

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-31

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2005 Survey Report

Benbrook Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Benbrook Reservoir were surveyed in 2003 with electrofishing, 2005 using trap nets, and in 2006 using gill nets. Low water levels precluded a standard fall electrofishing sample from being conducted in 2005. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Benbrook Reservoir is a 3,635-acre impoundment located on the Clear Fork of the Trinity River approximately 10 miles southwest of Fort Worth. Water level was at a historic low elevation of 14 feet below conservation pool during the winter of 2005. Rains in early 2006 brought water levels back within 2 feet of conservation pool (694 ft). Benbrook Reservoir has consistently been eutrophic. Habitat consisted of standing timber and rocks.
- **Management history:** Important sport fish included white bass, palmetto bass, largemouth bass, white crappie, and catfish. The management plan from the 2001 survey report included stocking palmetto bass at 10 fish/acre annually. Largemouth bass have historically been managed with state-wide minimum length limit of 14 inches. Florida largemouth bass were introduced in the mid-to-late 1970s and stocked again in 2002. Florida largemouth bass were requested for stocking in spring of 2006 as significant water level increases occurred. Blue catfish were stocked in 1990 and 1991 to capitalize on the abundant prey base. Recent efforts to improve the fish habitat and angler success have included construction of brush-piles in various locations.
- **Fish Community**
 - **Prey species:** Threadfin shad continued to be abundant. Electrofishing catch of gizzard shad was high. Electrofishing catch of bluegills was high, but few were over 6 inches long. Longear sunfish were also abundant in the reservoir.
 - **Catfishes:** The channel catfish population continued to have few fish available for anglers. Blue catfish were more abundant in Benbrook Reservoir than in any previous sample.
 - **Temperate basses:** White bass, yellow bass, and palmetto bass were present. White bass were collected at a lower rate than in previous years. Yellow bass, which may have been introduced through a pipeline connecting Cedar Creek Reservoir to Benbrook Reservoir, were collected in gill nets for the first time. Palmetto bass abundance increased significantly from the previous two surveys.
 - **Largemouth bass:** Largemouth bass were sampled in relatively low abundance. Size structure was dominated by fish under 14 inches. Largemouth bass body condition (relative weight) was good.
 - **White crappie:** Size and body condition of white crappie continued to be good, but abundance was down from previous years. Most crappie reached legal size (10 inches) within two years.
- **Management Strategies:** Stock palmetto bass at a rate of 10 fish/acre annually. Stock Florida largemouth bass in 2006 and 2007 as significant increases in water levels occur. Conduct general sport fish monitoring with trap nets, gill nets, and electrofishing surveys in 2007-2009. Continue habitat improvements through vegetation plantings with water willow and with brush pile construction.

INTRODUCTION

This document is a summary of fisheries data collected from Benbrook Reservoir in 2003 and 2005-2006. 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 2005-2006 data for comparison.

Reservoir Description

Benbrook Reservoir is a 3,635-acre impoundment constructed in 1952 on the Clear Fork of the Trinity River. It is located in Tarrant County approximately 10 miles southwest of Fort Worth and is operated and controlled by the United States Army Corps of Engineers. Primary water uses included municipal water supply (controlled by Tarrant Regional Water District [TRWD]) and recreation. Benbrook Reservoir is eutrophic with a mean TSI chl-*a* of 54.31, which was unchanged from previous samples (Texas Commission on Environmental Quality 2005). The primary habitat at time of sampling consisted of rocks and standing timber. No aquatic vegetation was observed during the habitat survey. Water level has been varied and unstable since 1999, and in 2005 the water level was approximately 14 feet below conservation pool (Figure 1). TRWD began drawing more water from Benbrook Reservoir (Clear Fork) for municipal uses beginning in 2005 to reduce the demand on the West Fork of the Trinity River Reservoirs (e.g., Bridgeport, Eagle Mountain, and Worth). Boat access consisted of 16 public boat ramps among six public parks. Bank fishing access was available in Holiday Park, Mustang Park, Rocky Creek Park, and Longhorn Park. Other descriptive characteristics for Benbrook Reservoir are in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Brock 2002) included:

1. Maintain a quality palmetto bass fishery through annual stocking.

Action: Palmetto bass have been stocked annually at a rate of 10 fish/acre since the early 1990s, except in 2000 and 2001 due to golden alga toxins at TPWD fish hatcheries. Subsequent gill netting surveys have indicated these stockings have been successful. An annual creel survey in 2001 revealed 12% of anglers were seeking palmetto bass.

Harvest regulation history: Sport fishes in Benbrook Reservoir are currently managed with statewide harvest regulations (Table 2).

Stocking history: Benbrook Reservoir has been stocked periodically since the early 1990's and annually since 2002 with palmetto bass. Threadfin shad were introduced in 1984, blue catfish in 1990, and Florida largemouth bass in 1974; these species were still present in the reservoir. The complete stocking history is in Table 3.

Vegetation/habitat history: No aquatic vegetation was found in Benbrook Reservoir during the 2005 habitat survey. Historically, native emergent aquatic vegetation (cattail and water willow) was present (Brock 2002). Drastic water level fluctuations since 1999-2000 are likely to blame for the disappearance.

METHODS

Fishes were collected by electrofishing (1 hour 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/h) of actual electrofishing and, for gill and trap nets, as the number of fish per net night (fish/nn). Due to excessively low water levels during the fall of 2005,

electrofishing could not be conducted at Benbrook Reservoir because access was not available. Effort during 2004 gill netting was only 4 net nights as one net was struck by a boat. All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2002).

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 ($RSE = 100 \times SE \text{ of the estimate/estimate}$) was calculated for all CPUE statistics and SE was calculated for structural indices and IOV. Ages were determined using otoliths. Source for water level data was the United States Geological Survey website.

RESULTS AND DISCUSSION

Habitat: Littoral zone habitat consisted primarily of rocks and standing timber (Table 4). Large water level fluctuations beginning in 1999 have been detrimental to the littoral habitat in Benbrook Reservoir. Native emergent vegetation (cattail and water willow) was present prior to drastic water level fluctuations.

Prey species: Electrofishing catch rates of bluegill and gizzard shad were 253.0/h and 192.0/h, respectively in 2003. Electrofishing catch rates of longear sunfish and threadfin shad were 151.0/h and 464.0/h, respectively. Index of vulnerability (IOV) for gizzard shad was good, indicating that 71% of gizzard shad were available to existing predators; this was similar to IOV estimates in previous years (Figure 2). Total CPUE of gizzard shad was lower in 2003 compared to the 2001 and 1999 surveys (Figure 2). Total CPUE of bluegill in 2003 was higher than total CPUE from surveys in 1999 and 2001, and size structure continued to be dominated by individuals below 5 inches (Figure 3). Longear sunfish total CPUE was higher in 2003 than the two previous surveys (Figure 4). Threadfin shad CPUE nearly doubled in 2003 as compared with 1999 and 2001. Benbrook Reservoir continued to support an excellent forage base.

Catfishes: Flathead catfish are present in the reservoir although none were sampled in 2005-2006. The gill net catch rate of blue catfish was 3.8/nn in 2006 (Figure 5). This CPUE is the highest on record since Benbrook Reservoir was stocked in the early 1990s. Relative weights of blue catfish were good and ranged between 90 and 105 in 2006. In addition to many legal sized blue catfish, several small individuals were collected indicating natural reproduction. Total CPUE of channel catfish was 3.4/nn in 2006, which is lower than the 2004 survey (Figure 6). Relative weights of stock-size (11 inches) channel catfish remained near 85.

White bass: The gill net catch rate of white bass was 3.0/nn in 2006. Catch rates indicated that white bass continued to be present in the reservoir (Figure 7). White bass CPUE was down from the 2002 and 2004 surveys. All fish collected in 2006 were legal for harvest, but relative weights were below 90.

Palmetto bass: The gill net catch rate of palmetto bass was a historic high 8.4/nn in 2006, up from 1.8/nn in 2004 and 2.4/nn in 2002. Size structure in 2006 was good, with multiple year classes present (Figure 8). Growth of palmetto bass was good, with fish reaching 18-inches by age 3 (Figure 9).

Largemouth bass: Because of low water level, electrofishing could not be conducted in 2005. The electrofishing catch rate of stock-length largemouth bass was 36/h in 2003, similar to the 39/h in 2001. Catch rate of largemouth bass over 14 inches remained low, with only 3 individuals observed during the 2003 survey. Size structure was poor as PSD has remained low since 1999 (>35 ; Figure 10). Body condition in 2003 was varied, but adequate (relative weights between 90 and 100) for nearly all size classes of fish and was similar to body condition in previous surveys (Figure 10). Low catch rate of largemouth over 14 inches may have been caused by low water at time of sampling. Florida largemouth bass influence has remained relatively constant as Florida alleles have ranged from 48.3 to 52.6% and the

pure Florida genotype has ranged from 10.0 to 19.2% (Table 5).

White crappie: The trap net catch rate of white crappie was 2.0/nn in 2005, slightly lower than in 1999 (2.6/nn) and much lower than in 2001 (8.6/nn). The PSD was 90 which was similar to the PSD in 2001 and much higher than the PSD in 1999 (Figure 11). Mean relative weight was over 90 for all size classes in 2005.

Fisheries management plan for Benbrook Reservoir, Texas

Prepared – July 2006.

ISSUE 1: Palmetto bass continue to provide a quality fishery in Benbrook Reservoir.

MANAGEMENT STRATEGIES

1. Stock fingerling palmetto bass (10/acre) annually based upon actual surface area.
2. Conduct gill net surveys every other year to monitor growth, relative abundance, and condition of palmetto bass.

ISSUE 2: With water levels rising to full pool level in 2006, re-flooded habitat will be available to sport fishes. The length of time Benbrook Reservoir was very low allowed terrestrial vegetation to grow, and inundation created new cover for largemouth bass.

MANAGEMENT STRATEGY

1. Stocking fingerling Florida largemouth bass at a rate of 25/acre when water level rises and new habitat is inundated.

ISSUE 3: Recently, the Tarrant Regional Water District (TRWD) has modified their routine of drinking water distribution resulting in drastic water level fluctuations at Benbrook Reservoir. Drought conditions have amplified the effects of the water level fluctuations due to municipal water use. In the winter of 2005, the water level reached a historic low of 14 feet below conservation pool. The potential detrimental impact on habitat with these water level fluctuations is great. Collaboration among TRWD, U.S Army Corps of Engineers, and TPWD to enhance aquatic habitat (brush-pile construction) during low water levels was successful.

MANAGEMENT STRATEGIES

1. Continue enhancement efforts in cooperation with other controlling authorities when water levels become conducive to brush pile placement on dry lakebed.
2. Plant water willow along shoreline areas.
3. Collaborate with conservation organizations (i.e., Bass Anglers Sportsman's Society and local bass clubs) when possible to assist with habitat enhancement projects.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes additional electrofishing in 2006, gill netting in spring of 2008, and standard monitoring in 2009/2010 (Table 6). Additional electrofishing in 2006 is necessary to make up for the missed 2005 survey due to low water level. Gill net surveys will be conducted every other year to monitor the palmetto bass fishery.

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- Brock, R. 2002. Statewide freshwater fisheries monitoring and management program survey report for Benbrook Reservoir, 2001. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
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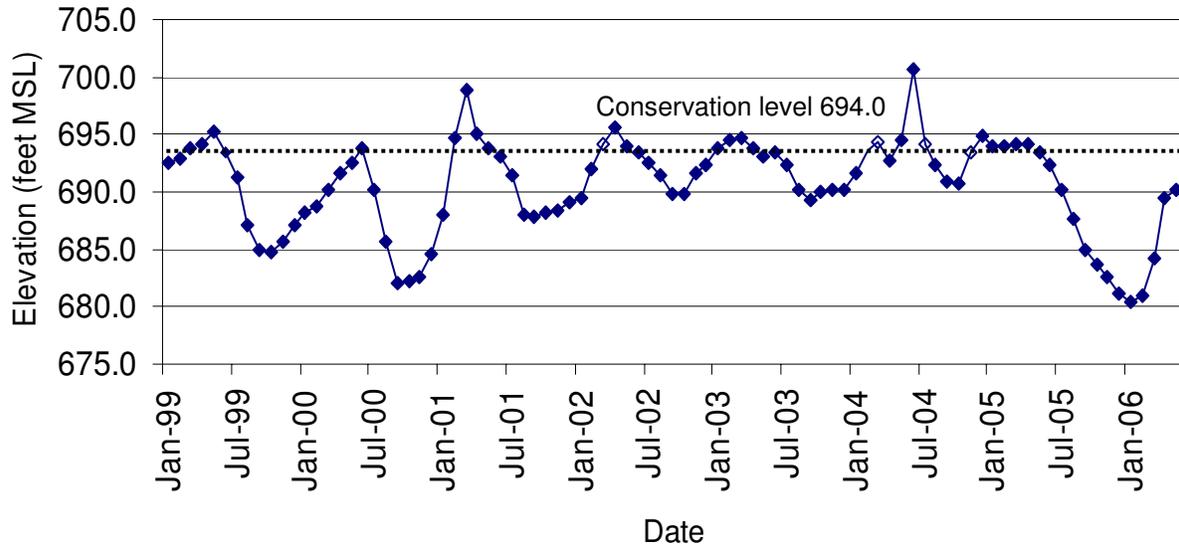


Figure 1. Mean monthly water level elevations in feet above mean sea level (MSL) recorded for Benbrook Reservoir, Texas.

Table 1. Characteristics of Benbrook Reservoir, Texas.

| Characteristic | Description |
|-----------------------------------|------------------------------|
| Year Constructed | 1952 |
| Controlling authority | U.S. Army Corps of Engineers |
| Counties | Tarrant |
| Reservoir type | Mainstream |
| Shoreline Development Index (SDI) | Unknown |
| Conductivity | 230 umhos/cm |

Table 2. Harvest regulations for Benbrook Reservoir, Texas.

| 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, Palmetto | 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 Benbrook Reservoir, Texas. Size categories are: FRY =<1 inch; FGL = 1-3 inches; and ADL = adults. Blanks indicate size category information was unavailable.

| Species | Year | Number | Size |
|-------------------------|--------------|---------|------|
| Threadfin shad | 1984 | 1,000 | ADL |
| Blue catfish | 1990 | 38,246 | FGL |
| | 1991 | 37,446 | FGL |
| | <u>Total</u> | 75,692 | |
| Channel catfish | 1970 | 15,000 | |
| | 1972 | 9,374 | |
| | <u>Total</u> | 24,374 | |
| Palmetto bass | 1978 | 19,980 | |
| | 1979 | 38,190 | |
| | 1982 | 30,000 | |
| | 1991 | 59,600 | FRY |
| | 1992 | 30,126 | FGL |
| | 1994 | 57,133 | FGL |
| | 1995 | 97,887 | FGL |
| | 1996 | 59,212 | FGL |
| | 1997 | 57,000 | FGL |
| | 1998 | 57,423 | FGL |
| | 1999 | 32,244 | FGL |
| | 2002 | 18,954 | FGL |
| | 2003 | 33,760 | FGL |
| | 2004 | 38,050 | FGL |
| | 2005 | 54,628 | FGL |
| 2006 | 36,336 | FGL | |
| <u>Total</u> | 720,523 | | |
| Largemouth bass | 1968 | 115,000 | |
| | 1969 | 98,000 | |
| | <u>Total</u> | 213,000 | |
| Florida largemouth bass | 1974 | 98,000 | FGL |
| | 1976 | 180,000 | FGL |
| | 1992 | 151,318 | FRY |
| | 1992 | 38,271 | FGL |
| | 1997 | 190,546 | FGL |
| | 2002 | 181,483 | FGL |
| <u>Total</u> | 840,373 | | |

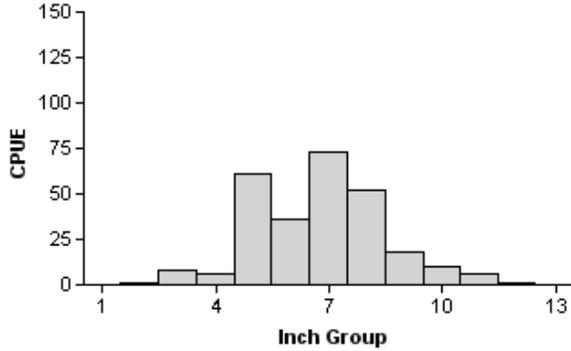
Table 4. Survey of littoral zone and physical habitat types, Benbrook Reservoir, Texas, 2005. A linear shoreline distance (miles) was recorded for each habitat type found. Surface area (acres) and percent of reservoir surface area was determined for each type of habitat found.

| Shoreline habitat type | Shoreline Distance | | Surface Area | |
|------------------------|--------------------|------------------|--------------|-----------------------------------|
| | Miles | Percent of total | Acres | Percent of reservoir surface area |
| Rocky shore | 14.5 | 36.2 | | |
| Standing timber | 1.3 | 3.3 | 326 | 9.0 |
| Indescript | 18.2 | 45.4 | | |
| Eroded bank | 1.6 | 4.0 | | |
| Cut bank | 2.4 | 6.0 | | |
| Boat docks, piers | 0.7 | 1.8 | | |
| Overhanging brush | 1.3 | 3.3 | | |

Gizzard shad

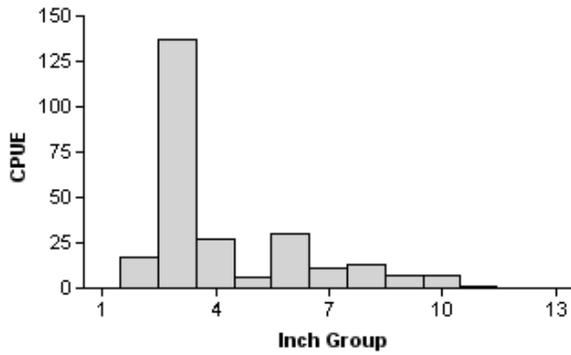
1999

Effort = 1.0
 Total CPUE = 272.0 (31; 272)
 IOV = 68.0 (0.07)



2001

Effort = 1.0
 Total CPUE = 256.0 (29; 256)
 IOV = 89.1 (0.06)



2003

Effort = 1.0
 Total CPUE = 192.0 (23; 192)
 IOV = 70.8 (0.07)

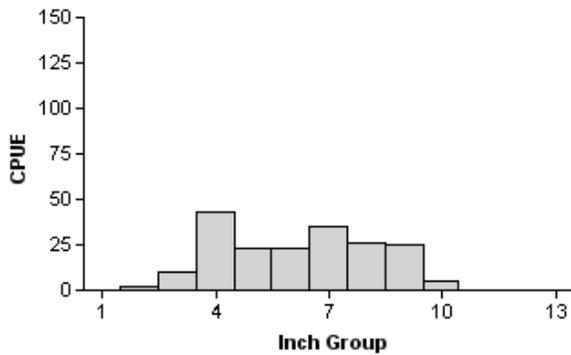
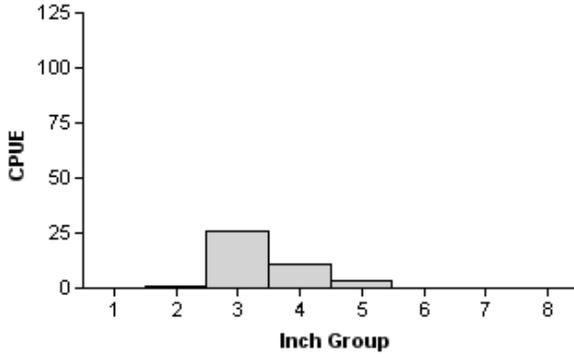


Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Benbrook Reservoir, Texas.

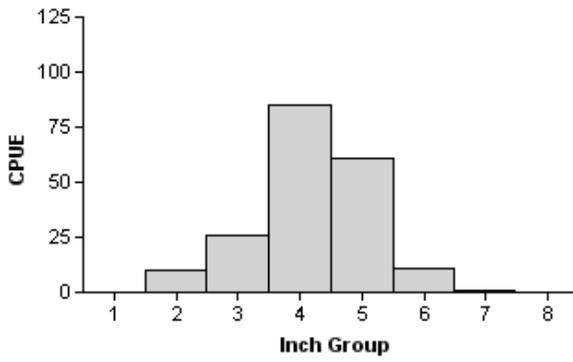
Bluegill

1999



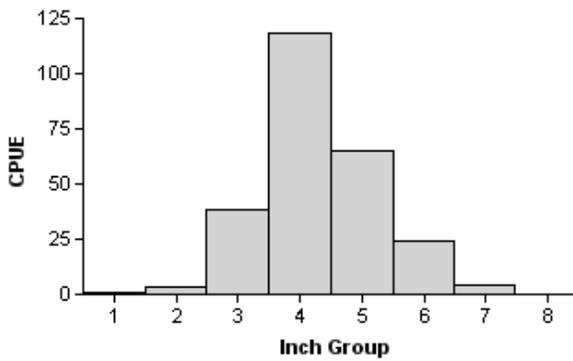
Effort = 1.0
 Total CPUE = 41.0 (71; 41)
 Stock CPUE = 40.0 (74; 40)
 CPUE-6 = 0.0 (0; 0)
 PSD = 0.0 (0.94)

2001



Effort = 1.0
 Total CPUE = 194.0 (39; 194)
 Stock CPUE = 184.0 (40; 184)
 CPUE-6 = 12.0 (58; 12)
 PSD = 7.0 (0.01)

2003



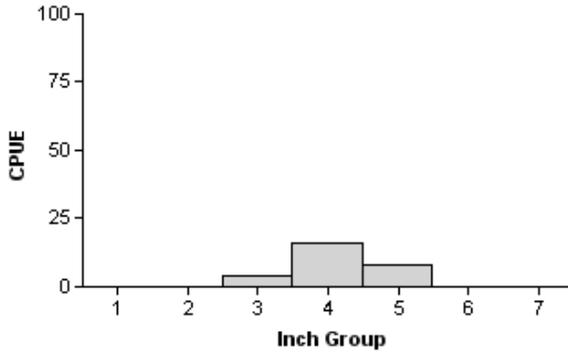
Effort = 1.0
 Total CPUE = 253.0 (25; 253)
 Stock CPUE = 249.0 (25; 249)
 CPUE-6 = 28.0 (53; 28)
 PSD = 11.0 (0.04)

Figure 3. Number of bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE in parentheses) for fall electrofishing surveys, Benbrook Reservoir, Texas.

Longear sunfish

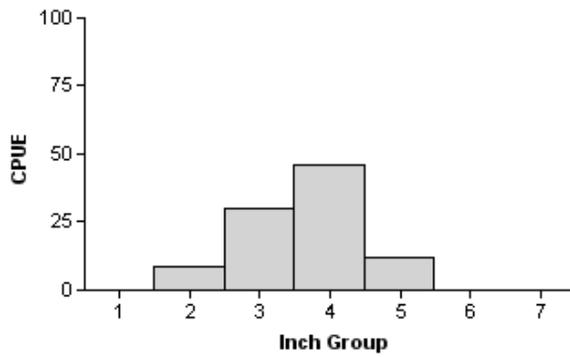
1999

Effort = 1.0
Total CPUE = 28.0 (66; 28)



2001

Effort = 1.0
Total CPUE = 97.0 (32; 97)



2003

Effort = 1.0
Total CPUE = 151.0 (30; 151)

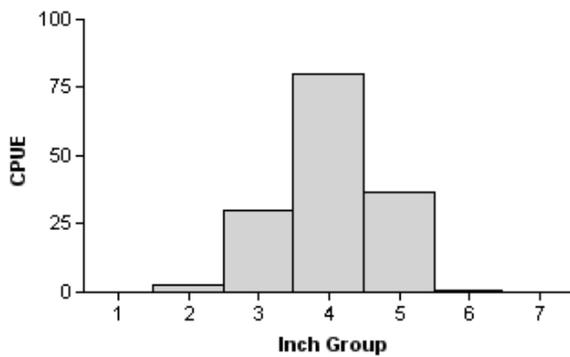
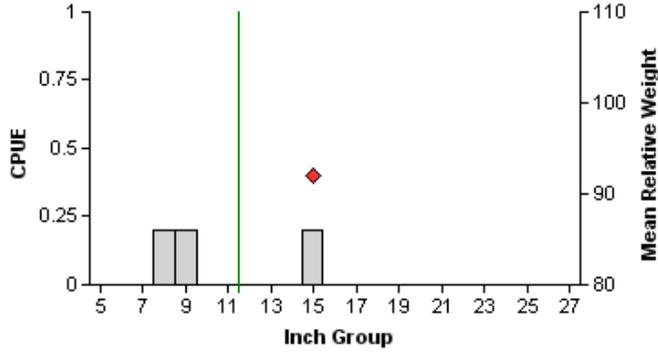


Figure 4. Number of longear sunfish caught per hour (CPUE; RSE and N for CPUE in parentheses) for fall electrofishing surveys, Benbrook Reservoir, Texas.

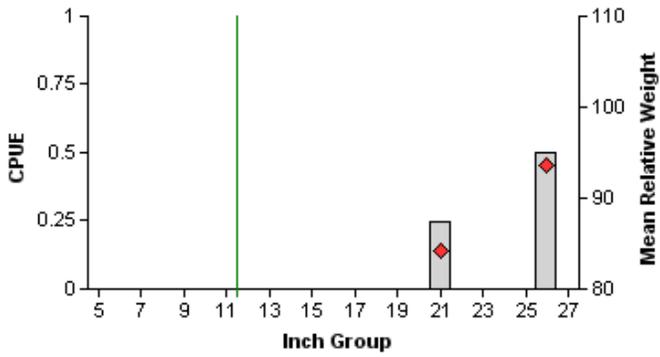
Blue catfish

2002



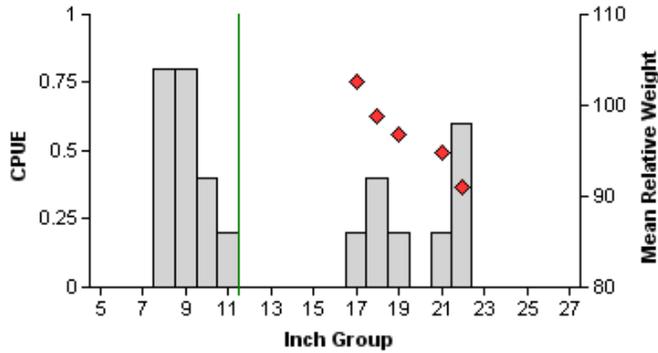
Effort = 5.0
 Total CPUE = 0.6 (0; 3)
 Stock CPUE = 0.2 (100; 1)
 PSD = 0.0 (2.12)

2004



Effort = 4.0
 Total CPUE = 0.8 (33; 3)
 Stock CPUE = 0.8 (33; 3)
 PSD = 100.0 (0.00)

2006

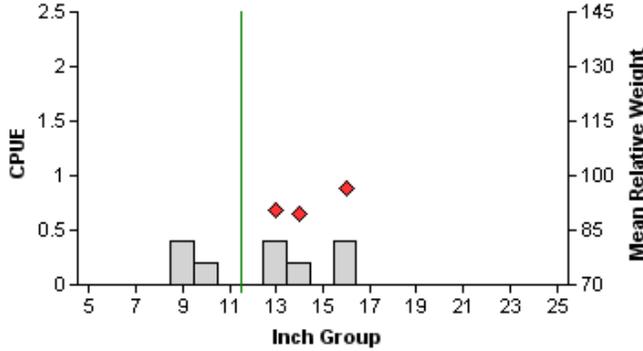


Effort = 5.0
 Total CPUE = 3.8 (41; 19)
 Stock CPUE = 1.6 (33; 8)
 PSD = 50.0 (0.29)

Figure 5. 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 netting surveys, Benbrook Reservoir, Texas. Solid vertical lines indicate minimum length limit at time of sampling.

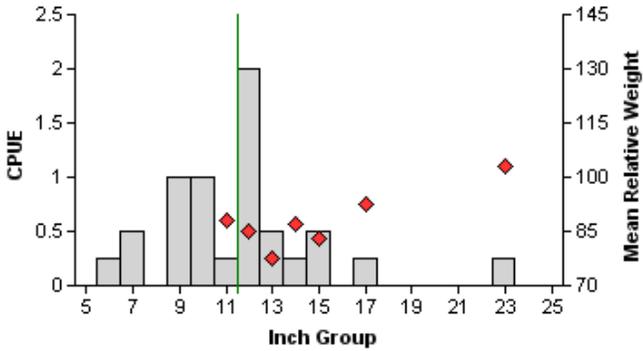
Channel catfish

2002



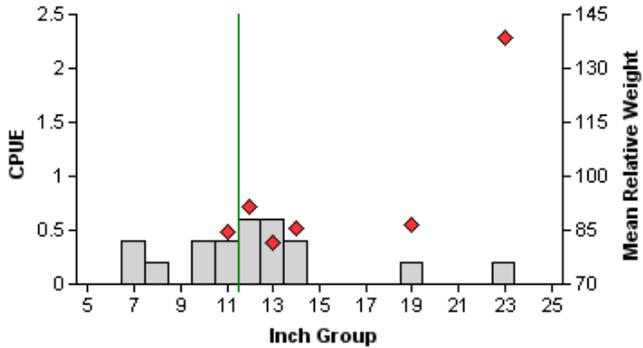
Effort = 5.0
 Total CPUE = 1.6 (33; 8)
 Stock CPUE = 1.0 (72; 5)
 PSD = 40.0 (0.21)

2004



Effort = 4.0
 Total CPUE = 6.8 (19; 27)
 Stock CPUE = 4.0 (25; 16)
 PSD = 12.0 (0.06)

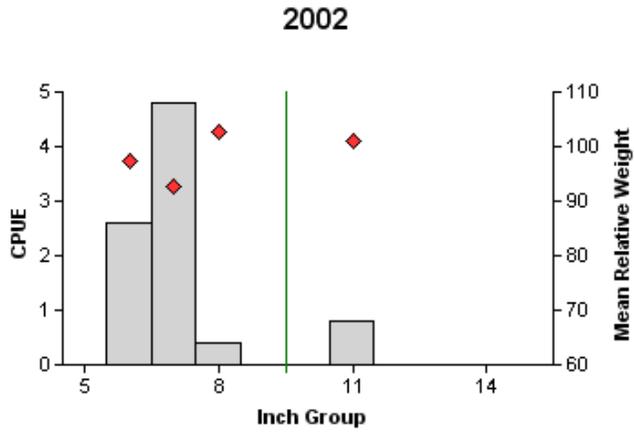
2006



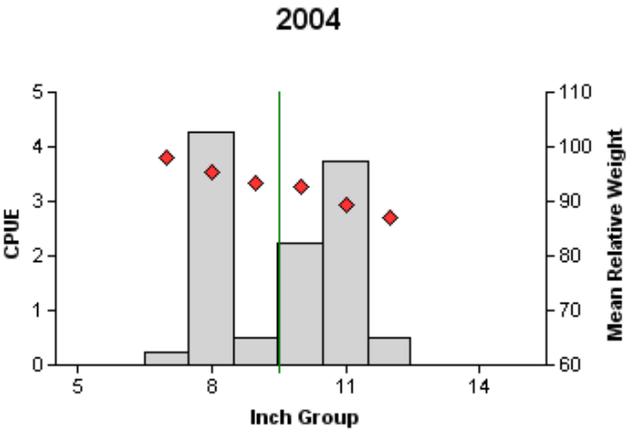
Effort = 5.0
 Total CPUE = 3.4 (50; 17)
 Stock CPUE = 2.4 (71; 12)
 PSD = 17.0 (0.07)

Figure 6. 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 netting surveys, Benbrook Reservoir, Texas. Solid vertical lines indicate minimum length limit at time of sampling.

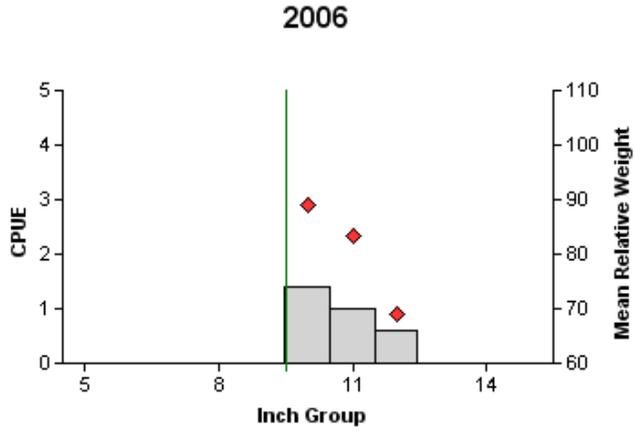
White bass



Effort = 5.0
 Total CPUE = 8.6 (31; 43)
 Stock CPUE = 8.6 (31; 43)
 PSD = 9.0 (0.01)



Effort = 4.0
 Total CPUE = 11.5 (24; 46)
 Stock CPUE = 11.5 (24; 46)
 PSD = 61.0 (0.10)



Effort = 5.0
 Total CPUE = 3.0 (87; 15)
 Stock CPUE = 3.0 (87; 15)
 PSD = 100.0 (0)

Figure 7. 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 netting surveys, Benbrook Reservoir, Texas. Solid vertical lines indicate minimum length limit at time of sampling.

Palmetto bass

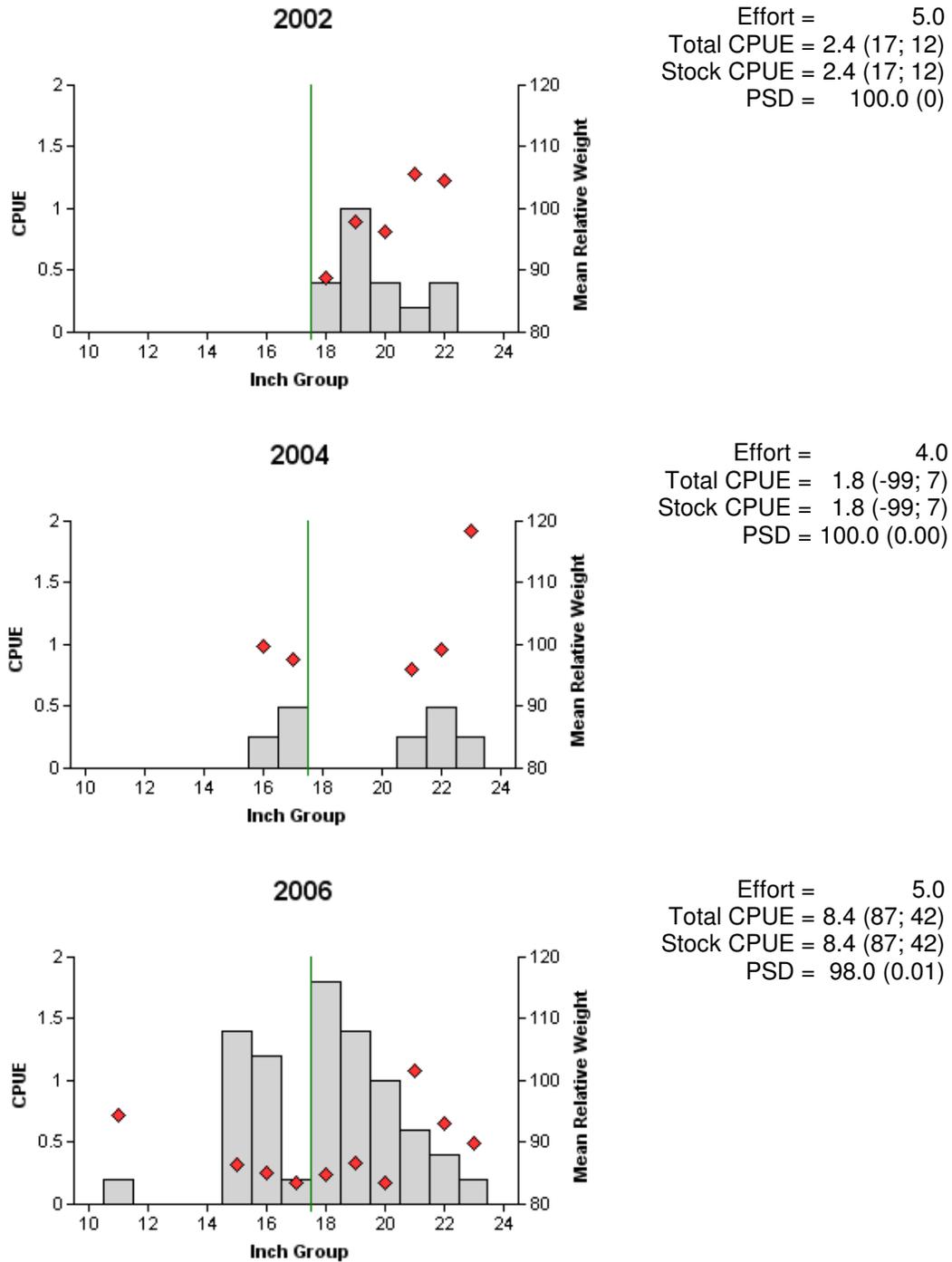


Figure 8. Number of palmetto bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting surveys, Benbrook Reservoir, Texas. Solid vertical lines indicate minimum length limit at time of sampling.

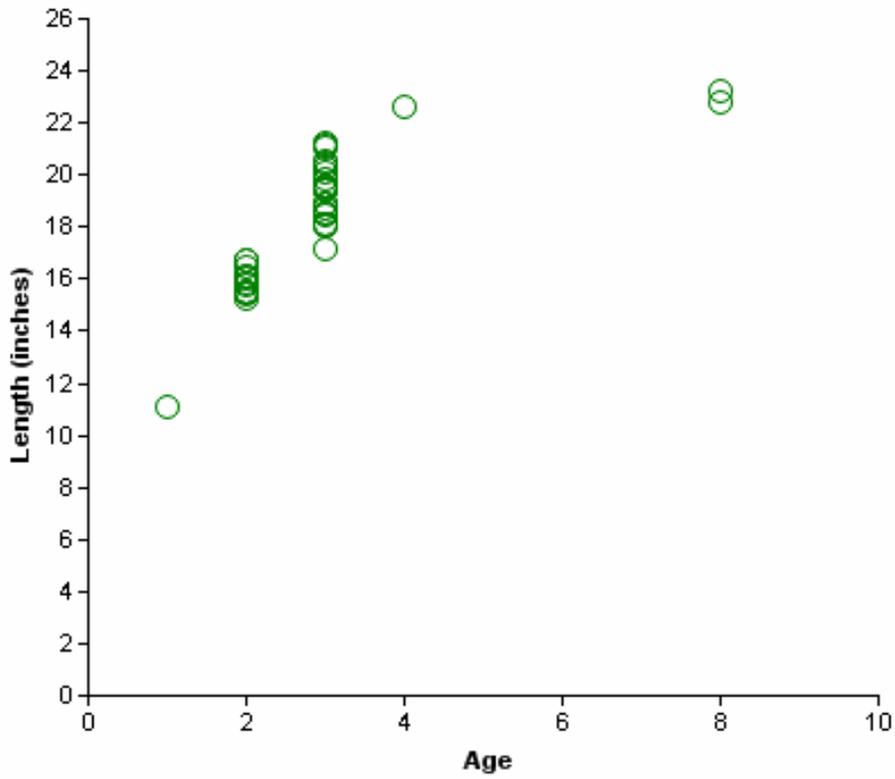


Figure 9. Length at age for palmetto bass (sexes combined) collected from gill nets at Benbrook Reservoir, Texas, April 2006 (N=41).

Largemouth bass

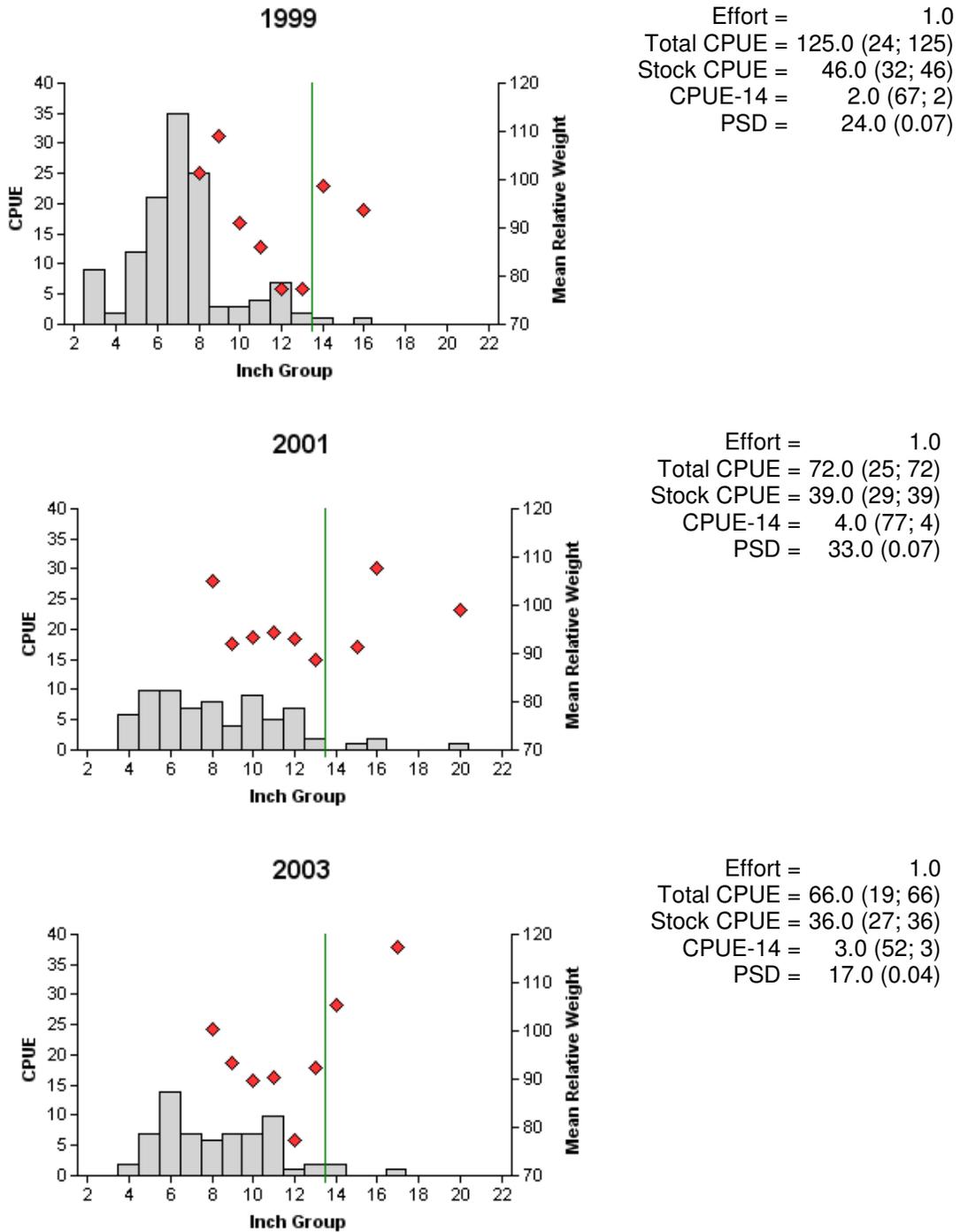


Figure 10. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Benbrook Reservoir, Texas. Solid vertical lines indicate minimum length limit at time of sampling.

Table 5. Results of genetic analysis of largemouth bass collected by fall electrofishing, Benbrook Reservoir, Texas, 1996, 1999, and 2001. FLMB = Florida largemouth bass, NLMB = Northern largemouth bass, F1 = first generation hybrid between a FLMB and a NLMB, Fx = second or higher generation hybrid between a FLMB and a NLMB.

| Year | Sample size | Genotype | | | | % FLMB alleles | % pure FLMB |
|------|-------------|----------|----|----|------|----------------|-------------|
| | | FLMB | F1 | Fx | NLMB | | |
| 1996 | 26 | 5 | 3 | 13 | 5 | 50.1 | 19.2 |
| 1999 | 30 | 3 | 7 | 14 | 6 | 48.3 | 10.0 |
| 2001 | 29 | 5 | 10 | 10 | 4 | 52.6 | 17.2 |

White crappie

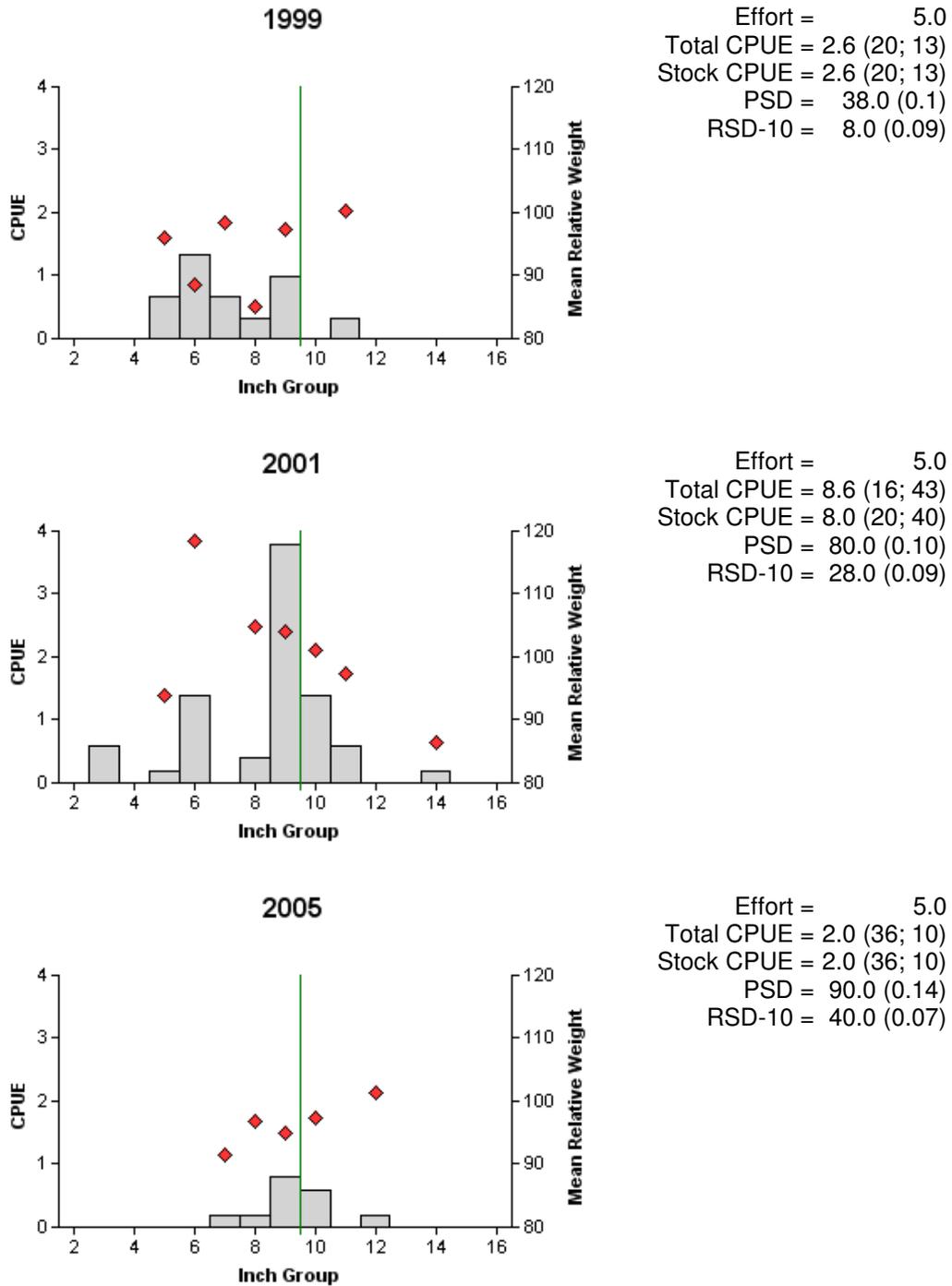


Figure 11. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Benbrook Reservoir, Texas. Solid vertical lines indicate minimum length limit at time of sampling.

Table 6. Proposed sampling schedule for Benbrook Reservoir, Texas. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

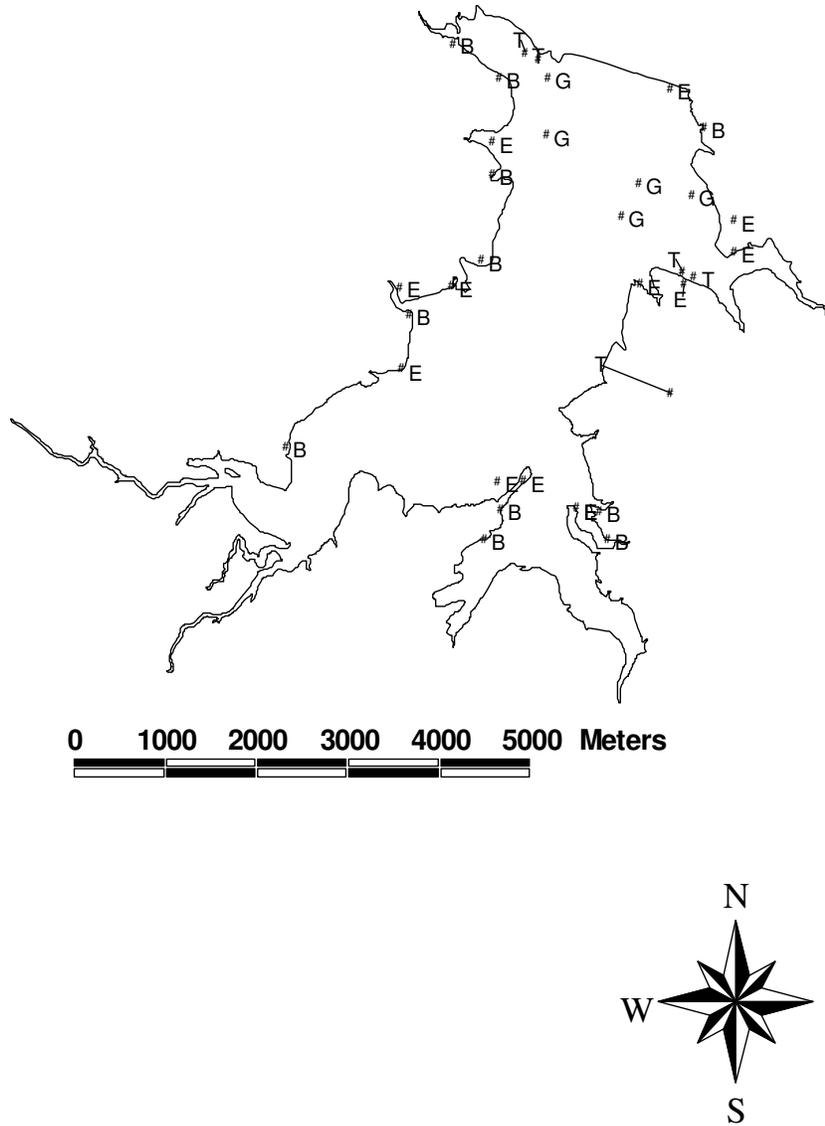
| Survey Year | Electrofisher | Trap Net | Gill Net | Creel Survey | Report |
|-----------------------|---------------|----------|----------|--------------|--------|
| Fall 2006-Spring 2007 | A | | | | |
| Fall 2007-Spring 2008 | | | A | | |
| Fall 2008-Spring 2009 | | | | | |
| Fall 2009-Spring 2010 | S | S | S | | S |

APPENDIX A

Number (N) and catch rate (CPUE) of all species collected from all gear types from Benbrook Reservoir, Texas, 2005-2006. Electrofishing data are from fall 2003 since low water levels did not allow a survey in fall 2005.

| Species | Gill Netting | | Trap Netting | | Electrofishing | |
|------------------|--------------|------|--------------|------|----------------|-------|
| | N | CPUE | N | CPUE | N | CPUE |
| Gizzard shad | 77 | 15.4 | | | 192 | 192.0 |
| Threadfin shad | | | | | 464 | 464.0 |
| Common carp | 11 | 2.2 | | | | |
| River carpsucker | 9 | 1.8 | | | | |
| Blue catfish | 19 | 3.8 | | | | |
| Channel catfish | 17 | 3.4 | | | | |
| White bass | 15 | 3.0 | | | | |
| Yellow bass | 22 | 4.4 | | | | |
| Palmetto bass | 42 | 8.4 | | | | |
| Bluegill | | | | | 253 | 253.0 |
| Longear sunfish | 1 | 0.2 | | | 151 | 151.0 |
| Redear sunfish | | | | | 3 | 3.0 |
| Largemouth bass | | | | | 66 | 66.0 |
| White crappie | | | 10 | 2.0 | | |
| Freshwater drum | 6 | 1.2 | | | | |

APPENDIX B



Location of sampling sites, Benbrook Reservoir, Texas, 2005-2006. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Boat ramps are indicated with a B. Electrofishing stations are from fall 2003. Water level was 14 feet below full pool at time of trap netting, 6 feet below full pool at time of gill netting, and near full pool at the time of electrofishing.