

Fort Parker Reservoir

2018 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-3

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

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Survey and Management Summary

Fish populations in Fort Parker Reservoir were surveyed in 2018 using electrofishing and trap netting and in 2019 using gill netting. Historical data are presented with the 2018-2019 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: Fort Parker Reservoir is a 750-acre impoundment located within Fort Parker State Park in Limestone County, Texas. Water level has fluctuated moderately since 2015 although it is not formally gauged. Mean and maximum water depths are four and eight feet respectively, and the reservoir is considered hypereutrophic. Habitat features consisted of natural shoreline and stands of cutgrass.

Management History: Important sport fish include Blue Catfish, Channel Catfish, White Crappie and Largemouth Bass. Blue Catfish were stocked most recently in 2009. Sport fish are managed with statewide regulations, except that there is no minimum length limit on catfishes, and the daily bag limit is five (in any combination); also, fishing is by pole and line only. Recent management efforts include maintaining aquatic invasive species (AIS) signage and educating constituents about the threat of AIS, especially Zebra Mussels, whenever possible.

Fish Community: It is likely that high water flow through the reservoir translocated large numbers of fish over the dam, resulting in the greatly reduced catches of most species during sampling.

- **Prey species:** Forage abundance was depressed overall. Gizzard Shad, Threadfin Shad and Bluegill were collected in low numbers.
- **Catfishes:** The Channel Catfish catch rate was above the historical average whereas catch rate of Blue Catfish was below the historical average. Body condition was good to excellent for both species.
- **Largemouth Bass:** Largemouth Bass catch rates were low. The 2018 electrofishing survey was the worst on record for this species and only two individuals were collected.
- **White Crappie:** White Crappie were collected during winter and spring trap netting and during spring gill netting. The winter trap netting catch rate was much lower than previous samples.

Management Strategies: Continue managing sport fishes at Fort Parker Reservoir with current regulations. Inform the public about the negative impacts of AIS and maintain appropriate signage at both access points within the park. Conduct electrofishing, low-pulse electrofishing and trap netting surveys in 2022.

Introduction

This document is a summary of fisheries data collected from Fort Parker Reservoir in 2018-2019. 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 species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2018-2019 data for comparison.

Reservoir Description

Fort Parker Reservoir is a Texas Parks and Wildlife Department (TPWD) owned 750-acre reservoir located within Fort Parker State Park in Limestone County, Texas. The reservoir was constructed in 1935 by the Civilian Conservation Corps and serves the dual purpose of flood control and municipal water supply for the town of Groesbeck, Texas. Fort Parker Reservoir is in the Blackland Prairie Ecological Area and land use around the reservoir is primarily agricultural. Fort Parker Reservoir has a shoreline length of approximately 19 miles, a mean and maximum water depth of four and eight feet and is hypereutrophic with a mean chl-*a* of 63.8 (Texas Commission on Environmental Quality 2008). Habitat at time of sampling consisted of natural shoreline and cutgrass. Water level has fluctuated moderately since January 2015 yet is not formally gauged. Other descriptive characteristics for Fort Parker Reservoir are in Table 1.

Angler Access

Fort Parker Reservoir has two public boat ramps; one on the main reservoir and one on the Navasota River just above the reservoir (Table 2). Both ramps are usable during normal water elevation periods however, there is no gauging station on or near the reservoir. Although the entire reservoir lies within the boundaries of the state park, much of the preferred bank access (areas near day-use and camp sites) is limited by large stands of cutgrass.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Tibbs and Baird 2015) included:

1. Stock Florida Largemouth Bass at an appropriate rate for the lower 250 acres of reservoir in 2016.

Action: Florida Largemouth Bass fingerlings were stocked at a rate of 68/acre (17,095) in 2016.

2. Construct and deploy crappie condo fish attractors in appropriate depths within the lower end of the reservoir and update the Fort Parker Reservoir link on the TPWD website with fish attractor information so that anglers and park users know their locations.

Action: More than a dozen crappie condos were constructed and deployed into the lower end of Fort Parker Reservoir with assistance from the Baylor Tri-Beta Biology Honor Society in fall 2016. Coordinates and downloadable files are listed on the TPWD website.

3. Cooperate with Fort Parker State Park staff to post appropriate AIS signage, educate the public about AIS, make a speaking point about AIS when presenting to constituent and user groups and keep track of all inter-basin water transfer routes to facilitate potential AIS responses.

Action: Invasive species signage was posted at Fort Parker Reservoir during summer 2013 and has been maintained since that time. District biologists have continued to educate constituents about AIS in presentations, conversations and Facebook posts

since the last report writing. Inter-basin water transfers are a permanent fixture in this report and are updated as needed.

Harvest regulation history: Sport fishes were managed with statewide regulations until 2004 when the Ctfsh1 and Gear1 exceptions took effect. Currently, sport fishes in Fort Parker Reservoir are still managed with statewide regulations, except that there is no minimum length limit on catfishes, and the daily bag limit for catfishes is five (in any combination), consistent with other TPWD owned State Park reservoirs. The current regulations are found in Table 3.

Stocking history: Over 17,000 Florida Largemouth Bass were stocked in 2016. Largemouth Bass and Channel Catfish were stocked in 2004. Blue Catfish were stocked at a rate of 50 fish/acre in both 2008 and 2009. The complete stocking history is in Table 4.

Vegetation/habitat management history: Large stands of cutgrass have prevented bank access for anglers in highly sought areas of the park for some time. This issue was first raised by Tibbs and Baird (2007) as a management strategy in the 2006 Fort Parker Management Report, and despite numerous conversations with the park manager at the time, improving bank angler access didn't seem to be a priority. The current park manager and staff recognize bank angler access as a priority and have been proactive in seeking assistance with the problem. Park staff identified and mapped areas of problematic cutgrass in early 2019 and requested help from IF staff in having the cutgrass treated (Appendix D). The Aquatic Habitat Enhancement (AHE) crew responded quickly by treating the area with Glyphosate (Roundup custom) in May 2019. The initial results (as of June 25, 2019) were mixed, with some cutgrass being heavily affected by the treatment and others far less so.

Water transfer: Fort Parker Reservoir is used primarily for municipal water supply, flood control, and recreation. The town of Groesbeck has rights to all but 0.5-acre feet of the water in the reservoir and the state park has rights to the 0.5-acre foot. The town of Groesbeck utilizes a siphon tube at the dam to pump make-up water from Fort Parker Reservoir into their drinking water supply reservoir as needed. Groesbeck's water rights supersede those of the town of Mexia for Mexia Reservoir, yet there are currently no plans to utilize those water rights. The state park's water rights are used mainly for irrigation purposes within the park.

Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Fort Parker Reservoir (TPWD unpublished). 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 2015).

Electrofishing – Largemouth Bass, sunfishes, Gizzard Shad, and Threadfin Shad were collected by day-time electrofishing (0.75 h at 9, 5-min stations). The 2018 survey is the first standard day-time electrofishing survey completed on Fort Parker Reservoir. Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

Trap netting – White Crappie were collected by winter (standard) and spring (non-standard) trap netting (5 net nights at 5 stations per season) to try and determine seasonal differences in catch rates for White Crappie. Spring trap netting and gill netting data were also compared to try and determine which gear produces the best sampling results for the species. Catch per unit effort for trap netting was recorded as the number of fish caught per net night (fish/nn).

