

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-30-R-31

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2005 Survey Report

Lake Bob Sandlin

Prepared by:

Michael W. Brice and Timothy J. Bister

Inland Fisheries Division
District 3-A, Marshall, Texas



Robert L. Cook
Executive Director

Phil Durocher
Director, Inland Fisheries

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Bob Sandlin were surveyed in 2003 and 2005 with electrofishing and 2006 with trap nets and gill nets. Anglers were surveyed from June 2004 to May 2005 by a roving creel. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Lake Bob Sandlin is a 9,116-acre impoundment located on Big Cypress Creek in the Cypress River Basin. The lake is located in Titus, Camp, and Franklin Counties. Habitat features consist of standing timber, brush, riprap, creek channels, native aquatic plants, and hydrilla.
- **Management history:** Important sport fish include channel catfish, white bass, largemouth bass, and crappie. All sport fish at Lake Bob Sandlin have historically been managed with statewide harvest regulations. Florida largemouth bass have been stocked in this reservoir to improve the quality of the largemouth bass fishery. Stockings in 1977 and 1998 have been successful in maintaining adequate Florida largemouth bass genetic influence in the population. However, recent increases in aquatic vegetation coverage have created an opportunity for additional Florida largemouth bass stocking to increase the abundance of pure Florida largemouth bass in the population and improve the trophy fishing potential of this reservoir. In recent years, native vegetation has increased to 730 acres in 2003 and 1,230 acres in 2005. Hydrilla has increased as well to 404 acres in 2003 and 1,900 acres in 2005.
- **Fish Community**
 - **Prey species:** Threadfin shad are present in the reservoir. Electrofishing catch rates of gizzard shad are relatively low with the majority of fish not available as prey to most sport fish. Bluegill and redear sunfish are also available as prey and are abundant.
 - **Catfishes:** The channel catfish population has many fish above legal length and provides excellent angling opportunities. Flathead catfish are present in the reservoir and provide anglers with an additional sport fish. Seven percent of all angling effort at Lake Bob Sandlin was directed towards catfish.
 - **Temperate basses:** White bass are present in the reservoir. Relative abundance of white bass has declined in recent years. Anglers fishing for white bass at Lake Bob Sandlin made up 2% of all directed effort.
 - **Largemouth bass:** The largemouth bass population is excellent with high relative abundance, good size structure, and adequate recruitment. Relative weights were slightly below average for all inch groups. Largemouth bass had adequate growth rates, reaching legal-size in 3 growing seasons. Nearly 70% of the directed effort at Lake Bob Sandlin was from anglers targeting largemouth bass.
 - **White crappie:** Experimental spring trap netting for crappie during the spawning season did not result in expected higher catch rates. However, both white and black crappie were collected. Ten percent of the directed angler effort at Lake Bob Sandlin was for crappie.

Management Strategies: Conduct electrofishing surveys every other year beginning 2006, and general monitoring with trap nets and gill nets 2009-2010. Aquatic vegetation surveys will be conducted annually beginning in 2006. All sport fish will continue to be managed under statewide harvest regulations.

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INTRODUCTION

This document is a summary of fisheries data collected from Lake Bob Sandlin 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 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

Lake Bob Sandlin is a 9,116-acre impoundment constructed in 1977 on Big Cypress Creek in the Cypress River Basin. It is located in Camp, Titus, and Franklin Counties centrally located approximately 10 miles between both the cities of Pittsburg and Mt. Pleasant. The controlling authority is Titus County Fresh Water District No. 1. Primary water uses are municipal and industrial water supply and public recreation. It has a drainage of approximately 128 square miles and a shoreline length of 75 miles. Average annual water fluctuation is 1-3 feet, however water level dropped 5.3 feet in 2005 and was as low as 331.62 msl (5.9 feet below conservation pool) in January 2006. Habitat features consisted of standing timber, brush, riprap, creek channels, native aquatic plants, hydrilla, and Eurasian watermilfoil. Boat access consisted of three public boat ramps and two private boat ramps. Bank fishing access is limited. Other descriptive characteristics for Lake Bob Sandlin are in Table 1.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Ryan and Brice 2002) included:

1. Develop a habitat enhancement program to increase aquatic vegetation densities in the lake.
Action: The abundance of aquatic vegetation has increased to the point that a habitat enhancement program is no longer a tactical management strategy for the lake. The abundance of aquatic vegetation in Lake Bob Sandlin has increased from 194 acres (2%) in 2001 to 2,130 acres (23%) in 2005. (Some chemical treatments of nuisance aquatic vegetation has been contracted by homeowners through private applicators to allow access to boat houses, docks, etc.)
2. Keep anglers and other public aware of harvest regulations, fishing methods, and other fisheries-related topics.
Action: District biologists attended a public meeting hosted by Titus County Freshwater District in an effort to inform homeowners and anglers of the nuisance levels of aquatic vegetation and options that can be taken to control it. News releases also have been written and disseminated to area newspapers.

Harvest regulation history: Sport fishes in Lake Bob Sandlin are currently managed with statewide regulations (Table 2).

Stocking history: Lake Bob Sandlin was stocked with channel catfish fingerlings in 1976 (42,498 fish), 1978 (149,315 fish), and 2000 (812 fish). The 812 channel catfish stocked in 2000 were inadvertently stocked into Lake Bob Sandlin and not Lake Bob Sandlin State Park Pond. Florida largemouth bass were introduced into Bob Sandlin in 1977 (450,00 fish) and again stocked in 1998 (238,477). The complete stocking history is in Table 3.

Vegetation/habitat history: In 2005, coverage of aquatic vegetation was estimated at 2,130 acres (23%) with the dominant plant species being hydrilla (1,898 acres) (Table 4). The coverage estimated in 2005 is a substantial increase compared to recent years. From the early 1990s to 2001, the abundance of aquatic vegetation in Lake Bob Sandlin declined. A reduction in densities of hydrilla, Eurasian watermilfoil, and native submerged plants has contributed most to this decline. Aquatic vegetation coverage declined from 646 acres in 1993 to 220 acres in 1994 (Flammang and Ryan 1995). Ryan and Brice (2002) also reported

a decline in aquatic macrophytes coverage (259 acres) in 1997. An estimated 194 acres was estimated in 2001.

METHODS

Fishes were collected by electrofishing (1.5 hours at 18 5-min stations), gill netting (10 net nights at 10 stations), and trap netting (10 net nights at 10 stations) and a roving angler creel survey from June 2004 to May 2005. Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing and, for gill and trap nets, as the number of fish per net night (fish/nn).

All survey sites were randomly selected and electrofishing and gill netting surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005). Spring trap netting was conducted to determine if sampling crappie during the spawning season increased catch rates compared to standard fall sampling.

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weight (*Wr*)] were calculated for target fishes according to Anderson and Neumann (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. Average age at length was determined using otoliths for largemouth bass from 13 fish 13.6 to 14.9 inches. Source for water level data was the United States Geological Survey (USGS) website.

RESULTS AND DISCUSSION

Habitat: Structural habitat consisted primarily of inundated timber, brush, creek channels, rocks, standing timber, and rip rap (Ryan and Brice 2002). Moderate amounts of aquatic vegetation were found throughout the lake (Figure 2). Approximately 23% (2,130 acres) of the lake surface area was covered with aquatic vegetation with hydrilla being the dominant species (Table 4). Eurasian watermilfoil was also present (11 acres) in two separate locations on the lake.

Creel: Directed fishing effort by anglers was highest for black bass (66%), followed by anglers fishing for anything (13.9%), crappie (10.4%), and catfish (7.3%) (Table 5). Total fishing effort for all species at Lake Bob Sandlin was 118,370 h from June 2004 to May 2005, and anglers spent an estimated \$664,761 on direct expenditures

Prey species: Gizzard shad, threadfin shad, and several sunfish species were present indicating good forage fish diversity. Electrofishing catch rates of gizzard shad and bluegill were 38.7/h and 388.0/h, respectively. Index of vulnerability (IOV) for gizzard shad was very poor, indicating that only 10% of gizzard shad were available to existing predators; this was similar to IOV estimates in previous years (Figure 3). Electrofishing catch rate of gizzard shad in 2005 was slightly lower than 1997 (45.3/h) and 2001 (59.3/h) (Figure 3). Bluegill catch rates in 2005 were approximately 50% higher than total CPUE from surveys in 1997 and 2001 with abundant small individuals available as forage (Figure 6). Catch rate for combined sunfish species (warmouth, bluegill, longear sunfish, redear sunfish, and spotted sunfish) has increased 20% from 1997 (600.7/h).

