

# White Rock Lake

## 2023 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

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INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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## Survey and Management Summary

Fish populations in White Rock Lake were surveyed in 2021 and 2023 using electrofishing, low-frequency electrofishing in 2020 and 2023, trap netting in 2023 and in 2024 using gill netting. Historical data are presented with the 2021-2024 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:** White Rock Lake is a 995-acre impoundment located on White Rock Creek, a tributary of the Elm Fork of the Trinity River approximately 5 miles northeast of downtown Dallas, Texas. Water level remains relatively stable near conservation pool at 457.9 feet above mean sea level. Habitat primarily consisted of native emergent vegetation, rock outcrops, boat docks and fishing piers.

**Management History:** Important sport fishes include Largemouth Bass, White Crappie, and Channel Catfish. White Rock Lake is an urban fishery with most of the fishing pressure being bank angling (Brock and Hungerford 2011). The management plan from the 2020 survey report included promoting recreational angling opportunities at White Rock Reservoir and working with the controlling authority to install fish habitat structures around fishing piers, and stocking Florida Largemouth Bass to maintain trophy potential of the fishery. The Dallas/Fort Worth Inland Fisheries office continues to work with the City of Dallas to develop a habitat enhancement plan and has updated printable and online materials that promote fishing locations with ample bank access and quality fisheries, which includes White Rock Lake. In 2021, over 200 adult ShareLunker Largemouth Bass (ShareLunker Largemouth Bass are 1<sup>st</sup> generation offspring from angler-donated Largemouth Bass  $\geq$  13 pounds from the Toyota ShareLunker program) were stocked into White Rock Lake to maintain trophy potential of the fishery.

### Fish Community

- **Prey species:** Threadfin Shad were present in the reservoir. Electrofishing catch of Gizzard Shad was high, and most Gizzard Shad were available as prey to most sport fish. Electrofishing catch of Bluegill was high, but few Bluegills were over 6-inches long.
- **Catfishes:** Channel Catfish catch rates were higher than previous years with most fish collected being 13" or larger. No Blue Catfish or Flathead Catfish were collected.
- **White Bass:** No White Bass were collected during this survey period.
- **Largemouth Bass:** Largemouth Bass were abundant and in good condition.
- **White Crappie:** White Crappie were abundant and in great condition. About one-quarter of the populations is legal-size fish available to anglers.

**Management Strategies:** Continue stocking Lonestar Largemouth Bass at 1,000 fish/km of shoreline to maintain trophy potential of the Largemouth Bass fishery. Inform the public about the negative impacts of aquatic invasive species. Conduct an additional electrofishing survey in 2025, a hoop netting survey in 2025, and general monitoring surveys with trap nets, gill nets, and electrofishing surveys in 2027-2028. Access and vegetation surveys will be conducted in 2026/2027.

## Introduction

This document is a summary of fisheries data collected from White Rock Lake from 2021-2024. 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 2021-2024 data for comparison.

## Reservoir Description

White Rock Lake is a 995-acre impoundment located about five miles northeast of downtown Dallas in Dallas County, on White Rock Creek, a tributary of the Elm Fork of the Trinity River (Texas Water Development Board (TWDB) 2015). It was constructed in 1910 by the City of Dallas as a municipal water supply. Although it still supplies a small part of the city's municipal water needs, its primary purpose is recreation and condenser cooling at a nearby steam-electric generating plant. The conservation pool elevation of White Rock Lake is 457.9 feet above mean sea level, with a total reservoir capacity of 10,230 acre-feet (TWDB 2015). The lake has been dredged at least four times between 1937 and 1999, resulting in over 4.7 million cubic yards (~6.6 million tons) of sediment being removed. Although an accurate sedimentation rate could not be calculated due to all the dredging, sedimentation is a major issue for White Rock Lake leading to a loss of ~40% of its storage capacity. Fishery habitat primarily consisted of native emergent vegetation in the form of bulrush and water willow, rock outcrops, boat docks and fishing piers. Since White Rock Lake is no longer used as a primary source for municipal water, a water level gauge is not available, but water level remains stable near conservation pool. Other descriptive characteristics for White Rock Reservoir can be found in Table 1

## Angler Access

White Rock Reservoir has numerous public fishing piers and five public boat ramps with ample parking near each ramp and pier. The boat ramps are open year-round and do not require fees. Outboard motors on White Rock can be no more than 10.5 HP. However, boats with larger motors can utilize the reservoir using electric trolling motors. There are two ADA compliant facilities on the reservoir and bank fishing is widely available via a paved trail that circles the reservoir. Additional boat ramp characteristics can be found in Table 2.

## Management History

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Holt et al. 2020) included:

1. Improve trophy bass potential by stocking Florida Largemouth Bass fingerlings in 2022 and 2023.

**Action:** Over 200 Adult ShareLunker Bass were stocked in 2022. ShareLunker Largemouth Bass are 1<sup>st</sup> generation offspring from angler-donated Largemouth Bass  $\geq$  13 pounds from the Toyota ShareLunker program. ShareLunker Bass were stocked to increase the trophy potential for Largemouth Bass.

2. Develop and conduct a creel survey on White Rock Lake.

**Action:** Given the smaller size of White Rock Lake compared to other major reservoirs, we were unsure how to conduct a creel survey that would be efficient, follow standard survey protocols, and provide accurate information about angler use of the lake and fisheries. We did not develop or conduct a creel survey on White Rock Lake during this sampling cycle.

3. Install habitat structures around fishing piers.

**Action:** We were unable to complete memorandum of understanding with controlling authority, therefore we couldn't install habitat structures around the fishing piers.

4. Increase angler utilization of White Rock Lake.

**Action:** We posted photos and information from our standard surveys about the fish community in White Rock Lake on our social media pages.

**Harvest regulation history:** Sport fish populations in White Rock Reservoir have always been managed with statewide regulations. Current regulations are found in Table 3.

**Stocking history:** The majority of fish stocked into White Rock Lake have been Channel Catfish and Largemouth Bass. The most recent stockings were adult Channel Catfish in 2020, fingerling Channel Catfish in 2021, and adult ShareLunker Largemouth Bass in 2022. The complete stocking history is in Table 4.

