Lake Halbert

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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SPORT FISH RESTORATION

Contents

Survey and Management Summary

Fish populations in Lake Halbert were surveyed in 2022 using electrofishing and trap netting, and in 2023 using gill netting. Historical data are presented with the 2022/2023 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: Lake Halbert is a 531-acre reservoir on Elm Creek, a tributary of the Trinity River, constructed by the City of Corsicana in 1921 to provide water for municipal and industrial purposes. Boat access is adequate, and a fishing pier is available. In addition, shoreline access is available in the park along the west bank. A prolonged drought in 2005-2006 reduced reservoir capacity to approximately 28% volume and the reservoir was closed to recreation; water level has stabilized over the past decade.

Management History: Important sport fish include White Crappie and catfishes. City of Corsicana personnel have maintained Zebra Mussel inspections at the boat ramp. Local news media outlets have been contacted regarding the Blue Catfish and White Crappie fisheries potential. The City of Corsicana proposed control of aquatic vegetation but was advised that it was unnecessary.

Fish Community

- **Prey species:** Threadfin Shad were abundant in the reservoir. Electrofishing catch of Gizzard Shad was moderate, and the majority of encountered Gizzard Shad were available as prey to most sport fish.
- **Catfishes:** Channel Catfish are abundant; however, few fish encountered were over 12 inches. Blue Catfish are present but at much lower relative abundance levels.
- **Largemouth Bass:** While historically the Largemouth Bass population has persisted at relatively low levels, the most recent survey indicated an improved abundance among the species.
- **Crappie:** White Crappie were very abundant and provide excellent angling opportunities.

Management Strategies: Conduct a trap net survey in 2026, a gill net survey in 2027, a structural habitat survey in 2026, and a vegetation survey in 2026.

Introduction

This document is a summary of fisheries data collected from Lake Halbert in 2022–2023. 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 2022–2023 data for comparison.

Reservoir Description

Lake Halbert is a 531-acre impoundment constructed in 1921 on Elm Creek, a tributary of the Trinity River. It is in Navarro County approximately 1 mile southeast of Corsicana and is operated and controlled by the city of Corsicana. Primary water uses included municipal water supply and recreation. Other descriptive characteristics for Lake Halbert are presented in Table 1. High turbidity limits growth of submersed aquatic vegetation. A prolonged drought in 2005-2006 reduced reservoir volume to approximately 28% capacity and the reservoir was temporarily closed to recreation. A second drought occurred from 2010-2013. Since 2016 reservoir elevation has remained relatively stable and within one to two feet of conservation pool (Figure 1).

Angler Access

Lake Halbert has one public boat ramp and no private ramps. Additional boat ramp characteristics are available in Table 2. A fishing pier is available and accessed near the boat ramp. In addition, good shoreline access is available in the park along the west bank.

Management History

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

1. Place fish attractors throughout the reservoir to promote the crappie fishery.

    Action: In 2022, several artificial fish attractors were purchased using Conservation License Plate funds and will be placed throughout the reservoir in 2023.

Harvest regulation history: All sport fishes in Lake Halbert have been managed with statewide harvest regulations (Table 3). Statewide catfish (Blue and Channel Catfish) regulations were changed on September 1, 2021 from a 12-inch minimum size limit to no minimum length (of which, only 10 fish ≥ 20 inches). Current regulations are found in Table 3.

Stocking history: Lake Halbert was first stocked with Florida Largemouth Bass in 1974 and successive stockings occurred in 1992, 1995, 1998, and 2015. No stockings of any other species have occurred in the last 10 years (Table 4).

Vegetation/habitat management history: Aquatic vegetation on Lake Halbert has remained at relatively comparable coverages over the course of the last three surveys (2014, 2018, 2022) with native aquatic species coverage ranging from 6–9.5% of the reservoir. Coverage has primarily consisted of American Lotus and Smartweed.

Water transfer: Raw water from Richland-Chambers Reservoir has the potential to be introduced directly or indirectly into Lake Halbert via a pumping station on the reservoir. Richland-Chambers Reservoir is within the Trinity River Basin and no water transfers outside of this basin are known to exist.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Lake Halbert (Ott 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, 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.

Trap netting – Crappie were collected using trap nets (10 net nights at 10 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn). Ages for crappie were determined using otoliths from 13 randomly selected fish (range 9.0 to 10.9 inches).

Gill netting – Blue Catfish, Channel Catfish, and White Bass 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 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/estimate) was calculated for all CPUE statistics.

Habitat – A comprehensive vegetation survey was conducted in 2022 using the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Water level – Source for water level data was from the Water Data for Texas website (Water Data for Texas 2022).

Results and Discussion

Habitat: Native vegetation covered 6.0% of total reservoir surface area (Table 6) with American Lotus being the primary species (5.6%) encountered. Historic vegetation surveys have indicated comparable coverages of native aquatic vegetation (2014 = 7.0%; 2018 = 9.7%). While historic vegetation levels have persisted at moderate levels, the vegetation on Lake Halbert is primarily found in the shallow upper end of the reservoir which does not provide suitable habitat for many sportfish species.

Prey species: Electrofishing catch rates of Threadfin Shad and Gizzard Shad were moderate with 187.0/h and 153.0/h, respectively. Index of Vulnerability (IOV) for Gizzard Shad was good indicating that 85% of Gizzard Shad were available to existing predators (Figure 2). Total CPUE of Gizzard Shad has considerably decreased compared to 2014 (924.0/h) and declined moderately from 2018 (291.0/h). Electrofishing catch rates of Bluegill were considerably improved in 2022 (255.0/h; Figure 3) compared to recent years (2014 = 20.0/h; 2018 = 66.5/h). Forage species in the reservoir provide adequate prey for sport fish species.

Catfish: Compared to historic population levels (2015 = 4.4/nn; 2019 = 3.0/nn), the Blue Catfish population have moderately declined to low levels of relative abundance (1.2/nn; Figure 4). The gill net catch rate of Channel Catfish was high at 15.4/nn in 2023 (Figure 5) and has increased in relative abundance compared to previous surveys (2015 = 0.9/nn; 2019 = 10.8/nn). While the size structure of the Channel Catfish population was low (PSD = 6), these estimates are similar to historic size structures (2015 = 0; 2019 = 5). The increase in Channel Catfish recruitment may reflect a response to diminishing numbers of Blue Catfish and may lead to sustained angling opportunities for anglers seeking catfishes in the future. The trends in catfish populations will continue to be monitored with more precision to determine future management approaches.

Temperate Basses: The gill net catch rate of White Bass was poor with only one fish encountered (0.2/nn) in 2023 indicating that White Bass continue to be present in the reservoir at low densities (Figure 6). Historical catch rates for this species have also been low on the reservoir (2015 = 2.2/nn; 2019 = 1.4/nn).

Largemouth Bass: The electrofishing catch rate of Largemouth Bass was 89.0/h in 2022, an increase from 2018 (66.5/h) and much greater relative abundance than additional historic estimates (2002–2014 range: 26.0–40.0/h; Figure 8). Although PSD indicated poor size structure (26), these estimates are similar to the prior survey (2018 = 29). While size structure is greatly reduced compared to 2014 (67), only 15 stock-sized fish were captured in the 2014 survey making it difficult to make comparisons. Additionally, the decline in size structure compared to the 2014 survey is indicative of improved year class strengths rather than a decline in quality-sized fish as CPUE-14 successively improved from prior surveys (2014 = 3.0/h; 2018 = 4.4/h) to 2022 (5.0/h). Improved year classes are likely correlated to stability in water levels as low water levels during prior surveys may have negatively influenced Largemouth Bass abundance. Mean relative weight was 89 in 2022 indicating adequate prey availability.

Crappie: The trap net catch rate of White Crappie was notably high at 73.4/nn in 2022 (Figure 9), much higher than the most recent surveys (2014 = 34.2nn; 2018 = 19.0/nn); although, prior surveys also indicated strong relative abundance. CPUE-10 has successively improved in 2022 (12.2/nn) compared to prior surveys (2014 = 4.4/nn; 2018 = 9.0/nn). Mean relative weight was 93 in 2022 and indicative of adequate prey availability with most size classes above 90. Growth for White Crappie was adequate with fish reaching legal length at 2.0 years (N = 13, 9.0 to 10.9 inches in length). While growth and condition were adequate, these indices have notably declined compared to prior surveys (age at legal length: 2014 = 1.0 years, 2018 = 1.5 years; mean relative weight: > 101 for both years). With the extremely high abundance and the decline in growth and condition, the crappie population has shown some signs of stunting and further evaluations on the growth of this population will be assessed. Black Crappie were also present but only one fish was captured in the survey (0.2/nn).

Fisheries Management Plan for Lake Halbert, Texas

Prepared – July 2023

ISSUE 1: Abundance estimates for crappie were very high (73.4/nn) with while growth (2.0 years at legal length) and condition (mean relative weight = 93) were at moderate levels. While adequate measures of growth and condition, these estimates were notable declines from historic levels (age at legal length of 1.0 and 1.5 years and mean relative weight > 101 in two prior surveys). To assess the potential for stunting in the crappie population, more precise estimates of growth are needed than traditional age and growth methods (13 fish at 9.0–10.9 inches).

MANAGEMENT STRATEGIES

1. Conduct a trap net survey in the fall of 2024 with the objective of collecting 100 stock sized fish at a CPUE-Stock RSE $\leq$ 25.

2. Age every fish captured in the 2024 survey to build growth models using age-length data collected from the population.

3. If more precise estimates of growth provide indications of stunting, assess alternative regulatory strategies to encourage harvest while working with the City of Corsicana to promote the fishery via social media.

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 controlling authority to post appropriate signage at access points around the reservoir.

2. Contact and educate marina owners about invasive species and provide posters or literature that they can in turn educate their customers.

3. Educate the public about invasive species using social media.

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 (2023–2027)

Sport fishes in Lake Halbert include Blue and Channel Catfish, White Bass, Largemouth Bass, and both Black and White Crappie are present but White Crappie predominate. Important forage species include Gizzard and Threadfin Shad and Bluegill.

<u>Low-density fisheries.</u>

White Bass gill net catch rates have historically been very low (≤ 2.0/nn), indicating a low-density population. No future sampling plans will be set for this species. Additionally, Lake Halbert has historically supported a low-density Largemouth Bass population. Catch rates of stock-size specimens from standard night-time electrofishing in the past three surveys ranged from 15.0/h – 35.0/h with RSE of 24-33. The quality of the Largemouth Bass has historically been poor and likely does not provide a significant fishery.

<u>Survey objectives, fisheries metrics, and sampling objectives</u>

Crappie: Anecdotal information suggests crappie are a popular fishery at Lake Halbert and likely account for most of the directed effort. To assess the growth of the population, five randomly selected trap net sites will be utilized with the goal of collecting $\geq$ 100 stock-size fish with precision objectives set at an RSE $\leq$ 25 for Stock-CPUE. Historic catches suggest that these goals can be met with five sites. Five randomly selected sites will be utilized if objectives are not met with a maximum of 10 total nets set. Trend data will continue to be collected during this survey on relative abundance, size structure, and body condition (measured by CPUE, PSD and W_r). Every fish captured in the 2024 survey will be aged to build growth models using age-length data to better assess the potential for stunting in the population.

Catfish: Both Blue and Channel Catfish are present at Lake Halbert and recent gill net surveys have identified shifts in community dominance between Channel Catfish and Blue Catfish (as indicated by relative abundance). Historical data suggest estimates of Blue Catfish relative abundance (Stock-CPUE) with RSE $\leq$ 30 and N $\geq$ 50 stock-sized individuals for PSD estimates would require > 15 randomly selected gill net sample sites. This level of effort is excessive as depth profiles only provide approximately 300 acres of sample-able water. Therefore, in the spring of 2027, only 5 randomly selected gill net sites will be sampled. If samples do not provide estimates of CPUE-stock with RSE $\leq$ 25 and N $\geq$ 50 stock sized individuals (for either species) that species will be reported as presence/absence only.

Prey Species: The abundance of prey species will be assessed with the relative weights of Blue and Channel Catfish caught in gill net surveys.

Habitat: A complete-reservoir comprehensive vegetation survey will be conducted in 2026 to monitor the littoral habitat within the reservoir and additionally, conduct a structural habitat survey in 2026.

Literature Cited

Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

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.

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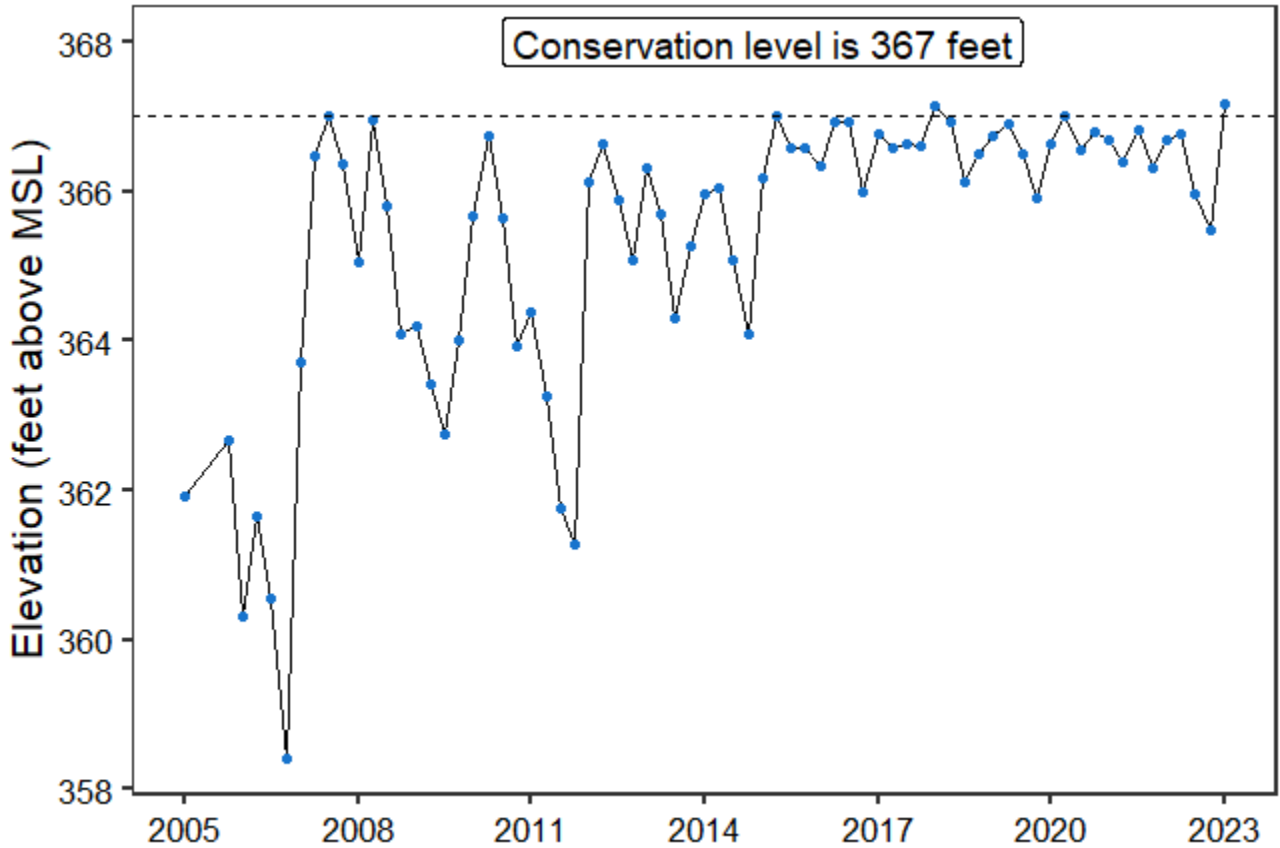
Tables and Figures

Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Lake Halbert, Texas (2005–2023). Dashed line indicates conservation level.

Table 1. Characteristics of Lake Halbert, Texas.

Characteristic	Description
Characteristic	Description
Year constructed	1921
Controlling authority	City of Corsicana
County	Navarro
Reservoir type	Tributary
Shoreline Development Index	1.8

Table 2. Boat ramp characteristics for Lake Halbert, Texas, November 2022. Reservoir elevation at time of survey was 365.8 feet above mean sea level.

Boat ramp	Latitude Longitude	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
City Park	32.07702 -96.40717	Y	15	361.5	Excellent, no access issues

Table 3. Harvest regulations for Lake Halbert, 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	14-inch minimum
Spotted Bass	5[a]	None
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 Lake Halbert, Texas. FGL = fingerling; ADL = adults; FRY = fry.

Species	Year	Number	Size
Threadfin Shad	1990	3,367	ADL
	1991	2,700	ADL
	Total	6,067	
Bluegill (copper nose)	1983	35,000	FGL
	Total	35,000	
Florida Largemouth Bass	1974	32,000	FGL
	1975	25,000	FGL
	1992	59,984	FGL
	1995	66,340	FGL
	1998	65,289	FGL
	2015	98,505	FRY
	Total	347,118	

Table 4. Objective-based sampling plan components for Lake Halbert, Texas 2019-2023.

Gear/target species	Survey objective	Metrics	Sampling objective
Electrofishing			
Largemouth Bass	Presence-absence	CPUE-Total	No objective set
	Size structure	PSD, length frequency	
	Condition	W_r	
Bluegill [a]	Abundance	CPUE–Total	No objective set
	Size structure	PSD, length frequency	
Gizzard Shad [a]	Abundance	CPUE–Total	No objective set
	Prey availability	IOV	
Trap netting			
Crappie	Abundance	CPUE-Stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50
	Age-and-growth	Age at 10 inches	N = 13, 9.0 – 10.9 inches
Gill netting			
Blue Catfish	Presence-absence	CPUE-Total	No set objective
	Size structure	PSD, length frequency	
Channel Catfish	Presence-absence	CPUE–Total	No set objective
	Size structure	PSD, length frequency	
White Bass	Presence-absence	CPUE-Total	No set objective

Table 5. Survey of aquatic vegetation, Lake Halbert, Texas, 2014, 2018, and 2022. Surface area (acres) is listed with percent of total reservoir surface area in parentheses

Vegetation	2014	2018	2022
Native submersed			
Pondweed	2 (0.4)	8 (1.5)	Trace
Coontail			2 (0.4)
Native Emergent			
American Lotus	7 (1.4)	6 (1.1)	29 (5.6)
American lotus/Smartweed		24 (4.5)	
Bulrush	1 (0.2)	Trace	
Button Bush		7 (1.3)	Trace
Cattail	1 (0.2)	1 (0.2)	
Smartweed	15 (3.1)	4 (0.7)	Trace
Water Willow	8 (1.7)	1 (0.2)	Trace
Non-native			
Giant Reed (Tier III)*		1 (0.2)	

Gizzard Shad

2014

Effort = 1.0
Total CPUE = 924.0 (27; 924)
IOV = 99 (0)

2018

Effort = 0.9
Total CPUE = 291.3 (23; 267)
IOV = 92 (4)

2022

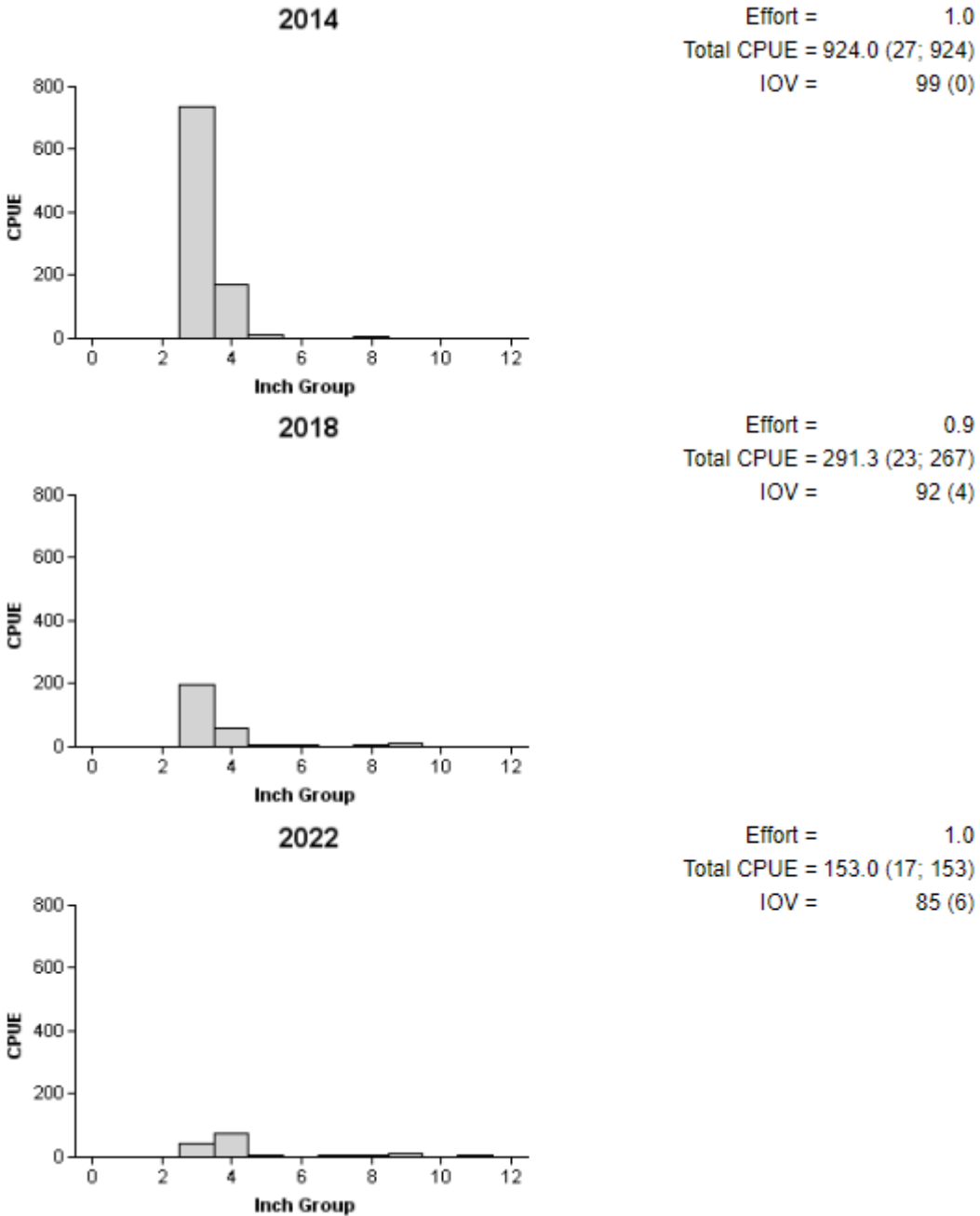Effort = 1.0
Total CPUE = 153.0 (17; 153)
IOV = 85 (6)

Figure 2. Number of Gizzard Shad caught per hour (CPUE, bars), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Halbert, Texas, 2014, 2018, and 2022.

Bluegill

2014

Effort = 1.0
Total CPUE = 20.0 (26; 20)
PSD = 0 (0)

2018

Effort = 0.9
Total CPUE = 66.5 (15; 61)
PSD = 0 (0)

2022

Effort = 1.0
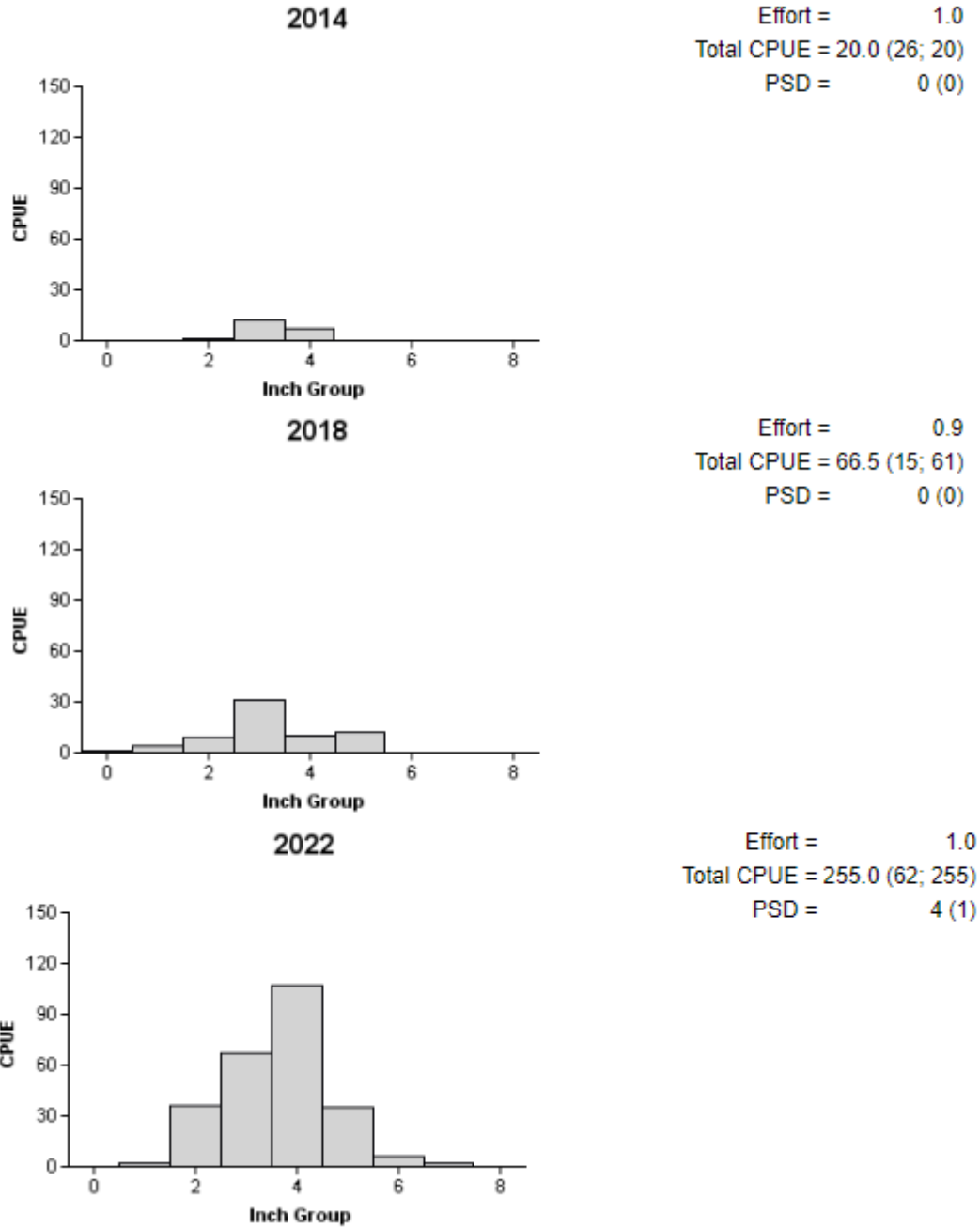Total CPUE = 255.0 (62; 255)
PSD = 4 (1)

Figure 3. Number of Bluegill caught per hour (CPUE, bars), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Halbert, Texas, 2014, 2018, and 2022.
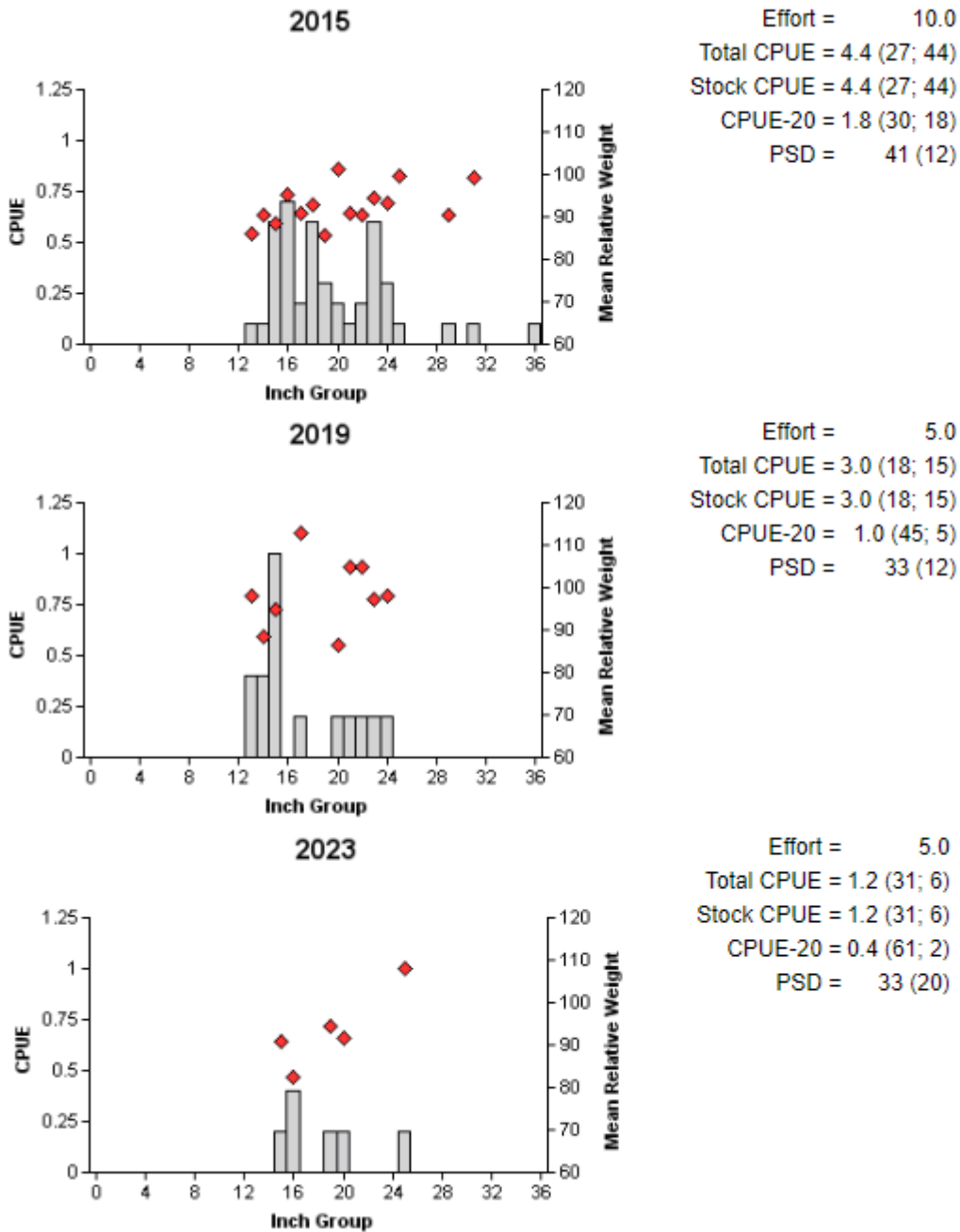
Blue Catfish

2015

Effort = 10.0
Total CPUE = 4.4 (27; 44)
Stock CPUE = 4.4 (27; 44)
CPUE-20 = 1.8 (30; 18)
PSD = 41 (12)

2019

Effort = 5.0
Total CPUE = 3.0 (18; 15)
Stock CPUE = 3.0 (18; 15)
CPUE-20 = 1.0 (45; 5)
PSD = 33 (12)

2023

Effort = 5.0
Total CPUE = 1.2 (31; 6)
Stock CPUE = 1.2 (31; 6)
CPUE-20 = 0.4 (61; 2)
PSD = 33 (20)

Figure 4. Number of Blue Catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Halbert, Texas, 2015, 2019, and 2023. CPUE-20 represents the catch rates of quality sized Blue Catfish (20 inches or greater)
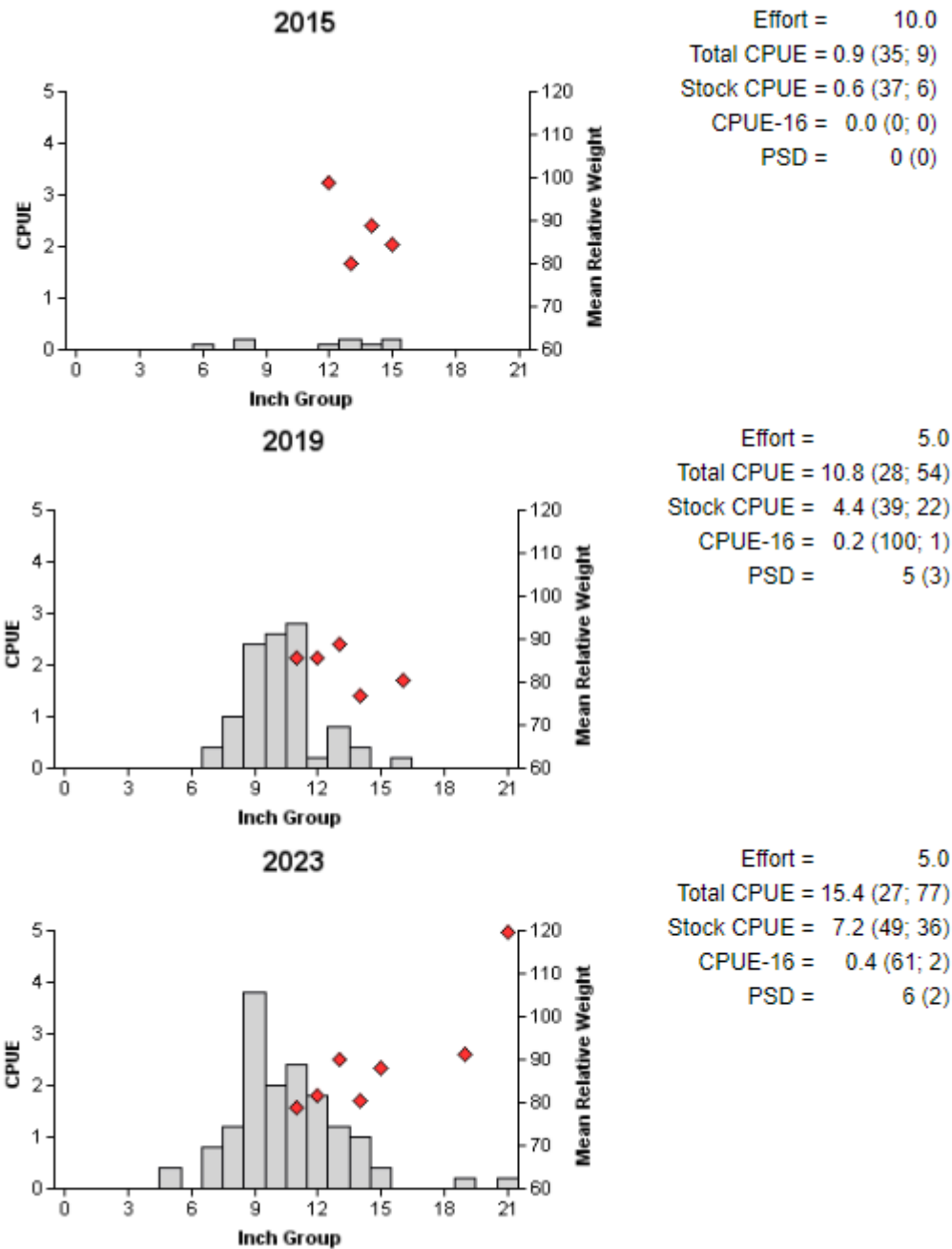
Channel Catfish

2015

Effort = 10.0
Total CPUE = 0.9 (35; 9)
Stock CPUE = 0.6 (37; 6)
CPUE-16 = 0.0 (0; 0)
PSD = 0 (0)

2019

Effort = 5.0
Total CPUE = 10.8 (28; 54)
Stock CPUE = 4.4 (39; 22)
CPUE-16 = 0.2 (100; 1)
PSD = 5 (3)

2023

Effort = 5.0
Total CPUE = 15.4 (27; 77)
Stock CPUE = 7.2 (49; 36)
CPUE-16 = 0.4 (61; 2)
PSD = 6 (2)

Figure 5. 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, Lake Halbert, Texas, 2015, 2019, and 2023. CPUE-16 represents the catch rates of quality sized Channel Catfish (16 inches or greater)

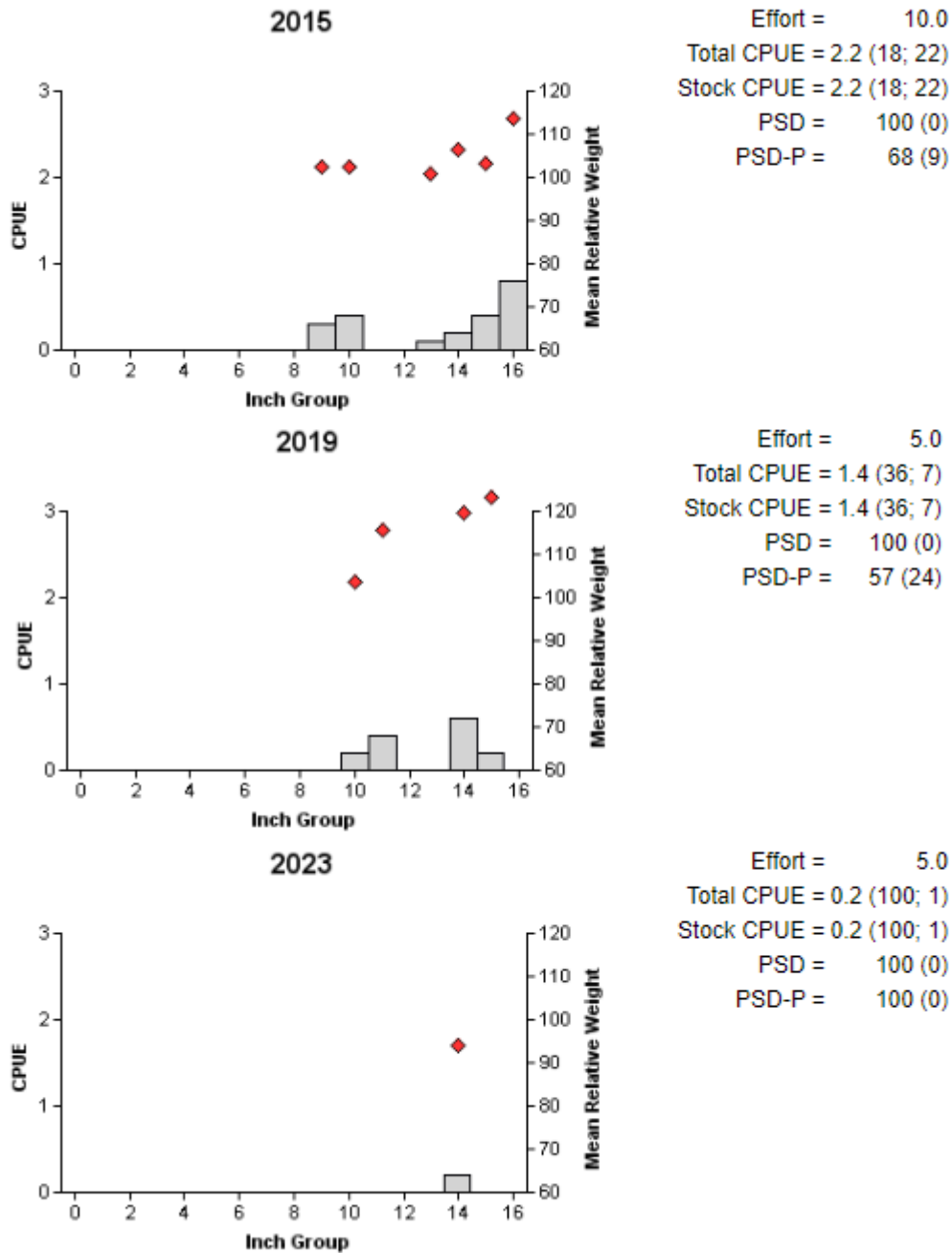# White Bass

2015

2019

2023

Figure 6. Number of White Bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Halbert, Texas, 2015, 2019, and 2023.
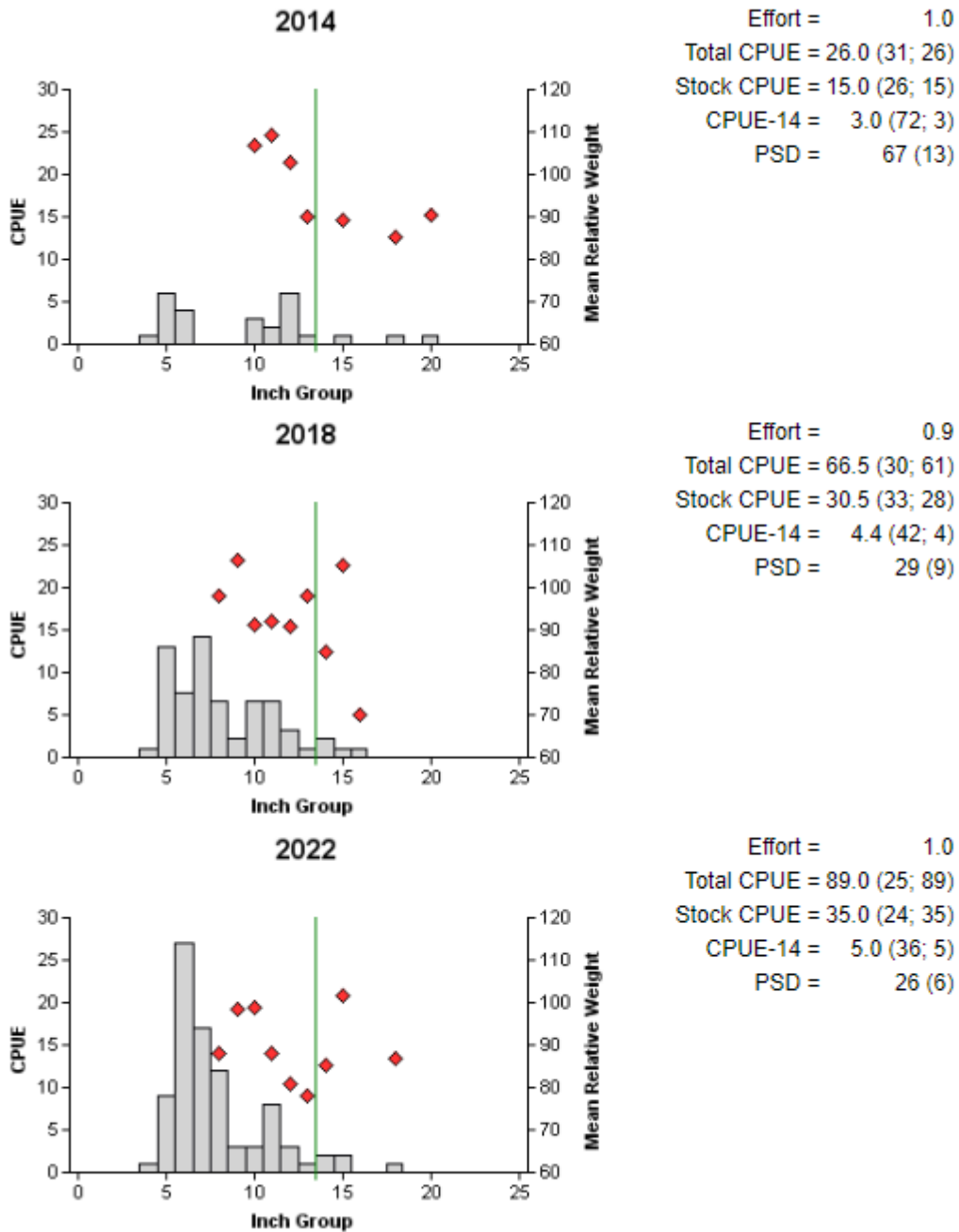
Largemouth Bass

2014

2018

2022

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, Lake Halbert, Texas, 2014, 2018, and 2022. Vertical line is at the minimum size limit (14 inches).
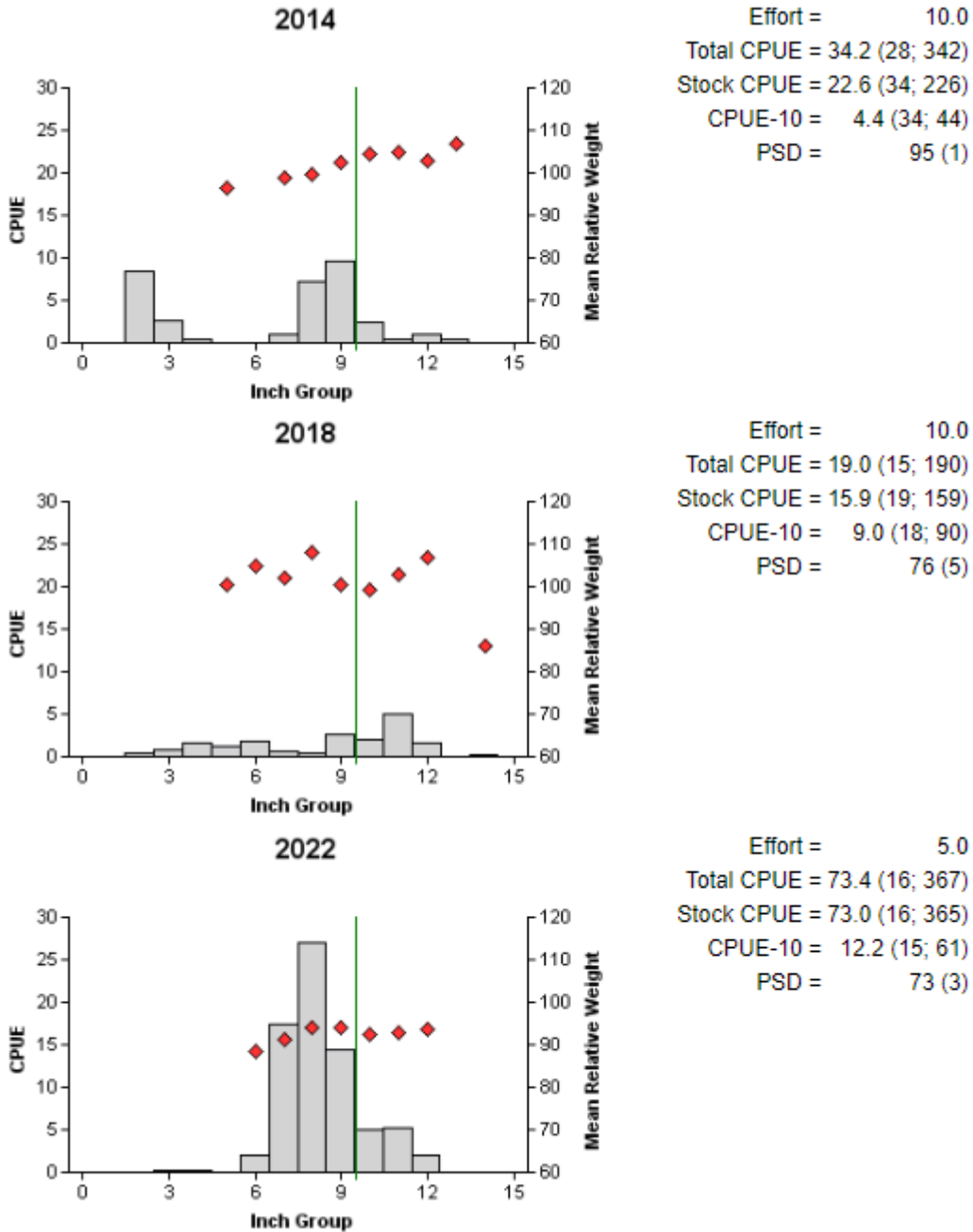
White Crappie

2014

Effort = 10.0
Total CPUE = 34.2 (28; 342)
Stock CPUE = 22.6 (34; 226)
CPUE-10 = 4.4 (34; 44)
PSD = 95 (1)

2018

Effort = 10.0
Total CPUE = 19.0 (15; 190)
Stock CPUE = 15.9 (19; 159)
CPUE-10 = 9.0 (18; 90)
PSD = 76 (5)

2022

Effort = 5.0
Total CPUE = 73.4 (16; 367)
Stock CPUE = 73.0 (16; 365)
CPUE-10 = 12.2 (15; 61)
PSD = 73 (3)

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, Lake Halbert, Texas, 2014, 2018, and 2022. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 6. Proposed sampling schedule for Lake Halbert, 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			
	2023-2024	2024-2025	2025-2026	2026-2027
Vegetation				X
Structural Habitat				X
Trap netting				X
Gill netting				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 target species collected from all gear types from Lake Halbert, Texas, 2022-2023. Sampling effort was 10 net nights for gill netting, 10 net nights for trap netting, and 1 hour for electrofishing.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad					153	153.0 (17)
Threadfin Shad					187	187.0 (40)
Blue Catfish	6	1.2 (31)				
Channel Catfish	77	15.4 (27)				
White Bass	1	0.2 (100)				
Warmouth					5	5.0 (81)
Longear Sunfish					106	106.0 (60)
Bluegill					255	255.0 (62)
Largemouth Bass					89	89.0 (25)
White Crappie			367	73.4 (16)		
Black Crappie			1	0.2 (100)		

APPENDIX B – Map of sampling locations
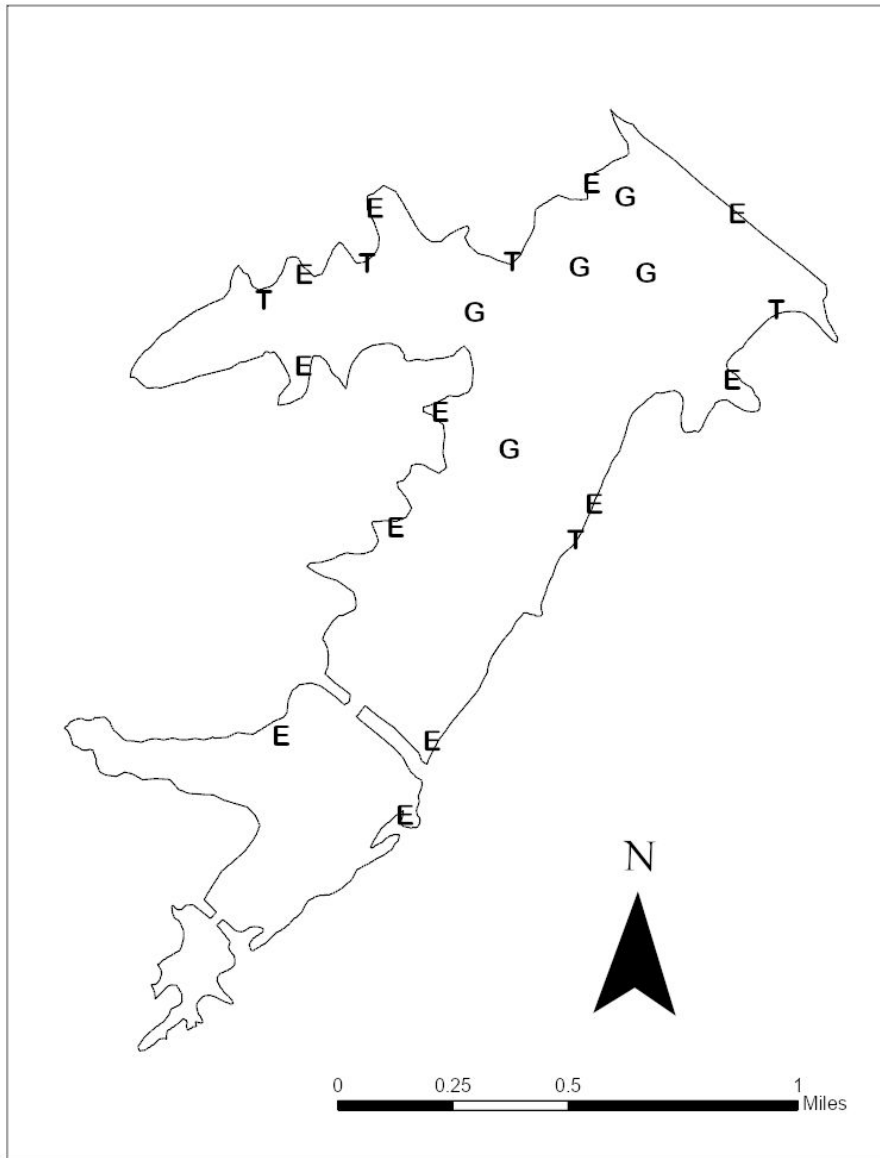
Location of sampling sites, Lake Halbert, Texas, 2022-2023. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level was near full pool at time of sampling.

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