Cedar Creek Reservoir

2023 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-5

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

Prepared by:

Jacob Norman, District Management Supervisor

and

Thomas Pullen, Assistant District Management Supervisor

Inland Fisheries Division

Tyler District, Tyler, Texas

David Yoskowitz
Executive Director

Timothy Birdsong
Director, Inland Fisheries

July 31, 2024

Contents

Contents i
Survey and Management Summary 1
Introduction 2
Reservoir Description 2
Angler Access 2
Management History 2
Methods 4
Results and Discussion 5
Fisheries Management Plan for Cedar Creek Reservoir, Texas 7
Objective-Based Sampling Plan and Schedule (2023–2027) 8
Literature Cited 10
Tables and Figures 11
Harvest Regulations 12
Stocking History 13
Objective-Based Sampling Plan for 2019-2020 15
Aquatic Vegetation Survey 16
Percent Directed Angler Effort per Species 17
Total Fishing Effort and Fishing Expenditures 17
Blue Catfish 18
Channel Catfish 19
White Bass 21
Hybrid Striped Bass 22
Largemouth Bass 25
Crappie 28
Proposed Sampling Schedule 30
APPENDIX A – Catch rates for all species from all gear types 31
APPENDIX B – Map of sampling locations 32
APPENDIX C – Reporting of creel ZIP codes 33

Survey and Management Summary

Fish populations in Cedar Creek Reservoir were surveyed in 2021 and 2024 with gill nets and in 2023 with electrofishing and trap nets. Anglers were surveyed from June through May 2023/2024 with a creel survey. Historical data are presented with the 2021-2024 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: Cedar Creek Reservoir is a 32,623-acre impoundment of Cedar Creek, a tributary of the Trinity River approximately 14 miles northeast of Athens, Texas. The reservoir was constructed by the Tarrant Regional Water District in 1965 to provide water for municipal and industrial use. Boat access is adequate, but public access for bank anglers is limited. Littoral habitat varies with water level and currently is limited to trace amounts of emergent and floating vegetation.

Management History: Important sport fish include Hybrid Striped Bass, White Bass, Largemouth Bass, Blue Catfish, Channel Catfish, and crappie. The management plan from the 2020 survey report included continued stocking of Hybrid Striped Bass at 10/acre.

Fish Community

- **Prey species:** Gizzard and Threadfin shad were present in the reservoir. Previous electrofishing surveys indicated shad provided a quality prey base for sportfish in the reservoir. The 2023 electrofishing survey was altered in an attempt to survey Largemouth Bass more effectively and did not provide accurate estimates of shad or sunfish. The reservoir has historically contained a very low-density sunfish population.
- **Catfish:** Both Blue and Channel Catfish exist in the reservoir. Blue Catfish remained more abundant and fish > 30 inches were observed in the 2024 gill net survey. Catfish historically provided a popular fishery, accounting for > 20% of directed effort in all previous creel surveys; catfish accounted for 1.7% of directed effort during the 2023/2024 creel survey.
- **Temperate Bass:** Cedar Creek Reservoir contains a quality temperate bass population, with abundant White Bass and Hybrid Striped Bass traditionally supported by an ample prey base and abundant open water habitat. Temperate bass were the third most targeted fish at Cedar Creek Reservoir, accounting for 8% of angling effort. Annual requests are submitted to stock Hybrid Striped Bass.
- **Largemouth Bass:** Traditional electrofishing surveys produced variable and low catch rates for Largemouth Bass. Creel surveys and tournament data suggested a popular fishery exists. A biologist selected daytime electrofishing survey was conducted in 2023 to further asses the bass population; the survey results were poor and did not provide enough data to assess the population. Largemouth Bass continued to provide a popular fishery, accounting for 67% of directed effort during the most recent creel survey; tournament angling made up 85% of all Largemouth Bass effort.
- **Crappie:** Black and White Crappie were present in the reservoir and continued to provide a popular fishery. The 2023 trap net survey indicated crappie were still abundant, and the population has been stable over the last 3 surveys (2015-2023). Crappie were the second most popular species targeted during the most recent creel survey, accounting for 19% of all angling effort.

Management Strategies: Continue stocking Hybrid Striped Bass to maintain the quality temperate bass fishery. Inform Cedar Creek Reservoir angling groups about ongoing management and research efforts. Continue managing all sport fish under state-wide regulations.

Introduction

This document is a summary of fisheries data collected from Cedar Creek Reservoir in 2021-2024. 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 2021-2024 data for comparison.

Reservoir Description

Cedar Creek Reservoir is a 32,623-acre impoundment of Cedar Creek, a tributary of the Trinity River approximately 14 miles northeast of Athens, Texas. The reservoir was constructed by the Tarrant Regional Water District (TRWD) in 1965 to provide water for municipal and industrial use. Primary water uses included municipal water supply and recreation. Cedar Creek Reservoir is eutrophic with a mean TSI chl-a of 59.08 (Texas Commission on Environmental Quality 2020). Habitat was limited at the time of sampling. Bulkhead is very abundant around most of the reservoir, resulting in heavy wave action which limits littoral habitat. Boat docks are abundant, and account for the majority of habitat in the reservoir. Prior to 2023, the reservoir had remained within two feet of conservation pool for the previous 10 years; drought conditions in 2023 lowered the reservoir by an additional two feet (Figure 1). Other descriptive characteristics for Cedar Creek Reservoir are in Table 1.

Angler Access

Cedar Creek Reservoir has two public boat ramps (Chamber Island and County Ramp) and many private ramps. Both public ramps were accessible during the most recent survey period. Shoreline access is limited to the public boat ramp area of County Ramp and the fishing pier located at Chamber Island. Chamber Island is also ADA accessible. Additional boat ramp characteristics are in Table 2.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Norman 2020) included:

1. Stock Hybrid Striped Bass annually at 10 fish/acre.

   Action: Sunshine Bass have been stocked from 2021-2023 at 9-13 fish/acre.

2. Seek opportunities to partner with stakeholder groups to install artificial habitat.

   Action: Currently, no stakeholders have expressed interest, and habitat initiatives have not been initiated, despite efforts to develop these partnerships.

3. Continue to educate the public about the negative impacts of introducing aquatic invasive species.

   Action: Clean, Drain, Dry signs are posted at all popular boat ramps and stencils have been painted on the ramps at the most utilized facilities.

Harvest regulation history: All sport fishes in Cedar Creek Reservoir are currently managed with statewide harvest regulations (Table 3).

Stocking history: Since 2002, Cedar Creek Reservoir has been stocked annually (with the exception of 2010, 2012, 2019 and 2020) with Hybrid Striped Bass. Florida Largemouth Bass have been stocked when littoral habitat was present. The complete stocking history is in Table 4.

Water transfer: Cedar Creek Reservoir was built by TRWD for municipal water supply. TRWD is currently a water wholesaler to more than ten counties in the Dallas and Fort Worth (DFW) Metroplex. Raw water is transferred from Cedar Creek through the East Texas Pipeline and converges with water from Richland Chambers near Waxahachie, Texas. Water from the pipeline is available along a grid system to multiple water treatment plants in the DFW area and has the potential to be introduced directly or indirectly into Richland Chambers Reservoir, Lake Halbert, Lake Bardwell, Lake Benbrook, Joe Pool Reservoir, Mountain Creek Reservoir, Lake Arlington, Eagle Mountain Reservoir and Lake Worth. The TRWD and the City of Dallas Water Utilities have partnered to construct an Integrated Pipeline Project, which will create further connections between municipalities and reservoirs, including Lake Palestine; construction on the Palestine pipeline has begun.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Cedar Creek Reservoir (Norman 2020). Primary components of the OBS plan are listed in Table 5. All surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Common names of fishes and their hybrids in this report are used following Page et al. (2023) with an exception for Largemouth Bass. While we recognize recent changes to black bass names, Texas reservoirs contain a mix of Florida Bass, Largemouth Bass, and their intergrade offspring. Therefore, Largemouth Bass is used in this report for simplicity as well as consistency with previous reports.

Electrofishing – Largemouth Bass, sunfishes, Gizzard Shad, and Threadfin Shad were collected by biologist selected, daytime electrofishing (1.0 hours at 12, 5-min stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing. Electrofishing in 2023 was conducted using a Smith-Root Apex electrofisher.

Trap netting – Crappie were collected using trap nets (10 net nights at 10 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn). Age at legal length for crappie was estimated using otoliths from 13 (White Crappie) and 8 (Black Crappie) randomly selected fish (range 9.2 to 10.9 inches; category II, TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Gill netting – Blue Catfish, Channel Catfish and Temperate Bass were collected by gill netting (10 net nights at 10 stations). CPUE for gill netting was recorded as the number of fish caught per net night (fish/nn). Ages for White Bass were determined using otoliths from 15 randomly selected fish (range 9.2 to 10.7 inches; category II, TPWD, Inland Fisheries Division, unpublished manual revised 2022).

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 Neumann et al. (2012). Hybrid striped bass PSD was calculated according to Dumont and Neely (2011). TPWD has stocked both hybrid striped bass crosses (palmetto bass and sunshine bass) in the past. Most hybrid striped bass currently produced by TPWD hatcheries are sunshine bass. Even though PSD length categories and standard weight equation were developed based on palmetto bass populations, they are applied to sunshine bass under the assumption that there is little difference in the growth of the two hybrids. 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.

Creel survey – An access-point creel survey was conducted from June 2023 through May 2024. 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 2022).

Habitat – A vegetation survey was conducted in 2023. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2022).

Water level – Source for water level data was the United States Geological Survey (USGS 2024).

Results and Discussion

Habitat: Aquatic vegetation continued to be limited by turbidity from wind and wave action around most of the lake; only trace amounts of emergent and floating vegetation were observed during the 2023 survey (Table 6). Ott and Beck (2008) reported 60% of the structural habitat was bulkhead with boat docks; there has been minimal variation in habitat in recent years.

Creel: Largemouth Bass were the most popular species during the 2023/2024 creel survey, accounting for 67% of total angling effort. The crappie fishery accounted for 19% of angling effort and Temperate Bass accounted for 8% indicating most sportfish present in Cedar Creek Reservoir offered popular fisheries during the most recent creel survey (Table 7). Historically, catfish were the most popular fishery at Cedar Creek, but have steadily declined since the 2007/2008 creel. Total angling effort (116,838 h) increased substantially from the previous creel survey but was within the historical estimates (range: 69,183 h – 272,047 h; 2007-2024). Estimated angler expenditures ($1,976,768) were the highest ever observed for Cedar Creek (Table 8). The average distance traveled increased from previous creel surveys (range: 153-170 miles; 2007-2020), to 216 miles in 2023/2034 (Appendix C). The increased distance is potentially in direct correlation with the increased tournament effort observed.

