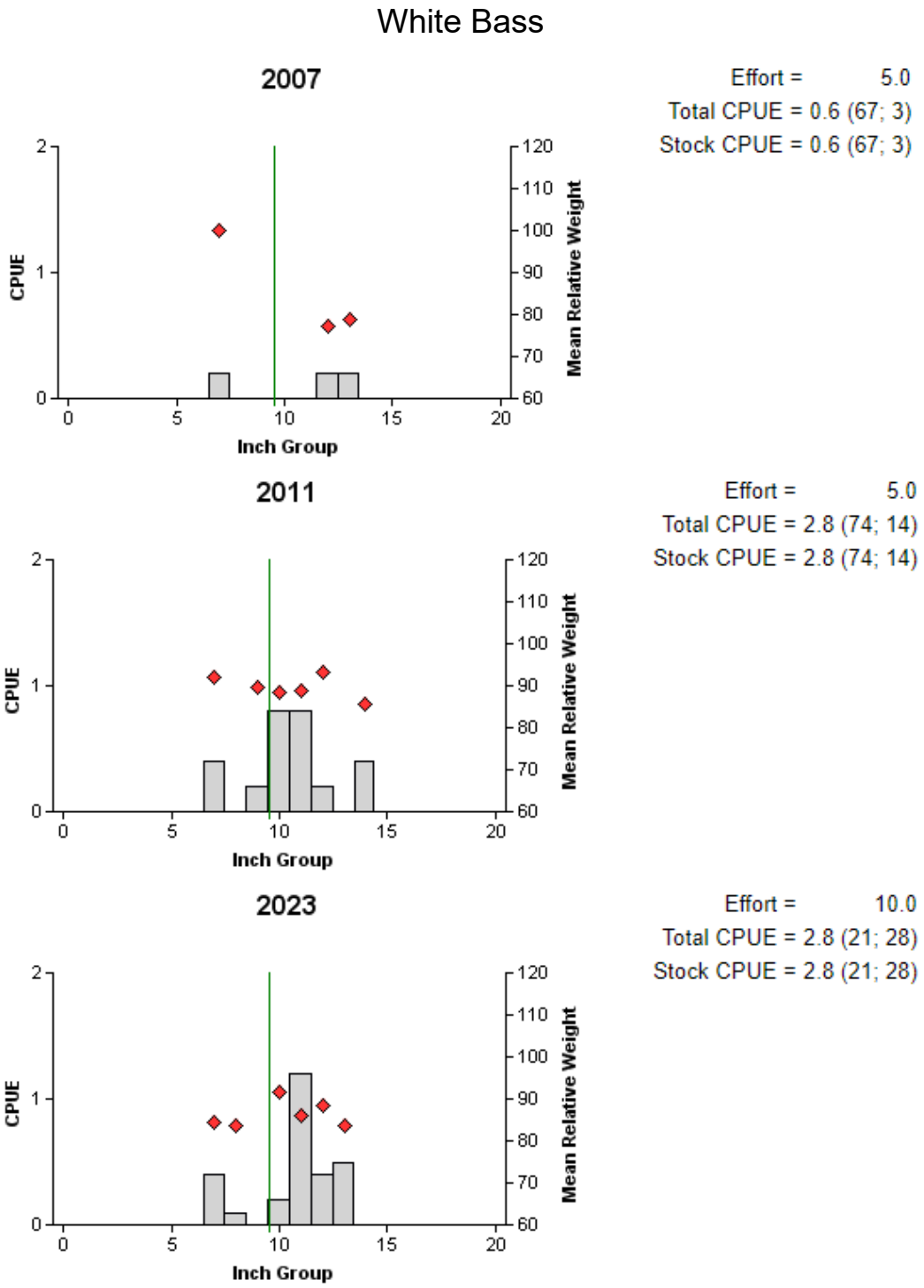


Figure 6. Number of White Bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting, Brady Creek Reservoir, Texas, 2007, 2011, and 2023. Vertical line indicates minimum length limit.

