

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-34

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2008 Survey Report

Wright Patman Reservoir

Prepared by:

Michael W. Brice and Timothy J. Bister
Inland Fisheries Division
District 3-A, Marshall, Texas



Carter Smith
Executive Director

Phil Durocher
Director, Inland Fisheries



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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Wright Patman Reservoir were surveyed in 2008 with electrofishing and trap netting and 2009 with gill netting. Anglers were surveyed from June 2008 through May 2009 using a roving creel survey. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir description:** Wright Patman Reservoir is a 20,143-acre impoundment located on the Sulphur River. The reservoir is located in Bowie and Cass Counties approximately 10 miles southwest of Texarkana. Habitat features consist of standing timber, flooded brush, riprap, native aquatic plants, and hydrilla.
- **Management history:** Important sport fish include blue and channel catfishes, white bass, largemouth bass, and crappie. All sport fish in Wright Patman Reservoir have historically been managed with statewide harvest regulations. Florida largemouth bass have been stocked in this reservoir to improve the quality of the largemouth bass fishery. Palmetto bass were also stocked to increase angling opportunities. Hydrilla and waterhyacinth were discovered in the reservoir in 2000 and 2005 respectively, however; neither species have reached nuisance levels.
- **Fish community**
 - **Prey species:** Threadfin shad were present in the reservoir. There were moderate numbers of gizzard shad available as prey to most sport fish. Sunfish were also available as prey with bluegill being the most abundant.
 - **Catfishes:** Blue and channel catfish populations offer many fish above legal length and provide excellent angling opportunities. Flathead catfish are present in the reservoir and provide anglers with an additional sport fish. Catfish were the second-most popular sportfish at Wright Patman Reservoir, accounting for thirty-one percent of all angling effort.
 - **Temperate basses:** White bass were present in the reservoir. Relative abundance of white bass is variable. There was no angler effort detected towards white bass.
 - **Largemouth bass:** The largemouth bass population can be characterized as consistently low in abundance and exhibiting good growth and population structure. Twenty-four percent of all angler effort was directed at largemouth bass.
 - **Crappie:** Both white and black crappie were present in the reservoir with white crappie being the dominant species. Crappie were abundant and provide excellent angling opportunities. Crappie species were the most popular sportfish at Wright Patman Reservoir, accounting for forty-one percent of all angling effort.

Management strategies: Conduct general monitoring with electrofishing, trap netting and gill netting 2012-2013. Surveys of invasive aquatic vegetation will be conducted annually beginning in 2009. All sport fish will continue to be managed under statewide harvest regulations.

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INTRODUCTION

This document is a summary of fisheries data collected from Wright Patman Reservoir from June 2008 through May 2009. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2008 and 2009 data for comparison.

Reservoir Description

Wright Patman Reservoir is a 20,143-acre impoundment constructed in 1956 on the Sulphur River. It is located in Bowie and Cass Counties approximately 10 miles southwest of Texarkana. The controlling authority is the U.S. Army Corps of Engineers. Primary water uses are flood control, municipal and industrial water supply, and public recreation. It has a drainage of approximately 3,443 square miles and a shoreline length of 170 miles. The U.S. Army Corps of Engineers manipulates downstream flow releases in an attempt to manage for a summer conservation pool of 227.5 msl and a winter conservation pool of 220.6 msl. Average annual water fluctuation is 7-8 feet (Figure 1). Habitat features consisted of standing timber, flooded brush, riprap, native aquatic plants, and hydrilla. Boat access consisted of thirteen boat ramps; seven private and six public. Bank fishing access is limited. Other descriptive characteristics for Wright Patman Reservoir are in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Brice 2005) included:

1. Wright Patman Reservoir supports excellent catfish, white bass, and crappie fishing opportunities. The fisheries need to be promoted so they are utilized.

Action:

1. Provided seasonal news releases informing anglers on fishing techniques, catch locations, and species-specific regulations.
2. Provided USACE personnel and private marinas with fishery information, regulation posters, and angler recognition program procedures.
3. Conducted a year-long angler creel survey from June 2008 through May 2009 to estimate angler effort and catch rates.

2. Palmetto bass were introduced in 1994 to increase fishing quality and broaden angling opportunities. Stockings were successful with spring gill net catch rates ranging from 0.1 to 4.9 fish/net night; however, annual stockings of palmetto bass were discontinued in 2003 due to low angler utilization.

Action:

1. Palmetto bass stockings were discontinued.

3. Florida largemouth bass have been stocked (2002 and 2003) in an effort to influence genetics of the population and ultimately make a positive impact on angling opportunities. From 1991 to 2004, electrophoretic analyses of young-of-year (age-0) largemouth bass have indicated that Florida largemouth bass alleles are present in the population but ranged from 0.0 to 6.7%. Therefore, Florida largemouth bass should be stocked to enhance the genetics of the population.

Action:

1. In 2006, genetic assessment of Florida largemouth bass young-of-the-year fish was conducted and indicated 9.2% Florida bass alleles present in the population.
2. In 2008, Florida largemouth bass were stocked at 25 fish/acre.

Harvest regulation history: Sport fishes in Wright Patman Reservoir are currently managed with statewide regulations (Table 2).

Stocking history: Florida largemouth bass were introduced into Wright Patman Reservoir in 1978 (14.7 per acre). Additional stockings have been conducted in the 1991, 1992, 1994, 2002, 2003, and 2008 at 25 fish per acre in an attempt to increase the frequency of Florida largemouth bass alleles. Paddlefish were stocked in 1992 and 1994 as part of a restoration project. Palmetto bass were stocked from 1994-1999 and 2002 to provide an additional sportfish. The complete stocking history is in Table 3.

Vegetation/habitat history: Historically, Wright Patman Reservoir has been characterized as having small quantities aquatic vegetation. Relatively turbid water and seasonal water level fluctuations are major factors that limit plant growth. Hydrilla is present in the lake and was discovered in 2000 (Ryan and Brice 2001). In 2004, hydrilla had increased to 5 acres (Brice 2005) and in 2008, 102 acres was estimated (Figure 2). In 2006, trace amounts of waterhyacinth were found adjacent to a popular marina in the mid-lake area. In 2007, an additional area in the upper end of the reservoir was found to be infested with waterhyacinth. Results of the 2008 vegetation survey indicated waterhyacinth has remained in trace amounts in the aforementioned areas of the lake (Figure 2). Native floating plants, primarily American lotus, dominated the aquatic plant community (Figure 2).

METHODS

Fishes were collected by electrofishing (2.0 hours at 24, 5-min stations), gill netting (15 net nights at 15 stations), and trap netting (15 net nights at 15 stations). Since the last survey report, a roving angler creel survey was conducted from June 2008 through May 2009. The creel survey consisted of 4 randomly-selected weekdays and 5 randomly-selected weekend days per quarter. The reservoir was partitioned into 4 sections of which 1 was randomly selected for each creel day. Each day was partitioned into 3, 4.5-hour survey periods during June-August 2008, 2, 5-hour periods September 2008 through February 2009, and 2, 5.5-hour periods March through May 2009. Passive-gear (i.e., trotlines and jug-lines) anglers were not represented in the creel survey. The aquatic vegetation survey was conducted in September 2008. 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 caught per net night (fish/nn). All survey sites were randomly selected and electrofishing, trap netting, gill netting, vegetation, and creel surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2008).

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 for creel statistics and SE was calculated for structural indices and IOV. Individual fish ages were determined using otoliths for largemouth bass (15 fish 13.2 to 20.9 inches) and for white crappie (64 fish 2.7 to 15.0 inches) and black crappie (29 fish 3.1 to 14.2 inches). Largemouth bass population genetics were assessed with micro-satellite DNA analysis in 2006. Source for water level data was the United States Geological Survey (USGS) website.

RESULTS AND DISCUSSION

Habitat: Structural habitat consisted primarily of inundated timber, flooded brush, and riprap (Brice 2005). Aquatic vegetation was not abundant (Figure 2). Only 4% (895 acres) of the lake surface area was covered with aquatic vegetation with American lotus (760 acres) and hydrilla (102 acres) being the dominant species (Table 4). Waterhyacinth was also found in trace amounts (Figure 2). Coon-tail and arrow-head were also present.

Creel: Directed angling effort was highest for crappie (41.4%), followed by catfish (30.7%), largemouth bass (24.0%), sunfish species (0.8%), and yellow bass (0.4%) (Table 5). Total fishing effort at Wright Patman Reservoir was 238,718 h and anglers spent an estimated \$1,015,609 on direct expenditures.

Prey species: Gizzard shad, threadfin shad, and several sunfish species were present, indicating good forage fish diversity. Electrofishing catch rates of gizzard shad and bluegill were 289.0/h and 308.5/h, respectively. Index of vulnerability (IOV) for gizzard shad indicated that 50% were available to most predators, representing a slight reduction from previous years (Figure 3). Electrofishing catch rate of gizzard shad in 2008 was lower than 2004 (491.5/h) and 2006 (416.5/h) (Figure 3). Bluegill catch rate in 2008 was approximately 50-60% higher compared to surveys in 2004 and 2006. Small individuals (<5 inches) provided abundant forage (Figure 4). Catch rate for combined sunfish species (green sunfish, warmouth, bluegill, longear sunfish, and redear sunfish) was 374.0/h, representing increases of 62% from 2006 (230.5/h) and 150% from 2004 (150.5/h).

Catfishes: Blue catfish and channel catfish were both present in Wright Patman Reservoir. The 2009 gill-netting catch rate of blue catfish was 2.6/nn, which was higher compared to 2005 (0.1/nn) and 2002 (0.8/nn) (Figure 7). Blue catfish collected in 2009 ranged from 8-29 inches in length. High numbers of legal-length fish were available for angling harvest (Figure 7), however; no blue catfish were observed during creel surveys (2008-2009). Blue catfish body condition was good with mean W_r for most inch groups exceeding 90 (Figure 7). Ryan and Brice (2001) reported that blue catfish in Wright Patman Reservoir attained legal-size (≥ 12 inches) during their second or third growing season. The catch rate of channel catfish in 2009 was 5.4/nn, which was similar to 2002 (5.5/nn), but less than 2005 (14.6/nn) (Figure 8). This decline was most evident within stock-size (>11 inches) catch rates (12.7/nn, 2005; 3.87, 2009). Channel catfish body condition was good with mean W_r for most inch groups exceeding 90 (Figure 8). Channel catfish growth was historically slow with fish attaining legal-size (≥ 12 inches) during their fourth growing season (Ryan and Brice 2001). No flathead catfish were collected during the 2009 gill-net survey, but were collected in low numbers in previous surveys (Brice 2005). The creel survey (2008-2009) indicated that directed effort for all catfish species was 3.6 hours/acre (Table 8). Anglers targeting catfish caught 1.4 fish/h, and the harvest rate of channel catfish by all anglers was 3.0 fish/acre (Table 8). Harvested fish ranged from 11 to 20 inches (Figure 9). Anglers released 6% of the legal-size catfish that were caught (Table 8).

Temperate basses: The gill-net catch rate of white bass in 2009 was 2.1/nn, which was lower than 2005 (11.5/nn) but similar to 2002 (1.1/nn) (Figure 10). The greatest decline was with preferred-size (≥ 12 inches) fish (2005, RSD-P=95; 2009, RSD-P=50). Body condition of white bass was good with mean W_r for most inch groups exceeded 90 (Figure 10). Growth of white bass was historically good with fish attaining legal-size (≥ 10 inches) by age one (Ryan and Brice 2001). White bass up to 16 inches in length were collected in gill nets in 2009 (Figure 10). During the 2008-2009 creel survey, no anglers targeted white bass, however; anglers targeted yellow bass (0.1 hours/acre) (Table 9). Harvest rates (all anglers) were 0.01 fish/acre for white bass and 0.1 fish/acre for yellow bass. Harvested white bass ranged from 12 to 16 inches and harvested yellow bass ranged from 6 to 11 inches (Figure 11). Anglers released 77% of the legal-size white bass that were caught (Table 9).

Largemouth bass: The largemouth bass population can be characterized as consistently low in abundance, and exhibiting favorable population structure. The electrofishing catch rate of largemouth bass in 2008 (43.5/h) was less than 2006 (64.0/h) and similar to 2004 (48.5/h) (Figure 12). Largemouth bass population structure was favorable, with multiple year classes present and evidence of successful reproduction. Largemouth bass up to 20 inches were collected during 2008 electrofishing (Figure 12). Genetic analysis of age-0 largemouth bass in 2006 indicated 9.2% Florida largemouth bass alleles (Table 11). Historically, the Florida largemouth bass allele frequency was low (1991-2004 range = 0.0-6.7). No pure Florida largemouth bass were collected in the 2006 age-0 sample (Table 11.). Mean length at age two was 14.9 inches (SE=0.5; N=7) (Figure 13). Body condition was excellent with most inch groups having relative weights greater than 100 (Figure 12). During the 2008-2009 creel survey, anglers targeting largemouth bass fished 2.8 hours/acre and caught 0.9 fish/h (Table 10). The harvest rate of largemouth bass by all anglers was 0.8 fish/acre (Table 10). Anglers released 25% of the legal-size largemouth bass that they caught (Table 10). The estimated harvest of largemouth bass during the 2008-2009 creel survey was 15,354, ranging from 13-20 inches (Figure 14). However, 34% of the fish used to estimate harvest were largemouth bass held by tournament anglers for later live release.

Crappie: Trap-net catch rates for white and black crappie in 2008 were 21.5/nn and 2.1/nn, respectively (Figures 15 and 17). White and black crappie grow to legal size (≥ 10 inches) during their third growing season (age 2) (Figures 16 and 18). Body condition was good for both crappie species with all inch groups having W_r values greater than 100 for white crappie (Figure 15) and most inch groups having W_r values greater than 90 for black crappie (Figure 17). Creel surveys (2008-2009) indicated crappie anglers fished 4.9 hours/acre and caught 2.7 fish/h. The crappie harvest rate by all anglers was 3.4 fish/hour (Table 12). Harvested crappie ranged from 6 to 16 inches (Figure 19). Anglers released only 1% of the legal-size crappie that were caught (Table 12).

Fisheries management plan for Wright Patman Reservoir, Texas

Prepared – July 2009.

ISSUE 1: Waterhyacinth was discovered in 2006. In 2008, waterhyacinth was only found in trace amounts and was not inhibiting boat access or fishing areas.

MANAGEMENT STRATEGY

1. Conduct supplemental annual surveys to monitor coverage of waterhyacinth.
2. Provide U.S. Army Corps of Engineers with results of waterhyacinth surveys and encourage treating areas of concern.

ISSUE 2: The white bass and blue catfish populations are under-utilized. Gill-netting surveys indicate harvestable-size fish are abundant and available to anglers. However, during the 2008-2009 creel survey, no directed effort was expended towards white bass and no blue catfish harvest was observed. White bass and blue catfish are desirable sport fish at other area reservoirs and should be promoted.

MANAGEMENT STRATEGIES

1. Provide information to print and broadcast media promoting the white bass and blue catfish populations. Educate anglers of successful angling techniques for both fisheries.
2. Promote fishing for white bass and blue catfish at Atlanta State Park located adjacent to Wright Patman Reservoir. Post signage and ask park rangers to promote these underutilized fisheries.
3. Contact Ark-La-Tex Sportsman Outdoor Show (Texarkana) to film separate shows showcasing white bass and blue catfish at Wright Patman Reservoir.
4. Provide fisheries presentations to angling groups promoting the fish community.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes aquatic vegetation surveys (2009-2012) and required electrofishing, trap netting, and gill netting surveys in 2012/2013. Annual aquatic vegetation surveys are necessary to monitor hydrilla and waterhyacinth.

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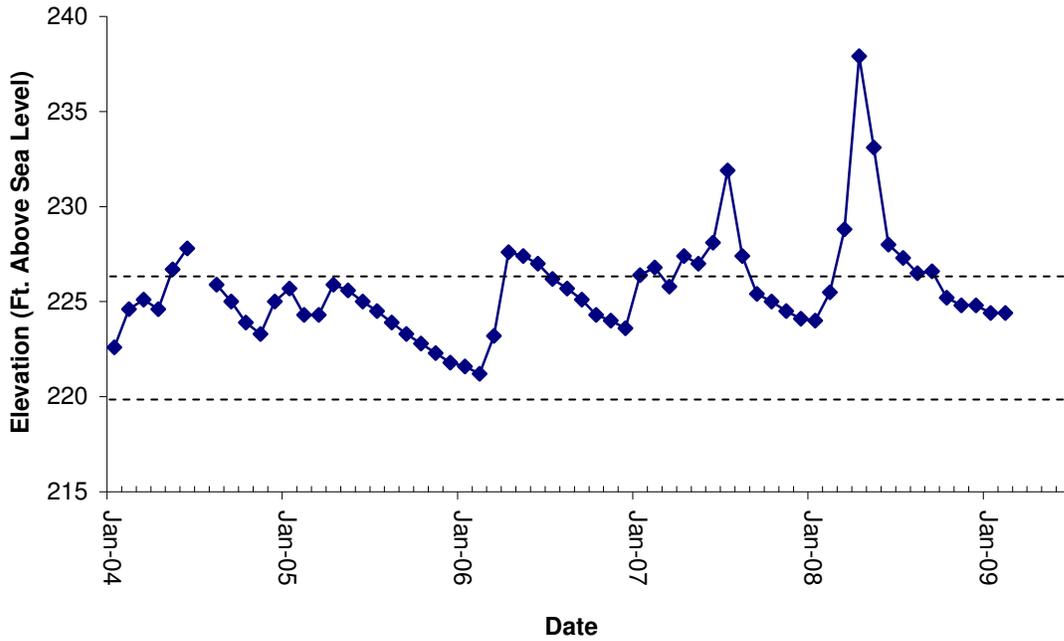


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Wright Patman Reservoir, Texas. Horizontal dashed-lines denote conservation pool level (220.60 msl) and summer pool level (227.5 msl).

Table 1. Characteristics of Wright Patman Reservoir, Texas.

Characteristic	Description
Year constructed	1956
Controlling authority	U.S. Army Corps of Engineers
Counties	Bowie and Cass
Reservoir type	Mainstream
Shoreline development index (SDI)	8.5
Conductivity	190 umhos/cm

Table 2. Harvest regulations for Wright Patman 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; largemouth	5 ^a	14 - No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 - No Limit

^a Daily bag for largemouth bass and spotted bass = 5 in any combination.

Table 3. Stocking history of Wright Patman Reservoir, Texas. Life stages are fry (FRY) and fingerlings (FGL). 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)
Florida largemouth bass	1978	295,460	FGL	2.0
	1991	80,745	FGL	1.2
	1991	419,682	FRY	0.8
	1992	499,718	FGL	1.2
	1994	400,854	FGL	1.2
	1994	106,524	FRY	1.0
	2002	500,228	FGL	1.6
	2003	500,240	FGL	1.7
	2008	503,509	FGL	1.6
	Total	3,306,960		
Paddlefish	1992	11,991		7.4
	1994	4,976		2.3
	Total	16,967		
Palmetto bass (striped X white bass hybrid)	1994	208,174	FGL	1.5
	1995	530,541	FGL	1.4
	1996	152,271	FGL	1.3
	1997	105,274	FGL	1.5
	1998	184,564	FGL	1.3
	1999	91,254	FGL	1.5
	2002	100,444	FGL	1.3
	Total	1,372,522		
Walleye	1974	334,317	FRY	0.2
	1975	338,000	FRY	0.2
	Total	672,317		

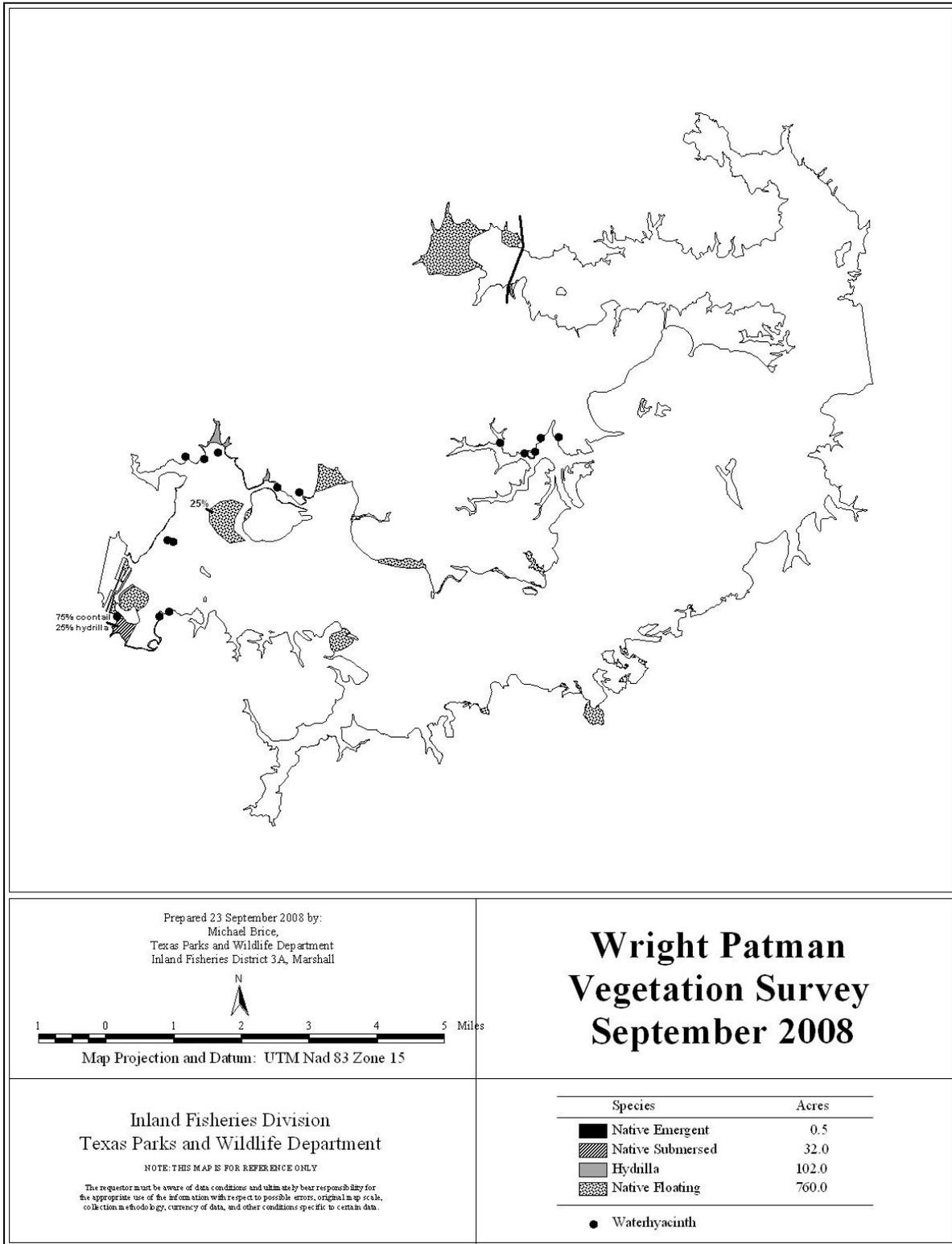


Figure 2. Results of aquatic vegetation survey conducted at Wright Patman Reservoir, Texas, September 2008.

Table 4. Survey of aquatic vegetation, Wright Patman Reservoir, Texas, 2008. Surface area (acres) and percent of reservoir surface area was determined for dominant aquatic vegetation species.

Vegetation	Acres	Percent of reservoir surface area
Native floating	760.0	3.74
Native submersed	32.0	0.16
Native emergent	0.5	<0.01
Hydrilla	102.0	0.50
Waterhyacinth	Trace	

Table 5. Percent directed angler effort by species for Wright Patman Reservoir, Texas, 2008 - 2009.

Species	Year
	2008/2009
Catfish	30.7
Yellow bass	0.4
Sunfish spp.	0.8
Largemouth bass	24.0
Crappie spp.	41.4
Anything	2.7

Table 6. Total fishing effort (h) for all species and total directed expenditures at Wright Patman Reservoir, Texas, 2008-2009.

Creel Statistic	Year
	2008/2009
Total fishing effort	238,718
Total directed expenditures	\$1,015,609

Gizzard shad

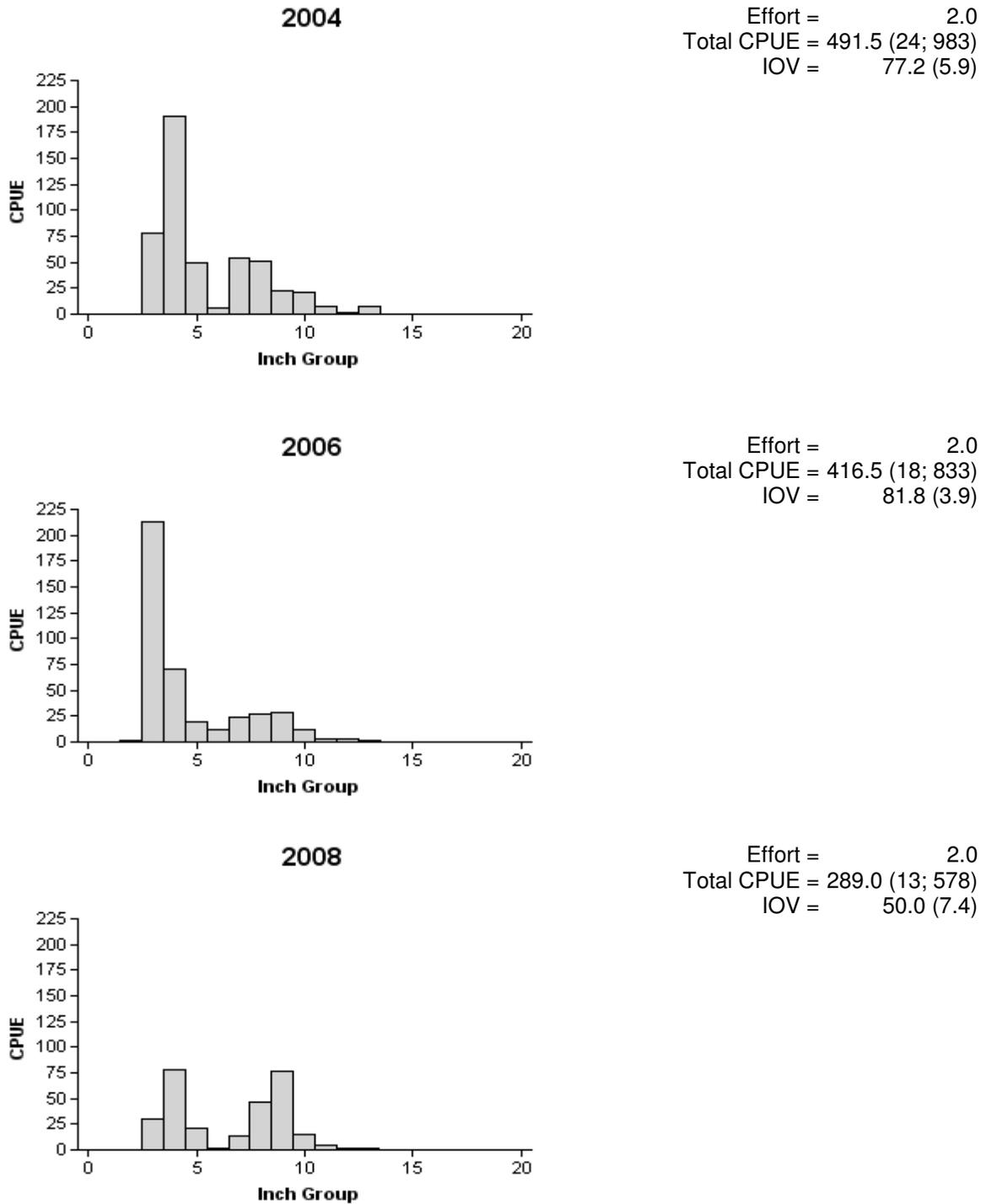
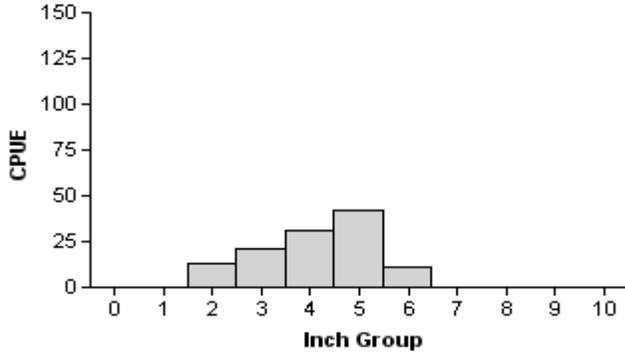


Figure 3. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV and size structure are in parentheses) for fall electrofishing surveys, Wright Patman Reservoir, Texas, 2004, 2006, and 2008.

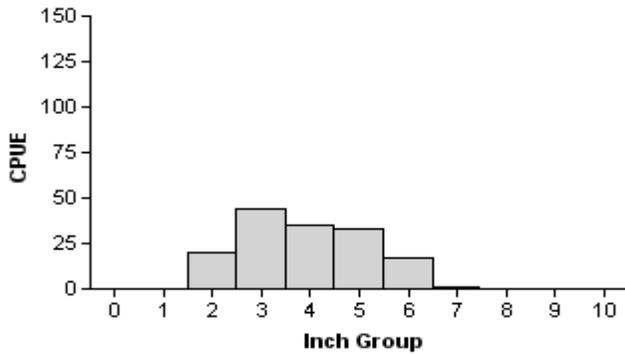
Bluegill

2004



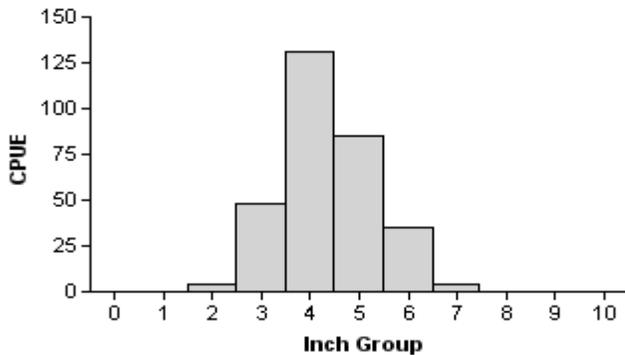
Effort = 2.0
 Total CPUE = 118.5 (27; 237)
 Stock CPUE = 105.0 (29; 210)
 PSD = 10 (2.5)

2006



Effort = 2.0
 Total CPUE = 151.5 (30; 303)
 Stock CPUE = 131.5 (27; 263)
 PSD = 14 (4.6)

2008



Effort = 2.0
 Total CPUE = 308.5 (19; 617)
 Stock CPUE = 303.5 (19; 607)
 PSD = 13 (1.6)

Figure 4. 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, Wright Patman Reservoir, Texas, 2004, 2006, and 2008.

Redear sunfish

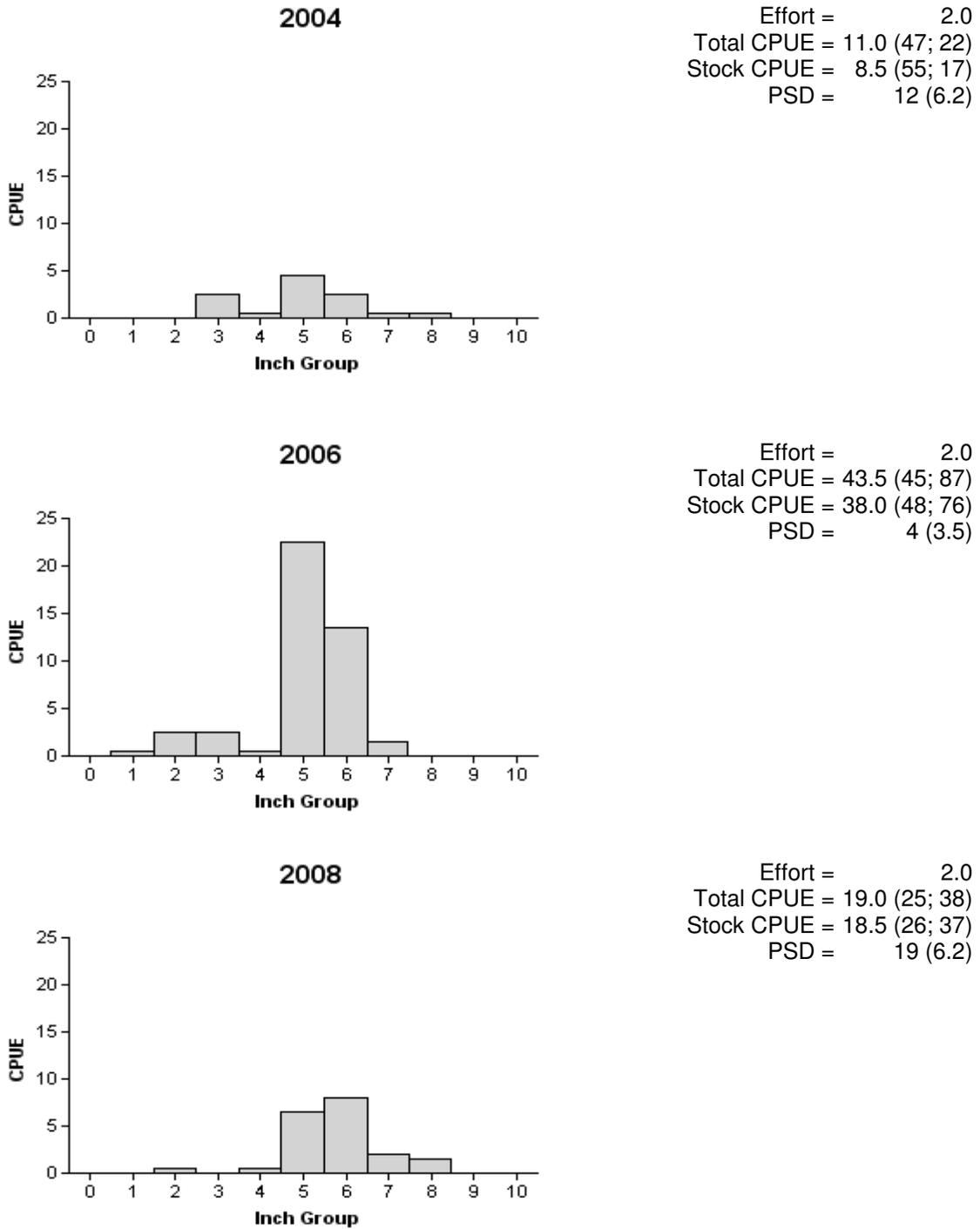


Figure 5. Number of redear sunfish caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Wright Patman Reservoir, Texas, 2004, 2006, and 2008.

Sunfishes

Table 7. Creel survey statistics for sunfish species at Wright Patman Reservoir, Texas from June 2008 through May 2009 where total catch per hour is for anglers targeting sunfish and total harvest is the estimated number of sunfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2008/2009
Directed effort (h)	2,1014.9 (57)
Directed effort/acre	0.1 (57)
Total catch per hour	6.5 (12)
Total harvest	6,115 (119)
Harvest/acre	0.3 (119)
Percent legal released	19.2

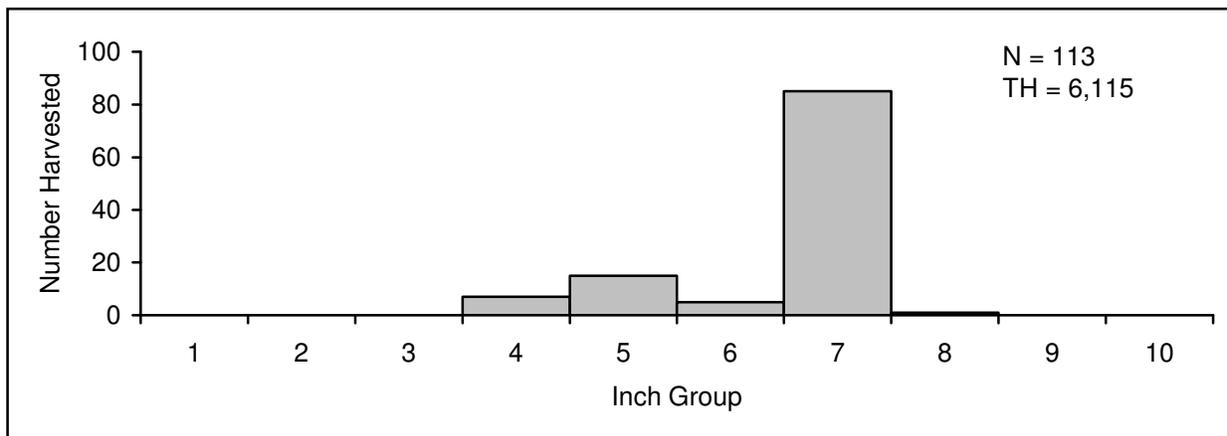


Figure 6. Length frequency of harvested sunfish species observed during creel surveys at Wright Patman Reservoir, Texas, June 2008 through May 2009, all anglers combined. N is the number of harvested sunfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

Blue catfish

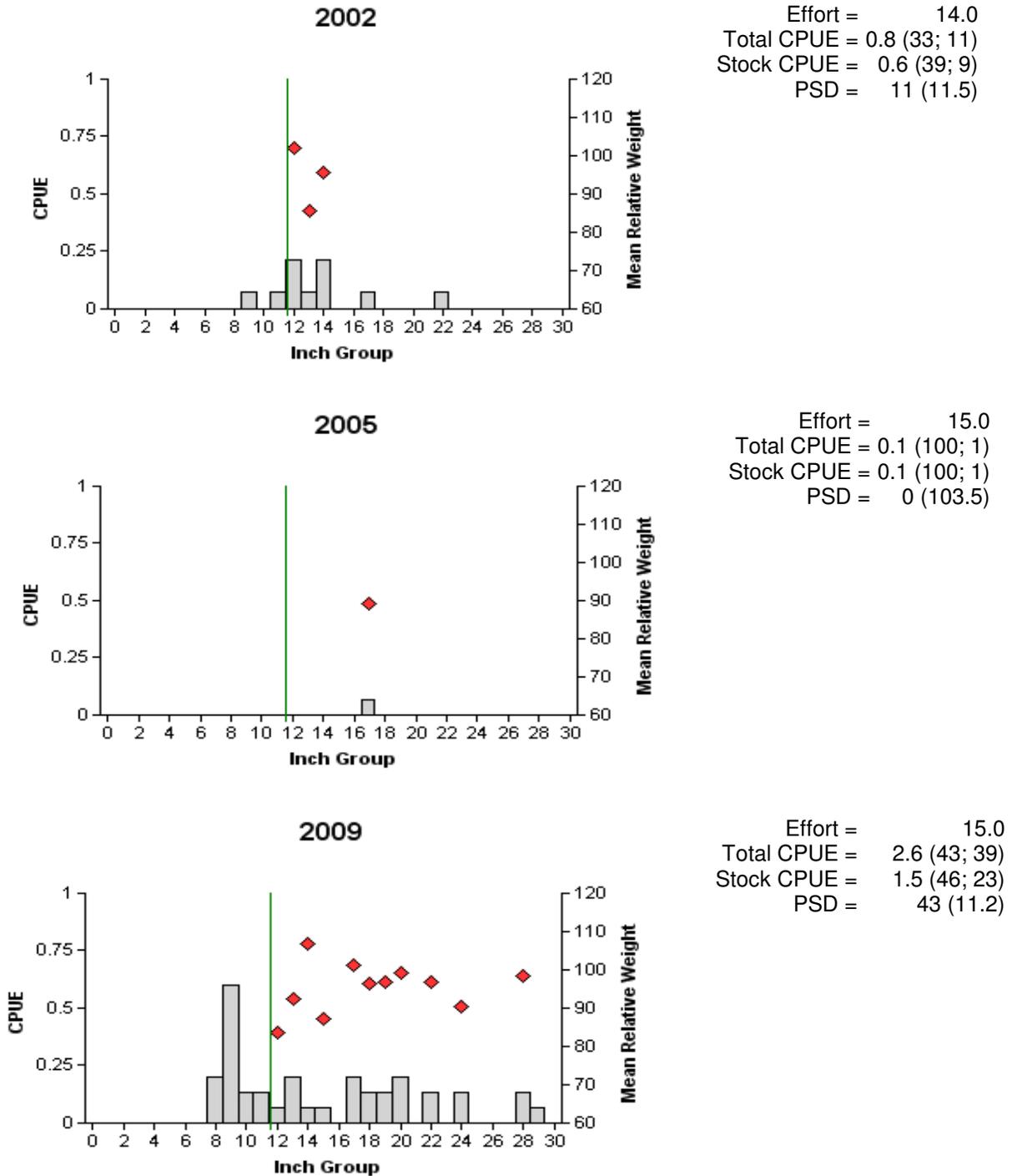
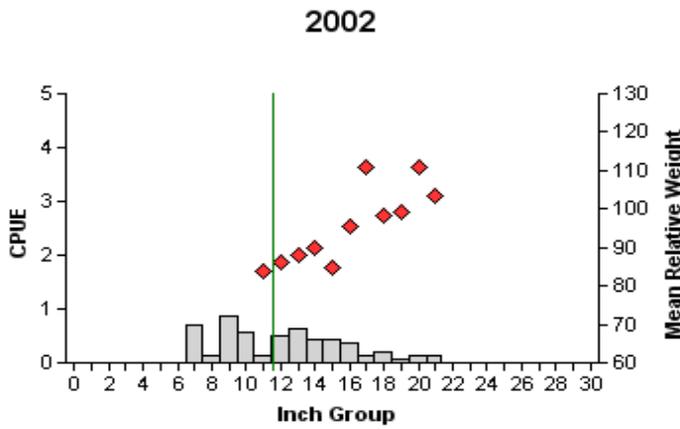
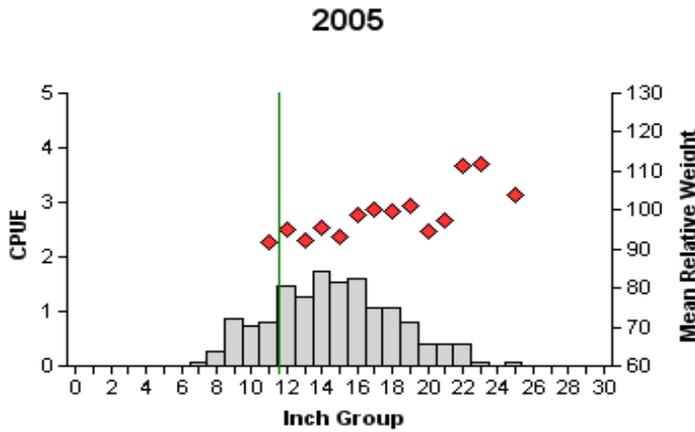


Figure 7. Number of blue catfish caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Wright Patman Reservoir, Texas, 2002, 2005, and 2009. Vertical line indicates minimum length limit.

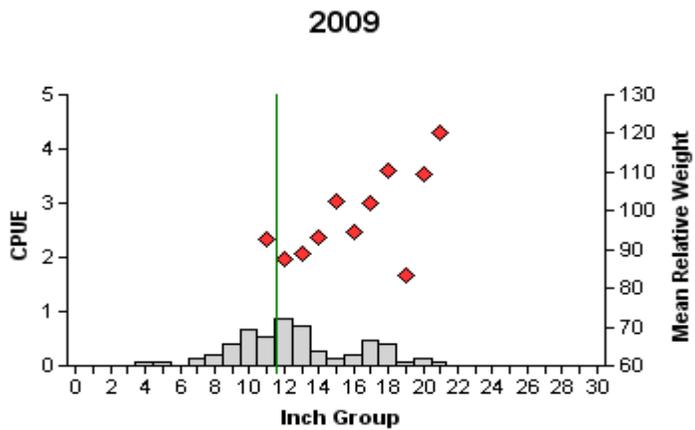
Channel catfish



Effort = 14.0
 Total CPUE = 5.5 (17; 77)
 Stock CPUE = 3.2 (17; 45)
 PSD = 33 (6.4)
 RSD-P = 0 (0)



Effort = 15.0
 Total CPUE = 14.6 (14; 219)
 Stock CPUE = 12.7 (15; 190)
 PSD = 46 (4.0)
 RSD-P = 1 (0.5)



Effort = 15.0
 Total CPUE = 5.4 (16; 81)
 Stock CPUE = 3.9 (17; 58)
 PSD = 34 (6.9)
 RSD-P = 0 (0)

Figure 8. 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, Wright Patman Reservoir, Texas, 2002, 2005, and 2009. Vertical line indicates minimum length limit.

Channel catfish

Table 8. Creel survey statistics for channel catfish at Wright Patman Reservoir, Texas from June 2008 through May 2009 where total catch per hour is for anglers targeting catfish and total harvest is the estimated number of channel catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2008/2009
Directed effort (h)	73,242 (17)
Directed effort/acre	3.6 (17)
Total catch per hour	1.4 (42)
Total harvest	60,741 (27)
Harvest/acre	3.0 (27)
Percent legal released	6.1

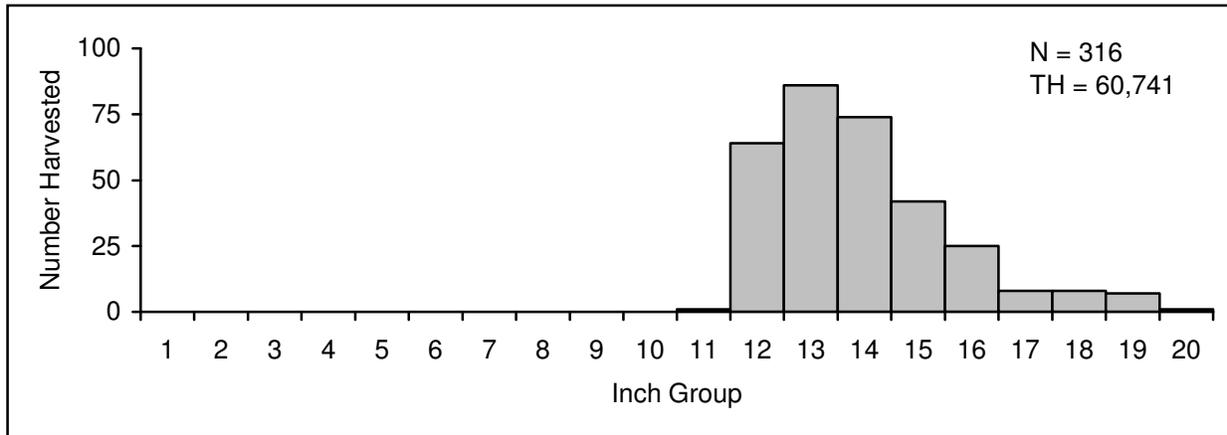
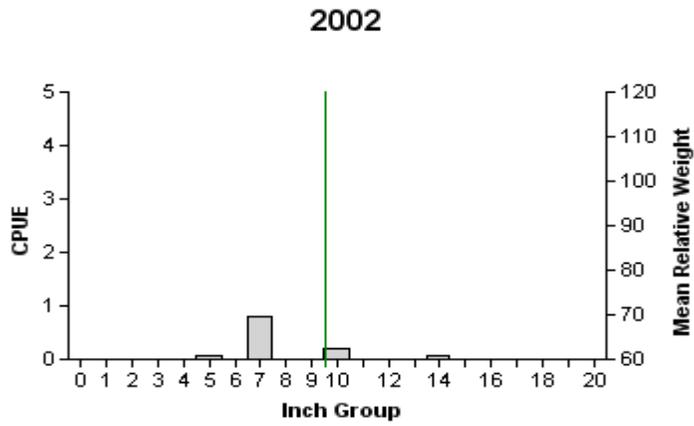
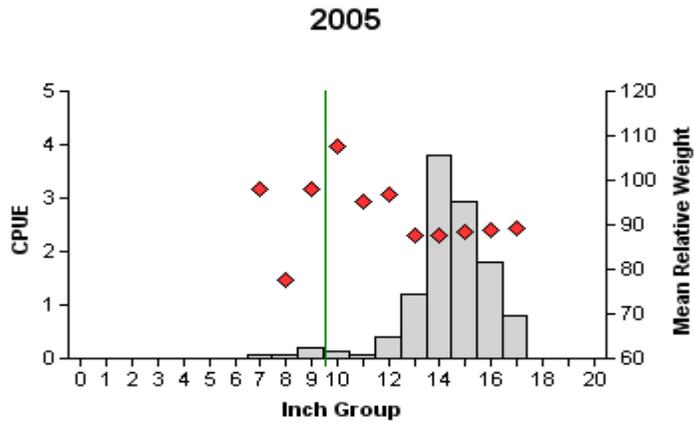


Figure 9. Length frequency of harvested channel catfish observed during creel surveys at Wright Patman Reservoir, Texas, June 2008 through May 2009, all anglers combined. N is the number of harvested channel catfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

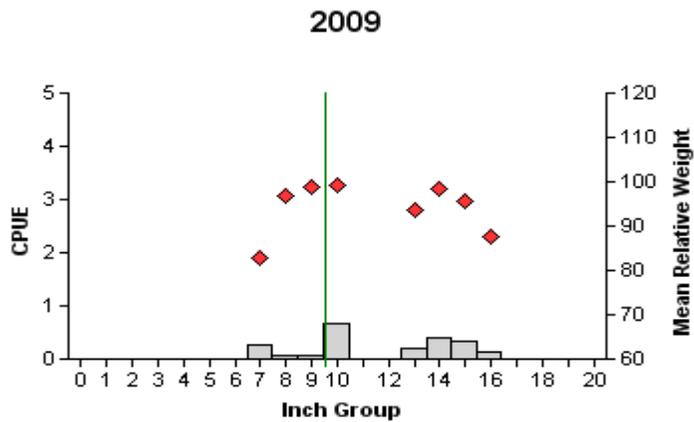
White bass



Effort = 14.0
 Total CPUE = 1.1 (62; 16)
 Stock CPUE = 1.1 (62; 15)
 PSD = 27 (22.1)
 RSD-P = 7 (7.8)



Effort = 15.0
 Total CPUE = 11.5 (18; 172)
 Stock CPUE = 11.5 (18; 172)
 PSD = 99 (0.8)
 RSD-P = 95 (2.1)



Effort = 15.0
 Total CPUE = 2.1 (32; 32)
 Stock CPUE = 2.1 (32; 32)
 PSD = 84 (8.3)
 RSD-P = 50 (12.9)

Figure 10. Number of white bass 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, Wright Patman Reservoir, Texas, 2002, 2005, and 2009. Vertical lines indicate minimum length limit.

Temperate basses

Table 9. Creel survey statistics for temperate basses at Wright Patman Reservoir, Texas from June 2008 through May 2009, where total catch per hour is for anglers targeting yellow bass and total harvest is the estimated number of temperate basses (white and yellow bass) harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2004/2005
Directed effort (h)	916.0 (95)
Directed effort/acre	0.1 (95)
Total catch per hour	3.4*
Total harvest	3,055 (147)
White bass	284 (636)
Yellow bass	2,771 (97)
Harvest/acre	0.2 (147)
White bass	0.01 (636)
Yellow bass	0.1 (97)
Percent legal released (white bass)	76.9

*Sample size too small to calculate RSE.

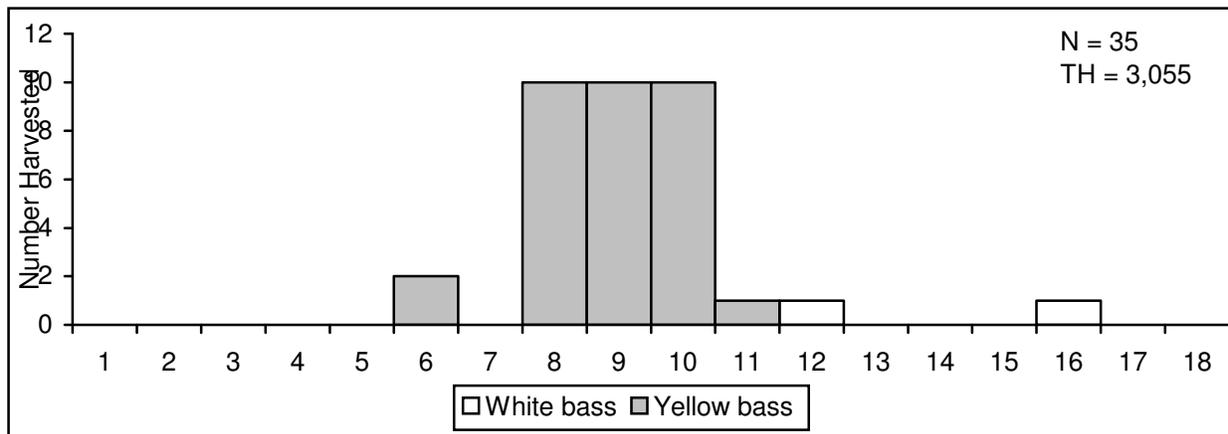


Figure 11. Length frequency of harvested white bass observed during creel surveys at Wright Patman Reservoir, Texas, June 2008 through May 2009, all anglers combined. N is the number of harvested temperate basses observed during creel surveys, and TH is the total estimated harvest for the creel period.

Largemouth bass

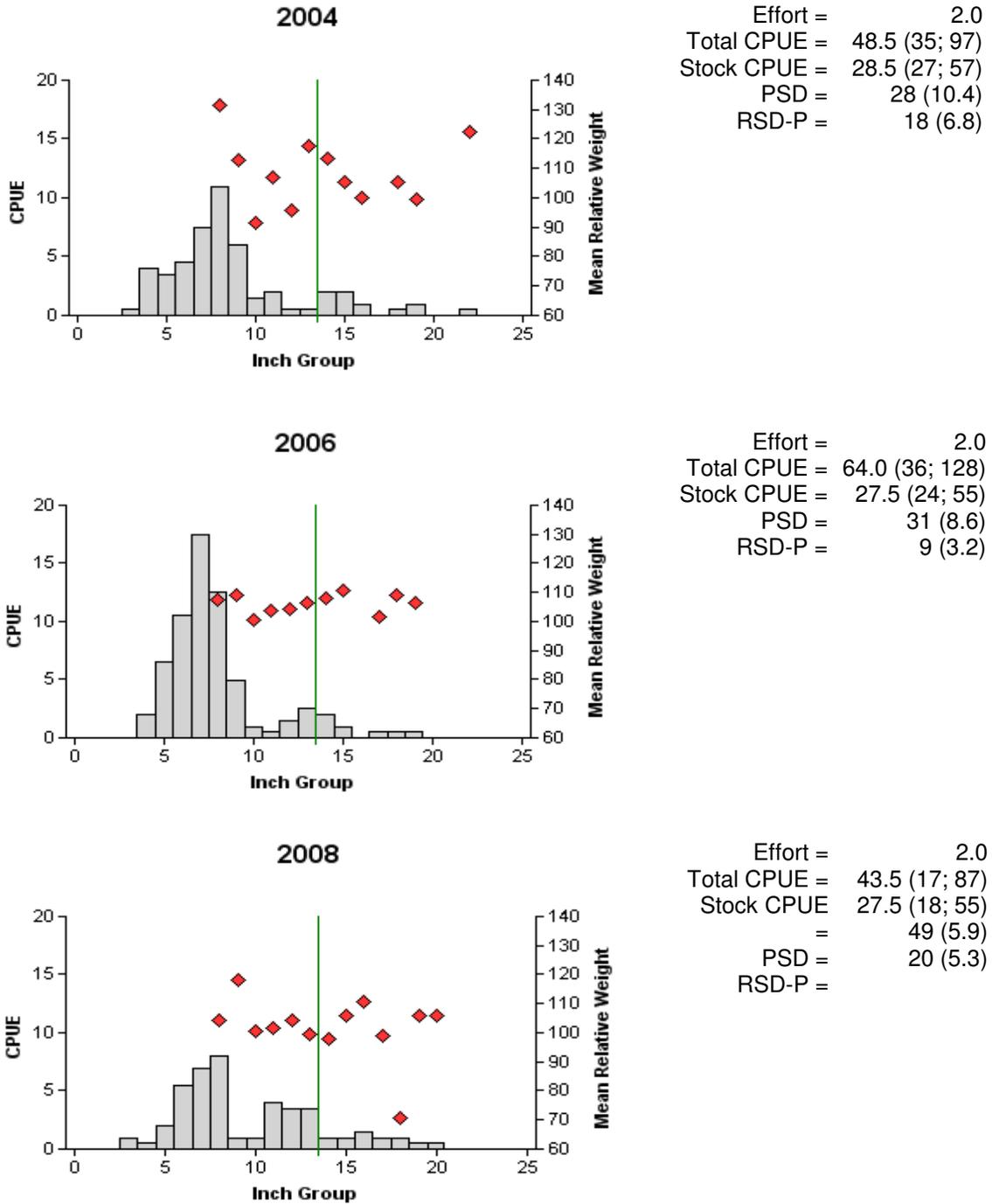


Figure 12. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Wright Patman Reservoir, Texas, 2004, 2006, and 2008. Vertical lines indicate minimum length limit.

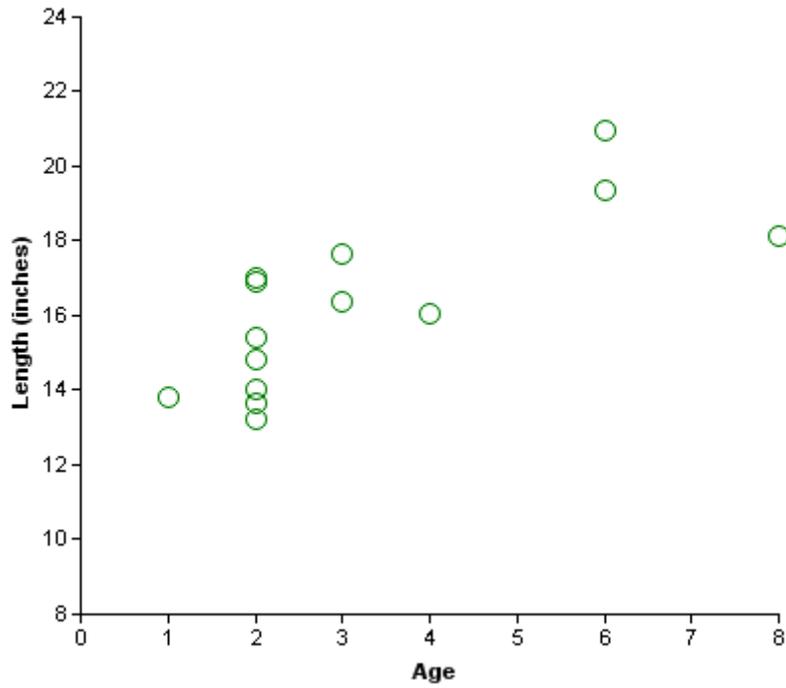


Figure 13. Length-at-age for largemouth bass collected by electrofishing at Wright Patman Reservoir, Texas, September-October 2008.

Largemouth bass

Table 10. Creel survey statistics for largemouth bass at Wright Patman Reservoir, Texas from June 2008 through May 2009, where total catch per hour is for anglers targeting largemouth bass and total harvest is the estimated number of largemouth bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2008/2009
Directed effort (h)	57,262.6 (21)
Directed effort/acre	2.8 (21)
Total catch per hour	0.9 (25)
Total harvest	15,354 (46)
Harvest/acre	0.8 (46)
Percent legal released	25.4

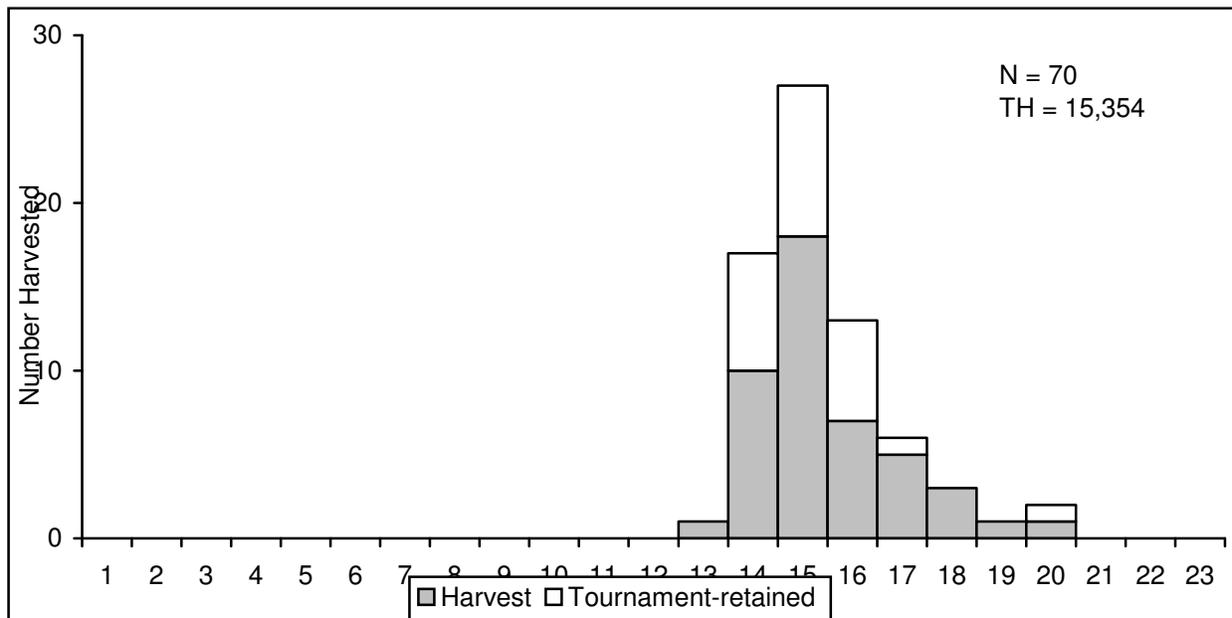


Figure 14. Length frequency of harvested largemouth bass observed during creel surveys at Wright Patman Reservoir, Texas, June 2008 through May 2009, all anglers combined. N is the number of harvested largemouth bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 11. Results of genetic analysis of largemouth bass collected by fall electrofishing, Wright Patman Reservoir, Texas, 1991, 1993, 1997, 2000, 2004, and 2006. FLMB = Florida largemouth bass, NLMB = Northern largemouth bass, F1 = first generation hybrid between a FLMB and a NLMB, Fx = intergrade between a FLMB and a NLMB. Since 2006, analyses have been conducted using DNA microsatellite analysis. Prior to that time, starch gel electrophoresis was employed.

Year	Sample size	Genotype				% FLMB alleles	% pure FLMB
		FLMB	F1	Fx	NLMB		
1991	30	2	0	0	28	6.7	6.7
1993	30	0	0	0	30	0.0	0.0
1997	27	0	1	1	25	2.7	0.0
2000	11	0	1	0	10	4.5	0.0
2004	60	0	4	5	50	5.9	0.0
2006	36	0	^a	14	22	9.2	0.0

^a Determination of hybrid status not conducted.

White crappie

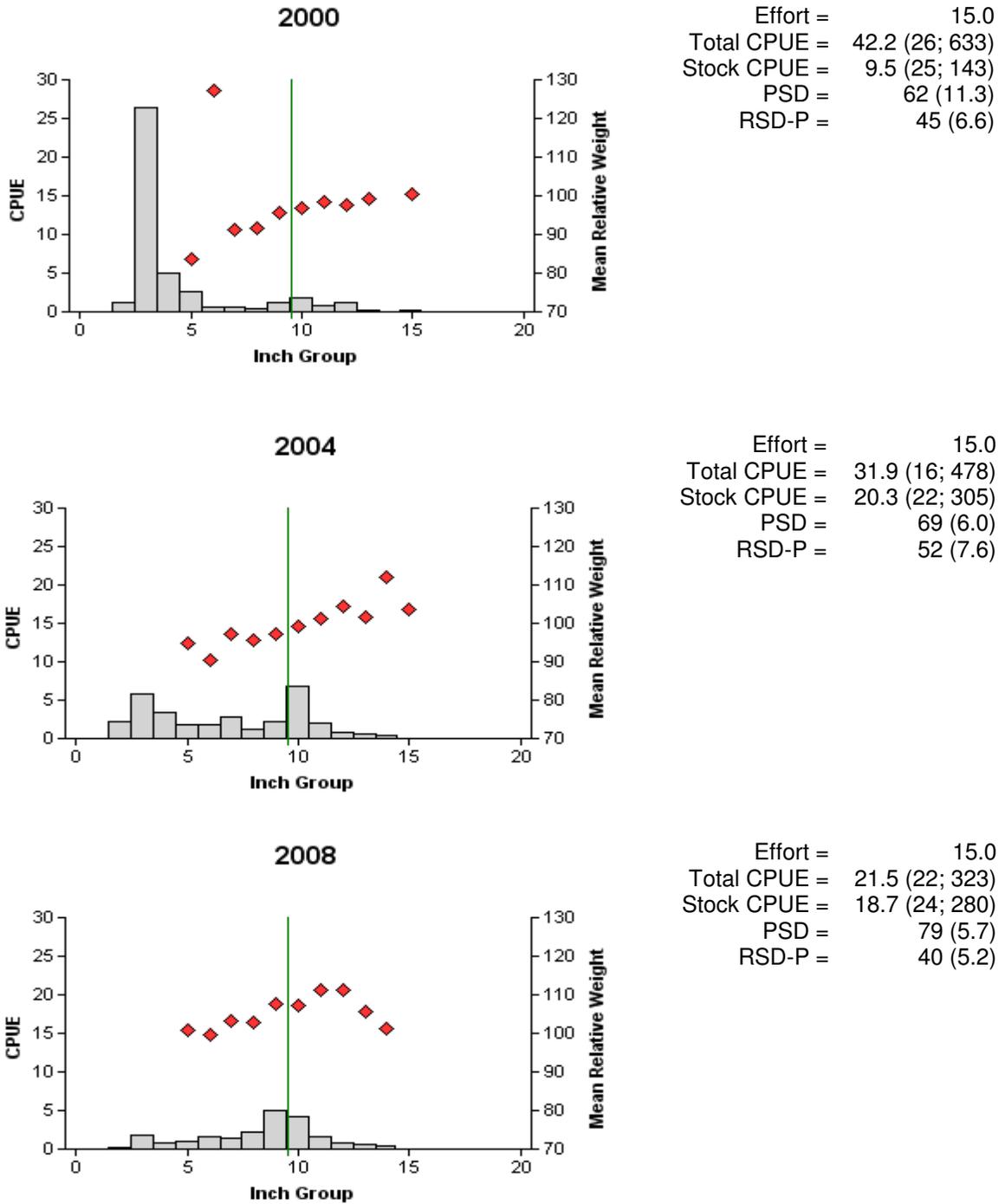


Figure 15. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Wright Patman Reservoir, Texas, 2000, 2004, and 2008. Vertical lines indicate minimum length limit.

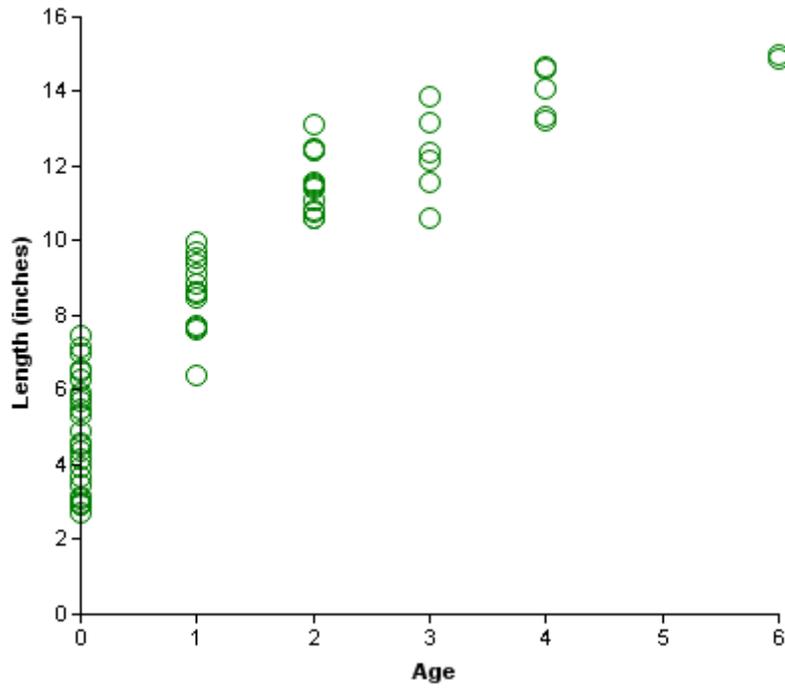


Figure 16. Length at age for white crappie collected by trap netting at Wright Patman Reservoir, Texas, November 2008.

Black crappie

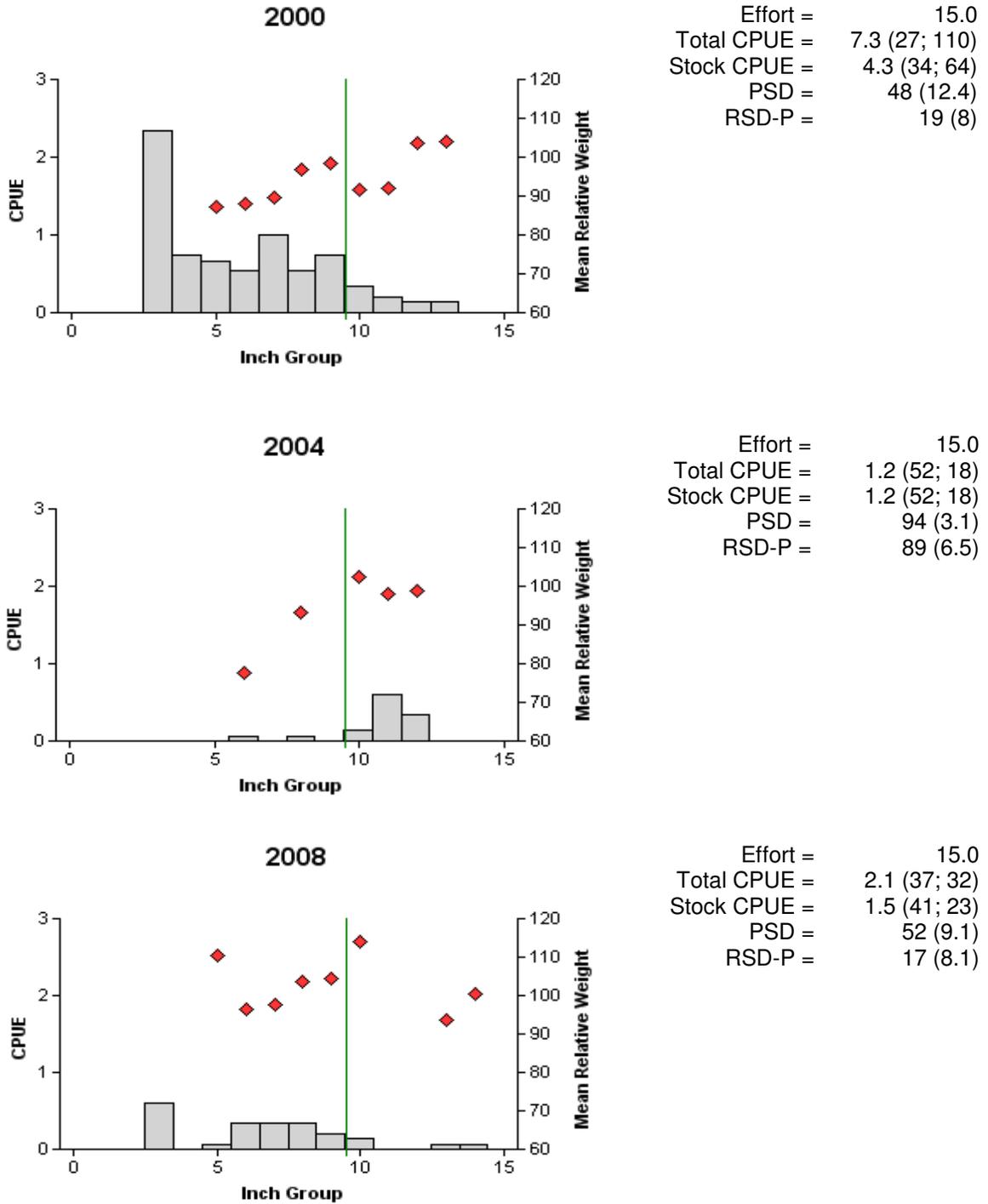


Figure 17. Number of black crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Wright Patman Reservoir, Texas, 2000, 2004, and 2008. Vertical lines indicate minimum length limit.

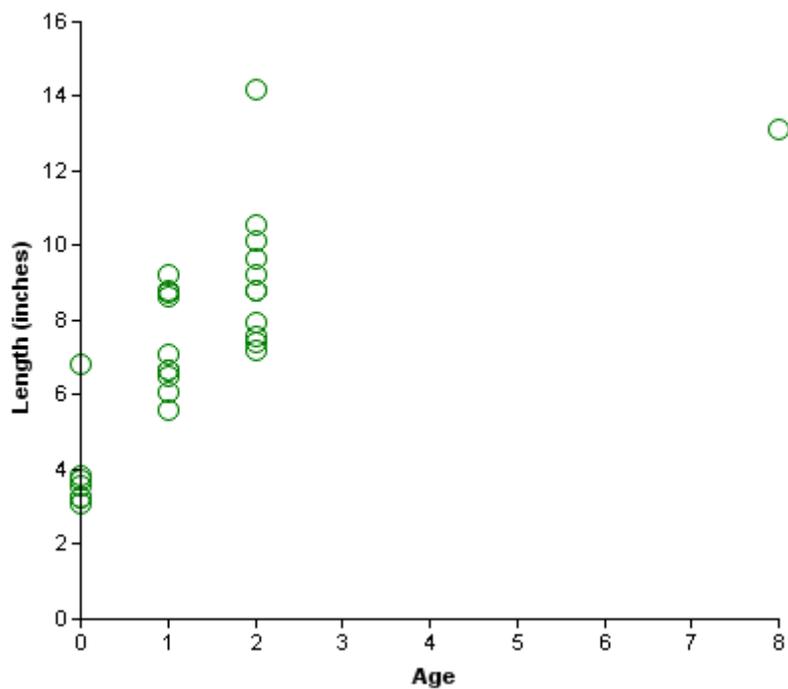


Figure 18. Length at age for black crappie collected by trap netting at Wright Patman Reservoir, Texas, November 2008.

Crappie

Table 12. Creel survey statistics for white and black crappie at Wright Patman Reservoir, Texas from June 2008 through May 2009, where total catch per hour is for anglers targeting crappie and total harvest is the estimated number of crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2008/2009
Directed effort (h)	98,762.2 (21)
Directed effort/acre	4.9 (21)
Total catch per hour	2.7 (16)
Total harvest	69,896 (51)
White crappie	53,077 (44)
Black crappie	8,068 (71)
Crappie (unidentified)	8,751 (71)
Harvest/acre	3.4 (51)
White crappie	2.6 (44)
Black crappie	0.4 (71)
Crappie (unidentified)	0.4 (71)
Percent legal released	1.2

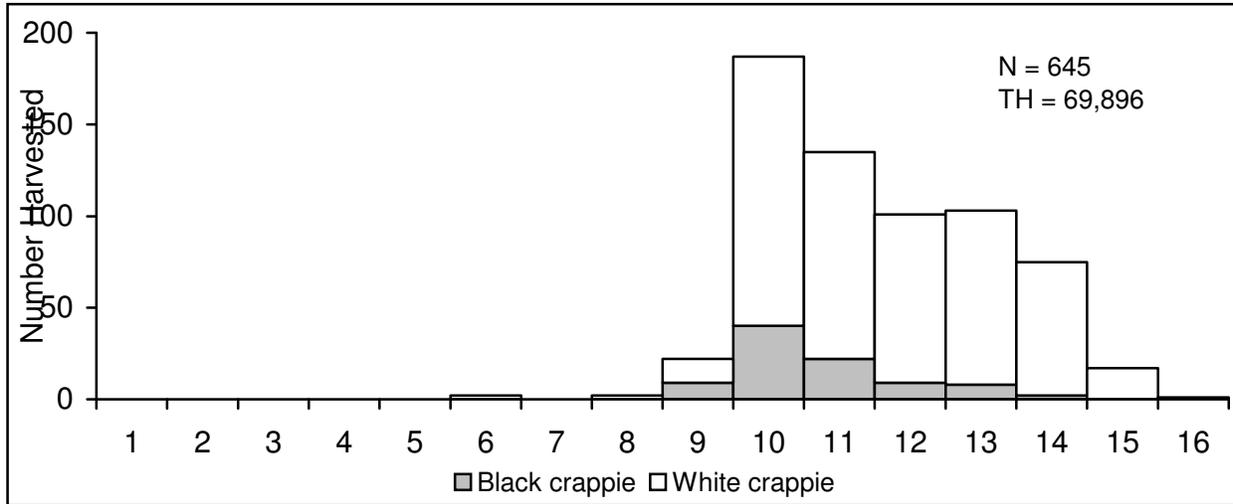


Figure 19. Length frequency of harvested white and black crappie observed during creel surveys at Wright Patman Reservoir, Texas, June 2008 through May 2009, all anglers combined. N is the number of harvested crappie observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 13. Proposed sampling schedule for Wright Patman Reservoir, Texas. Gill netting surveys are conducted in the spring, vegetation surveys are conducted in the summer, and electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

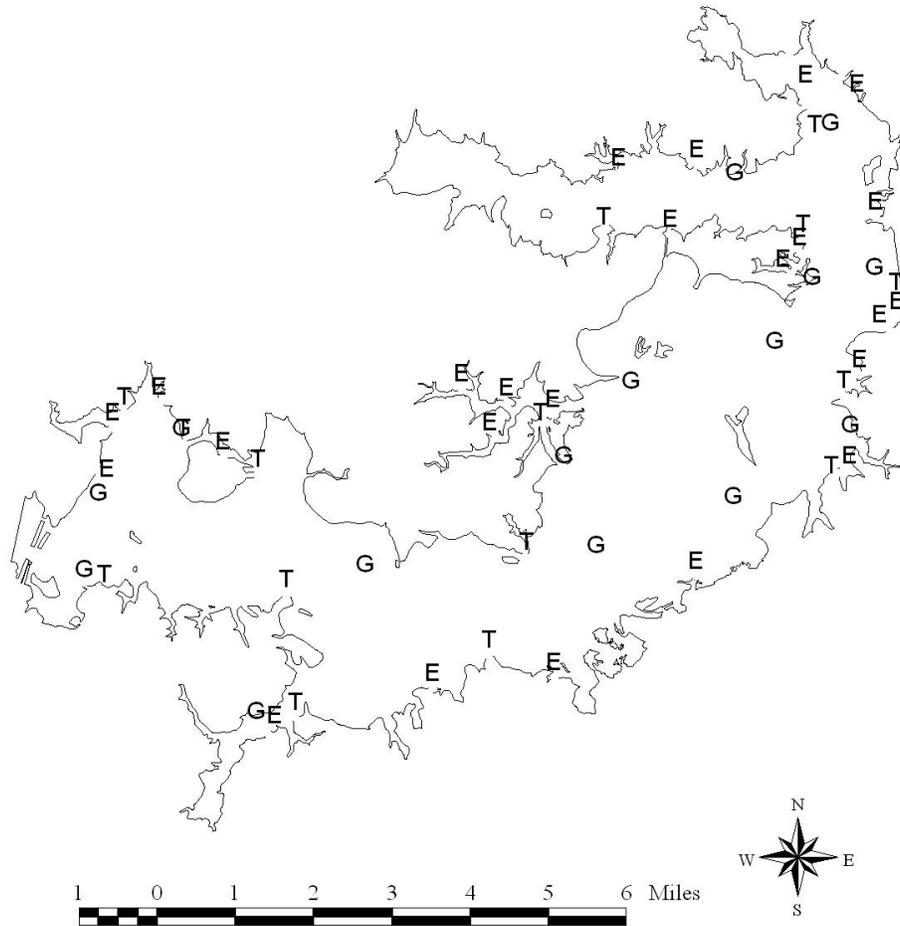
Survey Year	Vegetation	Electrofisher	Trap net	Gill net	Report
Summer 2009 - Spring 2010	A				
Summer 2010 - Spring 2011	A				
Summer 2011 - Spring 2012	A				
Summer 2012 - Spring 2013	S	S	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Wright Patman Reservoir, Texas, 2008-2009.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					578	289.0
Threadfin shad					83	41.5
Blue catfish	39	2.6				
Channel catfish	81	5.4				
White bass	32	2.1				
Warmouth					1	0.5
Bluegill					617	308.5
Longear sunfish					91	45.5
Redear sunfish					38	19.0
Largemouth bass					87	43.5
White crappie			323	21.5		
Black crappie			32	2.1		

APPENDIX B



Location of sampling sites, Wright Patman Reservoir, Texas, 2008-2009. Trap netting, gill netting, and electrofishing stations are indicated by T, G, and E, respectively.