**Vegetation/habitat management history:** The last vegetation/habitat survey on White Rock Reservoir was conducted in 2011. Vegetation and habitat primarily consist of shoreline emergent species including bulrushes and water willow. Given the stability in water levels, few changes have occurred with vegetation and no new structural habitat has been built or added since the last survey. As such, no surveys or management activities related to vegetation and habitat have been conducted since 2011.

**Water transfer:** 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 White Rock Lake (Holt et al. 2020). 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).

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, sunfishes, Gizzard Shad, and Threadfin 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. Electrofishing in 2023 was conducted using a Smith-Root Apex electrofisher, while previous surveys used a GPP 5.0 electrofisher.

**Trap netting** – White Crappie were collected using trap nets (5 net nights at 5 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn).

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

**Low-frequency electrofishing** – Blue Catfish were targeted by low-frequency electrofishing at 10 stations. The minimum duration of electrofishing at each station was 5 minutes. CPUE for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

**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.

**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). 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** – Structural habitat and vegetation surveys were conducted in 2011. Because White Rock Reservoir is no longer used as a municipal water source, water level of the reservoir remains stable near conservation pool. Since water level does not fluctuate and no vegetation management or habitat enhancement activities have occurred in the reservoir since 2011, we decided there was no need conduct habitat or vegetation surveys during the standard sampling procedures of 2023-2024.

**Water level** – No water gauge is available because White Rock Lake is no longer used as a primary municipal water source. Water level and reservoir capacity data were taken from TWDB (2015).

## Results and Discussion

**Habitat:** A habitat survey was last conducted in 2011 (Brock and Hungerford 2011) Primary habitat features in White Rock Reservoir include native emergent vegetation, rocky shorelines, and boat docks (Brock and Hungerford 2011). Approximately 90 percent of the habitat was natural rocky shoreline and native emergent vegetation in the form of water willow, cattail, and bulrush. The remaining percentage was bulkhead. Boat docks covered about 7 acres of the surface area of the lake.

**Prey species:** Electrofishing catch rates of Gizzard Shad and Bluegill were 197/h and 464/h, respectively. Index of Vulnerability (IOV; percentage of shad  $\leq 8$ -inches) for Gizzard Shad was excellent, indicating that 83% of Gizzard Shad were available to existing predators (Figure 1). Although catch rates and IOV of Gizzard Shad declined from previous surveys, CPUE was still high, and most fish were available to predators. Bluegill catch rates increased from the 2019 survey and was higher than the historical average. Size structure of Bluegill (PSD = 24) was dominated by small individuals as it had been in the previous two surveys (Figure 2). Objective-based sampling (OBS) objectives were met for Bluegill and Gizzard Shad (Table 5). Total CPUE of Threadfin Shad and Longear Sunfish were good (63/h and 141/h, respectively) during the 2023 survey (Appendix A).

**Catfishes:** The gill net CPUE of Channel Catfish was 8.2/nn in 2024; higher than all seven previous gill net surveys (Figure 3; Appendix C). Size structure of the population is primarily made up of larger individuals with most fish collected being 13 inches or larger (Figure 3). Given that almost 4,000 fingerling-sized Channel Catfish were stocked in 2021, and catfish growth rates are typically slower in smaller impoundments, it was difficult to determine if the smaller individuals were from the stocked fish or a result of natural recruitment. Condition was good for all the size classes (Figure 3). Objective-based sampling objectives were not met for Channel Catfish during this sampling period.

Despite stocking over 107,000 Blue Catfish into White Rock Lake in 2007, we have not collected a single Blue Catfish in any surveys. However, we have seen photos on social media of Blue Catfish caught by anglers at White Rock Lake, therefore, we attempted low-frequency electrofishing to target Blue Catfish in 2020 and 2023. No Blue Catfish were observed or collected during our low-frequency electrofishing or gill netting surveys (Appendix C).

**White Bass:** No White Bass were collected during the 2020 or 2023 gill net survey. The population of White Bass has historically been low (Appendix C).

**Largemouth Bass:** Total CPUE of Largemouth Bass was 172.0/h with a stock-size CPUE of 98 fish/h; bouncing back from previous years and nearing the historical average (Figure 4; Appendix C). Size structure is similar to surveys from previous years, however, fewer individuals above 14-inches were collected in this most recent survey. Condition was near or above optimum (100) for all size classes. Fin clips for genetic analysis were collected during 2023 sampling efforts. Florida Largemouth Bass influence has remained low, but consistent as Florida alleles have ranged from 25-34% and Florida genotype has ranged from 13-47% (Table 6; George et al. 2016). However, anglers have informed Inland Fisheries personnel that 8+ pound Largemouth Bass have been caught by anglers in White Rock Lake in recent years. OBS objectives were met for all metrics.

**White Crappie:** The total trap netting CPUE of White Crappie was 109/nn; lower than the 2019 survey, but higher than the 2015 survey and the historical average (Figure 5; Appendix C). Body condition is excellent for all size classes. OBS objectives were met for length frequency. White Rock Reservoir continues to be one of the best crappie lakes in the DFW metroplex. The age and growth survey was not conducted and will be conducted during the 2024-2028 sampling cycle.

# Fisheries Management Plan for White Rock Lake, Texas

Prepared – July 2013

**ISSUE 1:** Anecdotal evidence from discussions with anglers suggests that White Rock Reservoir can produce 8-10 pound (possibly larger) Largemouth Bass and that angling effort for Largemouth Bass has increased. The reservoir has ample prey fish available (e.g., combined sunfish electrofishing CPUE of 605/h and combined shad electrofishing CPUE of 206/h, IOV = 83). Continued introduction of Lonestar Largemouth Bass genetics is necessary to maintain the trophy potential of this fishery.

## MANAGEMENT STRATEGY

1. Stock Lone Star Bass fingerlings, which are 2<sup>nd</sup> generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to  $\geq 13$  pounds, at a rate of 1,000/km shoreline in 2025 and 2027.

**ISSUE 2:** A creel survey has not been conducted on White Rock Reservoir since 2005-2006. The smaller size of the reservoir prevents our standard creel survey protocols from being an effective way to collect angler information.

## MANAGEMENT STRATEGY

1. Collaborate with other Inland Fisheries biologists to develop a creel survey for small impoundments that will be more efficient and provide accurate information about the anglers utilizing the reservoir and fisheries.

**ISSUE 3:** White Rock Reservoir has several public fishing piers, but these areas are lacking fisheries habitat/cover that attracts fish.

## MANAGEMENT STRATEGY

1. Complete the memorandum of understanding and continue to work with Dallas Water Utilities to install habitat structures around the fishing piers.

**ISSUE 4:** White Rock Reservoir is in a highly urbanized area with ample boat and shoreline fishing access. However, the reservoir is not heavily utilized by anglers.

## MANAGEMENT STRATEGIES

1. Continue to encourage recreational angling opportunities at White Rock Reservoir using social media and TPWD website. Contact Dallas Water Utilities to promote fishing on White Rock Reservoir on City website and posting informational signage about recreational angling opportunities.

**ISSUE 5:** White Rock Lake is subject to intense sedimentation issues leading to loss of water holding capacity and lake depth. The volumetric and sedimentation survey of White Rock Lake by the Texas Water Development Board in 2015 found that despite several dredging projects and removal of over 6.6 million tons of sediment removed over the life of the lake, the storage capacity of the lake has declined over 40%. The TWDB report

from 2015 suggested that another survey be conducted in 10 years after a major flooding event.

#### MANAGEMENT STRATEGY

1. Reach out to TWDB to determine if a new survey will be conducted in 2025 or near future.
2. Reach out to controlling authority to discuss any future dredging projects and ways to prevent sedimentation in White Rock Lake.

**ISSUE 6:** 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 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 interbasin water transfers to facilitate potential invasive species responses.

## Objective-Based Sampling Plan and Schedule (2024–2028)

Sport fish, forage fish, and other important fishes

Important sport fishes in White Rock Lake include Largemouth Bass, Channel Catfish, and White Crappie. Important forage species include Bluegill and Threadfin and Gizzard Shad.

Low-density fisheries

**White Bass:** White Bass are present in White Rock Lake, but their abundance is very low and receives no directed fishing effort. No direct effort will be expended to collect information on White Bass during the 2024-2028 sampling cycle.

**Catfishes:** Blue Catfish are present in White Rock Lake, but their abundance is very low and receives little direct fishing effort. Channel Catfish receive more directed effort and occur in greater numbers than Blue Catfish in White Rock Lake. Catch rates over the past 20 years have been inconsistent and shown little to no evidence of recruitment. Since gill netting and low-frequency electrofishing have not been an effective method for catfish collection, 3 series of tandem hoop nets will be sampled in spring 2026. If hoop nets are unsuccessful, 3 gill nets will be sampled in spring 2028. No sampling objectives will be set for either catfish species.

Survey objectives, fisheries metrics, and sampling objectives

**Largemouth Bass:** According to the creel survey conducted in 2005-2006 (Brock and Hungerford 2007), Largemouth Bass are the third most popular sport fish and are targeted by nearly one quarter of anglers fishing White Rock Reservoir. The popularity and reputation for quality Largemouth Bass fishing at White Rock Reservoir warrant sampling time and effort. Largemouth Bass have always been managed with the statewide 14-inch minimum length limit (MLL). Fall nighttime electrofishing will be conducted in 2025 (bass-only) and 2027. This should allow for determination of any large-scale changes in the Largemouth Bass population that may spur further investigation. A total of 12 randomly selected 5-minute electrofishing sites will be sampled each year. Fin clips from 30 Largemouth Bass (of all sizes) will be collected in 2025 and 2027 to assess Largemouth Bass genetics and aid in future Lonestar Largemouth Bass stocking decisions. Based on previous catch rates, 12 stations should be adequate to meet objectives for relative abundance (RSE-Stock  $\leq 25$ ), size structure ( $N \geq 50$  stock-size fish), condition (10 fish/inch group) and genetic analysis ( $N = 30$ ). If the objectives are not met with 12 stations, no additional effort will be expended to collect additional fish.

**White Crappie:** The creel survey conducted in 2005-2006 indicated that White Crappie are tied with Channel Catfish as the most sought-after sport fish in White Rock Reservoir. This reservoir is one of the best crappie reservoirs in the DFW metroplex. This popularity warrants sampling time and effort. A 5-station single-cod trap net survey will be conducted in the fall of 2027. Based on previous catch rates, this should be adequate to meet objectives for relative abundance (RSE-Stock  $\leq 25$ ) and size structure ( $N = 50$ ). A category 3 age and growth survey will be conducted to monitor age and growth trends over time to assess if there are any problems with growth within the population. If the objectives are not met, no additional effort will be expended to collect additional fish.

**Bluegill, Threadfin and Gizzard Shad:** Bluegill, Threadfin and Gizzard Shad are the primary forage fish in White Rock Reservoir. Like Largemouth Bass, trend data on CPUE and size structure have been collected with fall nighttime electrofishing. Standard electrofishing for Largemouth Bass will allow for monitoring of large-scale changes in these species' relative abundance and size structure. Sampling effort set for Largemouth Bass objectives should result in sufficient numbers of these three prey species to meet the objectives for abundance (RSE-Stock  $\leq 25$ ) and size structure (PSD and IOV,  $N \geq 50$ ). If objectives are not met, no additional effort will be expended to collect additional fish.



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## Tables and Figures

Table 1. Characteristics of White Rock Lake, Texas.

Characteristic	Description
Year constructed	1910
Controlling authority	City of Dallas
County	Dallas
Reservoir type	Tributary of Trinity River
Shoreline Development Index	6.38
Conductivity	372.7 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for White Rock Lake, Texas, June 2023.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Condition
West Lawther	32.83298 - 96.72947	Y	30	Good, no access issues
Big Thicket	32.84983 - 96.71816	Y	20	Good, no access issues
Filter Building	32.82371 - 96.73019	Y	30	Good, no access issues
Corinthian Sailing Club	32.84386 - 96.71866	Y	20	Good, no access issues
East Lawther	32.84613 - 96.71749	Y	No Parking	Good, no access issues

Table 3. Harvest regulations for White Rock Lake, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids, and subspecies	25 (in any combination, only 10 $\geq$ 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 White Rock Lake, Texas. FRY = fry, FGL = fingerling; AFGL = advanced fingerling; ADL = adults.

Species	Year	Number	Size
Blue Catfish	1988	15	ADL
	2007	107,354	FGL
	Total	107,369	
Channel Catfish	1979	1,315	AFGL
	1979	935	UNK
	1980	17,431	AFGL
	1981	22,380	AFGL
	1986	1,883	AFGL
	2000	293,146	FGL
	2004	10,551	AFGL
	2008	163	ADL
	2017	5,006	FGL
	2019	23	ADL
	2020	61	ADL
	2021	3843	FGL
Total	356,737		
Florida Largemouth Bass	1978	1,150	AFGL
	1982	10,000	FGL
	1992	112,030	FGL
	1996	112,468	FGL
	Total	235,648	
Largemouth Bass	1968	300,000	UNK
	1995	10	ADL
	2001	13	ADL
	Total	300,023	
ShareLunker Largemouth Bass <sup>a</sup>	2022	207	ADL
	Total	207	
Palmetto Bass (Striped x White Bass hybrid)	1975	20,000	UNK
	1977	9,900	UNK
	Total	29,900	
Red Drum	1976	2,200	UNK
	Total	2,200	
Walleye	1978	4,500,000	FRY
	1979	3,360,000	FRY
	Total	7,860,000	

<sup>a</sup> ShareLunker Largemouth Bass are 1<sup>st</sup> generation offspring from angler-donated Largemouth Bass  $\geq$  13 pounds from the Toyota ShareLunker program.

Table 5. Objective-based sampling plan components for White Rock Lake, Texas 2023–2024.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Stock	RSE–Stock $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$ stock
	Condition	$W_r$	10 fish/inch group (max)
	Genetics	% FLMB	$N = 30$ , any size
Bluegill <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$
Gizzard Shad <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$
	Prey availability	IOV	$N \geq 50$
<i>Trap netting</i>			
Crappie	Size structure	PSD, length frequency	$N = 50$
	Age-and-growth	Age at 10 inches	$N = 13$ , 9.0 – 10.9 inches
<i>Tandem hoop netting</i>			
Channel Catfish	Abundance	CPUE–stock	Presence/Absence
	Size structure		Presence/Absence
Blue Catfish	Abundance	CPUE–stock	Presence/Absence
	Size structure		Presence/Absence
<i>Gill netting<sup>b</sup></i>			
Channel Catfish	Abundance	CPUE–stock	Presence/Absence
	Size structure		Presence/Absence
Blue Catfish	Abundance	CPUE–stock	Presence/Absence
	Size structure		Presence/Absence

<sup>a</sup> No additional effort will be expended to achieve an RSE  $\leq 25$  for CPUE of Bluegill and Gizzard Shad if not reached from designated Largemouth Bass sampling effort. Instead, Largemouth Bass body condition can provide information on forage abundance, vulnerability, or both relative to predator density.

<sup>b</sup>Gill netting will only be conducted if hoop netting is not successful at capturing catfish.

## Gizzard Shad

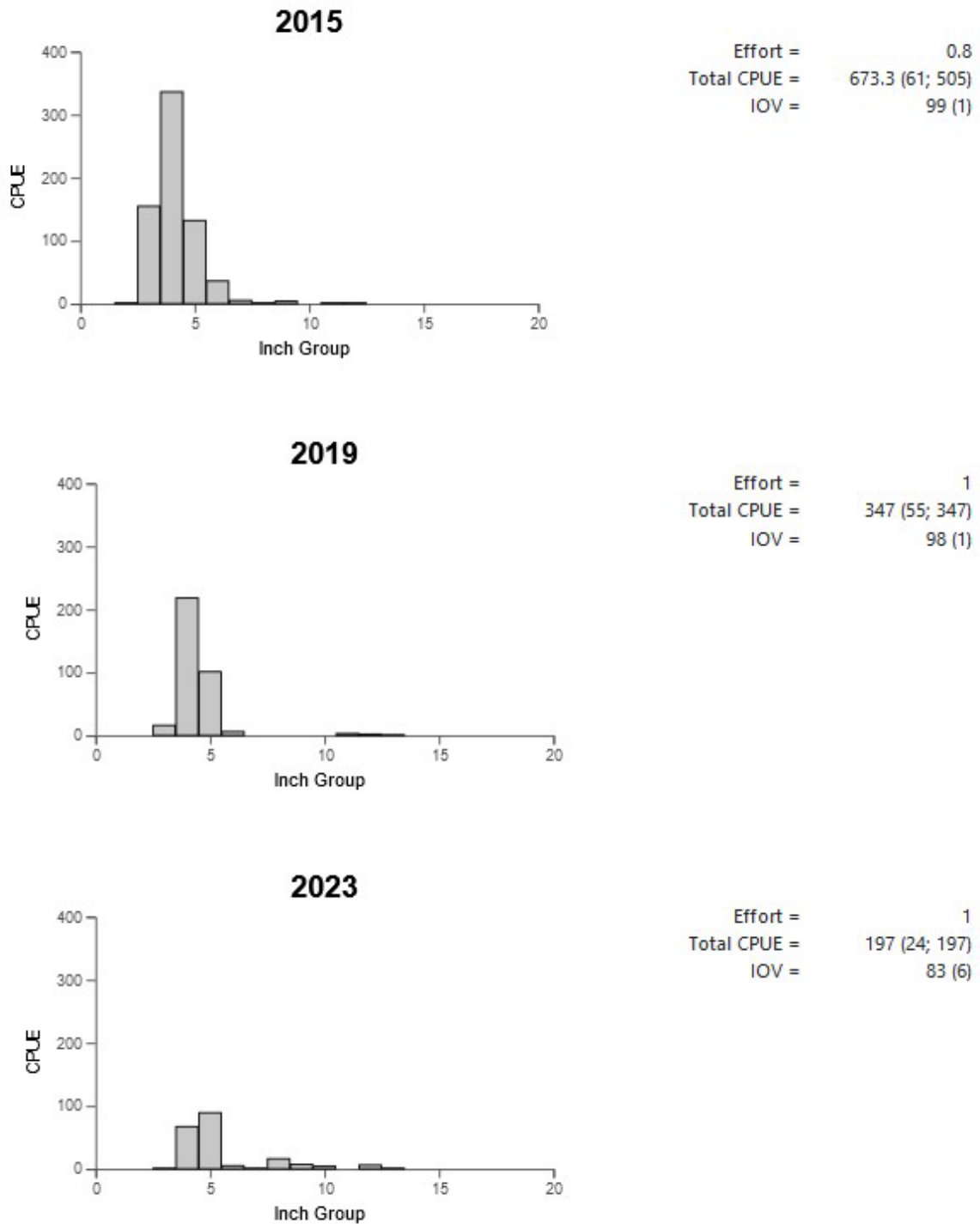


Figure 1. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, White Rock Lake, Texas, 2015, 2019, and 2023.

## Bluegill

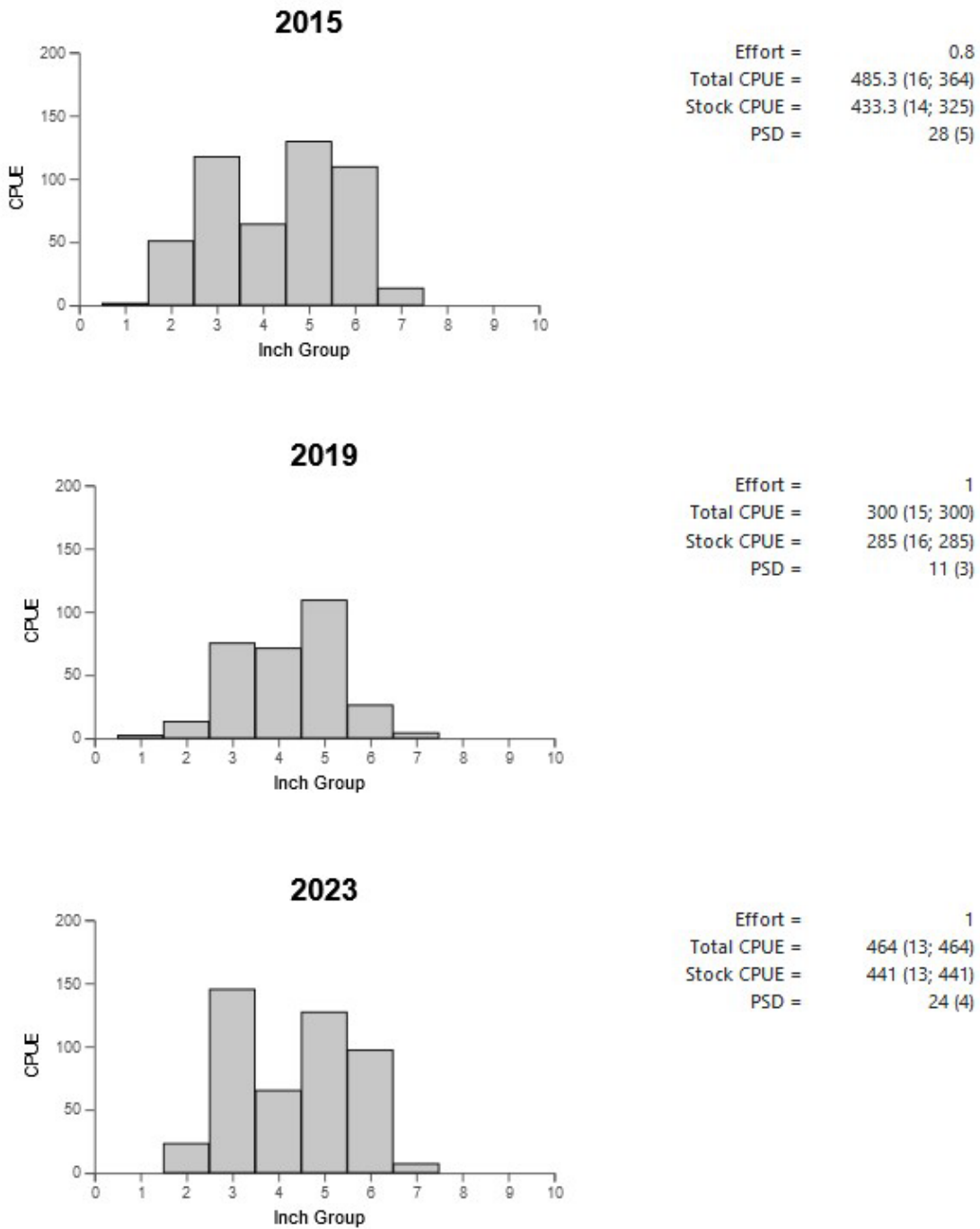


Figure 2. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, White Rock Lake, Texas, 2015, 2019, and 2023.

