Champion Creek Reservoir

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

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Survey and Management Summary

Fish populations in Champion Creek Reservoir were surveyed in 2018 using electrofishing and trap netting and in 2019 using tandem hoop netting. Historical data are presented with the 2018-2019 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: Champion Creek Reservoir is a 1,560-acre impoundment at conservation pool (2083 feet above MSL) located 7 miles south of Colorado City in Mitchell County, Texas, in the Colorado River drainage basin. The reservoir is primarily used for recreation. Historically, Champion Creek has experienced long periods of extreme low water conditions. From 1999 to 2014 the reservoir ranged from 30 to 55 feet below conservation pool, with its lowest level recorded on June 1, 2003 (2027.98 feet elevation, 176 surface acres). The reservoir filled to over 70% capacity in December 2018, the highest water level since the 1980's. Habitat features consisted of rocks, natural shoreline, and flooded saltcedar. Reservoir level was approximately 2071 feet elevation and 1107 surface acres during 2018 fall sampling.

Management History: Important sport fish historically included Largemouth Bass, White Crappie, catfishes, and White Bass. The management of this reservoir has been impacted by chronic low-water levels and toxic golden alga blooms in winter 2014-2015. Fisher Park was renovated in 2016 which improved reservoir boating and bank access. Fish attractors were paced in the reservoir in 2017 with conservation license plate funds and donations from local partners.

Fish Community

- **Prey species:** Electrofishing catch of Gizzard Shad was high, but few Gizzard Shad were available as prey to most sport fish. Bluegill were moderate in abundance and provide additional forage for predators.
- **Channel Catfish:** Total hoop net catch rates was 4.6/net series in spring 2019. Fish up to 19 inches were observed.
- **Largemouth Bass:** Largemouth Bass abundance was low as the population recovers from past golden alga fish kills. Largemouth Bass had fast growth (age at 14 inches long was 2.0 years) and condition was adequate. Florida Largemouth Bass alleles comprised 45% of the population genetics in 2018.
- **White Crappie:** White Crappie were in low abundance as the population recovers from past golden alga fish kills. Crappie up to 10 inches were collected.

Management Strategies: Stock Florida strain Largemouth Bass at 1000/km shoreline in 2020. Conduct additional electrofishing, trap net, and baited hoop net surveys in 2020-2021, and general monitoring surveys with trap nets, baited hoop nets, and electrofishing surveys in 2022-2023. Access and vegetation surveys will be conducted in 2022.

Introduction

This document is a summary of fisheries data collected from Champion Creek Reservoir in 2018-2019. 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 2018-2019 data for comparison.

Reservoir Description

Champion Creek Reservoir is a 1,560-acre impoundment at conservation pool (2083 feet above MSL) located 7 miles south of Colorado City in Mitchell County, Texas, in the Colorado River drainage basin (Table 1). The reservoir is primarily used for recreation. Historically, Champion Creek has experienced long periods of extreme low water conditions. From 1999 to 2014 the reservoir ranged from 30 to 55 feet below conservation pool, with its lowest level recorded on June 1, 2003 (2027.98 feet elevation, 176 surface acres). The reservoir filled to over 70% capacity in December 2018, the highest water level since the 1980's. Habitat features consisted of rocks, natural shoreline, and flooded saltcedar. Reservoir level was approximately. 2071 feet elevation and 1107 acres during 2018 fall sampling (Figure 1).

Angler Access

Champion Creek Reservoir has two improved boat ramps. Boat launching is possible on the south shoreline near the low-water boat ramp when all ramps are above water, but four-wheel drive is recommended. Although water levels have increased above the end of the main ramp at Fisher Park, the ramp remains closed due to safety concerns. The end of the ramp has a shear drop off and park management has not opened the ramp due to concerns over boat trailers getting stuck or damaged. If water levels increase sufficiently to reduce this concern, the ramp will likely be re-opened. Because of severe water fluctuations and extreme elevation drop, extending the current boat ramps is not feasible. Fishing from the shoreline is possible near the dam and boat launch areas (Table 2).

Management History

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

1. Monitor golden alga cell counts and toxicity levels and re-establish fish populations through hatchery and management stockings.

   Action: Golden alga was monitored during the winter months. Bluegill, Blue Catfish, Channel Catfish, Largemouth Bass, and White Crappie have been stocked since 2016.

2. Cooperate with the City of Colorado City to post signage, educate the public about invasive species, and track existing and future inter-basin water transfers to facilitate potential invasive species responses.

   Action: The San Angelo District continued to work with the City of Colorado City to post signage and to educate the public on invasive species threats through media outlets.

Harvest regulation history: Sportfishes in Champion Creek Reservoir are currently managed with statewide regulations. One exception was a 16-inch minimum length limit (MLL) imposed on Largemouth Bass in 1995 to protect a strong year class produced following a 10-foot water rise in 1994. Declining water level following the regulation change negated benefits of the previous water rise and the size limit was rescinded in favor of the statewide 14-inch MLL in 1999. Current regulations are found in Table 3.

Stocking history: Species stocked have included Channel Catfish, Florida Largemouth Bass, Bluegill, and Blue Catfish. Following a golden alga fish kill in winter 2014-2015 and improved water levels, the

reservoir has been stocked with Blue and Channel Catfish, Bluegill, Largemouth Bass, and White Crappie. The complete stocking history is in Table 4.

