

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-2

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2016 Fisheries Management Survey Report

Lake Timpson

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Timpson were surveyed in 2016 using fall electrofishing and trap netting and in 2017 using spring electrofishing (Largemouth Bass only). Historical data are presented with the 2016-2017 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:** Lake Timpson is located in Shelby County. The Shelby County Freshwater Supply District is the controlling authority. Primary uses are water supply and recreation. This reservoir has a surface area of 223 acres, a shoreline length of 8 miles, and an average depth of 8 feet. Water level fluctuations average 1-3 feet annually. Boat and bank access is adequate, with one boat ramp present.
- **Management History:** Important sport fish included Largemouth Bass and crappie. Prior to 1994, Largemouth Bass were managed under statewide regulations. In 1994, Largemouth Bass regulations were changed to a 14- to 21-inch slot length limit. This regulation has had the desired effect of producing increased numbers of Largemouth Bass that are within the protective slot length limit. In 2003, hydrilla was found in Lake Timpson, and coverage expanded to 40% of the reservoir surface area in 2004. Triploid Grass Carp were stocked in 2004 at a rate of 5 fish/vegetated acre (448 fish) to reduce hydrilla coverage. Since 2006, no hydrilla has been observed. In 2010, giant salvinia was discovered, and eradication efforts were attempted with numerous herbicide treatments; no plants were observed in 2011 or 2012. However, giant salvinia reappeared in 2013, and herbicide treatments resumed. A maximum of four acres was observed in 2015.
- **Fish Community**
 - **Prey species:** Threadfin and Gizzard Shad were present in the reservoir. Until 2016, no Gizzard Shad had been collected from the reservoir. Since the previous survey in 2012, electrofishing catch rates of Bluegill remained similar while Redear Sunfish abundance increased. Potential exists for a sunfish fishery, as a high number of Redbreast and Redear Sunfish > 6 inches were collected. Other prey species included Longear Sunfish and Warmouth.
 - **Catfishes:** Blue Catfish were stocked in 1998, but only four large fish (> 36 inches) have been collected since 2008, indicating no natural recruitment. Channel Catfish catch in past surveys has also been low, indicating poor reproduction. Anecdotal information indicates few anglers target catfish. Directed sampling effort for catfish was discontinued in 2016.
 - **Largemouth Bass:** Largemouth Bass were relatively abundant. Population size structure from recent surveys indicate the protective slot length limit has had the desired effect, with an abundance of Largemouth Bass within the protective slot length limit. Largemouth Bass had adequate growth rates and were in moderate condition.
 - **Crappies:** Although both White and Black Crappie were present in the reservoir, Black Crappie was most abundant. Population abundance increased significantly since the previous survey in 2012.
- **Management Strategies:** Continue to manage Largemouth Bass with a 14- to 21-inch slot length limit. Continue to monitor trends of hydrilla and giant salvinia coverage through annual aquatic vegetation surveys. Conduct electrofishing (fall and spring), trap net, structural, and access surveys in 2020/2021.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Timpson in 2016-2017. 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 2016-2017 data for comparison.

Reservoir Description

Lake Timpson is a 223-acre impoundment constructed in 1956. It is located in Shelby County approximately 5 miles northeast of Garrison and is operated and controlled by the Shelby County Freshwater Supply District. Primary water uses include municipal water supply and recreation. Secchi disc readings are typically 2-4 feet. Habitat at time of sampling consisted of rocks, boat docks, and limited aquatic vegetation. Hydrilla was first discovered in 2003 but no plants have been found since 2006, due to the introduction of Triploid Grass Carp. Giant salvinia was found in 2010. A rapid response that included numerous herbicide treatments was initiated at the time of discovery. A maximum coverage area of four acres was observed in 2015. The majority of the land surrounding the reservoir is used for agriculture, timber production, and residential development. Other descriptive characteristics for Lake Timpson are in Table 1.

Angler Access

Lake Timpson has one public boat ramp and a courtesy dock is present. Additional boat ramp characteristics are in Table 2. Shoreline access is limited to the public boat ramp area.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Ashe and Driscoll 2013) included:

1. Continue to remain vigilant to identify the presence of giant salvinia with plans to initiate an eradication or control response if any plants are found. Maintain signs educating the public of giant salvinia identification and reminding boaters to inspect their boat trailers to help ensure giant salvinia is not introduced to the reservoir.
Action: Aquatic vegetation surveys have been conducted annually to monitor for presence of giant salvinia. In 2013, trace amounts of giant salvinia were found. A maximum coverage of four acres was observed in 2015. Herbicide treatments were conducted in 2013 through 2017. Informational signs have been maintained.
2. Continue to monitor Largemouth Bass size structure and growth to assess the success of the implemented slot limit by fall and spring electrofishing.
Action: Fall and spring electrofishing surveys were conducted and growth was examined in 2016/2017.

Harvest regulation history: Sport fishes in Lake Timpson are currently managed with statewide regulations, with the exception of Largemouth Bass (Table 3). Prior to 1994, Largemouth Bass were managed with statewide regulations. A 14- to 21-inch slot length limit was implemented in 1994 to improve Largemouth Bass population size structure, growth, and size of bass caught by anglers.

Stocking history: Blue and Channel Catfish have been stocked into the reservoir. Florida Largemouth Bass fingerlings were stocked in 1980 and again in 1996. Threadfin Shad were introduced in 1979. Triploid Grass Carp were stocked in 2004. The complete stocking history is in Table 4.

Vegetation/habitat management history: Lake Timpson aquatic vegetation coverage has declined significantly since 2004. In 2004, the reservoir had problematic hydrilla coverage (40% of reservoir surface area). A Triploid Grass Carp stocking in 2004 (5 fish/vegetated acre) was successful, as no hydrilla has been documented since 2006. Giant salvinia was discovered in 2010 and a rapid eradication response was implemented using herbicides. No plants were observed in 2011 or 2012. Giant salvinia was observed again in 2013 and herbicide treatments have been ongoing since that time.

Water transfer: Lake Timpson is primarily used for municipal water supply and recreation. Currently, there are no interbasin water transfers from the reservoir.

METHODS

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Timpson 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 fall electrofishing in 2016 (1 hour at 12, 5-min stations) and spring electrofishing in 2017 (Largemouth Bass only; 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 11 randomly-selected fish (range 13.0 to 14.9 inches) collected during the 2016 fall electrofishing survey.

Trap netting – Crappie were collected in 2016 using trap nets (5 net nights at 5 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn).

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 = $100 \times \text{SE of the estimate/estimate}$) was calculated for CPUE.

Habitat – A structural habitat survey was conducted in 2007. Vegetation surveys were conducted in 2013 – 2016 to monitor hydrilla and giant salvinia coverage. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2015).

RESULTS AND DISCUSSION

Habitat: A structural habitat survey conducted in 2007 indicated that the littoral zone consisted primarily of rocky and natural shoreline (Ashe and Driscoll 2013). Hydrilla has not been documented since 2006. The eradication of hydrilla can likely be attributed to the Triploid Grass Carp stocking in 2004 and low water levels in 2005, 2006, and 2011. Giant salvinia was discovered in 2010. After rapid treatment with herbicides, no plants were observed in 2011 or 2012. Trace amounts of giant salvinia were observed in 2013 (Table 6), and herbicide treatments have been conducted annually since that time. A maximum of four acres of giant salvinia was observed in 2015. Since 2011, native aquatic vegetation coverage was limited to less than two acres (coontail, water primrose, giant cutgrass, and spikerush) (Table 6).

Prey species: Primary prey species included Threadfin Shad and Bluegill. Both species provided abundant prey. Although Gizzard Shad had not been observed in past surveys, 9.0 fish/h were collected in 2016 (Figure 1). Index of vulnerability (IOV) for Gizzard Shad was 100. Redbreast Sunfish were

relatively abundant and may provide a quality fishery (Figure 2). Bluegill had a catch rate in 2016 (349.0/h) similar to that observed in 2012 (301.0/h) (Figure 3). Other prey species included Redear Sunfish (Figure 4), Warmouth, and Longear Sunfish (Appendix A). Large Redbreast and Redear Sunfish (6 – 8 inches) were relatively abundant and may also provide a quality fishery.

Catfishes: Blue Catfish were stocked in 1998 but no natural recruitment has occurred. A total of four Blue Catfish (> 36 inches) were sampled in the last two gill net surveys conducted (2008 and 2013). Channel Catfish abundance appeared relatively low and stable, as gill net catch rates were 1.2/nn in 2008 and 1.4/nn in 2013 (Ashe and Driscoll 2013). Anecdotal information suggests there is little directed fishing effort for catfish. Beginning in 2016, there was no directed sampling for catfish.

Largemouth Bass: Fall electrofishing catch rates were lower in 2016 (93.0/h) than in 2007 and 2012 (184.0/h and 148.0/h, respectively) (Figure 5). Population size structure was similar across years (PSD range = 41 to 56). Relative weights exceeded 80 for most inch classes, indicating Largemouth Bass were in moderate condition. The spring electrofishing catch rate in 2017 (123.0/h) was similar to catch rate in 2013 (136.0/h) but lower than observed in 2008 (221.0/h) (Figure 6). Size structure was desirable for the past three surveys (PSD range = 57 - 94). Growth of Largemouth Bass was adequate; average age at 14 inches (13.5 to 14.5 inches) was 2.5 years (N = 11; range = 1 to 4 years).

Crappie: Although both White and Black Crappie were present in the reservoir, Black Crappie was most abundant. White Crappie abundance has been relatively low over the past three trap net surveys, ranging from 0 to 6.0/nn (Figure 7). Catch rates of Black Crappie were high in 2007 (44.8/nn) and 2016 (39.8/nn) (Figure 8). Low catch rates in 2012 (2.4/nn) could be attributed to low water levels in 2011 that may have reduced recruitment.

Fisheries management plan for Lake Timpson, Texas

Prepared – July 2017.

ISSUE 1: Hydrilla in Lake Timpson was first documented by TPWD in 2003. Since then, hydrilla has proven to be problematic as coverage reached 40% of the reservoir surface area in 2004. Triploid Grass Carp were stocked at a rate of 5 fish/vegetated acre in 2004. No hydrilla has been observed since 2006. However, tubers are likely present in the substrate and recolonization is possible.

MANAGEMENT STRATEGY

1. Continue to monitor aquatic vegetation annually (2017-2020). If hydrilla reappears, meet with county officials and anglers to develop an integrated aquatic vegetation management plan.

ISSUE 2: In 2010, giant salvinia was introduced in Lake Timpson. After rapid treatment with herbicides, no plants were observed in 2011 or 2012. In 2013, giant salvinia reappeared, and a maximum of 4 acres was observed in 2015.

MANAGEMENT STRATEGY

1. Continue to coordinate with Aquatic Habitat Enhancement regarding ongoing herbicide treatments.

ISSUE 3: The 14- to 21-inch slot length limit implemented in 1994 has been successful. Recruitment of Largemouth Bass into the slot limit has been relatively high.

MANAGEMENT STRATEGY

1. Continue to monitor Largemouth Bass size structure and growth to assess the success of the slot limit by fall electrofishing (2020) and spring electrofishing (2021).

ISSUE 4: Large Redbreast and Redear Sunfish (6 – 8 inches) were relatively abundant and could provide a quality fishery.

MANAGEMENT STRATEGY

1. Publicize survey results via local media to ensure anglers are aware of the current Redbreast and Redear Sunfish populations.

ISSUE 5: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches and plugging engine cooling systems. Giant salvinia and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate marina owners about invasive species, and provide them with posters, literature, etc... so that they can in turn educate their customers.

3. Educate the public about invasive species through the use of media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.
5. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

Objective-Based Sampling Plan and Schedule, 2017 - 2021

Sport fish, forage fish, and other important fishes

Sport fishes in Lake Timpson include Largemouth Bass, crappies, and Channel Catfish. Important forage species include Bluegill, Redear Sunfish, and Threadfin Shad.

Low density fisheries

Historically, Channel Catfish population abundance has been low. Although no creel surveys have been conducted, anecdotal information indicates few anglers target Channel Catfish. Beginning in 2016, no future directed sampling is planned.

Survey objectives, fisheries metrics, and sampling objectives

Largemouth Bass: Anecdotal information indicates that Largemouth Bass are the most popular sport fish in Lake Timpson. A 14- to 21-inch slot length limit was implemented in 1994 to improve population size structure. Since 2007, trend data on CPUE, size structure, and body condition have been collected every four years with fall and spring electrofishing. The population is abundant, recruitment rates have been high and steady, and size structure has been desirable and stable. Continuation of trend data with nighttime electrofishing in the fall and spring (2020/2021, and every four years thereafter) will allow for determination of any large-scale changes in the Largemouth Bass population that may spur further investigation. The minimum of 12 randomly selected 5-min electrofishing sites will be sampled, but the anticipated effort to meet sampling objectives ($N = 50$ stock-size fish; $RSE-S \leq 25$) is 5-8 stations with 80% confidence.

Average age of Largemouth Bass between 13.0 and 14.9 inches (Category 2; $N = 13$) will be estimated in 2020, and every four years thereafter. If growth problems are detected from this cursory estimate, mean length-at-age will be estimated from a random population sample of 400 fish > 6 inches, subsampled at 10 fish per 0.4-inch strata (Category 4).

Crappies: Although catch rates reflect cyclical abundance, trap netting is effective at Lake Timpson and reflects an abundant crappie population with desirable size structure. Since 2007, trend data on CPUE, size structure, and body condition have been collected every four years with fall trap netting. Continuation of this sampling should provide insight relative to any large-scale changes in the crappie population. The minimum of 5 randomly selected sites will be sampled to estimate size structure ($N = 50$ stock-size fish). An additional 5 sites will be sampled if the sample size is not reached.

Prey species: Threadfin Shad, Bluegill, and Redear Sunfish are the primary forage at Lake Timpson. Fall electrofishing in 2020 and every four years thereafter, sampling the minimum of 12 random sites, will result in sufficient numbers of Bluegill and Redear Sunfish to achieve sampling objectives ($N = 50$ stock-size fish; $RSE-S \leq 25$). Largemouth Bass body condition (fish ≥ 8 " TL) will be used to provide additional information on forage abundance and vulnerability.

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- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Ashe, D., and T. Driscoll. 2013. Statewide freshwater fisheries monitoring and management program survey report for Timpson Reservoir, 2012. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-3, Austin.
- DiCenzo, V. J., M. J. Maceina, and M. R. Stimpert. 1996. Relations between reservoir trophic state and Gizzard Shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.
- Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional size distribution (PSD): a further refinement of population size structure index terminology. Fisheries 32(7): 348.

Table 1. Characteristics of Lake Timpson, Texas.

Characteristic	Description
Year constructed	1956
Controlling authority	Shelby County Freshwater Supply District
County	Shelby
Reservoir type	Mainstream
Shoreline Development Index (SDI)	3.8
Conductivity	120 uS/cm

Table 2. Boat ramp characteristics for Lake Timpson, Texas, March, 2016. Reservoir elevation at time of survey was 317 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Public Boat Ramp	31.84521 -94.42646	Y	15	313	Excellent. The parking lot was recently resurfaced.

Table 3. Harvest regulations for Lake Timpson, 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, Largemouth	5 (only 1 > 21 inches)	14- to 21 inch slot
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

Table 4. Stocking history of Lake Timpson, Texas. FGL = fingerling; AFGL = advanced fingerling; ADL = adults.

Species	Year	Number	Size
Blue Catfish	1998	3,027	AFGL
Channel Catfish	1966	12,000	AFGL
	1992	2,000	AFGL
	1995	5,934	AFGL
	Total	19,934	
Flathead Catfish	1992	16	ADL
Florida Largemouth Bass	1980	10,000	FGL
	1996	5,981	FGL
	Total	15,981	
Triploid Grass Carp	2004	448	AFGL
Threadfin Shad	1979	1,200	AFGL

Table 5. Objective-based sampling plan components for Lake Timpson, Texas 2016 – 2017.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	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)
Bluegill ^a	Abundance	CPUE – Total	
	Size structure	PSD, length frequency	N \geq 50
Threadfin Shad ^a	Abundance	CPUE – Total	
Gizzard Shad ^a	Abundance	CPUE – Total	
	Size structure	PSD, length frequency	N \geq 50
	Prey availability	IOV	N \geq 50
<i>Trap netting</i>			
Crappies	Abundance	CPUE - Total	
	Size structure	PSD, length frequency	N \geq 50

^a No additional effort will be expended to achieve an RSE \leq 25 for CPUE of Bluegill, Threadfin Shad, or Gizzard Shad, if not reached from designated Largemouth Bass sampling effort.

Table 6. Survey of aquatic vegetation, Timpson Reservoir, Texas, 2012 - 2016. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Species	2012	2013	2014	2015	2016
Coontail	<1 (<0.5)	0 (0)	0 (0)	0 (0)	0 (0)
Water primrose	1 (0.5)	<1 (<0.5)	<1 (<0.5)	0 (0)	0 (0)
Giant cutgrass	<1 (<0.5)	2 (0.9)	1 (0.5)	1 (0.5)	<1 (<0.5)
Spikerush	0 (0)	<1 (<0.5)	0 (0)	0 (0)	<1 (<0.5)
Giant salvinia (Tier II)*	0 (0)	<1 (<0.5)	1 (0.5)	4 (1.8)	<1 (<0.5)

* Tier II is Maintenance

Gizzard Shad

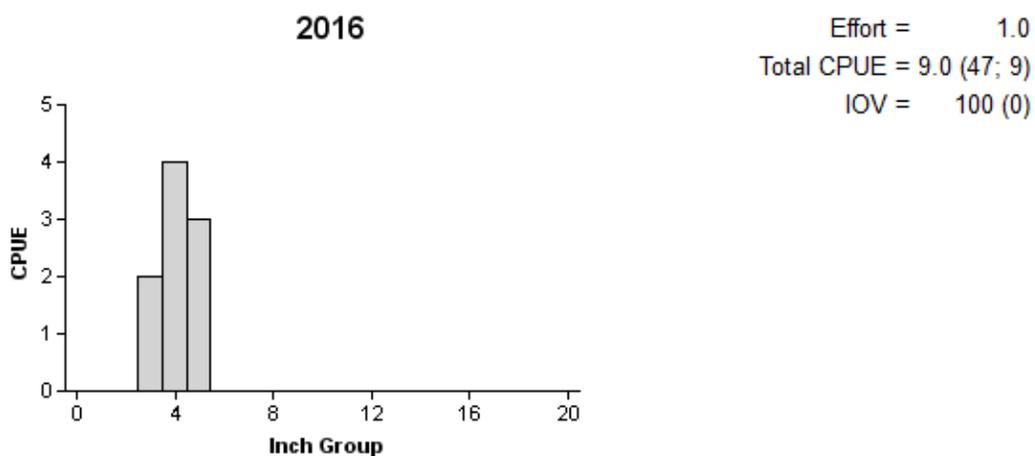


Figure 1. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lake Timpson, Texas, 2016. No Gizzard Shad were collected in 2007 or 2012.

Redbreast Sunfish

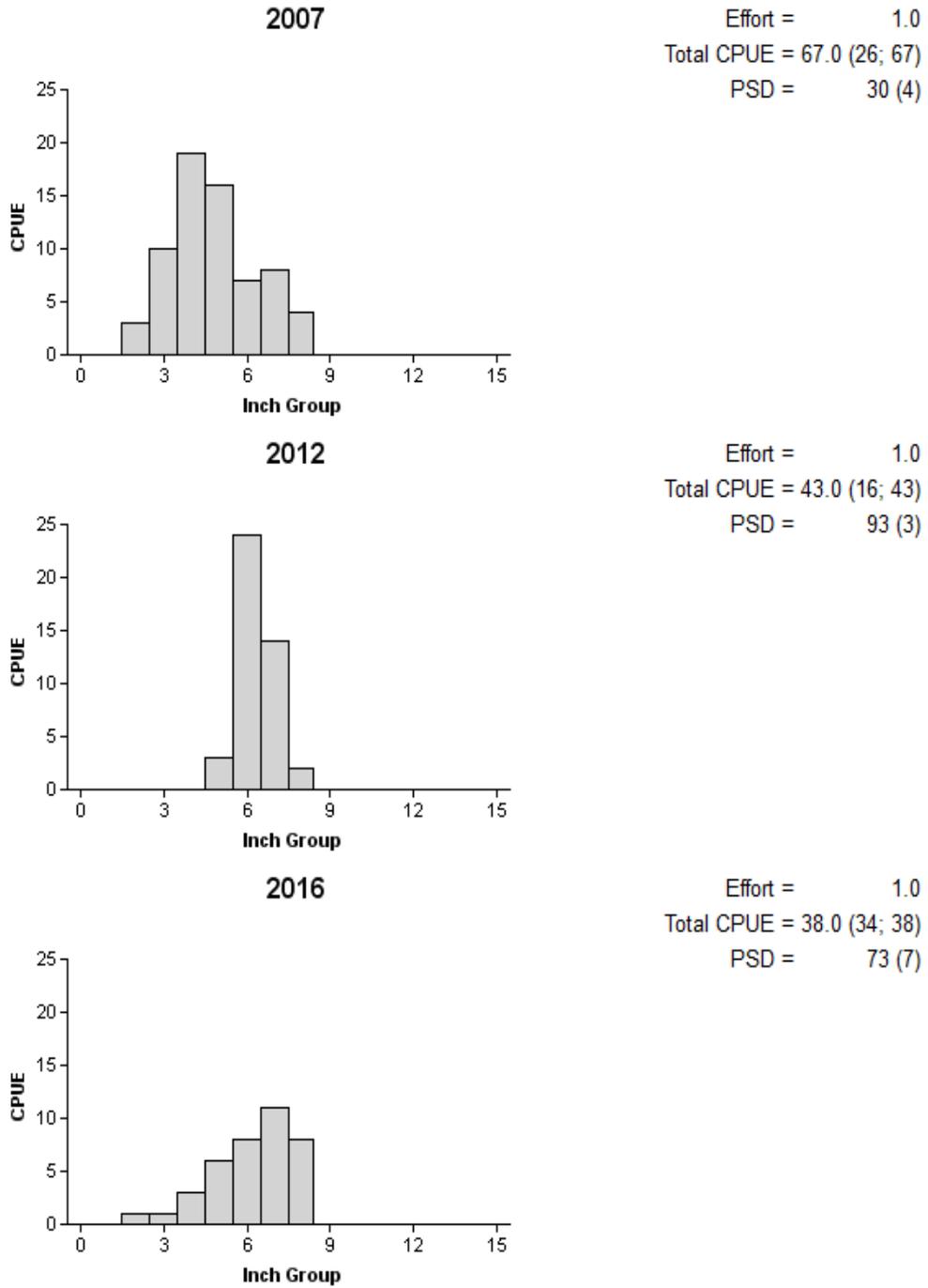


Figure 2. Number of Redbreast Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Timpson, Texas, 2007, 2012, and 2016.

Bluegill

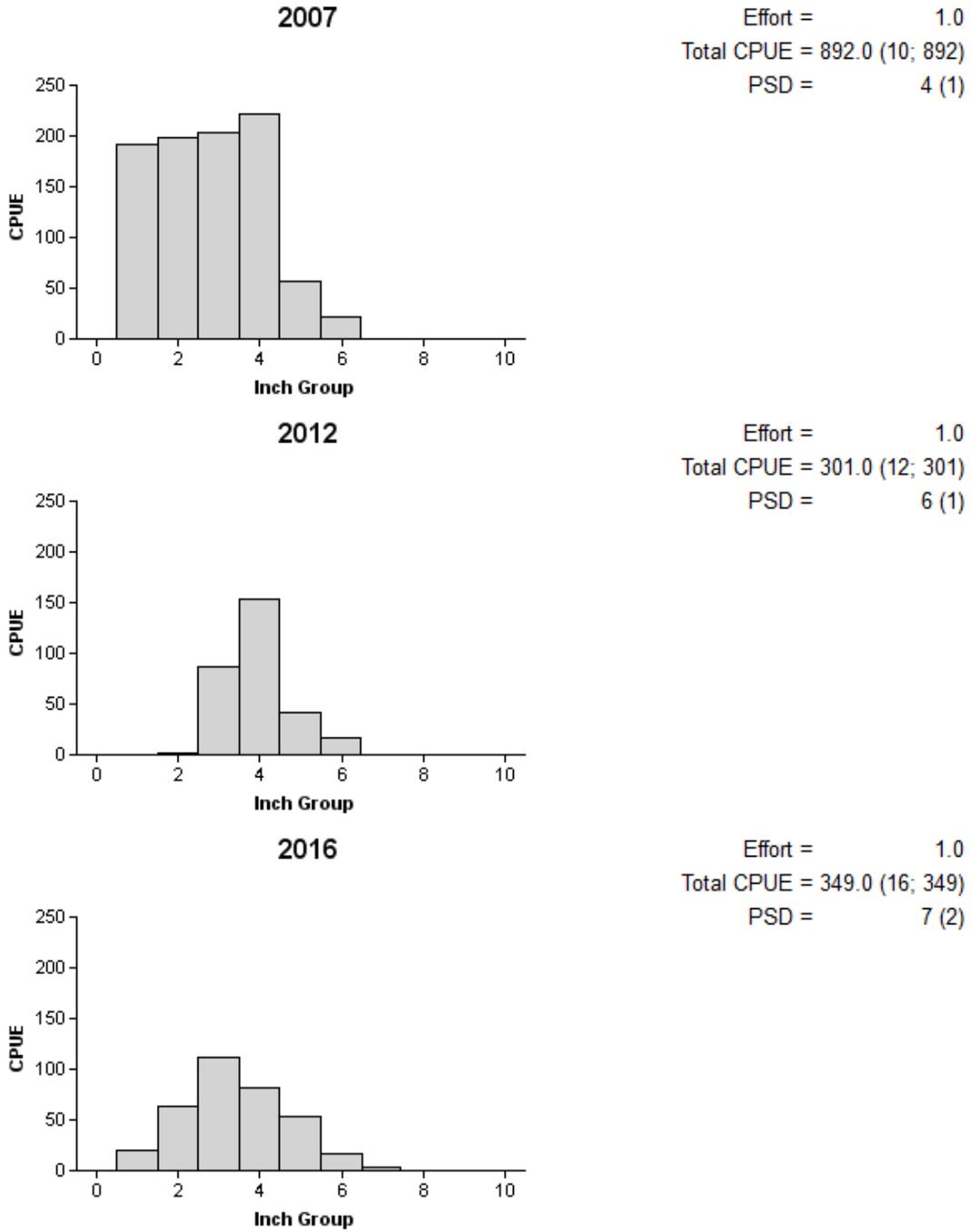


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Timpson, Texas, 2007, 2012, and 2016.

Redear Sunfish

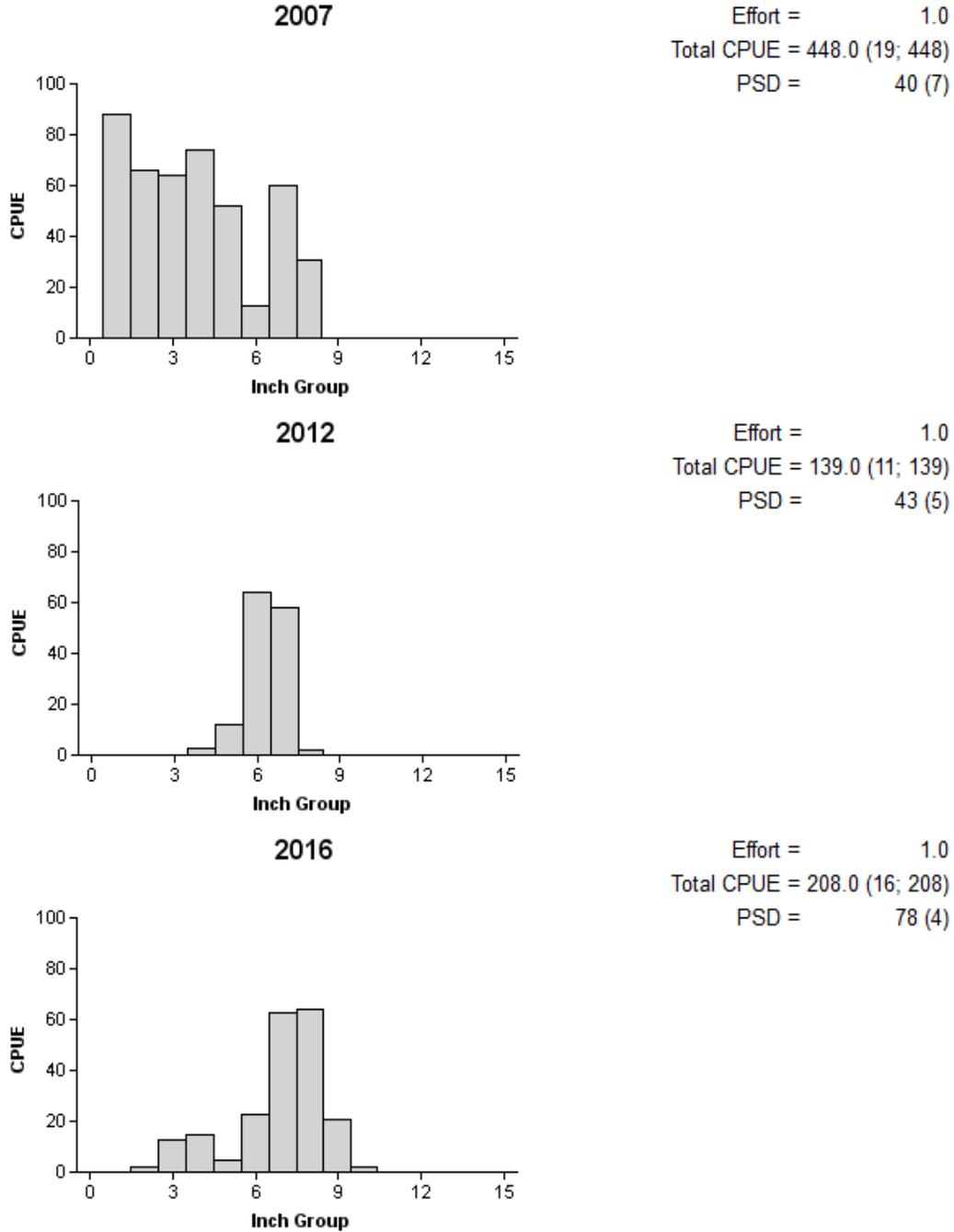


Figure 4. Number of Redear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Timpson, Texas, 2007, 2012, and 2016.

Largemouth Bass

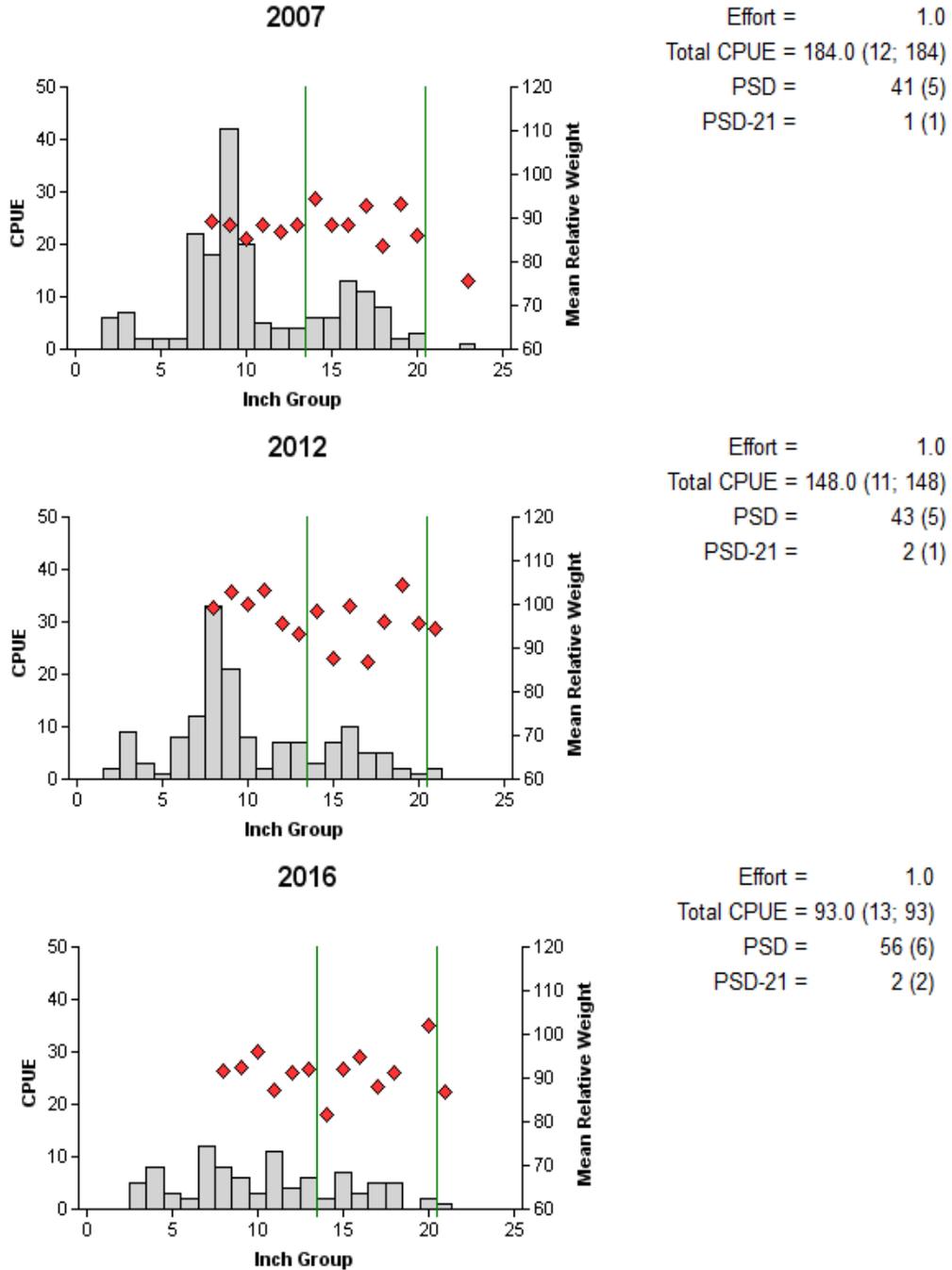


Figure 5. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Timpson, Texas, 2007, 2012, and 2016. Vertical lines represent the slot length limit.

Largemouth Bass

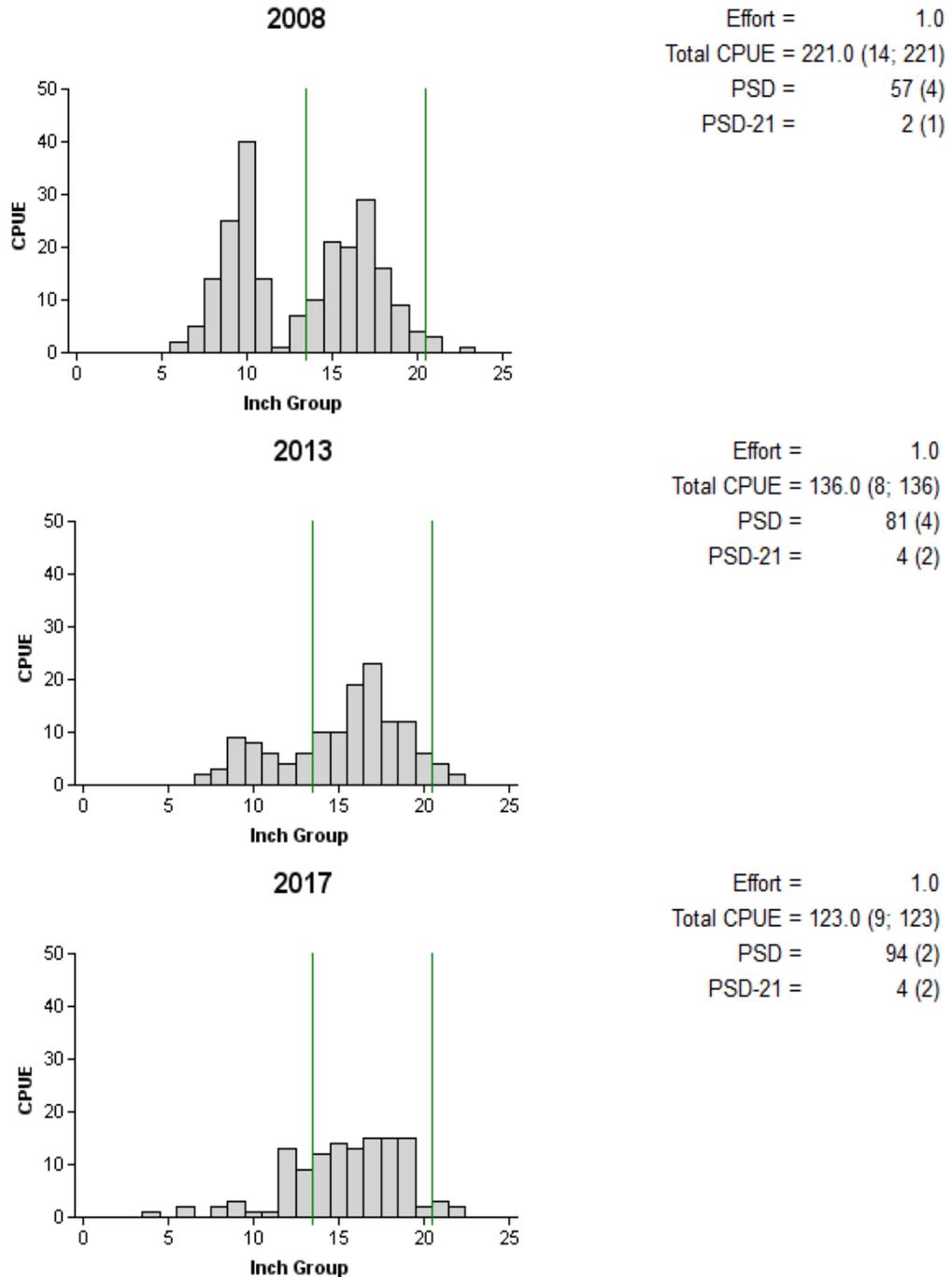


Figure 6. Number of Largemouth Bass caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring electrofishing surveys, Lake Timpson, Texas, 2008, 2013, and 2017. Vertical lines represent the slot length limit.

White Crappie

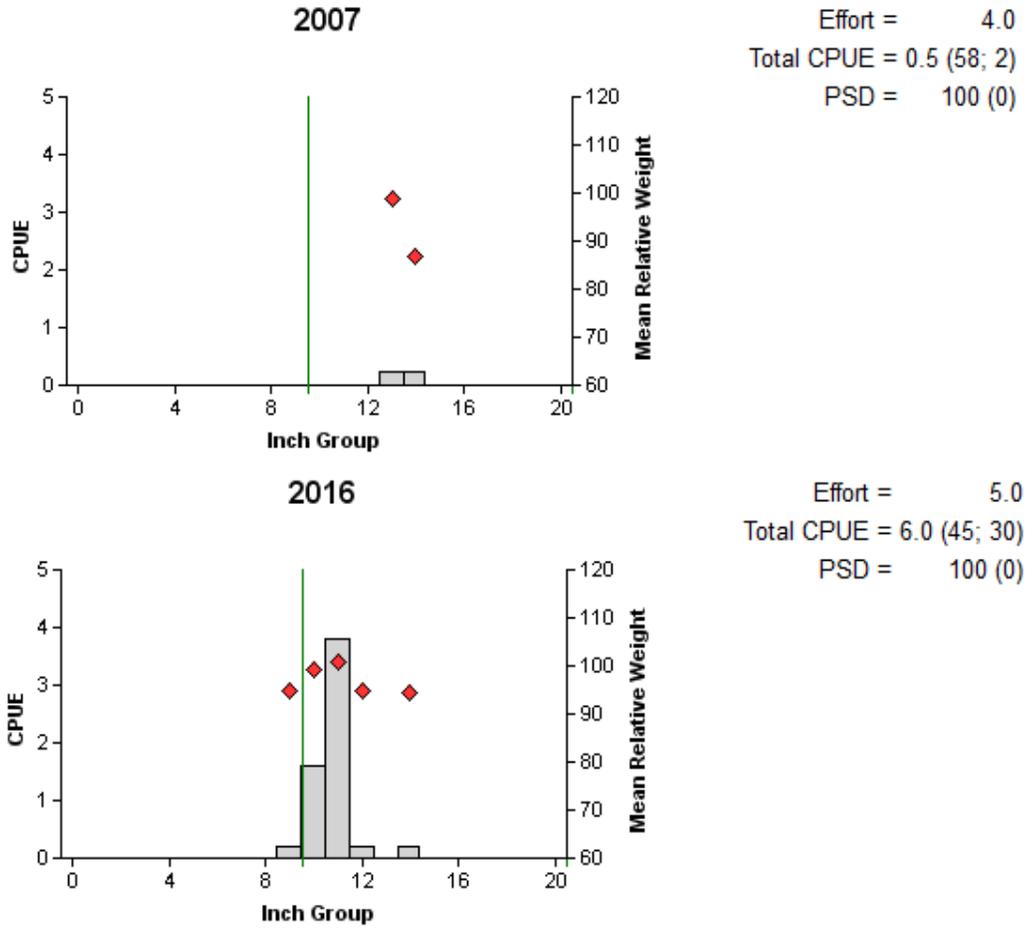


Figure 7. Number of White Crappie caught per net night (CPUE, bars), mean relative weights (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Lake Timpson, Texas, 2007 and 2016. Vertical line represents the minimum length limit. No White Crappie were collected in 2012.

Black Crappie

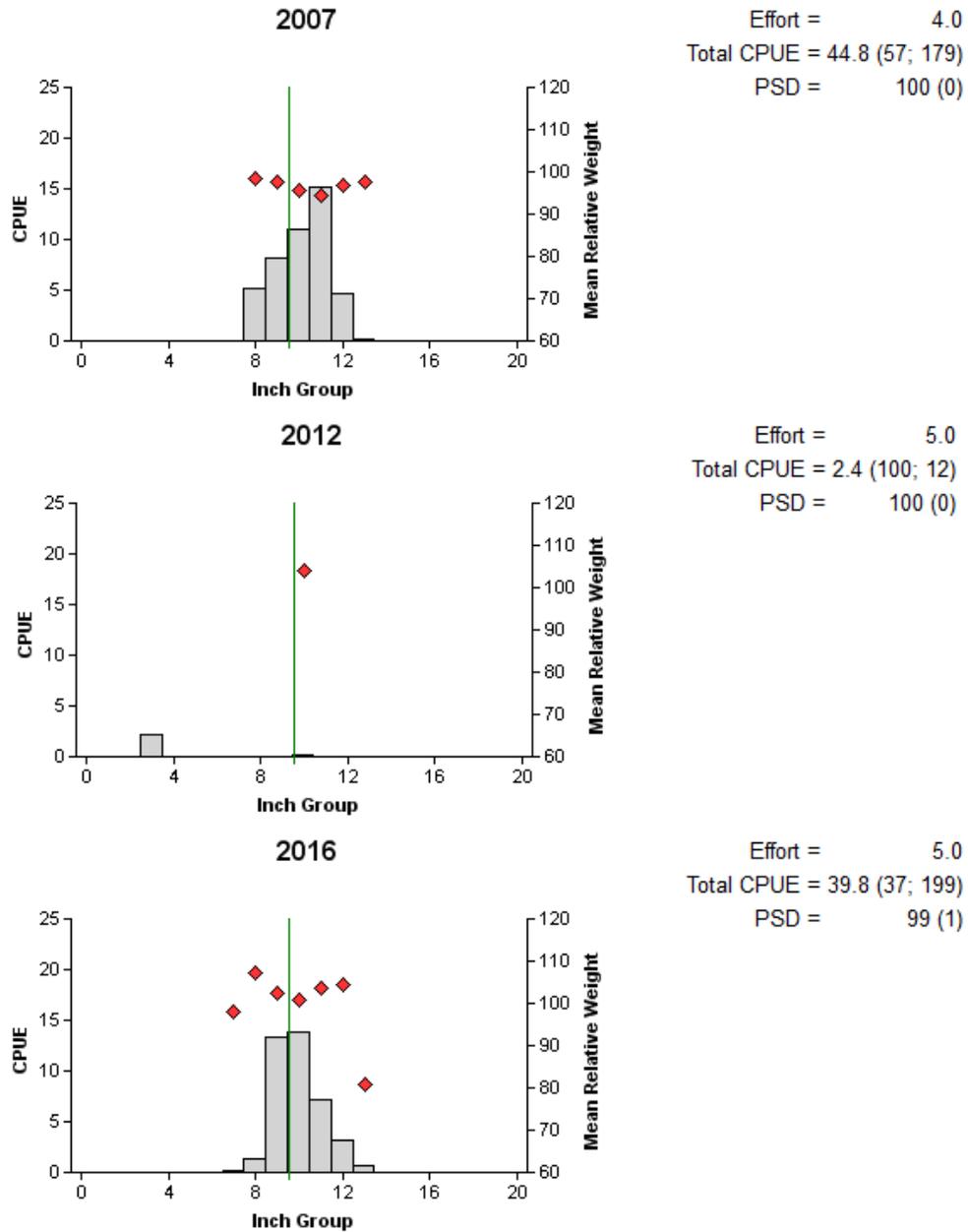


Figure 8. Number of Black Crappie caught per net night (CPUE, bars), mean relative weights (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Lake Timpson, Texas, 2007, 2012, and 2016. Vertical line represents the minimum length limit.

Table 7. Proposed sampling schedule for Lake Timpson, Texas. Survey period is June through May. Electrofishing surveys are conducted in the fall and spring. Standard survey denoted by S and additional survey denoted by A.

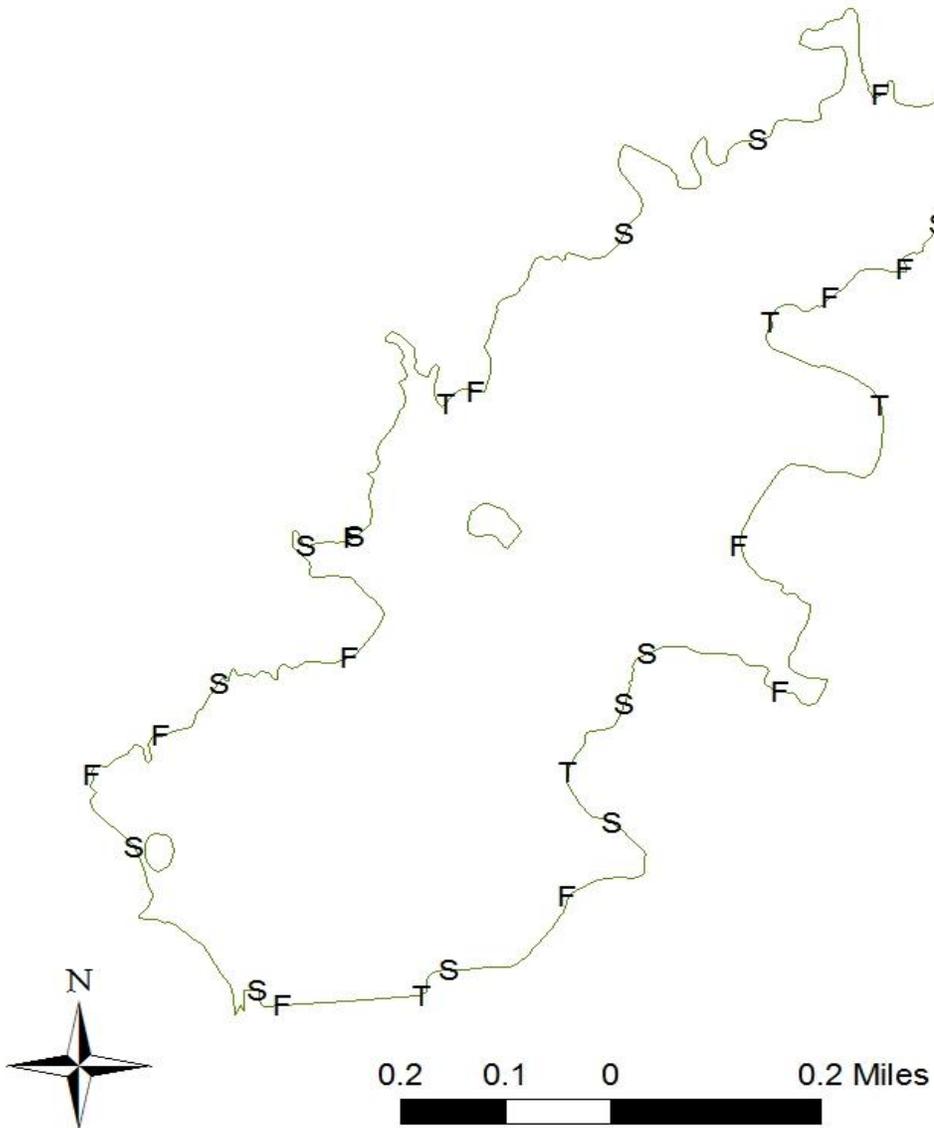
Survey year	Electrofishing Fall(Spring)	Trap net	Habitat			Report
			Structural	Vegetation	Access	
2017-2018				S		
2018-2019				S		
2019-2020				S		
2020-2021	S (A)	A	S	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Lake Timpson, Texas, 2016-2017. Sampling effort was 1 hour for electrofishing and 5 net nights for trap netting.

Species	Fall Electrofishing		Spring Electrofishing		Trap Netting	
	N	CPUE	N	CPUE	N	CPUE
Threadfin Shad	2,496	2,496.0				
Gizzard Shad	9	9.0				
Redbreast Sunfish	38	38.0				
Warmouth	7	7.0				
Bluegill	349	349.0				
Longear Sunfish	101	101.0				
Redear Sunfish	208	208.0				
Largemouth Bass	93	93.0	123	123.0		
White Crappie					30	6.0
Black Crappie					199	39.8

APPENDIX B



Location of sampling sites, Lake Timpson, Texas, 2016-2017. Fall electrofishing, spring electrofishing, and trap netting stations are indicated by F, S, and T respectively. Water level was near full pool at time of sampling.