

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-30-R-29

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2004-2005 Survey Report

**Clyde Reservoir**

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## EXECUTIVE SUMMARY

Clyde Reservoir was surveyed in fall 2004 using electrofishing and trap nets. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Clyde Reservoir is a 500-acre impoundment located on Pecan Bayou in the Colorado River Basin approximately 15 miles southeast of Abilene. It was constructed in 1970 as a municipal water supply and is controlled by the City of Clyde, Texas. The reservoir lies within the High and Rolling Plains Land Resource Area. Topography grades from gentle to moderate relief with sandy to loamy soils. Watershed land use is primarily agriculture. Water level history is not kept for this reservoir; however, during winter 2000/2001, the reservoir size was estimated at less than fifty surface acres due to a severe ongoing drought. By the end of 2004, water level was within 4 feet of conservation level. The habitat consisted primarily of mud flats and submerged terrestrial vegetation.
- **Prey species:** Electrofishing catch rates of bluegill and sub-stock gizzard shad were 66.0/h and 656.4/h, respectively. Index of vulnerability (IOV) for gizzard shad was excellent, 99% of gizzard shad were available to existing predators. This is a promising sign of recovery from the effects of the drought. The total catch per unit effort (CPUE) of bluegill (66.0/h) was relatively low, but there should be sufficient numbers of these fish to re-establish the bluegill population to pre-drought levels.
- **Channel catfish:** No gill net survey was conducted during 2005 to avoid sampling mortalities since the fishery was still in a drought recovery phase. Some catfish were present as indicated by electrofishing catch rates for channel catfish and flathead catfish of 1.2/h and 2.4/h respectively.
- **Largemouth bass:** Due to low water conditions a non-standard survey of largemouth bass was conducted in November of 2004. Five 10-minute stations were sampled resulting in a catch rate of 183.6/h. However, the electrofishing catch rate of stock length largemouth bass was very low (14.4/h). The bulk of these fish were in very good condition (relative weight ( $W_r$ )>100 in nearly all cases), and although relative abundance was low, the population size structure was reasonable (proportional stock density (PSD)=58, relative stock density (RSD-P)=15). The CPUE for sub-stock length fish was 169.2/h and may reflect the contribution of the Florida largemouth bass stocked in May of 2004. No fish were kept for age and growth analyses.
- **White crappie:** Due to low water conditions a non-standard trap net survey was conducted for white crappie. Three trap nets were set and resulted in a catch rate of 6.3/NN. This is much lower than the 64.8/NN recorded in the 2000 survey (which also incorporated a non-standard survey methodology due to the extreme low water conditions at that time). The PSD was 88. No fish were kept for age and growth analyses.
- **Management Strategies:** Lake Clyde has been a producer of trophy largemouth bass in the past. The current lake record is 14.8 pounds and was caught 2001. The lake had been very low as a result of the drought of 1998-2004, but water levels have been steadily rising since that time. Florida largemouth bass were stocked in 2004 as part of a selective restocking effort to help restore this quality fishery. Based on past history and the current status of the fishery, the statewide 14-inch minimum length limit for largemouth bass should be sufficient for management purposes.

## INTRODUCTION

This document is a summary of fisheries data collected from Clyde Reservoir in 2004. 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 2004 data for comparison.

## STATUS OF MANAGEMENT ACTIONS FROM 2001 SURVEY REPORT (Jons and Dumont 2001)

1. Stock Florida-strain largemouth bass when lake the level rises and floods terrestrial vegetation.  
**Action:** 45,257 Florida largemouth bass were stocked in 2004 and 45,398 were stocked in 2005.
2. Propose an 18-inch minimum length limit to enhance quality bass fishing.  
**Action:** Water level had improved and bass restocking had been initiated thus allowing for this proposal to be addressed. After reviewing the case for this regulation it was concluded that under the current circumstances (including low fishing pressure and susceptibility to drought) the statewide length limit of 14 inches will be sufficient for managing the development of this largemouth bass fishery.
3. Monitor the lake and fishery to determine the best drought recovery program.  
**Action:** Based on the current status of the reservoir and the restocking that has been conducted, no further action is needed other than to continue routine monitoring to document the development of the fishery.
4. Stock selected game and forage species when the lake re-fills.  
**Action:** 11,218 channel catfish were stocked in 2004 in addition to the stocking of bass indicated above.
5. Improve boat access subject to the availability of funds.  
**Action:** A new boat ramp has been constructed with funds from the Texas Parks and Wildlife Department and the City of Clyde.

## Harvest regulations for Clyde Reservoir.

Species	Bag Limit	Minimum-Maximum Length (inches)
Catfish, Blue and Channel	25	12 - No Limit
Catfish, Flathead	5	18 - No Limit
Bass, Largemouth	5	14 - No Limit
Crappie, White	25	10 - No Limit

## METHODS

- Fishes were collected by electrofishing (0.83 hours at 5 10-min stations) and trap nets (3 net nights at 3 stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (#/h) of actual electrofishing and, for trap nets, as the number of fish per net night (#/NN). All survey sites were non-randomly selected because of low water conditions as was the case in 2000); otherwise, surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2004).
- 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).
- Fish age analyses were not performed to avoid sampling mortalities due to the fact that the reservoir is still in a drought recovery phase.

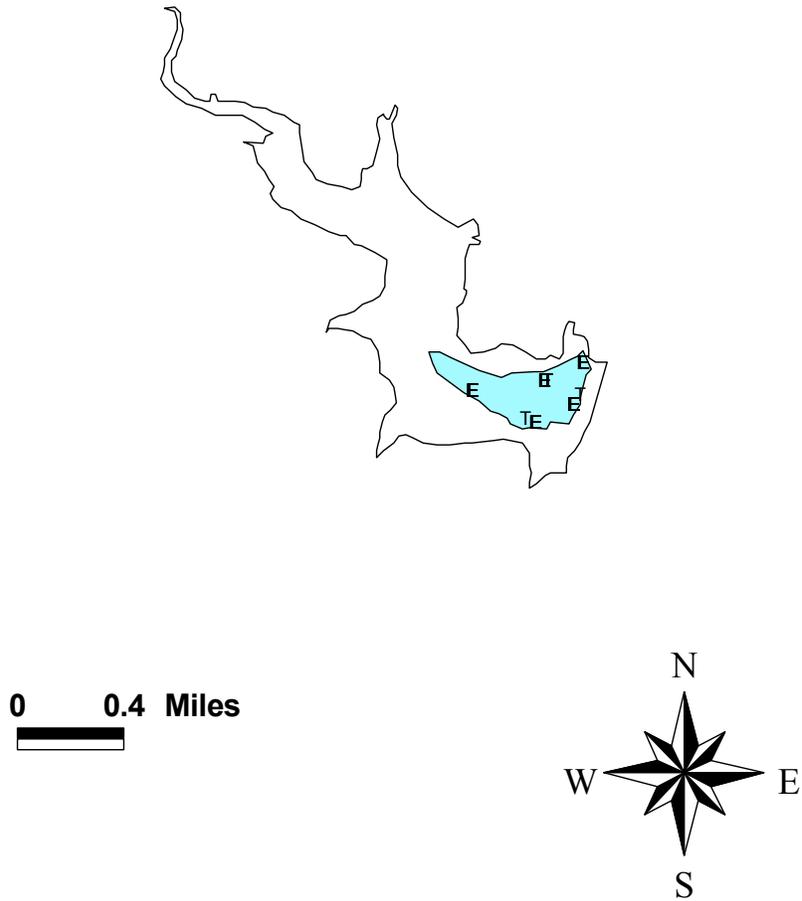
## LITERATURE CITED

- 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.
- 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.
- Jons, G. D., and S. C. Dumont. 2001. Statewide freshwater fisheries monitoring and management program survey report for Clyde Reservoir, 2001. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.



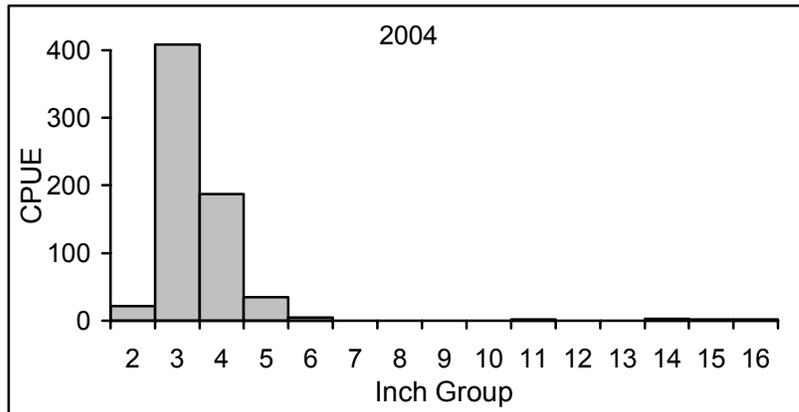
Stocking history of Clyde Reservoir, Texas. Size Categories are: FRY =<1 inch; FGL = 1-3 inches; AFGL = 8 inches, and ADL = adults.

Year	Number	Size
<u>Threadfin shad</u>		
1984	1,000	FGL
1990	2,343	FGL
1991	<u>2,812</u>	FGL
Species Total	6,155	
<u>Blue catfish</u>		
1980	6,800	FGL
1997	50,800	FGL
1998	<u>50,839</u>	FGL
Species Total	108,439	
<u>Channel catfish</u>		
1980	12,000	FGL
1981	28,015	FGL
1991	12,548	AFGL
2004	<u>11,218</u>	FGL
Species Total	63,781	
<u>Largemouth bass</u>		
1976	10,000	FGL
<u>Florida largemouth bass</u>		
1979	2,500	FGL
1988	50,784	FGL
1997	50,428	FGL
2004	<u>45,257</u>	FGL
Species Total	148,969	
<u>Walleye</u>		
1979	900,000	FRY



Location of sampling sites, Clyde Reservoir, Texas, 2004. Trap net and electrofishing stations are indicated by T and E, respectively. The shaded area represents the approximate reservoir size at the time of sampling in 2004. (Note: water level has significantly increased since then).

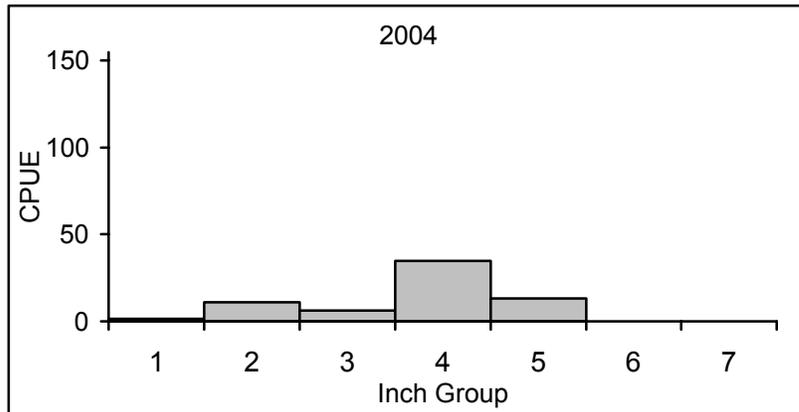
## Gizzard Shad



Effort = 0.8  
Total CPUE = 662.4  
Stock CPUE = 6.0  
PSD = 100  
IOV = 99

Number of gizzard shad caught per hour (CPUE) and population indices for non-standard, fall electrofishing survey, Clyde Reservoir, Texas, 2004.

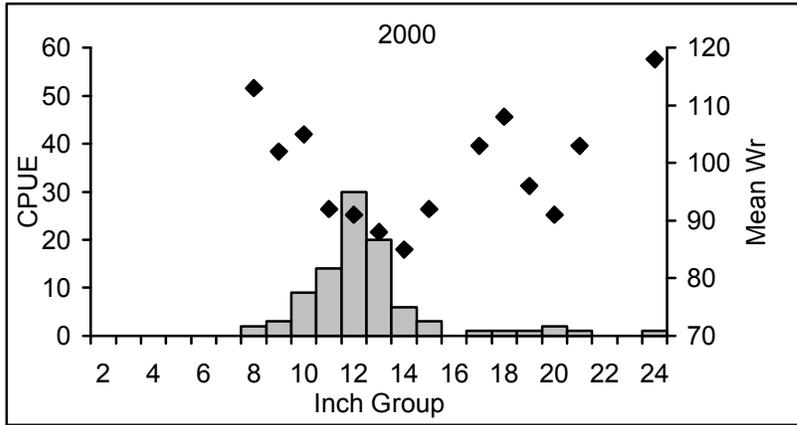
## Bluegill



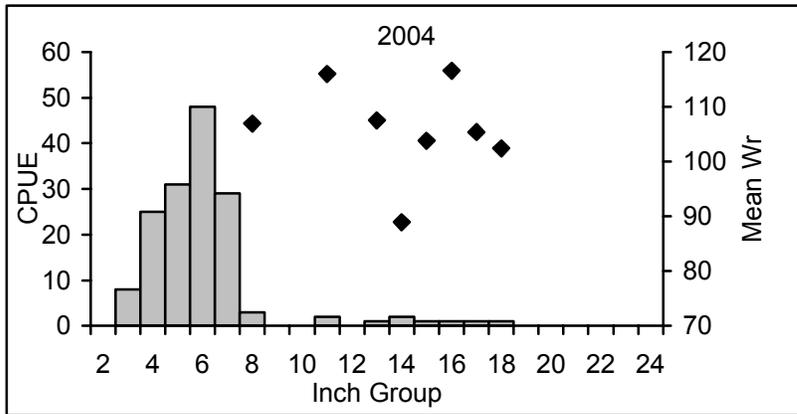
Effort = 0.8  
Total CPUE = 66.0  
Stock CPUE = 54.0  
PSD = 0  
RSD-P = 0

Number of bluegill caught per hour (CPUE) and population indices for non-standard, fall electrofishing survey, Clyde Reservoir, Texas, 2004.

## Largemouth Bass



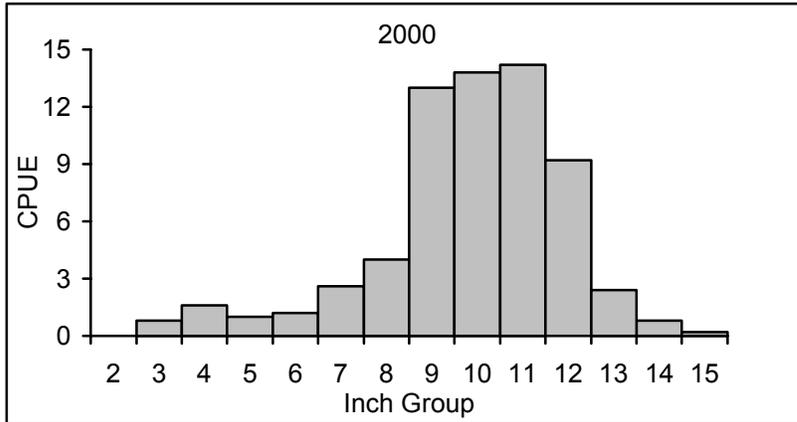
Effort = 1.0  
 Total CPUE = 94.0  
 Stock CPUE = 94.0  
 PSD = 70  
 RSD-P = 11  
 % Florida alleles = Unknown  
 % Florida genotype = Unknown



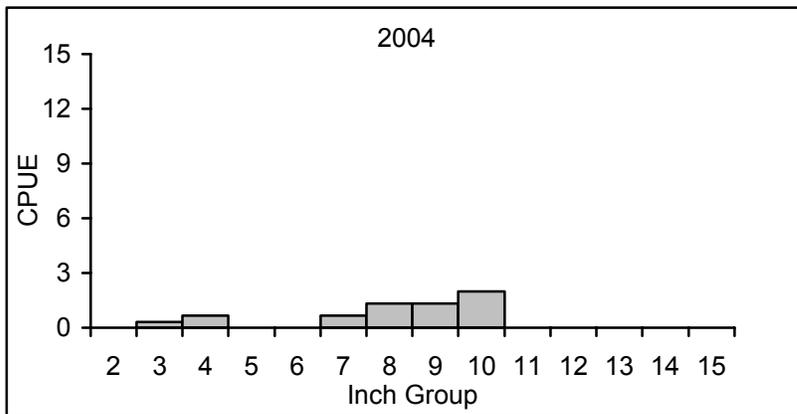
Effort = 0.8  
 Total CPUE = 183.6  
 Stock CPUE = 14.4  
 PSD = 58  
 RSD-P = 15  
 % Florida alleles = Unknown  
 % Florida genotype = Unknown

Comparison of the number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices for non-standard, fall electrofishing surveys, Clyde Reservoir, Texas, 2000, and 2004.

## White Crappie



Effort = 5.0  
 Total CPUE = 64.8  
 Stock CPUE = 62.4  
 PSD = 92  
 RSD-P = 65



Effort = 3.0  
 Total CPUE = 6.3  
 Stock CPUE = 5.3  
 PSD = 88  
 RSD-P = 38

Comparison of the number of white crappie caught per net night (CPUE) and population indices for non-standard, fall trap net surveys, Clyde Reservoir, Texas, 2000, and 2004.

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

Prepared – June 2005.

**ISSUE 1:** Clyde Reservoir had been a good trophy largemouth bass fishery, but was severely impacted by the drought of 1998-2004.

**MANAGEMENT STRATEGIES**

1. Monitor the success of the 2004 and 2005 stocking of Florida largemouth bass with electrophoresis sample in 2006.

**ISSUE 2:** Clyde Reservoir has suffered significantly from a severe drought. Existing populations of game fish have declined.

**MANAGEMENT STRATEGIES**

1. Continue to monitor the lake and its fishery to evaluate its recovery.
2. Stock appropriate species of fish as determined by the monitoring efforts.

**APPENDIX A**

Number (N) and catch rate (CPUE) of all species collected from all gear types from Clyde Reservoir, Texas, 2004.

Species	Gill Nets		Trap Nets		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					552	662.4
Channel catfish					1	1.2
Flathead catfish					2	2.4
Green sunfish					27	32.4
Warmouth					13	15.6
Orangespotted sunfish					2	2.4
Bluegill					55	66.0
Longear sunfish					25	30.0
Largemouth bass					153	183.6
White crappie			19	6.3		

**APPENDIX B**

Proposed sampling schedule for Clyde Reservoir, Texas. Gill net surveys are conducted in the spring, while electrofishing and trap net surveys are conducted in the fall. S denotes standard survey and A denotes additional survey.

Survey Year	Electrofishing	Trap Net	Gill Net	Creel	Report
Fall 2005-Spring 2006					
Fall 2006-Spring 2007	A	A	A		
Fall 2007-Spring 2008					
Fall 2008-Spring 2009	S	S	S		S