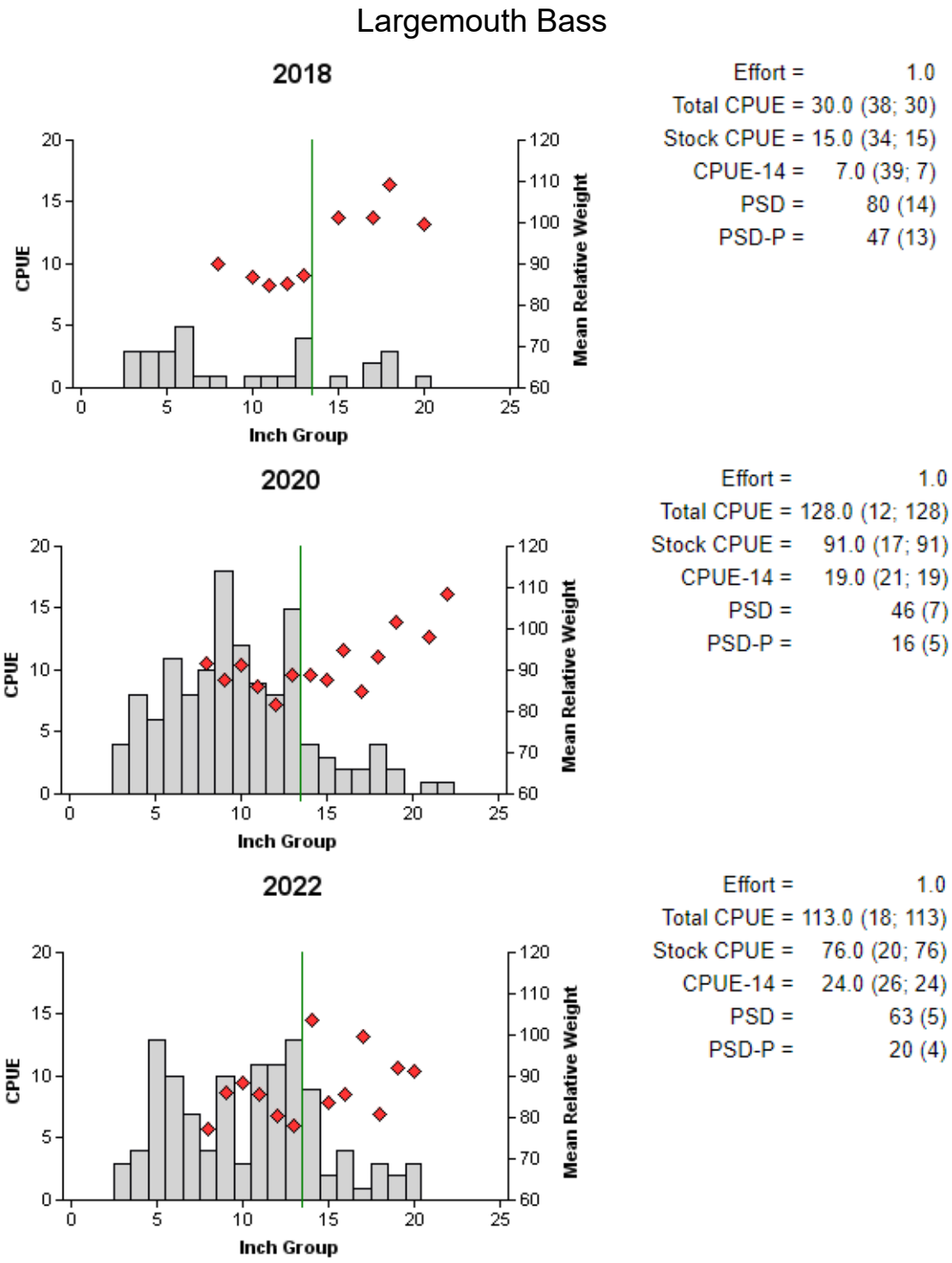


Figure 7. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Brady Creek Reservoir, Texas, 2018, 2020, and 2022. Vertical line indicates minimum length limit.

Table 7. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Brady Creek Reservoir, Texas, 2003, 2004, 2006, 2010, 2018, and 2022. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = 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	Intergrade	NLMB	% FLMB alleles	% FLMB
2003	28	3	25	0	67.0	10.7
2004	30	7	23	0	68.0	23.3
2006	30	2	28	0	63.0	6.7
2010	30	0	30	0	65.0	0.0
2018	29	3	26	0	81.0	10.3
2022	28	1	27	0	72.0	3.6

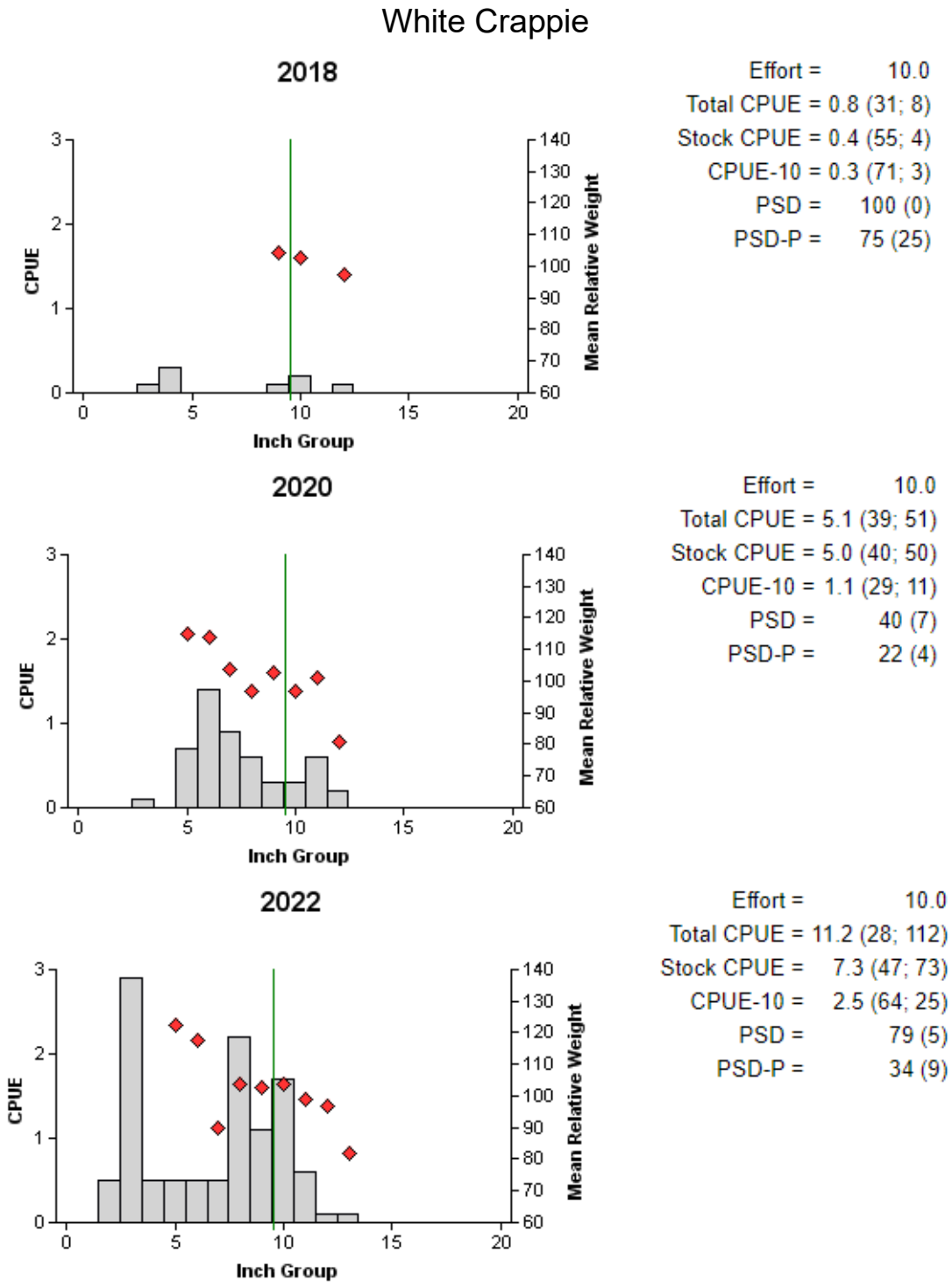


Figure 8. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Brady Creek Reservoir, Texas, 2018, 2020, and 2022. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 8. Proposed sampling schedule for Brady Creek Reservoir, 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.

