

# Coleto Creek Reservoir

## 2020 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

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INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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## Survey and Management Summary

Fish populations in Coletto Creek Reservoir were surveyed in 2018 using fall electrofishing, in 2019 using spring electrofishing, in 2020 using fall electrofishing, low-frequency electrofishing, and baited hoop nets and in 2021 using gill nets to assess population trends for important sport fishes. Anglers were surveyed from January through June 2021 with an access point creel survey. Historical data are presented with the 2017-2021 data for comparison. This report summarizes the survey results and contains a management plan for the reservoir based on those findings.

**Reservoir Description:** Coletto Creek Reservoir is a 3,100-acre (averaged 2,217 acres in 2020-2021) impoundment located on Coletto Creek in the Guadalupe River Basin, 13 miles southwest of Victoria, Texas. Guadalupe-Blanco River Authority (GBRA) serves as the controlling authority and the reservoir receives water from both the Coletto and Perdido creeks as well as several smaller tributaries. Primary uses include power plant cooling and recreation. Approximately 600 acres are used for cooling ponds and inaccessible to anglers. Water level is typically stable; however, over the survey period water levels fluctuated 5-feet from conservation pool elevation. Substrate was composed primarily of clays, deep loams, and small rock. Littoral habitat consisted primarily of woody debris, native floating-leaved vegetation, and periodically flooded terrestrial vegetation.

**Management History:** Important sport fish species include Blue and Channel Catfish, Largemouth Bass, and crappies. Palmetto Bass and Red Drum were previously stocked, but these stockings were discontinued due to low directed angling effort. Recent management efforts focused on monitoring and control of nuisance aquatic vegetation, enhancement of structural fish habitat, supplementing the Largemouth Bass population with stocking, compiling catch and harvest statistics on important sport fish populations, and exploratory use and evaluation of low-frequency electrofishing and baited tandem hoop nets to collect population data on catfishes. District staff has also compiled tournament data records to document catches of trophy-size Largemouth Bass. Historically, invasive aquatic vegetation (hydrilla, water milfoil, and water hyacinth) has restricted recreational access. Staff annually monitored access areas where invasive vegetation could restrict use. District staff worked with GBRA staff to manage invasive vegetation and herbicides were utilized for vegetation control, as needed. Angler harvest of all sport fishes has been regulated according to statewide size and bag limits.

### Fish Community

- **Prey species:** Gizzard Shad and various Sunfish species formed the reservoirs forage base. Most prey species collected were adequate size for predator fish. Bluegill abundance substantially decreased over the study period.
- **Catfishes:** Blue and Channel Catfish were moderately abundant, and the Blue Catfish size structure comprised a wide size range of fish. Legal-size catfish were abundant and available for angler harvest. Catfishes represented a substantial portion of the total directed fishing effort (36.1 %) in 2021. Flathead Catfish were present in low abundance.
- **White Bass:** Abundance of White Bass was low, and few fish were available for angler harvest. No effort was directed towards White Bass and total harvest was low.
- **Largemouth Bass:** Largemouth Bass abundance decreased slightly from prior surveys and size structure was primarily comprised of smaller individuals. Largemouth Bass remained the most sought sport fish in the reservoir; however, angling success and directed effort for both tournament and non-tournament anglers were substantially reduced compared to prior years.
- **Crappies:** Crappies remained an important component to the overall sport fishery, especially for harvest-oriented anglers. Angler catch rate was 1.7/h and total harvest was 1,780 fish.

**Management Strategies:** Continue to manage sport fish populations under statewide harvest regulations. Conduct creel survey to collect quantitative data on angler use. Stock Florida Largemouth Bass to maintain a high level of trophy production potential and continue to collect data for the Largemouth Bass trophy database. Work with GBRA and other local partners to continue to develop and implement habitat enhancement projects. Monitor coverage and potential expansion of non-native vegetation and continue to work with GBRA on all vegetation control activities.

## Introduction

This document is a summary of fisheries data collected from Coletto Creek Reservoir from 2017-2021. 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 2017-2021 data for comparison.

## Reservoir Description

Coletto Creek Reservoir is a 3,100-acre reservoir located in the Guadalupe River Basin on Coletto Creek. The reservoir was constructed in 1980 and is located 13 miles southwest of Victoria. The reservoir receives water from Coletto and Perdido creeks and several smaller tributaries. The reservoir is controlled and operated by the Guadalupe-Blanco River Authority (GBRA). Its main purposes are use as power plant cooling supply and recreation. Roughly 600 acres are used for cooling ponds and thus inaccessible to anglers. The reservoir typically experiences little water level fluctuation. However, water level fluctuated up to five feet below conservation elevation over the survey period (Figure 1). Secchi disc measurements of water clarity ranged from 35 to 51 centimeters. Substrate was composed primarily of clays, deep loams and small rock. Littoral habitat consisted of timber stands, periodically flooded terrestrial vegetation, and floating-leaved native vegetation (American lotus, spatterdock, and water lily). Non-native species present included water hyacinth. Historically, hydrilla, water milfoil, and water hyacinth have been problematic in the reservoir and subsequently treated with herbicides and bio-control organisms under the guidance of Texas Parks and Wildlife (TPWD) Corpus Christi District and the GBRA. A structural habitat enhancement initiative was implemented by TPWD and GBRA in 2020 to increase structural habitat in locations void of habitat features. Other descriptive characteristics for Coletto Creek Reservoir are in Table 1.

## Angler Access

Coletto Creek Reservoir has one public boat ramp located at Coletto Creek Park and is maintained and operated by GBRA. Additional boat ramp characteristics are in Table 2. Shoreline access consisted of the entire shoreline within Coletto Creek Park grounds, including one fishing pier.

## Management History

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Binion and McDonald 2017) included:

1. Restore littoral habitat (i.e., vegetation) after reservoir-wide loss was detected in 2016.

**Action:** TPWD worked with the GBRA and other local partners (Coletto Creek Friends of Reservoir Chapter, Texas B.A.S.S. Nation, Luminant Energy) to secure grant funding to implement habitat restoration and enhancement projects. Phase 1 was completed with the installation of artificial fish structural arrays (N = 84 structures, across 11 sites; Appendix D) in early 2020. The native aquatic vegetation reestablishment (Phase 2) component is scheduled for planting in fall 2021.

2. Implement a creel survey to collect fisheries-dependent data (e.g., angler effort, harvest, and catch) and document fisheries value.

**Action:** District staff conducted an access point creel survey from 1 January 2021 through 30 June 2021. Further, district staff categorized Largemouth Bass catches by weight category, providing additional data for the reservoir trophy database.

3. Monitor presence, distribution, and spread of invasive species (e.g., aquatic vegetation, zebra mussels) and implement control measures, as needed.

**Action:** Invasive vegetation was monitored annually with vegetation surveys. District staff coordinated with the TPWD Aquatic Habitat Enhancement (AHE) team and GBRA to manage and control water hyacinth through herbicide applications (2017; N = 17 acres).

Further, district staff assisted TPWD's invasive species coordinator with zebra mussel settlement sampling at several waterbodies within the Guadalupe River basin and provided signage to GBRA for posting at boater access locations. Press releases were disseminated to statewide and local media.

**Harvest regulation history:** Harvest of sport fishes in Coletto Creek Reservoir are currently managed with statewide regulations (Table 3). When Coletto Creek Reservoir opened to anglers in 1981, Largemouth Bass were managed with a 16-inch minimum length limit (MLL) and three fish daily bag limit (DBL). In the late 1980's the regulation was changed to the current statewide regulation (14-inch MLL, 5-fish DBL). Mandatory harvest reporting for Alligator Gar was implemented 1 September 2019.

**Stocking history:** Largemouth Bass (LMB) were last stocked in the reservoir in 2019. Northern Largemouth Bass (NLMB) were stocked from 2003 to 2005 as part of a research project examining the potential for increasing NLMB alleles in reservoirs with high Florida Largemouth Bass (FLMB) introgression. Red Drum were stocked in 2001 as a management action to create another sport fish population; however, Red Drum were never collected during routine fisheries surveys and only anecdotal angler catches were reported. Palmetto Bass were last stocked in 1999; stockings were discontinued due to low gill net catch rates and minimal angling effort directed toward this species. A complete stocking history can be found in Table 4.

**Vegetation/habitat management history:** Historically, hydrilla and water milfoil have been problematic in the reservoir restricting recreational access. Infestations at boat ramps have been treated with herbicides as needed. Additionally, bio-control weevils (hydrilla and water milfoil flies) have been introduced to assist with control. Hydrilla abundance in the reservoir has decreased substantially since 1998 and water milfoil was last detected in 2016. Isolated colonies of water hyacinth were found on the reservoir in 2005 and initially was controlled by mechanical removal. Water hyacinth coverage expanded in 2016 – 2017 and was treated with herbicides by TPWD in 2017 (17 acres). Phase 1 (fish structural arrays) of a larger habitat restoration and enhancement initiative was completed in January 2020 (Appendix D).

**Water transfer:** Coletto Creek Reservoir is primarily used for recreation and as a cooling pond for the Coletto Creek Power coal-fired plant. There is one pumping station on the reservoir with the capacity to pump water in from the Guadalupe River. There are no pending proposals to install additional pump stations. No inter-basin transfers exist.

## Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Coletto Creek Reservoir (Binion and McDonald 2017). Primary components of the OBS plan are listed in Table 5. All survey sites were randomly selected, and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

**Electrofishing** – Largemouth Bass, sunfishes, Gizzard Shad, and Threadfin Shad were collected by electrofishing (1 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. Ages for Largemouth Bass were determined using otoliths from 15 randomly selected fish (range 13.0 to 14.9 inches).

**Gill netting** – Blue Catfish, Channel Catfish, and White 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).

**Low-frequency electrofishing** – Blue Catfish were collected by low-frequency electrofishing (1 hour at 20, 3-minute stations). CPUE for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

**Tandem hoop netting** – Channel Catfish were collected using baited tandem hoop-nets (5 series at 5 stations). Nets were baited with soap and deployed for 2-night soak durations. CPUE for tandem hoop netting was recorded as the number of fish caught per tandem hoop net series (fish/series).

**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 X SE of the estimate/estimate) was calculated for all CPUE and creel statistics.

**Creel survey** – An access-point creel survey was conducted from January to June in 2021. Angler interviews were conducted on 7 weekend days and 5 weekdays per quarter to assess angler effort, catch, and harvest statistics in accordance with the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017). Prior to 2021, a roving creel survey design was utilized (district staff implemented an access-point creel to increase sampling efficiency and obtain completed trip data). Mandatory harvest reporting for Alligator Gar was implemented 1 September 2019.

**Habitat** –Vegetation surveys were conducted in 2017–2020 to monitor expansion of water hyacinth and hydrilla, and water milfoil and to document native vegetation distribution and acreage. Habitat was assessed with the digital shapefile method (TPWD, Inland Fisheries Division, unpublished manual revised 2017) in 2020.

**Water level** – Source for water level data was the United States Geological Service (USGS) website (<https://waterdata.usgs.gov>). Accessed 1 April 2021.

## Results and Discussion

**Habitat:** Littoral zone habitat consisted primarily of natural shoreline, standing timber, periodically flooded terrestrial vegetation, and native floating-leaved vegetation. Total native vegetation coverage was 31 acres (1.4%) in 2020, slightly higher than the native vegetative coverage in 2016 (6 acres; < 1.0%), yet still substantially reduced from 2013 (211 acres; 10.2%; Table 6) levels. Spatterdock, water lily, and American lotus were the most abundant native vegetation species encountered. Notably, no submerged vegetation was observed in 2020 and the large-scale reductions in total vegetative habitat first documented in 2016 (Binion and McDonald 2017) have remained. Total non-native vegetation coverage was low (2 acres; < 1.0%) and similar to coverage in 2016 (7 acres; < 1.0%). Water hyacinth was the only non-native species detected in 2020.

To address the substantial losses observed in littoral habitat (Binion and McDonald 2017), district staff worked with GBRA and other project partners (Coletto Bassmaster Friends of Reservoir Chapter, Texas BASS Nation, Luminant Energy) to leverage opportunities to develop and implement habitat enhancement projects. In early 2020, TPWD and our partners completed Phase I with the installation of artificial fish structures (N = 84) across 11 locations. Each location contains a fish structural array in varying complexity and size. (Appendix D). Roughly 11-acres of structural habitat were enhanced in 2020, further supplementing total aquatic habitat. Phase II (native aquatic vegetation reestablishment) will commence with a native planting initiative scheduled for the Fall of 2021.

**Creel:** The reservoir continues to be a popular South Texas destination for anglers; however, total fishing effort and direct expenditures were greatly reduced in 2021 relative to 2017. Directed fishing effort by anglers in 2021 was highest for Largemouth Bass [38.2%; combined tournament (5.9%) and non-tournament (32.3%) anglers], followed by catfishes (36.1%), crappies (20.6%), and no species preference (3.9%; Table 7). Total fishing effort for all species at Coletto Creek Reservoir in 2021 was 18,419 h, substantially lower than the total fishing effort observed in 2017 (64,489 h). Anglers spent an estimated \$149,221 on direct expenditures in 2021 (Table 8). The substantial reductions in total fishing effort and direct expenditures were likely attributed to poor habitat conditions and the reductions in abundance of important sport fish (i.e., Largemouth Bass, catfishes) and forage (sunfishes) species. While some anglers traveled great distances (> 1000 miles) to fish at the reservoir, the majority (> 90%) resided within 100 miles (Appendix E).