Vegetation/habitat management history: Champion Creek Reservoir has not supported aquatic vegetation due to severe water level fluctuations. The reservoir has no vegetation management history.

Water transfer: Champion Creek Reservoir is primarily used for recreation. It was formerly used for auxiliary water supply for the TXU generation plant on Colorado City Reservoir and municipal water supply for Colorado City. The TXU generation plant on Colorado City Reservoir ceased operation in 2003, ending the need for auxiliary water from Champion Creek Reservoir. 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 Champion Creek Reservoir (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 2015).

Electrofishing – Largemouth Bass, sunfishes, Gizzard Shad, and Threadfin Shad were collected by electrofishing (1.3 hour at 15, 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 7 randomly-selected fish (range 13.0 to 14.9 inches).

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).

Tandem hoop nets – Channel Catfish were collected using 10 tandem hoop-net series at 10 stations. Nets were baited with soap and deployed for 2-night soak durations. CPUE for tandem hoop netting was recorded as the number of fish caught per tandem hoop net series (fish/series).

Genetics – Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2015). Micro-satellite DNA analysis was used to determine genetic composition of individual fish from 2005 through 2018 and by electrophoresis for previous years.

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.

Habitat – A structural habitat survey was last conducted in 2007. A vegetation survey was conducted in 2018. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2015).

Water level – Source for water level data was the United States Geological Survey (USGS 2019).

Results and Discussion

Habitat: A structural habitat survey was last conducted in 2007 (Bonds and Scott 2007) and consisted primarily of rocky and natural shoreline. No aquatic vegetation was present during the 2018 survey. Historically, the reservoir supported no aquatic vegetation, primarily due to fluctuating water levels. Much of the reservoir's shoreline has been colonized by non-native saltcedar.

Prey species: Electrofishing catch rate of Gizzard Shad was 462.4/h in 2018, which was similar to 380.0/h in 2017 and 410.0/h in 2014. Index of Vulnerability (IOV) for Gizzard Shad was poor in 2018 and 2017 with IOV's of 21 and 31, respectively (Figure 2). Total CPUE of Bluegill in 2018 was 88.0/h, which was slightly lower than 2017 (145.0/h), but much better than 2014 (4.0/h). Bluegill size structure continued to be dominated by fish from 3 to 5 inches (Figure 3).

Channel Catfish: Total hoop net catch rate of Channel Catfish was 4.6/series (Figure 4). Sampled Channel Catfish ranged from 8 to 19 inches in length. Condition was variable among length groups, but in general were adequate with relative weights above 90 for all length groups.

White Bass: Historically, White Bass have been present in low abundance. No directed sampling effort was made toward White Bass during the past 4 years. Gill net sampling from 2011-2013 recorded White Bass from 7 to 16 inches in length (Scott 2015). However, after a severe golden alga kill in winter 2014-2015 no White Bass were collected during spring gill netting in 2015.

Largemouth Bass: The electrofishing catch rate of stock-length Largemouth Bass was 39.2/h in 2018, lower than the 79.0/h in 2017, but higher than the 1.0/h in 2014. Size structure remained poor as PSD varied from 25 to 39 over the past two surveys (Figure 5). Only two Largemouth Bass over 15 inches have been collected over the past two surveys. Growth of Largemouth Bass was very fast in Champion Creek Reservoir; average age at 14 inches (13.0 to 14.9 inches) was 1.0 years in 2017 (N = 13; all fish were 1 year old) and 2.0 years in 2018 (N = 7; all fish were 2 years old). This rapid growth rate is characteristic of a population still below carrying capacity. Body condition in 2018 was adequate with relative weights above 90 for nearly all size classes of fish. (Figure 5). Florida alleles have ranged from 26.5 to 51.6% since 1999 (Table 6). Overall, the bass population in Champion Creek is still in a state of recovery from a toxic golden alga bloom in late fall 2014. A significant increase in water levels in 2018 and additional stockings should help accelerate recovery of the bass population.

White Crappie: The trap net catch rate of White Crappie was 2.3/nn in 2018 (Figure 6) as the population continued to recover from golden alga in 2014. White Crappie up to 10 inches were observed in 2018. Additionally, the presence of small crappie indicated natural reproduction had occurred. Mean relative weight was over 100 for most size classes (Figure 6). Historically, Champion Creek has supported an abundant White Crappie population.

Fisheries Management Plan for Champion Creek Reservoir, Texas

Prepared – July 2019

ISSUE 1: Sportfish populations continue to recover from golden alga in 2014 and low water conditions. Continued sampling is necessary to monitor for changes in sport and prey fish populations. Additional stockings of some species may be warranted to help with recovery.

MANAGEMENT STRATEGY

1. Stock Florida Strain Largemouth Bass in 2020 to support population recovery and take advantage of current high water levels and flooded habitat.
2. Assess Florida Largemouth Bass genetics in 2022.
3. Stock Threadfin Shad to re-establish an additional prey source.
4. Request stockings CCF fingerlings in 2020.
5. Monitor sport fish populations with fall trap netting and electrofishing in 2020 and 2022 and baited hoop netting in spring 2021 and 2023.

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

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate park operators 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

Primary sport fishes in Champion Creek Reservoir include Largemouth Bass, Channel Catfish, and White Crappie. Known important forage species include Bluegill and Gizzard and Threadfin Shad.

Low-density fisheries

White Bass: White Bass are present in the reservoir, but in low abundance. From 1999 to 2013 gill net catch rates ranged from 0.4 to 4.0 fish/nn. Sampling is not necessary for this species in 2019-2023.

Blue Catfish: Blue Catfish are present in the reservoir, but in low abundance. In 2011 and 2013 gill net catch rates ranged from 1.2 to 3.8 fish/nn. Status of Blue Catfish population is unknown following golden alga fish kill in 2014, but is likely in low abundance. Sampling is not necessary for this species in 2019-2023.

Survey objectives, fisheries metrics, and sampling objectives

Largemouth Bass: Largemouth Bass are a primary sport fish in Champion Creek Reservoir. Largemouth Bass are managed with the statewide 14-in MLL regulation. Continued collection of trend data with night electrofishing in the fall every 2 years will allow for determination of any large-scale changes in the largemouth bass population that may spur further investigation. Past sampling data from 1999-2018 indicates that 50 stock size fish could be collected with 12-36 stations with 95% confidence. A minimum of 12 randomly selected 5-min electrofishing sites will be sampled in fall 2020 and 2022 (Table 7). Exclusive of the original 12 random stations, another 6 random stations will be determined in the event some extra sampling is necessary. Sampling will continue at random sites until 50 stock-size fish are collected or a maximum of 18 sites are sampled. Otoliths from 13 fish between 13.0 and 14.9 inches will be collected in 2020 and 2022 to determine mean age at 14 inches to monitor large-scale changes in growth. Relative weight of Largemouth Bass > 8 inches (total length) will be determined from their length/weight data. A genetic sample of 30 fish will be collected during electrofishing in 2022.

White Crappie: White Crappie have historically been abundant with trap net catch rates of stock size fish ranging from 9.0 to 51.2 fish/nn from 1999 to 2010. However, the population was severely affected by golden alga fish kill in 2014 and low water conditions. A management stocking of adult crappie occurred in 2016. In 2018 White Crappie abundance was low (2.3/nn), but adult crappie were present and natural reproduction had occurred. Ten trap net sets will be run in fall 2020 and 2022 (Table 7) to evaluate the status of the crappie population recovery in Champion Creek. Sampling will be exploratory with no specific objectives, but results from this sampling will guide our sampling objectives moving forward.

Channel Catfish: Channel Catfish have historically been present with gill net catch rates of stock size fish from 1.4 to 4.4 fish/nn from 1999 to 2013 However, the population was severely affected by golden alga fish kill in 2014 and low water conditions. A stocking of fingerling Channel Catfish occurred in 2016. Gill netting has been ineffective at collecting sufficient numbers or providing adequate precision for the Channel Catfish population. Instead of gill nets, we will sample with 10 baited hoop net series in the spring 2021 and 2023 (Table 7) to survey the Channel Catfish population. No set objectives will be made and no additional sampling will be conducted beyond the original 10 net series. Data collected from this sample will help guide future sampling objectives.

Sunfish and Shad: Sunfish and Gizzard Shad are important forage fish in Champion Creek Reservoir. From 1999 to 2018 total catch rates of Bluegill has ranged from 4.0 fish/h to 145.0 fish/h while Gizzard Shad have ranged from 167.0 fish/h to 714.0 fish/h. Threadfin Shad have historically been present in lower abundance, but none have been observed since 2012. Continuation of sampling, as per Largemouth Bass above, will allow for monitoring of large-scale changes in Bluegill and Gizzard Shad relative abundance and size structure.

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Tables and Figures

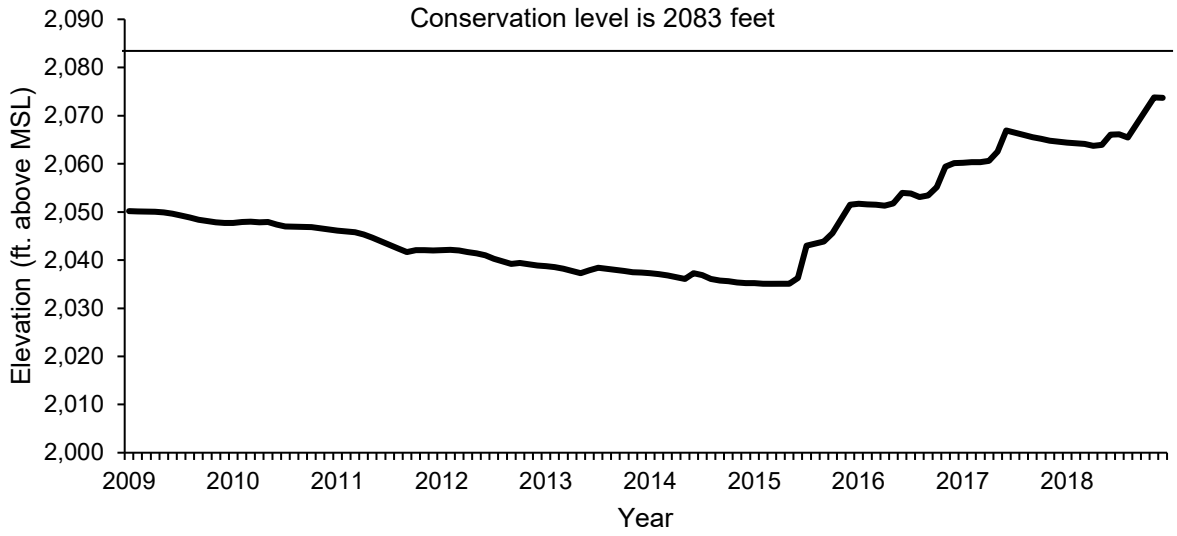


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Champion Creek Reservoir, Texas.

Table 1. Characteristics of Champion Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1959
Controlling authority	Colorado City
County	Mitchell
Drainage Basin	Colorado River Basin
Reservoir type	Tributary
Shoreline Development Index	5.37
Conductivity	860 µmhos/cm

Table 2. Boat ramp characteristics for Champion Creek Reservoir, Texas, June, 2019. Reservoir elevation at time of survey was 2074 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Marina Ramp	32.28197 -100.847411	Y	15	2070	Adequate, extension not feasible, remains closed due to safety concerns
Low-water Ramp	32.28175 -100.84735	Y	15	2040	Adequate

Table 3. Harvest regulations for Champion Creek Reservoir, 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, Largemouth	5	14-inch minimum
Crappie: White and Black crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

Table 4. Stocking history of Champion Creek Reservoir, Texas. FGL = fingerling; ADL = adults; UNK = Unknown.

Species	Year(s) Stocked	Number of Years	Number Stocked	Size
Threadfin Shad	1982-1984	2	10,500	UNK
Blue Catfish	2008-2013	3	146,119	FGL
	2016	1	61,270	FGL
	2019	1	36,124	FGL
Channel Catfish	1967–1981	9	260,374	UNK
	1987-2005	2	200,501	FGL
	2016	1	58,576	FGL
Bluegill	2007	1	105,882	FGL
	2016	1	25,360	FGL
	2017	1	70,416	FGL
Largemouth Bass	1970-1971	2	44,194	UNK
Florida Largemouth Bass	1981-2008	6	430,808	FGL
	2016	1	63,049	FGL
	2017	1	39	ADL
	2019	1	32,849	FGL
White Crappie	2016	1	220	ADL
Green Sunfish X Redear Sunfish	1980	1	17,326	UNK
Coppernose Bluegill X Green Sunfish	1981	1	133,701	UNK
Other sunfishes	1980	1	2,700	UNK

Table 5. Objective-based sampling plan components for Champion Creek Reservoir, Texas 2018–2019.

Gear/target species	Survey objective	Metrics	Sampling objective
Electrofishing			
Largemouth Bass	Abundance	CPUE–Stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Age-and-growth	Age at 14 inches	N = 13, 13.0 – 14.9 inches
	Condition	W_r	10 fish/inch group (max)
	Genetics	% FLMB	N = 30, any age
Bluegill [a]	Abundance	CPUE–Total	RSE ≤ 25
	Size structure	PSD, length frequency	N ≥ 50
Gizzard Shad [a]	Abundance	CPUE–Total	RSE ≤ 25
	Size structure	PSD, length frequency	N ≥ 50
	Prey availability	IOV	N ≥ 50
Trap netting			
Crappie	Size structure	PSD, length frequency	N = 50
	Age-and-growth	Age at 10 inches	N = 13, 9.0 – 10.9 inches
Tandem hoop netting			
Channel Catfish	Abundance	CPUE–stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock

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

Gizzard Shad

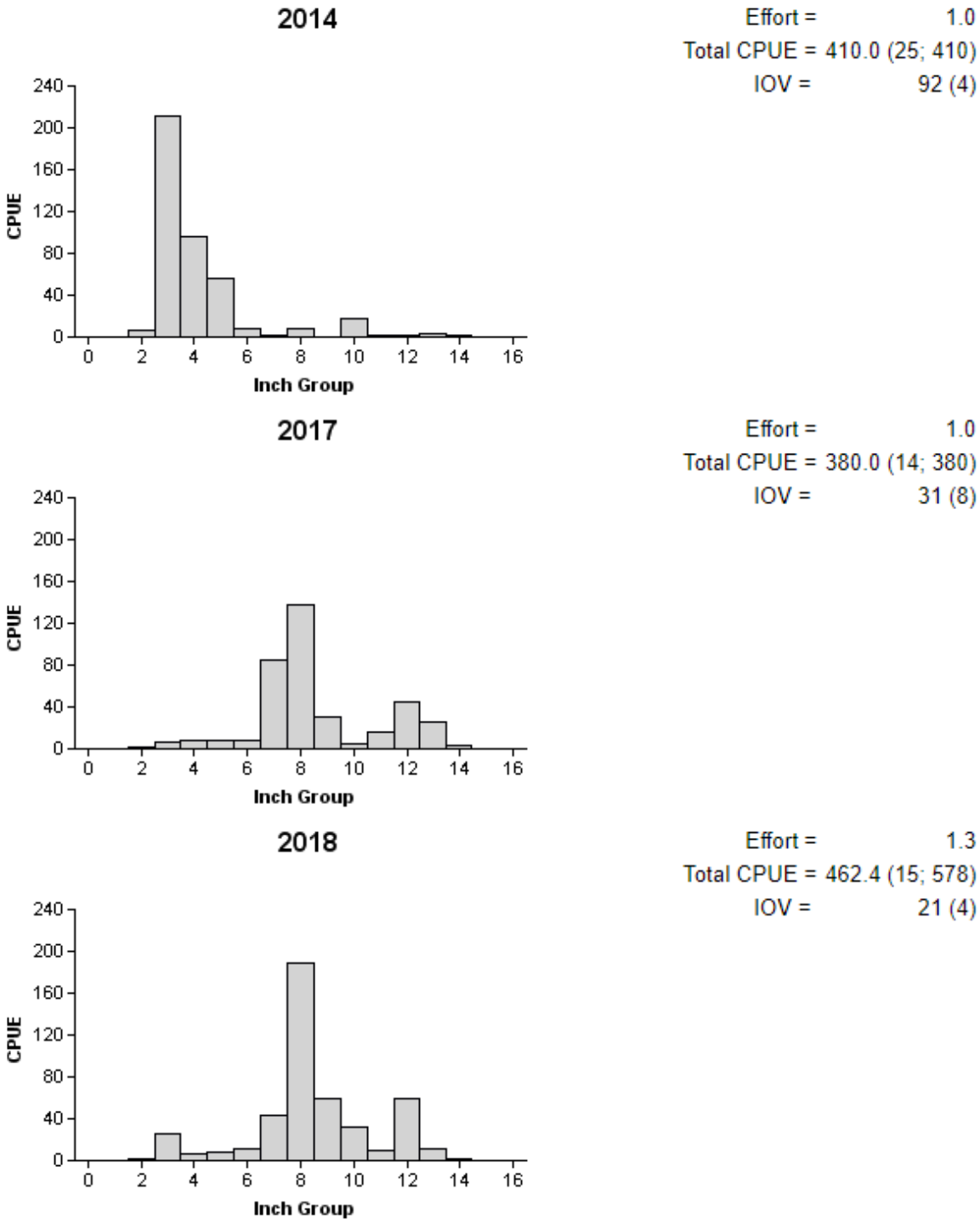


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Champion Creek Reservoir, Texas, 2014, 2017, and 2018.

Bluegill

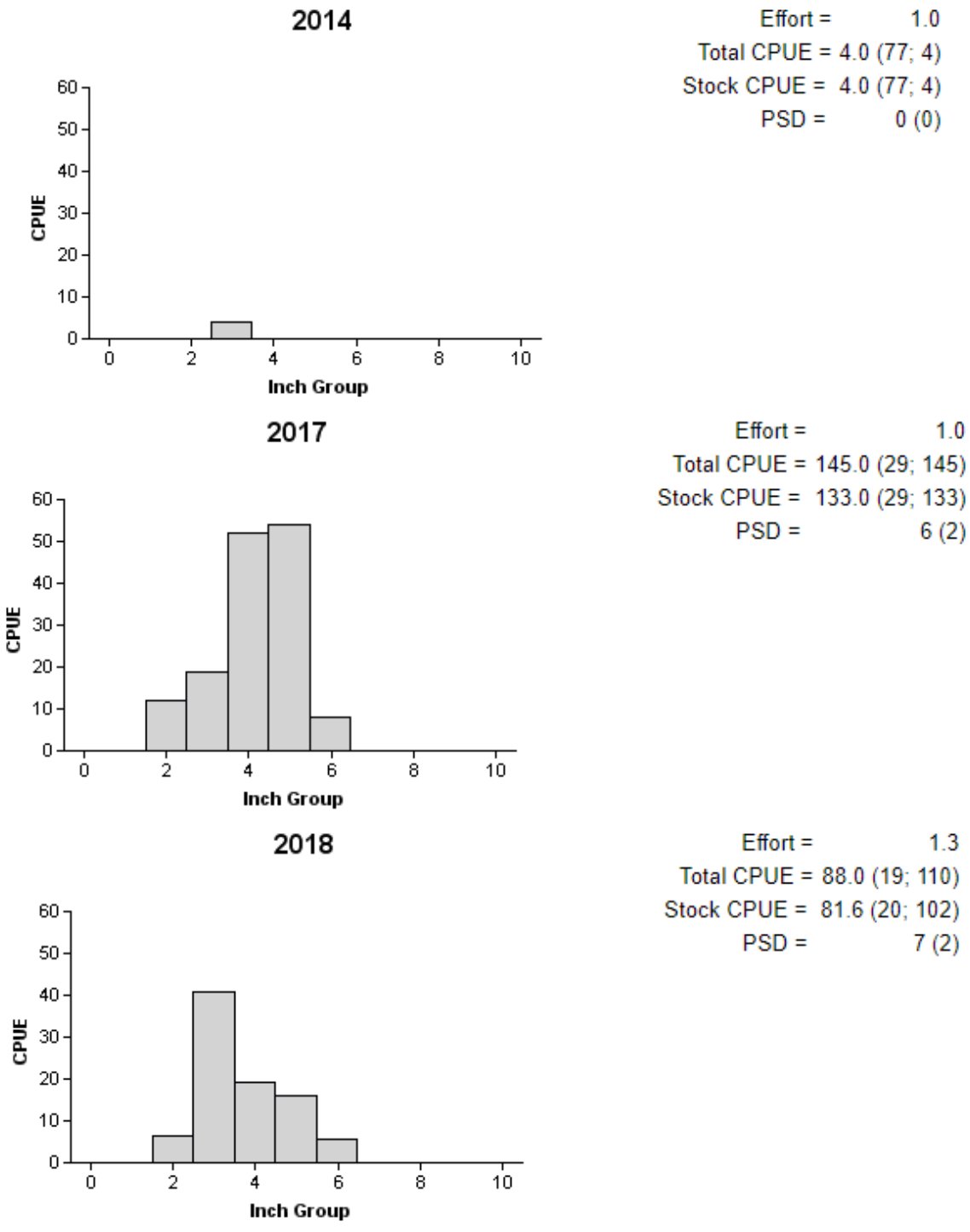


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Champion Creek Reservoir, Texas, 2014, 2017, and 2018.

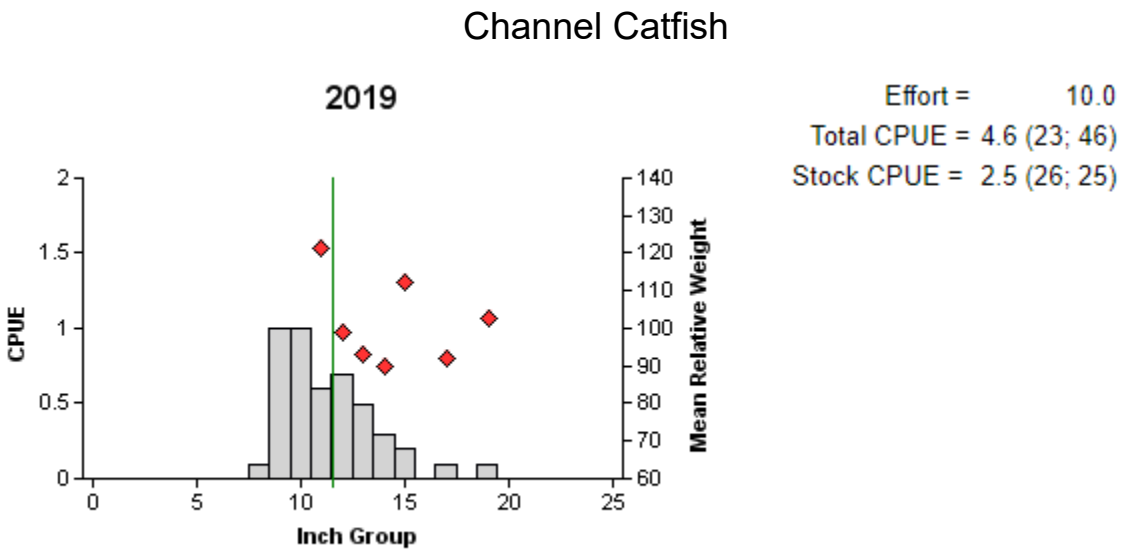


Figure 4. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE is in parentheses) for spring baited tandem hoop net surveys, Champion Creek Reservoir, Texas, 2019. Vertical line indicates the minimum length limit.

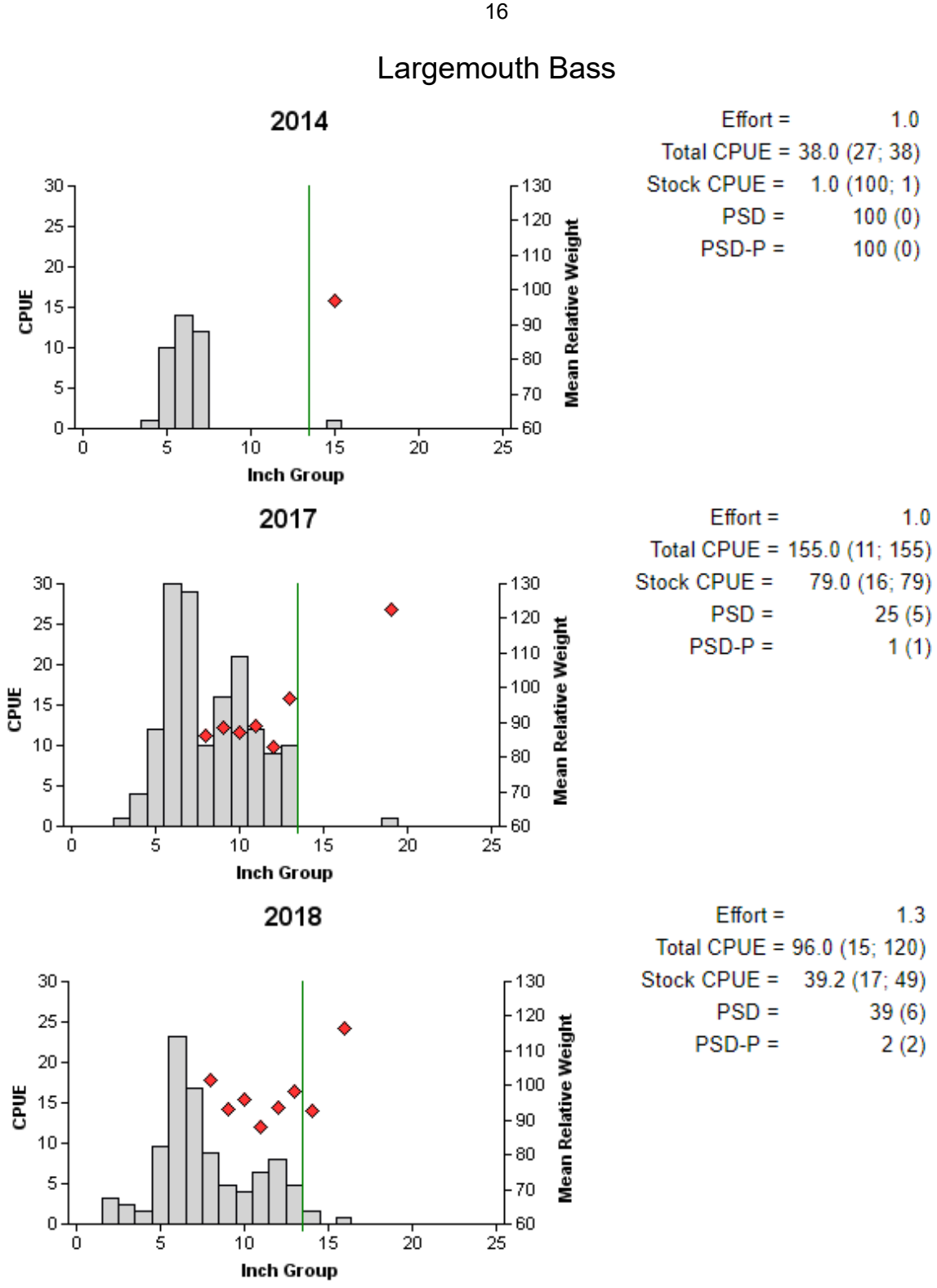


Figure 5. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Champion Creek Reservoir, Texas, 2014, 2017, and 2018. Vertical line indicates the minimum length limit.

Table 6. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Champion Creek Reservoir, Texas, 1999,, 2006, 2008, and 2018. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined by electrophoresis prior to 2005 and with micro-satellite DNA analysis since 2005.

		Number of fish				
Year	Sample size	FLMB	Intergrade	NLMB	% FLMB alleles	% FLMB
1999	31	4	23	4	51.6	12.9
2006	37	0	28	9	26.5	0.0
2008	38	0	38	0	45.0	0.0
2018	30	0	30	0	45.0	0.0

White Crappie

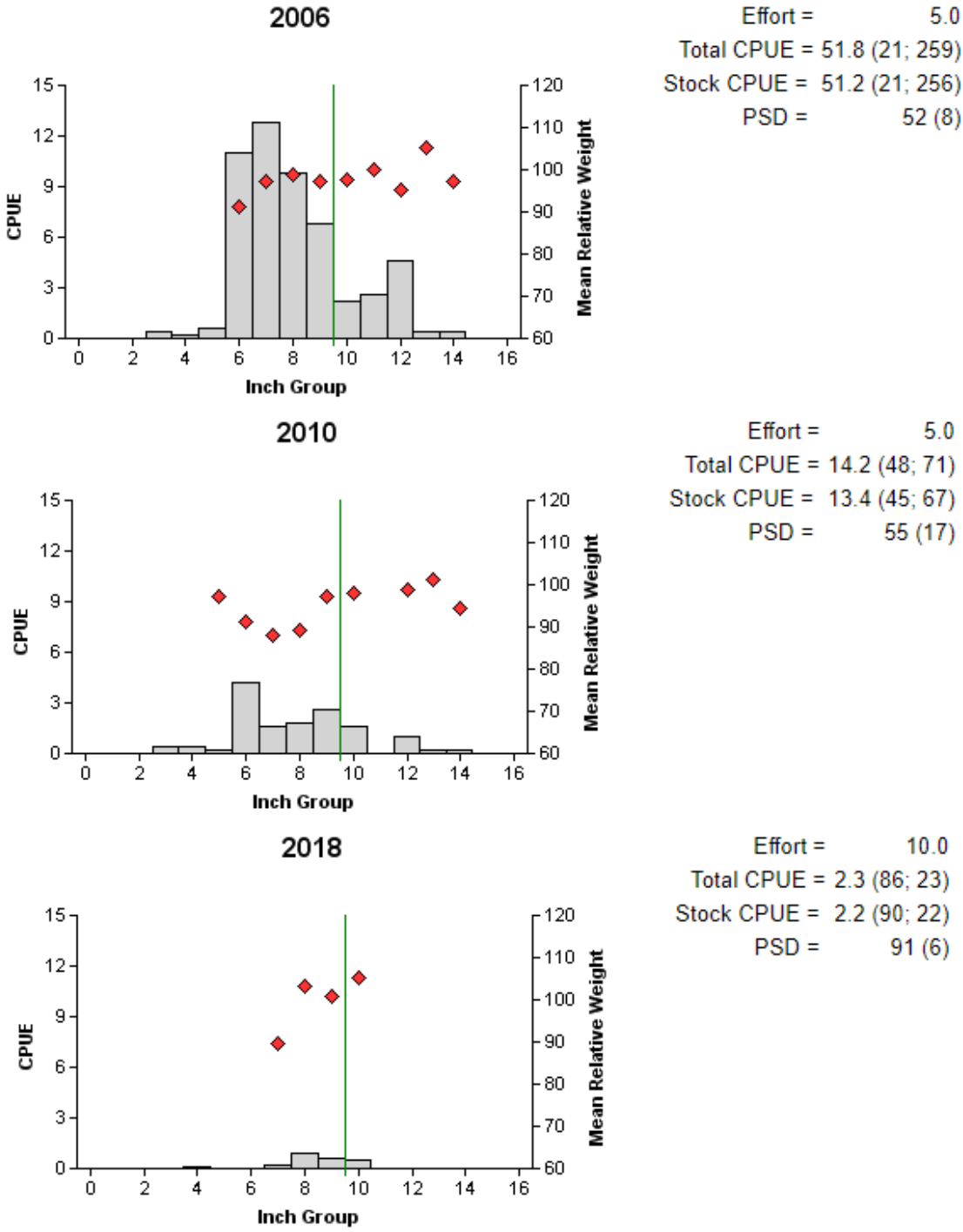


Figure 6. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Champion Creek Reservoir, Texas, 2006, 2010, and 2018. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 7. Proposed sampling schedule for Champion Creek Reservoir, Texas. Survey period is June through May. Baited tandem hoop netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

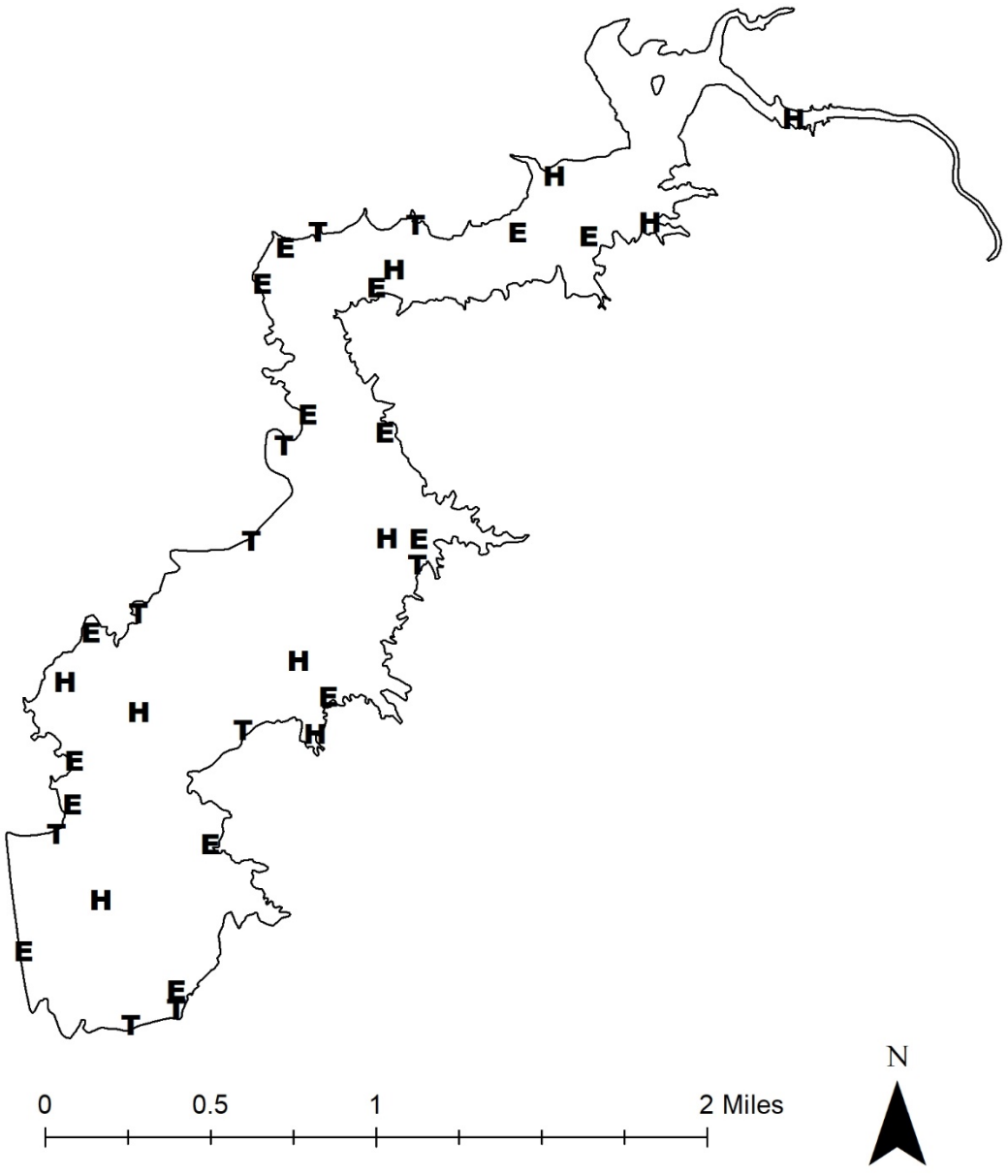
	Survey year			
	2019-2020	2020-2021	2021-2022	2022-2023
Angler Access				S
Structural Habitat				
Vegetation				S
Electrofishing – Fall		A		S
Trap netting		A		S
Baited tandem hoop netting		A		S
Creel survey				
Report				S

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 Champion Creek Reservoir, Texas, 2018-2019. Sampling effort was 10 net nights for trap netting, 1.3 hour for electrofishing, and 10 net series for tandem hoop netting.

Species	Trap Netting		Electrofishing		Hoop Netting	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad			578	462.4 (15)		
Channel Catfish					46	4.6 (23)
Green Sunfish			20	16.0 (30)		
Warmouth			4	3.2 (44)		
Bluegill			110	88.0 (19)		
Longear Sunfish			14	11.2 (51)		
Largemouth Bass			120	96.0 (15)		
White Crappie	23	2.3 (86)				

APPENDIX B – Map of sampling locations



Location of sampling sites, Champion Creek Reservoir, Texas, 2018-2019. Trap net, hoop net, and electrofishing stations are indicated by T, H, and E, respectively. Water level was approximately 12 feet below conservation pool at time of sampling.

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