PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-34

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2008 Survey Report

Navarro Mills Reservoir

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July 31, 2009

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SURVEY AND MANAGEMENT SUMMARY

The Navarro Mills Reservoir fish community was surveyed from June 2008 through May 2009 using electrofisher, gill nets, and trap nets. A vegetation survey was conducted in August 2008. This report summarizes results of the surveys and contains a management plan based on those findings.

- **Reservoir description:** Navarro Mills Reservoir is a 4,336-acre reservoir on Richland Creek, a tributary of the Trinity River. It was constructed by the U.S. Army Corps of Engineers (USACOE) in 1963 to provide flood control and water for municipal and industrial purposes. Boat and bank angler access are excellent. Handicap-specific facilities are present in the parking lot and restrooms near three of the boat ramps. Water is turbid but is high in productivity; mean TSI *chl-a* is 54.9 (Texas Commission on Environmental Quality 2007), therefore classified as eutrophic. Land use surrounding the reservoir is primarily agricultural (row cropping) and contributes to high turbidity and siltation. Navarro Mills Reservoir is operated by USACOE, therefore, there is no residential development of the shoreline and angler access is excellent.

- **Management history:** Important sport fish include largemouth bass, blue and channel catfish, white bass, and white crappie. No stocking has been conducted at Navarro Mills Reservoir since the last survey report (Ott and Bister 2005). Fish community surveys are conducted every four years. Statewide harvest regulations are in effect for all species.

- **Fish community:**
  - **Prey species:** Threadfin and gizzard shad were present in high relative abundance. Size distribution of gizzard shad was optimal as prey. Although catch rates of sunfishes were low, overall prey availability was adequate.

  - **Catfishes:** Blue catfish (previously rare) have become moderately abundant and appear to be recruiting. Channel catfish size distribution is improved and abundance is similar to previous surveys but condition (W_r) has declined.

  - **White bass:** White bass continue to exhibit inconsistent recruitment and relative abundance. This species may not have fully recovered from drought conditions in 2005-2006.

  - **Largemouth bass:** Despite poor habitat and low water level due to prolonged drought from 2005 through early 2007 largemouth bass abundance and size distribution have improved markedly from the 2004 survey. Recruitment in 2007 was high.

  - **Crappie:** Crappie abundance was high but size distribution was poor with few legal-length fish. Abundant yearling crappie suggests population recovery following poor year class strength during the drought of 2005 through early 2007.

- **Management strategies:** Standard surveys will be conducted in 2012-2013 to monitor sport fish and prey populations. Angling opportunities and fishery status of blue catfish will be promoted through local media. Outreach presentations will be conducted as requested.

INTRODUCTION

This document is a summary of fisheries data collected from Navarro Mills Reservoir from June 2008 through May 2009.The purpose of this 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. Historical data are presented with the 2008 and 2009 data for comparison where appropriate.

Reservoir Description

Navarro Mills Reservoir is a 4,336-acre reservoir on Richland Creek, a tributary of the Trinity River. It was constructed by the U.S. Army Corps of Engineers (USACOE) in 1963 to provide flood control and water for municipal and industrial purposes. Angler access is excellent; handicap-specific facilities are present in the parking lot and restrooms near three of the four boat ramps. Water is turbid and eutrophic with a mean TSI *chl-a* of 54.9 (Texas Commission on Environmental Quality 2007). Land use surrounding the reservoir is primarily agricultural (cotton and sorghum row cropping) and contributes to high turbidity and accelerated siltation. The habitat types within the littoral zone are not particularly diverse (Table 4) and aquatic vegetation is scarce. The majority of the shoreline is eroded bank (92%), with small areas of rocky shoreline (7%) or riprap (<1%). Because Navarro Mills Reservoir is operated by USACOE there is no residential development of the shoreline. Other descriptive characteristics for Navarro Mills Reservoir are found in Table 1.

Management History

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

1. Make efforts to quantify hydrilla *(Hydrilla verticillata)* abundance in 2008, or sooner if the situation dictates. Provide technical assistance regarding the control of hydrilla to the controlling authority, as necessary.
   Action: Hydrilla coverage was assessed in 2008; only a trace was detected. Because of water level fluctuation and turbidity, no hydrilla control has been necessary.
2. Collect adequate sample size of age-0 largemouth bass *(Micropterus salmoides)* during 2008 electrofishing to conduct electrophoresis. Recommend additional stocking if allele frequency is below target levels and centrarchid habitat improves.
   Action: A sample of 29 age-0 largemouth bass was collected during fall 2008 electrofishing and fin clips were submitted for genetic analysis. Largemouth bass habitat remains poor and does not justify additional stocking.

Harvest regulation history: Sport fishes in Navarro Mills Reservoir are managed with statewide harvest regulations (Table 2). Regulations have not changed since the last survey.

Stocking history: No stocking has been conducted at Navarro Mills Reservoir since the last survey. Florida largemouth bass *(M. s. Floridanus)* were initially stocked in 1976 and were stocked periodically through 2003 to enhance the trophy potential of the fishery. Palmetto bass (*Morone chrysops* x *M. saxatilis)* stocking was initiated in 1975 but was discontinued in 1998. A complete stocking history is found in Table 3.

Vegetation/habitat history: Aquatic vegetation has historically been scarce on Navarro Mills Reservoir, occupying less than 2% of the reservoir area in the 2004 (Ott and Bister 2005). Hydrilla was discovered in 2000 at the Liberty Hill Park area and covered approximately 0.5 acres in 2004, but only a trace was identified in the 2008 survey. The controlling authority has been notified of the potential problems associated with hydrilla infestation but no action has been necessary. Water willow (*Justicia Americana*) and giant bulrush *(Scirpus spp.)*, were the only native aquatic plant species found in the current survey

METHODS

Fishes were collected by electrofishing (1 hour at 12, 5-min stations), gill netting (5 net nights at 5 stations), and trap 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 gill and trap nets, as the number of fish per net night (fish/nn). A vegetation survey was conducted in August 2008. All survey stations 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), 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). Index of vulnerability (IOV) was calculated for gizzard shad *(Dorsoma cepedianum)*, (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. For largemouth bass and white crappie *(Pomoxis annularis)*, ages were determined using otoliths from 13 specimens with lengths ranging from 13.1-14.8 inches for largemouth bass and 12 specimens with lengths ranging from 9.1-11.0 inches for white crappie. Water level data was obtained from the United States Geological Survey web site (USGS 2008).

RESULTS AND DISCUSSION

Habitat: Physical habitat types and composition were similar to those found in previous surveys and represented low habitat diversity. Littoral habitat consisted mainly of eroded shoreline with little rocky shoreline or riprap. Turbid water combined with extreme water level fluctuations from 2005-2007 have limited the ability of submersed aquatic vegetation species to persist. Hydrilla was present in trace amount at the Liberty Hill boat ramp. Native aquatic vegetation species are limited to emergent growth forms. Giant bulrush (10.6 acres) and water willow (4.8 acres) were the only species occupying significant area (Table 1).

Prey species: Both threadfin shad *(D. petenense)* and gizzard shad were present in high abundance in Navarro Mills Reservoir with combined catch rate of 406/h (Appendix A). The gizzard shad electrofishing catch rate (275/h) increased from the 2004 (133/h) but is still lower than in 2000 (579/h), (Figure 2). Index of Vulnerability (IOV) for gizzard shad was 98, indicating most were available as prey. Sunfish species diversity and relative abundance were low (likely as a result of high turbidity and poor centrarchid habitat). The sunfish community includes warmouth *(Lepomis gulosus)*, bluegill *(L. macrochirus)*, longear sunfish (*L. megalotis)* and redear sunfish (*L. microlophus)*. Combined catch rate for all sunfish species was only 52/h; those collected were mostly $\leq$6 inches in length and do provide some supplemental prey.

Catfish: Blue catfish *(Ictalurus furcatus)* were rare in Navarro Mills prior to 2005 (when one specimen was collected) and have never been stocked (Table 3). Gill net catch rate in 2009 (4.4/nn) was moderate and size distribution suggests a developing population (Figure 4). A strong initial year class was evident with sub-adults in 19 to 22 inch range. Recruitment (at some level) appeared to be continuing as evidenced by sub-legal length fish. Body condition was moderately high with $W_r \geq 95$ and indicating adequate prey availability.

Channel catfish *(I. punctatus)* abundance in 2009 (gill net catch rate = 9.6/nn) was similar to 2005 (10/nn) but size distribution was more favorable with greater availability of legal-length fish (Figure 5). Body condition for all size classes was poor (W_r<90) and suggests limited availability of benthic organisms as prey. As inundated timber continues to decompose and attachment structure for benthic organisms decline, the catfish community will likely shift to dominance by blue catfish.

White basses: White bass *(Morone chrysops)* have traditionally provided a popular fishery at Navarro Mills Reservoir but gill net catch rates have been variable. In 2009 gill net catch rate (1.8/nn) was similar to 2001(1.5/nn) but below 2005 (5.2/nn) (Figure 6). Drought in 2005 and 2006 reduced inflow and likely reduced spawning habitat. Inflow was high in 2007; however it occurred after the spawning season and did

not benefit recruitment. Flows were normalized in 2008 but did not result in a strong year class. Specimens collected in the 2008 sample ranged from 7-15 inches in length and size structure (RSD=44) was good despite low relative abundance. Body condition of collected fish in 2008 was good (W_r>100) for most inch classes, indicating adequate forage was available. Growth assessment was not conducted in 2009 due the inadequate number of 9-11 inch individuals collected.

Largemouth bass: Electrofishing catch rate of largemouth bass in 2008 (74.0/h) was similar to 2000 (97.3/h) but substantially higher than 2004 (17.0/h) (Figure 10). Catch rate of stock-size ($\geq$8 inches) largemouth bass was higher than either of the previous surveys. Proportional stock density (PSD) has continued to improve from slightly below the 40-70 target range (38) in 2004 to within the target range (55) in 2008. Relative weight has improved substantially compared to the poor condition observed for some size groups in 2004. Relative weight (W_r) was >90 for all size classes larger than stock-size and most were $\geq$100. Growth was rapid as weighted mean age for largemouth bass at 14 inches [(13.1-14.8 inches) was 1.2 years (N =13, range 1-2 years)]. Of the 13 fish collected for age-and-growth, 11 were from the 2007 year class and only 2 from the 2006 year class. This suggests a much stronger year class for 2007 than 2006 and is likely related to high water level (and inundated terrestrial vegetation) during spring and summer 2007 (Figure 1). It is also possible that with the rapid growth exhibited many of the 2006 year class had already grown out of the 13 to 15 inch target range. The prevalence of Florida bass alleles in the population has increased to 59% from the 40% recorded in 2000 and is likely related to fingerling stockings in 2002 and 2003 (Table 8). Only one of the 29 age-0 specimens collected in 2008 was a pure Florida genotype.

Crappie: White crappie relative abundance is high at Navarro Mills Reservoir with trap net catch rate of 42/nn in 2008. Spatial distribution of crappie is more even than in other similar sized reservoirs and they were caught in all locations where trap nets were set in 2008. Although abundance was high, size distribution was poor; RSD-10 was only 12 and age distribution is dominated by young fish. Of the 12 fish collected for age-and-growth, 11 were from the 2007 year class and only one was from the 2006 year class. This is suggestive of poor year-class strength during the drought (and low water level) of 2005 through early 2007 (Figure 1) followed by unusually high rainfall and water level in 2007 and 2008. Although growth rate was rapid, [weighted mean age for crappie at 10 inches [(9.1-11.0) was 1.1 years (N =12, range 1-2 years)] low W_r (<90) for 6 to 8 inch crappie suggests intra-specific competition for prey.

Fisheries management plan for Navarro Mills Reservoir, Texas

Prepared – July 2009

ISSUE 1: Blue catfish (previously rare at Navarro Mills Reservoir) are recruiting and provide the potential for a fishery.

MANAGEMENT STRATEGY

1. Work with USACOE park staff and local news media to notify anglers of the developing fishery and different techniques necessary to exploit blue catfish.
2. Conduct angler outreach to promote the fishery.
3. Document continued development of the blue catfish population through standard gill net sampling in spring 2013.

ISSUE 2: White bass abundance continues to be inconsistent and appears to be related to fluctuations in inflow.

MANAGEMENT STRATEGIES

1. Document dynamics of the white bass population through standard gill net sampling in spring 2013.

ISSUE 3: The combination of high turbidity and lake level fluctuation limit the aquatic vegetation community of Navarro Mills Reservoir to a narrow fringe of water willow and giant bulrush in limited locations around the reservoir. Submersed vegetation (hydrilla) is still present in trace amounts but has not required treatment.

MANAGEMENT STRATEGIES

1. Consult with the USACOE staff about the possibility of placing artificial structures in the reservoir.
2. Solicit assistance from angler groups in construction of artificial reefs throughout the reservoir.
3. Consult with the USACOE about monitoring changes in hydrilla abundance and early detection of other exotic species such as Giant salvinia *(Salvinia molesta)*.
4. Conduct standard vegetation survey during late summer 2012.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes standard monitoring in 2012-2013 (Table 13).

LITERATURE CITED

Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

DiCenzo, V. J., M. J. Maceina, and M. R. Stimpert. 1996. Relations between reservoir trophic state and gizzard shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.

Ott, R. A. and T. J. Bister. 2001. Statewide freshwater fisheries monitoring and management program survey report for Navarro Mills Reservoir 2000. Texas Parks and Wildlife Department, Federal Aid Report F-30-R-26, Austin. 22 pp.

Ott, R. A. and T. J. Bister. 2005. Statewide freshwater fisheries monitoring and management program survey report for Navarro Mills Reservoir 2004. Texas Parks and Wildlife Department, Federal Aid Report F-30-R-30, Austin. 23 pp.

Texas Commission on Environmental Quality. 2007. Trophic Classification of Texas Reservoirs: 2006 Texas water quality inventory and 303 (d) list. 15 pp.

United States Geological Survey. 2008. *Real-time Data for Texas lakes and Reservoirs* http://waterdata.usgs.gov/tx/nwis/uv/?site_no=08063010&PARAmeter_cd=72020,00054

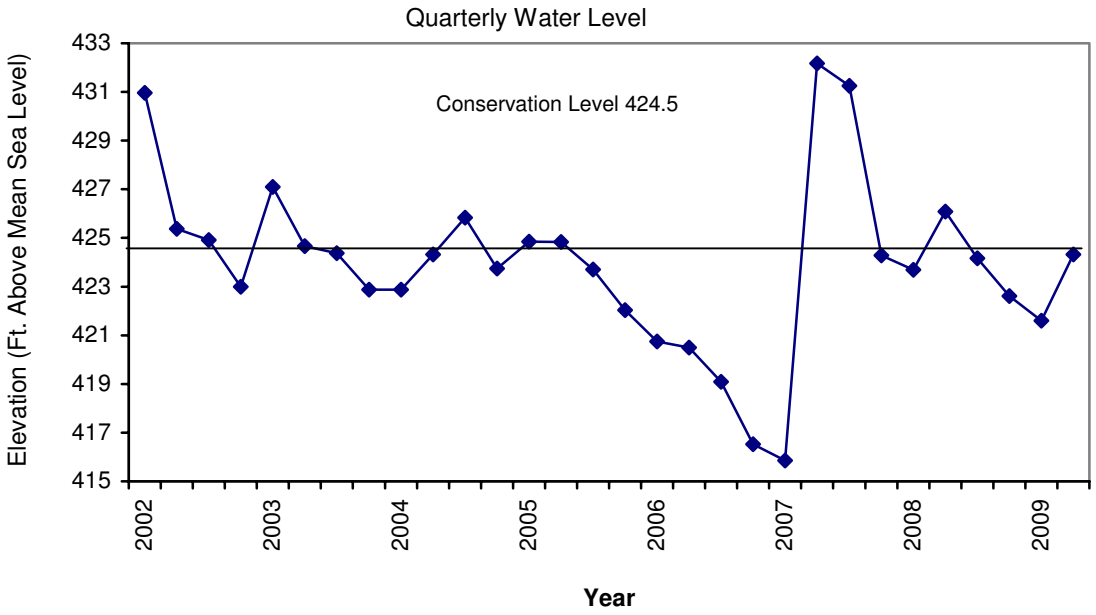


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Navarro Mills Reservoir, Texas. Horizontal line represents conservation level.

Table 1. Characteristics of Navarro Mills Reservoir, Texas.

Characteristic	Description
Year completed	1963
Controlling authority	U.S. Army Corps of Engineers
County	Navarro
Reservoir type	Flood control
Shoreline Development Index (SDI)	3.8
Conductivity	365 umhos/cm

Table 2. Harvest regulations for Navarro Mills Reservoir, Texas.

Species	Bag Limit	Minimum-maximum length (inches)
Catfish: channel and blue, their hybrids and subspecies	25 (in any combination)	12–No limit
Catfish, flathead	5	18–No limit
Bass, white	25	10–No limit
Bass, largemouth	5	14–No limit
Crappie: white and black, their hybrids and subspecies	25 (in any combination)	10-No limit

Table 3. Stocking history of Navarro Mills Reservoir. Size categories are: FRY <1 inch; FGL =1-3 inches; ADL = adult; UNK = unknown.

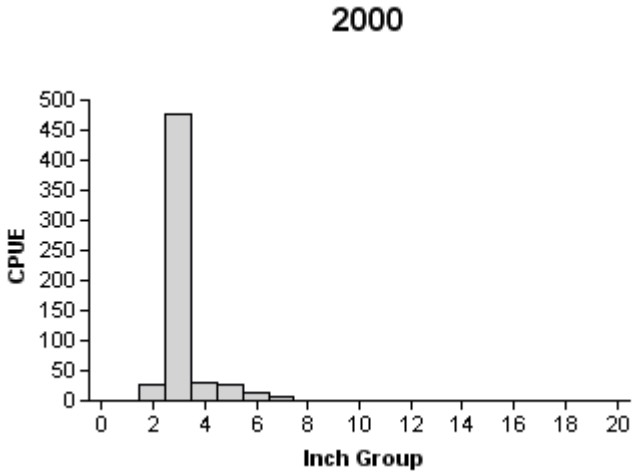
Species	Year	Number	Size
Channel catfish	1984	50,600	FGL
	1985	9,680	FGL
	1986	111,094	FGL
Flathead catfish	1968	500	UNK
		500	
Striped bass	1967	400,000	FRY
	1968	176,500	FRY
	1969	31,900	FGL
	1970	32,800	FGL
	1971	21,000	FGL
		662,280	
Palmetto bass	1975	51,748	UNK
	1979	52,750	UNK
	1982	50,945	UNK
	1984	127,252	FGL
	1986	75,050	FGL
	1991	76,468	FGL
	1992	41,240	FGL
	1994	77,400	FGL
	1995	107,415	FGL
	1996	77,845	FGL
	1997	76,569	FGL
	1998	82,546	FGL
		897,228	
Florida largemouth bass	1976	266,000	FGL
	1990	232,037	FRY
	1990	17,482	FGL
	1995	253,996	FGL
	1998	49,973	FGL
	2002	218,491	FGL
	2003	218,684	FGL
		1,256,663	

Table 4. Survey of littoral zone and physical habitat types, Navarro Mills Reservoir, Texas. Abiotic[1] habitat survey was conducted in 2000 (Ott & Bister, 2001). Vegetation survey was conducted in 2008. A linear shoreline distance (miles) was recorded for each habitat type found. Surface area (acres) and percent of reservoir surface area was determined for each type of aquatic vegetation found.

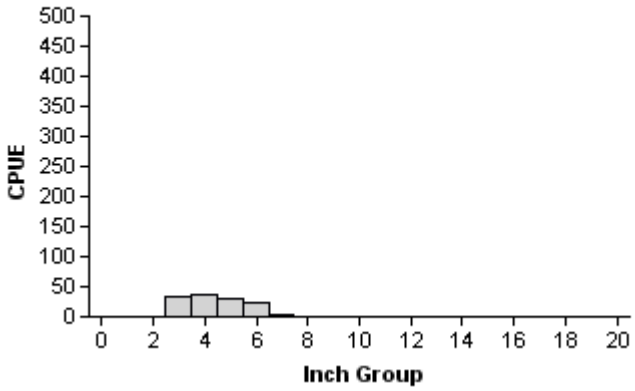
Shoreline habitat type	Shoreline distance		Surface area	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Eroded shoreline[1]	20.8	92.3		
Rocky shore[1]	1.7	7.6		
Rip rap[1]	<0.1	0.1		
Native emergent				
Giant bulrush			4.8	0.1
Water willow			10.6	0.2
Non-native (prohibited)				
Hydrilla			tr	tr

[1] Abiotic habitat features.

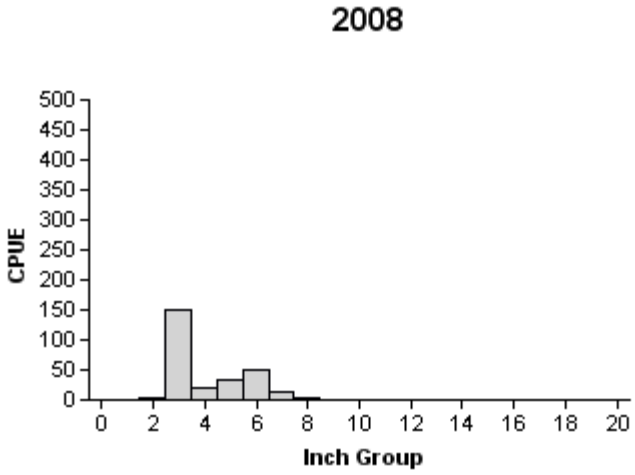
Gizzard shad



Effort = 1.5
Total CPUE = 579.3 (20; 869)
Stock CPUE = 8.7 (56; 13)
IOV = 99.42 (0.6)



Effort = 1.0
Total CPUE = 133.0 (15; 133)
Stock CPUE = 8.0 (50; 8)
IOV = 97.74 (1.2)



Effort = 1.0
Total CPUE = 275.0 (28; 275)
Stock CPUE = 19.0 (31; 19)
IOV = 97.82 (0.7)

Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Navarro Mills Reservoir, Texas, 2000, 2004, and 2008.

Bluegill

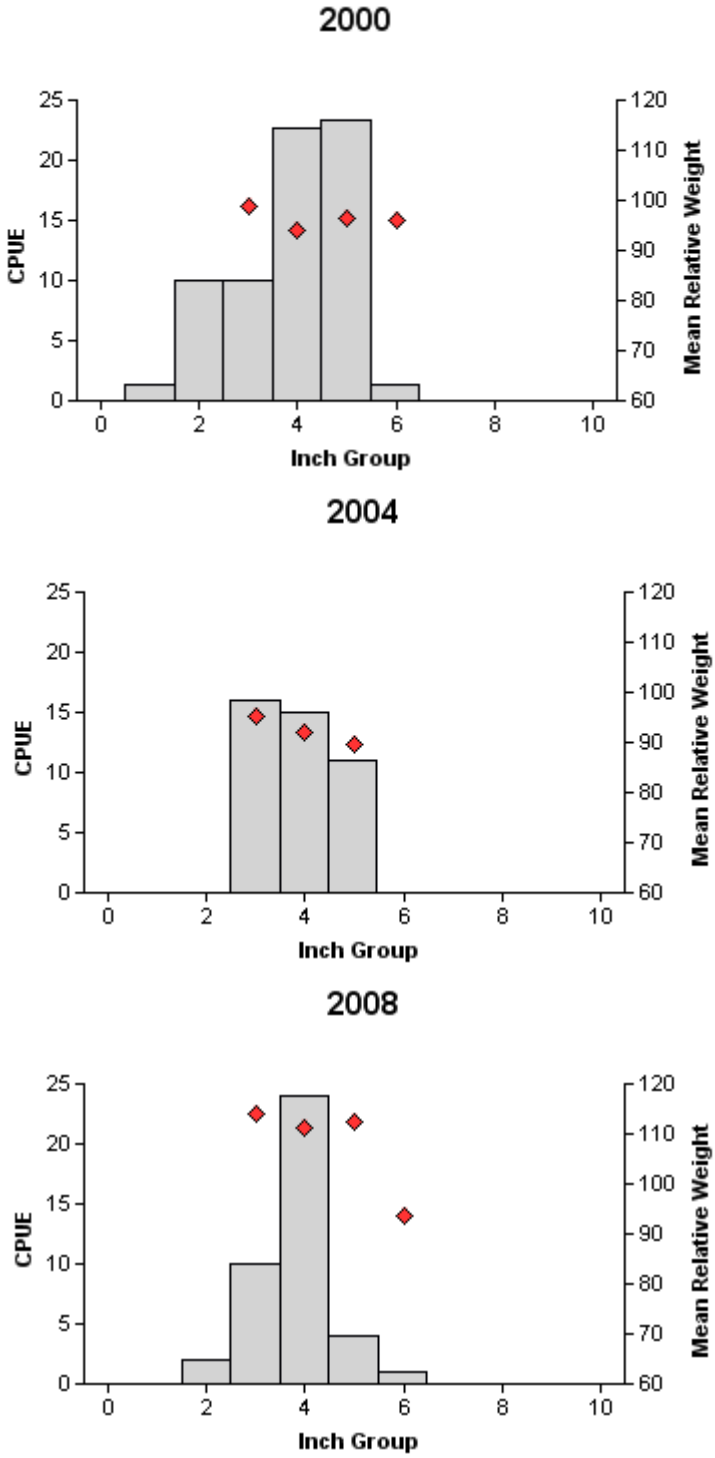
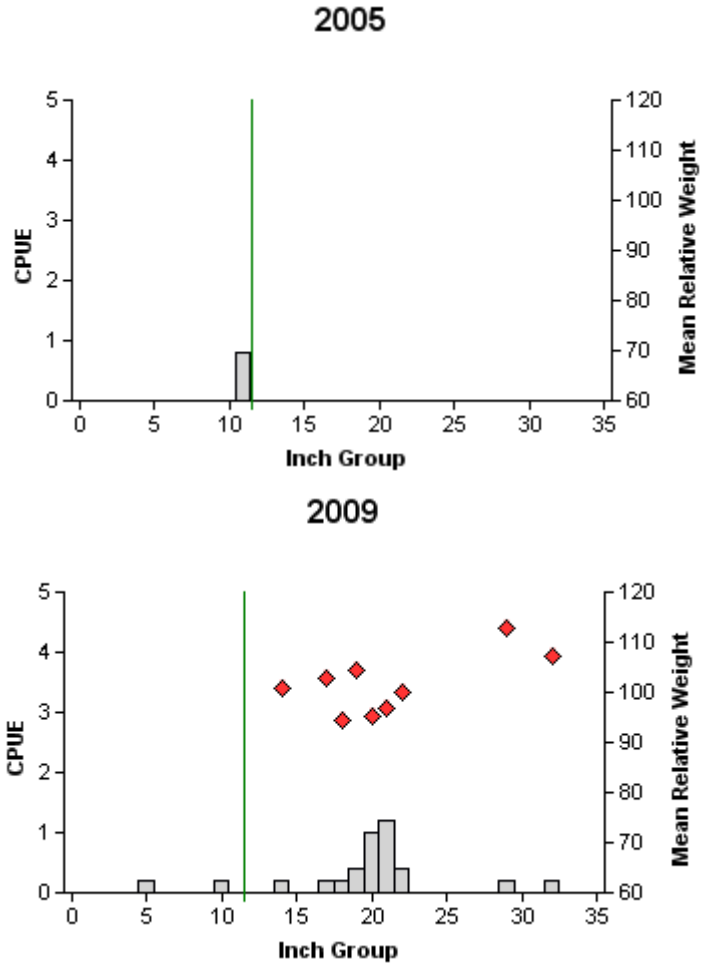


Figure 3. Number of bluegill caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Navarro Mills Reservoir, Texas, 2000, 2004, and 2008.

Blue Catfish



Effort = 5.0
Total CPUE = 0.8 (47; 4)
Stock CPUE = 0.0 (0; 0)
PSD = 0 (-1)
RSD-P = 0 (4.9)

Effort = 5.0
Total CPUE = 4.4 (24; 22)
Stock CPUE = 4.0 (26; 20)
PSD = 75 (10.3)
RSD-P = 5 (4.9)

Figure 4. 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, Navarro Mills Reservoir, 2005, and 2009; no blue catfish were collected in the 2001 survey. Vertical line represents length limit at time of survey.

Channel catfish

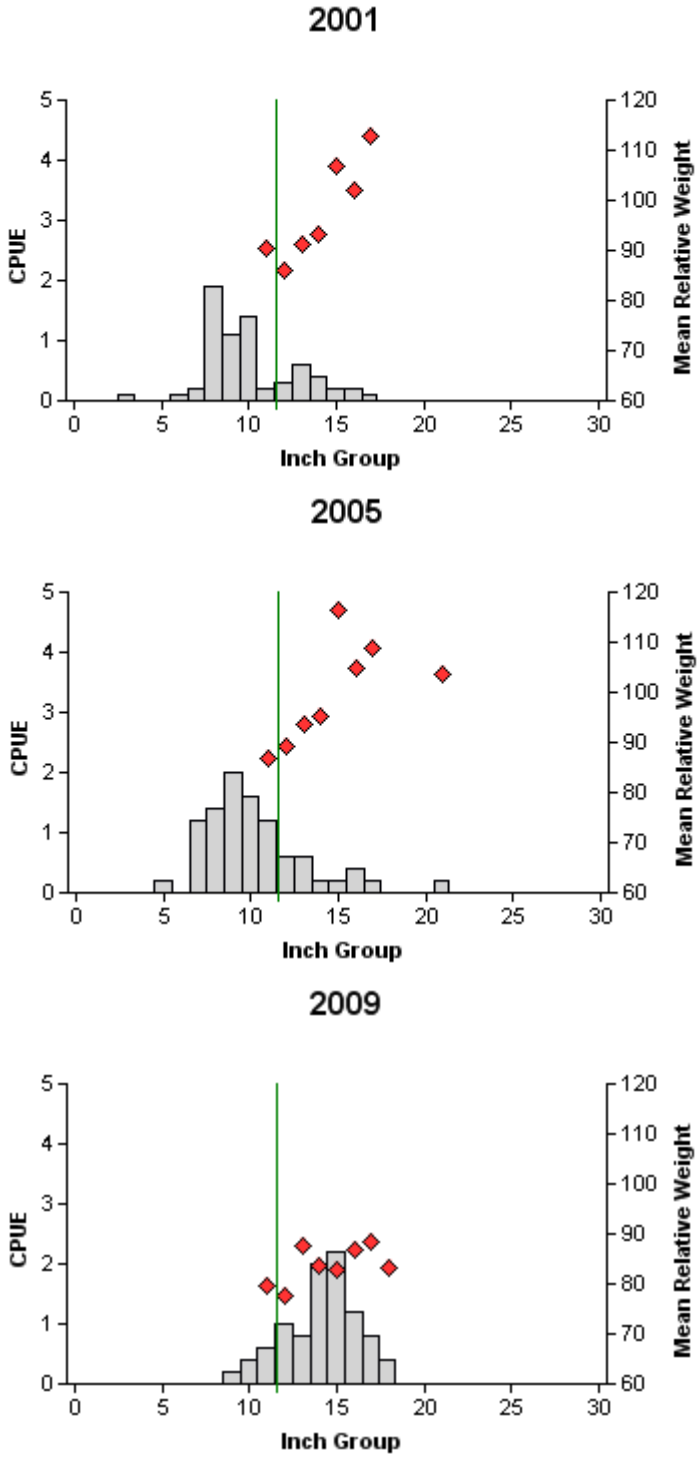


Figure 5. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Navarro Mills Reservoir, Texas, 2001, 2005 and 2009. Vertical line represents length limit at time of survey.

White bass

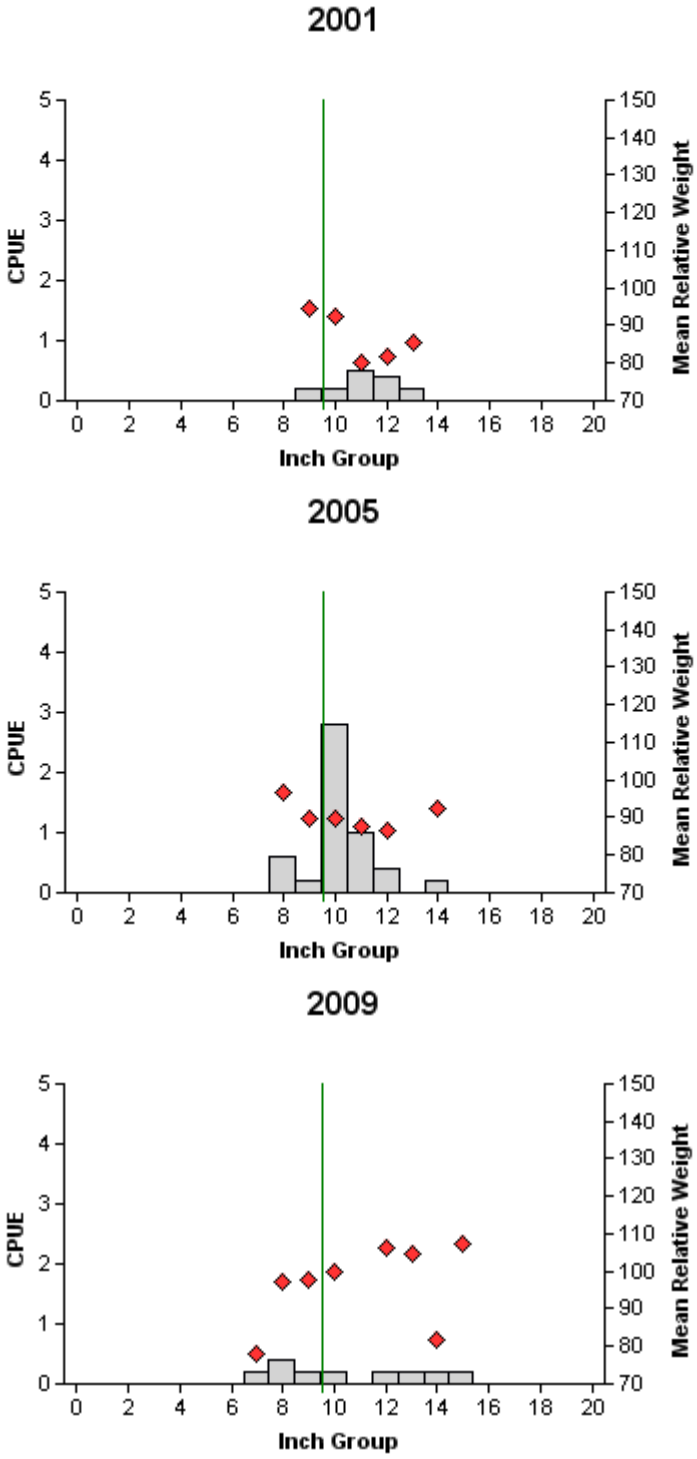
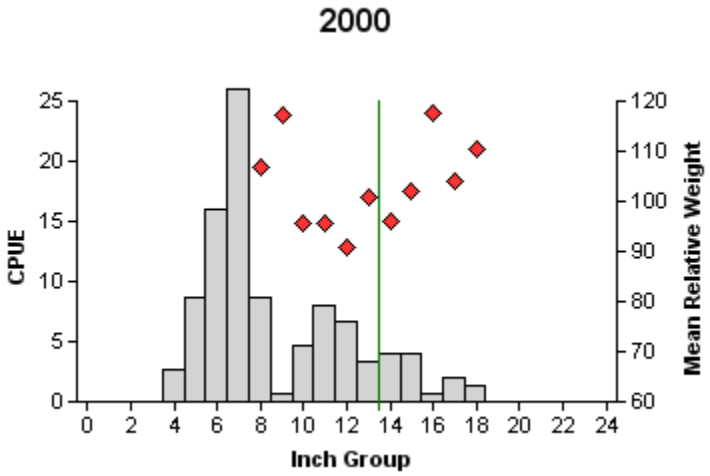
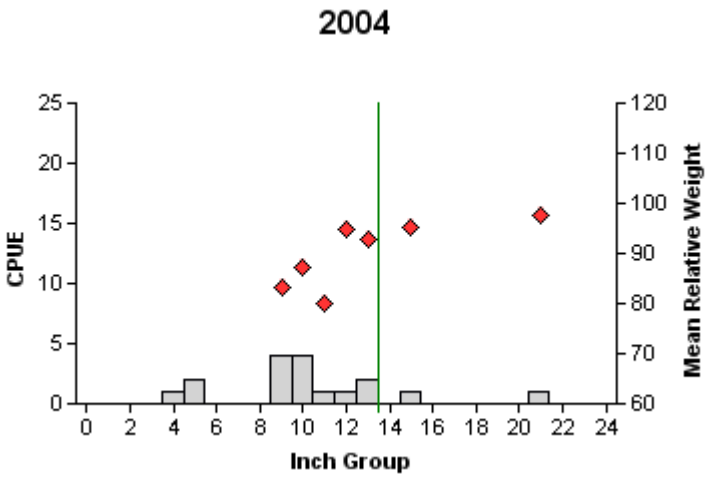


Figure 6. Number of white bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Navarro Mills Reservoir, Texas, 2001, 2005 and 2009. Vertical line represents length limit at time of survey.

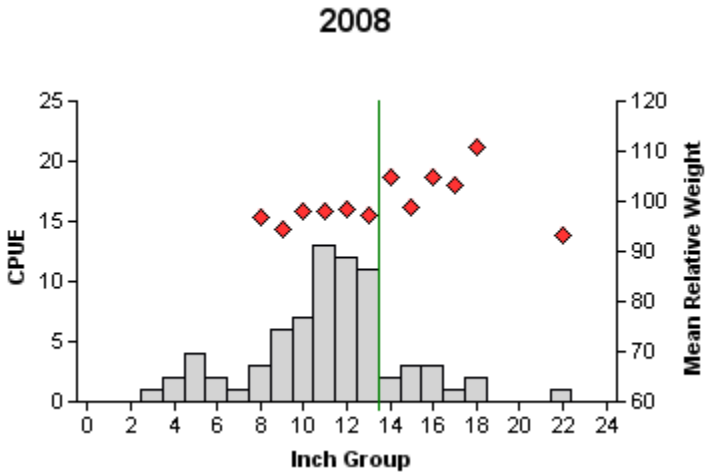
Largemouth bass



Effort =	1.5
Total CPUE =	97.3 (25; 146)
Stock CPUE =	44.0 (27; 66)
PSD =	50 (6.8)
RSD-14 =	27 (4.8)



Effort =	1.0
Total CPUE =	17.0 (40; 17)
Stock CPUE =	14.0 (38; 14)
PSD =	36 (15.3)
RSD-14 =	14 (5.7)



Effort =	1.0
Total CPUE =	74.0 (18; 74)
Stock CPUE =	64.0 (22; 64)
PSD =	55 (4.4)
RSD-14 =	19 (6)

Figure 7. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Navarro Mills Reservoir, Texas, 2000, 2004, and 2008. Vertical line represents length limit at time of survey.

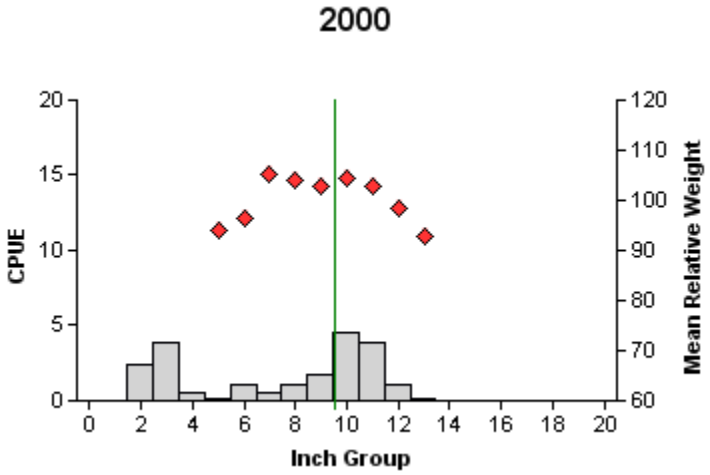
Largemouth bass

Table 5. Results of genetic analysis of largemouth bass collected by fall electrofishing at Navarro Mills Reservoir, Texas, 1987, 1994, 1997, 2000, and 2008. In 2008 microsatellite DNA analysis was used to determine largemouth bass genetic composition and results are not directly comparable to historic data; determination of integrade status was unavailable. FLMB=Florida largemouth bass, NLMB=Northern largemouth bass, F1=first generation hybrid between a FLMB and a NLMB, Fx=second or higher generation hybrid between a FLMB and a NLMB.

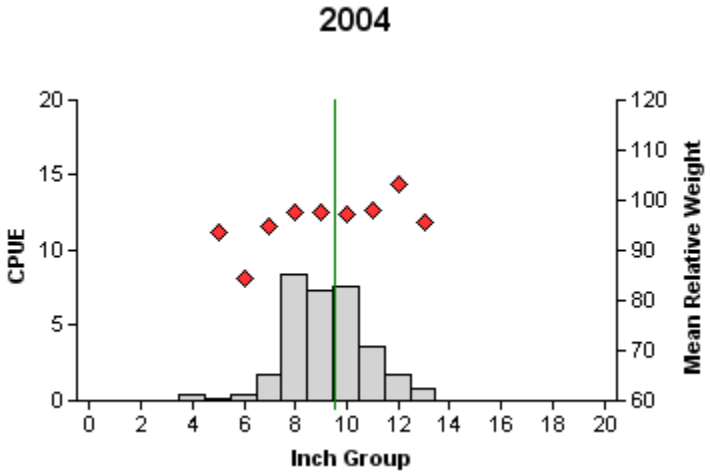
Year	Sample size	Genotype				% FLMB alleles	% pure FLMB
		FLMB	F1	Fx	NLMB		
1987	28	0	3	2	23	9.8	0.0
1994	30	0	0	8	22	15.0	0.0
1997	14	1	2	4	7	28.6	7.1
2000	30	4	6	10	10	40.0	13.3
2008[a]	29	1	7	NA	0	59.0	3.0

[a]Determination of hybrid status not conducted.

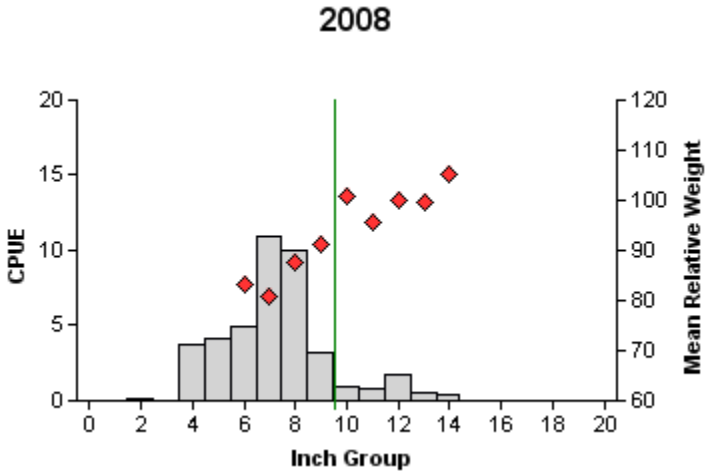
White crappie



Effort = 10.0
Total CPUE = 21.2 (16; 212)
Stock CPUE = 14.4 (18; 144)
PSD = 88 (3.1)
RSD-10 = 67 (4.9)



Effort = 5.0
Total CPUE = 32.4 (33; 162)
Stock CPUE = 32.0 (34; 160)
PSD = 92 (4.0)
RSD-10 = 43 (6.8)



Effort = 5.0
Total CPUE = 42.0 (19; 210)
Stock CPUE = 38.0 (16; 190)
PSD = 47 (6.7)
RSD-10 = 12 (3.8)

Figure 8. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Navarro Mills Reservoir, Texas, 2000, 2004, and 2008. Vertical line represents length limit at survey.

Table 12. Proposed sampling schedule for Navarro Mills Reservoir, Texas. 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.

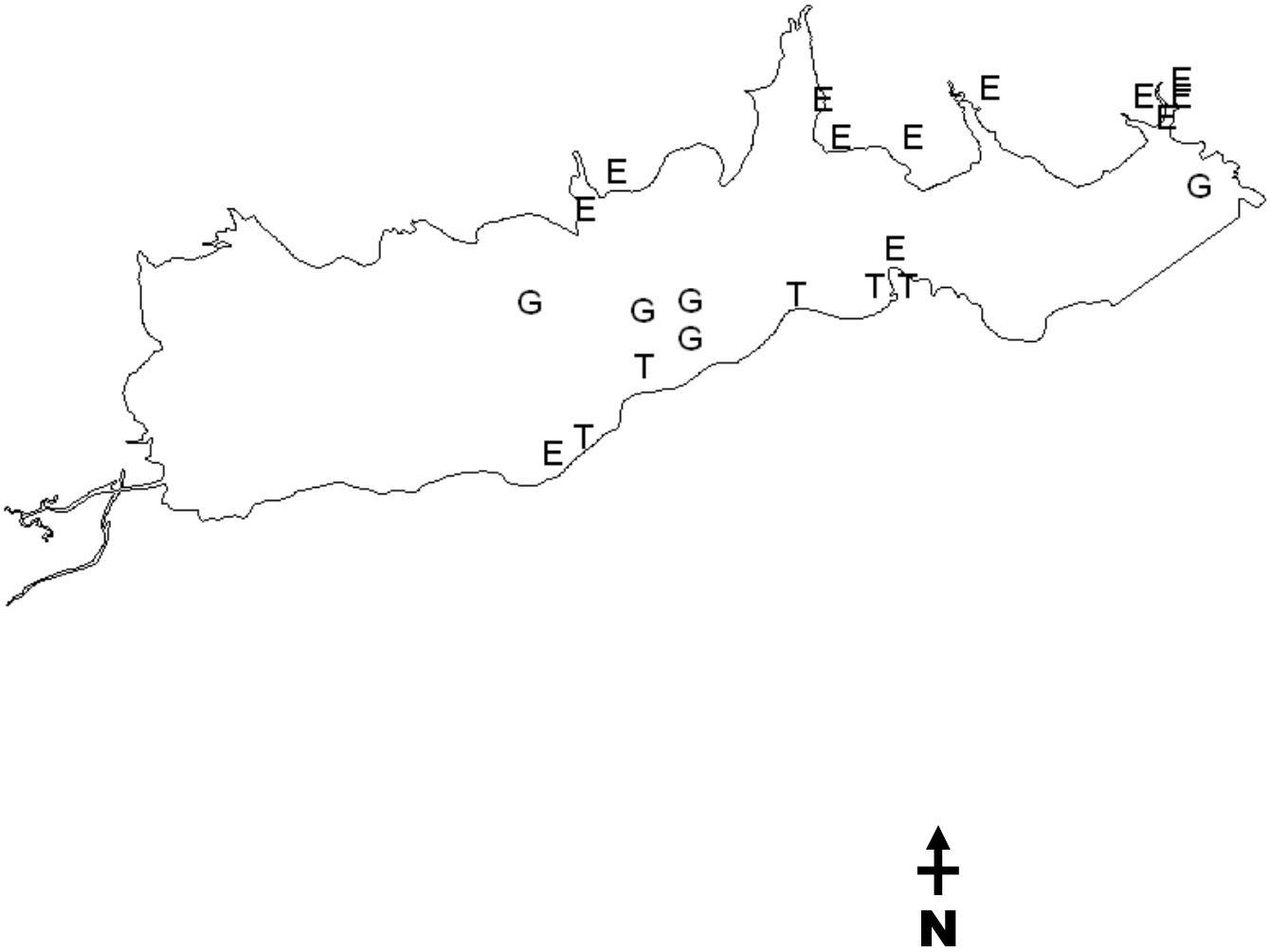
Survey Year	Electrofishing	Trap Net	Gill Net	Habitat	Report
2009-2010					
2010-2011					
2011-2012					
2012-2013	S	S	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Navarro Mills Reservoir, 2008-2009.

Species	Gill netting		Trap netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					275	275.0
Threadfin shad					131	131.0
Blue catfish	22	4.4				
Channel catfish	48	9.6				
White bass	9	1.8				
Warmouth					1	1.0
Bluegill					41	41.0
Longear sunfish					8	8.0
Redear sunfish					2	2.0
Largemouth bass					74	74.0
White crappie			210	42.0		

APPENDIX B



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