

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-31

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2005 Survey Report

Falcon Reservoir

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TABLE OF CONTENTS

Survey and Management Summary.....	2
Introduction.....	3
Reservoir Description.....	3
Management History	3
Methods.....	4
Results and Discussion	4-5
Fisheries Management Plan.....	6
Literature Cited.....	7
Figures and Tables.....	8-23
Water level (Figure 1).....	8
Reservoir characteristics (Table 1).....	8
Harvest regulations (Table 2).....	9
Stocking history (Table 3).....	10-11
Habitat survey (Table 4).....	12
Percent directed angler effort per species (Table 5).....	12
Total fishing effort and fishing expenditures (Table 6).....	12
Gizzard shad (Figure 2).....	13
Bluegill (Figure 3).....	14
Blue catfish (Figures 4-5; Table 7).....	15-16
Channel catfish (Figures 6-7; Table 8).....	17-18
Largemouth bass (Figures 8-9; Tables 9-10).....	19-21
White crappie (Figure 10).....	22
Proposed sampling schedule (Table 11).....	23
Appendix A	
Catch rates for all species from all gear types	24
Appendix B	
Map of 2005-2006 sampling locations.....	25

SURVEY AND MANAGEMENT SUMMARY

Fish populations in Falcon Reservoir were surveyed in 2005 using electrofishing and trap nets and in 2006 using gill nets. Creel sampling was used to survey anglers from January 2006 to June 2006. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Falcon Reservoir is a 83,654-acre water supply and hydroelectric impoundment located in south Texas on the Rio Grande River bordering Mexico. Water levels began declining in 1992 due to drought, then increased in 2003, reaching to within 11 feet of conservation pool in 2005. Habitat in 2005 was primarily flooded terrestrial vegetation. Commercial gill netting is legal on the Mexican side of the reservoir and conducted illegally on the Texas side.
- **Management History:** Important sport fishes historically include largemouth bass, catfishes, crappie, white bass, and striped bass. White bass and crappie currently do not provide fisheries in the reservoir because of low population abundance due to the extended period of low water and commercial gill netting. Stockings of TPWD-reared temperate basses and white crappie have been terminated because of gill netting in the reservoir. Concurrent with the increasing water level, Florida largemouth bass (FLMB) and northern largemouth bass were stocked in 2003 and 2004. Largemouth bass harvest was managed with a 10-inch minimum length limit (MLL) and a 10-fish daily bag limit (DBL) until 1985 when the regulation was changed to a 14-inch MLL and 5-fish DBL. Harvest of all other species has been according to statewide regulations.
- **Fish Community**
 - **Prey species:** Gizzard shad, threadfin shad, and bluegill form the reservoir's forage base. Other sunfishes and tilapia also exist in the reservoir and contribute to the forage base. Relative abundance of bluegill has increased and relative abundance of gizzard shad has decreased over the last three sample years.
 - **Catfishes:** Since 2002, blue catfish relative abundance remained consistent and population size structure improved. Channel catfish relative abundance increased since 2002. Sixteen percent of the total angling effort was directed at catfishes during the 6-month creel period in 2006 with anglers harvesting 3,035 blue catfish and 8,786 channel catfish.
 - **Temperate basses:** No white bass were collected in 2002, 2004, and 2006. Striped bass stocking has not been conducted since 2002, therefore relative abundance is low. No angler catches of either species were reported during the 6-month creel period in 2006.
 - **Largemouth bass:** Relative abundance of largemouth bass increased since 2002 and size structure of the population improved in 2005 compared to in 2003. Anglers caught, on average, 1.40 fish/h and harvested 15,557 fish during the 6-month creel period.
 - **White crappie:** Relative abundance of white crappie remained very low. One white crappie was collected in 2005, three in 2001 and zero in 1998. No white crappie were reported caught by anglers during the 6-month creel period.
- **Management Strategies:** Promote the reservoir and its high quality largemouth bass fishery and work with TPWD law enforcement to better understand the impact of commercial gill netting on the reservoir's fish community.

INTRODUCTION

This document is a summary of fisheries data collected from Falcon Reservoir in 2005-2006. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data is presented with the 2005-2006 data for comparison.

Reservoir Description

Falcon Reservoir is a 83,654-acre impoundment located on Rio Grande River on the Mexican border in South Texas. The reservoir was built in 1954 by the International Boundary and Water Commission and Mexico to provide water for irrigation in Texas and Mexico and for hydroelectric power generation. The primary tributaries are the Rio Grande and the Rio Salado (Tamaulipas, Mexico). Water level declined to a record low of 54 feet below conservation pool in 2002 as the result of a drought that began in 1992. During the extended low water period, terrestrial vegetation became established on the dry reservoir bottom. In 2003, the water level began to rise due to high rainfall inundating the terrestrial vegetation, and filling the reservoir to within 11 feet of conservation pool in 2005 (Figure 1). There are two public boat ramp, some motels, and RV parks adjacent to the reservoir with boat access. Shoreline angling access is limited to areas around the boat ramps. Commercial gill netting is allowed on the Mexican side of the reservoir. However, the Mexican commercial gill netters continue to operate illegally on the Texas side. Habitat at the time of sampling consisted primarily of flooded terrestrial vegetation. Other descriptive characteristics for Falcon Reservoir are in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Dean 2001) included:

1. Stock Florida largemouth bass when the drought breaks and water level increases.
Action: A total of 990,084 Florida largemouth bass were stocked in 2003, 2004, and 2005. Additionally, 28,043 blue catfish, 217,718 bluegill, 174,241 northern largemouth bass, 136 adult white bass, and 1,500 adult white crappie were stocked during the same time period.
2. Stock striped bass at 10 fish/acre when the reservoir returns to near conservation pool.
Action: Striped bass have not been stocked. Stocking of all open water species has been suspended until illegal gill netting activities have been curtailed.

Harvest regulation history: Since impoundment, harvest of all sport fishes in Falcon Reservoir, except largemouth bass, was managed according to statewide regulations (Table 2). In 1985, largemouth bass harvest was managed a 14-inch minimum size limit (MLL) and 5-fish daily bag limit (DBL) which became the statewide regulation for this species in 1986.

Stocking history: Stocking of Falcon Reservoir began in 1975. Walleye were stocked from 1975-1977 and striped bass were stocked periodically from 1976 through 2002. Palmetto bass were stocked in 1984 and 1987. Smallmouth bass were stocked in 1984. A few adult white bass were stocked in 2003 and 2004 and adult white crappies were stocked in 2003. Northern largemouth bass were stocked in 1984 and 2004, and Florida largemouth bass were first stocked in 1975 and most recently in 2005. Bluegill and blue catfish were stocked in 2003. The complete stocking history is in Table 3.

Vegetation/habitat history: Habitat at Falcon Reservoir consisted primarily of flooded terrestrial vegetation (mainly brush species). Aquatic vegetation was not found to occur in the reservoir in 2005 and 2006 (Table 4).

METHODS

Fishes were collected by electrofishing (2 hours at 24 5-minute stations), trap netting (20 net-nights at 20 stations) and gill 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 nets and trap nets, as the number of fish per net night (fish/nn). Electrofishing surveys were conducted during the daytime at randomly selected stations, trap net survey sites were biologist-selected, and gill net survey sites were randomly selected. Except as described above, all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weight (W_t)] 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. Age of 17 largemouth bass ranging from 13.0 to 14.9 inches in length was determined using otoliths to calculate mean age at 14 inches length.

Genetic analysis of age-0 largemouth bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

Creel surveys were conducted during the 6-month period from January 1, 2006 to June 30, 2006 to estimate angling effort and sport fish catch and harvest. Sampling was stratified by season (N=2 3-month quarters), and day type (weekend and week days). Data were obtained from boat anglers using the access-point survey method. Uniform sampling probabilities were used to randomly select dates and times within strata. Ten total creel sampling events were conducted each quarter (weekend days = 5 and week days =5).

Littoral zone/physical habitat, vegetation, angler access, and facility surveys were conducted in accordance with Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

RESULTS AND DISCUSSION

Habitat: The primary physical habitat in the reservoir since the water increase began in 2003 was flooded terrestrial vegetation. Flooded terrestrial vegetation occurred along nearly 100% of the shoreline in 2005 (Table 4). When the water level was highest in 2005, brush was inundated to a depth of 25 feet in many areas of the reservoir.

Creel: Angling effort was greatest for largemouth bass representing 83% of the total angling effort on the reservoir from January to June 2006 (Table 5). During that same 6-month period, anglers expended a total of 47,978 angler hours and had total angling-related expenditures of \$425,746 (Table 6).

Prey species: Electrofishing CPUE of gizzard shad was lower in 2005 (5.5 fish/h) than in 2003 (23.0 fish/h) and 2002 (37.0 fish/h). Gizzard shad IOV was poor in 2005, indicating that only 36% of gizzard shad were available to existing predators (Figure 2). Electrofishing CPUE of bluegill (Figure 3) remained low in 2005 (5.0 fish/h) which was similar to in 2003 (0.5 fish/h) and 2002 (0 fish/h). Threadfin shad and blue tilapia are also important prey species in the reservoir. Electrofishing CPUE of threadfin shad was 17.5 fish/h in 2005. Relative abundance of blue tilapia could not be determined because of low susceptibility of this species to sampling gears.

Blue catfish: Gillnet CPUE of blue catfish in 2006 (4.6 fish/nn) was similar to in 2004 (4.1 fish/nn) and greater than in 2002 (2.1 fish/nn). Size structure of the population was improved in 2006 compared to in

previous years as most fish were greater than the MLL (Figure 4). Anglers harvested 3,035 blue catfish during the January-June 2006 creel period (Figure 5). The majority of the harvested fish ranged from 14-16 inches in length.

Channel catfish: Gillnet CPUE of channel catfish in 2006 (3.0 fish/nn) was greater than in 2004 (1.4 fish/nn) and 2002 (0.2 fish/nn). Size structure of the population was similar in 2006 and 2004 (Figure 6). Anglers harvested 8,786 channel catfish during the January-June 2006 creel period (Figure 7). The modal peak of the length frequency distribution of harvested channel catfish was 15 inches.

Temperate basses: Few, if any, white bass exist in the reservoir. No white bass were collected in gill nets since 1995 and no fish were reported caught by anglers, both via creel interviews and anecdotally. The extended low water period along with intense commercial netting on the reservoir effectively decimated the white bass population in the mid to late 1990s. A few adult white bass (N = 139 total fish) were stocked in 2003 and 2004, but these stockings made no detectable effect on the white bass population. The striped bass population is sparse as no striped bass were collected in gill nets in 2006 and the last stocking of this species occurred in 2002. Although not documented through creel sampling, anglers did report catching a few large striped bass in spring and summer 2006.

Largemouth bass: Electrofishing CPUE of largemouth bass was greater in 2005 (39.0 fish/h) than in 2003 (20.0 fish/h) and 2002 (14.5 fish/h). Size structure of the population improved in 2005 compared to 2003; PSD increased to 71 in 2005 from 8 in 2004 (Figure 8). Growth of largemouth bass was rapid with most fish (16 of 17) attaining 14 inches in length at age-1. During the 6-month creel period, anglers expended 40,031 angling hours targeting largemouth bass representing a low reservoir-wide angling effort rate of 0.69 h/acre (Table 8). Largemouth bass anglers experienced tremendous angling success catching an average of 1.40 fish/h. Of the 383 fish measured during creel surveys, 241 fish (63%) were harvested by non-tournament anglers and 142 fish (37%) were brought to weigh-in by tournament anglers (Figure 9). Largemouth bass 15 inches in length were most common size of fish recorded as harvested. Only 48% of the legally harvestable size fish caught by anglers were released. Genetic introgression of FLMB into the population declined in 2005 (Table 9). In 2005, percent FLMB alleles was 68 compared to 81 and 84 in 2000 and 2001, respectively.

White crappie: The reservoir contains a sparse population of white crappie. In 2005 and 2006, only one 12-inch fish was caught in 20 net-nights of trap-net sampling effort (Figure 10). The extended low water period together with intense commercial netting on the reservoir severely impacted the white crappie population during the mid to late 1990s. The adult white crappie stocking in 2003 (1,500 fish) has made no detectable effect on the crappie population. In winter 2005, anglers and tackle shop owners reported a few catches of white crappie.

Prepared – July 2006.

ISSUE 1: A high quality largemouth bass fishery currently exists at the reservoir due to the recent water level increase and associated habitat improvement, however the fishery is underutilized. In 2006, average angler catch rate of largemouth bass was very high (1.40 fish/h), but angling effort was low (0.69 h/acre)

MANAGEMENT STRATEGY

1. Cooperate with the Zapata County Chamber of Commerce in promoting the reservoir and high quality largemouth bass fishery and prepare news releases and popular articles to attract more anglers.

ISSUE 2: The white crappie and white bass populations which historically supported important fisheries at the reservoir are currently non-existent due to the considerable legal and illegal gill netting that occurred in the reservoir during the extended low water period (1993-2003) and continues to occur.

MANAGEMENT STRATEGY

1. Conduct additional gill net and trap net sampling to monitor the white crappie and white bass populations in 2007-2008.
2. Work with TPWD law enforcement to monitor the intensity of the illegal gill netting activity and better understand its effect on the reservoir's fish community.

SAMPLING SCHEDULE JUSTIFICATION:

Annual fall electrofishing is necessary to monitor the largemouth bass population and additional gill net and trap net sampling in 2007-2008 will be conducted to monitor the catfish, white bass, and white crappie populations. The 6-month creel survey (in 2010) will be conducted to monitor changes in the reservoir's sport fishery.

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- Dean, W. J., Jr. 2001. Statewide freshwater fisheries monitoring and management program survey report for Falcon Reservoir, 2001. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
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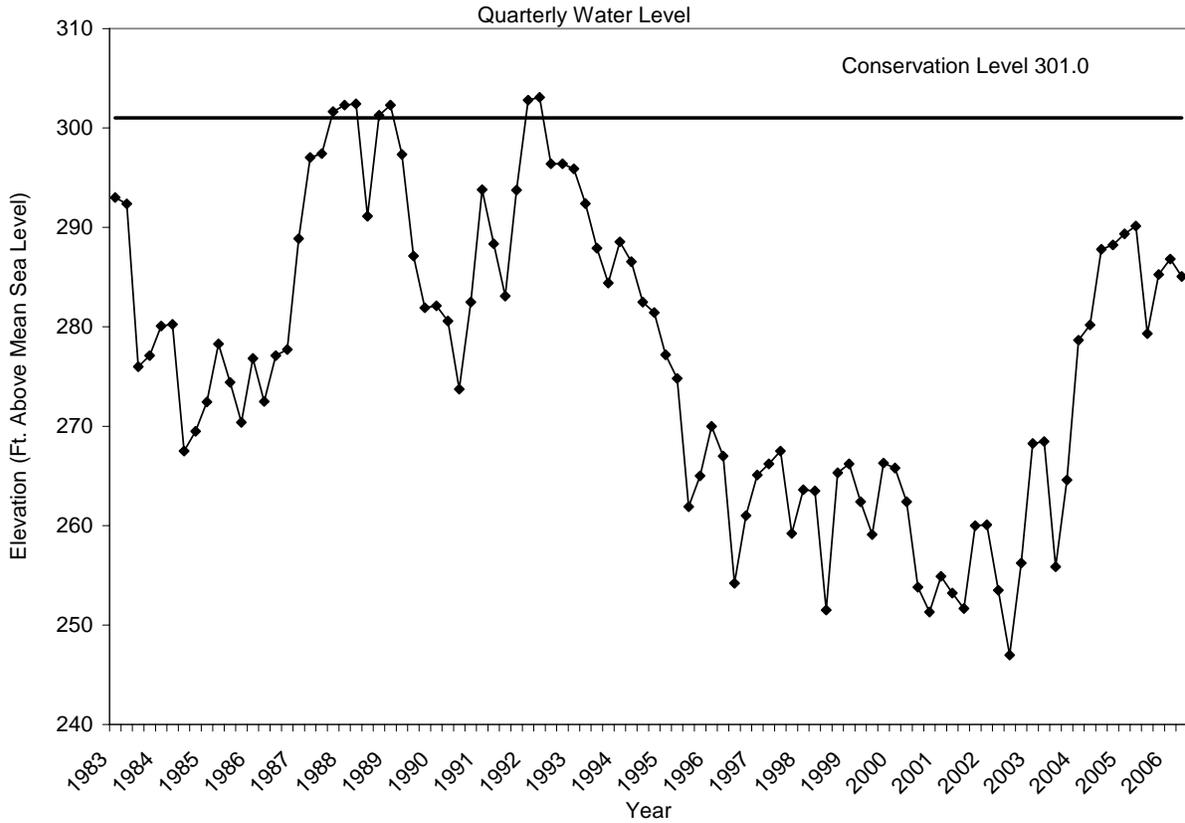


Figure 1. Quarterly water level elevations in feet above mean sea level recorded for Falcon Reservoir, Texas from 1983 to 2006. At conservation pool elevation, reservoir surface area is 83,654 acres.

Table 1. Characteristics of Falcon Reservoir, Texas.

Characteristic	Description
Year constructed	1933
Controlling authority	International Boundary and Water Commission
Counties	Zapata and Starr
Reservoir type	Mainstream
Shoreline Development Index	10.64
Conductivity	1,525 umhos/cm

Table 2. Harvest regulations for Falcon Reservoir.

Species	Bag Limit	Length Limit (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12" minimum
Catfish, flathead	5	18" minimum
Bass, white	25	10" minimum
Bass, striped	5	18" minimum
Bass, largemouth	5	14" minimum
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10" minimum

Table 3. Stocking history of Falcon Reservoir, Texas. Size categories are: FRY =<1 inch; FGL = 1-3 inches; AFGL = 8 inches, ADL = adults, and NR = size not recorded.

Species	Year	Number	Size
Walleye	1975	447,184	NR
	1976	4,830,000	NR
	1977	1,706,700	NR
	Total	6,983,884	
Smallmouth bass	1984	20,265	FGL
Striped bass	1976	149,804	NR
	1977	725,692	NR
	1978	186,287	NR
	1979	174,638	NR
	1983	386,503	NR
	1988	617,902	FGL
	1989	4,786,960	FRY
	1994	685,542	FGL
	1995	782,685	FGL
	1997	78,837	FGL
	1998	78,645	FGL
	1999	390,919	FGL
	2000	769,406	FGL
	2002	108,027	FGL
	Total	9,921,847	
White bass	2003	29	ADL
	2004	110	ADL
	Total	139	
Palmetto bass	1984	222,174	FGL
	1987	665,000	FRY
	Total	887,174	
White crappie	2003	1500	ADL
Bluegill	2003	215,718	FGL
Blue catfish	2003	28,043	FGL
Mixed largemouth bass	1989	219,316	NR
Florida largemouth bass	1975	750,000	FGL
	1976	2,250	FGL
	1978	451,049	FGL
	1979	131,455	FGL
	1981	67,000	FGL
	1984	18,375	FGL
	1985	102,000	FGL
	1989	117	ADL
	1997	501,783	FGL
	2001	131,021	FGL

Table 3 continued. Stocking history of Falcon Reservoir, Texas. Size categories are: FRY \leq 1 inch; FGL = 1-3 inches, ADL = adults, and NR = size not recorded.

Species	Year	Number	Size
Florida largemouth bass	2003	313,739	FGL
	2004	185	ADL
	2004	664,165	FGL
	2005	11,995	FGL
	Total	3,145,134	
Largemouth bass	1984	6000	ADL
	2004	174,241	FGL
	Total	180,241	

Table 4. Survey of littoral zone and physical habitat types, Falcon Reservoir (Texas side), Texas, 2005. 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. Water level was 282.6 feet above mean sea level and reservoir area was 54,127 acres at time of survey.

Shoreline habitat type	Shoreline Distance		Surface Area	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Flooded dead terrestrial vegetation	215.0	99.6		
Rip rap	0.2	0.1		
Non-descript shoreline with boat docks	0.7	0.3		
Native submerged vegetation	0	0	0	0
Native emerged vegetation	0	0	0	0

Table 5. Percent directed angler effort by species for Falcon Reservoir, Texas, January 1, 2005-March 31, 2005.

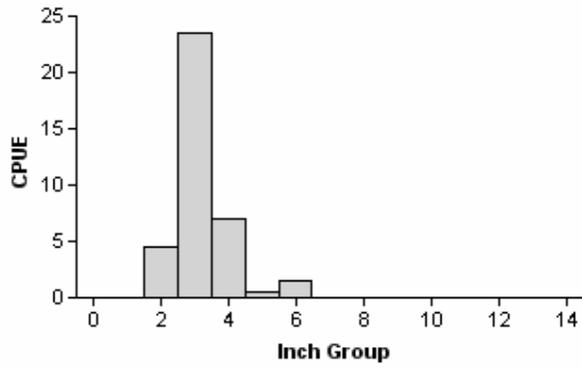
Species	Percent
Catfish spp.	16.2
White bass	0.3
Largemouth bass	83.4

Table 6. Total fishing effort (h) for all species and total angling expenditures at Falcon Reservoir, Texas, January 1, 2006 – March 31, 2006.

Creel statistic	Creel estimate
Total angling effort	47,978
Total angling expenditures	425,746

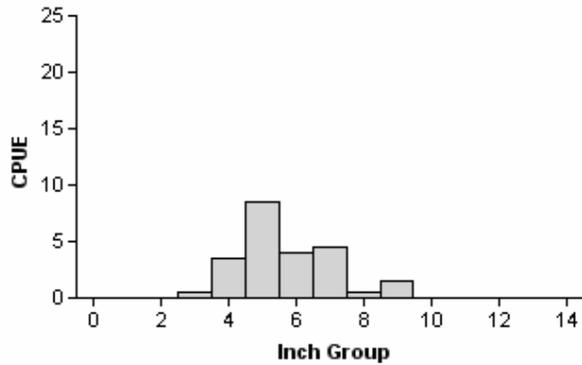
Gizzard Shad 2002

Effort = 2.0
 Total CPUE = 37.0 (50; 74)
 IOV = 100 (0.0)



2003

Effort = 2.0
 Total CPUE = 23.0 (23; 46)
 IOV = 91 (0.1)



2005

Effort = 2.0
 Total CPUE = 5.5 (27; 11)
 IOV = 36 (0.3)

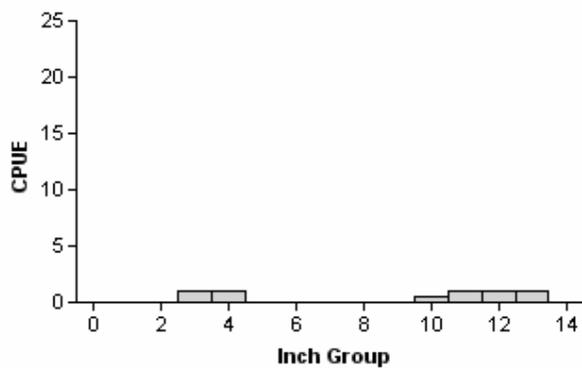
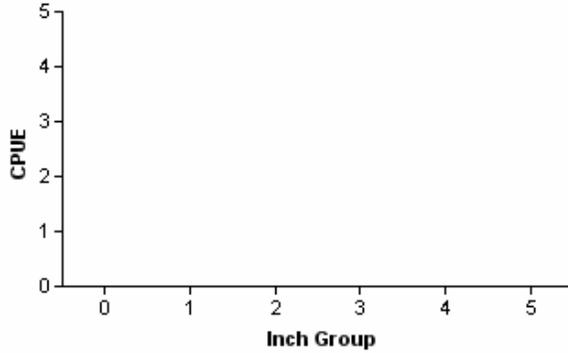


Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Falcon Reservoir, Texas, 2002, 2003, and 2005.

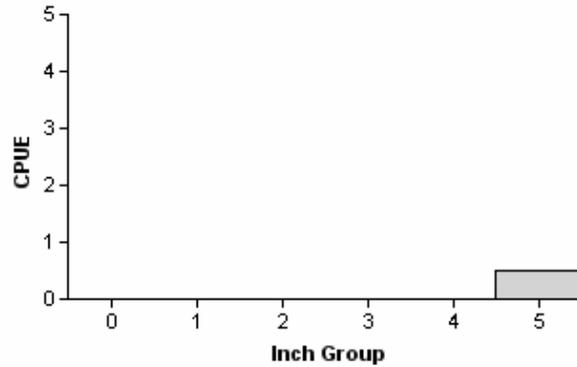
Bluegill

2002



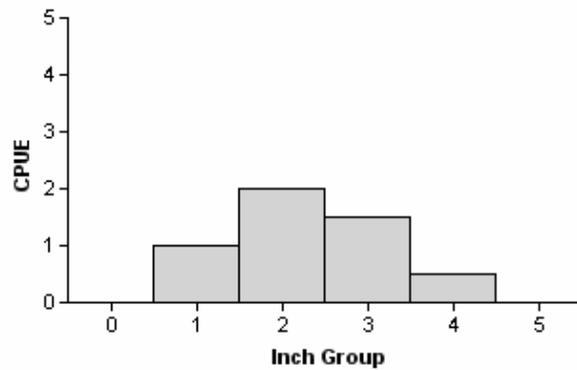
Effort = 2.0
 Total CPUE = 0.0 (0; 0)
 PSD = undefined

2003



Effort = 2.0
 Total CPUE = 0.5 (100; 1)
 PSD = 0 (1.0)

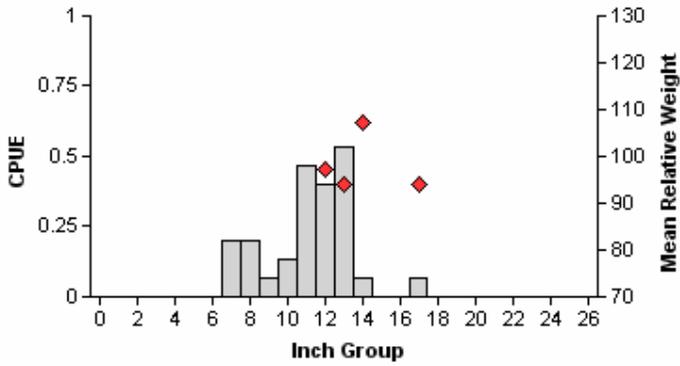
2005



Effort = 2.0
 Total CPUE = 5.0 (27; 10)
 PSD = 0 (1.4)

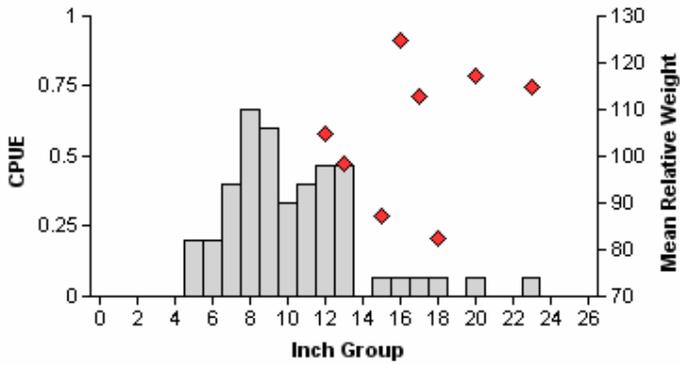
Figure 3. Number of bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Falcon Reservoir, Texas, 2002, 2003, and 2005.

Blue Catfish 2002



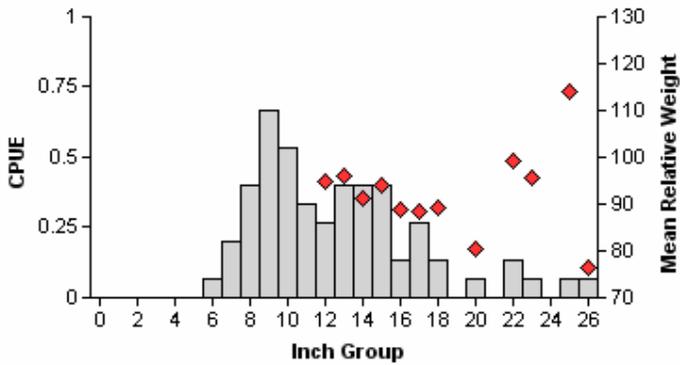
Effort = 15
 Total CPUE = 2.1 (20; 32)
 PSD = 0 (0.7)

2004



Effort = 15
 Total CPUE = 4.1 (25; 62)
 PSD = 10 (0.1)

2006



Effort = 15
 Total CPUE = 4.6 (26; 69)
 PSD = 17 (0.1)

Figure 4. Number of blue catfish caught per net night (CPUE), 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, Falcon Reservoir, Texas, 2002, 2004, and 2006.

Blue Catfish

Table 7. Creel survey statistics for blue catfish species at Falcon Reservoir from January 1, 2006 to June 30, 2006, where total catch per hour is for anglers targeting all catfish species and total harvest is the estimated number of blue catfish harvested by all anglers. Relative standard errors are in parentheses. For below per acre estimates, reservoir surface area at mid-point of the creel survey (April 1, 2006) was 57,606 acres which was determined from a stage-area curve provided by the controlling authority.

Creel Survey Statistic	Year
	2006
Directed effort (h)*	7,794 (25)
Directed effort/acre*	0.14 (25)
Total catch per hour*	1.18 (25)
Total harvest	3,035 (57)
Harvest/acre	0.05 (57)
Percent legal released*	0.6

Asterisk denotes directed effort combined for all species

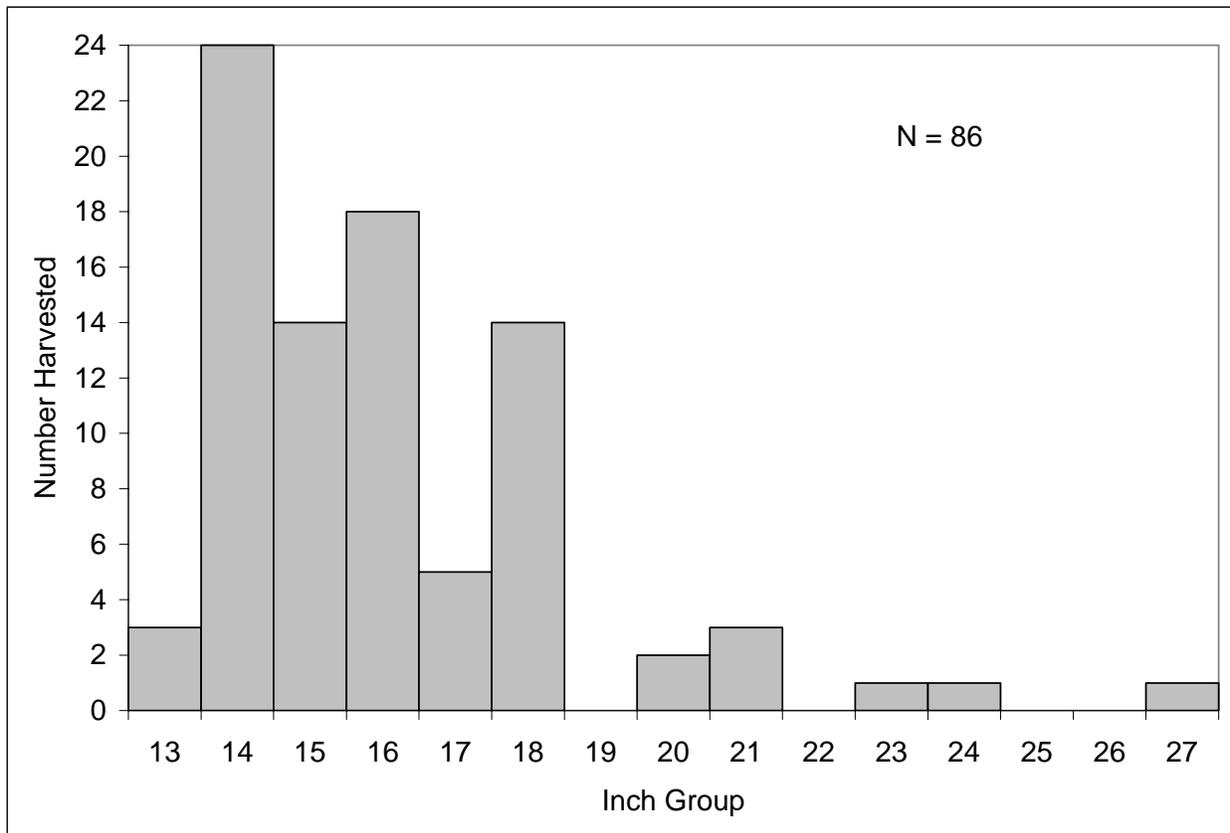
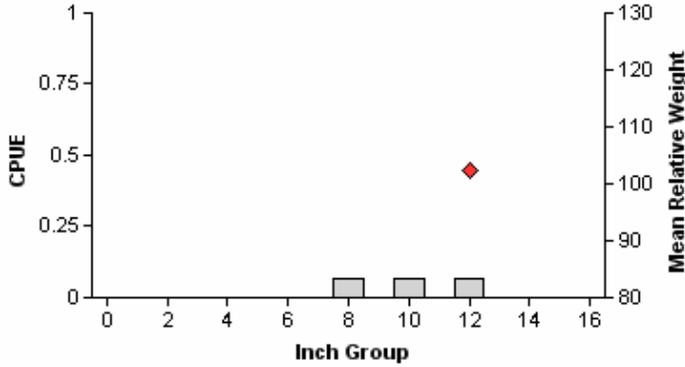


Figure 5. Length frequency of harvested blue catfish measured during creel surveys at Falcon Reservoir, Texas, January 2006 through June 2006. N is the number of harvested blue catfish observed during creel surveys.

Channel Catfish

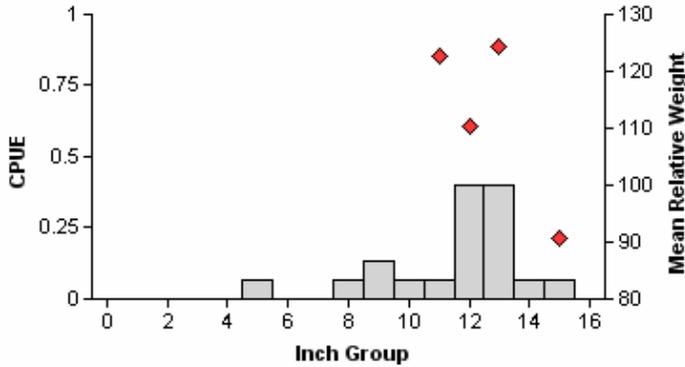
2002

2002, 2004, and 2006.



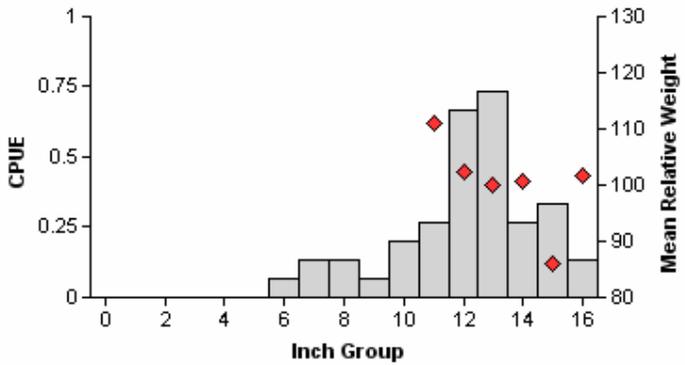
Effort = 15
 Total CPUE = 0.2 (33; 3)
 PSD = 0 (3.2)

2004



Effort = 15
 Total CPUE = 1.4 (19; 21)
 PSD = 6 (0.1)

2006



Effort = 15
 Total CPUE = 3.0 (20; 45)
 PSD = 6 (0.0)

Figure 6. Number of channel catfish caught per net night (CPUE), 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, Falcon Reservoir, Texas,

Channel Catfish

Table 8. Creel survey statistics for channel catfish species at Falcon Reservoir from January 1, 2006 to June 30, 2006, where total catch per hour is for anglers targeting all catfish species and total harvest is the estimated number of channel catfish harvested by all anglers. Relative standard errors are in parentheses. For below per acre estimates, reservoir surface area at mid-point of the creel survey (April 1, 2006) was 57,606 acres which was determined from a stage-area curve provided by the controlling authority.

Creel Survey Statistic	Year
	2006
Directed effort (h)*	7,794 (25)
Directed effort/acre*	0.14 (25)
Total catch per hour*	1.18 (25)
Total harvest	8,786 (43)
Harvest/acre	0.15 (43)
Percent legal released*	0.6

Asterisk denotes directed effort combined for all species

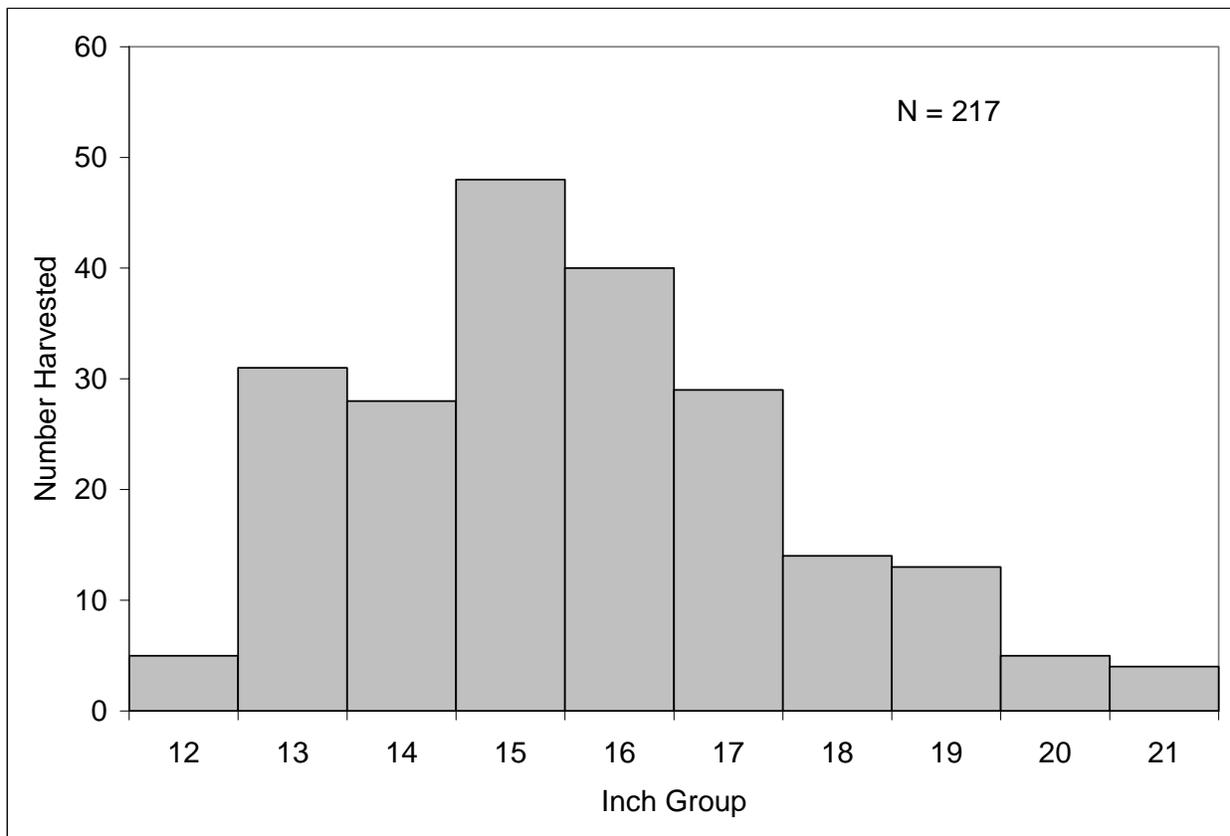


Figure 7. Length frequency of harvested channel catfish measured during creel surveys at Falcon Reservoir, Texas, January 2006 through June 2006. N is the number of harvested channel catfish observed during creel surveys.

Largemouth Bass

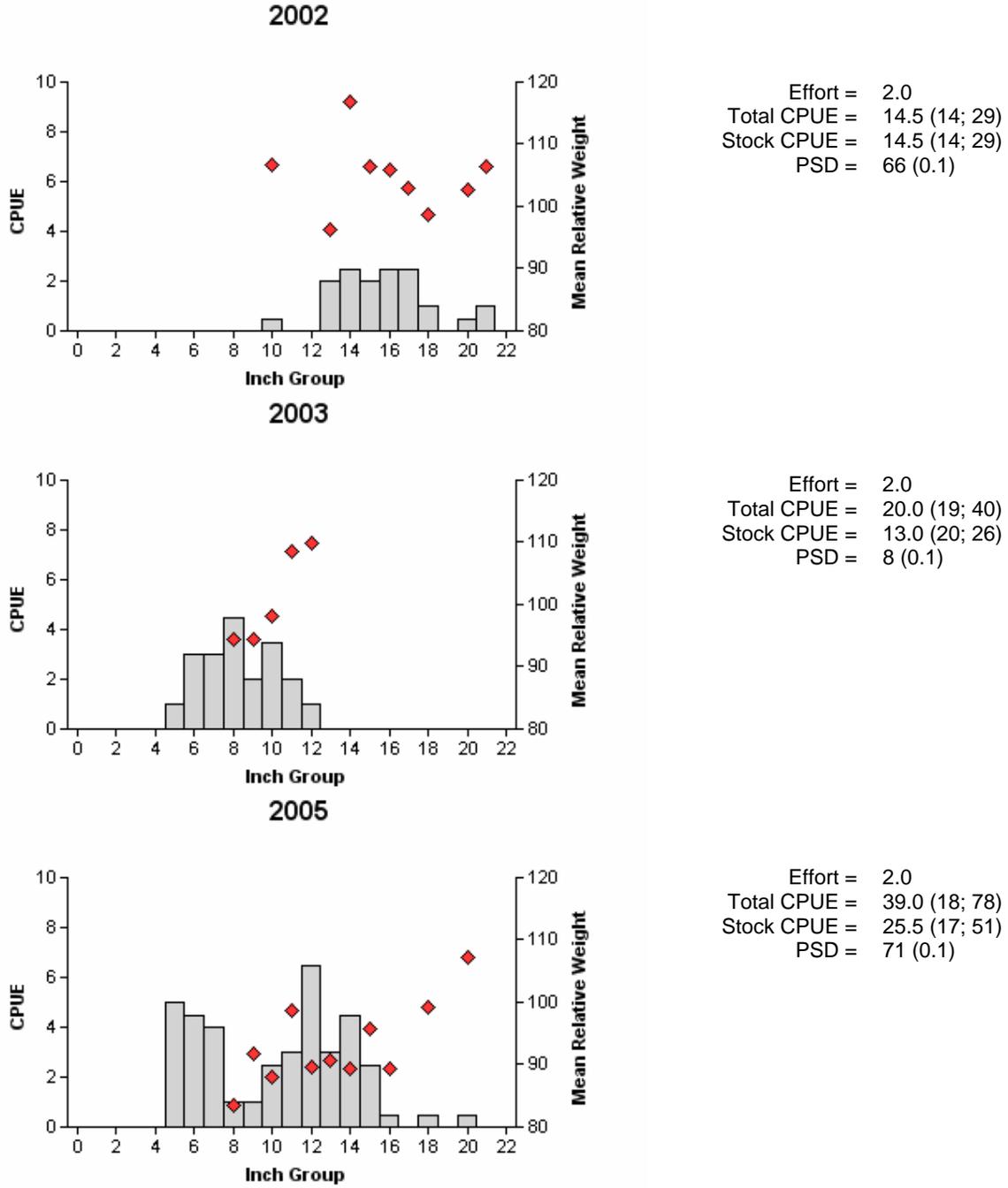


Figure 8. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Falcon Reservoir, Texas, 2002, 2003, and 2005.

Largemouth Bass

Table 9. Creel survey statistics for largemouth bass at Falcon Reservoir from January 1, 2006 to June 30, 2006, 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 are in parentheses. For below per acre estimates, surface area at mid-point of the creel survey (April 1, 2006) was 57,606 acres which was determined from a stage-area curve from the controlling authority.

Creel Survey Statistic	Year
	2006
Directed effort (h)	40,031 (17)
Directed effort/acre	0.69 (17)
Total catch per hour	1.40 (15)
Total harvest	15,557 (41)
Harvest/acre	0.27 (41)
Percent legal released	48

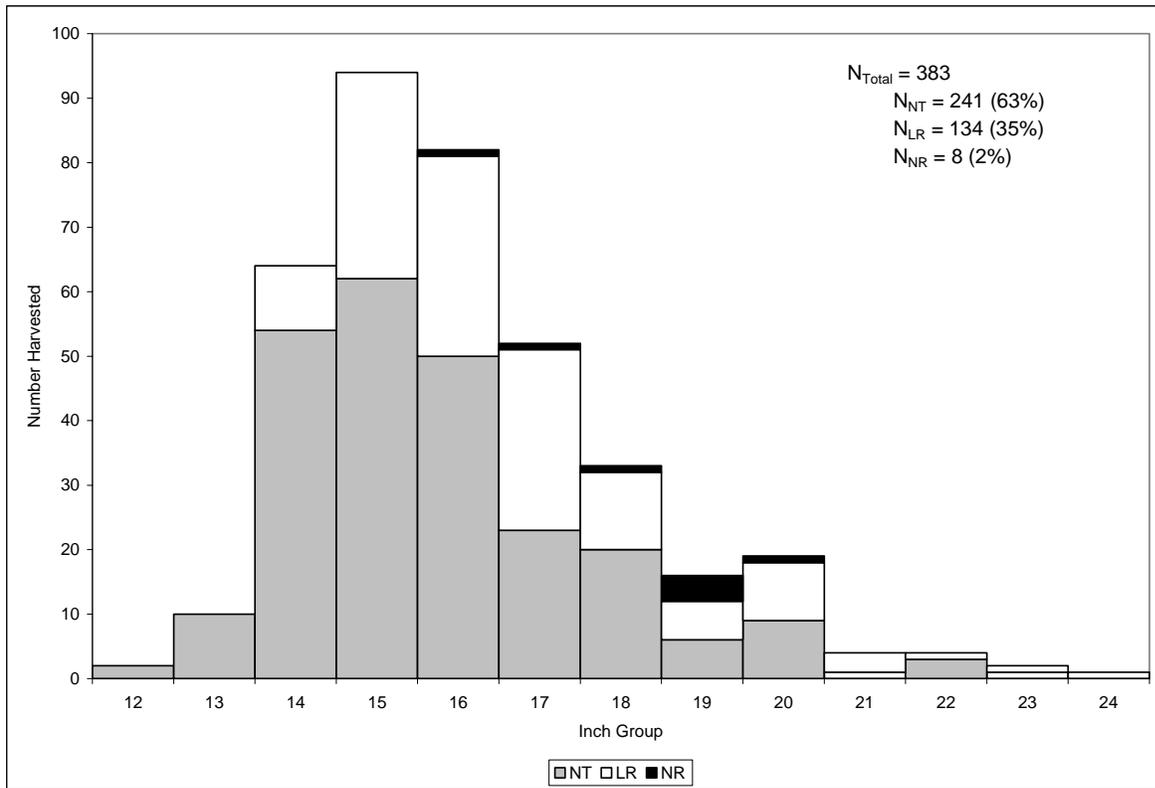


Figure 9. Length frequency of harvested largemouth bass observed during creel surveys at Falcon Reservoir, Texas, January 2006 through June 30, 2006. N_{Total} is the total number of harvested largemouth bass measured during creel surveys, and N_{NT} , N_{LR} , and N_{NR} are the proportions of the total harvested largemouth bass retained by non-tournament, tournament live release, and non-live release tournament anglers, respectively.

Largemouth Bass

Table 10. Results of genetic analysis of largemouth bass collected by fall electrofishing, Falcon Reservoir, Texas, 2000, 2001, and 2005. 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		
2000	34	14	3	17	0	81	41
2001	32	13	2	17	0	84	42
2005	33	4	0	29	0	68	12

White Crappie

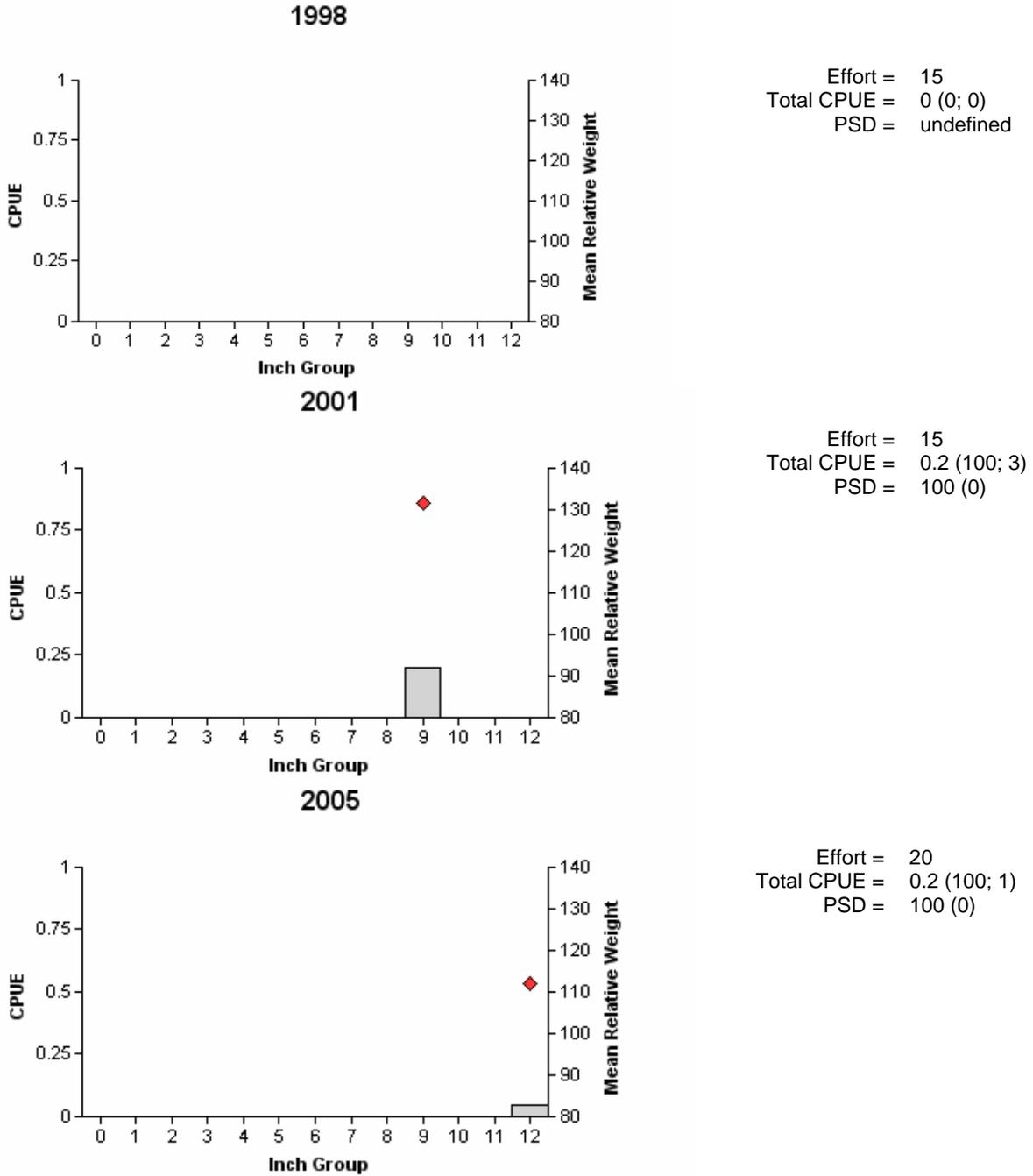


Figure 10. Number of white crappie caught per net night (CPUE, bars), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Falcon Reservoir, Texas, 1998, 2001, and 2005.

Table 11. Proposed sampling schedule for Falcon 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.

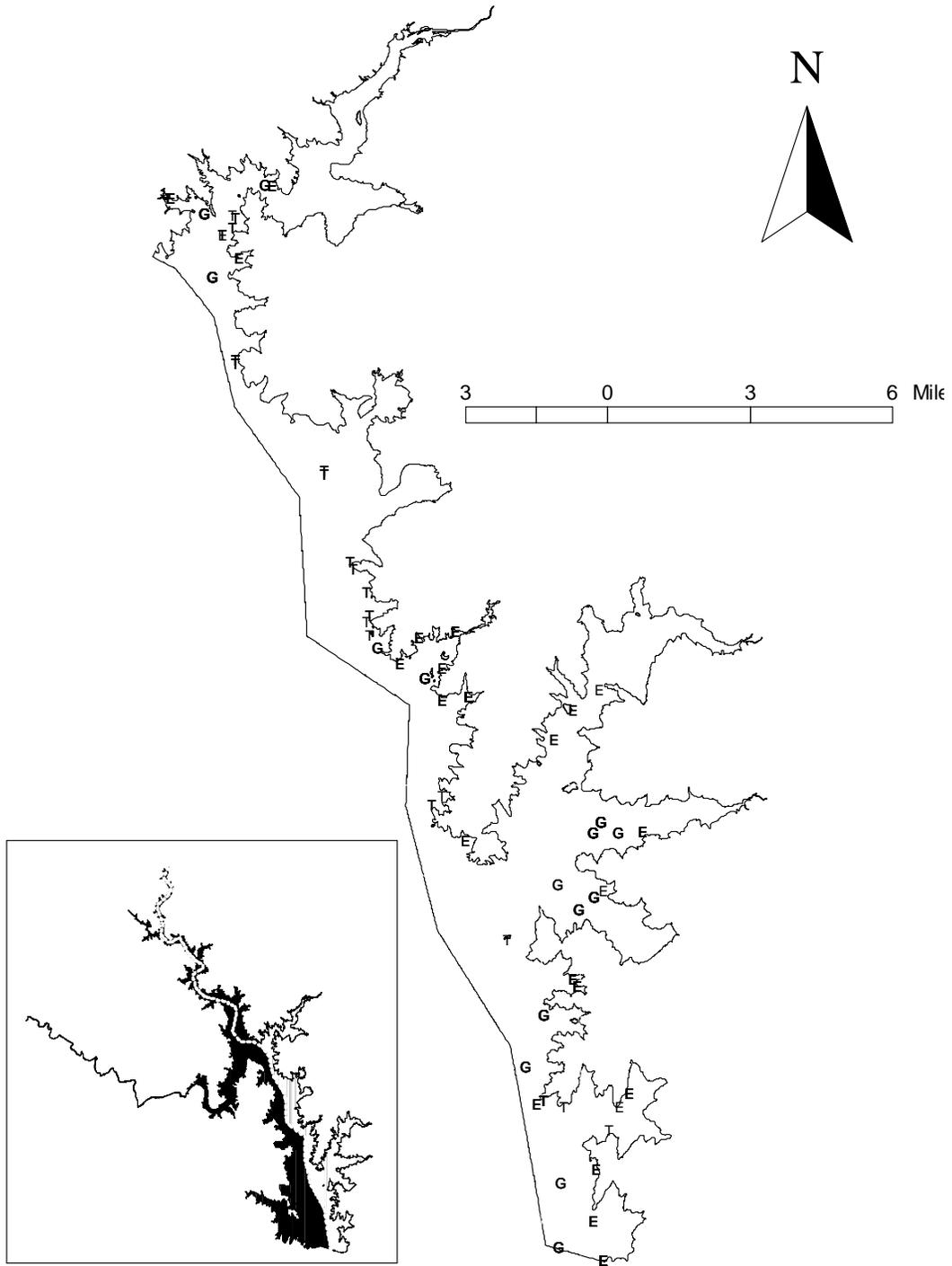
Survey Year	Electrofishing	Trap Net	Gill Net	Creel Survey	Report
Fall 2006-Spring 2007	S				
Fall 2007-Spring 2008	S	A	A		
Fall 2008-Spring 2009	S				
Fall 2009-Spring 2010	S	S	S	A	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Falcon Reservoir, Texas, 2005-2006.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					11	5.5
Threadfin shad					35	17.5
Blue catfish	69	4.6				
Channel catfish	45	3.0				
Redbreast sunfish					2	1.0
Warmouth					1	0.5
Bluegill					10	5.0
Redear sunfish					3	1.5
Largemouth bass					78	39.0
White crappie			1	0.05		

APPENDIX B



Location of sampling sites, Falcon Reservoir, Texas, 2005-2006. Gill net, trap net, and electrofishing stations are indicated by G, T, and E, respectively. Water level ranged 15-25 feet below conservation pool level at time of sampling.