	Survey year			
	2023-2024	2024-2025	2025-2026	2026-2027
Angler Access				X
Vegetation				X
Electrofishing – Fall		X		X
Trap netting		X		X
Gill netting				X
Creel survey			X[1]	
Report				X

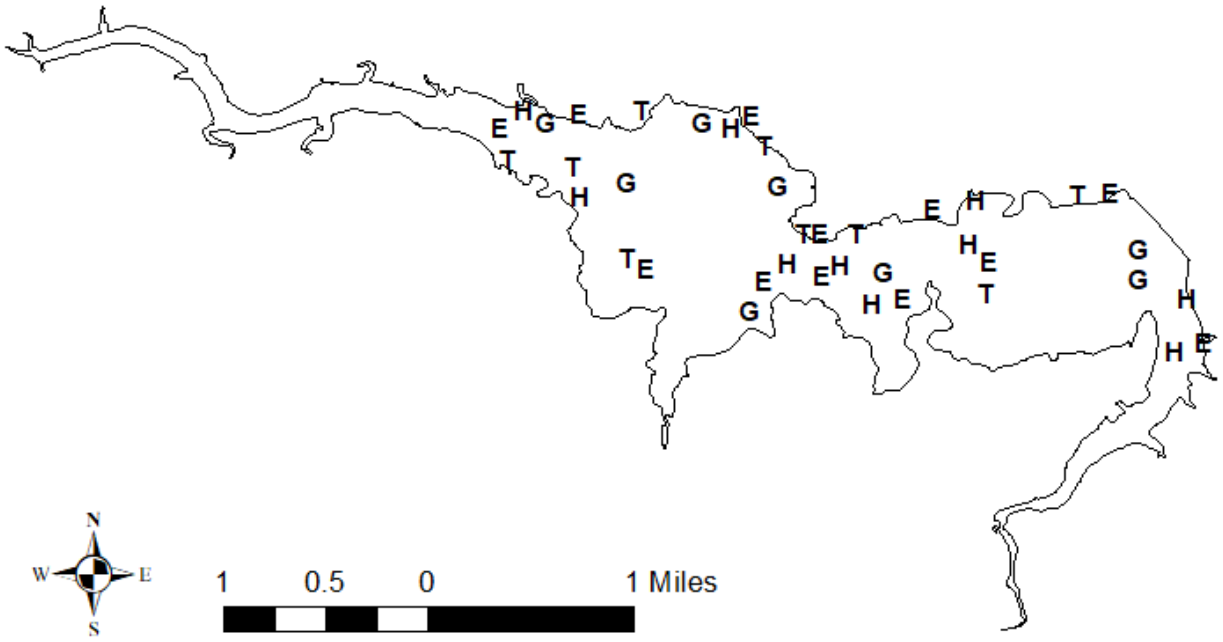
[1] spring quarter only roving creel

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 Brady Creek Reservoir, Texas, 2022-2023. Sampling effort was 10 net nights for trap netting, 1 hour for electrofishing, and 10 net series for hoop netting.

Species	Trap Netting		Electrofishing		Hoop Netting		Gill Netting	
	N	CPUE	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad			55	55.0 (42)				
Channel Catfish					37	3.7 (37)	73	7.3 (15)
White Bass							28	2.8 (21)
Green Sunfish			44	44.0 (30)				
Warmouth			11	11.0 (56)				
Bluegill			201	201.0 (31)				
Longear Sunfish			6	6.0 (46)				
Largemouth Bass			113	113.0 (18)				
White Crappie	112	11.2 (28)						

Appendix B– Map of sampling locations



Location of sampling sites, Brady Creek Reservoir, Texas, 2022-2023. Trap net, gill net, hoop net, and electrofishing stations are indicated by T, G, H, and E, respectively.

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