

# New Ballinger 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 New Ballinger Reservoir were surveyed in 2020 using electrofishing, trap netting and in 2021 tandem hoop netting. Historical data are presented with the 2018-2021 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:** New Ballinger Reservoir is a 591-acre impoundment located on Valley Creek in the Colorado River basin in Runnels County, Texas. It was constructed in 1984 for municipal water supply and recreation. The reservoir has a history of extreme water level fluctuations. The reservoir nearly dried up and refilled three times in the past 20 years. Water levels increased significantly in spring 2016 and the reservoir returned to full pool. Shoreline access is good at the city-maintained park, and habitat is predominantly flooded terrestrial and submerged vegetation. Watershed land use is primarily ranching.

**Management History:** Important sport fish included Largemouth Bass, White Crappie, White Bass, Channel Catfish, and Blue Catfish. Following construction in 1984, the reservoir was initially stocked with Threadfin Shad, Coppernose Bluegill, Redbreast Sunfish, Blue Catfish, Channel Catfish, Palmetto Bass, Smallmouth Bass, Florida Largemouth Bass, and Walleye. Periods of drying and refilling were followed up with stockings of Largemouth Bass, Bluegill, White Crappie, Channel Catfish, Walleye, and Gizzard Shad. Sport fish harvest has been managed with statewide regulations.

### Fish Community

- **Prey species:** Electrofishing catch of Gizzard Shad has declined in recent surveys while Bluegill relative abundance has increased. Only 61% of Gizzard Shad were available to most predators in 2020. Most Bluegill were 4 inches long with few over 6 inches.
- **Channel Catfish:** The Channel Catfish relative abundance has increased in recent surveys, with significant improvements in the availability of harvestable size fish.
- **White Bass:** White Bass are present in the reservoir but remain low in relative abundance and were not specifically targeted during sampling in 2020-2021. A lake record 2.6 lbs. White Bass was caught in spring 2018.
- **Largemouth Bass:** Largemouth Bass relative abundance has increased over last three survey and catch rates were near the historical average in 2020. Largemouth Bass had good growth (age at 14 inches long was 2.0 years). Condition was good for most inch groups indicating adequate forage. Pure Florida Bass comprised 10% of the Largemouth Bass population.
- **White Crappie:** White Crappie relative abundance was high due to a strong year-class in 2020; however, most crappie were below the minimum length limit with few fish available for harvest.

**Management Strategies:** Continue to manage harvest with statewide regulations. Monitor the fish community with electrofishing in fall 2022 and 2024, trap netting in fall 2024, and tandem hoop netting in spring 2024.

## Introduction

This document is a summary of fisheries data collected from New Ballinger Reservoir from 2018-2021. 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 2018-2021 data for comparison.

## Reservoir Description

New Ballinger Reservoir is a 591-acre impoundment located on Valley Creek in the Colorado River basin approximately 5 miles west of Ballinger in Runnels County, Texas. It was constructed in 1984 for municipal water supply and recreation. The reservoir water level dropped dramatically in 2004, 2011, and 2015. The boat ramp was closed to the public during those times. Heavy rainfall in 2005, 2007, and 2016 caused the reservoir to rise to conservation elevation (Figure 1). The reservoir has experienced relatively stable water levels since late 2017, remaining within 3 feet of conservation pool (Figure 1). Habitat is predominantly flooded saltcedar with some rock bluff, standing timber, and limit amounts of native vegetation. Watershed land use is primarily ranching. Other descriptive characteristics for New Ballinger Reservoir are shown in Table 1.

## Angler Access

New Ballinger Reservoir has one public access point at the Ballinger Municipal City Park and campground maintained by the City of Ballinger. Shoreline access is good at the park, and one concrete boat ramp is available when water level is suitable (Table 2).

## Management History

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

1. Monitor the recovery of sportfish populations following drought and low water conditions.
 

**Action:** Monitoring was conducted with Electrofishing, trap netting, and tandem hoop netting as planned. Florida strain Largemouth Bass and Channel Catfish were stocked in 2018 and 2019. Largemouth Bass fin clips for genetic analysis were collected in 2020.
2. Cooperate with the City of Ballinger 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 Ballinger to post signage and to educate the public on invasive species threats through media outlets.

**Harvest regulation history:** Sport fish in New Ballinger Reservoir are currently managed with statewide regulations (Table 3).

**Stocking history:** Gizzard Shad, Largemouth Bass, White Crappie, Channel Catfish and Walleye were stocked in 2005 to rebuild the populations following severe low water conditions. Walleye stockings were discontinued after 2007. The complete stocking history is shown in Table 4.

**Vegetation/habitat management history:** New Ballinger Reservoir has no significant vegetation/habitat management history.

**Water transfer:** No interbasin water transfers are known to occur.

## Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for New Ballinger Reservoir (Wright 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, 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).

**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 2017). Micro-satellite DNA analysis was used to determine genetic composition of individual fish since 2005. Electrophoresis analysis was used prior to 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 and creel statistics.

**Habitat** – A structural habitat and vegetation survey was conducted in 2020. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

**Water level** – Source for water level data was the City of Ballinger (personal communication; Randy Everett, Water Treatment Plant Superintendent).

## Results and Discussion

**Habitat:** Littoral zone structural habitat consisted primarily of natural shoreline, with lesser amounts of rocky shoreline (Table 6). Standing timber covered 30.5% of the reservoir surface area. Native vegetation covered 6.7% of the reservoir's surface area (Table 7). Most of the native submerged vegetation was pondweed species while native emergent was primarily bulrush. Native aquatic vegetation has expanded in recent years due to moderately stable water levels since 2017.

