Tradinghouse Creek Reservoir

2020 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 Tradinghouse Creek Reservoir were surveyed in 2020 using electrofishing and in 2021 using gill nets. Historical data are presented with the 2020-2021 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: Tradinghouse Creek Reservoir is a 1,793-acre reservoir located 15 miles east of Waco in McLennan County, Texas. Water level was 2 feet below conservation pool (445 feet above mean sea level [MSL]) during the summer 2020 vegetation survey, at conservation pool during the fall 2020 electrofishing survey and near conservation pool during the 2021 gill net survey. Habitat features were dominated by natural shorelines, as well as native emergent vegetation.

Management History: Important sport fish include Largemouth Bass, Channel Catfish, White Bass and crappies. The Red Drum fishery was completely lost between 2009 and 2010 due to the dismantling of the power plant and consequent loss of artificially warm winter water temperatures. Red Drum stockings were discontinued, and Red Drum regulations were removed. The management plan from 2012 included annual monitoring of hydrilla and giant reed; both were monitored through 2014 but never required control efforts. More recent management efforts focused on posting appropriate aquatic invasive species (AIS) signage at access points and providing technical support and informational materials for the Texas Parks and Wildlife Department's (TPWD) "Clean, Drain and Dry" campaign. Approximately 20 bamboo crappie condos were placed into the reservoir as part of an artificial fish habitat addition project during 2015. Management efforts from 2020-2021 include the addition of artificial fish habitat into the reservoir and aquatic vegetation, boater access, electrofishing, and gill netting surveys.

Fish Community

- **Prey species:** All major forage species were collected below their historical average catch rates and 69% of Gizzard Shad were a suitable size for predators. No Threadfin Shad were collected.
- **Catfishes:** Channel Catfish catch rates were among the highest on record, mean relative weight was good to excellent, and most collected individuals were of legal-length and available to anglers. No Blue or Flathead Catfish were observed.
- **White Bass:** White Bass remain a low-density population however mean relative weight was generally good.
- **Largemouth Bass:** Largemouth Bass were collected in higher numbers than the previous two surveys and the proportion of legal-length bass nearly doubled from 2016. Mean relative weight was generally good across length classes.
- **Crappies:** White Crappie remain a low-density population however mean relative weight was good to excellent. Black Crappie are still present in low numbers.

Management Strategies: The sport fishes in Tradinghouse Creek Reservoir will continue to be managed with statewide regulations. We will continue to maintain AIS efforts. Access, vegetation, and electrofishing surveys will be conducted in summer and fall 2024 and trap netting and gill netting surveys will be conducted in 2025. We will also work with interested partners to complete additional artificial fish habitat projects pending funding sources and reservoir priorities.

Introduction

This document is a summary of fisheries data collected from Tradinghouse Creek Reservoir in 2020-2021. 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 - 2021 data for comparison.

Reservoir Description

Tradinghouse Creek Reservoir is a 1,793-acre reservoir located 15 miles east of Waco, McLennan County, Texas. The reservoir was constructed in 1968 by Texas Utilities Generating Company (TXU) to serve as a cooling-reservoir for electrical power generation; however, the power plant is no longer in use. McLennan County now operates the reservoir, boat ramps and park areas for recreation. The reservoir is eutrophic, with water transparencies typically ranging from 2 to 3 feet. Habitat at the time of sampling consisted mainly of natural shoreline, rock riprap and aquatic vegetation. Vegetation is dominated by cattail, pondweed and bulrush. Although there are no USGS sources for water level data, the McLennan County Parks Department reported water level was two feet low during the summer 2020 vegetation survey, at conservation pool (445) during the 2020 electrofishing survey and near conservation pool during the spring 2021 gill net survey. Other descriptive characteristics for Tradinghouse Creek Reservoir are in Table 1.

Angler Access

Bank and boat access on Tradinghouse Creek Reservoir are good. Boat access consists of four ramps on the eastern side of the reservoir which are controlled by McLennan County. All four boat ramps were useable during the recent 2020/2021 surveys, and there are currently no access issues when the reservoir is full. Shoreline access is excellent along the eastern one-third of the reservoir. Additional boat ramp characteristics are in Table 2.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Baird and Tibbs 2017) included:

1. Continuing communications with McLennan County to facilitate the Boater Access Grant work awarded for Tradinghouse Creek Reservoir and its facilities.

   Action: The Waco District has maintained communication with McLennan County since the last report, and McLennan County completed its Boater Access Grant work during summer 2020, which included a boat ramp extension, pier, restroom facility, parking lot extension and parking lot re-surfacing.

2. Working with partners to build new fish habitat structures and deploy into Tradinghouse Creek Reservoir, updating fish attractor map and coordinates on the TPWD website, utilizing side scan sonar to monitor artificial fish habitat structure condition as needed, and releasing a news article describing the location(s) and benefits of the fish attractors to the fishery.

   Action: In addition to the 20 bamboo crappie condos placed in the reservoir in 2015, a freshwater fish reef consisting of six rectangular PVC structures (Georgia structures) was deployed in one other location during summer 2020. Coordinates and a map are being made available on the TPWD website and these efforts are being showcased on Facebook and through discussions with constituents and anglers whenever possible.

3. Investigating the use of spawning structures to increase Channel Catfish recruitment.

> **Action:** This work has not yet been accomplished but the Waco District still plans to look into the use of spawning structures to try to increase Channel Catfish recruitment in Tradinghouse Creek Reservoir.

4. Monitoring the area of water hyacinth infestation in 2017 and 2018 and manually removing propagules if observed. Determine future monitoring efforts based on the presence or absence of propagules and coordinate with the aquatic vegetation and habitat enhancement staff and controlling authority to develop a treatment plan if necessary.

> **Action:** The Waco District monitored water hyacinth since the last report, and the plant has not been observed since March 2017.

5. Cooperating with McLennan County to maintain appropriate AIS signage at access points around the reservoir. Educate the public about AIS and make a speaking point about AIS when presenting to constituent and user groups. Keep track of (i.e., map) all existing and future interbasin water transfer routes to facilitate potential invasive species responses.

> **Action:** Invasive species signage was posted at Tradinghouse Creek Reservoir access points during summer 2013 and have been maintained as needed. District staff have made a speaking point about AIS, how to prevent their spread, and potential effects on Tradinghouse Creek Reservoir while speaking to anglers over the past several years. Interbasin water transfers will be updated as needed.

Harvest regulation history: Sportfish in Tradinghouse Creek Reservoir are currently managed with statewide regulations. Current harvest regulations are in Table 3.

Stocking history: Tradinghouse Creek Reservoir was last stocked with Florida Largemouth Bass in 2017 and 2018. The complete stocking history is in Table 4.

Vegetation/habitat management history: Hydrilla was first discovered in Tradinghouse Creek Reservoir in 1996; see Baird and Tibbs (2017) for a synopsis on hydrilla coverage and management history. Water hyacinth was reported by a local fishing guide in January 2017. Waco District staff confirmed its presence between the two main boat ramps on the south end of the reservoir and manually removed all visible plants. A follow-up visit in March 2017 recovered an additional half-dozen or so smaller water hyacinth plants in the same vicinity of the reservoir. No additional water hyacinth plants were found during 2018 monitoring trips or during the summer 2020 vegetation survey.

Water transfer: There are no interbasin transfers within Tradinghouse Creek Reservoir.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Tradinghouse Creek Reservoir (Baird and Tibbs 2017). 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, sunfishes and Gizzard Shad were collected by daytime electrofishing (1.0 hour at 12, 5-min stations in fall). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

Gill netting – Channel Catfish and White Bass were collected by gill netting (5 net nights at 5 stations in spring). Catch per unit effort (CPUE) for gill netting was recorded as the number of fish caught per net night (fish/nn).

Genetics – Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017). Micro-satellite DNA analysis has been used to determine genetic composition of individual fish since 2005.

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 statistics.

Habitat – The 2010 structural habitat survey was conducted according to Tibbs and Baird (2009). The 2016 and 2020 vegetation surveys were conducted using an adaptation of the point method (TPWD, Inland Fisheries Division, unpublished manual revised 2017). Vegetation points were randomly generated on the shoreline and averaged a minimum of two points per shoreline mile. Aquatic vegetation has always been found close to the shore in Tradinghouse Creek Reservoir, so stratifying the random points to exclude deep-water areas increased precision and resulted in better data.

Water level – Source for water level data was McLennan County Parks and Recreation.

Results and Discussion

Habitat: The 2010 structural habitat survey estimated 14.9 miles of natural shoreline, 2.3 miles of rock shoreline, and 1.9 miles of gravel shoreline (Table 6; Tibbs and Baird 2009). The littoral zone vegetation encountered during summer 2020 consisted mostly of cattail, pondweed, and bulrush. The complete summer 2020 vegetation survey is in Table 7.

Prey species: The Fall 2020 electrofishing catch rate of Gizzard Shad (Figure 1) was 154.0/h; no Threadfin Shad were collected (Appendices A and B). The Index of vulnerability (IOV) for Gizzard Shad was fair and 69% of the population was available to existing predators as forage. Bluegill size structure has remained consistent over the last three surveys and supports small numbers of larger panfish for anglers (Figure 2). Other important forage species collected were Redear Sunfish (53.0/h) and Longear Sunfish (23.0/h; Appendices A and B).

Channel Catfish: Channel Catfish were collected with gill nets at 15.4/nn in 2021, similar to the record high catch rate of 15.6/nn in 2009, and well above the historical average of 8.6/nn (Figure 3; Appendices A and B). Seventy-three stock-length individuals were collected so the size structure objective (i.e., minimum of 50 stock-length fish) was easily met. However, the abundance objective of achieving an RSE equal to or less than 25, was not met since the RSE-Stock was 32 (Figure 3). Size distribution has stayed relatively consistent since 2013, and the population is dominated by legal-length fish. Mean relative

weight (i.e., body condition) remained excellent overall and improved with increasing length, similar to previous surveys.

White Bass: The gill net catch rate for White Bass was 3.6/nn in 2021 compared to 1.6/nn and 3.2/nn in 2017 and 2013 respectively (Figure 4; Appendices A and B). This catch rate equates to only 18 stock-length fish with an RSE of 56, so neither the size structure nor abundance objective was met. Mean relative weight was generally good (Figure 4).

Largemouth Bass: Largemouth Bass were collected by electrofishing at 157.0/h in 2020. This was an improvement over the previous two surveys (98/h in 2016 and 140/h in 2012) but below the historical average (Figure 5; Appendices A and B). The objectives for Largemouth Bass abundance (CPUE$_{-Stock}$ with an RSE ≤ 25) and size structure (N$_{-Stock}$ ≥ 50) were achieved with 53 stock-length fish collected and an RSE of 19 (Figure 5). Size distribution has remained relatively consistent since 2012, and the population is dominated by sub-legal fish. The catch of legal-length bass however did increase from 12.0/h in 2016 to 21.0/h in 2020. Mean relative weight was generally good across length classes (Figure 5). Genetic samples analyzed in 2016 showed an improved Florida allele percentage (67%; Table 8).

Crappies: The gill net catch rate for White Crappie was 1.6/nn in 2021, identical to the catch rates from the two previous surveys (Figure 6; Appendices A and B). This catch rate equates to only 8 stock-length fish with an RSE of 54, so neither the size structure nor abundance objective was met. Mean relative weight was generally good to excellent (Figure 6).

Fisheries Management Plan for Tradinghouse Creek Reservoir, Texas

Prepared – July 2021

ISSUE 1:   Trap netting for crappies became an optional survey in 2009 and since earlier trap net surveys on Tradinghouse Creek Reservoir exhibited poor results, data on crappies has relied heavily on gill net catches ever since. Recent sampling evaluations on Granbury, Fort Parker and Limestone Reservoirs found very good results in spring trap netting surveys for crappies. Spring trap netting collected more individuals than winter trap netting or spring gill netting, showed a high percentage of legal-length fish and evidence of recent recruitment on all three reservoirs. Based on population structure indices and length-frequency histograms from these evaluations, spring trap netting might provide better data for crappies on Tradinghouse Creek Reservoir as well.

MANAGEMENT STRATEGY

1. Test the effectiveness of spring trap netting for crappies on Tradinghouse Creek Reservoir in spring 2025 and review that effort during the next report period.

2. Continue collecting data on crappies during gill netting efforts.

ISSUE 2:   Although emergent vegetation can provide good fisheries habitat at full conservation pool elevation, its usefulness declines considerably at lower water elevations. Artificial fish structures deployed into Tradinghouse Creek Reservoir in 2015 and 2020 received a lot of good publicity and created new areas for anglers to fish. The fishery at Tradinghouse Creek Reservoir could benefit from more projects like this.

MANAGEMENT STRATEGIES

1. Work with interested partners to install new artificial fish reefs in the reservoir.

2. Take advantage of funding sources to purchase materials for artificial habitat when available.

ISSUE 3:   Many AIS 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 AIS are significant. Additionally, the potential for AIS 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 maintain AIS signage at access points around the reservoir.

2. Educate the public about AIS through the use of media and the internet.

3. Make a speaking point about AIS when presenting to constituent and user groups.

4. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential AIS responses.

Objective-Based Sampling Plan and Schedule (2021–2025)

Sport fish, forage fish, and other important fishes

Sport fishes in Tradinghouse Creek Reservoir include Largemouth Bass, White Bass, Channel Catfish, and White Crappie. Important forage fish species include Gizzard Shad, Threadfin Shad, Bluegill, Redear Sunfish and Longear Sunfish.

Low-density fisheries

Spotted Bass, Flathead Catfish, and Black Crappie occur in very low abundance in Tradinghouse Creek Reservoir and are generally caught incidentally to other targeted species. We will continue collecting and reporting data for these species while conducting surveys and upgrade their status if appropriate.

