

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-32

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2006 Survey Report

**Lavon Reservoir**

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## TABLE OF CONTENTS

Survey and management summary .....	2
Introduction.....	3
Reservoir description .....	3
Management history.....	3
Methods.....	4
Results and discussion .....	4
Fisheries management plan.....	6
Literature cited .....	7
Figures and Tables .....	8-21
Water level (Figure 1).....	8
Reservoir characteristics (Table 1) .....	8
Harvest regulations (Table 2).....	9
Stocking history (Table 3) .....	10
Habitat survey (Table 4).....	11
Gizzard shad (Figure 2) .....	12
Bluegill (Figure 3) .....	13
Blue catfish (Figure 4) .....	14
Channel catfish (Figure 5).....	15
White bass (Figure 6).....	16
Striped bass (Figure 7).....	17
Largemouth bass (Figure 8; Table 5).....	18
White crappie (Figure 9) .....	20
Proposed sampling schedule (Table 6) .....	21
Appendix A	
Catch rates for all species from all gear types.....	22
Appendix B	
Map of 2006-2007 sampling locations .....	23
Appendix C	
Historical catch statistics 1987-2007.....	24

## SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lavon Reservoir were surveyed in 2006 using an electrofisher and trap nets and in 2007 using gill nets. Habitat was last surveyed in 2002. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir description:** Lavon Reservoir is a 21,400-acre impoundment located on the East Fork Trinity River approximately 8 miles east of McKinney. Water level has been below conservation elevation (492 feet above mean sea level) since May 2003. The lowest level of record occurred October, November, and December 2006. Lavon Reservoir has moderate productivity. Habitat features consisted mainly of riprap along the dam and railroad bridges, dead trees and stumps, and rocky shoreline. Standing dead timber was the major habitat feature.
- **Management history:** Important sport fish included blue and channel catfish, white bass, striped bass, largemouth bass, and white crappie. The management plan from the 2002 survey report included investigating the resumption of striped bass stocking to augment recreational angling and develop a potential brood fish source, stock Florida largemouth bass fingerlings in 2004 and 2005, and updating the Lavon Reservoir web page on the TPWD web site. Palmetto bass were stocked in 1976 at 2/acre. In 1976 walleye fry were stocked at 4/acre. Adult threadfin shad were stocked in 1980 and 1984 and a reproducing population currently exists. Florida largemouth bass were first stocked in 1988 with fingerlings at 3/acre and fry at 17/acre. Florida largemouth bass fingerling stockings continued in 1997, 2004 and 2005 at 12 to 25/acre. In 1989 striped bass fingerlings/fry were stocked at 10/acre, in 1994 with 20 fingerling/fry/acre, and 2004, 2005, 2006 with 1/acre to 10/acre fingerlings. Blue catfish fingerlings were first stocked in 1989 at 10/acre; fingerling stockings continued in 1997 and 1998 at 10/acre. Statewide fish harvest regulations apply to sport fishes in Lavon Reservoir.
- **Fish community**
  - **Prey species:** Threadfin shad continued to be present in the reservoir and showed a significant increase in abundance. Electrofishing catch of gizzard shad remained unchanged since 1996. Nearly 75% of the gizzard shad were available as prey to most sportfishes. Electrofishing catch of desirable prey-size bluegills was high, but there were also good numbers of harvestable-size bluegills.
  - **Catfishes:** Gill net catch of blue catfish was high with about one-half of the sampled population being legal size and in excellent condition. Recruitment was good and they appeared to out-compete channel catfish. Gill net catch of channel catfish was low, but consistent with previous years. Flathead catfish were present in the reservoir; two were collected.
  - **Temperate basses:** Gill net catch of white bass and striped bass was extremely low and was consistent with gill net catches in 2003. White bass may have been up lake in response to inflow and temperature and the striped bass population is in the early stages of rebuilding.
  - **Largemouth bass:** Largemouth bass were abundant, with good recruitment and fair body condition. Florida largemouth bass alleles were high. One-third of the sample population was legal size and larger.
  - **White crappie:** Abundance and body condition of white crappie were very good. Almost one-half of the sample population was legal size and larger.
- **Management strategies:** Continue stocking striped bass fingerlings at 10/acre. Conduct special gill netting for striped bass in 2009. Conduct general monitoring with electrofisher, trap nets, and gill nets in 2010-2011.

## INTRODUCTION

This document is a summary of fisheries data collected from Lavon Reservoir in 2006-2007. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2006-2007 data for comparison.

### *Reservoir Description*

Lavon Reservoir is a 21,400-acre impoundment constructed in 1953 on the East Fork Trinity River. It is located in Collin County approximately 8 miles east of McKinney and is operated and controlled by the U.S. Army Corps of Engineers (USACOE). The original dam impounded 11,080 acres of water. In 1974 the dam was raised 12 feet and increased the surface area of the reservoir to 21,400 acres. Primary water uses included municipal and industrial water supply and recreation. Lavon Reservoir also receives outfall from a regional sewage treatment facility. Lavon Reservoir was mesotrophic with a mean TSI chl-*a* of 39.30 (Texas Commission on Environmental Quality 2002). Habitat at time of sampling consisted of dead trees, rocks and boulders, riprap, but mostly rocky interspersed with bare soil shoreline. There were isolated patches of native submerged and emerged vegetation. Native aquatic plants present were pondweed, water willow, and buttonbush. Water level has been low and unstable since May 2003 (Figure 1). At its lowest point on record, the reservoir was 17 feet below conservation elevation of 492 feet above mean sea level. Boat access consisted of two public boat ramps constructed in 1953. At conservation elevation, these ramps are under water. They were barely usable since the lake level actually dropped below the original conservation elevation (480 feet above mean-sea-level) and the ramps were only 8 feet wide. Bank fishing access was available at all USACOE recreation areas and other shoreline areas accessible from public roads. Other descriptive characteristics for Lavon Reservoir are in Table 1.

### *Management History*

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Hysmith and Moczygamba 2003) included:

1. Recommended resumption of striped bass fingerling stocking at 10/acre annually to augment recreational angling opportunities and develop a source of striped bass brood stock for future fish hatchery production.  
**Action:** We stocked 19,241 striped bass fingerlings in 2004, 107,008 in 2005, and 216,086 in 2006. We also investigated criteria necessary for developing a fishery in the tailrace. We found adequate discharge duration; we obtained cooperation from the controlling authority (USACOE) and water contractors; and determined there was adequate access to the tailrace for brood stock recovery. Striped bass will have the opportunity to exit Lavon Reservoir and swim downstream to Ray Hubbard Reservoir taking up residence there until flow from Lavon Reservoir down the East Fork Trinity River stimulates their upstream movement. This management strategy will provide multiple benefits including: angling opportunities in the reservoir and the tailrace and an alternate source of brood striped bass. The tailrace has parking and fishing platforms in place.
2. Due to a declining Florida largemouth bass allele percentage in Lavon Reservoir, we recommended the stocking of fingerling Florida largemouth bass in 2004 and 2005. We further recommended that we assess the impact of these Florida largemouth bass fingerlings on the population by analyzing tissue samples from young of the year largemouth bass in 2006.  
**Action:** We stocked 539,664 Florida largemouth bass fingerlings in 2004 and another 535,577 in 2005. During routine electrofishing, tissue samples were collected from 30 young-of-the-year largemouth bass and analyzed for genetic makeup in 2006.
3. Update the Lavon Reservoir web page as required.  
**Action:** Submitted updates as appropriate.

**Harvest regulation history:** Sportfishes in Lavon Reservoir are currently managed with statewide regulations (Table 2).

**Stocking history:** Lavon Reservoir was last stocked in 2007 with striped bass at 16/acre. Striped bass were first stocked in Lavon Reservoir in 1989 (10/acre), 1994 (20/acre), and 2004 through 2006 (average annual rate of 5/acre). Adult threadfin shad were stocked in 1980 and 1984, walleye and palmetto bass were both stocked in 1976 (2 to 4/acre, respectively), neither species established a sustained fishery. Florida largemouth bass were stocked in 1988 (20/acre), in 1997 (12/acre), and 2004 and 2005 at 25/acre. The complete stocking history is in Table 3.

**Vegetation/habitat history:** Lavon Reservoir supported limited aquatic vegetation (Table 4). The bulk of native vegetation consisted of pondweed, buttonbush, and black willow. Historically, native vegetation was more diverse and consisted of narrow leaved cattail, smartweed, water willow, knotgrass, duckweed, and water primrose in addition to current species (Hysmith and Moczygemba 1980). Historically, as well as currently, flooded timber provided the bulk of fishery habitat in Lavon Reservoir (Table 4; Hysmith and Moczygemba 1980).

## METHODS

Fishes were collected by electrofishing (2 hours at 24 5-min stations), gill netting (15 net nights at 15 stations), and trap 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 and trap nets, as the number of fish caught per net night (fish/nn). Survey sites were randomly selected, but some sites were moved based on the "coin toss protocol" due to extremely low water level. In some cases original randomly selected sites were on land adjacent the reservoir or situated in heavy timber. All surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weight (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 =  $100 \times \text{SE of the estimate/estimate}$ ) was calculated for all CPUE statistics and SE was calculated for structural indices and IOV. Ages for channel and blue catfish, largemouth bass, and white crappie were determined using Category 2 protocol according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005). The manual specifies largemouth bass, but we adapted the protocol to include channel and blue catfish and white crappie.

Tissue samples from 30 age-0 largemouth bass were collected, preserved, and transported for electrophoretic analysis according to Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

## RESULTS AND DISCUSSION

**Habitat:** Littoral zone habitat consisted primarily of gravel, rocks, and boulders and dead timber with some native aquatic vegetation (Table 4). At the extreme low water level during this survey it was obvious that much of the shoreline consisted of featureless soil substrate. Without the dead timber, there would be very little fishery habitat.

**Prey species:** Electrofishing CPUE of gizzard shad and bluegill were 208.0/h and 91.0/h, respectively (Figures 2 and 3). Although lower than the 99% in 2002, the IOV for gizzard shad was good with 74% of the population vulnerable to predators. Threadfin shad established following their introduction in 1980 and 1984, and their CPUE has held at > 100/h with the exception of 2002 when we collected only 58.5/h (Appendix C). Electrofishing CPUE was the highest on record (832/h) this year (Appendix A). The CPUE of gizzard shad has remained fairly

constant since 1996 (Appendix C). The mean size of bluegill appeared to be increasing since 1999 (Figure 3), but there were still good numbers of  $\leq 4$ -inch bluegill for prey.

**Catfishes:** The gill net CPUE of blue catfish was 16.7/nn in 2007, an increase from previous years (Figure 4). Relative weight ranged from 80 to over 110, increasing with size; a trend repeated from previous years (Figure 4). Blue catfish grew to 12 inches in 3 to 4 years ( $N = 13$ ; range = 3 to 4 years) and 45% of the sample population was  $\geq 12$  inches.

The gill net CPUE of channel catfish was 1.5/nn in 2007 and has remained fairly constant in size structure and numbers (Figure 5 and Appendix C). Relative weights ranged from poor to good (70 to 100) with smaller fish demonstrating the poorest condition. Only four candidate channel catfish for Category 2 age and growth were collected and they grew to 12 inches in 4 years ( $N = 4$ ; range = 3 to 9 years) slower than blue catfish. Twenty seven percent of the sample population was  $\geq 12$  inches.

**Temperate basses:** The gill net CPUE of white bass was 0.1/nn in 2007 (Figure 6), a decline from previous years (Appendix C). We collected only one 9-inch white bass and it was in fair condition. Our only explanation for this is that inflow was occurring during sampling and possibly the white bass had moved upstream.

The gill net CPUE of striped bass was 0.1/nn in 2007 (Figure 7), equal to the catch in 2003. Historically, gill net CPUE has never been high (Appendix C) and probably reflects only sporadic attempts to establish a striped bass population. Ongoing management strategy is committed to establishing a striped bass fishery to augment recreational angling and develop a source of brood stock for future fish hatchery needs. Following moderately successful stockings in 1989 and 1994, striped bass stocking resumed in 2004 and continued annually (Table 3). A stocking rate of 10/acre is our goal, but the lack of fingerlings precluded this rate in 2004 and 2005.

**Largemouth bass:** The electrofishing total CPUE of largemouth bass was 43.0/h in 2006, an increase from 2002, but consistent with historic catch rates (Appendix C). An average relative weight of 90 indicated a majority of the largemouth bass were in good condition. Good to excellent condition of largemouth bass in Lavon Reservoir has been consistent (Figure 8). Growth was excellent with fish reaching legal size within 2 years ( $N = 15$ ; range 2 to 3 years). Thirty-one percent of the sample population was  $\geq 14$  inches. Genetic analysis of largemouth bass collected by electrofishing indicated Florida largemouth bass allele's at 42.0% which is an increase over 10.4% shown in 2002 (Table 5). There were 3.0% pure FLMB in 2006.

**White crappie:** The trap net CPUE of white crappie was 22.2/nn in 2006 (Figure 9), up from previous years and historically the second highest on record (Appendix C). Size structure was great as shown by high PSD's, which has been consistently high in previous surveys. Thirty-nine percent of the sample population was  $\geq 10$  inches and they reach legal size in 1 year ( $N = 13$ ; range = 1 to 1). High relative weights are the norm for white crappie in Lavon Reservoir and 2006 was no exception (Figure 9).

## **Fisheries management plan for Lavon Reservoir, Texas**

Prepared – July 2007.

**ISSUE 1:** Establishing striped bass in Lavon Reservoir was begun in 1989 with a follow-up stocking in 1994. These fish contributed to recreational angling, but only in small numbers. The population was not augmented by natural reproduction or stocking until 2004. A full 10/acre stocking was not achieved until 2006 and stocking should continue at this rate. The ultimate goal is to augment recreational angling and develop an alternate source of brood fish for future fish hatchery needs.

### **MANAGEMENT STRATEGIES**

1. Continue stocking striped bass at 10/acre annually.
2. Monitor striped bass population with a gill netting survey in 2009 and during the routine survey in 2011.

**ISSUE 2:** The sport fishery in Lavon Reservoir, especially blue catfish, largemouth bass, and white crappie has continued to improve. As a result, angling opportunities for these species has increased.

### **MANAGEMENT STRATEGY**

1. Prepare and distribute a news release(s) advising area anglers of the improvements in this fishery.

### **SAMPLING SCHEDULE JUSTIFICATION:**

Conduct a special gill netting survey in 2009. General monitoring surveys in 2010 – 2011 require electrofishing, trap netting, and gill netting.

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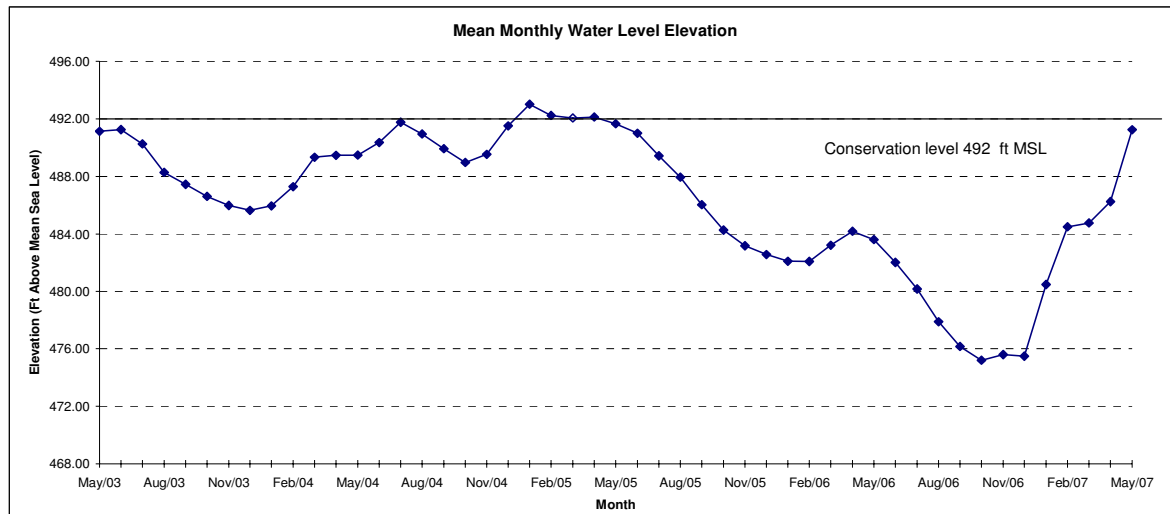


Figure 1. Monthly average water level elevations in feet above mean sea level (MSL) recorded for Lavon Reservoir, Texas, May 2003-May 2007.

Table 1. Characteristics of Lavon Reservoir, Texas.

Characteristic	Description
Year constructed	1953
Controlling authority	U.S. Army Corps of Engineers
Counties	Collin
Reservoir type	Mainstream
Shoreline development index	5.9
Conductivity	307 $\mu$ mhos/cm

Table 2. Harvest regulations for Lavon Reservoir.

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

Table 3. Stocking history of Lavon, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), and adults (ADL). 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	1989	214,259	FGL	2.6
	1997	214,106	FGL	2.0
	1998	214,588	FGL	2.2
	Total	642,953		
Channel catfish	1954	20,000	AFGL	7.9
	1971	26,700	AFGL	7.9
	Total	46,700		
Florida Largemouth bass	1988	67,226	FGL	2.0
	1988	361,652	FRY	1.0
	1997	250,800	FGL	1.2
	2004	539,664	FGL	1.5
	2005	535,577	FGL	1.5
	Total	1,754,919		
Largemouth bass	1954	1,027,000	FRY	0.7
	1968	177,100	FGL	1.2
	Total	1,204,100		
Mixed largemouth bass	1988	98,860		1.0
	Total	98,860		
Palmetto Bass (striped X white bass hybrid)	1976	39,200	FGL	1.5
	Total	39,200		
Striped bass	1989	213,826	FGL	1.4
	1994	428,402	FGL	1.3
	2004	19,241	FGL	1.9
	2005	107,008	FGL	1.6
	2006	216,086	FGL	1.8
	2007	339,114	FGL	1.5
	Total	1,323,677		
Threadfin shad	1980	8,250	AFGL	2.9
	1984	2,000	AFGL	3.0
	Total	10,250		

Table 3. Continued.

Species	Year	Number	Life Stage	Mean TL (in)
Walleye	1976	86,000	FRY	0.2
	Total	86,000		
White bass	1957	330	ADL	8.0
	Total	330		

Table 4. Survey of littoral zone and physical habitat types, Lavon Reservoir, Texas, 2002. 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		Surface Area	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Riprap	6.1	5.1		
Rocky shore	15.0	12.4		
Eroded bank	4.4	3.6		
Bulkhead	0.1	0.1		
Dead timber	57.1	47.2	10,700	49.7
Boat docks	1.5	1.2	100	0.5
Native vegetation	36.8	30.4	44	0.2

## Gizzard Shad

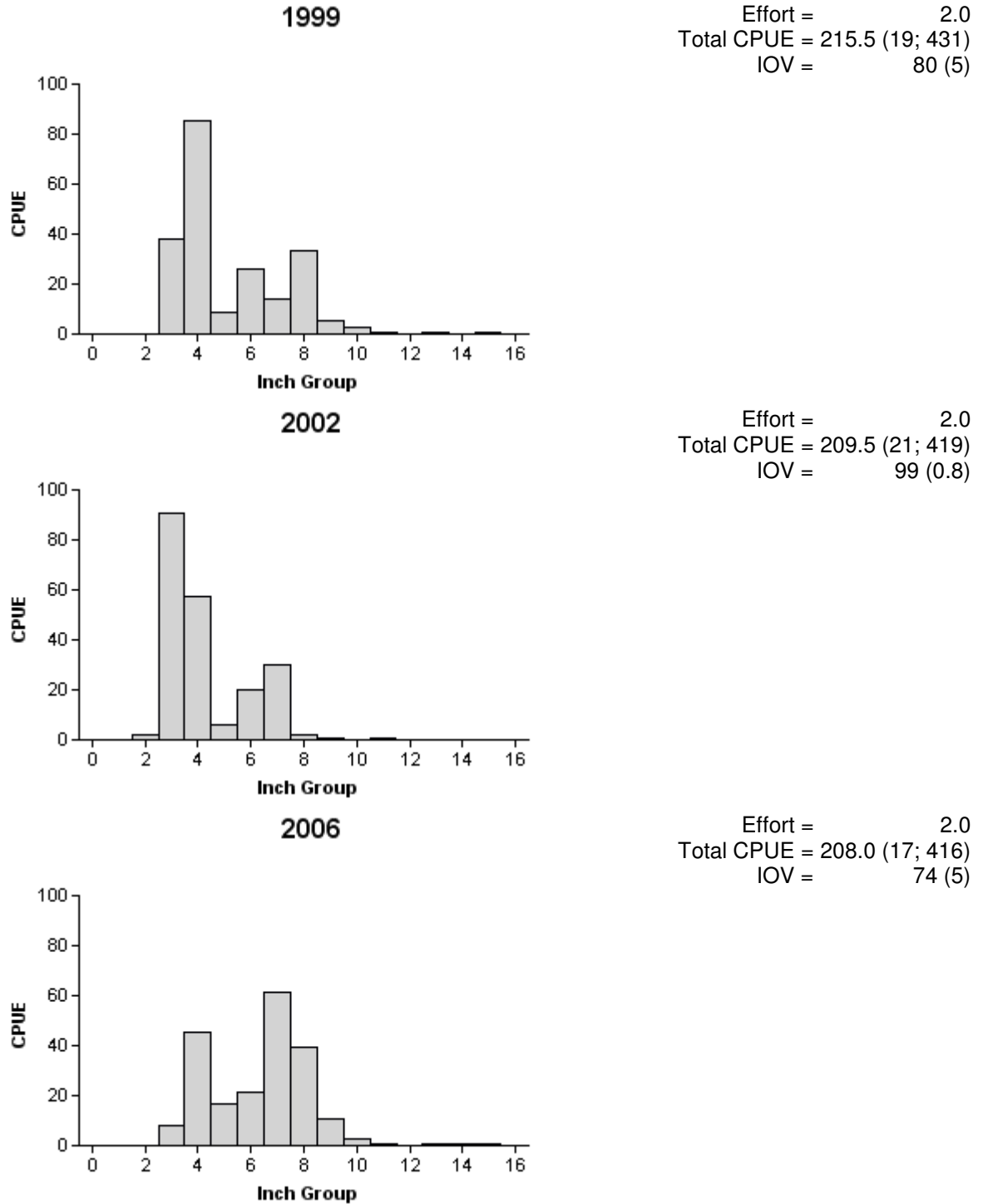
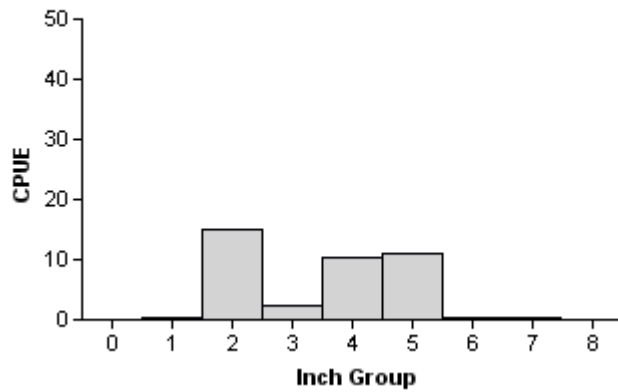


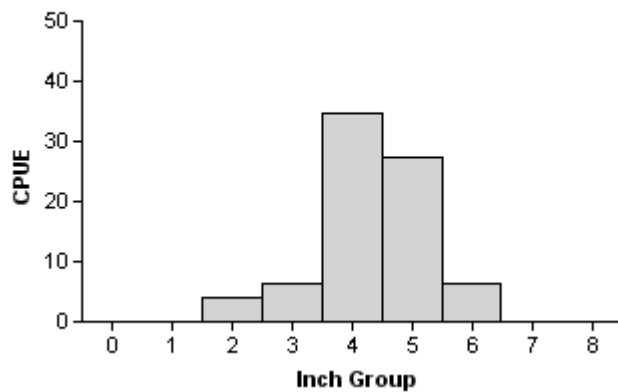
Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lavon Reservoir, Texas 1999, 2002, and 2006.

**Bluegill****1999**

Effort = 2.0  
 Total CPUE = 40.5 (58; 81)  
 PSD = 4 (1.6)

**2002**

Effort = 2.0  
 Total CPUE = 79.0 (36; 158)  
 PSD = 9 (3.3)

**2006**

Effort = 2.0  
 Total CPUE = 91.0 (23; 182)  
 PSD = 26 (4.6)

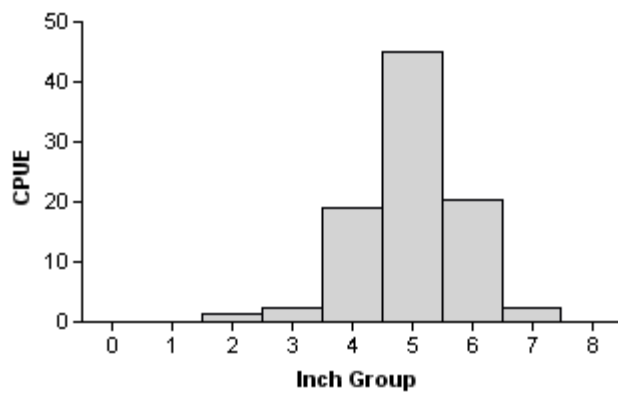


Figure 3. Number of bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lavon Reservoir, Texas, 1999, 2002, and 2006.

## Blue Catfish

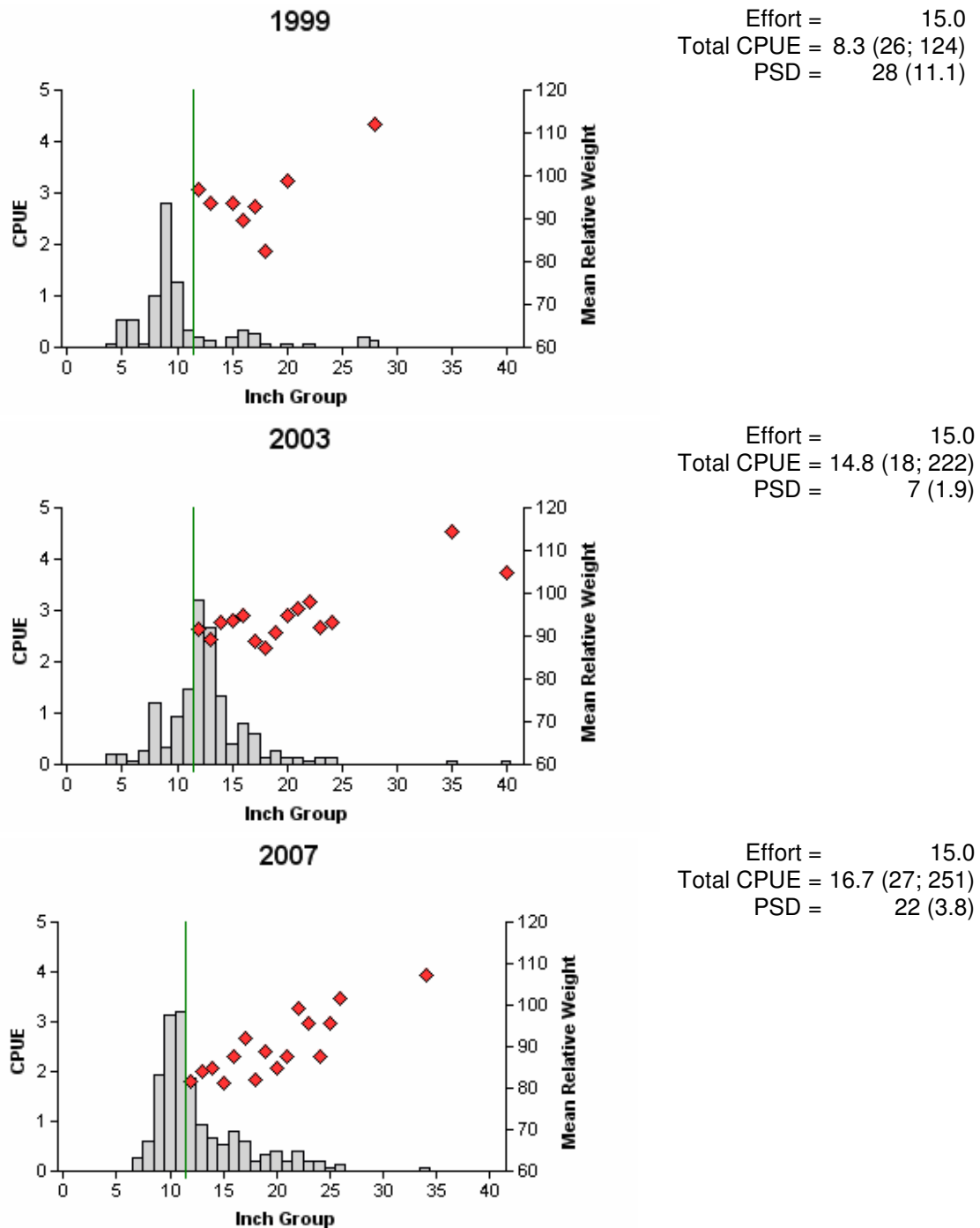


Figure 4. Number of blue catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lavon Reservoir, Texas, 1999, 2003, and 2007. Vertical lines represent length limit at time of collection.

## Channel Catfish

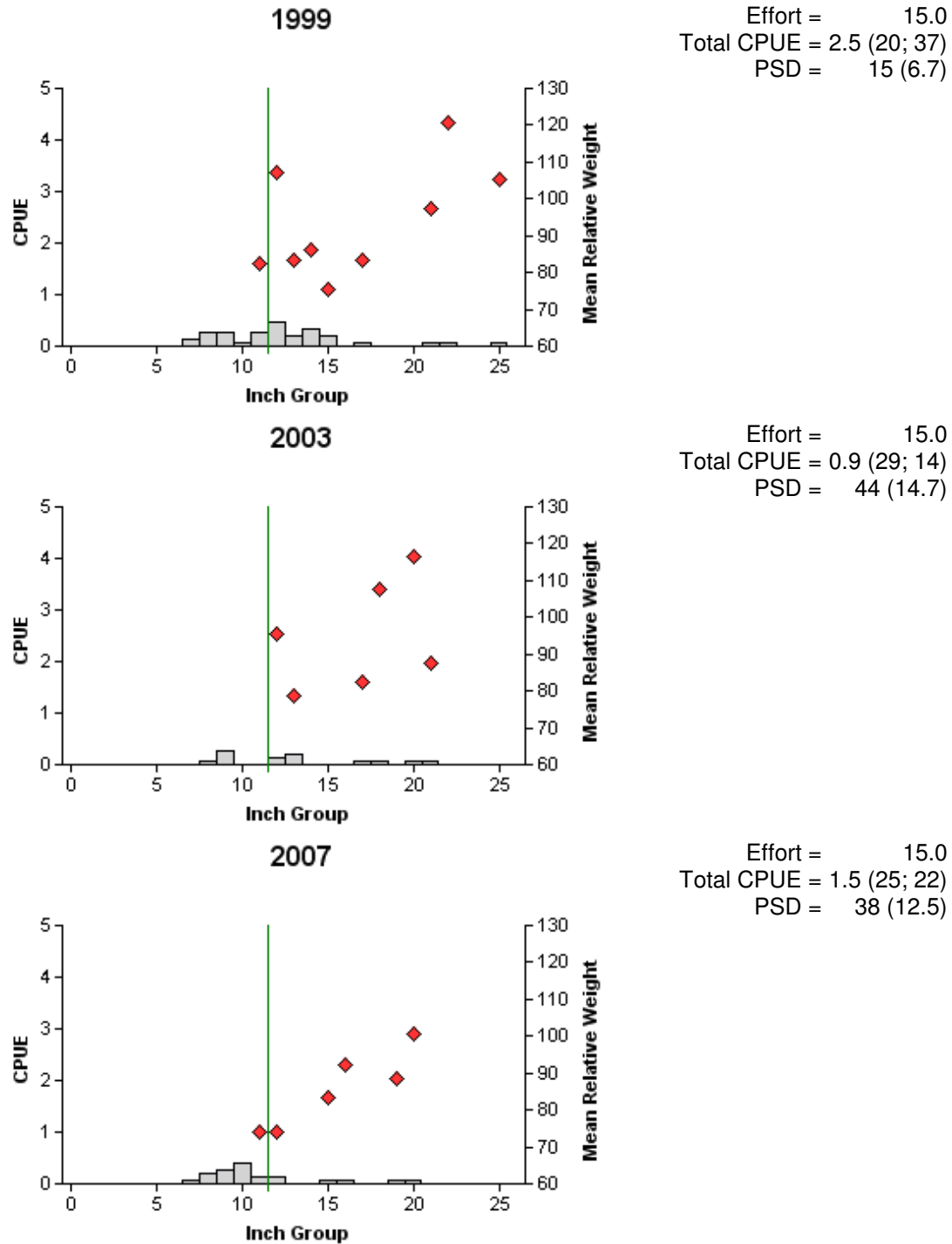
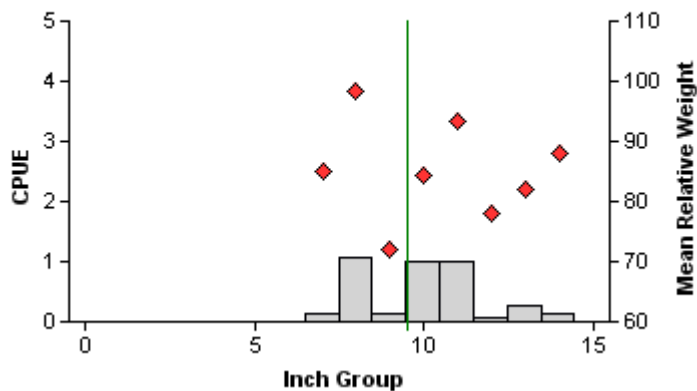


Figure 5. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lavon Reservoir, Texas, 1999, 2003, and 2007. Vertical lines represent length limit at time of collection.



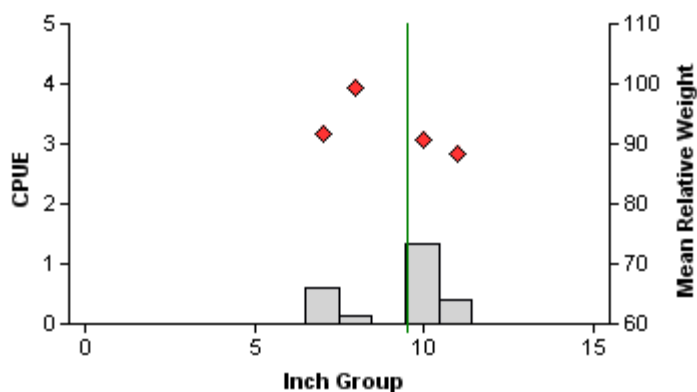
## White Bass

1999



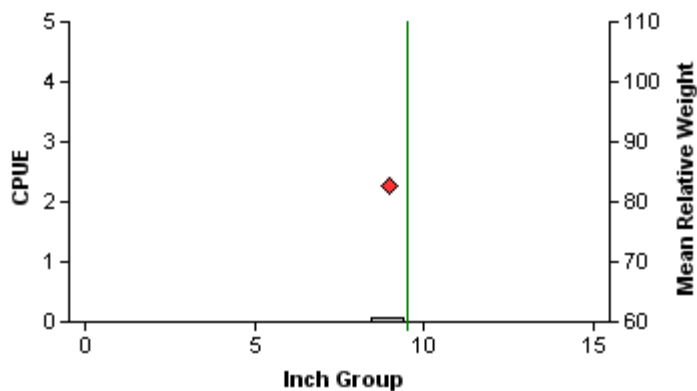
Effort = 15.0  
Total CPUE = 3.8 (38; 57)  
PSD = 68 (9.8)

2003



Effort = 15.0  
Total CPUE = 2.5 (49; 37)  
PSD = 70 (5.5)

2007



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

Figure 6. 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 net surveys, Lavon Reservoir, Texas, 1999, 2003, and 2007. Vertical lines represent length limit at time of collection.

## Striped Bass

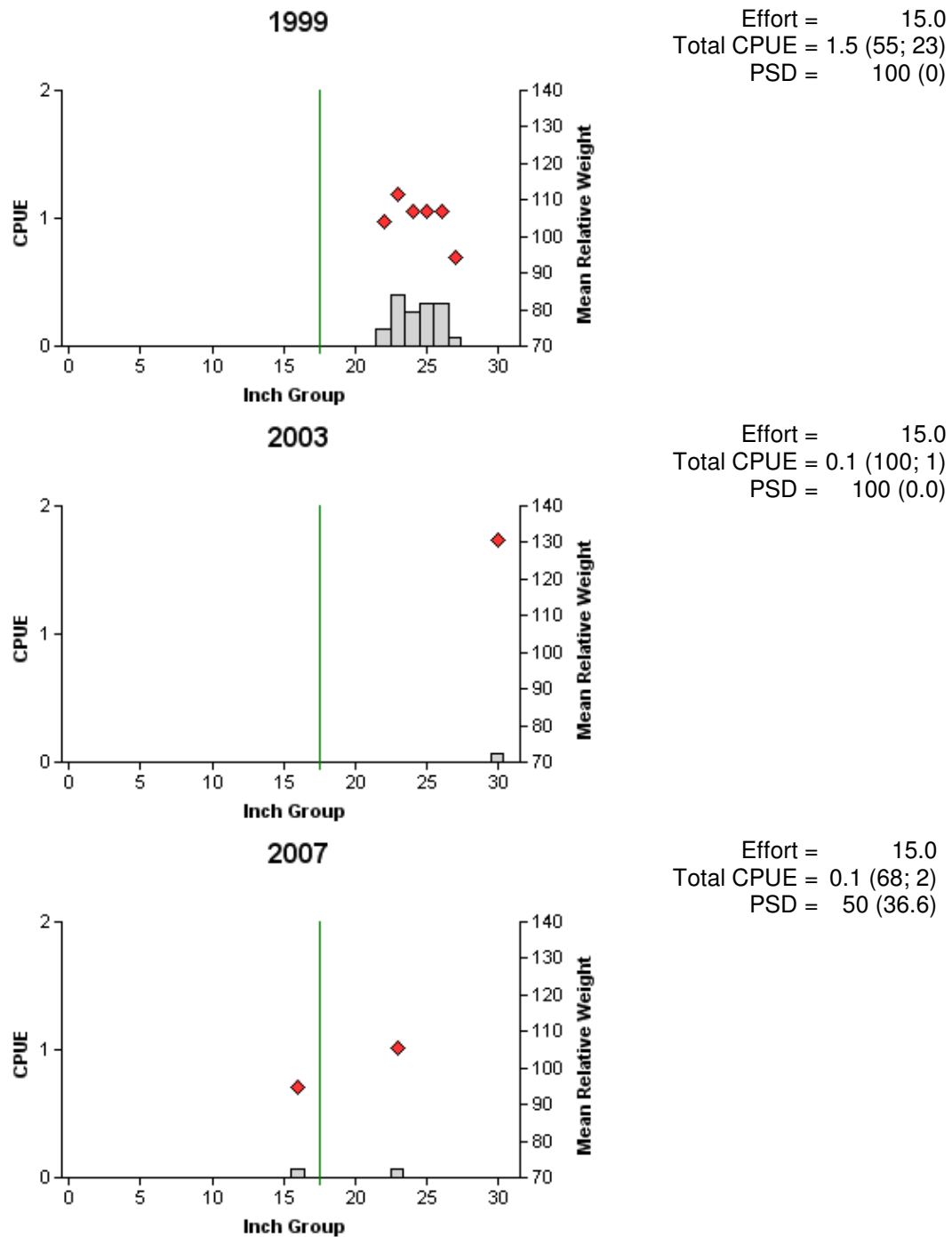


Figure 7. Number of striped bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lavon Reservoir, Texas, 1999, 2003, and 2007. Vertical lines represent length limit at time of collection.

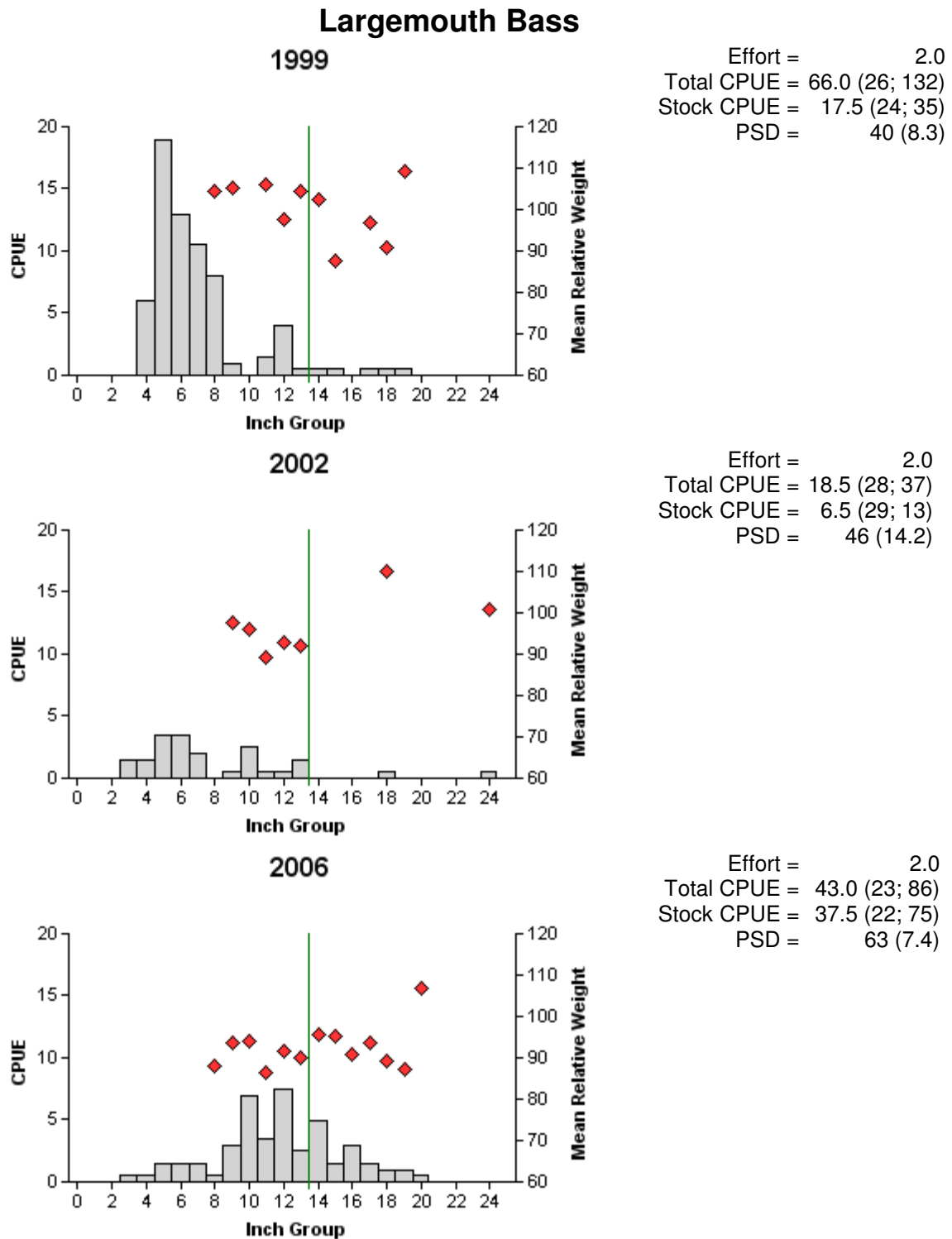


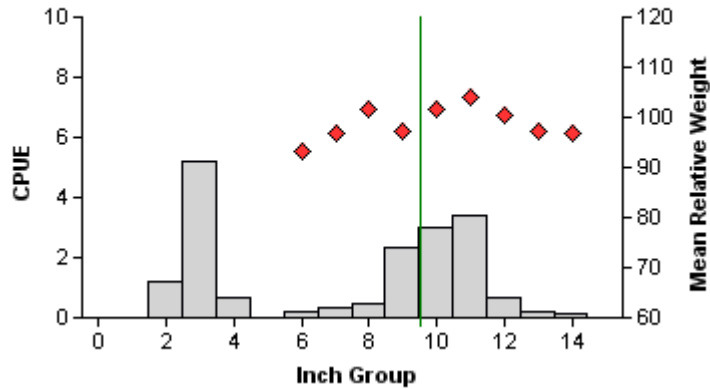
Figure 8. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lavon Reservoir, Texas, 1999, 2002, and 2006. Vertical lines represent length limit at time of collection.

Table 5. Results of genetic analysis of largemouth bass collected by fall electrofishing, Lavon Reservoir, Texas, 1990, 1996, 1999, 2002, and 2006. FLMB = Florida largemouth bass, NLMB = Northern largemouth bass, Hybrids = cross between a FLMB and a NLMB.

Year	Sample size	Genotype			% FLMB alleles	% pure FLMB
		FLMB	Hybrids	NLMB		
1990	36	1	6	29	6.9	2.8
1996	40	1	37	2	52.6	2.5
1999	33	1	17	15	23.5	3.0
2002	24	0	7	17	10.4	0.0
2006	30	1	24	5	42.0	3.0

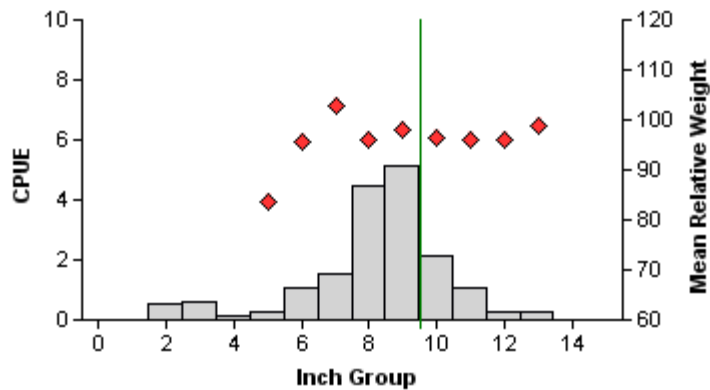
## White Crappie

1999



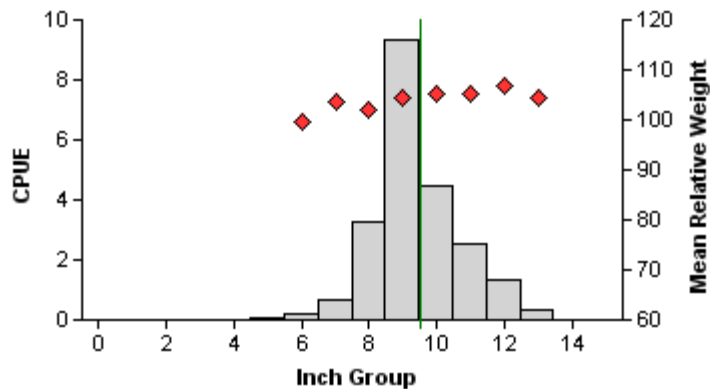
Effort = 15.0  
Total CPUE = 17.8 (39; 267)  
PSD = 95 (0.8)

2002



Effort = 15.0  
Total CPUE = 17.5 (30; 262)  
PSD = 82 (6.0)

2006



Effort = 15.0  
Total CPUE = 22.2 (43; 333)  
PSD = 96 (0.9)

Figure 9. 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, Lavon Reservoir, Texas, 1999, 2002, and 2006. Vertical lines represent length limit at time of collection.

Table 6. Proposed sampling schedule for Lavon Reservoir, Texas. Electrofishing and trap netting surveys are conducted in the fall, while gill netting surveys are conducted during the following spring. Standard survey denoted by S.

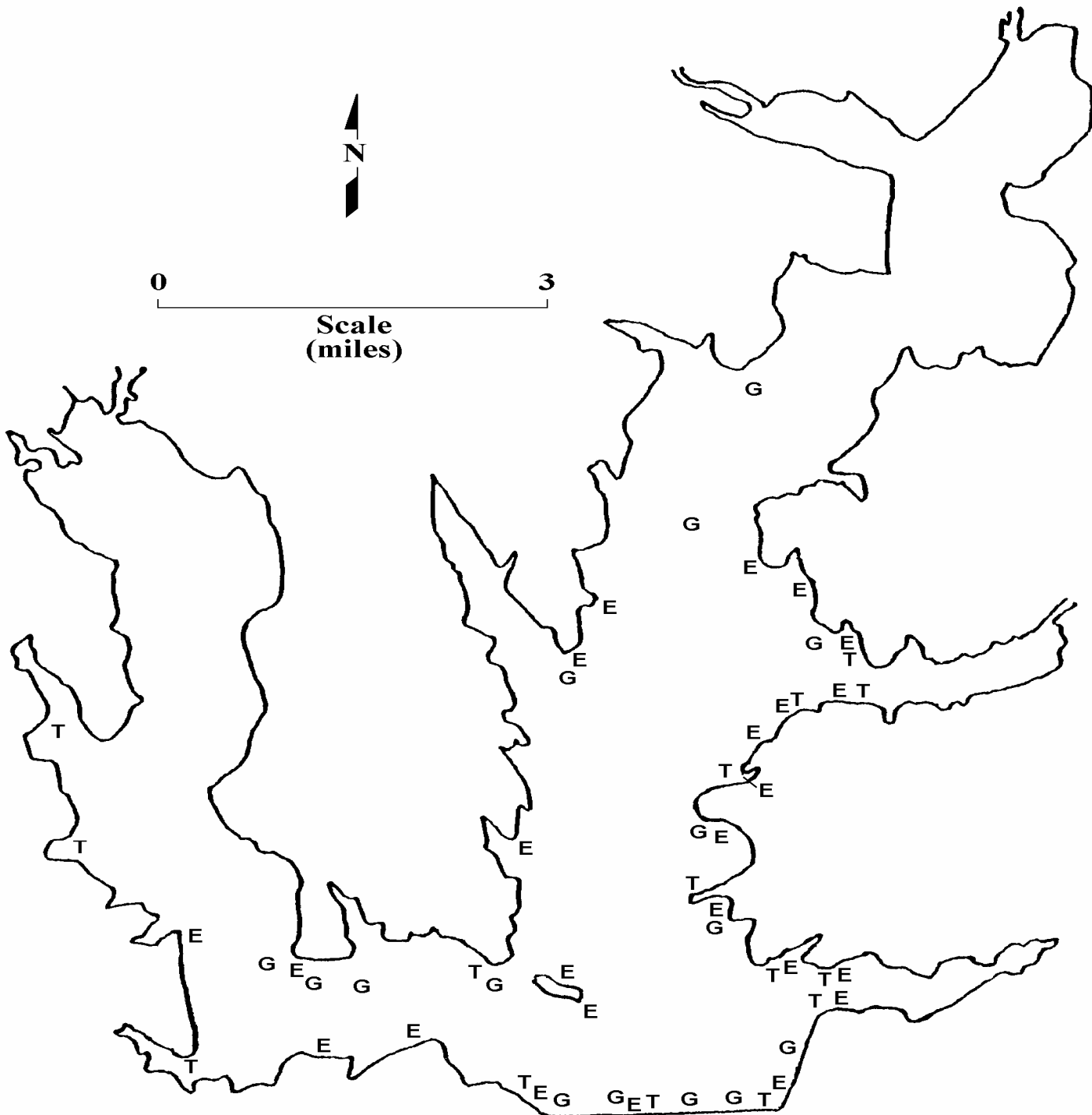
Survey Year	Electrofisher	Trap Net	Gill Net	Creel Survey	Report
Fall 2007-Spring 2008					
Fall 2008-Spring 2009			A		
Fall 2009-Spring 2 010					
Fall 2010-Spring 2011	S	S	S		S

**APPENDIX A**

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

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					416	208.0
Threadfin shad					1664	832.0
Blue catfish	251	16.7				
Channel catfish	22	1.5				
Flathead catfish	2	0.1				
White bass	1	0.1				
Striped bass	2	0.1				
Warmouth					4	8.0
Bluegill					182	91.0
Longear sunfish					131	65.5
Redear sunfish					2	1.0
Largemouth bass					86	43.0
White crappie			333	22.2		
Black crappie			1	0.1		

## APPENDIX B



Location of sampling sites, Lavon Reservoir, Texas, 2006-2007. Trap netting, gill netting, and electrofishing stations are indicated by T, G, and E, respectively. Water level was 16 feet below conservation for trap netting and electrofishing and six feet below during gill netting.



## APPENDIX C

Catch rates (CPUE) of targeted species by gear type for Lavon Reservoir, Texas, 1987, 1990, 1993, 1996, 1999, 2002, 2006, and 2007.

		Year								
		1987 <sub>a</sub>	1990	1993 <sub>b</sub>	1996 <sub>c,d</sub>	1999 <sub>c</sub>	2002 <sub>c</sub>	2003 <sub>c</sub>	2006 <sub>c</sub>	2007 <sub>c</sub>
Gill Net (fish/net night)	Blue catfish	0.0	0.1	0.4	1.1	8.3		14.8		16.7
	Channel catfish	7.6	1.9	1.1	1.9	2.5		0.9		1.5
	Flathead catfish	0.0	0.0	0.0	0.0	0.0		0.0		0.1
	White bass	2.4	7.0	6.4	3.8	3.8		2.5		0.1
	Striped bass	0.0	0.3	0.1	1.3	1.5		0.1		0.1
	Palmetto bass	0.0	0.0	0.1	0.0	0.0		0.0		0.0
Electrofisher (fish/hour)	Gizzard shad	49.5	333.0	152.5	202.5	215.5	209.5		208.0	
	Threadfin shad	138.0	108.0	107.5	120.5	330.0	58.5		832.0	
	Green sunfish	0.0	0.0	0.0	1.5	4.0	0.0		0.0	
	Warmouth	6.5	3.0	2.0	0.5	3.0	2.5		8.0	
	Orangespotted sunfish	6.5	7.5	0.0	0.0	0.0	2.5		0.0	
	Bluegill	94.0	70.5	190.0	33.0	40.5	79.0		91.0	
	Longear sunfish	73.5	36.5	57.0	4.0	88.0	66.5		65.5	
	Redear sunfish	0.0	0.0	0.0	0.0	0.0	0.0		1.0	
	Largemouth bass	61.0	44.0	121.0	9.0	66.0	18.5		43.0	
Trap Net (fish/net night)	White crappie	0.5	10.1	30.3	3.5	17.8	17.5		22.2	
	Black crappie	0.5	0.1	0.0	0.0	0.0	0.0		0.1	

<sub>a</sub> Electrofishing in 1987 was conducted with a Coffelt VVP-15 (Variable Voltage Pulsator). Electrofishing in all other years was conducted with a Smith-Root 5.0 GPP (Generator Powered Pulsator).

<sub>b</sub> Electrofishing, gill netting, and trap netting sampling sites were subjectively selected.

<sub>c</sub> Electrofishing, gill netting, and trap netting sampling sites were randomly selected.

<sub>d</sub> Trap netting was conducted in January 1997.