

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

Wichita

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Executive Summary

Wichita was surveyed in 2004-05 using electrofishing, gill and trap netting. These surveys were completed using stratified, randomly selected sites. The 2004-05 CPUE comparisons made in this summary are compared with the results of Wichita historical averages for the period 2000-2005. A survey of the littoral zone and associated physical habitat types was conducted in 2004 by examining the entire shoreline. Information from a March-May 2005 creel survey is included for historical perspective on angler use and compared with March-May creel surveys conducted in 1993, 2000 and 2003. This report summarizes all 2004-05 survey results and contains a management plan based on those findings.

- **Reservoir Description:** Wichita is a 1,224 acre municipal reservoir owned and operated by the city of Wichita Falls for flood control and recreation. The dam is within the city limits of Wichita Falls in Wichita County and a portion of the reservoir is in Archer County. The reservoir was built in 1901, impounding Holliday Creek, a tributary to the Wichita River. Originally, the lake was 2,200 acres and was built as a municipal water supply reservoir. After alternative water supplies were developed, Wichita Falls initiated a project with the Corps of Engineers to control flooding below the reservoir. This project culminated in a new spillway being completed in August 1995, 4.7 feet lower than the original one. This acted to reduce the surface acreage to 1,224 acres, mean depth to 4.5 feet and maximum depth to 9.5 feet. In an effort to sustain recreational use, the city of Wichita Falls diverts water from the local irrigation district to maintain elevation at or near spillway level. Angler and boat access were improved with the opening of a new boat ramp in 2000. However, there is no designated handicapped access. Habitat includes relatively large stands of native emergent vegetation. In March of 2004 a toxic golden alga event killed approximately 7,700 fish of which 93% were non-game fish. No other occurrences have been documented since.
- **Prey species:** Gizzard shad and bluegill were sampled by electrofishing in fall 2004. Gizzard shad were more abundant (180.0/hr) than the previous survey in 2000 (50.0/hr). The index of vulnerability (DiCenzo et al. 1996) was again high at 99. Bluegill were sampled at a rate of 92.0/hr compared to the last survey in the spring of 2001 when they were sampled at a rate of 19.0/hr. It is apparent that very abundant forage size gizzard shad continue to provide an adequate prey base for game fish.
- **Catfishes:** The channel catfish population continues to provide quality fishing opportunities for Wichita anglers. Catch rates have steadily increased from the 2001 gill net sample of 0.4/net night to 0.6/ net night in 2003 and to 1.2/net night in 2005. The 2005 sample population included a relatively high percentage (42%) of fish greater than 20 inches. The 2005 spring creel survey observed channel catfish being harvested from 17-20 inches. Channel catfish remain a popular species with anglers and are also harvested by jug and trotlines for which no creel survey data was collected. While no flathead catfish were collected, a 38.5 pound lake record was documented in 1999.

- **Temperate basses:** The gill net catch rate for white bass was down from the previous survey and slightly below the historic reservoir average of 13.2/net night. However, the 2005 catch rate of 11.5/net night for white bass was still relatively high when compared to the district average of 6.9/net night. The majority of 2005 sample was greater than 13 inches with one fish being sampled over 19 inches. The abundant shad population provides excellent forage, producing large size white bass as evidenced by a 4.09 pound lake record caught in March 2005. The spring 2005 creel survey results show a good fishery for these larger fish with all observed harvested being from 13–17 inches. White bass growth rates remained good when they were last checked in 2003 and were above ecological region averages. The CPUE for palmetto bass is steadily increasing from 0.4/net night in 1997 to 0.8/net night in 2000, 2.2/net night in 2001, 2.9/net night in 2003 and finally to 5.4/net night in 2005. Abundance has been expected to increase with the annual stockings every year since 1998 with the exception of 2001. Special creel questions were developed during spring 2005 for use through November 2005 to determine angler attitudes and opinions about stocking palmetto bass and their satisfaction with the fishery.
- **Largemouth bass:** The 1997 catch rate for largemouth bass was 0.7/hr, in fall 2000 it was 0.0/hr and the survey in fall 2004 also had a catch rate of 0.0/hr. During the 2003 creel survey, one largemouth bass was observed as harvested. Largemouth bass are still expected to be present in the reservoir, but at a low level. Largemouth bass habitat is relatively poor and there is low angler interest in the species because of this low abundance. In 1994, before the drop in spillway elevation, largemouth bass were sampled at 30.7/hr when fixed sites were used. The lake is not well suited for Florida largemouth bass and a supplemental stocking of 62,000 northern largemouth fingerlings occurred in 2005. The increase in emergent, shoreline vegetation should provide an increased survival opportunity for the 2005 stocking.
- **White crappie:** The 2004 catch rate of 36.3/net night was well above the 4.3/net night observed during the previous 2000 survey. However, the 2004 sample was predominantly age-0 fish. While this evidence of good reproduction is encouraging, the population includes far fewer legal size fish than before the spillway elevation change in 1995. Before the change in spillway level, Wichita crappie populations were among the best in Texas. Again, the increase in emergent shoreline vegetation is expected to enhance young crappie survival and eventually increase abundance of legal size fish in the future.
- **Management strategies:** Based on current information, this reservoir should continue to be managed with existing regulations. An abundant gizzard shad population should provide ample forage for annual palmetto bass stockings. Opportunities to enhance and maintain aquatic habitat should be actively considered along with attempts to reestablish a stronger largemouth bass population.

Introduction

This document is a summary of fisheries data collected from Wichita in 2004-05 with survey data from previous years included for comparison. The purpose of this document is to provide information on the fishery and make any management recommendations needed to protect and enhance the sport fishery. While information on other species was collected, this report deals primarily with important sport fish and prey species. Management strategies are included to address existing problems or opportunities.

Harvest regulations for Wichita in 2004-05

	Daily bag	Minimum Length limits (inches)
Channel catfish	25	12
Flathead catfish	5	18
White bass	25	10
Palmetto bass	5	18
Largemouth bass	5	14
White crappie	25	10

Methods

- Fishes were collected by electrofishing (1.0 hours at 12 five-minute stations), gill netting (1 net night at 10 stations = 10 total net nights), and trap netting (1 net night at 10 stations = 10 total net nights). 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.
- Sampling statistics (CPUE for various length categories) and structural indices (Proportional Stock Density (PSD), Relative Stock Density (RSD)), were calculated for target species according to Anderson and Neumann (1996). Standard weight equations used in assessing condition are from Anderson and Neumann (1996). Index of Vulnerability (IOV) measures are from DiCenzo et al. (1996).
- Ages were determined for selected fishes using otoliths for channel catfish, white bass, palmetto bass, and white crappie.
- A creel survey was conducted from December 2004-May 2005.
- A survey of the littoral zone and physical habitat was conducted in July 2004 in accordance with the Texas Parks and Wildlife Inland Fisheries Assessment Procedures (unpublished, revised manual 2003).

Literature Cited

- Anderson, R. O., and R. 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.
- Prentice, J. A. 1987. Length-weight relationships and average growth rates of fishes in Texas. Inland Fisheries Data Series No. 6. Texas Parks and Wildlife Department, Inland Fisheries Branch. Austin.

Physical and historical data for Wichita Reservoir, Texas, 2005.

Inland Fisheries water body code: 0785

IF District: 2E

Controlling authority: City of Wichita Falls

Counties: Archer and Wichita (location of dam)

Latitude: 33° 50'

Longitude: 98° 32'

Nearest major metropolitan area and distance: Wichita Falls - 0 miles

Reservoir description: Tributary

River system: Red

Mean depth (ft): 4.5

Maximum depth (ft): 9.5

Shoreline development index: 2.4

Secchi disc range (ft): 1-2

Conductivity (umhos/cm): 3,829

pH: 8.3

Size: 1,224 acres

Chlorides (ppm): 1,045

Total dissolved solids (ppm): 2,393

Average annual fluctuation: 1.5 feet

Total alkalinity (ppm): 97

Access: Boat: Good

Bank: Fair

Handicap: None

Survey history:

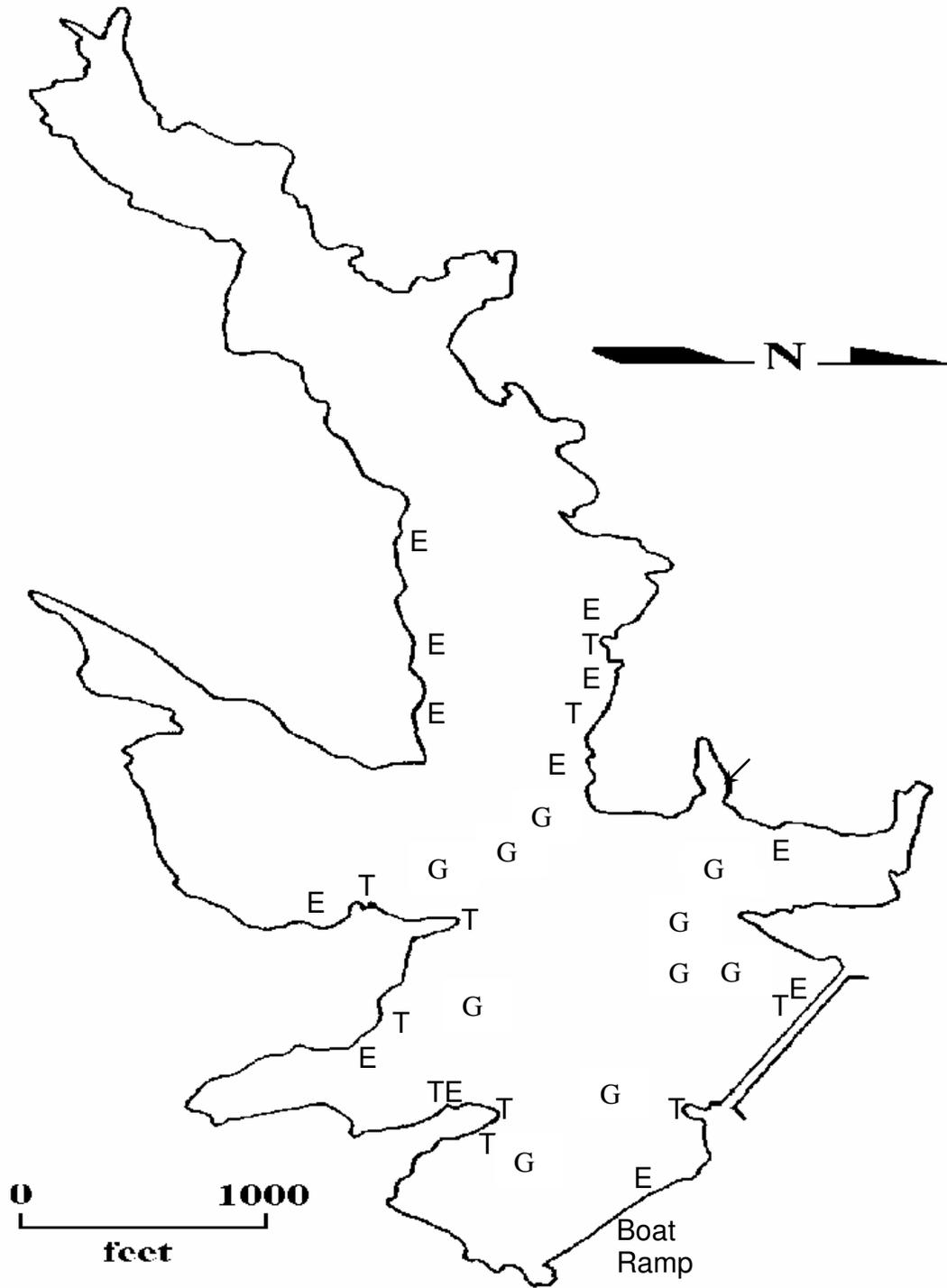
Method	Year								
Gill netting	1988	1992	1993	1994	1997	2000	2001	2003	2005
Electrofishing				1994	1997	2000	2001		2004
Trap netting	1988	1992	1993	1994	1997	2000			2004
Creel survey		1992	1993			2000		2003	2005
Habitat				1994	1997	2000			2004

Survey of littoral zone and physical habitat types, Wichita Reservoir, Texas, on July 13, 2004. A linear shoreline distance (miles) was recorded for each habitat type found. Lake elevation was 975.5 msl at time of survey which is 6 inches below spillway level.

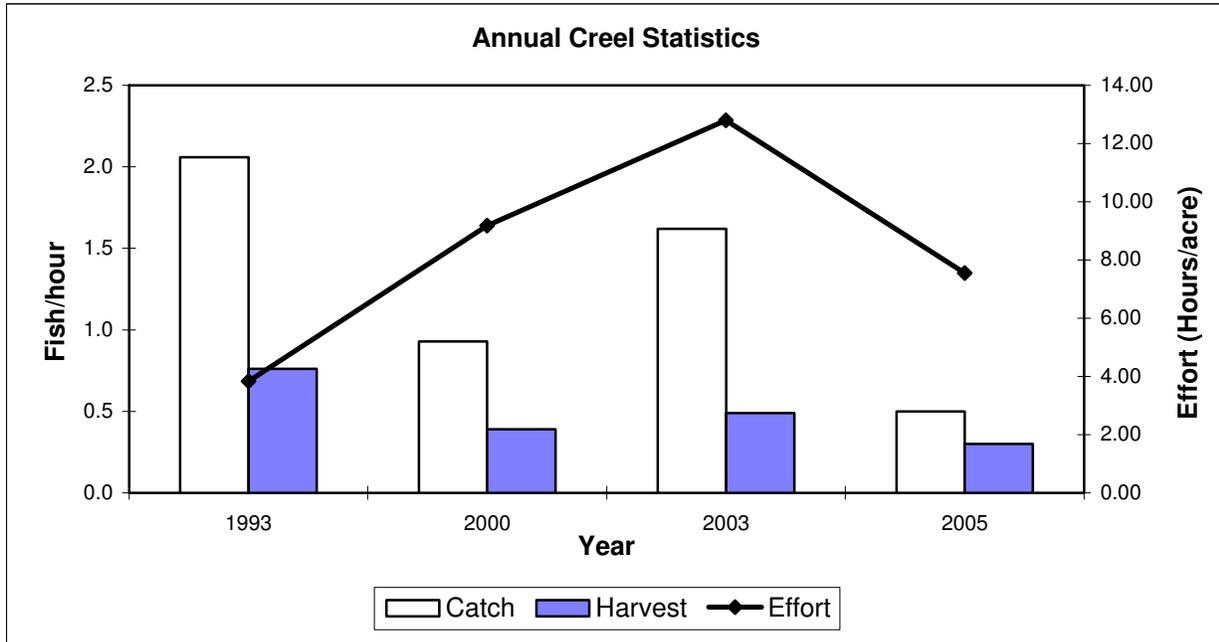
Shoreline habitat type	Shoreline distance		Acreage
	Miles	Percent of total	
Featureless	8.8	74	
Rocky shoreline	1.8	15	
Riprap	0.9	7	
Eroded bank	0.4	4	
Total shoreline length	11.9	100	
Vegetation			
Native emergent	9.3	78	
Habitat adjacent to shoreline			
Boat docks	1.6	13	

Stocking history at Wichita Reservoir, Texas. Size categories are: FRY= Fry, FGL= 1-3 inches and ADL= Adult.

Species	Year	Number	Size
Channel catfish	1969	10,000	FGL
	1971	50,000	FGL
	1972	22,000	FGL
	1990	22,319	FGL
	1995	67,000	FGL
	Species total	171,319	
Palmetto bass	1977	50,000	FGL
	1984	66,000	FGL
	1986	33,000	FGL
	1987	65,925	FGL
	1988	67,405	FGL
	1989	54,359	FGL
	1994	15,947	FGL
	1996	18,407	FGL
	1998	12,374	FGL
	1999	12,646	FGL
	2000	14,180	FGL
	2002	18,447	FGL
	2003	18,381	FGL
	2004	528	ADL
	2004	19,998	FGL
	2004	1,169,624	FRY
2005	18,666	FGL	
	Species total	1,655,887	
White crappie	2000	3,783	ADL
	2001	310	ADL
	Species total	4,093	
Northern largemouth bass	1966	80,000	FGL
	1967	75,000	FGL
	1997	60,000	FGL
	1998	14,250	FGL
	2000	131,875	FGL
	2005	62,271	FGL
	Species total	423,396	
Florida largemouth bass	1977	20,800	FGL
	1995	122,000	FGL
	Species total	142,800	

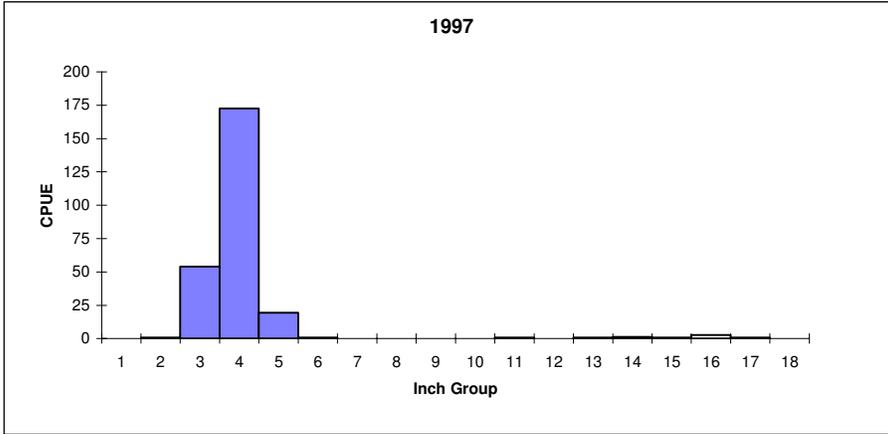


Map of Wichita Reservoir, Texas, showing randomly selected gill netting (G), electrofishing (E), and trap netting (T) sampling sites, 2004-05.

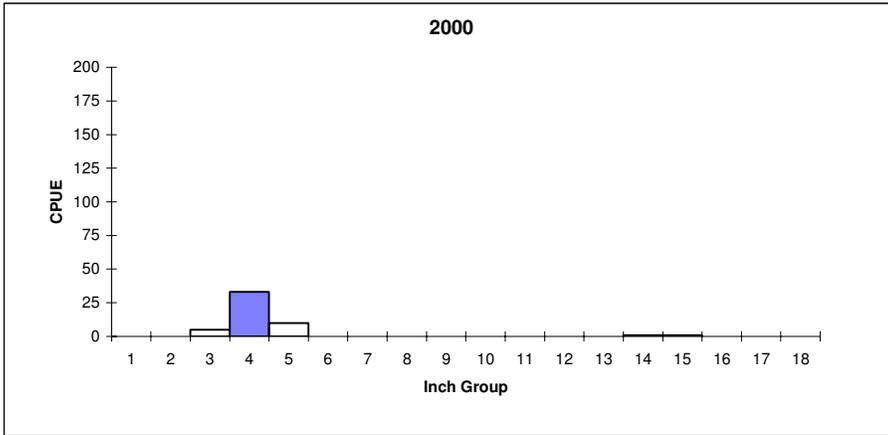


Estimated catch rates (fish/hour), harvest rates (fish/hour), and fishing effort (hours/acre) for all species combined from creel surveys, Wichita Reservoir, Texas, March-May 1993, 2000, 2003 and 2005.

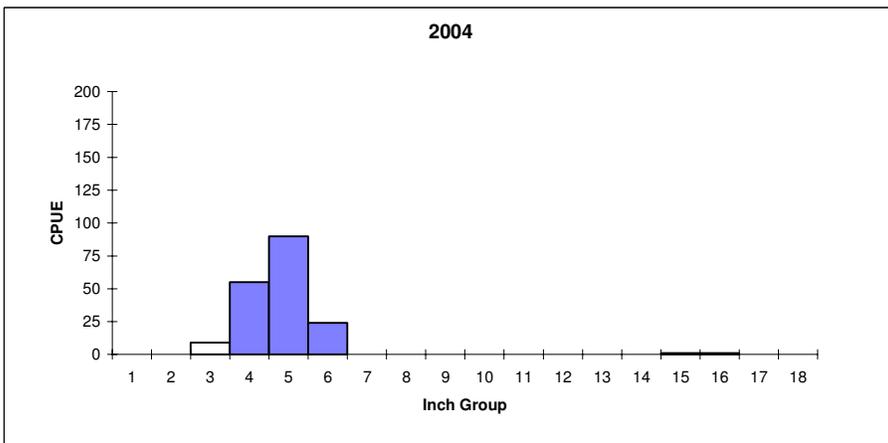
Gizzard Shad



Effort = 1.5
 Total CPUE = 254.0
 Stock CPUE = 6.7
 PSD = 100
 IOV = 97



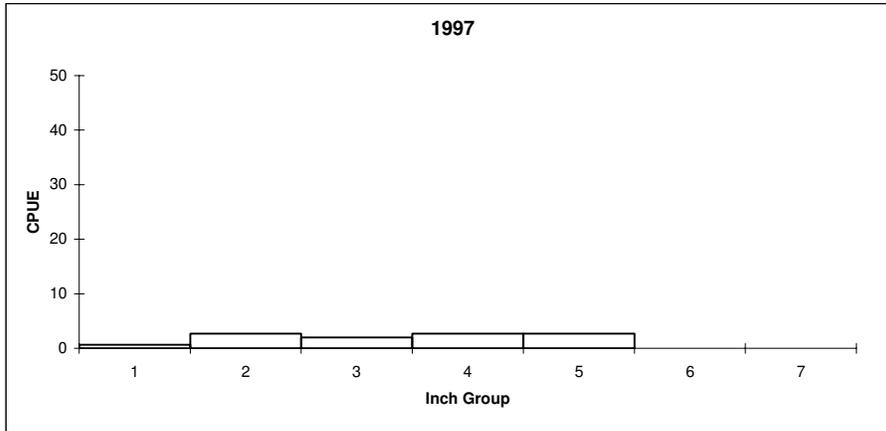
Effort = 1.0
 Total CPUE = 50.0
 Stock CPUE = 2.0
 PSD = 100
 IOV = 96



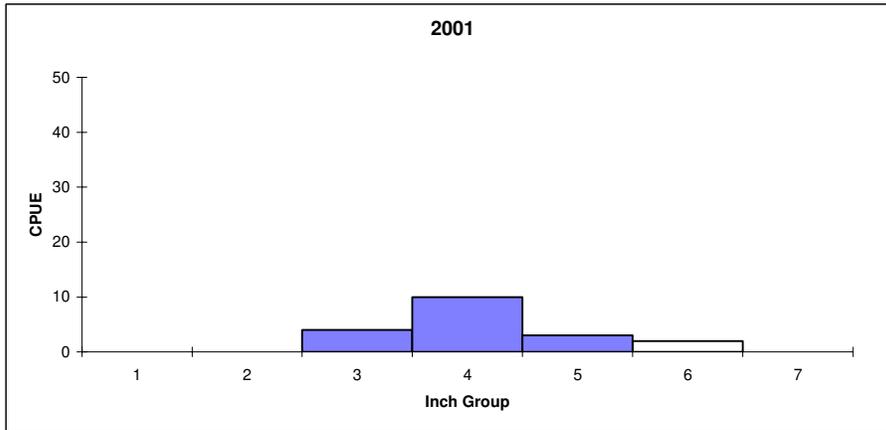
Effort = 1.0
 Total CPUE = 180.0
 Stock CPUE = 2.0
 PSD = 100
 IOV = 99

Comparison of the number of gizzard shad caught per hour (CPUE, bars) and population indices for fall electrofishing surveys, Wichita Reservoir, Texas.

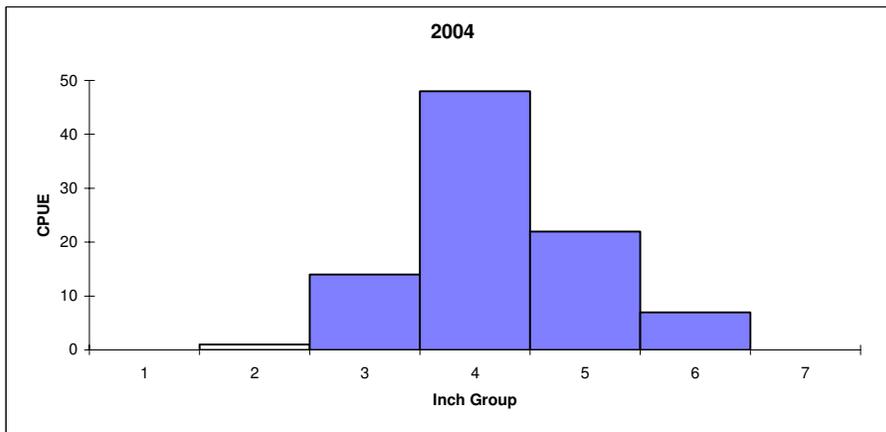
Bluegill



Effort = 1.5
 Total CPUE = 10.7
 Stock CPUE = 7.3
 PSD = 0
 RSD-P = 0



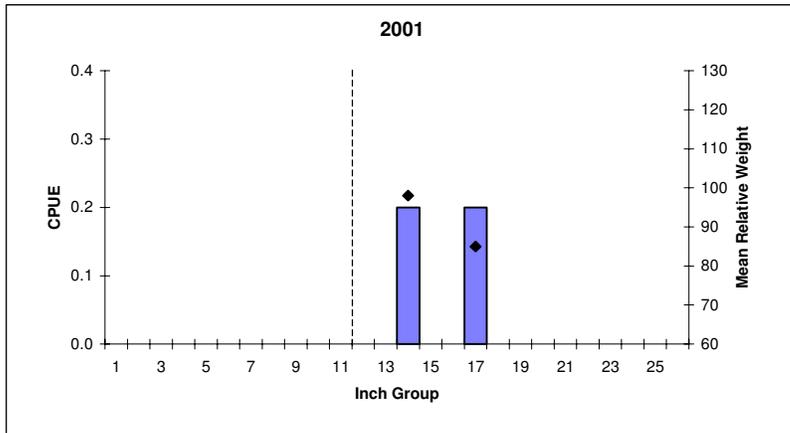
Effort = 1.0
 Total CPUE = 19.0
 Stock CPUE = 19.0
 PSD = 11
 RSD-P = 0



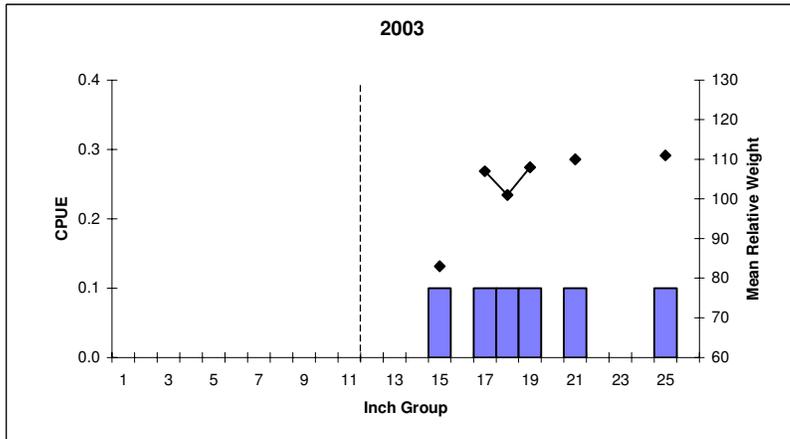
Effort = 1.0
 Total CPUE = 92.0
 Stock CPUE = 91.0
 PSD = 8
 RSD-P = 0

Comparison of the number of bluegill caught per hour (CPUE, bars) and population indices for fall electrofishing surveys 1997 and 2004, and spring electrofishing survey 2001, Wichita Reservoir, Texas.

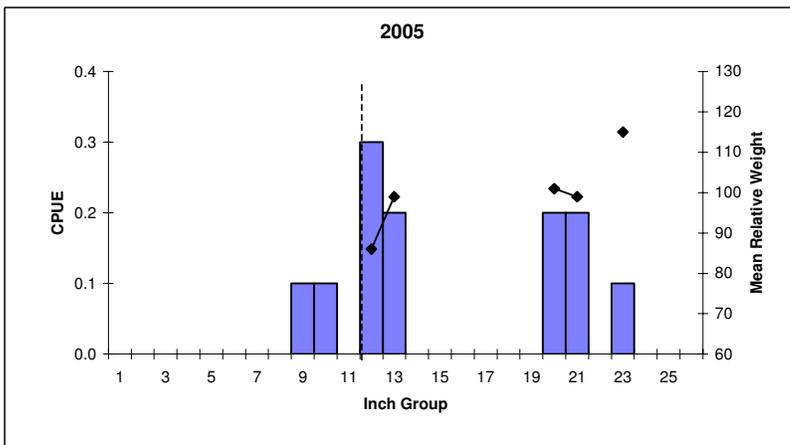
Channel Catfish



Effort = 5
 Total CPUE = 0.4
 Stock CPUE = 0.4
 PSD = 50
 RSD-P = 0



Effort = 10
 Total CPUE = 0.6
 Stock CPUE = 0.6
 PSD = 83
 RSD-P = 17



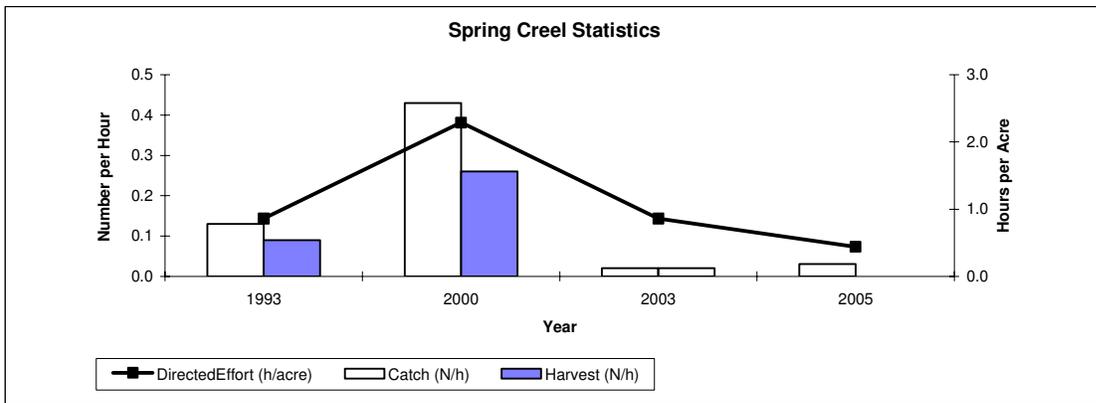
Effort = 10
 Total CPUE = 1.2
 Stock CPUE = 1.0
 PSD = 50
 RSD-P = 0

Comparison of the number of channel catfish caught per net night (CPUE, bars), mean relative weight (lines), and population indices for spring gill net collections, Wichita Reservoir, Texas. Dash line indicates minimum size limit at time of sampling.

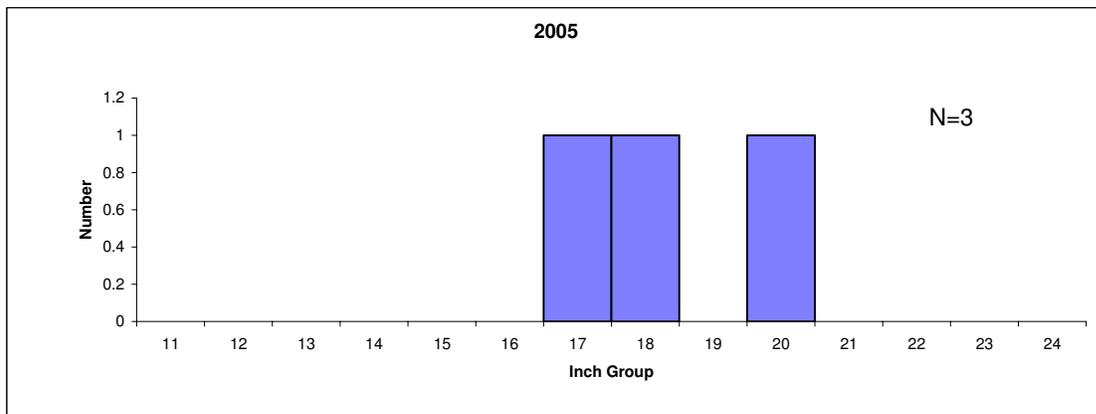
Mean length at age for channel catfish (sexes combined) collected during spring gill netting surveys, Wichita Reservoir, Texas. Ages determined by sectioned pectoral spines for 1994 and 1997 and otoliths for 2001. Sample sizes are provided in parentheses.

Year	Length (inches) at age						
	1	2	3	4	5	6	7
1994				17.6(1)	18.3(6)	21.5(2)	
1997			16.1(1)		17.7(3)	17.3(1)	23.7(2)
2001					14.0(1)		17.0(1)
Average*	6.6	9.3	11.9	14.4	16.8	19.2	21.4

* Ecological region 5 averages from Prentice (1987); lengths derived for April 1.

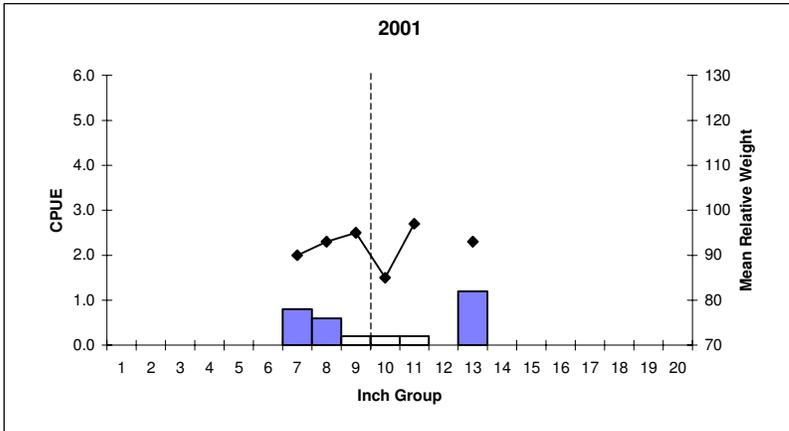


Creel statistics for anglers seeking channel catfish at Wichita Reservoir, Texas. Creel periods are from March through May.

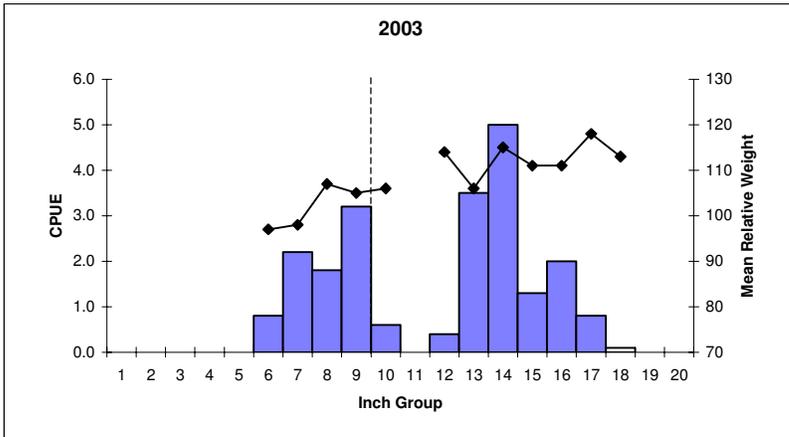


Length frequency of harvested channel catfish observed during creel surveys at Wichita Reservoir, Texas, March 2005 through May 2005, all anglers combined. The minimum length limit is 12 inches.

