

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-30-R-32

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2006 Survey Report

**Meredith Reservoir**

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## SURVEY AND MANAGEMENT SUMMARY

Fish Populations in Meredith Reservoir were surveyed in 2006 using electrofishing and trap nets and in 2007 using gill nets. Anglers were surveyed from April 2006 to September 2006 with a creel survey. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Meredith Reservoir is an impoundment on the Canadian River 35 miles northeast of Amarillo, Texas. It was built in 1965 to provide municipal and industrial water. It experiences substantial water level fluctuations and covered approximately 5,500 acres during 2006-2007. Angler and boat access is adequate but only 2 boat ramps were usable in spring 2006. There are two handicap accessible fishing piers. Habitat was primarily silt and rock shoreline areas, with some non-native macrophytes. There have been no significant man-made changes in habitat since 1998.
- **Management History:** Important sport fish include walleye, white bass, smallmouth bass, largemouth bass, white crappie, and catfish. Walleye were managed under a two under 16 inches regulation to improve angler catch rates and size of fish caught. Smallmouth bass were placed under a 12-15 inch slot limit in 1992 in an effort to increase the number of larger fish. Largemouth bass, crappie and catfish have been managed under statewide regulations.
- **Fish Community**
  - **Prey species:** Gizzard shad continued to be present in the reservoir. Electrofishing catch of gizzard shad was average, with about 36% of gizzard shad available as prey to most sport fish. The electrofishing catch rate of bluegills was high, and there were some bluegills collected over 6-inches long.
  - **Catfishes:** The channel catfish population has remained stable with increasing angler catch rates. The flathead catfish population remains stable with a high percentage of the sampled population consisting of legal-size fish. No anglers were documented as targeting flathead catfish by rod and reel.
  - **Temperate basses:** White bass were present in the reservoir and were a popular sport fish. Condition of sampled fish was low but they are reaching legal size by age 2.
  - **Black basses:** Smallmouth bass continue to be abundant in the reservoir though total catch is lower due to drought conditions. Size structure was good with fish up to 18 inches. There is little directed angling pressure toward this species. The largemouth bass population is stable at very low levels. There was increased angling effort directed at largemouth bass in 2006.
  - **Crappies:** Both white and black crappies are present in the reservoir though white crappie are much more abundant. Crappie are a popular sport species in the reservoir.
  - **Walleye:** The walleye population has remained relatively stable and is reproducing during record low water levels. Walleye are the most popular sport fish in the reservoir and they continue to reach 16 inches by age 3.
- **Management Strategies:** Continue monitoring of smallmouth bass and walleye populations to determine impact of the regulations during drought conditions. Conduct gill net, electrofishing, and creel surveys annually, and general monitoring with trap nets in 2008. Conduct a habitat survey in 2007.

## INTRODUCTION

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

### *Reservoir Description*

Meredith Reservoir is a 16,505-acre impoundment constructed in 1965 on the Canadian River by the US Bureau of Reclamation. It is located in Hutchinson, Moore, and Potter Counties approximately 35 miles northeast of Amarillo and is operated and controlled by the Canadian River Municipal Water Authority. The land surrounding Meredith Reservoir is owned and operated by the US Department of the Interior, National Park Service as the Lake Meredith National Recreation Area and the Alibates Flint Quarries National Monument. Primary water uses included municipal water supply and recreation. Meredith Reservoir was mesotrophic with a mean TSI chl-*a* of 39.04 (Texas Commission on Environmental Quality 2005). Habitat at time of sampling consisted of silt, rocks, and non-native submerged vegetation. Water level has been declining since 2000 and set a new record low level of 53.66 feet (5,513 acres) in August 2006 (Figure 1). Boat access consisted of two open public boat ramps. Three ramps were closed due to low water levels. Other descriptive characteristics for Meredith Reservoir are in Table 1.

### *Management History*

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Munger 2005) included:

1. Largemouth bass stocking and sampling.  
**Action:** Extreme drought conditions have impacted the ability to sample YOY largemouth bass. The total catch of largemouth bass was too low to accurately calculate the young-adult ratio to determine stocking need. Additional bass collections were not conducted as low water conditions eliminated available habitat.
2. Smallmouth bass slot length limit evaluation.  
**Action:** Extended drought conditions have impacted both angler access to the reservoir and quality habitat for smallmouth bass. Electrofishing catch rates have remained too low to complete the evaluation of the length limit.
3. Walleye length-limit evaluation.  
**Action:** Gill net sampling has continued for the study. Drought impacts on angler access and walleye reproduction have complicated data analysis. Angler opinion surveys were not conducted due to drought severely reducing angler activity.

**Harvest regulation history:** Sport fishes in Meredith Reservoir are currently managed with statewide regulations with the exception of smallmouth bass (Table 2). From 1988 to 1992, smallmouth bass were managed with a 14-inch minimum length limit. A 12- to 15-inch slot length limit was implemented in 1992 to improve the population size structure. A full history of harvest regulations is presented in Appendix C.

**Stocking history:** Meredith Reservoir has not been stocked since 2000 (largemouth bass and walleye). Largemouth bass have been stocked to supplement natural reproduction when the YAR was <1 and water levels were sufficient to provide nursery habitat. Yellow perch were experimentally stocked six times between 1980 and 1995 to provide an alternate forage species for walleye and an additional sport fish for anglers. The complete stocking history is in Table 3.

**Vegetation/habitat history:** Meredith Reservoir supported a limited amount of aquatic vegetation species (Munger 1999), primarily Eurasian watermilfoil and areas of cattail.

## METHODS

Fishes were collected by electrofishing (1.5 hour at 18 5-min stations), gill netting (10 net nights at 10 stations), and trap netting (10 net nights at 10 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). Electrofishing survey sites were randomly selected. Trap net survey sites were non-randomly selected. Gill net surveys were based on historical sampling sites. A roving creel survey was conducted on 10 days from April-June and 9 days from July-September, 2006. All surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weight (Wr)] were calculated for target fishes according to Anderson and Neumann (1996). Index of vulnerability (IOV) was calculated for gizzard shad (DiCenzo et al. 1996). Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE statistics and for creel statistics. Ages were determined using otoliths from 50 randomly selected white bass and the entire sample (85) of walleye. Source for water level data was the United States Geological Survey (USGS) website.

## RESULTS AND DISCUSSION

**Habitat:** A habitat survey was last conducted in 1998 (Munger 1999). Littoral zone habitat consisted primarily of silt, rocks, submerged terrestrial vegetation, and non-native submerged vegetation.

**Creel:** Directed fishing effort by anglers was highest for “any species” (41%), followed by anglers fishing for walleye (26.4%), and channel catfish (9.9%) (Table 4). Total fishing effort for all species at Meredith Reservoir was 43,666 h from April 2006 through September 2006, and anglers spent an estimated \$152,099 on direct expenditures (Table 5).

**Prey species:** Electrofishing catch rates of bluegill and gizzard shad were 53.3/h and 232.0/h, respectively. Index of vulnerability (IOV) for gizzard shad was poor, indicating that only 36% of gizzard shad were available to existing predators; this was lower than IOV estimates in previous years (Figure 2). Total CPUE of gizzard shad was comparable to 2004 and almost double the 2005 survey (Figure 2). Total CPUE of bluegill in 2006 was higher than from surveys in 2004 and 2005, and size structure continued to be dominated by small individuals (Figure 3).

**Channel catfish:** The gill net catch rate of channel catfish was 1.3/nn in 2007. The channel catfish population continued to have low relative abundance and a stable population when compared to the 2005 and 2006 surveys (Figure 4). There was an increase in directed fishing effort, catch per hour, and total harvest for channel catfish in 2006 (Table 6). Percent of released legal channel catfish was variable and ranged from 0 to 71%. The highest percent released corresponded with the lowest estimated harvest and lowest directed effort. Observed harvest from April through September 2006 showed good angler compliance, and harvested fish ranged in length from 10 to 27 inches (Figure 5).

**Flathead catfish:** The flathead catfish population size structure is very good with over 90% of the population >18 inches (Figure 6). There was no documented rod and reel angler directed effort toward the species (Table 7) and only two fish were documented in the creel (Figure 7).

**White bass:** The gill net catch rate of white bass was 7.1/nn in 2007. Catch rates indicated that white bass continue to be relatively abundant in the reservoir (Figure 8). Directed fishing effort, catch per hour, and total harvest for white bass was 1,093 h, 0.68 fish/h, and 5,605 fish, respectively, from April through

September 2006, and no trends were apparent among years (Table 8). White bass appear to be treated as a sport species by a segment of the angling community as 26% to 58% of legal-sized fish were released. Observed harvest in 2006 showed good angler compliance with harvested fish ranging in length from 9 to 17 inches (Figure 9). Growth of white bass is good as individual fish are reaching legal size by age 2 and fish continue to grow and survive to age 10 (Figure 10).

**Smallmouth bass:** The electrofishing catch rate of smallmouth bass was 14.7/h in 2006, similar to samples collected in 2004 and 2005 (Figure 11). Prior to the beginning of the drought in 2000, electrofishing catch rates were typically 40-70/h. Catch rates have been very low as water levels have declined. There was no directed effort toward smallmouth bass in 2006. Angler harvest was only 148 fish and only fish under the slot length limit were released (Table 9). Directed effort for smallmouth bass has typically been very low, and only three harvested smallmouth bass were observed during the 2006 creel period (Figure 12). Almost all legal fish caught were released.

**Largemouth bass:** The electrofishing catch rate of largemouth bass was 18.0/h in 2006 and was within normal sampling variation. Size structure was not adequate as PSD varied from 0 to 4 since 2004 (Figure 13). Body condition in 2006 was poor (relative weight under 90) for nearly all size classes of fish (Figure 13). Directed fishing effort/acre, catch per hour, and total harvest for largemouth bass was 0.40 h/acre, 0.39 fish/h, and 179 fish, respectively, from April through September 2006 (Table 10). Percent of released legal largemouth bass varied widely from 0% in 2004 to 80% in 2005. There was an increase in harvest of largemouth bass in 2006 over what was seen in 2004 and 2005, this increase was based on only 5 fish observed in the creel in 2006 versus 2 fish in 2004 and 3 fish in 2005 (Figure 14). Florida largemouth bass influence has remained low as Florida alleles have ranged from 10 to 16% and Florida genotype was 0% (Table 11).

**White crappie:** The trap net catch rate of white crappie was 0.4/nn in 2006, and was similar to previous surveys (Figure 15). Trap net catch rates were too low to calculate most population indices and only indicate they are present in the system. In 2005 and 2006, directed effort for white crappie was over 2,000 hours per year. The 2006 estimated total harvest was over 7,000 fish per year (Table 12). Size of harvested white crappie in 2006 was excellent and ranged from 10 to 15 inches in total length (Figure 16).

**Walleye:** The gill net catch rate of walleye was 8.5/nn in 2007 and was the lowest since 1999. The PSD was 76 and has remained over 75 since 2005 (Figure 17). The RSD-16 was good at 54. Mean relative weight was under 90 for most size classes in 2007 and was similar to values observed in 2005 and 2006 (Figure 17). Electrofishing surveys indicated continued reproduction (Figure 18) even though most spawning structure is now out of the water due to drought. Directed effort for walleye was similar in 2005 and 2006 at about 1.8 h/acre. Harvest rate has increased from 0.04/acre in 2004 to 0.75/acre in 2006 (Table 13). This increase may be due to the concentrating effect of record low water levels. The single most harvested inch class was 16 inches (Figure 19). Some walleye reached 16 inches in total length by age 3, and most were 16 inches by age 5 (Figure 20).

**Fisheries management plan for Meredith Reservoir, Texas**

Prepared – July 2007.

**ISSUE 1:** A 12 to 15-inch slot length limit was enacted for smallmouth bass at Meredith Reservoir in 1992. Assessment of the slot length limit has shown that anglers accept the regulation well and that fish under the slot length limit are being harvested. Population structure indices and condition indices have remained essentially unchanged. An extended drought has complicated analysis and reduced electrofishing catch rates.

**MANAGEMENT STRATEGY**

1. Continue monitoring the smallmouth bass population through standard sampling.

**ISSUE 2:** The harvest regulation for walleye was changed on September 1, 1999 to no minimum length limit and a 5 fish bag with no more than 2 fish under 16 inches. This change was enacted to alleviate predatory pressure on gizzard shad without losing the positive impacts gained from the 16-inch minimum length limit. Harvest of fish <16 inches was approximately 19% of the total harvest in 2006, but the total harvest was estimated at only 4,636 fish (Table 13). That level of harvest is unlikely to have any impact on the population of fish <16 inches. Extended drought conditions may be impacting walleye reproduction and growth which could mask the impact of the regulation.

**MANAGEMENT STRATEGIES**

1. Continue monitoring the walleye population through fall electrofishing and standard spring gill netting.
2. Monitor angler harvest of walleye through creel surveys.

**SAMPLING SCHEDULE JUSTIFICATION:**

The proposed sampling schedule excludes trap net sampling in 2007 and 2009. Electrofishing, gill netting, and creel surveys are conducted every year. Sampling with all gears is conducted in 2008/2009 and 2010/2011 (Table 14). Gill net surveys are required to monitor the walleye population and experimental length limit. Electrofishing is required to monitor the smallmouth bass slot length limit.

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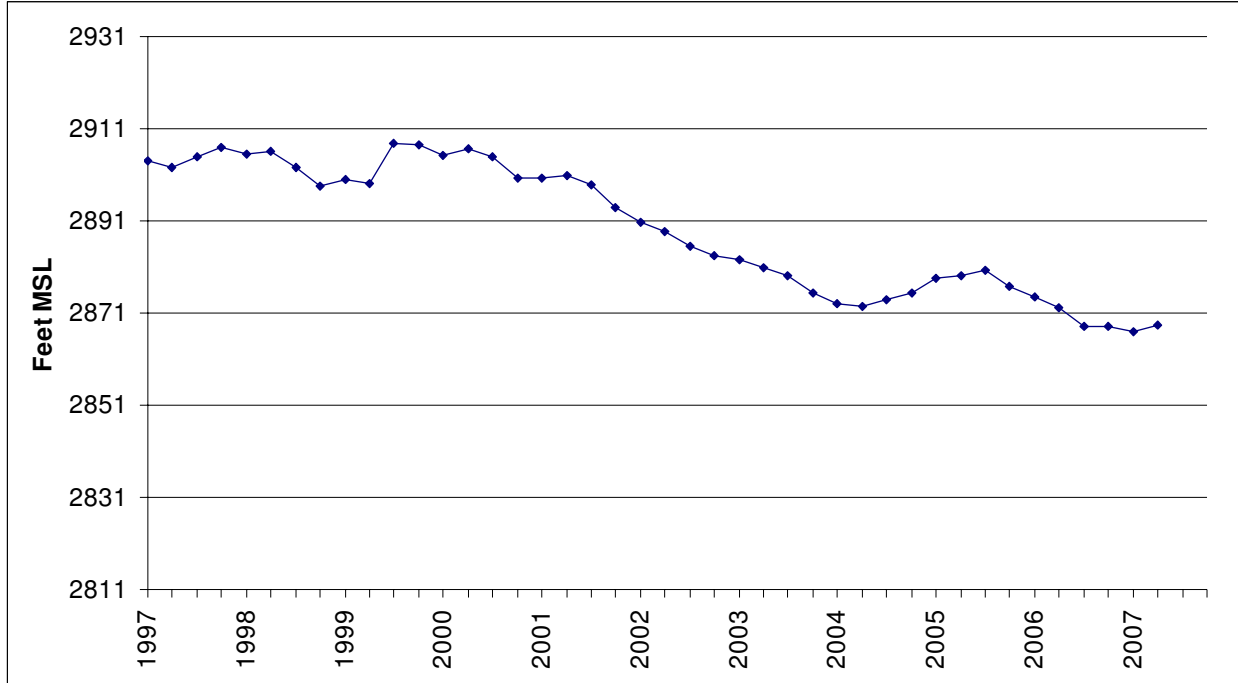


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Meredith Reservoir, Texas. Conservation pool is 2941 ft MSL.

Table 1. Characteristics of Meredith Reservoir, Texas.

Characteristic	Description
Year constructed	1965
Controlling authority	Canadian River Municipal Water Authority
Counties	Hutchinson, Moore, Potter
Reservoir type	Mainstream
Shoreline Development Index (SDI)	5.05
Conductivity	2,916 umhos/cm

Table 2. Harvest regulations for Meredith Reservoir.

Species	Bag Limit	Minimum-Maximum Length (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12 – No Limit
Catfish, flathead	5	18 – No Limit
Bass, white	25	10 – No Limit
Bass, smallmouth	5	12 – 15 Slot Limit
Bass: largemouth	5	14 – No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 – No Limit
Walleye	5	No more than 2 under 16

Table 3. Stocking history of Meredith Reservoir, Texas. Size Categories are: FRY =<1 inch, FGL = 1-3 inches, and ADL = adults.

Year	Number	Size	Year	Number	Size
	<u>Rainbow trout</u>			<u>Florida largemouth bass</u>	
1973	50,000	ADL	1986	631	ADL
	<u>Brown trout</u>		1990	401,749	FGL
1973	30,000	ADL	1993	100,000	FGL
	<u>Blue catfish</u>		Total	502,380	
1965	2,500	FGL		<u>F1 Florida X northern largemouth bass hybrids</u>	
1966	9,000	FGL	2001	32,000	FGL
1971	12,000	FGL		<u>Kemp's largemouth bass</u>	
1972	30,000	FGL	1988	412,727	FGL
1988	160,500	FRY	1990	189	ADL
Total	214,000		Total	412,916	
	<u>Channel catfish</u>			<u>Mixed largemouth bass</u>	
1965	421,500	FGL	1989	197	ADL
1966	360,000	FGL	1990	40	ADL
1970	9,680	FGL	Total	237	
1971	12,000	FGL		<u>Crappie</u>	
1973	107,690	FGL	1994	308	ADL
Total	910,870			<u>White crappie</u>	
	<u>Flathead catfish</u>		1965	125,000	FRY
1966	15,000	FGL	1965	258	ADL
1966	18	ADL	1966	50,000	FGL
	<u>White bass</u>		Total	175,258	
1965	15	ADL		<u>Black crappie</u>	
	<u>Smallmouth bass</u>		1966	150,000	FGL
1974	11,100	FGL		<u>Yellow perch</u>	
1975	28,000	FGL	1980	2,500	ADL
1976	66,000	FGL	1981	2,500	ADL
1977	322,700	FGL	1983	2,212	ADL
Total	427,800		1984	400	ADL
	<u>Largemouth bass</u>		1992	165,116	FGL
1965	480,000	FGL	1995	30,381	FGL
1966	432,000	FGL	Total	203,109	
1973	61,000	FGL		<u>Walleye</u>	
1973	27,000	ADL	1965	500,000	FRY
1983	553	ADL	1966	2,000,000	FRY
1994	286,400	FGL	1969	750,000	FRY
1995	586,663	FGL	1998	5,096,000	FRY
1997	177,000	FGL	2000	290,196	FGL
2000	20,370	FGL	Total	8,636,196	
Total	2,070,986				

Table 4. Percent directed angler effort by species for Meredith Reservoir, Texas, April through September, 2004 – 2006.

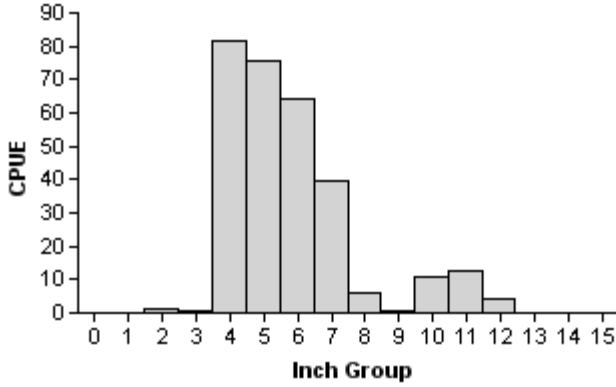
Species	Year		
	2004	2005	2006
Channel catfish	6.7	2.8	9.9
White bass	3.1	7.2	2.5
Bluegill			1.0
Smallmouth bass	1.5	0.3	
Largemouth bass		2.4	5.7
White crappie	1.8	6.6	5.4
Walleye	16.9	34.6	26.4
Anything	38.4	39.8	40.9
Black bass	5.3	5.3	1.8
Catfishes	3.2	0.9	6.3

Table 5. Total fishing effort (h) for all species and total directed expenditures in US dollars at Meredith Reservoir, Texas, April through September, 2004- 2006. RSE is in parentheses.

Creel Statistic	Year		
	2004	2005	2006
Total fishing effort	25,717.9 (15.7)	36,931.9 (18.5)	43,665.8 (14.4)
Total directed expenditures (\$)	124,614 (58)	141,350 (36)	152,099 (44)

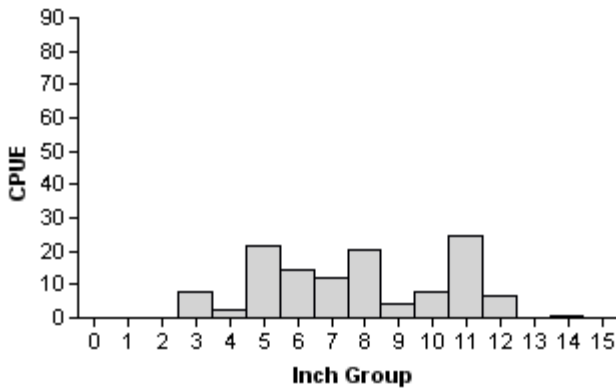
**Gizzard Shad**

**2004**



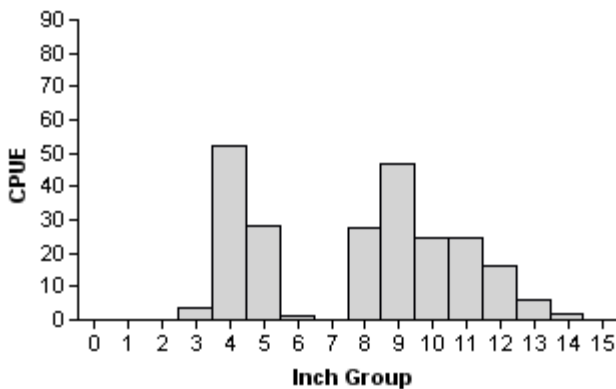
Effort = 1.5  
 Total CPUE = 296.0 (31; 444)  
 Stock CPUE = 73.3 (23; 110)  
 IOV = 89 (5)

**2005**



Effort = 1.5  
 Total CPUE = 123.3 (24; 185)  
 Stock CPUE = 76.7 (26; 115)  
 IOV = 48 (10)

**2006**

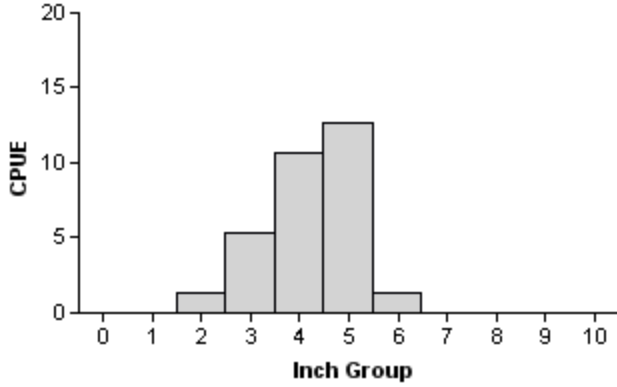


Effort = 1.5  
 Total CPUE = 232.0 (22; 348)  
 Stock CPUE = 147.3 (22; 221)  
 IOV = 36 (9)

Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N are in parentheses) for fall electrofishing surveys, Meredith Reservoir, Texas, 2004, 2005, and 2006. RSE is used for CPUE values and SE is used for RSD/PSD values.

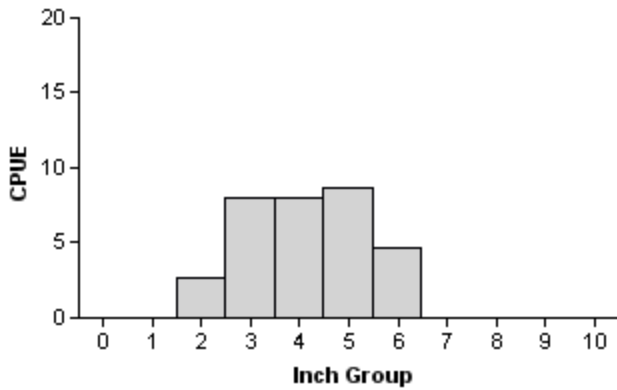
**Bluegill**

**2004**



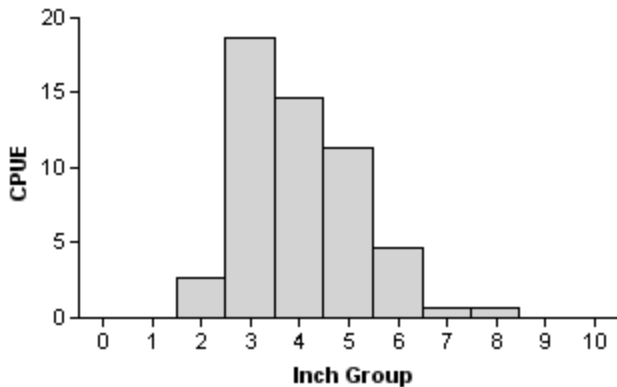
Effort = 1.5  
 Total CPUE = 31.3 (39; 47)  
 PSD = 4 (2.1)  
 RSD-P = 0 (0)

**2005**



Effort = 1.5  
 Total CPUE = 32.0 (26; 48)  
 PSD = 16 (7.5)  
 RSD-P = 0 (0)

**2006**

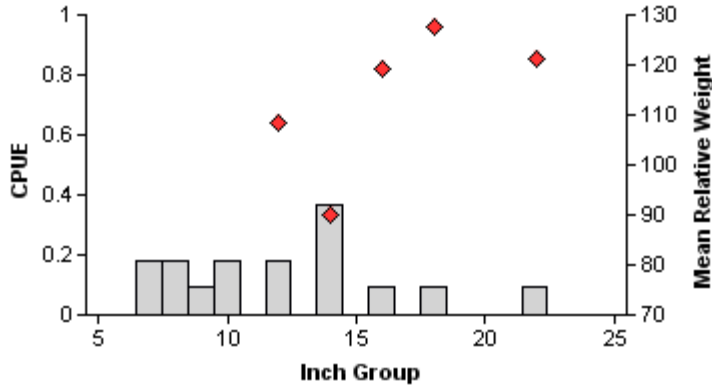


Effort = 1.5  
 Total CPUE = 53.3 (19; 80)  
 PSD = 12 (4.6)  
 RSD-P = 1 (1.4)

Figure 3. Number of bluegill caught per hour (CPUE) and population indices (RSE and N are in parentheses) for fall electrofishing surveys, Meredith Reservoir, Texas, 2004, 2005, and 2006. RSE is used for CPUE values and SE is used for RSD/PSD values.

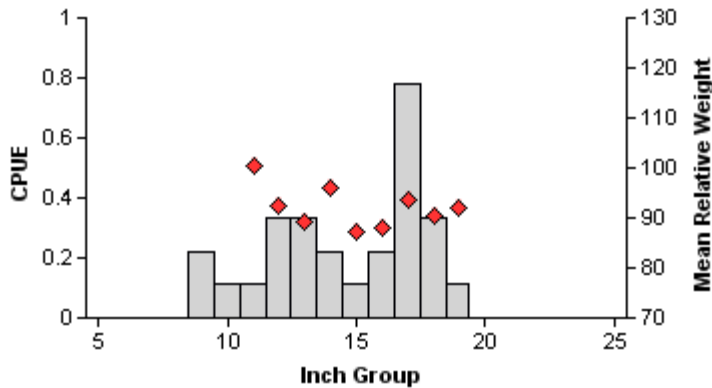
**Channel Catfish**

**2005**



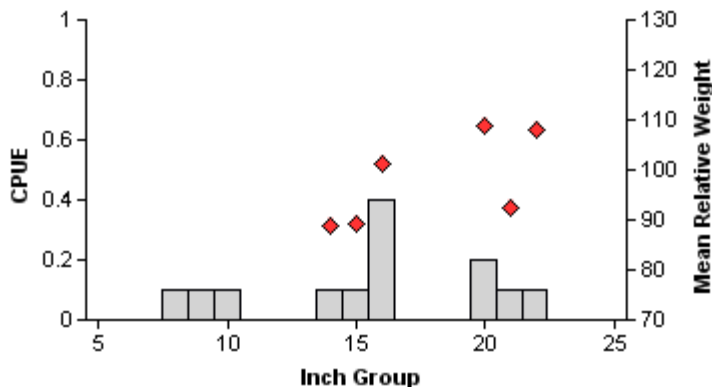
Effort = 11.0  
 Total CPUE = 1.5 (34; 16)  
 Stock CPUE = 0.8 (32; 9)  
 PSD = 33 (19.1)

**2006**



Effort = 9.0  
 Total CPUE = 2.9 (39; 26)  
 Stock CPUE = 2.6 (42; 23)  
 PSD = 57 (15.0)

**2007**



Effort = 10.0  
 Total CPUE = 1.3 (40; 13)  
 Stock CPUE = 1.0 (49; 10)  
 PSD = 80 (7.3)

Figure 4. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for spring gill net surveys, Meredith Reservoir, Texas, 2005, 2006, and 2007. RSE is used for CPUE values and SE is used for RSD/PSD values.

### Channel Catfish

Table 6. Creel survey statistics for channel catfish at Meredith Reservoir from April through September for 2004, 2005, and 2006, where total catch per hour is for anglers targeting channel catfish and total harvest is the estimated number of channel catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses. Meredith Reservoir was 6,164 surface acres in 2004 and 2006 and 7,047 surface acres in 2005.

Creel Survey Statistic	Year		
	2004	2005	2006
Directed effort (h)	1,712.31 (50)	1,049.26 (50)	4,342.73 (25)
Directed effort/acre	0.28 (50)	0.15 (50)	0.70 (25)
Total catch per hour	0.25 (.)	0.20 (74)	0.74 (102)
Total harvest	531.39 (165)	60.10 (541)	2,434.04 (11)
Harvest/acre	0.09 (165)	<0.01 (541)	0.39 (11)
Percent legal released	0	71	7

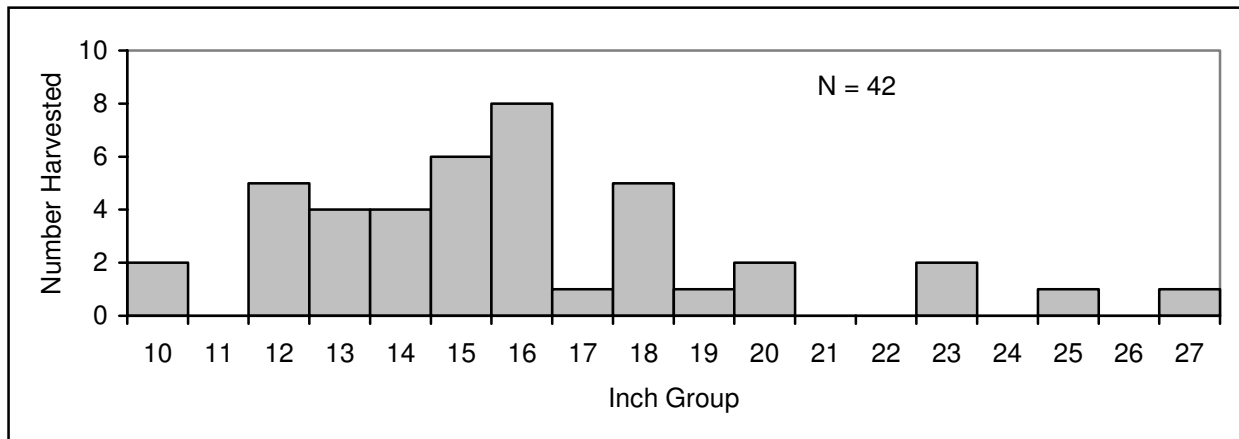
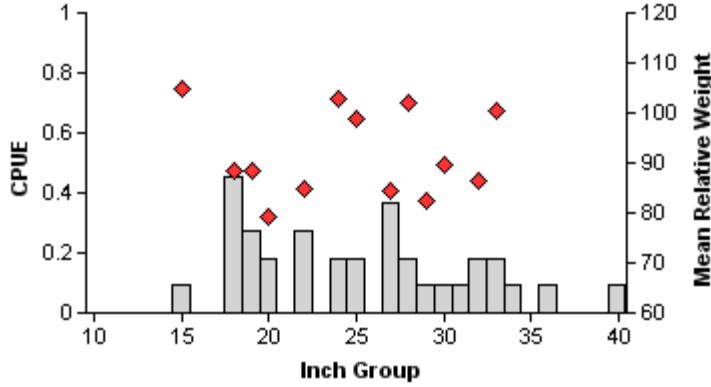


Figure 5. Length frequency of harvested channel catfish observed during creel surveys at Meredith Reservoir, Texas, April through September 2006, all anglers combined. N is the number of harvested channel catfish observed during creel surveys.



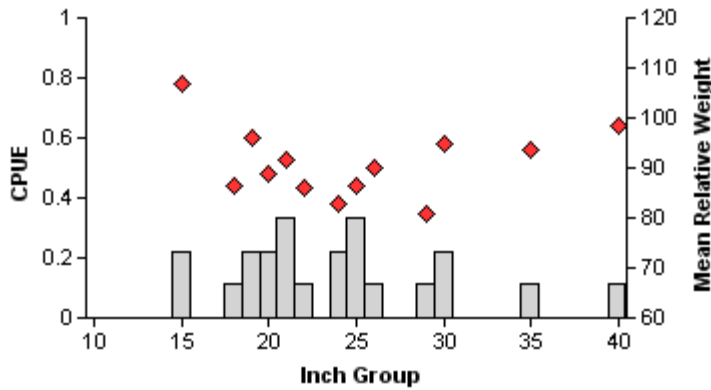
**Flathead Catfish**

**2005**



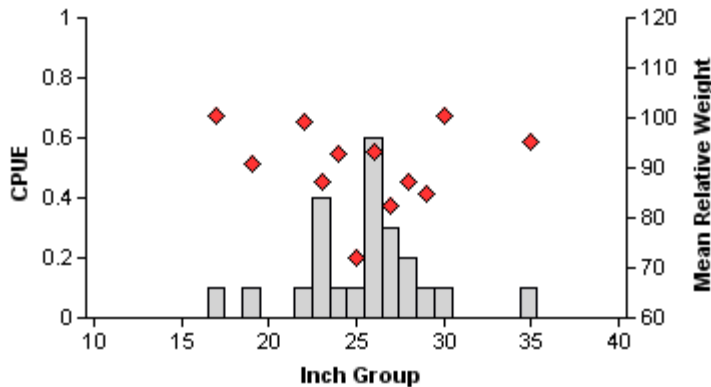
Effort = 11.0  
 Total CPUE = 3.1 (19; 34)  
 Stock CPUE = 3.1 (19; 34)  
 CPUE-18 = 3.0 (19; 33)  
 PSD = 74 (5.2)  
 RSD-18 = 97 (2.9)

**2006**



Effort = 9.0  
 Total CPUE = 2.4 (22; 22)  
 Stock CPUE = 2.4 (22; 22)  
 CPUE-18 = 2.2 (21; 20)  
 PSD = 77 (7.8)  
 RSD-18 = 91 (5.2)

**2007**



Effort = 10.0  
 Total CPUE = 2.3 (15; 23)  
 Stock CPUE = 2.3 (15; 23)  
 CPUE-18 = 2.2 (15; 22)  
 PSD = 91 (5.1)  
 RSD-18 = 96 (4.3)

Figure 6. Number of flathead catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for spring gill net surveys, Meredith Reservoir, Texas, 2005, 2006, and 2007. RSE is used for CPUE values and SE is used for RSD/PSD values.

### Flathead Catfish

Table 7. Creel survey statistics for flathead catfish at Meredith Reservoir from April through September for 2004, 2005, and 2006, where total catch per hour is for anglers targeting flathead catfish and total harvest is the estimated number of flathead catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses. Meredith Reservoir was 6,164 surface acres in 2004 and 2006 and 7,047 surface acres in 2005.

Creel Survey Statistic	Year		
	2004	2005	2006
Directed effort (h)	0.00 (0)	0.00 (0)	0.00 (0)
Directed effort/acre	0.0 (0)	0.0 (0)	0.0 (0)
Total catch per hour	0.0 (0)	0.0 (0)	0.0 (0)
Total harvest	32.89 (326)	0.00 (0)	81.68 (557)
Harvest/acre	<0.1 (326)	0.0 (0)	0.0 (557)
Percent legal released	0.0		0.0

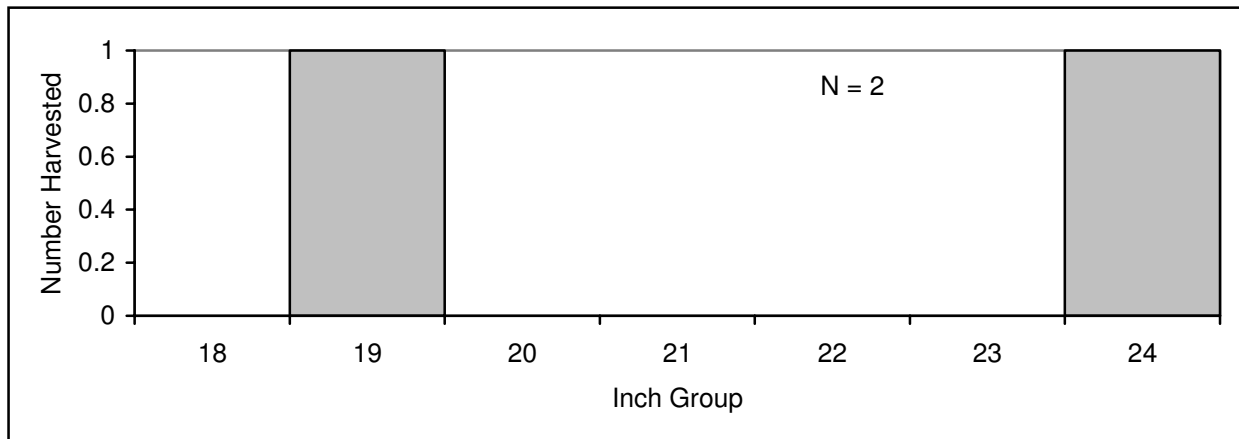
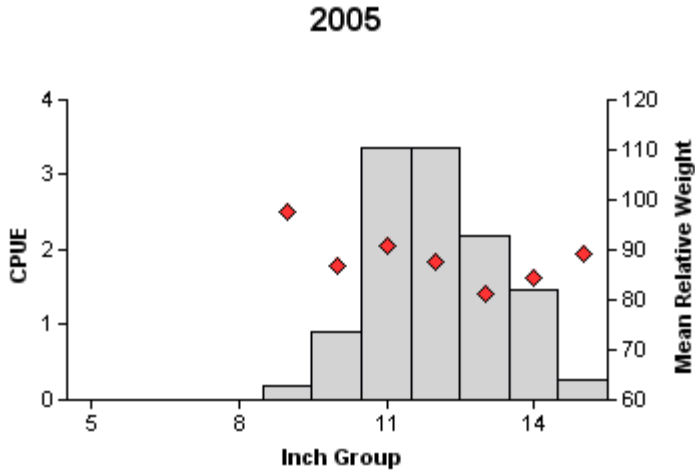
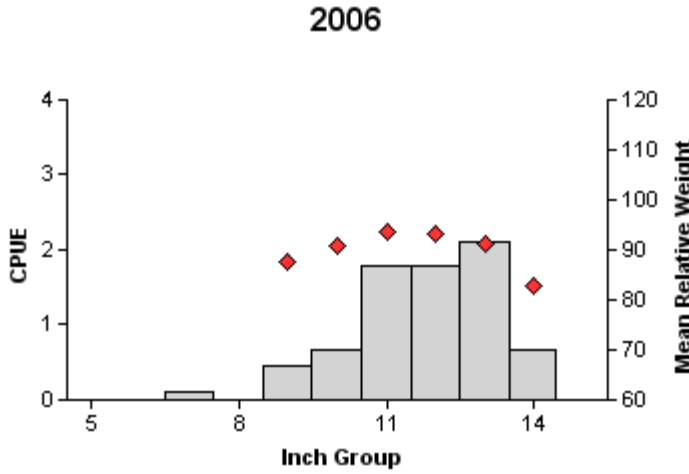


Figure 7. Length frequency of harvested flathead catfish observed during creel surveys at Meredith Reservoir, Texas, April through September 2006, all anglers combined. N is the number of harvested flathead catfish observed during creel surveys.

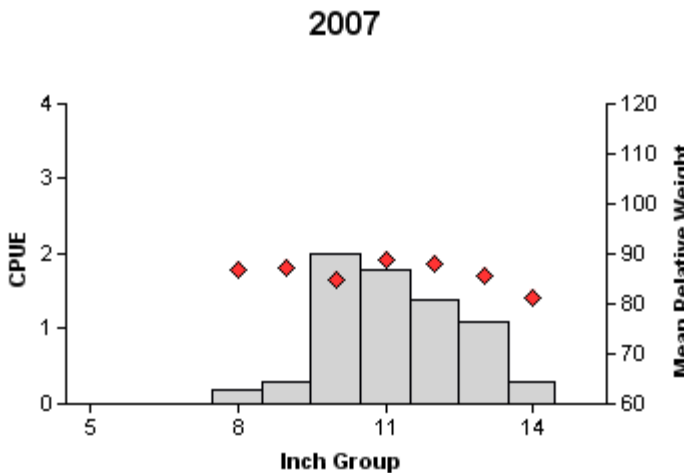
**White Bass**



Effort = 11.0  
 Total CPUE = 11.7 (26; 129)  
 Stock CPUE = 11.7 (26; 129)  
 PSD = 100 (0)  
 RSD-10 = 98 (1.2)



Effort = 9.0  
 Total CPUE = 7.6 (23; 68)  
 Stock CPUE = 7.6 (23; 68)  
 PSD = 99 (1.6)  
 RSD-10 = 93 (3.6)



Effort = 10.0  
 Total CPUE = 7.1 (38; 71)  
 Stock CPUE = 7.1 (38; 71)  
 PSD = 97 (2.5)  
 RSD-10 = 93 (2.7)

Figure 8. 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, Meredith Reservoir, Texas, 2005, 2006, and 2007. RSE is used for CPUE values and SE is used for RSD/PSD values.

### White Bass

Table 8. Creel survey statistics for white bass at Meredith Reservoir from April through September for 2004, 2005, and 2006, where total catch per hour is for anglers targeting white bass and total harvest is the estimated number of white bass harvested by all anglers. Relative standard errors (RSE) are in parentheses. Meredith Reservoir was 6,164 surface acres in 2004 and 2006 and 7,047 surface acres in 2005.

Creel Survey Statistic	Year		
	2004	2005	2006
Directed effort (h)	799.26 (66)	2,666.20 (38)	1,093.41 (52)
Directed effort/acre	0.13 (66)	0.38 (38)	0.18 (52)
Total catch per hour	0.47 (110)	0.54 (84)	0.68 (141)
Total harvest	1,189.66 (159)	1,830.34 (63)	5,605.15 (44)
Harvest/acre	0.19 (159)	0.26 (63)	0.91 (44)
Percent legal released	43	58	26

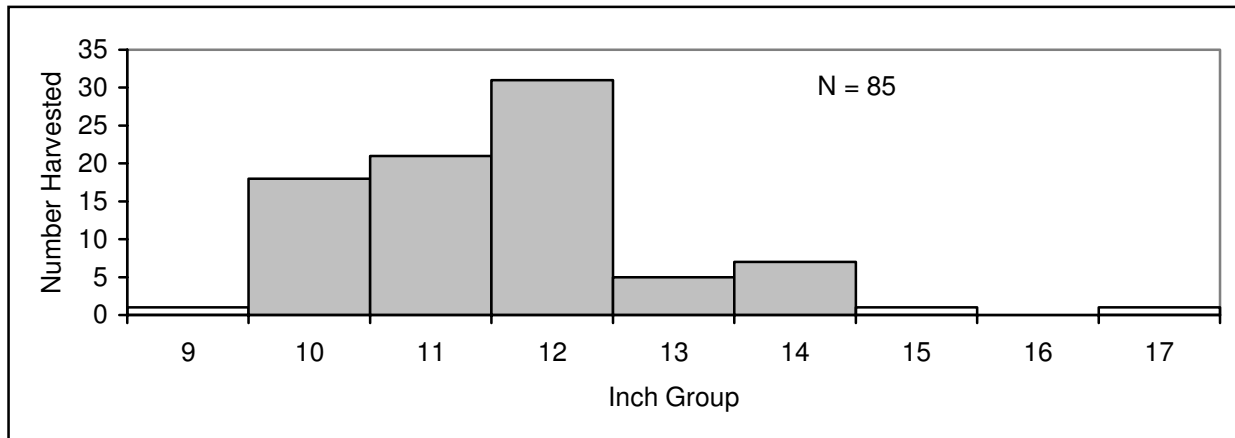


Figure 9. Length frequency of harvested white bass observed during creel surveys at Meredith Reservoir, Texas, April through September 2006, all anglers combined. N is the number of harvested white bass observed during creel surveys.

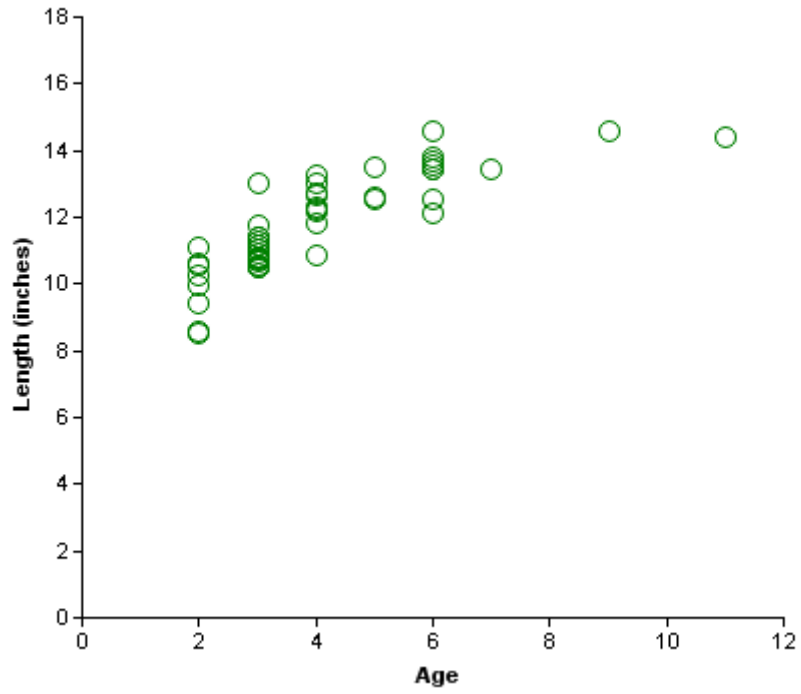
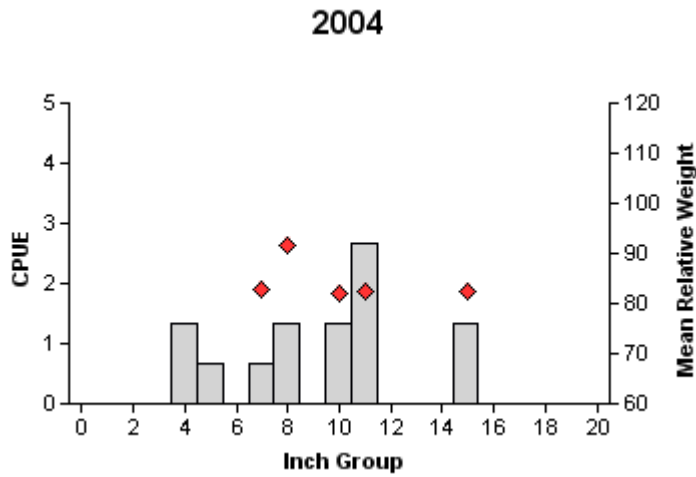
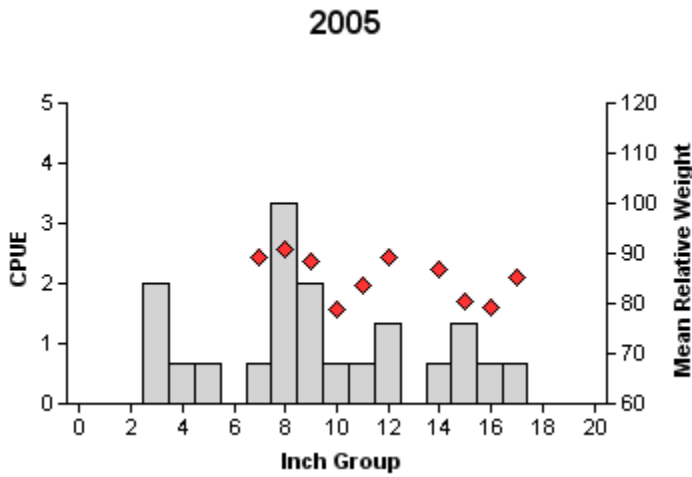
**White Bass**

Figure 10. Length at age for 50 white bass collected from gill nets at Meredith Reservoir, Texas, April 2007.

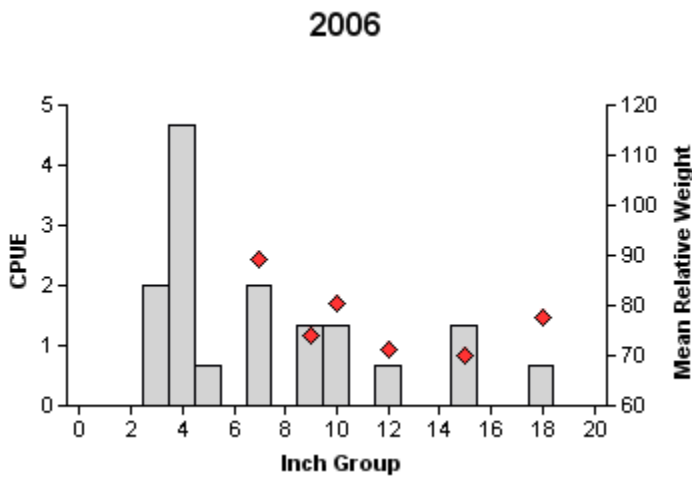
**Smallmouth Bass**



Effort = 1.5  
 Total CPUE = 9.3 (49; 14)  
 CPUE-12 = 1.3 (100; 2)  
 CPUE-15 = 1.3 (100; 2)  
 PSD = 55 (20.7)



Effort = 1.5  
 Total CPUE = 15.3 (35; 23)  
 CPUE-12 = 4.7 (59; 7)  
 CPUE-15 = 2.7 (58; 4)  
 PSD = 44 (16.6)



Effort = 1.5  
 Total CPUE = 14.7 (24; 22)  
 CPUE-12 = 2.7 (45; 4)  
 CPUE-15 = 2.0 (54; 3)  
 PSD = 36 (14.3)

Figure 11. Number of smallmouth bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for fall electrofishing surveys, Meredith Reservoir, Texas, 2004, 2005, and 2006. RSE is used for CPUE values and SE is used for

RSD/PSD values.

### Smallmouth Bass

Table 9. Creel survey statistics for smallmouth bass at Meredith Reservoir from April through September for 2004, 2005, and 2006, where total catch per hour is for anglers targeting smallmouth bass and total harvest is the estimated number of smallmouth bass harvested by all anglers. Relative standard errors (RSE) are in parentheses. Meredith Reservoir was 6,164 surface acres in 2004 and 2006 and 7,047 surface acres in 2005.

Creel Survey Statistic	Year		
	2004	2005	2006
Directed effort (h)	390.58 (89)	119.52 (135)	0.00 (.)
Directed effort/acre	0.06 (89)	0.02 (135)	0.00 (.)
Total catch per hour	0.20 (.)	0.50 (.)	0.00 (.)
Total harvest	0.00 (.)	224.86 (140)	147.51 (228)
Harvest/acre	0.00 (.)	0.03 (140)	0.02 (228)
Percent legal released	100	85	89*

\*All fish released were below the slot length limit.

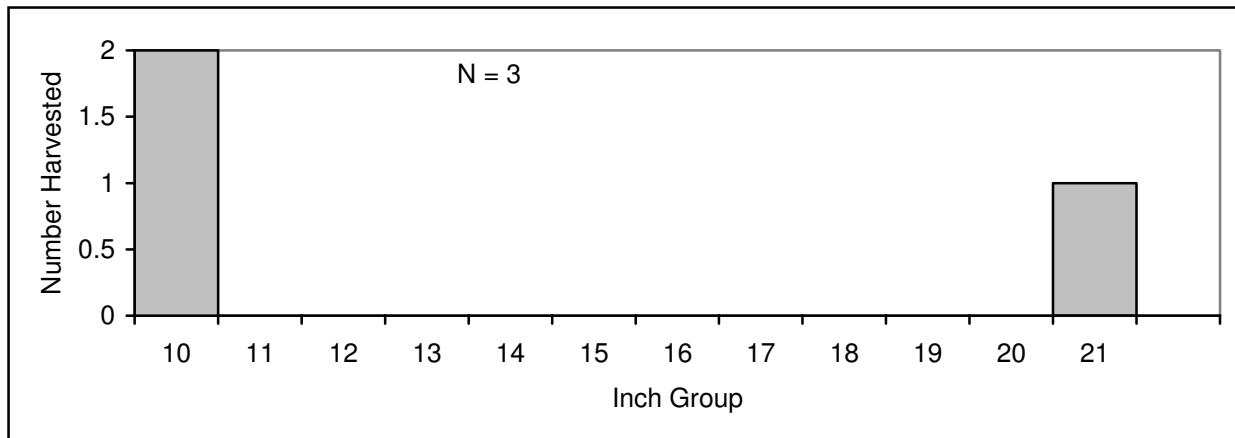


Figure 12. Length frequency of harvested smallmouth bass observed during creel surveys at Meredith Reservoir, Texas, April through September 2006, all anglers combined. N is the number of harvested smallmouth bass observed during creel surveys.

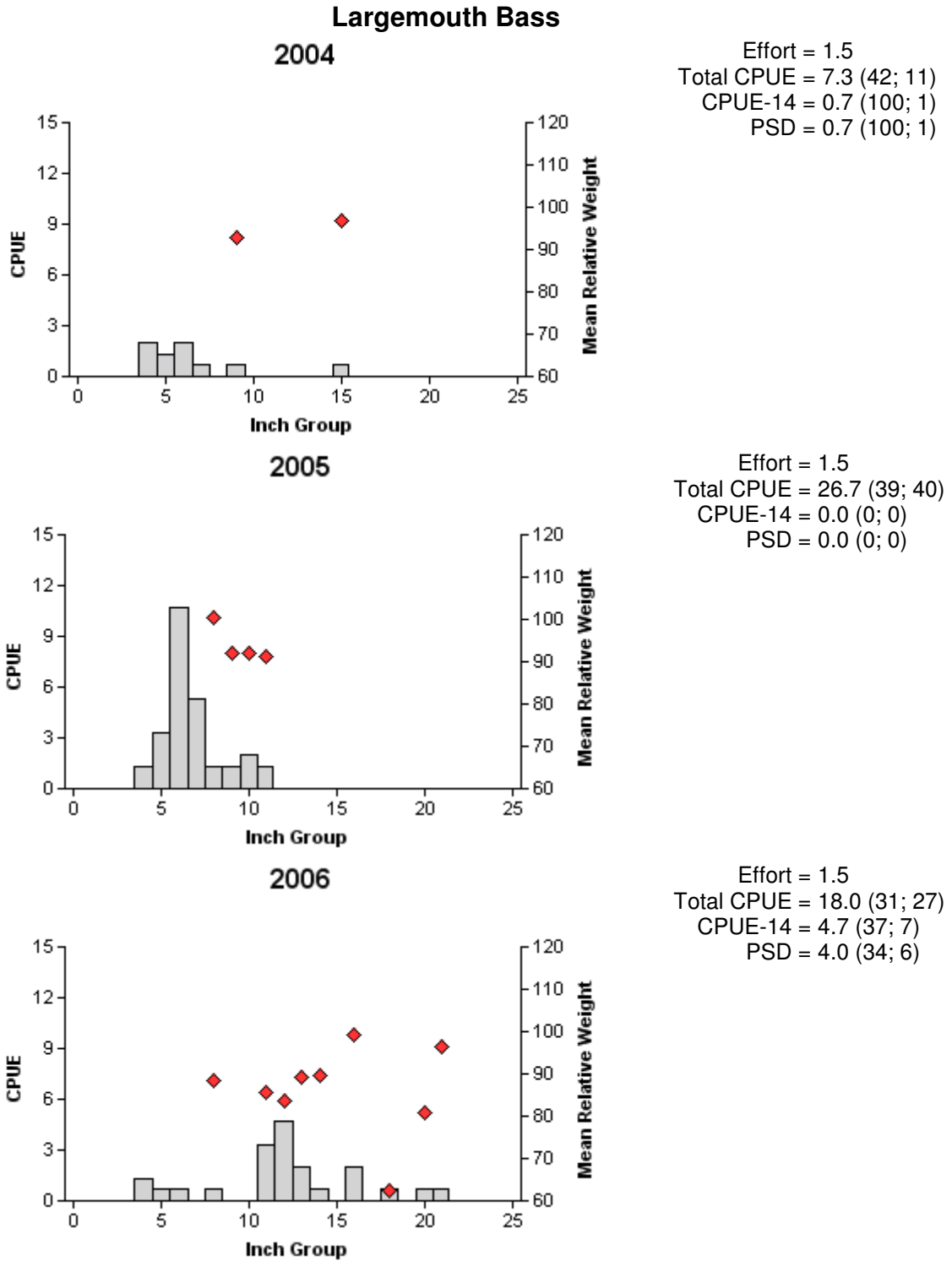


Figure 13. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for fall electrofishing surveys, Meredith Reservoir, Texas, 2004, 2005, and 2006. RSE is used for CPUE values and SE is used for RSD/PSD values.



### Largemouth Bass

Table 10. Creel survey statistics for largemouth bass at Meredith Reservoir from April through September for 2004, 2005, and 2006, where total catch per hour is for anglers targeting largemouth bass and total harvest is the estimated number of largemouth bass harvested by all anglers. Relative standard errors (RSE) are in parentheses. Meredith Reservoir was 6,164 surface acres in 2004 and 2006 and 7,047 surface acres in 2005.

Creel Survey Statistic	Year		
	2004	2005	2006
Directed effort (h)	0.00 (.)	890.67 (53)	2,478.50 (35)
Directed effort/acre	0.00 (.)	0.13 (53)	0.40 (35)
Total catch per hour	0.0 (.)	0.0 (.)	0.39 (61)
Total harvest	52.70 (216)	40.72 (87)	179.20 (165)
Harvest/acre	<0.01 (216)	<0.01 (87)	0.03 (165)
Percent legal released	0	80	58

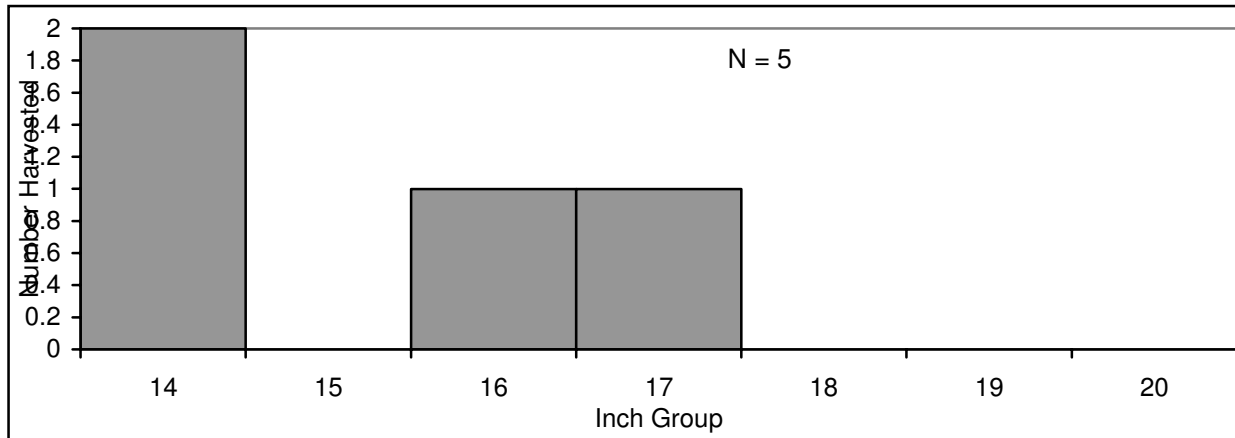


Figure 14. Length frequency of harvested largemouth bass observed during creel surveys at Meredith Reservoir, Texas, April through September 2006, all anglers combined. N is the number of harvested largemouth bass observed during creel surveys.

### Largemouth Bass

Table 11. Results of genetic analysis of largemouth bass collected by fall electrofishing, Meredith Reservoir, Texas, 1997 - 2000. Values under genotype are the number of fish classified in each category: 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		
1997	30	0	5	1	24	10.8	0.0
1998	27	0	1	9	17	11.1	0.0
1999	7	0	1	1	5	10.7	0.0
2000	29	0	4	11	14	16.1	0.0

**White Crappie**

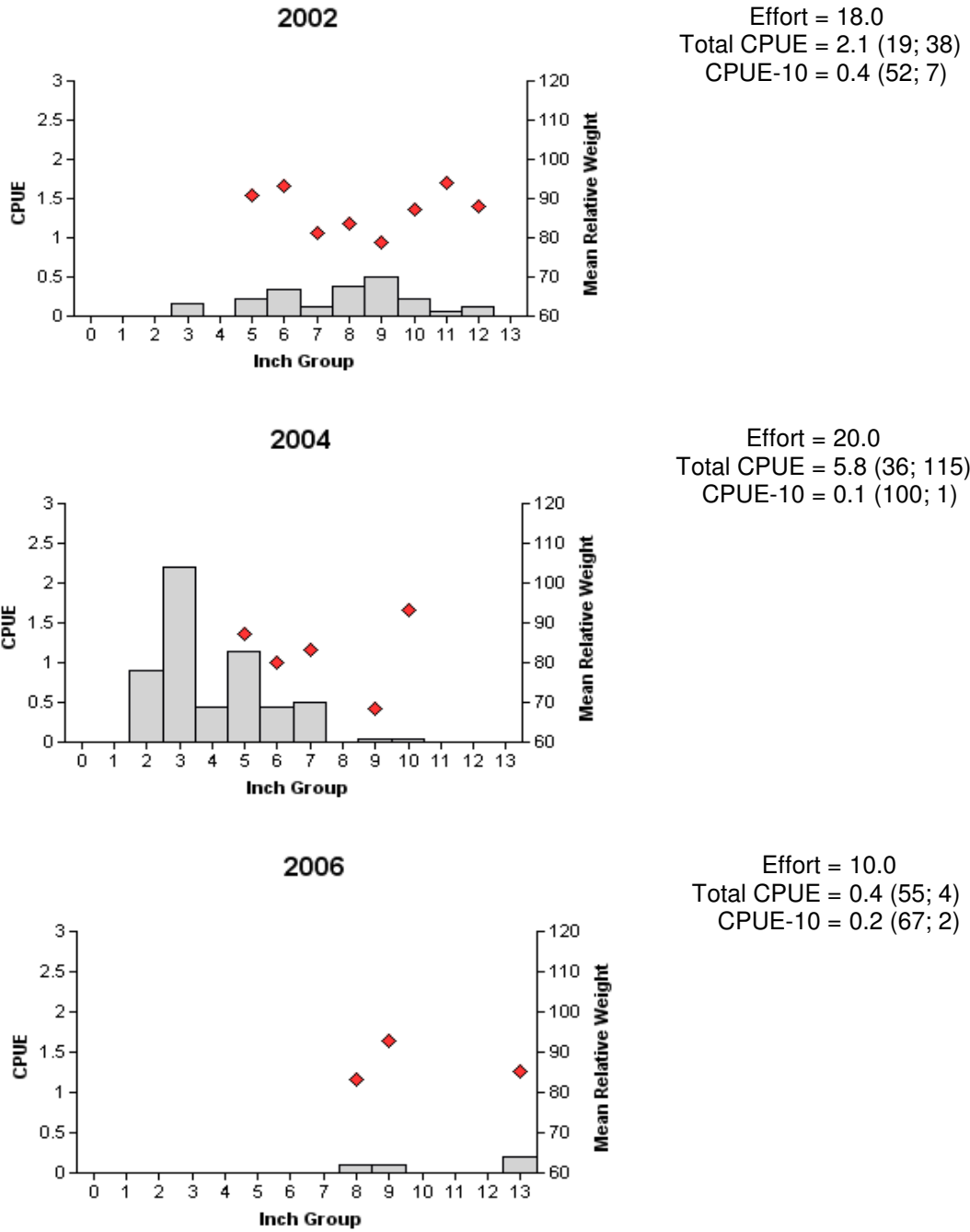


Figure 15. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for fall trap net surveys, Meredith Reservoir, Texas, 2002, 2004, and 2006. RSE is used for CPUE values and SE is used for RSD/PSD values.

## White Crappie

Table 12. Creel survey statistics for white crappie at Meredith Reservoir from April through September for 2004, 2005, and 2006, where total catch per hour is for anglers targeting white crappie and total harvest is the estimated number of white crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses. Meredith Reservoir was 6,164 surface acres in 2004 and 2006 and 7,047 surface acres in 2005.

Creel Survey Statistic	Year		
	2004	2005	2006
Directed effort (h)	456.83 (64)	2,431.42 (39)	2,366.47 (34)
Directed effort/acre	0.07 (64)	0.34 (39)	0.38 (34)
Total catch per hour	0.00 (.)	0.25 (117)	0.99 (32)
Total harvest	2,730.06 (102)	481.88 (77)	7,033.76 (41)
Harvest/acre	0.44 (102)	0.07 (77)	1.14 (41)
Percent legal released	0	15	5

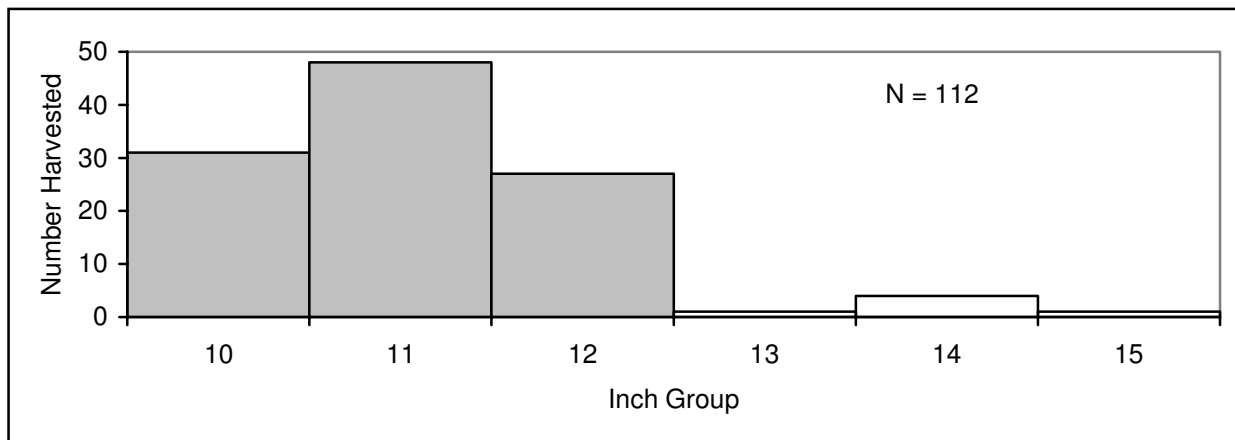
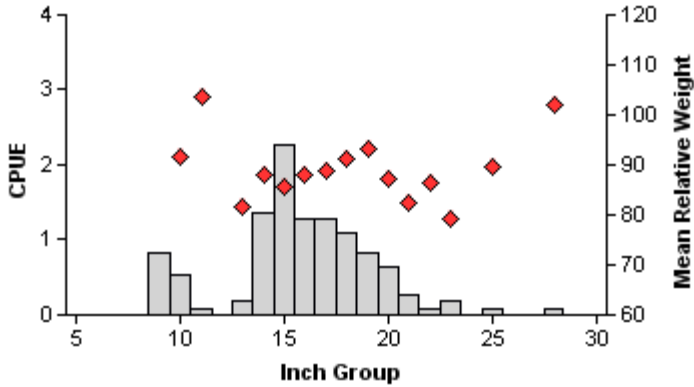


Figure 16. Length frequency of harvested white crappie observed during creel surveys at Meredith Reservoir, Texas, April through September 2006, all anglers combined. N is the number of harvested white crappie observed during creel surveys.

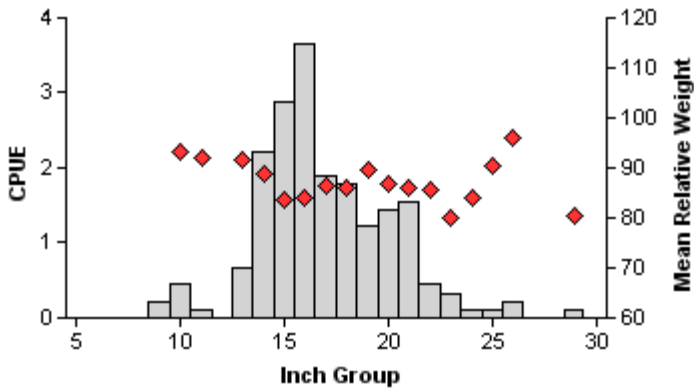
Walleye

2005



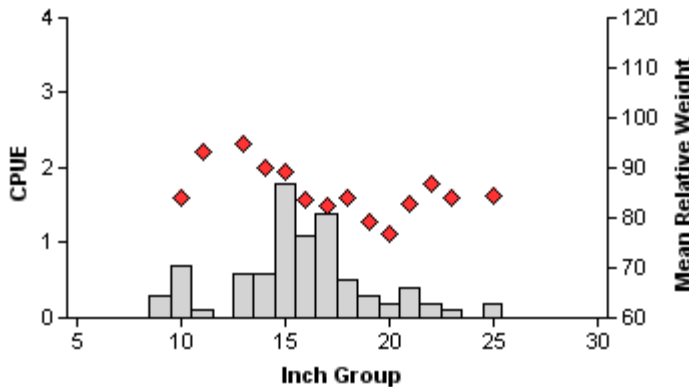
Effort = 11.0  
 Total CPUE = 11.1 (18; 122)  
 Stock CPUE = 10.3 (19; 113)  
 PSD = 79 (4.9)  
 RSD-16 = 57 (6.6)

2006



Effort = 9.0  
 Total CPUE = 19.4 (14; 175)  
 Stock CPUE = 19.2 (15; 173)  
 PSD = 82 (2.5)  
 RSD-16 = 69 (3.9)

2007



Effort = 10.0  
 Total CPUE = 8.5 (15; 85)  
 Stock CPUE = 8.2 (15; 82)  
 PSD = 76 (6.8)  
 RSD-16 = 54 (7.8)

Figure 17. Number of walleye caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for spring gill net surveys, Meredith Reservoir, Texas, 2005, 2006, and 2007. RSE is used for CPUE values and SE is used for RSD/PSD values.

Walleye

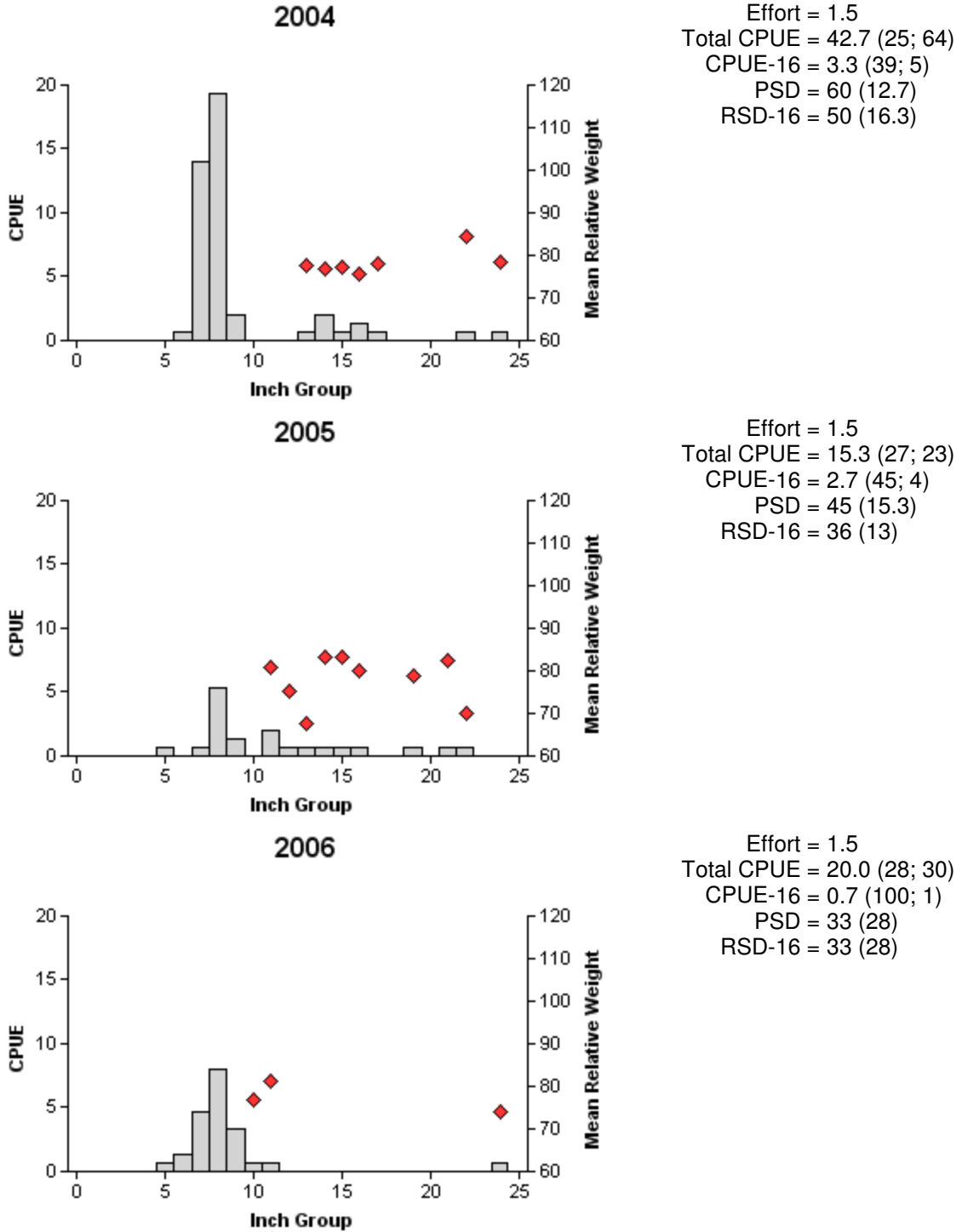


Figure 18. Number of walleye caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N are in parentheses) for fall electrofishing surveys, Meredith Reservoir, Texas, 2004, 2005, and 2006. RSE is used for CPUE values and SE is used for RSD/PSD values.

## Walleye

Table 13. Creel survey statistics for walleye at Meredith Reservoir from April through September for 2004, 2005, and 2006, where total catch per hour is for anglers targeting walleye and total harvest is the estimated number of walleye harvested by all anglers. Relative standard errors (RSE) are in parentheses. Meredith Reservoir was 6,164 surface acres in 2004 and 2006 and 7,047 surface acres in 2005.

Creel Survey Statistic	Year		
	2004	2005	2006
Directed effort (h)	4,351.49 (30)	12,794.36 (20)	11,527.79 (28)
Directed effort/acre	0.71 (30)	1.82 (20)	1.87 (28)
Total catch per hour	0.13 (124)	0.22 (43)	0.63 (23)
Total harvest	272.81 (124)	3,231.22 (45)	4,636.47 (41)
Harvest/acre	0.04 (124)	0.46 (45)	0.75 (41)
Percent legal released*	0	0	13

\*Only includes fish over 16 inches.

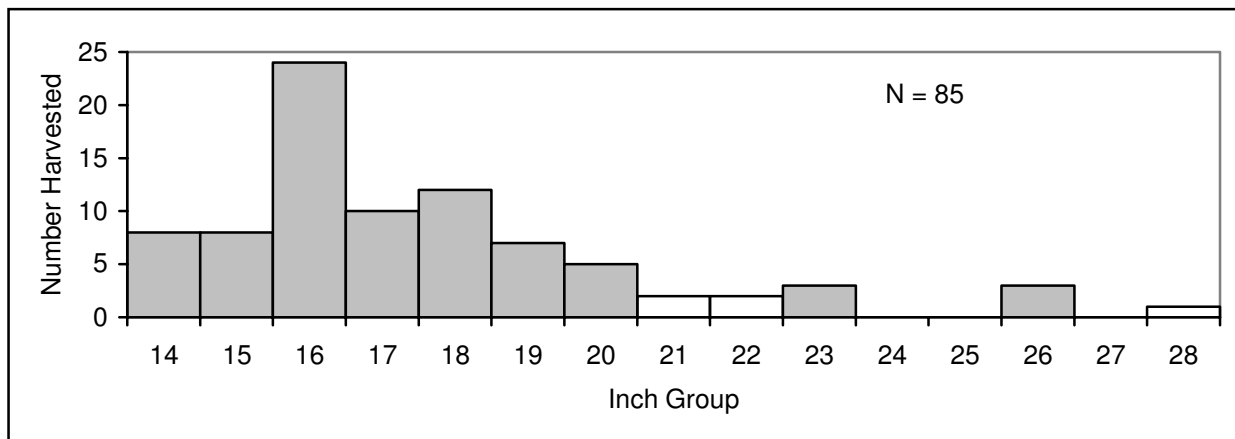


Figure 19. Length frequency of harvested walleye observed during creel surveys at Meredith Reservoir, Texas, April through September 2006, all anglers combined. N is the number of harvested walleye observed during creel surveys.

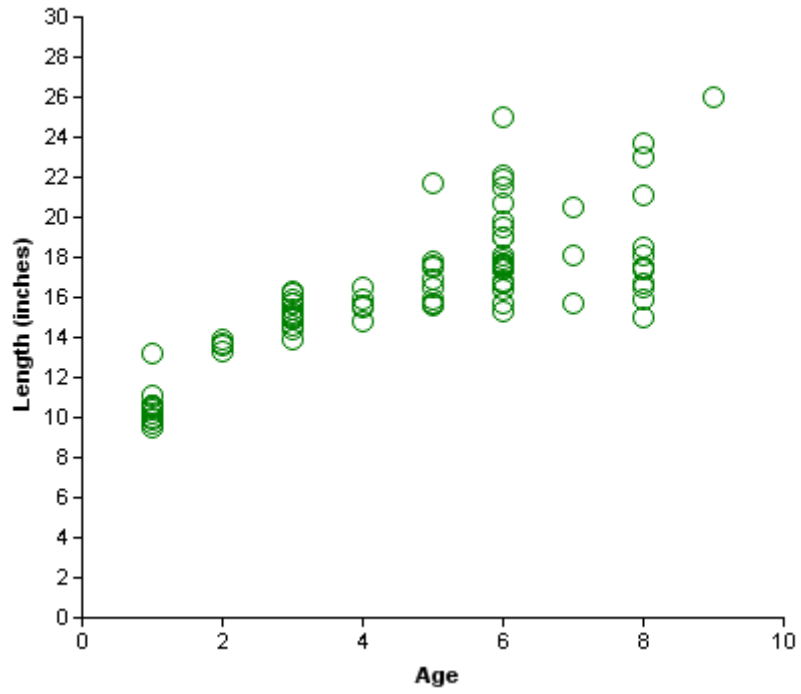
**Walleye**

Figure 20. Length at age for 85 walleye collected from gill nets at Meredith Reservoir, Texas, April 2007.



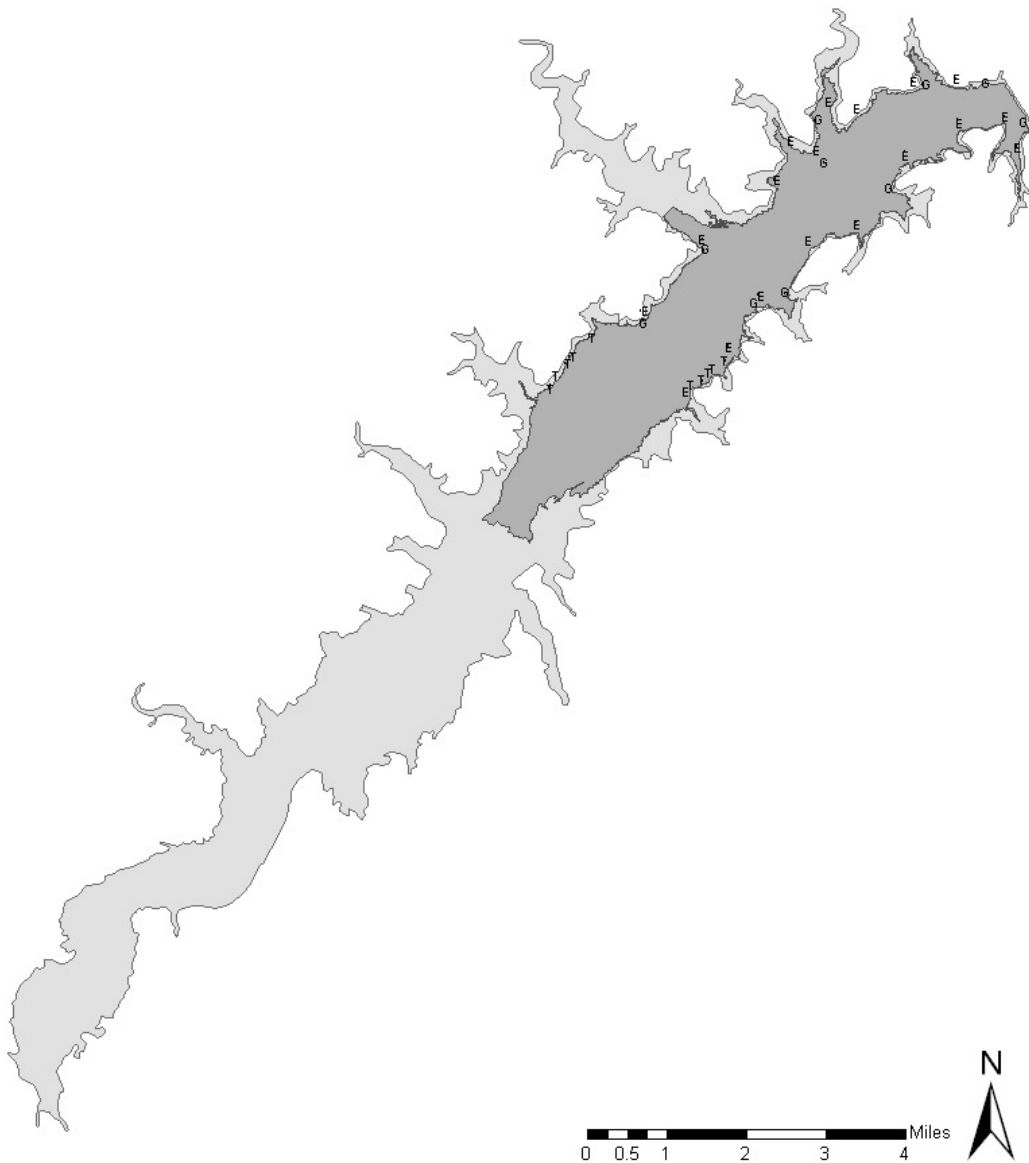
Table 14. Proposed sampling schedule for Meredith Reservoir, Texas. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. S denotes standard survey and A denotes additional survey. The creel survey will be 6 months from April through September.

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

**APPENDIX A**

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

Species	Gill Nets		Trap Nets		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad	194	19.4			348	232.0
Common carp	28	2.8			21	14.0
River carpsucker	91	9.1			2	1.3
Blue catfish	8	0.8				
Channel catfish	13	1.3			5	3.3
Flathead catfish	23	2.3			1	0.7
White bass	71	7.1	2	0.2	22	14.7
Warmouth					3	2.0
Bluegill	1	0.1	1	0.1	80	53.3
Longear sunfish					17	11.3
Smallmouth bass	3	0.3			22	14.7
Largemouth bass	3	0.3			27	18.0
White crappie	17	1.7	4	0.4	12	8.0
Black crappie	1	0.1				
Yellow perch					1	0.7
Walleye	85	8.5			30	20.0

**APPENDIX B**

Location of sampling sites, Meredith Reservoir, Texas, 2006-2007. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. The dark grey color indicates approximate elevation at time of sampling.

**APPENDIX C**

Harvest regulation history for Meredith Reservoir by species. Regulations were implemented on September 1 of the year indicated. Abbreviations: MLL = minimum length limit, DBL = daily bag limit, SLL = slot length limit, C&R = catch and release

Species	Year	Regulation
Catfish, blue and channel	1965	15 DBL in aggregate with channel and flathead catfish; no MLL
	1971	25 DBL in aggregate with channel and flathead catfish; no MLL
	1990	25 DBL in aggregate with channel catfish; 9 inch MLL
	1991	15 DBL in aggregate with channel catfish; 14 inch MLL
	1995	25 DBL in aggregate with channel catfish; 12 inch MLL
Catfish, flathead	1965	15 DBL in aggregate with channel and blue catfish; no MLL
	1971	25 DBL in aggregate with channel and blue catfish; no MLL
	1990	5 DBL; 9 inch MLL
	1992	5 DBL; 18 MLL
	1993	5 DBL; 24 MLL
	1995	5 DBL; 18 MLL
Bass, White	1965	25 DBL; no MLL
	1988	25 DBL; 10 inch MLL
Bass, smallmouth	1965	15 DBL in aggregate with largemouth bass; 7-inch MLL not more than 10 over 11 inches
	1971	10 DBL in aggregate with largemouth bass; 10 inch MLL
	1986	5 DBL; 12 inch MLL
	1988	5 DBL; 14 inch MLL
	1990	5 DBL in aggregate with largemouth bass; 14 inch MLL
	1992	3 DBL; 12-15 inch SLL
Bass, largemouth	1965	15 DBL in aggregate with smallmouth bass; 7-inch MLL not more than 10 over 11 inches
	1971	10 DBL in aggregate with smallmouth bass; 10 inch MLL
	1986	5 DBL; 12 inch MLL
	1988	5 DBL; 14 inch MLL
	1990	5 DBL in aggregate with smallmouth bass; 14 inch MLL
Crappie: white and black , their hybrids and subspecies	1965	25 DBL in aggregate; no MLL
	1985	25 DBL; 10 inch MLL
Walleye	1965	C&R only
	1968	5 DBL; no MLL
	1970	5 DBL; 10 inch MLL
	1980	10 DBL; 10 inch MLL
	1987	10 DBL; 16 inch MLL
	1988	5 DBL; 16 inch MLL
	1999	5 DBL; no more than 2 fish under 16 inches