**Prey species:** The objective-based sampling objective for both Gizzard Shad (N ≥ 50 fish) and Bluegill (N ≥ 50 fish) were attained (Table 5). Specifically, Gizzard Shad were moderately abundant and catch rates were consistent across years (CPUE range: 50.0 – 67.0/h; Figure 2). Reduced index of vulnerability indicated an increase in abundance of larger (i.e., ≥ 8 inches) Gizzard Shad size over time; yet the majority collected in 2020 were still available as prey (IOV = 69). Bluegill abundance was substantially reduced in 2020 (65.0/h) relative to 2018 (174.0/h) and 2016 (241.0/h; Figure 3). A similar declining trend in relative abundance was also observed for Redear Sunfish where catch rates declined from 148.0/h (2016) to 30.0/h (2020; Figure 4). Overall, the reduction of submerged aquatic macrophytes has likely contributed to the observed loss in total sunfish abundance. The majority of Bluegill collected were < 6 inches, a suitable size as prey for most predators. Several large Redear Sunfish were collected (CPUE-6 = 25.0/h; Figure 4), providing added recreational opportunity to anglers. Threadfin Shad, Bullhead Minnow, Redbreast Sunfish, Longear Sunfish, and Tilapia further contributed to the overall forage base (Appendix A).

**Catfishes:** Blue Catfish abundance decreased substantially in 2021 (CPUE = 5.0/nn, RSE = 30) when compared to 2017 (15.0/nn, RSE = 21; Figure 5). Yet, the 2021 catch rate remained above the historical Blue Catfish gill net catch rate (mean CPUE = 2.3/nn). While PSD was low (2), a wide size range of fish were collected (size range: 6 – 33 inches) and sampling indicated good numbers of harvestable size fish available to anglers with potential for trophy angling opportunity. Relative weight values were low (< 85) for smaller size classes, then increased with increasing total length. In addition to gill netting, low-frequency electrofishing (LFE) was utilized as an alternative sampling method but only yielded a catch rate of 24.0/h and high RSE (51). After utilizing LFE in 2015 and 2020 with low sampling precision, use of LFE as an alternative sampling gear to monitor general trends in Blue Catfish population metrics will be discontinued.



The gill net catch rate for Channel Catfish in 2021 was 4.6/nn, roughly half the catch rate observed in 2017 (9.0/nn; Figure 6). Proportional stock density trended downward over the survey period and the size composition in 2021 was poor (PSD = 0). However, roughly 43% of the Channel Catfish collected were available to angler harvest and body condition was desirable ( $W_r$  range: 90 – 101) for legal-size fish ( $\geq 12$  inches). Baited tandem hoop nets were deployed in the summers of 2017 and 2020 with low success (N = 10 Channel Catfish for both surveys). Due to low sampling efficiency use of baited tandem hoop nets as an alternative sampling gear to monitor trends in Channel Catfish population metrics will be discontinued.

Catfishes were the second most popular sport fish and directed effort comprised 6,656 angler hours (36.1% total directed effort; Table 9) in 2021. Angler catch rate was 0.49/h and total estimated harvest was 1,232 fish, values substantially reduced when compared to 2017 (angler CPUE = 1.11/h, total harvest = 3,044; Table 9). Twenty-seven percent of legal catfishes were voluntary released by anglers. Blue Catfish comprised the majority (72%) of the harvest composition. Harvested catfish ranged in length between 12 – 25 inches (Figures 7 and 8).

**White Bass:** Relative abundance of White Bass was low (0.6/nn; Figure 9). While catches were poor, most (67%) of the fish collected in 2021 were available for angler harvest. Relative weights were poor ( $< 80$ ) across years and size classes (Figure 9). No angling effort (0.0%) was directed toward White Bass in 2021 and total harvest was low (Table 10). Harvested fish ranged between 10 – 11 inches total length (Figure 10).

**Largemouth Bass:** All objective-based sampling objectives set for Largemouth Bass were achieved (Table 5). Relative abundance of Largemouth Bass remained high and was relatively consistent over the survey period (CPUE range: 133.0/h – 166.0/h). The catch rate for stock-size fish ( $\geq 8$  inches) in 2020 was 99.0/h (Figure 11). However, only 6% of the total electrofishing catch comprised legal-size fish (CPUE-14 = 8.0). Population size structure was poor (PSD = 32) in 2020 and indicated a population dominated by smaller size classes (Figure 12). Further, a bass-only spring electrofishing survey confirmed the overall decline in size composition and reduced abundance of legal-size Largemouth Bass (Figure 12). Relative weight values were suboptimal and ranged from 77 – 89 in 2020 and generally decreased with decreasing total length. Age and growth analysis indicated a slight deceleration in growth in 2018 (mean age at 14 inches = 3.3 years). However, mean age at legal length (14 inches) in 2020 was 2.7 years, a value more consistent with the historical average (Table 11). Introgression of FLMB genetics in the population has remained high since 2001 (Binion and McDonald 2017).

Directed effort, catch per hour, and total harvest for Largemouth Bass was 7,049 h, 0.8/h, and 144 fish, respectively, from 1 January 2021 through 30 June 2021 (Table 12). Consistent with the general trends with other recreationally important species, these metrics were substantially lower than observed in 2017 (directed effort = 48,180 h, angler CPUE = 1.8 fish/h, and total harvest = 2,062 fish). Largemouth Bass tournaments comprised a small component of the Largemouth Bass fishery. In 2021, tournament anglers represented 5.9% of total fishing effort (Table 8) and 15.5% of the total Largemouth Bass fishing effort, respectively. Catch and release of legal-size fish was frequent indicated by percent legal Largemouth Bass released (90%; Table 12). Harvested fish ranged from 14 – 24 inches total length in 2021 (Figure 13). From 1 January 2021 thru 30 June 2021, an estimated 59 Largemouth Bass weighing between 7 and 9.9 lbs. and 100 fish weighing between 4 and 6.9 lbs. were caught and released by anglers.

Collectively, the fisheries independent (electrofishing surveys) and dependent (creel survey) sampling data indicated an overall decline in various important population metrics (i.e., CPUE-14, size structure, body condition, growth, angler catch rate). The decline in these population dynamics and fisheries metrics indicate suboptimal reservoir conditions and correlate strongly to the overall reductions in fisheries habitat and forage abundance.

**Crappies:** Both Black and White Crappie were collected as bycatch in the 2020-2021 (Appendix A) objective-based sampling surveys. Trap netting for crappies was discontinued in 2014 due inconsistent catches and poor data resolution.

Crappies were the third most sought sport fish in the reservoir and provided excellent angling opportunity. Directed effort for crappies was 3,799 h (20.6%) in 2021 and angler success was high (angler CPUE =

1.7/h; Table 13). Total harvest for crappies was 1,780 fish and harvested fish ranged in length between 10 – 14 inches (Figure 14). Crappies continued to be an important component of the overall sport fishery.

# Fisheries Management Plan for Coletto Creek Reservoir, Texas

Prepared – July 2021

**ISSUE 1:** Substantial losses in littoral fisheries habitat (in particular submersed aquatic vegetation) were first documented in 2016. Since then, littoral habitat has remained limited relative to historical levels and Largemouth Bass forage populations have declined. Accordingly, TPWD worked in collaboration with GBRA and other various project partners (Coletto Creek Friends of Reservoir Chapter, Coletto Bassmasters, Texas B.A.S.S. Nation, and Luminant Energy) to develop and implement a reservoir-wide habitat enhancement initiative. Phase 1 was completed in 2019 – 2020 with the installation of multiple structural fish arrays (N = 11). The Phase 2 (aquatic vegetation reestablishment) pilot is scheduled for planting in Fall 2021.

## MANAGEMENT STRATEGIES

1. Continue to work collaboratively with GBRA and other local partners to identify funding opportunities and leverage partnerships to implement habitat enhancement initiatives.
2. Monitor and track changes in littoral vegetative habitat with a vegetation survey.
3. Monitor Largemouth Bass and forage population responses to vegetation restoration efforts with electrofishing surveys in 2022 and 2024.

**ISSUE 2:** Coletto Creek Reservoir is valued for its high-quality Largemouth Bass fishery and for catches of trophy-size fish. From 2012 – 2021, 487 Largemouth Bass weighing between 7 and 10 lbs. were documented as caught and released by anglers. Further, the lake record currently stands at 12.81 pounds and anecdotal reports of trophy catches are common.

## MANAGEMENT STRATEGIES

1. Request FLMB fingerlings annually (when water level and habitat conditions permit) for stocking to maintain a high-level Florida Bass genetic influence and thus maximize production potential of trophy fish.
2. Implement habitat enhancement measures to increase the performance and recruitment of stocked FLMB.
3. Conduct a creel survey in 2025 and work with local partners (Texas B.A.S.S. Nation, Coletto Creek Friends of Reservoirs, Coletto Bassmasters) to collect Largemouth Bass tournament data and to maintain and collect additional data for the Largemouth Bass trophy database.
4. Promote the ShareLunker program and monitor waterbody entries to the program.

**ISSUE 3:** Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. The financial costs of controlling and/or eradicating 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. Invasive plants species such as water hyacinth and hydrilla have historically been a severe problem, primarily in the Coletto Creek arm and upper tributaries of the reservoir. These invasive plants restrict recreational use and can impact the quality of fish and wildlife habitat restricting growth and colonization of native vegetation. Further, zebra mussels (*Dreissena polymorpha*) were first detected in the Guadalupe River Basin in Canyon Lake in 2017. Since that time, zebra mussels have expanded to infest (established adult population) or test positive (i.e., larvae detected) at several downstream Guadalupe Chain Lakes (e.g., Dunlap, McQueeney, Placid).

## MANAGEMENT STRATEGIES

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

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

3. Disseminate educational materials to the public about invasive species using media and the internet.
4. Make a speaking point about invasive species when presenting to constituent and user groups.
5. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.
6. Continue to cooperate with the GBRA on all vegetation control activities and monitor water hyacinth and other invasive vegetation through vegetation surveys on an annual basis.
7. Coordinate with TPWD's invasive species coordinator and GBRA to develop an appropriate zebra mussel monitoring plan (i.e., larval tows, distribute settlement samplers).

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

### Sport fish, forage fish, and other important fishes

Sport fishes in Coletto Creek Reservoir include Blue Catfish, Channel Catfish, and Flathead Catfish, White Bass, Largemouth Bass, Black Crappie, and White Crappie. Important forage species include Gizzard Shad, Threadfin Shad, Bluegill, Redear Sunfish, and Redbreast Sunfish.

### Low Density or Under-Utilized Fisheries

**Flathead Catfish:** Flathead Catfish are present in the reservoir in low abundance. No Flathead Catfish were collected in gill nets from 1998 to 2014 and only one was collected in gill nets in both the 2017 and 2021 surveys, respectively. Creel survey data indicates there is no directed effort towards this catfish species. Exploratory use of low-frequency electrofishing was conducted in 2015 and 2020 to determine its utility for use as alternative gear for collecting trend information for this species. Twenty, randomly selected 3-minute LF electrofishing stations were sampled in the summers of 2015 and 2020. No Flathead Catfish were collected during these surveys and use of LFE will be discontinued for catfishes at the reservoir. Presence/absence will be noted in standard gill net samples (Table 14). Currently, the population does not warrant expending additional sampling effort.

**White Bass:** White Bass are present in the reservoir in low abundance. Gill net CPUEs from 1998-2021 ranged from 0.4 to 10.6 fish/nn with RSE's ranging from 29 – 73. Minimal conclusions regarding the trend data on CPUE, size structure, and body condition of White Bass can be made due to high variability in the gill net catch data. Due to the inconsistent catches and associated high sampling variability and low directed fishing effort (< 1.0%); directed effort, angler catch, and angler harvest will be monitored with a creel survey conducted in 2025 to detect any large-scale shifts in White Bass metrics; lending important insight into overall population status and dynamics that may justify more intensive investigation. CPUE will be recorded for standard gill net samples (Table 14).

### Survey objectives, fisheries metrics, and sampling objectives

**Blue Catfish:** Blue Catfish are present in Coletto Creek Reservoir but historically abundance has been low. Gill net CPUEs from 1985-2014 ranged from 0.0 fish/nn to 1.8 fish/nn. The 2017 gill net survey yielded a record catch rate of 15.0/nn with a low RSE (21). Additionally, a LFE survey conducted in 2015 netted 149.0/h, albeit size composition and RSE values were poor. Low-frequency electrofishing was utilized again in 2020 to further evaluate its utility as an alternative catfish sampling gear. Again, the LFE survey conducted in 2020 failed to provide useful trend information (i.e., low CPUE and high RSE) relative to data collected with gill net sampling. Collection of trend data with spring gill netting once every four years will allow for determination of large-scale changes in basic population dynamics (relative abundance, size frequency, and body condition) that may warrant further investigation and more intensive sampling. A minimum of 10 randomly selected gill nets will be sampled in the spring of 2025 (Table 14) with objectives to collect 50 total fish. The desired level of precision is  $RSE \leq 25$  for CPUE-Total. Up to 5 additional gill nets may be deployed (at biologist discretion) to achieve sampling objectives and precision. Finally, directed effort and angler catch and harvest will be monitored with a creel survey conducted in 2025 to assess large-scale changes in angler effort, catch, and harvest; lending important insight into overall population dynamics and potential problems that may warrant more thorough study (Table 14).

**Channel Catfish:** Historically, Channel Catfish have been the predominant catfish species in Coletto Creek Reservoir. Gill net CPUEs from 1985-2021 have ranged from 0.8 to 9.0 fish/nn (RSE range: 19 –

47) and gill net sampling has produced highly variable catch rates for monitoring trends in relative abundance. However, the 2017 gill net survey yielded a record catch rate of 9.0/nn with an acceptable RSE (19). Further, the 2021 gill net CPUE (4.6/nn) exceeded the historical mean catch rate (4.2/nn) with an acceptable RSE (22). Exploratory baited tandem hoop net surveys were conducted in 2017 and 2020, but only 10 Channel Catfish were collected across both survey efforts. Collection of trend data with spring gill netting once every four years will allow for determination of large-scale changes in basic population dynamics (relative abundance, size frequency, and body condition) that may warrant further investigation and more intensive sampling. A minimum of 10 randomly selected gill nets will be sampled in the spring of 2025 (Table 14) with objectives to collect 50 total fish. The desired level of precision is  $RSE \leq 25$  for CPUE-Total. Up to 5 additional gill nets may be deployed (at biologist discretion) to achieve sampling objectives and precision. Finally, directed effort and angler catch and harvest will be monitored with a creel survey conducted in 2025 to assess large-scale changes in angler effort, catch, and harvest; lending important insight into overall population dynamics and potential problems that may warrant more thorough study (Table 14).

