

Mackenzie Reservoir

2024 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-5

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

Prepared by:

John Clayton, Assistant District Management Supervisor
and
Caleb Huber, District Management Supervisor

Inland Fisheries Division
Amarillo District, Canyon, Texas

David Yoskowitz, Ph.D.
Executive Director

Timothy Birdsong
Director, Inland Fisheries

July 31, 2025



Contents

Contents	i
Survey and Management Summary	1
Introduction.....	2
Reservoir Description	2
Angler Access.....	2
Management History	2
Methods.....	4
Results and Discussion.....	4
Fisheries Management Plan for Mackenzie Reservoir, Texas	6
Objective-Based Sampling Plan and Schedule (2025–2029).....	7
Literature Cited.....	9
Tables and Figures	10
Water Level	10
Reservoir Characteristics	10
Boat Ramp Characteristics.....	11
Harvest Regulations	11
Stocking History.....	12
Objective-Based Sampling Plan for 2024-2025	14
Structural Habitat Survey.....	15
Gizzard Shad	16
Bluegill	17
Channel Catfish	18
White Bass.....	19
Hybrid striped bass.....	20
Largemouth Bass	21
White Crappie	22
Proposed Sampling Schedule	23
APPENDIX A – Catch rates for all species from all gear types	24
APPENDIX B – Map of sampling locations.....	25

Survey and Management Summary

Fish populations in Mackenzie Reservoir were surveyed in 2024 using electrofishing and trap netting and in 2025 using gill netting. Historical data are presented with the 2024-2025 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: Mackenzie Reservoir was constructed in 1974 on Tule Creek, a tributary of the Prairie Dog Town Fork of the Red River. It is located 12 miles northwest of Silverton in Briscoe County, Texas. The reservoir is owned by the Mackenzie Municipal Water Authority and is used for water supply and recreational purposes. Mackenzie Reservoir is characterized as being a deep, clear, mesotrophic reservoir that experiences strong thermal stratification during summer months. At conservation pool (3,100 feet above mean sea level; FMSL) the reservoir is a 900-acre impoundment. At the time of sampling, the reservoir had a mean elevation of 3,014 FMSL and a surface area of approximately 209 acres. Habitat consisted primarily of natural featureless shoreline and rock bluff.

Management History: Important sport fishes include Largemouth Bass, hybrid striped bass, White Bass, White Crappie, and catfishes. All species have been managed with statewide harvest regulations.

Fish Community

- **Prey species:** Gizzard Shad and Bluegill were present in the reservoir. Electrofishing catch rate in 2024 for Gizzard Shad was similar to 2020 and 2018. More than half of the Gizzard Shad sampled were available to serve as prey to most sport fish. Electrofishing catch of Bluegill in 2024 was slightly lower than 2020 but higher than 2018, and all Bluegill sampled were ≤ 6 -inches in length.
- **Catfishes:** While Blue Catfish and Flathead catfish have historically been present in the reservoir, Channel Catfish remain the dominate catfish species. The majority of Channel Catfish collected during the gill net sample were between 12 and 27 inches in length.
- **Temperate basses:** While White Bass were present in the reservoir, past creel surveys indicated that they received no directed angling effort. Gill net catch rates for hybrid striped bass have fluctuated over the past four years. Only 2 fish were sampled in 2025; both of which were 24 inches in length.
- **Largemouth Bass:** Largemouth Bass abundance has increased since 2018 and 2020, but most fish sampled were below the legal length limit (14 in).
- **White Crappie:** White Crappie were present in the reservoir. Fish abundance appears to have improved from previous years.

Management Strategies: Continue suspension of hybrid striped bass stocking, as long as reservoir remains below 300 surface acres. Continue management under current harvest regulations. Conduct electrofishing, and trap netting in 2028, and gill netting in 2029. Access and habitat surveys will be conducted in 2028.

Introduction

This document is a summary of fisheries data collected from Mackenzie Reservoir from 2024-2025. 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 2024-2025 data for comparison.

Reservoir Description

Mackenzie Reservoir is a 900-acre impoundment (at conservation pool) constructed in 1974 on Tule Creek, a tributary of the Prairie Dog Town Fork of the Red River. It is located 12 miles northwest of Silverton in Briscoe County, Texas. The reservoir is owned by the Mackenzie Municipal Water Authority (MMWA) and is used for water supply and recreational purposes. The reservoir has a history of water level fluctuations and has never caught sufficient runoff to fill to capacity (Figure 1). Mackenzie Reservoir is characterized as a mesotrophic reservoir with a mean Trophic State Index chl-a of 49.54 (Texas Commission on Environmental Quality 2024). The lake has also been known to experience strong thermal stratification during summer months. At the time of sampling, the habitat consisted primarily of natural featureless shoreline and rock bluff. Other descriptive characteristics for Mackenzie Reservoir are in Table 1.

Angler Access

Mackenzie Reservoir has two public boat ramps and one private boat ramp. At the time of sampling, lake levels only allowed for the use of the Mackenzie boat ramp located on the southeast side of the dam. Extension of the Marina boat ramp is not feasible due to reduced slope. Additional boat ramp characteristics are in Table 2. There is one fishing dock located near the Marina boat ramp. Shoreline access is limited to a beach area on the west end of the lake and to areas around the boat ramps. There are no ADA specific facilities.

Management History

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

1. Suspend stocking of hybrid striped bass until the reservoir size increases to 300 acres or greater. Once the reservoir reaches 300 acres in size, reevaluate stocking of hybrid striped bass.

Action: The reservoir has remained well below 300 surface acres since 2020. No hybrid striped bass have been stocked since 2020.
2. Conduct a Spring quarter creel survey in 2024 to determine angler use and preference for the reservoir.

Action: The creel survey scheduled for Spring 2024 was canceled due to a higher priority need for a creel survey on a different district reservoir.
3. Cooperate with the MMWA to post appropriate signage at access points around the reservoir; contact and educate marina owners about invasive species, and provide them with posters, literature, etc... so that they can in turn educate their customers; educate the public about invasive species through the use of media and the internet; and make a speaking point about invasive species when presenting to constituents and user groups.

Action: Presentations have been given to the Region O water planning group and various area civic groups and school groups. Interviews and news releases concerning invasive species have been conducted for area newspapers. Stories and posts have

been added to the district Facebook page. Invasive Species literature has been sent to the controlling authority and placement of signage has been advised.

Harvest regulation history: Sport fishes in Mackenzie Reservoir have been and currently are managed with statewide regulations (Table 3).

Stocking history: Mackenzie Reservoir was last stocked in 2017 and 2020 with hybrid striped bass. Due to a surplus of Walleye available from the hatchery, the decision was made to stock 400,000 Walleye fry in 2025. The complete stocking history is in Table 4.

Vegetation/habitat management history: There is no vegetation or habitat management history for this reservoir.

Water transfer: Mackenzie Reservoir is primarily used for municipal water supply and recreation. One permanent pumping station on the reservoir transfers water to the Mackenzie Municipal Water Authority's water treatment plant for municipal water supply. 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 Mackenzie Reservoir (Clayton and Huber 2021). Primary components of the OBS plan are listed in Table 5. All electrofishing and gill net survey sites were randomly selected, and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022). Trap net survey sites were biologist-selected.

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, 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. Electrofishing in 2024 was conducted using a Smith-Root Apex electrofisher, while previous surveys used a GPP 7.5 electrofisher.

Trap netting – 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, White Bass, and hybrid striped bass 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).

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

Habitat – A structural habitat survey and a vegetation survey was conducted in 2024. 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 2025).

Results and Discussion

Habitat: Littoral zone structural habitat consisted primarily of natural, featureless shoreline (63.3 %) and rock (24.8 %); remaining shoreline consisted of rock bluff (11.9 %; Table 6). There were approximately 16.5 acres of flooded standing timber (7.2 %), and very little aquatic vegetation was present in the reservoir; a very small amount of Sago Pondweed was found in one small cove.

Prey species: Total CPUE (103.0/h) of Gizzard Shad in 2024 was similar to previous years (2020 CPUE=106.0/h and 2018 CPUE=101.3/h; Figure 2). Index of Vulnerability (IOV) for Gizzard Shad was fair, having improved from IOV=22 in 2018 to IOV=57 in 2020 and 2024 (Figure 2). Total CPUE of Bluegill in 2024 (88.0/h) was lower than total CPUE from 2020 (115.0/h) but higher than total CPUE in 2018 (68.7/h; Figure 3), and size structure was dominated by small individuals (Figure 3). Twelve random stations were adequate to achieve an $RSE \leq 25$ for Gizzard Shad abundance ($RSE=21$), but not Bluegill ($RSE > 25$).

Channel Catfish: Channel Catfish total CPUE was 9.0/nn in 2025, an increase over the 2021 survey (4.3/nn) and 2017 (3.8/nn; Figure 4). Most Channel Catfish sampled exhibited good to excellent body condition with a mean relative weight (W_r) greater than 90. Reproduction was indicated by the catch of smaller fish. Due to the current size of the reservoir (about 200 acres) and the excessive amount of survey effort needed to achieve specific OBS goals (more than 21 random stations), OBS goals consisted of general monitoring (without precision or sampling size requirements). Although objectives only consisted of general monitoring, the abundance estimate for Channel Catfish had high precision (RSE=21).

White Bass: White Bass continued to be present in the reservoir, but total CPUE has fluctuated over the past 8 years from a low of 4.3/nn in 2017 up to a high of 14.3/nn in 2020. The 2025 survey had a total CPUE of 9.8/nn (Figure 5). Most fish sampled during the surveys were legal-size (10 inches). Since past angler surveys indicate no directed effort towards this species, White Bass are considered a low-importance fishery and data collection consisted of general monitoring of trend data without precision or sampling size requirements.

Hybrid striped bass: Hybrid striped bass total CPUE was 0.4/nn in 2025, similar to the 0.5/nn observed in 2018 and 2020 (Figure 6). Only four fish were sampled during 2017 and 2021 gill net surveys and 2 fish were sampled in 2025. Low relative abundance is most likely attributed to chronic low reservoir water levels and the sporadic stockings prior to 2020 as well as suspended stocking after 2020. Due to the size of the reservoir (approximately 200 surface acres) and the excessive amount of survey effort required to achieve OBS goals (more than 65 gill net stations), OBS goals consisted of general monitoring without precision or sampling size requirements.

Largemouth Bass: The electrofishing catch rate of Largemouth Bass was 93.0/h in 2024, a large increase from 48.0/h in 2020, and 52.7/h in 2018 (Figure 7). Stock CPUE has also increased greatly from 2018 (30.7/h) and 2020 (32.0/h) to 2024 (64.0/h). Due to the size of the reservoir (approximately 200 surface acres) and the excessive amount of survey effort required (greater than 19 random stations) to achieve OBS goals, specific OBS goals were not established. However, more than 50 stock-length fish were collected (N=64) for size structure estimation (PSD; 50 stock-length fish minimum with 80% confidence) and CPUE-S RSE<25 was achieved with only 12 stations (RSE=15).

White Crappie: No White Crappie were observed during the 2024 electrofishing survey; as a result, five trap net stations were biologist-selected to determine presence/absence of White Crappie. The trap net catch rate of White Crappie was 16.8/nn in 2024, higher than in 2014 (6.4/nn) and 2012 (2.0/nn) (Figure 8). High variability of White Crappie trap net catch rates have not been able to offer much more than presence/absence data of the species. The majority of fish sampled were below the legal harvest length (10 inches). The OBS goal of presence/absence was achieved.

Fisheries Management Plan for Mackenzie Reservoir, Texas

Prepared – July 2025

ISSUE 1: Chronic low reservoir water levels and intermittent stockings have resulted in substantial decreases in gill net catch rates for hybrid striped bass since 2009. Stocking of hybrid striped bass is required to sustain the population and maintain the fishery. Low relative abundance has most likely resulted in less angler effort currently targeting hybrid striped bass, and extended periods of low lake levels and loss of habitat have made maintaining a quality fishery difficult. In 2020 the decision was made to suspend stocking of hybrid striped bass until the reservoir level reached or exceeded 300 surface acres. To date the reservoir has remained around 200 surface acres.

MANAGEMENT STRATEGIES

1. Continue with suspension of stocking of hybrid striped bass until the reservoir size increases to 300 acres or greater. Once the reservoir reaches 300 acres in size, reevaluate stocking of hybrid striped bass.
2. Conduct a Spring quarter Creel survey in 2026 to determine angler use, preference, and harvest for hybrid striped bass and all other sportfish species in the reservoir.

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 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 Mackenzie Municipal Water 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) of any future interbasin water transfers to facilitate potential invasive species responses.

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

Sport fish, forage fish, and other important fishes

Sport fishes in Mackenzie Reservoir have historically included Channel Catfish, Blue Catfish, Flathead Catfish, White Bass, hybrid striped bass, Largemouth Bass, and White Crappie. The primary forage species are Gizzard Shad and Bluegill.

Low-density fisheries

Blue Catfish are typically collected in gill nets at a rate below 1.0/nn, and past angler surveys indicated no directed effort toward this species. General monitoring trend data (without precision or sampling size requirement) will be gathered for this species while sampling for Channel Catfish and hybrid striped bass as outlined below.

Although White Bass are typically collected in gill nets at a rate of 2.4/nn to 4.4/nn, and the 2021 gill net survey showed a large increase in the relative abundance; past angler surveys indicated no directed effort towards this species. Until a new creel survey can be conducted, general monitoring trend data (without precision or sampling size requirement) will be gathered for this species while sampling for Channel Catfish and hybrid striped bass as outlined below.

Walleye stockings were discontinued after 1985 because they had natural recruitment. There is a remnant population of Walleye but low water levels are likely impacting spawning and recruitment. Walleye are typically collected in gill nets at a rate of 0.2/nn; past angler surveys indicate no directed effort towards this species. In 2025 there were surplus Walleye available at the hatchery and the decision was made to stock about 400,000 Walleye fry into the reservoir. General monitoring trend data (without precision or sampling size requirement) will be gathered for this species while electrofishing for Largemouth Bass and gill netting for Channel Catfish and hybrid striped bass as outlined below.

Survey objectives, fisheries metrics, and sampling objectives

Channel Catfish: Historically, Channel Catfish have been the most sought species in the reservoir. Trend data on relative abundance and size structure of Channel Catfish has been collected biennially between 1999 and 2017 and quadrennially since 2017. Continuation of trend data will allow for general monitoring of large-scale changes in relative abundance and size structure. Gill net sampling effort needed to achieve sampling objectives for relative abundance (CPUE-S; $RSE \leq 25$ with 80% confidence) is 16 random stations. Effort for size structure estimation (PSD; 50 fish minimum with 80% confidence) is 15 random gill net stations. Due to the size of the reservoir (approximately 200 surface acres) and the excessive amount of sampling effort needed to achieve specific objectives, Channel Catfish will be sampled with general monitoring (without precision or sampling size requirements). Due to extremely low lake levels, Channel Catfish data will be collected in 2027 and 2029 using 5 random gill net stations (Table 7).

Hybrid Striped Bass: In 2020 hybrid striped bass stockings were suspended due to extremely low lake levels. Trend data on relative abundance of hybrid striped bass has been collected biennially 1999 and 2017 and quadrennially since 2017. Continuation of trend data will allow for general monitoring of any large-scale changes in relative abundance. Catch rates since 2017 have been less than or equal to 0.5/nn. Utilizing catch rate data from the past 3 gill net surveys, achieving a relative abundance precision with an RSE of CPUE-S < 25 with 80% confidence would require 50 random gill net stations. Effort for size structure estimation (PSD; 50 fish minimum with 80% confidence) would require more than 100 random stations. Due to the size of the reservoir and the excessive amount of effort required to meet relative abundance and size structure estimation objectives, and due to the decision to suspend Hybrid Striped Bass stocking until the reservoir increases to 300 surface acres, hybrid striped bass data will be

collected using the sampling strategy for Channel Catfish (5 random gill net stations in 2027 and 2029; Table 7).

Largemouth Bass: Trend data on relative abundance and size structure of Largemouth Bass has been collected biennially between 1999 and 2020 with fall nighttime electrofishing. Continuation of trend data with night electrofishing in the fall will allow for general monitoring of any large-scale changes in the Largemouth Bass population that may spur further investigation. Analysis of past sampling indicates that it would require a minimum of 14 electrofishing sites to achieve a CPUE-S $RSE < 25$. Effort for size structure estimation (PSD; 50 fish minimum with 80% confidence) would require a minimum of 17 random electrofishing stations. Due to the size of the reservoir (approximately 200 surface acres) and the excessive amount of effort required to meet specific objectives, twelve randomly selected 5-min electrofishing sites will be sampled in 2026 and 2028. Category 2 Age and Growth analysis (13 fish between 330 and 381 mm) will be attempted in 2026. If the lake level increases to greater than 250 acres, fourteen 5-min electrofishing sites will be sampled in 2026 and 2028 (Table 7).

White Crappie: Due to trap net catch rates of White Crappie being highly variable, trend data has only been able to determine presence/absence of the species. General monitoring on a quadrennial basis will allow for the evaluation of presence/absence of White Crappie. To determine presence/absence we will document any White Crappie observed in the electrofishing survey and the gill net survey. If no White Crappie are detected in the 2028 electrofishing survey, additional effort will include 5 biologist selected trap net stations in fall of 2028 (Table 7).

Prey species: Bluegill and Gizzard Shad are the primary forage species at Mackenzie Reservoir. Trend data has been collected biennially between 1999 and 2020. Continuation of sampling, as per Largemouth Bass above, will allow for general monitoring of large-scale changes in relative abundance and size structure. No additional effort will be extended beyond what is used for Largemouth Bass sampling.

Creel: a Spring quarter Creel survey in 2026 will be conducted to determine angler use and preference as well as harvest of sportfish in the reservoir.

Literature Cited

- Clayton, J., and C. Huber. 2021. Mackenzie Reservoir, 2020 fisheries management survey report. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-4, Austin.
- DiCenzo, V. J., M. J. Maceina, and M. R. Stimpert. 1996. Relations between reservoir trophic state and Gizzard Shad population characteristics in Alabama reservoirs. *North American Journal of Fisheries Management* 16:888-895.
- Dumont, S. C., and B. C. Neely. 2011. A proposed change to Palmetto Bass proportional size distribution length categories. *North American Journal of Fisheries Management* 31: 722-725.
- Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional size distribution (PSD): a further refinement of population size structure index terminology. *Fisheries* 32(7): 348.
- Neumann, R. M., C. S. Guy, and D. W. Willis. 2012. Length, weight, and associated indices. Pages 637-676 in A. V. Zale, D. L. Parrish, and T. M. Sutton, editors. *Fisheries techniques*, 3rd edition. American Fisheries Society, Bethesda, Maryland.
- Page, L. M., K. E. Bemis, T. E. Dowling, H. S. Espinosa-Perez, L. T. Findley, C. R. Gilbert, K. E. Hartel, R. N. Lea, N. E. Mandrak, M. A. Neighbors, J. J. Schmitter-Soto, and H. J. Walker, Jr. 2023. Common and scientific names of fishes from the United States, Canada, and Mexico. American Fisheries Society, Special Publication 37, Bethesda, Maryland.
- Texas Commission on Environmental Quality. 2024. Trophic classification of Texas reservoirs. 2024 Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d) List, Austin. 11 pp.
- United States Geological Survey (USGS). 2025. National water information system: Web interface. Available: <http://waterdata.usgs.gov/tx/nwis> (July 2025).

Tables and Figures

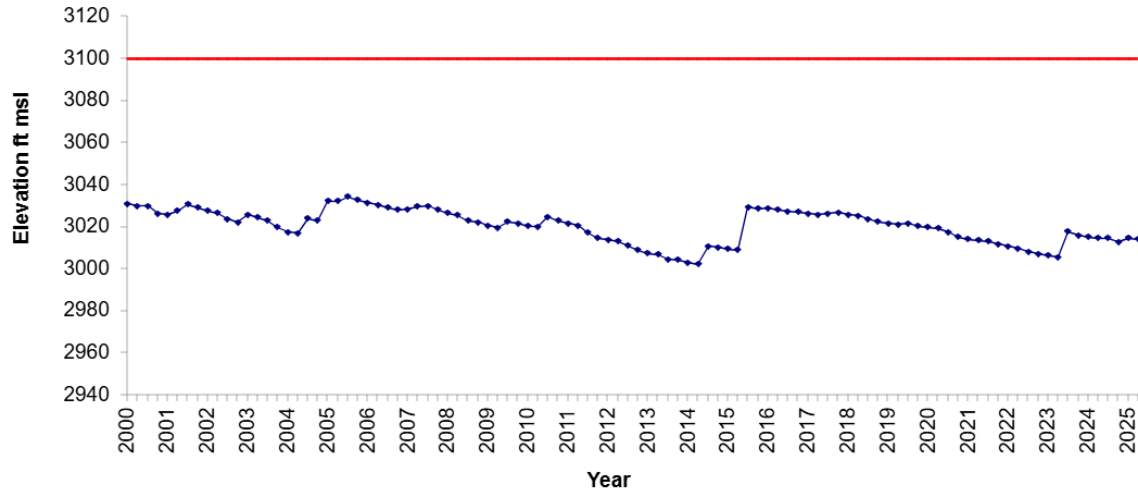


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Mackenzie Reservoir, Texas. The red horizontal line represents conservation pool elevation at 3,100 feet above mean sea level.

Table 1. Characteristics of Mackenzie Reservoir, Texas.

Characteristic	Description
Year constructed	1974
Controlling authority	Mackenzie Municipal Water Authority
County	Briscoe
Reservoir type	Mainstem
Shoreline Development Index	3.96
Conductivity	1,093 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for Mackenzie Reservoir, Texas, August 2024. Reservoir elevation at time of survey was 3,014 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Mackenzie	34.54498 -101.44220	Y	20	unknown	Useable, currently no access issues.
Marina	32.54467 -101.54083	Y	10	3,035	Out of water. Extension is not feasible.
Coronado Shores	34.55237 -101.44977	N	unknown	3,055	Out of water.

Table 3. Harvest regulations for Mackenzie Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (only 10 $\geq$ 20 inches)	None
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, hybrid striped	5	18-inch minimum
Bass, Smallmouth and Largemouth	5 (in any combination)	14-inch minimum
Crappie: White and Black crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum
Walleye	5	No more than 2 under 16 inches

Table 4. Stocking history of Mackenzie Reservoir, Texas. FGL = fingerling; FRY = fry; ADL = adults.

Species	Year	Number	Size
Rainbow Trout	1975	10,000	ADL
Brown Trout	1975	5,000	ADL
Blue Catfish	1980	3,000	FGL
	1982	44,998	FGL
	Total	47,998	
Channel Catfish	1973	4,000	FGL
	1974	50,000	FGL
	1986	40,000	FGL
	Total	94,000	
Flathead Catfish	1975	5,000	FGL
Hybrid striped bass			
Palmetto Bass	1979	5,000	FGL
	1981	10,951	FGL
	1994	13,507	FGL
	1995	13,500	FGL
	1997	9,202	FGL
	1998	9,025	FGL
	1999	13,511	FGL
	2003	9,020	FGL
	2005	9,214	FGL
	2007	9,333	FGL
	2009	10,160	FGL
	2011	2,039	FGL
	2013	2,696	FGL
	2015	2,200	FGL
	2017	5,130	FGL
Sunshine Bass	2020	12,240	FRY
	Total	136,728	
Florida Largemouth Bass	1982	20,680	FGL
	1988	35,400	FGL
	1993	90,194	FGL
	1994	44,944	FGL
	Total	191,218	

Table 5. Stocking history continued.

Smallmouth Bass	1976	10,600	FGL
	1977	39,800	FGL
	1978	50,000	FGL
	Total	100,400	
Walleye	1976	350,000	FRY
	1977	180,000	FRY
	1978	350,000	FRY
	1983	1,122,00	FRY
	1984	720,000	FRY
	1985	630,000	FRY
	2025	400,960	FRY
	Total	3,752,960	

Table 6. Objective-based sampling plan components for Mackenzie Reservoir, Texas 2024–2025.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Stock	Practical effort, trend data
	Size structure	PSD, length frequency	Practical effort, trend data
	Condition	W_r	Practical effort, trend data
Bluegill ^a	Abundance	CPUE–Total	Practical effort, trend data
	Size structure	PSD, length frequency	Practical effort, trend data
Gizzard Shad ^a	Abundance	CPUE–Total	Practical effort, trend data
	Size structure	PSD, length frequency	Practical effort, trend data
	Prey availability	IOV	Practical effort, trend data
White Crappie	Exploratory	CPUE-total	Presence/Absence
<i>Gill netting</i>			
Channel Catfish	Abundance	CPUE–stock	Practical effort, trend data
	Size structure	Length frequency	Practical effort, trend data
White Crappie	Exploratory	CPUE-total	Presence/Absence
<i>Trap netting</i>			
White Crappie	Exploratory	CPUE-total	Presence/Absence

^a 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.

Table 7. Survey of structural habitat types, Mackenzie Reservoir, Texas, 2024. Shoreline habitat type units are in miles and standing timber is acres.

Habitat type	Estimate	% of total
Natural	5.7 miles	63.3
Rock Bluff	1.1 miles	11.9
Rock	2.2 miles	24.8
Standing timber	16.5 acres	7.2

Gizzard Shad

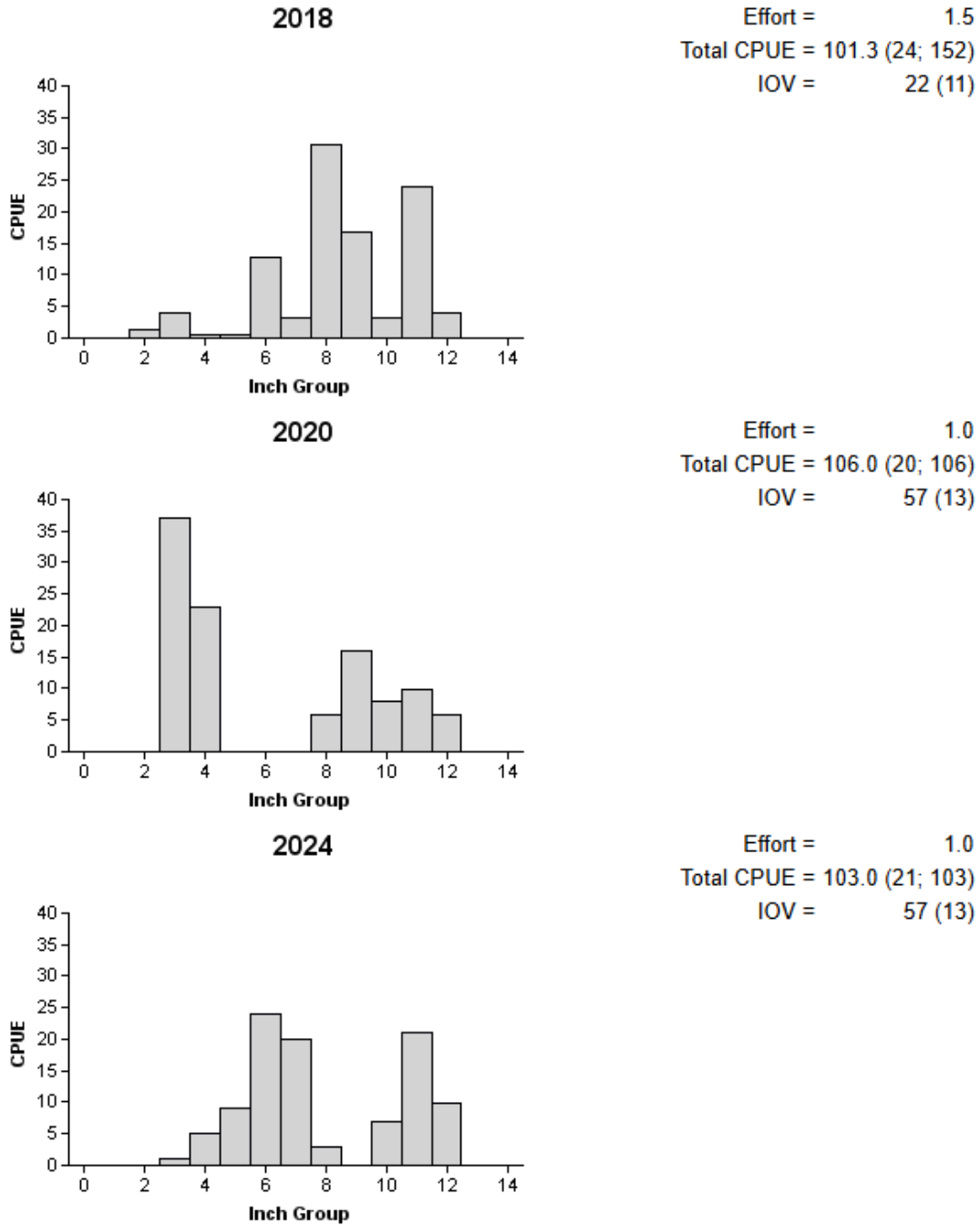


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Mackenzie Reservoir, Texas, 2018, 2020, and 2024.

Bluegill

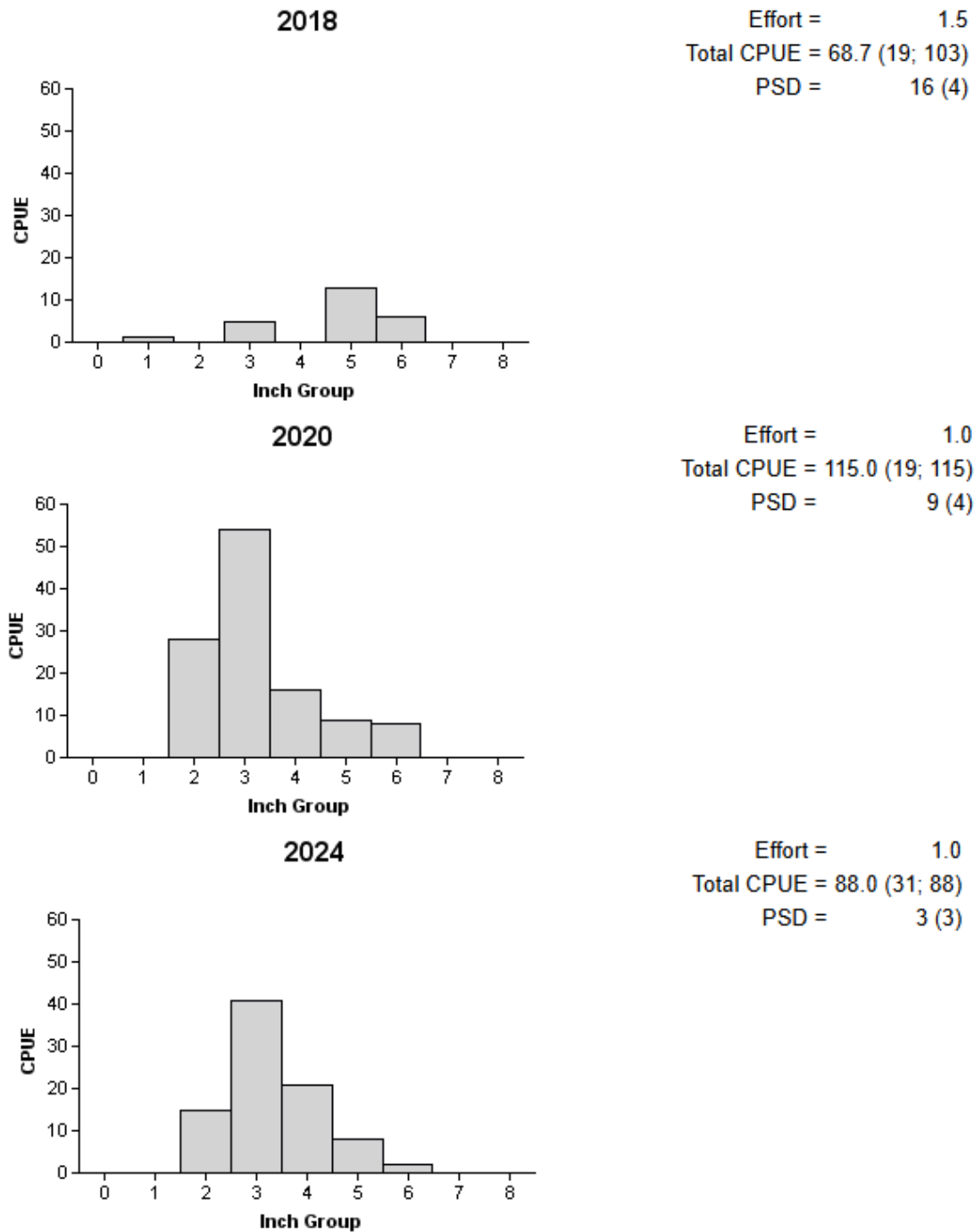


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mackenzie Reservoir, Texas, 2018, 2020, and 2024.

Channel Catfish

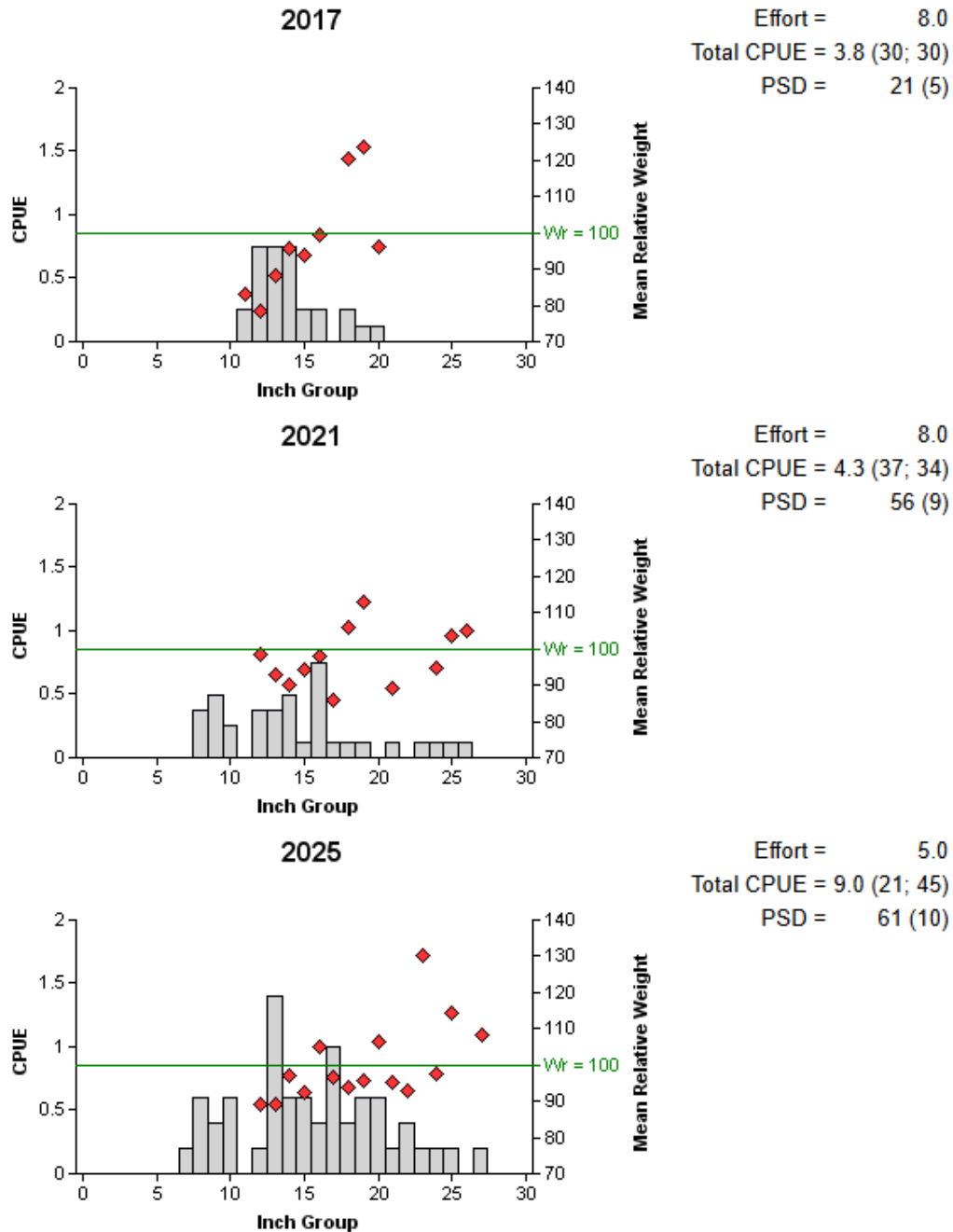


Figure 4. Number of Channel Catfish caught per net night (CPUE, bars), mean relative weight (diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Mackenzie Reservoir, Texas, 2017, 2021, and 2025. Horizontal line represents relative weight of 100.

White Bass

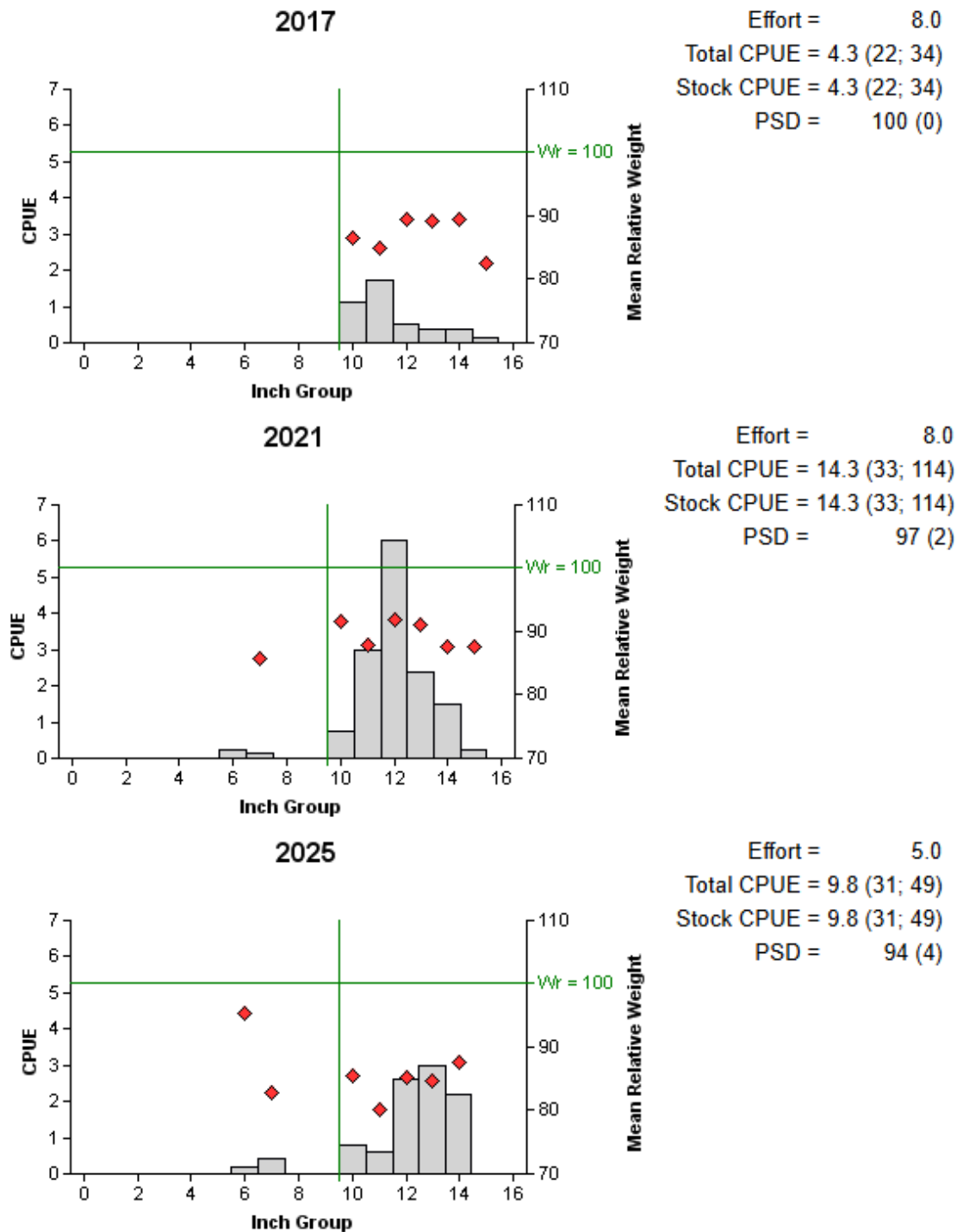


Figure 5. Number of White Bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure) for spring gill net surveys, Mackenzie Reservoir, Texas, 2017, 2021, and 2025. Vertical line represents minimum length limit of 10 inches, and horizontal line represents relative weight of 100.

Hybrid striped bass

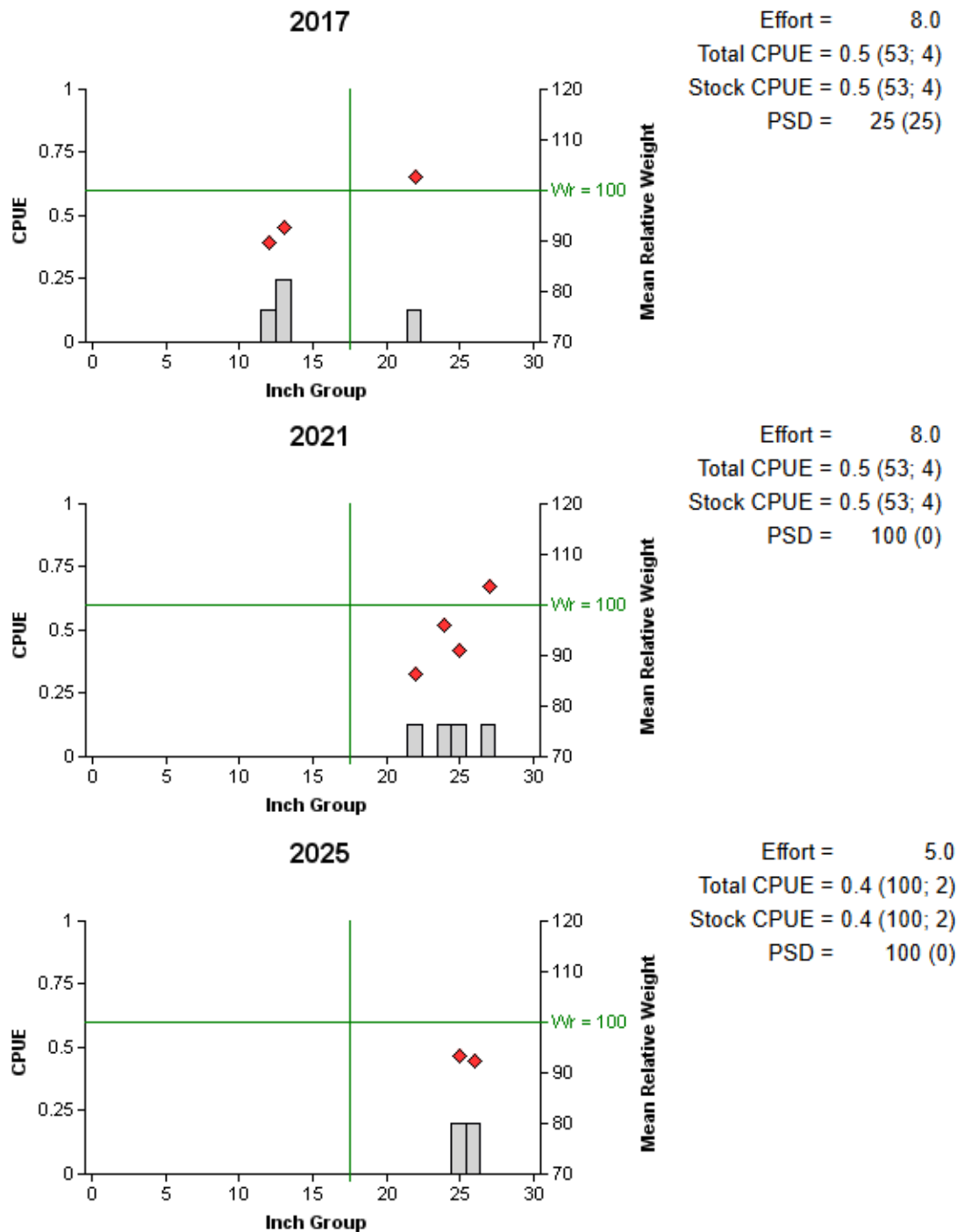


Figure 6. Number of hybrid striped bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Mackenzie Reservoir, Texas, 2017, 2021, and 2025. Vertical line represents minimum length limit of 18 inches, and horizontal line represents relative weight of 100.

Largemouth Bass

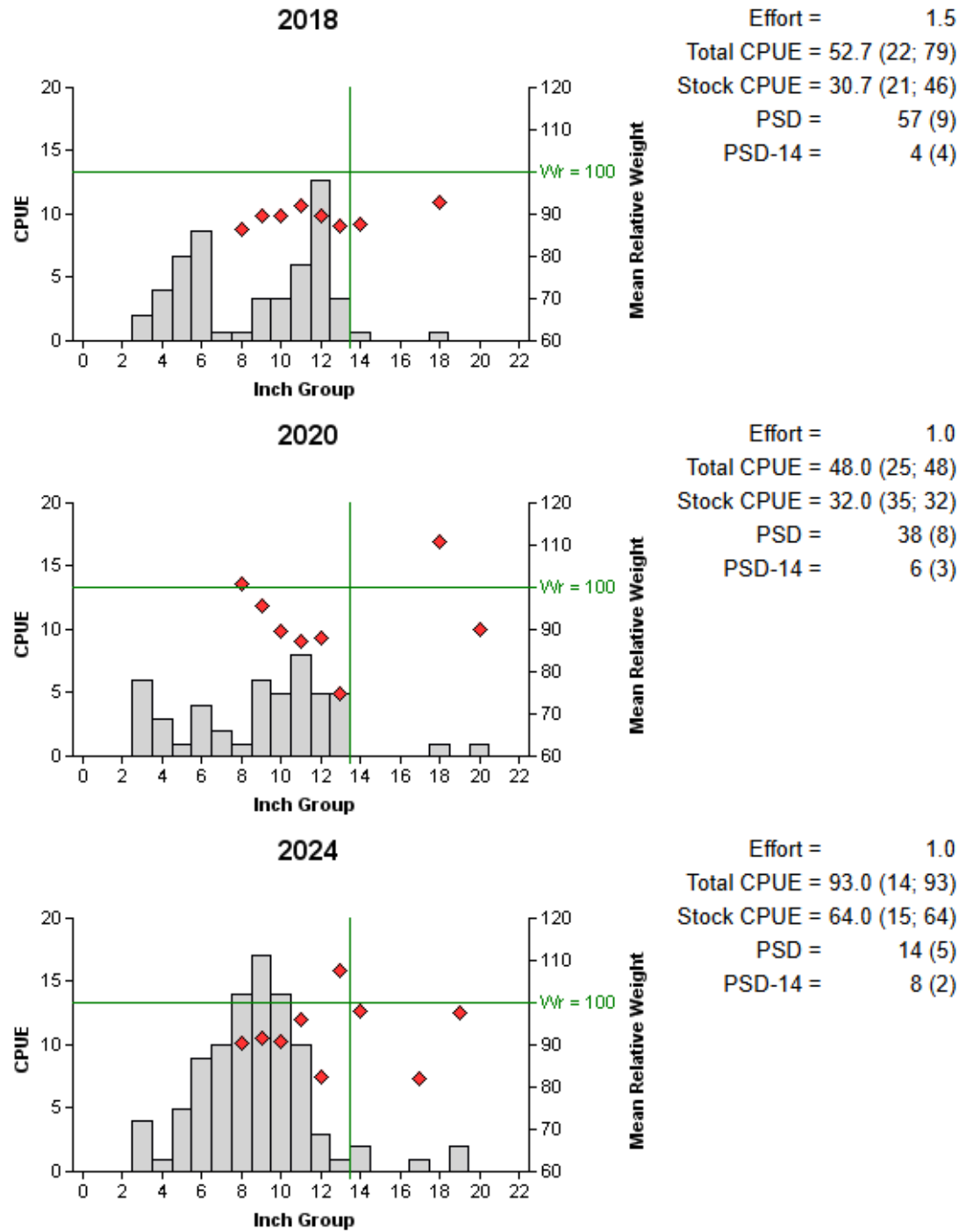


Figure 7. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mackenzie Reservoir, Texas, 2018, 2020, and 2024. Vertical line represents minimum length limit of 14 inches, and horizontal line represents relative weight of 100.

White Crappie

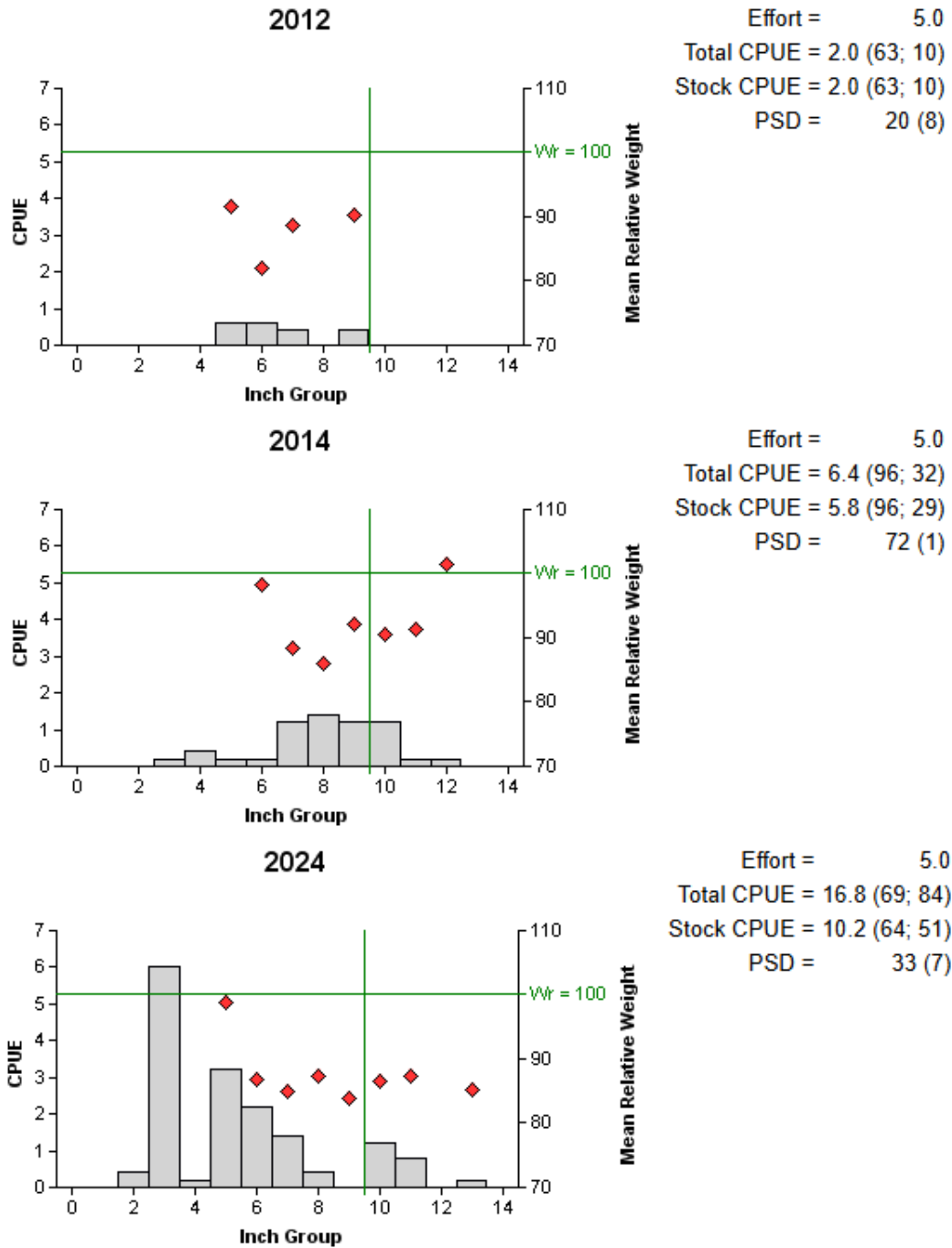


Figure 8. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Paradise Reservoir, Texas, 2012, 2014, and 2024. Vertical line indicates minimum length limit of 10 inches, and horizontal line represents relative weight of 100.

Proposed Sampling Schedule

Table 7. Proposed sampling schedule for Mackenzie 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.

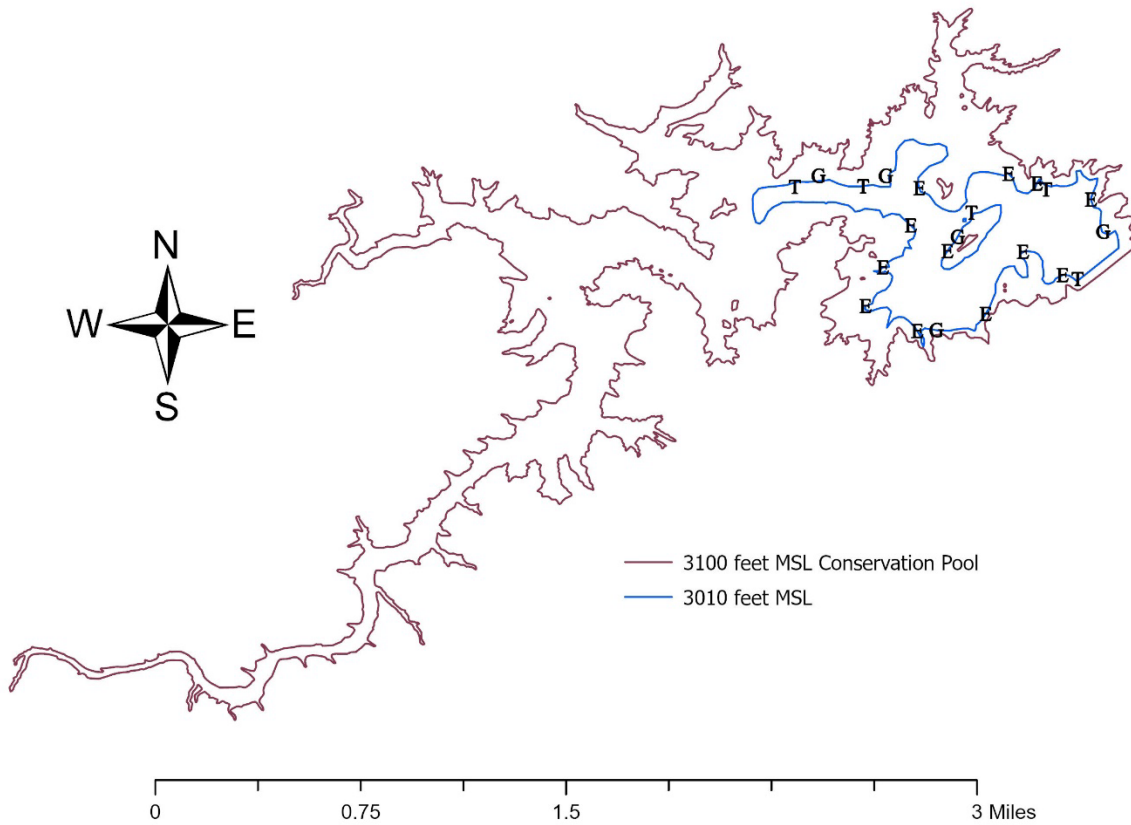
	Survey year			
	2025-2026	2026-2027	2027-2028	2028-2029
Angler Access				X
Structural Habitat				X
Vegetation				X
Electrofishing – Fall		X		X
Trap netting				
Gill netting		X		X
Creel survey		X		
Report				X

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

Number (N) and catch rate (CPUE) (RSE in parentheses) of all species collected from all gear types from Mackenzie Reservoir, Texas, 2024-2025. 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	248	49.6 (56)			103	103.0 (21)
Common Carp	10	2.0 (65)			9	9.0 (66)
Channel Catfish	45	9.0 (21)			6	6.0 (46)
Flathead Catfish					4	4.0 (43)
White Bass	49	9.8 (31)				
Hybrid striped bass	2	0.4 (100)				
Green Sunfish					42	42.0 (33)
Bluegill	3	0.6 (41)	72	14.4 (54)	88	88.0 (30)
Longear Sunfish			17	3.4 (72)	75	75.0 (27)
Redear Sunfish					2	2.0 (100)
Largemouth Bass	3	0.6 (41)	1	0.2 (100)	93	93.0 (14)
White Crappie	20	4.0 (39)	84	16.8 (69)		

APPENDIX B – Map of sampling locations



Location of sampling sites, Mackenzie Reservoir, Texas, 2024-2025. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level at time of sampling was 3014 feet MSL.



Life's better outside.®

In accordance with Texas State Depository Law, this publication is available at the Texas State Publications Clearinghouse and/or Texas Depository Libraries.

© Texas Parks and Wildlife, PWD RP T3200-1329 (09/25)

TPWD receives funds from DHS and USFWS. TPWD prohibits discrimination based on race, color, religion, national origin (including limited English proficiency), disability, age, and gender, pursuant to state and federal law. If you believe you have been discriminated against by TPWD, visit tpwd.texas.gov/nondiscrimination or call (512) 389-4800 for information on filing a complaint. To obtain information in an alternative format, contact TPWD through Relay Texas at 7-1-1 or (800) 735-2989, or by email at accessibility@tpwd.texas.gov. If you speak a language other than English and need assistance, email lep@tpwd.texas.gov. You can also contact Department of the Interior Office of Civil Rights, 1849 C Street, N.W., Washington, D.C. 20240, and/or U.S. Department of Homeland Security Office for Civil Rights and Civil Liberties (CRCL), Mail Stop #0190 2707, Martin Luther King, Jr. Ave., S.E. Washington, D.C. 20528.