HABITAT CONSERVATION PLAN

BIOLOGICAL MONITORING PROGRAM

San Marcos Springs/River Aquatic Ecosystem

ANNUAL REPORT

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EXECUTIVE SUMMARY

The Edwards Aquifer Habitat Conservation Plan (EAHCP) Biological Monitoring Program continued to track biota and habitat conditions of the San Marcos Springs/River ecosystem in 2022 through a series of routine and Critical Period monitoring activities outlined in this report. Monitoring in the San Marcos system consisted of routine surveys specific to HCP Covered Species: Fountain Darter (*Etheostoma fonticola*), Texas Wild-rice (*Zizania texana*), and San Marcos Salamander (*Eurycea nana*). Community-level monitoring data were also collected on aquatic vegetation, fish, and benthic macroinvertebrates. In addition, reduced river discharge triggered Critical Period and species-specific low-flow sampling events starting in late spring. The last extensive drought in the San Marcos system occurred near the start of EAHCP implementation in 2013-2014. Nine years later, EAHCP activities have included extensive efforts to enhance ecological conditions in the system. The results from 2022 biological monitoring provide valuable data to assess ecological responses of aquatic biota in the San Marcos Springs/River ecosystem under some of the lowest total river discharge conditions recorded since the inception of the Edwards Aquifer Authority (EAA) biological monitoring program in 2000.

In 2022, low precipitation and higher ambient temperatures in central Texas resulted in severe drought conditions by spring and transitioned to an exceptional drought classification by mid-summer. River discharge in the San Marcos River was below median historical conditions for most of the year and represents the lowest levels since the inception of biological monitoring in 2000. Median and minimum mean daily discharge were similar in 2022 (119 and 82 cfs, respectively) and 2009 (96 and 83 cfs, respectively). Median mean daily discharge aligned with 2022 during low flows in 2006 (116 cfs) and 2011 (117 cfs). Despite similar medians and minimums in 2022 and 2009, flows returned to normal levels by October in 2009, whereas river discharge remained low in fall 2022. San Marcos River monthly median discharge decreased throughout the year. Median discharge aligned with long-term medians from January to March and descended to values near the long-term 10th percentile by June. Flows dropped below 100 cfs in July, triggering additional Critical Period sampling. River discharge was mostly below 100 cfs for the remainder of the year and fell slightly below the long-term 10th percentile for all of October, reaching the annual minimum (82 cfs) by the end of October.

Three visual habitat evaluations and resulting memorandum updates were conducted this year as discharge decreased below 95 cfs. Despite lower flows and slightly degraded habitat conditions, water quality parameters measured during Critical Period sampling in summer 2022 were within the range of historical data. Expectedly, water temperatures were slightly elevated relative to typical years, but remained consistent with respect to historical longitudinal patterns. Under these extreme low-flow conditions, the maximum optimal water temperature threshold for Fountain Darter larval production was exceeded from Spring Lake Dam to the Wastewater Treatment Plant, occurring less frequently in upstream river segments. Additionally, the threshold for Fountain Darter egg production was exceeded at City Park, Thompson Island Artificial, and Wastewater Treatment Plant, though exceedance was uncommon and for short periods.

Total aquatic vegetation coverage declined from spring to fall across all study reaches this year. Coverages declined at a greater magnitude at Spring Lake Dam compared to other reaches, likely influenced by increased recreational traffic in this reach in 2022. Additionally, total fall cover was below the long-term average at Spring Lake Dam and City Park but was higher at I-35. Ubiquitous declines were mainly attributed to decreased coverage of Texas Wild-rice due to low flows and recreation. Texas Wild-rice exhibited its lowest system-wide coverage since the peak in spring 2021, although this taxon still remained abundant throughout the system and continued to dominate aquatic vegetation assemblages in the study reaches. Reduced river discharge led to some Texas Wild-rice becoming dewatered and stranded on islands or along bank habitats.

Fountain Darter density among vegetation types sampled demonstrated predictable patterns observed in previous years and continues to support the importance of ornate taxa, whereas patterns in size structure demonstrated that vegetation taxa used at a given life stage can vary depending on localized patch conditions. Population trends within seasons were generally in agreement between the three sampling methods. However, conflicting patterns in CPUE and occurrence during spring sampling were noted, likely due to Fountain Darters being inherently clustered in more suitable vegetation taxa. Each population performance metric generally aligned with seasonal historical data, with some exceptions shown by density and recruitment. Despite some variation in density between events, positive increases were observed across study reaches during the past two years. Density data demonstrate that Fountain Darter are heterogeneously distributed within a reach, with density varying considerably between vegetation taxa.

Overall, and particularly within the most suitable vegetative taxa, Fountain Darter density has increased the past two years. Simultaneously, habitat suitability indices show reductions in suitable habitat at the reach scale, which correspond to reach-scale trends in occurrence. Therefore, increased Fountain Darter density may be a result of aggregation into smaller amounts of available habitat. Alternatively, greater recruitment rates in recent years may provide partial explanation for the increasing density trend. Higher recruitment in 2022 could be attributed to increased patch size of vegetation taxa more suitable for juveniles in certain reaches (e.g., *Cabomba* in City Park), enhanced young-of-year survival (or site fidelity) due to low and/or stable flows, or a combination of all the above. Regardless of the mechanism, results from drop-netting showed that reduced flows in 2022 did not have a negative impact on Fountain Darter populations within suitable habitat patches. Substantially increased abundance of young-of-year darters in the fall, when river discharge was lowest, also suggests that Fountain Darters may be resistant to large reductions in flow by augmentation through recruitment. However, it is unclear at this time whether low flows negatively affected individual fitness. In summary, results from this year provided some interesting insights into Fountain Darter flow-ecology. Additional research is needed to better understand how flow rates influence demographic processes and contribute to population dynamics.

Fish community sampling demonstrated that species richness and diversity generally increased from upstream to downstream, whereas richness and relative density of spring-associated fishes (hereafter 'spring fishes') declined in the study segments furthest downstream. Five-year trends in species richness and diversity displayed slight increases at Upper River and Lower River segments. At the Middle River, species richness slightly decreased over time, while diversity increased. Spring fishes' species richness at Lower River increased the past five years to levels more similar to upstream river segments.

Trends in San Marcos Salamander densities were variable among sites in 2022 and the past five years. However, based on this recent and historical data, low-flow conditions in 2022 did not appear to have had a negative effect on San Marcos Salamander populations.

Macroinvertebrate sampling showed that Spring Lake and City Park scored lower than other sites, likely due to differences in habitats available for sampling. Lower scores were expected at Spring Lake as these communities are naturally different compared to swift flowing "least-disturbed reference streams". At City Park, lower scores compared to Spring Lake Dam and I-35 were also not surprising. Lotic habitats at City Park mainly consist of deeper runs, while riffles with cobble and gravel substrates more similar to reference streams are present at the other riverine sites. As such, higher scores at Spring Lake Dam and I-35 can be attributed to greater prevalence of fluvial specialist, resulting in greater overall taxa diversity. However, for a spring-fed system, the importance of this metric is not necessarily the ranking, but rather the consistency of scores, or observance of a trend over time. No temporal trends in bioassessment scores were apparent, and overall macroinvertebrate bioassessments revealed a healthy riverine community with a diversity of benthic invertebrates.

Overall, 2022 biological monitoring provided insights into the current condition of the Covered Species and their habitats in the San Marcos Springs/River, and informed flow-ecology relationships following nine years of EAHCP implementation. Total system discharge was the lowest recorded since the inception of the biological monitoring program over two decades ago. The exceptional drought and low-flow conditions resulted in impacted habitat conditions throughout the system with respect to increased siltation in Spring Lake, reductions in aquatic vegetation coverage throughout study reaches, and elevated water temperatures in slower moving segments. Recreational impacts were also magnified this year with the lower water levels and hot summer temperatures. With respect to the Covered Species, Texas Wild-rice coverages declined, although this taxon continued to dominate aquatic vegetation assemblages. Fountain Darter densities and catch rates were high in suitable habitat patches despite lower occurrences and habitat suitability at a reach scale. San Marcos Salamander densities generally aligned with previous low-flow events. In summary, results from 2022 demonstrated varied responses to reduced flows but did not reveal any major degradation to the overall ecological health of the San Marcos system. Subsequent monitoring efforts will provide opportunities to better understand the dynamics of this complex ecological system and further examine responses to varying hydrologic conditions.

INTRODUCTION

The Edwards Aquifer Habitat Conservation Plan (EAHCP) was established in 2012 and supports the issuance of an Incidental Take Permit that allows the "incidental take" of threatened and endangered species (i.e., Covered Species) (Table 1) from otherwise lawful activities in the San Marcos Springs/River. Section 6.3.1 of the HCP established a continuation of biological monitoring in the San Marcos Springs/River. This biological monitoring program was first established in 2000 (formerly known as the Edwards Aquifer Authority [EAA] Variable Flow Study) and its original purpose was to evaluate the effects of variable flow on the biological resources, with an emphasis on threatened and endangered species. However, the utility of the EAHCP biological monitoring program has surpassed its initial purpose (EAHCP 2012), and biological data collected since the implementation of this monitoring program (BIO-WEST 2001–2022) now serves as the foundation for several underlying sections in the HCP, which include: (1) long-term biological goals (LTBGs) and management objectives (Section 4.1); (2) determination of potential impacts to Covered Species, "incidental take" assessment, and Environmental Impact Statement alternatives (Section 4.2); and (3) establishment of core adaptive-management activities for triggered monitoring and adaptive-management response actions (Section 6.4.4). As the EAHCP proceeds, biological monitoring program data, in conjunction with other available information, are essential to adaptive management. Current and future data collection will help assess the effectiveness and efficiency of certain EAHCP mitigation and restoration activities conducted in the San Marcos Springs/River and calculate the EAHCP habitat baseline and net disturbance determination and annual "incidental take" estimate.

Table 1. Covered Species directly sampled for under the Edwards Aquifer Habitat Conservation Plan in the San Marcos Springs/River ecosystem.

SCIENTIFIC NAME	COMMON NAME	ESA STATUS
Plants		
Zizania texana	Texas Wild-rice	Endangered
Amphibians		
Eurycea nana	San Marcos Salamander	Threatened
Fish		
Etheostoma fonticola	Fountain Darter	Endangered

This report provides the methodology and results for biological monitoring activities conducted in 2022 within the San Marcos Springs/River ecosystem. In addition to routine monitoring, Critical Period and species-specific low-flow sampling were triggered. The results include summaries of current physiochemical conditions, as well as current conditions of floral and faunal communities, all of which encompasses both routine and low-flow sampling. For all aquatic organisms, historic observations (BIO-WEST 2001–2022) are also used to provide context to current conditions.

METHODS

Study Location

The upper San Marcos River (San Marcos, Hays County, Texas) is fed by the Edwards Aquifer and originates at a series of spring upwellings in Spring Lake, which was impounded in the mid-1800s (Bousman and Nickels 2003). From the headwaters, the river flows about eight kilometers (km) before its confluence with the Blanco River, traversing two additional impoundments, Rio Vista Dam, and Capes Dam. The upper San Marcos River watershed is dominated by urban landcover and is subjected to recreational use. Spring inputs from the Edwards Aquifer provide stable physiochemical conditions, and springflow conditions are dictated by aquifer recharge and human water use (Sung and Li 2010). The upper San Marcos River maintains diverse assemblages of floral and faunal communities (Bowles and Arsuffi 1993; Owens et al. 2001) that include multiple endemic organisms, such as Texas Wild-rice (*Zizania texana*), Comal Springs Riffle Beetle (*Heterelmis comalensis*), San Marcos Salamander (*Eurycea nana*), and Fountain Darter (*Etheostoma fonticola*) among others.

Sampling Strategy

Based on the long-term biological goals (LTBGs), and management objectives outlined in the EAHCP, study areas were established to conduct long-term monitoring and quantify population trends of the Covered Species (EAHCP 2012). The sampling locations selected are designed to cover the entire extent of Covered Species habitats, but they also allow for holistic ecological interpretation while maximizing resources (Figures 1–3). Comprehensive sampling within the established study area varies temporally and spatially among Covered Species. The current sampling strategy includes five spatial resolutions:

1. System-wide sampling
    a. Texas Wild-rice mapping: 1 event/year (summer)
    b. Aquatic vegetation mapping: 5-year intervals (winter)
2. Select longitudinal locations
    a. Water temperature: assessed year-round at permanent monitoring stations
3. Reach sampling
    a. Aquatic vegetation mapping: 2 events/year (spring, fall)
    b. Fountain Darter drop-net sampling: 2 events/year (spring, fall)
    c. Fountain Darter random-station dip-net surveys: 3 events/year (spring, summer, fall)
4. Springs Sampling
    a. San Marcos Salamander surveys: 2 events/year (spring, fall)
5. River section/segment
    a. Fountain Darter timed dip-net surveys: 3 events/year (spring, summer, fall)
    b. Fish community surveys: 2 events/year (spring, fall)
    c. Macroinvertebrate community sampling: 2 events/year (spring, fall)

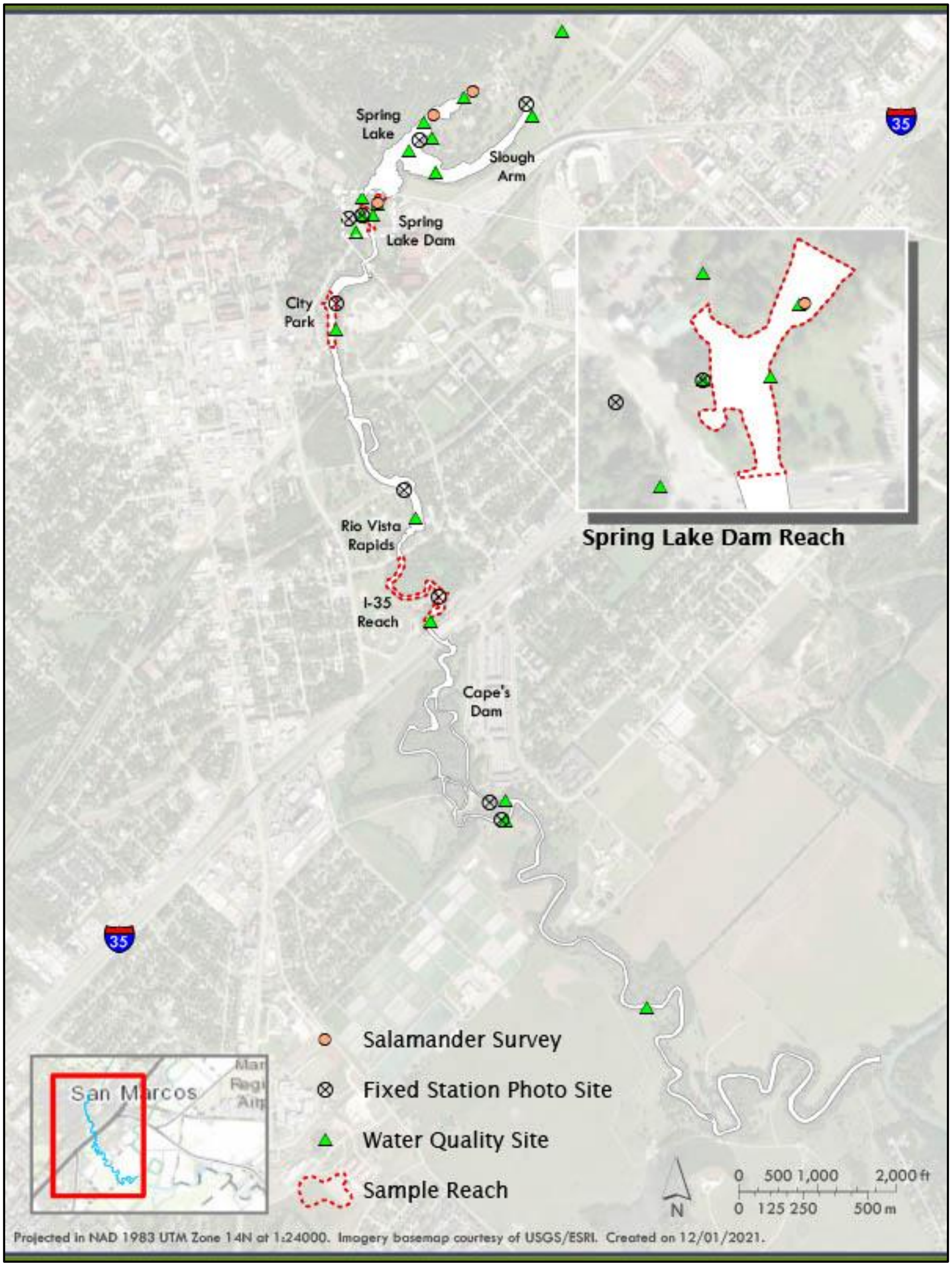

Figure 1. Upper San Marcos River sample reaches, San Marcos Salamander survey sites, water quality sampling sites, and fixed-station photography sites.

Figure 2. **Fish community sampling segments and dip-net timed survey sections for the upper San Marcos River.**

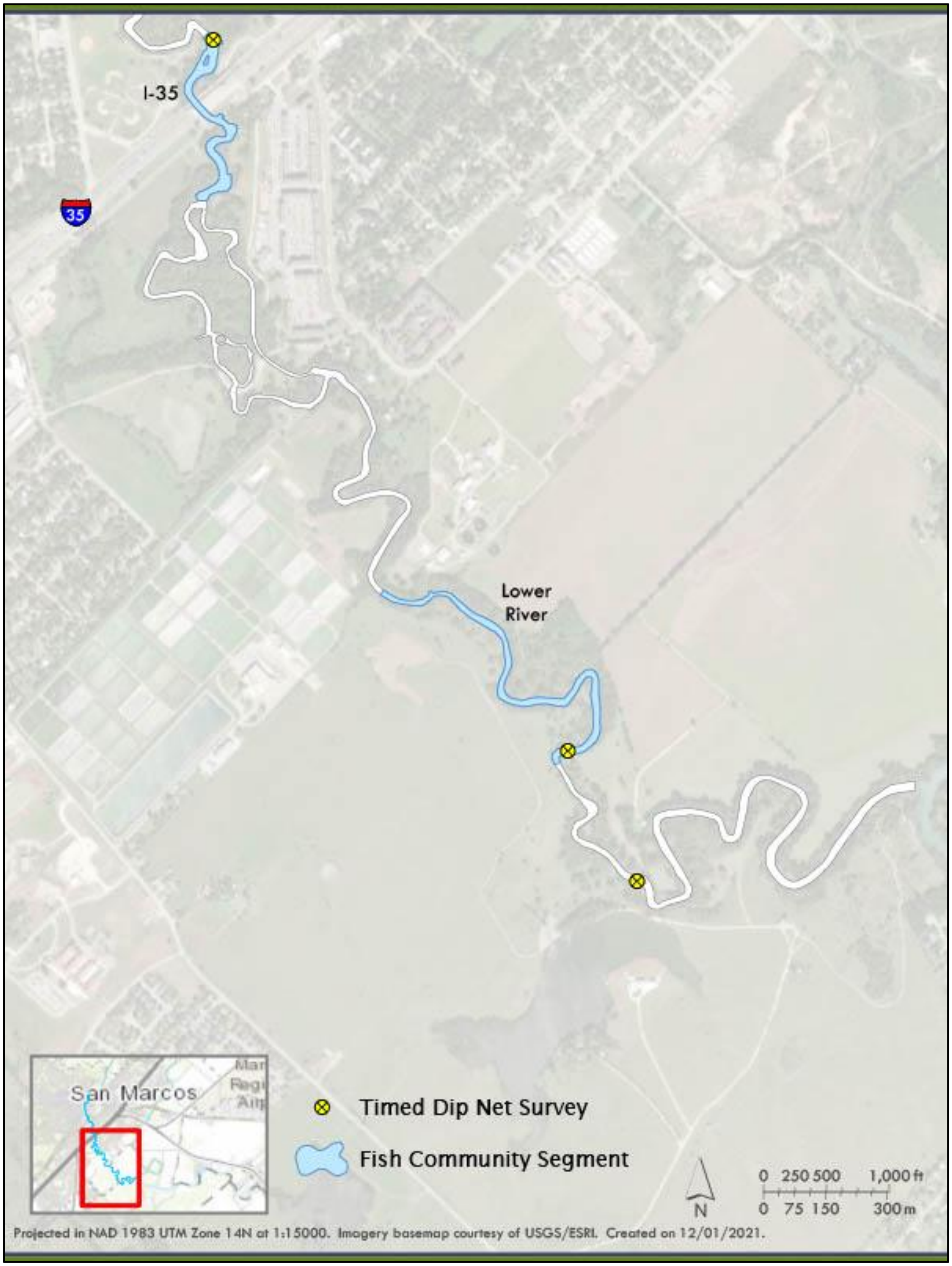

Figure 3. Fish community sampling segments and dip-net survey sections for the lower San Marcos River.

In addition to annual comprehensive sampling outlined above, low-flow sampling may also be conducted, but is dependent on EAHCP flow triggers, which include Critical Period low-flow sampling and species-specific sampling (EAHCP 2012). In July 2022, river discharge dropped below 100 cubic feet per second (cfs), which resulted in a comprehensive Critical Period low-flow full sampling event. Flows in fall remained in Critical Period and biological monitoring was integrated into a routine full, Fall sampling event. In addition, species-specific triggers were met from late spring through the remainder of the year for Texas Wild-rice physical measurements (Appendix A). Critical Period water grab sampling and visual habitat assessment results are presented in Appendix B.

The remaining methods sections provide brief descriptions of the procedures utilized for comprehensive routine, Critical Period, and species-specific sampling efforts. A more-detailed description of the gear types used, methodologies employed, and specific GPS coordinates can be found in the Standard Operating Procedures Manual for the EAHCP biological monitoring program for the San Marcos Springs/River ecosystem (EAA 2017).

San Marcos River Discharge

River hydrology in 2022 was assessed using U.S. Geological Survey (USGS) stream gage data from January 1 through October 31. Mean daily discharge expressed in cubic feet per second (cfs) was acquired from USGS gage #08170500, which represents cumulative river discharge that encompasses springflow and local runoff contributions from the Sink Creek drainage. It should be noted that some of these data are provisional and are subject to revision at a later date (USGS 2022). The annual distribution of mean daily discharge was compared from for the past 5 years using boxplots. The distribution of 2022 mean daily discharge was also summarized by month using boxplots. Monthly discharge levels were compared with long-term (1956–present) 10th, 50th (i.e., median), and 90th percentiles.

Water Temperature

Spatiotemporal trends in water temperature (°C) were assessed using temperature data loggers (HOBO Tidbit v2 Temp Loggers) at the 11 permanent monitoring stations established in 2000. Data loggers recorded water temperature every 10 minutes and were downloaded at regular intervals. Prior to analysis, data processing was conducted to locate potential data logger errors per station by comparing time-series for the current year with previous years. Timeframes displaying temperatures that deviated substantially from historical data and didn’t exhibit ecologically rational trends (e.g., discontinuities, ascending drift) were considered unreliable and omitted from the dataset. For analysis, the distribution of water temperatures for the current year was assessed among stations based on 4-hour intervals and summarized using boxplots. Water temperatures were also compared with maximum optimal temperature requirements for Fountain Darter larval (≥25 °C) and egg (≥26 °C) production (McDonald et al. 2007). Further, 25 °C is also the designated water temperature threshold within the HCP Fountain Darter LTBG study reaches (Spring Lake Dam, City Park, I-35) (EAHCP 2012). In the case of stations that surpassed either water temperature threshold during the year, the general timeframes in which those exceedances occurred are discussed in the text.

Aquatic Vegetation

Mapping

The team used a kayak for visual observations to complete aquatic vegetation mapping in sample reaches during the spring, summer Critical Period, and fall monitoring events. A Trimble GPS unit and external Tempest antenna set on the bow of the kayak was used to collect high accuracy (10–60 centimeter [cm]) geospatial data. A data dictionary with pre-determined attributes was loaded into the GPS unit for data collection in the field. Discrete patch dimensions and the type and density of vegetation were recorded from the kayak. In some instances, an accompanying free diver was used to provide additional detail and to verify surface observations. The discreteness of an individual vegetation patch was determined by the dominant species located within the patch compared to surrounding vegetation. Once a patch of vegetation was visually delineated, the kayak was maneuvered around the perimeter of the vegetation patch to collect geospatial data with the GPS unit, thus creating a vegetation polygon. Attributes assigned to each polygon included species type and percent cover of each of the four most-dominant species. The type of substrate (silt, sand, gravel, cobble, organic) was identified if substrate was a dominant feature within the patch. Rooted aquatic vegetation, floating aquatic vegetation, bryophytes, and algae were mapped as separate features. Only aquatic vegetation patches 1 meter (m) in diameter or larger were mapped as polygons. However, all Texas Wild-rice was recorded, with individual Texas Wild-rice plants too small to delineate as polygons mapped as points instead.

Data Processing and Analysis

During data processing, Microsoft Pathfinder was used to correct spatial data and create shapefiles. Spatial data were projected using the Projected Coordinate System NAD 1983 Zone 14N. Post processing was conducted to clean polygon intersections, check for and correct errors, and calculate cover for individual discrete polygons as well as totals for all encountered aquatic plant species.

Vegetation types are described in the Results and Discussion sections by genus, except for Texas Wild-rice for which the common name is used. Vegetation community composition among taxa and grouped by native vs. invasive taxa are compared for the last five years using stacked bar graphs. Total surface area of aquatic vegetation, measured in square meters (m^2), is presented for each season using bar graphs and is compared with long-term averages (2001–present) from spring, fall, high-flow events, and low-flow events. High-flow and low-flow averages were calculated from Critical Period events. These events are based on predetermined river discharge triggers (Appendix A), which result in additional mapping events to assess flow-related impacts to the vegetation community. All total coverages were calculated solely based on rooted plant taxa.

Texas Wild-rice Annual Observations

Mapping and Physical Observations

In addition to aquatic vegetation mapping in the LTBG study reaches, Texas Wild-rice was mapped within Spring Lake and eight river segments using the same methods described above during routine summer mapping in July, which also represented the Critical Period (Figure 4). Moreover, physical measurements were quantified during routine monitoring in spring and fall. Six additional sampling events occurred during Critical Period and species-specific events triggered in July (n = 2), August (n = 1), September (n = 2), and November (n = 1).

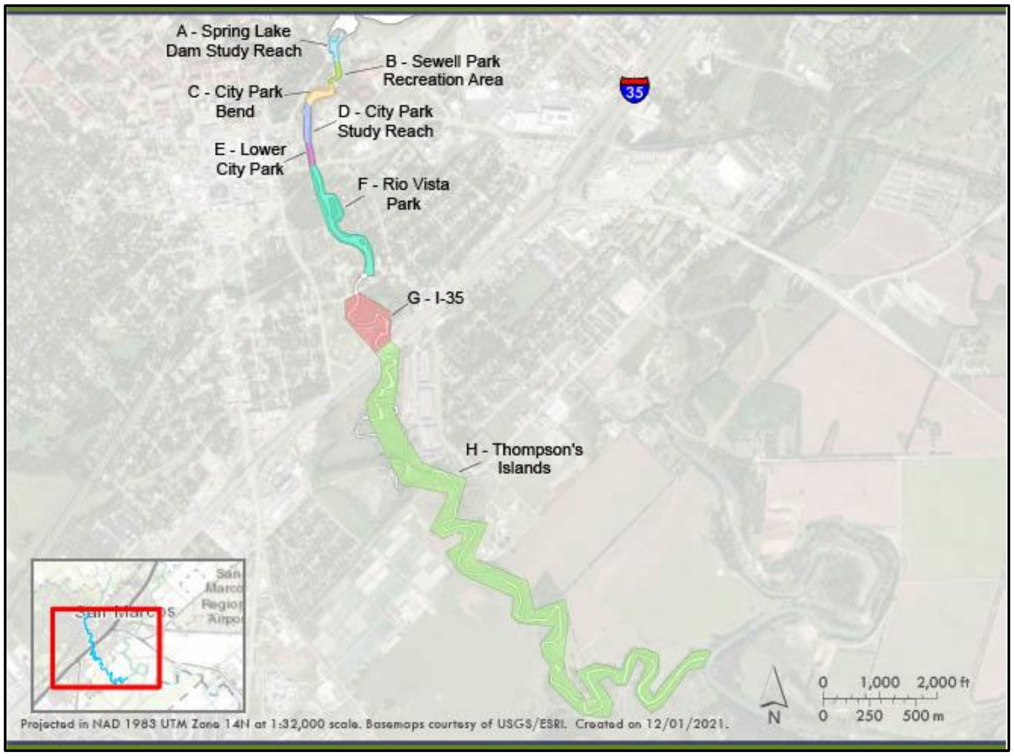

Figure 4. Designated river segments for monitoring Texas Wild-rice coverage.

At the beginning of the initial sampling activities in 2000, Texas Wild-rice stands throughout the San Marcos River were assessed and documented as being in "vulnerable" areas if they possessed one or more of the following characteristics: (1) occurred in shallow water (<0.5 feet); (2) revealed extreme root exposure because of substrate scouring; or (3) generally appeared to be in poor condition. The areal coverage of Texas Wild-rice stands in vulnerable locations were determined in 2022 by GPS mapping (see Aquatic Vegetation Mapping for details) in most instances. However, areal coverage of some smaller stands was measured using a method originally developed by the Texas Parks and Wildlife Department (J. Poole, pers. comm.). To do this, maximum length and maximum width were measured. The length measurement was taken at the water surface parallel to streamflow and included the distance between the bases of the roots to the tip of the longest leaf. The width was measured at the widest point perpendicular to the stream current. Percent cover was then estimated within the rectangle formed from the maximum length and maximum width measurements. The total area of the rectangle was then multiplied by the percent cover to estimate the areal coverage for each small stand.

Data Processing and Analysis

Annual trends in total Texas Wild-rice coverage (m^2) within Spring Lake and all river segments are presented from 2001–present. Changes in Texas Wild-rice coverage (m^2, %) from April to August this year are also compared between the eight river segments. Results for changes in Texas Wild-rice coverage in Spring Lake can be found in Appendix E.

The conditions of vulnerable Texas Wild-rice stands were assessed by combining quantitative and qualitative observational measurements from the following metrics: (1) percent of stand that was emergent, (2) percent of emergent portions that were seeding, (3) percent of stand covered with vegetation mats or algae buildup, and (4) categorical estimation of root exposure. Water depth was measured in feet (ft) at the shallowest point in the Texas Wild-rice stand and velocity in feet per second (ft/s) was measured at the upstream edge of each stand. All results from the physical observations and vulnerable stands monitoring can be found in Appendix D.

Fountain Darter

Drop-Net Sampling

Drop-net sampling was utilized to quantify Fountain Darter densities and habitat utilization during the spring, summer Critical Period, and fall monitoring events at established sample reaches (Figure 1). Drop-net sites were selected using a random-stratified design. In each study reach, two sample sites per vegetation strata were randomly selected based on dominant aquatic vegetation (including open areas) mapped prior to sampling (see Aquatic Vegetation Mapping for details). At each sample site, all organisms were first trapped using a 2 m^2 drop-net. Organisms were then collected by sweeping a 1 m^2 dip-net along the river bottom within the drop-net. If no fish were collected after the first ten dip-net sweeps, the site was considered complete, and if fish were collected, an additional five sweeps were conducted. If any Fountain Darters were collected on sweep 15, additional sweeps were conducted until no Fountain Darters were collected.

Most fishes collected were identified to species and enumerated. Two morphologically similar species, Western Mosquitofish (*Gambusia affinis*) and Largespring Gambusia (*Gambusia geiseri*), which are known to hybridize, were classified by genus (*Gambusia* sp.). Larval and juvenile fishes too small to confidently identify to species in the field were also classified by genus. All Fountain Darters and the first 25 individuals of other fish taxa were measured (total length expressed in millimeters [mm]).

Physiochemical habitat data were collected at each drop-net location. Water depth (ft) and velocity (ft/s) data were collected at the upstream end of drop-net samples using a HACH FH90 flowmeter and adjustable wading rod. Water-velocity measurements were collected at 15 cm above the river bottom to characterize flows that directly influence Fountain Darters. Mean-column velocity was measured at 60% of water depth when depths were less than three feet. At depths of three feet or greater, water velocities were measured at 20% and 80% of depth and averaged to estimate mean column velocity. Water quality was measured within each drop-net using a HydroTech multiprobe, which included water temperature (degrees Celsius [°C]), pH, dissolved oxygen (milligrams per liter [mg/L], percent saturation), and specific conductance (microsiemens per centimeter [µs/cm]). Mid-column water quality was measured at water depths less than three feet, whereas bottom and surface values were measured and averaged at depths of three feet or greater. Lastly, vegetation composition (%) was visually estimated and dominate substrate type was recorded within each drop-net sample.

Dip-Net Sampling

Dip-net sampling was used to provide additional metrics for assessing Fountain Darter population trends and included qualitative timed surveys and random-station presence/absence surveys. All sampling was conducted using a 40x40 cm (1.6-mm-mesh) dip net, and surveys for both methods were conducted in spring, summer, and fall. Summer surveys represented both routine and Critical Period sampling events.

Timed dip-net sampling was conducted to examine patterns in Fountain Darter catch rates and size structure along a more extensive longitudinal gradient compared to drop-net sampling. Surveys were conducted within established survey sections and for a fixed amount of search effort (Spring Lake: 0.5 hour, City Park: 1.0 hour, I-35: 1.0 hour, Cypress Tree: 0.5 hour, Todd Island: 0.5 hour) (Figures 2 and 3). In each study reach, a single surveyor used a dip-net to collect Fountain Darters in a downstream to upstream fashion. Collection efforts mainly focused on suitable Fountain Darter habitat, specifically in areas with dense aquatic vegetation. Non-wadeable habitats (>1.4 m) were not sampled. All Fountain Darters collected were enumerated, measured (mm), and returned to the river at point of collection.

Random-station presence/absence surveys were implemented to assess Fountain Darter occurrence. During each monitoring event, sample stations were randomly selected within the vegetated area of each reach (Spring Lake: 10 sites, Spring Lake Dam: 25 sites, City Park: 20 sites, I-35: 15 sites) (Figure 1). At each random-station presence/absence was recorded during four independent dips. To avoid recapture, collected Fountain Darters were returned to the river in areas adjacent to the random station being sampled. Habitat variables recorded at each station included dominant aquatic vegetation, and presence/absence of bryophytes and algae.

Data Analysis

Key demographic parameters used to evaluate Fountain Darter observations included population performance, size structure, and recruitment. Population performance was assessed using drop-net, timed dip-net, and random dip-net data. Counts of darters per drop-net sample were standardized as density (darters/m^2). Timed dip-net total darter counts per study reach were standardized as catch-per-unit-effort (CPUE; darters/person-hour [p-h]) for each sampling event. Random dip-net occurrence per station was based on whether or not a Fountain Darter was observed during any of the four dips and percent occurrence was calculated per sampling event at each site as: (sum[darter presence]/sum[random stations])*100. Fountain Darter density, CPUE, and occurrence were compared among seasons using boxplots. In addition, density and CPUE seasonal observations were compared to the past five years and long-term observations (2001–present). Occurrence values were only compared to observations from the past four years due to the fact that Texas Wild-rice was excluded from sampling prior to 2017. Lastly, temporal trends in Fountain Darter density were assessed per sampling event for each study reach for the past five years using boxplots and compared to their respective long-term (2001–present) medians and quartiles (25th and 75th percentile).

Size structure and recruitment were assessed among seasons. Fall and spring were assessed by combining drop-net and timed dip-net data and summer was assessed using timed dip-net data only. Boxplots coupled with violin plots were used to display the distribution of darter lengths per sampling event for each season for the past five years. Boxplots show basic length-distribution statistics (i.e., median, quartiles, range) and violin plots visually display the full distribution of lengths relative to each sampling event using kernel probability density estimation (Hintze and Nelson 1998). Recruitment was quantified as the percent of darters ≤20 mm during each sampling event. Based on a linear model built by Brandt et al. (1993) that looked at age-length relationships of laboratory-reared Fountain Darters, individuals of this size are likely less than 3 months old and not sexually mature (Brandt et al. 1993; Schenck and Whiteside 1977). Percent recruitment ±95% confidence intervals (beta distribution percentiles; McDonald 2014) were shown for the past five years by season and compared to their respective long-term averages.

Habitat use was assessed based on population performance and size structure among vegetation strata using drop-net and random station dip-net observations. Fountain Darter density by vegetation taxa was compared based on current, five-year, and long-term (2001–present) observations using boxplots. Long-term comparisons of Texas Wild-rice were not provided since 2020 was the first year this species was sampled via drop-netting. In addition, Texas Wild-rice was only sampled during spring drop-netting and not included in subsequent events due to river discharge dropping below 120 cfs. Proportion of occurrence was also calculated among vegetation types sampled during random-station dip-netting for the current year. Lastly, boxplots coupled with violin plots were used to display the distribution of darter lengths by vegetation taxa using drop-net data to examine habitat use among size classes for the current year. Open habitats and Texas Wild-rice were omitted from analysis due to limited darter counts (i.e. less than 3 darters total).

Habitat suitability was quantified to examine reach-level changes in habitat quality for Fountain Darters through time. First, Habitat Suitability Criteria (HSC) ranging from 0 (unsuitable habitat) to 1 (most suitable habitat) were built based on occurrence data for all vegetation types (including open habitat) that have been sampled using logistic regression (Manly et al. 1993). Resulting HSC were then multiplied by the areal coverage of each vegetation strata mapped during a biomonitoring event, and results were summed across vegetation strata to calculate a weighted usable area for each reach. To make data comparable between reaches of different sizes, the total weighted usable area of each reach was then divided by the total area of the reach, resulting in an Overall Habitat Suitability Index (OHSI) for each reach during each sampling event. Following this method, temporal trends of Fountain Darter OHSI ±95% CI were calculated per sampling event for each study reach (Spring Lake Dam, City Park, I-35) for the past five years. Long-term (2003–present) OHSI and 95% CI averages were also calculated to provide historical context to recent observations. Specific details on the analytical framework used for developing OHSI and evaluating its efficacy as a Fountain Darter habitat index, including methods to build HSC, can be found in Appendix H.

Fish Community

Mesohabitat, Microhabitat, and Seine Sampling

Fish community sampling was conducted in the spring, summer Critical Period, and fall monitoring events to quantify fish assemblage composition/structure and to assess Fountain Darters in river segments and habitats (e.g., deeper areas) not sampled during drop-net and timed dip-net surveys. The following nine monitoring segments were sampled: Spring Lake, Sewell Park, Veterans Plaza, Rio Vista Park, Crooks Park, I-35, Wastewater Treatment Plant, Smith Property, and Thompson Island (Figures 2 and 3). Deeper habitats were sampled using visual transect surveys, and shallow habitats were sampled via seining.

A total of three mesohabitat transects were sampled at each segment during visual surveys. At each transect, four divers swam from bank-to-bank at approximately mid-column depth, enumerating all fishes observed and identifying them to species. After each mesohabitat transect was completed, microhabitat sampling was also conducted along four, five-meter-long PVC pipe segments (micro-transect pipes) placed on the stream bottom, spaced evenly along the original transect. Divers started at the downstream end and swam up the pipe searching through the vegetation, if present, and substrate within approximately 1 m of the pipe. All fishes observed were identified to species and enumerated. For both surveys, any individuals that could not be identified to species were classified by genus. At each micro-transect-pipe, total area surveyed (m^2) aquatic vegetation composition (%), and substrate composition (%) were recorded. Water depth (ft) and velocity (ft/s) data were collected in the middle of each micro-transect pipe using a Marsh McBirney Model 2000 portable flowmeter and adjustable wading rod. At each micro-transect pipe, water-velocity measurements were taken 15 cm from the bottom, mid-column, and at the surface. Standard water-quality parameters were also recorded once at each transect using a handheld water-quality sonde.

In shallow habitats, at least three transects were sampled within each monitoring segment (except Spring Lake) via seining. At each of these, multiple seine hauls were pulled until the entire wadeable area had been covered. After each seine haul, fish were identified, measured (mm), and enumerated. Total area surveyed (m^2) was visually estimated for each seining transect. Habitat data from each seine haul location included substrate and vegetation composition (%); water depth (ft); and mid-column velocity (ft/s).

Data Analysis

To evaluate fish community results, all analyses were conducted using fishes identified to species; fishes identified to genus or family were excluded. Total counts of species from independent samples were first quantified as density (fish/m^2) to standardize abundance among the three gear types used. Results from multiple sites were combined to assess spatial longitudinal differences between Spring Lake, Upper River (Sewell Park, Veterans Plaza), Middle River (Rio Vista Park, Crooks Park, I-35), and Lower River (Thompson Island, Wastewater Treatment Plant, Smith Property) (hereafter 'study segments').
Based on microhabitat sampling, temporal trends in Fountain Darter density were assessed per sampling event for each study reach for the past five years using boxplots and compared to their respective long-term (2014–present) medians and quartiles. Overall species richness and

diversity using the Shannon's diversity index (Spellerberg and Fedor 2003) for each study segment was assessed for the past five years and plotted with bar graphs. Richness and relative density (%; [sum(species *x* density)/sum(all species density)]*100) of spring-associated fishes (Table 2) were also quantified and presented in the same manner as species richness and diversity.

Table 2. Spring-associated fishes within the San Marcos Springs system based on Craig et al. (2016).

SCIENTIFIC NAME	COMMON NAME
Dionda nigrotaeniata	Guadalupe Roundnose Minnow
Notropis amabilis	Texas Shiner
Notropis chalybaeus	Ironcolor Shiner
Astyanax mexicanus	Mexican Tetra
Gambusia geiseri	Largespring Gambusia
Etheostoma fonticola	Fountain Darter
Percina apristis	Guadalupe Darter
Percina carbonaria	Texas Logperch

San Marcos Salamander

Visual Surveys

Salamander surveys were conducted during the spring, summer Critical Period, and fall monitoring events at three sites within Spring Lake and the San Marcos River (Figure 1), which were previously described as habitat for San Marcos Salamander (Nelson 1993). Two of the sites are located within Spring Lake: the Hotel Site is adjacent to the old hotel, and the Riverbed Site was located across from the former Aquarena Springs boat dock. The third survey area, called the Spring Lake Dam Site, is located in the main river channel immediately downstream of Spring Lake Dam in the eastern spillway. This site is subdivided into three smaller areas to allow greater coverage of suitable salamander habitat.

SCUBA gear was used to sample habitats in Spring Lake, while a mask and snorkel were used in the site below Spring Lake Dam. For each sample, an area of macrophyte-free rock was outlined using flagging tape, and three timed surveys (five minutes each) were conducted by overturning rocks >5 cm wide and counting the number of San Marcos Salamanders observed underneath. Following each timed search, the total number of rocks surveyed was recorded to estimate the number of San Marcos Salamanders per rock in the area searched. The three surveys were averaged to yield the number of San Marcos Salamanders per rock. Densities of suitably sized rocks at each sampling site were determined using quadrats (0.25 m^2). Three random samples were taken in each area by randomly throwing the quadrat into the sampling area and counting the number of appropriately sized rocks. The three samples were then averaged to yield a density estimate of the number of suitable rocks in the sampling area. The area of each site was determined by measuring each sampling area with a tape measure.

Data Analysis

Salamander densities (salamanders/m^2) are presented for each season using bar graphs and are compared with long-term (2001–present) spring, fall, high-flow event, and low-flow event averages. High-flow and low-flow averages were calculated from Critical Period events. These events are based on predetermined river discharge triggers (Appendix A), which result in additional survey events to assess flow-related impacts to the San Marcos Salamander population. Temporal trends in salamander density were also assessed per sampling event for each study site for the past five years using bar graphs.

Macroinvertebrates

Rapid Bioassessment Sampling

Rapid Bioassessment Protocols (RBPs) are tools for evaluating biotic integrity and overall habitat health, based on the community of organisms present (Barbour et al. 1999). Macroinvertebrates are the most frequently used biological units for RBPs because they are ubiquitous, diverse, and there is an acceptable working knowledge of their taxonomy and life histories (Poff et al. 2006, Merritt et al. 2008).

BIO-WEST performed sampling and processing of freshwater benthic macroinvertebrates, following Texas RBP standards (TCEQ 2014). Macroinvertebrates were sampled with a D-frame kick net (mesh size 500 micrometers [µm]) by disturbing riffle or run habitat (consisting primarily of cobble-gravel substrate) for five minutes while moving in a zig-zag fashion up-stream. Invertebrates were then randomly distributed in a tray and subsamples were taken by scooping out random portions of material and placing them into a separate sorting tray.

All macroinvertebrates were picked from the tray before another subsample was taken. This process was continued until a minimum of 140 individuals were picked to represent a sample. If the entire sample did not contain 140 individuals, the process was repeated again until this minimum count was reached. Macroinvertebrates were collected in this fashion from Spring Lake, Spring Lake Dam, City Park, and I-35 reaches, during spring and fall sampling (Figure 1).

Sample Processing and Data Analysis

Picked samples were preserved in 70% isopropyl, returned to the laboratory, and identified to TCEQ-recommended taxonomic levels (TCEQ 2014). This is usually genus, though members of the family Chironomidae (non-biting midges) and class Oligochaeta (worms) were retained at those taxonomic levels. The 12 ecological measures or metrics of the Texas RBP benthic index of biotic integrity (B-IBI) were calculated for each sample. Each metric represents a functional aspect of the macroinvertebrate community, related to ecosystem health, and sample values are scored from 1 to 4 based on benchmarks set by reference condition streams for the state of Texas. The aggregate of all 12 metric scores for a sample represent the B-IBI score for the reach that sample was taken from. The B-IBI point-scores for each sample are compared to benchmark ranges and are described as having aquatic-life-uses as "Exceptional", "High", "Intermediate", or "Limited". In this way, point-scores were calculated and the aquatic-life-use for each sample reach was evaluated. Temporal trends in B-IBI scores were assessed per sampling event for each study site for the past five years using bar graphs.

RESULTS and DISCUSSION

In 2022, low precipitation and higher ambient temperatures in central Texas resulted in severe drought conditions by spring and transitioned to an exceptional drought classification by mid-summer. As described in the next section, river discharge in the San Marcos River was below median historical conditions for most of the year. Median and minimum mean daily discharge were similar in 2022 (119 and 82 cfs, respectively) and 2009 (96 and 83 cfs, respectively). Median mean daily discharge aligned with 2022 during low flows in 2006 (116 cfs) and 2011 (117 cfs). Despite similar medians and minimums in 2022 and 2009, flows returned to normal levels by October in 2009, while river discharge remained low in fall 2022. Water quality parameters measured during Critical Period sampling in 2022 were within the range of historical data (Appendix B, Table B1 and B2; Groeger et al. 1997). Lower dissolved oxygen concentrations (1.00 mg/L) were measured at I-35 during fall drop-netting; however, this sample location occurred in a slack water area closer to the channel margins and water quality within the main channel aligned with typical conditions. See Appendix B for a complete summary of water quality conditions during Critical Period low-flow sampling.

San Marcos River discharge decreased throughout the year, reaching 95 cfs at the end of July and 90 cfs by mid-August, and 85 cfs at the end of September, which triggered three full system visual habitat evaluations and memorandum updates (Appendix B). Habitat quality documented for the Covered Species varied spatially during the evaluations at these three flow levels. At 95 cfs in July, Habitat quality for the San Marcos Salamander and Fountain Darter (i.e., aquatic vegetation) remained stable at Spring Lake and Spring Lake Dam despite lower water levels and algae build up. Suitable Fountain Darter habitat also persisted further downstream at City Park and I-35, though total wetted area was reduced at I-35. In addition, system wide coverages of Texas Wild-rice decreased about 10% since mapping in summer 2021, though its footprint was largely intact and lower water levels mostly had a negative impact on the density of top growth.

At 90 cfs in mid-August, habitat conditions for all Covered Species appeared consistent with those observed in July with some exceptions. Specifically, reduced wetted area at I-35 resulted in the formation of slack water habitats along the channel margins, though high quality Fountain Darter habitat remained wetted. By the end of September, habitat conditions were mostly similar to previous evaluations at Spring Lake and Spring Lake Dam. However, lower water levels resulted in slightly degraded habitat quality in some areas that exhibited higher-than-average amounts of algae build up and siltation. Physical habitat conditions also remained consistent with observations in August at areas further downstream. Warmer water temperatures above 25 °C were documented at stations further downstream from Spring Lake, though were infrequent.

In summary, total river discharge in the San Marcos River System in 2022 was the lowest since the inception of biological monitoring in 2000. Noticeably lower water levels most impacted Texas Wild-rice, while other vegetation that are more suitable Fountain Darter habitat were less affected. Based on past low-flow years, it remains important to keep tracking the system-wide habitat conditions for the Covered Species as these lower-than average discharge levels continue to persist. The remaining sections in the Results and Discussion describes current trends in river discharge, water temperature, Covered Species populations, and select floral and faunal communities through the San Marcos system during this low-flow year.

River Discharge

Over the last five years, median mean daily discharge in the San Marcos River increased from 2018 (166 cfs) to 2019 (232 cfs) and then decreased to 2022 (119 cfs), representing the lowest median flow conditions during this timeframe. On an annual basis, maximum mean daily discharge was lowest in 2020 (205 cfs) and 2022 (220 cfs). Highest maximum discharge occurred in 2021 (579 cfs) and was the only year where mean daily discharge exceeded 400 cfs. Minimum mean daily discharge was lowest in 2021 (99 cfs) and 2022 (82 cfs). Variation in discharge (i.e., interquartile range) was generally low, though higher in 2019 (64 cfs), 2021 (57 cfs), and 2022 (64 cfs) relative to 2018 (37 cfs) and 2020 (24 cfs) (Figure 5A).

Monthly discharge trends in 2022 showed median daily discharge was more comparable to long-term trends from January (159 cfs) to March (174 cfs) and was highest in February (220 cfs). Median daily discharge descended below the long-term median by April (148 cfs), decreased to values near the long-term 10th percentile by June (100 cfs), and then decreased further to discharges slightly below the 10th percentile for all of October (median = 87 cfs). Variation in discharge was highest in January (21 cfs) and February (15 cfs) compared to the remaining months of the year which exhibited low variation (3–8 cfs) (Figure 5B).

Routine spring sampling occurred in April, where daily discharge ranged from 142–156 cfs and was slightly below the long-term median (174 cfs). Discharge during summer sampling in July ranged from 97–111 cfs, which aligned more with the long-term 10th percentile (93 cfs). Flows descended below 100 cfs in July, triggering Critical Period sampling, which in addition to usual routine summer sampling, included fixed station photography, water quality grab sampling, Texas Wild-rice physical measurements (n = 2 events), aquatic vegetation mapping, Fountain Darter drop-netting, salamander surveys, fish community sampling, and full-system habitat assessments. Discharge further decreased below 90 cfs in August and September, requiring an additional habitat assessment and Texas Wild-rice physical measurements. As mentioned previously, mean daily discharge was below long-term 10th percentile (98 cfs) in October, ranging from 82–90 cfs. Discharge below 85 cfs resulted in routine fall sampling representing a second critical period event and required the addition of a third habitat assessment (Figure 5B).

Water Temperature

Median water temperature varied about 3 °C among stations and ranged from 20.6 °C at Spring Lake Deep to 23.1 °C at the Wastewater Treatment Plant. Variation in water temperature (i.e., interquartile range) exhibited a longitudinal gradient, generally increasing from upstream to downstream. Stations in Spring Lake had more stable (0.1 °C) temperature regimes. Variation increased above 1 °C from Chute (1.1 °C) to Spring Lake Dam (1.9 °C) and exceeded 2 °C from City Park (2.2 °C) to Wastewater Treatment Plant (2.6 °C) (Figure 6). Longitudinal trends in 2022 match expectations based on previous years and are typical within spring-associated ecosystems, where water temperatures increase in magnitude and variation further downstream from spring inputs (Kollaus and Bonner 2012).

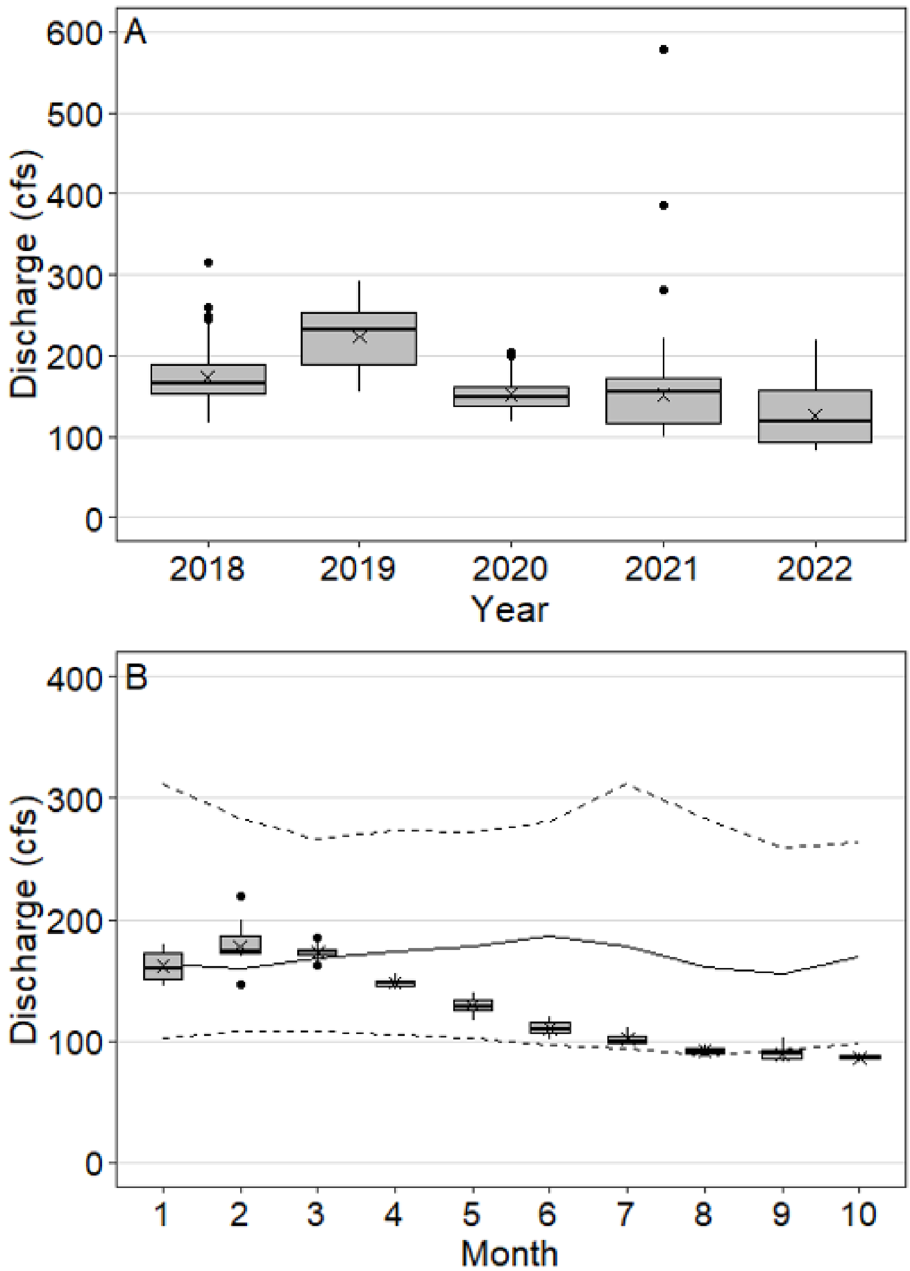

Figure 5. **Boxplots displaying San Marcos River mean daily discharge annually from 2018–2022 (A) and among months (January–October) in 2022 (B). Each month is compared to the 10th percentile (lower dashed line), median (solid line), and 90th percentile (upper dashed line) of their historical (1956–2022) daily means. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles.**

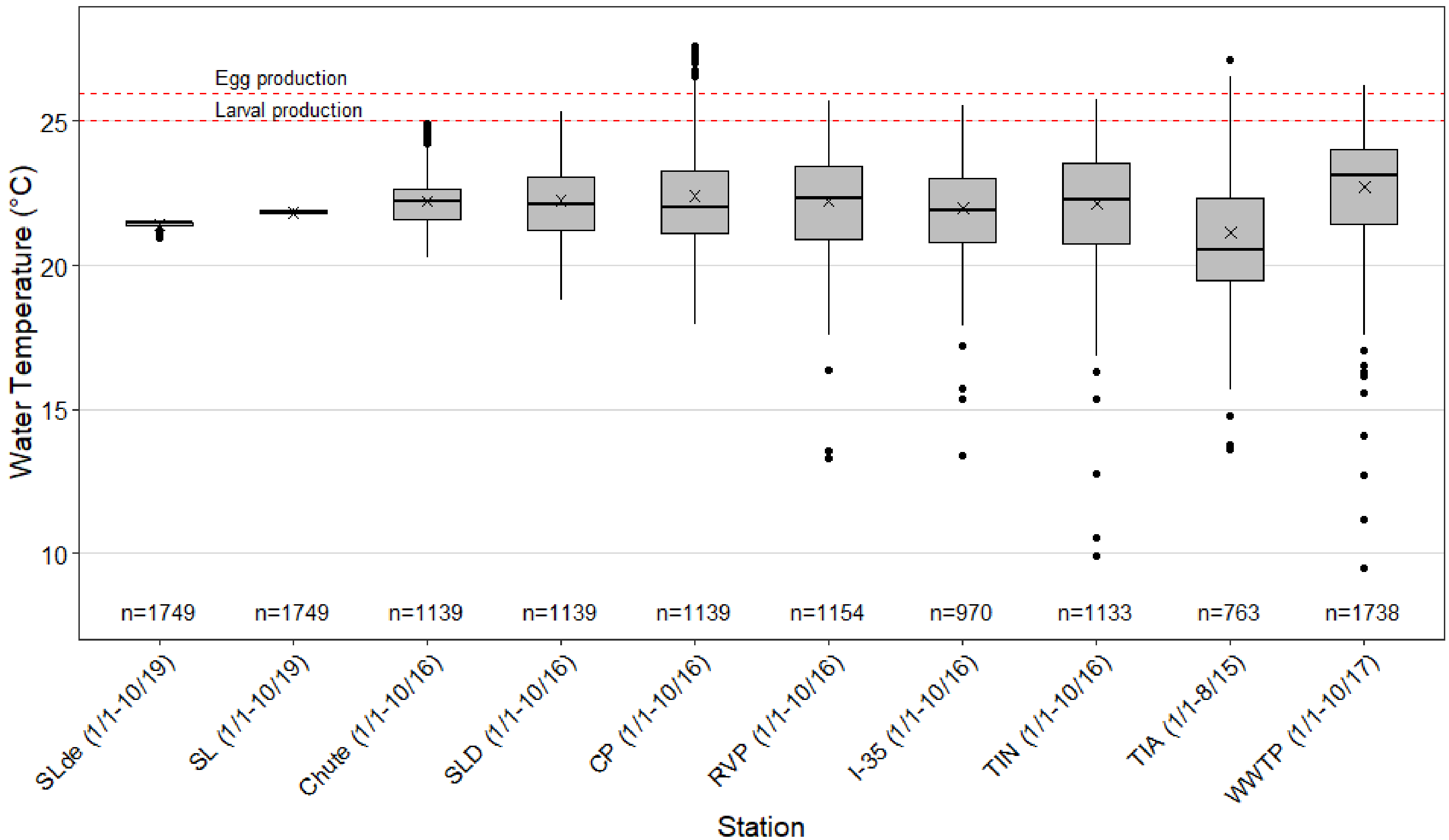

Figure 6. **Boxplots displaying 2022 water temperatures at logger stations (data collection timeframe [Month/Day]). Water temperature data are based on measurements collected at 4-hour increments. Stations include Spring Lake Deep (SLde), Spring Lake (SL), Chute, Spring Lake Dam (SLD), City Park (CP), Rio Vista Park (RVP), I-35, Thompson's Island Natural Channel (TIN), Thompson's Island Artificial Channel (TIA), and Wastewater Treatment Plant (WWTP). The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles. The "n" values along the x-axis represent the number of individual temperature measurements in each distribution. The red dashed lines indicate maximum optimal temperatures for Fountain Darter larval (≥25 °C) and egg (≥26 °C) production (McDonald et al. 2007).**

Total number of days water temperatures exceeded the Fountain Darter larval production threshold ranged from 16 to 117 days. Larval exceedance was recorded at 1–2 4-hr measurements per day from June–September at Rio Vista Park (49 days) and July–September at Spring Lake Dam (16 days), City Park (55 days), I-35 (31 days), and Thompson Island Natural (42 days). Additionally, larval exceedance was recorded at 1–3 measurements per day from May–September at Wastewater Treatment Plant (117 days) and 1–4 per day in July and August at Thompson Island Artificial (27 days). Exceedance of the Fountain Darter egg production threshold was recorded at 1–2 4-hr measurements per day at City Park (July–September [31 days]), Thompson Island Artificial (July–August [8 days]), and Wastewater Treatment Plant (July–August [14 days]). In summary, exceedances of larval and egg production thresholds were recorded throughout the summer at some stations. Larval exceedance occurred 4–8 hours per day most frequently, though was recorded 12–16 hours at stations in the lower river. Egg production thresholds were exceeded less frequently, mostly occurring 4 hours per day.

Aquatic Vegetation

Spring Lake Dam Reach

Spring Lake Dam reach has had interesting changes in recent years as Texas Wild-rice has become more dominant. This reach has been a popular recreation spot over the past decade. However, from 2015 to the fall of 2021, the river edge was fenced and closed to the public, limiting access and recreation. This year marks the first full year with restored access and unrestricted recreation. As such, recreation impacts to the vegetation community were noticeable and compounded by the low flow conditions. The spring event showed a total coverage substantially above the long-term average (Figure 7). Total coverage was similar in spring 2021 and 2022 (~2,077 m^2), although Texas Wild-rice cover increased slightly from 1,693 m^2 to 1,806 m^2 (Figure 8). Low-flow event mapping in summer recorded total vegetation coverage of 1,408 m^2 with 1,257 m^2 of Texas-Wild rice. Fall mapping showed a significant decrease in total vegetation coverage reaching 1,125 m^2 with 944 m^2 of Texas Wild-rice (Figures 7 and 8). The vegetation community in Spring Lake Dam Reach is almost entirely dominated by native aquatic plant species. *Potamogeton* and *Hydrocotyle* are generally the two most common species behind Texas Wild-rice. *Potamogeton* was almost completely absent from the reach by fall (Figure 8).

City Park Reach

In 2022, spring total vegetation coverage in City Park Reach remained similar to long term averages, but was much lower in the fall (Figure 7). Vegetation in this reach returned to a more historical distribution compared to the past two years when parks were closed due to Covid-19 restrictions (Figure 7 and 8). City Park Reach is characterized by high recreational activity. Tubing, wading and swimming are very popular activities here. Based on this, large variations in vegetation cover are common, yet long-term seasonal trends tend to remain similar (Figure 7). Total coverage in spring was 4,135 m^2 with Texas Wild-rice accounting for 96% of the coverage. During the low-flow event vegetation dropped to 2,994 m^2. Only 41 m^2 of this was aquatic vegetation other than Texas Wild-rice. By fall, total vegetation coverage had slightly fallen again to 2,872 m^2. However, non-Texas Wild-rice vegetation had risen to 172 m^2, which was highest for 2022 and mainly attributed to changes in *Cabomba* (Figures 7 and 8).

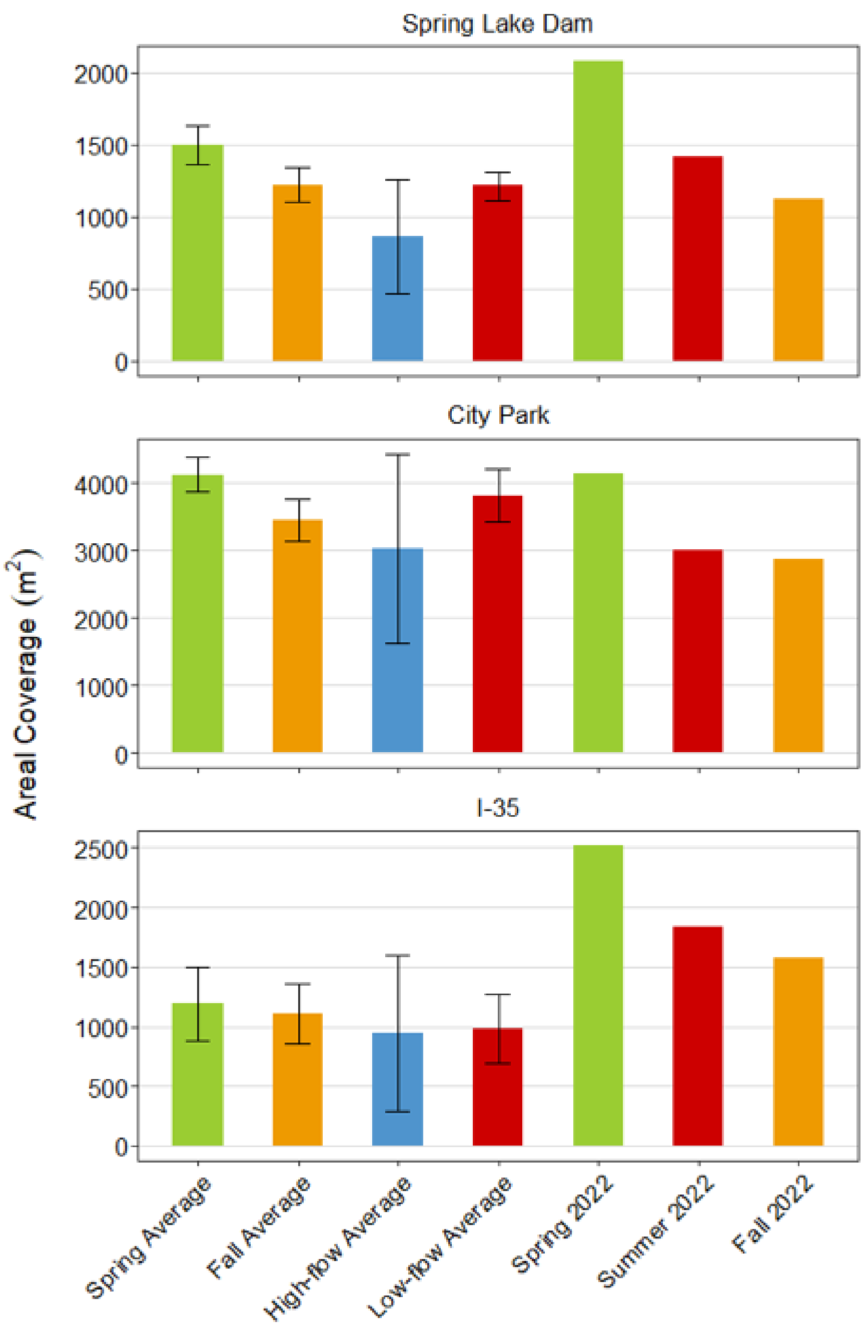

Figure 7. Areal coverage (m^2) of aquatic vegetation among study reaches in the San Marcos River. Long-term (2001–2022) study averages are provided with error bars representing 95% confidence intervals.

