

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-30

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2004 Survey Report

Amon G. Carter Reservoir

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Executive Summary

Amon G. Carter Reservoir was surveyed with creel surveys in 2002 and 2003, in 2004 using trap nets and electrofisher, and in 2005 using gill nets. This report summarizes the results of these surveys and contains a management plan for the reservoir.

- **Reservoir description:** Amon G. Carter Reservoir, a 1,540-acre impoundment on Big Sandy Creek, was constructed in 1956 by the City of Bowie and is located 8 miles southwest of Bowie. In 1985 the reservoir was enlarged to 1,848 acres by adding a 308-acre portion downstream of the existing dam. The reservoir has a drainage area of approximately 111 square miles, a shoreline length of 22.5 miles, and a shoreline development index of 4.9. Principal tributaries are Trail, Briar, Cowskin, and Kiel Creeks and McFall Branch. Water depth less than 15 feet accounts for approximately 55% of the reservoir. Average annual rainfall is 30 inches. The reservoir is used as a water supply for the City of Bowie. There are two public boat ramps with boat boarding piers. A fishing pier is located at Selma Park, the only public park on the reservoir. The pier at Selma Park and shoreline areas at both public areas, while not designed for physically challenged persons, are accessible to the physically challenged. Fish habitat consists of flooded boulders/rocks/stumps, emergent aquatic vegetation, and flooded standing timber. There was < 0.1 acre of hydrilla located near the Big Sandy Camp boat ramp.
- **Prey species:** Electrofishing catch rates of gizzard shad (709.0/hour) and bluegill (537.0/hour) rebounded in 2004 from low estimates in 2000 (111.0/hour and 172.0/hour). Catch rates for both prey species are the highest on record since 1998 and higher than the historic averages (355.5/hour for gizzard shad and 252.3/hour for bluegill). Historic averages were based on five surveys from 1992 through 2004. Increases in numbers occurred mostly in 3- and 4-inch classes, which provide excellent forage for predator species. The Index of Vulnerability (IOV) for gizzard shad was 88, an increase from 50 in 2000. The catch rate of other prey species also increased from 2000; threadfin shad increased from 125.0/hour to 219.0/hour; green sunfish increased from 31.0/hour to 102.0/hour; and longear sunfish increased from 44.0/hour to 242.0/hour.
- **Channel catfish:** The gill net catch rate of channel catfish in 2005 was 2.8/net night, up from 2.2/net night in 1998, but below the historic average of 6.5/net for this reservoir. The historic average for gill netting was based on five surveys from 1992 through 2005. The average relative weight was 90. An estimated 36% of the channel catfish sample population was \geq 12 inches total length.

According to creel survey results, there was an estimated 16,129 angler-hours fished the fall (2002) quarter and 26,235 angler-hours fished the spring (2003) quarter. Directed effort for channel catfish in the fall was 9.1% and 10.8% in the spring. Angler catch rate in the fall was 0.6 catfish/angling-hour and 0.2 catfish/angling-hour in the spring.

- **White bass:** The gill net catch rate of white bass was 5.6/net night, higher than 0.0/net night 2001 and higher than the historic average of 2.0/net night. White bass were not found in this reservoir until sometime between 1992 and 1995 when they were introduced by an angler. Although present in low numbers and discounting their absence in the 2001 survey, there have been white bass ≥ 10 inches in this reservoir since 1995. The average relative weight was 85.

Creel survey results showed 1.4% directed angler effort for white bass in the fall of 2002 and none in the spring of 2003. The angler catch rate in the fall of 2002 was 0.6 white bass/angler-hour. Directed angling effort and non-directed angling effort accounted for white bass harvest in both quarters. Apparently white bass have established in the reservoir and they were providing angling recreation.

- **Largemouth bass:** The total electrofishing catch rate of largemouth bass (149.0/hour) in 2004 showed much improvement over the 2000 and 2002 surveys (36.0/hour and 54.0/hour) and exceeded the historic average of 111.0/hour. Historic averages were based on six surveys from 1992 through 2004. However, there remains a paucity of big largemouth bass (≥ 18 inches). For example, the highest CPUE on record (184.0/hour) occurred in 1995 and was accompanied by a stock CPUE of 142.7/hour indicating 78% of the sample population was ≥ 8 inches. The 1995 sampling indicated 17% of the sample population was ≥ 14 inches and included largemouth bass in inch groups 14 through 24. In 2004, electrofishing indicated a stock CPUE of 46.0/hour and only 5% of the sample population was ≥ 14 inches. Between 1995 and 2004, the reservoir was sampled three times; in 1998, 2000, and 2002. The largemouth bass population showed a continued decline in numbers and quality through 2002, but largemouth bass ≥ 20 inches were collected. An increase in abundance was noted in 2004, but mostly in fish ≤ 14 inches. Largemouth bass appeared healthy with an average relative weight of 89. There was concern the current population was dominated by sub-legal largemouth bass with very little recruitment into larger inch classes, a condition that started developing in 1998. In 2000 the entire largemouth bass population appeared suppressed and remained suppressed through 2002.

According to creel survey results largemouth bass was the most sought-after species by anglers during the fall of 2002 and spring of 2003. There was 55.0% directed angling effort for largemouth bass in the fall and 40.0% directed effort in the spring with similar catch rates of 0.6 and 0.5 largemouth bass/angling-hour. In the spring of 2003, 36% of the parties interviewed were fishing in a tournament. The angler harvest rate was 0.03 in the fall and 0.12 in the spring and despite the apparent scarcity of largemouth bass ≥ 14 inches in samples since 1998, anglers harvested an estimated 1,011 largemouth bass between 14 and 24 inches in the spring of 2003. This amounted to 70% of the total number of legal-size largemouth bass caught in the spring of 2003. A total of 4,562 largemouth bass were caught during this same time period. Of this total, 1,454 were ≥ 14 inches. During the 9-day spring creel survey, creel clerks observed 76 of the 80 largemouth bass

harvested by directed anglers were caught by live-release tournament anglers. This high tournament-caught bass:harvest ratio (19:1) suggests overharvest may be a major cause of the decline in largemouth bass ≥ 14 inches in this reservoir. Allen et al. (2004) developed an age-structure simulation model which predicted when the tournament-catch:harvest ratio exceeds 3.0, tournament-associated mortality rates of 20-30% could cause 5-12% declines in the abundance of largemouth bass greater than 12 inches.

Based on electrophoretic analysis of liver tissue from 30 age-0 largemouth bass collected in the fall of 2004, the sample population is now represented genetically by 56.7% Florida largemouth bass alleles and 10.0% pure Florida largemouth bass. The reservoir record largemouth bass was 14.44 pounds and 26.5 inches.

- **Crappies:** The trap net catch rate of white crappie was 14.4/net night, double the 7.0/net night in 2000, and above the historic average of 10.2/net night for this reservoir. The average relative weight was 94. An estimated 44% of the white crappie sample population was ≥ 10 inches. The reservoir record white crappie was 2.06 pounds and 14.25 inches.

Black crappie were also found in the reservoir, but trap net catch rates have been low. They were first collected in 1995 (0.5/net night). The greatest abundance was recorded in 2000 (2.8/net night).

Creel survey results indicated crappies were the second-most sought after species. Directed angler effort during the fall of 2002 was 13.5% with a catch rate of 6.5 crappie/angler-hour. Directed angler effort during the spring of 2003 was 28.5% with a catch rate of 1.6 crappie/angler-hour. Harvest rate was similar; 0.52 crappie/angling-hour in the fall and 0.41 crappie/angling-hour in the spring.

- **Management strategies**

Based on current information, the largemouth bass fishery should be protected with a more restrictive regulation, but we have insufficient information to justify a new regulation. We have demonstrated poor recruitment to ≥ 14 inches, but age and growth is based on historic data. It would also be beneficial to have results from a current creel survey with ad hoc question(s) regarding various regulation options. Basic attitudes and opinions could be obtained with a scooping meeting held in Bowie. Once we have acceptable age and growth data, angler catch and harvest rates, and angler input, an appropriate harvest regulation can be identified. Other species continue to produce good angling opportunities and should be managed with existing regulations. Florida largemouth bass have established above the standard criteria and have persisted with minimal supplemental stocking over the past 19 years. Therefore, no stocking of Florida largemouth bass is recommended. Electrofishing in 2002 confirmed results of our 2000 electrofishing survey which

indicated declining largemouth bass > 14 inches. Hydrilla, first discovered in the reservoir in 1995 was confined to the area around the Big Sandy Camp boat ramp off SH1125, but spread of this aquatic vegetation should be monitored.

Finally, we recommend updating the Amon G. Carter Reservoir (Lake Amon G. Carter) web page on the TPWD web site with appropriate information as needed.

Introduction

This document is a summary of creel survey data collected from Amon G. Carter Reservoir in 2002 and 2003 and fisheries data collected from Amon G. Carter Reservoir in 2004 and 2005. The purpose of the document is to provide fisheries information and make management recommendations to protect and enhance the sport fishery. While information on other species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Management strategies are included to address existing problems or opportunities. Historical data are presented with the 2004-2005 data for comparison.

Harvest regulations for Amon G. Carter Reservoir, Texas, 2004-2005.

Species	Bag Limit	Minimum Length (inches)
Bass, largemouth	5	14
Bass, white	25	10
Catfish, channel	25	12
Catfish, flathead	5	18
Crappie, white and black	25 in aggregate	10

Methods

- Fish stocks were assessed by electrofishing (1.0 hours at 12 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 of actual electrofishing, and for gill and trap nets as the number of fish caught in one net set overnight. Largemouth bass electrophoresis samples were collected according to Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2004).

