PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-32

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2006 Survey Report

Richland Chambers Reservoir

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SURVEY AND MANAGEMENT SUMMARY

The Richland Chambers fish community was surveyed from June 2006-May 2007 using electrofishing, gill nets, and trap nets. A vegetation survey was conducted in September 2006. An access creel survey, conducted from June 2006-November 2006 and March 2007–May2007, collected angler use and harvest information. This report summarizes results of the surveys and contains a management plan based on those findings.

- **Reservoir Description:** Richland Chambers Reservoir is a 41,356-acre reservoir on the Richland and Chambers Creek tributaries of the Trinity River. Boat access is adequate, but bank angler access is limited. Boats can be launched from 10 boat ramps surrounding the lake, of which 6 are designated as public access. There are no handicap-specific facilities, but most are accessible. Aquatic vegetation was scarce due to drought. Anglers expended approximately 97,870 hours of fishing effort and spent an estimated $1,213,312 during the summer, fall, and spring creel surveys.

- **Management history:** Important sport fish include sunfishes, largemouth bass, white bass, palmetto bass, blue catfish, channel catfish, white crappie and black crappie. Supplemental largemouth bass sampling was conducted in 2004 and stockings were conducted in 2006. Supplemental gill net sampling for temperate basses and catfishes was conducted in 2005. An additional access creel survey was conducted in 2004-2005.

- **Fish Community**
  - **Prey species:** Threadfin shad were present in the reservoir and electrofishing catch rate was higher than in previous surveys. Electrofishing catch rate of gizzard shad and threadfin shad was good. Catch rates of sunfishes ≤ 4 inches was low but overall prey availability was adequate for sport fishes.

  - **Catfishes:** Angling success of catfish at Richland Chambers was excellent. The catfish community was dominated by blue catfish, and gill net catch rates were high. Channel catfish were present but occurred at lower abundance.

  - **Temperate basses:** White bass and palmetto bass were the most sought after species and made up 45% of the directed fishing effort in 2006-2007. The gill net catch rate of white bass has declined from 2002 and may be related to poor year class strength resulting from low river flows. Gill net catch rate of palmetto bass was higher than any previous survey.

  - **Largemouth bass:** Largemouth bass were the second most sought after species by anglers at Richland Chambers during 2006-2007. Electrofishing catch rate of fish ≥8 inches was similar to 2004, but body condition of largemouth bass remains poor for most size classes. Florida largemouth bass stockings were continued to enhance the fishery.

  - **Crappie:** Crappie were the third most sought after sportfish during creel surveys in 2004-2005 and 2006-2007. Both white crappie and black crappie were present and trap net catches of white crappie were the highest on record. Overall angler catch rate of crappie was good.

- **Management strategies:** Conduct fall electrofishing in 2008 to assess largemouth bass relative abundance, size distribution, and growth. Conduct supplemental daytime electrofishing survey in fall 2008 to collect at least 30 age-0 largemouth bass for genetic analysis and thus assess the success the Florida largemouth bass stockings of 2006 and 2007. Conduct spring gill netting in 2009 to monitor palmetto bass stocking success. Continue to offer technical assistance to the controlling authority in hydrilla management. Continue to promote Richland Chambers Reservoir by way of news releases.

INTRODUCTION

This document is a summary of fisheries data collected from Richland Chambers Reservoir in 2006-2007. The purpose of this 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 2006-2007 data for comparison where appropriate.

Reservoir Description

Richland-Chambers Reservoir is a 41,356-acre reservoir on the Richland and Chambers Creek tributaries of the Trinity River. The reservoir was completed in 1987 to provide water for municipal and industrial purposes. Aquatic vegetation has traditionally been scarce (occupying <10% of the shoreline). In 2002, both hydrilla *(Hydrilla verticillata)* and native aquatic vegetation expanded to occupy a substantial portion of the littoral area (Ott and Bister, 2003). However drought conditions from late 2005 through March 2007 resulted in senescence of most aquatic vegetation. Less than 1 acre of any species was identified during the September 2006 survey. Richland Chambers Reservoir is in the upper range of mesotrophic reservoirs in Texas with a mean TSI *chl-a* of 49.97 (Texas Commission on Environmental Quality 2002). The littoral zone consists of a variety of physical habitat types (Table 4). The majority of the shoreline is featureless (62%), while combinations consisting of bulkhead, eroded shoreline, rocky shoreline, and boat docks make up the remainder. Boat access is adequate, but bank angler access is limited. Boats can be launched from 10 boat ramps surrounding the lake, of which 6 are designated as public access. There are no handicap-specific facilities, but most are accessible. Other descriptive characteristics for Richland Chambers Reservoir are found in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Ott and Bister 2003) included:

1. Monitor largemouth bass size distribution and Florida largemouth bass (*Micropterus salmoides floridanus)* allele frequency in the population.
   Action: Supplemental electrofishing and electrophoresis sampling was conducted in fall 2004. Based on those results 420,129 Florida largemouth bass fingerlings were stocked in 2006 in an embayment stocking; an additional 500,680 were stocked in 2007.
2. Stock palmetto bass *(Morone chrysops x M. saxatilis*) at 10/acre. Monitor palmetto bass population by gill netting in spring 2005. Assess angler utilization of palmetto bass fishery by conducting a creel survey from June 2004 to May 2005 and June 2006 to May 2007.
   Action: Supplemental gill netting was conducted in 2005 to monitor the population. Stocking was reinstated (at a reduced rate due to availability) in 2002 and 2003. Stocking was conducted at full rate (10/acre) in 2005 and half rate in 2006. An access-point angler creel survey was conducted from June 2004 to May 2005 and from June-November 2006 and March-May 2007 to assess angler utilization.
2. Fishery could benefit from additional promotion.
   Action: Lake-specific regulation posters were provided to vendors of angling-oriented businesses serving the Richland Chambers Reservoir vicinity. Regulation posters were also provided to Tarrant Regional Water District to post at access sites. Outdoor writers around the reservoir were provided with news releases and information regarding the fishery.
4. Incorporate an angler attitude and opinion survey into the 2004-2005 creel survey to determine angler acceptance of a trophy blue catfish regulation. Modify procedures in the 2004-2005 creel survey to allow capture of passive gear angler effort, catch, harvest, and harvest size distribution.
   Action: A regulation change was proposed in 2004 to protect trophy blue catfish, but was rejected.

Harvest regulation history: Sport fishes in Richland Chambers Reservoir are currently managed with statewide harvest regulations (Table 2). Regulations have not changed since the reservoir was impounded in 1987.

Stocking history: Palmetto bass and Florida largemouth bass are the most frequently stocked species at Richland Chambers Reservoir. Palmetto bass fingerlings were first stocked in 1987 and subsequent stockings have been continued to maintain a fishery. Florida largemouth bass were initially stocked in 1988 and have been stocked periodically since then to enhance the trophy potential of the fishery. A complete stocking history is found in Table 3.

Vegetation/habitat history: Aquatic vegetation at Richland Chambers Reservoir has traditionally been scarce (occupying < 10% of the reservoir). This is primarily due to a combination of moderately turbid water and wave action. In 2002, both hydrilla and native aquatic vegetation were able to expand enough to occupy a substantial portion (50%) of the shoreline. However drought conditions beginning in late 2005 through March 2007 resulted in senescence of most aquatic vegetation. Less than 1 acre of any species was identified during the September 2006 survey. The physical habitat types have remained constant over the last decade; the rate of shoreline development has stabilized (Table 4).

In 2005 several vegetation control permits were issued by TPWD to individuals and subdivisions at Richland Chambers Reservoir. The primary species controlled under these permits was hydrilla.

METHODS

Fishes were collected by electrofishing (2 hours at 24, 5-min stations), gill netting (14 net nights at 14 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). A vegetation survey was conducted in September 2006; however, due to low water level (9.5 feet below pool)only the central portion of the reservoir was sampled. An access creel survey was conducted from June 2004–May 2005 and May–November 2006 and March–May 2007. Surveys consisted of 9 creel days per quarter (4 weekdays and 5 weekend days); angler counts and interviews were conducted two boat ramps on each creel day. 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 (Wr)] 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. For white bass *(M. chrysops)*, palmetto bass, and largemouth bass *(Micropterus salmoides spp.)*, ages were determined using otoliths from 13 specimens with lengths ranging from 9.6-12 inches for white bass and 12.9–15.8 inches for largemouth bass. For white crappie *(Pomoxis annularis)* ages were determined using otoliths from 5 fish per 10mm group. Source for water level data was the United States Geological Survey (USGS) website.

RESULTS AND DISCUSSION

Habitat: A vegetation survey of the littoral zone was conducted in 2006. Native submersed species included stonewort *(Chara spp)*, water stargrass *(Heteranthera dubia)*, and pondweed *(Potamogeton spp.)*. Emergent vegetation was composed of water primrose *(Ludwigia spp)* and smartweed *(Polygonium spp)* and total coverage was less than 1000 yards of shoreline. Fluctuating water levels (Figure 1) may be the cause for the overall decrease in emergent vegetation from the previous survey in 2002 (Ott and Bister 2003). Native submersed vegetation occupied less than 1 acre of the total reservoir surface area (Table 4). Hydrilla (exotic submersed) was still present, but only covered a trace of the total area. Because of

the low water levels in summer 2006 bulkhead and boat docks did not contribute to the structural habitat. Submersed trees and stumps were still present in the upper Richland and Chambers creeks. Open water was abundant and was suitable for pelagic predators.

Creel: Due to the low level of fishing effort documented during the winter quarter of the 2002-2003 and 2004-2005 creel surveys; the 2006-2007 winter creel quarter was not sampled. Directed fishing effort by anglers was highest for temperate basses (45%), followed by anglers fishing for black basses (27%), (Table 5). Total fishing effort for all species at Richland Chambers was 97,870 hours from June 2006 – May 2007, and anglers spent an estimated $1,213,312 on direct expenditures (Table 6).

Prey species: Both threadfin shad (*Dorosoma petenense)* and gizzard shad (*D. cepedianum*) were present in Richland Chambers Reservoir (Appendix A). The gizzard shad population was composed primarily of fish less than six inches (Figure 2); Index of vulnerability (IOV) was high (91). Total electrofishing catch rate of gizzard and threadfin shad combined was ~500 fish/hour. Sunfish abundance was low (32.8/hour). Bluegill *(Lepomis macrochirus)* were the most abundant sunfish species; longear sunfish and redear sunfish *(L. megalotis & L. microlophus)* were also collected. The size distributions of sunfish were skewed toward fish <5 inches, thus primarily functioning as prey. There was no directed effort, catch, or harvest of sunfishes reported during the 2006-2007 creel.

Catfish: Catfish *(Ictalurus spp.)* accounted for approximately 7% of the total directed effort made by rod and reel anglers on Richland Chambers Reservoir and is similar to previous surveys (Table 5). Fishing effort from passive gears (trotline and jugline) were not determined but is thought to be substantial. Creel survey results suggest high angler catch rates for both channel catfish *(I. punctatus)* and blue catfish *(I. furcatus)* (Table 7). Richland Chambers reservoir supports an excellent blue catfish population. Gill netting in 2007 indicated a decrease in blue catfish abundance (12.4/nn) compared to 2003 (23.0/nn) and 2005 (19.6/nn), (Figure 4). Age and growth was not conducted; however, data collected in 2002 indicated blue catfish reach minimum legal-length (12 inches) during their 5th growing season (Ott and Bister 2003). Channel catfish were less abundant than blue catfish and their catch rates have fluctuated from a high of 5.7/nn in 1995 to a low of 0.6/net night in 2007 (Figure 5). Age and growth data for channel catfish was not collected in 2007; however, data collected in 2000 indicated that they reached 12 inches during their 4th growing season (Ott and Bister 2003).

Temperate basses: Temperate basses *(Morone spp.)* were the most sought after species group at Richland Chambers accounting for 45% of the total directed angling effort. Angler catch rate remains excellent for temperate basses with anglers catching 6.4/hour. An estimated 103,478 white bass were harvested over the 9-month creel period, which was similar to previous estimates (Table10). White bass were collected up to 18 inches in length in gill nets (Figure 7). White bass gill net catch rate in 2007 (3.2/net night) has declined since previous surveys (2003;11.1and 2005; 6.8). The decline in abundance may be attributed to low water levels and lack of inflow from 2005-2006, which would have negatively affected spawning success. Average age for white bass at 10-inches (9.6-12.0) was 1.1 years (N =11, range 1-2 years).
Gill net catch rate of palmetto bass *(M. chrysops x saxatilis)* was the highest on record (6.1/net night) (Figure 8). The high catch rate of palmetto bass is a likely result of the stocking (10/acre) received in 2005 (Table 3). Average age for palmetto bass at 18-inches (16.8-18.8) was 2.1 years (N =13, range 2-3 years).

Largemouth bass: Angler catch rate of largemouth bass was adequate (0.4/hour) and was similar to previous surveys (Table 9). Directed effort toward largemouth bass has declined compared to previous surveys and may be related to low water levels and subsequent changes in habitat. Anglers at Richland Chambers harvested 55% of the total legal catch, but harvest is still extremely low at an estimated 3,285 fish. Despite stable angler success, 2006 electrofishing catch rate (14.7/hour) decreased to a historical low. This decrease was likely due to low water conditions during 2006 electrofishing. Stock-size (≥8 inches) catch rates (13.1/hour) were similar to that of previous surveys (Figure 10). Size distribution of largemouth bass was good; PSD=77 which was slightly above the target range of 40-70. Average age for largemouth bass at 14 inches (12.9-15.8) was 2.3 years (N =13, range 1-4 years). Relative weight for most size classes of largemouth bass (Figure 10) was less than desirable, and can possibly be attributed

to the lack of vegetated habitats needed for optimal foraging efficiency. The length frequency of harvested largemouth observed during the creel survey was similar to the size distribution in the electrofishing survey (Figure 11), suggesting that fish are harvested in proportion to their abundance. Richland Chambers Reservoir received embayment stockings of Florida largemouth bass (~500,000) in 2001 and 2002, which may have been responsible for the increase in Florida largemouth bass alleles from 26% in 2000 to 55% in 2004 (Table 10). The percentage of pure Florida largemouth bass in the population similarly increased from 7% in 2000 to 12% in 2004.

Crappie: Crappie *(Pomoxis spp.)* were the third most sought after sport fish group at Richland Chambers Reservoir in 2006-2007 accounting for 8% of the directed effort (Table 5). Angler catch rate of crappie was 2.0/h. An estimated 15,805 white crappie and 1,757 black crappie *(P. nigromaculatus)* were harvested. Length frequency of harvested white crappie was good, with individuals reaching 14 inches. The trap net catch rate of white crappie in 2006 (43.5/nn) was higher than the 1998 and 2002 surveys (20.1 and 4.4/nn, respectively;Figure 12). The size distribution of white crappie in 2006 was good (PSD=39); and exhibited a strong 2006 year class. Relative weight was adequate (Wr > 90) for all length classes. Growth rate of white crappie was excellent, with a mean length at age-1 of 10.1 inches (Table 11). The trap net catch rate of black crappie in 2006 (0.8/nn) was lower than the 1998 (5.0/nn) survey, but similar to the 2002 (0.5/nn) survey (Figure 13). Due to a low sample size, age and growth analysis was not conducted for black crappie.

Fisheries management plan for Richland Chambers Reservoir, Texas

Prepared – July 2007

ISSUE 1: Florida largemouth bass fingerlings were stocked in 2006 and 2007 to increase percent Florida largemouth bass alleles. Evaluation of this stocking is necessary to determine if > 20% allele frequency has been achieved.

MANAGEMENT STRATEGY

1. Conduct electrofishing in 2008 and 2010 to monitor largemouth bass and prey populations.
2. Conduct a supplemental daytime electrofishing if necessary to collect at least 30 age-0 or age-1 largemouth bass and assess the success of Florida largemouth bass stockings of 2006 and 2007.

ISSUE 2: Annual stockings of palmetto bass (combined with natural recruitment of white bass) have developed an excellent fishery that is utilized by many anglers and accounts for the majority of the directed effort of this reservoir. Because the high demand for this species and consumptive nature of the fishery, annual stockings are required to maintain the quality of this fishery.

MANAGEMENT STRATEGIES

1. Conduct annual stockings of palmetto bass at 10/acre.
2. Make Richland Chambers Reservoir priority 1 on district stocking request.
3. Conduct additional gill netting in spring of 2009 to evaluate palmetto bass population characteristics.
4. Conduct harvest assessment of palmetto bass during a creel survey conducted from June 2010-May 2011.

ISSUE 3: Hydrilla has been problematic enough to require treatment limited (primarily subdivision) areas in the past and has the potential to be so again.

MANAGEMENT STRATEGIES

1. Coordinate with the controlling authority to conduct reconnaissance surveys of hydrilla; provide technical assistance as necessary.
2. Continue to review treatment plans as submitted.
3. Conduct a complete habitat survey in 2010.

ISSUE 4: Richland Chambers offers substantial recreational angling opportunities and could benefit from additional promotion.

MANAGEMENT STRATEGIES

1. Continue promoting Richland Chambers in news releases and continue presentations to angling clubs promoting angling opportunities in the Dallas/Fort Worth area.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes additional electrofishing in 2008, additional gill netting in 2009, and mandatory monitoring in 2010-2011 (Table 13). Conduct a supplemental daytime electrofishing survey in 2008 to collect at least 30 age-0 or age-1 largemouth bass and assess the success of Florida largemouth bass stockings of 2006 and 2007. Optional gill netting in the spring of 2009 will provide additional trend data on the catfish and temperate bass fishery. An optional creel survey is recommended to supplement fish community data for the full survey in 2010-2011.

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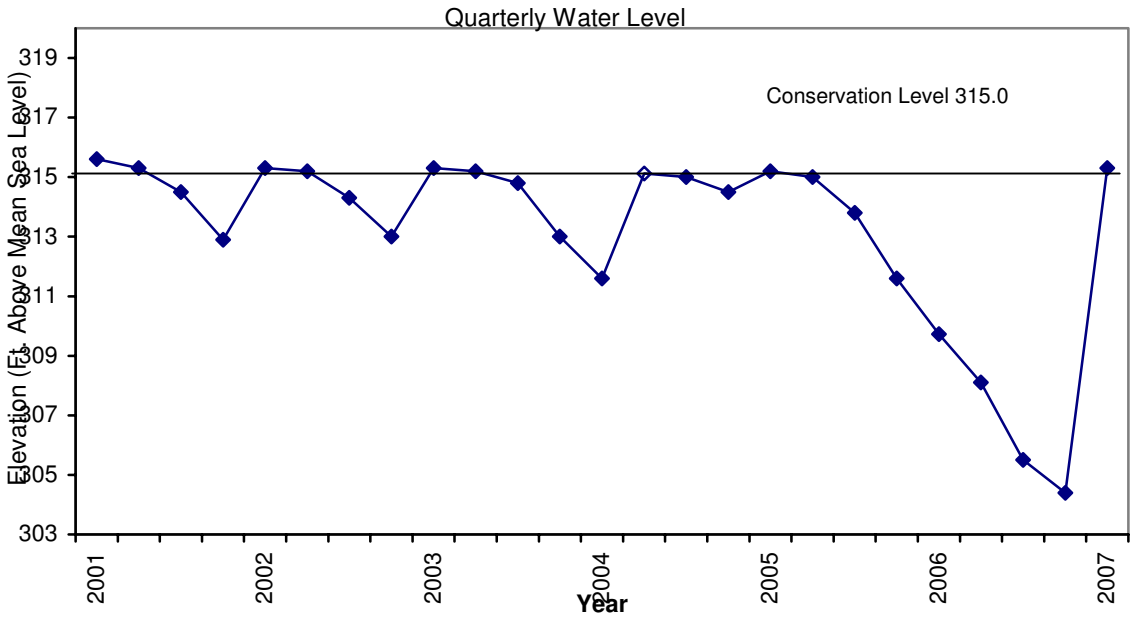


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Richland Chambers Reservoir Texas. Horizontal line represents conservation level.

Table 1. Characteristics of Richland Chambers Reservoir, Texas.

Characteristic	Description
Year completed	1987
Controlling authority	Tarrant Regional Water District
Counties	Freestone (dam), Navarro
Reservoir type	Mainstream
Shoreline Development Index (SDI)	11.2
Conductivity	300 umhos/cm

Table 2. Harvest regulations for Richland Chambers Reservoir, Texas.

Species	Bag Limit	Minimum-maximum length (inches)
Catfish: channel and blue, their hybrids and subspecies	25 (in any combination)	12-No limit
Catfish, flathead	5	18-No limit
Bass, white	25	10-No limit
Bass, palmetto	5	18-No limit
Bass, largemouth	5	14-No limit
Crappie: white and black, their hybrids and subspecies	25 (in any combination)	10-No limit

Table 3. Stocking history of Richland Chambers Reservoir, Texas. Size categories are: FRY <1 inch; FGL =1-3 inches.

Species	Year	Number	Size
Blue catfish	1988	46,972	FGL
	Total	46,972	
Channel catfish	1988	193,202	FGL
	Total	193,202	
Palmetto bass	1996	100,861	FGL
	1997	117,567	FGL
	1998	227,618	FGL
	1999	225,598	FGL
	2002	112,070	FGL
	2003	103,390	FGL
	2004	205,895	FGL
	2005	413,686	FGL
	2006	150,753	FGL
	Total	1,657,438	
Coppernose bluegill	1988	1,042,071	FGL
	1989	1,701,071	FGL
	Total	2,743,142	
Florida largemouth bass	1988	547,392	FGL
	1989	1,114,186	FRY
	1991	499,317	FRY
	1999	644	FGL
	2001	485,519	FGL
	2002	423,715	FGL
	2006	420,129	FGL
	2007	500,608	
	Total	4,556,021	

Table 4. Survey of littoral zone and physical habitat types, Richland Chambers Reservoir, Texas. Abiotic[1] habitat survey was conducted in 2002 (Ott and Bister 2003). Vegetation survey[2] was conducted in 2006. 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		Surface area	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Bulkhead[1]	16.9	5		
Bulkhead and boat dock[1]	40.0	12		
Concrete[1]	13.2	4		
Eroded shoreline[1]	51.3	16		
Eroded shoreline & boat docks[1]	1.3	<1		
Rip rap[1]	1.5	<1		
Rocky shoreline[1]	0.5	<1		
Featureless[1]	206.5	62		
Native submersed & hydrilla			<1.0	trace

[1] Abiotic habitat features.
[2] Due to low water level biotic survey was limited to the central portion of the reservoir.

Table 5. Percent directed angler effort by species for Richland Chambers Reservoir, Texas, June 2002-May 2003, June 2004-May 2005, and June 2006-November 2006 and March-May 2007.

Species	Year		
	2002-2003	2004-2005	2006-2007*
Temperate basses	37	32	45
Largemouth bass	42	54	26
Crappie spp.	14	6	8
Catfish spp.	7	4	7
Anything	1	4	14

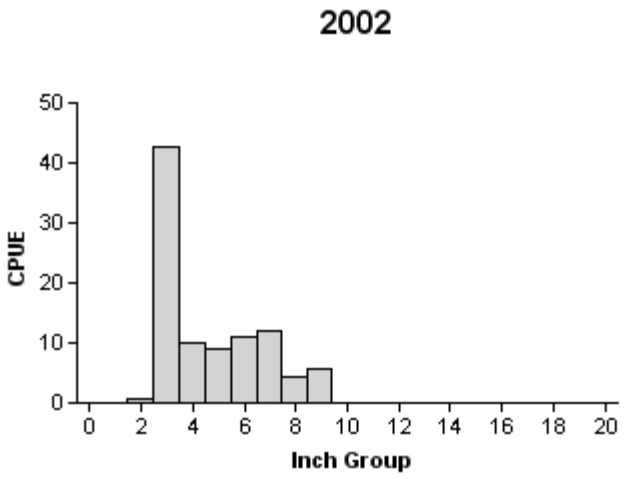
* Winter quarter was not included in the 2006-2007 creel survey.

Table 6. Total fishing effort (h) for all species and total directed expenditures at Richland Chambers Reservoir Texas, June 2002-May 2003, June 2004-May 2005, and June-November 2006 and March-May 2007.

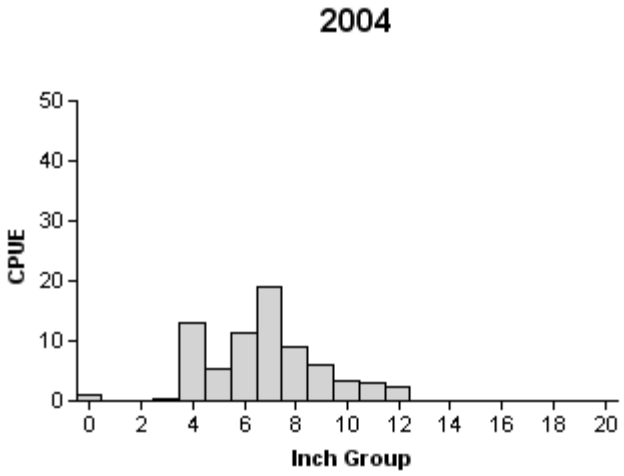
Creel Statistic	Year		
	2002-2003	2004-2005	2006-2007*
Total fishing effort	104,987	152,252	97,870
Total directed expenditures	$951,008	$1,517,049	$1,213,312

* Winter quarter not included in 2006-2007 creel survey.

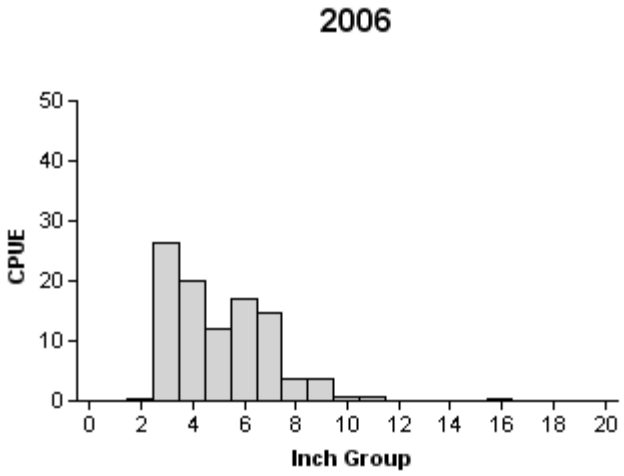
Gizzard shad



Effort = 1.9
Total CPUE = 95.0 (23; 182)
Stock CPUE = 21.9 (45; 42)
IOV = 89.56 (5.9)



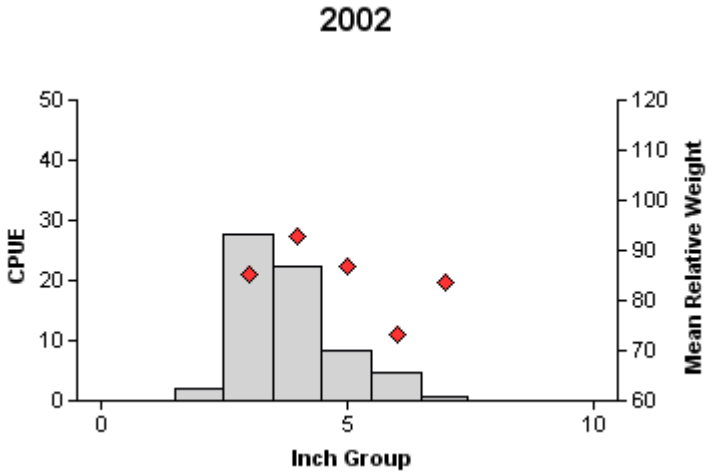
Effort = 2.0
Total CPUE = 74.5 (25; 149)
Stock CPUE = 43.0 (32; 86)
IOV = 65.58 (7.0)



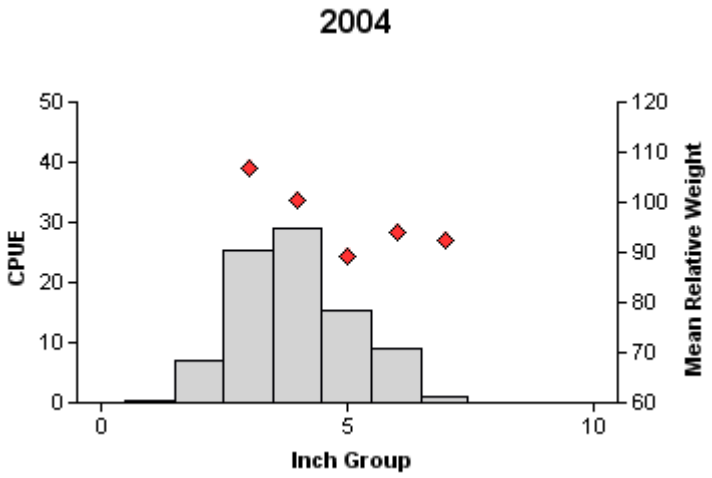
Effort = 4.0
Total CPUE = 98.8 (19; 393)
Stock CPUE = 23.1 (24; 92)
IOV = 91.35 (2.5)

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, Richland Chambers Reservoir, Texas, 2002, 2004, and 2006.

Bluegill



Effort = 1.9
Total CPUE = 65.7 (53; 126)
Stock CPUE = 63.7 (54; 122)
PSD = 8 (5.3)

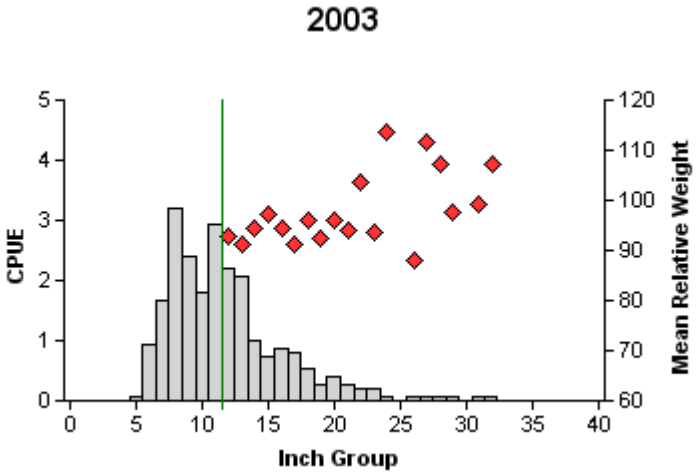


Effort = 2.0
Total CPUE = 87.5 (31; 175)
Stock CPUE = 80.0 (30; 160)
PSD = 12 (4.7)

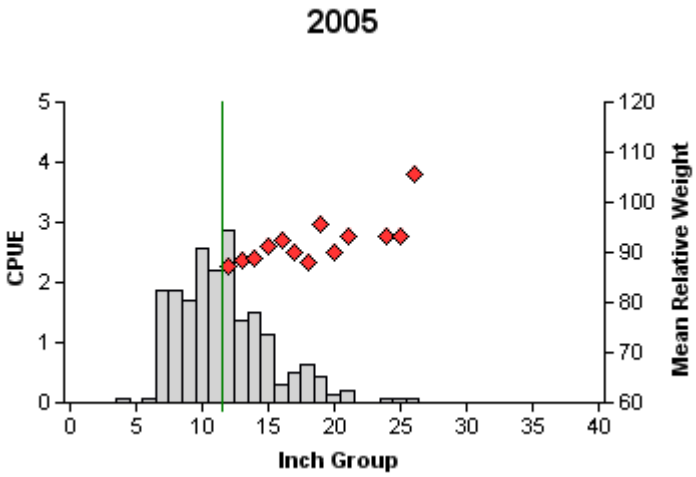
Effort = 4.0
Total CPUE = 13.6 (44; 54)
Stock CPUE = 13.1 (45; 52)
PSD = 17 (4.9)

Figure 3. Number of bluegill caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Richland Chambers Reservoir, Texas, 2002, 2004, and 2006.

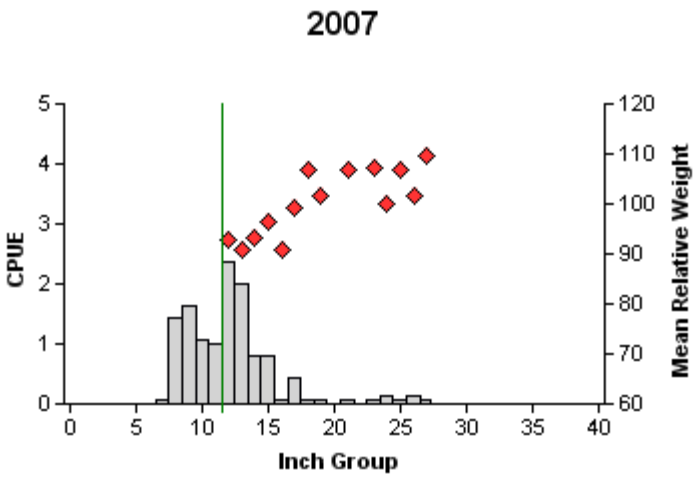
Blue catfish



Effort = 15.0
Total CPUE = 23.0 (13; 345)
Stock CPUE = 10.0 (15; 150)
PSD = 15 (3.6)
RSD-P = 1 (0.9)



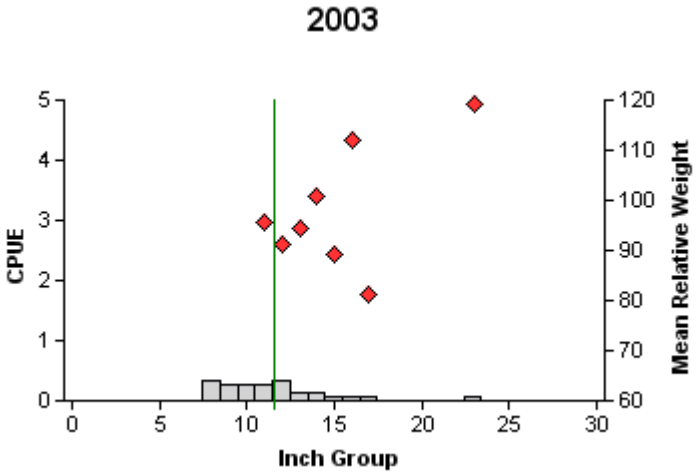
Effort = 14.0
Total CPUE = 19.6 (44; 275)
Stock CPUE = 9.3 (37; 130)
PSD = 6 (3.2)
RSD-P = 0 (0)



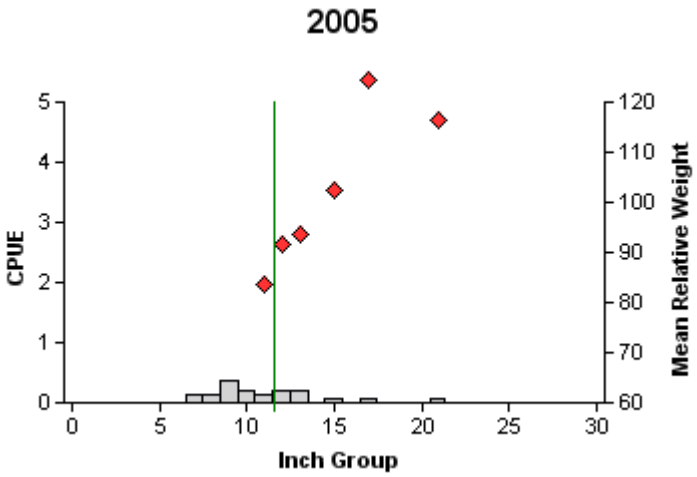
Effort = 14.0
Total CPUE = 12.4 (27; 173)
Stock CPUE = 7.1 (35; 100)
PSD = 8 (3.1)
RSD-P = 0 (0)

Figure 4. 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, Richland Chambers Reservoir, Texas, 2003, 2005 and 2007. Vertical line represents length limit at time of survey.

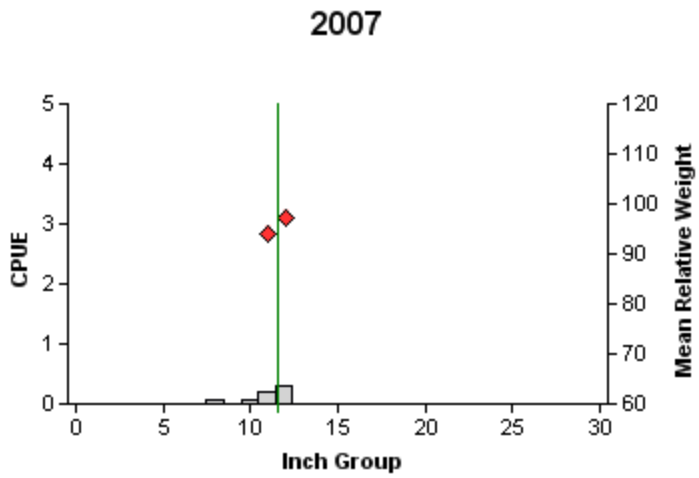
Channel catfish



Effort = 15.0
Total CPUE = 2.0 (27; 30)
Stock CPUE = 1.1 (38; 17)
PSD = 18 (10.5)
RSD-P = 0 (0)



Effort = 14.0
Total CPUE = 1.6 (36; 23)
Stock CPUE = 0.8 (48; 11)
PSD = 18 (11.7)
RSD-P = 0 (0)



Effort = 14.0
Total CPUE = 0.6 (42; 9)
Stock CPUE = 0.5 (46; 7)
PSD = 0 (64.6)
RSD-P = 0 (0)

Figure 5. 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, Richland Chambers Reservoir, Texas, 2003, 2005 and 2007. Vertical line represents length limit at time of survey.

Catfish

Table 7. Creel survey statistics for catfish at Richland Chambers Reservoir from June 2002-May 2003, June 2004-May 2005, and June 2006-November 2006 and March-May 2007, where total catch per hour is for anglers targeting all catfish, and total harvest is the estimated number of catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year		
	2002-2003	2004-2005	2006-2007*
Directed effort (h)	7,087 (42)	6,626 (50)	5,780 (29)
Directed effort/acre	0.2 (42)	0.2 (50)	0.2 (29)
Total catch per hour	1.4 (84)	0.2 (46)	1.9 (46)
Total harvest	9,072 (93)	22,147 (73)	11,849 (69)
Channel catfish	2,444 (133)	6,718 (106)	2,302 (155)
Blue catfish	6,628 (79)	15,429 (58)	9,547 (48)
Harvest/acre	0.2 (93)	0.5 (73)	0.3 (69)
Channel catfish	<0.1 (133)	0.2 (106)	<0.1(155)
Blue catfish	0.2 (79)	0.4 (58)	0.2 (48)
Percent legal released	<1	0	<1

* Winter quarter not included in 2006-2007 creel survey.

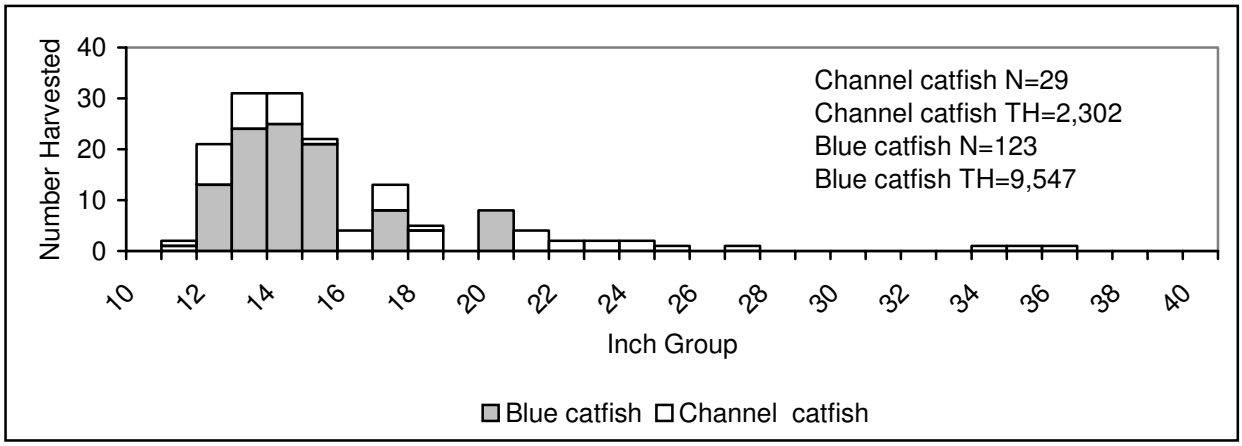
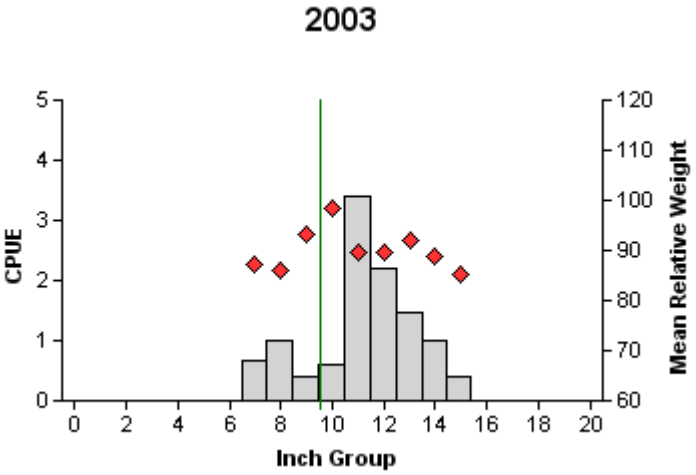
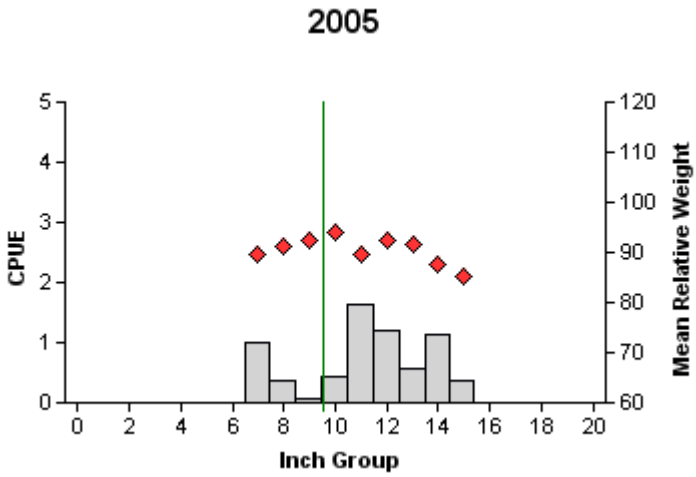


Figure 6. Length frequency of harvested blue and channel catfish observed during creel surveys at Richland Chambers Reservoir, Texas, June 2006-November 2006 and March-May 2007, all anglers combined. N is the number of harvested catfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

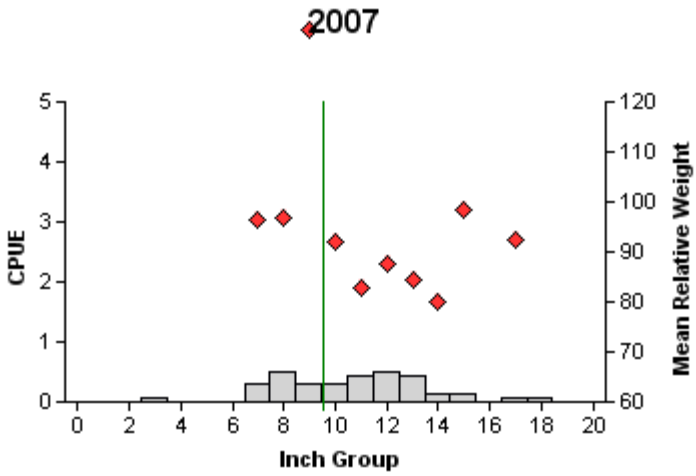
White bass



Effort =	15.0
Total CPUE =	11.1 (34; 167)
Stock CPUE =	11.1 (34; 167)
PSD =	85 (7.8)
RSD-P =	46 (9)



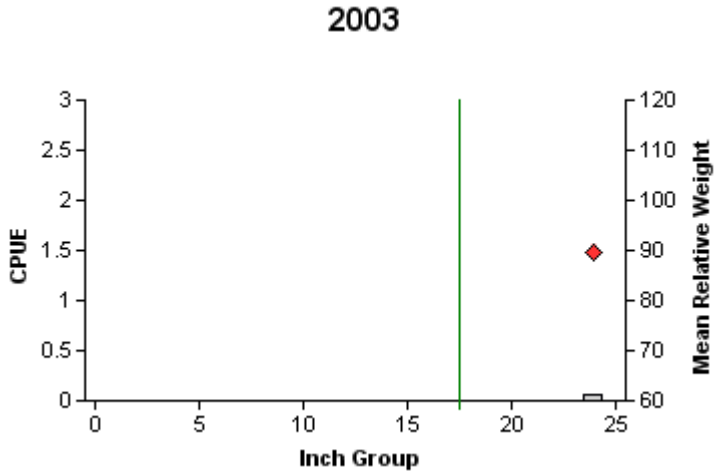
Effort =	14.0
Total CPUE =	6.8 (31; 95)
Stock CPUE =	6.8 (31; 95)
PSD =	80 (7.6)
RSD-P =	48 (6.8)



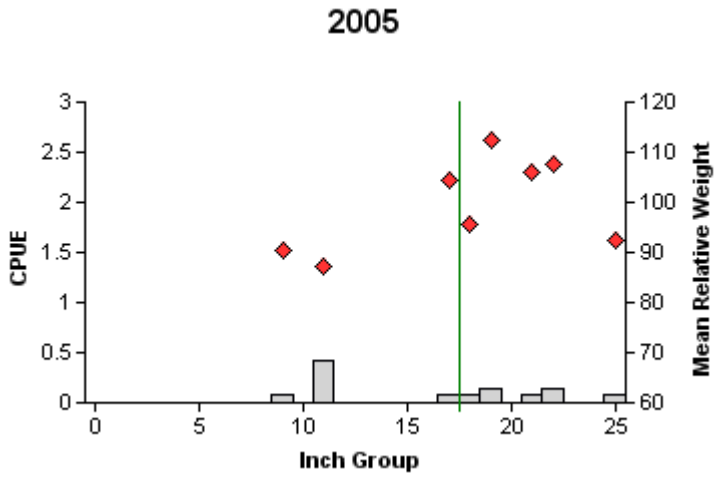
Effort =	14.0
Total CPUE =	3.2 (51; 45)
Stock CPUE =	3.1 (52; 44)
PSD =	75 (8)
RSD-P =	43 (6.2)

Figure 7. 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, Richland Chambers Reservoir, Texas, 2003, 2005 and 2007. Vertical line represents length limit at time of survey.

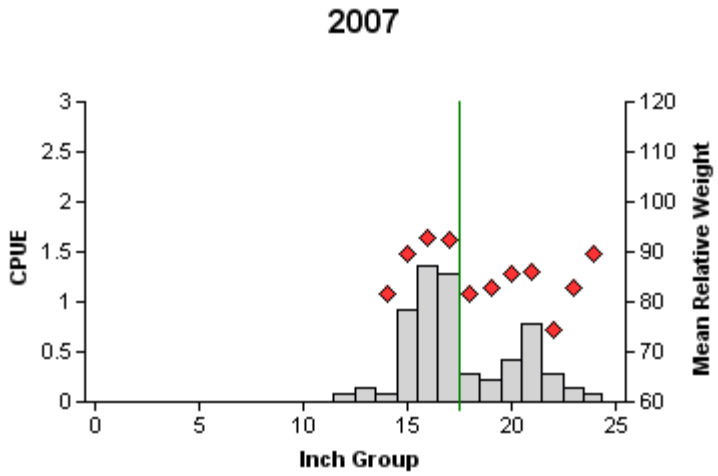
Palmetto bass



Effort = 15.0
Total CPUE = 0.1 (100; 1)
Stock CPUE = 0.1 (100; 1)
PSD = 100 (0)
RSD-P = 100 (0)



Effort = 14.0
Total CPUE = 1.1 (57; 15)
Stock CPUE = 1.1 (57; 15)
PSD = 53 (26.5)
RSD-P = 53 (26.5)



Effort = 14.0
Total CPUE = 6.1 (66; 85)
Stock CPUE = 6.1 (66; 85)
PSD = 100 (0)
RSD-P = 95 (2.3)

Figure 8. Number of palmetto 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, Richland Chambers Reservoir, Texas, 2003, 2005 and 2007. Vertical line represents length limit at time of survey.

Temperate basses

Table 8. Creel survey statistics for temperate basses at Richland Chambers Reservoir from June 2002-May 2003, June 2004- May 2005, and June 2006-November 2006 and March-May 2007, where total catch per hour is for anglers targeting all temperate basses, and total harvest is the estimated number of temperate basses harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year		
	2002-2003	2004-2005	2006-2007*
Directed effort (h)	38,862 (31)	48,238 (29)	43,830 (20)
Directed effort/acre	0.9 (31)	1.2 (29)	1.1 (20)
Total catch per hour	8.0 (71)	3.4 (58)	6.4 (64)
Harvest			
White bass	83,632 (31)	141,214 (31)	103,478 (23)
Palmetto bass	0	2,165 (225)	8,370 (45)
Harvest/acre			
White bass	2.0 (31)	3.4 (31)	2.5 (23)
Palmetto bass	0	>0.1 (225)	0.2 (45)
Percent legal released			
White bass	15	1	9
Palmetto bass	100	NA	18

* Winter quarter not included in 2006-2007 creel survey.

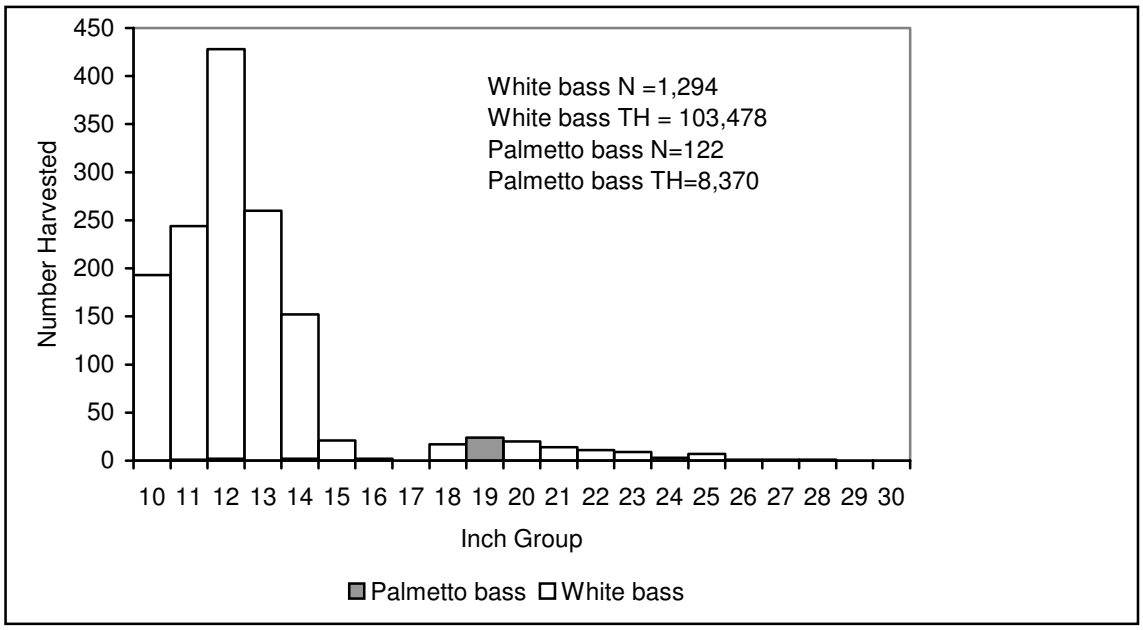
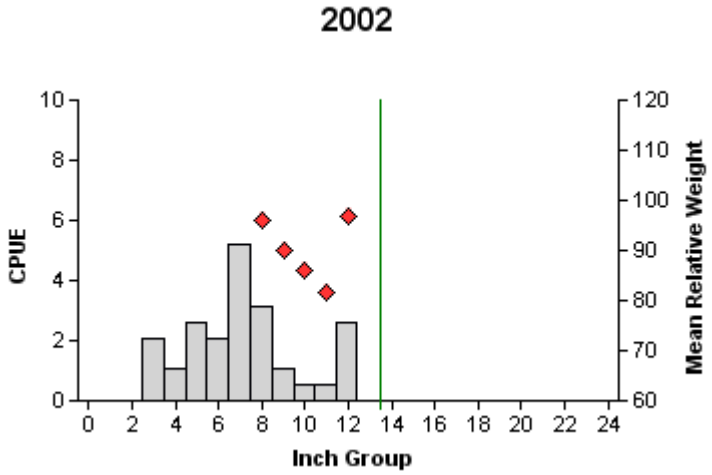
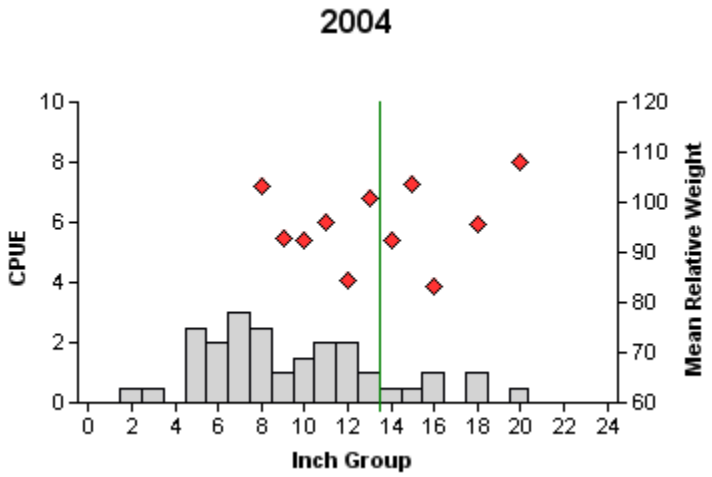


Figure 9. Length frequency of harvested white and palmetto bass observed during creel surveys at Richland Chambers Reservoir, Texas, June-November 2006 and March-May 2007, all anglers combined. N is the number of harvested white and palmetto bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

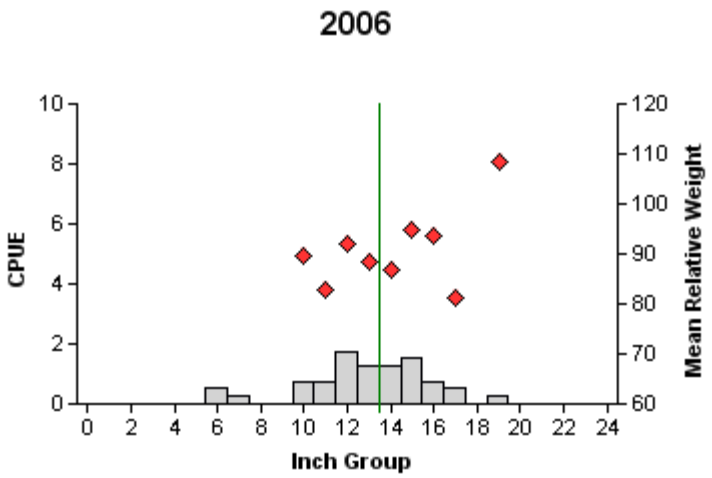
Largemouth bass



Effort =	1.9
Total CPUE =	20.9 (35;40)
Stock CPUE =	7.8 (34; 15)
PSD =	33 (12.9)
RSD-P =	0 (0)



Effort =	2.0
Total CPUE =	22.0 (38; 44)
Stock CPUE =	13.5 (42; 27)
PSD =	48 (4.9)
RSD-P =	22 (5.7)



Effort =	4.0
Total CPUE =	9.6 (29; 38)
Stock CPUE =	8.8 (30; 35)
PSD =	83 (8.9)
RSD-P =	34 (5.7)

Figure 10. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds),(CPUE) and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Richland Chambers Reservoir, Texas, 2002, 2004, and 2006. Vertical line represents length limit at time of survey.

Largemouth bass

Table 9. Creel survey statistics for largemouth bass at Richland Chambers Reservoir from June 2002 - May 2003, June 2004-May 2005, and June-November 2006 and March-May 2007, where total catch per hour is for anglers targeting all catfish, and total harvest is the estimated number of catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year		
	2002-2003	2004-2005	2006-2007*
Directed effort (h)	43,531 (22.4)	82,455 (33.3)	21,716 (19.3)
Directed effort/acre	1.1 (22.4)	2.0 (33.3)	0.63 (19.3)
Total catch per hour	0.5 (32.1)	0.5 (16.9)	0.4 (52.1)
Total harvest	1,723 (66.3)	34,061 (48.2)	3,285 (67.7)
Harvest/acre	0.04 (66.3)	0.8 (48.2)	0.08 (67.7)
Percent legal released	61	14	45

* Winter quarter not included in 2006-2007 creel survey.

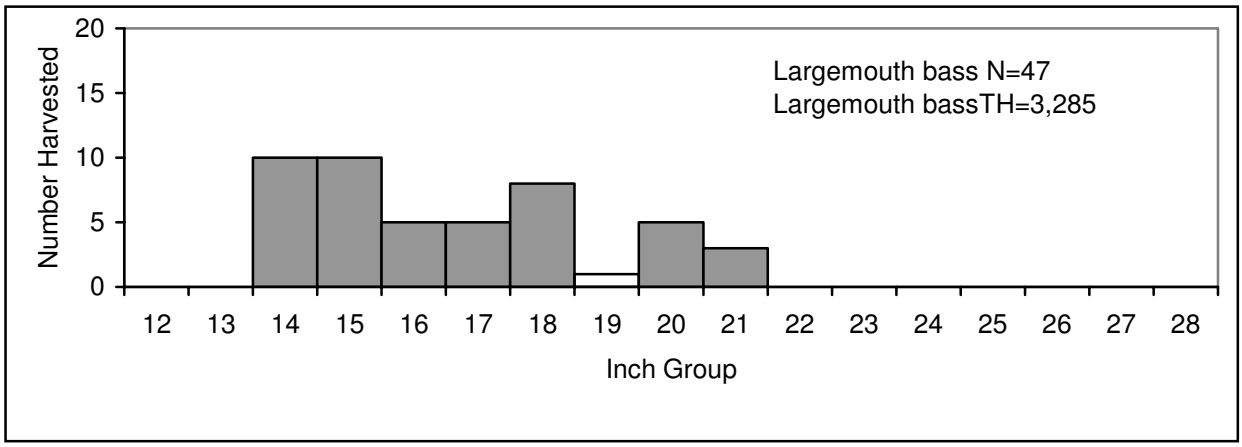


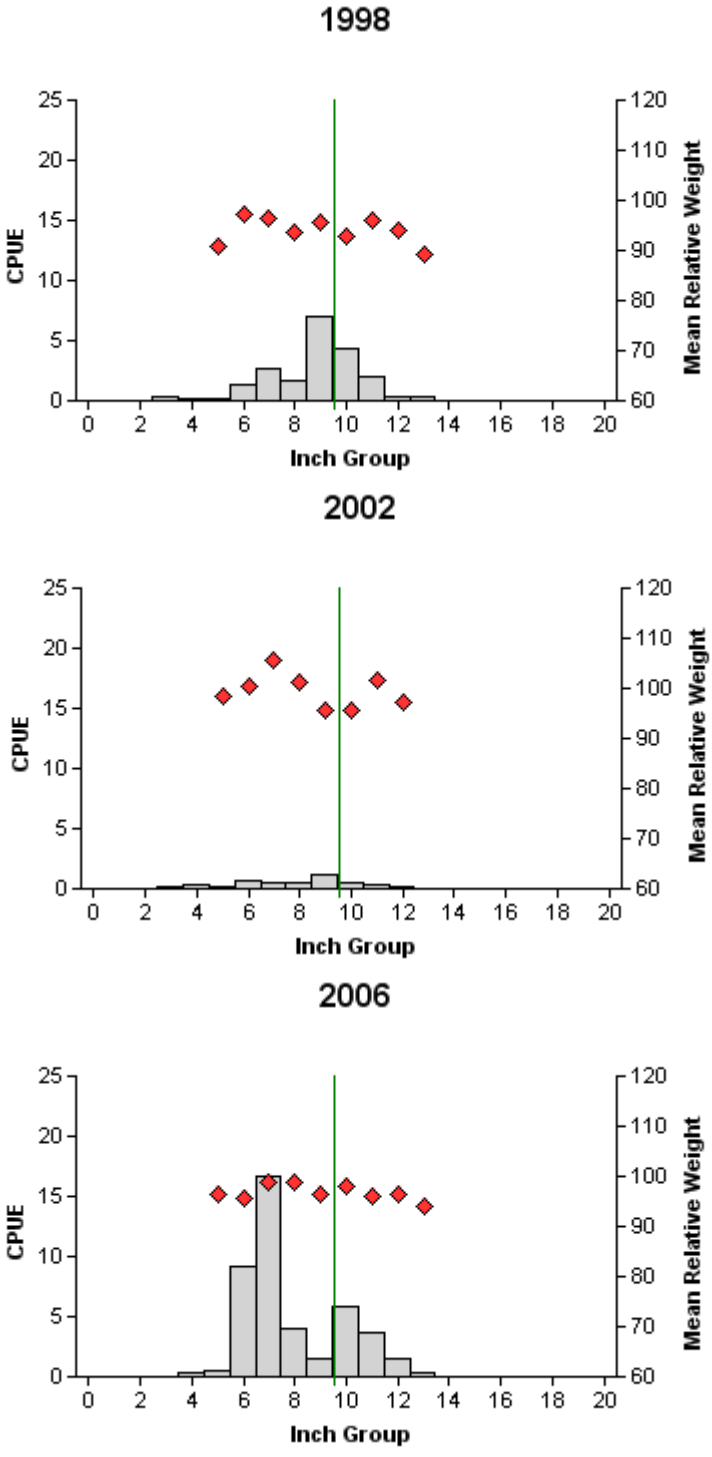
Figure 11. Length frequency of harvested largemouth bass observed during creel surveys at Richland Chambers Reservoir, Texas, June–November 2006, and March–May 2007all anglers combined. N is the number of harvested largemouth bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

Largemouth bass

Table 10. Results of genetic analysis of largemouth bass collected by fall electrofishing at Richland Chambers Reservoir, Texas, 1989, 1992, 1993, 1995, 2000, 2002, and 2004. Electrophoresis sampling was not conducted in 2006 due to stocking in same season. FLMB=Florida largemouth bass, NLMB=Northern largemouth bass, F1=first generation hybrid between a FLMB and a NLMB, Fx=second or higher generation hybrid between a FLMB and a NLMB.

Year	Sample size	Genotype				% FLMB alleles	% pure FLMB
		FLMB	F1	Fx	NLMB		
1989	29	1	2	0	26	10	3
1992	29	5	11	12	1	60	17
1993	30	4	9	6	11	38	13
1995	29	7	7	11	4	60	24
2000	30	2	4	9	15	26	7
2002	31	0	12	19	0	55	0
2004	40	5	10	20	5	55	12

White crappie



	1998	2002	2006
Effort =	15.0	15.0	15.0
Total CPUE =	20.1 (21; 302)	4.4 (37; 66)	43.5 (25; 653)
Stock CPUE =	19.7 (22; 295)	3.9 (38; 58)	43.3 (25; 649)
PSD =	79 (3)	67 (9.2)	39 (4.9)
RSD-P =	35 (4.2)	24 (5.5)	27 (5.1)

Figure 12. 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, Richland Chambers Reservoir, Texas, 1998, 2002 and 2006. Vertical line represents length limit at time of survey.

White crappie

Table 11. Average length at capture for white crappie (sexes combined) ages 0-2 collected in electrofishing surveys, Richland Chambers Reservoir, Texas, 2006. Lengths are followed by the relative standard error and sample size and in parenthesis (RSE; N).

	Length (inches) at capture for age		
Sampling date	0	1	2
11/06/2006	6.6 (4.0; 22)	10.1 (3.8; 16)	12.8 (1.3; 10)

Black crappie

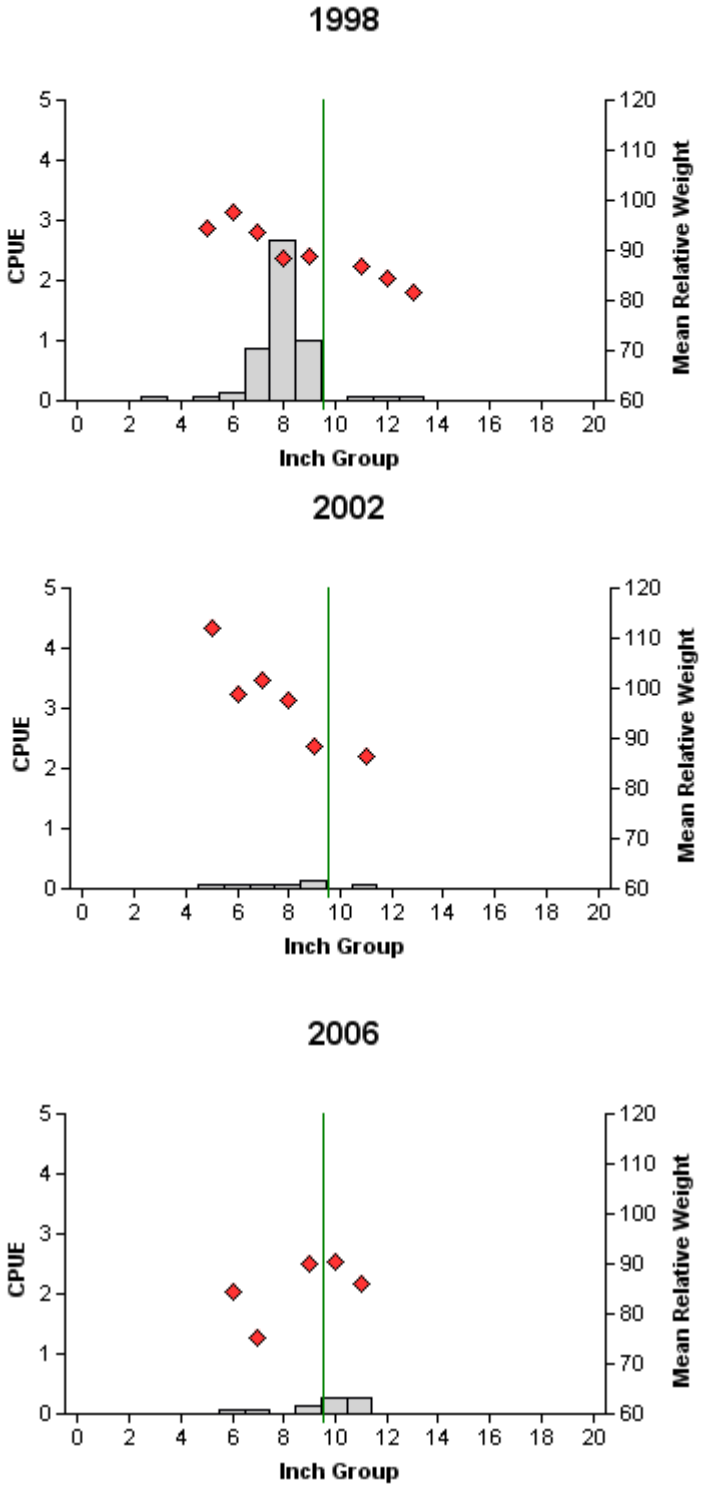


Figure 13. Number of black crappie caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Richland Chambers Reservoir, Texas, 1998, 2002 and 2006. Vertical line represents length limit at time of survey.

Crappie

Table 12. Creel survey statistics for crappie at Richland Chambers Reservoir from June 2002 - May 2003, June 2004 – May 2005, and June – November 2006 and March – May 2007, where total catch per hour is for anglers targeting all 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		
	2002-2003	004-2005	2006-2007*
Directed effort (h)	14,373 (39)	9,138 (30)	7,930 (27)
Directed effort/acre	0.3 (39)	0.2 (30)	0.19 (27)
Total catch per hour	3.3 (29)	1.5 (46)	2.0 (31)
Total harvest	20,858 (507)	8,983 (130)	17,562 (56)
White crappie	20,141 (51)	8,834 (92)	15,805 (44)
Black crappie	717 (486)	149 (2,417)	1,757 (164)
Harvest/acre	0.5 (507)	0.2 (130)	0.4 (56)
White crappie	0.5 (51)	0.2 (92)	0.38 (44)
Black crappie	>0.1 (486)	>0.1 (2,417)	0.04 (164)
Percent legal released	<1	0	5

* Winter quarter not included in 2006-2007 creel survey.

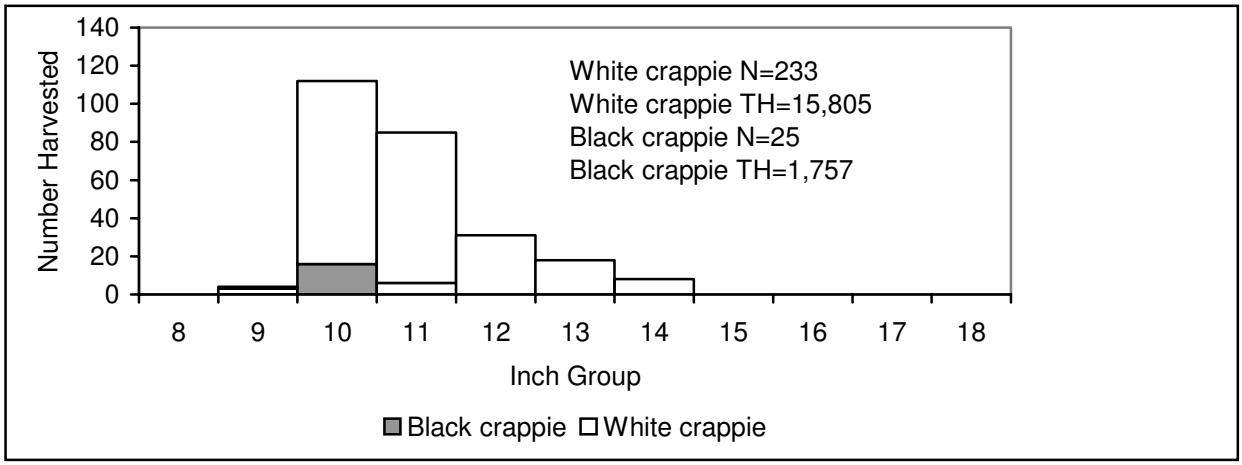


Figure 14. Length frequency of harvested white crappie and black crappie observed during creel surveys at Richland Chambers Reservoir, Texas, June-November 2006 and March-May 2007, all anglers combined. N is the number of harvested white crappie and black crappie observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 13. Proposed sampling schedule for Richland Chambers 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.

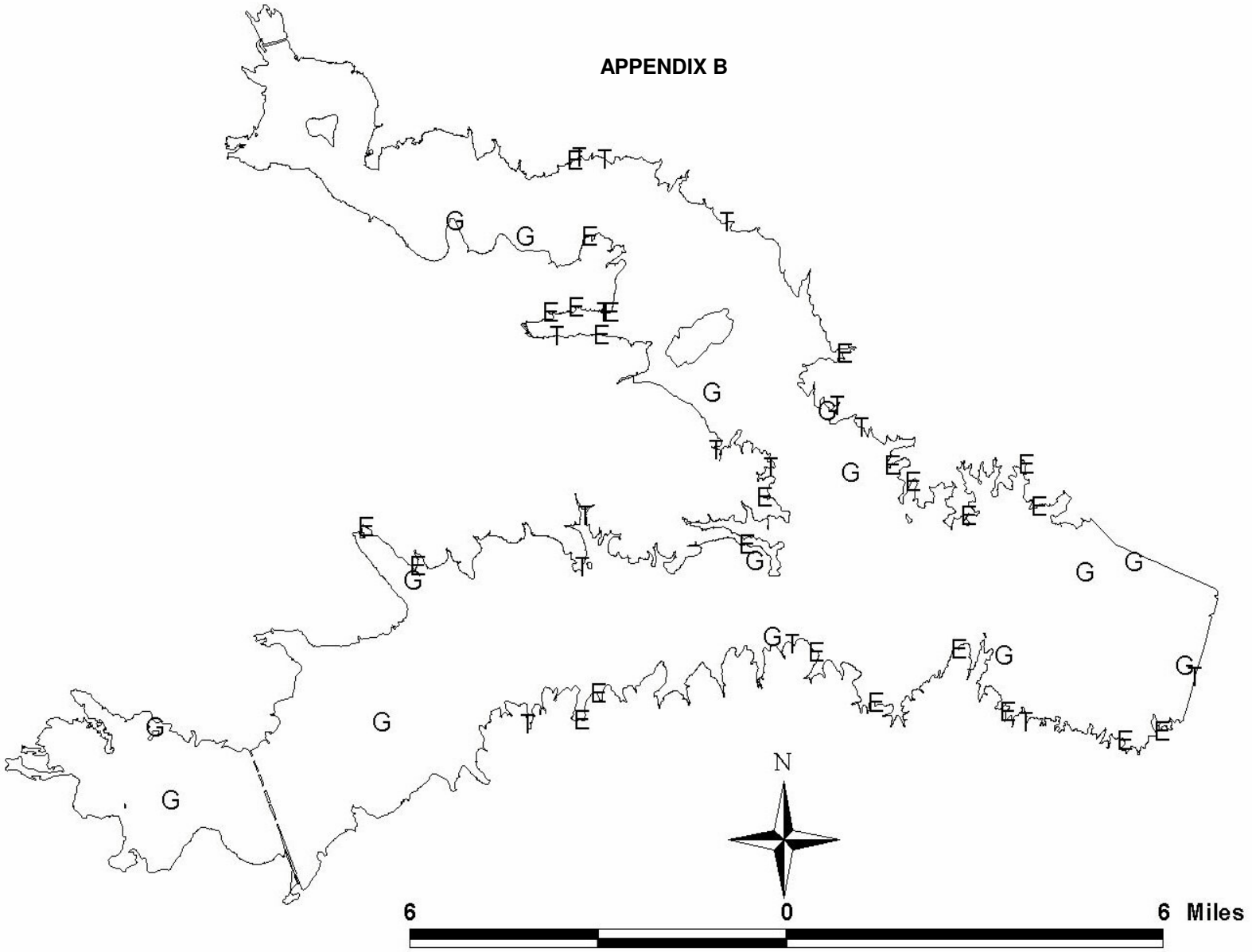
Survey Year	Electrofishing	Trap Net	Gill Net	Habitat	Creel	Report
2007-2008						
2008-2009	A		A			
2009-2010						
2010-2011	S	S	S	S	A	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Richland Chambers Reservoir, Texas, 2006-2007.

Species	Gill netting		Trap netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					393	98.8
Threadfin shad					799	399.7
Blue catfish	160	11.4				
Channel catfish	208	14.8				
White bass	21	1.5				
Palmetto bass	40	2.8				
Bluegill					54	27.3
Longear sunfish					8	4.0
Redear sunfish					3	1.5
Largemouth bass					29	14.7
White crappie			653	43.5		
Black crappie			12	0.8		

APPENDIX B



Location of sampling sites, Richland Chambers Reservoir, Texas, 2006-2007. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively.