

PERFORMANCE REPORT

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FEDERAL AID PROJECT F-30-R-29

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2004 Survey Report

**Lake Placid**

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## EXECUTIVE SUMMARY

Lake Placid was surveyed in May 2005 using electrofishing, trap nets, and gill nets. Electrofishing and trap net surveys were conducted in May 2005 due to low water level, as a result of damaged dam gates in November 2004, prevented access to the reservoir. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- ◆ **Reservoir Description:** Lake Placid is a 214-acre reservoir located on the Guadalupe River in Guadalupe County one-half mile southwest of Seguin. This small impoundment, constructed in 1928, is fed by the Guadalupe River watershed and used for water supply, hydroelectric generation, and recreation. The reservoir is controlled by the Guadalupe-Blanco River Authority (GBRA). Although most of the shoreline is privately owned, public boat access is adequate, while public access for bank and handicap anglers is inadequate. The lake is typically riverine with a maximum depth of 40 feet. Substrate in the upper portion of the reservoir is composed primarily of rock and gravel, and in the middle and lower portions of the reservoir is composed of clay, sand and silt. In addition to boat docks, piers, bulkheads, and riprap, littoral habitat consists of many native aquatic species including rushes, cattail, pondweed, American lotus, and spatterdock. There are some areas of submerged timber, and overhanging terrestrial vegetation is abundant. Introduced exotics, such as water hyacinth, water lettuce, and hydrilla caused access problems for many years until aggressive chemical and biological controls were implemented. No evidence of hydrilla was found in Lake Placid in 2005. Water hyacinth and water lettuce, although still present, were not found in high concentrations. Two major flood events have occurred causing damage to the gates of the dam since the last survey report in 2001, and thus resulted in two sustained periods of low water conditions. The first low water event was experienced in spring 2003, while the other was experienced for a 6-month time period between November 2004 and April 2005. Lake Placid was added to the general survey list in 1999.
- **Prey species:** Gizzard shad and bluegill electrofishing catch rates were 49.0/hour and 39.0/hour, respectively, in 2005. No gizzard shad, <8 inches total length, were collected, thus the IOV for gizzard shad was 0.
  - Bluegill had a PSD of 14, indicating that the size structure of bluegill population in the fishery offers good availability as a forage species.
- **Channel catfish:** The gill net catch rate for channel catfish declined from 14.4/net night in 2001 to 1.8/net night in 2005. However, all fish captured in the 2005 sampling period were of harvestable size ( $\geq 14$ -inches). Overall condition of channel catfish was good as mean relative weights averaged near 100.
- **Redbreast sunfish:** Redbreast sunfish catch rate was 5.0/hr in 2005. Due to insufficient sample size, population indices were not calculated, but total length (TL) of the sampled individuals ranged from 5 to 8-inches. Redbreast sunfish do not currently provide a fishery in this reservoir.
- **Redear sunfish:** Redear sunfish catch rates 12.0/hour in 2005. The current PSD of 27 and RSD-P of 9.0 indicates that the potential for a redeer fishery in Lake Placid still persists.
- **Largemouth bass:** The electrofishing catch rate for largemouth bass was 20.0/hour in 2005. The current PSD and RSD-P for largemouth bass in Lake Placid are 69.0 and 38.0, respectively. Though based upon a relatively small sample size (N=20), these indices suggests that the surviving population is dominated by a number adult individuals that are capable of reproduction. The mean relative weight of the individuals sampled in 2005 was approximately 86.

#### Management Strategies

- Based on current information, the reservoir should continue to be managed with existing regulations.
- Hydrilla, water hyacinth, and water lettuce caused access and recreational problems in the watershed prior to the herbicide treatment and grass carp introductions in 1996. Continued monitoring efforts to detect new infestations should be considered a priority.
- Due to low water levels experienced from November 2004 to April 2005 as a result of damage to the gates of Lake Placid dam, restock both Florida largemouth bass and Imperial-strain channel catfish in the reservoir. Also, change from the existing 4-year sampling rotation of electrofishing, gill netting, and trap netting once every four years to electrofishing, gill netting, and trap netting once every other year to monitor the reproduction and recruitment of the recovering fisheries.

## INTRODUCTION

This document is a summary of fisheries data collected from Lake Placid in May 2005. 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. Management strategies are included to address existing problems or opportunities. No historical electrofishing and trap net data is presented for comparison because the most recent electrofishing and trap net surveys were conducted in May 2005 (outside the standard Fall time period). Historical gill net data is presented for comparison to the 2005 data.

## STATUS OF MANAGEMENT ACTIONS FROM 2000 (Elder and Findeisen, 2001) SURVEY REPORT

ISSUE 1 Hydrilla, water hyacinth, and water lettuce caused access and recreational problems in the watershed prior to the herbicide treatment and grass carp introductions in 1996. Continued monitoring efforts to detect new infestations should be considered a priority.

Action: District staff continued monitoring efforts in conjunction with efforts of GBRA staff and lake-front property owners .

ISSUE 2 Most sportfish populations have shown minimal changes since the severe flood event in 1998, press releases concerning the status of sportfish fisheries could prevent negative public perception.

Action: District staff submitted several press releases regarding the re-establishment of the sportfish populations in Lake Placid.

ISSUE 3 The potential for a redear sunfish fishery may warrant press releases to inform the public of this opportunity.

Action: District staff submitted several press releases regarding the potential redear sunfish fishery in Lake Placid.

## Harvest regulations for Lake Placid.

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

## METHODS

- Due to extreme low water levels experienced from November 2004 to April 2005, as a result of damage to the gates of Lake Placid dam, nonstandard electrofishing and trap net surveys were conducted in May 2005 (standard surveys are conducted during the Fall). Fishes were captured using electrofishing (1.0 hour at 12, 5-min stations), trap nets (5 net nights), and gill nets (5 net nights) at randomly selected sites. Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour of actual electrofishing (#/h), and for gill and frame nets as the number of fish caught in one net set over night (#/NN).
- Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density Preferred (RSD-P), and Relative Weight ( $W_r$ )] indices were calculated for target fishes according to Anderson and Neumann (1996). The Index of Vulnerability (IOV) was calculated for gizzard shad according to DiCenzo et. al (1996).
- A littoral zone/physical habitat survey was conducted in 2004 according to the Fisheries Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2004).

## LITERATURE CITED

- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, second edition. American Fisheries Society, Bethesda, Maryland.
- DiCenzo, V.J., M.J. Maceina, and M.R. Stimpert. 1996. Relationships between reservoir trophic state and gizzard shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.
- Elder, H.S., and J.A. Findeisen. 2001. Statewide freshwater fisheries monitoring and management program survey report for: Lake Placid Reservoir, 2000. Texas Parks and Wildlife Department, Federal Aid In Sport Fish Restoration, Grant F-30-R, Performance Report, Austin, Texas.

## Physical and historical data for Lake Placid, Texas, 2004-2005.

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Inland Fisheries water body code: 0587	IF District: IE - Mathis
Controlling authority: Guadalupe Blanco River Authority	Acres: 214
Water Uses: Water supply, hydroelectric, recreation	
Counties: Guadalupe	Location: 1/2 mile SW of Seguin, TX
Latitude: 29° 33'	Longitude: 98° 05'
Nearest major metropolitan area and distance: San Antonio - 25 miles	
Reservoir description: Mainstream: Guadalupe River	
Mean depth (ft): 12.6	Maximum depth (ft): 40.0
Shoreline development ratio: 5.27	
Secchi disc range (ft): 1-2	Conductivity (umhos/cm): 395-414
Constructed: 1928	
Access: Boat: Adequate - 1 ramp	
Bank: Inadequate	
Handicap: Inadequate	

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Littoral zone/physical habitat survey for Lake Placid, Texas, July 2004. A linear shoreline distance (miles) was recorded for each habitat type found and an areal coverage (acres) was calculated for each vegetation type.

Habitat	Type	Shoreline Distance		Areal Coverage	
		Miles	Percent	Acres	Percent
Shoreline	Bulkhead	7.6	44.2		
	Concrete	0.3	1.5		
	Cut bank	0.2	1.1		
	Eroded bank	7.7	44.9		
	Overhanging brush	1.3	7.8		
	Rocky/gravel shoreline	10.7	6.8		
Vegetation	Native emergent			0.02	0.01
	Native floating			1.99	0.93
	Water hyacinth			<0.01	<0.01
Adjacent to Shoreline	Boat dock	8.5	49.5		

Stocking history of Lake Placid, Texas. Size categories are ADL for adult, FGL for fingerling, and FRY for fry.

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<u>Year</u>	<u>Number</u>	<u>Size</u>
<u>Channel catfish</u>		
1966	4,200	FGL
1973	9,000	FGL
1995	6,261	FGL
1997	<u>5,990</u>	FGL
Species total	25,451	
<u>Florida largemouth bass</u>		
1978	410	FGL
1985	9,500	FGL
1993	1,461	FGL
1994	40,413	FGL
2003	119,487	FRY
2003	<u>20,136</u>	FGL
Species total	190,997	
<u>White crappie</u>		
1994	<u>24,808</u>	FGL
Species total	24,808	
<u>Coppernose Bluegill</u>		
1983	<u>10,000</u>	FGL
Species total	10,000	
<u>Blue catfish</u>		
1995	40,541	FGL
1998	<u>40,000</u>	FGL
Species total	80,541	
<u>Triploid grass carp</u>		
1995	25*	ADL
1998	<u>11**</u>	ADL
Species total	36	

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\* Radio tagged.

\*\* Fish in 1998 replaced 11 dead fish.

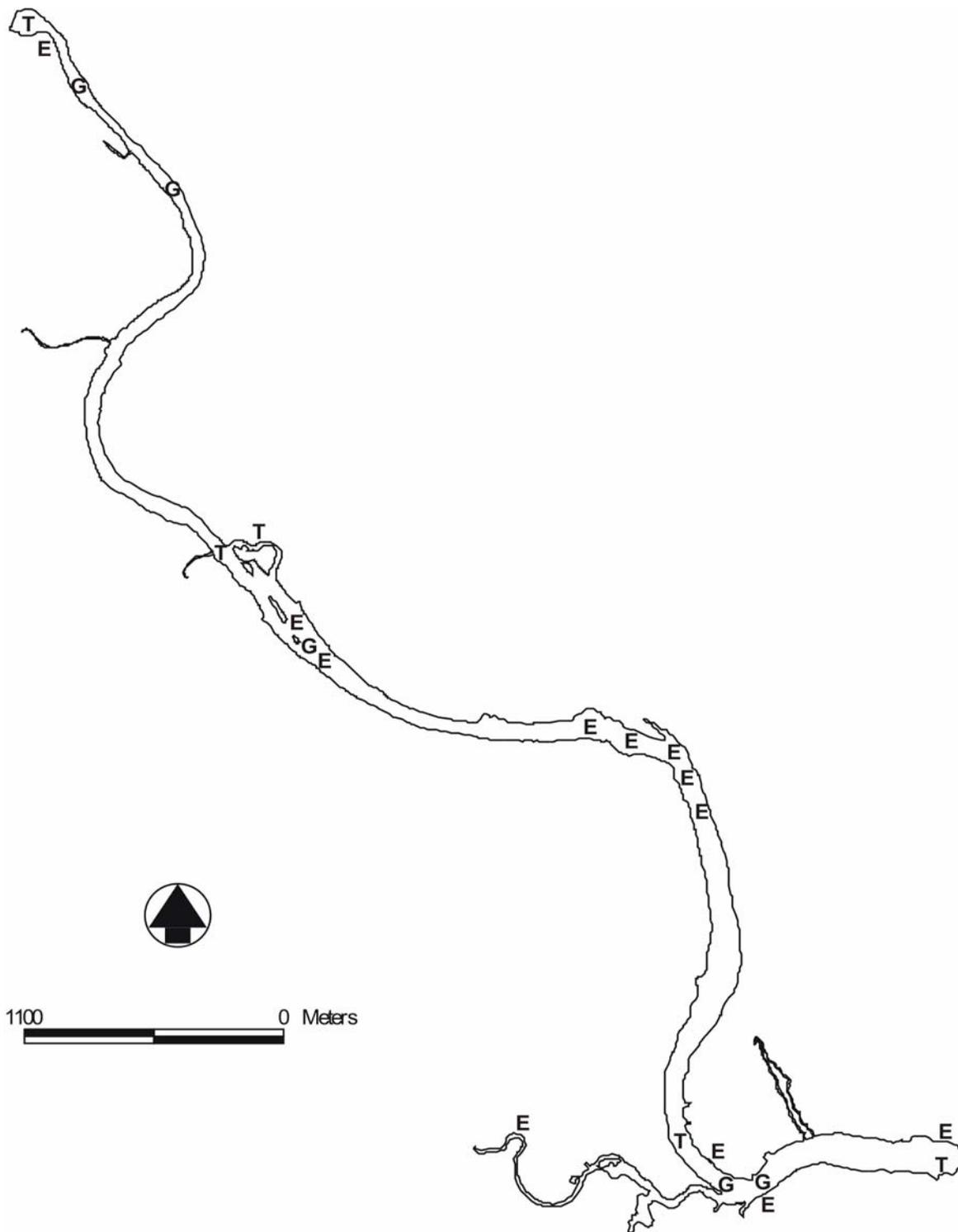
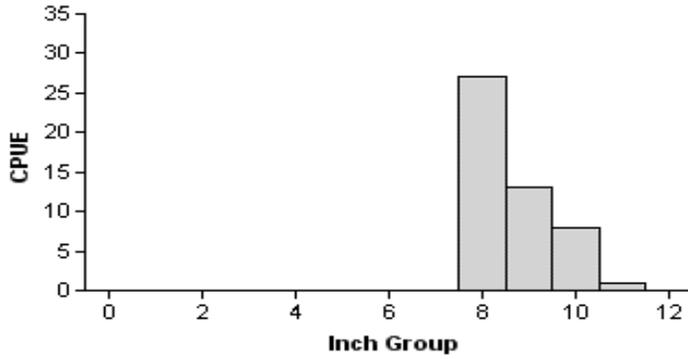


Figure 1. Lake Placid Reservoir sampling sites. Electrofishing, trap net, and gill net stations are indicated by E, T, and G, respectively.

### Gizzard Shad

2005

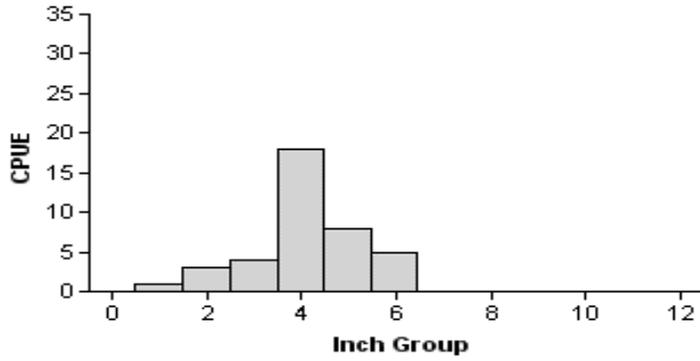


Effort = 1  
Total CPUE = 49  
Stock CPUE = 49  
IOV = 0

The number of gizzard shad caught per hour (CPUE, bars) and population indices for the Spring 2005 electrofishing survey, Lake Placid, Texas.

# Bluegill

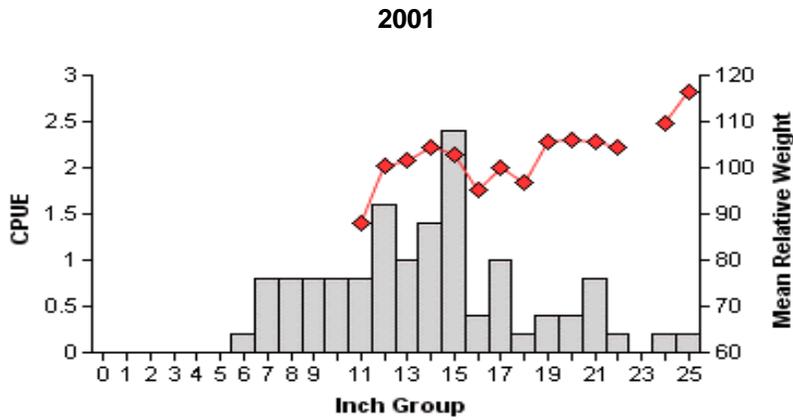
2005



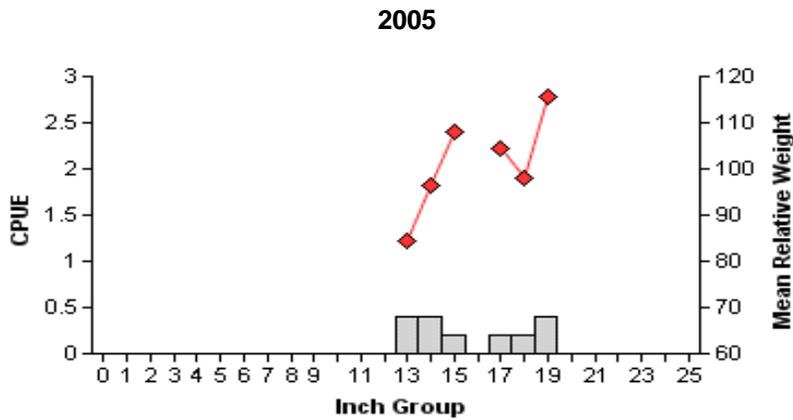
Effort = 1  
Total CPUE = 39  
Stock CPUE = 35  
PSD = 14  
RSD-P = 0

The number of bluegill caught per hour (CPUE, bars) and population indices for the Spring 2005 electrofishing survey, Lake Placid, Texas.

### Channel catfish



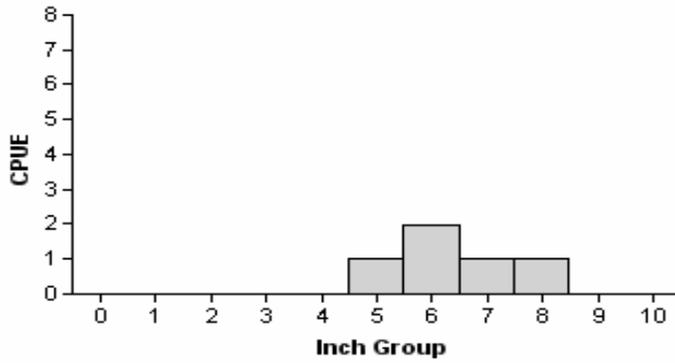
Effort = 5.0  
 Total CPUE = 14.40  
 Stock CPUE = 11.00  
 PSD = 35  
 RSD-12 = 93



Effort = 5.0  
 Total CPUE = 1.80  
 Stock CPUE = 1.80  
 PSD = 44  
 RSD-12 = 100

Comparison of the number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices for Spring 2001 and 2005 gill net surveys, Lake Placid, Texas.

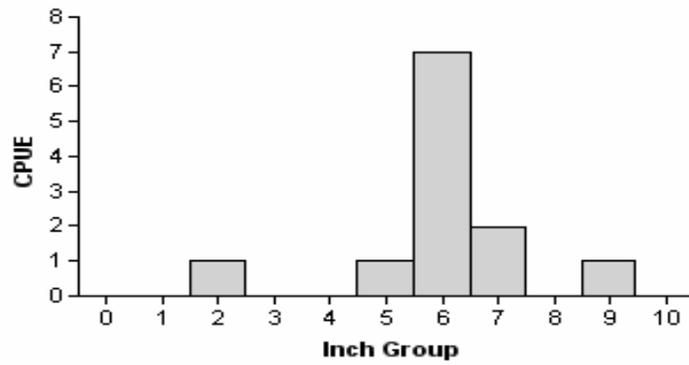
## Redbreast Sunfish



Effort = 1  
Total CPUE = 5  
Stock CPUE = 5

The number of redbreast sunfish caught per hour (CPUE, bars) and population indices for the non-standard Spring 2005 electrofishing surveys, Lake Placid, Texas.

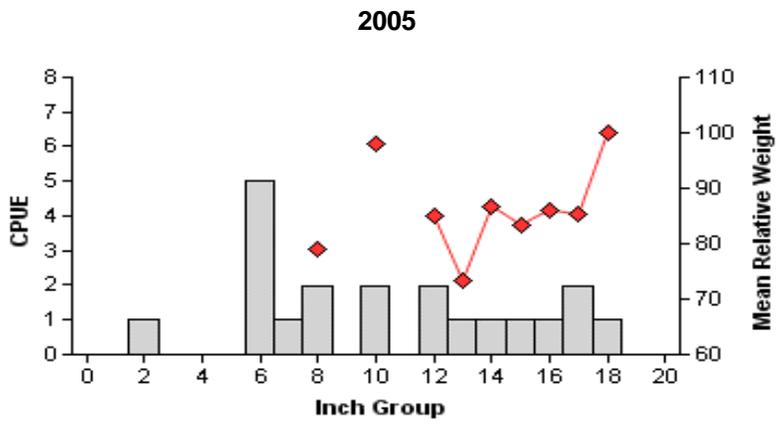
## Redear Sunfish



Effort = 1  
Total CPUE = 12  
Stock CPUE = 11  
PSD = 27  
RSD-P = 9.1

The number of redear sunfish caught per hour (CPUE, bars) and population indices for the non-standard Spring 2005 electrofishing surveys, Lake Placid, Texas.

### Largemouth bass



Effort = 1  
 Total CPUE = 20  
 Stock CPUE = 13  
 PSD = 69  
 RSD-P = 38

The number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices for the non-standard spring 2005 electrofishing surveys, Lake Placid, Texas.

Fisheries Management Plan  
Lake Placid, Texas  
Prepared - June 2005.

**ISSUE 1** Nuisance aquatic vegetation (hydrilla, water hyacinth, and water lettuce) caused access and recreational problems in the watershed prior to herbicide treatments and grass carp introductions in 1996. However, since 1996 hydrilla has not been observed in Lake Placid, but water hyacinth and water lettuce were observed in small quantities during the 2004 physical vegetation habitat survey.

**MANAGEMENT STRATEGIES**

1. Continue to monitor the reservoir for possible return of nuisance aquatic vegetation and implement control measures as necessary.

**ISSUE 2** A severe flood event in October 2004 caused damage to the dam of Lake Placid, causing the reservoir to remain 12-feet below conservation pool for a 6-month period between November 2004 and April 2005. This low water period has likely caused a negative impact on the Lake Placid fisheries.

**MANAGEMENT STRATEGIES**

1. Restock both Florida largemouth bass and Imperial-strain channel catfish at a rate of 100/acre.
2. Change from the existing 4-year sampling rotation of electrofishing, gill netting, and trap netting once every four years to electrofishing, gill netting, and trap netting once every other year to monitor the reproduction and recruitment of the recovering fisheries.

## APPENDIX A

Table 1. Number (N) and catch rate (CPUE) of all species collected from all gear types from Lake Placid, Texas, May 2005.

Species	Electrofishing		Trap Net		Gill net	
	N	CPUE	N	CPUE	N	CPUE
Spotted gar	2	2.0				
Longnose gar	1	1.0				
Gizzard shad	49	49.0			2	0.4
Common carp	7	7.0			3	0.6
Golden shiner					1	0.2
Red shiner	1	1.0				
Bullhead minnow	61	61.0				
Inland silverside	1	1.0				
Blacktail shiner	18	18.0	2	0.4		
Gray redbhorse	28	28.0			6	1.2
Blue catfish					1	0.2
Channel catfish	14	14.0			10	2.0
Flathead catfish					3	0.6
Redbreast sunfish	5	5.0				
Green sunfish	1	1.0				
Warmouth	1	1.0				
Bluegill	39	39.0	2	0.4		
Longear sunfish	32	32.0	2	0.4		
Redear sunfish	12	12.0				
Largemouth bass	20	20.0				
Guadalupe bass	7	7.0	1	0.2		
White crappie	4	4.0	1	0.2	1	0.2
Rio Grande cichlid	10	10.0				
Armored catfish	1	1.0			1	0.2

**Appendix B**

Table 2. Proposed survey schedule for Lake Placid, Texas. Trap net and electrofishing surveys are conducted in the fall and the gill net survey is conducted in the spring. "S" denotes the years standard sampling is conducted.

<b>Sampling Year</b>	<b>Electrofishing</b>	<b>Trap Net</b>	<b>Gill Net</b>	<b>Annual Report</b>
Fall 2005-Spring 2006				
Fall 2006-Spring 2007	S	S	S	
Fall 2007-Spring 2008				
Fall 2008-Spring 2009	S	S	S	S