Grapevine Reservoir

2023 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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Contents

Survey and Management Summary

Fish populations in Grapevine Reservoir were surveyed in 2023 using low frequency electrofishing, electrofishing, and trap nets, and in 2020 using gill nets. A roving creel survey was also conducted from June 2023 thru November 2023 and March 2024 thru May 2024. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

Reservoir Description: Grapevine Reservoir is a 6,684-acre impoundment constructed on Denton Creek, a tributary of the Trinity River by the U.S. Army Corps of Engineers in 1952 to provide flood control, municipal and industrial water, and recreation. Grapevine Reservoir is surrounded by urban development and is 20 miles northwest of Dallas, Texas in Tarrant County. The reservoir contains 188,550 acre-feet of water at conservation elevation (535 ft. above mean sea level) and has a maximum depth of 65.0 feet. Angler and boat access are adequate. At the time of sampling the fishery habitat was primarily rocky and natural shoreline.

Management History: Important sport fishes include Largemouth Bass, Smallmouth Bass, Spotted Bass, White Crappie, White Bass, and Blue and Channel Catfish. The Largemouth Bass population had been managed with a 14 to 18-inch slot-length limit from 1994-2016. It is currently managed with no minimum length limit but only 2 fish under 18 inches may be retained. All other species have been managed with statewide regulations.

Fish Community

- **Prey species:** Gizzard and Threadfin Shad were present in the reservoir. Catch rates of these species were slightly lower than previous surveys but new equipment was used in 2023. Bluegill catch rates were also very high.
- **Catfishes:** Catch rates of Blue Catfish was high with low frequency electrofishing with quality fish available for anglers. Catfishes were the fourth most sought-after species at Grapevine Reservoir in 2023-2024 and an estimated 823 Channel Catfish were harvested by anglers during the creel survey.
- **White Bass:** White Bass were not surveyed during this four-year sampling rotation; however, angler reported high catches of White Bass. White Bass were the second most sought-after species during the 2023-2024 creel survey.
- **Black Bass:** The Smallmouth Bass catch rate decreased from the previous survey and remained low. The Spotted Bass catch rate was moderate with quality fish available for anglers. The Largemouth Bass catch rate was below the reservoir average. Largemouth Bass were the most sought-after species in the reservoir.
- **White Crappie:** The White Crappie catch rates were lower than the previous survey. Crappie were the third most sought-after species in the reservoir in the 2023-2024 survey.

Management Strategies: Smallmouth Bass will be requested for stocking annually at the rate of 25/acre. Fall, night-time electrofishing surveys will be conducted in 2025 and 2027 to collect data on all black basses. Low frequency electrofishing will be conducted in summer of 2027 to monitor Blue Catfish populations. Gill netting will not be conducted.

Introduction

This document is a summary of fisheries data collected from Grapevine Reservoir in 2020-2024. 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 for comparison.

Reservoir Description

Grapevine Reservoir is a 6,684-acre impoundment constructed on Denton Creek, a tributary of the Trinity River by the U.S. Army Corps of Engineers (USACE) in 1952 to provide flood control, municipal and industrial water, and recreation (Table 1). Grapevine Reservoir is surrounded by urban development and is 20 miles northwest of Dallas, Texas in Tarrant County. The reservoir contains 188,550 acre-feet of water at conservation elevation (535 ft. above mean sea level) has a maximum depth of 65.0 feet. At the time of sampling the fishery habitat was natural and rocky shoreline. It is classified as eutrophic by the Texas Commission of Environmental Quality (TCEQ; Texas Commission on Environmental Quality 2022).

Angler Access

Grapevine Reservoir has 15 public boat ramps and 2 private boat ramps. There are two high water ramps which are located at Katie's Woods and Murrell Parks. Access was limited during several high water events from 2016-2020. Additional boat ramp characteristics are in Table 2. Shoreline access is good within numerous parks located around the reservoir. Many of the parks which were once managed by the USACE are now being leased by surrounding municipalities.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Brock and Hungerford 2020) included:

1. Request annual stockings of Smallmouth Bass.

   Action: Smallmouth Bass were requested annually from 2020-2024. From 2021-2023, a total of 50,828 Smallmouth Bass were stocked ranging in size from fingerlings to retired broodfish (adults). Not enough individuals were collected to perform age and growth analysis.

2. Conduct a year-long creel survey to update angling pressure and species preference information. The last creel survey was conducted in year 2019-2020.

   Action: We conducted a summer, fall, and spring quarter creel survey, however, we did not survey during the winter quarter. The results of that survey are included in this report.

3. Since Largemouth Bass are the most sought-after species on Grapevine Reservoir additional monitoring of the population was planned for fall 2021 with electrofishing and genetic analysis.

   Action: An additional 18-station electrofishing survey was conducted in 2021 and results are presented in this report. Genetics were analyzed in 2023 and the results are included in this report.

4. The invasive species zebra mussels (*Dreissena polymorpha*) are established in Grapevine Reservoir. It is currently classified as an infested reservoir.

   Action: Communicated with USACE and local municipalities regarding invasive species information and provided educational materials when requested. Zebra mussel boat ramp stencils were also resurfaced.

Harvest regulation history: The Largemouth Bass population was managed with a 14 to 18-inch slot-length limit from 1994-2016. It is currently managed with no minimum length limit but only 2 fish under 18 inches allowed. All other species have been managed with statewide regulations (Table 3).

Stocking history: Grapevine Reservoir was last stocked in 2022 and 2023 with Smallmouth Bass, and in 2021 with Florida Largemouth Bass. The complete stocking history is in Table 4.

Vegetation/habitat management history: During sampling, littoral zone habitat consisted primarily of rocky and natural shoreline. Shoreline habitat does not fluctuate in Grapevine and no vegetation management has occurred in the reservoir.

Zebra mussels: Grapevine Reservoir is classified as infested with Zebra Mussels as of 2020.

Water transfer: Grapevine Reservoir is the main water supply for the City of Grapevine. 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 Grapevine Reservoir (Brock and Hungerford 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 – Smallmouth Bass, Spotted Bass, Largemouth Bass, sunfishes, Gizzard Shad, and Threadfin Shad were collected by electrofishing (1.5 hours at 18, 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. Beginning with 2023 surveys, a Smith-Root Apex electrofisher was used while previous surveys used GPP 7.5 electrofisher. Given the new equipment, settings used during the first night of electrofishing were deemed to be ineffective. After discussions with Smith-Root staff, settings were adjusted and an additional 9, 5-min stations were sampled and labeled 'modified electrofishing' later in this report.

Trap netting – Crappie were collected using trap nets (10 net nights at 10 stations). Catch per unit effort for trap netting was recorded as the number of fish caught per net night (fish/nn).

Gill netting – Blue Catfish, Channel Catfish, and White Bass were collected by gill netting (5 net nights at 5 stations). Catch per unit effort for gill netting was recorded as the number of fish caught per net night (fish/nn). No gill netting has been conducted since 2020.

Low Frequency Electrofishing – Blue Catfish were collected by low frequency electrofishing (1.7 hours at 20, 5-min stations). Catch per unit effort for low frequency 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 from 2005 through 2012 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). 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 structural habitat survey was last conducted in 2011 using 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 2024).

Creel survey – A roving creel survey consisting of 9 days per quarter was conducted from May 2023 through November 2023 and again from March 2024 through May 2024. The creel survey was originally planned to be an annual survey that would be conducted from June 2023 through May 2024 but due to historically low effort during the winter quarter (December – February) we did not survey the winter quarter. Angler interviews were conducted on 5 weekend days and 4 weekdays per quarter to assess angler use and fish catch/harvest statistics in accordance with the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Results and Discussion

Habitat: The last habitat survey was conducted in 2011 (Brock and Hungerford 2012).

Creel: Directed fishing effort by anglers was highest for black basses (45.2%), followed by anglers fishing for White Bass and White Crappie (Table 6). Total fishing effort for all species and direct expenditures at Grapevine Reservoir increased in 2023-2024 as compared to 2019-2020 (Table 7).

Prey species: It's important to note that the 2023 survey was conducted with the new Smith-Root Apex electrofisher (see methods section). The 2023 electrofishing catch rate of Threadfin Shad (208.0/h) was lower than the previous samples but near the reservoir average (Appendices A and C). The Gizzard Shad electrofishing catch rate in 2023 (240.7/h) was lower than the previous samples (Figure 2). Index of vulnerability for Gizzard Shad (92) was higher when compared to the previous sample (Figure 2). This indicated that 92% of Gizzard Shad captured in 2023 were available as forage. The electrofishing catch rate of Bluegill in 2023 (294.0/h) was much lower than the previous sample but similar to the 2017 survey (Figure 3; Appendix C). The most recent survey revealed some larger sunfish available for anglers as the CPUE-6 of Bluegill was 38.7/h (Figure 3). The Longear Sunfish catch rate observed in 2023 (137.3/h) was similar to the previous sample and higher than the reservoir average (Appendix A and C). The OBS sampling objectives were achieved for Bluegill and Gizzard Shad.

Catfishes: Gillnets were not used during the past four-year sampling rotation. Low frequency electrofishing (LFE) for Blue Catfish began in summer of 2017. The LFE CPUE of Blue Catfish in 2019 was 102.0/h, dropped to 71.0/h in 2021, and increased to 172.8/h in 2023 (Figure 5). It appears LFE provides better population assessment statistics for Blue Catfish when compared to gill net sampling statistics; RSEs were generally lower (Figures 4 and 5). The gill net catch rate of Channel Catfish remained low in 2020 (1.4/nn) but similar to past samples (Figure 7).

Catfishes were the fourth most sought-after fishes (3.3%) in Grapevine Reservoir (Table 6). Directed fishing effort for Blue and Channel Catfish combined was estimated to be 3,542.7 h (Table 9). Although percent directed effort was low (0.1%), some anglers specifically targeted Blue Catfish (Table 8). Directed fishing effort for Blue Catfish was estimated to be 137.5 h for 2023-2024 (Table 8). Harvest of Blue Catfish was estimated to be 37,925 fish in 2023-2024 and fish between 13 and 25 inches were observed in the creel (Figure 6). Although no directed effort was observed for Channel Catfish, harvest of Channel Catfish was estimated to be 823 fish in 2023-2024 (Table 9).

White Bass: Gillnets were not used during the past four-year sampling rotation. The 2020 gill net catch rate was 1.2/nn which was similar when compared to previous samples (Figure 9). Anecdotal evidence from anglers indicated a very large population of White Bass. This is probably the result of the past several years of high water levels. White Bass were the second most targeted species by anglers (24.9%), an increase from previous creel survey results (Table 6). Directed fishing effort for White Bass was estimated to be 26,476.5 h for 2023-2024 with anglers catching an estimated 0.5 fish per hour of directed effort (Table 10). Harvest of White Bass was estimated to be 5,159 fish in 2023-2024 and fish between 10 and 14 inches were observed in the creel (Figure 10).

Black basses: The total electrofishing catch rate of Smallmouth Bass in 2023 (6.7/h) was lower than the previous samples and just above the reservoir average (Figure 11; Appendix C). Although the frequent stockings are required to maintain population, evidence of natural reproduction has been observed (Figure 11). The catch rate of Smallmouth Bass ≥ 14 inches continued to be low. Although the population is low density, there was angler directed effort (259.1 h) for Smallmouth Bass (Table 11).

The total electrofishing catch rate of Spotted Bass in 2023 (19.3/h) was higher than the 2021 sample (8.0/h) but below the 2019 sample (Figure 12). Condition of Spotted Bass appear to be good with mean relative weights varying from 90 to 110. While there was no directed effort specifically for Spotted Bass, harvest was observed during the previous creel survey (Figure 13).

