

PERFORMANCE REPORT

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FEDERAL AID IN SPORT FISH RESTORATION ACT

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INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2014 Fisheries Management Survey Report

Gibbons Creek Reservoir

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Gibbons Creek Reservoir were surveyed in 2014 using electrofishing and trap netting and in 2015 using gill netting. Anglers were surveyed from March through May 2015 using an access point creel survey. Historical data are presented with the 2014-2015 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:** Gibbons Creek Reservoir is a 2,770-acre reservoir located in Grimes County on Gibbons Creek in the Brazos River Basin. Impounded in 1981 by Texas Municipal Power Agency (TMPA), the reservoir is used for power-plant cooling and recreational purposes. Angler access is excellent with a 5-lane boat ramp, plentiful bank access around the boat launch area, and a 750 square foot fishing pier. Americans with Disabilities Act (ADA)-approved restrooms are available. Beginning in October of 2012 Gibbons Creek Reservoir is open only Friday – Sunday and on holidays.
- **Management History:** Gibbons Creek Reservoir opened for angling in March 1981 under a 14- to 24-inch slot-length limit for Largemouth Bass. The slot limit on bass was amended to a 14- to 21-inch slot-length limit after one year and remained under that regulation until 1992 when a catch-and-release-only regulation was adopted. On September 1, 2002, the bass fishery was placed under a 14- to 24-inch slot-length limit and a five-fish daily bag limit with one fish over 24 inches allowed per angler per day. All other sport fish are managed under statewide regulations.
- **Fish community**
 - **Prey species:** The prey fish community at Gibbons Creek Reservoir consists primarily of Threadfin Shad, Gizzard Shad, and Bluegill.
 - **Catfishes:** Substantial Blue Catfish and Channel Catfish populations are present in Gibbons Creek Reservoir. Blue Catfish are dominant with an excellent size distribution.
 - **Largemouth Bass:** Largemouth Bass are moderately abundant in Gibbons Creek Reservoir and provide quality angling opportunities. The lake has a history of producing trophy Largemouth Bass including the 16.12 pound reservoir record Largemouth Bass. Florida Largemouth Bass fingerlings have been stocked periodically to enhance and maintain the trophy potential of the population.
 - **Crappie:** Both White Crappie and Black Crappie are present and provide a significant fishery at Gibbons Creek Reservoir; however, crappie catch rates during standard monitoring are low.
- **Management Strategies:** District staff will monitor the Largemouth Bass population every four years with fall electrofishing. Largemouth Bass genetics will be assessed every four years and Florida Largemouth Bass fingerlings stocked when appropriate. District staff will monitor catfish and crappie populations with gill nets and trap nets every four years. An access-point creel survey will be conducted in the spring of 2019. District staff will continue to work with TMPA personnel to assess exotic vegetation coverage and implement treatments as needed.

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INTRODUCTION

This document is a summary of fisheries data collected from Gibbons Creek Reservoir from June 2014 through May 2015. 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 2014-2015 data for comparison.

Reservoir Description

Gibbons Creek Reservoir is a 2,770-acre reservoir located in Carlos, Texas (Grimes County) on Gibbons Creek in the Brazos River Basin. Impounded in 1981 by Texas Municipal Power Agency (TMPA), the reservoir is used for power plant cooling and recreational purposes. Bank and boat access are excellent, and ADA-approved restroom facilities are available. Other descriptive characteristics of Gibbons Creek Reservoir are found in Table 1.

Angler Access Description

Angler access at Gibbons Creek Reservoir is comprised of one 5-lane boat ramp in excellent condition, a fishing pier near the boat ramp, and several shoreline access areas. The only access issue is that the park is open only Friday through Sunday and on holidays with the exception that long term campers have access throughout the week (Table 2).

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Webb and Gore 2011) included:

1. Sample Largemouth Bass genetics in fall 2012 to evaluate 2010 and 2011 Largemouth Bass stockings
Action: Largemouth Bass genetics were sampled in the fall of 2014.
2. Request stockings of fingerling Florida Largemouth Bass at 100/acre in 2014 and 2015 to continue supporting the trophy potential of Gibbons Creek Reservoir.
Action: Largemouth Bass stockings have been requested annually.
3. Continue to regulate the Largemouth Bass fishery with the 14- to 24-inch slot-length limit and a 5-fish daily bag limit with one fish \geq 24 inches allowed per angler per day.
Action: The Largemouth Bass fishery continues to be managed with the 14- to 24-inch slot-length limit and a 5-fish daily bag limit with one fish \geq 24 inches allowed per angler per day regulation.
4. Continue to monitor Largemouth Bass relative abundance and population size structure biennially by electrofishing.
Action: Electrofishing for Largemouth Bass was conducted in 2012 and 2014.
5. Continue to monitor hydrilla and water hyacinth annually.
Action: Exotic vegetation surveys were conducted annually.
6. Assist the controlling authority as needed with treatments.
Action: TPWD assisted TMPA with treatments as needed.
7. Cooperate with the controlling authority to post appropriate signs at access points around the reservoir to help prevent the spread of exotic species to and from Gibbons Creek Reservoir.
Action: Clean drain dry and giant salvinia signs have been posted at Gibbons Creek Reservoir.
8. Contact and educate local merchants about invasive species and provide them with posters, literature, etc. so they in turn can educate their customers.
Action: Although no specific campaign has been directed at local merchants, information regarding nuisance aquatic invasive species has been widely disseminated in the Bryan-College Station and Huntsville areas.

9. Educate the public about invasive species through the use of media and the internet.
Action: Information regarding aquatic invasive species has been widely disseminated in the area using magazine and newspaper articles, television, and social media.
10. Make a speaking point about invasive species when presenting to constituent and user groups.
Action: Several presentations focusing on nuisance aquatic species have been given to constituent groups.
11. Deploy Portland Samplers in Gibbons Creek Reservoir to monitor possible infestations of zebra mussels.
Action: In lieu of Portland samplers TPWD staff have made frequent inspections of rocks and debris along the shoreline in access areas to monitor for zebra mussels.

Harvest regulation history: Since September 1, 2002, Largemouth Bass have been managed under a 14- to 24-inch slot-length limit, five fish daily bag with the harvest of one fish 24 inches or larger allowed per day per angler. This regulation was adopted to continue maximizing the trophy potential of the Gibbons Creek Largemouth Bass fishery while allowing some angler harvest. Prior to the current regulation, a catch-and-release-only regulation for Largemouth Bass was in place for ten years. All other sport fish are managed under statewide regulations (Table 3).

Stocking history: Immediately after impoundment in 1981, Gibbons Creek Reservoir was stocked with Channel Catfish, Blue Catfish, Coppernose Bluegill, Redear Sunfish, and Florida Largemouth Bass fingerlings. Kemp's Largemouth Bass were stocked in 1985. Florida Largemouth Bass were stocked in 2002, 2003, 2008, 2010, and 2011 to enhance the potential for trophy bass production (Table 4).

Vegetation/habitat history: The primary habitat in Gibbons Creek Reservoir is aquatic vegetation, both native and exotic. From the early 1980s through the mid 1990s, hydrilla was present in moderate quantities and, along with a mixed native plant community, provided excellent fish habitat. By the late 1990s, vegetation coverage was greatly reduced. Mixed native plants as well as hydrilla have recovered in recent years. Water hyacinth treatments have been conducted by TMPA whenever needed.

Water Transfer: Gibbons Creek Reservoir is owned and operated by TMPA as a cooling water reservoir for a coal fired power plant. Outflow is to Gibbons Creek, a tributary of the Navasota River in the Brazos River Watershed.

METHODS

Fishes were collected by electrofishing (1 hour at 12, 5-min stations), trap netting (10 net nights at 10 stations), and gill netting (10 net nights at 10 stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing and as fish per net night (fish/nn) for gill and trap nets. All survey sites were randomly selected, and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2014). An access-point creel survey was conducted in the spring quarter of 2015 (March through May). Nine creel days (5 weekend days, 4 weekdays) were chosen randomly with each survey lasting 3.25 hours. Even though Gibbons Creek Reservoir is open to the general public only Friday through Sunday and on holidays, long term campers and TMPA employees have access for angling throughout the week; therefore, the creel survey was conducted on a standard 9 day schedule. Anglers were counted and interviewed as they completed their fishing trips. Analyses were conducted in accordance with the Texas Parks and Wildlife Inland Fisheries Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2014).

A structural habitat survey was conducted in 2014. Vegetation surveys were conducted in 2011 – 2014 to monitor non-native species. Habitat was assessed with the digital shape file method (TPWD, Inland Fisheries Division, unpublished manual revised 2014). The entire shoreline was sampled.

Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution

(PSD), Guy et al. (2007)], and condition indices [relative weights (W_i)] 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 Standard Error) was calculated for all CPUE statistics, and Standard Error (SE) was calculated for structural indices and IOV.

Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2014). Micro-satellite DNA analysis was used to determine genetic composition of individual fish from 2014 and by electrophoresis for previous years.

Source for water level data was the TMPA.

RESULTS AND DISCUSSION

Habitat: A physical habitat survey in 2014 revealed no substantial changes in shoreline structural habitat since 2010. The vegetation survey from 2014 indicated 374 acres of native aquatic vegetation, 37 acres of hydrilla and 67 acres of water hyacinth (Tables 5 and 6).

Creel: Total angler effort decreased substantially from 2011 (21,936 h) to 2015 (13,769 h) due to the change in lake operations from being open each day except Wednesday to being open only Friday, Saturday, Sunday, and holidays. The proportion of directed effort for Largemouth Bass stayed nearly the same in 2011 (29%) and 2015 (29%). The proportion of directed effort decreased from 50% to 44% for catfishes, and from 18% to <1% for crappies. Anglers fishing for anything increased sharply from 3% in 2011 to 28% in 2015 (Table 7). Even though total angler effort decreased, angler expenditures increased from \$97,491 in 2011 to \$100,616 in 2015 (Table 8).

Prey species: Threadfin Shad relative abundance estimates increased from 160.0/h in 2010 to 1,312.0/hr in 2014 (Appendix A). Gizzard Shad relative abundance estimates have been relatively stable with catch rates of 78/h in 2006, 187/hr in 2010, and 124/h in 2014 (Figure 2). IOV for Gizzard Shad was 85 in 2014 indicating most Gizzard Shad were available as prey to existing predators. Bluegill CPUE increased from 169.0/hr in 2010 to 223/h in 2014 (Figure 3). The total CPUE of all prey fish species combined was 1,721/h in 2014 (Appendix A).

Catfishes: Blue Catfish remain the dominant catfish species in Gibbons Creek Reservoir. Gill net CPUE in 2014 (13.3/nn) was lower than it was in 2011 (29.8/nn), but fish up to 26 inches in length were present in the sample (Figure 4). An estimated 735 Blue Catfish (Figure 6) were harvested by anglers during the spring creel period in 2015 (down from 3,235 in 2011). All legal length Blue Catfish caught by anglers were retained indicating a harvest-oriented fishery. Fish up to 18 inches were observed during the creel survey (Figure 6).

Gill net CPUE of Channel Catfish decreased from 15.4/nn in 2011 to 8.8/nn in 2015 (Figure 5). Angler harvest during the spring 2015 creel period was estimated at 3,249, with fish up to 22 inches in length observed in the creel (Figure 7).

Largemouth Bass: Largemouth Bass electrofishing catch rates increased from 91/h in 2010 to 112/h in 2014 (Figure 8). PSD-14 increased from 21% in 2010 to 34% in 2014. The length frequency from electrofishing indicates good reproduction and recruitment to adult size with good body condition (Figure 8). Direct angling effort for Largemouth Bass decreased from 6,380h in 2011 to 3,944h in 2014 (Table 10); likely due to the reduction in days the reservoir is open to the public. Limited entry into the fishery may have improved success for anglers who did utilize it because the angling catch rate for Largemouth Bass improved from 0.5/h in 2011 to 2.4/h in 2015 (Table 10). 32% of Largemouth Bass in the 2014 genetic sample were pure Florida Largemouth Bass. This was up from 7% in 2007 and may reflect success of the 2008, 2010, and 2011 Florida Largemouth Bass stockings (Tables 4 and 11).

White Crappie and Black Crappie: Trap net catch rates of White Crappie and Black Crappie in 2014 were 0.2/nh and 3.4/nh respectively (Figures 10 and 11). The results of the spring creel survey indicated <1% of anglers target crappie, down from 18% in 2011 (Table 7). Angler catch rates for both species were good for the few anglers targeting crappie; 16.9 fish per hour for both species combined (Table 12). Anglers harvested an estimated 858 Black Crappie with no White Crappie reported harvested in 2015 (Table 12, Figure 12).

Fisheries management plan for Gibbons Creek Reservoir, Texas

Prepared—July 2015

ISSUE 1: Largemouth Bass are an important sport fish managed with a trophy-bass regulation. The Largemouth Bass population requires specific management strategies to maintain its quality.

MANAGEMENT STRATEGIES

1. Continue to monitor Largemouth Bass relative abundance, population size structure, and genetics every four years by electrofishing.
2. Request stockings of fingerling Florida Largemouth Bass annually to continue supporting the trophy potential of Gibbons Creek Reservoir.

ISSUE 2: Blue Catfish are an underutilized resource for anglers.

MANAGEMENT STRATEGIES

1. Promote the Blue Catfish fishery in local media outlets.
2. Continue to monitor the Blue Catfish population with gill netting every four years.

ISSUE 3: Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels 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 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.

Exotic vegetation continues to be an issue at Gibbons Creek Reservoir with water hyacinth the primary concern.

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to post appropriate signage at access points around the reservoir to help prevent the spread of exotic species to and from Gibbons Creek Reservoir.
2. Contact and educate local merchants 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. Continue to monitor hydrilla and water hyacinth annually.
6. Assist the controlling authority as needed with treatments of water hyacinth.
7. Sample substrate around access areas to monitor possible infestations of zebra mussels.

SAMPLING SCHEDULE JUSTIFICATION:

District staff will monitor Largemouth Bass and forage species with electrofishing, catfish populations with gill netting, and crappie populations with trap netting every four years. A spring creel survey will be conducted from March through May 2019 to monitor sport fish catch and harvest and economic expenditures associated with the Gibbons Creek fisheries. Annual vegetation surveys will be conducted to monitor exotic vegetation. Access and structural habitat surveys will be conducted in summer 2018.

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Water Level

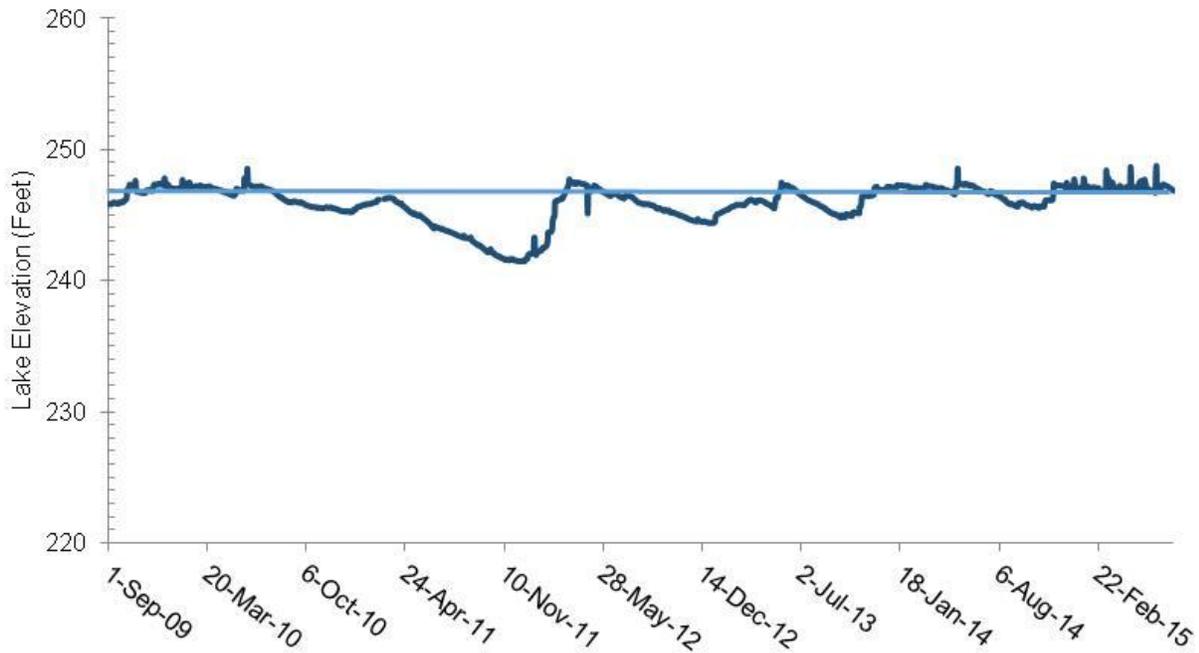


Figure 1. Monthly water level elevations in feet above mean sea level (MSL) recorded for Gibbons Creek Reservoir, Texas, September 2009- July 2015. Conservation pool is 247 feet above MSL and is denoted by a solid line.

Table 1. Characteristics of Gibbons Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1981
Controlling authority	Texas Municipal Power Agency
County	Grimes
Reservoir type	Power plant cooling
Shoreline Development Index (SDI)	2.3
Conductivity	370 μ mhos/cm

Table 2. Boat ramp characteristics for Gibbons Creek Reservoir, Texas, August 2014. Reservoir elevation at time of survey was 246 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
TMPA Boat Ramp	30.61778 -96.05367	Y	125	243	Excellent, no access issues.

Table 3. Harvest regulations for Gibbons Creek Reservoir, 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, Largemouth	5 (only 1 > 24 inches)	14 – to 24 – inch slot
Crappie, White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10 – inch minimum

Table 4. Stocking history of Gibbons Creek Reservoir, Texas. Size Category is FGL = 1-3 inches.

Species	Year	Number	Size
Blue Catfish	1981	115,768	FGL
	Total	115,768	
Channel Catfish	1981	120,000	FGL
	Total	120,000	
Coppernose Bluegill	1981	24,500	FGL
	Total	24,500	
Redear Sunfish	1981	8,780	FGL
	Total	8,780	
Florida Largemouth Bass	1981	121,522	FGL
	2002	126,116	FGL
	2003	211,359	FGL
	2008	138,625	
	2010	59,384	FGL
	2011	140,493	FGL
	Total	804,006	
Kemp's Largemouth Bass	1985	254,696	FGL
	Total	254,696	

Table 5. Survey of habitat types, Gibbons Creek Reservoir, Texas, 2014. Surface area (acres) and percent of reservoir surface area was determined for each type of habitat found.

Habitat Type	Estimate (acres)	% of total habitat
Bulkhead	1.3	0.96
Bulkhead/Standing Ttmber	0.0	0.01
Rock	0.5	0.40
Natural shoreline	10.7	8.12
Natural shoreline/Flooded terrestrial	2.2	1.68
Natural shoreline/Standing timber	1.3	0.96
Natural shoreline/Native emergent	4.5	3.42
Natural shoreline/Native Floating	26.6	20.17
Natural shoreline/Native submersed	11.4	8.66
Natural shoreline/Flooded terrestrial/ Standing timber	0.5	0.40
Natural shoreline/Flooded terrestrial/ Native emergent	0.1	0.05
Natural shoreline/Flooded terrestrial/ Native submersed	52.6	39.90
Natural shoreline/Flooded terrestrial/ Native floating	0.3	0.24
Natural shoreline/Flooded terrestrial/ Standing timber/Native emergent	0.3	0.22
Natural shoreline/Flooded terrestrial/ Standing Timber/Native submersed	0.3	0.22
Native Floating/Native submersed	2.8	2.09
Native floating/Native emergent	2.7	2.06
Native submersed/Native emergent	2.4	1.82
Native floating/Native submersed/Native emergent	11.4	8.63

Table 6. Survey of aquatic vegetation, Gibbons Creek Reservoir, Texas 2012-2014. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2012	2013	2014
Native submersed			136.5 (4.9)
Native floating-leaved			140.3 (5.0)
Native emergent			97.0 (3.5)
Total native			373.9 (13.5)
Non-native			
Alligator weed (Tier II)			9.3 (0.3)
Hydrilla (Tier III)*	0.4 (<0.1)	4.0 (<0.1)	37.4 (1.4)
Water hyacinth (Tier II)*	0.4 (<0.1)	29.0 (<0.1)	67.4 (2.4)
Total non-native	0.8 (<0.1)	33.0 (<0.1)	114.1 (4.1)

*Tier II is Maintenance Status, Tier III is Watch Status

Table 7. Percent directed angler effort by species for Gibbons Creek Reservoir, Texas, 2007-2015. Survey period was from March 1 through May 31.

Species	2007	2011	2015*
Catfishes	55	50	44
Largemouth Bass	18	29	29
Crappies	23	18	<1
Anything	4	3	28

*For 2015 angling access was limited Monday-Thursday to campers and TMPA employees only.

Table 8. Total fishing effort (h) for all species and total directed expenditures at Gibbons Creek Reservoir, Texas, March-May 2007, 2011, 2015.

Creel statistic	2007	2011	2015*
Total fishing effort (h)	22,697	21,936	13,769 (37.3)
Total directed expenditures	\$86,429	\$97,491	\$100,616 (182.9)

*For 2015 angling access was limited Monday-Thursday to campers and TMPA employees only.

Gizzard Shad

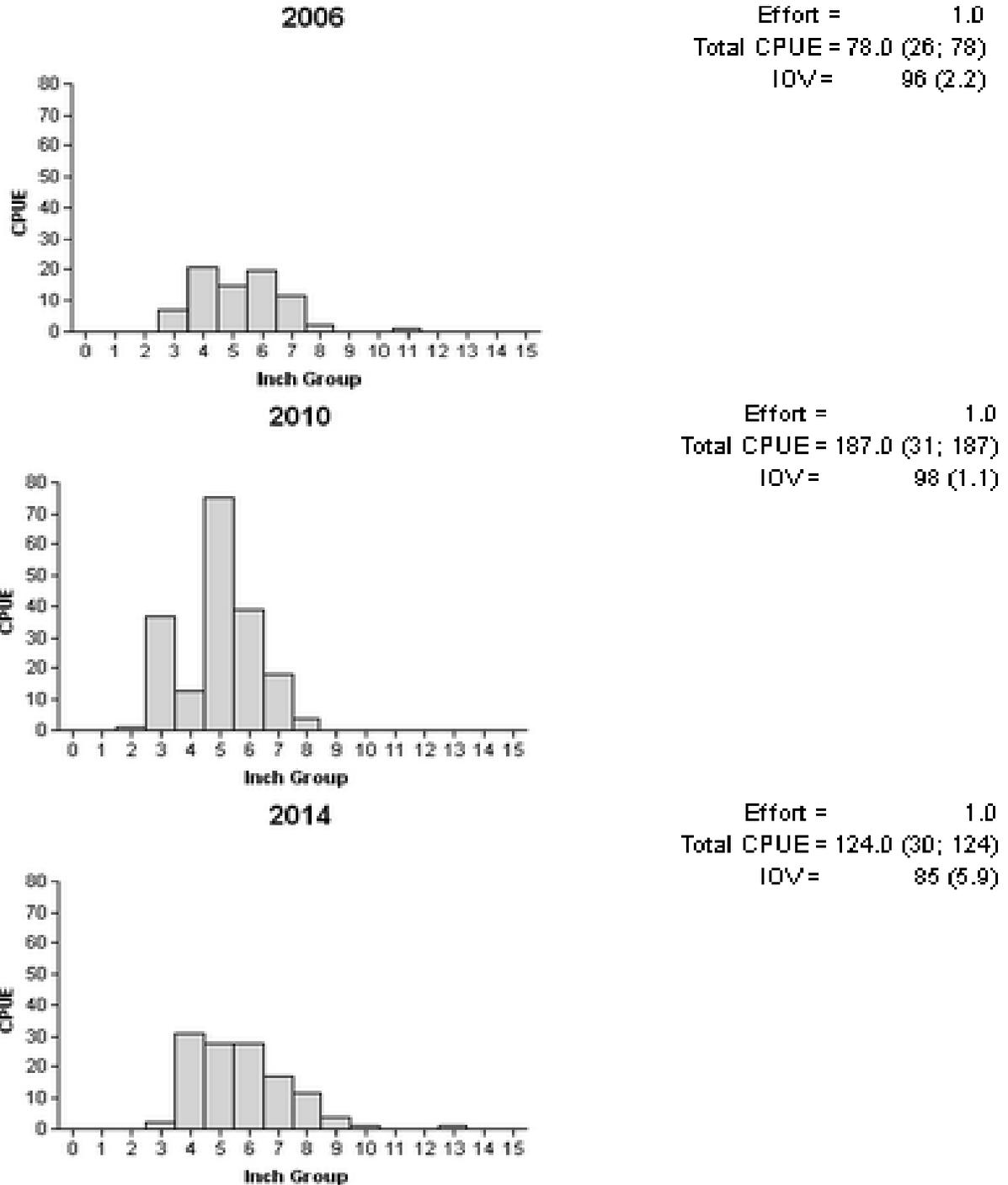


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Gibbons Creek Reservoir, Texas, 2006, 2010, and 2014.

Bluegill

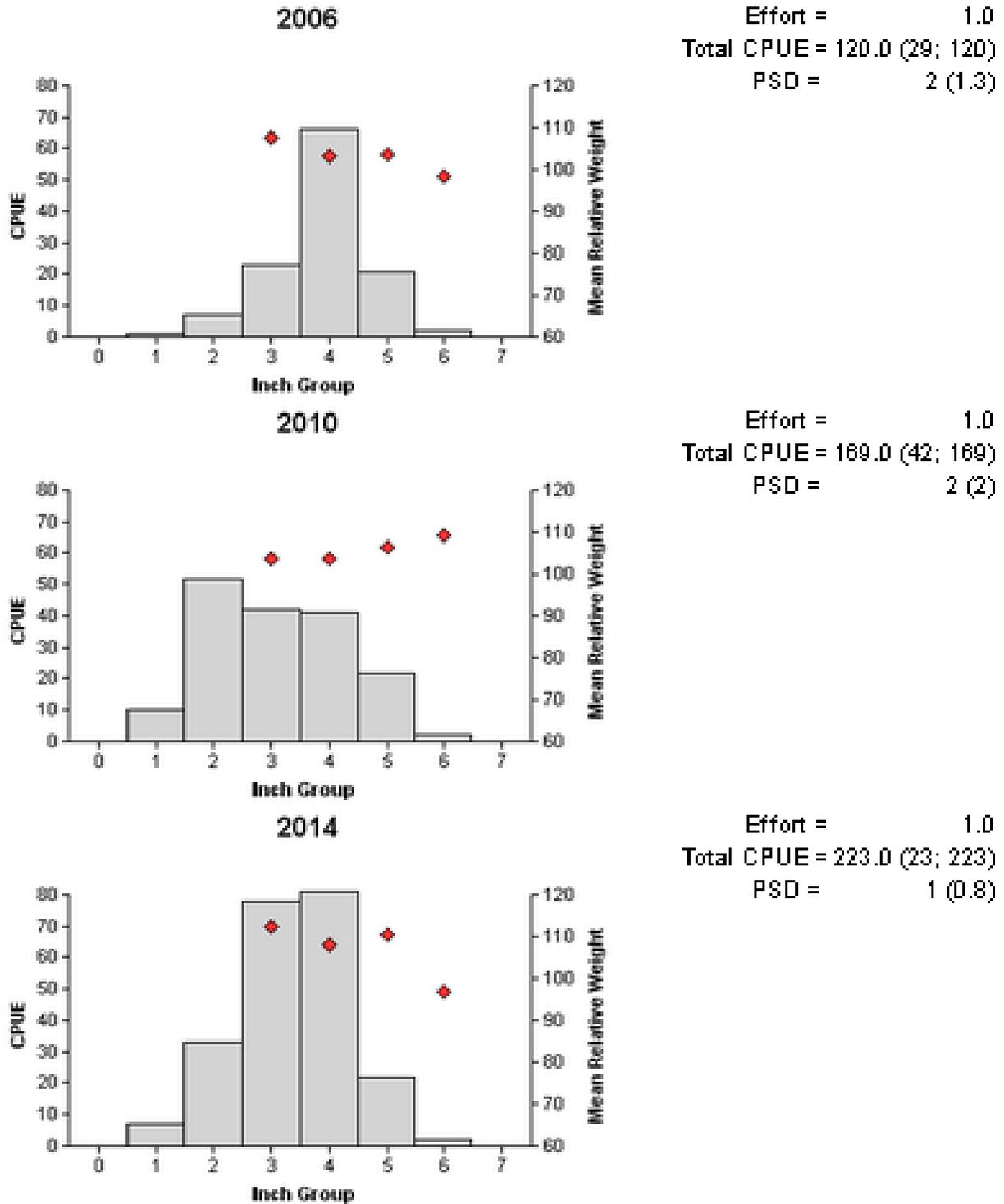
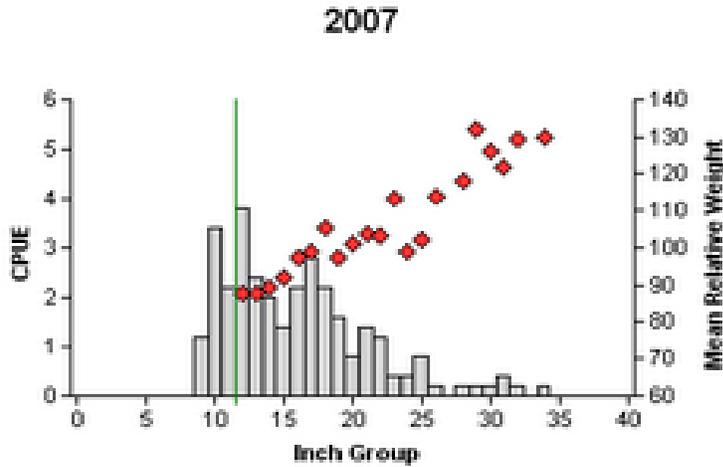
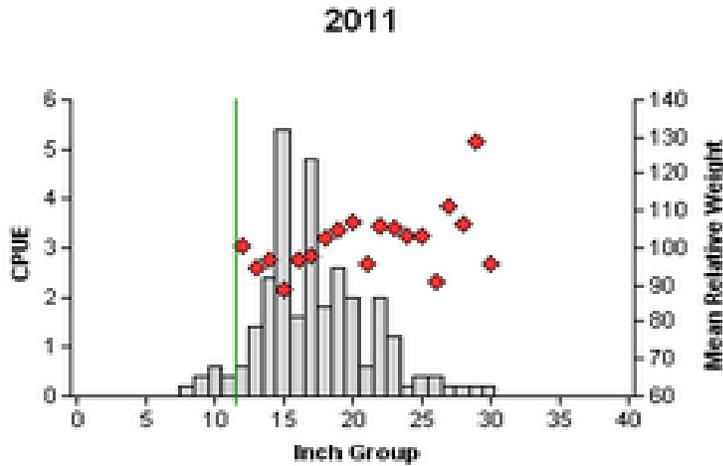


Figure 3. Number of Bluegill caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Gibbons Creek Reservoir, Texas, 2006, 2010, and 2014.

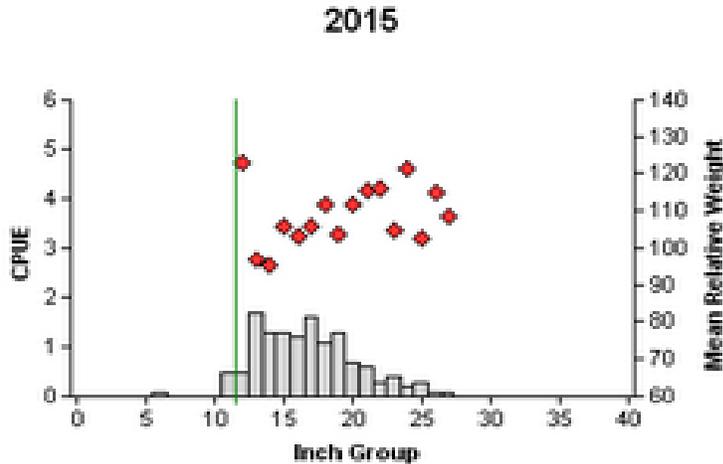
Blue Catfish



Effort = 5.0
 Total CPUE = 31.8 (22; 159)
 Stock CPUE = 25.0 (22; 125)
 PSD = 26 (7.2)



Effort = 5.0
 Total CPUE = 29.8 (23; 149)
 Stock CPUE = 28.2 (24; 141)
 PSD = 27 (6.7)



Effort = 10.0
 Total CPUE = 13.3 (12; 133)
 Stock CPUE = 12.7 (12; 127)
 PSD = 21 (3.4)

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, Gibbons Creek Reservoir, Texas, 2007, 2011, and 2015. Vertical lines indicate minimum length limit.

Channel Catfish

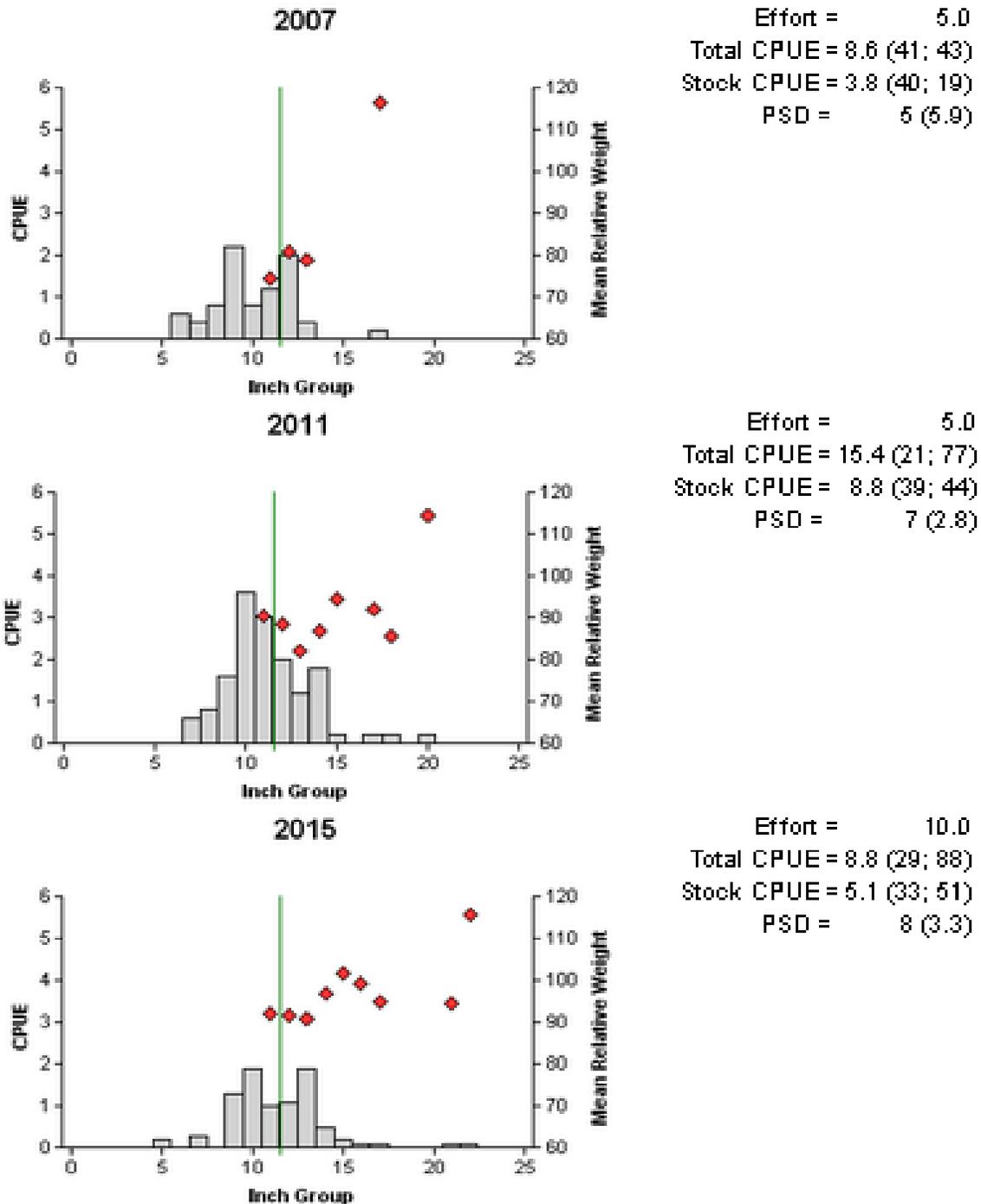


Figure 5. Number of Channel Catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Gibbons Creek Reservoir, Texas, 2007, 2011, and 2015. Vertical lines indicate minimum length limit.

Table 9. Creel survey statistics for catfishes at Gibbons Creek Reservoir from March through May 2007, 2011, and 2015 where Total catch per hour is for anglers targeting catfishes (species combined) and total harvest is the estimated number of Blue Catfish or Channel Catfish harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Statistic	Year		
	2007	2011	2015*
Directed effort (h)	12,518(27)	11,009 (24)	5,989(51)
Directed effort/acre	4.5	4.0	2.2
Total catch per hour	1.4(26)	0.9	
Blue Catfish			0.3(60)
Channel Catfish			1.2(47)
Total harvest			
Blue Catfish	7,443(42)	3,235 (55)	735(99)
Channel Catfish	7,037(40)	7,865 (40)	3,249(66)
Harvest/acre			
Blue Catfish	2.7	1.2	0.3
Channel Catfish	2.5	2.8	1.2
Percent legal released			
Blue Catfish	1.7	3.7	0
Channel Catfish	12.1	13.5	35.3(67.1)

*For 2015 angling access was limited Monday-Thursday to campers and TMPA employees only.

Blue Catfish

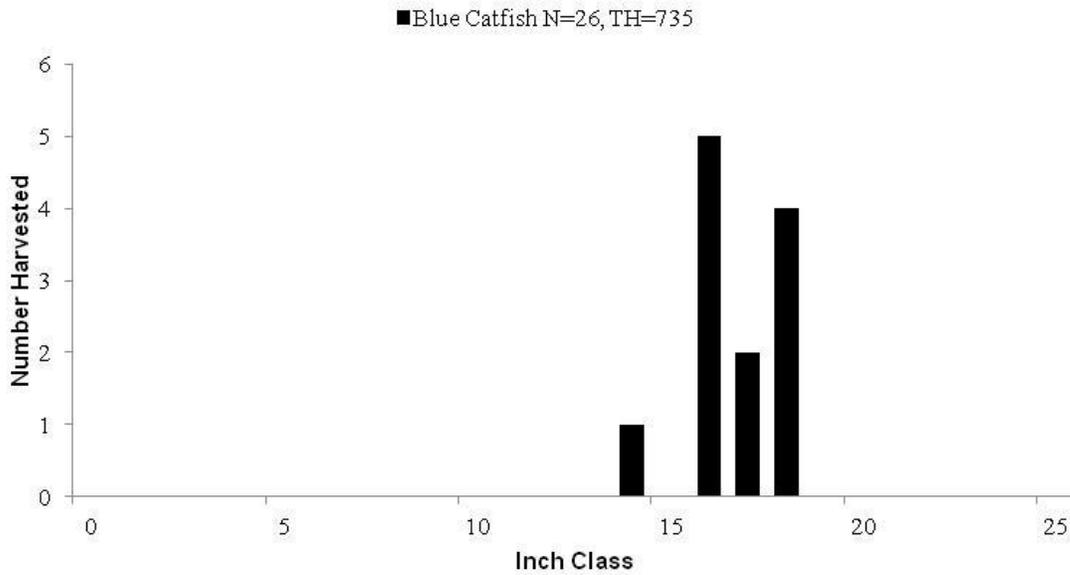


Figure 6. Length frequency of harvested Blue Catfish observed during creel surveys at Gibbons Creek Reservoir, Texas, March through May 2015. N is the number of harvested Blue Catfish observed during the creel surveys, and TH is the total estimated number of Blue Catfish harvested for the creel period.

Channel Catfish

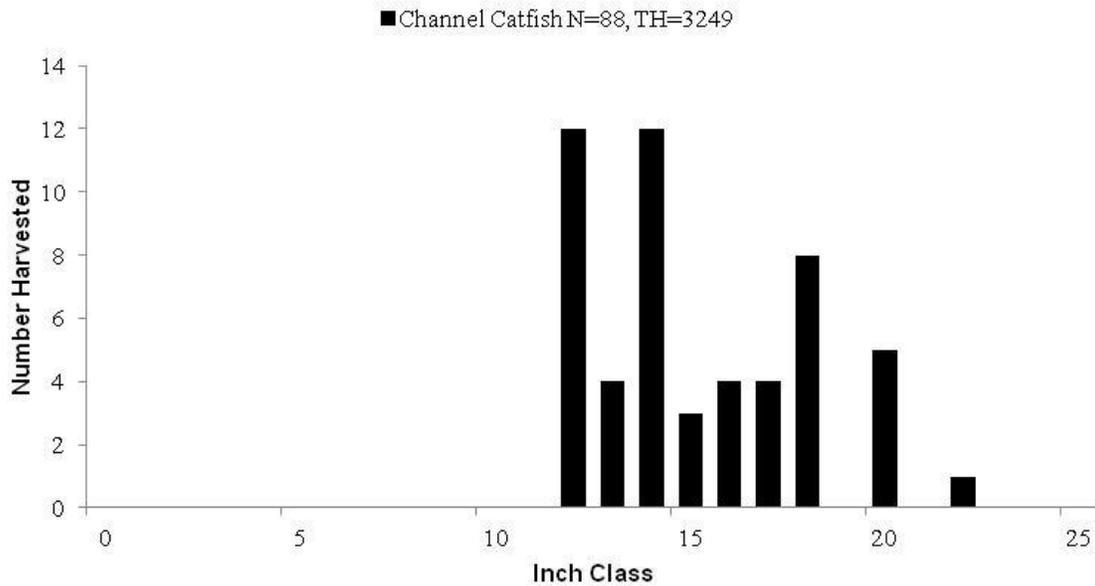


Figure 7. Length frequency of harvested Channel Catfish observed during creel surveys at Gibbons Creek Reservoir, Texas, March through May 2015. N is the number of harvested Channel Catfish observed during the creel surveys and TH is the total estimated number of Channel Catfish harvested for the creel period.

Largemouth Bass

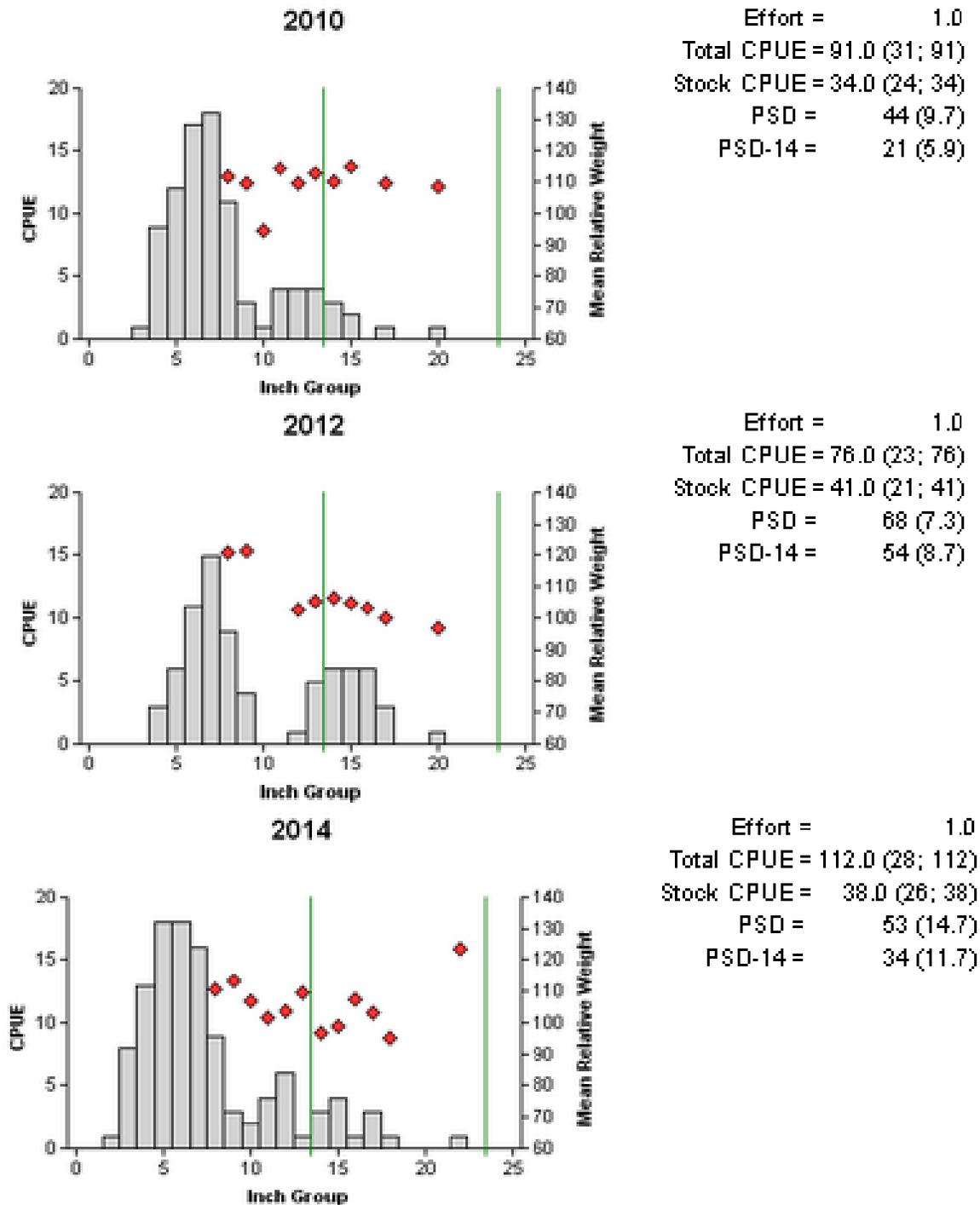


Figure 8. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Gibbons Creek Reservoir, Texas, 2010, 2012, and 2014. Vertical lines indicate minimum and maximum lengths of slot length limit at time of survey.

Largemouth Bass

Table 10. Creel survey statistics for Largemouth Bass at Gibbons Creek Reservoir from March through May 2007, 2011, and 2015 where total catch per hour is for anglers targeting Largemouth Bass and total harvest is the estimated number of Largemouth Bass harvested by all anglers. No tournament anglers were observed. Relative standard errors (RSE) are in parentheses.

Statistic	2007	2011	2015
Directed effort (h)	4,166(54)	6,380(27)	3,944(78)
Angling effort/acre	1.5	2.3	1.4
Catch rate (number/h)	0.5(31)	0.5(16)	2.4
Non-tournament harvest	0	81	122(113)
Harvest/acre	0	0.3	<0.1
Release by weight			
<4.0 lbs	NA	NA	8783(50.2)
4.0-6.9 lbs	NA	NA	591(68.8)
7.0-9.9 lbs	NA	NA	0
≥10.0 lbs	NA	NA	0
Percent legal released (Non-tournament)	100	62	54.9(50.0)

Largemouth Bass

■ Largemouth Bass N=2, TH=122

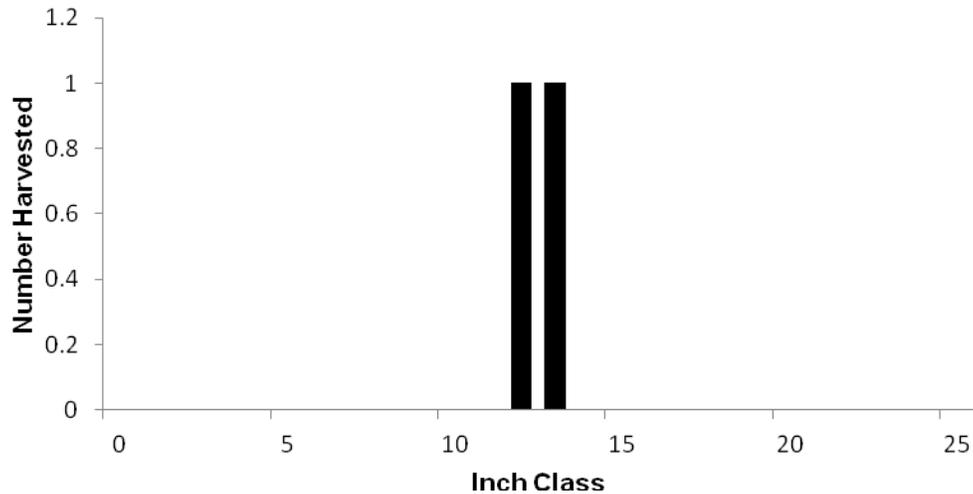


Figure 9. Length frequency of harvested Largemouth Bass observed during creel surveys at Gibbons Creek Reservoir, Texas, March through May 2015. N is the number of harvested Largemouth Bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

Largemouth Bass

Table 11. Results of genetic analysis of Largemouth Bass collected by fall electrofishing at Gibbons Creek Reservoir, Texas, 2007 and 2014. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic analysis was determined with micro-satellite DNA analysis.

Year	Sample Size	Number of Fish			% FLMB alleles	% pure FLMB
		FLMB	Intergrade	NLMB		
2007	46	3	45	0	69.2	7
2014	30	1	29	0	68	32

White Crappie

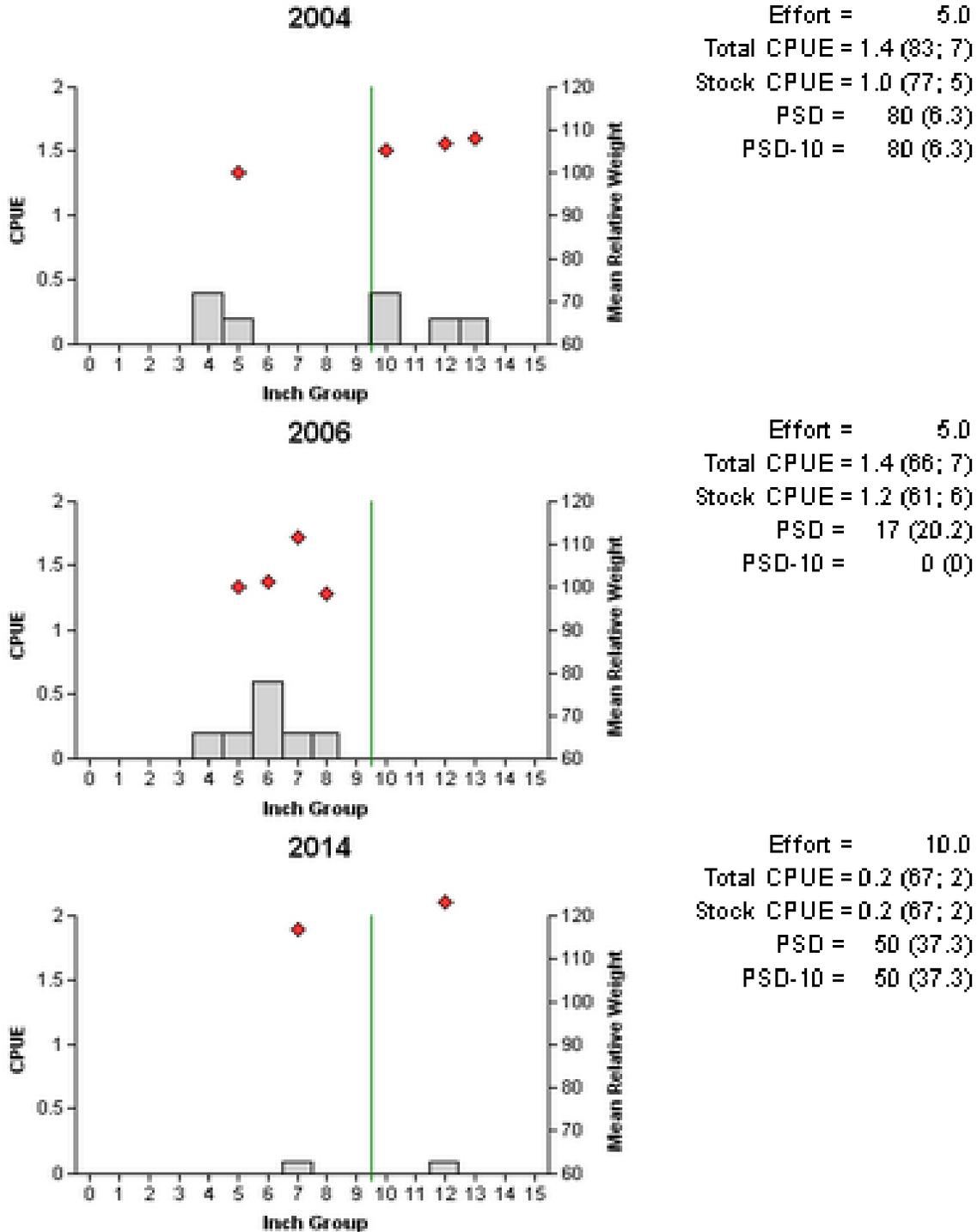


Figure 10. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Gibbons Creek Reservoir, Texas, 2004, 2006, and 2014. Vertical lines represent minimum length limit.

Black Crappie

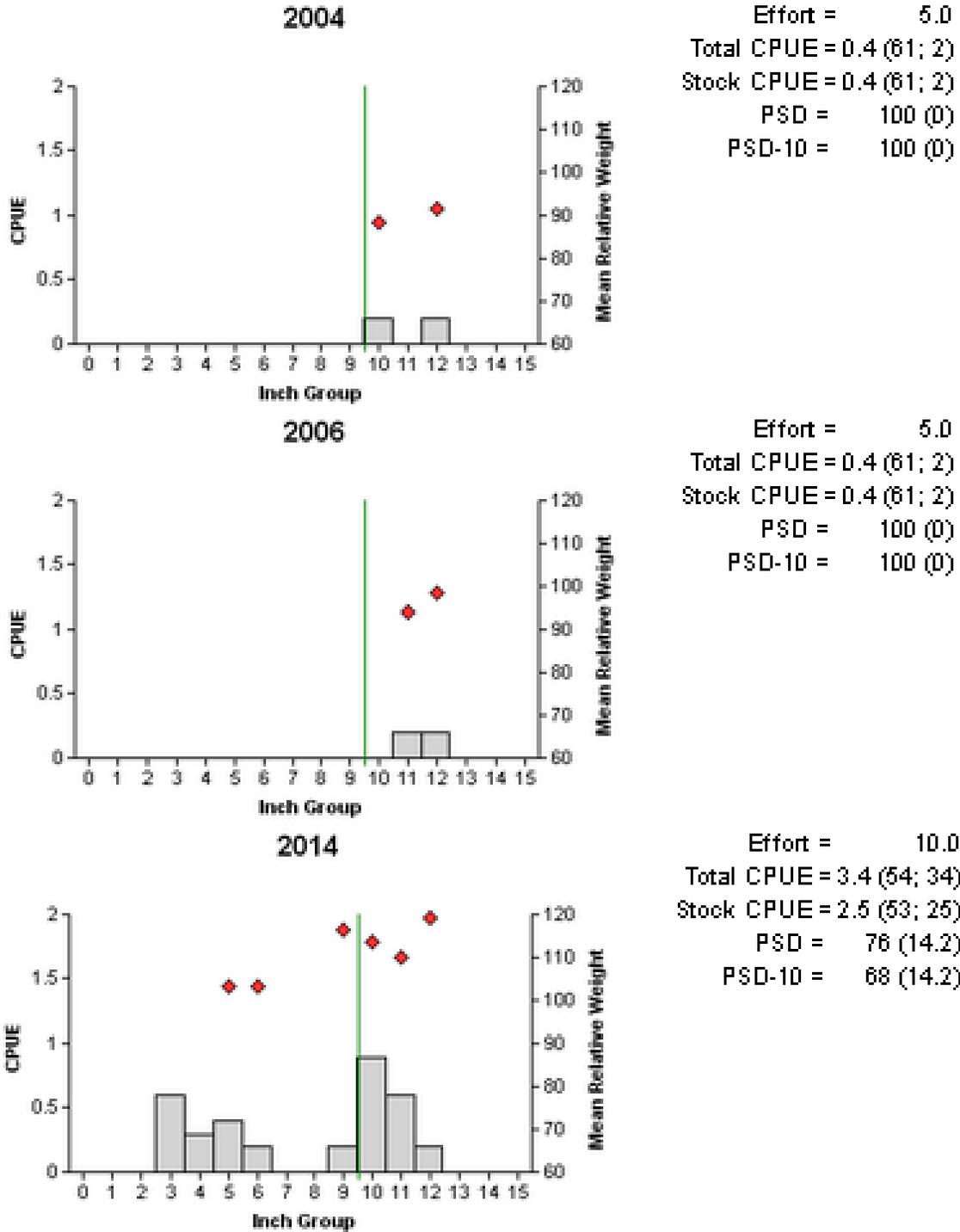


Figure 11. Number of Black Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap net surveys, Gibbons Creek Reservoir, Texas, 2004, 2006, and 2014. Vertical lines represent minimum length limit.

Table 12. Creel survey statistics for crappie (species combined) at Gibbons Creek Reservoir, Texas, from March through May 2007, 2011, and 2015. Total catch per hour is for anglers targeting crappie (species combined) and total harvest is the estimated number of White and Black Crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel Survey Statistic	Year		
	2007	2011	2015
Directed effort (h)	5,121(50)	3,934 (32)	54.16(115)
Directed effort/acre	1.8	1.4	>0.1
Total catch per hour	0.2(65)	0.4 (81)	16.9(182)
Total harvest			
White Crappie	1,027(104)	265 (171)	0
Black Crappie	1,575(114)	274 (181)	858(106)
Harvest/acre			
White Crappie	0.4	0.1	0
Black Crappie	0.6	0.1	0.3
Percent legal released			
White Crappie	4.1	7.4	0
Black Crappie	2.7	1.2	0

Black Crappie

■ Black Crappie N=27, TH=858

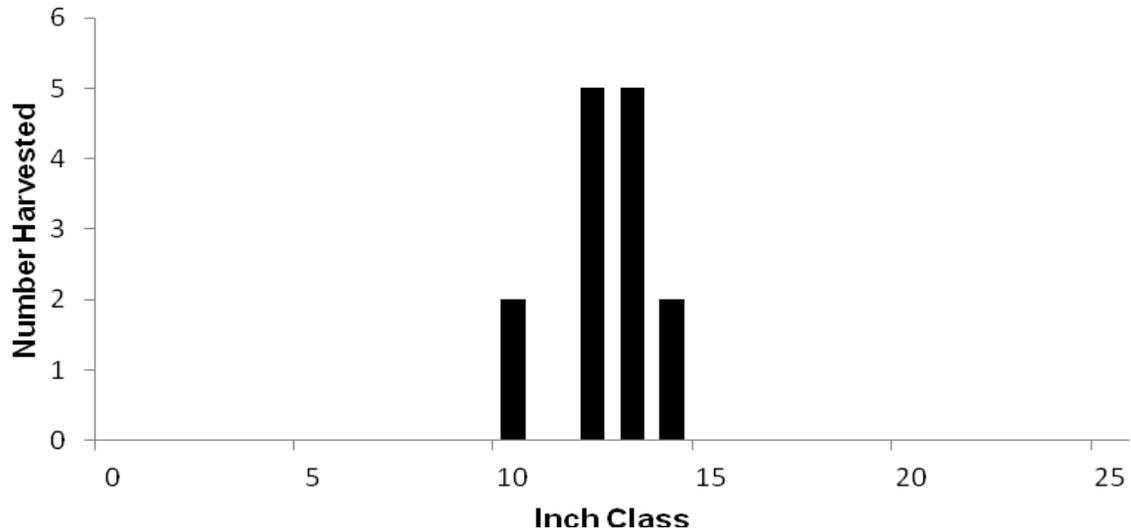


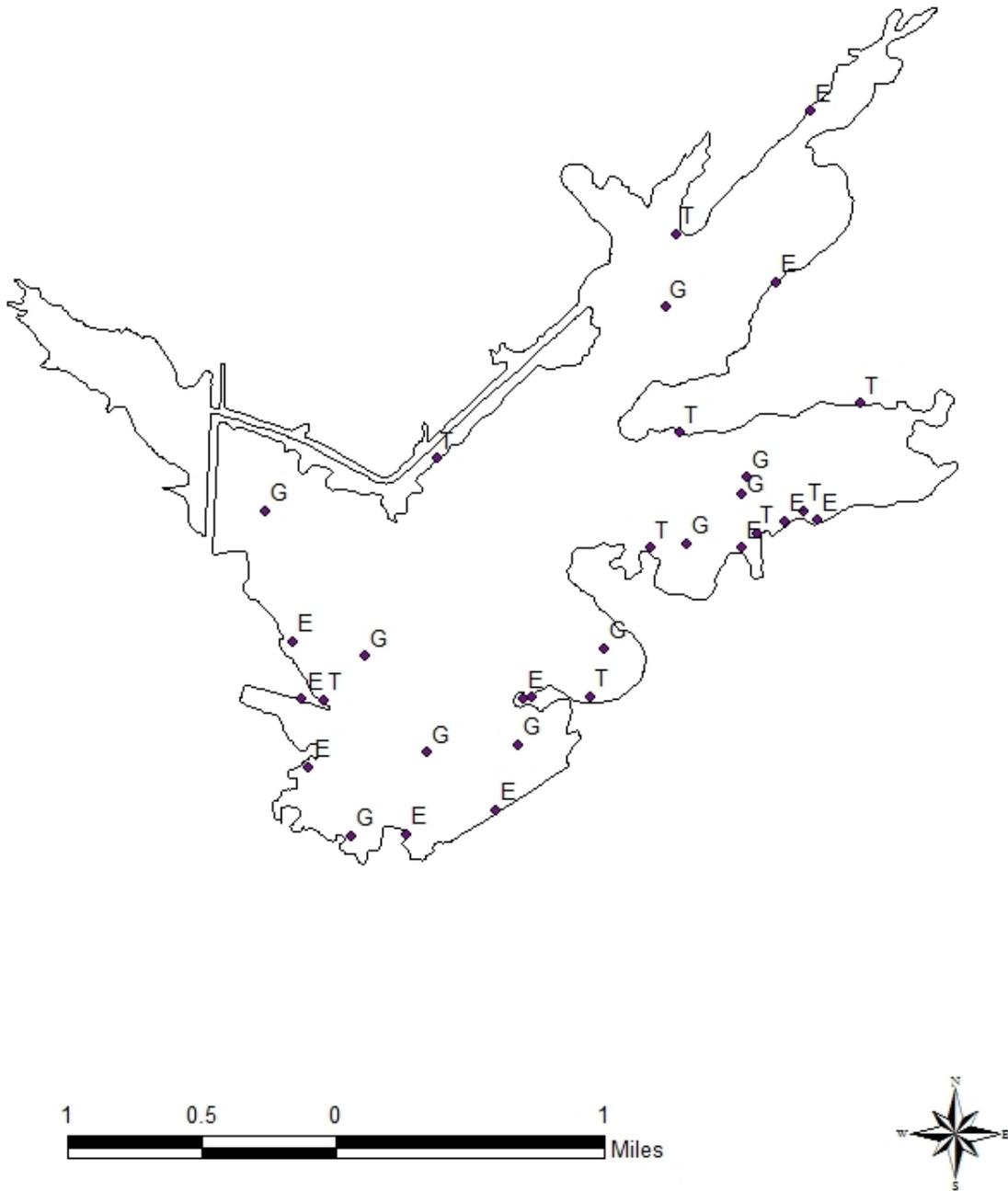
Figure 12. Length frequency of harvested Black Crappie observed during creel surveys at Gibbons Creek Reservoir, Texas, March through May 2015. N is the number of harvested Black Crappie observed during creel surveys and TH is the total estimated number harvested during the creel period.

APPENDIX A

Number (N) and catch rate (CPUE) of all target species collected from all gear types from Gibbons Creek Reservoir, Texas, 2014-2015. Sampling effort was 10 net nights for trap netting and gill netting and 1 hour for electrofishing.

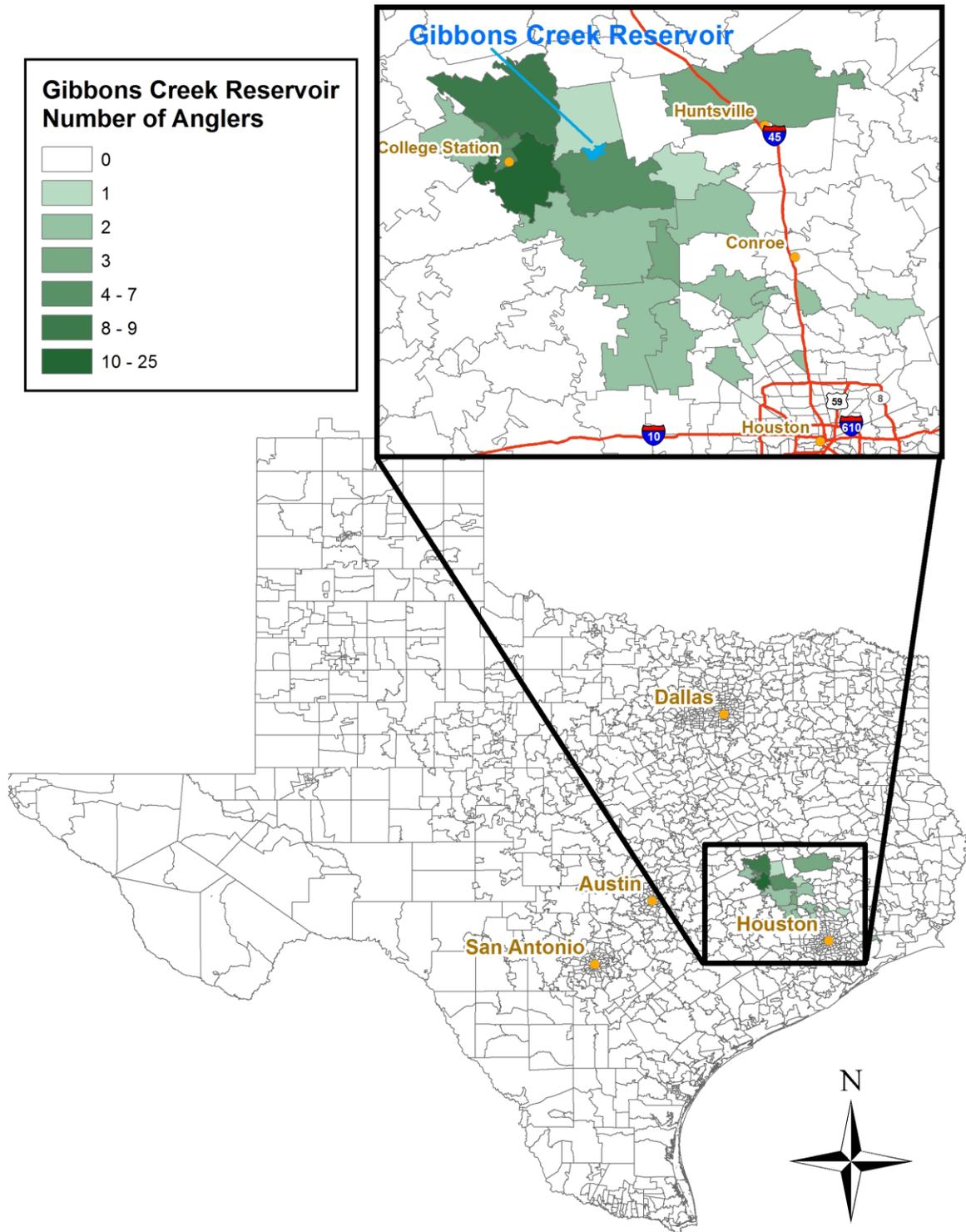
Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Spotted Gar	17	1.7				
Gizzard Shad					124	124.0
Threadfin Shad					1,312	1,312.0
Common Carp	1	0.1				
Golden Shiner					1	1.0
Bullhead Minnow					2	2.0
Pugnose Minnow					4	4.0
Inland Silverside					8	8.0
Smallmouth Buffalo	71	7.1				
Blue Catfish	133	13.3				
Channel Catfish	88	8.8				
Green Sunfish					5	5.0
Warmouth					1	1.0
Bluegill					223	223.0
Longear Sunfish					32	32.0
Redear Sunfish					2	2.0
Largemouth Bass					112	112.0
White Crappie			2	0.2		
Black Crappie			34	3.4	7	7.0
Freshwater Drum	107	10.7				
Blue Tilapia	1	0.1			7	7.0

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APPENDIX B



Location of sampling sites, Gibbons Creek Reservoir, Texas, 2014-2015. Trap netting, gill netting, and electrofishing stations are indicated by T, G, and E respectively. Water level was approximately 247 feet above mean sea level at time of sampling.

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APPENDIX C



Location by ZIP Code and frequency of anglers that were interviewed at Gibbons Creek Reservoir Texas, during the Spring 2015 creel survey.