

PERFORMANCE REPORT

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FEDERAL AID PROJECT F-221-M-5

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2014 Fisheries Management Survey Report

Proctor Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Proctor Reservoir were surveyed by low-frequency electrofishing in 2014, electrofishing in 2012 and 2014, trap netting in 2014, and gill netting in 2015. Historical data are presented with the recent 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: Proctor Reservoir is a 4,610-acre impoundment constructed in 1963 on the Leon River and is located 10 miles north of the City of Comanche. Proctor Reservoir is controlled by the United States Army Corps of Engineers. Primary water uses included flood control, water supply, and recreation. The reservoir has a history of large water level fluctuations. Water level reached conservation pool (CP) in 2007 and 2012 but declined to 12 feet below CP in April 2015. During the beginning of the 2014 survey period, boater access was reduced to only two usable ramps. In early May 2015, the water level increased to CP allowing for the re-opening of all ramps. Bank fishing access was good, and there were handicap-accessible fishing piers.

- **Management History:** Palmetto bass (female Striped Bass x male White Bass) have been stocked almost every year since 1978 to maintain the population. Sunshine bass (female White Bass x male Striped Bass) were stocked in 2014 and 2015. The most recent stocking of Florida Largemouth Bass was in 2014. Harvest of all sport fishes are currently regulated by statewide size and bag limits.
- **Fish Community**
 - **Prey species:** Forage was abundant and consisted primarily of Gizzard Shad. Threadfin Shad, Bluegill, and Longear Sunfish were also available as prey. Prey species were of sizes that were available to most sport fish.
 - **Catfishes:** Blue, Channel, and Flathead catfishes were present in the reservoir but in low relative abundance.
 - **White Bass:** White Bass relative abundance in 2015 was lower than previously reported, and all fish sampled were harvestable size.
 - **Hybrid Striped Bass:** In 2015, relative abundance of hybrid Striped Bass was higher than previously reported in 2011 with a wide size range of fish sampled. An adequate number of hybrid Striped Bass were harvestable size.
 - **Largemouth Bass:** Largemouth Bass relative abundance and number of large fish decreased from 2010 to 2014. Low water level and lack of suitable habitat may have decreased Largemouth Bass reproduction and recruitment.
 - **Crappies:** White and Black crappies were present in the reservoir; White Crappie were more abundant in the survey. In 2014, White Crappie CPUE increased compared to previous years. Size distribution was comprised of smaller fish, and few fish were harvestable size.
- **Management Strategies:** Largemouth Bass, forage fish, and crappie will be surveyed in 2016. Trap netting, gill netting, electrofishing surveys, and low-frequency electrofishing will be conducted in 2018-2019 for relative abundance, size structure, and mean relative weight data. Access and habitat surveys will be conducted in 2018. Work on possible boat ramp extension projects. Stock hybrid Striped Bass. Inform the public of the threat and impact of invasive species.

INTRODUCTION

This document is a summary of fisheries data collected from Proctor Reservoir in 2012-2015. 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 2012-2015 data for comparison.

Reservoir Description

Proctor Reservoir is a 4,610-acre impoundment constructed in 1963 on the Leon River. It is located in Comanche County approximately 10 miles north of the town of Comanche and is owned and operated by the United States Army Corps of Engineers (USACE). Primary water uses included flood control, water supply, and recreation. The water level filled to conservation pool (CP) in 2001 and remained relatively steady until 2005. After 2005, Proctor Reservoir experienced long periods of reduced water level and occasional heavy rain events that filled the reservoir (

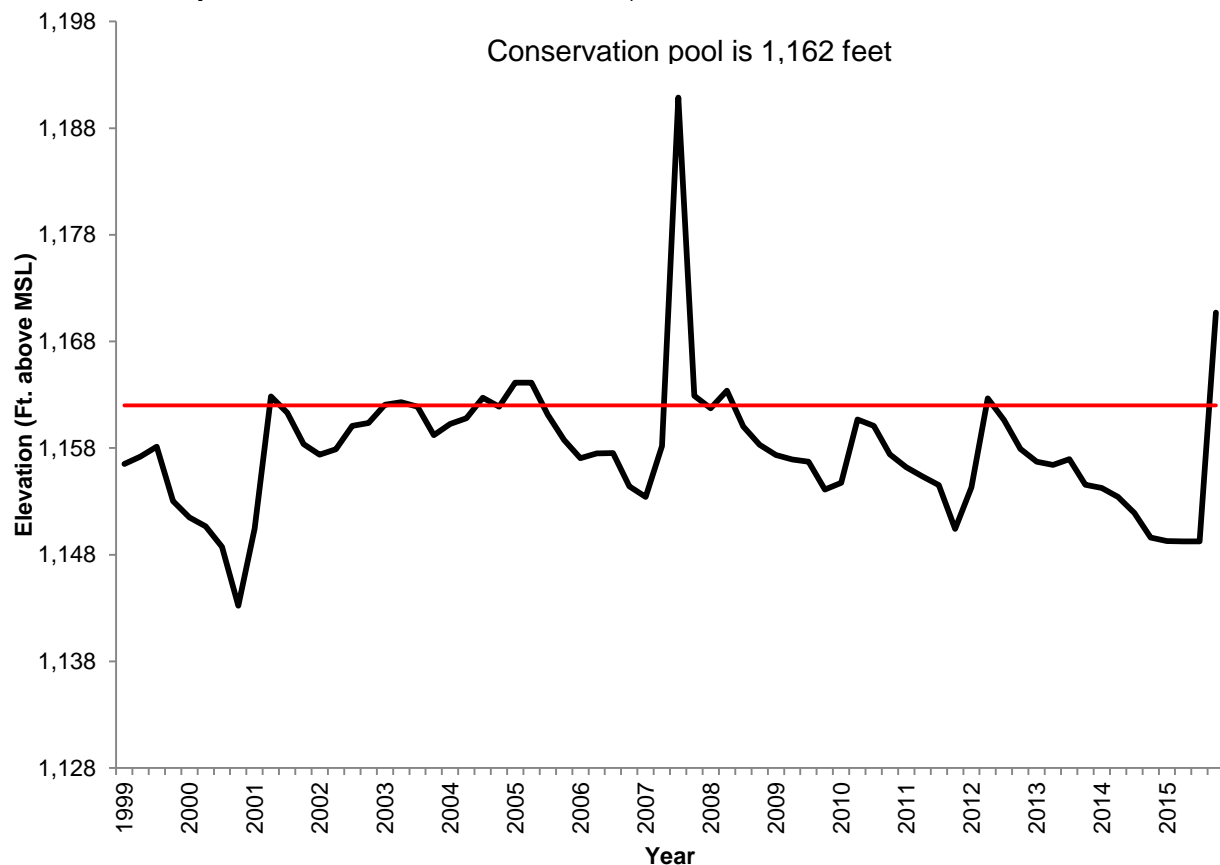


Figure 1). Heavy rain events occurred in 2007, 2010, and 2012. From 2012-2015, the water level declined to 12 feet below CP as of April 2015. In May, rains increased water level to CP. Other descriptive characteristics for Proctor Reservoir are in Table 1.

Angler Access

Proctor Reservoir had seven, fee-required boat ramps controlled by USACE. Only two ramps were usable at the beginning of the 2014 sampling period, and only one ramp was useable in fall 2014. Currently, all ramps are accessible after heavy rains in May refilled the reservoir to CP. Bank anglers had adequate access within walking distance of road pull-offs. Proctor Reservoir also had handicap-accessible piers that could be used at the current water level. Additional boat ramp characteristics are located in Table 2.

