

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-33

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2007 Survey Report

Whitney Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Whitney Reservoir were surveyed in 2007 using electrofishing and trap nets and in 2008 using gill nets. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Whitney Reservoir is a 23,560-acre impoundment of the Brazos River, in Bosque and Hill Counties. Water levels were near conservation pool (533) during electrofishing and trap netting, and approximately six feet low during gill netting. Shoreline fish habitat was dominated by rocky shoreline and inundated stumps. Boat access (14 ramps) on the reservoir is excellent, but there are currently no handicap-specific facilities available.
- **Management history:** Important sport fish include largemouth bass, striped bass, white bass, white crappie, and catfishes. The management plan from the 2004 survey report included strategies to combat losses from golden algae, investigate alternatives to prevent chronic low water levels with the U.S. Army Corps of Engineers, and continued stocking requests for smallmouth bass.
- **Fish Community**
 - **Prey species:** Threadfin and gizzard shad were both collected in 2005 and 2007 surveys. Electrofishing catch rates of gizzard shad in 2007 were the second highest recorded since golden algae was observed in the reservoir. Most gizzard shad were available as prey to sport fish (i.e., IOV = 91). Bluegill catch rates were average and 7 to 9-inch individuals were common. Additional sunfish species contributed to the forage base.
 - **Catfishes:** Blue catfish were collected in low numbers and body condition was average. Channel catfish were abundant with excellent recruitment, population structure and body condition. No flathead catfish were collected in 2008.
 - **Temperate basses:** White bass were abundant with excellent body condition and over half of the population measured 12 inches in length or longer. A good striped bass population exists in the reservoir and most fish were greater than 18 inches.
 - **Black basses:** Smallmouth bass were not collected in the 2007 or 2005 electrofishing survey. Largemouth bass were abundant and were collected in the highest numbers since a golden alga was observed in the reservoir. Body condition was generally excellent.
 - **White crappie:** The 2005 trap net survey collected white crappie in the highest numbers since pre-golden alga surveys were performed. Body condition was also excellent. Trap netting became optional in 2007, and was dropped from the general monitoring plan for Whitney, therefore no trap net data were collected, or reported, from 2007.
- **Management Strategies:** Continue managing Whitney with statewide regulations and submitting requests for smallmouth bass and striped bass stockings. Conduct additional electrofisher and gill net surveys in 2009 and 2010 if needed (depending on number and severity of fish kills caused by golden algae) and standard monitoring with electrofisher and gill nets in 2011 and 2012. Also, perform a new littoral habitat survey prior to the 2012 report.

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INTRODUCTION

This document is a summary of fisheries data collected from Whitney Reservoir in 2007-2008. 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 with the 2007-2008 data for comparison.

Reservoir Description

Whitney Reservoir is an impoundment of the Brazos River, in Bosque and Hill Counties. The reservoir is used for flood control, electrical power production, and recreation. The 23,560-acre impoundment has a drainage area of 17,656 square miles, a storage capacity of 622,800 acre-feet, and a shoreline length of 225.0 miles. Mean and maximum depths are 26 and 108 feet respectively. Water levels were near conservation pool (533 above MSL) during electrofishing and trap netting surveys, and approximately six feet low during the gill netting survey (Figure 1). Shoreline fish habitat was dominated by bluffs, rocky shoreline and inundated trees and stumps (Table 4). Bank fishing is good and boat access (14 ramps) on the reservoir is excellent, but there are currently no handicap-specific facilities available. Further information about Whitney Reservoir and its facilities can be obtained by visiting the Texas Parks and Wildlife Department's web site at www.tpwd.state.tx.us and navigating within the fishing link.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Tibbs and Baird 2004) included:

1. Take advantage of opportunities to work with others to develop management strategies to combat golden alga.
Action: Fishery monitoring information from Whitney and Granbury Reservoirs has been shared with numerous groups working with golden alga since the problem began in 2001. Also, the district has taken on the role of transporting water quality samples for ongoing TPWD studies.
2. Perform additional surveys on fishery if circumstances (i.e., drastic fish kills due to golden alga event) occur – to facilitate comparisons with standardized monitoring surveys.
Action: Additional electrofishing (2005) and gill netting (2006) surveys were performed in response to fish kills caused by golden alga. These surveys have been included in the current report for additional comparisons and to provide more insight into the fisheries.
3. Request stockings of affected sport fishes as needed.
Action: The following species (with total number stocked) have been successfully stocked since the 2004 report: advanced fingerling bluegill (13,747), fingerling Florida largemouth bass (589,978), fingerling smallmouth bass (5,609), and striped bass (1,234,730).
4. Contact U.S. Army Corps of Engineers, Brazos River Authority, and other associated power companies to request consideration for fish populations and recreational activities (in terms of maintaining appropriate reservoir levels) during times of power production.
Action: The U.S. Army Corps of Engineers and contacts within TXU were contacted and requests were made; however economics and logistics prevent the maintenance of ecologically appropriate water levels at the expense of necessary power production at this time.
5. Continue obtaining and requesting smallmouth bass for stockings.
Action: 5,609 smallmouth bass were stocked in 2004, and annual requests continue to be made.

Harvest regulation history: Sportfishes in Whitney Reservoir are currently managed with statewide regulations.

Stocking history: Whitney Reservoir has received annual stockings of striped bass totaling 1,234,730 since the 2003 report. Other significant stockings since 2003 include 589,978 fingerling Florida largemouth bass in 2004, 13,747 advanced fingerling bluegill in 2005, and 5,609 fingerling smallmouth bass in 2004. The complete stocking history is in Table 3.

Vegetation/habitat history: There are currently no vegetation issues to address and no noxious species of vegetation have been identified in the reservoir to date.

METHODS

Fishes were collected by electrofishing (2 hours at 24 5-min stations), gill netting (15 net nights at 15 stations), and trap netting (15 net nights at 15 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 survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], 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 ($RSE = 100 \times SE$ of the estimate/estimate) was calculated for all CPUE statistics and SE was calculated for structural indices and IOV. No age and growth was conducted in 2007 and 2008. Source for water level data was the United States Geological Survey (USGS) website and Brazos River Authority (BRA).

RESULTS AND DISCUSSION

Habitat: Littoral zone habitat consisted primarily of bluffs, rocky shoreline and inundated trees and stumps (Table 4). No habitat survey was conducted in 2007-2008. The last habitat survey was conducted by Mitchell (1997).

Creel: No creel surveys were performed on Whitney Reservoir in the last four years.

Prey species: Electrofishing catch rates of threadfin shad were 30.0/h and 131.0/h in 2005 and 2007 respectively. Gizzard shad catch rates were 37.0/h in 2005 and 144.0/h in 2007. Total CPUE of gizzard shad was the second highest catch recorded in over a decade. The index of vulnerability (IOV) for gizzard shad was 91 – also the highest it's been in over 10 years, indicating that 91% of gizzard shad were available to existing predators as forage (Figure 2). Total CPUE of bluegill was 139.5/h (Figure 3). Additional sunfish species and catch rates included redear sunfish (36.0/h), longear sunfish (9.0/h), and green sunfish (4.0/h). Panfish larger than 7" are available for anglers.

Catfishes: Blue catfish were collected at 0.3/nn and 0.4/nn in 2006 and 2008 – down more than 50% from pre-golden alga catch rates; body condition was good (range 90 to 108, Figure 4). Catch rates for channel catfish were excellent ranging from 4.6/nn in 2006 to 8.9/nn in 2008 (Figure 5). Population structure and recruitment appear strong ($PSD = 84$), and body condition was also excellent with relative weights exceeding 110. A single flathead catfish was collected in 2006, but none were collected in 2008.

Temperate basses: Catch rates for white bass were excellent ranging from 4.0/nn in 2006 to 7.4/nn in 2008 (Figure 6). Population structure ($PSD = 83$) and body condition (average $W_r = >100$) were also excellent. Striped bass were collected at 1.5/nn and 1.4/nn in 2006 and 2008 respectively, which is near average for the past 10 years. Body condition was excellent with W_r s exceeding 120 for some size

classes (Figure 7).

Black basses: Smallmouth bass were not collected in the 2005 or 2007 electrofishing surveys, although anecdotal evidence from anglers indicates a very low density population still exists. Spotted bass were collected in low numbers during the 2005 electrofishing survey. Largemouth bass were abundant and were collected in the highest numbers since golden alga was observed in the reservoir; total CPUE of largemouth bass was 113.0/h in 2007 (Figure 8). The PSD was 54 indicating a balanced population, and 19% of the population is reaching the preferred size class of 15-inches or more (Figure 8). Body condition was generally excellent (range 96 to 114). Florida largemouth bass alleles in the population were determined to be 58%.

White crappie: The 2005 trap net survey collected white crappie in the highest numbers since pre-golden alga surveys were performed. Trap netting became optional in 2007, and was dropped from the general monitoring plan for Whitney. Therefore no trap net data were collected.

Fisheries management plan for Whitney Reservoir, Texas

Prepared – July 2008.

ISSUE 1: Fish kills caused by golden alga usually take place from late November through May. For the first time since 2001, Whitney reservoir did not experience fish kills from golden alga. Although this is great news, research and concerns about golden alga must continue.

MANAGEMENT STRATEGIES

1. Continue working with others, within and external to the agency, to develop management strategies to combat golden alga.
2. Continue standard monitoring surveys and additional monitoring surveys if needed (i.e., if a major fish kill occurs and warrants supplemental monitoring).
3. Consider a Tier IV age sample for largemouth bass if sufficient numbers exist in the reservoir in 2011 to document the affects of golden alga on survival of largemouth bass.
4. Request stocking of affected sport fish species if necessary.

ISSUE 2: The once prized smallmouth bass fishery in Whitney reservoir is nearly non-existent.

MANAGEMENT STRATEGY

1. Continue requesting smallmouth bass for stocking.

ISSUE 3: The last habitat survey was conducted in 1997. Although few changes have taken place on the reservoir, this information needs to be updated.

MANAGEMENT STRATEGY

1. Conduct a vegetation/habitat survey in summer of 2011

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes additional electrofishing in fall 2009 and gill netting in spring 2010 and standard sampling in 2011 and 2012.

LITERATURE CITED

- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- 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.
- Mitchell, J. 1997. Statewide freshwater fisheries monitoring and management program survey report for Whitney Reservoir, 1997. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
- Tibbs, J. and M. Baird. 2003. Statewide freshwater fisheries monitoring and management program survey report for Whitney Reservoir, 2003. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.

Whitney Reservoir Mean Daily Water Level

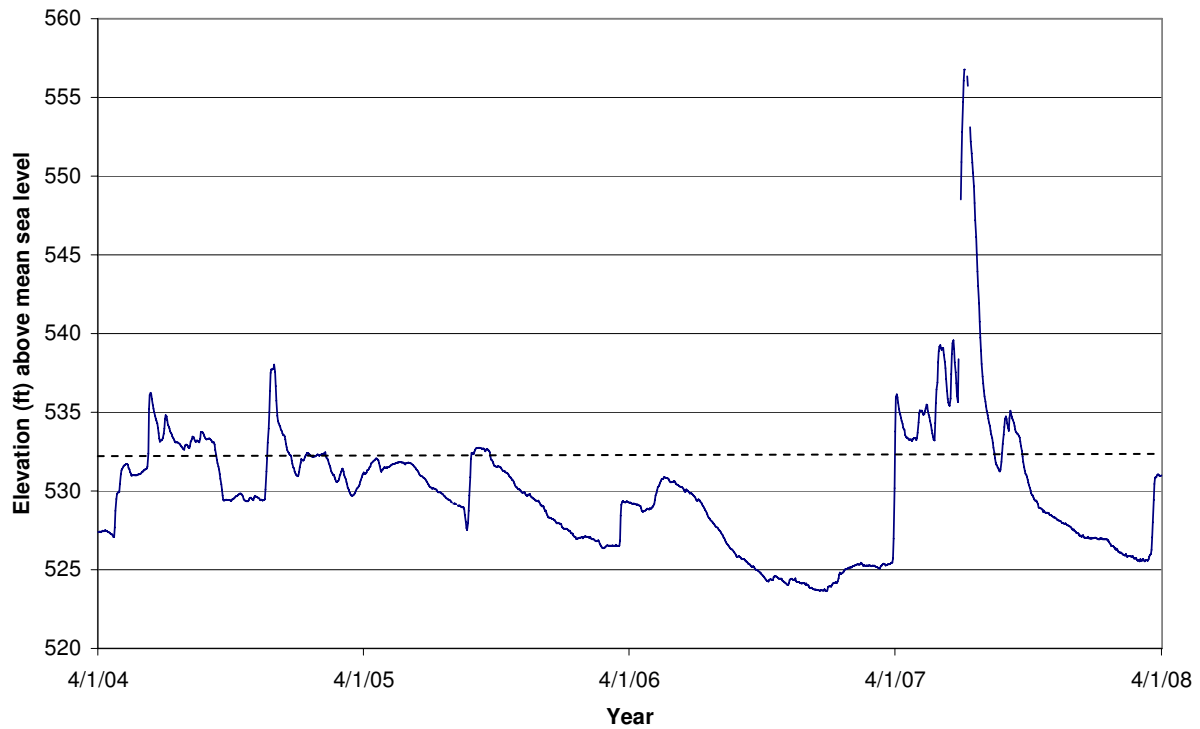


Figure 1. Daily mean water level elevations in feet above mean sea level (MSL) recorded for Whitney Reservoir, Texas.

Table 1. Characteristics of Whitney Reservoir, Texas.

Characteristic	Description
Year Constructed	1951
Controlling authority	U.S. Army Corps of Engineers
Counties	Bosque and Hill
Reservoir type	Mainstem
Shoreline Development Index (SDI)	10.5
Conductivity	1,800 umhos/cm

Table 2. Harvest regulations for Whitney Reservoir.

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: largemouth and smallmouth	5	14 – No limit
Bass: spotted*	5	No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 - No Limit

* On September 1, 2001 the minimum length limit changed from 12 inches to no minimum. The combined bag limit for largemouth and spotted bass is 5 fish per day.

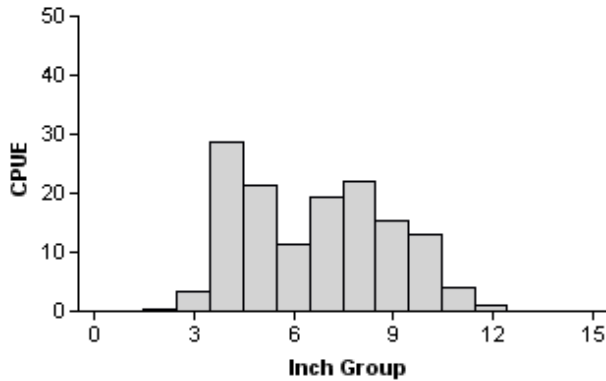
Table 3. Stocking history of Whitney, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean 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)
Blue catfish	1966	8,000	UNK	UNK
	Total	8,000		
Bluegill	2005	13,747	AFGL	2.1
	Total	13,747		
Channel catfish	1970	61,000	AFGL	7.9
	Total	61,000		
Florida Largemouth bass	1985	204,099	FGL	2.0
	1986	151,900	FRY	1.0
	2003	760,159	FGL	1.5
	2004	589,978	FGL	1.7
	Total	1,706,136		
Largemouth bass	1966	280,000	UNK	UNK
	1968	250,000	UNK	UNK
	1969	350,000	FRY	0.7
	1971	220,000	UNK	UNK
	Total	1,100,000		
Smallmouth bass	1983	65,400	UNK	UNK

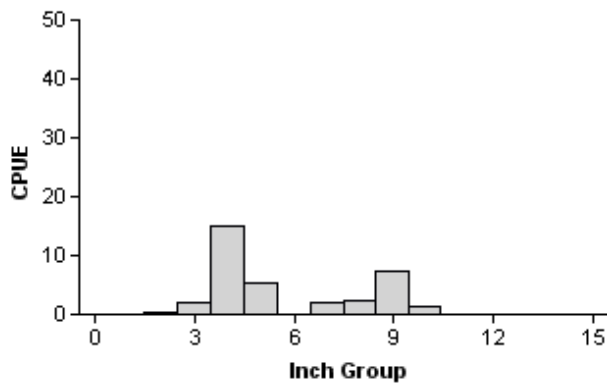
Species	Year	Number	Life Stage	Mean TL (in)
	1984	235,505	FGL	2.0
	1985	162,976	FGL	2.0
	1985	39,167	FRY	1.0
	1986	24,435	FGL	2.0
	1986	124,700	FRY	1.0
	1992	29,253	FGL	1.3
	1994	262,402	FGL	1.2
	1995	40,670	FGL	1.3
	1996	333,282	FGL	1.3
	1997	714,665	FGL	1.2
	1998	353,100	FGL	1.2
	1999	351,302	FGL	1.3
	2000	589,849	FGL	1.4
	2004	5,609	FGL	1.9
	Total	3,332,315		
Striped bass	1973	267,711	FGL	1.7
	1974	229,291	FGL	1.7
	1975	17,090	UNK	UNK
	1976	232,123	UNK	UNK
	1984	351,581	FGL	2.0
	1985	172,115	FRY	1.0
	1986	354,130	FGL	1.7
	1987	121,525	FGL	2.0
	1987	237,232	FRY	1.0
	1988	235,900	FRY	1.0
	1989	235,923	FGL	1.2
	1990	240,219	FGL	1.4
	1991	331,827	FGL	1.3
	1992	123,161	FGL	1.2
	1994	448,490	FGL	1.2
	1995	237,566	FGL	1.2
	1996	113,057	FGL	1.3
	1997	235,226	FGL	1.2
	1998	145,768	FGL	1.3
	1999	236,400	FGL	1.5
	2000	476,600	FGL	1.5
	2001	1,400,000	FRY	0.8
	2002	353,587	FGL	1.6
	2003	223,892	FGL	1.7
	2004	84,184	FGL	1.5
	2005	332,999	FGL	1.7
	2006	322,532	FGL	1.9
	2007	495,015	FGL	1.6
	Total	8,255,144		

Table 4. Survey of littoral zone and physical habitat types, Whitney Reservoir, Texas, 1997. A linear shoreline distance (miles) was recorded for each habitat type found. Surface area (acres) and percent of reservoir surface area was determined for each type of aquatic vegetation found.

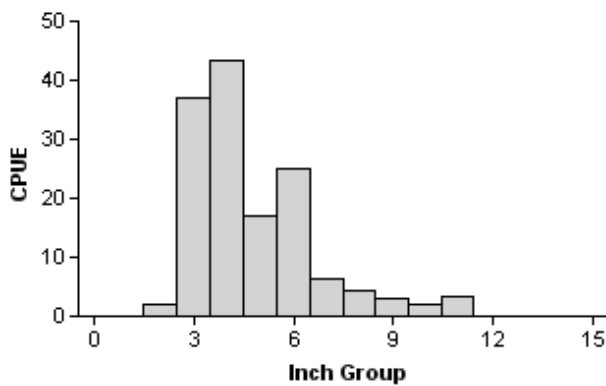
Shoreline habitat type	Shoreline distance	
	Miles	Percent of total
Rocky shoreline	17.0	7.6
Cut bank	2.0	0.9
Dead trees, stumps	50.0	22.2
Eroded bank	4.0	1.8
Featureless	55.0	24.4
Overhanging brush	2.0	0.9
Rock or gravel	95.0	42.2

Gizzard Shad**2003**

Effort = 2.0
 Total CPUE = 140.5 (19; 281)
 Stock CPUE = 75.0 (27; 150)
 IOV = 56.86 (7.5)

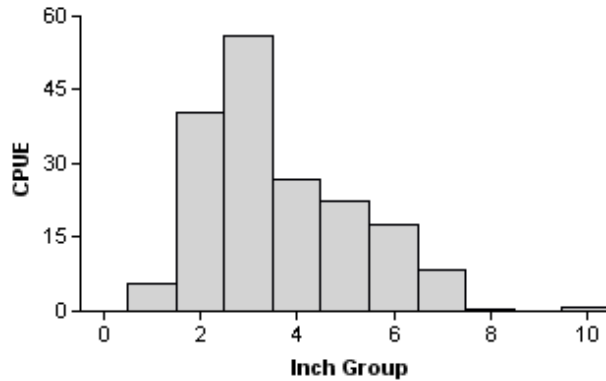
2005

Effort = 2.0
 Total CPUE = 36.5 (27; 73)
 Stock CPUE = 13.5 (33; 27)
 IOV = 68.49 (8.8)

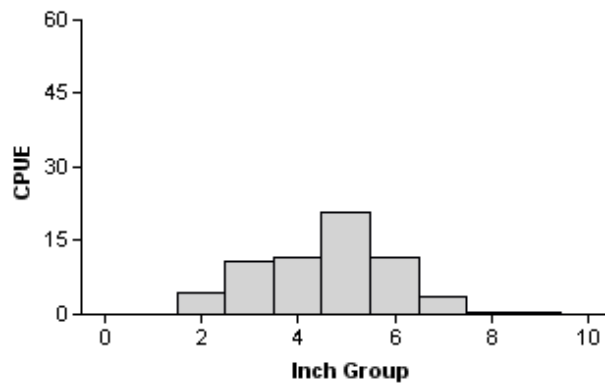
2007

Effort = 2.0
 Total CPUE = 144.0 (24; 288)
 Stock CPUE = 19.5 (43; 39)
 IOV = 90.97 (5.3)

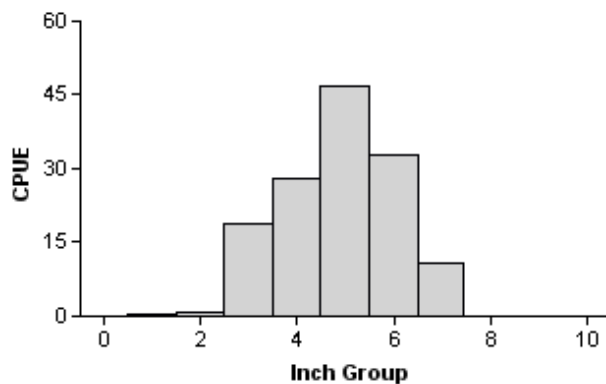
Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Whitney Reservoir, Texas, 2003, 2005, and 2007.

Bluegill**2003**

Effort = 2.0
 Total CPUE = 179.0 (22; 358)
 Stock CPUE = 133.0 (21; 266)
 PSD = 21 (3.7)
 RSD-P = 1 (0.9)

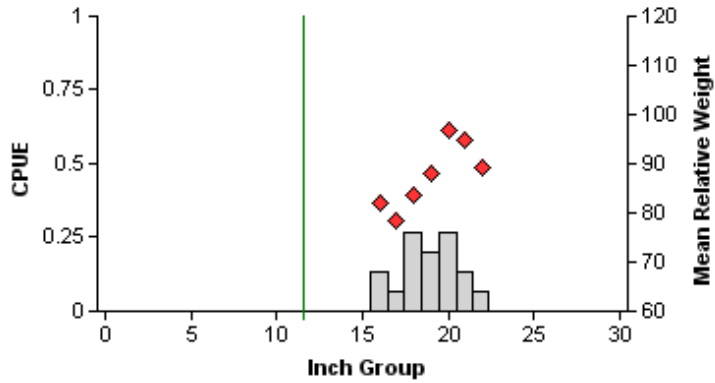
2005

Effort = 2.0
 Total CPUE = 64.0 (28; 128)
 Stock CPUE = 59.5 (27; 119)
 PSD = 27 (5.3)
 RSD-P = 2 (1.3)

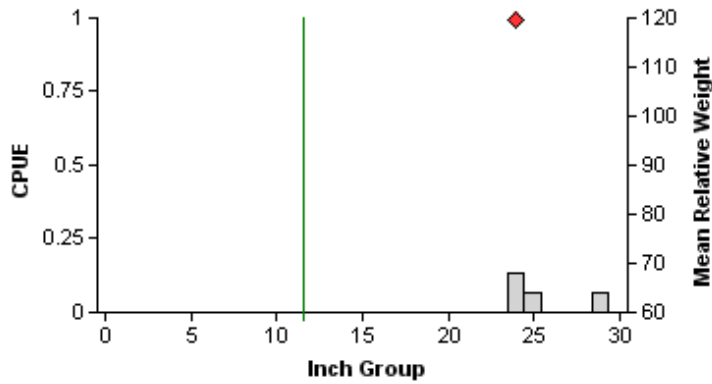
2007

Effort = 2.0
 Total CPUE = 139.5 (26; 279)
 Stock CPUE = 138.0 (26; 276)
 PSD = 32 (7.3)
 RSD-P = 0 (0)

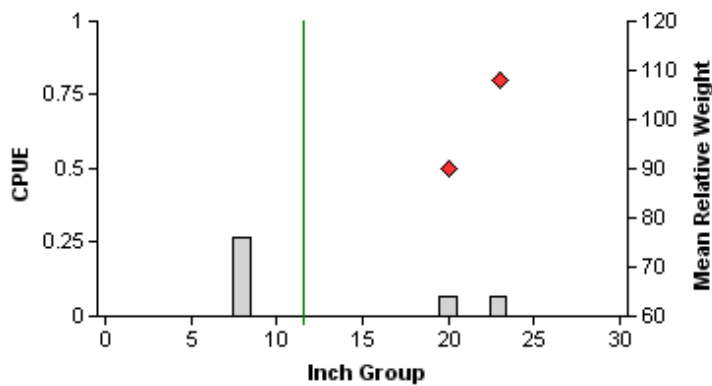
Figure 3. Number of bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Whitney Reservoir, Texas, 2003, 2005, and 2007.

Blue Catfish**2004**

Effort = 15.0
 Total CPUE = 1.1 (36; 17)
 Stock CPUE = 1.1 (36; 17)
 PSD = 41 (9.8)
 RSD-P = 0 (0)

2006

Effort = 15.0
 Total CPUE = 0.3 (57; 4)
 Stock CPUE = 0.3 (57; 4)
 PSD = 100 (0.0)
 RSD-P = 0 (0)

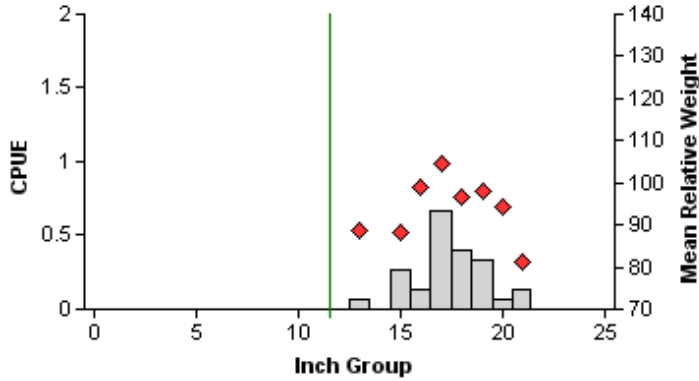
2008

Effort = 15.0
 Total CPUE = 0.4 (53; 6)
 Stock CPUE = 0.1 (68; 2)
 PSD = 100 (0)
 RSD-P = 0 (0)

Figure 4. Number of blue catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Whitney Reservoir, Texas, 2004, 2006, and 2008.

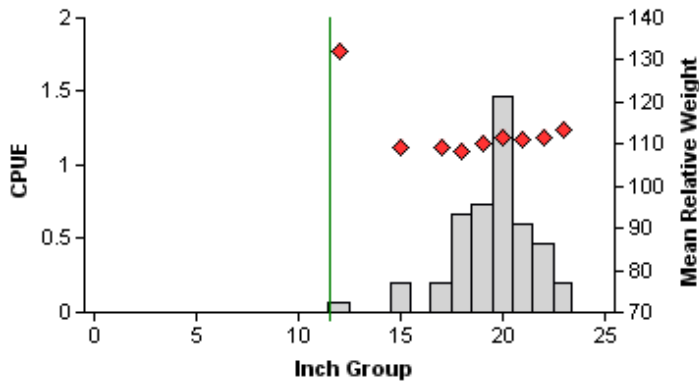
Channel Catfish

2004



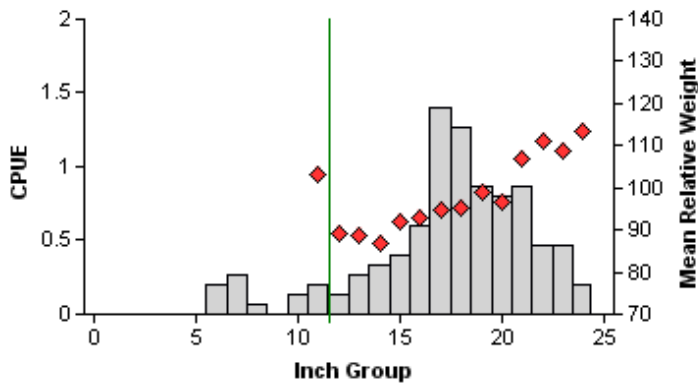
Effort = 15.0
 Total CPUE = 2.1 (26; 31)
 Stock CPUE = 2.1 (26; 31)
 PSD = 84 (7.5)
 RSD-P = 0 (0)

2006



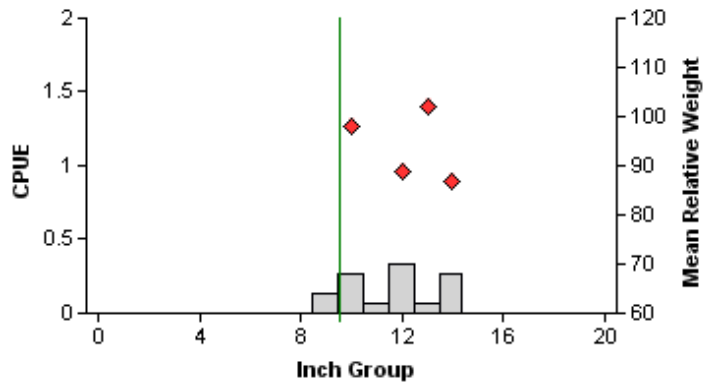
Effort = 15.0
 Total CPUE = 4.6 (22; 69)
 Stock CPUE = 4.6 (22; 69)
 PSD = 94 (3.2)
 RSD-P = 0 (0)

2008

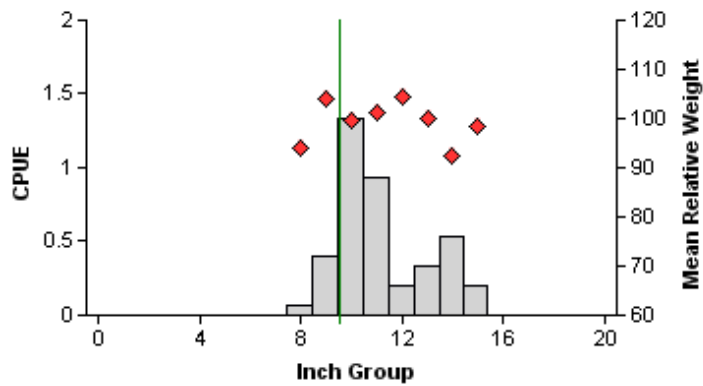


Effort = 15.0
 Total CPUE = 8.9 (20; 134)
 Stock CPUE = 8.3 (21; 124)
 PSD = 84 (4.8)
 RSD-P = 2 (1.5)

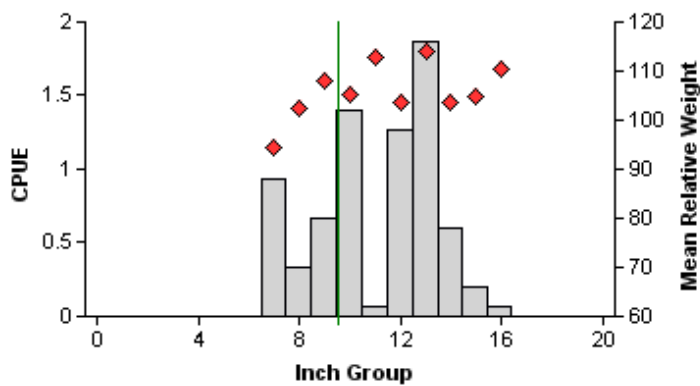
Figure 5. Number of channel catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Whitney Reservoir, Texas, 2004, 2006, and 2008.

White Bass**2004**

Effort = 15.0
 Total CPUE = 1.1 (36; 17)
 Stock CPUE = 1.1 (36; 17)
 PSD = 100 (0)
 RSD-P = 59 (16.1)

2006

Effort = 15.0
 Total CPUE = 4.0 (18; 60)
 Stock CPUE = 4.0 (18; 60)
 PSD = 98 (1.7)
 RSD-P = 32 (6.8)

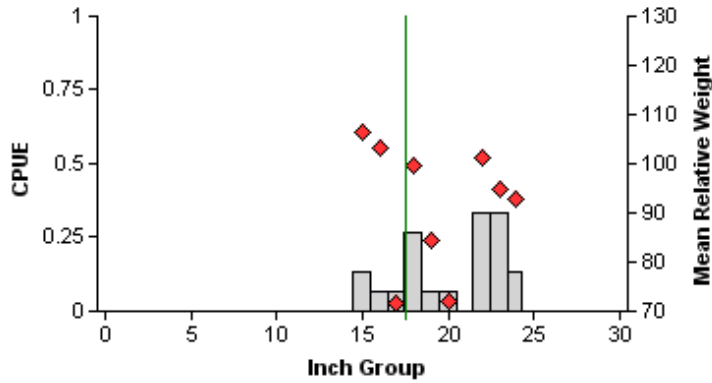
2008

Effort = 15.0
 Total CPUE = 7.4 (24; 111)
 Stock CPUE = 7.4 (24; 111)
 PSD = 83 (4.6)
 RSD-P = 54 (6.4)

Figure 6. Number of white bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Whitney Reservoir, Texas, 2004, 2006, and 2008.

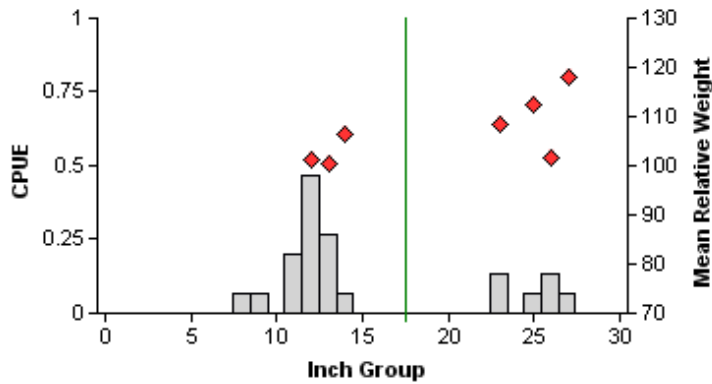
Striped Bass

2004



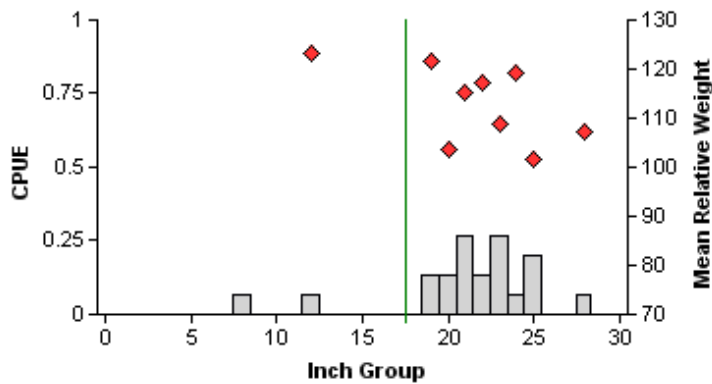
Effort = 15.0
 Total CPUE = 1.5 (46; 22)
 Stock CPUE = 1.5 (46; 22)
 PSD = 59 (12.8)
 RSD-P = 0 (0)

2006



Effort = 15.0
 Total CPUE = 1.5 (39; 23)
 Stock CPUE = 1.2 (37; 18)
 PSD = 33 (10.2)
 RSD-P = 0 (0)

2008

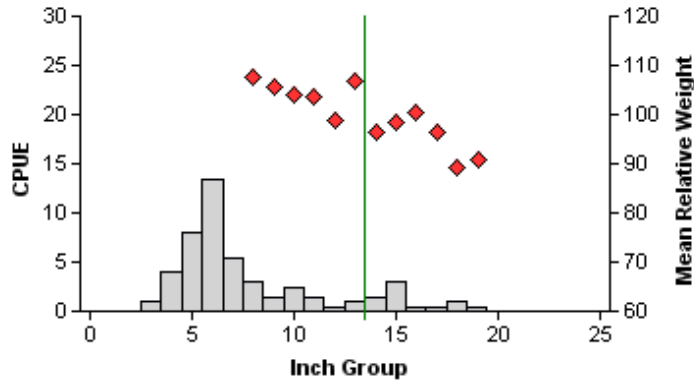


Effort = 15.0
 Total CPUE = 1.4 (33; 21)
 Stock CPUE = 1.3 (32; 20)
 PSD = 85 (6.9)
 RSD-P = 0 (0)

Figure 7. Number of striped bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Whitney Reservoir, Texas, 2004, 2006, and 2008.

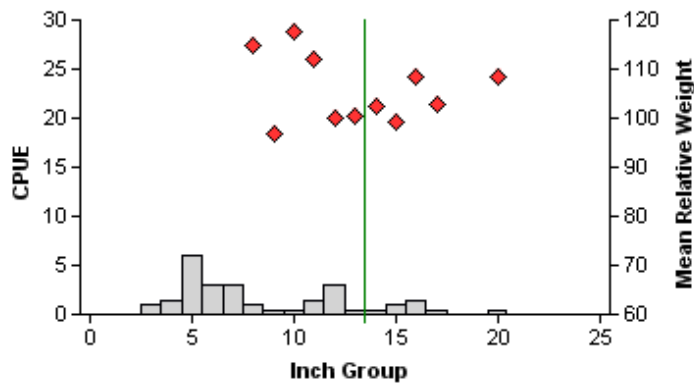
Largemouth Bass

2003



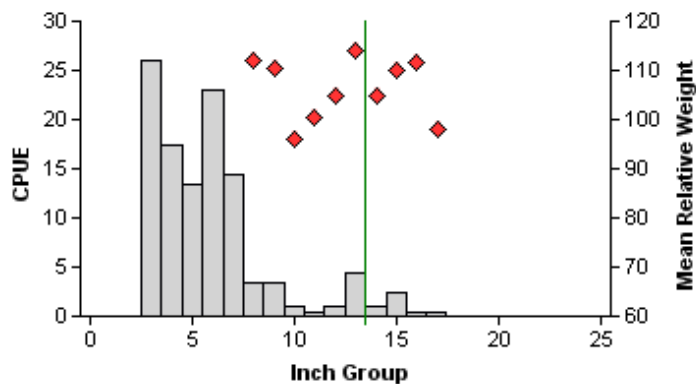
Effort = 2.0
 Total CPUE = 49.0 (19; 98)
 Stock CPUE = 17.0 (32; 34)
 PSD = 50 (8.5)
 RSD-P = 32 (6.8)

2005



Effort = 2.0
 Total CPUE = 25.5 (27; 51)
 Stock CPUE = 11.0 (39; 22)
 PSD = 68 (11.4)
 RSD-P = 32 (8.1)

2007

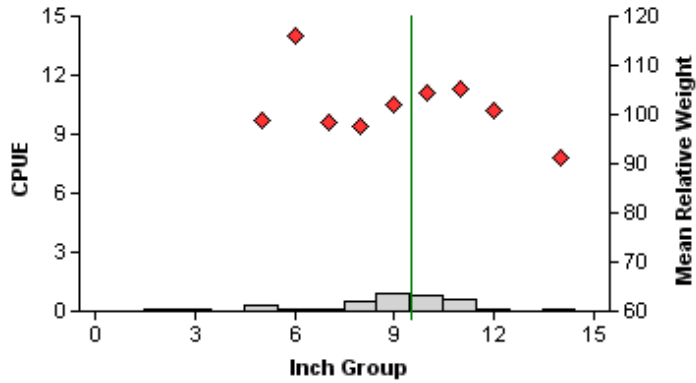


Effort = 2.0
 Total CPUE = 113.0 (17; 226)
 Stock CPUE = 18.5 (30; 37)
 PSD = 54 (7.1)
 RSD-P = 19 (6.9)

Figure 8. Number of largemouth bass caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Whitney Reservoir, Texas, 2003, 2005, and 2007.

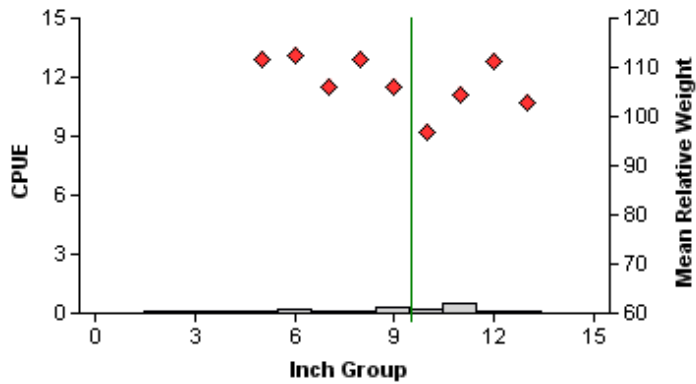
White Crappie

1999



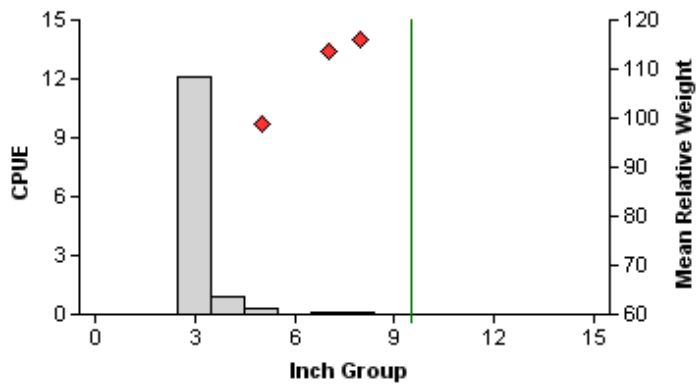
Effort = 14.0
 Total CPUE = 3.9 (18; 54)
 Stock CPUE = 3.6 (18; 51)
 PSD = 84 (7.5)
 RSD-P = 45 (6.6)

2003



Effort = 15.0
 Total CPUE = 1.9 (38; 29)
 Stock CPUE = 1.7 (41; 26)
 PSD = 73 (16.6)
 RSD-P = 50 (20.7)

2005



Effort = 15.0
 Total CPUE = 13.5 (58; 203)
 Stock CPUE = 0.5 (48; 8)
 PSD = 12 (9.5)
 RSD-P = 0 (0)

Figure 9. Number of white crappie caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Whitney Reservoir, Texas, 1999, 2003, and 2005.

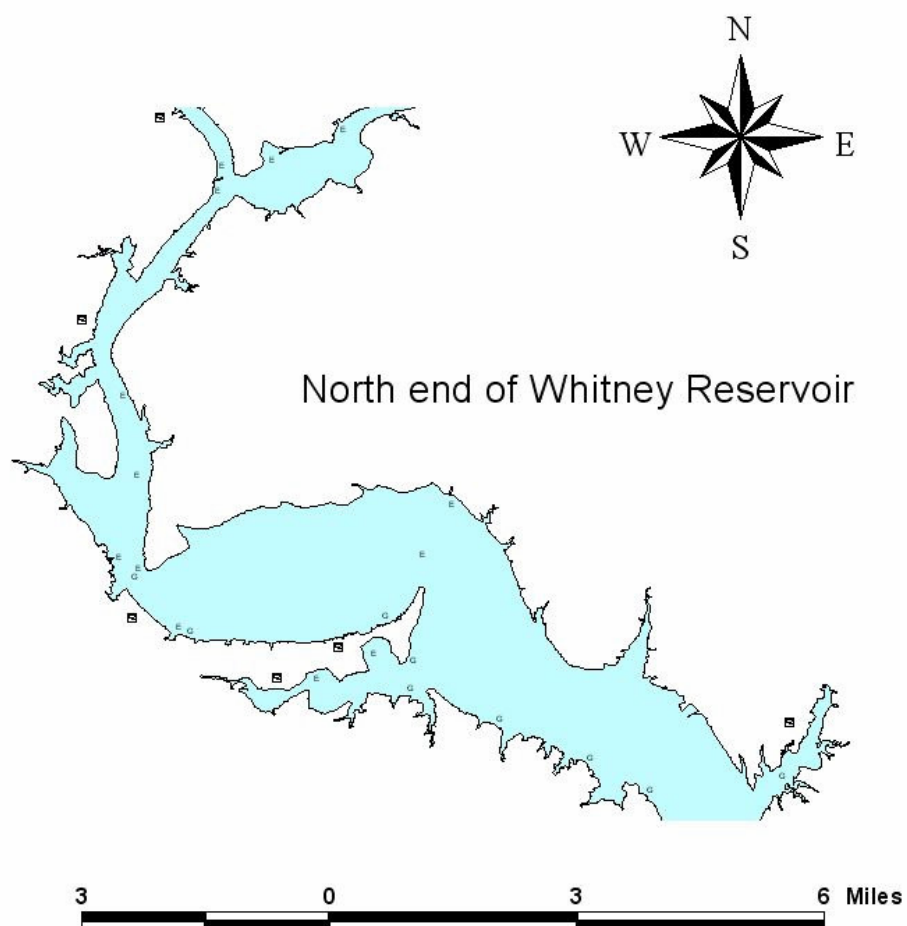
Table 5. Proposed sampling schedule for Whitney Reservoir, Texas. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

Survey Year	Electrofisher	Trap Net	Gill Net	Creeel Survey	Report
Fall 2008-Spring 2009					
Fall 2009-Spring 2010	A		A		
Fall 2010-Spring 2011					
Fall 2011-Spring 2012	S		S		S

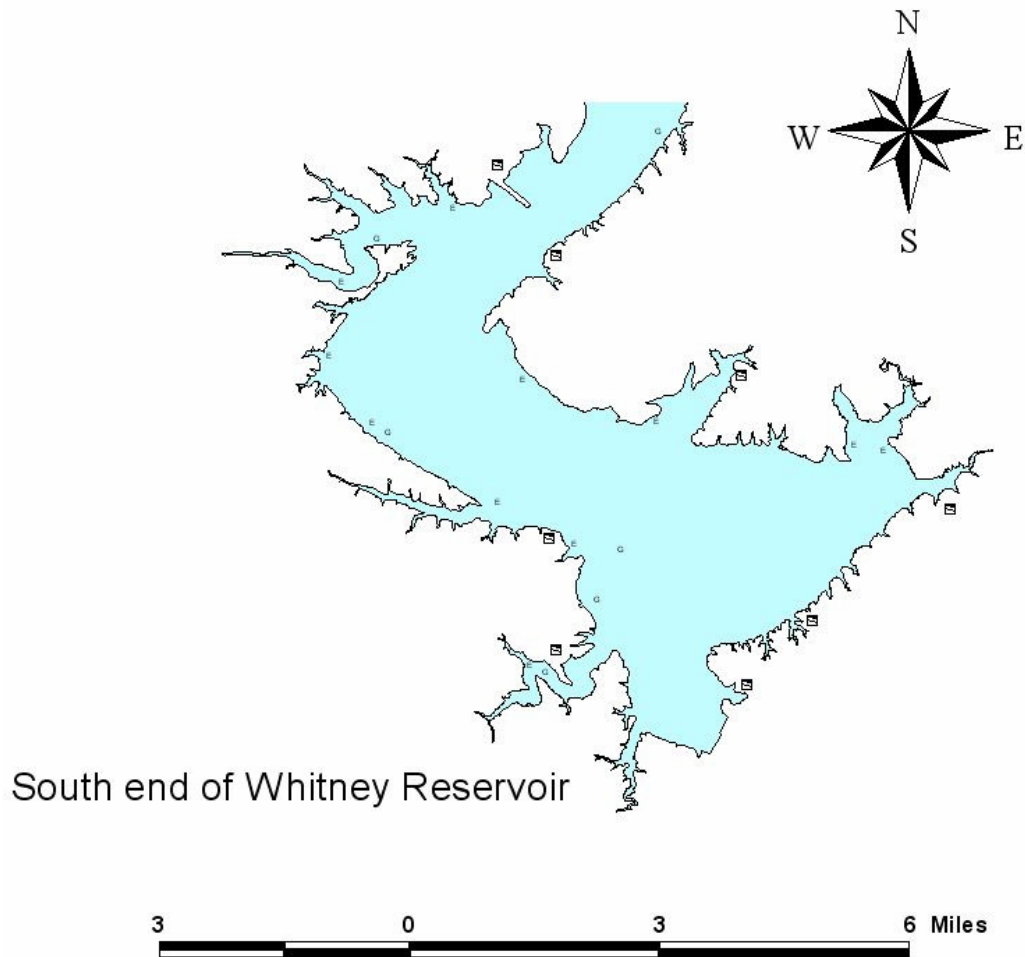
APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Whitney Reservoir, Texas, 2007-2008. Optional trap netting was dropped from the 2007 survey.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					288	144.0
Threadfin shad					261	130.5
Blue catfish	6	0.4				
Channel catfish	134	8.9				
White bass	111	7.4				
Striped bass	21	1.4				
Green sunfish					8	4.0
Bluegill					279	139.5
Longear sunfish					18	9.0
Redear sunfish					72	36.0
Largemouth bass					226	113.0

APPENDIX B

Location of sampling sites, Whitney Reservoir, Texas, 2007-2008. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level was near full pool at time of sampling.

APPENDIX B continued

Location of sampling sites, Whitney Reservoir, Texas, 2007-2008. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level was near full pool at time of sampling.