Survey objectives, fisheries metrics, and sampling objectives

Fall Electrofishing: This survey will be used to monitor Largemouth Bass and primary forage species (Bluegill, Longear Sunfish, Redear Sunfish, Gizzard Shad and Threadfin Shad). A minimum of 12, random five-minute daytime electrofishing stations will be sampled in fall 2024. The objectives of the electrofishing survey will be general monitoring (i.e., CPUE, size structure, and mean relative weight) and prevalence of Northern and Florida Largemouth Bass alleles (i.e., fin clips from 30 random individuals) to characterize the Largemouth Bass population and make comparisons with historical and future data. Abundance target precision will be a RSE ≤ 25 for CPUE $_{Total}$ and CPUE $_{Stock}$, and target sample size for size structure will be N ≥ 50 stock, allowing us to calculate PSDs with 80% confidence. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group ≥ stock-length. If objectives are not met in 12 stations, but catch rates indicate they're attainable, sampling will continue at random stations until the objectives are met. Since the primary forage species objectives are exploratory, no target precision or target sampling sizes will be sought for these species; additional sampling will not be necessary beyond that which is done for Largemouth Bass.

Spring Trap Netting: This survey will be used to monitor White Crappie. Recent catch rate comparisons observed on Granbury (2017-2018), Fort Parker (2018-2019) and Limestone (2020-2021) suggests spring trap netting collects superior CPUE, population structure and mean relative weight data (on these reservoirs) for monitoring purposes (Baird and Tibbs 2018, 2019, 2021). Therefore, a minimum of 10 randomly selected trap net stations will be sampled on Tradinghouse Creek Reservoir in spring 2025 in order to test the effectiveness of this gear and season combination. The objectives of the spring trap netting survey will be to collect baseline monitoring data (i.e., CPUE, size structure, and mean relative weight) to characterize the population and make comparisons with future springtime data sets. Abundance target precision will be a RSE ≤ 25 for CPUE $_{Total}$ and CPUE $_{Stock}$, and target sample size for size structure will be N ≥ 50 stock, allowing us to calculate PSDs with 80% confidence. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group ≥ stock-length. If objectives are not met in 10 stations, but catch rates indicate they're attainable, sampling will continue at random stations until the objectives are met.

Spring Gill Netting: This survey will be used to monitor Channel Catfish, White Bass, and White Crappie. None of the OBS objectives were met completely from sampling five gill net nights in 2021. Therefore, a minimum of 10 randomly selected gill net stations will be sampled in spring 2025. The objectives of the spring gill netting survey will be general monitoring (i.e., CPUE, size structure, and mean relative weight) to characterize populations and make comparisons with historical and future data. Abundance target precision will be a RSE ≤ 25 for CPUE $_{Total}$ and CPUE $_{Stock}$, and target sample size for size structure will be N ≥ 50 stock, allowing us to calculate PSDs with 80% confidence. Mean relative weight will be determined by measuring and weighing at least 5 fish per represented inch group ≥ stock-

length. If objectives are not met in 10 stations, but catch rates indicate they're attainable, sampling will continue at random stations until the objectives are met.

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Tables and Figures

Table 1. Characteristics of Tradinghouse Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1965
Controlling authority	McLennan County Parks and Recreation
County	McLennan
Reservoir type	Tributary of the Brazos River
Shoreline Development Index	5.0
Conductivity	325 µS/cm

Table 2. Boat ramp characteristics for Tradinghouse Creek Reservoir, Texas, August 2020. Reservoir elevation at time of survey was 443 feet above MSL (2 feet below conservation pool). Latitude and longitude are in decimal degrees.

Boat ramp	Latitude/Longitude (dd)	Parking capacity (N)	Condition
Number 1	31.5499/-96.9637	10	Short, steep
Number 2	31.5509/-96.9619	16	Extended in 2020
Number 3	31.5554/-96.9415	8	Fair, shallow
Number 4	31.5746/-96.9335	12	Fair, shallow

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

Species	Bag Limit	Length limit
Catfish: Channel	25	12-inch minimum
Catfish: Flathead	5	18-inch minimum
Bass: White	25	10-inch minimum
Bass: Largemouth	5[a]	14-inch minimum
Bass: Spotted	5[a]	None
Crappie: White, Black and hybrids	25 (any combination)	10-inch minimum

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

Table 4.   Stocking history for Tradinghouse Creek, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range.   For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
Black x White Crappie	1995	101,848	FRY	0.9
	1996	201,132	FRY	0.9
	Total	302,980		
Blue Catfish	1986	21,122	FGL	2.0
	Total	21,122		
Channel Catfish	1968	10,600	AFGL	7.9
	Total	10,600		
Florida Largemouth Bass	1985	59,294	FGL	2.0
	1985	98,338	FRY	1.0
	1986	100,566	FRY	1.0
	2017	100,214	FGL	1.6
	2018	93,519	FGL	1.8
	2018	97,350	FRY	0.3
	Total	549,281		
Largemouth Bass	1969	100,000	UNK	0.0
	Total	100,000		
Peacock Bass	1982	1,600		0.0
	Total	1,600		
Red Drum	1975	53,161	UNK	0.0
	1981	200,000	UNK	0.0
	1983	198,500	UNK	0.0

Table 4 con't.   Stocking history for Tradinghouse Creek, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range.   For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
	1984	153,783	FRY	1.0
	1985	408,532	FRY	1.0
	1986	671	ADL	15.0
	1986	245,800	FRY	1.0
	1987	768,810	FRY	1.0
	1989	8,000	FGL	1.2
	1990	69	ADL	11.0
	1990	9,500	FGL	1.1
	1991	224,000	FGL	1.7
	1991	114,066	FRY	1.0
	1991	75,136	UNK	0.0
	1992	90	ADL	13.1
	1992	77,010	FGL	1.8
	1992	125,466	FRY	1.0
	1993	206,434	FGL	1.2
	1994	184,000	FGL	1.4
	1995	217,188	FRY	1.0
	1996	197,399	FGL	1.3
	1997	202,378	FGL	1.1
	1999	268,643	FGL	1.1
	2000	251,815	FGL	1.1
	2001	290,905	FGL	1.1

Table 4 con't.   Stocking history for Tradinghouse Creek, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range.   For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
	2002	4,158	ADL	11.3
	2002	175,964	FGL	1.3
	2003	344,657	FGL	1.3
	2004	370,011	FGL	1.5
	2005	345,238	FGL	1.5
	2006	750	ADL	10.0
	2006	145,847	FGL	1.5
	2007	391,145	FGL	1.4
	2008	358,080	FGL	1.3
	2009	376,104	FGL	1.4
	2010	203,661	FGL	1.3
	Total	7,196,971		
Striped Bass	1980	240,700	UNK	0.0
	Total	240,700		
White Crappie	1992	2,224	FGL	1.4
	1992	10,494	FRY	0.7
	Total	12,718		

Table 5. Objective-based sampling plan components for Tradinghouse Creek Reservoir, Texas 2020 – 2021.

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
	Condition	Wr	10 fish/inch group (max)
Bluegill	Abundance	CPUE $_{Stock}$	General monitoring
	Size structure	PSD, length frequency	General monitoring
Redear Sunfish	Abundance	CPUE $_{Stock}$	General monitoring
	Size structure	PSD, length frequency	General monitoring
Longear Sunfish	Abundance	CPUE $_{Stock}$	General monitoring
	Size structure	Length frequency	General monitoring
Gizzard Shad	Abundance	CPUE $_{Stock}$	General monitoring
	Size structure	Length frequency	General monitoring
	Prey availability	IOV	N ≥ 50
Gill netting			
Channel Catfish	Abundance	CPUE $_{Stock}$	RSE $_{Stock}$ ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Condition	Wr	10 fish/inch group (max)
White Bass	Abundance	CPUE $_{Stock}$	RSE $_{Stock}$ ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Condition	Wr	10 fish/inch group (max)
White Crappie	Abundance	CPUE $_{Stock}$	RSE $_{Stock}$ ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Condition	Wr	10 fish/inch group (max)

Table 6. Survey of structural habitat types, Tradinghouse Creek Reservoir, Texas, 2010. Survey was conducted using 2010 NAIP, 1-meter resolution satellite imagery. Shoreline habitat type units are in miles. Eleven (11) boat docks and piers were observed during the survey.

Habitat Type	Estimate	% of Total
Gravel shoreline	1.88	9.7
Boulder/riprap shoreline	2.29	11.8
Natural shoreline	14.94	77.2

Table 7. Survey of aquatic vegetation, Tradinghouse Creek Reservoir, Texas, 2012, 2016 and 2020.
Percent of total reservoir surface area is listed for 2012, while percent of randomly selected points where
species occurred, is listed for 2016 and 2020. The number of shoreline sites where the species occurred
is in parenthesis. Water level was near full pool during the surveys. Tier III is watch status.

Vegetation	2012	2016	2020
Native submersed			
American pondweed		76% (19 of 25)	50% (25 of 50)
Southern naiad		12% (3 of 25)	2% (1 of 50)
Muskgrass		4% (1 of 25)	
Coontail		8% (2 of 25)	
Native floating-leaved			
American lotus		8% (2 of 25)	2% (1 of 50)
White water lily		4% (1 of 25)	
Native emergent			
Bulrush		52% (13 of 25)	48% (24 of 50)
Common buttonbush		8% (2 of 25)	
Cattail		80% (20 of 25)	54% (27 of 50)
Non-native			
Hydrilla (Tier III)	3.8 (0.2)	4% (1 of 25)	
Giant reed *(Tier III)*	0.6 (.03)	4% (1 of 25)	

Gizzard Shad

2012

Effort = 1.0
Total CPUE = 107.0 (18; 107)
Stock CPUE = 78.0 (20; 78)
IOV = 48 (10)

2016

Effort = 1.0
Total CPUE = 218.0 (17; 218)
Stock CPUE = 166.0 (15; 166)
IOV = 31 (9)

2020

Effort = 1.0
Total CPUE = 154.0 (28; 154)
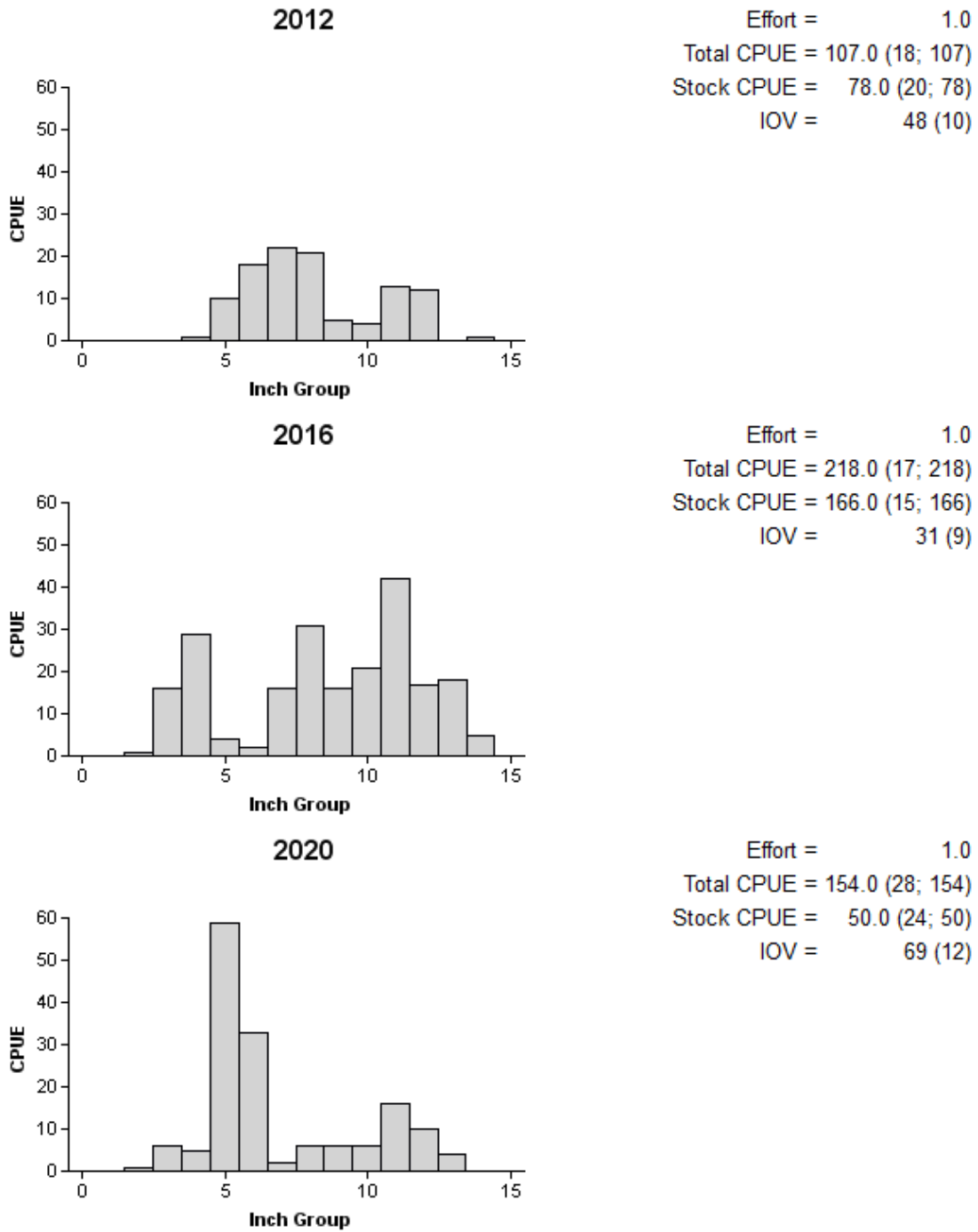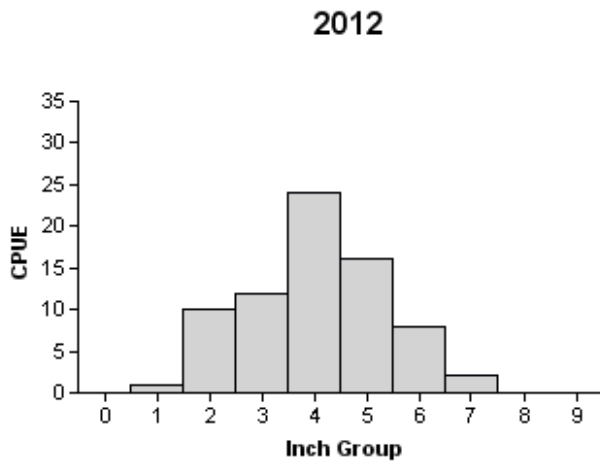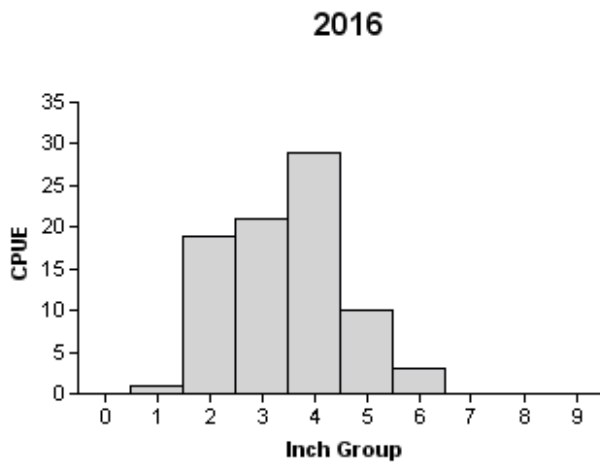Stock CPUE = 50.0 (24; 50)
IOV = 69 (12)

Figure 1. 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, Tradinghouse Creek Reservoir, Texas, 2012, 2016 and 2020.

Bluegill

2012

Effort = 1.0
Total CPUE = 73.0 (25; 73)
Stock CPUE = 62.0 (31; 62)
PSD = 16 (8)

2016

Effort = 1.0
Total CPUE = 83.0 (25; 83)
Stock CPUE = 63.0 (29; 63)
PSD = 5 (4)

2020

Effort = 1.0
Total CPUE = 92.0 (23; 92)
Stock CPUE = 82.0 (22; 82)
PSD = 7 (7)

Figure 2. 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, Tradinghouse Creek Reservoir, Texas, 2012, 2016, and 2020.
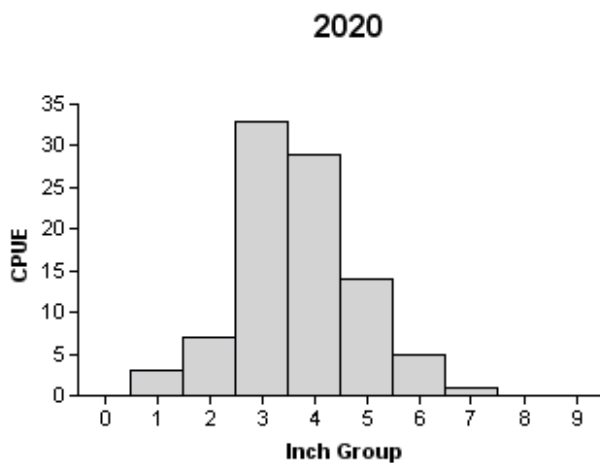
Channel Catfish

2013

Effort = 5.0
Total CPUE = 9.0 (19; 45)
Stock CPUE = 8.8 (18; 44)
PSD = 55 (7)
PSD-12 = 95 (2)

2017

Effort = 5.0
Total CPUE = 4.0 (22; 20)
Stock CPUE = 4.0 (22; 20)
PSD = 80 (7)
PSD-12 = 100 (0)

2021

Effort = 5.0
Total CPUE = 15.4 (30; 77)
Stock CPUE = 14.6 (32; 73)
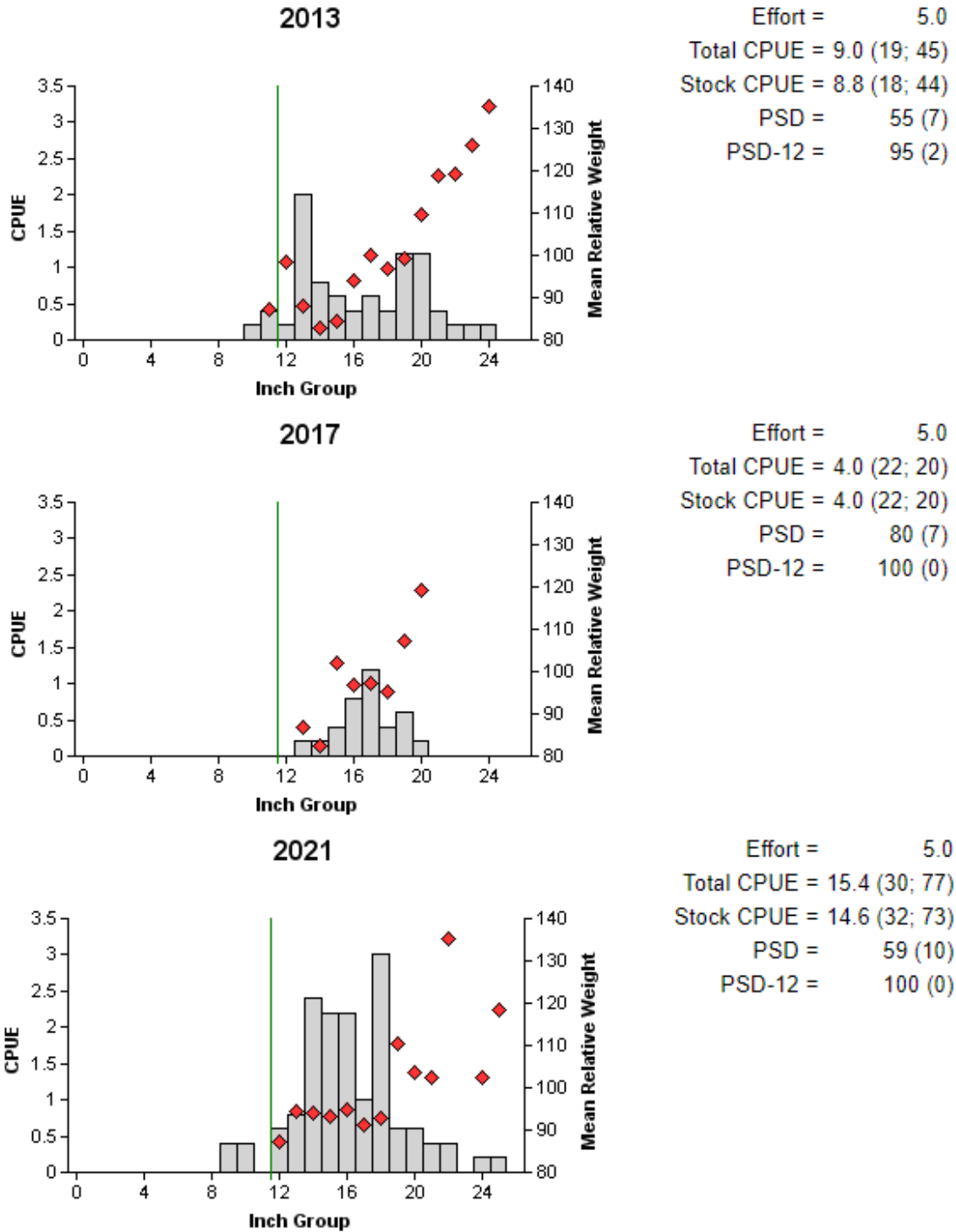PSD = 59 (10)
PSD-12 = 100 (0)

Figure 3. Number of Channel Catfish caught per net night (CPUE, bars), mean relative weights (diamonds) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill net surveys, Tradinghouse Creek Reservoir, Texas, 2013, 2017 and 2021. Vertical line represents 12-inch minimum length limit.

White Bass

2013

Effort = 5.0
Total CPUE = 3.2 (36; 16)
Stock CPUE = 3.2 (36; 16)
PSD = 94 (6)
PSD-10 = 75 (11)
PSD-12 = 50 (15)

2017

Effort = 5.0
Total CPUE = 1.6 (61; 8)
Stock CPUE = 1.6 (61; 8)
PSD = 100 (0)
PSD-10 = 100 (0)
PSD-12 = 25 (20)

2021

Effort = 5.0
Total CPUE = 3.6 (56; 18)
Stock CPUE = 3.6 (56; 18)
PSD = 100 (0)
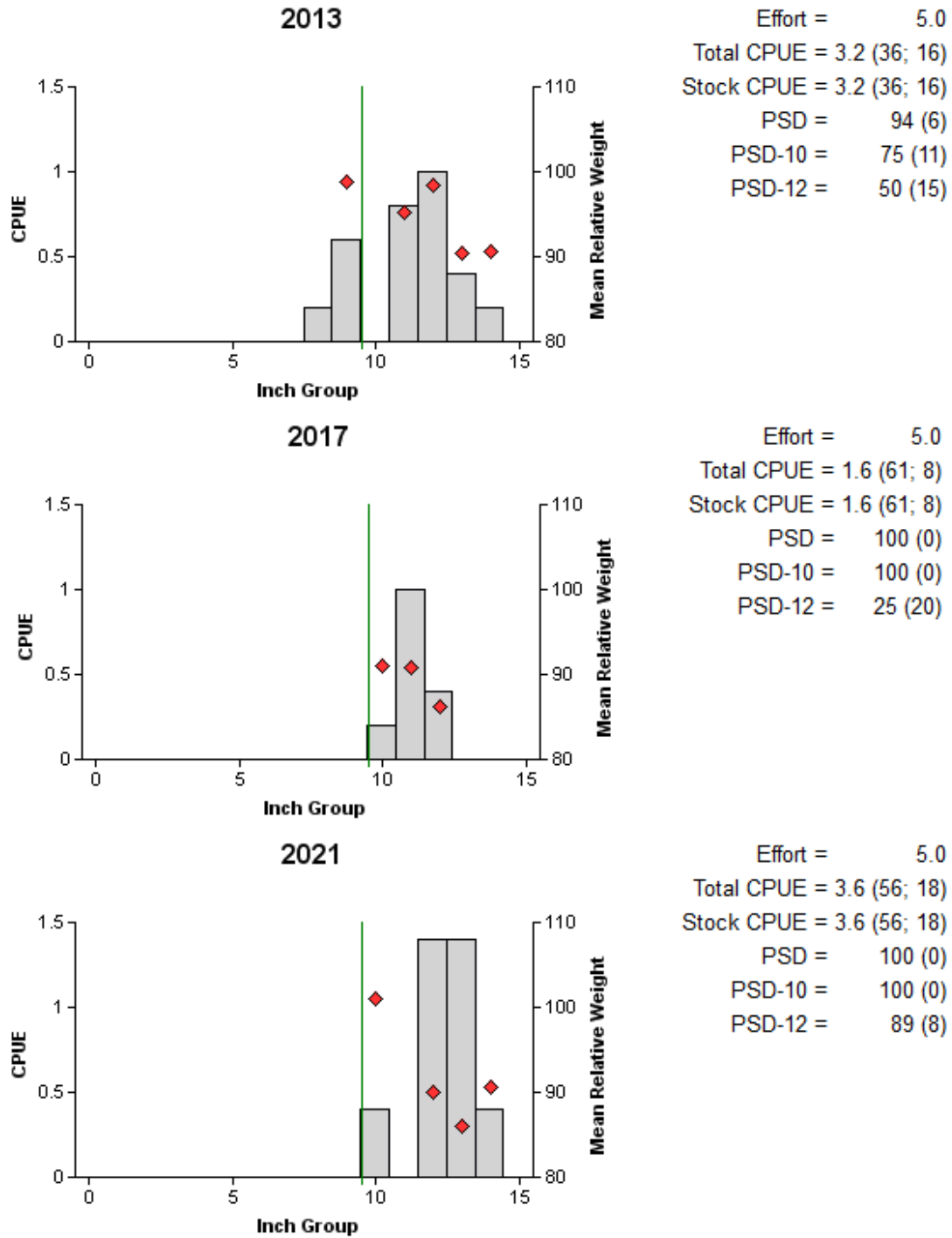PSD-10 = 100 (0)
PSD-12 = 89 (8)

Figure 4. Number of White Bass caught per net night (CPUE, bars), mean relative weights (diamonds) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill net surveys, Tradinghouse Creek Reservoir, Texas, 2013, 2017 and 2021. Vertical line represents 10-inch minimum length limit.

Largemouth Bass

2012

Effort =   1.0
Total CPUE = 140.0 (16; 140)
Stock CPUE =   82.0 (20; 82)
CPUE-14 =   8.0 (34; 8)
PSD =   65 (6)
PSD-14 =   10 (3)

2016

Effort =   1.0
Total CPUE = 98.0 (14; 98)
Stock CPUE = 54.0 (17; 54)
CPUE-14 = 12.0 (33; 12)
PSD =   56 (4)
PSD-14 =   22 (6)

