PERFORMANCE REPORT

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FEDERAL AID PROJECT F-30-R-32

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2006 Survey Report

Lake Travis

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Travis were surveyed in 2006 using electrofishing and in 2007 using gill nets. This report summarizes the results of the surveys and contains a fisheries management plan for the reservoir based on those findings.

- **Reservoir Description:** Lake Travis is an 18,622-acre impoundment of the Colorado River located in Travis and Burnet Counties, approximately 12 miles northwest of Austin. It was constructed in 1942 by the Lower Colorado River Authority (LCRA) for purposes of flood control, municipal and industrial water supplies, irrigation, and hydroelectric power. Lake Travis has a Shoreline Development Index of 18.3. The basin is steep-sided with relatively few shallow coves and shoal areas. This reservoir experiences extreme water level fluctuations and lies within the Edwards Plateau ecological area. Land use is predominantly ranching in the upper reservoir, with residential properties common in the lower reservoir. Aquatic vegetation has never been documented in the reservoir.

- **Management History:** Important sport fish include white bass, striped bass, largemouth bass, and catfish species. The management plans for 2003 were to re-establish a once popular striped bass fishery by restocking hatchery-raised fish; and secondly, work with fishing clubs to reduce tournament-caught largemouth bass mortality. The Florida subspecies of largemouth bass was stocked in the reservoir in the late 80s to increase Florida largemouth bass genetic influence in the population. Blue and channel catfish were stocked in the 70's to help establish a sustainable population. White bass were managed under an experimental 12-inch minimum length limit. The regulation was rescinded in 2002 after analysis indicated environmental factors, not angler harvest, were probably more influential in determining white bass population density.

- **Fish Community**
  - **Prey species:** Gizzard shad, bluegill, and redbreast sunfish were the predominant sources of forage. Threadfin shad were also available.

  - **Catfishes:** Blue catfish was the dominant species present. Channel and flathead catfish were also present in low densities. Previous creel surveys indicated directed effort towards catfish in general was low.

  - **Temperate basses:** White bass abundance improved in 2007, rebounding from low sampling catch rates during previous surveys. Striped bass were present in low densities, but gill net catch improved after three stockings (2002, 2005, 2006).

  - **Black basses:** Largemouth bass were abundant, with the population size structure dominated by individuals within the 10- to 12-inch range. Largemouth bass growth in 2006 remained similar to the last survey in 2002. Lake Travis also contains Guadalupe bass. Some Guadalupe bass in the 12- to 15-inch range are available.

Management Strategies

The reservoir should continue to be managed with existing fishing regulations. Striped bass should continue to be stocked in efforts to re-establish the once popular fishery. Florida largemouth bass should be stocked to increase genetic influence, pending on reservoir flood status. Routine gill netting and electrofishing surveys should be conducted in 2010 – 2011, with an additional gill netting survey in spring 2009.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Travis in 2006 and 2007. The purpose of the document is to provide fisheries information and make fisheries 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 species and important prey species. Fisheries management strategies are included to address existing problems or opportunities. Historical data is presented with the 2006 and 2007 data for comparison.

Reservoir Description

Lake Travis is an 18,622-acre impoundment of the Colorado River located in Travis and Burnet Counties, approximately 12 miles northwest of Austin. It was constructed in 1942 by the Lower Colorado River Authority (LCRA) for purposes of flood control, municipal and industrial water supplies, irrigation, and hydroelectric power. Lake Travis has a Shoreline Development Index of 18.3. The basin is steep-sided with relatively few shallow coves and shoal areas. This reservoir experiences extreme water level fluctuations (Figure 1), and lies within the Edwards Plateau ecological area. Land use is predominantly ranching in the upper reservoir, with residential properties common in the lower reservoir. Shoreline habitat at the time of sampling consisted mostly of rocky shoreline, rock bluff, and sand. No aquatic vegetation was present. Angler access was excellent for both boat and bank anglers. Twelve concrete public boat ramps were available for anglers. A new 2-lane boat ramp was constructed at Jones Brother's Park in the City of Jonestown. Bank fishing was available at 18 public parks. Handicapped access was poor with no specific handicap accessible fishing sites available. Other descriptive characteristics for Lake Travis are in Table 1.

Management History

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

1. Stock striped bass and monitor with an optional gill net survey in 2006 if stockings occur in 2004 and 2005.

   Action: Striped bass were stocked in 2005, 2006, and 2007. No optional gill net survey was conducted in 2006 because stocked individuals had not had sufficient time to grow large enough to be effectively caught in the gear.

2. Continue to offer tournament organizations use of the District 2C bass tournament weigh-in kit to help educate anglers about proper weigh-in procedures.

   Action: The weigh-in kit was made available to tournament organizations.

Harvest Regulation History: Sport fish in Lake Travis are currently managed with statewide regulations (Table 2). The white bass minimum length limit was reduced to 10 inches in September 2002 as analyses suggested that population densities were probably determined by environmental factors rather than angler harvest.

Stocking History: Annual striped bass stockings at a rate of 5/acre have been requested since 2002 to re-establish a once popular fishery. Florida largemouth bass were introduced in 1988 to increase Florida largemouth bass genetic influence. A complete stocking history is in Table 3.

Aquatic Vegetation/habitat history: Lake Travis had no aquatic vegetation coverage. Most of the shoreline habitat was comprised of rocky shoreline, bluff, and sand (Table 4). Water levels at Lake Travis fluctuate widely, but shoreline habitat changes little.

METHODS

Fishes were collected by electrofishing (2.0 hours at 24 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 netting as the number of fish caught in one net set overnight (fish/nn). All survey sites were randomly selected and all surveys were conducted according to the Texas Parks and Wildlife Department Inland Fisheries Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual, revised 2005). Trap netting for white crappie was not performed due to historically low catch rates and high cost associated with collecting these data. A habitat survey has not been conducted since 1998. No large scale structural habitat changes have occurred in the interim.

Sampling statistics (CPUE for various length categories) and structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weights (Wr)] were calculated for target fishes according to Anderson and Neumann (1996). The Index of Vulnerability (IOV) was used to determine the percentage of gizzard shad vulnerable to predation (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 for temperate basses were obtained using otoliths from all individuals sampled. Ages were determined for LMB using otoliths from 13 individuals between 330 and 381mm (category 2 age analysis for 14-inch LMB; TPWD Procedures Manual, revised 2007). Largemouth bass electrophoresis samples were collected according to the Texas Parks and Wildlife Department Inland Fisheries Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005). Genotype identification of F1 and Fx hybrid LMB were omitted in 2006 due to high probability of misidentification resulting from low numbers of loci available for analysis. The source for water level data was the Lower Colorado River Authority.

RESULTS AND DISCUSSION

Habitat: Shoreline habitat was comprised mostly of rocky shoreline, bluff, and sand (Table 4).

Prey species: Electrofishing catch rates of gizzard shad**,** bluegill, and redbreast sunfish were 134.0/hour, 410.5/hour, and 163.5/hour, respectively. Index of Vulnerability (IOV) for gizzard shad more than doubled to 73.1 in 2006 from 32.1 in 2002, indicating that 73% of gizzard shad were vulnerable to existing predators (Figure 2). Total CPUE of gizzard shad was also considerably higher in 2006 than in 2002 (Figure 2). Threadfin shad were present in lower densities. Total CPUE of bluegill in 2006 remained similar to total CPUE from the 2002 survey, and size structure continued to be dominated by small individuals < 5 inches (Figure 3). Total CPUE of redbreast sunfish in 2006 was nearly quadrupled the total CPUE from the 2002 survey, with the size class dominance shifting towards quality size (≥ 7 inches). Still, most redbreast sunfish sampled were 5-6 inches (Figure 4).

Blue catfish: Blue catfish was the predominant species of catfish surveyed. The gill net catch rate of blue catfish was 2.4/nn in 2007. The blue catfish population continued to show low relative abundance, with a population structure dominated by fish between 15 and 20 inches (Figure 5). Body condition in 2007 was poor (relative weights under 90) for many size classes of fish, and remained similar to body condition from the 2003 survey (Figure 5).

Channel catfish: The gill net catch rate of channel catfish was 1.8/nn in 2007. The channel catfish population continued to show low relative abundance, with most individuals within the 12- to 14-inch length range (Figure 6). Body condition in 2007 was good (relative weights above 90) for nearly all size classes and remained similar to previous surveys (Figure 6).

Flathead catfish: The gill net catch rate of flathead catfish was 0.9/nn in 2007. The flathead catfish

population continued to show low relative abundance, with a population structure dominated by large individuals (Figure 7). Body condition in 2007 was poor (relative weights under 90) for many size classes of fish, and remained similar to body condition from the 2003 survey (Figure 7).

White bass: The gill net catch rate of white bass was 2.3/nn in 2007. Catch rates improved from surveys conducted in 2003 and 2001 (Figure 8). Furthermore, most individuals sampled were of legal size (88.6%). Age and growth data revealed that most white bass reached harvest size (10 inches) by age 1 (age 1 = 10.08 inches average; N = 35)(Figure 9).

Striped bass: This was the first year striped bass were sampled since stocking was re-initiated. The gill net catch rate of striped bass was 0.9/nn in 2007. The striped bass population showed low relative abundance, with most individuals ranging between 18 and 20 inches (Figure 10). Age and growth data revealed that striped bass reached harvest size (18 inches) during their second growing season (age 1 = 13.25 inches average, age 2 = 19.85 inches average; N = 13)(Figure 11).

Largemouth bass: The electrofishing catch rate of stock-length largemouth bass was 115.5/h in 2006, higher than the 83/h in 2002. Size structure remained similar to previous surveys with individuals between 10 and 12 inches dominating the population (Figure 12). Catch rates of harvestable bass (CPUE-14) doubled from the 2002 survey to a historical high (Appendix A). An overall increasing trend in CPUE14 has been recorded since 1988, possibly reflecting the effect of catch-and-release practiced by anglers, or an increase in growth rates over time (although still poor) as the reservoir has become more fertile (LCRA, unpublished data), or a combination of both (Appendix A). Growth of largemouth bass in Lake Travis remained poor; average age at 14 inches of length was > 3 years (N = 13; range = 1 – 3 years) (Figure 13). There are multiple year classes within size groups in Lake Travis, and large individuals are not frequently encountered. One large individual was retained for contaminants analysis from the gill net sample in 2007. At 6.5 pounds, the bass was at least 8 years of age, showing that Lake Travis bass must be long-lived in order to reach memorable size. Body condition in 2006 was poor (relative weights under 90) for nearly all size classes of fish, and was lower than body condition in previous surveys (Figure 12). Florida largemouth bass influence declined as Florida alleles have dropped from 50% in 2002 to 40% in 2006. No pure Florida largemouth bass were sampled in 2006 (Table 5).

Fisheries management plan for Lake Travis, Texas

Prepared - July 2007.

ISSUE 1: Three striped bass stocking have been made in Lake Travis since 2002. The shad population continues to show improvement, with an increasing IOV. Striped bass were present in the 2007 gill netting survey indicating a population is being re-established. Continuing stocking efforts will be needed to re-establish a viable fishery for this species.

MANAGEMENT STRATEGY

1. Request striped bass fingerlings be stocked once per year at a rate of 5/acre.

2. An additional gill netting survey should be conducted spring 2009 to monitor striped bass abundance and condition.

ISSUE 2: Due to drought conditions the water level on Lake Travis was extremely low (<650 msl) in 2006. In spring 2007 water level had exceeded conservation pool elevation (681 msl), inundating terrestrial vegetation. Florida largemouth bass influence has decreased and no pure Florida largemouth bass were collected in the 2006 survey. Florida largemouth bass have not been stocked since 1988. The increase in water level provides favorable conditions for stocking Florida bass fingerlings.

MANAGEMENT STRATEGY

1. Stock Florida bass fingerlings in spring 2008 at a rate of 25/acre if the reservoir is at or above 670 msl.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule will constitute mandatory sampling in 2010/2011; with an additional gill netting survey in spring 2009 to assess the abundance and condition of striped bass (Table 6).

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

S.J. Magnelia and. C.C. Bonds. 2003. Statewide freshwater fisheries monitoring and management program survey report for Lake Travis, 2003. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin. 33 pp.

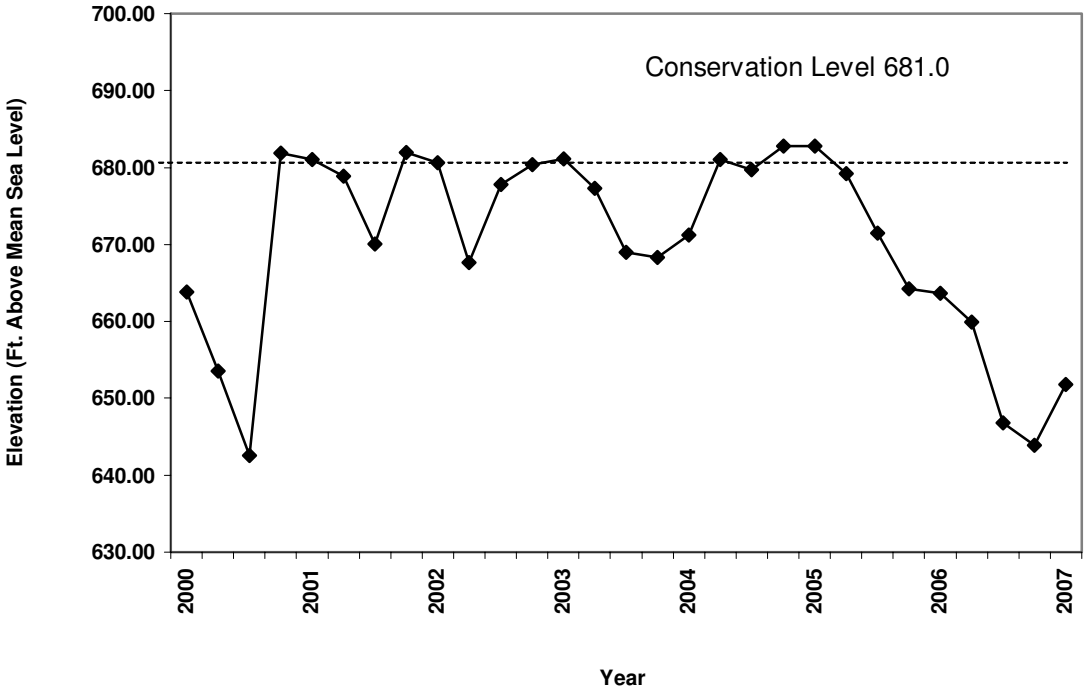


Figure 1. Mean quarterly water level elevations in feet above mean sea level (MSL) recorded for Lake Travis, Texas.

Table 1. Characteristics of Lake Travis, Texas

Characteristic	Description
Year constructed	1941
Controlling authority	LCRA
Counties	Burnet and Travis
Reservoir type	Mainstream river system: Colorado
Shoreline development index (SDI)	18.3
Conductivity	900 umhos/cm

Table 2. Harvest regulations for Lake Travis.

Species	Bag limit	Length limit (inches)
Bass: largemouth	5*	14 minimum
Bass: Guadalupe	5*	No minimum limit
Striped bass	5	18 minimum
White bass	25	10 minimum
Flathead catfish	5	18 minimum
Catfish: channel and blue catfish	25 (in any combination)	12 minimum

*Five largemouth and Guadalupe bass in any combination.

Table 3. Stocking history of Travis Reservoir, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
Blue catfish	1979	101,313	UNK	UNK
	Total	101,313		
Channel catfish	1971	13,000	AFGL	7.9
	1972	87,000	AFGL	7.9
	2005	457	ADL	15.4
	Total	100,457		
Florida Largemouth bass	1988	474,535	FRY	1.0
	Total	474,535		
Largemouth bass	1967	238,000	UNK	UNK
	Total	238,000		
Smallmouth bass	1977	211,400	UNK	UNK
	1978	196,050	UNK	UNK
	1979	343,940	UNK	UNK
	Total	751,390		
Striped bass	1973	206,285	FGL	1.7
	1974	163,611	FGL	1.7
	1976	175,854	UNK	UNK
	1978	90,250	UNK	UNK
	1981	180,000	UNK	UNK
	1983	183,699	UNK	UNK
	1991	94,600	FGL	1.4
	2002	110,490	FGL	1.5
	2005	96,000	FGL	1.6
	2006	98,842	FGL	1.9
	2007	103,569	FGL	1.8
	Total	1,503,200		
Walleye	1976	190,000	FRY	0.2
	1977	3,666,925	FRY	0.2
	1978	4,391,640	FRY	0.2
	1979	4,503,500	FRY	0.2
	Total	12,752,065		

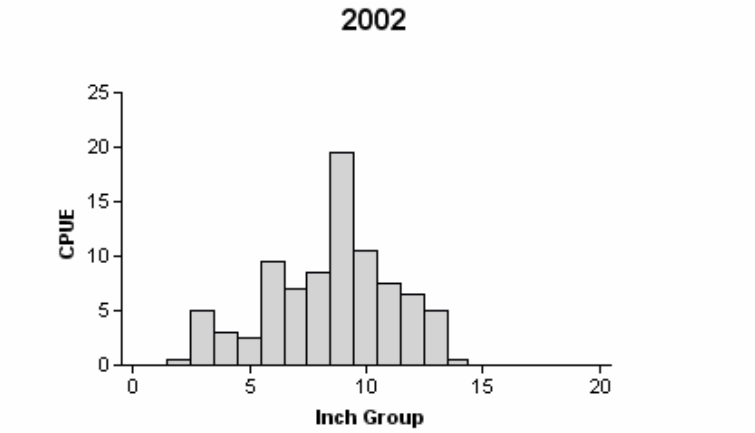
Table 4. Survey of shoreline habitat types, Lake Travis, Texas, 1998. A linear shoreline distance (miles) was recorded for each habitat type found.

Shoreline habitat type	Shoreline distance	
	Miles*	Percent of total
Rocky shoreline	103.1	67
Bluff	30.2	19
Sand	22.4	14
Riprap	0.3	<1
Concrete	0.4	<1

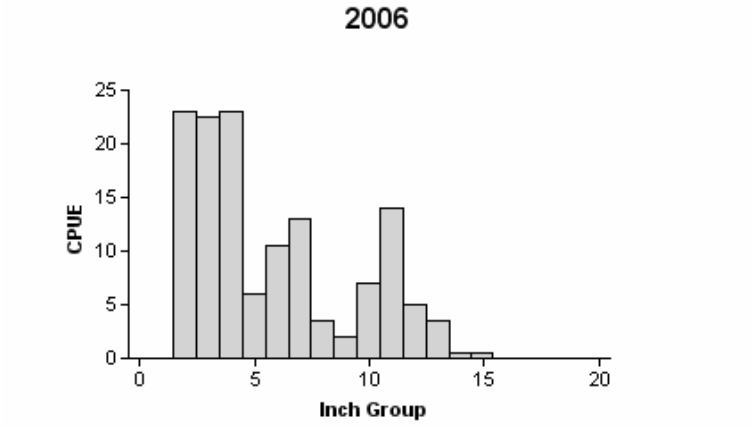
*Reservoir was 16 feet below conservation pool at time of survey. Survey was terminated at mile marker 57 due to low water conditions (156.4 total shoreline miles surveyed).

Gizzard Shad

Effort = 2.0
Total CPUE = 90.5 (29; 181)
IOV = 35.36 (14.7)



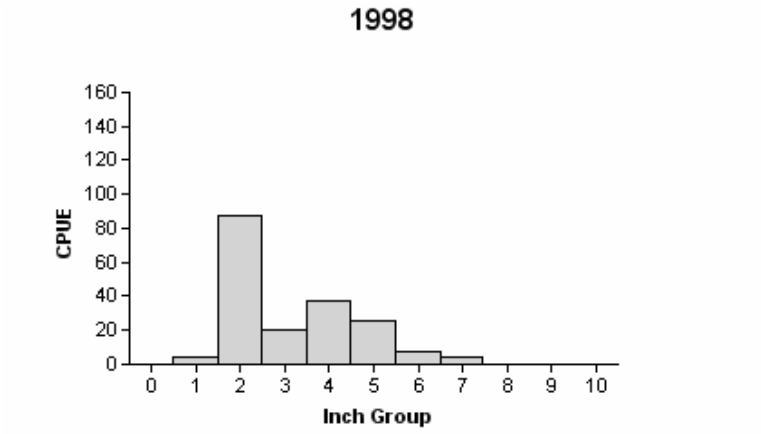
Effort = 2.0
Total CPUE = 85.5 (28; 171)
IOV = 32.16 (7.7)



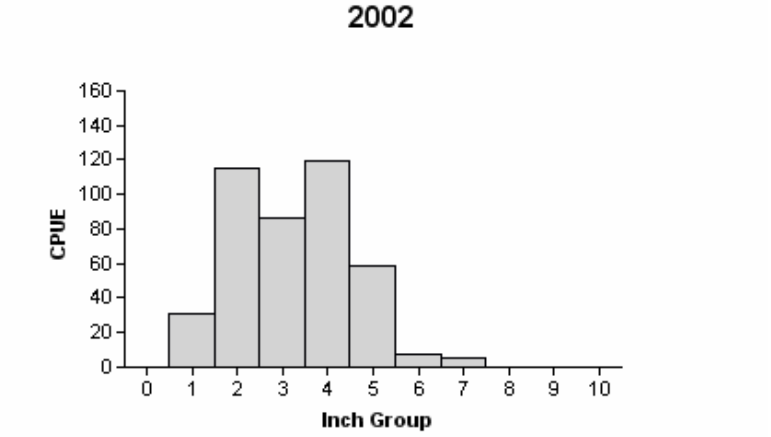
Effort = 2.0
Total CPUE = 134.0 (35; 268)
IOV = 73.13 (9.4)

Figure 2. Number of gizzard shad caught per hour (CPUE) population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lake Travis, Texas, 1998, 2002 and 2006.

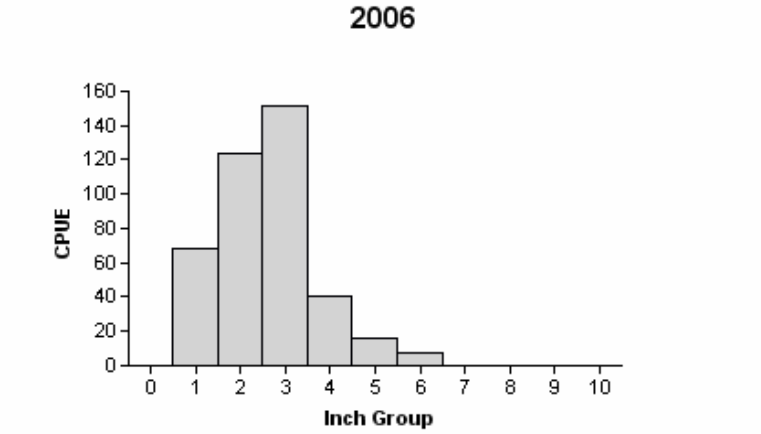
Bluegill



Effort =	2.0
Total CPUE =	188.0 (36; 376)
PSD =	13 (3.2)



Effort =	2.0
Total CPUE =	422.5 (16; 845)
PSD =	5 (1.4)



Effort =	2.0
Total CPUE =	410.5 (25; 821)
PSD =	4 (1.2)

Figure 3. Number of bluegill caught per hour (CPUE) population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Travis, Texas, 1998, 2002 and 2006.

Redbreast Sunfish

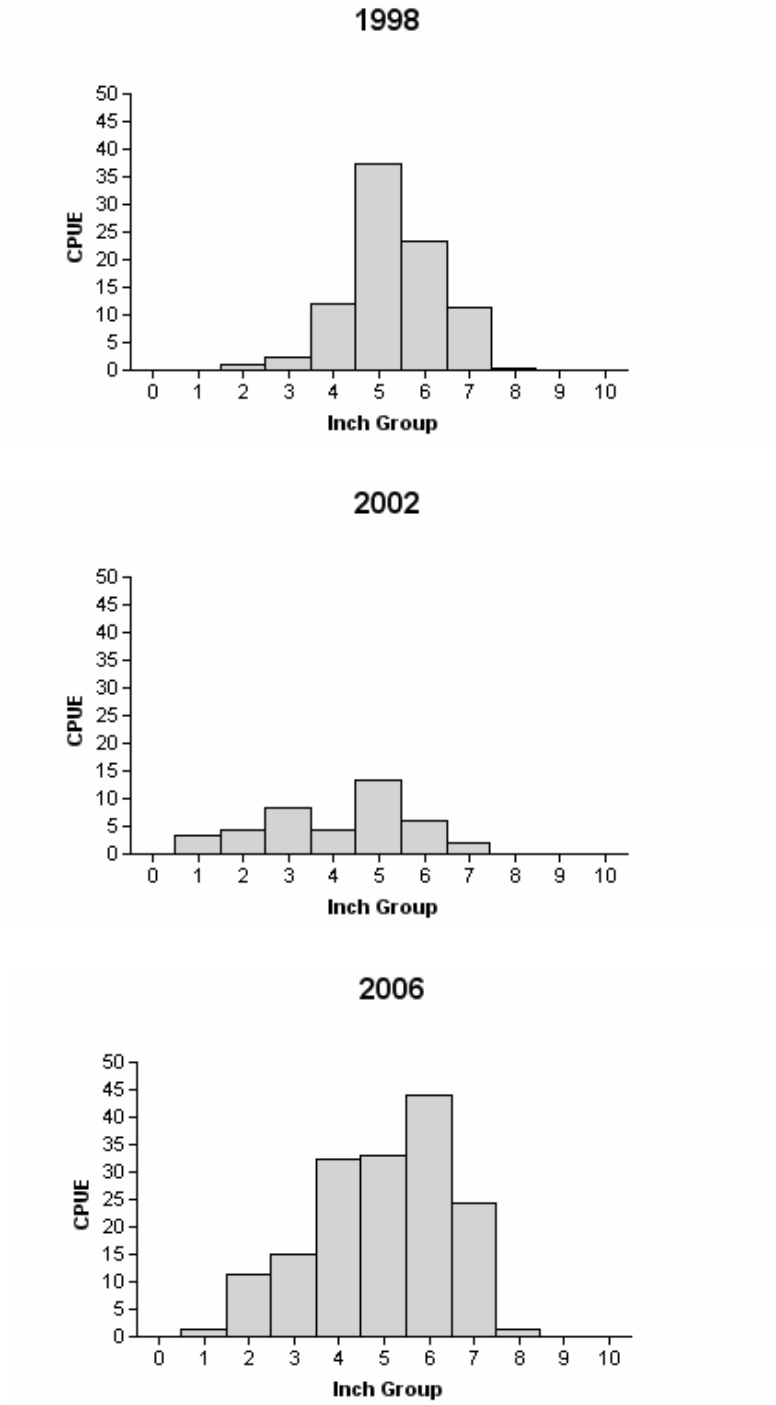
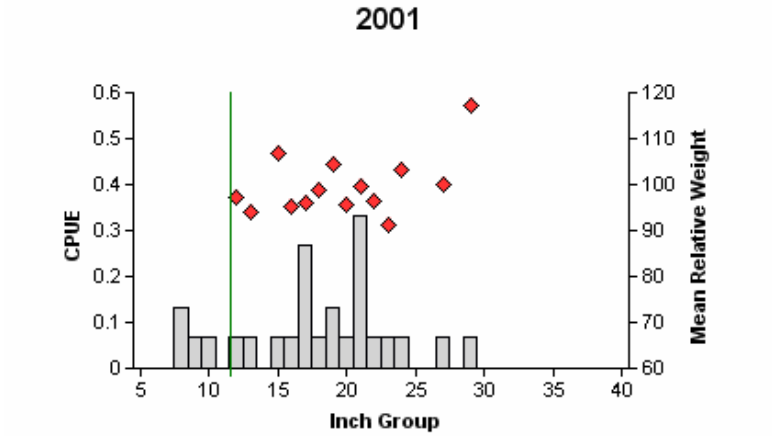
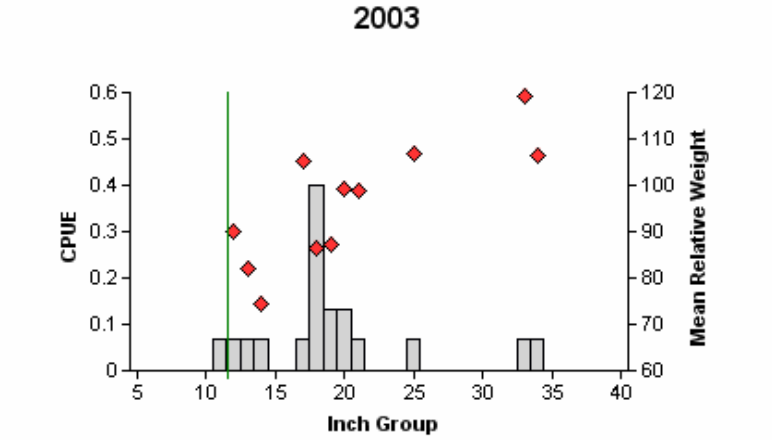


Figure 4. Number of redbreast sunfish caught per hour (CPUE) population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Travis, Texas, 1998, 2002 and 2006.

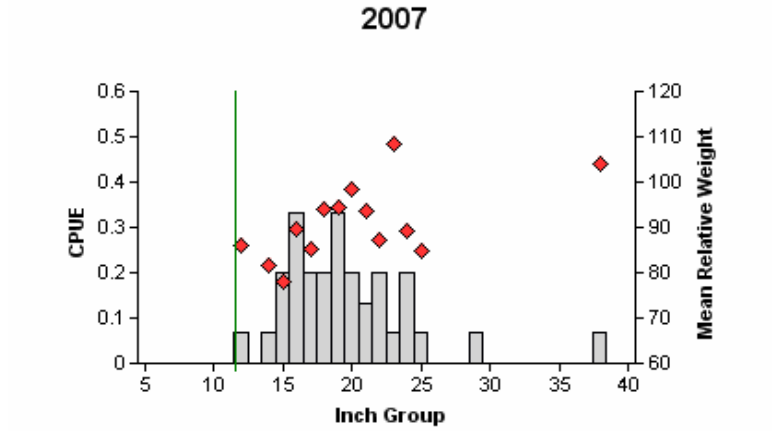
Blue Catfish



Effort =	15.0
Total CPUE =	1.7 (26; 26)
CPUE-12 =	1.5 (26; 22)
PSD =	50 (10)



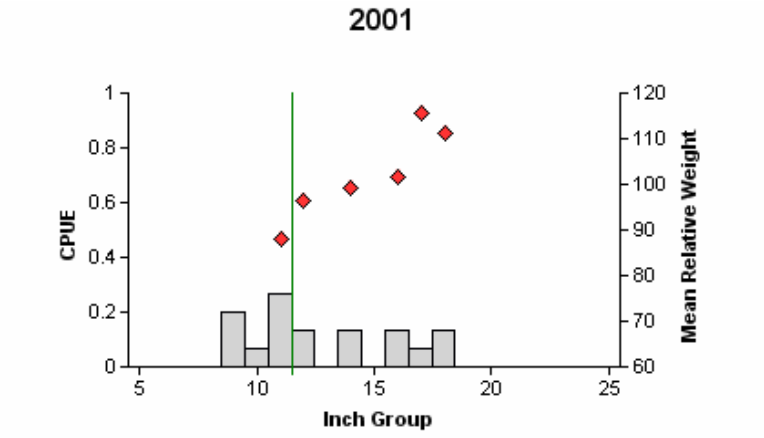
Effort =	15.0
Total CPUE =	1.3 (24; 19)
CPUE-12 =	1.2 (26; 18)
PSD =	33 (12.4)



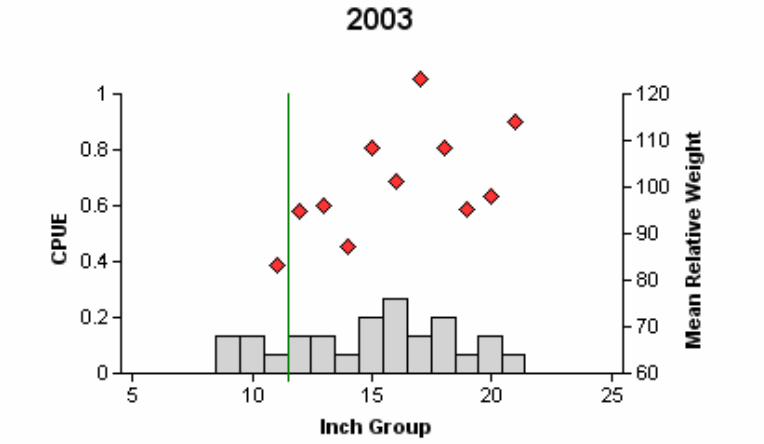
Effort =	15.0
Total CPUE =	2.4 (30; 36)
CPUE-12 =	2.4 (30; 36)
PSD =	42 (11.3)

Figure 5. Number of blue catfish caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Travis, Texas, 2001, 2003 and 2007. Minimum length limit indicated by vertical line.

Channel Catfish



Effort =	15.0
Total CPUE =	1.1 (37; 17)
CPUE-12 =	0.6 (36; 9)
PSD =	38 (18.7)

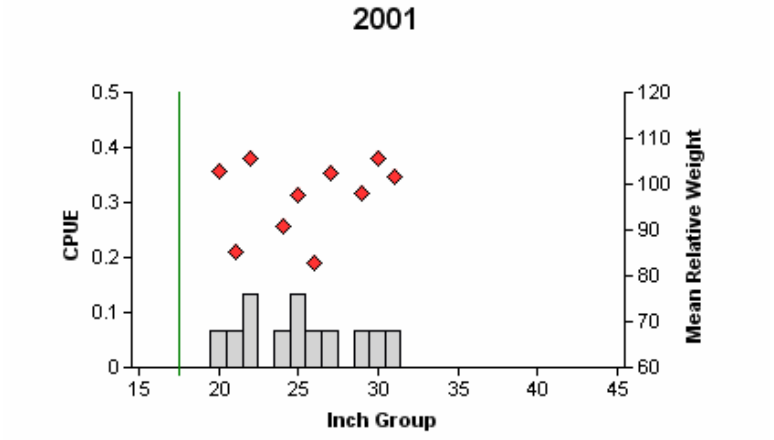


Effort =	15.0
Total CPUE =	1.7 (25; 26)
CPUE-12 =	1.4 (33; 21)
PSD =	59 (10.7)

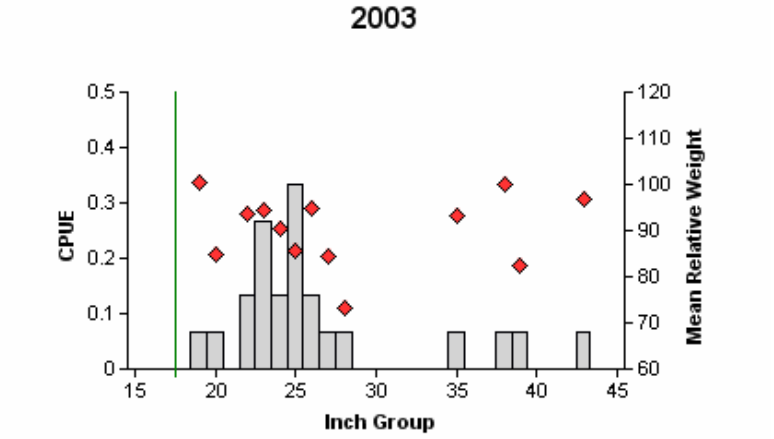
Effort =	15.0
Total CPUE =	1.8 (18; 27)
CPUE-12 =	1.3 (17; 20)
PSD =	17 (9.9)

Figure 6. Number of channel catfish caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Travis, Texas, 2001, 2003 and 2007. Minimum length limit indicated by vertical line.

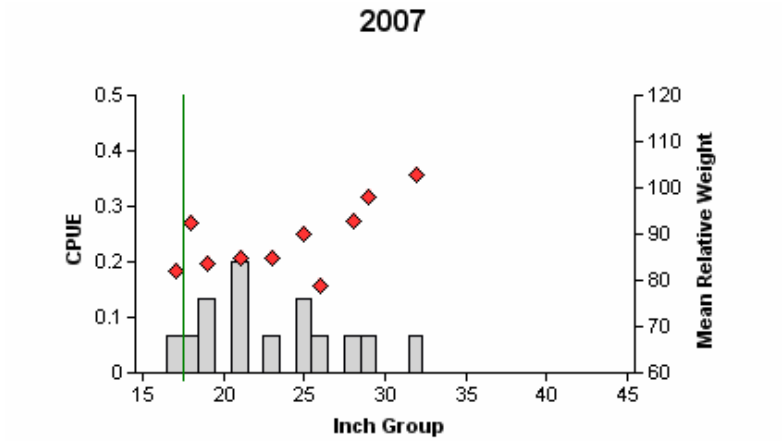
Flathead Catfish



Effort =	15.0
Total CPUE =	0.8 (30; 12)
CPUE-18 =	0.8 (30; 12)
PSD =	100 (0)



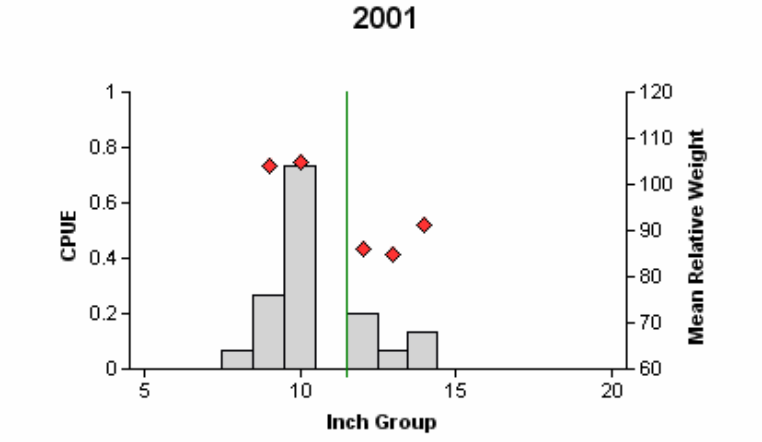
Effort =	15.0
Total CPUE =	1.5 (18; 23)
CPUE-18 =	1.5 (18; 23)
PSD =	96 (4.5)



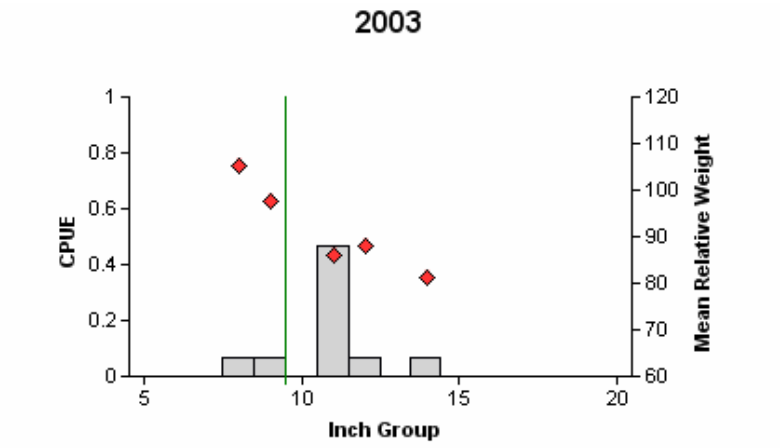
Effort =	15.0
Total CPUE =	0.9 (38; 14)
CPUE-18 =	0.9 (40; 13)
PSD =	71 (15.1)

Figure 7. Number of flathead catfish caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Travis, Texas, 2001, 2003 and 2006. Minimum length limit indicated by vertical line.

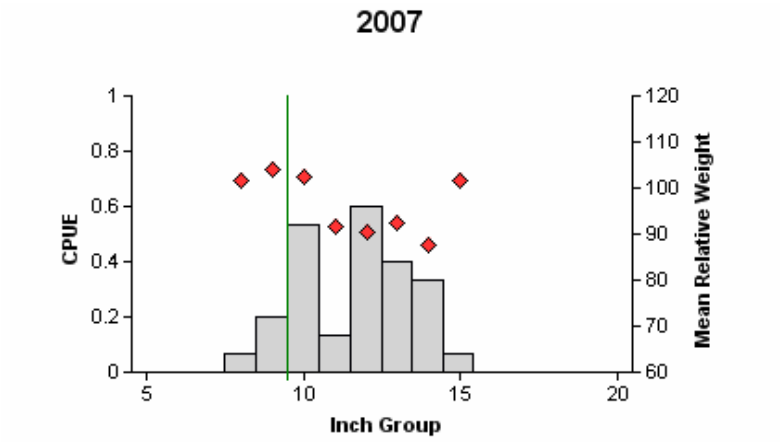
White Bass



Effort =	15.0
Total CPUE =	1.5 (58; 22)
CPUE-10 =	1.1 (70; 17)
PSD =	95 (5.5)



Effort =	15.0
Total CPUE =	0.7 (39; 11)
CPUE-10 =	0.6 (45; 9)
PSD =	91 (8.6)



Effort =	15.0
Total CPUE =	2.3 (37; 35)
CPUE-10 =	2.1 (37; 31)
PSD =	97 (2.4)

Figure 8. Number of white bass caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Travis, Texas, 2001, 2003 and 2007. Minimum length limit indicated by vertical line.

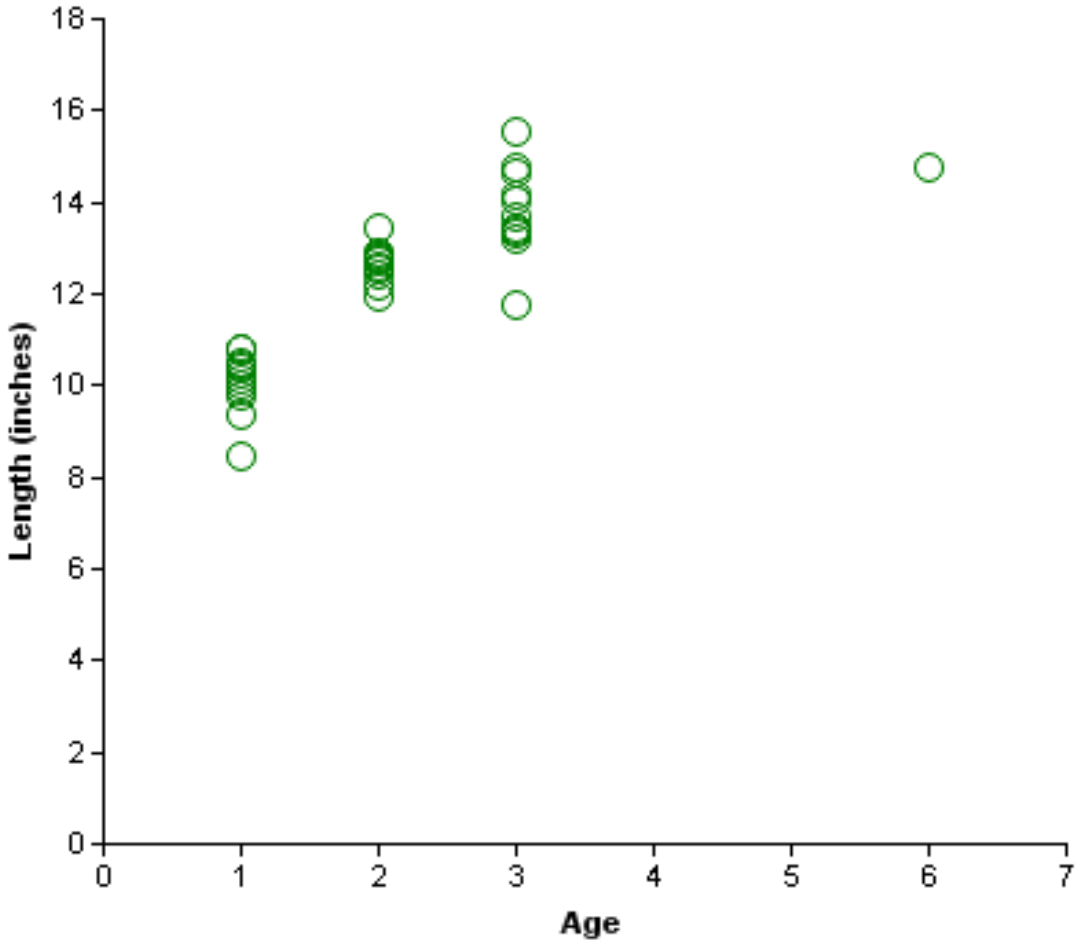
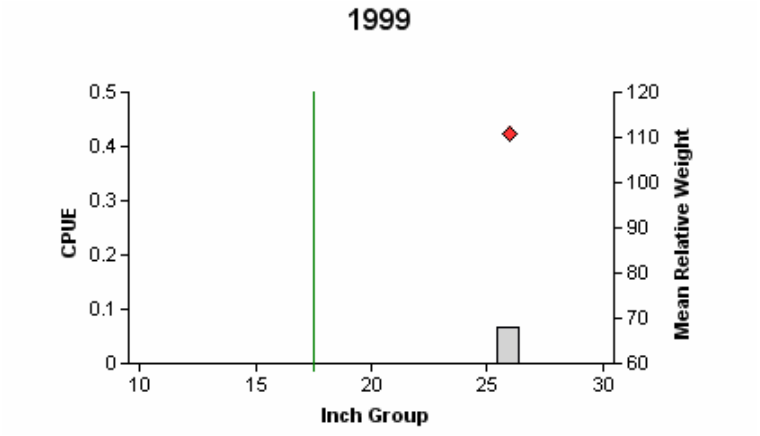
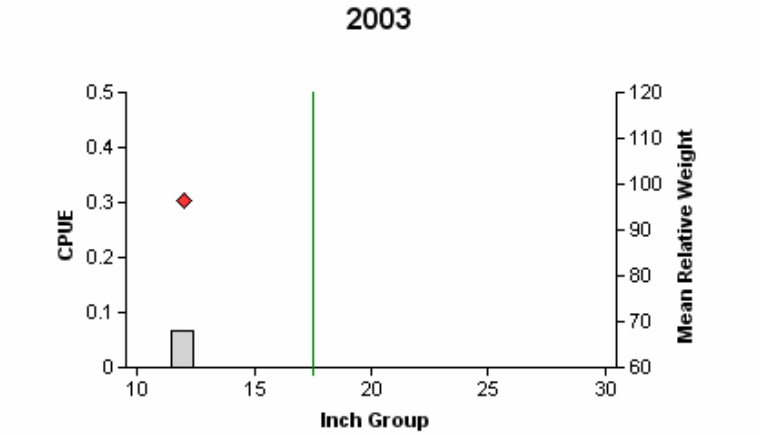


Figure 9. Length at age for white bass collected by gill nets at Lake Travis, Texas, March 2007 (N = 35).

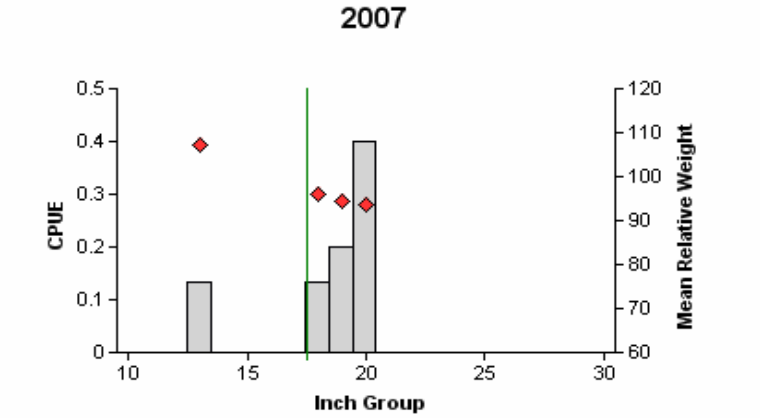
Striped Bass



Effort = 15.0
Total CPUE = 0.1 (100; 1)
CPUE-18 = 0.1 (100; 1)
PSD = 100 (0)



Effort = 15.0
Total CPUE = 0.1 (100; 1)
CPUE-18 = 0.0 (0; 0)
PSD = 0 (103.5)



Effort = 15.0
Total CPUE = 0.9 (32; 13)
CPUE-18 = 0.7 (34; 11)
PSD = 46 (10.5)

Figure 10. Number of striped bass caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Travis, Texas, 1999, 2003 and 2007. Minimum length limit indicated by vertical line.

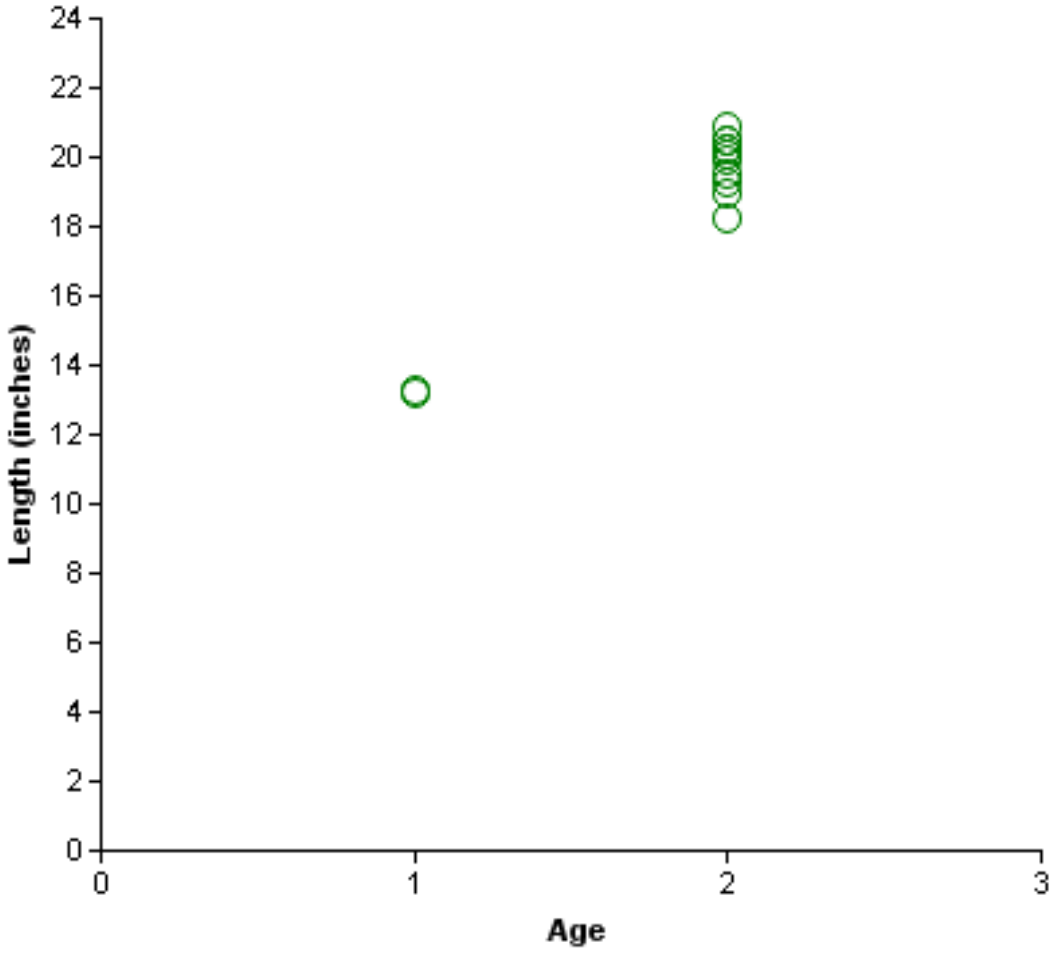
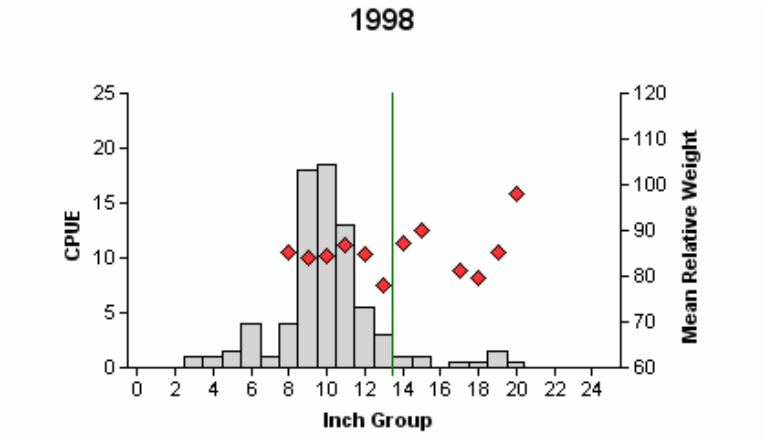
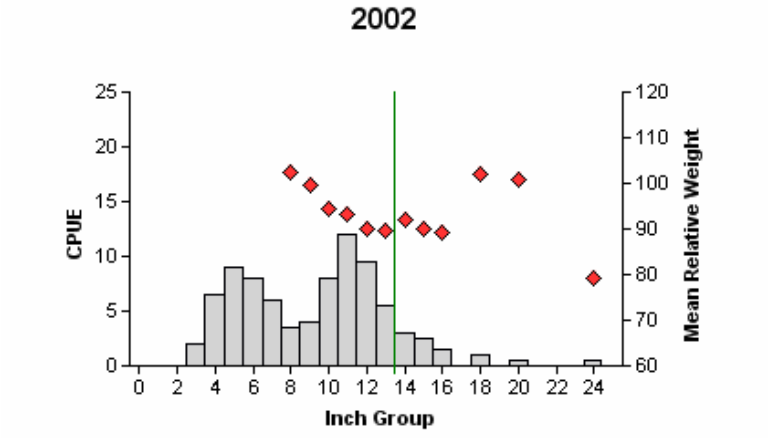


Figure 11. Length at age for striped bass collected by gill nets at Lake Travis, Texas, March 2007 (N = 13)

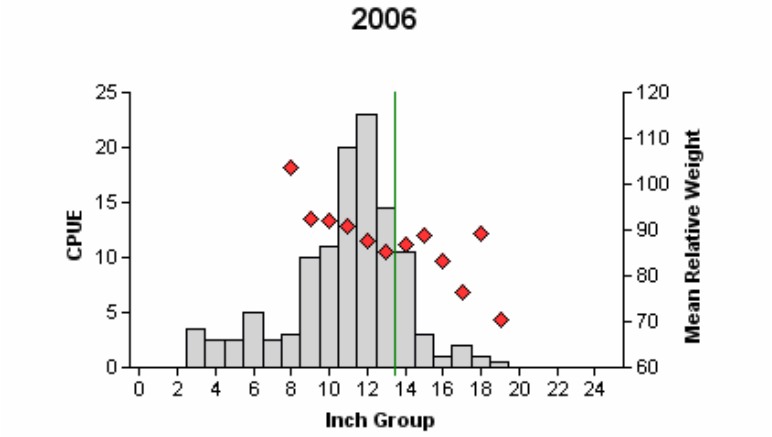
Largemouth Bass



Effort =	2.0
Total CPUE =	75.5 (11; 151)
Stock CPUE =	67.0 (12; 134)
CPUE-14 =	5.0 (29; 10)
PSD =	20 (3.8)
RSD-14 =	7 (2.2)



Effort =	2.0
Total CPUE =	83.0 (15; 166)
Stock CPUE =	51.5 (15; 103)
CPUE-14 =	9.0 (23; 18)
PSD =	47 (5.6)
RSD-14 =	17 (3.8)



Effort =	2.0
Total CPUE =	115.5 (17; 231)
Stock CPUE =	99.5 (17; 199)
CPUE-14 =	18.0 (16; 36)
PSD =	56 (4.6)
RSD-14 =	18 (2.8)

Figure 12. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Travis, Texas, 1998, 2002 and 2006. Minimum length limit indicated by vertical line.

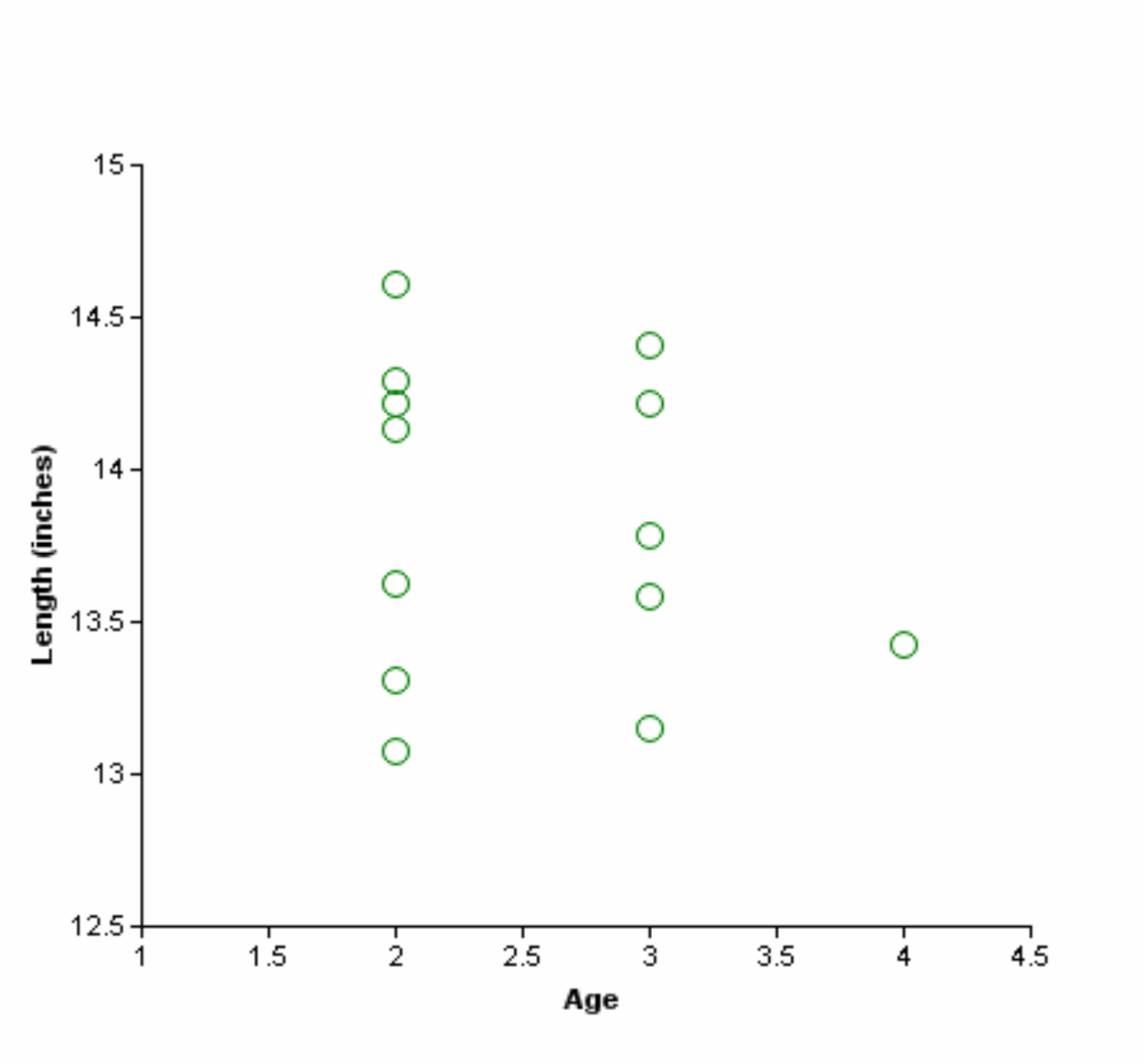


Figure 13. Length at age for largemouth bass collected by electrofishing at Lake Travis, Texas, November 2006 (N = 13; range 2-4 years).

Table 5. Results of genetic analysis of largemouth bass collected by electrofishing, Lake Travis, Texas, 1998, 2002 and 2006. FLMB = Florida largemouth bass, NLMB = northern largemouth bass, F1 = first generation hybrid between a FLMB and NLMB, Fx = second or higher generation hybrid between FLMB and NLMB.

Year	Sample size	Genotype				% FLMB alleles	% pure FLMB
		FLMB	F1	Fx	NLMB		
1998	30	0	6	22	2	45	0
2002	29	3	9	14	3	50	10.3
2006	30	0	N/A*	N/A*	1	40	0

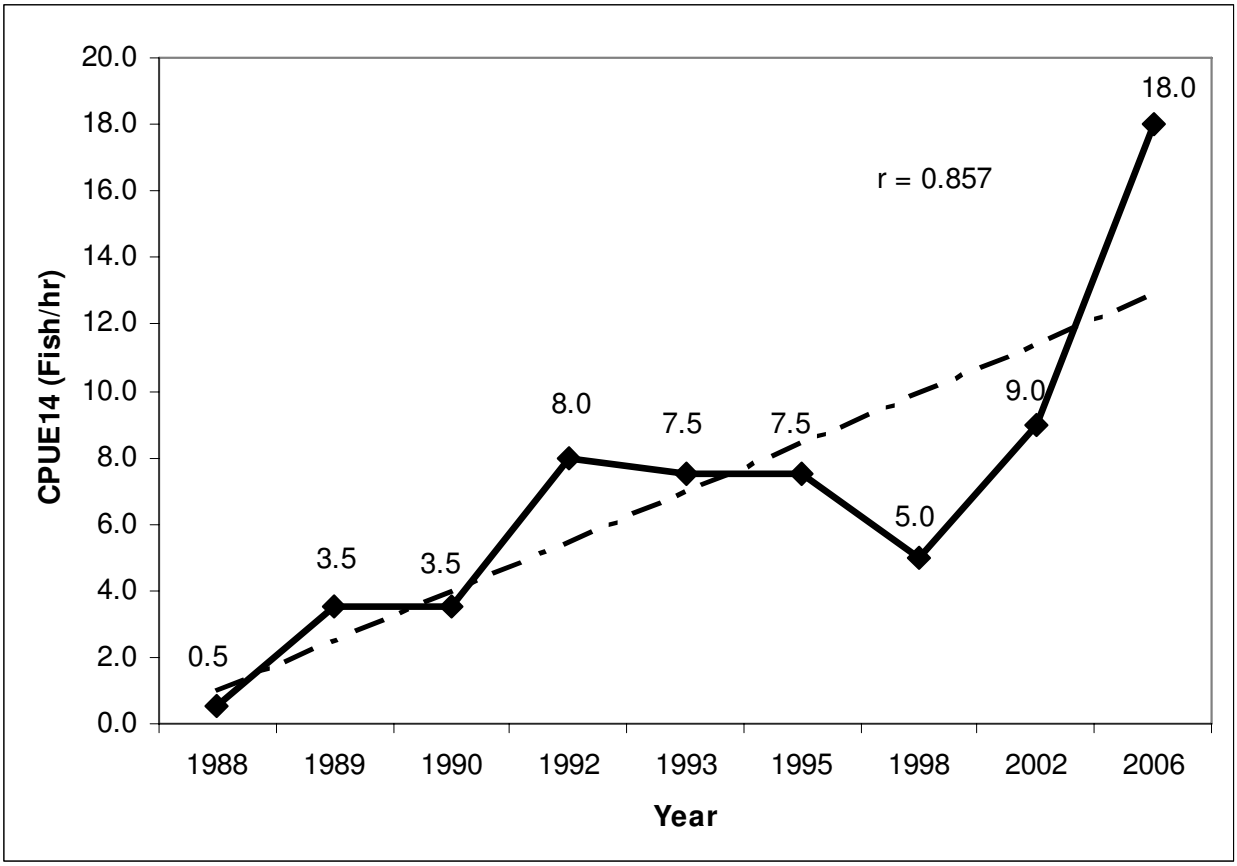
*Not available (29 hybrids total).

Table 6. Proposed sampling schedule for Lake Travis, 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.

Survey Year	Electrofisher	Gill Net	Creel Survey	Report
Fall 2007-Spring 2008				
Fall 2008-Spring 2009		A		
Fall 2009-Spring 2010				
Fall 2010-Spring 2011	S	S		S

Appendix A

Historical trend of largemouth Bass CPUE14 (diamonds) from electrofishing surveys conducted on Travis Reservoir from 1988 to 2006. A linear regression line (dotted) represents the increasing trend over time.

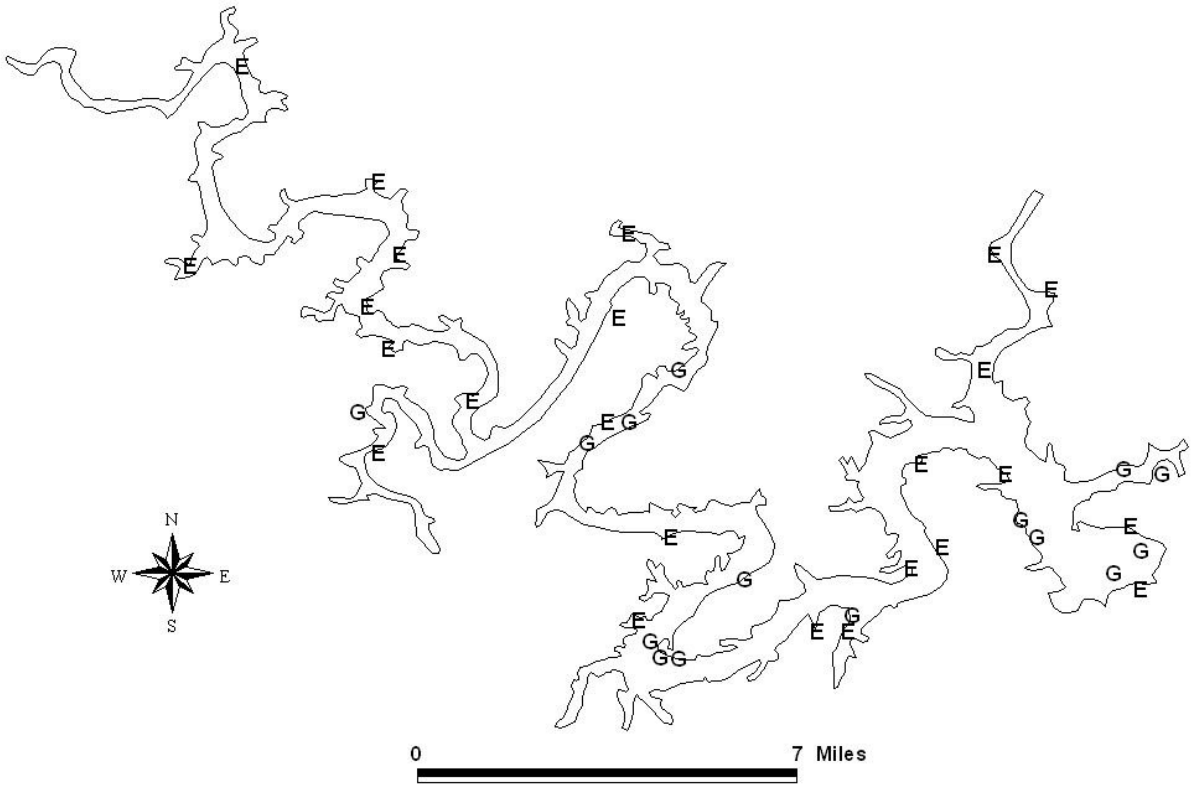


Appendix B

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

	Gill Netting		Electrofishing	
Species	N	CPUE	N	CPUE
Gizzard shad	291	19.40	268	134.0
Threadfin shad			22	11.0
Bullhead minnow			55	27.5
Inland silverside			14	7.0
Blacktail shiner			25	12.5
Blue catfish	36	2.40		
Channel catfish	27	1.80		
Flathead catfish	14	0.93		
White bass	35	2.33		
Striped bass	13	0.87		
Palmetto bass	1	0.07		
Redbreast sunfish			327	163.5
Green Sunfish			89	44.5
Warmouth			8	4.0
Bluegill			821	410.5
Longear sunfish			46	23.0
Redear sunfish			38	19.0
Largemouth bass	1	0.07	231	115.5
Guadalupe bass			87	43.5
Logperch			12	6.0
Rio Grande cichlid			47	23.5
Blue tilapia			1	0.5

Appendix C



Location of sampling sites, Lake Travis, Texas, 2006-2007. Gill netting and electrofishing stations indicated by G and E, respectively.