PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-30-R-31

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2005 Survey Report

Lake Waxahachie

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TABLE OF CONTENTS

SURVEY AND MANAGEMENT SUMMARY

Fish communities in Lake Waxahachie were surveyed in 2005 using electrofishing and trap nets 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:** Lake Waxahachie is a 553 acre reservoir on Prong Creek (a tributary of the Trinity River), Texas, built to provide water for municipal and industrial purposes. Boat access is adequate, but bank angler access is limited. There are no handicap-specific facilities. The reservoir is mesotrophic (TSI Chl a = 43.39) (TCEQ 2002) and contains a diversity of littoral habitat types. Hydrilla *(Hydrilla verticillata)*, which was becoming a significant problem in the area around the city water intake structure and swimming beach in the 1998 survey, was rare in 2001 and 2005. However, native submersed species form a beneficial fringe around much of the reservoir. Water levels below conservation pool from 1999 through late 2003 may have limited year-class strength of several species.

- **Management history:** Important sport fish include channel catfish *(Ictalurus punctatus)*, white bass *(Morone chrysops)*, largemouth bass *(Micropterus salmoides)*, and crappie *(Pomoxis sp.)*. The management plan from the 2001 survey report included: continued monitoring of the largemouth bass population in 2005; coordinaton with TPWD law enforcement to promote angler information and education regarding the slot-limit and encourage additional harvest of sub slot-size fish; stocking of Florida strain largemouth bass *(M. s. floridanus)* at 100/acre in 2003 and 2004; providing angler information on size limits; and stocking blue catfish fingerlings at 100/acre in 2003 and 2004. Largemouth bass were managed under a 14-18 inch slot-length limit from 1991-2002 and reverted to the Statewide limit in Sept 2003. Continued monitoring of largemouth bass size distribution and population genetics was conducted as recommended in fall 2005. Promotion of angler harvest of sub slot-sized largemouth bass was discontinued following regulation change. Stocking of Florida strain largemouth bass was not conducted due to changes in stocking philosophy following regulation change. Blue catfish *(Ictalurus furcatus)* were stocked in 2003 and 2005.

- **Fish Community**
  - **Prey species:** Threadfin shad *(Dorosoma petenense)* continued to be present in the reservoir but have declined in abundance. Electrofishing catch of gizzard shad *(Dorosoma cepedianum)* was low, with few available as prey for most sport fish. Low relative abundance of small shad appears to have limited white bass growth. Electrofishing catch rate of bluegill *(Lepomis macrochirus)* was high, and most were of a size suitable as prey. Redear *(L. microlophus)* and longear sunfish *(L. megalotis)* are present and provide a valuable addition to the prey base. Redear, although fewer in number than bluegill, grow large enough to provide a fishery.

  - **Catfishes:** Although gill net catch rate of channel catfish was moderate**,** size distribution was excellent; approximately 65% of harvestable size. Blue catfish (stocked in 2003 and 2005) were not collected in the present survey.

  - **Temperate basses:** Only white bass were present in the reservoir. Overall gill net catch rate of white bass was lower than in previous surveys and only one year-class (2004) was present. Apparent weak year-classes in previous years may be related to low flow conditions in feeder streams prior to 2004 or to low survival related to prey availability.

  - **Largemouth bass:** Largemouth bass were abundant. Electrofishing catch rate was similar to previous surveys but size structure was still poor. Those collected were thin and in poor body condition. Growth rate was not estimated due to the low catch of suitable

sized specimens.

- **Crappies:** Both white crappie *(P. annularis)* and black crappie *(P. nigromaculatus)* were present but white crappie were more abundant. White crappie abundance and body condition continued to be acceptable but size distribution is poor. Most white crappie collected were from the 2004 year class suggesting low year-class strength in previous years. However, growth is adequate, with crappie reaching legal length by age 1.

- **Management Strategies:** Stock blue catfish at 100/acre in 2005 and 2006; re-evaluate success of blue catfish stockings during routine gill netting in 2010. Make greater effort to provide regulation posters to the controlling authority for distribution to area businesses. Continue monitoring size distribution and genetic composition of largemouth bass during routine electrofishing in 2009. Coordinate with the controlling authority (City of Waxahachie) to monitor the hydrilla as needed. Conduct a quantitative assessment of the aquatic plant community during routine habitat survey in 2009. A spring quarter creel survey is scheduled for 2007.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Waxahachie 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 are presented with the 2005-2006 data for comparison.

Reservoir Description

Lake Waxahachie is a 553 acre reservoir on Prong Creek (a tributary of the Trinity River), Texas, built to provide water for municipal and industrial purposes. Boat access is adequate, but bank angler access is limited. There are no handicap-specific facilities. Water level remained below conservation pool from 1999 through late 2003 but was above conservation pool in 2004 (Figure 1). The reservoir contains a diversity of littoral habitat types. Hydrilla *(Hydrilla verticillata)*, which was becoming a significant problem in the area around the city water intake structure and swimming beach in the 1998 survey, covered only 5 acres in August 2005. However, American pondweed (*Potamogeton nodosus*), southern naiad (*Najas guadalupensis*), coontail *(Ceratophyllum demersum)*, water willow *(Justicia Americana)*, and smartweed *(Polygonum sp.)* have become abundant and form a beneficial fringe around much of the reservoir (Figure 2). Boat access consisted of three public boat ramps. Bank fishing access was restricted to Waxahachie City Park. Other descriptive characteristics for Lake Waxahachie are in Table 1.

Management History

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

1. Continue monitoring size distribution and population genetics of largemouth bass *(Micropterus salmoides)* during routine electrofishing sampling in FY 2006.
   Action: Continued monitoring of size distribution and population genetics was conducted as recommended in fall 2005.
2. Coordinate with TPWD law enforcement to promote angler information and education regarding the slot-limit. Encourage additional harvest of sub slot-length fish.
   Action: Promotion of angler harvest of sub slot-length largemouth bass was discontinued following regulation change back to statewide in 2003.
3. Restock with Florida strain largemouth bass at 100/acre in 2003 and 2004.
   Action: Stocking of Florida strain largemouth bass *(M. s. floridanus)* was not conducted due to changes in stocking philosophy in 2003.
4. Provide lake-specific regulation posters to vendors of angling oriented businesses serving the Lake Waxahachie vicinity, maintain regulation signs previously posted at public and private boat ramps on Lake Waxahachie.
   Action: No action taken.
5. Stock blue catfish *(Ictalurus furcatus)* at the recommended rate in 2003 and 2004.
   Action: Blue catfish were stocked in 2003, were not available in 2004, but were stocked in 2005.

Harvest regulation history: Sport-fishes in Lake Waxahachie are currently managed with statewide regulations (Table 2). From 1985 to 1991 largemouth bass were managed with a 14-inch minimum-length limit, from 1992-2003 largemouth bass were managed under a 14 to18-inch slot length-limit; on September 1, 2003 the largemouth bass length limit reverted to the statewide limit of 14 inches.

Stocking history: Lake Waxahachie was stocked with threadfin shad *(Dorosoma petenense)* in 1987. Initial stocking of Florida strain largemouth bass was conducted in 1988 and the lake was restocked in 1997 and 1998. Blue catfish were stocked in 2003 and 2005. The complete stocking history is presented in Table 3.

Vegetation/habitat history: Lake Waxahachie has historically supported a diverse aquatic vegetation community. Historically, submerged aquatic vegetation (American pondweed, southern naiad, and coontail) formed a fringe in littoral areas and has not proven problematic (Bonds and Ott 1999; Ott and Bister 2002). In 2005 water willow and smartweed continued to be abundant along undeveloped shoreline areas but shoreline development (in the form of bulkhead banks, riprap, and boat docks) is extensive representing approximately 30% of the shoreline (Ott and Bister 2002) and may have limited expansion of macrophytes to additional areas..

