

Marine 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

Prepared by:

Raphael Brock, District Management Supervisor
Thomas Hungerford, Assistant District Management Supervisor
and
Cynthia Fox Holt, Assistant District Management Supervisor

Inland Fisheries Division
Dallas/Fort Worth District, Fort Worth, Texas

Carter Smith
Executive Director

Craig Bonds
Director, Inland Fisheries

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Survey and Management Summary

Fish populations in Marine Creek Reservoir were surveyed in 2018 using electrofishing and trap netting and in 2019 using gill 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: Marine Creek is a 250-acre reservoir located on Marine Creek (a tributary of the Trinity River) in Tarrant County. The reservoir was constructed in 1958 by the Tarrant Regional Water District primarily for flood control and limited recreational activities. Habitat is limited but composed mainly of native emergent aquatic vegetation in the forms of water willow, cattails, bulrush and rocky shoreline.

Management History: Important sport fish include Largemouth Bass, White Bass, White Crappie, and Channel Catfish. Sport fish populations, except Largemouth Bass, are managed with statewide regulations. Marine Creek was a study site for the first phase of the Operation World Record (OWR) research project. Operation World Record was a project designed to test the growth rates of local Largemouth Bass (LMB), Florida Largemouth Bass (FLMB), and ShareLunker Largemouth Bass (offspring). Largemouth Bass were managed under the statewide 14-inch minimum length limit until September 1, 2006 when the minimum length limit was changed to 18 inches to protect the Largemouth Bass in the OWR project. Phase 1 of the project included stocking LMB and FLMB fingerlings into Marine Creek in 2006 and 2008. In 2014, tagged ShareLunker Largemouth Bass and FLMB were stocked as part of phase two of the OWR project. In summer of 2013 and 2014, white water lily, arrowhead, and pickerel weed were planted at various locations along the shoreline. However, high water levels in 2015 flooded the vegetation preventing establishment and additional growth. In 2017, artificial fish habitat structures were deployed near shore at two locations in Marine Creek Reservoir.

Fish Community

- **Prey species:** Threadfin Shad were present in the reservoir. Electrofishing catch of Gizzard Shad was low, and few Gizzard Shad were available as prey to most sport fish. Electrofishing catch of Bluegill was high, but few Bluegill were over 6-inches long.
- **Catfishes:** Channel Catfish catch rates were low, but most fish collected were available to anglers for harvest. One Blue Catfish was collected in our spring gill netting survey.
- **White bass:** White Bass are present in the reservoir in low numbers.
- **Black basses:** Largemouth Bass were abundant and in good condition. Few legal-size fish were available to anglers. Spotted bass are present in the reservoir and have good body condition.
- **White Crappie:** White Crappie were present in low numbers with legal-size fish available to anglers.

Management Strategies: This reservoir will be monitored with electrofishing and trap netting in 2022 and gill netting in 2023. Stock Sharelunker Largemouth Bass over the next two years. Collect fin clips from all Largemouth Bass \geq 5 pounds. Inform the public about the negative impacts of aquatic invasive species.

Introduction

This document is a summary of fisheries data collected from Marine 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

Marine Creek Reservoir is a 250-acre impoundment in Tarrant County constructed in 1958 on Marine Creek (a tributary of the Trinity River), by the Tarrant Regional Water District (TRWD) for flood control and limited recreational activities. Water level remains fairly constant (within 2 feet) even during times of prolonged drought. The watershed is small and mostly contains residential development with some agricultural land remaining. Angler and boat access are adequate. Most of the fishing facilities are ADA compliant. Fishery habitat was emergent aquatic vegetation in the forms of water willow, cattails, and bulrush along with rocky shoreline. Other descriptive characteristics for Marine Creek Reservoir are in Table 1.

Angler Access

Marine Creek Reservoir has two public boat ramps and no private boat ramps. Both ramps are open year-round and stable water level keeps access consistent. The IH 820 Access Road ramp has a single-lane paved boat ramp, ample paved parking, multiple floating docks, shoreline fishing access, and a portable restroom. Ten Mile Bridge ramp has a 4-lane paved boat ramp, limited, gravel parking and shoreline fishing access. Additional boat ramp characteristics are in Table 2. Shoreline angler access to fish habitat is limited, with most fish habitat only being accessible to boat anglers.

Management History

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

1. Request native vegetation for additional plantings in the reservoir. Plantings of white water lily, pickerel weed, and arrowhead proved successful in 2013 and 2014.
Action: Additional plantings of white water lily, pickerel weed and arrowhead were planned for 2015 and 2016, but flood conditions in 2015 increased the water level of Marine creek by several feet, preventing establishment of new plantings and flooding out previously established plants.
2. All LMB collected during sampling were checked for coded-wire tags. Fin clips were collected from tagged LMB for DNA confirmation of OWR project LMB.
Action: Sample size of age-4 females from Marine Creek was too low for it to be included in data analysis and comparison for Phase 2 of the OWR project. Nonetheless, the influence of the OWR stockings was evident in the genetics of Largemouth Bass from Marine Creek (Appendix E).
3. Cooperate with controlling authorities 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 DFW District continued to work with Tarrant Regional Water District (TRWD) to post signage and to educate the public about invasive species threats through media outlets.

Harvest regulation history: Sport fish populations in Marine Creek Reservoir were managed with statewide regulations except for an 18-inch minimum length limit on Largemouth Bass. In 2006, the regulation was changed from the statewide 14-in minimum length limit to protect the genetically superior Largemouth Bass that were stocked as part of the Operation World Record Project. Current regulations can be found in Table 3.

Stocking history: Marine Creek was stocked in 2006, 2008, 2014, and 2019 with ShareLunker Largemouth Bass fingerlings. Channel Catfish were stocked in 2004, 2009, and 2014-2018. The complete stocking history is in Table 4.

Vegetation/habitat management history: In summer of 2013 and 2014, white water lily, arrowhead, and pickerel weed were planted at various locations along the shoreline. However, high water levels in 2015 flooded the vegetation preventing establishment and additional growth. In 2017, artificial fish habitat structures were deployed near shore at two locations in Marine Creek Reservoir. Locations are marked by signs and buoys at the reservoir. Coordinates and habitat information can be found in Appendix D.

Water transfer: Marine Creek Reservoir is primarily used for flood control and recreation. There are no pumping structures on the reservoir and no interbasin 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 Marine 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 (0.6 hour at 8, 5-min stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

Trap netting – Crappie were collected using trap nets (3 net nights at 3 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn).

Gill netting – Channel Catfish and White Bass were collected using gill nets (3 net nights at 3 stations). 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 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 statistics.

Creel survey – The last creel survey at Marine Creek was conducted in 2006-2007 (Hungerford and Brock 2011).

Habitat – A habitat survey was not conducted for the 2018-2019 sampling season

Water level – Water level data are not available for Marine Creek Reservoir, but little fluctuation of water level occurs.

Results and Discussion

Habitat: A habitat survey was last conducted on Marine Creek Reservoir in 2010 (Hungerford and Brock 2011). Habitat in Marine Creek Reservoir has remained consistent with the dominant habitat consisting of shoreline emergent vegetation in the form of water willow, cattail, bulrush, and rocky shoreline.

Prey species: Electrofishing catch rates of Gizzard Shad and Bluegill were 49.5/h and 240.0/h, respectively (Figures 1 and 2). Index of Vulnerability (IOV) for Gizzard Shad was poor, indicating that only 3% of Gizzard Shad were available to existing predators; this was similar to IOV in 2014 and significantly lower than IOV in 2010 (Figure 1). Total CPUE of Gizzard Shad was consistent with previous surveys (Figure 1). Total CPUE of Bluegill has declined since 2010 with an unbalanced size structure skewed toward smaller size classes (Figure 2). Threadfin shad were present in low abundance in Marine Creek Reservoir (Appendix A).