Channel catfish: Channel catfish and flathead catfish were both present in Lake Bob Sandlin. The gill net catch rate of channel catfish in 2005 was 6.6/nn, which was lower than that of recent surveys (11.2/nn; 2002 and 1997; 13.3/nn) (Figure 4). The decline was most evident with the absence of sub-stock size (<11 inches) fish. Growth of channel catfish was good with fish attaining legal-size (≥ 12 inches) during their second growing season (Ryan and Brice 2002). Body condition was excellent with mean *Wr* for all inch groups >100 (Figure 4). Flathead catfish were collected at a rate of 1.3/nn in 2006. Creel surveys (2004-2005) indicated that directed effort for catfish was 0.94 hours/acre (Table 7). Harvest rate of catfish by all anglers was 1.22 fish/hour. Harvested fish ranged from 12 to 18 inches (Figure 5).

White bass: The gill net catch rate of white bass in 2006 was 3.3/nn, which was lower than catch rates in 2002 (8.3/nn) and 1997 (14.6/nn) (Figure 9.). The greatest decline was with fish ≤ 10 inches. Growth of white bass was good with fish attaining legal-size by the end of their first growing season (Ryan and Brice 2002). Anglers targeting white bass fished 0.23 hours/acre and harvested 0.32 fish/hour (Table 8). Harvested (all anglers) fish ranged from 10 to 15 inches (Figure 10). Seventy-four percent of the legal-size white bass caught were released.

Black bass: The electrofishing catch rate of spotted bass in 2005 was 34.0/h, which was an increase from 2003 (21.3/h). The population had a good size distribution along with moderate body condition (Figure 11). Creel surveys indicated that spotted bass 6-16 inches were harvested. Growth of spotted bass is very slow (Ryan and Brice 2002).

The electrofishing catch rate of largemouth bass in 2005 was 185.3/h. This catch rate was 2 times that of 2004 (90.7/h) and also greater than catch rates in 2003 (126.7) (Figure 12.) and 2001 (130.6/h) (Ryan and Brice 2002). Most of this increase in relative abundance was attributed to the increase in stock-size fish. The CPUE of stock-size fish in 2005 was 118.7/h while in 2004 and 2003 it was 69.3/h and 126.7/h, respectively. An increase in abundance of aquatic vegetation in recent years may have contributed to this increase in recruitment. The Florida largemouth bass allele frequency was 36.8%, similar to estimates reported in 2001 (32.5%) and 1997 (31.1%) (Table 11). No pure Florida largemouth bass were collected in a 75 fish sample of YOY largemouth bass in 2005 (Table 11.). Growth of largemouth bass in Bob Sandlin was good. Average age at 14 inches (13.6 to 14.9 inches) was 2.3 years (N = 13; range = 1 – 3 years). Condition of largemouth bass was good with mean Wr for all inch groups >90 .

Anglers targeting black bass fished 8.53 hours/acre. Largemouth bass were harvested at 1.63 fish/hour and spotted bass were harvested at 0.22 fish/hour (Figure 13.). Harvest (all anglers) of largemouth bass and spotted bass ranged from 6 to 18 inches and 11 to 15 inches, respectively. Anglers released 47% of the legal-size black bass that they caught (Table 10).

Crappie: Experimental spring trap netting was conducted in 2006 in an attempt to increase catch rates by sampling during the spawning season. Because of the experimental nature of the procedures, data from that survey should not be compared to previous samples. Trap net catch rates for white and black crappie were 0.7/nn and 2.2/nn, respectively (Figures 14 and 15.). Anglers targeting crappie fished 1.33 hours/acre and harvested 2.20 fish/hour. Crappie from 8 to 15 inches were harvested (Figure 16.). White crappie reach 10 inches in total length (legal size) by the end of their second growing season (age 1) while black crappie attain legal-size during their third growing season (age 2) (Ryan and Brice 2002).

Fisheries management plan for Lake Bob Sandlin, Texas

Prepared – July 2005.

ISSUE 1: The abundance of aquatic vegetation in Lake Bob Sandlin has increased from 194 acres (2%) in 2001 to 2130 acres (23%) in 2005. Hydrilla is the dominant aquatic plant estimated at 1,898 acres. While this level of aquatic plant coverage is not problematic, certain areas may require management to maintain access.

MANAGEMENT STRATEGY

1. Allow treatments of nuisance aquatic vegetation to allow property owners access to the lake. Procedural requirements as outlined in *Aquatic Vegetation Management in Texas: A Guidance Document* will be followed.
2. Conduct annual aquatic vegetation surveys to monitor trends and estimate coverage of hydrilla, Eurasian watermilfoil, and native plants.

ISSUE 2: Florida largemouth bass (FLMB) influence has remained above 20% in the Lake Bob Sandlin largemouth bass population since the 1990s, however very few pure FLMB or F1 first generation hybrids have been collected in young-of-year samples (Table 11). Recent increases in aquatic vegetation at Lake Bob Sandlin create conditions favorable for good survival of recruitment of stocked FLMB. Stocking at this time could increase abundance of pure FLMB and F1 hybrids and increase trophy fishing potential of this reservoir.

MANAGEMENT STRATEGY

1. Stock FLMB at 50/acre in 2006 and 2007.
2. Conduct an electrofishing survey in fall 2009 to assess FLMB influence. Young-of-year largemouth bass will be collected (N=60) to assess genetics (% pure FLMB and F1 hybrids).
3. Conduct standard electrofishing surveys in fall 2007 and 2009 to monitor the largemouth bass and prey species populations.

ISSUE 3: Anglers and stakeholders need to be informed about fisheries management activities, fishing opportunities, and other issues at Lake Bob Sandlin.

MANAGEMENT STRATEGIES

1. Continue to provide news releases to the print and broadcast media.
2. Continue to provide fisheries presentations to public regarding issues/opportunities at Lake Bob Sandlin

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes aquatic vegetation surveys (2006-2009); supplemental electrofishing survey in 2007; and required electrofishing, trap net, and gill net surveys in 2009/2010. Annual aquatic vegetation surveys are necessary to monitor hydrilla and Eurasian watermilfoil. Supplemental electrofishing in 2007 will be conducted to monitor the largemouth bass and prey fish populations. Genetic analysis of age-0 LMB in Fall 2009 will be used to evaluate effectiveness of the 2006/2007 FLMB stockings.

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- Ryan, M. J., and M. W. Brice. 2002. Statewide freshwater fisheries monitoring and management program survey report for Caddo Lake, 2001. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.

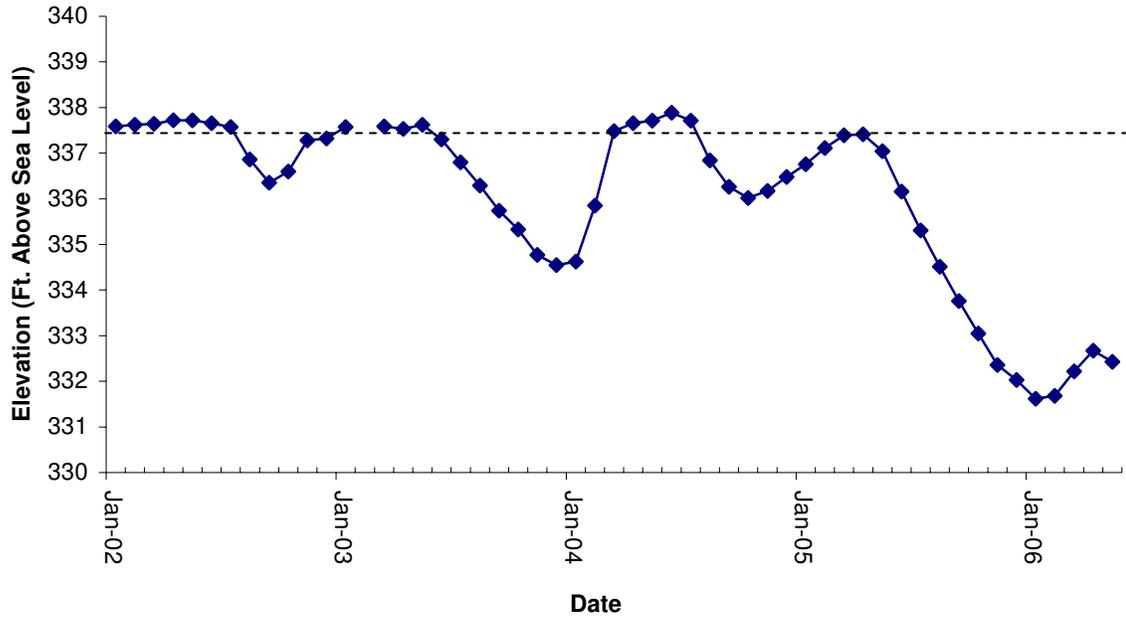


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Lake Bob Sandlin, Texas. Horizontal line marks denotes conservation pool level (337.50 msl).

Table 1. Characteristics of Lake Bob Sandlin, Texas.

Characteristic	Description
Year Constructed	1977
Controlling authority	Titus County Freshwater District No.1
Counties	Camp, Titus, Franklin
Reservoir type	Mainstream
Shoreline Development Index (SDI)	5.5
Conductivity	349 umhos/cm

Table 2. Harvest regulations for Lake Bob Sandlin, Texas.

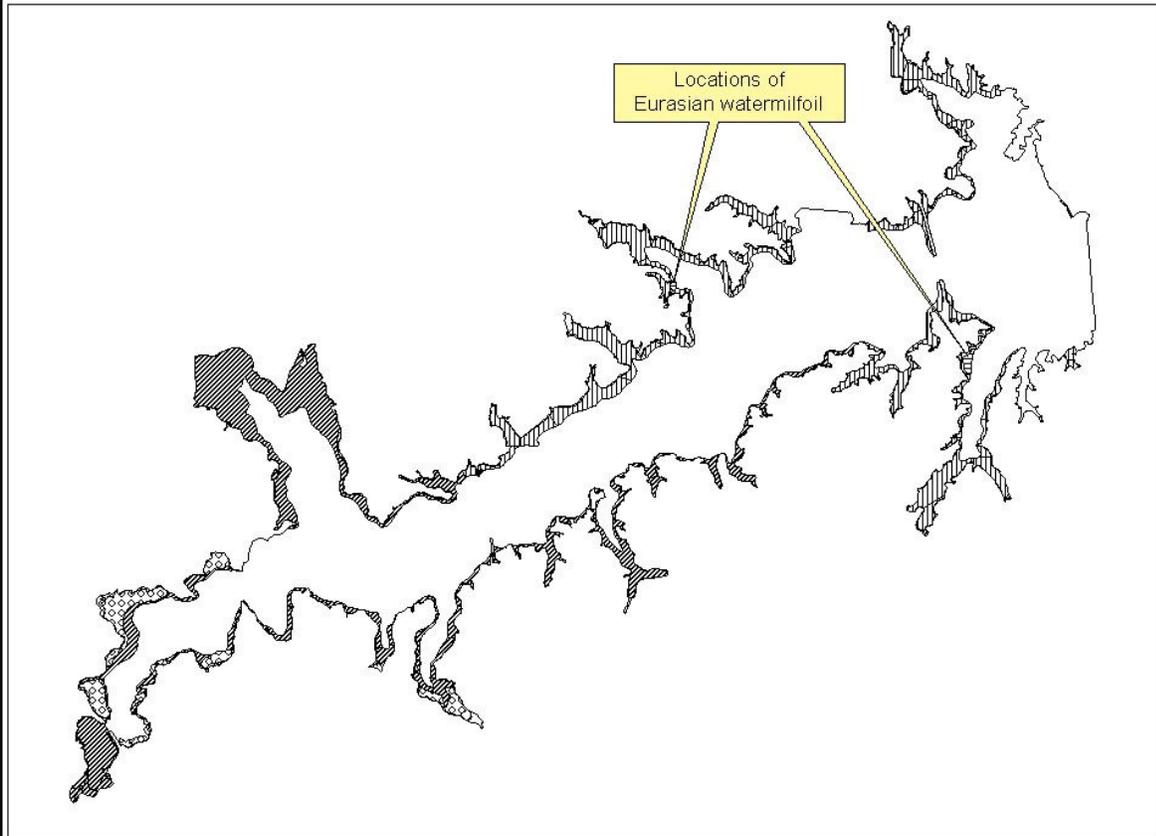
Species	Bag Limit	Minimum-Maximum Length (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12 - No Limit
Catfish, Flathead	5	18 - No Limit
Bass, White	25	10 - No Limit
Bass: largemouth	5 ^a	14 - No Limit
Bass: spotted	5 ^a	No Limit - No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 - No Limit

^a Daily bag for largemouth bass and spotted bass = 5 in any combination.

Table 3. Stocking history of Lake Bob Sandlin, Texas. Size categories are fry (FRY; <1 inch), fingerlings (FGL; 1-3 inches), advanced fingerlings (AFGL; 8 inches) and adults (ADL).

Species	Year	Number	Size
Channel catfish	1976	42,498	AFGL
	1978	149,315	AFGL
	2000	812	AFGL
	Total	192,625	
Florida largemouth bass	1977	450,000	FRY
	1998	238,477	FGL
	Total	688,477	

Lake Bob Sandlin Aquatic Vegetation Survey August 29, 2005



Prepared 8 September 2005 by:
Michael W. Brice
TPWD Inland Fisheries District 3A
903-938-1007



Map Projection and Datum: UTM NAD83 Zone 15

Inland Fisheries Division
Texas Parks and Wildlife Department

NOTE: THIS MAP IS FOR REFERENCE ONLY

This map was prepared from data collected and ultimately bears no responsibility for the accuracy or use of the information with respect to possible errors, original map scale, collection methodology, currency of data, and other conditions specific to certain data.

Species	Acres
Coontail/Hydrilla mix	1,005
Hydrilla	893
American lotus	216
Eurasian watermilfoil	11
Pondweed	5
Cattail	4

Other species present:
Arrowhead
Chara
Nitella

Water level at time of the survey was 334 msl.

Figure 2. Results of aquatic vegetation survey conducted at Lake Bob Sandlin, Texas September 2005.

Table 4. Survey of aquatic vegetation, Lake Bob Sandlin, Texas, 2005. Surface area (acres) and percent of reservoir surface area was determined for dominant aquatic vegetation species.

Species	Acres	Percent of reservoir surface area
Hydrilla/coontail mix	1,005	11.00
Hydrilla	893	9.80
American lotus	216	2.40
Eurasian watermilfoil	11	0.12
Pondweed	5	0.05
Cattail	4	0.04
Arrowhead	Trace	<0.01
Chara	Trace	<0.01
Nitella	Trace	<0.01

Table 5. Percent directed angler effort by species for Lake Bob Sandlin, Texas, 2004 – 2005.

Species	Year
	2004/2005
Catfish	7.3
Morone spp.	1.7
Sunfish spp.	1.0
Black bass	65.8
Crappie	10.4
Anything	13.9

Table 6. Total fishing effort (h) for all species and total directed expenditures at Lake Bob Sandlin, Texas, 2004- 2005.

Creel Statistic	Year
	2004/2005
Total fishing effort	118,370.0
Total directed expenditures	\$664,761.00

Gizzard shad

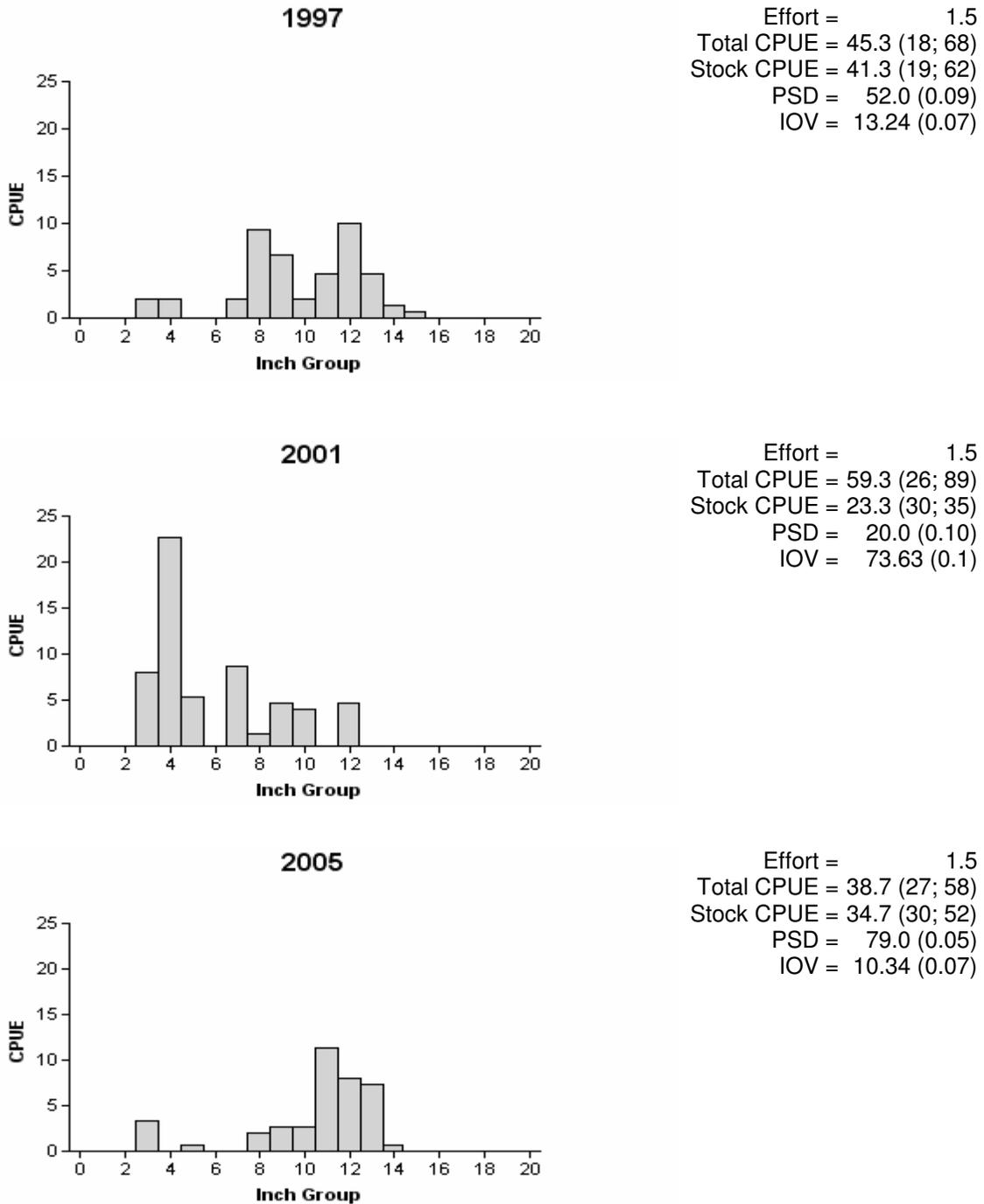


Figure 3. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV and size structure are in parentheses) for fall electrofishing surveys, Lake Bob Sandlin, Texas, 1997, 2001, and 2005.

Channel catfish

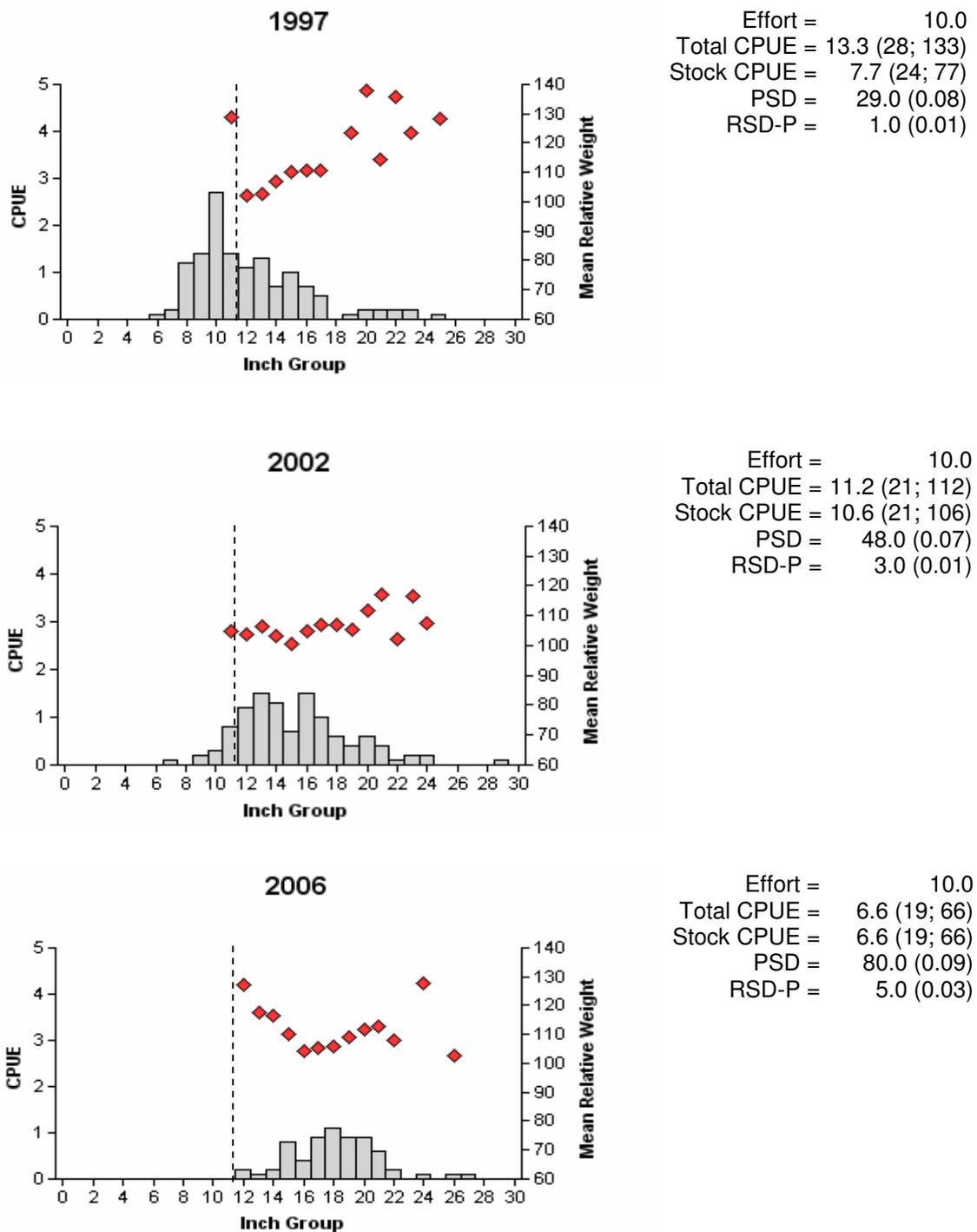


Figure 4. Number of channel catfish caught per net night (CPUE; bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Bob Sandlin, Texas, 1997, 2002, and 2006. Vertical lines indicate minimum length limit.

Channel catfish

Table 7. Creel survey statistics for channel catfish at Lake Bob Sandlin, Texas from June 2004 through May 2005 where total catch per hour is for anglers targeting channel catfish and total harvest is the estimated number of catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2004/2005
Directed effort (h)	8,584.8 (26)
Directed effort/acre	0.94 (26)
Total catch per hour	1.0 (63)
Total harvest	11,129 (34)
Harvest/acre	1.22 (34)
Percent legal released	9.3

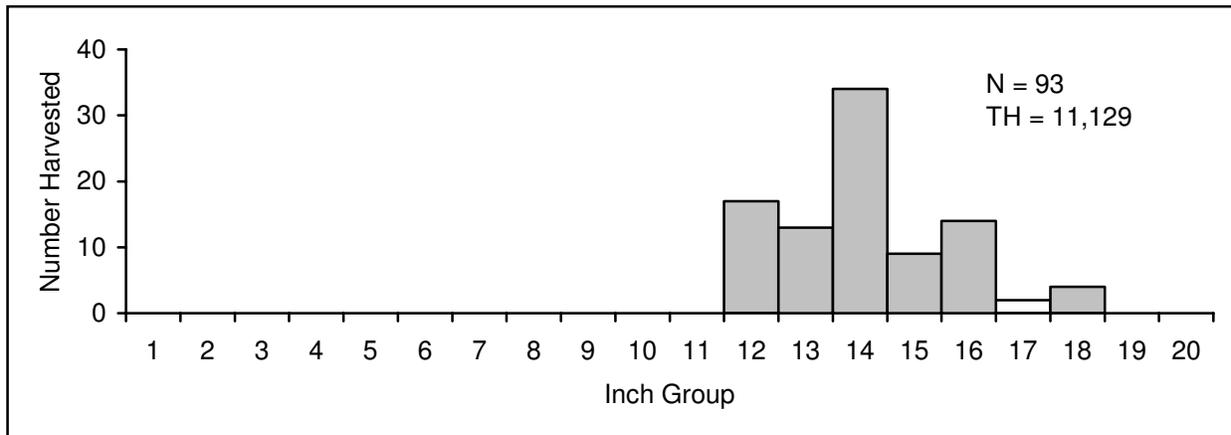
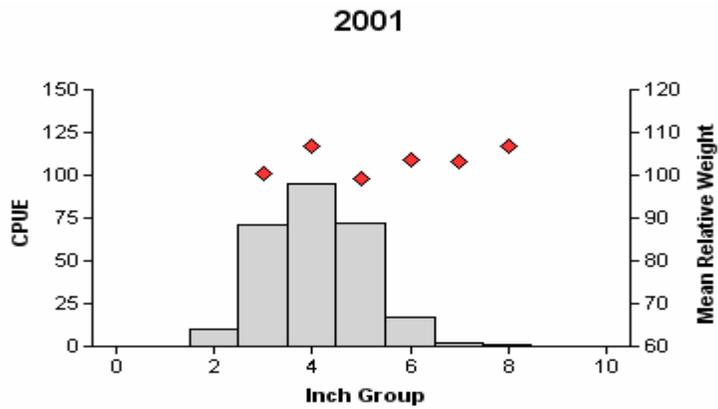


Figure 5. Length frequency of harvested channel catfish observed during creel surveys at Lake Bob Sandlin, Texas, June 2004 through May 2005, all anglers combined. N is the number of harvested channel catfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

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Bluegill



Effort = 1.5
 Total CPUE = 255.3 (15; 383)
 Stock CPUE = 220.7 (15; 331)
 PSD = 4.0 (0.01)
 RSD-P = 0.0 (0)



Effort = 1.5
 Total CPUE = 267.3 (29; 401)
 Stock CPUE = 257.3 (30; 386)
 PSD = 8.0 (0.02)
 RSD-P = 0.0 (0)



Effort = 1.5
 Total CPUE = 388.0 (22; 582)
 Stock CPUE = 350.7 (22; 526)
 PSD = 11.0 (0.02)
 RSD-P = 0.0 (0)

Figure 6. Number of bluegill caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Bob Sandlin, Texas, 1997, 2001, and 2005.

Bluegill

Table 7. Creel survey statistics for bluegill at Lake Bob Sandlin, Texas from June 2004 through May 2005 where total catch per hour is for anglers targeting bluegill and total harvest is the estimated number of sunfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2004/2005
Directed effort (h)	1,1175.1 (56)
Directed effort/acre	0.13 (56)
Total catch per hour	14.65*
Total harvest	5,843 (71)
Harvest/acre	0.64 (71)
Percent legal released	48.0

* = sample size insufficient for calculating RSE

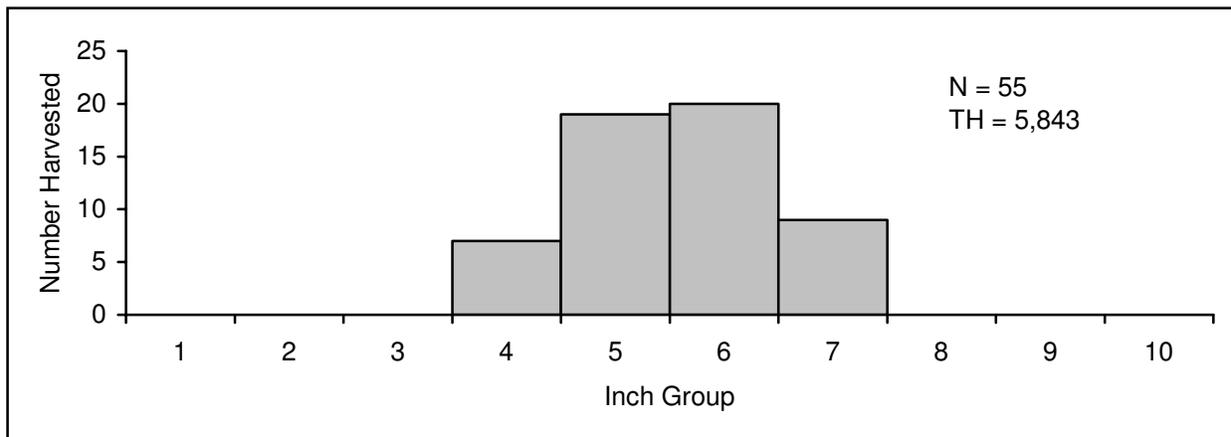


Figure 7. Length frequency of harvested bluegill observed during creel surveys at Lake Bob Sandlin, Texas, June 2004 through May 2005, all anglers combined. N is the number of harvested bluegill observed during creel surveys, and TH is the total estimated harvest for the creel period.

Redear sunfish

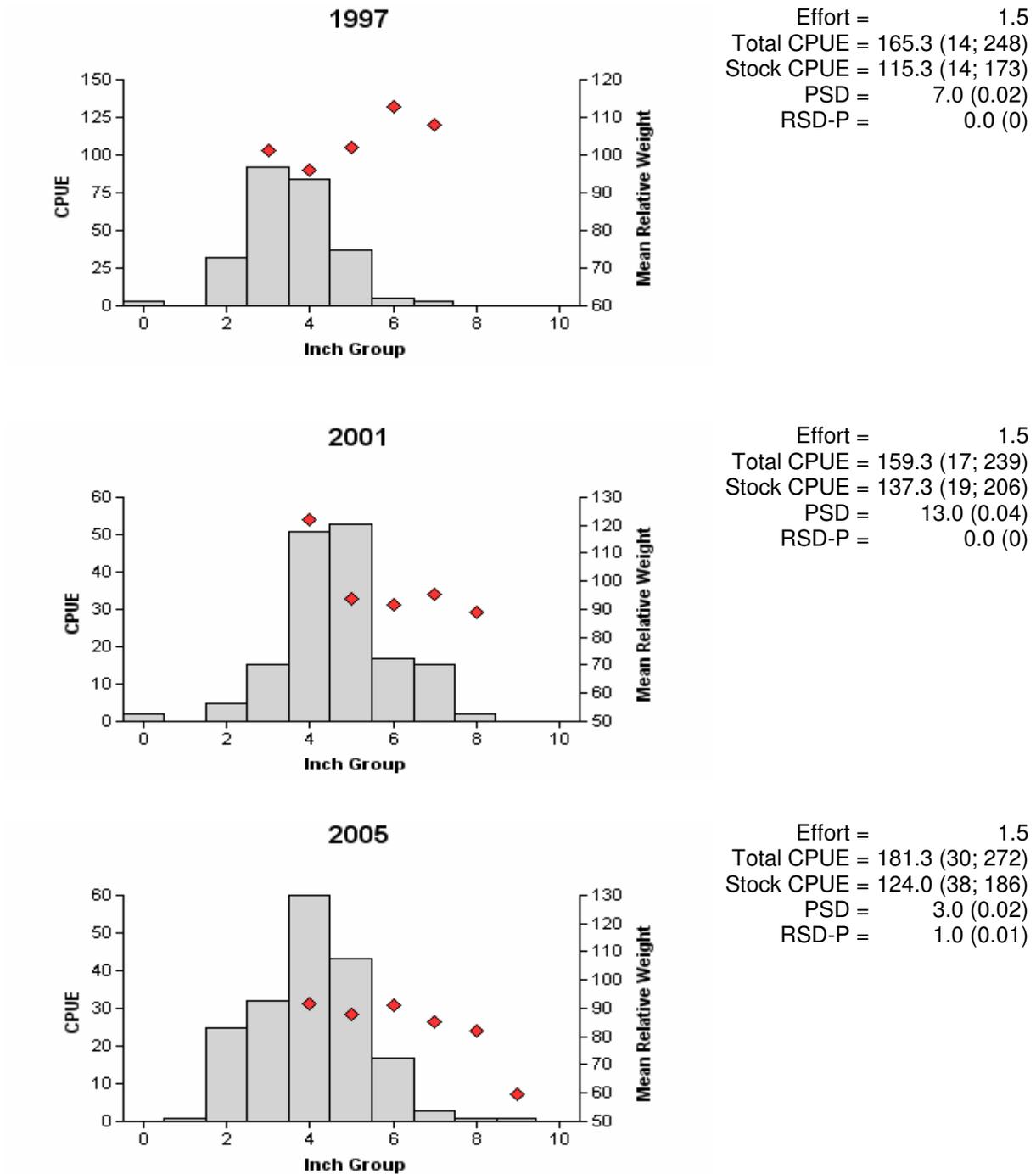


Figure 8. Number of redear sunfish caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Bob Sandlin, Texas, 1997, 2001, and 2005.

White bass

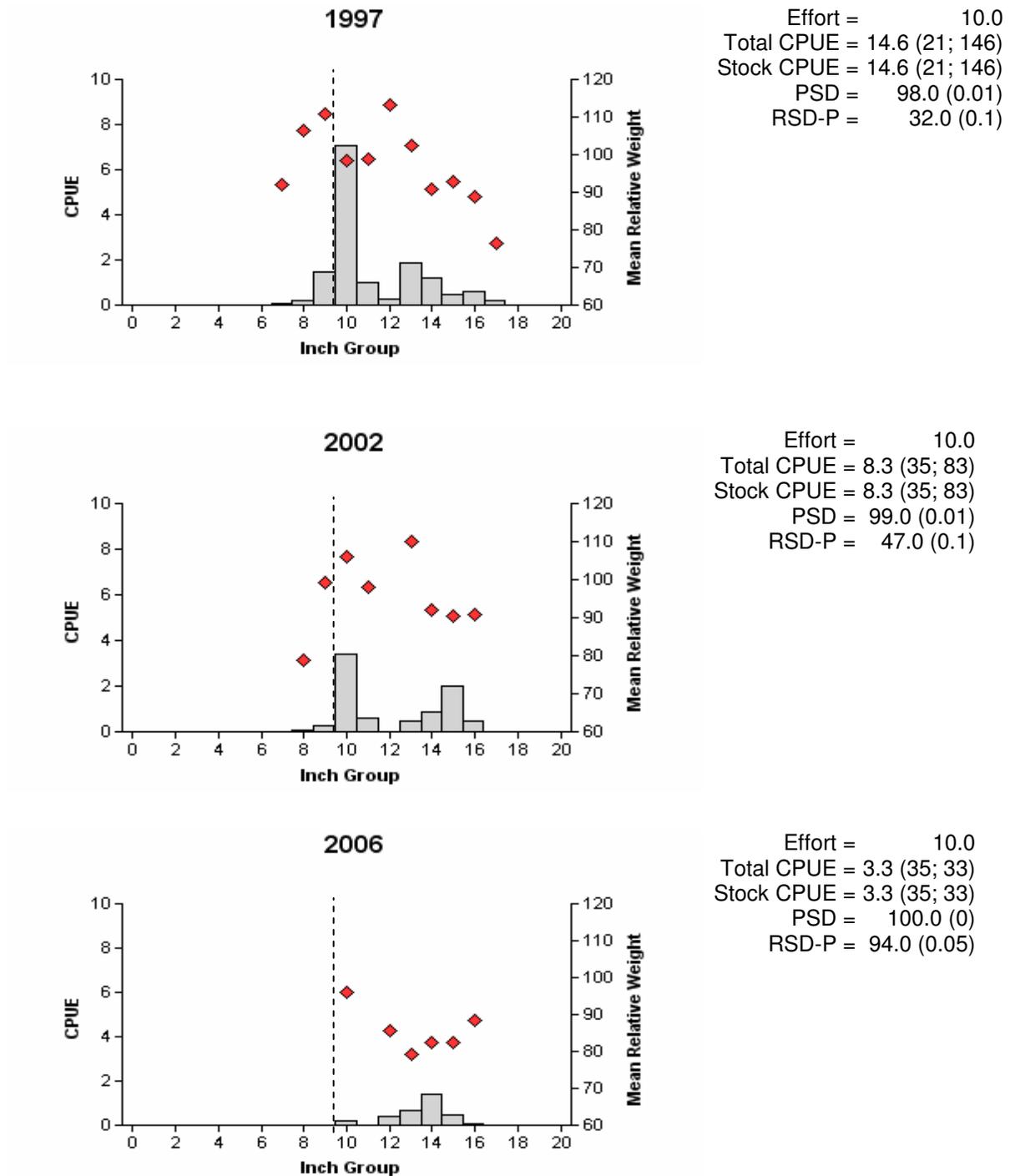


Figure 9. Number of white bass caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Bob Sandlin, Texas, 1997, 2002, and 2006. Vertical lines indicate minimum length limit.

White bass

Table 8. Creel survey statistics for white bass at Lake Bob Sandlin, Texas from June 2004 through May 2005, where total catch per hour is for anglers targeting white bass and total harvest is the estimated number of white bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2004/2005
Directed effort (h)	2,051.8 (40)
Directed effort/acre	0.23 (40)
Total catch per hour	3.90 (63)
Total harvest	2,888 (87)
Harvest/acre	0.32 (87)
Percent legal released	74.0

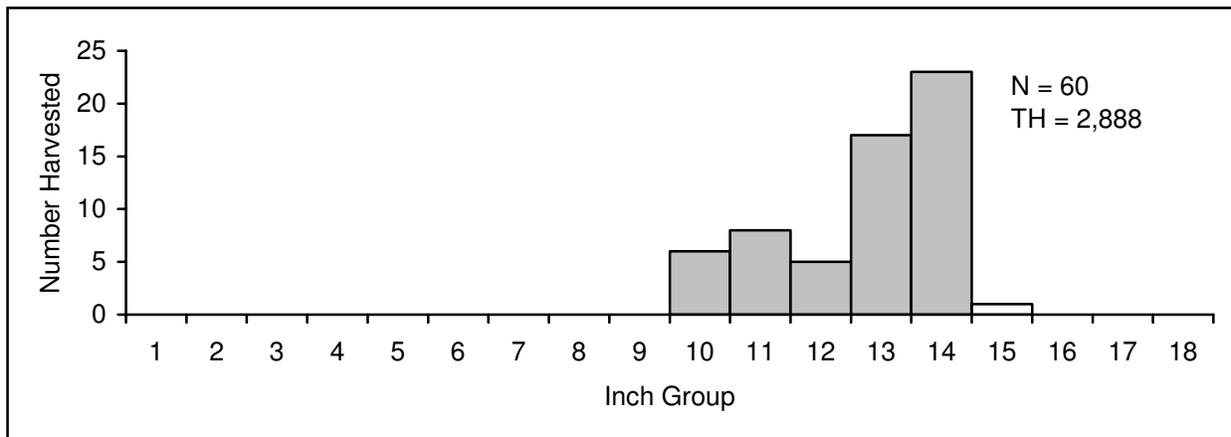
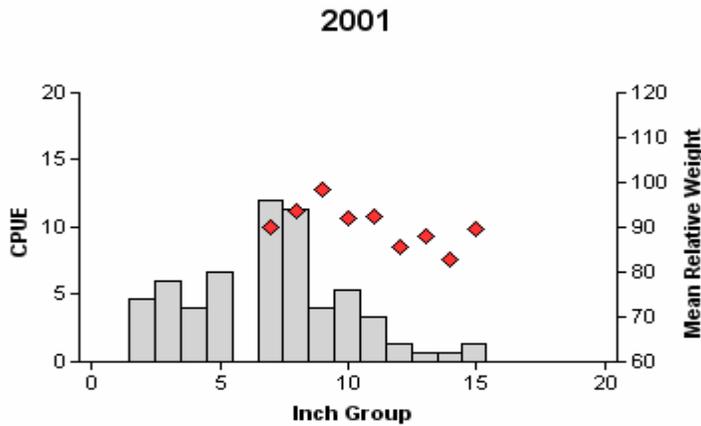
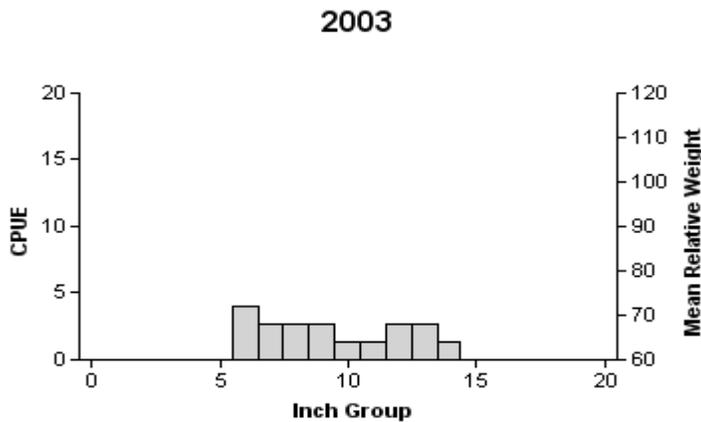


Figure 10. Length frequency of harvested white bass observed during creel surveys at Lake Bob Sandlin, Texas, June 2003 through May 2004, all anglers combined. N is the number of harvested white bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

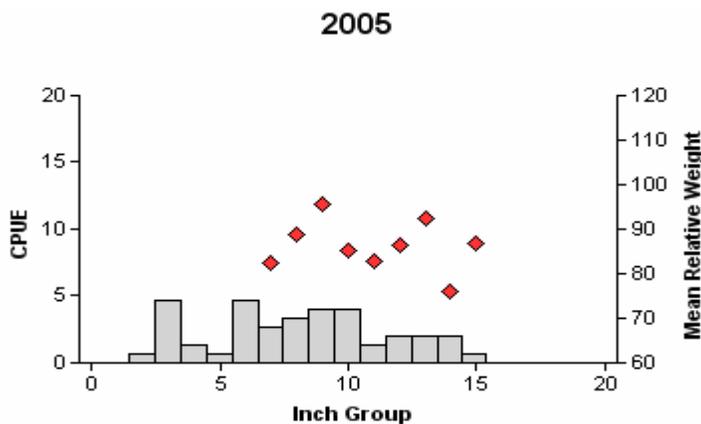
Spotted bass



Effort = 1.5
 Total CPUE = 61.3 (30; 92)
 Stock CPUE = 40.0 (35; 60)
 PSD = 18.0 (0.06)
 RSD-P = 5.0 (0.03)



Effort = 0.8
 Total CPUE = 21.3 (42; 16)
 Stock CPUE = 17.3 (38; 13)
 PSD = 46.0 (0.15)
 RSD-P = 8.0 (0.09)



Effort = 1.5
 Total CPUE = 34.0 (34; 51)
 Stock CPUE = 22.0 (38; 33)
 PSD = 36.0 (0.08)
 RSD-P = 12.0 (0.05)

Figure 11. Number of spotted bass 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, Lake Bob Sandlin, Texas, 2002, 2003, and 2003. Relative weight data was not collected in 2003.

Largemouth bass

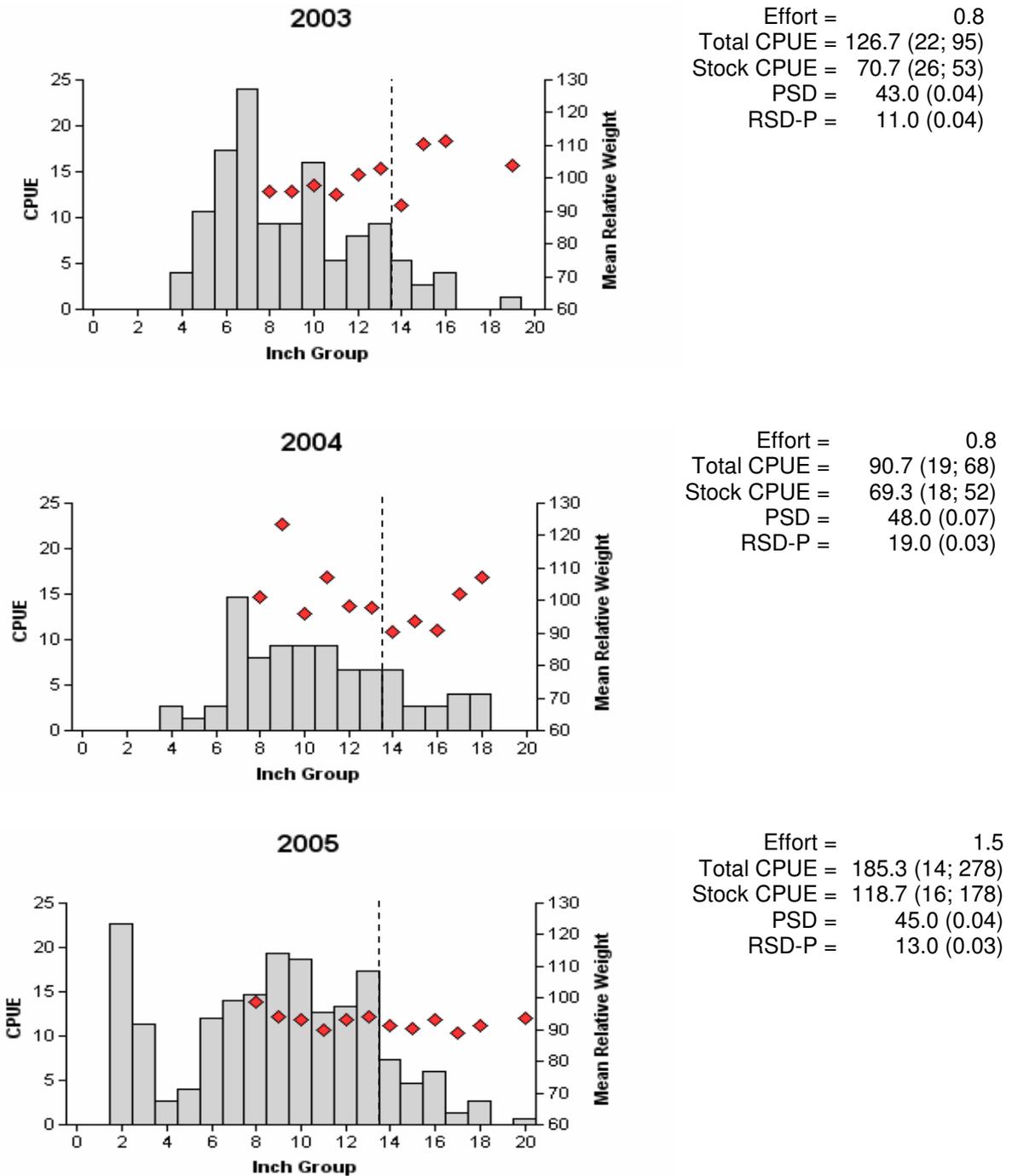


Figure 12. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Bob Sandlin, Texas, 2003, 2004, and 2005. Vertical lines indicate minimum length limit.

Black bass

Table 10. Creel survey statistics for black bass at Lake Bob Sandlin, Texas from June 2004 through May 2005, where total catch per hour is for anglers targeting black bass and total harvest is the estimated number of black bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2004/2005
Directed effort (h)	77,769.0 (12)
Directed effort/acre	8.53 (12)
Total catch per hour	1.10 (12)
Total harvest	16,839 (40)
Spotted bass	2,002 (152)
Largemouth bass	14,837 (24)
Harvest/acre	1.85 (40)
Spotted bass	0.22 (152)
Largemouth bass	1.63 (24)
Percent legal released	46.7

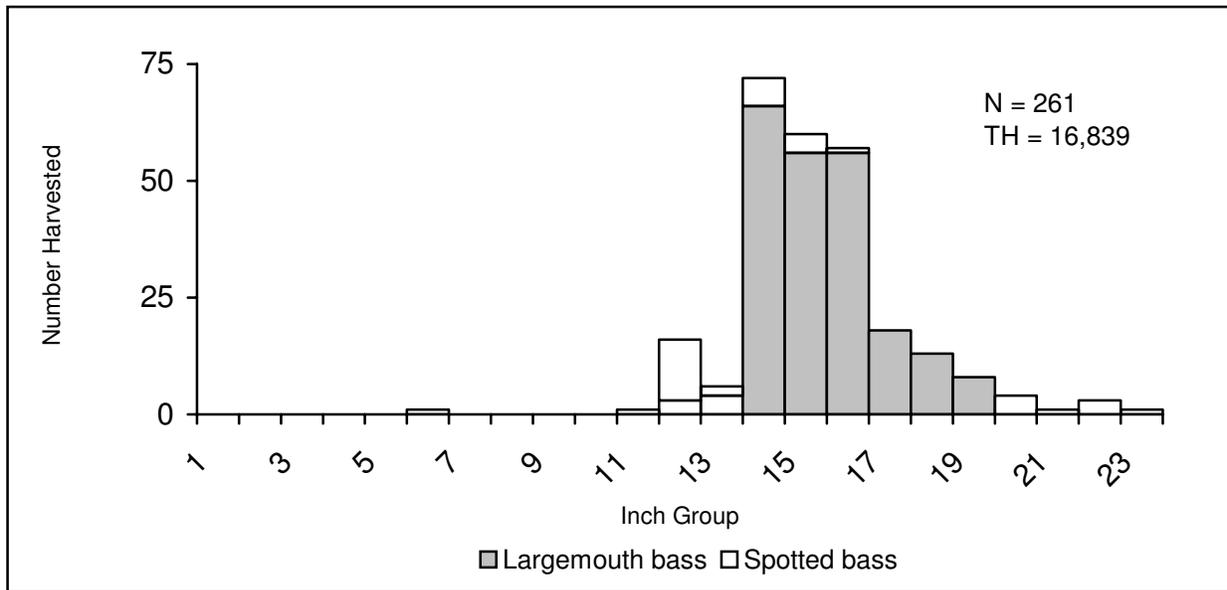


Figure 13. Length frequency of harvested black bass observed during creel surveys at Lake Bob Sandlin, Texas, June 2003 through May 2004, all anglers combined. N is the number of harvested black bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 11. Results of genetic analysis of largemouth bass collected by fall electrofishing, Lake Bob Sandlin, Texas, 1990, 1997, 2001, 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		
1990	30	11	8	10	11	62.1	0.0
1997	41	0	9	21	11	31.1	0.0
2001	30	1	4	18	7	32.5	3.3
2005	75	0	3	46	3	36.8	0.0

White crappie

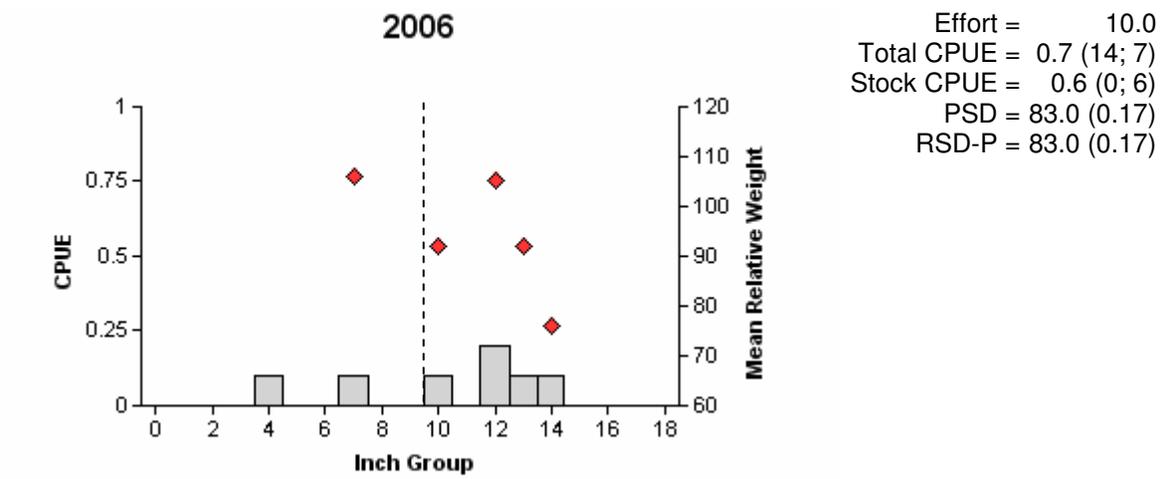


Figure 14. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring trap net surveys, Lake Bob Sandlin, Texas, 2006. Vertical lines indicate minimum length limit.

Black crappie

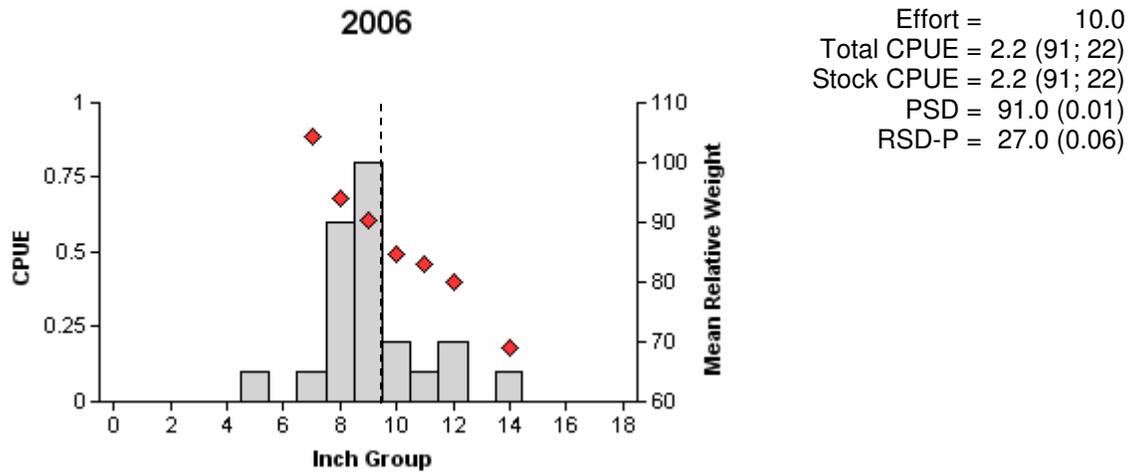


Figure 15. Number of black crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring trap net surveys, Lake Bob Sandlin, Texas, 2006. Vertical lines indicate minimum length limit.

Crappie

Table 12. Creel survey statistics for white and black crappie at Lake Bob Sandlin, Texas from June 2004 through May 2005, where total catch per hour is for anglers targeting crappie and total harvest is the estimated number of crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year
	2004/2005
Directed effort (h)	12,121 (24)
Directed effort/acre	1.33 (24)
Total catch per hour	2.41 (35)
Total harvest	20,098 (53)
White crappie	4,778 (73)
Black crappie	5,482 (58)
Crappie (unidentified)	9,838 (45)
Harvest/acre	2.20 (53)
White crappie	0.52 (73)
Black crappie	0.60 (58)
Crappie (unidentified)	1.08 (45)
Percent legal released	3.61 (66)

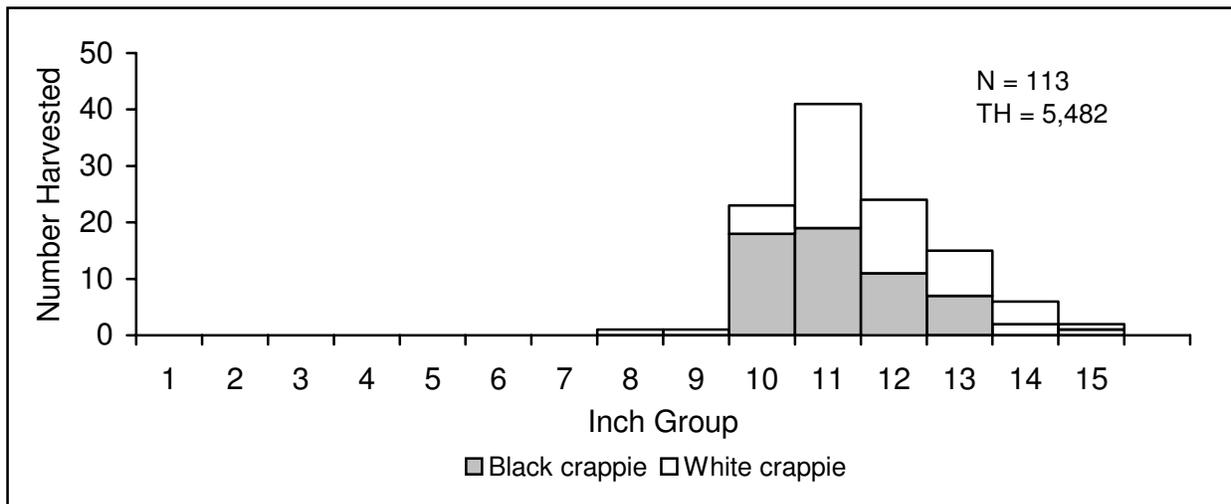


Figure 16. Length frequency of harvested white and black crappie observed during creel surveys at Lake Bob Sandlin, Texas, June 2004 through May 2005, all anglers combined. N is the number of harvested crappie observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 13. Proposed sampling schedule for Lake Bob Sandlin, Texas. Gill netting surveys are conducted in the spring, vegetation surveys are conducted in the summer, and electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

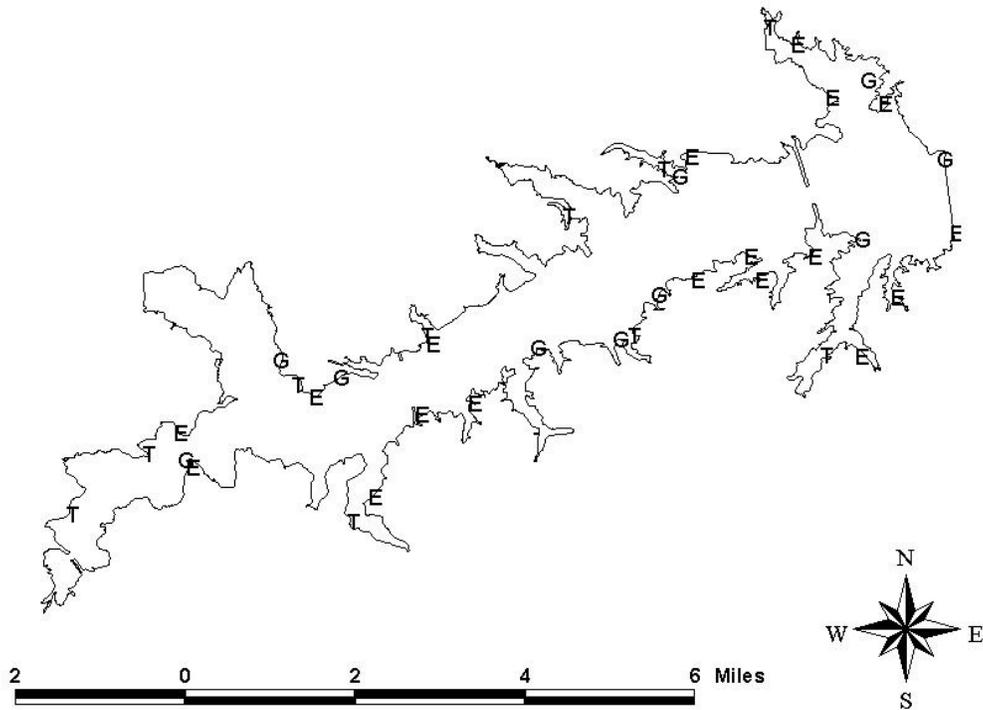
Survey Year	Vegetation	Electrofisher	Trap net	Gill net	Report
Summer 2006 - Spring 2007	A				
Summer 2007 - Spring 2008	A	A			
Summer 2008 - Spring 2009	A				
Summer 2009 - Spring 2010	S	S	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Lake Bob Sandlin, Texas, 2004-2005.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					58	38.7
Threadfin shad					5	3.3
Channel catfish	66	6.6				
Flathead catfish	13	1.3				
White bass	33	3.3				
Warmouth					17	11.3
Bluegill					582	388.0
Longear sunfish					58	38.7
Redear sunfish					272	181.3
Spotted sunfish					63	42.0
Spotted bass					51	34.0
Largemouth bass					278	185.3
White crappie			7	0.70		
Black crappie			22	2.20		

APPENDIX B



Location of sampling sites, Lake Bob Sandlin, Texas, 2005-2006. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively.