PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-4

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2013 Fisheries Management Survey Report

Wheeler Branch Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Wheeler Branch Reservoir were surveyed annually since the last report with fall electrofishing, spring gill netting and spring bass-only electrofishing. Historical data are presented with the 2013-2014 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:** Wheeler Branch Reservoir is a 180-acre impoundment located within the Paluxy River system in Somervell County, Texas. Maximum depth is 85'. Water level is maintained by pumping water from the Paluxy River during periods of high flow. Wheeler Branch Reservoir is an oligotrophic reservoir with water transparencies typically ranging from three to five meters. Habitat features consist of flooded cedars around the periphery, flooded standing timber in deeper water, brush piles, rock piles and ledges.

- **Management history:** Wheeler Branch opened to the public on September 1, 2011. Prior to opening, the reservoir was stocked with Florida Largemouth Bass, Smallmouth Bass, Walleye, Bluegill, Threadfin Shad, Inland Silverside, Longear and Redear Sunfish – and sampled extensively with electrofishing and gill netting. Three important regulations were proposed and initiated September 1, 2011: 1) fishing by pole and line only; two poles per angler, 2) a 14" to 21" slot length limit, 5 fish bag only one of which can exceed 21" for Largemouth Bass, and 3) a 18" minimum length limit, 3 fish bag for Smallmouth Bass. Since the reservoir's opening, Wheeler Branch has been sampled annually with fall electrofishing, spring gill netting, and spring bass-only electrofishing. Additionally, a year-long angler creel survey was implemented from June 2013 through May 2014. A public relations campaign began within the district to inform and educate constituents about zebra mussels in order to prevent their spread into Wheeler Branch Reservoir. Somervell County employees were trained about zebra mussels, and how to inspect boats and trailers entering the reservoir.

- **Fish Community**
  - **Prey species:** The forage base consisted of good populations of Bluegill, Green Sunfish and Longear Sunfish. Threadfin and Gizzard Shad are present in low density.

  - **Channel Catfish:** Channel Catfish were collected in low numbers, and all individuals approached or exceeded the preferred size category of twenty-four inches. Channel Catfish were the second most sought after species (14%).

  - **Black basses:** Largemouth Bass catch rates, size distribution, and conditions were all fair to good. Largemouth bass were the most popular fish species sought, with 64% of anglers targeting them. Smallmouth Bass were present (though seldom collected in standard sampling) but were sought and caught at low rates by anglers.

  - **Walleye:** Walleye were collected in low numbers but are reaching harvestable size by age 3. Only 4% of anglers targeted this species, and catch rates were very low.

- **Management Strategies:** Continue managing Wheeler Branch Reservoir with existing regulations. Conduct general monitoring with electrofishing and gill netting biennially. Conduct an aquatic vegetation and access survey during summer 2017. Continue efforts to educate the public about invasive species and zebra mussel issues, and protect the reservoir from zebra mussel introductions. Stock Walleye fry annually and advanced fingerling Channel Catfish in 2015 and 2017.

INTRODUCTION

This document is a summary of fisheries data collected from Wheeler Branch Reservoir in 2013-2014. 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 species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data is presented with the 2013-2014 data for comparison.

Reservoir Description

Wheeler Branch Reservoir is a 180-acre impoundment located within the Paluxy River system in Somervell County, Texas. The reservoir began filling in 2007 and the controlling authority is the Somervell Water District (SWD). The primary purpose of the reservoir is ultimately to provide drinking water to Somervell County residents. Maximum depth is 85'. Water level is maintained by pumping water from the Paluxy River during periods of high flow. Glen Rose City Lake (9 acres) was impounded on the Paluxy to provide a pool of water from which to pump. The pump has a capacity of 13,000 gallons per minute. Wheeler Branch Reservoir is classified as an oligotrophic reservoir, with water transparencies typically ranging from three to five meters. Habitat features consist of flooded cedars around the periphery, flooded standing timber in deeper water, brush piles, rock piles and ledges (See Table 1 for other descriptive characteristics for Wheeler Branch Reservoir).

Angler Access

Wheeler Branch Reservoir has one double-lane boat ramp that has been available to anglers since the reservoir's opening despite drought conditions and low water levels during summers of 2011, 2012, and 2013. This boat ramp does not require work at this time. Shoreline access is currently being expanded around the entire reservoir (See Table 2 for additional boat ramp characteristics).

Management History

Previous management strategies and actions: Multi-faceted management strategies and actions from the previous survey report (Baird and Tibbs 2009) included:

1. Propose: 1) a pole-and-line only regulation (two poles per angler), to limit conflicts among users of the day use park, 2) a 14" to 21" slot length limit, 5 fish bag (only one of which can exceed 21") for Largemouth Bass, and 3) a 18" minimum length limit, 3 fish bag for Smallmouth Bass. Work with the SWD to design an on-site angler survey to be implemented by the water district starting September 1, 2011. Sample the reservoir annually to monitor the fisheries.
   Action: All three proposed regulations were accepted and initiated upon the opening date of the reservoir (September 1, 2011). An angler survey was designed specifically for Wheeler Branch's unique single access point, and was conducted from June 1, 2013 through May 31, 2014; those data are included in this report. Annual sampling has been conducted with standard fall electrofishing, spring bass-only electrofishing, and spring gill netting for the past four years.
2. Request Florida Largemouth Bass for stocking in spring 2011 to improve genetics in the population, and re-evaluate genetic composition in fall 2011 and during the next report year.
   Action: Florida Largemouth Bass were requested and stocked in 2011. The most recent genetic evaluation data are included in this report.
3. Electrofish for bass only through the date of the next report. Evaluate Smallmouth Bass population using angling in 2010 and 2011. Request additional stockings of Smallmouth Bass in 2011 and 2013. Request stockings of surplus fish when available. Evaluate Smallmouth Bass population progress in 2014 and determine if further stocking is warranted.
   Action: Spring bass-only electrofishing was conducted annually for the past four years. The Smallmouth Bass angling evaluation which was planned for 2011 was not conducted

because the regional biologist report-editing meeting was moved to another district. Smallmouth Bass were requested and stocked at 25/acre in both spring 2011 and 2013, and surplus fish have been requested when available. All available Smallmouth Bass data are evaluated in this report.

4. Continue requesting Walleye fry annually. Gill net annually through the date of the next report. Test the effectiveness of trap netting in early February when water temperatures are about 60 degrees Fahrenheit. If successful, trap net annually to augment Walleye information. Evaluate Walleye population progress in the next report and determine if further stocking is warranted.

   Action: Walleye fry have been requested and stocked annually since the previous report. The effectiveness of trap netting and gill netting were tested during spring 2011, and gill netting proved to be the gear of choice for collecting Walleye; as a result, early gill netting has been conducted annually ever since. All available Walleye data are evaluated in this report.

5. Monitor for presence of Threadfin Shad during annual electrofishing starting in fall, 2010. If Threadfin are not documented in fall 2010 electrofishing, collect Threadfin Shad from Belton Reservoir by early May, 2011 and stock into Wheeler Branch Reservoir.

   Action: Threadfin Shad were observed in low density during 2011 and 2012 electrofishing surveys, but not in more recent surveys. It is possible that a low density population still exists. The potential for collecting and stocking Threadfin Shad from another district reservoir disappeared with the Zebra Mussel threat – and the confirmation of Zebra Mussels in Belton Reservoir. However, it is still possible that Somervell Water District could purchase Threadfin Shad from an accredited vendor or grower.

6. Cooperate with the SWD to post appropriate invasive species signage at the boat ramp. Educate SWD employees on how to prevent constituents from launching boats contaminated with invasive species. Make a speaking point about invasive species when presenting to constituents and user groups that might frequent Wheeler Branch. Keep track of (i.e., map) all existing and future inter-basin water transfer routes to facilitate potential invasive species responses.

   Action: Invasive species signage was posted at the Wheeler Branch boat ramp during summer 2013. District biologists have made a speaking point about invasive species, how to prevent their spread, and potential effects on Wheeler Branch Reservoir, while speaking to constituent groups such as the Central Texas Flyrodders, Legacy Outfitters, and Brazos River Sportsman's Club over the past several years. Inter-basin water transfers are a permanent fixture in this report now, and will be updated appropriately.

Harvest regulation history: Sport fishes in Wheeler Branch are managed with three special regulations. The first regulation is a gear restriction, pole and line fishing only (maximum of two poles per angler). The second is a 14-21" slot length limit for Largemouth Bass, 5 fish total bag (only one allowed over 21"). The third is an 18" minimum length limit for Smallmouth Bass, 3 fish total bag (Table 2).

Vegetation/habitat history: Wheeler Branch Reservoir supports native aquatic vegetation in the form of some Cattail, Chara, Southern Naiad, and American Pondweed. There is extensive woody structure throughout the reservoir, as well as some areas of rock piles.

Stocking history: Bluegill, Threadfin Shad, Redear and Longear Sunfish, Inland Silverside, and Fathead Minnow were stocked in 2007, 2008 and 2009 to establish a prey base. Sport fish were stocked in spring 2007 and 2008 and included Florida Largemouth Bass, Smallmouth Bass, Channel Catfish, and Walleye. Please see Tibbs and Baird (2010) for source of initial brood stock and Table 3 for hatchery stocking history.

