PERFORMANCE REPORT

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FEDERAL AID PROJECT F-221-M-2

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2011 Survey Report

Lake Wood

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SURVEY AND MANAGEMENT SUMMARY

Lake Wood (H-5) was surveyed in fall 2005, 2007, 2009, 2011 and spring 2009 and 2012 using electrofishing, fall 2005, 2007, 2009, and 2011 using trap nets and spring 2004, 2008, and 2012 using gill nets. This report summarizes the results of these surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Lake Wood (488 acres) is located on the Guadalupe River in Gonzales County, and was constructed in 1931 by the Texas Hydroelectric Commission. Its main purposes are for water supply, hydro-power production and recreation. Angler and boat access is adequate with two public boat ramps; however there are no handicap-specific facilities at either location. Habitat consisted of boat docks, rocks, floating-leaved vegetation, emergent vegetation, exotic vegetation (water hyacinth, water lettuce) and stumps. Hydrilla has not been observed in the reservoir since 2004. Water hyacinth and water lettuce was present and has the potential to create access problems

- **Management History:** Important sport fish include channel and flathead catfish, largemouth bass, and crappie. White bass are present in this reservoir but in low abundance. Blue catfish have been stocked in this reservoir but are not the dominant catfish species. The 2008 management plan focused on working with GBRA on the control of water hyacinth, monitoring water lettuce and East Indian hygrophila, and conducting spring electrofishing surveys to assess perceived spawning and recruitment issues of largemouth bass. Guadalupe Blanco River Authority (GBRA) controlled nuisance aquatic vegetation (primarily water hyacinth) through contracted herbicide spraying operations and winter time lake drawdowns. Combined, these efforts were effective at controlling water hyacinth. TPWD monitored water lettuce and East Indian hygrophila, but neither plant became problematic in 2011. Spring electrofishing surveys were conducted and the data showed both spawning success and recruitment were no longer a problem.

- **Fish Community**
  - **Prey species:** Gizzard shad, threadfin shad, and several sunfish species were the primary forage species available to predators, with gizzard shad and bluegill having the highest relative abundance. Catch rates of most forage species increased from previous years.

  - **Catfish:** Gill net catch data of channel catfish indicated about half of the fish collected were greater than the minimum length limit of 12-inches, providing adequate angling opportunities. Gill net data also suggests the blue catfish population is expanding without the aid of stocking. Flathead catfish were present in the reservoir.

  - **Largemouth bass:** Largemouth bass, spotted bass, and Guadalupe bass are present in the reservoir. Electrofishing catch rates of largemouth bass increased since the previous report (2008), and they likely provide a significant fishery. Spawning success and recruitment were not a problem in 2011..

  - **White crappie:** White crappie and black crappie were present in the reservoir. White crappies were more numerous than previously thought and provide anglers with excellent fishing opportunities.

- **Management Strategies:** Continue to manage sport fisheries under existing regulations. Continue cooperative efforts with GBRA to monitor and control nuisance aquatic vegetation and publicize fisheries.

INTRODUCTION

This document is a summary of fisheries survey data collected from Lake Wood in 2011-2012. The purpose of the document is to provide fisheries information critical in making management recommendations to protect and improve economically and recreationally important sport fisheries. While information on other species of fishes was collected, this report deals primarily with the major sport fishes and important prey species present in the reservoir. Management strategies are included to address existing problems and/or opportunities. Historical data is presented with the 2011-2012 data for comparison.

Reservoir Description

Lake Wood is a 448-acre reservoir impounded on the Guadalupe River in Gonzales County and was constructed in 1931 by the GBRA. Its main purposes are for water supply, hydro-power production and recreation. Angler and boat access is adequate with two public boat ramps; however there are no handicap-specific facilities at either location. Lake Wood is surrounded by private property; thus public bank access and angling opportunities from the shoreline are limited to one location (GBRA Park). At the time of sampling, fish habitat consisted of boat docks, rocks, floating-leaved vegetation, emergent vegetation, fallen timber, stumps, overhanging brush, piers, and boat docks. Substrate included sand, clays, and deep loam soils. Non-native aquatic vegetation has historically created access problems in the reservoir. A small stand of hydrilla was observed at the GBRA park boat ramp in 2004, however, it has not been observed since. Water hyacinth and water lettuce were present in the reservoir and are treated annually with herbicide and through water level drawdowns during extended periods of below freezing temperatures.

Management History

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

1. Water hyacinth has been a problematic species on this reservoir for many years. Control efforts have been limited to problematic areas rather than the entire reservoir. Cost-share funds have become available for the treatment of water hyacinth on this reservoir.
   Action: Assisted GBRA with meeting the goals outlined in the nuisance aquatic management plan and reviewed vegetation treatment proposals. We conducted vegetation surveys prior to treatment of water hyacinth, attended stakeholders meetings to discuss treatment of water hyacinth, modified the nuisance aquatic vegetation management plan to include water level drawdowns during extended periods of below freezing temperatures, and provided GBRA with cost-share funding .

2. Monitor water lettuce and East Indian hygrophila for colonization and expansion.
   Action: Water lettuce and East Indian hygrophila were noted on all vegetation surveys. Water lettuce was treated at the same time as water hyacinth. Neither species became problematic.

3. Conduct a spring electrofishing survey to address potential largemouth bass spawing success and recruitment problems.
   Action: Both spring and fall electrofishing surveys showed no evidence of a spawning success or recruitment problem in this reservoir.

Harvest regulation history: Sport fish populations in Lake Wood are currently managed with the statewide regulations presented in Table 2.

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

Vegetation/habitat management history: Water hyacinth has been a nuisance and problematic species since the early 90's; prior to 1998 TPWD staff controlled water hyacinth through herbicide treatments. Since then, GBRA has hired a private contractor to conduct herbicide treatments. Initially, water hyacinth control efforts were limited to problematic sections of the reservoir and proved ineffective for long-term control and management of this species. However, recent control efforts have focused on treating all areas of the reservoir and have substantially decreased the surface coverage of water hyacinth. In addition to the herbicide treatments, GBRA has decreased water level during extended periods of below freezing temperatures, also contributing water hyacinth control. Water hyacinth weevils, *Neochetina eichorniae* and *Neochetina bruchi,* were present but provided little control. Water lettuce and hydrilla have been present in previous years but had limited distributions and low abundance.

Water Transfer: Lake Wood is primarily used for hydro-electric generation, water supply for the Gonzales County Water Supply Corporation, and recreation to a lesser extent. Currently there are no plans to build additional pump stations on this reservoir.

METHODS

Fishes were collected by electrofishing (1.0 hour at 12 5-minute stations), trap nets (7 net nights at 7 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 2011. Electrofishing and gill net survey sites were randomly selected and trap net survey sites were subjectively selected based on previous surveys. All surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2011).

Genetic data of largemouth bass was collected using micro-satellite analysis to determine genotype of individual fish and was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2011).

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. Otoliths were collected from largemouth bass (N=13; 330-381mm total length) and white crappie (N=87) for age and growth analysis. Growth parameters were estimated white crappie using the von Bertalanffy growth equation utilizing non-linear least squares methodology (Haddon 2001). Mean length-at-age was described by: $L_a = L\infty\ (1\text{-}e^{-K(t - to)})$; where L_a = length-at-age, $L\infty$ = average asymptotic length, K = metabolic growth coefficient, and t_o = hypothetical age where the fish has a length of zero.

RESULTS AND DISCUSSION

Habitat: Shoreline zone habitat consisted primarily of eroded bank, bulkhead, and concrete and non-vegetative habitat consisted of piers and boat docks (Table 4). Numerous fallen trees and overhanging limbs provide large woody habitat. Aquatic vegetation types included; native floating vegetation (spatterdock and American lotus), native emergent vegetation (cattail, bull tongue, water primrose, white water willow), and exotic vegetation (water hyacinth, water lettuce). East Indian hygrophila and hydrilla were not documented in the 2011 vegetation survey, however, they were observed during several other surveys.

Surface coverage of native floating-leaved vegetation was 61.8 acres; similar to 61.7 acres measured in 2007. Surface coverage of native emergent vegetation was 1.9 acres; less than the 12.9 acres measured in 2007. Cattail was the only native emergent species documented in 2007; however, small colonies of bull tongue, water primrose, and white water willow were documented in 2011. Exotic aquatic vegetation (water hyacinth and water lettuce) both decreased as a result of herbicide applications and water level manipulations; water hyacinth surface coverage decreased from 49.5 acres in 2007 to 7.9 acres in 2011 and water lettuce decreased from 13.9 acres in 2007 to 0.1 acres in 2011.