Gill netting – Catfishes and White Crappie were collected by spring gill netting (5 net nights at 5 stations). Catch per unit effort for gill netting was recorded as the number of fish caught per net night (fish/nn).

Statistics – Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], and condition indices [relative weight (W_r)] were calculated for target fishes according to Anderson and Neumann (1996). Index of Vulnerability (IOV) was calculated for Gizzard Shad (DiCenzo et al. 1996). Standard error (SE) was calculated for structural indices and IOV. Relative standard error ($RSE = 100 \times SE$ of the estimate/estimate) was calculated for all CPUE and creel statistics.

Results and Discussion

Habitat: The last structural habitat survey estimated 12.3 miles (98%) of natural shoreline and 0.2 miles (2%) of bulk headed shoreline (Tibbs and Baird 2011). Littoral zone habitat in summer 2018 was dominated by cutgrass (88% or 22 of 25 randomly selected shoreline points). Structural habitat was scarce and open water vegetation was nonexistent.

Creel: No creel surveys have been conducted on Fort Parker Reservoir to date.

Prey species: Gizzard Shad, Bluegill and Threadfin Shad were collected with day-time electrofishing at rates of 116.0 fish/h, 36.0 fish/h and 21.3 fish/h respectively and all three catch rates were well below historical averages (Figures 1 and 2; Appendices A and B). The IOV for Gizzard Shad was fair and 52% of individuals were available to existing predators; this was lower than the IOV estimate from 2014 (98; Figure 1). The Bluegill catch rate (36 fish/h) and population size structure was similar to the previous survey (24 fish/h; Figure 2). No other forage species were observed.

Catfishes: Blue and Channel Catfish were collected with gill netting at rates of 0.6 fish/nn and 3.4 fish/nn respectively (Figures 3 and 4; Appendix A). The Channel Catfish catch rate was above the historical average while that of Blue Catfish was below the historical average (Appendix B). The OBS goal for these species, general monitoring to collect abundance (CPUE – Total; $RSE \leq 25$) and size structure (PSD and length-frequency; $N \geq 50$) data, was not achieved as only 20 combined individuals were collected and the RSE for each species was well above 25 (Figures 3 and 4). Both populations were dominated by larger individuals and PSDs were higher than desired. Body condition was good to excellent for both species (Figures 3 and 4).

Largemouth Bass: Largemouth Bass were collected with day-time electrofishing at a rate of 2.7 fish/h and this is the worst catch rate on record (Figure 5; Appendices A and B). The OBS goal for this species,

general monitoring to collect abundance (CPUE – Total; RSE \leq 25) and size structure (PSD and length-frequency; $N \geq 50$) data, was not achieved as only 2 individuals were collected with an RSE of 66 (Figure 5). Although sample size was low, body condition was good. Largemouth Bass genetics could not be analyzed due to the low catch rate however, the 2014 analysis showed minimal Florida influence (i.e., 11%).

White Crappie: White Crappie were collected with winter trap netting (9.8 fish/nn), spring trap netting (15.4 fish/nn) and spring gill netting (2.2 fish/nn; Figures 6 and 7; Appendices A and B). The OBS goal for the standard survey (winter trap nets), general monitoring to collect abundance (CPUE – Stock; RSE \leq 25) and size structure (PSD and length-frequency; $N \geq 50$) data, was not achieved with only 15 individuals collected and an RSE of 55 (Figure 6). The winter 2018 White Crappie trap netting survey catch rates were the worst on record (Appendix B). The non-standard, spring trap netting survey would have come close to achieving the OBS goal, with 53 individuals and an RSE of 46 (Figure 7). Only 11 individuals were collected with gill netting; RSE = 36. Body condition was excellent for the standard survey and not analyzed for the nonstandard surveys.

Trap netting reflected recruitment of White Crappie the best with length classes from 3 to 5 inches represented in both winter and spring samples. Spring gill netting showed the highest percentage of legal-sized fish (PSD-10), but little recruitment. Spring trap netting collected more individuals than the other two surveys combined, showed a high percentage of legal-sized fish and evidence of recent recruitment. This is of interest because the exact same trend was observed on Granbury Reservoir during 2017-2018 comparisons (Tibbs and Baird 2018). Based on the size and numbers of fish captured, spring trap netting seems to show promise for future sampling of White Crappie.

Fisheries Management Plan for Fort Parker Reservoir, Texas

Prepared – July 2019

ISSUE 1: Large stands of cutgrass have prevented bank access for anglers in highly sought areas of the park for some time. Park staff identified and mapped areas of problematic cutgrass in early 2019 and requested help from IF staff in having the cutgrass treated. The AHE crew treated the area with Glyphosate in May 2019. The initial results were mixed, with some cutgrass being heavily affected by the treatment and others less so.

MANAGEMENT STRATEGIES

1. Communicate with the AHE crew throughout 2019 and 2020 to ensure that cutgrass stands are treated effectively.
2. Keep Fort Parker State Park staff informed of treatment schedules and details.

ISSUE 2: Gill netting has provided low catch rates of catfishes and White Bass historically in Fort Parker Reservoir. The 2019 gill netting survey collected the fewest number of Blue Catfish and White Bass on record. Low pulse electrofishing trial runs have collected multiple catfish species in the past and should provide better recruitment data, more efficiently, and during seasons when weather and reservoir conditions are more predictable (i.e., late summer and fall).

MANAGEMENT STRATEGY

1. Discontinue spring gill netting surveys and replace with fall low pulse electrofishing surveys.

ISSUE 3: Many AIS threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches, and plugging engine cooling systems. Giant salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for AIS to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

MANAGEMENT STRATEGIES

1. Cooperate with state park staff to maintain appropriate signage at access points around the reservoir.
2. Provide technical support and informational materials to park visitors describing the agencies' "Clean, Drain, Dry" initiative.
3. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.

Objective-Based Sampling Plan and Schedule (2019–2023)

Important sport and forage fishes

Abundant and/or important sport fishes in Fort Parker Reservoir include Blue Catfish, Channel Catfish, White Crappie and Largemouth Bass. Important forage fishes include Gizzard Shad, Threadfin Shad and Bluegill.

Sport fishes with low-density populations

Flathead Catfish, White Bass and Black Crappie occur in low abundance in Fort Parker Reservoir and are generally caught incidentally to targeted species. We will continue collecting and reporting data for these species and upgrade their status as appropriate.

Survey objectives, fisheries metrics, and sampling objectives

Fall Electrofishing: Dumont and Dennis (1997) reported catch of bass greater than 14.9 inches was not statistically different between fall day-time and night-time samples. They also reported increased catch of smaller bass during night-time sampling. Day-time versus night-time electrofishing data collected by the Waco District on five major reservoirs from 2004 to 2008 show mixed results for several popular fishery metrics, but support findings by Dumont and Dennis overall. For example, while Total and Stock CPUE values were typically higher for night-time surveys, nearly all CPUE categories for legal sized bass (11, 14 and 18) were higher for day-time surveys. Further evaluation of these data documented improved RSE values for day-time electrofishing CPUE estimates as well (Dumont, Pers. Comm.). The additional advantages of day-time electrofishing include enhanced safety, improved sampling logistics, reduced labor requirements, and increased visibility to the public. Fort Parker Reservoir will be sampled with day-time electrofishing from now on unless otherwise noted.

This survey will be used to evaluate Largemouth Bass and primary forage species (Gizzard Shad, Threadfin Shad and Bluegill). Historically, Fort Parker electrofishing catch rates for Largemouth Bass have been among the lowest in the Waco District, and the fall 2018 electrofishing catch rates were the lowest on record for the reservoir. Catch rate for the primary forage species were also near historical lows. Since catch rates are well below those desired for general monitoring (N of stock-sized fish ≥ 50 and CPUE target precision RSE ≤ 25) the goal of this survey will be exploratory sampling. Nine random five-minute day-time electrofishing stations will be sampled during fall 2022 as outlined in the 2018 OBS plan. Index of vulnerability will be calculated for Gizzard Shad. No additional sampling effort will be conducted.

Trap Netting: This survey will be used to evaluate White Crappie, which is the dominant crappie species in Fort Parker Reservoir. White Crappie were last sampled with winter trap netting in 2018 (9.8 fish/nn) and spring trap netting in 2019 (15.4 fish/nn). A minimum of 5 random trap netting stations will be sampled in both winter 2022 and spring 2023. The goal of these surveys will be general monitoring (using CPUE, size structure and relative weight as metrics) to characterize the White Crappie population and make comparisons with historical and future data. Catch per unit effort target precision will be an RSE ≤ 25 . Target sample size will be an N ≥ 50 stock-sized fish to determine population size structure, allowing us to calculate proportional size distributions with 80% confidence. If the objective is not met, no additional sampling effort will be conducted. The Fort Parker winter 2022 trap netting data will be compared with spring 2023 trap netting data again to characterize differences among samples.

Low pulse electrofishing: A minimum of 3 random low pulse electrofishing stations will be sampled in fall 2022. This survey will evaluate catfishes with exploratory monitoring to see if more useful recruitment data can be obtained. Since only anecdotal data exist for this gear on Fort Parker Reservoir, no catch per unit effort target precision, target sample sizes or relative weights will be assigned.

Literature Cited

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Tables and Figures

Table 1. Characteristics of Fort Parker Reservoir, Texas.

| Characteristic | Description |
|-----------------------------|-------------------------------------|
| Year constructed | 1935 |
| Controlling authority | Texas Parks and Wildlife Department |
| County | Limestone |
| Reservoir type | Mainstem |
| Shoreline Development Index | 4.80 |
| Conductivity | 310 μ S/cm |

Table 2. Boat ramp characteristics for Fort Parker Reservoir, Texas, 2018. Although no gauging station exists for Fort Parker Reservoir, water level was approximately 2' low during the survey.

| Boat ramp | Latitude Longitude (dd) | Public | Parking capacity (N) | Condition |
|----------------|------------------------------|--------|----------------------|----------------|
| State Park | 31.596192 °N 96.535520 °W | Y | 6 | Concrete; fair |
| Navasota River | 32.245520 °N 99.904980 °W | Y | 9 | Concrete; fair |

Table 3. Harvest regulations for Fort Parker Reservoir, Texas 2018.

| Species | Bag Limit | Length limit (inches) |
|---|----------------------|------------------------------|
| Catfish: Channel, Blue, their hybrids and subspecies | 5 (any combination) | none |
| Catfish, Flathead | 5 | 18-inch minimum |
| Bass, White | 25 | 10-inch minimum |
| Bass: Largemouth, Spotted, their hybrids and subspecies | 5 (any combination) | 14-inch minimum ^a |
| Crappie: White, Black, their hybrids and subspecies | 25 (any combination) | 10-inch minimum |

^a Daily bag limit for Largemouth Bass and Spotted Bass = 5 fish in any combination. There is no minimum length limit for Spotted Bass.

Table 4. Stocking history for Fort Parker Reservoir, Texas. Life stages for each species are defined as having a mean length that falls within the given length range. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL) and unknown (UNK). For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

| Species | Year | Number | Life Stage | Mean TL (in) |
|-------------------------|-------|---------|------------|--------------|
| Blue Catfish | 2003 | 7,089 | AFGL | 9.6 |
| | 2008 | 36,138 | FGL | 2.0 |
| | 2009 | 36,250 | FGL | 2.0 |
| | Total | 79,477 | | |
| Channel Catfish | 1966 | 8,000 | AFGL | 7.9 |
| | 1982 | 35,000 | AFGL | 7.9 |
| | 1991 | 283 | AFGL | 5.2 |
| | 2004 | 4,597 | AFGL | 8.9 |
| | Total | 47,880 | | |
| Coppernose Bluegill | 1982 | 30,000 | UNK | 0.0 |
| | Total | 30,000 | | |
| Florida Largemouth Bass | 1982 | 34,900 | FRY | 1.0 |
| | 2016 | 17,095 | FGL | 1.7 |
| | Total | 51,995 | | |
| Largemouth Bass | 1966 | 3,000 | UNK | 0.0 |
| | 1970 | 2,000 | UNK | 0.0 |
| | 1974 | 33,000 | UNK | 0.0 |
| | 1975 | 35,000 | UNK | 0.0 |
| | 2004 | 93,331 | FGL | 1.6 |
| | Total | 166,331 | | |

Table 5. Objective-based sampling plan components for Fort Parker Reservoir, Texas 2018 – 2019.

| Gear/target species | Survey objective | Metrics | Sampling objective |
|-----------------------------|--------------------|--------------------------|------------------------------|
| <i>Electrofishing</i> | | | |
| Largemouth Bass | General monitoring | CPUE, Size structure, Wr | RSE-Stock < 25, N ≥ 50 stock |
| Bluegill ^a | General monitoring | CPUE, Size structure | none |
| Gizzard Shad ^a | General monitoring | CPUE, Size structure | none |
| Threadfin Shad ^a | General monitoring | CPUE, Size structure | none |
| <i>Trap netting</i> | | | |
| White Crappie | General monitoring | CPUE, Size structure, Wr | RSE-Stock < 25, N ≥ 50 stock |
| <i>Gill netting</i> | | | |
| Blue Catfish | General monitoring | CPUE, Size structure, Wr | RSE-Stock < 25, N ≥ 50 stock |
| Channel Catfish | General monitoring | CPUE, Size structure, Wr | RSE-Stock < 25, N ≥ 50 stock |
| White Crappie | General monitoring | CPUE, Size structure, Wr | RSE-Stock < 25, N ≥ 50 stock |

^a No additional effort will be expended to achieve an RSE ≤ 25 for CPUE of Bluegill, Gizzard Shad and Threadfin 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.

