

PERFORMANCE REPORT

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INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2012 Fisheries Management Survey Report

Mountain Creek Lake Reservoir

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TABLE OF CONTENTS

Survey and Management Summary.....	2
Introduction.....	3
Reservoir Description.....	3
Angler Access.....	3
Management History.....	3
Methods.....	4
Results and Discussion.....	4
Fisheries Management Plan.....	6
Literature Cited.....	8
Figures and Tables.....	9-18
Water Level (Figure 1).....	9
Reservoir Characteristics (Table 1).....	9
Boat Ramp Characteristics (Table 2).....	9
Harvest Regulations (Table 3).....	10
Stocking History (Table 4).....	10
Structural Habitat Survey (Table 5).....	11
Gizzard Shad (Figure 2).....	12
Bluegill (Figure 3).....	13
Channel Catfish (Figure 4).....	14
White Bass (Figure 5).....	15
Largemouth Bass (Figure 6).....	16
White Crappie (Figure 7).....	17
Proposed Sampling Schedule (Table 6).....	18
Appendix A	
Catch Rates for all Species from all Gear Types.....	19
Appendix B	
Map of 2012-2013 Sampling Locations.....	20
Appendix C	
Historical catch statistics 1994-2013.....	21

SURVEY AND MANAGEMENT SUMMARY

Fish populations in Mountain Creek Reservoir were surveyed in 2012 using electrofishing and trap netting and in 2013 using gill netting. Historical data are presented with the 2012-2013 data for comparison. 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 22,850 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. In October 2010, TDSHS changed the fish possession ban to a fish possession advisory which advises anglers to not consume any fish.
- **Management History:** Important sport fish include White Bass, Largemouth Bass, White Crappie, and Channel Catfish. All species have been managed through statewide harvest regulations.
- **Fish Community**
 - **Prey species:** Gizzard and Threadfin Shad are present in the reservoir. The catch rate of Gizzard Shad decreased from previous samples while the Threadfin Shad catch rates increased. The total catch rate and the catch rate of bluegills over 6 inches has increased over the past couple of samples.
 - **Catfish:** The catch rate of Channel Catfish decreased slightly compared to the 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. In 2013 White Bass catch rates decreased but were higher than historical catch rates.
 - **Largemouth Bass:** The Largemouth Bass population has decreased in abundance when compared to previous samples. Population size structure was good.
 - **White Crappie:** The White Crappie catch rates were much lower than previous samples.

Management Strategies: Mountain Creek Reservoir receives low fishing pressure because of poor access and the fish possession advisory. Because of these factors, the sport fishes will continue to be managed with statewide regulations and no stockings are planned. General monitoring with standard sampling will occur in 2016-2017. An exotic vegetation survey will be conducted annually to monitor the presence of water hyacinth.

INTRODUCTION

This document is a summary of fisheries data collected from Mountain Creek Reservoir in 2012-2013. 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 2012-2013 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 Exelon 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 lower half of the reservoir is very shallow and is not conducive for sampling. 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. In October 2010, TDSHS changed the fish possession ban to a fish possession advisory which advises anglers not to consume any fish. Other descriptive characteristics for Mountain Creek Reservoir are in Table 1.

Angler Access

Mountain Creek Reservoir has one public boat ramp. This ramp is very narrow and shallow even at water levels near conservation pool. Extension of the ramp may not be feasible without dredging that must take place to deepen water near ramp. Additional boat ramp characteristics are in Table 2. Shoreline access for anglers is limited to the park near the public boat ramp.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Brock and Hungerford 2008) included:

1. 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. However no progress was made because of budget issues.

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

Action: An investigation revealed no permanent connectivity between the Joe Pool Reservoir tailrace and Mountain Creek Reservoir. Paddling conditions were acceptable for approximately 2.5 miles from the Joe Pool spillway. The parking area nearest to the Joe Pool tailrace is currently closed but angling is still allowed. Parking is allowed at the gated entrance to the area. However the distance from the current parking area to tailrace area is too long and would make development of the area into a paddling trail difficult.

Harvest regulation history: Sport fish populations in Mountain Creek Reservoir have always been managed with statewide regulations (Table 3).

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 4.

Vegetation/habitat management history: No management of habitat has occurred. 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. The exotic invasive water hyacinth, *Eichhornia crassipes*, was discovered in the reservoir in the summer of 2012. Abundance is currently less than one acre. It is mainly confined to discharge canal

Water transfer: Mountain Creek Reservoir is primarily used as cooling reservoir for a natural gas electrical generating plant, and to a lesser extent, flood control. No interbasin transfers are known to exist.

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 2011).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], 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). Standard error (SE) was calculated for structural indices and IOV. Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE and creel statistics. No genetic analysis of Largemouth Bass was conducted.

Source for water level data was the United States Geological Survey website.

RESULTS AND DISCUSSION

Habitat: The last habitat survey was conducted in 2008. Very few changes in habitat have occurred since that survey. A low abundance (less than one acre) of water hyacinth was found.

Creel Survey: No creel surveys have been conducted due to fish possessions and advisories.

