

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-34

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2008 Survey Report

Mountain Creek Lake Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Mountain Creek Reservoir were surveyed in 2008 using electrofishing and trap netting and in 2009 using gill netting. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Mountain Creek Reservoir, a 2,493-acre reservoir located on Mountain Creek (a tributary of the Trinity River), was constructed in 1937 by Dallas Power and Light. It was built primarily as a cooling reservoir for a power plant and is now controlled by Excelon Energy Company. It is located in Dallas County four miles southeast of Grand Prairie, Texas. At conservation elevation (457-ft mean-sea-level), the reservoir contains 22,840 acre feet of water. It has an average depth of 8.5 ft and a maximum depth of approximately 26 ft. The reservoir is located in the Blackland Prairies ecological region. The watershed is primarily industrial and residential. The land on the northwest side of the reservoir is owned by the City of Dallas which purchased the property from the U.S. Navy. Angler and boat access is inadequate. There is no handicap specific facility on the reservoir. At the time of sampling the fishery habitat was primarily rip-rap and native emergent vegetation. In April 1996, the Texas Department of State Health Services (TDSHS) declared Mountain Creek Reservoir a prohibited area for the possession of all fish species due to their contamination with PCB's.

- **Management history:** Important sport fish include white bass, largemouth bass, white crappie, and channel catfish. All species have been managed through statewide harvest regulations. However, since the implementation of the fish possession ban in 1996, all species have been under a catch and release regulation.

- **Fish Community**
 - **Prey species:** Gizzard and threadfin shad are present in the reservoir. Catch rates of these species have increased compared to previous samples. The total catch rate and the catch rate of bluegills over 5 inches has increased over the past couple of samples.

 - **Catfish:** The catch rate of channel catfish increased compared to previous sample with the population having good structure. Flathead catfish are present but none were captured this past survey year.

 - **White bass:** Past gill netting surveys revealed a small population of white bass. In 2009 white bass were caught at a high rate by gill netting and many were of quality size.

 - **Largemouth bass:** The largemouth bass population has increased in abundance when compared to previous samples. Population size structure is also good.

 - **White crappie:** The white crappie population is very abundant and has good size structure.

Management Strategies: Because of the fish possession ban, the sport fishes will continued to be managed with statewide regulations.

INTRODUCTION

This document is a summary of fisheries data collected from Mountain Creek Reservoir in 2008-2009. 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 2008-2009 data for comparison.

Reservoir Description

Mountain Creek Reservoir, a 2,493-acre reservoir located on Mountain Creek (a tributary of the Trinity River), was constructed in 1937 by Dallas Power and Light. It was built primarily as a cooling reservoir for a power plant and is now controlled by Excelon Energy Company. It is located in Dallas County four miles southeast of Grand Prairie, Texas. At conservation elevation (457-ft mean-sea-level), the reservoir contains 22,840 acre feet of water. It has an average depth of 8.5 ft and a maximum depth of approximately 26 ft. The reservoir is located in the Blackland Prairies ecological region. The watershed is primarily industrial and residential. The land on the northwest side of the reservoir is owned by the City of Dallas which purchased the property from the U.S. Navy. Angler and boat access is inadequate. There is no handicap specific facility on the reservoir. At the time of sampling the fishery habitat was primarily rip-rap and native emergent vegetation. In April 1996, the Texas Department of State Health Services (TDSHS) declared Mountain Creek Reservoir a prohibited area for the possession of all fish species due to their contamination with PCB's. Other descriptive characteristics for Mountain Creek Reservoir are in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Brock and Hungerford 2004) included:

Due to the TDSHS ban on possession of fish from Mountain Creek for PCB contamination, existing Texas Parks & Wildlife Department regulations should be changed to catch-and-release only to reflect the fish possession ban regulation.

Action: A catch and release regulation proposal was presented and approved at the August 2005 staff meeting. However, it was determined that TDSHS regulations supersedes TPWD regulations. Thus creating a catch and release regulation was deemed repetitive and thus not presented to commission.

Management strategies that complement catch and release only regulation need to be developed.

Action: No additional strategies have been developed. A proposal to stock palmetto bass in the lake was contemplated but never finalized.

Boat access to the reservoir is limited by the poor condition of the only public boat ramp.

Action: The City of Dallas has been contacted and information regarding the boat ramp program was sent to decisions makers. Discussions with the City of Dallas were positive. Officials stated they were eager to repair the boat ramp.

Harvest regulation history: Sport fish populations in Mountain Creek Reservoir have always been managed with statewide regulations (Table 2). Since the implementation of the fish possession ban in 1996 by TDSHS, all species have been under a catch and release regulation.

Stocking history: Mountain Creek Reservoir has not been stocked since the fish possession ban was implemented in 1996. The complete stocking history is in Table 3.

Vegetation/habitat history: Mountain Creek Reservoir aquatic vegetation is currently composed of

emergent plant species. Another habitat type is riprap which is abundant on the upper end of the reservoir.

METHODS

Fishes were collected by electrofishing (1.0 hours at 12 5-min stations), gill netting (5 net nights at 5 stations), and trap netting (5 net nights at 5 stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/hr) 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 2008).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weight (W_r)] 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 ($RSE = 100 \times SE$ of the estimate/estimate) was calculated for all CPUE statistics and SE was calculated for structural indices and IOV. Source for water level data was the United States Geological Survey website.

RESULTS AND DISCUSSION

Habitat: Littoral zone habitat consisted primarily of rocky habitat, and emergent aquatic vegetation (Table 4).