Hydrilla was identified at Lake Waxahachie in 1995 (unpublished data, author). Early control of hydrilla was recommended to the controlling authority (City of Waxahachie) but no action was taken. By 1998, hydrilla covered nearly 10% of the reservoir area (Bonds and Ott 1999). The primary location of hydrilla was near boat ramps and surrounding the intake for the city water supply. Following unusually low water levels in 1999 and early 2000, the area of hydrilla began to decline, and by 2001 only occupied approximately 1% of the shoreline (Ott and Bister 2002). In the present survey, hydrilla was identified in historical areas, but still occupied <1% of the reservoir area. This aquatic plant has the potential to interfere with boat or bank angling access, and the potential exists for rapid growth.

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), Appendix B. 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 all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005). Chlorophyll-*a* data was obtained from the Texas Commission on Environmental Quality (TCEQ 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 for creel statistics and SE was calculated for structural indices and IOV. Ages were determined for white bass and white crappie using otoliths from 13 specimens (within the range 1 inch below to 1 inch above the legal minimum-length limit) for each species. Source for water level data was the United States Geological Survey (USGS) website.

RESULTS AND DISCUSSION

Habitat: Lake Waxahachie supported a diverse aquatic vegetation community (Table 4). Submersed aquatic species (American pondweed, southern naiad, and coontail) formed a fringe around the lake in littoral areas occupying approximately 7% of reservoir area and was similar to previous surveys. Water willow and smartweed occupied undeveloped shoreline areas (5% of reservoir area), but shoreline development appears to limit further expansion of emergent species. Other authors have found a negative correlation between occurrence of emergent and floating-leaf vegetation and the percentage of

lakeshore development (Radomski and Goeman 2001). Increased conversion of vegetated shoreline to bulkhead habitat can lead to poor littoral fish assemblages (Trial et al. 2001). In the present survey, hydrilla was identified in historical areas, but occupied <1% of the reservoir area. This aquatic plant has the potential to interfere with boat or bank angling access, and the potential exists for rapid growth.

Prey species: Electrofishing catch rates of bluegill *(Lepomis macrochirus)* and gizzard shad *(Dorosoma cepedianum)* were 311/h and 41/h, respectively. Index of vulnerability (IOV) for gizzard shad was poor, indicating that only 19% of gizzard shad were available to predators; this was lower than IOV estimates in previous years (Figure 2). Total CPUE of gizzard shad was considerably lower in 2005 compared to the 2001 or 1998 surveys (143/h and 183/h respectively). Threadfin shad were collected in the 2005 survey (Appendix A) but electrofishing catch rate was lower (17/h) than in 2001 or 1998 (23/h and 184/h, respectively). Total CPUE of bluegill in 2005 (311/h), was somewhat lower than in 2002 or 1998 (341/h and 405/h respectively) but is still high. Size structure of bluegill continued to be dominated by small individuals (Figure 3) suitable as prey. Redear and longear sunfish are present, provide a valuable addition to the prey base, and also grow large enough to provide a fishery. PSD of redear was 48, and individuals up to 8 inches in length were collected (Figure 4).

Channel and blue catfish: The gill net catch rate of channel catfish was 6.2/nn in 2005 (Figure 5). Channel catfish catch rate was somewhat lower than that recorded in 1998 or 2002 (9.0/nn and 10.8/nn respectively) but size distribution continues to be excellent (PSD = 44) and over 65% of the fish collected were of legal (12 inch) length. The multi-modal length distribution of channel catfish suggests consistent recruitment. Overall condition of channel catfish continues to be excellent with mean Wr $\leq$ 90 for most size groups. Wr increases with size for individuals greater than harvestable length and may be related to a shift in the diet from invertebrates to fish at that size.

Blue catfish were stocked on 2003 and 2005 to diversify the catfish fishery; however, none were recovered in the current survey.

White bass: The gill net catch rate of white bass was 2.2/nn in 2005 (Figure 6) and is only 1/3 of the catch rates recorded in previous surveys (7.2/nn in 1998 and 7.6/nn in 2002). Furthermore, only one year-class (2004) was represented in the current survey. Only one small tributary (Prong Creek) (Appendix B) provides spawning habitat for white bass at Lake Waxahachie and low water conditions from 1999 through 2003 (Figure 1) may have reduced year-class strength in those years. High inflow in 2004 maintained reservoir level at or above conservation pool and presumably improved recruitment. White bass growth is slow, requiring two growing seasons to reach legal harvestable length (10 inches), (Figure 7). This slow growth may be related to low availability of suitable sized shad as prey.

Largemouth bass: The electrofishing catch rate of stock-length largemouth bass was 107/h in 2005 (Figure 9) and is higher than recorded in previous surveys (79/h in 1998 and 81.h in 2001 respectively). Stock structure (PSD) has varied from 25 to 36 since 1998 and continues to be poor (PSD = 19; RSD-P = 1). In past surveys, largemouth bass grew to 14 inches in length by age 3 (Ott and Bister 2002). Insufficient numbers of largemouth bass 13 - 15 inches in length were collected to allow assessment of growth in the present survey. Body condition continues to be poor (relative weight < 90) for most size classes and was similar to previous surveys. The percentage of pure Florida strain largemouth bass and the percentage of fish with Florida largemouth bass alleles has declined since the last stocking in 1998 (Table 5).

White and Black crappie: Both white crappie and black crappie were present but white crappie were greater in abundance. The trap net catch rate of white crappie was 8.8/nn in 2005, higher than in 2001 (1.8/nn) but lower than 1998 (19.8/nn) (Figure 9). Few legal length white crappie were collected. Size distribution was poor; PSD was 76 and was lower than 2001 (100) or 1998 (91). Length frequency suggests a strong 2004 year-class relative to weak earlier year-classes. Mean relative weight was > 90 for most size classes. White crappie grew to legal minimum-length (10 inches) by age 1 (Figure 10).

Trap net catch rate of black crappie (2.2/nn) was lower than in 2001 (4.4/nn) or 1998 (38.6/nn), (Figure 11). Body condition was low (Wr<90) for most inch classes but is similar to previous years and may be related to low shad abundance. Historical growth rate for black crappie is acceptable; growing to legal minimum-length (10 inches) between age 1 and 2 (Ott and Bister 2002).

Fisheries management plan for Lake Waxahachie, Texas

Prepared – July 2006

ISSUE 1: Anglers expressed interest in having a blue catfish population to diversify the catfish fishery.

MANAGEMENT STRATEGY
1. Stock blue catfish (100/acre) in 2006 and 2007.
2. Re-evaluate success of blue catfish stockings during standard gill netting in 2010.

ISSUE 2: Previous recommendations regarding providing lake-specific regulation posters to vendors of angling-oriented businesses serving the Lake Waxahachie vicinity were not accomplished.

MANAGEMENT STRATEGY
1. Make greater effort to provide regulation posters to the controlling authority for distribution to area businesses.

ISSUE 3: Electrophoresis conducted on young-of-the-year largemouth bass collected in fall 2005 indicated that allele frequency and percentage of pure Florida strain largemouth bass have continued to decline since the last stocking in 1998.

MANAGEMENT STRATEGIES
1. Continue monitoring size distribution and genetic composition during standard electrofishing sampling in 2009.
2. If allele frequency is below 20% restock with Florida strain largemouth bass at 100/acre in 2010 and 2011.

