

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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FEDERAL AID PROJECT F-30-R-34

STATEWIDE FRESHWATER FISHERIES MONITORING AND MANAGEMENT PROGRAM

2008 Survey Report

Purtis Creek State Park Lake

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SURVEY AND MANAGEMENT SUMMARY

The Purvis Creek State Park Lake fish community was surveyed from September 2008 through May 2009 using electrofisher, gill nets, and trap nets. An experimental trap net survey using lighted/non-lighted trap nets was conducted in November 2008, and results from standard, non-lighted nets are included in this report. A vegetation survey was conducted in September 2008. This report summarizes results of these surveys and contains a management plan based on those findings.

- **Reservoir Description:** Purvis Creek State Park Lake is a 349-acre reservoir on Purvis Creek, a tributary of the Trinity River. The impoundment was constructed by the Texas Parks and Wildlife Department in 1985 for recreation and soil conservation purposes. Boat and bank access are both good and the park maintains two handicap-accessible fishing piers.
- **Management History:** Important sport fish include sunfishes, largemouth bass, channel and blue catfish, and white crappie. Hydrilla surveys have been conducted annually, and treatments with herbicide and triploid grass carp have been conducted in accordance with an integrated pest management plan. Electrofishing has been conducted in the fall and spring each year to monitor the largemouth bass population managed by a catch-and-release harvest regulation. Prior to September 1, 2008, anglers were allowed to retain one fish greater than 21 inches to be weighed at a lake-side weigh station and immediately released or donated to the TPWD ShareLunker program. This regulation was modified in 2008 so that only fish 24 inches and longer can be donated or released. Genetic analysis of Florida largemouth bass alleles was previously assessed in 2002 and has remained stable. The lake was included in the Operation World Record (OWR) program in 2005. Two stockings of OWR fish were conducted in 2006 and 2008.
- **Fish Community**
 - **Prey species:** Threadfin shad were abundant in the reservoir in 2008. Electrofishing catch rates of gizzard shad were also good with a high percentage of fish available as forage. Electrofishing catch rates of bluegill and redear sunfish ≤ 4 inches were also high providing excellent prey availability for sport fishes.
 - **Catfishes:** Few channel and blue catfish were collected during gill net surveys in 2009. Recruitment of catfishes in Purvis Creek State Park Lake has historically been low, and supplemental stocking with advanced-size fingerlings has been conducted in an attempt to maintain this fishery.
 - **White bass:** No white bass were collected prior to 2005. In 2009, white bass were abundant in the reservoir as gill net catch rates increased to a historical high. All fish collected were in excellent condition and were of harvestable length.
 - **Largemouth bass:** Largemouth bass remain a popular fishery at Purvis Creek State Park Lake, and a catch-and-release regulation is set to maintain high angler catch rates. Electrofishing catch rates remained consistent, although the number of large fish observed in samples declined since 2006.
 - **Crappie:** White crappie were abundant in the reservoir and provide an important fishery. Trap net catch rates were good, and all fish were above stock size.
- **Management Strategies:** Conduct fall and spring electrofishing in 2009 and 2010 to assess largemouth bass population parameters. Monitor hydrilla coverage annually and evaluate continued effectiveness of grass carp stocking and recommend treatments if necessary. Promote angling opportunities by way of news releases. Maintain catch-and-release regulation for largemouth bass.

INTRODUCTION

This document is a summary of fisheries data collected from Purtil Creek State Park Lake from June 2008 through May 2009. The purpose of this document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2008 and 2009 data for comparison where appropriate.

Reservoir Description

Purtis Creek State Park Lake is a 349-acre reservoir on Purtil Creek, a tributary of the Trinity River. The impoundment was constructed by the Texas Parks and Wildlife Department in 1985 for recreation and soil conservation purposes. Boat and bank access are both good. There are two handicap-accessible fishing piers. Hydrilla (*Hydrilla verticillata*) has required periodic herbicide treatment to provide access to the fishing piers, boat ramp, and swimming beach. Purtil Creek State Park funded the treatment of hydrilla by stocking 1,000 triploid grass carp (*Ctenopharyngodon idella*) in 2007, which, aided by flood-water inflows, effectively reduced hydrilla to trace amounts. Native vegetation, primarily emergent species, now covers 53 surface acres (15%). Other descriptive characteristics for Purtil Creek State Park Lake can be found in Table 1.

Management History

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

1. Monitor and assess Florida largemouth bass (*M. s. Floridanus*) genetics and population every other year.

Action: The largemouth bass (*Micropterus salmoides*) population is sampled every fall and spring to monitor the highly restrictive catch-and-release regulation. Genetic analysis was conducted in 2008 to assess the composition of Florida largemouth bass genetics in the population. The length limit for fish donated to the ShareLunker Largemouth Bass was increased from 21 inches to 24 inches to maintain consistency with statewide regulations.
2. Conduct channel and blue catfish stockings to maintain the fishery.

Action: Due to limitations in hatchery production, blue catfish (*Ictalurus furcatus*) have not been stocked since 2003, and channel catfish (*Ictalurus punctatus*) have not been stocked since 2006.
3. Monitor changes in habitat during annual vegetation surveys; provide Purtil Creek State Park staff with recommendations on hydrilla control as necessary.

Action: Periodic herbicide treatments have been conducted by the Texas Parks and Wildlife Aquatic Habitat Enhancement staff, and the introduction of 1,000 triploid grass carp was conducted in 2007.

Harvest regulation history: Sport fishes in Purtil Creek State Park Lake are currently managed with statewide harvest regulations with the exception of a catch-and-release regulation for largemouth bass (Table 2). One largemouth bass greater than 24 inches can be temporarily retained in a live well and immediately weighed using personal scales, and then immediately released or donated to the ShareLunker program.

Stocking history: In 2005, Purtil Creek State Park Lake was included in a long-term evaluation of the effectiveness of stocking offspring of TPWD ShareLunker brood fish, termed Operation World Record. Approximately 17,541 advanced-size (6-inch) ShareLunker largemouth bass were stocked since 2006 (Table 3). All ShareLunker progeny were tagged (coded stainless steel wire 0.25 mm in diameter and 1.1 mm long) prior to stocking. Prior to these stockings, Florida largemouth bass had not been stocked since 1996 due to a stable proportion of Florida largemouth bass alleles in the population (Table 5). Channel catfish have been stocked periodically since 1985; however, catfish have not been stocked since 2006. One thousand triploid grass carp were stocked in 2007. A complete stocking history is listed in Table 3.

Vegetation/habitat history: A comprehensive vegetation survey of Purtil Creek State Park Lake was conducted in July 2008. Historically, hydrilla has required annual treatments with aquatic herbicide by TPWD Inland Fisheries Aquatic Habitat Enhancement staff to maintain access to the reservoir. Hydrilla covered roughly 6% of the reservoir in 2004, and had expanded to cover 60% of the reservoir surface area by the fall of 2006. In 2007, strong currents from a flood event reduced hydrilla coverage to trace levels. One thousand triploid grass carp (stocked prior to flood event) have prevented the re-growth of hydrilla. American lotus (*Nelumba lutea*) is typically abundant in the upper third of the reservoir, yet declined from 27% in 2004 to 2% in 2008.

METHODS

Fishes were collected by electrofishing (1 hour at 12, 5-min stations), gill netting (5 net nights at 5 stations), and trap netting (15 net nights at 15 stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (# of fish/h) of actual electrofishing and, for gill and trap nets, as the number of fish per net night (fish/nn). All surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2005).

Sampling statistics (CPUE for various length categories), structural indices [Proportional Stock Density (PSD), Relative Stock Density (RSD)], and condition indices [relative weight (W_r)] 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. Ages were determined using otoliths from white bass (*Morone chrysops*), largemouth bass, and white crappie (*Pomoxis annularis*) with lengths ranging from 12.7-16 inches for white bass (N=20), 13.5-14.8 inches for largemouth bass (N=13), and 9.2-10.2 inches for white crappie (N=16). Microsatellite DNA analysis was used to determine largemouth bass genetic composition. Prior to 2005, genetic analysis was done by electrophoresis.

RESULTS AND DISCUSSION

Habitat: A comprehensive vegetation survey was conducted in September 2008, and species-specific hydrilla surveys have been conducted annually since 2006. Hydrilla covered roughly 6% of the reservoir in 2004, and had expanded to cover 60% of the reservoir's surface area by the fall of 2006. Following the introduction of 1,000 triploid grass carp and flooding in 2007, hydrilla has been reduced to trace amounts. American lotus occupied approximately 12 surface acres throughout the reservoir, and was predominant in the upper third of the reservoir at the time of survey. Native emergent vegetation occupied a fringe around the lake and consisted of waterleaf (*Hydrolea* spp.), cattails (*Typha* spp.), button bush (*Cephalanthus occidentalis*), maidencane (*Panicum hemitomon*), bull tongue (*Sagittaria* spp.), and arrowhead (*Sagittaria* spp.). Approximately 2 acres of alligatorweed (*Alternanthera philoxeroides*) were also present. A complete list of species present can be found in Table 4.

Prey species: Sunfishes have traditionally been the predominant prey available to largemouth bass in Purtil Creek State Park Lake. Electrofishing catch rates of bluegill (*Lepomis macrochirus*) and redear sunfish (*Lepomis microlophus*) have improved since 2004 and 2006. Bluegill electrofishing catch rates have increased from 35/h in 2004 (Ott and Bister 2005), to 465/h in 2008 (Figure 2). No redear were collected in 2004, but electrofishing catch rates in 2007 and 2008 were 344/h and 192/h respectively (Figure 3). A cohort of 6- to 7-inch redear sunfish represents opportunity for a developing fishery. Mean relative weight (W_r) in each inch class has generally been good (>95) for both bluegill and redear sunfish. The electrofishing catch rate of gizzard shad (*Dorosoma cepedianum*) has also improved in recent years and was 225/h in 2007 and 202/h in 2008 (Figure 1). Electrofishing catch rates of gizzard shad indicated an abundance of fish available to predators, with approximately 100/h collected <4 inches. Threadfin shad (*Dorosoma petenense*) electrofishing catch rates increased from 235/h in 2004 to 1,577/h in 2008 (Appendix A).

Catfish: Purts Creek State Park Lake exhibits poor catfish recruitment, presumably due to an abundant largemouth bass population, and has required stocking with advanced-sized fingerlings to support this fishery. However, due to limitations in hatchery production the lake has not received channel catfish or blue catfish since 2006 and 2003 respectively. Channel catfish <12 inches continue to be scarce in gill net surveys. Gill net catch rate of channel catfish in 2009 was low (0.6/nn) and similar to 2001 (0.4/nn); no channel catfish were collected in 2005. All channel catfish collected in 2001 and 2008 were above stock size (PSD=100); however, sample size was only 3 fish (Figure 5). Blue catfish were stocked in 2000 and 2003; however, recruitment has not been observed. Sample size was three blue catfish, and consisted of fish greater than 30 inches (Figure 4).

Temperate basses: White bass were first collected in gill nets in Purts Creek State Park Lake in 2005. White bass have not been stocked by TPWD so it is not known how they were introduced in the reservoir. In 2009, gill net catch rate increased (4.6/nn) from 2005 (3.2/nn). White bass collected were from 2004, 2007, and 2008 year classes (N =20), and all fish were of harvestable length (Figure 7). Specimens collected in 2009 ranged from 12.7 to 16 inches in length and body condition of most inch classes was moderately high ($W_r > 95$) indicating adequate prey availability (Figure 6).

Largemouth bass: Annual fall and spring electrofishing surveys at Purts Creek State Park Lake continue to indicate the presence of a high-quality and stable largemouth bass population. Fall electrofishing catch rates of stock-size fish (≥ 8 inches) (55/h) declined from previous years from 114 and 107/h in 2006 and 2007, respectively (Figure 8). Spring electrofishing catch rates of stock-size fish have remained high at 129, 195, and 179/h in 2007, 2008, and 2009, respectively (Figure 9). Mean relative weight (W_r) in each inch class has generally been moderate (> 85) during fall sampling, and body condition has improved from 2006. The average age of largemouth bass at 14 inches (range=13.5-14.8 inches) was 2.15 years (N=13, range=1-3). Size structure of the population was within the target range (PSD=40, RSD-14=25). Thirty age-0 fish were collected for Microsatellite DNA analysis and 75.6% contained Florida largemouth bass (FLMB) alleles and 6.7% were pure FLMB (Table 5).

Crappie: Although trap net catch rates of white crappie (7.2/nn) were slightly lower than previous surveys, the ratio of quality-size to stock-size fish (PSD=79) remained consistent since 2000 (PSD=89) and 2004 (PSD=92) (Figure 9). Growth of white crappie to legal size was fast. The average age of white crappie at 10 inches (range=9.2-10.2 inches) was 1.0 years (N=16, range=1). Following drought conditions in 2005 and 2006, a successful 2007 year-class should create an abundance of preferred-size, harvestable fish in 2009. Condition of white crappie was excellent with most inch groups having a mean $W_r \geq 100$.

Fisheries management plan for Purtis Creek State Park Lake, Texas

Prepared – July 2009

ISSUE 1: The largemouth bass fishery in Purtis Creek State Park Lake remains highly popular with anglers.

MANAGEMENT STRATEGIES

1. Conduct biannual electrofishing in fall 2009 through 2012 and spring 2010 through 2013 to monitor growth rates and abundance of largemouth bass and prey populations, respectively.

ISSUE 2: Hydrilla has been problematic on Purtis Creek State Park Lake. Herbicide treatments were implemented to treat hydrilla in access areas, and 1,000 triploid grass carp were stocked in 2007. The combination of the herbicide treatments, flood conditions, and grass carp introductions reduced hydrilla to trace amounts. Native emergent vegetation continues to occupy 15% of the reservoir.

MANAGEMENT STRATEGIES

1. Continue to survey hydrilla coverage during the summer each year.
2. Coordinate with Purtis Creek State Park staff to begin native plant establishment project.

ISSUE 3: The recent increase in white bass abundance has added another component to this fishery and would benefit from additional promotion.

MANAGEMENT STRATEGY

1. Promote this fishery to anglers through news releases and public presentations.

ISSUE 4: There is little evidence of natural catfish recruitment at Purtis Creek State Park Lake. Consider stocking advanced size (> 12 inch) channel catfish fingerlings if angler interest is significant. Since this lake is a state park facility, it should be considered a high priority for stocking.

MANAGEMENT STRATEGY

1. Conduct a creel survey to determine angler interest and utilization of the catfish fishery.
2. If not available from TPWD hatcheries seek outside sources of funding for catfish and/or funding partners to support the catfish fishery at Purtis Creek State Park Lake.
3. When available, stock channel catfish advanced fingerlings.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes additional spring and fall electrofishing in 2009-2012 to monitor the largemouth bass fishery and prey populations, and mandatory monitoring in 2012-2013 (Table 6). Additional vegetation surveys will be conducted to monitor hydrilla coverage.

LITERATURE CITED

- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Ott, R. A. and T. J. Bister. 2005. Statewide freshwater fisheries monitoring and management program survey report for Purtil Creek State Park Lake, 2004. Texas Parks and Wildlife Department, Federal Aid Report F-30-R-30, Austin. 29 pp.
- 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.

Table 1. Characteristics of Purtis Creek State Park Lake, Texas.

Characteristic	Description
Year completed	1985
Controlling authority	Texas Parks and Wildlife Department
County	Henderson and Van Zandt
Reservoir type	State Park Lake
Shoreline Development Index (SDI)	3.4
Conductivity	212 umhos/cm

Table 2. Harvest regulations for Purtis Creek State Park Lake, Texas.

Species	Bag Limit	Minimum-maximum length (inches)
Catfish: channel and blue, their hybrids and subspecies	5 (in any combination)	No limit
Catfish, flathead	5	18-No limit
Bass, white	25	10-No limit
Bass, largemouth	Catch-and-release only: Fish \geq 24 inches in length may be temporarily retained in a live well and immediately weighed using personal scales.	-
Crappie: white and black, their hybrids and subspecies	25 (in any combination)	10-No limit

Table 3. Stocking history of Purtil Creek State Park Lake, Texas.
 Size categories are: FRY <1 inch; FGL =1-3 inches, AFGL = 4-8 inches, and adults (ADL).

Species	Year	Number	Size
Threadfin shad	1985	1,840	ADL
Threadfin shad	1994	<u>500</u>	ADL
		2,340	
Blue catfish	2000	8,906	FGL
Blue catfish	2003	<u>8,746</u>	FGL
		17,652	
Channel catfish	1985	54,140	FGL
Channel catfish	1986	10,080	FGL
Channel catfish	1987	4,400	FGL
Channel catfish	1989	11,230	ADL
Channel catfish	1990	177,503	FGL
Channel catfish	1991	8,875	FGL
Channel catfish	1992	14,650	FGL
Channel catfish	1993	17,882	FGL
Channel catfish	1994	8,876	FGL
Channel catfish	1995	8,170	FGL
Channel catfish	1995	2,703	ADL
Channel catfish	1996	8,850	ADL
Channel catfish	1998	8,973	FGL
Channel catfish	1999	8,870	FGL
Channel catfish	2001	8,875	FGL
Channel catfish	2002	8,875	FGL
Channel catfish	2005	20,824	FGL
Channel catfish	2006	<u>4,604</u>	FGL
		388,380	
Bluegill	1994	<u>2,500</u>	FGL
		2,500	
Bluegill x Green sunfish	1997	<u>700</u>	FGL
		700	
Coppernose bluegill	1987	<u>7,300</u>	FGL
		7,300	
Redear sunfish	1985	<u>86,792</u>	FGL
		86,792	
Largemouth bass	1995	19,959	FGL
Largemouth bass	1996	<u>17,987</u>	FGL
		37,946	
Florida Largemouth bass	1985	31,440	FGL
Florida Largemouth bass	1985	<u>248</u>	ADL
		31,688	

Stocking history of Purtil Creek State Park Lake, Texas, continued.

Species	Year	Number	Size
ShareLunker Largemouth Bass	2006	8,734	AFGL
ShareLunker Largemouth Bass	2008	<u>8,807</u>	AFGL
		17,541	
Triploid Grass carp	2007	<u>1,000</u>	ADL
		1,000	

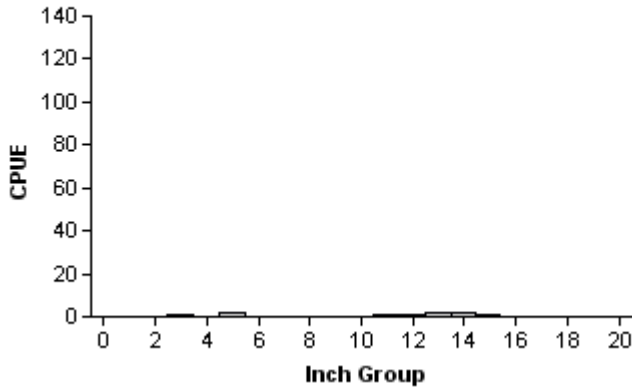
Table 4. Survey of aquatic vegetation, Purtil Creek State Park Lake, Texas. A vegetation survey was conducted in September, 2008. A linear shoreline distance (miles) was recorded for each type of aquatic vegetation found. Surface area (acres) and percent of reservoir surface area was also determined for each type.

Shoreline habitat type	Shoreline distance		Surface area	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Pondweed	0.13	1.5	0.5	<1
Hydrilla	0.02	<1	trace	<1
Alligatorweed	0.4	4.5	2.4	<1
American lotus	n/a	n/a	12	3.5
Native emergent:	5.9	66	40.5	11.4
Buttonbush			10	n/a
Arrowhead			trace	<1
Water pennywort			trace	<1
Maidencane			2	n/a
Bull tongue			3	n/a
Cattail			<1	<1
Rush			13.5	n/a
Waterleaf			10	n/a

Gizzard shad

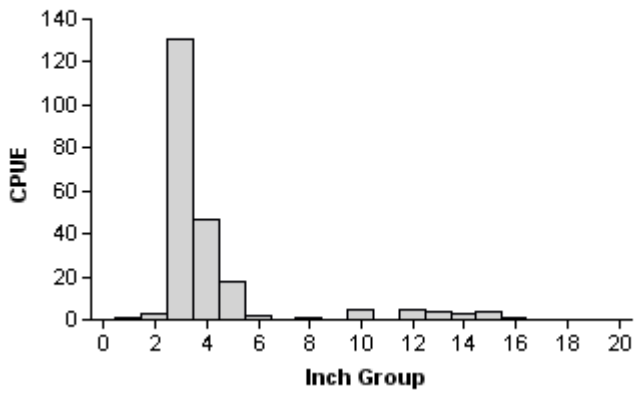
2006

Effort = 1.0
 Total CPUE = 10.0 (44; 10)
 Stock CPUE = 7.0 (45; 7)
 IOV = 30.0 (7.7)



2007

Effort = 1.0
 Total CPUE = 225.0 (22; 225)
 Stock CPUE = 23.0 (33; 23)
 IOV = 89.78 (4.0)



2008

Effort = 1.0
 Total CPUE = 202.0 (19; 202)
 Stock CPUE = 37.0 (26; 37)
 IOV = 88.61 (3.1)

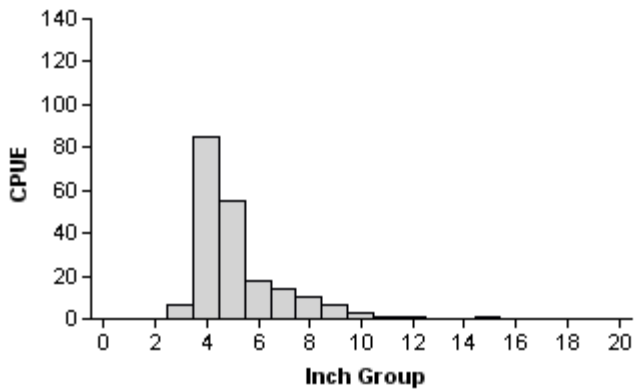
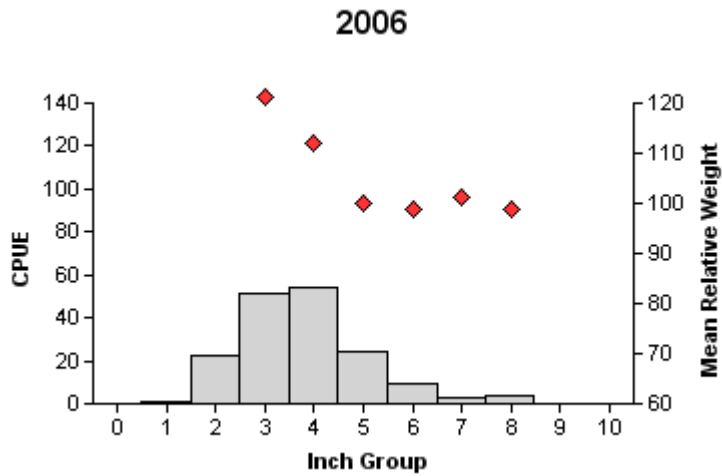
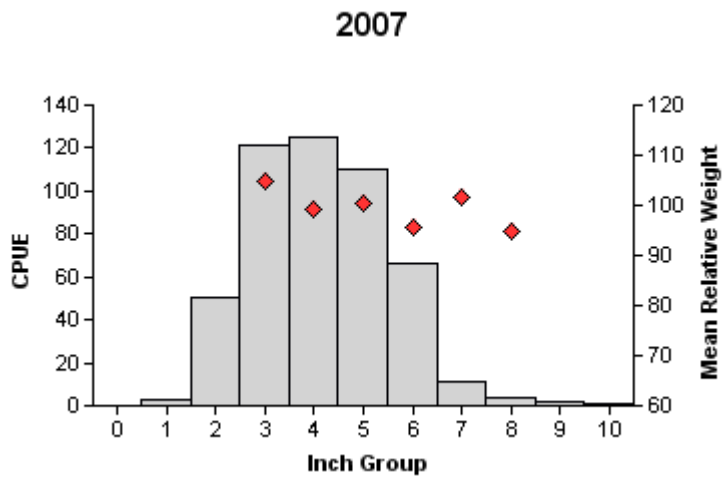


Figure 1. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Puritus Creek State Park Lake, Texas, 2006, 2007, and 2008.

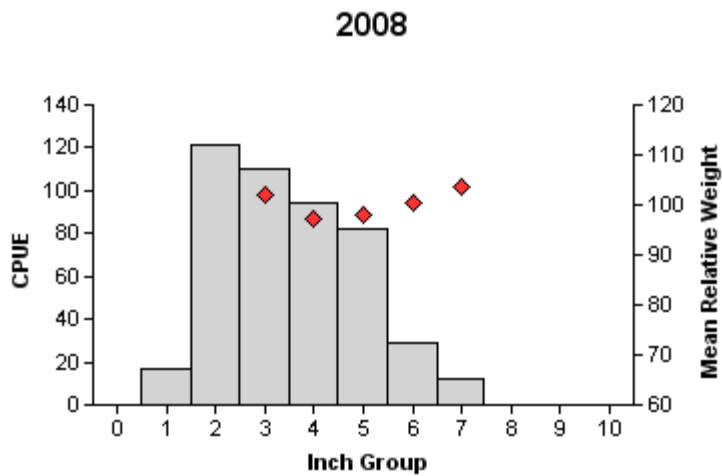
Bluegill



Effort = 1.0
 Total CPUE = 168.0 (23; 168)
 Stock CPUE = 145.0 (22; 145)
 PSD = 11 (3.4)



Effort = 1.0
 Total CPUE = 493.0 (24; 493)
 Stock CPUE = 440.0 (24; 440)
 PSD = 19 (3.4)

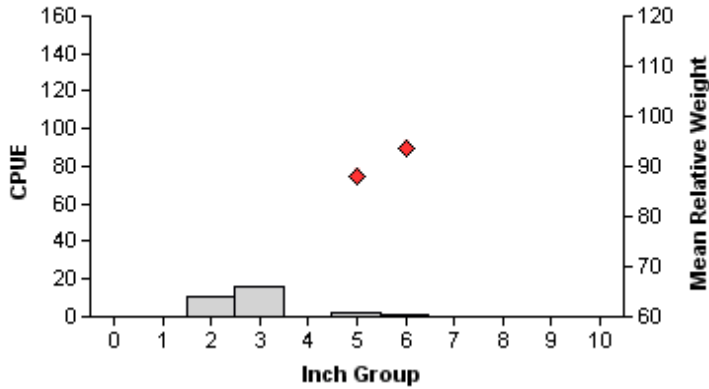


Effort = 1.0
 Total CPUE = 465.0 (22; 465)
 Stock CPUE = 327.0 (21; 327)
 PSD = 13 (3.3)

Figure 2. Number of bluegill caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Purtils Creek State Park Lake, Texas, 2006, 2007, and 2008.

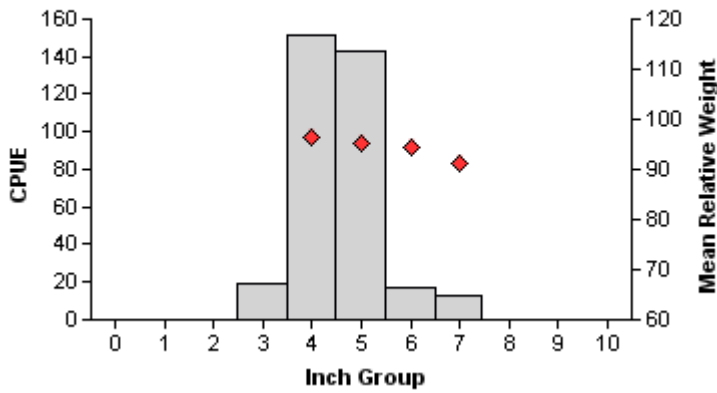
Redear sunfish

2006



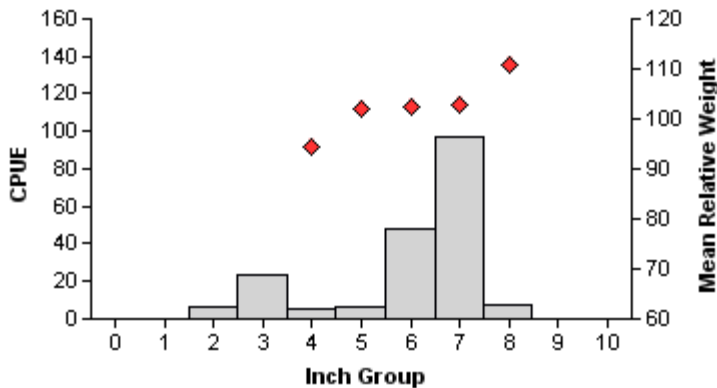
Effort = 1.0
 Total CPUE = 30.0 (44; 30)
 Stock CPUE = 3.0 (72; 3)
 PSD = 0 (530.3)

2007



Effort = 1.0
 Total CPUE = 344.0 (18; 344)
 Stock CPUE = 325.0 (19; 325)
 PSD = 4 (0.9)

2008

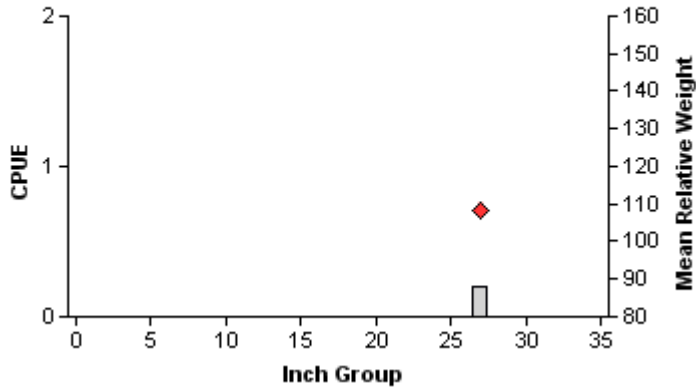


Effort = 1.0
 Total CPUE = 192.0 (15; 192)
 Stock CPUE = 163.0 (18; 163)
 PSD = 64 (5.9)

Figure 3. Number of redear sunfish caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Puritus Creek State Park Lake, Texas, 2006, 2007, and 2008.

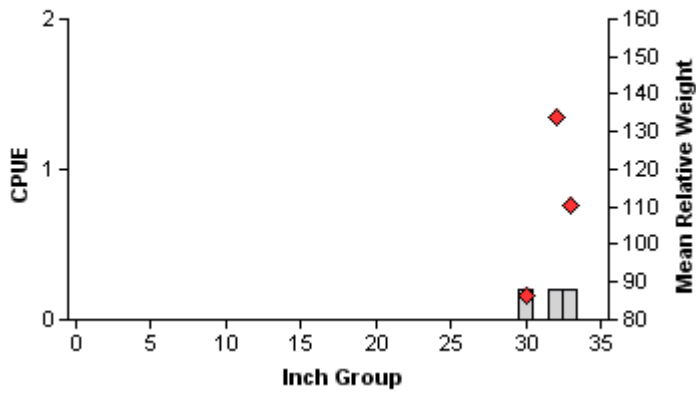
Blue catfish

2005



Effort = 5.0
 Total CPUE = 0.2 (100; 1)
 Stock CPUE = 0.2 (100; 1)
 PSD = 100 (0)
 RSD-P = 0 (0)

2009



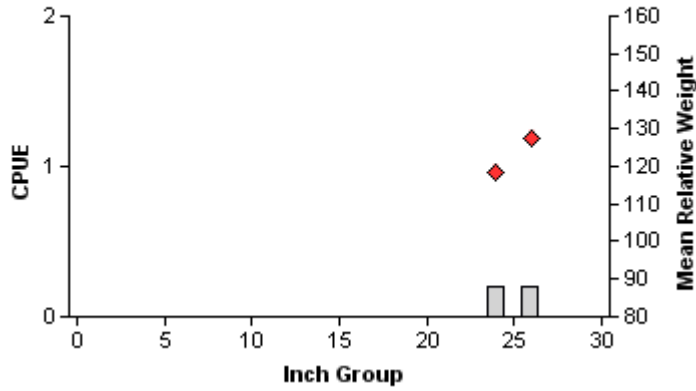
Effort = 5.0
 Total CPUE = 0.6 (67; 3)
 Stock CPUE = 0.6 (67; 3)
 PSD = 100 (0.0)
 RSD-P = 100 (0)

Figure 4. Number of blue catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Purts Creek State Park Lake, 2005 and 2009; no blue catfish were collected in the 2001 survey.

Channel catfish

2001

Effort = 5.0
 Total CPUE = 0.4 (61; 2)
 Stock CPUE = 0.4 (61; 2)
 PSD = 100 (0)
 RSD-P = 100 (0)



2009

Effort = 5.0
 Total CPUE = 0.6 (100; 3)
 Stock CPUE = 0.4 (100; 2)
 PSD = 100 (0.0)
 RSD-P = 0 (0)

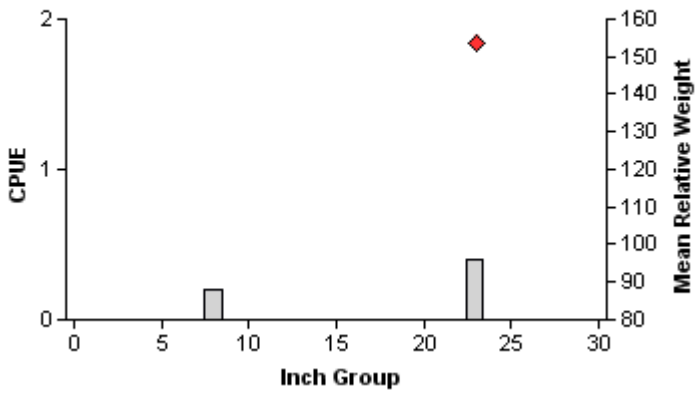
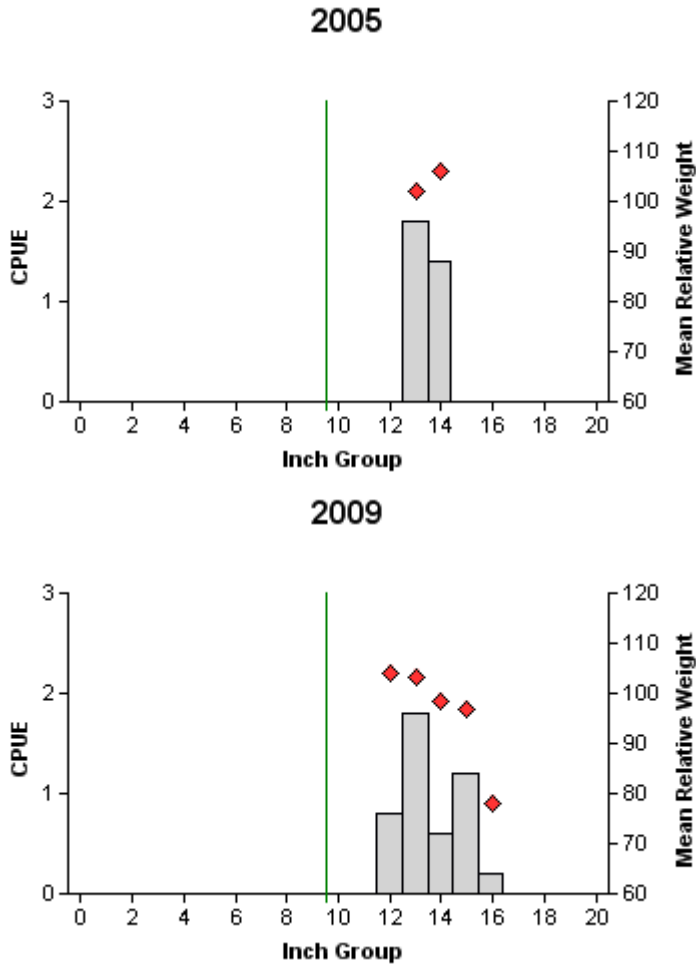


Figure 5. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Purts Creek State Park Lake, 2001 and 2009; no channel catfish were collected in the 2005 survey.

White bass



Effort = 5.0
 Total CPUE = 3.2 (45; 16)
 Stock CPUE = 3.2 (45; 16)
 PSD = 100 (0)
 RSD-10 = 100 (0)

Effort = 5.0
 Total CPUE = 4.6 (76; 23)
 Stock CPUE = 4.6 (76; 23)
 PSD = 100 (0.0)
 RSD-10 = 100 (0)

Figure 6. Number of white bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Purtils Creek State Park Lake, 2005 and 2009; no white bass were collected in the 2001 survey. Vertical line represents length limit at time of survey.

White bass

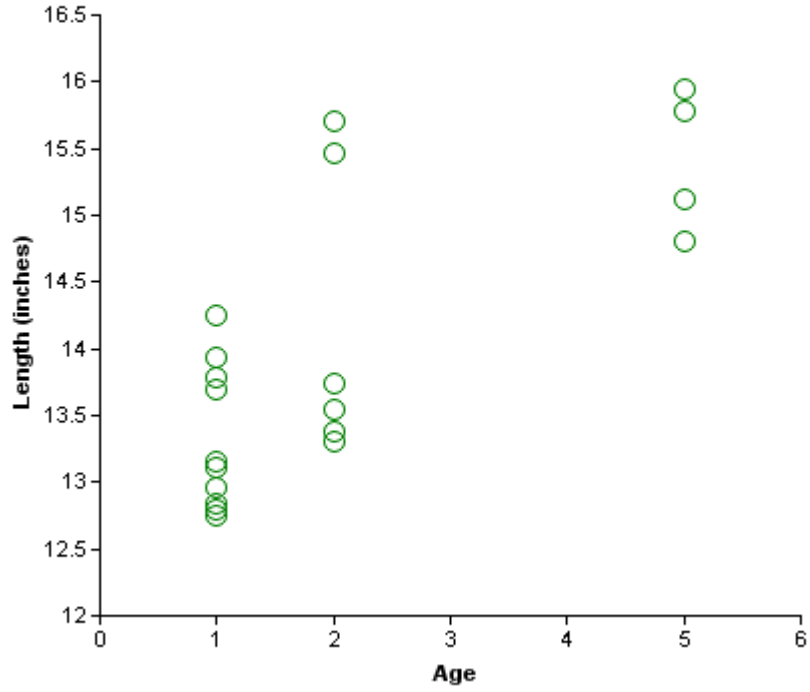
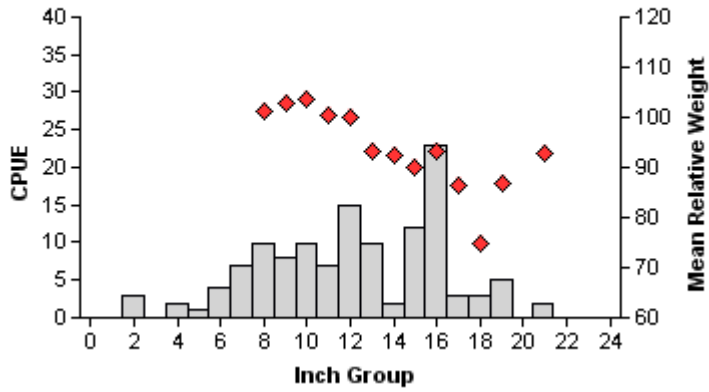


Figure 7. Length-at-age (inches) at time of capture for white bass, collected by gill netting, Purtil Creek State Park Lake, Texas, March 2009.

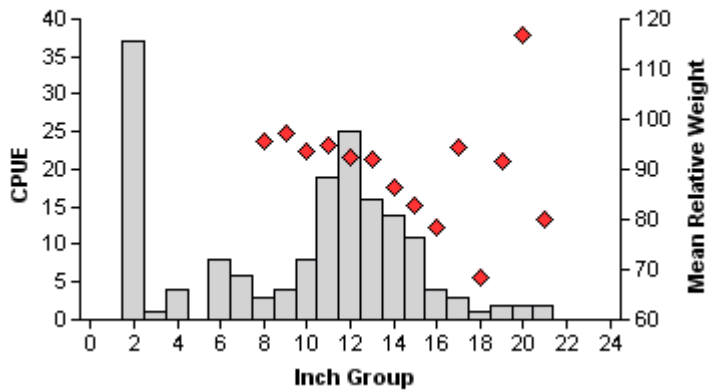
Largemouth bass

2005



Effort = 1.0
 Total CPUE = 127.0 (20; 127)
 Stock CPUE = 110.0 (22; 110)
 PSD = 68 (7.2)
 RSD-14 = 45 (11.1)

2006

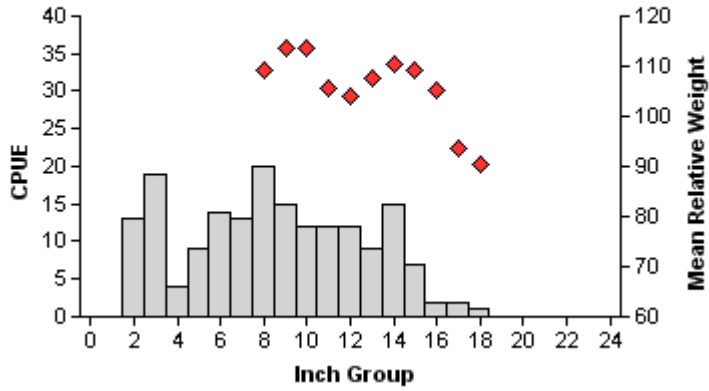


Effort = 1.0
 Total CPUE = 170.0 (13; 170)
 Stock CPUE = 114.0 (19; 114)
 PSD = 70 (4)
 RSD-14 = 34 (4.2)

Figure 8. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Purtil Creek State Park Lake, Texas, 2005 and 2006.

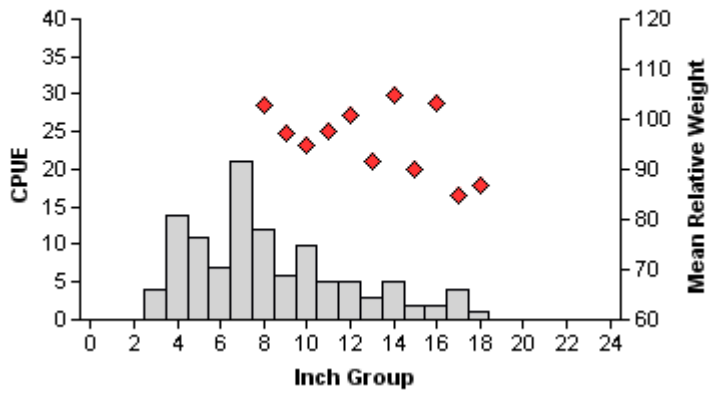
Largemouth bass

2007



Effort = 1.0
 Total CPUE = 179.0 (15; 179)
 Stock CPUE = 107.0 (21; 107)
 PSD = 45 (4.2)
 RSD-14 = 25 (5.3)

2008



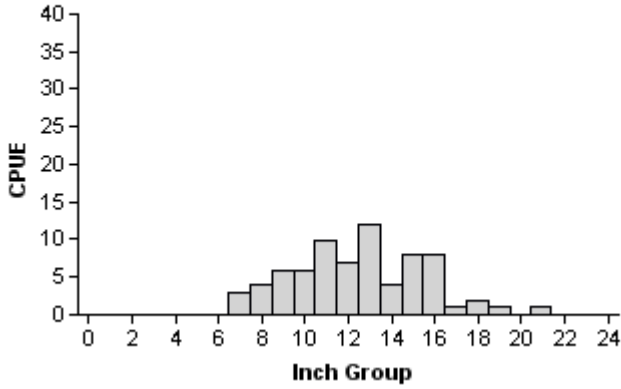
Effort = 1.0
 Total CPUE = 112.0 (22; 112)
 Stock CPUE = 55.0 (17; 55)
 PSD = 40 (8.6)
 RSD-14 = 25 (7)

Figure 9. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE are in parentheses) for fall electrofishing surveys, Purtil Creek State Park Lake, Texas, 2007 and 2008.

Largemouth bass

2006

Effort = 1.0
 Total CPUE = 73.0 (22; 73)
 Stock CPUE = 70.0 (21; 70)
 PSD = 63 (4.8)
 RSD-14 = 36 (5.1)



2007

Effort = 1.0
 Total CPUE = 138.0 (16; 138)
 Stock CPUE = 129.0 (17; 129)
 PSD = 76 (7.2)
 RSD-14 = 35 (5.2)

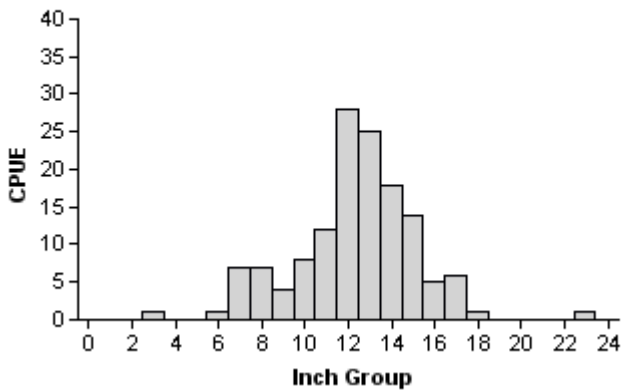
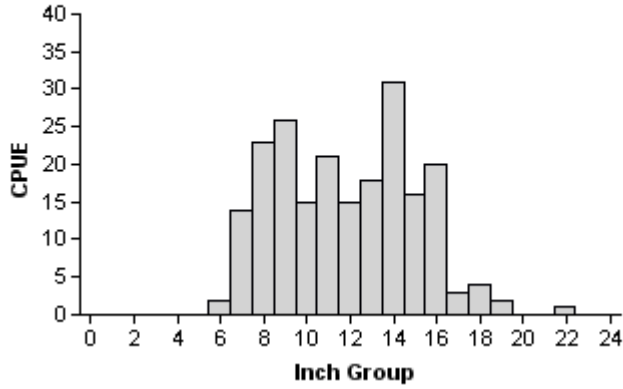


Figure 10. Number of largemouth bass caught per hour (CPUE, bars), and population indices (RSE and N for CPUE and SE are in parentheses) for spring electrofishing surveys, Purtil Creek State Park Lake, Texas, 2006 and 2007.

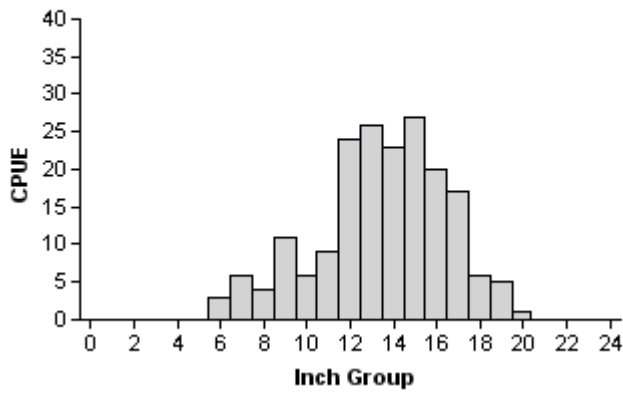
Largemouth bass

2008



Effort = 1.0
 Total CPUE = 211.0 (13; 211)
 Stock CPUE = 195.0 (12; 195)
 PSD = 56 (6.0)
 RSD-14 = 39 (6.4)

2009



Effort = 1.0
 Total CPUE = 188.0 (15; 188)
 Stock CPUE = 179.0 (14; 179)
 PSD = 83 (3.2)
 RSD-14 = 55 (5.3)

Figure 11. Number of largemouth bass caught per hour (CPUE, bars), and population indices (RSE and N for CPUE and SE are in parentheses) for spring electrofishing surveys, Purts Creek State Park Lake, Texas, 2008 and 2009.

Largemouth bass

Table 5. Results of genetic analysis of largemouth bass collected by fall electrofishing at Purvis Creek State Park Lake, Texas, 1998, 2002, and 2009. 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. Samples collected in 1998 and 2002 were analyzed by electrophoresis.

Year	Sample size	Genotype				% FLMB alleles	% pure FLMB
		FLMB	F1	Fx	NLMB		
1998	30	10	7	13	0	75.8	33.0
2002	30	11	3	14	2	70.8	36.7
2008	30	2	1	20	7	75.6	6.6

White crappie

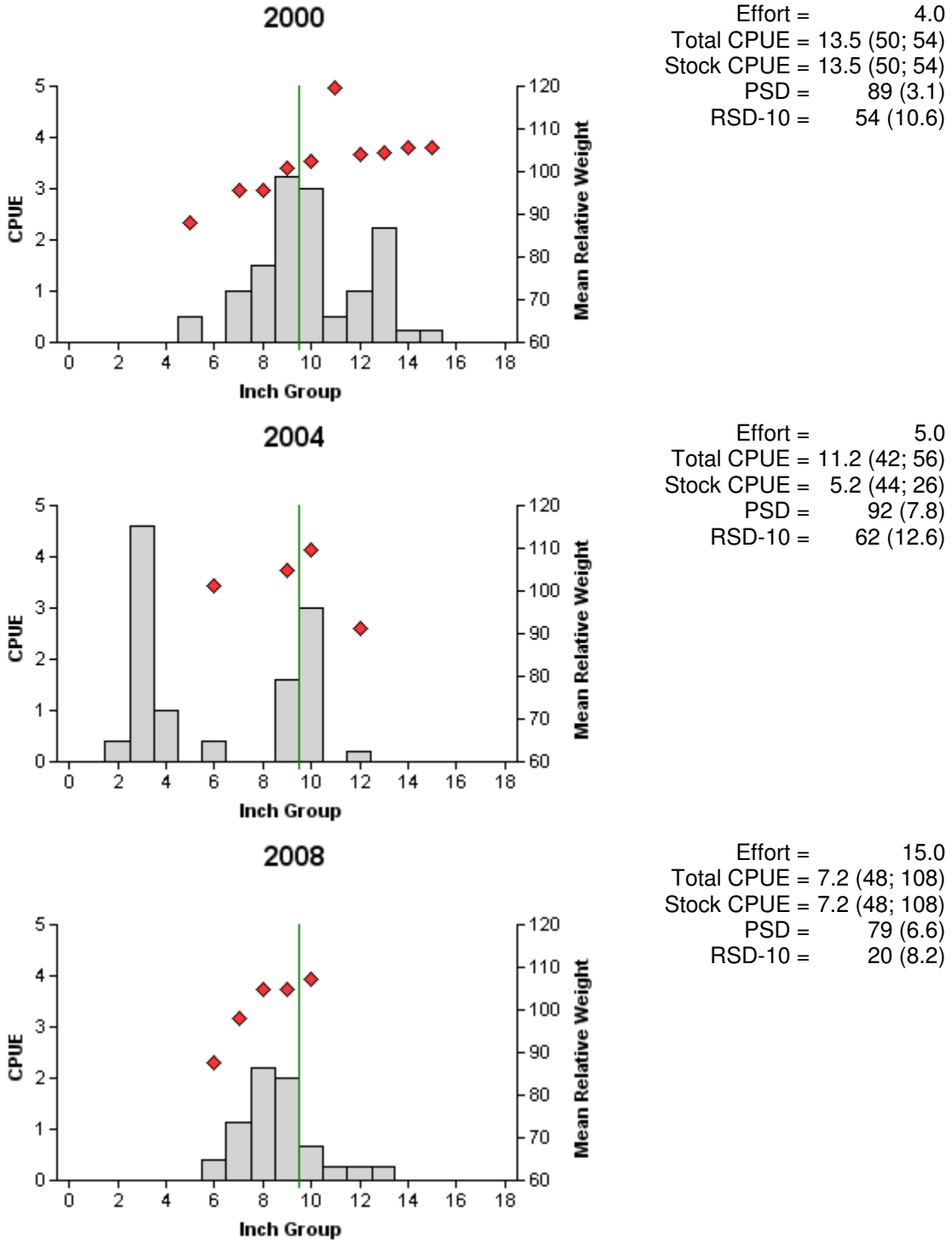


Figure 12. Number of white crappie caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Purtil Creek State Park Lake, Texas, 2000, 2004, and 2008. Vertical line represents length limit at time of survey.

Table 6. Proposed sampling schedule for Purtil Creek State Park Lake, Texas. Electrofishing is conducted in the fall and spring. Gill netting surveys are conducted in the spring, while trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

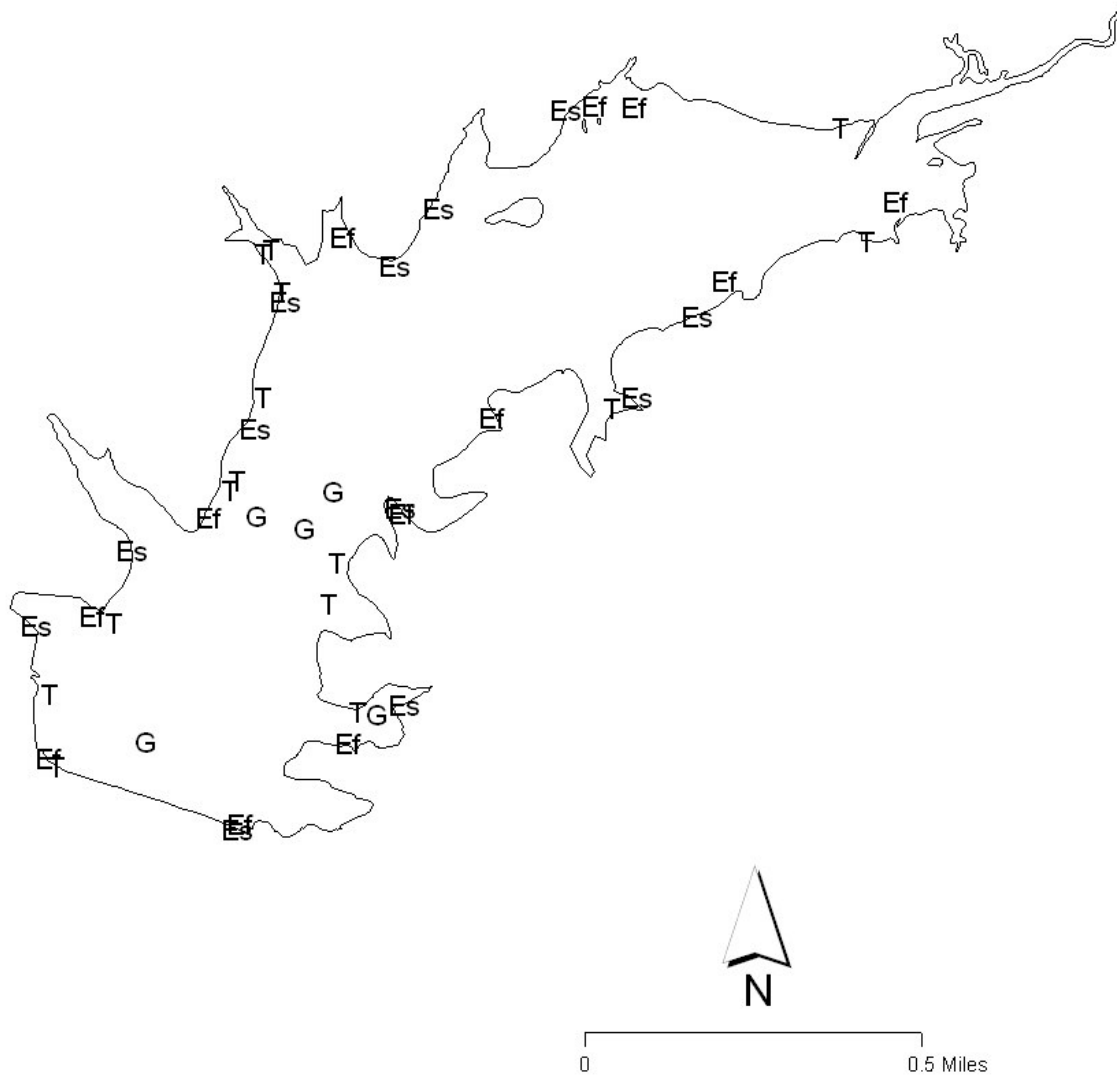
Survey Year	Fall Electrofishing	Spring Electrofishing	Trap Net	Gill Net	Habitat	Report
2009-2010	A	A			A	
2010-2011	A	A			A	
2011-2012	A	A			A	
2012-2013	S	A	S	S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Purtil Creek State Park Lake, Texas, 2008-2009.

Species	Gill netting		Trap netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard shad					202	202
Threadfin shad					1,577	1,577
Channel catfish	3	0.6				
Blue catfish	3	0.6				
White bass	23	4.6				
Redbreast sunfish					54	54
Warmouth					4	4
Bluegill					493	493
Redear sunfish					192	192
Largemouth bass					112	112
White crappie			108	7.2		

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APPENDIX B



Location of sampling sites, Purit Creek State Park Lake, Texas, 2008-2009. Trap net, gill net, and fall and spring electrofishing stations are indicated by T, G, Ef, and Es respectively.