### Channel Catfish

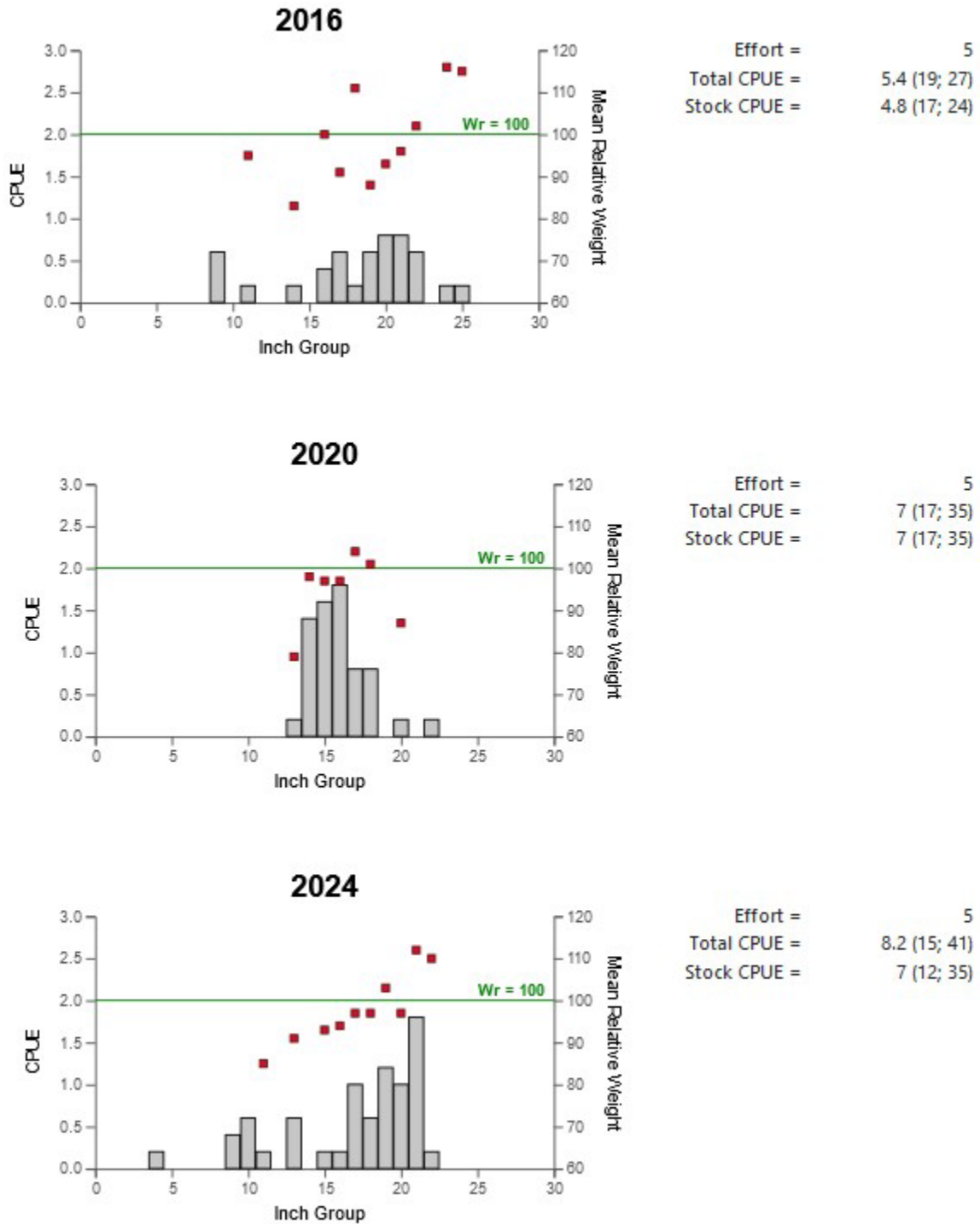


Figure 3. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, White Rock Lake, Texas, 2016, 2020, and 2024. Horizontal line represents optimal relative weight value of 100.

## Largemouth Bass

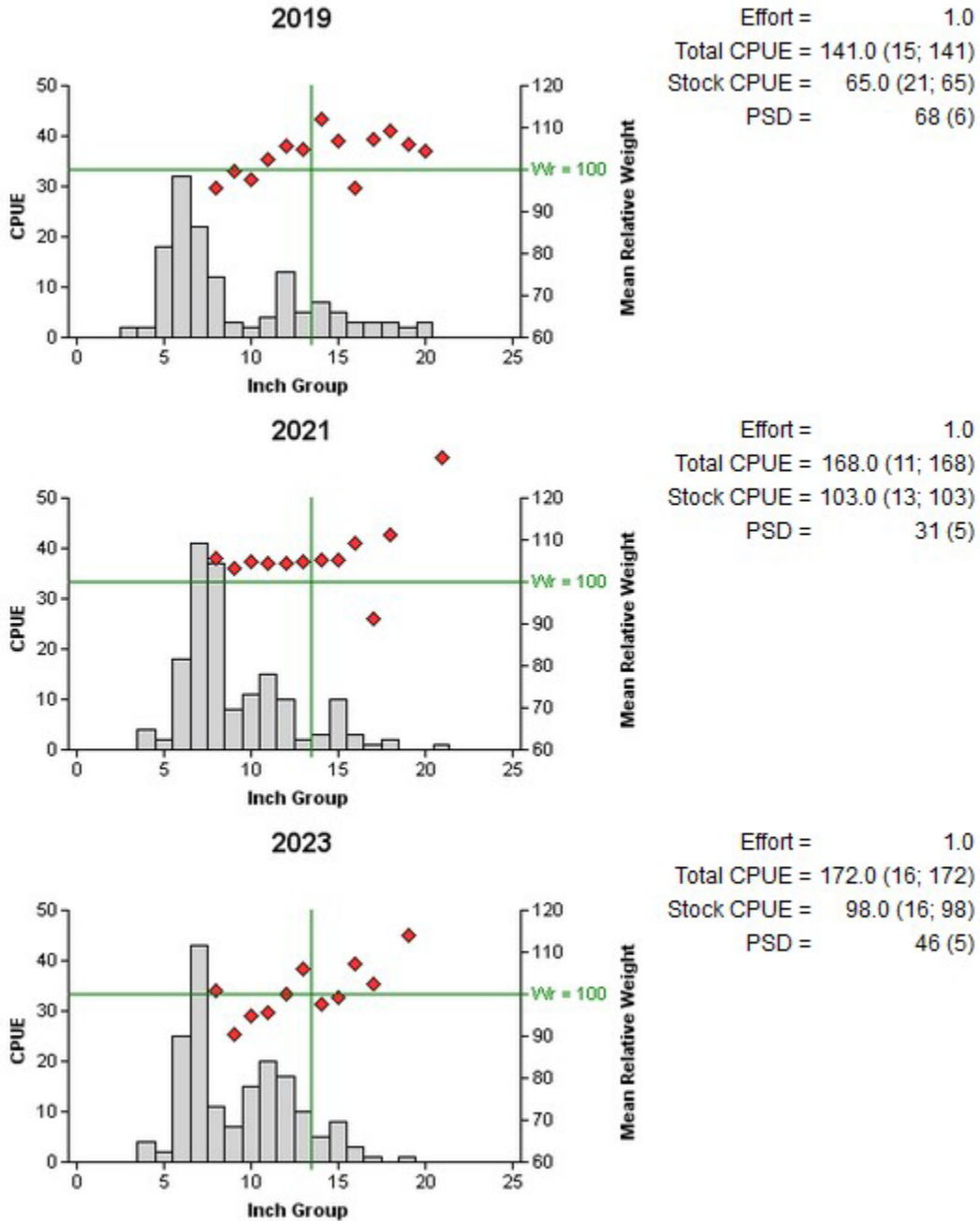


Figure 4. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, White Rock Reservoir, Texas, 2019, 2021 (Bass-only), and 2023. Vertical line represents minimum length limit at time of sampling. Horizontal line represents optimal relative weight value of 100.

Table 6. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, White Rock Lake, Texas, 2011, 2015, and 2023. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined by micro-satellite DNA analysis.

Year	Sample size	Number of fish			% FLMB alleles	% FLMB
		FLMB	Intergrade	NLMB		
2011	30	0	20	10	34.0	0
2015	30	0	26	4	25.0	0
2023	30	0	26	4	34.0	0

## White Crappie

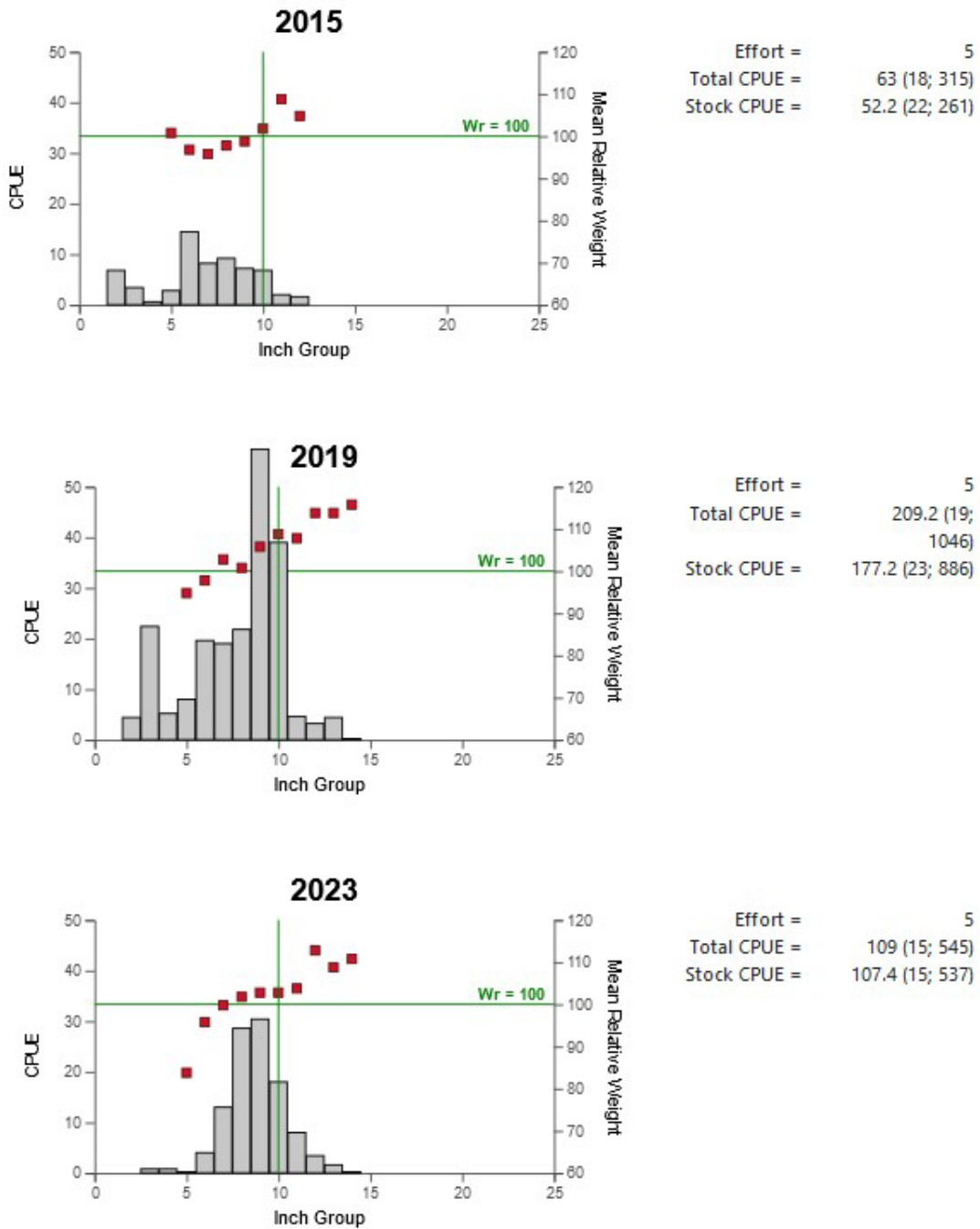


Figure 5. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, White Rock Reservoir, Texas, 2015, 2019, and 2023. Vertical line represents minimum length limit at time of sampling. Horizontal line represents optimal relative weight value of 100.

## Proposed Sampling Schedule

Table 4. Proposed sampling schedule for White Rock Lake, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall.

	Survey year			
	2024-2025	2025-2026	2026-2027	2027-2028
Angler Access				X
Structural Habitat			X	
Vegetation			X	
Electrofishing – Fall		X <sup>b</sup>		X
Tandem hoop netting		X		
Trap netting				X
Gill netting				X <sup>a</sup>
Report				X

<sup>a</sup> Will only be conducted if tandem hoop netting in 2025-2026 is unsuccessful for catfish collection.

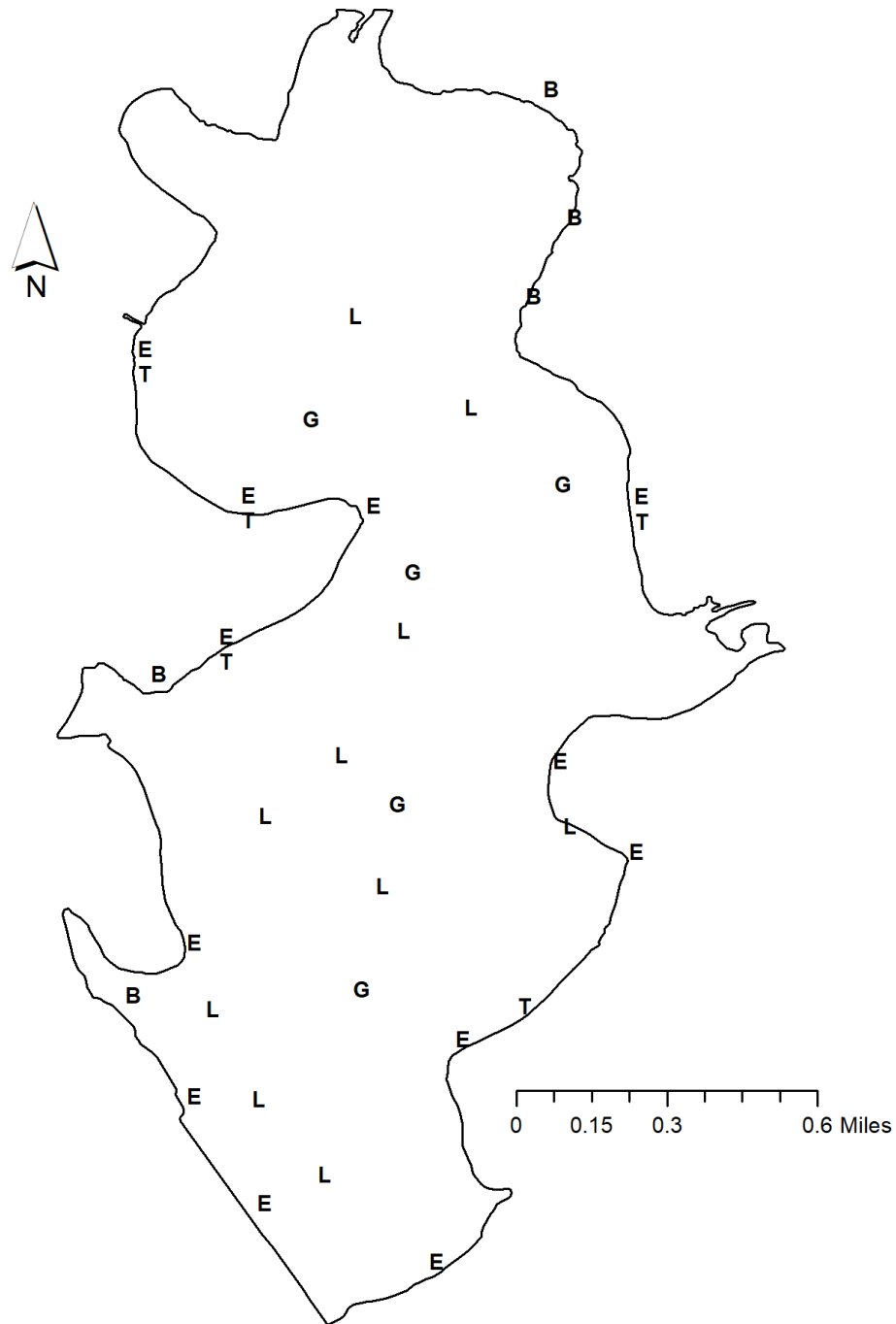
<sup>b</sup>Bass-only electrofishing.

## 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 White Rock Lake, Texas, 2023-2024. Sampling effort was 5 net nights for gill netting, 5 net nights for trap netting, and 1 hour for electrofishing.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad	264	52.8 (23)			197	197.0 (24)
Threadfin Shad					63	63.0 (44)
Common Carp	1	0.2 (100)				
Smallmouth Buffalo	58	11.6 (13)				
Channel Catfish	41	8.2 (15)				
Yellow Bass	102	20.4 (22)				
Bluegill					464	464.0 (13)
Longear Sunfish					141	141.0 (21)
Largemouth Bass					172	172.0 (16)
White Crappie	11	2.2 (33)	545	109.0 (15)		
Freshwater Drum	2	0.4 (100)				

## APPENDIX B – Map of sampling locations



Location of sampling sites, White Rock Lake, Texas, 2023-2024. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Boat ramps are indicated by B. Water level was near full pool at time of sampling.

## APPENDIX C – Historical catch rates for White Rock Reservoir 1996-2024

Historical catch rates (CPUE) for frequently targeted species in White Rock Reservoir for all gear types from 1996 – 2024.

Gear	Species	Year											
		1996	1999	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Gill Net (fish/net night)	Blue Catfish												
	Channel Catfish	0.8	2.0				3.2				7.0		
	White Bass	0.6	1.4				0.4				0.6		
	Common Carp	0.8	1.4										
	Smallmouth Buffalo	10.4	16.2			18.6				4.8			
	Gizzard Shad												
	White Crappie												
Electrofishing (fish/hour)	Gizzard Shad	47	362	324	149	100	90	213	415	274	152	957	353
	Threadfin Shad	57	177		9	47	255	402	348	30	125	369	29
	Bluegill	129	61	190	78	210	108	300	296	423	622	431	477
	Longear Sunfish	33	14	102	46	141	54	158	88	124	163	112	180
	Redear Sunfish												
	Largemouth Bass	318	302	100	90	100	50	212	177	154	217	206	291
Low-frequency Electrofishing (fish/hour)	Blue Catfish												
	Channel Catfish												
Hoop Net (fish/series)	Blue Catfish												
	Channel Catfish												
Trap Net (fish/net night)	White Crappie	6.6	13.4			176				69.8			

Historical catch rates (CPUE) for frequently targeted species in White Rock Reservoir for all gear types from 1996 – 2023 cont'd.

Gear	Species	Year									
		2011	2012	2015	2016	2017	2019	2020	2023	2024	Historical Average
Gill Net (fish/net night)	Blue Catfish				0			0		0	0
	Channel Catfish		3.4		5.4			7.0		8.2	4.6
	White Bass		0.4					0		0	0.5
	Common Carp				0.2			0.4		0.2	0.6
	Smallmouth Buffalo		20.20		20			8.6		11.6	13.8
	Gizzard Shad							18.6		52.8	35.7
	White Crappie							2.0		2.2	2.1
Electrofishing (fish/hour)	Gizzard Shad	837		673.3			347			197	343.1
	Threadfin Shad	54		284			245			63	166.3
	Bluegill	547		485.3			300			464	320.1
	Longear Sunfish	134		154.6			85			141	108.1
	Redear Sunfish						1			0	0.5
	Largemouth Bass	185		185.3			141			172	181.3
Low-frequency Electrofishing (fish/hour)	Blue Catfish							0	0		0
	Channel Catfish							0	0		0
Hoop Net (fish/series)	Blue Catfish							0			0
	Channel Catfish							0			0
Trap Net (fish/net night)	White Crappie	58.2		63		162	209.2		109		96.4



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