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

Kickapoo Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Kickapoo Reservoir were surveyed in 2005 using trap nets and electrofishing and in 2006 using gill nets. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Kickapoo Reservoir is a 6,028-acre impoundment located on the Little Wichita River in the Red River Basin approximately 30 miles west of Wichita Falls. It has a primarily rocky shoreline with flooded terrestrial habitat. The reservoir was within 10 feet of conservation pool (1,045 msl) from January of 2003 through January 2006. Kickapoo water quality is considered good for municipal use, but at times turbid.

- **Management history:** Important sport fish include catfish, white bass, largemouth bass, and white crappie. The 2001 management plan recommended maintaining the genetic integrity of the existing pure northern strain largemouth bass population as a possible source for Texas parks and Wildlife Department (TPWD) hatchery brood stock. The reservoir is popular for its white crappie population. Kickapoo has always been managed with statewide regulations.

- **Fish Community**
  - **Prey species:** Gizzard shad catch rate was higher than average for the reservoir indicating adequate forage for game fish. The CPUE for bluegill was also higher than previous surveys.

  - **Catfishes:** Blue catfish were well represented in the gill net survey of 2006, but catch per unit effort (CPUE) was down slightly from 2002. The gill net survey for the channel catfish population showed a low abundance. The channel catfish CPUE was down considerably from surveys completed in 1997 and 2002. However, anglers were observed harvesting channel catfish during the March-May 2006 creel survey. Flathead catfish exist in the reservoir but none were observed in 2006.

  - **White bass:** Few white bass were sampled in 2006 unlike 2002 when record numbers of white bass were surveyed. However, the 2006 creel survey had high numbers of young white bass reported as caught indicating adequate reproduction has occurred during the last two years.

  - **Largemouth bass:** Largemouth bass had the lowest electrofishing catch rate recorded for the reservoir, primarily because of an abundance of flooded terrestrial vegetation that made electrofishing near shore extremely difficult. Subsequent largemouth bass tournaments in 2006 have reported excellent catches of legal size bass. Recent (2006) genetic analysis has continued to verify that only northern strain largemouth bass are present in the reservoir.

  - **White crappie:** The 2005 CPUE was lower than the 2001 survey but higher than in 2000. Natural reproduction continues to be good with adequate abundance of legal-size fish. Crappie were the most sought after species during the March–May 2006 creel survey.

- **Management Strategies:** Maintain the genetic integrity of the existing largemouth bass population as a pure northern strain population by not introducing Florida strain largemouth bass. Continue conducting periodic electrophoretic testing when largemouth bass are collected. Kickapoo is recognized by anglers as an excellent crappie reservoir, and historically has been under utilized by anglers seeking other species. Populations of catfish, white bass, and largemouth bass are in good shape and should be promoted to increase angler effort.

INTRODUCTION

This document is a summary of fisheries data collected from Kickapoo Reservoir in 2005 and 2006. The purpose 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 important sport fish and prey species. Historical data is also presented for comparison.

Reservoir Description

Kickapoo Reservoir is a 6,028-acre impoundment constructed in 1947 on the Little Wichita River. It is located in Archer County approximately 30 miles west of Wichita Falls and is operated and controlled by the City of Wichita Falls. Primary uses include municipal water supply and recreation. Mean depth was 17 ft., shoreline development index was 5.4, and conductivity was 440 umhos/cm. Habitat at time of sampling consisted of flooded terrestrial vegetation, rocks, and boat docks. Water level has been rising since 2004 when the reservoir water level was about 10 feet below conservation pool (Figure 1). Boat access consisted of two boat ramps, one public and a private one charging a $2.00 launch fee. Bank fishing is available at the public access points including the boat ramp. A popular fee fishing barge and camp also operates on the reservoir. Other descriptive characteristics for Kickapoo are in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Mauk and Howell 2002) included:

1. Maintain the genetic integrity of the existing largemouth population as a pure northern strain population and as a possible source for TPWD hatchery program brood stock.
   Action: Did not stock any Florida largemouth bass. Genetic integrity was maintained as shown by genetic analysis during the last 4 years. Northern largemouth bass were collected twice during the 4 year period for hatchery brood stock use.
2. Kickapoo Reservoir has traditionally been viewed as an excellent crappie reservoir with a low abundance of other game species present. The view has probably been somewhat accurate in the past with low catch rates for white bass and largemouth bass. The reservoir elevation rose during 2001 providing much better habitat resulting in improved year-classes of white bass and largemouth bass.
   Action: Promoted the reservoir fisheries and the refurbished boat ramp.

Harvest regulation history: Sport fish species in Kickapoo Reservoir have always been managed using statewide regulations (Table 2).

Stocking history: Sport fish have not been stocked recently since surveys have indicated adequate populations and reproduction of sport fish. Blue catfish were stocked in 1986, 1990 and 1991 to introduce an additional sport fish species to the reservoir. The complete stocking history is in Table 3.

Vegetation/habitat history: Kickapoo has no significant vegetation/habitat management history. Noxious vegetation has not been a problem at the reservoir.

METHODS

Fishes were collected by electrofishing (1.5 hours at 18 5-min stations), gill netting (10 net nights at 10 stations), and trap netting (16 net nights at 16 stations). Catch per unit effort for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing and for gill and trap nets, as the number of fish caught per net night (fish/nn). All survey sites were randomly selected and all

surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2002).

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 SE was calculated for structural indices and IOV. Ages were determined using otoliths from 5 to 10 fish per inch group. Source for water level data was the United States Geological Survey.

RESULTS AND DISCUSSION

Habitat: A physical habitat survey conducted July 26, 2005 indicated the littoral zone habitat consisted primarily of nondescript or rocky shoreline and flooded terrestrial vegetation (Table 4). The previous physical habitat survey was conducted in 2001 (Mauk and Howell 2002). Very few manmade changes to the physical habitat had occurred during the four year period.

Prey species: Electrofishing catch rates of bluegill and gizzard shad were 66.7/h and 564.0/h, respectively. Index of vulnerability for gizzard shad was high, indicating that 99.8% of gizzard shad were available to predators; this was similar to IOV estimates in previous years. Total CPUE of gizzard shad was higher in 2005 compared to the 1997 and 2001 surveys (Figure 2). Total CPUE of bluegill in 2005 was also higher than the 1997 and 2001 surveys.

Blue catfish: Blue catfish 2006 gill net CPUE (9.0/nn) was down slightly from the 2002 CPUE (13.2/nn) but higher than the 1997 CPUE of 4.9/nn (Figure 4). They have been the most abundant catfish species sampled every gill net survey since 1994, with good numbers of legal size fish up to 28 inches observed during the 2006 survey.

Channel catfish: Only one channel catfish was sampled in 2006 (CPUE = 0.1/nn), compared to the 2002 CPUE of 1.7/nn and 1997 CPUE of 1.9/nn. Despite low abundance in gill nets, channel catfish were well documented in the 2006 creel survey (Figure 7). Estimated total harvest of combined catfish species was 2,310 fish (1,387 blue catfish and 923 channel catfish) making catfish the most harvested group of fish during this creel survey period. Catfish angling accounted for 19.1 % of the angling effort (Table 5).