ISSUE 4: No creel data is available to characterize angler use or intended effort for the fish community on Lake Waxahachie

MANAGEMENT STRATEGIES
1. Conduct a spring quarter creel survey of Lake Waxahachie in conjunction with the survey scheduled for Lake Bardwell in Spring 2007.

ISSUE 5: Hydrilla has been present at Lake Waxahachie since 1995 but has declined in area since 1998.

MANAGEMENT STRATEGIES
2. Coordinate with the controlling authority (City of Waxahachie) to monitor the hydrilla as needed.
3. Conduct a quantitative assessment of the aquatic plant community during routine habitat survey in 2009.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes trap net sampling in 2009, electrofishing in 2009, and gill netting in 2010 (Table 6). Sampling at the scheduled intervals is sufficient to monitor trends in this fishery. Additional surveys of the vegetation community will be conducted as necessary based on continued reconnaissance by the controlling authority.

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Trial, P. F., F. P. Gelwick, and M. A. Webb. 2001. Effects of shoreline urbanization on littoral fish assemblages. Journal of Lake and Reservoir Management 17(2):127-138.

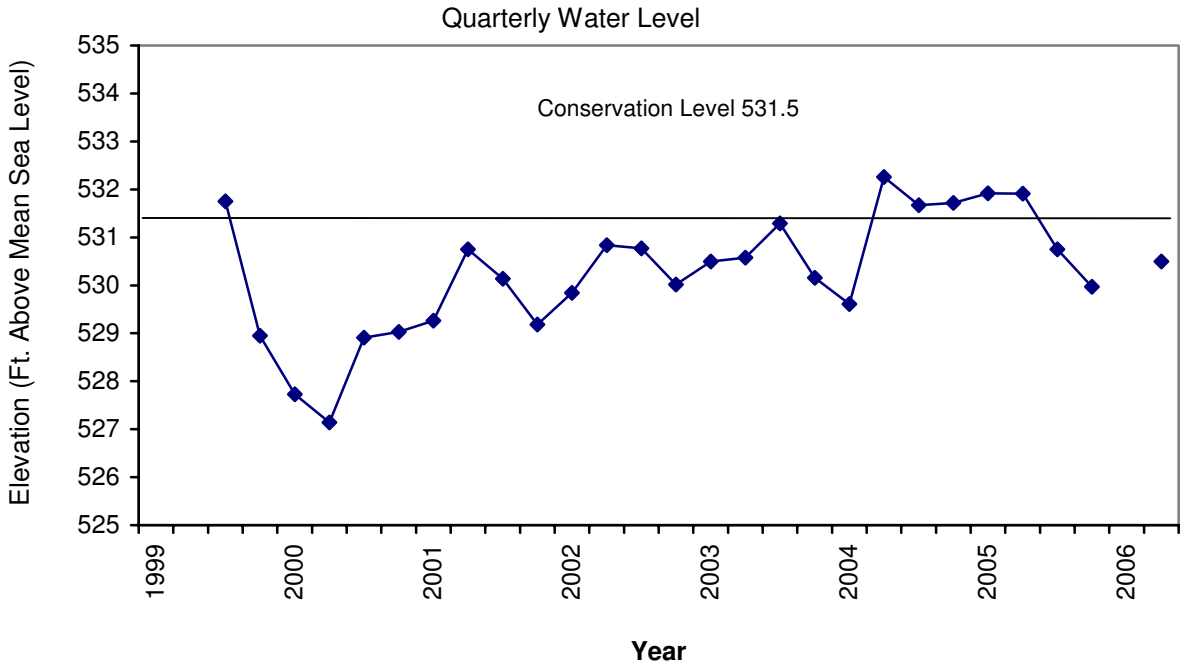


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Lake Waxahachie, Texas.

Table 1. Characteristics of Lake Waxahachie, Texas.

Characteristic	Description
Year Constructed	1958
Controlling authority	City of Waxahachie
Counties	Ellis
Reservoir type	Tributary
Shoreline Development Index (SDI)	1.8
Conductivity	240 umhos/cm

Table 2. Harvest regulations for Lake Waxahachie.

Species	Bag Limit	Minimum-Maximum Length (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12 - No Limit
Catfish, Flathead	5	18 - No Limit
Bass, White	25	10 - No Limit
Bass, Largemouth	5	14 - No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 - No Limit

Table 3. Stocking history of Lake Waxahachie, Texas. Size Categories are: FGL = 1-3 inches and ADL = adults.

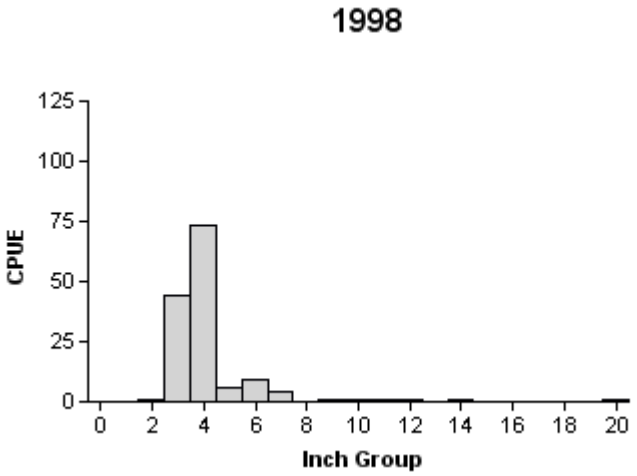
Species	Year	Number	Size
Threadfin shad	1987	1,000	ADL
	Total	1,000	
Blue catfish	2003	57,658	FGL
	2005	49,594	FGL
	Total	107,252	
Florida largemouth bass	1988	69,549	FGL
	1997	70,051	FGL
	1998	69,011	FGL
	Total	208,611	

Table 4. Survey of littoral zone and physical habitat types, Lake Waxahachie, Texas, 2005. Abiotic habitat survey was conducted in 2001 (Bister and Ott 2002). A linear shoreline distance (miles) was recorded for each habitat type found. Surface area (acres) and percent of reservoir surface area were determined for each type of aquatic vegetation found.

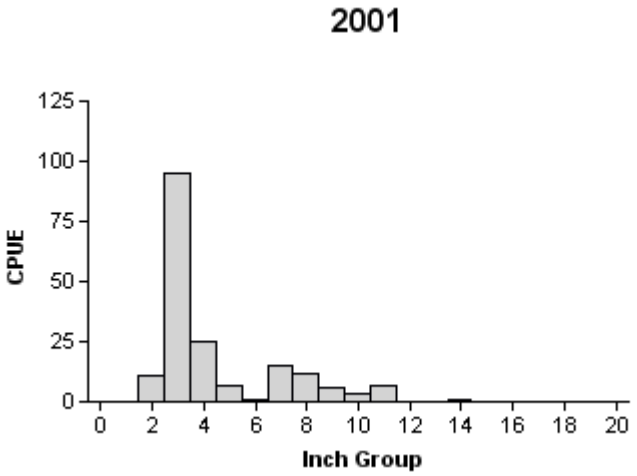
Shoreline habitat type	Shoreline Distance		Surface Area	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Bulkhead & boat docks[1]	0.5	3.8		
Eroded bank[1]	1.0	7.6		
Eroded bank & boat docks[1]	0.8	5.8		
Riprap[1]	0.5	4.0		
Rocky shoreline[1]	0.3	2.4		
Featureless & boat docks[1]	1.2	8.9		
Featureless[1]	9.2	67.6		
Native submerged vegetation			39	7.0
Native emerged vegetation			29	5.2
Hydrilla			5	0.9

