Sweetwater Reservoir

2022 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-4

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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Survey and Management Summary

Fish populations in Sweetwater Reservoir were surveyed in fall 2019, 2020, and 2022 by using electrofishing, fall 2022 by using trap netting, as well as in spring 2023 by tandem hoop netting. Historical data are presented with the 2019-2023 data for comparison. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

Reservoir Description: Sweetwater Reservoir is a 630-acre reservoir located in Sweetwater, Texas. The reservoir is in the Brazos River Basin on Bitter and Cottonwood creeks, tributaries of the Clear Fork. The reservoir is owned and operated by the City of Sweetwater for municipal and recreational purposes. The reservoir has a history of severe golden alga blooms and water level fluctuations. After prolonged drought, the reservoir caught substantial water from rains in 2018. Boater access consists of two public-use ramps, and bank access was limited to the park areas near the ramps.

Management History: Historically, important sport fish have included Channel Catfish, Largemouth Bass, and White Crappie. A 14- to 18-inch slot limit on Largemouth Bass was implemented in September 2001 but reverted to statewide regulations in September 2018 following several golden alga kills and severe droughts. After the reservoir filled in November 2018, sport and forage fishes were reintroduced beginning in 2019, and additional stockings of Largemouth Bass and Bluegilll occurred in 2020 and 2021. Blue Catfish and Channel Catfish were stocked in 2020 and 2021. As of September 2021, Blue and Channel Catfish were managed under a new statewide regulation requiring no minimum length limit, 25 fish daily bag limit with no more than 10 fish ≥ 20 inches.

Fish Community

- **Prey species:** Gizzard Shad, Bluegill, and Green Sunfish were present. Gizzard Shad dominated the prey sample in 2022. Bluegill and Green Sunfish catches were low.

- **Channel Catfish:** Channel Catfish were present in the reservoir and had low relative abundance in the tandem hoop netting survey. Body condition of sampled individuals was adequate.

- **Largemouth Bass:** Largemouth Bass decreased in catch from 2020 to 2022. Catch rates were low.

- **White Crappie:** Catch rates of White Crappie in fall trap netting surveys were low.

Management Strategies: Sampling will be conducted if conditions allow. Fall electrofishing and trap netting will be conducted in 2024 and 2026 to monitor Largemouth Bass, White Crappie and prey species. Tandem hoop netting will be conducted in late spring/early summer 2026 to monitor Channel Catfish. Access and vegetation surveys will be conducted in summer 2026. Low frequency electrofishing will be conducted in spring 2027 to monitor Blue Catfish.

Introduction

Fish populations in Sweetwater Reservoir were surveyed in fall 2019,2020, and 2022 by using electrofishing, in fall 2022 by trap netting, as well as in spring 2023 by using tandem hoop netting. Historical data are presented with the 2019-2023 data for comparison. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

Reservoir Description

Sweetwater Reservoir is a 630-acre impoundment constructed in 1930 on Bitter and Cottonwood creeks, located in Nolan County approximately 12 miles southeast of Sweetwater, Texas. It is owned and operated by the City of Sweetwater. Primary water use is water supply and recreation. Carlson's Trophic Index classification in 2022 was 61.06 (TCEQ 2022). Sweetwater Reservoir is subject to extreme water level fluctuations, prolonged drought, and golden alga blooms. Severe golden alga blooms have occurred several times and have devastated fisheries at the reservoir. Significant golden alga blooms also occurred in 2014 and 2016-2018. In November 2018 after heavy rains, the water level filled to conservation pool level (Figure 1). The reservoir has steadily declined since to about 10 ft. below conservation pool level. Habitat in 2022 consisted of featureless shoreline with sections of rocky shoreline and dead terrestrial vegetation. Other descriptive characteristics for Sweetwater Reservoir are in Table 1.

Angler Access

Sweetwater Reservoir has two public boat ramps and public bank access was limited to the boat ramp areas. Both public boat ramps were accessible during the monitoring period. Other boat ramp characteristics for Sweetwater Reservoir are shown in Table 2.

Management History

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

1. Conduct an exploratory electrofishing survey in 2019.

   Action: Electrofishing was conducted in fall 2019, 2020, and 2022.

2. Conduct stockings of Channel Catfish, Largemouth Bass and Bluegill fingerlings.

   Action: Stockings were conducted in 2019-2022.

3. Conduct management stockings of White Crappie and Gizzard Shad.

   Action: Management stocking of White Crappie was conducted in 2019. Additional attempts to stock Gizzard Shad were not conducted because they were present in the reservoir.

4. Periodically monitor the reservoir for presence of golden alga and alga blooms by collecting water samples and performing golden alga cell counts and fisheries toxicity tests.

   Action: During winter months from 2019-2023, water samples were collected, and golden alga cell counts and fisheries toxicity tests were performed.

5. Meet with the City of Sweetwater and discuss the potential of ramp improvement projects.

   Action: Discussions with the City of Sweetwater occurred in 2019 to discuss needed improvements.

6. Inform the public of the impacts and threats of invasive species.

   Action: Newspaper articles were written about the negative impacts of invasive species with emphasis on zebra mussels. Educational efforts have been made to inform the

public and local bass clubs about how they can prevent the spread of invasive species. Signage about invasive species is present at the reservoir.

Harvest regulation history: A 14- to 18-inch slot limit on Largemouth Bass was implemented from September 2001 to August 2018. In 2018, the Largemouth Bass slot limit was reverted to the statewide five-fish daily bag limit and 14-inch minimum length limit. In 2021, the statewide harvest limits for Blue and Channel Catfish were changed to a no minimum length, 25-fish daily bag limit with no more than 10 per day ≥20 inches. All other sport fish in Sweetwater Reservoir are managed with statewide regulations (Table 3).