Prey species: The electrofishing catch rate for gizzard shad was 98.0/h, considerably lower than in 2009 (423.0/h) but higher than in 2007 (34.0/h) (Figure 1). The Index of vulnerability (IOV) for gizzard shad was similar to previous years and indicating that 77% of the gizzard shad were less than eight inches in length and available to predators. The electrofishing catch rate of threadfin shad was 40.0 (Figure 2) and within the range of normal variation.

Electrofishing catch rates for bluegill and redear sunfish were 160.0/h and 25.0/h, respectively. The catch rate for bluegill was substantially higher than in 2007 (75.0/h) but similar to the 2009 catch rate (152.0/h) (Figure 3). Redear catch rates were similar to the 2007 catch rate (21.0/h) but less than the 2009 catch rate (135.0/h) (Figure 4). Both species were dominated by small individuals that are available to predators.

Blue catfish: Blue catfish have been a rare in gill-net collections.. The 2012 gill net catch rate of blue catfish was 2.4/nn, similar to the 2008 catch rate of 1.4/nn (Figure 5). The small blue catfish collected provide evidence of natural reproduction.

Channel catfish: The 2012 gill net catch rate of channel catfish was 4.2/nn; down from 12.8/nn in 2004 and similar to 2.4/nn in 2008 (Figure 6). Historically, channel catfish catch rates have been less than 6/nn. Channel catfish, stock size and greater, were below average condition with mean relative weights near 90. Channel catfish provide anglers with harvest opportunities as 50% of the sample was comprised of legal-size fish($\geq$12-inches).

Largemouth bass: The electrofishing catch rate of stock-length largemouth bass was 84.0/h in 2011; higher than 2007 estimates(18.0/h) but similar to 2009 (62.0/h)(Figure 7). Small fish (<12-inches total length) were dominate in samples, as PSD values were below the desired range of 40-60. Largemouth bass reached 14 inches total length in 1.8 years. Genetic analysis indicated a 51% frequency of Florida largemouth bass alleles, with <0.1% of the population having the Florida largemouth bass genotype. In the previous report, poor habitat was thought to be contributing to low spawning survival and poor recruitment of largemouth bass (Binion and Findeisen 2008). Spring and fall electrofishing data (Figures 7 and 8), collected since the 2008 report, have shown increases in survival and recruitment (measured by CPUE of sub-stock fish). These presumed variations in year class strength are likely an artifact of sampling and not due to changes in fish habitat..

White crappie: Historically, random sampling sites have produced lower white crappie catch rates (Figure 9) as compared to biologist-selected sampling sites (Figure 10). Consequently, biologist-selected sites have been used as the standard for monitoring crappie populations in Lake Wood since 2009. The 2011 trap net catch rate was 18.3/nn, higher than the 2009 catch rate (4.8/nn) and similar to the 2005 catch rate (20.2/nn) (Figure 9). Mean relative weight values were good (>100) for most inch classes. Based on Von Bertalanffy growth model, white crappie in Lake Wood reached legal size (10-inches)t by age-2 in 2011 (Linf = 12.6 and K = 0.59) (APPENDIX G).

Fisheries management plan for Lake Wood, Texas.

Prepared – June 2012

ISSUE 1: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches and plugging engine cooling systems. 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. Water hyacinth has been problematic on this reservoir. Additionally, water lettuce and East Indian hygrophila are present in the reservoir but have yet to become problematic species.

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. Continue to assist GBRA in acquiring cost-share funding.

ISSUE 2: Sport fish populations have increased since the last report and provide anglers with excellent fishing opportunities away from crowded, larger lakes.

MANAGEMENT STRATEGIES

1. Write and distribute press releases to media outlets concerning the excellent angling opportunities available in Lake Wood.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes electrofishing and trap netting surveys in the fall 2013 and electrofishing, trap netting, and gill netting in 2015-2016 (Table 6). Electrofishing surveys are necessary to monitor largemouth bass, sunfish, and shad. Non-random trap net surveys will be used to monitor crappie populations. Gill net surveys are only necessary once every four years to monitor catfish species. A Federal Aid report will be prepared in 2016.

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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.

Binion, G. and J. Findeisen. 2008. Statewide freshwater fisheries monitoring and management program survey report for: Lake Wood, 2008. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.

Haddon, M. 2001. Modeling and quantitative methods in fisheries. Chapman and Hall, New York.

Table 1. Characteristics of Lake Wood, Texas.

Characteristic	Description
Year constructed	1931
Controlling authority	Guadalupe-Blanco River Authority
County	Gonzales
Reservoir type	Mainstream
Shoreline Development Index	2.46
Access: Boat	Adequate – 1 pay-to-use ramp and 1 free ramp
Bank	Fair – public bank access at GBRA park
Handicapped	Inadequate – no handicapped access

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

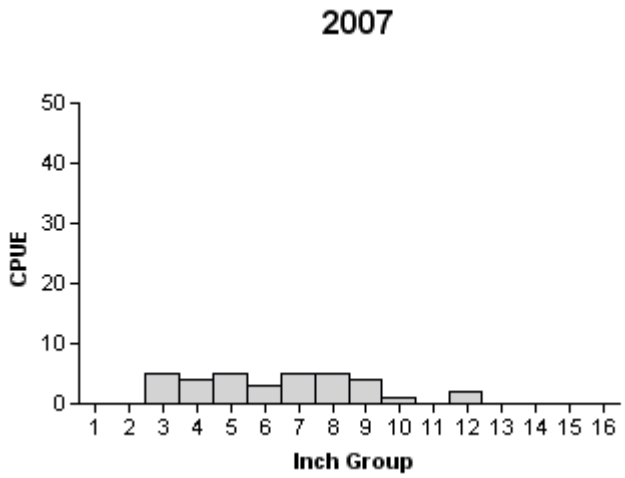
Table 3. Stocking history of Lake Wood, Texas. Sizes categories are: FGL = 1-3 inches and ADL = adult (sexually mature fish).

Year	Number	Size
Blue catfish		
1985	4,620	FGL
1986	4,500	FGL
1988	16	ADL
1994	45,638	FGL
1995	44,800	FGL
1997	44,800	FGL
1998	44,960	FGL
Species Total	189,334	
Channel catfish		
1972	35,000	FGL
1991	60	ADL
Species Total	35,060	
Striped bass		
1978	4,225	FGL
Species Total	4,225	
Florida largemouth bass		
1978	17,900	FGL
Species Total	17,900	
Triploid grass carp		
1996	11	ADL
Species Total	11	

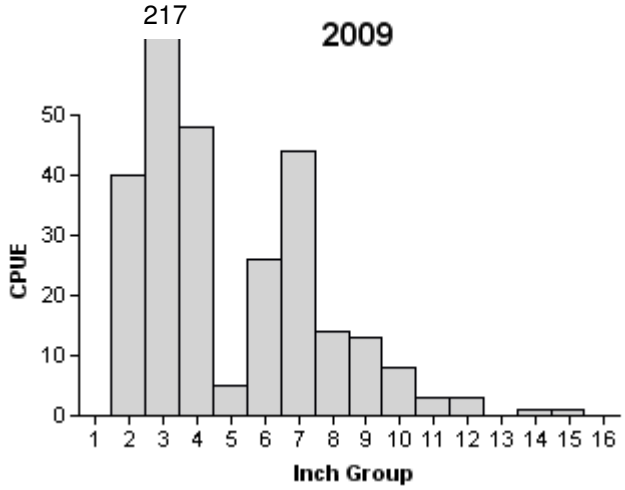
Table 4. Survey of littoral zone and physical habitat types, Lake Wood, Texas, 2007. A linear shoreline distance (miles) was recorded for each habitat type found. A vegetation survey was conducted in 2011. Surface area and percent of reservoir surface acre were determined for each type of aquatic vegetation 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				
Overhanging brush	0.27	1.3		
Eroded bank	17.99	86.9		
Bulkhead	1.27	6.2		
Non-descript	0.89	4.3		
Concrete	0.28	1.4		
Total	20.7	100		
Vegetation				
Native floating vegetation			61.8	12.7
American lotus			4.8	1.0
Spatterdock			57	11.7
Native emergent vegetation			1.9	5.7
Bull tongue			0.1	<0.1
Cattail			0.3	0.1
Water primrose			0.8	0.2
White water willow			0.7	0.1
Exotic vegetation			8.0	1.6
Water hyacinth			7.9	1.6
Water lettuce			0.1	<0.1
Adjacent to shoreline				
Piers and boat docks	2.64	12.7		

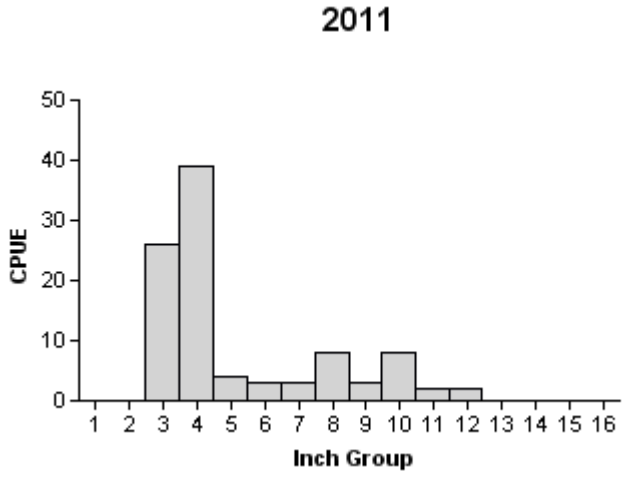
Gizzard shad



Effort = 1.0
Total CPUE = 34.0 (15; 34)
IOV = 64 (8)



Effort = 1.0
Total CPUE = 423.0 (18: 423)
IOV = 90 (3)



Effort = 1.0
Total CPUE = 98.0 (19; 98)
IOV = 77 (9)

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 Wood, Texas, 2007, 2009, and 2011.

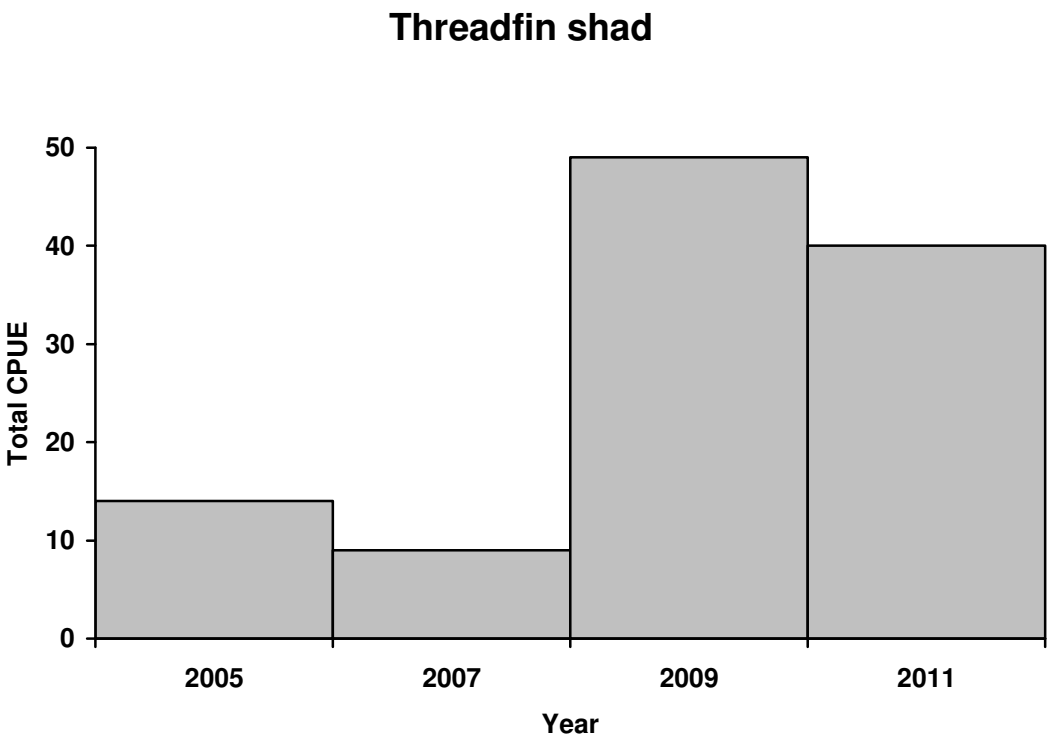


Figure 2. Total catch per unit effort for threadfin shad for fall electrofishing surveys, Lake Wood, Texas, 2001, 2003, 2005, 2007, 2009, and 2011.

Bluegill

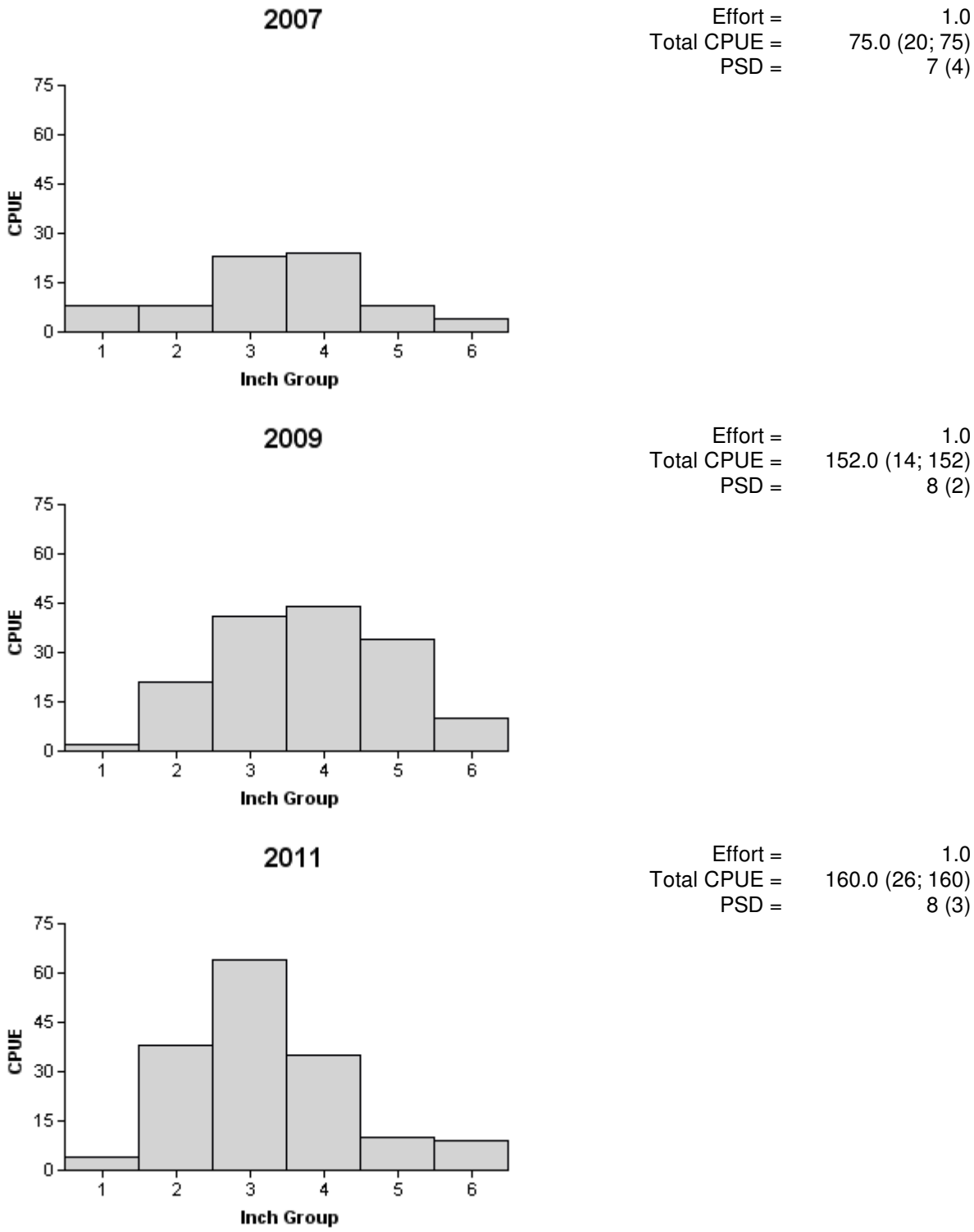
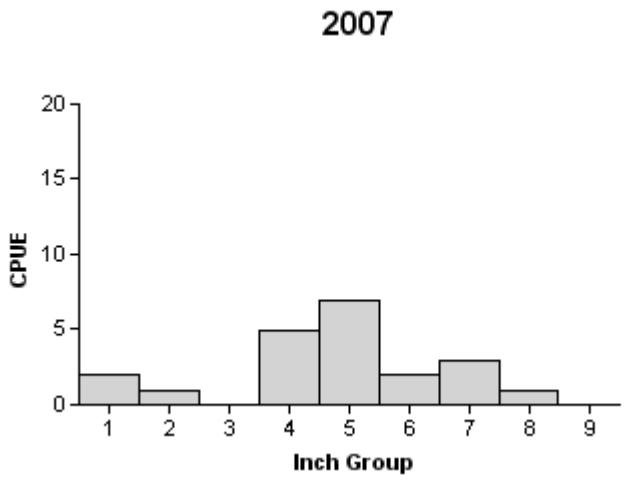
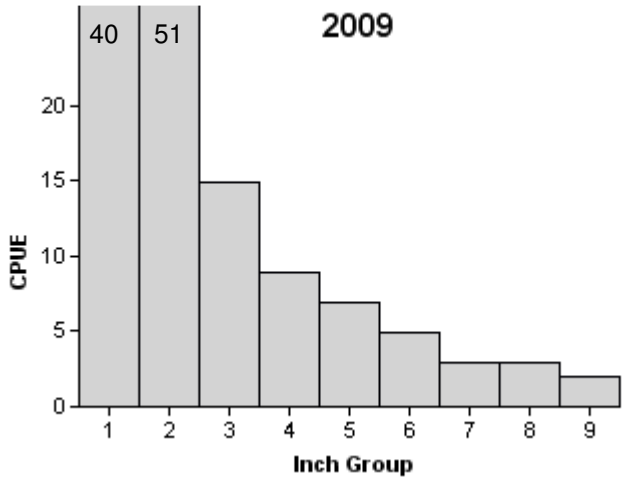


Figure 3. Comparison of the number of bluegill caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Wood, Texas, 2007, 2009, and 2011.