Water transfer: Wheeler Branch Reservoir was primarily designed to supply municipal water for the City of Glen Rose and is currently being utilized in that capacity. When monthly bypass flows (levels range from 3.1 to 27.2 cubic feet per second) are exceeded in the Paluxy River, SWD pumps untreated water

into the reservoir from an impounded portion of the river known as Glen Rose City Lake. This approach was taken because the Wheeler Branch watershed is insufficient to reliably recharge the reservoir.

METHODS

Fishes were collected by electrofishing (0.5 hours at 6, 5-min stations) and gill netting (5 net nights at 5 stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing and, for gill nets, 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 manual revised 2011)].

A single access creel survey was conducted by Somervell County employees from June 1, 2013 through May 31, 2014. A total of 44 weekend and 44 weekday creels were completed, representing significantly increased effort over the standard 20 weekend and 16 weekday creels required. Each creel survey represented a complete census of effort and catch for the entire reservoir for that day.

Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. (2007)], and condition indices [relative weight (W_r)] were calculated for target fishes according to Anderson and Neumann (1996). Index of vulnerability (IOV) was calculated for Gizzard Shad (DiCenzo et al. 1996). Standard error (SE) was calculated for structural indices and IOV. Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE and creel statistics. Fish aging became optional in 2004, and no new age and growth data (with the exception of Walleye) were collected from the 2013/2014 survey. Recent age and growth information for Wheeler Branch Reservoir can be found in Baird and Tibbs (2010).

Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures [TPWD, Inland Fisheries Division, (unpublished manual revised 2011)]. Micro-satellite DNA analysis was used to determine genetic composition of individual fish.

RESULTS AND DISCUSSION

Habitat: Littoral zone habitat consisted primarily of standing timber, natural shoreline, boulders, rock riprap and bulk heading. Structural habitat was last surveyed in summer 2008 and a survey was also conducted with side scan sonar during summer 2013 (Tables 5 and 6).

Creel: A creel survey was conducted from June 1, 2013 through May 31, 2014 to determine angler effort and catch rates of popular sport fish species. Directed fishing effort was highest for Largemouth Bass (64%), followed by Channel Catfish (14%), Smallmouth Bass (6%), and Walleye (4%; Table 7). Total angling hours were 6,331 (35.2 hours/acre), with total directed expenditures of $24,201 (Table 8). An additional question which asked “Which of the following items most influenced your decision to visit Wheeler Branch today?” and a list of six possible responses were listed. A total of 220 responses were recorded, with the most common being “Fishery” (45%, N = 99), followed by “Facilities” (39%, N = 86), “Proximity” (13%, N = 28), “Other” (2%, N = 4), “Reservoir size” (<1%, N = 2), and “Regulations” coming in last (<1%, N = 1). From this information, we would conclude that a quality fishery with good facilities that is geographically close to the angler is desirable.

Prey species: Prey species have been surveyed annually since 2008 with fall electrofishing. Threadfin Shad were collected at 28.0/h during the fall 2012 survey, and have not been observed since. Gizzard Shad have never been collected by electrofishing, but were collected with gill nets at 0.60/nn in 2014. The current forage base consists of Bluegill (220.0/h; Figure 1), Green Sunfish (52.0/h) and Longear Sunfish (40.0/h). Electrofishing trend data show solid populations of these sunfish species, but individuals seldom reach preferred size classes.

Channel Catfish: Channel Catfish were collected with gill nets at 0.60/nn in 2014. This catch rate equates to only 3 collected individuals and was below the historical average (1.5/nn; Figure 2). Proportional size distribution values have remained at 100 for the past four surveys, indicating an unbalanced population of larger individuals and little (if any) recruitment. The Channel Catfish sampled either approached or exceeded the preferred size category of 24 inches, and body condition was variable but good (Figure 2). Anglers directed 4.92 h/acre effort towards Channel Catfish and caught 0.31/h (Table 9). Harvested fish ranged from 14 to 26 inches (Figure 3).

Black basses: Smallmouth Bass have been surveyed annually by fall electrofishing since 2010 and by spring electrofishing (i.e., bass-only surveys) since 2011. Fall electrofishing catch rates were low (18.0/h in 2010, 6.0/h in 2011, 2.0/h in 2012, and 0.0/h in 2013) and spring electrofishing catch rates were even lower (2.0/h in 2011, 0.0/h in 2012, 2.0/h in 2013, and 2.0/h in 2014). Body condition in collected individuals was generally good (Figures 4 and 5). Anglers directed 2.20 h/acre of effort towards Smallmouth Bass, and only caught 0.03/h (Table 10). Harvested fish ranged from 21 to 23 inches (Figure 6)

Largemouth Bass have been surveyed annually by fall electrofishing since 2010 and by spring electrofishing (i.e., bass-only surveys) since 2011. Fall electrofishing catch rates were 162.0/h in 2010, 188.0/h in 2011, 130.0/h in 2012, and 72.0/h in 2013 (Figure 7). Spring electrofishing catch rates were 86.0/h in 2011, 96.0/h in 2012, 92.0/h in 2013, and 146.0/h in 2014 (Figure 8). Proportional size distribution values show balanced recruitment, growth and mortality rates for all recent surveys. Body condition decreased with increasing size, but was generally good (Figure 7). Largemouth Bass genetics were analyzed in 2013 and showed good Florida influence (57%; Table 12). Anglers directed 22.58 h/acre of effort towards Largemouth Bass, and caught 0.71/h (Table 11). Harvested fish ranged from 13 to 22 inches (Figure 9)

Walleye: Walleye have been surveyed annually since 2011 with gill nets, and were collected at 1.40/nn in 2011, 2.2/nn in 2012, 2.4/nn in 2013 and 0.4/nn in 2014. These catch rates equate to 7, 11, 12 and 2 collected individuals respectively (Figure 10). Proportional size distribution values have remained at or near 100 for the past four surveys, which may indicate poor recruitment, rapid growth or gear bias associated with gill netting. Most Walleye sampled were of quality size and body condition was good (Figure 10). Walleye approached the preferred size category of 24 inches by age 6 (Table 13). Anglers directed 1.48 h/acre of effort towards Walleye, and caught 0.02/h (Table 14). Harvested fish ranged from 18 to 25 inches (Figure 11).

Fisheries management plan for Wheeler Branch Reservoir, Texas

Prepared – July 2014.

ISSUE 1: Threadfin Shad have only been observed in one electrofishing survey following 2009 stockings.

MANAGEMENT STRATEGIES

1. Monitor for the presence of Threadfin Shad during supplemental electrofishing surveys in fall 2015 and spring 2016.
2. Perform management stockings of Threadfin Shad from reservoirs free of invasive species.
3. Talk to the SWD and suggest purchasing Threadfin Shad if management stockings fail.

ISSUE 2: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches and plugging engine cooling systems. Giant Salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

1. Cooperate with the SWD to maintain appropriate signage.
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 management responses.

ISSUE 3: Despite annual stocking, Smallmouth Bass catch rates have declined to very low rates. However, creel data indicates that over 10% of anglers visiting the reservoir fish exclusively or in part for Smallmouth Bass.

MANAGEMENT STRATEGIES

1. Continue requesting annual stockings. Request stockings of surplus Smallmouth Bass when available.
2. Conduct supplemental electrofishing surveys during fall 2015 and spring 2016 to monitor the Smallmouth Bass population.
3. Evaluate Smallmouth Bass population progress in the next report and determine if further stocking is warranted.

ISSUE 4: Stocked Walleye are present in low numbers but are sought after and occasionally caught by anglers. Multiple pictures posted on fishing forum sites on the web confirm their popularity despite very low angler catch rates in the creel.

MANAGEMENT STRATEGIES

1. Continue requesting Walleye fry or fingerlings annually.
2. Conduct gill netting surveys during February 2015 and 2017 to monitor the Walleye population.

ISSUE 5: Channel Catfish are a popular species with bank and boat anglers as reported in the creel. Park staff report a large reduction in angling pressure and success from prior years. Sampling data shows no recruitment of smaller fish and depletion of the larger fish. Fingerlings were stocked in 2013 in response to park staff reports, but it is likely that recruitment will need to be sustained through repeated stockings.

MANAGEMENT STRATEGIES

1. Stock 9” Channel Catfish advanced fingerlings in 2015 and 2017.
2. Request 2” Channel Catfish fingerlings if advanced fingerlings are unavailable.

SAMPLING SCHEDULE JUSTIFICATION:
The proposed sampling schedule includes general monitoring with electrofishing and gill netting in 2017 and 2018, supplemental electrofishing in fall 2015 and spring 2016, and an aquatic vegetation and access survey in summer 2017 (Table 8).

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DiCenzo, V. J., M. J. Maceina, and M. R. Stimert. 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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Table 1. Characteristics of Wheeler Branch Reservoir, Texas.

Characteristic	Description
Year Constructed	2007
Controlling authority	Somervell Water District
County	Somervell
Reservoir type	Mainstem
Conductivity	400 umhos/cm

Table 2. Boat ramp characteristics for Wheeler Branch Reservoir, Texas, 2013. Latitude and longitude are in decimal degrees.