Management History

Previous management strategies and actions: Management strategies and actions from previous survey report (Dumont and Neely 2011b) included:

1. Determine if the 16-inch minimum length limit placed on Largemouth Bass in 2002 should continue to be the current regulation, or if the regulation should revert to the statewide regulation.
Action: Conducted electrofishing surveys before and after the regulation change and determined that the 16-inch minimum length limit should revert to the statewide regulation. Regulation was reverted to the statewide regulation in September 2012.
2. Hybrid Striped Bass provide a popular fishery in Proctor Reservoir but require annual stockings to maintain the population.
Action: When possible, hybrid Striped Bass were stocked annually. Some years (2011 and 2012), Proctor Reservoir did not receive full stockings of hybrid Striped Bass due to low production at hatcheries. Sunshine bass fry (female White Bass x male Striped Bass) were stocked in 2014 and 2015 in lieu of palmetto bass fingerlings (female Striped Bass x male White Bass).
3. Educate the public about the threats of invasive species.
Action: Press releases were distributed to local and statewide media. Signage was posted at Proctor Reservoir to notify users of the potential threats of invasive species.

Harvest regulation history: All sport fish are currently managed under statewide harvest regulations (Table 3). Previously, the minimum length limit for Largemouth Bass changed from 14 inches to 16 inches in 2002 but was changed back to the statewide harvest regulation in September 2012.

Stocking history: Palmetto bass fingerlings were originally stocked in 1978 and have been stocked nearly every year since then to maintain the population. In 2014 and 2015, sunshine bass fry were stocked. Florida Largemouth Bass were first stocked in 1979 and were most recently stocked in 2014. Threadfin Shad were stocked in 1984 and Blue Catfish were introduced in 1991. The complete stocking history is located in Table 4.

Vegetation/habitat management history: Proctor Reservoir has no history of management for vegetation or structural habitat.

Water transfer: No interbasin transfers are known to exist.

METHODS

Fishes were collected in summer 2014 by low-frequency electrofishing (2 hours at 24, 5-minute stations), in fall 2012 and 2014 by electrofishing (1 hour at 12, 5-minute stations), in fall 2014 by trap netting (10 net nights at 10 stations), and in spring 2015 gill netting (5 net nights at 5 stations). Catch per unit effort (CPUE) for low-frequency electrofishing and electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing, and for trap and gill netting, as the number of fish per net night (fish/nn). All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manuals revised 2014).

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). Palmetto bass PSD was calculated according to Dumont and Neely (2011a). 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.

In July 2014, habitat composition was determined by assessing the habitat at 150 random stations distributed throughout the reservoir and 50 random stations along the shoreline. Plants and habitat types were identified at or below the waterline and marked as “1” for present or “0” for absent. Stations distributed throughout the reservoir and shoreline were analyzed separately. Percent occurrence ($\% = [\# \text{ stations present} / \text{total stations sampled}] \times 100$) and associated 95% confidence intervals were calculated for habitat. No structural habitat survey was conducted in 2014-2015 since structural features have not changed since the 2010 sampling period.

Source for water level data was the United States Geological Survey (USGS 2015).

RESULTS AND DISCUSSION

Habitat: Water level at the time of habitat survey was 11 feet below CP. No aquatic vegetation was observed during the habitat survey. Habitat consisted of stumps, dead terrestrial vegetation, downed timber, pebble, cobbles, boulders, and bedrock (Table 5). In the 2010 habitat survey, smartweed, seep willow, and cattail were observed (Dumont and Neely 2011b). Substrate consisted primarily of rock, but a clay/silt/sandy composite was common in many sites during the habitat survey in 2014 and 2010 (Dumont and Neely 2011b).

Prey species: The prey base primarily consisted of Gizzard Shad, but Threadfin Shad, Bluegill, and Longear Sunfish were also present. In 2014, relative abundance of Gizzard Shad (733.0/h) increased since 2012 (403.0/h), although, it had greatly decreased since 2010 (2,985.2/h). Gizzard Shad IOV remained high in all survey years, ranging from 81-100, indicating most fish were available as prey (Figure 2). Bluegill CPUE was drastically lower in 2014 (18.0/h) compared to 2012 (443.0/h) and 2010 (753.4/h; Figure 3). The decline in Bluegill relative abundance could be attributed to lack of suitable habitat because of the prolonged low water level. Size structure of Bluegill consisted primarily of fish 4-7 inches, and most fish in the sample were of adequate prey size for sport fish (Figure 3). Threadfin Shad and Longear Sunfish were also present (Appendix A) and of sizes available for most sport fish. Survey results indicated abundant prey base for sport fish and that availability of prey should not be a limiting factor to the growth and condition of sport fish in the reservoir.

Blue Catfish: Blue Catfish were sampled with gill nets and low-frequency electrofishing. Gill net catch rates for Blue Catfish remained low from 2007 (0.6/nn) through 2015 (0.2/nn). In 2011 and 2014, baseline surveys for Blue Catfish were conducted by low-frequency electrofishing. The first survey was conducted in spring 2011; only four fish were sampled. A summer 2014 low-frequency electrofishing survey was conducted with greater effort (2 h versus 0.5 h in 2011), and 19 fish were sampled ranging from 1-17 inches (Figure 4). Greater numbers of fish and better representation of the size distribution were achieved with low-frequency electrofishing compared to gill netting (CPUE= 9.5/h versus 0.2/nn respectively) which may warrant continued use of low-frequency electrofishing for future monitoring of Blue Catfish in Proctor Reservoir.

Channel Catfish: Channel Catfish catch rates in the gill netting surveys decreased from 11.4/nn in 2007, to 5.2/nn in 2011, and to 2.2/nn in 2015. A similar decrease in fish \geq stock size was evident from 2007 (6.6/nn) to 2015 (2.2/nn) (Figure 5). Size structure of the 2015 sample was mostly represented by fish \geq 12 inches.

Flathead Catfish: A baseline low-frequency electrofishing survey for Flathead Catfish was conducted in summer 2014. Catch rate was 2.5/h and all fish were above legal size (\geq 18 inches). No Flathead Catfish have been caught in gill nets since 2003.

White Bass: White Bass catch rates in gill netting surveys have decreased to 4.2/nn in 2015 from 20.8/nn in 2007 and 21.0/nn in 2011. Similar to the 2007 and 2011 surveys, size structure of the 2015 sample was mostly represented by fish \geq 10 inches. Mean relative weight (W_r) of White Bass were fair and ranged from 93-95 in 2015 (Figure 6).

Hybrid Striped Bass: Gill netting CPUE for hybrid Striped Bass declined from 38.6/nn in 2007 to 4.4/nn in 2011, then increased to 12.6/nn in 2015. However, CPUE in 2015 was less than half of the reported rate in 2007, and a similar decline in catch rate was apparent for fish \geq legal length (\geq 18 inches). The number of harvestable size hybrid Striped Bass were variable with 20.6/nn in 2007, 1.8/nn in 2011, and 5.0/nn in 2015 (Figure 7). Body condition, expressed as mean relative weight, ranged in the high 80's to low 90's for most inch groups.

Largemouth Bass: Electrofishing CPUE for all Largemouth Bass was 4.0/h in 2014, which was substantially lower than catches reported in 2012 (358.0/h) and 2010 (204.6/h). Similarly, CPUE of Largemouth Bass \geq stock-sized was lower than reported in 2012 (133.0/h) and 2010 (56.1/h). Relative abundance of Largemouth Bass \geq 14 inches remained low but was variable from 2010-2014 ranging from 3.0/h in 2014 to 13.0/h in 2012 (Figure 8). The low water level and lack of suitable habitat from 2012-2014 may have decreased Largemouth Bass reproduction and recruitment.

White Crappie: White Crappie CPUE in the trap netting surveys slightly increased from 2002 (32.9/nn) to 2014 (45.2/nn); 2014 catch rate was similar to that reported in 2006 (42.5/nn). Catch of stock-size White Crappie increased from 32.5/nn in 2002 to 42.4/nn in 2006, but decreased in 2014 (1.6/nn; Figure 9). In 2014, White Crappie size structure was mostly comprised of smaller size classes than in previous surveys (2014 PSD = 38; 2002 PSD = 70; 2006 PSD = 98; Figure 9). In the 2014 survey, few White Crappie were harvestable size.