[1] Abiotic habitat feature

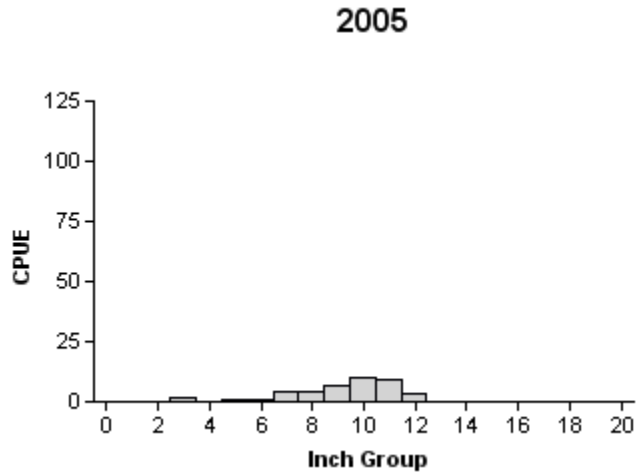
Gizzard Shad



Effort = 1.0
Total CPUE = 143.0 (21; 143)
Stock CPUE = 10.0 (59; 10)
PSD = 40.0 (0.13)
IOV = 87.82 (0.04)



Effort = 1.0
Total CPUE = 183.0 (27; 183)
Stock CPUE = 44.0 (28; 44)
PSD = 18.0 (0.06)
IOV = 84.15 (0.05)



Effort = 1.0
Total CPUE = 41.0 (27; 41)
Stock CPUE = 37.0 (28; 37)
PSD = 32.0 (0.06)
IOV = 19.51 (0.07)

Figure 2. Number of gizzard shad caught per hour (CPUE, bars), and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lake Waxahachie, Texas 1998, 2001, and 2005.

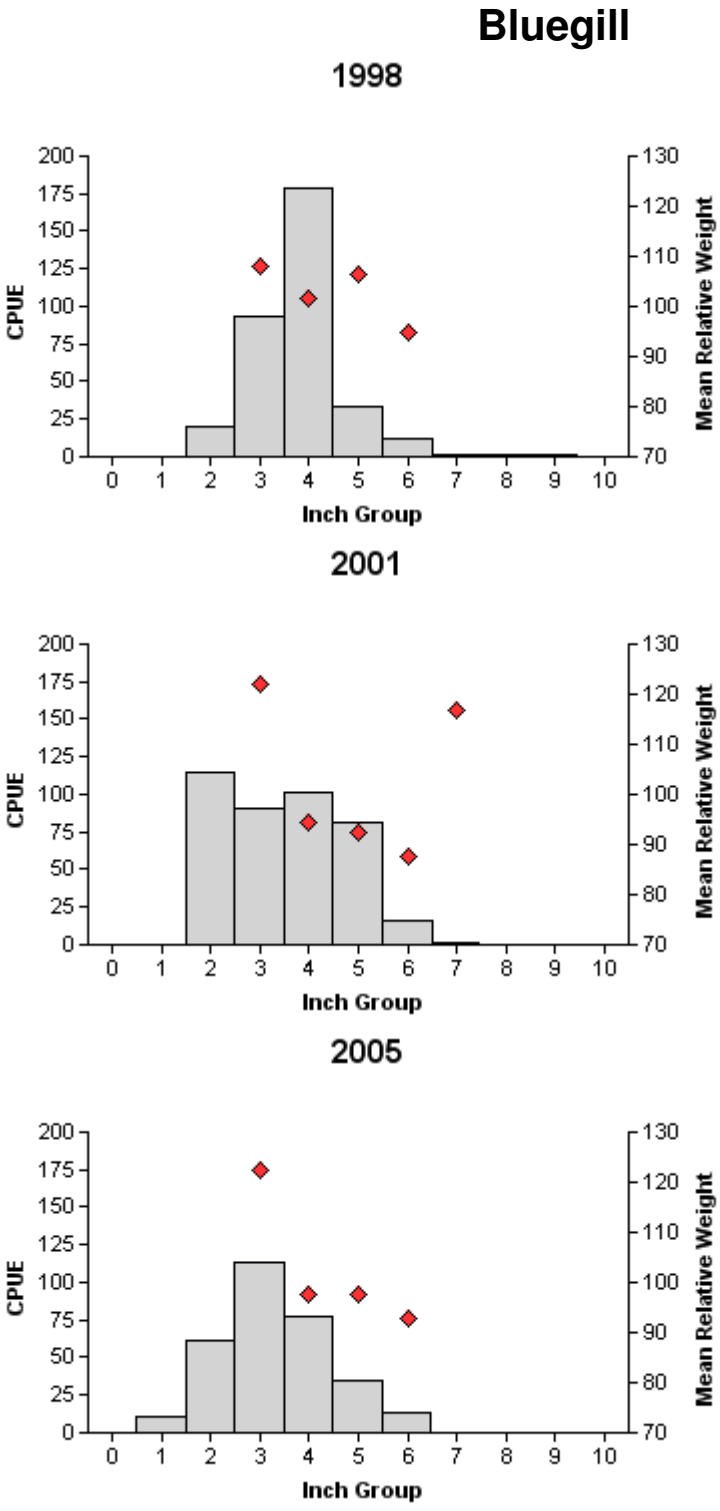


Figure 3. Number of bluegill caught per hour (CPUE, bars), mean relative weight (Wr, diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Waxahachie, Texas, 1998, 2001, and 2005.