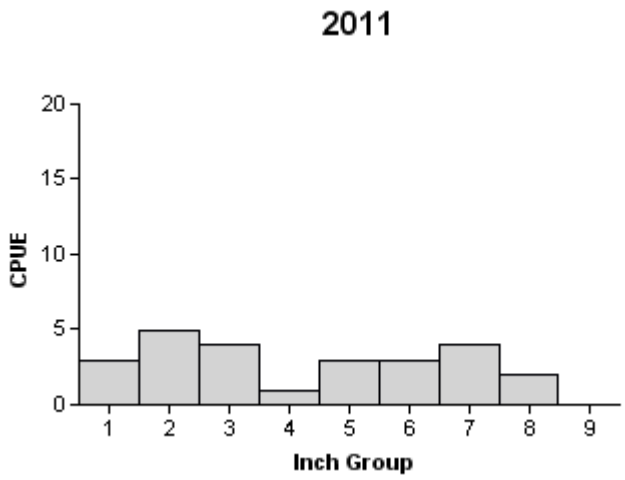
Redear sunfish



Effort = 1.0
Total CPUE = 21.0 (38; 21)
PSD = 22 (7)



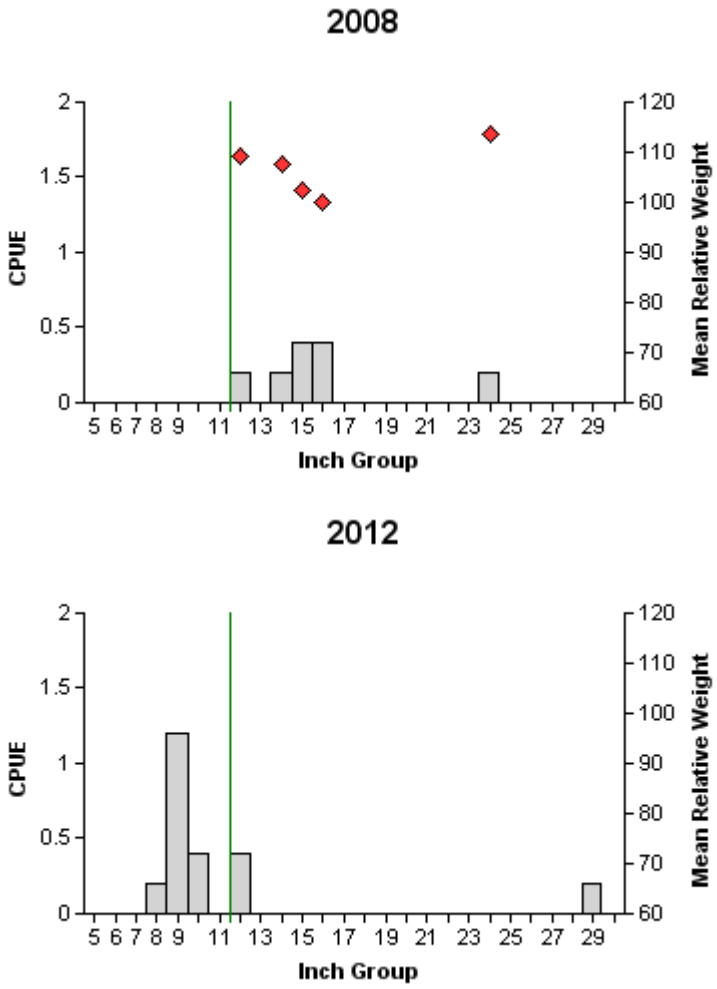
Effort = 1.0
Total CPUE = 135.0 (22; 135)
PSD = 28 (8)



Effort = 1.0
Total CPUE = 25.0 (22; 25)
PSD = 46 (17)

Figure 4. Comparison of the number of redear 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 Wood, Texas, 2007, 2009, and 2011.

Blue catfish

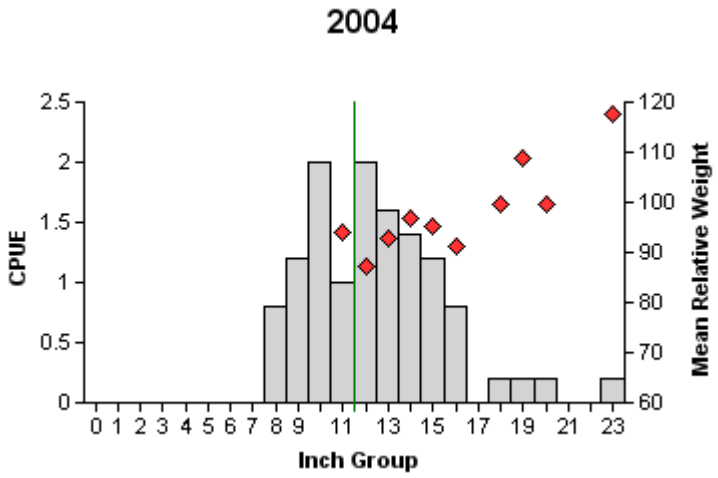


Effort =	5.0
Total CPUE =	1.4 (48, 7)
Stock CPUE =	1.4 (48; 7)
PSD =	14 (12)

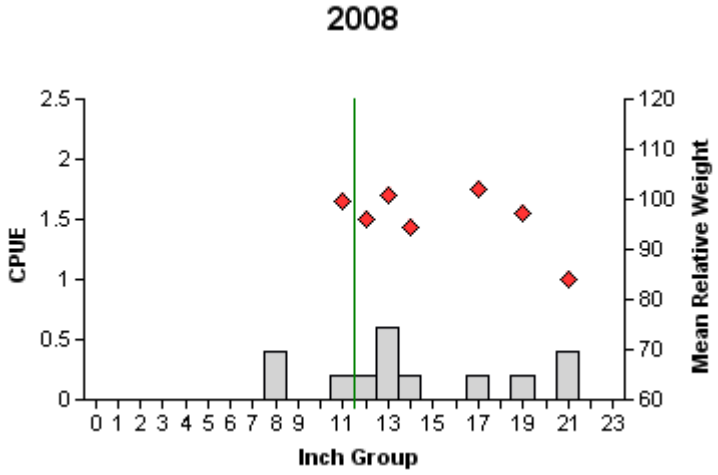
Effort =	5.0
Total CPUE =	2.4 (47; 12)
Stock CPUE =	0.6 (41; 3)
PSD =	33 (30)

Figure 5. Comparison of the number of blue catfish 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 spring gill net surveys, Lake Wood, Texas, 2008 and 2012. Vertical lines denote 12-inch minimum length limit.

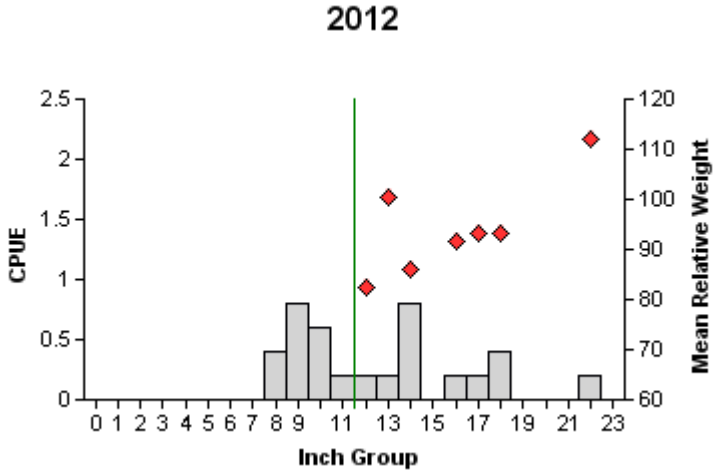
Channel catfish



Effort = 5.0
Total CPUE = 12.8 (24; 64)
PSD = 18 (7)



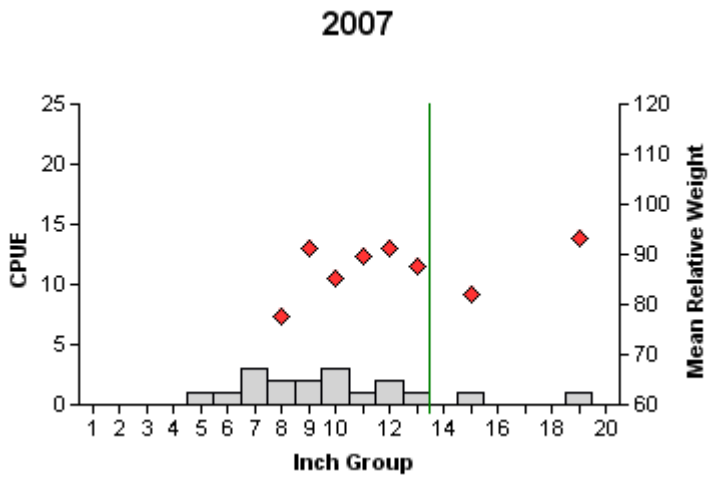
Effort = 5.0
Total CPUE = 2.4 (10; 12)
PSD = 40 (15)



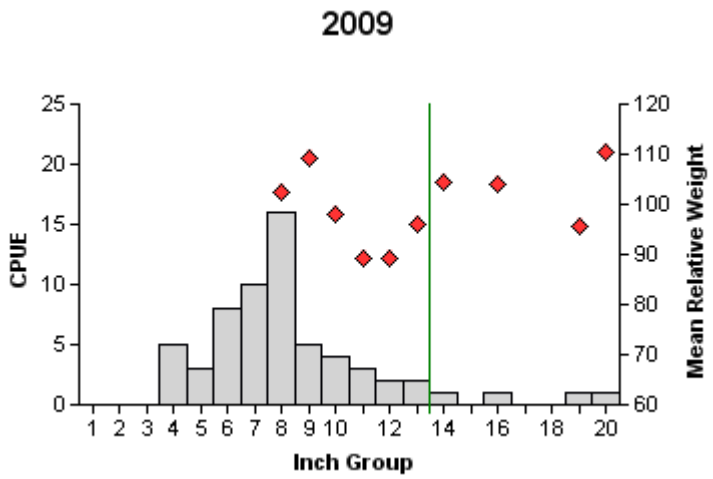
Effort = 5.0
Total CPUE = 4.2 (39; 21)
PSD = 42 (11)

Figure 6. Comparison of the number of channel catfish 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 spring gill net surveys, Lake Wood, Texas, 2004, 2008, and 2012. Vertical lines denote 12-inch minimum length limit.

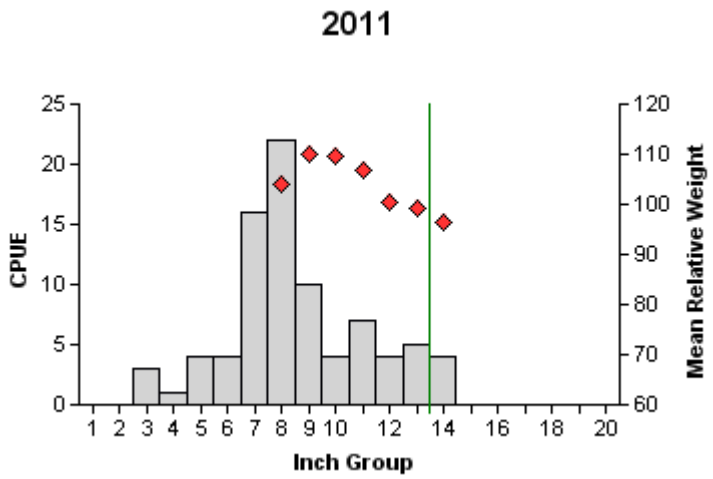
Largemouth bass



Effort =	1.0
Total CPUE =	18.0 (19; 18)
Stock CPUE =	13.0 (18; 13)
PSD =	38 (15)



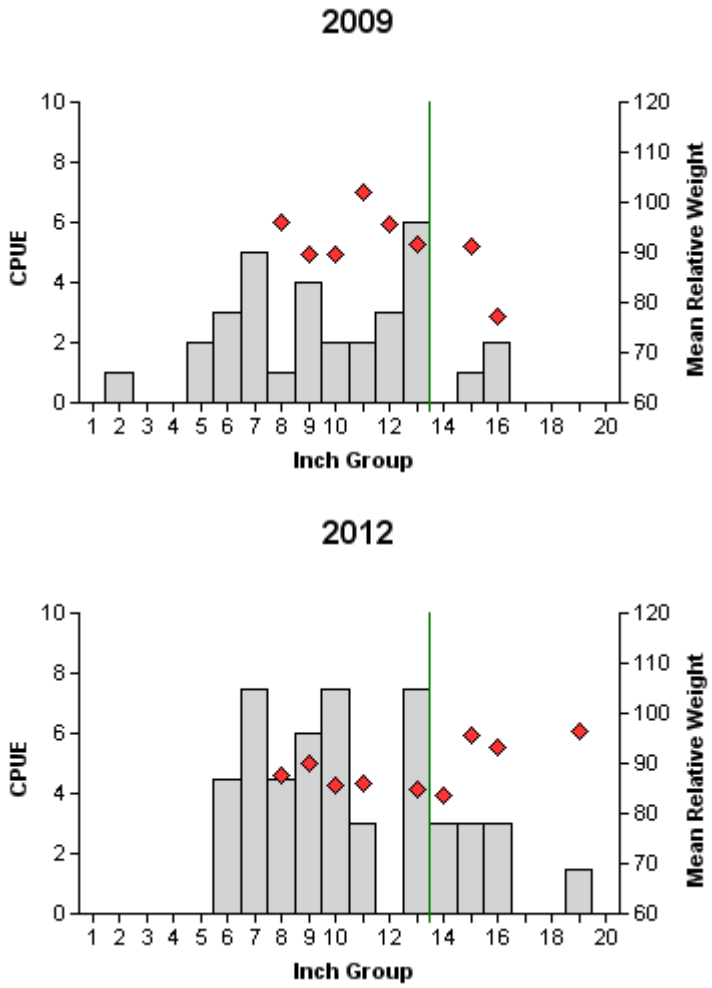
Effort =	1.0
Total CPUE =	62.0 (30; 62)
Stock CPUE =	36.0 (35; 36)
PSD =	22 (12)



Effort =	1.0
Total CPUE =	84.0 (15; 84)
Stock CPUE =	56.0 (18; 56)
PSD =	23 (9)

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 Wood, Texas, 2007, 2009, and 2011. Vertical lines denote 14-inch minimum length limit.

Largemouth bass

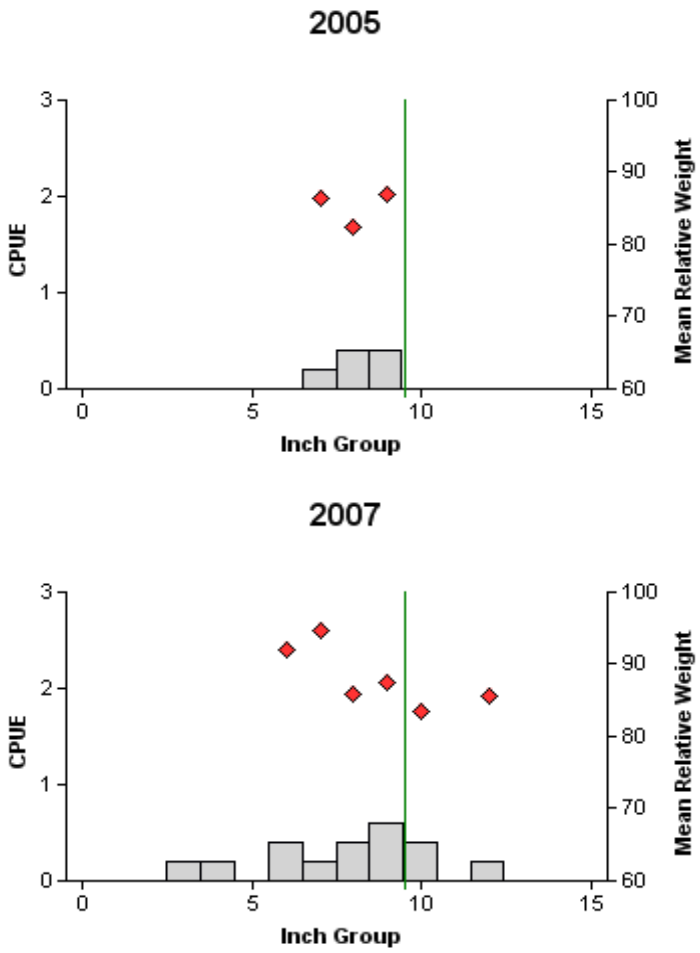


Effort =	1.0
Total CPUE =	32.0 (20; 32)
Stock CPUE =	21 (19; 21)
PSD =	57 (11)

Effort =	0.7
Total CPUE =	51.0 (39; 34)
Stock CPUE =	39.0 (40; 26)
PSD =	46 (6)

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 biologist selected, spring electrofishing surveys, Lake Wood, Texas, 2009 and 2012. Vertical lines denote 14-inch minimum length limit.

White crappie

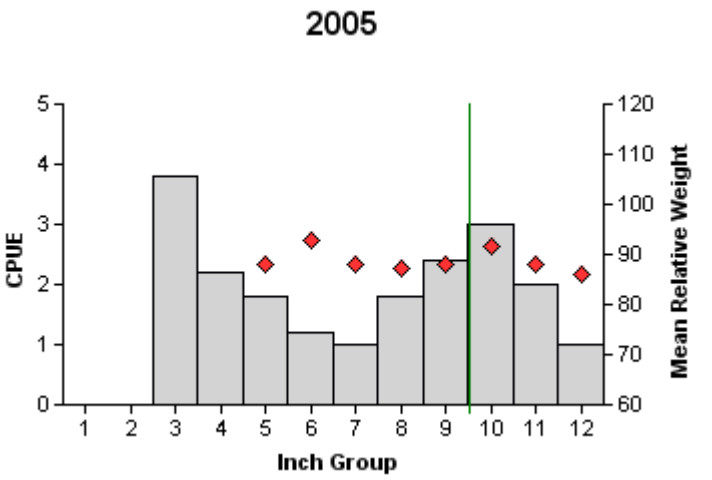


Effort =	5.0
Total CPUE =	1.0 (60; 5)
CPUE-10 =	0.0 (0; 0)
PSD =	80 (20)

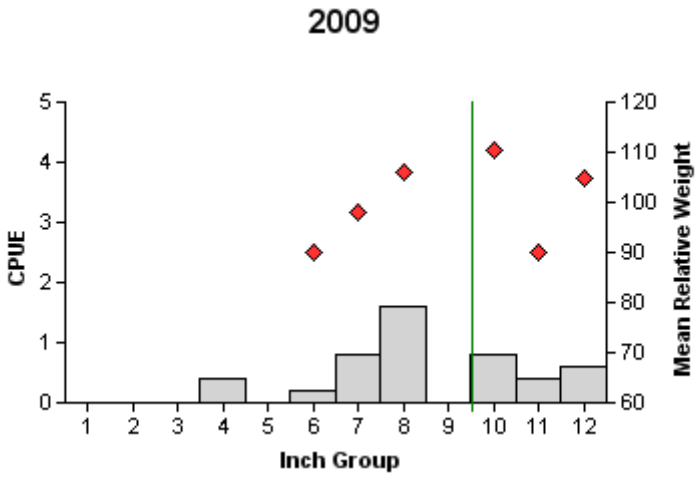
Effort =	5.0
Total CPUE =	2.6 (72; 13)
CPUE-10 =	0.6 (41; 3)
PSD =	73 (10)

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 net surveys, Lake Wood, Texas, 2005 and 2007. Vertical lines denote 10-inch minimum length limit.

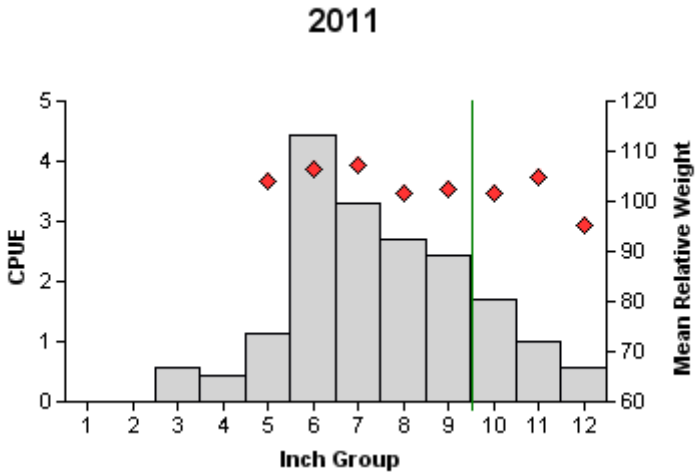
White crappie



Effort =	5.0
Total CPUE =	20.2 (38; 101)
Stock CPUE =	14.2 (35; 71)
PSD =	72(12)



Effort =	5.0
Total CPUE =	4.8 (46; 24)
Stock CPUE =	4.4 (51; 22)
PSD =	77 (15)



Effort =	7.0
Total CPUE =	18.3 (29; 128)
Stock CPUE =	17.3 (30; 121)
PSD =	49 (7)

Figure 10. 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 biologist selected fall trap net surveys, Lake Wood, Texas, 2005, 2009, and 2011. Vertical lines denote 10-inch minimum length limit.

Table 5. Proposed survey schedule for Lake Wood, 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	Electro-fishing	Trap Netting	Gill Netting	Vegetation Survey	Access Survey	Report
Fall 2012-Spring 2013						
Fall 2013-Spring 2014	A	A*				
Fall 2014-Spring 2015						
Fall 2015-Spring 2016	S	S*	S	S	S	S

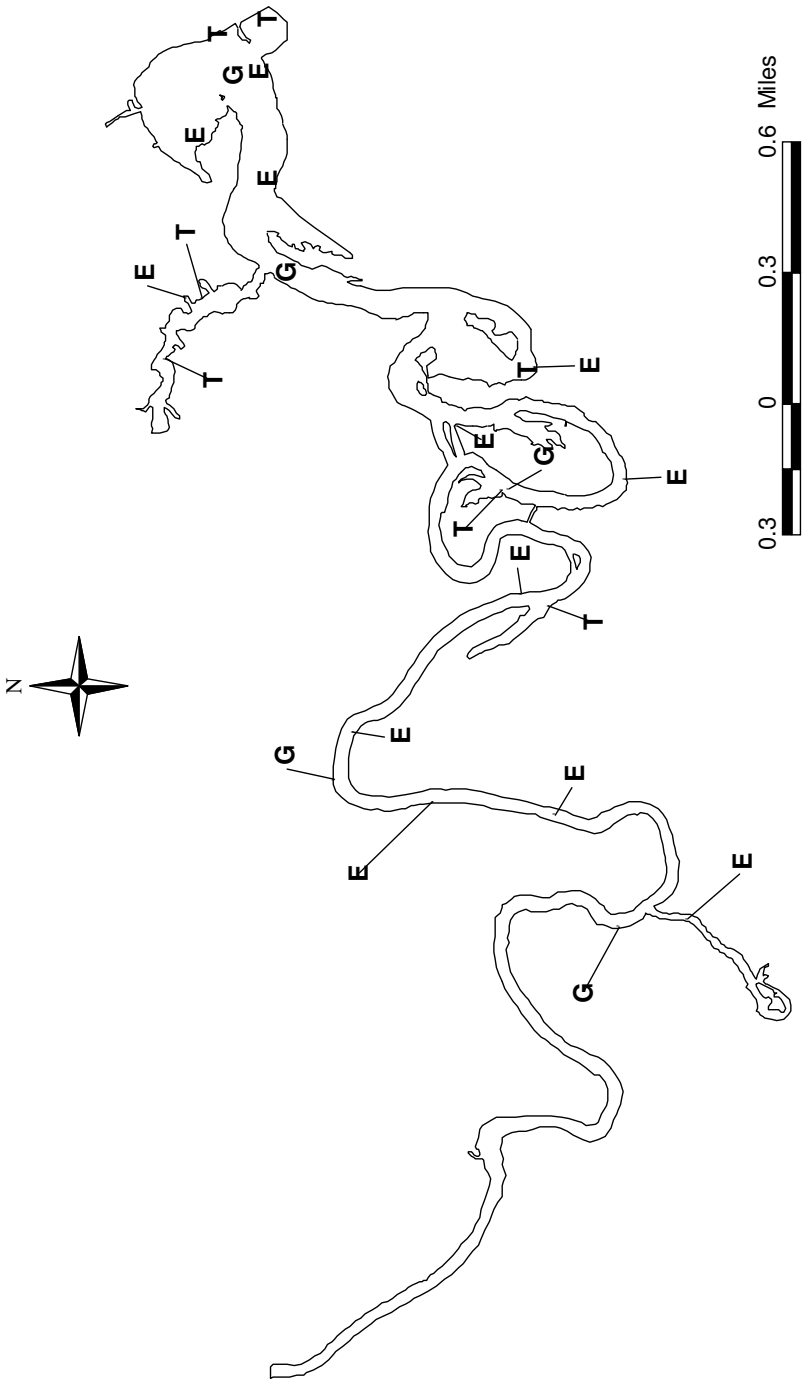
* Denotes non-random site selection.

APPENDIX A

Number (N) and catch rate (CPUE) of all species collected from all gear types from Lake Wood, Texas, 2007-2008.

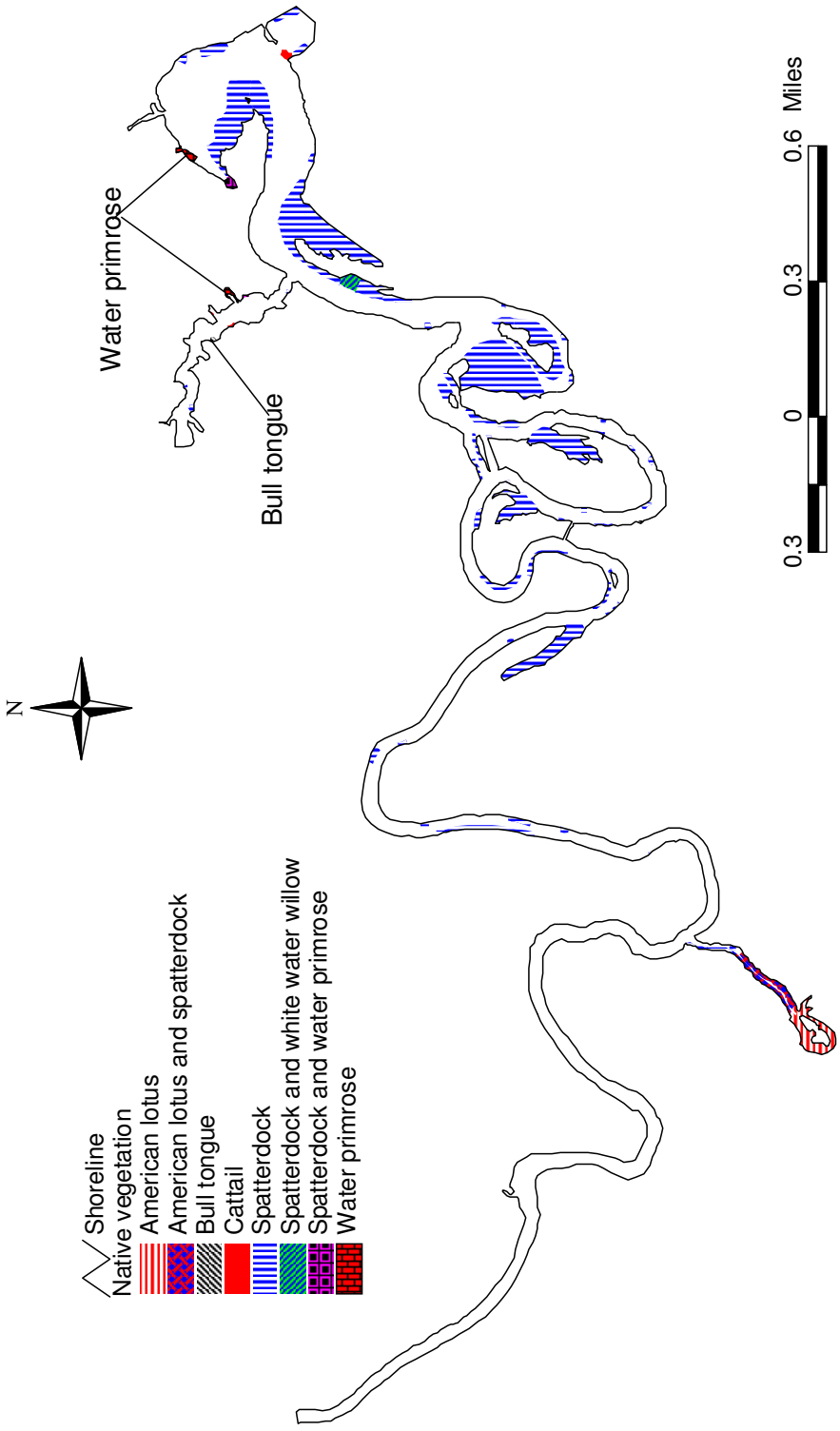
	Electrofishing		Trap netting		Gill netting	
Species	N	CPUE	N	CPUE	N	CPUE
Gizzard shad	98	98.0	4	0.6	11	2.2
Threadfin shad	40	40.0				
Common carp					1	0.2
Golden shiner	1	1.0				
Bullhead minnow	16	16.0				
Inland silverside	3	3.0				
Smallmouth buffalo					30	6.0
Gray redhorse					2	0.4
Blue catfish					12	2.4
Channel catfish	2	2.0			21	4.2
Flathead catfish					3	0.6
Redbreast sunfish	2	2.0	1	0.1		
Warmouth	1	1.0	4	0.6		
Bluegill	160	160.0	250	35.7		
Longear sunfish	22	22.0	6	0.9		
Redear sunfish	25	25.0	16	2.3		
Spotted bass	28	28.0			4	0.8
Largemouth bass	84	84.0			1	0.2
White crappie	3	3.0	128	18.3	21	4.2
Black crappie	4	4.0	3	0.4	1	0.2
Freshwater drum	3	3.0			11	2.2
Blue tilapia	1	1.0	1	0.1	21	4.2
Grass carp					1	0.2

APPENDIX B



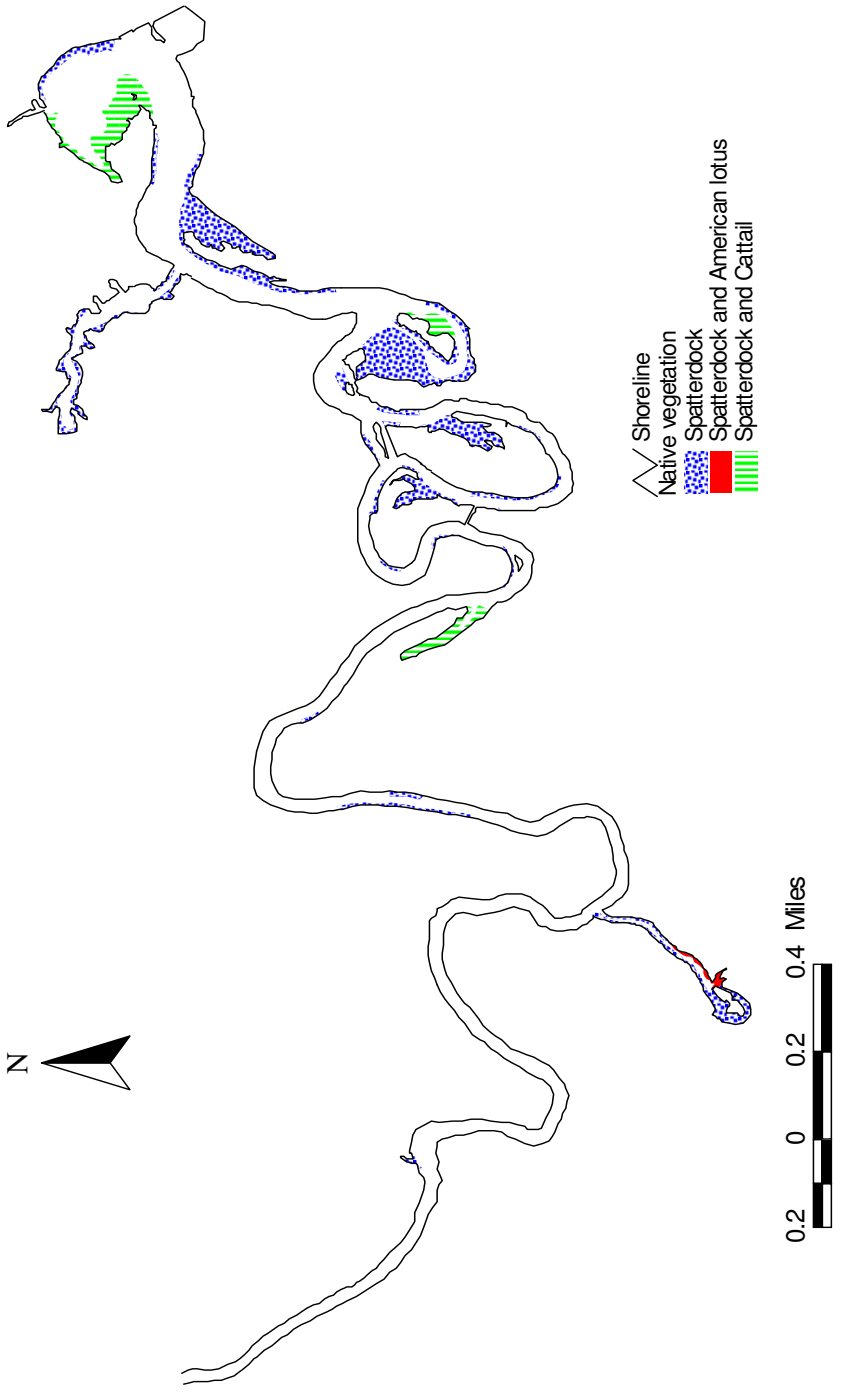
Location of sampling sites, Lake Wood, Texas, 2011-2012. Electrofishing, trap net, and gill net stations indicated by E, T, and G respectively.

APPENDIX C



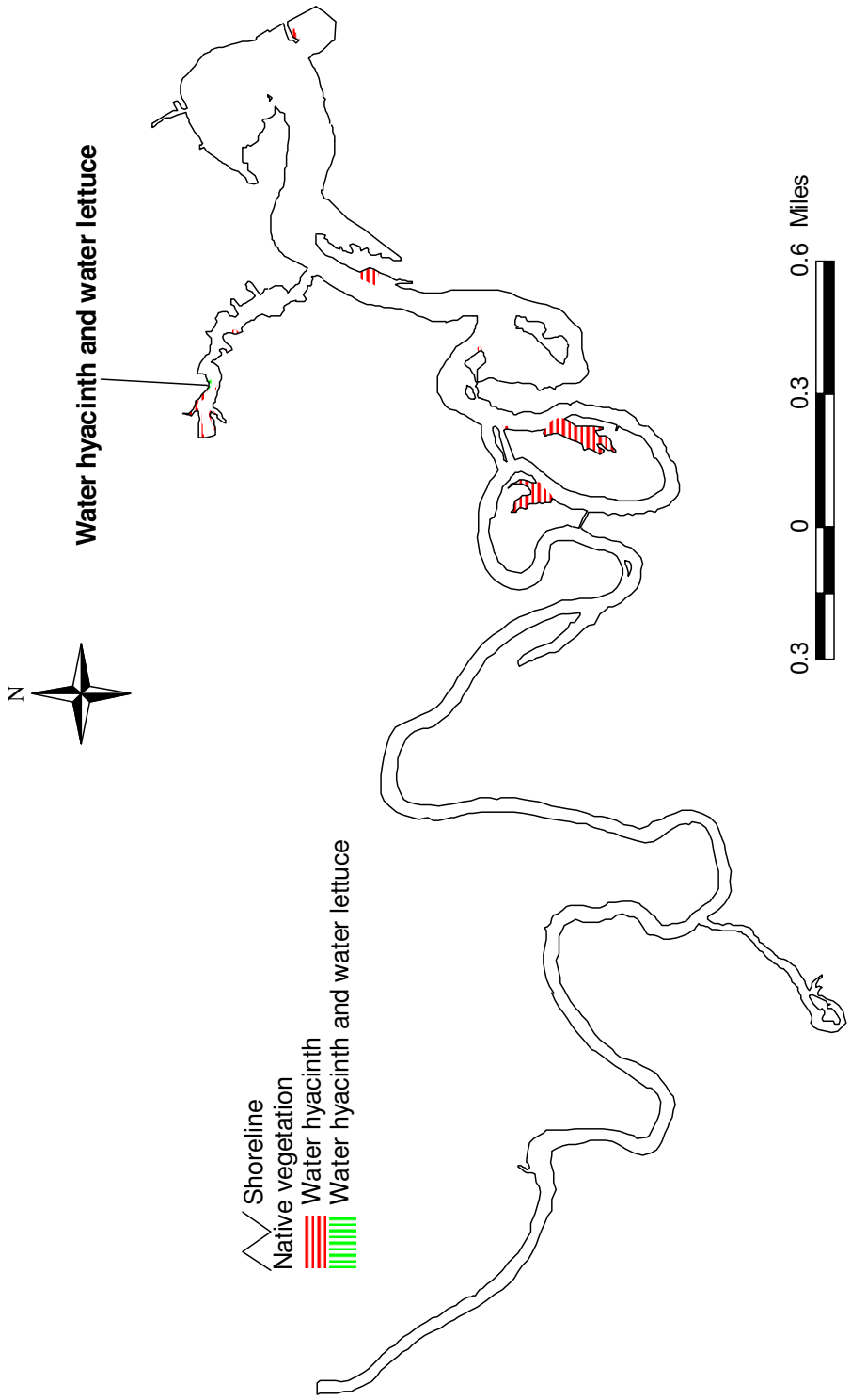
Native aquatic vegetation map for Lake Wood, Texas, 2011.

APPENDIX D



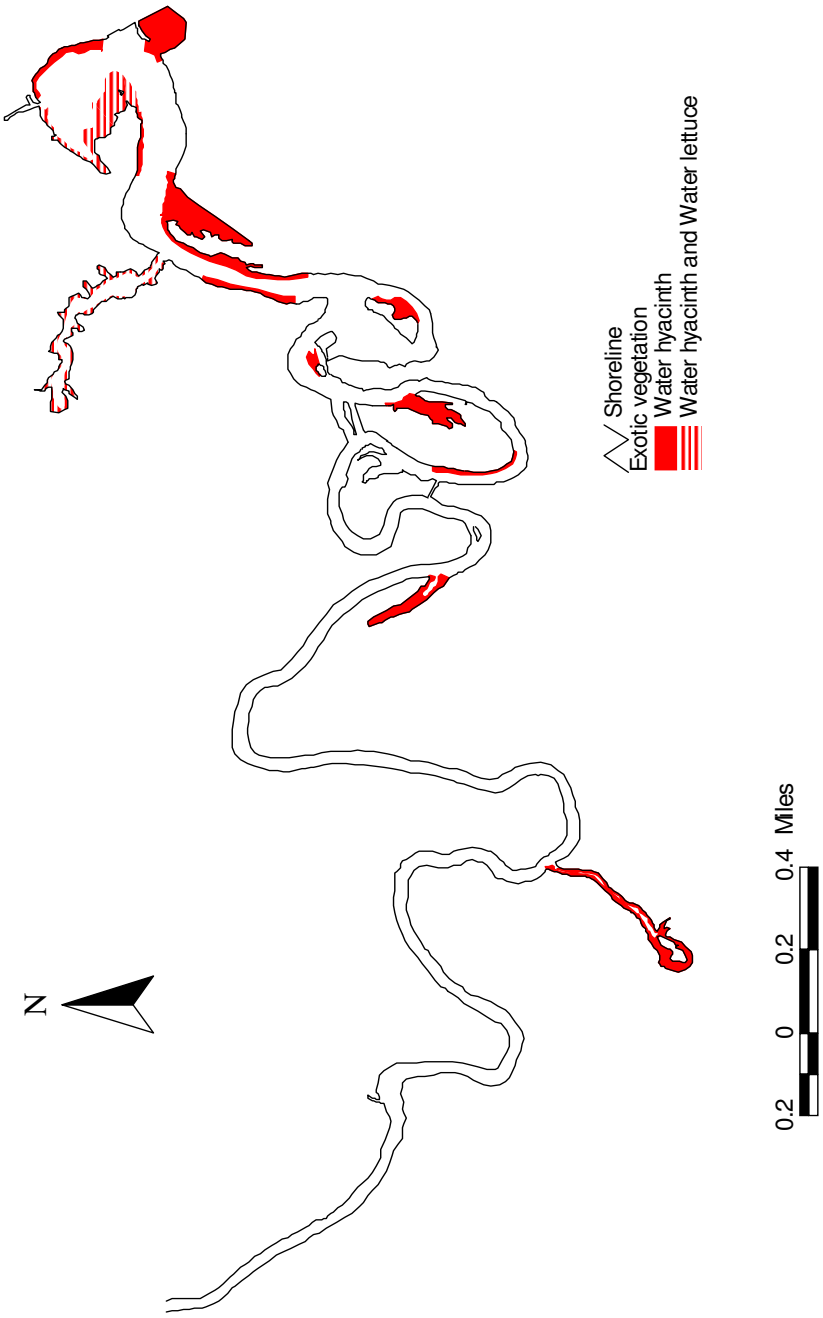
Native aquatic vegetation map for Lake Wood, Texas, 2007

APPENDIX E



Exotic aquatic vegetation map for Lake Wood, Texas, 2011.

APPENDIX F



Exotic aquatic vegetation map for Lake Wood, Texas, 2007

APPENDIX G

Observed and predicted lengths-at-age from von Bertalanffy growth model, Lake Wood, Texas, 2011. Growth model was generated with fish sampled from biologist selected sample sites.