**Prey species:** Electrofishing catch rates of Gizzard Shad has declined from 382.0/h in 2016, to 135.0/h in 2018, to 83.0/h in 2020 (Figure 2). IOV for Gizzard Shad has been variable over the past three surveys, ranging from 99 since 2016, 32 in 2018, and 61 in 2020 (Figure 2). Given the marginal IOV values and decline in relative abundance, the Gizzard Shad population provides only a marginal prey base for sportfish in New Ballinger Reservoir. Total CPUE of Bluegill increased from 20.0/h in 2016 to 290.0/h in 2020, likely due to increased coverage of submerged vegetation during that time frame (Figure 3). Bluegill size structure is dominated by smaller individuals ( $PSD \leq 5$  last three surveys) and provides a good forage base for predators but is likely of limited interest to anglers. Overall, the prey base is adequate to support sportfish populations in New Ballinger Reservoir.

**Channel Catfish:** The tandem hoop net catch rate of Channel Catfish has improved from 2.6/net series in 2017, to 9.2/net series 2021 (Figure 4). The catch rate of preferred size Channel Catfish (CPUE-16) has increased over the past three surveys (Figure 4). Condition of Channel Catfish from 14-17 inches was marginal in 2021 with relative weights ranging from 80-88 (Figure 4). The overall improvement in abundance and sizes of Channel Catfish over the past four years appears to be related to successful fingerling stockings from 2016-2019. The initial stocking in 2016 can be seen from the number of 7-inch Channel Catfish caught in the tandem hoop nets in 2017 (Figure 4). Additionally, the presence of a few small Channel Catfish in 2021 would indicate natural reproduction is occurring and that no further stockings are needed.

**Largemouth Bass:** The Largemouth Bass population has continued to show improvement following very low water levels from 2010-2015. Total catch rate of Largemouth Bass has increased over the past three surveys from 26.0/h in 2016, 67.0/h in 2018, to 72.0/h in 2020 (Figure 5). The abundance of legal-size fish (CPUE-14) has also improved since the 2016 survey, increasing from 0.0/h in 2016 to 17.0/h in 2020 (Figure 5). The sampling objective of 50 fish was not met, thus size structure was not calculated. However, several Largemouth Bass over 20 inches were collected in 2020, indicating improvement in the size range of fish available to anglers. Growth of Largemouth Bass was good; average age at 14 inches (13.0 to 14.9 inches) was 2.0 years (N = 13; all age 2). Body condition in 2020 was good for nearly all size classes of fish with relative weights ranging from mid-90's to the low 100's (Figure 5). In 2020, the prevalence of FLMB alleles was 72%, and prevalence of pure FLMB in samples was 10% (Table 8) indicating successful stockings from 2017-2019.

**White Crappie:** The trap net catch rate of White Crappie was 58.5/nn in 2020, significantly higher than in 2018 (10.6/nn) and 2016 (13.7/nn, Figure 6). Although the overall catch rate was high, the length frequency was dominated by small fish and the catch rate of legal-size crappie has remained below 1.0/nn over the past three surveys (Figure 6). Mean relative weights were near 100 for most size classes over the past three surveys (Figure 6). Growth of crappie was fast; the average age at 10 inches (9.0 to 10.9 inches) was 1.1 years (N = 12; range; 1 – 2 years) in 2018. While recruitment of crappie in New Ballinger reservoir is good from year to year and growth to legal length is fast, the consistent lack of legal-size crappie in the trap net survey would indicate White Crappie provide only a marginal fishery. It is unclear if the lack of legal-size crappie is due to harvest or high natural mortality, or a combination of both.

# Fisheries Management Plan for New Ballinger Reservoir, Texas

Prepared – July 2021

**ISSUE 1:** Sportfish populations have shown improvements in abundance and size structure following low water levels prior to 2016. Sampling is necessary to monitor population trends in the bass, crappie, and catfish populations.

## MANAGEMENT STRATEGIES

1. Conduct electrofishing surveys in fall 2022 and 2024 to monitor Largemouth Bass population.
2. Conduct fall trap netting for White Crappie and tandem baited hoop netting for Channel Catfish in 2024.
3. Explore opportunities to stock Threadfin Shad through either a management stocking or from a private producer.

**ISSUE 2:** Angler effort at New Ballinger Reservoir is unknown. Anecdotal evidence suggest angler effort is low, given it's rural location, small size, and lack of boat trailers during visits to the lake. Game cameras may be useful in identifying the level of angler use.

## MANAGEMENT STRATEGY

1. Work with the City of Ballinger to place game cameras at the boat ramp parking area to estimate angler use.

**ISSUE 3:** Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels 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 City of Ballinger to post appropriate signage at access points around the reservoir.
2. Educate the public about invasive species through the use of media and the internet.
3. Make a speaking point about invasive species when presenting to constituent and user groups.
4. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

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

### Sport fish, forage fish, and other important fishes

Important sport fish include Largemouth Bass, Channel Catfish, and White Crappie. Important forage fish include Gizzard Shad and Bluegill.

### Low-density fisheries

**Flathead Catfish:** Flathead Catfish are present in the reservoir but catch rates have been very low. Sampling this population is unnecessary during 2021-2025.

**White Bass:** White Bass are present in the reservoir, but abundance has been highly variable likely due to inconsistent recruitment and fluctuating water levels. From 1995 to 2017 catch rates have ranged from 0.0/nn to 10.2/nn. Collecting enough White Bass to assess the population is unlikely. Sampling this population is unnecessary during 2021-2025.

### Survey objectives, fisheries metrics, and sampling objectives

**Largemouth Bass:** Largemouth Bass are a primary sport fish in New Ballinger Reservoir and 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. A minimum of 12 randomly selected 5-min electrofishing sites will be sampled in fall 2022 and 2024. Twelve random stations will be determined for electrofishing. In addition to the original 12 stations, another 3 random stations will be determined in the event extra sampling is necessary. A maximum of 15 stations will be sampled. Otoliths from 13 fish between 13.0 and 14.9 inches will be collected in 2024 to determine mean age at 14 inches to monitor large-scale changes in growth. Relative weight of Largemouth Bass  $\geq 8$  inches will be determined from their length/weight data.

**White Crappie:** Historically, White Crappie were abundant in New Ballinger Reservoir and provided excellent angling opportunities. White Crappie have been sampled periodically since 1998 with 5 single-cod, shoreline-set, trap nets in late fall, with CPUE ranging from 13.7-56.5/nn. However, RSE has been variable and has ranged from 27 to 47 during this timeframe. A minimum of 10 randomly selected trap netting sites will be sampled in fall 2024. No additional sampling effort will be expended if objectives are not met in 10 net nights. Otoliths from 13 fish between 9.0 and 10.9 inches will be collected in 2024 to determine mean age at 10 inches to monitor large-scale changes in growth. Relative weight of White Crappie  $\geq 5$  inches will be determined from their length/weight data.

**Channel Catfish:** Channel Catfish will be sampled with baited tandem hoop nets in the spring 2024. Ten sets using the recommended 2-night soak duration to monitor for changes in general population trends. Sampling objectives for relative abundance and size data will be exploratory as the Channel Catfish population is still in a recovery phase. No additional sampling will occur beyond the original 10 sets.

**Sunfish and Gizzard Shad:** Sunfish and Gizzard Shad both are important forage fish in New Ballinger Reservoir. From 2005 to 2016 CPUEs of Bluegill ranged from 11.0 fish/h to 356.0 fish/h and Gizzard Shad have ranged from 76.6 fish/h to 382.0 fish/h. 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. Sampling effort based on achieving sampling objectives for Largemouth Bass should



result in sufficient numbers of bluegill size structure estimation (PSD; 50 fish minimum with 80% confidence) and relative abundance estimates ( $RSE < 25$  of CPUE-Total). If the objectives for Bluegill and Gizzard Shad are not attained, per the sampling effort for Largemouth Bass, no additional effort will be expended for prey species.

## Literature Cited

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- DiCenzo, V. J., M. J. Maceina, and M. R. Stimpert. 1996. Relations between reservoir trophic state and Gizzard Shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.
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## Tables and Figures

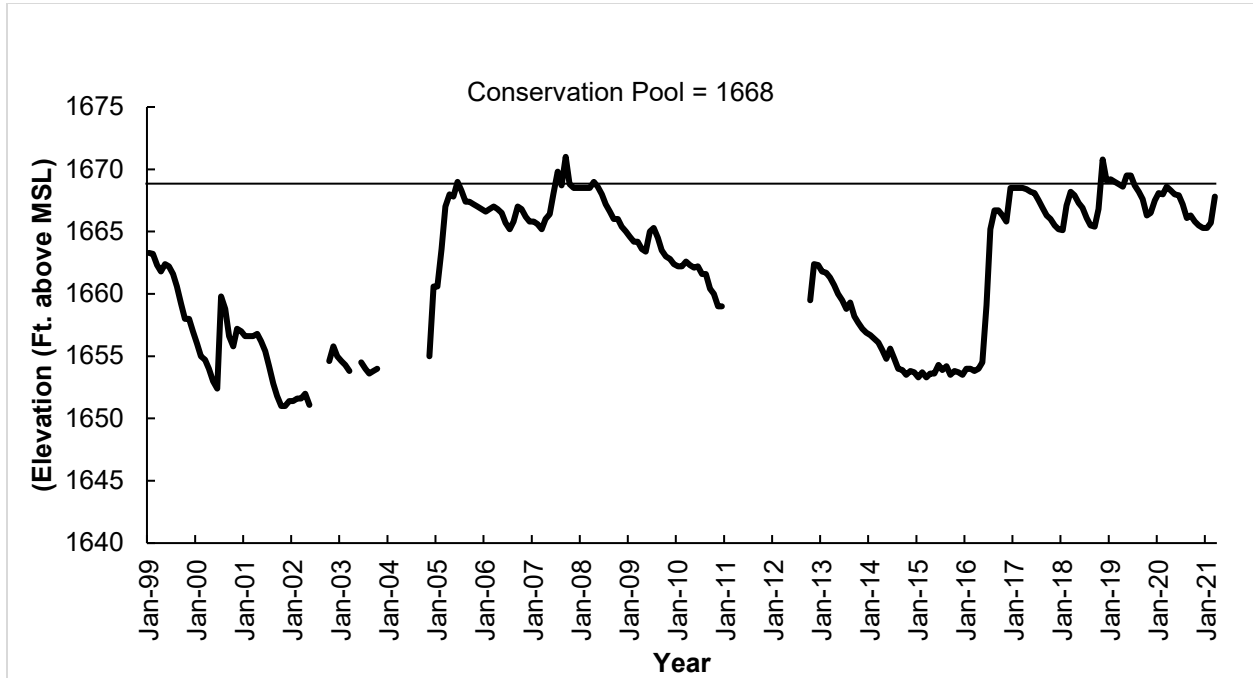


Figure 1. Mean monthly water level elevations in feet above mean sea level (MSL) recorded for New Ballinger Reservoir, Texas. Water level data was unavailable during some months

Table 1. Characteristics of New Ballinger Reservoir, Texas.

Characteristic	Description
Year constructed	1984
Controlling authority	City of Ballinger
County	Runnels
Reservoir type	Tributary of the Colorado River
Shoreline Development Index	3.01
Conductivity	1,337 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for New Ballinger Reservoir, Texas, September 2020. Reservoir elevation at time of survey was 1,666 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Ballinger Municipal Lake Park	31.74021 -100.0357	Y	30	1,660	Good, no issues. Extension not feasible

Table 3. Harvest regulations for New Ballinger 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 New Ballinger Reservoir, Texas. FGL = fingerling; ADL = adults; UNK = unknown.

Species	Year(s) Stocked	Number of Years	Number Stocked	Size
Gizzard Shad	2005	1	196	ADL
Threadfin Shad	1985	1	1,000	UNK
Blue Catfish	1984-1995	4	82,527	FGL
Channel Catfish	1986-2013	5	201,058	FGL
	2016	1	45,210	FGL
	2017	1	27,602	FGL
	2018	1	51,957	FGL
	2019	1	61,610	FGL
Palmetto Bass	1985	1	57,389	FRY
Redbreast Sunfish	1985	1	8,262	FGL
Bluegill	2005	1	386	ADL
	2013	1	15,720	FGL
Coppernose Bluegill	1985	1	60,000	UNK
Smallmouth Bass	1985-1987	3	38,025	FGL
Largemouth Bass	2005	1	68	ADL
White Crappie	2005	1	327	ADL
Florida Largemouth Bass	1985-2013	5	167,776	FGL
	2017	1	55,342	FGL
	2018	1	51,814	FGL
	2019	1	9,522	FGL
Walleye	1985-1995	3	3,850,000	FRY
	1996-2007	4	170,142	FGL

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

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Total and CPUE–Stock	RSE–Stock $\leq 25$
	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)
	Genetics	% FLMB	$N = 30$ , any age
Bluegill <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$
Gizzard Shad <sup>a</sup>	Abundance	CPUE–Total	RSE $\leq 25$
	Size structure	length frequency	$N \geq 50$
	Prey availability	IOV	$N \geq 50$
<i>Trap netting</i>			
Crappie	Size structure	PSD, length frequency	$N = 50$
	Age-and-growth	Age at 10 inches	$N = 13$ , 9.0 – 10.9 inches
<i>Tandem hoop netting</i>			
Channel Catfish	Abundance	CPUE–stock	RSE–Stock $\leq 25$
	Size structure	length frequency	$N \geq 50$ stock

<sup>a</sup> No additional effort will be expended to achieve an RSE  $\leq 25$  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.

Table 6. Survey of structural habitat types, New Ballinger Reservoir, Texas, 2020. Shoreline habitat type units are in miles and standing timber is acres.

Habitat type	Estimate	% of total
Natural	7.4 miles	76.3
Rocky	1.7 miles	17.5
Rip Rap	0.6 miles	6.2
Standing timber	180.0 acres	30.5

Table 7. Survey of aquatic vegetation, New Ballinger Reservoir, Texas, 2020. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2016	2020
Native submersed	0.0	22.0 (3.7)
Native floating-leaved	0.0	2.0 (2.0)
Native emergent	0.0	6.0 (1.0)

## Gizzard Shad

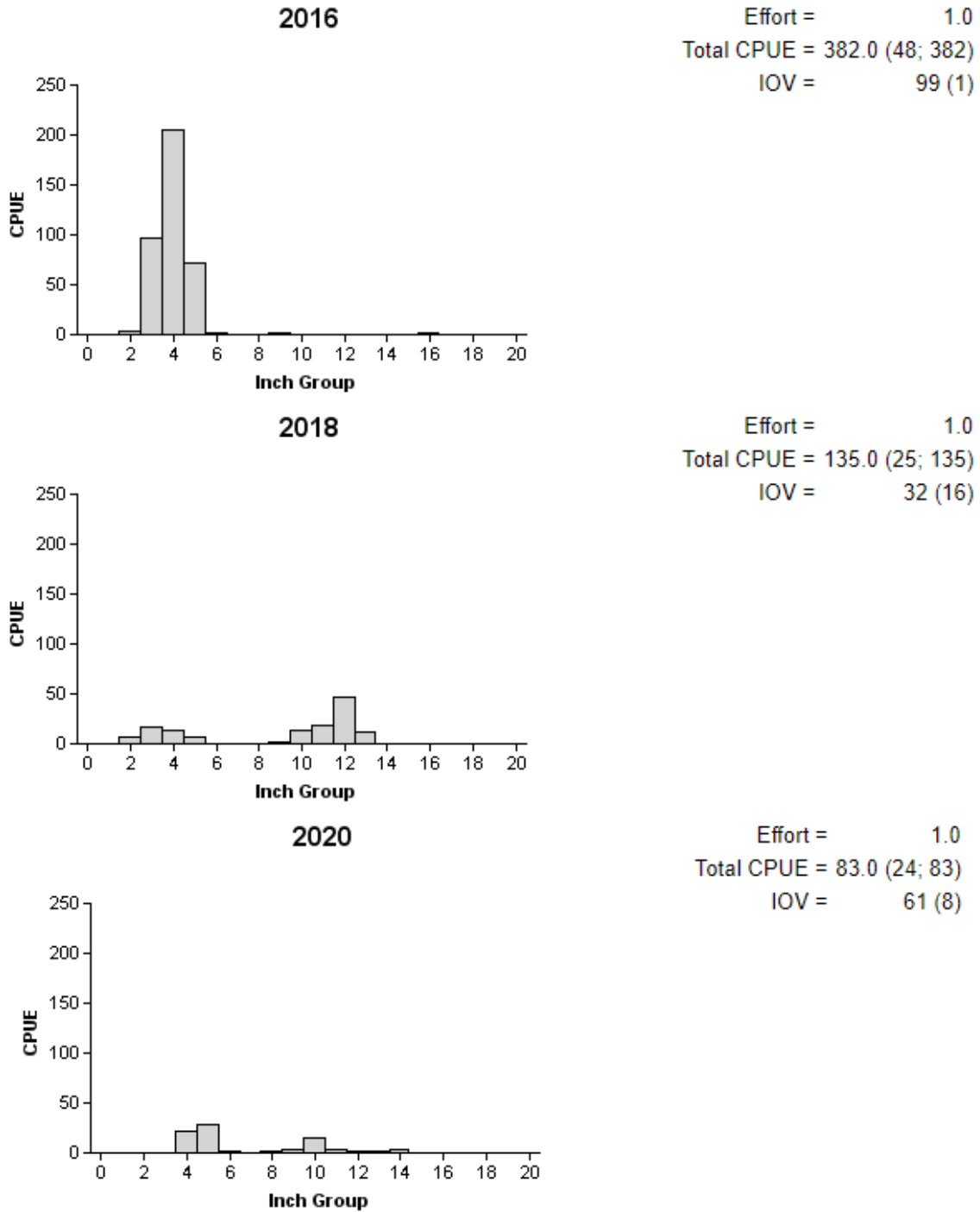


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, New Ballinger Reservoir, Texas, 2016, 2018, and 2020.



## Bluegill

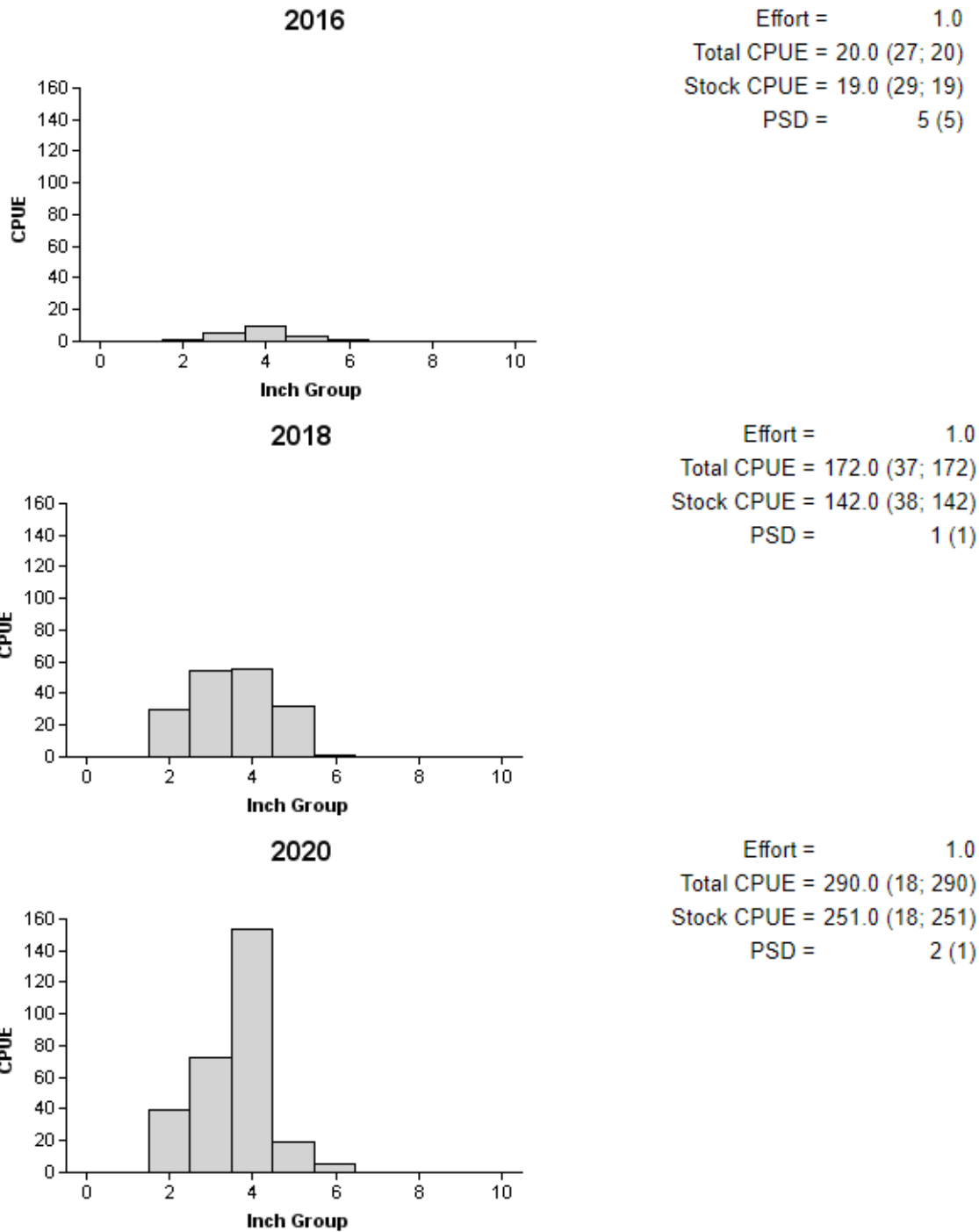


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, New Ballinger Reservoir, Texas, 2016, 2018, and 2020.

### Channel Catfish

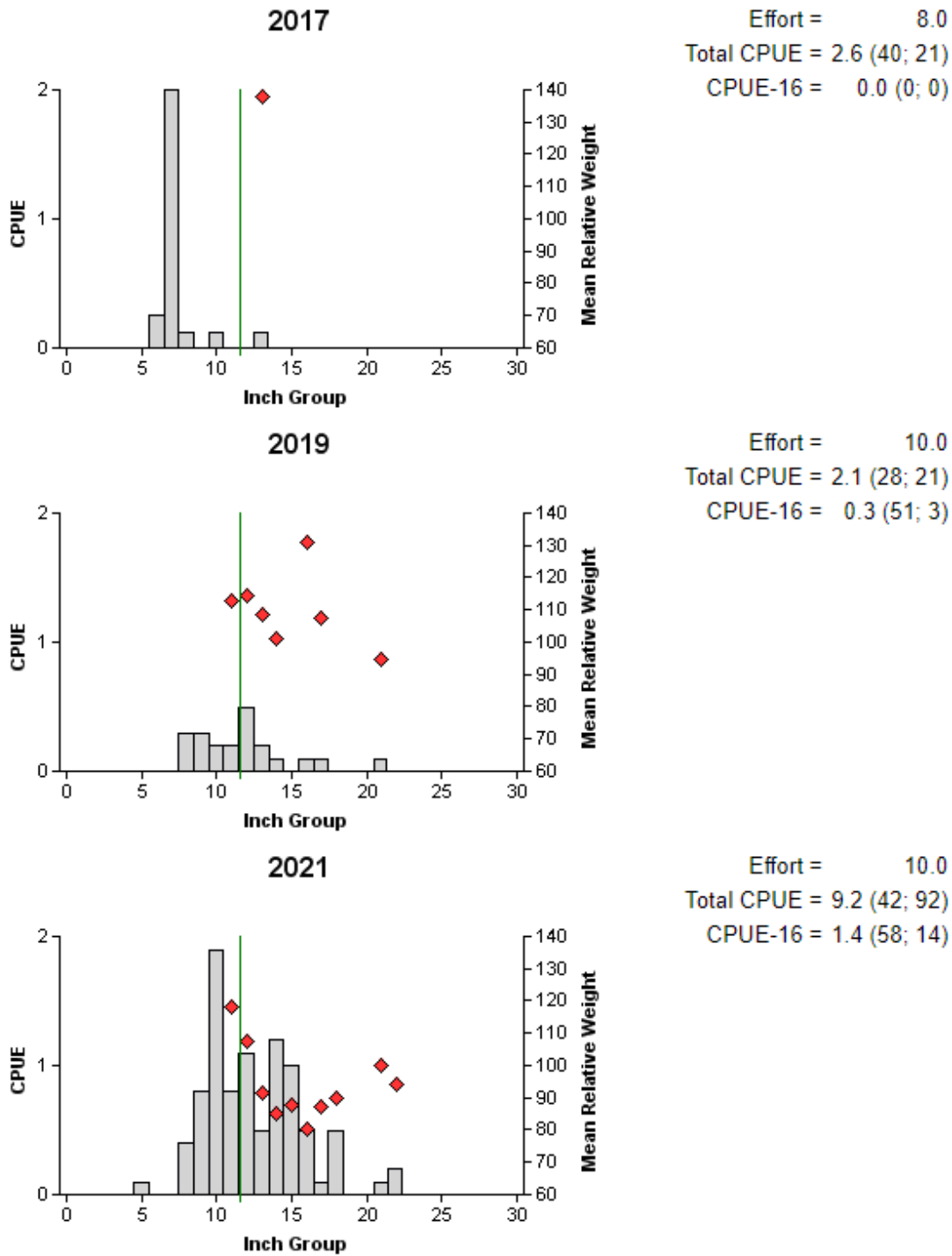


Figure 4. Number of Channel Catfish caught per tandem series (CPUE) and population indices (RSE and N for CPUE are in parentheses) for spring tandem hoop netting surveys, New Ballinger Reservoir, Texas, 2017, 2019, and 2021. Vertical line indicates minimum length limit.

## Largemouth Bass

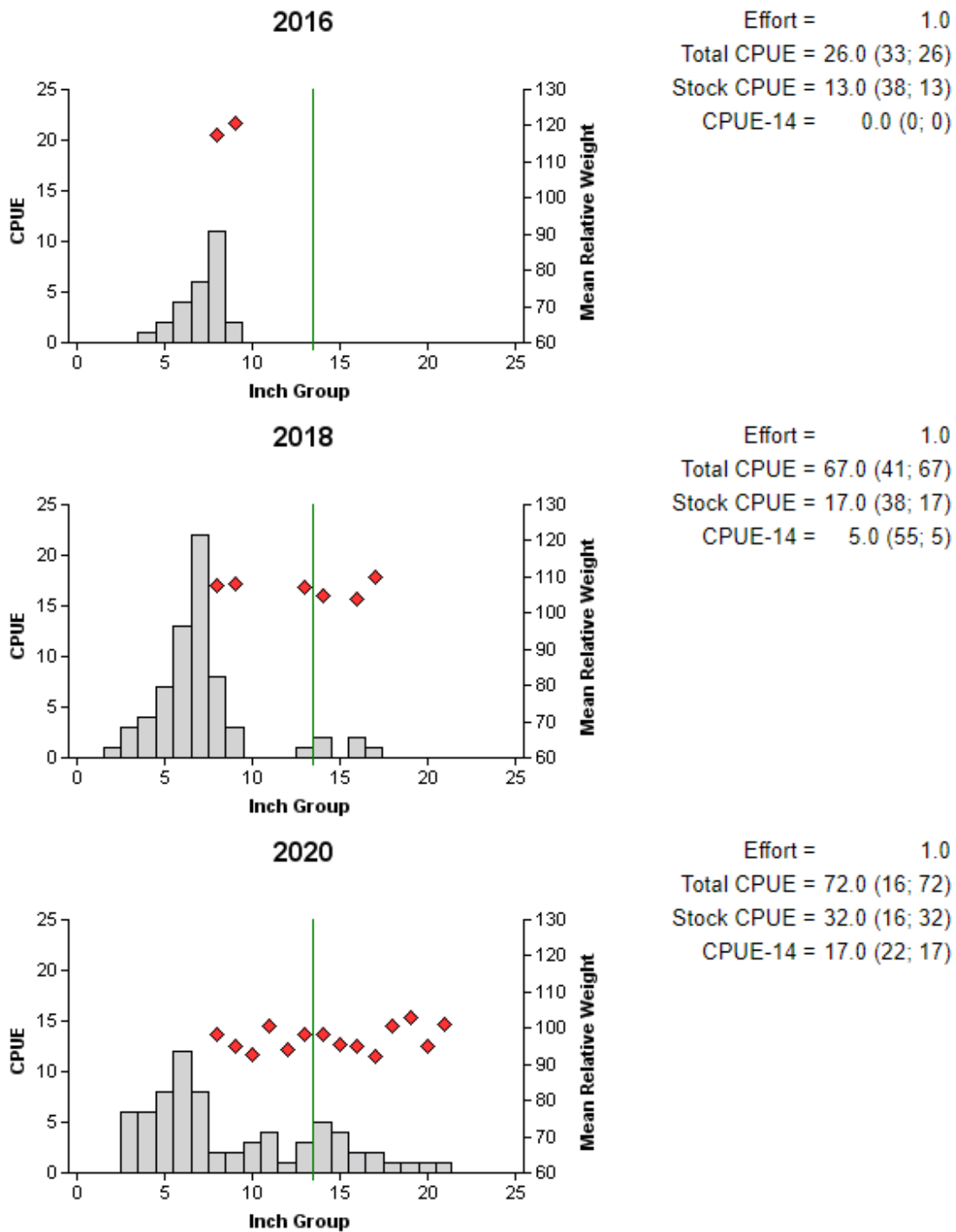


Figure 5. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE are in parentheses) for fall electrofishing surveys, New Ballinger Reservoir, Texas, 2016, 2018, and 2020. Vertical line indicates the minimum length limit.

Table 8. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, New Ballinger Reservoir, Texas, 2020. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined with micro-satellite DNA analysis.

Year	Sample size	Number of fish			% FLMB alleles	% FLMB
		FLMB	Intergrade	NLMB		
2020	20	2	18	0	72.0	10.0

## White Crappie

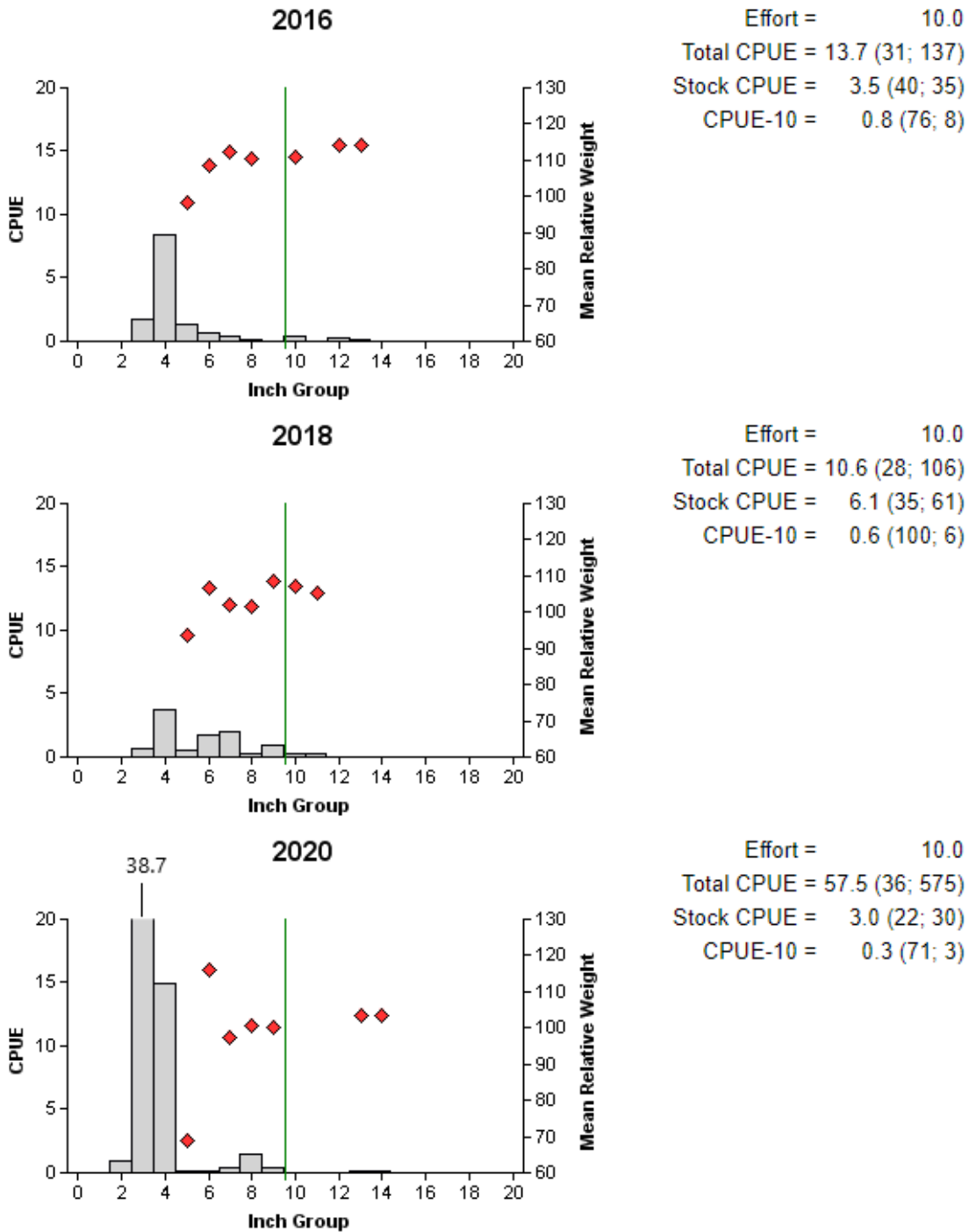


Figure 6. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE are in parentheses) for fall trap netting surveys, New Ballinger Reservoir, Texas, 2016, 2018, and 2020. Vertical line indicates minimum length limit.

## Proposed Sampling Schedule

Table 9. Proposed sampling schedule for New Ballinger Reservoir, Texas. Survey period is June through May. Tandem hoop netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall.

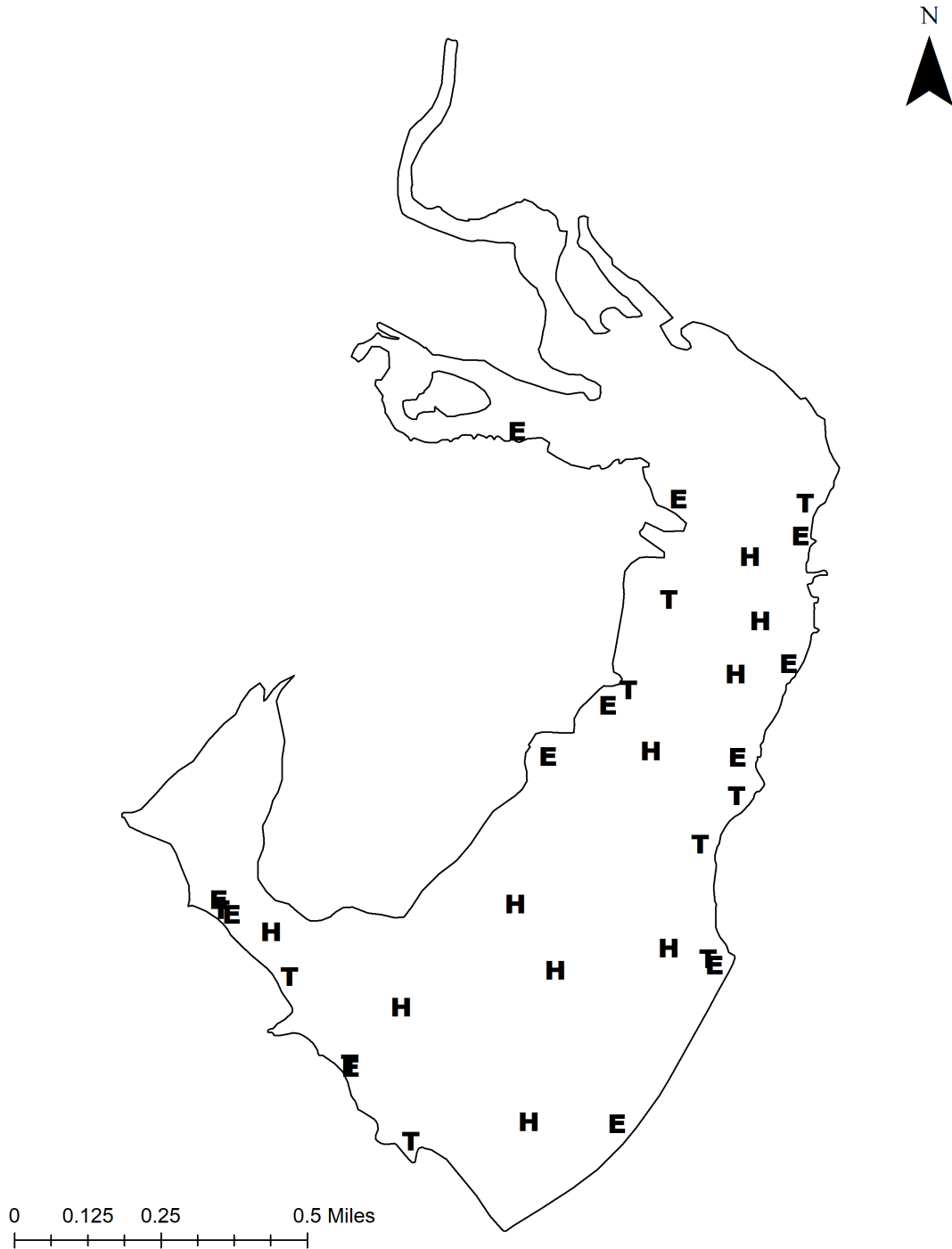
	Survey year			
	2021-2022	2022-2023	2023-2024	2024-2025
Angler Access				X
Structural Habitat				
Vegetation				X
Electrofishing – Fall		X		X
Trap Netting				X
Tandem Hoop Netting				X
Report				X

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

Number (N) and catch rate (CPUE) (RSE in parentheses) of all target species collected from all gear types from New Ballinger Reservoir, Texas, 2020-2021. Sampling effort was 10 net series for tandem hoop netting, 10 net nights for trap netting, and 1 hour for electrofishing.

Species	Tandem Hoop Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad					83	83.0 (24)
Channel Catfish	92	9.2 (42)				
Green Sunfish					1	1.0 (100)
Warmouth					20	20.0 (27)
Bluegill					290	290.0 (18)
Longear Sunfish					21	21.0 (48)
Redear Sunfish					1	1.0 (100)
Largemouth Bass					72	72.0 (16)
White Crappie			573	57.5 (36)		

## APPENDIX B – Map of sampling locations



Location of sampling sites, New Ballinger Reservoir, Texas, 2020-2021. Trap net, tandem hoop net, and electrofishing stations are indicated by T, H, and E, respectively. Water level was approximately 2 feet below conservation pool at time of sampling.





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