Stocking history: A major fish kill caused by a golden alga bloom occurred in 2003. Fish populations had to be reintroduced once water level increased and the threat of a golden alga bloom lessened. The stocking recovery began in 2007 and by the end of 2008, all major forage and sport fishes had been stocked at least once. During 2014-2018, golden alga blooms once again caused severe fish kill events, and all fish in the reservoir were thought to be lost. Once the reservoir was refilled to conservation pool level in 2018, Fathead Minnows and Bluegill were stocked in spring 2019 as an attempt to re-establish forage for sport fish in the reservoir. White Crappie were stocked in 2019. Bluegill were stocked in 2020 and 2021 as well. Fingerling Florida Largemouth Bass and Channel Catfish were also stocked in 2019, 2020, and 2021. The complete stocking history is shown in Table 4.

Vegetation/habitat management history: Sweetwater Reservoir has no vegetation or habitat management history.

Water transfer: No interbasin transfers are known to exist.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Sweetwater Reservoir (Goldstrohm and Homer 2019). Primary components of the OBS plan are listed in Table 5. All survey sites were randomly selected, and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Electrofishing – Largemouth Bass, sunfishes, and Gizzard Shad were collected by electrofishing (1.0 hour at 12, 5-min stations) during fall 2019, 2020, and 2022. Daytime electrofishing was conducted during 2019 and nighttime electrofishing was conducted during 2020 and 2022. Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of electrofishing. A sample of 28 fish were retained for evaluating prevalence of Florida Largemouth Bass and Northern Largemouth Bass alleles.

Trap netting – Crappie were collected by using trap nets (5 net nights at 5 stations) during fall 2022. Catch rate (i.e., CPUE) for trap netting was recorded as the number of fish caught per net night (fish/nn).

Tandem hoop netting – Channel Catfish were collected by using tandem hoop nets (5 tandem series at 5 stations) during fall 2022. Catch rate (i.e., CPUE) for trap netting was recorded as the number of fish caught per tandem series (fish/tandem series).

Genetics – Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

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

Habitat – In summer 2022, vegetation and habitat were surveyed by circumnavigation of the reservoir and the Digital Shapefile Method (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Results and Discussion

Habitat: Habitat consisted primarily of rocky and featureless shoreline, flooded terrestrial vegetation, and timber. Aquatic vegetation present was bulrush totaling less than 0.10 acre (see Appendix C).

Prey species: Prey species consisted of Gizzard Shad, Bluegill, and Green Sunfish. Gizzard Shad were not caught in the 2019 and 2020 surveys, but they were caught at a rate of 161.0/h in 2022 (Figure 2). The Gizzard Shad IOV in 2022 was 84 and indicated that most of these fish in the sample were of optimal prey size for sportfish. Bluegill catch rates from electrofishing surveys conducted from 2019 through 2022 were low. In the 2019 daytime electrofishing survey, Bluegill were caught at a rate of 14.0/h (Figure 3). Nighttime electrofishing resulted in Bluegill catch rates decreasing from 54.0/h in 2020 to 8.0/h in 2022 (Figure 4). Green Sunfish were also caught in the surveys. In 2019, Green Sunfish were caught at a rate of 7.0/h (Figure 5). In 2020, Green Sunfish were caught at 12.0/h, which slightly increased to 16.0/h in 2022 (Figure 6). Overall, prey species, while present, appeared to be recovering slowly.

Catfishes: Channel Catfish were caught at a rate of 7.4/tandem series in spring 2023 (Figure 7). Most individuals were ≤stock length (PSD=22), and mean relative weights were adequate.

Largemouth Bass: In 2019, Largemouth Bass were caught at a rate of 65.0/h, and only one fish was legal length (Figure 7). In 2020, Largemouth Bass were caught at a rate of 47.0/h, which decreased to 11.0/h in 2022 (Figure 8). Similarly, Stock CPUE decreased from 18.0/h in 2020 to 9.0/h in 2022. No legal individuals were caught in 2020, and only one was caught in 2022. In 2022, of the 11 fish evaluated for allele frequencies, 10 fish were intergrades and 1 fish was a Lonestar Largemouth Bass. The percentage of Florida Largemouth Bass alleles was 35.0% (Table 5).

White Crappie: Only 8 White Crappie were caught during the fall 2022 trap netting survey (CPUE=1.6/nn). Seven of these individuals were ≥stock length, and only 1 was legal length. Sizes ranged from 2-11 inches.

Fisheries Management Plan for Sweetwater Reservoir, Texas

Prepared – July 2023

ISSUE 1: Fisheries are recovering slowly after commencing a recovery stocking plan that began in 2019. Recruitment of sport fishes and prey has been poor and has been hampered by drought conditions that have been occurring since 2021. The reservoir also has a substantial Common Carp population. Stockings of Florida Largemouth Bass did not appear to have good success given higher prevalence of Northern Largemouth Bass alleles. Continued stockings of prey species and sportfish may be necessary to help boost recruitment following an increase in water level.

MANAGEMENT STRATEGIES

1. If the water level is at least 70% capacity, stock Northern Largemouth Bass, Bluegill, Blue and Chanel Catfish fingerlings.
2. Conduct a management stocking of White Crappie.
3. Monitor Common Carp relative abundance in electrofishing surveys.

ISSUE 2: Sweetwater Reservoir has a history of severe golden algae kills. Monitoring is necessary to know the status of this potential threat to existing fisheries.

MANAGEMENT STRATEGIES

1. Collect monthly water samples during November-March and perform golden alga cell counts and toxicity tests.
2. If golden alga cell counts are high and toxicity is evident, stockings will be suspended until water level and water quality conditions improve.
3. Educate the public about golden alga blooms and impacts on fishes by newspaper articles, television interviews, and social media posts.

ISSUE 3: 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 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. Educate the public about invasive species by media and the internet.
3. Make a speaking point about invasive species when presenting to constituent and user groups.
4. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

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

Sport fish, forage fish, and other important fishes: Historically, sport fishes present in Sweetwater Reservoir included Channel Catfish, Largemouth Bass, and White Crappie. Important prey species included Gizzard Shad and Bluegill.

Low-density fisheries: Common Carp are present in the reservoir, but they do not support a popular fishery.

Survey objectives, fisheries metrics, and sampling objectives:

The proposed sampling schedule is detailed in Table 7.