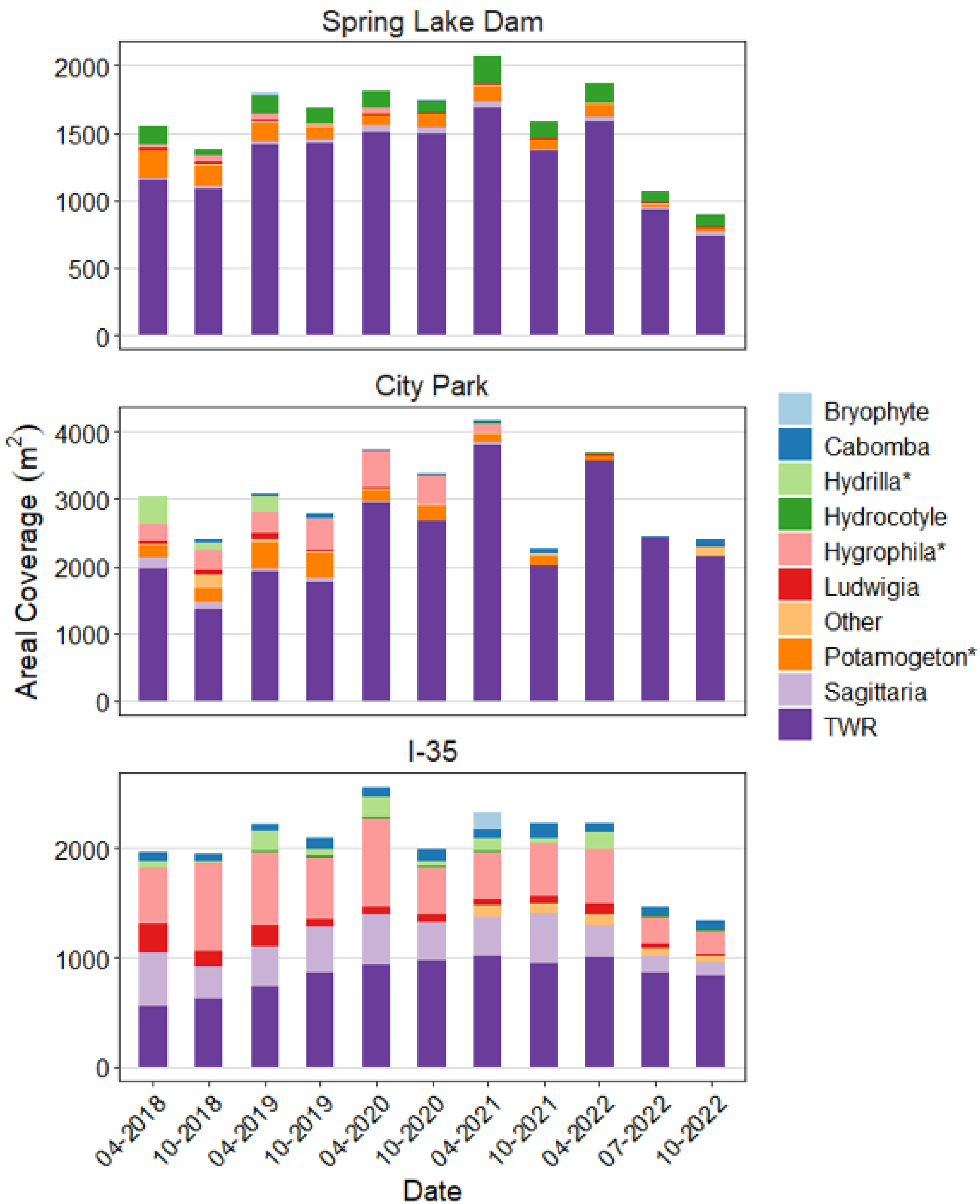

Figure 8. **Aquatic vegetation (m^2) composition among taxa (top row) from 2018–2022 in the San Marcos River. (*) in the legend denote non-native taxa. All taxa represent rooted vegetation except bryophytes.**

I-35 Reach

Total vegetation coverage was substantially higher in spring 2022 compared to long-term averages, driven mainly by a steady increase in Texas Wild-rice which reached 1,164 m^2 in the spring. This is the second highest coverage of Texas Wild-rice mapped in this reach. The total spring vegetation cover was 2,519 m^2. As the drought persisted large portions of the stream bed in the lower section of the reach became exposed above the water surface. This caused a dramatic decrease in aquatic vegetation coverage, mostly impacting *Hygrophila*. Cover of non-Texas Wild-rice species was reduced by 49% by the low flow mapping event in summer when total vegetation coverage was 1,834 m^2. Vegetation coverage fell further by fall to 1,573 m^2 with 612 m^2 of non-Texas Wild-rice vegetation. Despite the decrease fall vegetation coverage still remained higher than the long-term seasonal average (Figures 7 and 8). Other than Texas Wild-rice, *Cabomba* is currently the most dominant native species in the reach. It was less impacted from low flow conditions than many other species since it occurs almost exclusively in deeper areas of this reach (Figures 7 and 8).

Texas Wild-rice

Texas Wild-rice Mapping

In 2022, Texas Wild-rice was mapped during the annual summer mapping event in July/August. By this time, river flows were approaching the Critical Period low-flow trigger for mapping. Therefore, mapping in July/August represented routine annual and Critical Period mapping. Low flows remained below 90 cfs for the remainder of the summer and into the fall. Full system maps are located in Appendix C. Results of the 2022 annual mapping event showed a coverage of 13,273 m^2. This is the lowest coverage of Texas Wild-rice mapped by BIO-WEST since 2019 and continues the trend of decreasing Texas Wild-rice since it reached its peak in April 2021 (Figure 9).

This year's annual event occurred during substantially reduced discharge (~90–100 cfs) and high levels of recreation in the river. Reduced water levels from low flows led to some Texas Wild-rice becoming dewatered and stranded on islands or along banks. These plants were mapped as terrestrial Texas Wild-rice that totaled 203 m^2. Terrestrial Texas Wild-rice appeared healthy and continued to bloom, as long as roots remained in mud or saturated soil. In some dewatered areas, terrestrial or riparian vegetation was beginning to grow into Texas Wild-rice stands. In instances where the water level dropped so low that the soil dried out, Texas Wild-rice plants perished, although this was an infrequent occurrence and did not heavily impact the total coverage of the species. Recreation in the summer of 2022 also had negative impacts to Texas Wild-rice coverage located adjacent to several public access areas, including the Spring Lake Dam and City Park study reaches.

Between the August 2021 and July/August 2022 annual mapping events, Texas Wild-rice coverage decreased in all but two segments, totaling 709 m^2 (Table 3, Appendix E, Table E-1). Segment A saw the largest percent loss in Texas Wild-rice with cover decreasing by over 368 m^2 since the previous mapping event. A large portion of Texas Wild-rice adjacent to the public access area in this reach was lost since 2021. Texas Wild-rice in Segment B was reduced by 22% (Table 3). Although some loss was due to recreation, loss was also attributed to lower water levels that left several Texas Wild-rice stands desiccated. This impacted the health of these stands and allowed terrestrial vegetation to colonize and compete with Texas Wild-rice. Much of the Texas Wild-rice in Sewell Park was overtaken by emergent or terrestrial plant species as the water level dropped **(**Figure 10).

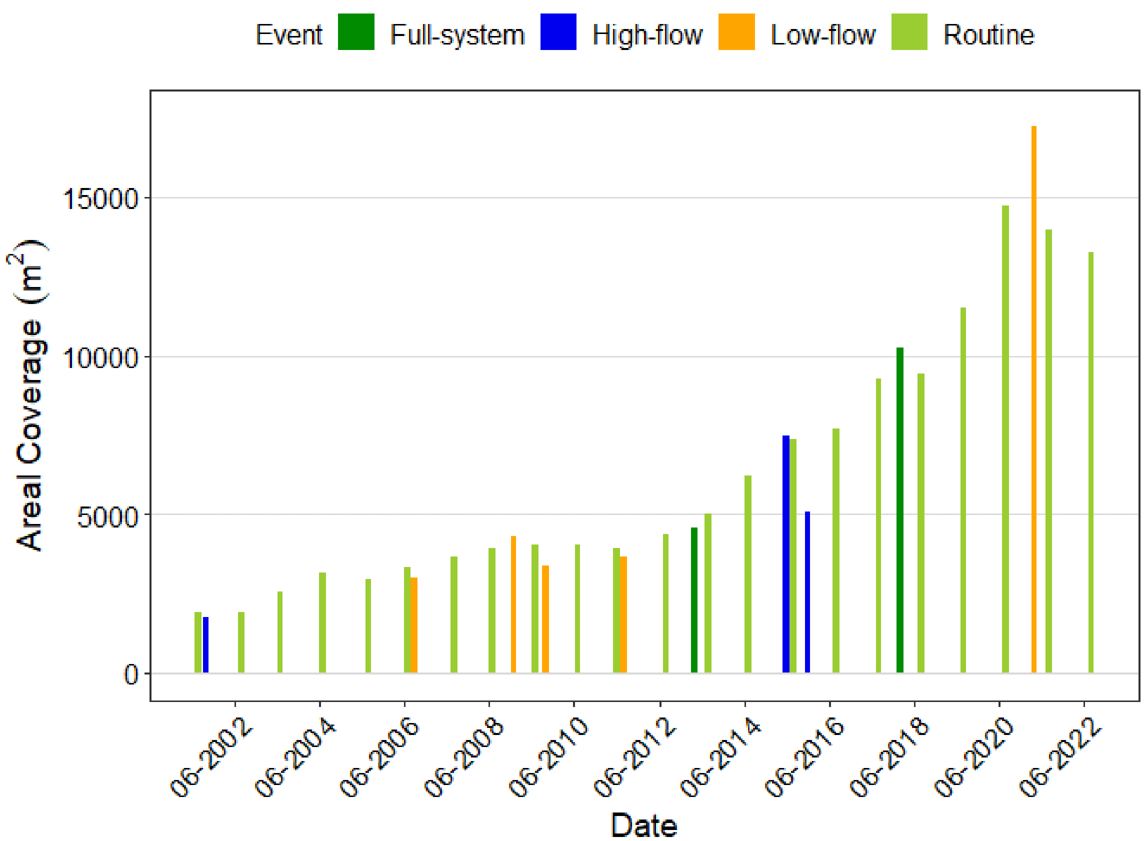

Figure 9. Texas Wild-rice Areal coverage (m^2) from 2001–2022 in the upper San Marcos River. Routine sampling in 2022 also represents a Critical Period low-flow event.

Texas Wild-rice declined slightly in several other segments, but although plants were lost in some areas, plants expanded in others. Segment H saw the largest increase in Texas wild-rice of 25% over the previous year (Table 3). In recent years, Texas wild-rice has been steadily increasing in this section mostly as a result of heightened natural expansion, EAHCP restoration plantings and lack of pulse flow scouring events. Texas Wild-rice plants in the mill race below Cheatham Street and in the Thompson's Island mill race were observed again for the fourth consecutive year.

In summary, Texas Wild-rice remained abundant throughout the system. Plants were only locally extirpated in areas where the substrate had been desiccated or eroded away by foot traffic or shear velocity flows. Even though top growth has been impacted in many places, the root footprints remained intact, potentially allowing plants to re-sprout when growing conditions improve (Figure 10).

Table 3. Change in cover amount (m^2) of Texas Wild-rice between August 2021 and July/August 2022 annual mapping.

RIVER SEGMENT	AUGUST 2021 COVERAGE	JULY/AUGUST 2022 COVERAGE	COVERAGE CHANGE	PERCENT CHANGE
A. Spring Lake Dam Study Reach	1,372	1,004	-368	-26.8%
B. Sewell Park	1,308	1,017	-291	-22.2%
C. City Park bend	3,988	3,802	-186	-4.6%
D. City Park Study Reach	2,452	2,424	-28	-1.1%
E. Lower City Park	1,335	1,516	+181	+13.6%
F. Veramendi Park to Rio Vista Park	2,124	2,126	+2	-0.1%
G. I-35 Study Reach	954	866	-88	-9.2%
H. Below I-35	317	419	+102	+32.1%
Spring Lake	132	99	-33	-25.0%

Figure 10. Texas Wild-rice at Sewell Park overtaken by terrestrial and riparian sedges and grasses at low water levels (top); Texas Wild-rice root masses in the heavily recreated Spring Lake Dam Reach, which were still viable despite poor root condition (bottom).

Fountain Darter

A total of 734 Fountain Darters were observed at 76 drop-net samples in 2022. Drop-net densities ranged from 0.00–53.00 fish/m^2. Community summaries and raw drop-net data are included in Appendix D and Appendix E, respectively. Habitat conditions observed during drop-netting can be found in Table 4. Texas Wild-rice was only sampled during spring drop-netting and not included in subsequent events due to river discharge dropping below 120 cfs. Timed dip-netting resulted in a total of 557 Fountain Darters during 10.5 person-hours (p-h) of effort. Site CPUE ranged from 4–116 fish/p-h. Lastly, Fountain Darters were present at 60 out of 180 random-stations and reach-level percent occurrence among monitoring events ranged from 10–87%. A summary of occurrences per reach and vegetation taxa can be found in Table 5.

Table 4. Habitat conditions observed during 2022 drop-net sampling. Physical habitat parameters include counts of dominant vegetation (median % composition) and dominant substrate type sampled. Depth-velocity and water quality parameters include medians (min-max) of each variable among all drop-net samples.

HABITAT PARAMETERS	SLD	CP	I-35
Vegetation			
Cabomba[1]	0	6 (95%)	6 (100%)
Hydrocotyle[1]	6 (100%)	2 (85%)	0
Hygrophila[1]	0	0	5 (100%)
Ludwigia[1]	0	0	3 (90%)
Open	6 (100%)	6 (100%)	6 (100%)
Potamogeton[2]	6 (90%)	4 (85%)	0
Sagittaria[2]	6 (93%)	2 (100%)	6 (95%)
Texas Wild-rice[2]	2 (100%)	2 (93%)	2 (100%)
Substrate			
Cobble	11	1	0
Gravel	9	8	2
Sand	1	2	10
Silt	5	11	16
Depth-velocity			
Water depth (ft)	1.2 (0.3–2.7)	2.3 (0.6–3.7)	1.0 (0.2–3.8)
Mean column velocity (ft/s)	0.4 (0.0–2.3)	0.2 (0.0–0.9)	0.1 (0.0–0.9)
15-cm column velocity (ft/s)	0.3 (0.0–2.3)	0.1 (0.0–0.6)	0.0 (0.0–0.9)
Water quality			
Water temperature (°C)	22.0 (21.5–22.8)	22.6 (21.7–24.2)	22.6 (20.2–24.1)
DO (ppm)	8.5 (7.1–9.3)	9.3 (5.2–10.6)	8.7 (1.0[3]–10.3)
DO % saturation	97.4 (82.7–106.9)	107.6 (6.7–122.1)	99.1 (9.7–120.0)
pH	7.5 (7.4–7.9)	7.5 (7.3–7.8)	7.7 (7.3–7.8)
Specific conductance (µs/cm)	635 (623–640)	627 (617–639)	630 (624–693)

[1]Denotes ornate vegetation taxa with physical characteristics that create complex structure
[2]Denotes long broad or ribbon-like, austere-leaved vegetation taxa
[3]Minimum DO concentration was observed at a slack water area adjacent to the main channel, which maintained suitable water quality conditions

Table 5. Summary of vegetation types sampled among reaches during 2022 random-station surveys in the San Marcos Springs/River and the percent occurrence of Fountain Darters in each reach and vegetation type. Raw numbers represent the sum of detections per reach-vegetation type combination.

VEGETATION TYPE	SL	SLD	CP	I-35	Total	Occurrence
Cabomba[1]	3	0	3	2	**8**	**57.1**
Ceratophyllum[1]	3	0	0	0	**3**	**100.0**
Filamentous algae[1]	1	0	0	0	**1**	**100.0**
Hydrocotyle[1]	0	6	0	1	**7**	**70.0**
Hygrophila[1]	0	0	0	17	**17**	**77.3**
Ludwigia[1]	0	0	0	1	**1**	**100.0**
Potamogeton[2]	0	2	0	0	**2**	**66.7**
Sagittaria[2]	9	1	0	1	**11**	**52.4**
Texas Wild-Rice[2]	0	4	6	0	**10**	**9.5**
Total	**16**	**13**	**9**	**22**	**60**	**33.3**
Occurrence	**53.3**	**28.9**	**15.0**	**48.9**	**-**	**-**

[1]Denotes ornate vegetation taxa with physical characteristics that create complex structure
[2]Denotes long broad or ribbon-like, austere-leaved vegetation taxa

Population Demography

Seasonal population trends

Median Fountain Darter density in 2022 was higher in the summer (3.75 darters/m^2) than spring (0.75 darters/m^2) and fall (1.25 darters/m^2). Compared to historical data, spring 2022 aligned with 5-year trends, whereas both spring 2022 and spring 5-year had lower medians and variability (i.e., interquartile range) compared to the long-term. In contrast, median density and variation were slightly above long-term trends in summer (Figure 11A). Mean density was ubiquitously higher than the median across seasons and temporal extents, demonstrating positively skewed distributions (i.e., clustered). Median CPUE in 2022 was highest in spring (69 darters/p-h), followed by summer (54 darter/p-h) and fall (36 darters/p-h). Compared to historical data, median CPUE was higher in spring 2022 and variation was lower across seasons, which can be attributed to lower sample sizes associated with this sampling method (Figure 11B). Lastly, median percent occurrence was greatest in summer (42%), followed by spring (33%) and fall (29%). Median percent occurrence in spring 2022 was lower than the 5-year dataset and variation was slightly lower in fall 2022 when compared to 5-year data (Figure 11C).

In summary, population performance metrics generally aligned with historical data. Some exceptions included less frequent high-density samples for 5-year versus long-term trends in spring and a greater frequency of high-density samples in summer 2022 compared to the long-term. Despite decreases in high-density samples shown by 5-year trends, density increased across reaches in recent years (see next section). Conflicting patterns in spring CPUE and occurrence further support Fountain Darter's inherently clustered distributions, as shown by drop-net data. Based on the methods used for generating sample sites to examine occurrence (i.e., simple random sampling), it is reasonable to suggest that the sampling sites selected were not located in areas with high aggregations of darters. For example, all City Park random dip-net stations in spring occurred in Texas Wild-rice, resulting in low percent occurrence, whereas CPUE during timed dip-netting was high, with efforts focused more in suitable habitat types (e.g., *Cabomba*).

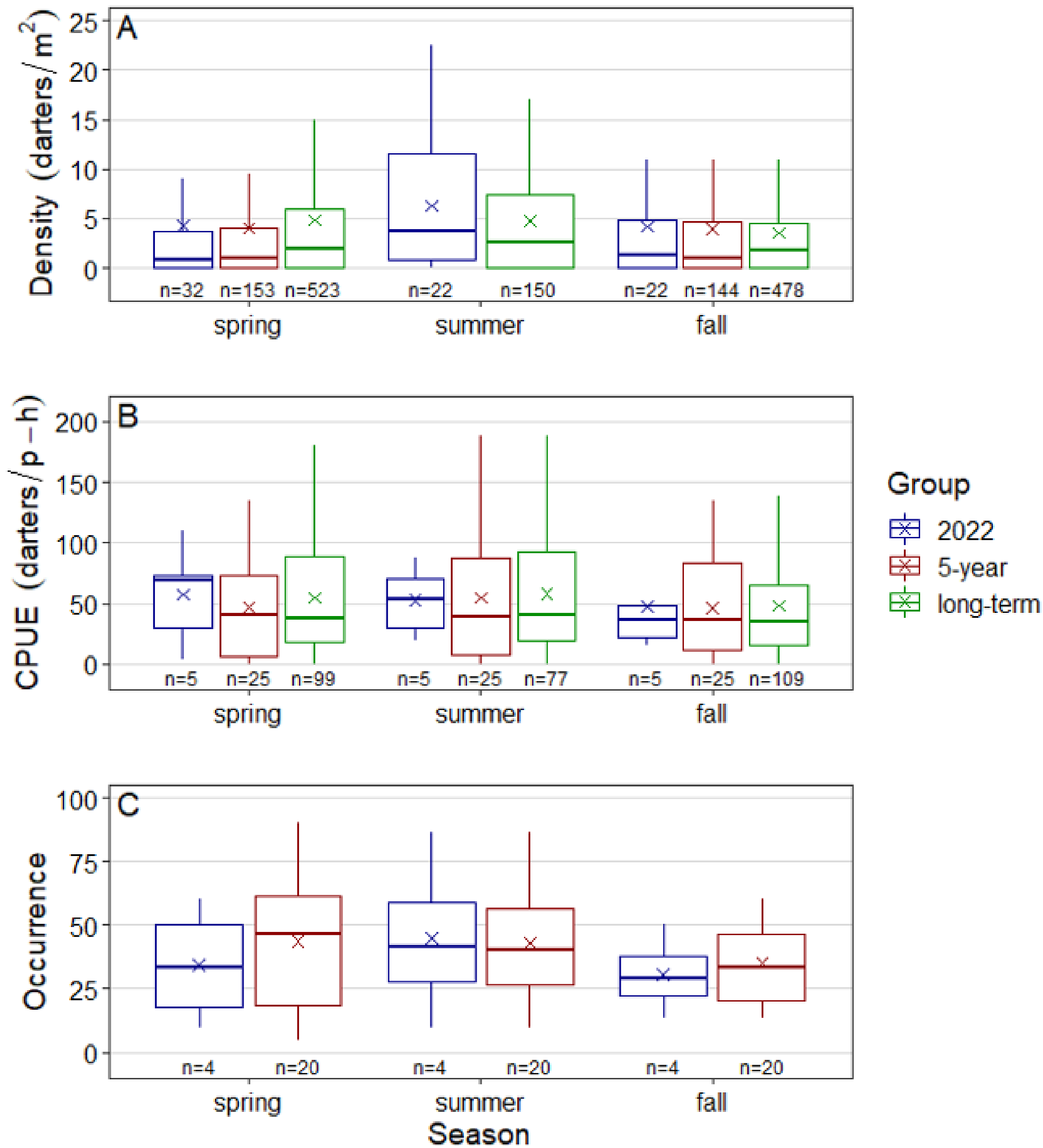

Figure 11. **Boxplots comparing Fountain Darter density from drop-net sampling (A), catch-per-unit-effort (CPUE) from timed dip-netting (B), and proportional occurrence from random station dip-netting (C) among seasons in the San Marcos Springs/River. Temporal groups include 2022, 5-year (2018–2022), and long-term (2001–2022) observations. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. The "n" values along the x-axes represent the number of discrete samples per category.**

Drop-net sampling density trends

Patterns in Fountain Darter density varied among and within reaches in 2022. Median density at Spring Lake Dam was similar to the long-term median (1.50 darters/m^2) in the spring (1.00 darters/m^2) and fall (2.00 darters/m^2). Median density was higher in the summer (4.00 darters/m^2) and closer to the long-term 75th percentile (4.50 darters/m^2), representing the highest densities documented since 2018. Median density at City Park and I-35 was less than or equal to their long-term median (2.00 darters/m^2) in spring (0.75 and 1.25 darters/m^2, respectively) and fall (1.25 and 2.00 darters/m^2, respectively). Summer medians were also higher than the long-term at City Park (4.00 darters/m^2) and I-35 (3.75 darters/m^2). Drop-net samples with high Fountain Darter densities often resulted in greater medians and upper quartiles the past two years. As such, directional trends in density were generally positive across reaches since 2018, though varied in magnitude depending on the descriptive statistic assessed (Figure 12).

Positive increases in median density were minimal, though slightly higher at I-35.
The direction of temporal trends was more apparent based on upper quartile quantities, which exhibited positive directional change at greater magnitudes. Increased upper quartiles were highest in City Park, followed by I-35 and Spring Lake (Figure 12). Positive increases in density the past five years may be due to several extrinsic and intrinsic factors. Increased patch size of more suitable vegetation taxa (e.g., *Cabomba* in City Park) could explain some recent increases observed (Angermeier et al. 2002). In addition, flow stability likely facilitated higher recruitment rates the last two years and contributed to the positive trends observed (Katz and Freeman 2015; see 'Size structure and recruitment trends'). This suggests suitable environmental conditions were sustained during low flows across all Fountain Darter life stages. The degree that recruitment positively affected patterns in density may also be attributed to reach-level differences in the availability of suitable vegetation for juveniles (e.g., *Cabomba*), which would explain why higher increases occurred at City Park and I-35 compared to Spring Lake Dam. However, results should be interpreted with a degree of uncertainty due to potential influences of imperfect detection (Davis et al. 2011; Kéry and Royle 2021).

In summary, results from drop-netting suggest that reduced flows in 2022 did not have a negative impact on Fountain Darter density. On the contrary, densities were generally higher compared to long-term trends, which previous low-flow sampling also supports (Figure E5 and E6). As such, stable flows in 2022 could have enhanced young-of-year survival (or prevented displacement) that led to the increased density from spring to summer. This suggests demographic processes vary in response to flow conditions and that population growth can occur during periods of environmental stability (Freeman et al. 2001; Falke et al. 2012; Katz and Freeman 2015). Results also indicate that population resistance to reduced flows may be a function of recruitment (McCargo and Peterson 2010; Katz and Freeman 2015). However, explicit effects of vital rates on population density are currently unknown. Although long-term data shows densities were higher at lower flows, it's unlikely that this pattern would continue if flows decreased to levels that degrade habitat quality or impact darter fitness (McDonald et al. 2007; Mora et al. 2013). Additional research is needed to understand how different demographic processes (e.g., recruitment, survival, immigration/emigration) contribute to population dynamics during periods of reduced flows and how the duration and/or magnitude of such events influences population state transitions (Wheeler et al. 2017; Freeman et al. 2022).

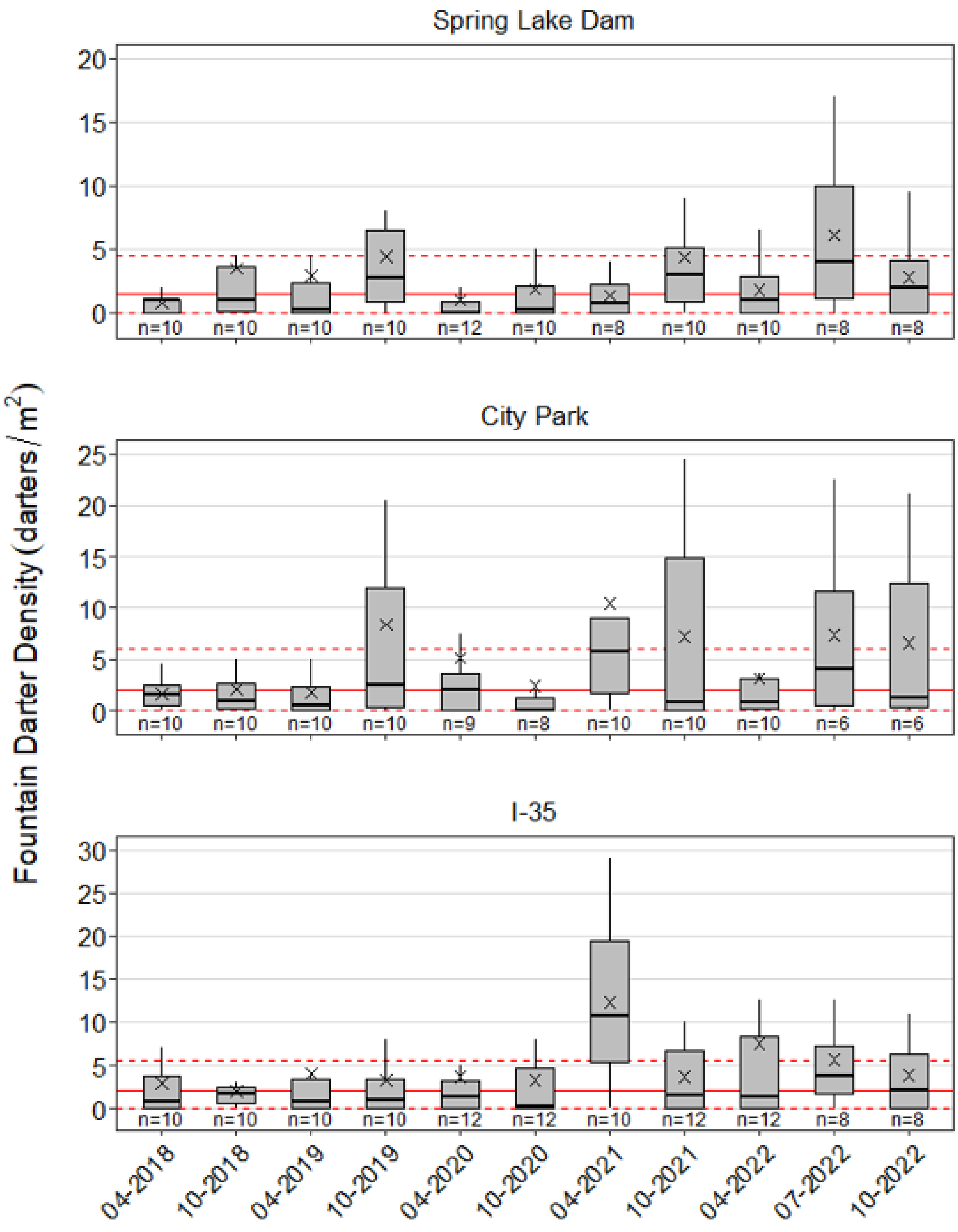

Figure 12. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) among study reaches from 2018–2022 during drop-net sampling in the San Marcos River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. The "n" values along the x-axes represent the number of drop-net samples in each category. Solid and dashed red lines denote long-term (2001–2022) medians and interquartile ranges, respectively.**

Size structure and recruitment trends

Five-year trends in Fountain Darter size structure and recruitment displayed consistent patterns among seasons, though event-specific discrepancies were observed. In general, smaller darters were more frequently observed in spring during the peak reproductive period, as seen by lower median lengths (19–22 mm). Violin plots with distributions that are negatively skewed and greater levels of recruitment in spring (42.55–61.09%) further support this trend. Patterns in size structure aligned with long-term trends in the spring. Recruitment was noticeable higher in spring 2019 (60.09%), 2021 (59.47%), and 2022 (57.26%) than other years and the lack of confidence interval overlap with long-term trends suggest these were meaningful increases. Summer median lengths (25–28 mm) were high with distributions more frequently skewed positively towards larger darters. As such, summer recruitment rates (14.89–25.95%) were lower, but aligned with historical summer data. In fall from 2018–2021, median lengths (26–29 mm) and recruitment (16.04–31.25%) were comparable to summer trends. However, recruitment in fall 2022 (39.24%) represented the highest relative abundance of young-of-year darters in recent falls and confidence intervals lacking overlap with long-term data support a meaningful response (Figure 13).

Higher recruitment rates in 2021 and 2022 likely provide partial explanation for the positive trend in Fountain Darter density observed the past two years. Events with the highest drop-net densities are consistently represented by a greater proportion of young-of-year darters (i.e., ≤20 mm). Spring and fall recruitment rates did not align with expectations of long-term trends in these events. In particular, fall 2022 exhibited the highest fall recruitment rate on record. Higher rates of recruitment were also documented during past periods of similar hydrologic conditions in the San Marcos River, supporting that low and/or stable flows can increase recruitment and enhance young-of-year survival (or site fidelity) (Freeman et al. 2001; Poff and Zimmerman 2010; Craven et al. 2010; Katz and Freeman 2015). A previous study that assessed population dynamics of the Turquoise Darter (*Etheostoma inscriptum*) also observed greater young-of-year abundances during years of lower and more stable flows, suggesting that Fountain Darters may be resistant to large reductions in flow by augmentation through recruitment (Katz and Freeman 2015).

While data from this program and past research indicate recruitment as a mechanism for population resistance, studies have also observed attenuated growth of darters during extreme low flows (Marsh-Matthews and Matthews 2010; Katz and Freeman 2015). It is currently unknown whether the current drought negatively influenced individual growth and fitness; however, even if a negative impact was observed, recovery of body condition would be expected when flow conditions return to normal (Marsh-Matthews and Matthews 2010). In summary, patterns in size structure and recruitment provided some interesting insight into Fountain Darter flow-ecology, including recruitment as a potential mechanism for population resistance. Additional research using more robust analyses would be needed to provide a more mechanistic understanding of population resistance and resilience. Nonetheless, these results suggest management strategies that aim to establish or maintain suitable spawning and young-of-year habitats could augment Fountain Darter population persistence (Katz and Freeman 2015; Duncan et al. 2016; Dunn and Angermeier 2019).

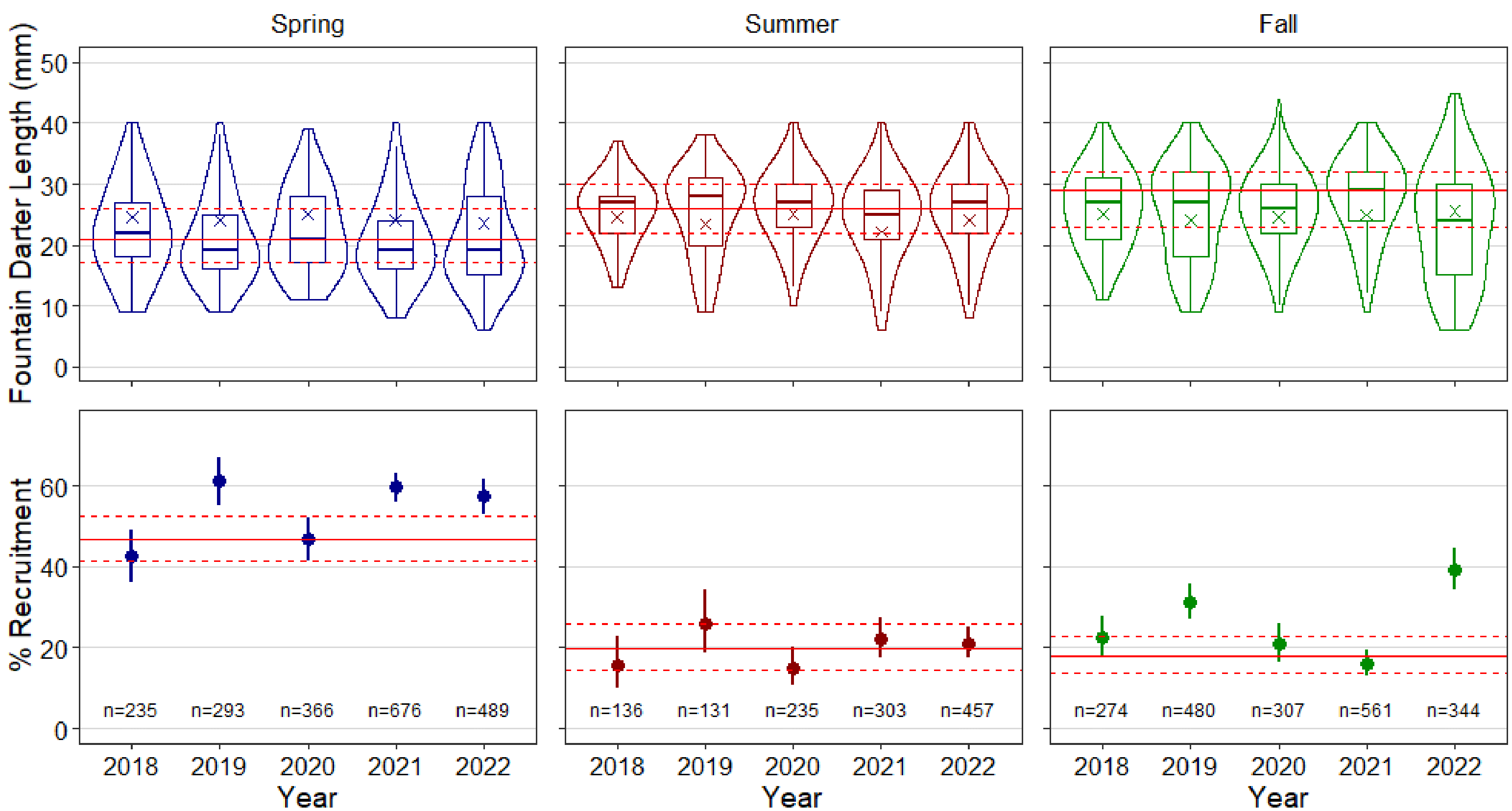

Figure 13. **Seasonal trends of Fountain Darter size structure (mm; top row) and percent recruitment (bottom row) in the San Marcos River from 2018–2022. Spring and fall trends are based on drop-net and timed dip-net data in aggregate, whereas summer trends are based on timed dip-net data only. Size structure is displayed with boxplots (median, quartiles, range) and violin plots (probability density; polygons outlining boxplots). The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. The "n" values along the x-axis of the top row represent the number of Fountain Darter length measurements in each distribution. Recruitment is the percent relative abundance (± 95% CI) of darters ≤20 mm. Long-term (2001–2022) trends in size structure are represented by median (solid red line) and interquartile range (dashed red lines). Recruitment is compared to the long-term mean percentage (solid red line) and 95% CI (dashed red lines).**

Habitat Use and Suitability

Density trends among vegetation taxa

Median densities in 2022 were highest in *Cabomba* (11.25 darters/m^2), *Hygrophila* (11.00 darters/m^2), and *Ludwigia* (9.50 darters/m^2). Maximum density in 2022 also occurred in *Cabomba* (53.00 darters/m^2). Densities in *Hygrophila* and *Ludwigia* were substantially higher during 2022 sampling compared to 5-year and long-term trends. Density trends for *Cabomba* in 2022 were slightly lower than 5-year trends, though had similar levels of dispersion and were both greater than long-term trends. Higher variation (i.e., interquartile range) in *Cabomba* (11.88 darters/m^2) demonstrates that while this taxon often harbors greater densities of darters, there is high variability among sites within a given year. The remaining taxa had lower medians, which included *Hydrocotyle* (3.25 darters/m^2), *Sagittaria* (2.00 darters/m^2), Texas Wild-rice (0.00 darters/m^2), and open habitats (0.00 darters/m^2). These taxa also displayed similar trends to historical observations, except for *Potamogeton*, which in 2022 was higher than 5-year and long-term trends (Figure 14).

Current patterns of vegetation use continue to generally support previous research, showing higher Fountain Darter densities occur within ornate vegetation (Schenck and Whiteside 1976; Linam et al. 1993; Alexander and Phillips 2012; Edwards and Bonner 2022). Densities were higher than historical data for several taxa. Higher densities in 2022 could simply be a product of temporal variation in drop-net locations within the river channel. For example, most individuals in high density samples were recent recruits located in slack water habitats along the banks (e.g., *Ludwigia*), making spatial variation an important consideration when interpretating results (see 'Size structure among vegetation taxa' for further discussion). Alternately, habitat associations may be density-dependent at greater population sizes. Preferred habitats may not support all individuals at high population densities, which would result in use of a wider breadth of habitats, including less-favored ones (i.e., *Potamogeton*) (Angermeier et al. 2002). However, it remains unclear whether density-dependence is in fact a regulating mechanism on Fountain Darter habitat use. Trends observed may instead be a result of higher levels of aggregation due to reduced habitat suitability (reaches dominated by less-suitable Texas Wild-rice with limited amounts of high-quality habitat) and/or low-flow conditions, rather than increased population size.

Size structure among vegetation taxa

Distribution summary statistics and violin plots showed that Fountain Darter size structure varied among vegetation taxa in 2022. Open and Texas Wild-rice were not included in analysis due to limited observations. The lowest median lengths occurred in *Ludwigia* (19 mm), *Cabomba* (21 mm), and *Potamogeton* (22 mm). Size structure distributions were negatively skewed for *Ludwigia*, while *Cabomba* was more uniform, which both conflict with past results (Figure 15). In 2021, *Ludwigia* and *Cabomba* were positively and negatively skewed, respectively, indicating both taxa can be important habitat for young-of-year and adults (BIO-WEST 2022). Taxa with the highest median lengths included *Sagittaria* (29 mm) and *Hydrocotyle* (29 mm), which aligned with previous observations and was due to greater representation of larger adults (Figure 15; BIO-WEST 2022).

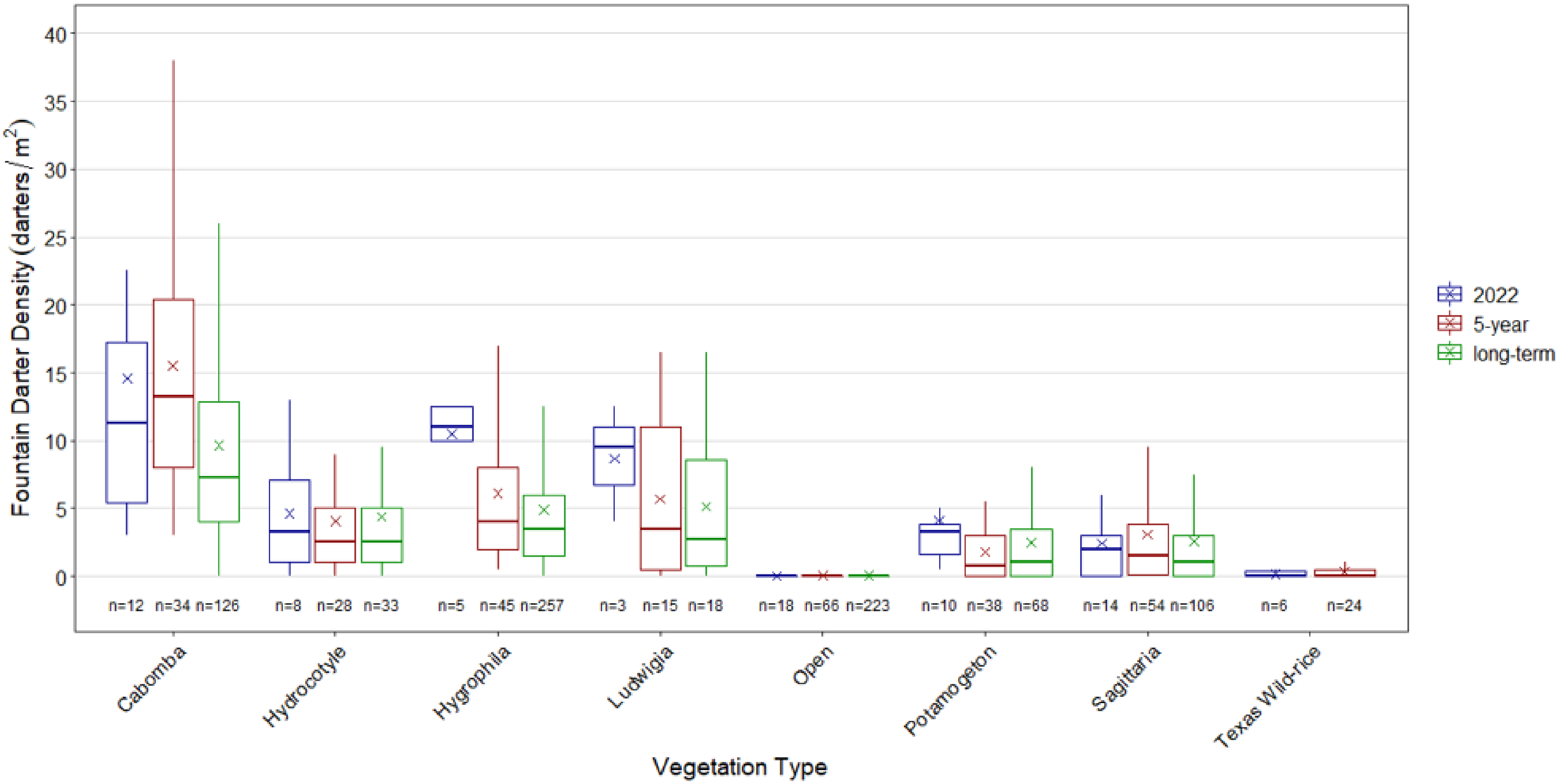

Figure 14. **Boxplots displaying 2022, 5-year (2018–2022), and long-term (2001–2022) drop-net Fountain Darter density (darters/m^2) among vegetation types in the San Marcos River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. The "n" values along the x-axes represent drop-net sample sizes per group.**

When evaluating Fountain Darter size structure among vegetation taxa it is important to recognize the influence of other confounding factors (e.g., water quality, hydraulics) that impact the distribution of aquatic vegetation and darter size structure. For example, *Cabomba* tends to grow in low-velocity backwater areas with silty substrates that provide important habitat for early life stages of darters, which likely have difficulty persisting and feeding in swift flowing water. In contrast, *Hydrocotyle* is most abundant in shallow high-velocity areas with course gravel and cobble substrates where large adults typically prevail. Lastly, most *Ludwigia* drop-net samples at I-35 in 2021 and 2022 were within shallow moderate- to high-velocity areas and contained larger adult darters (BIO-WEST 2022). In summer 2022, about 50% of the darters collected from one slack water *Ludwigia* habitat sampled were recent recruits, which aligned more with data collected in the Comal system this year. In summary, results from 2022 show that habitat use can vary annually among size classes, while consistent ontogenetic differences in habitat use appear to be related to the physical structure of vegetation taxa and local flow conditions. This in total indicates that habitat use across life stages should be put into context with channel position and associated hydraulic characteristics.

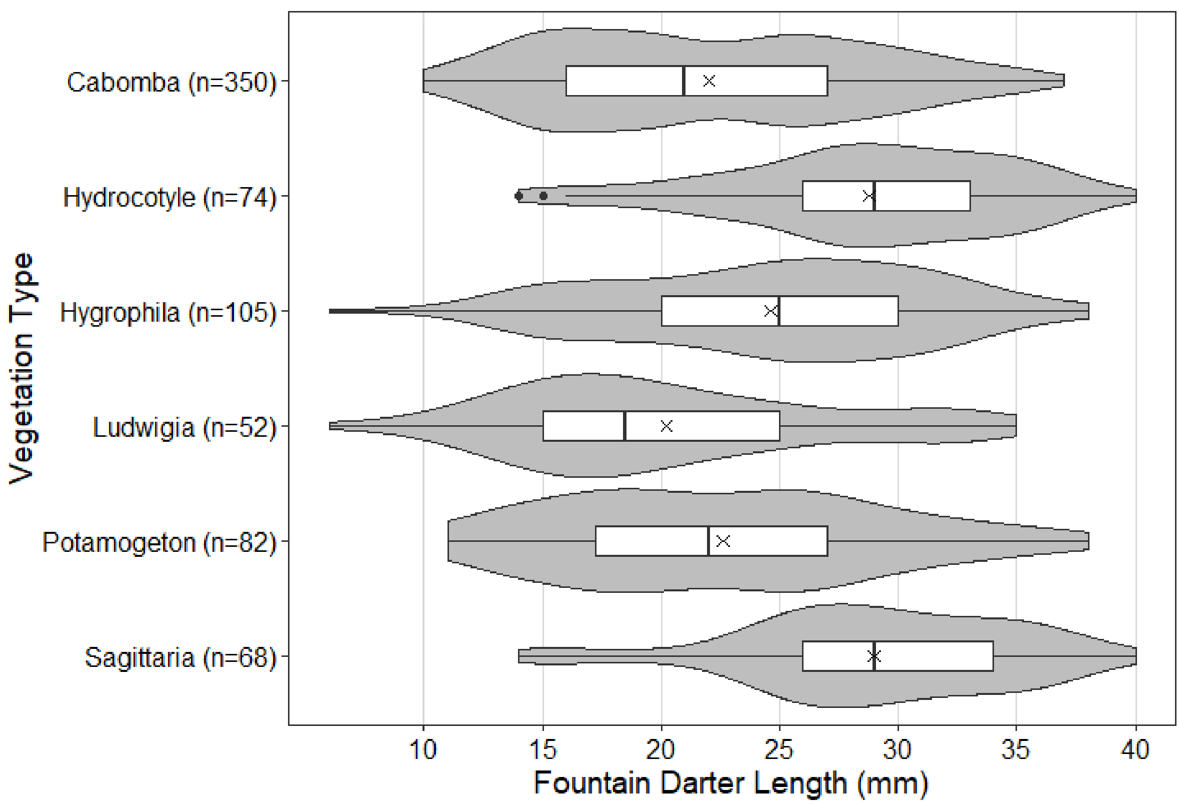

Figure 15. **Boxplots and violin plots (grey polygons) displaying Fountain Darter lengths among dominant vegetation types during 2022 drop-net sampling in the San Marcos River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles. The "n" values represent the number of Fountain Darter length measurements per vegetation type.**

Habitat suitability
Temporal trends in Fountain Darter habitat suitability at Spring Lake Dam showed OHSI was similar or above the long-term mean (0.12) from 2018 to spring 2022 (~0.12–0.16) and showed a slight increase during this period. Habitat suitability from spring (0.14) to fall (0.10) in 2022 denotes the largest decrease at Spring Lake Dam in recent years. At City Park, OHSI was stable from 2018 to spring 2021 (0.16-0.18), followed by a decline that remained stable from fall 2021 to fall 2022 (0.10-0.12). City Park OHSI has remained below the long-term 95% confidence intervals since 2018. Habitat suitability at I-35 showed a pattern similar to Spring Lake Dam, being generally stable from 2018 to spring 2022 (0.13–0.16), then declining in summer and fall (0.09). Although coverages of more suitable vegetation taxa declined (e.g., *Cabomba*, *Hydrocotyle*), the impact of reduced flows on OHSI was mainly driven by increased open habitats associated with decreased Texas Wild-rice coverage. Despite Texas Wild-rice having low suitability criteria, it has a strong impact on changes in OHSI due to its dominance within each study reach.

Fountain Darter habitat suitability in 2022 declined at each reach, which can be contributed to combined effects of recreation and low flows. Decreased vegetation coverage from spring to fall has been consistent through time due to summer recreation that was likely exacerbated by reduced flows and lead to OHSIs dropping below 0.10 at Spring Lake Dam and I-35 (Figure 16 and E10). Habitat conditions were noticeably impacted by low-flows at I-35, where fluvial habitats closer to the banks transitioned to backwaters or were desiccated. Habitat suitability at City Park has been lower than the long-term mean since 2014 due to increased dominance of Texas Wild-rice, which has the lowest suitability criteria among taxa (Figure E10 and H1).

The utility of OHSI for providing potential explanations on Fountain Darter population trends are apparent when put into context with random dip-net results. Sites for random dip-netting are selected via simple random sampling, which provides unbiased estimates of prevalence at the reach-level. Analyses conducted when developing OHSI showed a strong relationship between OHSI and occurrence (Table H1 and Figure H3). For example, Texas wild-rice represented 92% of random dip-net stations sampled at City Park in 2022 resulting in overall occurrence of 15%, whereas occurrence was 65% during all sampling events in 2014, which had higher OHSI values (>0.30) and mostly included samples in the previously dominant non-natives (but highly suitable) *Hydrilla* and *Hygrophila* (Table 5; BIO-WEST 2015). These differences support that Fountain Darters in the San Marcos River currently exhibit spatially structured distributions at the reach-level.

While lower Fountain Darter prevalence points to degraded population condition at the reach-level, estimates of population performance by drop-net and timed dip-net data do not support this. Drop-net results showed that densities have increased recently, demonstrating spatial structured distributions and restricted patches of suitable habitat does not appear to negatively affect population performance (Davis and Cooke 2010; Davis et al. 2011). In addition, for species that are patchily distributed, estimated occurrence via simple random sampling may not be a reliable measure of population performance, since important taxa (e.g., spawning habitat) with limited coverage have a low probability of being selected for sampling (Pacifici et al. 2016). Nonetheless, occurrence data still provides useful information on patterns of species distribution that are still relevant to population performance. At the Old Channel in the Comal system for example, overall occurrence, OHSI, and density are consistently higher compared to reaches in the San Marcos River. This suggests that higher habitat suitability can increase overall occurrence and result in higher densities. Based on this, establishing diverse vegetation assemblages could enhance Fountain Darter population persistence potential in the San Marcos River (Duncan et al. 2016; Dunn and Angermeier 2018).

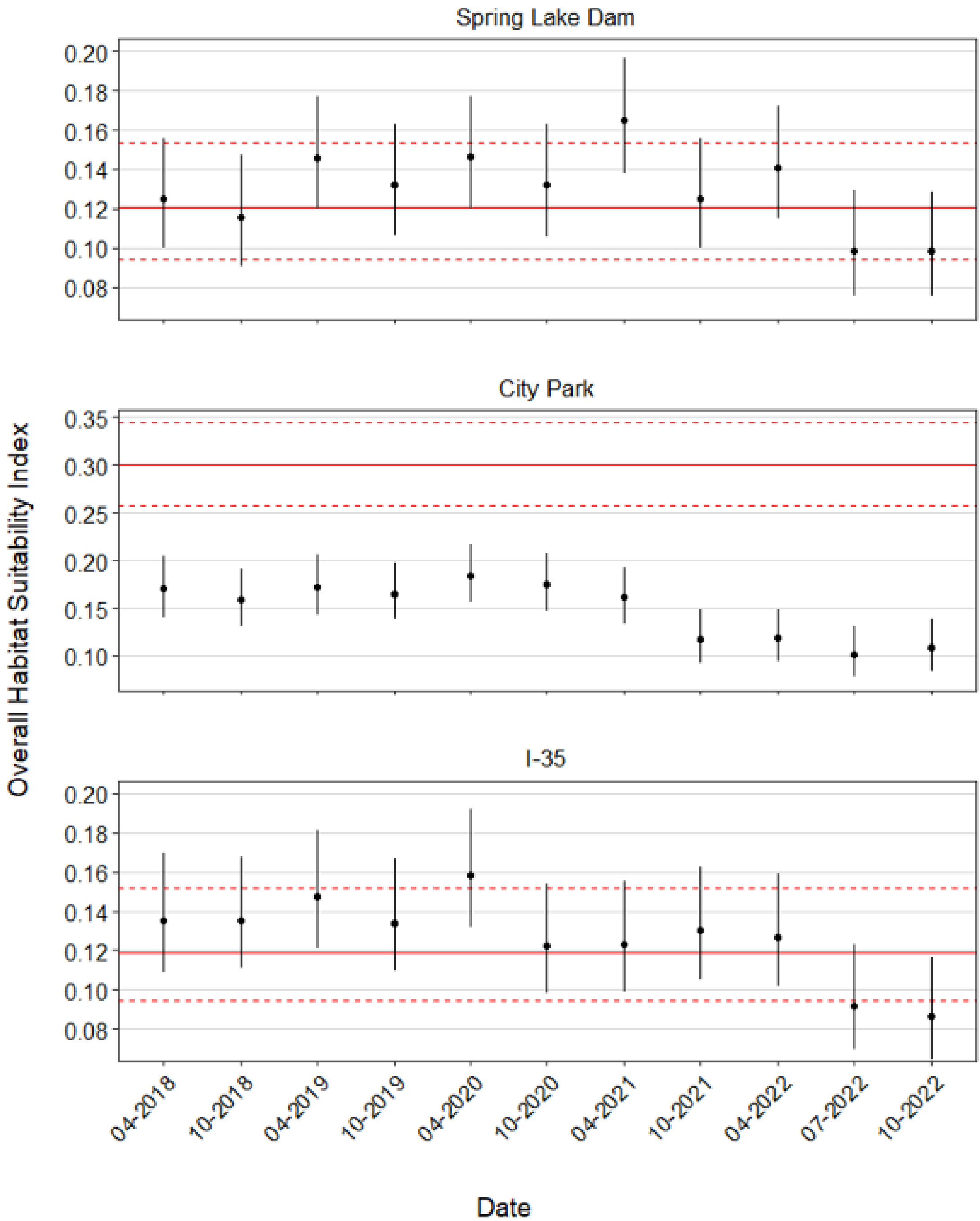

Figure 16. **Overall Habitat Suitability Index (OHSI) (±95% CI) from 2018–2022 among study reaches in the San Marcos River. Solid and dashed red lines denote means of long-term (2003–2022) OHSI and 95% CI, respectively.**

Fish Community

A total of 9,758 fishes represented by 10 families and 29 unique species were observed in the San Marcos Springs system during 2022 sampling. Fish assemblage showed somewhat discrete shifts in structure (percent relative density), particularly between the lower river and upstream segments. At the three most upstream segments, assemblages were dominated by Guadalupe Roundnose Minnow (*Dionda nigrotaeniata*; 30.7–31.9%) or Largespring Gambusia (*Gambusia geiseri*; 54.1%), while the Lower River was dominated by Texas Shiner (*Notropis amabilis*; 35.2%). Fountain Darter ranked 5th in abundance at Spring Lake (6.9%) and Upper River (4.8%), 9th at Middle River (3.3%), and 8th at Lower River (2.7%) (Table E2).

Evidence of detectable temporal trends in fish communities varied among the selected metrics and between and within study segments. Species richness and diversity was typically highest in Lower River. Species richness was also high at the Upper River, though diversity was low and more like Spring Lake. Middle River displayed intermediate species richness levels and diversity quantities akin to Lower River. Five-year trends in species richness and diversity displayed slight increases at Upper River and Lower River. At the Middle River, species richness slightly decreased over time, while diversity increased at a greater magnitude in comparison. Community-based metrics at Spring Lake contrasted other segments and were stable (Figure 17).

Temporal trends in spring fishes' species richness and relative density were incongruent with community-level observations. Spring fishes' species richness was high and stable at the Upper River and Middle River. Total number of spring fish species were also stable at Spring Lake, though didn't exceed 4 species. Spring fishes' species richness at Lower River increased the past five years to levels more similar to upstream river segments. Relative density of spring fishes was high and stable at Spring Lake and Upper River. At the Middle River, relative density was also high, but less stable. Relative density was lower at Lower River, but accounted for >60% of the assemblage in fall 2021 and summer 2022 (Figure 18). Decreases in the total species and relative density of spring fishes with increasing distance from springflow influence is well documented (Hubbs 1995; Kollaus and Bonner 2012; Craig et al. 2016). That being said, relative density was about 80% in the lower river this summer, which does not align with expectation, especially under low-flow conditions. However, it's possible that other spring-associated fishes have experienced increased recruitment due to low stable flows, as documented for Fountain Darters above.

Temporal trends in Fountain Darter density from 2018–2022 were based on microhabitat sampling data. In 2022, median density was above or slightly below the long-term at Spring Lake and Middle River. Variation in density (i.e., interquartile range) was generally similar to the long-term at Spring Lake, except for spring 2022, where the upper quartile was substantially higher. At the Middle River, variability aligned with the long-term in fall and was lower the other two events. Lastly, median Fountain Darter density in 2022 was at or close to zero at the Upper River and Lower River, which are typical trends (Figure 19).

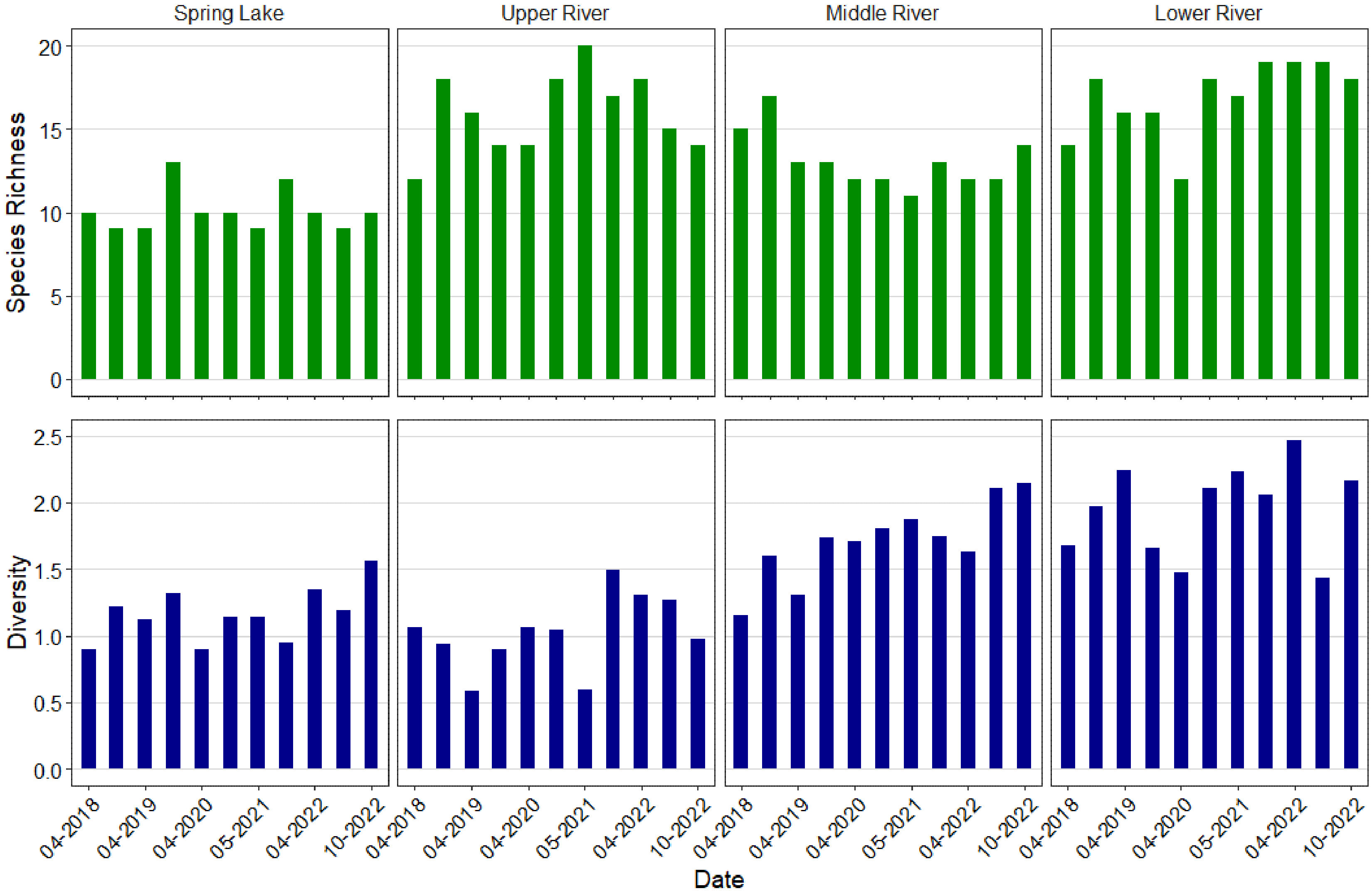

Figure 17. **Bar graphs displaying species richness (top row) and diversity (bottom row) from 2018–2022 based on all three fish community sampling methods in the San Marcos Springs/River.**

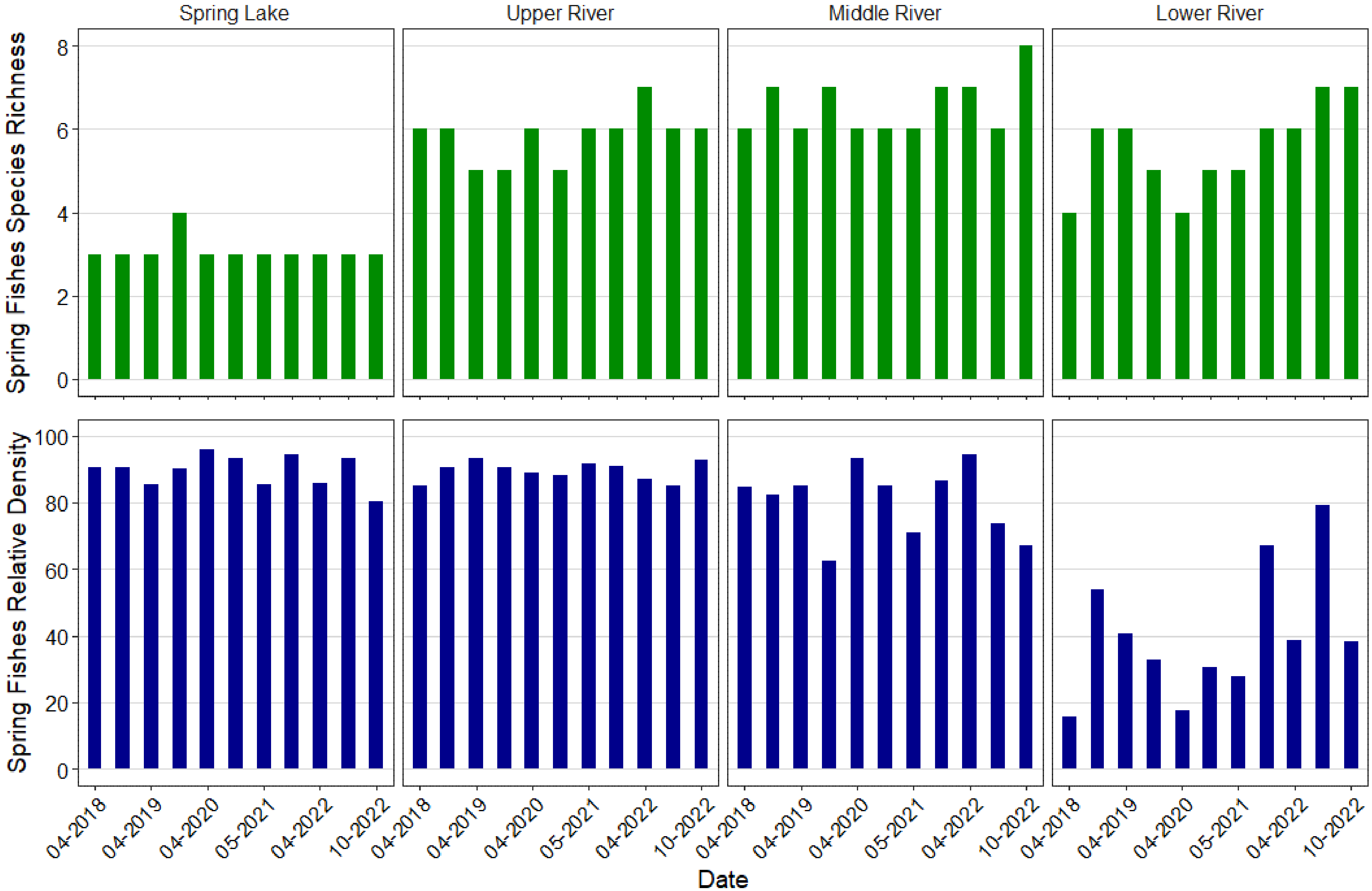

Figure 18. Bar graphs displaying spring fish richness (top row) and relative density (RD; %) (bottom row) from 2018–2022 based on all three fish community sampling methods in the upper San Marcos Springs/River.

