

PERFORMANCE REPORT

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FEDERAL AID PROJECT F-221-M-1

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2010 Survey Report

White River Reservoir

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July 31, 2011

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in White River Reservoir were surveyed with electrofishing and trap nets in 2010 and gill nets in 2011. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings. Historical data are presented for comparison.

- **Reservoir Description:** At conservation pool (2,372.2 feet MSL), White River Reservoir is a 2,020-acre impoundment constructed in 1963 on the White River, a tributary of the Salt Fork of the Brazos River. The reservoir is located in Crosby County approximately 55 miles east of Lubbock, Texas. Since mid 1999 White River Reservoir has experienced a steady decline in lake levels. A record low was set in September 2008 when the lake reached an elevation of 2,340.7 feet MSL and a surface area of 401 acres. Two substantial rain events have occurred in the watershed since 2008 which resulted in an increase in surface area to 930 acres. During sampling, the reservoir maintained an elevation near 2,356 feet MSL. White River Reservoir is owned and operated by the White River Municipal Water District as a municipal water supply and for recreational purposes. The reservoir has three boat ramps, and at current lake levels all three ramps are usable. During extremely low water levels there is a temporary launch site in place. There are no facilities for physically challenged anglers.
- **Management History:** Sport fish in the reservoir included walleye, white bass, largemouth bass, white crappie, and catfish. Past surveys have shown that white crappie were overabundant in the reservoir and exhibited poor growth. Walleye stockings have been utilized in part to mitigate overabundance of crappie. Florida largemouth bass were stocked in 1982, 2000, 2003, and 2009 in order to maintain a trophy largemouth bass fishery.
- **Fish Community**
 - **Prey species:** Gizzard shad and bluegill served as the primary prey species in the reservoir. The 2010 electrofishing catch rate of gizzard shad was 238.0/h with 91% considered to be suitably-sized prey for sport fish. The 2010 electrofishing catch rate of bluegills was 16.0/h, and all bluegills were equal to or less than 5-inches long making them available as prey.
 - **Catfishes:** Blue catfish 2011 catch rates appeared to be down slightly from past surveys, but the majority of blue catfish sampled were 20 inches or larger in length. Channel catfish 2011 catch rates have also declined with a shift in the population to larger individuals. The 2011 flathead catfish catch rate remained similar to catch rates from previous surveys.
 - **White bass:** Although white bass numbers remained low there was a slight increase in catch rates since 2007.
 - **Largemouth bass:** Since 2006 electrofishing catch rates of largemouth bass have shown a decrease from 63.0/h to 7.0/h in 2010.
 - **Crappie:** White crappie were collected during the 2010 trap net survey at a rate of 51.0/nn; however, size structure continued to remain poor with very few legal-sized fish sampled.
 - **Walleye:** The walleye stocking program was resumed in 2010 due to increased lake levels. Walleye catch rate increased from 0.2/h in 2009 to 4.0/h in 2011.
- **Management Strategies:** Continue stocking program for walleye and Florida largemouth bass. Conduct electrofishing survey in 2011 and 2012, trap net survey in 2012, and general monitoring with electrofishing, trap net, and gill net surveys in 2014 – 2015. Conduct habitat survey in 2014.

INTRODUCTION

This document is a summary of fisheries data collected from White River Reservoir in 2010-2011. 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 are presented for comparison.

Reservoir Description

At conservation pool (2,372.2 feet MSL), White River Reservoir is a 2,020-acre impoundment constructed in 1963 on the White River, a tributary of the Salt Fork of the Brazos River. The reservoir is located in Crosby County approximately 55 miles east of Lubbock, Texas. Since 1992 White River Reservoir experienced a general decline in lake levels (Figure 1). A record low was set in September 2008 when the lake reached an elevation of 2,340.7 feet MSL and a surface area of 401 acres. Heavy rain events in September 2008 and July 2010 resulted in a substantial increase in lake level elevation (2,356.9 feet MSL) and surface area (930 acres). During sampling the reservoir maintained an elevation near 2,356 feet MSL. White River Reservoir is owned and operated by the White River Municipal Water District as a municipal water supply and for recreational purposes. The reservoir has three boat ramps, and at current lake levels all 3 ramps are usable. During extremely low water levels there is a temporary launch site in place. There are no facilities for physically challenged anglers. Other descriptive characteristics for White River Reservoir are presented in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Henegar and Munger 2007) included:

1. Maintain the walleye fishery and increase predation on small crappie by increasing the stocking rate of 2,000 walleye fry/acre every other year to an annual stocking rate of 3,000 fry/acre.
Action: Due to dropping lake levels and insufficient numbers of fry produced in the hatcheries, stocking was not conducted in 2008 or 2009. Due to a rise in lake levels, walleye fry were stocked in 2010.
2. Investigate other methods of controlling the overabundant white crappie population with catfish species.
Action: Due to dropping lake levels, no catfish species have been evaluated as a potential candidate for controlling stunted crappie.
3. In order to maintain the trophy largemouth bass fishery, Florida largemouth bass fingerlings should be stocked at a rate of 100/acre when water levels increase.
Action: 143,705 Florida largemouth bass fingerlings were stocked in 2009.

Harvest regulation history: Sport fishes in White River Reservoir are currently managed with statewide regulations (Table 2). From 1993 to 2001, smallmouth bass were managed with an 18-inch minimum length limit and 3-fish daily bag limit in an effort to increase relative abundance and improve size structure. In 2001, harvest regulations for smallmouth bass were changed to the statewide 14-inch minimum length limit and 5-fish bag as no discernable change in the population was observed. Regulations on harvest of walleye changed from 16-inch minimum and 5-fish bag, to a 5-fish bag with no more than 2 walleye under 16 inches on September 1, 1999.

Stocking history: White River Reservoir has been stocked with multiple species since impoundment in 1963. In 2009 there were 143,705 Florida largemouth bass fingerlings stocked. The last stocking took place in 2010 with 2,958,150 walleye fry. The complete stocking history is available in Table 3.

Vegetation/habitat management history: White River Reservoir has no vegetation/ habitat management history.

Water transfer: White River Reservoir is primarily used for municipal water supply and recreation. The reservoir currently supplies water to the Cities of Crosbyton, Post, Ralls, and Spur in a rural region located approximately 65 miles southeast of Lubbock. There is one permanent pumping station on the reservoir that pumps water to the White River Municipal Water District's water treatment plant to be distributed to the 4 member cities. Recent proposals include negotiations with the City of Lubbock to purchase the water rights in the reservoir. If purchased, water management strategies could include the use of reclaimed effluent from the City of Lubbock being pumped to the reservoir. Other strategies include the possible transfer of water to and from Alan Henry Reservoir and the proposed Post Reservoir.

METHODS

Fishes were collected by electrofishing (1 hour at 12 5-min stations), gill netting (5 net nights at 5 stations), and trap 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 and trap nets, as the number of fish per net night (fish/nn). All electrofishing and gill netting survey sites were randomly selected, and trap netting survey sites prior to 2010 were randomly selected. In 2010 the trap netting sites were biologist selected. All surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2009).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), as defined 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). Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE statistics and for creel statistics and SE was calculated for structural indices and IOV. Source for water level data was the United States Geological Survey website, http://waterdata.usgs.gov/tx/nwis/uv?site_no=08080910.

RESULTS AND DISCUSSION

Habitat: Habitat was typified by natural shoreline (eroded bank, clay, silt, or sand) with scattered areas of gravel (rock <4 in) and rocky shoreline (rock >4 in). Vegetation in the reservoir consisted of native emergent, flooded timber, and large areas of flooded terrestrial vegetation and exotic submerged aquatic vegetation. No man-made changes have occurred at the reservoir since 2006.

Prey species: In 2010 electrofishing catch rate of gizzard shad was 238.0/h. Gizzard shad IOV was 91, indicating that the majority of shad sampled were available as forage to existing predators (Figure 2). The 2010 IOV was similar to the IOV estimates from 2008 (IOV=92) and 2006 (IOV=89) (Figure 2). Total CPUE of gizzard shad was lower in 2010 compared to the 2008 and 2006 surveys (Figure 2). Total CPUE of bluegill in 2010 was 16.0/h. This is lower than catch rates from 2008 (39.0/h) and 2006 (107.0/h) (Figure 3). The bluegill population was predominantly small individuals and available to existing predators (Figure 3). Low catch rates for prey species are most likely attributed to declining lake levels and loss of habitat from 1999 to 2008. Also, a heavy rain event in July 2010 resulted in submerging a large amount of terrestrial vegetation. It was noted during sampling that stations containing large amounts of decomposing vegetation provided poor catch rates.

Blue catfish: The gill net catch rate for blue catfish was 5.2/nn in 2011, which is down slightly from 2009 (6.8/nn) and 2007 (8.4/nn) (Figure 4). In addition to the lower catch rate size structure shifted toward larger individuals; all fish collected were 18 inches or larger (Figure 4). Lack of juvenile blue catfish collected would support that declining lake levels and loss of habitat have impacted spawning and recruitment. Collected fish appeared healthy with most W_s near 100 (Figure 4).

Channel catfish: Catch rates for channel catfish declined from 10.0/nn in 2007 to 8.0/nn in 2009 and 4.0/nn in 2011 (Figure 5). Declining catch rates were most likely attributed to loss of favorable habitat from 1992 to 2008.

Flathead catfish: Flathead catfish continued to have low relative abundance. The gill net catch rate of flathead catfish was 0.4/nn. This was similar to 2009 (0.8/nn) and to 2007 (0.4/nn) (Figure 6).

White bass: The gill net catch rate for white bass was 1.4/nn in 2011 (Figure 7). This catch rate is lower than 2005 (2.2/nn), and it is only a slight improvement from 2007 (0.8/nn) (Figure 7). Although relative abundance of white bass is low, the sampled fish appeared healthy with W_s near 100 (Figure 7).

Largemouth bass: The electrofishing catch rate of largemouth bass was 7.0/h in 2010, down from 2008 (14.0/h) and 2006 (63.0/h) (Figure 8). No fish smaller than 13 inches were collected in 2008, decreasing lake levels and loss of habitat appear to have severely impacted reproduction and recruitment. Recent improvements in lake levels have allowed for implementing previous management strategies of stocking Florida largemouth bass in an attempt to mitigate poor recruitment (Henegar and Munger 2007). In the 2010 survey, the majority of fish sampled were not available for harvest (Figure 8).

White crappie: In the past, white crappie in the reservoir have been overabundant with slow growth and poor size structure (Henegar and Munger 2007). The trap net catch rate for white crappie in 2010 was 51.0/nn (Figure 9). This is down from 388.0/nn in 2007, but it is up from the 28.4/nn catch rate reported in 2002 (Figure 9). The majority of fish sampled were less than 10 inches in length. Low relative abundance of predatory fish in the reservoir may quickly allow the crappie to take advantage of newly inundated habitat which could again allow the crappie to become overly abundant.

Walleye: Due to falling lake levels and insufficient numbers of fry produced in the hatcheries, annual stockings were suspended in 2008 and 2009. As natural recruitment in the reservoir is limited, and the fishery is maintained by stocking, gill net catch rates dropped from 2.0/nn in 2007 to 0.2/nn in 2009 (Figure 10). Substantial rises in lake level in 2009 and 2010 allowed for resuming the walleye stocking program in 2010 when 2,958,150 fry were stocked. Following this stocking, the 2011 gill net catch rate increased to 4.0/nn.

Fisheries management plan for White River Reservoir, Texas

Prepared – July 2011

ISSUE 1: The walleye fishery was developed in White River Reservoir through a stocking program beginning in the early 1970s. Due to above optimal water temperatures during the winter cooling period, natural recruitment in the reservoir is limited, and the population needs to be maintained by supplemental stockings.

MANAGEMENT STRATEGY

1. Maintain the walleye fishery through biennial stockings of 3,000fry/acre.

ISSUE 2: Historically the reservoir has had an overabundant white crappie population with poor size structure and growth. Age and growth data for white crappie in the reservoir showed that growth slowed from a mean length of 13 inches at age 5 in 1999 (Hutt 2003) to 7 inches at age 5 in 2006 (Henegar and Munger 2007).

MANAGEMENT STRATEGY

1. Monitor white crappie population with additional trap net survey in 2012.
2. Conduct age and growth analysis for white crappie in 2012.

ISSUE 3: The largemouth bass fishery in White River Reservoir has suffered from poor recruitment for several years due to declining lake levels. An attempt to mitigate poor recruitment was implemented by stocking 143,705 Florida largemouth bass in 2009 following a 10-foot rise in lake level.

MANAGEMENT STRATEGY

1. Monitor largemouth bass population with standard electrofishing to determine impact of 2009 stocking and lake level fluctuations.

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 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. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes electrofishing in 2011, electrofishing and trap net sampling in 2012, gill netting in 2013, a creel survey in spring 2014, and a full survey in 2014/2015 (Table 4). The additional electrofishing surveys are necessary to monitor the largemouth bass population and determine if additional stockings are required to help mitigate poor recruitment of the fishery. Additional trap net sampling will be used for continued monitoring of white crappie. The additional creel survey will be used to determine angling pressure and preferences.

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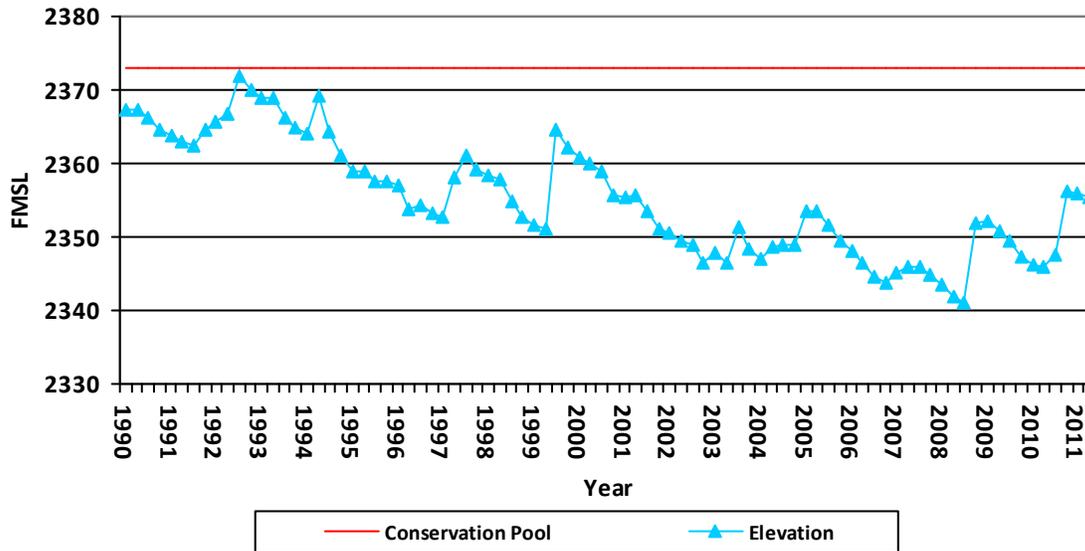


Figure 1. Quarterly water level elevations in feet above mean sea level (FMSL) recorded for White River Reservoir, Texas. Conservation pool elevation is 2,372.2 feet above mean sea level.

Table 1. Characteristics of White River Reservoir, Texas.

Characteristic	Description
Year constructed	1963
Controlling authority	White River Municipal Water District
County	Crosby
Reservoir type	Mainstream
Mean depth (ft)	11
Maximum depth (ft)	65
Watershed (mi ²)	172
Shoreline Development Index (SDI)	4.87
Conductivity	800 μ mhos/cm

Table 2. Harvest regulations for White River Reservoir, Texas.

Species	Bag Limit	Minimum-Maximum Length (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12 - No Limit
Catfish, Flathead	5	18 - No Limit
Bass, white	25	10 - No Limit
Bass: smallmouth	5	14 - No Limit
Bass: largemouth	5	14 - No Limit
Crappie: white and black crappie hybrids and subspecies	25 (in any combination)	10 - No Limit
Walleye	5	Only 2 fish allowed under 16 inches

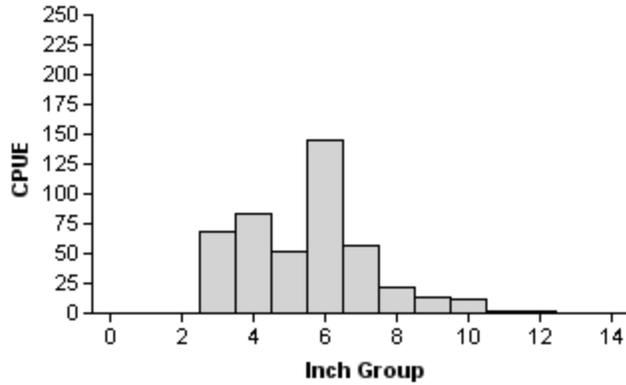
Table 3. Stocking history of White River Reservoir, Texas. Size categories are unknown (UNK), fingerling (FGL), and fry (FRY).

Year	Number	Size	Year	Number	Size
<u>Blue catfish</u>			<u>Florida largemouth bass</u>		
1970	5,000	UNK	1982	105,000	FGL
1975	<u>9,300</u>	UNK	2000	200,000	FGL
Total	14,300		2003	19,105	FGL
<u>Channel catfish</u>			2009	<u>143,705</u>	FGL
1967	30,000	FGL	Total	467,810	
1970	9,000	FGL	<u>Walleye</u>		
1972	21,000	FGL	1975	500,000	FRY
1973	25,000	FGL	1976	500,000	FRY
1974	<u>10,000</u>	FGL	1979	2,456,250	FRY
Total	95,000		1980	5,478,500	FRY
<u>Flathead catfish</u>			1983	5,800,004	FRY
1971	1,500	UNK	1988	1,515,488	FRY
1972	1,500	UNK	1989	3,989,200	FRY
1973	<u>1,500</u>	UNK	1990	3,762,064	FRY
Total	4,500		1991	5,000,000	FRY
<u>Green sunfish X Redear sunfish</u>			1994	4,100,000	FRY
1969	3,000	UNK	2000	58,000	FGL
1970	7,500	UNK	2005	2,385,745	FRY
1971	7,500	UNK	2007	2,145,000	FRY
1972	<u>1,000</u>	UNK	2010	<u>2,958,150</u>	FRY
Total	19,000		Total	40,648,401	
<u>Smallmouth bass</u>			<u>Yellow perch</u>		
1979	15,654	UNK	1994	200,000	UNK
1980	5,212	UNK	1996	116,700	UNK
1981	<u>50,300</u>	UNK	1997	<u>3,745</u>	UNK
Total	71,166		Total	320,645	
<u>Largemouth bass</u>			<u>Red Drum</u>		
1964	100,000	UNK	1975	14,415	UNK
1972	<u>15,000</u>	UNK			
Total	115,000				

Gizzard Shad

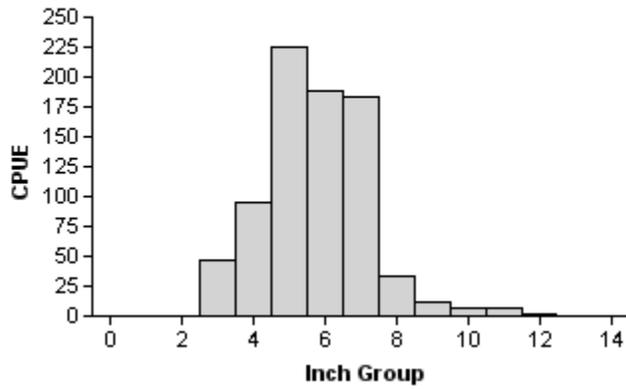
2006

Effort = 1.0
 Total CPUE = 455.0 (14; 455)
 IOV = 89 (3)



2008

Effort = 1.0
 Total CPUE = 799.0 (16; 799)
 IOV = 92 (2)



2010

Effort = 1.0
 Total CPUE = 238.0 (24; 238)
 IOV = 91 (3)

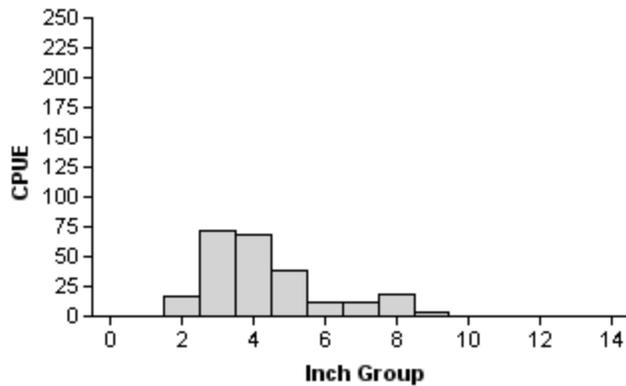
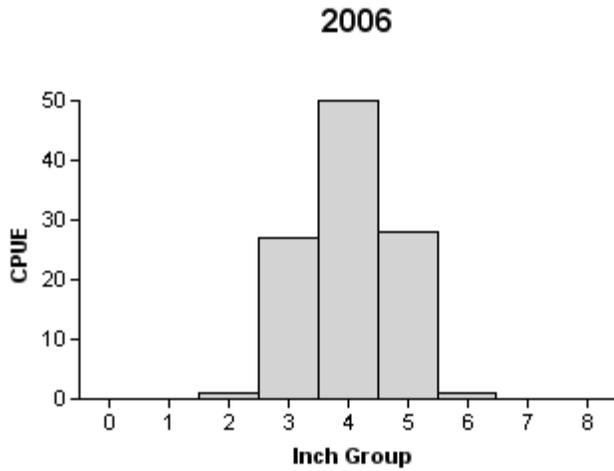
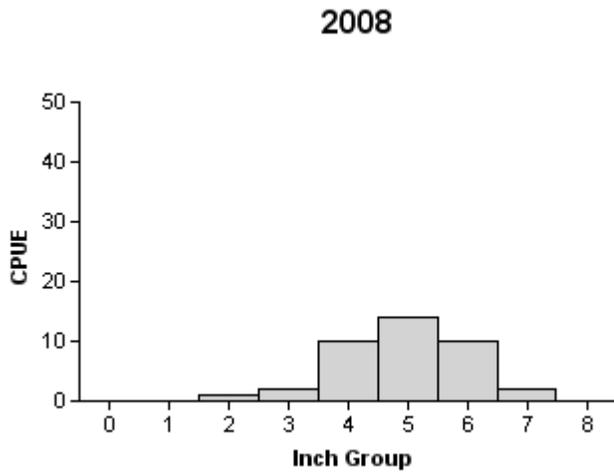


Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, White River Reservoir, Texas, 2006, 2008, and 2010.

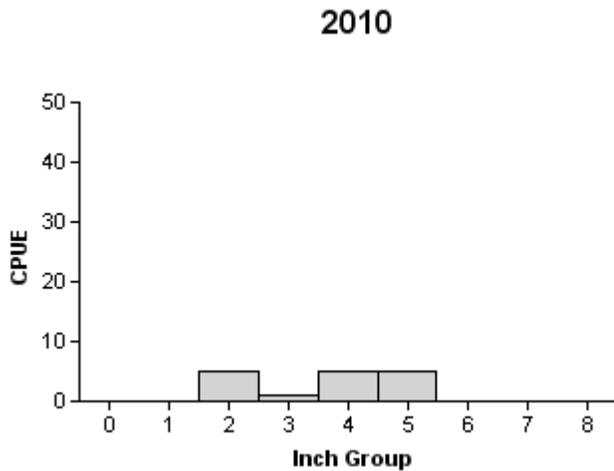
Bluegill



Effort = 1.0
 Total CPUE = 107.0 (20; 107)
 PSD = 1 (1)



Effort = 1.0
 Total CPUE = 39.0 (59; 39)
 PSD = 32 (7)



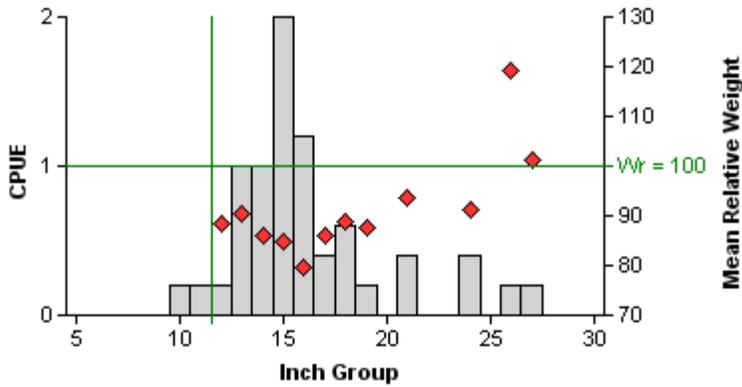
Effort = 1.0
 Total CPUE = 16.0 (35; 16)
 PSD = 0 (67)

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, White River Reservoir, Texas, 2006, 2008, and 2010.

Blue Catfish

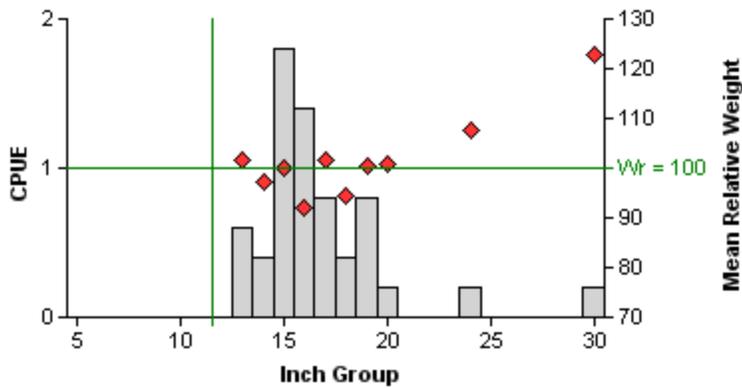
2007

Effort = 5.0
 Total CPUE = 8.4 (32; 42)
 PSD = 18 (8)



2009

Effort = 5.0
 Total CPUE = 6.8 (20; 34)
 PSD = 9 (8)



2011

Effort = 5.0
 Total CPUE = 5.2 (17; 26)
 PSD = 73 (9)

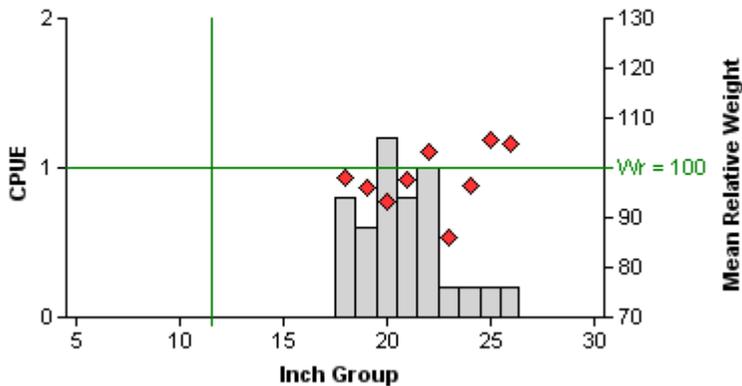
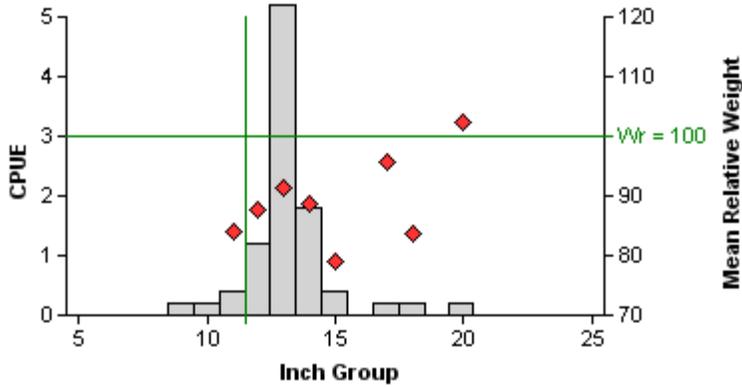


Figure 4. Number of blue catfish caught per net night (CPUE, bars), relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, White River Reservoir, Texas, 2007, 2009, and 2011. Vertical line represents length of 12 inches, and horizontal line represents relative weight of 100.

Channel Catfish

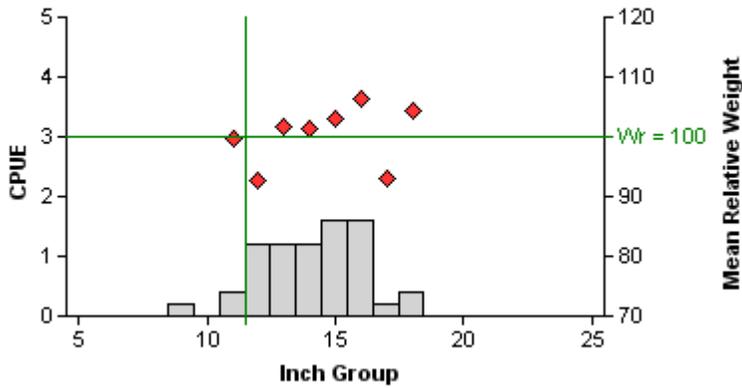
2007

Effort = 5.0
 Total CPUE = 10.0 (14; 50)
 PSD = 6 (2)



2009

Effort = 5.0
 Total CPUE = 8.0 (7; 40)
 PSD = 28 (6)



2011

Effort = 5.0
 Total CPUE = 4.0 (22; 20)
 PSD = 38 (17)

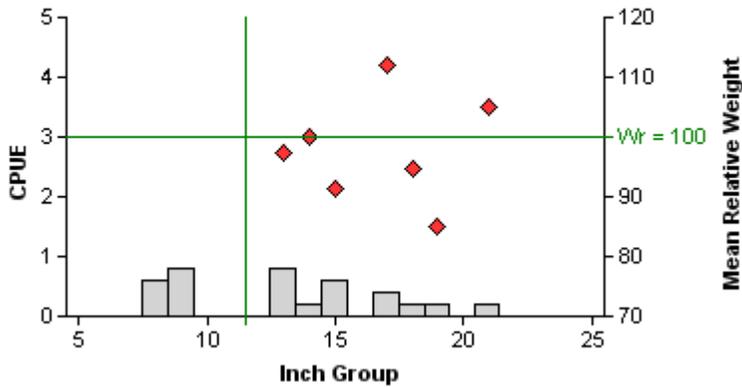


Figure 5. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, White River Reservoir, Texas, 2007, 2009, and 2011. Vertical line represents length of 12 inches, and horizontal line represents relative weight of 100.

Flathead Catfish

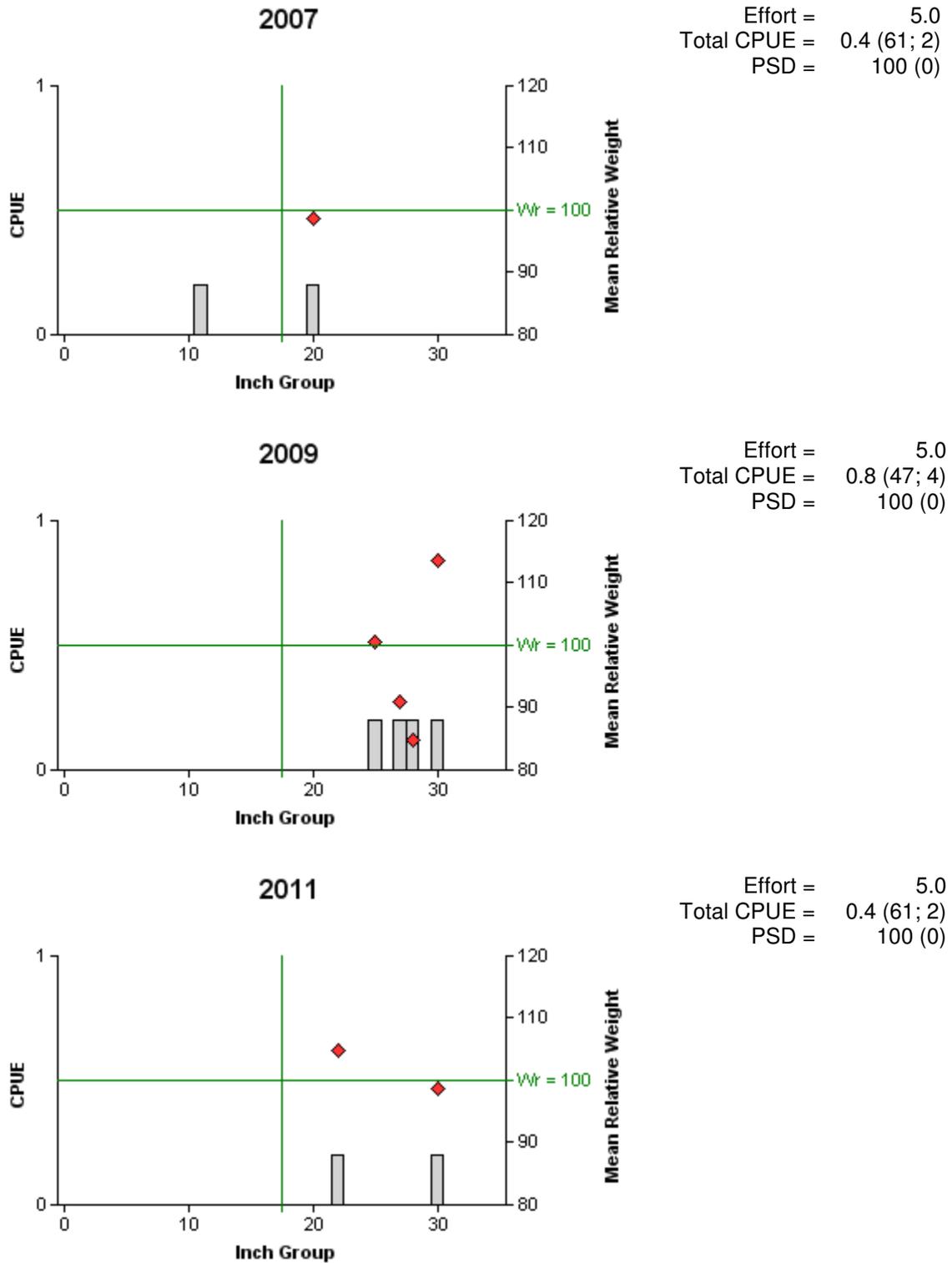


Figure 6. Number of flathead catfish caught per net night (CPUE, bars), relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, White River Reservoir, Texas, 2007, 2009, and 2011. Vertical line represents length of 18 inches, and horizontal line represents relative weight of 100.

White Bass

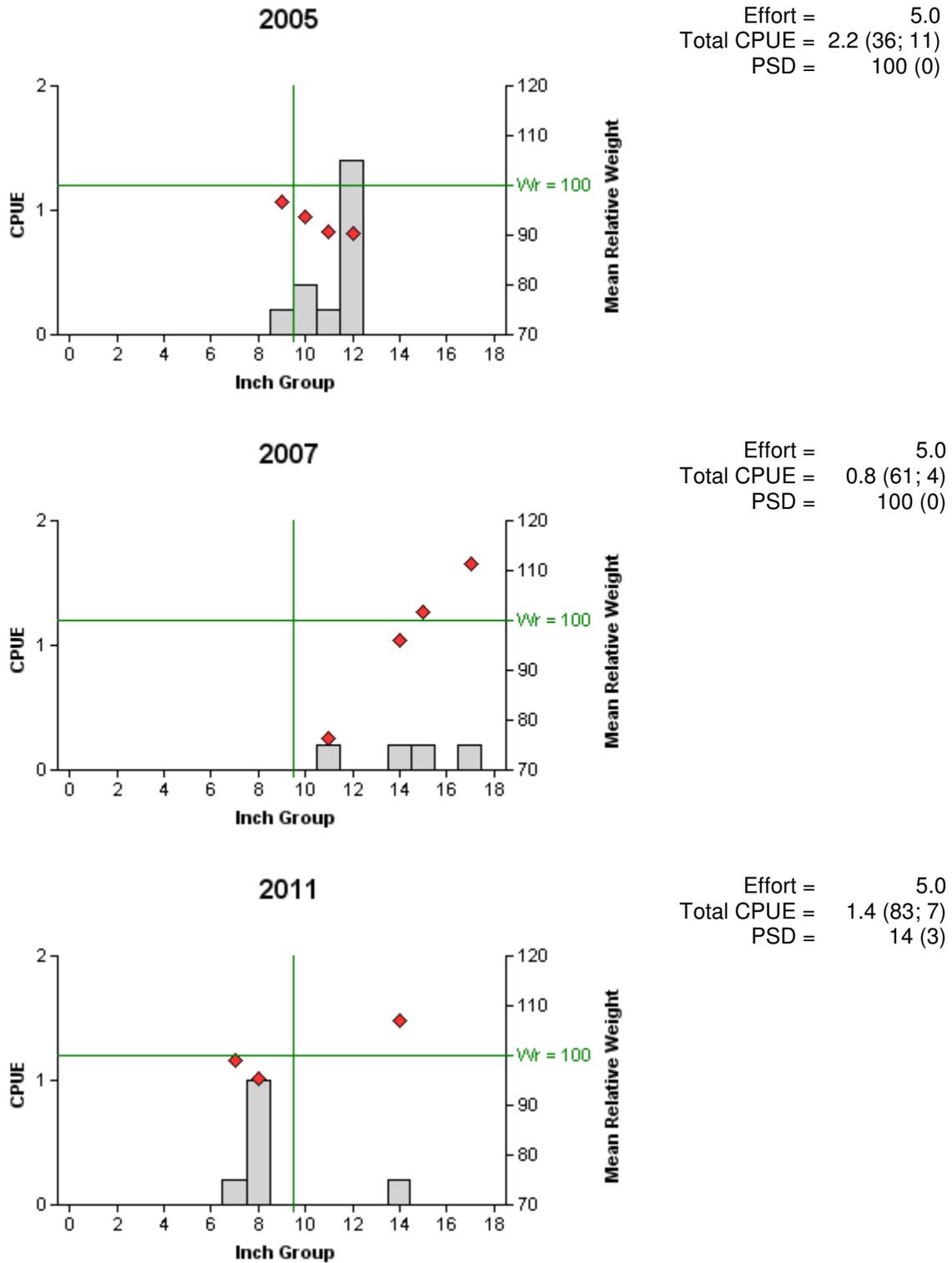
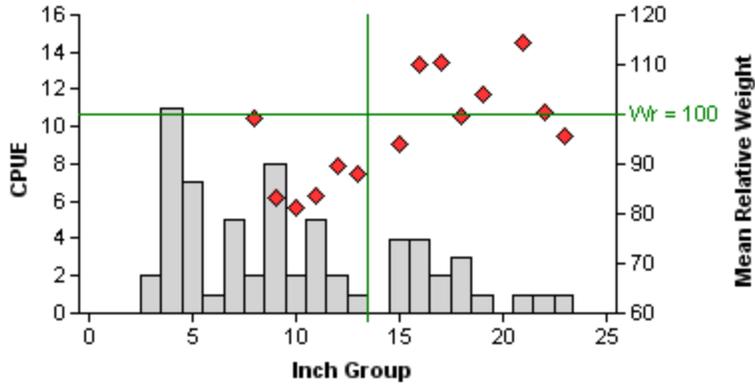


Figure 7. Number of white bass caught per net night (CPUE, bars), relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, White River Reservoir, Texas, 2005, 2007, and 2011. Vertical line represents length of 10 inches, and horizontal line represents relative weight of 100.

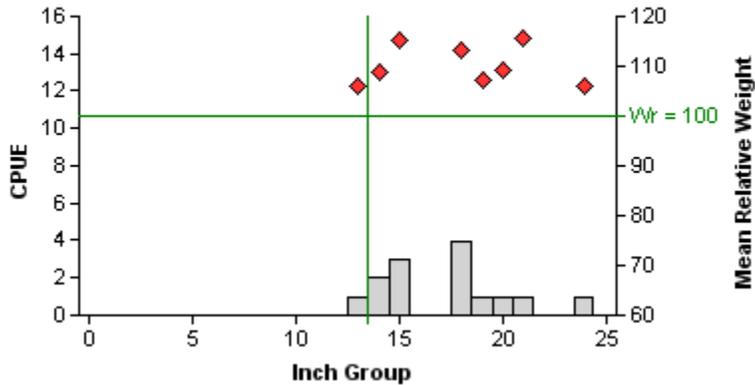
Largemouth Bass

2006



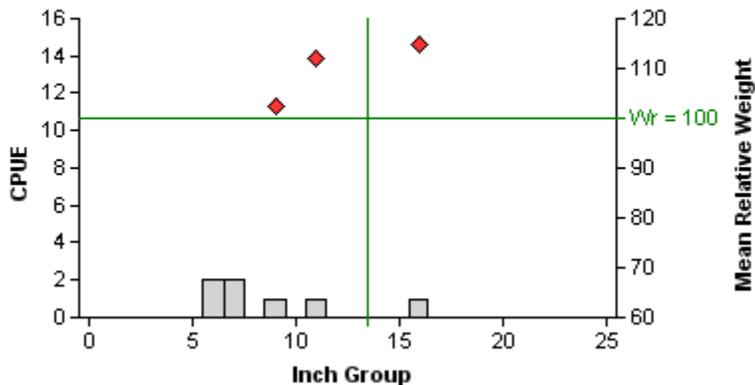
Effort = 1.0
 Total CPUE = 63.0 (29; 63)
 PSD = 54 (6)
 PSD-14 = 46 (5)

2008



Effort = 1.0
 Total CPUE = 14.0 (35; 14)
 PSD = 100 (0)
 PSD-14 = 93 (7)

2010



Effort = 1.0
 Total CPUE = 7.0 (58; 7)
 PSD = 33 (33)
 PSD-14 = 33 (33)

Figure 8. 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, White River Reservoir, Texas, 2006, 2008, and 2010. Vertical line represents length of 14 inches, and horizontal line represents relative weight of 100.

White Crappie

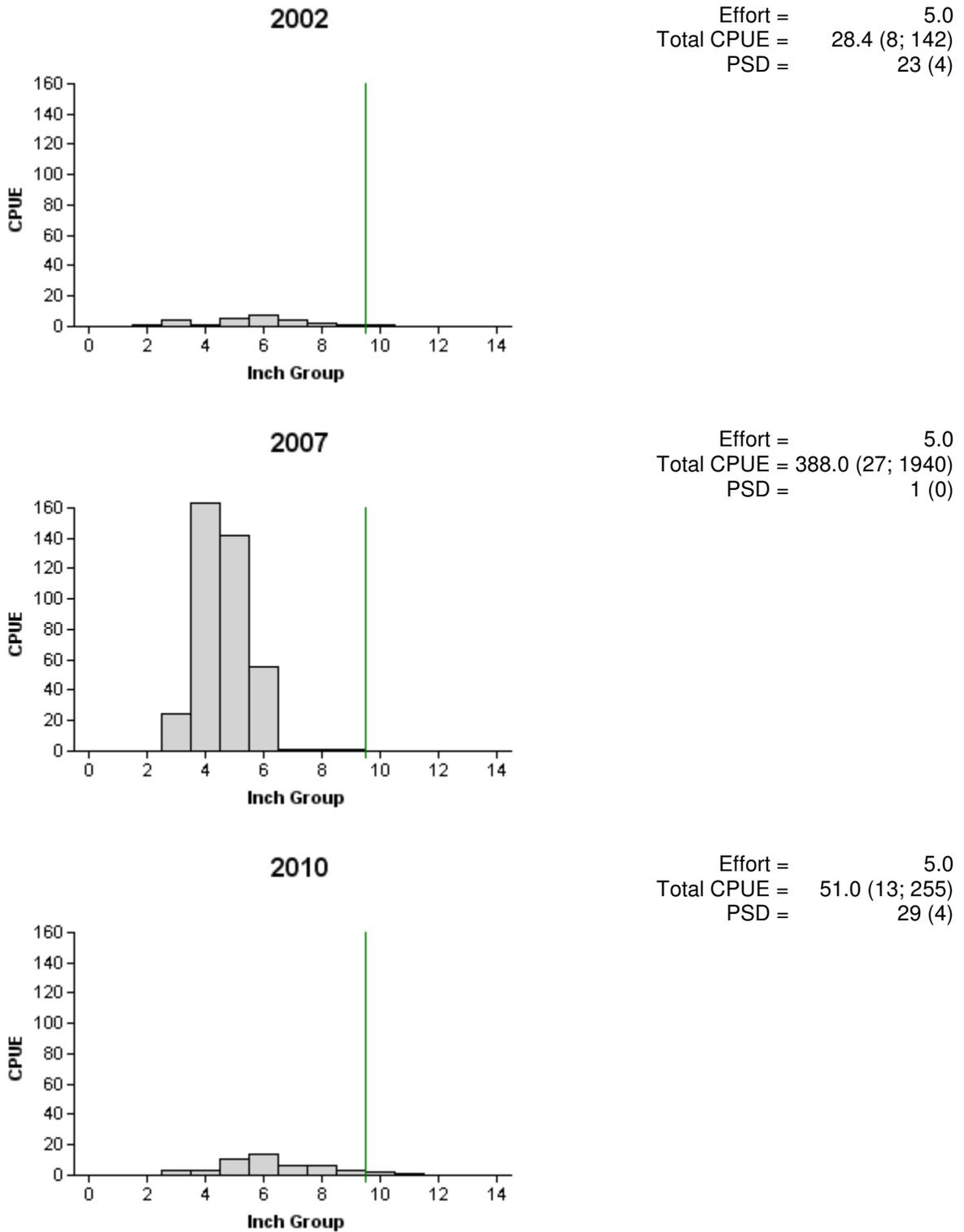
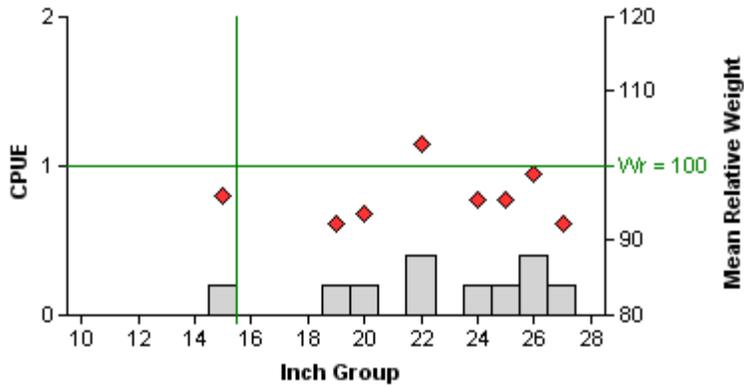


Figure 9. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, White River Reservoir, Texas, 2002, 2007, and 2010. Vertical line represents length of 10 inches.

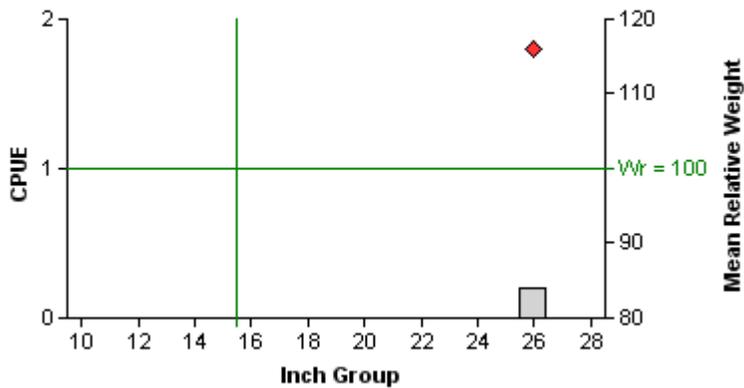
Walleye

2007



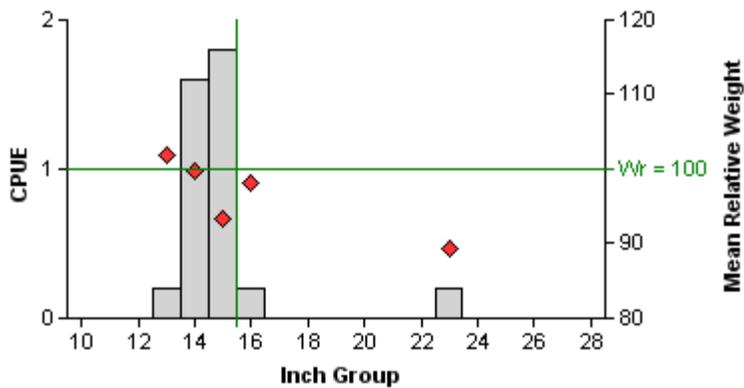
Effort = 5.0
 Total CPUE = 2.0 (76; 10)
 PSD = 100 (0)

2009



Effort = 5.0
 Total CPUE = 0.2 (100; 1)
 PSD = 100 (0)

2011



Effort = 5.0
 Total CPUE = 4.0 (94; 20)
 PSD = 55 (4)

Figure 10. Number of walleye caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, White River Reservoir, Texas, 2007, 2009, and 2011. Vertical line represents length of 16 inches, and horizontal line represents relative weight of 100.

Table 4. Proposed sampling schedule for White River Reservoir, Texas. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard surveys are denoted by S and additional surveys are denoted by A.

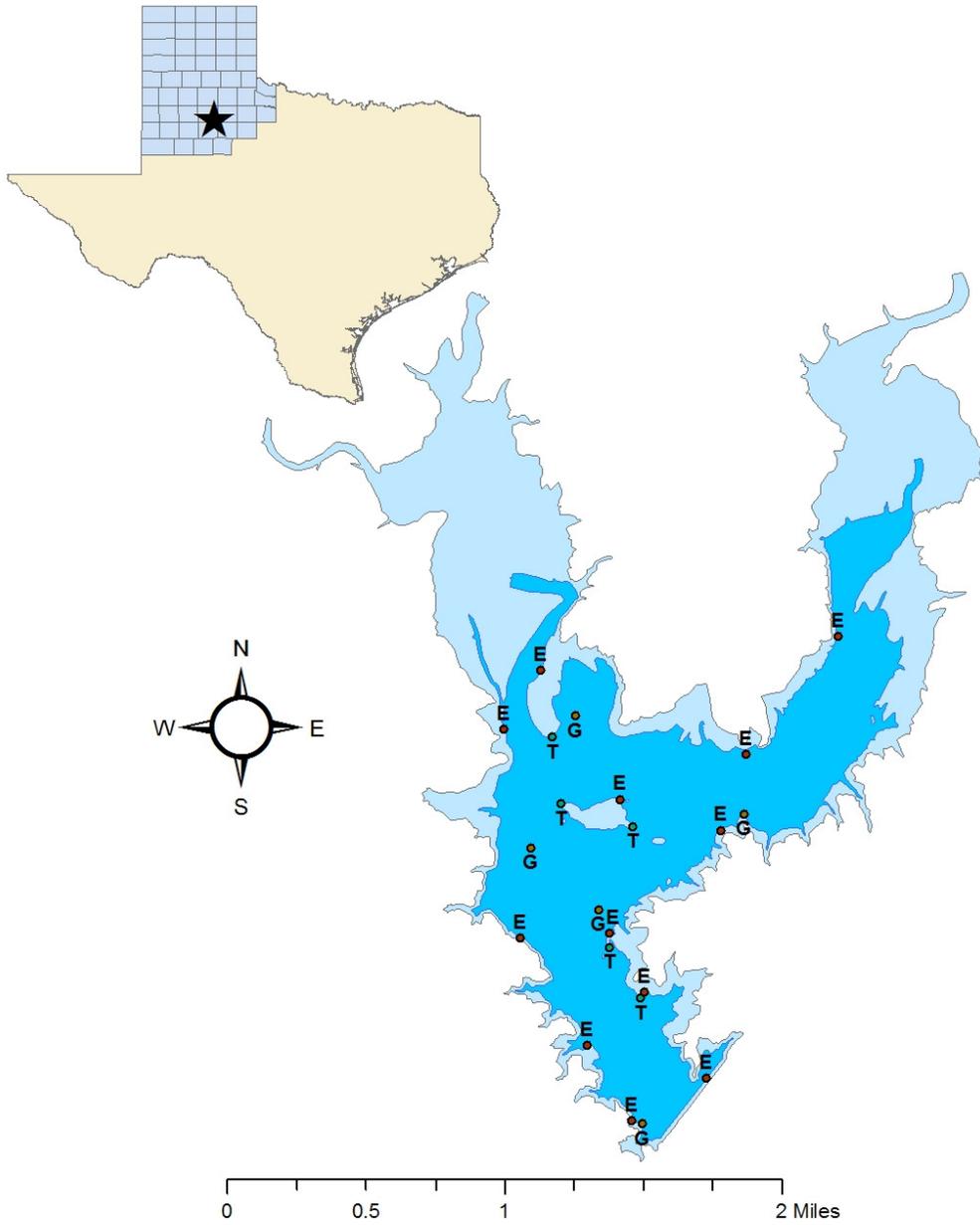
Survey Year	Electrofishing	Trap Net	Gill Net	Creel Survey	Vegetation Survey	Access Survey	Report
Fall 2011-Spring 2012	A						
Fall 2012-Spring 2013	A	A	A				
Fall 2013-Spring 2014				A			
Fall 2014-Spring 2015	S	S	S		S	S	S

APPENDIX A

Catch rate of all species collected from all gear types from White River Reservoir, Texas, 2010-2011. Effort was 1 h for electrofishing, 5 net nights for gill nets, and 5 net nights for trap nets.

Species	Electrofishing		Gill Netting		Trap Netting	
	CPUE	N	CPUE	N	CPUE	N
Gizzard shad	238.0	238	11.0	55		
Common carp	2.0	2	1.4	7		
Golden shiner			0.2	1		
River carpsucker	2.0	2	7.4	37		
Blue catfish			5.2	26		
Black bullhead			4.4	22	26.4	132
Channel catfish	1.0	1	4.0	20		
Flathead catfish	4.0	4	0.4	2		
White bass			1.4	7		
Bluegill	16.0	16	0.2	1	78.6	393
Longear sunfish	15.0	15			2.0	10
Largemouth bass	7.0	7	0.2	1		
White crappie	10.0	10	8.6	43	51.0	255
Walleye			4.0	20		
Freshwater drum			2.0	10		

APPENDIX B



Location of sampling sites, White River Reservoir, Texas, 2010-2011. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Light blue color represents lake at conservation pool, and dark blue represents lake level during sampling.