PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-34

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2008 Survey Report

Lake Placid

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Placid were surveyed in fall 2008 using trap nets and electrofishing and spring 2009 using gill nets. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** 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). Substrate in the upper portion of the reservoir is composed primarily of rock and gravel, and 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 several native aquatic species including water willow, white water lily, and spatterdock.

- **Management History:** Important sport fish species include largemouth, guadalupe, and spotted bass, channel, blue, and flathead catfish, and crappie. 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. Since 1996 hydrilla has not been observed in Lake Placid, but water hyacinth and water lettuce were observed in small quantities during the 2008 physical vegetation habitat survey. 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. Florida largemouth bass and channel catfish were stocked in 2005 following this low water event.

- **Fish Community**

  - **Prey species:** Gizzard and threadfin shad comprised the majority of the forage base for the predator assemblage. Bluegill, redbreast, and longear sunfish were present, but relative abundance of these species has declined since 2006. Most prey collected was adequate in size to be available as prey to sport fishes.

  - **Catfishes:** Blue, channel, and flathead catfish were present in the reservoir. The relative abundance of blue catfish slightly increased from previous surveys and consisted primarily of legal-sized (≥12-in) fish. Relative abundance of channel catfish increased since 2005 and size structure was balanced; consisting of good numbers of both sub-legal and legal-sized fish. Several flathead catfish were collected and a high percentage of the sampled population consisted of legal-sized (≥18-in) fish.

  - **Largemouth bass:** Largemouth bass abundance and size structure remained stable with a slight increase in relative abundance and the number of legal-sized (≥14-in) fish sampled. Largemouth bass had adequate growth, but tended to be skinny as body condition decreased from 2006 survey and was below average for most fish.

  - **Crappies:** Both white and black crappies are present in the reservoir; however white crappies are far more abundant. Relative abundance of white crappie slightly increased since 2006 and body conditions were adequate. Half of the crappies collected were of legal-size (≥10-in).

- **Management Strategies:** Based on current information, the reservoir should continue to be managed with existing regulations. Hydrilla, water hyacinth, and water lettuce have caused access and recreational problems in the watershed and monitoring efforts should be maintained to detect new infestations. Electrofishing and trap netting is scheduled for fall 2010 to further assess and monitor declines in prey assemblage (primarily sunfishes) abundance as well as poor body condition of largemouth bass and white crappie.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Placid in 2008 and 2009. 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 and/or opportunities. Historical data is presented with the 2008-2009 data for comparison.

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 riverine with a maximum depth of 40 feet. Substrate in the upper portion of the reservoir is composed primarily of rock and gravel, and the middle and lower portions of the reservoir are composed of clay, sand and silt. In addition to boat docks, piers, bulkheads, and riprap, littoral habitat consists of many native aquatic species including water willow, white water lily, and spatterdock. Littoral habitat in some portions of the lake includes submerged timber and overhanging terrestrial vegetation. 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 2009. Water hyacinth, although still present, was not found in high concentrations. Other descriptive characteristics for Lake Placid can be found in Table 1.

Management History

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

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.

   Action: Nuisance aquatic vegetation was monitored via physical vegetation habitat surveys which were conducted in 2006 and 2008. No hydrilla has been observed in the reservoir since 1996 and water lettuce has not been observed since 2004. Very little water hyacinth was observed in 2008 survey and its potential for expansion will continue to be monitored during sampling years.

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 may have caused a negative impact on the Lake Placid fisheries.

   Action: Florida largemouth bass and channel catfish fingerlings were stocked in 2005 at a rate of 95 and 97/acre, respectively. The extant 4-year sampling rotation of electrofishing, trap netting, and gill netting was changed to electrofishing, trap netting, and gill netting every other year to monitor reproduction and recruitment of recovering fisheries.

Harvest regulation history: Sport fish in Lake Placid are currently managed with statewide harvest regulations (Table 2).

Stocking history: Lake Placid has been stocked with numerous species including; channel catfish, blue catfish, largemouth bass, white crappie, coppernose bluegill, and triploid grass carp. The most recent stockings (channel catfish, largemouth bass) occurred in 2005 following a severe flood and low water event as part of the 2005 management plan. A complete stocking history is in Table 3.

Vegetation/habitat history: Substrate in the upper portion of the reservoir is composed primarily of rock and gravel, and the middle and lower portions of the reservoir are composed of clay, sand and silt. In addition to boat docks, piers, bulkheads, and riprap, littoral habitat consists of many native aquatic species including water willow, and spatterdock. Littoral habitat in some portions of the lake includes submerged timber and overhanging terrestrial vegetation. Introduced exotics, such as water hyacinth, water lettuce, and hydrilla caused access problems for many years until aggressive chemical and biological controls were implemented in 1996. No evidence of hydrilla was found in Lake Placid in 2008. Water hyacinth was detected in 2008 habitat/vegetation survey, albeit in low concentrations.

METHODS

Fishes were collected by electrofishing (1.0 hour at 12 5-minute stations), trap nets (5 net nights at 5 stations), and gill nets (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 trap and gill nets as the number of fish caught in one net set overnight (fish/nn). Access, littoral habitat, and aquatic vegetation surveys were conducted in August 2008. All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2008).

Sampling statistics (CPUE for various length categories) and 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). The Index of Vulnerability (IOV) was calculated for gizzard shad according to DiCenzo et. al. (1996). Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE statistics and SE was calculated for structural indices and IOV.

RESULTS AND DISCUSSION

Habitat: Near-shore or littoral zone habitat was predominately characterized by bulkhead, gravel/rocky shoreline, and native emergent and floating leaved vegetation. Offshore or adjacent to shoreline habitat included boat docks and/or piers. Native aquatic vegetation consisted of spatterdock, white water lily, and water willow. Nuisance vegetation such as water hyacinth is still present in the reservoir albeit percent coverage is minimal inhabiting less than one percent of reservoir. Native emergent and floating vegetation surface coverage has increased since 2005. Native-floating vegetation increased from 2.0 acres (0.93% coverage) in 2004 to 11.3 acres (5.3% coverage) in 2008, while native emergent vegetation increased from 0.02 acres (0.01% coverage) to 6.2 acres (2.9% coverage), for each respective survey year. Additional habitat characteristics are presented in Table 4.

Prey species: Electrofishing catch rates of gizzard and threadfin shad were 131.0/h (Figure 1) and 466.0/h, respectively, reflecting a large increase in relative abundance for both species since 2006. Survey results in 2008 indicated a downward trend in gizzard shad size composition where index of vulnerability (IOV) value was 43, considerably higher compared to 2006 (IOV = 12), but less than the IOV in 2000 (IOV = 76). The 2008 catch rates for bluegill (54.0/h, Figure 2), redbreast sunfish (35.0/h, Figure 3), and longear sunfish (26.0/h, Figure 4) dropped substantially (> 60%) since 2006 (Figures 2 - 4). Size structure for these species was adequate and most individuals collected were available as forage to most

sport fishes. Taken as a whole, survey results indicated ample prey base for sport fishes, primarily attributed to high abundance of gizzard and threadfin shad. Availability of prey should not be a limiting factor to the growth and condition of sport fishes in the reservoir.

Blue Catfish: Gill net CPUE for blue catfish was 2.6/nn in 2009, slightly higher than 1.6/nn in 2001 and 0.2/nn in 2005 (Figure 5). Although few fish were collected, size structure was skewed towards larger individuals where most fish sampled (92%) were greater than 12 in minimum length limit with several quality-sized fish ≥ 20-in collected. All blue catfish collected exhibited excellent body condition with W_r values exceeding 100 (Figure 5).

Channel Catfish: The 2009 channel catfish gill net catch rate was 15.6/nn, similar to 14.4/nn in 2001 and up from 1.8/nn in 2005 (Figure 6). A PSD-value of 8 indicates the population is currently dominated by smaller individuals, however, several fish greater than or equal to the 12-in minimum length limit were collected. Relative weights were excellent for all size classes of fish with W_r values greater than or near 100 (Figure 6).

Flathead catfish: Gill net CPUE for flathead catfish was slightly higher in 2009 (3.0/nn) compared to 2001 (1.2/nn) and 2005 (0.0/nn) (Figure 7). Size composition was dominated by larger sizes as indicated by a PSD-value of 75. Body condition was adequate with most relative weight values below 90 (Figure 7).

Largemouth bass: The electrofishing catch rate of largemouth bass was 52.0/h in 2008, up from 39.0/h in 2006, but similar to the 2000 catch rate of 55.0/h (Figure 8). The 2008 largemouth bass size composition was dominated by larger individuals (PSD = 76) compared to a more balanced size composition in 2006 (PSD = 52) and 2000 (PSD = 36). However, several sub-stock length fish were collected indicating some reproductive success. Growth of largemouth bass was good; average age at 14-inches was 2.3 years (N = 12). Body conditions in 2008 were below average for nearly all size classes and considerably lower than W_r values in 2006 (Figure 8). Largemouth bass genetics analysis in 2008 (n = 14) indicated a Florida-strain allele frequency of 65% and a Florida-strain genotype of 0%.

White Crappie: Trap net CPUE for white crappie was 3.0/nn in 2008, substantially higher than 0.8/nn in 2006, but less than 5.3/nn in 2000 (Figure 9). A PSD-value of 75 indicates the sample was dominated by larger sizes and half of the fish collected were available to anglers (≥ 10-in). Body condition was average for most fish collected where relative weights were at or near 90 (Figure 9).

Fisheries Management Plan for Lake Placid, TX

Prepared - July 2009

ISSUE 1 Survey results indicated substantial drops in some important prey species (sunfishes) abundance as well as decreases in body condition indices for largemouth bass.

MANAGEMENT STRATEGIES

1. Conduct electrofishing every other year to monitor the status of prey fish community and largemouth bass population.

ISSUE 2 Historically, nuisance aquatic vegetation (hydrilla, water hyacinth, and water lettuce) caused access and recreational problems in the watershed. 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 and once again water hyacinth was detected in the 2008 survey.

MANAGEMENT STRATEGIES

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

ISSUE 3 Channel catfish abundance and size composition has improved with a strong year class moving into the fishery and several quality sized (≥ 20 in) blue and flathead catfish were collected.

MANAGEMENT STRATEGIES

1. Promote catfish fisheries and catfish angling opportunities by distributing press releases.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes routine electrofishing and trap netting in the fall 2010 and 2012 and gill netting in the fall 2013 (Table 5) to assess all sport fish populations present in the reservoir. Habitat and aquatic vegetation will be monitored in the summer 2012 utilizing the digital shapefile method to monitor abundance and expansion of nuisance vegetation.

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.

Walters, A., and J.A. Findeisen. 2005. Statewide freshwater fisheries monitoring and management program survey report for: Lake Placid Reservoir, 2004. Texas Parks and Wildlife Department, Federal Aid In Sport Fish Restoration, Grant F-30-R, Performance Report, Austin, Texas.

Table 1. Characteristics of Lake Placid, Texas.

Characteristic	Description
Year constructed	1928
Controlling authority	Guadalupe-Blanco River Authority
County	Guadalupe
Reservoir type	Mainstream: Guadalupe River
Shoreline Development Index	5.27
Conductivity (umhos/cm)	395 – 414
Access: Boat	Adequate – 1 ramp
Bank	Inadequate
Handicapped	Inadequate

Table 2. Harvest regulations for Lake Placid, Texas.

Species	Bag Limit (per person)	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, largemouth	5	14 – No Limit
Bass, spotted and Guadalupe	5	No Limit – No Limit
Bass, white	25	10 – No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 – No Limit

Table 3. Stocking history of Lake Placid, Texas. Sizes categories are: FRY = < 1 inch, FGL = 1-3 inches and ADL = adult (sexually mature fish).

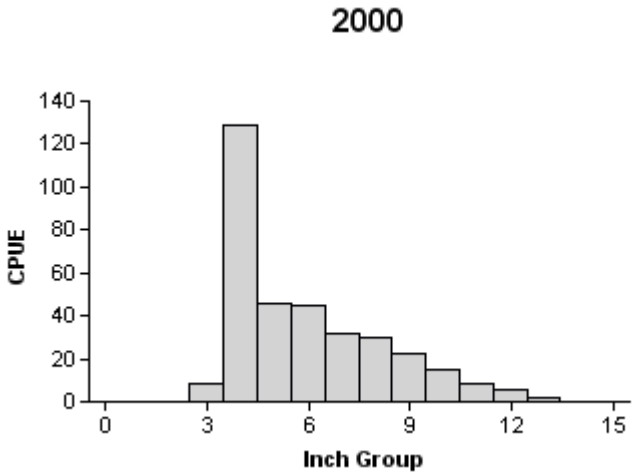
Year	Number	Size
Channel catfish		
1966	4,200	FGL
1973	9,000	FGL
1995	6,261	FGL
1997	5,990	FGL
2005	20,806	FGL
Species total	46,257	
Largemouth bass		
1978	410	FGL
1985	9,500	FGL
1993	1,461	FGL
1994	40,413	FGL
1994	141	ADL
2003	119,487	FRY
2003	20,136	FGL
2005	20,396	FGL
Species total	211,944	
White crappie		
1994	24,808	FGL
Species total	24,808	
Coppernose bluegill		
1983	10,000	FGL
Species total	10,000	
Blue catfish		
1995	40,541	FGL
1998	40,000	FGL
Species total	80,541	
Triploid grass carp		
1995	*25	ADL
1998	**11	ADL
Species total	36	

* Radio tagged.
** Fish in 1998 replaced 11 dead fish.

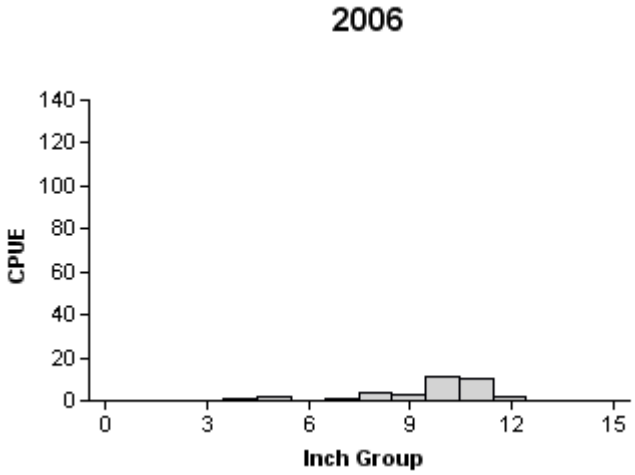
Table 4. Survey of littoral zone and physical habitat types, Lake Placid, Texas, 2008. A linear shoreline distance (miles) was recorded for each habitat type found. Surface area and percent of reservoir surface acre were determined for each type of aquatic vegetation found. Surface area estimates are based on the acreage of water containing a specific vegetation type not the total acreage of vegetation.

		Shoreline Distance		Areal Coverage	
Habitat	Type	Miles	Percent	Acres	Percent
Shoreline	Bulkhead	7.8	45.9		
	Boat Dock	8.5	49.9		
	Natural Shoreline	9.2	54.2		
	Rocky/gravel shoreline	0.1	0.7		
Vegetation	Native emergent			6.2	2.9
	Water willow			6.2	2.9
	Native floating			11.3	5.3
	Spatterdock			11.3	5.3
	White water lily			< 0.1	<0.1
	Non-native floating				
	Water hyacinth			<0.1	<0.1

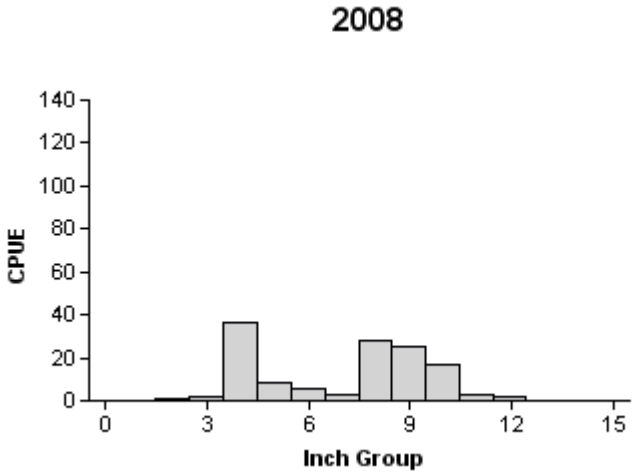
Gizzard shad



Effort = 1.0
Total CPUE = 343.0 (21; 343)
IOV = 76 (5)



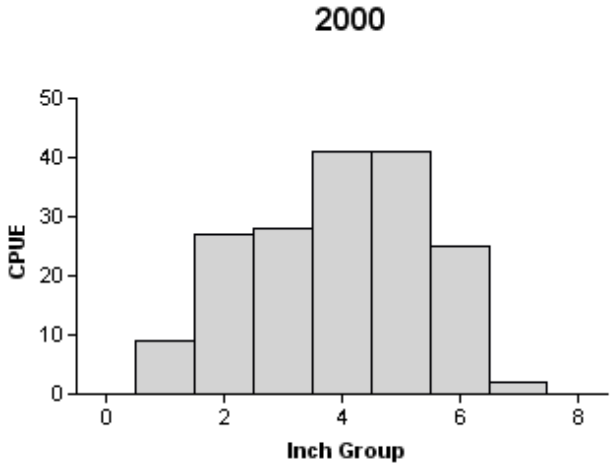
Effort = 1.0
Total CPUE = 34.0 (16; 34)
IOV = 12 (8)



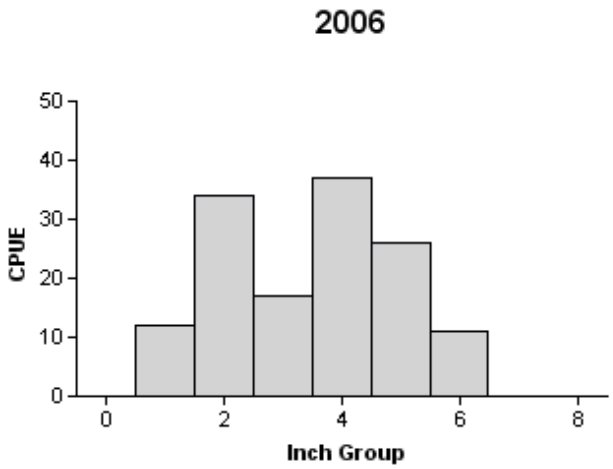
Effort = 1.0
Total CPUE = 131.0 (29; 131)
IOV = 43 (14)

Figure 1. Comparison of the number of gizzard shad caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lake Placid, Texas, 2000, 2006, and 2008.

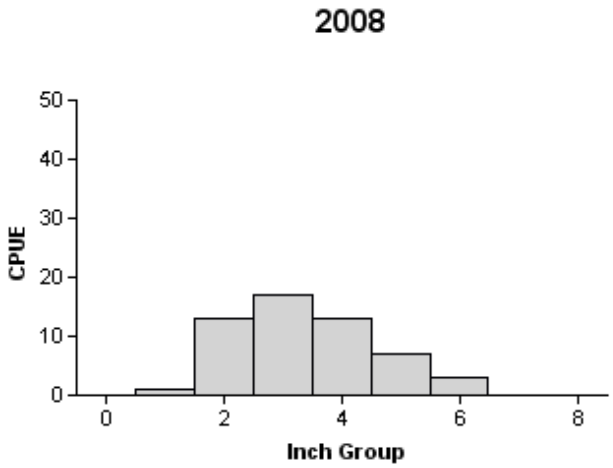
Bluegill



Effort =	1.0
Total CPUE =	173.0 (25; 173)
Stock CPUE =	137.0 (24; 137)
PSD =	20 (4)



Effort =	1.0
Total CPUE =	137.0 (16; 137)
Stock CPUE =	91.0 (16; 91)
PSD =	12 (3)



Effort =	1.0
Total CPUE =	54.0 (24; 54)
Stock CPUE=	40.0 (29; 40)
PSD =	8 (4)

Figure 2. Comparison of the number of bluegill caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Placid, Texas, 2000, 2006, and 2008.

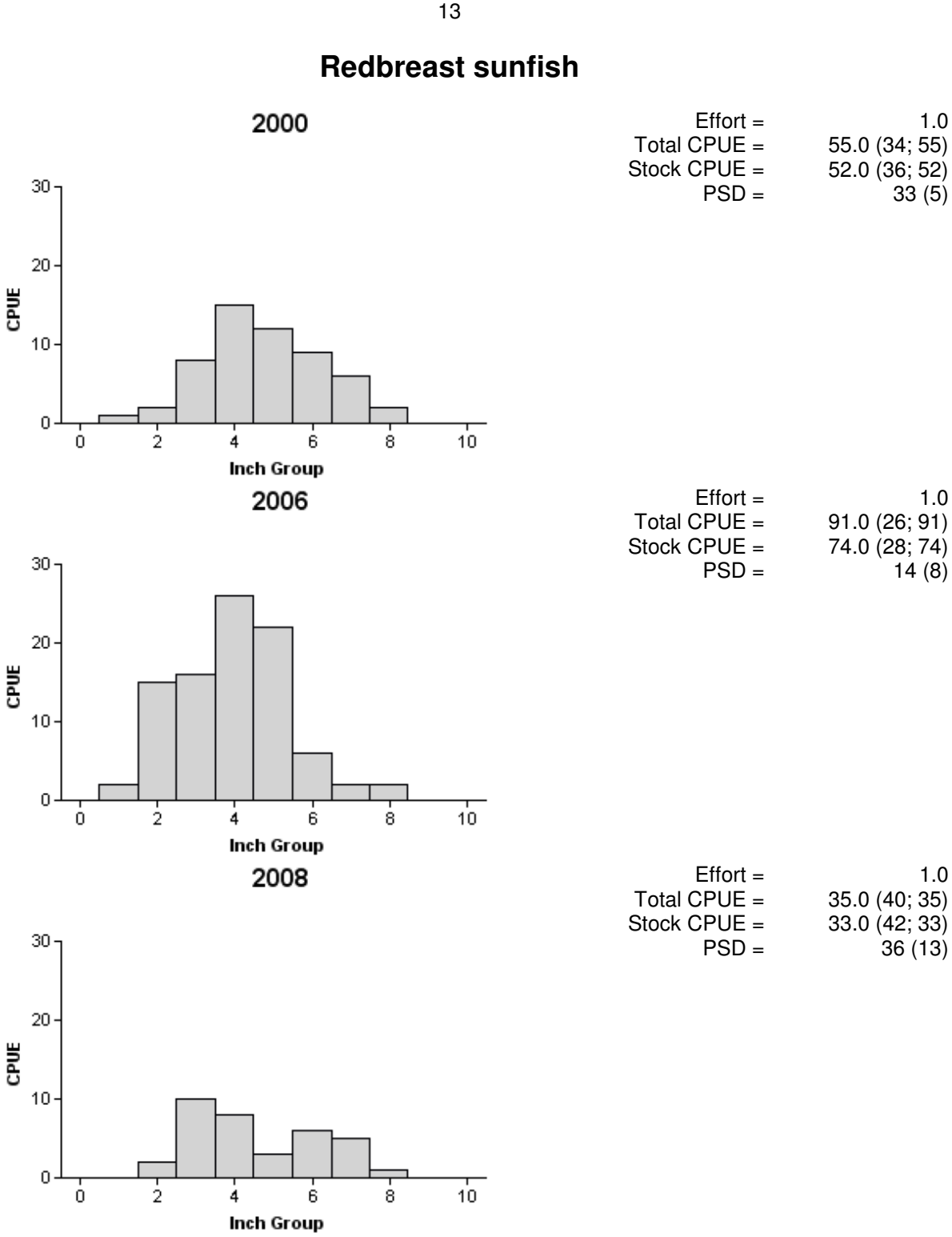
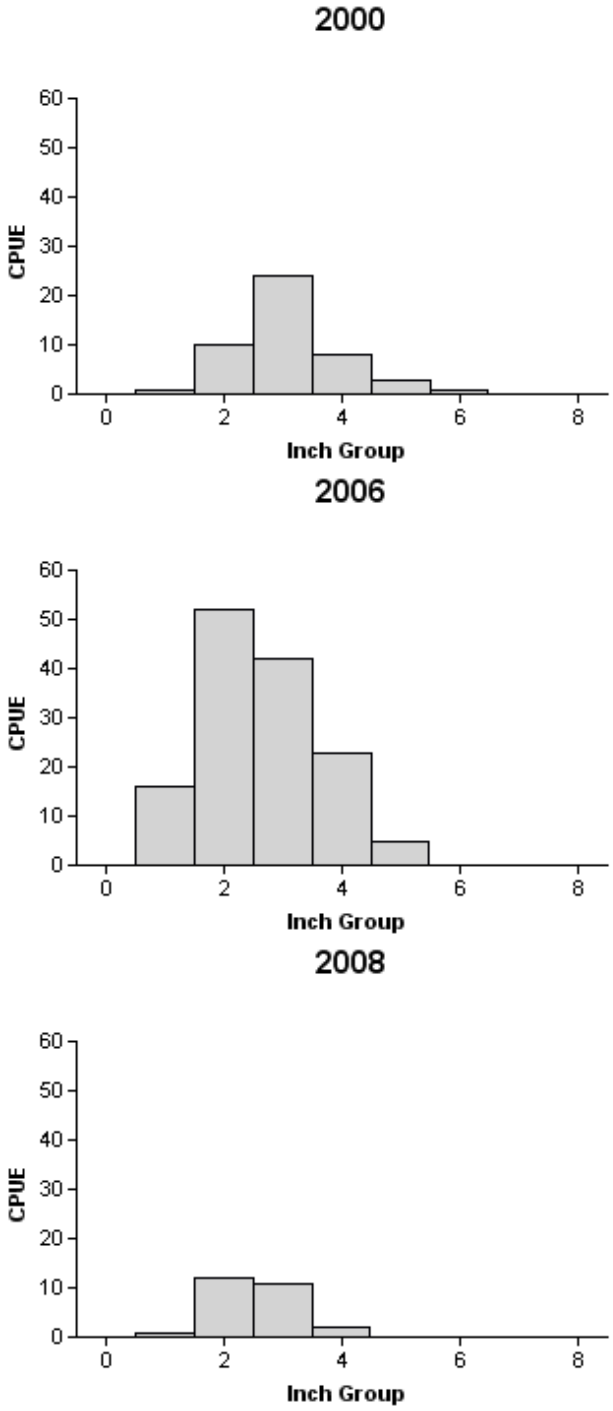


Figure 3. Comparison of the number of redbreast sunfish caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Placid, Texas, 2000, 2006, and 2008.

Longear sunfish



Effort =	1.0
Total CPUE =	47.0 (31; 47)
Stock CPUE =	47.0 (31; 47)
PSD =	100 (0)

Effort =	1.0
Total CPUE =	138.0 (28; 138)
Stock CPUE =	138.0 (28; 138)
PSD =	0 (0.0)

Effort =	1.0
Total CPUE =	26.0 (21; 26)
Stock CPUE =	26.0 (21; 26)
PSD =	0 (0.0)

Figure 4. Comparison of the number of longear sunfish caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Placid, Texas, 2000, 2006, and 2008.

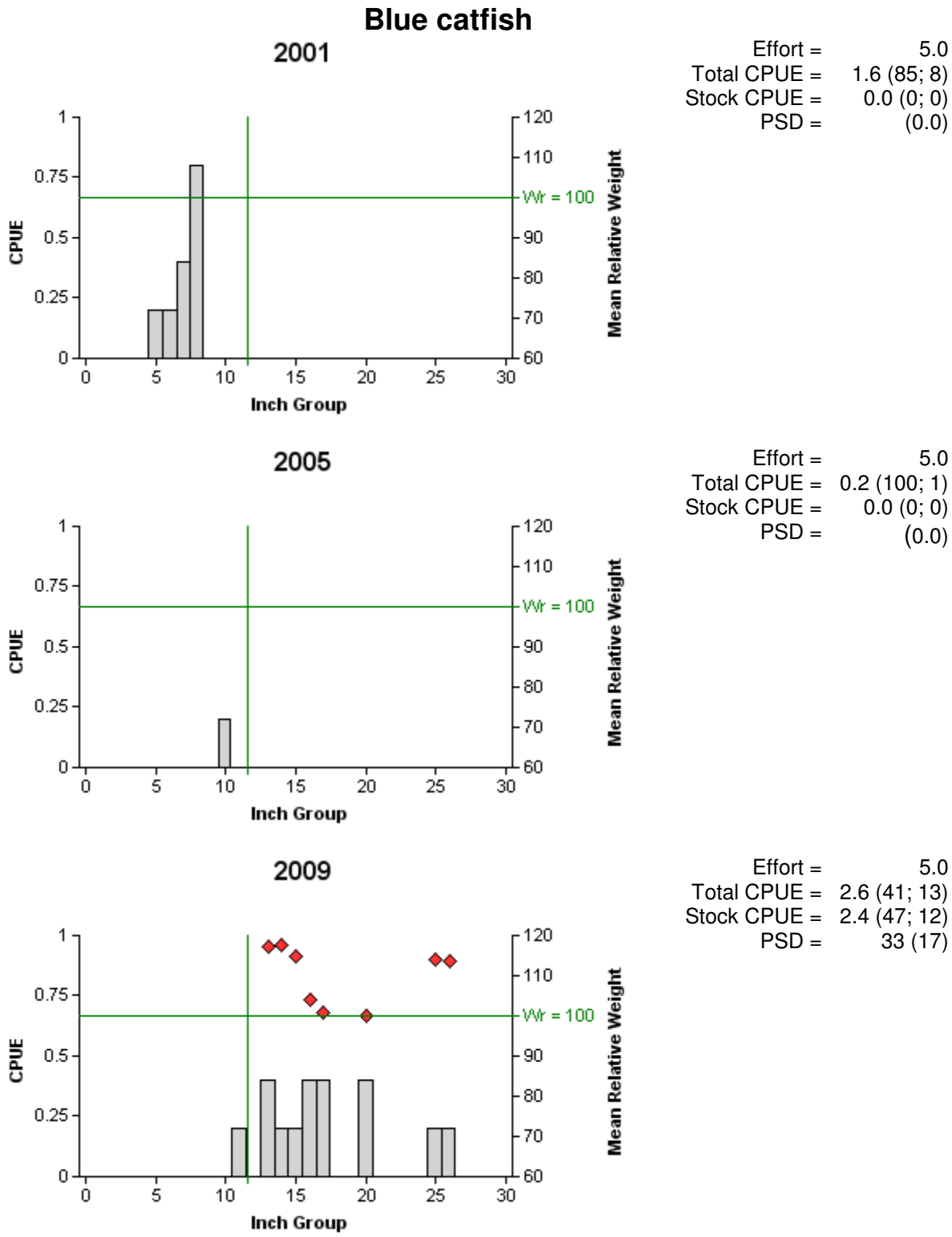


Figure 5. Comparison of the number of blue catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Placid, Texas, 2001, 2005, and 2009. Vertical lines denote 12-inch minimum length limit and horizontal lines denote Wr of 100.

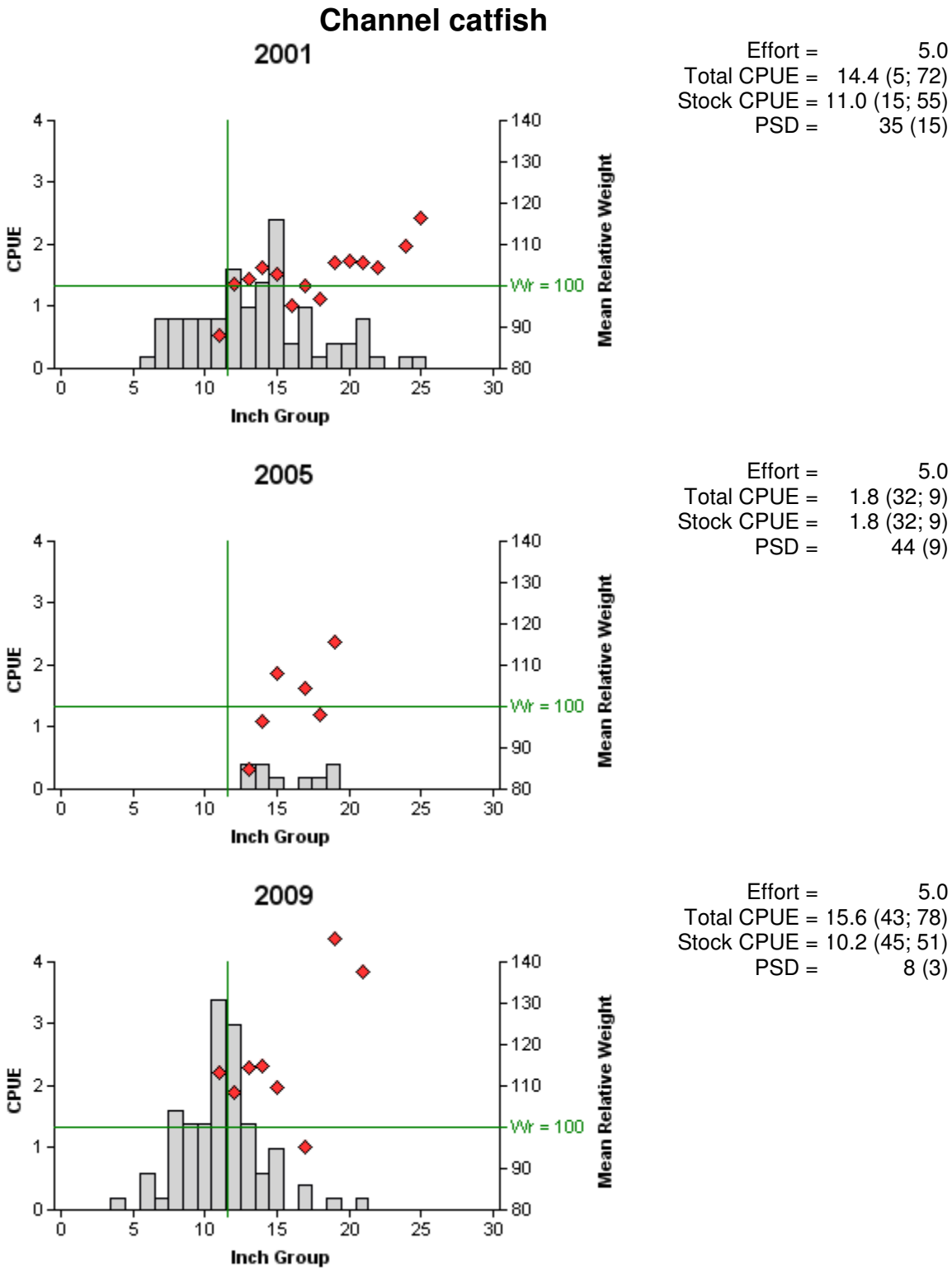
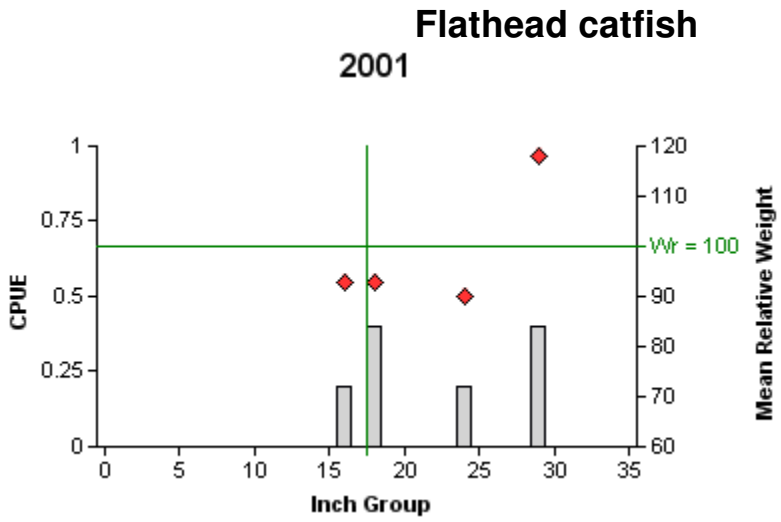


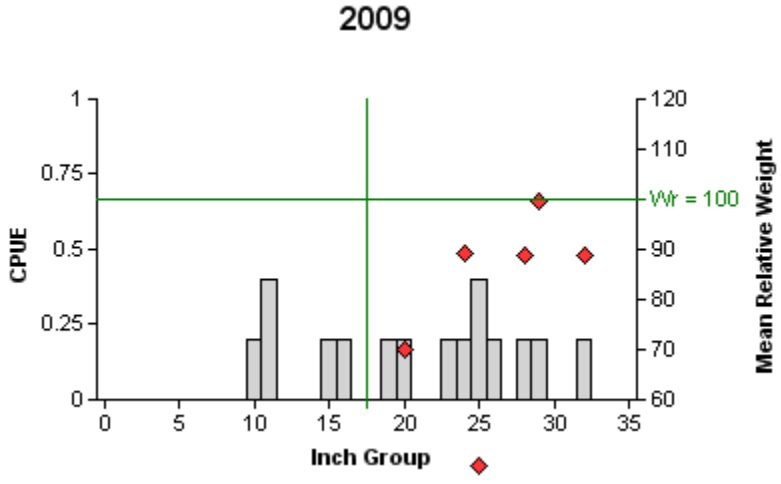
Figure 6. Comparison of the number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Placid, Texas, 2001, 2005, and 2009. Vertical lines denote 12-inch minimum length limit and horizontal lines denote Wr of 100.



Effort = 5.0
Total CPUE = 1.2 (61; 6)
Stock CPUE = 1.2 (61; 6)
PSD = 50 (23)

Effort = 5.0
Total CPUE = 0.0 (0; 0)
Stock CPUE = 0.0 (0; 0)
PSD = N/A

No flathead catfish were captured in gill nets in 2005.



Effort = 5.0
Total CPUE = 3.0 (33; 15)
Stock CPUE = 2.4 (34; 12)
PSD = 75 (10)

Figure 7. Comparison of the number of flathead catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Placid, Texas, 2001, 2005, and 2009. Vertical lines denote 18-inch minimum length limit and horizontal lines denote Wr of 100.

Largemouth bass

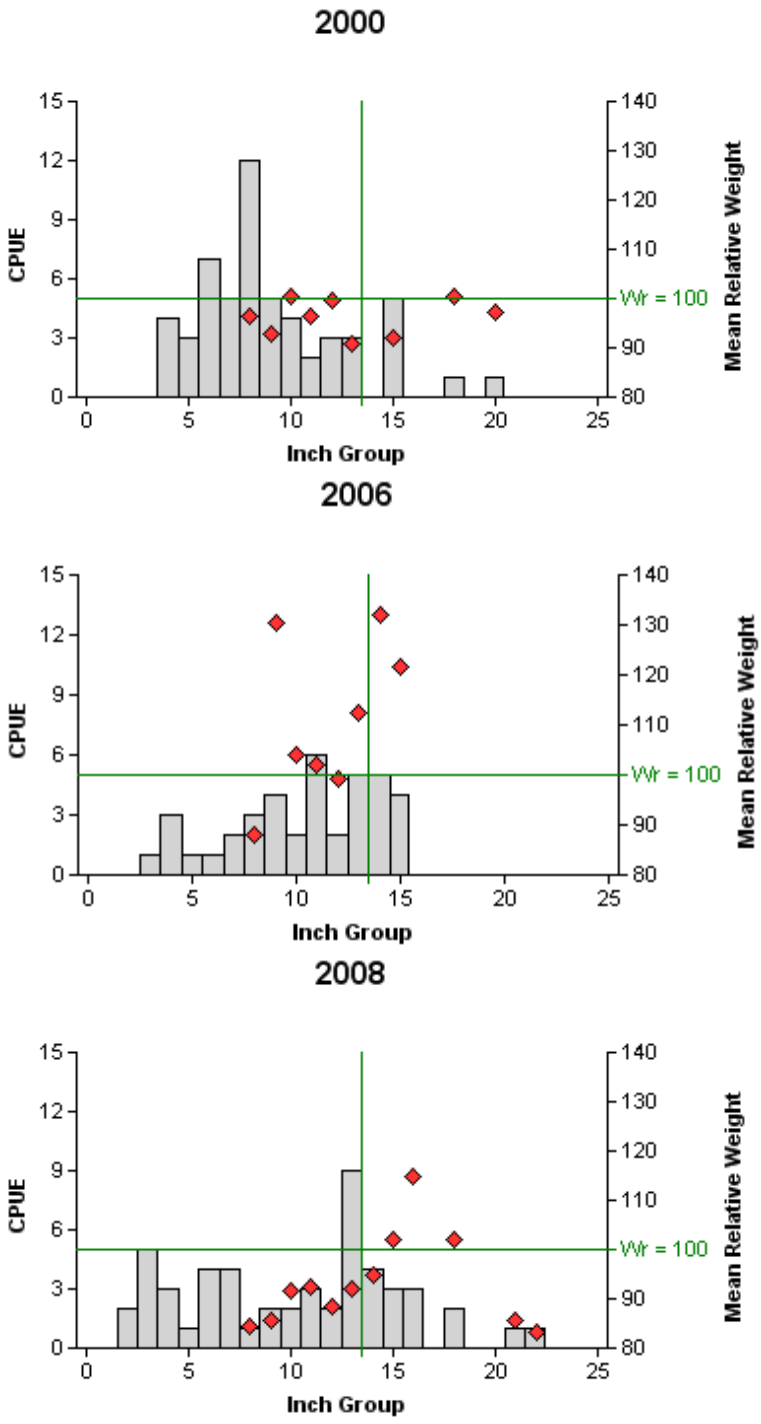
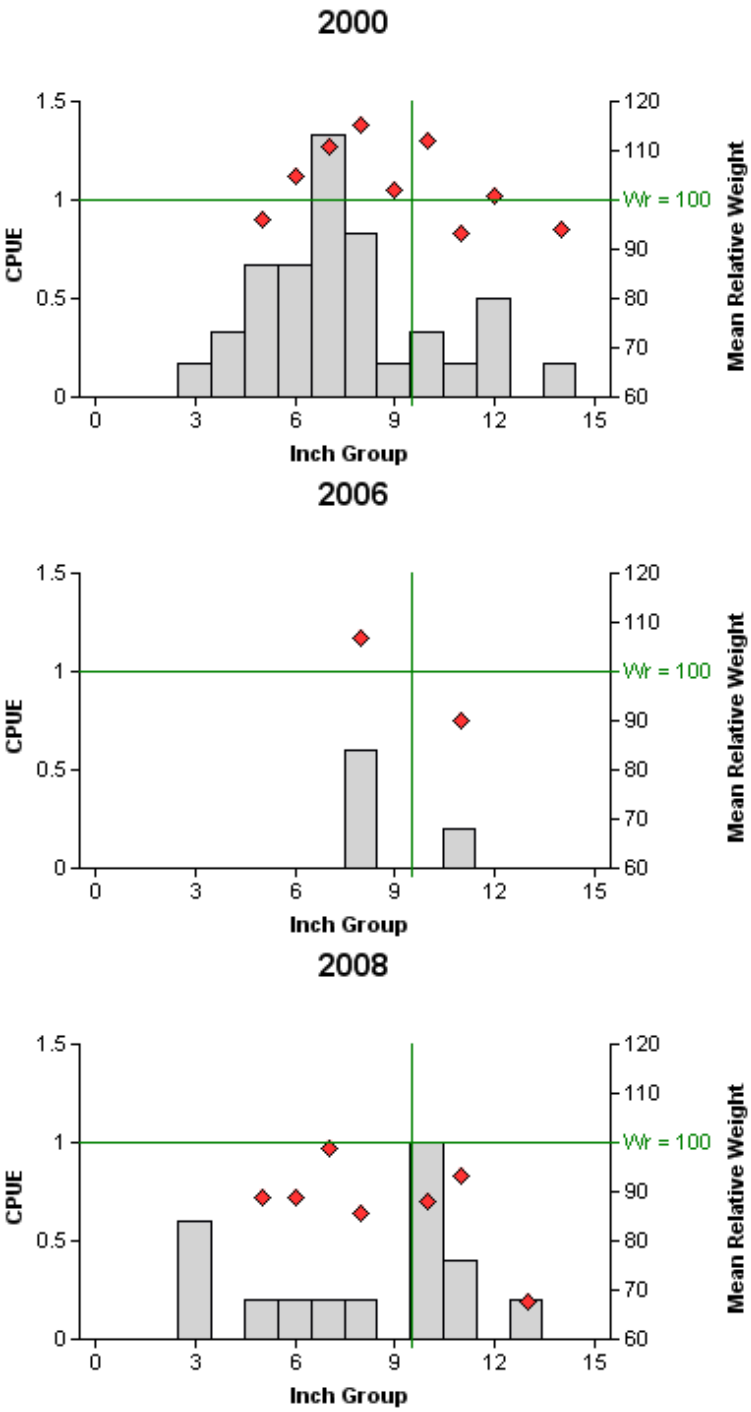


Figure 8. Comparison of the number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Placid, Texas, 2000, 2006, and 2008. Vertical lines denote 14-inch minimum length limit and horizontal lines denote Wr of 100.

White crappie



Effort =	6.0
Total CPUE =	5.3 (43; 32)
Stock CPUE =	4.8 (42; 29)
CPUE-10 =	1.2 (56; 7)
PSD =	45 (7)

Effort =	5.0
Total CPUE =	0.8 (73; 4)
Stock CPUE =	0.8 (73; 4)
CPUE-10 =	0.2 (100; 1)
PSD =	100 (0)

Effort =	5.0
Total CPUE =	3.0 (23; 15)
Stock CPUE =	2.4 (14; 12)
CPUE-10 =	1.6 (41; 8)
PSD =	75 (11)

Figure 9. Comparison of the 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, Lake Placid, Texas, 2000, 2006, and 2008. Vertical lines denote 10-inch minimum length limit and horizontal lines denote Wr of 100.

Table 5. 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. Standard surveys are denoted by S and additional surveys are denoted by A.

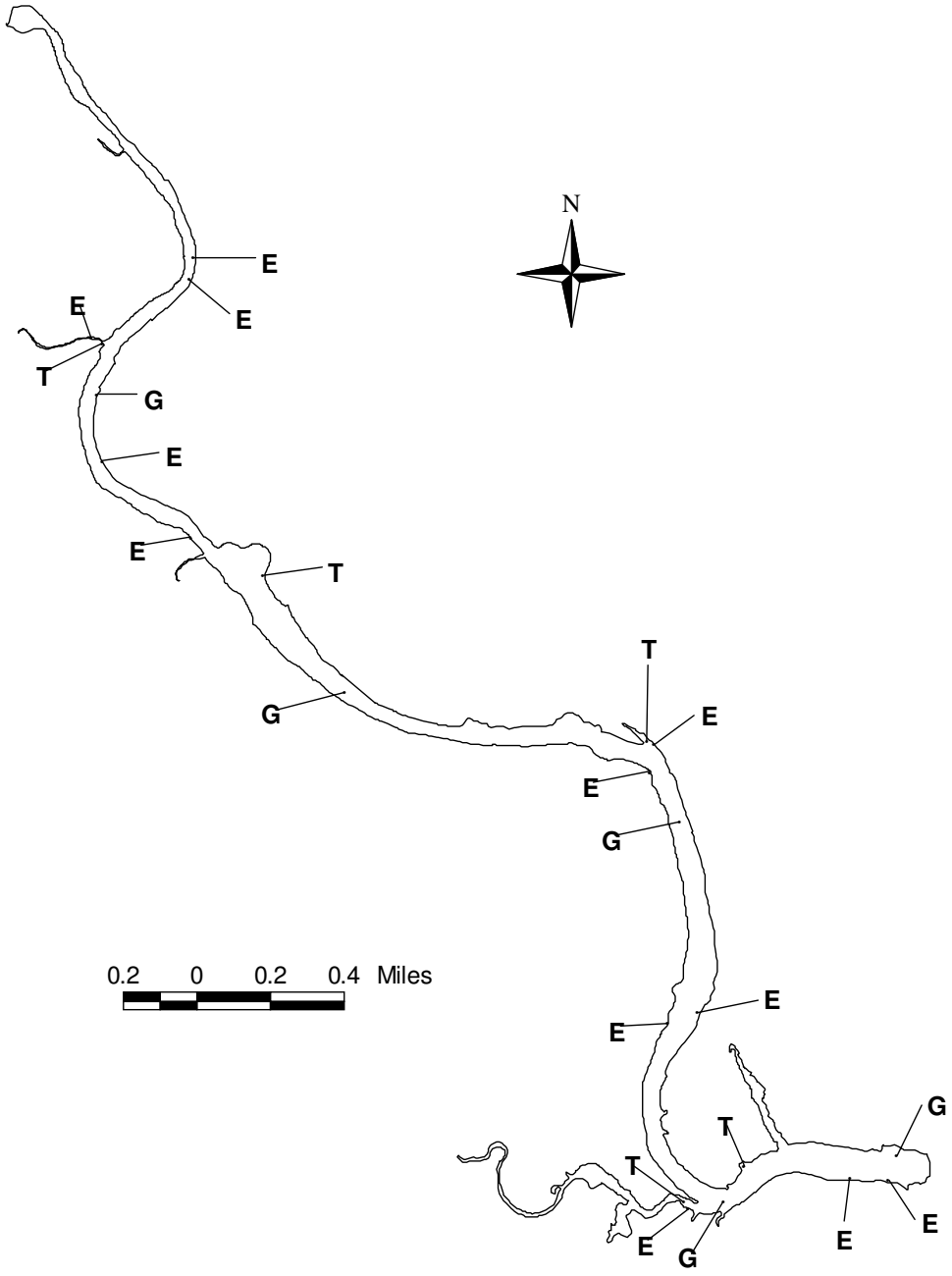
Survey Year	Vegetation	Electrofishing	Trap Netting	Gill Netting	Report
Fall 2009-Spring 2010					
Fall 2010-Spring 2011		A	A		
Fall 2011-Spring 2012					
Fall 2012-Spring 2013	S (Digital shapefile)	S	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all species collected from all gear types from Lake Placid, Texas, 2008 – 2009.

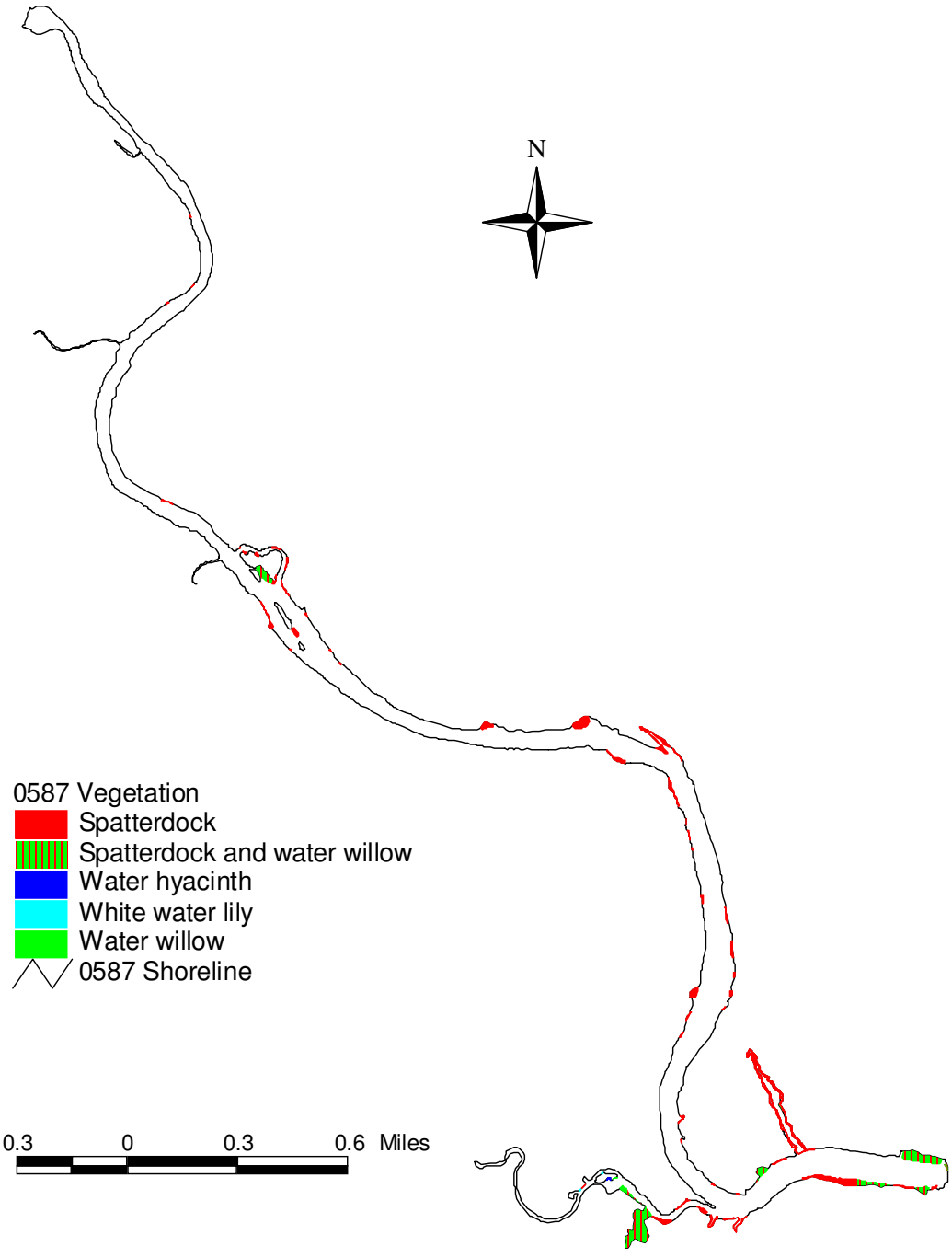
	Electrofishing		Gill netting		Trap netting	
Species	N	CPUE	N	CPUE	N	CPUE
Gizzard shad	131	131.0	51	10.2		
Threadfin shad	466	466.0				
Common carp			1	0.2		
Red shiner	36	36.0				
Bullhead minnow	34	34.0				
Inland silverside	4	4.0				
Other minnows	5	5.0				
Blacktail shiner	28	28.0				
Smallmouth buffalo			2	0.4		
Grey redhorse	1	1.0	2	0.4		
Blue catfish			13	2.6		
Channel catfish			78	15.6		
Flathead catfish			15	3.0		
Redbreast sunfish	35	35.0			5	1.0
Warmouth	5	5.0	1	0.2	1	0.2
Bluegill	54	54.0			16	3.2
Longear sunfish	26	26.0	1	0.2	4	0.8
Redear sunfish	10	10.0			3	0.6
Spotted bass	16	16.0				
Largemouth bass	52	52.0	3	0.6		
Guadalupe bass	8	8.0				
White crappie	3	3.0	16	3.2	15	3.0
Black crappie					1	0.2
Logperch	7	7.0				
Rio grande cichlid	3	3.0				
Blue tilapia	4	4.0				

APPENDIX B



Location of sampling sites, Lake Placid, Texas, 2008-2009. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively.

APPENDIX C



Aquatic vegetation map for Lake Placid, Texas, 2008.