

Lone Star Lake

2018 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-3

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

Prepared by:

Timothy J. Bister, District Management Supervisor
and
Margaret H. Stadig, Assistant District Management Supervisor

Inland Fisheries Division
Marshall District, Marshall, Texas

Carter Smith
Executive Director

Craig Bonds
Director, Inland Fisheries

July 31, 2019



Contents

Contents	i
Survey and Management Summary	1
Introduction.....	2
Reservoir Description	2
Angler Access.....	2
Management History	2
Methods.....	3
Results and Discussion.....	3
Fisheries Management Plan for Lone Star Lake, Texas.....	5
Objective-Based Sampling Plan and Schedule (2019–2023).....	6
Literature Cited.....	7
Tables and Figures	8
Water Level	8
Reservoir Characteristics	8
Boat Ramp Characteristics.....	9
Harvest Regulations	9
Stocking History.....	10
Objective-Based Sampling Plan for 2018-2019	10
Structural Habitat Survey.....	11
Aquatic Vegetation Survey	11
Percent Directed Angler Effort per Species.....	12
Total Fishing Effort and Fishing Expenditures.....	12
Gizzard Shad.....	13
Redbreast Sunfish	14
Bluegill	15
Redear Sunfish.....	16
Largemouth Bass	17
Proposed Sampling Schedule	20
APPENDIX A – Catch rates for all species from all gear types	21
APPENDIX B – Map of sampling locations.....	22
APPENDIX C – Reporting of creel ZIP code data	23

Survey and Management Summary

Fish populations in Lone Star Lake were surveyed in 2018 using electrofishing. Anglers were surveyed from March through May 2016 with a creel survey. Historical data are presented with the 2018 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: Lone Star Lake is a 1,516-acre impoundment located on Ellison Creek in the Cypress River Basin in Morris County. Structural habitat is sparse, but is comprised of brush, riprap, creek channels, and boat docks. Hydrilla was discovered in the reservoir in 2006 and has required occasional herbicide treatment by homeowner groups. A fish consumption advisory was issued due to PCB contamination in 2005 and remains in effect.

Management History: Important sport fish include Largemouth Bass. White Bass, White Crappie, Black Crappie, and Channel Catfish are present in this reservoir, but have low historical abundance and limited directed angling effort. All sport fish have historically been managed with statewide harvest regulations. Florida Largemouth Bass have been stocked in this reservoir to improve the quality of the Largemouth Bass fishery. Palmetto Bass stocking was discontinued in 2005 due to the fish consumption advisory. Hydrilla was discovered in the reservoir in 2006 and herbicide treatments were conducted in 2006 and 2007. Environmental conditions caused a reduction in native vegetation in 2010, but vegetation coverage returned to previous levels in subsequent years. Hydrilla was treated with herbicide in 2016 by homeowners whose reservoir access was impeded by heavy growth.

Fish Community

- **Prey species:** Gizzard Shad, Threadfin Shad, and several species of sunfish were present, indicating good forage diversity. Bluegill were the most abundant sunfish species. Redear Sunfish catch rates have declined since previous surveys. The sunfish population generally displayed a small size structure with few large (>8 inches) sunfish for anglers but abundant smaller fish for predators.
- **Largemouth Bass:** Largemouth Bass were abundant with many fish over 14 inches observed. Largemouth Bass growth has been consistently fast in recent surveys, with good body condition indicating an excellent forage base. Many Largemouth Bass under 10 inches were observed during the 2018 survey, which should result in an increased number of larger fish in the population over the next several years. Spotted Bass were present but comprised a small part of the black bass community.

Management Strategies: Conduct electrofishing surveys in fall 2020 and 2022 to monitor the Largemouth Bass and prey populations. Annual vegetation surveys will be conducted to monitor hydrilla, alligatorweed, and any other invasive species.

Introduction

This document is a summary of fisheries data collected from Lone Star Lake in 2018. 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 2018 data for comparison.

Reservoir Description

Lone Star Lake is a 1,516-acre impoundment constructed in 1943 on Ellison Creek in the Cypress River Basin. It is in the city of Lone Star, in Morris County. The controlling authority is U. S. Steel Tubular Products, Inc. Primary water uses are industrial water supply and public recreation. It has a watershed of approximately 37 square miles, a shoreline length of 18.6 miles, and a shoreline development index of 2.6. Annual water level fluctuation is typically around 1-2 ft (Figure 1). Structural habitat is sparse but is comprised of inundated timber, brush, riprap, creek channels, and boat docks. Hydrilla coverage has increased since 2014. A fish consumption advisory has been in effect since 2005 due to PCB contamination. Other descriptive characteristics for Lone Star Lake are recorded in Table 1.

Angler Access

Lone Star Lake has two public boat ramps. Lone Star City Park ramp is currently under repair and is expected to be completed during summer 2019. Shoreline access for bank fishing is limited to the public boat ramp areas. Additional boat ramp characteristics are recorded in Table 2.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Wright and Bister 2015) included:

1. Continue to manage and monitor the Largemouth Bass population with additional electrofishing, Florida Largemouth Bass stocking, and a creel survey.

Action: Additional electrofishing was conducted in 2016. Florida Largemouth Bass were stocked in 2015 and 2018. An angler creel survey was conducted during spring 2016.
2. Conduct annual aquatic vegetation surveys and recommend treatment if necessary.

Action: Hydrilla and alligatorweed have been monitored annually. Technical guidance has been provided to homeowners regarding herbicide treatment of hydrilla. Alligatorweed flea beetles were released during spring 2019.
3. Maintain signage related to fish consumption advisory.

Action: Signs related to the PCB fish consumption advisory have been maintained and concerned citizens have been referred to the Texas Department of State Health Services (TDSHS).
4. Inform public about invasive aquatic species.

Action: A public meeting was held with lake residents to discuss invasive aquatic plants; especially water hyacinth.

Harvest regulation history: Fish populations in Lone State Lake have been managed under statewide harvest regulations. Current regulations are found in Table 3.

Stocking history: Lone Star Lake was previously stocked with Palmetto Bass, however it was discontinued following the fish consumption advisory from TSDHS in 2005. Florida Largemouth Bass

stocking has been conducted to establish and maintain a quality fishery. The complete stocking history is recorded in Table 4.

Vegetation/habitat management history: Hydrilla was discovered in the reservoir in 2006, and herbicide treatments were conducted in 2006 and 2007. Lakefront property owners hired a contractor to conduct herbicide treatment of hydrilla in 2016. Alligatorweed flea beetles were obtained from U. S. Army Corps of Engineers in Florida in spring 2014 and spring 2019 and released in the upper end of the reservoir to provide biological control of plants.

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 Lone Star Lake (TPWD unpublished). 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 2017).

Electrofishing – Largemouth Bass, Spotted 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. Ages for Largemouth Bass were determined using otoliths from 13 randomly-selected fish (range 13.0 to 14.9 inches).

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 and creel statistics.

Creel survey – A roving creel survey was conducted from March through May 2016. Angler interviews were conducted on 5 weekend days and 4 weekdays to assess angler use and fish catch/harvest statistics in accordance with the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

Habitat – A structural habitat survey was conducted in 2010. Vegetation surveys were conducted in 2015–2018 to monitor invasive species, and native aquatic plant abundance was assessed in 2018. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

Water level – Source for water level data was from U. S. Steel Tubular Products, Inc.

Results and Discussion

Habitat: A structural habitat survey was last conducted in 2010 (Bister 2011). Littoral zone structural habitat consisted primarily of natural shoreline (Table 6). Native submersed vegetation (133 acres) and hydrilla (158 acres) covered approximately 20% of the reservoir surface area (Table 7). Hydrilla has expanded in coverage following a 2016 herbicide treatment. Alligatorweed continues to persist in the upper end of the reservoir (Table 7). Water hyacinth was found in 2016 and 2017, but eradication efforts by TPWD have been successful.

Creel: Directed fishing effort by anglers was highest for Largemouth Bass (91%; Table 8). Total fishing effort for all species and direct expenditures at Lone Star Lake increased since the spring 2016 creel survey (Table 9). Most anglers traveled less than 50 miles to fish at Lone Star Lake during spring 2016 (Appendix C).

Prey species: Gizzard Shad, Threadfin Shad, and several species of sunfish were present, indicating good forage diversity. Gizzard Shad Index of Vulnerability (IOV) was low with 30% of fish being available to predators, and catch rate was 76.0/h, which was slightly higher than it was in 2016 (52.0/h) and 2014 (46.0/h; Figure 2). Redbreast Sunfish catch rate in 2018 (64.0/h) was lower than it was in 2016 (192.0/h) and 2014 (225.0/h) (Figure 3). Bluegill catch rate was 428.0/h in 2018, which was lower than it was in 2016 (772.0/h) but similar to 2014 (474.0/h) (Figure 4). Redear Sunfish catch rate declined from 130.0/h in 2014 to 39.0/h in 2018 (Figure 5). Additional sunfish species are listed in Appendix A. The sunfish population generally displayed a small size structure with few large (>8 inches) sunfish for anglers but abundant smaller fish for predators.

Black Basses: Spotted Bass were present but comprised a small part of the black bass community. The electrofishing catch rate of stock-length (≥ 8 inches) Largemouth Bass was 127.0/h in 2018, which was higher than 94.0/h in 2016 and 111.0/h in 2014 (Figure 6). Size structure, as measured by PSD, indicated that 31% of adult fish were at least 12 inches long and 21% of adults were at least 15 inches long. PSD was lower in 2018 compared to that of previous surveys in 2016 and 2014, which was a result of an increased number of fish between 8 and 11 inches (Figure 6). Largemouth Bass growth has been fast. In 2018, mean age at 14 inches (13.0 to 14.8 inches) was 2.1 years ($N = 13$; range = 1 – 4 years), which was similar to that of 2016 when Largemouth Bass mean age at 14 inches (13.1 to 14.9) was 2.4 years ($N = 13$; range = 2 – 6 years). Body condition was satisfactory, and similar to past surveys, with most inch groups having a mean $W_r > 90$. This indicated adequate prey availability for Largemouth Bass. Directed angling effort toward Largemouth Bass more than doubled in spring 2016 (13,702 h) compared to spring 2006 (5,776 h) (Table 10). Tournament effort was not documented in the 2006 survey, but in 2016 it was almost twice that of non-tournament Largemouth Bass effort. The angling catch rate in 2016 (0.9/h) was similar to that of 2006 (1.0/h). Creel survey statistics for Largemouth Bass are listed in Table 10. Anglers harvested an estimated 198 Largemouth Bass, which was much less than the harvest in 2006 (1,051 fish; Figure 7). Tournament anglers weighed in 1,827 fish during spring 2016 (Figure 8).

Fisheries Management Plan for Lone Star Lake, Texas

Prepared – July 2019

ISSUE 1: The Largemouth Bass population in Lone Star Lake consists of quality-sized fish and has the ability to produce larger fish. Previous creel and electrofishing surveys have documented fish greater than 20 inches in the reservoir. The current lake record is 11.75 pounds set in 2017. Fish stocking will continue to add pure Florida Largemouth Bass to the population.

MANAGEMENT STRATEGY

1. Stock Florida Largemouth Bass every other year beginning in 2020 at 1,000 fish/km of shoreline.
2. Conduct electrofishing surveys in 2020 and 2022 to monitor Largemouth Bass and prey fish populations.

ISSUE 2: Hydrilla had expanded in Lone Star Lake in recent years and has been treated with herbicides by a homeowner group in 2016. Hydrilla should be monitored to identify potential access problems in the future. Management of hydrilla may be necessary to minimize expansion throughout the reservoir. Alligatorweed is present and has been managed with alligatorweed flea beetles. Water hyacinth was discovered during the survey period but was eliminated with manual removal and herbicide treatment. Annual surveys are necessary to monitor the invasive aquatic vegetation.

MANAGEMENT STRATEGIES

1. Conduct annual invasive aquatic plant surveys to monitor abundance and provide technical guidance to the controlling authority and shoreline property owners.

ISSUE 3: The TDSHS issued a fish consumption advisory due to PCB contamination for all fishes in Lone Star Lake in 2005, which remains in place. The Texas Parks and Wildlife Department is required to post signs at access areas on waterbodies that have consumption advisories.

MANAGEMENT STRATEGY

1. Continue to maintain consumption advisory signs at Lone Star Lake boat ramps.
2. Continue to refer public to TDSHS for more detailed information related to the advisory.
3. Continue to promote fisheries that are non-consumptive (i.e., Largemouth Bass).

ISSUE 4: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels 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 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 (2019–2023)

Sport fish, forage fish, and other important fishes:

Sport fishes in Lone Star Lake include Largemouth Bass, Channel Catfish, White Crappie, and Black Crappie. Known important forage species include Redbreast Sunfish, Bluegill, Redear Sunfish, Gizzard Shad, and Threadfin Shad.

Low-Density or Underutilized Fisheries:

White Bass are present in this reservoir, but abundance is low due to lack of suitable spawning habitat. White and Black Crappie have been present in the past; however, few fish have been collected during trap netting surveys. Only two crappies were collected during the 2006 survey, and no crappie were collected during the 2010 survey. Spotted Bass are present but have been low in abundance in previous surveys. Few Spotted Bass were observed in the 2016 spring creel survey. Channel Catfish are present and have historically had moderate abundance. However, during the spring 2016 creel survey, directed effort toward catfish accounted for less than 1% of the total effort.

Survey objectives, fisheries metrics, and sampling objectives:

Black Bass: The last creel survey on Lone Star Lake (March 2016 through May 2016) estimated 91% of directed angling effort was for black bass. Largemouth Bass are managed with a 14-inch minimum length limit. Trend data on relative abundance and size structure have been collected biennially during fall nighttime electrofishing with 1 hour of effort at 12, 5-minute stations. Continuation of biennial trend data in this reservoir with fall nighttime electrofishing will allow for determination of any large-scale changes in the Largemouth Bass population that may spur further investigation.

Survey objectives for Largemouth Bass will include size structure (PSD and length frequency), relative abundance (CPUE-total and CPUE-stock), condition (mean Wr using lengths and weights from up to 10 fish per inch group). Largemouth Bass growth (mean age at 14 inches using a sample size of 13 fish between 13.0 and 14.9 inches) will also be evaluated.

A minimum of 12 randomly selected 5-min electrofishing sites will be sampled in 2020 and 2022, but sampling will continue at random sites until 50 stock-size Largemouth Bass are collected and the RSE of CPUE-S is ≤ 25 . Past sampling has achieved an RSE of CPUE-S < 25 , so we are confident we will achieve this level of precision with the minimum sampling effort. However, an additional three random stations will be determined in the event extra sampling is necessary to meet sampling objectives. A maximum of 15 stations will be sampled.

Forage Fish: Trend data on relative abundance and size structure of sunfish, Gizzard Shad and Threadfin Shad have been collected biennially. Continuation of sampling, as per Largemouth Bass above, will allow for monitoring of large-scale changes in sunfish and shad relative abundance and size structure. No additional effort will be expended beyond 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 ≥ 8 inches total length will be determined from their length/weight data with maximum of 10 fish per inch class.

Habitat: Hydrilla is present and annual surveys are required to monitor its coverage as well as the presence of any other invasive species. Annual invasive aquatic vegetation surveys will be conducted to monitor coverage of hydrilla or other invasive species.

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.
- Bister, T. J. 2011. Lone Star Lake, 2010 fisheries management survey report. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-1, 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.
- 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.
- Wright, L. D., and T. J. Bister. 2015. Lone Star Lake, 2014 fisheries management survey report. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-3, Austin.

Tables and Figures

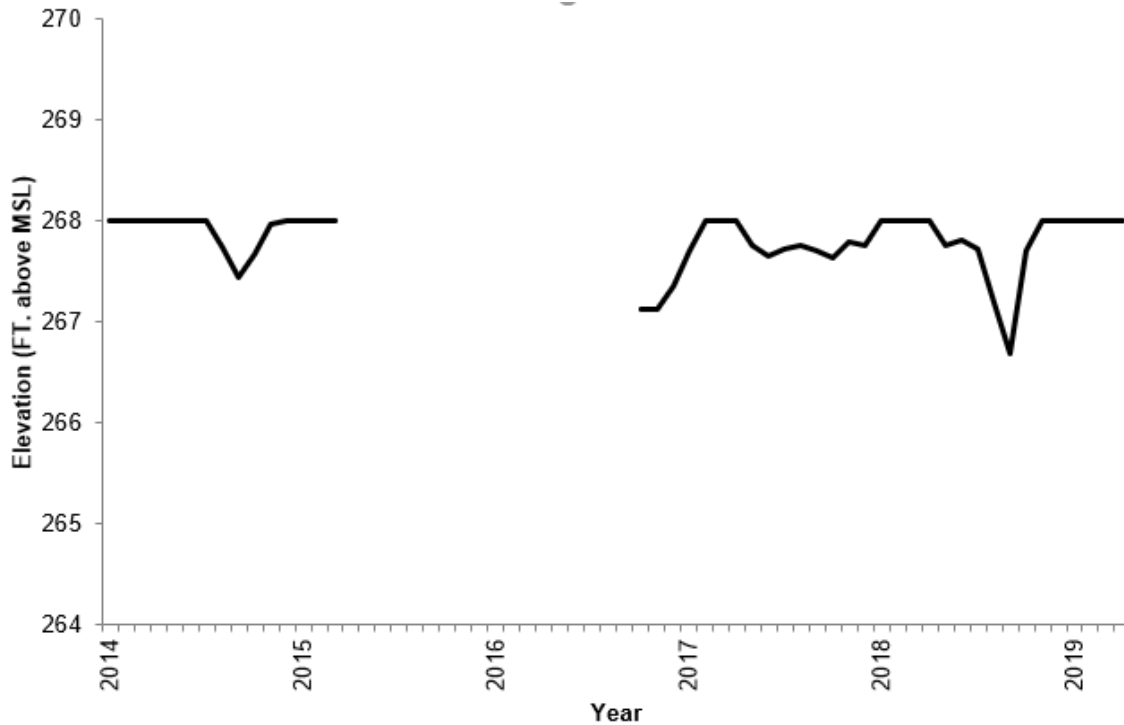


Figure 1. Water level elevations in feet above mean sea level (MSL) recorded for Lone Star Lake, Texas. Average monthly level was calculated from Monday elevation readings. Water level above conservation pool elevation (268 feet) was recorded as 268 feet. Water level data source was U.S. Steel Tubular Products, Inc.

Table 1. Characteristics of Lone Star Lake, Texas.

Characteristic	Description
Year constructed	1943
Controlling authority	U.S. Steel Tubular Products, Inc.
County	Morris
Reservoir type	Mainstream
Shoreline Development Index (SDI)	2.6
Conductivity	218 μ S/cm

Table 2. Boat ramp characteristics for Lone Star Lake, Texas, August 2018. Reservoir elevation at time of survey was 267 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Lone Star City Park	32.94678 -94.71485	Y	10	263	Needs repair, ramp is cracked
FM 997 County Ramp	32.96302 -94.72221	Y	10	263	Excellent, no access issues

Table 3. Harvest regulations for Lone Star Lake, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (in any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Palmetto	5	18-inch minimum
Bass, Largemouth	5 ^a	14-inch minimum
Bass: Spotted and Guadalupe	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 Lone Star Lake, Texas. FGL = fingerling; FRY = fry; UNK = unknown.

Species	Year	Number	Size
Palmetto Bass	1983	16,500	UNK
	1997	15,253	FGL
	1999	7,636	FGL
	2002	15,264	FGL
	2004	14,300	FGL
	2005	14,328	FGL
	Total	83,281	
Florida Largemouth Bass	1990	153,238	FRY
	1995	75,013	FGL
	2008	151,608	FGL
	2009	152,108	FGL
	2015	155,063	FGL
	2018	163,430	FGL
	Total	850,460	

Table 5. Objective-based sampling plan components for Lone Star Lake, Texas 2018–2019.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Stock	RSE–Stock ≤ 25
	Size structure	PSD, length frequency	$N \geq 50$ stock
	Age-and-growth	Age at 14 inches	$N = 13, 13.0 - 14.9$ inches
	Condition	W_r	10 fish/inch group (max)

Table 6. Survey of structural habitat types, Lake Lone Star, Texas, 2010 (Bister 2011). Shoreline habitat type units are in miles.

Habitat type	Estimate	% of total
Bulkhead	2.6 miles	14.0
Natural	11.2 miles	60.2
Natural with boat docks	2.8 miles	15.1
Rocky	1.5 miles	8.1
Rocky with boat docks	0.5 miles	2.7

Table 7. Survey of aquatic vegetation, Lone Star Lake, Texas, 2015–2018. Surface area (acres) is listed with percent of total reservoir surface area in parentheses. Native vegetation was not surveyed 2015–2017.

Vegetation	2015	2016	2017	2018
Native submersed				133 (8.8)
Native floating-leaved				63 (4.2)
Native emergent				2 (0.1)
Non-native				
Alligatorweed (Tier II)*	7 (0.5)	13 (0.9)	11 (0.7)	6 (0.4)
Hydrilla (Tier II)*	38 (2.5)	4 (0.3)	8 (0.5)	158 (10.4)
Water hyacinth (Tier I)*	0 (0)	<1 (0.1)	<1 (0.1)	0 (0)

*Tier I is immediate response, Tier II is maintenance status, and Tier III is watch status

Table 8. Percent directed angler effort by species for Lone Star Lake, Texas, 2006 and 2016. Survey periods were from 1 March through 31 May.

Species	2006	2016
Channel Catfish	5.4	0.8
Sunfishes	0	1.2
Largemouth Bass	82.0	91.0
Crappie	9.5	4.3
Anything	3.1	2.7

Table 9. Total fishing effort (h) for all species and total directed expenditures at Lone Star Lake, Texas, 2006 and 2016. Survey periods were from 1 March through 31 May. Relative standard error is in parentheses.

Creel statistic	2006	2016
Total fishing effort	7,003 (24)	15,042 (36)
Total directed expenditures	\$32,436 (82)	\$70,298 (41)

Gizzard Shad

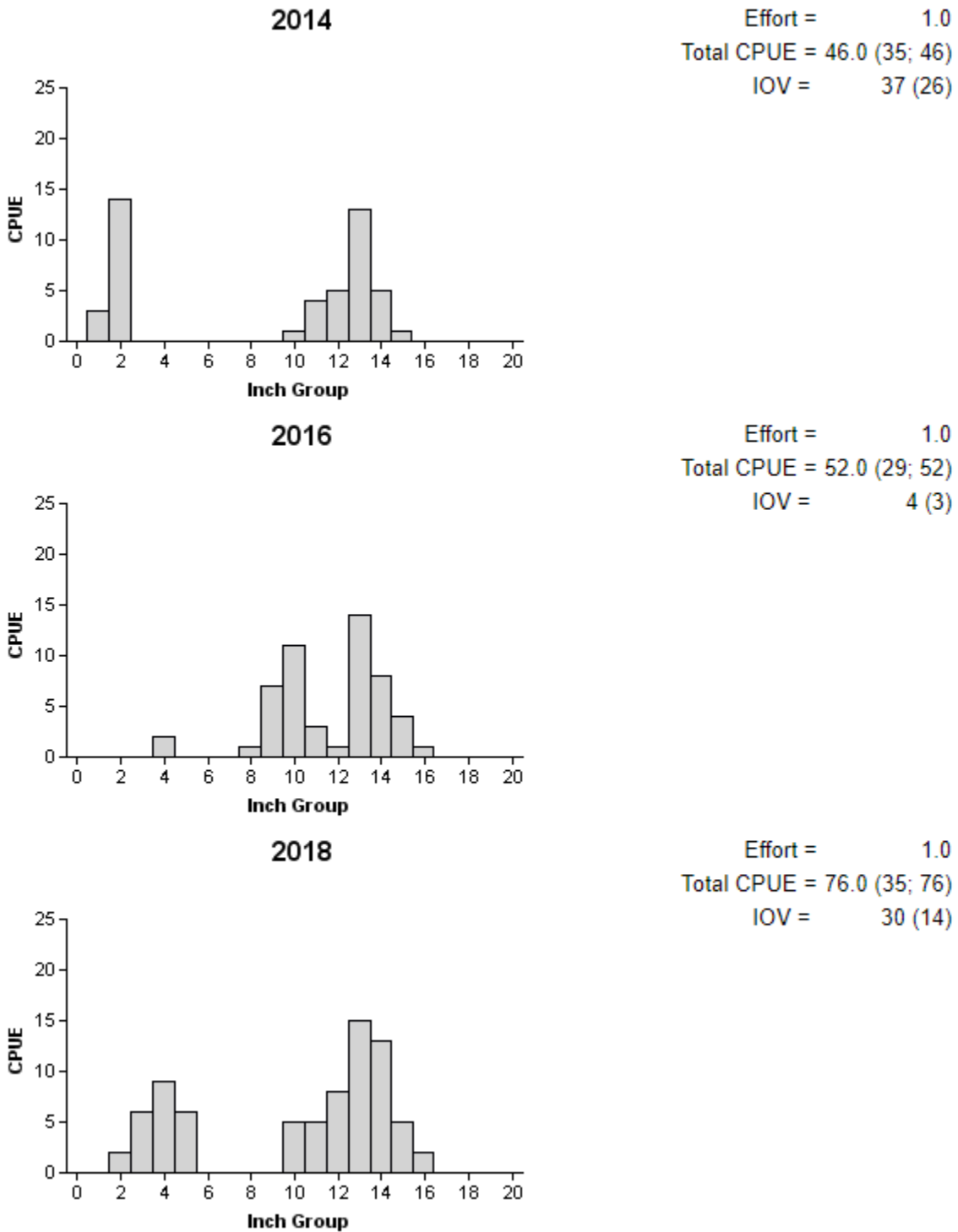


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lone Star Lake, Texas, 2014, 2016, and 2018.

Redbreast Sunfish

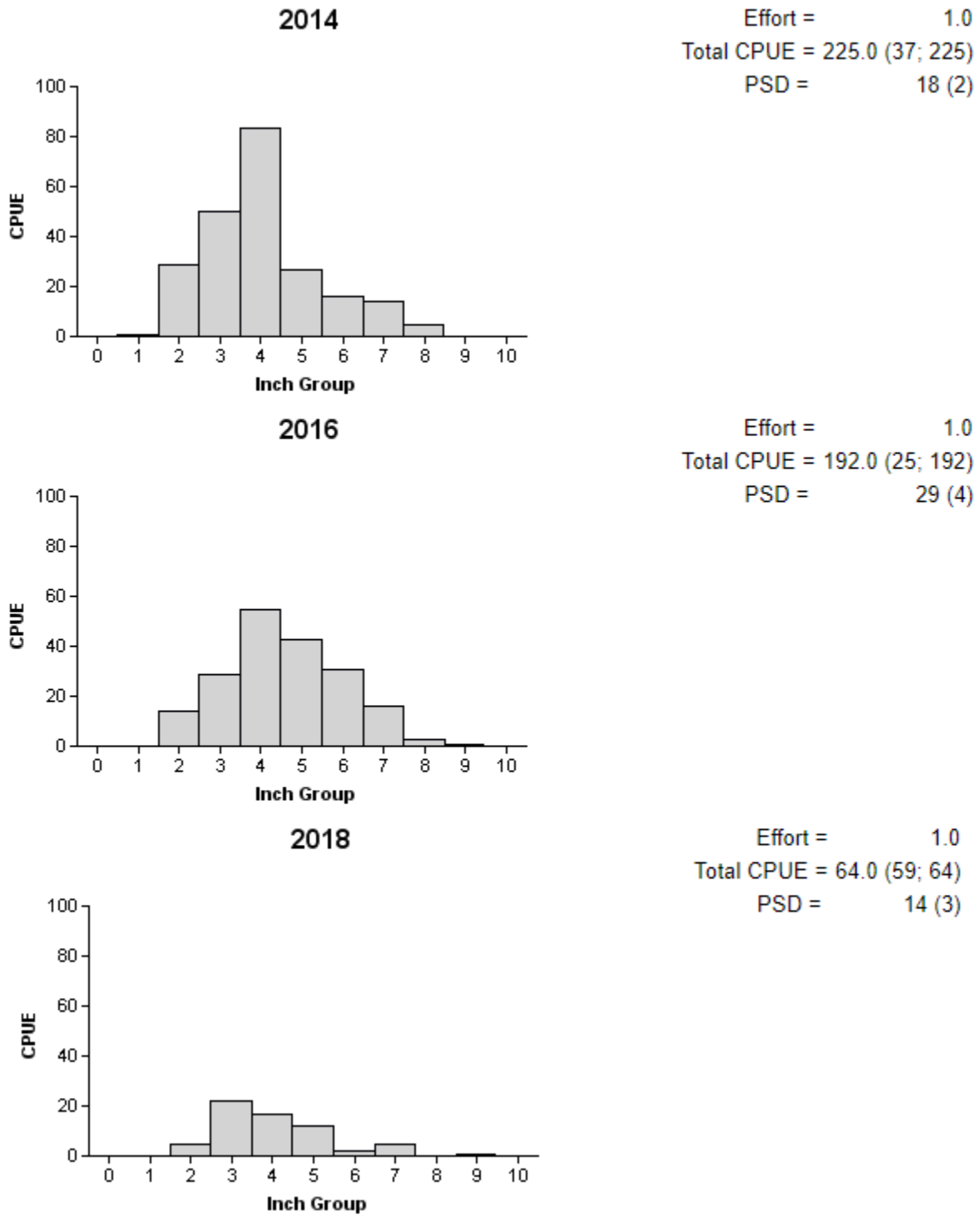
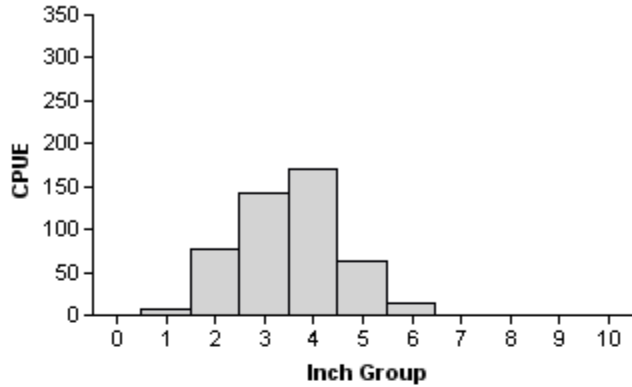


Figure 3. Number of Redbreast Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lone Star Lake, Texas, 2014, 2016, and 2018.

Bluegill

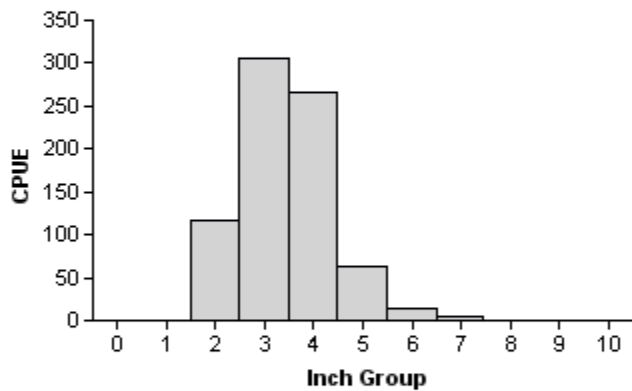
2014

Effort = 1.0
 Total CPUE = 474.0 (17; 474)
 PSD = 4 (1)



2016

Effort = 1.0
 Total CPUE = 772.0 (17; 772)
 PSD = 3 (1)



2018

Effort = 1.0
 Total CPUE = 428.0 (18; 428)
 PSD = 7 (2)

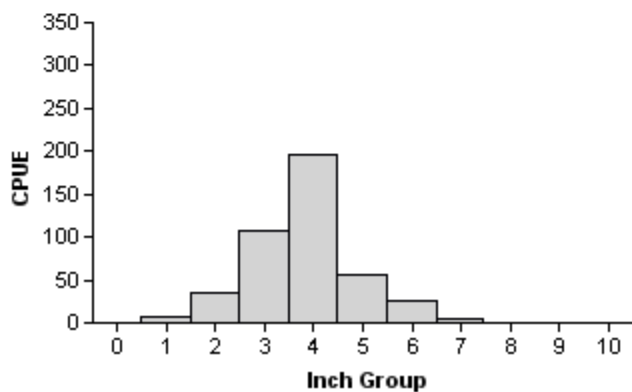


Figure 4. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lone Star Lake, Texas, 2014, 2016, and 2018.

Redear Sunfish

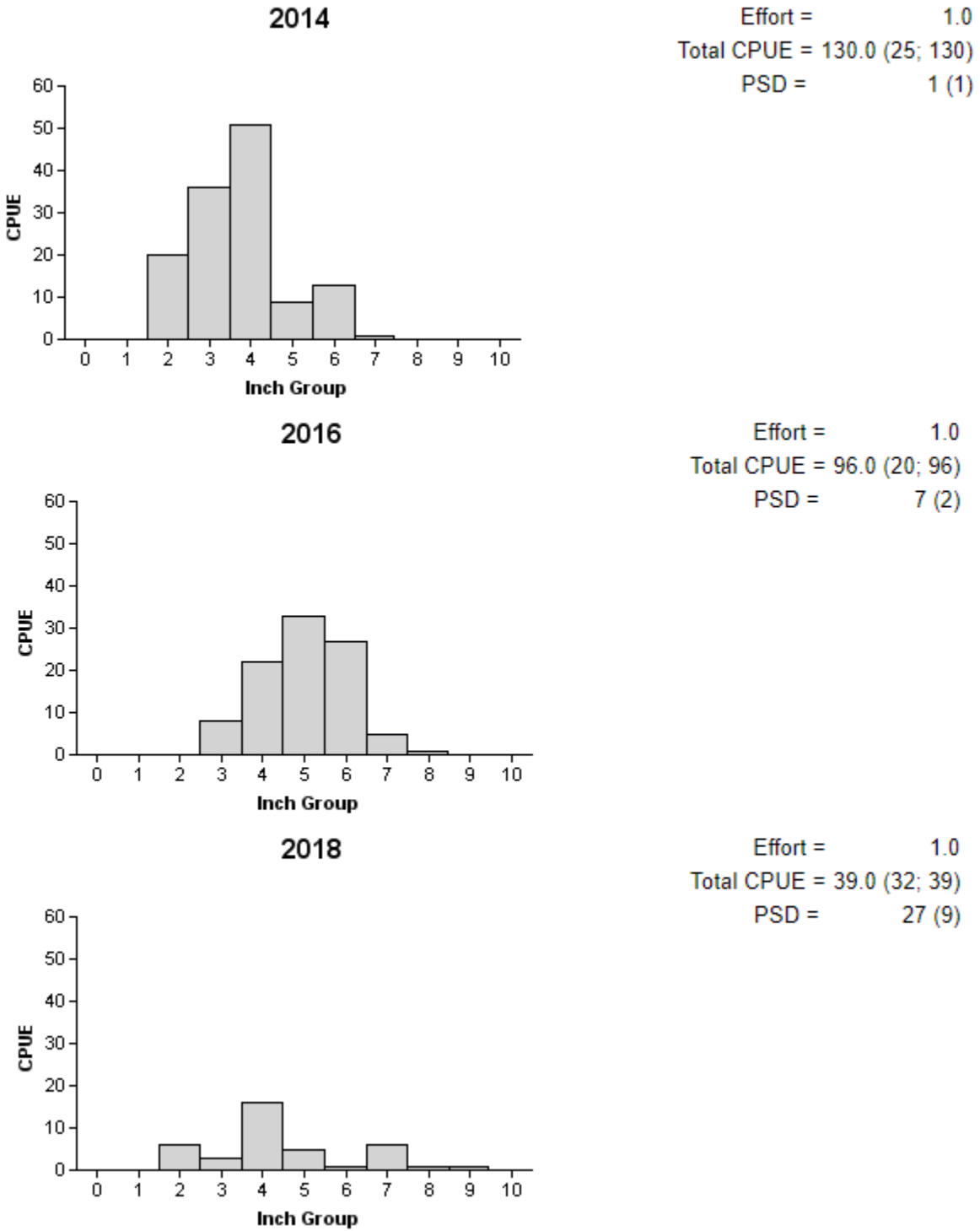


Figure 5. Number of Redear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lone Star Lake, Texas, 2014, 2016, and 2018.

Largemouth Bass

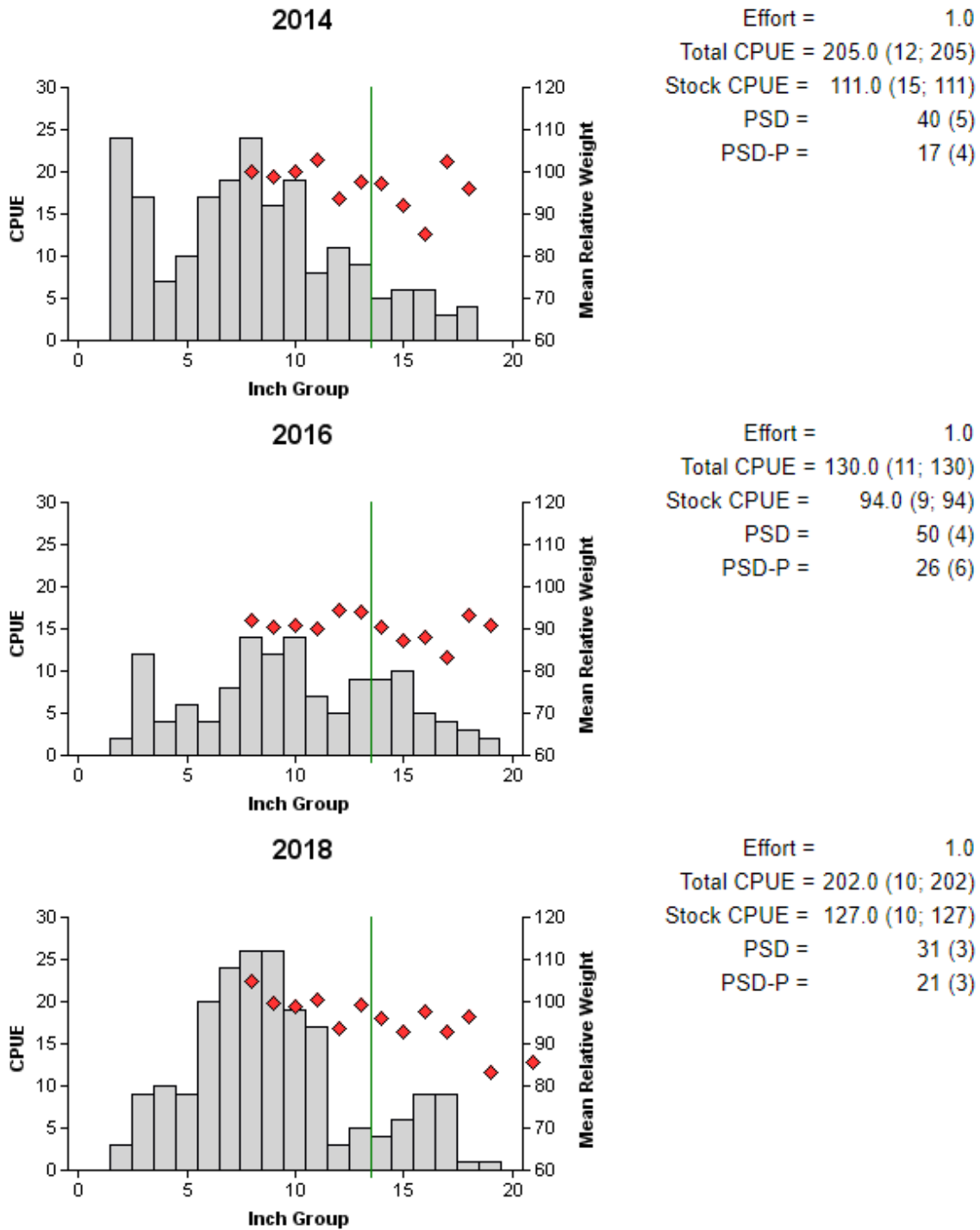


Figure 6. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lone Star Lake, Texas, 2014, 2016, and 2018. Vertical line indicates minimum length limit.

Table 10. Creel survey statistics for Largemouth Bass at Lone Star Lake, Texas, from March through May 2006 and March through May 2016. Catch rate is for all anglers targeting Largemouth Bass. Harvest is partitioned by the estimated number of fish harvested by non-tournament anglers and the number of fish retained by tournament anglers for weigh-in and release. The estimated number of fish released by weight category is for anglers targeting Largemouth Bass. Relative standard errors (RSE) are in parentheses.

Statistic	2006	2016
Surface area (acres)	1,516	1,516
Directed angling effort (h)		
Tournament	0 (NA)	8,938 (38)
Non-tournament	5,776 (27)	4,764 (40)
All black bass anglers combined	5,776 (27)	13,702 (37)
Angling effort/acre	3.8 (27)	9.0 (40)
Catch rate (number/h)	1.0 (24)	0.9 (10)
Harvest		
Non-tournament harvest	1,051 (63)	198 (84)
Harvest/acre	0.7 (63)	0.1 (84)
Tournament weigh-in and release	0 (NA)	1,827 (68)
Release by weight		
<4.0 lbs	NA	12,921 (44)
4.0-6.9 lbs	NA	291 (82)
7.0-9.9 lbs	NA	0 (NA)
≥10.0 lbs	NA	0 (NA)
Percent legal released (non-tournament)	66	86

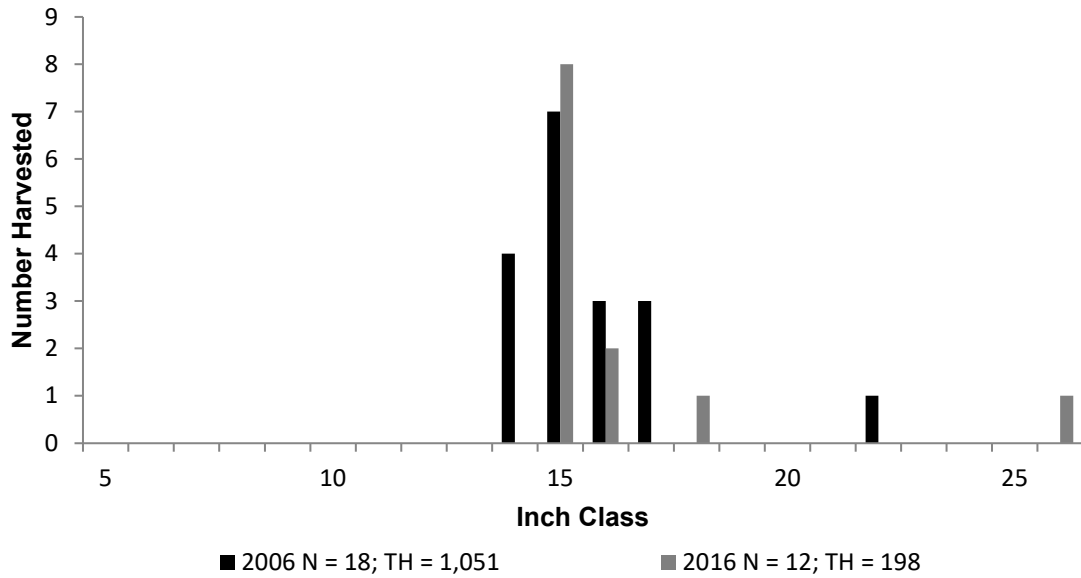


Figure 7. Length frequency of non-tournament harvested Largemouth Bass observed during creel surveys at Lone Star Lake, Texas, March through May 2006 and March through May 2016, all anglers combined. N is the number of harvested Largemouth Bass observed during creel surveys, and TH is the estimated non-tournament harvest for the creel period.

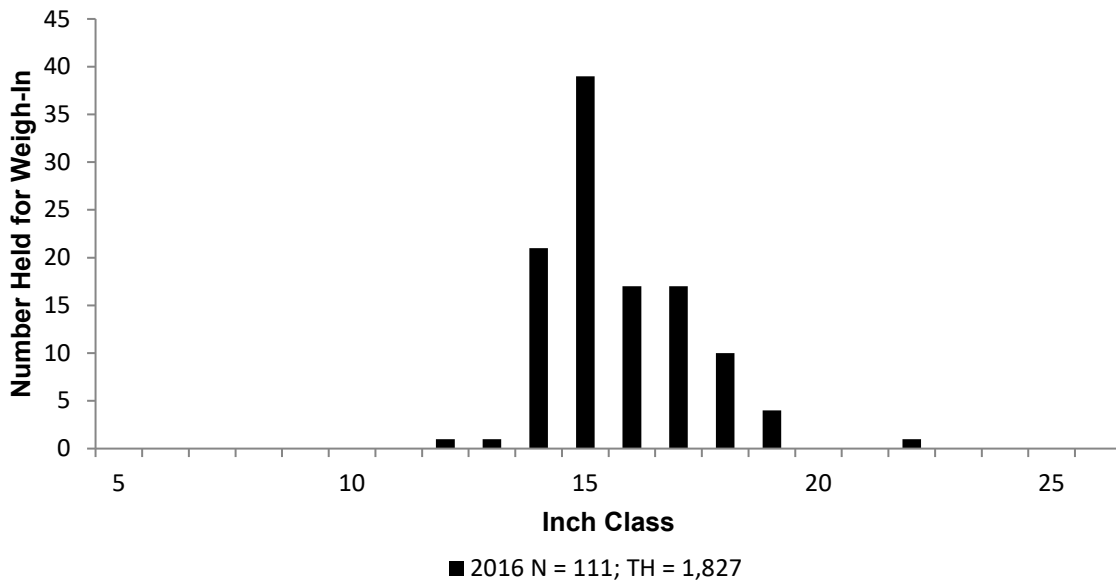


Figure 8. Length frequency of Largemouth Bass observed during creel surveys held for live weigh-in and release at Lone Star Lake, Texas, March through May 2016, all anglers combined. N is the number of Largemouth Bass observed during creel surveys, and TH is the estimated tournament fish weighed and released for the creel period.

Proposed Sampling Schedule

Table 11. Proposed sampling schedule for Lone Star Lake, Texas. Survey period is June through May. Electrofishing surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

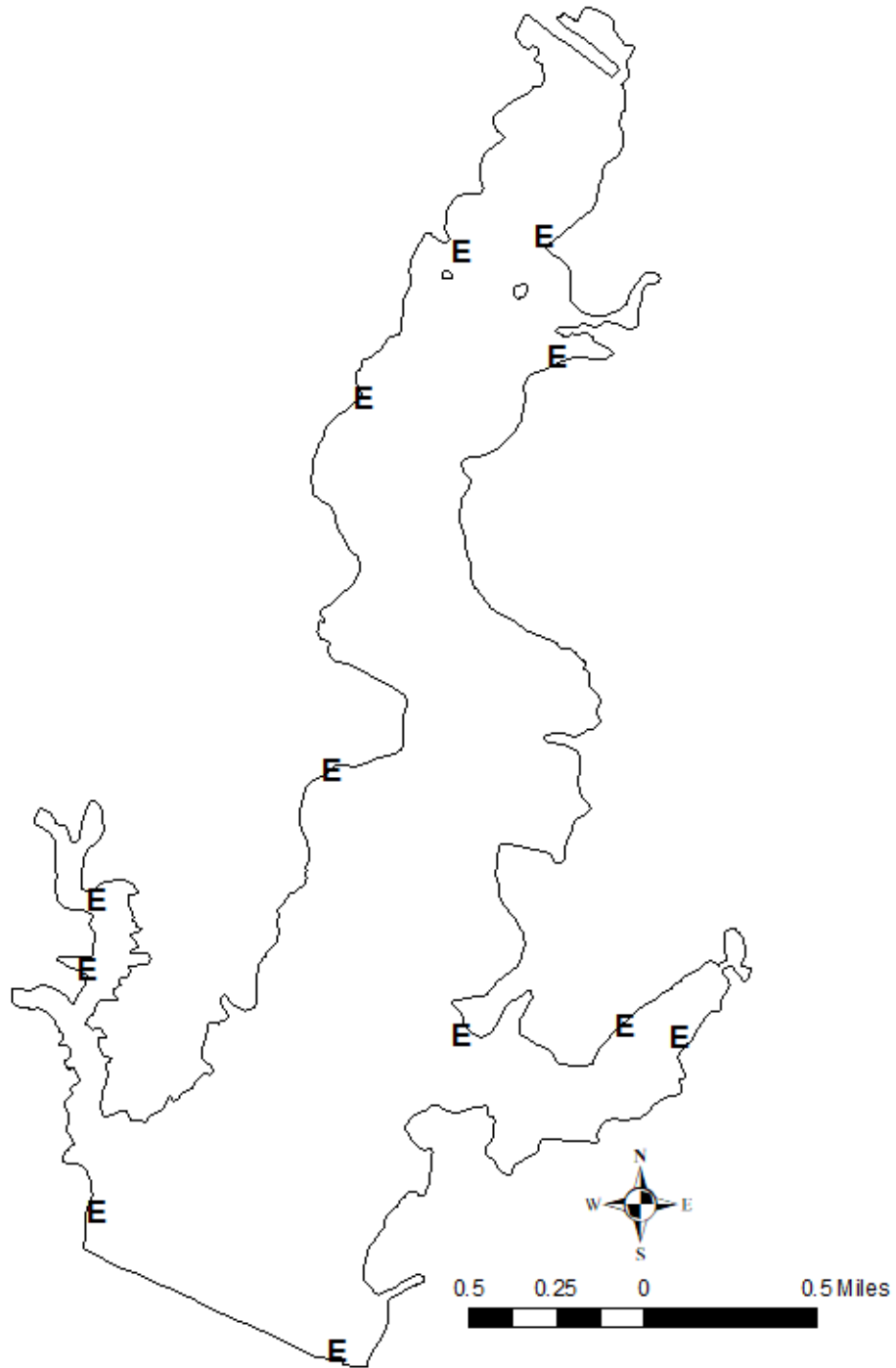
	Survey year			
	2019-2020	2020-2021	2021-2022	2022-2023
Angler Access				S
Structural Habitat				S
Vegetation	A	A	A	S
Electrofishing – Fall		A		S
Report				S

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 Lone Star Lake, Texas, 2018-2019. Sampling effort was 1 hour for electrofishing.

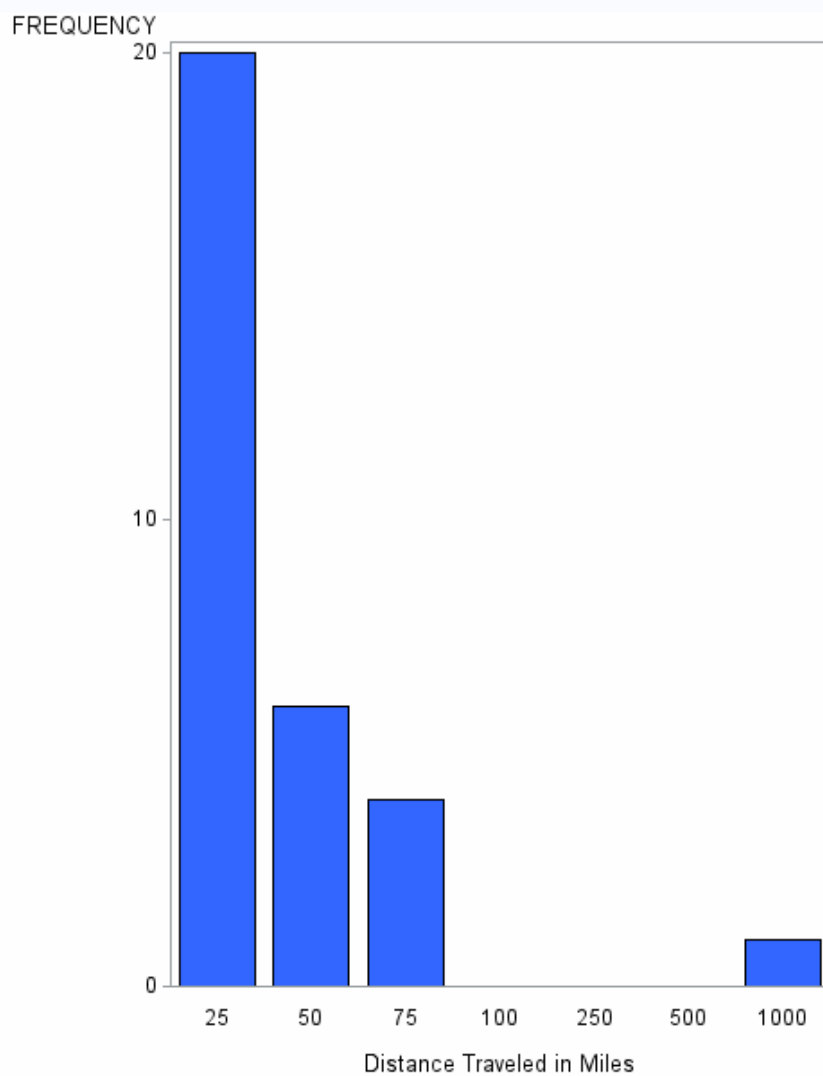
Species	Electrofishing	
	N	CPUE
Gizzard Shad	76	76.0 (35)
Threadfin Shad	125	125.0 (25)
Redbreast Sunfish	64	64.0 (59)
Warmouth	7	7.0 (33)
Orangespotted Sunfish	4	4.0 (100)
Bluegill	428	428.0 (18)
Dollar Sunfish	58	58.0 (52)
Longear Sunfish	45	45.0 (86)
Redear Sunfish	39	39.0 (32)
Redspotted Sunfish	3	3.0 (72)
Bantam Sunfish	5	5.0 (100)
Spotted Bass	10	10.0 (100)
Largemouth Bass	202	202.0 (10)

APPENDIX B – Map of sampling locations



Location of sampling sites, Lone Star Lake, Texas, 2018-2019. Electrofishing stations are indicated by E. Water level was near full pool at time of sampling

APPENDIX C – Reporting of creel ZIP code data



Frequency of anglers that traveled various distances (miles) to Lone Star Lake, Texas, as determined from the March 2016 through May 2016 creel survey.



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 T3200-1327 (08/19)

TPWD receives funds from the USFWS. TPWD prohibits discrimination on the basis of race, color, religion, national origin, disability, age, and gender, pursuant to state and federal law. To request an accommodation or obtain information in an alternative format, please contact TPWD on a Text Telephone (TTY) at (512) 389-8915 or by Relay Texas at 7-1-1 or (800) 735-2989 or by email at accessibility@tpwd.texas.gov. If you believe you have been discriminated against by TPWD, please contact TPWD, 4200 Smith School Road, Austin, TX 78744, or the U.S. Fish and Wildlife Service, Office for Diversity and Workforce Management, 5275 Leesburg Pike, Falls Church, VA 22041.