Channel Catfish: The gill net catch rate of Channel Catfish was 2.3/nn in 2019 (Figure 3). The Channel Catfish population continued to have low relative abundance as seen in previous 2011 and 2015 surveys (Figure 3). Body condition for Channel Catfish was lower than in 2015, but most size classes were above 80 (Figure 3).

White Bass: The gill net catch rate of White Bass was 8.3/nn in 2019 (Figure 4). White Bass catch rates have varied since sampling of Marine Creek began in 2003, ranging from 1.3 fish/nn to 11.0 fish/nn (Appendix C). Body condition for White Bass remains near optimal (average 95; Figure 4).

Largemouth Bass: The electrofishing catch rate of stock-length Largemouth Bass was 75.0/h in 2018, lower than the 90.02/h in 2014 (Figure 5). The OBS objectives for this species, abundance (CPUE – Stock; RSE \leq 25) and size structure (PSD and length frequency; $N \geq 50$) were achieved with 50 stock-size LMB collected and an RSE of 24 (Figure 5). Size structure suggests a balanced population with a PSD of 70 (Figure 5). Body condition in 2018 was good (relative weight >85) for nearly all size classes of fish and was similar to body condition in previous surveys (Figure 5). Florida alleles have increased from 25% to 50% between 2004 and 2014 and from 50 to 63% between 2014 and 2018 (Table 6). Florida genotype has increased from 0.0% to 7.4% to 25% in 2004, 2014, and 2018, respectively (Table 6).

Spotted Bass: The electrofishing catch rates of Spotted Bass were similar to previous surveys with a total CPUE of 15.0/h in 2014 and 2018 and stock-length CPUE of 15.0/h in 2014 and 13.5/h in 2018 (Figure 6). Body condition of Spotted Bass was excellent (Figure 6).

White Crappie: The trap net catch rate of White Crappie was 4.3/nn in 2018, higher than in 2014 (1.7/nn) and lower than 2010 (8.7/nn; Figure 7). The OBS objectives for this species, size structure (PSD and length frequency; $N = 50$) was not achieved as only 13 individuals were collected (Figure 7). The PSD value of 100 indicates a severely unbalanced population with all fish collected being stock-size or larger suggesting a problem with White Crappie recruitment. Crappie recruitment is known to be sporadic across years (Allen and Miranda 1998), but consistently high PSD values indicate that recruitment is an ongoing issue for White Crappie in Marine Creek. Mean relative weight was ~ 90 for all size classes in 2018 and was similar to values observed in 2014 and 2010 (Figure 7). More than half of the individuals collected were legal harvest size, an improvement from previous survey years (Figure 7).

Fisheries Management Plan for Marine Creek Reservoir, Texas

Prepared – July 2019

ISSUE 1: Marine Creek has been stocked with approximately 39,000 Sharelunker Largemouth Bass offspring since 2006. Stocking of ShareLunker offspring has resulted in at least 10 angler-caught fish, the largest of which was 14.57 lbs caught in 2019. This project is ongoing.

MANAGEMENT STRATEGIES

1. Collect fin clips from at least 30 Largemouth Bass collected during standard management surveys to continue genetic analyses.
2. Plan and continue ShareLunker offspring stockings into Marine Creek at 8-10-year intervals.
3. Request larger 4-6" fingerlings for stocking as opposed to the standard 2-3" fingerlings.

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 Tarrant Regional Water District (TRWD) 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 (2022–2023)

Sport fish, forage fish, and other important fishes

Important sport fishes in Marine Creek Reservoir include Largemouth Bass and White Crappie. Known important forage species include Gizzard and Threadfin Shad, Bluegill and Longear Sunfish.

Low density fisheries:

Channel Catfish: Channel Catfish have been present in Marine Creek Reservoir, but sampling catch rates have been consistently low. Additionally, Largemouth Bass have frequently been bycatch in gill nets at similar rates to Channel Catfish. Although the catch rate is not high, it's an unnecessary risk to the genetically superior Largemouth Bass being stocked in Marine Creek Reservoir. Therefore, given the low catch rates and risk to LMB, no gill net surveys will be conducted, and no objectives will be set for CPUE or size structure information for Channel Catfish.

Spotted Bass: Spotted Bass are present in Marine Creek Reservoir; however, they are in low relative abundance. We will record CPUE and size structure data from all Spotted Bass coincidentally captured by electrofishing surveys directed at Largemouth Bass.

White Bass: White Bass are present in Marine Creek, but the catch rates are variable and recruitment appears to be very low. Additionally, Largemouth Bass have frequently been bycatch in gill nets used to sample White Bass. Although the catch rate is not high, it's an unnecessary risk to the genetically superior Largemouth Bass being stocked in Marine Creek Reservoir. Thus, no gill net surveys will be conducted, and no objectives will be set for CPUE or size structure information for White Bass.

Survey objectives, fisheries metrics, and sampling objectives

Largemouth Bass: Electrofishing catch rates for Largemouth Bass have been historically high in Marine Creek Reservoir. Fall nighttime electrofishing will be conducted in 2022. A minimum of 8 randomly selected 5-min sites will be sampled to collect trend data on CPUE, size structure, and body condition for Largemouth Bass. Based on past catch rates, this should be adequate to obtain an RSE of CPUE-S \leq 25. If the RSE objective is not met, additional electrofishing sampling will only continue if 50 stock-size or larger fish are not captured in the first 8 sample sites. Marine Creek Reservoir has been stocked with approximately 39,000 Sharelunker Largemouth Bass since 2006 and nearly 13,000 Florida Largemouth Bass (2014) as a part of a selective breeding research project. At least 10 of the Sharelunker Largemouth Bass from the 2006 stocking have been caught by anglers including Toyota Sharelunker #577 weighing 14.57 pounds. Given the presence of genetically superior Largemouth Bass, fins will be clipped on at least 30 Largemouth Bass collected during standard sampling.

White Crappie: Previous survey data indicated that White Crappie are present in Marine Creek Reservoir. A trap-netting survey consisting of 3 single-cod shoreline net sets will be conducted in fall 2022. The objective of this sampling will be to collect a minimum of 25 stock length fish which will allow us to estimate the size structure of the population. This should provide sufficient information for monitoring of large-scale changes in the population. No additional effort will be expended if 25 stock length fish are not collected in the 3 trap nets.

Bluegill, Longear Sunfish, Threadfin and Gizzard Shad: Bluegill, Longear Sunfish, Threadfin, and Gizzard Shad are the primary forage in Marine Creek Reservoir. Like Largemouth Bass, trend data on CPUE and size structure will be collected with fall nighttime electrofishing. Sampling, as with Largemouth Bass above, will allow for monitoring of large-scale changes in Bluegill, Longear Sunfish, Threadfin and Gizzard Shad relative abundance and size structure. Sampling effort based on achieving sampling

objectives for Largemouth Bass will result in sufficient numbers of Bluegill, Longear Sunfish, Threadfin and Gizzard Shad for size structure estimation (PSD and IOV; 50 fish minimum at 8 stations with 80% confidence).

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

Table 1. Characteristics of Marine Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1958
Controlling authority	Tarrant Regional Water District
County	Tarrant
Reservoir type	Tributary Trinity River
Conductivity	315 μ S/cm

Table 2. Boat ramp characteristics for Marine Creek Reservoir, Texas, August 2018. There is no staff gauge for monitoring water levels.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
IH-820 Access Road Ramp	32.825912 -97.390618	Y	36	Unknown	Excellent
Ten Mile Bridge Road Ramp	32.828620 -97.399333	Y	15	Unknown	Ramp is good, parking is gravel and rough

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

Species	Bag limit	Length limit
Catfish: Channel and Blue, their hybrids and subspecies	25 (in any combination)	12-inch minimum
Bass, White	25	10-inch minimum
Bass, Largemouth	5	18-inch minimum
Bass: Spotted and Guadalupe	5 ^a	None
Crappie: White and Black, their hybrids and subspecies	25 (in any combination)	10-inch minimum

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

Table 4. Stocking history of Marine Creek Reservoir, Texas. FGL = fingerling.

Species	Year	Number Stocked	Size
Channel Catfish	2004	11,608	FGL
Channel Catfish	2009	18,758	FGL
Channel Catfish	2014	183	FGL
Channel Catfish	2015	185	FGL
Channel Catfish	2016	206	FGL
Channel Catfish	2017	201	FGL
Channel Catfish	2018	162	FGL
	Total	31,303	
Florida Largemouth Bass	1977	23,880	FGL
Florida Largemouth Bass	1978	15,200	FGL
Florida Largemouth Bass	2014	12,797	FGL
	Total	51,877	
ShareLunker Largemouth Bass	2006	6,290	FGL
ShareLunker Largemouth Bass	2008	6,254	FGL
ShareLunker Largemouth Bass	2014	12,599	FGL
ShareLunker Largemouth Bass	2019	13,900	FGL
	Total	39,043	

Table 4. Objective-based sampling plan components for Marine Creek Reservoir, Texas 2018–2019.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE–Stock	RSE–Stock ≤ 25
	Size structure	PSD, length frequency	$N \geq 50$ stock
	Condition	W_r	$N \geq 50$ stock
	Genetics	% FLMB	$N = 30$, any age
Bluegill ^a	Abundance	CPUE–Total	RSE ≤ 25
	Size structure	PSD, length frequency	$N \geq 50$ stock
Gizzard Shad ^a	Abundance	CPUE–Total	RSE ≤ 25
	Size structure	PSD, length frequency	None
	Prey availability	IOV	None
<i>Gill netting</i>			
Channel Catfish	Abundance	CPUE–Stock	None
	Size structure	PSD, length frequency	None
	Condition	W_r	None
White Bass	Size structure	PSD, Length frequency	None
	Condition	W_r	None
<i>Trap netting</i>			
Crappie	Size structure	PSD, length frequency	$N = 25$
	Condition	W_r	None

^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

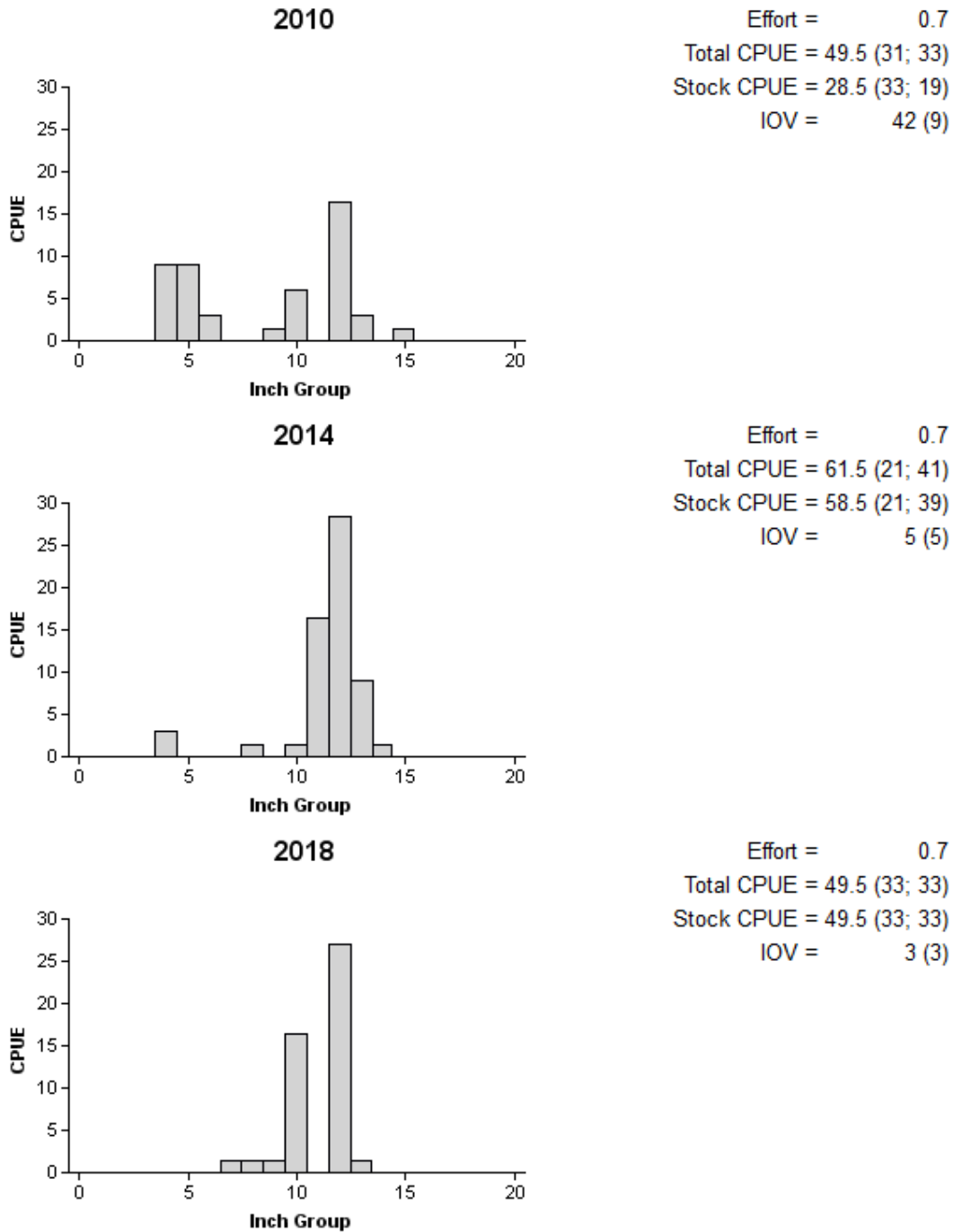


Figure 1. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Marine Reservoir, Texas, 2010, 2014, and 2018.

Bluegill

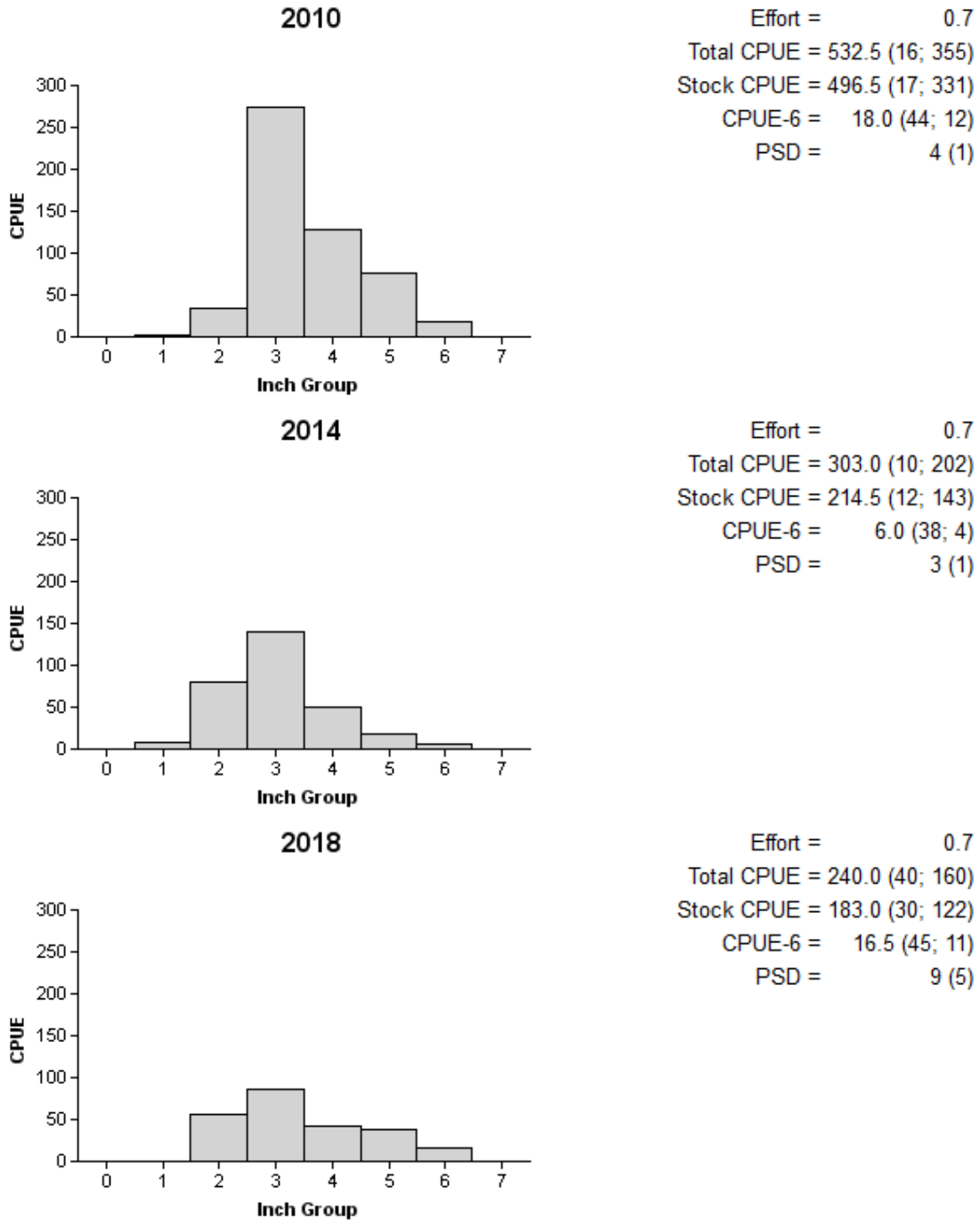


Figure 2. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Marine Creek Reservoir, Texas, 2010, 2014, and 2018.

Channel Catfish

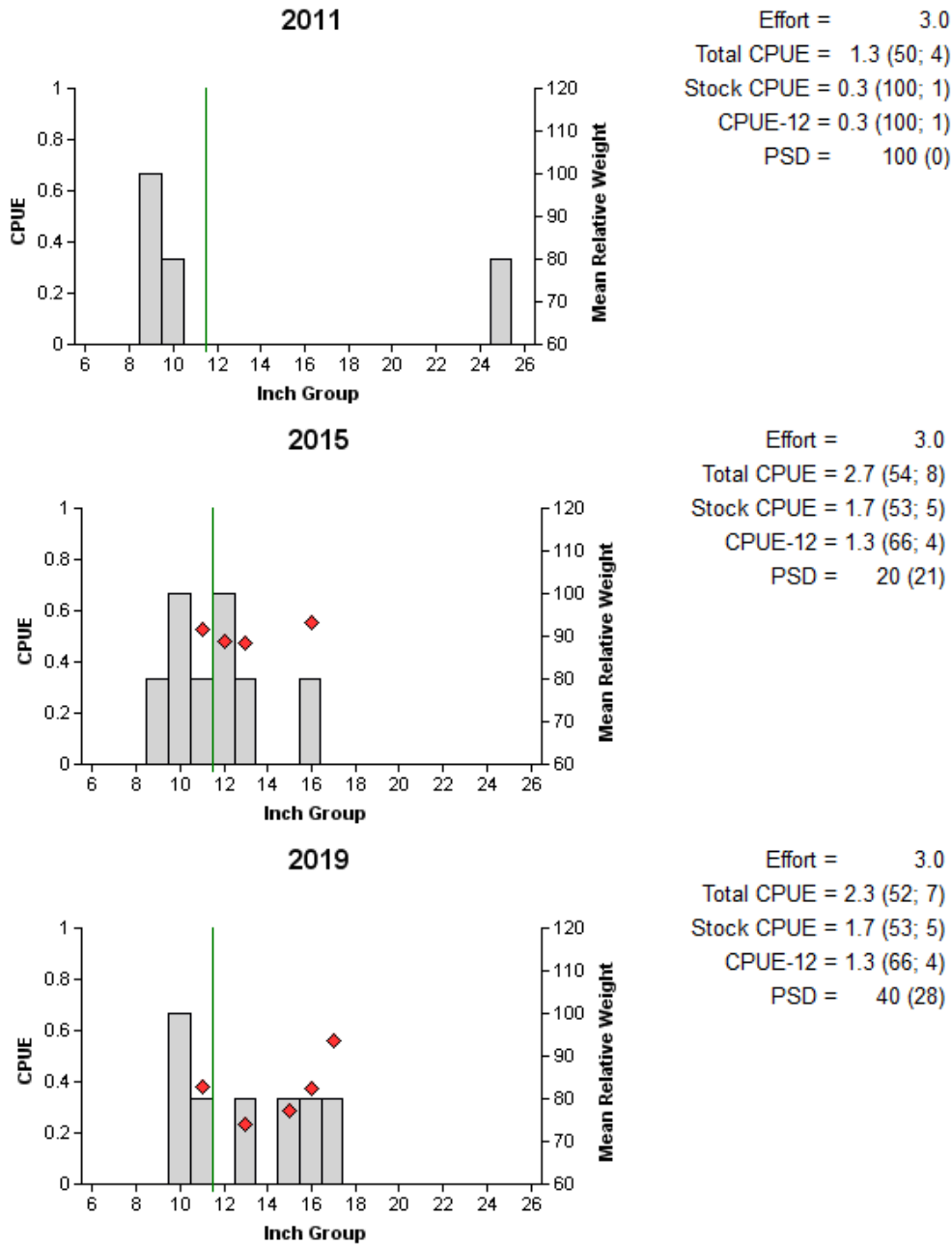


Figure 3. Number of Channel Catfish caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Marine Creek Reservoir, Texas, 2011, 2015, and 2019. Vertical line indicates minimum length limit.

White Bass

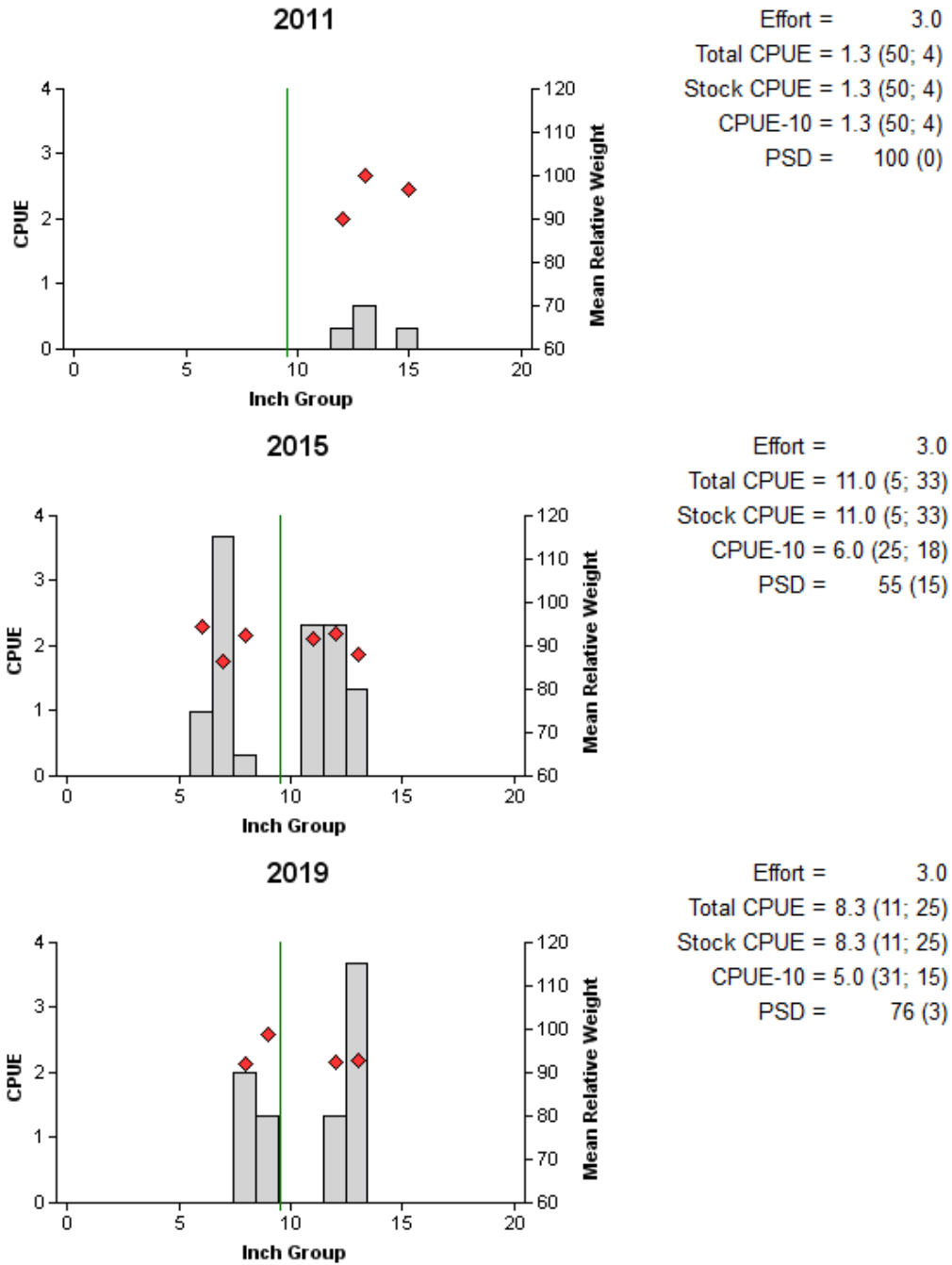


Figure 4. Number of White Bass caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Marine Creek Reservoir, Texas, 2011, 2015, and 2019. Vertical line indicates minimum length limit.

Largemouth Bass

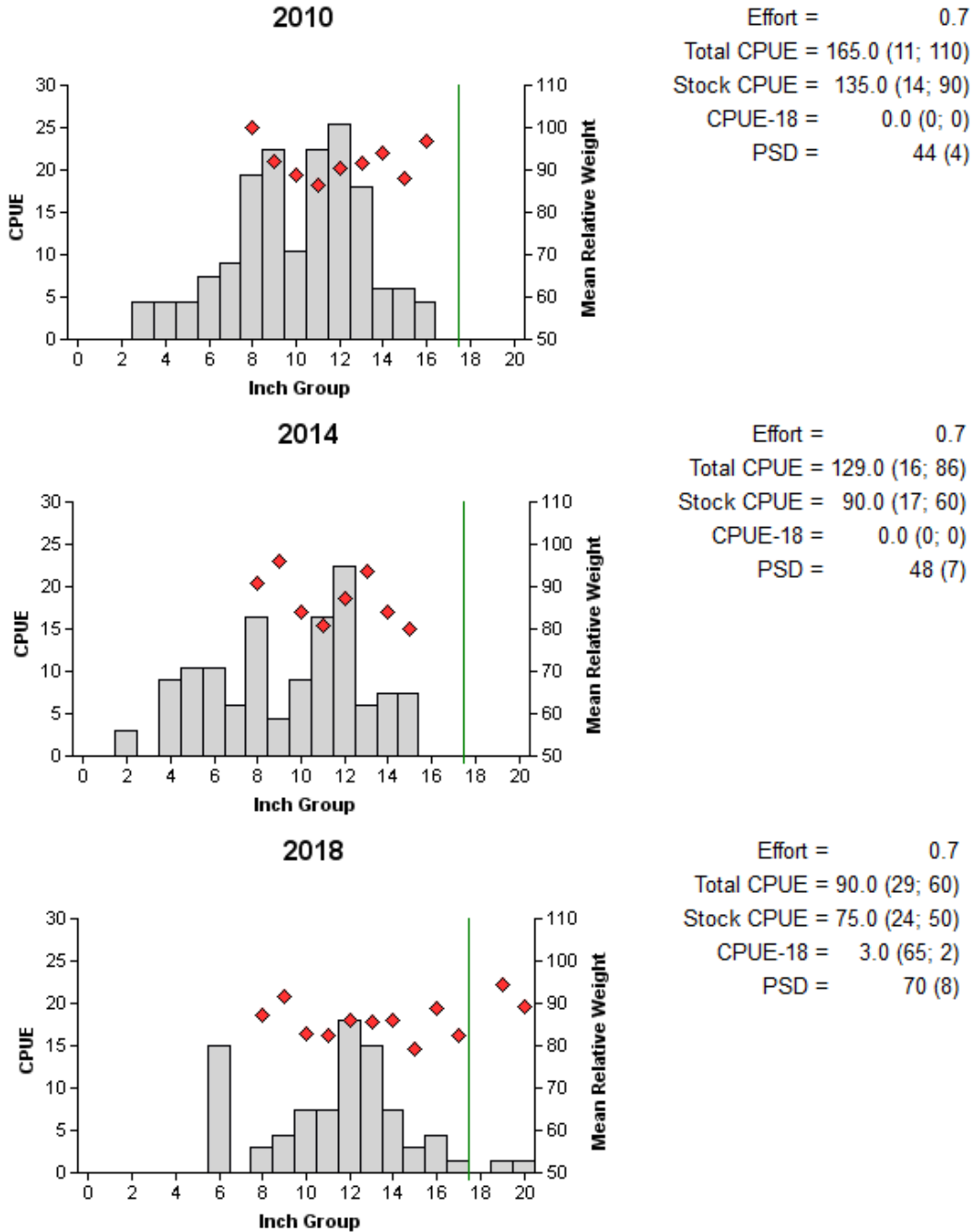


Figure 5. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Marine Creek Reservoir, Texas, 2010, 2014, and 2018. Vertical line indicates minimum length limit.

Table 6. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Marine Creek Reservoir, Texas. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, F1 = first generation hybrid between a FLMB and a NLMB, Fx = second or higher generation hybrid between a FLMB and a NLMB. Genetic composition was determined with micro-satellite DNA analysis.

Year	Sample size	Number of fish				% FLMB alleles	% pure FLMB
		FLMB	F1	Fx	NLMB		
2004	18	0	NA	14 ^a	4	25.0	0.0
2014	27	2	2	23	0	50.0	0.07
2018	4	1	1	2	0	63.0	0.25

^a Determination of hybrid status not conducted.

Spotted Bass

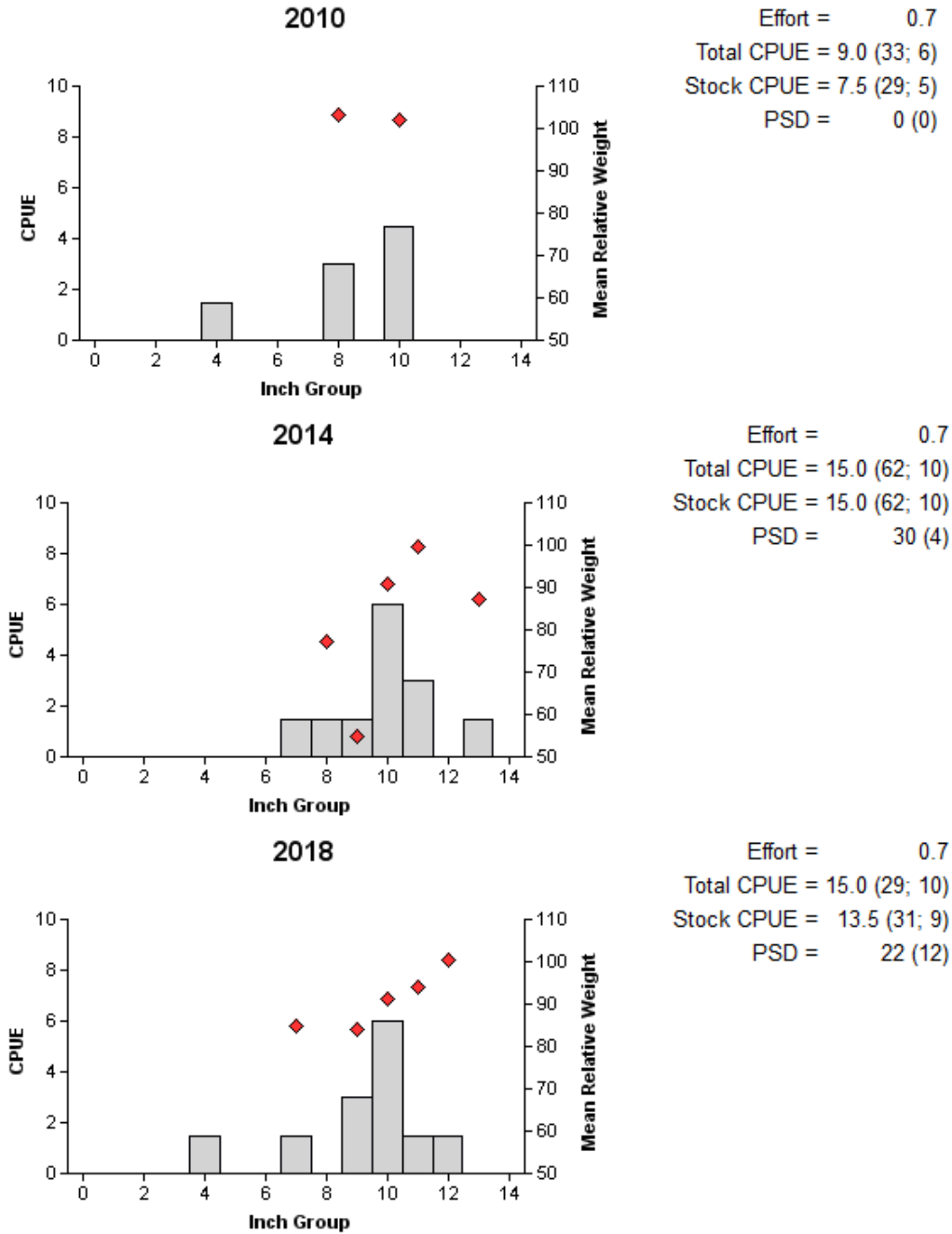


Figure 6. Number of Spotted Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Marine Creek Reservoir, Texas, 2010, 2014, and 2018.

White Crappie

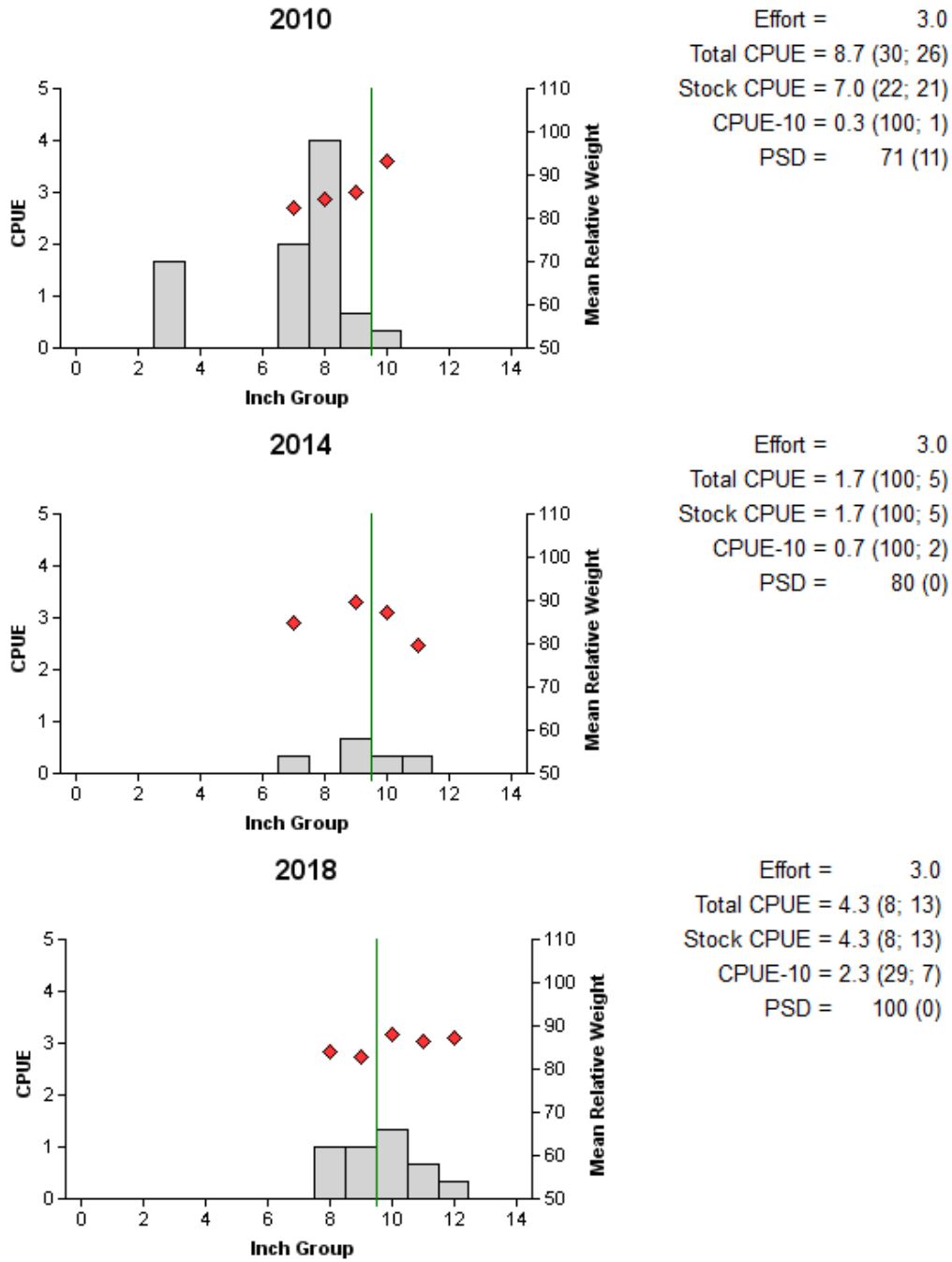


Figure 7. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Marine Creek Reservoir, Texas, 2010, 2014, and 2018. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 5. Proposed sampling schedule for Marine Creek Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

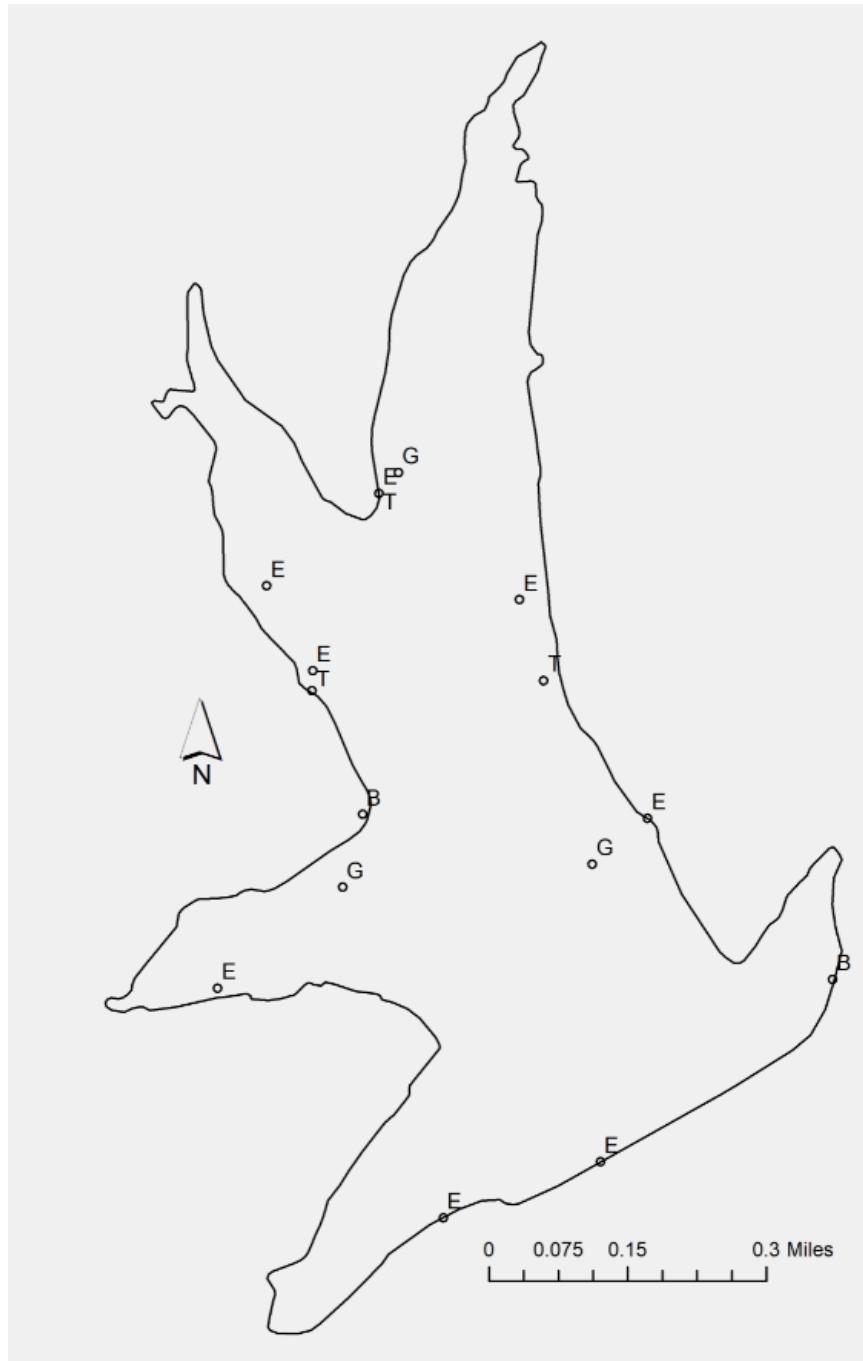
	Survey year			
	2019-2020	2020-2021	2021-2022	2022-2023
Angler Access				S
Structural Habitat				
Vegetation				
Electrofishing – Fall				S
Electrofishing – Spring				
Electrofishing – Low frequency				
Trap netting				S
Gill netting				
Baited tandem hoop netting				
Creel survey				
Report				S

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 Marine Creek Reservoir, Texas, 2018-2019. Sampling effort was 3 net nights for gill netting, 3 net nights for trap netting, and 40 minutes for electrofishing.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad					33	49.5 (33)
Threadfin Shad					13	19.5 (38)
Common Carp	1	0.33 (100)				
Blue Catfish	1	0.33 (100)				
Channel Catfish	7	2.33 (52)				
White Bass	25	8.33 (11)				
Bluegill					160	240.0 (40)
Longear Sunfish					34	51.0 (64)
Redear Sunfish					14	21.0 (39)
Spotted Bass					10	15.0 (29)
Largemouth Bass					60	90.0 (29)
White Crappie	7	2.33 (29)	13	4.33 (8)		

APPENDIX B – Map of sampling locations



Location of sampling sites, Marine Creek Reservoir, Texas, 2018-2019. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. B indicates boat ramp. Water level was near full pool at time of sampling.

Historical catch rates cont'd.

Gear	Species	Year												
		2002	2003	2004	2005	2006	2007	2008	2010	2011	2014	2015	2018	2019
<i>Gill netting</i> (fish/nn)	Gizzard Shad						8.0			4.0		9.0		4.67
	Bluegill											0.33		
	Redear Sunfish											0.33		
	Common Carp						0.67					0.33		0.33
	Channel Catfish						2.33			1.33		2.67		2.33
	Blue Catfish													0.33
	Flathead Catfish									0.33		0.33		
	Freshwater Drum						0.33							
	Spotted Bass													0.33
	Largemouth Bass						0.33			3.0		1.0		1.33
	White Bass		9.0				4.67			1.33		11.0		8.33
	White Crappie									9.33		6.33		2.33

APPENDIX D – Artificial Fish Habitat Project

Texas Parks and Wildlife Inland Fisheries Office in Fort Worth proposed a habitat project to increase shoreline angler catch rates at Marine Creek Reservoir. This reservoir has limited habitat that bank anglers can access. A major initiative of TPWD is to develop fisheries in and near urban areas. By increasing habitat, fishing success should increase at the reservoir. A total of 24 fish habitat structures were installed at two locations of Marine Creek Reservoir. These locations were selected based on depth and to avoid hindering any recreational activities at the reservoir including: skiing, rowing, and swimming. At each location, the structure cluster contains 12 individual structures and 3 buoys. To determine the effectiveness of structures on angler catch rates, we fished the structure locations and control locations using rod and reel immediately prior to installing the structures, one to three weeks after installation, and once per season for two years after installation. We will compare catch rates between structure locations and control locations to determine if the structures increase catch rates. We also proposed placing information and regulation signs at each location to make anglers aware of the structures, provide helpful information about how to fish around the structures, and provide regulation information. In theory, these structure clusters should concentrate various fish species closer to prime bank angling areas leading to greater success for bank anglers and improve overall angler satisfaction at Marine Creek Reservoir. This is a small portion of a larger habitat project for small urban lakes in the Dallas/Fort Worth area. The Inland Fisheries office in Fort Worth is working closely with Heart of the Hills research staff to develop a project to test the effectiveness of artificial (Georgia Structures) habitat at concentrating various fish species and increasing angler catch rates in small urban lakes. Data collection has been completed for two years and analysis is ongoing. After analysis is complete, we will determine if additional data need to be collected.

GPS coordinates of structure and control sites in Marine Creek Reservoir, Fort Worth, TX.

Sites	Latitude/Longitude
Structure Site 1	32.825378 -97.398031
Control Site 1	32.833325 -97.399200
Structure Site 2	32.832687 -97.395956
Control Site 2	32.834819 -97.396110



Map of control sites (circles) and structure sites (diamonds) for artificial fish habitat project in Marine Creek Reservoir, Fort Worth, TX.

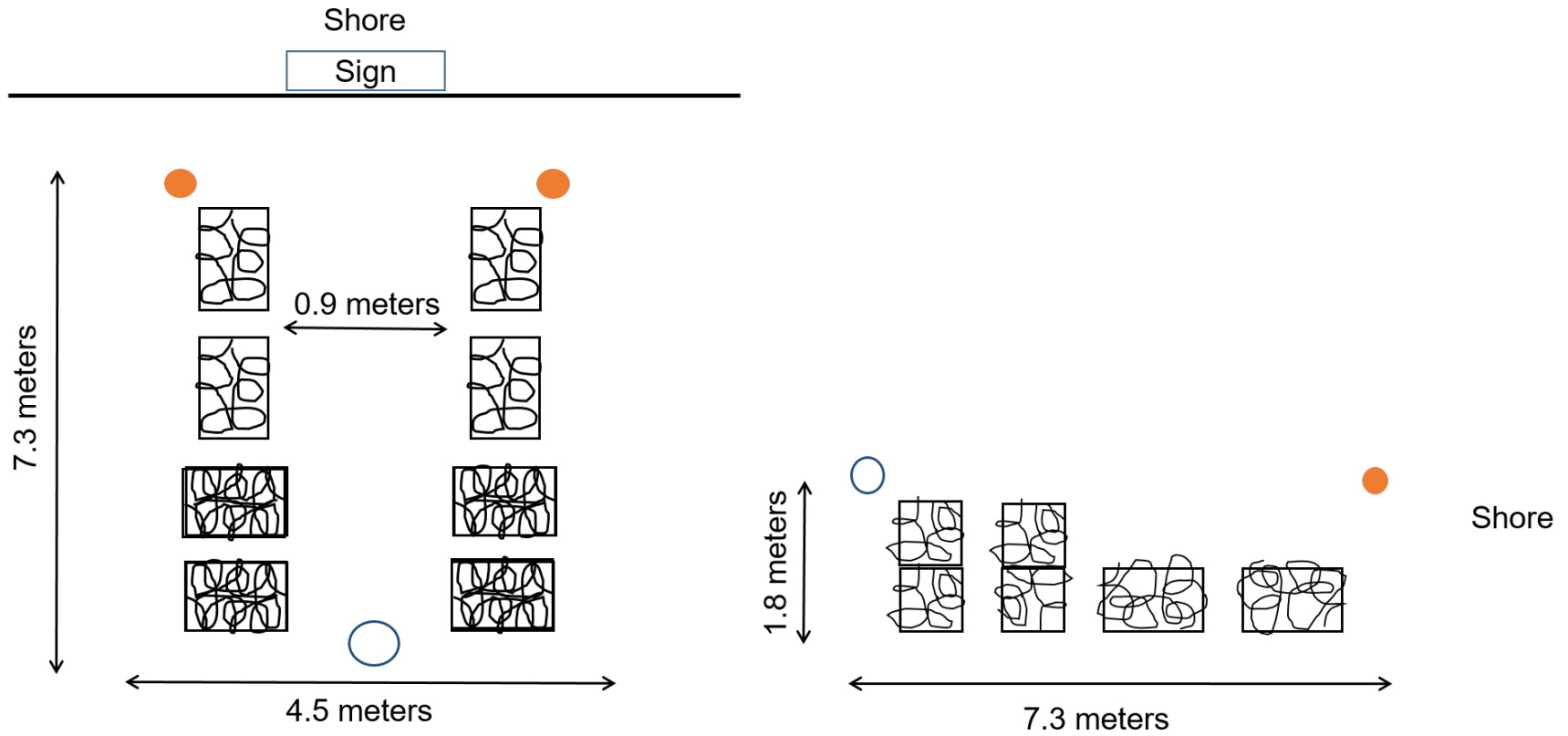


Diagram of artificial fish habitat structure cluster in Marine Creek Reservoir, Fort Worth, TX. Left side of image represents a top view of the structure cluster, right side of image represents a side view of the structure cluster. Structures = rectangles, shoreline buoys = closed circles, open water buoys = open circles. Sign indicates information signs posted at each site.

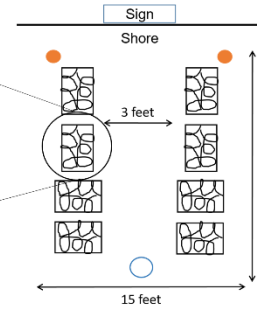


Artificial Fish Habitat Structure

Artificial habitats are a tool commonly used to concentrate sunfish and attract game fish in an effort to improve angler success.



The structure is constructed of PVC and corrugated drain pipe



Common Fish Species



Largemouth Bass



Bluegill



Green Sunfish



Longear Sunfish



Redear Sunfish



White Crappie



For more information visit:
http://tpwd.texas.gov/fishboat/fish/recreational/lakes/marine_creek/
<http://tpwd.texas.gov/fishattractor>

Recommended Fishing Techniques

- Fish outside the orange buoys
- Use artificial lures or live bait



Worms



Minnows



Soft Plastics



Crankbaits



Jigs



Spoons



Informational sign posted on shore at each artificial fish habitat structure site, Marine Creek Reservoir, Fort Worth, TX. Sign printed and posted by controlling authority, Tarrant Regional Water District (TRWD).

APPENDIX E – Operation World Record Phase 2

Detailed genetic analysis of Largemouth Bass collected from Marine Creek Reservoir, April 2018. SL = ShareLunker, LOS = ShareLunker offspring, HOS = hatchery offspring, GC = grandchild, OS = offspring, and UR = ShareLunker ancestry in unresolved configuration.

Length (mm)	Weight (g)	Sex	Genetic-Group
580	3063		SL ancestry - UR
588	3244		GC of SL-396
571	3218		GC of SL-410
357	622	M	HOS
381	727	M	LOS
358	561	M	HOS
353	544	M	HOS
586	2737		SL ancestry – UR
506	1571		SL ancestry – UR
379	669	M	LOS
374	650	M	GC of SL-413
595	2630		SL ancestry – UR
537	2256	F	LOS
593	3742		GC of SL-410; OS of PNS-0440
620	4004		GC of SL-410
481	1556		SL ancestry – UR
645	5037	F	LOS
578	2876		SL ancestry – UR
370	658	M	HOS
550	2859	F	SL ancestry – UR
561	2486		SL ancestry – UR
335	511	M	LOS
600	3244		SL ancestry – UR
442	1407	F	LOS
491	1727	F	LOS
334	442	M	LOS
583	3050		SL ancestry – UR
346	545	M	HOS
417	1273	F	SL ancestry - UR



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