Prey species: The total electrofishing catch rate of threadfin shad (127.0/hr) remained below the district average of 249.6/hr. The catch rate of gizzard shad (201.0/hr) was also below the district average of 267.9/hr but increased from the previous sample. Index of vulnerability for gizzard shad was 92%, indicating that most gizzard shad captured were available to predators. This was similar to IOV estimates in previous years (Figure 2). Electrofishing catch rates of bluegill increased greatly from the previous sample. The total catch rate of 320.0/hr is well above the district average of 186.6/hr (Figure 3). The number of quality sized bluegill (>6 inches) also increased greatly from previous samples. The longear sunfish total catch rate (153.0/hr) also increased from previous samples (Figure 4).

Channel catfish: The channel catfish total gill net catch rate of 9.4/nn was higher than the district average of 5.7/nn and much higher than the previous sample (Figure 5). The size structure of the population also increased from the previous sample and remained very good as indicated by a PSD value of 83.

White bass: The white bass total gill netting catch rates have historically been well below the district average of 8.0/nn and averaged only 2.0/nn in the previous 2 samples (Figure 6). However, the catch rate in 2009 increased dramatically to 24.2/nn. Body conditions of all size groups were very good. Size structure of the population was good as indicated by the PSD value of 38.

Largemouth bass: The total electrofishing catch rate of largemouth bass (114.0/hr) decreased slightly from the previous sample and was slightly below the district average of 131.8/hr. The size structure of the population has improved from the previous sample as evident in the PSD and RSD-14 values of 56 and 28 respectively. Body conditions in 2008 were near optimal for nearly all size classes of (Figure 7).

White crappie: The total trap net catch rate of white crappie was 85.8/nn in 2008, which was much higher than the previous sample which was also high (52.0/nn) (Figure 8). Body condition of most size groups was also excellent. The size structure of the population remains above average as indicated by PSD and RSD-10 values of 69 and 37 respectively.

Fisheries management plan for Mountain Creek Reservoir, Texas

Prepared – July 2009.

ISSUE 1: Boat access to the reservoir continues to be limited by the poor condition of the only public boat ramp.

MANAGEMENT STRATEGY

1. Continue working to improve boat access on the reservoir by contacting the City of Dallas Parks and Recreation Department.

ISSUE 2: Mountain Creek Reservoir has value as a catch and release only reservoir and could possibly provide recreation through a paddling trail.

MANAGEMENT STRATEGIES

1. Investigate the river connection between Joe Pool Reservoir and Mountain Creek Reservoir for possible development into a paddling trail.
2. Contact United States Corps of Engineers and get information regarding area below Joe Pool Reservoir regarding possible small craft launch site.
3. Conduct exploratory float trip to investigate paddling conditions between Joe Pool and Mountain Creek Reservoirs.

SAMPLING SCHEDULE JUSTIFICATION

General monitoring of sport fish species with electrofishing, trap netting, and gill netting will be conducted every four years.

LITERATURE CITED

- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Brock, R. and T. Hungerford 2004. Statewide freshwater fisheries monitoring and management program survey report for Mountain Creek Reservoir, 2004. Texas Parks and Wildlife Department, Federal Aid Report F-30-R30, Austin.
- 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.

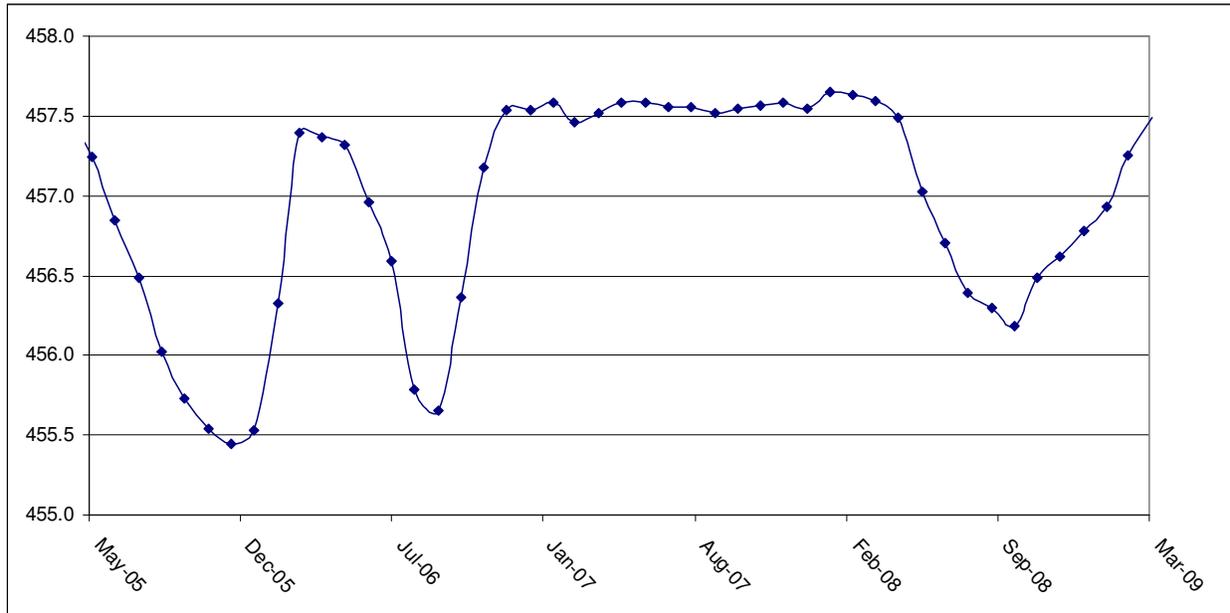


Figure 1. Mean monthly water level elevations in feet above mean sea level (MSL) recorded for Mountain Creek Reservoir, Texas from May 2005-March 2009. Conservation pool is 457 feet above MSL.

Table 1. Characteristics of Mountain Creek Reservoir, Texas.

Characteristic	Description
Year Constructed	1937
Controlling authority	Excelon Energy
Counties	Dallas
Reservoir type	Tributary Trinity River
Conductivity	375 umhos/cm

Table 2. Harvest regulations for Mountain Creek Reservoir. However, because of the TDSHS implementation of the fish possession ban, all species are catch and release.

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

Table 3. Stocking history of Mountain Creek Lake (Dallas County), 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)
Florida Largemouth bass	1980	136,630	FGL	2.0
	1990	45,720	FGL	1.6
	1990	89,550	FRY	1.0
	1994	136,380	FGL	1.3
	Total	408,290		
Palmetto Bass (striped X white bass hybrid)	1978	10,650	UNK	UNK
	Total	10,650		
Red drum	1981	235,000	UNK	UNK
	Total	235,000		

Table 4. Survey of littoral zone and physical habitat types, Mountain Creek Reservoir, Texas, 2008. 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
Bulkhead	0.3	1.6		
Native emergent	2.9	15.3		
Native emergent + native submersed	0.04	0.2		
Natural	0.9	4.7		
Natural + native emergent	7.2	37.9		
Rocky shoreline	3.3	17.4		
Rocky shoreline + native emergent	1.4	7.4		
Standing timber + native emergent	3.0	15.8		

Gizzard Shad

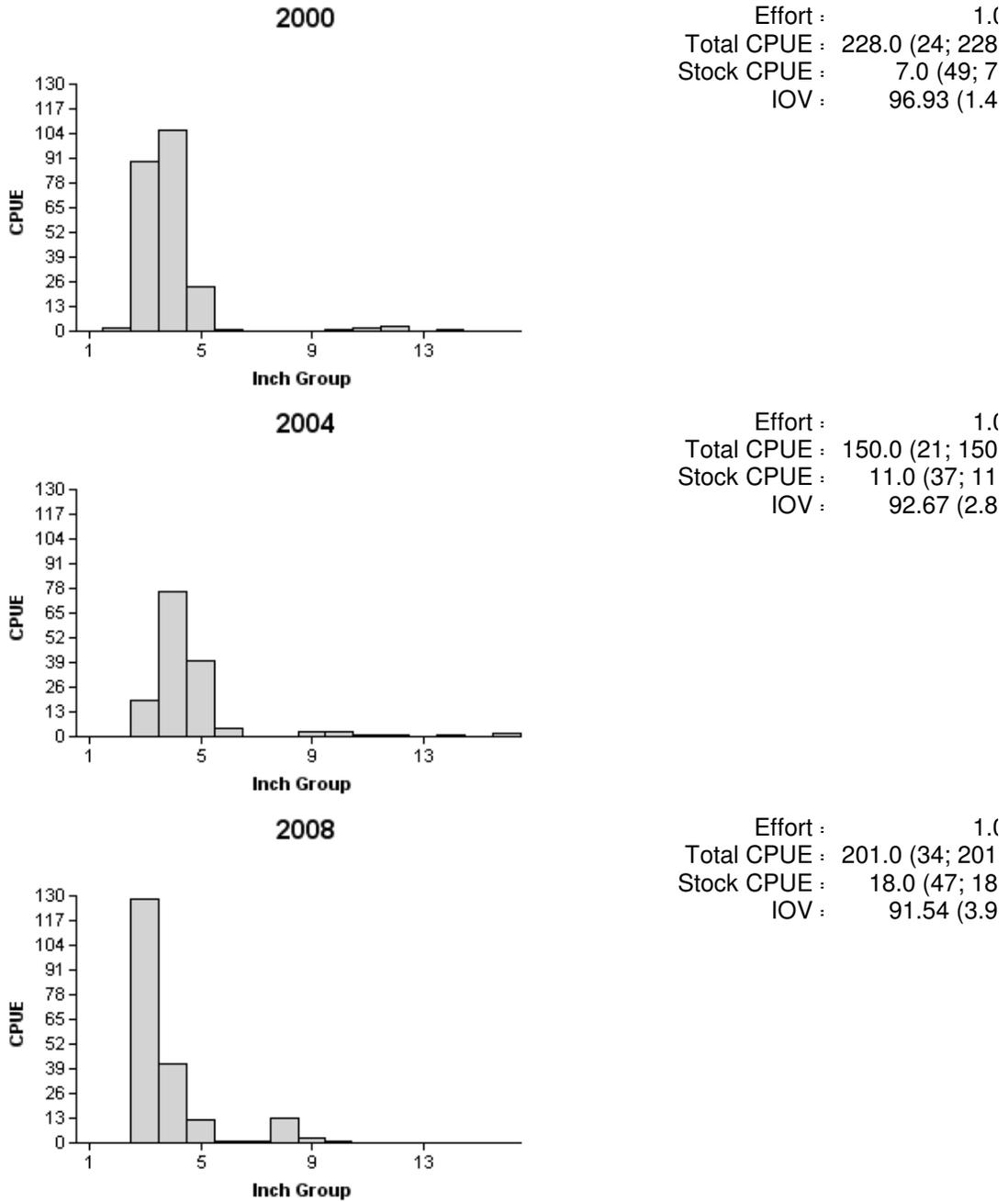


Figure 2. Number of gizzard shad caught per hour (CPUE; bars) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Mountain Creek Reservoir, Texas, 2000, 2004, and 2008.

Bluegill

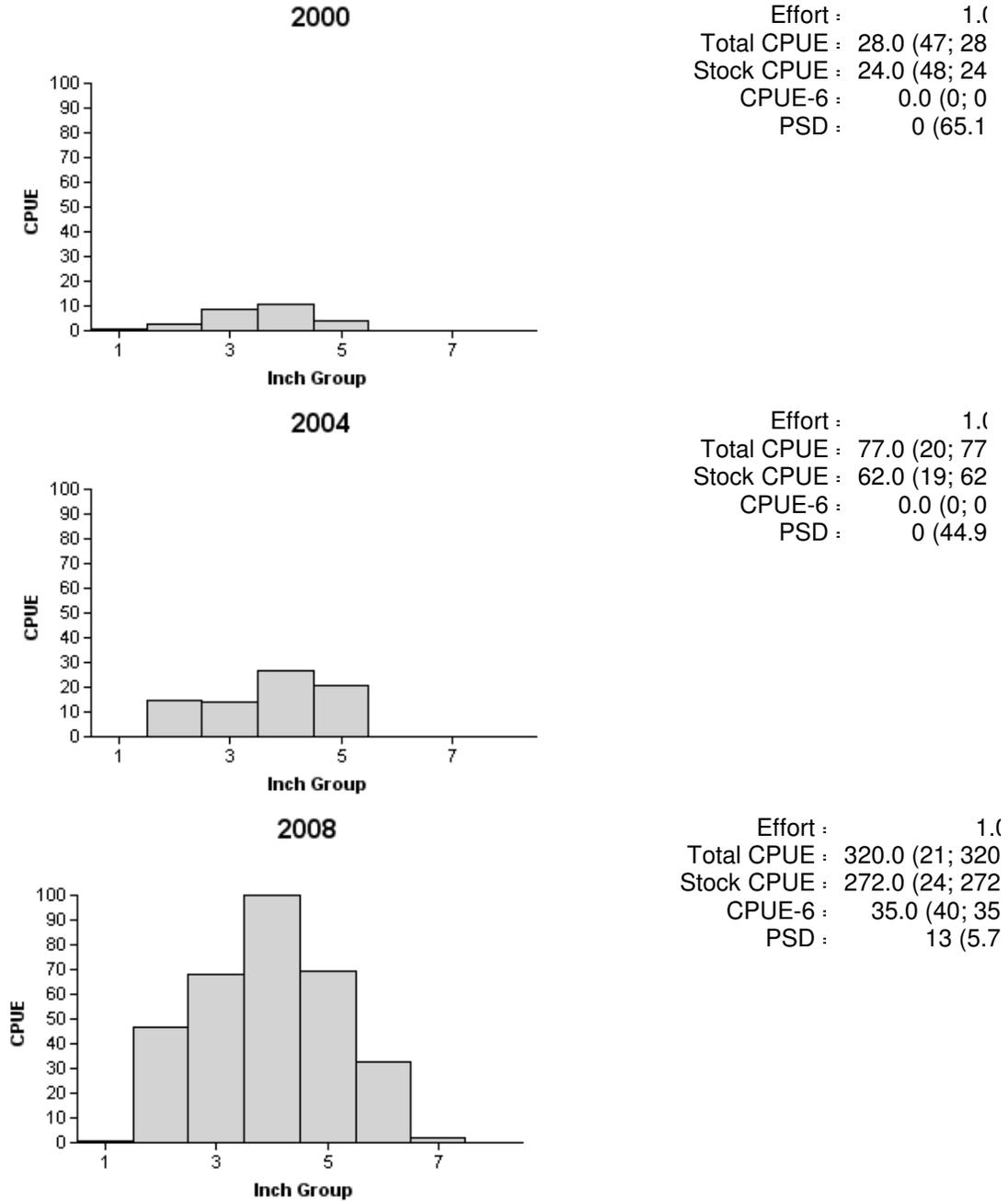
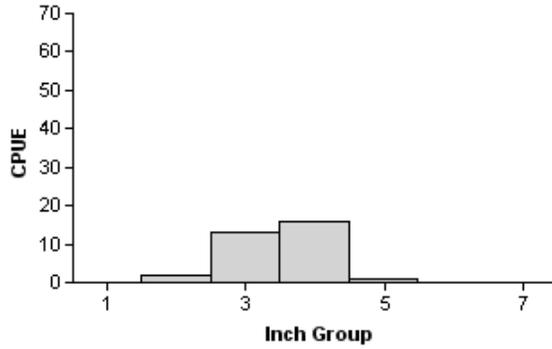


Figure 3. Number of bluegill caught per hour (CPUE; bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mountain Creek Reservoir, Texas, 2000, 2004 and 2008.

Longear Sunfish

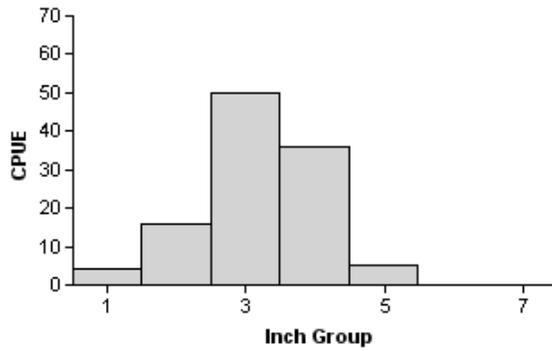
2000

Effort : 1.0
Total CPUE : 32.0 (23; 32)



2004

Effort : 1.0
Total CPUE : 111.0 (33; 111)



2008

Effort : 1.0
Total CPUE : 153.0 (24; 153)

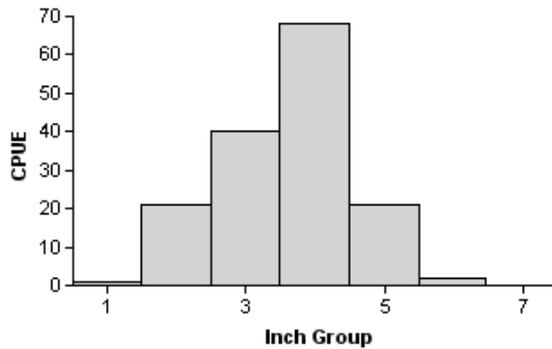


Figure 4. Number of longear sunfish caught per hour (CPUE; bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mountain Creek Reservoir, Texas, 2000, 2004 and 2008.

Channel Catfish

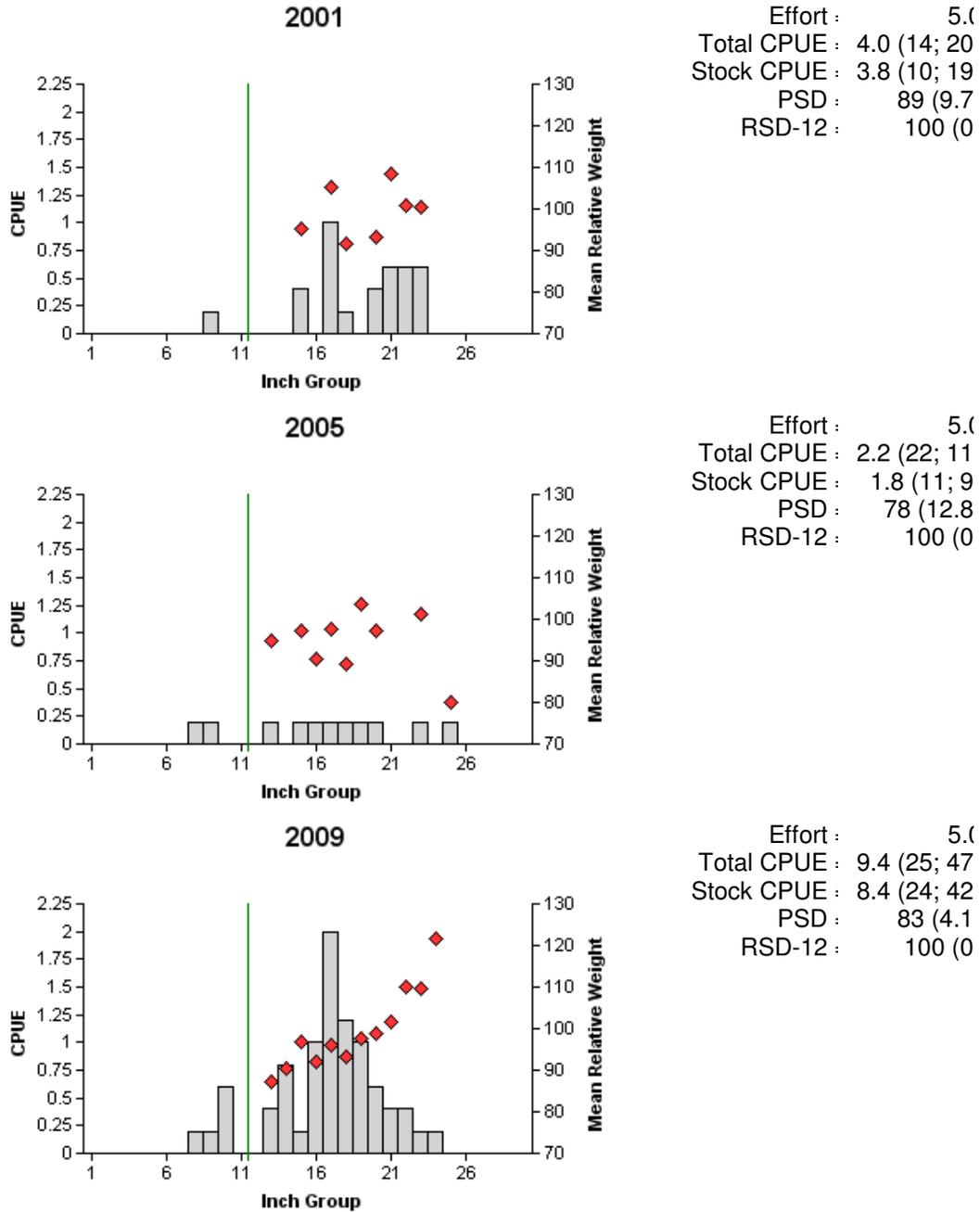


Figure 5. Number of channel catfish caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Mountain Creek Reservoir, Texas, 2001, 2005, and 2009. Vertical line represents length limit at time of sampling.

White Bass

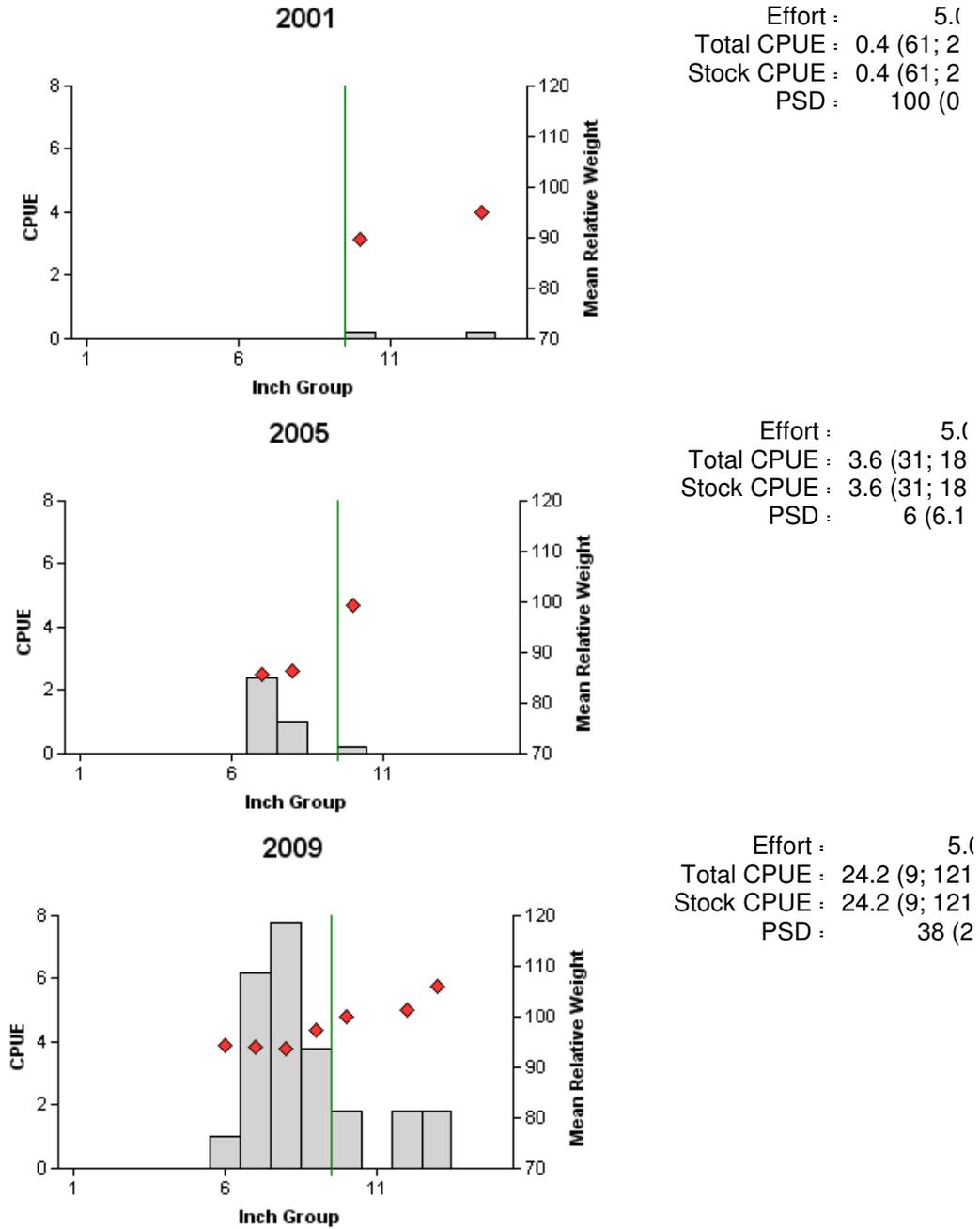


Figure 6. Number of white bass caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for spring gill net surveys, Mountain Creek Reservoir, Texas, 2001, 2005, and 2009. Vertical line represents length limit at time of sampling.

Largemouth Bass

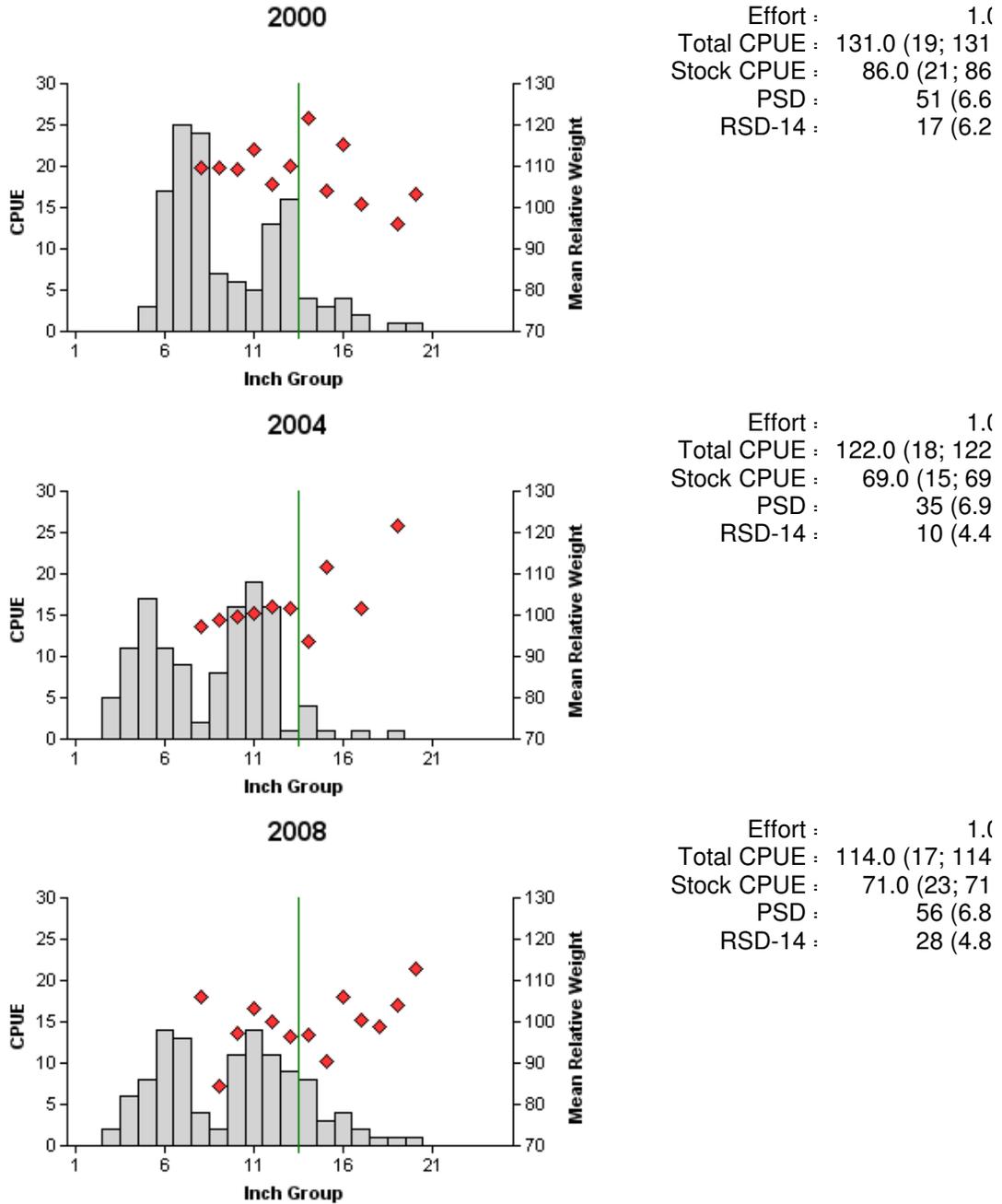


Figure 7. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mountain Creek Reservoir, Texas, 2000, 2004, and 2008. Vertical lines represent length limit at time of sampling.

White Crappie

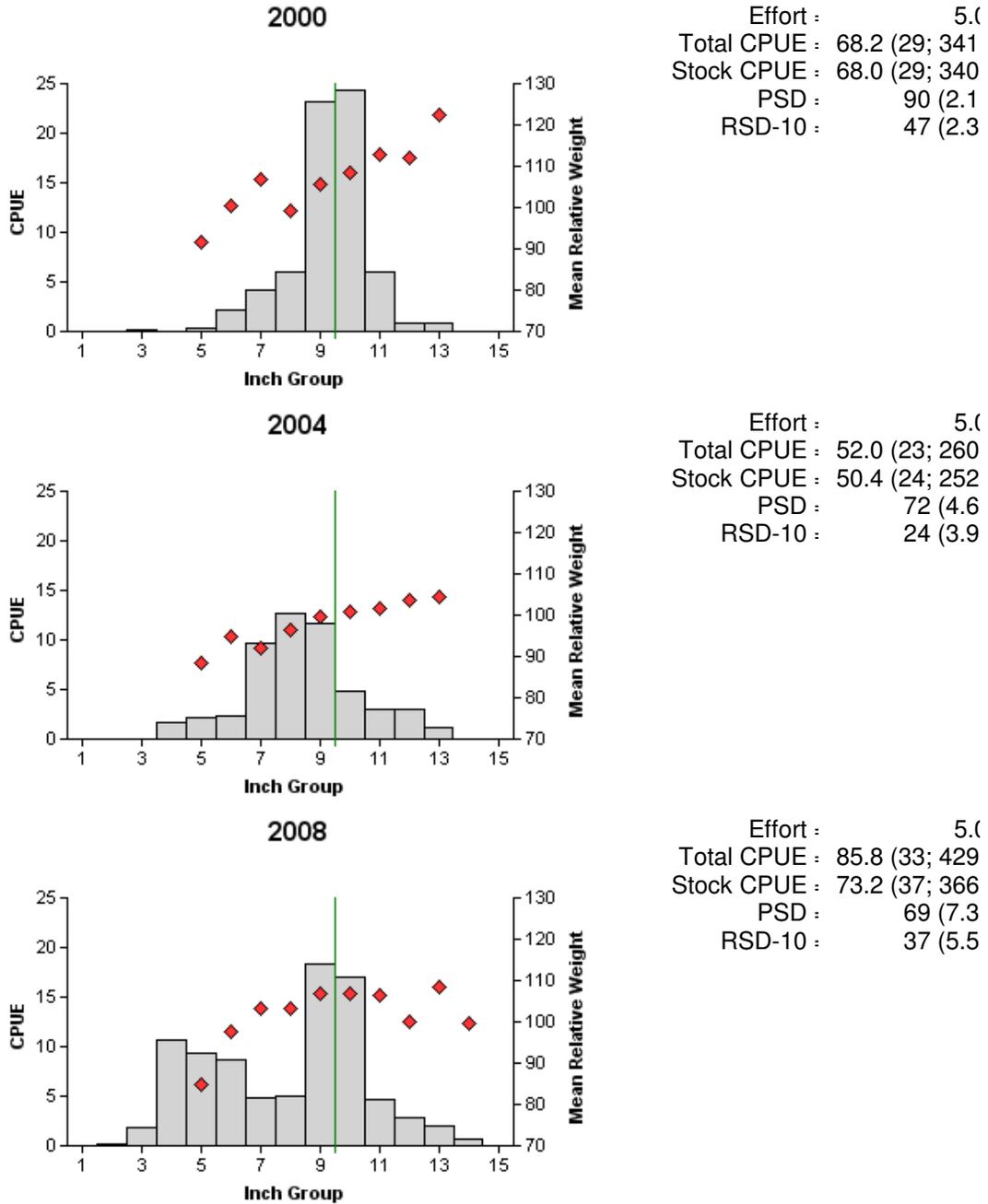


Figure 8. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Mountain Creek Reservoir, Texas, 2000, 2004, and 2008. Vertical line represents length limit at time of sampling.

Table 5. Proposed sampling schedule for Mountain Creek Reservoir, Texas. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard surveys are denoted by S and additional surveys denoted by A.

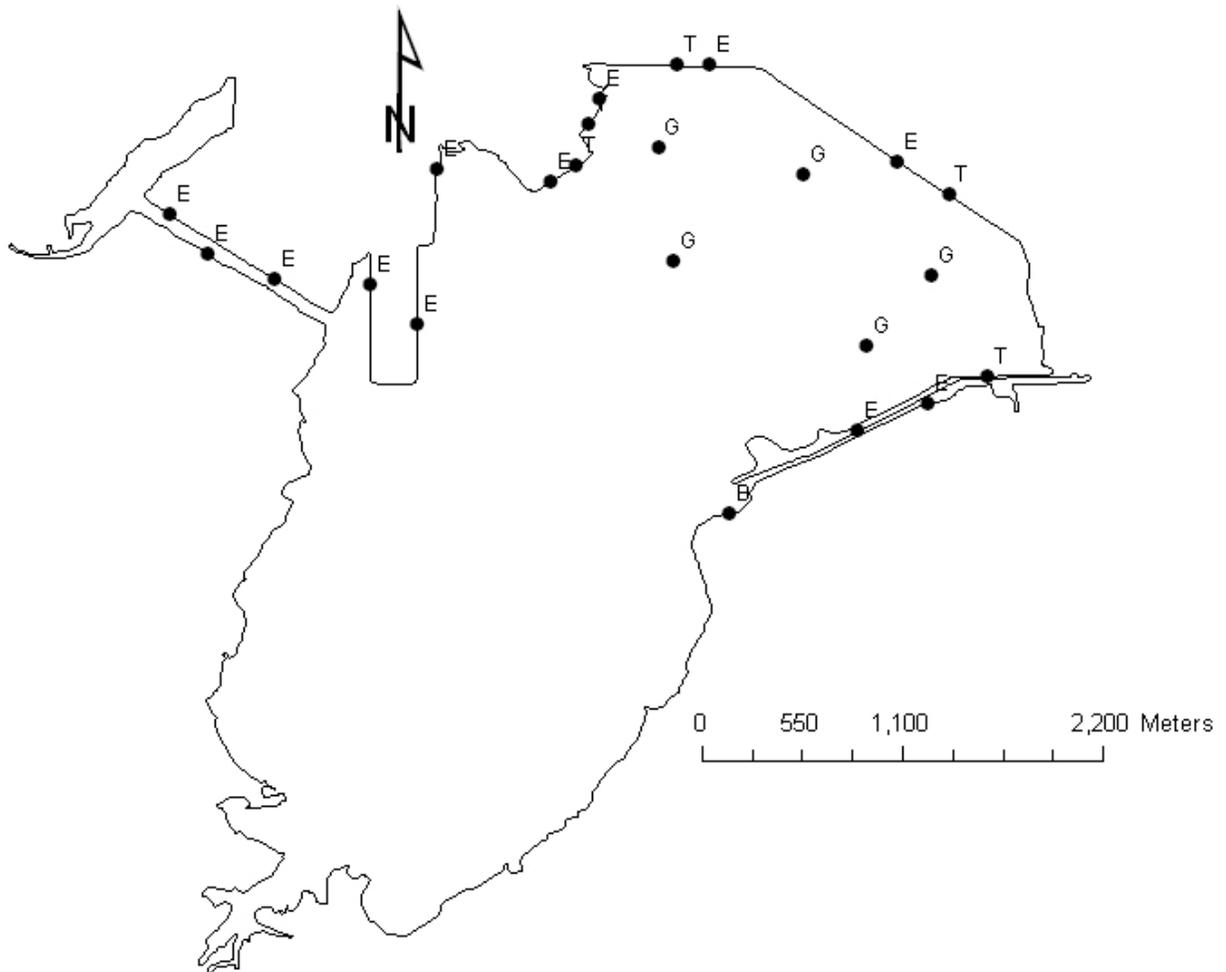
Survey Year	Electrofisher	Trap Net	Gill Net	Creel Survey	Report
Fall 2009-Spring 2010					
Fall 2010-Spring 2011					
Fall 2011-Spring 2012					
Fall 2012-Spring 2013	S	S	S		S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Mountain Creek Reservoir, Texas, 2008-2009.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					201	201.0
Threadfin shad					127	127.0
Common carp	62	12.4				
Smallmouth buffalo	33	6.6				
Channel catfish	47	9.4				
White bass	121	24.2				
Bluegill					320	320.0
Longear sunfish					153	153.0
Redear sunfish					1	1.0
Largemouth bass					114	114.0
White crappie			429	85.8		
Freshwater drum	3	0.6				

APPENDIX B



Location of sampling sites, Mountain Creek Reservoir, Texas, 2008-2009. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Boat ramps are indicated with a B. Water level was near full pool at time of sampling.