White bass: The gill net catch rate for white bass was 0.3/nn in 2006, which was well down from 21.6/nn in 2002, but similar to 0.5/nn in 1997 (Figure 8). Many sub-legal white bass were caught by anglers during the 2006 spring creel survey. Only one angling group identified themselves as targeting white bass during the creel period indicating that angling for this species is not a priority for Kickapoo anglers. However, white bass made up 13.4% of the total catch behind only crappie (Table 5). Most fish being released were identified as sub-legal in size. Opportunities for promoting white bass angling in the future exist, especially when the smaller fish recruit to legal size.

Largemouth bass: The electrofishing CPUE of largemouth bass was 5.3/h in 2005, a decrease from previous surveys in 1997 (16.0/h) and 2001 (114.7/h); (Figure 10). The 2005 electrofishing survey was adversely affected by the large amount of flooded terrestrial vegetation that made it nearly impossible to get near the shoreline. There was good documentation of substantial abundance of legal-size largemouth bass as evidenced during a March 2006 tournament at the reservoir. Body condition for these fish was excellent (relative weight over 110) for legal size bass ($\geq$ 14 inches); (Figure 11). The tournament caught fish were donated to the hatchery brood stock program and all documented as pure northern strain. Florida influence has not been documented at the reservoir.

White crappie: The trap net catch rate of white crappie was 24.7/nn in 2005, lower than the previous survey of 2001 (136.4/nn), but higher than 2000 (16.8/nn); (Figure 13). Natural reproduction remains

good. Over half (52.6%) of the anglers surveyed were targeting white crappie during this three month creel period. Estimated harvest was 1,697 crappie. Of the observed crappie harvest during the creel survey, one third of the harvested crappie were sub-legal, however 8 of 9 of these fish were caught by one particular angler who has since been educated about the size limit. Over 55.6% percent of the total catch recorded during the survey was crappie while only 22.8% of harvest was white crappie indicating many small crappie being caught and released (Table 5).

Fisheries management plan for Kickapoo Reservoir, Texas

Prepared – July 2006

ISSUE 1: Maintain and monitor the genetic integrity of the existing largemouth bass population as a pure northern strain population and a source for TPWD hatchery program brood stock.

MANAGEMENT STRATEGIES

1. Do not stock any Florida largemouth bass at Kickapoo. It is the uppermost public impoundment in the watershed and should maintain the genetic integrity of its largemouth bass population.

2. Continue to monitor for Florida strain influence by conducting regular electrophoretic testing.

ISSUE 2: Lake Kickapoo has traditionally been viewed by anglers as a good crappie reservoir with other game fish species being under utilized. This reservoir also supports a good catfish population and improved largemouth bass size structure. Recent increases in water elevation should provide improved spawning and recruitment conditions in the years ahead.

MANAGEMENT STRATEGY

1. Promote the improving fisheries through news releases and that the public boat ramp is improved for better angler access.

SAMPLING SCHEDULE JUSTIFICATION:

Trap netting for crappie, the most sought after species, will be conducted on a two year basis to keep anglers well informed about the population status. Standard surveys with gill nets and electrofishing will be conducted every 4 years to monitor other species relative abundances.

LITERATURE CITED

Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

DiCenzo, V. J., M. J. Maceina, and M. R. Stimert. 1996. Relations between reservoir trophic state and gizzard shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.

Mauk, R., and M. Howell. 2002. Statewide freshwater fisheries monitoring and management program survey report for Kickapoo Reservoir, 2001. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.

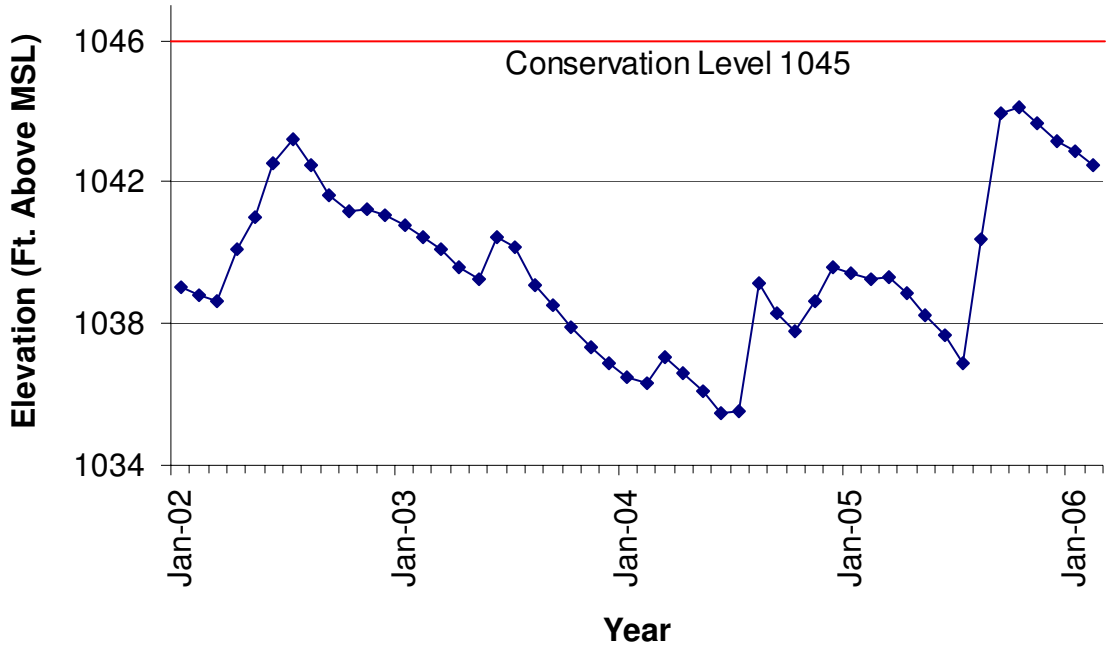


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Kickapoo Reservoir, Texas.

Table 1. Characteristics of Kickapoo Reservoir, Texas.

Characteristic	Description
Year Constructed	1947
Controlling authority	City of Wichita Falls
County	Archer
Reservoir type	Tributary
Shoreline Development Index (SDI)	5.44
Conductivity	440 umhos/cm

Table 2. Harvest regulations for Kickapoo 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, Largemouth	5	14 minimum
Crappie, White	25	10 minimum

Table 3. Stocking history of Kickapoo Reservoir, Texas. Size Category is: FGL = 1-3 inches.

Year	Number	Size
	Blue catfish	
1986	18,475	FGL
1990	63,162	FGL
1991	62,039	FGL
Species Total	143,676	
	Channel catfish	
1969	10,000	FGL
1971	88,375	FGL
1972	50,000	FGL
1973	1,000	FGL
Species Total	149,375	
	Largemouth bass	
1970	100,000	FGL
Species Total	100,000	

Table 4. Survey of littoral zone and physical habitat types, Kickapoo Reservoir, 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.

Shoreline habitat type	Shoreline Distance	
	Miles	Percent of total
Rocky shore	11.0	39.3
Riprap	0.8	2.9
Featureless	16.2	57.9
Habitat adjacent to shoreline		
Boat docks	1.8	6.4

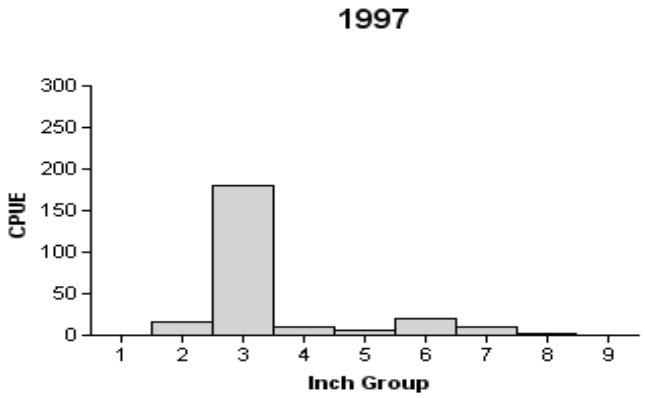
Table 5. Percent directed angler effort by species, percent harvest and catch all anglers for Kickapoo Reservoir, Texas, March 1, 2006 – May 31, 2006.

Species	Percent directed effort	Percent harvest all anglers	Percent catch all anglers
Blue catfish	4.3	18.7	11.7
Channel catfish	0.2	12.4	6.0
Catfish spp.	14.6		
White bass	2.7	9.1	13.4
Largemouth bass	9.6	28.5	8.0
White crappie	52.6	22.8	55.6
Anything	16.0		

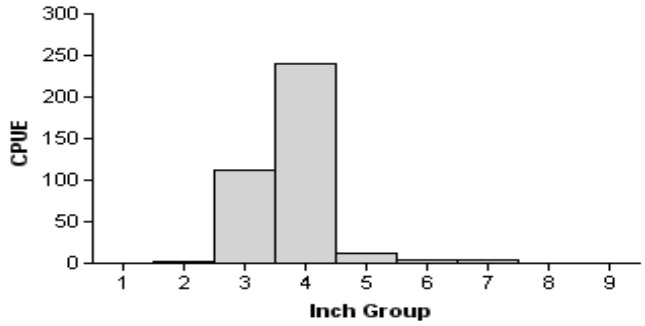
Table 6. Total fishing effort (h) for all species and total directed expenditures at Kickapoo Reservoir, Texas, March 1, 2006 – May 31, 2006.

Creel Statistic	Period
	March 1-May 31, 2006
Total fishing effort (h)	21,043.8
Total directed expenditures	$75,974

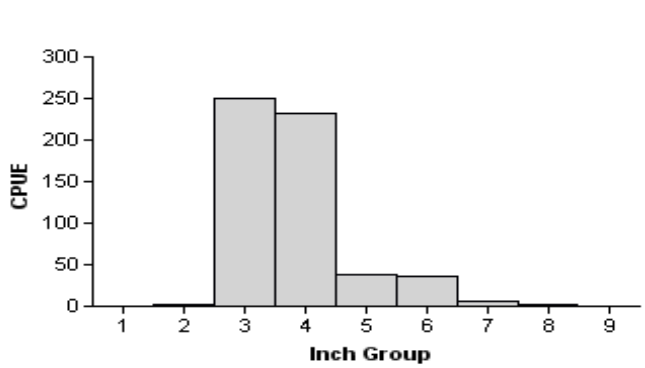
Gizzard Shad



Effort = 1.5
Total CPUE = 242.0 (22; 363)
IOV = 99.5 (0)



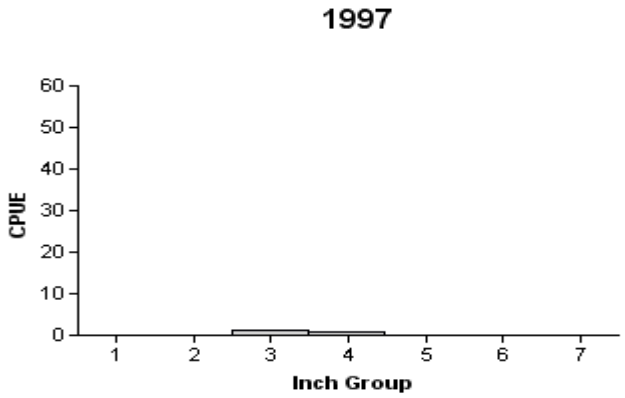
Effort = 1.5
Total CPUE = 376.0 (20; 564)
IOV = 99.7 (0)



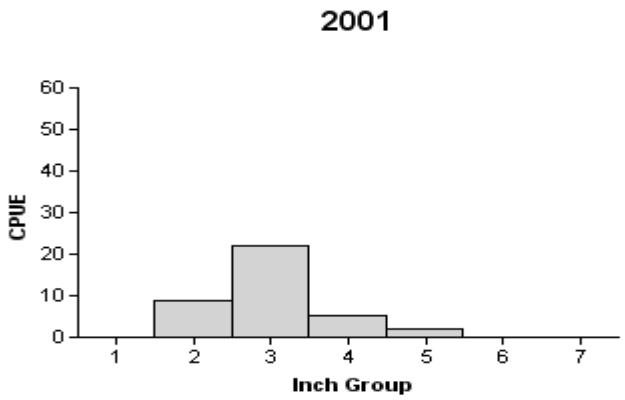
Effort = 1.5
Total CPUE = 564.0 (30; 846)
IOV = 99.8 (0)

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, Kickapoo Reservoir, Texas, 1997, 2001, and 2005.

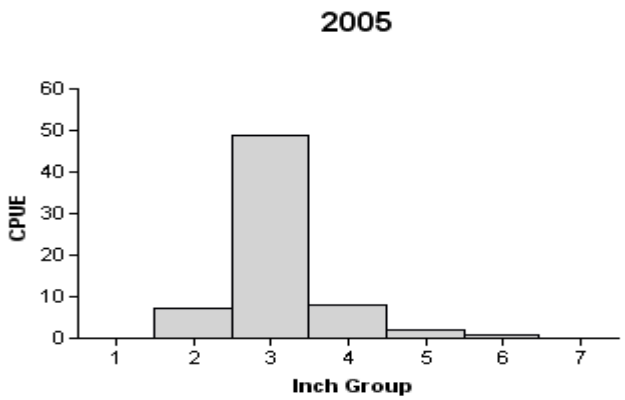
Bluegill



Effort = 1.5
Total CPUE = 2.0 (-99; 3)
PSD = 0.0 (1.0)



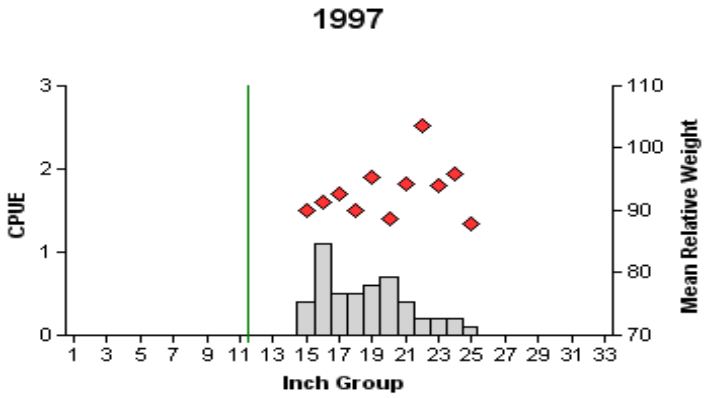
Effort = 1.5
Total CPUE = 38.0 (27; 57)
PSD = 0.0 (0.5)



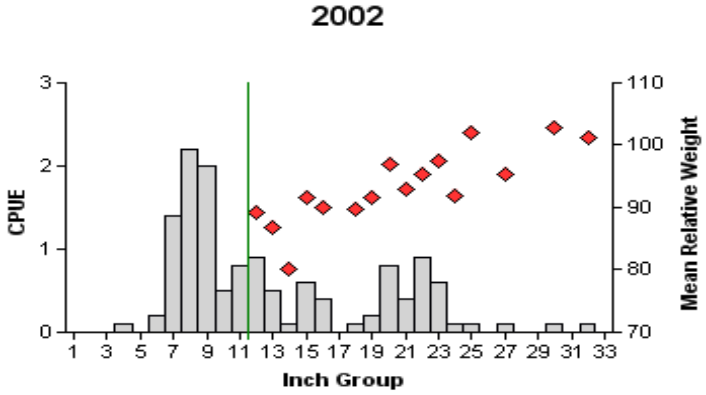
Effort = 1.5
Total CPUE = 66.7 (36; 100)
PSD = 1.0 (0.0)

Figure 3. Number of bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Kickapoo Reservoir, Texas, 1997, 2001, and 2005.

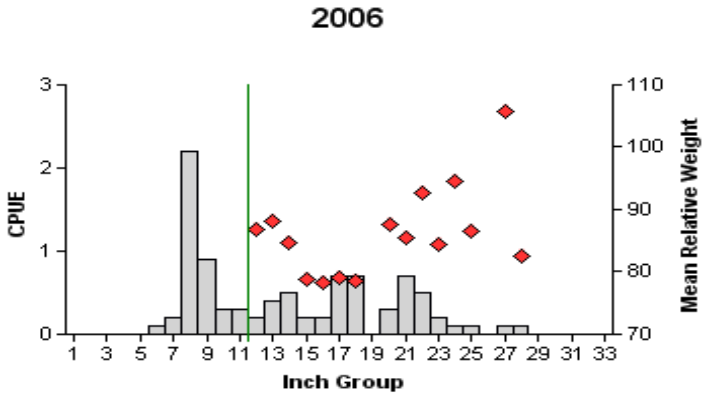
Blue Catfish



Effort =	10.0
Total CPUE =	4.9 (32; 49)
Stock CPUE =	4.9 (32; 49)
PSD =	37.0 (0.1)
RSD-P =	0.0 (0)



Effort =	10.0
Total CPUE =	13.2 (21; 132)
Stock CPUE =	6.0 (26; 60)
PSD =	53.0 (0.1)
RSD-P =	3.0 (0.0)



Effort =	10.0
Total CPUE =	9.0 (26; 90)
Stock CPUE =	5.0 (31; 50)
PSD =	42.0 (0.1)
RSD-P =	0.0 (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 netting surveys, Kickapoo Reservoir, Texas, 1997, 2002, and 2006. Line indicates minimum size limit at time of sampling.

Blue Catfish

Table 7. Creel survey statistics for blue catfish at Kickapoo Reservoir from March 1, 2006 through May 31, 2006, where total catch per hour is for anglers targeting blue catfish and total harvest is the estimated number of blue catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Period
	March 1-May 31, 2006
Directed effort (h)	905.3 (52.5)
Directed effort/acre	0.2 (52.5)
Total catch per hour	0.6 (54.9)
Total harvest	1,386.9 (52.0)
Harvest/acre	0.2 (52.0)
Percent legal released	0.0

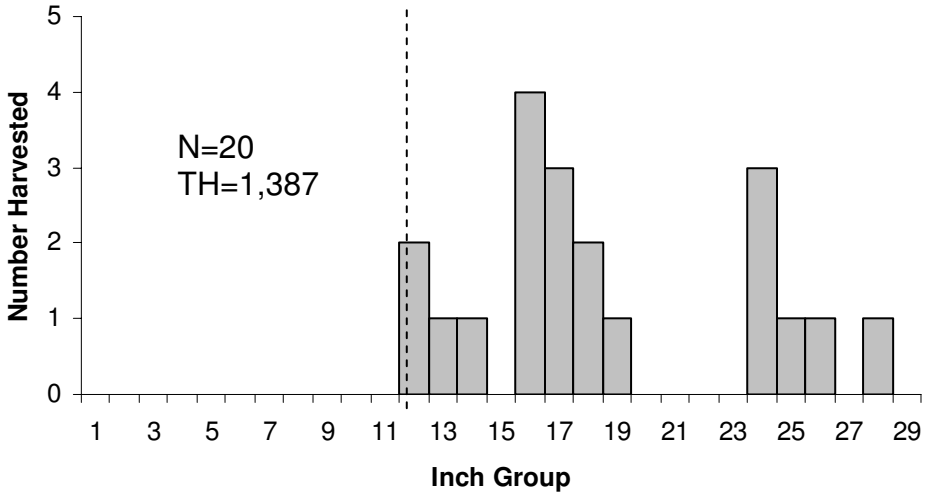
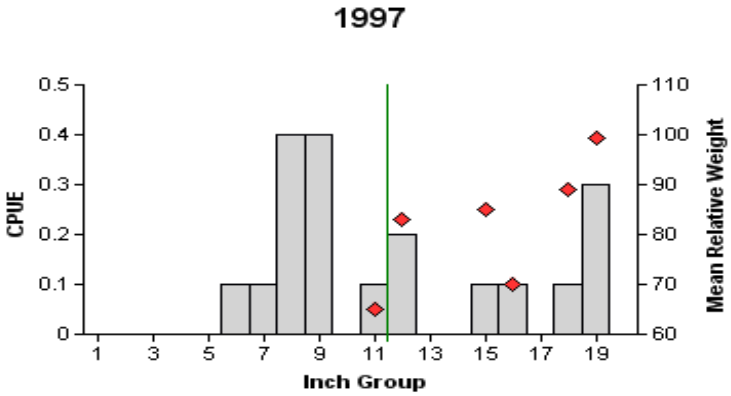
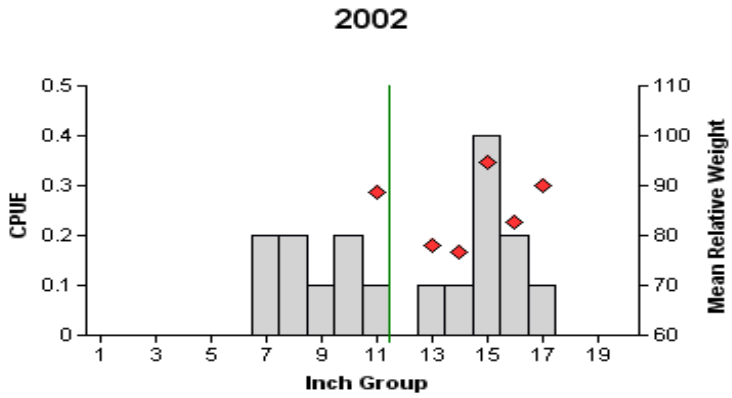


Figure 5. Length frequency of harvested blue catfish observed during creel surveys at Kickapoo Reservoir, Texas, March 1, 2006 through May 1, 2006, all anglers combined. N is the number of harvested blue catfish observed during creel surveys, and TH is the total estimated harvest for the creel period. Dash line indicates minimum size limit at time of sampling.

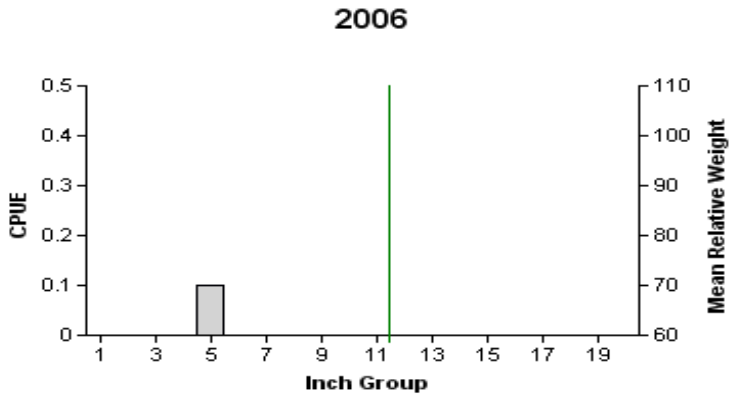
Channel Catfish



Effort =	10.0
Total CPUE =	1.9 (25; 19)
Stock CPUE =	0.9 (43; 9)
PSD =	56.0 (0.1)
RSD-P =	0.0 (0)



Effort =	10.0
Total CPUE =	1.7 (30; 17)
Stock CPUE =	1.0 (30; 10)
PSD =	30.0 (0.2)
RSD-P =	0.0 (0)



Effort =	10.0
Total CPUE =	0.1 (-99; 1)
Stock CPUE =	0.0 (0; 0)
PSD =	0.0 (1.0)
RSD-P =	0.0 (0)

Figure 6. 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 netting surveys, Kickapoo Reservoir, Texas, 1997, 2002, and 2006. Line indicates minimum size limit at time of sampling.

Channel Catfish

Table 8. Creel survey statistics for channel catfish at Kickapoo Reservoir from March 1, 2006 through May 31, 2006, where total catch per hour is for anglers targeting channel catfish and total harvest is the estimated number of channel catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Period
	March 1-May 31, 2006
Directed effort (h)	44.5 (217.6)
Directed effort/acre	0.0 (217.6)
Total catch per hour	0.0
Total harvest	923.3 (64.2)
Harvest/acre	0.2 (64.2)
Percent legal released	3.8

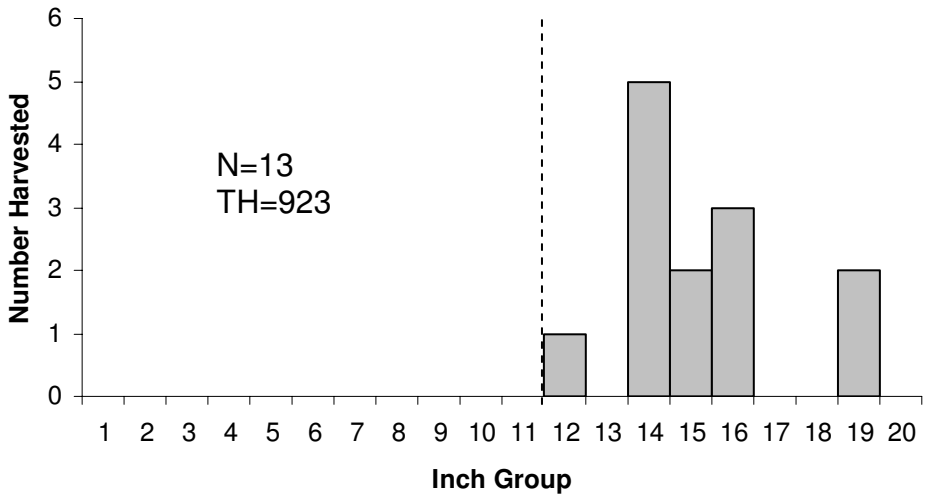
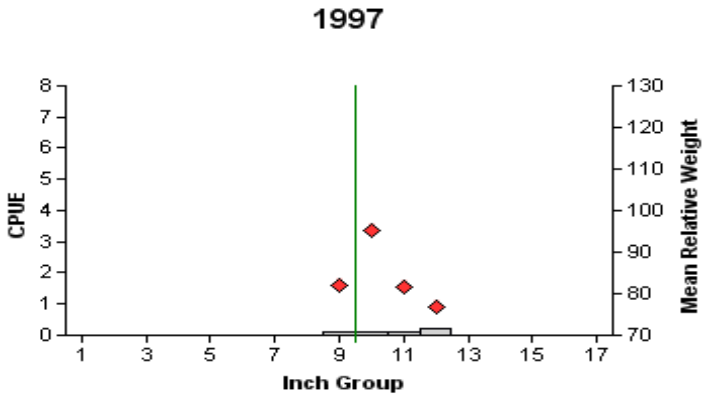
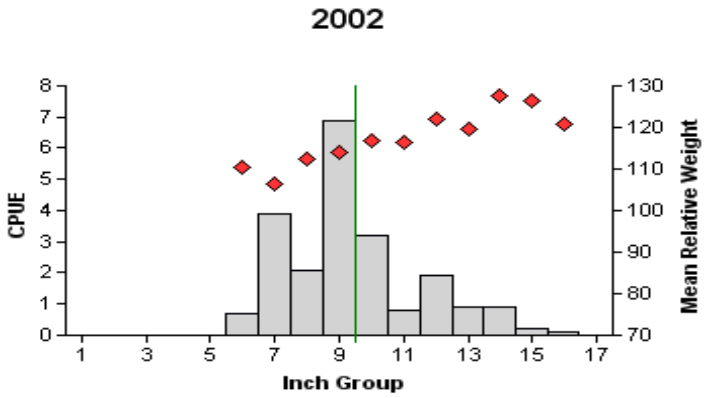


Figure 7. Length frequency of harvested channel catfish observed during creel surveys at Kickapoo Reservoir, Texas, March 1, 2006 through May 1, 2006, all anglers combined. N is the number of harvested channel catfish observed during creel surveys, and TH is the total estimated harvest for the creel period. Dash line indicates minimum size limit at time of sampling.

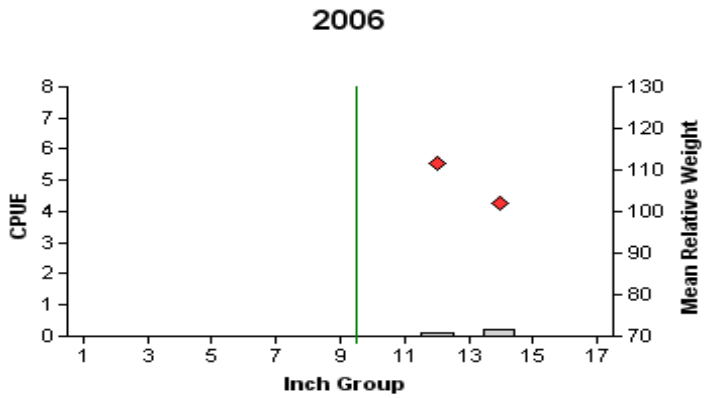
White Bass



Effort =	10.0
Total CPUE =	0.5 (60; 5)
Stock CPUE =	0.5 (60; 5)
PSD =	100.0 (0)
RSD-P =	40.0 (0.2)



Effort =	10.0
Total CPUE =	21.6 (24; 216)
Stock CPUE =	21.6 (24; 216)
PSD =	69.0 (0.0)
RSD-P =	19.0 (0.1)



Effort =	10.0
Total CPUE =	0.3 (0; 3)
Stock CPUE =	0.3 (0; 3)
PSD =	100.0 (0)
RSD-P =	100.0 (0)

Figure 8. 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 netting surveys, Kickapoo Reservoir, Texas, 1997, 2002, and 2006. Line indicates minimum size limit at time of sampling.

White Bass

Table 9. Creel survey statistics for white bass at Kickapoo Reservoir from March 1, 2006 through May 31, 2006, where total catch per hour is for anglers targeting white bass and total harvest is the estimated number of white bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Period
	March 1-May 31, 2006
Directed effort (h)	563.5 (58.9)
Directed effort/acre	0.1 (58.9)
Total catch per hour	0.6 (.)
Total harvest	675.8 (76.3)
Harvest/acre	0.1 (76.3)
Percent legal released	17.5

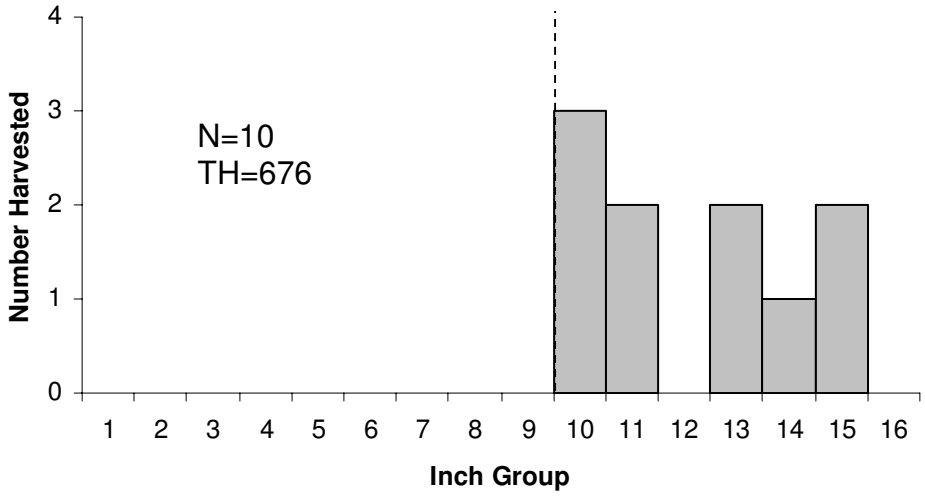
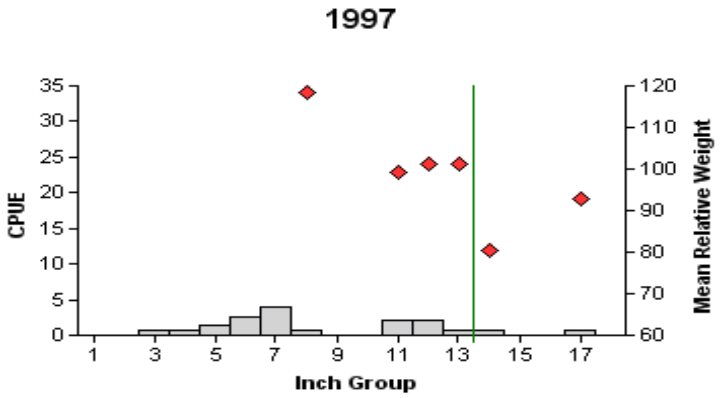
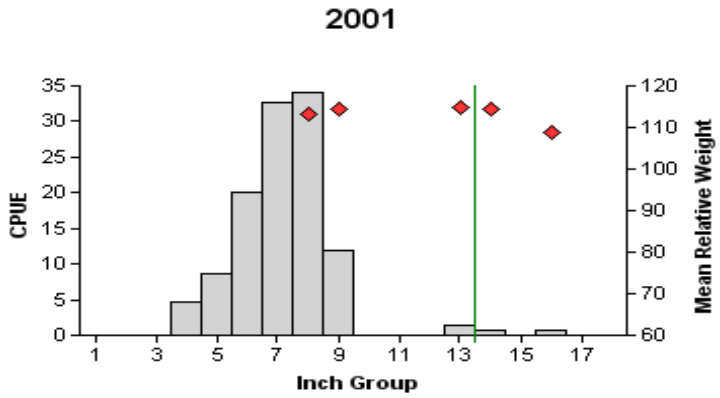


Figure 9. Length frequency of harvested white bass observed during creel surveys at Kickapoo Reservoir, Texas, March 1, 2006 through May 1, 2006, all anglers combined. N is the number of harvested white bass observed during creel surveys, and TH is the total estimated harvest for the creel period. Dash line indicates minimum size limit at time of sampling.

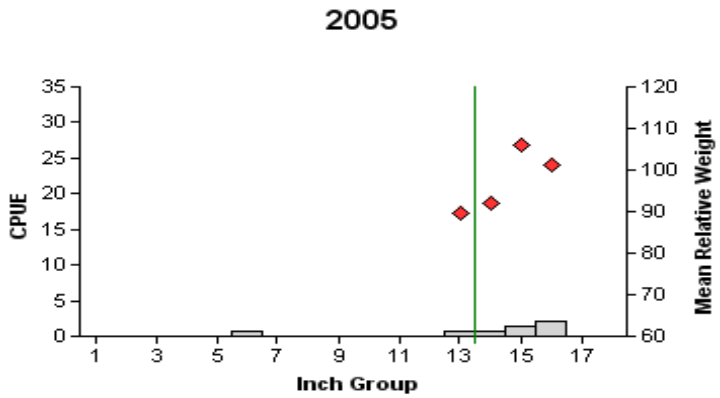
Largemouth Bass



Effort =	1.5
Total CPUE =	16.0 (40; 24)
Stock CPUE =	6.7 (36; 10)
PSD =	60.0 (0.1)
RSD-P =	10.0 (0.1)



Effort =	1.5
Total CPUE =	114.7 (19; 172)
Stock CPUE =	48.7 (21; 73)
PSD =	5.0 (0.0)
RSD-P =	1.0 (0.0)



Effort =	1.5
Total CPUE =	5.3 (25; 8)
Stock CPUE =	4.7 (36; 7)
PSD =	100.0 (0)
RSD-P =	71.0 (0.1)

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, Kickapoo Reservoir, Texas, 1997, 2001, and 2005. Line indicates minimum size limit at time of sampling.

Largemouth Bass

Table 10. Results of genetic analysis of largemouth bass collected by fall electrofishing, Kickapoo Reservoir, Texas, 1997, 2001, and 2005. On March 26, 2006, largemouth bass were collected from anglers at a tournament for use in TPWD fish hatcheries. 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.

		Genotype					
Year	Sample size	FLMB	F1	Fx	NLMB	% FLMB alleles	% pure FLMB
1997	15	0	0	0	15	0	0
2001	30	0	0	0	30	0	0
2005	1	0	0	0	1	0	0
2006	64	0	0	0	64	0	0

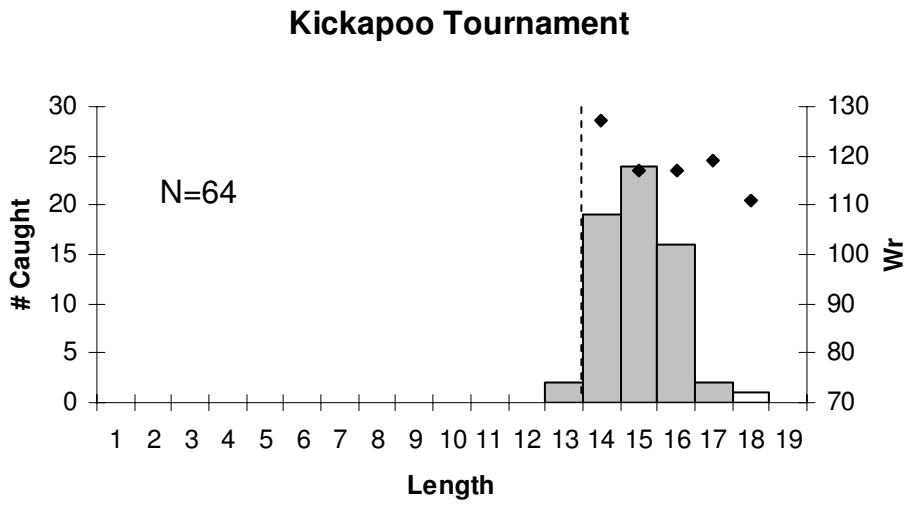


Figure 11. Length frequency of largemouth bass collected from tournament anglers on March 26, 2006, for brood stock use at TPWD fish hatcheries. Dash line indicates minimum size limit at time of tournament. N = total number collected.

Largemouth bass

Table 11. Creel survey statistics for largemouth bass at Kickapoo Reservoir from March 1, 2006 through May 31, 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 (RSE) are in parentheses.

Creel Survey Statistic	Period
	March 1-May 31, 2006
Directed effort (h)	2,019.6 (34.3)
Directed effort/acre	0.3 (34.3)
Total catch per hour	0.3 (35.6)
Total harvest	2,117.6 (48.3)
Harvest/acre	0.4 (48.3)
Percent legal released	1.9

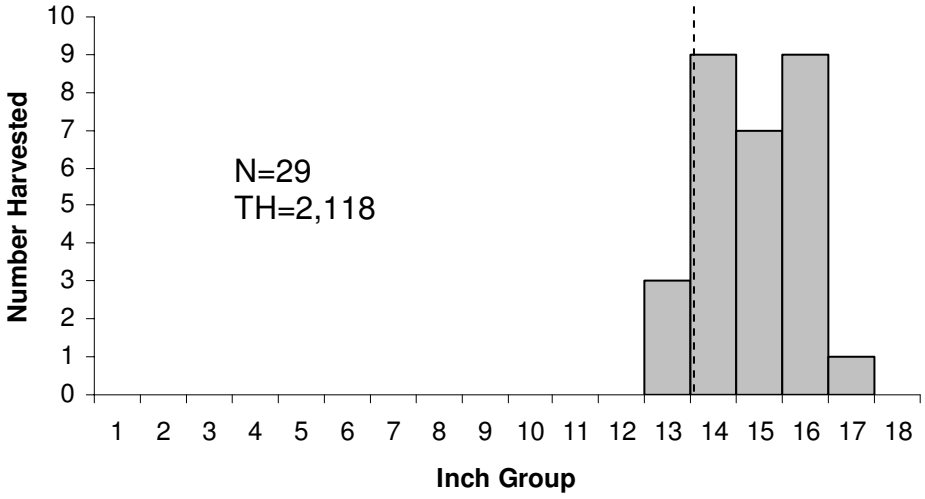
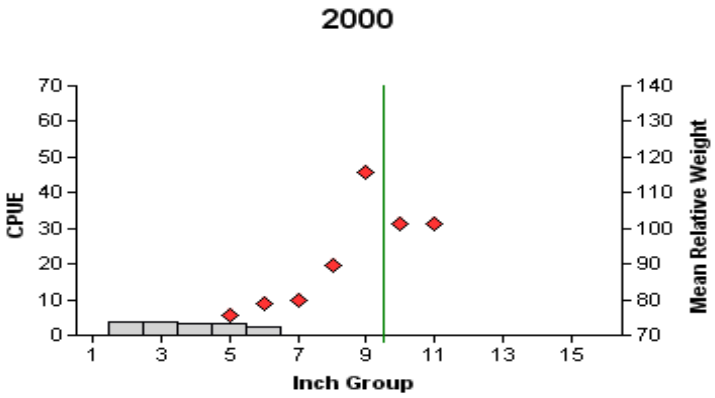
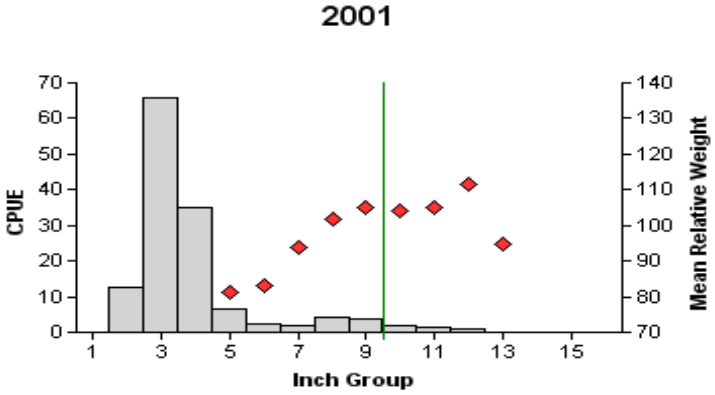


Figure 12. Length frequency of harvested largemouth bass observed during creel surveys at Kickapoo Reservoir, Texas, March 1, 2006 through May 1, 2006, all anglers combined. N is the number of harvested largemouth bass observed during creel surveys, and TH is the total estimated harvest for the creel period. Dash line indicates minimum size limit at time of sampling.

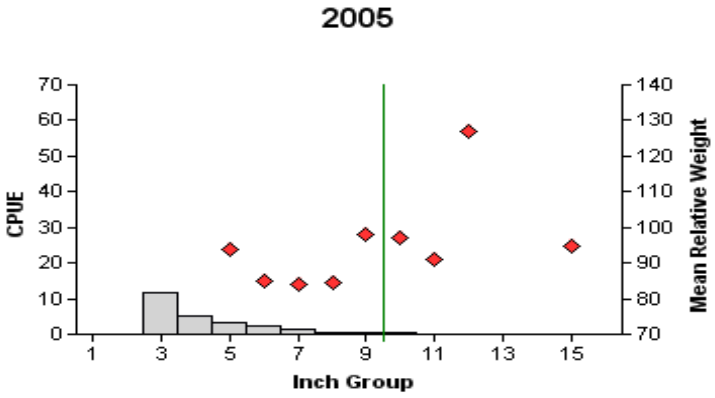
White Crappie



Effort =	10.0
Total CPUE =	16.8 (26; 168)
Stock CPUE =	6.2 (31; 62)
PSD =	6.0 (0.0)
RSD-P =	3.0 (0.0)



Effort =	10.0
Total CPUE =	136.4 (30; 1364)
Stock CPUE =	22.6 (41; 226)
PSD =	54.0 (0.2)
RSD-P =	18.0 (0.0)



Effort =	16.0
Total CPUE =	24.7 (16; 395)
Stock CPUE =	8.0 (16; 128)
PSD =	16.0 (0.0)
RSD-P =	9.0 (0.0)

Figure 13. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Kickapoo Reservoir, Texas, 2000, 2001, and 2005. Line indicates minimum size limit at time of sampling.

White Crappie

Table 12. Creel survey statistics for white crappie at Kickapoo Reservoir from March 1, 2006 through May 31, 2006, where total catch per hour is for anglers targeting white crappie and total harvest is the estimated number of white crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Period
	March 1-May 31, 2006
Directed effort (h)	11,073.5 (24.8)
Directed effort/acre	1.8 (24.8)
Total catch per hour	1.3 (19.3)
Total harvest	1,697.4 (56.3)
Harvest/acre	0.3 (56.3)
Percent legal released	11.5

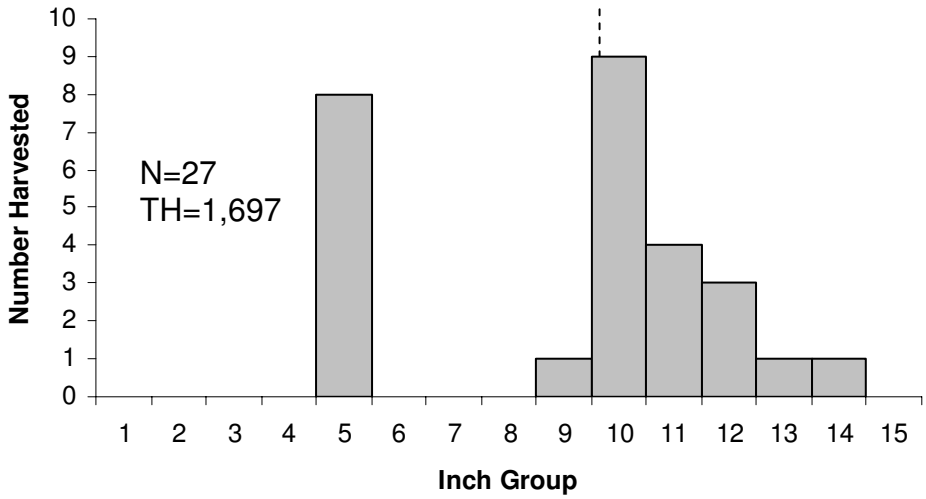


Figure 14. Length frequency of harvested white crappie observed during creel surveys at Kickapoo Reservoir, Texas, March 1, 2006 through May 1, 2006, all anglers combined. N is the number of harvested white crappie observed during creel surveys, and TH is the total estimated harvest for the creel period. Dash line indicates minimum size limit at time of sampling.

Table 13. Proposed sampling schedule for Kickapoo Reservoir, Texas. Gill net surveys are conducted in the spring, while electrofishing and trap net surveys are conducted in the fall. S denotes standard survey and A denotes additional survey.

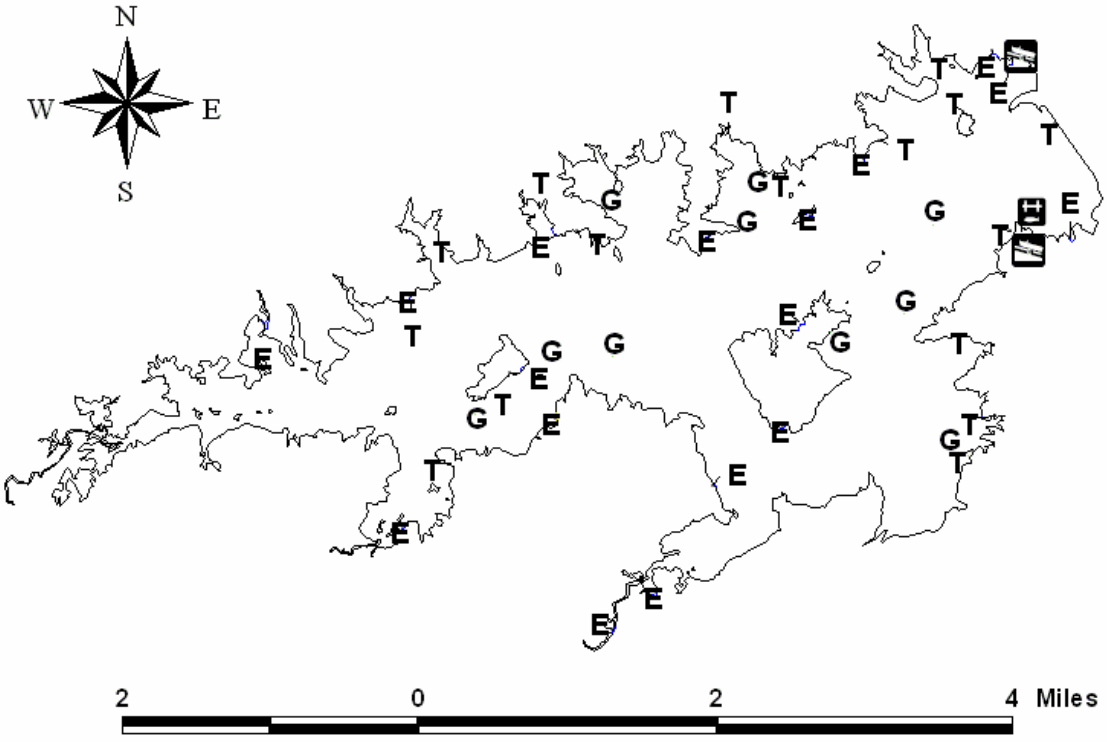
Survey Year	Electrofisher	Trap Net	Gill Net	Creel Survey	Report
Fall 2006-Spring 2007					
Fall 2007-Spring 2008		A		A	
Fall 2008-Spring 2009					
Fall 2009-Spring 2010	S	S	S		S

APPENDIX A

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

	Gill Nets		Trap Nets		Electrofishing	
Species	N	CPUE	N	CPUE	N	CPUE
Spotted gar			1	0.1		
Longnose gar	19	1.9				
Gizzard shad	4	0.4	1	0.1	846	564
Common carp	1	0.1	1	0.1		
River carpsucker	1	0.1	5	0.3		
Smallmouth buffalo	8	0.8	8	0.5		
Blue catfish	90	9.0	1	0.1		
Channel catfish	1	0.1	3	0.2		
White bass	3	0.3	5	0.3		
Green sunfish			1	0.1	1	0.7
Orangespotted sunfish			5	0.3		
Bluegill			201	12.6	100	66.7
Longear sunfish			16	1.0	29	19.3
Largemouth bass	2	0.2	1	0.1	8	5.3
White crappie	1	0.1	395	24.7		
Freshwater drum	8	0.8	9	0.6		

APPENDIX B



Location of sampling sites, Kickapoo Reservoir, Texas, 2005-2006. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. ^ represents boat ramps. ▭ represents public fishing barge.