Black Crappie: Black Crappie was the least abundant of the crappie species in the reservoir. Catch rates of Black Crappie sampled from 2002 to 2014 trap netting surveys were low, ranging from 0.9/nn-3.5/nn. Only a few fish sampled were of legal size (\geq CPUE-10) in 2002 (0.1/nn), 2006 (0.7/nn), and 2014 (0.3/nn).

Fisheries management plan for Proctor Reservoir, Texas

Prepared – July 2015

ISSUE 1: Proctor Reservoir has reduced structural habitat available for Largemouth Bass, Crappie, and sunfishes. Prolonged droughts, siltation, and degradation of structural habitat because of reservoir aging have contributed to poor habitat at Proctor Reservoir.

MANAGEMENT STRATEGY

1. Seek partners for potential collaborations for fisheries habitat enhancement projects.

ISSUE 2: Proctor Reservoir had multiple boat ramps that become unusable during periods of low water level. Only two ramps were usable at 11 feet below CP.

MANAGEMENT STRATEGY

1. Meet with USACE and discuss the potential of ramp improvement projects, specifically the extension of the Sowell Creek South and Spillway ramps during a period of low water level.

ISSUE 3: Proctor Reservoir provides a popular hybrid Striped Bass fishery but requires annual stockings to maintain the population. Sunshine bass fry have been stocked in 2014 and 2015, but growth and stocking success and survival are poorly understood for Proctor Reservoir.

MANAGEMENT STRATEGIES

1. Continue to stock either palmetto bass fingerlings at 15/acre or stock sunshine bass fry at 66/acre annually.
2. Determine year class strength from the 2014 and 2015 sunshine fry stocking by collecting at least 10 fish per inch class from 15-21 inches.
3. Use age data collected to determine total annual mortality, theoretical maximum age, theoretical maximum length, and year class strength for sunshine bass.
4. Continue to monitor the population of hybrid Striped Bass to determine that fish are successfully recruiting to the population.

ISSUE 4: 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 were 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 USACE 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, and other informative materials 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 constituents.
5. Map existing and future interbasin water transfers to facilitate potential invasive species responses.

SAMPLING SCHEDULE JUSTIFICATION:

Sampling once every four years is sufficient to monitor Blue Catfish, Channel Catfish, and White Bass. Biennial electrofishing surveys are necessary to monitor trends in relative abundance and other population demographics for Largemouth Bass and forage species. Biennial trap netting surveys are

necessary to monitor trends in relative abundance and other population demographics for crappie. Gill netting surveys are necessary to monitor age-at-legal length of hybrid Striped Bass in 2018 and 2019. An aquatic vegetation survey will be conducted in 2018 to monitor aquatic and semi aquatic plants. Access survey will be conducted in 2018. The proposed sampling schedule is in Table 6.

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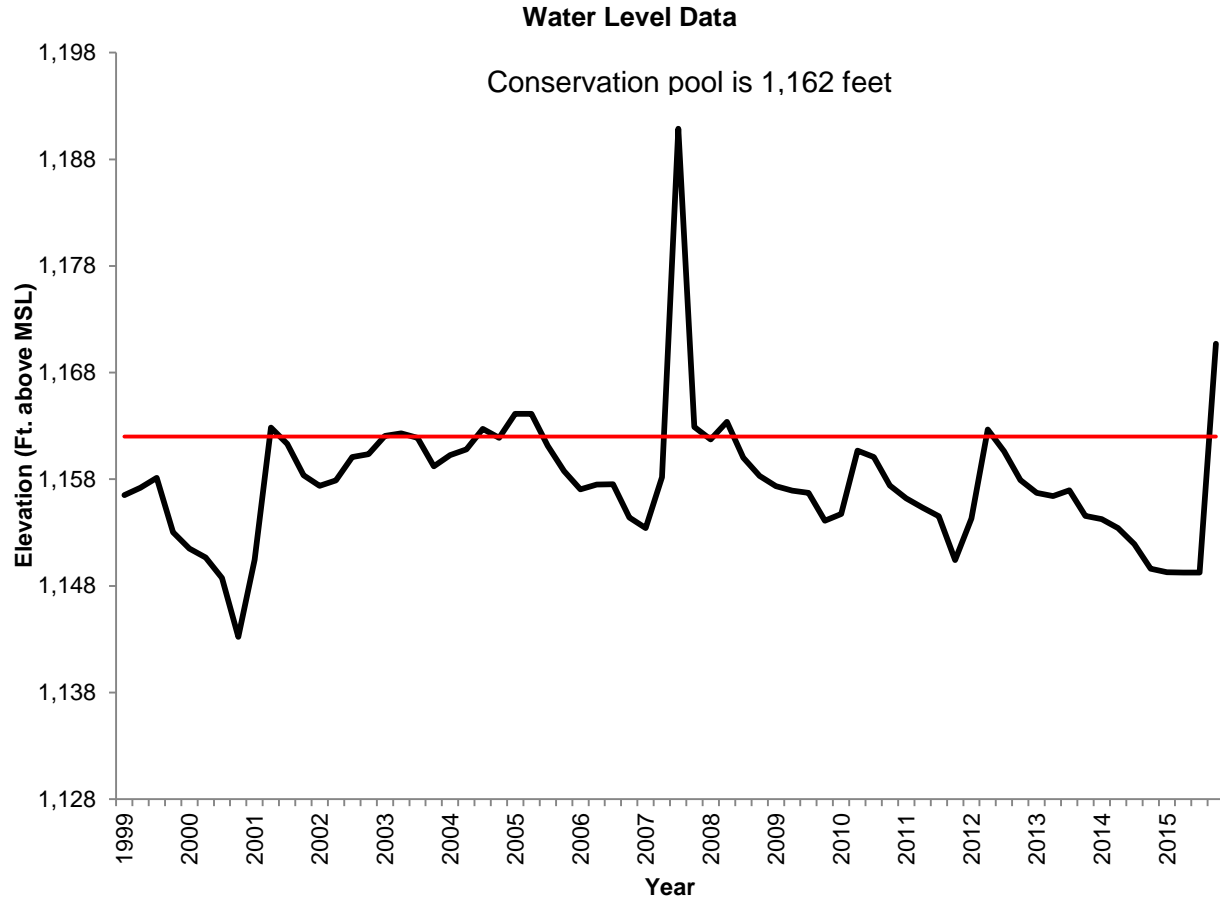


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Proctor Reservoir, Texas. Conservation pool is 1,162 feet above mean sea level, shown in red. Dead pool is approximately at 1,128 feet above mean sea level.

Table 1. Characteristics of Proctor Reservoir, Texas.

Characteristic	Description
Year constructed	1963
Conservation pool (CP)	1,162 feet above mean sea level
Dead pool	1,128 feet above mean sea level
Controlling authority	U.S. Army Corps of Engineers
County	Comanche
Reservoir type	Tributary
River basin	Brazos River Basin
Shoreline Development Index (SDI)	4.73
USGS 8-Digit HUC Watershed	12070201 (Leon)
Conductivity	473-669 μ S/cm

Table 2. Boat ramp characteristics for Proctor Reservoir, Texas, June, 2015. Reservoir elevation at time of survey was 1,177.52 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Copperas East	31.97003 -98.49956	Y	20	1,149	No access issues
Copperas West	31.97375 -98.50571	Y	20	1,148	No access issues
Sowell Creek North	31.99155 -98.46024	Y	20	1,150	No access issues
Sowell Creek South	31.97241 -98.46847	Y	30	1,146	No access issues
Spillway	31.96916 -98.48876	Y	15	1,154	No access issues
Promontory East	31.98787 -98.48265	Y	20	1,151	No access issues
Promontory West	31.97825 -98.49659	Y	15	1,157	No access issues

Table 3. Harvest regulations for Proctor Reservoir, Texas.

Species	Bag Limit	Length limit
Catfish: Channel and Blue, their hybrids and subspecies	25 (In any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, hybrid Striped	5	18-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black, their hybrids and subspecies	25 (in any combination)	10-inch minimum

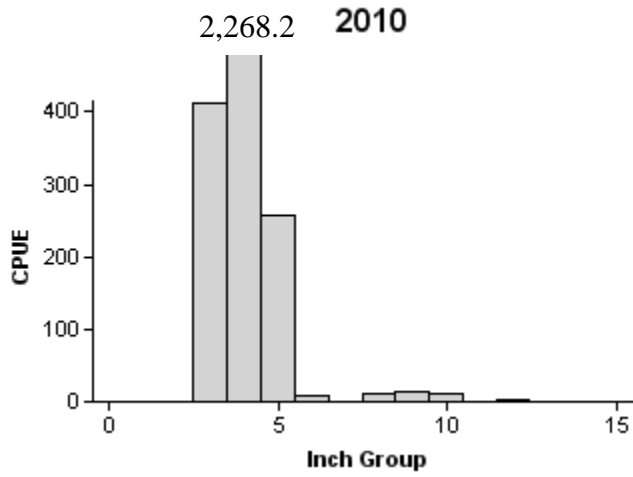
Table 4. Stocking history of Proctor Reservoir, Texas. Size categories were: FRY = < 1 inch; FGL = (fingerling) 1-3 inches; ADL = adults.

Species	Year	Number	Size
Shad, Threadfin	1984	1,000	ADL
Catfish, Blue	1991	46,417	FGL
Bass, palmetto (female Striped Bass x male White Bass)	1978	22,850	FGL
	1980	47,440	FGL
	1983	46,773	FGL
	1984	91,090	FGL
	1986	92,000	FGL
	1987	138,462	FGL
	1988	93,044	FGL
	1989	101,700	FGL
	1991	70,080	FGL
	1992	72,322	FGL
	1994	142,526	FGL
	1995	143,261	FGL
	1996	70,218	FGL
	1997	72,100	FGL
	1998	80,496	FGL
	1999	34,656	FGL
	2000	34,980	FGL
	2002	34,630	FGL
	2004	67,985	FGL
	2005	67,524	FGL
2006	66,925	FGL	
2007	62,776	FGL	
2008	67,447	FGL	
2009	66,247	FGL	
2010	67,305	FGL	
2011	32,630	FGL	
2013	67,142	FGL	
Total		1,954,609	
Bass, sunshine (female White Bass x male Striped Bass)	2014	293,267	FRY
	2015	253,175	FRY
	Total	546,442	
Bass, Largemouth	1970	100,000	FGL
Bass, Florida Largemouth	1979	100,215	FGL
	1993	230,621	FGL
	1994	232,436	FGL
	2001	232,002	FGL
	2014	224,664	FGL
	Total	1,019,938	
Green x Redear Sunfish	1971	5,000	FGL

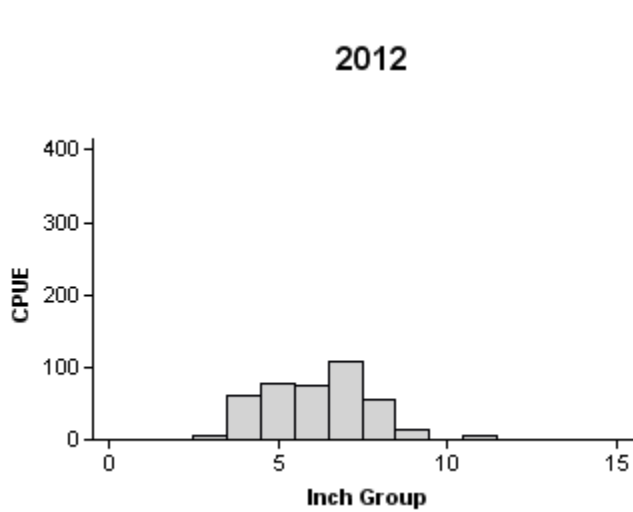
Table 5. Comparison of the percent occurrence and associated 95% confidence levels for habitat sampled at randomly selected stations throughout the reservoir (N=150) and along the shoreline (N=50) in Proctor Reservoir, Texas, 2014. Size categories were: Pebbles 0.08-2.5 inches, Cobble 2.5-10 inches, small boulders 10-24 inches, large boulders 24 inches and greater.

	Throughout the Reservoir			Shoreline		
	Percent Occurrence	Upper CL	Lower CL	Percent Occurrence	Upper CL	Lower CL
Stumps	3.0	5.1	0.0	13.7	21.6	5.8
Dead terrestrial plants	3.0	5.1	0.0	11.0	18.1	3.8
Downed timber	0.0	0.0	0.0	5.5	10.7	0.3
Pebbles	4.0	6.3	0.1	37.0	48.1	25.9
Cobbles	6.0	8.6	1.1	31.5	42.2	20.8
Small boulders	1.0	2.4	0.0	15.1	23.3	6.9
Large boulders	0.0	0.0	0.0	4.1	8.7	0.0
Bedrock	0.0	0.0	0.0	1.4	4.0	0.0

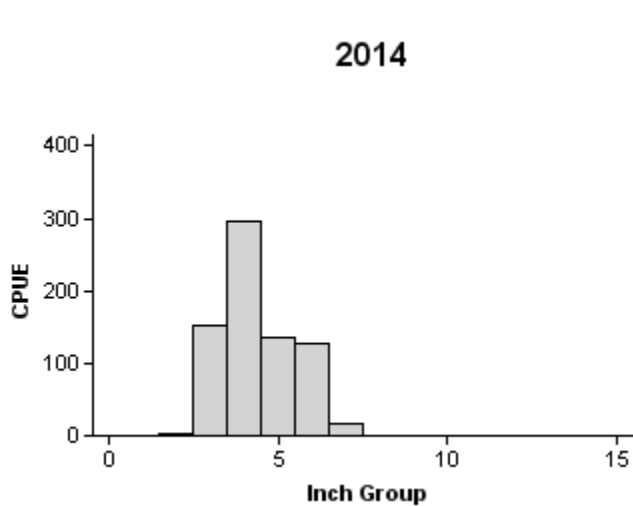
Gizzard Shad



Effort = 1.0
 Total CPUE = 2,985.2 (7; 3,035)
 IOV = 99 (1)



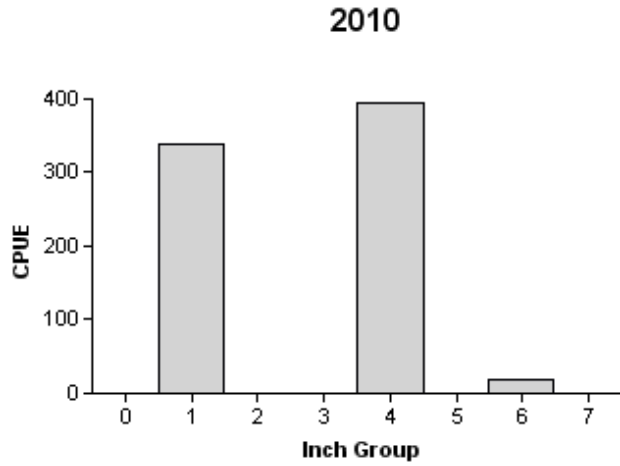
Effort = 1.0
 Total CPUE = 403.0 (15; 403)
 IOV = 81 (4)



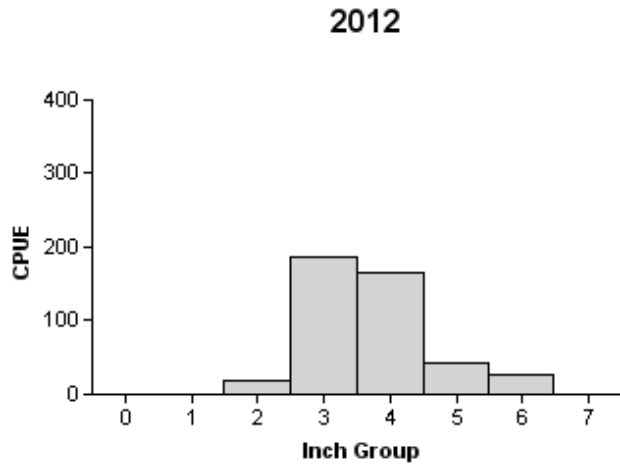
Effort = 1.0
 Total CPUE = 733.0 (26; 733)
 IOV = 100 (0)

Figure 2. Comparison of the 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, Proctor Reservoir, Texas, 2010, 2012, and 2014.

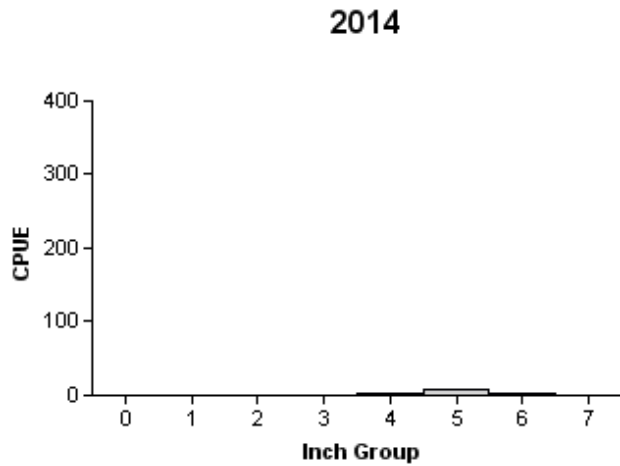
Bluegill



Effort = 1.0
 Total CPUE = 753.4 (27; 766)
 Stock CPUE = 415.1 (27; 422)
 PSD = 5 (2)



Effort = 1.0
 Total CPUE = 443.0 (18; 443)
 Stock CPUE = 424.0 (19; 424)
 PSD = 6 (2)



Effort = 1.0
 Total CPUE = 18.0 (34; 18)
 Stock CPUE = 17.0 (34; 17)
 PSD = 29 (13)

Figure 3. Comparison of the 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, Proctor Reservoir, Texas, 2010, 2012, and 2014.

Blue Catfish

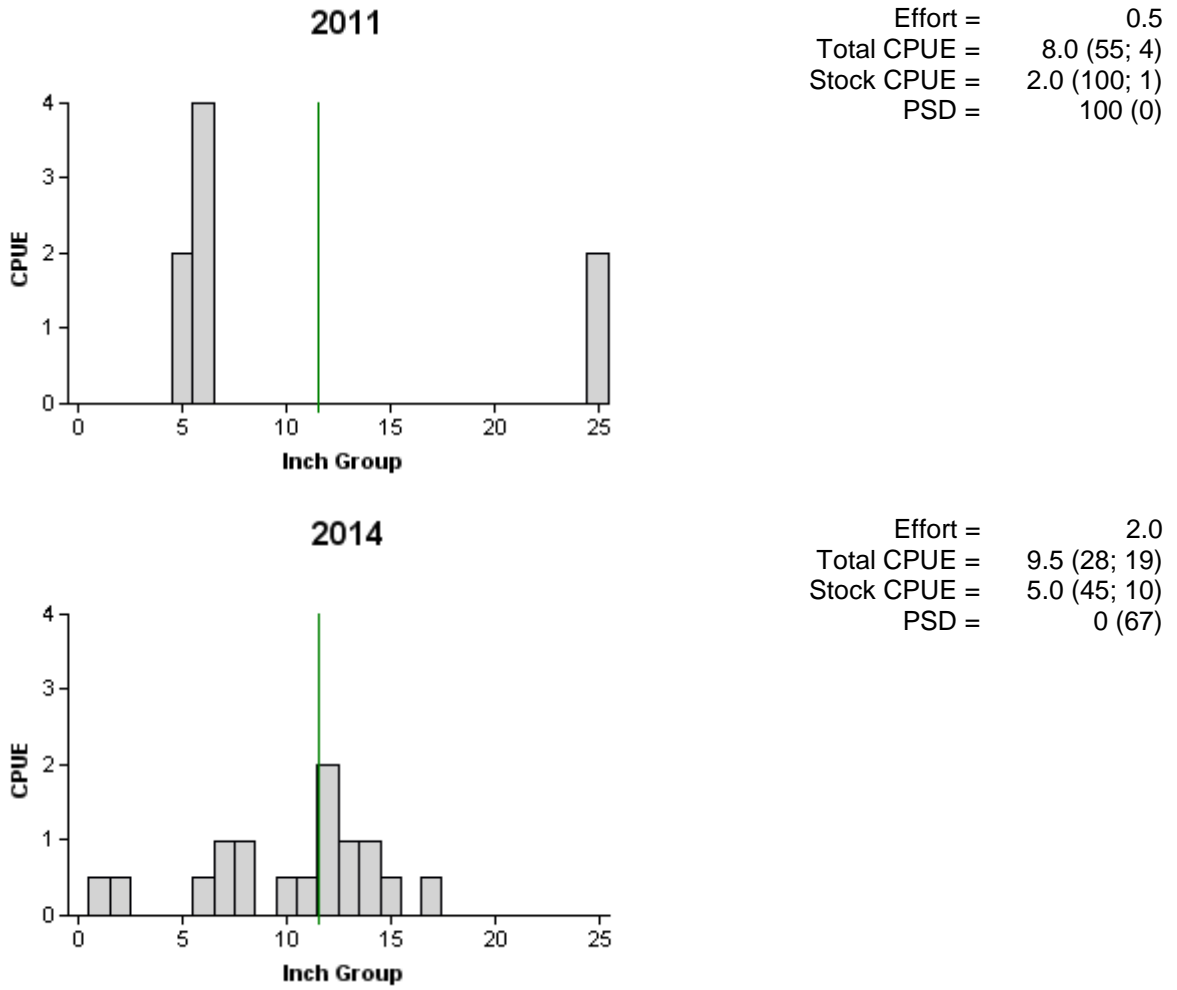


Figure 4. Comparison of the number of Blue Catfish caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for low-frequency electrofishing surveys, Proctor Reservoir, Texas, spring 2011 and summer 2014. Vertical line denotes 12-inch minimum length limit.

Channel Catfish

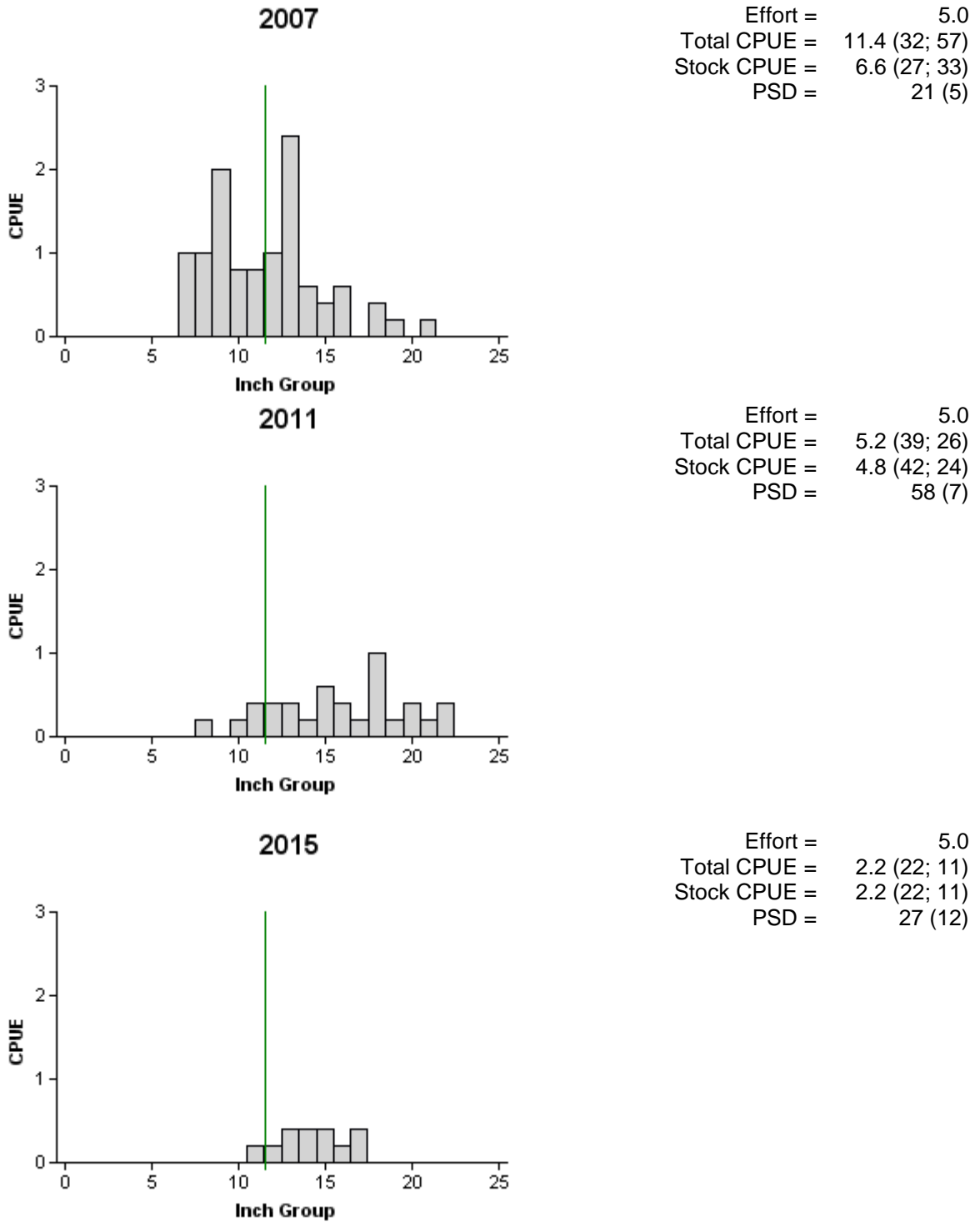


Figure 5. Comparison of the number of Channel Catfish caught per net night (CPUE) and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Proctor Reservoir, Texas, 2007, 2011, and 2015. Vertical line denotes 12-inch minimum length limit.

White Bass

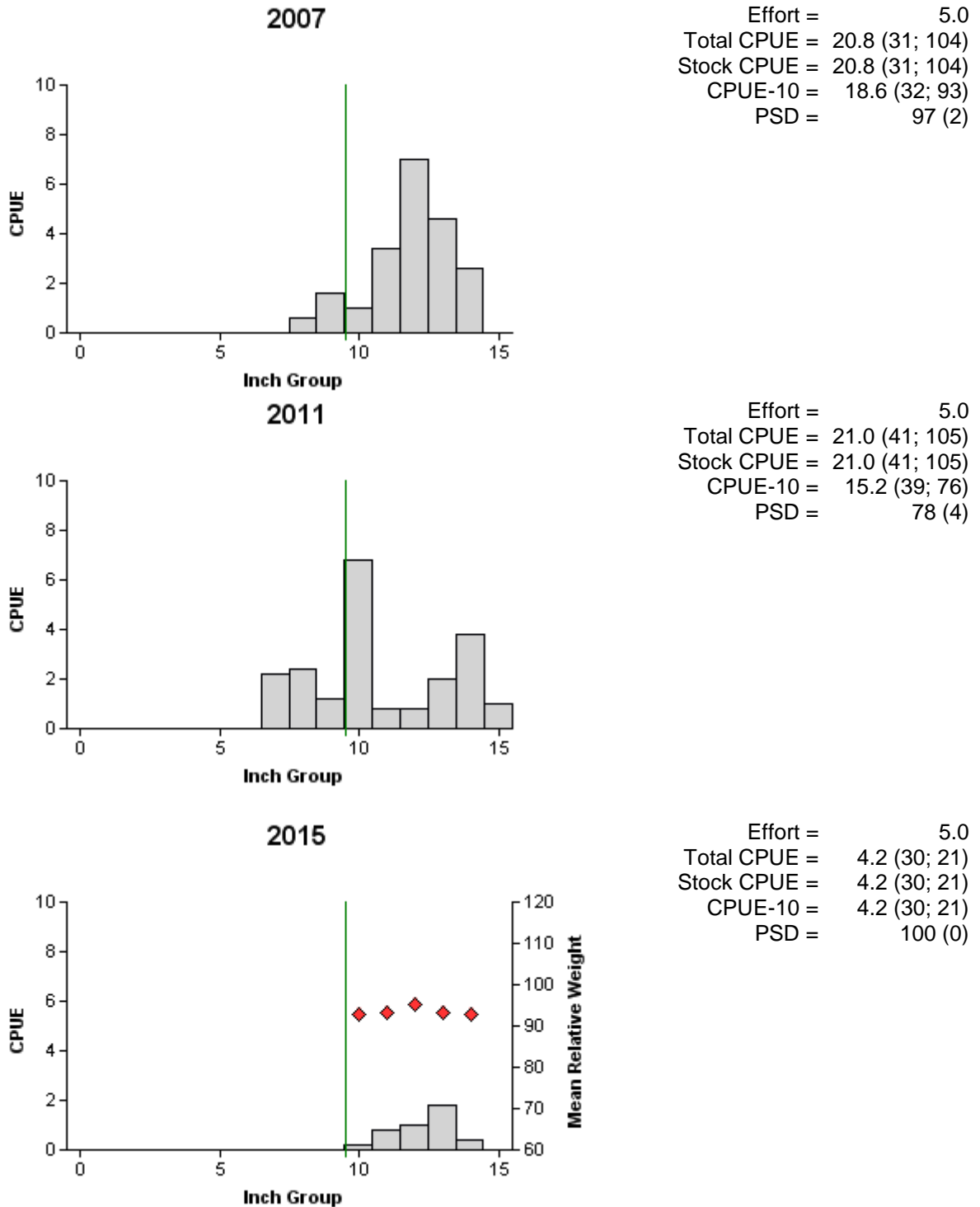


Figure 6. Comparison of the number of White Bass caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Proctor Reservoir, Texas, 2007, 2011, and 2015. Vertical line denotes 10-inch minimum length limit.

