

PERFORMANCE REPORT

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FEDERAL AID PROJECT F-221-M-3

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2012 Fisheries Management Survey Report

Lake Somerville

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TABLE OF CONTENTS

Survey and Management Summary	2
Introduction	3
Reservoir Description	3
Angler Access	3
Management History.....	3
Methods	4
Results and Discussion	4
Fisheries Management Plan	7
Literature Cited.....	9
Figures and Tables.....	10-30
Water Level (Figure 1).....	10
Reservoir Characteristics (Table 1)	10
Boat Ramp Characteristics (Table 2).....	11
Harvest Regulations (Table 3).....	11
Stocking History (Table 4).....	12
Structural Habitat Survey (Table 5).....	14
Aquatic Vegetation Survey (Table 6).....	14
Percent Directed Angler Effort per Species (Table 7).....	15
Total Fishing Effort and Fishing Expenditures (Table 8).....	15
Gizzard Shad (Figure 2).....	16
Bluegill (Figure 3).....	17
Channel Catfish (Figures 4 & 6; Table 9).....	18
Blue Catfish (Figures 5 & 6; Table 9).....	19
White Bass (Figures 7-8; Table 10)	21
Palmetto Bass (Figure 9).....	23
Largemouth Bass (Figures 10-11; Tables 11-12).....	24
White Crappie (Figures 12 & 14; Table 13)	27
Black Crappie (Figures 13 & 14; Table 13)	28
Proposed Sampling Schedule (Table 14).....	30
Appendix A	
Catch Rates for all Species from all Gear Types.....	31
Appendix B	
Map of 2012-2013 Sampling Locations.....	32
Appendix C	
Reporting of Creel Distance Traveled and ZIP Code Data	33-34

SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Somerville were surveyed in 2012 using electrofishing and trap netting and in 2013 using gill netting. Anglers were surveyed from June 2012 through May 2013 with a creel survey. Historical data are presented with the 2012-2013 data for comparison. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Lake Somerville is an 11,456-acre flood-control reservoir constructed by the U.S. Army Corps of Engineers on Yegua Creek in Burleson, Lee, and Washington counties, Texas. Principle tributaries are Middle Yegua, West Yegua, and Nails creeks. Lake Somerville has a drainage area of approximately 1,006 square miles and a shoreline length of 104 miles.

Management History: Important sport fishes include White Bass (*Morone chrysops*), Palmetto Bass (*M. chrysops x saxatilis*), Largemouth Bass (*Micropterus salmoides*), Crappies (*Pomoxis* spp.), and Channel (*Ictalurus punctatus*) and Blue Catfish (*I. furcatus*). Since 2009, annual gill netting and annual stockings of Palmetto Bass have been conducted. Crappie and catfish populations have been monitored every four years. Hydrilla (*Hydrilla verticillata*) and water hyacinth (*Eichornia crassipes*) have been introduced and treated in the lake.

- **Fish Community**
 - **Prey species:** Threadfin Shad (*Dorosoma pretense*) and Gizzard Shad (*Dorosoma cepedianum*) were the predominant prey species in Lake Somerville and most were available as prey. Bluegill (*Lepomis macrochirus*) and Longear Sunfish (*L. megalotis*) were the most common sunfish prey. Other less important prey species included Bullhead Minnow (*Pimephales vigilax*), Pugnose Minnow (*Opsopoeodus emiliae*), Inland Silverside (*Menidia beryllina*), Green Sunfish (*L. cyanellus*), Warmouth (*L. gulosus*), and Redear Sunfish (*L. microlophus*).
 - **Catfishes:** Channel Catfish were the dominant catfish species, offering good angling opportunities. Blue Catfish, although less numerous, also support a fishery. Flathead catfish were also present in the reservoir but in low relative abundance.
 - **Temperate basses:** White Bass and Palmetto Bass were both present in Lake Somerville. Palmetto Bass have been stocked annually with the recent exceptions of 2010 and 2012.
 - **Largemouth Bass:** Largemouth Bass were abundant with a good size distribution available to anglers. Florida bass fingerlings were stocked in 2008 and 2010. The 2009-2010 creel survey indicated that Largemouth Bass were the most popular species among anglers at Lake Somerville.
 - **Crappie:** Both White Crappie (*P. annualis*) and Black Crappie (*P. nigromaculatus*) were moderately abundant with legal-size fish up to 14 inches long available to anglers. According to the most recent creel survey, Crappie were the second-most targeted species group at Lake Somerville.
- **Management Strategies:** TPWD will monitor the temperate basses and catfish biennially with spring gill nets. Largemouth Bass and their prey will be monitored by electrofishing and crappies by trap netting in the fall of 2016. Exotic vegetation surveys will be conducted annually to monitor changes in hydrilla abundance. Angler effort and catch will be monitored with a creel survey from March 2014 through February 2015. An angler access survey will be conducted in 2016.

3
INTRODUCTION

This document is a summary of fisheries data collected from Lake Somerville from June 2012 through May 2013. 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 are presented with the 2012-2013 data for comparison.

Reservoir Description

Lake Somerville is an 11,456-acre flood-control reservoir constructed by the U.S. Army Corps of Engineers (USACE) on Yegua Creek in Burleson, Lee, and Washington Counties, Texas. Principle tributaries are Middle Yegua, West Yegua, and Nails Creeks. Lake Somerville has a drainage area of approximately 1,006 square miles, a shoreline length of about 104 miles, and a Shoreline Development Index of 5.7. The reservoir has a mean depth of 11 feet and a maximum depth of 38 feet. Average rainfall in the watershed is 39 inches per year. Conservation elevation is 238 feet above mean sea level (MSL) (Figure 1). The reservoir lies within the Post Oak Savannah Land Resource Area with soils consisting of Falba-Burlewash, Kaufman-Gowen, and Tabor-Axtell associations. Land uses around the reservoir are primarily agricultural and recreational. Other descriptive characteristics for Lake Somerville are recorded in Table 1.

Angler Access

Lake Somerville has six public boat ramps and three private boat ramps. All public access ramps except one in the Nails Creek Unit of Lake Somerville State Park were available to anglers in 2012. Additional boat ramp characteristics are listed in Table 2. Shoreline access is available at the Nails Creek and Birch Creek Units of Lake Somerville State Park, Welch Park, Overlook Park, and Lake Somerville Marina.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Henson and Webb 2009) included:

1. Continue annual monitoring of temperate basses in Lake Somerville. Palmetto bass would be stocked at a rate of 10/acre annually.
Action: Temperate bass species were sampled with gill nets in spring of 2010, 2011, and 2013. Because of limited availability, Palmetto Bass were stocked only in 2011 and 2013.
2. Monitor Crappie by a creel survey from 2009-2010 and by trap nets in 2012.
Action: Crappie were monitored with a creel survey from June 2009 to May 2010 and by trap nets during the fall of 2012.
3. Continue to perform outreach to anglers and encourage anglers to participate in the Angler Recognition and Sharelunker programs. Send news releases to local media outlets highlighting the stockings of Sharelunker offspring. Continue to monitor Largemouth Bass by a bass-only electrofishing survey and standard electrofishing survey.
Action: News releases have been distributed in local media regarding the Largemouth Bass population at Lake Somerville. Several presentations have also been given to local constituent groups. Largemouth Bass were monitored using a creel survey in 2009-2010 and a standard electrofishing survey in 2012. The additional bass-only electrofishing survey was not conducted. Florida Largemouth Bass were stocked in 2009 (ShareLunker offspring) and in 2010.
4. Continue annual monitoring for hydrilla and water hyacinth in Lake Somerville.
Action: Annual exotic vegetation surveys are conducted to monitor for invasive species. No treatments have been necessary since the last report.

Harvest regulation history: Currently, there are no exceptions to statewide fishing regulations at Lake Somerville. Table 3 summarizes the harvest regulations for the reservoir.

Stocking history: Since 1975, Lake Somerville has been stocked annually with Palmetto Bass when fish were available. Lake Somerville was stocked with Florida Largemouth Bass in 2008, 2009 (ShareLunker offspring), and in 2010. The complete stocking history is in Table 4.

Vegetation/habitat management history: Lake Somerville has structural habitat primarily comprised of stumps and dead vegetation (Table 5), and it has exhibited a mixed aquatic plant community of both native and non-native species (Table 6). Exotic hydrilla has been present for several years. In 2000, only about 5 acres of hydrilla were found, but by 2004, 307 acres were documented. In 2008, 410 acres were present but did not pose an impediment to access or angling. Control measures have not been taken and no complaints have been received by anglers or other recreational users. Water hyacinth was discovered in 2008, and an initial effort to manually remove the plant was unsuccessful; remaining plants were treated with herbicide. African giant cane (*Arundo donax*) is an exotic, abundant plant along the shoreline and is likely blocking access for bank anglers. However, complaints about giant cane have not been received.

Water transfer: Lake Somerville is operated by the USACE for water supply, flood control, and recreation. Water released from Lake Somerville is transferred via Yegua Creek to the Brazos River to supply agricultural, industrial, and municipal customers downstream. No interbasin transfers are known to exist.

METHODS

Fishes were collected by electrofishing (2 hours at 24, 5-min stations), gill netting (15 net nights at 15 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 (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 all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2011).

A roving creel survey was conducted from June 2009 through May 2010. Angler interviews were conducted on 5 weekend days and 4 weekdays per quarter to assess angler use and fish catch/harvest statistics in accordance with the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2011). Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], and condition indices [relative weight (W_r)] were calculated for target fishes according to Anderson and Neumann (1996). Palmetto bass PSD was calculated according to Dumont and Neely (2011). Index of Vulnerability (IOV) was calculated for gizzard shad (DiCenzo et al. 1996). Standard error (SE) was calculated for structural indices and IOV. Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all CPUE and creel statistics. Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2011). Micro-satellite DNA analysis was used to determine genetic composition of individual fish from 2005 through 2012 and by electrophoresis for previous years. Source for water level data was the United States Geological Survey (USGS) website.

RESULTS AND DISCUSSION

Habitat: Littoral habitat consisted primarily of vegetated shoreline with African giant cane and black willow (*Salix nigra*) dominating the shoreline plant community. Non-vegetated as well as rocky shoreline can be found throughout the perimeter of the reservoir. Riprap occurs along the dam and along jetties

within the state parks. Other structural habitat consists of flooded dead vegetation and timber (Table 5). Vegetative habitat primarily consisted of non-native hydrilla and African giant cane (Table 6). The native plant community was dominated by floating-leaved vegetation and native emergent grasses and forbs. Water hyacinth was not detected during the most recent vegetation survey.

Creel: Directed fishing effort by anglers was highest for Largemouth Bass (35%), followed by anglers fishing for crappies (21%) and catfishes (18%) (Table 7). Anglers reported fishing for 31,798 hours and spending approximately \$267,000 towards fishing-related expenditures (Table 8). During the creel period, anglers traveled within 75 miles to fish at Lake Somerville, and some anglers reported traveling up to 250 miles (Appendix C).

Prey species: Shads were the dominant prey fish in Lake Somerville. Gizzard Shad exhibited a high electrofishing catch rate of 979.5/h in 2012, which was greater than the 231.5/h reported by Henson and Webb (2009) (Figure 2). Most Gizzard Shad were available as prey (IOV = 88). Threadfin Shad catch decreased from a rate of 1,800/h in 2008 to 513.5/h in 2012. Additional forage was provided by Bluegill with an electrofishing catch rate of 287.5/h (Figure 3). Other, less-important prey species included Bullhead Minnow, Pugnose Minnow, Inland Silverside, Green Sunfish, Warmouth, and Redear Sunfish.

Catfishes: Lake Somerville supports a quality Channel Catfish fishery. The gill net catch rates have been similar in the last three surveys, with catch rates of 10.6/nn in 2013, 8.5/nn in 2009, and 11.1/nn in 2005 (Figure 4). Size distribution data from the 2013 gill net survey indicated Channel Catfish are available for harvest, with fish collected up to 24 inches in length. Blue Catfish were caught at 0.9/nn in the spring 2013 gill net survey, which was similar to the 0.7/nn in 2009. Blue Catfish up to 30 inches total length were available for harvest in 2013 (Figure 5). Catfishes were the third-most targeted species group at Lake Somerville. During the 2009-2010 creel survey, anglers reported targeting catfishes for 5,457 h, with catch rate at 0.99/h (Table 9). An estimated 5,358 Channel Catfish were harvested during the 2009-2010 creel period; 83 fish were observed as harvested ranging from 14-19 inches total length (Figure 6). During the 2009-2010 creel survey, anglers harvested an estimated 297 Blue Catfish; the three observed harvested fish were 16 – 20 inches total length (Table 9; Figure 6).

Temperate basses: White Bass were caught in the spring 2013 gill net survey at 2.1/nn, which was higher than the 0.5/nn reported in the 2009 (Figure 7). White Bass up to 15 inches were available for harvest, but data suggested poor recruitment of juveniles to the fishery. The primary spawning area for White Bass in Lake Somerville is Yegua Creek, which experiences inconsistent flows in the spring, limiting White Bass reproduction in some years. Drought conditions from 2009 to early 2012 likely impeded access to preferred spawning habitat. During the 2009-2010 creel survey, anglers reported that they spent 673 h targeting white bass (Table 10). Further, 660 White Bass were reported harvested; the eight observed harvested fish ranged from 10-16 inches (Figure 8). No White Bass of legal size were released by anglers during the creel period.

Palmetto Bass have been stocked in Lake Somerville since 1975 when fish were available. Most recently Palmetto Bass were stocked in 2009, 2011, and 2013 (Table 4). Gill net CPUE of Palmetto Bass in the spring surveys were 2.9/nn in 2010, 2.3/nn in 2011, and 1.9/nn in 2013. The majority of Palmetto Bass collected in each survey were available for harvest, with fish between 18 and 25 inches in length. Recent catch rates were much lower than in 2005 (13.7/nn), but similar to 2004 (2.3/nn) (Figure 9). The relative abundance of legal-length fish in 2013 (CPUE₁₈=1.9) has increased slightly since 2009 (CPUE₁₈=0.7). During the 2009-2010 creel survey, 4% of the total directed fishing effort by anglers was directed to Palmetto Bass. No catches by anglers were reported in the creel.

Largemouth Bass: The electrofishing catch rate in 2013 (65.5/h) was similar to those reported in 2004 (76.5/h) and 2008 (77.5/h) (Figure 10). Size distribution was dominated by small (<10 inches) fish. Catch rate of stock-sized (\geq 8 inches) fish was 22.0/h during the fall 2012 survey, which was lower than it was in 2008 (55.0/h) and 2004 (38.5/h). Largemouth Bass up to 17 inches total length were observed in the

sample. Repeated and persistent drought conditions from 2009 until 2012 resulted in protracted periods of low reservoir water levels. Subsequent poor littoral fish habitat conditions contributed to reduced recruitment of Largemouth Bass as well as unfavorable sampling conditions during that time.

Largemouth Bass were the most targeted species in the 2009/2010 angler creel survey. During the creel period, anglers spent 13,515 h targeting Largemouth Bass (Table 11); 2,987 h of the total effort was contributed by tournament anglers. Angler catch-per-hour was estimated to be 0.99/h. An estimated total of 1,260 Largemouth Bass were harvested by all anglers during the survey; an estimated 1,029 fish were retained by tournament anglers. During the 2009/2010 creel period, twelve fish were observed retained by tournament anglers; the fish ranged from 14 to 16 inches (Figure 11). An estimated 41.7% of legal-sized fish caught were released by non-tournament anglers, and 19.7% were released by tournament anglers.

In 2012, two pure-strain Florida Largemouth Bass were caught during the electrofishing surveys. The 27 remaining fish were intergrades of both the Florida and Northern Largemouth Bass strains (Table 12).

Crappies: White Crappie and Black Crappie were present in Lake Somerville, but trap net catch rates since 2000 have been low for both species. In 2004, 2008, and 2012 trap net catch rates for White Crappie were only 1.6/nn, 1.1/nn, and 1.1/nn, respectively (Figure 12). One Black Crappie was captured in 2004, none in 2008, and 13 in 2012 (Figure 13).

Historically, crappies were the most targeted species group at Lake Somerville (Henson and Webb 2005). Data from the 2009-2010 creel survey indicated crappies were still a popular species group, comprising 20.8% of directed angling effort. Anglers spent 0.54 hours/acre targeting crappies, which was lower than the 3.4 h/acre reported in 2005 (Table 13). Angler catch rate of crappies was 5.43/hr in 2009/2010. An estimated 7,038 White Crappie and 3,555 Black Crappie were harvested during the same period (Figure 14).

Fisheries management plan for Lake Somerville, Texas

Prepared – July 2013.

ISSUE 1: Stockings of Palmetto Bass have occurred numerous times since 2000, yet catch by anglers has been low.

MANAGEMENT STRATEGIES

1. Develop and conduct a creel survey that more accurately reflects catch of temperate basses and effort by anglers. Conduct 12-month creel survey from March 2014 through February 2015.
2. Continue to monitor temperate basses through biennial gill net surveys.
3. Request Palmetto Bass stockings for 2014 at 10/acre.
4. If significant angler effort for and catch of Palmetto Bass is not documented, stocking requests will be discontinued in 2015.

ISSUE 2: Crappies support the second-most popular fishery among anglers at Lake Somerville.

MANAGEMENT STRATEGIES

1. Continue to monitor the crappie fishery with a creel survey to be conducted from March 2014 through February 2015.
2. Continue to monitor the crappie population with a trap net survey in 2016.

ISSUE 3: Largemouth Bass support one of the most popular fisheries at Lake Somerville.

MANAGEMENT STRATEGIES

1. Continue outreach to anglers in the Lake Somerville area encouraging participation in all TPWD angler recognition programs including ShareLunker.
2. Conduct an electrofishing survey in the fall 2016 to monitor Largemouth Bass relative abundance, growth, condition, and size structure.

ISSUE 4: Expansion of exotic aquatic plants could potentially lead to angler access issues at Lake Somerville.

MANAGEMENT STRATEGIES

1. Continue annual monitoring of hydrilla and water hyacinth at Lake Somerville.
2. Continue to keep the USACE informed and assist with treatment recommendations (hydrilla) and facilitate with herbicide treatment (water hyacinth) if necessary.

ISSUE 5: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches and plugging engine cooling systems. Giant salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to post appropriate signage at access points around the reservoir.
2. Contact and educate marina owners about invasive species, and provide them with posters,

literature, etc., so that they can in turn educate their customers.

3. Educate the public about invasive species through the use of media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.
5. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes electrofishing, trap netting, and an angler access survey in 2016. Gill netting for temperate basses and catfishes will occur in 2015 and 2017. A creel survey will be conducted from March 2015 through February 2016. Aquatic vegetation surveys will be conducted annually to monitor exotic plant presence and distribution (Table 14).

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.
- Brice, M., and S. Dumont. 2008. Statewide freshwater fisheries monitoring and management program survey report for Lake Somerville, 2007. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
- 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.
- Dumont, S. C. and B. C. Neely. 2011. A proposed change to palmetto bass proportional size distribution length categories. North American Journal of Fisheries Management 31: 722-725.
- Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional size distribution (PSD): a further refinement of population size structure index terminology. Fisheries 32(7): 348.
- Henson and Webb. 2005. Statewide freshwater fisheries monitoring and management program survey report for Lake Somerville, 2004. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
- Henson and Webb. 2009. Statewide freshwater fisheries monitoring and management program survey report for Lake Somerville, 2008. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.
- Texas Commission on Environmental Quality. 2011. Trophic classification of Texas reservoirs. 2010 Texas Water Quality Inventory and 303 (d) List, Austin. 18 pp.
- United States Geological Survey. 2009. Real-time Data for Texas lakes and Reservoirs. http://waterdata.usgs.gov/tx/nwis/uv/?site_no=08063010&PARAMeter_cd=72020,00054

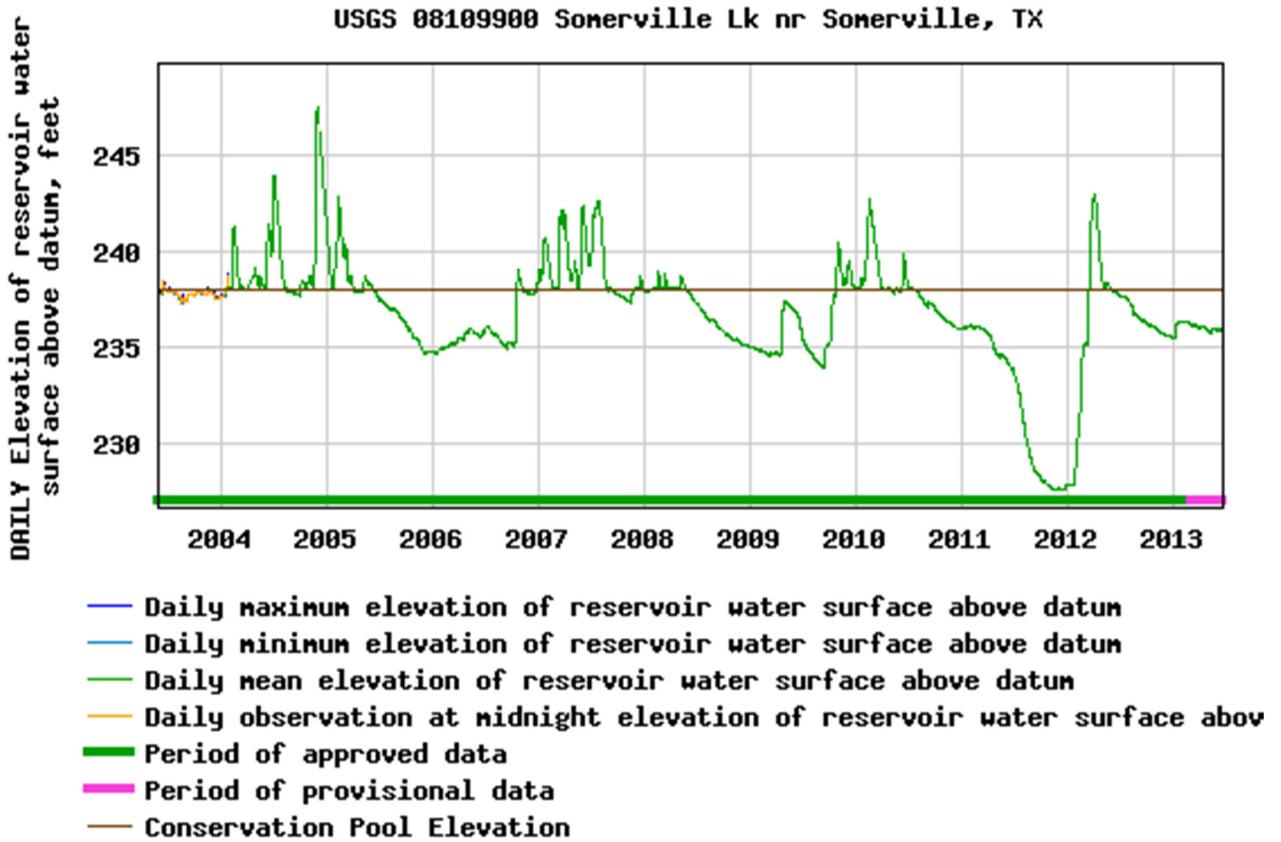


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Lake Somerville, Texas .

Table 1. Characteristics of Lake Somerville, Texas.

Characteristic	Description
Year constructed	1967
Controlling authority	U.S. Army Corps of Engineers
Counties	Washington, Lee, and Burleson
Reservoir type	Tributary
Shoreline Development Index (SDI)	5.2
Shoreline Length	86.4 miles
Conductivity	290-330 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for Lake Somerville, Texas, August, 2012. Reservoir elevation at time of survey was approximately 236 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Nails Creek State Park	30.29519 -96.66404	Y	25	233	Out of water. Extension not feasible. Currently closed.
Birch Creek State Park	30.30943 -96.61884	Y	80	228	Excellent, no access issues
Big Creek Park	30.32343 -96.57185	N	8	232	Excellent, no access issues
Yegua Creek Park A	30.30737 -96.54563	Y	50	226	One ramp is accessible; needs repair.
Yegua Creek Park B	30.30611 -96.53626	Y	20	230	Excellent, no access issues
Welch Park	30.33857 -96.55160	N	25	231	Excellent, no access issues
Overlook Park & Lake Somerville Marina	30.30954 -96.51765	N	50	230	Excellent, no access issues
Rocky Creek Park A	30.29963 -96.57211	Y	35	226	Excellent; no access issues
Rocky Creek Park B	30.30597 -96.56443	Y	30	226	Excellent, no access issues

Table 3. Harvest regulations for Lake Somerville, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (in any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Palmetto	5	18-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

Table 4. Stocking history of Lake Somerville, Texas. FRY=Fry; FGL = fingerling; AFGL = advanced fingerling; ADL = adults; UNK=Unknown.

Species	Year	Number	Size
Blue Catfish	1967	23,000	UNK
	Total	23,000	
Channel Catfish	1967	73,850	UNK
	1968	302,000	UNK
	1973	29,500	UNK
	2012	128	FGL
	Total	405,478	
Palmetto bass	1975	50,000	UNK
	1977	72,649	UNK
	1979	128,000	UNK
	1981	67,416	UNK
	1983	76,912	UNK
	1984	250,576	FGL
	1985	144,271	FGL
	1986	170,600	FGL
	1987	184,600	FGL
	1988	232,497	FGL
	1989	232,497	FGL
	1991	116,651	FGL
	1992	178,626	FGL
	1993	92,723	FGL
	1994	170,800	FGL
	1995	324,800	FGL
	1996	173,638	FGL
	1997	50,215	FGL
	1998	177,621	FGL
	1999	85,436	FGL
	2000	29,800	FGL
	2002	22,020	FGL
	2004	115,312	FGL
2005	100,175	FGL	
2006	58,085	FGL	
2007	58,375	FGL	
2008	110,079	FGL	
2009	80,406	FGL	
2011	80,676	FGL	
2013	107,963	FGL	
Total	3,743,769		
Black Crappie	1967	4,000	UNK
	Total	4,000	
White Crappie	1967	4,000	UNK
	Total	4,000	

Table 4. continued stocking history.

Species	Year	Number	Size
Sharelunker Largemouth Bass	2009	2,990	FGL
	Total	2,990	
Florida Largemouth Bass	1990	287,680	FRY
	2000	287,680	FGL
	2001	259,707	FGL
	2008	296,657	FGL
	2010	304,656	FGL
	Total	1,436,342	
Walleye	1973	655,000	FRY
	1974	171,000	FRY
	1975	253,200	FRY
	Total	1,079,800	

Table 5. Survey of structural habitat types, Lake Somerville, Texas, 2012. Shoreline habitat type units are in miles and standing timber is acres.

Habitat type	Estimate	% of total
Bulkhead with boat docks	0.6 miles	0.7
Riprap	0.7 miles	0.8
Non-descript/Un-vegetated	7.1 miles	8.2
Rocky	3.5 miles	4.1
Dead timber/dead vegetation	246.2 acres	2.1

Table 6. Survey of aquatic vegetation, Lake Somerville, Texas, 2009 and 2012. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2009	2012
Native submersed ^a	94.1 (0.8)	5.7 (0.05)
Native floating-leaved ^b	<1.0 (0.0)	28.2 (0.2)
Native emergent ^c	830.7 (7.3)	19.3 (0.2)
Non-native		
African Giant Cane	Not Recorded	26.8 (0.2)
Hydrilla	410.3 (3.6)	34.2 (0.3)
Water hyacinth	<1.0 (0.0)	0.0 (0.0)

^a Native submersed vegetation was primarily coontail (*Ceratophyllum demersum*), Illinois pondweed (*Potamogeton illinoensis*), and brushy pondweed (*Potamogeton pectinatus*).

^b Native floating-leaved vegetation was primarily American lotus (*Nelumbo lutea*) and water lilies (*Nymphaea* spp.).

^c Native emergent vegetation consisted primarily of giant bulrush (*Scirpus californicus*), black willow (*Salix nigra*), and Panic grasses (*Panicum* spp.).

Table 7. Percent directed angler effort by species for Lake Somerville, Texas, June 2009 – May 2010.

Species	2009/2010
Catfishes	18.3
White Bass	2.3
Palmetto bass	4.0
Largemouth Bass	45.2
Crappies	20.8
Anything	9.0

Table 8. Total fishing effort (h) for all species and total directed expenditures at Lake Somerville, Texas, 2009-2010. Survey periods were from 1 June 2009 through 31 May 2010. Relative standard error is in parentheses.

Creel statistic	2009/2010
Total fishing effort	31,798 (13)
Total directed expenditures	\$267,171 (31)

Gizzard Shad

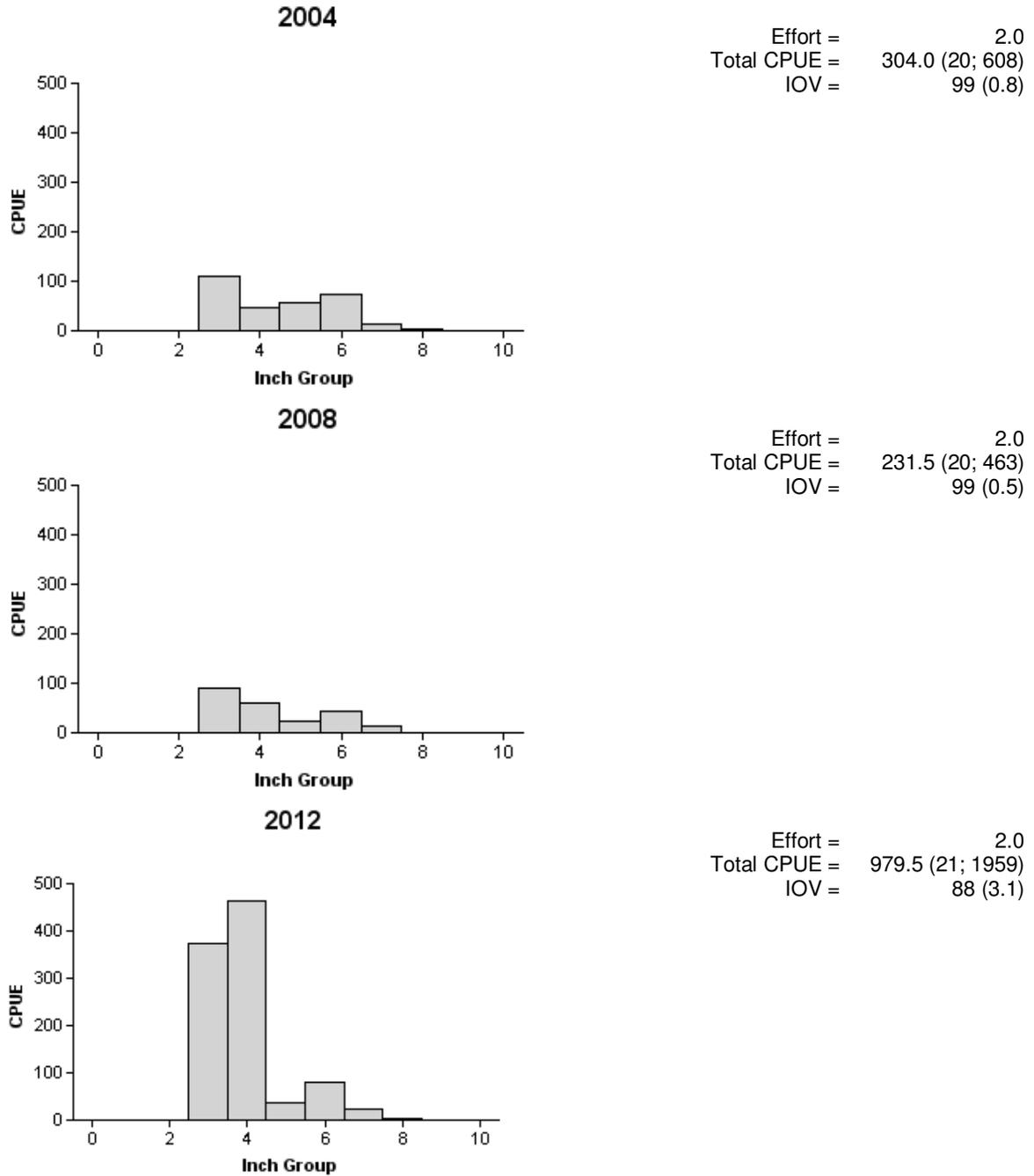


Figure 2. Number of gizzard shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lake Somerville, Texas, 2004, 2008, and 2012.

Bluegill

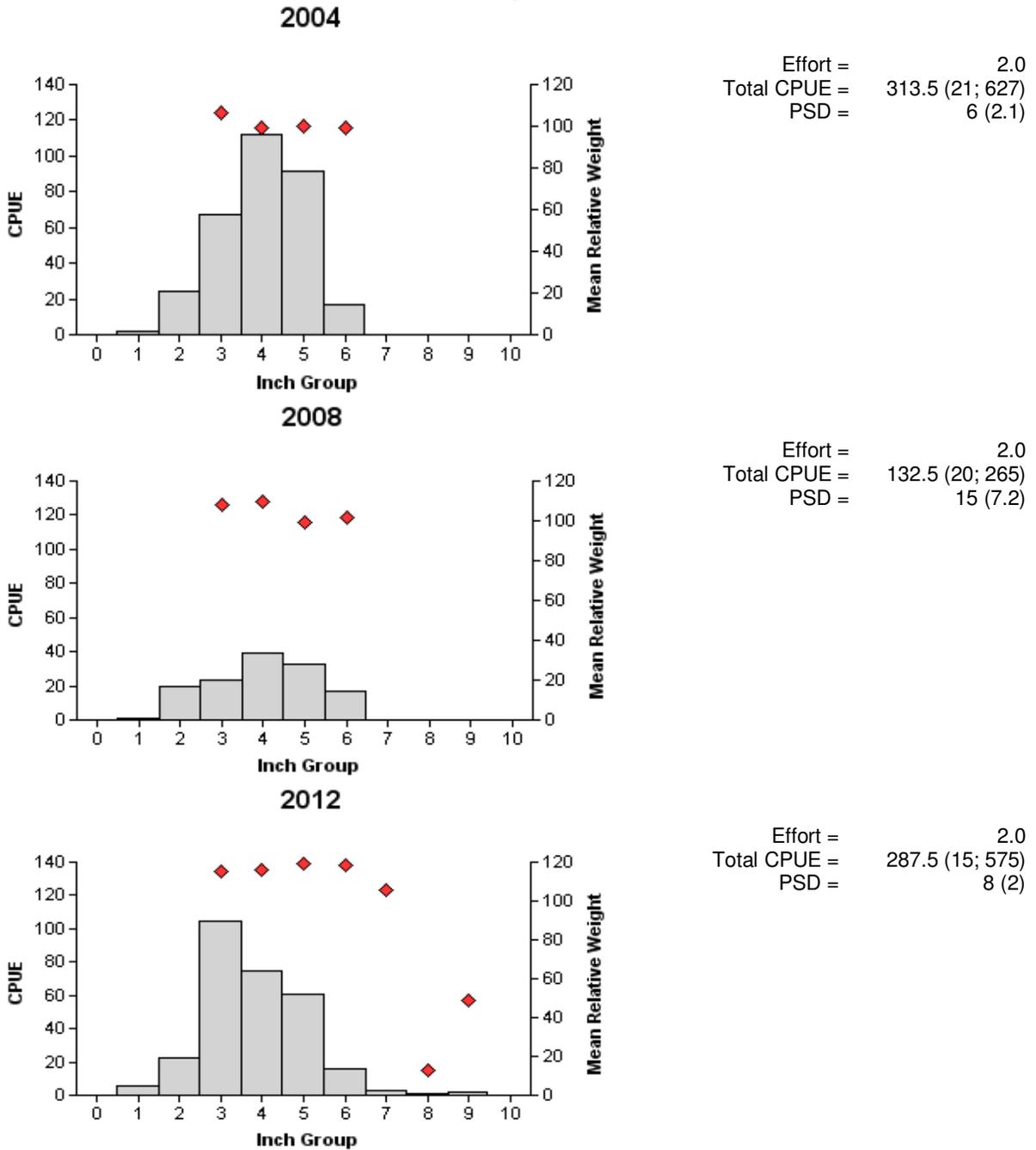
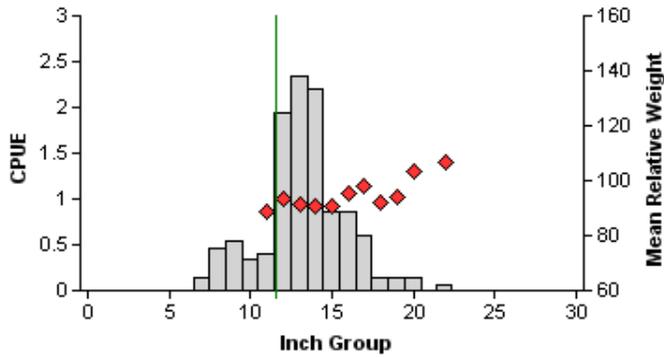


Figure 3. Number of Bluegill caught per hour (CPUE), relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Somerville, Texas, 2004, 2008, and 2012.

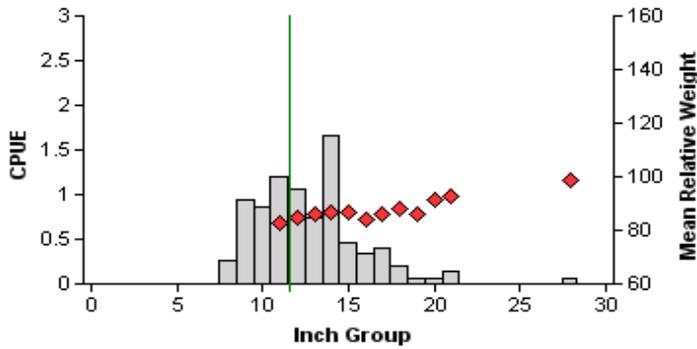
Channel Catfish

2005



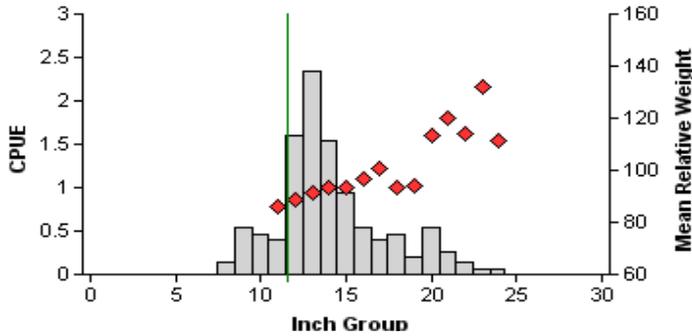
Effort = 15.0
 Total CPUE = 11.1 (15; 167)
 PSD = 20 (5.3)

2009



Effort = 15
 Total CPUE = 8.5 (15; 127)
 PSD = 20 (4.2)

2013

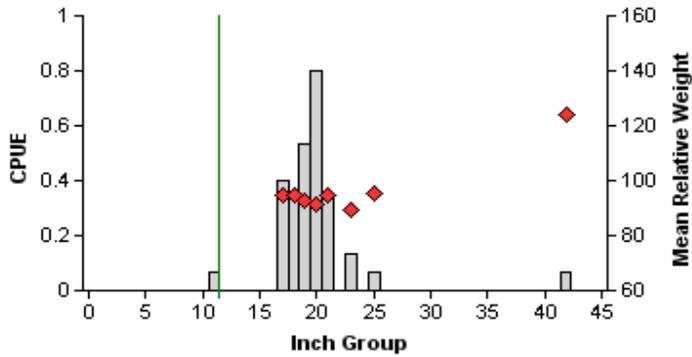


Effort = 15
 Total CPUE = 10.6 (14; 159)
 PSD = 28 (4)

Figure 4. Number of Channel Catfish caught per net night (CPUE), 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 Somerville, Texas, 2005, 2009, and 2013. Vertical line indicates minimum length limit.

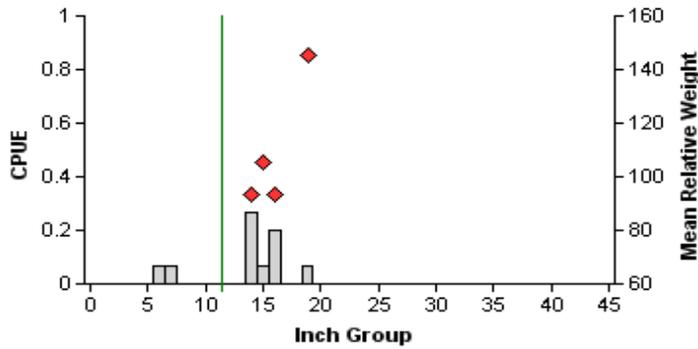
Blue Catfish

2005



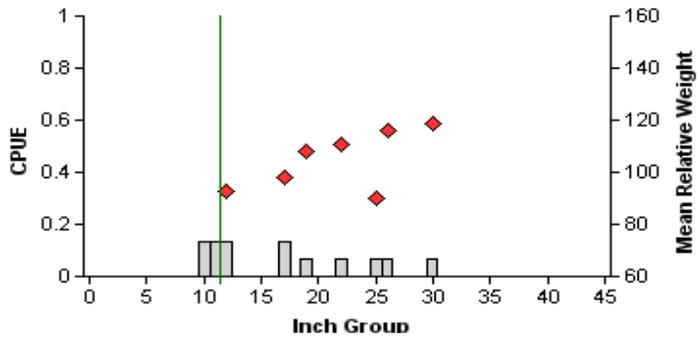
Effort = 15.0
 Total CPUE = 2.7 (32; 41)
 PSD = 52 (7.2)

2009



Effort = 15
 Total CPUE = 0.7 (49; 11)
 PSD = 0 (68)

2013



Effort = 15
 Total CPUE = 0.9 (43; 13)
 PSD = 44 (13.5)

Figure 5. Number of Blue Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Somerville, Texas, 2005, 2009, and 2013. Vertical line indicates minimum length limit.

Catfishes

Table 9. Creel survey statistics for Blue Catfish and Channel Catfish at Lake Somerville from June 2009 through May 2010. Total effort and catch per hour is for anglers targeting catfishes and total harvest is the estimated number of by species harvested by all anglers. Relative standard errors (RSE) are in parentheses. Directed effort, directed effort/acre, and total catch-per-hour are reported as those values for the entire catfishes group.

Creel survey statistic	Year	
	2009/2010	
Directed effort (h)	5,457 (24)	
Directed effort/acre	0.48 (24)	
Total catch per hour	0.99 (33)	
Total harvest		
Channel Catfish	5,358 (26)	
Blue Catfish	297	
Harvest/acre		
Channel Catfish	2.15 (26)	
Blue Catfish	0.03 (193)	
Percent legal released		
Channel Catfish	14.9	
Blue Catfish	0.0	

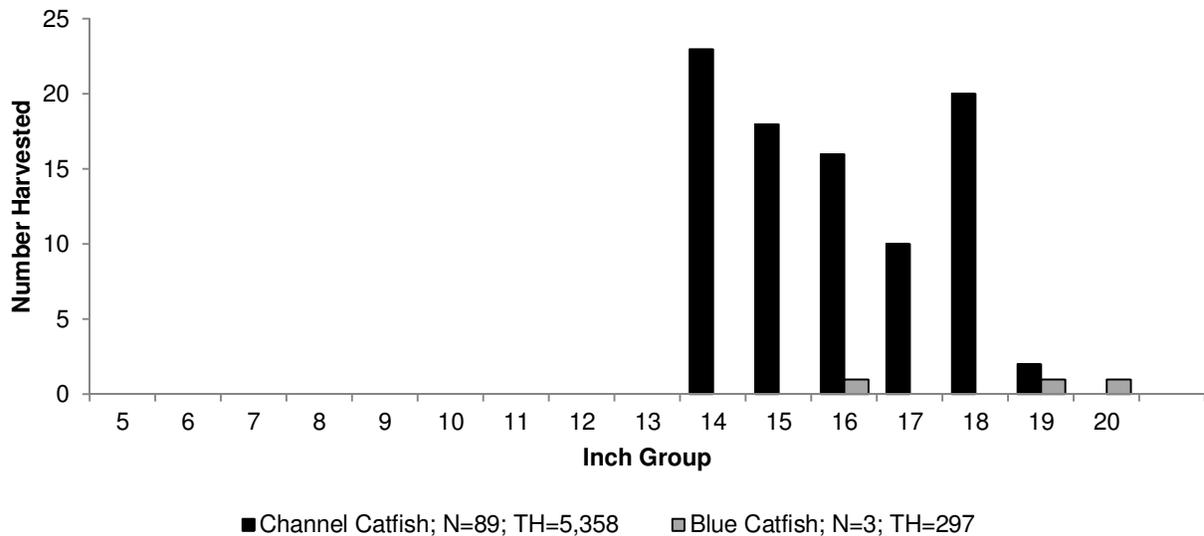


Figure 6. Length frequency of harvested Blue Catfish (gray bars) and Channel Catfish (black bars) observed during creel surveys at Lake Somerville, Texas, June 2009 through May 2010, all anglers combined. N is the number of harvested catfish of the particular species observed during creel surveys, and TH is the total estimated harvest of the particular species for the creel period.

White Bass

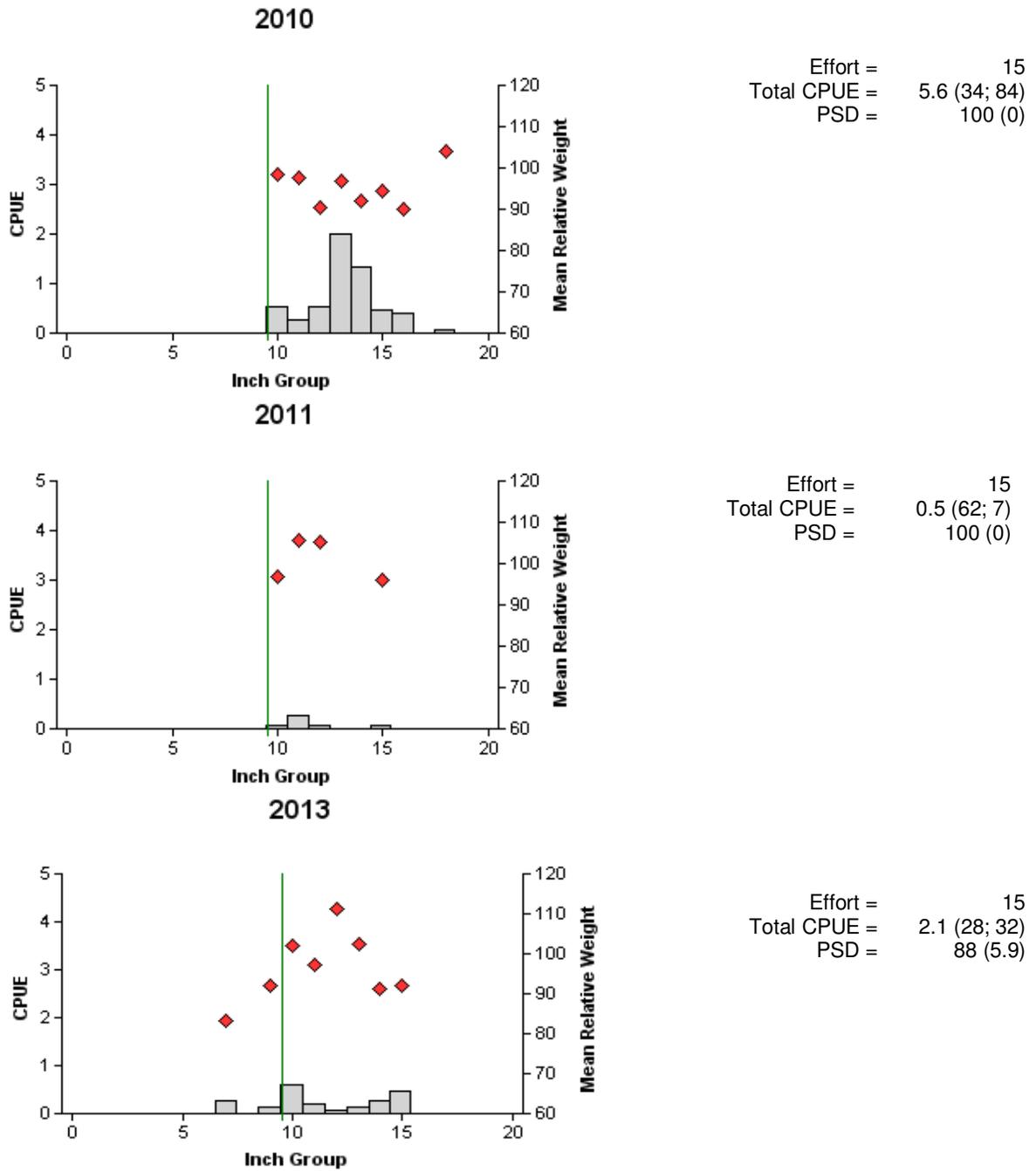


Figure 7. Number of White Bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Somerville, Texas, 2010, 2011, and 2013. Vertical line indicates the minimum length limit.

White Bass

Table 10. Creel survey statistics for White Bass at Lake Somerville from June 2009 through May 2010. 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	
	2009/2010	
Directed effort (h)	673 (71)	
Directed effort/acre	0.06 (71)	
Total catch per hour	0.19 (0)	
Total harvest	660 (168)	
Harvest/acre	0.06 (168)	
Percent legal released	0.00	

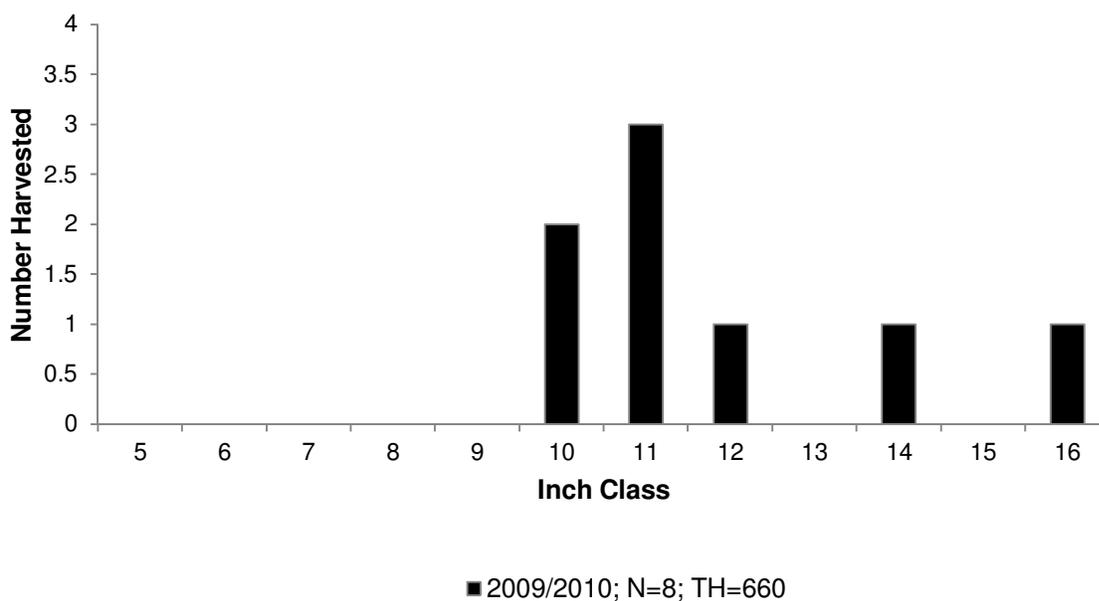
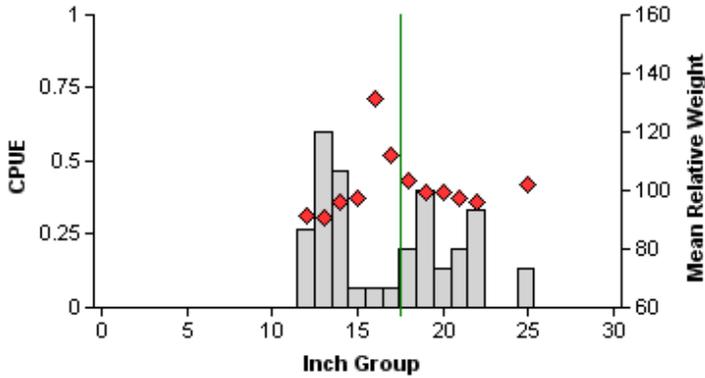


Figure 8. Length frequency of harvested White Bass observed during creel surveys at Lake Somerville, Texas, June 2009 through May 2010, all anglers combined. N is the number of harvested White Bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

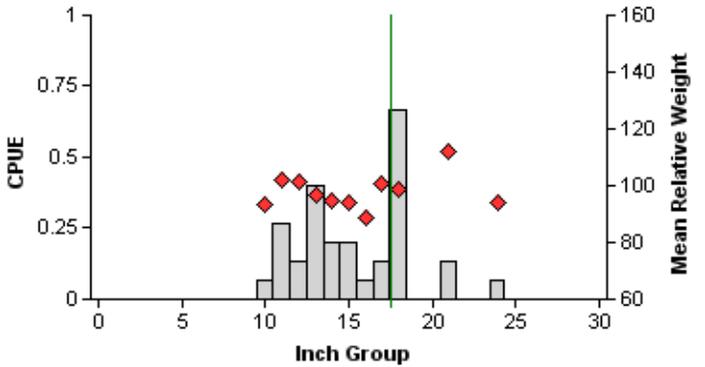
Palmetto Bass

2010



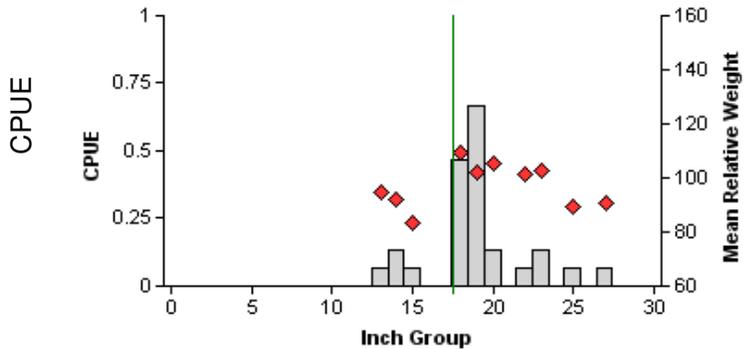
Effort = 15
 Total CPUE = 2.9 (68; 44)
 Stock CPUE = 2.9 (68; 44)
 PSD = 52 (23)

2011



Effort = 15
 Total CPUE = 2.3 (29; 35)
 Stock CPUE = 2.3 (29; 35)
 PSD = 46 (8.8)

2013



Effort = 15
 Total CPUE = 1.9 (33; 28)
 Stock CPUE = 1.9 (33; 28)
 PSD = 86 (8.2)

Figure 9. Number of Palmetto Bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Lake Somerville, Texas, 2010, 2011, and 2013. Vertical line indicates the minimum length limit.

Largemouth Bass

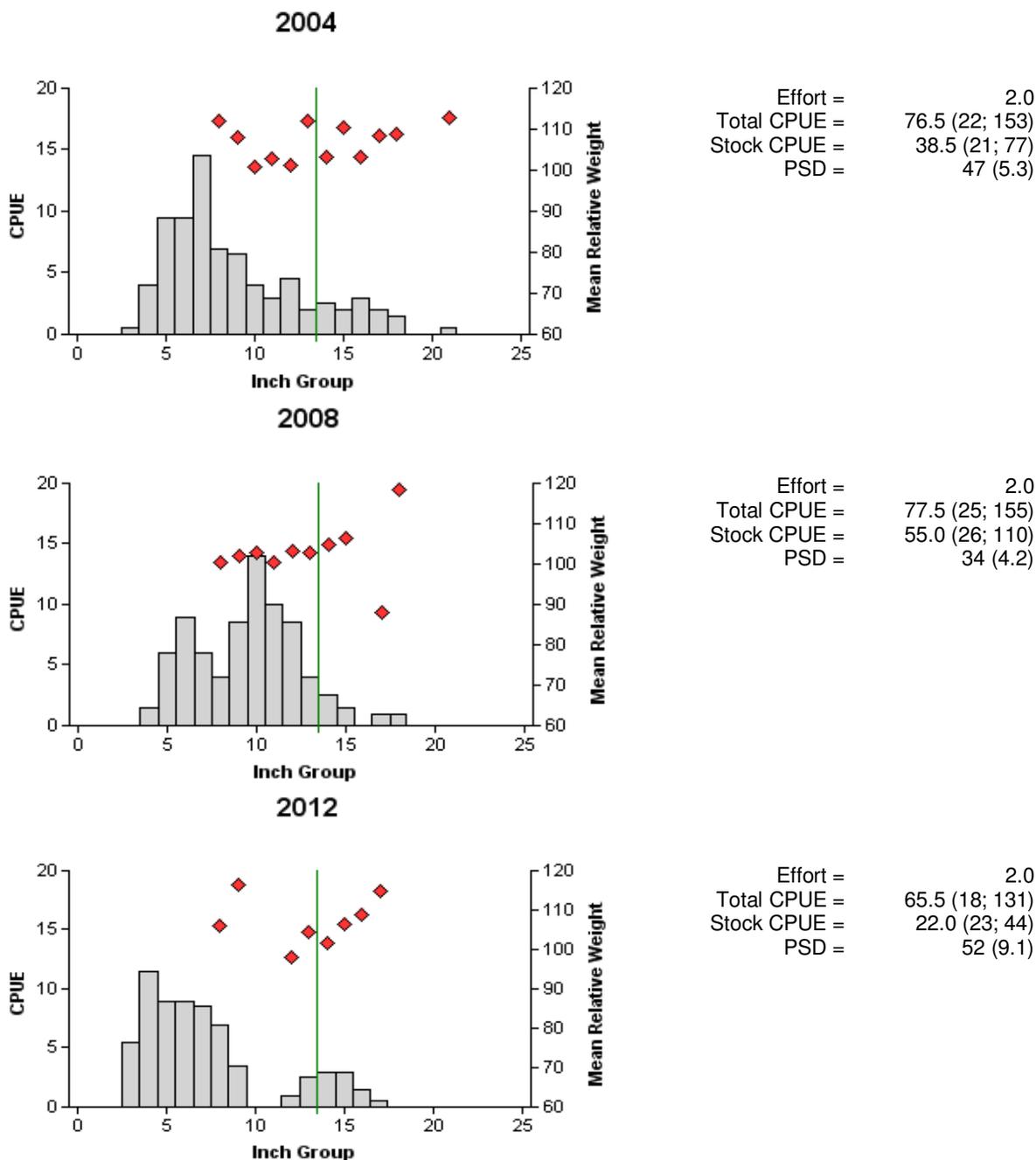


Figure 10. Number of Largemouth Bass caught per hour (total CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and stock CPUE, and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Somerville, Texas, 2004, 2008, and 2012. Vertical line indicates minimum length limit.

Largemouth Bass

Table 11. Creel survey statistics for Largemouth Bass at Lake Somerville from June 2009 through May 2010. Total effort, effort per acre, catch per hour, total harvest, harvest per acre, and percent legal release are partitioned by all anglers combined, non-tournament anglers, and tournament anglers. Relative standard errors (RSE) are in parentheses.

Statistic	2009/2010
Total directed angling effort (h)	13,515 (55)
Non-tournament	10,528 (20)
Tournament	2,987 (35)
Total angling effort/acre	1.18 (55)
Non-tournament	0.92 (20)
Tournament	0.26 (35)
Total catch per hour	0.99 (140)
Non-tournament	0.14 (124)
Tournament	0.85 (16)
Total harvest	1,260 (298)
Non-tournament	231 (202)
Tournament	1,029 (96)
Total harvest/acre	0.11 (298)
Non-tournament	0.02 (202)
Tournament	0.09 (96)
Total percent legal released	60.8
Non-tournament	41.1
Tournament	19.7

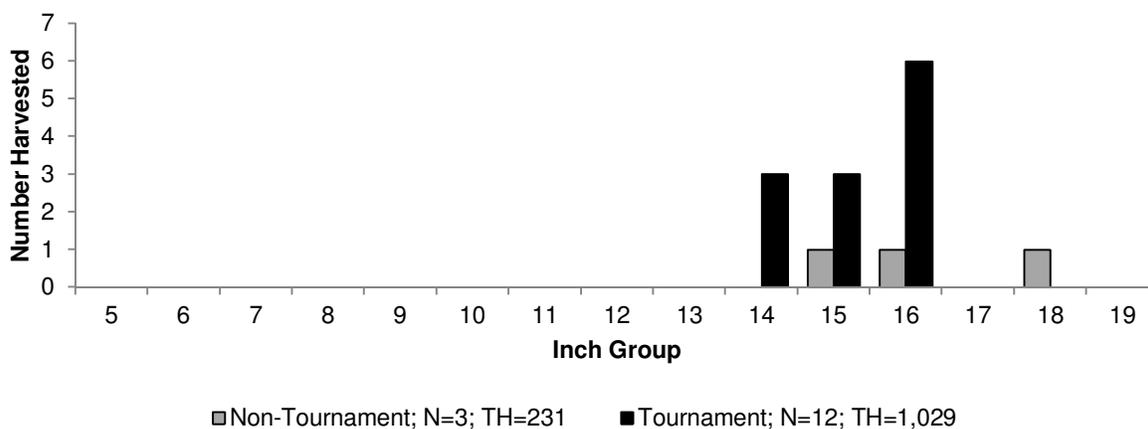


Figure 11. Length frequency of all harvested Largemouth Bass by non-tournament (gray bars) and tournament (black bars) anglers observed during creel surveys at Lake Somerville, Texas, June 2009 through May 2010. N is the number of harvested Largemouth Bass observed during creel surveys, and TH is the estimated harvest for the creel period.

Largemouth Bass

Table 12. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Lake Somerville, Texas, 2012. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined by electrophoresis prior to 2005 and with micro-satellite DNA analysis since 2005.

Year	Sample size	Number of fish			% FLMB alleles	% FLMB
		FLMB	Intergrade	NLMB		
2012	29	2	27	0	57.0	7.0

White Crappie

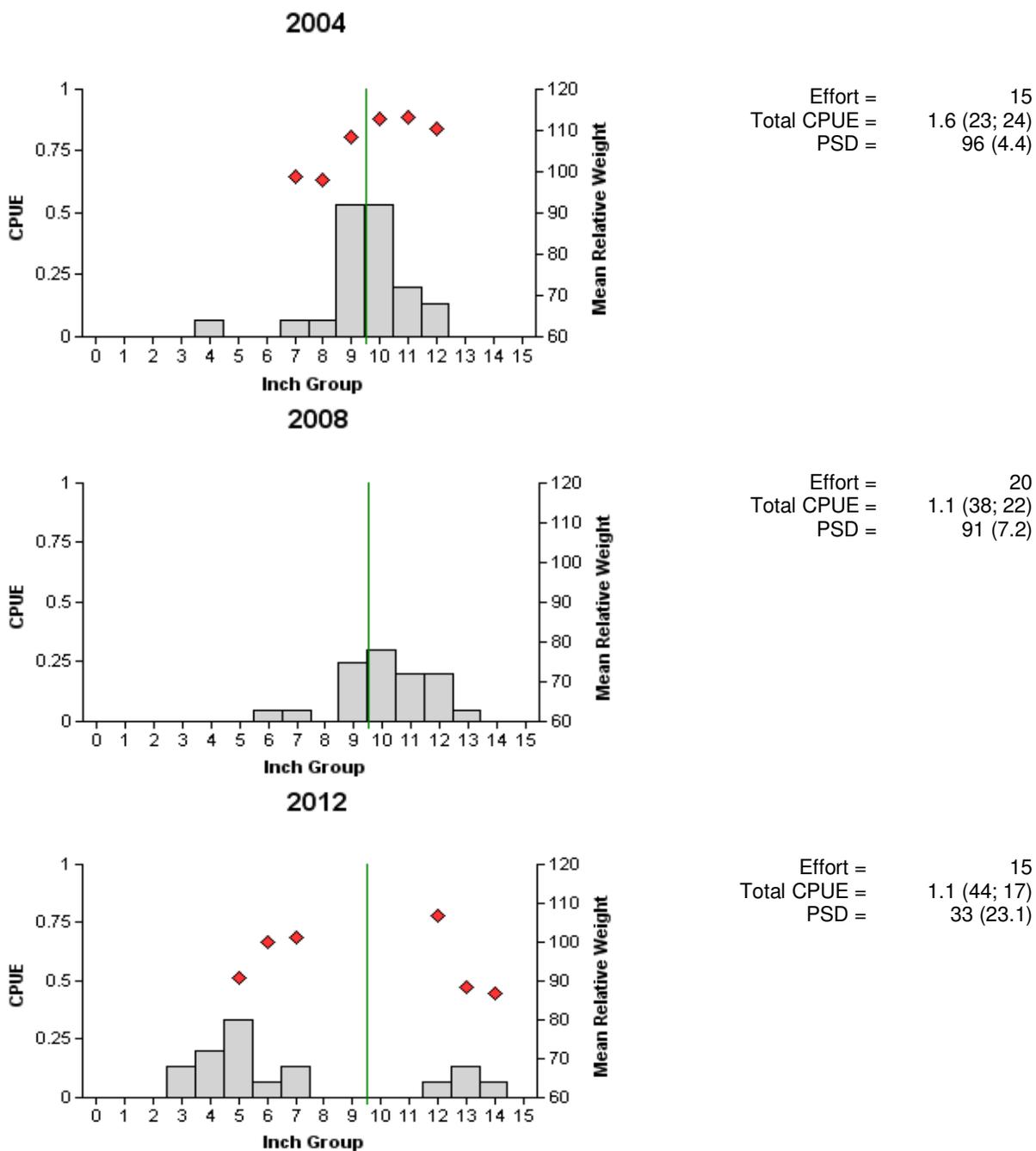
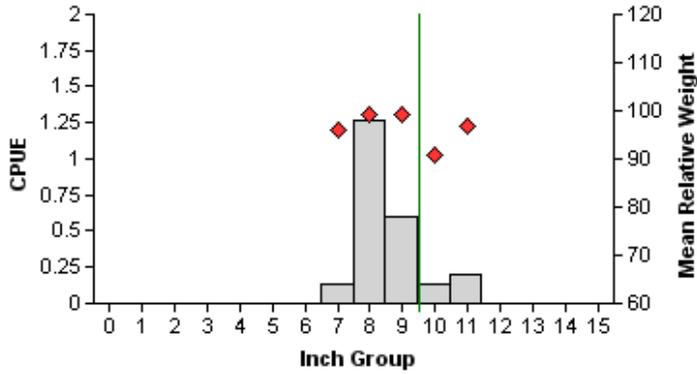


Figure 12. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Lake Somerville, Texas, 2004, 2008 and 2012. Vertical line indicates minimum length limit.

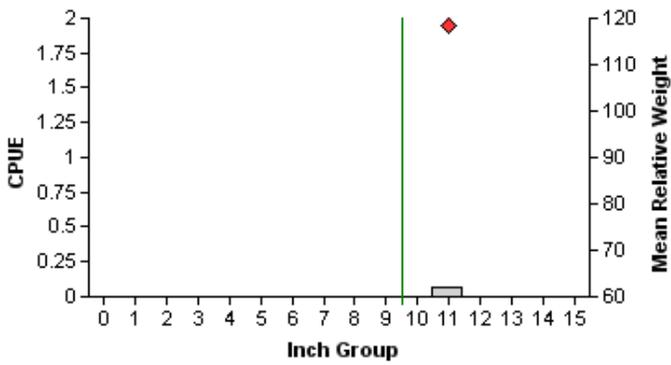
Black Crappie

2000



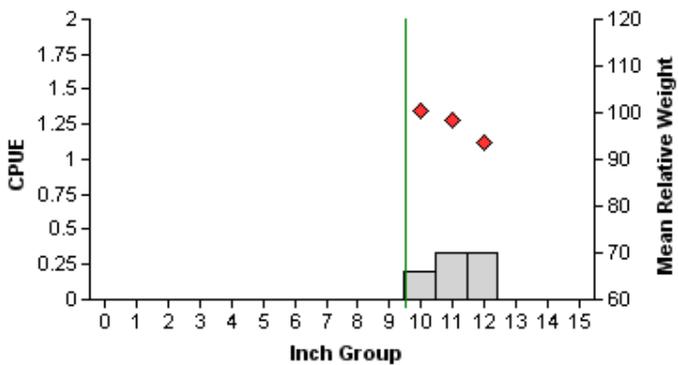
Effort = 15
 Total CPUE = 2.3 (20; 35)
 PSD = 94 (3.8)

2004



Effort = 15
 Total CPUE = 0.9 (100; 13)
 PSD = 100 (0)

2012



Effort = 15
 Total CPUE = 0.1 (100; 1)
 PSD = 100 (0)

Figure 13. 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 fall trap net surveys, Lake Somerville, Texas, 2000, 2004 and 2012. Vertical line indicates minimum length limit.

Crappies

Table 13. Creel survey statistics for White Crappie and Black Crappie at Lake Somerville from June 2009 through May 2010. Directed effort, directed effort/acre, and total catch-per-hour are reported as those values for both crappie species combined. Harvest, harvest per acre, and percent of legal fish released are separated by species. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year	
	2009/2010	
Directed effort (h)	6,224 (24)	
Directed effort/acre	0.54 (24)	
Total catch per hour	5.43 (64)	
Total harvest		
White Crappie	7,038 (78)	
Black Crappie	3,555 (47)	
Harvest/acre		
White Crappie	0.61 (78)	
Black Crappie	0.31 (47)	
Percent legal released		
White Crappie	0.0	
Black Crappie	0.0	

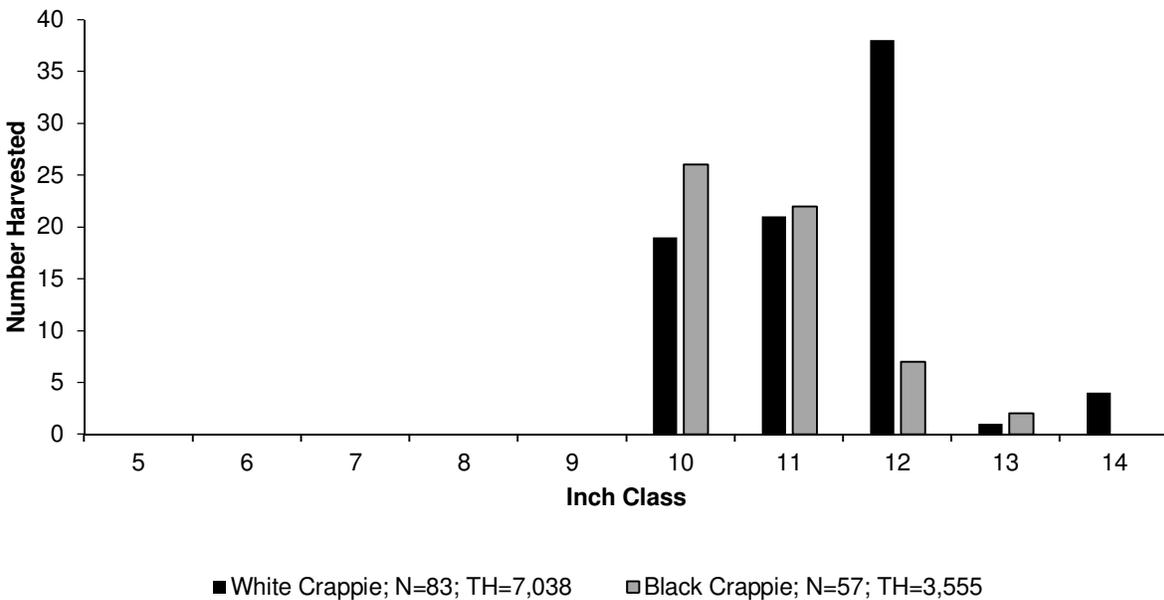


Figure 14. Length frequency of harvested White Crappie (black bars) and Black Crappie (gray bars) observed during the creel survey at Lake Somerville, Texas, June 2009 through May 2010, all anglers combined. N is the number of harvested White Crappie and Black Crappie observed during creel surveys, and TH is the total estimated harvest for the creel period.

Table 14. Proposed sampling schedule for Lake Somerville, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring while electrofishing and trap netting surveys are conducted in the fall. Standard survey denoted by S and additional survey denoted by A.

Survey year	Electrofishing Fall	Trap net	Gill net	Habitat			Creel survey	Report
				Structural	Vegetation	Access		
2013-2014					A			
2014-2015			A		A		A*	
2015-2016					A			
2016-2017	S	A	S	S	S	S		S

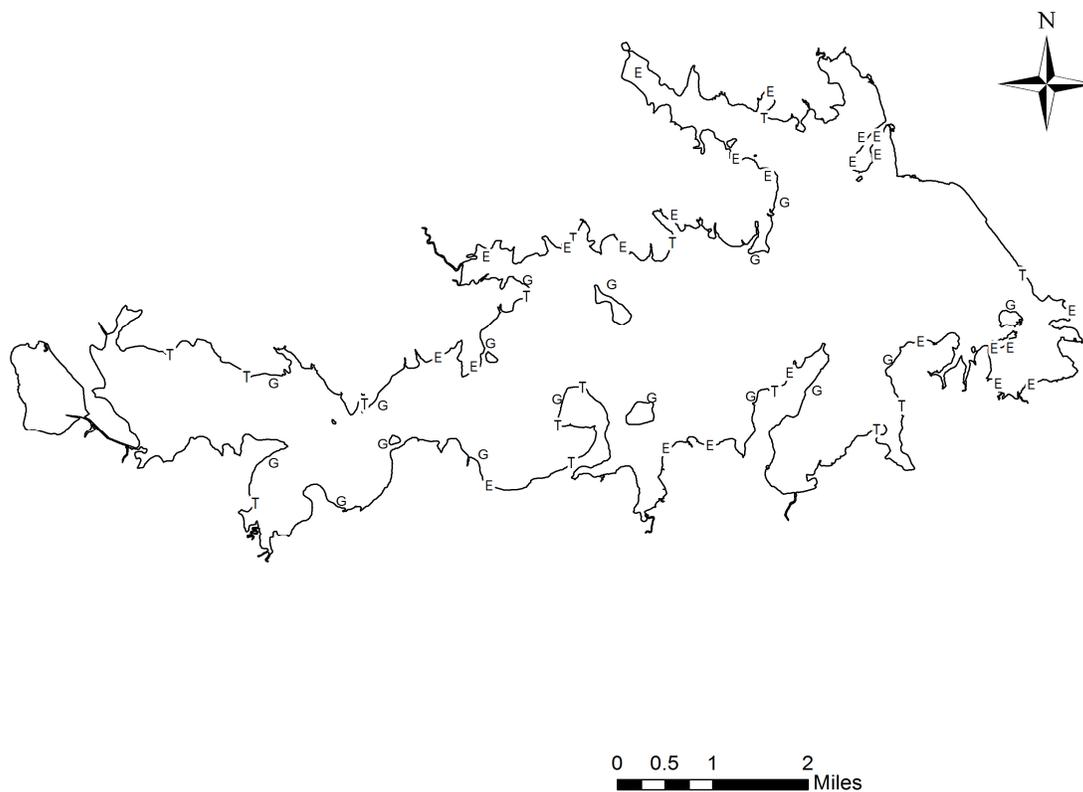
*1-year creel survey (March 2014 through February 2015)

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Lake Somerville, Texas, 2012-2013. Sampling effort was 15 net nights for gill netting, 15 net nights for trap netting, and 2 hours for electrofishing.

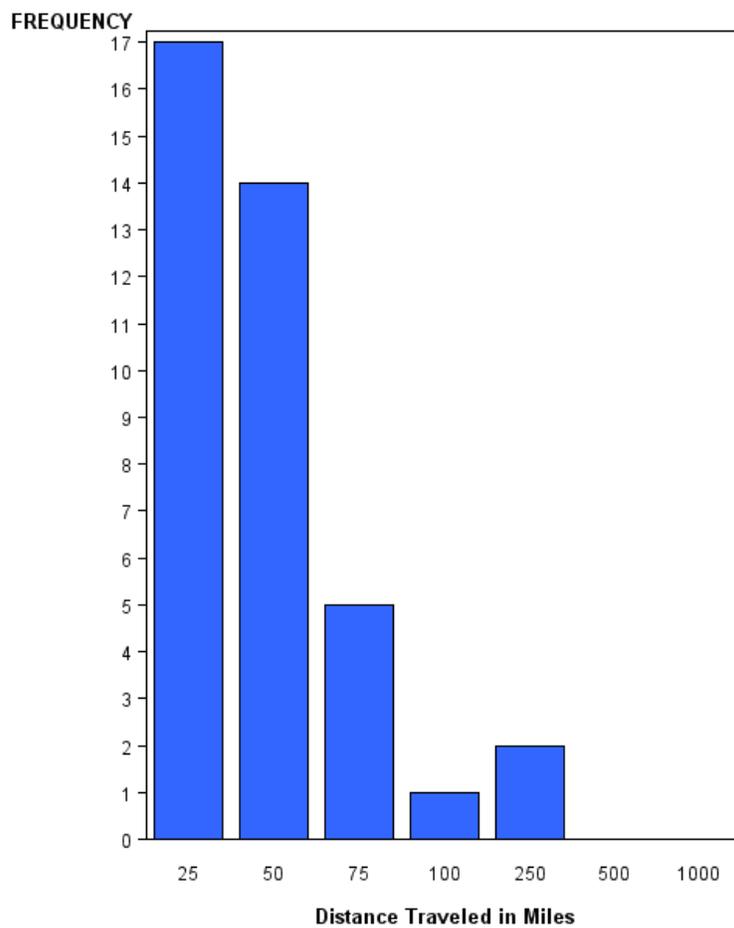
Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad					1,959	979.5
Threadfin Shad					1,027	513.50
Blue Catfish	13	0.9				
Channel Catfish	159	10.6				
White Bass	32	2.13				
Palmetto Bass	28	1.87				
Redbreast Sunfish					1	0.5
Warmouth					1	0.5
Bluegill					575	287.5
Longear Sunfish					20	10.0
Redear Sunfish					1	0.5
Largemouth Bass					131	65.5
White Crappie			17	1.1		
Black Crappie			13	0.9		

APPENDIX B

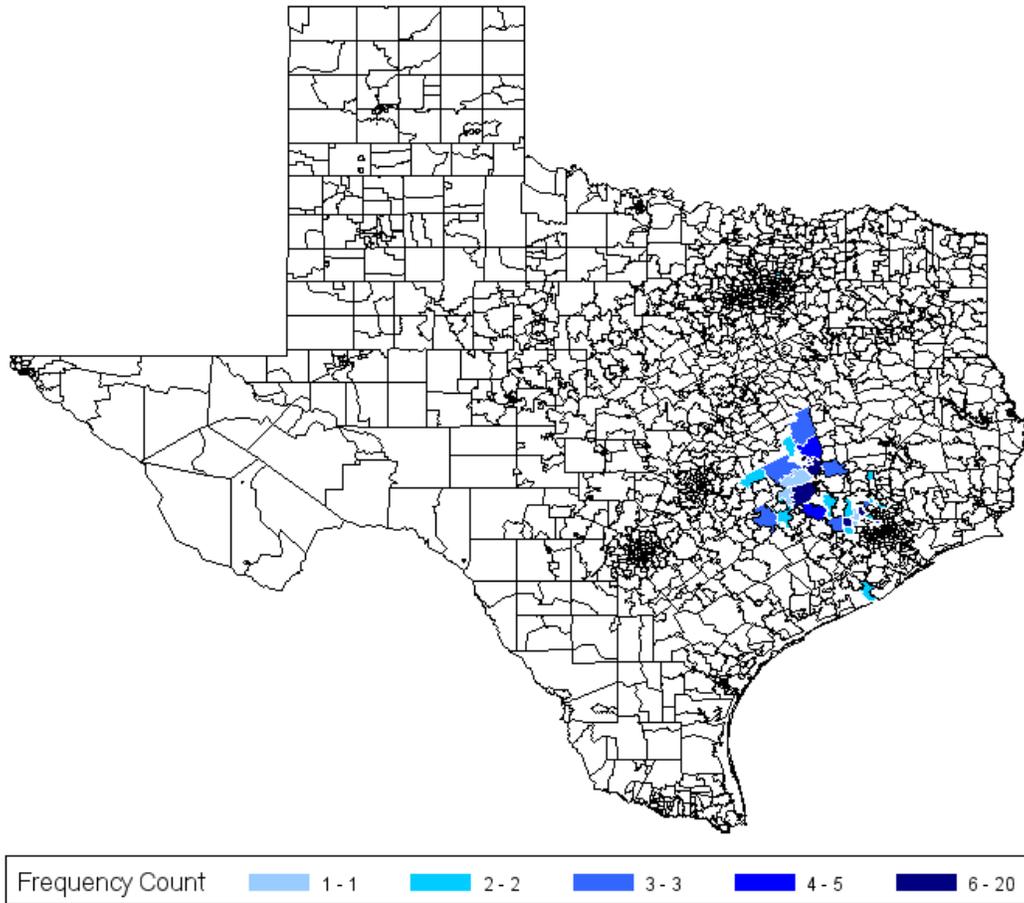


Location of sampling sites, Lake Somerville, Texas, 2012-2013. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level was within 1-foot below full pool at the time of sampling.

APPENDIX C



Frequency of anglers that traveled various distances (miles) to Lake Somerville, Texas, as determined from the June 2009 through May 2010 creel survey.



Location, by ZIP code, and frequency of anglers that were interviewed at Lake Somerville, Texas, during the June 2009 through May 2010 creel survey.