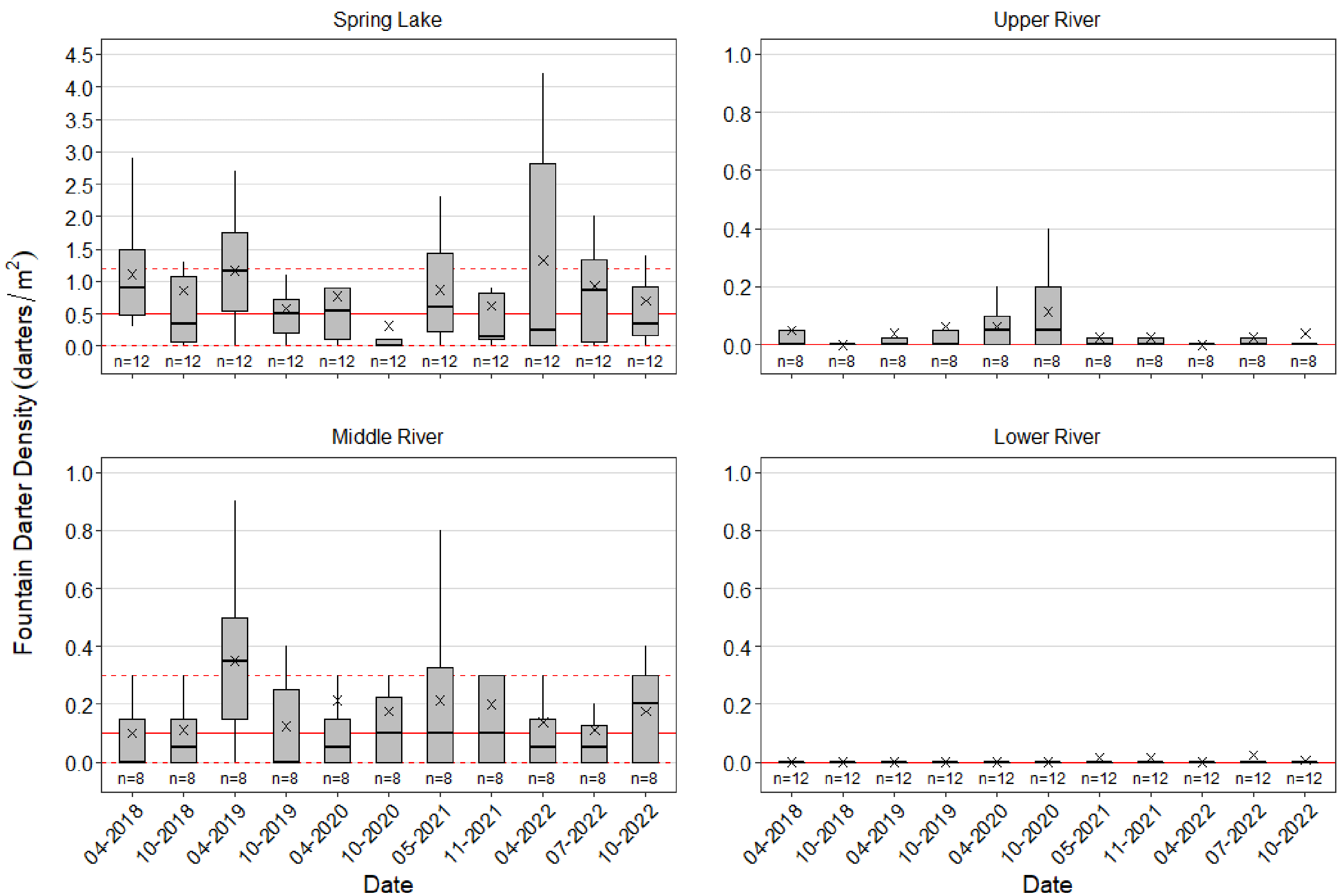

Figure 19. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) among study reaches from 2018–2022 during fish community microhabitat sampling in the San Marcos Springs/River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. The "n" values along the x-axes represent the number of microhabitat samples per category. Solid and dashed red lines denote long-term (2014–2022) medians and interquartile ranges, respectively.**

San Marcos Salamander

In 2022, a total of 679 San Marcos salamanders were observed in spring (195 salamanders), summer (240 salamanders), and fall (244 salamanders) and densities ranged from 2.88–30.86 salamanders/m^2 (Figure 20). At the Hotel Site, salamander densities in 2022 were lower than the long-term average for the spring and were considerably higher in summer and fall. San Marcos salamander densities at Riverbed were higher than long-term averages in spring and fall but were lower in summer. In contrast, densities at Spring Lake Dam in 2022 were higher in summer and lower for other seasons. Almost all density observations in the current year fell outside the confidence interval boundaries (except Spring Lake Dam, summer 2022), suggesting meaningful differences (Figure 20).

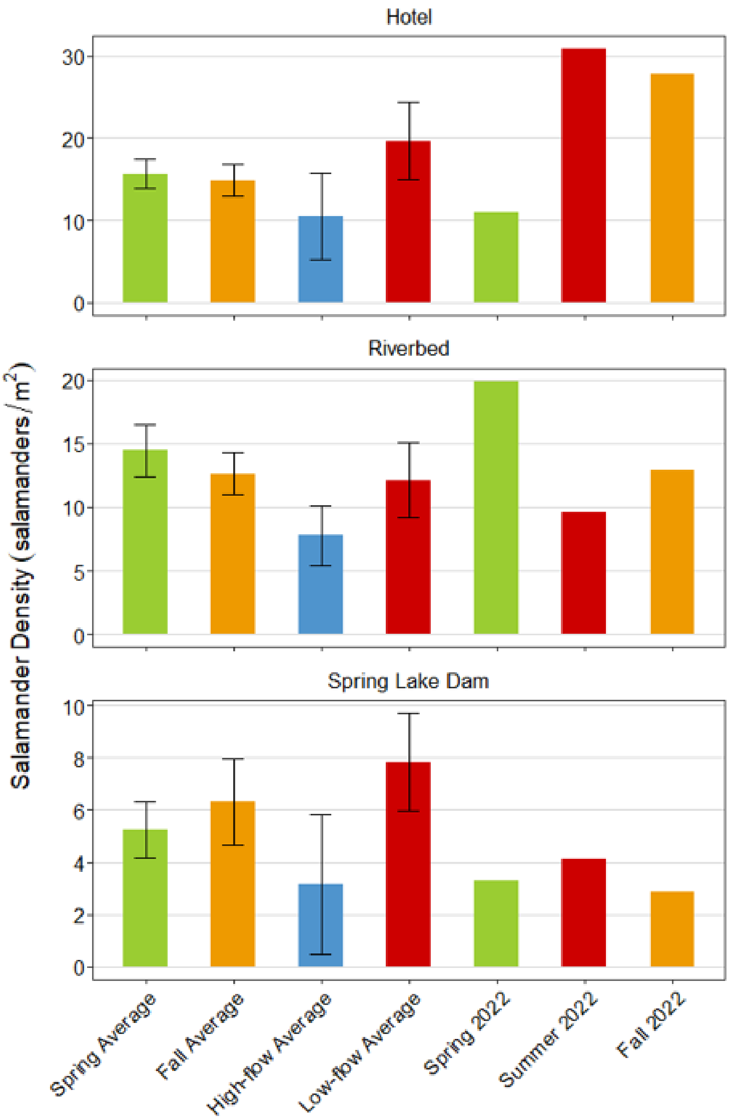

Figure 20. **San Marcos Salamander density (salamanders/m^2) among sites in 2022, with the long-term (2001–2022) average for each sampling event. Error bars for long-term averages represent 95% confidence intervals.**

Five-year trends at the Hotel Site did not display any distinct patterns in density from 2018 to spring 2022 but a noticeable increase occurred the last two events in 2022. At the Riverbed Site, density generally decreased from 2018–2022, though was similar to values from 2018–2020 in spring 2022. Density at Spring Lake Dam generally declined from 2018–2021, which was followed by an increase in 2022 (Figure 21). Subsequent monitoring will help provide insights on how salamander densities change following this low-flow year.

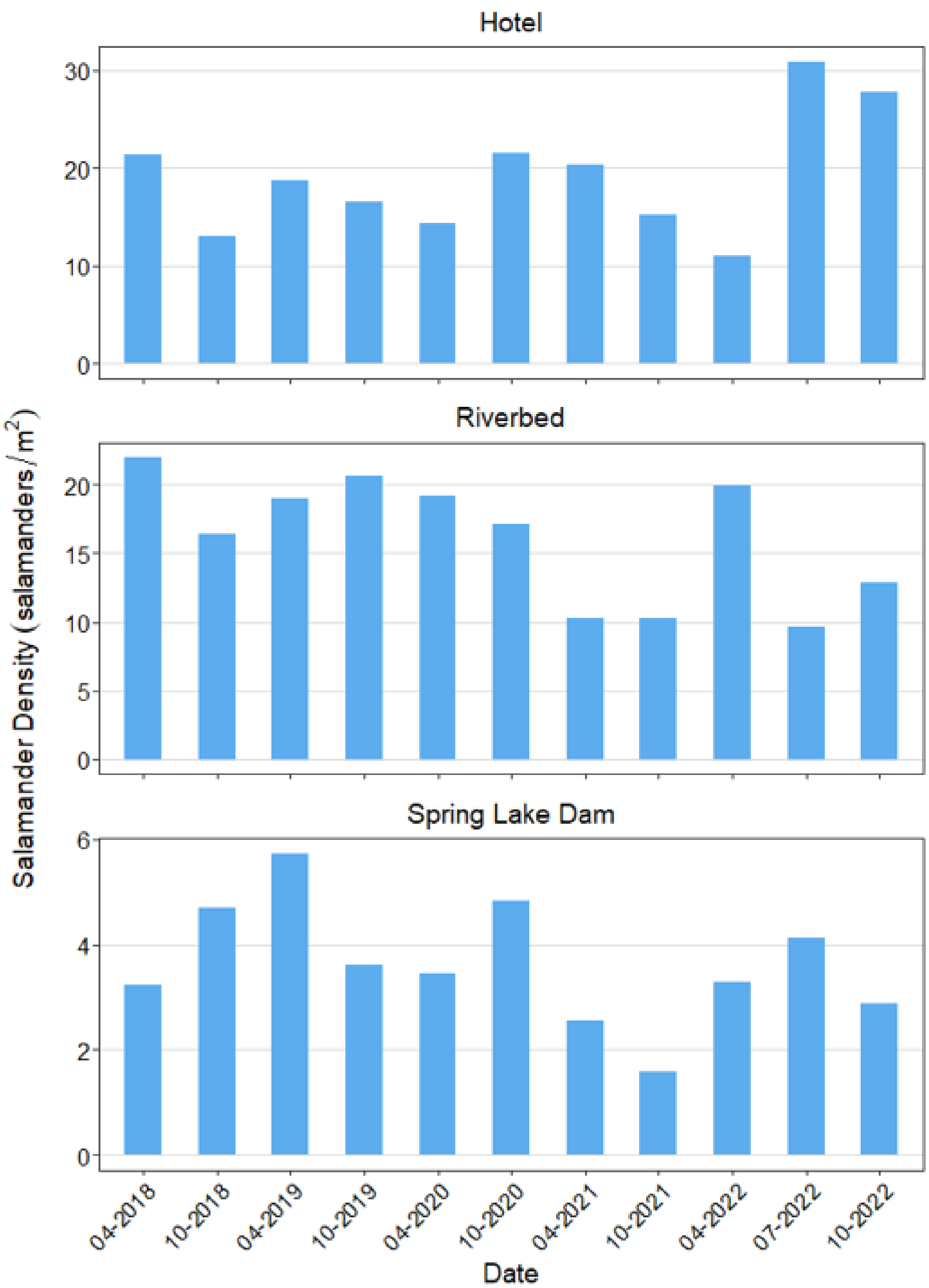

Figure 21. San Marcos Salamander density (salamanders/m^2) among sites from 2018–2022 in the San Marcos Springs/River.

Macroinvertebrates

Benthic Macroinvertebrate Rapid Bioassessment

Benthic macroinvertebrate rapid bioassessment data was collected during both the spring and fall sampling events in 2022 (raw data presented in Appendix F). A total of 687 and 821 individual macroinvertebrates, representing 47 and 40 unique taxa were sampled in spring and fall, respectively. Altogether, 66 unique taxa were represented among all samples from 2022. Values for each metric are reported, while metric scores for calculating the B-IBI can be found in Table 6. At Spring Lake, habitats sampled this year included emergent vegetation, root wads, and sand. Similar habitats were sampled at City Park, with the addition of debris jams. Cobble/gravel habitats were sampled at Spring Lake Dam and I-35 in addition to what was sampled at City Park. No supplemental snag samples were taken. Aquatic-life-use in 2022 generally aligned with four years prior and indicates stable trends. Spring Lake and City Park were described as “Intermediate” for both seasons, whereas Spring Lake Dam was described as “High”. Aquatic-life-use during both sampling events were ranked “Exceptional” at I-35 (Figure 22).

In summary, Spring Lake and City Park scored lower than the other sites, likely due to differences in habitats available for sampling. Lower scores were expected at Spring Lake as these communities are naturally different compared to swift flowing “least-disturbed reference streams”. At City Park, lower scores compared to Spring Lake Dam and I-35 were also not surprising. Lotic habitats at City Park consists of runs, while riffles with cobble and gravel substrates more similar to reference streams are present at the other riverine sites. As such, higher scores at Spring Lake Dam and I-35 are best explained by greater prevalence of fluvial specialist, resulting in greater taxa diversity overall. It should also be noted that most reference streams do not exhibit the stenothermal conditions present within the upper San Marcos River and this may result in differing community composition. Based on this, the level of score is less important in the spring-fed San Marcos River sample reaches than the consistency or trends in results per reach over time. Additional monitoring will generate a robust reference dataset and allow for the development of scoring criteria specific to this unique ecosystem, providing a more accurate realization of ecological health through time.

Table 6. Metric value scoring ranges for calculating the Texas RBP B-IBI (TCEQ 2014).

METRIC	SCORING CRITERIA			
	4	3	2	1
Taxa richness	>21	15–21	8–14	<8
EPT taxa abundance	>9	7–9	4–6	<4
Biotic index (HBI)	<3.77	3.77–4.52	4.56–5.27	>5.27
% Chironomidae	0.79–4.10	4.11–9.48	9.49–16.19	<0.79 or >16.19
% Dominant taxon	<22.15	22.15–31.01	31.02–39.88	>39.88
% Dominant FFG	<36.50	36.50–45.30	45.31–54.12	>54.12
% Predators	4.73–15.20	15.21–25.67	25.68–36.14	<4.73 or >36.14
Ratio of intolerant: tolerant taxa	>4.79	3.21–4.79	1.63–3.20	<1.63
% of total Trichoptera as Hydropsychidae	<25.50	25.51–50.50	50.51–75.50	>75.50 or no Trichoptera
# of non–insect taxa	>5	4–5	2–3	<2
% Collector–gatherers	8.00–19.23	19.24–30.46	30.47–41.68	<8.00 or >41.68
% of total number as Elmidae	0.88–10.04	10.05–20.08	20.09–30.12	<0.88 or >30.12

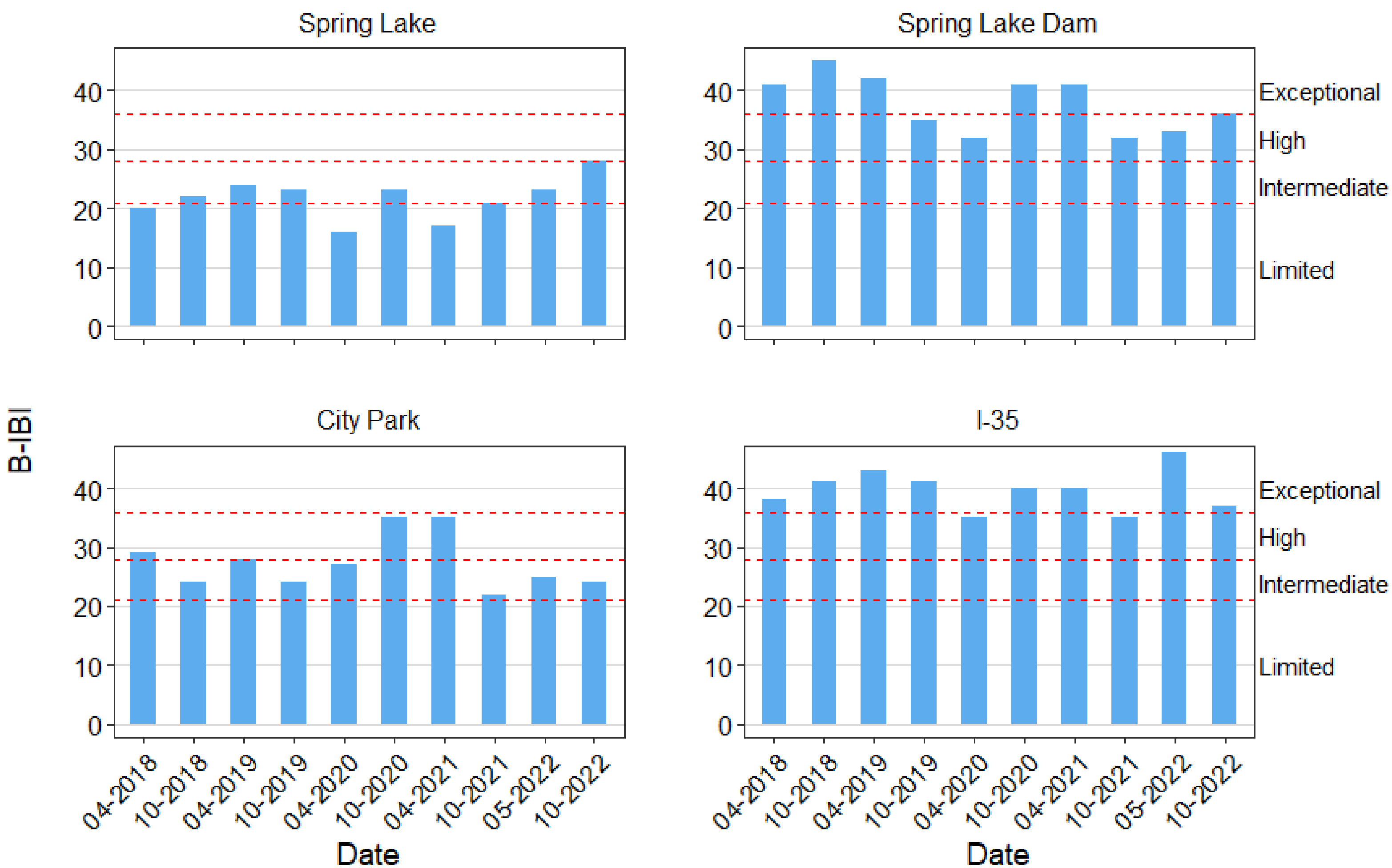

Figure 22. **Benthic macroinvertebrate Index of Biotic Integrity (B-IBI) scores and aquatic-life-use point-score ranges from 2018–2022 in the San Marcos Springs/River. "Exceptional" indicates highest quality habitats**

CONCLUSION

In 2022, low precipitation and higher ambient temperatures in central Texas resulted in severe drought conditions by spring and transitioned to an exceptional drought classification by mid-summer. San Marcos River discharge decreased throughout the year, reaching 95 cfs at the end of July, 90 cfs by mid-August, and 85 cfs at the end of September, which triggered three full system visual habitat evaluations and memorandum updates. Habitat quality documented for the Covered Species varied spatially during the evaluations at these three flow levels. By the third evaluation (September), lower water levels resulted in slightly degraded habitat quality in Spring Lake which exhibited higher-than-average amounts of algae build up and siltation. At this time, conditions in the river continued to experience aquatic vegetation coverage declines and warmer than typical water temperatures.

In summary, total river discharge in the San Marcos River System in 2022 was the lowest since the inception of biological monitoring in 2000. Total aquatic vegetation coverage declined from spring to fall across all study reaches. Coverages declined at a greater magnitude at Spring Lake Dam compared to other reaches. Additionally, total fall cover was below the long-term average at Spring Lake Dam and City Park, but was higher at I-35. Ubiquitous declines in vegetation were mainly attributed to decreased coverage of Texas Wild-rice due to both low-flows and recreation. Full system mapping represented the lowest Texas Wild-rice coverage since spring 2021, although this taxon still remained abundant throughout the system and continued to dominate aquatic vegetation assemblages. Reduced river discharge in 2022 led to some Texas Wild-rice becoming dewatered and stranded on islands or along bank habitats.

Fountain Darter population performance metrics generally aligned with historical data among seasons, with several exceptions shown by density. Despite some seasonal discrepancies, positive increases in density were observed across reaches the past two years. The strong relationship between overall habitat suitability and occurrence supports that Fountain Darters in the San Marcos River exhibit spatially structured distributions at the reach-level, driven by the composition and configuration of vegetation assemblages. Yet, recent increases in density show increased population performance within patches of suitable habitat. Positive increases in Fountain Darter density may be due to several extrinsic and/or intrinsic factors. Greater recruitment rates in recent years likely provide partial explanation for this increasing trend, potentially due to increased coverage of suitable vegetation in some reaches (e.g., *Cabomba* at City Park), or low/stable flows minimizing displacement of young-of-year darters. Regardless of the mechanism, results from drop-netting showed that reduced flows in 2022 did not negatively impact Fountain Darter populations within suitable habitat patches. Concurrently, reach-level occurrence and habitat suitability indices show that highly suitable habitat patches have become restricted in recent years due to dominance of Texas Wild-rice. Substantially higher young-of-year darters in the fall, when river discharge was lowest, also suggests that Fountain Darters may be resistant to large reductions in flow by augmentation through recruitment. This increased recruitment could come through increased reproduction rates (i.e., compensatory reproduction) or through higher survival of young-of-year. It is also unclear whether flows negatively affect individual fitness and growth of juvenile and adult darters. Additional research is needed to understand how different demographic processes under low flow conditions contribute to population dynamics.

Fish community sampling demonstrated that species richness and diversity generally increased from upstream to downstream, whereas richness and relative density of spring-associated fishes declined in the study segments furthest downstream. Five-year trends in species richness and diversity displayed slight increases at Upper River and Lower River segments. At the Middle River, species richness slightly decreased over time, while diversity increased. Spring fishes' species richness at Lower River increased the past five years to levels more similar to upstream river segments.

Trends in San Marcos Salamander densities were variable among sites in 2022 and the past five years. Five-year trends at the Hotel Site did not display any distinct patterns in density from 2018 to spring 2022 and a noticeable increase occurred the last two events in 2022. At the Riverbed Site, density generally decreased from 2018–2022, though was similar to values from 2018–2020 in spring 2022. Density at Spring Lake Dam generally declined from 2018–2021, which was followed by an increase in 2022. Given the methodology employed, the magnitude of variation between events, and the differences in patterns among sites, no clear patterns in San Marcos Salamander populations are evident.

Macroinvertebrate bioassessment results showed areas lacking riffle habitats (i.e. Spring Lake, City Park) scored lower, as these communities are naturally different compared to swift flowing least-disturbed reference streams. As such, higher scores at Spring Lake Dam and I-35 are best explained by greater prevalence of fluvial specialist, resulting in greater taxa diversity overall. However, for a spring-fed system, the importance of this metric is not necessarily the ranking, but rather the evaluation of a trend over time. No temporal trends in bioassessment scores were apparent, suggesting that reduced flows in 2022 did not degrade the ecological health of the San Marcos system.

In summary, 2022 biological monitoring provided insights into the current condition of the EAHCP Covered Species in the San Marcos Springs/River, and informed flow-ecology relationships. Patterns in river discharge and water temperatures aligned with previous low-flow years, and although impacts to available Fountain Darter habitat and Texas Wild-rice coverage were observed, conditions in 2022 did not appear to result in detrimental impacts to covered species populations. Subsequent monitoring efforts will provide opportunities to better understand the dynamics of this complex ecological system and how it responds to future hydrologic conditions.

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APPENDIX A: CRITICAL PERIOD MONITORING SCHEDULE

SAN MARCOS RIVER/SPRINGS
Critical Period Low-Flow Sampling – Schedule and Parameters

FLOW TRIGGER (+ or - 5 cfs)	PARAMETERS
120 cfs	Wild-Rice vulnerable stands - Every 5 cfs decline (maximum weekly)
100 cfs	Full Sampling Event
100 - 85 cfs	Habitat Evaluations - Every 5 cfs decline (maximum weekly)
85 cfs	Full Sampling Event
85 - 60 cfs	Habitat Evaluations - Every 5 cfs decline (maximum weekly)
60 cfs	Full Sampling Event
60 - 25 cfs	Habitat Evaluations - Every 5 cfs decline (maximum weekly)
25 cfs	Full Sampling Event
25 - 0 cfs	Habitat Evaluations - Every 5 cfs decline (maximum weekly)
10 - 0 cfs	Full Sampling Event
RECOVERY	
25 - 85 cfs	Full Sampling Event (dependent on flow stabilization)
85 - 125 cfs	Full Sampling Event (dependent on flow stabilization)

PARAMETER DESCRIPTION

Wild-Rice Monitoring	Physical changes vulnerable stands
Fall Sampling Event	Aquatic Vegetation Mapping - including Texas Wild-Rice Fountain Darter Sampling Drop Net, Dip net (Presence/Absence), and Visual Parasite evaluations Fish Community Sampling Salamander Sampling - Visual Fish Sampling - Exotics/Predation (85 cfs and below) Water Quality - Suite I and Suite II
Habitat Evaluations	Photographs

SAN MARCOS RIVER/SPRINGS
Species-Specific Triggered Sampling

FLOW RATE (+ or – 10 cfs)	SPECIES	FREQUENCY	PARAMETERS
≤80 cfs or ≥ 50 cfs continuing until flow rate restores to ≥100 cfs	Fountain Darter	Every other month	Aquatic vegetation mapping at Spring Lake Dam reach, City Park reach, and IH-35 reach
≤80 cfs or ≥ 50 cfs continuing until flow rate restores to ≥100 cfs	Fountain Darter	Every other month	Conduct dip net sampling/visual parasite evaluations at 50 sites in high quality habitat to include fifteen (15) sites in Spring Lake Dam reach; twenty (20) sites in City Park reach, and fifteen (15) sites in IH-35 reach.
≤50 cfs	Fountain Darter	Monthly	Aquatic vegetation mapping at Spring Lake Dam reach, City Park reach, and IH-35 reach
≤50 cfs	Fountain Darter	Weekly	Conduct dip net sampling/visual parasite evaluations at 50 sites in high quality habitat to include fifteen (15) sites in Spring Lake Dam reach; twenty (20) sites in City Park reach, and fifteen (15) sites in IH-35 reach.
≤80 cfs or ≥ 50 cfs	San Marcos Salamander	Every other week	Salamander surveys (SCUBA and snorkel) will be conducted at the Hotel Area, Riverbed area, and eastern spillway of Spring Lake Dam
<50 cfs	San Marcos Salamander	Weekly	Salamander surveys (SCUBA and snorkel) will be conducted at the Hotel Area, Riverbed area, and eastern spillway of Spring Lake Dam
100 cfs	Texas Wild-Rice	Once	Mapping of Texas Wild-Rice coverage for the entire San Marcos River will be conducted
≤100 cfs or ≥60 cfs	Texas Wild-Rice	Every other week	Physical parameters of Texas Wild-Rice will be monitored in designated "vulnerable" areas
<80 cfs	Texas Wild-Rice	Monthly	Mapping of Texas Wild-Rice coverage for the entire San Marcos River will be conducted
<80 cfs	Texas Wild-Rice	Weekly	Physical visual observations of Texas Wild-Rice will occur

APPENDIX B: LOW-FLOW CRITICAL PERIOD WATER QUALITY SAMPING AND HABITAT EVALUATION

Water Quality Sampling Results

Table B1. Water quality sampling at select stations during Low-flow Critical Period Monitoring in July 2022. Measurements were taken at the middle of the water-column.

Site	Date	Time	Temp (°C)	spCond (µs/cm)	pH	D.O. (mg/L)	Depth (ft)	Velocity (ft/s)	Weather Conditions
Sink Creek	2022-07-21	15:00	26.2	601.0	7.4	5.9	0.9	0.0	partly cloudy, 98 F, 45% RH
Hotel	2022-07-21	14:40	22.6	611.0	7.5	5.9	7.0	0.0	partly cloudy, 98 F, 45% RH
Submarine	2022-07-21	14:32	23.1	612.0	7.6	7.1	1.8	0.0	partly cloudy, 98 F, 45% RH
DS Boatdock	2022-07-21	14:22	22.8	605.0	7.4	6.6	5.0	0.0	partly cloudy, 97 F, 46% RH
Landing Dock	2022-07-21	14:00	24.0	629.0	7.6	8.9	1.5	0.0	partly cloudy, 97 F, 46% RH
Boardwalk	2022-07-21	13:52	26.7	628.0	7.6	6.2	2.0	0.0	partly cloudy, 97 F, 46% RH
Downstream of Road	2022-07-21	13:30	26.7	606.0	7.5	4.5	2.4	0.0	partly cloudy, 95 F, 47% RH
Above Dam	2022-07-21	13:08	24.1	633.0	7.4	8.2	1.5	0.4	partly cloudy, 92 F, 50% RH
Below Dam	2022-07-21	13:00	24.1	631.0	7.7	8.6	0.8	0.6	partly cloudy, 92 F, 50% RH
Below Chute	2022-07-21	12:52	23.3	634.0	7.7	8.7	1.5	0.0	partly cloudy, 92 F, 51% RH
Above Chute	2022-07-21	12:43	23.5	636.0	7.7	8.4	1.6	0.3	partly cloudy, 92 F, 51% RH
Sessom Creek	2022-07-21	12:30	24.3	667.0	7.6	7.1	0.2	1.2	partly cloudy, 92 F, 51% RH
City Park	2022-07-21	12:05	23.5	633.0	7.8	9.3	2.9	0.4	partly cloudy, 92 F, 53% RH
Rio Vista	2022-07-21	11:47	23.6	633.0	7.9	9.0	1.0	0.0	partly cloudy, 90 F, 57% RH
IH 35 Crossing	2022-07-21	11:27	23.5	633.0	7.9	8.8	4.0	0.1	partly cloudy, 90 F, 57% RH
Thompson's Island - Natural	2022-07-21	10:57	23.5	632.0	7.9	8.6	0.8	0.6	partly cloudy, 86 F, 68% RH
Thompson's Island - Artificial	2022-07-21	10:47	23.7	627.0	7.9	8.5	1.6	0.0	partly cloudy, 86 F, 68% RH
Water Treatment Plant	2022-07-21	10:15	23.5	625.0	7.8	8.0	1.7	0.8	partly cloudy, 86 F, 68% RH

Table B2. **Lab results from water quality grab samples collected at select stations during Low-flow Critical Period Monitoring on July 21, 2022. The unit for each parameter is milligrams per liter (mg/L). ND for each parameters denotes that it was not detectable.**

Site	Nitrate as N	Total N	Ammonium	Soluble Reactive P	Total P	Alkalinity	Total Suspended Solids
Sink Creek	0.49	3.71	0.15	0.08	0.24	243	185
Hotel	1.23	0.81	0.06	0.09	ND	252	8.40
Submarine	1.29	1.04	ND	ND	ND	253	3.10
DS Boatdock	1.29	0.88	ND	ND	ND	256	ND
Landing Dock	1.42	1.30	0.05	ND	ND	266	7.40
Boardwalk	0.96	0.85	0.09	0.05	ND	252	38.90
Downstream of Road	0.52	0.38	0.11	ND	ND	245	2.70
Above Dam	1.03	1.11	ND	ND	ND	267	ND
Below Dam	1.05	1.13	ND	ND	ND	268	ND
Below Chute	1.16	1.26	ND	ND	ND	267	ND
Above Chute	1.15	1.26	ND	ND	ND	266	ND
Sessom Creek	1.31	1.40	ND	ND	ND	265	ND
City Park	1.08	1.23	ND	ND	ND	260	ND
Rio Vista	1.13	1.22	ND	0.24	ND	269	22.90
IH 35 Crossing	1.14	1.22	ND	ND	ND	269	6.50
Thompson's Island - Natural	1.12	1.23	ND	ND	ND	255	4.70
Thompson's Island - Artificial	1.04	1.18	ND	ND	ND	262	8.30
Water Treatment Plant	1.09	1.46	0.06	ND	ND	255	12.50

Habitat Evaluation

MEMORANDUM

TO:	Chad Furl, Jamie Childers
FROM:	Ed Oborny (BIO-WEST)
DATE:	**August 5, 2022**
SUBJECT:	EA HCP Critical Period Habitat Evaluation – 95 cfs – San Marcos System

95 cfs Habitat Evaluation

SAN MARCOS SYSTEM:

The Spring 2022 Comprehensive Biological Monitoring effort for the San Marcos System was completed in April / May 2022. As total system discharge continued to decline over the summer, the 100 cfs full Critical Period monitoring was triggered and completed in July. That monitoring effort incorporated the 100 cfs Habitat Evaluation. As of this memorandum, all activities associated with San Marcos Critical Period Biological Monitoring (**Task 2**) < 100 cfs event have been completed and are currently being processed:

- Aquatic vegetation mapping of the three (Spring Lake Dam, City Park, and I35) study reaches.
- San Marcos Salamander surveys (Spring Lake and Spring Lake Dam).
- Thermister downloads and zebra mussel lure assessment.
- Fixed-station photography.
- Fountain Darter presence/absence and timed dip netting.
- Fountain Darter drop netting in the three study reaches.
- Fish Community sampling via SCUBA and seine.
- Texas Wild-rice vulnerable stands measurements.
- Texas Wild-rice full system mapping.
- Suite I and II water quality sampling.

Habitat evaluations are required for every 5 cfs decline (not to exceed weekly) in the San Marcos system when conditions are below 100 cfs. The 95 cfs Habitat Evaluation was completed on July 27th. Per requirement, the next scheduled evaluation should occur at 90 cfs. Preliminary observations and photo documentation associated with the full system Critical Period event and 95 cfs Habitat Evaluation are presented below. As of this memorandum, the total system discharge in the San Marcos River ≈ 94 cfs (see Figure to the right).

EDWARDS AQUIFER AUTHORITY — AQUIFER CONDITIONS

Area Index	Today	Yesterday	Ten Day
Bexar (J-17)	630.4	630.6	631.6
Uvalde (J-27)	843.3	843.4	843.8
Comal Springs	100	101	105
San Marcos	94	96	98

Provisional Daily water readings as of 9:00 AM
Last Updated on August 5 2022

Key ecological information relative to the Spring 2022 routine and July Critical Period sampling are included herein to describe current conditions. Water temperature is a key component system-wide as it is an underlying driver of spring-related aquatic assemblages.

Recent 7-day trends in water temperature (°C) for July Critical Period sampling were assessed using temperature data loggers (HOBO Tidbit v2 Temp Loggers) at 10 permanent monitoring stations in Spring Lake and the upper San Marcos River. A location map is purposely not included in this memorandum to help prevent tampering with sensitive and expensive equipment. Data for each monitoring station are based on 10-minute intervals and dates for recent trends extended from the last day that each data logger was downloaded to 7 days prior. All 7-day trends were examined from 7/23 – 7/29, except for Spring Lake Deep (7/21 – 7/27), Spring Lake (7/21 – 7/27), and Rio Vista Park (7/13 – 7/20). Recent 7-day trends were compared to long-term water temperature data measured at 4-hour intervals in July from 2001 – 2021 or to the greatest temporal extent available. For analysis, 7-day trends were compared to long-term trends using boxplots to visualize differences in central tendency (i.e., median) and variation (e.g., range, interquartile range). Results are provided in Table 1 and graphically depicted in Figures 1 and 2. Overall, it is clear the San Marcos system is in a lower flow, summer time condition but no water temperatures are noted as a concern at stations in Spring Lake or longitudinally down the system at this time.

Table 1. Summary of boxplot descriptive statistics comparing recent 7-day and long-term trends in water temperature (°C) at 10 monitoring stations in the upper San Marcos Springs/River.

Station	Period	Min	Lower Box	Median	Upper Box	Max	Interquartile Range	Range
Spring Lake Deep	7-day	21.39	21.46	21.49	21.51	21.53	0.05	0.14
Spring Lake Deep	Long-term	21.56	21.97	22.14	22.37	22.50	0.40	0.94
Spring Lake	7-day	21.84	21.84	21.87	21.87	21.87	0.02	0.02
Spring Lake	Long-term	21.51	21.58	21.62	21.68	21.82	0.09	0.31
Chute	7-day	22.39	22.59	22.85	23.42	24.68	0.84	2.28
Chute	Long-term	21.33	22.13	22.32	22.67	23.46	0.54	2.13
Spring Lake Dam	7-day	22.71	22.97	23.40	24.36	25.26	1.40	2.55
Spring Lake Dam	Long-term	21.52	22.24	22.49	22.94	23.99	0.71	2.47
City Park	7-day	22.61	23.02	23.74	25.21	26.82	2.19	4.21
City Park	Long-term	21.61	22.37	22.81	23.23	24.52	0.86	2.91
Rio Vista Park	7-day	22.71	23.09	23.62	24.56	25.60	1.47	2.89
Rio Vista Park	Long-term	21.33	22.36	22.84	23.61	25.48	1.25	4.15
I-35	7-day	22.66	23.02	23.67	24.68	25.72	1.66	3.06
I-35	Long-term	21.82	22.46	22.87	23.52	25.12	1.06	3.30
Thompson Island - Natural	7-day	22.87	23.23	23.98	25.09	25.91	1.86	3.04
Thompson Island - Natural	Long-term	20.52	22.61	23.20	24.06	26.23	1.45	5.71
Thompson Island - Artificial	7-day	23.47	24.20	24.87	25.45	26.21	1.26	2.74
Thompson Island - Artificial	Long-term	21.93	22.77	23.44	24.22	26.34	1.45	4.40
Waste Water Treatment Plant	7-day	23.16	23.59	24.36	25.36	25.99	1.76	2.83
Waste Water Treatment Plant	Long-term	21.87	22.80	23.42	24.19	26.24	1.39	4.38

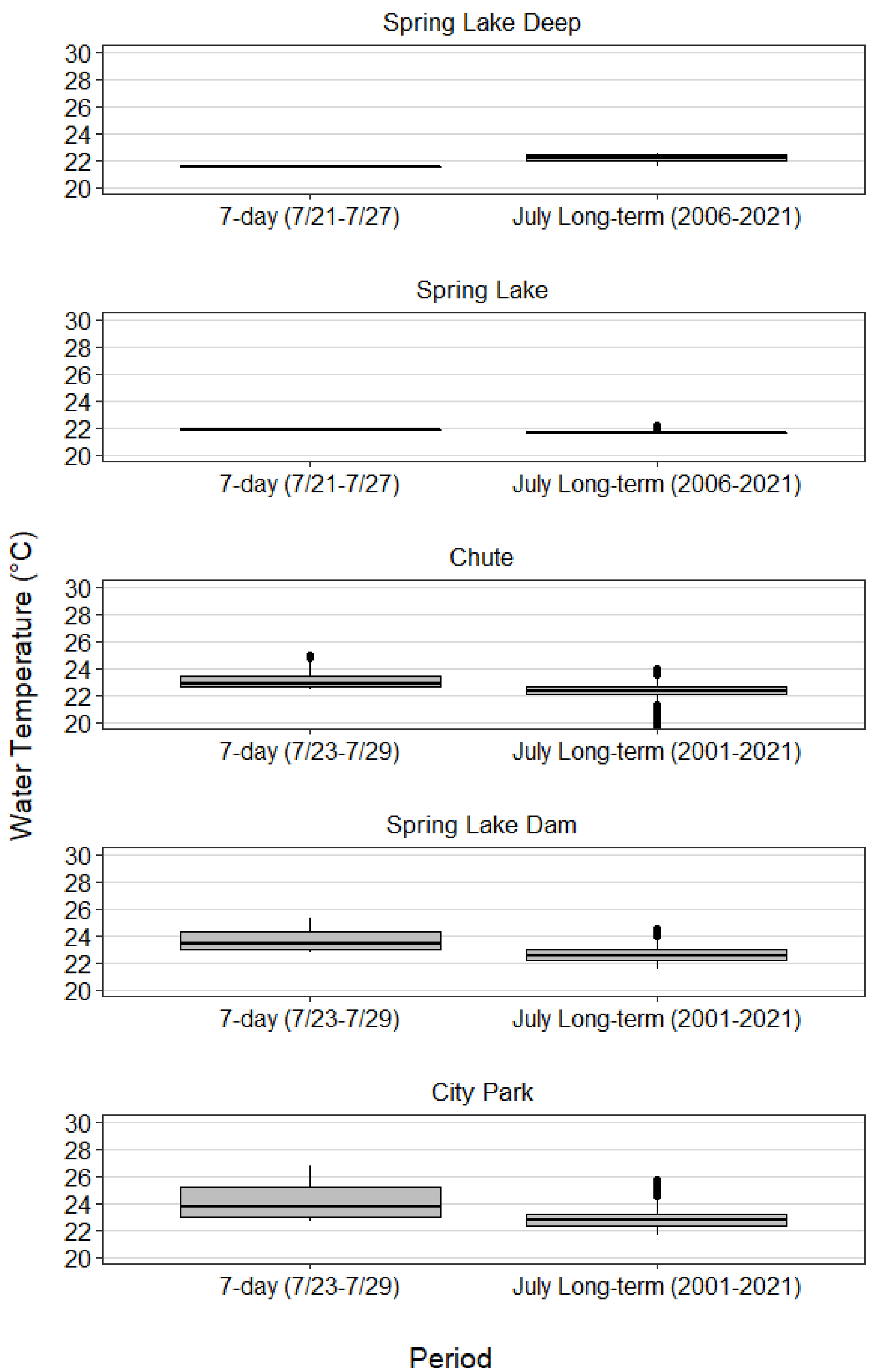

Figure 1. **Boxplots comparing recent 7-day and long-term water temperature trends at five monitoring stations from Spring Lake to City Park. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles.**

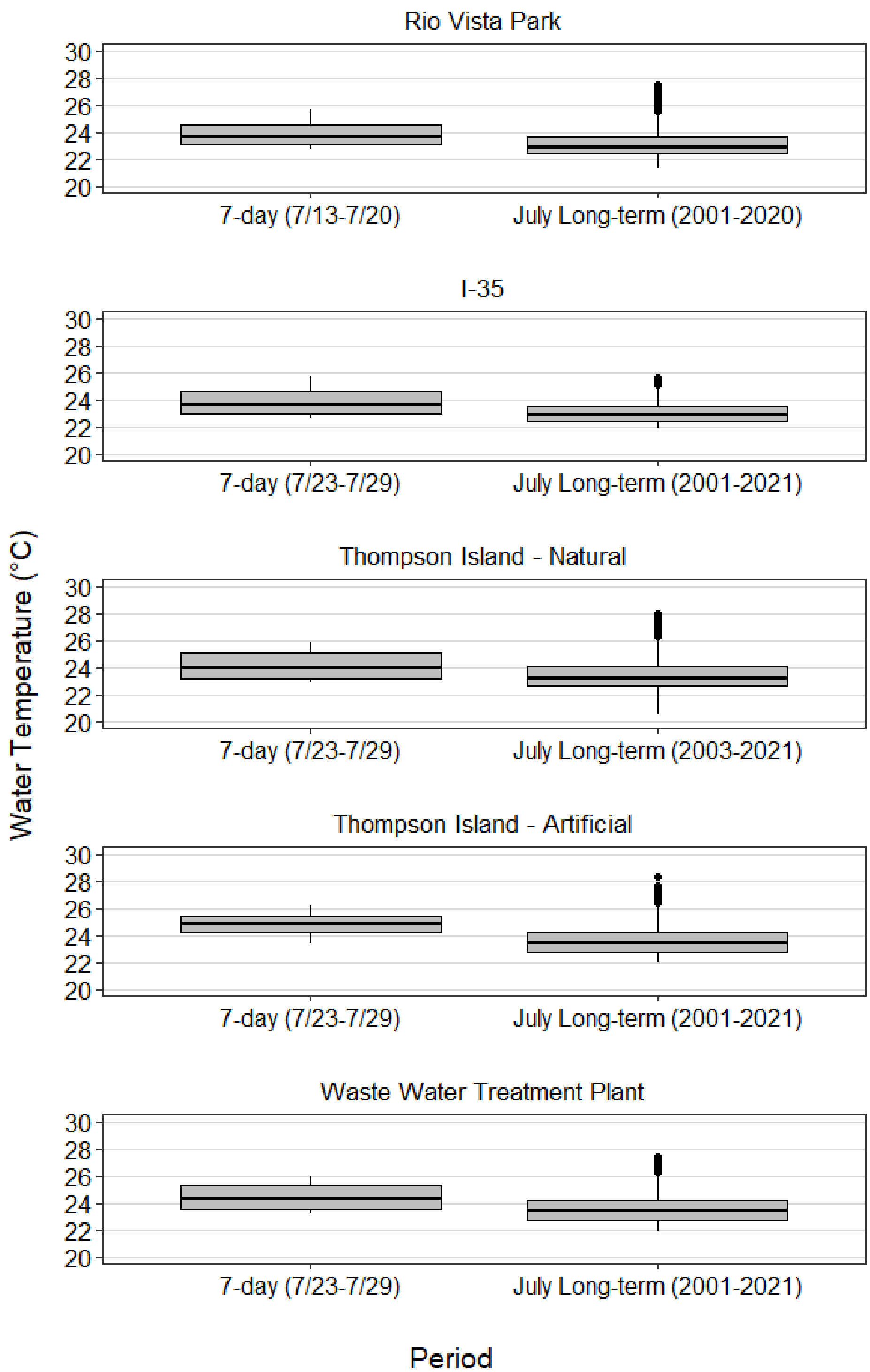

Figure 2. **Boxplots comparing recent 7-day and long-term water temperature trends at five monitoring stations from Rio Vista Park to Waste Water Treatment Plant. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles.**

Aquatic vegetation mapping and Fountain Darter dip netting are key monitoring components as they comprise the equation / criteria for Fountain Darter refugia salvage activities described in Section 6.4.4 (**San Marcos Springs and River Ecosystem Adaptive Management Activities**) of the EAHCP. The trigger conditions for the Fountain Darter in the San Marcos system are as follows:

- *Less than 50 percent mean aquatic vegetation (Variable Flow Study monitoring reaches including Spring Lake) AND less than 20 percent darter presence,*

  OR

- *Less than 25 percent mean aquatic vegetation (Variable Flow Study monitoring reaches including Spring Lake) AND less than 30 percent darter presence.*

At present, neither of the above scenarios are close to being triggered. However, the San Marcos study reaches are experiencing summer time aquatic vegetation declines greater than average, which is typical for lower-than-average flow conditions. From April to July 2022, all three San Marcos River study reaches (Spring Lake Dam, City Park, and I35) have seen a reduction of aquatic vegetation greater than 25%. Fountain Darter dip netting results are also below average conditions as would be expected. In Spring 2022, 24% of the sites had darters present, while on July 29th 40% of the sites had darters present. With respect to Fountain Darters in both drop net and dip net sampling, the two reaches most impacted are Spring Lake Dam and City Park. Over the past several years, these reaches have become dominated by Texas Wild-rice leaving limited other aquatic vegetation of higher darter preference available. At present, the remaining native aquatic vegetation in these two reaches is unfortunately on the fringes which has started to become exposed due to declining water levels.

Throughout the system, Texas Wild-rice total coverage has experienced an approximate 10 percent decline from August 2021 to July 2022. There is approximately 13,000 m^2 of Texas Wild-rice in wetted areas. Currently, last summer's Texas Wild-rice footprint is still largely intact but what has been negatively impacted the most from lower water levels is the density of the top growth. The overall system-wide reduction versus reach reductions of all aquatic vegetation noted above is less, partly because of the amount of Texas Wild-rice that has been planted below Capes Dam. With no scouring pulse events the past few years in this area, these patches are currently doing exceedingly well.

Another key factor is the condition of Spring Lake as it and the Spring Lake Dam spillway are the only two locations that support the presence all three listed species (Fountain Darter, San Marcos Salamander, and Texas Wild-rice. The following pictorial habitat evaluation highlights the current condition of Spring Lake, Spring Lake Dam and longitudinally down the San Marcos River with respect to threatened and endangered species habitat conditions.

SPRING LAKE AND SPRING LAKE DAM

As evident in Figures 3, 4, and 5, water levels throughout Spring Lake are declining. Additionally, habitat conditions for San Marcos Salamanders and Fountain Darters in the lake are holding steady at this time (Figures 6, 7, and 8). The reduced water flow throughout Spring Lake with lower discharge has resulted in higher levels of algal build up and siltation within the San Marcos Salamander Spring Lake study sites. Although there is more silt depositing in these areas with less flow through the lake as is expected, that silt is not yet filtering into the under-rock crevices that support clean substrate habitat. Overall, salamander counts were consistent with years past and adult and juvenile San Marcos Salamanders and Fountain Darters were observed at all sites.

Figure 3: Headwaters of Spring Lake looking downstream on July 27, 2022.

Figure 4: View of slough arm in Spring Lake on July 27, 2022.

Figure 5: View of Spring Lake toward Spring Lake Dam spillway on July 27, 2022.

Figure 6: Hotel Study Reach habitat surveyed on July 27, 2022.

Figure 7: Riverbed Study Reach habitat survey on July 27, 2022.

Figure 8: San Marcos Salamanders and Fountain Darters at the Hotel Reach on July 27, 2022.

Figure 9: Spring Lake Dam Spillway on July 27, 2022.

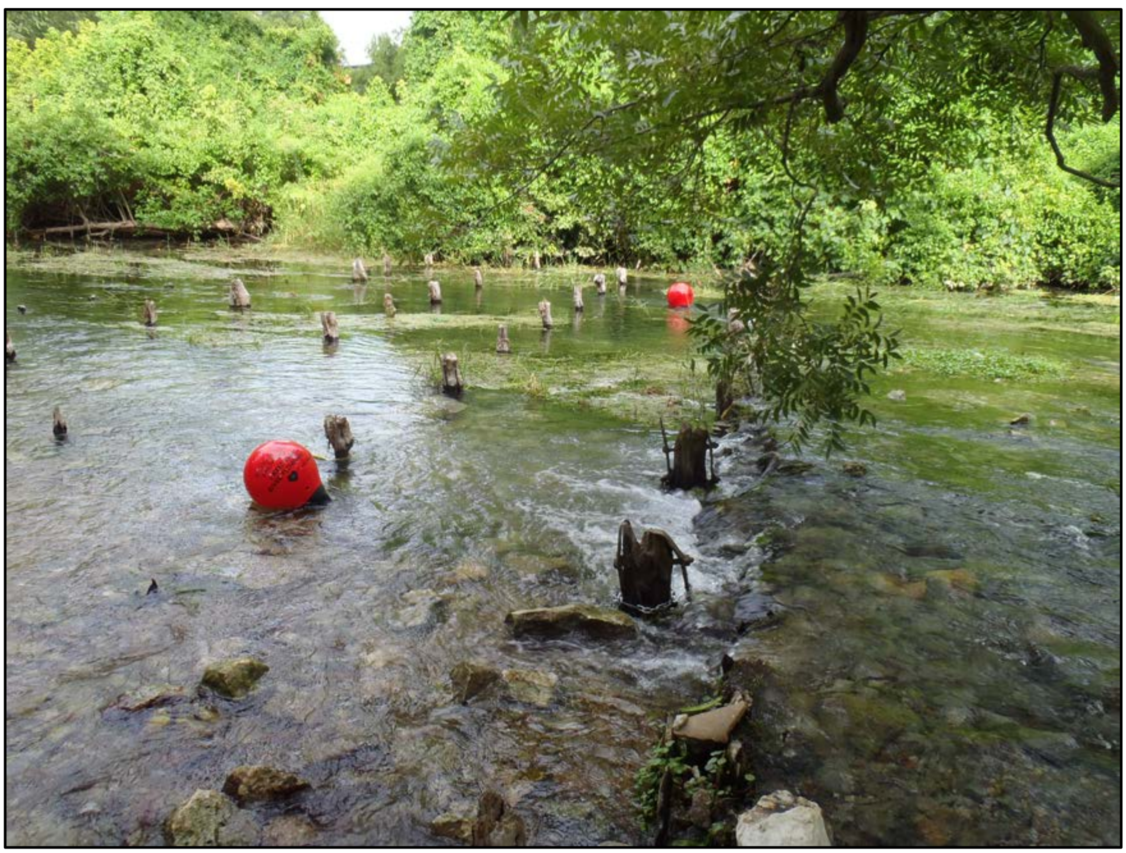

Figure 10: Spring Lake Dam water level on July 27, 2022.

Figure 11: Spring Lake Dam Site U1 Habitat surveyed on July 27, 2022.

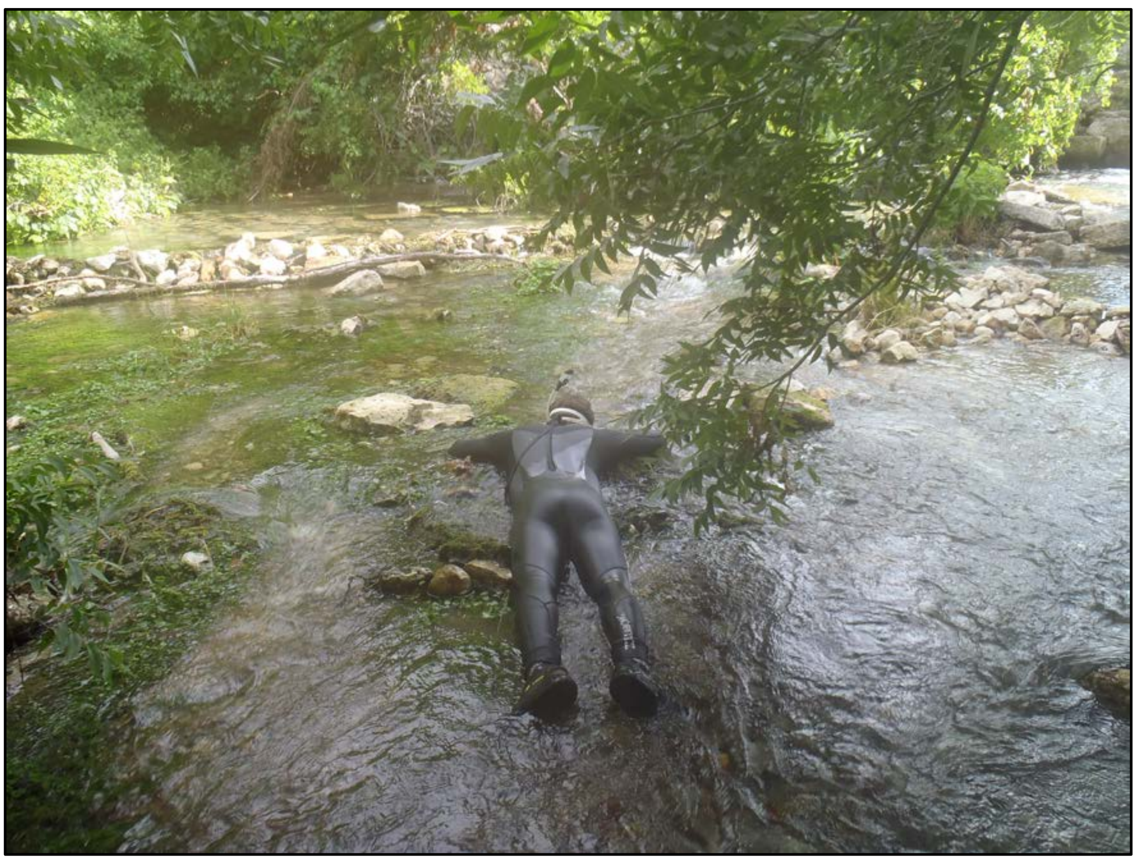

Figure 12: Spring Lake Dam Site U2 Habitat surveyed on July 27, 2022.

Figure 13: Texas Wild-rice exclusion zone below Spring Lake Dam looking downstream on July 27, 2022.

As evident in Figures 9 through 12 above, there is considerable San Marcos Salamander and Fountain Darter habitat in the spillway area. However, there has been considerable rock moving and relocating to build structures by the public which disturbs habitat in this very important area. As previously mentioned, aquatic vegetation within the Spring Lake Dam (Figure 13) and City Park (Figure 14) study reaches continue to be dominated by Texas Wild-Rice, while the I35 study reach (Figure 17) supports a more diverse aquatic vegetation community. The following photographs highlight the declining water levels and Fountain Darter habitat conditions moving downstream in the San Marcos River.

Figure 14: City Park habitat conditions on July 27, 2022.

Figure 15: City Park habitat conditions on July 27, 2022.

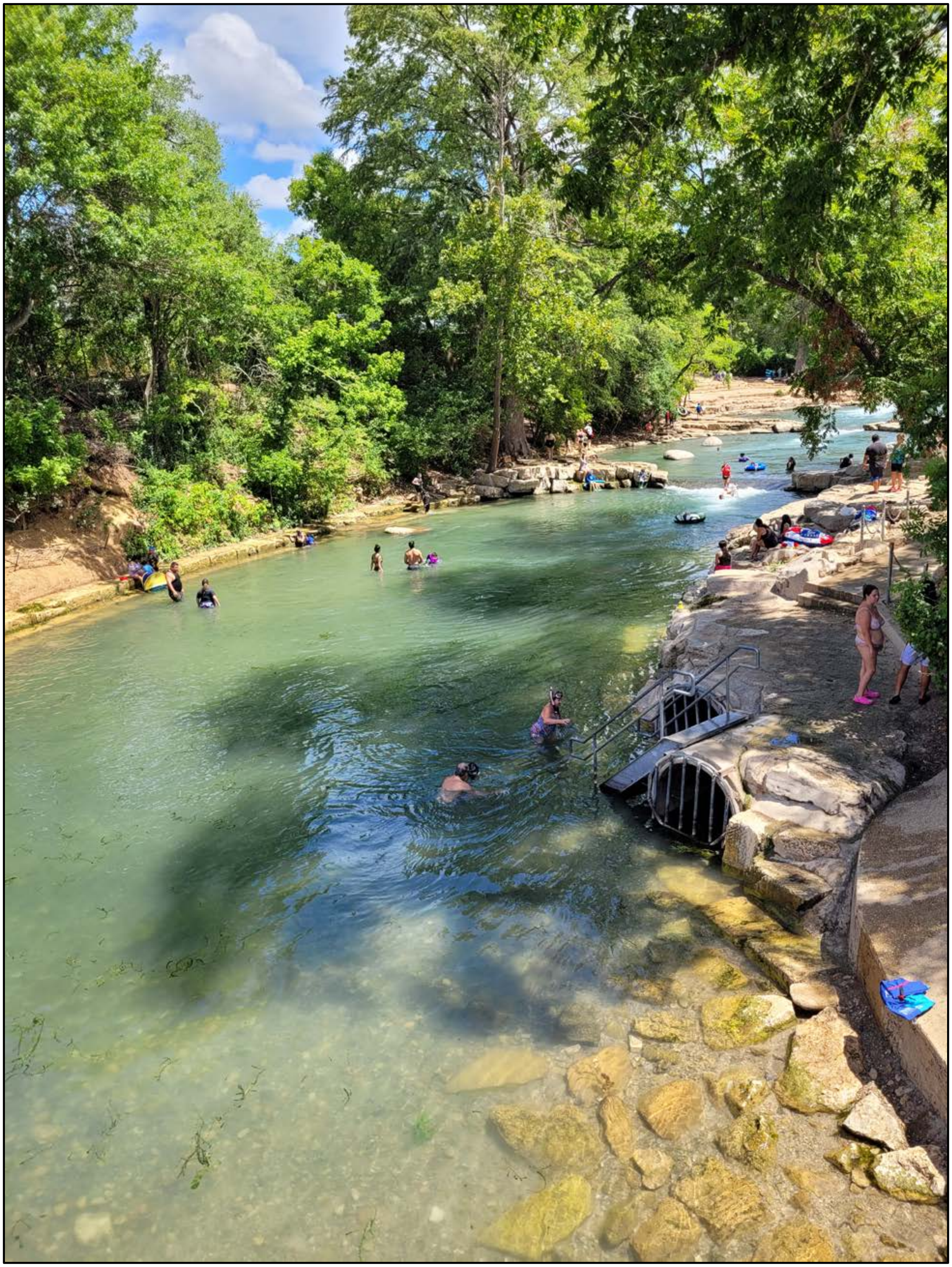

Figure 16: Rio Vista habitat conditions looking upstream on July 27, 2022.

Figure 17: I35 habitat conditions on July 27, 2022.

Figure 18: I35 habitat conditions on July 27, 2022.

Figure 17: Thompson Island mill race on July 27, 2022.

Figure 18: Thompson Island natural channel on July 27, 2022.

The majority of fish community study sites reported similar conditions from April to July. As expected, the water levels at the most downstream location were considerably lower than average. Presumably related to decreased depths (increased light penetration; but also decreased flow/current velocities) increased coverages of epiphytic algae and some aquatic vegetation was observed in areas typically void of vegetation. As evident in Figure 2, water temperatures are holding at the downstream locations, hence a fish community shift (spring fish community shifting to more riverine fish community) is not being observed. Instead, preliminary review of the data shows an increase in spring fish community (i.e. a greater abundance/densities of Texas Shiners and Texas Logperch). The numbers of Fountain Darters are about the same as previous collections, but it is important to note that they are still present.

Overall, water levels are noticeably down at 95 cfs, but BIO-WEST and Texas State University biologists noted no biological indicators of alarm at this time relative to historically observed conditions. As previously noted, flow through Spring Lake is presently reduced causing increased algal growth and siltation at certain locations in the lake. It should also be noted that although a diverse aquatic vegetation community is present in the I35 study reach, and scattered non-rice aquatic vegetation is present in the City Park study reach, much of this habitat is located in edge or shallow areas which will be impacted by declining water levels. Finally, declining water levels are also exposing more wetted areas to wadable conditions. As water levels continue to decline, it will be imperative to continue to track habitat conditions for HCP Covered Species during this heavy recreation season for the San Marcos River.

As always, please don’t hesitate to contact me if you have any questions or concerns.

Ed

MEMORANDUM

TO: Chad Furl, Jamie Childers

FROM: Ed Oborny (BIO-WEST)

DATE: **August 23, 2022**

SUBJECT: EAHCP Critical Period Habitat Evaluation – 90 cfs – San Marcos System

SAN MARCOS SYSTEM: 90 cfs Habitat Evaluation

As total system discharge continued to decline in August coupled with the USGS gage adjustment on August 11th, the 90 cfs Habitat Evaluation was triggered. The 95 cfs Habitat Evaluation was completed on July 27th and the 90 cfs evaluation was conducted on August 19th. Per requirement, the next habitat evaluation is scheduled for 85 cfs which would also trigger a full-system Critical Period Event. As of this memorandum, the total system discharge in the San Marcos River is approximately 91 cfs (Figure 1).

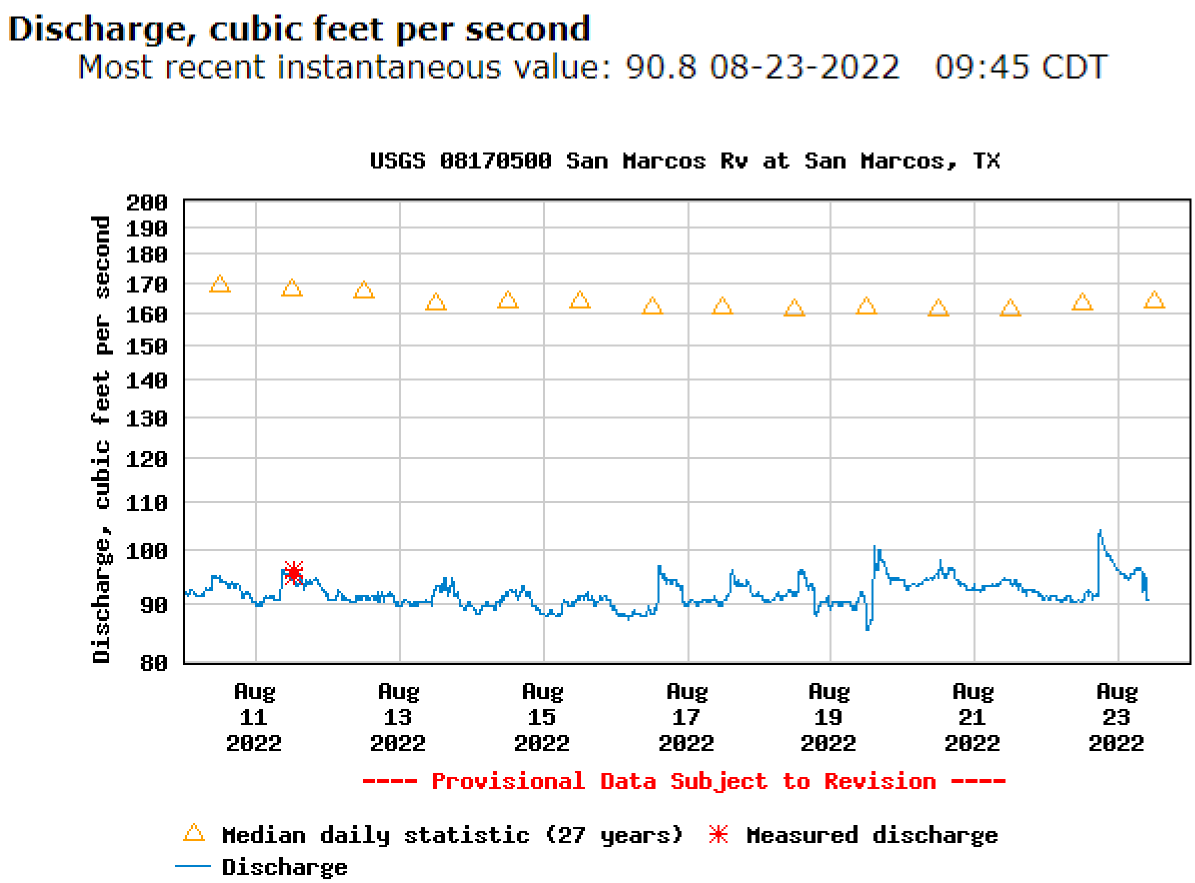

Figure 1. Total San Marcos River discharge over the past two weeks (USGS 08170500 at San Marcos, Texas.

Water temperature is a key component system-wide as it is an underlying driver of spring-related aquatic assemblages. Recent 7-day trends in water temperature (°C) for August Critical Period sampling were assessed using temperature data loggers (HOBO Tidbit v2 Temp Loggers) at 8 permanent monitoring stations in the upper San Marcos River (Table 1, Figures 2 and 3). Data for each monitoring station are based on 10-minute intervals and dates for recent trends extended from the last day that each data logger was downloaded to 7 days prior. For all stations, 7-day trends were examined from 8/13 – 8/19. Recent 7-day trends were compared to long-term water temperature data measured at 4-hour intervals in August from 2001 – 2021 or to the greatest temporal extent available. For analysis, 7-day trends were compared to long-term trends using boxplots to visualize differences in central tendency (i.e., median) and variation (e.g., interquartile range). Boxplots from July Critical Period sampling were also included for comparison. Overall, it remains evident that the San Marcos system is in a lower-than-average discharge, summer time condition. However, no water temperatures are noted as a concern at stations in the San Marcos River at this time (Figures 2 and 3).

Table 1. Summary of boxplot descriptive statistics comparing recent 7-day and long-term trends in water temperature (°C) at 8 monitoring stations in the upper San Marcos Springs River for the month of August.

Station	Period	Lower Whisker	Lower Box	Median	Upper Box	Upper Whisker	Interquartile Range
Chute	7-day	22.35	22.49	22.73	23.21	24.24	0.72
Chute	Long-term	21.28	22.17	22.40	22.76	23.65	0.59
Spring Lake Dam	7-day	22.71	23.02	23.45	24.27	25.19	1.25
Spring Lake Dam	Long-term	21.03	22.11	22.47	23.00	24.33	0.89
City Park	7-day	22.71	23.04	23.79	25.19	27.63	2.15
City Park	Long-term	21.67	22.37	22.76	23.27	24.61	0.90
Rio Vista Park	7-day	22.68	22.99	23.45	24.34	25.53	1.35
Rio Vista Park	Long-term	21.01	22.42	22.87	23.68	25.56	1.26
I-35	7-day	22.63	22.99	23.57	24.36	25.38	1.37
I-35	Long-term	21.70	22.51	22.97	23.68	25.44	1.18
Thompson Island - Natural	7-day	22.78	23.16	23.79	24.65	25.65	1.49
Thompson Island - Natural	Long-term	21.29	22.66	23.27	24.19	26.50	1.54
Thompson Island - Artificial	7-day	23.91	24.51	25.02	25.72	27.53	1.21
Thompson Island - Artificial	Long-term	21.61	22.86	23.52	24.43	26.78	1.57
Waste Water Treatment Plant	7-day	23.06	23.55	24.24	25.02	25.87	1.47
Waste Water Treatment Plant	Long-term	21.70	22.85	23.53	24.41	26.74	1.56

There was no Aquatic vegetation mapping or Fountain Darter dip netting triggered since the July Habitat Evaluation and full Critical Period sampling effort. There was a Texas Wild-rice vulnerable stand sampling triggered, and subsequently conducted on August 16th. Figures 4 and 5 highlight impacts that are presently occurring to Texas Wild-rice in these vulnerable areas. Another key factor is the condition of Spring Lake as it and the Spring Lake Dam spillway are the only two locations that support the presence all three listed species (Fountain Darter, San Marcos Salamander, and Texas Wild-rice). The following pictorial habitat evaluation highlights the current condition of Spring Lake, Spring Lake Dam and longitudinally down the San Marcos River with respect to threatened and endangered species habitat conditions.

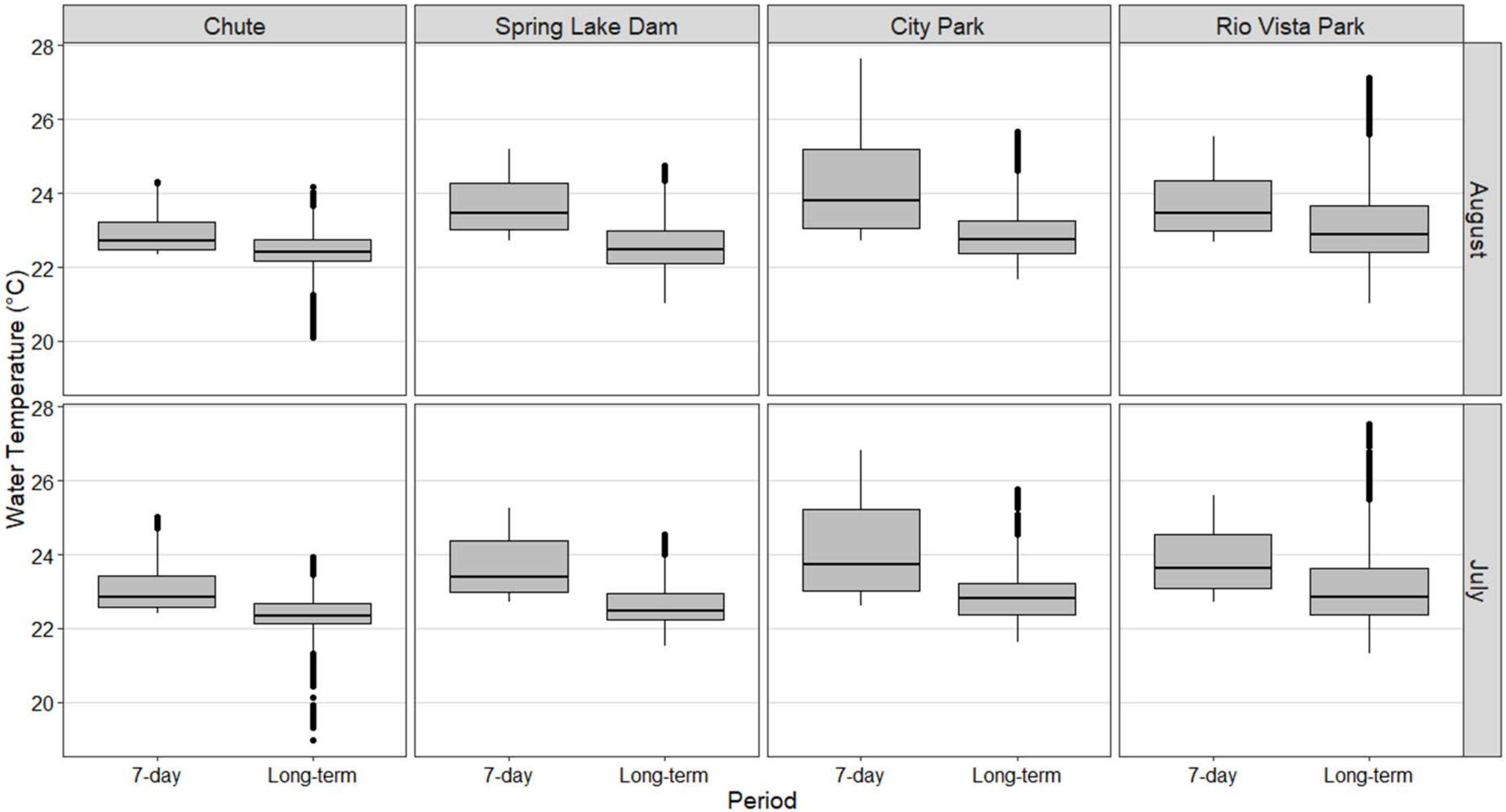

Figure 2. **Boxplots comparing recent 7-day and long-term water temperature trends at four monitoring stations from Chute to Rio Vista Park for the month of August (top). July results are also included for comparison (bottom). The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles.**

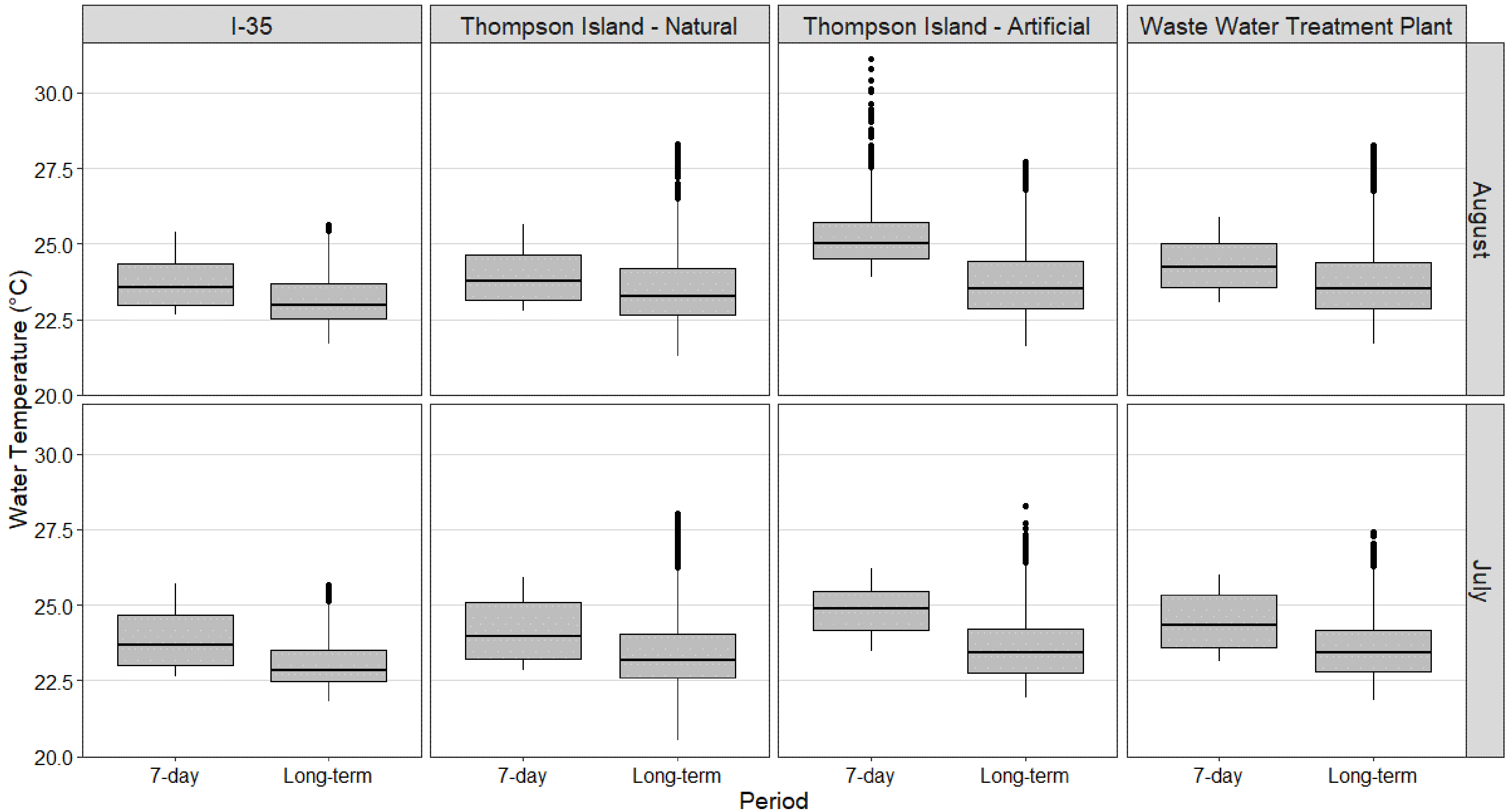

Figure 3. **Boxplots comparing recent 7-day and long-term water temperature trends at four monitoring stations from I-35 to Waste Water Treatment Plant in August 2022 (top). July results are also included for comparison (bottom). The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles.**

Figure 4: Texas Wild-rice root ball exposure on August 16, 2022.

Figure 5: Texas Wild-rice impacted underwater stands (left) and on dry land (right) on August 16, 2022.

SPRING LAKE AND SPRING LAKE DAM

Habitat conditions for San Marcos Salamanders and Fountain Darters in Spring Lake appear consistent with those observed in July. As noted last month, the reduced water flow throughout Spring Lake with lower discharge has resulted in higher-than-average levels of algal build up and siltation within San Marcos Salamander habitat. However, as of this evaluation, the Hotel site salamander habitat is maintaining clear, clean substrate (Figure 6).

Figure 6: Headwaters of Spring Lake looking downstream at San Marcos Salamander Hotel study site on August 19, 2022.

As evident in Figure 7, considerable San Marcos Salamander and Fountain Darter habitat are being maintained in the spillway area. There continues to be evidence of recreational activities such as rock relocating which disturbs both species habitat. As previously mentioned, aquatic vegetation within the Spring Lake Dam (Figure 7) and City Park (Figure 8) study reaches continue to be dominated by Texas Wild-rice, while the I35 study reach (Figure 10) supports a more diverse aquatic vegetation community. The following photographs highlight Fountain Darter habitat conditions moving downstream in the San Marcos River.

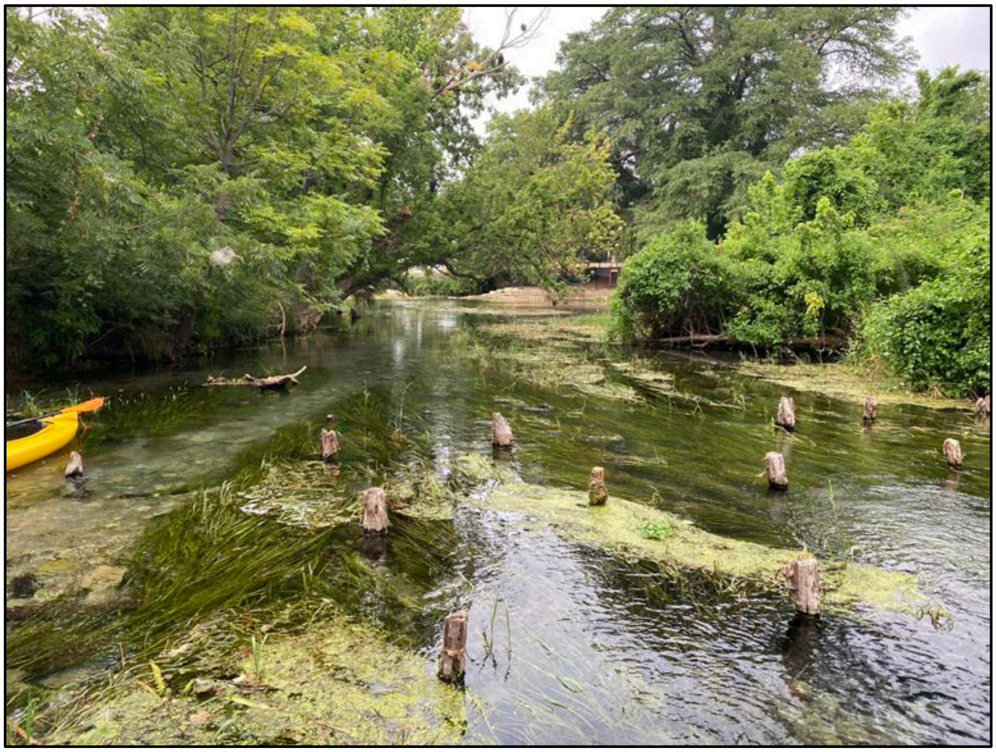

Figure 7: Spring Lake Dam spillway water level on August 16, 2022.

Figure 8: City Park habitat conditions on August 19, 2022.

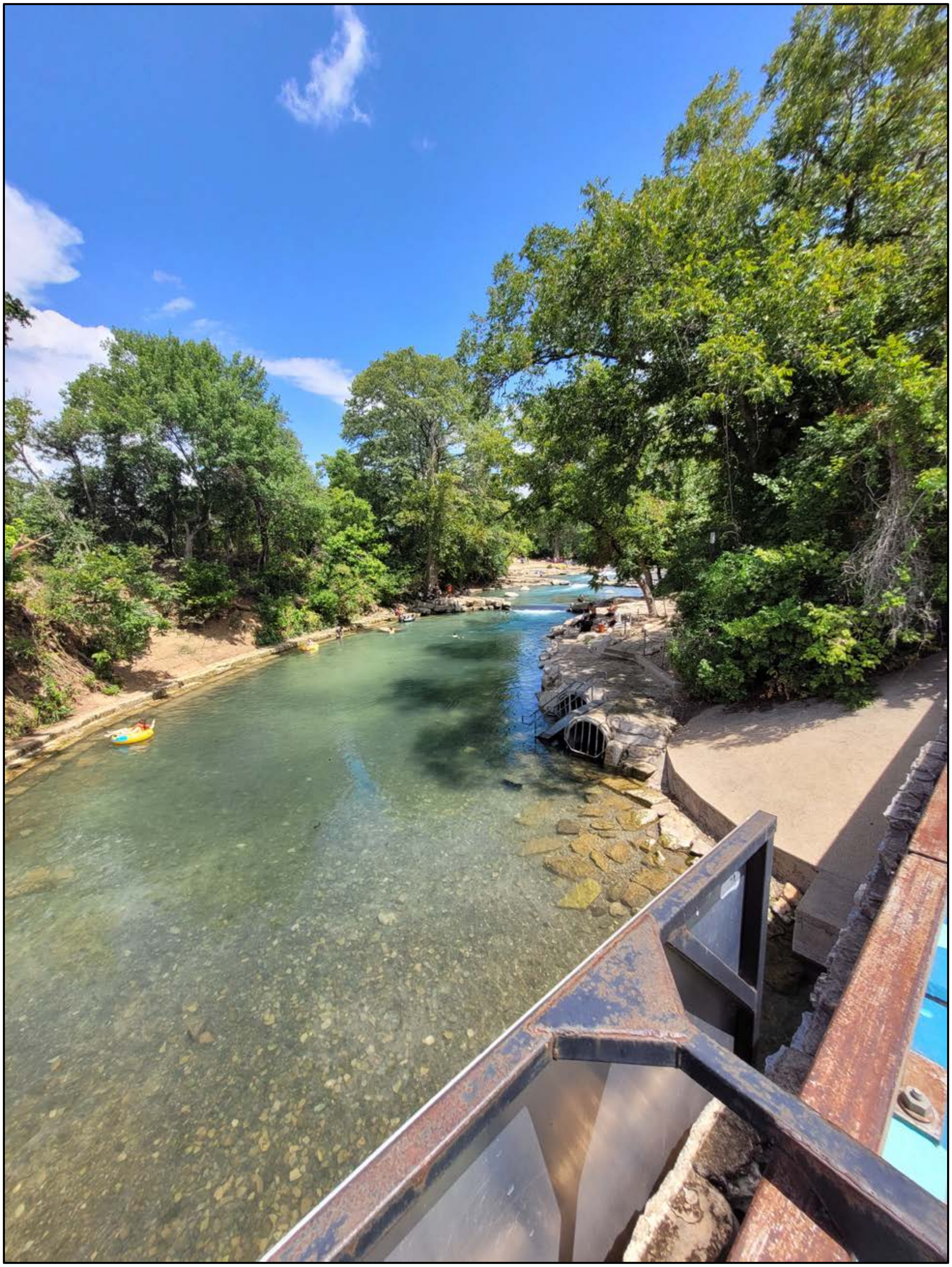

Figure 9: Rio Vista habitat conditions looking upstream on August 19, 2022.

Figure 10: I35 habitat conditions on August 19, 2022.

Overall, water levels and Covered Species habitat conditions remain similar to those observed in July. Lower-than-average water levels continue to expose more wetted area to recreational activities that can impact Covered Species habitat. Texas Wild-rice in vulnerable areas (i.e., low water depth, high recreation) continues to be the Covered Species impacted to the greatest extent under present conditions. As noted last month, the turnover of Spring Lake is presently reduced causing increased algal growth and siltation at certain locations in the lake. However, San Marcos Salamander and Fountain Darter habitat within the lake remains suitable. The higher quality Fountain Darter habitat in the I35 study reach (compared to the Spring Lake Dam and City Park study reaches) remains quite shallow, but still mostly wetted as shown in Figure 10. Should the extreme drought continue, monitoring activities are in place to continue to track habitat conditions for HCP covered species in the San Marcos River.

Please don’t hesitate to contact me if you have any questions or concerns.

Ed

MEMORANDUM

TO:	Chad Furl, Jamie Childers
FROM:	Ed Oborny (BIO-WEST)
DATE:	**September 30, 2022**
SUBJECT:	EAHCP Critical Period Habitat Evaluation – 85 cfs – San Marcos System

SAN MARCOS SYSTEM: 85 cfs Habitat Evaluation

As total system discharge continued to decline in September, the 85 cfs Habitat Evaluation was triggered. The 95 cfs Habitat Evaluation was completed on July 27th; the 90 cfs evaluation was completed on August 19th; and the 85 cfs evaluation was conducted on September 28th. Per requirement, the next habitat evaluation is scheduled for 80 cfs. As of this memorandum, the total system discharge in the San Marcos River is approximately 85 cfs (Figure 1).

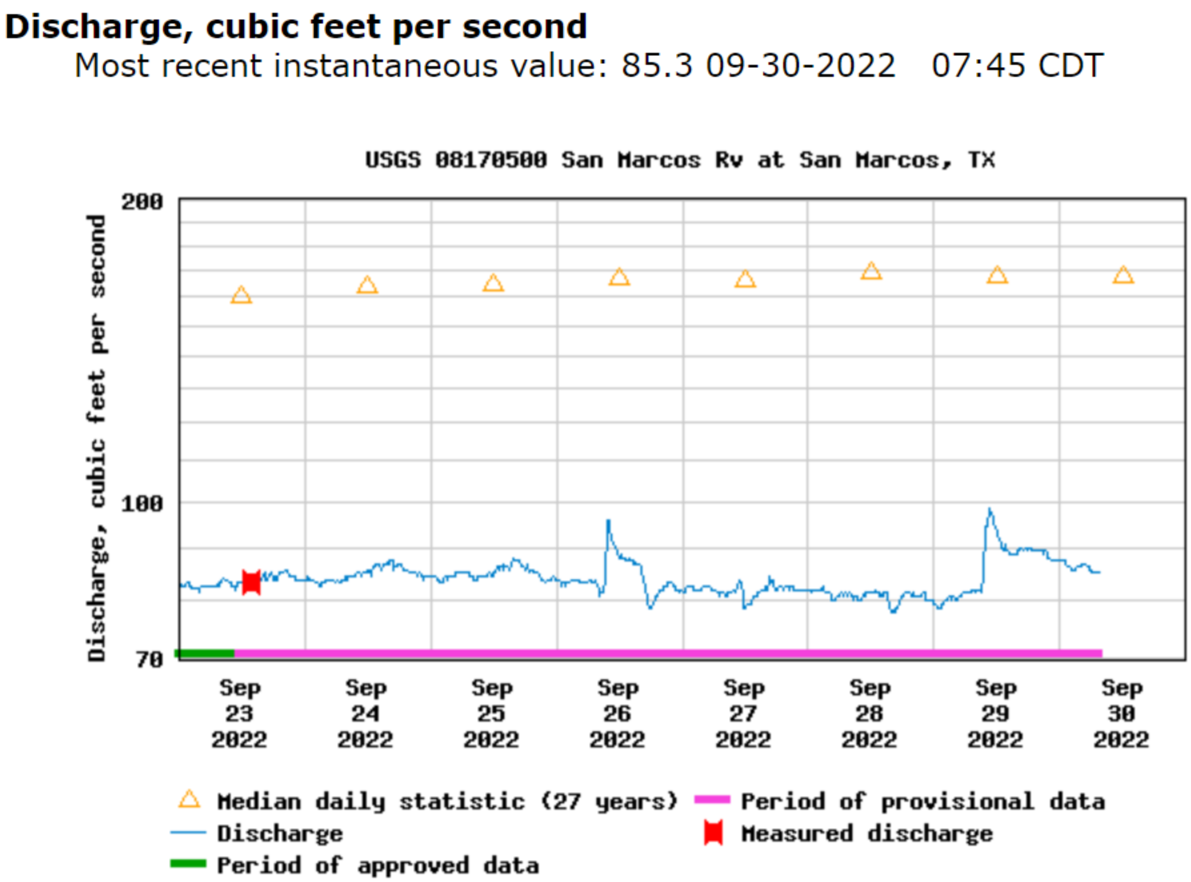

Figure 1. Total San Marcos River discharge over the past two weeks (USGS 08170500 at San Marcos, Texas.

Water temperature is a key component system-wide as it is an underlying driver of spring-related aquatic assemblages. Recent 7-day trends in water temperature (°C) for September Critical Period sampling were assessed using temperature data loggers (HOBO Tidbit v2 Temp Loggers) at 5 permanent monitoring stations in the upper San Marcos River. Data for each monitoring station are based on 10-minute intervals and dates for recent trends extended from the last day that each data logger was downloaded to 7 days prior. For all stations, 7-day trends were examined from September 9 – 15. Recent 7-day trends were compared to long-term water temperature data measured at 4-hour intervals in September from 2001 – 2021 or to the greatest temporal extent available. For analysis, 7-day trends were compared to long-term trends using boxplots to visualize differences in central tendency (i.e., median) and variation (e.g., interquartile range). Boxplots from August and July Critical Period 2022 sampling were also included for comparison. Similar to previous months, no water temperatures are noted as a concern at stations longitudinally down the San Marcos River at this time (Figure 2).

Table 1. Summary of boxplot descriptive statistics comparing recent 7-day and long-term trends in water temperature (°C) at 5 monitoring stations in the upper San Marcos Springs River for the month of September.

Station	Period	Lower Whisker	Lower Box	Median	Upper Box	Upper Whisker	Interquartile Range
Chute	7-day	22.11	22.37	22.61	23.11	23.86	0.74
Chute	Long-term	21.37	22.08	22.28	22.56	23.28	0.48
Spring Lake Dam	7-day	22.06	22.56	22.97	23.95	24.97	1.39
Spring Lake Dam	Long-term	20.64	21.81	22.24	22.65	23.89	0.83
City Park	7-day	21.63	22.51	23.21	24.90	25.99	2.39
City Park	Long-term	21.18	22.18	22.50	22.91	23.99	0.73
Thompson Island - Natural	7-day	21.96	22.73	23.38	24.41	25.26	1.68
Thompson Island - Natural	Long-term	20.92	22.34	22.86	23.60	25.45	1.25
Waste Water Treatment Plant	7-day	22.37	23.16	23.81	24.76	25.60	1.60
Waste Water Treatment Plant	Long-term	20.84	22.47	23.08	23.76	25.67	1.29

Aquatic vegetation mapping was conducted in late September as required by Task 3 and to subsequently serve as baseline establishment of the Fall Routine biological monitoring. Each of the three study reaches experienced a continued decline in aquatic vegetation coverage from mid-July to mid-September. This was most notable at the Spring Lake Dam reach (approximately a 16% decline) with lesser declines at the City Park reach (≈2%) and I35 reach (≈8%). Additionally, a Texas Wild-rice vulnerable stand survey was conducted on September 29th. Figure 3 highlights extensive root ball exposure that are presently occurring to Texas Wild-rice in these vulnerable areas. A full Routine Biological Monitoring event (Fall) is scheduled to start next week. To maximize efficiencies while minimizing disturbance during these low-flow conditions, the Fall Routine Event will double as the 85 cfs Critical Period Event.

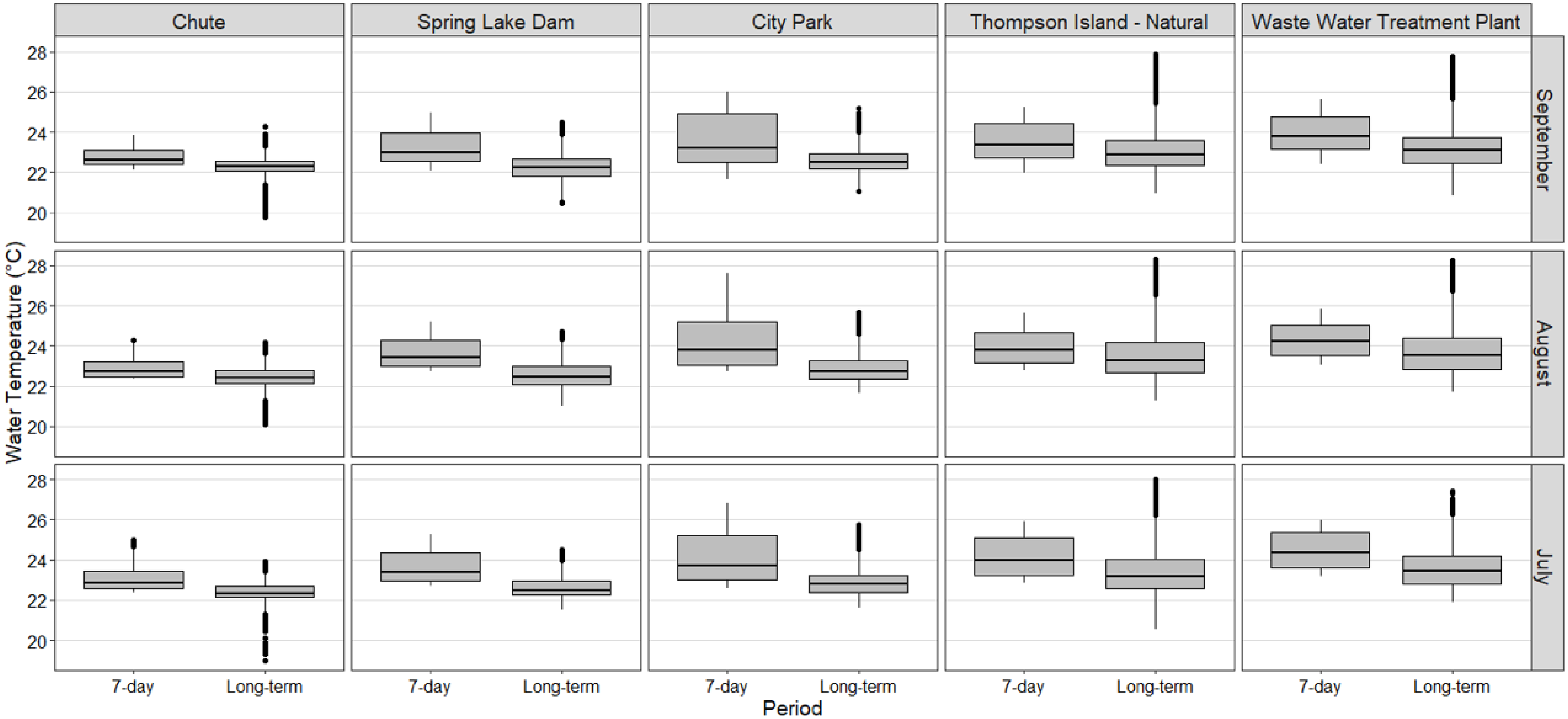

Figure 2. **Boxplots comparing recent 7-day and long-term water temperature trends at five monitoring stations from the Chute (Spring Lake Dam western spillway) to the Waste Water Treatment Plant for the month of September. August and July results are also included for comparison. The thick horizontal line in each box is the median and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range, and outliers beyond this are designated with solid black circles.**

Figure 3: Texas Wild-rice root ball exposure on September 29, 2022.

Another key factor is the condition of Spring Lake as it and the Spring Lake Dam spillway are the only two locations that support the presence all three listed species (Fountain Darter, San Marcos Salamander, and Texas Wild-rice). The following pictorial habitat evaluation highlights the current condition of Spring Lake, Spring Lake Dam and longitudinally down the San Marcos River with respect to threatened and endangered species habitat conditions.

SPRING LAKE AND SPRING LAKE DAM

Habitat conditions for San Marcos Salamanders and Fountain Darters in Spring Lake remain similar but slightly degraded compared to July and August. As noted last month, the reduced water flow throughout Spring Lake with lower discharge has resulted in higher-than-average levels of algal build up and siltation within San Marcos Salamander habitat. This was notably evident in September, but portions of the Hotel site salamander habitat is still supporting clear, clean substrate (Figure 4).

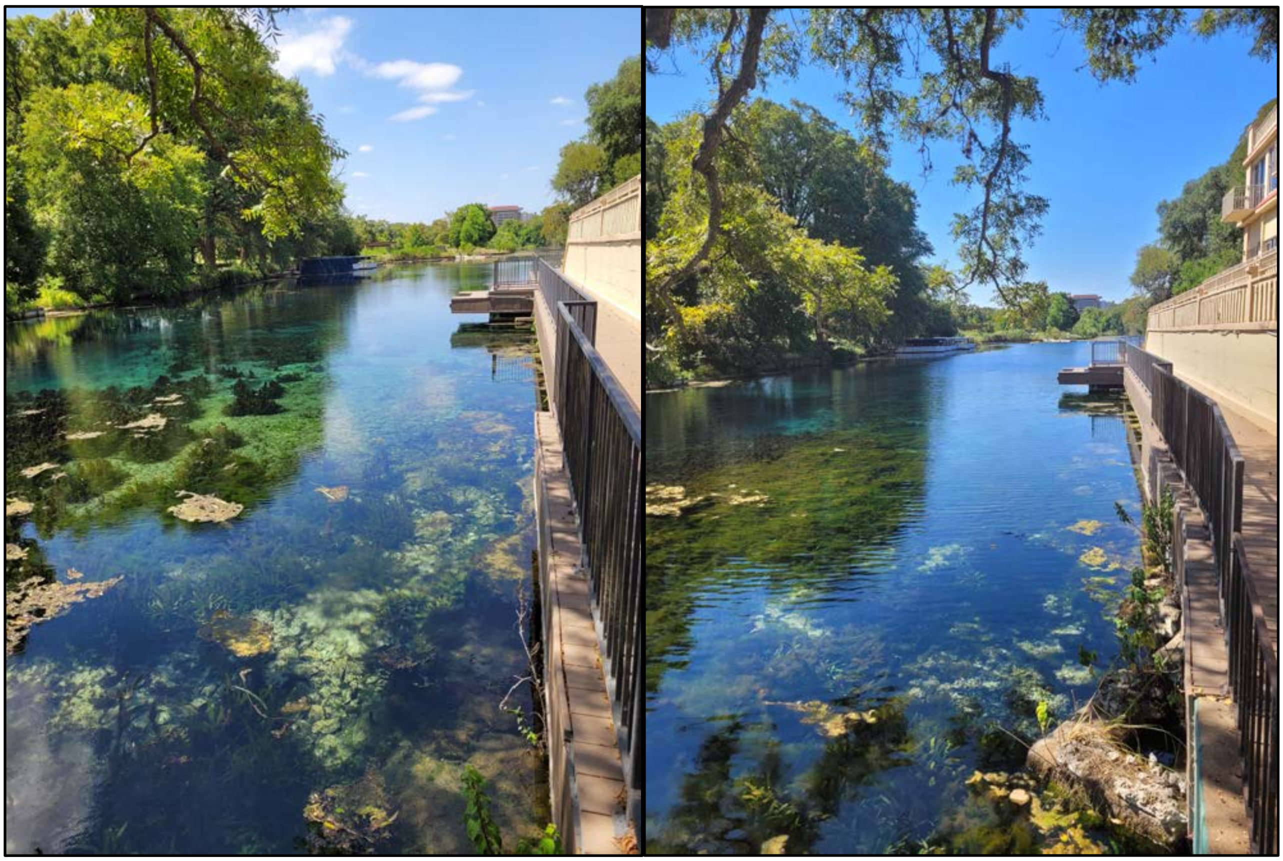

Figure 4: Headwaters of Spring Lake looking downstream at San Marcos Salamander Hotel study site on August 19 (left) and September 28, 2022 (right).

As evident in Figure 5, considerable San Marcos Salamander and Fountain Darter habitat are being maintained in the Spring Lake Dam study site. There continues to be evidence of recreational activities such as rock relocating which disturbs both species habitat. As previously mentioned, aquatic vegetation within the Spring Lake Dam (Figure 5 and 6) and City Park (Figure 7) study reaches continue to be dominated by Texas Wild-rice, while the I35 study reach (Figure 9) supports a more diverse aquatic vegetation community. The following photographs highlight Fountain Darter habitat conditions moving downstream in the San Marcos River.

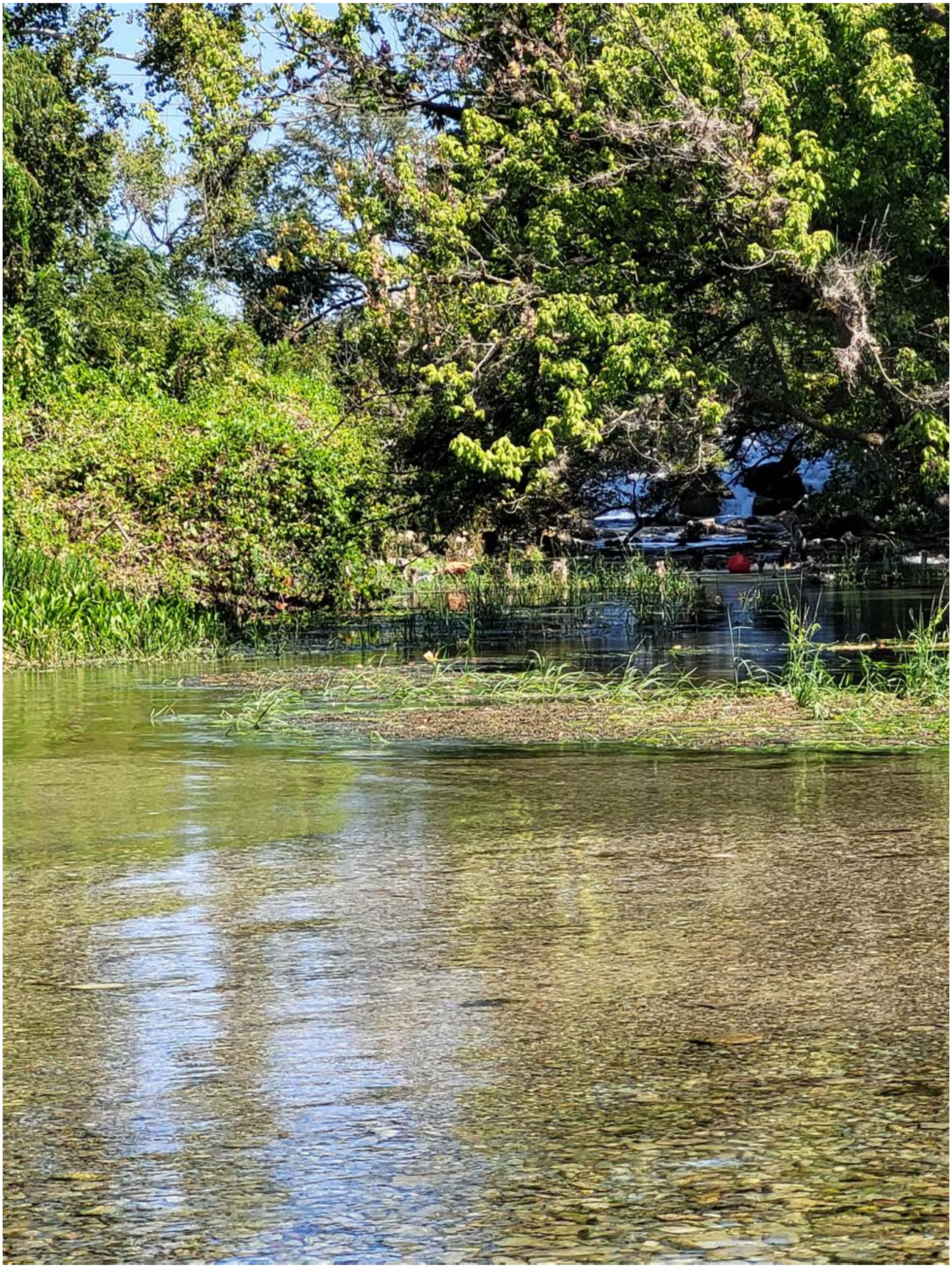

Figure 5: Spring Lake Dam spillway water level on September 28, 2022.

Figure 6: Spring Lake Dam Sessom's Island on September 28, 2022.

Figure 7: City Park habitat conditions looking upstream on September 28, 2022.

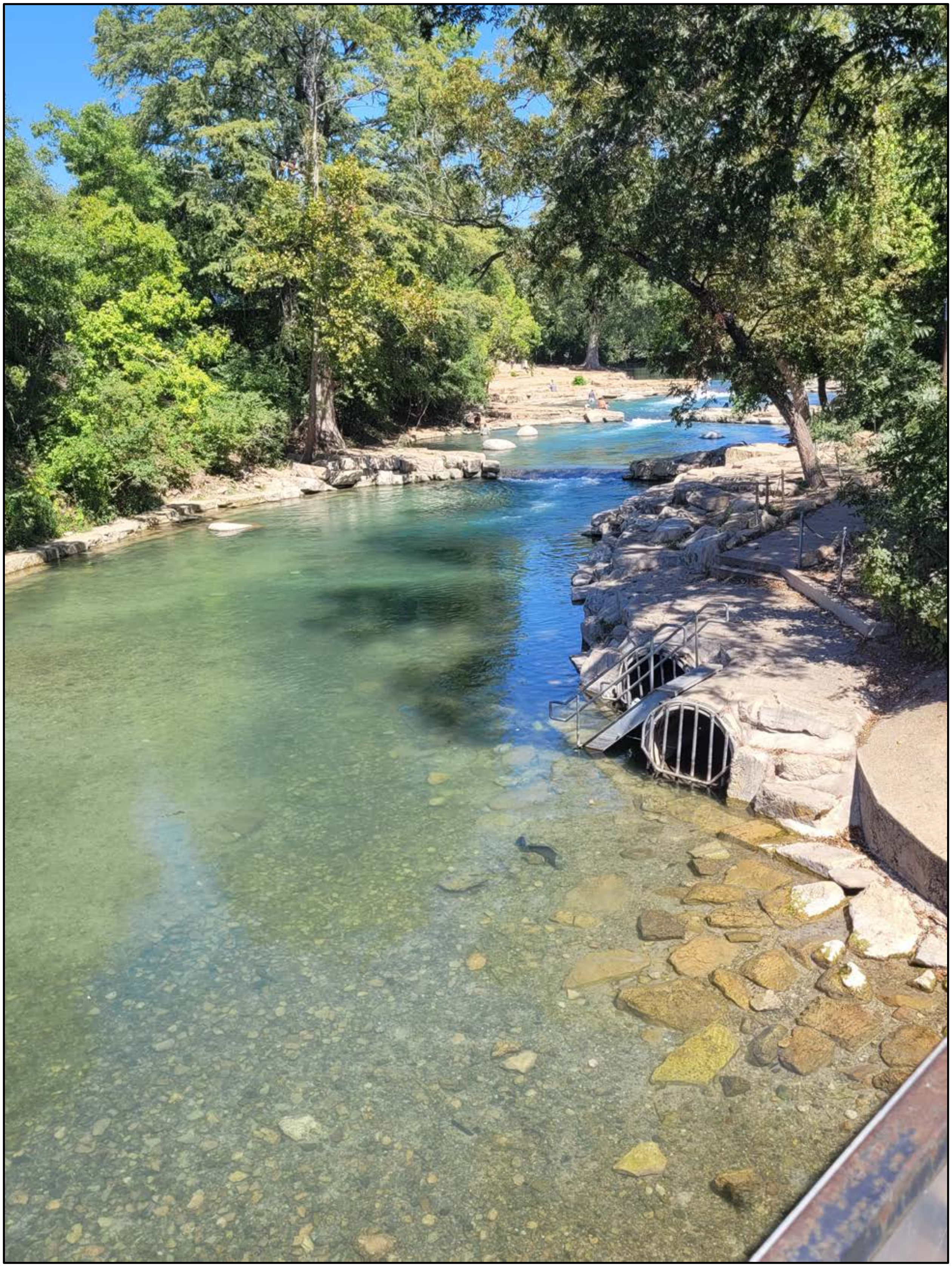

Figure 8: Rio Vista habitat conditions looking upstream on September 28, 2022.

Figure 9: I35 habitat conditions on September 28, 2022.

Overall, water levels and Covered Species habitat conditions remain similar to those observed in July and August. Lower-than-average water levels continue to expose wetted area to recreational activities that impact Covered Species habitat. However, with schools back in session and the start of Autumn, the river is experiencing less recreation than in previous summer-time months. Texas Wild-rice in vulnerable areas (i.e., low water depth) continues to be the Covered Species impacted to the greatest extent under these hydrological conditions. As noted in August, the turnover of Spring Lake is presently reduced causing increased algal growth and siltation at certain locations in the lake. However, San Marcos Salamander and Fountain Darter habitat within the lake and Eastern spillway remains suitable. The higher quality Fountain Darter habitat in the I35 study reach (compared to the Spring Lake Dam and City Park study reaches) remains shallow, but mostly wetted as shown in Figure 9. Should the extreme drought continue, monitoring activities are in place to continue to track habitat conditions for HCP covered species in the San Marcos River.

Please don’t hesitate to contact me if you have any questions or concerns.

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APPENDIX C: AQUATIC VEGETATION MAPS

Long-term Biological Goals Study Reaches

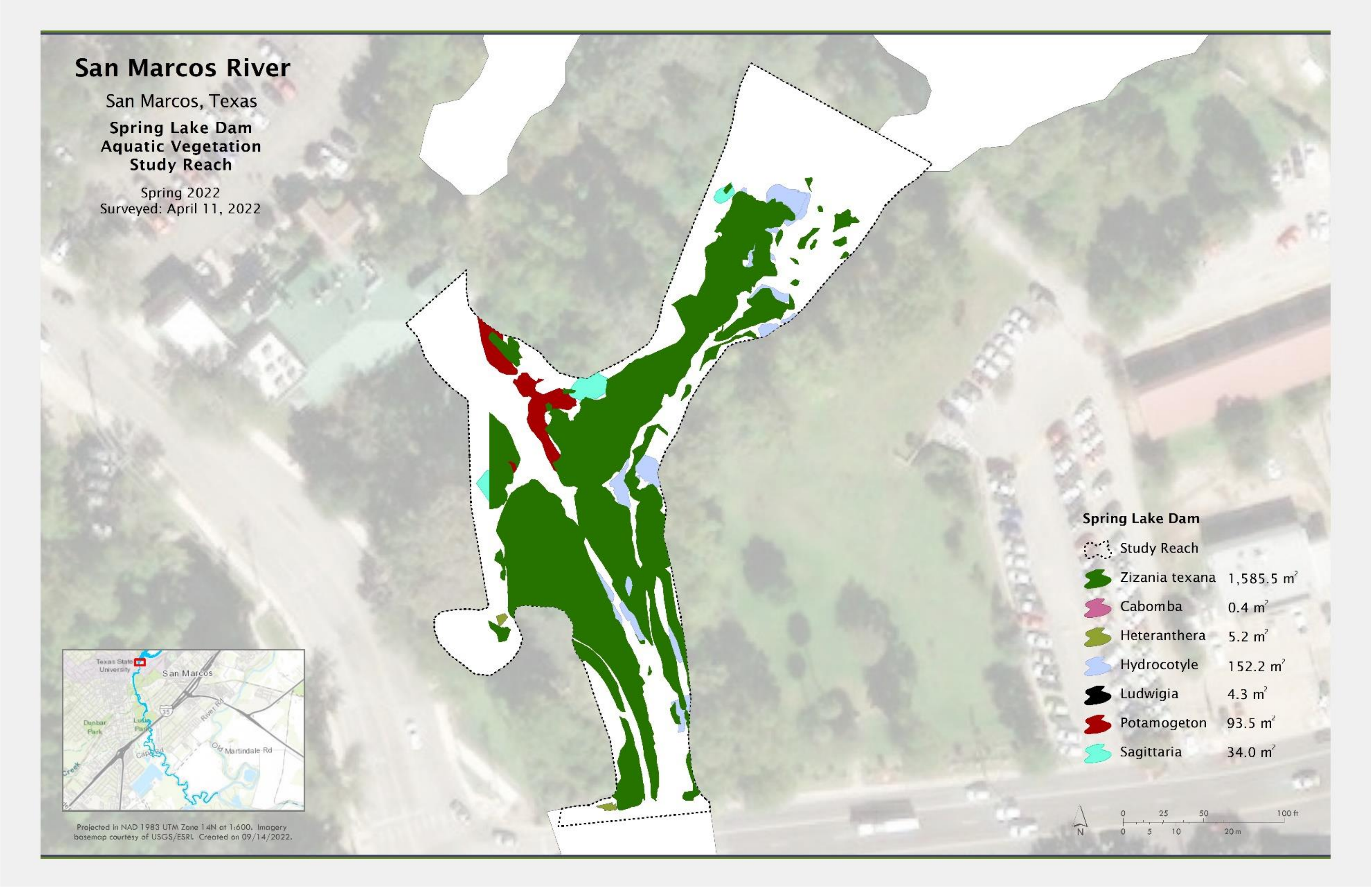

Figure C1. **Map of aquatic vegetation coverage at Spring Lake Dam Study Reach in spring 2022.**

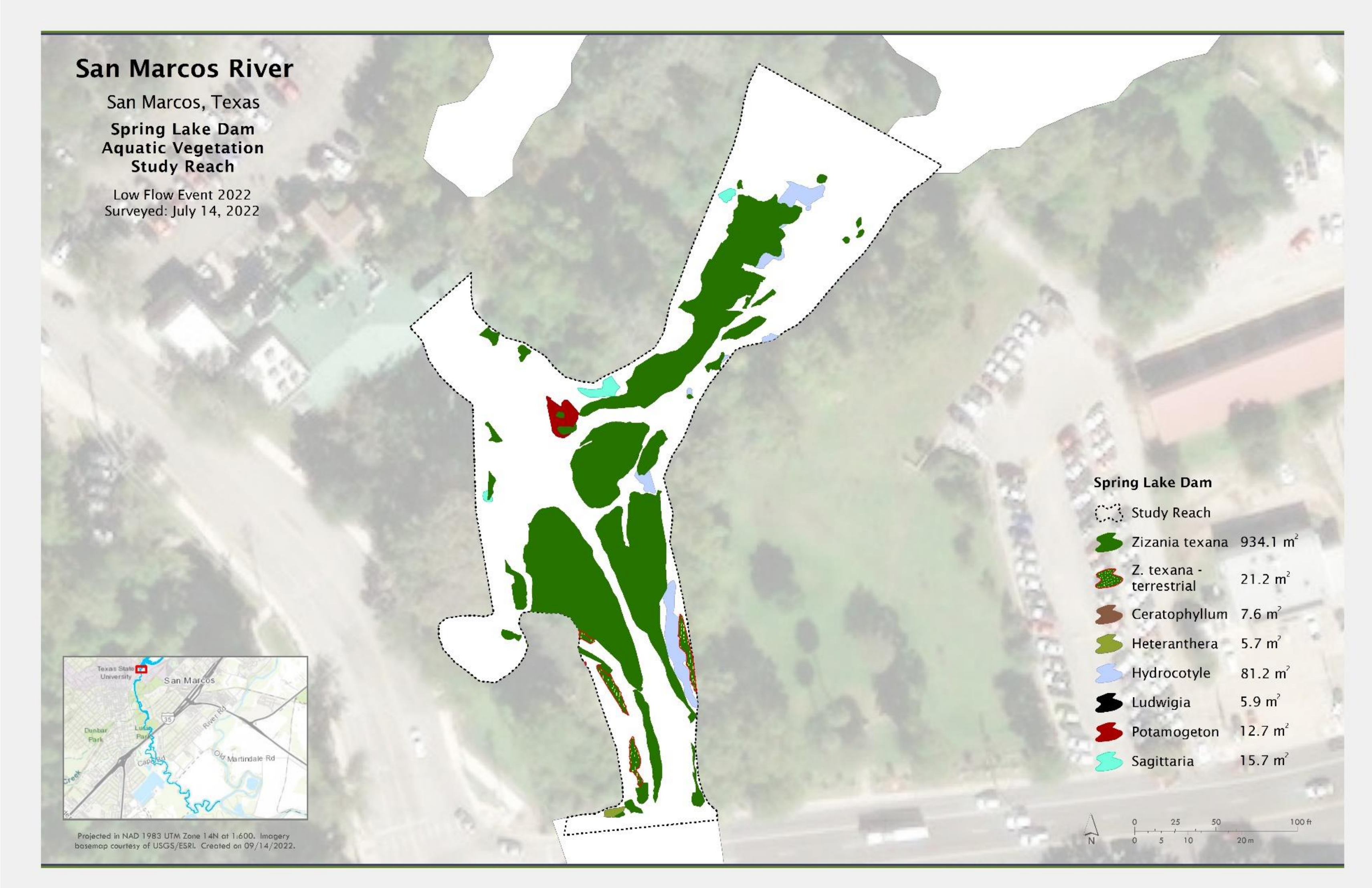

Figure C2. Map of aquatic vegetation coverage at Spring Lake Dam Study Reach in summer 2022 during Critical Period low-flow sampling event (July).

Figure C3. **Map of aquatic vegetation coverage at Spring Lake Dam Study Reach in fall 2022.**

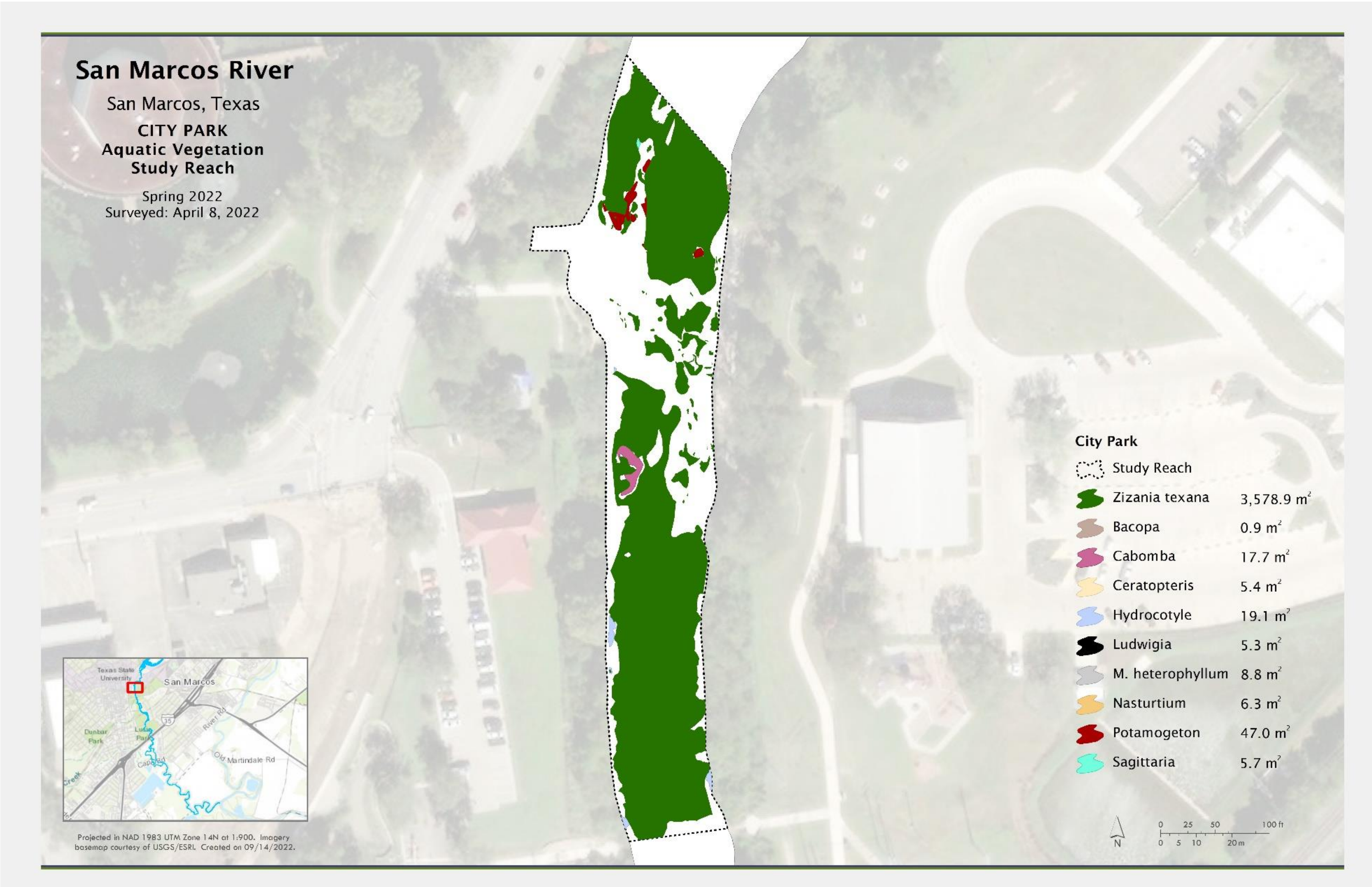

Figure C4. Map of aquatic vegetation coverage at City Park Study Reach in spring 2022.

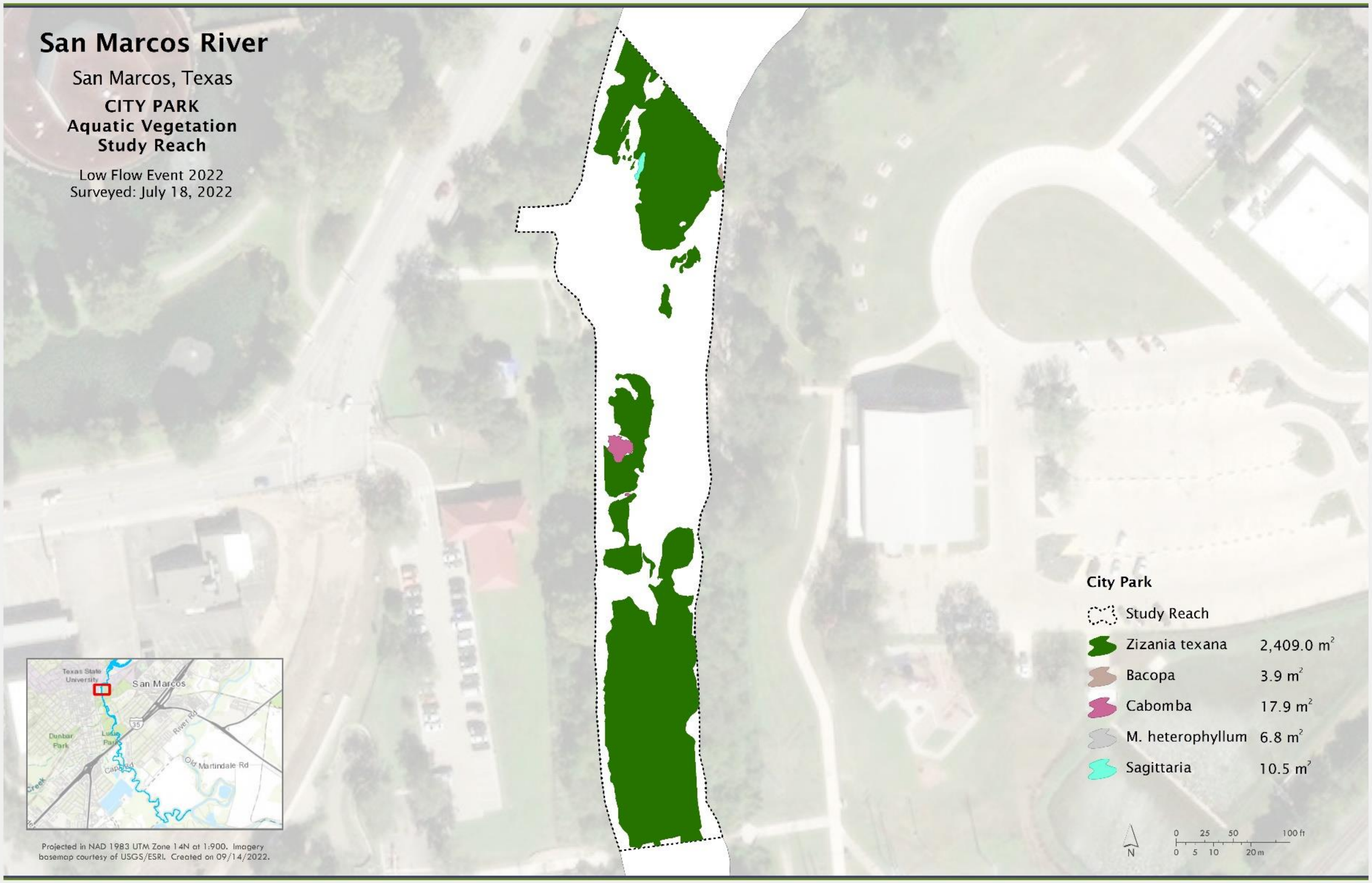

Figure C5. **Map of aquatic vegetation coverage at City Park Study Reach in summer 2022 during Critical Period low-flow sampling event (July).**

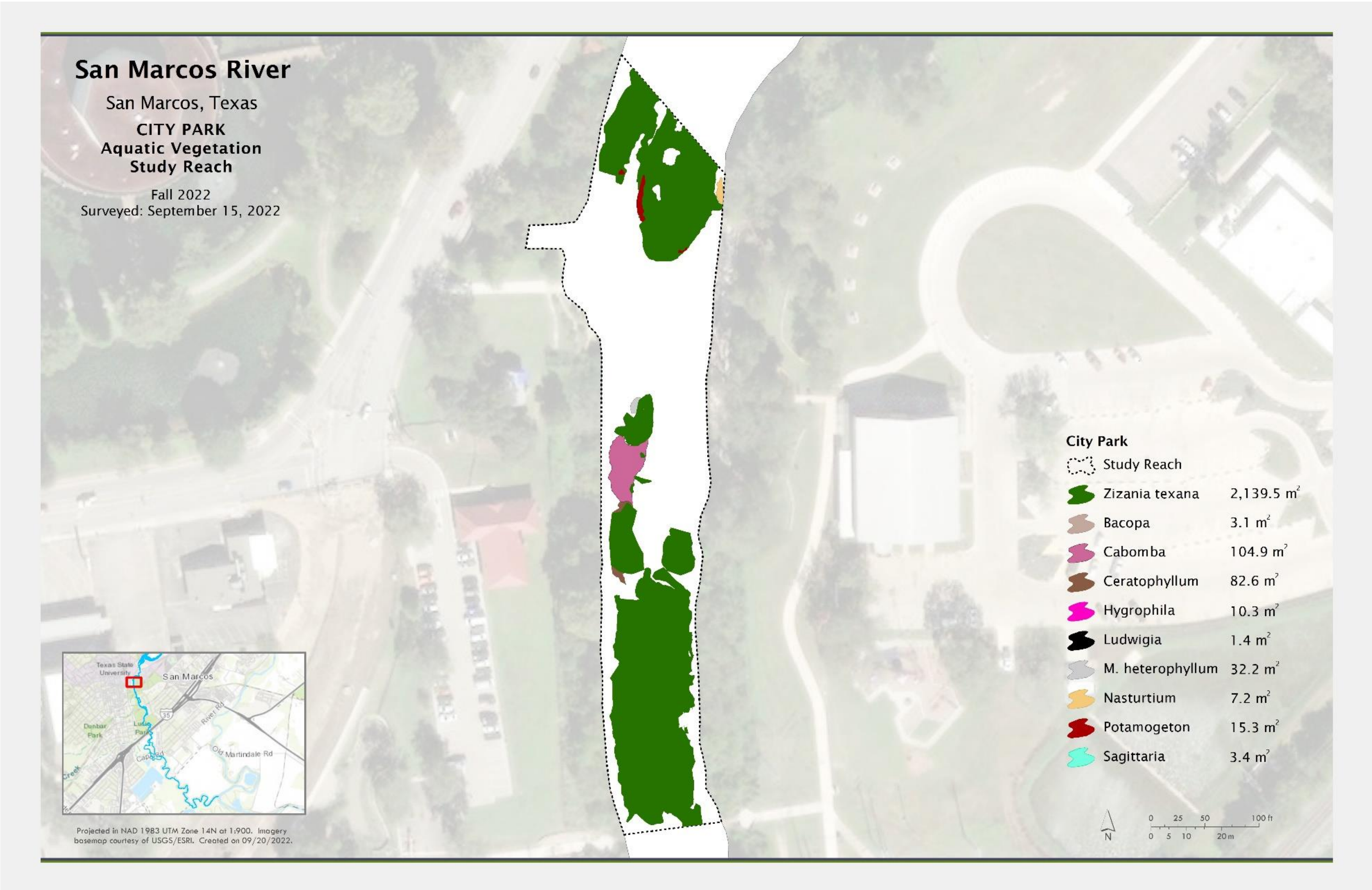

Figure C6. Map of aquatic vegetation coverage at City Park Study Reach in fall 2022.

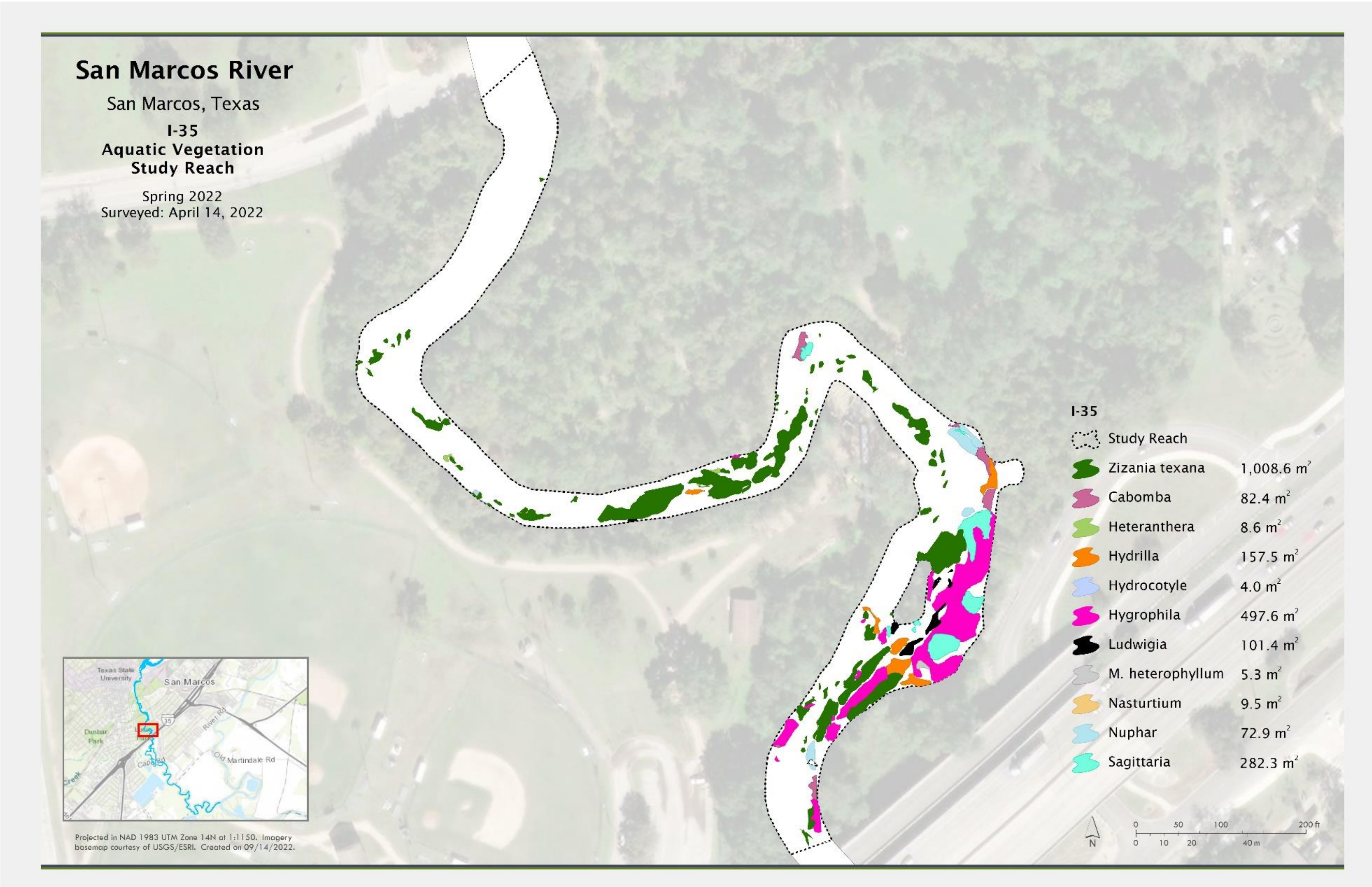

Figure C7. **Map of aquatic vegetation coverage at I-35 Study Reach in spring 2022**.

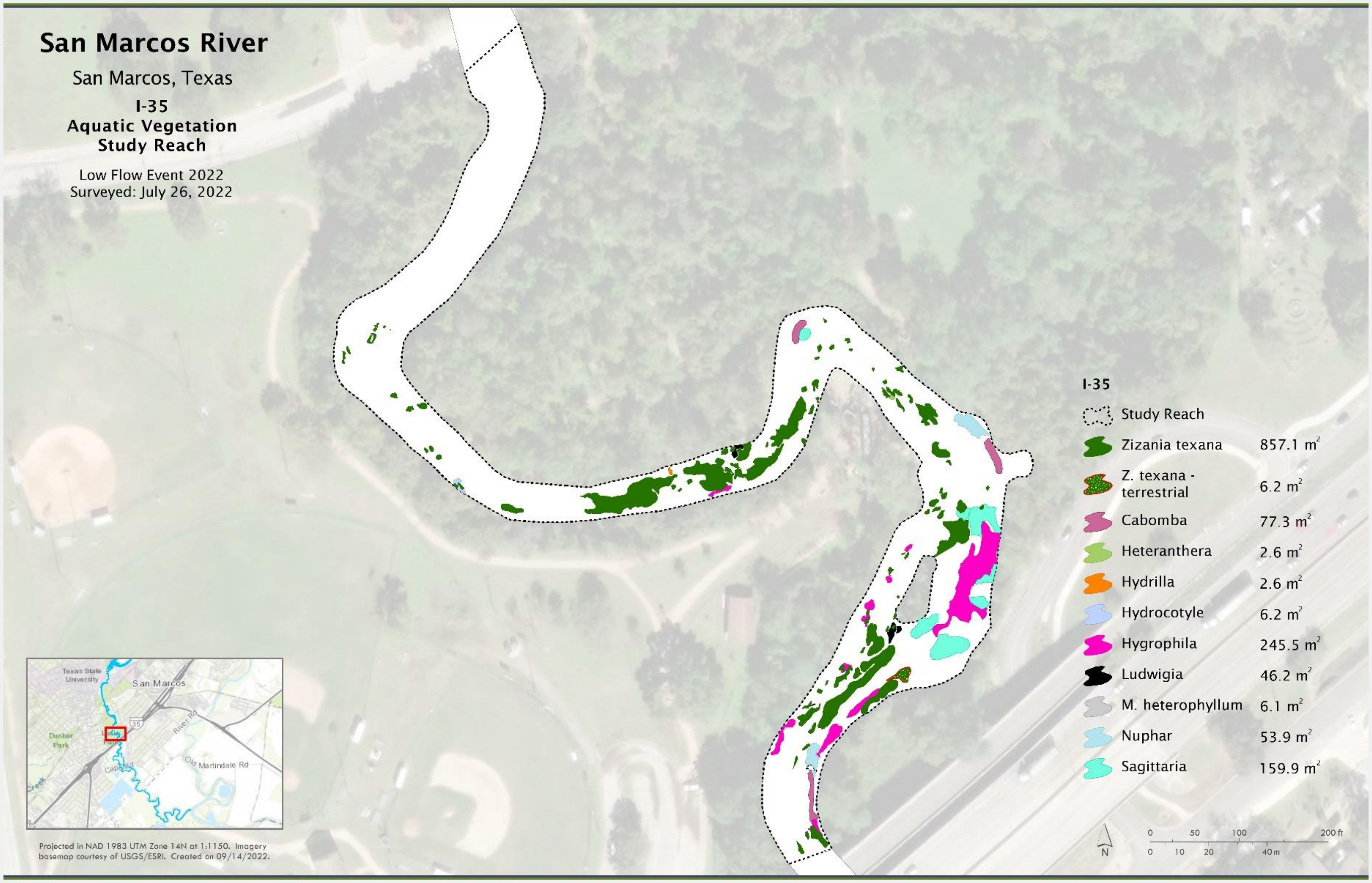

Figure C8. **Map of aquatic vegetation coverage at I-35 Study Reach in summer 2022 during Critical Period low-flow sampling event (July).**

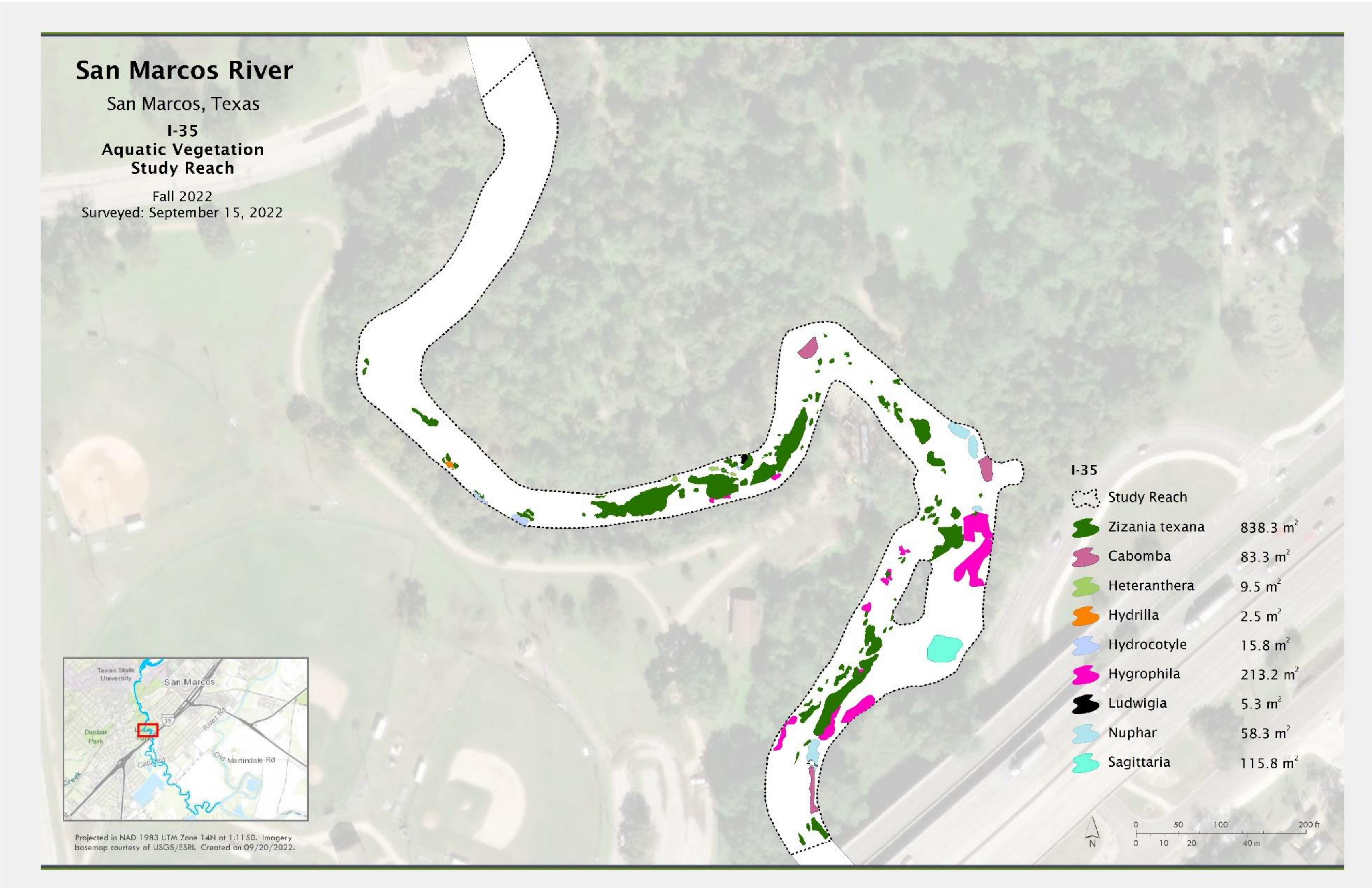

Figure C9. Map of aquatic vegetation coverage at I-35 Study Reach in fall 2022.

Texas Wild-rice Annual Mapping

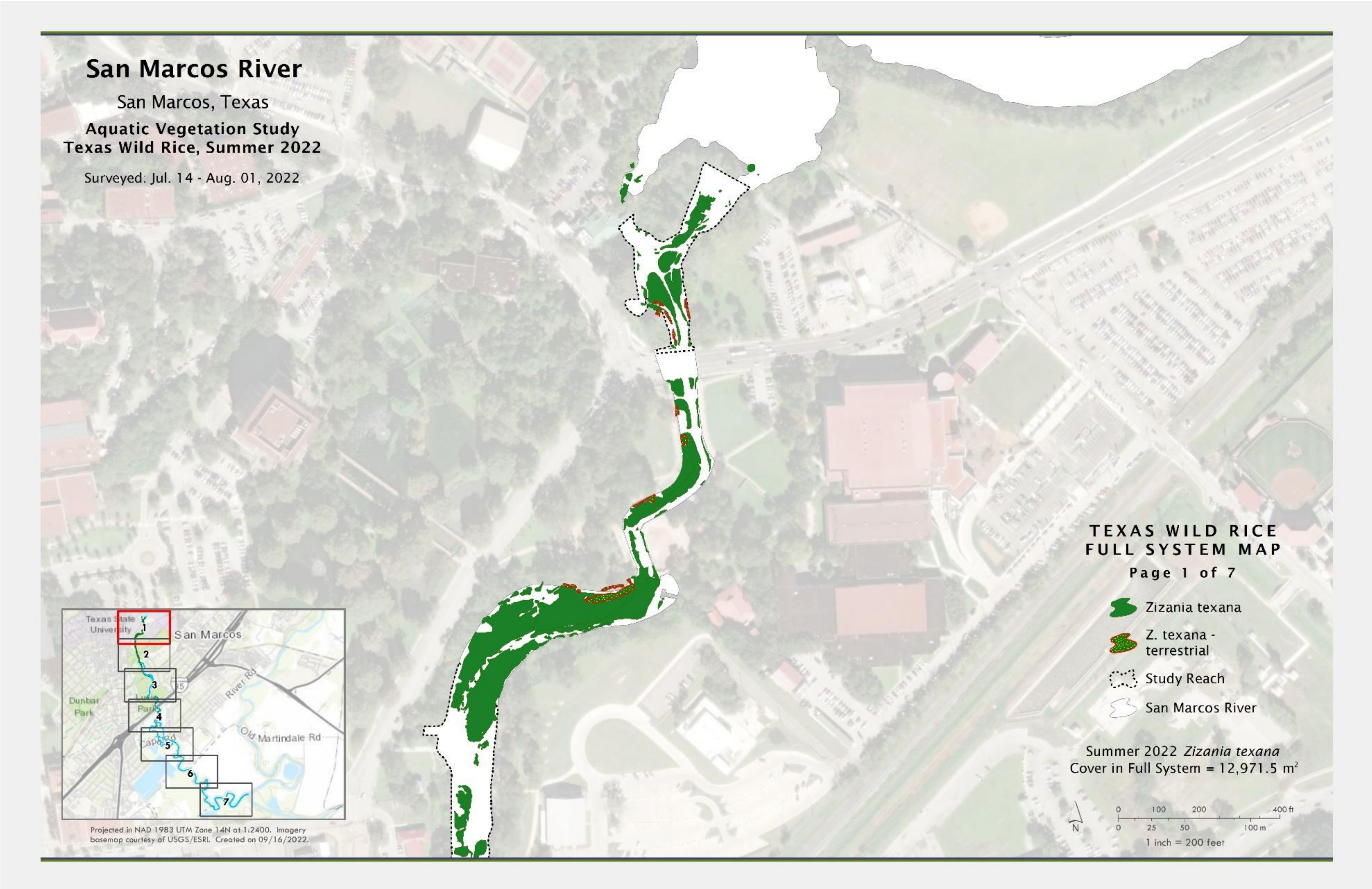

Figure C10. **Map of Texas Wild-rice coverage from Spring Lake to City Park in summer 2022.**

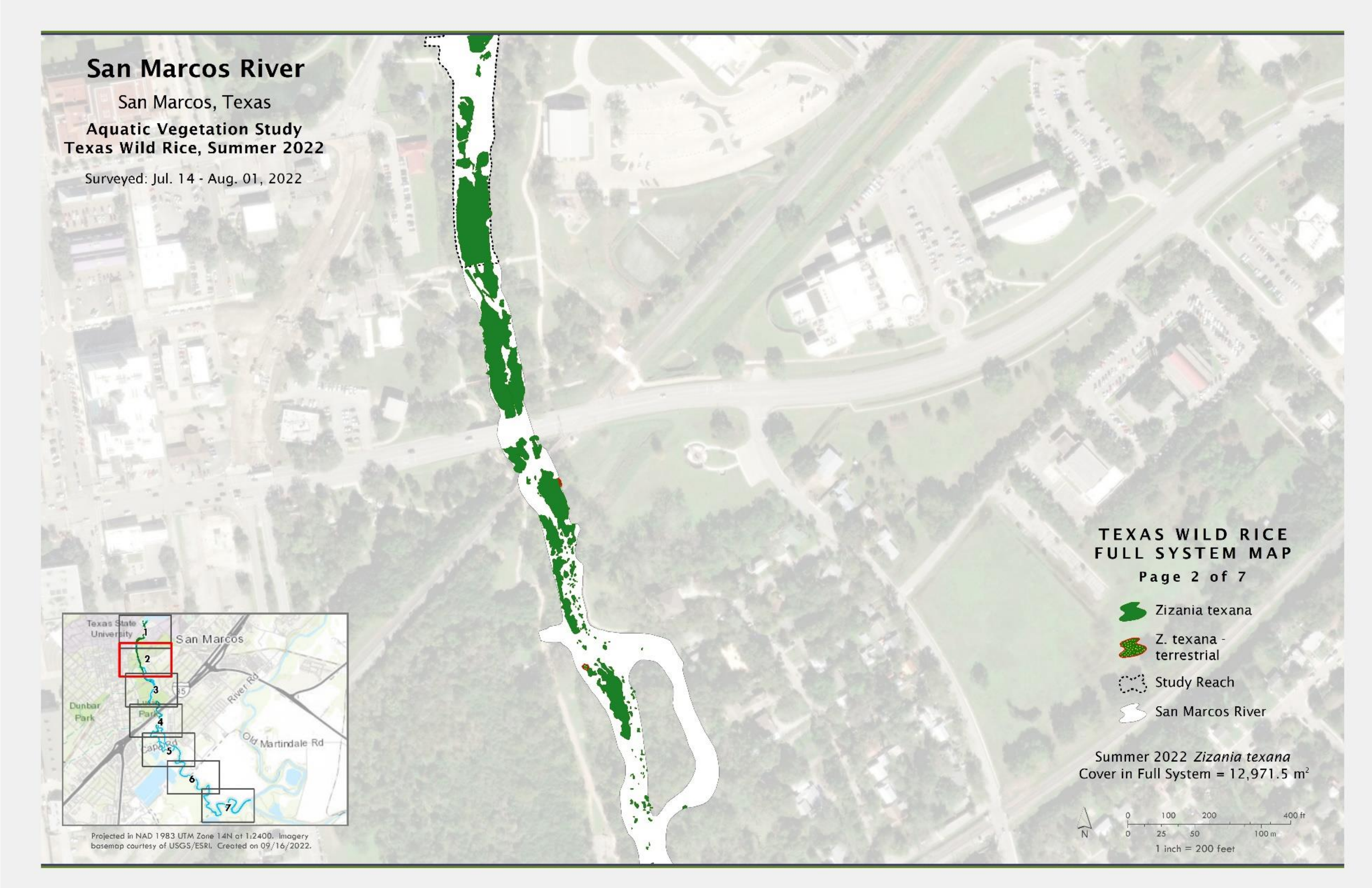

Figure C11. **Map of Texas Wild-rice coverage from City Park Cheatham Street in summer 2022.**

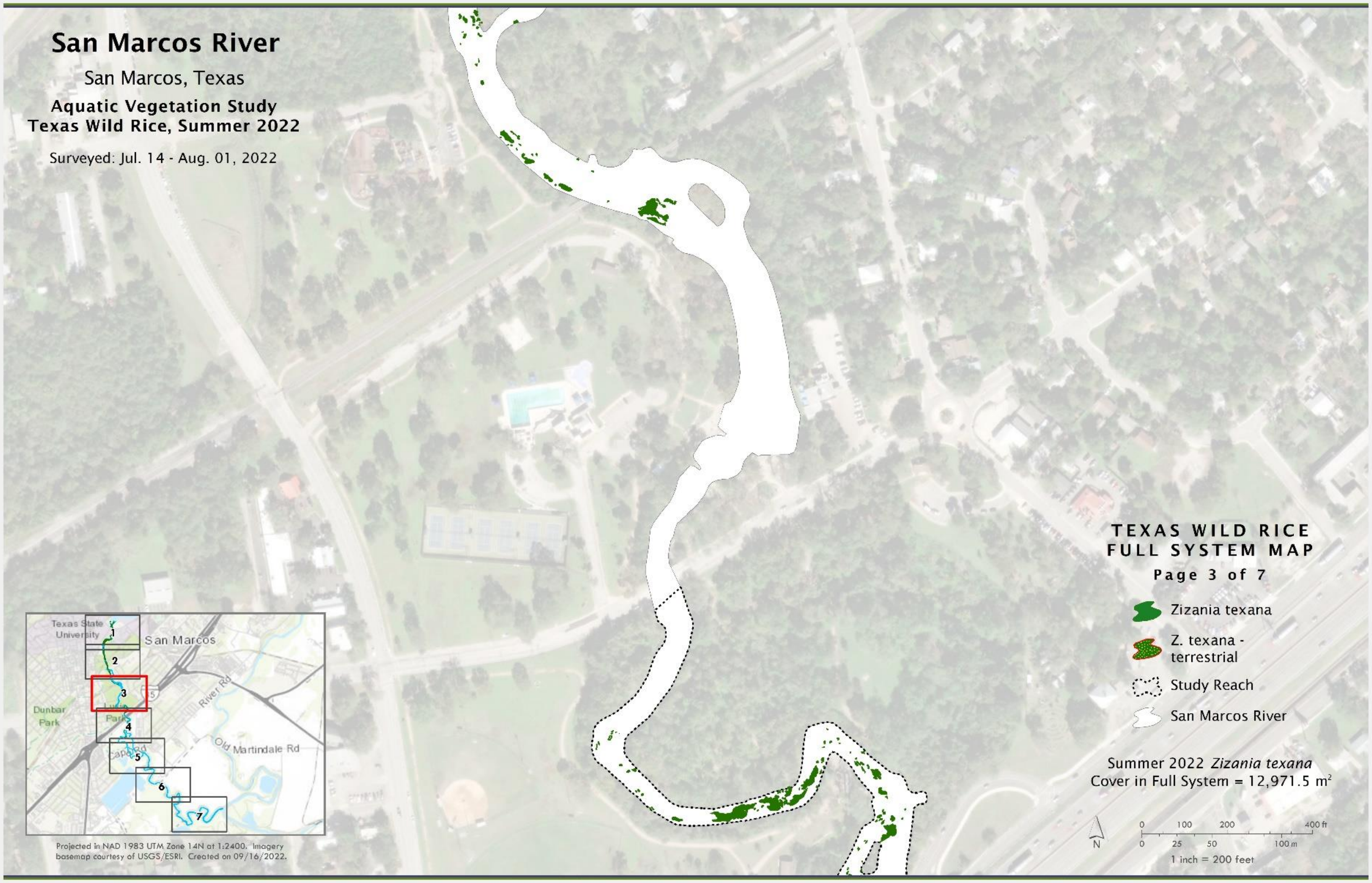

Figure C12. **Map of Texas Wild-rice coverage from Cheatham Street to I-35 in summer 2022.**

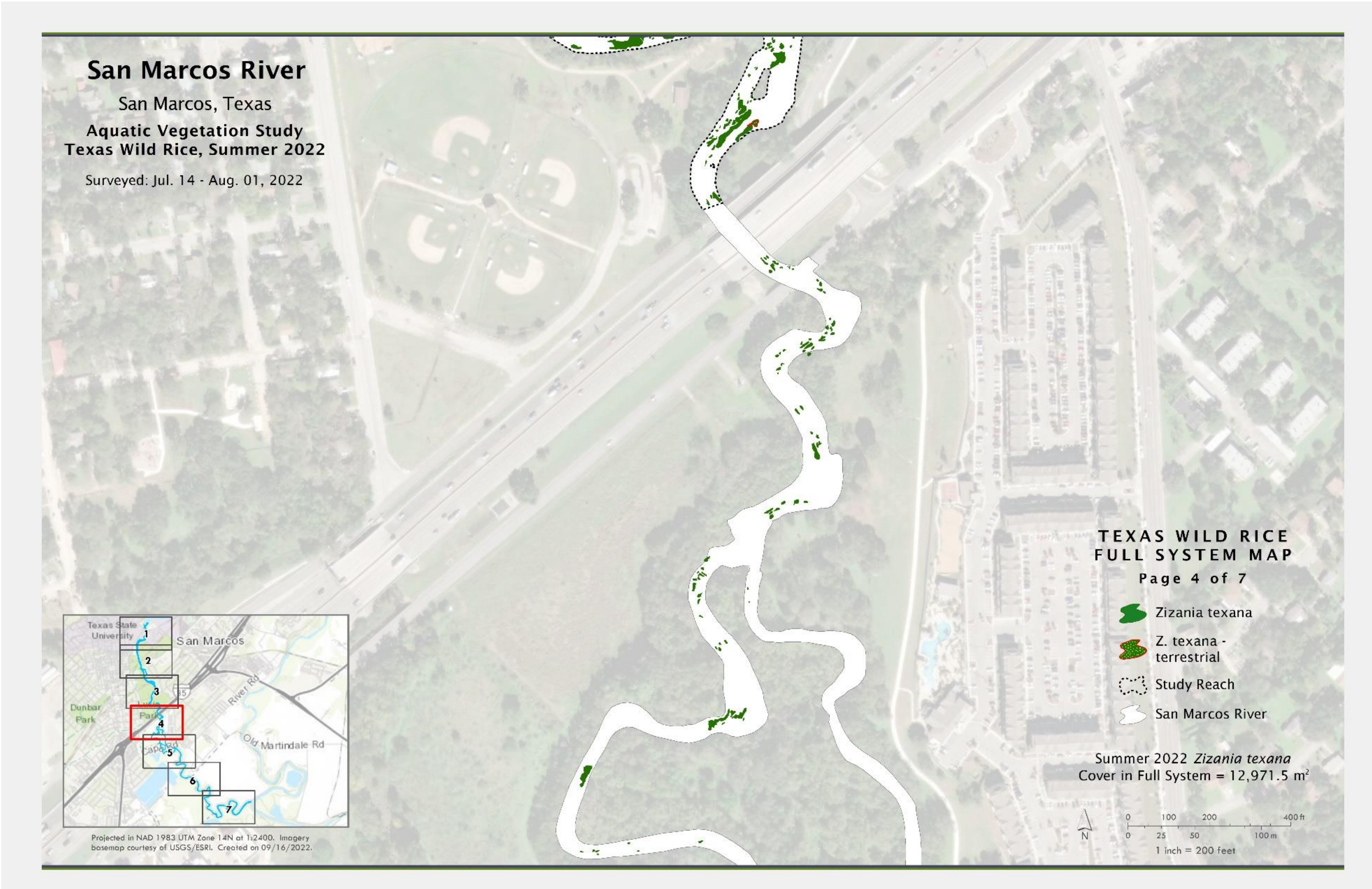

Figure C13. Map of Texas Wild-rice coverage from Cheatham Street to about Stokes Park in summer 2022.

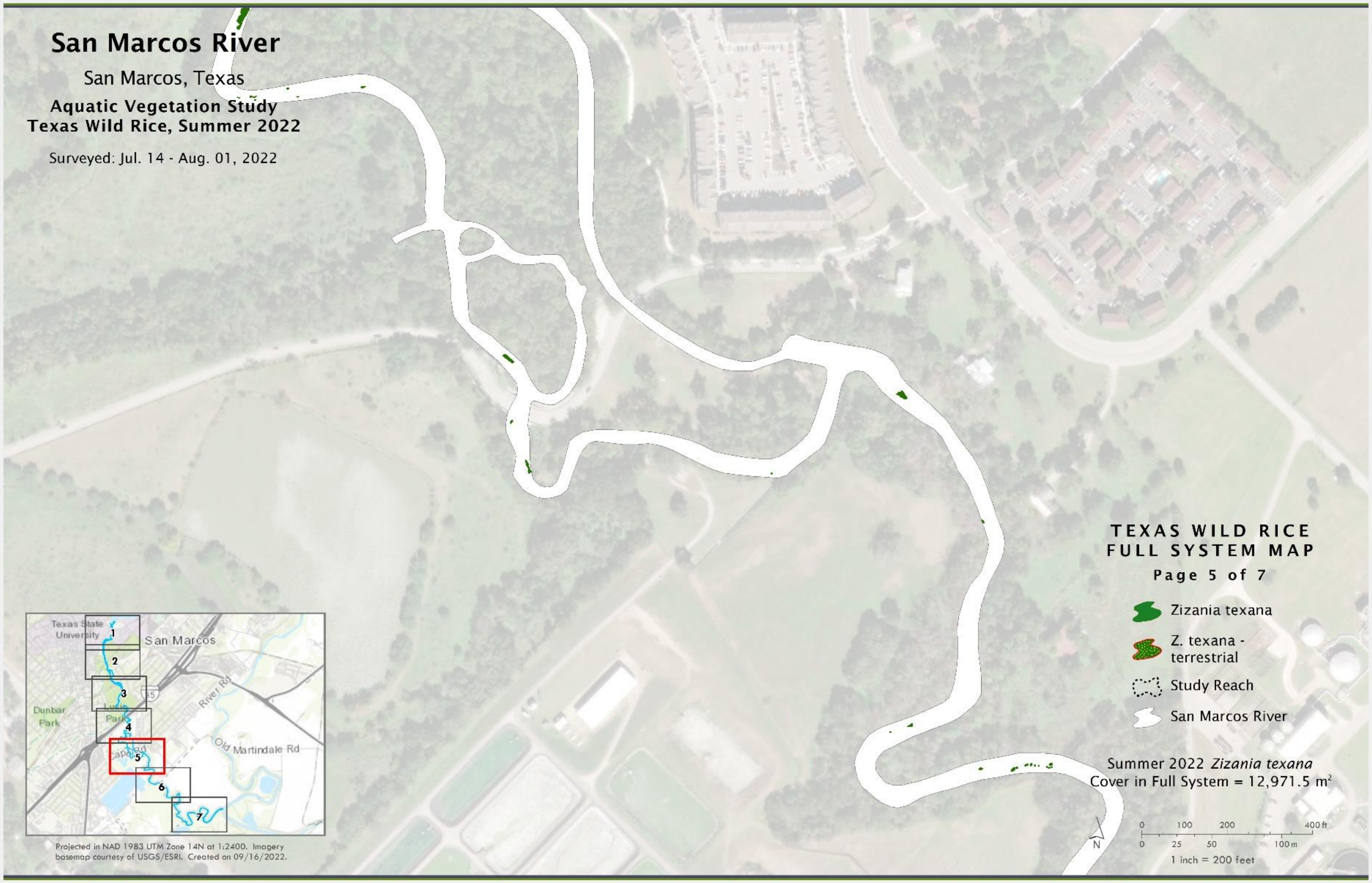

Figure C14. **Map of Texas Wild-rice coverage from about Stokes Park to Wastewater Treatment Plant in summer 2022.**

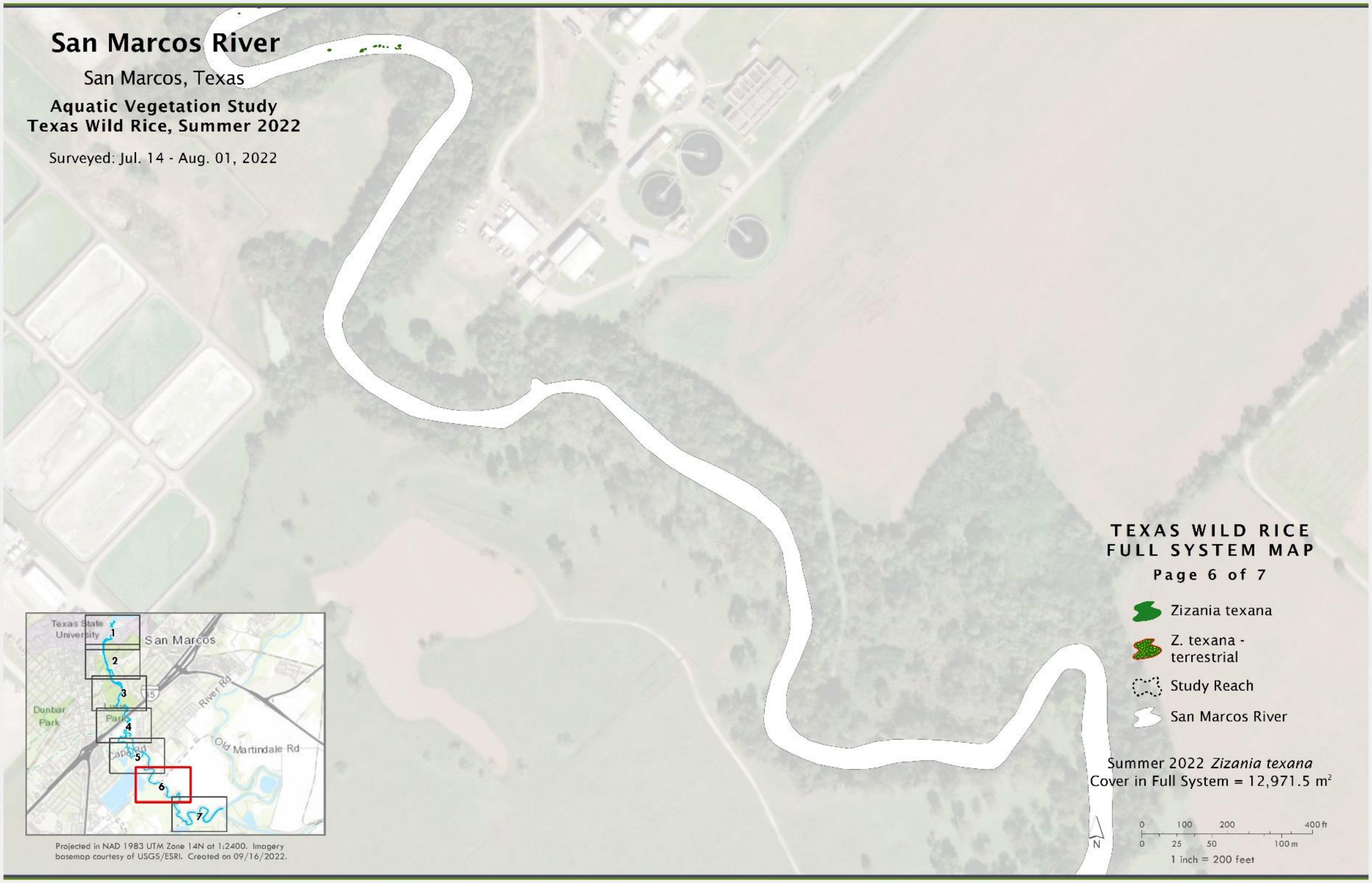

Figure C15. Map of Texas Wild-rice coverage from Wastewater Treatment Plant to about Cypress Tree Island in summer 2022.

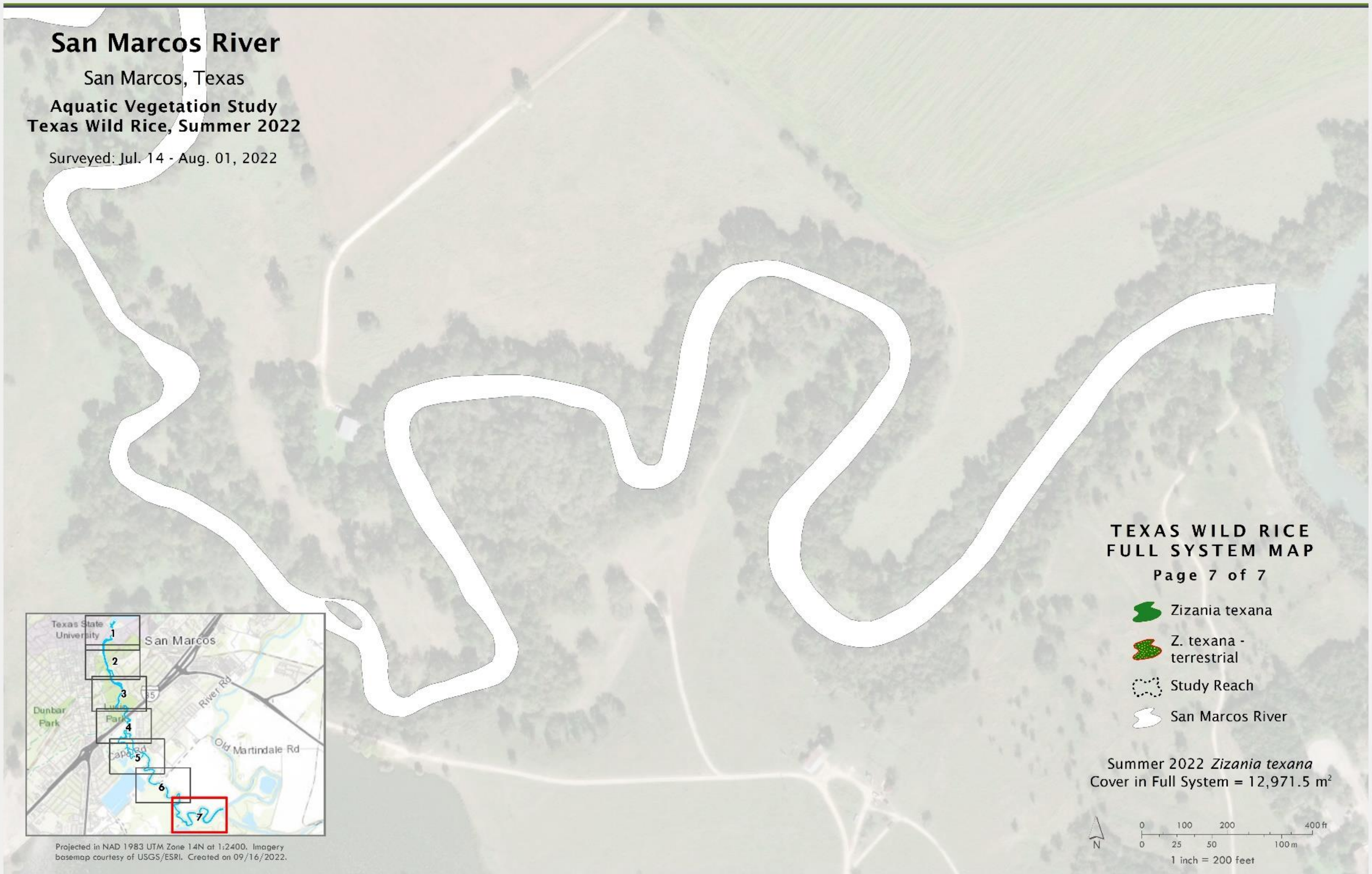

Figure C16. **Map of Texas Wild-rice coverage from about Cypress Tree to the Blanco River confluence in summer 2022.**

APPENDIX D: TEXAS WILD-RICE PHYSICAL OBSERVATIONS

For the 2022 mapping event, 420 stands and 319 points of Texas Wild-rice were mapped. The extent of Texas Wild-rice was unchanged compared to previous years and the most downstream extent of rice was located at the power line right of way as it crosses the river at A.E. Wood State Fish Hatchery (29.8664456N; -97.9271326W). About 50% of Texas Wild-rice stands were found at water depths ≥ 3 ft. Terrestrial Texas Wild-rice were observed at 4% of stands (n = 16) and were mostly located on islands or newly exposed bank of the river (Table D1). Approximately 20% of Texas Wild-rice stands were found to be associated with another aquatic plant species, which was lower compared to previous years. One non-native aquatic plant species, *Hygrophila polysperma*, and one native aquatic plant species, *Sagittaria platyphylla*, were the most commonly associated aquatic plant species with Texas Wild-rice (Table D2). Plant community associations have changed considerably over the last few years, as native plants have become more widespread along the river. Lastly, there were 41 Texas Wild-rice stands in bloom at the time of mapping and bloom percentage ranged from 10 to 100%.

Table D1. Distribution of Texas Wild-rice stands based on water depth (n=420) during annual mapping in July/August 2022.

WATER DEPTH (ft)	# OF TWR STANDS	FREQUENCY (%)
0 to 0.9	73	17
1-1.9	76	18
2-2.9	58	4
3 +	211	50

Table D2. Associated species found with Texas Wild-rice stands (n=83) during annual mapping in July/August 2022.

SPECIES	# OF TWR STANDS	FREQUENCY (%)
Hygrophila polysperma	26	31
Sagittaria platyphylla	22	26
Hydrocotyle verticillata	11	13
Hydrilla verticillata	6	7
Ludwigia repens	6	7
Potamogeton illinoensis	5	6
Other species	7	8

Observations for vulnerable Texas Wild-rice were conducted eight times during 2022, which was the most conducted in the entirety of this monitoring program (Table D3). These qualitative measurements included the following categories: 1) the percent of the stand that was emergent (including the percent with seed or flower); and 2) the percent covered with vegetation mats or algae buildup and a categorical estimation of root exposure. Rectangular study plots, established around chosen vulnerable stands in GIS were used to locate and identify vulnerable Texas Wild-rice stands for sampling. Individual stands are mapped in GIS to provide length, width and cover estimates. Water depth and flow measurements were taken at the upstream edge of each Texas Wild-rice stand. San Marcos River mean daily discharge at the time of spring sampling was 130 cfs, which was below the historical average (186 cfs) and the highest discharge of all eight events. River discharge dropped to 90 cfs by late August and remained below this threshold for the remainder of the year, with the exception of a brief increase from a stormwater event in early September (Table D3).

As in the previous year, physical observations were made for vulnerable Texas Wild-rice stands within three general study areas: 1) Spring Lake Dam / Sewell Park location; 2) Veramendi Park; and 3) I-35. These study areas are heavily trafficked with river recreation, due to being located near river access points, where river recreationists enter, exit or linger for the duration of a given day. Therefore, during peak recreation season, Texas Wild-rice patches at these locations are typically subjected to harsher disturbances compared to patches located in other reaches of the river. At the end of this appendix, coverage of each vulnerable stand, percent of stands at water depths less than 0.50 feet, and index of root exposure for stands can be found in Table D4, Figure D5, and Figure D6, respectively.

Table D3. The dates of Texas Wild-rice observations conducted in 2021 with corresponding average daily discharge in the San Marcos River.

PHYSICAL OBSERVATIONS EVENT	EVENT TYPE	DATE	MEAN DAILY DISCHARGE (cfs)
1	Spring Biological Monitoring	April, 15	130
2	Low Flow Physical Observation	June, 7	114
3	Low Flow Physical Observation	June, 20	105
4	Low Flow Physical Observation	July, 29	99
5	Low Flow Physical Observation	August, 16	89
6	Fall Biological Monitoring	September, 29	89
7	Low Flow Physical Observation	October, 19	85
8	Low Flow Physical Observation	November, 13	87

http://nwis.waterdata.usgs.gov/tx

Spring Lake Dam/Sewell Park Reach

The stands in this reach maintained a high degree of cover in spring, but subsequently decreased afterwards and never recovered. In general, Texas Wild-rice stands in this reach were negatively impacted primarily by foot traffic followed by silt accretion and dewatering (Figure D1). All stands but #2 became increasingly fragmented by foot traffic. Stand #4/5 and #7 had large percentages of the stand elevated above the water surface during some observations. Stand #7 was highly eroded along the long edge, with clear walking paths throughout and was also the most impacted by lowered water levels (Figure D2).

Figure D1. Texas wild-rice below Aquarena Springs Drive Bridge in February of 2021 (top) compared to October of 2022 (bottom).

During spring sampling, velocity at individual stands ranged from 0.12 to 1.62 ft/s and about 10% of stands were in water less than 0.50 ft. Root exposure from scouring was noted in this section, with only moderate scouring at stand #3 and #4/5, while scouring at #7 was high. Fall sampling velocity ranged from 0.60 to 2.09 ft/s. A majority of stand #8 occurred in water depths less than 0.50 ft, with much of the growth converted to emergent leaves. Root exposure was extreme in this stand and several others. Blooming was minimal in both spring and fall (Figure D2).

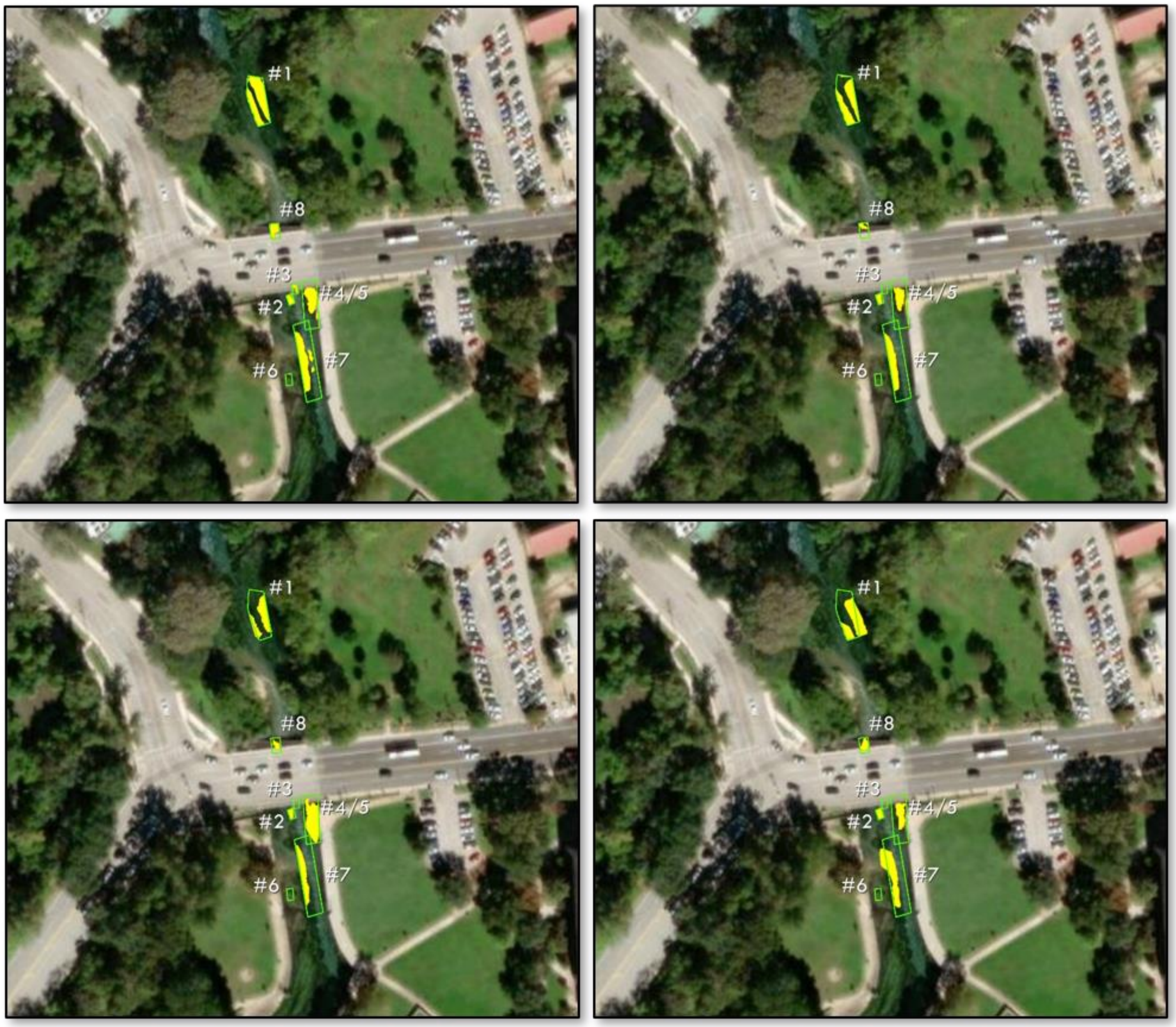

Figure D2. **Spring (top left); Event 2, 2022 (top right); Fall (bottom left); and Event 6, 2022 (bottom right) vulnerable Texas Wild-rice plots in the Spring Lake Dam / Sewell Park location. Yellow polygons indicated Texas wild-rice stands. Green rectangles indicate the stand plots. Projected in NAD 1983 UTM 14N at 1:2,250 scale.**

Veramendi Park

Total cover of vulnerable Texas Wild-rice stands in Veramendi Park was highest during spring observations and subsequently decreased dramatically thereafter. During the spring sample period, velocities ranged from 0.33 to 1.50 ft/s. All stands occurred in water depths greater than 0.50 ft. Root exposure was moderate across all stands and blooming was minimal. During the fall, sampling velocities ranged from 0.40 to 1.97 ft/s. No stands were occurred in water less than 0.50 ft in water depth. Root exposure was moderate to extreme. By the fall event, all of stand #1 had disappeared, as well as most of stand #3, which were both located in the main current of the river. Stand #2, located along the river edge, maintained high coverage for the duration of the year (Figure D3).

Figure D3. **Spring (top left); Event 2, 2022 (top right); Fall (bottom left); and Event 6, 2022 (bottom right) vulnerable Texas Wild-rice plots in the Veramendi Park location. Yellow polygons indicated Texas wild-rice stands. Green rectangles indicate the stand plots. Projected in NAD 1983 UTM 14N at 1:2,250 scale.**

I-35 Reach

The coverages of vulnerable Texas Wild-rice stands in this reach was highest during Low-flow event I and maintained a high degree of cover, with some exceptions throughout the year. The vulnerable stands were more impacted by reduced water depths and flow compared to Texas Wild-rice stands in the other study areas. Current velocities for spring sampling ranged from 0.18 to 1.75 ft/s. No stands were observed in water depths 0.50 ft or less. Root exposure was moderate on average around all stands. During fall sampling, velocities ranged from 0.00 to 1.65 ft/s. Root exposure was noted as moderate. Due to lower river flows by this time, water flow at stand #7 was diverted, leaving this stand completely dewatered and subsequently dead. Flowering was minimal in both spring and fall sampling. Over the course of 2022, this reach saw several patches expand, followed by fragmentation that depended on changes in the water current and recreational pressure. Although this section has lost the most stands of vulnerable Texas Wild-rice, some individual stands continue to do well (Figure D4).

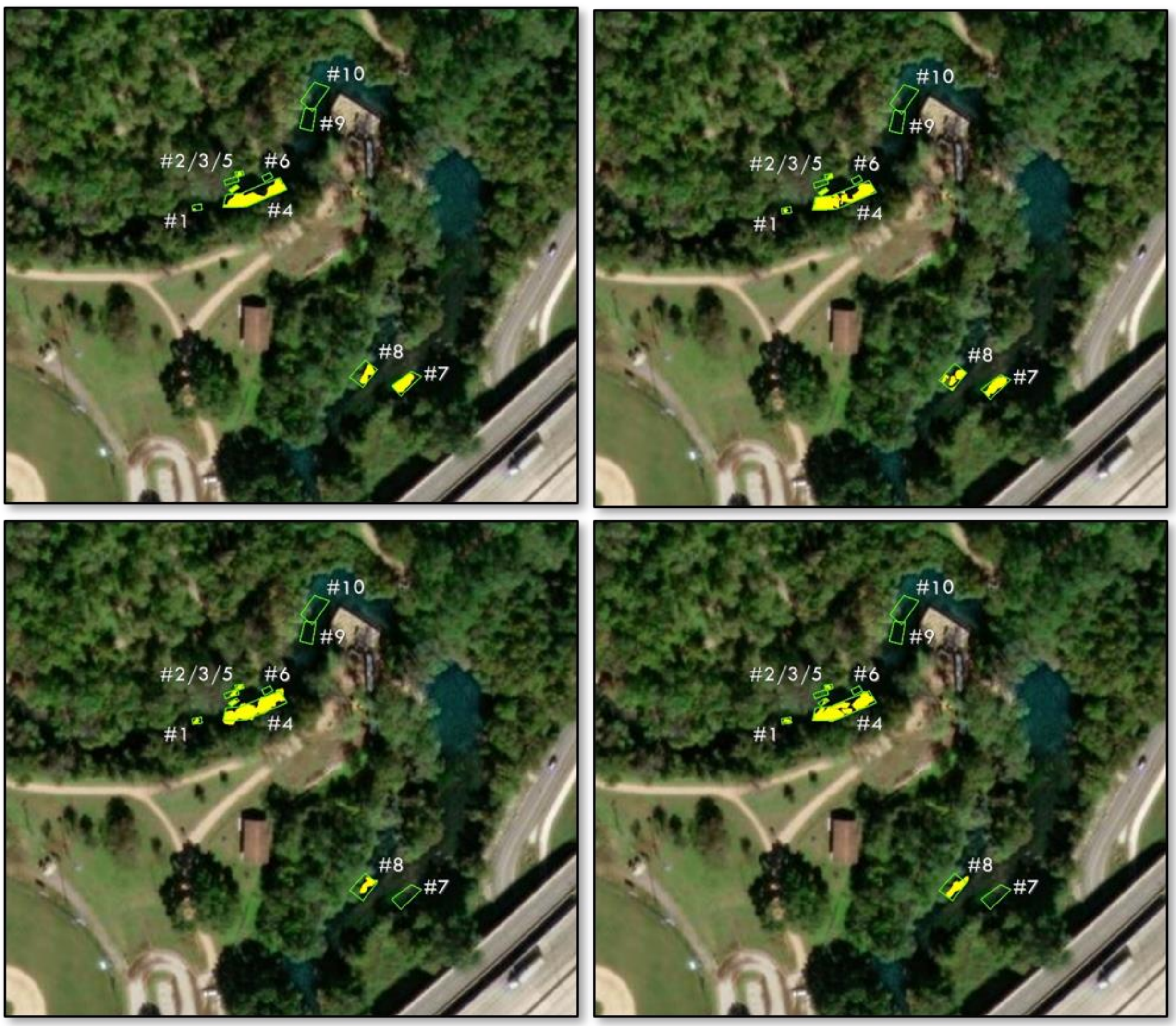

Figure D4. **Spring (top left); Event 2, 2022 (top right); Fall (bottom left); and Event 6, 2022 (bottom right) vulnerable Texas wild-rice plots in the I-35 location. Yellow polygons indicated Texas wild-rice stands. Green rectangles indicate the stand plots. Projected in NAD 1983 UTM 14N at 1:2,250 scale.**

Table D6. **Cover (m^2) of individual vulnerable Texas Wild-rice stands during each sampling event. Sites labeled 'Gone' denotes vulnerable stands were absent and 'Point' denotes vulnerable stands were present, but cover was not large enough to calculate an area.**

LOCATION	SPRING 2022	LOW-FLOW EVENT I	LOW-FLOW EVENT II	LOW-FLOW EVENT III	LOW-FLOW EVENT IV	FALL 2022	LOW-FLOW EVENT V	LOW-FLOW EVENT VI
Sewell Park 1	89	89	49	64	48	49	43	67
Sewell Park 2	8	7	8	7	8	5	12	8
Sewell Park 3	4	2	1	Gone	Gone	Gone	Gone	Gone
Sewell Park 4/5	34	38	29	25	36	28	28	24
Sewell Park 6	Point	Gone	Gone	Gone	Gone	Gone	Gone	Gone
Sewell Park 7	63	68	49	50	56	57	57	67
Sewell Park 8	12	5	1	4	Gone	6	2	10
Sum of Cover	**210**	**209**	**137**	**150**	**148**	**145**	**142**	**176**
Veramendi 1	25	20	6	10	Gone	Gone	Gone	Gone
Veramendi 2	35	35	31	41	35	42	42	45
Veramendi 3	68	68	62	39	8	45	3	8
Sum of Cover	**128**	**123**	**99**	**90**	**43**	**87**	**45**	**53**
I-35-1	5	2	1	2	3	3	2	3
I-35-2	4	2	2	5	4	5	2	2
I-35-3	2	2	1	3	2	3	3	2
I-35-4	81	84	81	85	67	107	89	87
I-35-5	Gone	Gone	Gone	Gone	Gone	2	Gone	Gone
I-35-6	Gone	Gone	Gone	Gone	Gone	Gone	Gone	Gone
I-35-7	29	30	21	28	Gone	Gone	Gone	Gone
I-35-8	19	26	23	21	10	16	12	23
I-35-9	Gone	Gone	Gone	Gone	Gone	Gone	Gone	Gone
I-35-10	Gone	Gone	Gone	Gone	Gone	Gone	Gone	Gone
Sum of Cover	**140**	**146**	**129**	**144**	**86**	**136**	**108**	**117**

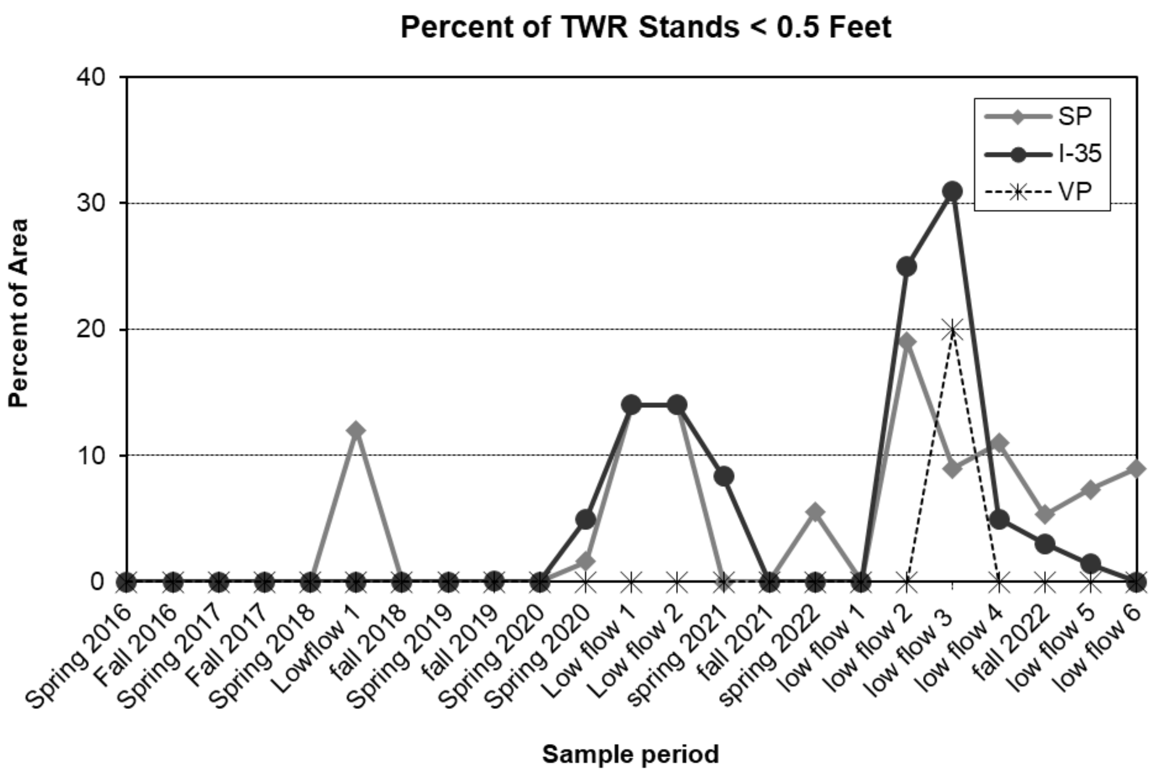

Figure D5. **Percent of Texas Wild-rice stands at water depths less than 0.5 feet 2016–2022.**

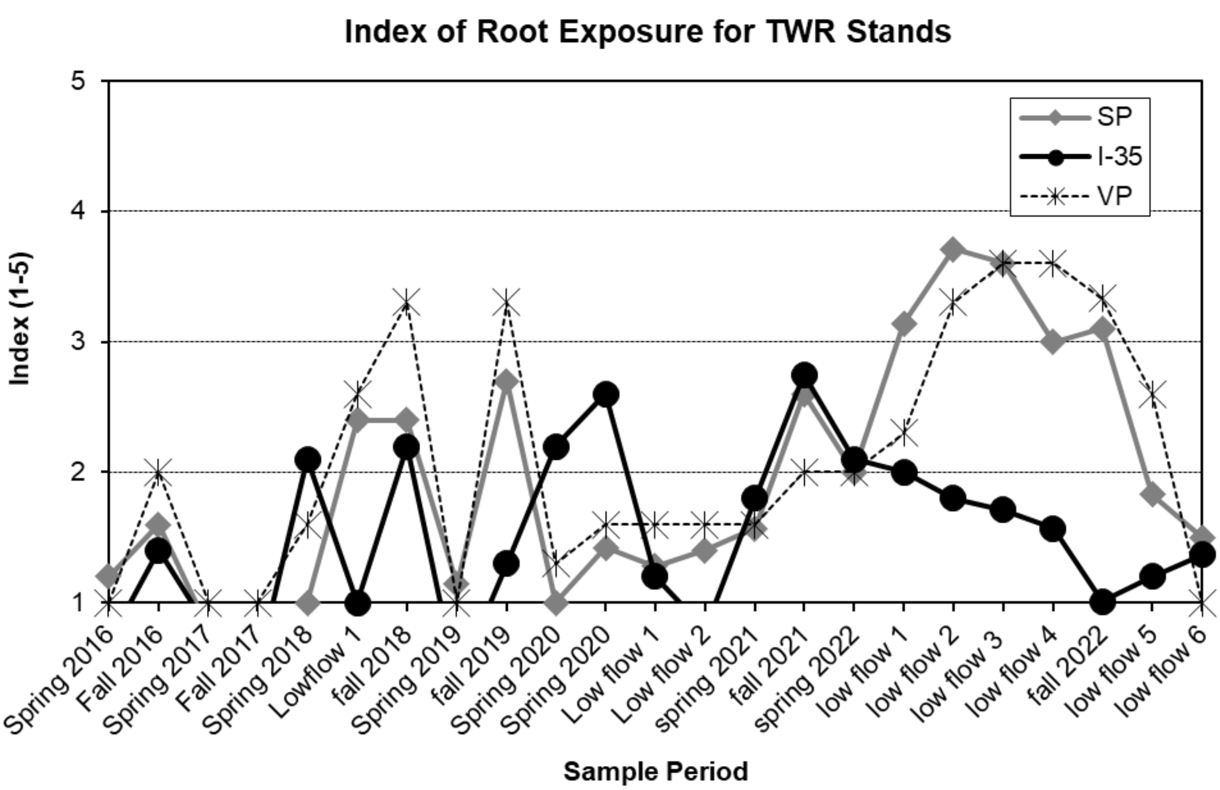

Figure D6. **Index for root exposure of Texas Wild-rice stands from 2016–2022.**

APPENDIX E: TABLES AND FIGURES

TABLES

Texas Wild-rice Mapping

Table E1. Change in cover amount (m^2) of Texas Wild-rice between August 2021 and July/August 2022 annual mapping among the Habitat Conservation Plan Long-term Biological Goals (HCP LTBG) river segments.

HCP LTBG RIVER SEGMENTS	AUGUST 2021 COVERAGE	JULY/AUGUST 2022 COVERAGE	COVERAGE CHANGE	PERCENT CHANGE
Spring Lake	Not Mapped	Not Mapped	Not Mapped	Not Mapped
Spring Lake Dam to Rio Vista Park	12,579			
I-35 Study Reach	954			
Below I-35	317			

Fish Assemblage Results:
Drop-Net and Fish Community Sampling

Table E2. Overall number (#) and percent relative abundance (%) of fishes collected from the three long-term biological goals study reaches during drop-net sampling in 2022.

TAXA	SPRING LAKE DAM		CITY PARK		I-35	
	#	%	#	%	#	%
Cyprinidae						
Dionda nigrotaeniata	5	0.72	0	0.00	0	0.00
Notropis amabilis	0	0.00	4	0.39	20	2.37
Notropis chalybaeus	0	0.00	0	0.00	1	0.12
Characidae						
*Astyanax mexicanus**	2	0.29	1	0.10	2	0.24
Ictaluridae						
Ameiurus natalis	1	0.14	3	0.29	1	0.12
Loricariidae						
*Hypostomus plecostomus**	0	0.00	0	0.00	2	0.24
Fundulidae						
Fundulus chrysotus	0	0.00	0	0.00	4	0.47
Poeciliidae						
Gambusia sp.	445	64.12	715	69.82	416	49.35
*Poecilia latipinna**	0	0.00	18	1.76	1	0.12
Centrarchidae						
*Ambloplites rupestris**	0	0.00	4	0.39	17	2.02
Lepomis gulosus	2	0.29	1	0.10	0	0.00
Lepomis macrochirus	0	0.00	1	0.10	0	0.00
Lepomis miniatus	53	7.64	15	1.46	26	3.08
Lepomis sp.	6	0.86	20	1.95	8	0.95
Micropterus salmoides	2	0.29	0	0.00	8	0.95
Percidae						
Etheostoma fonticola	176	25.36	229	22.36	329	39.03
Cichlidae						
*Herichthys cyanoguttatus**	2	0.29	13	1.27	6	0.71
*Oreochromis aureus**	0	0.00	0	0.00	2	0.24
Total	**694**		**1024**		**843**	

Asterisks (*) denotes introduced species

Table E3. **Overall number (#) and percent relative abundance (%) of fishes collected during fish community sampling in 2022.**

TAXA	SPRING LAKE		UPPER RIVER		MIDDLE RIVER		LOWER RIVER	
	#	%	#	%	#	%	#	%
Lepisosteidae								
Lepisosteus oculatus	1	0.02	1	0.04	0	0.00	0	0.00
Cyprinidae								
Campostoma anomalum	0	0.00	0	0.00	0	0.00	9	0.99
Cyprinella venusta	0	0.00	0	0.00	0	0.00	117	12.81
Dionda nigrotaeniata	1572	30.68	15	0.59	383	31.94	39	4.27
Notropis amabilis	0	0.00	1	0.04	49	4.09	321	35.16
Notropis chalybaeus	0	0.00	46	1.82	55	4.59	0	0.00
Notropis volucellus	0	0.00	0	0.00	0	0.00	59	6.46
Catastomidae								
Moxostoma congestum	0	0.00	1	0.04	3	0.25	0	0.00
Characidae								
*Astyanax mexicanus**	1323	25.82	349	13.84	38	3.17	6	0.66
Ictaluridae								
Ameiurus melas	0	0.00	3	0.12	1	0.08	0	0.00
Ameiurus natalis	0	0.00	3	0.12	0	0.00	1	0.11
Loricariidae								
Loricariidae sp.	0	0.00	8	0.32	17	1.42	116	12.71
Poeciliidae								
Gambusia affinis	0	0.00	15	0.59	1	0.08	24	2.63
Gambusia geiseri	0	0.00	1365	54.12	60	5.00	6	0.66
Gambusia sp.	689	13.45	20	0.79	188	15.68	20	2.19
*Poecilia latipinna**	0	0.00	5	0.20	0	0.00	3	0.33
Centrarchidae								
*Ambloplites rupestris**	0	0.00	2	0.08	2	0.17	2	0.22
*Lepomis auritus**	57	1.11	202	8.01	78	6.51	17	1.86
Lepomis cyanellus	0	0.00	2	0.08	0	0.00	0	0.00
Lepomis gulosus	0	0.00	8	0.32	0	0.00	3	0.33
Lepomis macrochirus	124	2.42	7	0.28	0	0.00	31	3.40
Lepomis megalotis	43	0.84	53	2.10	17	1.42	4	0.44
Lepomis microlophus	91	1.78	0	0.00	1	0.08	5	0.55
Lepomis miniatus	19	0.37	77	3.05	4	0.33	3	0.33
Lepomis sp.	522	10.19	127	5.04	117	9.76	18	1.97
Micropterus salmoides	312	6.09	49	1.94	102	8.51	18	1.97
Micropterus treculii	0	0.00	0	0.00	0	0.00	1	0.11
Percidae								
Etheostoma fonticola	354	6.91	122	4.84	40	3.34	25	2.74
Etheostoma spectabile	0	0.00	0	0.00	0	0.00	27	2.96

Percina aptristis	0	0.00	24	0.95	27	2.25	14	1.53
Percina carpodes	0	0.00	0	0.00	2	0.17	19	2.08
Percina sp.	0	0.00	0	0.00	0	0.00	1	0.11
Cichlidae								
*Herichthys cyanoguttatus**	17	0.33	17	0.67	14	1.17	4	0.44
Total	**5124**		**2522**		**1199**		**913**	

Asterisks (*) denotes introduced species

FIGURES

Aquatic Vegetation

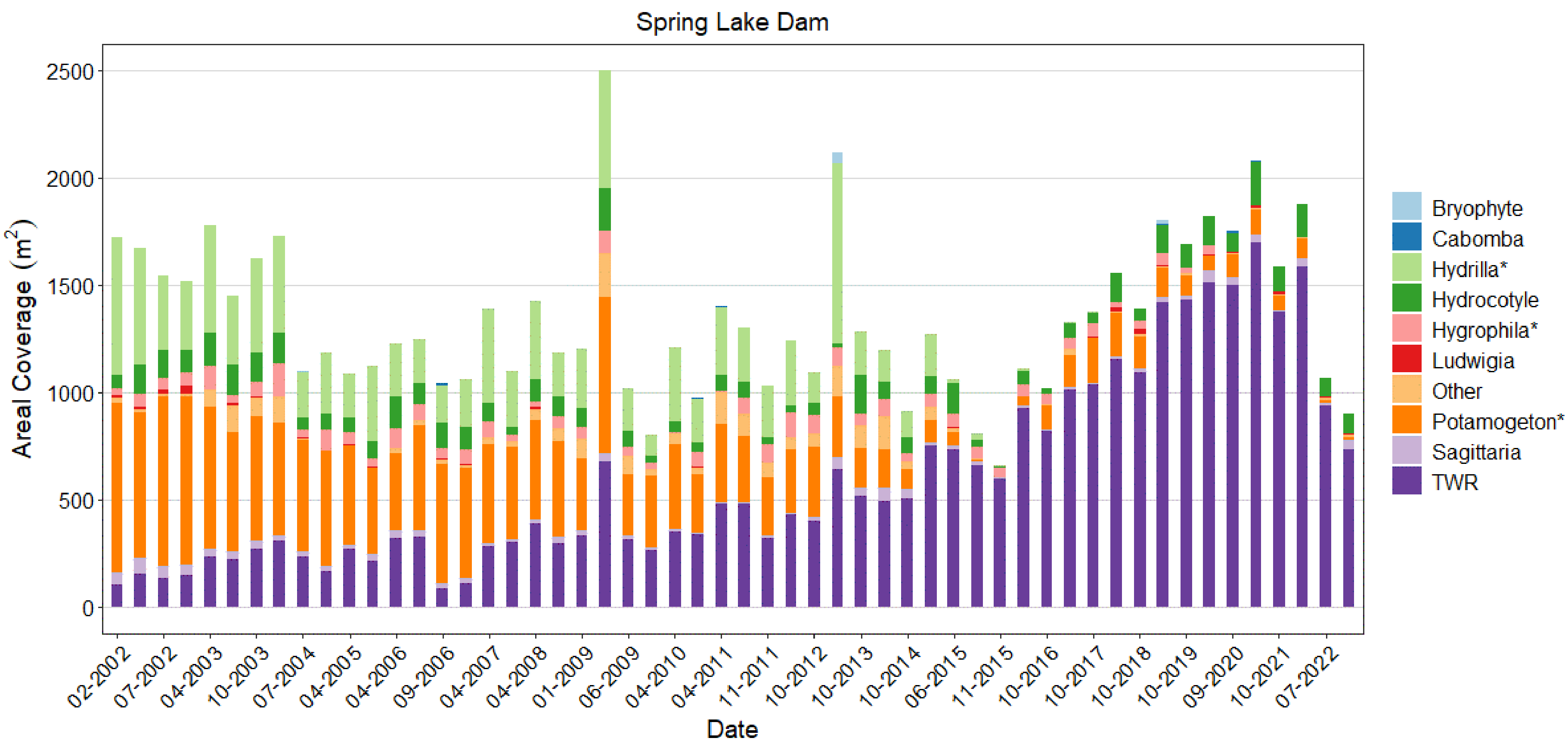

Figure E1. **Aquatic vegetation composition (m^2) among select taxa from 2003–2022 at Spring Lake Dam.**

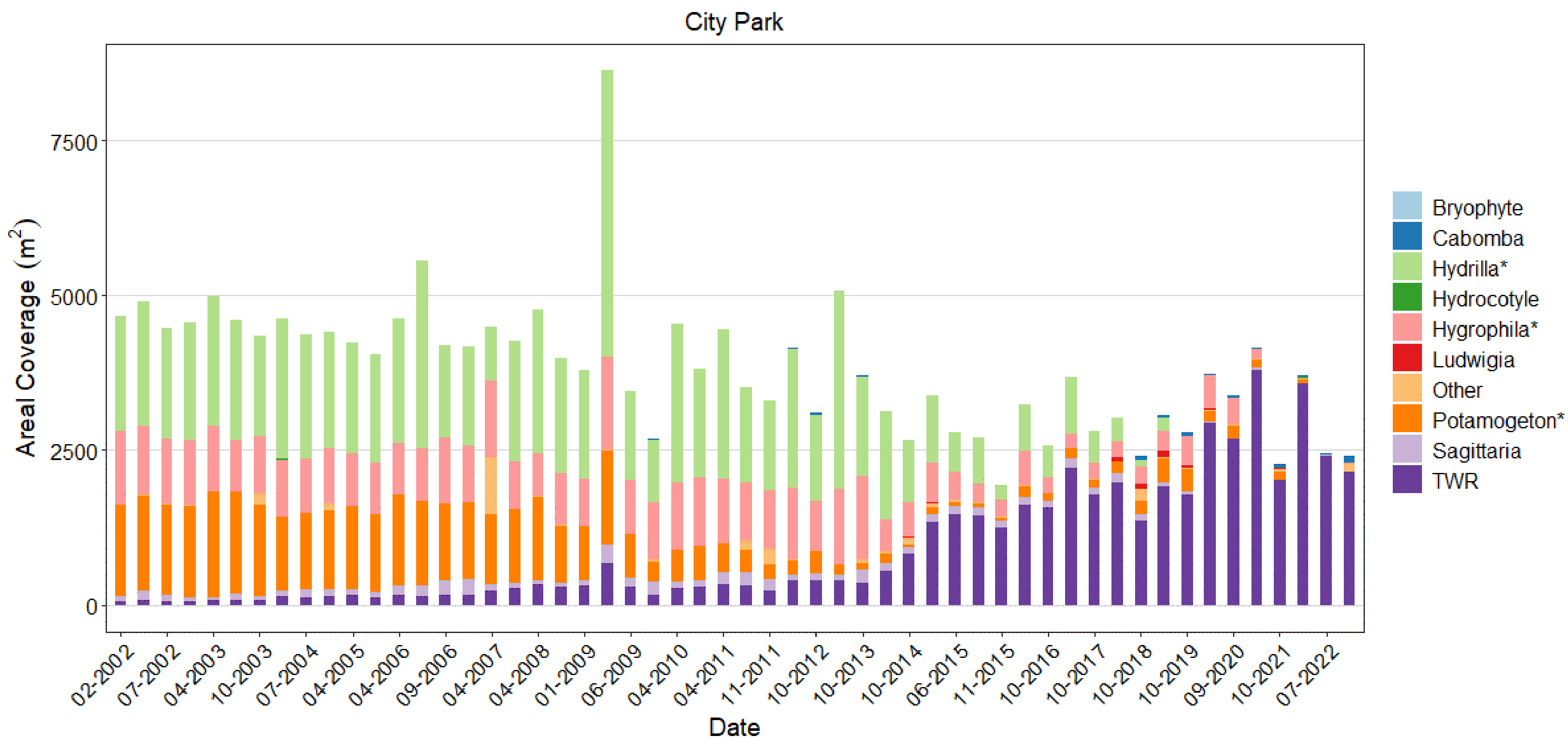

Figure E2. **Aquatic vegetation composition (m^2) among select taxa from 2003–2022 at City Park.**

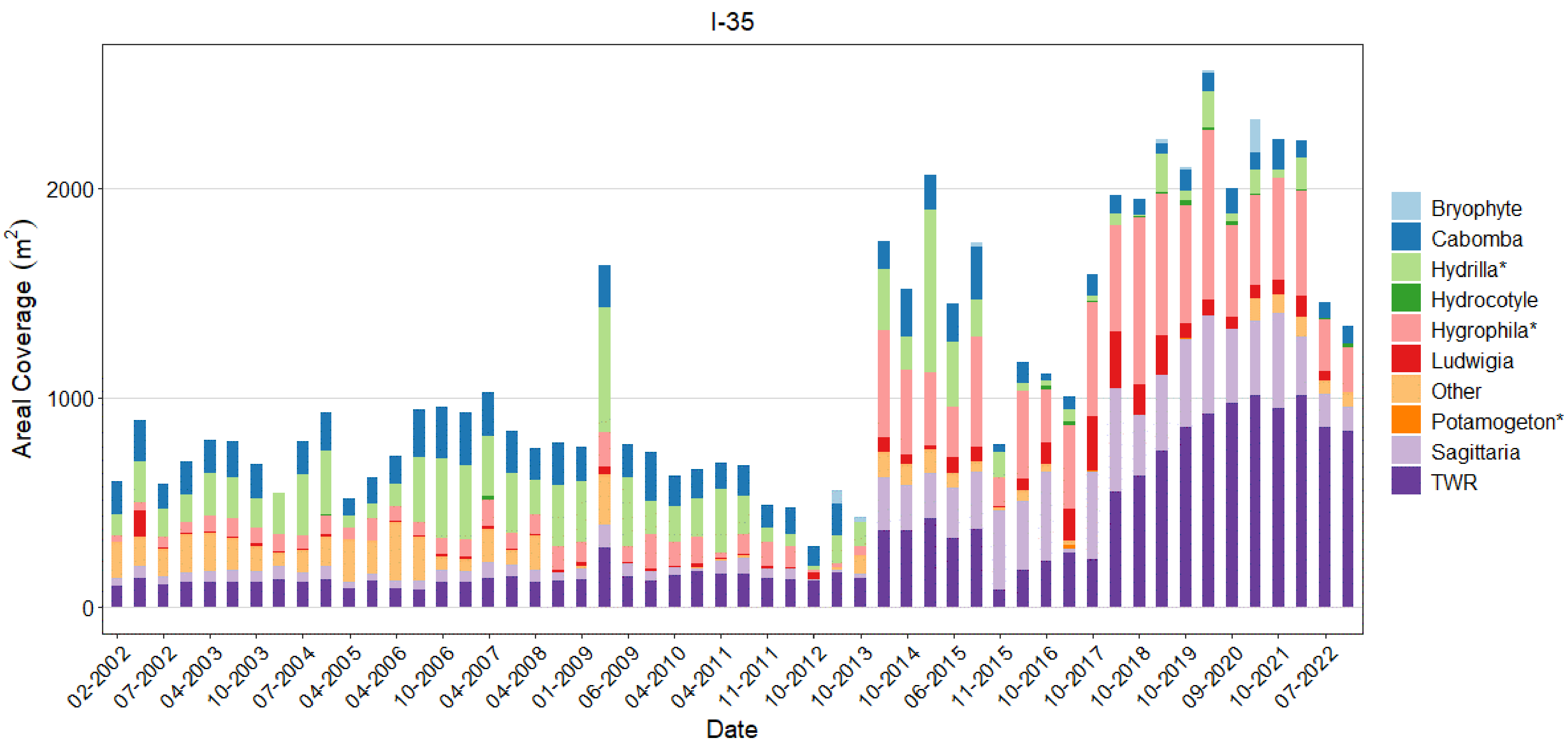

Figure E3. **Aquatic vegetation composition (m^2) among select taxa from 2003–2022 at I-35.**

Fountain Darter

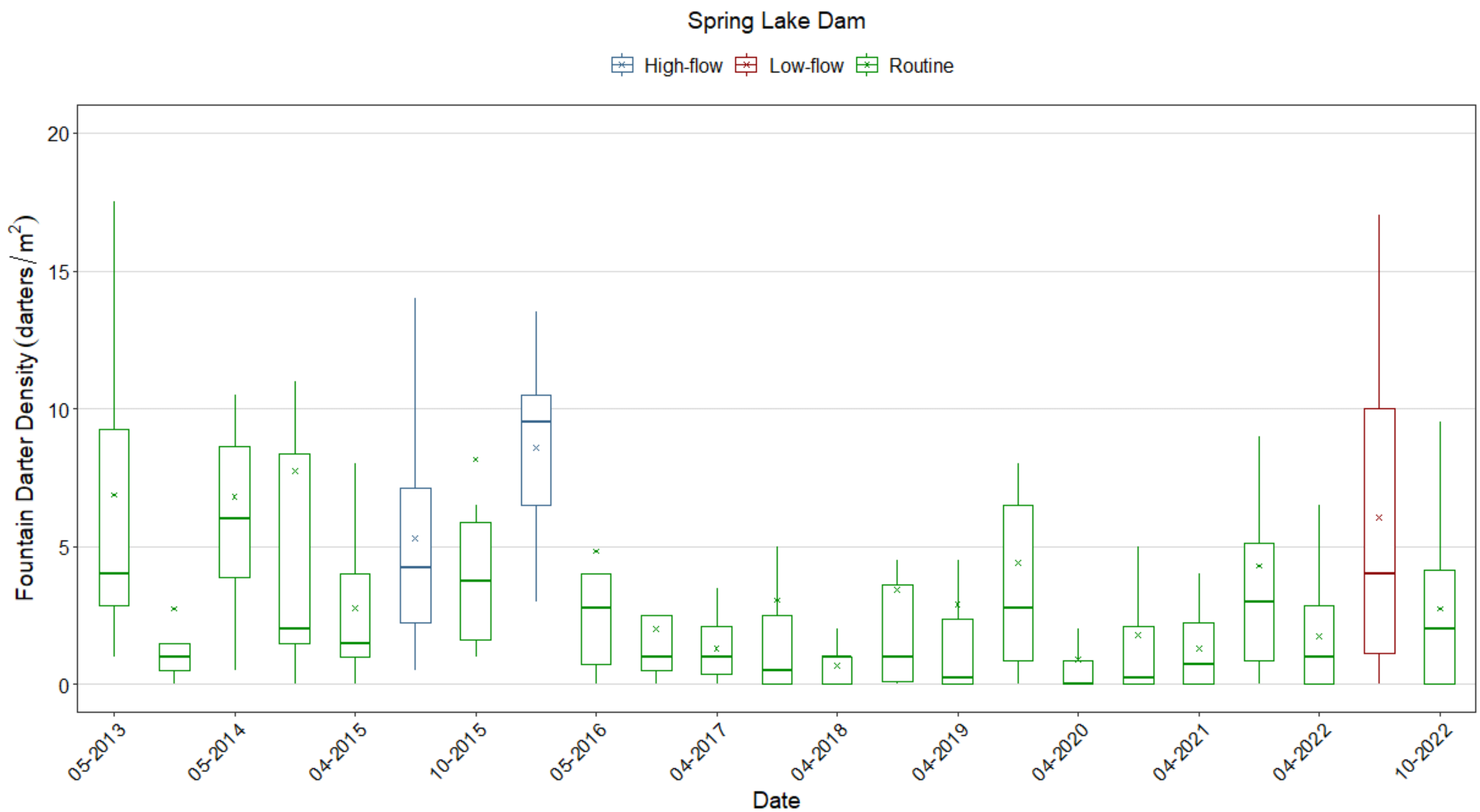

Figure E4. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) from 2013–2022 during drop-net sampling at Spring Lake Dam. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

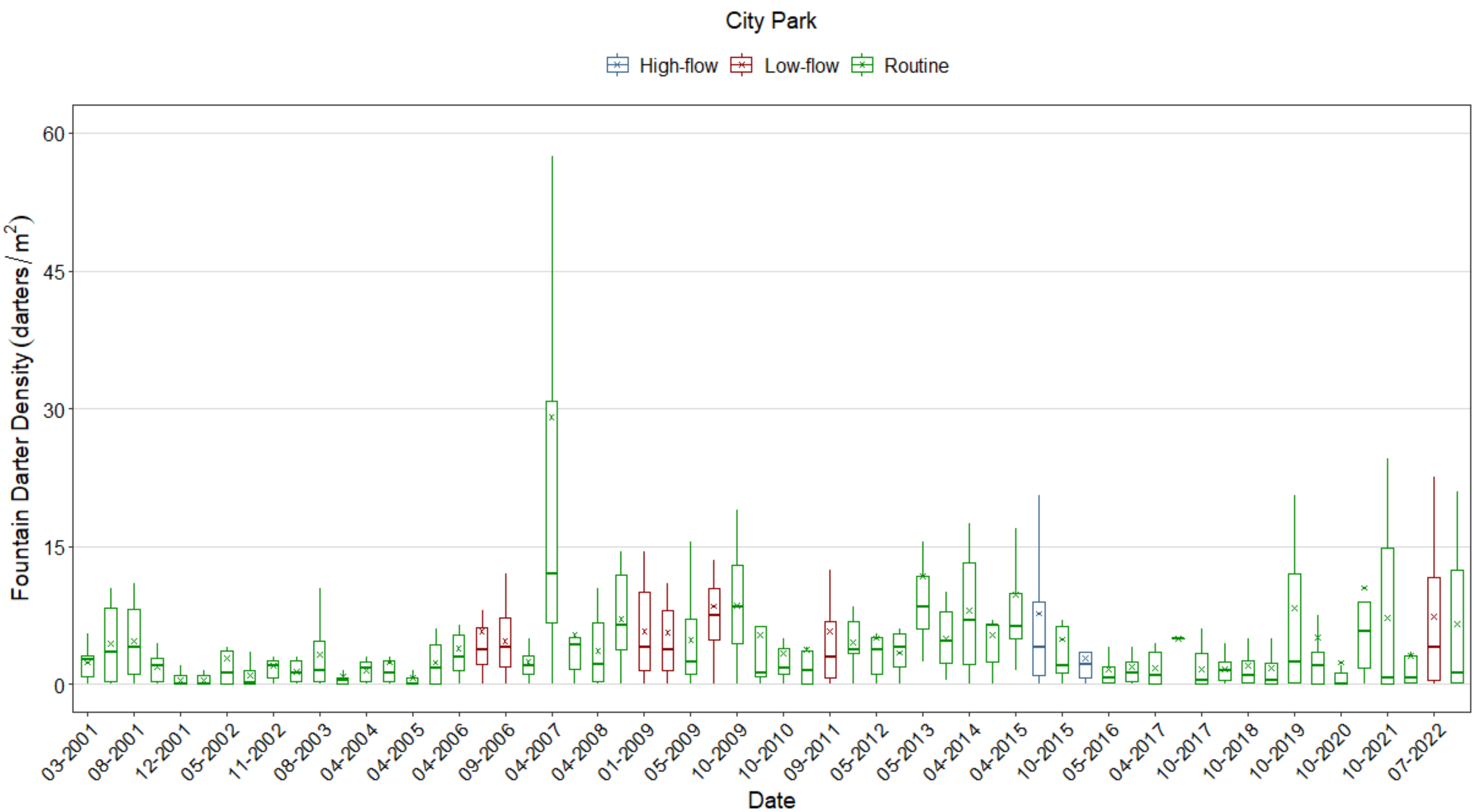

Figure E5. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) from 2001–2022 during drop-net sampling at City Park. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

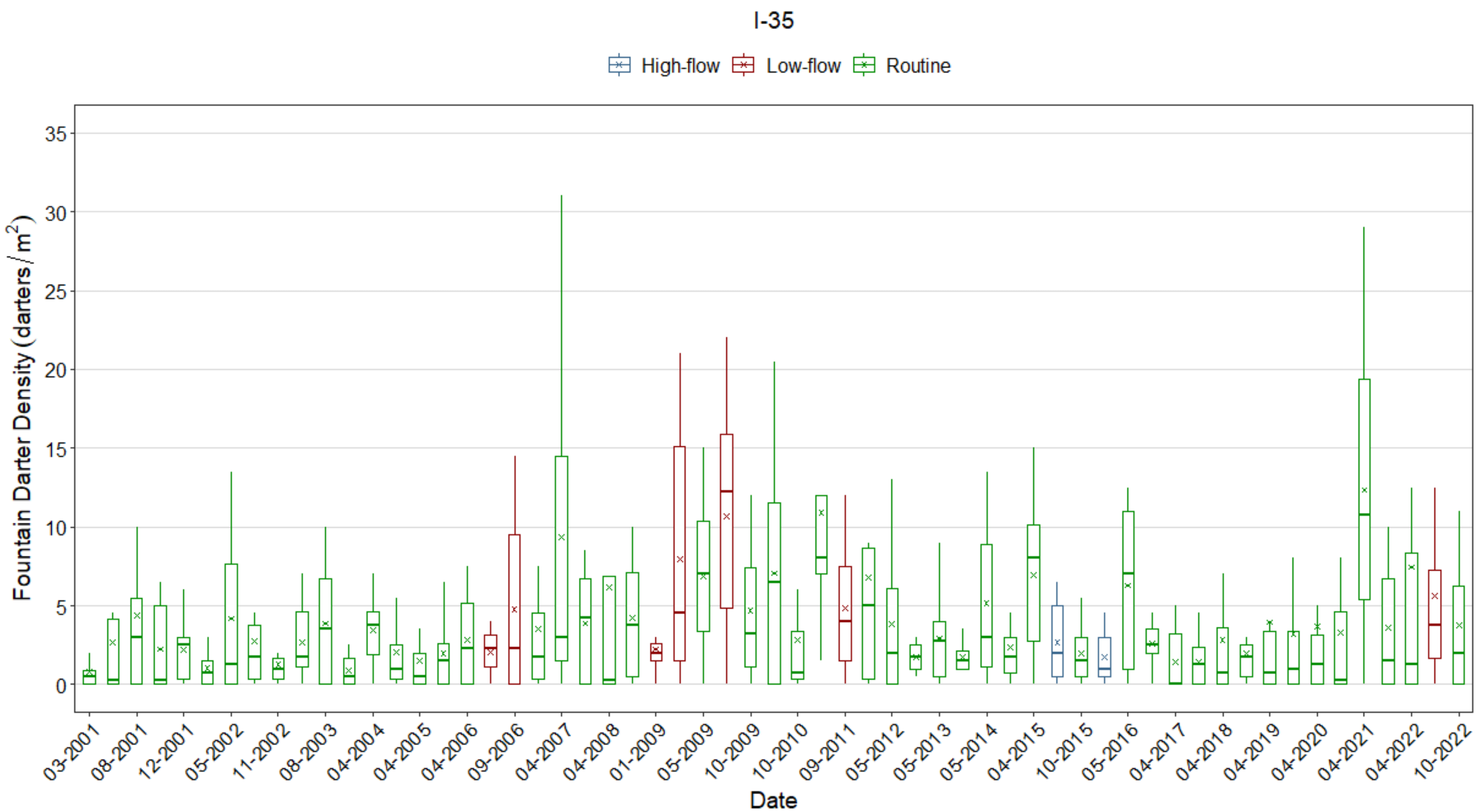

Figure E6. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) from 2001–2022 during drop-net sampling at I-35. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

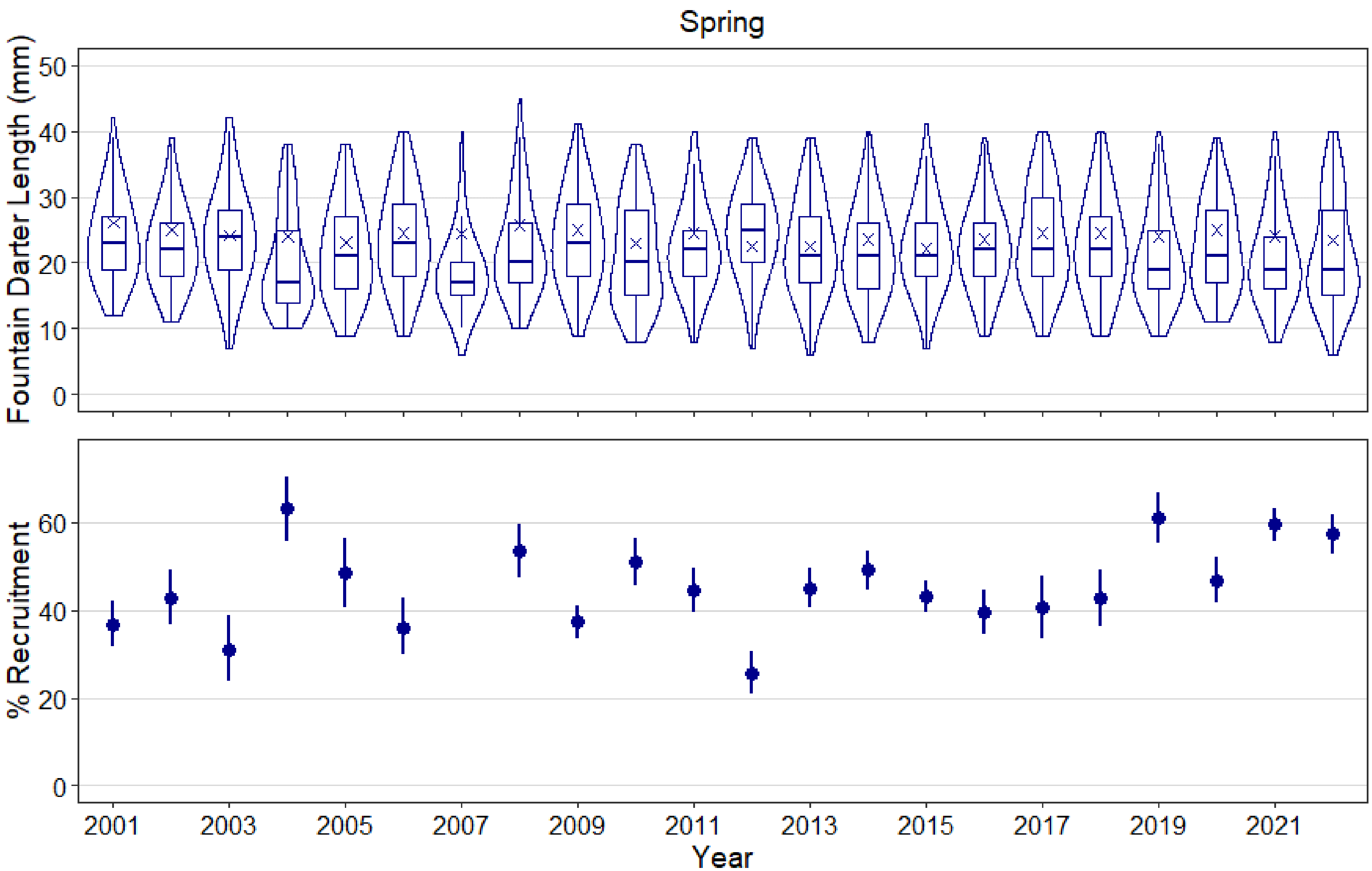

Figure E7. **Fountain Darter size structure (mm; top row) and percent recruitment (bottom row) in the San Marcos Springs and River during spring sampling (i.e., drop-net and timed dip-net data) events from 2001–2022. Size structure is displayed with boxplots (median, quartiles, range) and violin plots (probability density; polygons outlining boxplots). The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. Recruitment is the percent relative abundance (± 95% CI) of darters ≤20 mm.**

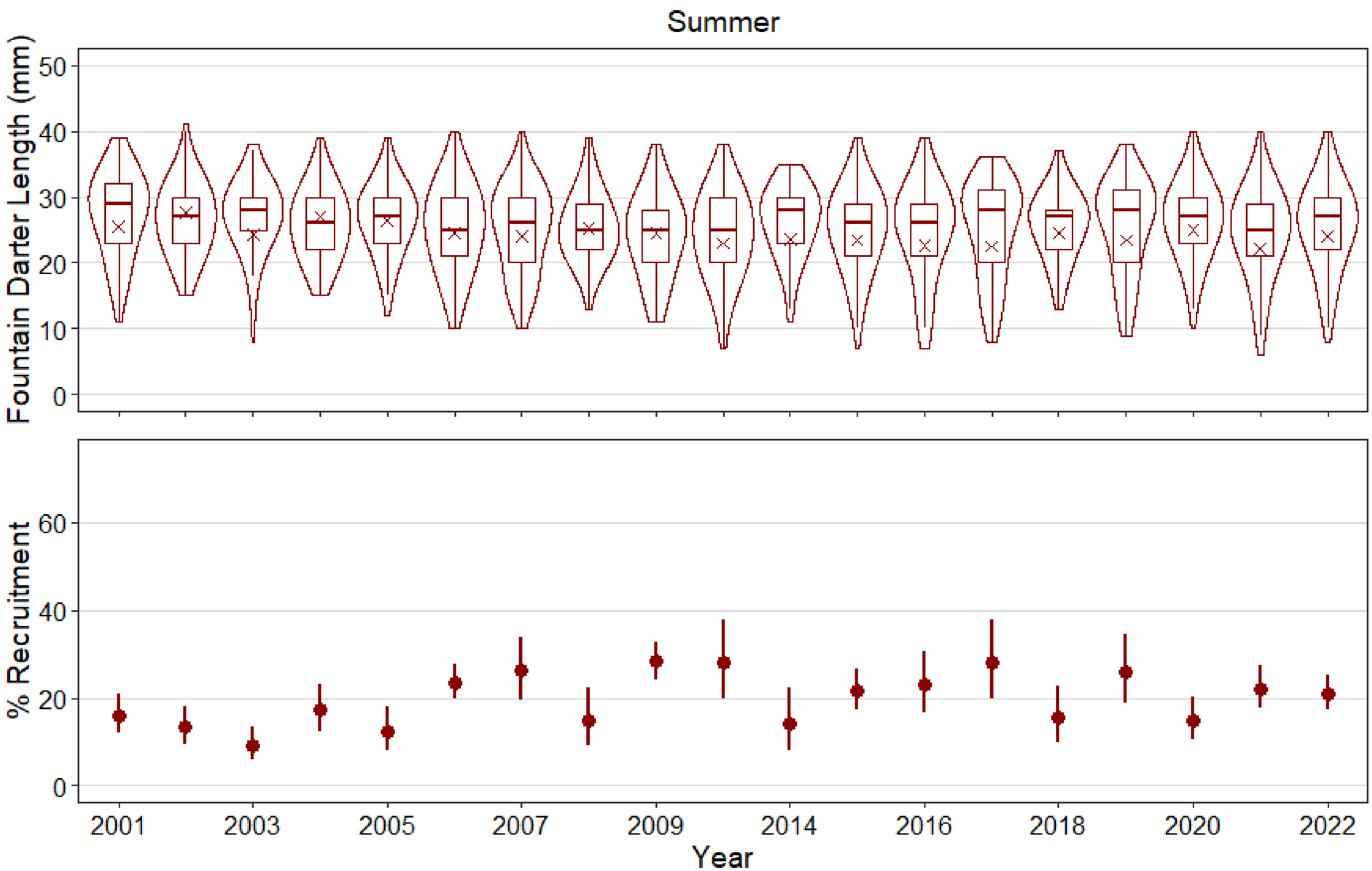

Figure E8. **Fountain Darter size structure (mm; top row) and percent recruitment (bottom row) in the San Marcos Springs and River during summer sampling (i.e., drop-net and timed dip-net data) events from 2001–2022. Size structure is displayed with boxplots (median, quartiles, range) and violin plots (probability density; polygons outlining boxplots). The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. Recruitment is the percent relative abundance (± 95% CI) of darters ≤20 mm.**

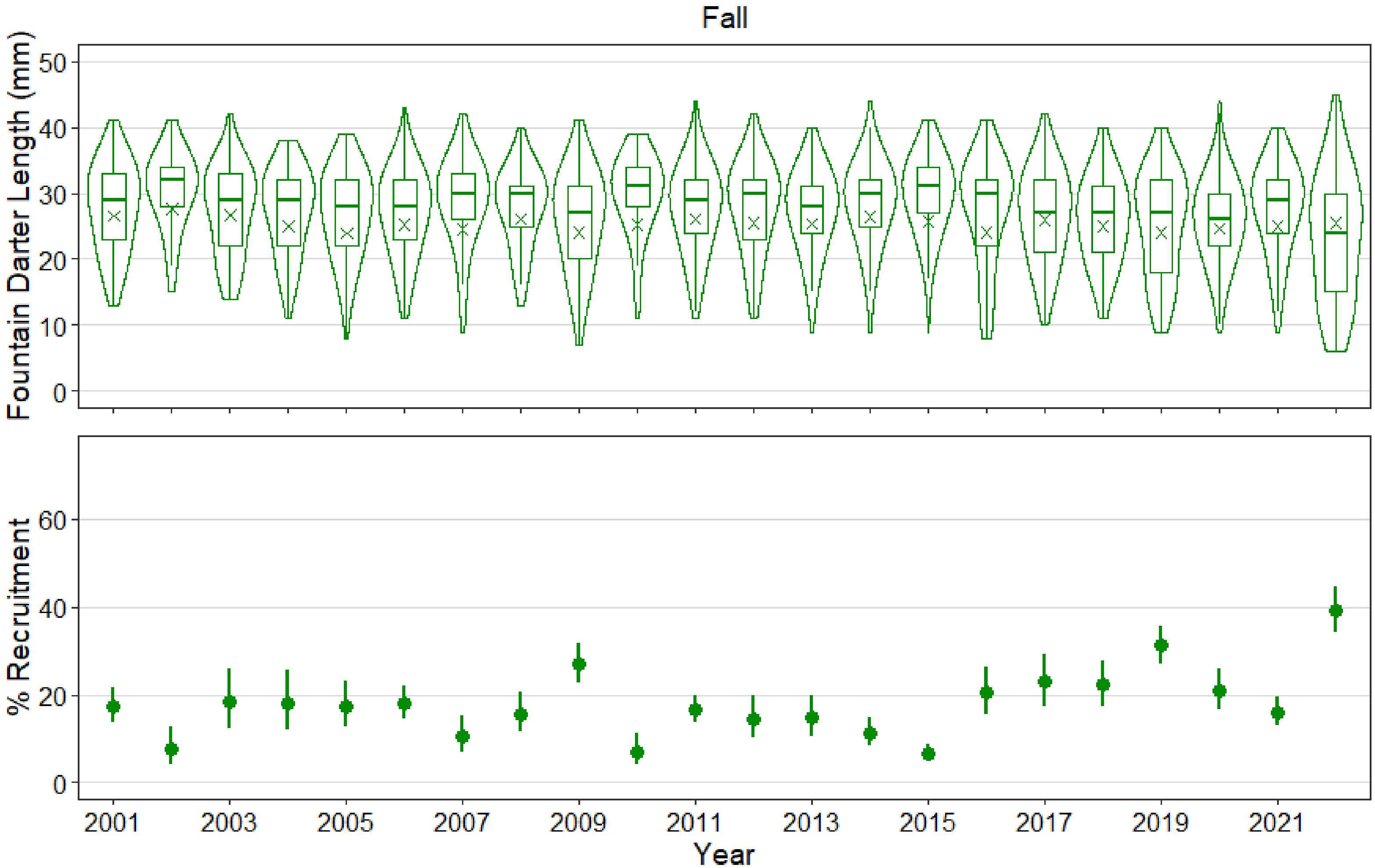

Figure E9. **Fountain Darter size structure (mm; top row) and percent recruitment (bottom row) in the San Marcos Springs and River during fall sampling (i.e., drop-net and timed dip-net data) events from 2001–2022. Size structure is displayed with boxplots (median, quartiles, range) and violin plots (probability density; polygons outlining boxplots). The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range. Recruitment is the percent relative abundance (± 95% CI) of darters ≤20 mm.**

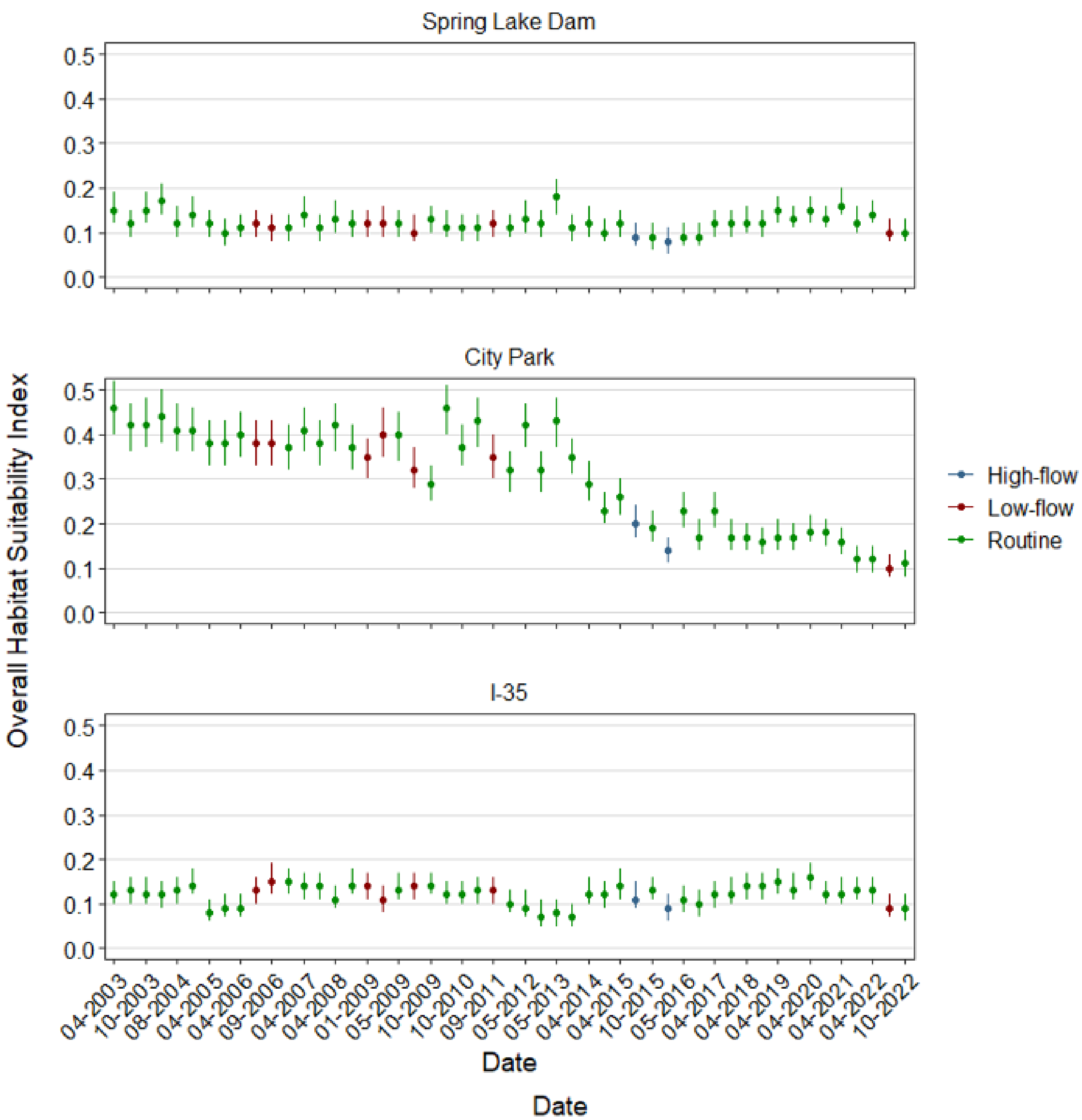

Figure E10. Overall Habitat Suitability Index (OHSI) (±95% CI) from 2003–2022 among study reaches in the San Marcos River.

Fish Community

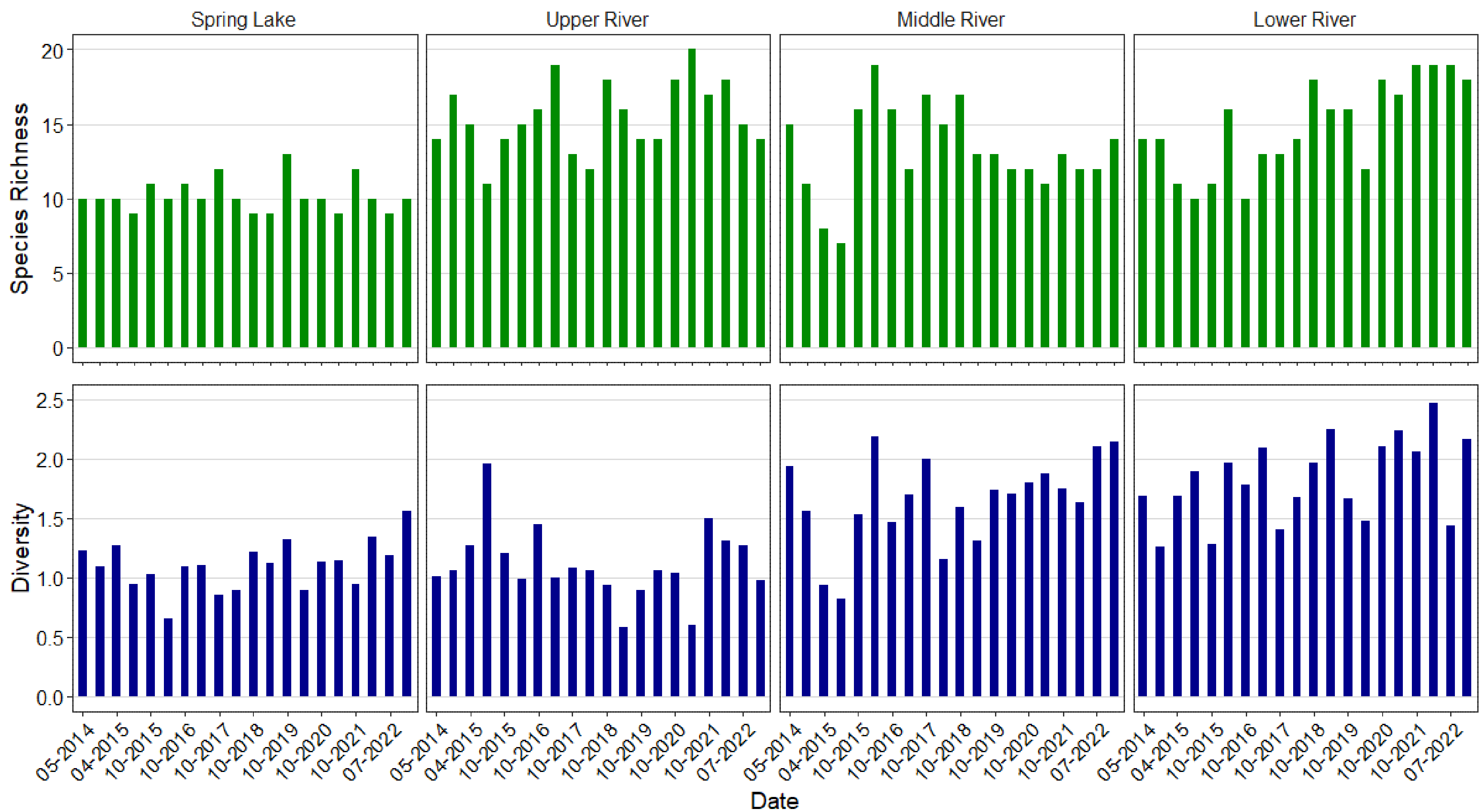

Figure E11. **Bar graphs displaying temporal trends in species richness and diversity among study reaches from 2014–2022 during fish community sampling in the San Marcos Springs/River.**

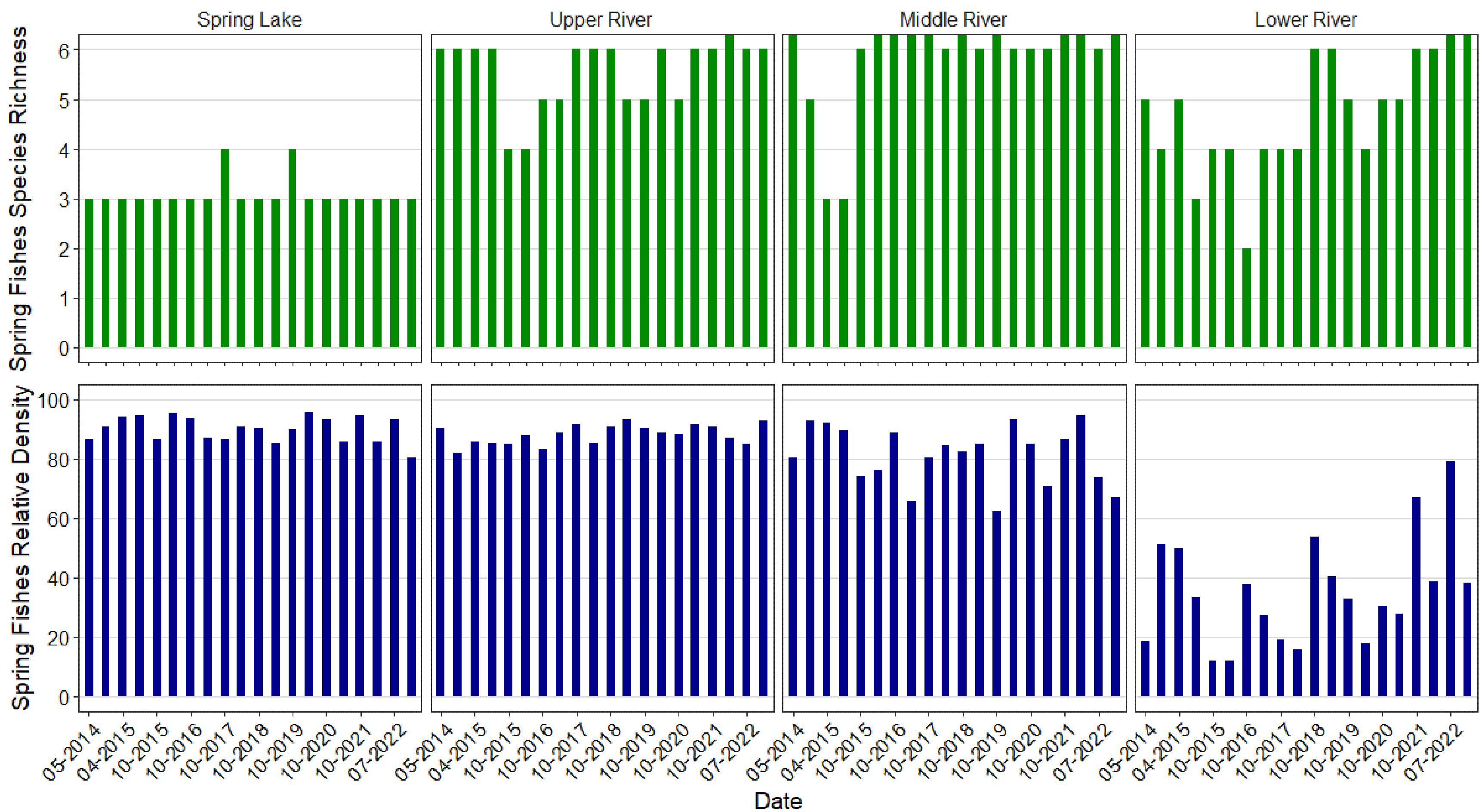

Figure E12. **Bar graphs displaying temporal trends in spring fishes species richness and percent relative density among study reaches from 2014–2022 during fish community sampling in the San Marcos Springs/River.**

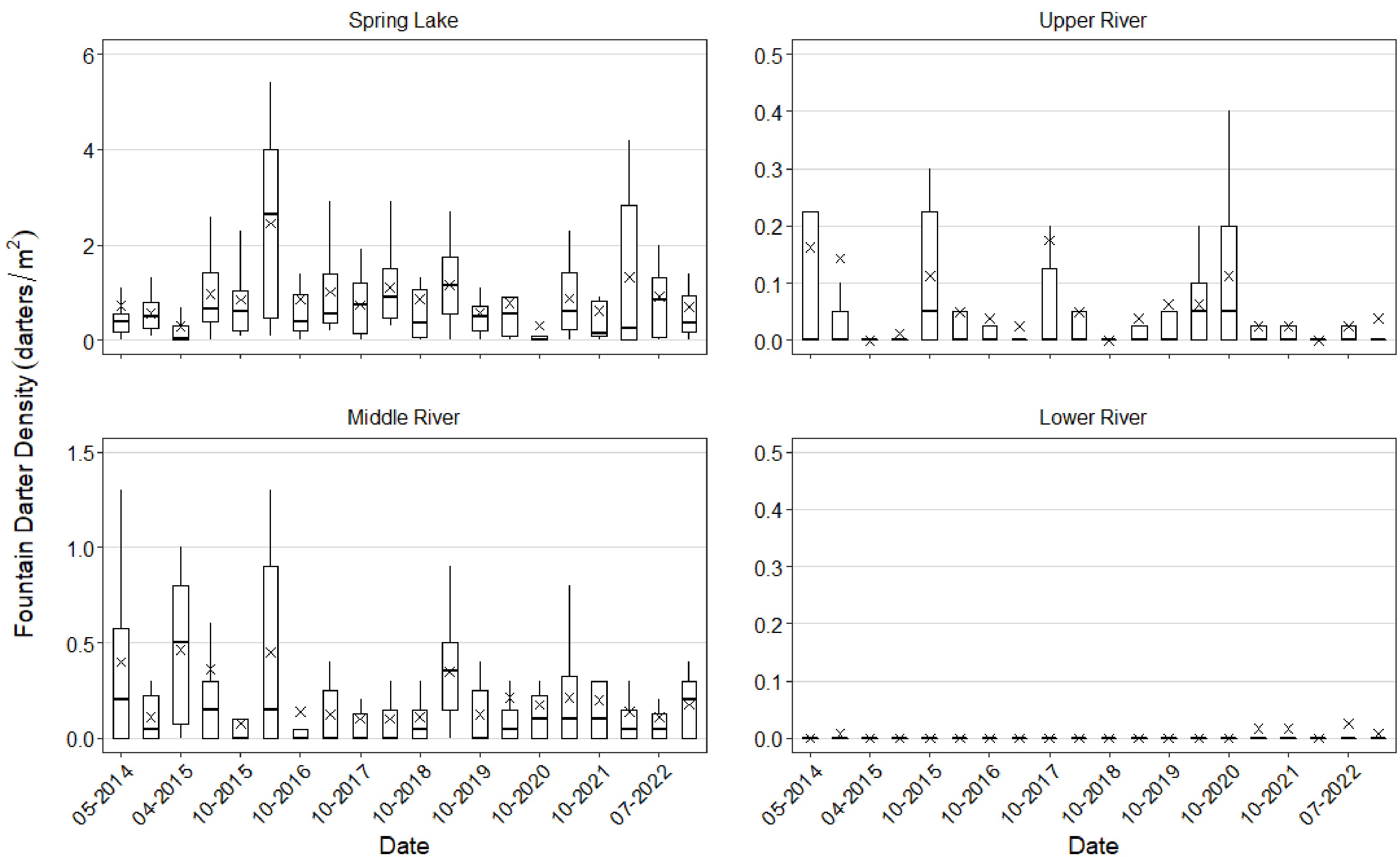

Figure E13. **Boxplots displaying temporal trends in Fountain Darter density (darters/m²) among study reaches from 2014–2022 during fish community microhabitat sampling in the San Marcos Springs/River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

San Marcos Salamander

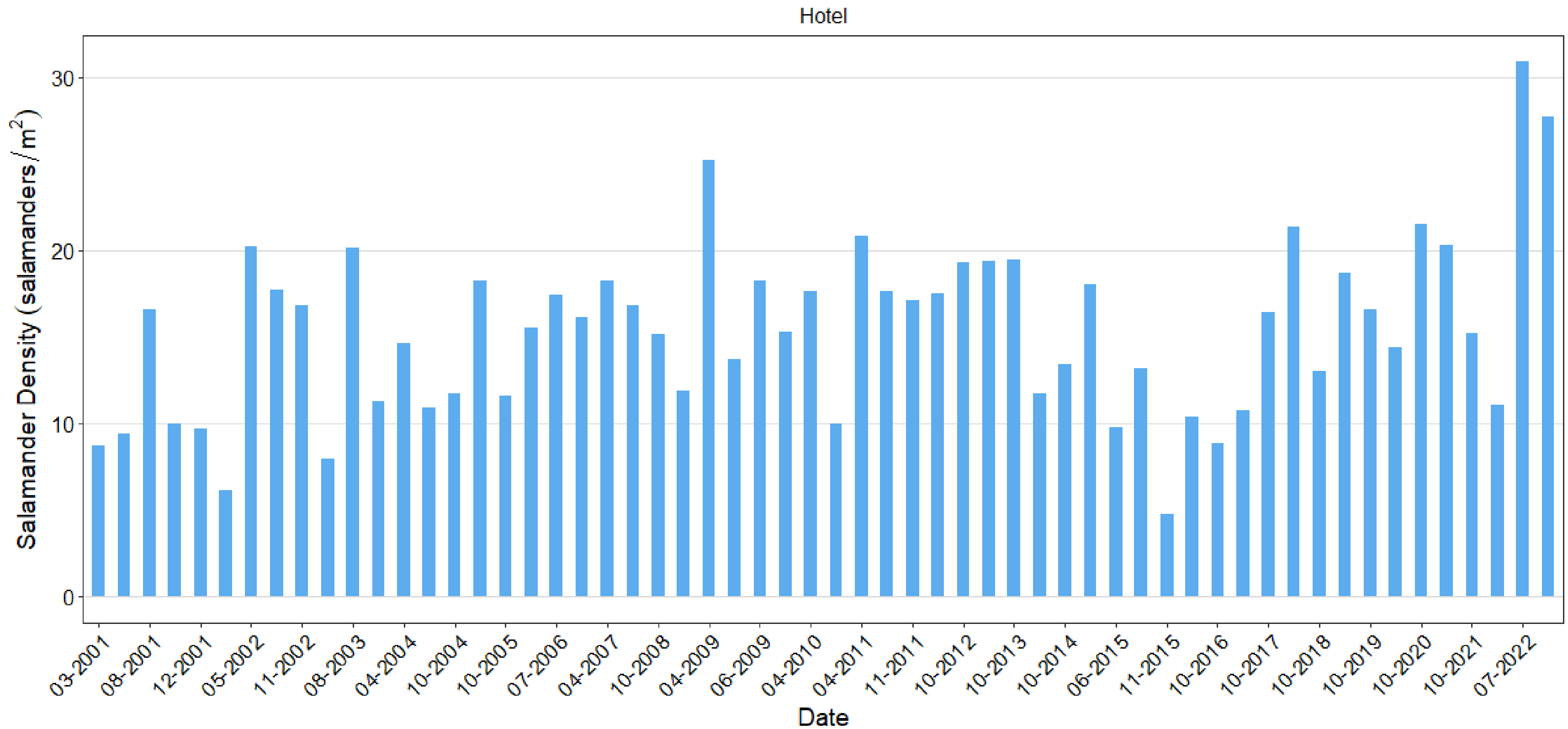

Figure E14. **San Marcos Salamander density from 2001–2022 at the Hotel Site.**

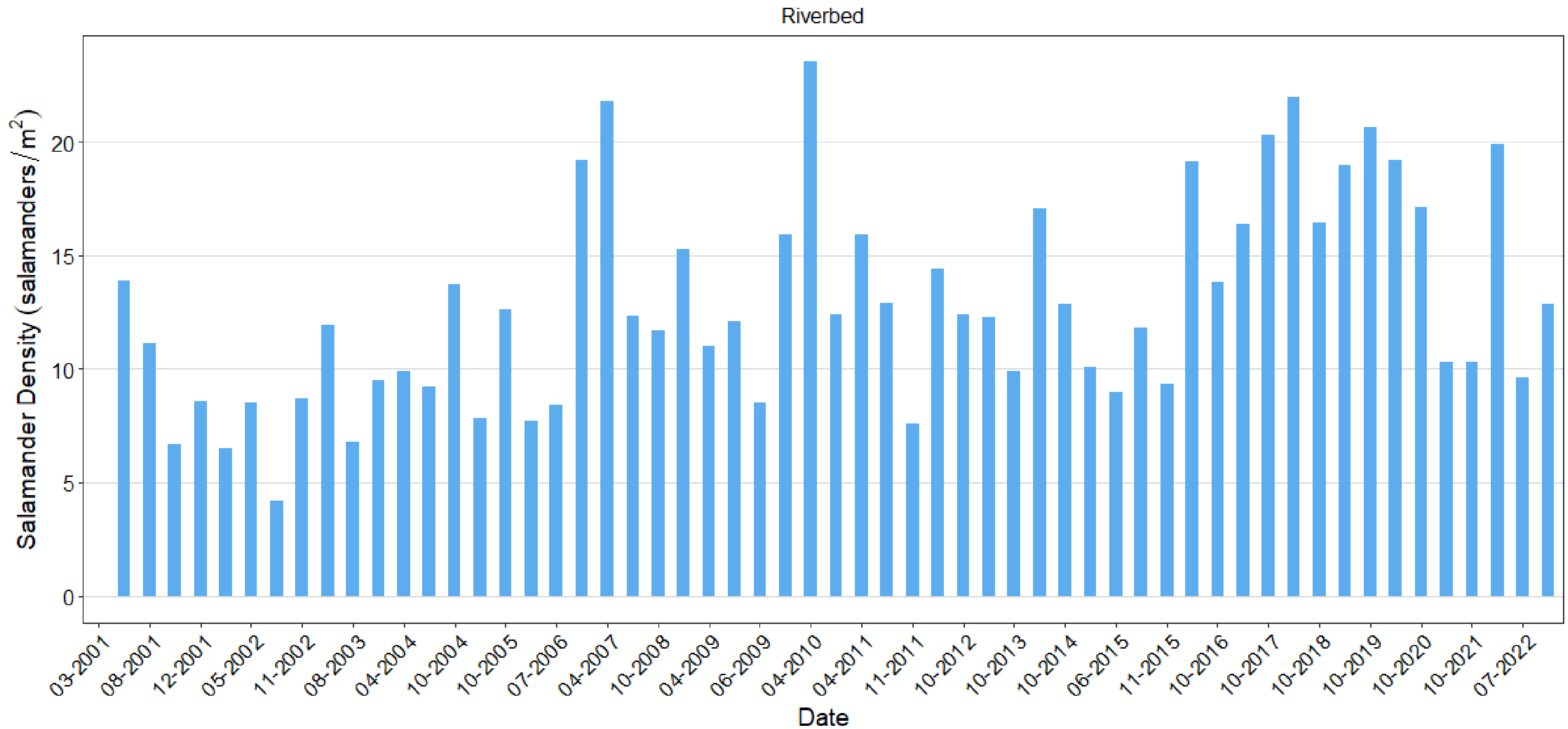

Figure E15. San Marcos Salamander density from 2001–2022 at the Riverbed Site.

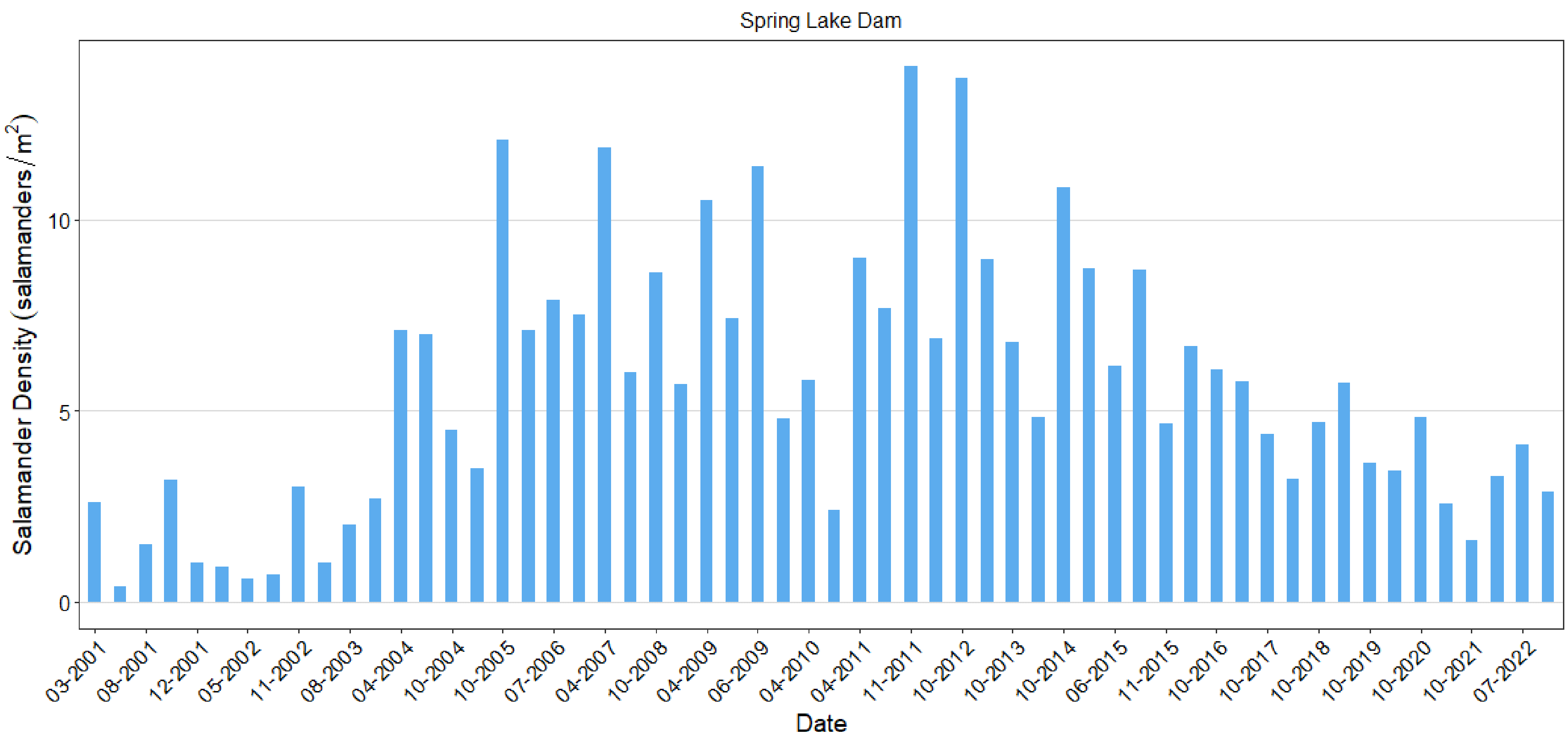

Figure E16. San Marcos Salamander density from 2001–2022 at the Spring Lake Dam Site.

APPENDIX F: MACROINVERTEBRATE RAW DATA

Site	Date	Class	Order	Family	FinalID	Counts
City Park	2022-05-18	Gastropoda	Neotaenioglossa	Thiaridae	Tarebia	4
City Park	2022-05-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	7
City Park	2022-05-18	Malacostraca	Amphipoda	Talitridae	Hyalella	51
City Park	2022-05-18	Malacostraca	Decapoda	Cambaridae	Cambaridae	1
City Park	2022-05-18	Insecta	Ephemeroptera	Baetidae	Fallceon	14
City Park	2022-05-18	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	8
City Park	2022-05-18	Insecta	Trichoptera	Glossosomatidae	Protoptila	6
City Park	2022-05-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	15
City Park	2022-05-18	Clitellata	Rhynchobdellida	Glossiphoniidae	Desserobdella	1
City Park	2022-05-18	Insecta	Diptera	Chironomidae	Thieaemanniella	1
City Park	2022-05-18	Clitellata	Oligochaeta		Oligochaeta	15
City Park	2022-05-18	Insecta	Hemiptera	Naucoridae	Limnocoris	3
City Park	2022-05-18	Turbellaria	Tricladida	Planarridae	Planarridae	8
City Park	2022-05-18	Insecta	Ephemeroptera	Baetidae	Baetis	10
City Park	2022-05-18	Insecta	Trichoptera	Leptoceridae	Nectopsyche	10
City Park	2022-10-18	Gastropoda	Neotaenioglossa	Thiaridae	Melanoides	38
City Park	2022-10-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	18
City Park	2022-10-18	Malacostraca	Amphipoda	Talitridae	Hyalella	43
City Park	2022-10-18	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	6
City Park	2022-10-18	Insecta	Coleoptera	Psephenidae	Psephenus	1
City Park	2022-10-18	Turbellaria	Tricladida	Dugesiidae	Dugesia	5
City Park	2022-10-18	Clitellata	Hirudinea	Glossosiphonidae	Hirudinea	1
City Park	2022-10-18	Insecta	Trichoptera	Leptoceridae	Oecetis	1
City Park	2022-10-18	Insecta	Trichoptera	Leptoceridae	Nectopsyche	8
City Park	2022-10-18	Insecta	Diptera	Chironomidae	Chironomidae	1
City Park	2022-10-18	Insecta	Ephemeroptera	Baetidae	Baetis	4
City Park	2022-10-18	Insecta	Ephemeroptera	Caenidae	Caenis	20
City Park	2022-10-18	Insecta	Diptera	Simuliidae	Simulium	1
I-35	2022-05-18	Malacostraca	Amphipoda	Talitridae	Hyalella	6

I-35	2022-05-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	4
I-35	2022-05-18	Gastropoda	Neotaenioglossa	Hydrobiidae	Hydrobiidae	1
I-35	2022-05-18	Gastropoda	Neotaenioglossa	Thiaridae	Tarebia	2
I-35	2022-05-18	Insecta	Trichoptera	Leptoceridae	Nectopsyche	9
I-35	2022-05-18	Insecta	Odonata	Gomphidae	Gomphidae	1
I-35	2022-05-18	Insecta	Hemiptera	Naucoridae	Limnocoris	12
I-35	2022-05-18	Insecta	Hemiptera	Naucoridae	Ambrysus	2
I-35	2022-05-18	Insecta	Odonata	Libellulidae	Brechmorhoga	1
I-35	2022-05-18	Insecta	Trichoptera	Philopotamidae	Chimarra	1
I-35	2022-05-18	Insecta	Trichoptera	Hydroptilidae	Hydroptila	1
I-35	2022-05-18	Insecta	Coleoptera	Gyrinidae	Dineutus	1
I-35	2022-05-18	Insecta	Ephemeroptera	Leptophlebiidae	Thraulodes	9
I-35	2022-05-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	29
I-35	2022-05-18	Insecta	Ephemeroptera	Leptohyphidae	Leptohyples	2
I-35	2022-05-18	Insecta	Trichoptera	Glossosomatidae	Protoptila	8
I-35	2022-05-18	Insecta	Lepidoptera		Lepidoptera	1
I-35	2022-05-18	Insecta	Diptera	Empididae	Hemerodromia	1
I-35	2022-05-18	Insecta	Trichoptera	Leptoceridae	Oecetis	1
I-35	2022-05-18	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	4
I-35	2022-05-18	Insecta	Diptera	Chironomidae	Rheotanytarsus	5
I-35	2022-05-18	Insecta	Diptera	Chironomidae	Thieaemanniella	1
I-35	2022-05-18	Clitellata	Oligochaeta		Oligochaeta	2
I-35	2022-05-18	Clitellata	Rhynchobdellida	Glossiphoniidae	Desserobdella	3
I-35	2022-05-18	Insecta	Coleoptera	Elmidae	Microcylloepus	17
I-35	2022-05-18	Turbellaria	Tricladida	Planarridae	Planarridae	13
I-35	2022-05-18	Insecta	Ephemeroptera	Baetidae	Fallceon	3
I-35	2022-05-18	Insecta	Ephemeroptera	Baetidae	Baetis	6
I-35	2022-10-18	Insecta	Hemiptera	Naucoridae	Limnocoris	18
I-35	2022-10-18	Insecta	Hemiptera	Naucoridae	Ambrysus	2
I-35	2022-10-18	Insecta	Ephemeroptera	Isonychidae	Isonychia	1

I-35	2022-10-18	Insecta	Odonata	Libellulidae	Brechmorhoga	3
I-35	2022-10-18	Turbellaria	Tricladida	Dugesiidae	Dugesia	12
I-35	2022-10-18	Insecta	Diptera	Chironomidae	Chironomidae	4
I-35	2022-10-18	Insecta	Trichoptera	Leptoceridae	Nectopsyche	17
I-35	2022-10-18	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	14
I-35	2022-10-18	Gastropoda	Neotaenioglossa	Thiaridae	Melanoides	22
I-35	2022-10-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	15
I-35	2022-10-18	Insecta	Ephemeroptera	Leptophlebiidae	Thraulodes	44
I-35	2022-10-18	Insecta	Trichoptera	Glossosomatidae	Culoptila	16
I-35	2022-10-18	Insecta	Odonata	Coenagrionidae	Argia	1
I-35	2022-10-18	Insecta	Ephemeroptera	Caenidae	Caenis	3
I-35	2022-10-18	Insecta	Ephemeroptera	Baetidae	Baetis	1
I-35	2022-10-18	Clitellata	Oligochaeta		Oligochaeta	1
I-35	2022-10-18	Insecta	Diptera	Simuliidae	Simulium	1
I-35	2022-10-18	Malacostraca	Amphipoda	Talitridae	Hyalella	1
I-35	2022-10-18	Insecta	Trichoptera	Philopotamidae	Chimarra	2
I-35	2022-10-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	2
I-35	2022-10-18	Insecta	Coleoptera	Elimidae	Heacylloepus	1
Spring Lake	2022-05-18	Gastropoda	Basommatophora	Physidae	Physa	2
Spring Lake	2022-05-18	Malacostraca	Amphipoda	Talitridae	Hyalella	140
Spring Lake	2022-05-18	Insecta	Diptera	Ceratopogonidae	Bezzia complex	1
Spring Lake	2022-05-18	Insecta	Coleoptera	Psephenidae	Psephenus	2
Spring Lake	2022-05-18	Malacostraca	Decapoda	Palaemonidae	Palaemonetes	2
Spring Lake	2022-05-18	Insecta	Odonata	Coenagrionidae	Argia	1
Spring Lake	2022-05-18	Malacostraca	Decapoda	Cambaridae	Cambaridae	3
Spring Lake	2022-05-18	Clitellata	Rhynchobdellida	Glossiphoniidae	Desserobdella	1
Spring Lake	2022-05-18	Turbellaria	Tricladida	Planarridae	Planarridae	1
Spring Lake	2022-05-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	6
Spring Lake	2022-05-18	Clitellata	Oligochaeta		Oligochaeta	3
Spring Lake	2022-05-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	13

Spring Lake	2022-05-18	Insecta	Diptera	Chironomidae	Dicrotendipas	6
Spring Lake	2022-05-18	Insecta	Diptera	Chironomidae	Cricotopas/Orthocladias	1
Spring Lake	2022-05-18	Insecta	Diptera	Chironomidae	Pseudochironomas	1
Spring Lake	2022-05-18	Insecta	Ephemeroptera	Baetidae	Callibaetis	8
Spring Lake	2022-10-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	9
Spring Lake	2022-10-18	Gastropoda	Basommatophora	Physidae	Physa	3
Spring Lake	2022-10-18	Malacostraca	Amphipoda	Talitridae	Hyalella	188
Spring Lake	2022-10-18	Hexanauplia	Copopoda		Copepoda	13
Spring Lake	2022-10-18	Arachnida	Hydrachinida		Hydrachinida	5
Spring Lake	2022-10-18	Insecta	Ephemeroptera	Baetidae	Callibaetis	31
Spring Lake	2022-10-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	18
Spring Lake	2022-10-18	Insecta	Diptera	Chironomidae	Chironomidae	8
Spring Lake	2022-10-18	Insecta	Diptera	Ceratopogonidae	Bezzia complex	1
Spring Lake	2022-10-18	Clitellata	Hirudinea	Glossosiphonidae	Hirudinea	1
Spring Lake	2022-10-18	Turbellaria	Tricladida	Dugesiidae	Dugesia	1
Spring Lake	2022-10-18	Insecta	Odonata	Coenagrionidae	Enallagma	2
Spring Lake	2022-10-18	Malacostraca	Decapoda	Palaemonidae	Palaemonetes	7
Spring Lake	2022-10-18	Malacostraca	Decopoda	Cambaridae	Cambaridae	4
Spring Lake Dam	2022-05-18	Insecta	Megaloptera	Corydalidae	Corydalus	1
Spring Lake Dam	2022-05-18	Insecta	Odonata	Libellulidae	Brechmorhoga	5
Spring Lake Dam	2022-05-18	Malacostraca	Amphipoda	Talitridae	Hyalella	50
Spring Lake Dam	2022-05-18	Insecta	Hemiptera	Naucoridae	Ambrysus	17
Spring Lake Dam	2022-05-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	3
Spring Lake Dam	2022-05-18	Gastropoda	Neotaenioglossa	Thiaridae	Tarebia	2
Spring Lake Dam	2022-05-18	Insecta	Trichoptera	Philopotamidae	Chimarra	14
Spring Lake Dam	2022-05-18	Insecta	Trichoptera	Hydropsychidae	Smicridea	2
Spring Lake Dam	2022-05-18	Insecta	Ephemeroptera	Baetidae	Fallceon	15
Spring Lake Dam	2022-05-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	6
Spring Lake Dam	2022-05-18	Insecta	Ephemeroptera	Leptohyphidae	Leptohyples	20
Spring Lake Dam	2022-05-18	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	7

Spring Lake Dam	2022-05-18	Insecta	Odonata	Coenagrionidae	Argia	1
Spring Lake Dam	2022-05-18	Insecta	Lepidoptera		Lepidoptera	1
Spring Lake Dam	2022-05-18	Insecta	Coleoptera	Psephenidae	Psephenus	1
Spring Lake Dam	2022-05-18	Insecta	Diptera	Chironomidae	Polypedilam	3
Spring Lake Dam	2022-05-18	Insecta	Diptera	Chironomidae	Rheocricotopus	8
Spring Lake Dam	2022-05-18	Insecta	Diptera	Chironomidae	Thieaemanniella	1
Spring Lake Dam	2022-05-18	Insecta	Ephemeroptera	Baetidae	Baetis	1
Spring Lake Dam	2022-05-18	Insecta	Diptera	Simuliidae	Simuliidae	9
Spring Lake Dam	2022-05-18	Clitellata	Oligochaeta		Oligochaeta	5
Spring Lake Dam	2022-05-18	Turbellaria	Tricladida	Planarridae	Planarridae	14
Spring Lake Dam	2022-05-18	Insecta	Ephemeroptera	Leptohyphidae	Allenhyphes	2
Spring Lake Dam	2022-05-18	Insecta	Coleoptera	Elimidae	Macrelmis	5
Spring Lake Dam	2022-05-18	Insecta	Coleoptera	Elmidae	Phanacerus	1
Spring Lake Dam	2022-05-18	Insecta	Coleoptera	Elimidae	Neoelmis	2
Spring Lake Dam	2022-10-18	Insecta	Trichoptera	Philopotamidae	Chimarra	47
Spring Lake Dam	2022-10-18	Insecta	Hemiptera	Naucoridae	Ambrysus	7
Spring Lake Dam	2022-10-18	Insecta	Ephemeroptera	Baetidae	Baetodes	20
Spring Lake Dam	2022-10-18	Gastropoda	Neotaenioglossa	Thiaridae	Melanoides	4
Spring Lake Dam	2022-10-18	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	3
Spring Lake Dam	2022-10-18	Gastropoda	Neotaenioglossa	Hydrobiidae	Hydrobiidae	1
Spring Lake Dam	2022-10-18	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	1
Spring Lake Dam	2022-10-18	Insecta	Odonata	Libellulidae	Brechmorhoga	1
Spring Lake Dam	2022-10-18	Insecta	Odonata	Libellulidae	Erythemis	1
Spring Lake Dam	2022-10-18	Turbellaria	Tricladida	Dugesiidae	Dugesia	20
Spring Lake Dam	2022-10-18	Clitellata	Oligochaeta		Oligochaeta	8
Spring Lake Dam	2022-10-18	Insecta	Lepidoptera	Crambidae	Petrophila	1
Spring Lake Dam	2022-10-18	Gastropoda	Basommatophora	Planorbidae	Ferrissia sp.	1
Spring Lake Dam	2022-10-18	Insecta	Trichoptera	Hydropsychidae	Potamyia	20
Spring Lake Dam	2022-10-18	Malacostraca	Amphipoda	Talitridae	Hyalella	8
Spring Lake Dam	2022-10-18	Insecta	Diptera	Chironomidae	Chironomidae	7

Spring Lake Dam	2022-10-18	Insecta	Diptera	Simuliidae	Simulium	17
Spring Lake Dam	2022-10-18	Insecta	Ephemeroptera	Baetidae	Baetis	10
Spring Lake Dam	2022-10-18	Insecta	Ephemeroptera	Baetidae	Callibaetis	2
Spring Lake Dam	2022-10-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	6
Spring Lake Dam	2022-10-18	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes	13
Spring Lake Dam	2022-10-18	Insecta	Coleoptera	Elimidae	Heterelmis	4

APPENDIX G: DROP-NET RAW DATA

SiteCode	Reach	Site_No	Date	Dip_Net	Species	Length	Count
2749	City Park	Hydr-1	2022-04-26	1	Procambarus sp.		5
2749	City Park	Hydr-1	2022-04-26	1	Palaemonetes sp.		1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	35	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	19	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	18	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	30	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	20	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	21	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	18	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	20	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	16	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	24	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	20	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	23	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	18	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	16	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	20	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	20	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	15	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	21	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	19	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	21	1
2749	City Park	Hydr-1	2022-04-26	1	Gambusia sp.	20	1
2749	City Park	Hydr-1	2022-04-26	2	Gambusia sp.	26	1
2749	City Park	Hydr-1	2022-04-26	2	Etheostoma fonticola	34	1
2749	City Park	Hydr-1	2022-04-26	2	Procambarus sp.		1
2749	City Park	Hydr-1	2022-04-26	3	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	3	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	4	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	4	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	4	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	4	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	4	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	5	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	5	Procambarus sp.		2
2749	City Park	Hydr-1	2022-04-26	6	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	6	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	6	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	6	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	7	Gambusia sp.		1

2749	City Park	Hydr-1	2022-04-26	7	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	7	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	7	Procambarus sp.		2
2749	City Park	Hydr-1	2022-04-26	8	Procambarus sp.		1
2749	City Park	Hydr-1	2022-04-26	8	No fish collected		
2749	City Park	Hydr-1	2022-04-26	9	Procambarus sp.		2
2749	City Park	Hydr-1	2022-04-26	9	Etheostoma fonticola	37	1
2749	City Park	Hydr-1	2022-04-26	9	Etheostoma fonticola	16	1
2749	City Park	Hydr-1	2022-04-26	9	Etheostoma fonticola	21	1
2749	City Park	Hydr-1	2022-04-26	9	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	10	Procambarus sp.		2
2749	City Park	Hydr-1	2022-04-26	10	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	10	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	10	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	10	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	11	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	12	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	12	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	12	Procambarus sp.		1
2749	City Park	Hydr-1	2022-04-26	13	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	14	No fish collected		
2749	City Park	Hydr-1	2022-04-26	15	Procambarus sp.		1
2749	City Park	Hydr-1	2022-04-26	15	Gambusia sp.		1
2749	City Park	Hydr-1	2022-04-26	15	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	15	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	20	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	21	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	21	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	29	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	15	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	20	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	22	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	12	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	20	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	35	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	12	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	35	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	27	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	16	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	25	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	26	1

2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	21	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	16	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	18	1
2750	City Park	Hydr-2	2022-04-26	1	Gambusia sp.	15	1
2750	City Park	Hydr-2	2022-04-26	1	Etheostoma fonticola	32	1
2750	City Park	Hydr-2	2022-04-26	1	Procambarus sp.		3
2750	City Park	Hydr-2	2022-04-26	2	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	2	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	2	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	2	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	3	Procambarus sp.		1
2750	City Park	Hydr-2	2022-04-26	3	No fish collected		
2750	City Park	Hydr-2	2022-04-26	4	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	4	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	5	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	5	Procambarus sp.		1
2750	City Park	Hydr-2	2022-04-26	6	Procambarus sp.		1
2750	City Park	Hydr-2	2022-04-26	6	Etheostoma fonticola	34	1
2750	City Park	Hydr-2	2022-04-26	6	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	7	No fish collected		
2750	City Park	Hydr-2	2022-04-26	8	Procambarus sp.		1
2750	City Park	Hydr-2	2022-04-26	8	No fish collected		
2750	City Park	Hydr-2	2022-04-26	9	Procambarus sp.		1
2750	City Park	Hydr-2	2022-04-26	9	No fish collected		
2750	City Park	Hydr-2	2022-04-26	10	Gambusia sp.		1
2750	City Park	Hydr-2	2022-04-26	11	No fish collected		
2750	City Park	Hydr-2	2022-04-26	12	Procambarus sp.		2
2750	City Park	Hydr-2	2022-04-26	12	No fish collected		
2750	City Park	Hydr-2	2022-04-26	13	No fish collected		
2750	City Park	Hydr-2	2022-04-26	14	No fish collected		
2750	City Park	Hydr-2	2022-04-26	15	No fish collected		
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	30	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	15	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	21	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	13	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	18	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	15	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	12	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	18	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	13	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	10	1

2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	15	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	20	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	10	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	8	1
2751	City Park	Cabo-1	2022-04-26	1	Gambusia sp.	16	1
2751	City Park	Cabo-1	2022-04-26	1	Lepomis sp.	15	1
2751	City Park	Cabo-1	2022-04-26	1	Etheostoma fonticola	15	1
2751	City Park	Cabo-1	2022-04-26	1	Etheostoma fonticola	11	1
2751	City Park	Cabo-1	2022-04-26	2	Lepomis miniatus	102	1
2751	City Park	Cabo-1	2022-04-26	2	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	2	Gambusia sp.	20	1
2751	City Park	Cabo-1	2022-04-26	2	Gambusia sp.	21	1
2751	City Park	Cabo-1	2022-04-26	2	Gambusia sp.	17	1
2751	City Park	Cabo-1	2022-04-26	2	Gambusia sp.	20	1
2751	City Park	Cabo-1	2022-04-26	2	Gambusia sp.	14	1
2751	City Park	Cabo-1	2022-04-26	2	Etheostoma fonticola	25	1
2751	City Park	Cabo-1	2022-04-26	2	Etheostoma fonticola	20	1
2751	City Park	Cabo-1	2022-04-26	2	Etheostoma fonticola	18	1
2751	City Park	Cabo-1	2022-04-26	2	Etheostoma fonticola	16	1
2751	City Park	Cabo-1	2022-04-26	2	Lepomis sp.	15	1
2751	City Park	Cabo-1	2022-04-26	2	Lepomis sp.	11	1
2751	City Park	Cabo-1	2022-04-26	2	Lepomis sp.	11	1
2751	City Park	Cabo-1	2022-04-26	3	Palaemonetes sp.		1
2751	City Park	Cabo-1	2022-04-26	3	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	3	Etheostoma fonticola	18	1
2751	City Park	Cabo-1	2022-04-26	4	Procambarus sp.		3
2751	City Park	Cabo-1	2022-04-26	4	Etheostoma fonticola	31	1
2751	City Park	Cabo-1	2022-04-26	4	Etheostoma fonticola	17	1
2751	City Park	Cabo-1	2022-04-26	4	Etheostoma fonticola	21	1
2751	City Park	Cabo-1	2022-04-26	5	Etheostoma fonticola	37	1
2751	City Park	Cabo-1	2022-04-26	6	Procambarus sp.		2
2751	City Park	Cabo-1	2022-04-26	6	Etheostoma fonticola	20	1
2751	City Park	Cabo-1	2022-04-26	6	Etheostoma fonticola	17	1
2751	City Park	Cabo-1	2022-04-26	7	Procambarus sp.		3
2751	City Park	Cabo-1	2022-04-26	7	No fish collected		
2751	City Park	Cabo-1	2022-04-26	8	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	8	Etheostoma fonticola	16	1
2751	City Park	Cabo-1	2022-04-26	9	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	9	No fish collected		
2751	City Park	Cabo-1	2022-04-26	10	Procambarus sp.		2
2751	City Park	Cabo-1	2022-04-26	10	No fish collected		

2751	City Park	Cabo-1	2022-04-26	11	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	11	Etheostoma fonticola	15	1
2751	City Park	Cabo-1	2022-04-26	12	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	12	Lepomis miniatus	45	1
2751	City Park	Cabo-1	2022-04-26	12	Lepomis sp.	24	1
2751	City Park	Cabo-1	2022-04-26	13	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	13	Etheostoma fonticola	30	1
2751	City Park	Cabo-1	2022-04-26	14	Palaemonetes sp.		1
2751	City Park	Cabo-1	2022-04-26	14	Lepomis sp.	11	1
2751	City Park	Cabo-1	2022-04-26	15	Procambarus sp.		3
2751	City Park	Cabo-1	2022-04-26	15	Etheostoma fonticola	20	1
2751	City Park	Cabo-1	2022-04-26	15	Etheostoma fonticola	32	1
2751	City Park	Cabo-1	2022-04-26	16	Procambarus sp.		1
2751	City Park	Cabo-1	2022-04-26	16	No fish collected		
2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	31	1
2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	18	1
2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	20	1
2752	City Park	Cab-2	2022-04-26	3	Lepomis miniatus	21	1
2752	City Park	Cab-2	2022-04-26	3	Gambusia sp.	23	1
2752	City Park	Cab-2	2022-04-26	3	Lepomis sp.	15	1
2752	City Park	Cab-2	2022-04-26	3	Lepomis sp.	14	1
2752	City Park	Cab-2	2022-04-26	3	Lepomis sp.	14	1
2752	City Park	Cab-2	2022-04-26	3	Procambarus sp.		2
2752	City Park	Cab-2	2022-04-26	4	Palaemonetes sp.		2
2752	City Park	Cab-2	2022-04-26	4	Etheostoma fonticola	20	1
2752	City Park	Cab-2	2022-04-26	4	Etheostoma fonticola	25	1
2752	City Park	Cab-2	2022-04-26	4	Etheostoma fonticola	29	1
2752	City Park	Cab-2	2022-04-26	4	Etheostoma fonticola	15	1
2752	City Park	Cab-2	2022-04-26	4	Etheostoma fonticola	22	1
2752	City Park	Cab-2	2022-04-26	4	Etheostoma fonticola	18	1
2752	City Park	Cab-2	2022-04-26	5	Palaemonetes sp.		1
2752	City Park	Cab-2	2022-04-26	5	Etheostoma fonticola	18	1
2752	City Park	Cab-2	2022-04-26	5	Etheostoma fonticola	25	1
2752	City Park	Cab-2	2022-04-26	5	Etheostoma fonticola	13	1
2752	City Park	Cab-2	2022-04-26	5	Gambusia sp.	13	1
2752	City Park	Cab-2	2022-04-26	6	Etheostoma fonticola	30	1
2752	City Park	Cab-2	2022-04-26	7	Lepomis sp.	15	1
2752	City Park	Cab-2	2022-04-26	7	Lepomis sp.	16	1
2752	City Park	Cab-2	2022-04-26	7	Etheostoma fonticola	31	1
2752	City Park	Cab-2	2022-04-26	7	Gambusia sp.	13	1
2752	City Park	Cab-2	2022-04-26	8	Lepomis sp.	18	1

2752	City Park	Cab-2	2022-04-26	9	Procambarus sp.		1
2752	City Park	Cab-2	2022-04-26	9	Lepomis sp.	19	1
2752	City Park	Cab-2	2022-04-26	9	Etheostoma fonticola	34	1
2752	City Park	Cab-2	2022-04-26	10	Procambarus sp.		1
2752	City Park	Cab-2	2022-04-26	10	Etheostoma fonticola	28	1
2752	City Park	Cab-2	2022-04-26	10	Lepomis sp.	15	1
2752	City Park	Cab-2	2022-04-26	11	Etheostoma fonticola	22	1
2752	City Park	Cab-2	2022-04-26	11	Etheostoma fonticola	18	1
2752	City Park	Cab-2	2022-04-26	12	No fish collected		
2752	City Park	Cab-2	2022-04-26	13	Gambusia sp.	21	1
2752	City Park	Cab-2	2022-04-26	13	Etheostoma fonticola	14	1
2752	City Park	Cab-2	2022-04-26	14	No fish collected		
2752	City Park	Cab-2	2022-04-26	15	Lepomis miniatus	94	1
2752	City Park	Cab-2	2022-04-26	15	Lepomis sp.	16	1
2752	City Park	Cab-2	2022-04-26	1	Lepomis macrochirus	76	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	22	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	19	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	25	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	11	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	20	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	26	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	20	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	20	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	22	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	22	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	22	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	25	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	20	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	15	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	18	1
2752	City Park	Cab-2	2022-04-26	1	Gambusia sp.	10	1
2752	City Park	Cab-2	2022-04-26	1	Etheostoma fonticola	29	1
2752	City Park	Cab-2	2022-04-26	2	Procambarus sp.		1
2752	City Park	Cab-2	2022-04-26	2	Lepomis gulosus	192	1
2752	City Park	Cab-2	2022-04-26	2	Etheostoma fonticola	34	1
2752	City Park	Cab-2	2022-04-26	2	Etheostoma fonticola	16	1
2752	City Park	Cab-2	2022-04-26	2	Etheostoma fonticola	20	1
2752	City Park	Cab-2	2022-04-26	2	Etheostoma fonticola	15	1
2752	City Park	Cab-2	2022-04-26	2	Gambusia sp.	20	1
2752	City Park	Cab-2	2022-04-26	2	Lepomis sp.	18	1
2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	29	1

2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	18	1
2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	20	1
2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	17	1
2752	City Park	Cab-2	2022-04-26	3	Etheostoma fonticola	17	1
2753	City Park	Ziz-1	2022-04-26	1	No fish collected		
2753	City Park	Ziz-1	2022-04-26	2	No fish collected		
2753	City Park	Ziz-1	2022-04-26	3	No fish collected		
2753	City Park	Ziz-1	2022-04-26	4	No fish collected		
2753	City Park	Ziz-1	2022-04-26	5	No fish collected		
2753	City Park	Ziz-1	2022-04-26	6	No fish collected		
2753	City Park	Ziz-1	2022-04-26	7	No fish collected		
2753	City Park	Ziz-1	2022-04-26	8	No fish collected		
2753	City Park	Ziz-1	2022-04-26	9	No fish collected		
2753	City Park	Ziz-1	2022-04-26	10	Etheostoma fonticola	18	1
2753	City Park	Ziz-1	2022-04-26	11	No fish collected		
2753	City Park	Ziz-1	2022-04-26	12	No fish collected		
2753	City Park	Ziz-1	2022-04-26	13	No fish collected		
2753	City Park	Ziz-1	2022-04-26	14	No fish collected		
2753	City Park	Ziz-1	2022-04-26	15	No fish collected		
2754	City Park	Ziz-2	2022-04-26	1	No fish collected		
2754	City Park	Ziz-2	2022-04-26	2	No fish collected		
2754	City Park	Ziz-2	2022-04-26	3	No fish collected		
2754	City Park	Ziz-2	2022-04-26	4	No fish collected		
2754	City Park	Ziz-2	2022-04-26	5	No fish collected		
2754	City Park	Ziz-2	2022-04-26	6	No fish collected		
2754	City Park	Ziz-2	2022-04-26	7	No fish collected		
2754	City Park	Ziz-2	2022-04-26	8	No fish collected		
2754	City Park	Ziz-2	2022-04-26	9	No fish collected		
2754	City Park	Ziz-2	2022-04-26	10	No fish collected		
2755	City Park	Open-1	2022-04-27	1	No fish collected		
2755	City Park	Open-1	2022-04-27	2	No fish collected		
2755	City Park	Open-1	2022-04-27	3	No fish collected		
2755	City Park	Open-1	2022-04-27	4	No fish collected		
2755	City Park	Open-1	2022-04-27	5	No fish collected		
2755	City Park	Open-1	2022-04-27	6	No fish collected		
2755	City Park	Open-1	2022-04-27	7	No fish collected		
2755	City Park	Open-1	2022-04-27	8	No fish collected		
2755	City Park	Open-1	2022-04-27	9	No fish collected		
2755	City Park	Open-1	2022-04-27	10	No fish collected		
2756	City Park	Open-2	2022-04-27	1	No fish collected		
2756	City Park	Open-2	2022-04-27	2	No fish collected		

2756	City Park	Open-2	2022-04-27	3	No fish collected		
2756	City Park	Open-2	2022-04-27	4	No fish collected		
2756	City Park	Open-2	2022-04-27	5	No fish collected		
2756	City Park	Open-2	2022-04-27	6	No fish collected		
2756	City Park	Open-2	2022-04-27	7	No fish collected		
2756	City Park	Open-2	2022-04-27	8	No fish collected		
2756	City Park	Open-2	2022-04-27	9	No fish collected		
2756	City Park	Open-2	2022-04-27	10	No fish collected		
2757	City Park	Pota-1	2022-04-27	1	Gambusia sp.	19	1
2757	City Park	Pota-1	2022-04-27	1	Gambusia sp.	23	1
2757	City Park	Pota-1	2022-04-27	1	Gambusia sp.	17	1
2757	City Park	Pota-1	2022-04-27	1	Gambusia sp.	18	1
2757	City Park	Pota-1	2022-04-27	1	Etheostoma fonticola	20	1
2757	City Park	Pota-1	2022-04-27	2	Ambloplites rupestris	20	1
2757	City Park	Pota-1	2022-04-27	2	Ambloplites rupestris	16	1
2757	City Park	Pota-1	2022-04-27	3	Palaemonetes sp.		1
2757	City Park	Pota-1	2022-04-27	3	Ambloplites rupestris	13	1
2757	City Park	Pota-1	2022-04-27	4	Procambarus sp.		1
2757	City Park	Pota-1	2022-04-27	4	Lepomis sp.	14	1
2757	City Park	Pota-1	2022-04-27	5	Gambusia sp.	34	1
2757	City Park	Pota-1	2022-04-27	5	Procambarus sp.		1
2757	City Park	Pota-1	2022-04-27	5	Etheostoma fonticola	33	1
2757	City Park	Pota-1	2022-04-27	5	Etheostoma fonticola	31	1
2757	City Park	Pota-1	2022-04-27	5	Etheostoma fonticola	19	1
2757	City Park	Pota-1	2022-04-27	5	Lepomis sp.	14	1
2757	City Park	Pota-1	2022-04-27	5	Ambloplites rupestris	18	1
2757	City Park	Pota-1	2022-04-27	6	No fish collected		
2757	City Park	Pota-1	2022-04-27	7	No fish collected		
2757	City Park	Pota-1	2022-04-27	8	No fish collected		
2757	City Park	Pota-1	2022-04-27	9	Gambusia sp.	20	1
2757	City Park	Pota-1	2022-04-27	10	Etheostoma fonticola	30	1
2757	City Park	Pota-1	2022-04-27	10	Etheostoma fonticola	18	1
2757	City Park	Pota-1	2022-04-27	11	Lepomis miniatus	80	1
2757	City Park	Pota-1	2022-04-27	11	Etheostoma fonticola	38	1
2757	City Park	Pota-1	2022-04-27	11	Procambarus sp.		1
2757	City Park	Pota-1	2022-04-27	12	Procambarus sp.		1
2757	City Park	Pota-1	2022-04-27	12	Lepomis miniatus	75	1
2757	City Park	Pota-1	2022-04-27	13	No fish collected		
2757	City Park	Pota-1	2022-04-27	14	No fish collected		
2757	City Park	Pota-1	2022-04-27	15	No fish collected		
2758	City Park	Pota-2	2022-04-27	1	No fish collected		

2758	City Park	Pota-2	2022-04-27	2	No fish collected		
2758	City Park	Pota-2	2022-04-27	3	No fish collected		
2758	City Park	Pota-2	2022-04-27	4	No fish collected		
2758	City Park	Pota-2	2022-04-27	5	Gambusia sp.	30	1
2758	City Park	Pota-2	2022-04-27	6	No fish collected		
2758	City Park	Pota-2	2022-04-27	7	No fish collected		
2758	City Park	Pota-2	2022-04-27	8	No fish collected		
2758	City Park	Pota-2	2022-04-27	9	No fish collected		
2758	City Park	Pota-2	2022-04-27	10	No fish collected		
2758	City Park	Pota-2	2022-04-27	11	Etheostoma fonticola	29	1
2758	City Park	Pota-2	2022-04-27	12	No fish collected		
2758	City Park	Pota-2	2022-04-27	13	No fish collected		
2758	City Park	Pota-2	2022-04-27	14	No fish collected		
2758	City Park	Pota-2	2022-04-27	15	No fish collected		
2812	City Park	Sagi-1	2022-07-19	1	Etheostoma fonticola	35	1
2812	City Park	Sagi-1	2022-07-19	2	No fish collected		
2812	City Park	Sagi-1	2022-07-19	3	Etheostoma fonticola	26	1
2812	City Park	Sagi-1	2022-07-19	4	Etheostoma fonticola	26	1
2812	City Park	Sagi-1	2022-07-19	4	Etheostoma fonticola	27	1
2812	City Park	Sagi-1	2022-07-19	4	Etheostoma fonticola	30	1
2812	City Park	Sagi-1	2022-07-19	4	Procambarus sp.		1
2812	City Park	Sagi-1	2022-07-19	5	No fish collected		
2812	City Park	Sagi-1	2022-07-19	6	Etheostoma fonticola	27	1
2812	City Park	Sagi-1	2022-07-19	6	Procambarus sp.		3
2812	City Park	Sagi-1	2022-07-19	7	Etheostoma fonticola	26	1
2812	City Park	Sagi-1	2022-07-19	7	Etheostoma fonticola	27	1
2812	City Park	Sagi-1	2022-07-19	7	Etheostoma fonticola	25	1
2812	City Park	Sagi-1	2022-07-19	7	Etheostoma fonticola	24	1
2812	City Park	Sagi-1	2022-07-19	7	Procambarus sp.		1
2812	City Park	Sagi-1	2022-07-19	8	Etheostoma fonticola	26	1
2812	City Park	Sagi-1	2022-07-19	9	Procambarus sp.		1
2812	City Park	Sagi-1	2022-07-19	9	No fish collected		
2812	City Park	Sagi-1	2022-07-19	10	No fish collected		
2812	City Park	Sagi-1	2022-07-19	11	No fish collected		
2812	City Park	Sagi-1	2022-07-19	12	Etheostoma fonticola	29	1
2812	City Park	Sagi-1	2022-07-19	13	No fish collected		
2812	City Park	Sagi-1	2022-07-19	14	No fish collected		
2812	City Park	Sagi-1	2022-07-19	15	No fish collected		
2813	City Park	Sagi-2	2022-07-19	14	No fish collected		
2813	City Park	Sagi-2	2022-07-19	15	No fish collected		
2813	City Park	Sagi-2	2022-07-19	1	Etheostoma fonticola	35	1

2813	City Park	Sagi-2	2022-07-19	1	Etheostoma fonticola	25	1
2813	City Park	Sagi-2	2022-07-19	2	No fish collected		
2813	City Park	Sagi-2	2022-07-19	3	No fish collected		
2813	City Park	Sagi-2	2022-07-19	4	No fish collected		
2813	City Park	Sagi-2	2022-07-19	5	Etheostoma fonticola	29	1
2813	City Park	Sagi-2	2022-07-19	5	Procambarus sp.		1
2813	City Park	Sagi-2	2022-07-19	6	No fish collected		
2813	City Park	Sagi-2	2022-07-19	7	No fish collected		
2813	City Park	Sagi-2	2022-07-19	8	Etheostoma fonticola	30	1
2813	City Park	Sagi-2	2022-07-19	9	No fish collected		
2813	City Park	Sagi-2	2022-07-19	10	No fish collected		
2813	City Park	Sagi-2	2022-07-19	11	No fish collected		
2813	City Park	Sagi-2	2022-07-19	12	No fish collected		
2813	City Park	Sagi-2	2022-07-19	13	No fish collected		
2814	City Park	Open-1	2022-07-19	1	No fish collected		
2814	City Park	Open-1	2022-07-19	2	No fish collected		
2814	City Park	Open-1	2022-07-19	3	No fish collected		
2814	City Park	Open-1	2022-07-19	4	No fish collected		
2814	City Park	Open-1	2022-07-19	5	No fish collected		
2814	City Park	Open-1	2022-07-19	6	No fish collected		
2814	City Park	Open-1	2022-07-19	7	No fish collected		
2814	City Park	Open-1	2022-07-19	8	No fish collected		
2814	City Park	Open-1	2022-07-19	9	No fish collected		
2814	City Park	Open-1	2022-07-19	10	No fish collected		
2815	City Park	Open-2	2022-07-19	1	No fish collected		
2815	City Park	Open-2	2022-07-19	2	No fish collected		
2815	City Park	Open-2	2022-07-19	3	No fish collected		
2815	City Park	Open-2	2022-07-19	4	No fish collected		
2815	City Park	Open-2	2022-07-19	5	No fish collected		
2815	City Park	Open-2	2022-07-19	6	No fish collected		
2815	City Park	Open-2	2022-07-19	7	No fish collected		
2815	City Park	Open-2	2022-07-19	8	No fish collected		
2815	City Park	Open-2	2022-07-19	9	No fish collected		
2815	City Park	Open-2	2022-07-19	10	No fish collected		
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	34	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	41	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	10	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	14	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	31	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	12	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	14	1

2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	15	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	16	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	18	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	15	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	18	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	10	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	10	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	12	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	13	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	11	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	12	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	11	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	17	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	9	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	12	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	13	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	12	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	12	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	10	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	11	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	14	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	10	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	13	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	9	1
2816	City Park	Cabo-1	2022-07-19	1	Gambusia sp.	11	1
2816	City Park	Cabo-1	2022-07-19	1	Poecilia latipinna	27	1
2816	City Park	Cabo-1	2022-07-19	1	Poecilia latipinna	23	1
2816	City Park	Cabo-1	2022-07-19	1	Poecilia latipinna	28	1
2816	City Park	Cabo-1	2022-07-19	1	Poecilia latipinna	25	1
2816	City Park	Cabo-1	2022-07-19	1	Poecilia latipinna	20	1
2816	City Park	Cabo-1	2022-07-19	1	Herichthys cyanoguttatus	25	1
2816	City Park	Cabo-1	2022-07-19	1	Herichthys cyanoguttatus	20	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	25	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	12	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	13	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	14	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	13	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	13	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	28	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	22	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	19	1

2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	20	1
2816	City Park	Cabo-1	2022-07-19	1	Etheostoma fonticola	28	1
2816	City Park	Cabo-1	2022-07-19	1	Ameiurus natalis	21	1
2816	City Park	Cabo-1	2022-07-19	1	Palaemonetes sp.		1
2816	City Park	Cabo-1	2022-07-19	1	Procambarus sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Procambarus sp.		3
2816	City Park	Cabo-1	2022-07-19	2	Palaemonetes sp.		2
2816	City Park	Cabo-1	2022-07-19	2	Etheostoma fonticola	23	1
2816	City Park	Cabo-1	2022-07-19	2	Etheostoma fonticola	35	1
2816	City Park	Cabo-1	2022-07-19	2	Etheostoma fonticola	24	1
2816	City Park	Cabo-1	2022-07-19	2	Etheostoma fonticola	19	1
2816	City Park	Cabo-1	2022-07-19	2	Etheostoma fonticola	30	1
2816	City Park	Cabo-1	2022-07-19	2	Etheostoma fonticola	19	1
2816	City Park	Cabo-1	2022-07-19	2	Etheostoma fonticola	27	1
2816	City Park	Cabo-1	2022-07-19	2	Poecilia latipinna	26	1
2816	City Park	Cabo-1	2022-07-19	2	Poecilia latipinna	32	1
2816	City Park	Cabo-1	2022-07-19	2	Poecilia latipinna	26	1
2816	City Park	Cabo-1	2022-07-19	2	Poecilia latipinna	24	1
2816	City Park	Cabo-1	2022-07-19	2	Poecilia latipinna	18	1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1

2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	2	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Ameiurus natalis	68	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	26	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	18	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	30	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	27	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	29	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	28	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	25	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	24	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	24	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	26	1
2816	City Park	Cabo-1	2022-07-19	3	Etheostoma fonticola	27	1
2816	City Park	Cabo-1	2022-07-19	3	Poecilia latipinna	18	1
2816	City Park	Cabo-1	2022-07-19	3	Herichthys cyanoguttatus	24	1
2816	City Park	Cabo-1	2022-07-19	3	Herichthys cyanoguttatus	26	1
2816	City Park	Cabo-1	2022-07-19	3	Procambarus sp.		1
2816	City Park	Cabo-1	2022-07-19	3	Palaemonetes sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Procambarus sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Etheostoma fonticola	19	1
2816	City Park	Cabo-1	2022-07-19	4	Etheostoma fonticola	22	1
2816	City Park	Cabo-1	2022-07-19	4	Etheostoma fonticola	24	1
2816	City Park	Cabo-1	2022-07-19	4	Etheostoma fonticola	31	1
2816	City Park	Cabo-1	2022-07-19	4	Etheostoma fonticola	28	1
2816	City Park	Cabo-1	2022-07-19	4	Etheostoma fonticola	32	1
2816	City Park	Cabo-1	2022-07-19	4	Etheostoma fonticola	26	1
2816	City Park	Cabo-1	2022-07-19	4	Poecilia latipinna	25	1
2816	City Park	Cabo-1	2022-07-19	4	Poecilia latipinna	25	1
2816	City Park	Cabo-1	2022-07-19	4	Poecilia latipinna	23	1

2816	City Park	Cabo-1	2022-07-19	4	Herichthys cyanoguttatus	26	1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	4	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	5	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	5	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	5	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	5	Procambarus sp.		1
2816	City Park	Cabo-1	2022-07-19	5	Herichthys cyanoguttatus	30	1
2816	City Park	Cabo-1	2022-07-19	5	Etheostoma fonticola	30	1
2816	City Park	Cabo-1	2022-07-19	5	Etheostoma fonticola	24	1
2816	City Park	Cabo-1	2022-07-19	5	Poecilia latipinna	21	1
2816	City Park	Cabo-1	2022-07-19	6	Lepomis miniatus	86	1
2816	City Park	Cabo-1	2022-07-19	6	Etheostoma fonticola	29	1
2816	City Park	Cabo-1	2022-07-19	6	Etheostoma fonticola	27	1
2816	City Park	Cabo-1	2022-07-19	6	Poecilia latipinna	25	1
2816	City Park	Cabo-1	2022-07-19	6	Procambarus sp.		1
2816	City Park	Cabo-1	2022-07-19	6	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	7	Procambarus sp.		1
2816	City Park	Cabo-1	2022-07-19	7	Palaemonetes sp.		1
2816	City Park	Cabo-1	2022-07-19	7	Etheostoma fonticola	25	1
2816	City Park	Cabo-1	2022-07-19	7	Etheostoma fonticola	28	1
2816	City Park	Cabo-1	2022-07-19	7	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	7	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	8	Lepomis miniatus	29	1
2816	City Park	Cabo-1	2022-07-19	8	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	8	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	9	Palaemonetes sp.		1
2816	City Park	Cabo-1	2022-07-19	9	No fish collected		
2816	City Park	Cabo-1	2022-07-19	10	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	10	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	10	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	11	Etheostoma fonticola	26	1
2816	City Park	Cabo-1	2022-07-19	11	Etheostoma fonticola	26	1
2816	City Park	Cabo-1	2022-07-19	12	Etheostoma fonticola	31	1
2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1

2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	12	Gambusia sp.		1
2816	City Park	Cabo-1	2022-07-19	13	Ameiurus natalis	82	1
2816	City Park	Cabo-1	2022-07-19	14	No fish collected		
2816	City Park	Cabo-1	2022-07-19	15	No fish collected		
2817	City Park	Cab-2	2022-07-19	1	Herichthys cyanoguttatus	23	1
2817	City Park	Cab-2	2022-07-19	2	Procambarus sp.		1
2817	City Park	Cab-2	2022-07-19	2	Etheostoma fonticola	25	1
2817	City Park	Cab-2	2022-07-19	2	Etheostoma fonticola	27	1
2817	City Park	Cab-2	2022-07-19	2	Etheostoma fonticola	22	1
2817	City Park	Cab-2	2022-07-19	2	Etheostoma fonticola	25	1
2817	City Park	Cab-2	2022-07-19	2	Lepomis sp.	12	1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1

2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	2	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Procambarus sp.		1
2817	City Park	Cab-2	2022-07-19	3	Astyanax mexicanus	37	1
2817	City Park	Cab-2	2022-07-19	3	Lepomis miniatus	142	1
2817	City Park	Cab-2	2022-07-19	3	Etheostoma fonticola	23	1
2817	City Park	Cab-2	2022-07-19	3	Etheostoma fonticola	25	1
2817	City Park	Cab-2	2022-07-19	3	Etheostoma fonticola	21	1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	3	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Etheostoma fonticola	25	1
2817	City Park	Cab-2	2022-07-19	4	Etheostoma fonticola	19	1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1

2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	4	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Herichthys cyanoguttatus	20	1
2817	City Park	Cab-2	2022-07-19	5	Poecilia latipinna	16	1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	5	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Etheostoma fonticola	22	1

2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	16	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	16	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	21	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	16	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	11	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	24	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	29	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	32	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	14	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	20	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	18	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	19	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	23	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	17	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	24	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	25	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	17	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	19	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	14	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	15	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	14	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	10	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	12	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	13	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	15	1
2817	City Park	Cab-2	2022-07-19	1	Gambusia sp.	10	1
2817	City Park	Cab-2	2022-07-19	1	Poecilia latipinna	17	1
2817	City Park	Cab-2	2022-07-19	1	Etheostoma fonticola	21	1
2817	City Park	Cab-2	2022-07-19	1	Etheostoma fonticola	19	1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	6	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1

2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	7	Etheostoma fonticola	31	1
2817	City Park	Cab-2	2022-07-19	7	Etheostoma fonticola	28	1
2817	City Park	Cab-2	2022-07-19	7	Palaemonetes sp.		1
2817	City Park	Cab-2	2022-07-19	7	Procambarus sp.		1
2817	City Park	Cab-2	2022-07-19	7	Herichthys cyanoguttatus	29	1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	8	Etheostoma fonticola	20	1
2817	City Park	Cab-2	2022-07-19	9	Etheostoma fonticola	28	1
2817	City Park	Cab-2	2022-07-19	9	Etheostoma fonticola	24	1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1

2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Etheostoma fonticola	21	1
2817	City Park	Cab-2	2022-07-19	10	Etheostoma fonticola	23	1
2817	City Park	Cab-2	2022-07-19	10	Lepomis sp.	13	1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	10	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Etheostoma fonticola	20	1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	11	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	12	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	12	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	12	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	12	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	12	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	12	Gambusia sp.		1

2817	City Park	Cab-2	2022-07-19	12	Etheostoma fonticola	21	1
2817	City Park	Cab-2	2022-07-19	12	Etheostoma fonticola	25	1
2817	City Park	Cab-2	2022-07-19	12	Etheostoma fonticola	25	1
2817	City Park	Cab-2	2022-07-19	13	No fish collected		
2817	City Park	Cab-2	2022-07-19	14	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	14	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	14	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	14	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	14	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	14	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	15	Palaemonetes sp.		1
2817	City Park	Cab-2	2022-07-19	15	Etheostoma fonticola	25	1
2817	City Park	Cab-2	2022-07-19	15	Herichthys cyanoguttatus	26	1
2817	City Park	Cab-2	2022-07-19	15	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	15	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	15	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	15	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	15	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	16	Procambarus sp.		1
2817	City Park	Cab-2	2022-07-19	16	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	16	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	16	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	16	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	16	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	16	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	9	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	16	Etheostoma fonticola	12	1
2817	City Park	Cab-2	2022-07-19	16	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	17	Procambarus sp.		1
2817	City Park	Cab-2	2022-07-19	17	Etheostoma fonticola	35	1
2817	City Park	Cab-2	2022-07-19	17	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	17	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	17	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	17	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	17	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	18	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	18	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	18	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	18	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	18	Gambusia sp.		1

2817	City Park	Cab-2	2022-07-19	18	Etheostoma fonticola	17	1
2817	City Park	Cab-2	2022-07-19	19	Gambusia sp.		1
2817	City Park	Cab-2	2022-07-19	19	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	11	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	26	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	15	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	10	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	17	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	18	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	10	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	20	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	25	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	21	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	20	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	11	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	12	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	11	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	10	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	1	Procambarus sp.		8
2834	City Park	Cabo-1	2022-10-10	2	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	2	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	2	Gambusia sp.		1

2834	City Park	Cabo-1	2022-10-10	2	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	2	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	2	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	2	Etheostoma fonticola	26	1
2834	City Park	Cabo-1	2022-10-10	2	Etheostoma fonticola	29	1
2834	City Park	Cabo-1	2022-10-10	2	Etheostoma fonticola	17	1
2834	City Park	Cabo-1	2022-10-10	2	Palaemonetes sp.		1
2834	City Park	Cabo-1	2022-10-10	3	Notropis amabilis	45	1
2834	City Park	Cabo-1	2022-10-10	3	Notropis amabilis	42	1
2834	City Park	Cabo-1	2022-10-10	3	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	3	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	3	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	3	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	3	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	3	Etheostoma fonticola	24	1
2834	City Park	Cabo-1	2022-10-10	3	Etheostoma fonticola	24	1
2834	City Park	Cabo-1	2022-10-10	3	Etheostoma fonticola	27	1
2834	City Park	Cabo-1	2022-10-10	3	Etheostoma fonticola	25	1
2834	City Park	Cabo-1	2022-10-10	3	Herichthys cyanoguttatus	13	1
2834	City Park	Cabo-1	2022-10-10	3	Procambarus sp.		2
2834	City Park	Cabo-1	2022-10-10	3	Palaemonetes sp.		1
2834	City Park	Cabo-1	2022-10-10	4	Etheostoma fonticola	25	1
2834	City Park	Cabo-1	2022-10-10	4	Etheostoma fonticola	25	1
2834	City Park	Cabo-1	2022-10-10	4	Etheostoma fonticola	26	1
2834	City Park	Cabo-1	2022-10-10	4	Etheostoma fonticola	27	1
2834	City Park	Cabo-1	2022-10-10	4	Procambarus sp.		2
2834	City Park	Cabo-1	2022-10-10	5	Lepomis miniatus	151	1
2834	City Park	Cabo-1	2022-10-10	5	Etheostoma fonticola	32	1
2834	City Park	Cabo-1	2022-10-10	5	Etheostoma fonticola	20	1
2834	City Park	Cabo-1	2022-10-10	5	Etheostoma fonticola	23	1
2834	City Park	Cabo-1	2022-10-10	5	Etheostoma fonticola	26	1
2834	City Park	Cabo-1	2022-10-10	5	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	5	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	6	Procambarus sp.		6
2834	City Park	Cabo-1	2022-10-10	6	Etheostoma fonticola	21	1
2834	City Park	Cabo-1	2022-10-10	6	Etheostoma fonticola	21	1
2834	City Park	Cabo-1	2022-10-10	6	Etheostoma fonticola	26	1
2834	City Park	Cabo-1	2022-10-10	6	Etheostoma fonticola	25	1
2834	City Park	Cabo-1	2022-10-10	6	Etheostoma fonticola	29	1
2834	City Park	Cabo-1	2022-10-10	6	Etheostoma fonticola	34	1
2834	City Park	Cabo-1	2022-10-10	6	Etheostoma fonticola	12	1

2834	City Park	Cabo-1	2022-10-10	6	Gambusia sp.		1
2834	City Park	Cabo-1	2022-10-10	6	Lepomis miniatus	38	1
2834	City Park	Cabo-1	2022-10-10	7	Procambarus sp.		3
2834	City Park	Cabo-1	2022-10-10	7	Etheostoma fonticola	35	1
2834	City Park	Cabo-1	2022-10-10	8	Etheostoma fonticola	21	1
2834	City Park	Cabo-1	2022-10-10	9	Notropis amabilis	45	1
2834	City Park	Cabo-1	2022-10-10	10	Etheostoma fonticola	31	1
2834	City Park	Cabo-1	2022-10-10	10	Etheostoma fonticola	29	1
2834	City Park	Cabo-1	2022-10-10	10	Etheostoma fonticola	26	1
2834	City Park	Cabo-1	2022-10-10	11	Etheostoma fonticola	30	1
2834	City Park	Cabo-1	2022-10-10	12	Notropis amabilis	36	1
2834	City Park	Cabo-1	2022-10-10	12	Etheostoma fonticola	32	1
2834	City Park	Cabo-1	2022-10-10	12	Etheostoma fonticola	31	1
2834	City Park	Cabo-1	2022-10-10	13	No fish collected		
2834	City Park	Cabo-1	2022-10-10	14	Etheostoma fonticola	14	1
2834	City Park	Cabo-1	2022-10-10	15	No fish collected		
2834	City Park	Cabo-1	2022-10-10	1	Lepomis miniatus	20	1
2834	City Park	Cabo-1	2022-10-10	1	Herichthys cyanoguttatus	25	1
2834	City Park	Cabo-1	2022-10-10	1	Herichthys cyanoguttatus	20	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	28	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	25	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	24	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	23	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	30	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	31	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	23	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	20	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	24	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	27	1
2834	City Park	Cabo-1	2022-10-10	1	Etheostoma fonticola	36	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	10	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	11	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	18	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	31	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	18	1
2834	City Park	Cabo-1	2022-10-10	1	Gambusia sp.	19	1
2835	City Park	Cab-2	2022-10-10	1	Gambusia sp.	28	1
2835	City Park	Cab-2	2022-10-10	1	Gambusia sp.	10	1
2835	City Park	Cab-2	2022-10-10	1	Gambusia sp.	10	1
2835	City Park	Cab-2	2022-10-10	1	Gambusia sp.	5	1
2835	City Park	Cab-2	2022-10-10	1	Gambusia sp.	19	1

2835	City Park	Cab-2	2022-10-10	1	Etheostoma fonticola	27	1
2835	City Park	Cab-2	2022-10-10	1	Etheostoma fonticola	28	1
2835	City Park	Cab-2	2022-10-10	1	Etheostoma fonticola	18	1
2835	City Park	Cab-2	2022-10-10	1	Etheostoma fonticola	15	1
2835	City Park	Cab-2	2022-10-10	1	Etheostoma fonticola	25	1
2835	City Park	Cab-2	2022-10-10	1	Etheostoma fonticola	29	1
2835	City Park	Cab-2	2022-10-10	1	Procambarus sp.		10
2835	City Park	Cab-2	2022-10-10	1	Palaemonetes sp.		1
2835	City Park	Cab-2	2022-10-10	2	Etheostoma fonticola	32	1
2835	City Park	Cab-2	2022-10-10	2	Etheostoma fonticola	30	1
2835	City Park	Cab-2	2022-10-10	2	Etheostoma fonticola	28	1
2835	City Park	Cab-2	2022-10-10	2	Etheostoma fonticola	31	1
2835	City Park	Cab-2	2022-10-10	2	Etheostoma fonticola	15	1
2835	City Park	Cab-2	2022-10-10	2	Gambusia sp.		1
2835	City Park	Cab-2	2022-10-10	2	Procambarus sp.		6
2835	City Park	Cab-2	2022-10-10	2	Palaemonetes sp.		1
2835	City Park	Cab-2	2022-10-10	3	Gambusia sp.	15	1
2835	City Park	Cab-2	2022-10-10	3	Gambusia sp.	28	1
2835	City Park	Cab-2	2022-10-10	3	Gambusia sp.	27	1
2835	City Park	Cab-2	2022-10-10	3	Gambusia sp.	17	1
2835	City Park	Cab-2	2022-10-10	3	Gambusia sp.	10	1
2835	City Park	Cab-2	2022-10-10	3	Etheostoma fonticola	25	1
2835	City Park	Cab-2	2022-10-10	3	Etheostoma fonticola	26	1
2835	City Park	Cab-2	2022-10-10	3	Etheostoma fonticola	22	1
2835	City Park	Cab-2	2022-10-10	3	Etheostoma fonticola	20	1
2835	City Park	Cab-2	2022-10-10	3	Etheostoma fonticola	29	1
2835	City Park	Cab-2	2022-10-10	3	Etheostoma fonticola	16	1
2835	City Park	Cab-2	2022-10-10	3	Procambarus sp.		3
2835	City Park	Cab-2	2022-10-10	4	Etheostoma fonticola	30	1
2835	City Park	Cab-2	2022-10-10	4	Etheostoma fonticola	34	1
2835	City Park	Cab-2	2022-10-10	4	Etheostoma fonticola	32	1
2835	City Park	Cab-2	2022-10-10	4	Gambusia sp.	18	1
2835	City Park	Cab-2	2022-10-10	4	Procambarus sp.		8
2835	City Park	Cab-2	2022-10-10	5	Gambusia sp.	12	1
2835	City Park	Cab-2	2022-10-10	5	Procambarus sp.		1
2835	City Park	Cab-2	2022-10-10	6	Procambarus sp.		2
2835	City Park	Cab-2	2022-10-10	6	Etheostoma fonticola	27	1
2835	City Park	Cab-2	2022-10-10	7	Procambarus sp.		5
2835	City Park	Cab-2	2022-10-10	7	Etheostoma fonticola	15	1
2835	City Park	Cab-2	2022-10-10	7	Etheostoma fonticola	25	1
2835	City Park	Cab-2	2022-10-10	8	Procambarus sp.		1

2835	City Park	Cab-2	2022-10-10	8	Etheostoma fonticola	25	1
2835	City Park	Cab-2	2022-10-10	9	Etheostoma fonticola	26	1
2835	City Park	Cab-2	2022-10-10	9	Etheostoma fonticola	27	1
2835	City Park	Cab-2	2022-10-10	9	Etheostoma fonticola	23	1
2835	City Park	Cab-2	2022-10-10	9	Procambarus sp.		2
2835	City Park	Cab-2	2022-10-10	10	Procambarus sp.		1
2835	City Park	Cab-2	2022-10-10	10	No fish collected		
2835	City Park	Cab-2	2022-10-10	11	Etheostoma fonticola	24	1
2835	City Park	Cab-2	2022-10-10	11	Etheostoma fonticola	26	1
2835	City Park	Cab-2	2022-10-10	11	Procambarus sp.		2
2835	City Park	Cab-2	2022-10-10	12	Procambarus sp.		1
2835	City Park	Cab-2	2022-10-10	12	No fish collected		
2835	City Park	Cab-2	2022-10-10	13	No fish collected		
2835	City Park	Cab-2	2022-10-10	14	Etheostoma fonticola	29	1
2835	City Park	Cab-2	2022-10-10	14	Etheostoma fonticola	30	1
2835	City Park	Cab-2	2022-10-10	15	Etheostoma fonticola	27	1
2835	City Park	Cab-2	2022-10-10	16	No fish collected		
2836	City Park	Open-1	2022-10-10	1	No fish collected		
2836	City Park	Open-1	2022-10-10	2	No fish collected		
2836	City Park	Open-1	2022-10-10	3	No fish collected		
2836	City Park	Open-1	2022-10-10	4	No fish collected		
2836	City Park	Open-1	2022-10-10	5	No fish collected		
2836	City Park	Open-1	2022-10-10	6	No fish collected		
2836	City Park	Open-1	2022-10-10	7	No fish collected		
2836	City Park	Open-1	2022-10-10	8	No fish collected		
2836	City Park	Open-1	2022-10-10	9	No fish collected		
2836	City Park	Open-1	2022-10-10	10	No fish collected		
2837	City Park	Open-2	2022-10-10	1	No fish collected		
2837	City Park	Open-2	2022-10-10	2	No fish collected		
2837	City Park	Open-2	2022-10-10	3	No fish collected		
2837	City Park	Open-2	2022-10-10	4	No fish collected		
2837	City Park	Open-2	2022-10-10	5	No fish collected		
2837	City Park	Open-2	2022-10-10	6	No fish collected		
2837	City Park	Open-2	2022-10-10	7	No fish collected		
2837	City Park	Open-2	2022-10-10	8	No fish collected		
2837	City Park	Open-2	2022-10-10	9	No fish collected		
2837	City Park	Open-2	2022-10-10	10	No fish collected		
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	10	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	22	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	25	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	18	1

2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	13	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	11	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	34	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	18	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	21	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	21	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	22	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	16	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	17	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	18	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	20	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	17	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	10	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	10	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	10	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	11	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.	7	1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	1	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Etheostoma fonticola	23	1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1

2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	2	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	3	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	3	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	4	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	4	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	4	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	5	Lepomis miniatus	47	1
2838	City Park	Pota-1	2022-10-10	5	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	5	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	6	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	7	No fish collected		
2838	City Park	Pota-1	2022-10-10	8	Lepomis miniatus	97	1
2838	City Park	Pota-1	2022-10-10	8	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	8	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	8	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	9	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	9	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	9	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	10	No fish collected		
2838	City Park	Pota-1	2022-10-10	11	No fish collected		
2838	City Park	Pota-1	2022-10-10	12	No fish collected		
2838	City Park	Pota-1	2022-10-10	13	No fish collected		
2838	City Park	Pota-1	2022-10-10	14	Procambarus sp.		1
2838	City Park	Pota-1	2022-10-10	14	No fish collected		
2838	City Park	Pota-1	2022-10-10	15	Etheostoma fonticola	34	1
2838	City Park	Pota-1	2022-10-10	16	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	16	Gambusia sp.		1
2838	City Park	Pota-1	2022-10-10	16	Gambusia sp.		1

2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	11	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	13	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	16	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	17	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	16	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	25	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	12	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	11	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	11	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.		1

2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	18	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	15	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	20	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	15	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	15	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	11	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	15	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	17	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	12	1
2839	City Park	Pota-2	2022-10-10	1	Etheostoma fonticola	22	1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	2	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	3	Etheostoma fonticola	20	1
2839	City Park	Pota-2	2022-10-10	3	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	3	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	3	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	3	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	3	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	3	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	4	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	4	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	4	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	4	Gambusia sp.		1

2839	City Park	Pota-2	2022-10-10	4	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	12	1
2839	City Park	Pota-2	2022-10-10	1	Gambusia sp.	13	1
2839	City Park	Pota-2	2022-10-10	4	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	4	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	4	Etheostoma fonticola	19	1
2839	City Park	Pota-2	2022-10-10	5	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	5	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	5	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	6	Lepomis miniatus	45	1
2839	City Park	Pota-2	2022-10-10	6	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	6	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	6	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	6	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	7	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	8	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	8	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	8	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	8	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	9	No fish collected		
2839	City Park	Pota-2	2022-10-10	10	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	11	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	11	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	11	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	11	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	11	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	11	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	12	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	12	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	12	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	12	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	12	Gambusia sp.		1
2839	City Park	Pota-2	2022-10-10	13	No fish collected		

