PERFORMANCE REPORT

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FEDERAL AID PROJECT F-221-M-3

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2012 Fisheries Management Survey Report

Lake Placid

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Placid were surveyed in fall 2012 using electrofishing and trap netting and in spring 2013 using gill netting. Historical data are presented with the 2012-2013 data for comparison. 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. Substrate in the upper portion of the reservoir is primarily composed of rock and gravel, while the middle and lower portions substrate consisted of clay, sand, and silt. Habitat features consisted of boat docks, piers, bulkhead, riprap, and several native aquatic species including water willow, American lotus, and spatterdock.

- **Management History:** Important sport fish include Largemouth, Guadalupe, and Spotted Bass, Channel, Blue, and Flathead Catfish, and Crappie. The management plan from the 2008 survey report included additional surveys to assess and monitor declines in prey abundance and poor body condition of important sport fish species. Historically, nuisance aquatic vegetation (hydrilla, water hyacinth, and water lettuce) has caused access and recreational problems in the reservoir prior to herbicide treatments and grass carp introductions in 1996. Water hyacinth and water lettuce were observed in small quantities during the 2004 and 2008 vegetation surveys. District staff monitored expansion of nuisance vegetation through periodic surveys over the survey period. Non-native vegetation was not observed during 2012 vegetation survey. Most recent stockings included Florida Largemouth Bass and Channel Catfish in 2005. Angler harvest of all sport fishes has been regulated according to statewide size and bag limits.

- **Fish Community**

    - **Prey species:** Gizzard and Threadfin Shads comprised the majority of the forage base for the predator assemblage. Bluegill, Redbreast, Redear, and Longear Sunfishes were present, with Bluegill being most abundant. Population size structure for prey species was suitable to support sport fish populations.

    - **Catfishes:** Blue, Channel, and Flathead Catfishes were present in the reservoir. Relative abundance of Blue and Channel Catfishes increased from previous surveys and both populations comprised a wide size-range of 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 increased during the survey period. Several legal-sized (≥14-in) fish were collected and size structure indices indicated a balanced population. Largemouth Bass had adequate growth (mean age at 14 inches was 2.7 years).

    - **Crappies:** Both White and Black Crappies were present in the reservoir; however White Crappie were more abundant. Relative abundance of White Crappie remained stable with legal-size (≥10-in) fish available to anglers. Body conditions were adequate.

- **Management Strategies:** Continue to manage sport fish populations with existing harvest regulations. Conduct additional electrofishing in 2014 to monitor Largemouth Bass population dynamics. Increase habitat diversity through native vegetation plantings and solicit partners or funding for a Lake Placid habitat enhancement program. Monitor non-native exotic species as needed. Conduct access and vegetation surveys in 2016.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Placid in 2012 and 2013. 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 are presented with the 2012-2013 data for comparison.

Reservoir Description

Lake Placid is a 214-acre impoundment constructed in 1928 on the Guadalupe River. It is located in Guadalupe County one-half mile southwest of Seguin and is operated and controlled by the Guadalupe-Blanco River Authority (GBRA). Primary water uses included municipal water supply, hydroelectric generation, and recreation. Although most of the shoreline is privately owned, public boat access is adequate. Handicap and bank fishing access is inadequate and restricted to one boat launch area. Substrate in the upper portion of the reservoir is primarily composed of rock and gravel. Clay, sand and silt are dominant substrate types in the middle and lower portions of the reservoir. Habitat features at time of sampling included boat docks, piers, bulkheads, riprap, native aquatic vegetation, submerged timber, and overhanging terrestrial vegetation. Native aquatic plants present in 2012 were American lotus, spatterdock, and white water willow. Introduced exotics, including water hyacinth, water lettuce, and hydrilla caused access problems for many years until aggressive chemical and biological controls were implemented. Exotic vegetation was not detected in the 2012 vegetation survey. While water level data was not available, water levels at the reservoir remain relatively stable. Other descriptive characteristics for Lake Placid can be found in Table 1.

Angler Access

Lake Placid has one public boat ramp and several private boat ramps. The public boat ramp is located at the I-10 underpass just outside the city of Seguin. Shoreline and handicap access is limited to the public boat ramp area. Additional boat ramp characteristics are located in Table 2.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Binion and Findeisen 2008) included:

1. Conduct exotic aquatic vegetation surveys and recommend treatment if necessary.
   Action: Nuisance aquatic vegetation was monitored via visual surveys during routine fisheries surveys and vegetation surveys conducted in August 2008 and 2012. 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, but none was present in 2012.

2. Assess and monitor decreased relative abundance of some important prey species (Sunfishes) as well as decreased body condition indices for Largemouth Bass.
   Action: Additional electrofishing was conducted. Catch rates for Bluegill doubled since the last survey report. While relative weight values of Largemouth Bass increased for some inch-groups, no discernible trends in relative weight was evident as some values remained the same or decreased for other inch-groups.

3. Promote Catfish fisheries and excellent Catfish angling opportunities.
   Action: Press releases were distributed to local and statewide media.

Harvest regulation history: Sport fish in Lake Placid are currently managed with statewide harvest regulations (Table 3).

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 presented in Table 4.

Vegetation/habitat management history: Historically, non-native vegetation such as water hyacinth, water lettuce, and hydrilla has caused boater and angler access problems. In 1996, aggressive chemical and biological controls were implemented. Over the current survey period, exotic vegetation had not negatively impacted boat and angler access. Water hyacinth was last detected in 2008 vegetation survey, albeit in low concentrations. Water hyacinth and hydrilla were not detected in 2012 aquatic vegetation survey.

Water Transfer: Lake Placid is primarily used for hydro-power generation and recreation. No significant transfer of water occurs at Lake Placid and no interbasin transfers are known to exist.

METHODS

Fishes were collected by electrofishing (1 hour at 12, 5-minute stations), trap netting (7 net nights at 7 stations), and gill netting (5 net nights at 5 stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing and, for trap and gill nets as the number of fish caught in one net set overnight (fish/nn). Access and aquatic vegetation surveys were conducted in August 2012. All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2011).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], and condition indices [relative weight (W_r)] were calculated for target fishes according to Anderson and Neumann (1996). Index of Vulnerability (IOV) was calculated for Gizzard Shad (DiCenzo et al. 1996). Standard Error (SE) was calculated for structural indices and IOV. Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE statistics. Mean age at length was calculated for Largemouth Bass between 13 – 15 inches total length in 2006 (N = 12), 2008 (N = 12), 2010 (N = 4), and 2012 (N = 13).

Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2011). Micro-satellite DNA analysis was used to determine genetic composition of individual fish from 2008 – 2012.

RESULTS AND DISCUSSION

Habitat: Shoreline habitat consisted primarily of bulkheads, boat docks, and natural shoreline (Table 5). Native vegetation surface coverage increased slightly in 2012 (22.7 acres; 9.1%) from 2008 (17.5 acres; 8.2%) (Table 6). Spatterdock and water willow were the most abundant species in 2012 (Figure 1).

Prey species: Gizzard Shad abundance remained stable over the survey period with an electrofishing catch rate of 122.0/h in 2012 (Figure 2). Survey results also indicated a downward trend in Gizzard Shad size composition where index of vulnerability (IOV) value was 69 in 2012, considerably higher compared to 2008 (IOV = 43) and 2010 (IOV = 53). Threadfin Shad CPUE in 2012 was 200.0/h, further contributing to the shad forage base (Appendix A). The 2012 electrofishing catch rate for Bluegill (109.0/h) was consistent with the 2010 survey (95.0/h) and double that of 2008 (54.0/h) (Figure 3). Size structure for Bluegill was adequate and most individuals collected were <6 in total length and available as forage to

most sport fish. Taken as a whole, survey results indicated ample prey base for sport fish and that availability of prey should not be a limiting factor to the growth and condition of sport fish in the reservoir.

Blue Catfish: Gill net CPUE for Blue Catfish was 7.8/nn in 2013, considerably higher than 0.2/nn in 2005 and 2.6/nn in 2009 (Figure 4). Catch rates of sub-stock size fish increased indicating successful reproduction and recruitment. Roughly 54% of the fish sampled were ≥ 12 in total length and available for angler harvest. Several quality-sized (≥ 20 in) fish were collected. Body condition for most inch groups were adequate (W_r values > 90; Figure 4).

Channel Catfish: The 2013 Channel Catfish gill net catch rate was 17.6/nn, similar to 15.6/nn in 2009 and up from 1.8/nn in 2005 (Figure 5). A PSD-value of 20 indicates the population is currently dominated by smaller individuals, however, numerous (N = 25) fish greater than or equal to the 12 in minimum length limit were collected. Relative weights of stock-size Channel Catfish varied (range: 54 – 107) and no discernible trends were evident (Figure 5). The population continued to provide excellent angling opportunity.

Flathead Catfish: Relative abundance of Flathead Catfish remained low. Gill net CPUE for Flathead Catfish was 1.2/nn in 2013, consistent with the value in 2009 (3.0/nn) and higher than 2005 (0.0/nn) (Figure 6). Size composition was dominated by larger sizes as indicated by a PSD value of 69 and CPUE-20 of 0.8/nn. Body condition was adequate as all relative weight values exceeded 90 (Figure 6).

Largemouth Bass: Relative abundance of Largemouth Bass increased over the survey period. The electrofishing catch rate of Largemouth Bass was 73.0/h in 2012, considerably higher than 52.0/h in 2008 and 20.0/h in 2010 (Figure 7). Catch of legal-size and larger fish was excellent as evidenced by CPUE-14 (18.0/h) and CPUE-18 (5.0/h) values. Population size structure in 2012 was balanced as indicated by PSD (46; Figure 7) metric. Mean age at 14 inches in 2012 was 2.7 years. Growth was considered adequate and has remained consistent since 2006 (Table 7). Relative weights in 2012 varied (range: 76 – 107) among inch groups and no clear patterns in body condition were evident based on size. Body condition indices showed slight improvement over the 2010 sample (Figure 7). Florida Largemouth Bass influence has remained relatively constant over the survey period as Florida alleles ranged from 56.7 to 64.6% and a Florida genotype of 0 to 3.3% (Table 8).

White Crappie: Trap net CPUE for White Crappie was 3.3/nn in 2012, consistent with 3.0/nn in 2008, but less than 5.7/nn in 2010 (Figure 8). Fish up to 13 in were collected and CPUE-10 was 1.0/nn, consistent with values from previous surveys. Proportional size distribution in 2012 (52) decreased from previous surveys yet indicated a stable and balanced population. Relative weight values increased over the survey period and were ≥ 90 for all size groups indicating sufficient and improved body condition (Figure 8).

Fisheries Management Plan for Lake Placid, TX

Prepared - July 2013

ISSUE 1: The aquatic vegetation community is relatively low in abundance and species diversity. Some emergent and floating-leaved species are present but submerged vegetation is scarce.

MANAGEMENT STRATEGIES

1. Increase habitat diversity as well as quality and quantity of habitat through native vegetation plantings.
2. Solicit partners and funding for a Lake Placid habitat enhancement project. Foster a collaborative relationship with local homeowner groups and river authority (GBRA) to construct a local vegetation grow out facility to support plantings in the Guadalupe River chain of lakes.

ISSUE 2: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, Giant Salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state. Historically, non-native plants such as water hyacinth and hydrilla have been a problem in the reservoir. These exotic plants restrict recreational use and can negatively impact the quality of fish and wildlife habitat restricting growth and colonization of native vegetation.

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate marina owners about invasive species, and provide them with posters, literature, etc… so that they can in turn educate their customers.
3. Educate the public about invasive species through the use of media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.
5. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.
6. Monitor water hyacinth and other exotic nuisance vegetation through vegetation surveys as needed.
7. Continue to cooperate with GBRA on all vegetation control activities.

ISSUE 3 Channel and Blue Catfish abundance and size composition is excellent. Several quality sized fish 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 2016 and gill netting in spring 2017 (Table 9) to assess and monitor trends for all sport fish populations present in the reservoir. Additional electrofishing in 2014 is necessary to maintain trend data on the Largemouth Bass population. An aquatic vegetation survey will be conducted in 2016 to monitor for presence and possible

expansion of nuisance vegetation. Access survey will be conducted in 2016.

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.

Binion, G. R., and J.A. Findeisen. 2009. Statewide freshwater fisheries monitoring and management program survey report for: Lake Placid Reservoir, 2008. Texas Parks and Wildlife Department, Federal Aid In Sport Fish Restoration, Grant F-30-R, Performance Report, Austin, Texas.

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.

Guy, C. S., R. M. Neuman, D. W. Willis, and R. O. Anderson. 2007. Proportional size distribution (PSD): a further refinement of population size structure index terminology. Fisheries 32(7): 348.

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. Boat ramp characteristics for Lake Placid, Texas, March, 2013. Reservoir elevation at time of survey was 497.5 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
IH-10 underpass	29.566847 -98.023132	Y	12+	497.5	Excellent, no access issues

Table 3. Harvest regulations for Lake Placid, Texas.

Species	Bag Limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (in any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Largemouth	5[a]	14-inch minimum
Bass: Spotted and Guadalupe	5[a]	None
Crappie: White and Black crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

[a] Daily bag for Largemouth Bass, Spotted bass, and Guadalupe bass = 5 fish in any combination

Table 4. Stocking history of Lake Placid, Texas. FRY = < 1 inch; FGL = fingerling; ADL = adults.

Species	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
	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
	Total	211,944	
White Crappie	1994	24,808	FGL
Coppernose Bluegill	1983	10,000	FGL
Blue Catfish	1995	40,541	FGL
	1998	40,000	FGL
	Total	80,541	
Triploid Grass Carp	1995	*25	ADL
	1998	*11	ADL
	Total	36	

*Radio tagged.

Table 5. Survey of structural habitat types, Lake Placid, Texas, 2008. Shoreline habitat type units are measured in miles.

Habitat type	Estimate	% containing
Bulkhead	7.8	45.9
Boat docks	8.5	49.9
Natural	9.2	54.2
Rocks	0.1	0.7

Table 6. Survey of aquatic vegetation, Lake Placid, Texas, 2008 and 2012. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2008	2012
Native emergent		
Water willow	6.2 (2.9)	4.8 (1.9)
Native floating-leaved		
American lotus		<0.1 (<0.1)
Spatterdock	11.3 (5.3)	17.8 (7.2)
White water lily	<0.1 (<0.1)	
Non-native		
Water hyacinth	<0.1 (<0.1)	

Aquatic Vegetation

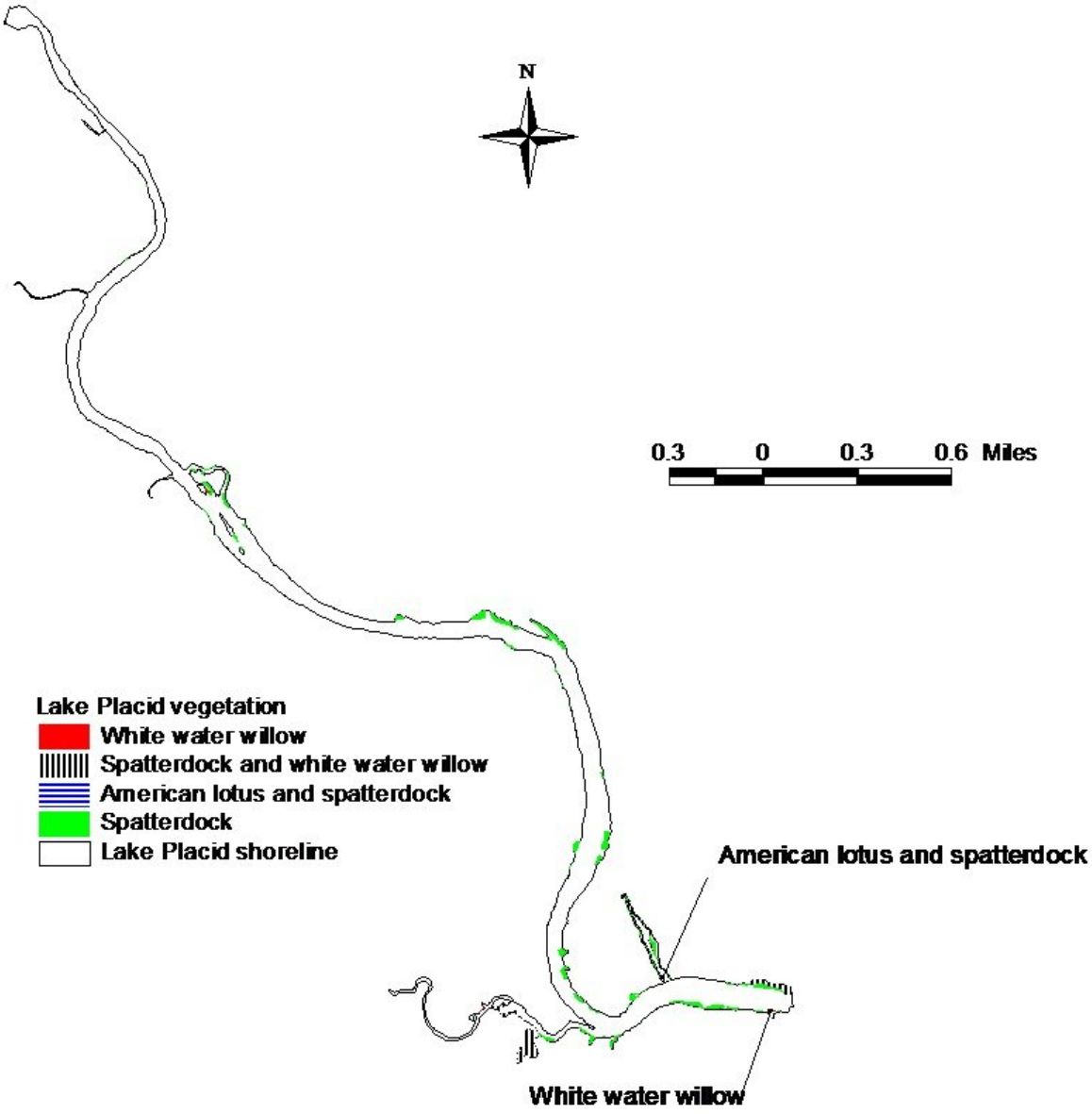
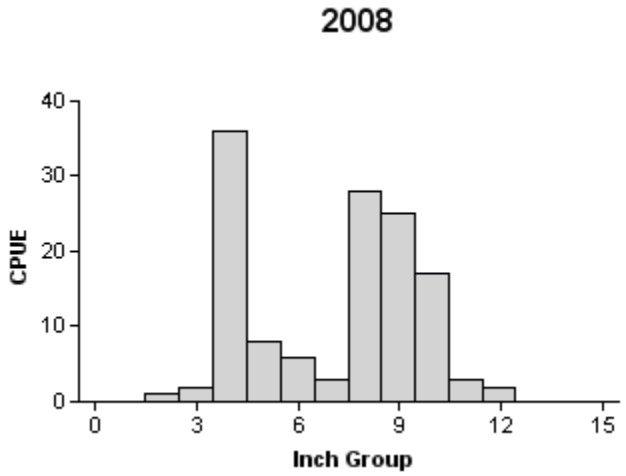
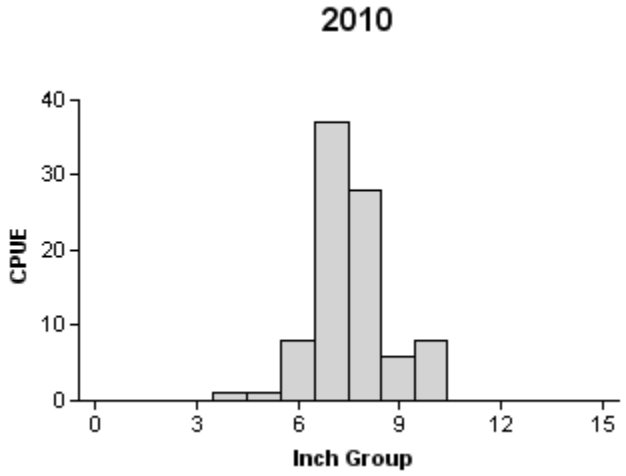


Figure 1. Aquatic vegetation map, Lake Placid, Texas, 2012.

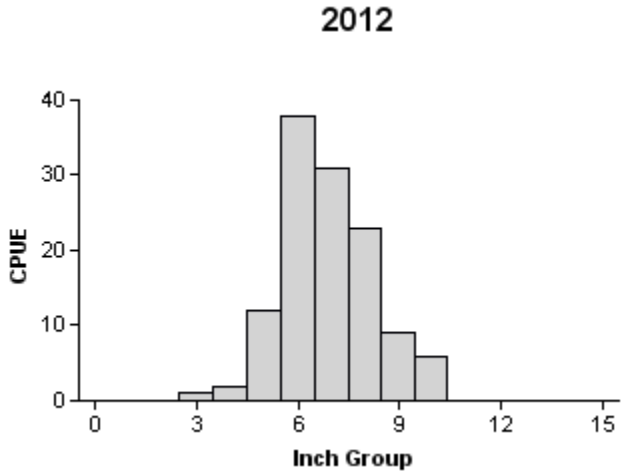
Gizzard Shad



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



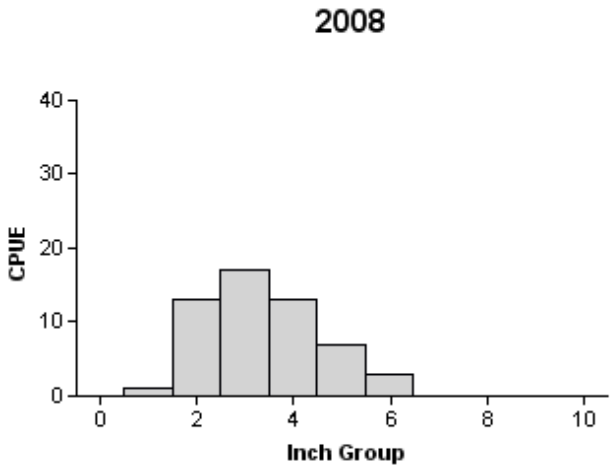
Effort = 1.0
Total CPUE = 89.0 (26; 89)
IOV = 53 (8)



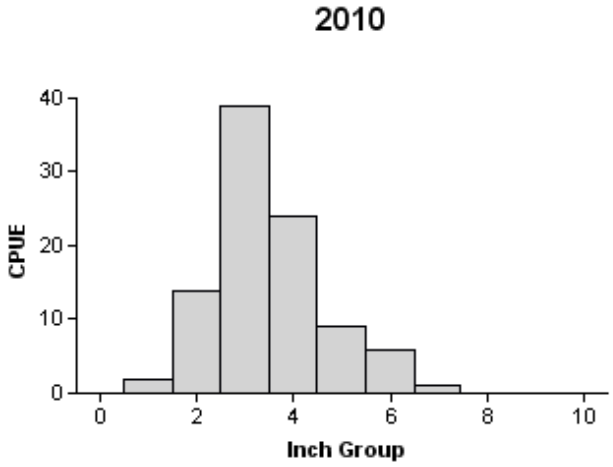
Effort = 1.0
Total CPUE = 122.0 (27; 122)
IOV = 69 (5)

Figure 2. 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, 2008, 2010, and 2012.

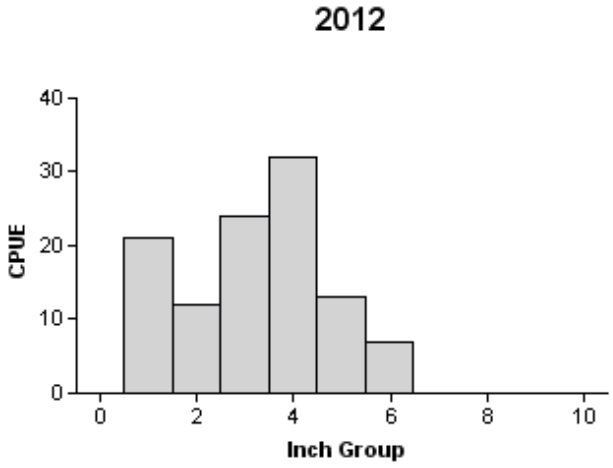
Bluegill



Effort =	1.0
Total CPUE =	54.0 (24; 54)
Stock CPUE =	40.0 (29; 40)
CPUE-6 =	3.0 (52; 3)
PSD =	8 (4)



Effort =	1.0
Total CPUE =	95.0 (28; 95)
Stock CPUE =	79.0 (29; 79)
CPUE-6 =	7.0 (33; 7)
PSD =	9 (4)



Effort =	1.0
Total CPUE =	109.0 (16; 109)
Stock CPUE =	76.0 (18; 76)
CPUE-6 =	7.0 (45; 7)
PSD =	9 (4)

Figure 3. 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, 2008, 2010, and 2012.

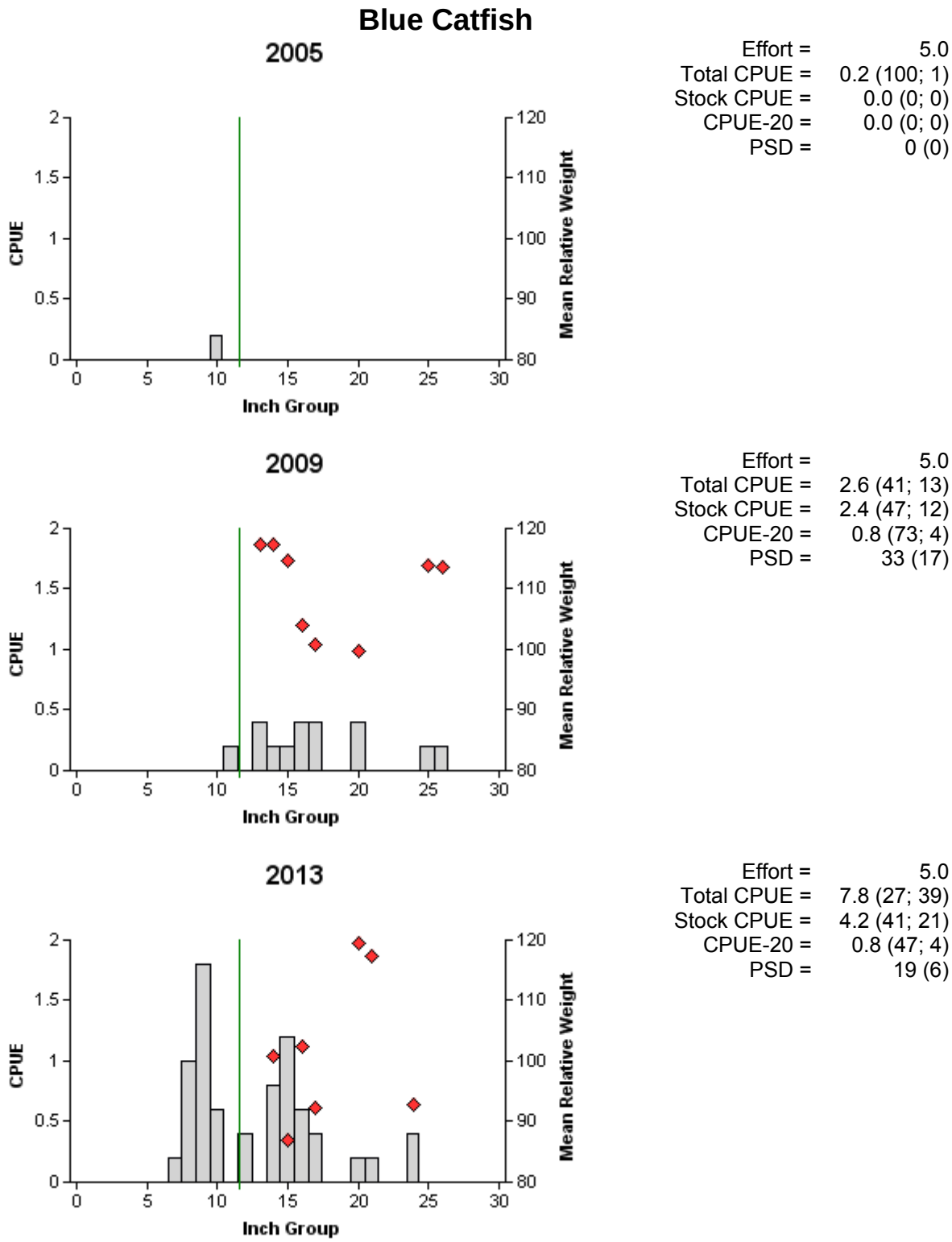


Figure 4. Comparison of the number of Blue Catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Placid, Texas, 2005, 2009, and 2013. Vertical line denotes 12-inch minimum length limit.

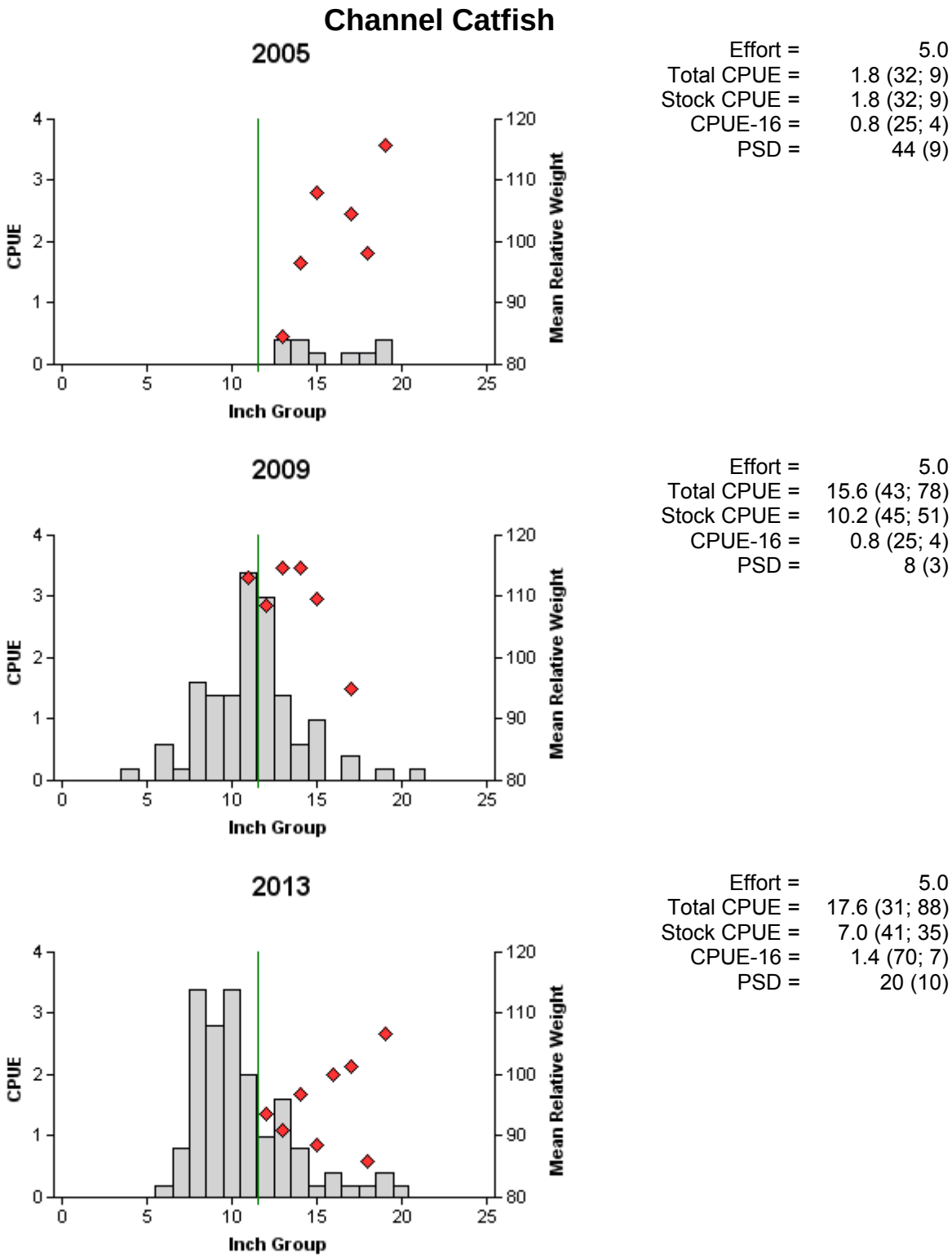
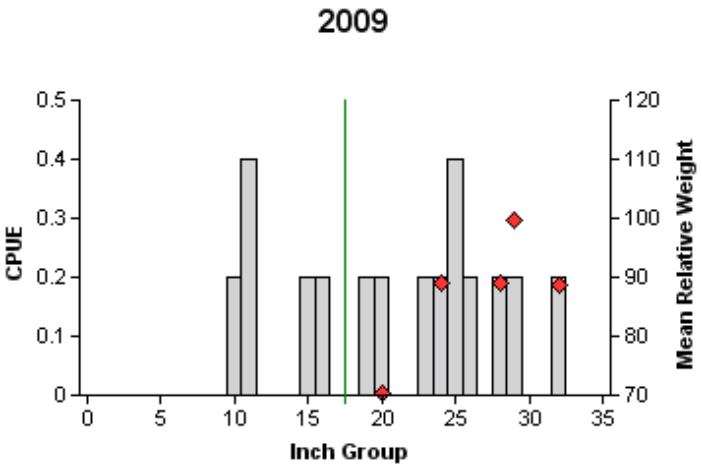


Figure 5. Comparison of the number of Channel Catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Placid, Texas, 2005, 2009, and 2013. Vertical line denotes 12-inch minimum length limit.

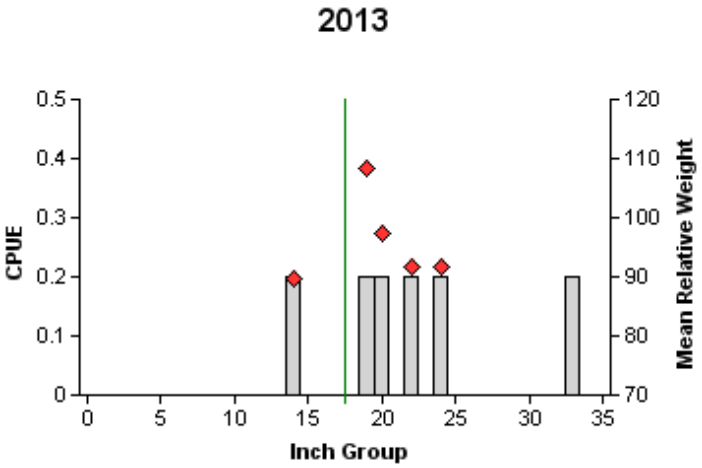
Flathead Catfish

Effort =	5.0
Total CPUE =	0.0 (0; 0)
Stock CPUE =	0.0 (0; 0)
CPUE-20 =	0.0 (0; 0)
PSD =	N/A

No Flathead Catfish were captured in 2005 gill net survey.



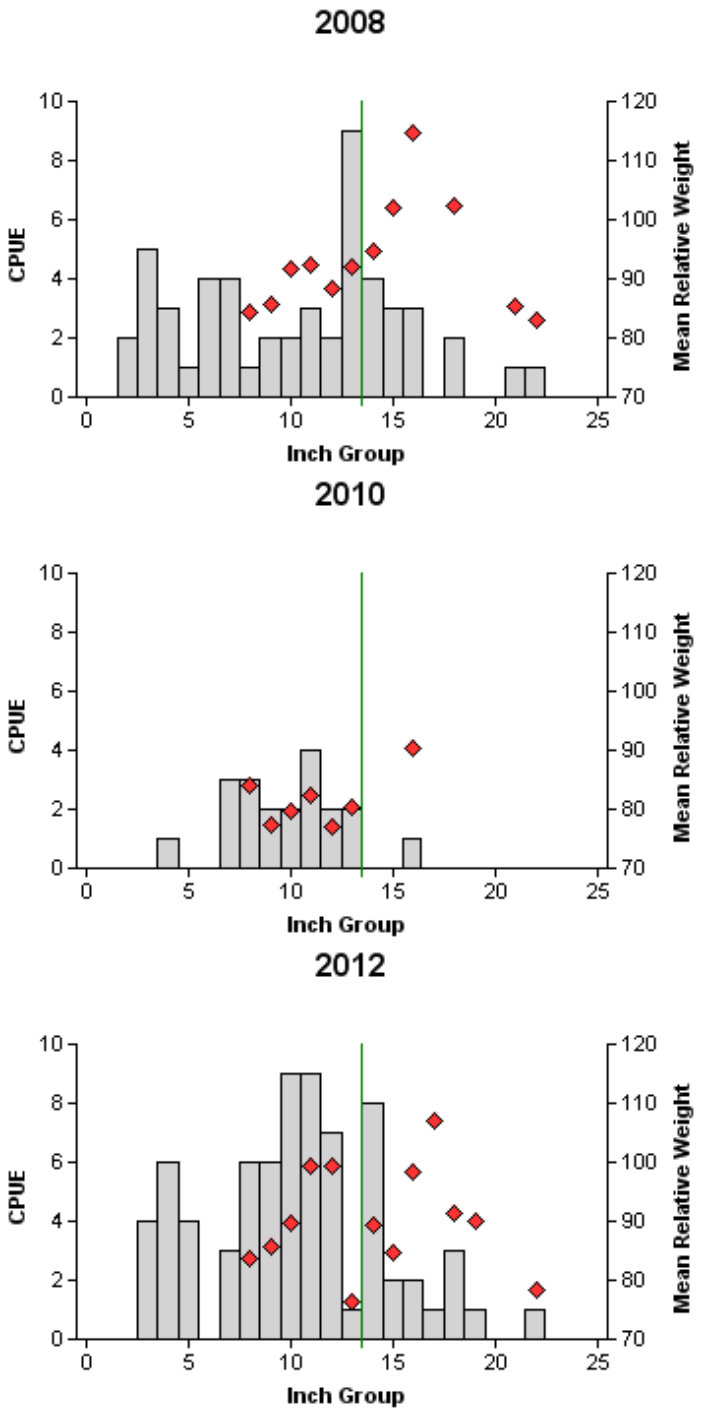
Effort =	5.0
Total CPUE =	3.0 (33; 15)
Stock CPUE =	2.4 (34; 12)
CPUE-20 =	1.8 (27; 9)
PSD =	75 (10)



Effort =	5.0
Total CPUE =	1.2 (41; 6)
Stock CPUE =	1.2 (41; 6)
CPUE-20 =	0.8 (25; 4)
PSD =	67 (22)

Figure 6. 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, 2005, 2009, and 2013. Vertical line denotes 18-inch minimum length limit.

Largemouth Bass



Effort =	1.0
Total CPUE =	52.0 (32; 52)
Stock CPUE =	33.0 (52; 33)
CPUE-14 =	14.0 (62; 14)
CPUE-18 =	4.0 (77; 4)
PSD =	76 (9)

Effort =	1.0
Total CPUE =	20.0 (24; 20)
Stock CPUE =	16.0 (25; 16)
CPUE-14 =	1.0 (100; 1)
CPUE-18 =	0.0 (0; 0)
PSD =	31 (10)

Effort =	1.0
Total CPUE =	73.0 (26; 73)
Stock CPUE =	56.0 (35; 56)
CPUE-14 =	18.0 (42; 18)
CPUE-18 =	5.0 (46; 5)
PSD =	46 (6)

Figure 7. 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, 2008, 2010, and 2012. Vertical line denotes 14-inch minimum length limit.

Largemouth Bass

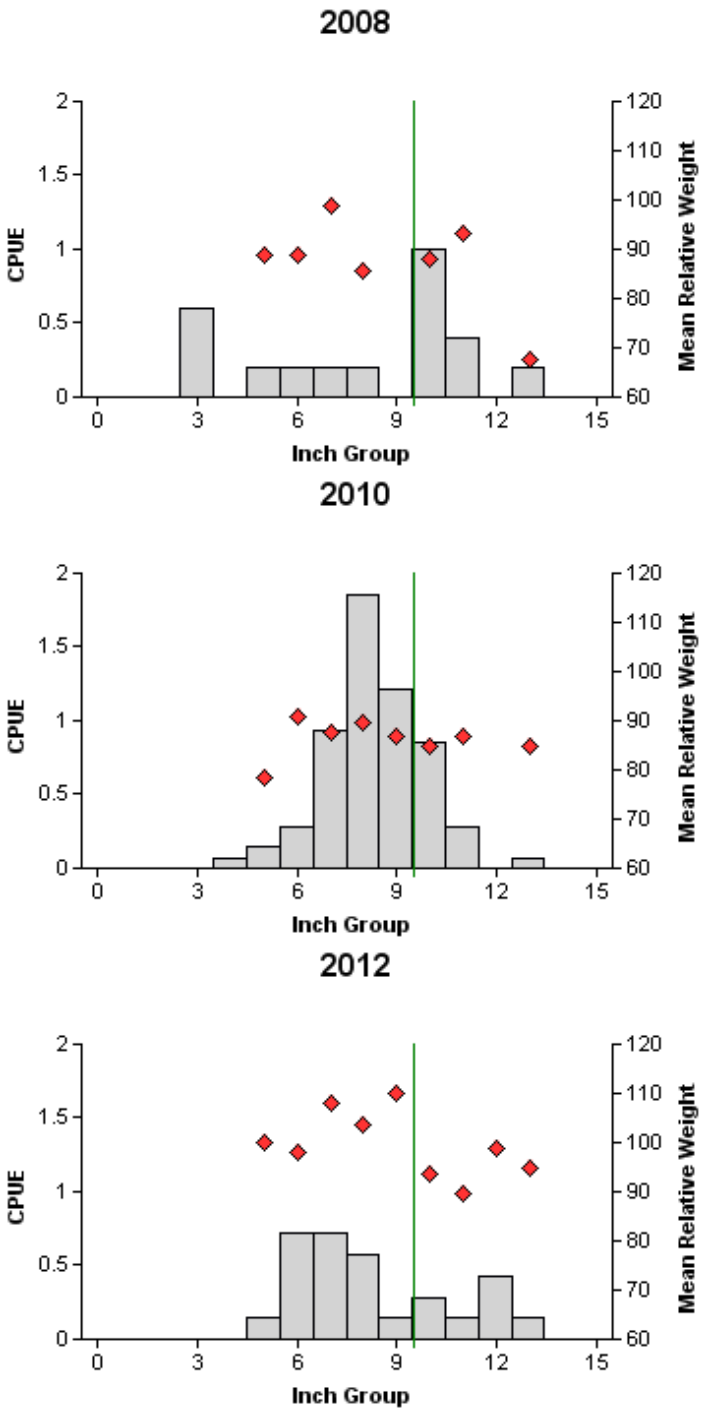
Table 7. Mean age at legal length (14 in) for Largemouth Bass collected by fall electrofishing, Lake Placid, Texas. Standard deviations are in parenthesis.

Year	N	Age Range	Age at Length
2006	12	1 – 6	2.6 (1.37)
2008	12	2 – 3	2.3 (0.45)
2010	4	2 – 4	3.0 (0.81)
2012	13	1 – 4	2.7 (0.83)

Table 8. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Lake Placid, Texas, 2008, 2010, and 2012. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined by with micro-satellite DNA analysis.

		Number of fish				
Year	Sample Size	FLMB	Intergrade	NLMB	% FLMB alleles	%FLMB
2008	14	0	14	0	64.6	0.0
2010	30	1	28	1	57.4	3.3
2012	30	0	30	0	56.7	0.0

White Crappie



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

Effort =	14.0
Total CPUE =	5.7 (19; 80)
Stock CPUE =	5.6 (19; 79)
CPUE-10 =	1.2 (25; 17)
PSD =	76 (4)

Effort =	7.0
Total CPUE =	3.3 (41; 23)
Stock CPUE =	3.3 (41; 23)
CPUE-10 =	1.0 (38; 7)
PSD =	52 (8)

Figure 8. 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, 2008, 2010, and 2012. Vertical line denotes 10-inch minimum length limit.

Table 9. Proposed sampling schedule for Lake Placid, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

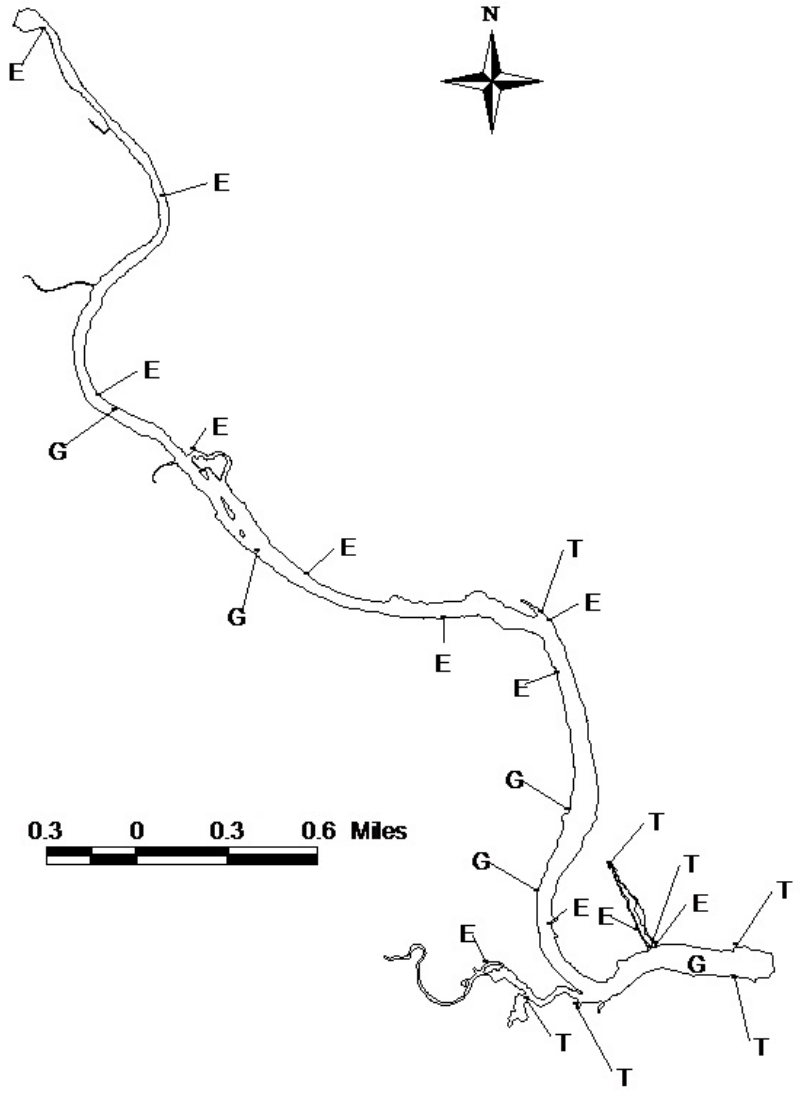
Survey year	Electrofish	Trap net	Gill net	Habitat		Access	Creel survey	Report
				Structural	Vegetation			
2013-2014								
2014-2015	A				.			
2015-2016								
2016-2017	S	S	S		S	S		S

APPENDIX A

Number (N) and catch rate (CPUE) of all species collected from all gear types from Lake Placid, Texas, 2012 – 2013. Sampling effort was 5 net nights for gill netting, 7 net nights for trap netting, and 1 hour for electrofishing.

Species	Electrofishing		Gill Netting		Trap netting	
	N	CPUE	N	CPUE	N	CPUE
Longnose Gar			6	1.2		
Gizzard Shad	122	122.0	73	14.6		
Threadfin Shad	200	200.0			1	0.1
Golden Shiner	3	3.0				
Bullhead Minnow	3	3.0			1	0.1
Inland Silverside	7	7.0				
Other Minnows	47	47.0				
Blacktail Shiner	25	25.0				
Grey Redhorse			16	3.2		
Blue Catfish			39	7.8		
Channel Catfish			88	17.6	1	0.1
Flathead Catfish			6	1.2		
Redbreast Sunfish	11	11.0				
Green Sunfish	1	1.0				
Warmouth	2	2.0				
Bluegill	109	109.0	1	0.2	55	7.9
Longear Sunfish	24	24.0			4	0.6
Redear Sunfish	5	5.0	4	0.8	18	2.6
Redspotted Sunfish	2	2.0				
Spotted Bass	6	6.0				
Largemouth Bass	73	73.0	3	0.6		
Guadalupe Bass	20	20.0				
White Crappie	1	1.0	53	10.6	23	3.3
Black Crappie			1	0.2	1	0.1
Rio Grande Cichlid	8	8.0			1	0.1
Blue Tilapia			1	0.2		

APPENDIX B



Location of sampling sites, Lake Placid, Texas, 2012-2013. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level was near full pool at time of sampling.