PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-30-R-34

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2008 Survey Report

Lake Findley

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Findley 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 Findley is a 200-acre reservoir located on Chilitipin Creek, in the San Fernando Creek Basin, one mile north of Alice. It receives water from Chilitipin Creek and from Lake Corpus Christi via pipeline, and is used for water supply and recreation. Shoreline access is adequate, whereas challenged and boat access are inadequate, as there are no challenged specific facilities and no improved boat ramp. A unimproved boat ramp is located on the west side of the reservoir but can only accommodate small vessels. The lake is shallow and turbid with substrate comprised of small rock, clay, sand, and silt. Littoral habitat at the time of sampling consisted of spatterdock, fallen timber, and rip rap.

- **Management history:** Important sport fish species include largemouth bass, channel and blue catfish, and crappie. Palmetto bass were an important sport fish in the late 1990s but became non-existent shortly after stockings were halted. The 2005 management plan focused on addressing fish kills due to anoxic water trapped in the pipelines from Lake Corpus Christi, working with the city of Alice on improvements to the reservoir, stabilizing water level and recreating a palmetto bass fishery. The city of Alice constructed a barrier at the influent canal/reservoir interface to prevent fish from entering the canal during pumping periods when anoxic water can be present. Since the construction of the barrier, there have been no additional fish kills at Lake Findley. Water levels remained fairly consistent since the last report primarily due to rainfall events. Palmetto bass were requested in 2005 and 2009, with the 2009 request being approved. Stocking occured in the spring 2009.

- **Fish Community**

  - **Prey species:** Forage species included bluegill, warmouth, and both threadfin and gizzard shad. All forage species were of sizes available to most predator species. Threadfin shad were the predominant species.

  - **Catfishes:** Blue and channel catfish were both present in the reservoir. Blue catfish were first collected from the reservoir in 2004 but have never been stocked by Texas Parks and Wildlife Department (TPWD). The blue catfish population appears to be expanding as evidenced by the increased gill net catch rates. Channel catfish abundance was low and remained similar to previous years.

  - **Palmetto bass:** Palmetto bass were stocked in the late 1990s and rapidly grew to legal size (18-inches). However, stockings were halted in 2000 and the population rapidly disappeared.

  - **Largemouth bass:** No largemouth bass were collected in any recent survey. Historically, the largemouth bass population was small and typically concentrated in Chilitipin Creek. Only one electrofishing station was located in Chilitipin Creek, possibly explaining the low number of largemouth bass collected from the reservoir.

  - **Crappie:** Historically, both black and white crappie have been present in the reservoir; however, only white crappie were collected in the most recent survey. Catch rates of both species have declined in recent years.

- **Management strategies:** Continue to manage fish populations under current regulations. Stock palmetto bass three consecutive years then every other year at a stocking rate of 10/acre and monitor stocking success through gill net surveys conducted every other year following a stocking. Write and distribute press releases concerning the palmetto bass stocking and regulations for this fishery as well as highlight the developing blue catfish fishery.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Findley in 2008-2009. 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 recommendations address existing problems or opportunities. Historical data is presented with the 2008-2009 data for comparison.

Reservoir Description

Lake Findley is a 200-acre reservoir located on Chilitipin Creek, in the San Fernando Creek Basin, one mile north of Alice. It receives water from Chilitipin Creek and from Lake Corpus Christi via pipeline, and is used for water supply and recreation. Shoreline access is adequate, while challenged and boat access are inadequate, as there are no challenged specific facilities and no improved boat ramp. A unimproved boat ramp is located on the west side of the reservoir but can only accommodate small vessels. The lake is shallow and turbid with substrate comprised of small rock, clay, sand, and silt. Water level fluctuates frequently in this reservoir (Figure 1). Littoral habitat at the time of sampling consisted of spatterdock, fallen timber, and rip rap. Native aquatic vegetation was planted as a mitigation project for a prior fish kill. Survival of the native aquatic vegetation has been highly variable due to water level fluctuations. Emergent (bulltongue and pickerel weed) and floating-leaf species (spatterdock) have established and spread beyond the planting sites. Submersed species (water stargrass) are present in the reservoir but sparsely scattered along the shoreline. A barrier was installed at the canal/reservoir interface to prevent fish from entering the canal during pumping periods as anoxic water conditions can occur. Since the installation of this barrier there have been no reported fish kills. Other descriptive characteristics for Lake Findley are in Table 1.

Management History

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

1. Work with the city of Alice on preventing fish kills in the influent canal during pumping periods such as the construction of a barrier and weir dams. Monitor water quality during pumping periods to document severity and duration of the anoxic conditions.
   Action: District staff met with city of Alice staff to discuss plans for preventing fish kills. City staff surveyed the canal and installed a barrier at the influent canal/reservoir interface. The barrier consisted of two panels of chain-link fence, with holes offset, posts every eight feet, and boulders piled along both sides of the bottom of the fence. The barrier provided the desired result and the construction of weir dams was discontinued. City staff also contacted TPWD staff prior to pumping periods in order to document water quality changes as a result of pumping. Both TPWD and city staff documented anoxic water conditions shortly after the pumps were turned on, however, there have been no fish kills in the canal since the barrier was installed.

2. New management within the city of Alice had expressed interest in the possible construction of an improved boat ramp and improvements to the reservoir and surrounding park.
   Action: District staff met with city staff and discussed the feasibility of constructing an improved boat ramp and maintaining a more stable water level. In order to construct an improve boat ramp a section of the reservoir would need to be dredged to provide adequate water depth for boat launching. Currently there is a 20 hp outboard limit on the reservoir (city ordinance) and small boat are off loaded by hand using the unimproved boat ramp on the west side of the reservoir. Since the previous report the reservoir has maintained a relatively stable water level primarily due to rainfall events.

3. Recreate the palmetto bass fishery to provide anglers with an additional sport fish.
   Action: Palmetto bass stockings were requested in 2005 (request denied) and again in 2009 (request approved) at a rate of 10/acre.

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

Stocking history: No stockings have occurred since the previous report. A complete stocking history is in Table 3.

Vegetation/habitat history: Aquatic vegetation prior to 1998 was limited to one dense, mixed stand of bulrush and cattail and also a variety of spikerushes along the shoreline. Beginning in the summer 1998 TPWD oversaw the implementation of a native vegetation establishment project at Lake Findley. This served as the city of Alice's mitigation project for a fish kill in 1996. The project, completed in the summer 2000, attempted to establish emergent, floating-leaf, and submersed native aquatic vegetation to enhance fish habitat. Approximately 1,000 plants were planted by the end of the mitigation project. By 2002, species such as water stargrass, pickerel weed, bulltongue, white water lily, and spatterdock had established and were beginning to colonize other areas of the reservoir. The low water level in 2003 was detrimental to the water stargrass stands. Remaining established species have continued to flourish.

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: Littoral zone habitat consisted of fallen timber and rip rap along the shoreline. Offshore or adjacent to shoreline habitat was virtually non-existent. Aquatic vegetation consisted of spatterdock, water primrose, water stargrass, bulrush, cattail, and pickerel weed. Excluding bulrush and cattail, the other species were the results of the native vegetation mitigation project. Native vegetation surface coverage increased from the previous report. Native-floating vegetation increased from <0.1 acres in 2004 to 1.9 acres in 2008, native submerged vegetation increased from <0.1 acres (2004) to 0.2 acres (2008), and native emergent vegetation increased from 0.1 acres (2004) to 1.9 acres (2008). Additional information concerning habitat is presented in Table 4.

Prey species: The 2008 electrofishing catch rate for gizzard shad was 95.0/h (Figure 2). Gizzard shad catch rates increased from 25.0/h in 2004 but were still below 147.0/h in 2002. The Index of Vulnerability (IOV) for gizzard shad was 99 and similar to previous years, indicating that nearly all of the gizzard shad collected were less than 8 inches and vulnerable to predation. The 2008 threadfin shad electofishing catch rate was 1,511.0/h, substantially higher than 6.0/h in 2002 and 48.0/h in 2004.

The 2008 electrofishing catch rate for bluegill was 39.0/h, lower than previous years (Figure 3). Most bluegill were available to existing predators. Low water level at the time of the electrofishing survey may explain this decrease in catch rate as the electrofishing boat was unable to effectively navigate directly adjacent to shore.

Blue Catfish: Although not stocked by TPWD, blue catfish were first collected from the reservoir in fall 2004. These fish were collected during routine electrofishing (N=3 stations) and trap net surveys (N=1

station). The 2009 blue catfish gill net catch rate was 2.4/nn (Figure 4) and was the first time blue catfish have been collected from the reservoir during a gill net survey. The blue catfish population appears to be growing as evidenced by the total catch and natural reproduction is likely as evidenced by the presence of smaller size classes.

Channel Catfish: The 2009 channel catfish gill net catch rate was 0.6/nn, similar to previous years (Figure 5). Historically, channel catfish gill net catch rates have always been low compared to other lakes within the district.

Palmetto bass: No palmetto bass were collected in gill nets in 2009 (Figure 6), indicating that the population is small or no longer exists.

Largemouth bass: No largemouth bass were collected in the 2008 electrofishing survey (Figure 7). Low catch rates of largemouth bass in Lake Findley may be explained by the limited effectiveness of the electrofishing boat in shallow water and the lack of electrofishing stations in Chilitipin Creek. Historically, the majority of largemouth bass collected from Lake Findley were located in Chilitipin Creek.

White Crappie: The 2008 trap net catch rate for white crappie was 2.6/nn, lower than previous years (Figure 8). Condition of stock size or greater fish was good, as mean relative weights exceeded 100.

Black Crappie: No black crappie were collected during the 2008 trap net survey (Figure 9). Historically, trap net catch rates of black crappie have been low and very few fish ever exceed the 10-inch minimum length limit. Black crappie appear to have ample forage for growth and maintaining body condition.

Fisheries management plan for Lake Findley, Texas

Prepared - July 2009.

ISSUE 1 Palmetto bass were stocked in the reservoir in 1997 and 1998 to utilize abundant large gizzard shad and provide anglers with an additional sport fish to target. Some of these fish were approaching legal size (18-inches) 13 months after stocking. However, stockings were discontinued due to low availability of fry and the fishery never reached its full potential.

MANAGEMENT STRATEGIES

1. Stock palmetto bass at a rate of 10/acre every other year

2. Monitor palmetto bass stockings through gill net surveys conducted the spring following a stocking.

3. Write and distribute press releases concerning stocking introductions as well as angling opportunities/regulations for the species.

ISSUE 2 Blue catfish have not been stocked by TPWD but are present in the reservoir. This population was first documented at Lake Findley in fall 2004 and appears to be self-sustaining without stocking. This species may provide better angling opportunities over channel catfish.

MANAGEMENT STRATEGIES

1. Monitor blue catfish population through gill net surveys.

2. Write and distribute press releases concerning the blue catfish population and angling regulations.

ISSUE 3 The largemouth bass population has never been highly abundant, however, recent electrofishing surveys have yielded even fewer bass. Historically, the majority of largemouth bass have been collected from Chilitipin Creek which has not been well represented in the recent electrofishing surveys.

MANAGEMENT STRATEGIES

1. Conduct a largemouth bass-only electrofishing survey at biologist selected stations in fall 2010 to document the status of the largemouth bass population.

2. Request largemouth bass to be stocked at a rate of 100/acre.

SAMPLING SCHEDULE JUSTIFICATION:
The proposed sampling schedule includes routine electrofishing and trap netting in the fall 2012 and gill netting in the spring 2013 (Table 5) to assess all sport fish populations present in the reservoir. Additional gill netting will occur the spring following a stocking of palmetto bass to assess stocking efforts. An additional largemouth bass-only electrofishing survey will be conducted in the fall 2010. Habitat will be monitored in the summer 2012 using the digital shapefile method in order to continue monitoring the expansion of the native vegetation plantings.

LITERATURE CITED

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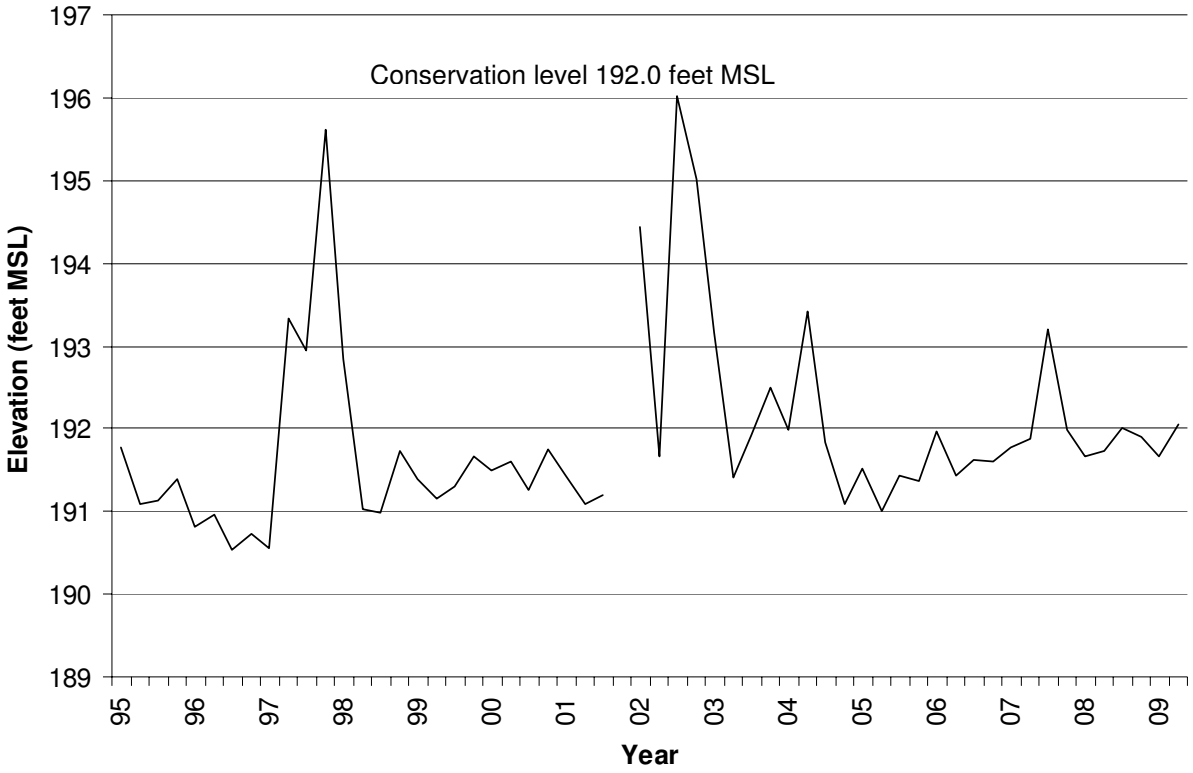


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Lake Findley, Texas, January 1995 through April 2009. Note water level elevation data from August 2004 through December 2004 not available.

Table 1. Characteristics of Lake Findley, Texas.

Characteristic	Description
Year constructed	1965
Controlling authority	City of Alice
County	Jim Wells
Reservoir type	Reservoir/City Park
Shoreline Development Index	1.7
Conductivity	
Access: Boat	Inadequate – unimproved ramp
Bank	Adequate
Handicapped	Inadequate – one short pier

Table 2. Harvest regulations for Lake Findley, 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, palmetto	5	18 – No Limit
Bass, largemouth	5	14 – No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 – No Limit

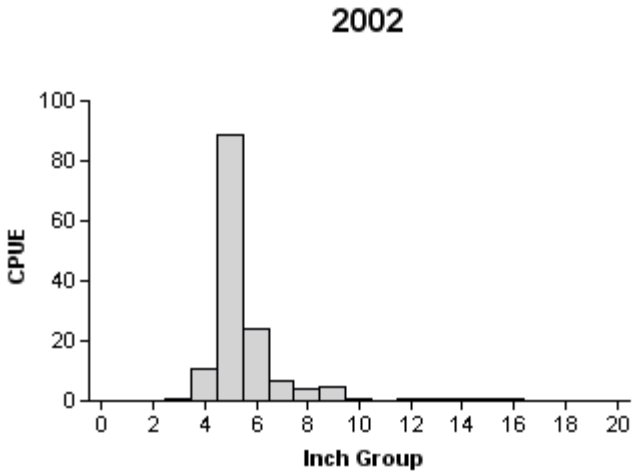
Table 3. Stocking history for Lake Findley , Texas. Sizes categories are: FRY = <1 inch and FGL = 1-3 inches.

Year	Number	Size
Channel catfish		
1968	1,500	FGL
1971	2,000	FGL
1991	7,005	FGL
1995	64,312	FRY
1997	7,744	FGL
1998	7,195	FGL
1999	7,235	FGL
2000	7,200	FGL
2001	7,217	FGL
Species total	111,462	
Palmetto bass		
1997	4,647	FGL
1998	4,536	FGL
Species total	9,183	
Largemouth bass		
1966	24,640	FGL
1968	6,000	FGL
Species total	30,650	
Florida largemouth bass		
1996	70,079	FGL
Species total	70,079	
Black crappie		
1966	4,000	FGL
Species total	4,000	

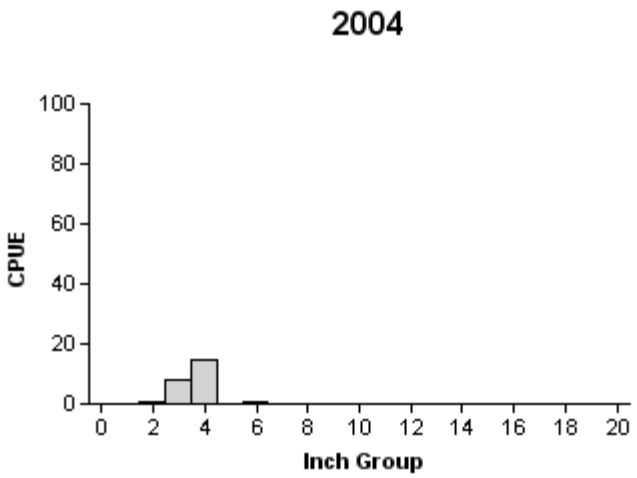
Table 4. Survey of littoral zone and physical habitat types, Lake Findley, Texas, 2008. A linear shoreline distance (miles) was recorded for each habitat type found. Surface area and percent of reservoir surface acre were determined for each type of aquatic vegetation found. Surface area estimates are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

Habitat type	Shoreline Distance		Surface Area of Water with Vegetation	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Shoreline habitat				
Bulkhead	<0.1	0.4		
Natural shoreline	10.2	97.1		
Rip-rap	0.3	2.5		
Total	10.5	100		
Vegetation				
Native floating vegetation			1.9	0.9
Spatterdock			1.9	0.9
Water primrose			<0.1	<0.1
Native submerged vegetation			0.2	0.1
Water stargrass			0.2	0.1
Native emergent vegetation			1.9	0.9
Bulrush			0.3	0.1
Cattail			0.7	0.4
Pickerel weed			0.9	0.4
Adjacent to shoreline				
Piers and Boat docks	<0.1	<0.1		

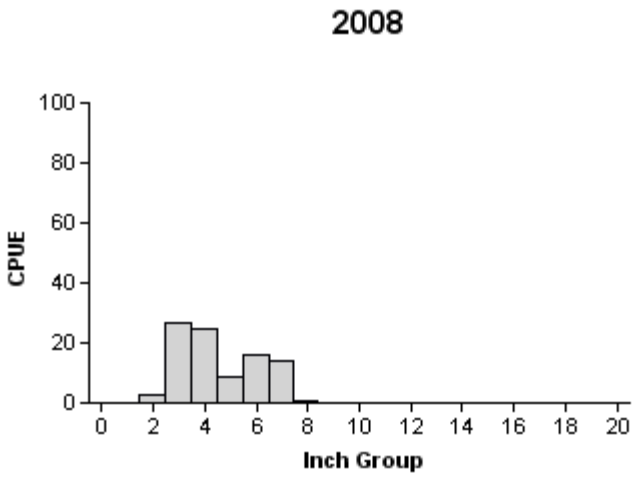
Gizzard shad



Effort = 1.0
Total CPUE = 147.0 (30; 147)
IOV = 90 (4)



Effort = 1.0
Total CPUE = 25.0 (32; 25)
IOV = 100 (0)



Effort = 1.0
Total CPUE = 95.0 (48; 95)
IOV = 99 (1)

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 Findley, Texas, 2002, 2004, and 2008.

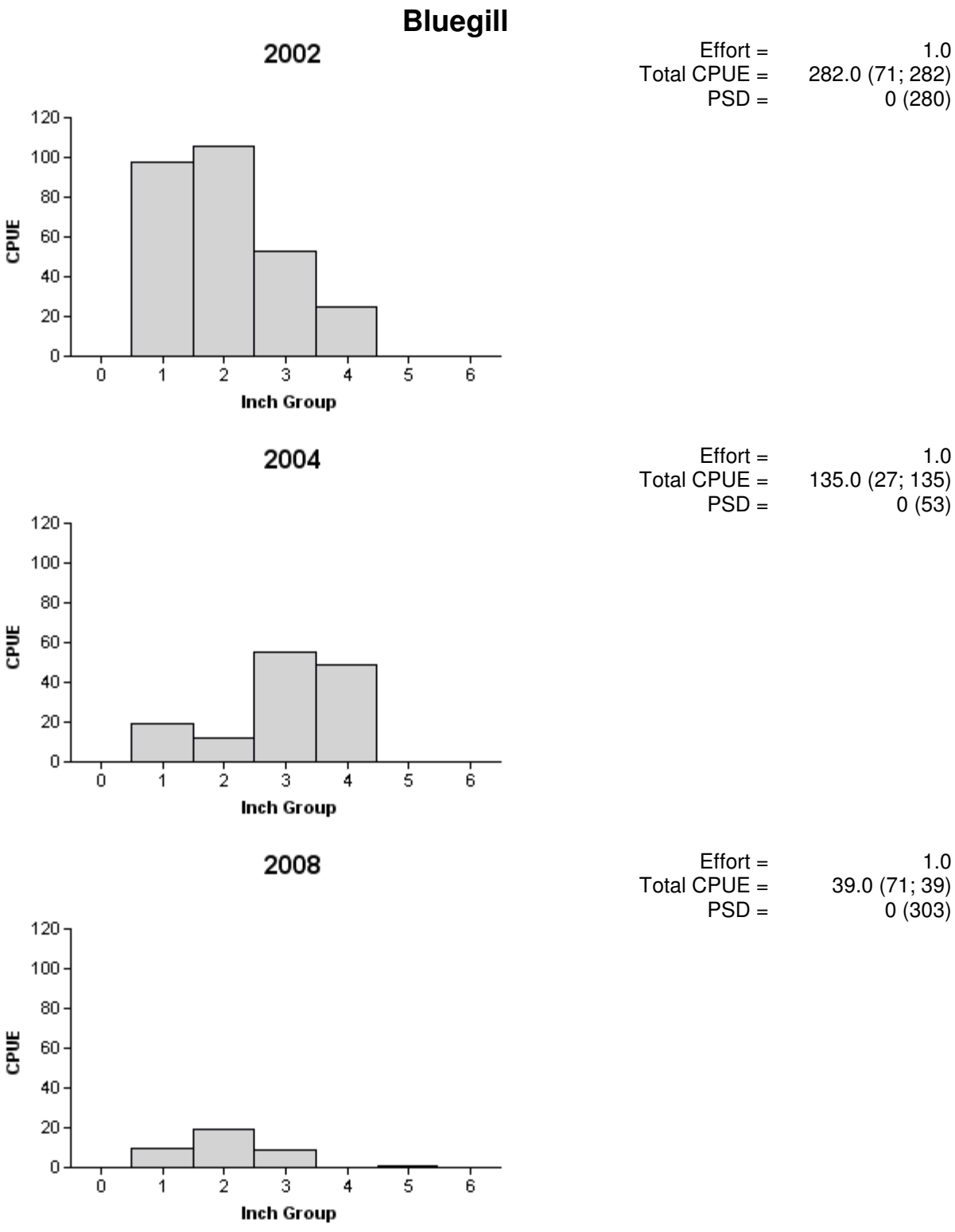


Figure 3. Comparison of the number of bluegill caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Findley, Texas, 2002, 2004, and 2008.

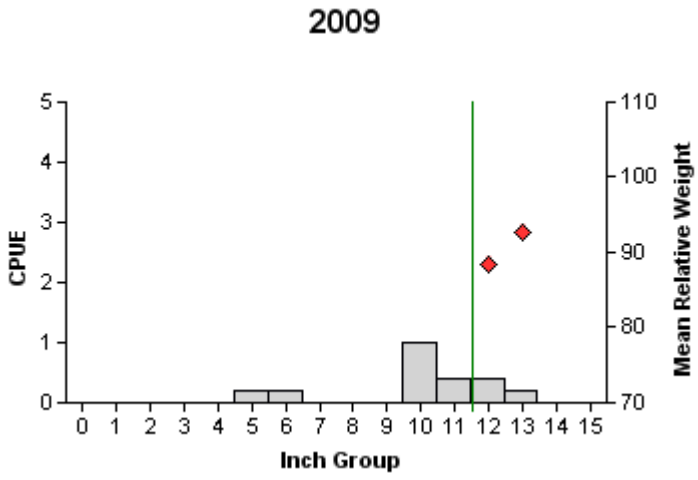
Blue catfish

Effort = 5.0
Total CPUE = 0.0

No blue catfish were captured in gill nets in 2001.

Effort = 5.0
Total CPUE = 0.0

No blue catfish were captured in gill nets in 2005



Effort = 5.0
Total CPUE = 2.4 (90; 12)
Stock CPUE = 0.6 (67; 3)
PSD = 0 (412)

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 Findley, Texas, 2001, 2005, and 2009. Vertical lines denote 12-inch minimum length limit.

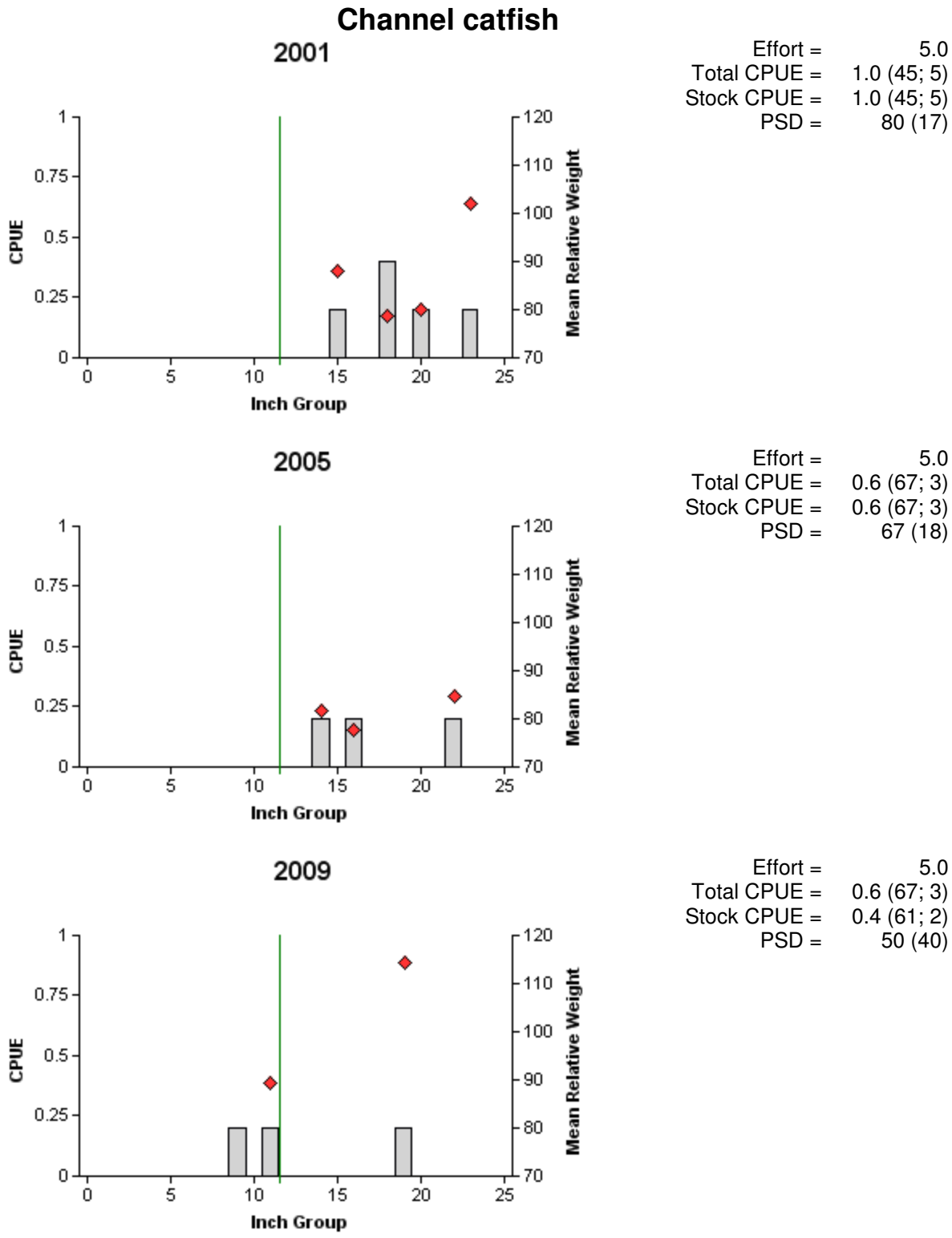
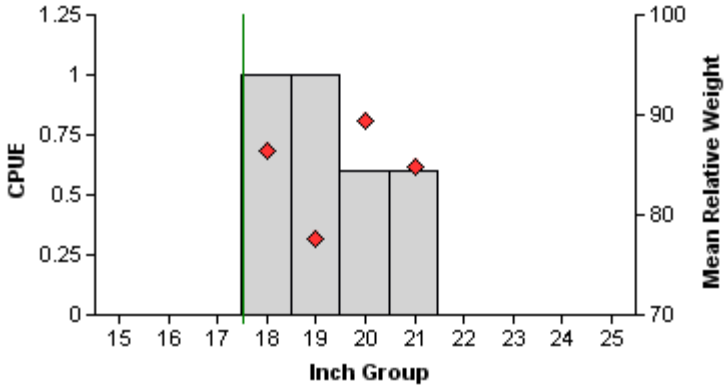


Figure 5. Comparison of the number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and populations indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Findley, Texas, 2001, 2005, and 2009. Vertical lines denote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

Palmetto bass

2001



Effort =	5.0
Total CPUE =	3.2 (40; 16)
CPUE-18 =	3.2 (40; 16)
PSD =	100 (0)

Effort =	5.0
Total CPUE =	0.0

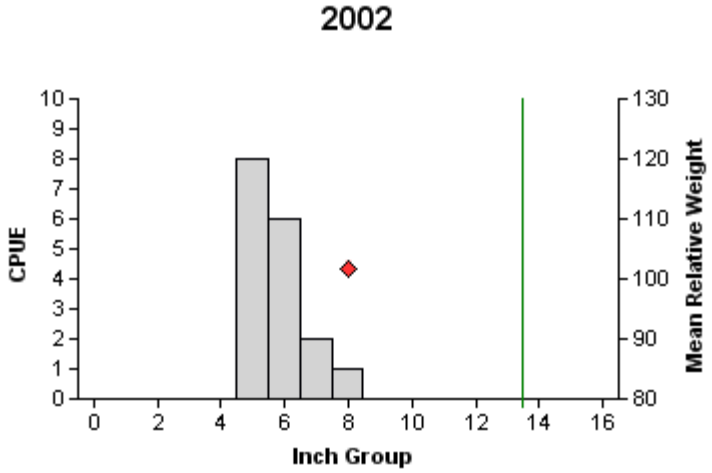
No palmetto bass were captured in gill nets in 2005.

Effort =	5.0
Total CPUE =	0.0

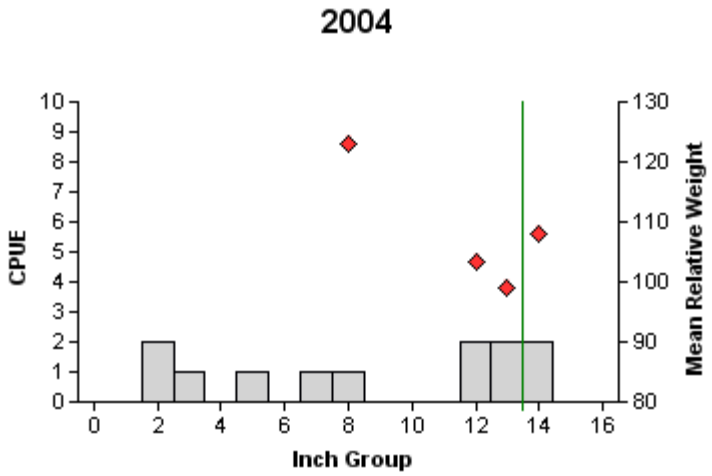
No palmetto bass were captured in gill nets in 2009.

Figure 6. Comparison of the number of palmetto bass 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 Findley, Texas 2001, 2005, and 2009. Vertical line denotes 18-inch minimum length limit.

Largemouth bass



Effort =	1.0
Total CPUE =	17.0 (81; 17)
Stock CPUE =	1.0 (100; 1)
PSD =	0 (1473)



Effort =	1.0
Total CPUE =	12.0 (39; 12)
Stock CPUE =	7.0 (33; 7)
PSD =	86 (12)

Effort =	1.0
Total CPUE =	0.0

No largemouth bass were captured by electrofishing in 2008.

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 Findley, Texas, 2002, 2004, and 2008. Vertical lines denote 14-inch minimum length limit.

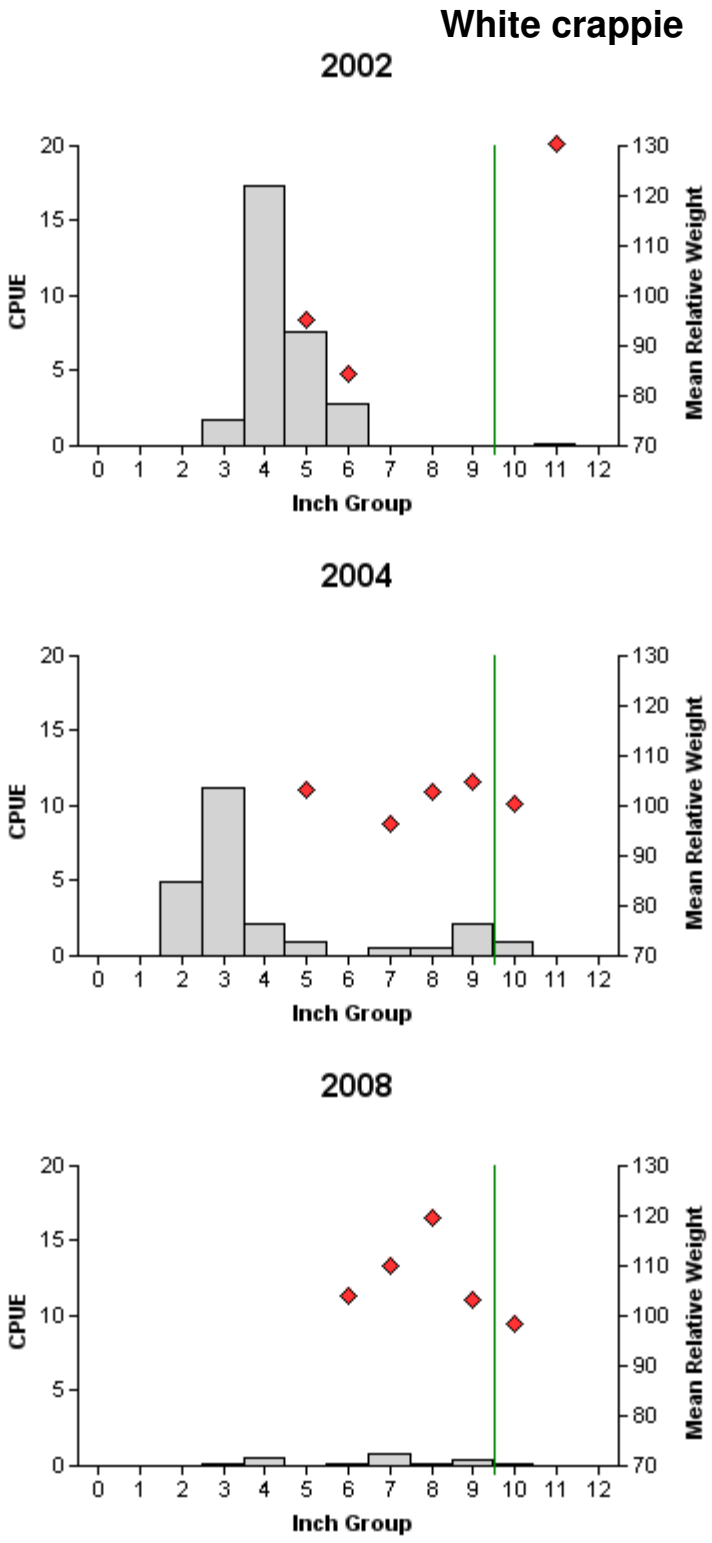
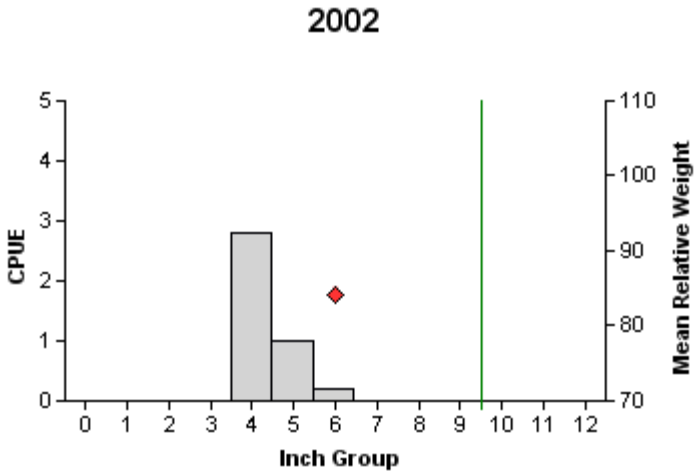
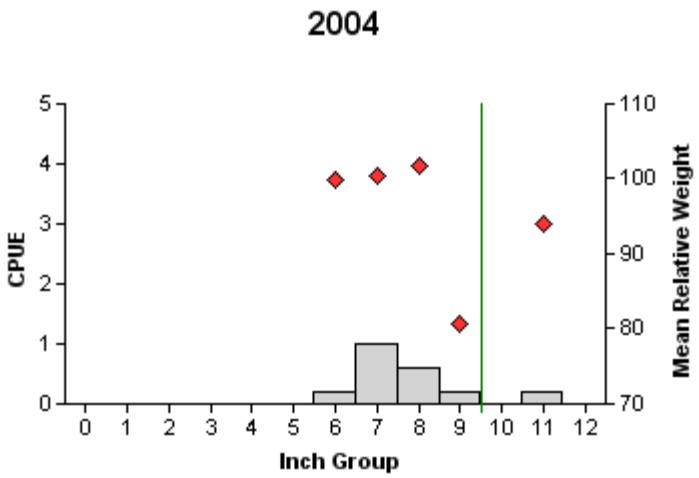


Figure 8. Comparison of the number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Lake Findley, Texas, 002, 2004, and 2008. Vertical lines denote 10-inch minimum length limit.

Black crappie



Effort =	5.0
Total CPUE =	4.0 (40; 20)
Stock CPUE =	1.2 (31; 6)
PSD =	0 (214)



Effort =	5.0
Total CPUE =	2.2 (49; 11)
Stock CPUE =	2.2 (49; 11)
PSD =	45 (9)

Effort =	5.0
Total CPUE =	0.0

No black crappie were captured in trap nets in 2008.

Figure 9. Comparison of the number of black 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 net surveys, Lake Findley, Texas, 2002, 2004, and 2008. Vertical lines denote 10-inch minimum length limit.

Table 5. Proposed survey schedule for Lake Findley, 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.

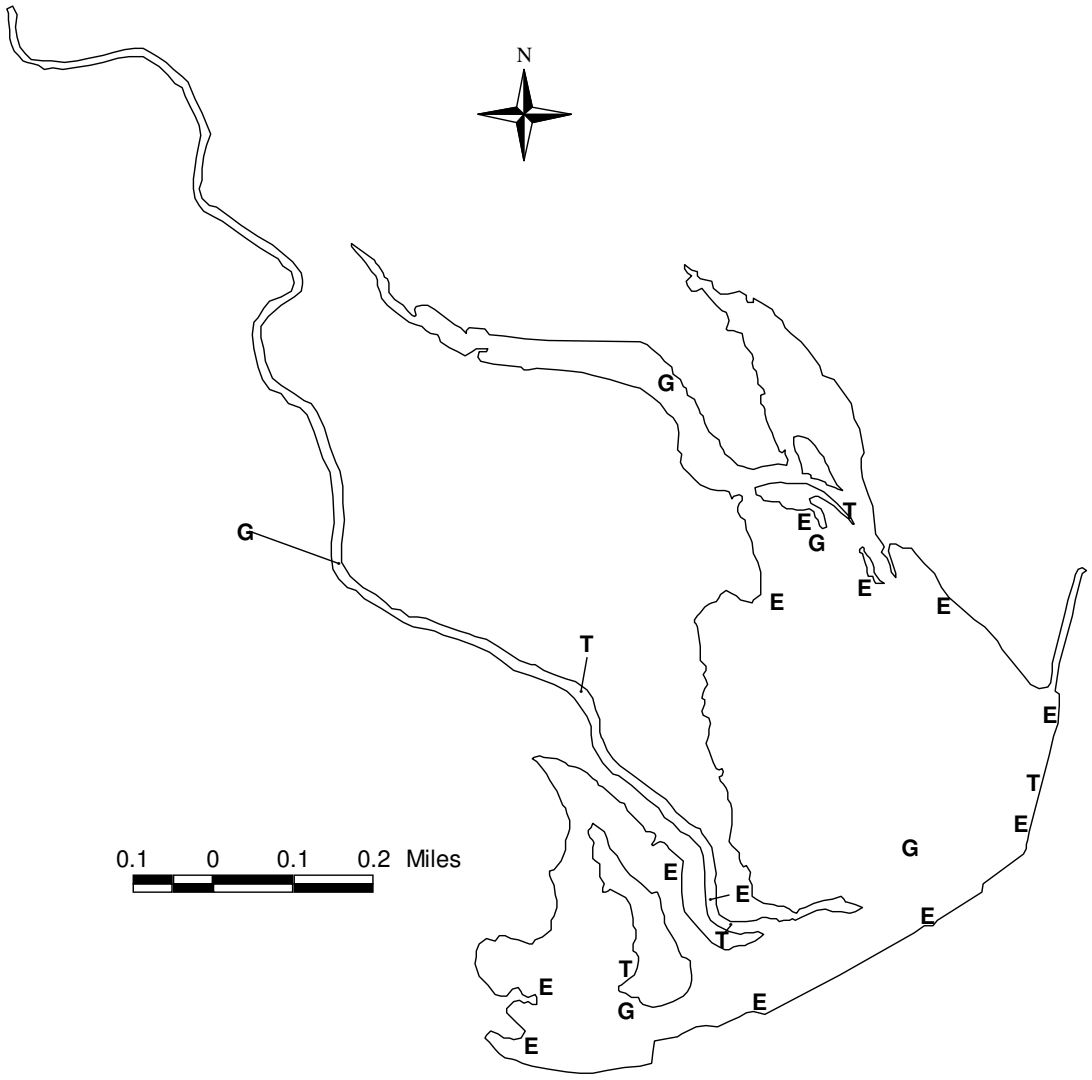
Survey Year	Habitat	Electrofishing	Trap Netting	Gill Netting	Report
Fall 2009-Spring 2010					
Fall 2010-Spring 2011				A	
Fall 2011-Spring 2012					
Fall 2012-Spring 2013	S (Digital shapefile)	S	S	S	S

APPENDIX A

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

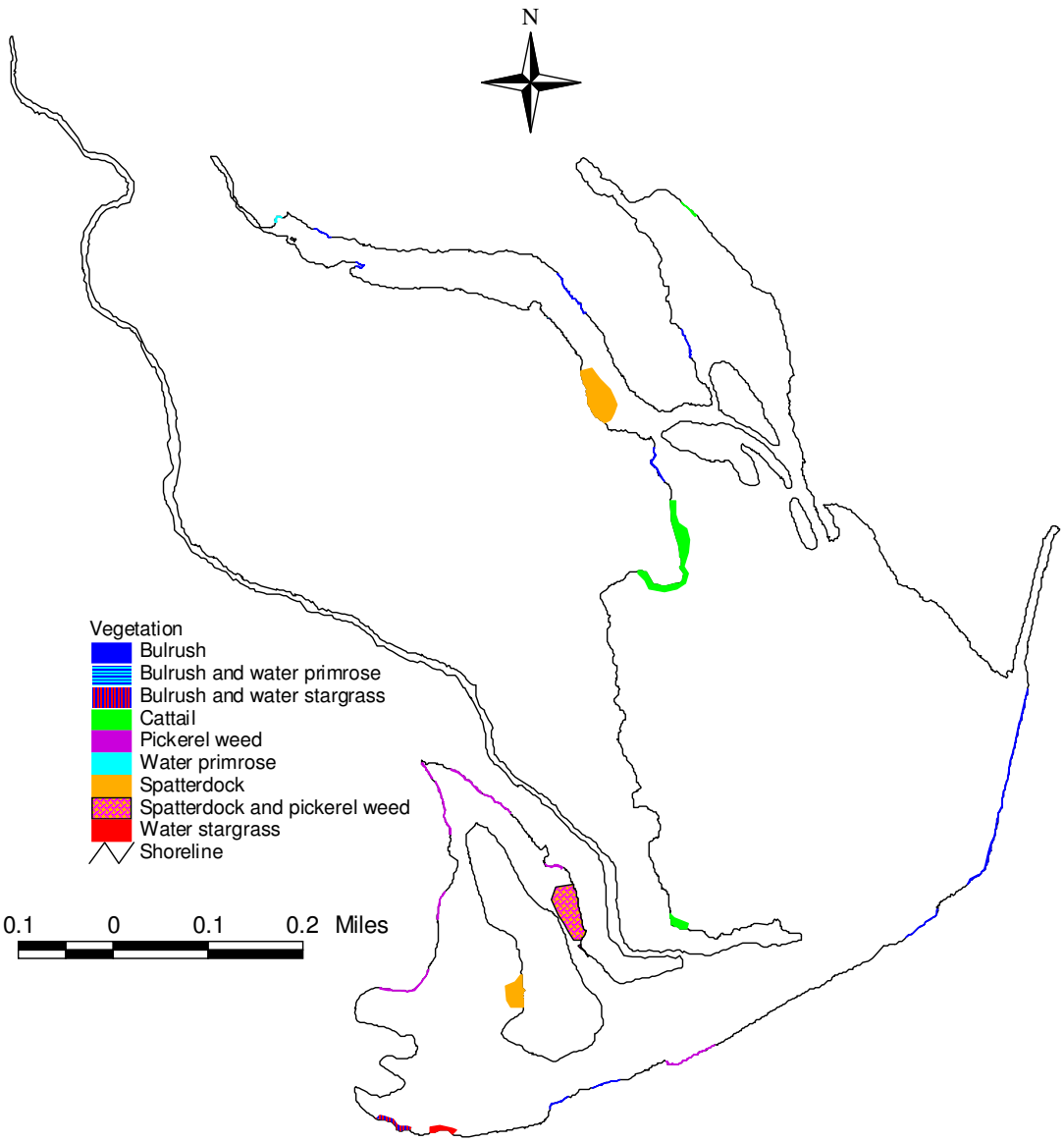
	Electrofishing		Trap Netting		Gill netting	
Species	N	CPUE	N	CPUE	N	CPUE
Spotted gar			2	0.4		
Gizzard shad	95	95.0	8	1.6	102	20.4
Threadfin shad	1,511	1,511.0	36	7.2		
Common carp					2	0.4
Inland silverside	1	1.0				
Smallmouth buffalo			10	2.0	111	22.2
Blue catfish					12	2.4
Channel catfish			1	0.2	3	0.6
Warmouth	74	74.0				
Bluegill	39	39.0				
White crappie	1	1.0	13	2.6	17	3.4
Freshwater drum			2	0.4		
Rio Grande cichlid	2	2.0	2	0.4		

APPENDIX B



Location of sampling sites, Lake Findley, 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 Findley, Texas, 2008.