Boat ramp	Latitude; Longitude	Public?	Parking capacity	Condition
Wheeler Branch	32.261208º N -97.765422º W	Y	20 with trailers, 26 car only	Excellent, no issues

Table 3. Harvest regulations for Wheeler Branch Reservoir, Texas, 2013.

Species	Bag Limit	Length limit (inches)
Catfish, Channel	25	12” minimum
Bass, Largemouth	5, only one over 21”	14” – 21” slot
Bass, Smallmouth	3	18” minimum
Sunfish	No limit	No limit
Walleye	5	Only 2 can be less than 16”

Table 4. Stocking history of Wheeler Branch Reservoir, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
Bluegill	2007	42,040	AFGL	2.5
	2008	18,550	AFGL	2.4
	Total	60,590		
Channel Catfish	2007	5,591	FGL	2.2
	2008	9,439	FGL	3.0
	2013	18,133	FGL	3.1
	Total	33,163		
Fathead Minnow	2007	16,750	FGL	
	Total	16,750		
Florida Largemouth Bass	2007	4,689	FGL	2.0
	2011	18,413	FGL	1.7
	Total	23,102		
Inland Silversides	2007	200	ADL	
	Total	200		
Smallmouth Bass	2007	426	ADL	8.4
	2007	4,074	FGL	1.7
	2008	4,263	AFGL	5.9
	2009	5,222	FGL	1.4
	2011	4,819	FGL	1.9
	2013	4,481	FGL	1.9
	Total	23,285		
Threadfin Shad	2007	1,500	ADL	
	2009	1,500	ADL	
	Total	3,000		
Walleye	2008	570,280	FRY	0.3
	2009	182,512	FRY	0.4
	2010	379,250	FRY	0.3
	2011	367,450	FRY	0.3
	2012	380,000	FRY	0.2
	2013	873,900	FRY	0.3
	Total	2,753,392		

Table 5. Survey of structural habitat types, Wheeler Branch Reservoir, Texas, 2010. Shoreline habitat type units are in miles.

Habitat type	Estimate	% of total
Bulkhead	.23	6.70
Natural shoreline	2.07	59.43
Rocky shoreline (rocks > 4”)	1.18	33.82

Table 6. Survey of aquatic vegetation, Wheeler Branch Reservoir, Texas, 2010 – 2013. In 2013, the value represents the percentage of randomly selected points with vegetation present during a habitat and access survey on August 14, 2013. Vegetation was generally found in trace or low-density quantities.

Vegetation	2010	2011	2012	2013
Southern Naiad	-	-	-	10.0% (3 of 30)
American Pondweed	-	-	-	23.3% (7 of 30)
Cattail	-	-	-	3.3% (1 of 30)

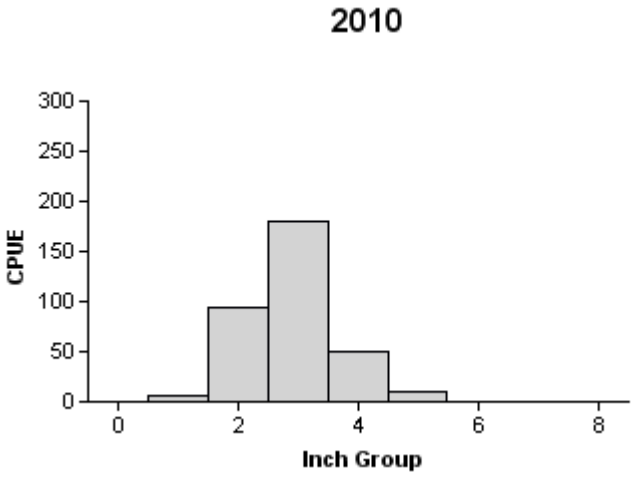
Table 7. Percent directed angler effort, for all anglers by species group for Wheeler Branch Reservoir, Texas, 2013-2014.

Species group	% directed effort 2013-2014
Channel Catfish	14
Smallmouth Bass	6
Largemouth Bass	64
Black Bass spp.	4
Walleye	4
Anything	7

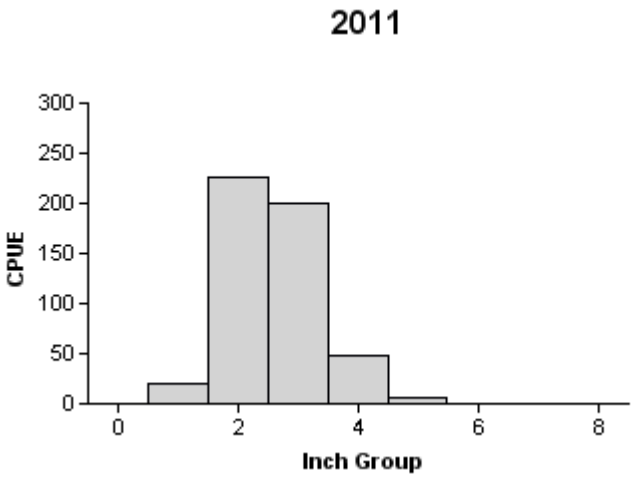
Table 8. Total fishing effort (h) for all species and total directed expenditures at Wheeler Branch Reservoir, Texas, 2013-2014. Relative standard errors (RSE) are in parentheses.

	Year
Creel Statistic	2013-2014
Total fishing effort (hours)	6,331(11)
Total directed expenditures	$24,201(19)

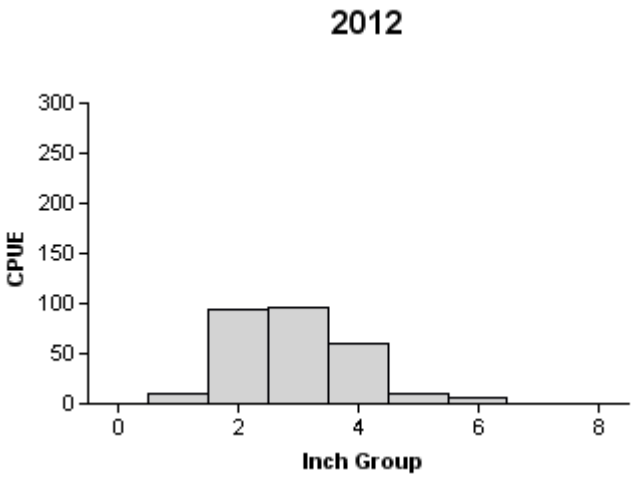
Bluegill



0.5
Effort = 340.0 (20; 170)
Total CPUE = 240.0 (22; 120)
Stock CPUE = 0 (69.2)
PSD =



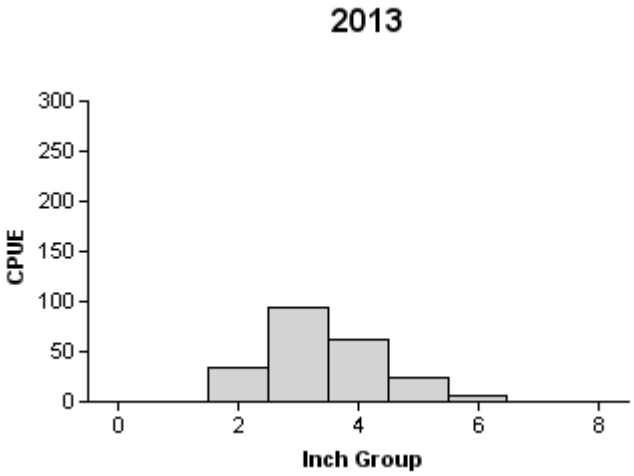
Effort = 0.5
Total CPUE = 500.0 (35; 250)
Stock CPUE = 254.0 (31; 127)
PSD = 0 (112.2)



Effort = 0.5
Total CPUE = 276.0 (25; 138)
Stock CPUE = 172.0 (24; 86)
PSD = 3 (2.1)

Figure 1. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2010, 2011 and 2012.

Bluegill



Effort = 0.5
Total CPUE = 220.0 (26; 110)
Stock CPUE = 186.0 (28; 93)
PSD = 3 (2.9)

Figure 1 Continued. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2013.

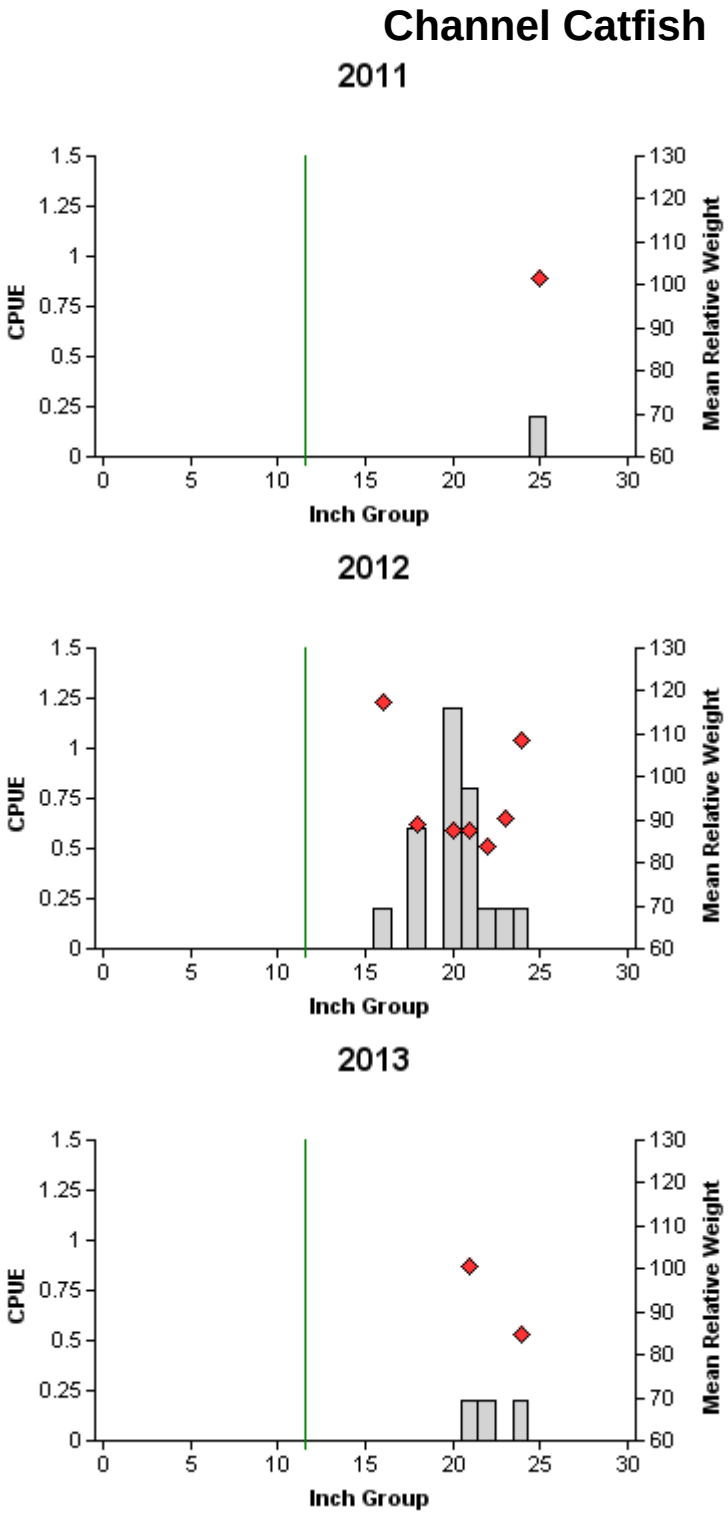


Figure 2. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill net surveys, Wheeler Branch Reservoir, Texas, 2011, 2012, and 2013. Minimum length limit represented by vertical line.

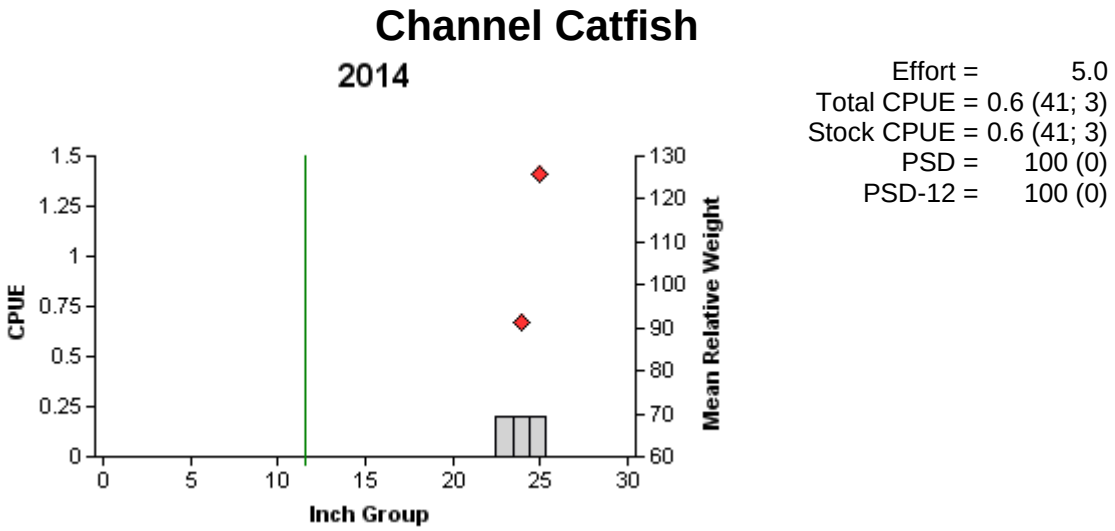


Figure 2 Continued. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill net surveys, Wheeler Branch Reservoir, Texas, 2014. Minimum length limit represented by vertical line.

Table 9. Creel survey statistics for Channel Catfish at Wheeler Branch Reservoir from June 2013 through May 2014. Directed effort, total catch, and harvest are for anglers targeting Channel Catfish. Relative standard errors (RSE) are in parentheses.

Directed effort (h)	886 (19)
Directed effort/acre	4.92
Total catch per hour	0.31 (39)
Total harvest	298 (38)
Harvest/acre	1.66

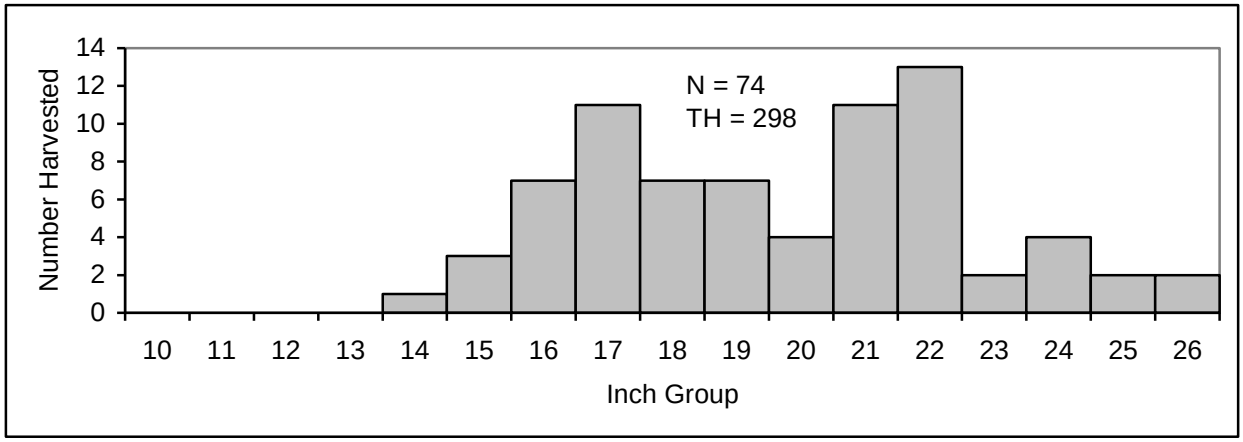


Figure 3. Length frequency of harvested Channel Catfish observed during creel surveys at Wheeler Branch Reservoir, Texas, from June 2013 through May 2014, all anglers combined. N is the number of harvested Channel Catfish observed during creel surveys and TH is the total estimated harvest for the creel period.

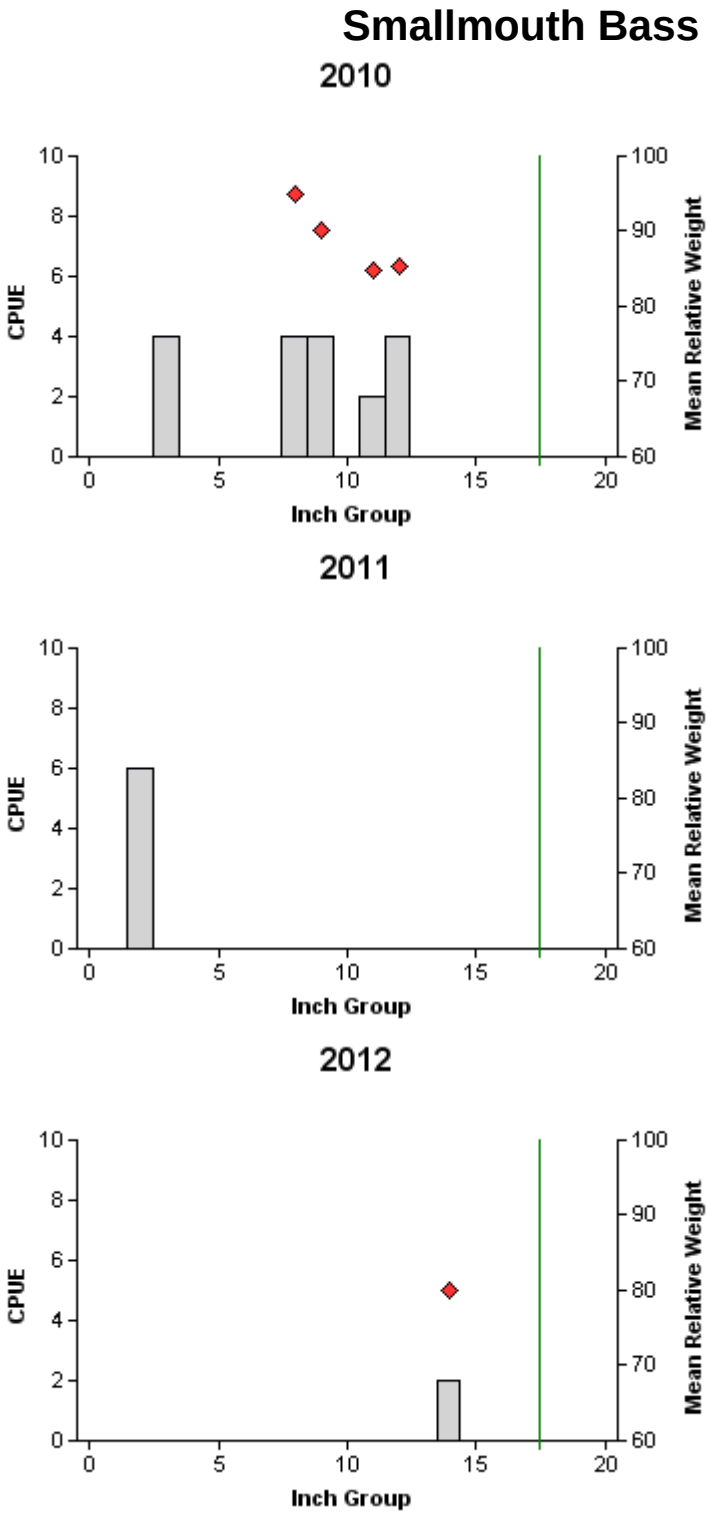


Figure 4. Number of Smallmouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2010, 2011 and 2012. Minimum length limit represented by vertical line.

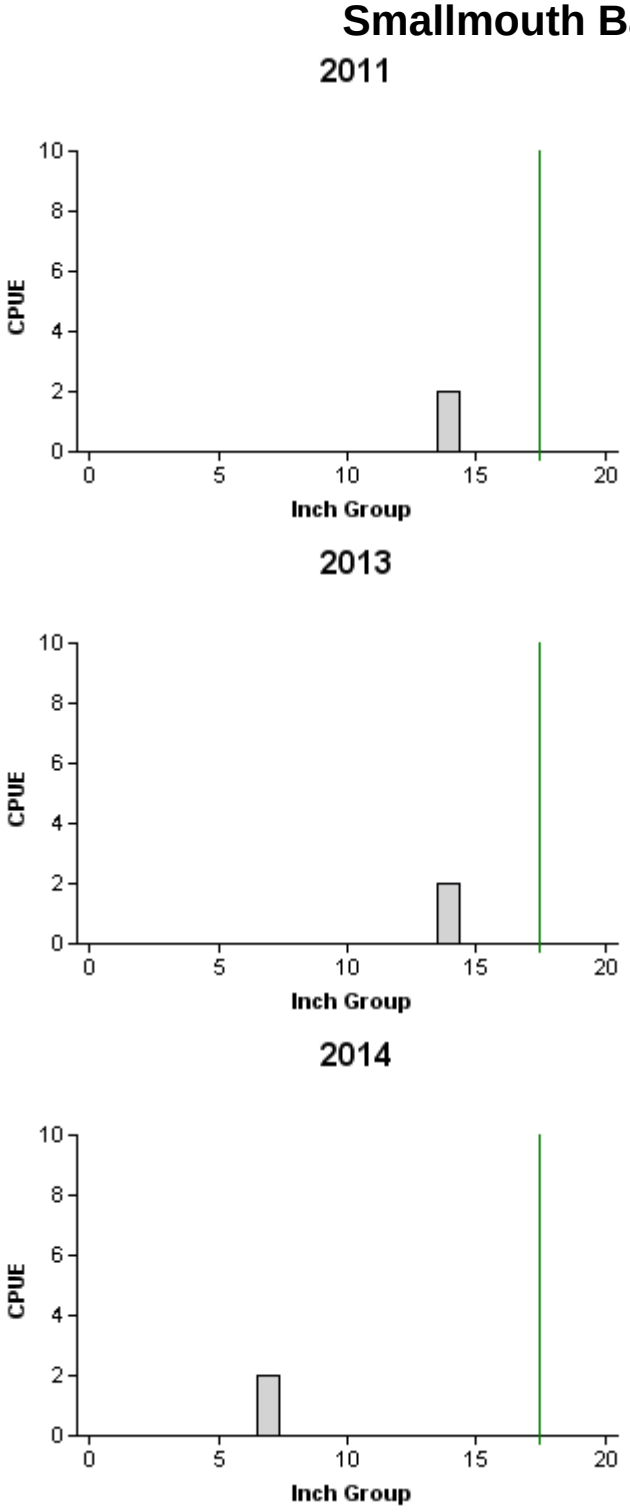


Figure 5. Number of Smallmouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring, bass-only electrofishing surveys, Wheeler Branch Reservoir, Texas, 2011, 2013 and 2014. Minimum length limit represented by vertical line.

Table 10. Creel survey statistics for Smallmouth Bass at Wheeler Branch Reservoir from June 2013 through May 2014. Directed effort, total catch, and total harvest are for anglers targeting Smallmouth Bass. Relative standard errors (RSE) are in parentheses.

Directed effort (h)	396 (34)
Directed effort/acre	2.20
Total catch per hour	0.03 (467)
Total harvest	7 (100)
Harvest/acre	0.04

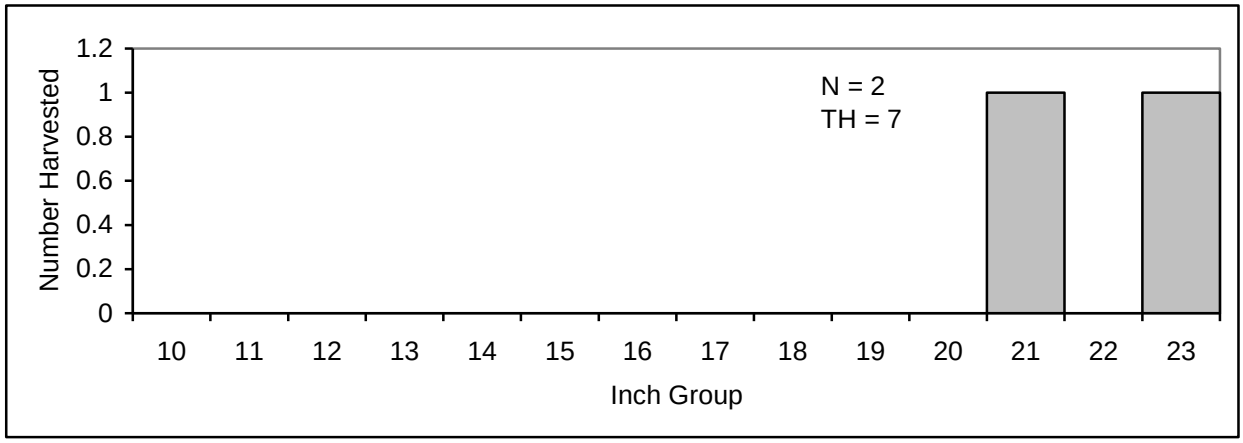


Figure 6. Length frequency of harvested Smallmouth Bass observed during creel surveys at Wheeler Branch Reservoir, Texas, from June 2013 through May 2014, all anglers combined. N is the number of harvested Smallmouth Bass observed during creel surveys and TH is the total estimated harvest for the creel period.

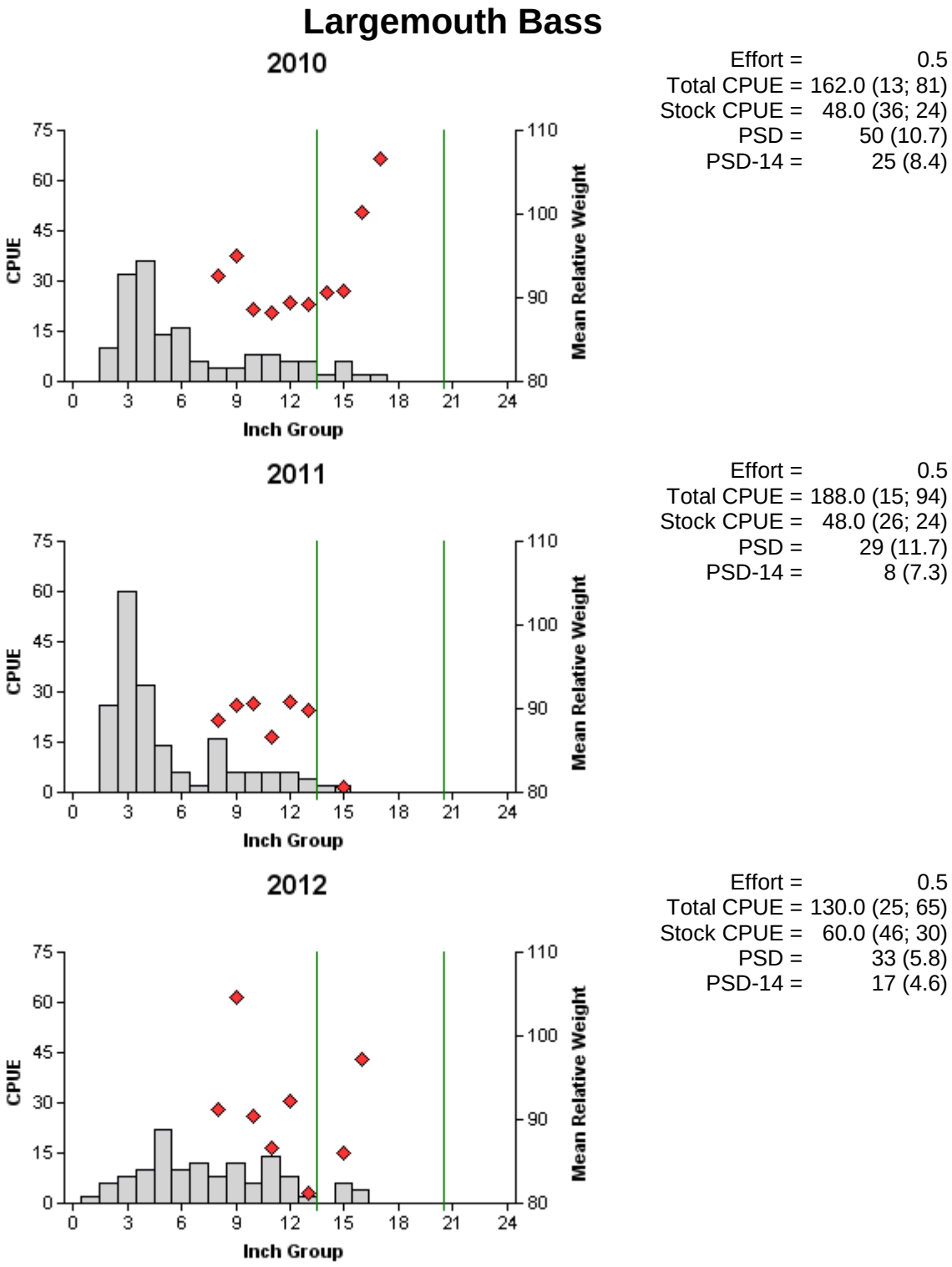


Figure 7. Number of Largemouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2010, 2011 and 2012. Slot limit represented by vertical lines.

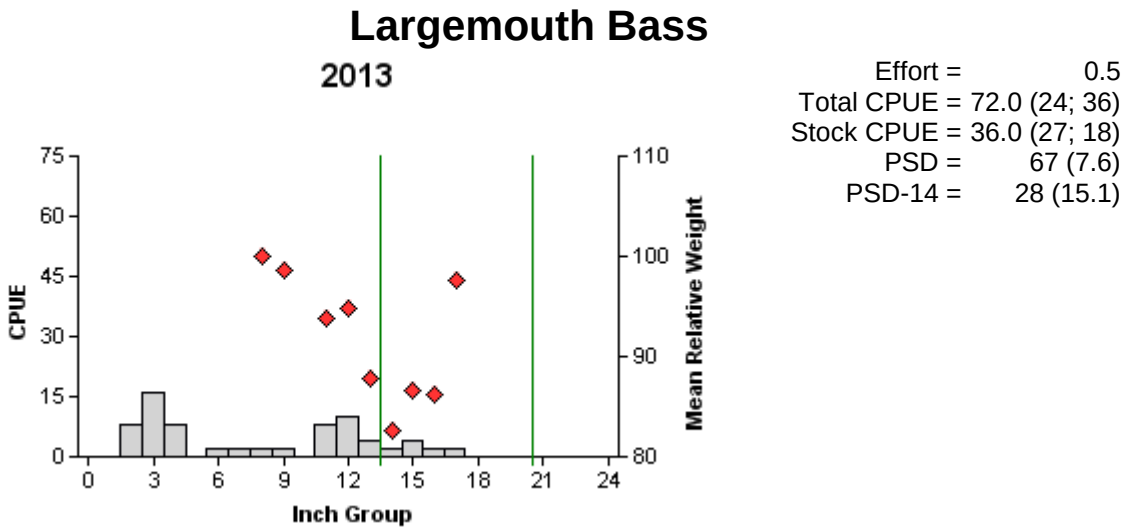


Figure 7 Continued. Number of Largemouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for fall electrofishing surveys, Wheeler Branch Reservoir, Texas, 2013. Slot limit represented by vertical lines.

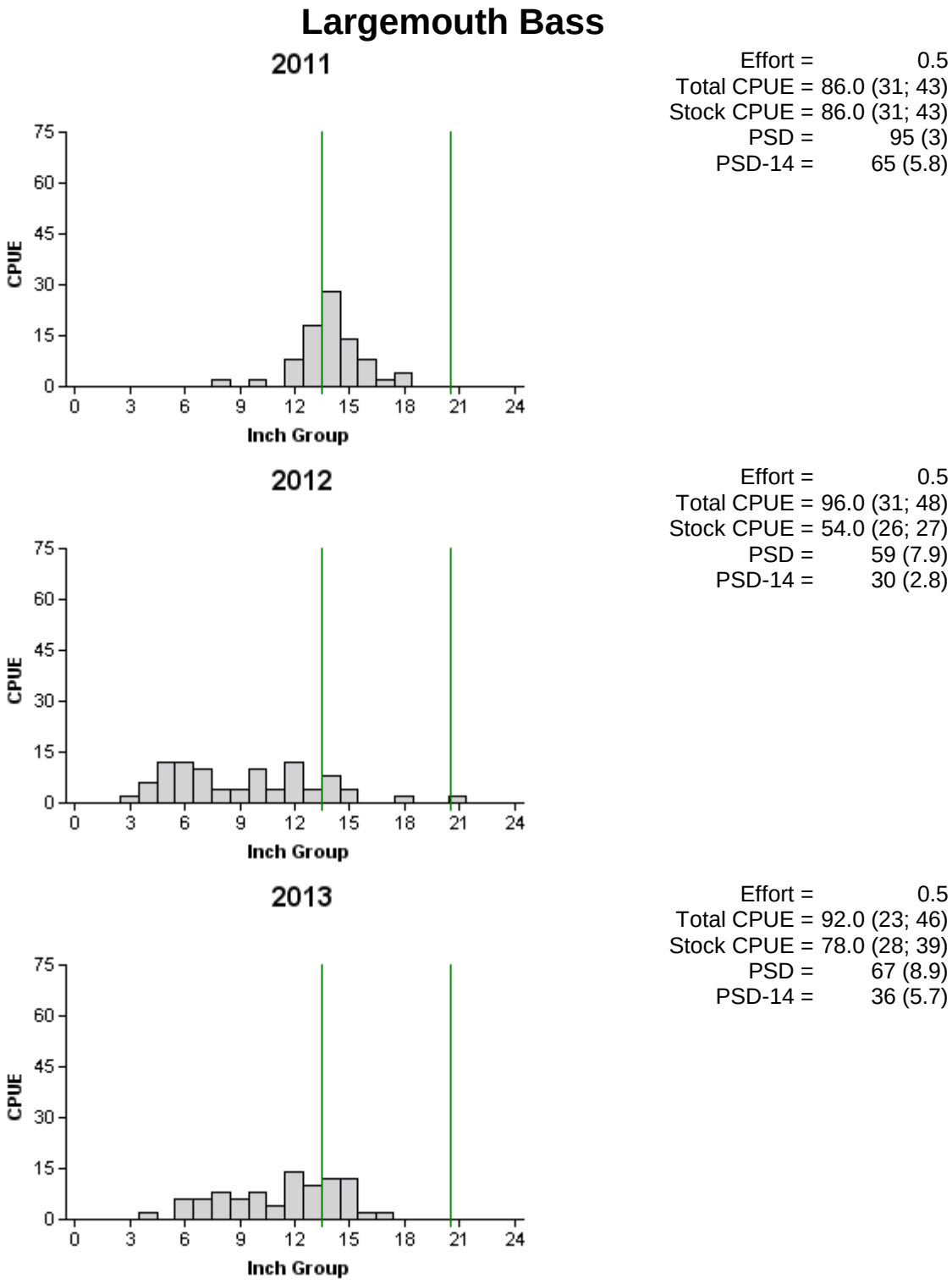


Figure 8. Number of Largemouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring, bass-only electrofishing surveys, Wheeler Branch Reservoir, Texas, 2011, 2012 and 2013. Slot limit represented by vertical lines.

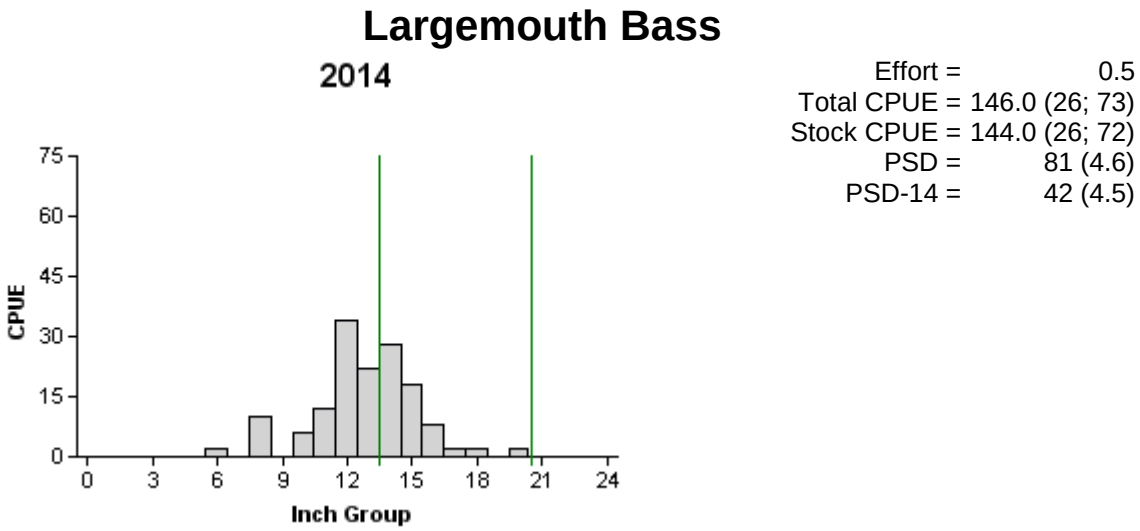


Figure 8. Number of Largemouth Bass caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring, bass-only electrofishing surveys, Wheeler Branch Reservoir, Texas, 2014. Slot limit represented by vertical lines.

Table 11. Creel survey statistics for Largemouth Bass at Wheeler Branch Reservoir from June 2013 through May 2014. Directed effort, total catch, and harvest are for anglers targeting Largemouth Bass. Relative standard errors (RSE) are in parentheses.

Directed effort (h)	4,064 (13)
Directed effort/acre	22.58
Total catch per hour	0.71 (19)
Total harvest	98 (36)
Harvest/acre	.54

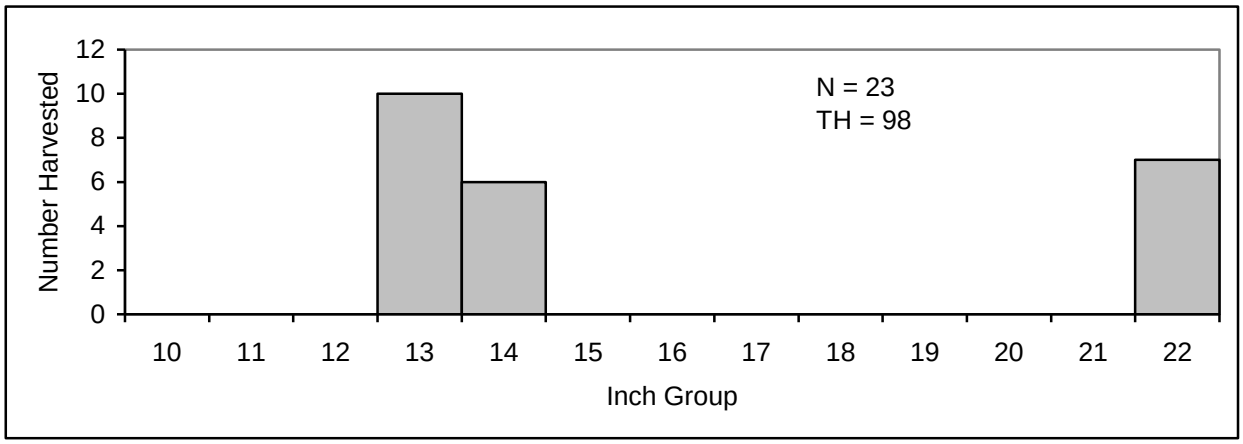


Figure 9. Length frequency of harvested Largemouth Bass observed during creel surveys at Wheeler Branch Reservoir, Texas, from June 2013 through May 2014, all anglers combined. N is the number of harvested Largemouth Bass observed during creel surveys and TH is the total estimated harvest for the creel period.

Table 12. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Wheeler Branch Reservoir, Texas, 2007, 2008 and 2013. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined with micro-satellite DNA analysis.

		Number of fish				
Year	Sample size	FLMB	Intergrade	NLMB	% FLMB alleles	% FLMB
2007	30	4	21	5	42	13.3
2008	10	0	9	1	30	0.0
2013	30	1	29	0	57	3.3

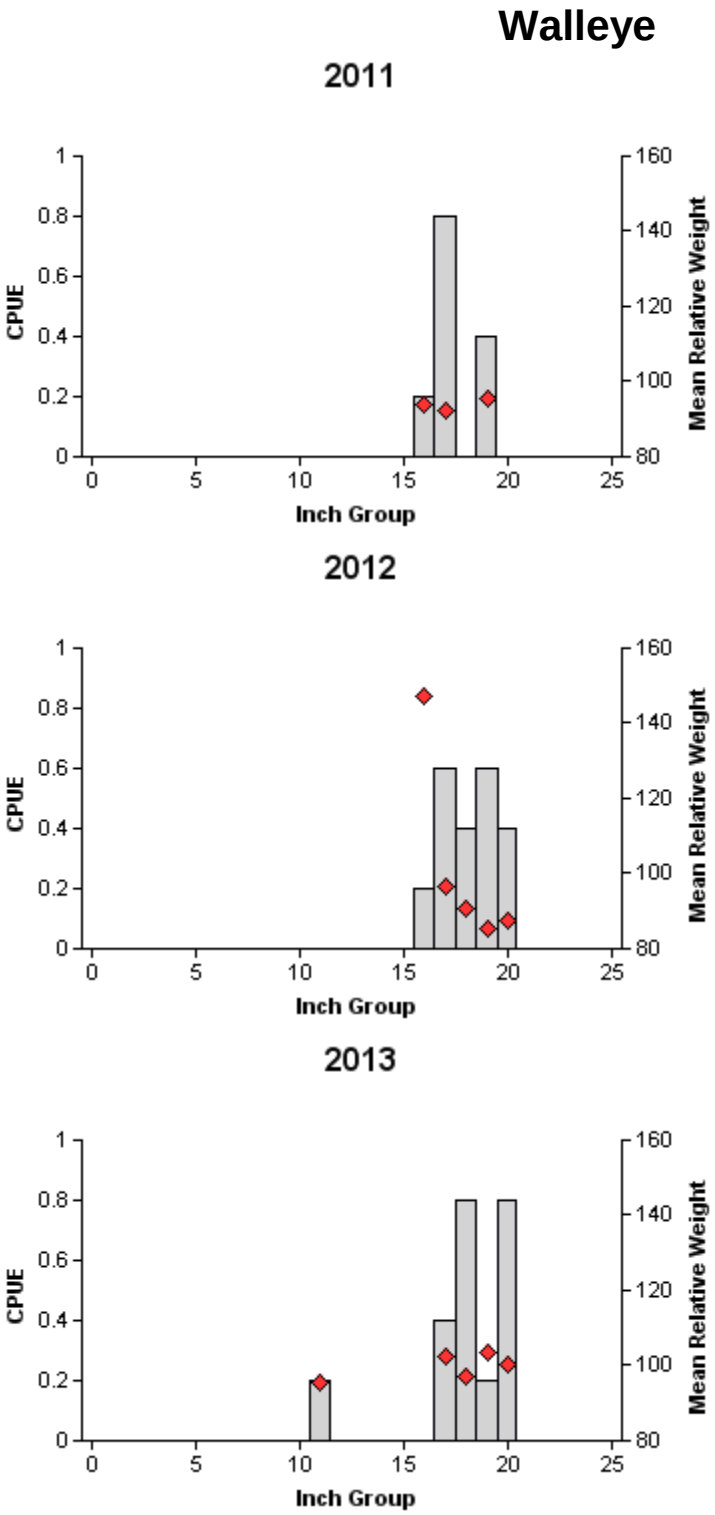


Figure 10. Number of Walleye caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure in parentheses) for spring gill net surveys, Wheeler Branch Reservoir, Texas, 2011, 2012, and 2013.

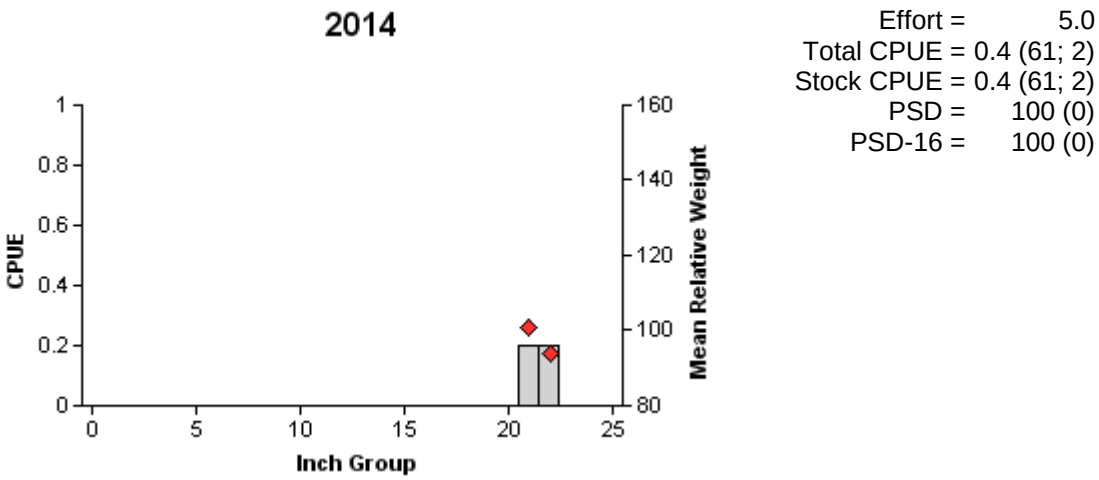


Figure 10 Continued. Number of Walleye caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) spring gill net surveys, Wheeler Branch Reservoir, Texas, 2014.

Table 13. Average length at capture for Walleye (sexes combined) ages 1 – 6 collected with gill net surveys, Wheeler Branch Reservoir, Texas, 2012, 2013 and 2014. Lengths are followed by the sample size in parenthesis (N).

	Length (inches) at capture for age					
Sampling date	1	2	3	4	5	6
Spring 2012	--	17.5 (4)	19.9 (2)	--	--	--
Spring 2013	11.7 (1)	--	--	19.1(9)	19.1 (2)	--
Spring 2014	--	--	--	--	--	22.1(2)

Table 14. Creel survey statistics for Walleye at Wheeler Branch Reservoir from June 2013 through May 2014. Directed effort, total catch, and harvest are for anglers targeting Walleye. Relative standard errors (RSE) are in parentheses.

Directed effort (h)	267 (33)
Directed effort/acre	1.48
Total catch per hour	0.02 (116)
Total harvest	19 (177)
Harvest/acre	0.11

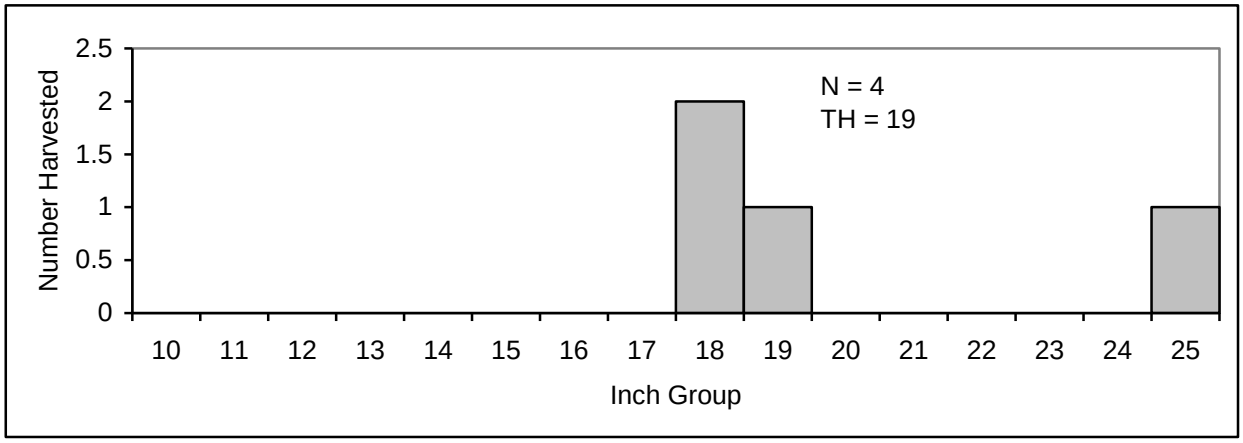


Figure 11. Length frequency of harvested Walleye observed during creel surveys at Wheeler Branch Reservoir, Texas, from June 2013 through May 2014, all anglers combined. N is the number of harvested Walleye observed during creel surveys and TH is the total estimated harvest for the creel period.

Table 15. Proposed sampling schedule for Wheeler Branch Reservoir, Texas. Survey period is June through May. Standard electrofishing and gill netting surveys are conducted in the fall and spring respectively. Additional electrofishing surveys are to be conducted during fall 2015 and spring 2016. Standard survey denoted by S and additional survey denoted by A.

Survey year	Electrofish Fall(Spring)	Trap net	Gill net	Habitat		Access	Creel survey	Report
				Structural	Vegetation			
2014-2015								
2015-2016	A		A					
2016-2017								
2017-2018	S		S		S	S		S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from fall and spring electrofishing, and gill netting, Wheeler Branch Reservoir, Texas, 2013-2014. Sampling effort was 0.5 hours for electrofishing, and 5 net nights for gill netting.

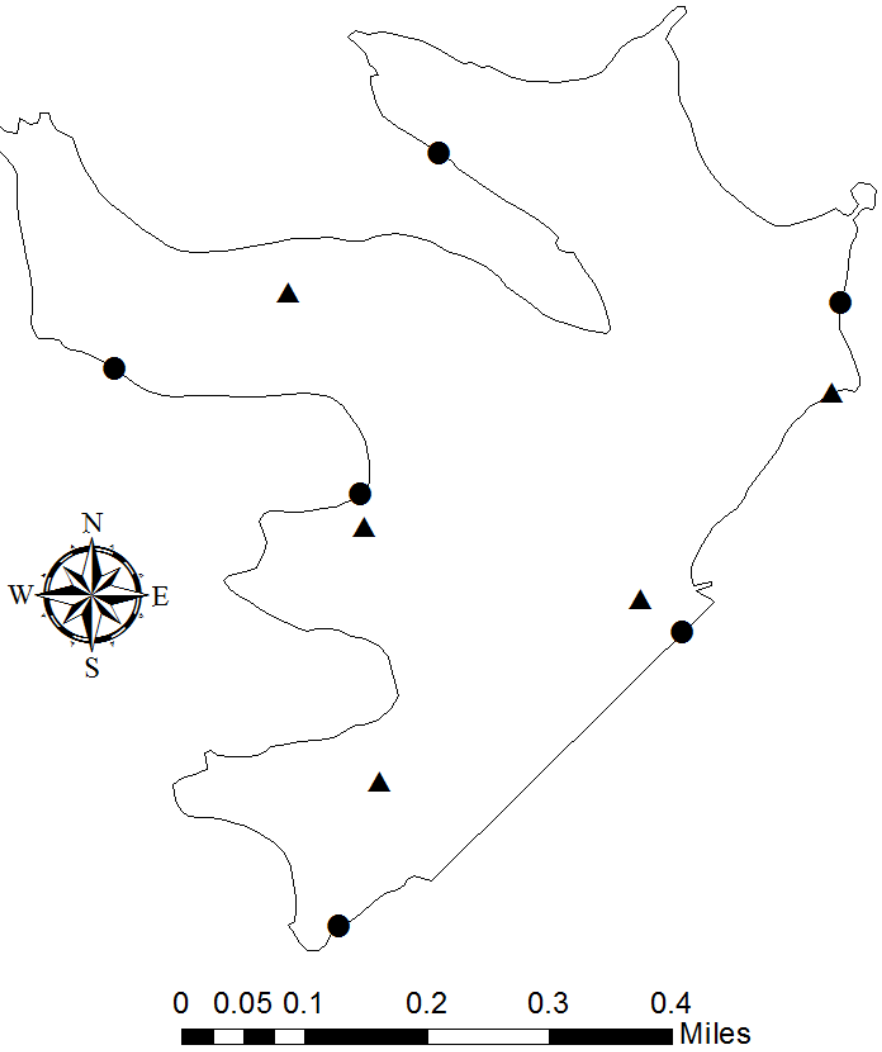
Species	Gill Netting		Spring Electrofishing		Fall Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad	3	0.60				
Channel Catfish	3	0.60				
Green Sunfish					26	52.0
Bluegill					110	220.0
Longear Sunfish					20	40.0
Largemouth Bass	43	8.60	73	146.0	36	72.0
Smallmouth Bass			1	2.0		
Walleye	2	0.40				

APPENDIX B

Historical catch rates (CPUE) of targeted species by gear type for standard surveys on Wheeler Branch Reservoir, Texas, 2008 to present. All stations were randomly selected. Electrofishing stations were shocked with a 5.0 Smith-Root GPP (Gas Powered Pulsator) until 2010, after which a 7.5 Smith-Root GPP was used. Species averages are in bold. Spring electrofishing catches of Largemouth and Smallmouth Bass are marked with an (*) and do not contribute to standard historical averages for those species.

Gear	Species	2008	2009	2010	2011	2012	2013	2014	Avg.
Electrofisher									
	Largemouth Bass	36.0	176.0	162.0	188.0	130.0	72.0		**127.0**
	Smallmouth Bass	74.0	6.0	18.0	6.0	2.0	0.0		**18.0**
	Gizzard Shad	0.0	0.0	0.0	0.0	0.0	0.0		**0.0**
	Threadfin Shad	0.0	0.0	0.0	0.0	28.0	0.0		**5.0**
	Bluegill Sunfish	264.0	600.0	340.0	500.0	276.0	220.0		**367.0**
	Redear Sunfish	2.0	0.0	0.0	0.0	0.0	0.0		**0.3**
	Longear Sunfish	42.0	90.0	18.0	14.0	0.0	40.0		**34.0**
	Green Sunfish	118.0	116.0	110.0	58.0	28.0	52.0		**80.0**
Gill nets									
	Channel Catfish			2.5	0.20	3.4	0.60	0.60	**1.5**
	Walleye		2.0	2.0	1.40	2.2	2.40	0.40	**1.7**
Spring Electrofisher									
	Largemouth Bass*				86.0*	96.0*	92.0*	146.0*	**105.0**
	Smallmouth Bass*				2.0*	0.0*	2.0*	2.0*	**1.5**

APPENDIX C



Location of sampling sites, Wheeler Branch Reservoir, Texas, 2013-2014. Electrofishing and gill netting stations are indicated by circles and triangles respectively. Conservation pool is 785 feet above mean sea level; water elevation was five feet low during fall electrofishing and six feet low during spring electrofishing and gill netting.