2020

Effort =   1.0
Total CPUE = 157.0 (15; 157)
Stock CPUE =   53.0 (19; 53)
CPUE-14 =   21.0 (30; 21)
PSD =   57 (9)
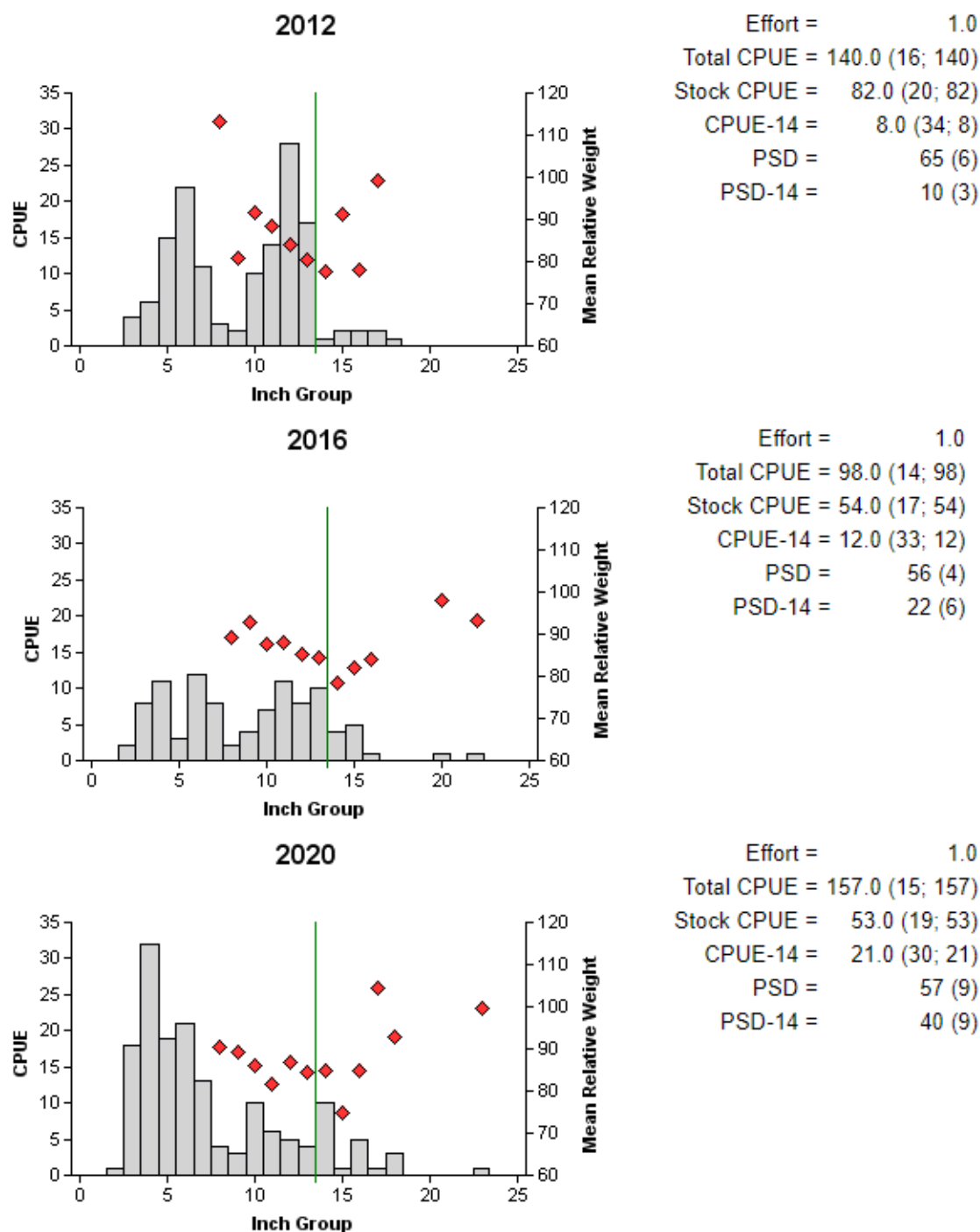PSD-14 =   40 (9)

Figure 5. 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, Tradinghouse Creek Reservoir, Texas, 2012, 2016, and 2020. Vertical line represents 14-inch minimum length limit.

Table 8. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Tradinghouse Creek Reservoir, Texas, 2008 and 2016. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined by micro-satellite DNA analysis.

Year	Sample size	Number of Fish			% FLMB alleles	% FLMB
		FLMB	Intergrade	NLMB		
2008	15	0	13	2	33	0
2016	30	0	30	0	67	0

White Crappie

2013

Effort = 5.0
Total CPUE = 1.6 (70; 8)
Stock CPUE = 1.6 (70; 8)
PSD = 100 (0)
PSD-10 = 88 (5)

2017

Effort = 5.0
Total CPUE = 1.6 (58; 8)
Stock CPUE = 1.4 (66; 7)
PSD = 100 (0)
PSD-10 = 71 (14)

2021

Effort = 5.0
Total CPUE = 1.6 (54; 8)
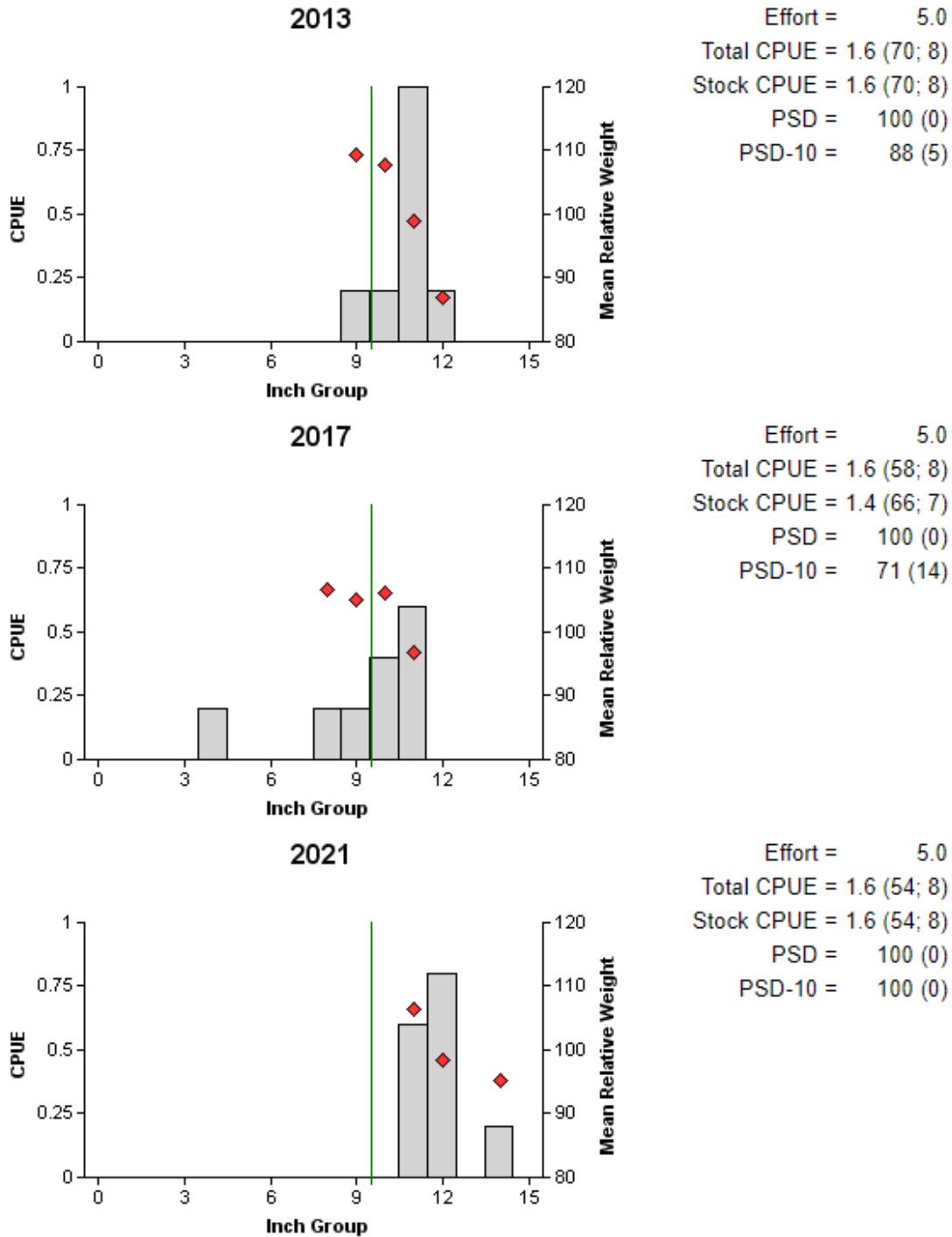Stock CPUE = 1.6 (54; 8)
PSD = 100 (0)
PSD-10 = 100 (0)

Figure 6. 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 spring gill netting surveys, Tradinghouse Creek Reservoir, Texas, 2013, 2017, and 2021. Vertical line indicates 10-inch minimum length limit.

Proposed Sampling Schedule

Table 9. Proposed sampling schedule for Tradinghouse Creek Reservoir, Texas. Survey period is June through May. Vegetation, access, and electrofishing surveys are conducted in late summer and fall while gill net and all future trap net surveys are conducted in the spring. Surveys are denoted by X.

	Survey Year			
	2021-2022	2022-2023	2023-2024	2024-2025
Vegetation				X
Angler Access				X
Electrofishing - Fall				X
Trap Netting - Spring				X
Gill Netting - Spring				X
Report				X

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

Number (N), relative standard error (RSE), and catch rate (CPUE) of all target species collected from all gear types from Tradinghouse Creek Reservoir, Texas, 2020-2021. Sampling effort was 5 net nights for gill netting, and 1 hour for electrofishing.
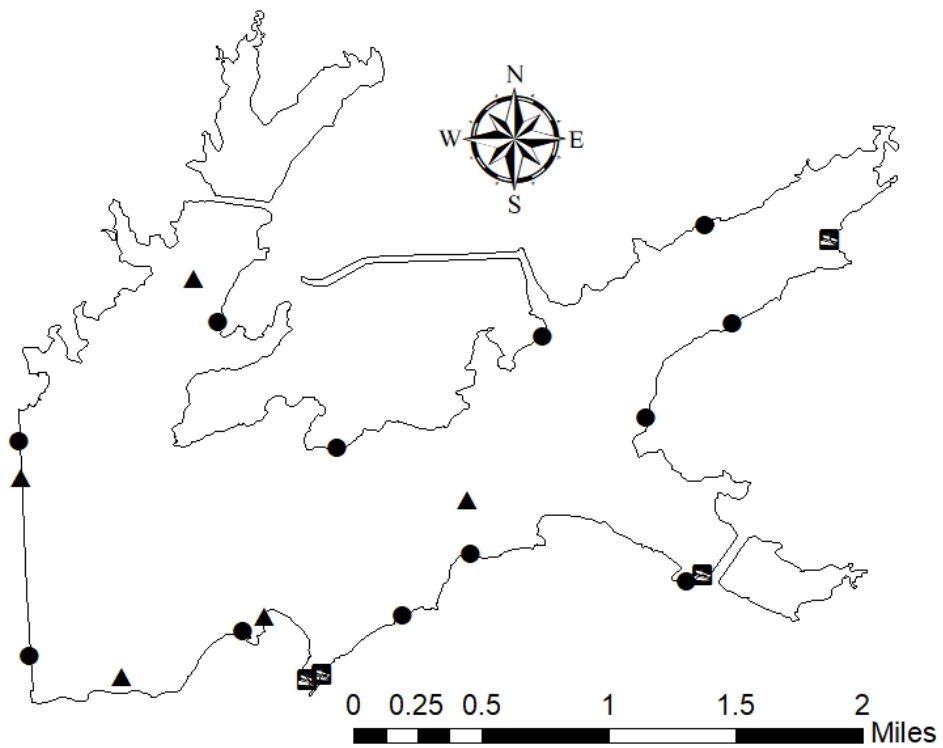
Species	Gill Netting		Electrofishing	
	N/RSE	CPUE	N/RSE	CPUE
Gizzard Shad			154/28	154.0
Channel Catfish	77/30	15.4		
White Bass	18/56	3.6		
Warmouth			1/100	1.0
Bluegill			92/23	92.0
Longear Sunfish			23/54	23.0
Redear Sunfish			53/26	53.0
Largemouth Bass			157/15	157.0
White Crappie	8/54	1.6		
Black Crappie	5/45	1.0		

APPENDIX B – Historical catch rates for target species by gear type

Historical catch rates (CPUE) of targeted species by gear type for management surveys on Tradinghouse Creek Reservoir, Texas, 2000 to present. All stations were randomly selected. Electrofishing stations utilized a 5.0 Smith-Root GPP (Gas Powered Pulsator) through 2010, after which a 7.5 Smith-Root GPP was used. Objective based sampling began in 2015. Species averages are in bold. Dashes represent no data. Asterisks indicate a catch rate from a non-standard gear or season.

Gear	Species	00/01	04/05	08/09	12/13	16/17	20/21	Avg.
Electrofishing								
	Largemouth Bass	227.0	289.0	169.0	140.0	98.0	157.0	**180.0**
	Spotted Bass	0.0	0.0	0.0	2.0	0.0	0.0	**0.3**
	Gizzard Shad	441.0	183.0	134.0	107.0	218.0	154.0	**206.2**
	Threadfin Shad	3.0	7.0	52.0	144.0	156.0	0.0	**60.3**
	Bluegill Sunfish	528.0	176.0	927.0	73.0	83.0	92.0	**313.2**
	Redear Sunfish	37.0	5.0	193.0	27.0	50.0	53.0	**60.8**
	Longear Sunfish	41.0	57.0	80.0	8.0	15.0	23.0	**37.3**
	Green Sunfish	0.0	0.0	3.0	0.0	0.0	0.0	**0.5**
	Warmouth	0.0	0.0	3.0	0.0	0.0	1.0	**0.7**
Gill netting								
	Channel Catfish	4.8	3.0	15.6	9.0	4.0	15.4	**8.6**
	White Bass	1.0	9.8	10.6	3.2	1.6	3.6	**5.0**
	White Crappie	*0.6	-	-	*1.6	*1.6	*1.6	***1.4**
	Black Crappie	*0.2	-	-	*1.8	*1.2	*1.0	***1.1**
Trap netting								
	White Crappie	1.8	0.2		0.8			**0.7**
	Black Crappie	9.8	0.1		0.0			**2.0**

APPENDIX C – Map of sampling locations

Location of sampling sites, Tradinghouse Creek Reservoir, Texas, 2020-2021. Electrofishing and gill netting stations are indicated by solid circles and squares, respectively. Water level was near conservation pool at time of sampling.

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