

Wichita Reservoir

2020 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-4

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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Survey and Management Summary

Fish populations in Wichita Reservoir were surveyed in 2020 using electrofishing and trap netting and in 2021 using gill nets. Historical data are presented with the 2020-2021 data for comparison. This report summarizes the results of the surveys and contains a management plan based on those findings.

Reservoir Description: Wichita Reservoir is a 1,224-acre municipal reservoir owned and operated by the City of Wichita Falls for flood control and recreation. The dam and most of the reservoir is in Wichita County and the southern portion is in Archer County. The reservoir was built in 1901, impounding Holliday Creek, a tributary to the Wichita River. Mean depth is 4.5 feet and maximum depth is 9.5 feet. Angler and boat access is adequate when reservoir elevation is near conservation pool. Habitat includes large stands of native emergent vegetation when full. Starting in 2004, the reservoir has suffered periodic golden alga caused fish kills. In 2012, a drought began that lasted until 2015 and nearly dried up the reservoir.

Management History: Historically important sport fish include Channel Catfish, White Bass, Palmetto Bass, and White Crappie, though recently White and Palmetto Bass have not been documented in the reservoir. The 2012 management plan recommended minimum management activity because of the developing initiative to rehabilitate the reservoir which called for dewatering the reservoir and excavation.

Fish Community

- **Prey species:** The 2020 electrofishing survey catch rates of Gizzard Shad and Bluegill were well above previous surveys and were at historic highs for both species. With few predators present in the reservoir, these populations are in great condition. Larger Bluegill were observed, and the fishery has been promoted for anglers seeking larger sunfish.
- **Catfishes:** The 2021 gill nets found an abundant Channel Catfish population and for the first time Blue Catfish were documented during survey work.
- **Temperate basses:** The reservoir went nearly dry in 2015 caused by severe drought and after refilling, no White or Palmetto Bass have been observed nor stocked.
- **Largemouth Bass:** The 2020 survey did not document any Largemouth Bass. Historically, since 1995 when the reservoir elevation was lowered, Largemouth Bass presence in the reservoir would be characterized as rare. After several attempts at establishing a population through stocking, requests were halted after 2010 citing lack of success.
- **White Crappie:** The 2020 trap net survey had the second highest catch rate observed at this reservoir. The catch rate was double the reservoirs historical average for White Crappie abundance.

Management Strategies: Continue working with the City of Wichita Falls' Lake Wichita Revitalization Committee with the goal of deepening the reservoir, increasing fisheries habitat, increasing fishing access, and adding amenities around and to the reservoir. Management activities will consist of supporting the committee's efforts. A stocking request will be made for Blue Catfish to increase the population and to add predators to utilize an abundant prey base. Flathead Catfish will be collected and moved into the reservoir in addition to the Blue Catfish stocking request.

Introduction

This document is a summary of fisheries data collected from Wichita Reservoir in 2020-2021. 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 2020-2021 data for comparison.

Reservoir Description

Wichita Reservoir is a 1,224-acre municipal reservoir owned and operated by the city of Wichita Falls for flood control and recreation. The dam is on the city limit line for Wichita Falls in Wichita County and a portion of the reservoir is in Archer County. The reservoir was built in 1901, impounding Holliday Creek, a tributary to the Wichita River. Originally, the reservoir was 2,200 acres and was built as a municipal water supply reservoir. After alternative water supplies were developed, Wichita Falls initiated a project with the U. S. Army Corps of Engineers to control flooding below the reservoir. This project culminated in a new spillway being completed in August 1995 which is 4.7 feet lower than the original one. This reduced the surface acreage to 1,224 acres, mean depth to 4.5 feet and maximum depth to 9.5 feet. To sustain recreational use, the City of Wichita Falls diverts water from a local irrigation canal to maintain elevation at or near spillway level. When the reservoir is near full, habitat includes relatively large stands of bulrush *Scirpus spp.* In 2004 a toxic golden alga event occurred followed by golden alga events in 2007, 2009, and 2012. A drought that ended in 2015 reduced the reservoir to a puddle, negatively impacting all fish species. Other descriptive characteristics for Wichita Reservoir are in Table 1.

Angler Access

Wichita Reservoir has a one-lane boat ramp that is unusable for boat access if the reservoir is one foot below conservation pool. Currently care must be taken when launching or loading at the ramp, even at full pool. Extending the ramp is not feasible without lake-bottom excavation. Additional boat ramp characteristics are in Table 2. Shoreline access is considered good with public access at the ramp, along the dam where a new fishing pier and boardwalk were erected, and at the City of Wichita Falls' Lake Wichita Park located on the reservoir. A new fish cleaning station is located at the public boat ramp off Kemp Blvd. for angler use.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Lang and Mauk 2017) included:

1. Wichita Reservoir is prone to golden alga fish kill events. The reservoir has a mean depth of 4.5 feet and is prone to dewatering from droughts. The reservoir is void of habitat and has silted in. These problems make having a viable, sustained fishery very difficult.

Action: Worked with the Lake Wichita Revitalization Committee with the goal to renovate the waterbody by dredging/excavation and habitat work. A U.S. Army Corps of Engineers (USACE) 404 Permit application was applied for and received during the report cycle. Artificial habitat has been placed by the new fishing pier and boardwalk. Investigated alternative water sources that are not prone to golden alga blooms or high salinities. Pathways to fund the dredging/excavation now that the permit is in hand are currently being explored.

2. The public boating access was impeded by low water level in 2012 until May 2015 and anytime the reservoir is around 1 foot below full pool. Even at full pool, boaters must use caution launching and loading at the ramp. The boat ramp cannot be extended because the lake bottom levels out at the end of the ramp with no access to deeper water. This ramp is also unlikely to provide sufficient access for the reservoir once the revitalization is complete.

Action: A TPWD boat ramp grant was obtained to improve and expand the Kemp Blvd. public boat ramp. But lack of matching funding and the original cost of the improvement plans made it impossible to complete in a timely fashion, so the grant was returned to TPWD with the hope that another grant could be obtained in the future once other aspects of the reservoir revitalization plan have been completed. Signage has been erected warning of the shallow water hazards of using the ramp.

3. Lake Wichita is an extremely old reservoir with siltation, water quantity, water quality, and fish habitat issues.

Action: District biologist served on the city of Wichita Falls Lake Wichita Revitalization Committee as a non-voting member, working to address each of the issues keeping Wichita Reservoir from being a viable fisheries resource.

4. Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically.

Action: The district office monitored the reservoir for invasive species and erected signage on-site about them. Made a speaking point about invasive species when presenting to the public. Kept track for any inter-basin water transfers to facilitate potential invasive species.

Harvest regulation history: Sport fish species in Wichita Reservoir are currently managed under statewide regulations (Table 3).

Stocking history: The reservoir nearly went dry in 2015 and no stockings have occurred since because of the possible excavation of the lakebed. The complete stocking history is shown in Table 4.

Vegetation/habitat management history: There is no history of vegetation issues at this reservoir. Artificial structure was placed around the fishing pier and boardwalk in 2020.

Water transfer: There are no interbasin water transfers occurring at the reservoir. The City of Wichita Falls periodically conducts intrabasin water transfers from Diversion Reservoir to Wichita Reservoir.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Wichita Reservoir (Lang and Mauk 2017). Primary components of the OBS plan are listed in Table 5. All electrofishing and gill net survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017) except electrofishing was performed during the day at six sites and three trap nets were set at biologist chosen locations since there are few locales that a trap net can fish effectively due to a lack of depth.

Electrofishing – Largemouth Bass, Sunfishes, and Gizzard Shad were collected by electrofishing (0.5 hour at 6, 5-min stations) during daylight hours. Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

Trap netting – Crappie were collected using trap nets (3 net nights at 3 stations) by biologist selected sites because of the lack of littoral depth throughout the reservoir. CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn).

Gill netting – Channel and Blue Catfish were collected by gill netting (5 net nights at 5 stations). CPUE for gill netting was recorded as the number of fish caught per net night (fish/nn).

Statistics – 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). 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 ($RSE = 100 \times SE$ of the estimate/estimate) was calculated for all CPUE and creel statistics.

Habitat – A structural habitat survey was conducted in 2016. Vegetation surveys were conducted in 2004, 2008, 2012, 2016, and 2020 to monitor vegetation coverage. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

Water level – Water elevation not available for this reservoir.

Results and Discussion

Habitat: A physical habitat survey was conducted July 2016 and indicated the littoral zone habitat consisted entirely of natural shoreline with some rocky shoreline. A vegetation survey was completed in 2020 documenting the presence of emergent vegetation (Typha and Lotus). The emergent vegetation covered 16.0% of the reservoir surface acreage (Table 7) but the littoral zone where it is growing is too shallow to provide coverage for most fish populations.

Prey species: The 2020 electrofishing survey resulted in a Gizzard Shad catch rate of 622.0/hr, which is the highest catch rate sampled and well above historical numbers (Figure 1). The high catch rate can be attributed to a lack of predators in the reservoir. White and Palmetto Bass once existed in the reservoir but were never re-introduced once the reservoir refilled in 2015. Gizzard Shad IOV was 93 indicating most Gizzard Shad surveyed were vulnerable to predation. Bluegill were also sampled in historically high numbers with a catch rate of 248.0/hr (Figure 2). The historical average for this species is 81.8/hr. The Bluegill were very healthy with up to seven-inch fish sampled. This is a species that the public inquires about seeking quality length fish to angle for and of which the district is mostly lacking.

Catfishes: The 2021 gill net survey was the first catfish survey completed since 2011. This was because a drought reduced the reservoir elevation and acreage considerably that resulted in the boat ramp being unusable. Even at full pool, finding depth to set gill nets was problematic, since the deepest spot was just over eight feet in depth. Setting gill nets in water less than 8 feet creates a boating hazard as evidenced by having one destroyed this year and can affect the nets capture efficiency.

Blue Catfish gill netting catch rate was 1.0/nn (Figure 3). It was the first time they had been sampled in the reservoir. They ranged in length from 11 to 13-inches and exhibited excellent body condition. Anglers

first reported catching Blue Catfish in 2006. It was thought it was a transported individual from another waterbody. Since the reservoir refilled in 2015, there have been sporadic reports of anglers catching Blue Catfish. There is a pending waterbody record of 34.35 lbs. which was caught in 2020. Blue Catfish have never been stocked into Wichita Reservoir so it is unclear where they originated. With an abundance of prey available and few predators to utilize the prey, it is anticipated that Blue Catfish will flourish in the reservoir.

The Channel Catfish CPUE of 5.0/nn (Figure 4), was the second highest catch rate on record and well above the historical average of 1.9/nn. Almost all the catfish were of legal-length and exhibited increasing body condition with increase in length, with Channel Catfish above 18-inches being in excellent condition. Channel Catfish were never restocked after the reservoir refilled in 2015. It is assumed that they originated from private waterbodies within the watershed that overflowed after high precipitation events that occurred in 2015.

White and Palmetto Bass: White Bass have not been documented in the reservoir since 2005 and Palmetto Bass were last documented in 2011. During those time periods, the reservoir has had periodical golden alga caused fish kills and drought. Neither species has been reintroduced since these occurrences. Because it was unknown whether the reservoir would be dewatered for excavation, no stocking requests were made for White or Palmetto Bass. Also, with the hatcheries struggling to meet Palmetto/Sunshine Bass stocking requests, it was decided that they would not be requested until the restoration project is complete.

Largemouth Bass: The 2020 electrofishing survey resulted in no Largemouth Bass being sampled. Historically, Largemouth Bass have been found in very low density (2.0/hr in 2016 and 3.0/hr in 2008; Figure 5). The historical average is 1.0/hr with multiple prior electrofishing surveys having resulted in zero Largemouth Bass being sampled. These catch rates are very low but not surprising as the reservoir is very shallow and lacks suitable habitat for Largemouth Bass. The reservoir has also suffered multiple golden algae caused fish kills as well as having dried up nearly completely during the early portion of 2015. Seven Largemouth Bass stockings have occurred between 1997 to 2010, but the historical average indicates the environment is not suited to largemouth recruitment and survival so the decision was made to no longer request Largemouth Bass stockings unless the reservoir was deepened and habitat is improved.

White Crappie: The 2020 trap netting survey catch rate of White Crappie was the second highest ever sampled at 125.7/nn with 52% of those being 10 inches or greater in length (Figure 6). This catch rate was double the historical average but below the highest catch on record (186.3/nn) which was observed in 2016 (Figure 6; Appendix C). The 2010 survey used dual cod trap nets that resulted in a catch rate of 49.0/nn (Figure 6). Body condition was excellent for the crappie, especially for legal-length fish. Like all of the above species that have been discussed, crappie were never re-introduced into the reservoir upon refill but most likely came from flooded waterbodies within the watershed.

Fisheries Management Plan for Wichita Reservoir, Texas

Prepared – July 2021

ISSUE 1: Wichita Reservoir was constructed in 1901 and has many issues associated with aging such as loss of habitat, siltation, and water quantity and quality. The reservoir also has a mean depth of 4.5 feet and is prone to dewatering from droughts. The reservoir is void of habitat, has significant siltation, has high salinity and is prone to golden alga fish kills. These problems make having a viable, sustained fishery very difficult.

MANAGEMENT STRATEGIES

1. Continue serving on the city of Wichita Falls Lake Wichita Revitalization Committee as a non-voting member and actively work on a plan that addresses each of the issues keeping Wichita Reservoir from being a viable fisheries resource.
2. Continue working through the Lake Wichita Revitalization Committee to renovate the waterbody by dredging/excavation and habitat work.
3. Work through the Lake Wichita Revitalization Committee to establish a Lake Wichita Watershed Group to address the watershed issues affecting the reservoir.

ISSUE 2: The public boating access (Lake Wichita boat ramp) is impeded by substrate at end of ramp that makes launching hazardous. Vegetation (cattails and bulrush) is also encroaching into the ramp area narrowing the width for trailers. The boat ramp cannot be extended because the water is shallow at the end of the ramp with no access to deeper water. Signage has been placed alerting boaters to the potential hazard.

MANAGEMENT STRATEGIES

1. Discuss with the City of Wichita Falls on a plan to remove impediments at end of ramp to launching and deepen the area.
2. Discuss with the City of Wichita Falls the possibility of vegetation removal that is encroaching on the boat ramp narrowing the trailer lane.

ISSUE 3: Lake Wichita has an over-abundance of Gizzard Shad and Bluegill with few predators to utilize them. Before the drought, White and Palmetto Bass and Flathead Catfish were present to consume them. Currently a low abundance Blue Catfish population is the only pelagic predator in the reservoir.

MANAGEMENT STRATEGIES

1. Request a stocking of Blue Catfish to supplement the current low-density population.
2. Move some Flathead Catfish from Lake Arrowhead into Wichita Reservoir to add another predator to the fishery.

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

Objective-Based Sampling Plan and Schedule (2021–2025)

Sport fish, forage fish, and other important fishes

Sport fishes in Lake Wichita Reservoir have historically included Channel Catfish, White Bass, Palmetto Bass, and White Crappie. The primary forage species has been Bluegill and Gizzard Shad.

Low-density fisheries

Due to the reservoir going nearly dry in 2015 and not being restocked, all species except Channel Catfish, Bluegill, and White Crappie would be considered low abundance from a fisheries standpoint.

Survey objectives, fisheries metrics, and sampling objectives

All surveys listed below are contingent on adequate water elevation for boat access to the reservoir.

Crappie

Three trap nets will be set at biologist selected sites. This should provide sufficient information for monitoring of large-scale changes of population.

Catfishes

Blue Catfish recruitment after stocking will be monitored in 2024 with low-frequency electrofishing at six sites. If low-frequency electrofishing fails to capture Blue Catfish, then Blue and Channel Catfish will be monitored using three gill nets set at biologist selected sites. This will be for general monitoring with no established goals/objectives.

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.
- 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.
- 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.
- Lang, T., and R. Mauk. 2017. Statewide freshwater fisheries monitoring and management program survey report for Wichita Reservoir, 2017. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-2, Austin.

Tables and Figures

Table 1. Characteristics of Wichita Reservoir, Texas.

Characteristic	Description
Year constructed	1901
Controlling authority	City of Wichita Falls
County	Wichita and Archer
Reservoir type	Tributary
Shoreline Development Index	2.5
Conductivity	1,239 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for Wichita Reservoir, Texas, July, 2020.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Lake Wichita Boat Ramp	33.84078 -98.53159	Y	30	974	Very shallow, reservoir elevation must be near full pool to launch. Extension is not practical.

Table 3. Harvest regulations for Wichita 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	14-inch minimum
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-inch minimum

Table 4. Stocking history of Wichita Reservoir, Texas. FGL = fingerling; AFGL = advanced fingerling; ADL = adults.

Year	Number	Size	Year	Number	Size
	<u>Threadfin Shad</u>			<u>Largemouth Bass</u>	
2009	780	AFGL	1966	80,000	UNK
			1967	75,000	UNK
	<u>Channel Catfish</u>		1997	120,000	FGL
1969	10,000	AFGL	1998	125,415	FGL
1971	50,000	AFGL	2000	131,875	FGL
1972	22,000	AFGL	2005	62,271	FGL
1990	22,319	FGL	2006	63,078	FGL
1995	67,000	FGL	<u>2010</u>	<u>129,592</u>	FGL
<u>2009</u>	<u>110,341</u>	FGL	Species Total	787,231	
Species Total	281,660				
	<u>Palmetto Bass</u>			<u>Florida Largemouth Bass</u>	
1977	50,000	UNK	1977	20,800	FRY
1984	66,000	FGL	1995	122,000	FGL
1986	33,000	FRY	<u>2009</u>	<u>113,456</u>	FGL
1987	65,925	FRY	Species Total	256,256	
1988	11,705	FGL			
1988	55,700	FRY		<u>White Crappie</u>	
1989	54,359	FGL	2010	392	UNK
1994	15,947	FGL	<u>2010</u>	<u>213</u>	ADL
1996	18,407	FGL	Species Total	605	
1998	12,374	FGL			
1999	12,646	FGL		<u>Red Drum</u>	
2000	14,180	FGL	1983	95,600	UNK
2002	18,447	FGL			
2003	18,381	FGL			
2004	19,843	FGL			
2004	1,169,624	FRY			
2005	18,666	FGL			
2007	103	AFGL			
2007	18,401	FGL			
2008	9,003	FGL			
<u>2010</u>	<u>8,795</u>	FGL			
Species Total	1,691,506				
	<u>Bluegill</u>				
2009	55,566	AFGL			
<u>2010</u>	<u>124,355</u>	AFGL			
Species Total	179,921				

Table 5. Objective-based sampling plan components for Wichita Reservoir, Texas 2017–2021.

Gear/target species	Survey objective	Metrics	Sampling objective
There was no objective-based sampling plan established for the reservoir since plans called for the reservoir to be drained and excavated.			

Table 6. Survey of structural habitat types, Wichita Reservoir, Texas, 2016. Shoreline habitat type units are in miles.

Habitat type	Estimate	% of total
Bulkhead	0.2 miles	1.6
Natural	10.5 miles	83.3
Rocky	1.9 miles	15.1
Flooded terrestrial	407.0 acres	33.3

Table 7. Survey of aquatic vegetation, Wichita Reservoir, Texas, 2004–2020. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2004	2008	2012	2016	2020
Native emergent	11.3 (<0.1)	10.2 (<0.1)		176.0 (11.2)	252.0 (16.0)

Gizzard Shad

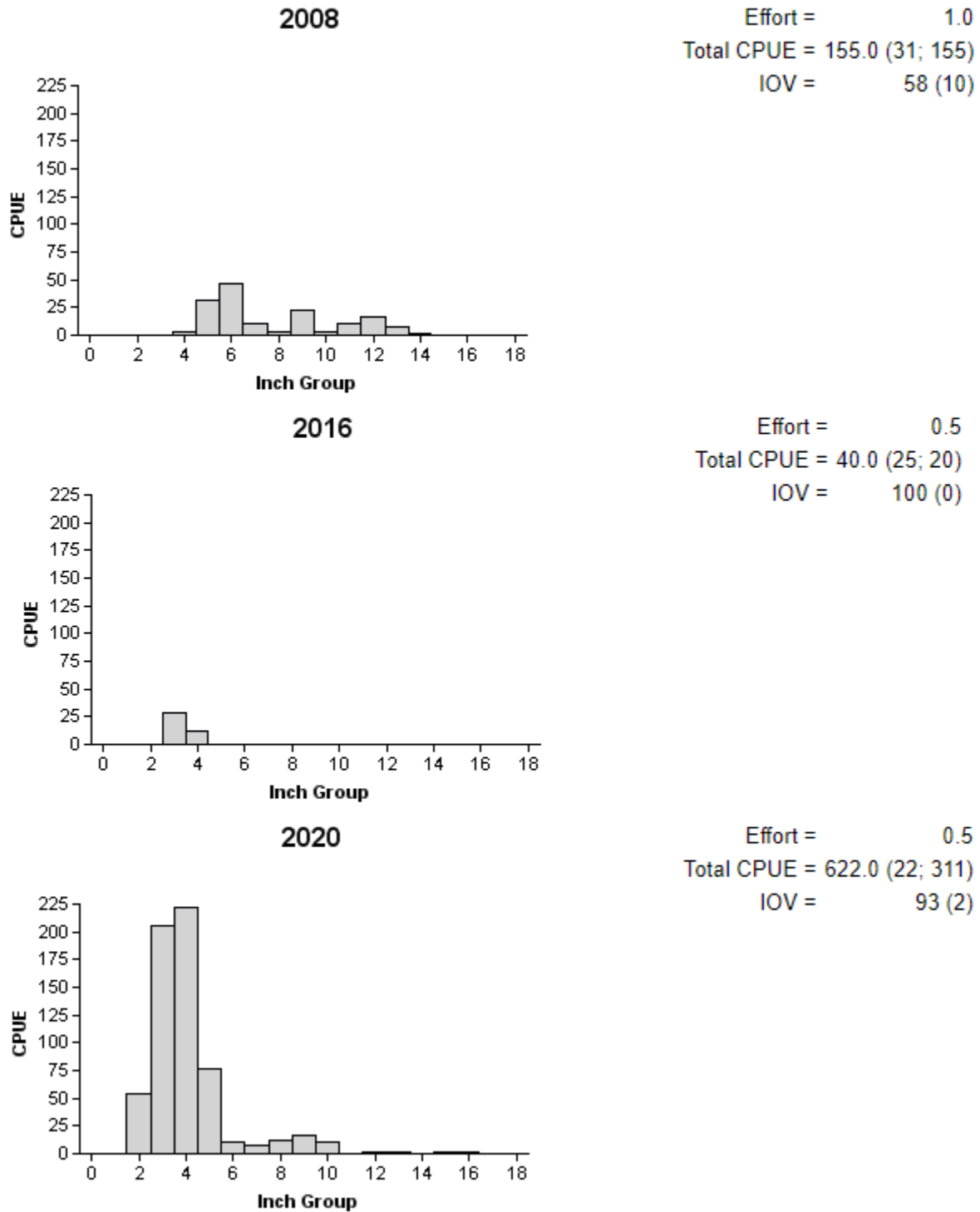


Figure 1. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Wichita Reservoir, Texas, 2008, 2016, and 2020.

Bluegill

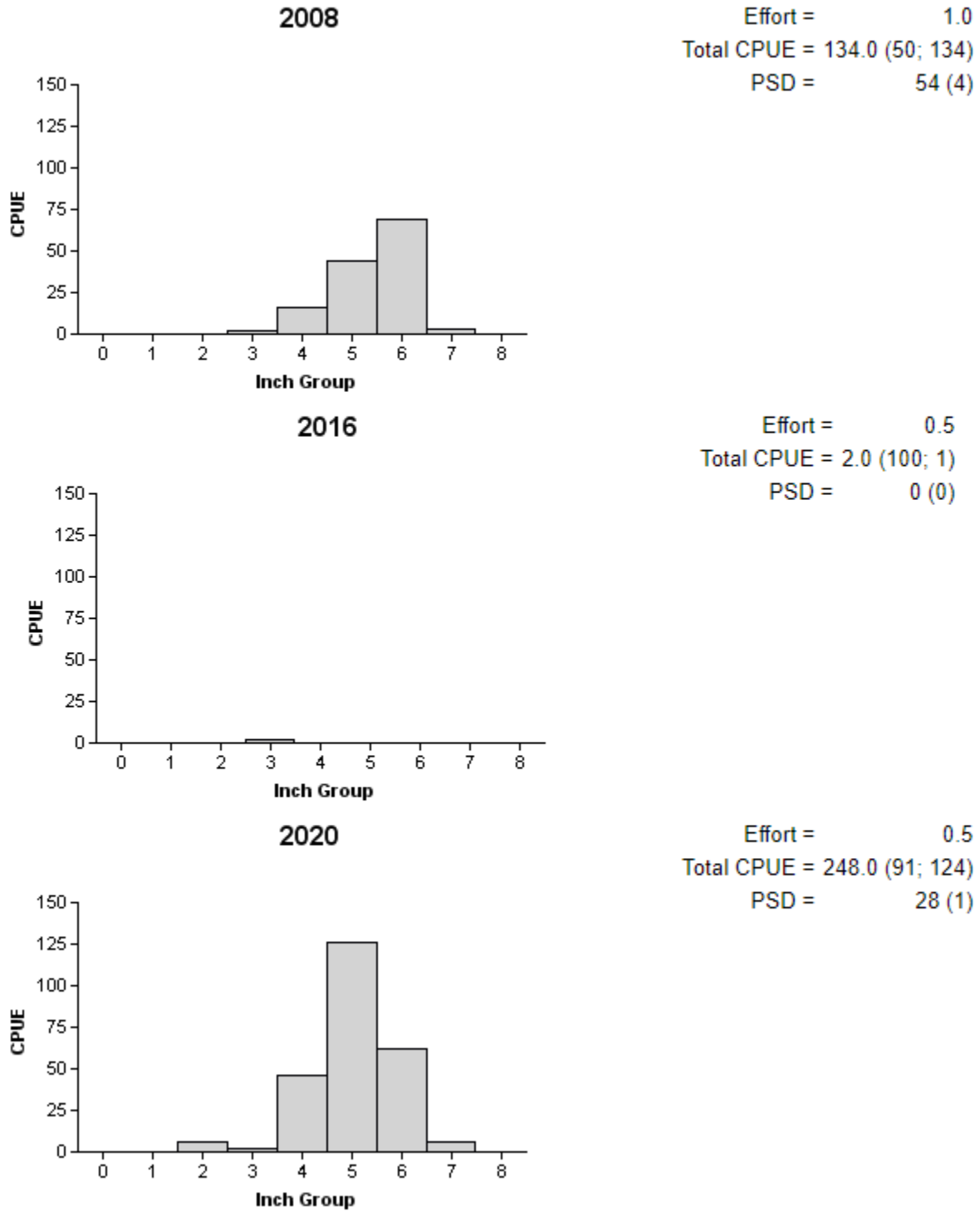


Figure 2. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Wichita Reservoir, Texas, 2008, 2016, and 2020.

Blue Catfish

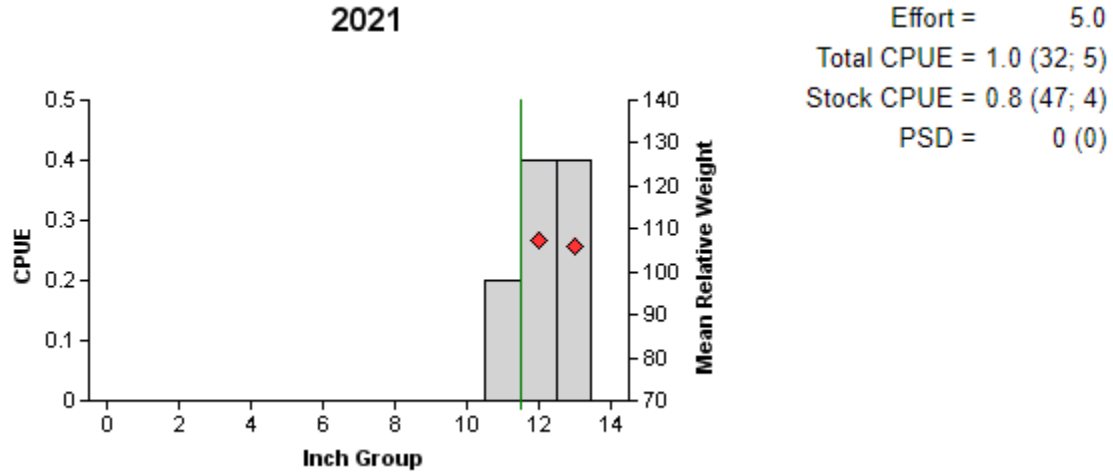


Figure 3. Number of Blue Catfish caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net survey, Wichita Reservoir, Texas, 2021. Vertical line indicates minimum length limit.

Channel Catfish

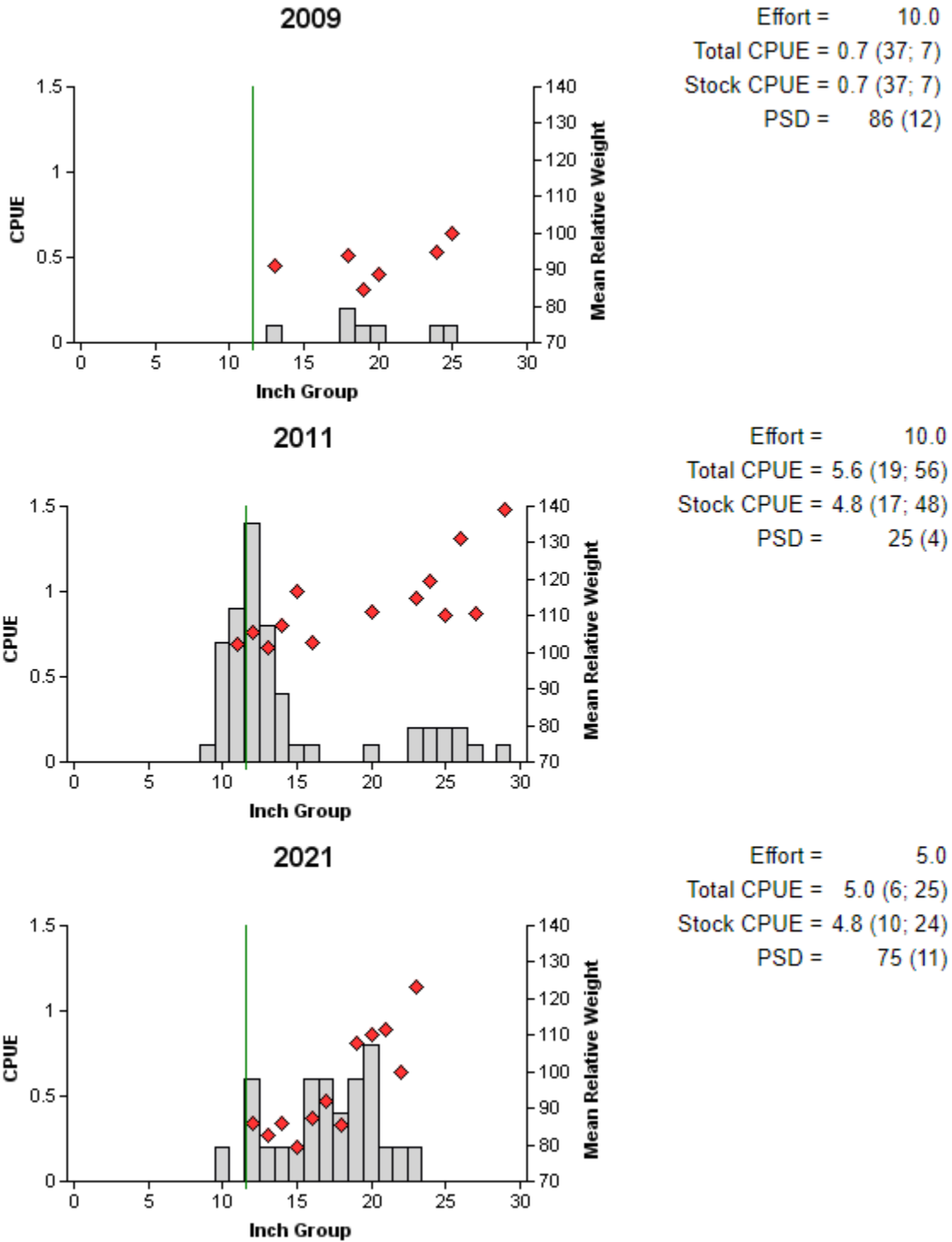
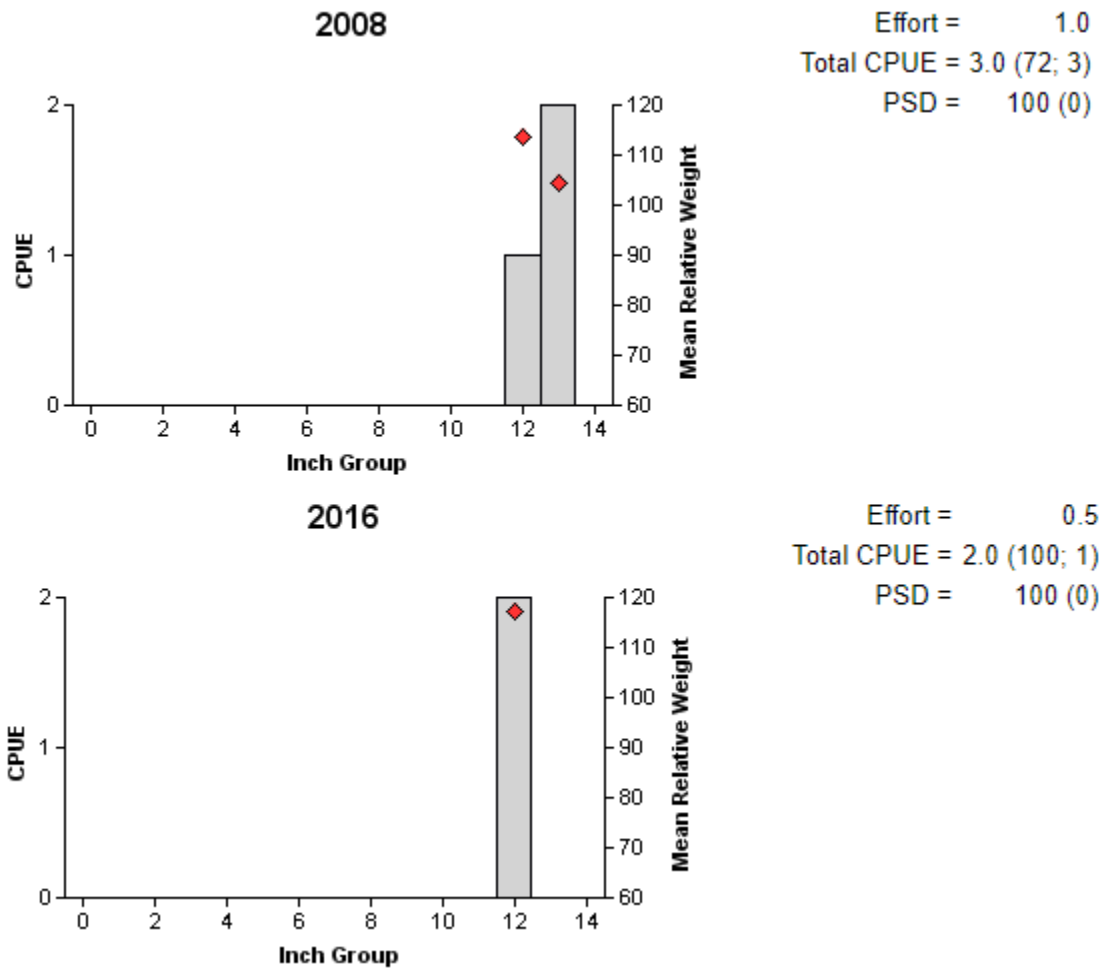


Figure 4. Number of Channel Catfish caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Wichita Reservoir, Texas, 2009, 2011, and 2021. Vertical line indicates minimum length limit.

Largemouth Bass



NO BASS in 2020

Figure 5. 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, Wichita Reservoir, Texas, 2008, 2016, and 2020.

White Crappie

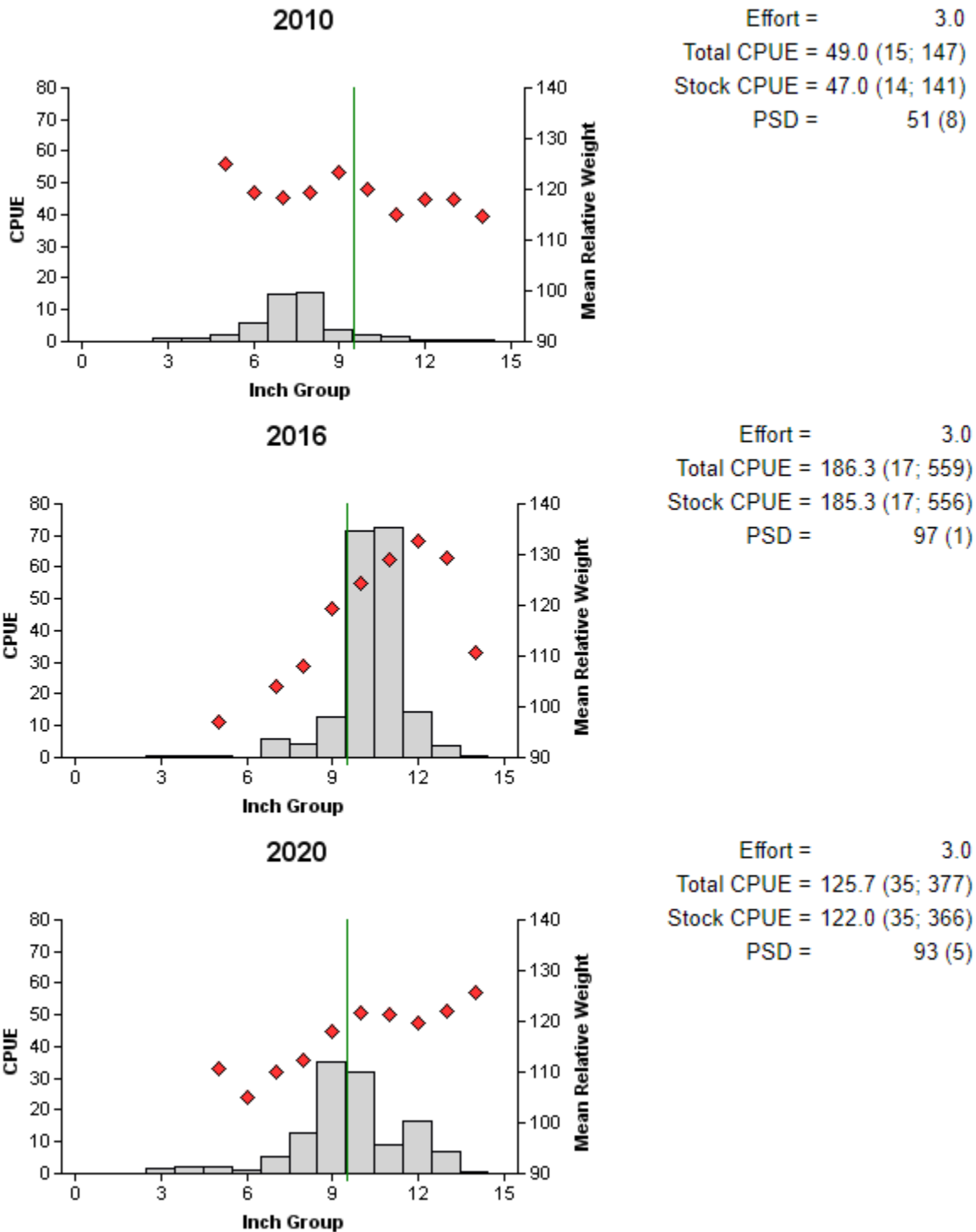


Figure 6. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for 2010 fall dual-cod trap net survey and 2016 and 2020 fall trap net surveys, Wichita Reservoir, Texas. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 8. Proposed sampling schedule for Wichita Reservoir, 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.

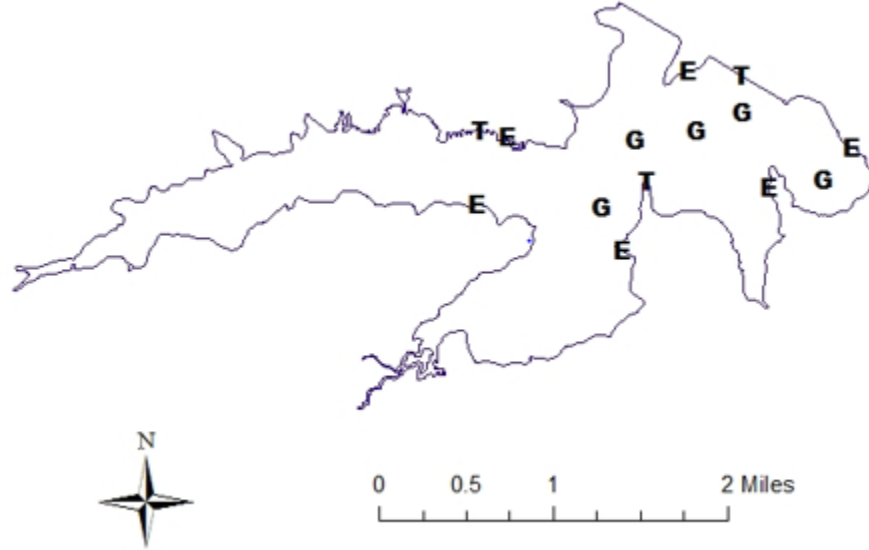
	Survey year			
	2021-2022	2022-2023	2023-2024	2024-2025
Angler Access				X
Structural Habitat				
Vegetation				X
Electrofishing – Fall				
Electrofishing – Spring				
Electrofishing – Low frequency			X	
Trap netting				X
Gill netting				
Baited tandem hoop netting				
Creel survey				
Report				X

APPENDIX A – Catch rates for all species from all gear types

Number (N) and catch rate (CPUE) (RSE in parentheses) of all target species collected from all gear types from Wichita Reservoir, Texas, 2020-2021. Sampling effort was 5 net nights for gill netting, 3 net nights for trap netting, and 0.5 hour for electrofishing.

Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Spotted Gar	1	0.2 (100)				
Gizzard Shad	181	36.2 (19)	1	0.3 (100)	311	622.0 (22)
Common Carp	30	6.0 (28)				
River Carpsucker			1	0.3 (100)		
Smallmouth Buffalo	33	6.6 (33)				
Blue Catfish	5	1.0 (32)				
Black Bullhead	15	3.0 (35)	61	20.3 (28)		
Channel Catfish	25	5.0 (6)	11	3.7 (33)		
Green Sunfish					9	18.0 (100)
Warmouth					1	2.0 (100)
Orangespotted Sunfish					4	4.0 (77)
Bluegill			14	4.7 (57)	124	248.0 (91)
Longear Sunfish			1	0.3 (100)	10	20.0 (77)
Largemouth Bass						
White Crappie	6	1.2 (31)	377	125.7 (35)		
Black Crappie			2	0.7 (50)		

APPENDIX B – Map of sampling locations



Location of sampling sites, Wichita Reservoir, Texas, 2020-2021. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively. Water level was near full pool at time of sampling.

APPENDIX C – Historical catch rates of targeted species by gear type for Lake Wichita, Texas.

Historical catch rates for targeted species by gear type for Lake Wichita, Texas.

Gear	Species	Year						
		1997	2000	2001	2003	2004	2005	2007
Gill Netting (fish/net night)	Blue Catfish							
	Channel Catfish	1.8	1.0	0.4	0.6		1.2	1.0
	White Bass	7.2	16.3	3.2	21.7		11.6	0
	Palmetto Bass	0.4	0.8	2.2	2.9		5.4	18.1
Electrofishing (fish/hour)	Gizzard Shad	254.0	60.0			180.0		
	Green Sunfish	3.3	0			7.0		
	Bluegill	10.7	4.0			92.0		
	Longear Sunfish	1.3	0			5.0		
	Largemouth Bass	0.7	0			0		
Trap Netting (fish/net night)	White Crappie	33.8	4.3			36.3		41.7
	Black Crappie							

APPENDIX C – (Continued)

Gear	Species	Year						Avg
		2008	2009	2011	2016	2020	2021	
Gill Netting (fish/net night)	Blue Catfish						1.0	1.0
	Channel Catfish		0.7	5.6			5.0	1.9
	White Bass		0	0.0				7.5
	Palmetto Bass		0	9.8				5.0
Electrofishing	Gizzard Shad	155.0			40.0	622.0		216.8
	Green Sunfish	18.0			6.00	18.0		8.7
	Bluegill	134.0			2.0	248.0		81.8
	Longear Sunfish	20.0			0	20.0		7.7
	Largemouth Bass	3.0			2.0	0		1.0
Trap Netting (fish/net night)	White Crappie	7.8			186.3	125.7		60.6
	Black Crappie					0.7		0.7



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