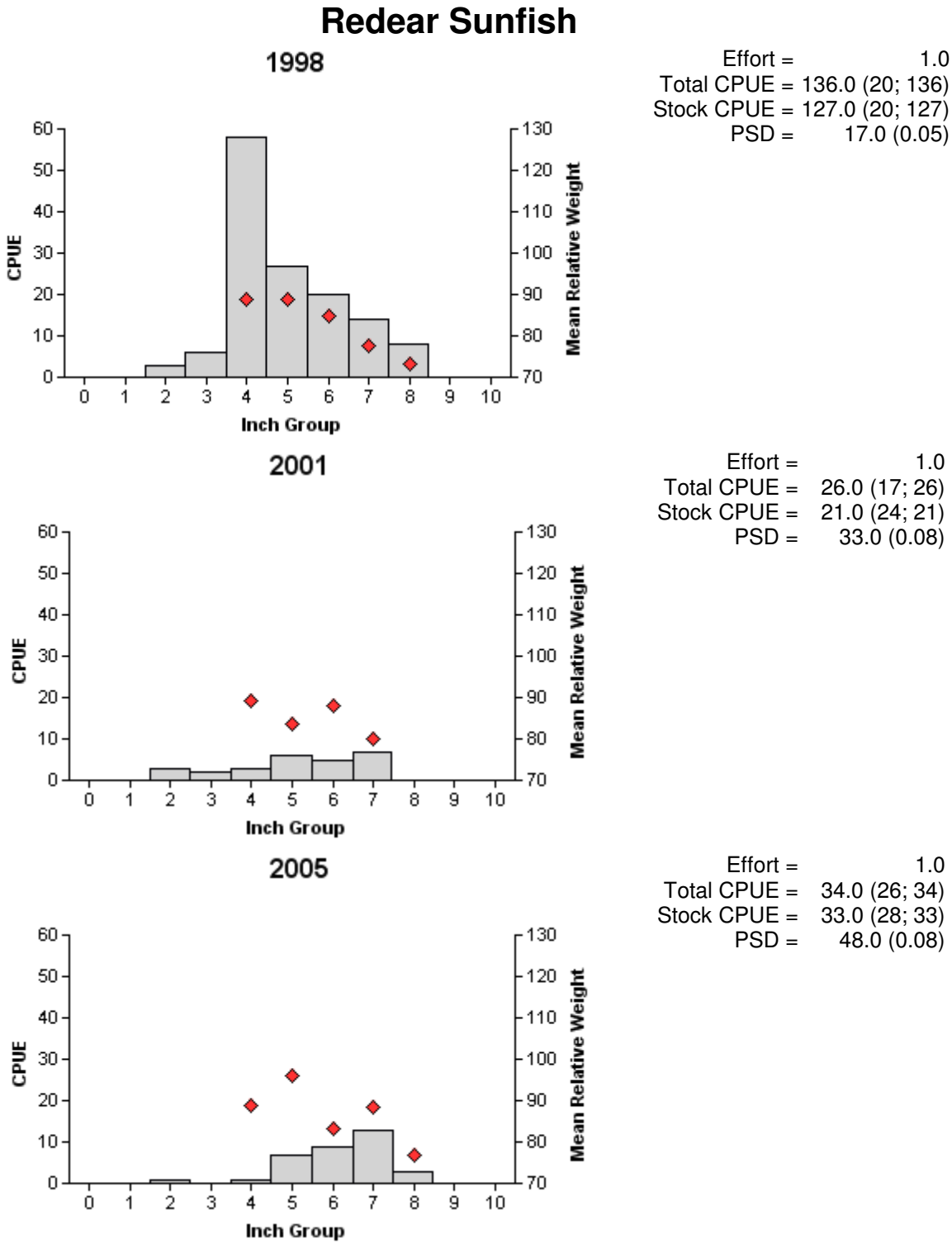


Figure 4. Number of redear sunfish caught per hour (CPUE, bars), mean relative weight (Wr, diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Waxahachie, Texas, 1998, 2001, and 2005.

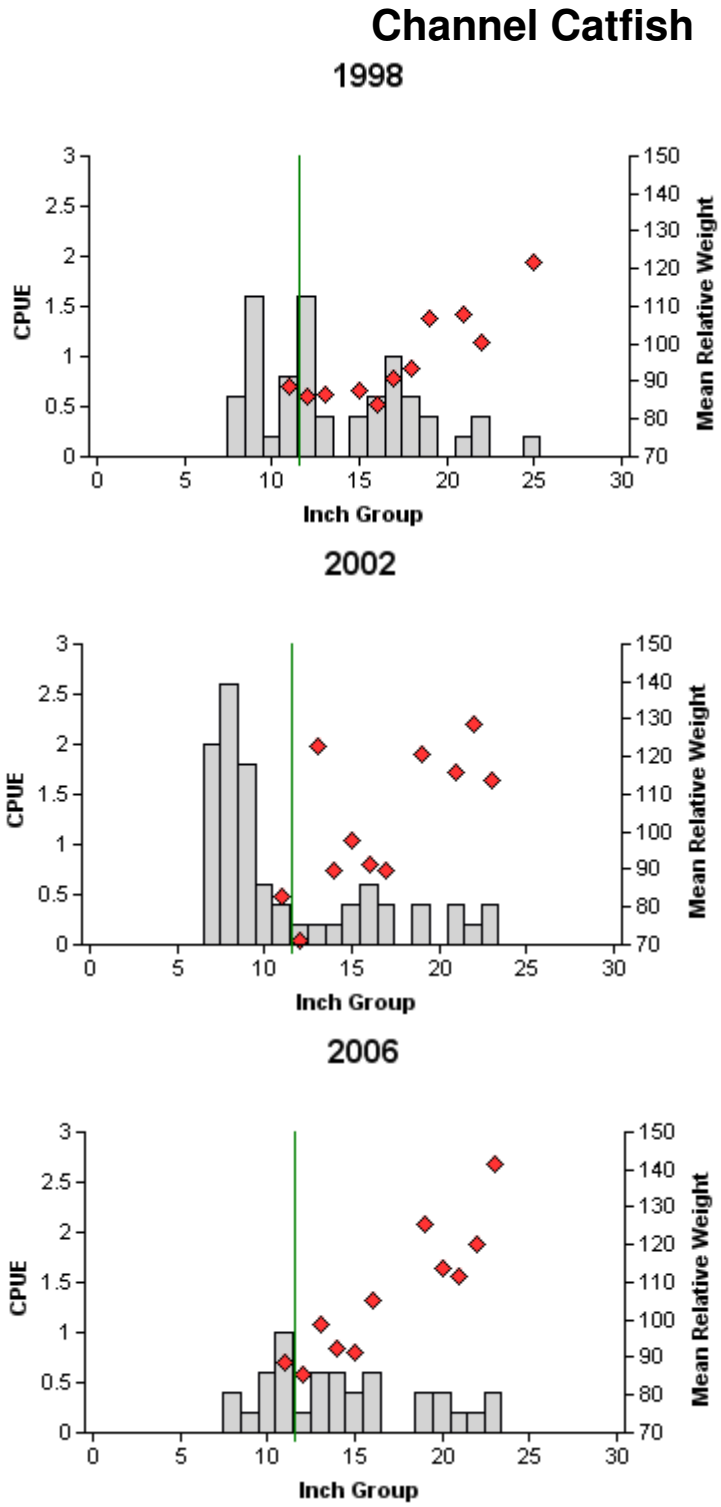


Figure 5. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (Wr, diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Waxahachie, Texas, 1998, 2002, and 2006. Vertical line represents the length limit in effect at the time of survey.

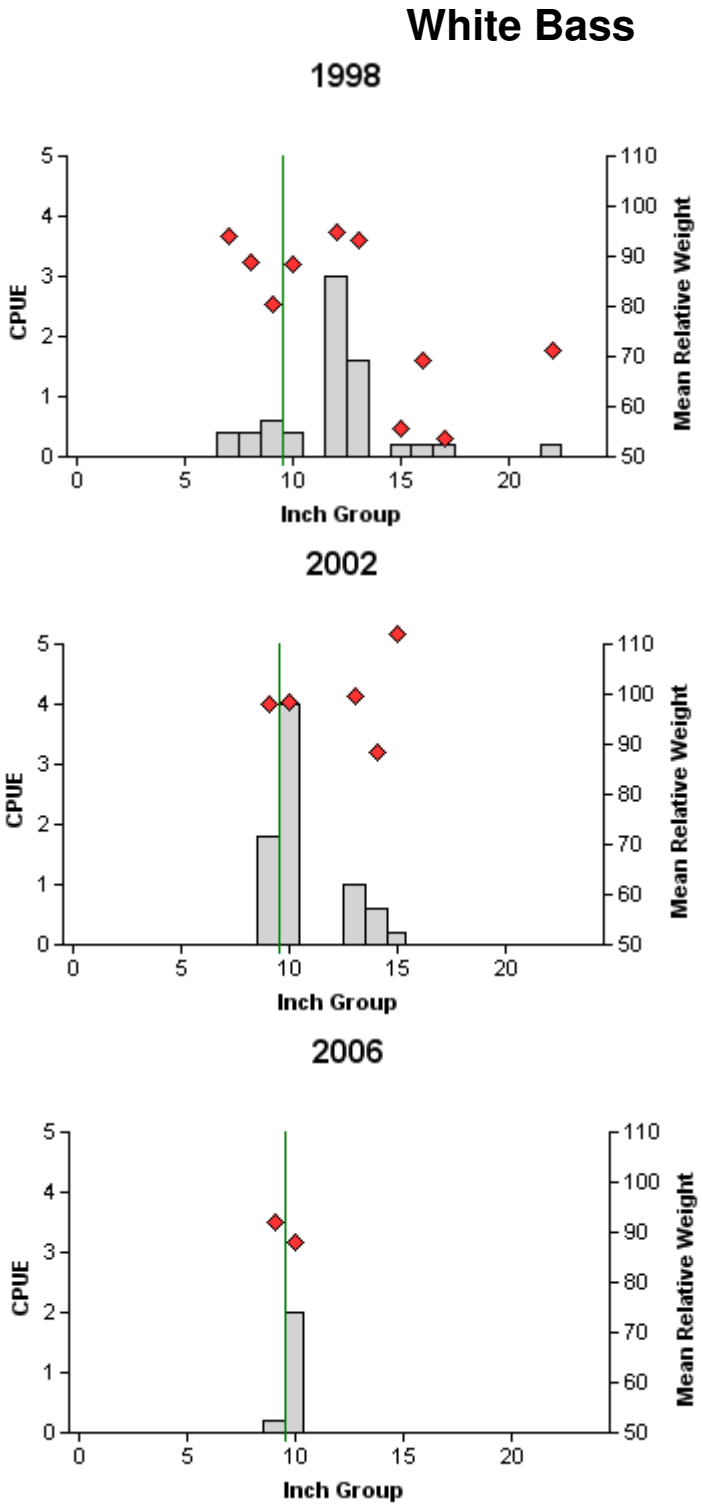


Figure 6. Number of white bass caught per net night (CPUE, bars), mean relative weight (Wr, diamonds) and population indices (RSE and N are in parentheses) for spring gill net surveys, Lake Waxahachie, Texas, 1998, 2002, and 2006. Vertical line represents the length limit in effect at the time of survey.

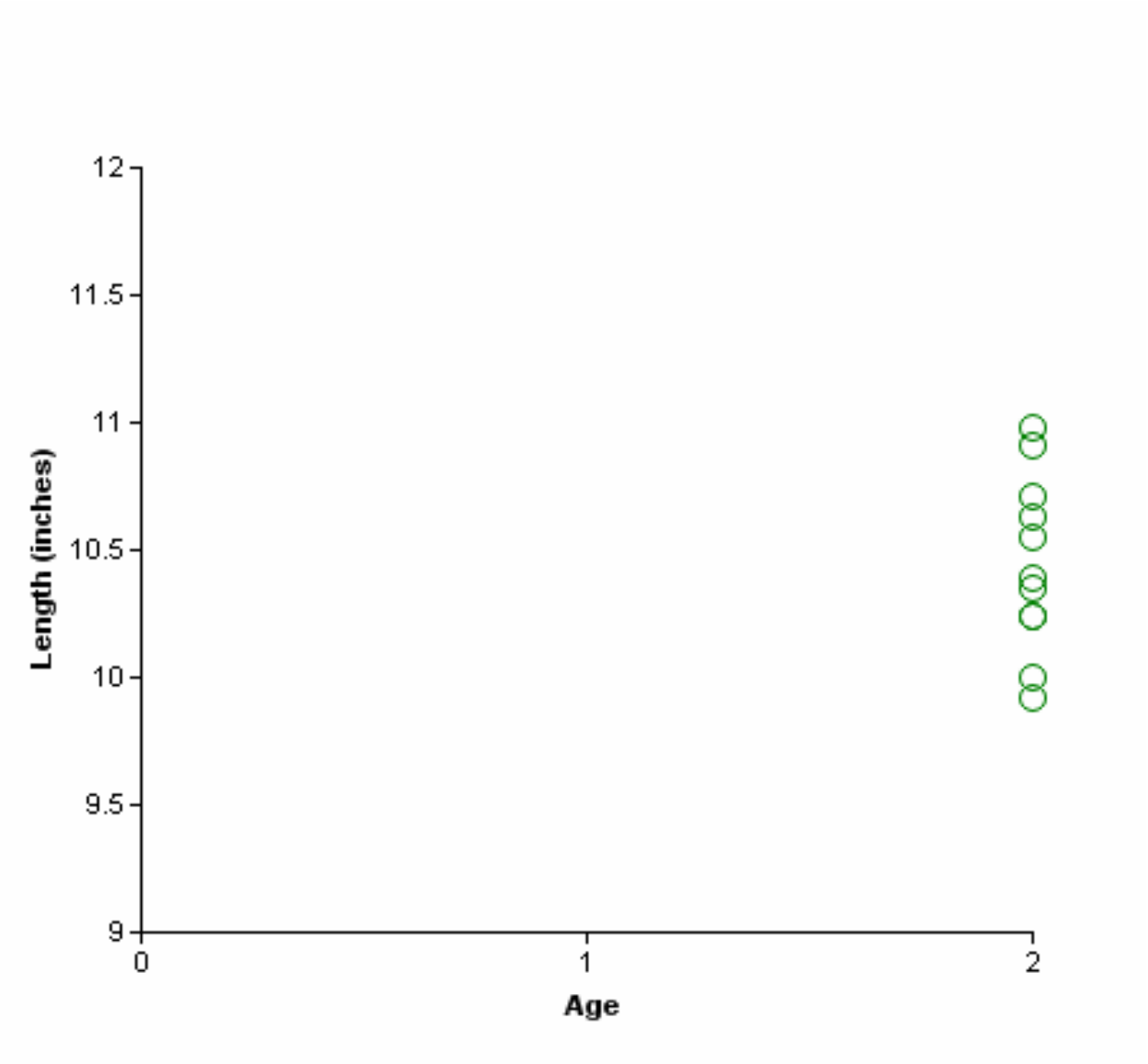
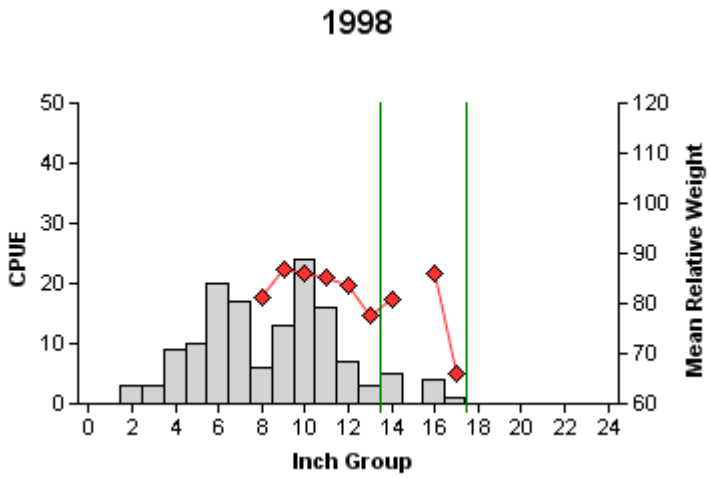
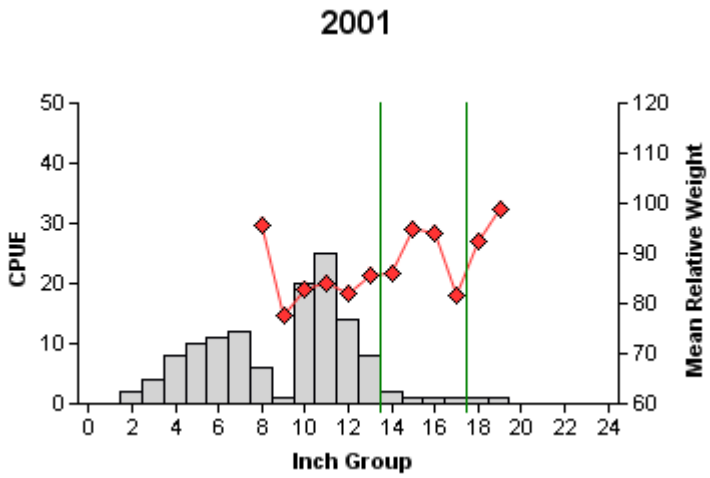


Figure 7. Length at age for white bass collected from gill nets at Lake Waxahachie, Texas, March 2006.

