

PERFORMANCE REPORT

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FEDERAL AID PROJECT F-221-M-1

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2010 Survey Report

**Champion Creek Reservoir**

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## SURVEY AND MANAGEMENT SUMMARY

Fish populations in Champion Creek Reservoir were surveyed in 2010 using electrofishing gear and trap nets, and in 2011 using gill nets. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Champion Creek Reservoir is a 1,560-acre impoundment at conservation pool (2,083 feet above mean sea level) and located 7 miles south of Colorado City in Mitchell County, Texas, in the Colorado River drainage basin. The reservoir is primarily used for recreation. The reservoir was approximately 37 feet below conservation level at the time of sampling, and was at about 16% capacity with a surface area of 440 acres. Habitat features consisted of rocks, natural shoreline, and flooded saltcedar. Access to the reservoir was restricted by a locked entrance gate. Gate keys could be procured for public use by contacting the Colorado City municipal office. There was one usable paved boat ramp, and boats could be launched off the shoreline.
- **Management History:** Important sport fish included largemouth bass, white crappie, catfishes, and white bass. The management of this reservoir has been impacted by chronic low-water levels. A variety of fish species have been stocked in the reservoir including threadfin shad, blue catfish, channel catfish, bluegill, and largemouth bass.
- **Fish Community**
  - **Prey species:** Threadfin shad catch rate was 34.0/h. Electrofishing catch of gizzard shad was high (447.0/h) and 60% were of a suitable size to be available as prey to most sport fish. Electrofishing catch rate of bluegill was low, and most were between 4 to 6 inches.
  - **Catfishes:** Blue catfish were first introduced in 2008 and restocked in 2009. Fish had recruited to harvestable size, but catch rate was low (3.8/nn). Channel catfish exhibited a broad size structure, but catch rate of harvestable-size fish was low (2.9/nn). No flathead catfish were caught in 2011.
  - **White bass:** White bass catch rate was relatively low (2.4/nn). However, most of the fish were of harvestable-size including some larger ones between 14 to 16 inches in length.
  - **Largemouth bass:** Florida largemouth bass were last stocked in 2008 to take advantage of rising water levels and increased habitat. Largemouth bass catch rate was moderate (72.0/h). Size structure had improved with an increase in the number of harvestable fish. Body condition and growth of largemouth bass was adequate.
  - **White crappie:** Abundance of white crappie was moderate (14.2/nn) and size distribution was good; fish up to 14 inches in length were captured. Overall, body condition was good. Average age at 10 inches was 1.0 year.
- **Management Strategies:** Sportfish should continue to be managed with statewide regulations. Conduct electrofishing surveys in 2012 and 2014. Conduct standard gill netting survey in 2015 and additional gill netting in 2013 to complement additional low frequency electrofishing surveys in 2013 and 2015. Conduct access and trap netting surveys in 2014.

## INTRODUCTION

This document is a summary of fisheries data collected from Champion Creek Reservoir in 2010-2011. 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 2010-2011 data for comparison.

### *Reservoir Description*

Champion Creek Reservoir is a 1,560-acre impoundment constructed in 1959. Located in Mitchell County, approximately 7 miles south of Colorado City, the reservoir is operated and controlled by Colorado City and is primarily used for recreation. This reservoir has been severely impacted by drought. Water level declined 35 feet from 1998 to 2003 and then increased by 22 feet by October 2007 before continuing another gradual decline (Figure 1). The reservoir was approximately 37 feet below conservation level at the time of sampling, and was at about 16% capacity with a surface area of 440 acres. Habitat features consisted of rocks, natural shoreline, and flooded saltcedar. Access to the reservoir was restricted by a locked entrance gate. Gate keys could be procured for public use by contacting the Colorado City municipal office. There was one paved boat ramp and boats could also be launched off the shoreline. Other descriptive characteristics for Champion Creek Reservoir are in Table 1.

### *Management History*

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Bonds and Scott 2007) included:

1. Conduct electrofishing survey in 2008 to monitor genetic composition of age-0 largemouth bass.  
**Actions:** Age-1 largemouth bass were collected in 2008 for genetic analysis because age-0 Florida largemouth bass were stocked in 2008.
2. Stock blue catfish at 100/acre in 2008 and 2009.  
**Action:** Fingerling-size blue catfish were stocked at 100/acre in 2008 and 2009.

**Harvest regulation history:** Sportfishes in Champion Creek Reservoir are currently and have historically been managed with statewide regulations (Table 2). One exception was a 16-inch minimum length limit (MLL) imposed on largemouth bass in 1995 to protect a strong year class produced following a 10-foot water rise in 1994. Declining water level following the regulation change negated benefits of the previous water rise and the size limit was rescinded in favor of the statewide 14-inch MLL in 1999 (Dennis and Farquhar 2000).

**Stocking history:** Florida largemouth bass (2008) and blue catfish (2008 and 2009) have been stocked since the last report (Bonds and Scott 2007). The complete stocking history is in Table 3.

**Vegetation/habitat history:** Champion Creek Reservoir has not supported aquatic vegetation due to severe water level fluctuations. In 2007, shoreline habitat consisted mainly of flooded saltcedar, rocks, and natural shoreline (Bonds and Scott 2007).

**Water Transfer:** Champion Creek Reservoir is primarily used for recreation. It was formerly used for auxiliary water supply for the TXU generation plant on Colorado City Reservoir and municipal water supply for Colorado City. The TXU generation plant on Colorado City Reservoir ceased operation circa 2003, ending the need for auxiliary water from Champion Creek Reservoir.

## METHODS

Fish were collected by electrofishing (1 hour at 12, 5-min stations), gill netting (5 net nights at five stations), and trap netting (5 net nights at five 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 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 2009).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), as defined 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). 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. We collected 15 largemouth bass between 13.0 and 14.9 inches to calculate mean age at 14-inch length. We also collected 16 white crappie between 9.0 and 10.9 inches to calculate mean age at 10-inch length. Ages of largemouth bass and white crappie were determined using otoliths. Microsatellite DNA analysis was used to determine largemouth bass genetic composition. Source for water level data was the United States Geological Survey (USGS) website.

## RESULTS AND DISCUSSION

**Habitat:** A habitat survey was last conducted in 2007 (Bonds and Scott 2007). The reservoir supported no aquatic vegetation species. Much of the reservoir's shoreline has been colonized by non-native saltcedar. Other habitat features included rocks and natural shoreline.

**Prey species:** Threadfin shad CPUE was 34.0/h in 2010 and indicated that the species continues to be a viable source of forage for predators. Electrofishing catch rates of gizzard shad and bluegill were 447.0/h and 37.0/h, respectively. Total CPUE of gizzard shad was lower compared to 2008 (606/h), but higher than in 2006 (365/h), and IOV was higher compared to 2008 with 60% being of a suitable size to be available to predators (Figure 2). Total CPUE of bluegill has been low for the last three surveys (36.0/h in 2006, 32.0/h in 2008, and 37.0/h in 2010) with nearly all of the fish between 4 to 6 inches in length (Figure 3). Bluegill size structure (as described by PSD) has steadily improved since 2006 (Figure 3).

**Blue Catfish:** Blue catfish were introduced via stockings in 2008 and 2009. The gill net catch rate in 2011 was 3.8/nn with fish up to 13 inches in length (Figure 4).

**Channel catfish:** The gill net catch rate (3.6/nn) of channel catfish in 2011 was lower compared to 2007 (5.8/nn) (Figure 5), although size range (8 to 23 inches) was similar. Relative weight values were generally above 90.

**Flathead catfish:** No flathead catfish were caught in 2011 whereas they were present in low numbers (1.0/nn) in 2007.

**White bass:** The gill net catch rate of white bass was 2.4/nn in 2011 which was higher than in 2007 (0.4/nn) (Figure 6). Low reservoir inflow during the drought years from 2000 to 2007 may have limited white bass production in this reservoir (Bonds and Scott 2007). Figure 6 shows that by 2011 there had been some reproduction along with an initial corresponding increase in water level (Figure 1). White bass up to 16 inches in length were captured. No fish of the appropriate size were collected to determine average age at 10-inch length.

**Largemouth bass:** The electrofishing catch rate of stock-length largemouth bass was 52.0/h in 2010, representing a slight increase since 2008 (39.0/h) and 2006 (23.0/h) (Figure 7). Electrofishing catch rate of fish greater than 14 inches was much higher in 2010 (15.0/h) than in 2008 (2.0/h) and 2006 (6.0/h). Size structure had improved over recent years (PSD = 50, PSD-P = 12, PSD-M = 2). Growth of largemouth bass was adequate. Average age at 14 inches was 2.7 years (N = 15, range = 1 – 3 years). Body condition was adequate in 2010 (mean  $W_r$  = 88.4, range = 71.0 – 105.0) as was the case in 2008 (mean  $W_r$  = 85.4, range = 79.0 – 97.0) and 2006 (mean  $W_r$  = 89.7, range = 81.0 – 96.0). Florida largemouth bass influence (Table 4) was evidenced by percent Florida alleles (45.0) and Florida genotype was 0% in 2008.

**White crappie:** The trap net catch rate of white crappie was 14.2/nn in 2010, much lower than in 2006 (51.8/nn) (Figure 8). Average age at 10 inches was 1.0 year (N = 16, all were age-1) in 2010, indicating fast growth. Body condition was good (mean  $W_r$  = 93.3, range = 88.0 – 101.0).

### Fisheries management plan for Champion Creek Reservoir, Texas

Prepared – July 2011.

**ISSUE 1:** Blue catfish were introduced in the reservoir in 2008 and 2009 and appear to be establishing themselves. However, gill netting alone may not be adequate to monitor the development of the population for future management decisions.

#### MANAGEMENT STRATEGY

1. Conduct low frequency electrofishing surveys and consider using other sampling techniques as appropriate.

**ISSUE 2:** 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 the controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate marina owners about invasive species, and provide them with posters, literature, etc... so that they can in turn educate their customers.
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:**

The proposed sampling schedule includes electrofishing in 2012 and mandatory monitoring in 2014/2015 (Table 5). The 2012 electrofishing survey is necessary to collect largemouth bass growth and body condition information. Trap net surveys are only necessary every four years to monitor the white crappie population. Additional gill netting in 2013 will complement additional low frequency electrofishing in 2013 and 2015 to better gauge the blue catfish population.

**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, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Bonds, C. C., and M. K. Scott. 2007. Statewide freshwater fisheries monitoring and management program survey report for Champion Creek Reservoir, 2006. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
- Dennis, J., and B. Farquhar. 2000. Statewide freshwater fisheries monitoring and management program survey report for Champion Creek Reservoir, 1999. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
- DiCenzo, V. J., M. J. Maceina, and M. R. Stimert. 1996. Relations between reservoir trophic state and gizzard shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.
- 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.

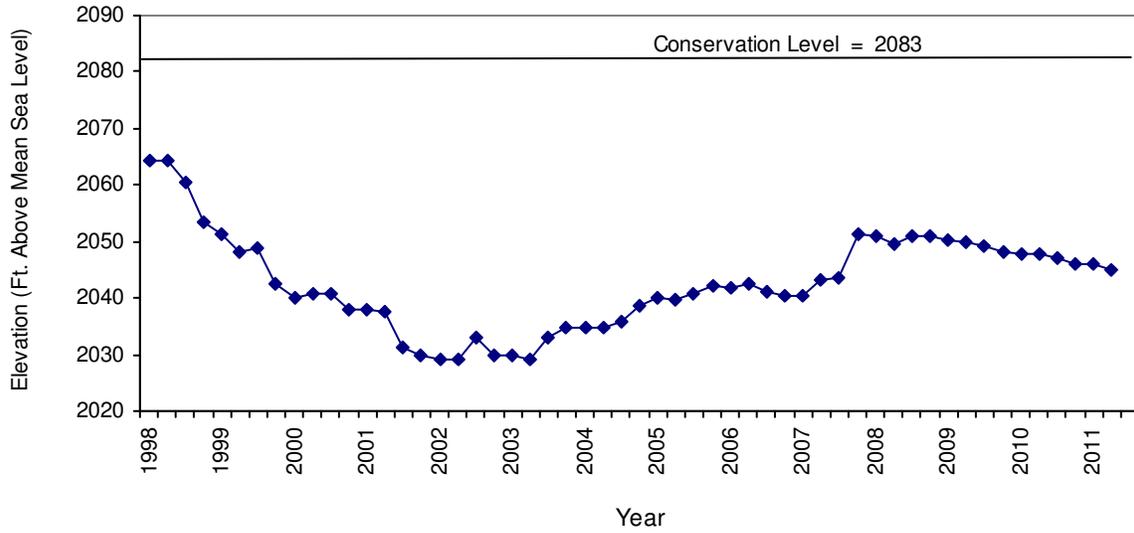


Figure 1. Quarterly water level elevations in feet above mean sea level recorded for Champion Creek Reservoir, Texas (1998-2011).

Table 1. Characteristics of Champion Creek Reservoir, Texas.

| Characteristic              | Description         |
|-----------------------------|---------------------|
| Year constructed            | 1959                |
| Controlling authority       | Colorado City       |
| County                      | Mitchell            |
| Reservoir type              | Main stream         |
| Shoreline Development Index | 5.37                |
| Conductivity                | 1,400 $\mu$ mhos/cm |

Table 2. Harvest regulations for Champion Creek Reservoir, Texas.

| Species   | Bag Limit                  | Minimum-Maximum Length (inches) |
|---|----------------------------|---------------------------------|
| Catfish: channel and blue catfish, their hybrids and subspecies | 25<br>(in any combination) | 12 - No Limit                   |
| Catfish, flathead   | 5                          | 18 - No Limit                   |
| Bass, white   | 25                         | 10 - No Limit                   |
| Bass: largemouth  | 5                          | 14 - No Limit                   |
| Crappie: white and black crappie, their hybrids and subspecies  | 25<br>(in any combination) | 10 - No Limit                   |

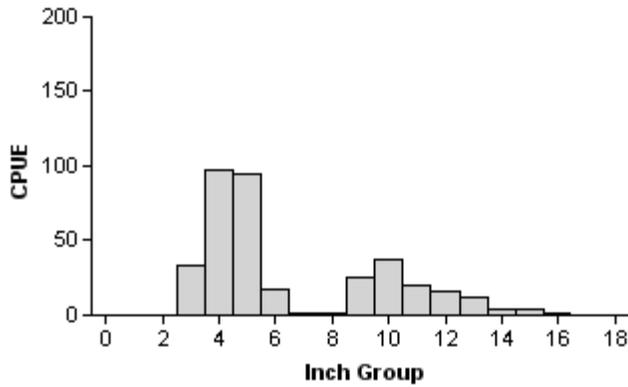
Table 3. Stocking history of Champion Creek Reservoir, Texas. Size categories are: FGL = 1-3 inches; UNK = Unknown.

| Species                             | Year    | Number  | Size |
|-------------------------------------|---------|---------|------|
| Threadfin shad                      | 1982    | 2,000   | UNK  |
|                                     | 1984    | 8,500   | UNK  |
| Blue catfish                        | 2008    | 59,353  | FGL  |
|                                     | 2009    | 56,000  | FGL  |
|                                     | Total   | 115,353 |      |
| Channel catfish                     | 1967    | 10,000  | UNK  |
|                                     | 1968    | 35,000  | UNK  |
|                                     | 1969    | 26,400  | UNK  |
|                                     | 1970    | 20,600  | UNK  |
|                                     | 1971    | 28,355  | UNK  |
|                                     | 1973    | 5,000   | UNK  |
|                                     | 1974    | 15,000  | UNK  |
|                                     | 1980    | 48,780  | UNK  |
|                                     | 1981    | 71,239  | UNK  |
|                                     | 1987    | 164,799 | FGL  |
|                                     | 2005    | 35,702  | FGL  |
| Total                               | 460,875 |         |      |
| Bluegill                            | 2007    | 105,882 | FGL  |
| Largemouth bass                     | 1970    | 39,000  | UNK  |
|                                     | 1971    | 5,194   | UNK  |
|                                     | Total   | 44,194  |      |
| Florida largemouth bass             | 1981    | 75,000  | FGL  |
|                                     | 1987    | 24,049  | FGL  |
|                                     | 1996    | 158,779 | FGL  |
|                                     | 1999    | 77,030  | FGL  |
|                                     | 2005    | 35,770  | FGL  |
|                                     | 2008    | 60,180  | FGL  |
| Total                               | 430,808 |         |      |
| Green sunfish X redear sunfish      | 1980    | 17,326  | UNK  |
| Coppernose bluegill X green sunfish | 1981    | 133,701 | UNK  |
| Other sunfishes                     | 1980    | 2,700   | UNK  |

## Gizzard Shad

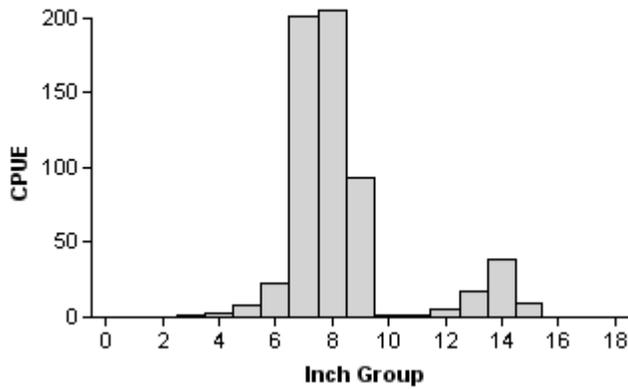
2006

Effort = 1.0  
 Total CPUE = 365.0 (18; 365)  
 IOV = 67 (7)



2008

Effort = 1.0  
 Total CPUE = 606.0 (15; 606)  
 IOV = 39 (6)



2010

Effort = 1.0  
 Total CPUE = 447.0 (15; 447)  
 IOV = 60 (8)

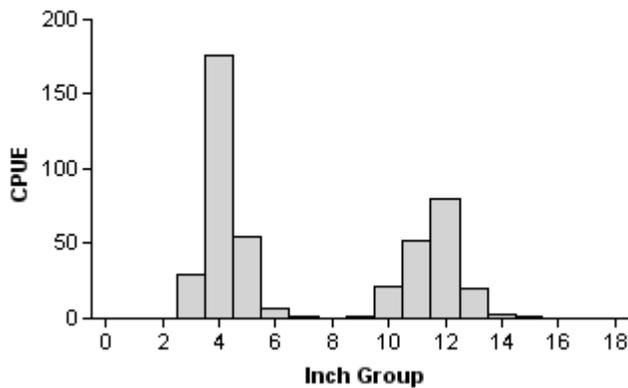
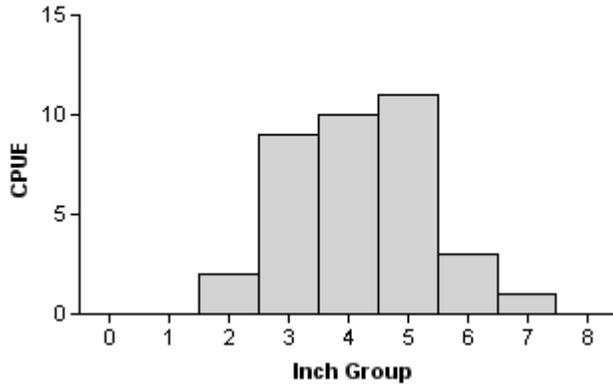


Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Champion Creek Reservoir, Texas, 2006, 2008, and 2010.

# Bluegill

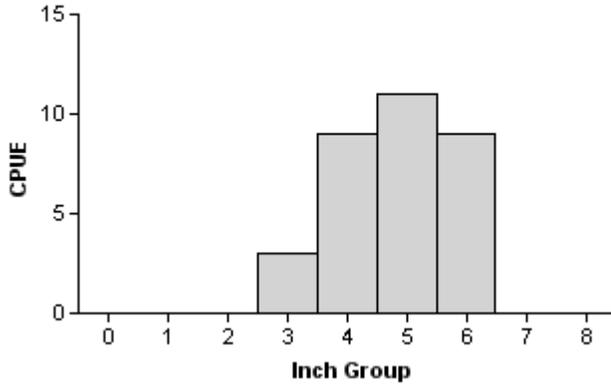
**2006**

Effort = 1.0  
 Total CPUE = 36.0 (31; 36)  
 PSD = 12 (6)



**2008**

Effort = 1.0  
 Total CPUE = 32.0 (36; 32)  
 PSD = 28 (14)



**2010**

Effort = 1.0  
 Total CPUE = 37.0 (29; 37)  
 PSD = 38 (10)

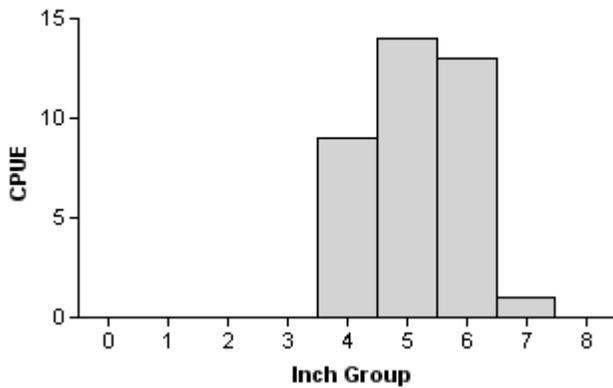
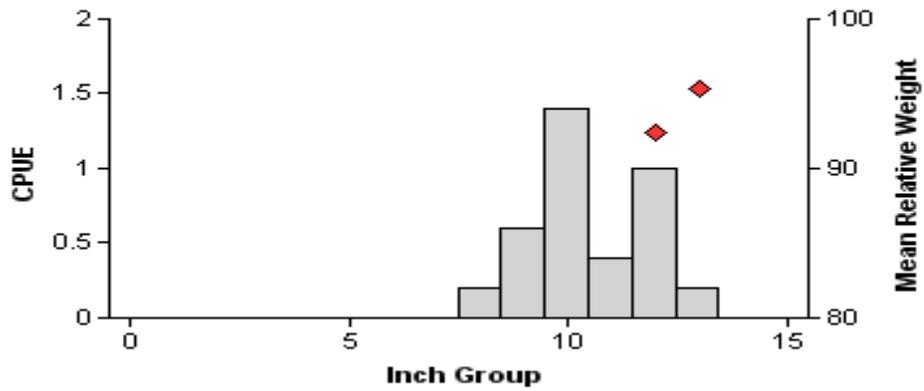


Figure 3. Number of bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Champion Creek Reservoir, Texas, 2006, 2008, and 2010.

## Blue Catfish 2011



Effort = 5.0  
 Total CPUE = 3.8 (68; 19)  
 Stock CPUE = 1.2 (61; 6)  
 CPUE-12 = 1.2 (61; 6)

Figure 4. Number of blue catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE are in parentheses) for spring gill net surveys, Champion Creek Reservoir, Texas, 2011. Blue catfish were introduced in the reservoir via stockings in 2008 and 2009.

## Channel Catfish

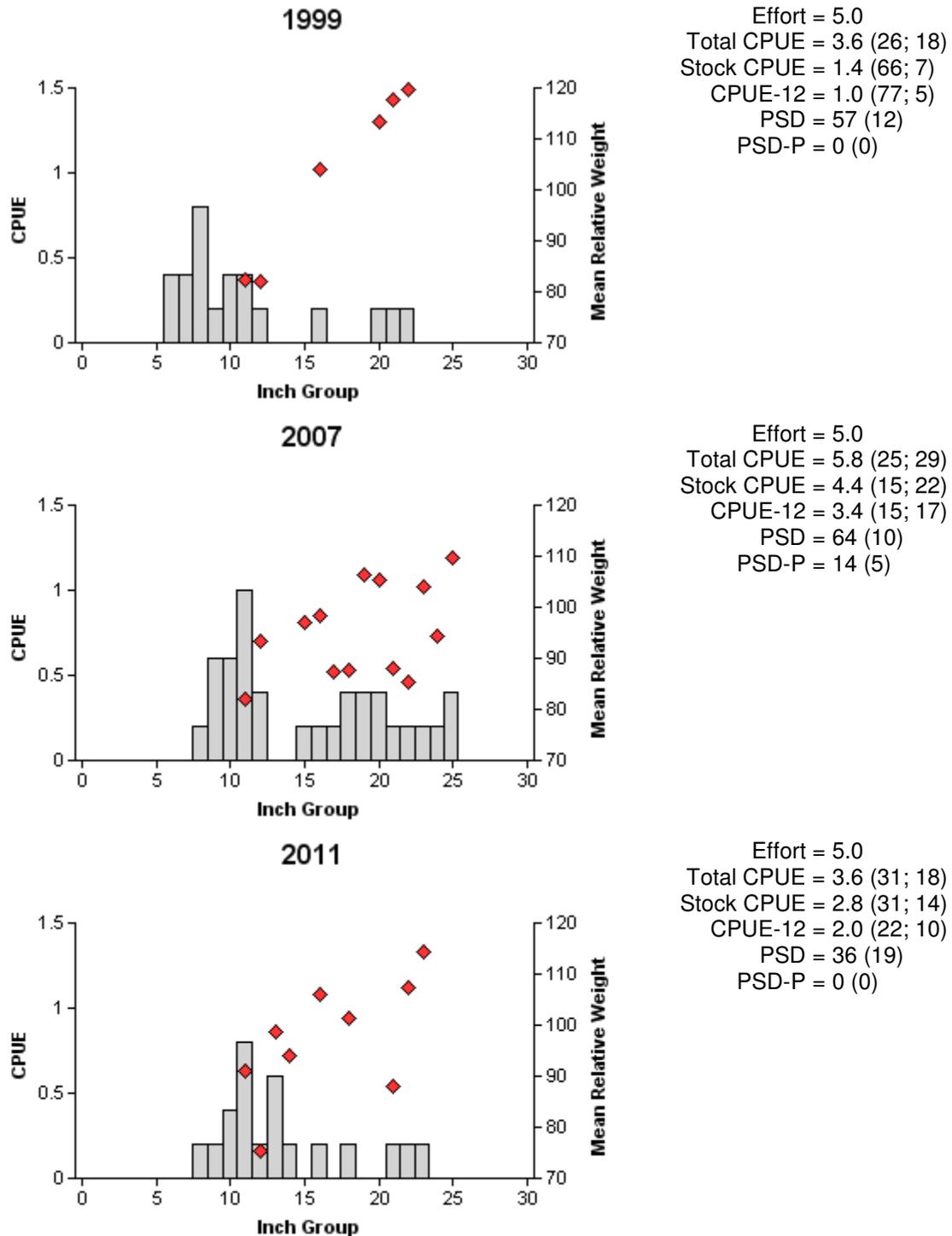


Figure 5. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Champion Creek Reservoir, Texas, 1999, 2007, and 2011. There was no sampling between 2000 and 2006 due to extremely low water levels preventing access.

## White Bass

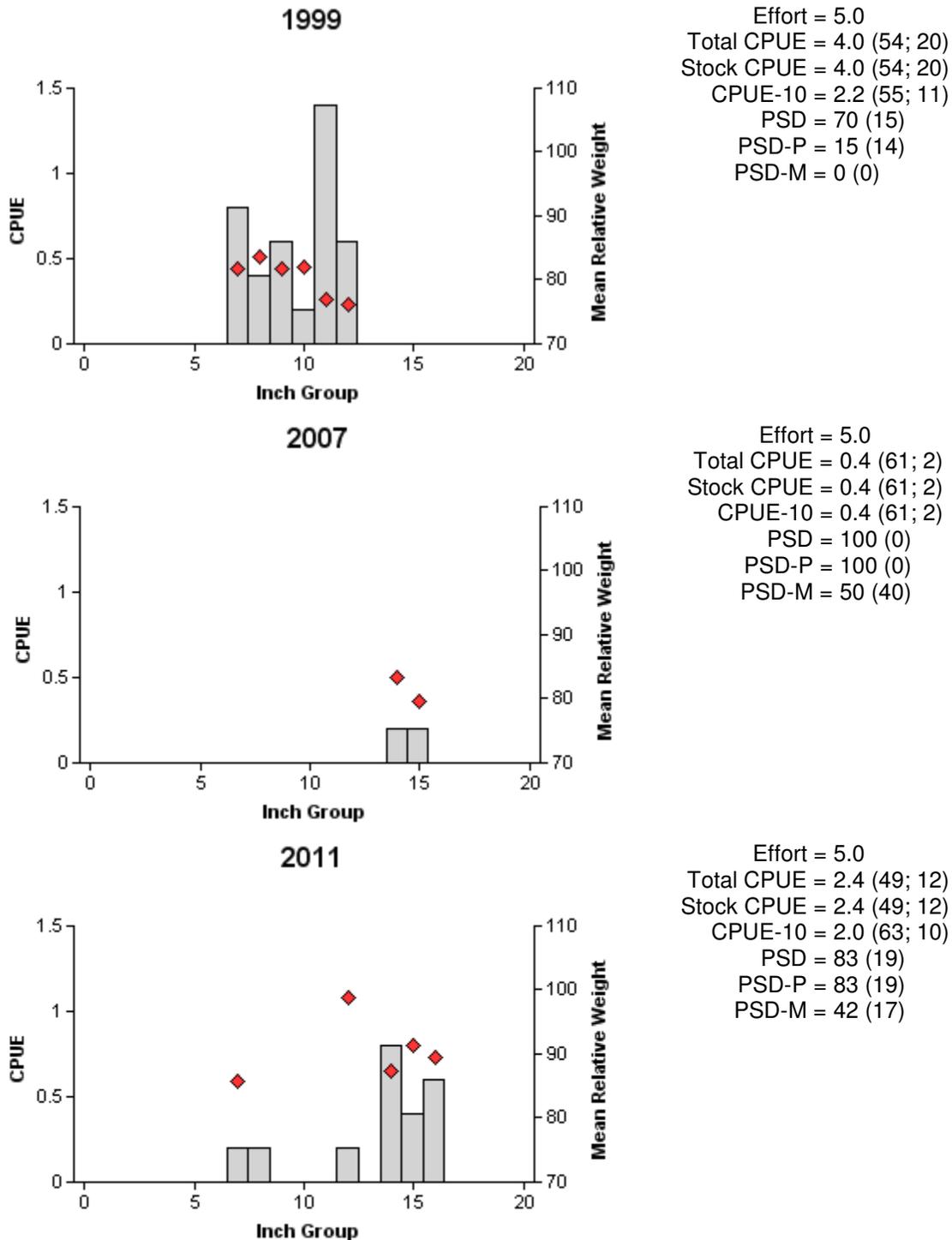


Figure 6. Number of white bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Champion Creek Reservoir, Texas, 1999, 2007, and 2011. There was no sampling between 2000 and 2006 due to extremely low water levels which prevented boat access.

## Largemouth Bass

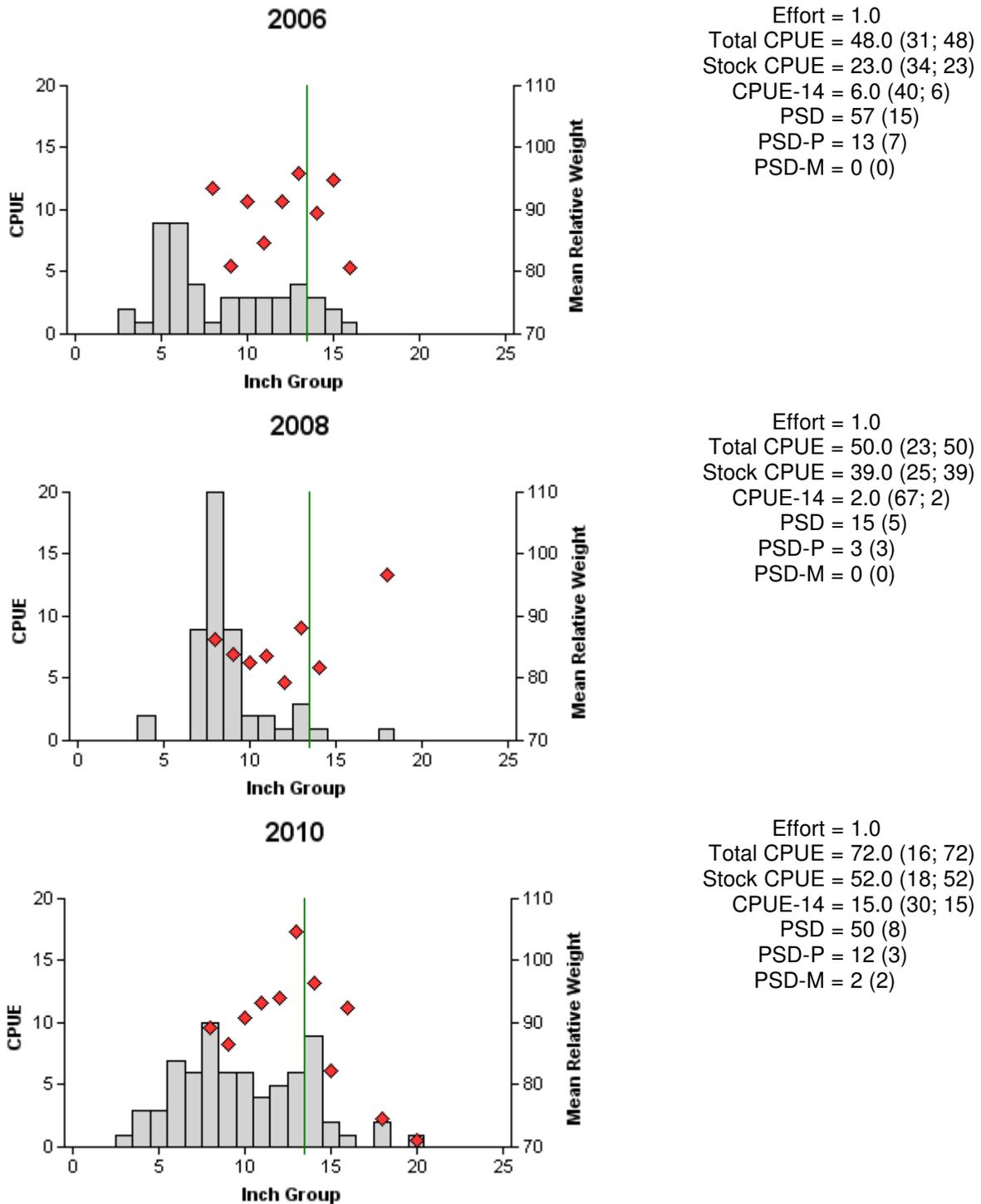


Figure 7. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Champion Creek Reservoir, Texas, 2006, 2008, and 2010. Vertical line represents the minimum length limit for harvestable-size fish.

Table 4. Results of genetic analysis of largemouth bass collected by fall electrofishing, Champion Creek Reservoir, Texas, 1999, 2006, and 2008. FLMB = Florida largemouth bass, NLMB = Northern largemouth bass, FxN = first or higher generation hybrid between a FLMB and a NLMB. Microsatellite DNA analysis was used to determine largemouth bass genetic composition in 2006 and 2008. In 1999 genetic analysis was done by electrophoresis.

| Year | Sample size | Genotype |            |      | % FLMB alleles | % pure FLMB |
|------|-------------|----------|------------|------|----------------|-------------|
|      |             | FLMB     | FxN Hybrid | NLMB |                |             |
| 1999 | 31          | 4        | 23         | 4    | 51.6           | 12.9        |
| 2006 | 37          | 0        | 28         | 9    | 26.5           | 0.0         |
| 2008 | 38          | 0        | 38         | 0    | 45.0           | 0.0         |

# White Crappie

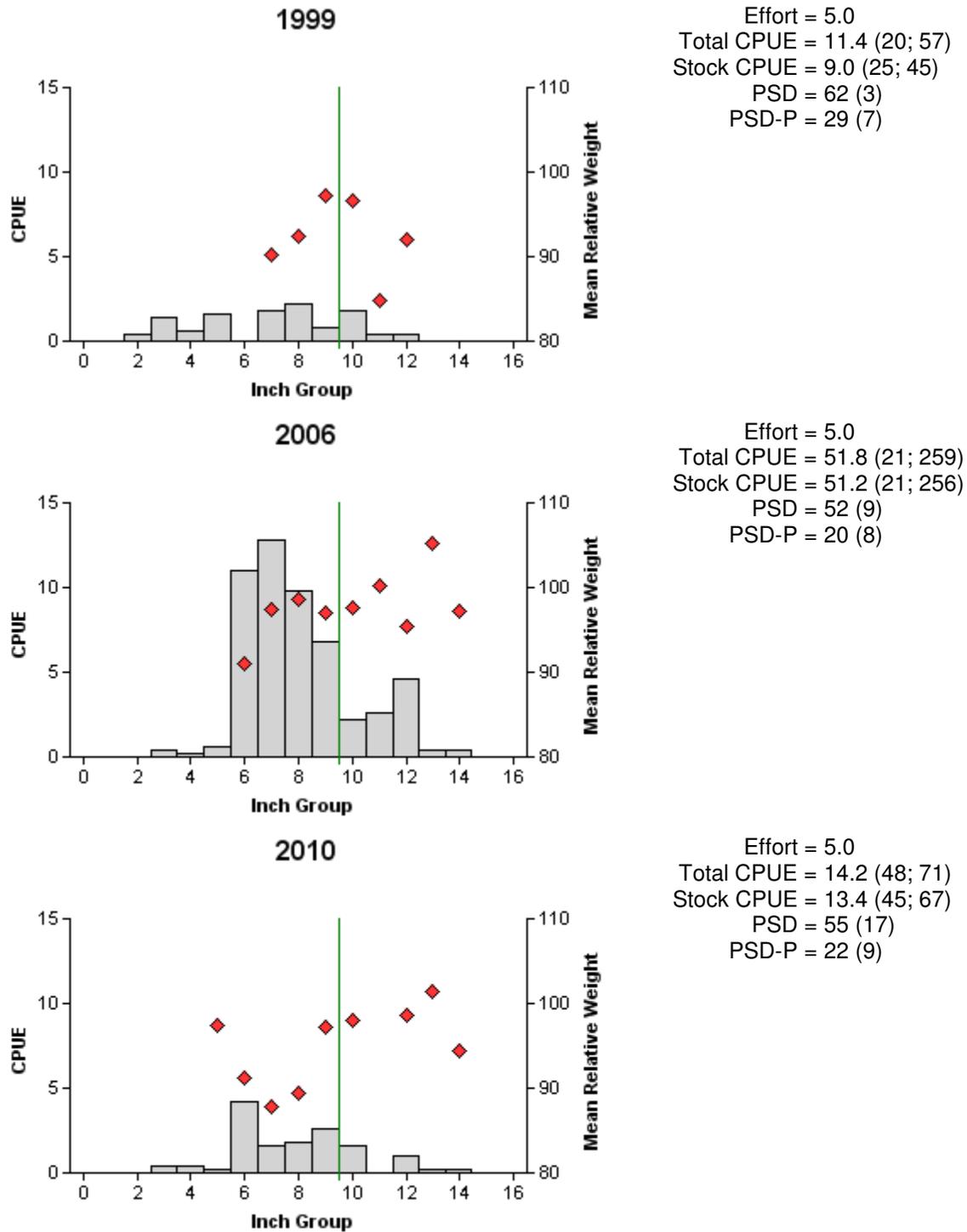


Figure 8. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Champion Creek Reservoir, Texas, 1999, 2006, and 2010. Vertical line represents the minimum length limit for harvestable-size fish.

Table 5. Proposed sampling schedule for Champion Creek Reservoir, Texas. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Low frequency (LF) electrofishing is conducted in summer. Standard surveys denoted by S and additional surveys denoted by A.

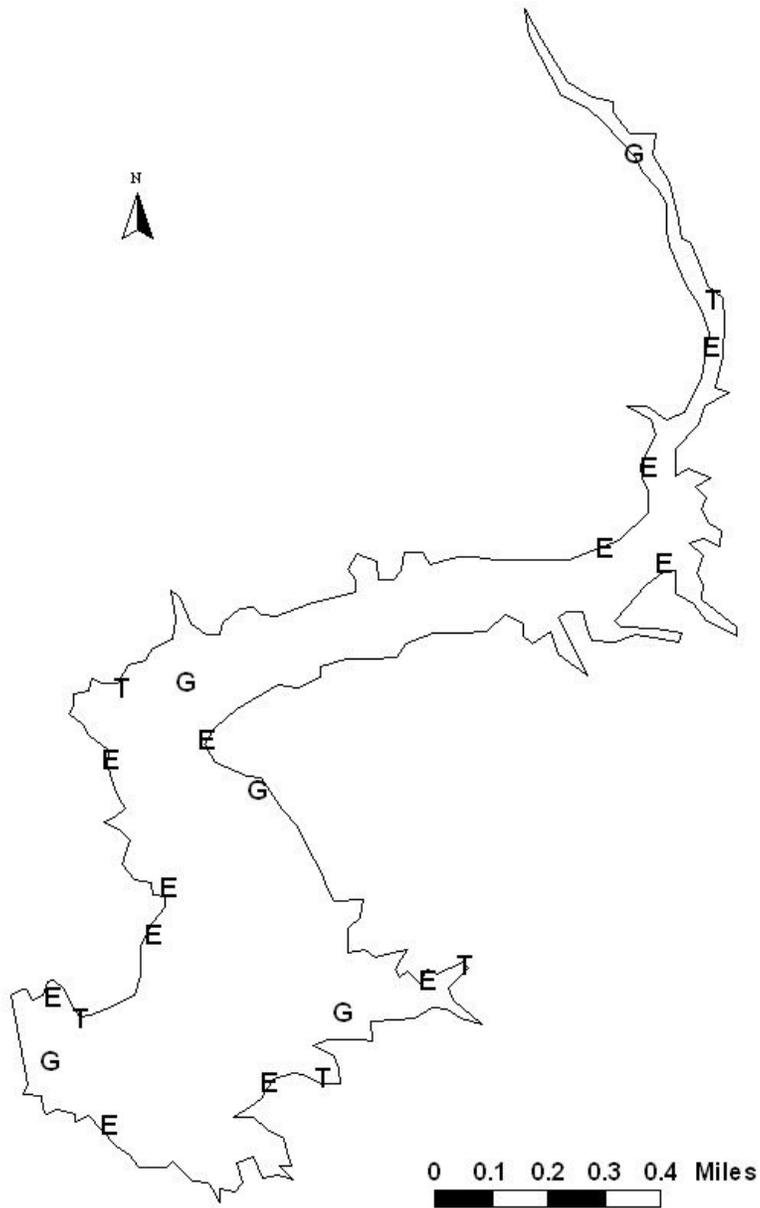
| Survey Year           | Electro-fisher | Trap Net | Gill Net | LF Electro-fisher | Vegetation Survey | Access Survey | Report |
|-----------------------|----------------|----------|----------|-------------------|-------------------|---------------|--------|
| Fall 2011-Summer 2012 |                |          |          |                   |                   |               |        |
| Fall 2012-Summer 2013 | A              |          | A        | A                 |                   |               |        |
| Fall 2013-Summer 2014 |                |          |          |                   |                   |               |        |
| Fall 2014-Summer 2015 | S              | S        | S        | A                 | S                 | S             | S      |

#### APPENDIX A

Number (N) and catch rate (CPUE) of all species collected by all gear types from Champion Creek Reservoir, Texas, 2010-2011.

| Species          | Gill Netting |      | Trap Netting |      | Electrofishing |       |
|------------------|--------------|------|--------------|------|----------------|-------|
|                  | N            | CPUE | N            | CPUE | N              | CPUE  |
| Gizzard shad     | 50           | 10.0 |              |      | 447            | 447.0 |
| Threadfin shad   |              |      | 2            | 0.4  | 34             | 34.0  |
| Common carp      | 5            | 1.0  |              |      |                |       |
| River carpsucker | 41           | 8.2  |              |      |                |       |
| Blue catfish     | 19           | 3.8  |              |      |                |       |
| Channel catfish  | 18           | 3.6  |              |      |                |       |
| White bass       | 12           | 2.4  |              |      |                |       |
| Warmouth         |              |      |              |      | 1              | 1.0   |
| Bluegill         |              |      | 26           | 5.2  | 37             | 37.0  |
| Longear sunfish  |              |      | 6            | 1.2  | 2              | 2.0   |
| Largemouth bass  | 1            | 0.2  |              |      | 72             | 72.0  |
| White crappie    | 3            | 0.6  | 71           | 14.2 |                |       |

## APPENDIX B



Location of sampling sites, Champion Creek Reservoir, Texas, 2010-2011. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level was approximately 37 feet below conservation pool at time of sampling and reservoir surface area was 28.2% (440 acres) of that at conservation level.