Prey species: Predominant prey species Gizzard Shad, Bluegill, and Green Sunfish. Monitoring for prey species has traditionally been conducted at nighttime and recently by daytime electrofishing. Sampling for prey species during the 2023-2027 monitoring cycle will be conducted by daytime electrofishing during fall 2024 and fall 2026. No target levels of precision will be set for relative abundance estimates. However, a minimum sample of 50 Gizzard Shad and Bluegill will be attempted to evaluate size structure. Largemouth Bass relative weights will also be assessed to evaluate forage availability.

Largemouth Bass: Largemouth Bass were reintroduced into the reservoir in 2019. Multiple stockings were conducted to boost recruitment of this sportfish, but efforts appear to be limited in success. Additional stocking will be necessary to continue restoring this fishery, but Florida-alleles may not be suited for this reservoir. Should water level permit, additional monitoring will be conducted by electrofishing in the fall of 2024 and 2026. Sampling will be conducted at 12, 5-minute stations randomly selected for a duration of 1.0 hour. Sampling will be conducted in combination with sampling for prey species. No target levels of precision will be set for relative abundance estimates. A minimum sample of 50 fish ≥stock length will be attempted to evaluate size structure as PSD, and 5 fish/inch group will also be attempted to evaluate mean relative weights. Thirty (N=30) fish will have fin clips taken to assess allele frequencies. Additional sampling up to 0.5 hour of sampling may be conducted to fulfill sampling objectives.

Catfishes: Blue and Channel Catfish have been stocked into Sweetwater Reservoir for the recovery of the catfish fishery. Blue Catfish will be monitored by low-frequency electrofishing in late spring/early summer 2027. Sampling will be conducted at 10, 3-minute stations for a duration of 0.5 hour without a target level of precision for CPUE. A minimum sample of 50 fish ≥stock length will be attempted to evaluate size structure, and 5 fish per inch group will be attempted to assess mean relative weights. Up to 0.5 hour of additional sampling may be conducted to fulfill objectives and if deemed feasible. Channel Catfish will be sampled by tandem hoop netting in late spring/early summer 2026 by deploying 6 tandem series at 6 randomly selected stations. There will be no target levels of precision set for relative abundance, PSD, or relative weights. A minimum sample of 50 fish ≥ stock length will be attempted to evaluate size structure. Relative weight will be evaluated if sample size is adequate.

White Crappie: White Crappie will be sampled by trap netting during fall 2024 and 2026. Sampling will be conducted at 5 stations over 5 net nights. No target levels of precision will be set for White Crappie relative abundance, A minimum sample of 50 fish ≥ stock length will be attempted to determine PSD. Relative weights will be evaluated if 5 fish/inch group are represented in the sample. Up to 5 additional trap nets may be set to improve sample size and if deemed feasible.

Creel: A creel survey will not be conducted during this monitoring period.

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Tables and Figures

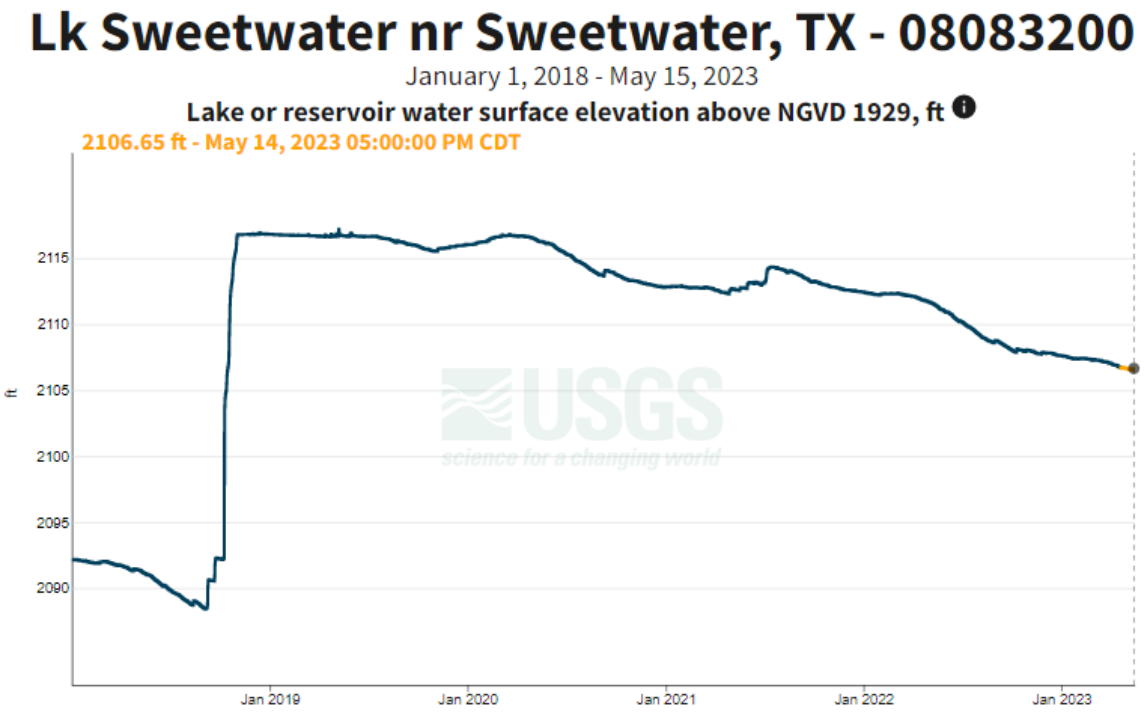


Figure 1. Daily water level elevations for Sweetwater Reservoir, TX, 2018-2023 (USGS 2023).

Table 1. Characteristics of Sweetwater Reservoir, Texas.

Characteristic	Description
Year constructed	1930
Conservation pool (CP)	2,116 feet above mean sea level
Controlling authority	City of Sweetwater
County	Nolan
Reservoir type	Tributary
River basin	Brazos River Basin
Carlson's Trophic Index Classification	61.06
USGS 8-Digit HUC Watershed	12060102 (Upper Clear Fork Brazos)
Conductivity	979-4,053 µS/cm

Table 2. Boat ramp characteristics for Sweetwater Reservoir, Texas, September 2022. The reservoir elevation at time of survey was approximately 8 ft. below conservation pool level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Main Ramp	32.437541 -100.300439	Y	20	2,093	Accessible
Golf Course Ramp	32.435750 -100.308438	Y	5	2,102	Accessible

Table 3. Harvest regulations for Sweetwater Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (in any combination); no more than 10 fish ≥20 inches	No Limit
Catfish, Flathead	5	18-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

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

Species	Year	Number	Size
Fathead Minnow	2007	12,500	ADL
	2019	8,980	ADL
	Total	21,480	
Golden Shiner	2007	1,000	ADL
Inland Silverside	2008	500	ADL
Gizzard Shad	2008	500	ADL
Bluegill	2007	64,545	FGL
	2008	64,601	FGL
	2009	86,421	FGL
	2019	2,976	ADL
	2020	65,200	FGL
	2021	93,847	FGL
	Total	218,543	
Channel Catfish	2008	62,973	FGL
	2009	63,441	FGL
	2019	64,446	FGL
	2020	61,016	FRY
	2021	68	ADL
	Total	251,944	
Blue Catfish	2019	7	ADL
	2021	94,656	FGL
	Total	94,663	
Flathead Catfish	1973	1,600	UNK
Florida Largemouth Bass	1996	1,169	FGL
	1997	2,412	FGL
	1998	25,000	FGL
	1999	15,998	FGL
	2000	12,821	FGL
	2008	63,338	FGL
	2009	72,257	FGL
	2019	524,906	FRY
	2020	14,979	FGL
	2021	31,692	FGL

Table 4 (continued).

Florida Largemouth Bass	Total	717,901	
Largemouth Bass	1966	70,000	FGL
ShareLunker Largemouth Bass	2008	39,970	FGL
Walleye	1984	3,512,500	FRY
	1977	122,000	FRY
	1976	8,000	FGL
	Total	3,642,500	
White Crappie	2007	50	ADL
	2019	240	ADL
	Total	290	

Table 5. Objective-based sampling plan for Sweetwater Reservoir, Texas, 2019-2023

Gear/target species	Survey objective	Metrics	Sampling objective
Electrofishing			
Gizzard Shad	Relative Abundance	CPUE–Total	Exploratory
	Size Structure	Length frequency	Exploratory
	Prey Availability	IOV	Exploratory
Bluegill	Relative Abundance	CPUE-Total	Exploratory
	Size Structure	Length Frequency, PSD	Exploratory
Largemouth Bass	Relative Abundance	CPUE-Total, Stock CPUE, CPUE-14	Exploratory
	Size Structure	Length Frequency, PSD	Exploratory
	Body Conditions	W_r	Exploratory
	Genetics	Allele Frequencies for FLMB and NLMB	N=30 (random)
Tandem Hoop Netting			
Channel Catfish	Relative Abundance	CPUE-Total and Stock CPUE	Exploratory
	Size Structure	Length Frequency, PSD	Exploratory
Trap netting			
White Crappie	Relative Abundance	CPUE–Total, CPUE–Stock, CPUE-10	Exploratory
	Size Structure	Length Frequency, PSD	Exploratory

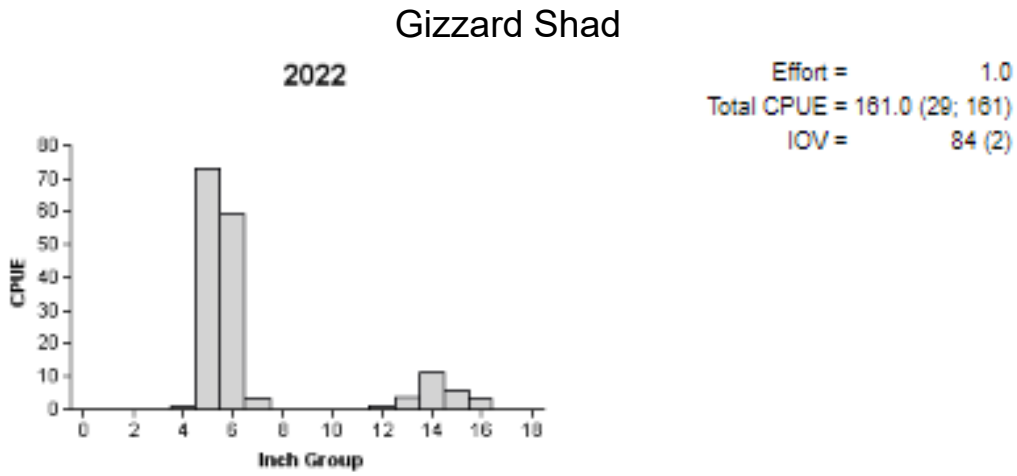


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for the fall 2022 nighttime electrofishing survey, Sweetwater Reservoir, Texas.

Bluegill

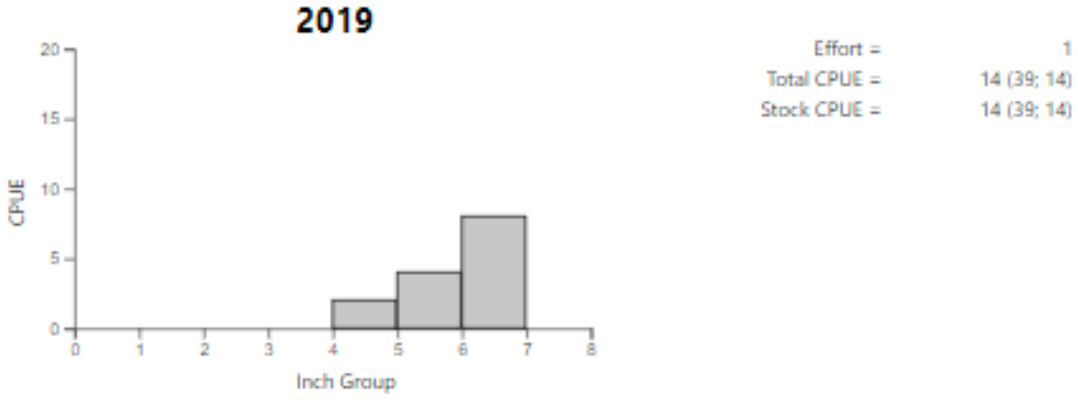


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE are in parentheses) for the fall 2019 daytime exploratory electrofishing survey, Sweetwater Reservoir, Texas.

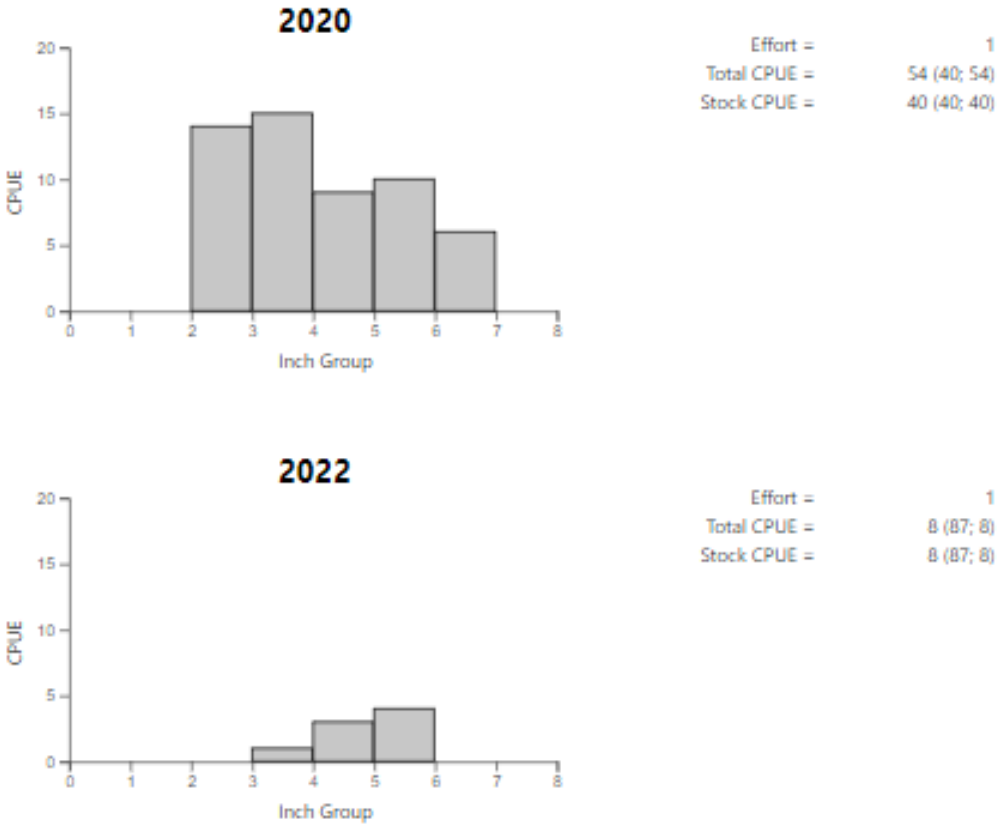


Figure 4. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE are in parentheses) for the fall 2020 and 2022 nighttime electrofishing surveys, Sweetwater Reservoir, Texas.

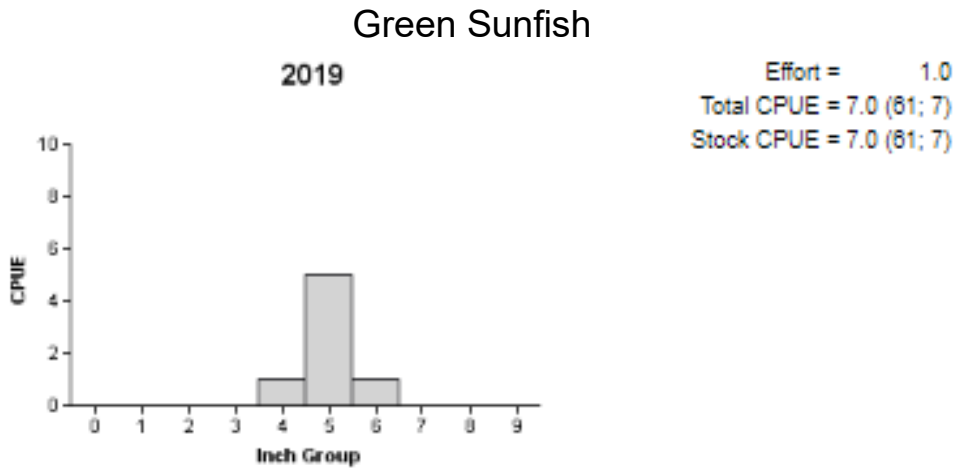


Figure 5. Number of Green Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE are in parentheses) for the fall 2019 daytime exploratory electrofishing survey, Sweetwater Reservoir, Texas.

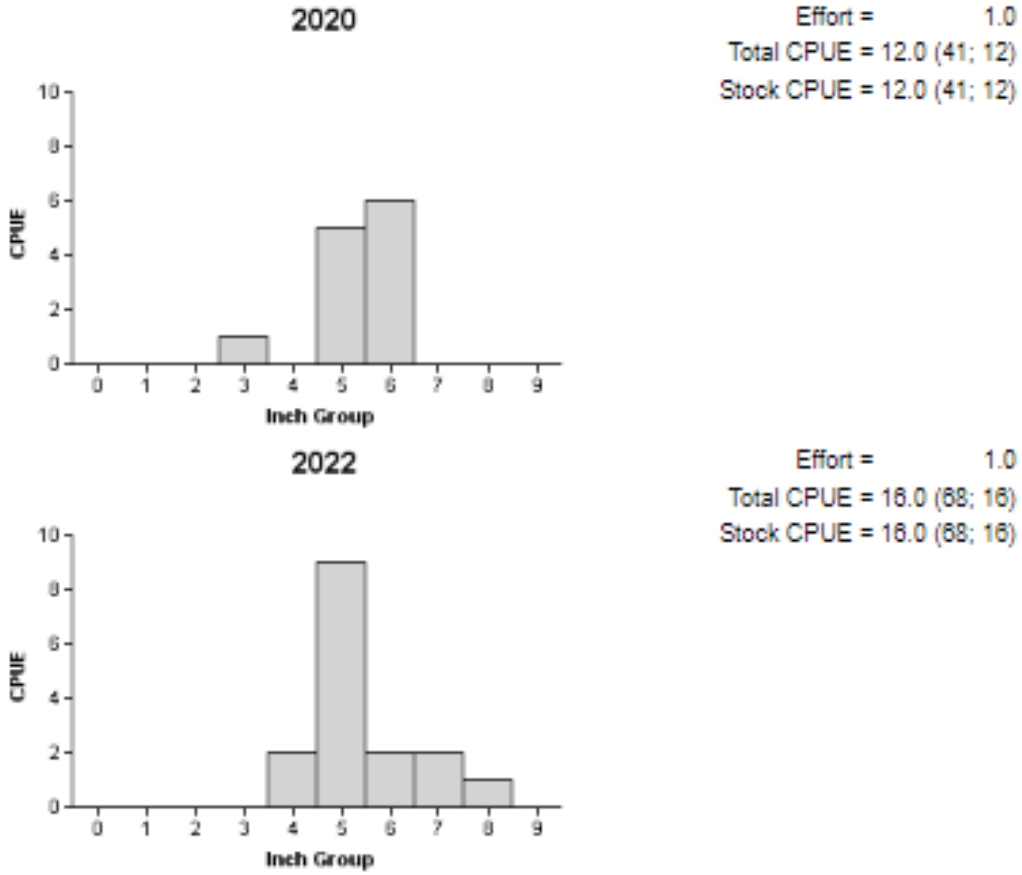


Figure 6. Number of Green Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE are in parentheses) for the fall 2020 and 2022 nighttime electrofishing surveys, Sweetwater Reservoir, Texas.

Channel Catfish

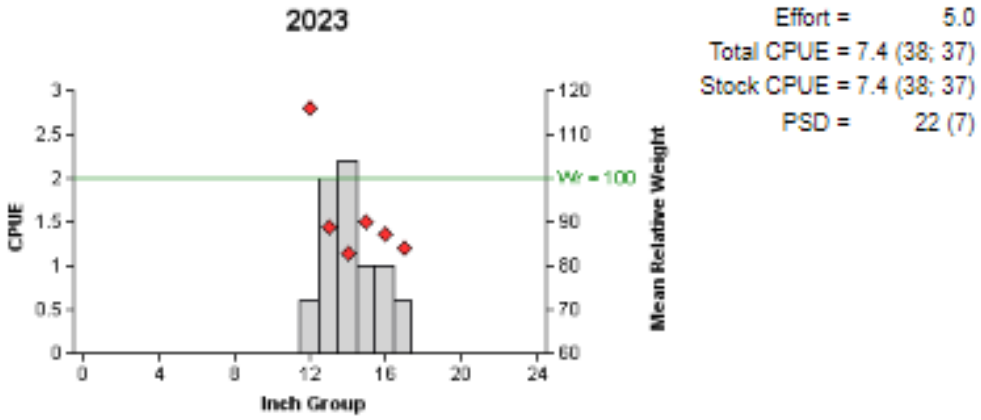


Figure 7. Number of Channel Catfish caught per tandem series (CPUE), population indices (RSE and N for CPUE and SE for PSD are in parentheses) and mean relative weights (diamonds) for the spring 2023 exploratory tandem hoop netting survey, Sweetwater Reservoir, Texas.

Largemouth Bass

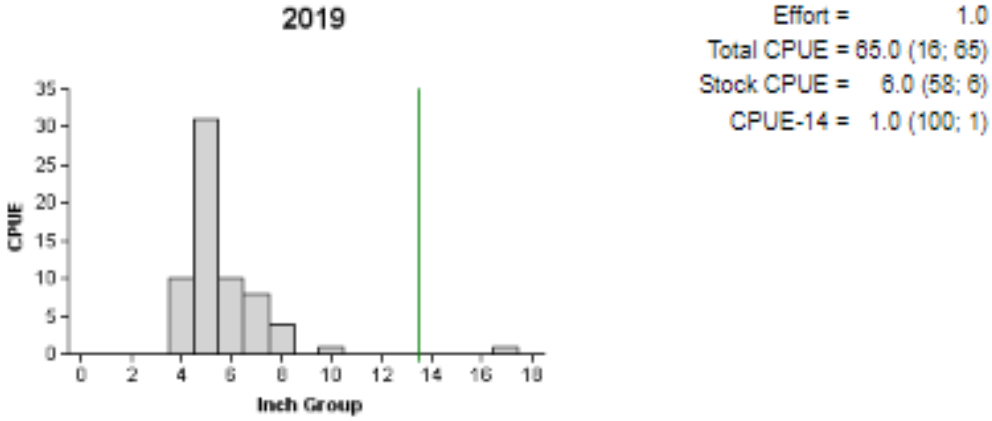


Figure 8. Number of Largemouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE are in parentheses) for the fall 2019 daytime exploratory electrofishing survey, Sweetwater Reservoir, Texas.

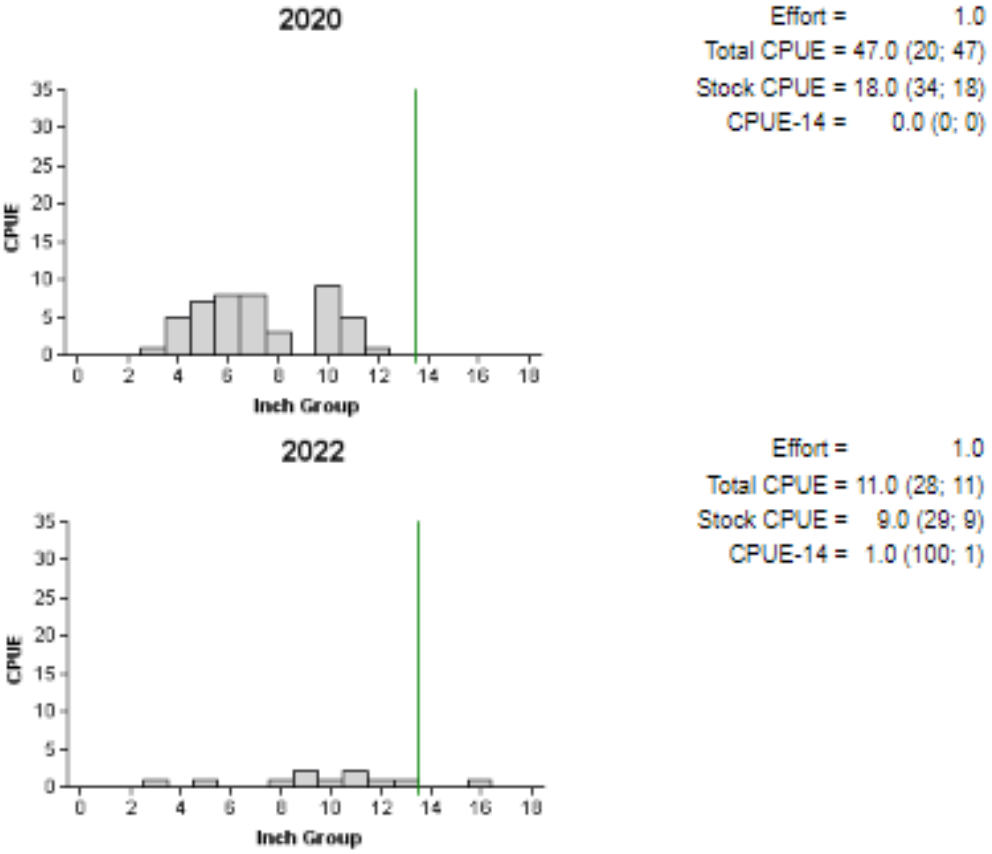


Figure 9. Number of Largemouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE are in parentheses) for the fall 2020 and 2022 nighttime electrofishing surveys, Sweetwater Reservoir, Texas.

Largemouth Bass

Table 6. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Sweetwater Reservoir, Texas, 2022. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB, LB=Lonestar Largemouth Bass. Genetic composition was determined by micro-satellite DNA analysis.

Year	Sample Size	Number of Fish				% FLMB Alleles	%FLMB
		FLMB	Intergrade	NLMB	LB		
2022	11	0	10	0	1	35.0	0.0

Proposed Sampling Schedule

Table 7. Proposed sampling schedule for Sweetwater Reservoir, Texas. The survey period is June through May. Electrofishing is conducted in the fall and baited tandem hoop netting surveys are conducted in early summer. Surveys denoted by X and will be conducted if conditions allow.

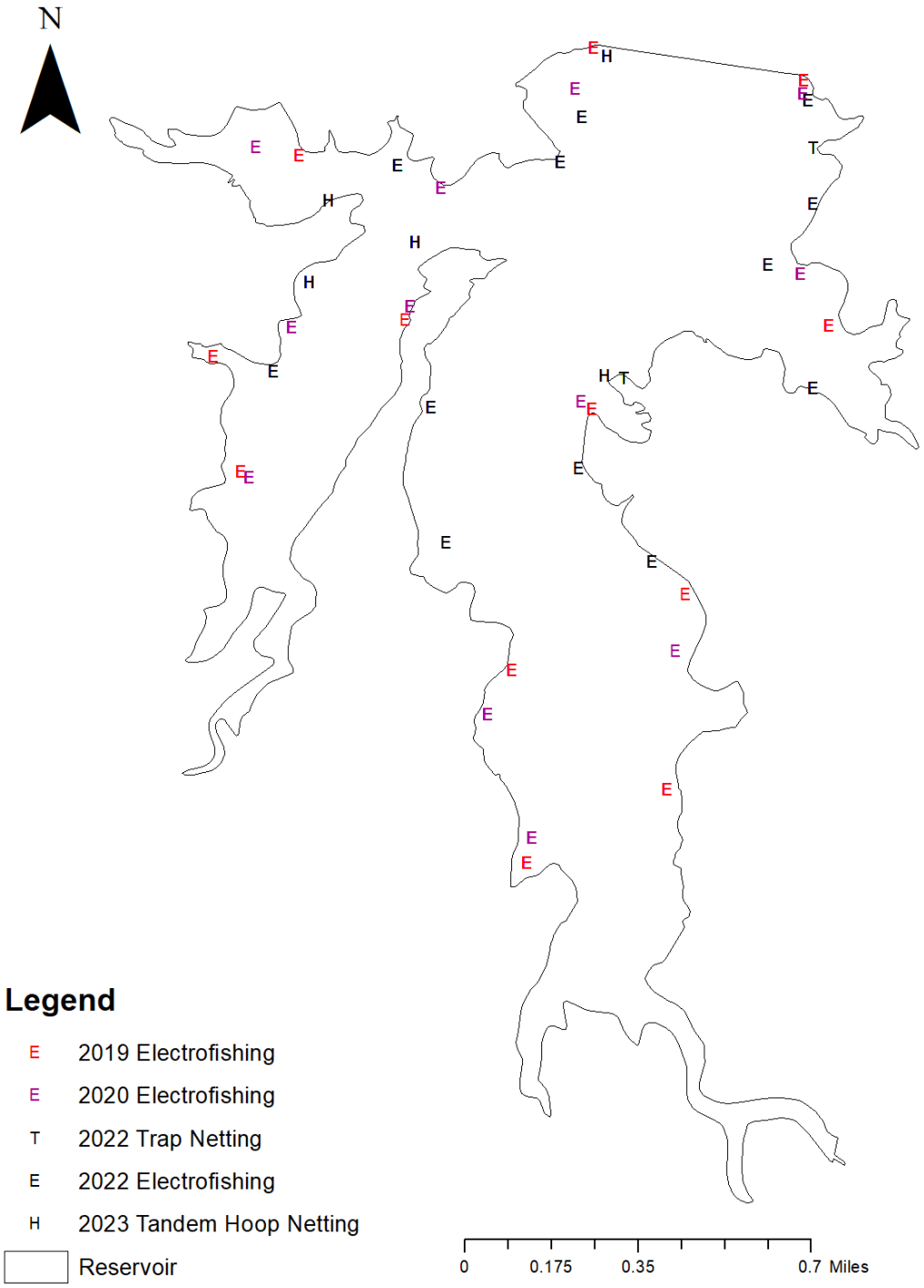
	Survey year			
	2023-2024	2024-2025	2025-2026	2026-2027
Angler Access				X
Structural Habitat				X
Vegetation				X
Baited tandem hoop netting				X
Electrofishing – Fall		X		X
Low-frequency Electrofishing				X
Trap netting		X		X
Report				X

Appendix A

Number (N) and catch per unit effort (CPUE; RSE in parentheses) of all target species collected from all gear types from Sweetwater Reservoir, Texas, 2022-2023. Sampling effort was 1.0 hour for electrofishing, 5 net nights for fall trap netting, and 5 tandem series for hoop netting.

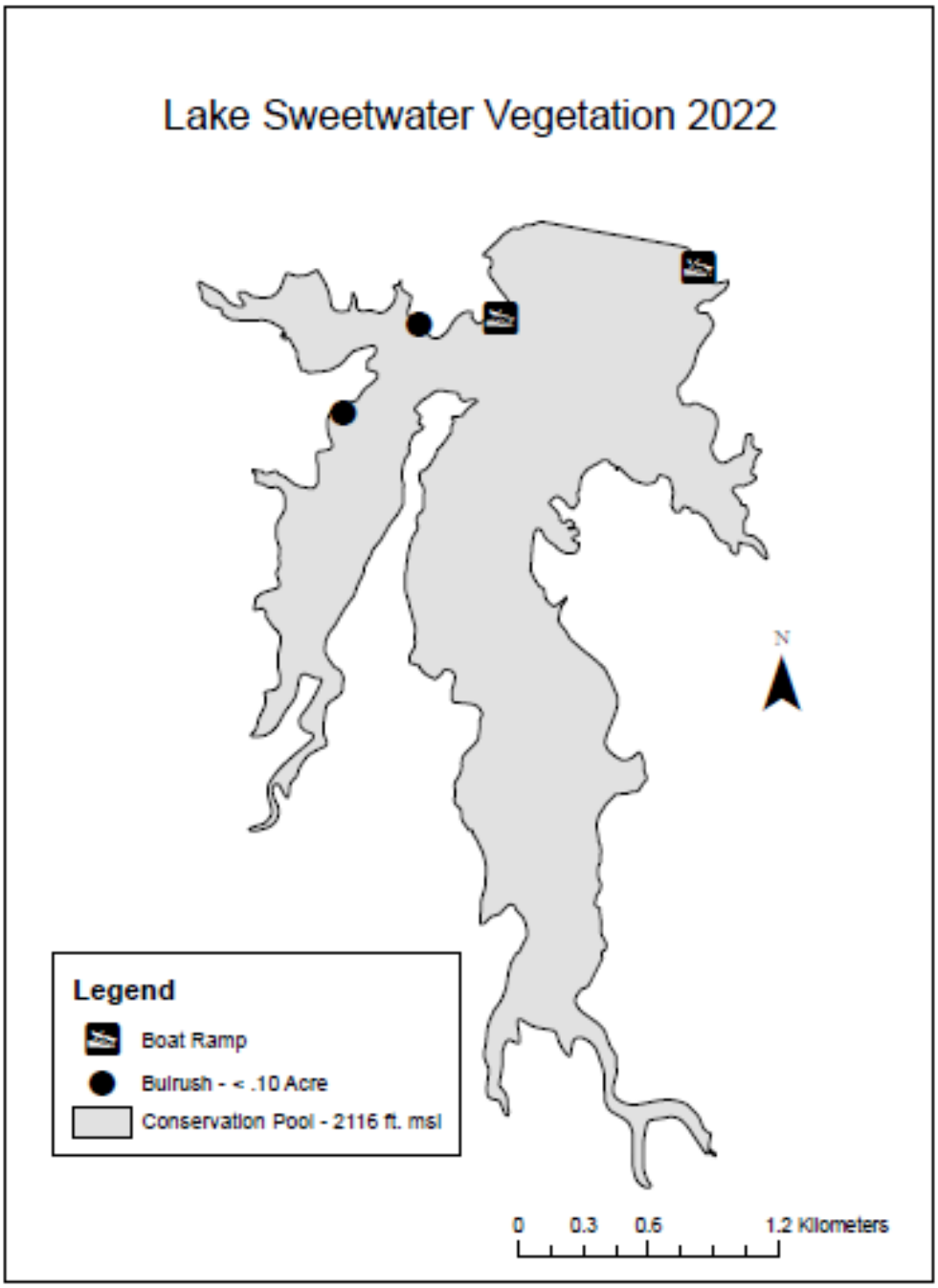
Species	Electrofishing		Trap Netting		Tandem Hoop Netting	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad	161	161.0 (29)				
Channel Catfish					37	7.4 (38)
Green Sunfish	16	16.0 (68)				
Bluegill	8	8.0 (87)				
Longear Sunfish	1	1.0 (100)				
Largemouth Bass	11	11.0 (28)	3	0.60 (100)		
White Crappie			8	1.6 (28)		

Appendix B



Map of fall electrofishing (E), fall trap netting (T), and spring tandem hoop netting stations at Sweetwater Reservoir, Texas, 2019-2023.

Appendix C



Map of summer 2022 vegetation survey, Sweetwater Reservoir, Texas.

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