Prey species: Threadfin and Gizzard Shad were present in the reservoir. Yellow Bass were also present in the reservoir and offer an additional prey item to larger predators. The 2023 electrofishing survey was altered in attempts to more effectively sample the Largemouth Bass population. This survey yielded poor results for all species, and the data collected was insufficient to monitor the prey base. Relative weights for catfish and temperate bass indicate a sufficient prey base. Despite poor data from the 2023 survey, historical electrofishing results indicated a stable and abundant shad population. Future sampling efforts will revert to traditional procedures(randomly selected, nighttime survey); there is minimal concern about the current prey base in Cedar Creek.

Catfish: The gill net catch rate of Blue Catfish was 35.1/nn in 2024, indicating a substantial increase from the previous two surveys (2016 and 2021; Figure 2). Size structure (PSD = 20) was comparable to previous surveys however, the recent survey indicated an increased relative abundance of fish > 20 inches and a high relative abundance of fish < 10 inches, suggesting recent strong year classes. Body condition was good (W_r > 90 for most size classes; range: 80-115) suggesting an adequate prey base for Blue Catfish. The gill net catch rates of Channel Catfish (≤ 4.4/nn over the last three surveys) reflect a low-density population. However, size structure (PSD = 20) has increased over the past three surveys (Figure 3). Body condition was moderate (average W_r of 85).

Directed fishing effort, catch rate, and total harvest for catfish was 8,995 h, 0.82 fish/h, and 3,460 fish, respectively, from June 2023 – May 2024 (Table 9). These metrics were all substantially down from previous surveys, despite improved gill net catch rates in 2024. Harvested Blue Catfish ranged in length from 12 – 32 inches and harvested Channel Catfish ranged in length from 12 – 14 inches (Figure 4). Anglers released 66% of legal length catfish. This is likely a result of regulation changes removing the minimum length limit on Blue and Channel Catfish for the reservoir.

Temperate Bass: The gill net catch rate for White and Hybrid Striped Bass has historically varied between surveys. This variation is attributed to the gill net survey timing often coinciding with spring spawning migrations, resulting in few fish in the main lake where gill nets are set. White Bass gill net catch rates have varied over the last three surveys (CPUE range: 0.7/nn – 19.4/nn; Figure 5). White Bass collected in 2024 displayed fast growth; all aged fish reached 10 inches in one year (N = 15; 9.2 – 10.7 inches). Hybrid Striped Bass catch rates were low in the most recent survey (CPUE = 1.3/nn), but comparable to the previous two surveys (Figure 6). Body condition was desirable (W_r ≥ 90) for all species of temperate bass, indicating adequate forage.

Directed fishing effort and total harvest for temperate bass substantially increased from the previous creel survey (8,995 h and 22,397 fish, respectively; Table 10). The increased creel metrics are likely a result of more consistent Hybrid Stripped Bass stockings in recent years. Harvested White Bass and Hybrid

Striped Bass ranged in length from 10 – 16 inches and 18 – 23 inches, respectively (Figures 7-8). Anglers released 22% of all legal length Temperate Bass.

Largemouth Bass: Historical electrofishing surveys suggested that Cedar Creek supported a low-density bass population. However, creel data and tournament results highlighted quality bass fishing opportunities. The 2023 electrofishing survey was designed to improve Largemouth Bass sampling and was conducted during the daytime at biologist selected sites. Unfortunately, this survey design yielded very poor results, collecting eight fish after one hour of electrofishing. Only 5 were above stock-length (8 inches) and one was at legal length (Figure 9). Future surveys will return to standard nighttime electrofishing procedures with randomly selected stations, and inferences about the Largemouth Bass population from 2020-2024 can be made from creel survey results.

Directed fishing effort (77,943 h) for Largemouth Bass substantially increased from the previous creel survey (8,332 h; Table 11). However, the 2019/2020 creel survey was canceled before the spring 2020 quarter, due to COVID-19. The most recent estimated effort was still higher than previous full-year creel surveys. Anglers released an estimated 96% of legal fish caught. Approximately 95% (N = 41,205) of Largemouth Bass caught and released were less than 4 pounds, 5% (N = 2,107) were between 4-7 pounds and 0.4% (N = 195) were between 7 and 9 pounds. Largemouth Bass tournaments were popular on the reservoir, accounting for 85% of all bass effort. Tournament anglers retained an estimated 16,834 fish in livewells for weigh in, ranging in length from 14 to 23 inch (Figure 10). Non-tournament angler harvest was negligible; two 15-inch fish were observed during the 2023/2024 creel survey.

Crappie: The 2023 trap netting survey indicated both White and Black Crappie were present within the reservoir and White Crappie remained more abundant (Figure 11). Size structure in 2023 (PSD = 68) was comparable to previous surveys (PSD range: 60-75). Condition of White Crappie was excellent with mean W_r values > 100 for all size classes. Relative weights of Black Crappie improved from previous surveys (W_r > 90 for all size classes). White Crappie growth was fast; average age at 10 inches (9.2 to 10.7 inches) was 1.1 years (N = 13; range = 1 – 2 years). Black Crappie growth was moderate; average age at 10 inches (10.6 to 10.9 inches) was 2.4 years (N = 8; range 2 – 4 years).

Directed fishing effort for crappie (22,693 h) and catch rate (0.7 fish/h) declined slightly from the previous survey (June 2019 – February 2020) but were comparable to historical estimates (Table 12). Despite reduced effort and catch rates, total harvest estimates (34,713 fish) increased during the 2023/2024 creel survey. White Crappie accounted for approximately 68% of harvested crappie, ranging in length from 10-16 inches (Figure 12). The crappie fishery is highly consumptive; 5% of legal fish were released during the survey period.

Fisheries Management Plan for Cedar Creek Reservoir, Texas

Prepared – July 2024

ISSUE 1: Hybrid Striped Bass have been an important part of the fishery at Cedar Creek Reservoir since the early 1980s. Several full-time guides that make their livelihood on these fish, and subsequently harvest a significant number of temperate bass each year. Angler effort and harvest increased during the 2023/2034 creel survey. Annual stockings of Hybrid Striped Bass are required to sustain the population and maintain the popular fishery.

MANAGEMENT STRATEGY

1. Request Hybrid Striped Bass fingerling stockings annually at 10 fish/acre.
2. Continue to monitor the population and fishery through gill netting and creel surveys.

ISSUE 2: Creel surveys and tournament results continue to indicate Cedar Creek contains a quality Largemouth Bass fishery. While littoral habitat has been poor in recent years, fluctuating water levels have resulted in periodically flooded quality terrestrial habitat. Despite challenges in predicting future habitat abundance, it is imperative to be ready to stock genetically superior Largemouth Bass into the reservoir, when appropriate, to increase the potential catch of trophy (> 8 lbs.) Largemouth Bass.

MANAGEMENT STRATEGY

1. Continue to monitor water levels, and subsequent habitat changes, annually.
2. Request Lone Star Bass fingerlings at 1,000/km of shoreline, when littoral habitat is adequate to promote survival of stocked fingerlings.
3. Promote TPWD ShareLunker program to improve supplemental reporting of trophy Largemouth Bass catches within the reservoir.

ISSUE 3: The Cedar Creek Reservoir watershed is susceptible to the introduction of invasive invertebrates including zebra mussels. 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. Additionally, problematic aquatic vegetation including giant salvinia and water hyacinth have been identified in nearby reservoirs and present a risk of being introduced into Cedar Creek Reservoir.

MANAGEMENT STRATEGIES

1. Cooperate with the controlling authority to post appropriate signage at access points around the reservoir.
2. Continue to work with marina owners and provide them with signs, posters, and literature to educate their customers.

3. Educate the public about invasive species through social media, presentations and news releases, when appropriate.

4. Investigate reports of unusual or unknown aquatic plants in Cedar Creek Reservoir by anglers and homeowners at the earliest possible opportunity.

5. Document existing and future interbasin water transfers to facilitate potential invasive species responses.

Objective-Based Sampling Plan and Schedule (2023–2027)

Sport fish, forage fish and other important fishes

Sport fish in Cedar Creek Reservoir include Hybrid Striped Bass, White Bass, Blue and Channel Catfish, Largemouth Bass and crappie. Important forage species include Gizzard and Threadfin Shad.

Survey objectives, fisheries metrics and sampling objectives

Crappie: Crappie represented 19% of the directed angler effort during the most recent creel survey at Cedar Creek Reservoir. Trap netting CPUE has been moderate in recent surveys. Based on bootstrap analysis of historical data, it would take a minimum of 20 trap nets to accurately estimate size structure (PSD: N > 50 stock-length fish) at least 80% of the time. The historically variable catch rates suggest it would take a minimum of 35 trap nets to estimate relative abundance of stock size fish with acceptable precision (RSE-S < 25). Crappie size structure, body condition, and growth (PSD, W_r, mean age at 10 inches) will continue to be monitored every four years to detect any larger scale population fluctuations. In the fall of 2027 a minimum of 10, randomly selected single-cod shoreline trap net sites will be sampled, and up to 10 additional nets will be set, if needed, to collect at least 50 stock-size crappies (species combined). We believe that the level of sampling proposed will provide our secondary sampling objective of 13 specimens between 9.0 and 10.9 inches for category II age and growth evaluations. An access-point creel survey will be conducted in 2027-2028 to monitor angler catch, harvest, and fishing effort.

Catfish: Historical gill net data suggests Blue Catfish population indices (CPUE, PSD, W_r) can be estimated with acceptable precision (RSE < 25) and sample size (N ≥ 50 stock-size fish) with only 10 net-nights of gill net effort at least 80% of the time. Blue Catfish population trend data (CPUE and PSD) will be monitored every four years in order to detect any large-scale fluctuations. In the spring of 2028, 10 gill nets will be set, with up to 10 additional nets set, to achieve a precise estimate (RSE < 25) of abundance and an acceptable size-structure estimate (N ≥ 50 stock-size fish). While Channel Catfish are present in the reservoir, gill net catch rates have been too inconsistent to effectively monitor the population. Channel Catfish will be monitored with gill net surveys, but no sample objectives will be set. An Angler catch, harvest and fishing effort will be monitored with an access point creel survey in 2027-2028.

Temperate Bass: Temperate Bass accounted for 8% of fishing effort in the 2023-2024 creel. Gill netting surveys will be used to monitor temperate bass relative abundance and size structure while creel surveys will be conducted to monitor angler catch, harvest, and fishing effort in 2027-2028. Temperate Bass gill net catch rates have historically been variable and would likely require 30+ net nights of effort to effectively estimate relative abundance and size structure; no additional gill net effort will be expended beyond that directed at catfish. Angler catch, harvest, and fishing effort will be monitored with an access point creel survey in 2027-2028.

Largemouth Bass: Approximately 67% of fishing effort was targeted at Largemouth Bass in 2023-2024. Creel data and tournament results further highlight a quality Largemouth Bass fishery. The recent attempt to more effectively monitor the LMB population with daytime, biologist selected sites, proved to be ineffective, and yielded minimal data. While traditional electrofishing survey results did not closely resemble creel and tournament data, the results were still adequate to make year-over-year comparisons

and should be resumed. In the fall of 2027, Largemouth Bass trend data on relative abundance, size structure, body condition, and growth (CPUE, PSD, W_r, average age at 14 inches) will be monitored with nighttime electrofishing. A minimum of 18, randomly selected 5-minute stations will be sampled, with up to an additional 6 stations, if necessary to adequately (RSE<25, N≥50 stock sized individuals) assess Largemouth Bass population trends. Average age at 14 inches will be estimated for fish between 13.0 and 14.9 inches (N=13, 10 fish per inch group). An access-point creel survey will be conducted in 2027-2028 to monitor angler catch, harvest, and fishing effort.

Prey Species: Gizzard Shad and Threadfin Shad are important prey species in Cedar Creek Reservoir. Long-term trend data is desired for these populations to evaluate their relative abundance (CPUE) and size structure (PSD). Relative weights of the Largemouth Bass population, along with the IOV of Gizzard Shad, will be used to gauge prey fish availability for sport fishes from electrofishing sampling conducted in fall 2027. No sampling objectives will be set for prey species.

Literature Cited

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 Hybrid Striped 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.

Neumann, R. M., C. S. Guy, and D. W. Willis. 2012. Length, weight, and associated indices. Pages 637-676 in A. V. Zale, D. L. Parrish, and T. M. Sutton, editors. Fisheries techniques, 3rd edition. American Fisheries Society, Bethesda, Maryland.

Norman, J.D. 2020. Statewide freshwater fisheries monitoring and management program survey report for Cedar Creek Reservoir 2019. Texas Parks and Wildlife Department, Federal Aid Report F-221-M-4, Austin. 39 pp.

Ott, R.A., Jr., and P.A. Beck. 2008. Statewide freshwater fisheries monitoring and management program survey report for Cedar Creek Reservoir 2007. Texas Parks and Wildlife Department, Federal Aid Report F-30-R-33, Austin. 31 pp.

Page, L. M., K. E. Bemis, T. E. Dowling, H. S. Espinosa-Perez, L. T. Findley, C. R. Gilbert, K. E. Hartel, R. N. Lea, N. E. Mandrak, M. A. Neighbors, J. J. Schmitter-Soto, and H. J. Walker, Jr. 2023. Common and scientific names of fishes from the United States, Canada, and Mexico. American Fisheries Society, Special Publication 37, Bethesda, Maryland.

Texas Commission on Environmental Quality. 2022. Trophic classification of Texas reservoirs. 2022 Texas Water Quality Inventory and 303 (d) List, Austin. 17 pp.

United States Geological Survey (USGS). 2024. National water information system: Web interface. Available: http://waterdata.usgs.gov/tx/nwis (May 2024).

Tables and Figures

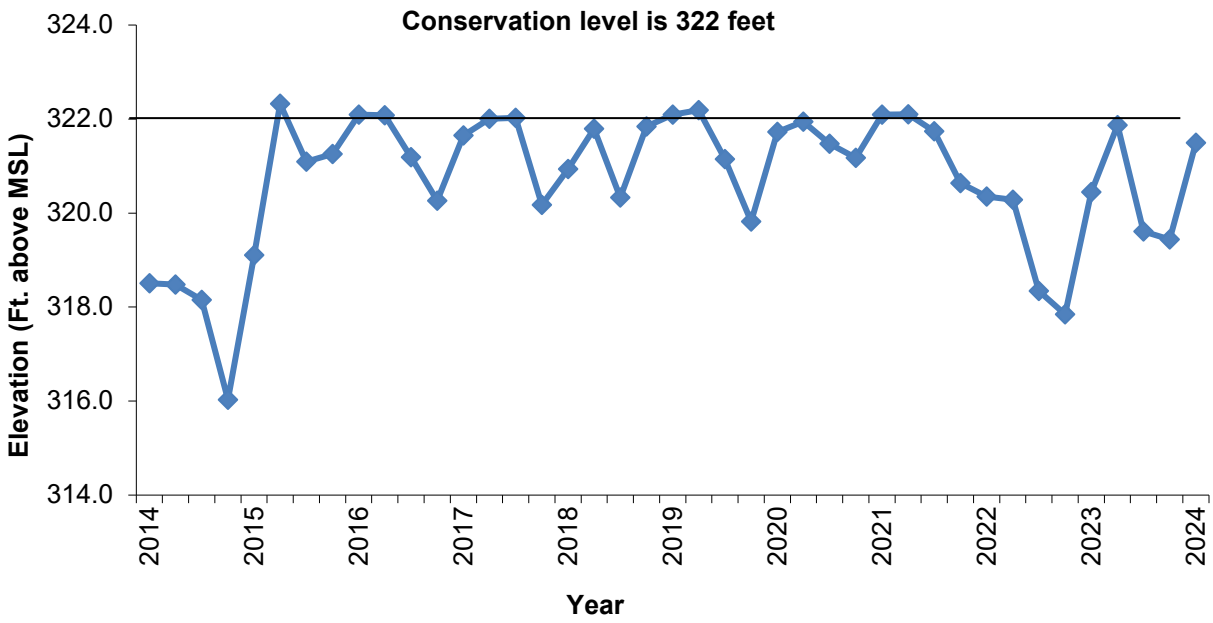


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Cedar Creek Reservoir, Texas.

Table 1. Characteristics of Cedar Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1965
Controlling authority	Tarrant Regional Water District
Counties	Henderson (dam), Kaufman
Reservoir type	Tributary
Shoreline Development Index	1.9
Conductivity	280 µS/cm

Table 2. Boat ramp characteristics for Cedar Creek Reservoir, Texas, August 2023. Reservoir elevation at time of survey was 321.9 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft.)	Condition
Chamber Island	32.32930 -96.17042	Y	75	317	Good
Sandy Shores Marina	32.32866 -96.15995	N	70	315	Good
Lone Star Marina	32.26172 -96.15341	N	50	317	Good
Log Cabin	32.21733 -96.01523	N	100	317	Good
County Ramp	32.20874 -96.02556	Y	40	319	Good
Fisherman's Wharf	32.18871 -96.03118	N	40	318	Good

Table 3. Harvest regulations for Cedar Creek Reservoir, Texas.

Species	Bag limit	Length limit
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (only 10 ≥ 20 inches)	None
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Hybrid Striped	5 (in any combination	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 Cedar Creek Reservoir, Texas. FRY = fry; FGL = fingerling; AFGL = advanced fingerling; UNK = unknown.

Species	Year	Number	Life Stage
Channel Catfish	1966	7,600	AFGL
	1973	125	UNK
	Total	7,725	
Florida Largemouth Bass	1976	343,000	FRY
	1977	20,000	FRY
	1978	194,847	FGL
	1978	203,990	FRY
	1997	343,012	FGL
	1998	453,072	FGL
	1999	342,424	FGL
	2000	57,986	FGL
	2004	501,870	FGL
	2005	496,806	FGL
	2008	185,016	FGL
	2009	531,063	FGL
	2015	29,700	FGL
	2016	399,930	FGL
	2017	149,309	FGL
	2018	435,455	FGL
	2019	435,765	FGL
	Total	5,123,245	
Largemouth Bass	1966	690,000	FRY
Palmetto Bass (Striped X White Bass hybrid)	1977	169,900	UNK
	1979	172,425	UNK
	1983	143,332	UNK
	1984	452,940	FGL
	1991	175,232	FGL
	1991	1,033,577	FRY
	1992	521,494	FGL
	1993	114,757	FGL
	1993	889,000	FRY
	1994	518,259	FGL
	1995	531,200	FGL
	1996	516,724	FGL
	1997	290,540	FGL
	1998	514,907	FGL
	1999	265,310	FGL

Table 4. Stocking history continued.

Species	Year	Number	Life Stage
Palmetto Bass (Striped X White Bass hybrid)	2002	258,467	FGL
	2003	244,723	FGL
	2004	326,988	FGL
	2005	215,660	FGL
	2006	132,664	FGL
	2007	170,396	FGL
	2007	1,054,822	FRY
	2008	308,108	FGL
	2009	124,836	FGL
	2011	101,341	FGL
	2013	269,031	FGL
	2014	166,620	FGL
	2015	224,957	FGL
	2017	141,712	FGL
	2018	110,326	FGL
	Total	10,160,248	
Sunshine Bass (White X Striped Bass hybrid)	2014	197,733	FGL
	2016	160,706	FGL
	2021	427,241	FGL
	2022	428,479	FGL
	2023	280,391	FGL
	Total	2,504,040	
Threadfin Shad	1984	7,015	AFGL
Walleye	1975	1,650,000	FRY
	1976	1,852,000	FRY
	1977	2,100,000	FRY
	Total	5,602,000	

Table 5. Objective-based sampling plan components for Cedar Creek Reservoir, Texas 2021–2024.

Gear/target species	Survey objective	Metrics	Sampling objective
Electrofishing			
Largemouth Bass	Relative abundance	CPUE–Stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Age-and-growth	Age at 14 inches	N = 13, 13.0 – 14.9 inches
	Condition	W_r	10 fish/inch group (max)
Bluegill [a]	Relative abundance	CPUE–Total	
	Size structure	PSD, length frequency	
Gizzard Shad [a]	Relative abundance	CPUE–Total	
	Prey availability	IOV	
Threadfin Shad [a]	Relative abundance	CPUE-Total	
Trap netting			
Crappie	Size structure	PSD, length frequency	N = 50
	Condition	W*r*	10 fish/inch group (max)
	Age-and-growth	Age at 10 inches	N = 13, 9.0 – 10.9 inches
Gill Netting			
Blue Catfish	Relative abundance	CPUE– stock	RSE-Stock ≤ 25
	Size structure	PSD, length frequency	N ≥ 50 stock
	Condition	W_r	10 fish/inch group (max)
Channel Catfish [a]	Relative abundance	CPUE– stock	
	Size structure	PSD, length frequency	
	Condition	W_r	
Temperate Bass [a]	Relative abundance	CPUE– stock	
	Size structure	PSD, length frequency	
	Condition	W_r	
Creel Survey			
Largemouth Bass, Catfish, Crappie and Temperate Bass	Angler trend information	Angler effort, CPUE, harvest and size structure	

[a] No additional effort will be expended to achieve an RSE ≤ 25 for CPUE of Bluegill, Gizzard Shad, Threadfin Shad, Channel Catfish and Temperate Bass if not reached from designated Largemouth Bass or Blue Catfish sampling effort.

Table 6. Survey of aquatic vegetation, Cedar Creek Reservoir, Texas, 20072007–2023. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2007	2015	2019	2023
Native emergent				
Bulrush		5 (<1)	3 (<1)	
Cutgrass		8 (<1)	11 (<1)	trace
Water willow			3 (<1)	trace
Non-native				
Alligatorweed (Tier III)*	448 (1.4)	47 (<1)	9 (<1)	trace
Water hyacinth (Tier III)*	197 (<1)	< 1 (<1)	0	trace

* Tier III is Watch Status

Table 7. Percent directed angler effort by species for Cedar Creek Reservoir, Texas, 2007 - 2024. Survey periods were June through May for 2007/2008, 2015/2016 and 2023/2024, and June through February for 2019/2020.

Species	2007/2008	2015/2016	2019/2020	2023/2024
Catfish-all species	41.0	27.1	21.3	1.7
Blue Catfish				1.2
Flathead Catfish				0.3
Carp				0.1
Temperate bass	9.0	8.1	6.5	7.7
Largemouth Bass	19.0	41.3	23.1	66.7
Crappie	8.0	21.0	44.7	19.4
Anything	23.0	2.1	4.3	2.9

Table 8. Total fishing effort (hours) for all species and total directed expenditures at Cedar Creek Reservoir, Texas, 2007 - 2024. Survey periods were June through May for 2007/2008, 2015/2016 and 2023/2024, and June through February for 2019/2020. Relative standard error is in parentheses.

Creel statistic	2007/2008	2015/2016	2019/2020	2023/2024
Total fishing effort	272,047 (17)	109,102 (27)	69,183 (40)	116,838 (18)
Total directed expenditures	$1,630,227	$1,053,162	$275,295	$1,976,768

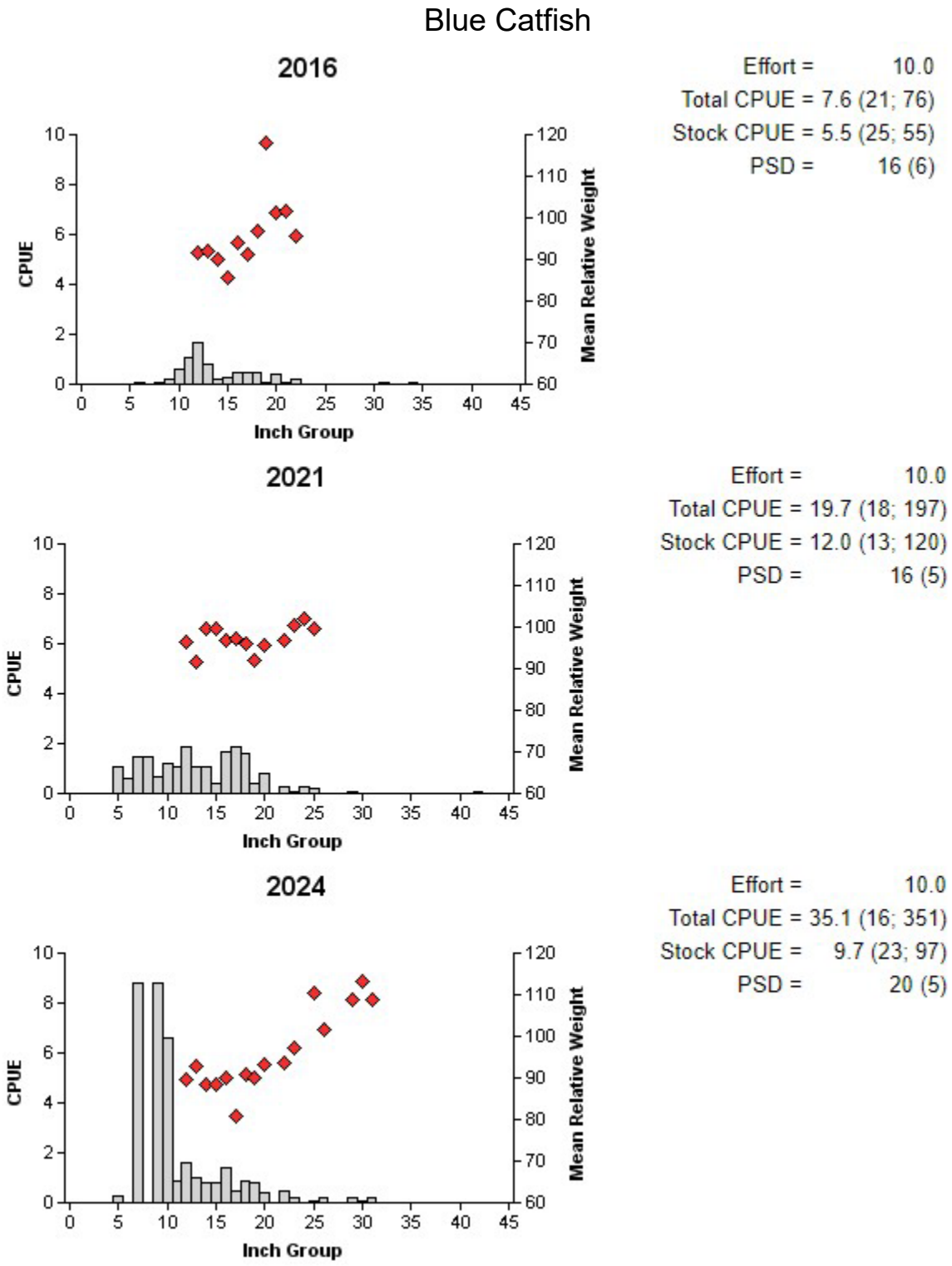


Figure 2. Number of Blue Catfish caught per net night (CPUE), mean relative weights (diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Cedar Creek Reservoir, Texas, 2016, 2021 and 2024.

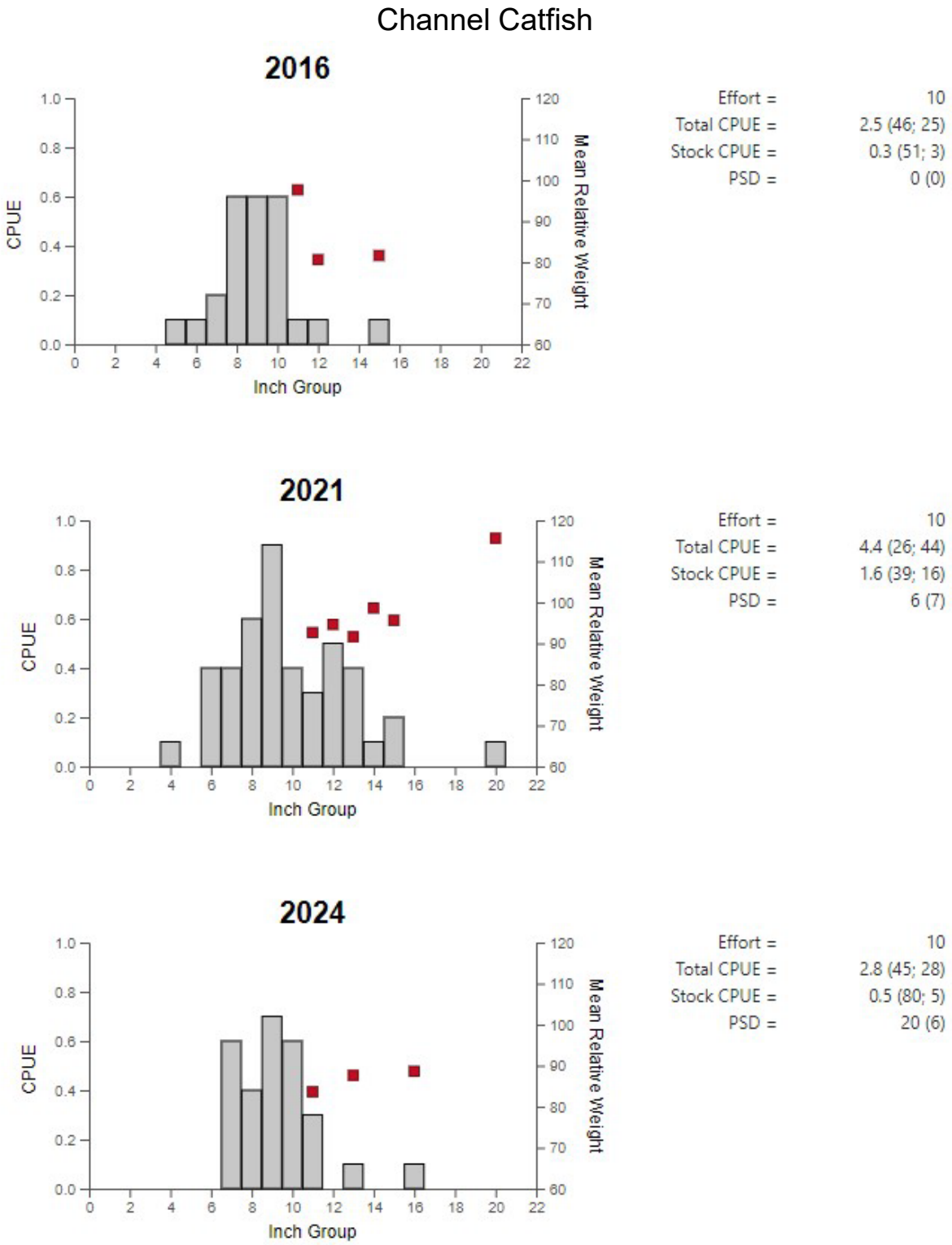


Figure 3. Number of Channel Catfish caught per net night (CPUE), mean relative weights (squares) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Cedar Creek Reservoir, Texas, 2016, 2021 and 2024.

Table 9. Creel survey statistics for catfish at Cedar Creek Reservoir, Texas, from 2007-2024. Survey periods were June through May for 2007/2008, 2015/2016 and 2023/2024, and June through February for 2019/2020. Total catch per hour is for anglers targeting all catfish and total harvest is the estimated number of harvested catfish by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	2007/2008	2015/2016	2019/2020	2023/2024
Surface area (acres)	31,813	32,132	32,623	32,623
Directed effort (h)	127,776 (137)	29,550 (32)	14,764 (61)	8,995 (39)
Directed effort/acre	4.02 (137)	0.92 (32)	0.45 (61)	0.28 (39)
Total catch per hour	1.8 (52)	0.98 (32)	0.53 (75)	0.82 (27)
Total harvest	93,073 (31)	37,335 (49)	3,399 (137)	3,460 (101)
Blue Catfish	58,547 (30)	34,890 (44)	2,720 (100)	2,606 (87)
Channel Catfish	34,526 (34)	2,445 (113)	679 (290)	854 (142)
Harvest/acre	2.7 (31)	1.2 (49)	0.1 (137)	0.1 (101)
Percent legal released	12	7	0	66

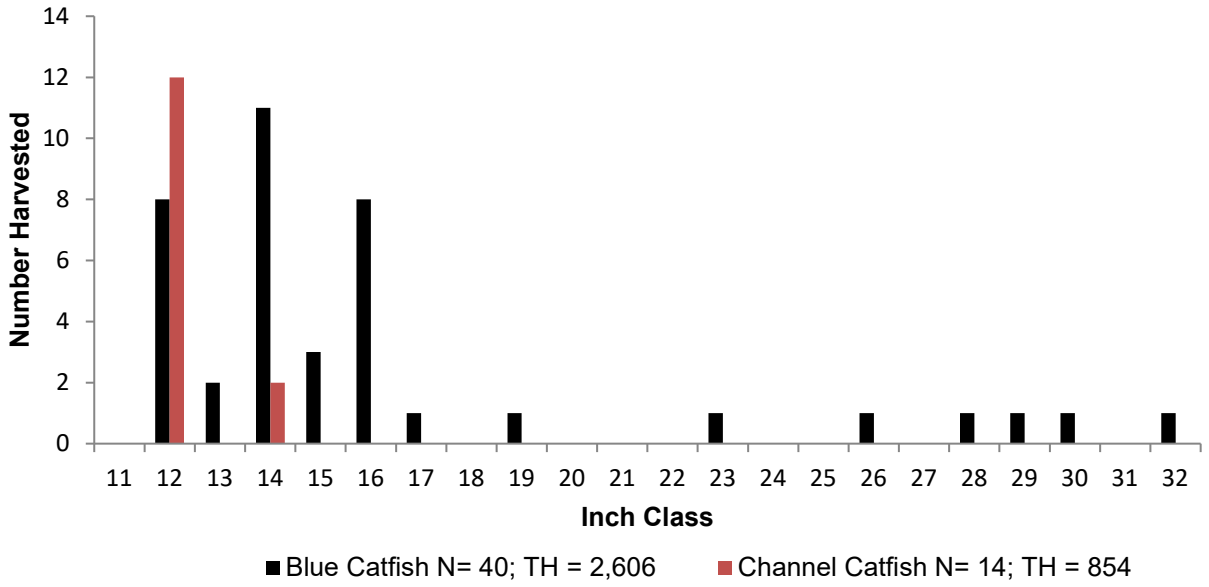


Figure 4. Length frequency of harvested catfish observed during creel survey at Cedar Creek Reservoir, Texas, June through May 2023/2024, all anglers combined. N is the number of harvested catfish observed during the creel survey, and TH is the total estimated harvest for the creel period.

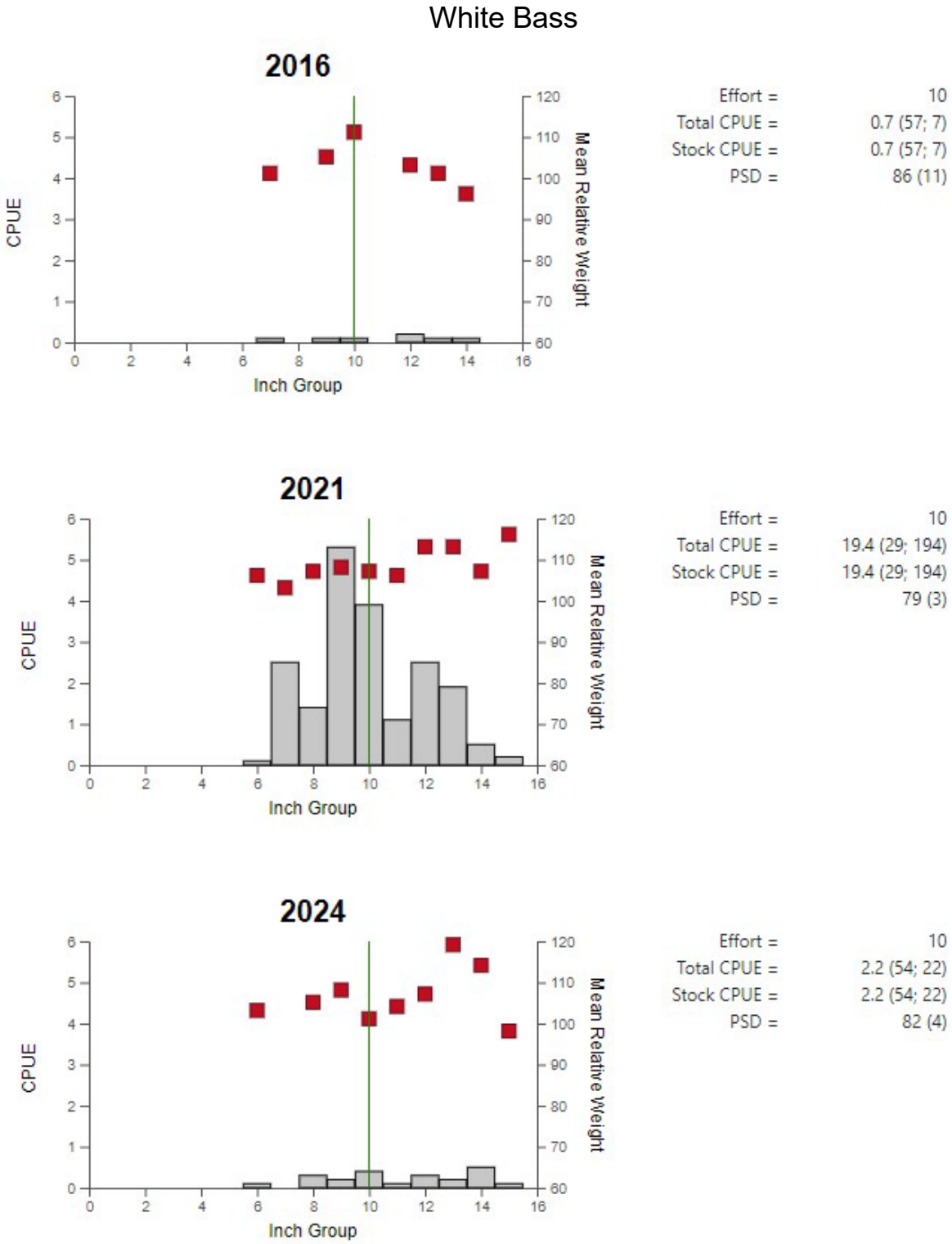


Figure 5. Number of White Bass caught per net night (CPUE), mean relative weights (squares) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Cedar Creek Reservoir, Texas, 2016, 2021 and 2024. Vertical line indicates minimum length limit.

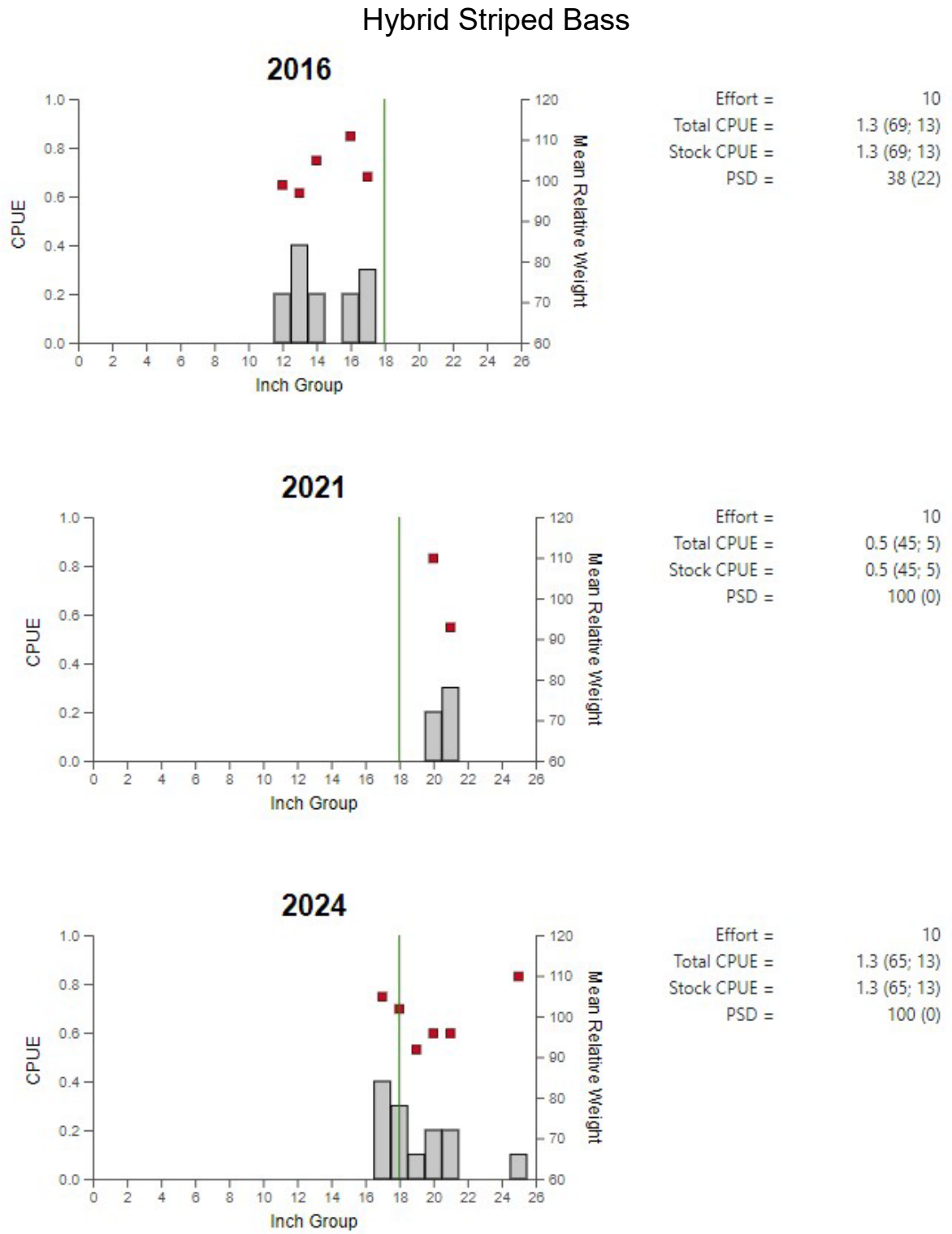


Figure 6. Number of Hybrid Striped Bass caught per net night (CPUE), mean relative weights (squares) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Cedar Creek Reservoir, Texas, 2016, 2021, and 2024. Vertical line indicates minimum length limit.

Table 10. Creel survey statistics for White Bass and Hybrid Bass at Cedar Creek Reservoir, Texas, from 2007 – 2024. Survey periods were June through May for 2007/2008, 2015/2016 and 2023/2024, and June through February for 2019/2020. Total catch per hour is for anglers targeting temperate bass and total harvest is the estimated number of temperate bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	2007/2008	2015/2016	2019/2020	2023/2024
Surface area (acres)	31,813	32,132	32,623	32,623
Directed angling effort (h)	23,416 (37)	8,877 (37)	4,512 (65)	8,995 (25)
Angling effort/acre	0.7 (37)	0.3 (37)	0.1 (65)	0.3 (25)
Total catch per hour	2.5 (47)	2.5 (39)	1.1 (118)	2.9 (42)
Total harvest	18,239 (58)	10,021 (82)	3,210 (102)	22,397 (35)
White Bass	16,547 (46)	8,964 (66)	3,210 (102)	21,093 (30)
Hybrid Striped Bass	1,692 (172)	1,057 (217)	0	1,304 (113)
Harvest/acre	0.6 (58)	0.31 (82)	0.10 (102)	0.7 (35)
Percent legal released (total)		44	87	22

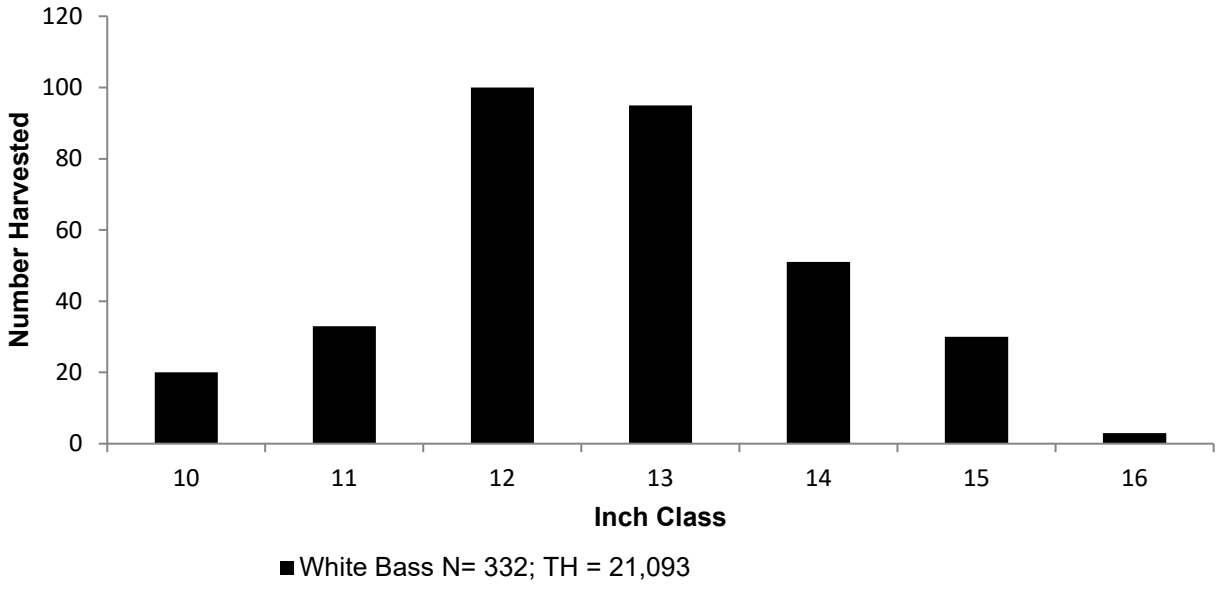


Figure 7. Length frequency of harvested White Bass observed during creel survey at Cedar Creek Reservoir, Texas, June through May 2023/2024, all anglers combined. N is the number of harvested White Bass observed during the creel survey, and TH is the total estimated harvest for the creel period.

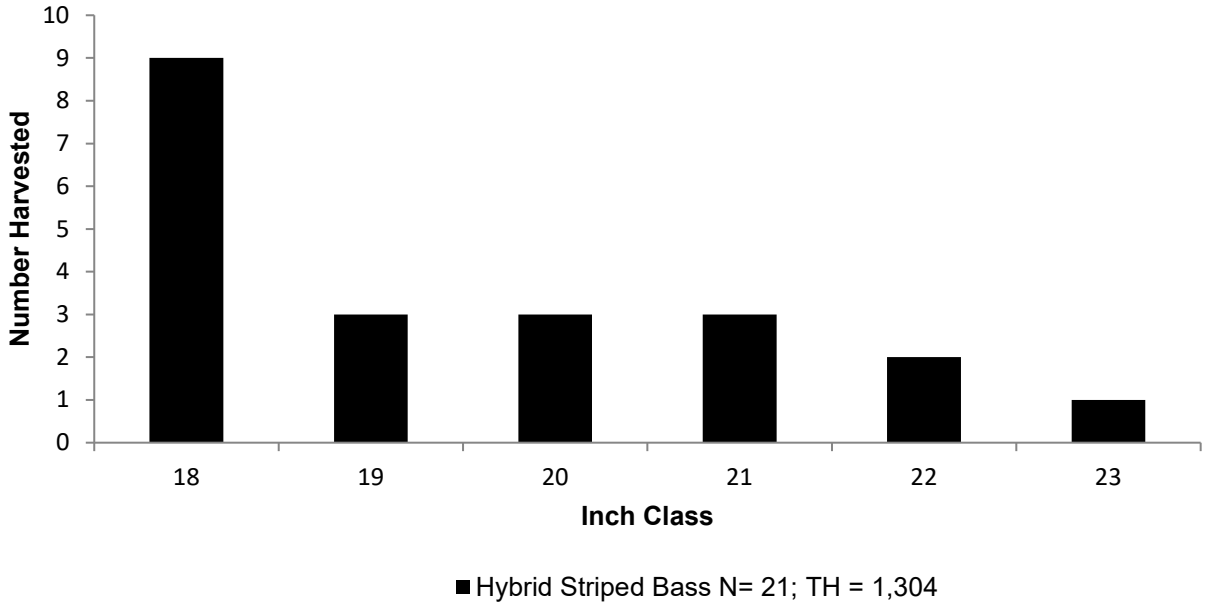


Figure 8. Length frequency of harvested Hybrid Striped Bass observed during creel survey at Cedar Creek Reservoir, Texas, June through May 2023/2024, all anglers combined. N is the number of harvested fish observed during the creel survey, and TH is the total estimated harvest for the creel period.

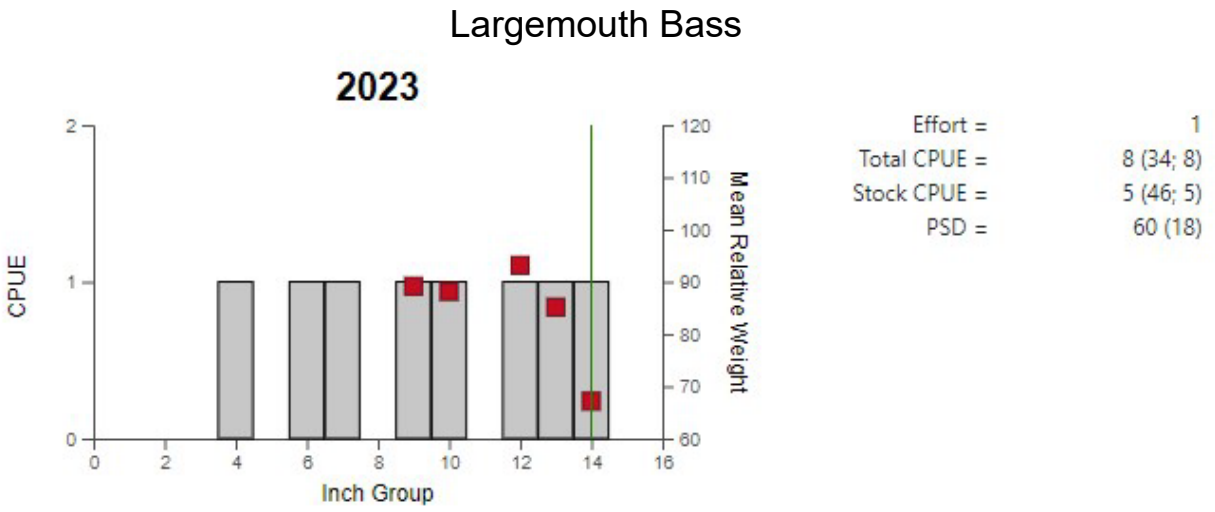


Figure 9. Number of Largemouth Bass caught per hour (CPUE), mean relative weights (squares), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall daytime electrofishing survey, Cedar Creek Reservoir, Texas, 2023.

Table 11. Creel survey statistics for Largemouth Bass at Cedar Creek Reservoir, Texas, from 2007 through 2024. Survey periods were June through May for 2007/2008, 2015/2016 and 2023/2024, and June through February for 2019/2020. Catch rate is for all anglers targeting Largemouth Bass. Harvest is partitioned by the estimated number of fish harvested by non-tournament anglers and the number of fish retained by tournament anglers for weigh-in and release. The estimated number of fish released by weight category is for anglers targeting Largemouth Bass. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	2007/2008	2017/2018	2021/2022	2023/2024
Surface area (acres)	31,813	32,132	32,623	32,623
Directed angling effort (h)				
Tournament		12,046 (53)	8,332 (62)	66,347 (20)
Non-tournament		33,042 (30)	7,627 (58)	11,596 (23)
All bass anglers combined	51,852 (25)	45,088 (29)	15,959 (56)	77,943 (20)
Angling effort/acre	1.6 (25)	1.4 (29)	0.5 (56)	2.4 (20)
Catch rate (number/h)	0.6 (25)	0.7 (23)	0.8 (19)	0.6 (10)
Harvest				
Non-tournament harvest	1,404 (48)	506 (249)	0	109 (415)
Harvest/acre	0.3 (48)	<0.1 (249)	0	<0.1 (415)
Tournament weigh-in and release	7,373 (48)	3,050 (88)	2,536 (99)	16,833 (30)
Release by weight				
<4.0 lbs		23,216 (79)	13,391 (72)	41,205 (46)
4.0-6.9 lbs		1,402 (88)	702 (91)	2,107 (56)
7.0-9.9 lbs		126 (106)	0 (0)	195 (114)
≥10.0 lbs		0 (0)	0 (0)	0 (0)
Percent legal released (non-tournament)	83	87	100	96

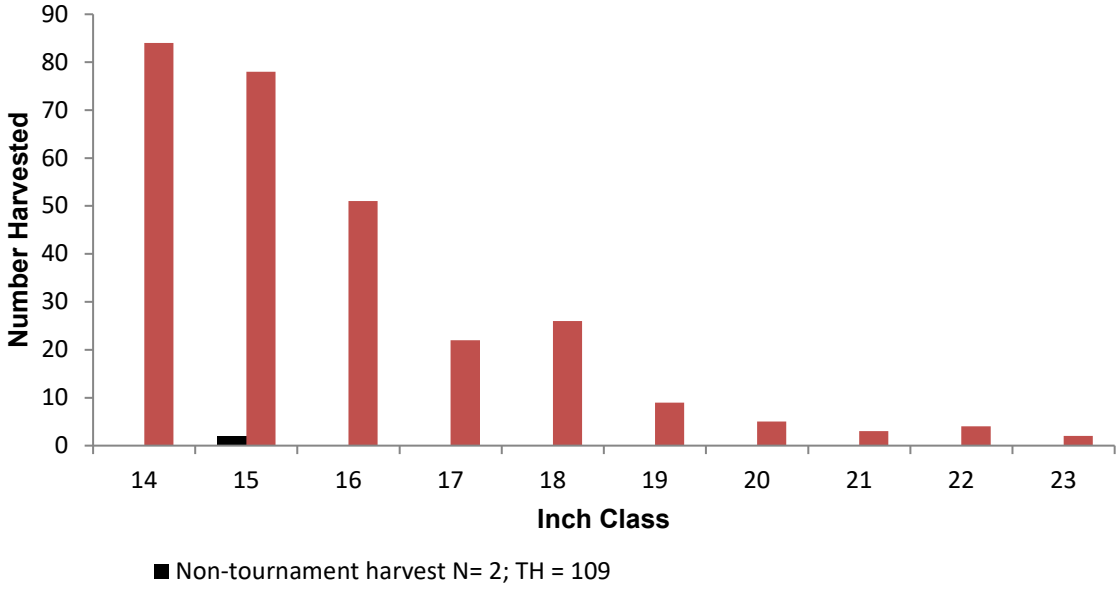
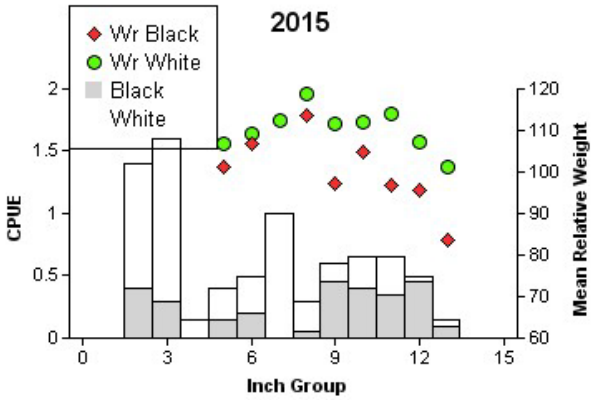
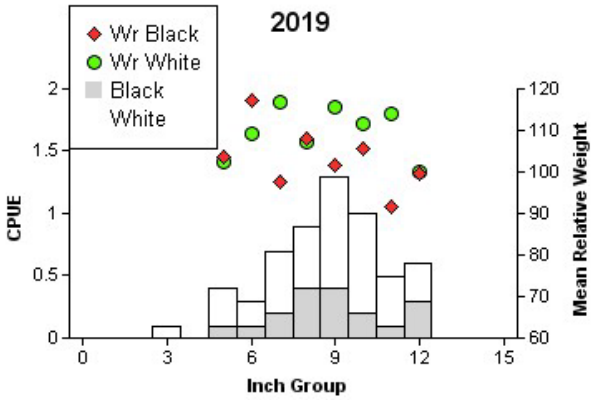


Figure 10. Length frequency of harvested Largemouth Bass observed during creel survey at Cedar Creek Reservoir, Texas, June through May 2023/2024, all anglers combined. N is the number of harvested Largemouth Bass observed during the creel survey, and TH is the total estimated harvest for the creel period.

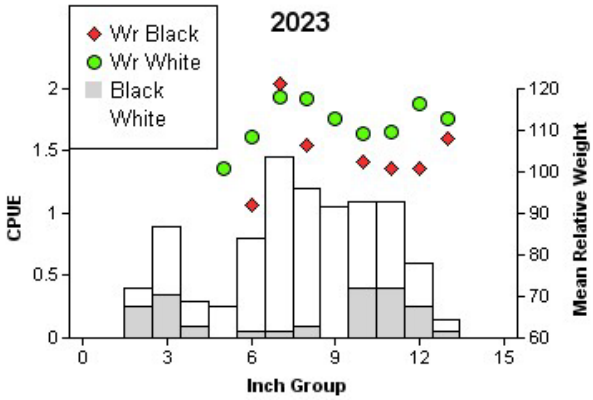
Crappie



Effort =	20.0
Total CPUE =	7.9 (28; 158)
Stock CPUE =	4.8 (22; 95)
PSD =	60 (10)



Effort =	10.0
Total CPUE =	5.8 (33; 58)
Stock CPUE =	5.7 (34; 57)
PSD =	75 (7)



Effort =	20.0
Total CPUE =	9.3 (21; 186)
Stock CPUE =	7.7 (25; 154)
PSD =	68 (7)

Figure 11. Number of Black and White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds and circles), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Cedar Creek Reservoir, Texas, 2015, 2019, and 2023.

Table 12. Creel survey statistics for crappie at Cedar Creek Reservoir, Texas, from 2007 through 2024. Survey periods were from June 1 through May 31. Survey periods were June through May for 2007/2008, 2015/2016 and 2023/2024, and June through February for 2019/2020. Total catch per hour is for anglers targeting crappie and total harvest is the estimated number of crappie harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	2007/2008	2015/2016	2019/2020	2023/2024
Surface area (acres)	31,813	32,132	32,623	32,623
Directed effort (h)	22,781 (25)	22,941 (31)	30,950 (47)	22,693 (24)
Directed effort/acre	0.7 (25)	0.7 (31)	0.9 (47)	0.7 (24)
Total catch per hour	1.3 (68)	1.5 (31)	1.0 (50)	2.0 (30)
Total harvest	22,051 (79)	38,973 (65)	31,920 (59)	34,713 (32)
White Crappie	11,578 (76)	4,702 (87)	16,772 (60)	23,528 (29)
Black Crappie	10,473 (82)	34,271 (62)	15,148 (58)	11,185 (37)
Harvest/acre	0.7 (44)	1.2 (65)	0.9 (59)	1.1 (32)
Percent legal released	54	2	0	5

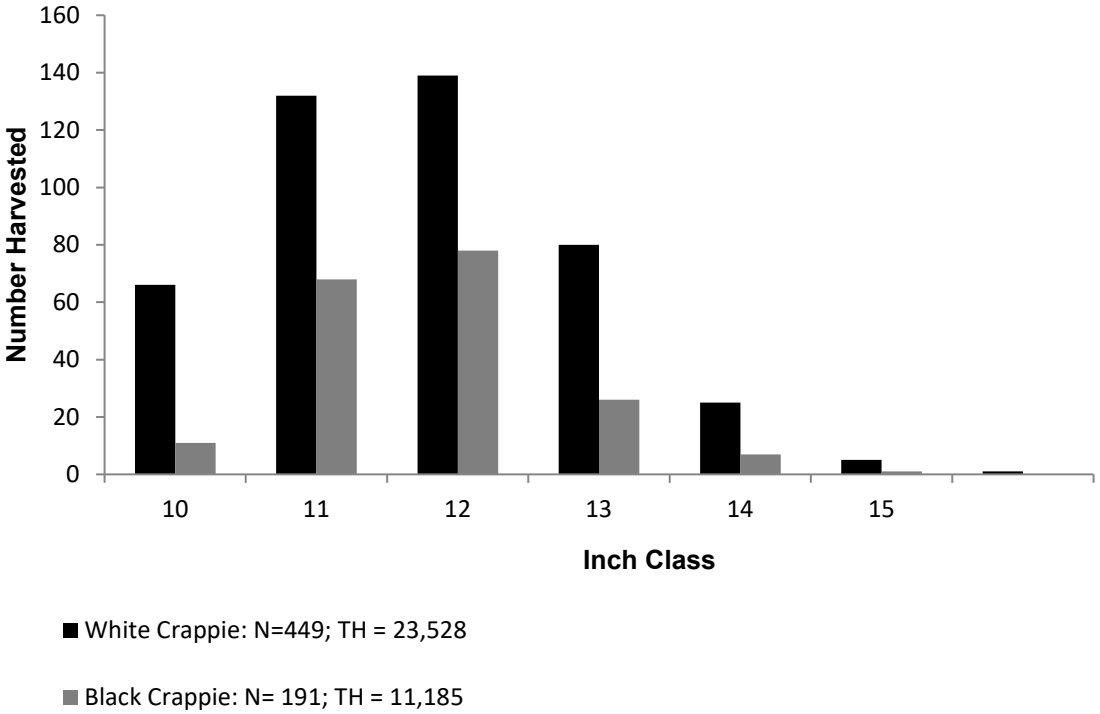


Figure 12. Length frequency of harvested White and Black Crappie observed during creel survey at Cedar Creek Reservoir, Texas, June through May 2023/2024, all anglers combined. N is the number of harvested crappie observed during the creel survey, and TH is the total estimated harvest for the creel period.

Proposed Sampling Schedule

Table 13. Proposed sampling schedule for Cedar Creek Reservoir, Texas. Survey period is June through May.

	Survey year			
	2024-2025	2025-2026	2026-2027	2027-2028
Angler access				X
Vegetation				X
Electrofishing - Fall				X
Trap netting				X
Gill netting				X
Creel survey				X
Report				X
Structural Habitat Survey				X

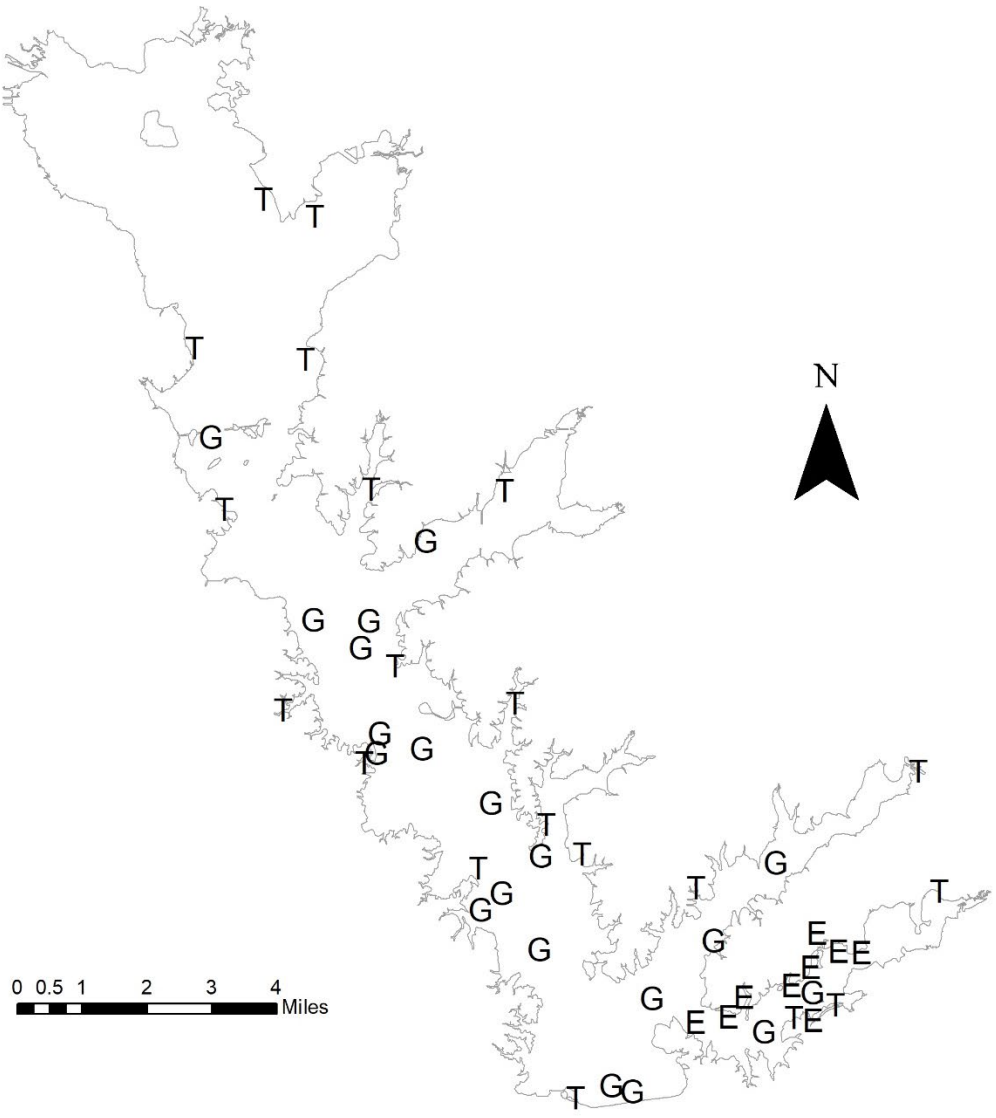
APPENDIX A – Catch rates for all species from all gear types

Number (N) and catch rate (CPUE) (RSE in parentheses) of all target species collected from all gear types from Cedar Creek Reservoir, Texas, June 2020 – May 2024. Sampling effort was 10 net nights for gill netting, 20 net nights for trap netting and 1.0 hour for electrofishing.

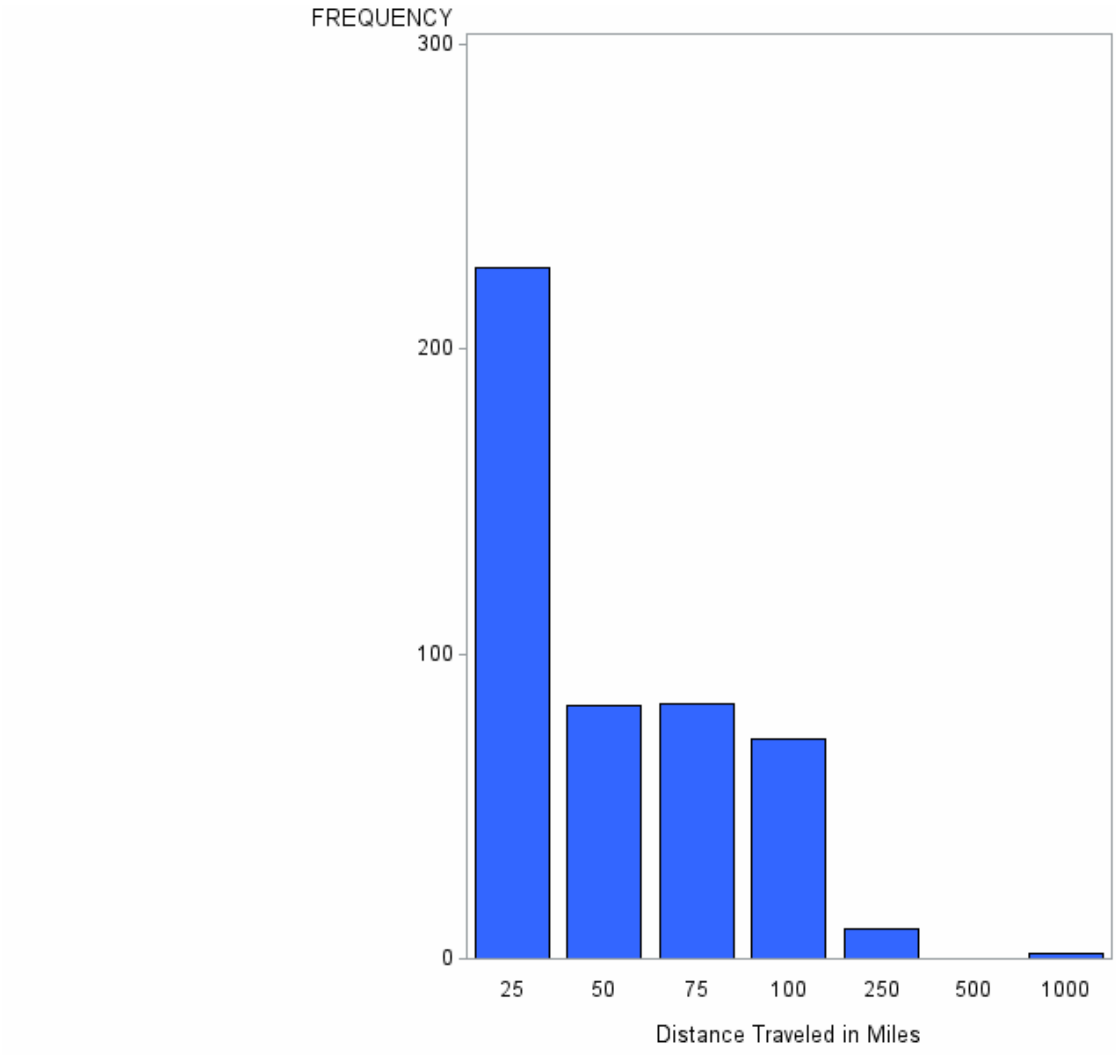
Species	Gill Netting		Trap Netting		Electrofishing	
	N	CPUE	N	CPUE	N	CPUE
Gizzard Shad					30	30.0 (77)
Threadfin Shad					5	5.0 (62)
Blue Catfish	351	35.1 (16)				
Channel Catfish	28	2.8 (45)				
White Bass	22	2.2 (54)				
Hybrid Striped Bass	13	1.3 (65)				
Largemouth Bass					8	8.0 (34)
White Crappie			146	7.3 (22)		
Black Crappie			40	2.0 (26)		

APPENDIX B – Map of sampling locations

Location of sampling sites, Cedar Creek Reservoir, Texas, 2021-2024. Gill netting, trap netting and electrofishing are indicated by a G, T and E . Water level was near full pool at time of sampling.



APPENDIX C – Reporting of creel ZIP codes



Frequency of anglers that traveled various distances (miles) to Cedar Creek Reservoir, Texas, as determined from the June 2023 through May 2024 creel survey.

Life's better outside.®

In accordance with Texas State Depository Law, this publication is available at the
Texas State Publications Clearinghouse and/or Texas Depository Libraries.