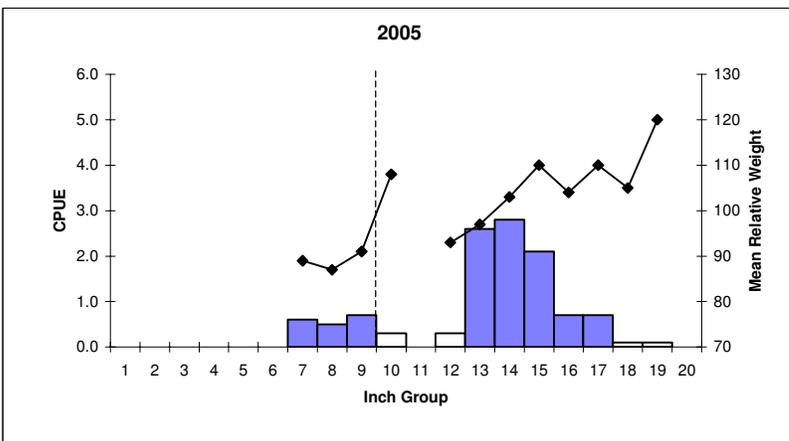
White Bass



Effort = 5
 Total CPUE = 3.2
 Stock CPUE = 3.2
 PSD = 56
 RSD-P = 38



Effort = 10
 Total CPUE = 21.7
 Stock CPUE = 21.7
 PSD = 78
 RSD-P = 60



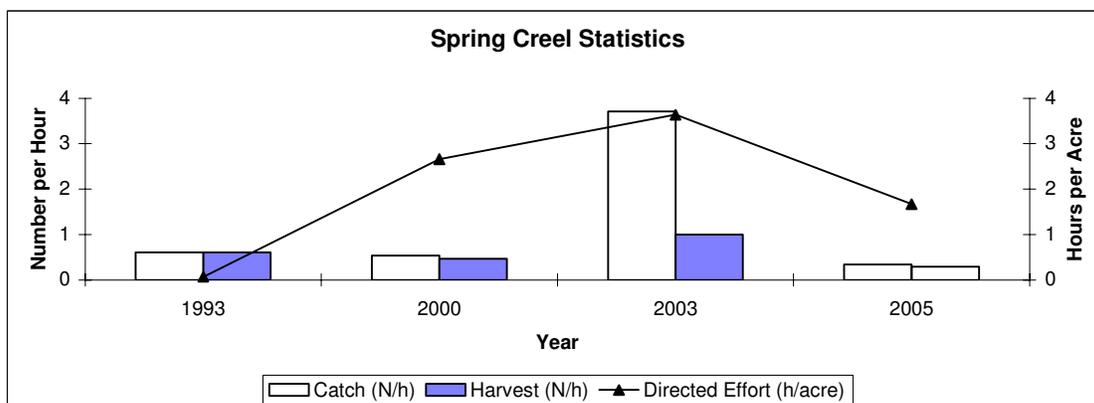
Effort = 10
 Total CPUE = 11.5
 Stock CPUE = 11.5
 PSD = 90
 RSD-P = 82

Comparison of the number of white bass caught per net night (CPUE, bars), mean relative weight (lines), and population indices for spring gill net collections, Wichita Reservoir, Texas. Dash line indicates minimum size limit at time of sampling.

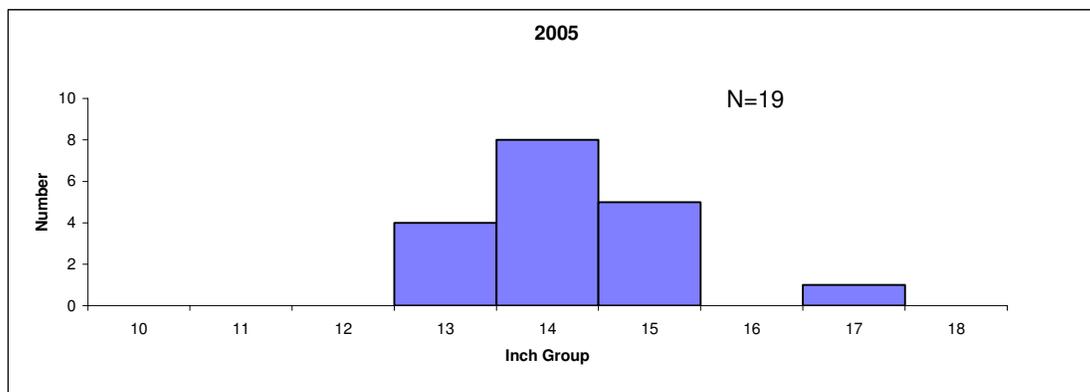
Mean length at age for white bass (sexes combined) collected during spring gill netting surveys, Wichita Reservoir, Texas. Sample sizes are in parentheses.

Year	Length (inches) at age					
	1	2	3	4	5	6
1997		10.7(7)	11.9(3)	13.9(7)	15.0(5)	16.3(2)
2000	7.8(16)	11.9(21)	15.0(1)	15.4(2)	17.0(3)	17.4(1)
2001	8.3(9)	13.0(5)	13.8(1)	14.0(1)		
2003	8.4(24)	13.6(12)	15.2(2)	16.0(5)	16.7(10)	
Averages*	8.7	11.1	12.9	14.2	15.3	16.1

* Ecological region 5 averages from Prentice (1987); lengths derived for April 1.

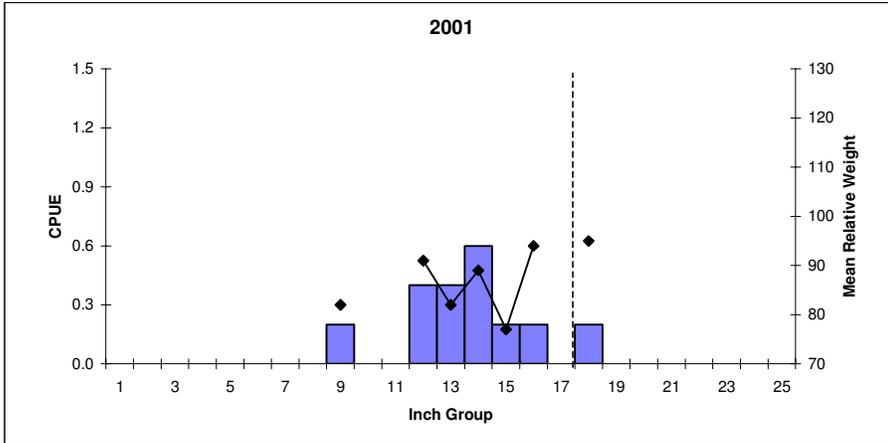


Creel statistics for anglers seeking white bass at Wichita Reservoir, Texas. Creel periods are from March through May.

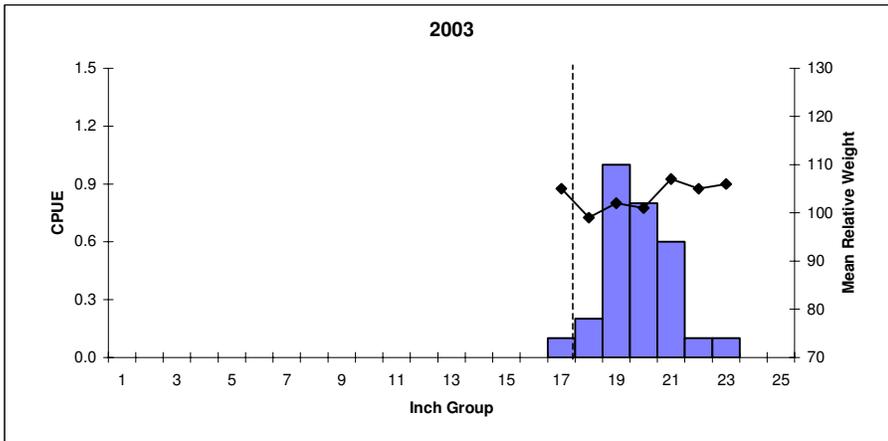


Length frequency of harvested white bass observed during creel surveys at Wichita Reservoir, Texas, March 2005 through May 2005, all anglers combined. The minimum length limit is 10 inches.

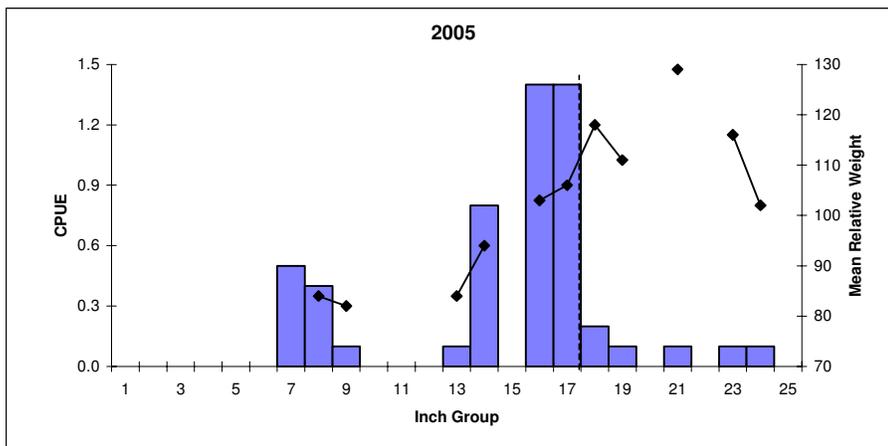
Palmetto bass



Effort = 5
 Total CPUE = 2.2
 Stock CPUE = 2.2
 PSD = 91
 RSD-P = 27



Effort = 10
 Total CPUE = 2.9
 Stock CPUE = 2.9
 PSD = 100
 RSD-P = 100



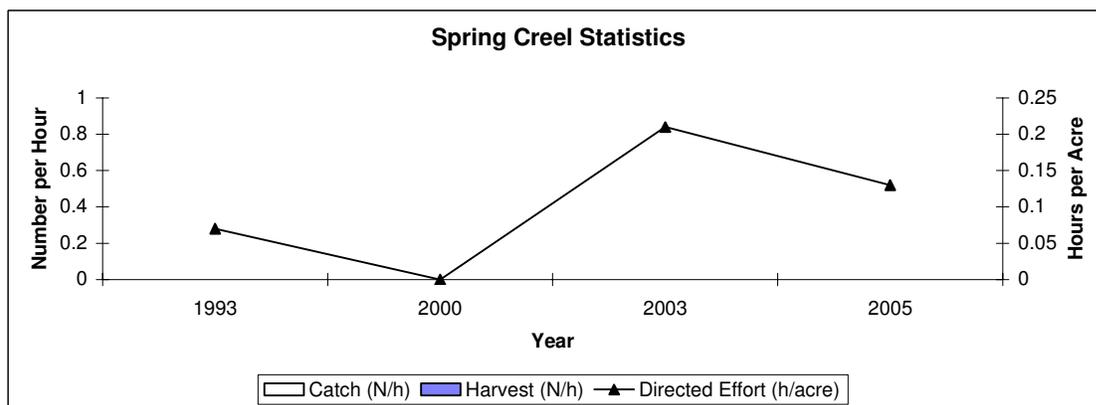
Effort = 10
 Total CPUE = 5.4
 Stock CPUE = 4.9
 PSD = 90
 RSD-P = 71

Comparison of the number of palmetto bass caught per net night (CPUE, bars), mean relative weights (lines), and population indices for spring gill net collections, Wichita Reservoir, Texas. Dash line indicates minimum size limit at time of sampling.

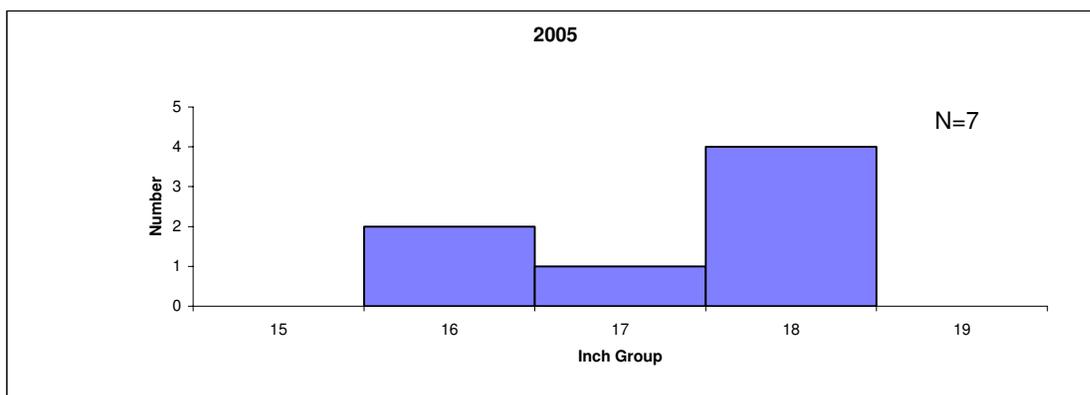
Mean length at age for palmetto bass (sexes combined) collected during spring gill netting surveys, Wichita Reservoir, Texas. Sample sizes are in parentheses.

Year	Length (inches) at age						
	1	2	3	4	5	6	7
2001	9.1(1)	14.9(5)	13.9(4)				18.1(1)
2003			19.6(12)	21.2(7)	22.6(1)		
2005	8.3(5)	16.5(15)	18.1(2)			23.9(2)	
Averages*	13.4	17.2	20.2	22.5	24.3	25.8	27.0

* Ecological region 5 averages from Prentice (1987); lengths derived for April 1.

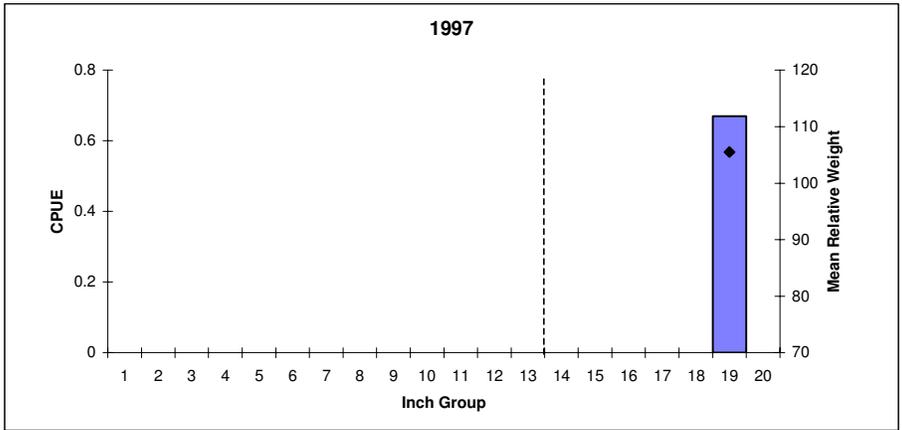


Creel statistics for anglers seeking palmetto bass at Wichita Reservoir, Texas. Creel periods are from March through May.

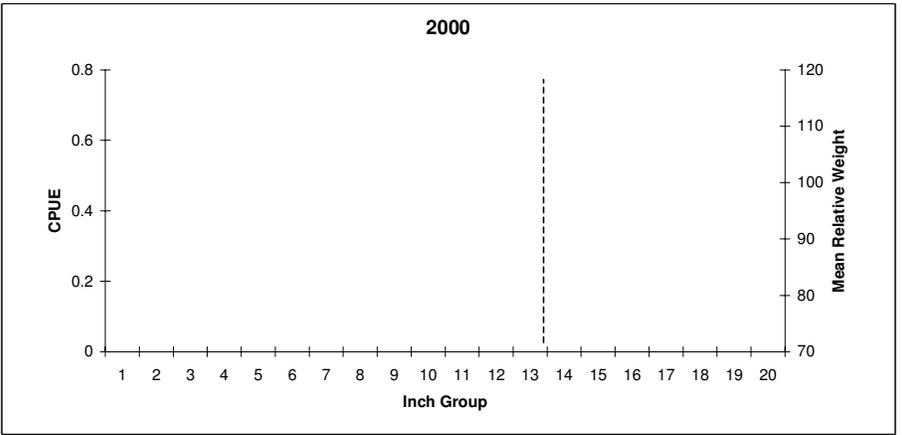


Length frequency of harvested palmetto bass observed during creel surveys at Wichita Reservoir, Texas, March 2005 through May 2005, all anglers combined. The minimum length limit is 18 inches.

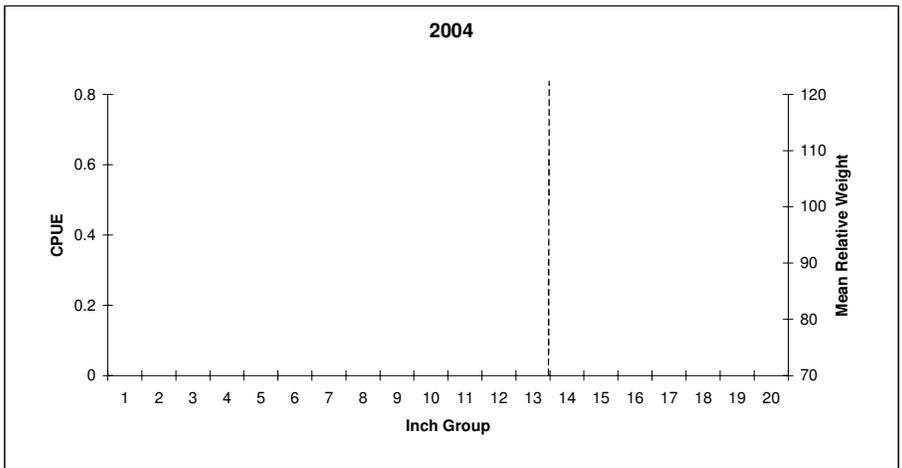
Largemouth Bass



Effort = 1.5
 Total CPUE = 0.7
 Stock CPUE = 0.7
 PSD = 100
 RSD-14 = 100
 % FLMBA = 1.8
 % FLMB = 0



Effort = 1.0
 Total CPUE = 0.0
 Stock CPUE = 0.0
 PSD = 0
 RSD-14 = 0



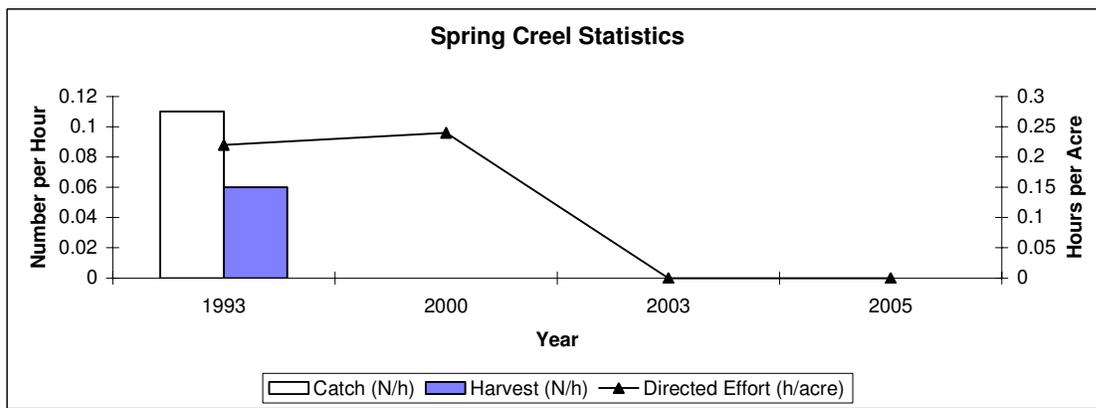
Effort = 1.0
 Total CPUE = 0.0
 Stock CPUE = 0.0
 PSD = 0
 RSD-14 = 0

Comparison of the number of largemouth bass caught per hour (CPUE, bars), mean relative weight (lines), and population indices for fall electrofishing surveys, Wichita Reservoir, Texas. Dashed lines indicate minimum length limit at time of survey. When assessed, the percentages of Florida largemouth bass alleles (% FLMBA) and pure Florida largemouth bass (% FLMB) collected in the sample are given.

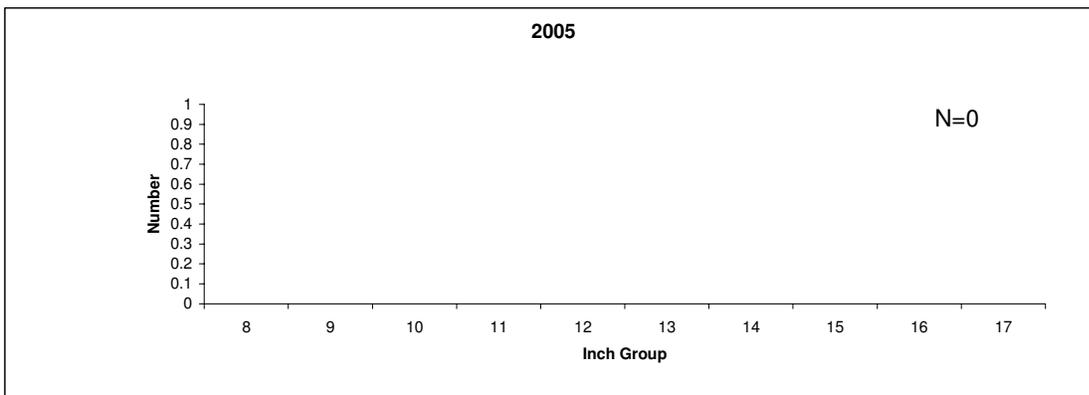
Mean length at age for largemouth bass (sexes combined) collected during fall electrofishing surveys, Wichita Reservoir, Texas. Sample sizes are in parentheses.

Year	Length (inches) at age				
	1	2	3	4	5
1994	8.3(1)	12.5(22)	15.3(1)	16.9(4)	18.8(2)
Averages*	10.1	12.9	15.1	16.9	18.3

* Ecological region 5 averages from Prentice (1987); lengths derived for October 15.

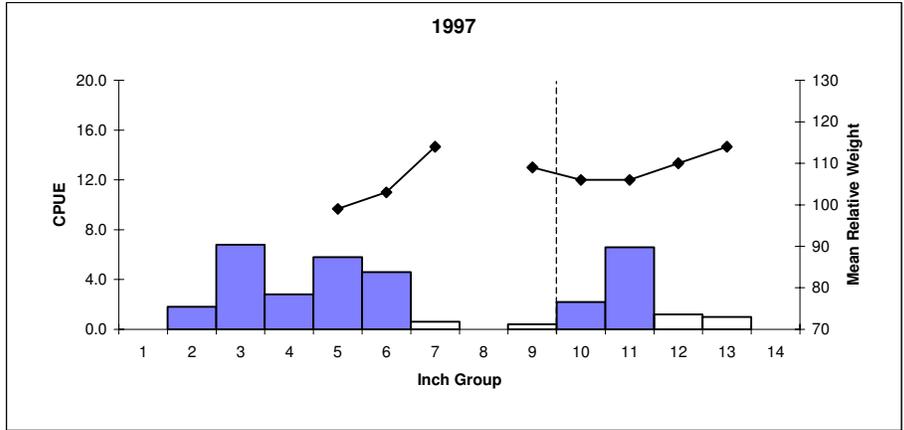


Creel statistics for anglers seeking largemouth bass at Wichita Reservoir, Texas. Creel periods are from March through May.

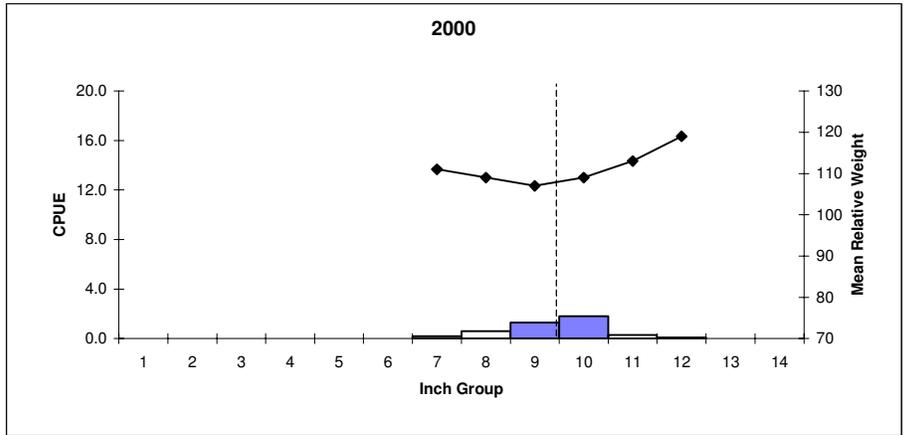


Length frequency of harvested largemouth bass observed during creel surveys at Wichita Reservoir, Texas, March 2005 through May 2005, all anglers combined. The minimum length limit is 14 inches.

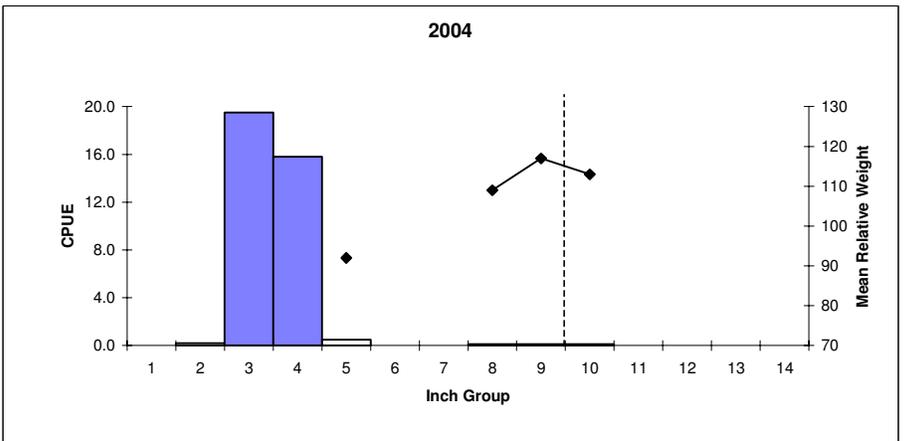
White Crappie



Effort = 5
 Total CPUE = 33.8
 Stock CPUE = 22.4
 PSD = 51
 RSD-P = 49



Effort = 10
 Total CPUE = 4.3
 Stock CPUE = 4.3
 PSD = 95
 RSD-P = 51



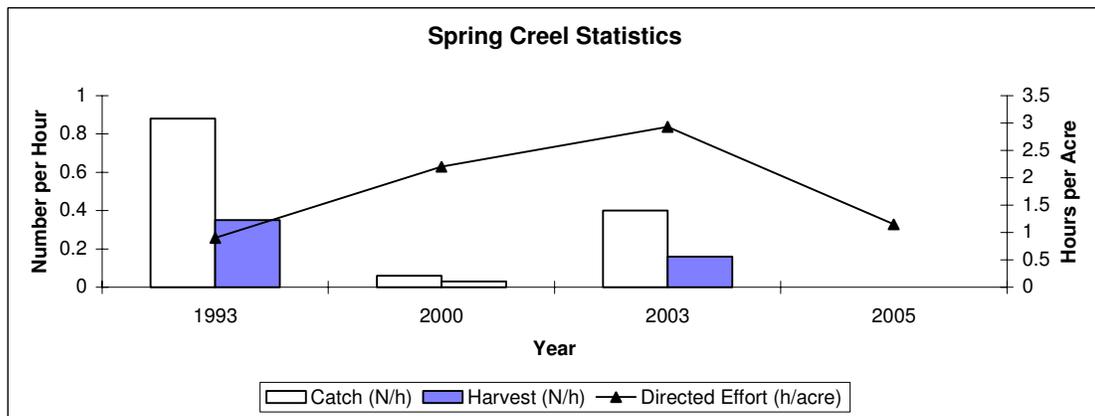
Effort = 10
 Total CPUE = 36.3
 Stock CPUE = 0.8
 PSD = 38
 RSD-P = 12

Comparison of the number of white crappie caught per net night (CPUE, bars), mean relative weight (lines), and population indices for fall trap net surveys, Wichita Reservoir, Texas. Dashed lines indicate minimum length limit at time of survey.

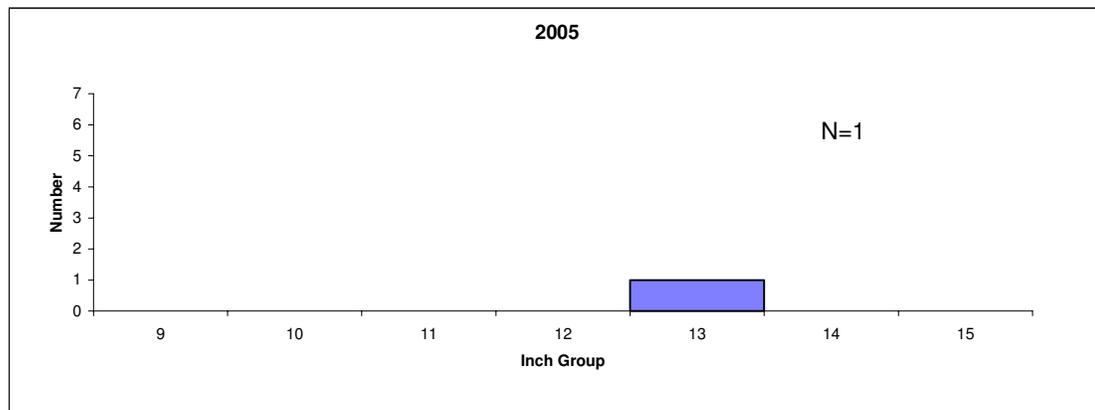
Mean length at age for white crappie (sexes combined) collected during fall trap netting surveys, Wichita Reservoir, Texas. Sample sizes are in parentheses.

Year	Length (inches) at age						
	0	1	2	3	4	5	6
1994		7.4(13)	9.6(17)	12.8(6)	13.0(7)	13.3(2)	14.8(2)
1997	4.2(21)	6.5(7)	10.6(11)	11.1(1)	12.6(5)	13.6(3)	13.0(1)
2000		9.5(14)	10.2(8)	11.9(1)			
Average*	4.0	6.9	8.9	10.3	11.3	11.9	12.4

* Ecological region 5 averages from Prentice (1987); lengths derived for November 15.



Creel statistics for anglers seeking white crappie at Wichita Reservoir, Texas. Creel periods are from March through May.



Length frequency of harvested white crappie observed during creel surveys at Wichita Reservoir, Texas, March 2005 through May 2005, all anglers combined. The minimum length limit is 10 inches.

**Fisheries Management Plan
Wichita Reservoir, Texas**

Prepared - July 2005

Issue 1 Because of the 4.7 feet reduction in spillway elevation in 1995; large areas of littoral habitat were lost resulting in a loss of largemouth bass and crappie juvenile recruitment to the fishery.

Management
Strategies

1. Continue to maintain existing plantings of cypress trees.
2. Place brush piles near the dam to improve angler catch rates and provide additional littoral habitat.
3. After coordination with the city of Wichita Falls controlling authority, attempt an introduction of native water willow (*Dianthera americana*). Introduction to occur in late summer of 2005 along selected littoral areas in the lower part of the lake.

Issue 2 Palmetto bass have historically provided a quality fishery. Annual fingerling stockings have occurred from 2002 through 2005 at the rate of 15/acre. An abundant forage base exists that could readily support annual palmetto bass stockings. Sub-legal harvest has been observed to be a problem during district creel surveys.

Management
Strategies

1. Conduct angler attitude and opinion survey from March – November 2005 to determine level of angler satisfaction with the palmetto bass stocking program.
2. Continue stocking palmetto bass fingerlings every year at the rate of 15 fingerlings per acre if there is continued angler support for the program.
3. Maintain regulatory signs about the palmetto bass size limit and how to distinguish them from white bass in order to reduce harvest of sub-legal fish.

Issue 3 The largemouth bass population has suffered a severe decline since the spillway elevation was lowered in 1995. Very few largemouth bass have been sampled or caught by anglers since that time. Current habitat improvements should help improve survival opportunity for juvenile largemouth bass.

Management
Strategy

1. Stock northern largemouth bass fingerlings at the rate of 50/acre in 2005 and 2006.

Appendix A

Number (N) and catch per unit effort (CPUE) of all species collected from all gear types from Wichita Reservoir, Texas, 2004-05. Gill net and trap net CPUE is the number of fish per net night and electrofishing CPUE is the number of fish per hour.

Species	Gill netting		Trap netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Spotted gar	37	3.7				
Longnose gar	45	4.5				
Shortnose gar	7	0.7				
Gizzard shad	168	16.8	66	6.6	180	180.0
Common carp	4	0.4				
River carpsucker	4	0.4	4	0.4		
Smallmouth buffalo	67	6.7	1	0.1		
Bigmouth buffalo	1	0.1				
Channel catfish	12	1.2				
White bass	116	11.6	181	18.1		
Palmetto bass	54	5.4				
Green sunfish					7	7.0
Bluegill			15	1.5	92	92.0
Longear sunfish					5	5.0
White crappie			363	36.3		
Freshwater drum	10	1.0	202	20.2		

Appendix B. Estimated fishing effort (Hours) and percentage of time (% Time) an individual fish species was being sought at Wichita Reservoir, December 2004 through May 2005. Relative standard errors are in parentheses.

Quarter	Species	Hours	Hrs/acre	% Total Effort
DEC.-FEB.				
	Catfish spp.	46.1 (64.0)	0.0	8.7
	Channel catfish	4.5 (155.3)	0.0	0.8
	White bass	380.3 (47.1)	0.3	72.0
	Palmetto bass	38.7 (67.2)	0.0	7.3
	White crappie	12.2 (100.1)	0.0	2.3
	Any species	46.2 (64.0)	0.0	8.8
	All fishes	527.9 (46.3)	0.4	
MARCH -MAY				
	Carp	131.4 (90.2)	0.1	1.4
	Catfish spp.	1,044.0 (35.4)	0.9	11.3
	Channel catfish	542.2 (46.8)	0.4	5.9
	Morone spp.	810.3 (39.7)	0.7	8.8
	White bass	2,048.1 (30.9)	1.7	22.2
	Palmetto bass	153.9 (81.5)	0.1	1.7
	White crappie	1,402.5 (31.2)	1.1	15.2
	Any species	3,107.7 (27.0)	2.5	33.6
	All fishes	9,240.1 (21.9)	7.5	
TOTAL				
	Carp	131.4 (90.2)	0.1	1.3
	Catfish spp.	1,090.1 (34.0)	0.9	11.2
	Channel catfish	546.7 (46.4)	0.4	5.6
	Morone spp.	810.3 (39.7)	0.7	8.3
	White bass	2,428.4 (27.1)	2.0	24.9
	Palmetto bass	192.6 (66.5)	0.2	2.0
	White crappie	1,414.8 (31.0)	1.2	14.5
	Any species	3,153.9 (26.7)	2.6	32.3
	All fishes	9,768.1 (20.9)	8.0	

Appendix C. Estimated catch rates (number of fish) for all fishes caught, and the percentage of fish from Wichita Reservoir, December 2004 through May 2005. Relative standard errors are in parentheses.

Species	Number of Fish					% of Fish		
	Harvested	Released	Released Above Limit	Released Below Limit	Total	Harvested	Released	Caught
Longnose gar	0	87.3 (354.0)			87.3 (354.0)	0	4.9	1.9
Smallmouth buffalo	0	29.1 (618.1)			29.1 (618.1)	0	1.6	0.6
Black bullhead	149.9 (222.3)	349.0 (109.5)			498.9 (101.6)	5.3	19.7	10.8
Channel catfish	188.1 (178.3)	29.1 (360.1)	0	29.1 (288.1)	217.2 (161.8)	6.6	1.6	4.7
White bass	1,436.6 (42.7)	930.7 (61.6)	29.1 (105.4)	901.6 (60.4)	2,367.3 (35.5)	50.4	52.7	51.2
Palmetto bass	477.9 (16.8)	174.5 (144.4)	0	174.5 (96.4)	652.4 (71.0)	16.8	9.9	14.1
Sunfish spp.	0	58.2 (435.3)			58.2 (435.3)	0	3.3	1.3
White crappie	74.9 (545.2)	0	0	0	74.9 (545.2)	2.6	0	1.6
Freshwater drum	524.5 (77.0)	109.7 (98.6)			634.2 (65.9)	18.4	6.2	13.7
All fishes	2,852.0 (37.3)	1,767.5 (57.3)			4,619.4 (39.6)			