Hybrid Striped Bass

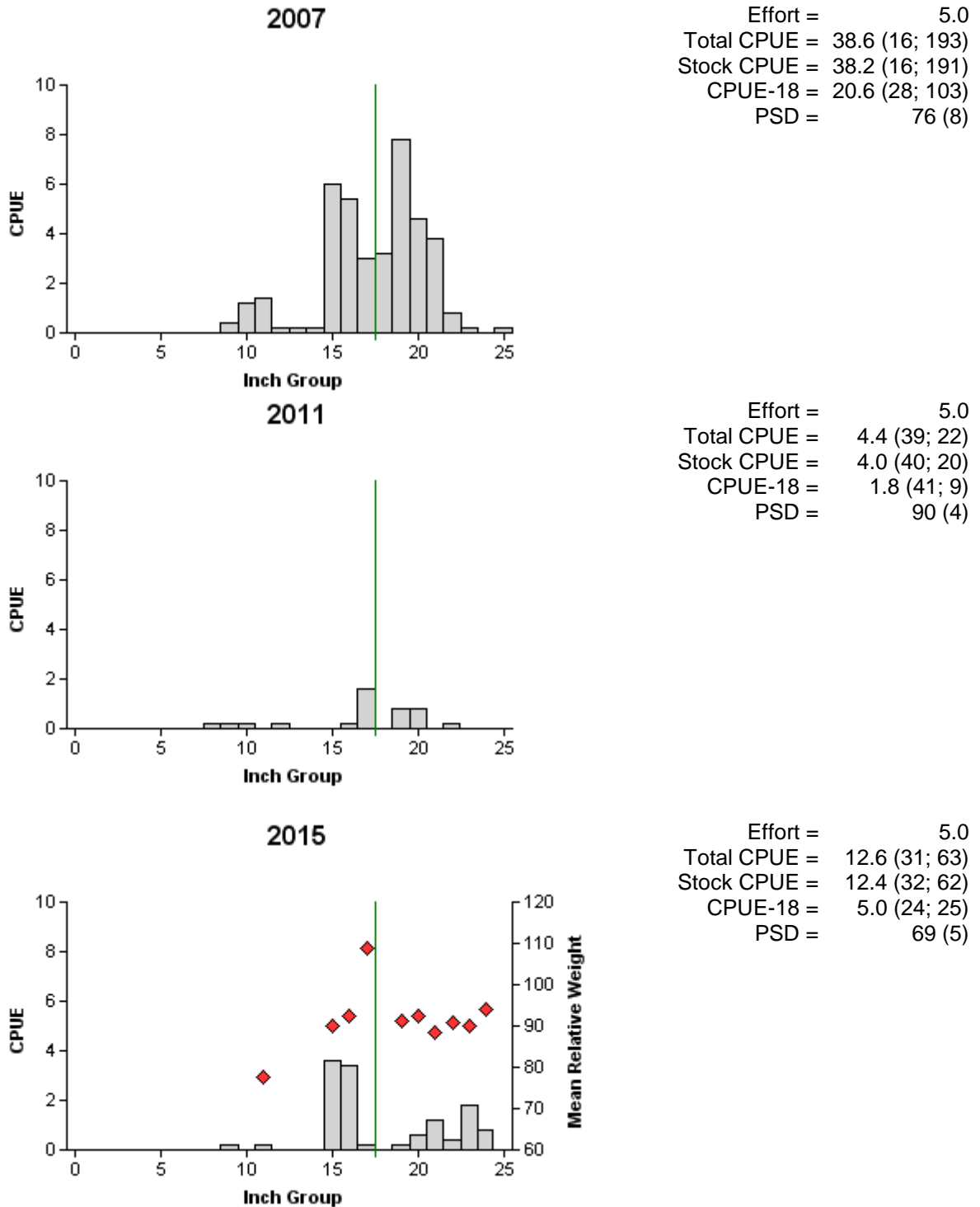


Figure 7. Comparison of the number of hybrid Striped Bass caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Proctor Reservoir, Texas, 2007, 2011, and 2015. Vertical line denotes 18-inch minimum length limit.

Largemouth Bass

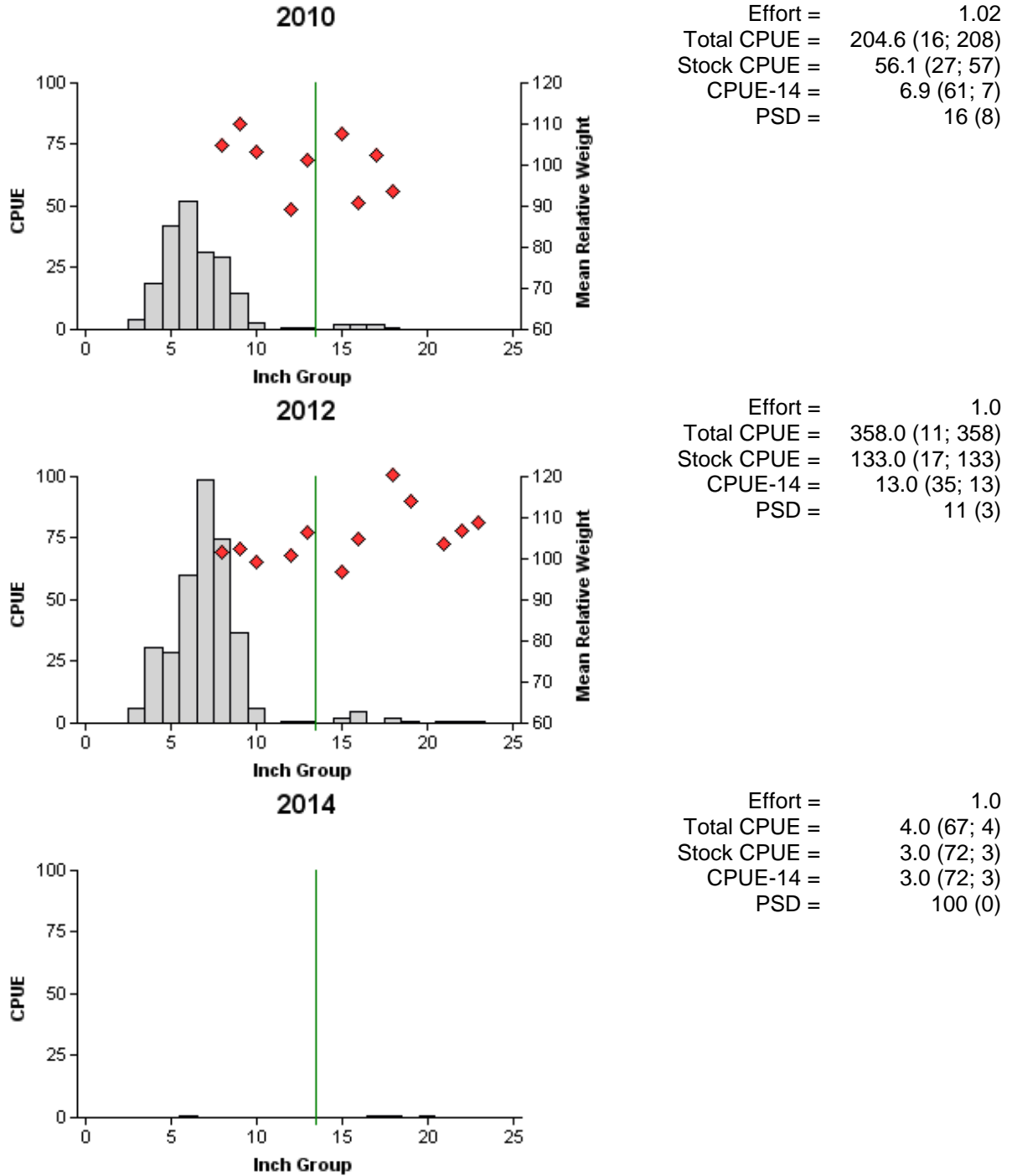


Figure 8. Comparison of the number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Proctor Reservoir, Texas, 2010, 2012, and 2014. Vertical line denotes 14-inch minimum length limit.

White Crappie

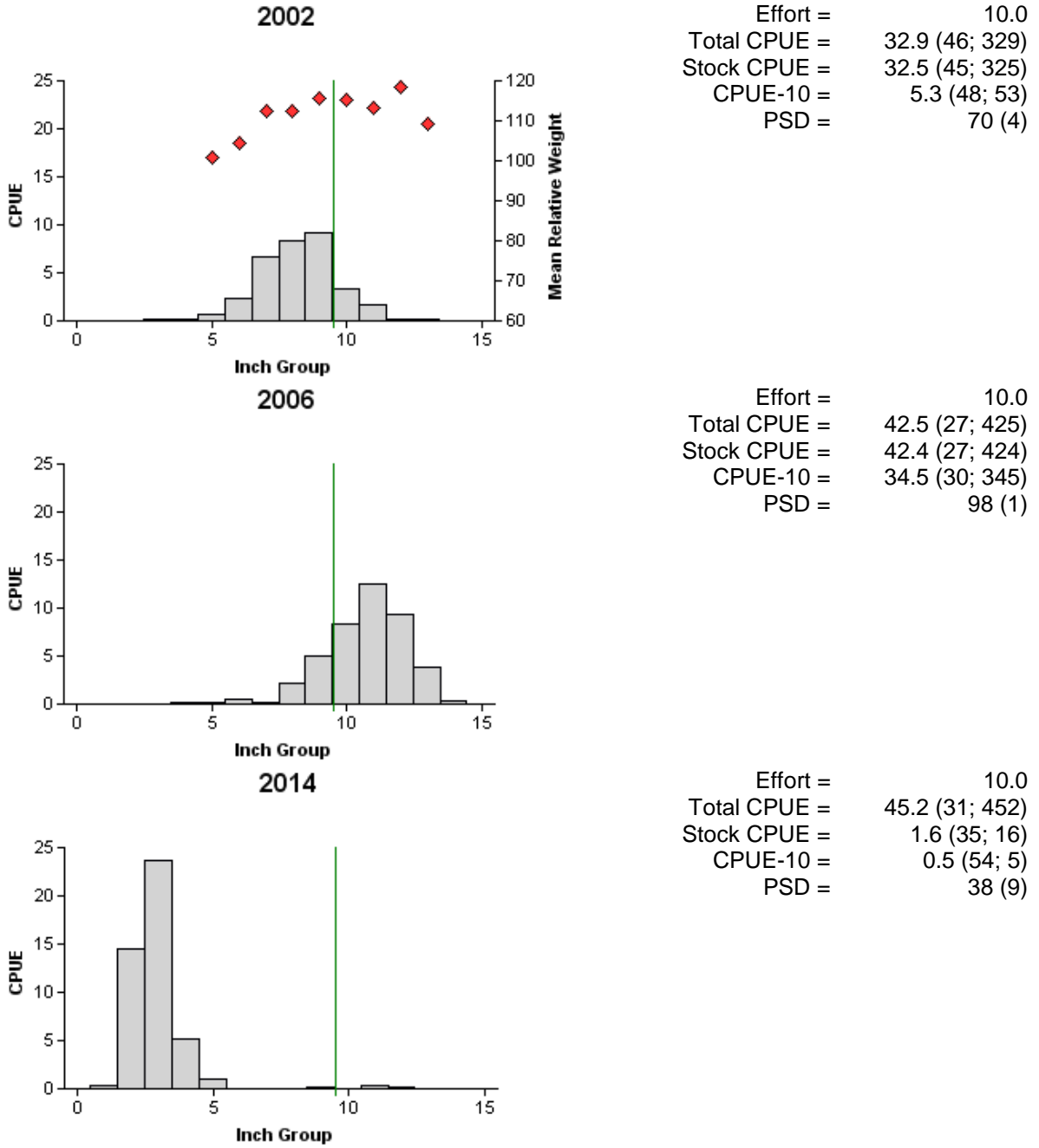


Figure 9. Comparison of the number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and bars and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Proctor Reservoir, Texas, 2002, 2006, and 2014. Vertical line denotes 10-inch minimum length limit.

Table 6. Proposed sampling schedule for Proctor Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while low-frequency electrofishing is conducted in the summer, and electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

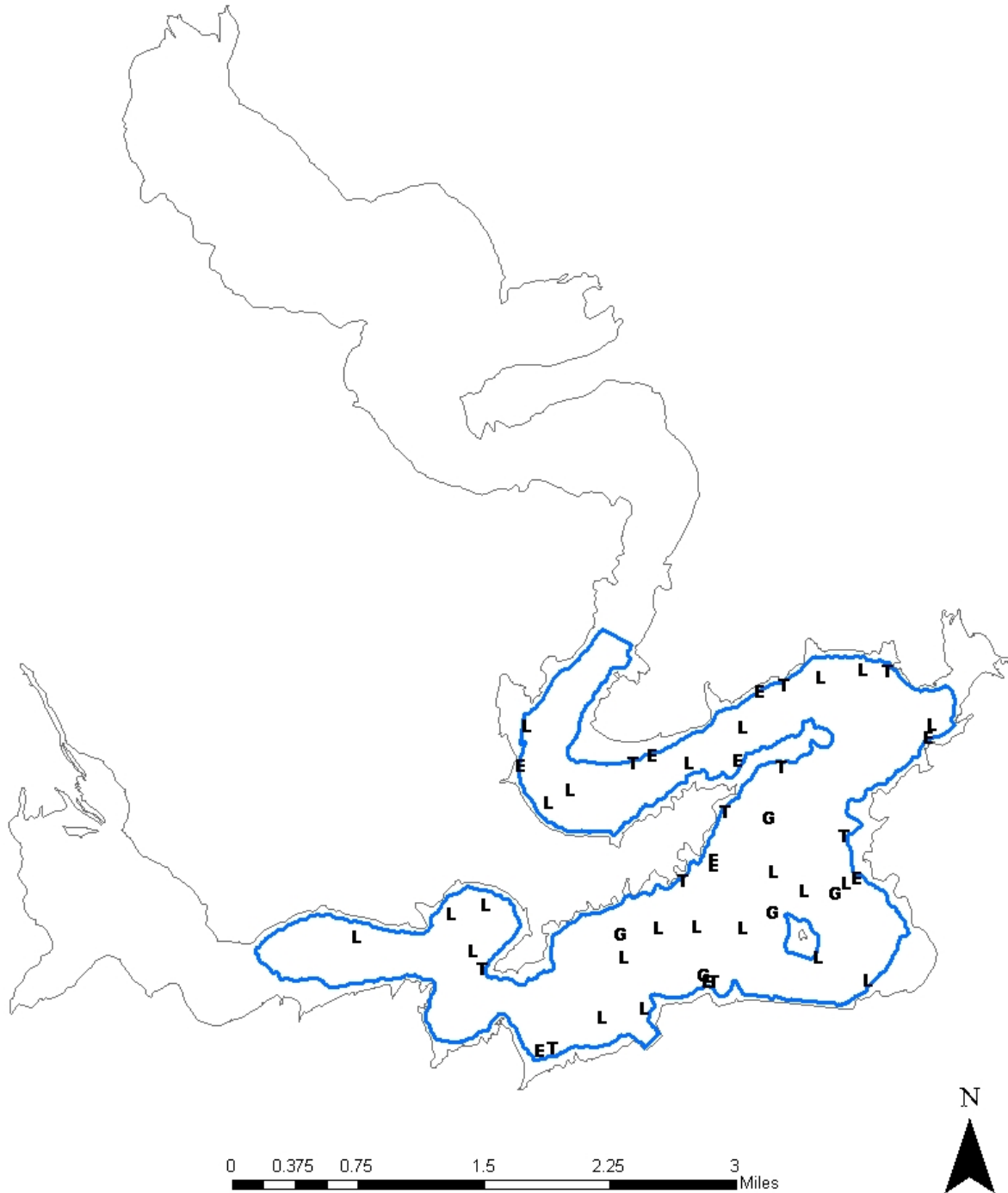
Survey year	Electrofishing	Trap netting	Gill netting	Low-frequency electrofishing	Habitat/ Vegetation	Access	Report
2015-2016							
2016-2017	A	A					
2017-2018			A				
2018-2019	S	S	S	A	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from standard gear types from Proctor Reservoir, Texas, 2014-2015. Sampling effort was 5 net nights for gill netting, 10 net nights for trap netting, and 1 hour for electrofishing.

Species	Electrofishing		Gill Netting		Trap Netting	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad	733	733.0				
Threadfin Shad	26	26.0				
Blue Catfish			1	0.2		
Channel Catfish			11	2.2		
White Bass			21	4.2		
Hybrid Striped Bass			63	12.6		
Bluegill	18	18.0				
Longear Sunfish	11	11.0				
Largemouth Bass	4	4.0				
White Crappie					452	45.2
Black Crappie					9	0.90

APPENDIX B



Location of sampling sites, Proctor Reservoir, Texas, 2014-2015. Trap netting (T), gill netting (G), low-frequency electrofishing (L), and electrofishing (E) stations are displayed. Reservoir outline at conservation pool (gray line) and water level at time of sampling (blue line) are displayed. The reservoir was approximately an average of 12 feet below conservation pool at time of sampling.