In 2023, the Largemouth Bass total electrofishing catch rate (41.3/h) was lower than previous samples (Figure 14). The catch rate of Largemouth Bass ≥ 14 inches also decreased from the previous surveys. Size structure was skewed towards larger fish in 2021 (Figure 14) but decreased in 2023. Beginning with 2023 surveys, a Smith-Root Apex electrofisher was used. The first two nights of electrofishing at Grapevine resulted in low catch rate so after discussions with Smith-Root staff, we adjusted the settings on our box and returned to sample 9 additional stations with more effective settings. The additional 9 stations yielded a total CPUE of 42.7/h and represented Largemouth Bass from 5 inches up to 20 (Figure 15). Genetic analysis in 2023 revealed 46% Florida Largemouth Bass alleles present in our sample (Table 13).

Black basses (Smallmouth, Spotted, and Largemouth combined) were the most sought-after fish in Grapevine Reservoir (45.2%), but lower than the previous creel survey (Table 6). Directed fishing effort for black basses was estimated to be 47,958.5 h for 2023-2024 with anglers catching an estimated 0.4 fish per hour of directed effort (Table 12). Non-tournament harvest of black basses was estimated to be 1,268 fish in 2023-2024 and fish between 10 and 18 inches were observed in the creel (Figure 16). With the change in the harvest regulations for Largemouth Bass, it appears anglers are exploiting Largemouth Bass between 15 and 17 inches compared to previous creel during which those fish were protected with the 14- to 18-inch slot length limit (Figure 16).

Crappies: The trap net catch rate of White Crappie was 2.2/nn in 2023 and was lower than the previous samples (Figure 17). The body condition (Wr) of the White Crappie population was good with most inch classes around 100. The size structure of stock-length crappie is biased towards larger fish as indicated by a PSD value of 77. The catch rate of fish over 10 inches (0.9/nn) was lower than the previous sample. Crappie were the third most sought-after fish by anglers (22.8%), which was more than two-fold increase as compared to the previous creel survey (Table 6). Directed fishing effort for White Crappie was estimated to be 24,715.4 h for 2023-2024 with anglers catching an estimated 2.8 fish per hour of directed effort (Table 14). Harvest of White Crappie was estimated to be 7,377 fish during the 2023-2024 creel and fish between 10 and 14 inches were observed in the creel (Figure 18).

A total of 6 Black Crappie were collected in the trap netting survey in 2023 (Appendix A). An estimated 254 Black Crappie were harvested in the 2023-2024 creel survey.

Fisheries Management Plan for Grapevine Reservoir, Texas

Prepared – July 2024

ISSUE 1: Smallmouth Bass have been stocked intermittently since 2008. A population is developing. A new waterbody record weighing 6.11 pounds was caught in 2023. The 2023-2024 creel survey showed that some anglers (0.2%; 259 h) are specifically targeting them at the reservoir.

MANAGEMENT STRATEGIES

1. Request fingerling Smallmouth Bass for stocking annually at a rate of 25/acre.
2. Monitor population through fall electrofishing in 2025 and 2027.

ISSUE 2: Largemouth Bass are the most sought-after species in the reservoir with 45.2% of all directed angling effort. Additional sampling is needed to monitor possible population changes.

MANAGEMENT STRATEGIES

1. Conduct additional fall electrofishing in 2025 to monitor Largemouth Bass population.
2. Request Lonestar Bass for stocking in 2026 at the rate of 1,000/km of shoreline.

ISSUE 3: The primary boat ramp at Katie's Woods Park is leased from the USACE by the City of Grapevine. It is one of the busiest ramps on the reservoir and is just two lanes with some deteriorating concrete that could potentially be improved.

MANAGEMENT STRATEGY

1. Contact the City of Grapevine regarding the TPWD boating access grant to suggest improving access for the reservoir.

ISSUE 4: 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 USACE 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 using 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 Grapevine Reservoir include Largemouth Bass, Spotted Bass, Smallmouth Bass, Channel and Blue Catfish, White Bass, and White Crappie. Known important forage species include Bluegill, Longear Sunfish, Threadfin and Gizzard Shad.

Low Density fisheries:

Spotted Bass: Although a quality population of Spotted Bass are present in Grapevine there is no directed effort for the species. Catch information on Spotted Bass will be collected during sampling for Largemouth Bass and forage species.

Smallmouth Bass: There was some directed effort for Smallmouth Bass (0.2%; 259 h) in 2023-2024. There is a low-density population that is dependent on stocking to maintain population. Catch information on Smallmouth Bass will be collected during sampling for Largemouth Bass and forage species.

Channel Catfish: Although Channel Catfish are present in Grapevine, the population is low density based recent creel survey data. The 2023-2024 creel survey documented no specific directed effort towards Channel Catfish.

Survey objectives, fisheries metrics, and sampling objectives

Largemouth Bass: According to the most recent creel survey conducted on Grapevine Reservoir (2023-2024), 45.2% of anglers target Largemouth Bass and they are the most popular sport fish in Grapevine Reservoir. The popularity and reputation for quality Largemouth Bass fishing at this reservoir warrant sampling time and effort. Largemouth Bass had been managed with a 14-18 in slot length limit regulation with a 5 fish bag limit from 1994-2016. The regulation recently changed to no minimum length limit; however, only two Largemouth Bass less than 18 inches may be retained each day with 5 fish total bag limit. Fall nighttime electrofishing will be conducted in 2025 and 2027. This should allow for determination of any large-scale changes in the Largemouth Bass population. A minimum of 18 randomly selected 5-min electrofishing sites will be sampled in 2025 and 2027. Based on past catch rates, this should be adequate to obtain an RSE of CPUE-S $\leq$ 25 (the anticipated effort to meet both sampling objectives is 18 stations with 80% confidence). If the RSE objective is not met, additional electrofishing sampling will only continue if 50 stocked sized fish or larger are not captured in the 18 sample sites for size structure estimation (PSD 50 fish minimum at 20 stations with 80% confidence).

Blue Catfish: Catfishes are the fourth most sought-after sport fish in Grapevine Reservoir (3.3 % of total angling effort). The creel survey conducted in 2023-2024 indicated some directed effort towards Blue Catfish (0.1%). The popularity and reputation for quality catfish fishing at this reservoir warrant sampling time and effort. A low frequency electrofishing survey consisting of 20 stations will be conducted in 2027. Based on past catch rates, this should be adequate to obtain an RSE of CPUE-S $\leq$ 25 (the anticipated effort to sampling objectives is 20 stations with 80% confidence) for Blue Catfish. Size structure estimation (PSD 50 fish minimum at 20 stations with 80% confidence). If RSE objectives are not met no additional sampling will be conducted.

Bluegill, Longear Sunfish, Threadfin and Gizzard Shad: Bluegill, Longear Sunfish, Threadfin, and Gizzard Shad are the primary forage in Grapevine Reservoir. Like Largemouth Bass, trend data on CPUE and size structure have been collected with fall nighttime electrofishing. Sampling, as with Largemouth Bass above, will allow for monitoring of large-scale changes in Bluegill, Longear Sunfish, Threadfin and Gizzard Shad relative abundance. Sampling effort based on achieving sampling objectives for Largemouth Bass should result in sufficient numbers of Bluegill and Gizzard Shad for size structure estimation (PSD and IOV; 50 fish minimum at 18 stations with 80% confidence).

White Crappie: Previous creel survey data indicate White Crappie angling comprised 22.8% of total angling effort during the 2023-2024 survey. A 10 station, single-cod shoreline trap netting survey will be conducted in fall of 2027. This should provide basic population trend data information. No sampling objectives will be set for White Crappie.

White Bass: Although creel survey data from 2023-2024 indicated 24.9% of anglers targeted White Bass, no sampling data will be collected on the White Bass population. Information regarding the White Bass population will be gathered during future creel surveys.

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Tables and Figures

Figure 1. Water level elevations in feet above mean sea level (MSL) recorded for Grapevine Reservoir, Texas, January 2019 – April 2024. Conservation pool (535 MSL) is noted with solid black line.

Table 1. Characteristics of Grapevine Reservoir, Texas.

Characteristic	Description
Year constructed	1952
Controlling authority	United States Corps of Engineers
Counties	Tarrant and Denton
Reservoir type	Tributary of Trinity River
Conductivity	473.3 µS/cm

Table 2. Boat ramp characteristics for Grapevine Reservoir, Texas, August 2023.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Trophy Club Park	32.0292 -99.1798	Y	10	NA	Small boat only
Meadowmere Park 1	32.98167 -97.1119	Y	28	528.5	Excellent, no access issues
Meadowmere Park 2	32.9789 -97.1139	Y	24	NA	Excellent, no access issues
Lakeview 1	32.9807 -97.0968	Y	15	NA	Excellent, no access issues
Lakeview 2	32.9771 -97.0964	Y	15	528.2	Excellent, no access issues
Oak Grove Park McPherson Slough	32.9669 -97.0943	Y	25	NA	Excellent, no access issues
Oak Grove Park Dove Loop Ramp	32.9700 -97.0903	Y	65	NA	Excellent, no access issues
Oak Grove Park Trawick Ramp	32.9697 -97.0808	Y	42	NA	Excellent, no access issues
Oak Grove Park Sand Bass Point Ramp	32.9641 -97.0726	Y	30	528.0	Excellent, no access issues
Katie's Woods Ramp	32.9597 -97.0667	Y	47	NA	Fair, deteriorating concrete in places
Katie's Woods High Water Ramp	32.9588 -97.0674	Y	NA	NA	Excellent, no access issues
Silver Lake Marina	32.9559 -97.0585	Y	NA	NA	Fair, no access issues, limited parking
Murrell Park 1	32.9931 -97.0847	Y	16	526.9	Fair, no access issues
Murrell Park 2	32.9961 -97.0919	Y	22	528.9	Good, no access issues

Table 2 Continued

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Twin Coves Park	32.0028 -97.1047	Y	15	NA	Excellent, no access issues

Table 3. Harvest regulations for Grapevine Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (only 10 ≥ 20 inches)[a]	None
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Spotted	5[b]	None
Bass, Smallmouth	5[b]	14-inch minimum
Bass, Largemouth	5 Total; only 2 < 18 inches[b]	None
Crappie: White and Black crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

[a] Daily bag for Channel and Blue Catfish (and their hybrids and subspecies) = 25 in any combination

[b] Daily bag for Largemouth Bass, Smallmouth Bass, and Spotted Bass = 5 fish in any combination

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

Species	Year	Number	Life Stage	Mean TL (in)
Channel Catfish	1969	25,000	AFGL	7.9
	1970	50,000	AFGL	7.9
	1971	50,000	AFGL	7.9
	1972	87,000	AFGL	7.9
	Total	212,000		
Florida Largemouth Bass	1990	218,848	FGL	1.1
	1990	147,286	FRY	0.8
	1996	363,499	FGL	1.6
	2001	195,900	FGL	1.5
	2007	335,768	FGL	1.7
	2019	92,079	FGL	1.8
	2021	96,000	FGL	1.9
	Total	1,449,380		
Largemouth Bass	1967	320,000	FRY	0.7
	1968	50,000	UNK	0
	1969	450,000	FRY	0.7
	1971	400,000	FRY	0.7
	Total	1,220,000		
Mixed Largemouth Bass	1988	364,004		1
	Total	364,004		
Hybrid striped bass	1978	36,400	UNK	0
	1979	74,390	UNK	0
	1982	87,000	UNK	0
	Total	197,790		

Table 4, continued.

Species	Year	Number	Life Stage	Mean TL (in)
Smallmouth Bass	1999	183,186	FGL	1.4
	2008	27,977	AFGL	4.8
	2009	103,586	FGL	1.4
	2010	112,208	FGL	1.3
	2011	104,650	FGL	1.4
	2013	67,212	FGL	2.0
	2014	99,098	FGL	1.4
	2018	47,637	FGL	1.9
	2021	158	ADL	10.2
	2021	50,035	FGL	1.8
	2022	22	UNK	
	2022	87	ADL	18.0
	2023	526	AFGL	5.1
	Total	796,382		
Threadfin Shad	1984	800	AFGL	3.0
	Total	800		
Walleye	1975	144,600	FRY	0.2
	1976	2,500,000	FRY	0.2
	Total	2,644,600		

Table 5. Objective-based sampling plan components for Grapevine Reservoir, Texas 2023–2024.

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	10 fish/inch group (max)
	Genetics	% FLMB	None
Smallmouth and Spotted Bass	Abundance	CPUE – stock	None
	Size structure	PSD, length frequency	None
	Condition	W_r	None
Bluegill [a]	Abundance	CPUE – Total	RSE ≤ 25
	Size structure	PSD, length frequency	N ≥ 50
Gizzard Shad [a]	Abundance	CPUE – Total	RSE ≤ 25
	Size structure	IOV, length frequency	N ≥ 50
Trap netting			
Crappie	Abundance	CPUE	None
	Size structure	PSD, length frequency	None
	Condition	W_r	None
Low-frequency electrofishing			
Blue Catfish	Abundance	CPUE – Total	RSE ≤ 25
	Size structure		N ≥ 50 stock
	Condition	W_r	10 fish/inch group (max)

[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. Percent directed angler effort by species for Grapevine Reservoir, Texas. Survey periods were from September 2019 through March 2020 and June – November 2023 and March – May 2024.

Species	2019/2020	2023/2024
Blue Catfish	2.7	0.1
Catfishes	5.6	3.3
White Bass	16.0	24.9
Smallmouth Bass	0.4	0.2
Black Basses	64.6	45.2
Crappie	7.7	22.8
Anything	3.4	3.8

Table 7. Total fishing effort (h) for all species and total directed expenditures at Grapevine Reservoir, Texas. Survey period was from September 2019 through March 2020 and June – November 2023 and March – May 2024. Relative standard error is in parentheses.

Creel statistic	2019/2020	2023/2024
Total fishing effort	35,710.0 (20.7)	128,930.0 (17.0)
Total directed expenditures	$96,566 (35.7)	$439,468 (21.9)

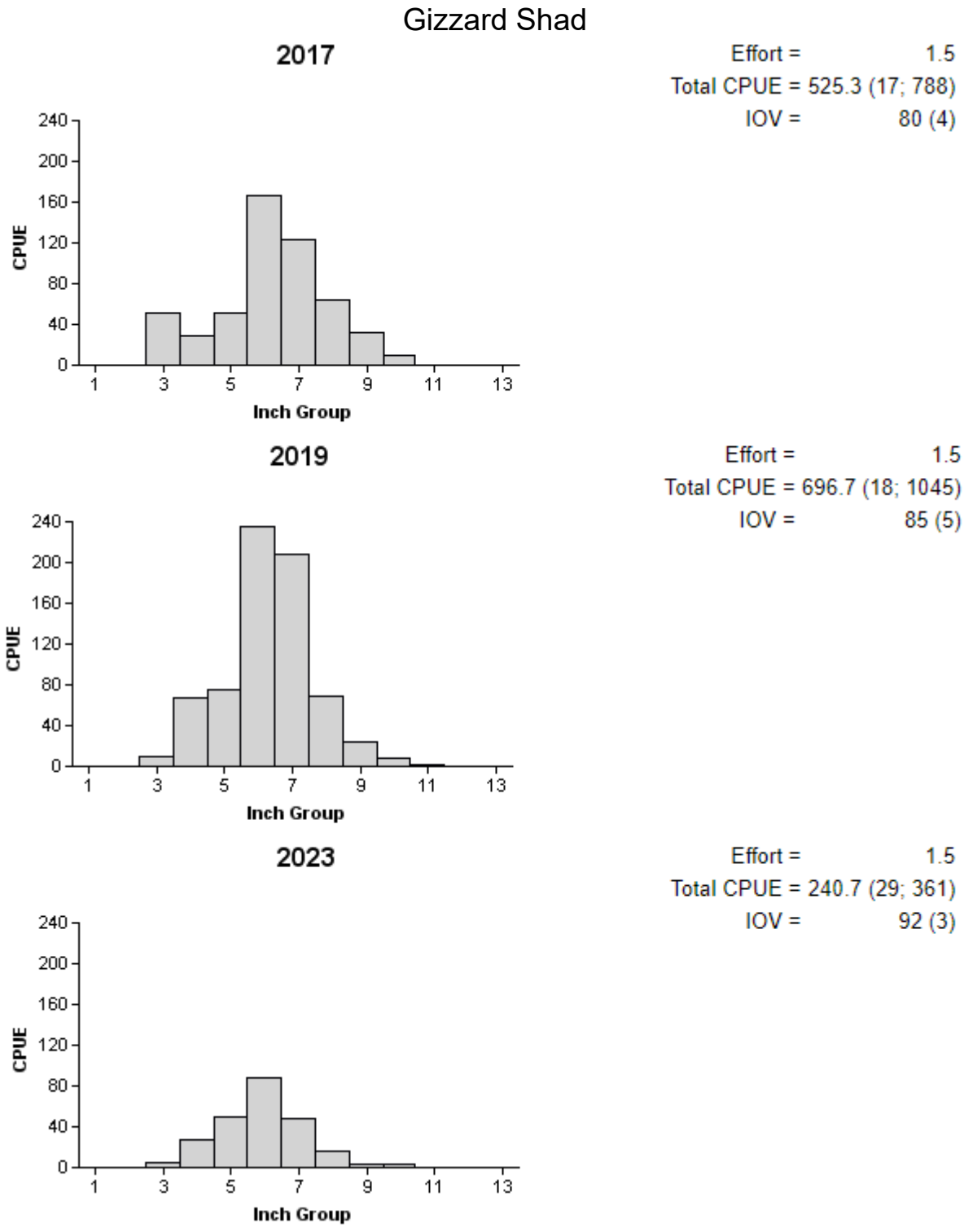


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Grapevine Reservoir, Texas, 2017, 2019, and 2023.

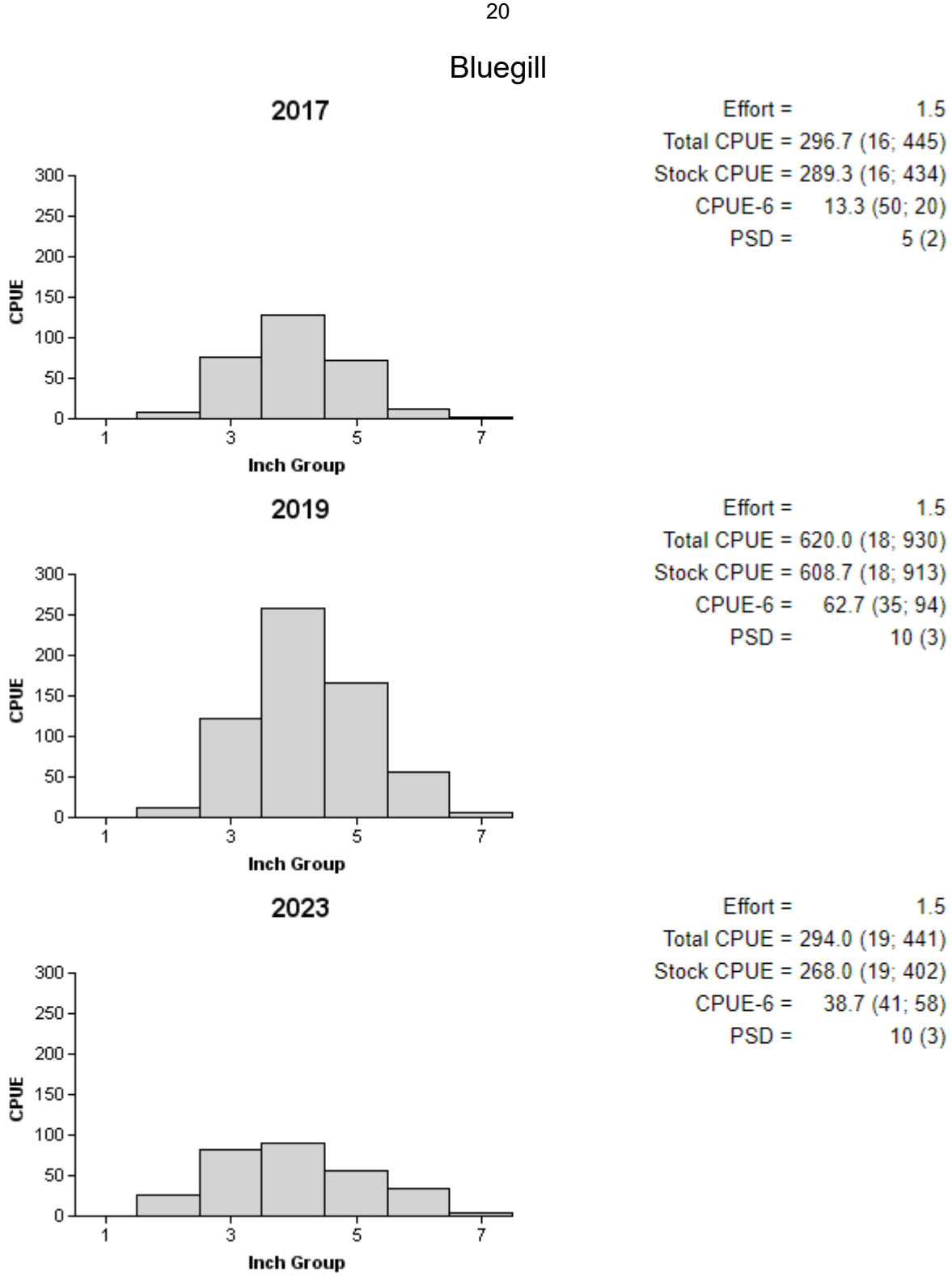


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Grapevine Reservoir, Texas, 2017, 2019, and 2023.

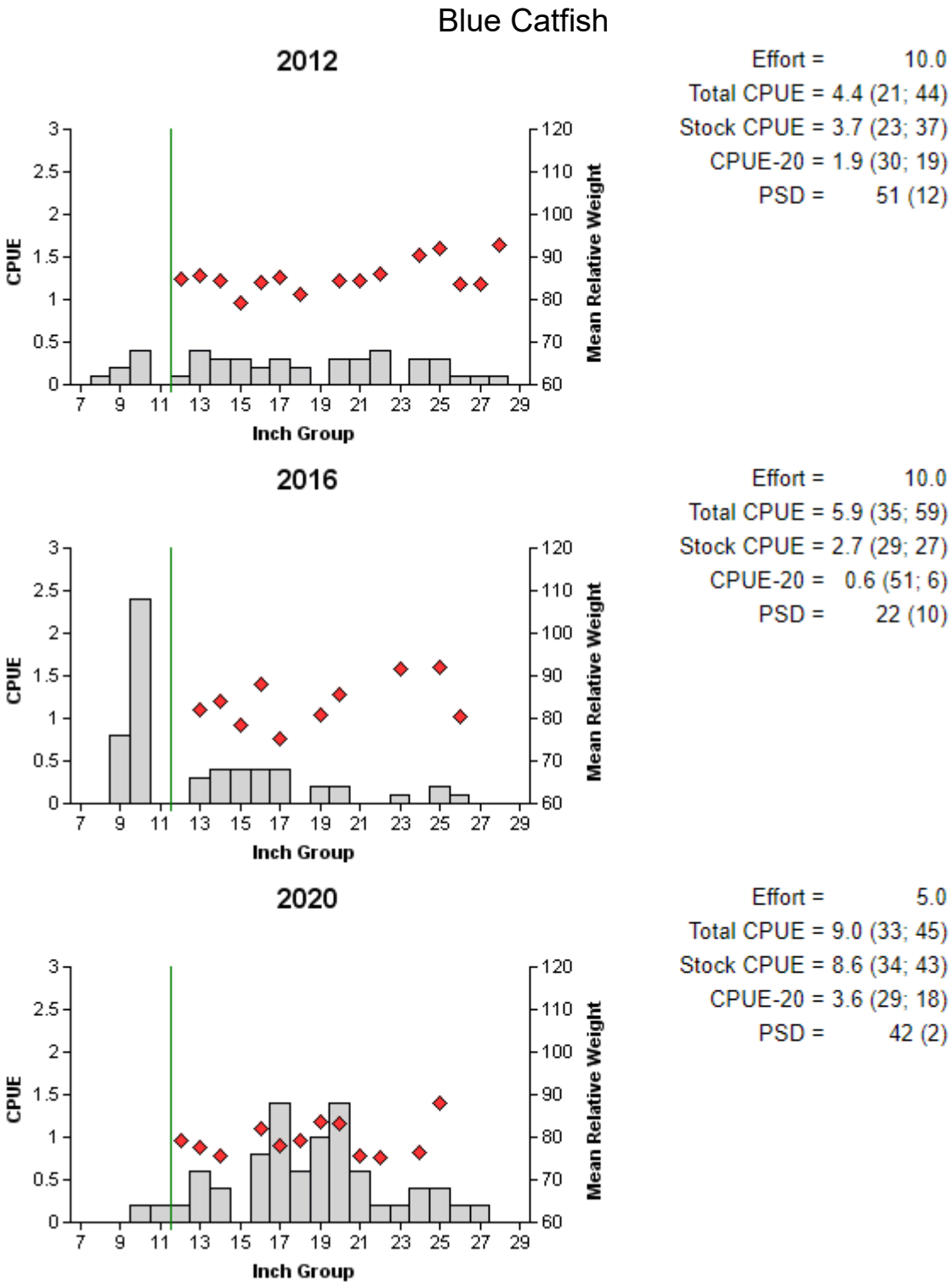


Figure 4. Number of Blue Catfish caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Grapevine Reservoir, Texas, 2012, 2016, 2020. Vertical line represents length limit at time of sampling.

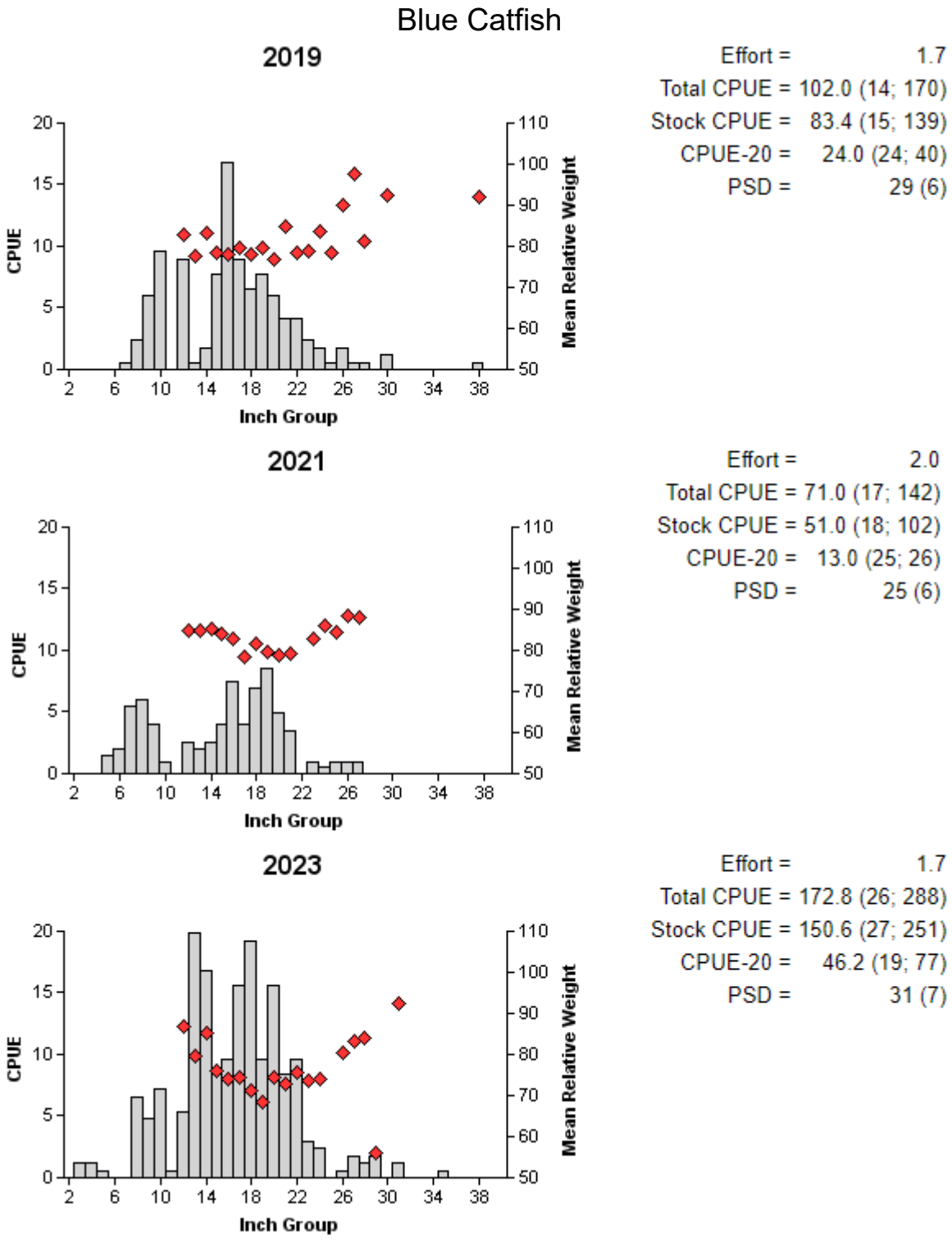


Figure 5. Number of Blue Catfish caught per hour (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for summer low frequency electrofishing surveys, Grapevine Reservoir, Texas, 2019, 2021, and 2023.

Table 8. Creel survey statistics for Blue Catfish at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024. Total catch per hour is for anglers targeting Blue Catfish and total harvest is the estimated number of Blue Catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2019/2020	2023/2024
Surface area (acres)	6,684	6,684
Directed effort (h)	618.3 (55)	137.4 (122.7)
Directed effort/acre	0.1	>0.1
Total catch per hour	0.3 (35)	0.0 (NA)
Total harvest	408.0 (148)	37,925 (6)
Harvest/acre	0.06	5.67
Percent legal released	28.0	2.3

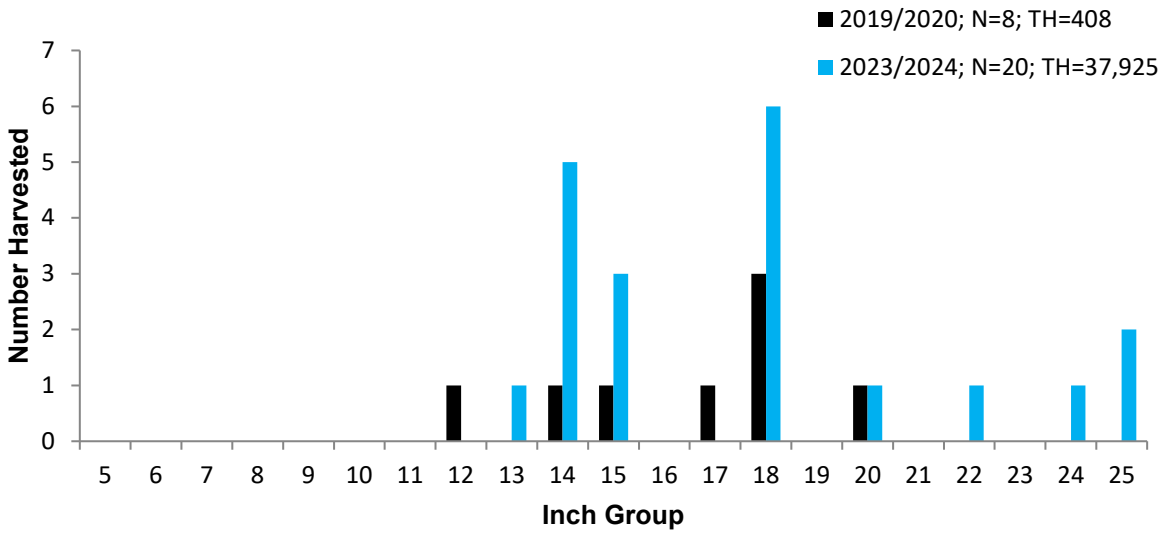


Figure 6. Length frequency of harvested Blue Catfish observed during creel surveys at Grapevine Reservoir, Texas, September 2019 through March 2020 and June - November 2023 and March – May 2024, all anglers combined. N is the number of harvested Blue Catfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

Channel Catfish

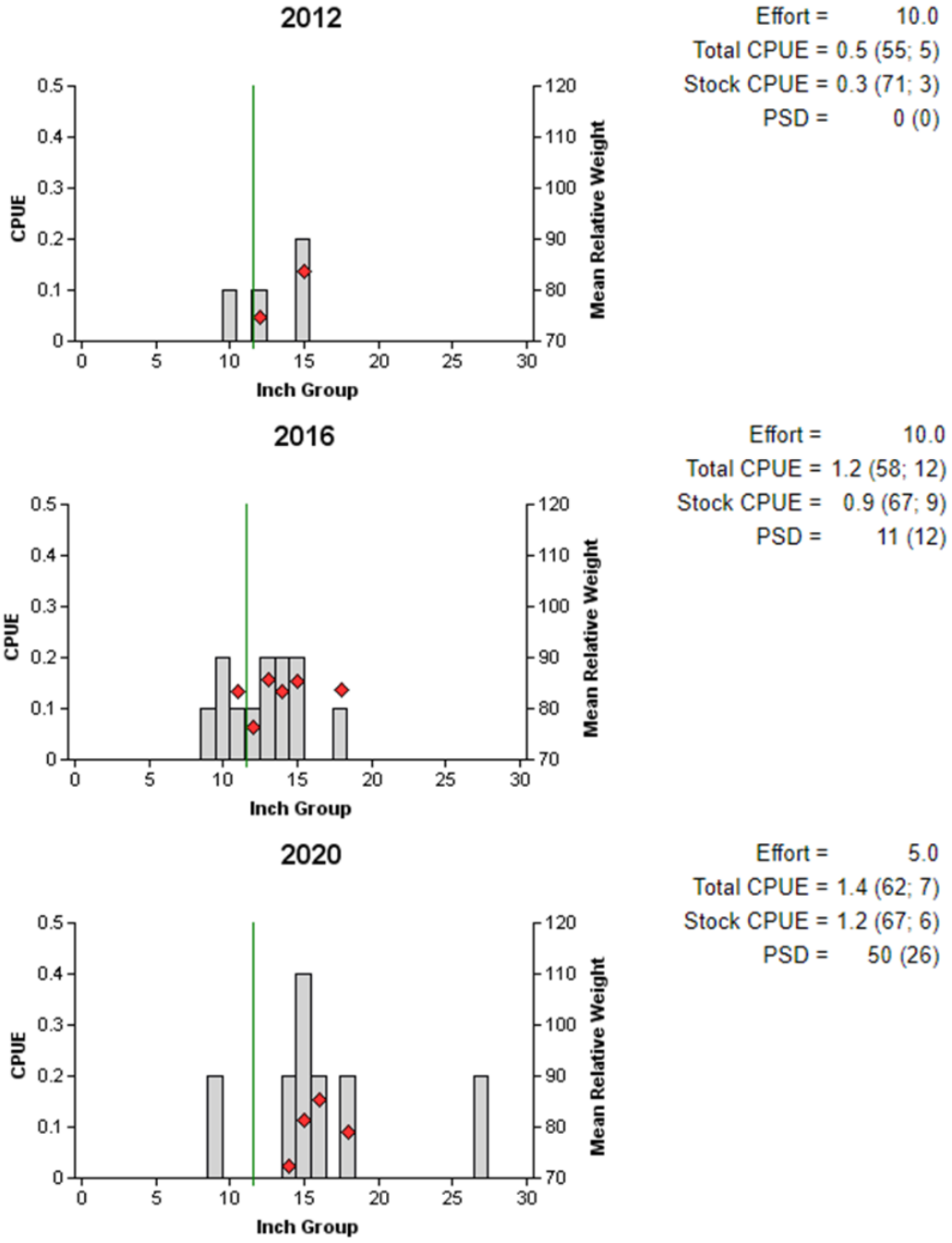


Figure 7. Number of Channel Catfish caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Grapevine Reservoir, Texas, 2012, 2016, and 2020. Vertical line represents length limit at time of sampling.

Table 9. Creel survey statistics for Catfish at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024. Total catch per hour is for anglers targeting Catfish (Blue and Channel) and total harvest is the estimated number of Catfish (Blue and Channel) harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2019/2020	2023/2024
Surface area (acres)	6,684	6,684
Directed effort (h)	1,301.3 (40)	3,542.7 (31)
Directed effort/acre	0.2	0.5
Total catch per hour	0.3 (84)	0.0 (NA)
Total harvest	408 (148)	823 (157)
Harvest/acre	0.13	0.12
Percent legal released	18	74

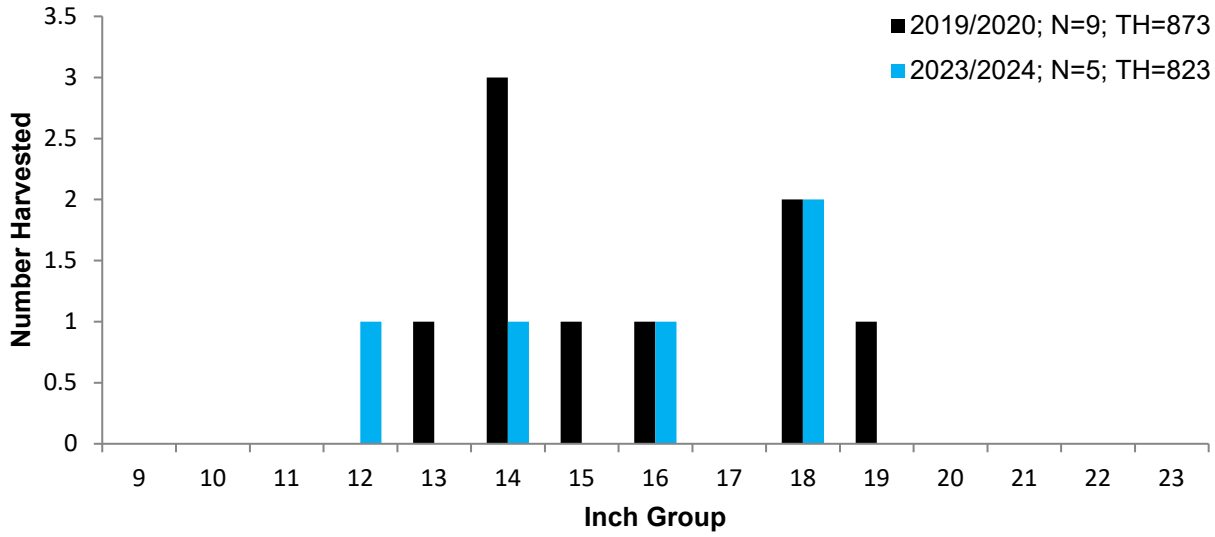


Figure 8. Length frequency of harvested Channel Catfish observed during creel surveys at Grapevine Reservoir, Texas, September 2019 through March 2020 and June - November 2023 and March – May 2024, all anglers combined. N is the number of harvested Channel Catfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

White Bass

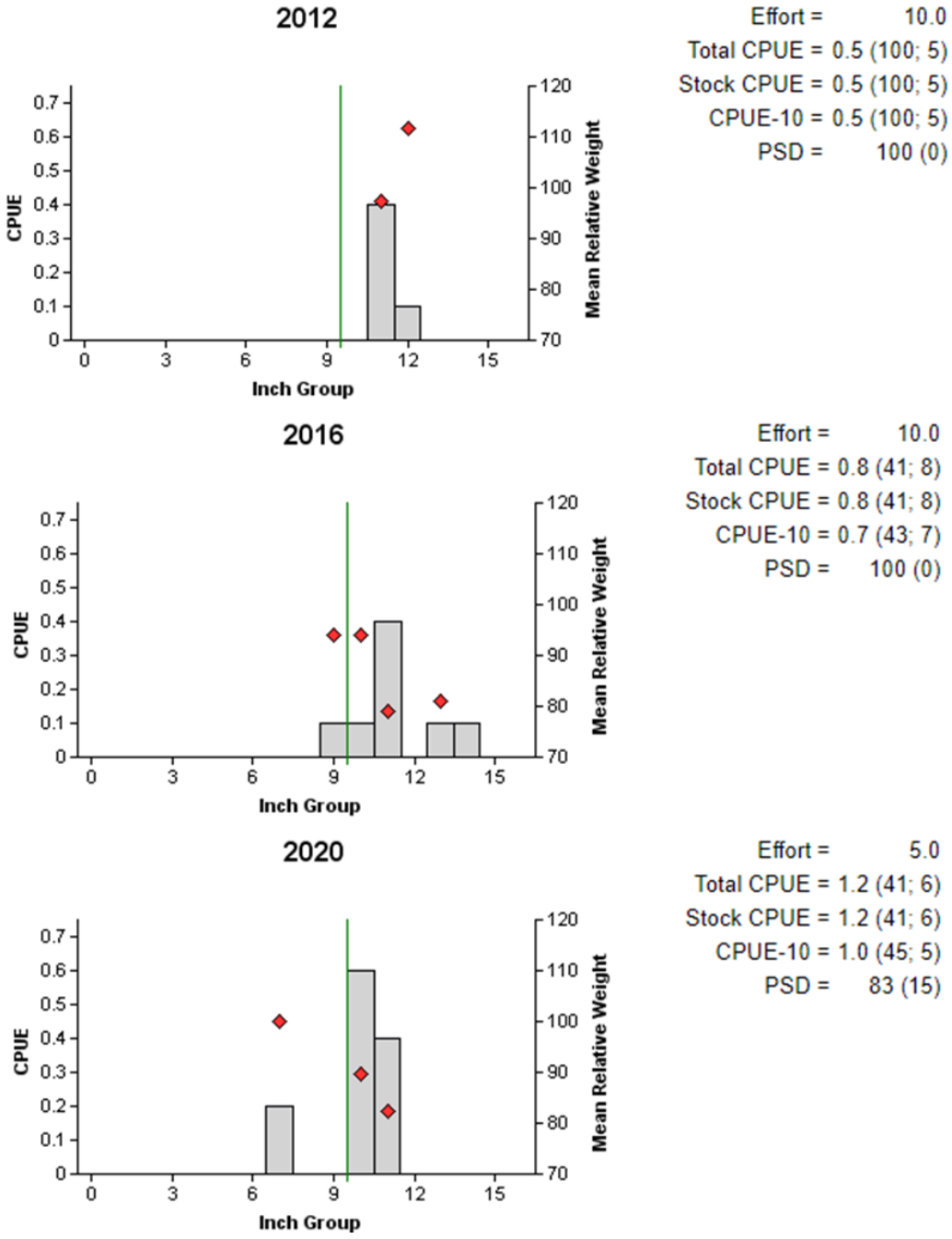


Figure 9. Number of White Bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Grapevine Reservoir, Texas, 2012, 2016, and 2020. Vertical line represents length limit at time of sampling.

Table 10. Creel survey statistics for White Bass at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024. Total catch per hour is for anglers targeting White Bass and total harvest is the estimated number of White Bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2019/2020	2023/2024
Surface area (acres)	6,684	6,684
Directed effort (h)	3,701 (30)	26,476.5 (22.9)
Directed effort/acre	0.6	4.0
Total catch per hour	3.4 (27)	0.5 (102)
Total harvest	3,760 (46)	5,159 (43)
Harvest/acre	0.56	0.77
Percent legal released	64	64

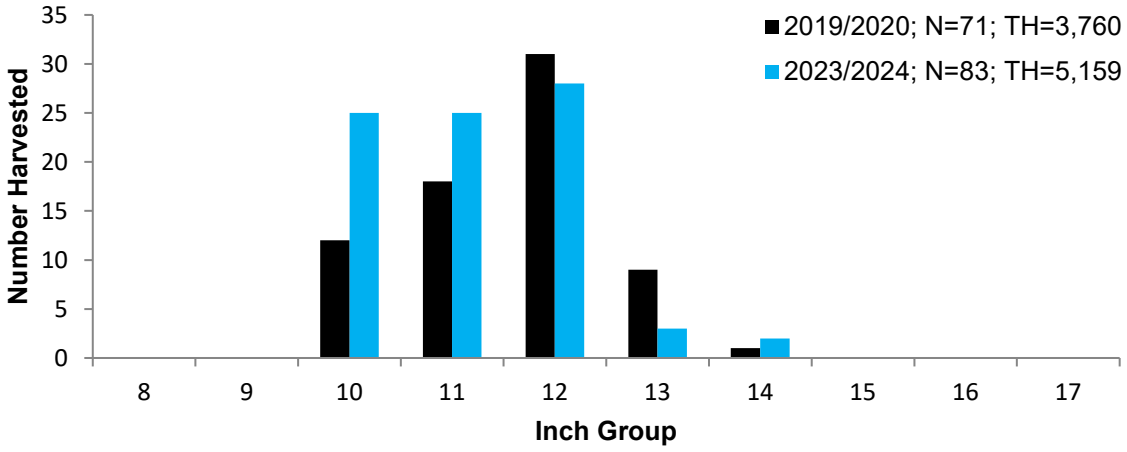


Figure 10. Length frequency of harvested White Bass observed during creel surveys at Grapevine Reservoir, Texas, September 2019 through March 2020 and June - November 2023 and March – May 2024, all anglers combined. N is the number of harvested White Bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

Smallmouth Bass

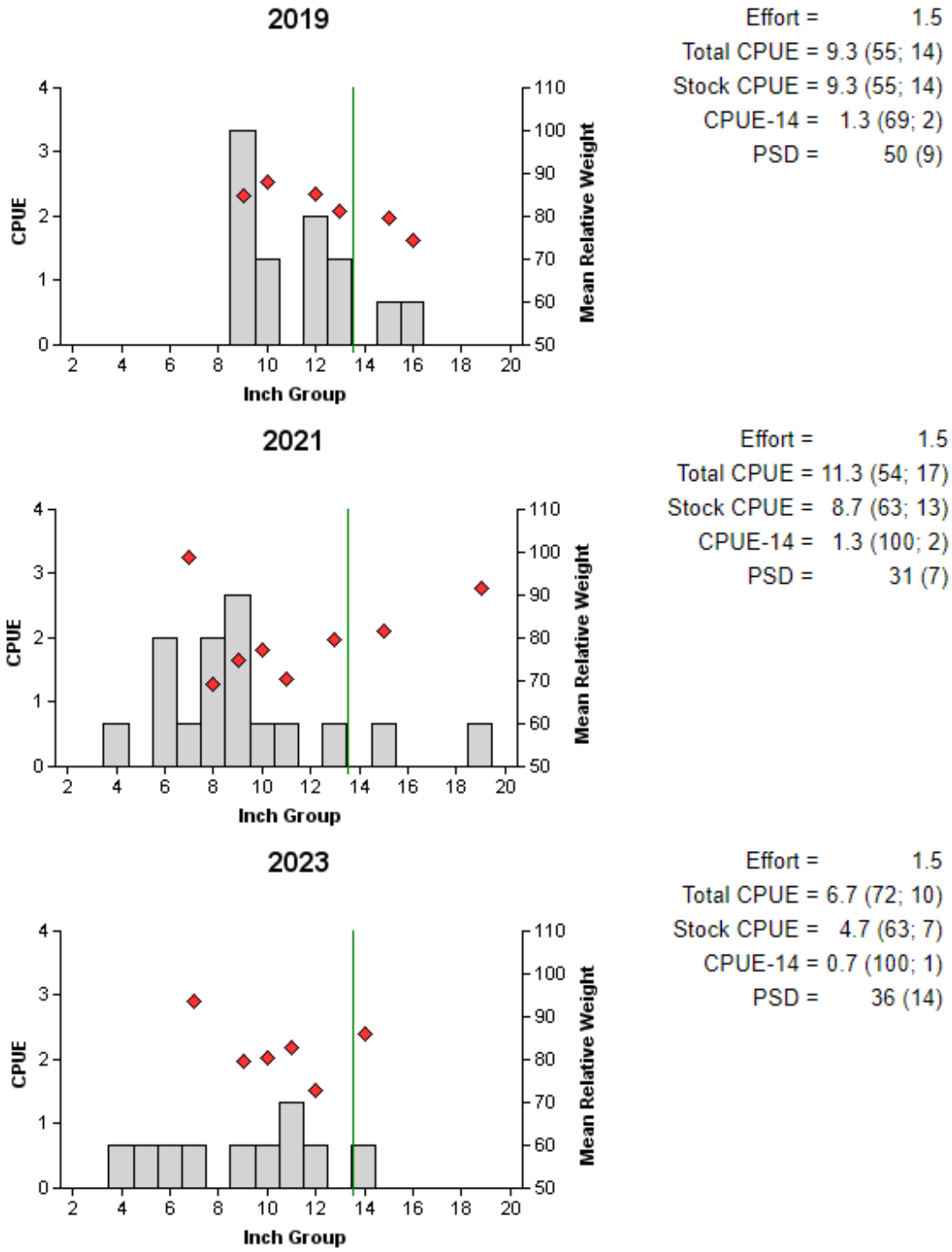


Figure 11. Number of Smallmouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Grapevine Reservoir, Texas, 2019, 2021, and 2023. Vertical line represents length limit at time of sampling.

Table 11. Creel survey statistics for Smallmouth Bass at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024. Total catch per hour is for anglers targeting Smallmouth Bass and total harvest is the estimated number of Smallmouth Bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2019/2020	2023/2024
Surface area (acres)	6,684	6,684
Directed effort (h)	96.9 (121)	259.1 (93.8)
Directed effort/acre	<0.1	<0.1
Total catch per hour	0.0 (NA)	0.0 (NA)
Total harvest	0.00 (NA)	0.0 (NA)
Harvest/acre	0.0 (NA)	0.0 (NA)
Percent legal released	NA	NA

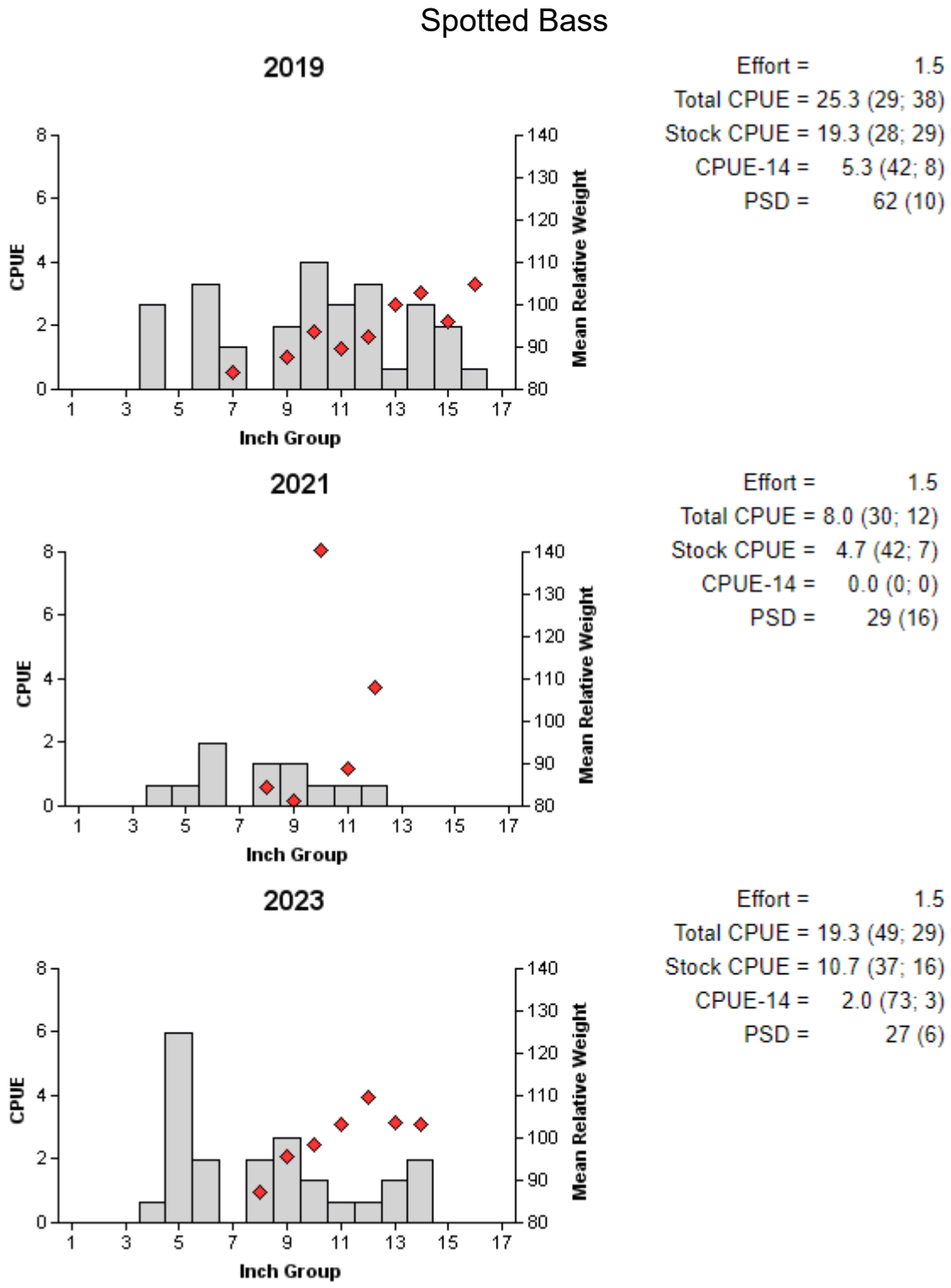


Figure 12. Number of Spotted Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Grapevine Reservoir, Texas, 2019, 2021, and 2023.

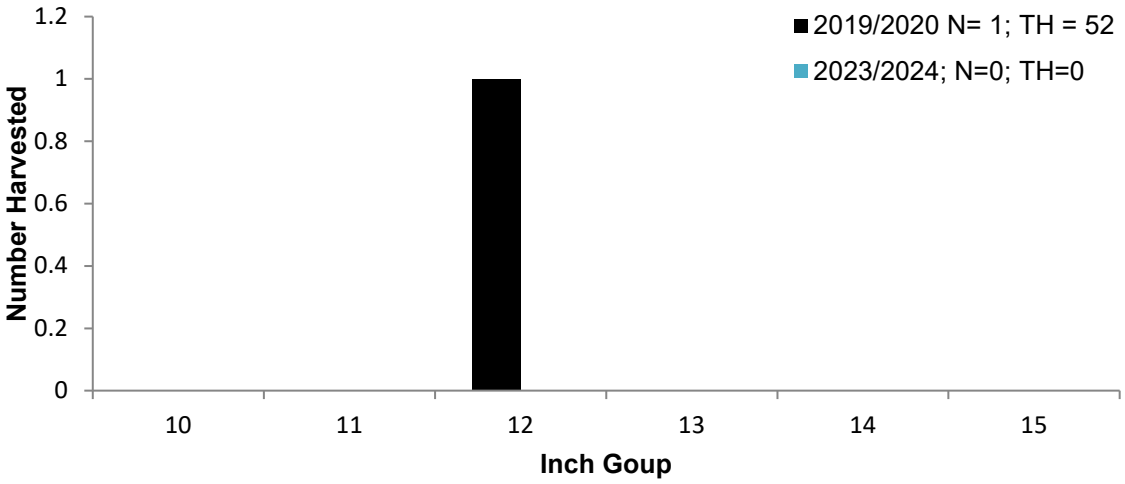


Figure 13. Length frequency of non-tournament harvested Spotted Bass observed during creel surveys at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024, all anglers combined. N is the number of harvested Spotted Bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

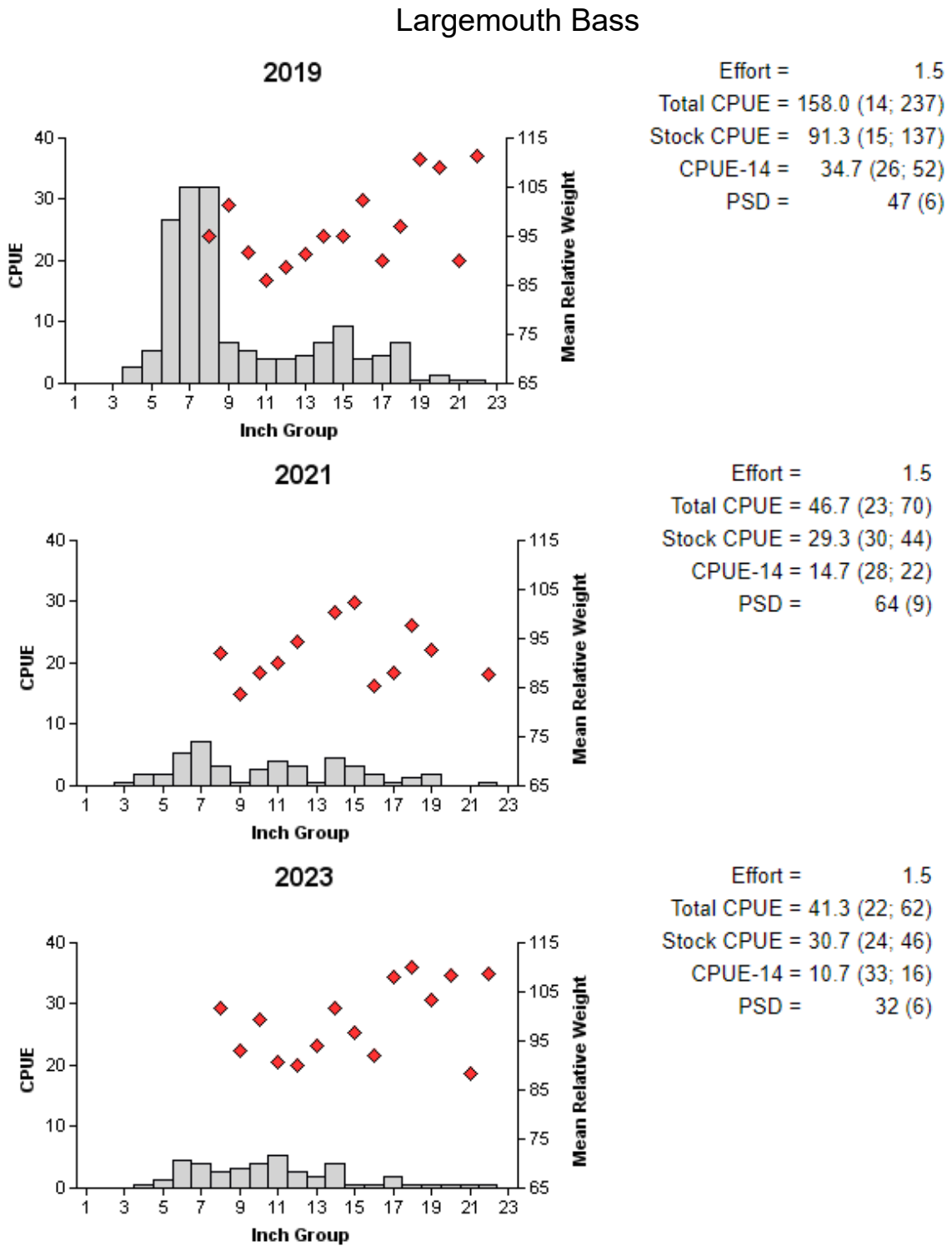


Figure 14. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Grapevine Reservoir, Texas, 2019, 2021, and 2023.

Largemouth Bass

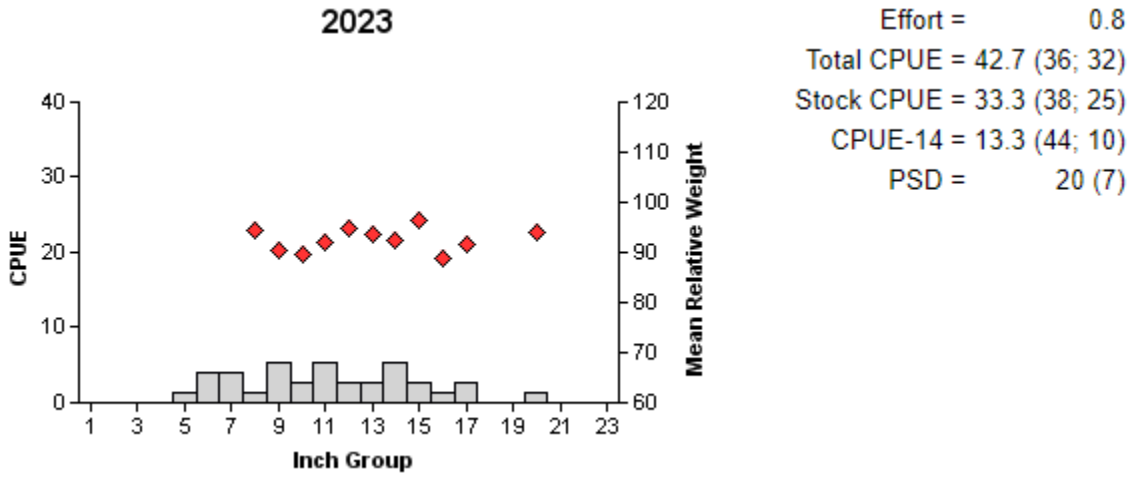


Figure 15. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for modified fall electrofishing survey, Grapevine Reservoir, Texas, 2023.

Table 12. Creel survey statistics for black basses (Smallmouth, Spotted, and Largemouth) combined for Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024. Total catch per hour is for anglers targeting black basses (Smallmouth, Spotted, and Largemouth) and total harvest is the estimated number of black basses (Smallmouth, Spotted, and Largemouth) harvested by all anglers. Percent legal released is for Largemouth Bass only. Relative standard errors (RSE) are in parentheses.

Statistic	2019/2020	2023/2024
Surface area (acres)	6,684	6,684
Directed angling effort (h)		
Tournament	2,608.9 (33.9)	9,379.0 (23.4)
Largemouth Bass	11,359.8 (22.1)	33,886.5 (35.9)
Black basses	893.4 (46.2)	4,433.9 (29.4)
All black bass anglers combined	14,862.1	47,699.4
Angling effort/acre	2.2	7.1
Catch rate (number/h)	0.6 (18)	0.4 (27)
Harvest		
Non-tournament harvest	105 (144)	1,268 (81)
Harvest/acre	<0.1	0.2
Tournament weigh-in and release	1,205 (68)	5,112 (50)
Percent legal released (non-tournament)	90	87

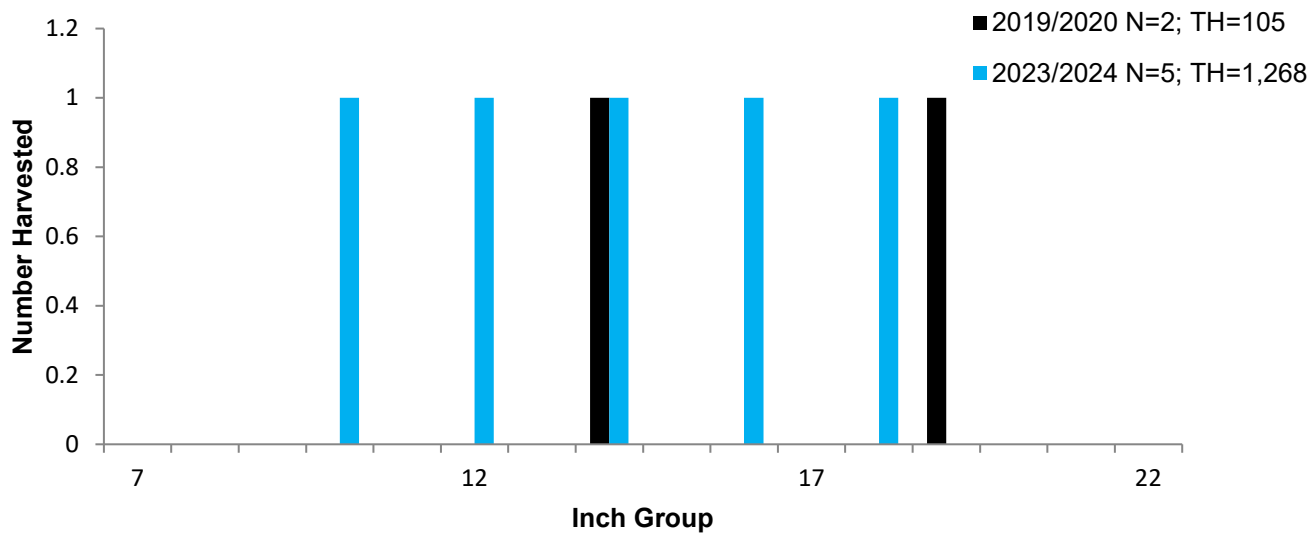


Figure 16. Length frequency of non-tournament harvested Largemouth Bass observed during creel surveys at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024, all anglers combined. N is the number of harvested Largemouth Bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 13. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Grapevine Reservoir, Texas, 2011, 2015 and 2023. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB.

		Number of fish					
Year	Sample size	FLMB	F1	Fx	NLMB	% FLMB alleles	% pure FLMB
2011	30	0	1	NA	1	37	0
2015	29	0	0	21	8	29	0
2023	27	0	5	21	1	46	0

White Crappie

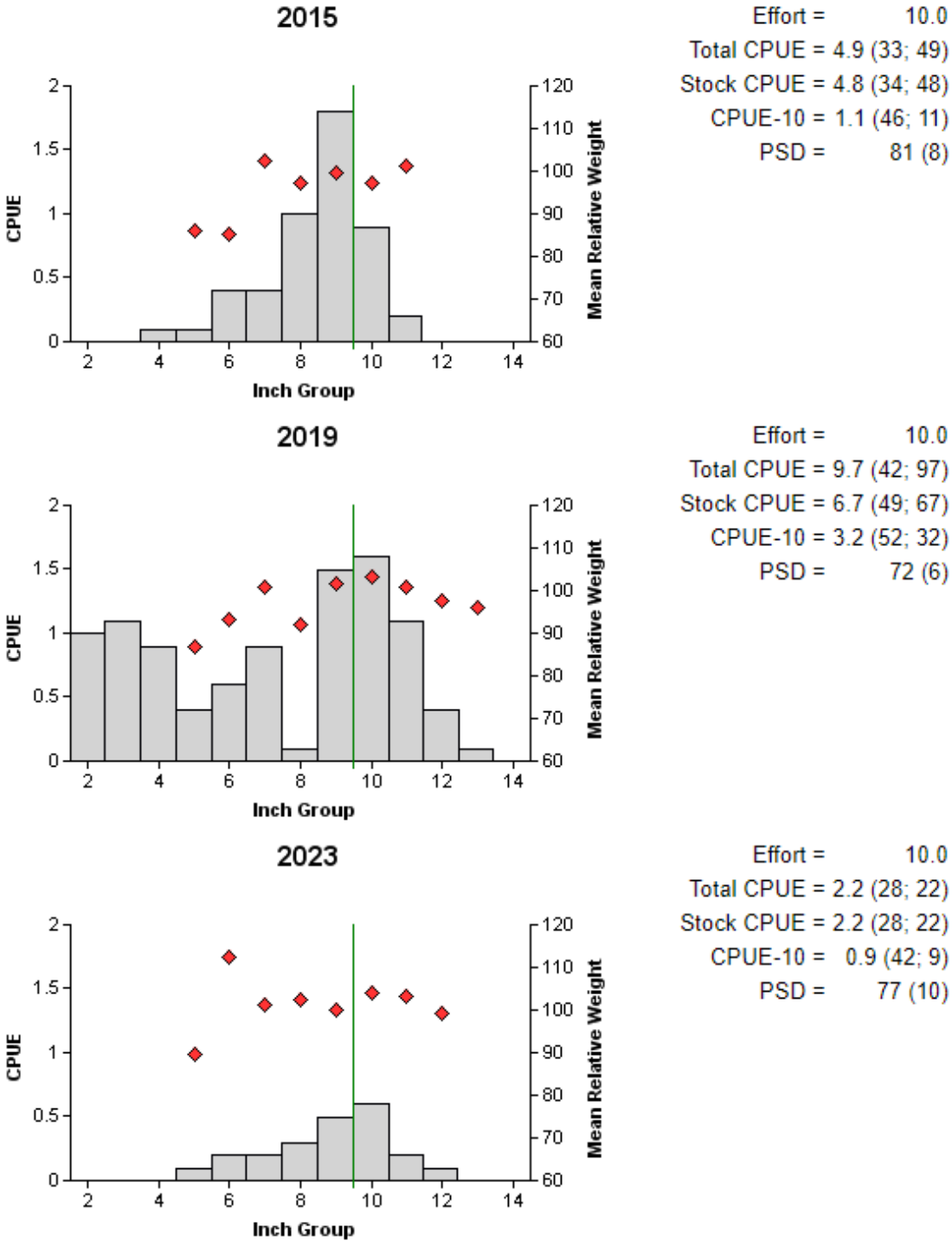


Figure 17. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Grapevine Reservoir, Texas, 2015, 2019, and 2023. Vertical line indicates minimum length limit.

Table 14. Creel survey statistics for crappie at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024. Total catch per hour is for anglers targeting crappie and total harvest is the estimated number of crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2019/2020	2023/2024
Surface area (acres)	6,684	6,684
Directed effort (h)	1,780.60 (36)	24,715.4 (52.6)
Directed effort/acre	0.3	3.7
Total catch per hour	5.6 (25)	2.8 (100)
Total harvest	2,770 (54)	7,377 (52)
Harvest/acre	0.2	1.1
Percent legal released	37	5

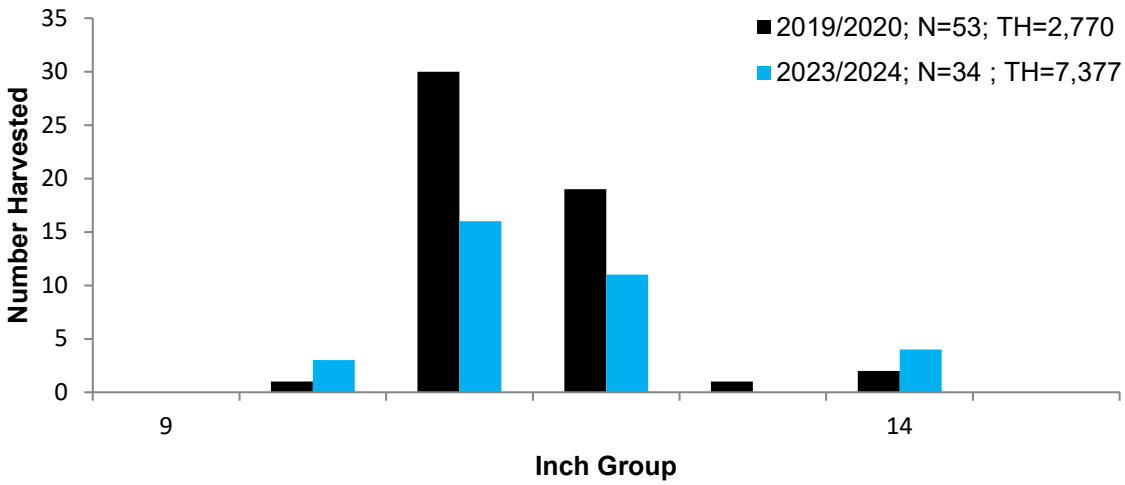


Figure 18. Length frequency of harvested White Crappie observed during creel surveys at Grapevine Reservoir, Texas, from September 2019 through March 2020 and June – November 2023 and March – May 2024, all anglers combined. N is the number of harvested White Crappie observed during creel surveys, and TH is the total estimated harvest for the creel period.

Proposed Sampling Schedule

Table 15. Proposed sampling schedule for Grapevine Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall.

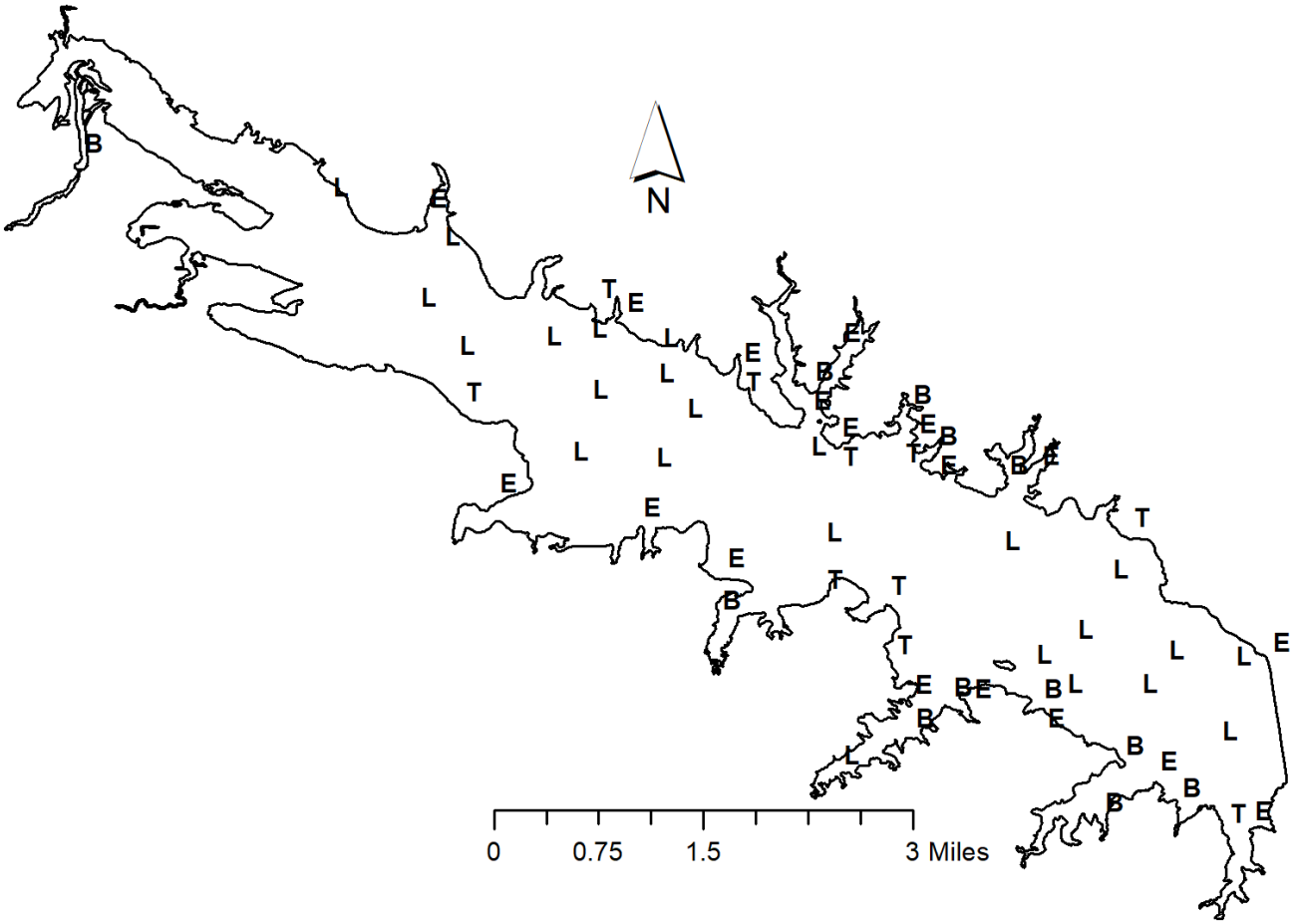
	Survey year			
	2024-2025	2025-2026	2026-2027	2027-2028
Angler Access				X
Structural Habitat				X
Electrofishing – Fall		X		X
Trap netting				X
Low Frequency Electrofishing – Summer				X
Report				X

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

Number (N) and catch rate (CPUE; RSE in parentheses) of most species collected from all gear types from Grapevine Reservoir, Texas, 2023-2024. Sampling effort was 1.7 hours for low frequency electrofishing, 10 net nights for trap netting, and 1.5 hours for electrofishing.

Species	Trap Netting		Electrofishing		Low Frequency Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad			361	240.7 (29)		
Threadfin Shad			312	208.0 (24)		
Blue Catfish					288	172.8 (26)
Channel Catfish						
Bluegill			441	294.0 (19)		
Longear Sunfish			206	137.3 (23)		
Redear Sunfish			1	0.7 (100)		
Smallmouth Bass			10	6.7 (72)		
Spotted Bass			29	19.3 (49)		
Largemouth Bass			62	41.3 (22)		
White Crappie	22	2.2 (28)				
Black Crappie	6	0.6 (51)				

APPENDIX B – Map of sampling locations and boat ramps



Location of sampling sites, Grapevine Reservoir, Texas, 2023-2024. Trap net, low frequency electrofishing, electrofishing stations, and boat ramps are indicated by T, L, E, and B respectively. Water level was near or above full pool at time of all surveys.

APPENDIX C – Historical catch rates of targeted species by gear type for Grapevine Reservoir, Texas.

		Year														
Gear	Species	1996	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Gill Netting	Blue Catfish	0.5	0.8					3.9				3.5				4.4
(fish/net night)	Channel Catfish	4.7	4.5					5.0				2.3				0.5
	White Bass	5.8	4.4					2.3				3.2				0.5
Electrofishing	Gizzard Shad	141.0	283.0	310.7	620.0	287.3	328.7	373.3	409.3	211.3	398.7	442.7	294.0	566.7	698.7	
(fish/hour)	Threadfin Shad	59.0	337.0	348.7	128.0	161.3	154.7	184.7	123.3	138.0	84.0	134.7	192.0	360.7	386.7	
	Bluegill	11.0	82.0	74.0	340.7	217.3	146.7	140.0	204.7	18.0	255.3	393.3	466.7	263.3	274.7	
	Longear Sunfish	10.0	58.0	60.67	151.3	60.7	71.3	90.7	136	36.3	42.0	79.3	153.3	186.0	214.0	
	Redear Sunfish	3.0	1.0	1.3	4.9	0.7	2.7	2.0	2.0	0.0	3.3	8.0	9.3	6.7	2.7	
	Smallmouth Bass		3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	11.3	8.7	
	Spotted Bass	13.0	41.0	16.7	28.0	23.3	34.0	40.0	38.0	22.7	26.0	29.3	31.3	25.3	34.0	
	Largemouth Bass	95.0	109.0	88.7	208.0	78.0	125.3	110.0	126.7	51.3	294.0	196.7	204.0	191.3	185.3	
Trap Netting (fish/net night)	White Crappie	2.6	2.5				24.4				4.2				10.0	
Low Frequency Electrofishing (fish/hour)																

APPENDIX C – Continued

Appendix C continued.

		Year								
Gear	Species	2013	2015	2016	2017	2019	2020	2021	2023	Ave
Gill Netting (fish/net night)	Blue Catfish			5.9			9.0			4.0
	Channel Catfish			1.2			1.4			2.8
	White Bass			0.8			1.2			2.6
Electrofishing (fish/hour)	Gizzard Shad	678.7	616.7		523.3	696.7			240.7	427.5
	Threadfin Shad	578.0	494.7		406.7	227.3			208.0	247.8
	Bluegill	204.7	241.3		296.7	620.0			294.0	239.2
	Longear Sunfish	93.3	56.7		70.0	110.7			137.3	95.7
	Redear Sunfish	0.7	3.3		0.0	1.3			0.7	2.8
	Smallmouth Bass	16.7	6.7		3.3	9.3		11.3	6.7	4.2
	Spotted Bass	31.3	52.7		22.0	25.3		8.0	19.3	28.1
	Largemouth Bass	146.0	234.7		108.7	158.0		46.7	41.3	139.9
Trap Netting (fish/net night)	White Crappie		4.9			9.7				8.3
Low Frequency Electrofishing (fish/hour)					72.6	102.0		71.0	172.8	104.6

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