**Largemouth Bass:** Largemouth bass are abundant in Coletto Creek Reservoir and are the most popular sport fish (38% total directed effort). Results from 2021 creel survey showed directed angling effort for Largemouth Bass to be 3 hours/acre, and 59 Largemouth Bass over 7 pounds were estimated to be caught and released by anglers. Trend data on CPUE, size structure, and body condition has been collected intensively since 1986 with electrofishing. The collection of biennial trend data with fall electrofishing will allow for determination of large-scale changes in basic population dynamics (abundance, size structure indices, body condition, age-at-length) that may warrant further investigation with more intensive sampling and/or management action. A minimum of 12 randomly selected electrofishing sites will be sampled to collect 50 stock-size fish for PSD indices and relative weight. The desired level of precision is  $RSE \leq 25$  for CPUE-S. Further, Category two age and growth analysis [i.e., mean age at legal length (14 in),  $N =$  minimum of 13 fish between 13.0 – 14.9 in] will be conducted for each sample year to assess any changes in growth to the minimum length limit. Sampling will continue up to an additional 12 stations until all objectives are attained. In addition to biennial fall electrofishing (2022 and 2024), a spring bass-only electrofishing survey will be conducted in 2024 to assess the abundance of larger fish (i.e.,  $\geq 14$  inches). Finally, directed effort and angler catch and harvest will be monitored with a creel survey conducted in 2025 to monitor for any large-scale changes in angling effort, catch, and harvest to gain further insight into population characteristics (Table 14). Largemouth Bass catch data recorded from creel surveys will be categorized by weight (<4, 4 – 6.9, 7 – 9.9, >10) to document catches of trophy-size fish and to maintain the trophy LMB database at the reservoir.

**Crappies:** Considerable trap net sampling efforts (random and biologist-selected, standard and dual-cod, fall and spring) have yielded very little population data on crappies and data quality was poor. Historic (1998 – 2014) catch rates for White Crappie have ranged from 0.0 – 12.4/nn with RSE values ranging from 32 – 72. Staff once thought crappie as a negligible fishery due to low trap net catches. The fishery was realized however after implementation of a creel survey in 2005-2006. Crappies are an important component of the overall sport fishery at the reservoir; representing up to 21% of the total angling effort. Due to inconsistent trap net catch data and inability to assess trends in population metrics, creel survey data will be used to monitor large-scale changes in crappie angler catch, effort, and harvest; lending important insight into overall crappie population dynamics (Table 14).

**Shad and Bluegill:** Gizzard Shad and Bluegill are the primary forage at Coletto Creek Reservoir. Like Largemouth Bass, trend data on CPUE and size structure of Gizzard Shad and Bluegill have been collected intensively since 1986 with electrofishing. Continuation of sampling, as per Largemouth Bass above, will allow for monitoring of large-scale changes in Gizzard Shad and Bluegill relative abundance

and size structure. Sampling effort based on achieving sampling objectives for Largemouth Bass will result in sufficient numbers for size structure estimation (Gizzard Shad IOV; 50 fish minimum, Bluegill PSD; 50 fish minimum at 12 randomly selected 5-minute stations with 90% confidence) and relative abundance estimates (Gizzard Shad and Bluegill CPUE-Total; RSE < 25). Threadfin Shad, minnows, and other sunfish presence/absence will be noted in electrofishing collections. No additional effort will be expended beyond sampling effort conducted for Largemouth Bass data collection.

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- DiCenzo, V.J., M.J. Maceina, and M.R. Stimpert. 1996. Relationships between reservoir trophic state and Gizzard Shad population characteristics in Alabama reservoirs. *North American Journal of Fisheries Management* 16:888-895.
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- Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional size distribution: A further refinement of population size structure index terminology. *Fisheries* 32: 348.
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## Tables and Figures

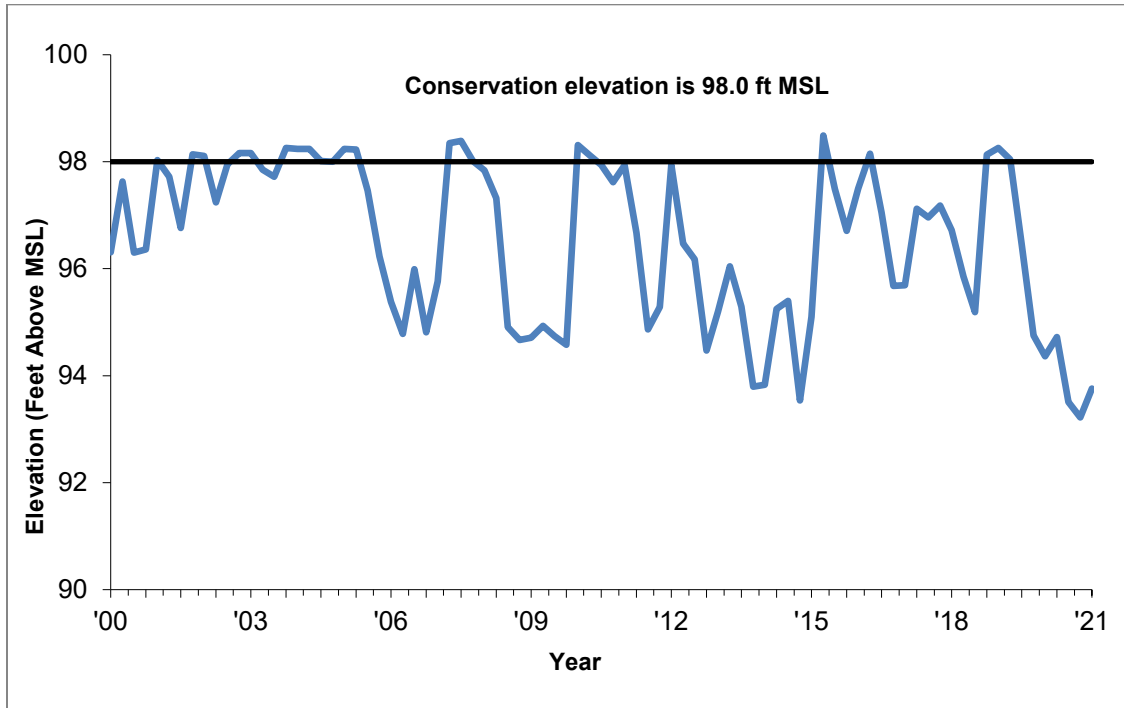


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Coletto Creek Reservoir, Texas, 2000 through March 2021.

Table 1. Characteristics of Coletto Creek Reservoir, Texas.

Characteristic	Description
Year constructed	1980
Controlling authority	Guadalupe-Blanco River Authority
Counties	Goliad, Victoria
Reservoir type	Tributary
Shoreline Development Index	7.1
Conductivity ( $\mu\text{S}/\text{cm}$ )	500 – 700

Table 2. Boat ramp characteristics for Coletto Creek Reservoir, Texas, August 2020. Reservoir elevation at time of survey was 93.5 feet above mean sea level.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
Coletto Creek Park	28.72039° -97.17385°	Y	40+	91.0	Excellent, no access issues

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

Species	Bag Limit	Length Limit
Gar, Alligator	1 <sup>a</sup>	none
Catfish: Channel and Blue, their hybrids and subspecies	25 (in any combination)	12-inch minimum
Catfish, Flathead	5	18-inch minimum
Bass, White	25	10-inch minimum
Bass, Largemouth	5	14-inch minimum
Crappie: White and Black, their hybrids and subspecies	25 (in any combination)	10-inch minimum

<sup>a</sup> Mandatory harvest reporting required for all harvested Alligator Gar (reporting available through the My Texas Hunt Harvest app or at <https://apps.tpwd.state.tx.us/huntharvest/home.faces>)

Table 4. Stocking history of Coletto Creek Reservoir, Texas. FRY = fry; FGL = fingerling; ADL = adults.

Species	Year	Number	Size
Threadfin Shad	1980	17,900	ADL
Nile Perch	1981	68,119	FGL
Peacock Bass	1980	4,147	FGL
Coppernose Bluegill	1982	249,992	FGL
Blue Catfish	1990	31,496	FGL
Channel Catfish	1980	100,583	FGL
Palmetto Bass	1981	34,461	FGL
	1982	30,980	FGL
	1986	30,500	FGL
	1987	10,021	FGL
	1988	64,567	FGL
	1989	68,584	FGL
	1991	46,000	FGL
	1992	31,300	FGL
	1995	30,470	FGL
	1996	46,500	FGL
	1997	41,021	FGL
	1998	49,642	FGL
1999	46,747	FGL	
	Total	484,293	
Largemouth Bass	2003	38,613	FGL
	2004	31,872	FGL
	2005	31,249	FGL
	2019	121,005	FRY
	Total	222,739	
Florida Largemouth Bass	1980	356	ADL
	1981	92,092	FGL
	1982	160,294	FGL
	1983	161,800	FGL
	Total	414,542	
Red Drum	2001	25,445	FGL

Table 5. Objective-based sampling plan components for Coletto Creek Reservoir, Texas 2020 – 2021.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE – stock	RSE-Stock $\leq 25$
	Size structure	PSD, length frequency	N $\geq 50$ stock
	Age-and-growth	Age at 14 inches	N = 13, 13.0 – 14.9 inches
	Condition	$W_r$	10 fish/inch group (max)
Bluegill <sup>a</sup>	Abundance	CPUE – Total	RSE-Stock $\leq 25$
	Size structure	PSD, length frequency	N $\geq 50$
Gizzard Shad <sup>a</sup>	Abundance	CPUE – Total	RSE-Stock $\leq 25$
	Prey availability	IOV	N $\geq 50$
<i>Gill netting</i>			
Blue Catfish	Abundance	CPUE – stock	
	Size structure	PSD, Length frequency	
	Condition	$W_r$	
Channel Catfish	Abundance	CPUE – stock	
	Size structure	PSD, Length frequency	
	Condition	$W_r$	
<i>Low-frequency electrofishing</i>	Exploratory use of alternative gear to monitor for large-scale changes in:		
	Blue Catfish	Abundance	CPUE – stock
		Size structure	Length frequency
	Flathead Catfish	Abundance	CPUE – stock
Size structure		Length frequency	N $\geq 50$
<i>Tandem hoop netting</i>	Exploratory use of alternative gear to monitor for large-scale changes in:		
	Channel Catfish	Abundance	CPUE – stock
		Size structure	Length frequency
	<i>Creel survey</i> <sup>b</sup>		
White Bass	Trend information on angler effort, catch, and harvest	Angler effort, angler CPUE, total harvest, and size composition of harvest	

Table 5 Continued. Objective-based sampling plan components for Coletto Creek Reservoir, Texas, 2020 – 2021.

Gear/target species	Survey objective	Metrics	Sampling objective
Crappies	Trend information on angler effort, catch, and harvest	Angler effort, angler CPUE, total harvest, and size composition of harvest	

<sup>a</sup> No additional effort will be expended to achieve an RSE  $\leq 25$  for CPUE of Bluegill and Gizzard Shad if not reached from designated Largemouth Bass sampling effort. Instead, Largemouth Bass body condition can provide information on forage abundance, vulnerability, or both relative to predator density.

<sup>b</sup> Angler utilization data and associated statistics will be calculated for all sport fish and non-game species.

Table 6. Survey of aquatic vegetation, Coletto Creek Reservoir, Texas, 2013, 2016, and 2020. Surface area (acres) is listed with percent of total reservoir surface area in parentheses.

Vegetation	2013	2016	2020
Surface area (acres)	2,570	2,323	2,217
Native submersed	127 (4.9)	1 (< 1.0)	
Native floating-leaved	84 (3.3)	4 (< 1.0)	30 (1.4)
Native emergent		1(< 1.0)	1 (< 1.0)
Non-native	673 (26.2)	7 (< 1.0)	2 (< 1.0)
Hydrilla (Tier III)*	14 (< 1.0)		
Eurasian watermilfoil (Tier III)*	659 (25.6)	1 (< 1.0)	
Alligatorweed (Tier III)*		1 (< 1.0)	
Water hyacinth (Tier II)*		5 (< 1.0)	2 (< 1.0)

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

Table 7. Percent directed angler effort by species for Coletto Creek Reservoir, Texas, 2017 and 2021. Survey periods were from 1 January through 30 June.

Species	2017	2021
Sunfishes	0.0	0.8
Catfishes	8.1	36.1
White Bass	0.4	0.0
Largemouth Bass (Non-Tournament)	39.4	32.3
Largemouth Bass (Tournament)	35.4	5.9
Crappies	6.0	20.6
Anything	10.8	3.9

Table 8. Total fishing effort (h) for all species and total directed expenditures at Coletto Creek Reservoir, Texas, 2017 and 2021. Survey periods were from 1 January through 30 June. Relative standard error is in parentheses.

Creel statistic	2017	2021
Total fishing effort	64,489 (14)	18,419 (17)
Total directed expenditures	\$708,225 (25)	\$149,221 (47)

## Gizzard Shad

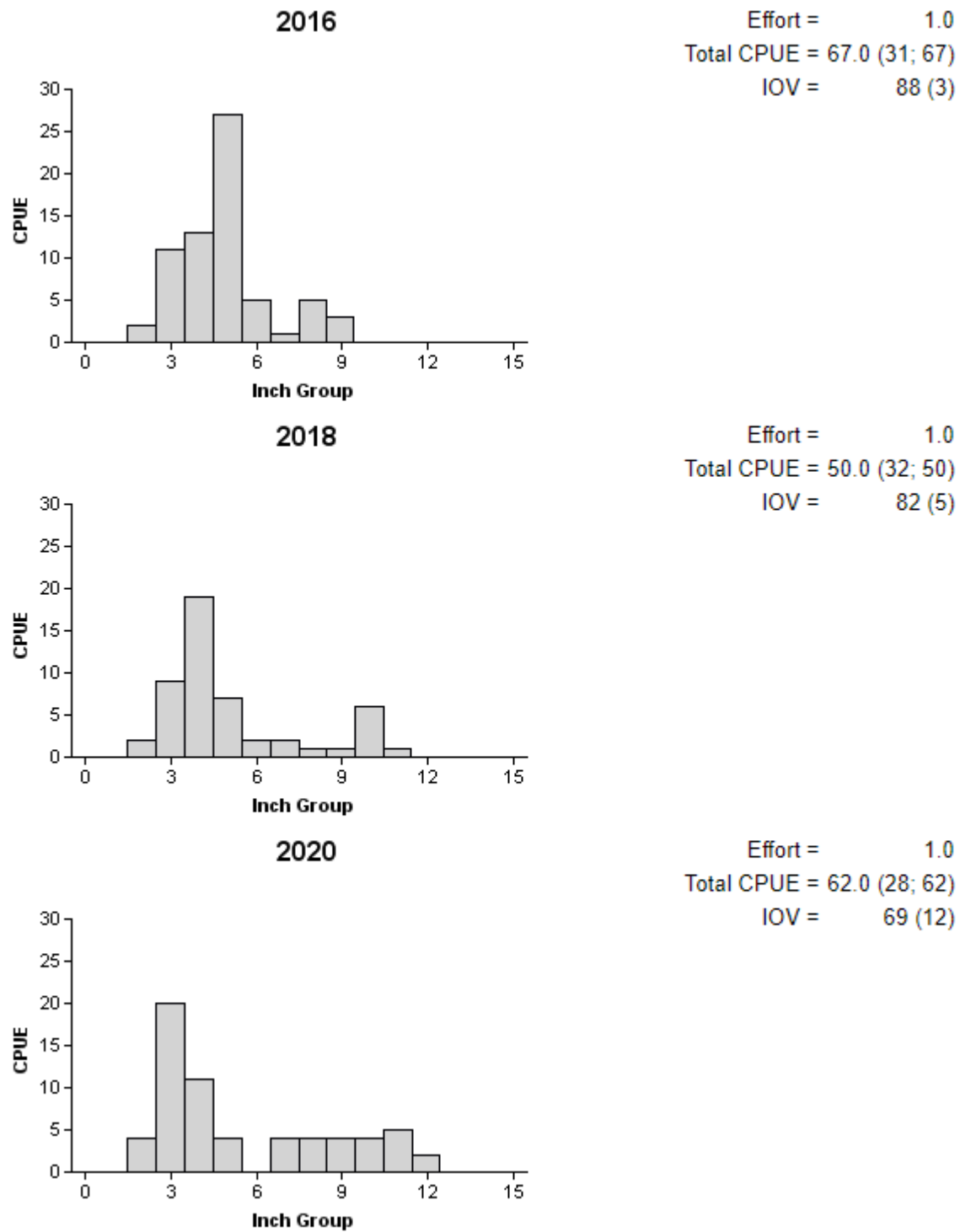


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Coletto Creek Reservoir, Texas, 2016, 2018, and 2020.

## Bluegill

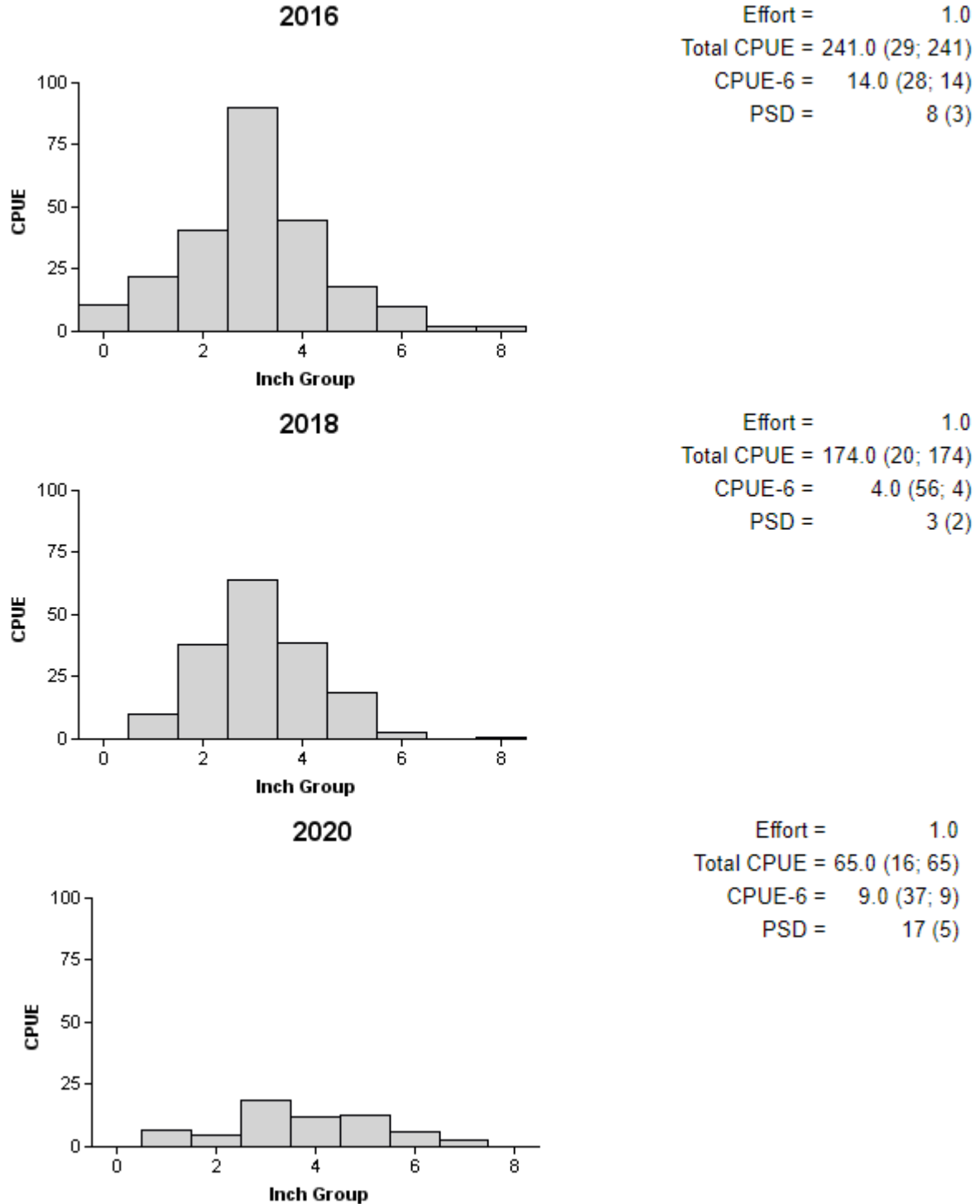


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Coletto Creek Reservoir, Texas, 2016, 2018, and 2020.



## Redear Sunfish

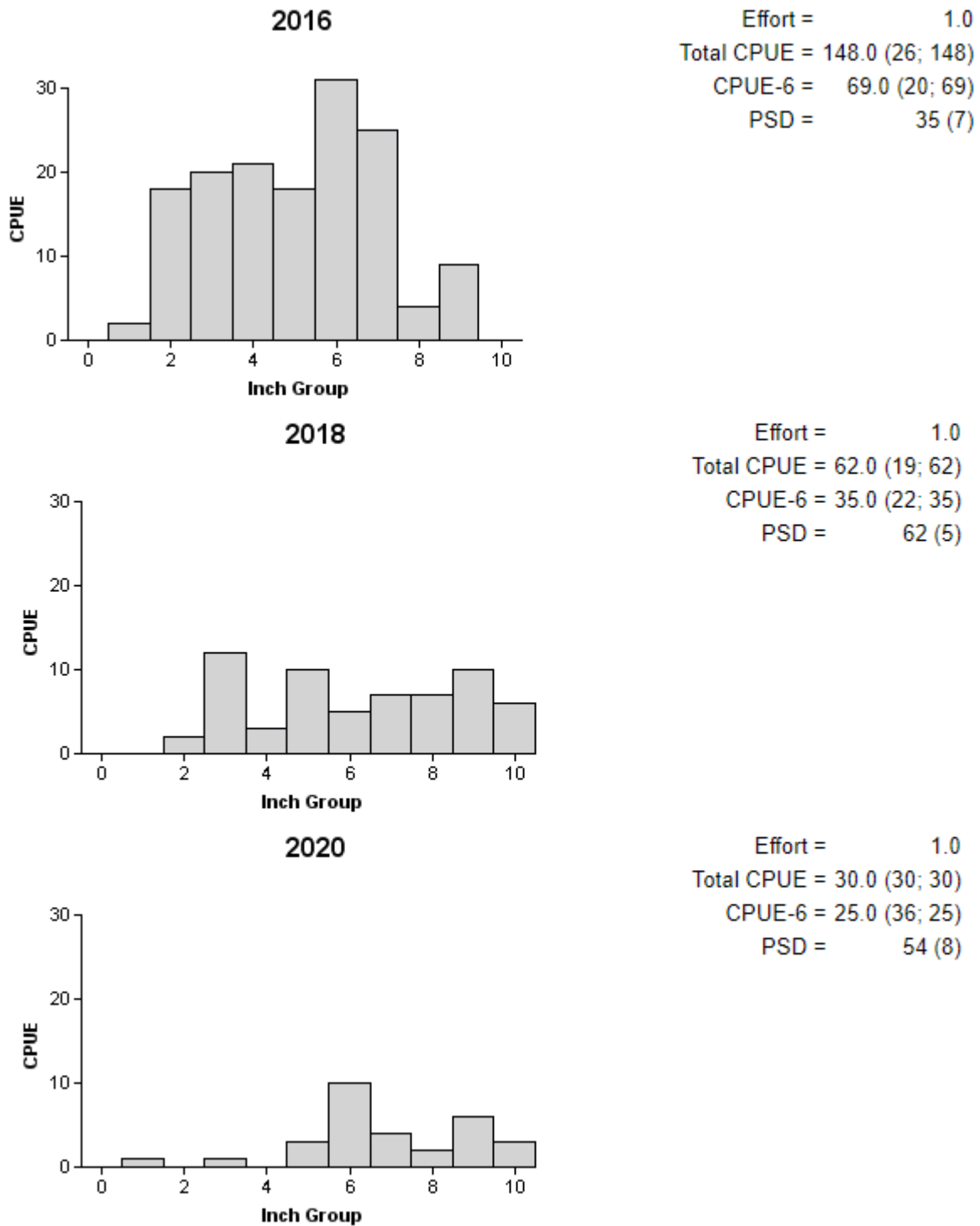


Figure 4. Number of Redear Sunfish caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Coletto Creek Reservoir, Texas, 2016, 2018, and 2020.

## Blue Catfish

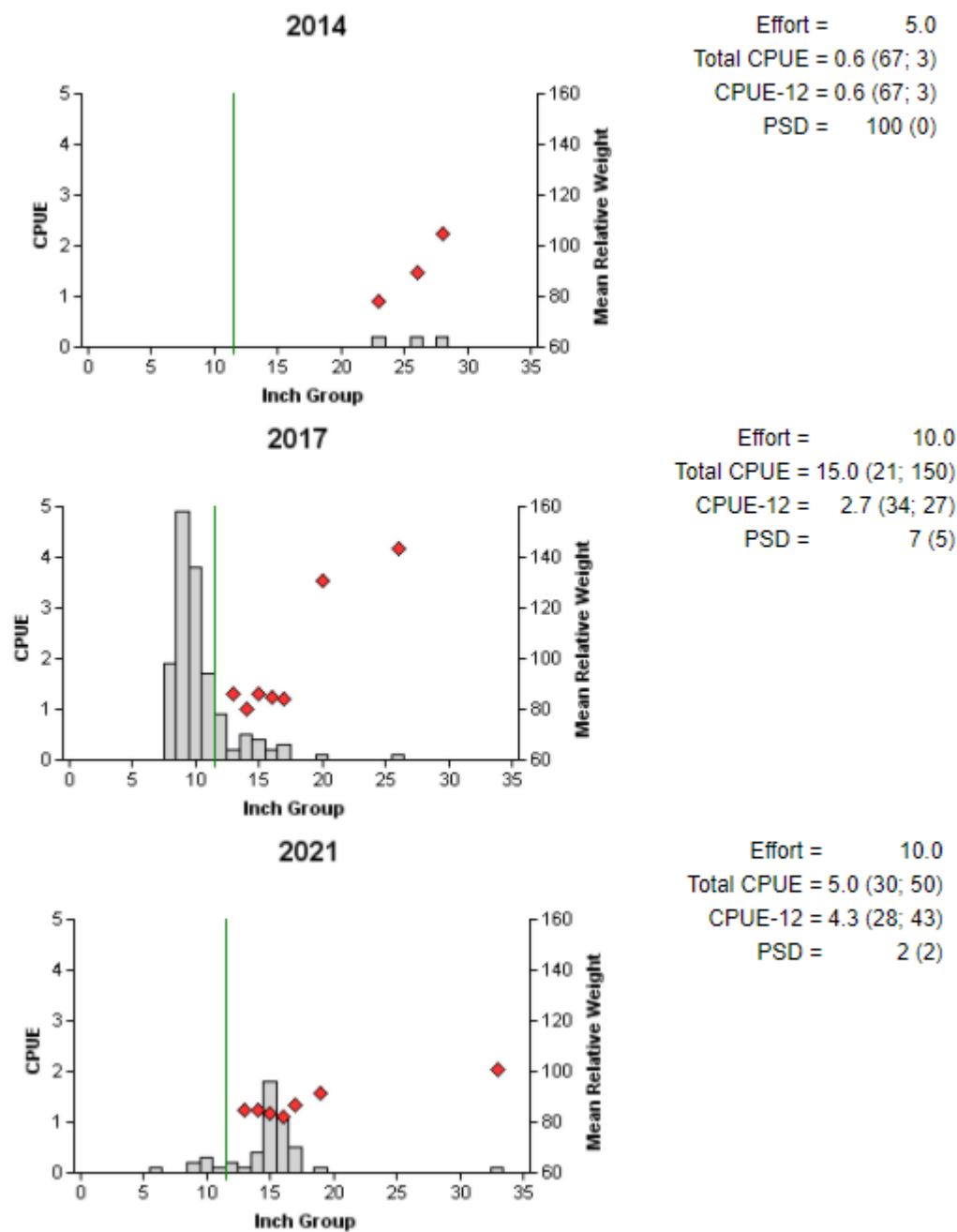


Figure 5. Number of Blue Catfish caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Coletto Creek Reservoir, Texas, 2014, 2017, and 2021. Vertical line denotes the 12-inch minimum length limit.

## Channel Catfish

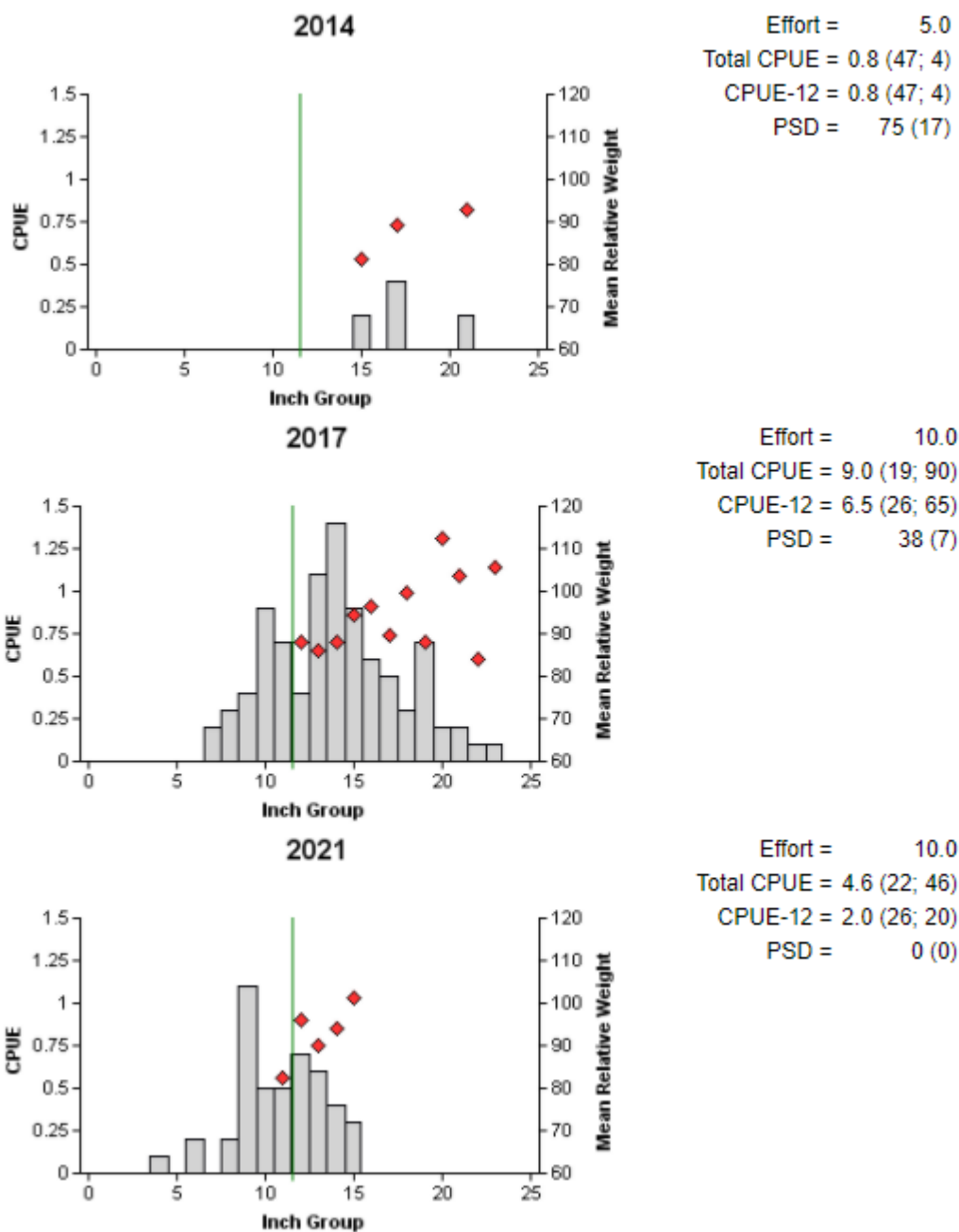


Figure 6. Number of Channel Catfish caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Coletto Creek Reservoir, Texas, 2014, 2017, and 2021. Vertical line denotes the 12-inch minimum length limit.

## Catfishes

Table 9. Creel survey statistics for catfishes at Coletto Creek Reservoir, Texas, from January through June 2017 and 2021. Total catch per hour is for anglers targeting catfishes and total harvest is the estimated number of catfishes harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2017	2021
Surface area (acres)	2,323	2,217
Directed effort (h)	5,426 (23)	6,656 (26)
Directed effort/acre	2.26 (23)	3.00 (26)
Total catch per hour	1.11 (69)	0.49 (51)
Total harvest	3,044 (82)	1,232 (61)
Harvest/acre	1.31 (82)	0.56 (61)
Percent legal released	11	27

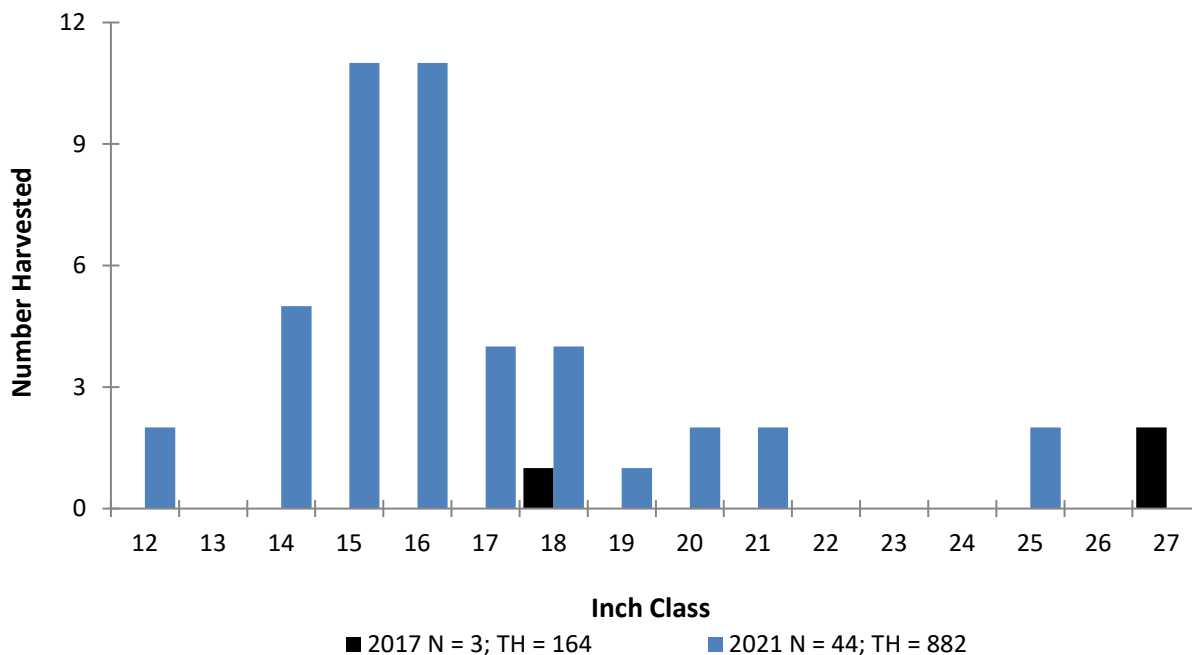


Figure 7. Length frequency of harvested Blue Catfish observed during creel surveys at Coletto Creek Reservoir, Texas, January through June 2017 and 2021, all anglers combined. N is the number of harvested Blue Catfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

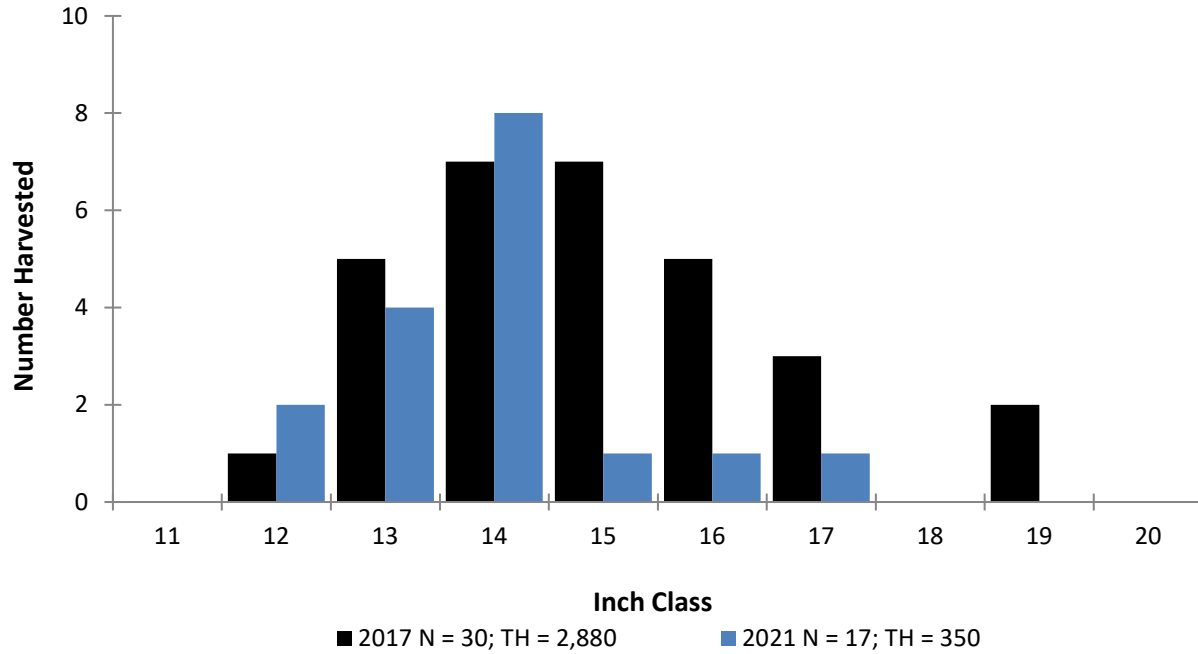


Figure 8. Length frequency of harvested Channel Catfish observed during creel surveys at Coletto Creek Reservoir, Texas, January through June 2017 and 2021, all anglers combined. N is the number of harvested Channel Catfish observed during creel surveys, and TH is the total estimated harvest for the creel period.

## White Bass

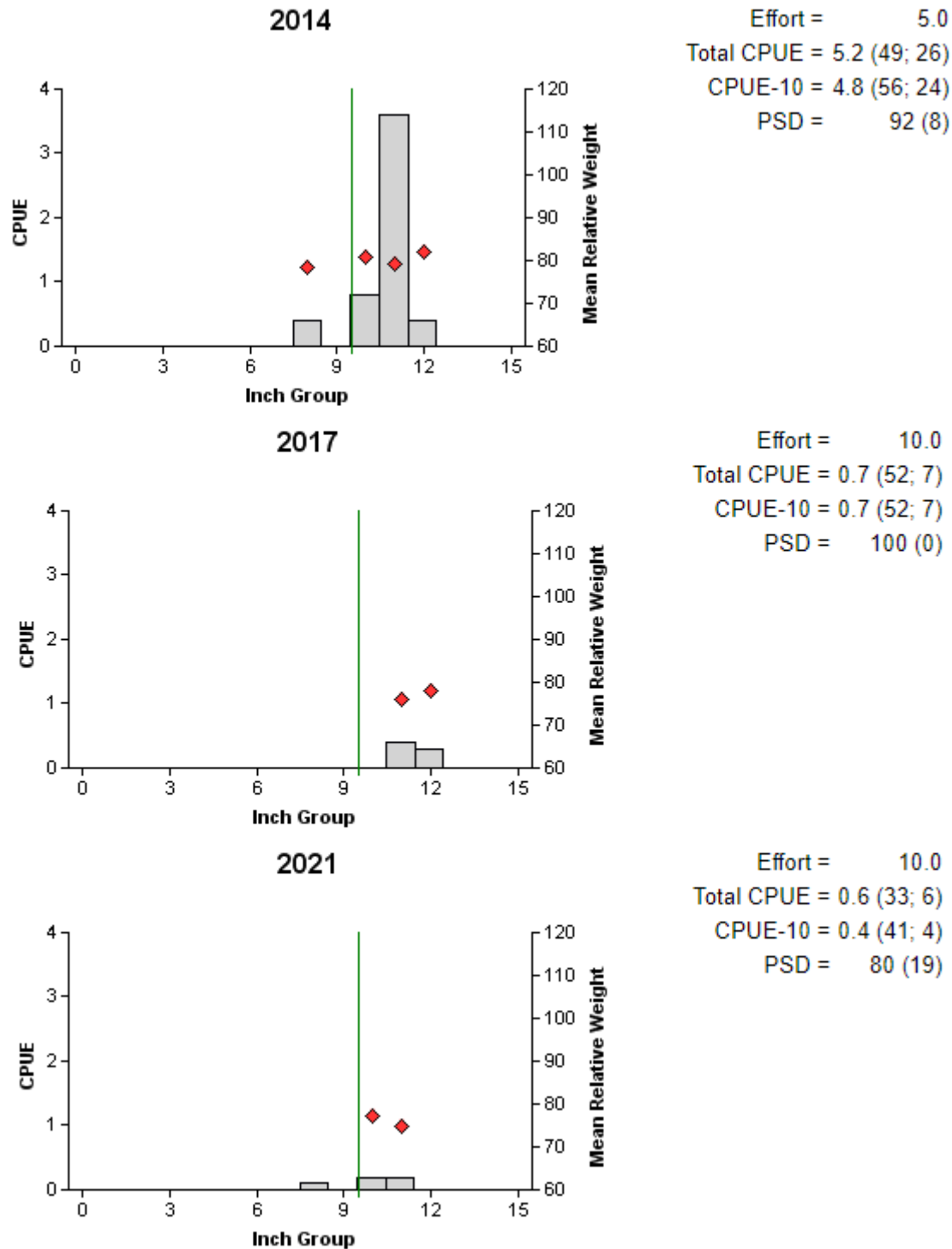


Figure 9. Number of White Bass caught per net night (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Coletto Creek Reservoir, Texas, 2014, 2017, and 2021. Vertical line denotes the 10-inch minimum length limit.

Table 10. Creel survey statistics for White Bass at Coletto Creek Reservoir, Texas, from January through June 2017 and 2021. Total catch per hour is for anglers targeting White Bass and total harvest is the estimated number of White Bass harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2017	2021
Surface area (acres)	2,323	2,217
Directed effort (h)	252 (96)	0 (*)
Directed effort/acre	0.11 (96)	0.00 (*)
Total catch per hour	1.36 (410)	0.00 (*)
Total harvest	223 (444)	303 (76)
Harvest/acre	0.10 (444)	0.14 (76)
Percent legal released	13	26

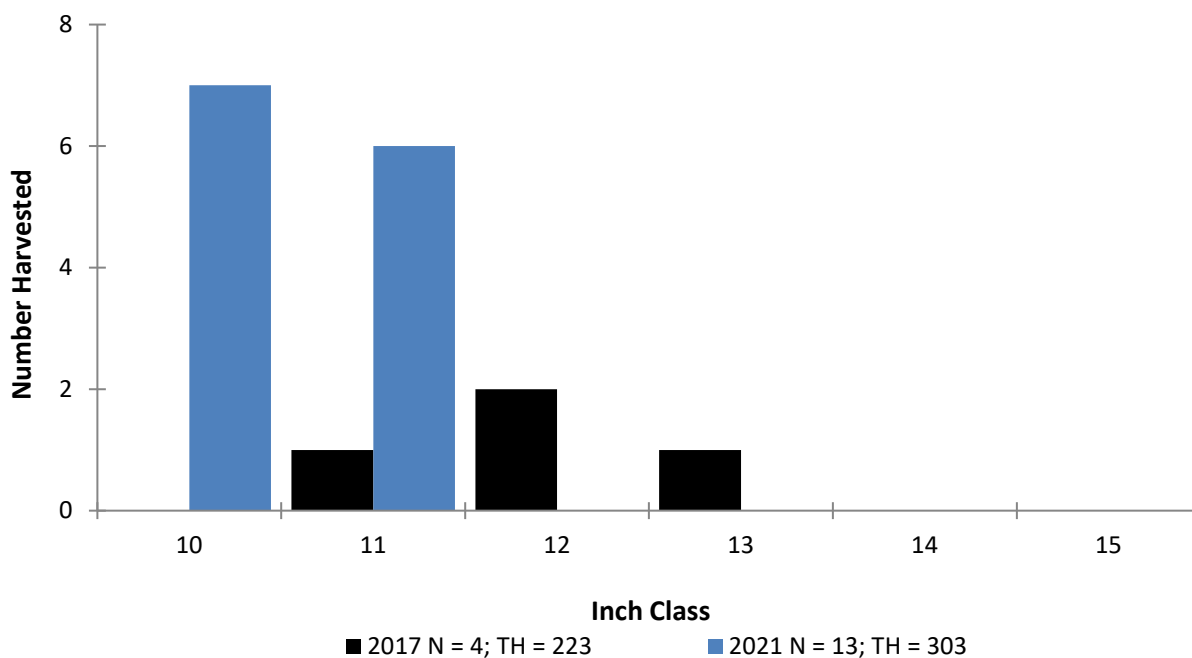


Figure 10. Length frequency of harvested White Bass observed during creel surveys at Coletto Creek Reservoir, Texas, January through June 2017 and 2021, all anglers combined. N is the number of harvested White Bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

## Largemouth Bass

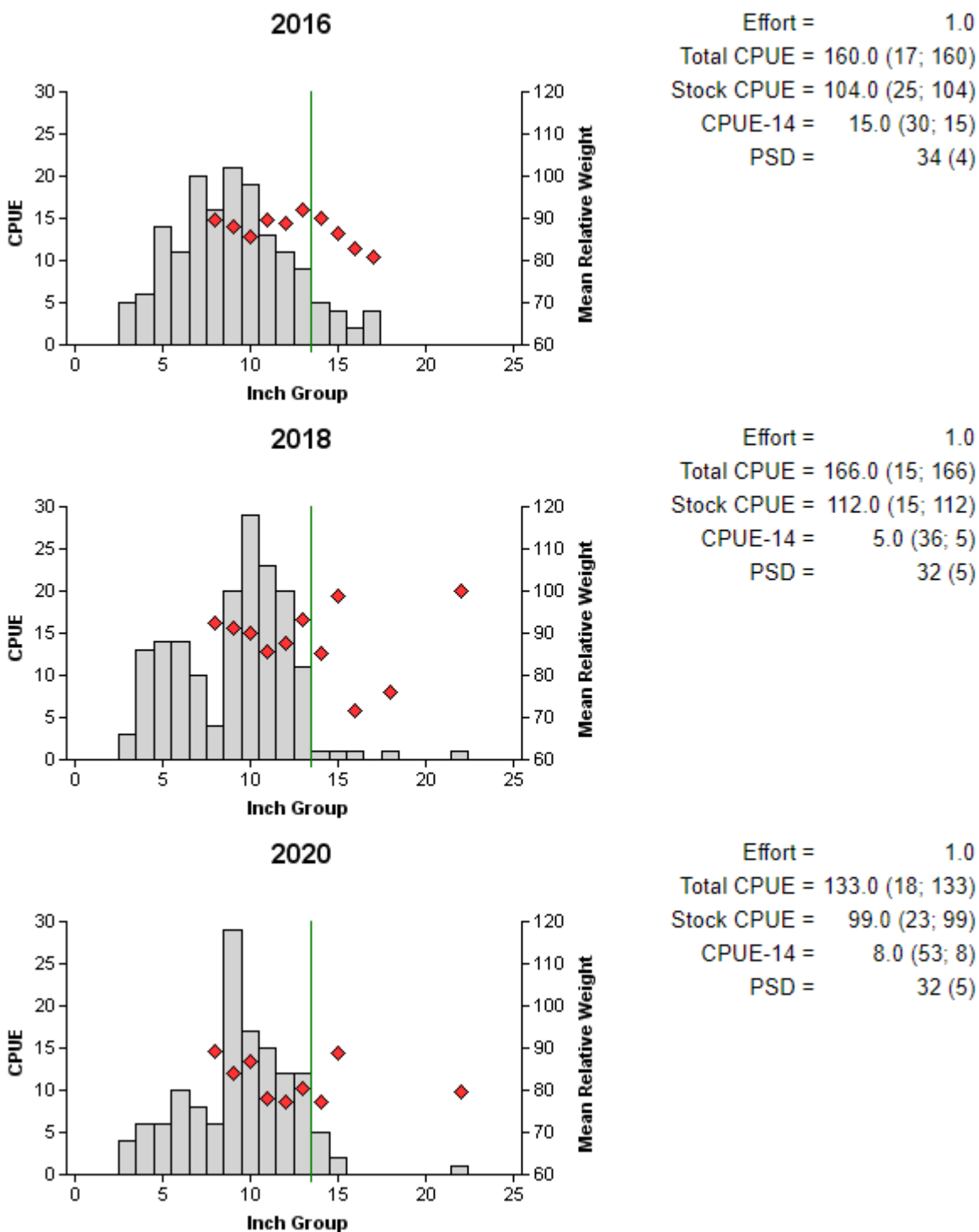


Figure 11. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Coletto Creek Reservoir, Texas, 2016, 2018, and 2020. Vertical line denotes the 14-inch minimum length limit.



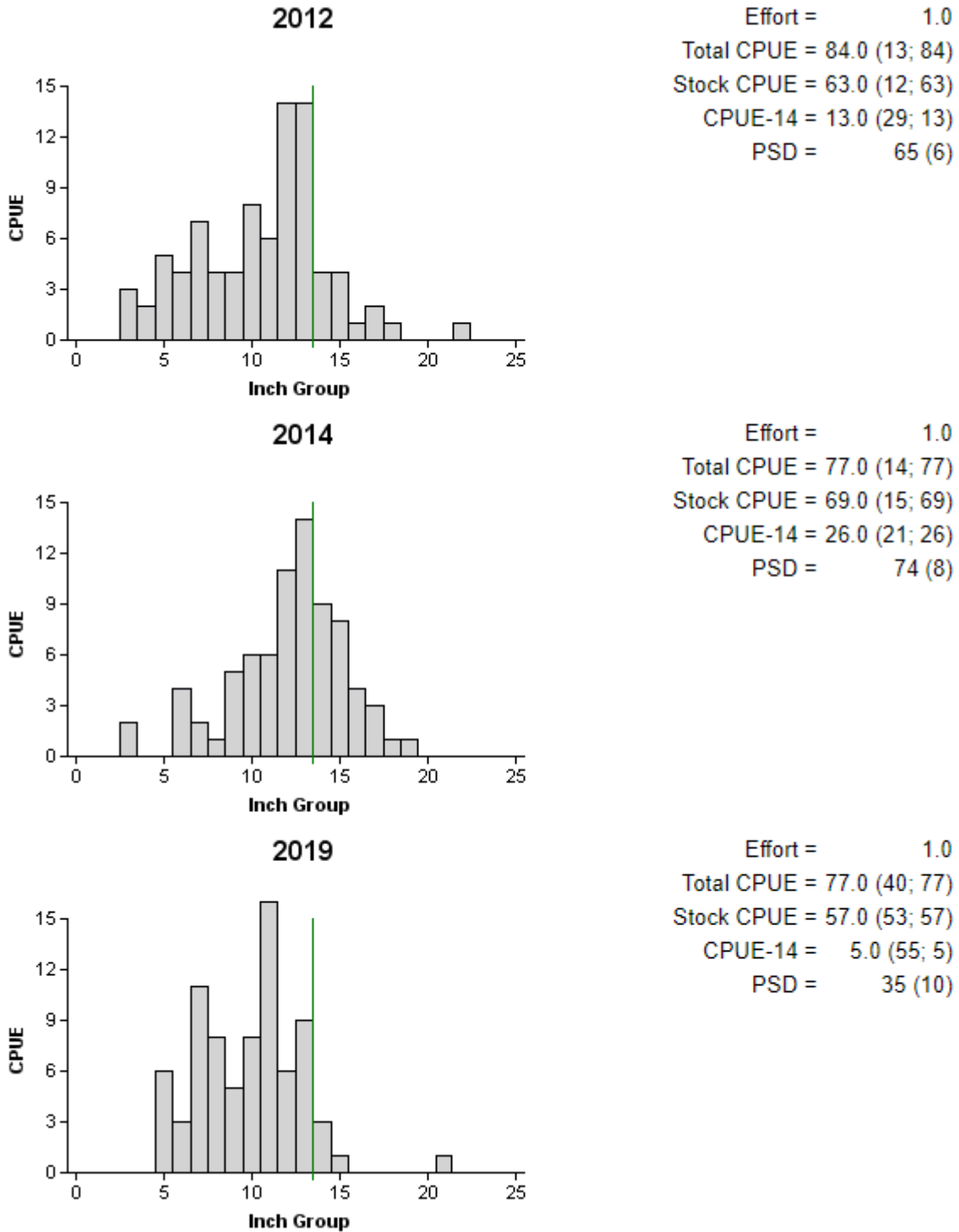


Figure 12. Number of Largemouth Bass caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring bass-only electrofishing surveys, Coletto Creek Reservoir, Texas, 2012, 2014, and 2019. Vertical line denotes the 14-inch MLL.

Table 11. Mean age at legal length (14-inches) for Largemouth Bass collected by fall electrofishing, Coletto Creek Reservoir, Texas. Standard deviations are in parentheses.

Year	N	Age Range	Age-at-Length
2009	34	1 – 3	2.3 (0.51)
2010	15	2 – 4	2.5 (0.74)
2011	21	2 – 4	2.5 (0.68)
2012	14	2 – 4	2.4 (0.65)
2013	15	1 – 4	3.1 (1.03)
2014	13	2 – 4	2.9 (0.64)
2015	24	2 – 4	2.6 (0.71)
2016	14	2 – 4	2.6 (0.65)
2018	13	2 – 4	3.3 (0.63)
2020	15	2 – 4	2.7 (0.72)
<b>Mean (across time)</b>	<b>178</b>	<b>1 – 4</b>	<b>2.6 (0.74)</b>

Table 12. Creel survey statistics for Largemouth Bass at Coletto Creek Reservoir, TX from January through June in 2017 and 2021. 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.

Statistic	2017	2021
Surface area (acres)	2,323	2,217
Directed angling effort (h)		
Tournament	22,852 (15)	1,091 (37)
Non-tournament	25,328 (18)	5,958 (20)
All black bass anglers combined	48,180 (18)	7,049 (37)
Angling effort/acre	20.7 (17)	3.2 (37)
Catch rate (number/h)	1.8 (21)	0.8 (32)
Harvest		
Non-tournament harvest	2,062 (47)	144 (63)
Harvest/acre	0.89 (47)	0.06 (63)
Tournament weigh-in and release	19,205 (47)	620 (145)
Release by weight		
<4.0 lbs	63,508 (26)	5,317 (48)
4.0-6.9 lbs	1,044 (69)	100 (93)
7.0-9.9 lbs	154 (163)	59 (115)
≥10.0 lbs	0 (*)	0 (*)
Percent legal released (non-tournament)	72	90

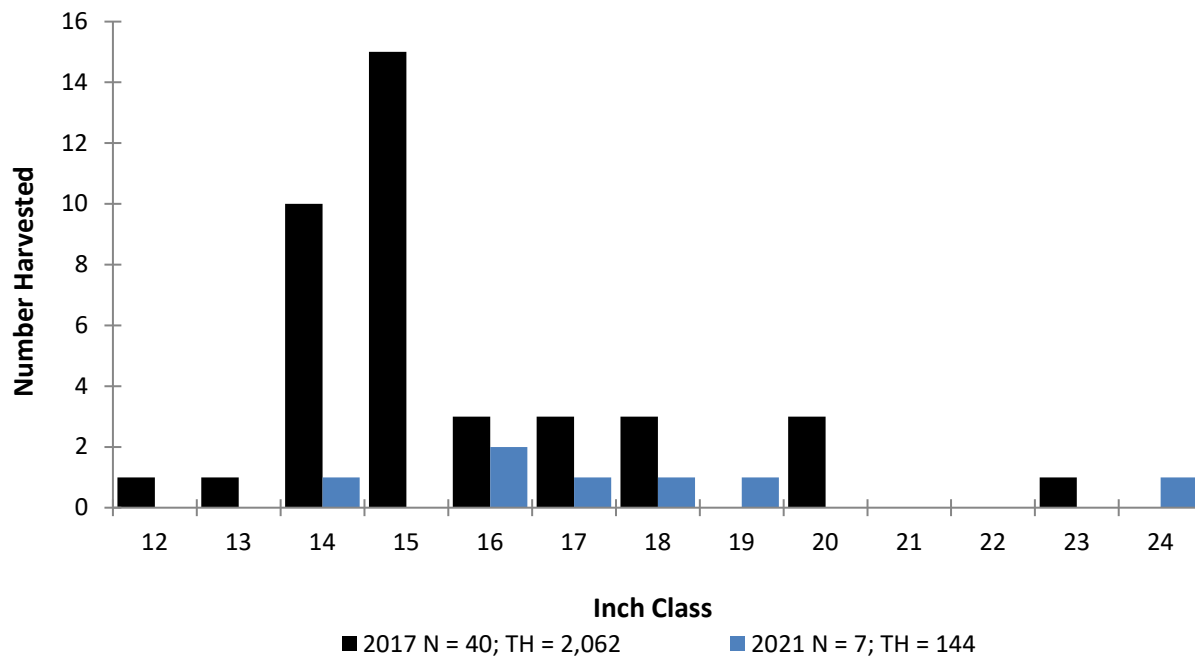


Figure 13. Length frequency of harvested Largemouth Bass observed during creel surveys at Coletto Creek Reservoir, Texas, January through June 2017 and 2020, all anglers combined. N is the number of harvested Largemouth Bass observed during creel surveys, and TH is the total estimated harvest for the creel period.

## Crappies

Table 13. Creel survey statistics for crappies at Coletto Creek Reservoir, Texas, from January through June 2017 and 2021. Total catch per hour is for anglers targeting crappies and total harvest is the estimated number of crappies harvested by all anglers. Relative standard errors (RSE) are in parentheses.

Creel survey statistic	Year	
	2017	2021
Surface area (acres)	2,323	2,217
Directed effort (h)	3,860 (27)	3,799 (22)
Directed effort/acre	1.66 (27)	1.71 (22)
Total catch per hour	1.67 (46)	1.73 (35)
Total harvest	3,671 (48)	1,780 (73)
Harvest/acre	1.58 (48)	0.80 (73)
Percent legal released	0	4

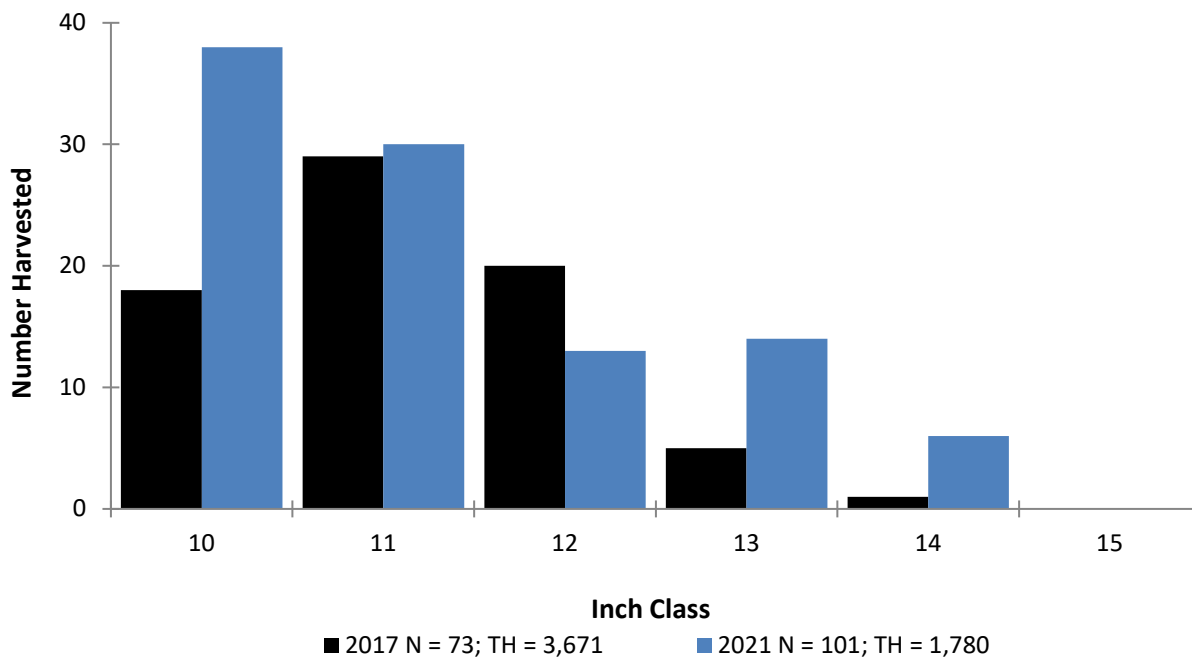


Figure 14. Length frequency of harvested crappies observed during creel surveys at Coletto Creek Reservoir, Texas, January through June 2017 and 2020, all anglers combined. N is the number of harvested crappies observed during creel surveys, and TH is the total estimated harvest for the creel period.

## Proposed Sampling Schedule

Table 14. Proposed sampling schedule for Coletto Creek Reservoir, Texas. Survey period is June through May. Creel surveys are conducted over a 6-month period from January through June with a total of 24 creel days. Gill netting surveys are conducted in the spring.

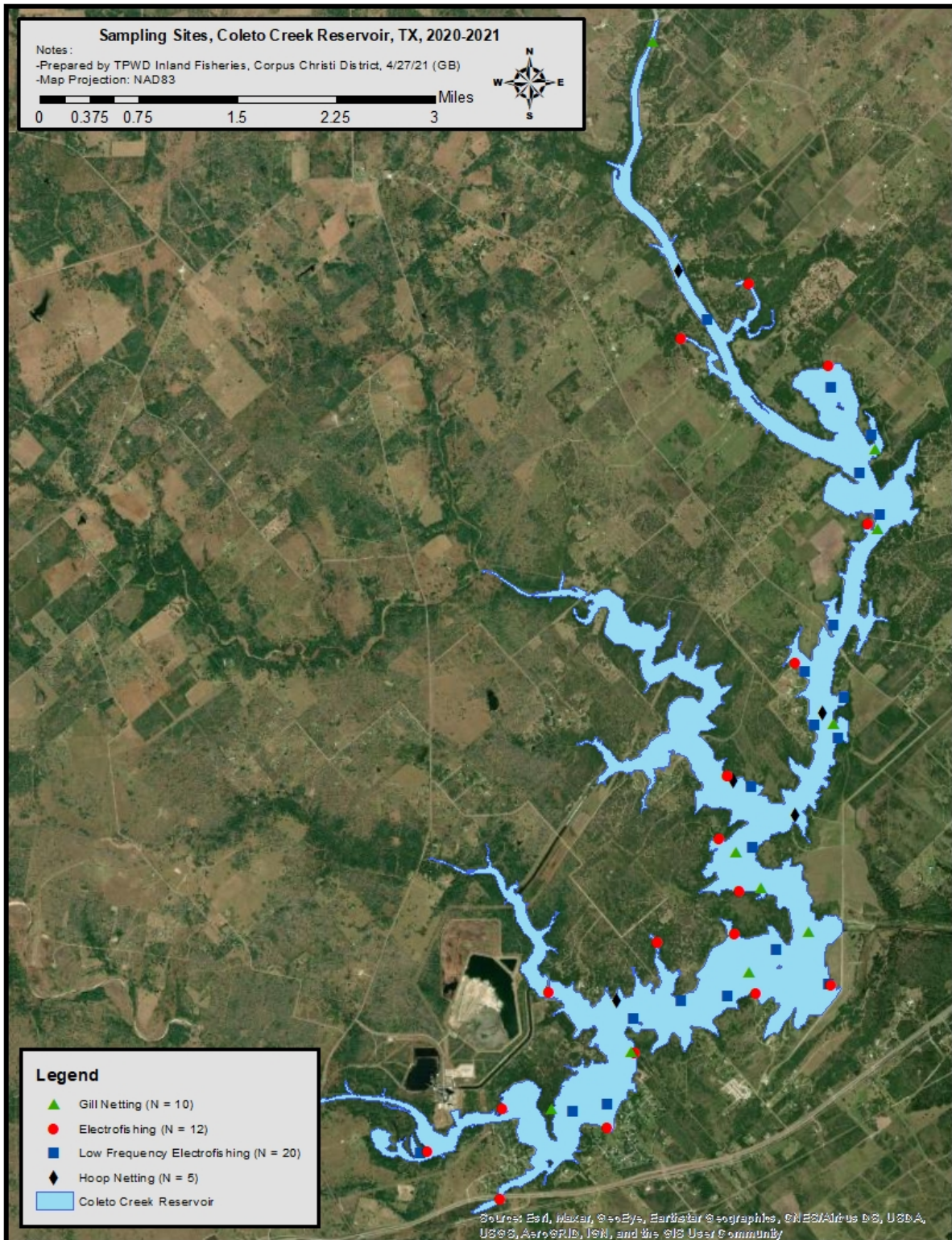
	Survey year			
	2021-2022	2022-2023	2023-2024	2024-2025
Angler Access				X
Vegetation	X	X	X	X
Electrofishing – Fall		X		X
Electrofishing – Spring			X	
Gill netting				X
Creel survey				X
Report				X

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

Number (N) and catch rate (CPUE) (RSE in parentheses) of all species collected by gear type from Coletto Creek Reservoir, Texas, 2020-2021. Sampling effort was 1 hour for electrofishing, 10 net nights for gill netting, and 5 hoop net series.

Species	Electrofishing		Gill Netting		Hoop Netting	
	N	CPUE	N	CPUE	N	CPUE
Spotted Gar	2	2.0(100)	12	1.2 (32)	1	0.2 (100)
Longnose Gar			6	0.6 (100)		
Gizzard Shad	62	62.0 (28)	120	12.0 (29)		
Threadfin Shad	29	29.0 (59)				
Common Carp			5	0.5 (61)		
Bullhead Minnow	14	14.0 (28)				
Smallmouth Buffalo			436	43.6 (11)	1	0.2 (100)
Blue Catfish			50	5.0 (30)		
Channel Catfish			46	4.6 (22)	10	2.0 (27)
Flathead Catfish			1	0.1 (100)		
White Bass	3	3.0 (52)	6	0.6 (37)	1	0.2 (100)
Redbreast Sunfish	14	14.0 (74)				
Bluegill	65	65.0 (16)	3	0.3 (71)		
Longear Sunfish	6	6.0 (58)				
Redear Sunfish	30	30.0 (30)	8	0.8 (45)	21	4.2 (64)
Largemouth Bass	133	133.0 (18)	5	0.5 (61)	2	0.4 (100)
White Crappie			1	0.1 (100)	13	2.6 (62)
Black Crappie	1	1.0 (100)	45	4.5 (23)		
Logperch	3	3.0 (72)				
Blue Tilapia	1	1.0 (100)				
Atlantic Needlefish			1	0.1 (100)		

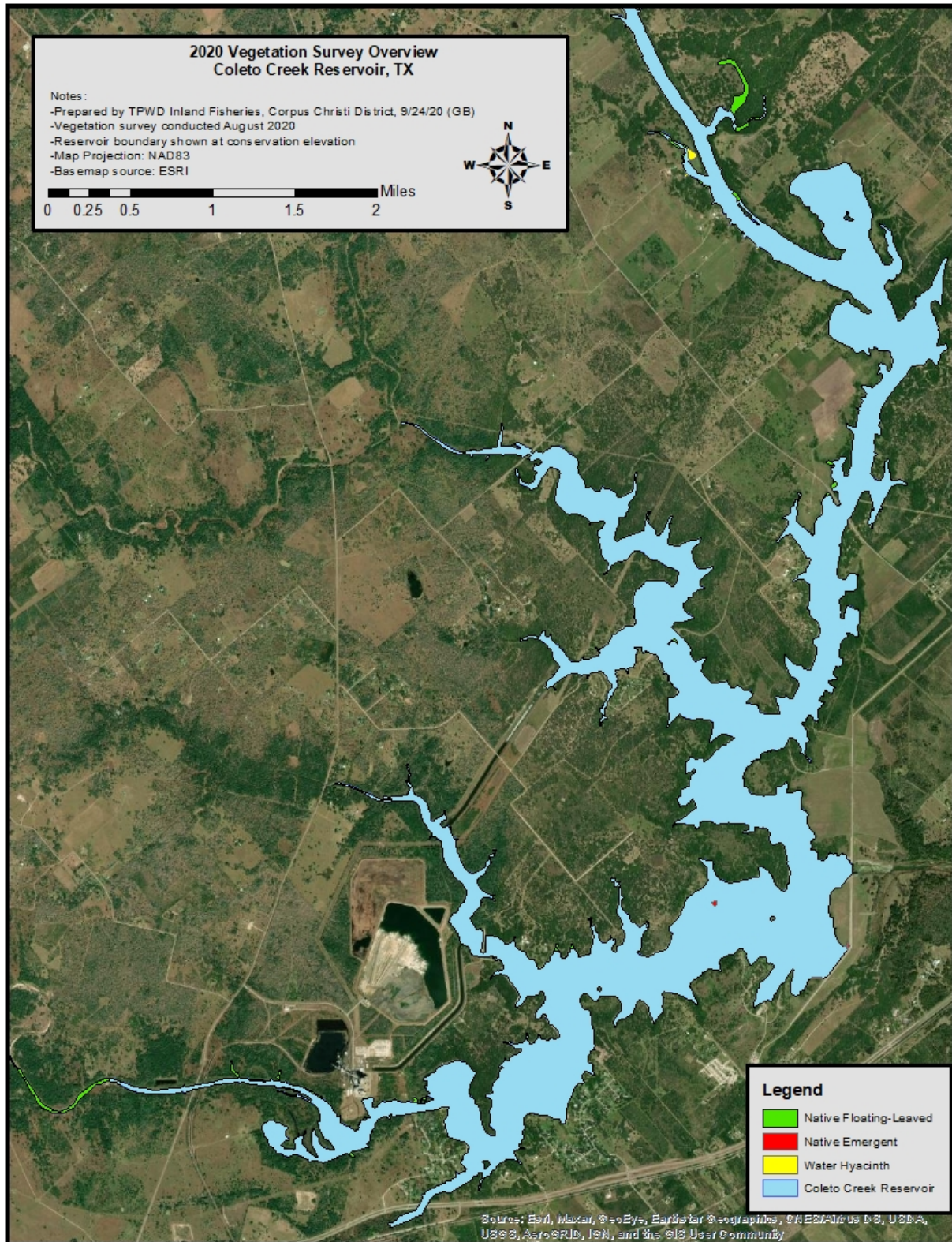
## APPENDIX B – Map of sampling locations



Location of sampling sites, Coledo Creek Reservoir, Texas, 2020-2021. The reservoir was 4.5 feet below conservation pool at time of sampling.



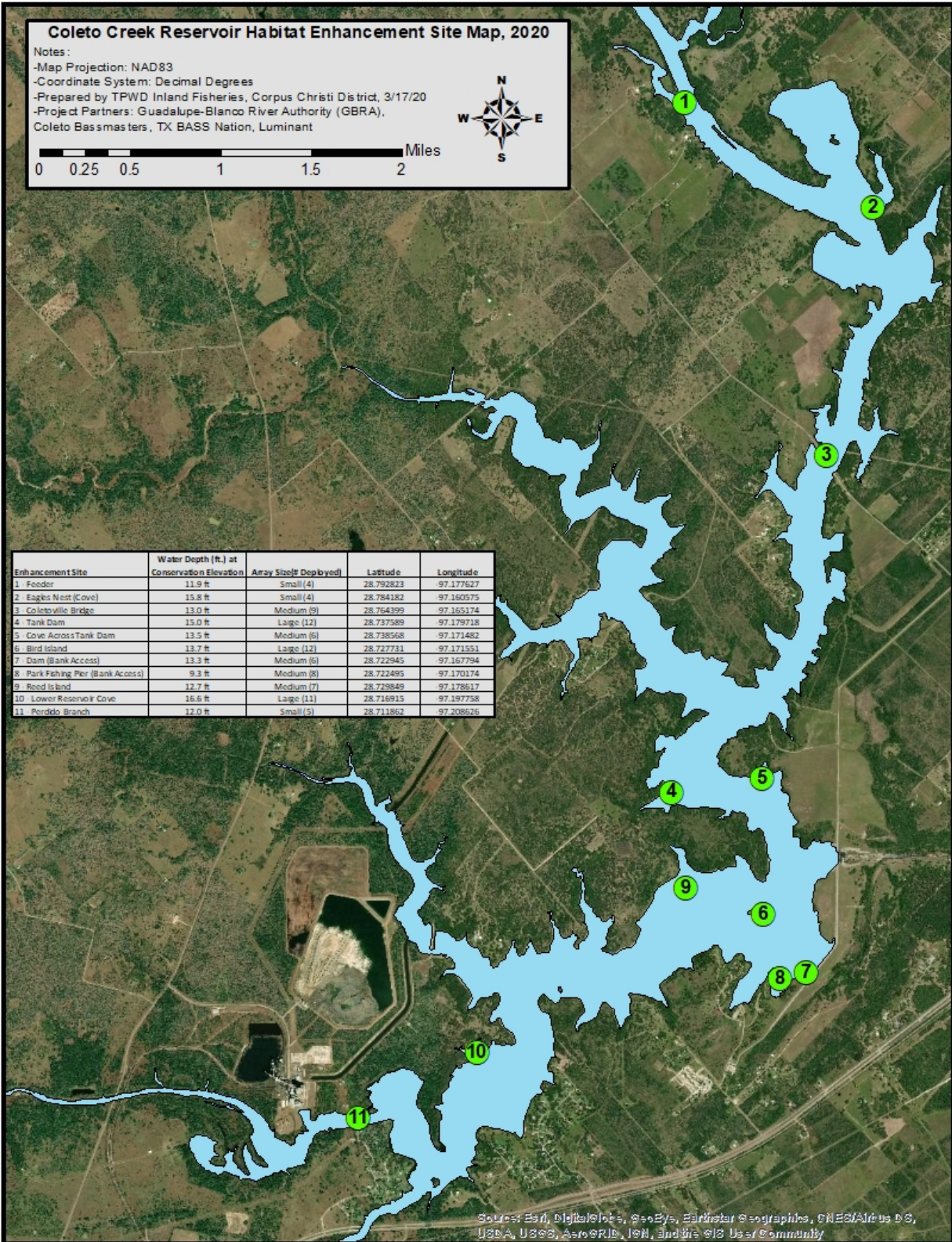
## APPENDIX C – 2020 Distribution map of aquatic vegetation



Native and non-native aquatic vegetation map, Coletto Creek Reservoir, Texas, 2020.

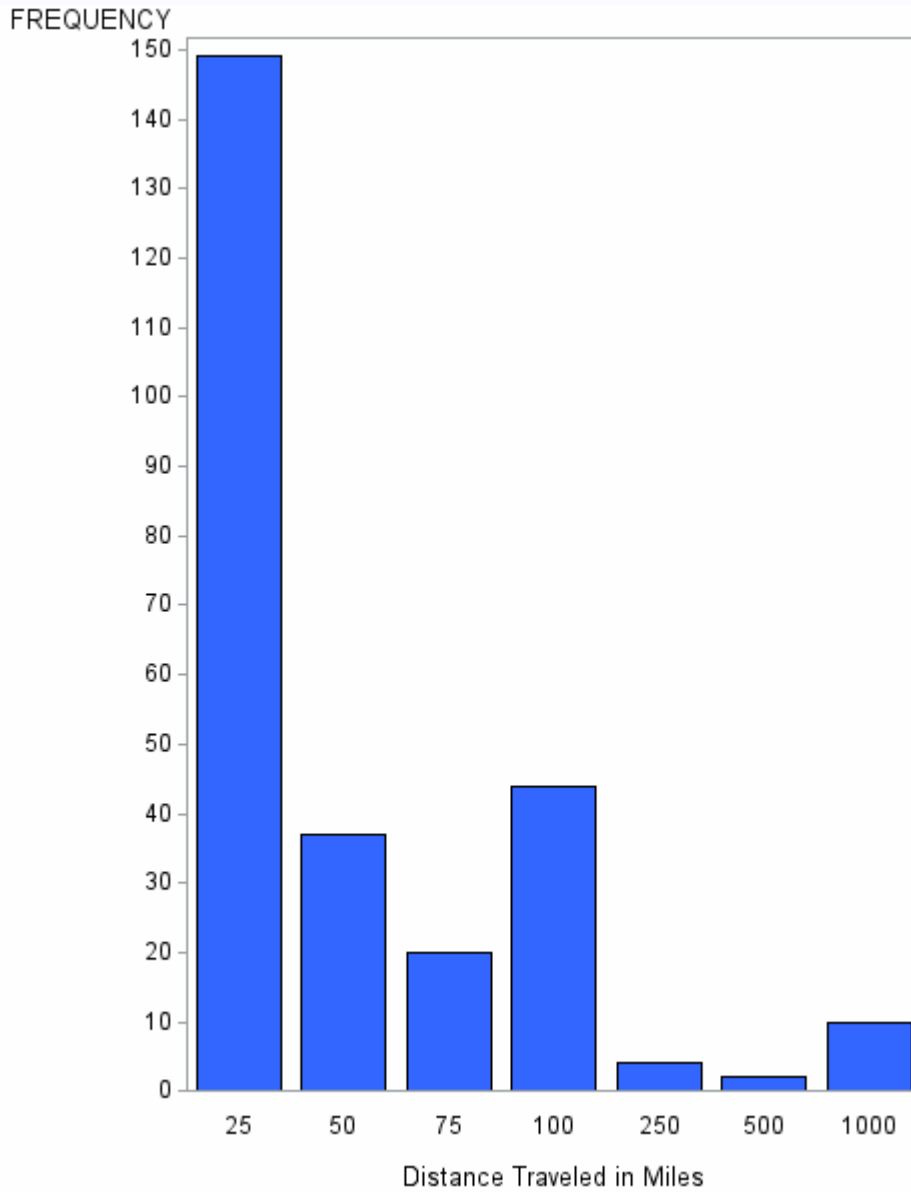


## APPENDIX D – Phase 1 Habitat Enhancement Site Map

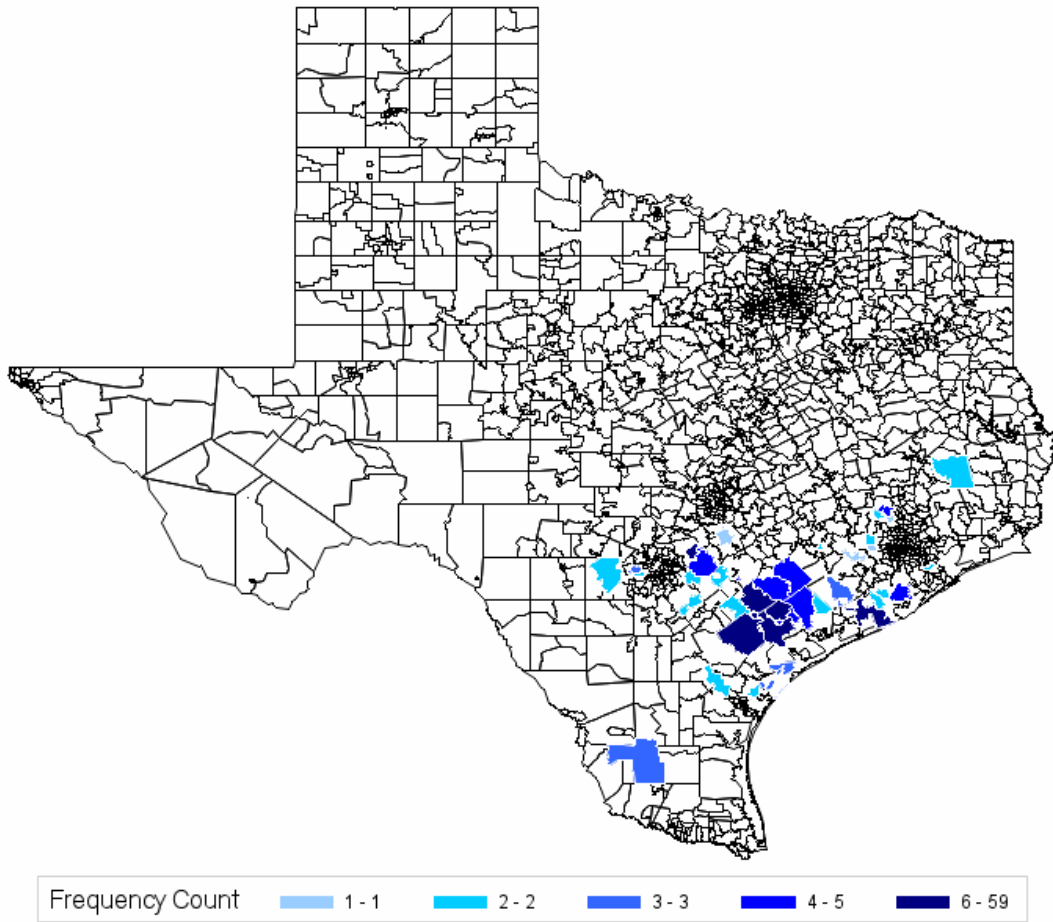


Artificial structural fish habitat site map, Coletto Creek Reservoir, Texas.

## APPENDIX E – Reporting of creel ZIP code data



Frequency of anglers that traveled various distances (miles) to Coletto Creek Reservoir, Texas, as determined from the January through June 2021 creel survey.



Location, by ZIP code, and frequency of anglers that were interviewed at Coletto Creek Reservoir, Texas, as determined from the January through June 2021 creel survey.



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