Prey species: The total electrofishing catch rate of Threadfin Shad (210.0/hr) remained below the district average of 292.7/hr (Appendix A and C). However the catch rate was high enough to provide forage for sport fish. The catch rate of Gizzard Shad (151.0/hr) was also below the district average of 290.7/hr and has decreased from the previous sample (Figure 2). Index of vulnerability for Gizzard Shad was 72%, indicating that most Gizzard Shad captured were available to predators. However this IOV was much lower than estimates in previous years. Electrofishing catch rates of bluegill decreased slightly from the previous sample. The total catch rate of 294.0/hr is well above the district average of 202.7/hr (Figure 3). The number of quality sized bluegill (>6 inches) increased greatly from previous samples. The Longear Sunfish total catch rate (149.0/hr) also increased from previous samples.

Channel Catfish: The Channel Catfish total gill netting catch rate of 6.6/nn was higher than the district average of 5.7/nn and but slightly lower than the previous sample (Figure 4). The size structure of the population also decreased from the previous sample but remained very good as indicated by a PSD value of 73.

White Bass: The White Bass total gill netting catch rates have historically been well below the district

average of 7.7/nn. However, the catch rate in 2009 increased dramatically to 24.2/nn (Figure 5). In 2013 the catch rates decreased to 9.8/nn. However this was still above district average. Body condition of all size groups were very good. Size structure of the population was good as indicated by the PSD value of 92.

Largemouth Bass: The total electrofishing catch rate of Largemouth Bass (79.0/hr) decreased greatly from the previous sample and was well below the district average of 132.3/hr. However the catch rate of fish over 14-inches remained relatively unchanged from previous sample (Figure 6). The size structure of the population remained good as evident in the PSD value of 49. Body condition in 2012 was near optimal for nearly all size classes.

White Crappie: The total trap net catch rate of White Crappie was 11.4/nn in 2012, which was much lower than previous samples which averaged 68.9/nn (Figure 7). Body condition of most size groups was excellent. The size structure of the population remained average as indicated by a PSD value of 60.

Fisheries management plan for Mountain Creek Reservoir, Texas

Prepared – July 2013.

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

MANAGEMENT STRATEGIES

1. Continue working to improve boat access on the reservoir by contacting the City of Dallas Parks and Recreation Department.
2. Dredging of contaminated sediments in the reservoir are being planned. City will be contacted about feasibility of adding boat ramp area to dredging plan.

ISSUE 2: Reports of anglers harvesting fish from reservoir have increased despite the fish possession advisory. No signs are posted informing anglers of advisory.

MANAGEMENT STRATEGIES

1. Place fish advisory signs, provided by TDSHS, around boat ramp and bank access areas to inform anglers of advisory.
2. Update webpage information to include possession advisory.

ISSUE 3: Genetic analysis of Largemouth Bass population has not been conducted since 2000.

MANAGEMENT STRATEGY

1. Collect and conduct genetic analysis on fin clips from Largemouth Bass in 2016.

ISSUE 4: The exotic aquatic plant, water hyacinth, has been found in the reservoir.

MANAGEMENT STRATEGY

1. Contact controlling authority about discovery of water hyacinth.
2. Develop treatment plan to eradicate the plant from the reservoir.

ISSUE 5: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches and plugging engine cooling systems. Giant salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

1. Cooperate with controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate controlling authority about invasive species, and provide them with posters, literature, etc... so that they can in turn educate their reservoir visitors.
3. Educate the public about invasive species through the use of media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.
5. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

SAMPLING SCHEDULE JUSTIFICATION

Because of the lack of quality access and the low fishing pressure observed, only general monitoring of sport fish species will be conducted. Electrofishing, trap netting, and gill netting will be conducted in 2016-2017. An exotic vegetation survey will be conducted annually to monitor the presence of water hyacinth.

LITERATURE CITED

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- Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional Size Distribution (PSD): a further refinement of population size structure index terminology. Fisheries 32(7):348.

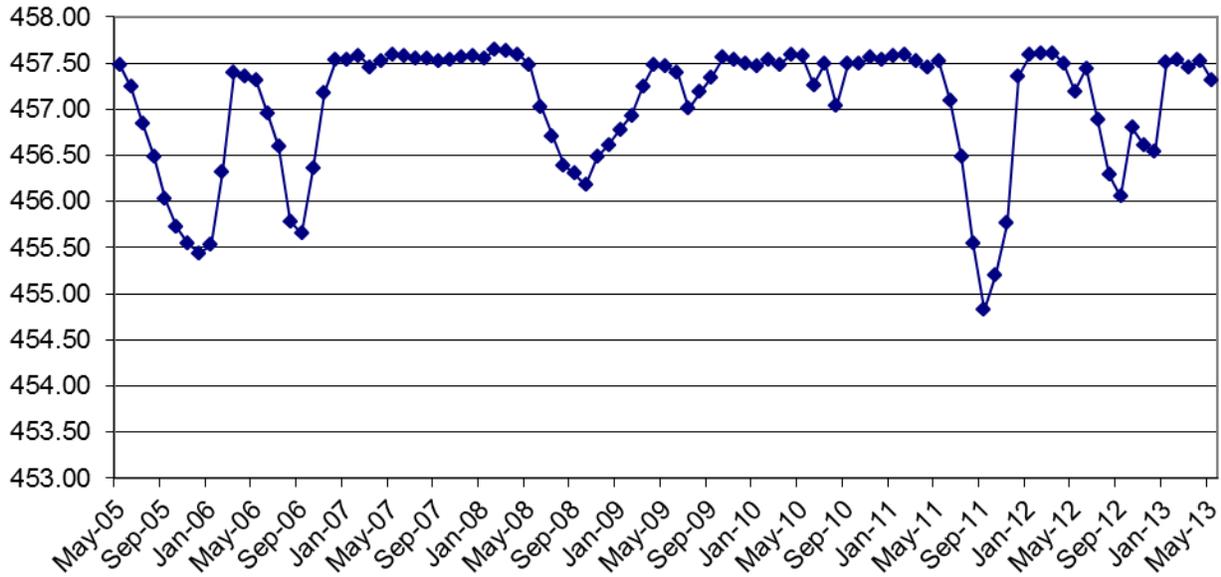


Figure 1. Mean monthly water level elevations in feet above mean sea level (MSL) recorded for Mountain Creek Reservoir, Texas from May 2005-March 2013. Conservation pool is 457 feet above MSL.

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	429 umhos/cm

Table 2. Boat ramp characteristics for Mountain Creek Reservoir, Texas, October, 2012. Reservoir elevation at time of survey was 455.2 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Condition
Park boat ramp	32.70527 -96.95288	Y	15	Narrow and shallow. Very poor condition

Table 3. Harvest regulations for Mountain Creek Reservoir. However, because of the TDSHS implementation of the fish possession ban, catch and release of all species is encouraged.

Species	Bag Limit	Length Limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (in any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

Table 4. 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	45,726	FGL	1.6
	1990	89,550	FRY	1.0
	1994	<u>136,389</u>	FGL	1.3
	Total	408,295		
Palmetto Bass (Striped X White Bass hybrid)	1978	<u>10,656</u>	UNK	UNK
	Total	10,656		
Red Drum	1981	<u>235,000</u>	UNK	UNK
	Total	235,000		

Table 5. Survey of structural habitat types, Mountain Creek Reservoir, Texas, 2008. Shoreline habitat type units are in miles and standing timber and boat docks and marinas are acres.

Habitat type	Estimate	% of total
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

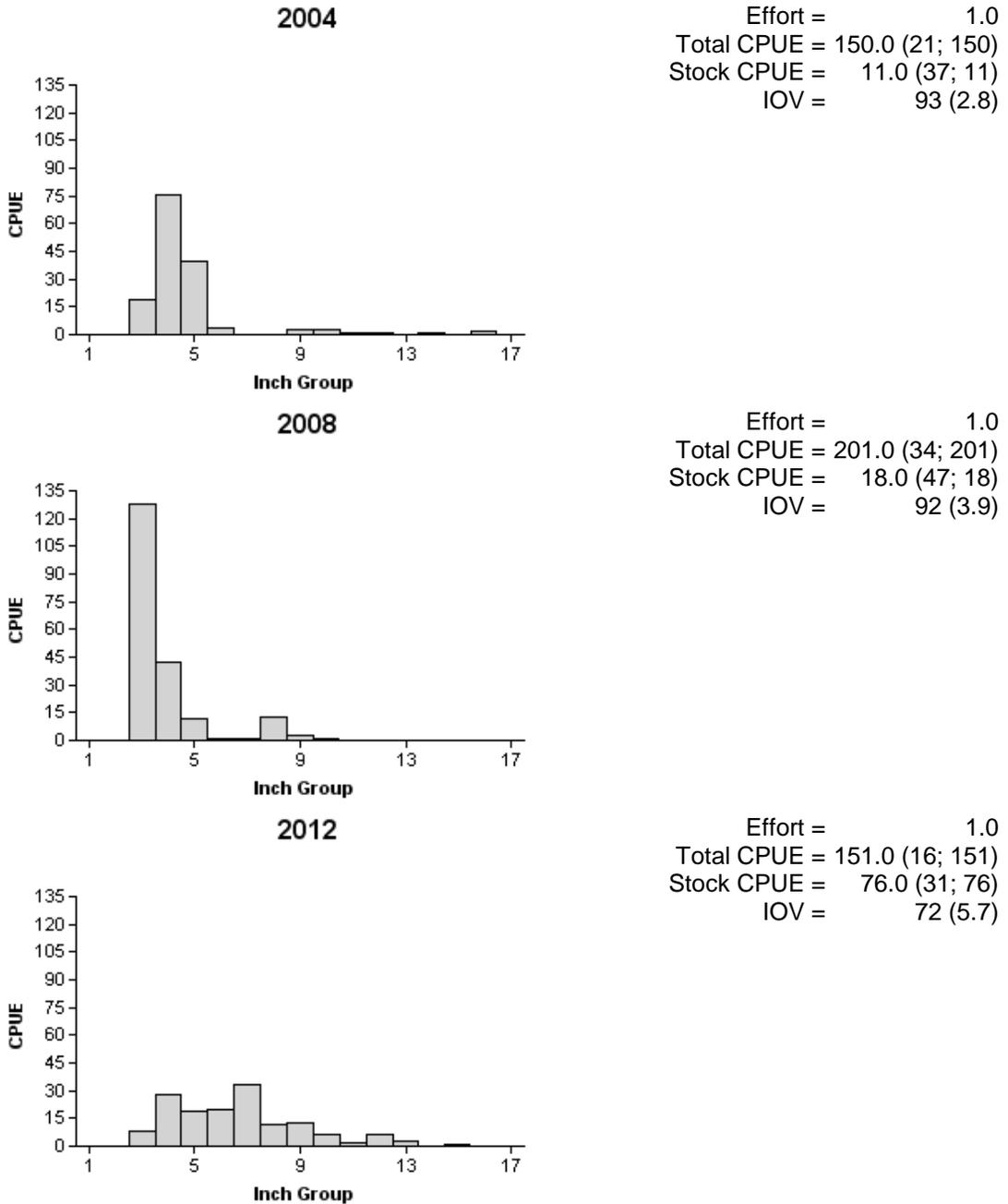


Figure 2. Number of Gizzard Shad caught per hour (CPUE; bars) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Mountain Creek Reservoir, Texas, 2004, 2008, and 2012.

Bluegill

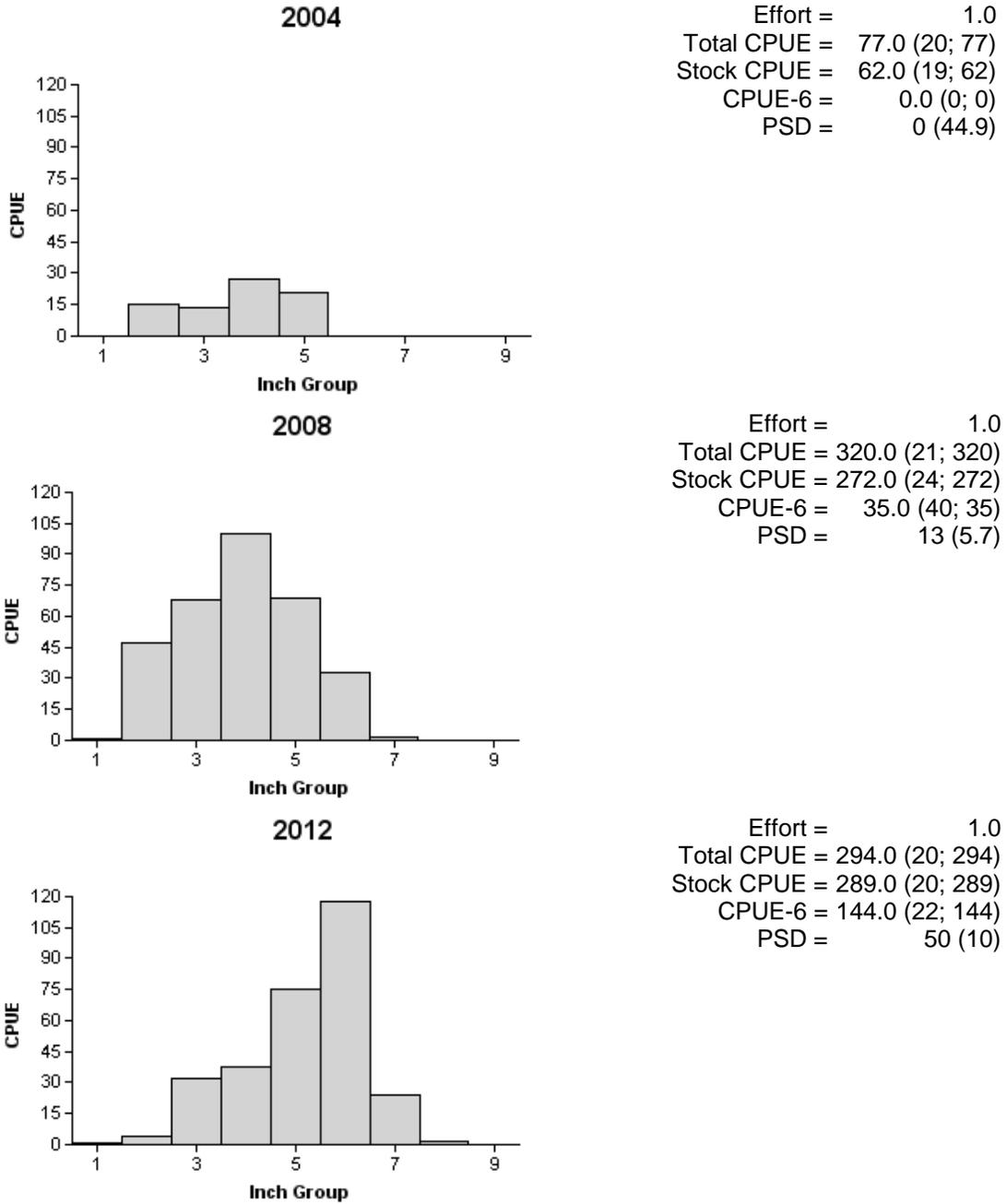


Figure 3. Number of bluegill caught per hour (CPUE; bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mountain Creek Reservoir, Texas, 2004, 2008, and 2012.

Channel Catfish

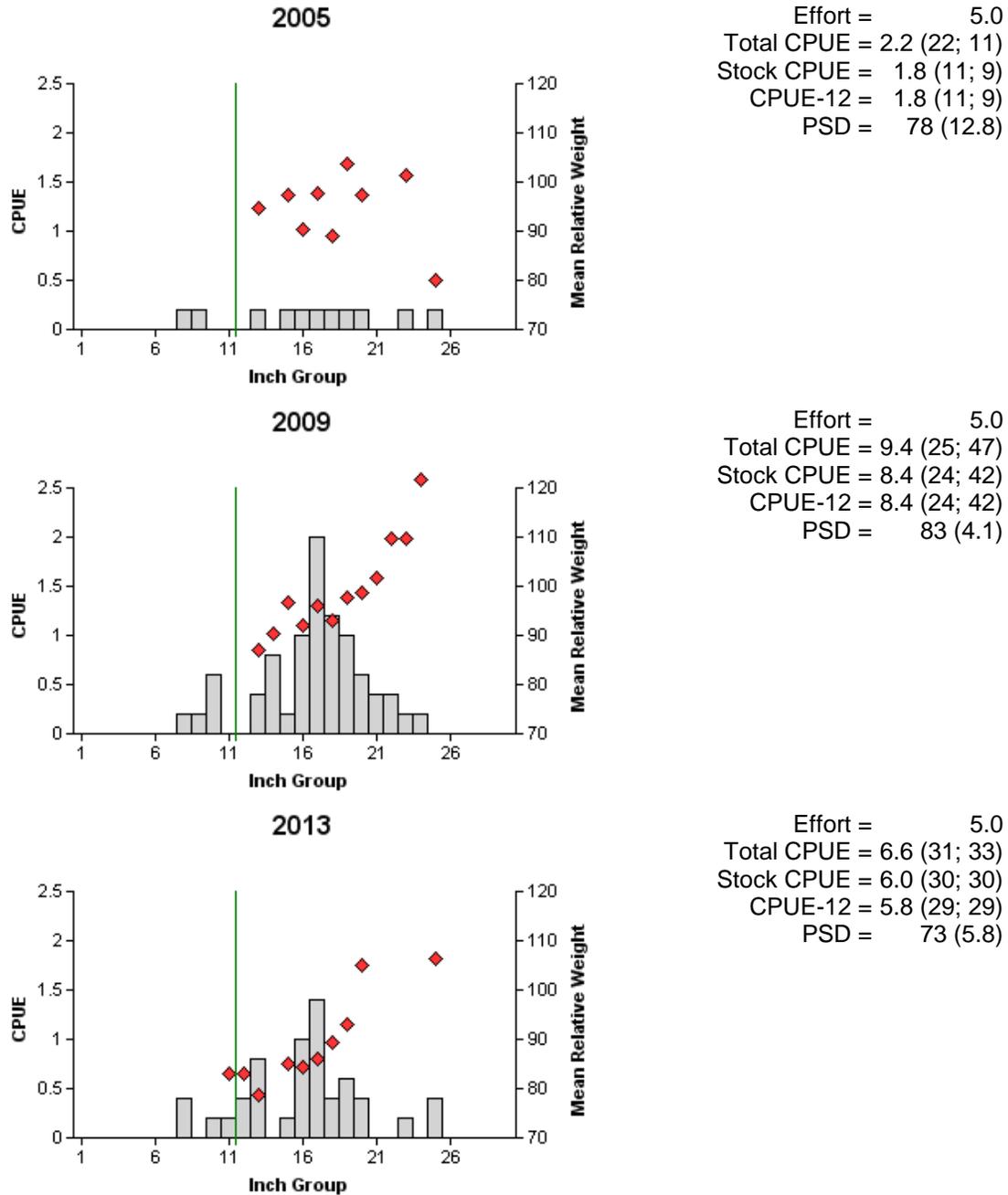


Figure 4. Number of Channel Catfish caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Mountain Creek Reservoir, Texas, 2005, 2009, and 2013. Vertical line represents length limit at time of sampling.

White Bass

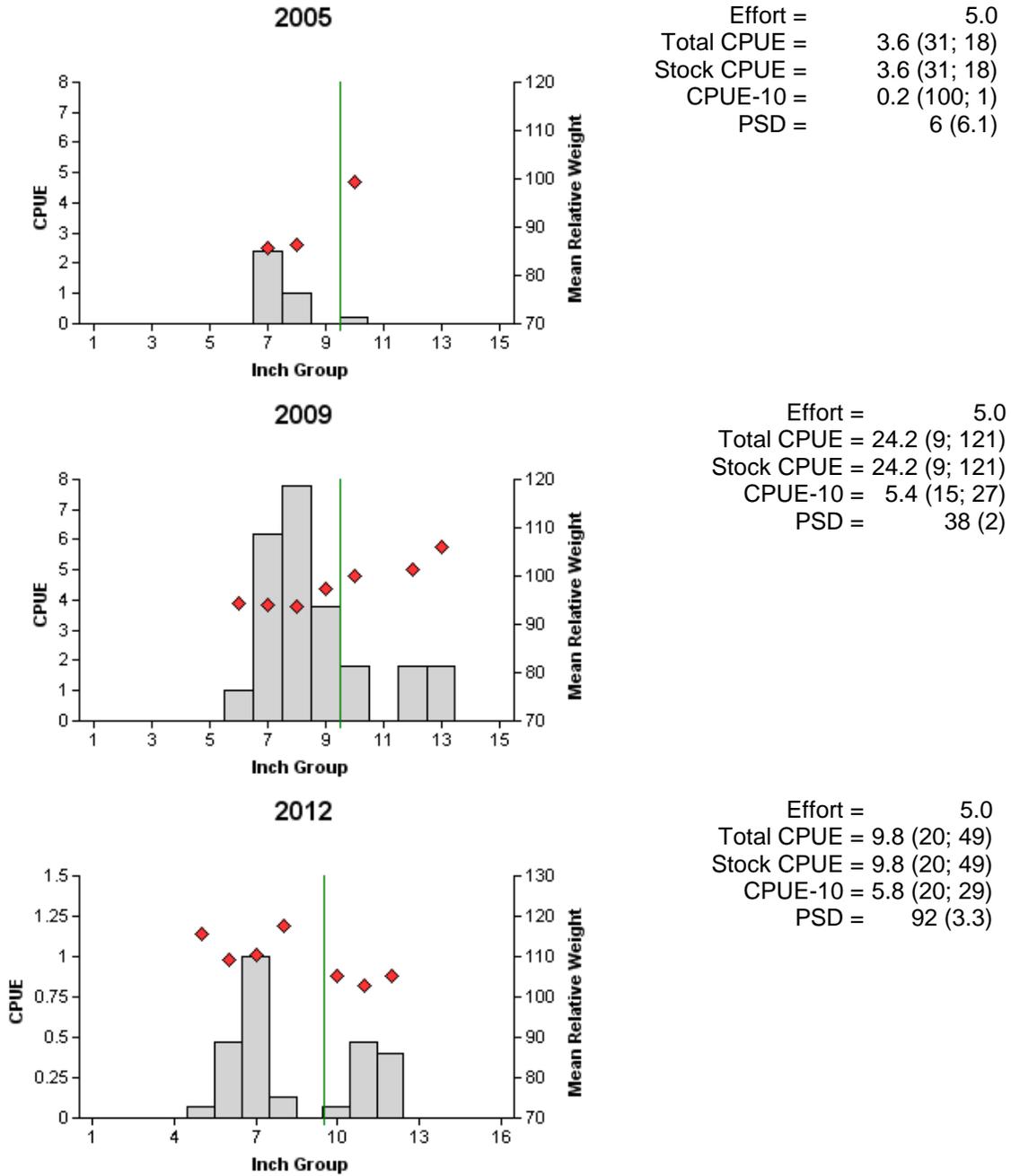


Figure 5. Number of White Bass caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for spring gill net surveys, Mountain Creek Reservoir, Texas, 2005, 2009, and 2013. Vertical line represents length limit at time of sampling.

Largemouth Bass

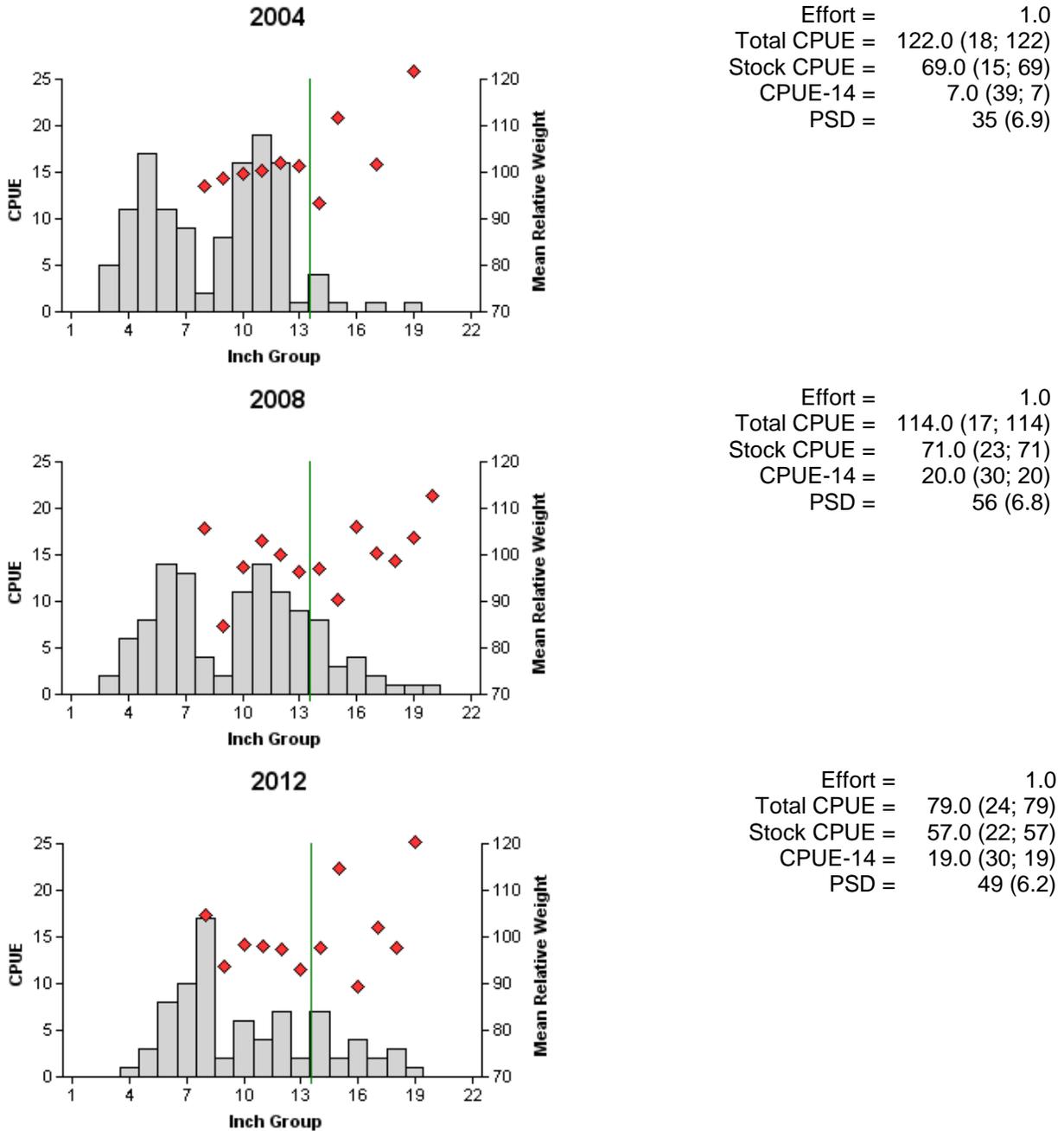
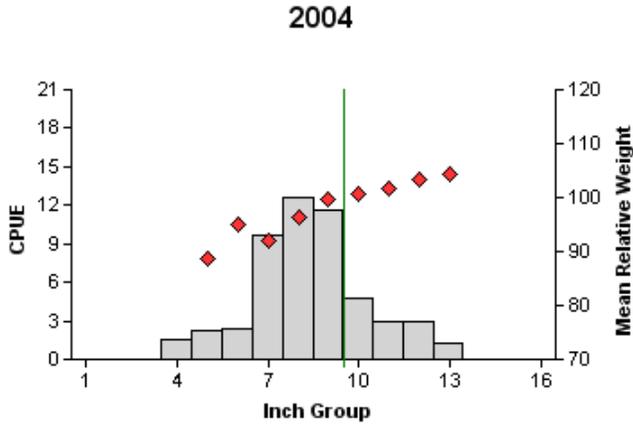
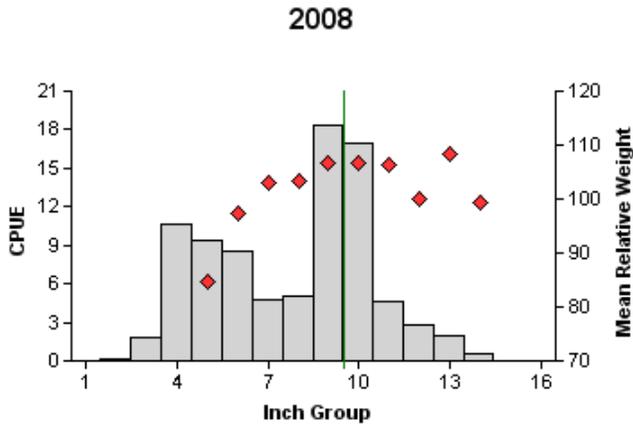


Figure 6. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Mountain Creek Reservoir, Texas, 2004, 2008, and 2012. Vertical lines represent length limit at time of sampling.

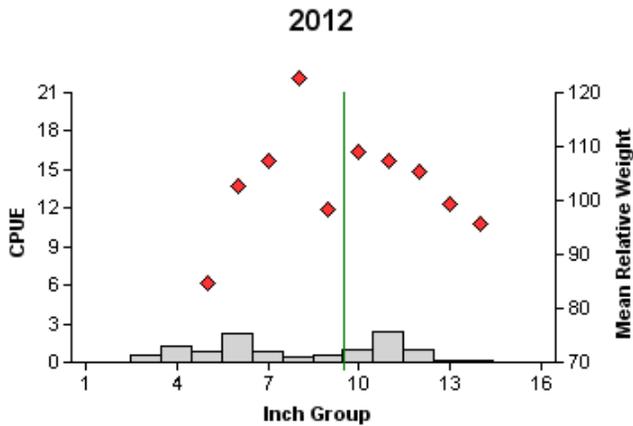
White Crappie



Effort = 5.0
 Total CPUE = 52.0 (23; 260)
 Stock CPUE = 50.4 (24; 252)
 CPUE-10 = 12.0 (30; 60)
 PSD = 72 (4.6)



Effort = 5.0
 Total CPUE = 85.8 (33; 429)
 Stock CPUE = 73.2 (37; 366)
 CPUE-10 = 27.0 (39; 135)
 PSD = 69 (7.3)



Effort = 5.0
 Total CPUE = 11.4 (43; 57)
 Stock CPUE = 9.6 (35; 48)
 CPUE-10 = 4.8 (34; 24)
 PSD = 60 (6.2)

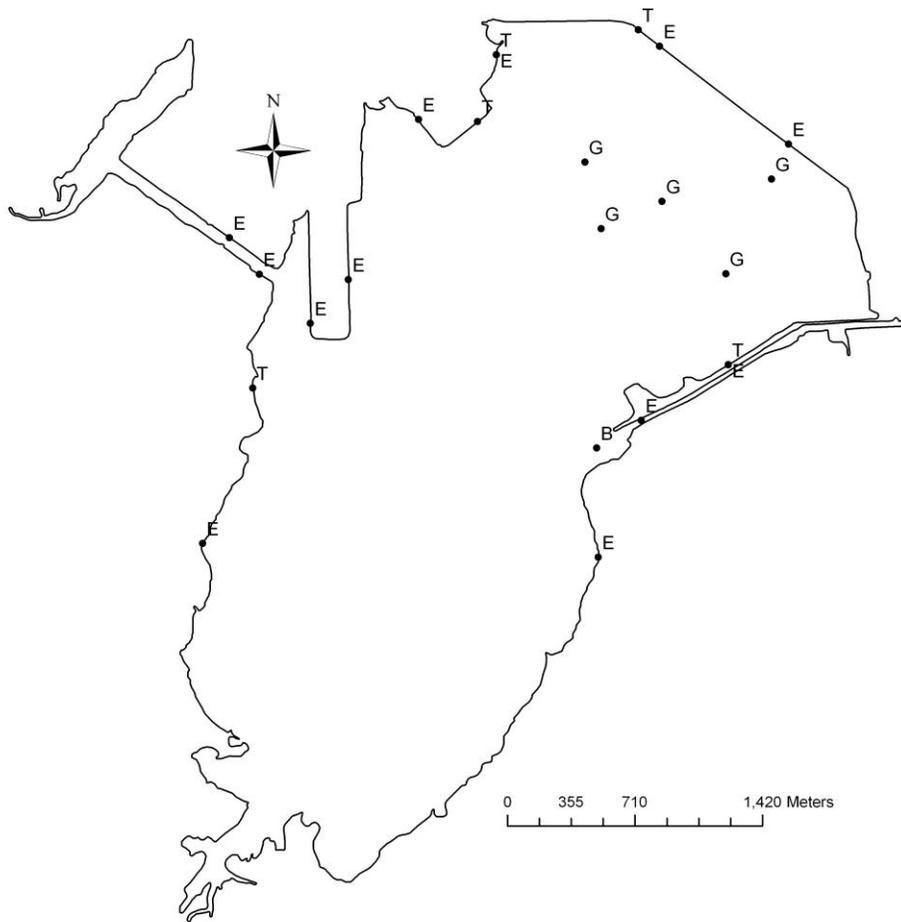
Figure 7. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Mountain Creek Reservoir, Texas, 2004, 2008, and 2012. Vertical line represents length limit at time of sampling.

APPENDIX A

Number (N) and catch rate (CPUE) of species collected from all gear types from Mountain Creek Reservoir, Texas, 2012-2013.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad	135	27.0			151	151.0
Threadfin Shad					210	210.0
Common Carp	20	4.0				
Smallmouth Buffalo	25	5.0				
Channel Catfish	33	6.6				
White Bass	49	9.8				
Bluegill					294	294.0
Longear Sunfish					149	149.0
Largemouth Bass					79	79.0
White Crappie	1	0.2	57	11.4		

APPENDIX B



Location of sampling sites, Mountain Creek Reservoir, Texas, 2012-2013. Trap net, gill net, electrofishing stations, and boat ramps are indicated by T, G, E, and B respectively. Water level was near full pool at time of sampling.

APPENDIX C

Historical catch rates of targeted species by gear type for Mountain Creek Reservoir, Texas.

Gear	Species	Year									Ave	
		1994	1997	2000	2001	2004	2005	2008	2009	2012		2013
Gill Netting (fish/net night)	Channel Catfish	8.6	8.8		4.0		2.2		9.4		6.6	6.6
	White Bass	5.6	1.6		0.4		3.6		24.2		9.8	7.5
Electrofishing (fish/hour)	Gizzard Shad	124.0	201.0	228.0		150.0		201.0		151.0		175.8
	Threadfin Shad	39.3	76.0	20.0		10.0		127.0		210.0		80.3
	Bluegill	88.7	152.0	28.0		77.0		320.0		294.0		160.0
	Longear Sunfish	137.3	67.0	32.0		111.0		228.0		149.0		120.7
	Largemouth Bass	297.0	145.0	131.0		122.0		114.0		79.0		148.0
Trap Netting (fish/net night)	White Crappie	78.0	23.4	68.2		52.0		85.8		11.4		53.1