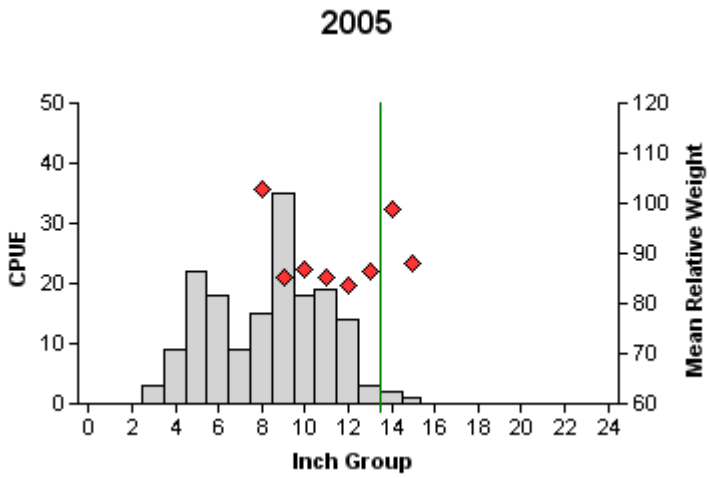
Largemouth Bass



Effort =	1.0
Total CPUE =	141.0 (18; 141)
Stock CPUE =	79.0 (16; 79)
PSD =	25.0 (0.06)
RSD-P =	6.0 (0.03)



Effort =	1.0
Total CPUE =	128.0 (18; 128)
Stock CPUE =	81.0 (24; 81)
PSD =	36.0 (0.05)
RSD-P =	6.0 (0.02)



Effort =	1.0
Total CPUE =	168.0 (25; 168)
Stock CPUE =	107.0 (29; 107)
PSD =	19.0 (0.02)
RSD-P =	1.0 (0.01)

Figure 8. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (Wr, diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Waxahachie, Texas, 1998, 2001, and 2005. Vertical line represents the length limit in effect at the time of survey.

Table 5. Results of genetic analysis of age-0 largemouth bass collected by fall electrofishing, Lake Waxahachie, Texas, 1998, 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.

		Genotype					
Year	Sample size	FLMB	F1	Fx	NLMB	% FLMB alleles	% pure FLMB
1998[a]	17	2	3	9	3	43	12
2001	30	0	5	14	11	22	0
2005	30	1	1	22	6	26	3

[a] – FLMB stocked the same year as survey

White Crappie

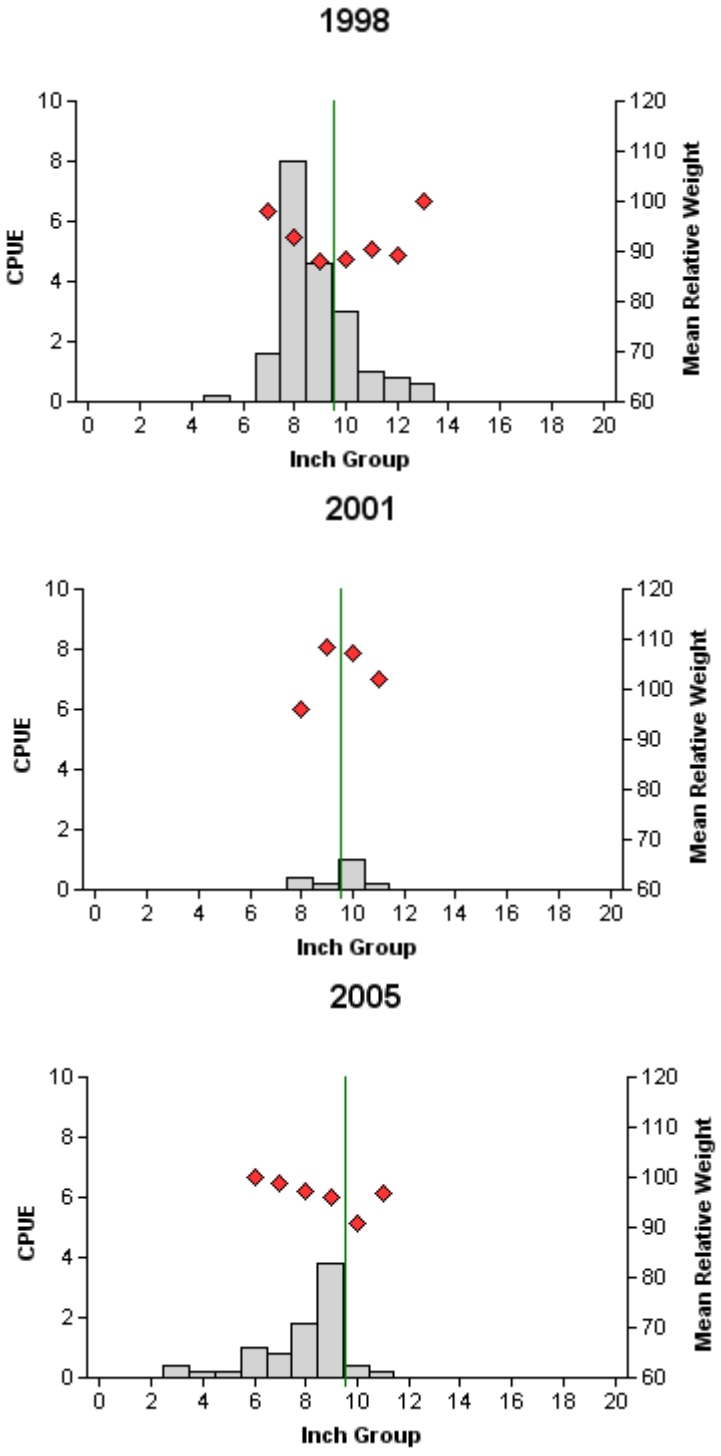


Figure 9. Number of white crappie caught per trap net night (CPUE, bars), mean relative weight (Wr, diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Lake Waxahachie, Texas, 1997, 2001, and 2005. Vertical line represents the length limit in effect at the time of survey.

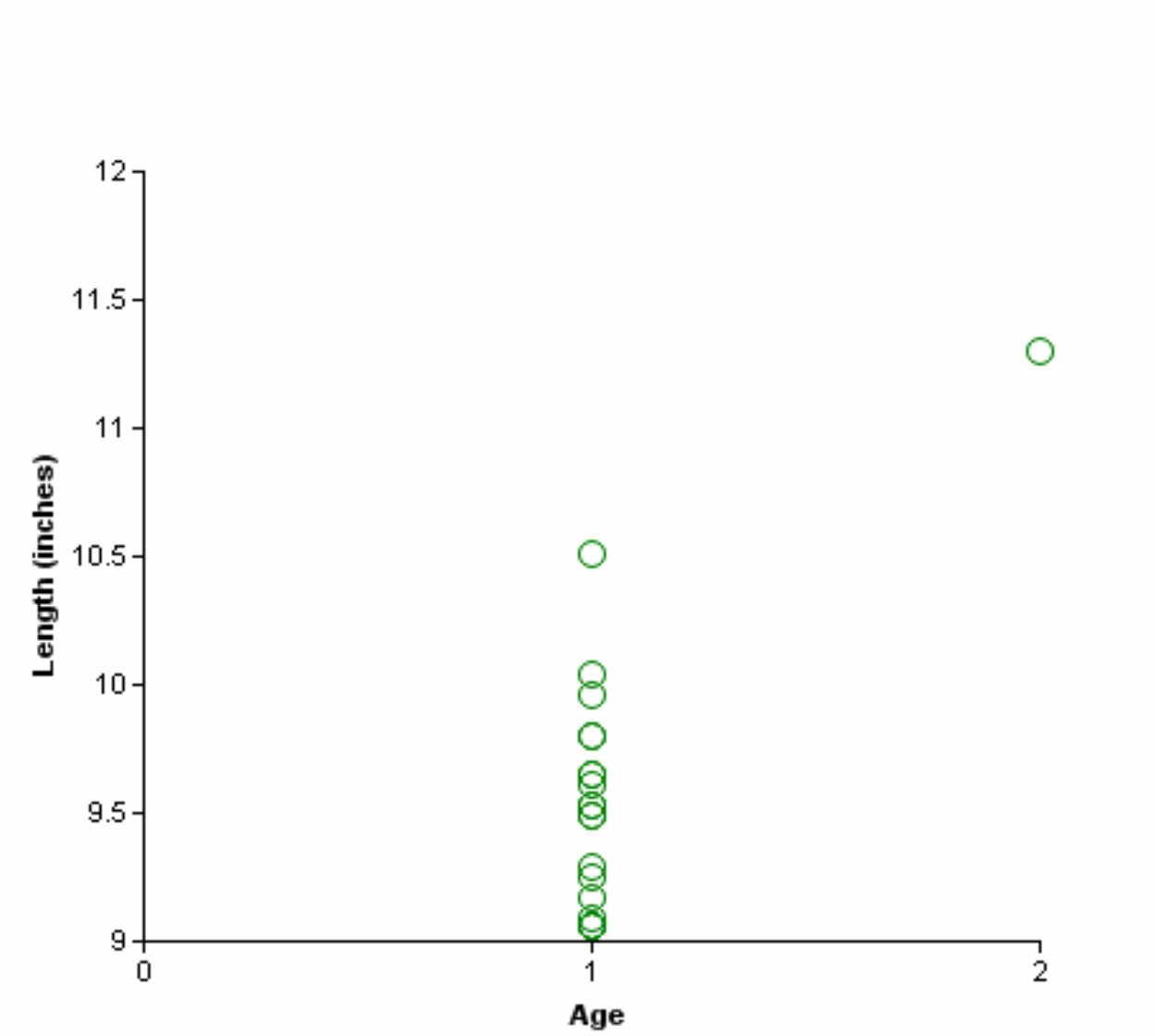


Figure 10. Length at age for white crappie collected from trap nets at Lake Waxahachie, Texas, November 2005.

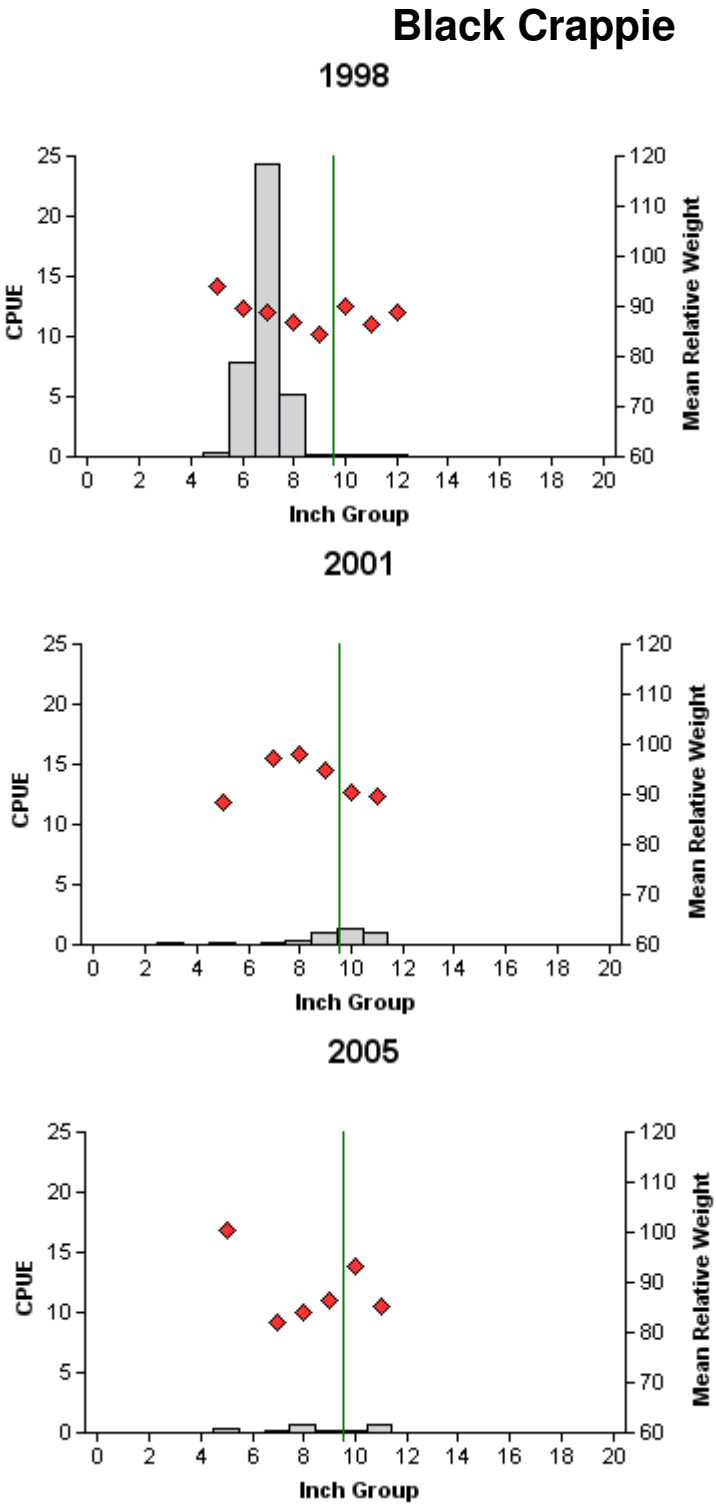


Figure 11. Number of black crappie caught per trap net night (CPUE, bars), mean relative weight (Wr, diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Lake Waxahachie, Texas, 1997, 2001, and 2005. Vertical line represents the length limit in effect at the time of survey.

Table 6. Proposed sampling schedule for Lake Waxahachie, 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	Electrofisher	Trap Net	Gill Net	Creel Survey	Report
Fall 2006-Spring 2007				C[a]	
Fall 2007-Spring 2008					
Fall 2008-Spring 2009					
Fall 2009-Spring 2010	S	S	S		S

[a] – spring quarter only

APPENDIX A

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

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					41	41.0
Threadfin shad					17	17.0
Channel catfish	31	6.2				
White bass	11	2.2				
Green sunfish					1	1.0
Warmouth					13	13.0
Orange spotted sunfish					4	4.0
Bluegill					311	311.0
Longear sunfish					76	76.0
Redear sunfish					34	34.0
Largemouth bass					168	168.0
White crappie			44	8.8		
Black crappie			11	2.2		

APPENDIX B

Location of sampling sites, Lake Waxahachie, Texas, 2005-2006. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively.