

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

Lake Cypress Springs

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Cypress Springs were surveyed in 2006 using electrofishing and trap nets and in 2007 using gill nets. Anglers were surveyed from June 2006 to May 2007 with a creel. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir description:** Lake Cypress Springs is a 3,461-acre impoundment located on Big Cypress Creek in the Cypress River Basin. The lake is located in Franklin County. Habitat features consist of standing timber, bulkhead, boat docks, rocky shoreline, riprap, native aquatic plants, and hydrilla.
- **Management history:** Important sport fish include channel catfish, largemouth bass, and crappie. All sport fish at Lake Cypress Springs have historically been managed with statewide harvest regulations. Florida largemouth bass were stocked in this reservoir in 1980 and 1992 to improve the quality of the largemouth bass fishery. These initial stockings were successful in establishing the Florida largemouth bass genetics in the population. Hydrilla, introduced into the lake in the 1970s, was the most common aquatic plant in the lake. Nuisance levels of hydrilla have been treated with stockings of triploid grass carp in 1997 and 2006. Additionally, a native aquatic plant restoration project was initiated by Franklin County Water District in 2003 to increase plant diversity and provide additional habitat.
- **Fish community**
 - **Prey species:** Threadfin shad were present in the reservoir. Electrofishing catch rates of gizzard shad were relatively low with the majority of fish not available as prey to most sport fish. Bluegill and redear sunfish were also available as prey and were abundant.
 - **Catfishes:** The channel catfish population had many fish above legal length and provided excellent angling opportunities. Twelve percent of all angling effort at Lake Cypress Springs was directed towards catfish.
 - **Black bass:** The largemouth bass population had high relative abundance, good size structure, and adequate recruitment. Condition was average for all inch groups and growth was good with fish reaching legal size in 3 growing seasons. The spotted bass population had good size structure and moderate body condition. Fifty-five percent of the directed effort at Lake Cypress Springs was from anglers targeting black bass.
 - **Crappie:** Both white and black crappie were present in the reservoir. Very few crappie have been collected during trap netting surveys; however, angler survey data indicated an excellent crappie fishery. Angler catch rates were high and fish up to 16 inches were harvested. Twenty-four percent of the directed angler effort at Lake Cypress Springs was for crappie.
- **Management strategies:** Conduct electrofishing surveys every other year beginning in 2008, and general monitoring with trap nets and gill nets in 2010-2011. Aquatic vegetation surveys will be conducted annually to monitor the hydrilla infestation. Recommend supplemental triploid grass carp stocking to maintain desired number of grass carp in reservoir based on hydrilla coverage. Recommend Florida largemouth bass stocking to enhance the quality and trophy potential of the fishery. All sport fish will continue to be managed under statewide harvest regulations.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Cypress Springs in 2006-2007. 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 2006-2007 data for comparison.

Reservoir description

Lake Cypress Springs is a 3,461-acre impoundment constructed in 1970 on Big Cypress Creek in the Cypress River Basin. It is located in Franklin County approximately 10 miles south of Mt. Vernon. The controlling authority is Franklin County Water District (FCWD). Primary water uses are municipal and industrial water supply and public recreation. It has a watershed of approximately 75 square miles and a shoreline length of 43 miles. Average annual water fluctuation is 2-2.5 feet; however, from May 2005 to May 2007, water level remained below conservation pool (378 msl) and was as low as 373 msl in December 2006 (Figure 1). Habitat features consist of standing timber, bulkhead, boat houses, rocky shoreline, riprap, native aquatic plants, and hydrilla. Bulkhead comprises 35% of the shoreline. Boat access consists of five public boat ramps and one private boat ramp. Bank fishing access is limited. Other descriptive characteristics for Lake Cypress Springs are in Table 1.

Management history

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

1. Develop a habitat enhancement program to increase native aquatic vegetation densities in the lake.

Action: In July 2003, FCWD entered into a cooperative agreement with the U.S. Army Corps of Engineers to begin a native aquatic plant restoration program. Native aquatic plants were planted throughout the lake with positive results. A variety of native plant species were established at several test sites and will continue to be planted. In 2005, FCWD created a plant nursery facility onsite to improve the efficiency and cost effectiveness of this program.

2. Communicate information concerning fisheries management-related activities to anglers and other public.

Action: District biologists provided news releases to area newspapers and FCWD explaining when, where, and how fisheries surveys are conducted in 2006-2007. District biologists attended a FCWD board meeting to present fish community survey and aquatic vegetation assessment results.

3. Provide better fishing access to non-boating anglers

Action: District biologists encouraged FCWD to upgrade facilities to meet ADA standards when existing parks are renovated.

Harvest regulation history: Sport fishes in Lake Cypress Springs have been managed with statewide regulations (Table 2).

Stocking history: Blue catfish and walleye have been stocked but populations were not established. Channel catfish have been stocked numerous times from the late 1960s to the early 1990s. These stockings were done in an effort to supplement the limited recruitment of channel catfish. From 1984 to 1993, fingerling channel catfish were stocked into FCWD rearing ponds and grown to advanced-size (8-9

inches) before being stocked in the lake. Additionally, catfish, redear sunfish, and black crappie were stocked prior to the reservoir filling. Florida largemouth bass were stocked in 1980 and 1992. Triploid grass carp were stocked at a rate of 5 fish per vegetated acre (2,200 fish) in 1997 in an effort to control hydrilla. A maintenance stocking of 1,000 triploid grass carp was conducted in 2006. A complete stocking history is in Table 3.

Vegetation/habitat history: Hydrilla, introduced in the 1970s, was the dominant aquatic plant through the 1990s. Coverage typically approached 10% of the reservoir, and reached a peak in 1996 at 13.5% (434 acres). Franklin County Water District was granted a permit to stock triploid grass carp in 1997 (2,200 fish). Hydrilla fly larvae were also introduced in 1997 as an additional control measure. Hydrilla declined to <1% coverage after these biological control measures were implemented. This was likely the result of a combination of the biological control efforts and cold winter temperatures prior to the decline. In 2003, a native aquatic plant restoration project was initiated by FCWD to increase plant diversity and increase available habitat. In recent years hydrilla coverage has increased (2005; 11.9%, 2006; 14.7%). The FCWD was permitted to stock an additional 1,000 triploid grass carp (2.5 fish/hydrilla acre) in January 2006.

METHODS

Fishes were collected by electrofishing (1 hour at 12 5-min stations), gill netting (5 net nights at 5 stations), and trap netting (5 net nights at 5 stations). A roving angler creel survey was conducted from June 2006 to May 2007. 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 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 ($RSE = 100 \times SE \text{ of the estimate/estimate}$) was calculated for all CPUE statistics and for creel statistics and SE was calculated for structural indices and IOV. Average age-at-length was determined using otoliths for largemouth bass from 13 fish 13.0 to 14.7 inches. Source for water level data was the United States Geological Survey (USGS) website.

RESULTS AND DISCUSSION

Habitat: Structural habitat consisted primarily of boat houses, bulkhead, native submersed aquatic plants, hydrilla, and riprap (Ryan and Brice 2003). Aquatic vegetation was present throughout most of the reservoir with greater concentrations along the north shore (Figure 2). Approximately 16% (564 acres) of the lake surface area was covered with aquatic vegetation with hydrilla the dominant species (510 acres; Table 4). American lotus was also present (51 acres) and located mostly in the upper reaches of the main tributaries.

Creel: Directed fishing effort by anglers (Table 5) was highest for black bass (54.7%), followed by anglers fishing for crappie (23.8%), catfish (12.1%), anything (7.7%) and sunfish (1.7%). Total fishing effort for all species at Lake Cypress Springs was 37,047 h and anglers spent an estimated \$263,895 on direct expenditures (Table 6).

Prey species: Gizzard shad, threadfin shad, and several sunfish species were present indicating good forage fish diversity. The electrofishing catch rate of gizzard shad in 2006 was 103.0/h which was less than half of the catch of 2002 (239.0/h), but was considerably higher than the 1998 catch rate of 28.0/h (Figure 3). Index of vulnerability (IOV) for gizzard shad (Figure 3) was poor, indicating that only 10% of gizzard shad were available to existing predators. This was a substantial decrease from 2002 (61%) but

similar to 1998 (7%). Threadfin shad also provided additional prey and during the 2006 electrofishing survey, 61.0/h were caught. The electrofishing catch rate of bluegill (Figure 4) in 2006 (351.0/h) was approximately 90% higher than the catch rate from 2002 (186.0/h), but was similar to the catch rate in 1998 (380.0/h). Small bluegill were abundant (Figure 4); however, anglers selected for those at the upper end of the size distribution (Figure 5). Size distribution for redear sunfish was somewhat better (Figure 6) but harvest was not documented in the creel. Electrofishing catch rate for combined sunfish species (warmouth, bluegill, longear sunfish, and redear sunfish) in 2006 (529.0/h) was 28% greater than 2002 (414.0/h).

Channel catfish: The gill net catch rate of channel catfish (Figure 7) in 2007 was 18.8/nn, which was similar to the catch rate of 2003 (19.8/nn). Growth of channel catfish was good with fish attaining legal size (≥ 12 inches) by age 2 (Ryan and Brice 2003). Body condition was good with mean W_r for most inch groups ≥ 90 (Figure 7). Creel surveys (2006-2007) indicated that directed effort for catfish was 1.30 hours/acre (Table 8). Anglers targeting channel catfish caught 2.03 fish/h and harvested 1.21 fish/h. Total catfish harvest was 3.4 fish/acre. Harvested fish ranged from 12 to 21 inches (Figure 8).

Black bass: The electrofishing catch rate of spotted bass (Figure 9) in 2006 was 57.0/h, which was similar to catch rates of 2004 (51.0/h) and 2003 (64.0/h). The population had a good size distribution along with good W_rs for most inch groups ≥ 90 (Figure 9). Creel surveys indicated that spotted bass 5-17 inches were harvested (Figure 11). Historical data indicate spotted bass growth was slow, with fish reaching 12 inches during their fifth growing season (Ryan and Brice 1999).

The electrofishing catch rate of largemouth bass in 2006 was 141.0/h (Figure 10). This catch rate was twice that of 2004 (66.0/h) and also greater than that of 2003 (102.0). Most of this increase in relative abundance can likely be attributed to the increase in the abundance of aquatic vegetation in recent years. The Florida largemouth bass allele frequency (Table 10) in 2006 was 28.0%, and was similar to 2002 (29.9%). No pure Florida largemouth bass were collected in a 60 fish sample of age-0 largemouth bass in 2006 (Table 10). Growth of largemouth bass was good. Average age at 14 inches (13.0 to 14.7 inches) was 1.8 years (N = 13; range = 1–3 years). Condition of largemouth bass was good with mean W_rs from 90-100 for most inch groups (Figure 10). Creel surveys (2006-2007) indicated that anglers targeting black bass fished 5.85 hours/acre (Table 9). Anglers targeting black bass caught 1.19 fish/h and harvested 0.19 fish/hour (Table 9). For all anglers combined, total black bass harvest (Table 9) was 2.42 fish/acre (largemouth bass = 1.87 fish/acre, spotted bass = 0.54 fish/acre). Harvest (all anglers) of spotted bass and largemouth bass ranged from 5 to 17 inches and 14 to 22 inches, respectively (Figure 11). Anglers released 48% of the legal-size black bass that they caught (Table 9).

Crappie: Both black and white crappie were present in the lake. In 2006, only 0.8 black crappie/nn were collected (Figure 12). This was a considerable decrease compared to catch rates in 2002 (3.2/nn) and 1998 (4.6/nn). No white crappie were collected in 2006 trap nets. Creel surveys (2006-2007) indicated that anglers targeting crappie fished 2.54 hours/acre (Table 11). For all anglers combined, total crappie harvest (Figure 13) was 4.53 fish/acre (white crappie = 1.58 fish/acre, black crappie = 2.95 fish/acre) (Table 11). Crappie from 9 to 16 inches were harvested (Figure 13). No age and growth analyses were conducted in 2006 due the low sample size. However, Ryan and Brice (2003) reported white crappie reach 10 inches in total length (legal size) by the end of their second growing season (age 1+) and black crappie attain legal size during their third growing season (age 2+).

Fisheries management plan for Lake Cypress Springs, Texas

Prepared – July 2007.

ISSUE 1: The abundance of hydrilla in Lake Cypress Springs has steadily increased in recent years. Hydrilla coverage was estimated at 415 acres in 2005 (11.9%) and 510 acres (14.7%) in 2006. These are the highest estimates of hydrilla on the lake since 1996 (13.5%; 434 acres). In 1997, triploid grass carp were stocked at 5 fish/vegetated acre in an effort to control hydrilla. The hydrilla fly was also introduced in 1997 as an additional control measure. Following these control measures, abundance of hydrilla dropped to <1%. However, hydrilla coverage began to increase once again and in January 2006 the FCWD was permitted to stock an additional 1,000 triploid grass carp (2.5 fish/hydrilla acre).

MANAGEMENT STRATEGY

1. Encourage FCWD to take an integrated approach to controlling hydrilla by treating infested areas with chemical means, in addition to triploid grass carp.
2. Conduct annual aquatic vegetation surveys to monitor trends and estimate coverage of hydrilla.
3. Recommend supplemental stockings of triploid grass carp based on hydrilla abundance and fish mortality to maintain an effective stocking rate of 2.5 fish/acre of hydrilla.
4. Provide a hydrilla management plan to FCWD annually.

ISSUE 2: The growth rate and population size structure of largemouth bass along with increased habitat in recent samples all show good potential for producing larger bass. The current lake record is 13.69 lbs. Genetic analyses of age-0 largemouth bass in 2006 showed no pure Florida largemouth bass genotypes. Supplemental stocking of Florida largemouth bass has the potential to enhance the quality/trophy potential of this fishery. Stocking was requested for 2007, but fish were not stocked due to limited availability.

MANAGEMENT STRATEGY

1. Recommend supplemental stocking of Florida largemouth bass at a rate of 50 fish/acre in 2008 and 2009.
2. Conduct a supplemental electrofishing survey in 2008 and a standard electrofishing survey in 2010 to monitor largemouth bass relative abundance, size structure, condition, and growth.
3. Collect age-0 largemouth bass in 2012 to assess the success of Florida largemouth bass stockings of 2008 and 2009.

ISSUE 3: Anglers and other stakeholders need to be informed about fisheries management activities, fishing opportunities, and other issues at Lake Cypress Springs.

MANAGEMENT STRATEGIES

1. Continue to provide news releases to the print and broadcast media and to FCWD.
2. Continue to provide fisheries presentations to the public regarding issues/opportunities at Lake Cypress Springs

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes annual aquatic vegetation surveys (2007-2010), a supplemental electrofishing survey in 2008, and required electrofishing, trap net, and gill net surveys in 2010/2011. Annual aquatic vegetation surveys are necessary to monitor hydrilla coverage. Supplemental electrofishing in 2008 will be conducted to monitor the largemouth bass and prey fish populations.

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Monthly Water Level

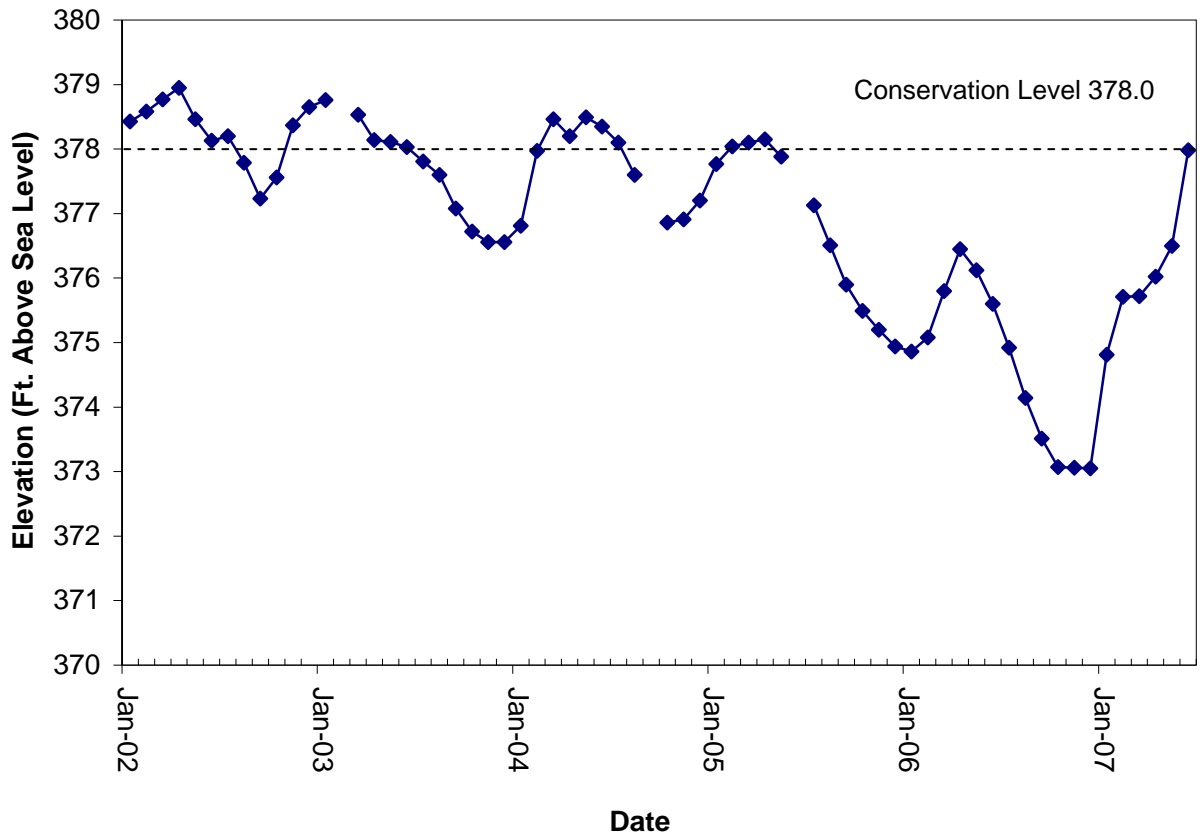


Figure 1. Average monthly water level elevations in feet above mean sea level (MSL) recorded for Lake Cypress Springs, Texas January 2002 to June 2007. Horizontal dashed-line denotes conservation pool level (378.0 msl).

Table 1. Characteristics of Lake Cypress Springs, Texas.

Characteristic		Description
Year constructed	1970	
Controlling authority	Franklin County Water District	
County	Franklin	
Reservoir type	Mainstream	
Shoreline development index (SDI)	5.2	
Conductivity	165 umhos/cm	

Table 2. Harvest regulations for Lake Cypress Springs, Texas.

Species	Bag Limit	Minimum-Maximum Length (inches)
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
Bass, spotted	5 ^a	No Limit - No Limit
Crappie, white and black, 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 Lake Cypress Springs, Texas. Size categories are fry (FRY; <1 inch), fingerlings (FGL; 1-3 inches), advanced fingerlings (AFGL; 8 inches) and adults (ADL).

Species	Year	Number	Size
Blue catfish	1982	1,996	AFGL
	1983	4,997	AFGL
	1987	6,154	AFGL
	Total	13,147	
Channel catfish	1966	5,500	AFGL
	1970	112,644	FGL
	1971	18,514	FGL
	1980	66,827	FGL
	1981	10,000	FGL
	1983	35,000	FGL
	1984	6,000	AFGL
	1985	5,569	AFGL
	1986	6,000	AFGL
	1989	6,390	AFGL
	1991	5,000	AFGL
	1992	5,095	AFGL
	1993	4,991	AFGL
	Total	287,530	

Table 3. Stocking history continued.

Species	Year	Number	Size
Redear sunfish	1967	2,750	ADL
	Total	2,750	
Largemouth bass	1971	690,000	FRY
	Total	690,000	
Black crappie	1966	2,750	FGL
	Total	2,750	
Florida largemouth bass	1980	120,000	FGL
	1992	172,394	FGL
	Total	293,294	
Walleye	1970	600,000	FRY
	1971	4,000,000	FRY
	1972	53,460	FRY
	Total	4,653,460	
Triploid grass carp	1997	2,200	ADL
	2006	1,000	ADL
		3,000	

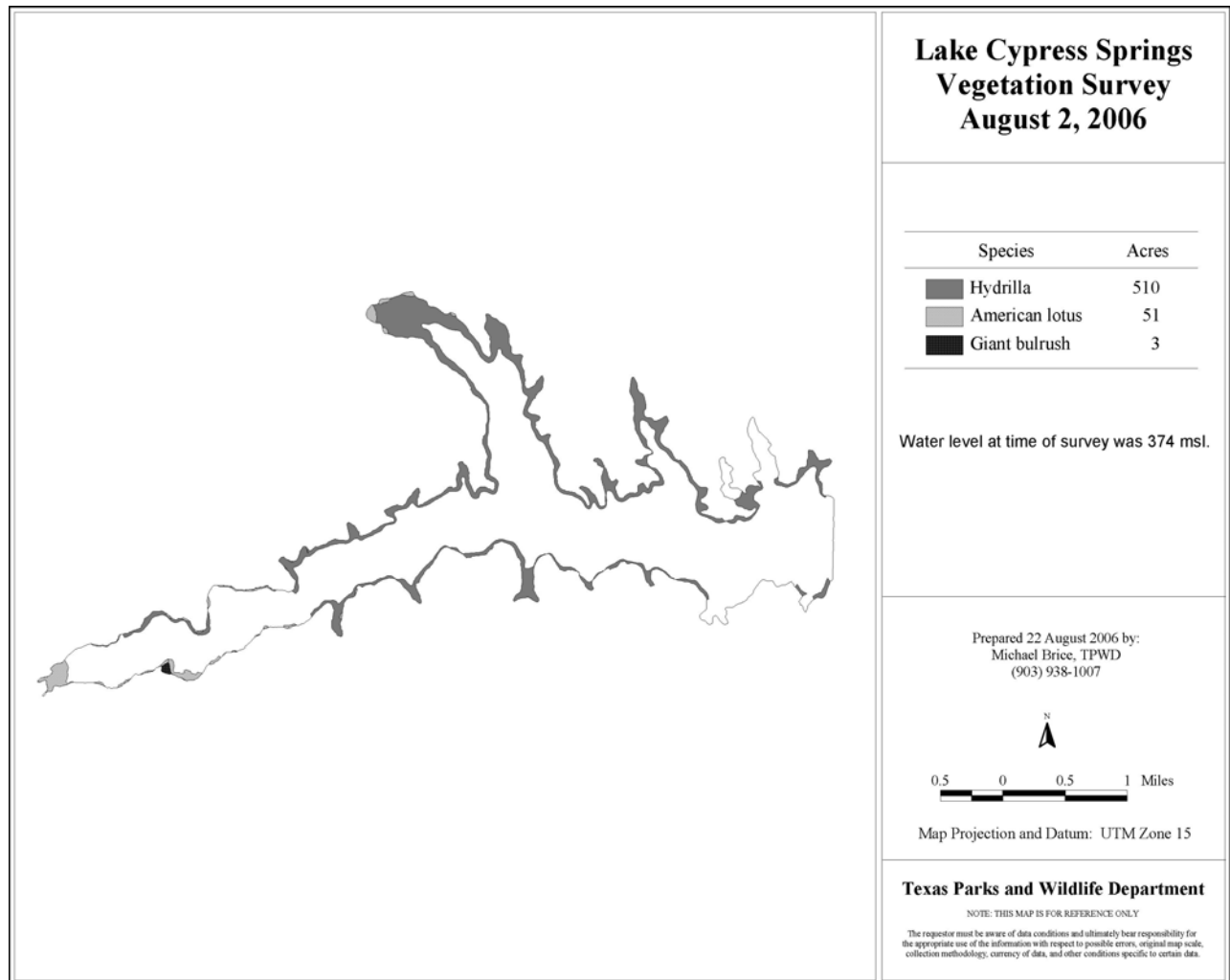


Figure 2. Results of aquatic vegetation survey conducted at Lake Cypress Springs, Texas August 2006.

Table 4. Survey of aquatic vegetation, Lake Cypress Springs, Texas, 2006. Surface area (acres) and percent of reservoir surface area was determined for dominant aquatic vegetation species.

Species	Acres	Percent of reservoir surface area
Hydrilla	510	14.7
American lotus	51	1.5
Giant bulrush	3	0.1

Table 5. Percent directed angler effort by species for Lake Cypress Springs, Texas, June 2006–May 2007.

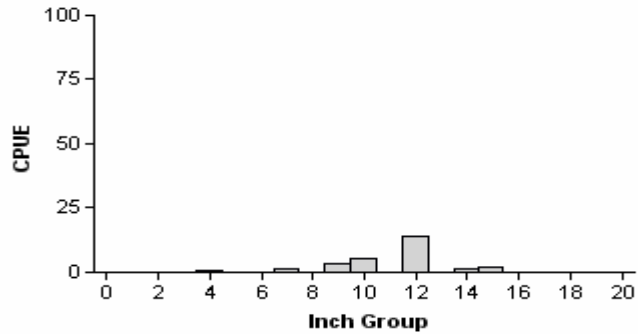
Species	Year
	2006/2007
Catfish	12.1
Sunfish spp.	1.7
Black bass	54.7
Crappie	23.8
Anything	7.7

Table 6. Total fishing effort (h) for all species and total directed expenditures at Lake Cypress Springs, Texas, June 2006-May 2007.

Creel Statistic	Year
	2006/2007
Total fishing effort	37,047
Total directed expenditures	\$263,895

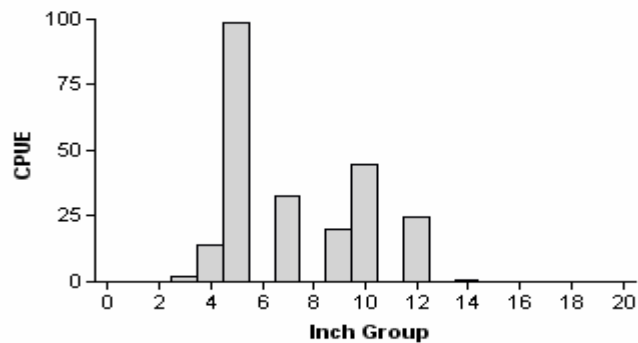
Gizzard shad

1998



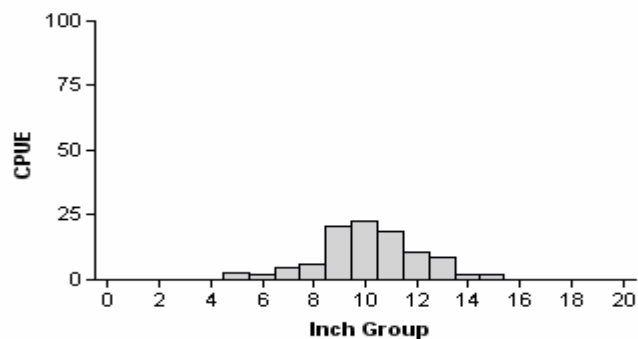
Effort = 1.5
 Total CPUE = 28.0 (24; 42)
 Stock CPUE = 27.3 (23; 41)
 PSD = 63 (10.1)
 IOV = 7.14 (3.1)

2002



Effort = 1.0
 Total CPUE = 239.0 (44; 239)
 Stock CPUE = 124 (23; 124)
 PSD = 21 (5.2)
 IOV = 61.16 (9.7)

2006



Effort = 1.0
 Total CPUE = 103.0 (23; 103)
 Stock CPUE = 98.0 (22; 98)
 PSD = 44 (10.4)
 IOV = 9.71 (5.6)

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, Lake Cypress

Springs, Texas, 1998, 2002, and 2006.

Bluegill

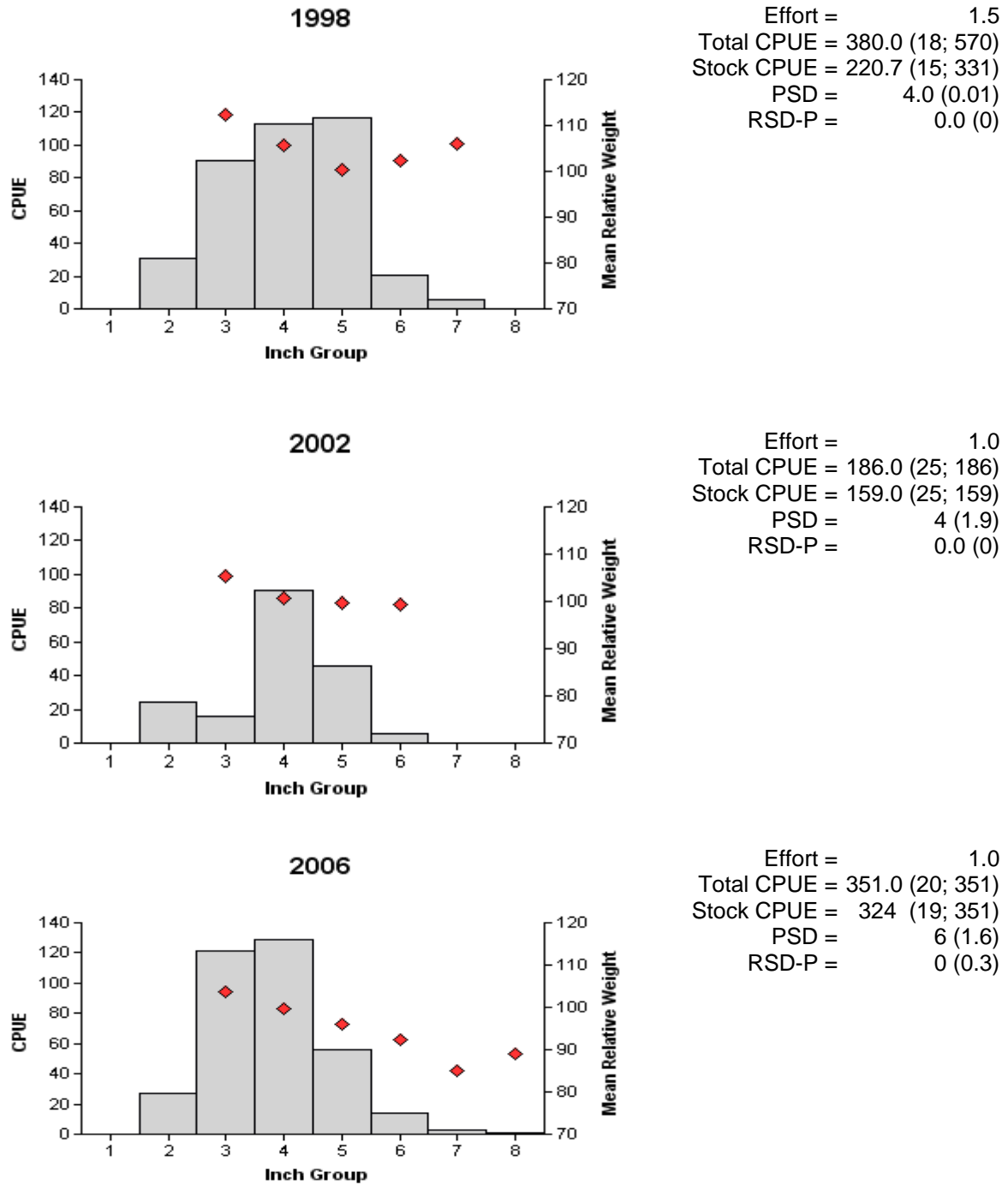


Figure 4. Number of bluegill caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys,

Lake Cypress Springs, Texas, 1998, 2002, and 2006.

Sunfish

Table 7. Creel survey statistics for sunfish at Lake Cypress Springs, Texas from June 2006 through May 2007 where total catch per hour is for anglers targeting bluegill and total harvest is the estimated number of sunfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2006/2007
Directed effort (h)	643.30 (66)
Directed effort/acre	0.19 (66)
Total catch per hour	3.10 ^a
Total harvest per hour	1.64 ^a
Total harvest (bluegill)	1,429.00 (92)
Harvest/acre (bluegill)	0.41 (92)
Percent legal released (all sunfish)	71.2

^a Sample size insufficient for calculating RSE

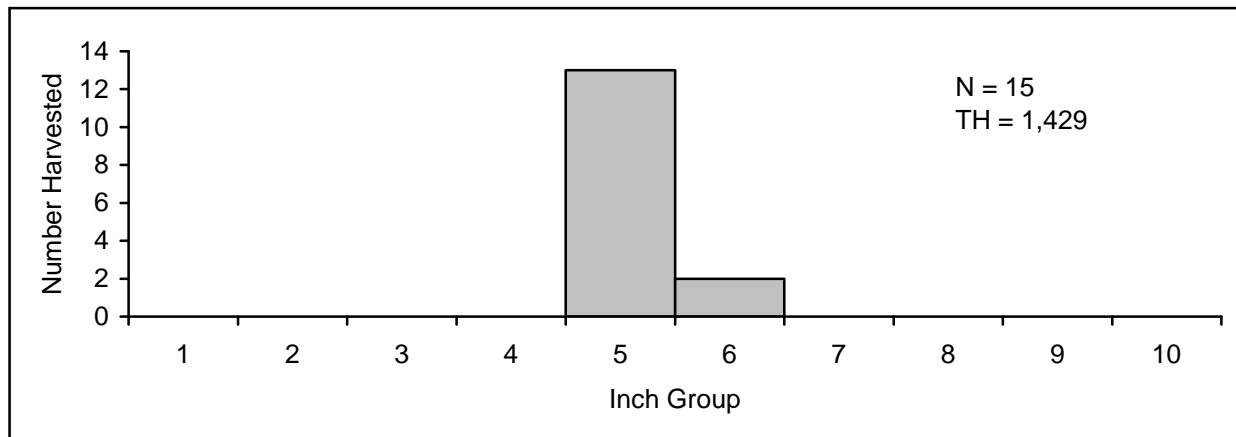


Figure 5. Length frequency of harvested bluegill observed during creel surveys at Lake Cypress Springs, Texas, June 2006-May 2007, all anglers combined. N is the number of harvested bluegill observed during creel surveys, and TH is the total estimated harvest for the creel period.

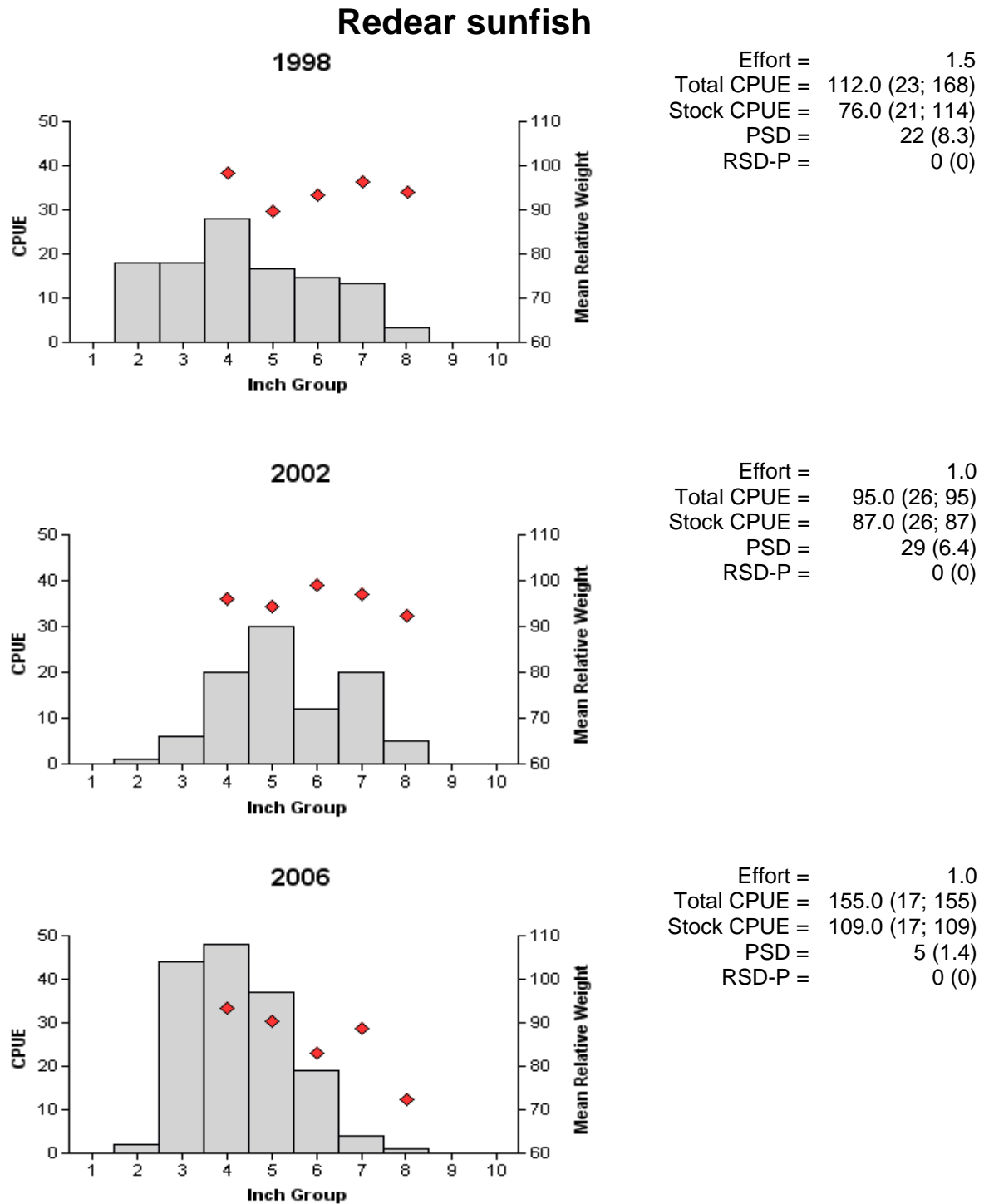
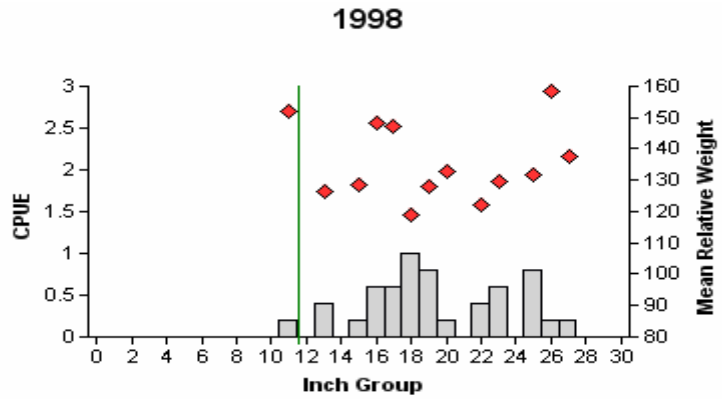
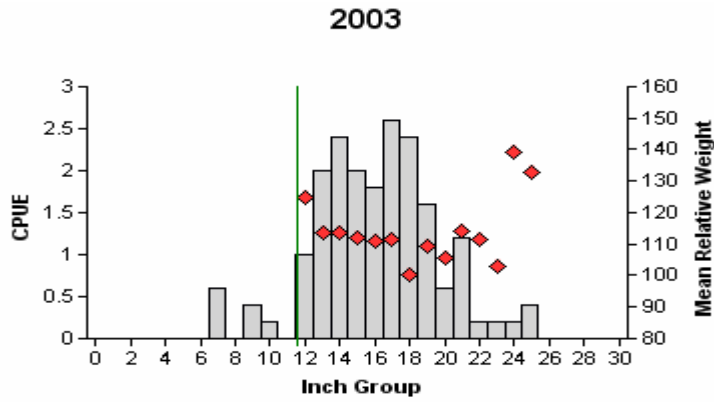


Figure 6. Number of redear sunfish caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Cypress Springs, Texas, 1998, 2002, and 2006.

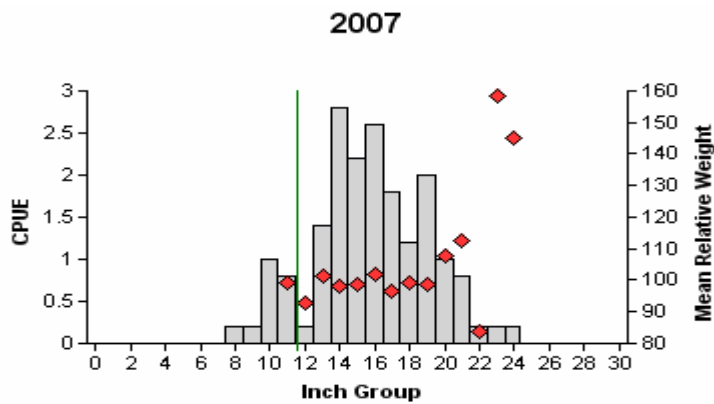
Channel catfish



Effort = 5.0
 Total CPUE = 6.2 (16; 31)
 Stock CPUE = 6.2 (16; 31)
 PSD = 87 (8.3)
 RSD-P = 19 (5.6)



Effort = 5.0
 Total CPUE = 19.8 (18; 99)
 Stock CPUE = 18.6 (15; 93)
 PSD = 60 (14.9)
 RSD-P = 3 (3)



Effort = 5.0
 Total CPUE = 18.8 (6; 94)
 Stock CPUE = 17.4 (4; 87)
 PSD = 57 (7.2)
 RSD-P = 1 (1.2)

Figure 7. 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, Lake Cypress Springs, Texas, 1998, 2003, and 2007. Vertical lines indicate minimum length limit.

Catfish

Table 8. Creel survey statistics for channel catfish at Lake Cypress Springs, Texas from June 2006-May 2007 where total catch per hour is for anglers targeting 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
	2006/2007
Directed effort (h)	4,491.01 (29)
Directed effort/acre	1.30 (29)
Total catch per hour	2.03 (66)
Total harvest per hour	1.21 (64)
Total harvest	11,797.62 (38)
Channel catfish	9,372.04 (29)
Catfish (unidentified)	2,425.58 (72)
Harvest/acre	3.40 (38)
Channel catfish	2.70 (29)
Catfish (unidentified)	0.70 (72)
Percent legal released	2.2

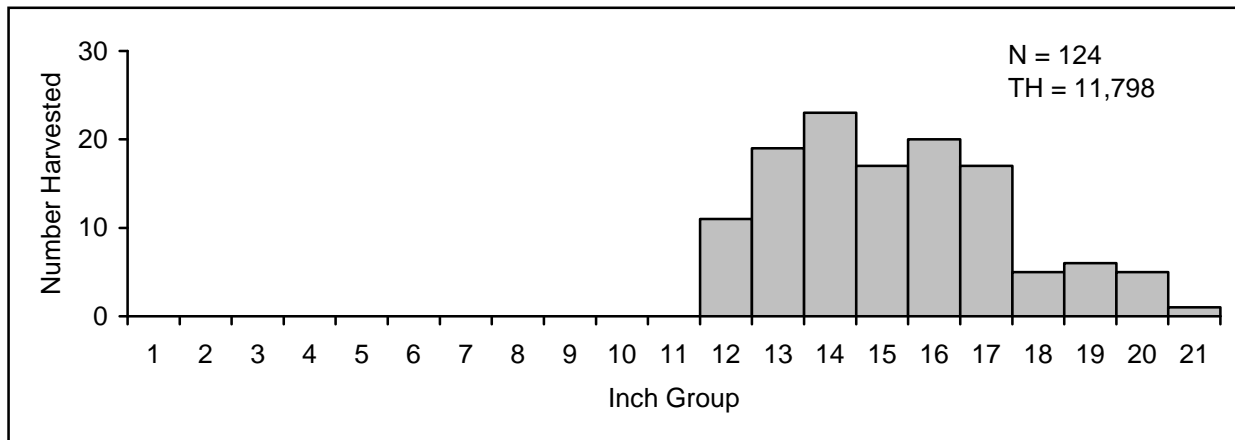


Figure 8. Length frequency of harvested channel catfish observed during creel surveys at Lake Cypress Springs, Texas, June 2006-May 2007, all anglers combined. N is the number of harvested channel catfish observed during creel surveys, and TH is the total estimated harvest of catfish for the creel period.

Spotted bass

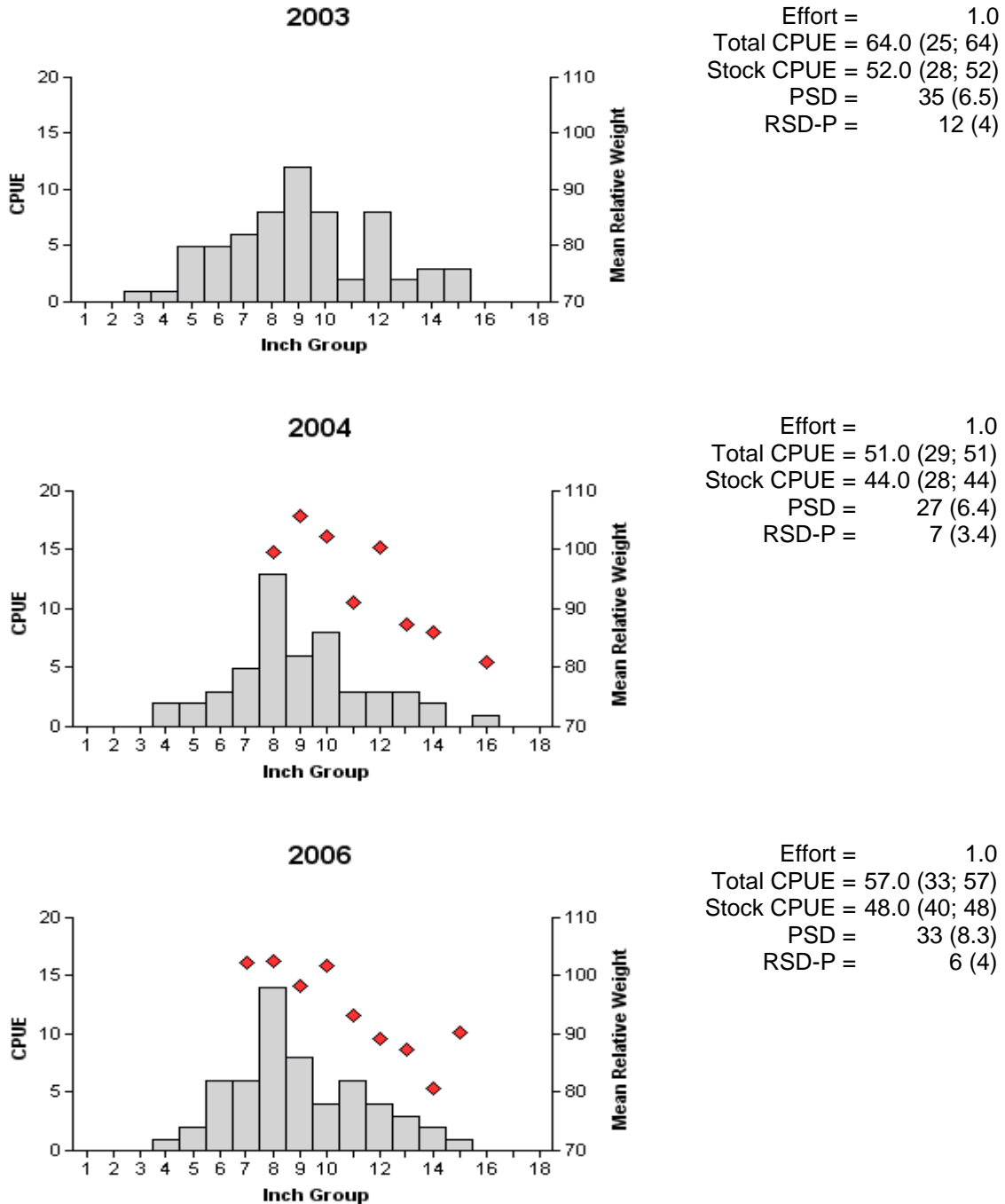
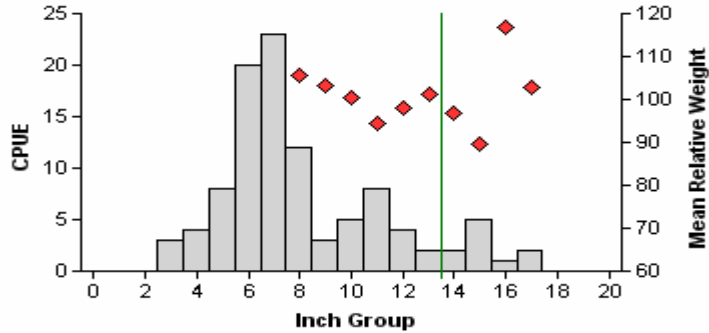


Figure 9. Number of spotted bass caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Cypress Springs, Texas, 2003, 2004, and 2006. Relative weight data were not collected in 2003.

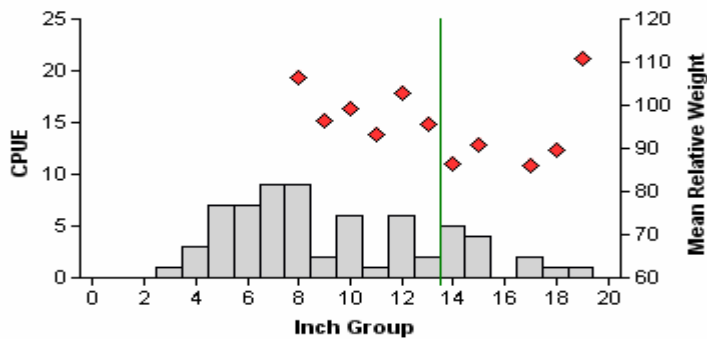
Largemouth bass

2003



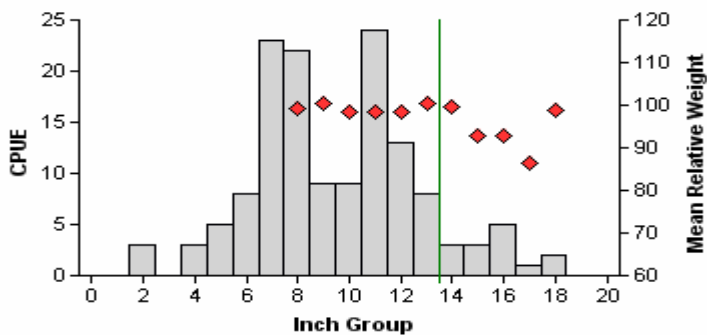
Effort = 1.0
 Total CPUE = 102.0 (28; 102)
 Stock CPUE = 44.0 (18; 44)
 PSD = 36 (9.8)
 RSD-P = 18 (6.7)

2004



Effort = 1.0
 Total CPUE = 66.0 (20; 66)
 Stock CPUE = 39.0 (24; 39)
 PSD = 54 (11.5)
 RSD-P = 21 (7.6)

2006



Effort = 1.0
 Total CPUE = 141.0 (24; 141)
 Stock CPUE = 99.0 (22; 99)
 PSD = 35 (6.2)
 RSD-P = 11 (4.6)

Figure 10. 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, Lake Cypress Springs, Texas, 2003, 2004, and 2006. Vertical lines indicate

minimum length limit.

Black bass

Table 9. Creel survey statistics for black bass at Lake Cypress Springs, Texas from June 2006 - May 2007, where total catch per hour is for anglers targeting black bass and total harvest is the estimated number of black bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2006/2007
Directed effort (h)	20,255.30 (18)
Directed effort/acre	5.85 (18)
Total catch per hour	1.19 (20)
Total harvest per hour	0.19 (36)
Total harvest	8,362.00 (52)
Spotted bass	1,859.00 (97)
Largemouth bass	6,503.00 (39)
Harvest/acre	2.42 (52)
Spotted bass	0.54 (97)
Largemouth bass	1.87 (39)
Percent legal released	47.7

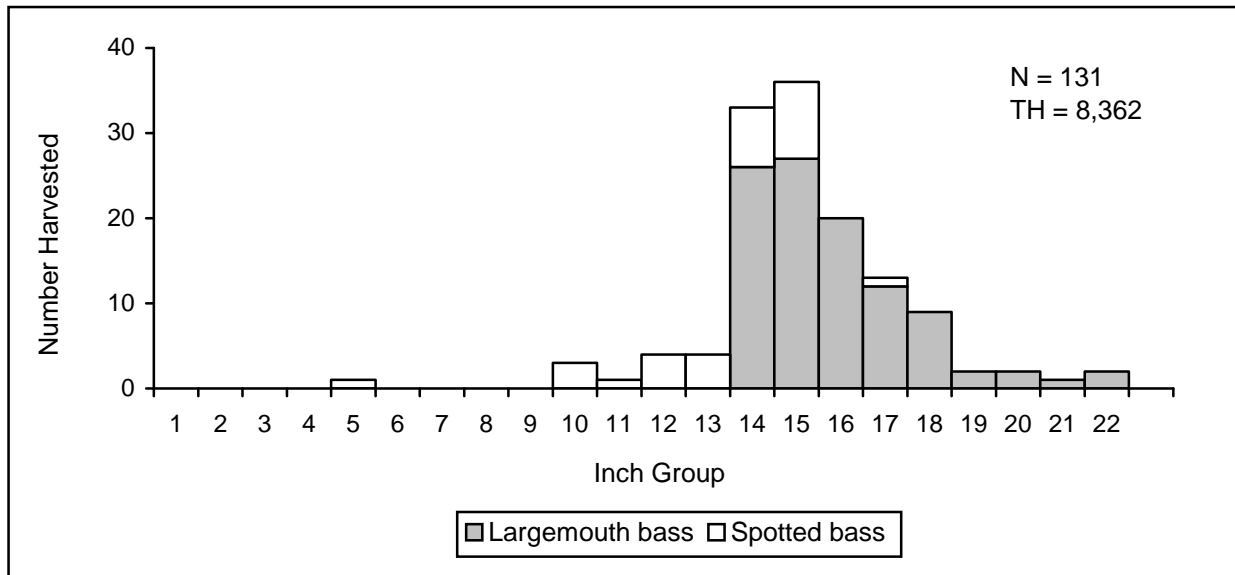


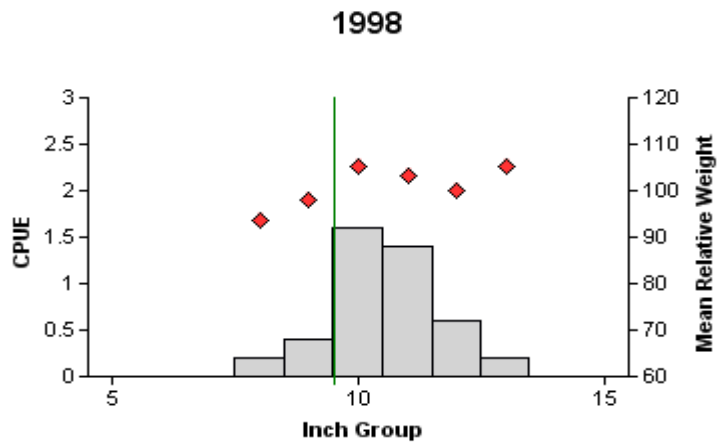
Figure 11. Length frequency of harvested black bass observed during creel surveys at Lake Cypress Springs, Texas, June 2006-May 2007, all anglers combined. N is the number of harvested black bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 10. Results of genetic analysis of largemouth bass collected by fall electrofishing, Lake Cypress Springs, Texas, 1991, 1995, 1998, 2002, and 2006. 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		
1991	30	1	0	7	22	14.0	3.3
1995	30	1	10	10	9	30.0	3.3
1998	51	0	3	32	16	20.6	0.0
2002	39	0	7	25	7	29.9	0.0
2006	60	0	NA	50 ^a	10	28.0	0.0

^a Determination of hybrid status not conducted.

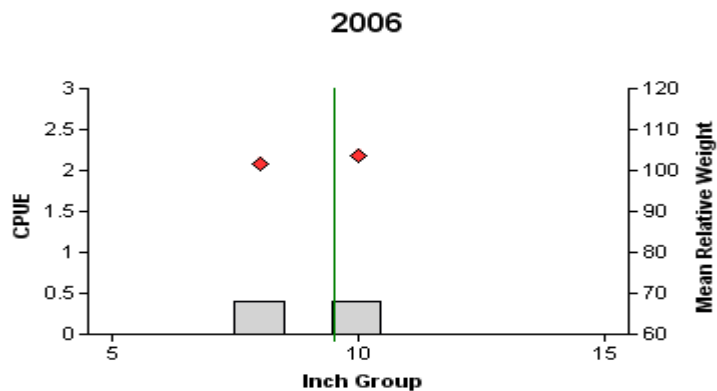
Black crappie



Effort = 5.0
 Total CPUE = 4.6 (74; 23)
 Stock CPUE = 4.4 (78; 22)
 PSD = 100 (0)
 RSD-P = 86 (4.7)



Effort = 5.0
 Total CPUE = 3.2 (82; 16)
 Stock CPUE = 3.2 (82; 16)
 PSD = 75 (5.4)
 RSD-P = 19 (6.9)



Effort = 5.0
 Total CPUE = 0.8 (100; 4)
 Stock CPUE = 0.8 (100; 4)
 PSD = 100 (0)
 RSD-P = 50 (0)

Figure 12. 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, Lake Cypress Springs, Texas, 1998, 2002, and 2006. Vertical lines indicate minimum length limit.

Crappie

Table 11. Creel survey statistics for white and black crappie at Lake Cypress Springs, Texas from June 2006-May 2007, where effort and 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
	2006/2007
Directed effort (h)	8,799.80 (19)
Directed effort/acre	2.54 (19)
Total catch per hour	4.12 (35)
Total harvest per hour	1.27 (38)
Total harvest	15,675.00 (38)
White crappie	5,463.00 (44)
Black crappie	10,211.00 (34)
Harvest/acre	4.53 (38)
White crappie	1.58 (44)
Black crappie	2.95 (34)
Percent legal released	0.6

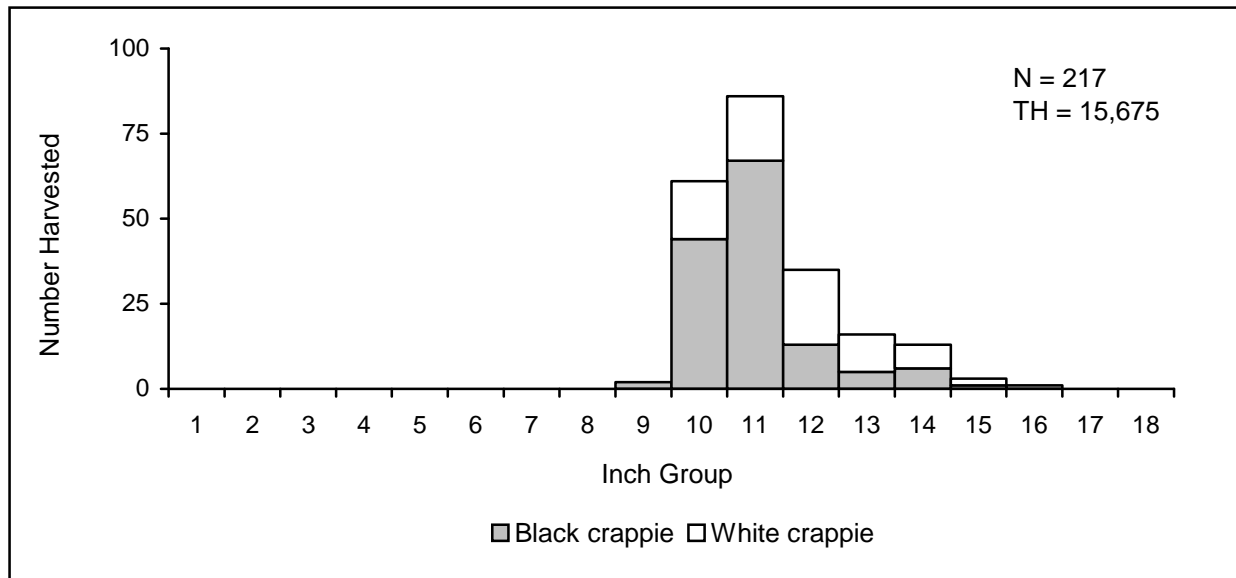


Figure 13. Length frequency of harvested white and black crappie observed during creel surveys at Lake Cypress Springs, Texas, June 2006-May 2007, all anglers combined. N is the number of harvested crappie observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 12. Proposed sampling schedule for Lake Cypress Springs, 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.

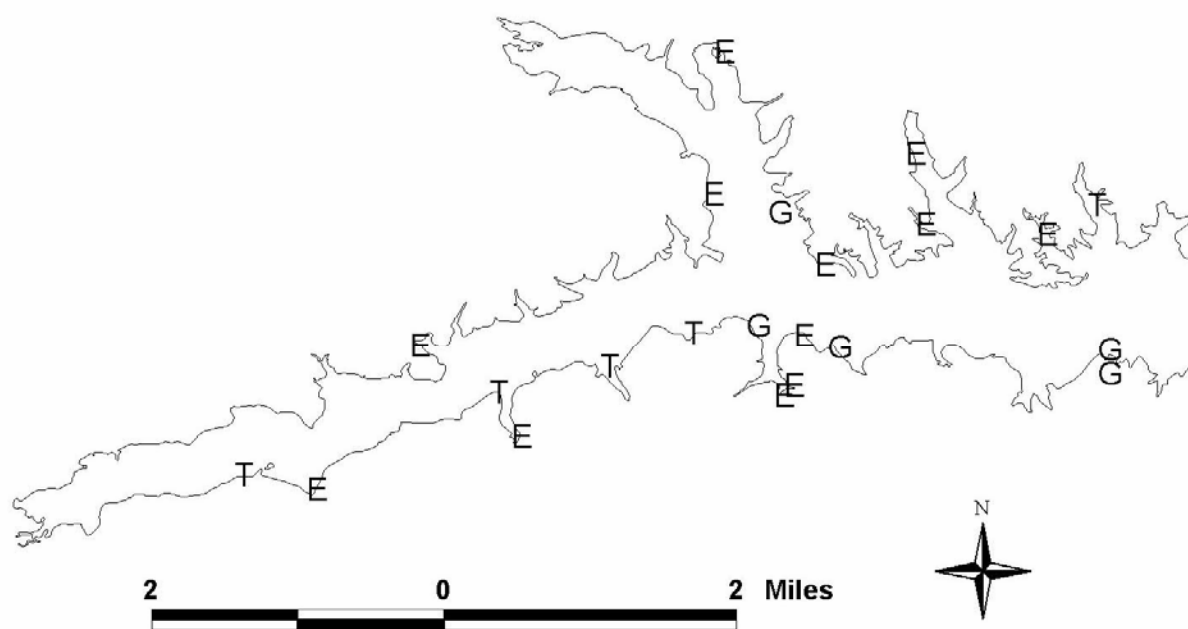
Survey Year	Vegetation	Electrofisher	Trap net	Gill net	Report
Summer 2007 - Spring 2008	A				
Summer 2008 - Spring 2009	A	A			
Summer 2009 - Spring 2010	A				
Summer 2010 - Spring 2011	S	S	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Lake Cypress Springs, Texas, 2006-2007.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					103	103.0
Threadfin shad					61	61.0
Channel catfish	94	18.8				
White bass	12	2.4				
Warmouth					3	3.0
Bluegill					351	351.0
Longear sunfish					20	20.0
Redear sunfish					155	155.0
Spotted bass					57	57.0
Largemouth bass					141	141.0
White crappie			0	0.0		
Black crappie			4	0.8		

APPENDIX B



Location of sampling sites, Lake Cypress Springs, Texas, 2006-2007. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively.