

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-31

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2005 Survey Report

Victor Braunig Reservoir

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TABLE OF CONTENTS

Survey and Management Summary.....	3
Introduction.....	4
Reservoir Description.....	4
Management History.....	4
Methods.....	5
Results and Discussion.....	5-6
Fisheries Management Plan.....	7
Literature Cited.....	8
Figures and Tables.....	9-25
Reservoir characteristics (Table 1).....	9
Harvest regulations (Table 2).....	9
Stocking history (Table 3).....	10-12
Habitat survey (Table 4).....	13
Percent directed angler effort per species (Table 5).....	13
Total fishing effort and fishing expenditures (Table 6).....	13
Gizzard shad (Figure 1).....	14
Bluegill (Figure 2).....	15
Channel catfish (Figures 3-4; Table 7).....	16-17
Palmetto bass (Figures 5-6; Table 8).....	18-19
Largemouth bass (Figures 7-8; Table 9-10).....	20-22
Red drum (Figures 9-10; Table 11).....	23-24
Proposed sampling schedule (Table 12).....	25
Appendix A	
Catch rates for all species from all gear types.....	26
Appendix B	
Map of 2005-2006 sampling locations.....	27

SURVEY AND MANAGEMENT SUMMARY

Fish populations in Victor Braunig Reservoir were surveyed in 2005 using electrofishing and in 2006 using gill nets. Creel sampling was used to survey anglers from December 2004 to November 2005. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Victor Braunig Reservoir is a 1,298-acre power plant cooling impoundment located on the southeast side of San Antonio, Texas. Water level is maintained at or near conservation pool by pumping from the San Antonio River. Habitat features consisted of bulrush, cattails, rip rap, southern naiad, and sago pondweed.
- **Management History:** Important sport fishes include red drum, palmetto bass, catfishes, and largemouth bass. Fingerling stockings have been conducted in most years since the mid-1970s to support the palmetto bass and red drum fisheries. Angler harvest of palmetto bass, red drum, and catfish has been managed under the statewide length and daily bag limits. Largemouth bass have been intensively managed since the reservoir opened through stocking and special harvest regulations. Florida largemouth bass (FLMB) were first stocked in 1976 with the last fingerling stocking occurring in 1987. Largemouth bass harvest regulations were changed from the statewide 10-inch minimum length limit (MLL), 10 fish daily bag limit (DBL) to a 21-inch MLL, 2-fish DBL in 1985. The harvest regulations were again changed in 1993 to an 18-inch MLL, 5-fish DBL. In 2004 and 2005, City Public Service Energy (CPS, the controlling authority) purchased and stocked sub-adult northern largemouth bass. White crappie have not been collected from the reservoir since 1988 when previously stocked hybrid crappie were collected in cove-rotenone sampling.
- **Fish Community**
 - **Prey species:** Gizzard shad, threadfin shad, bluegill, and blue tilapia form the reservoir's forage base. Relative abundance of bluegill remained high and gizzard shad abundance decreased by about half. Relative abundance of threadfin shad and blue tilapia was undeterminable because of low susceptibility to sampling gear.
 - **Catfishes:** Channel catfish dominate the catfish community in the reservoir. Relative abundance of channel catfish remained high and size structure of the population continues to improve. Anglers expended 16.6 h/acre targeting catfish and harvested 10,305 catfish during the 2004-2005 annual creel survey period.
 - **Palmetto bass:** Relative abundance of palmetto bass increased in 2006 compared to 2005 and 2004. Size structure of population likewise improved. Anglers expended 5.4 h/acre targeting this species and harvested 2,214 palmetto bass during the 2004-2005 annual creel survey period.
 - **Largemouth bass:** Relative abundance of largemouth bass remained low and the population was dominated by individuals under the MLL in 2006. Anglers expended only 3.0 h/acre targeting this species and harvested just 131 largemouth bass during the 2004-2005 annual creel survey period.
 - **Red drum:** Red drum remains one of the most popular sport fish species in the reservoir. Anglers expended 45.6 h/acre targeting this species and harvested 2,455 red drum up to 36 inches long during the 2004-2005 annual creel survey period.
- **Management strategies:** Continue to stock red drum and palmetto bass annually. Support stocking of sub-adult northern largemouth bass by CPS in an effort to improve the largemouth bass fishery and evaluate stocking success.

INTRODUCTION

This document is a summary of fisheries data collected from Victor Braunig Reservoir in 2005-2006. 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. Historical data is presented with the 2005-2006 data for comparison.

Reservoir Description

Victor Braunig Reservoir is a 1,298-acre power plant cooling impoundment constructed in 1964. It is located in Bexar County on the southeast side of San Antonio and owned by City Public Service Energy (CPS). Recreation access is controlled by the San Antonio River Authority. Primary water uses include power plant cooling and fishing (water skiing and personal watercraft are prohibited). Habitat at time of sampling consisted of bulrush, cattails, rip rap, southern naiad and sago pondweed. Water level is held at or near conservation pool by pumping from the San Antonio River into the reservoir. Boat access consists of two public boat ramps. Bank fishing access is restricted to shoreline on the southwest side of the reservoir. Other descriptive characteristics for Victor Braunig Reservoir are in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Dean 2001) included:

1. Stock palmetto bass at the rate of 15 fish/acre annually to maintain the fishery.
Action: Palmetto bass were stocked in 2002, 2003, 2004, 2005, and 2006 at the rates of 7.8, 14.9, 15.1, 15.0, and 16.6 fish/acre, respectively. The low stocking rate in 2002 was the result of low production at hatcheries due to a golden algae outbreak.
2. Stock red drum at the rate of 200 fish/acre annually to maintain the fishery.
Action: Red drum were stocked in 2003, 2004, and 2006 at the rates of 190, 118, and 4.9 fish/acre respectively. Fingerlings were stocked in 2003, a combination of fingerlings and sub-adults in 2004, and only sub-adults in 2006. In 2005, TPWD hatcheries were unable to produce sufficient red drum fingerlings for stocking.

Harvest regulation history: All sport fishes, except largemouth bass, in Victor Braunig Reservoir are currently managed with statewide regulations (Table 2). From 1985 to 1994, largemouth bass were managed with a 21-inch minimum length limit (MLL) and 2-fish daily bag limit (DBL). The regulations were changed to an 18-inch MLL, 5-fish DBL in 1995.

Stocking history: Palmetto bass and red drum were stocked in most years since 1976. Largemouth bass were stocked in most years from 1967 to 1984 to supplement low natural reproduction. In addition stockings of Kemp's largemouth bass, nile perch, orangemouth corvina, orangemouth corvina X spotted-seatrou hybrids, tarpon, and hybrid crappie were conducted. In 2004 and 2005, pellet reared sub-adult northern largemouth bass were purchased and stocked by CPS as part of a special research project to improve the largemouth fishery. The complete stocking history is in Table 3.

Vegetation/habitat history: Bulrush, cattails, and rip rap were the primary physical and vegetative habitat at Victor Braunig Reservoir, historically. Other aquatic vegetation species present in the reservoir in varying amounts include southern naiad and sago pondweed (Table 4).

METHODS

Fishes were collected by electrofishing (1 hour at 12 5-min stations) and gill netting (5 net nights at 5 stations). Trap netting was not conducted because few, if any crappie, are present in the reservoir. 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 nets, as the number of fish per net night (fish/nn). All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weight (W_t)] were calculated for target fishes according to Anderson and Neumann (1996) and Dennis (1996). Index of vulnerability (IOV) was calculated for gizzard shad (DiCenzo et al. 1996). Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE statistics and for creel statistics and SE was calculated for structural indices and IOV. Ages of largemouth bass were determined using otoliths from 246 fish collected in fall 2005 by electrofishing. Additional random selected sites were sampled for bass-only to obtain the total sample size of 246 fish.

Genetic analysis of largemouth bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

An annual creel survey was conducted from December 1, 2004 to November 30, 2005 to estimate angling effort and sport fish catch and harvest according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005). Creel sampling was stratified by season (N=4 3-month quarters), day type (weekend and week days) and angler type (boat and bank anglers). Data were obtained from bank anglers using the roving type angler survey method and from boat anglers using the access-point survey method. Uniform sampling probabilities were used to randomly select sample dates and times within strata. Nine total creel sampling events were conducted each quarter (weekend days = 5 and week days =4).

Littoral zone/physical habitat, vegetation, angler access, and facility surveys were conducted in accordance with Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

RESULTS AND DISCUSSION

Habitat: In 2005, rip rap, native submersed and emergent aquatic plants provided the primary structural fisheries habitat in the reservoir (Table 4). Rip rap occurred along 4.3 miles of shoreline representing 31% of the total shoreline distance. Native emergent vegetation, primarily cattails and bulrush, occupied 5.8 acres and native emergent vegetation, primarily southern naiad and sago pondweed, occupied 24.1 acres of the reservoir.

Creel: Both boat (39%) and bank anglers (51%) primarily targeted "any fish" during the 2004-2005 annual creel survey period accounting for 39% and 51% of the total angling effort, respectively (Table 5). Angling effort specifically directed at red drum and catfish each accounted for 23% of the total angling effort expended by boat anglers. Angling effort specifically directed towards red drum represented 37% of the total angling effort expended by bank anglers. Boat and bank anglers angled a total of 44,573 and 132,208 h, respectively (Table 6). Total direct angling related expenditures was estimated to be \$190,688 for boat anglers and \$382,562 for bank anglers during the annual 2004-2005 creel survey period.

Prey species: Electrofishing CPUE of gizzard shad was lower in 2005 (48.0 fish/h) than in 2004 (149.0 fish/h) and 2003 (118.0 fish/h). Gizzard shad IOV was poor in 2005, indicating that only 27% of gizzard shad were available to existing predators (Figure 1). Electrofishing CPUE of bluegill in 2005 (264 fish/h)

was similar to in 2004 (239 fish/h) and much greater than in 2003 (64.0 fish/h). About half of the bluegill population was comprised of fish <4 inches in length which is suitable size as forage for most adult predator sport fishes (Figure 2). Threadfin shad and blue tilapia are also important prey species in the reservoir; however population statistics for these species were undeterminable because of low susceptibility to sampling gears.

Channel catfish: Gillnet CPUE of channel catfish in 2006 (13.0 fish/nn) was greater than in 2005 (10.8 fish/nn) and similar to in 2004 (14.2 fish/nn). Size structure of the population was improved in 2006 compared to previous years; modal peak of length frequency distribution increased to 21 inches in 2006 from 18 inches in 2005 and 16 inches in 2004 (Figure 3). In 2005, relative weight exceeded 100 for the majority of channel catfish exceeding the MLL. Anglers expended 16.6 h/acre targeting catfish and harvested 10,305 catfish during the 2004-2005 annual creel survey period (Table 7). Angler catch rate was 0.20 fish/h and zero legal size fish caught by anglers were released back into the lake. Most of the catfish harvested were channel catfish with anglers harvesting fish up to 26 inches in length (Figure 4).

Palmetto bass: Gill net CPUE of palmetto bass increased in 2006 (13.6 fish/nn) compared to 2005 (9.0 fish/nn) and 2004 (2.0 fish/nn). Size structure of population likewise improved (Figure 5). In 2005, about half of the individuals in population exceeded 16 inches in length. Growth rate was high as it took an average of just over two growing seasons (N = 34 fish from 17 to 19 inches) for palmetto bass to attain 18 inches in length. Anglers expended 5.4 h/acre targeting this species and harvested 2,214 palmetto bass during the 2004-2005 annual creel survey period (Table 8). Anglers averaged catching palmetto bass at a rate of 0.19 fish/h. Non-compliance to the length limit regulation remains a problem as 18% of the harvested palmetto bass were under the 18 inch MLL (Figure 6)

Largemouth bass: Electrofishing CPUE of largemouth bass in 2005 (141.0 fish/h) was similar to in 2004 (112.0 fish/h) and greater than in 2003 (83.0 fish/h). Size structure of the population remained similar in 2005 compared to previous years with the population dominated by fish ≤ 10 inches (Figure 7). Largemouth bass exhibit rapid growth in the reservoir. In fall 2005, mean length of age-1 largemouth bass was 13.6 inches (N=21). Anglers expended only 3.0 h/acre targeting this species and harvested just 131 largemouth bass during the 2004-2005 annual creel survey (Table 9 and Figure 8). Angler catch rate of largemouth bass was poor at 0.12 fish/h. In 2005, Florida largemouth bass genetic introgression remained high in the population with percent FLMB alleles estimated to be 98% (Table 10).

Red drum: Gillnet CPUE of red drum was lower in 2006 (0.2 fish/nn) compared to in 2005 (0.8 fish/nn) and 2004 (2.0 fish/nn, Figure 9). Spring gill net sampling has yielded insufficient sample size to effectively monitor changes in relative abundance of this species. Anglers expended 45.6 h/acre targeting this species and harvested 2,455 red drum up to 36 inches long during the 2004-2005 annual creel survey period (Table 11). Average size of harvested red drum was 27 inches (Figure 10). On average, anglers caught red drum at a rate 0.03 fish/h. Only 1.9% of all legal harvestable size red drum caught by anglers were released back into the reservoir.

Prepared – July 2006.

ISSUE 1: Palmetto bass and red drum have become popular sport fishes in Victor Braunig Reservoir. Of the total angling effort expended in the reservoir in 2004-2005, 40% and 30% was specifically directed at these species by bank and boat anglers, respectively. Because natural reproduction of these species does not occur in the reservoir, stocking is necessary to support these fisheries.

MANAGEMENT STRATEGIES

1. Stock palmetto bass fingerlings annually at a rate of 15 fish/acre.
2. Stock red drum fingerlings annually at a rate of 200 fish/acre or sub-adult red drum annually at a rate of 4 fish/acre.

ISSUE 2: A poor largemouth bass fishery exists in the reservoir. Angling effort by boat anglers directed at largemouth in 2004-2005 accounted for only 7% of the total angling effort on the reservoir. Angler catch rate of largemouth bass was only 0.12 fish/h in 2004-2005.

MANAGEMENT STRATEGY

1. Cooperate with CPS in stocking sub-adult northern largemouth bass in 2007 and 2008 and determine stocking success.

SAMPLING SCHEDULE JUSTIFICATION:

Annual gill net sampling is necessary to monitor population trends of red drum, catfish, and palmetto bass, the three most popular sport fish in the reservoir. Annual electrofishing is needed to monitor the effect of sub-adult northern largemouth bass stockings on the population. An annual creel survey will be conducted in 2007-2008 and 2009-2010 to evaluate the effect of red drum, palmetto bass, and sub-adult northern largemouth bass stockings on the fishery.

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

Table 1. Characteristics of Victor Braunig Reservoir, Texas.

Characteristic	Description
Year Constructed	1964
Controlling authority	City Public Service Energy
County	Bexar
Reservoir type	Tributary
Shoreline Development Index	2.24
Conductivity	1695 umhos/cm

Table 2. Harvest regulations for Victor Braunig Reservoir.

Species	Bag Limit	Length Limit (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12" minimum
Catfish, Flathead	5	18" minimum
Bass, Largemouth	5	18" minimum
Bass, Palmetto	5	18" minimum
Drum, Red	3	20" minimum
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10" minimum

Table 3. Stocking history of Victor Braunig Reservoir, Texas. Size categories are: FRY =<1 inch; FGL = 1-3 inches; AFGL = 8 inches, ADL = adults, and NR = size not recorded.

Species	Year	Number	Size
Channel catfish	1969	35,000	NR
	1974	103,280	NR
	2005	61,923	FGL
	Total	200,203	
Blue catfish	1986	134,975	FGL
	1987	136,720	FGL
	Total	271,695	
Palmetto bass	1977	9,900	NR
	1981	16,425	NR
	1983	13,500	NR
	1984	61,140	FGL
	1985	101,885	FGL
	1986	67,000	FGL
	1987	135,310	FGL
	1988	180,000	FRY
	1989	179,200	FRY
	1991	139,894	FGL
	1992	277,085	FGL
	1994	135,000	FGL
	1995	25,150	FGL
	1996	22,500	FGL
	1997	20,648	FGL
	1998	20,461	FGL
	1999	20,650	FGL
	2000	20,100	FGL
	2002	10,108	FGL
	2003	19,370	FGL
2004	19,650	FGL	
2005	19,517	FGL	
2006	21,572	FGL	
Total	1,536,065		
Largemouth bass	1967	28,000	NR
	1968	60,000	NR
	1969	40,000	NR
	1970	67,000	NR
	1972	56,200	NR
	1974	69,630	NR
	2004	6,999	AFGL
	2005	12,000	AFGL
	Total	339,829	
Kemps largemouth bass	1985	273,368	FGL
	1986	97,655	FGL
	1987	112,584	FGL
	Total	483,607	

Table 3 continued. Stocking history of Victor Braunig Reservoir, Texas. Size categories are:
 FRY =<1 inch; FGL = 1-3 inches; AFGL = 8 inches, ADL = adults, and NR = size not recorded.

Species	Year	Number	Size
Florida largemouth bass	1976	27,000	FGL
	1977	67,300	FGL
	1978	49,968	FGL
	1981	68,000	FGL
	1982	68,500	FGL
	1983	67,900	FGL
	1984	268,580	FRY
	Total	617,248	
White crappie	1974	10,000	NR
Black crappie	1972	5,600	NR
Hybrid crappie	1987	545,095	FGL
	1994	135,000	FRY
	1995	128,933	FRY
	Total	809,028	
Nile perch	1978	88	NR
	1979	14	NR
	1984	26	NR
	Total	128	
Red drum	1976	2,065	NR
	1980	3,051	NR
	1981	135,000	NR
	1982	135,000	NR
	1983	126,000	NR
	1984	162,000	FGL
	1985	447,000	FGL
	1986	293,223	FGL
	1987	180,000	FGL
	1988	19,700	FGL
	1989	2,800	FRY
	1990	1,910	FGL
	1990	213,100	FRY
	1991	294,714	FRY
	1992	270,305	FGL
	1992	4	ADL
	1993	182,540	FRY
	1994	160,229	FGL
	1995	146,108	FRY
	1996	159,026	FGL
1997	136,046	FGL	
1999	198,621	FGL	
2000	183,619	FGL	
2001	190,806	FGL	

Table 3 continued. Stocking history of Victor Braunig Reservoir, Texas. Size categories are:
 FRY =<1 inch; FGL = 1-3 inches; AFGL = 8 inches, ADL = adults, and NR = size not recorded.

Species	Year	Number	Size
Red drum	2002	169,429	FGL
	2003	246,505	FGL
	2004	153,705	FGL
	2004	5,491	AFGL/ADL
	2006	6,395	AFGL/ADL
	Total	4,212,077	
Black X red drum	1983	5,995	NR
	1984	47,035	NR
	1984	3,316	ADL
	Total	56,346	
Spotted seatrout	1984	72,000	FGL
Tarpon	1984	17	NR
	1985	17	NR
	Total	34	
Orangemouth corvina	1985	3,150	NR

Table 4. Survey of littoral zone and physical habitat types, Victor Braunig Reservoir, Texas, 2005. 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 bank	8.2	59		
Rip rap	4.3	31		
Rock or gravel	0.7	5		
Concrete	0.7	5		
Native submerged vegetation			24.1	1.9
Native emerged vegetation			5.8	0.07

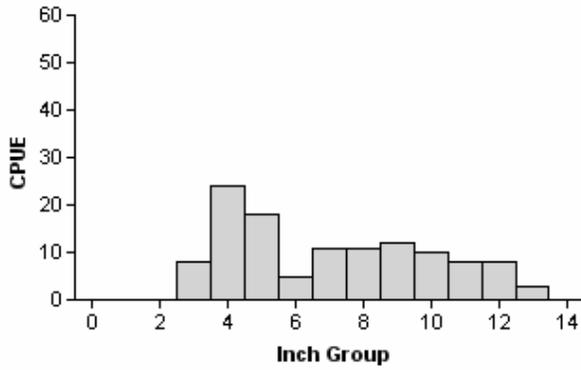
Table 5. Percent directed angler effort by species and angler type (BT = boat anglers and BK = bank anglers) for Victor Braunig Reservoir, Texas, in 1999-2000 and 2004-2005.

Species	1999-2000		2004-2005	
	BT	BT	BK	
Catfish spp.	24	23	9	
Palmetto bass	10	7	3	
Largemouth bass	8	7	1	
Red drum	25	23	37	
Anything	32	39	51	

Table 6. Total fishing effort (h) for all species and total direct angling expenditures by angler type (boat anglers = BT and bank anglers = BK) at Victor Braunig Reservoir, Texas in 1999-2000 and 2004-2005. Estimates for bank anglers were not made in 1999-2000.

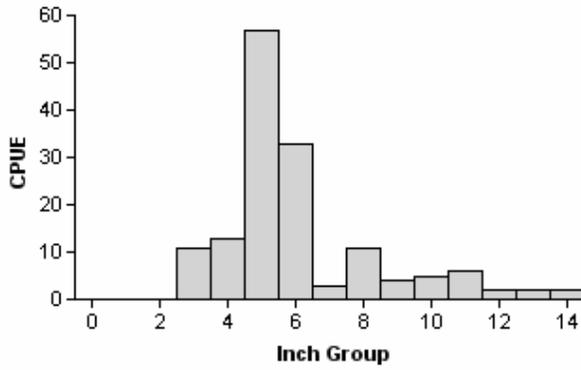
Creel Statistic	1999-2000		2004-2005	
	BT	BT	BK	
Total angling effort	72,255	44,573	132,208	
Total direct angling expenditures	\$214,734	\$190,688	\$382,562	

Gizzard Shad 2003



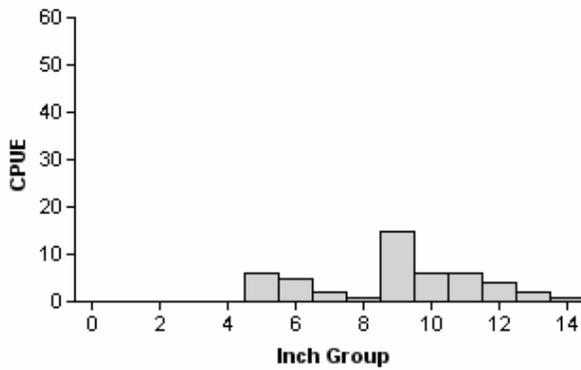
Effort = 1.0
 Total CPUE = 118.0 (23; 118)
 IOV = 56 (0.1)

2004



Effort = 1.0
 Total CPUE = 149.0 (28; 149)
 IOV = 79 (0.1)

2005

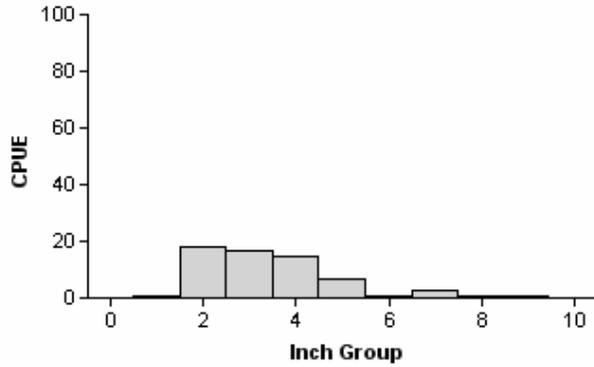


Effort = 1.0
 Total CPUE = 48.0 (29; 48)
 IOV = 27 (0.2)

Figure 1. 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, Victor Braunig Reservoir, Texas, 2003, 2004, and 2005.

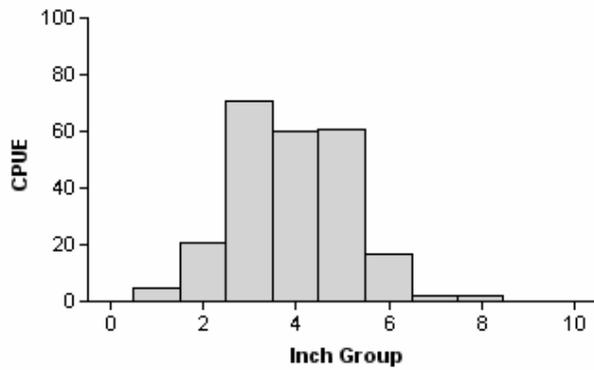
Bluegill

2003



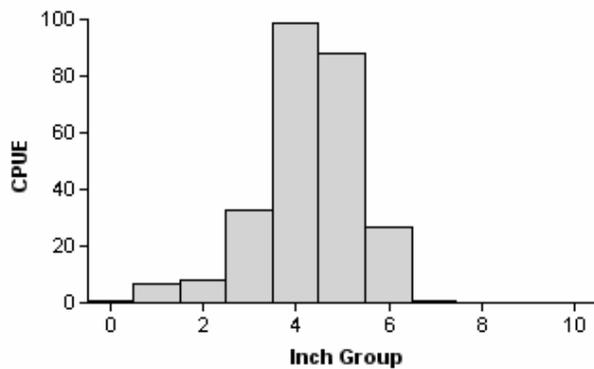
Effort = 1.0
 Total CPUE = 64.0 (25; 64)
 PSD = 13 (0.1)

2004



Effort = 1.0
 Total CPUE = 239.0 (23; 339)
 PSD = 10 (0.0)

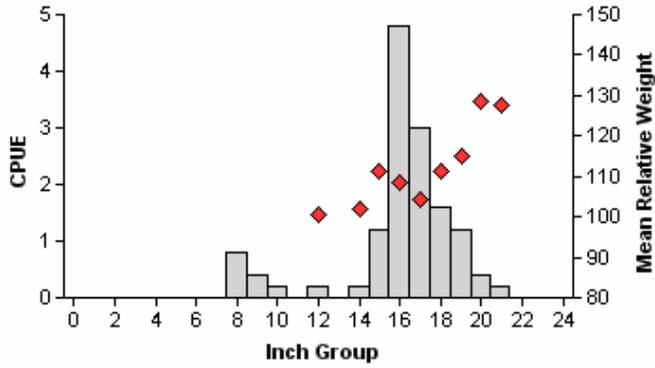
2005



Effort = 1.0
 Total CPUE = 264 (40; 264)
 PSD = 11 (0.0)

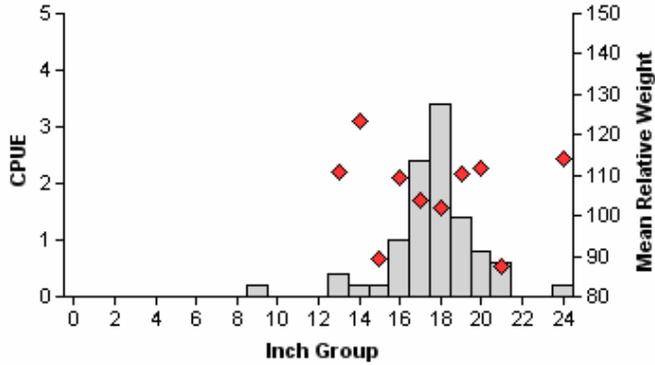
Figure 2. Number of bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Victor Braunig Reservoir, Texas, 2003, 2004, and 2005.

Channel Catfish 2004



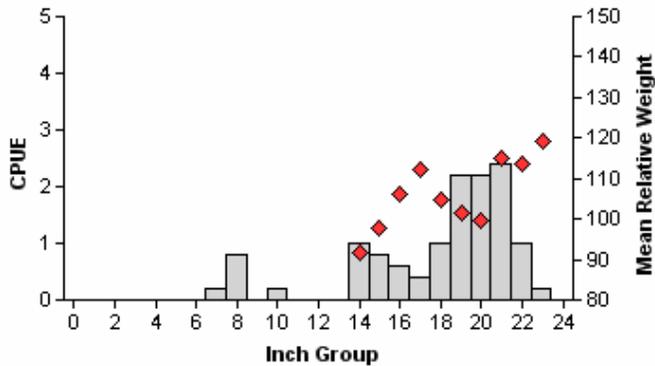
Effort = 5
 Total CPUE = 14.2 (41; 71)
 PSD = 88 (0.1)

2005



Effort = 5
 Total CPUE = 10.8 (10; 54)
 PSD = 92 (0.0)

2006



Effort = 5
 Total CPUE = 13.0 (19; 65)
 PSD = 85 (0.0)

Figure 3. Number of channel catfish caught per net night (CPUE), 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, Victor Braunig Reservoir, Texas, 2004, 2005, and 2006.

Channel Catfish

Table 7. Creel survey statistics for catfish species at Victor Braunig Reservoir from December 1999 through November 2000 for boat anglers only and December 2004 through November 2005 for boat and bank anglers combined. Creel statistics for bank anglers in 1999/2000 were not available. Total catch per hour is for anglers targeting all catfish species and total harvest is the estimated number of channel catfish harvested by all anglers. Relative standard errors are in parentheses.

Creel Survey Statistic	Year	
	1999/2000	2004/2005
Directed effort (h)*	16,943 (13)	21,587 (21)
Directed effort/acre*	13.1 (13)	16.6 (21)
Total catch per hour*	0.29 (24)	0.20 (63)
Total harvest	12,096 (30)	10,305 (48)
Harvest/acre	9.3 (30)	7.9 (48)
Percent legal released	6.1	0

Asterisk denotes directed effort combined for all catfish species

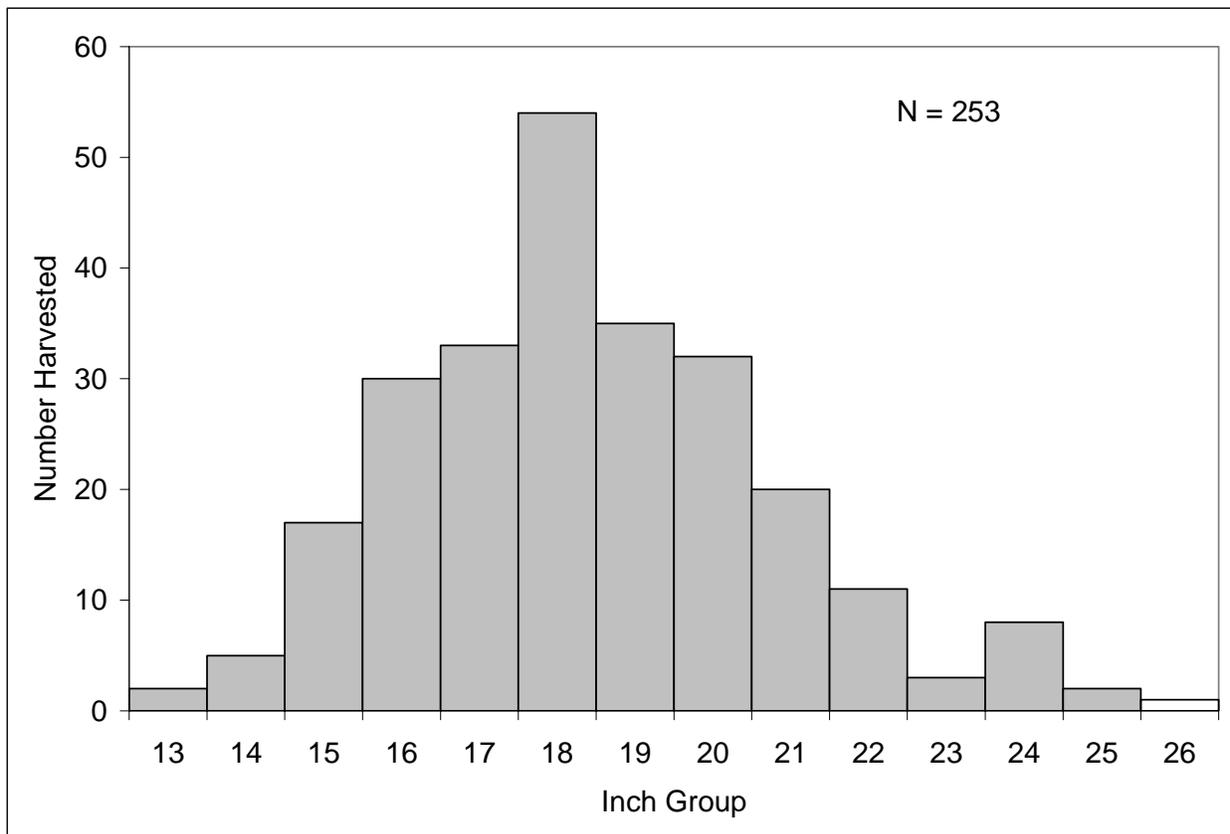


Figure 4. Length frequency of harvested channel catfish observed during creel surveys at Victor Braunig Reservoir, Texas, December 2004 through November 2005, all anglers combined. N is the number of harvested channel catfish measured during creel surveys.

Palmetto Bass

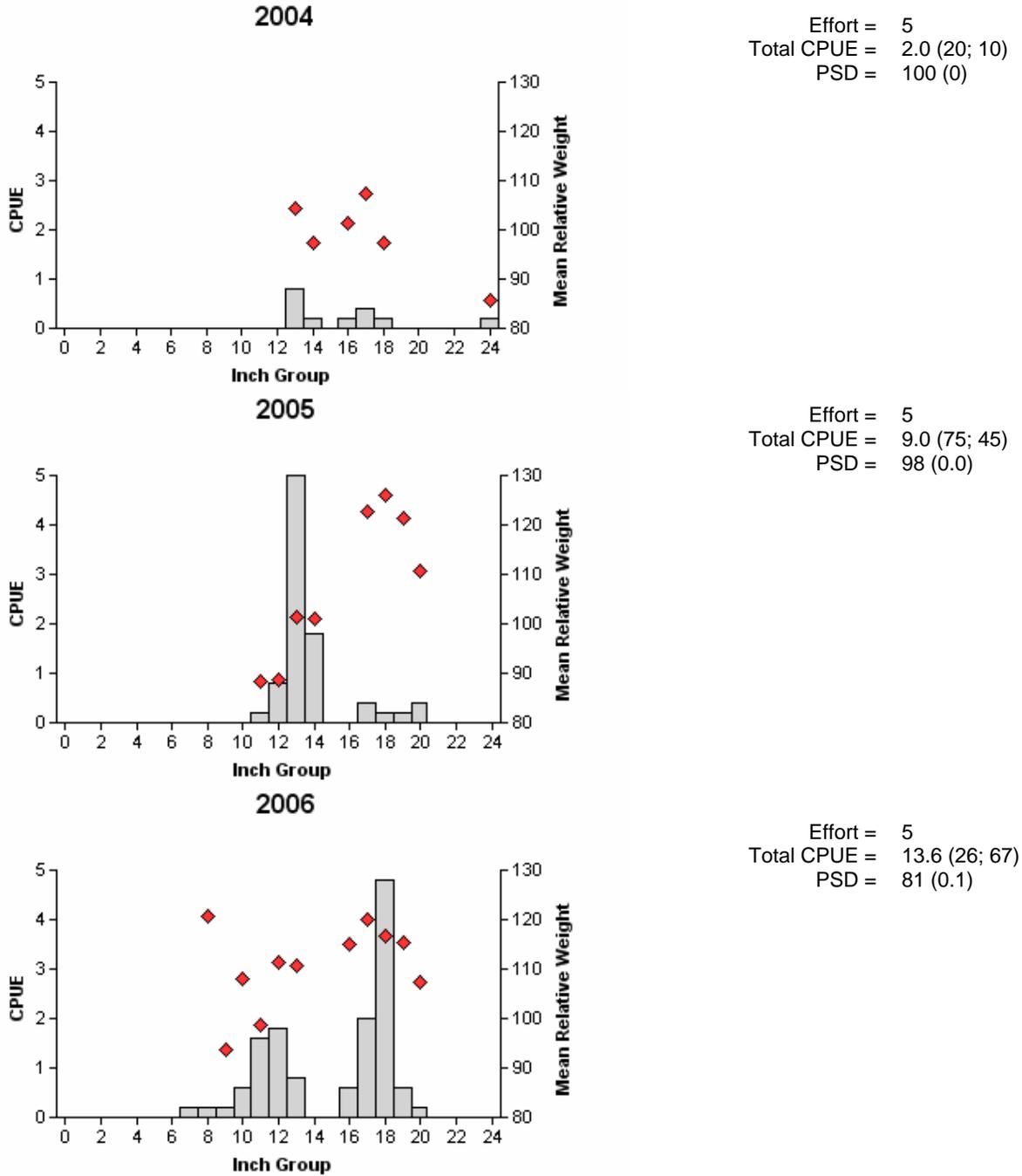


Figure 5. Number of palmetto bass caught per net night (CPUE) and population indices (RSE and N are in parentheses) for spring gill net surveys, Victor Braunig Reservoir, Texas, 2004, 2005, and 2006.

Palmetto Bass

Table 8. Creel survey statistics for palmetto bass at Victor Braunig Reservoir from December 1999 through November 2000 for boat anglers only and December 2004 through November 2005 for boat and bank anglers combined. Creel statistics for bank anglers in 1999/2000 were not available. Total catch per hour is for anglers targeting palmetto bass and total harvest is the estimated number of palmetto bass harvested by all anglers. Relative standard errors are in parentheses.

Creel Survey Statistic	Year	
	1999/2000	2004/2005
Directed effort (h)	7,948 (16)	7,016 (35)
Directed effort/acre	6.1 (16)	5.4 (35)
Total catch per hour	0.12 (44)	0.19 (59)
Total harvest	2,134 (32)	2,214 (48)
Harvest/acre	1.6 (32)	1.7 (48)
Percent legal released	5.9	16.6

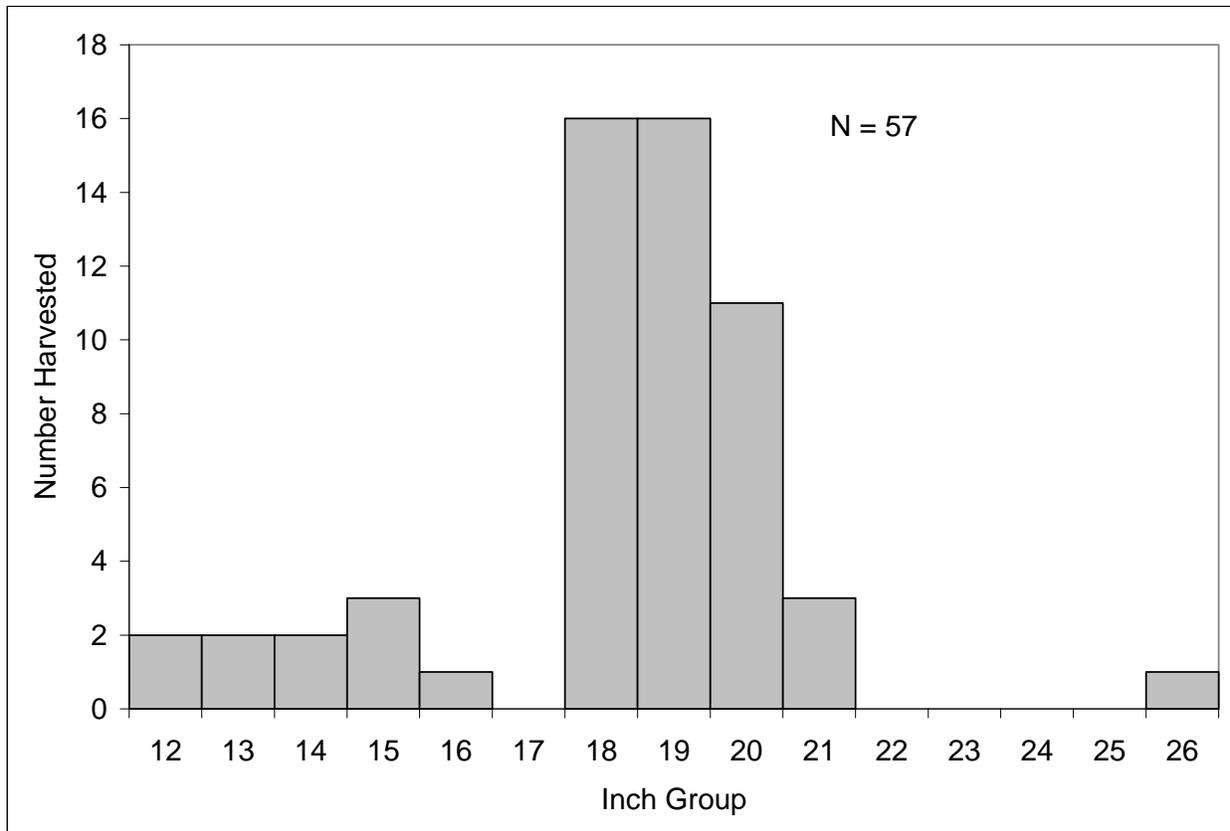
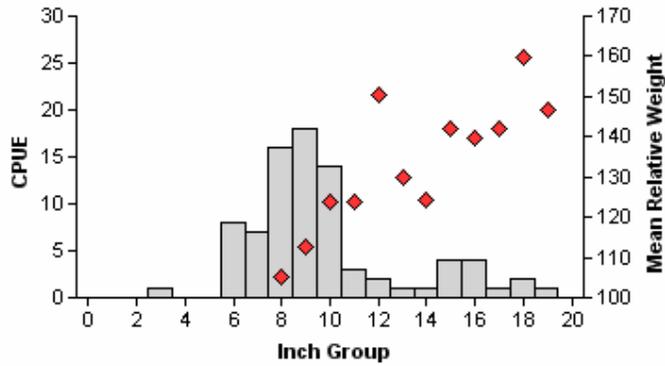


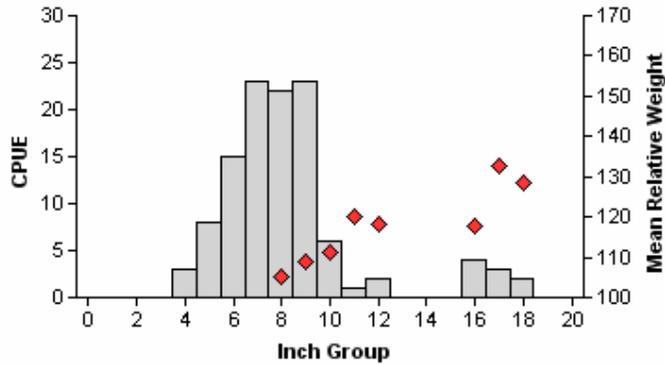
Figure 6. Length frequency of harvested palmetto bass observed during creel surveys at Victor Braunig Reservoir, Texas, December 2004 through November 2005, all anglers combined. N is the number of harvested palmetto bass measured during creel surveys.

Largemouth Bass 2003



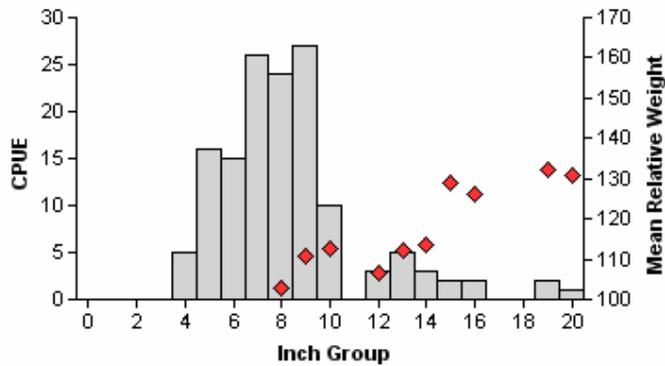
Effort = 1.0
 Total CPUE = 83.0 (37; 83)
 Stock CPUE = 67.0 (39; 67)
 PSD = 24 (0.1)

2004



Effort = 1.0
 Total CPUE = 112.0 (24; 112)
 Stock CPUE = 63.0 (29; 63)
 PSD = 17 (0.0)

2005



Effort = 1.0
 Total CPUE = 141.0 (24; 141)
 Stock CPUE = 79.0 (33; 79)
 PSD = 23 (0.0)

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 for size structure are in parentheses) for fall electrofishing surveys, Victor Braunig Reservoir, Texas, 2003, 2004, and 2005.

Largemouth Bass

Table 9. Creel survey statistics for largemouth bass at Victor Braunig Reservoir from December 1999 through November 2000 for boat anglers only and December 2004 through November 2005 for boat and bank anglers combined. Creel statistics for bank anglers in 1999/2000 were not available. Total catch per hour is for boat anglers targeting largemouth bass and total harvest is the estimated number of largemouth bass harvested by all anglers. Relative standard errors are in parentheses.

Creel Survey Statistic	Year	
	1999/2000	2004/2005
Directed effort (h)	6,367 (17)	3,916 (41)
Directed effort/acre	4.9 (17)	3.0 (41)
Total catch per hour	0.11 (52)	0.12 (74)
Total harvest	121 (103)	131 (408)
Harvest/acre	0.09 (103)	0.10 (408)
Percent legal released	50.8	64.6

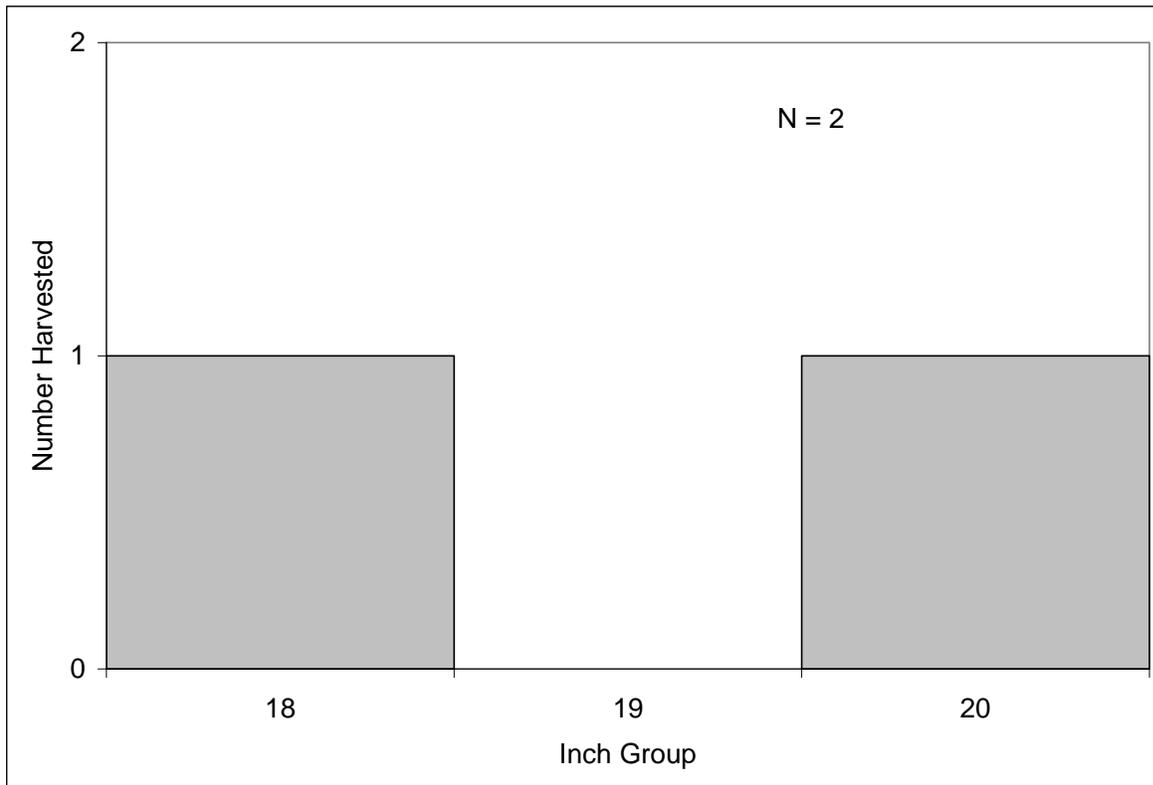


Figure 8. Length frequency of harvested largemouth bass observed during creel surveys at Victor Braunig Reservoir, Texas, December 2004 through November 2005, all anglers combined. N is the number of harvested largemouth bass measured during creel surveys.

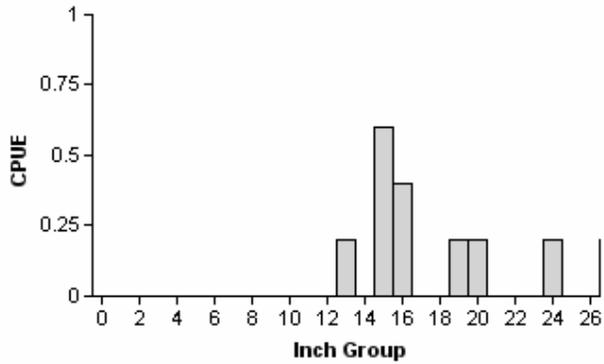
Largemouth Bass

Table 10. Results of genetic analysis of age-0 largemouth bass collected by fall electrofishing, Victor Braunig Reservoir, Texas, 2000, 2003, 2004, and 2005. 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		
2000	31	28	0	3	0	94	90
2003	50	43	0	7	0	97	86
2004	30	25	0	5	0	97	83
2005	195	173	0	22	0	98	89

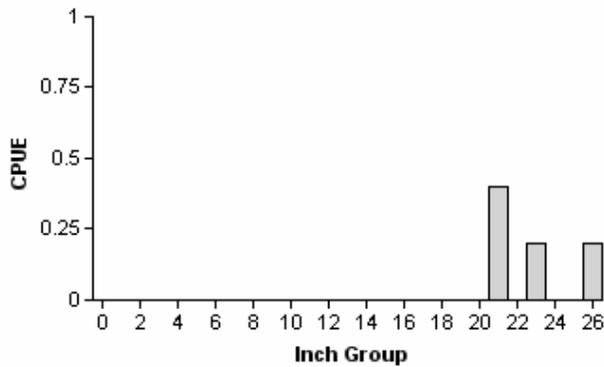
Red Drum

2004



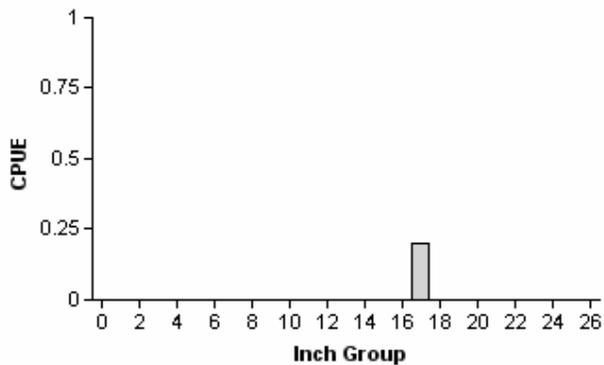
Effort = 5
 Total CPUE = 2.0 (35; 10)
 PSD = 100 (0)

2005



Effort = 5
 Total CPUE = 0.8 (100; 4)
 PSD = 100 (0)

2006



Effort = 5
 Total CPUE = 0.2 (100; 1)
 PSD = 100 (0)

Figure 9. Number of red drum caught per net night (CPUE, bars), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Victor Braunig Reservoir, Texas, 2004, 2005, and 2006.

Red Drum

Table 11. Creel survey statistics for red drum at Victor Braunig Reservoir from December 1999 through November 2000 for boat anglers only and December 2004 through November 2005 for boat and bank anglers combined. Creel statistics for bank anglers in 1999/2000 were not available. Total catch per hour is for anglers targeting red drum and total harvest is the estimated number of red drum harvested by all anglers. Relative standard errors are in parentheses.

Creel Survey Statistic	Year	
	1999/2000	2004/2005
Directed effort (h)	17,883 (12)	59,175 (17)
Directed effort/acre	13.8 (12)	45.6 (17)
Total catch per hour	0.06 (36)	0.03 (58)
Total harvest	2,228 (44)	2,455 (50)
Harvest/acre	1.7 (44)	1.9 (50)
Percent legal released	0	26

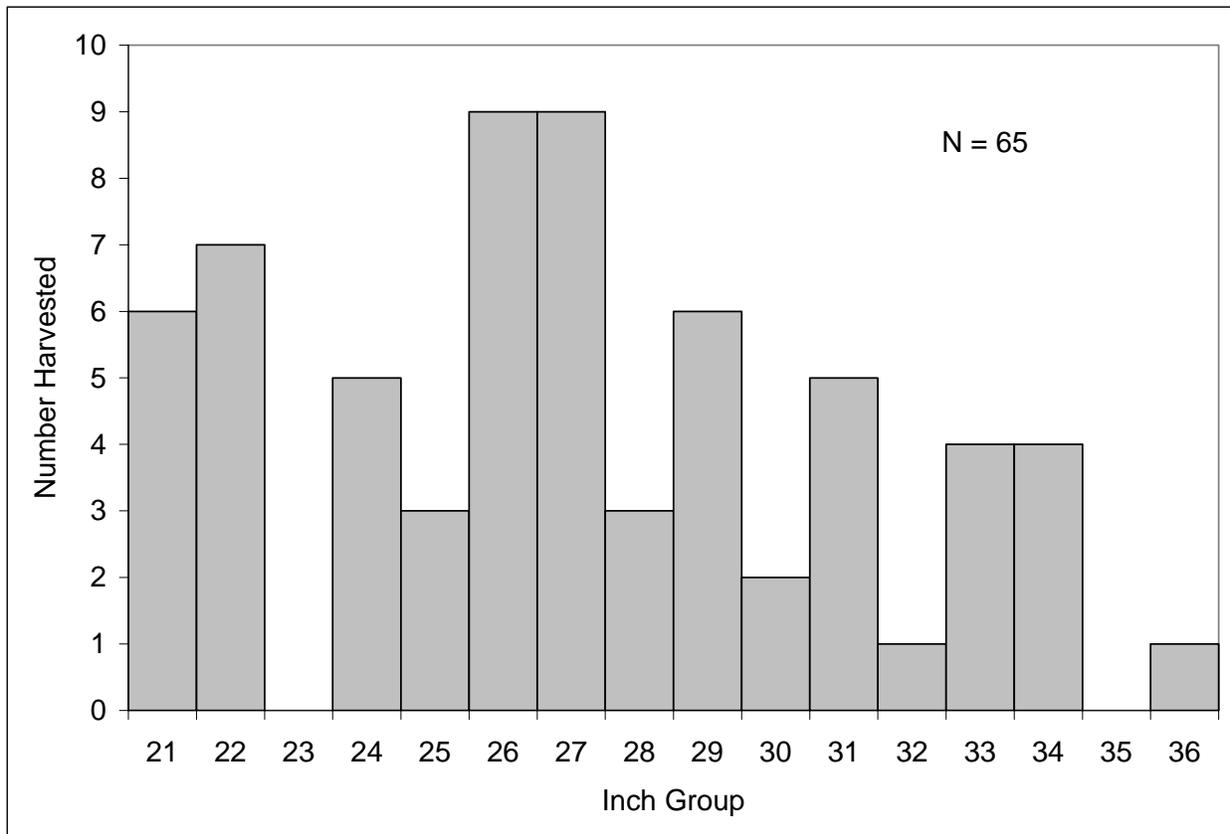


Figure 10. Length frequency of harvested red drum observed during creel surveys at Victor Braunig Reservoir, Texas, December 2004 through November 2005, all anglers combined. N is the number of harvested red drum measured during creel surveys.

Table 12. Proposed sampling schedule for Victor Braunig 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.

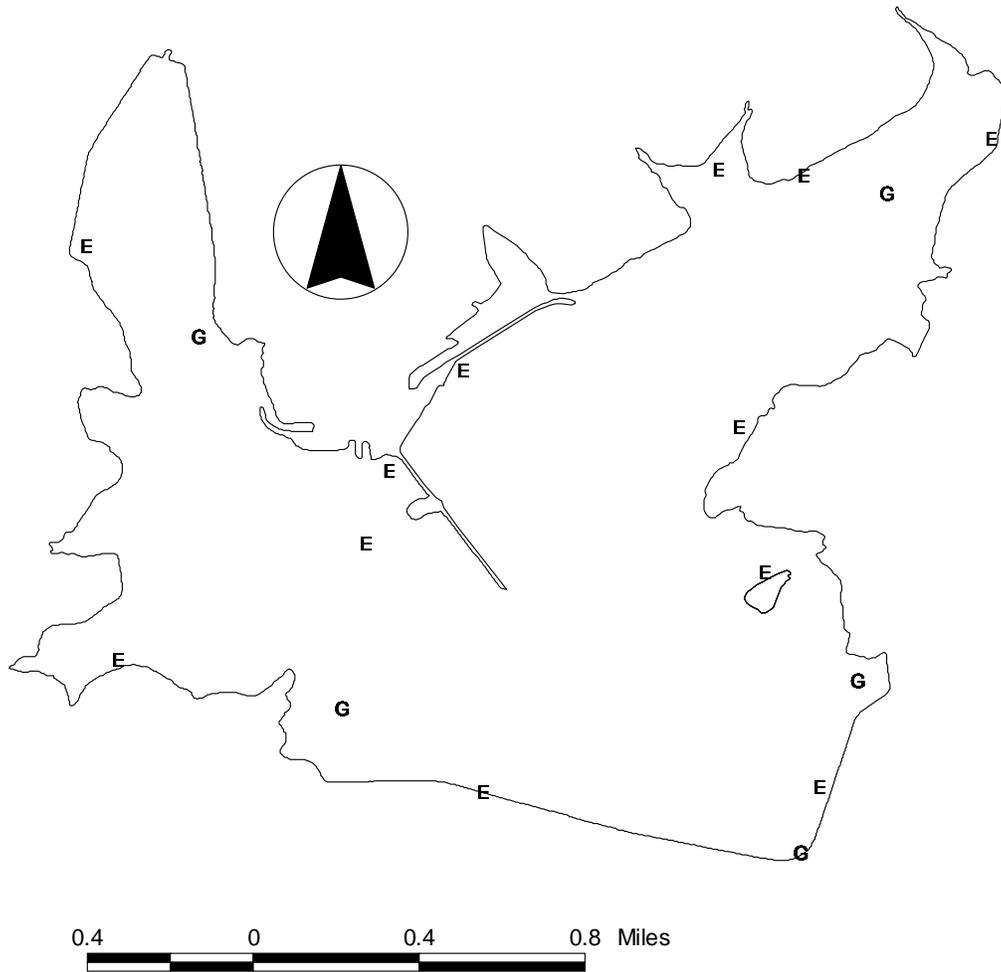
Survey Year	Electrofishing	Trap Net	Gill Net	Creel Survey	Report
Fall 2006-Spring 2007	S		S		
Fall 2007-Spring 2008	S		S	S	
Fall 2008-Spring 2009	S		S		
Fall 2009-Spring 2010	S		S	A	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Victor Braunig Reservoir, Texas, 2005-2006.

Species	Gil netting		Electrofishing	
	N	CPUE	N	CPUE
Gizzard shad			48	48.0
Threadfin shad			183	183.0
Channel catfish	65	13.0		
Palmetto bass	68	13.6		
Bluegill			264	264.0
Redear sunfish			1	1.0
Largemouth bass			141	141.0
Red Drum	1	0.2		

APPENDIX B



Location of sampling sites, Victor Braunig Reservoir, Texas, 2005-2006. Gill net and electrofishing stations are indicated by G and E, respectively. Water level was near full pool at time of sampling.