- Sampling statistics (CPUE for various length categories) and structural indices Proportional Stock Density (PSD), Relative Stock Density (RSD), and relative weight (W_r) were calculated for target fishes according to Anderson and Neumann (1996). Standard weight (W_r) equations used in assessing condition are from Anderson and Neuman (1996). Index of vulnerability (IOV) was calculated for gizzard shad according to DiCenzo et al. (1996).
- An assessment of the littoral zone and physical habitat and water quality assessment was conducted in 2004 in accordance with Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2003).
- A creel survey was conducted over a three-month period in the fall of 2002 and again over a three-month period in the spring of 2003. Interviews were conducted on 5 weekend days and 4 weekdays each three-month period, to assess angler use and fish catch/harvest rate in accordance with the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2004).

Acknowledgments

Fish and Wildlife Technicians Todd R. Robinson and Bill Thornhill contributed in conducting field surveys, compiling and analyzing data, and report preparation.

Literature Cited

Allen, M.S., M.W. Rogers, R.A. Myers, and W.M. Bivin. 2004. Simulated impacts of tournament-associated mortality on largemouth bass fisheries. *North American Journal of Fisheries Management* 24: 1252-1261.

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*. American Fisheries Society, Bethesda, Maryland.

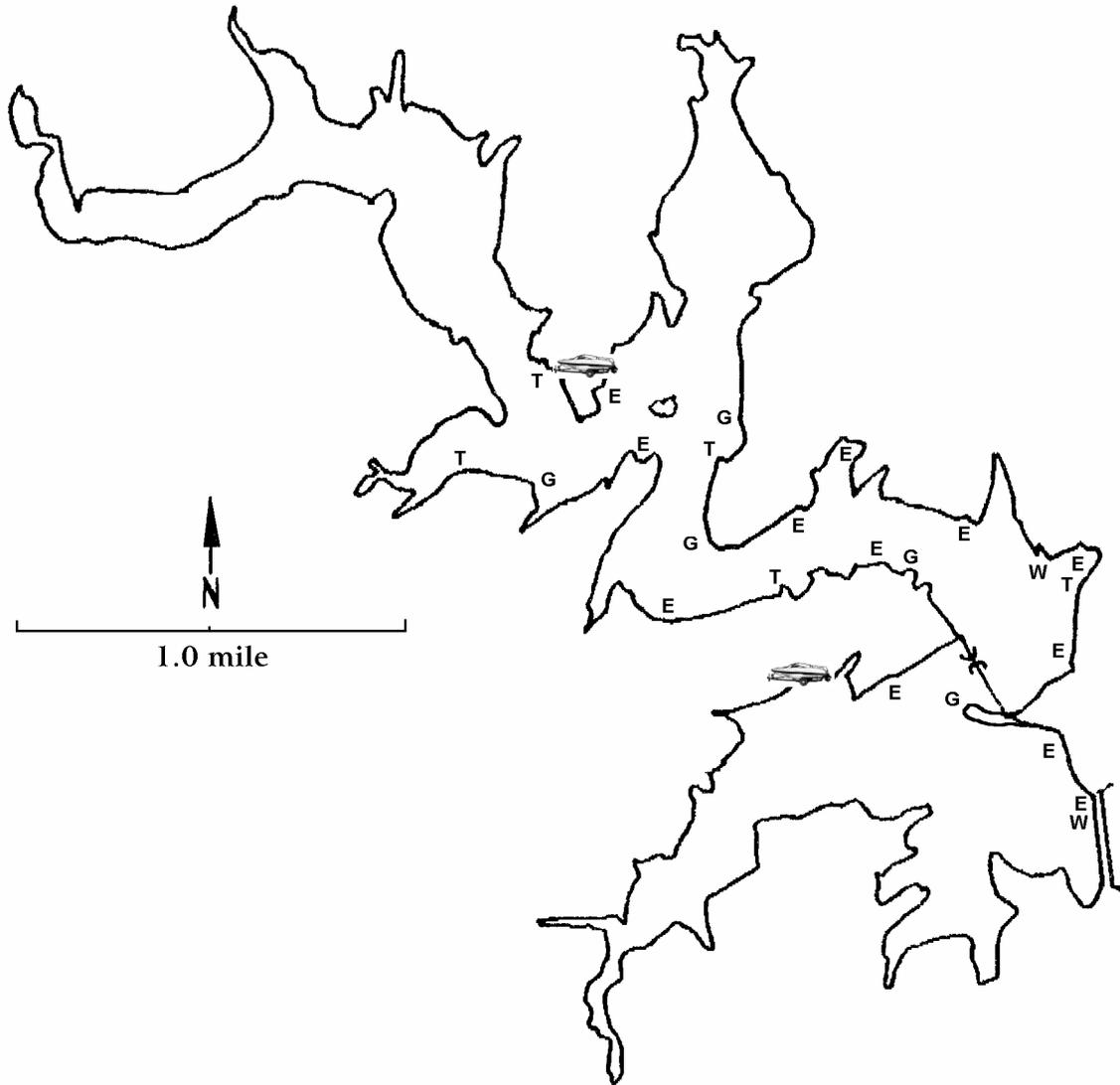
DiCenzo, V.J., M.J. Maceina, and M.R. Stimpert. 1996. Relations between reservoir trophic state and gizzard shad population characteristics in Alabama reservoirs. *North American Journal of Fisheries Management* 16:888-895.

Survey of littoral zone and physical habitat types, Amon G. Carter Reservoir, Texas, July 2004. A linear shoreline distance (miles) was recorded for each habitat type found. Acreage is listed for aquatic vegetation and habitat types adjacent to shoreline.

Shoreline habitat type	Shoreline distance		Acreage
	Miles	Percent of total	
Rock bluff	0.5	2.0	
Rock rip-rap	2.3	10.3	
Rocky or gravel shoreline	2.4	10.8	
Boulders	7.2	32.0	
Bulkhead	0.2	0.9	
Featureless	<u>9.9</u>	44.0	
Total shoreline length:	22.5		
<u>Vegetation</u>			
Native floating vegetation	0.5		1.9
Native submerged vegetation	<0.1		<0.1
Native emerged vegetation	7.5		40.9
Hydrilla	<0.1		<0.1
<u>Habitat adjacent to shoreline</u>			
Dead trees, stumps	6.7		556.8
Boat docks	0.4		2.4

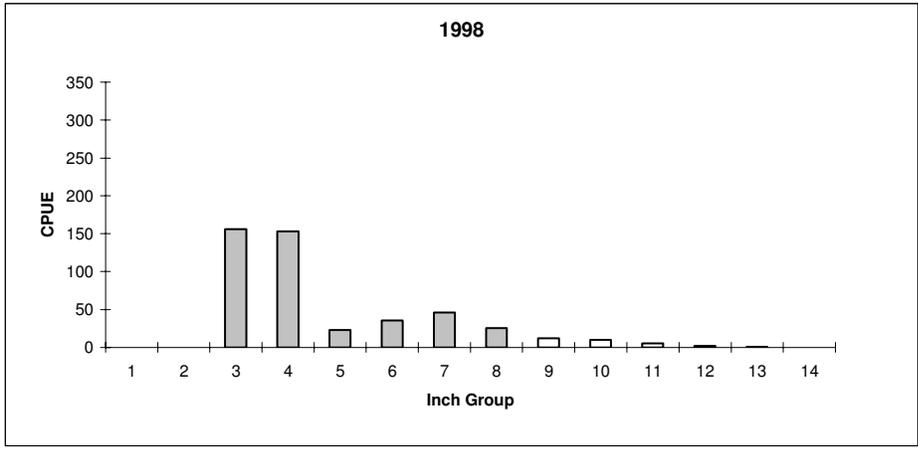
Stocking history of Amon G. Carter Reservoir, Texas. Size categories are: FGL = 1-3 inches; FGL+ = larger than 3 inches; and ADL = adults.

Species	Year	Number	Size
Threadfin shad	1978	800	ADL
	1980	1,800	ADL
	1984	1,500	ADL
	1985	4,100	ADL
	2003	<u>925</u>	ADL
	Species total	9,125	
Channel catfish	1966	8,000	FGL+
	1969	40,000	FGL+
	1970	25,000	FGL+
	1971	23,000	FGL+
	1972	<u>5,000</u>	FGL+
	Species total	101,000	
Largemouth bass	1971	75,000	FGL
	1985	<u>60</u>	ADL
	Species total	75,060	
Florida largemouth bass	1982	77,533	FGL
	1983	36,980	FGL
	1984	101,932	FGL
	1985	56,000	FGL
	2000	106,500	FGL
	2001	<u>106,816</u>	FGL
	Species total	485,761	

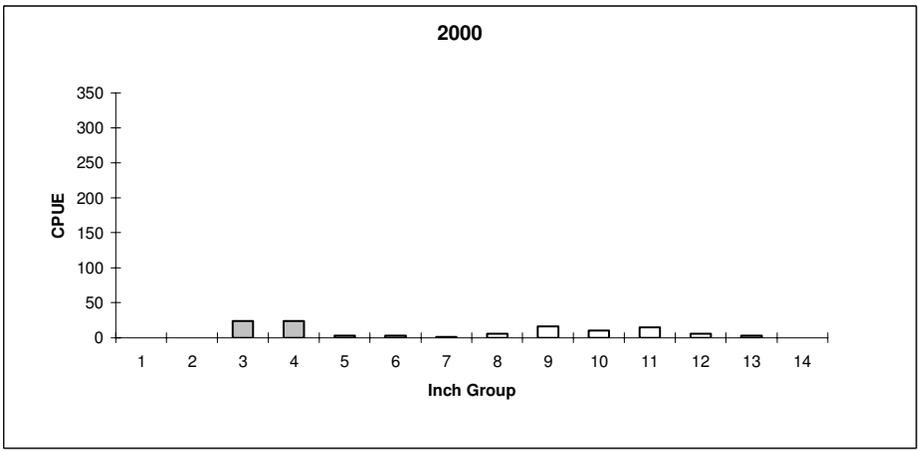


Location of sampling sites, Amon G. Carter Reservoir, Texas, 2004-2005. Gill net, electrofishing, trap net, and water sample stations are indicated by G, E, T, and W, respectively. Boat ramps are indicated by  .

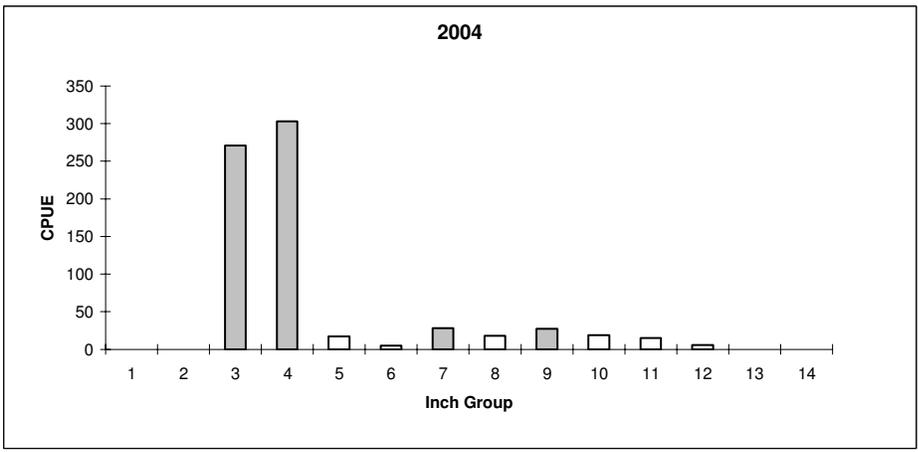
Gizzard Shad



Effort = 1.5
 Total CPUE = 468.7
 Stock CPUE = 101.3
 PSD = 8
 IOV = 88



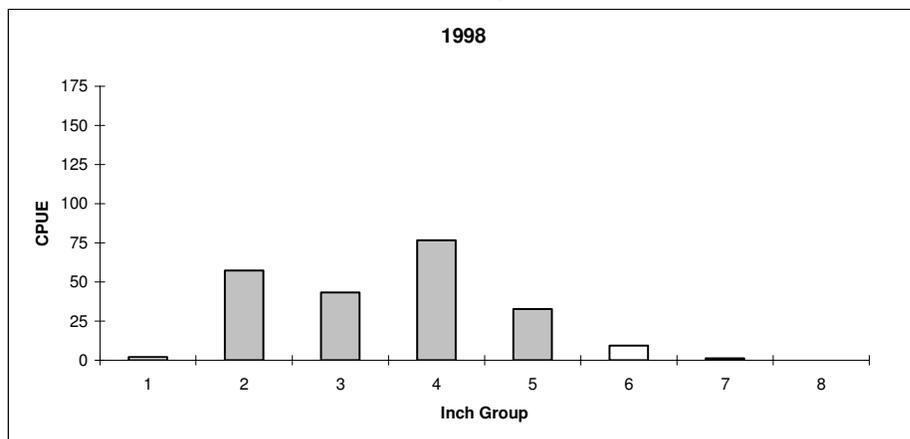
Effort = 1.0
 Total CPUE = 111.0
 Stock CPUE = 57.0
 PSD = 42
 IOV = 50



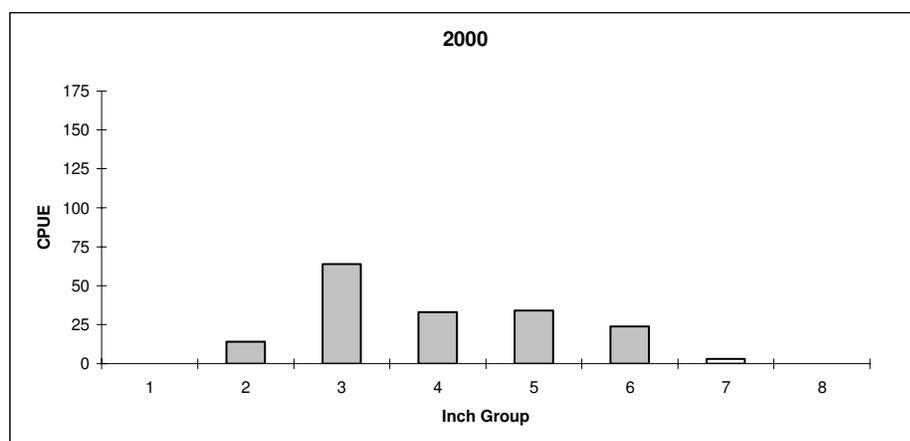
Effort = 1.0
 Total CPUE = 709.0
 Stock CPUE = 113.0
 PSD = 19
 IOV = 88

Comparison of the number of gizzard shad caught per hour (CPUE, bars) and population indices for electrofishing surveys, Amon G. Carter Reservoir, Texas, October 1998 and November 2000 and 2004.

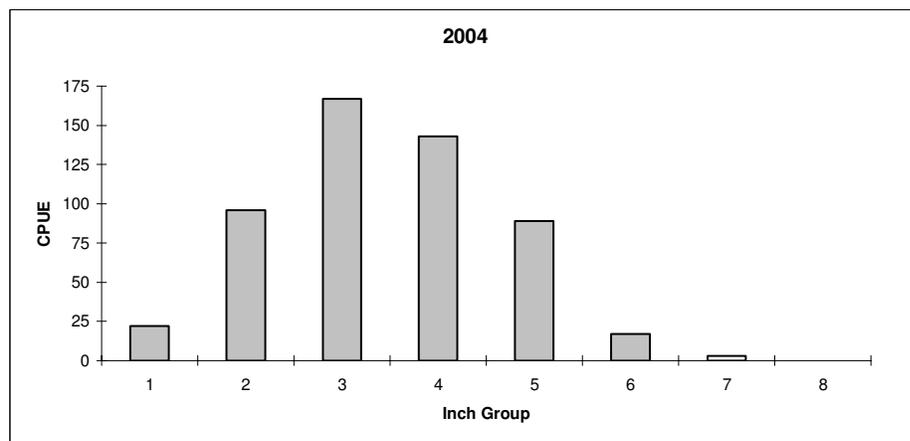
Bluegill



Effort = 1.5
 Total CPUE = 222.7
 Stock CPUE = 163.3
 PSD = 7
 RSD-P = 0

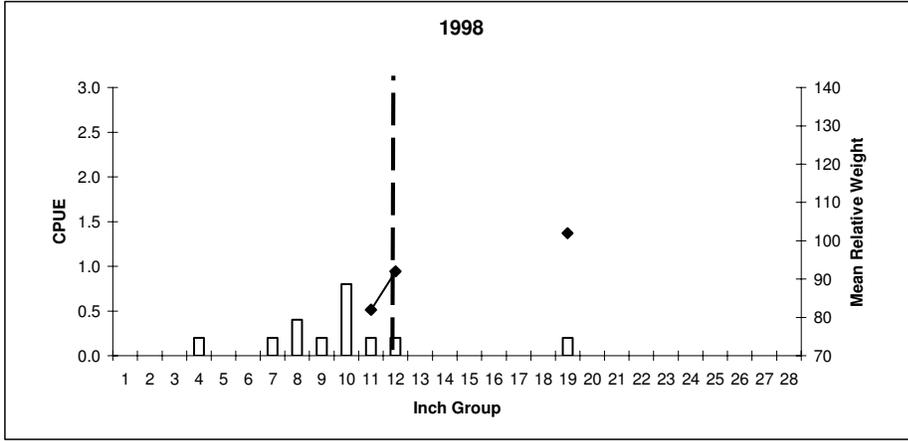


Effort = 1.0
 Total CPUE = 172.0
 Stock CPUE = 158.0
 PSD = 2
 RSD-P = 0

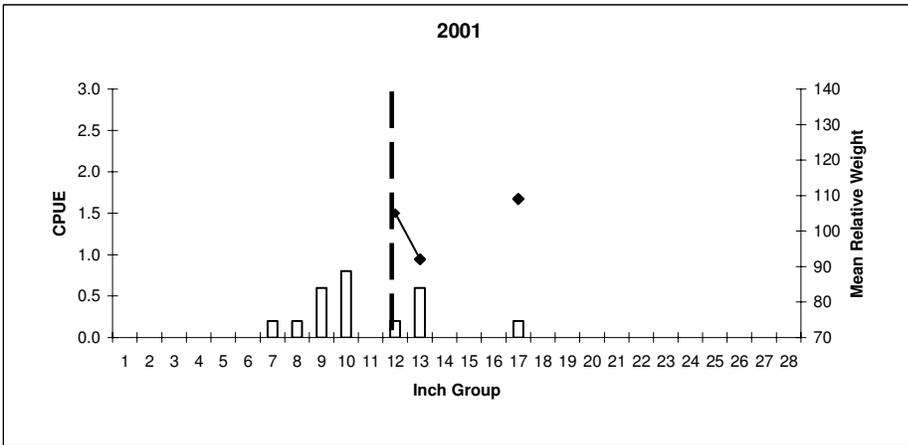


Effort = 1.0
 Total CPUE = 537.0
 Stock CPUE = 419.0
 PSD = 5
 RSD-P = 0

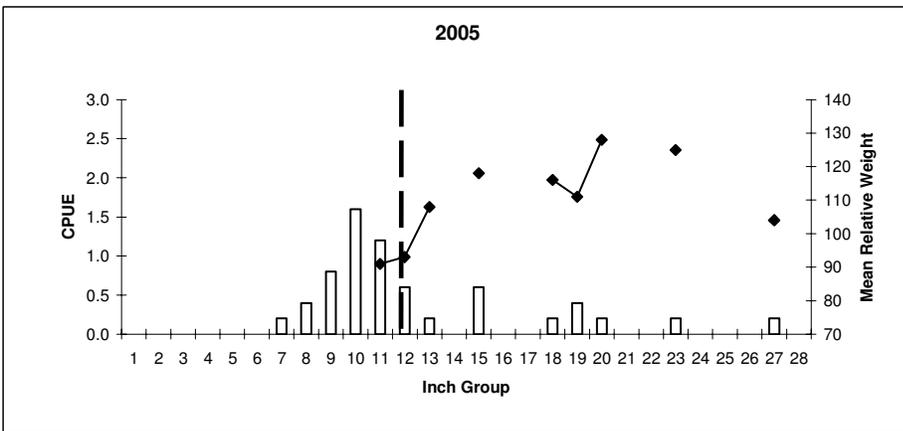
Comparison of the number of bluegill caught per hour (CPUE, bars) and population indices for electrofishing surveys, Amon G. Carter Reservoir, Texas, October 1998, and November 2000 and 2004.



Effort = 5
 Total CPUE = 2.2
 Stock CPUE = 0.6
 PSD = 33
 RSD-P = 0



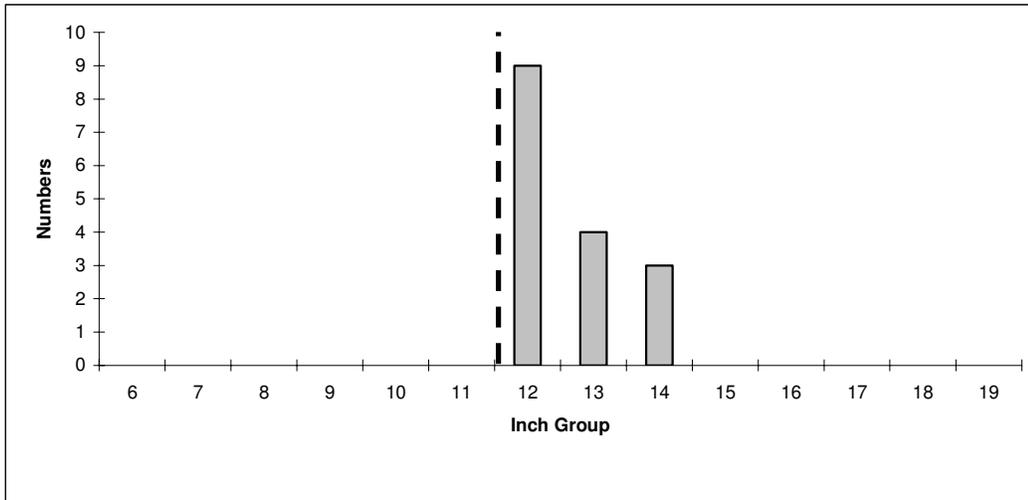
Effort = 5
 Total CPUE = 2.8
 Stock CPUE = 1.0
 PSD = 20
 RSD-P = 0



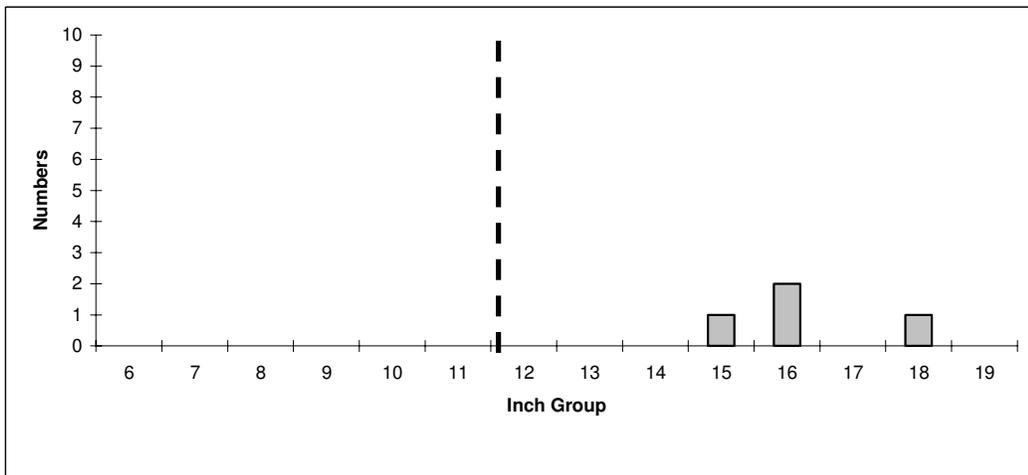
Effort = 5
 Total CPUE = 6.8
 Stock CPUE = 3.8
 PSD = 32
 RSD-P = 5

Comparison of the number of channel catfish caught per net night (CPUE, bars), mean relative weight (lines), and population indices for gill net collections, Amon G. Carter Reservoir, Texas, April 1998, 2001, and 2005. Dashed lines indicate length limit at time of sample collection.

Channel Catfish

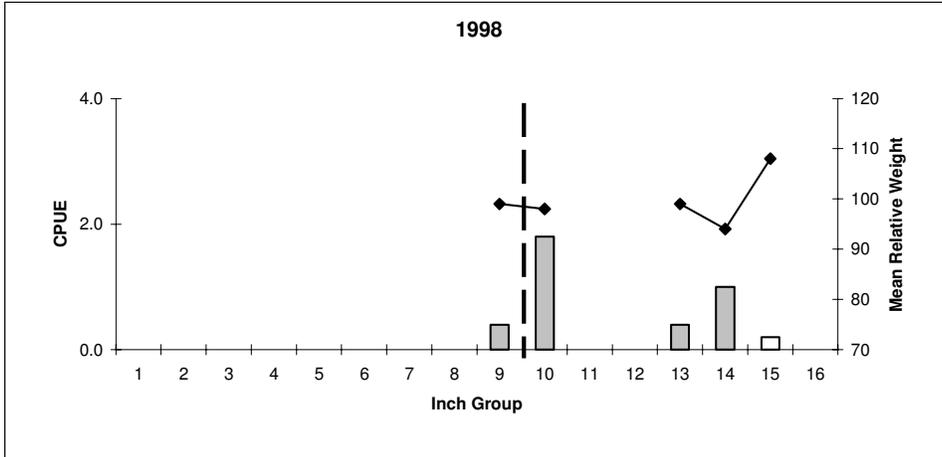


Length frequency of channel catfish harvested during creel surveys at Amon G. Carter Reservoir, Texas, September through November 2002, all anglers combined. Dashed line indicates length limit at time of creel survey.

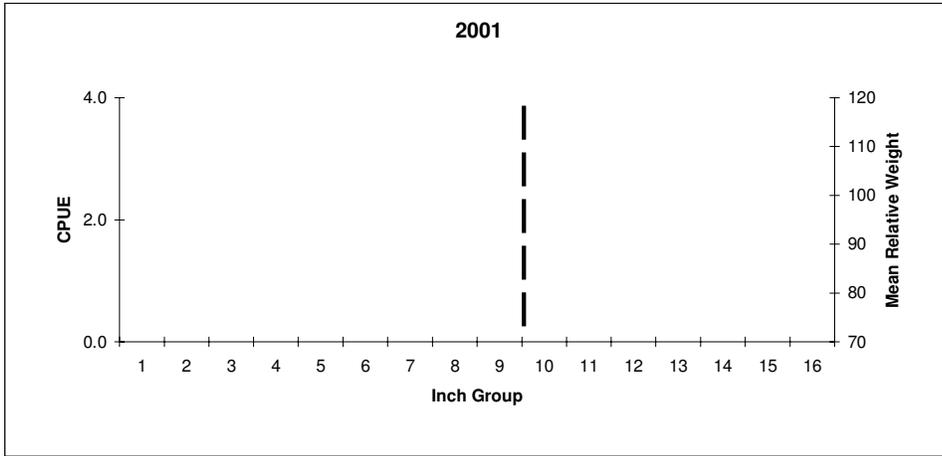


Length frequency of channel catfish harvested during creel surveys at Amon G. Carter Reservoir, Texas, March through May 2003, all anglers combined. Dashed line indicates length limit at time of creel survey.

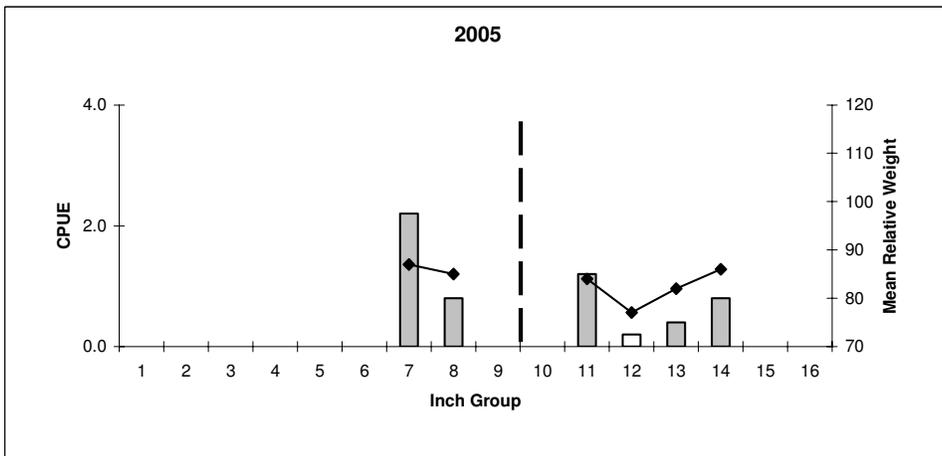
White Bass



Effort = 5
 Total CPUE = 3.8
 Stock CPUE = 3.8
 PSD = 100
 RSD-P = 42



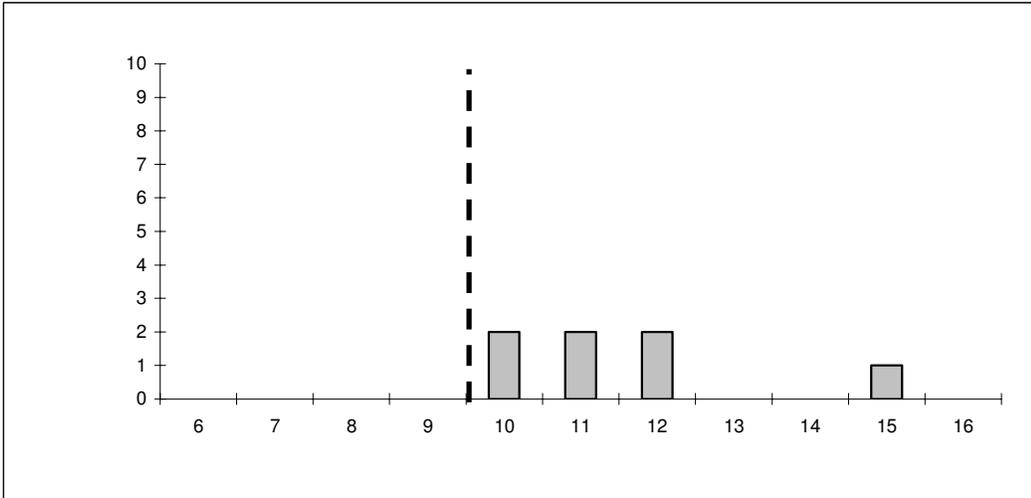
Effort = 5
 Total CPUE = 0.0
 Stock CPUE = 0.0
 PSD = 0
 RSD-P = 0



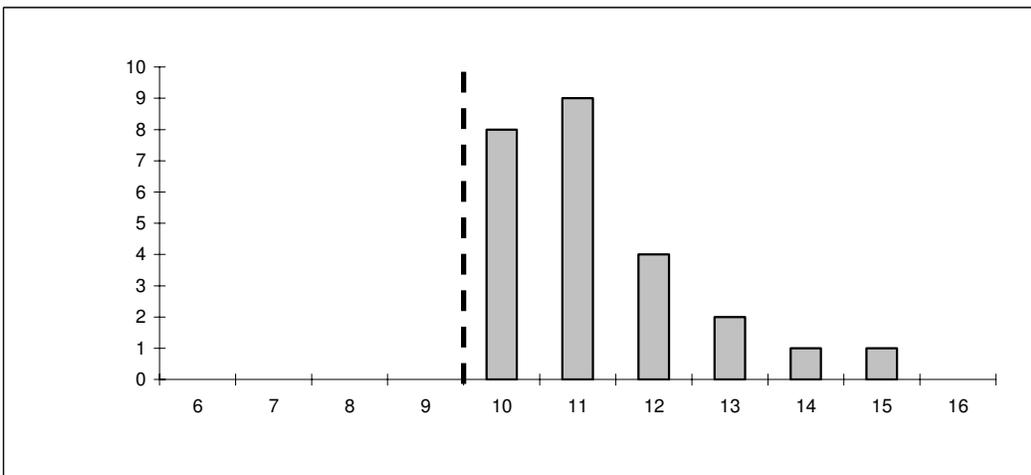
Effort = 5
 Total CPUE = 5.6
 Stock CPUE = 5.6
 PSD = 46
 RSD-P = 25

Comparison of the number of white bass caught per net night (CPUE, bars), mean relative weight (lines), and population indices for gill net collections, Amon G. Carter Reservoir, Texas, April 1998, 2001, and 2005. Dashed lines indicate length limit at time of sample collection.

White Bass

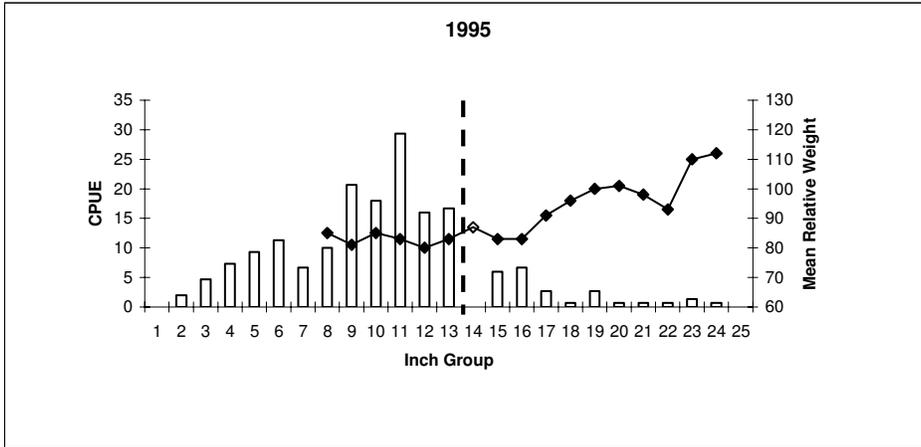


Length frequency of white bass harvested during creel surveys at Amon G. Carter Reservoir, Texas, September through November 2002, all anglers combined. Dashed line indicates length limit at time of creel survey.

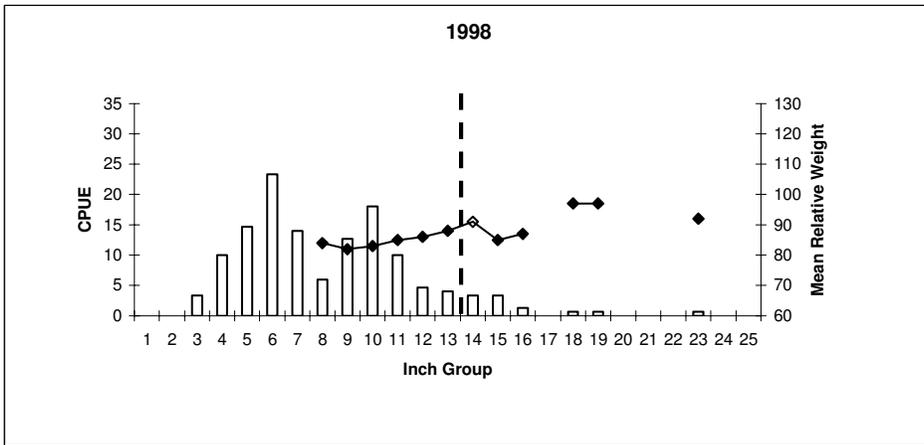


Length frequency of white bass harvested during creel surveys at Amon G. Carter Reservoir, Texas, March through May 2003, all anglers combined. Dashed line indicates length limit at time of creel survey.

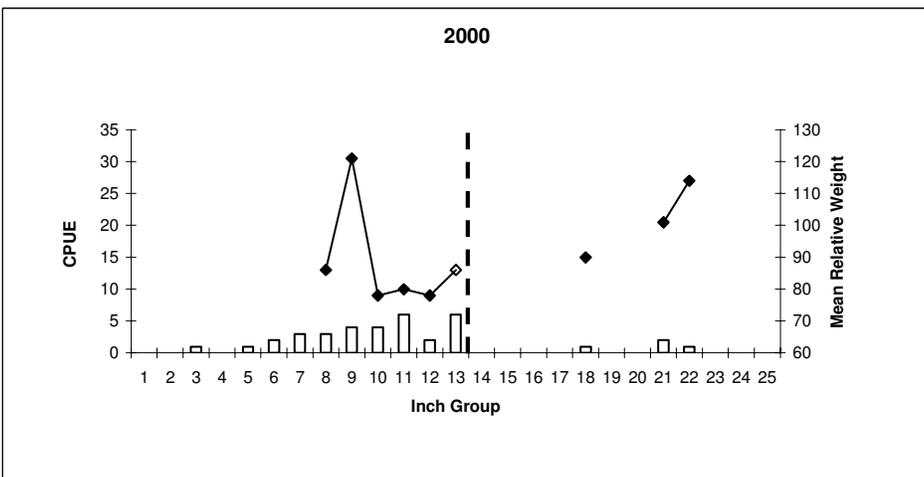
Largemouth Bass



Effort = 1.5
 Total CPUE = 184.0
 Stock CPUE = 142.7
 PSD = 45
 RSD-P = 16
 % FLMB ALLELES = unknown
 % FLMB = unknown



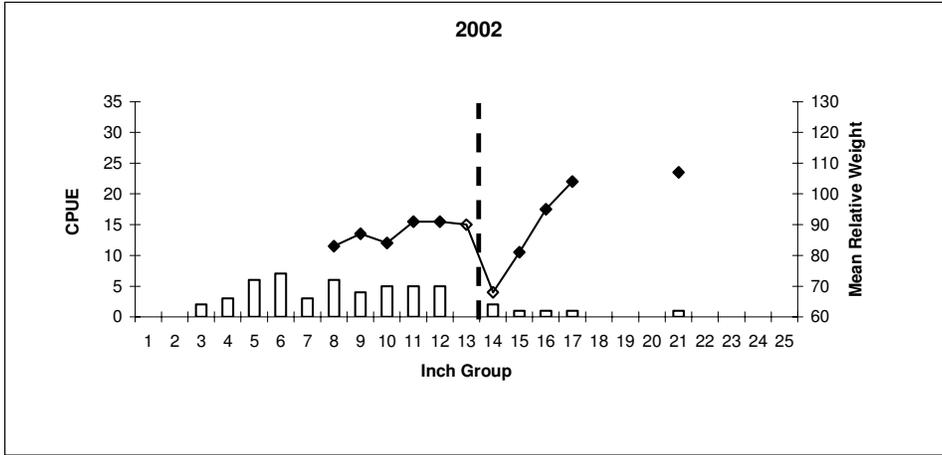
Effort = 1.5
 Total CPUE = 130.7
 Stock CPUE = 65.3
 PSD = 29
 RSD-P = 10
 % FLMB ALLELES = 43.8
 % FLMB = 2.5



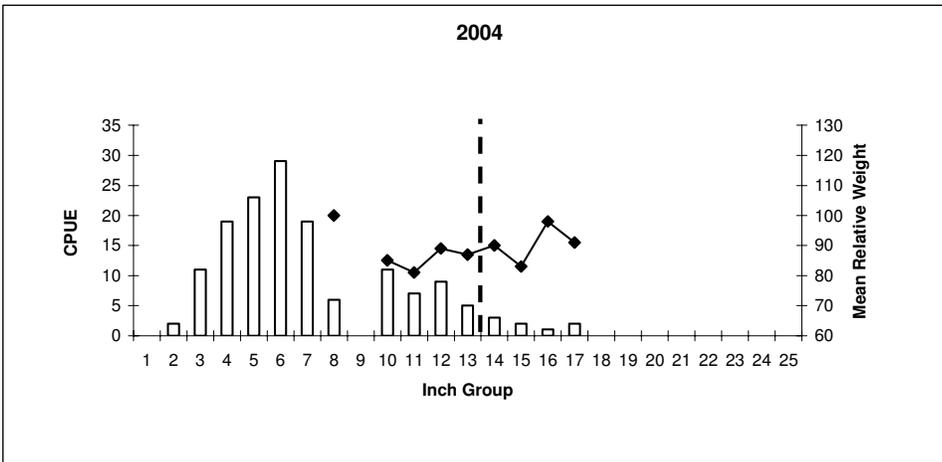
Effort = 1.0
 Total CPUE = 36.0
 Stock CPUE = 30.0
 PSD = 41
 RSD-P = 14
 % FLMB ALLELES = 73.5
 % FLMB = 42.9

Comparison of the number of largemouth bass caught per hour (CPUE, bars), mean relative weight (lines), and population indices for electrofishing surveys, Amon G. Carter Reservoir, Texas, October 1995 and 1998, and November 2000. "%FLMB ALLELES" equals percent of Florida bass alleles in a sample of the largemouth bass population. "%FLMB equals percent of pure Florida bass in a sample of the largemouth bass population. Dashed lines indicate length limit at time of sample collection.

Largemouth Bass



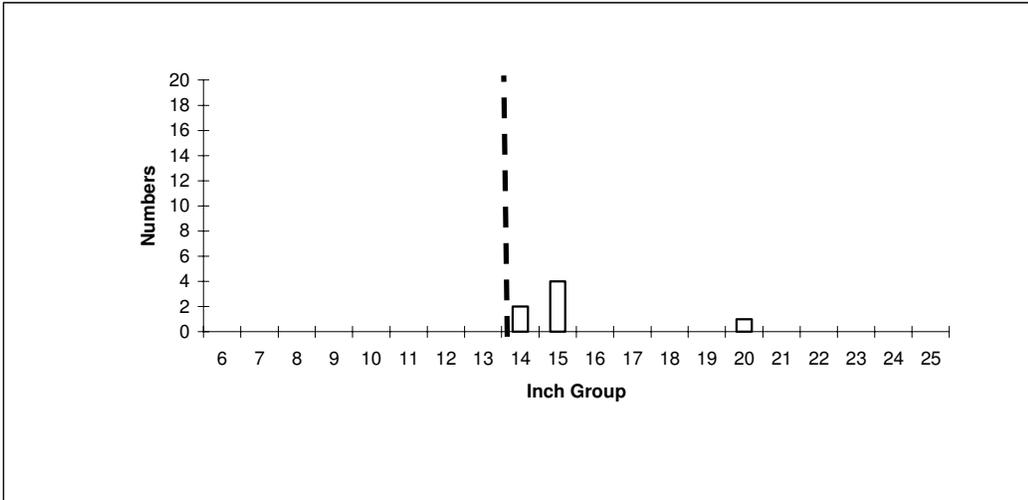
Effort =	1.0
Total CPUE =	54.0
Stock CPUE =	33.0
PSD =	39
RSD-P =	12
% FLMB ALLELES =	38.3
% FLMB =	6.6



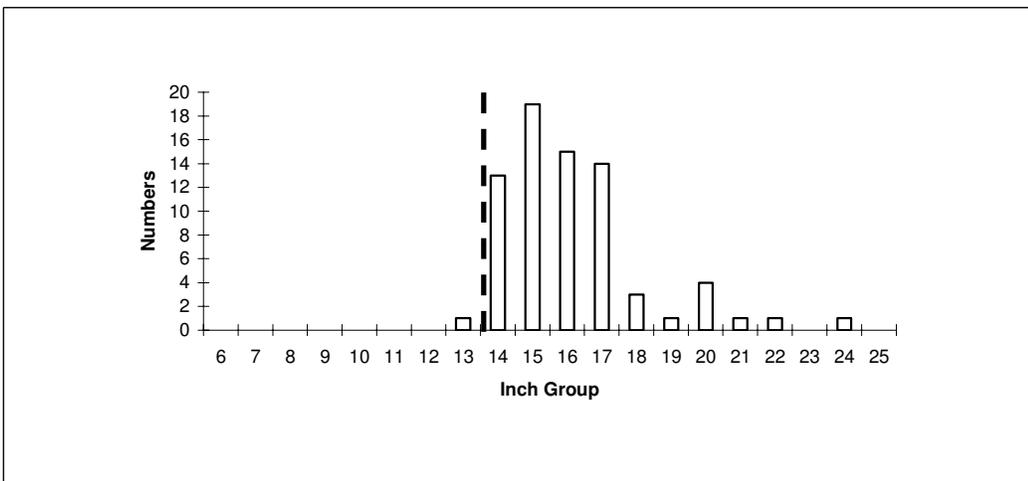
Effort =	1.0
Total CPUE =	149.0
Stock CPUE =	46.0
PSD =	48
RSD-P =	11
% FLMB ALLELES =	56.7
% FLMB =	10.0

Comparison of the number of largemouth bass caught per hour (CPUE, bars), mean relative weight (lines), and population indices for electrofishing surveys, Amon G. Carter Reservoir, Texas, November 2002 and 2004. "%FLMB ALLELES" equals percent of Florida bass alleles in a sample of the largemouth bass population. "%FLMB equals percent of pure Florida bass in a sample of the largemouth bass population. Dashed lines indicate length limit at time of sample collection.

Largemouth Bass

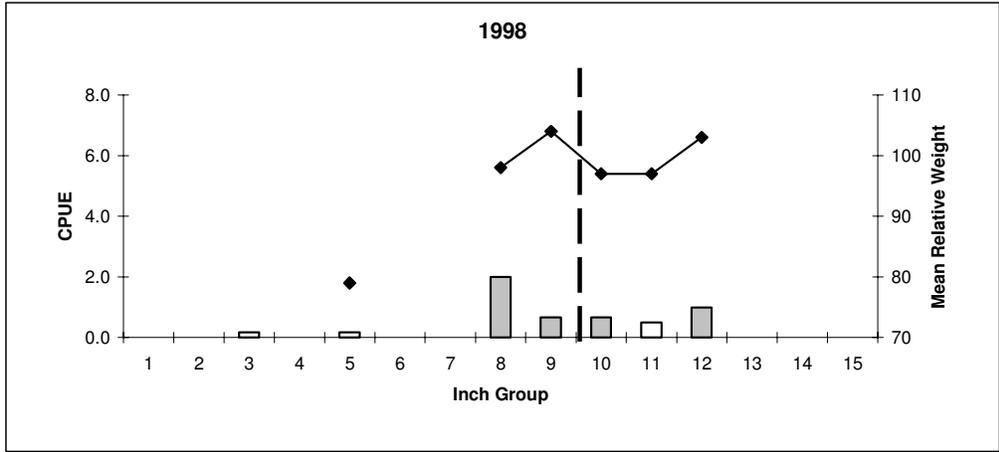


Length frequency of largemouth bass harvested during creel surveys at Amon G. Carter Reservoir, Texas, September through November 2002, all anglers combined. Dashed line indicates length limit at time of creel survey.

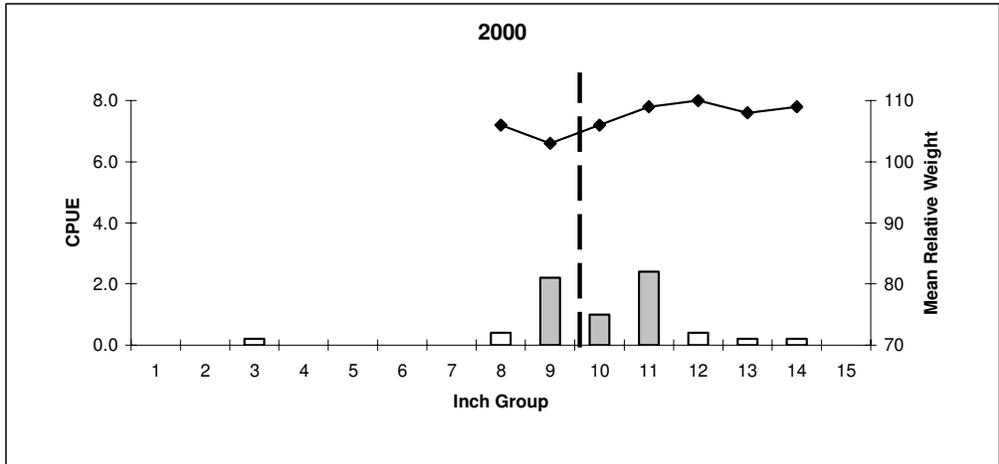


Length frequency of largemouth bass harvested during creel surveys at Amon G. Carter Reservoir, Texas, March through May 2003, all anglers combined. Dashed line indicates length limit at time of creel survey.

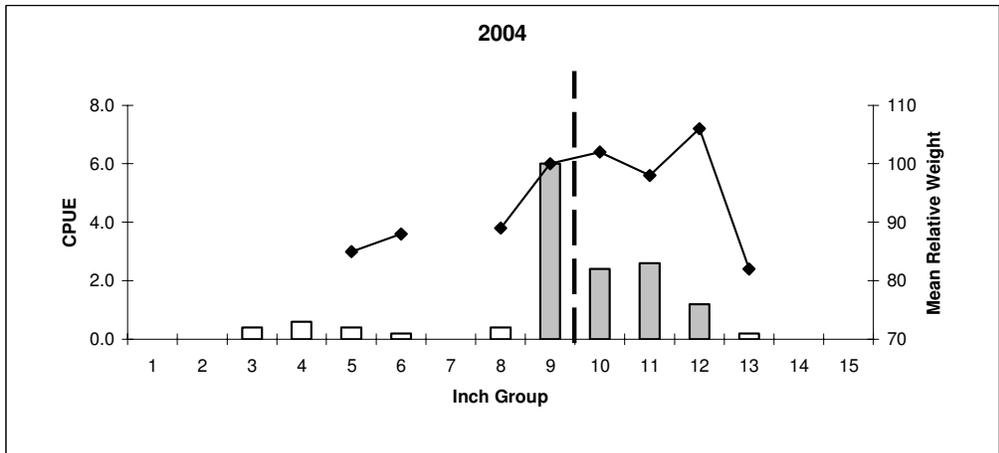
White Crappie



Effort = 6
 Total CPUE = 5.2
 Stock CPUE = 5.0
 PSD = 97
 RSD-P = 43



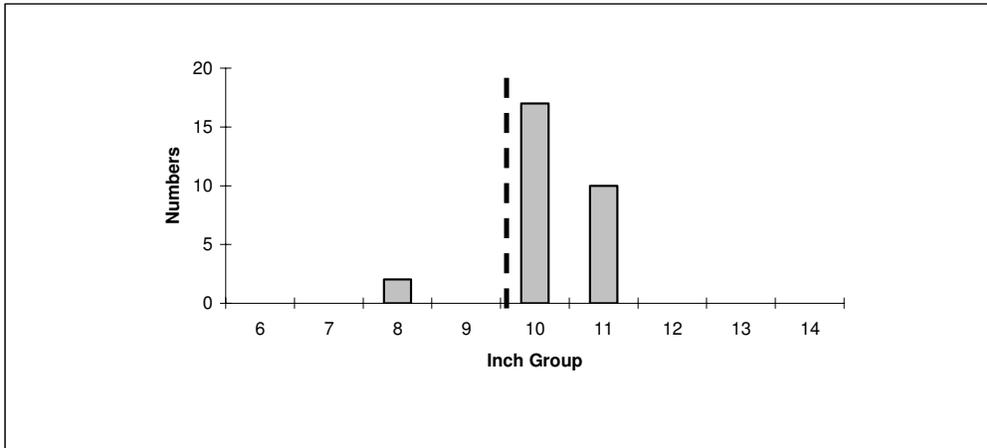
Effort = 5
 Total CPUE = 7.0
 Stock CPUE = 6.8
 PSD = 100
 RSD-P = 62



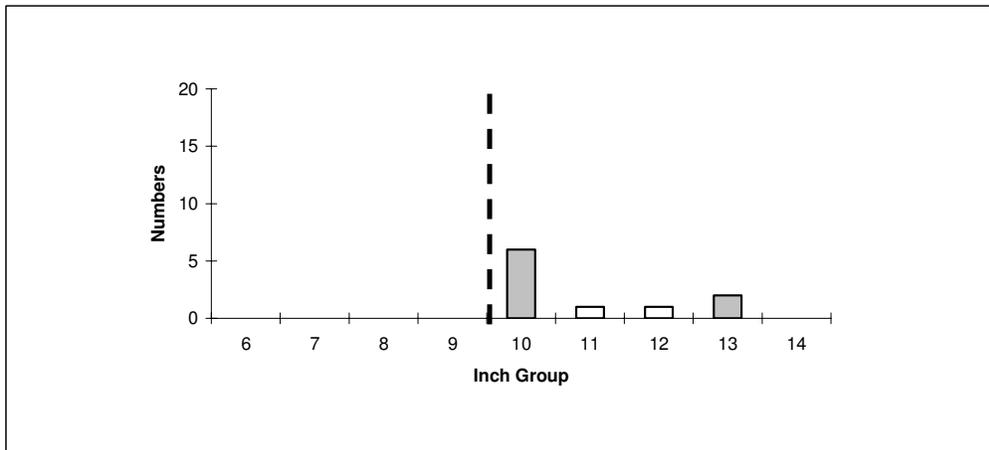
Effort = 5
 Total CPUE = 14.4
 Stock CPUE = 13.4
 PSD = 96
 RSD-P = 48

Comparison of the number of white crappie caught per net night (CPUE, bars), mean relative weight (lines), and population indices for trap net surveys, Amon G. Carter Reservoir, Texas, December 1998, 2000, and 2004. Dashed lines indicate length limit at time of sample collection.

White Crappie

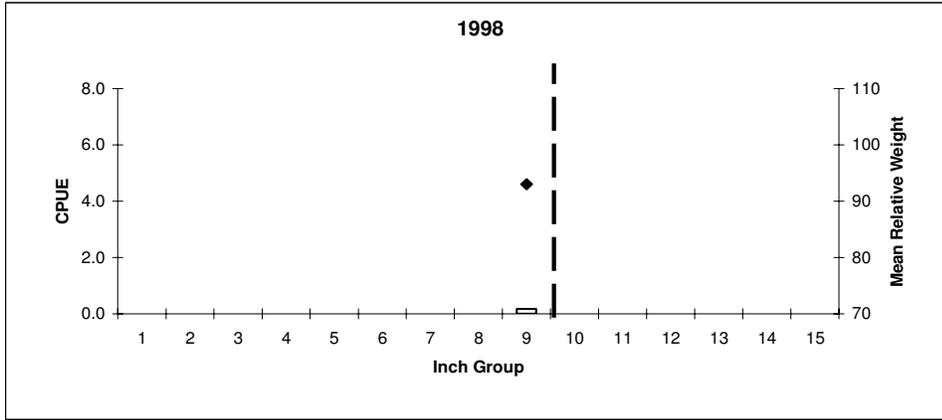


Length frequency of white crappie harvested during creel surveys at Amon G. Carter Reservoir, Texas, September through November 2002, all anglers combined. Dashed line indicates length limit at time of creel survey.

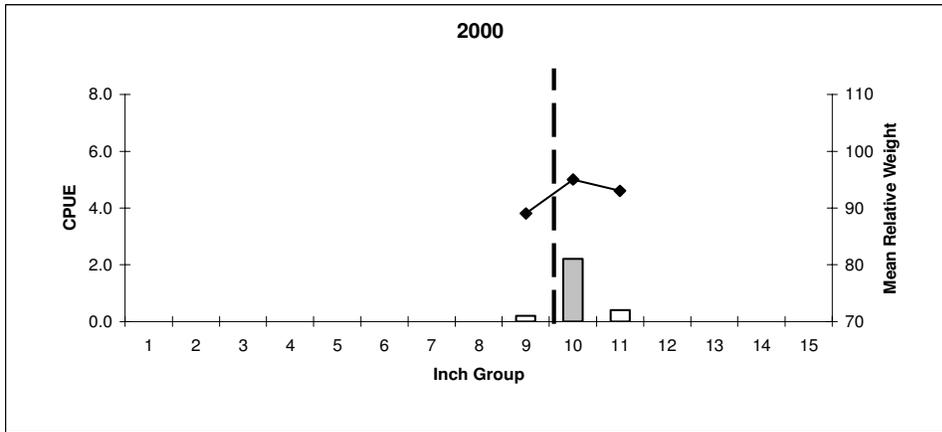


Length frequency of white crappie harvested during creel surveys at Amon G. Carter Reservoir, Texas, March through May 2003, all anglers combined. Dashed line indicates length limit at time of creel survey.

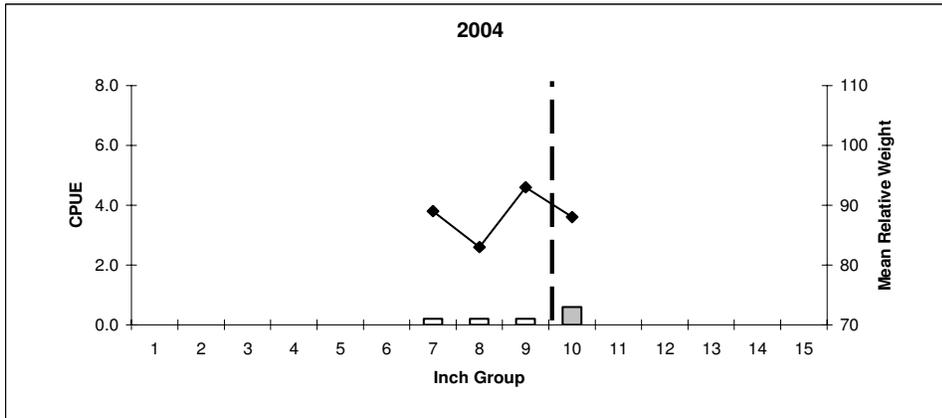
Black Crappie



Effort = 6
 Total CPUE = 0.2
 Stock CPUE = 0.2
 PSD = 100
 RSD-P = 0



Effort = 5
 Total CPUE = 2.8
 Stock CPUE = 2.8
 PSD = 100
 RSD-P = 93



Effort = 5
 Total CPUE = 1.2
 Stock CPUE = 1.2
 PSD = 83
 RSD-P = 50

Comparison of the number of black crappie caught per net night (CPUE, bars), mean relative weight (lines), and population indices for trap net surveys, Amon G. Carter Reservoir, Texas, December 1998, 2000, and 2004. Dashed lines indicate length limit at time of sample collection.

**FISHERIES MANAGEMENT PLAN
AMON G. CARTER RESERVOIR, TEXAS**

Prepared - July 2005.

Issue 1

There has been a decline of largemouth bass greater than 14 inches since 1998 and may possibly be due to overharvest.

Management
Strategies

1. Plan, organize, and conduct an age and growth study to identify the best-fit largemouth bass regulation for this reservoir in fall 2005.
2. Conduct creel survey in spring 2006 to determine largemouth bass angling statistics and angler attitude on current and potential largemouth bass regulations.
3. Conduct a public scoping meeting by summer 2006 for public input on current and potential regulations for largemouth bass.
4. Based on findings determine appropriate largemouth bass regulation and, if needed, request a regulation change in 2006.

Issue 2

Presence of exotic vegetation in the reservoir. A small amount of hydrilla has persisted near the FM 1125 boat ramp.

Management
Strategies

1. Monitor the growth of hydrilla annually.
2. If growth of hydrilla inhibits angling access, controlling authority will be contacted with management options presented.

Issue 3

Changes in existing fishing opportunities need to be communicated to the public.

Management
Strategy

Updating the Amon G. Carter Reservoir (Lake Amon G. Carter) web page with current information will be ongoing.

Appendix A:

Number (N) and catch rate (CPUE) of all species collected from all gear types from Amon G. Carter Reservoir, Texas, 2004-2005. Gill net and trap net CPUE is the number of fish per net night, while electrofishing CPUE is the number of fish per hour. Only targeted species were recorded from electrofishing.

Species	Gill Net 2005		Trap Net 2004		Electrofishing 2004	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad	104	20.8			709	709.0
Threadfin shad					219	219.0
Common carp	8	1.6				
Channel catfish	34	6.8				
Flathead catfish	2	0.4				
White bass	28	5.6				
Green sunfish					102	102.0
Warmouth sunfish					11	11.0
Bluegill sunfish	2	0.4	215	43.0	537	537.0
Longear sunfish			34	6.8	242	242.0
Redear sunfish			3	0.6	6	6.0
Largemouth bass					149	149.0
White crappie	8	1.6	72	14.4		
Black crappie			6	1.2		
Freshwater drum	4	0.8				

Appendix B:

The percentage of directed effort (angler-hours), directed catch rate (number/angling-hour), and directed harvest rate (number/angling-hour), for each creel survey quarter for Amon G. Carter Reservoir, Texas, fall (September-November), 2002 and spring (March-May), 2003.

Analysis Variable	Channel Catfish	White Bass	Largemouth Bass	Crappies
% Fall (2002) Quarter Effort (16,129 angler-hours)	9.1	1.4	55.0	13.5
Fall (2002) Quarter Catch Rate	0.6	0.6	0.6	6.5
Fall (2002) Quarter Harvest Rate	0.0	0.5	0.0*	0.5
% Spring (2003) Quarter Effort (26,235 angler-hours)	10.8	0.0	39.9	28.5
Spring (2003) Quarter Catch Rate	0.2	0.0	0.5	1.6
Spring (2003) Quarter Harvest Rate	0.0	0.1	0.1	0.4

* Harvest rate was rounded from 0.03.

Appendix C:

Water chemistry profile for Amon G. Carter Reservoir, Texas, July 24, 2004. Sample station located at dam site.

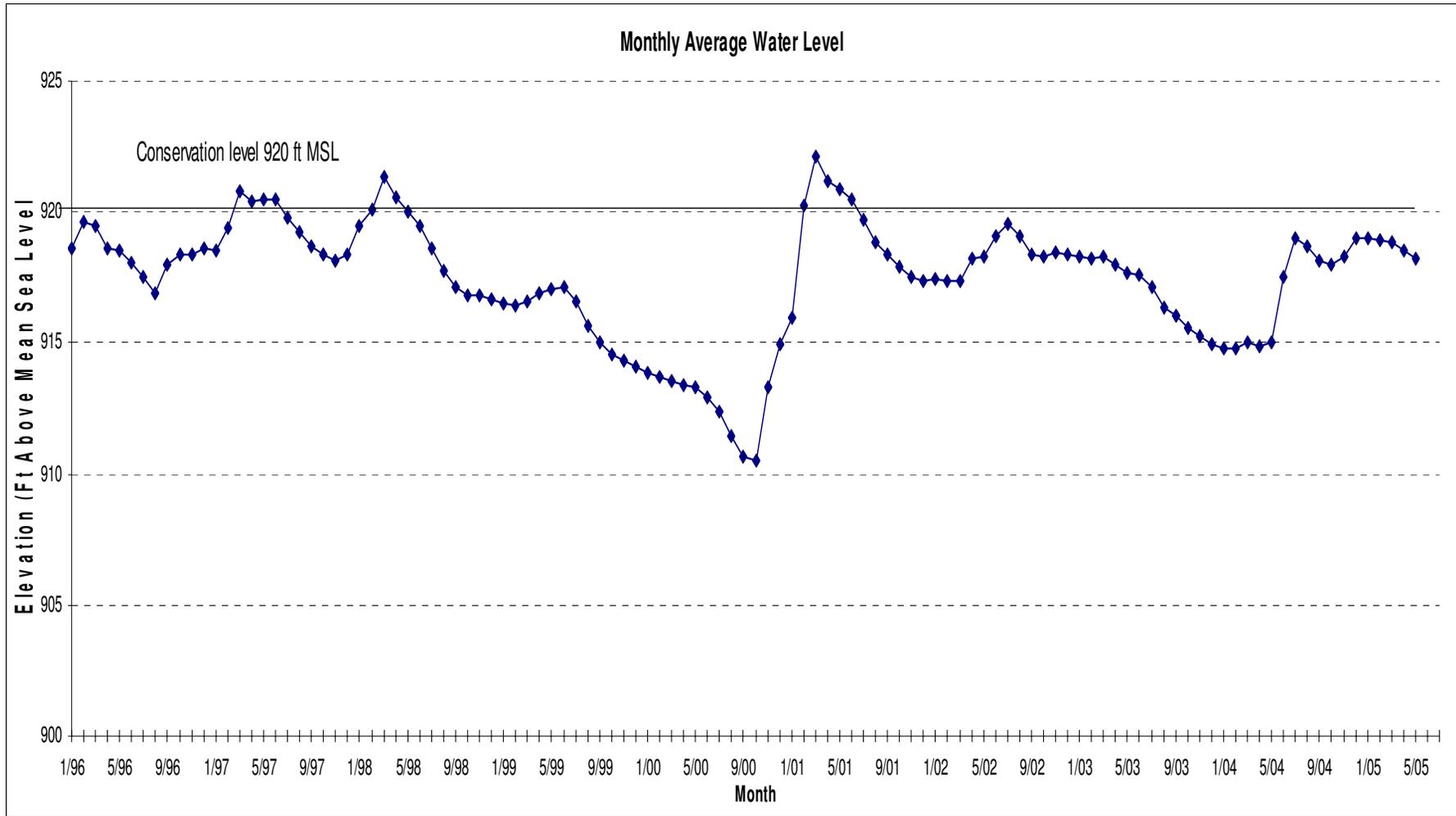
Depth (m)	Temp (C°)	D.O. (ppm)	Chlorides (ppm)	Conductivity (µmhos/cm)	Alkalinity (ppm)	Total Dissolved Solids (ppm)	pH
Surface	27.8	7.0	22	305	102	198.4	8.3
1.0	27.8	6.9					
2.0	27.8	6.9					
3.0	27.8	6.9					
4.0	27.8	6.8					
5.0	27.7	6.8	21	311	102	201.8	8.2
6.0	27.2	2.0					
7.0	26.2	0.2	20	312	104	203.1	7.4
8.0	24.1	0.0					
9.0	21.9	0.0					
10.0	18.4	0.0					
11.0	15.5	0.0	10	341	118	221.5	7.4

Appendix D:

Water chemistry profile for Amon G. Carter Reservoir, Texas, July 27, 2004. Sample station located at water pump station.

Depth (m)	Temp. (C°)	D.O. (ppm)	Chlorides (ppm)	Conductivity (µmhos/cm)	Alkalinity (ppm)	Total Dissolved Solids (ppm)	pH
Surface	27.5	6.3	17	263	89	171.1	7.8
1.0	27.5	6.2					
2.0	27.5	6.1					
3.0	27.5	6.0					
4.0	27.4	5.8					
5.0	27.4	5.4	18	262	88	170.4	7.5
6.0	27.0	0.7	16	267	95	173.7	7.3
7.0	25.6	0.1					
8.0	24.3	0.0	17	323	112	210.2	7.1

Appendix E:



Monthly average water level elevations in feet above mean sea level (MSL) recorded for Amon G. Carter Reservoir, Texas, January 1996 - May 2005.

Appendix F:

Historical total catch rates of targeted species by gear type for Amon G. Carter Reservoir, 1992, 1995, 1998, 2000, 2001, 2002, 2004, and 2005.

		Y							
		1992 _a	1995 _a	1998 _b	2000 _b	2001 _b	2002 _c	2004 _b	2005 _b
Gill Netting	Channel catfish	8.8	11.6	2.4		2.8			6.8
	Flathead catfish	0.0	0.4	0.0		0.0			0.4
	White bass	0.0	0.8	3.8		0.0			5.6
Electrofishing	Gizzard shad	304.0	184.7	468.7	111.0			709.0	
	Threadfin shad	83.3	392.0	183.3	125.0			219.0	
	Green sunfish	32.0	245.3	14.0	31.0			102.0	
	Warmouth	9.3	60.7	18.0	2.0			11.0	
	Bluegill sunfish	110.7	219.3	222.7	172.0			537.0	
	Longear sunfish	130.0	152.0	108.0	44.0			242.0	
	Redear sunfish	3.3	1.3	2.0	9.0			6.0	
	Largemouth bass	112.0	184.0	130.7	36.0		54.0	149.0	
	White crappie	12.9	11.5	5.2	7.0			14.4	
Trap Netting	Black crappie	0.0	0.5	0.2	2.8			1.2	

^a Electrofishing, gill netting, and trap netting sites were subjectively selected.

^b Electrofishing, gill netting, and trap netting sites were randomly selected.

^c Bass only electrofishing survey.

