Martin Creek 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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Survey and Management Summary

Fish populations in Martin Creek Reservoir were surveyed in 2021 and 2023 using electrofishing and in 2024 using gill nets. Aquatic vegetation surveys were conducted 2020-2023. Historical data are presented with the 2020-2024 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: Martin Creek Reservoir is located on Martin Creek, a tributary of the Sabine River in Rusk County. Luminant Energy impounded the reservoir in 1974 to provide cooling water for their coal-powered generators. At conservation pool, Martin Creek Reservoir is 4,981 surface acres with a shoreline length of 62 miles and a mean depth of 16 feet. Water level fluctuations average 3 to 5 feet annually.

Management History: Previous management included monitoring the reservoir for invasive aquatic vegetation and conducting herbicide treatments as necessary. Several giant salvinia introductions have been identified and quickly eliminated in previous years. In 2017, a substantial infestation of giant salvinia was discovered. After two years of herbicide treatments all salvinia plants have been reduced to trace amounts. Triploid Grass Carp were stocked from 1996 through 1999 at a rate of 0.6/acre each year to reduce hydrilla that covered approximately a third of the reservoir. This strategy eliminated much of the vegetation in the reservoir but as Grass Carp numbers declined due to annual mortality, submersed aquatic vegetation coverage has increased. Native aquatic vegetation was planted in 2012, and brush piles were deployed in 2014. Artificial fish habitat structures were placed near the state park fishing pier in 2019 to enhance fishing success.

Fish Community

- **Prey species:** Threadfin and Gizzard Shad were present in the reservoir, but their abundance was low. Bluegill were the most abundant prey fish in the reservoir. Redbreast Sunfish and Redear Sunfish were also present as a prey fish as well and provided additional angling opportunities.
- **Catfishes:** Blue Catfish, Channel Catfish, and Flathead Catfish were present during 2024 gill netting. Blue Catfish population relative abundance has been variable, but the population size distribution is desirable with fish collected up to 41 inches in 2020. The number of Channel Catfish was similar in recent gill netting surveys. Channel Catfish were the most abundant catfish species. The number of Channel Catfish over 16 inches has improved in recent years.
- **White Bass:** White Bass were present in the reservoir, however abundance has historically been low and not well-utilized by anglers.
- **Largemouth Bass:** Largemouth Bass relative abundance has been variable in recent electrofishing surveys. Growth of Largemouth Bass was fast, which was likely a result of warmer average water temperatures due to power plant cooling operations. The percentage of fish larger than 14 inches in the population has increased in recent years. Recent increases in aquatic vegetation abundance has been beneficial to this population.
- **Crappie:** Historical trap netting for White Crappie and Black Crappie has caught few fish. Therefore, netting surveys for crappie were discontinued in 2009. Few anglers interviewed fished for crappie during the 2019/2020 winter creel survey and they only accounted for 1% of the total angling effort.

Management Strategies: Conduct annual vegetation surveys to monitor for the presence and growth of giant salvinia, hydrilla, or other non-native invasive aquatic plants. Inform the public about the negative impacts of aquatic invasive species. Continue to work with Martin Creek Lake State Park staff to promote angling opportunities in the reservoir. Conduct electrofishing surveys in fall 2026 and 2028 to monitor the Largemouth Bass and prey fish populations. Stock Lone Star Bass fingerlings in 2024 and 2026.

Introduction

This document is a summary of fisheries data collected from Martin Creek 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 with the 2020-2024 data for comparison.

Reservoir Description

Martin Creek Reservoir was impounded in 1974 on Martin Creek. It is located in Rusk County approximately 10 miles northeast of Henderson and is operated and controlled by Luminant Energy to provide cooling water for their coal-powered generators. At conservation pool, Martin Creek Reservoir is 4,981 surface acres in size and has a shoreline length of 62 miles and a mean depth of 16 feet. Water level fluctuations average 3-5 feet annually (Figure 1). The reservoir is eutrophic with a mean TSI Chl-*a* of 60.12 (Texas Commission on Environment Quality 2022).The primary habitat type is standing timber. Most of the land around the reservoir is used for agriculture and oil and gas production. Other descriptive characteristics for Martin Creek Reservoir are presented in Table 1.

Angler Access

Martin Creek Reservoir has a public boat ramp and one handicap-accessible fishing pier at Martin Creek State Park, and a private ramp located on Luminant Energy property. An additional boat ramp is located within the state park to accommodate larger fishing tournaments. Additional boat ramp characteristics are listed in Table 2. Shoreline access is limited to Martin Creek State Park.

Management History

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

1. Monitor the reservoir for giant salvinia, hydrilla, and other invasive species. Coordinate with the controlling authority, Martin Creek Lake State Park, and TPWD Aquatic Habitat Enhancement (AHE) for any necessary prevention, education, or management activities.

   Action: Annual aquatic vegetation surveys have been conducted to monitor the coverage and distribution of invasive species. The AHE team has conducted herbicide treatments of giant salvinia, hydrilla, and torpedo grass during the report period as needed.

2. Promote fishing opportunities available through Martin Creek Lake State Park.

   Action: Martin Creek Lake State Park is listed as an official weigh station for TPWD's Angler Recognition Program, which provides service to anglers fishing at this reservoir or other waterbodies in the area. District staff have directed anglers to fish at this reservoir for Largemouth Bass and catfish.

Harvest regulation history: Sport fishes in Martin Creek Reservoir are currently managed with statewide regulations (Table 3).

Stocking history: No stockings occurred over the current survey period. Blue Catfish were stocked in 2003 (273,789 fingerlings) and 2007 (249,050 fingerlings). Approximately 3,000 triploid Grass Carp were stocked annually from 1996 through 1999. The complete stocking history is listed in Table 4.

Vegetation/habitat management history: The controlling authority stocked triploid Grass Carp in 1993 and again from 1996 through 1999 to reduce hydrilla. Hydrilla had become problematic in the reservoir at nearly 35% coverage prior to the triploid Grass Carp stockings. Grass Carp subsequently removed the majority of submersed plants in the reservoir. Giant salvinia was discovered in June 2009 and was eradicated, however, recent introductions were identified in 2015 and 2016. Early detection of these

introductions allowed rapid response with a combination of physical removal and herbicide treatment. A contractor treated 3 acres of giant salvinia in 2016 and 9 acres in 2017. In 2017, TPWD personnel discovered a giant salvinia infestation in a separate area of the reservoir. The primary source of plants came from a cove on the other side of Farm to Market Road 2658 that was connected to the main reservoir via a culvert that runs under the road. Team members from TPWD Aquatic Habitat Enhancement (AHE) and Marshall Inland Fisheries District installed a floating boom to prevent further plants from entering the reservoir through the culvert. Repeated herbicide treatments were conducted on both sides of FM2658. The AHE team conducted herbicide treatments of giant salvinia in 2017 (10 acres), 2018 (11 acres), 2019 (2.5 acres), 2022 (5.7 acres), and 2023 (1.5 acres). Native aquatic vegetation (water willow, water stargrass, and Illinois pondweed) was planted in 2012 with limited success. Brush piles were installed in 2014. Artificial fish habitat structures were also deployed around the fishing pier at Martin Creek State Park in 2019. TPWD AHE has also treated hydrilla and torpedo grass in the state park's swimming area in recent years.

Water transfer: There is no interbasin transfer associated with the operation of Martin Creek Reservoir. Martin Creek Reservoir does have the ability to pump water from the Sabine River when needed, and water is released through the dam to maintain flow downstream and to manage pool elevation.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Martin Creek Reservoir (Bister and Stadig 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. To assess mean age of Largemouth Bass at minimum legal length (14 inches), fish ages were determined using otoliths from 13 randomly selected fish in 2021 and 16 fish in 2023 (range 13.0 to 14.9 inches).

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

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 statistics.

Habitat – A structural habitat survey was conducted in 2005. Vegetation surveys were conducted in 2020–2023 to monitor presence of giant salvinia and the expansion of hydrilla. 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 2024).

Results and Discussion

Habitat: A structural habitat survey was last conducted in 2005 (Ashe and Driscoll 2006). They reported 2,426 acres of standing timber within the reservoir and a majority of natural shoreline. There have been no perceivable changes in structural habitat. Giant salvinia has been present at trace amounts over the past several years. Native vegetation covered approximately 11% of the reservoir's surface area (Table 6), most of which was floating-leaved species (primarily American lotus). Bister and Stadig (2020) reported 42 acres of hydrilla in 2019. Hydrilla has continued to increase over the past four years to 270 acres in 2023 (Table 6). Continued improvement in aquatic vegetation coverage will be beneficial to fish populations in the reservoir and should translate to increased fishing success.

Prey species: Threadfin Shad were present in the 2021 and 2023 electrofishing surveys (Appendix A). The electrofishing catch rate of Gizzard Shad has varied from 41/h in 2019, 90/h in 2021, and 63/h in 2023 (Figure 2). Index of vulnerability (IOV) for Gizzard Shad in 2023 was poor, indicating that only 3% of Gizzard Shad were available to existing predators (Figure 2). Redbreast Sunfish were present as an additional prey source (Figure 3). Total CPUE of Bluegill in 2023 (286/h) was lower than 2021 (316/h), and 2019 (462/h), but were still the most abundant prey species (Figure 4). Redear Sunfish abundance was low in 2023 (21/h) (Figure 5). Collectively, sunfishes formed the primary forage base in the reservoir. In addition to serving as prey, some fish were collected up to 8 inches, which provided additional angling opportunities.

Catfishes: The gill net catch rate of stock-length (≥ 12 inches) Blue Catfish was 5.8/nn in 2024, which was lower than 2020 (8.3/nn) and 2016 (6.3/nn) (Figure 6). Recruitment was consistent and the length range of fish collected during gill netting was similar among recent surveys (PSD range: 30-38). Body condition of Blue Catfish indicated adequate prey availability with W_r values close to 90 for most inch groups. The current lake record Blue Catfish (57.71 pounds, 46 inches) was caught February 5, 2023.

The gill netting catch rate of stock-length (≥ 11 inch) Channel Catfish in 2024 (10.4/nn) was similar to 2020 (10.7/nn) (Figure 7). Size structure of the Channel Catfish population increased in the most recent survey (PSD = 16). Channel Catfish body condition indicated adequate prey availability with W_r values >90 for most inch groups.

Both Blue and Channel Catfish populations provided excellent angling opportunities. Previous winter quarter angler surveys have detected some directed effort for catfish, but this fishery may be more popular during other times of year. An upcoming angler survey will include a spring quarter as well to better characterize catfish angling in the reservoir.

Largemouth Bass: The electrofishing catch rate of stock-length (≥ 8 inch) Largemouth Bass has varied over the last three surveys from 201/h in 2019, 99/h in 2021, and 148/h in 2023 (Figure 8). However, the percentage of 14-inch fish (PSD-14) in the population has steadily increased. The number of fish collected over 14 inches (CPUE-14) was also higher in 2023 than in previous surveys. This increase is likely related to the increase in aquatic vegetation in recent years. Growth of Largemouth Bass was fast. The average age of 14-inch fish was 1.9 years in 2021 (N = 13; range = 1 to 2 years) and 2.4 years in 2023 (N = 16; range 1 to 3 years). Body condition was moderate with mean W_r values near 90 for most size classes (Figure 8). Largemouth Bass have been the most popular sport fish in the reservoir in recent winter quarter angler surveys, with directed angling effort exceeding 85% (Bister and Stadig 2020).

Fisheries Management Plan for Martin Creek Reservoir, Texas

Prepared – July 2024

ISSUE 1: Giant salvinia was first discovered in Martin Creek Reservoir in June 2009. This initial infestation was contained and eliminated using herbicides. There have been several other instances in recent years in which giant salvinia has been found at the Martin Creek State Park boat ramp and on boat trailers. These smaller infestations have also been eliminated by mechanical removal and/or herbicide applications. A larger infestation was discovered in 2017 but has subsequently been eliminated using herbicide applications. The threat of future giant salvinia introductions remains high.

MANAGEMENT STRATEGY

1. Continue to encourage state park personnel to inspect boat trailers and monitor the boat ramps for any invasive plant introductions.
2. Conduct annual surveys to monitor the reservoir for giant salvinia occurrence.
3. Coordinate with TPWD AHE for routine surveys to locate giant salvinia and conduct herbicide treatments as needed.
4. Provide information and technical guidance to Luminant Energy related to giant salvinia management.
5. Maintain signage and boat ramp stencils related to invasive species.

ISSUE 2: Martin Creek Reservoir is well-known for its quality Largemouth Bass fishing. The reservoir has not been stocked since 1990. There has been a substantial increase in littoral habitat over the last several years. Taking advantage of this improvement in fish habitat through Lone Star Bass stocking should provide improvements to the bass population.

MANAGEMENT STRATEGIES

1. Conduct electrofishing survey in fall 2025 and 2027 to monitor Largemouth Bass and prey species populations.
2. Stock Lone Star Bass fingerlings, which are 2nd generation offspring of pure Florida strain ShareLunker Largemouth Bass that have proven to be able to grow to ≥ 13 pounds, at a rate of 1,000/km shoreline biennially in 2024 and 2026.

ISSUE 3: Martin Creek Lake State Park is the primary access point for anglers to utilize the reservoir. Largemouth Bass and catfish fisheries are popular among anglers that visit the park. A certified scale is located at the state park headquarters to weigh fish for anglers that may catch record-sized fish.

MANAGEMENT STRATEGIES

1. Continue to work with state park staff to promote fishing opportunities in the reservoir.
2. Inform anglers about the availability of the certified scale at the state park for weighing potential fish records.

ISSUE 4: Hydrilla and other submersed aquatic vegetation have reestablished in the reservoir following years of little to no submersed plant presence. The Largemouth Bass and sunfish populations have responded favorably to this increase in plant growth. However, hydrilla coverage has reached nuisance levels in the past and should be monitored.

MANAGEMENT STRATEGIES

1. Conduct annual surveys to monitor hydrilla coverage.
2. Coordinate with TPWD Aquatic Habitat Enhancement to conduct herbicide treatment of hydrilla around the state park fishing pier, boat ramps, and swimming area as necessary to improve angler/user access.
3. Provide information and technical guidance to Luminant Energy related to hydrilla management.

ISSUE 5: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches, and plugging engine cooling systems. Giant salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

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

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

Sport fish, forage fish, and other important fishes

Sport fishes in Martin Creek Reservoir include Blue Catfish, Channel Catfish, White Bass, Largemouth Bass, White Crappie, and Black Crappie. Known important forage species include Bluegill, Gizzard Shad, and Threadfin Shad. The proposed sampling schedule to meet the following OBS Plan can be found in Table 7.