Gizzard Shad

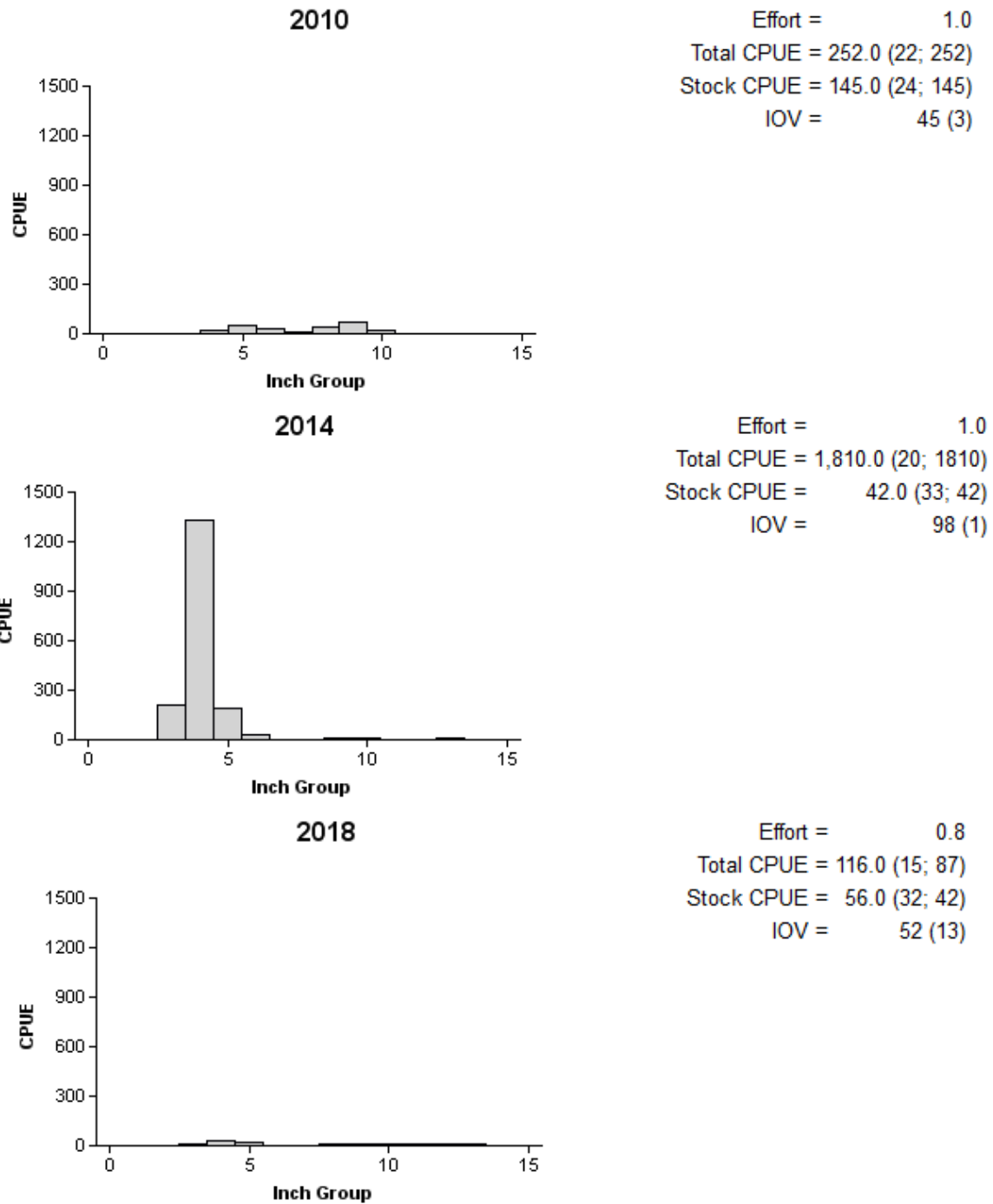


Figure 1. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Fort Parker Reservoir, Texas, 2010 (night-time), 2014 (night-time) and 2018 (day-time). Electrofishing effort was decreased to 0.8 h in 2018.

Bluegill

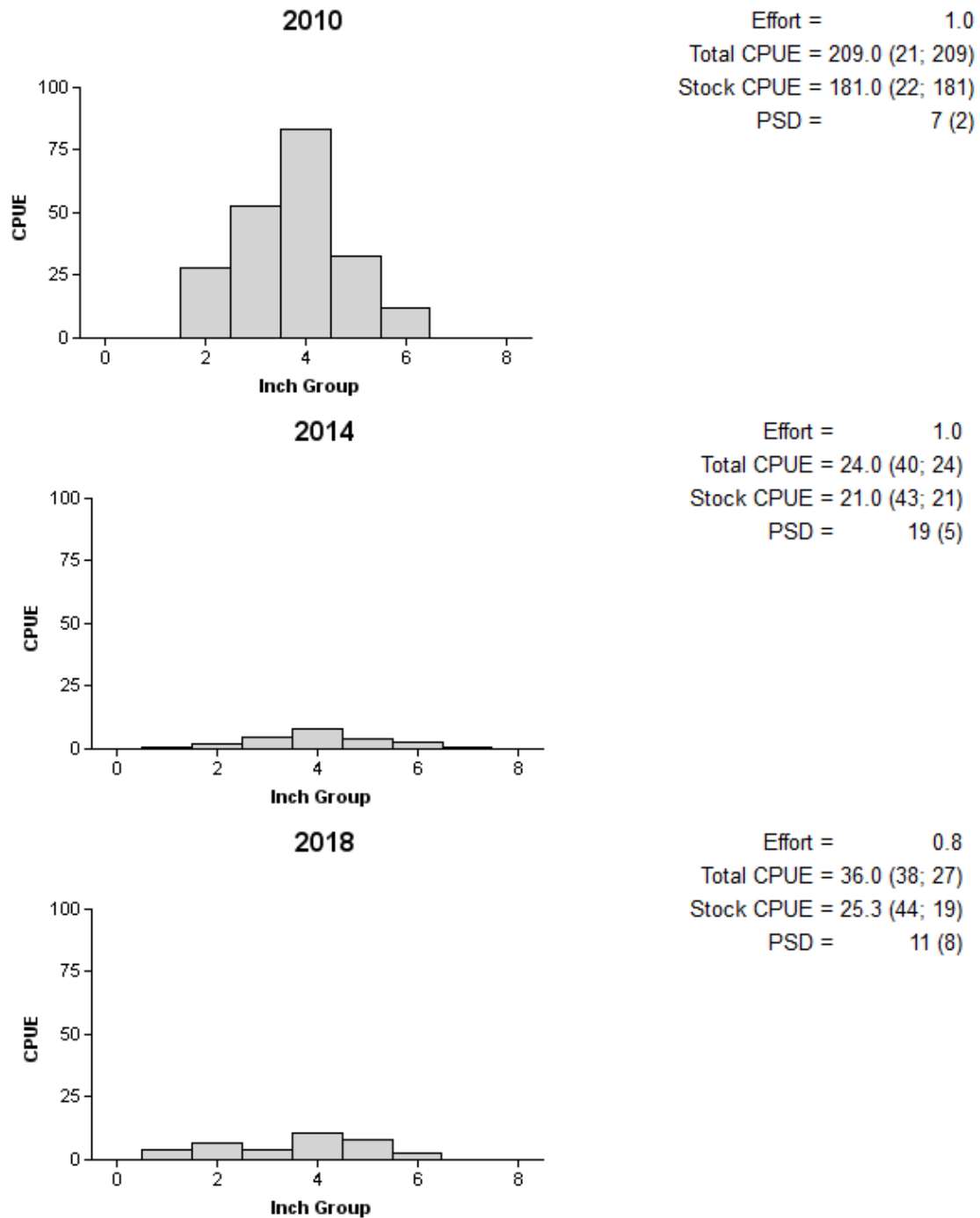


Figure 2. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Fort Parker Reservoir, Texas, 2010 (night-time), 2014 (night-time) and 2018 (day-time). Electrofishing effort was decreased to 0.8 h in 2018.

Blue Catfish

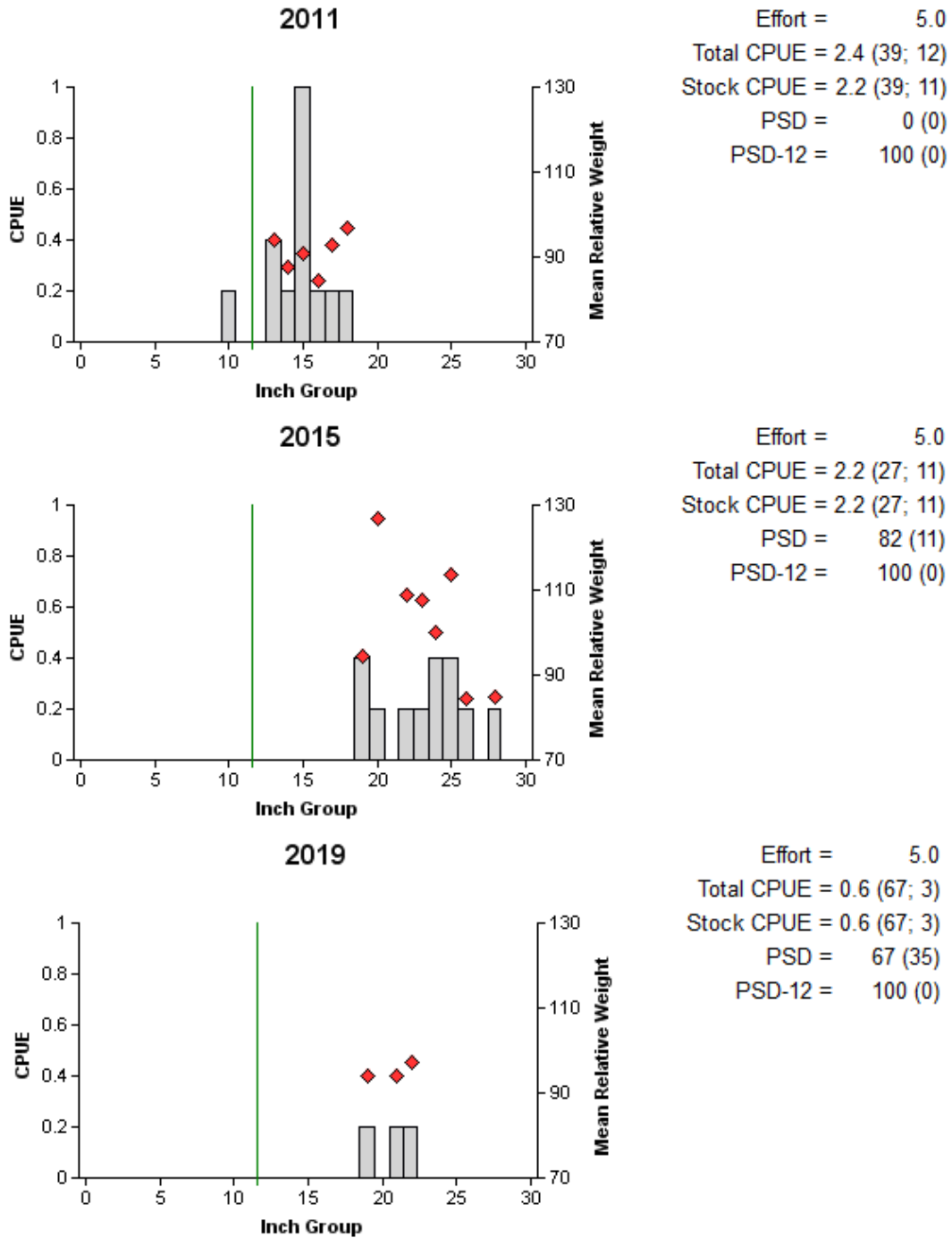


Figure 3. Number of Blue Catfish caught per net night (CPUE, bars), mean relative weight (diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting surveys, Fort Parker Reservoir, Texas, 2011, 2015, and 2019. Vertical line indicates minimum length limit.

Channel Catfish

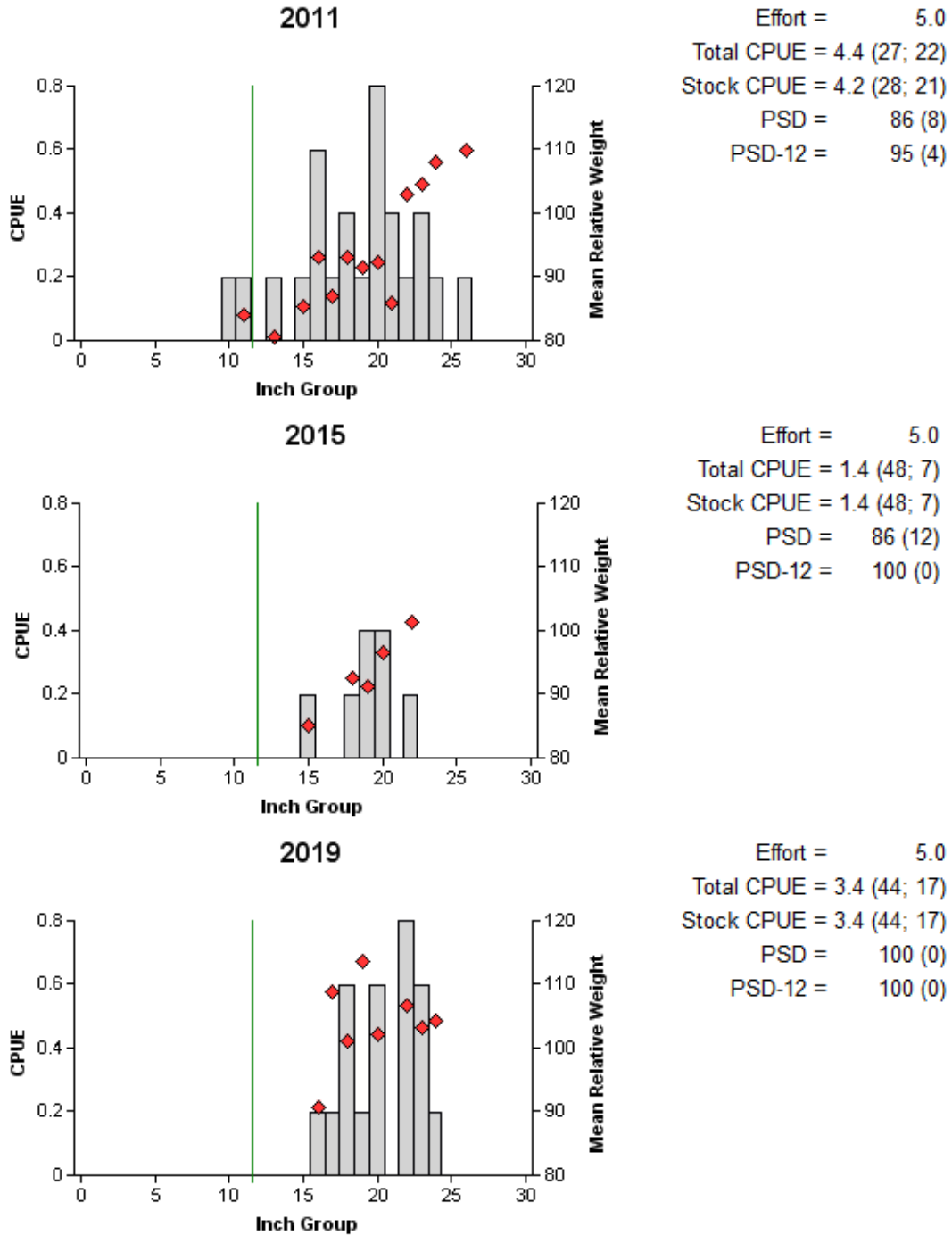


Figure 4. Number of Channel Catfish caught per net night (CPUE, bars), mean relative weight (diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting surveys, Fort Parker Reservoir, Texas, 2011, 2015, and 2019. Vertical line indicates minimum length limit.

Largemouth Bass

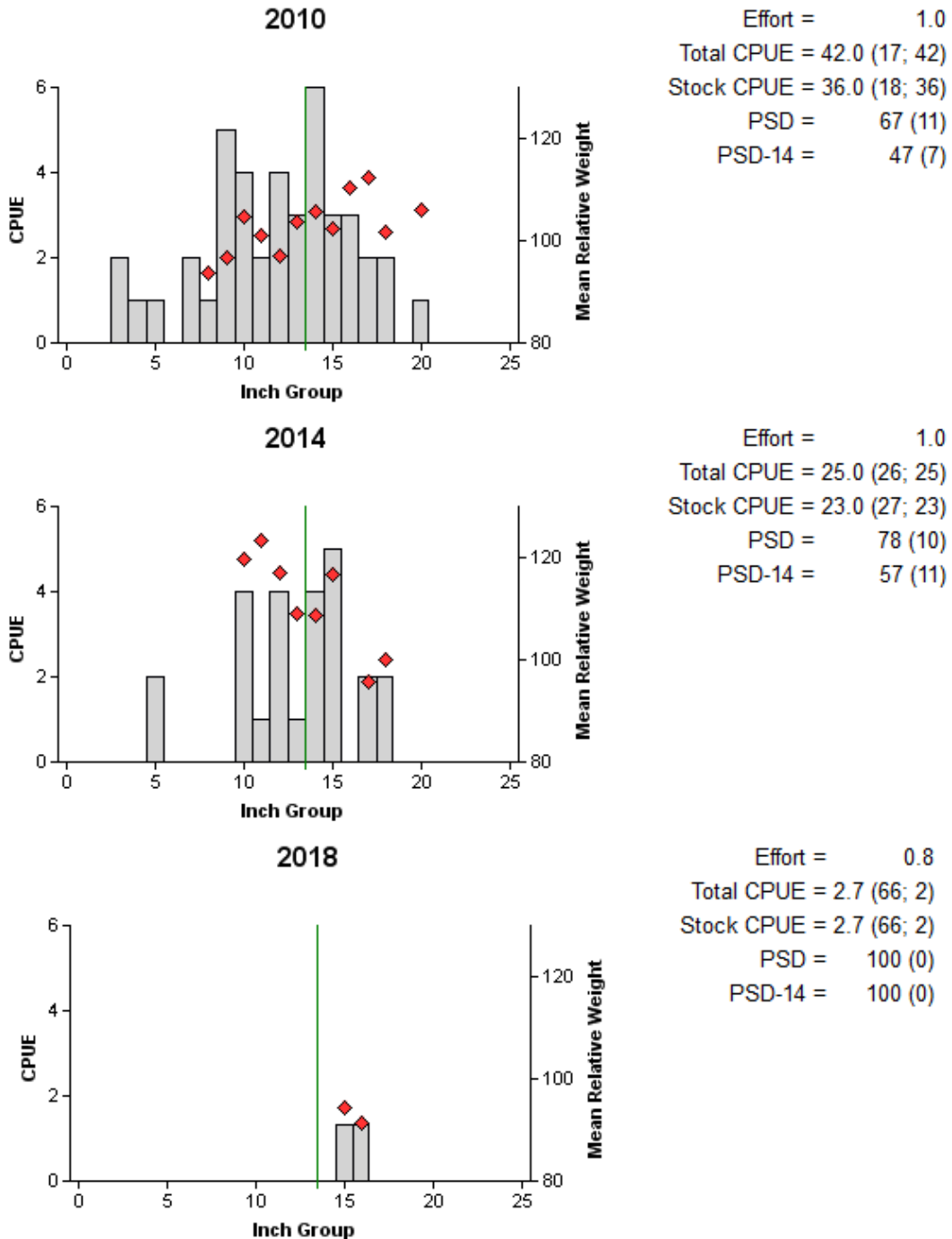


Figure 5. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Fort Parker Reservoir, Texas, 2010 (night-time), 2014 (night-time) and 2018 (day-time). Electrofishing effort was decreased to 0.8 h in 2018. Vertical line indicates minimum length limit.

White Crappie

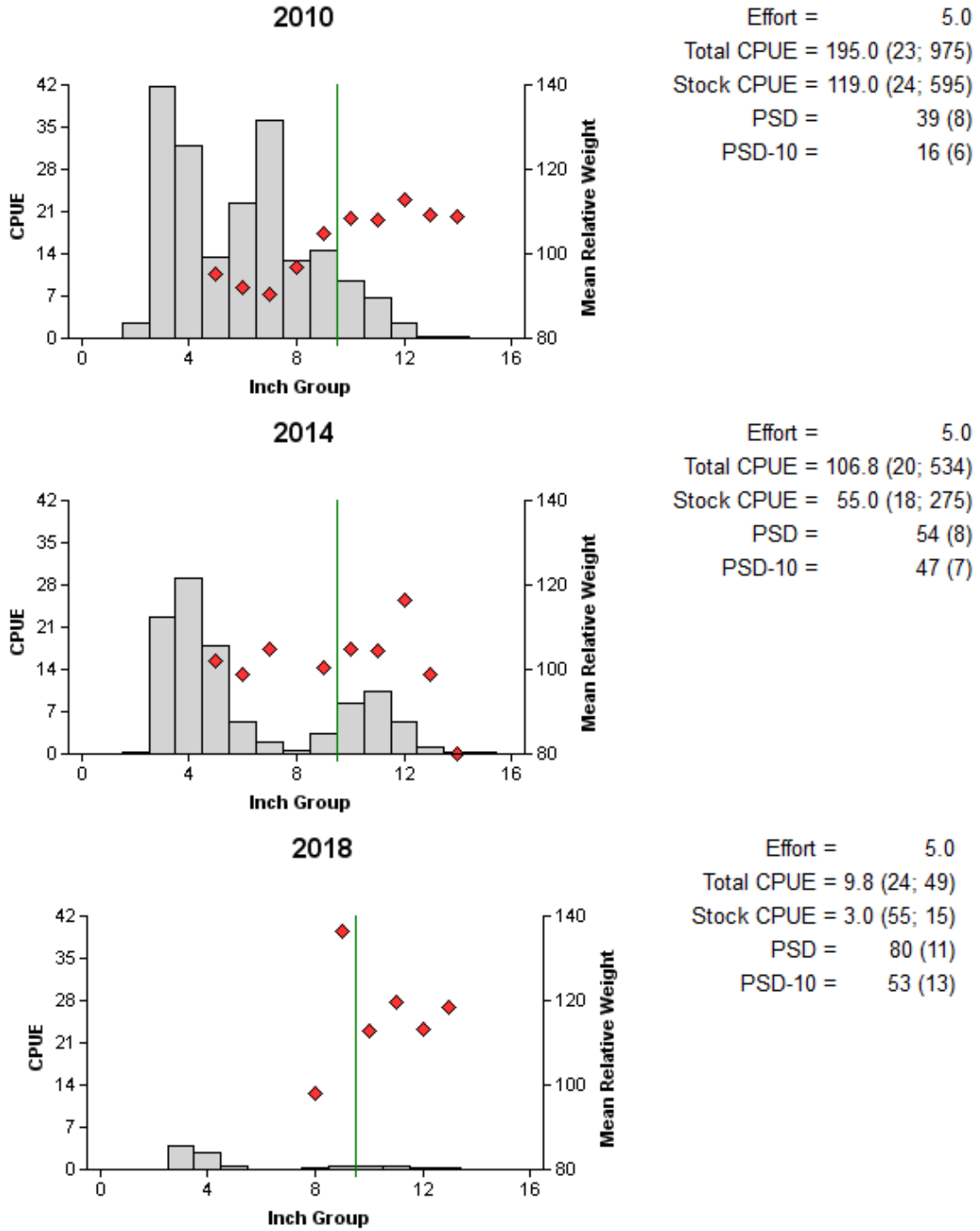


Figure 6. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for winter trap netting surveys, Fort Parker Reservoir, Texas, 2010, 2014, and 2018. Vertical line indicates minimum length limit.

White Crappie

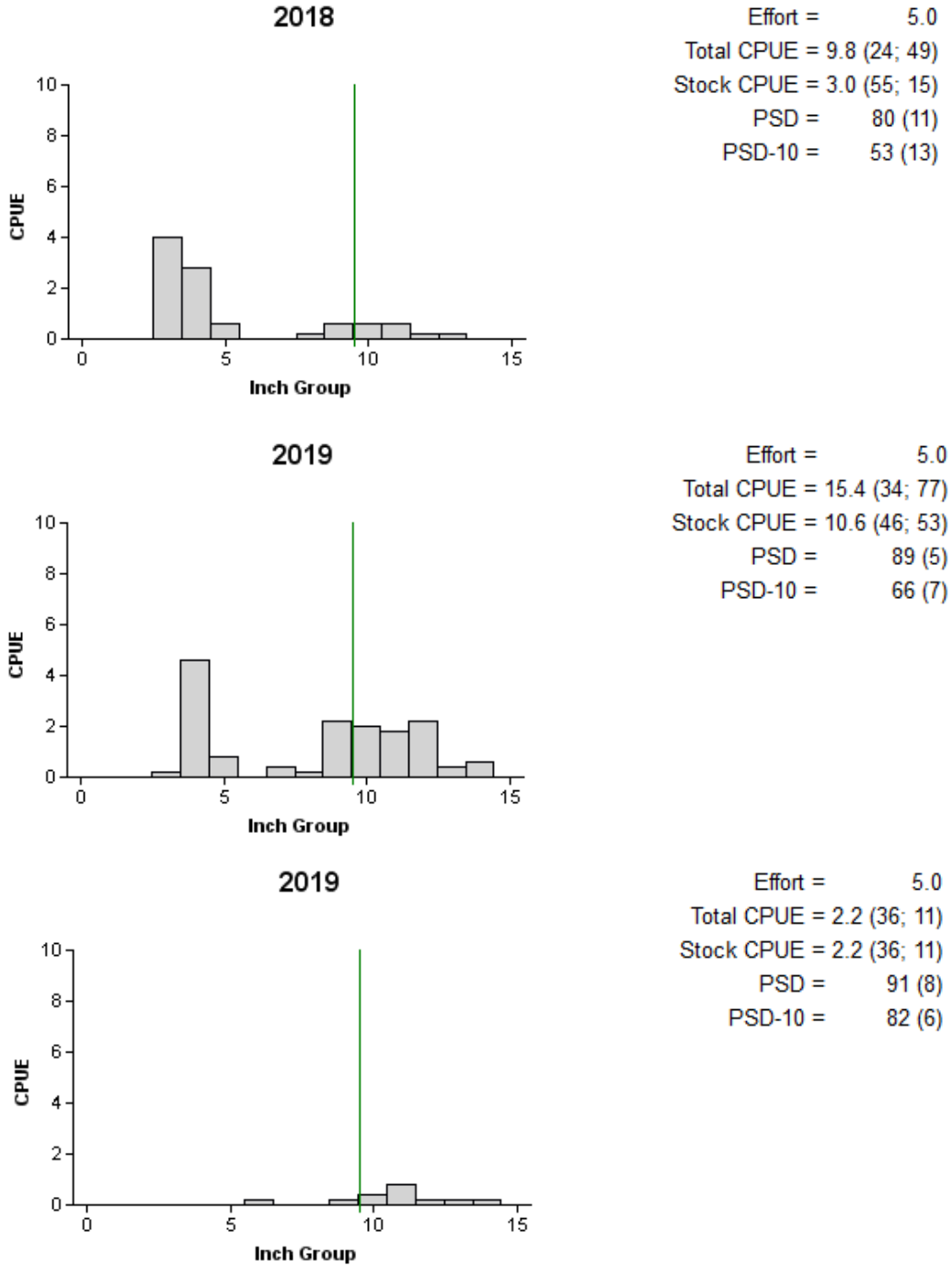


Figure 7. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for 2018 winter trap netting (top figure), 2019 spring trap netting (middle figure) and 2019 spring gill netting (bottom figure), Fort Parker Reservoir, Texas. Vertical line indicates minimum length limit.

Proposed Sampling Schedule

Table 6. Proposed sampling schedule for Fort Parker Reservoir, Texas. Survey period is June through May. Electrofishing and trap netting surveys are conducted in fall and winter, while gill netting surveys are conducted in spring. Standard surveys are denoted by S.

| | Survey year | | | |
|---------------------------------|-------------|-----------|-----------|-----------|
| | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 |
| Electrofishing – Fall | | | | S |
| Trap netting | | | | S |
| Low-Pulse Electrofishing - Fall | | | | S |

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 standard gear types from Fort Parker Reservoir, Texas, 2018-2019. Sampling effort was 0.8 hours for electrofishing, 5 net nights for winter trap netting and 5 net nights for spring gill netting. Spring 2019 trap netting (not listed) collected White Crappie at 15.4 fish/nn and Black Crappie at 0.2 fish/nn. Asterisk denotes a species collected by a non-standard gear.

| Species | Gill Netting | | Trap Netting (Winter) | | Electrofishing | |
|-----------------|--------------|-----------|-----------------------|-----------|----------------|------------|
| | N | CPUE | N | CPUE | N | CPUE |
| Gizzard Shad | | | | | 87 | 116.0 (15) |
| Threadfin Shad | | | | | 16 | 21.3 (54) |
| Blue Catfish | 3 | 0.6 (67) | | | | |
| Channel Catfish | 17 | 3.40 (44) | | | | |
| Yellow Bullhead | 4 | 0.8 (100) | | | | |
| Bluegill | | | | | 27 | 36.0 (38) |
| Largemouth Bass | | | | | 2 | 2.7 (66) |
| White Crappie* | 11 | 2.2 (36) | 49 | 9.8 (24) | | |
| Black Crappie* | | | 1 | 0.1 (100) | | |

APPENDIX B – Historical catch rates for targeted species

Catch rates (CPUE) of targeted species collected with electrofishing, trap netting and gill netting surveys on Fort Parker Reservoir, Texas, 2002 to present. Electrofishing stations were sampled with a 5.0 Smith-Root GPP (Gas Powered Pulsator) until 2010 and a 7.5 Smith-Root GPP thereafter. Asterisk denotes a species collected by a non-standard gear. Dashes represent no data taken. Species averages are in bold.

| | Electrofishing | | | | | Average |
|-----------------|----------------|--------|-------|--------|-------|--------------|
| | 2002 | 2006 | 2010 | 2014 | 2018 | |
| Gizzard Shad | 544.0 | 2114.0 | 252.0 | 1810.0 | 116.0 | 967.2 |
| Threadfin Shad | 5.2 | 243.0 | 231.0 | 48.0 | 21.3 | 108.6 |
| Bluegill | 196.0 | 352.0 | 209.0 | 24.0 | 36.0 | 163.4 |
| Redear | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| Warmouth | 13.0 | 4.0 | 5.0 | 0.0 | 0.0 | 4.4 |
| Green | 6.0 | 4.0 | 3.0 | 4.0 | 0.0 | 3.4 |
| Largemouth Bass | 42.0 | 39.0 | 42.0 | 25.0 | 2.7 | 30.1 |

| | Trap netting | | | | | |
|---------------|--------------|------|-------|-------|------|-------------|
| | 2002 | 2006 | 2010 | 2014 | 2018 | |
| White Crappie | 11.8 | 28.6 | 195.0 | 106.8 | 9.8 | 70.4 |

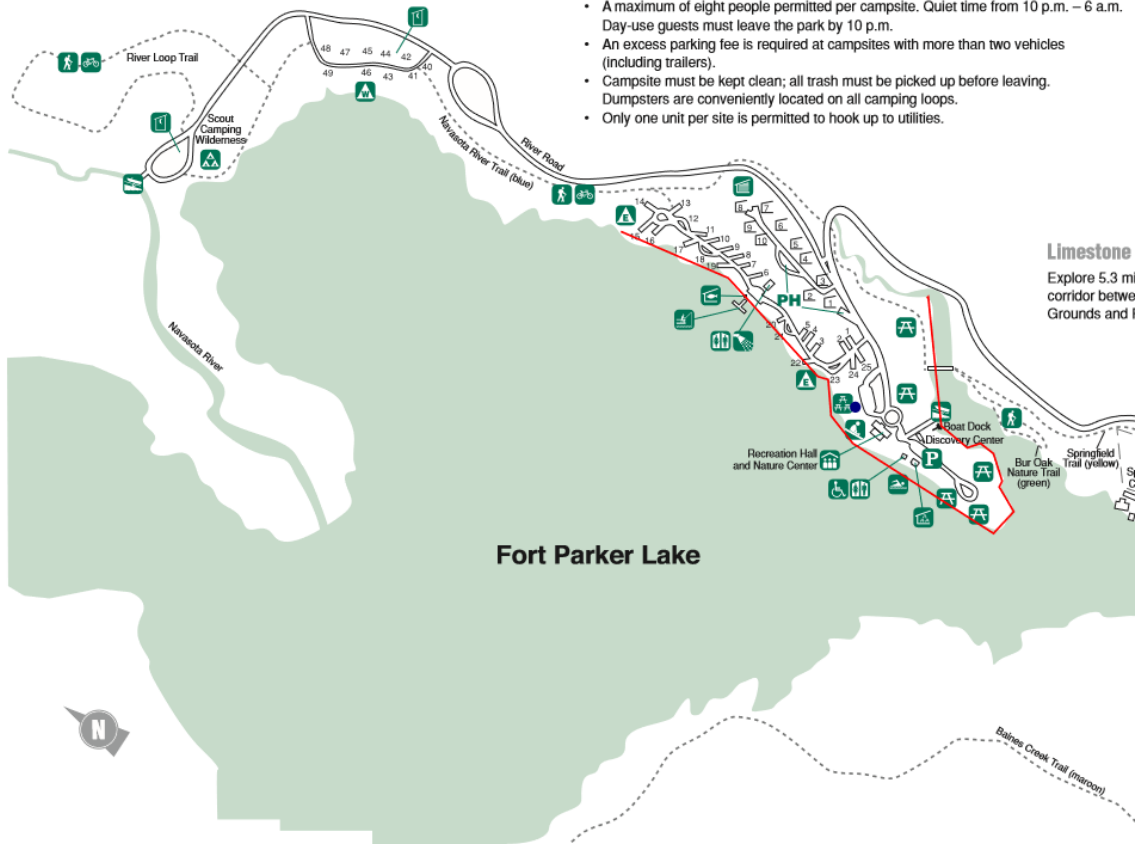
| | Gill netting | | | | | |
|-----------------|--------------|------|------|------|------|------------|
| | 2003 | 2007 | 2011 | 2015 | 2019 | |
| Blue Catfish | 0.8 | 0.6 | 2.4 | 2.2 | 0.6 | 1.3 |
| Channel Catfish | 1.0 | 3.2 | 4.4 | 1.4 | 3.4 | 2.7 |
| White Bass | 1.4 | 0.4 | 0.0 | 0.2 | 0.0 | 0.4 |
| White Crappie* | -- | -- | -- | -- | 2.2 | 2.2 |

APPENDIX C – Map of sampling locations



Location of sampling sites, Fort Parker Reservoir, Texas, 2018-2019. Electrofishing, trap netting and gill netting stations are indicated by circles, squares and triangles respectively. Water level was near full pool at time of sampling. The upper two-thirds of the reservoir (shaded area) is not navigable due to shallow water.

APPENDIX D – Map of problematic cutgrass



Location of shoreline affected by cutgrass that could be used by anglers, Fort Parker Reservoir, Texas, 2018-2019 (red line).



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