Low-density fisheries

Crappie: Black and White Crappie are present in Martin Creek Reservoir, but trap netting surveys have historically caught few fish. Efforts to increase the catch of crappie in 2009 were made using procedures for dual-cod trap nets, but only one White Crappie and six Black Crappie were caught during the survey. Trap net surveys were discontinued after 2009. There has been very little directed angling effort for crappie estimated during recent winter angler creel surveys (2009-2010 = 5.2%; 2013-2014 = 0.8%).

White Bass: White Bass were first collected in the reservoir in 2020. They were not intentionally stocked but may have been transferred into the reservoir from the Sabine River when water was used to maintain reservoir water levels. Currently, abundance is low and there was no directed angling effort during the 2019/2020 winter angler creel survey. This will likely continue to be a low-density fishery due to limited

spawning habitat, but we will monitor angler catch and effort during the next creel survey (December 2025 through May 2026) and record White Bass data during routine gill netting surveys for catfishes (spring 2028).

Survey objectives, fisheries metrics, and sampling objectives

Largemouth bass: Largemouth Bass are the most popular sport fish in Martin Creek Reservoir. Directed angling effort exceeded 85% during recent winter creel surveys (2009-2010, 2013-2014, and 2019-2020). The popularity and reputation for quality Largemouth Bass fishing at this reservoir warrant sampling effort. Largemouth Bass are managed with the statewide 14-inch minimum length limit. Trend data on CPUE, size structure, and body condition have been collected every 2 years since 2013 with fall nighttime electrofishing. Continued collection of trend data in this power plant cooling reservoir with night electrofishing in the fall every 2 years will allow for determination of any large-scale changes in the Largemouth Bass population that may spur further investigation. A minimum of 12 randomly selected 5-min electrofishing sites will be sampled in 2025 and 2027, but sampling will continue at random sites until 50 stock-size fish are collected and the RSE of CPUE-S is $\leq$ 25. Most previous surveys have achieved this objective with 12 electrofishing stations. In addition to the original 12 random stations, 3 additional random stations will be pre-determined in the event some extra sampling is necessary to achieve objectives. Otoliths from 13 fish between 13.0 and 14.9 inches will be collected in 2025 and 2027 to determine mean age at 14 inches to monitor large-scale changes in growth that may indicate the need for further investigation. Relative weight of Largemouth Bass $\geq$ 8 inches (total length) will be determined from their length/weight data (maximum of 10 fish weighed and measured per inch class). Largemouth Bass genetics will be evaluated from a 30-fish sample in 2027.

Catfish: Blue Catfish and Channel Catfish are present in Martin Creek Reservoir. The use of alternative sampling gears to monitor the catfish populations in addition to traditional gill netting have been investigated in recent years. Even though hoop nets have been effective at catching Channel Catfish, low-frequency electrofishing has not been successful in sampling the Blue Catfish population. Therefore, gill netting remains the best sampling gear to collect population data for both species.

Gill netting will be continued every four years. The next survey will be conducted during spring 2028. Our sampling objective will be 50 stock-length Channel Catfish for length frequency and size structure (PSD), with a target RSE ≤ 25 for CPUE-S. Data will be also collected from Blue Catfish. Relative weight will be calculated for each species based on length/weight data. We estimate that 10 net nights is needed to achieve 50 stock-length Channel Catfish. Our maximum sampling effort will be 10 net nights.

Bluegill and shad: Bluegill and other sunfish are the primary forage at Martin Creek Reservoir. Gizzard Shad and Threadfin Shad are present in low densities. Shad species will be surveyed for presence/absence during electrofishing surveys. Continuation of sampling, as per Largemouth Bass above, will allow for monitoring of large-scale changes in Bluegill relative abundance and size structure. No additional effort will be expended beyond the effort necessary to achieve Largemouth Bass objectives. Instead, Largemouth Bass body condition can provide information on forage abundance, vulnerability, or both relative to predator density. Relative weight of Largemouth Bass $\geq$ 8 inches will be determined from their length/weight data (maximum of 10 fish weighed and measured per inch class).

Creel Survey: An angler creel survey will be conducted December 2025 through May 2026 for general monitoring of total fishing effort, angler expenditures, directed angling effort for all sport fish, catch rates, and number of fish harvested.

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Tables and Figures

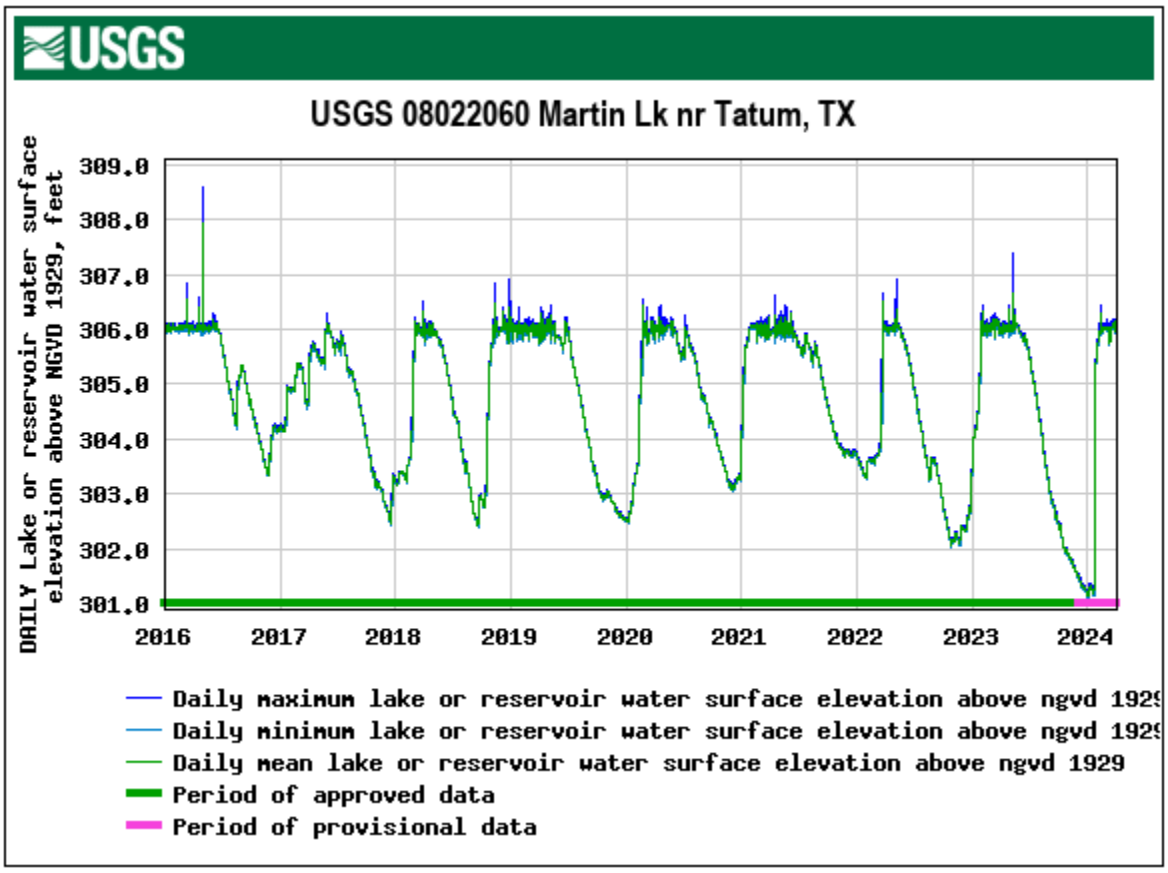


Figure 1. Daily average water level elevations in feet above mean sea level (MSL) recorded for Martin Creek Reservoir, Texas. Conservation pool elevation is 306.0 feet MSL.

Table 1. Characteristics of Martin Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1974
Controlling authority	Luminant Energy
Counties	Rusk
Reservoir type	Tributary
Shoreline Development Index (SDI)	4.7
Conductivity	120 umhos/cm

Table 2. Boat ramp characteristics for Martin Creek Reservoir, Texas, August 2023. Reservoir elevation at time of survey was 305.9 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Martin Creek State Park	32.27379 -94.56583	Y	50	302.0	Excellent, no access issues
Martin Creek State Park auxiliary ramp	32.27534 -94.56308	Y	100	301.5	Excellent, no access issues

Table 3. Harvest regulations for Martin Creek Reservoir, Texas.

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

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

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

Species	Year	Number	Size
Blue Catfish	1974	81,520	UNK
	1982	600	UNK
	1984	100,758	FGL
	1985	50,062	FGL
	2003	273,789	FGL
	2004	200	ADL
	2007	249,050	FGL
	Total	755,979	
Channel Catfish	1973	15	UNK
	1974	100,888	AFGL
	Total	100,903	
Florida Largemouth Bass	1974	365,000	FRY
	1984	559,970	FGL
	1990	251,357	FRY
	Total	1,176,327	
Palmetto Bass	1974	49,880	UNK
	1975	15,000	UNK
	1983	49,800	UNK
	1984	99,875	FGL
	Total	214,555	
Redbreast Sunfish	1983	346,853	UNK
	1984	404,236	UNK
	Total	751,089	
Triploid grass carp	1993	800	AFGL
	1996	2,899	AFGL
	1997	2,857	AFGL
	1998	3,000	AFGL
	1999	3,000	AFGL
	Total	12,556	
Walleye	1974	1,250,676	FRY
	Total	1,250,676	
White Crappie	1983	30,913	UNK
	1984	134,227	FGL
	1986	91,696	FRY
	Total	256,836	

Table 5. Objective-based sampling plan components for Martin Creek Reservoir, Texas 2020–2024.

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
	Age-and-growth	Age at 14 inches	N = 13, 13.0 – 14.9 inches
	Condition	W_r	10 fish/inch group (max)
Bluegill [a]	Abundance	CPUE–Total	
	Size structure	PSD, length frequency	
Gizzard Shad [a]	Presence/absence		
Threadfin Shad [a]	Presence/absence		
Gill netting			
Blue Catfish	Abundance	CPUE–stock	
	Size structure	PSD, length frequency	
Channel Catfish	Abundance	CPUE-stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N = 100 stock

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

Table 6. Survey of aquatic vegetation, Martin Creek Reservoir, Texas, 2020–2023. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2020	2021	2022	2023
Native submersed				25 (0.5)
Native floating-leaved				516 (10.4)
Native emergent				13 (0.3)
Non-native				
Giant salvinia (Tier II)*	Trace	Trace	Trace	Trace
Hydrilla (Tier III)*	81 (1.6)	147 (3.0)	200 (4.0)	270 (5.4)

* Tier II is maintenance status, and Tier III is watch status

Gizzard Shad

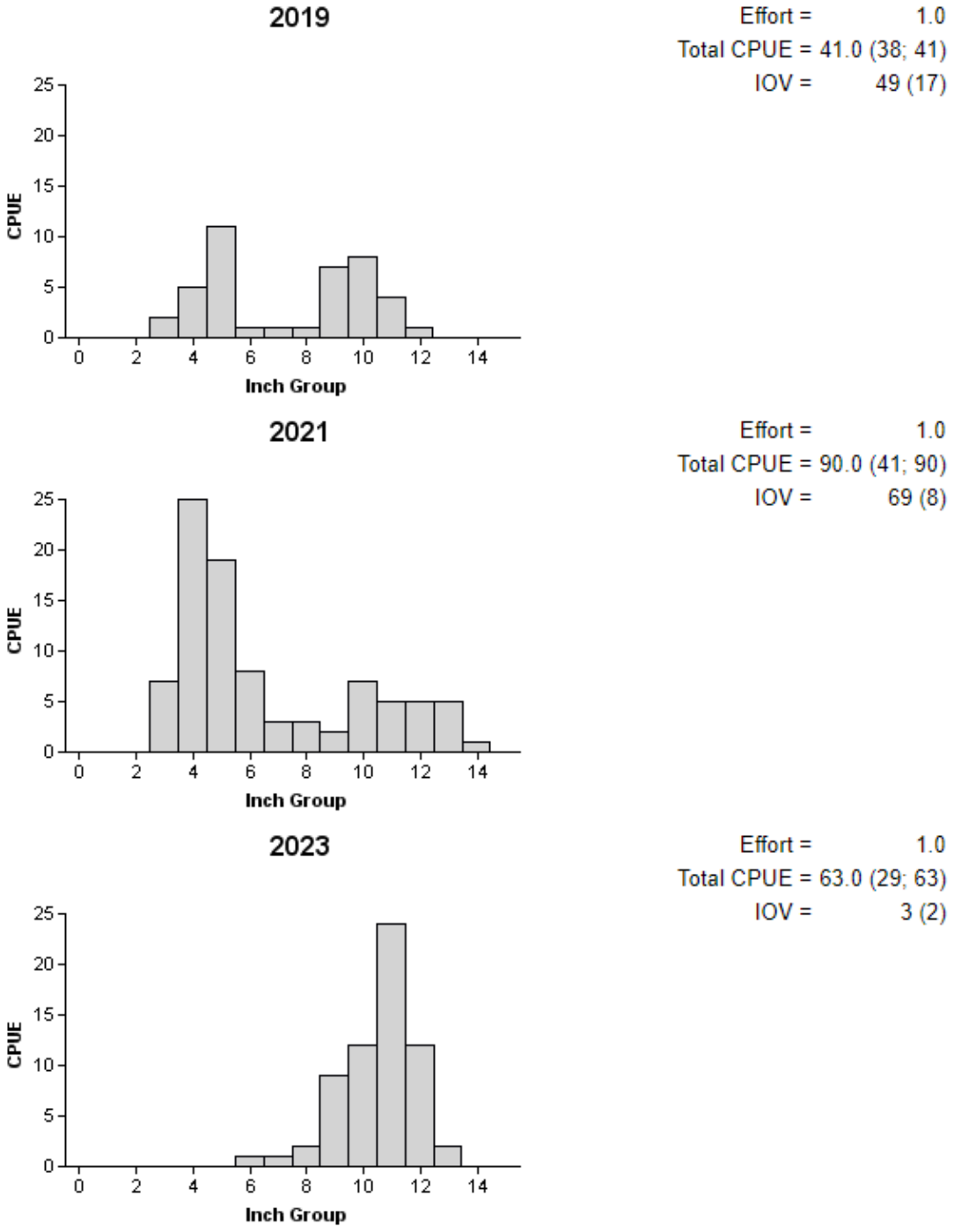


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Martin Creek Reservoir, Texas, 2019, 2021, and 2023.

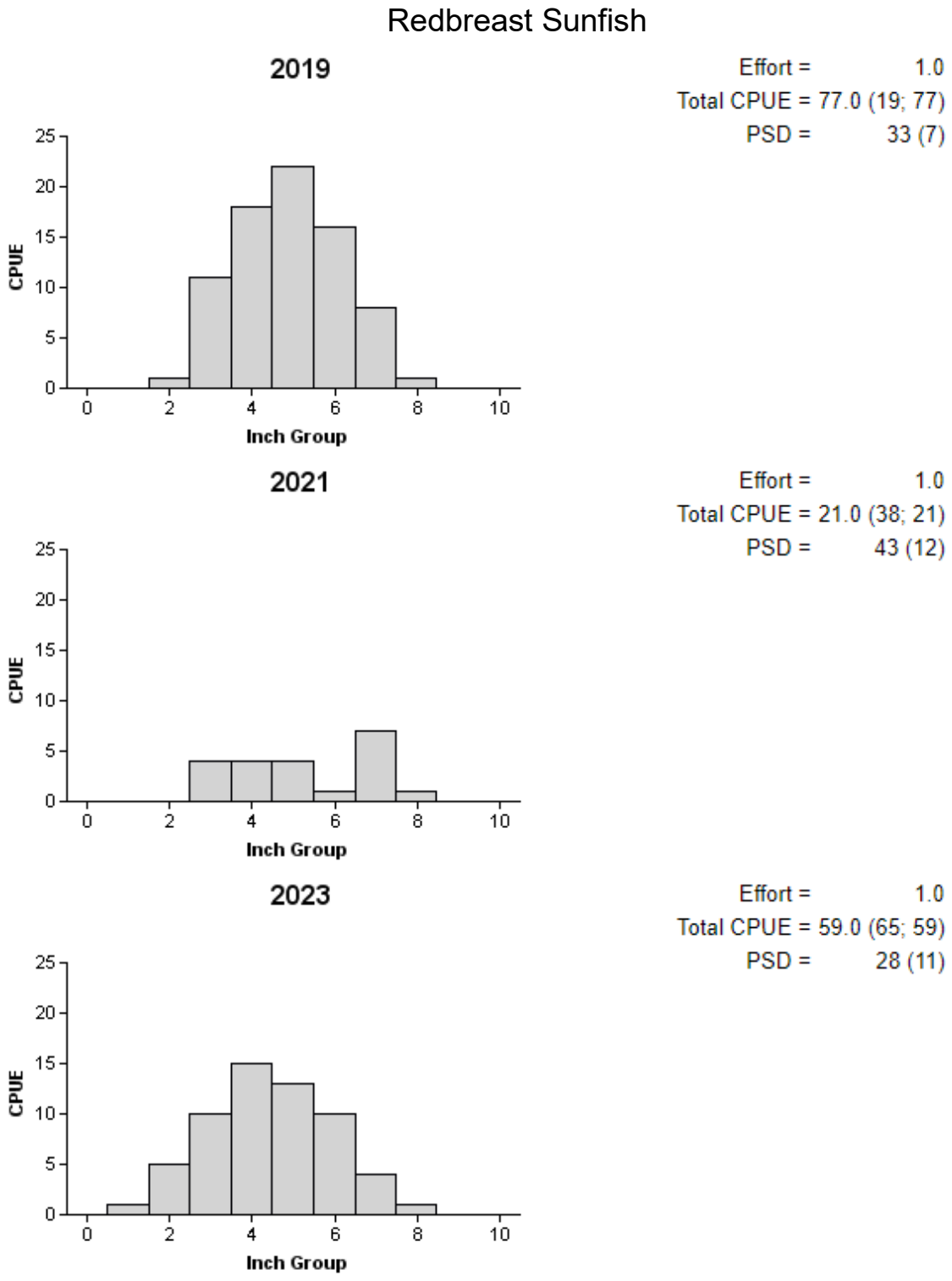


Figure 3. Number of Redbreast Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Martin Creek Reservoir, Texas, 2019, 2021, and 2023.

Bluegill

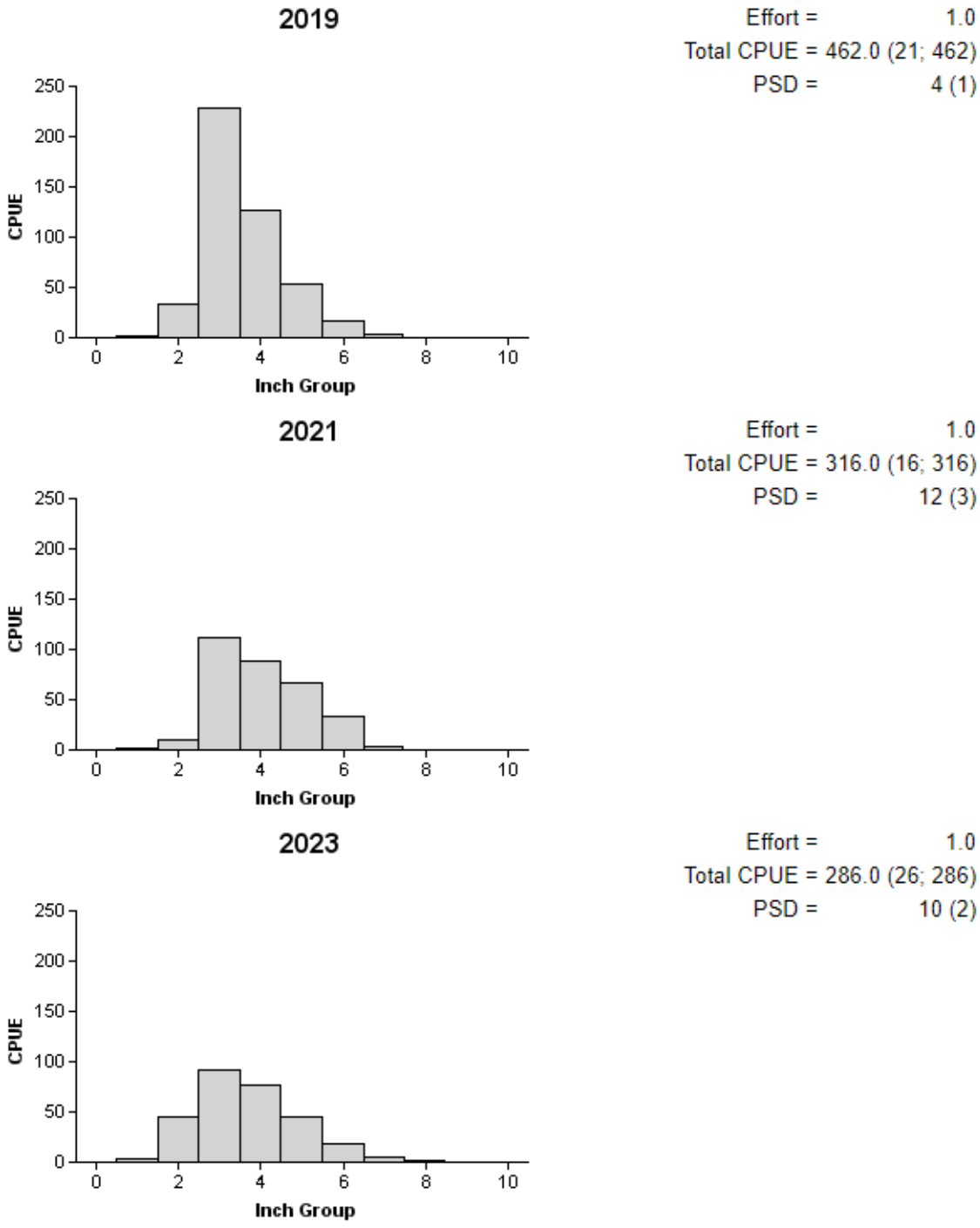


Figure 4. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Martin Creek Reservoir, Texas, 2019, 2021, and 2023.

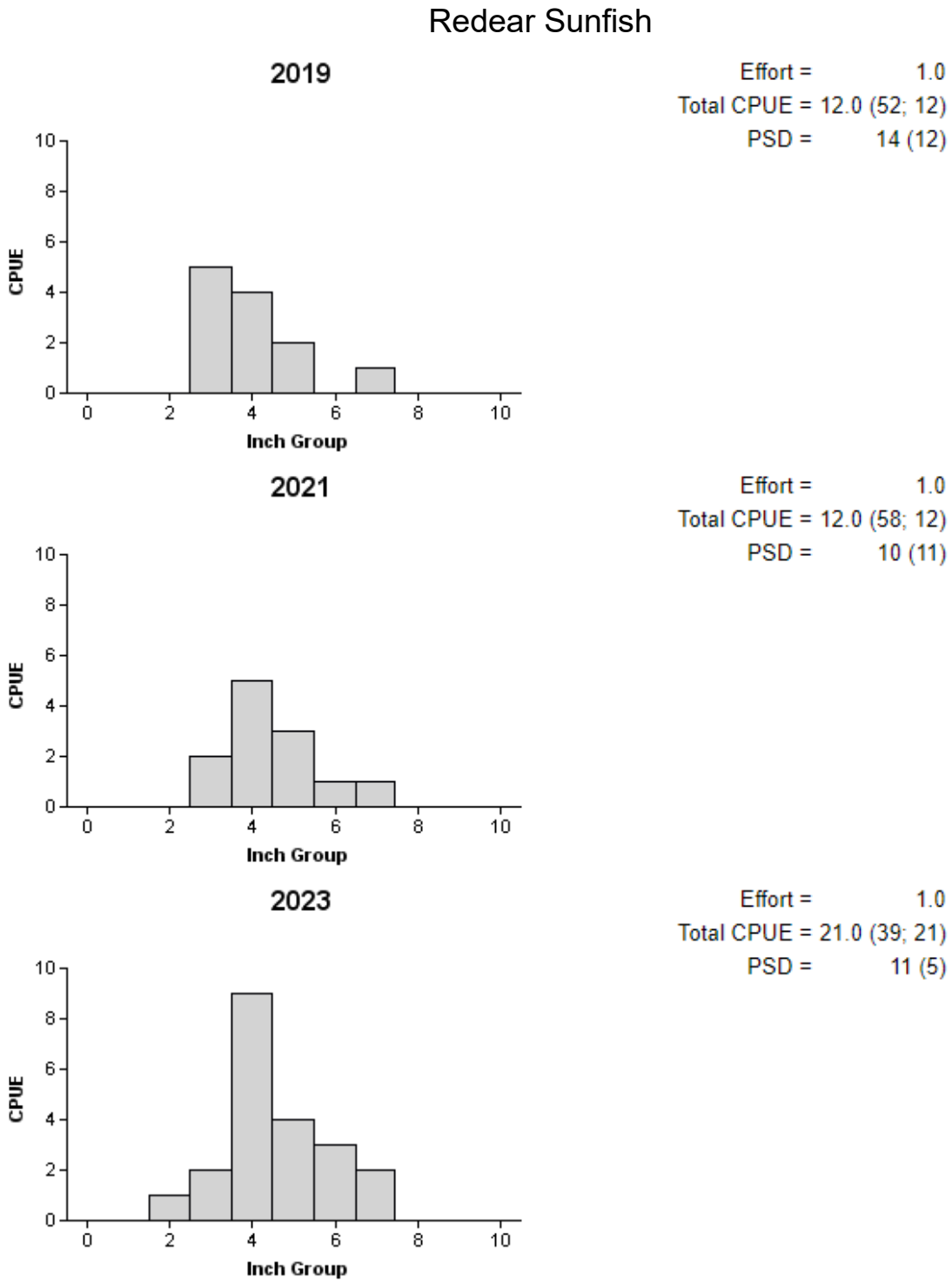


Figure 5. Number of Redear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Martin Creek Reservoir, Texas, 2019, 2021, and 2023.

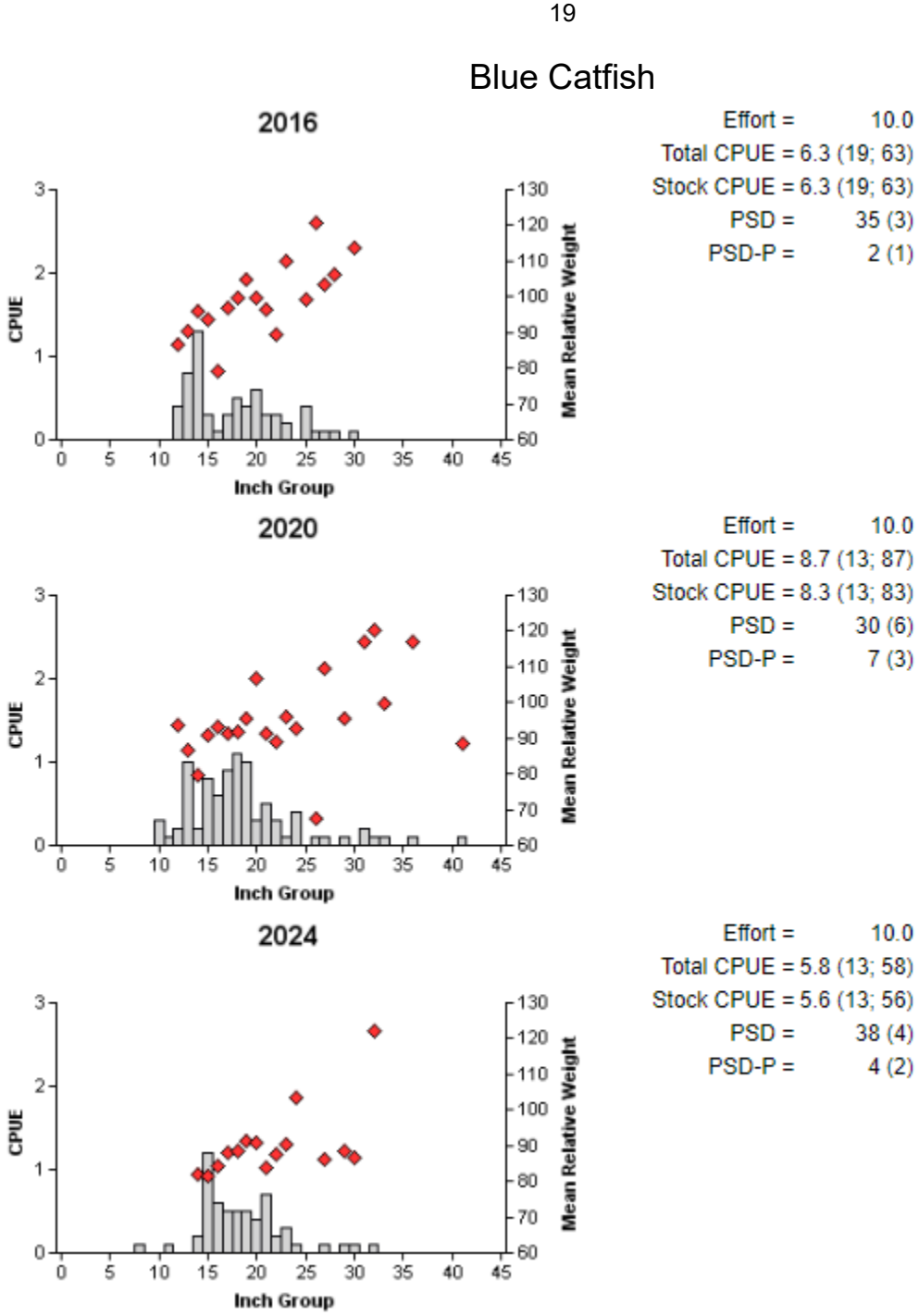


Figure 6. Number of Blue Catfish caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Martin Creek Reservoir, Texas, 2016, 2020, and 2024.

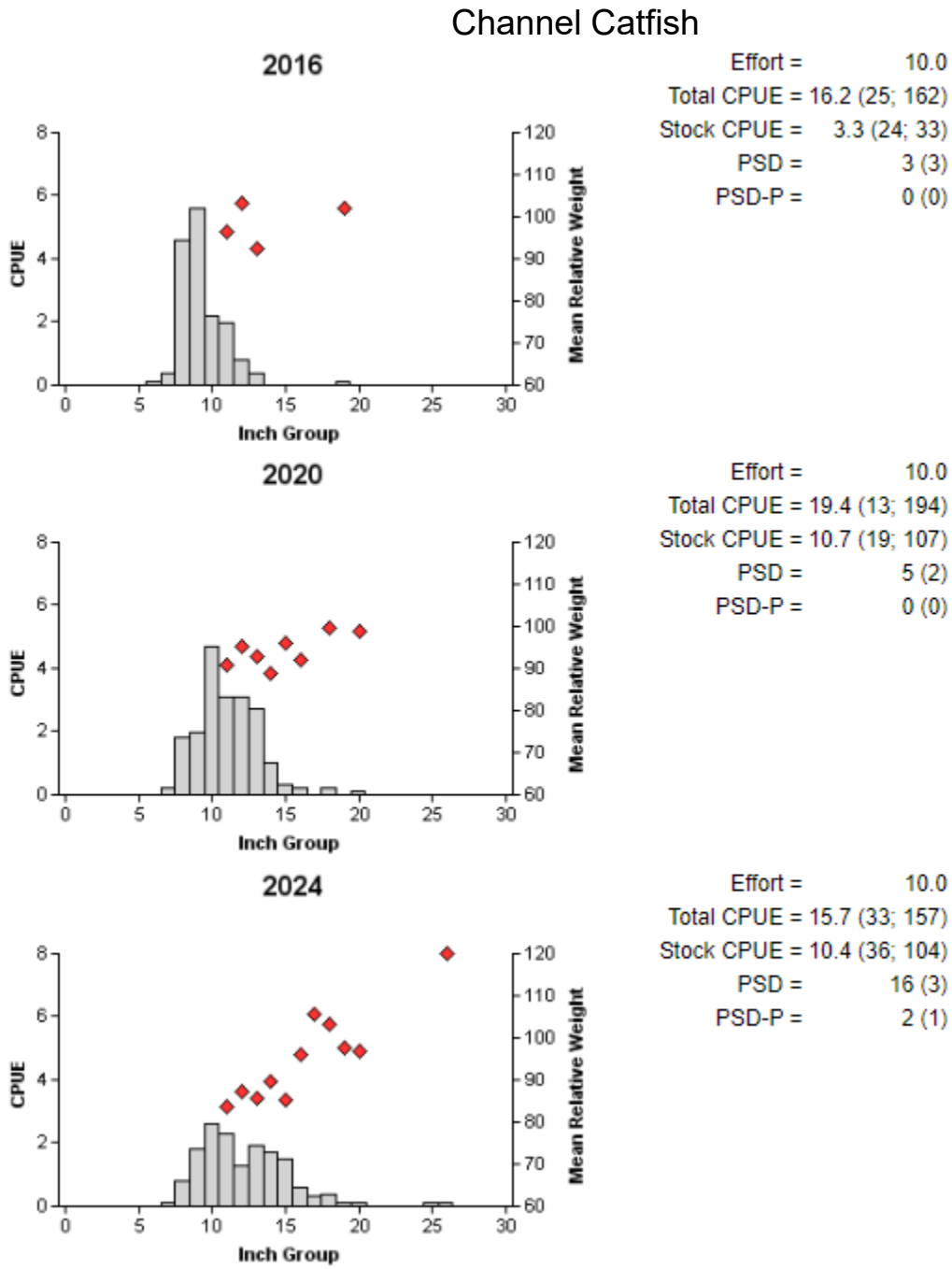


Figure 7. Number of Channel Catfish caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Martin Creek Reservoir, Texas, 2016, 2020, and 2024.

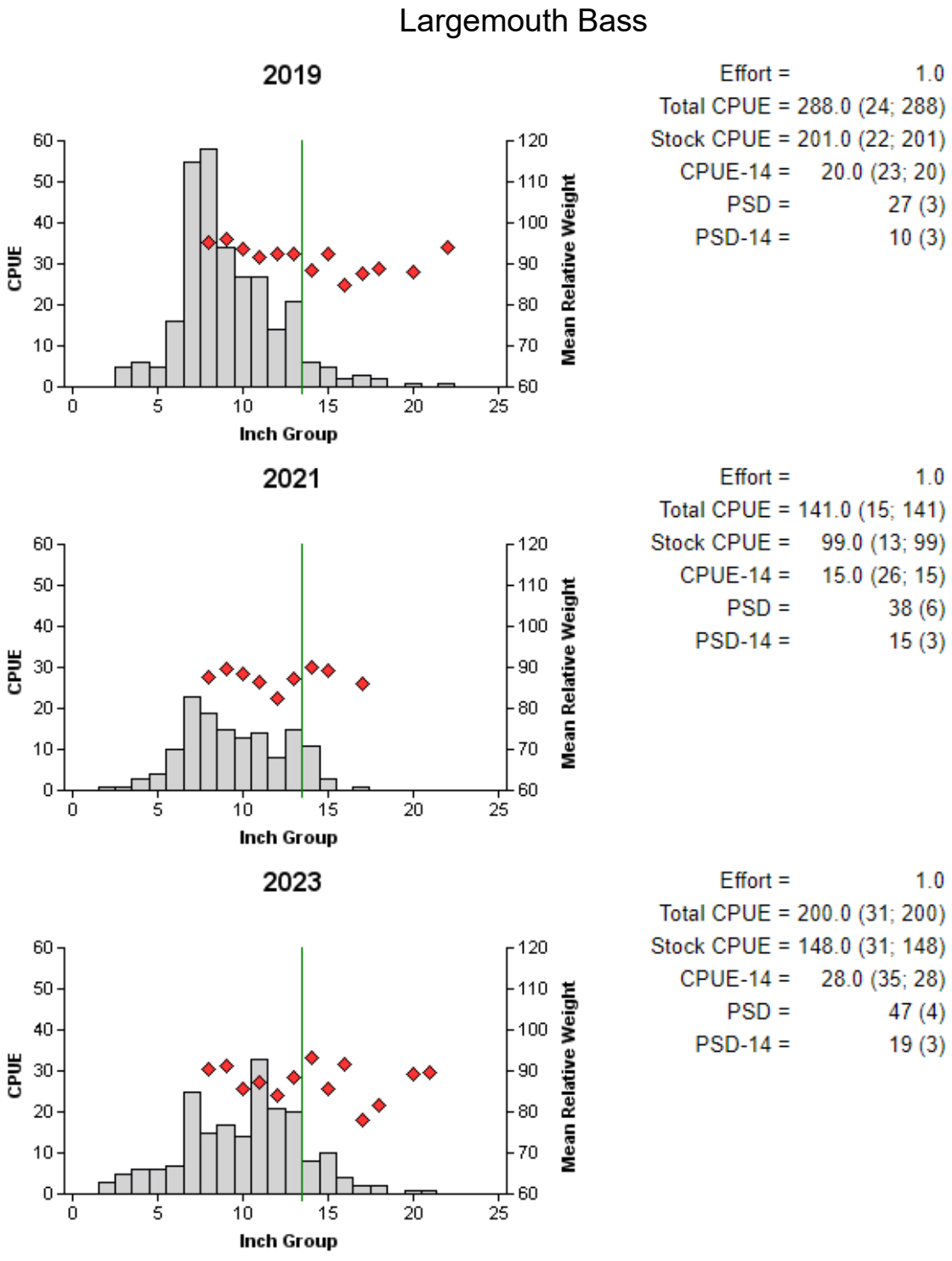


Figure 8. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Martin Creek Reservoir, Texas, 2019, 2021, and 2023. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 7. Proposed sampling schedule for Martin Creek Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing surveys are conducted in the fall

	Survey year			
	2024-2025	2025-2026	2026-2027	2027-2028
Angler Access				X
Structural habitat				X
Vegetation	X	X	X	X
Electrofishing – Fall		X		X
Gill netting				X
Creel survey		X[a]		
Report				X

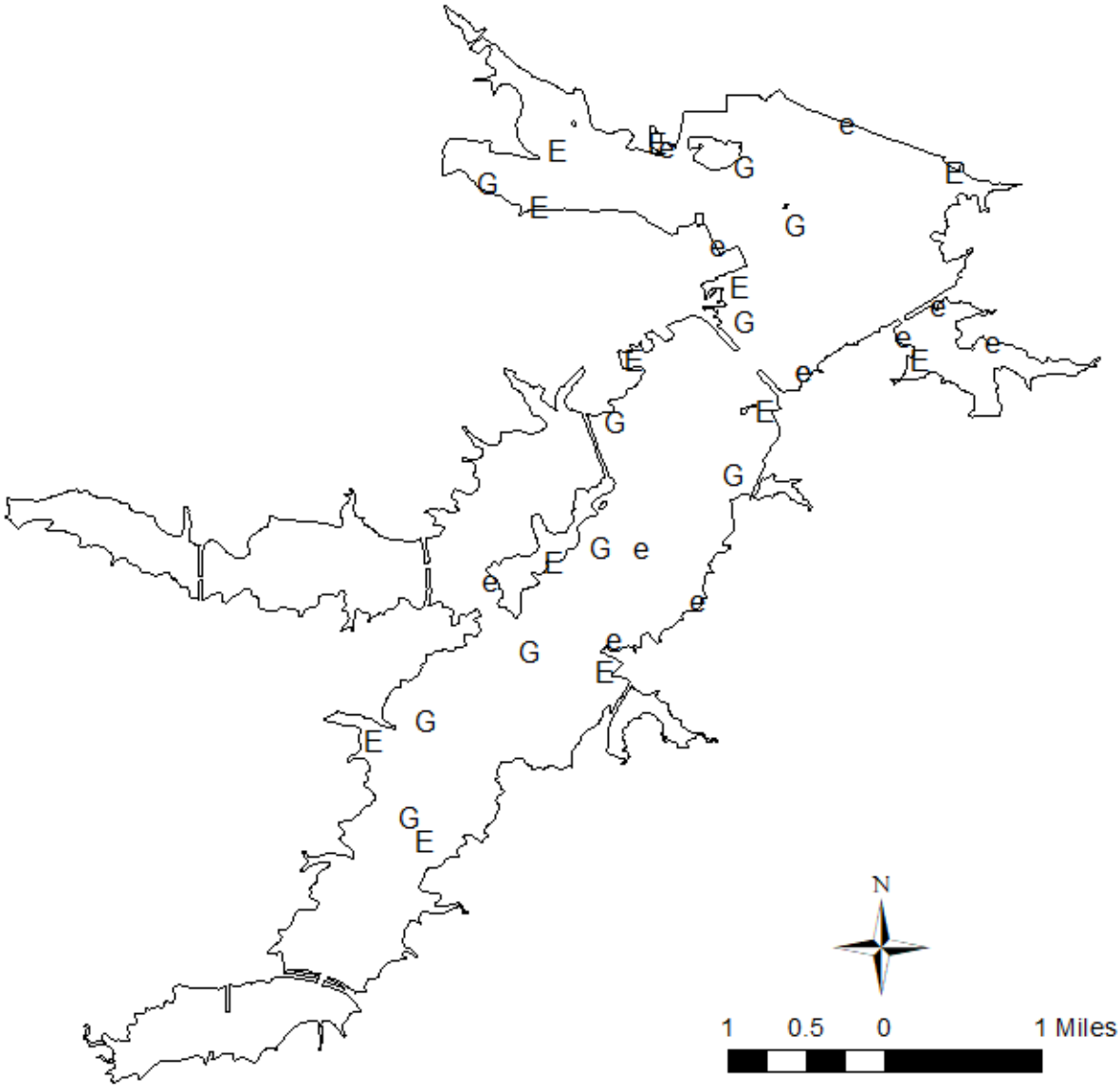
[a] Access point creel survey will be conducted December 2025 through May 2026.

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 Martin Creek Reservoir, Texas, 2021-2024. Sampling effort was 10 net nights for gill netting and 1 hour for electrofishing.

Species	Electrofishing (2021)		Electrofishing (2023)		Gill Netting (2024)	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad	90	90.0 (41)	63	63.0 (29)		
Threadfin Shad	47	47.0 (83)	85	85.0 (48		
Blue Catfish					58	5.8 (13)
Channel Catfish					157	15.7 (33)
Redbreast Sunfish	21	21.0 (38)	59	59.0 (65)		
Warmouth	2	2.0 (100)	2	2.0 (100)		
Bluegill	316	316.0 (16)	286	286.0 (26)		
Longear Sunfish	13	13.0 (29)	3	3.0 (72)		
Redear Sunfish	12	12.0 (58)	21	21.0 (39)		
Largemouth Bass	141	141.0 (15)	200	200.0 (31)		

APPENDIX B – Map of sampling locations



Location of sampling sites, Martin Creek Reservoir, Texas, 2021-2024. Gill net stations are indicated by G, while electrofishing stations from 2021 are indicated by e and 2023 by E. Water level was 3 to 4 feet low for electrofishing and near full pool for gill netting at time of sampling.

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