2839	City Park	Pota-2	2022-10-10	14	No fish collected		
2839	City Park	Pota-2	2022-10-10	15	Gambusia sp.		1
2761	I-35	Hyg-1	2022-04-27	1	Procambarus sp.		17
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	37	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	12	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	16	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	9	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	17	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	6	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	6	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	12	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	12	1
2761	I-35	Hyg-1	2022-04-27	1	Gambusia sp.	12	1
2761	I-35	Hyg-1	2022-04-27	1	Ambloplites rupestris	82	1
2761	I-35	Hyg-1	2022-04-27	1	Ambloplites rupestris	18	1
2761	I-35	Hyg-1	2022-04-27	1	Etheostoma fonticola	16	1
2761	I-35	Hyg-1	2022-04-27	1	Etheostoma fonticola	14	1
2761	I-35	Hyg-1	2022-04-27	1	Etheostoma fonticola	18	1
2761	I-35	Hyg-1	2022-04-27	1	Etheostoma fonticola	21	1
2761	I-35	Hyg-1	2022-04-27	1	Etheostoma fonticola	15	1
2761	I-35	Hyg-1	2022-04-27	1	Etheostoma fonticola	19	1
2761	I-35	Hyg-1	2022-04-27	2	Procambarus sp.		17
2761	I-35	Hyg-1	2022-04-27	2	Gambusia sp.	11	1
2761	I-35	Hyg-1	2022-04-27	2	Gambusia sp.	30	1
2761	I-35	Hyg-1	2022-04-27	2	Gambusia sp.	13	1
2761	I-35	Hyg-1	2022-04-27	2	Gambusia sp.	11	1
2761	I-35	Hyg-1	2022-04-27	2	Gambusia sp.	22	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	20	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	18	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	16	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	17	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	18	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	14	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	11	1
2761	I-35	Hyg-1	2022-04-27	2	Etheostoma fonticola	13	1
2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	23	1
2761	I-35	Hyg-1	2022-04-27	3	Procambarus sp.		12
2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	22	1
2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	6	1
2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	16	1
2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	15	1

2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	15	1
2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	14	1
2761	I-35	Hyg-1	2022-04-27	3	Etheostoma fonticola	15	1
2761	I-35	Hyg-1	2022-04-27	3	Gambusia sp.	15	1
2761	I-35	Hyg-1	2022-04-27	3	Gambusia sp.	18	1
2761	I-35	Hyg-1	2022-04-27	3	Gambusia sp.	14	1
2761	I-35	Hyg-1	2022-04-27	3	Gambusia sp.	15	1
2761	I-35	Hyg-1	2022-04-27	4	Procambarus sp.		5
2761	I-35	Hyg-1	2022-04-27	4	Gambusia sp.	10	1
2761	I-35	Hyg-1	2022-04-27	4	Etheostoma fonticola	37	1
2761	I-35	Hyg-1	2022-04-27	5	Procambarus sp.		4
2761	I-35	Hyg-1	2022-04-27	5	Etheostoma fonticola	17	1
2761	I-35	Hyg-1	2022-04-27	6	Gambusia sp.		1
2761	I-35	Hyg-1	2022-04-27	7	Lepomis miniatus	62	1
2761	I-35	Hyg-1	2022-04-27	7	Procambarus sp.		1
2761	I-35	Hyg-1	2022-04-27	8	No fish collected		
2761	I-35	Hyg-1	2022-04-27	9	No fish collected		
2761	I-35	Hyg-1	2022-04-27	10	Procambarus sp.		3
2761	I-35	Hyg-1	2022-04-27	10	No fish collected		
2761	I-35	Hyg-1	2022-04-27	11	Etheostoma fonticola	21	1
2761	I-35	Hyg-1	2022-04-27	11	Procambarus sp.		1
2761	I-35	Hyg-1	2022-04-27	12	Procambarus sp.		1
2761	I-35	Hyg-1	2022-04-27	12	No fish collected		
2761	I-35	Hyg-1	2022-04-27	13	No fish collected		
2761	I-35	Hyg-1	2022-04-27	14	No fish collected		
2761	I-35	Hyg-1	2022-04-27	15	No fish collected		
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	30	1
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	35	1
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	26	1
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	17	1
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	27	1
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	17	1
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	22	1
2762	I-35	Sag-1	2022-04-27	1	Gambusia sp.	30	1
2762	I-35	Sag-1	2022-04-27	1	Astyanax mexicanus	61	1
2762	I-35	Sag-1	2022-04-27	2	Procambarus sp.		1
2762	I-35	Sag-1	2022-04-27	2	Gambusia sp.	17	1
2762	I-35	Sag-1	2022-04-27	2	Gambusia sp.	18	1
2762	I-35	Sag-1	2022-04-27	2	Ambloplites rupestris	20	1
2762	I-35	Sag-1	2022-04-27	3	Procambarus sp.		3
2762	I-35	Sag-1	2022-04-27	3	Gambusia sp.	27	1

2762	I-35	Sag-1	2022-04-27	3	Gambusia sp.	10	1
2762	I-35	Sag-1	2022-04-27	4	Procambarus sp.		1
2762	I-35	Sag-1	2022-04-27	4	Gambusia sp.	19	1
2762	I-35	Sag-1	2022-04-27	5	No fish collected		
2762	I-35	Sag-1	2022-04-27	6	Gambusia sp.	44	1
2762	I-35	Sag-1	2022-04-27	7	No fish collected		
2762	I-35	Sag-1	2022-04-27	8	No fish collected		
2762	I-35	Sag-1	2022-04-27	9	No fish collected		
2762	I-35	Sag-1	2022-04-27	10	No fish collected		
2762	I-35	Sag-1	2022-04-27	11	Procambarus sp.		2
2762	I-35	Sag-1	2022-04-27	11	No fish collected		
2762	I-35	Sag-1	2022-04-27	12	No fish collected		
2762	I-35	Sag-1	2022-04-27	13	No fish collected		
2762	I-35	Sag-1	2022-04-27	14	No fish collected		
2762	I-35	Sag-1	2022-04-27	15	No fish collected		
2763	I-35	Hyg-2	2022-04-27	1	Procambarus sp.		29
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	14	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	41	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	11	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	12	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	15	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	15	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	19	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	18	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	27	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	10	1
2763	I-35	Hyg-2	2022-04-27	1	Gambusia sp.	6	1
2763	I-35	Hyg-2	2022-04-27	1	Etheostoma fonticola	38	1
2763	I-35	Hyg-2	2022-04-27	2	Procambarus sp.		8
2763	I-35	Hyg-2	2022-04-27	2	Gambusia sp.	27	1
2763	I-35	Hyg-2	2022-04-27	2	Gambusia sp.	20	1
2763	I-35	Hyg-2	2022-04-27	2	Gambusia sp.	9	1
2763	I-35	Hyg-2	2022-04-27	2	Gambusia sp.	22	1
2763	I-35	Hyg-2	2022-04-27	2	Gambusia sp.	12	1
2763	I-35	Hyg-2	2022-04-27	2	Gambusia sp.	13	1
2763	I-35	Hyg-2	2022-04-27	3	Procambarus sp.		11
2763	I-35	Hyg-2	2022-04-27	3	Gambusia sp.	40	1
2763	I-35	Hyg-2	2022-04-27	3	Gambusia sp.	38	1
2763	I-35	Hyg-2	2022-04-27	3	Gambusia sp.	21	1
2763	I-35	Hyg-2	2022-04-27	4	Procambarus sp.		5
2763	I-35	Hyg-2	2022-04-27	4	No fish collected		

2763	I-35	Hyg-2	2022-04-27	5	Procambarus sp.		3
2763	I-35	Hyg-2	2022-04-27	5	No fish collected		
2763	I-35	Hyg-2	2022-04-27	6	Procambarus sp.		1
2763	I-35	Hyg-2	2022-04-27	6	No fish collected		
2763	I-35	Hyg-2	2022-04-27	7	Procambarus sp.		3
2763	I-35	Hyg-2	2022-04-27	7	Gambusia sp.		1
2763	I-35	Hyg-2	2022-04-27	8	Procambarus sp.		3
2763	I-35	Hyg-2	2022-04-27	8	Etheostoma fonticola	33	1
2763	I-35	Hyg-2	2022-04-27	8	Etheostoma fonticola	33	1
2763	I-35	Hyg-2	2022-04-27	8	Gambusia sp.		1
2763	I-35	Hyg-2	2022-04-27	9	Procambarus sp.		4
2763	I-35	Hyg-2	2022-04-27	9	No fish collected		
2763	I-35	Hyg-2	2022-04-27	10	No fish collected		
2763	I-35	Hyg-2	2022-04-27	11	Procambarus sp.		4
2763	I-35	Hyg-2	2022-04-27	11	No fish collected		
2763	I-35	Hyg-2	2022-04-27	12	Etheostoma fonticola	37	1
2763	I-35	Hyg-2	2022-04-27	13	No fish collected		
2763	I-35	Hyg-2	2022-04-27	14	No fish collected		
2763	I-35	Hyg-2	2022-04-27	15	Procambarus sp.		1
2763	I-35	Hyg-2	2022-04-27	15	No fish collected		
2764	I-35	Sag-2	2022-04-27	1	Procambarus sp.		1
2764	I-35	Sag-2	2022-04-27	1	Gambusia sp.	40	1
2764	I-35	Sag-2	2022-04-27	1	Gambusia sp.	32	1
2764	I-35	Sag-2	2022-04-27	1	Gambusia sp.	21	1
2764	I-35	Sag-2	2022-04-27	1	Gambusia sp.	25	1
2764	I-35	Sag-2	2022-04-27	1	Gambusia sp.	21	1
2764	I-35	Sag-2	2022-04-27	1	Gambusia sp.	11	1
2764	I-35	Sag-2	2022-04-27	2	Gambusia sp.	20	1
2764	I-35	Sag-2	2022-04-27	3	Procambarus sp.		3
2764	I-35	Sag-2	2022-04-27	3	No fish collected		
2764	I-35	Sag-2	2022-04-27	4	Procambarus sp.		3
2764	I-35	Sag-2	2022-04-27	4	No fish collected		
2764	I-35	Sag-2	2022-04-27	5	Procambarus sp.		2
2764	I-35	Sag-2	2022-04-27	5	Lepomis miniatus	75	1
2764	I-35	Sag-2	2022-04-27	5	Gambusia sp.	25	1
2764	I-35	Sag-2	2022-04-27	6	No fish collected		
2764	I-35	Sag-2	2022-04-27	7	Procambarus sp.		1
2764	I-35	Sag-2	2022-04-27	7	No fish collected		
2764	I-35	Sag-2	2022-04-27	8	Procambarus sp.		2
2764	I-35	Sag-2	2022-04-27	8	No fish collected		
2764	I-35	Sag-2	2022-04-27	9	Lepomis miniatus	85	1

2764	I-35	Sag-2	2022-04-27	10	No fish collected		
2764	I-35	Sag-2	2022-04-27	11	Procambarus sp.		1
2764	I-35	Sag-2	2022-04-27	11	No fish collected		
2764	I-35	Sag-2	2022-04-27	12	No fish collected		
2764	I-35	Sag-2	2022-04-27	13	Procambarus sp.		2
2764	I-35	Sag-2	2022-04-27	13	No fish collected		
2764	I-35	Sag-2	2022-04-27	14	Gambusia sp.	14	1
2764	I-35	Sag-2	2022-04-27	15	No fish collected		
2765	I-35	Ziz-2	2022-04-27	1	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	1	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	1	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	1	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	2	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	3	No fish collected		
2765	I-35	Ziz-2	2022-04-27	4	Etheostoma fonticola		1
2765	I-35	Ziz-2	2022-04-27	4	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	4	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	4	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	5	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	6	No fish collected		
2765	I-35	Ziz-2	2022-04-27	7	No fish collected		
2765	I-35	Ziz-2	2022-04-27	8	No fish collected		
2765	I-35	Ziz-2	2022-04-27	9	No fish collected		
2765	I-35	Ziz-2	2022-04-27	10	No fish collected		
2765	I-35	Ziz-2	2022-04-27	11	Gambusia sp.		1
2765	I-35	Ziz-2	2022-04-27	12	No fish collected		
2765	I-35	Ziz-2	2022-04-27	13	No fish collected		
2765	I-35	Ziz-2	2022-04-27	14	No fish collected		
2765	I-35	Ziz-2	2022-04-27	15	No fish collected		
2766	I-35	Lud-1	2022-04-27	1	Procambarus sp.		2
2766	I-35	Lud-1	2022-04-27	1	Gambusia sp.	20	1
2766	I-35	Lud-1	2022-04-27	1	Gambusia sp.	18	1
2766	I-35	Lud-1	2022-04-27	1	Gambusia sp.	28	1
2766	I-35	Lud-1	2022-04-27	1	Gambusia sp.	22	1
2766	I-35	Lud-1	2022-04-27	1	Gambusia sp.	20	1
2766	I-35	Lud-1	2022-04-27	1	Gambusia sp.	17	1
2766	I-35	Lud-1	2022-04-27	1	Etheostoma fonticola	32	1
2766	I-35	Lud-1	2022-04-27	1	Etheostoma fonticola	20	1
2766	I-35	Lud-1	2022-04-27	1	Etheostoma fonticola	25	1
2766	I-35	Lud-1	2022-04-27	1	Etheostoma fonticola	17	1
2766	I-35	Lud-1	2022-04-27	2	Procambarus sp.		2

2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	30	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	24	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	19	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	23	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	28	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	20	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	22	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	21	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	17	1
2766	I-35	Lud-1	2022-04-27	2	Gambusia sp.	15	1
2766	I-35	Lud-1	2022-04-27	3	Procambarus sp.		2
2766	I-35	Lud-1	2022-04-27	3	Gambusia sp.	21	1
2766	I-35	Lud-1	2022-04-27	3	Gambusia sp.	17	1
2766	I-35	Lud-1	2022-04-27	3	Gambusia sp.	24	1
2766	I-35	Lud-1	2022-04-27	3	Gambusia sp.	15	1
2766	I-35	Lud-1	2022-04-27	3	Gambusia sp.	13	1
2766	I-35	Lud-1	2022-04-27	3	Gambusia sp.	26	1
2766	I-35	Lud-1	2022-04-27	4	No fish collected		
2766	I-35	Lud-1	2022-04-27	5	Procambarus sp.		1
2766	I-35	Lud-1	2022-04-27	5	Etheostoma fonticola	31	1
2766	I-35	Lud-1	2022-04-27	5	Gambusia sp.		1
2766	I-35	Lud-1	2022-04-27	6	Procambarus sp.		1
2766	I-35	Lud-1	2022-04-27	6	Gambusia sp.		1
2766	I-35	Lud-1	2022-04-27	6	Etheostoma fonticola	20	1
2766	I-35	Lud-1	2022-04-27	7	No fish collected		
2766	I-35	Lud-1	2022-04-27	8	Procambarus sp.		1
2766	I-35	Lud-1	2022-04-27	8	Etheostoma fonticola	33	1
2766	I-35	Lud-1	2022-04-27	9	Etheostoma fonticola	15	1
2766	I-35	Lud-1	2022-04-27	10	No fish collected		
2766	I-35	Lud-1	2022-04-27	11	No fish collected		
2766	I-35	Lud-1	2022-04-27	12	No fish collected		
2766	I-35	Lud-1	2022-04-27	13	No fish collected		
2766	I-35	Lud-1	2022-04-27	14	No fish collected		
2766	I-35	Lud-1	2022-04-27	15	No fish collected		
2767	I-35	Lud-2	2022-04-27	1	Procambarus sp.		5
2767	I-35	Lud-2	2022-04-27	1	Lepomis miniatus	45	1
2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	19	1
2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	17	1
2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	15	1
2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	13	1
2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	11	1

2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	18	1
2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	17	1
2767	I-35	Lud-2	2022-04-27	1	Etheostoma fonticola	13	1
2767	I-35	Lud-2	2022-04-27	2	Procambarus sp.		4
2767	I-35	Lud-2	2022-04-27	2	Etheostoma fonticola	20	1
2767	I-35	Lud-2	2022-04-27	2	Etheostoma fonticola	22	1
2767	I-35	Lud-2	2022-04-27	2	Gambusia sp.	21	1
2767	I-35	Lud-2	2022-04-27	2	Gambusia sp.	12	1
2767	I-35	Lud-2	2022-04-27	2	Gambusia sp.	13	1
2767	I-35	Lud-2	2022-04-27	2	Gambusia sp.	10	1
2767	I-35	Lud-2	2022-04-27	3	Procambarus sp.		2
2767	I-35	Lud-2	2022-04-27	3	Etheostoma fonticola	20	1
2767	I-35	Lud-2	2022-04-27	3	Etheostoma fonticola	17	1
2767	I-35	Lud-2	2022-04-27	4	Procambarus sp.		7
2767	I-35	Lud-2	2022-04-27	4	Etheostoma fonticola	21	1
2767	I-35	Lud-2	2022-04-27	5	Procambarus sp.		7
2767	I-35	Lud-2	2022-04-27	5	Gambusia sp.	18	1
2767	I-35	Lud-2	2022-04-27	5	Etheostoma fonticola	6	1
2767	I-35	Lud-2	2022-04-27	5	Etheostoma fonticola	15	1
2767	I-35	Lud-2	2022-04-27	6	Etheostoma fonticola	18	1
2767	I-35	Lud-2	2022-04-27	7	Procambarus sp.		4
2767	I-35	Lud-2	2022-04-27	7	Etheostoma fonticola	15	1
2767	I-35	Lud-2	2022-04-27	7	Etheostoma fonticola	17	1
2767	I-35	Lud-2	2022-04-27	8	No fish collected		
2767	I-35	Lud-2	2022-04-27	9	Procambarus sp.		3
2767	I-35	Lud-2	2022-04-27	9	Etheostoma fonticola	20	1
2767	I-35	Lud-2	2022-04-27	10	No fish collected		
2767	I-35	Lud-2	2022-04-27	11	Procambarus sp.		1
2767	I-35	Lud-2	2022-04-27	11	No fish collected		
2767	I-35	Lud-2	2022-04-27	12	No fish collected		
2767	I-35	Lud-2	2022-04-27	13	Procambarus sp.		2
2767	I-35	Lud-2	2022-04-27	13	No fish collected		
2767	I-35	Lud-2	2022-04-27	14	Procambarus sp.		1
2767	I-35	Lud-2	2022-04-27	14	No fish collected		
2767	I-35	Lud-2	2022-04-27	15	Procambarus sp.		1
2767	I-35	Lud-2	2022-04-27	15	No fish collected		
2768	I-35	Cab-2	2022-04-27	1	Micropterus salmoides	25	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	13	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	12	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	16	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	11	1

2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	19	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	21	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	14	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	11	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	12	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	19	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	15	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	14	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	12	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	11	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	10	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	13	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	15	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	10	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	18	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.	17	1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1

2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	1	Etheostoma fonticola	19	1
2768	I-35	Cab-2	2022-04-27	1	Etheostoma fonticola	18	1
2768	I-35	Cab-2	2022-04-27	1	Ambloplites rupestris	14	1
2768	I-35	Cab-2	2022-04-27	1	Notropis chalybaeus	13	1
2768	I-35	Cab-2	2022-04-27	1	Procambarus sp.		2
2768	I-35	Cab-2	2022-04-27	2	Procambarus sp.		6
2768	I-35	Cab-2	2022-04-27	2	Ambloplites rupestris	28	1
2768	I-35	Cab-2	2022-04-27	2	Ambloplites rupestris	20	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	15	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	21	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	24	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	11	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	25	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	17	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	16	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	19	1
2768	I-35	Cab-2	2022-04-27	2	Etheostoma fonticola	20	1
2768	I-35	Cab-2	2022-04-27	2	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	2	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	2	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	2	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	2	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	3	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	4	Procambarus sp.		1
2768	I-35	Cab-2	2022-04-27	4	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	5	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	5	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	5	Procambarus sp.		1
2768	I-35	Cab-2	2022-04-27	6	Procambarus sp.		4
2768	I-35	Cab-2	2022-04-27	6	Etheostoma fonticola	36	1
2768	I-35	Cab-2	2022-04-27	6	Etheostoma fonticola	15	1
2768	I-35	Cab-2	2022-04-27	6	Etheostoma fonticola	16	1
2768	I-35	Cab-2	2022-04-27	6	Ambloplites rupestris	20	1
2768	I-35	Cab-2	2022-04-27	7	Procambarus sp.		2
2768	I-35	Cab-2	2022-04-27	7	Etheostoma fonticola	19	1
2768	I-35	Cab-2	2022-04-27	8	Procambarus sp.		2
2768	I-35	Cab-2	2022-04-27	8	No fish collected		
2768	I-35	Cab-2	2022-04-27	9	Procambarus sp.		1

2768	I-35	Cab-2	2022-04-27	9	No fish collected		
2768	I-35	Cab-2	2022-04-27	10	No fish collected		
2768	I-35	Cab-2	2022-04-27	11	Procambarus sp.		1
2768	I-35	Cab-2	2022-04-27	11	No fish collected		
2768	I-35	Cab-2	2022-04-27	12	No fish collected		
2768	I-35	Cab-2	2022-04-27	13	No fish collected		
2768	I-35	Cab-2	2022-04-27	14	Procambarus sp.		1
2768	I-35	Cab-2	2022-04-27	14	Etheostoma fonticola	19	1
2768	I-35	Cab-2	2022-04-27	14	Gambusia sp.		1
2768	I-35	Cab-2	2022-04-27	15	No fish collected		
2768	I-35	Cab-2	2022-04-27	3	Procambarus sp.		1
2759	I-35	Cabo-1	2022-04-27	1	Procambarus sp.		18
2759	I-35	Cabo-1	2022-04-27	1	Ambloplites rupestris	16	1
2759	I-35	Cabo-1	2022-04-27	1	Ambloplites rupestris	17	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	18	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	35	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	38	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	18	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	15	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	18	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	9	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	10	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	9	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	11	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	12	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	12	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	8	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	12	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	9	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	10	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	10	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	10	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	12	1
2759	I-35	Cabo-1	2022-04-27	1	Gambusia sp.	14	1
2759	I-35	Cabo-1	2022-04-27	1	Lepomis sp.	12	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	30	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	19	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	19	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	20	1

2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	20	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	32	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	31	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	26	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	21	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	19	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	23	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	16	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	16	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	16	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	21	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	16	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	12	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	13	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	19	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	22	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	12	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	13	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	16	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	11	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	12	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	14	1

2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	11	1
2759	I-35	Cabo-1	2022-04-27	1	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	2	Procambarus sp.		8
2759	I-35	Cabo-1	2022-04-27	2	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	2	Ambloplites rupestris	15	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	20	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	20	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	27	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	11	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	22	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	19	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	11	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	12	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	19	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	12	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	20	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	21	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	13	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	21	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	12	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	13	1
2759	I-35	Cabo-1	2022-04-27	2	Etheostoma fonticola	11	1
2759	I-35	Cabo-1	2022-04-27	3	Procambarus sp.		7
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	3	Gambusia sp.		1

2759	I-35	Cabo-1	2022-04-27	3	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	3	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	3	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	3	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	3	Etheostoma fonticola	10	1
2759	I-35	Cabo-1	2022-04-27	4	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	4	Etheostoma fonticola	14	1
2759	I-35	Cabo-1	2022-04-27	4	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	4	Etheostoma fonticola	16	1
2759	I-35	Cabo-1	2022-04-27	5	Procambarus sp.		2
2759	I-35	Cabo-1	2022-04-27	5	Etheostoma fonticola	19	1
2759	I-35	Cabo-1	2022-04-27	5	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	5	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	5	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	6	Procambarus sp.		2
2759	I-35	Cabo-1	2022-04-27	6	Etheostoma fonticola	34	1
2759	I-35	Cabo-1	2022-04-27	6	Etheostoma fonticola	11	1
2759	I-35	Cabo-1	2022-04-27	6	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	7	Procambarus sp.		2
2759	I-35	Cabo-1	2022-04-27	7	Etheostoma fonticola	25	1
2759	I-35	Cabo-1	2022-04-27	7	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	7	Etheostoma fonticola	21	1
2759	I-35	Cabo-1	2022-04-27	8	Procambarus sp.		1
2759	I-35	Cabo-1	2022-04-27	8	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	8	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	8	Etheostoma fonticola	12	1
2759	I-35	Cabo-1	2022-04-27	9	Micropterus salmoides	15	1
2759	I-35	Cabo-1	2022-04-27	9	Procambarus sp.		1
2759	I-35	Cabo-1	2022-04-27	9	Etheostoma fonticola	29	1
2759	I-35	Cabo-1	2022-04-27	10	Etheostoma fonticola	30	1
2759	I-35	Cabo-1	2022-04-27	10	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	10	Procambarus sp.		1
2759	I-35	Cabo-1	2022-04-27	11	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	12	Etheostoma fonticola	36	1
2759	I-35	Cabo-1	2022-04-27	12	Etheostoma fonticola	26	1
2759	I-35	Cabo-1	2022-04-27	13	No fish collected		
2759	I-35	Cabo-1	2022-04-27	14	Procambarus sp.		1
2759	I-35	Cabo-1	2022-04-27	14	Etheostoma fonticola	16	1
2759	I-35	Cabo-1	2022-04-27	15	Procambarus sp.		2
2759	I-35	Cabo-1	2022-04-27	15	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	16	Etheostoma fonticola	23	1

2759	I-35	Cabo-1	2022-04-27	16	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	17	Etheostoma fonticola	17	1
2759	I-35	Cabo-1	2022-04-27	18	Etheostoma fonticola	18	1
2759	I-35	Cabo-1	2022-04-27	19	No fish collected		
2759	I-35	Cabo-1	2022-04-27	4	Procambarus sp.		4
2759	I-35	Cabo-1	2022-04-27	4	Gambusia sp.		1
2759	I-35	Cabo-1	2022-04-27	4	Etheostoma fonticola	15	1
2759	I-35	Cabo-1	2022-04-27	4	Etheostoma fonticola	16	1
2760	I-35	Ziz-1	2022-04-27	1	Procambarus sp.		2
2760	I-35	Ziz-1	2022-04-27	1	Astyanax mexicanus	70	1
2760	I-35	Ziz-1	2022-04-27	1	Gambusia sp.	25	1
2760	I-35	Ziz-1	2022-04-27	1	Gambusia sp.	25	1
2760	I-35	Ziz-1	2022-04-27	1	Gambusia sp.	38	1
2760	I-35	Ziz-1	2022-04-27	1	Gambusia sp.	26	1
2760	I-35	Ziz-1	2022-04-27	1	Gambusia sp.	18	1
2760	I-35	Ziz-1	2022-04-27	1	Gambusia sp.	20	1
2760	I-35	Ziz-1	2022-04-27	1	Gambusia sp.	18	1
2760	I-35	Ziz-1	2022-04-27	2	Gambusia sp.	21	1
2760	I-35	Ziz-1	2022-04-27	2	Gambusia sp.	17	1
2760	I-35	Ziz-1	2022-04-27	3	Gambusia sp.	25	1
2760	I-35	Ziz-1	2022-04-27	4	No fish collected		
2760	I-35	Ziz-1	2022-04-27	5	Gambusia sp.	17	1
2760	I-35	Ziz-1	2022-04-27	6	No fish collected		
2760	I-35	Ziz-1	2022-04-27	7	No fish collected		
2760	I-35	Ziz-1	2022-04-27	8	No fish collected		
2760	I-35	Ziz-1	2022-04-27	9	No fish collected		
2760	I-35	Ziz-1	2022-04-27	10	Ambloplites rupestris	77	1
2760	I-35	Ziz-1	2022-04-27	11	No fish collected		
2760	I-35	Ziz-1	2022-04-27	12	No fish collected		
2760	I-35	Ziz-1	2022-04-27	13	No fish collected		
2760	I-35	Ziz-1	2022-04-27	14	Gambusia sp.	45	1
2760	I-35	Ziz-1	2022-04-27	15	Gambusia sp.	17	1
2769	I-35	Open-1	2022-04-27	1	No fish collected		
2769	I-35	Open-1	2022-04-27	2	No fish collected		
2769	I-35	Open-1	2022-04-27	3	No fish collected		
2769	I-35	Open-1	2022-04-27	4	No fish collected		
2769	I-35	Open-1	2022-04-27	5	No fish collected		
2769	I-35	Open-1	2022-04-27	6	No fish collected		
2769	I-35	Open-1	2022-04-27	7	No fish collected		
2769	I-35	Open-1	2022-04-27	8	No fish collected		
2769	I-35	Open-1	2022-04-27	9	No fish collected		

2769	I-35	Open-1	2022-04-27	10	No fish collected		
2770	I-35	Open-2	2022-04-27	1	No fish collected		
2770	I-35	Open-2	2022-04-27	2	No fish collected		
2770	I-35	Open-2	2022-04-27	3	No fish collected		
2770	I-35	Open-2	2022-04-27	4	No fish collected		
2770	I-35	Open-2	2022-04-27	5	No fish collected		
2770	I-35	Open-2	2022-04-27	6	No fish collected		
2770	I-35	Open-2	2022-04-27	7	No fish collected		
2770	I-35	Open-2	2022-04-27	8	No fish collected		
2770	I-35	Open-2	2022-04-27	9	No fish collected		
2770	I-35	Open-2	2022-04-27	10	No fish collected		
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	20	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	20	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	21	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	24	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	25	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	26	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	25	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	15	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	12	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	24	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	14	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	14	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	22	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	25	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	25	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	26	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	26	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	28	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	20	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	25	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	30	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	30	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	25	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	27	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	30	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	33	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	33	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	37	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	18	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	15	1

2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	20	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	15	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	24	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	20	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	29	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	32	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.	14	1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	1	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Procambarus sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Lepomis sp.	20	1
2818	I-35	Cabo-1	2022-07-20	2	Palaemonetes sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Etheostoma fonticola	25	1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	2	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	3	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	3	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	3	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	4	Lepomis miniatus	42	1
2818	I-35	Cabo-1	2022-07-20	4	Etheostoma fonticola	15	1
2818	I-35	Cabo-1	2022-07-20	5	Procambarus sp.		2

2818	I-35	Cabo-1	2022-07-20	5	No fish collected		
2818	I-35	Cabo-1	2022-07-20	6	No fish collected		
2818	I-35	Cabo-1	2022-07-20	7	Lepomis miniatus	95	1
2818	I-35	Cabo-1	2022-07-20	7	Procambarus sp.		1
2818	I-35	Cabo-1	2022-07-20	8	No fish collected		
2818	I-35	Cabo-1	2022-07-20	9	Procambarus sp.		1
2818	I-35	Cabo-1	2022-07-20	9	Etheostoma fonticola	35	1
2818	I-35	Cabo-1	2022-07-20	10	No fish collected		
2818	I-35	Cabo-1	2022-07-20	11	Etheostoma fonticola	18	1
2818	I-35	Cabo-1	2022-07-20	11	Etheostoma fonticola	18	1
2818	I-35	Cabo-1	2022-07-20	11	Procambarus sp.		1
2818	I-35	Cabo-1	2022-07-20	11	Micropterus salmoides	51	1
2818	I-35	Cabo-1	2022-07-20	12	No fish collected		
2818	I-35	Cabo-1	2022-07-20	13	Gambusia sp.		1
2818	I-35	Cabo-1	2022-07-20	14	Etheostoma fonticola	21	1
2818	I-35	Cabo-1	2022-07-20	15	Lepomis miniatus	70	1
2818	I-35	Cabo-1	2022-07-20	15	Lepomis miniatus	31	1
2818	I-35	Cabo-1	2022-07-20	15	Lepomis miniatus	89	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	29	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	32	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	32	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	15	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	17	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	12	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	30	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	18	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	17	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	18	1
2819	I-35	Cab-2	2022-07-20	1	Procambarus sp.		1
2819	I-35	Cab-2	2022-07-20	2	Gambusia sp.	30	1
2819	I-35	Cab-2	2022-07-20	2	Gambusia sp.	25	1
2819	I-35	Cab-2	2022-07-20	2	Gambusia sp.	23	1
2819	I-35	Cab-2	2022-07-20	2	Gambusia sp.	20	1
2819	I-35	Cab-2	2022-07-20	2	Ambloplites rupestris	13	1
2819	I-35	Cab-2	2022-07-20	3	Procambarus sp.		2
2819	I-35	Cab-2	2022-07-20	3	Gambusia sp.	12	1
2819	I-35	Cab-2	2022-07-20	3	Etheostoma fonticola	28	1
2819	I-35	Cab-2	2022-07-20	3	Etheostoma fonticola	21	1
2819	I-35	Cab-2	2022-07-20	4	Etheostoma fonticola	28	1
2819	I-35	Cab-2	2022-07-20	4	Etheostoma fonticola	33	1
2819	I-35	Cab-2	2022-07-20	4	Etheostoma fonticola	29	1

2819	I-35	Cab-2	2022-07-20	4	Gambusia sp.	22	1
2819	I-35	Cab-2	2022-07-20	5	Gambusia sp.	35	1
2819	I-35	Cab-2	2022-07-20	6	Procambarus sp.		1
2819	I-35	Cab-2	2022-07-20	6	No fish collected		
2819	I-35	Cab-2	2022-07-20	7	Procambarus sp.		1
2819	I-35	Cab-2	2022-07-20	7	Etheostoma fonticola	31	1
2819	I-35	Cab-2	2022-07-20	8	Procambarus sp.		1
2819	I-35	Cab-2	2022-07-20	8	No fish collected		
2819	I-35	Cab-2	2022-07-20	9	No fish collected		
2819	I-35	Cab-2	2022-07-20	10	No fish collected		
2819	I-35	Cab-2	2022-07-20	11	Procambarus sp.		1
2819	I-35	Cab-2	2022-07-20	11	Etheostoma fonticola	26	1
2819	I-35	Cab-2	2022-07-20	11	Lepomis sp.	15	1
2819	I-35	Cab-2	2022-07-20	12	Gambusia sp.		1
2819	I-35	Cab-2	2022-07-20	13	Etheostoma fonticola	27	1
2819	I-35	Cab-2	2022-07-20	14	No fish collected		
2819	I-35	Cab-2	2022-07-20	15	Etheostoma fonticola	20	1
2819	I-35	Cab-2	2022-07-20	16	Etheostoma fonticola	30	1
2819	I-35	Cab-2	2022-07-20	16	Procambarus sp.		2
2819	I-35	Cab-2	2022-07-20	17	Etheostoma fonticola	27	1
2819	I-35	Cab-2	2022-07-20	18	No fish collected		
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	25	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	25	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	31	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	28	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	19	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	20	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	20	1
2819	I-35	Cab-2	2022-07-20	1	Gambusia sp.	20	1
2820	I-35	Lud-1	2022-07-20	1	Procambarus sp.		4
2820	I-35	Lud-1	2022-07-20	1	Etheostoma fonticola	33	1
2820	I-35	Lud-1	2022-07-20	1	Etheostoma fonticola	25	1
2820	I-35	Lud-1	2022-07-20	1	Etheostoma fonticola	35	1
2820	I-35	Lud-1	2022-07-20	1	Etheostoma fonticola	14	1
2820	I-35	Lud-1	2022-07-20	1	Etheostoma fonticola	25	1
2820	I-35	Lud-1	2022-07-20	1	Etheostoma fonticola	18	1
2820	I-35	Lud-1	2022-07-20	1	Etheostoma fonticola	20	1
2820	I-35	Lud-1	2022-07-20	1	Gambusia sp.	15	1
2820	I-35	Lud-1	2022-07-20	1	Lepomis miniatus	80	1
2820	I-35	Lud-1	2022-07-20	2	Procambarus sp.		13
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	11	1

2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	14	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	15	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	15	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	32	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	25	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	12	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	23	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	24	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	17	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	17	1
2820	I-35	Lud-1	2022-07-20	2	Etheostoma fonticola	15	1
2820	I-35	Lud-1	2022-07-20	3	Procambarus sp.		2
2820	I-35	Lud-1	2022-07-20	3	No fish collected		
2820	I-35	Lud-1	2022-07-20	4	Procambarus sp.		4
2820	I-35	Lud-1	2022-07-20	4	Etheostoma fonticola	31	1
2820	I-35	Lud-1	2022-07-20	4	Etheostoma fonticola	28	1
2820	I-35	Lud-1	2022-07-20	4	Etheostoma fonticola	17	1
2820	I-35	Lud-1	2022-07-20	5	Gambusia sp.	25	1
2820	I-35	Lud-1	2022-07-20	5	Procambarus sp.		1
2820	I-35	Lud-1	2022-07-20	6	No fish collected		
2820	I-35	Lud-1	2022-07-20	7	No fish collected		
2820	I-35	Lud-1	2022-07-20	8	No fish collected		
2820	I-35	Lud-1	2022-07-20	9	Etheostoma fonticola	25	1
2820	I-35	Lud-1	2022-07-20	10	Procambarus sp.		2
2820	I-35	Lud-1	2022-07-20	10	Etheostoma fonticola	22	1
2820	I-35	Lud-1	2022-07-20	10	Etheostoma fonticola	31	1
2820	I-35	Lud-1	2022-07-20	11	No fish collected		
2820	I-35	Lud-1	2022-07-20	12	No fish collected		
2820	I-35	Lud-1	2022-07-20	13	No fish collected		
2820	I-35	Lud-1	2022-07-20	14	No fish collected		
2820	I-35	Lud-1	2022-07-20	15	No fish collected		
2821	I-35	Sagi-1	2022-07-20	1	Ambloplites rupestris	53	1
2821	I-35	Sagi-1	2022-07-20	1	Ambloplites rupestris	54	1
2821	I-35	Sagi-1	2022-07-20	1	Ambloplites rupestris	39	1
2821	I-35	Sagi-1	2022-07-20	1	Gambusia sp.	30	1
2821	I-35	Sagi-1	2022-07-20	1	Gambusia sp.	18	1
2821	I-35	Sagi-1	2022-07-20	1	Gambusia sp.	25	1
2821	I-35	Sagi-1	2022-07-20	1	Gambusia sp.	19	1
2821	I-35	Sagi-1	2022-07-20	1	Gambusia sp.	36	1
2821	I-35	Sagi-1	2022-07-20	1	Gambusia sp.	19	1
2821	I-35	Sagi-1	2022-07-20	1	Procambarus sp.		4

2821	I-35	Sagi-1	2022-07-20	2	Procambarus sp.		4
2821	I-35	Sagi-1	2022-07-20	2	Etheostoma fonticola	38	1
2821	I-35	Sagi-1	2022-07-20	2	Gambusia sp.	24	1
2821	I-35	Sagi-1	2022-07-20	2	Gambusia sp.	11	1
2821	I-35	Sagi-1	2022-07-20	3	Gambusia sp.	19	1
2821	I-35	Sagi-1	2022-07-20	4	Procambarus sp.		3
2821	I-35	Sagi-1	2022-07-20	4	No fish collected		
2821	I-35	Sagi-1	2022-07-20	5	Procambarus sp.		5
2821	I-35	Sagi-1	2022-07-20	5	Etheostoma fonticola	14	1
2821	I-35	Sagi-1	2022-07-20	6	Procambarus sp.		4
2821	I-35	Sagi-1	2022-07-20	6	Etheostoma fonticola	28	1
2821	I-35	Sagi-1	2022-07-20	7	Procambarus sp.		2
2821	I-35	Sagi-1	2022-07-20	7	No fish collected		
2821	I-35	Sagi-1	2022-07-20	8	Etheostoma fonticola	31	1
2821	I-35	Sagi-1	2022-07-20	8	Procambarus sp.		5
2821	I-35	Sagi-1	2022-07-20	9	Procambarus sp.		1
2821	I-35	Sagi-1	2022-07-20	9	No fish collected		
2821	I-35	Sagi-1	2022-07-20	10	Procambarus sp.		1
2821	I-35	Sagi-1	2022-07-20	10	No fish collected		
2821	I-35	Sagi-1	2022-07-20	11	Procambarus sp.		1
2821	I-35	Sagi-1	2022-07-20	11	No fish collected		
2821	I-35	Sagi-1	2022-07-20	12	Procambarus sp.		1
2821	I-35	Sagi-1	2022-07-20	12	No fish collected		
2821	I-35	Sagi-1	2022-07-20	13	Procambarus sp.		1
2821	I-35	Sagi-1	2022-07-20	13	No fish collected		
2821	I-35	Sagi-1	2022-07-20	14	Procambarus sp.		1
2821	I-35	Sagi-1	2022-07-20	14	No fish collected		
2821	I-35	Sagi-1	2022-07-20	15	Gambusia sp.	35	1
2822	I-35	Hyg-1	2022-07-20	1	Procambarus sp.		26
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	24	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	20	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	18	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	16	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	25	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	25	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	26	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	26	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	27	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	24	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	27	1
2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	20	1

2822	I-35	Hyg-1	2022-07-20	1	Etheostoma fonticola	21	1
2822	I-35	Hyg-1	2022-07-20	1	Gambusia sp.	15	1
2822	I-35	Hyg-1	2022-07-20	2	Procambarus sp.		12
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	37	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	31	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	31	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	31	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	20	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	32	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	28	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	34	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	26	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	27	1
2822	I-35	Hyg-1	2022-07-20	2	Etheostoma fonticola	24	1
2822	I-35	Hyg-1	2022-07-20	2	Gambusia sp.	22	1
2822	I-35	Hyg-1	2022-07-20	2	Gambusia sp.	16	1
2822	I-35	Hyg-1	2022-07-20	3	Procambarus sp.		6
2822	I-35	Hyg-1	2022-07-20	3	Gambusia sp.	17	1
2822	I-35	Hyg-1	2022-07-20	3	Etheostoma fonticola	28	1
2822	I-35	Hyg-1	2022-07-20	3	Etheostoma fonticola	25	1
2822	I-35	Hyg-1	2022-07-20	3	Etheostoma fonticola	23	1
2822	I-35	Hyg-1	2022-07-20	3	Etheostoma fonticola	26	1
2822	I-35	Hyg-1	2022-07-20	3	Etheostoma fonticola	23	1
2822	I-35	Hyg-1	2022-07-20	3	Etheostoma fonticola	27	1
2822	I-35	Hyg-1	2022-07-20	4	Procambarus sp.		3
2822	I-35	Hyg-1	2022-07-20	4	No fish collected		
2822	I-35	Hyg-1	2022-07-20	5	No fish collected		
2822	I-35	Hyg-1	2022-07-20	6	Etheostoma fonticola	28	1
2822	I-35	Hyg-1	2022-07-20	7	Etheostoma fonticola	23	1
2822	I-35	Hyg-1	2022-07-20	7	Etheostoma fonticola	26	1
2822	I-35	Hyg-1	2022-07-20	8	No fish collected		
2822	I-35	Hyg-1	2022-07-20	9	Procambarus sp.		1
2822	I-35	Hyg-1	2022-07-20	9	No fish collected		
2822	I-35	Hyg-1	2022-07-20	10	No fish collected		
2822	I-35	Hyg-1	2022-07-20	11	Procambarus sp.		1
2822	I-35	Hyg-1	2022-07-20	11	No fish collected		
2822	I-35	Hyg-1	2022-07-20	12	No fish collected		
2822	I-35	Hyg-1	2022-07-20	13	No fish collected		
2822	I-35	Hyg-1	2022-07-20	14	Etheostoma fonticola	32	1
2822	I-35	Hyg-1	2022-07-20	15	No fish collected		
2823	I-35	Sagi-2	2022-07-20	1	Procambarus sp.		7

2823	I-35	Sagi-2	2022-07-20	1	Etheostoma fonticola	32	1
2823	I-35	Sagi-2	2022-07-20	1	Etheostoma fonticola	37	1
2823	I-35	Sagi-2	2022-07-20	1	Etheostoma fonticola	29	1
2823	I-35	Sagi-2	2022-07-20	1	Etheostoma fonticola	24	1
2823	I-35	Sagi-2	2022-07-20	1	Gambusia sp.	32	1
2823	I-35	Sagi-2	2022-07-20	1	Gambusia sp.	35	1
2823	I-35	Sagi-2	2022-07-20	1	Gambusia sp.	13	1
2823	I-35	Sagi-2	2022-07-20	2	Procambarus sp.		4
2823	I-35	Sagi-2	2022-07-20	2	Gambusia sp.	33	1
2823	I-35	Sagi-2	2022-07-20	3	Procambarus sp.		9
2823	I-35	Sagi-2	2022-07-20	3	Etheostoma fonticola	36	1
2823	I-35	Sagi-2	2022-07-20	3	Etheostoma fonticola	25	1
2823	I-35	Sagi-2	2022-07-20	3	Ambloplites rupestris	37	1
2823	I-35	Sagi-2	2022-07-20	4	Procambarus sp.		3
2823	I-35	Sagi-2	2022-07-20	4	Etheostoma fonticola	30	1
2823	I-35	Sagi-2	2022-07-20	5	No fish collected		
2823	I-35	Sagi-2	2022-07-20	6	No fish collected		
2823	I-35	Sagi-2	2022-07-20	7	Procambarus sp.		1
2823	I-35	Sagi-2	2022-07-20	7	Etheostoma fonticola	27	1
2823	I-35	Sagi-2	2022-07-20	8	Lepomis miniatus	71	1
2823	I-35	Sagi-2	2022-07-20	8	Etheostoma fonticola	37	1
2823	I-35	Sagi-2	2022-07-20	9	Procambarus sp.		1
2823	I-35	Sagi-2	2022-07-20	9	No fish collected		
2823	I-35	Sagi-2	2022-07-20	10	No fish collected		
2823	I-35	Sagi-2	2022-07-20	11	No fish collected		
2823	I-35	Sagi-2	2022-07-20	12	Procambarus sp.		1
2823	I-35	Sagi-2	2022-07-20	12	No fish collected		
2823	I-35	Sagi-2	2022-07-20	13	Procambarus sp.		1
2823	I-35	Sagi-2	2022-07-20	13	No fish collected		
2823	I-35	Sagi-2	2022-07-20	14	Procambarus sp.		3
2823	I-35	Sagi-2	2022-07-20	14	No fish collected		
2823	I-35	Sagi-2	2022-07-20	15	No fish collected		
2824	I-35	Open-1	2022-07-20	1	No fish collected		
2824	I-35	Open-1	2022-07-20	2	No fish collected		
2824	I-35	Open-1	2022-07-20	3	No fish collected		
2824	I-35	Open-1	2022-07-20	4	Etheostoma fonticola	14	1
2824	I-35	Open-1	2022-07-20	5	No fish collected		
2824	I-35	Open-1	2022-07-20	6	No fish collected		
2824	I-35	Open-1	2022-07-20	7	No fish collected		
2824	I-35	Open-1	2022-07-20	8	No fish collected		
2824	I-35	Open-1	2022-07-20	9	No fish collected		

2824	I-35	Open-1	2022-07-20	10	No fish collected		
2824	I-35	Open-1	2022-07-20	11	No fish collected		
2824	I-35	Open-1	2022-07-20	12	No fish collected		
2824	I-35	Open-1	2022-07-20	13	No fish collected		
2824	I-35	Open-1	2022-07-20	14	No fish collected		
2824	I-35	Open-1	2022-07-20	15	No fish collected		
2825	I-35	Open-2	2022-07-20	1	No fish collected		
2825	I-35	Open-2	2022-07-20	2	No fish collected		
2825	I-35	Open-2	2022-07-20	3	No fish collected		
2825	I-35	Open-2	2022-07-20	4	No fish collected		
2825	I-35	Open-2	2022-07-20	5	No fish collected		
2825	I-35	Open-2	2022-07-20	6	No fish collected		
2825	I-35	Open-2	2022-07-20	7	No fish collected		
2825	I-35	Open-2	2022-07-20	8	No fish collected		
2825	I-35	Open-2	2022-07-20	9	No fish collected		
2825	I-35	Open-2	2022-07-20	10	No fish collected		
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	49	1
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	52	1
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	43	1
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	35	1
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	41	1
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	44	1
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	32	1
2840	I-35	Hyg-1	2022-10-11	1	Notropis amabilis	32	1
2840	I-35	Hyg-1	2022-10-11	1	Procambarus sp.		1
2840	I-35	Hyg-1	2022-10-11	2	Procambarus sp.		1
2840	I-35	Hyg-1	2022-10-11	2	Notropis amabilis	42	1
2840	I-35	Hyg-1	2022-10-11	2	Notropis amabilis	35	1
2840	I-35	Hyg-1	2022-10-11	2	Notropis amabilis	55	1
2840	I-35	Hyg-1	2022-10-11	2	Notropis amabilis	35	1
2840	I-35	Hyg-1	2022-10-11	2	Notropis amabilis	25	1
2840	I-35	Hyg-1	2022-10-11	2	Notropis amabilis	22	1
2840	I-35	Hyg-1	2022-10-11	2	Etheostoma fonticola	30	1
2840	I-35	Hyg-1	2022-10-11	2	Etheostoma fonticola	27	1
2840	I-35	Hyg-1	2022-10-11	2	Etheostoma fonticola	13	1
2840	I-35	Hyg-1	2022-10-11	2	Lepomis sp.	15	1
2840	I-35	Hyg-1	2022-10-11	2	Lepomis sp.	10	1
2840	I-35	Hyg-1	2022-10-11	2	Micropterus salmoides	98	1
2840	I-35	Hyg-1	2022-10-11	3	Notropis amabilis	51	1
2840	I-35	Hyg-1	2022-10-11	3	Notropis amabilis	31	1
2840	I-35	Hyg-1	2022-10-11	3	Notropis amabilis	32	1

2840	I-35	Hyg-1	2022-10-11	3	Notropis amabilis	16	1
2840	I-35	Hyg-1	2022-10-11	3	Etheostoma fonticola	20	1
2840	I-35	Hyg-1	2022-10-11	3	Etheostoma fonticola	33	1
2840	I-35	Hyg-1	2022-10-11	3	Etheostoma fonticola	29	1
2840	I-35	Hyg-1	2022-10-11	3	Etheostoma fonticola	15	1
2840	I-35	Hyg-1	2022-10-11	3	Gambusia sp.	10	1
2840	I-35	Hyg-1	2022-10-11	3	Procambarus sp.		2
2840	I-35	Hyg-1	2022-10-11	4	Etheostoma fonticola	22	1
2840	I-35	Hyg-1	2022-10-11	4	Etheostoma fonticola	32	1
2840	I-35	Hyg-1	2022-10-11	4	Procambarus sp.		3
2840	I-35	Hyg-1	2022-10-11	5	Etheostoma fonticola	24	1
2840	I-35	Hyg-1	2022-10-11	5	Procambarus sp.		2
2840	I-35	Hyg-1	2022-10-11	6	Notropis amabilis	48	1
2840	I-35	Hyg-1	2022-10-11	6	Lepomis miniatus	44	1
2840	I-35	Hyg-1	2022-10-11	6	Procambarus sp.		3
2840	I-35	Hyg-1	2022-10-11	7	No fish collected		
2840	I-35	Hyg-1	2022-10-11	8	Procambarus sp.		3
2840	I-35	Hyg-1	2022-10-11	8	Etheostoma fonticola	24	1
2840	I-35	Hyg-1	2022-10-11	8	Etheostoma fonticola	24	1
2840	I-35	Hyg-1	2022-10-11	9	Etheostoma fonticola	26	1
2840	I-35	Hyg-1	2022-10-11	9	Procambarus sp.		1
2840	I-35	Hyg-1	2022-10-11	10	Procambarus sp.		3
2840	I-35	Hyg-1	2022-10-11	10	Etheostoma fonticola	21	1
2840	I-35	Hyg-1	2022-10-11	10	Etheostoma fonticola	30	1
2840	I-35	Hyg-1	2022-10-11	11	Etheostoma fonticola	16	1
2840	I-35	Hyg-1	2022-10-11	11	Etheostoma fonticola	25	1
2840	I-35	Hyg-1	2022-10-11	11	Etheostoma fonticola	25	1
2840	I-35	Hyg-1	2022-10-11	12	Notropis amabilis	53	1
2840	I-35	Hyg-1	2022-10-11	12	Etheostoma fonticola	30	1
2840	I-35	Hyg-1	2022-10-11	12	Procambarus sp.		2
2840	I-35	Hyg-1	2022-10-11	13	Etheostoma fonticola	31	1
2840	I-35	Hyg-1	2022-10-11	13	Procambarus sp.		2
2840	I-35	Hyg-1	2022-10-11	14	Procambarus sp.		2
2840	I-35	Hyg-1	2022-10-11	14	No fish collected		
2840	I-35	Hyg-1	2022-10-11	15	No fish collected		
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	21	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	21	1
2841	I-35	Cabo-1	2022-10-11	1	Lepomis sp.	15	1
2841	I-35	Cabo-1	2022-10-11	1	Procambarus sp.		4
2841	I-35	Cabo-1	2022-10-11	2	Etheostoma fonticola	15	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	13	1

2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	24	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	42	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	19	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	20	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	20	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	20	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	21	1
2841	I-35	Cabo-1	2022-10-11	2	Gambusia sp.	10	1
2841	I-35	Cabo-1	2022-10-11	3	Lepomis miniatus	36	1
2841	I-35	Cabo-1	2022-10-11	3	Gambusia sp.	36	1
2841	I-35	Cabo-1	2022-10-11	3	Gambusia sp.	38	1
2841	I-35	Cabo-1	2022-10-11	3	Gambusia sp.	18	1
2841	I-35	Cabo-1	2022-10-11	3	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	3	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	3	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	4	Lepomis miniatus	35	1
2841	I-35	Cabo-1	2022-10-11	4	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	4	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	4	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	4	Procambarus sp.		3
2841	I-35	Cabo-1	2022-10-11	5	Etheostoma fonticola	20	1
2841	I-35	Cabo-1	2022-10-11	5	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	5	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	6	Etheostoma fonticola	10	1
2841	I-35	Cabo-1	2022-10-11	6	Etheostoma fonticola	14	1
2841	I-35	Cabo-1	2022-10-11	7	No fish collected		
2841	I-35	Cabo-1	2022-10-11	8	Procambarus sp.		1
2841	I-35	Cabo-1	2022-10-11	8	No fish collected		
2841	I-35	Cabo-1	2022-10-11	9	Lepomis sp.	20	1
2841	I-35	Cabo-1	2022-10-11	9	Etheostoma fonticola	25	1
2841	I-35	Cabo-1	2022-10-11	10	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	10	Etheostoma fonticola	32	1
2841	I-35	Cabo-1	2022-10-11	11	Lepomis miniatus	40	1
2841	I-35	Cabo-1	2022-10-11	12	Etheostoma fonticola	32	1
2841	I-35	Cabo-1	2022-10-11	12	Gambusia sp.		1
2841	I-35	Cabo-1	2022-10-11	13	Micropterus salmoides	85	1
2841	I-35	Cabo-1	2022-10-11	13	Procambarus sp.		1
2841	I-35	Cabo-1	2022-10-11	14	No fish collected		
2841	I-35	Cabo-1	2022-10-11	15	No fish collected		
2841	I-35	Cabo-1	2022-10-11	1	Etheostoma fonticola	16	1
2841	I-35	Cabo-1	2022-10-11	1	Lepomis miniatus	64	1

2841	I-35	Cabo-1	2022-10-11	1	Lepomis miniatus	45	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	25	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	25	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	35	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	28	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	25	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	33	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	17	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	22	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	18	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	20	1
2841	I-35	Cabo-1	2022-10-11	1	Gambusia sp.	21	1
2842	I-35	Sagi-1	2022-10-11	1	Gambusia sp.	14	1
2842	I-35	Sagi-1	2022-10-11	1	Gambusia sp.	14	1
2842	I-35	Sagi-1	2022-10-11	1	Gambusia sp.	15	1
2842	I-35	Sagi-1	2022-10-11	1	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	1	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	1	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	1	Procambarus sp.		3
2842	I-35	Sagi-1	2022-10-11	2	Gambusia sp.	15	1
2842	I-35	Sagi-1	2022-10-11	2	Gambusia sp.	12	1
2842	I-35	Sagi-1	2022-10-11	2	Gambusia sp.	9	1
2842	I-35	Sagi-1	2022-10-11	2	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	2	Procambarus sp.		7
2842	I-35	Sagi-1	2022-10-11	3	Fundulus chrysotus	35	1
2842	I-35	Sagi-1	2022-10-11	3	Gambusia sp.	15	1
2842	I-35	Sagi-1	2022-10-11	3	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	4	Gambusia sp.	20	1
2842	I-35	Sagi-1	2022-10-11	4	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	4	Procambarus sp.		10
2842	I-35	Sagi-1	2022-10-11	5	Gambusia sp.	16	1
2842	I-35	Sagi-1	2022-10-11	5	Gambusia sp.	13	1
2842	I-35	Sagi-1	2022-10-11	5	Procambarus sp.		11
2842	I-35	Sagi-1	2022-10-11	6	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	6	Procambarus sp.		2
2842	I-35	Sagi-1	2022-10-11	7	Fundulus chrysotus	37	1
2842	I-35	Sagi-1	2022-10-11	7	Gambusia sp.	11	1
2842	I-35	Sagi-1	2022-10-11	8	Gambusia sp.	11	1
2842	I-35	Sagi-1	2022-10-11	8	Procambarus sp.		1
2842	I-35	Sagi-1	2022-10-11	9	Gambusia sp.	10	1
2842	I-35	Sagi-1	2022-10-11	9	Gambusia sp.	15	1

2842	I-35	Sagi-1	2022-10-11	9	Procambarus sp.		2
2842	I-35	Sagi-1	2022-10-11	10	Fundulus chrysotus	30	1
2842	I-35	Sagi-1	2022-10-11	11	Procambarus sp.		1
2842	I-35	Sagi-1	2022-10-11	11	No fish collected		
2842	I-35	Sagi-1	2022-10-11	12	Procambarus sp.		2
2842	I-35	Sagi-1	2022-10-11	12	No fish collected		
2842	I-35	Sagi-1	2022-10-11	13	Fundulus chrysotus	32	1
2842	I-35	Sagi-1	2022-10-11	15	No fish collected		
2842	I-35	Sagi-1	2022-10-11	14	Procambarus sp.		1
2842	I-35	Sagi-1	2022-10-11	14	No fish collected		
2843	I-35	Sag-2	2022-10-11	1	Procambarus sp.		4
2843	I-35	Sag-2	2022-10-11	1	No fish collected		
2843	I-35	Sag-2	2022-10-11	2	Procambarus sp.		6
2843	I-35	Sag-2	2022-10-11	2	No fish collected		
2843	I-35	Sag-2	2022-10-11	3	Gambusia sp.	10	1
2843	I-35	Sag-2	2022-10-11	3	Procambarus sp.		5
2843	I-35	Sag-2	2022-10-11	4	Gambusia sp.	7	1
2843	I-35	Sag-2	2022-10-11	4	Procambarus sp.		1
2843	I-35	Sag-2	2022-10-11	5	Procambarus sp.		4
2843	I-35	Sag-2	2022-10-11	5	Gambusia sp.	9	1
2843	I-35	Sag-2	2022-10-11	6	Gambusia sp.	10	1
2843	I-35	Sag-2	2022-10-11	6	Gambusia sp.	10	1
2843	I-35	Sag-2	2022-10-11	6	Procambarus sp.		3
2843	I-35	Sag-2	2022-10-11	7	Gambusia sp.	8	1
2843	I-35	Sag-2	2022-10-11	7	Gambusia sp.	15	1
2843	I-35	Sag-2	2022-10-11	7	Procambarus sp.		4
2843	I-35	Sag-2	2022-10-11	8	Gambusia sp.	10	1
2843	I-35	Sag-2	2022-10-11	8	Procambarus sp.		7
2843	I-35	Sag-2	2022-10-11	9	No fish collected		
2843	I-35	Sag-2	2022-10-11	10	Gambusia sp.	15	1
2843	I-35	Sag-2	2022-10-11	10	Gambusia sp.	7	1
2843	I-35	Sag-2	2022-10-11	10	Gambusia sp.	10	1
2843	I-35	Sag-2	2022-10-11	10	Gambusia sp.	5	1
2843	I-35	Sag-2	2022-10-11	10	Procambarus sp.		2
2843	I-35	Sag-2	2022-10-11	11	Procambarus sp.		1
2843	I-35	Sag-2	2022-10-11	11	No fish collected		
2843	I-35	Sag-2	2022-10-11	12	Gambusia sp.	12	1
2843	I-35	Sag-2	2022-10-11	12	Gambusia sp.	11	1
2843	I-35	Sag-2	2022-10-11	12	Procambarus sp.		1
2843	I-35	Sag-2	2022-10-11	13	Gambusia sp.	11	1
2843	I-35	Sag-2	2022-10-11	13	Procambarus sp.		1

2843	I-35	Sag-2	2022-10-11	14	Procambarus sp.		3
2843	I-35	Sag-2	2022-10-11	14	No fish collected		
2843	I-35	Sag-2	2022-10-11	15	Procambarus sp.		1
2843	I-35	Sag-2	2022-10-11	15	No fish collected		
2844	I-35	Open-1	2022-10-11	1	No fish collected		
2844	I-35	Open-1	2022-10-11	2	No fish collected		
2844	I-35	Open-1	2022-10-11	3	Hypostomus plecostomus	27	1
2844	I-35	Open-1	2022-10-11	4	No fish collected		
2844	I-35	Open-1	2022-10-11	5	No fish collected		
2844	I-35	Open-1	2022-10-11	6	No fish collected		
2844	I-35	Open-1	2022-10-11	7	No fish collected		
2844	I-35	Open-1	2022-10-11	8	No fish collected		
2844	I-35	Open-1	2022-10-11	9	No fish collected		
2844	I-35	Open-1	2022-10-11	10	No fish collected		
2844	I-35	Open-1	2022-10-11	11	No fish collected		
2844	I-35	Open-1	2022-10-11	12	No fish collected		
2844	I-35	Open-1	2022-10-11	13	No fish collected		
2844	I-35	Open-1	2022-10-11	14	No fish collected		
2844	I-35	Open-1	2022-10-11	15	No fish collected		
2845	I-35	Hyg-2	2022-10-11	1	Etheostoma fonticola	30	1
2845	I-35	Hyg-2	2022-10-11	1	Etheostoma fonticola	27	1
2845	I-35	Hyg-2	2022-10-11	1	Etheostoma fonticola	29	1
2845	I-35	Hyg-2	2022-10-11	1	Etheostoma fonticola	27	1
2845	I-35	Hyg-2	2022-10-11	1	Etheostoma fonticola	20	1
2845	I-35	Hyg-2	2022-10-11	1	Etheostoma fonticola	33	1
2845	I-35	Hyg-2	2022-10-11	1	Gambusia sp.	22	1
2845	I-35	Hyg-2	2022-10-11	1	Gambusia sp.	30	1
2845	I-35	Hyg-2	2022-10-11	1	Gambusia sp.	10	1
2845	I-35	Hyg-2	2022-10-11	1	Gambusia sp.	15	1
2845	I-35	Hyg-2	2022-10-11	1	Gambusia sp.	23	1
2845	I-35	Hyg-2	2022-10-11	1	Gambusia sp.	13	1
2845	I-35	Hyg-2	2022-10-11	1	Procambarus sp.		23
2845	I-35	Hyg-2	2022-10-11	2	Etheostoma fonticola	31	1
2845	I-35	Hyg-2	2022-10-11	2	Etheostoma fonticola	25	1
2845	I-35	Hyg-2	2022-10-11	2	Herichthys cyanoguttatus	25	1
2845	I-35	Hyg-2	2022-10-11	2	Gambusia sp.	19	1
2845	I-35	Hyg-2	2022-10-11	2	Procambarus sp.		5
2845	I-35	Hyg-2	2022-10-11	3	Herichthys cyanoguttatus	22	1
2845	I-35	Hyg-2	2022-10-11	3	Oreochromis aureus	55	1
2845	I-35	Hyg-2	2022-10-11	3	Etheostoma fonticola	25	1
2845	I-35	Hyg-2	2022-10-11	3	Etheostoma fonticola	28	1

2845	I-35	Hyg-2	2022-10-11	3	Procambarus sp.		25
2845	I-35	Hyg-2	2022-10-11	4	Gambusia sp.	31	1
2845	I-35	Hyg-2	2022-10-11	4	Etheostoma fonticola	31	1
2845	I-35	Hyg-2	2022-10-11	4	Procambarus sp.		6
2845	I-35	Hyg-2	2022-10-11	5	Herichthys cyanoguttatus	40	1
2845	I-35	Hyg-2	2022-10-11	5	Herichthys cyanoguttatus	31	1
2845	I-35	Hyg-2	2022-10-11	5	Etheostoma fonticola	30	1
2845	I-35	Hyg-2	2022-10-11	5	Hypostomus plecostomus	20	1
2845	I-35	Hyg-2	2022-10-11	5	Procambarus sp.		5
2845	I-35	Hyg-2	2022-10-11	6	Ameiurus natalis	32	1
2845	I-35	Hyg-2	2022-10-11	6	Etheostoma fonticola	30	1
2845	I-35	Hyg-2	2022-10-11	6	Etheostoma fonticola	28	1
2845	I-35	Hyg-2	2022-10-11	6	Etheostoma fonticola	30	1
2845	I-35	Hyg-2	2022-10-11	6	Procambarus sp.		5
2845	I-35	Hyg-2	2022-10-11	7	Etheostoma fonticola	34	1
2845	I-35	Hyg-2	2022-10-11	7	Etheostoma fonticola	31	1
2845	I-35	Hyg-2	2022-10-11	7	Etheostoma fonticola	24	1
2845	I-35	Hyg-2	2022-10-11	7	Etheostoma fonticola	34	1
2845	I-35	Hyg-2	2022-10-11	7	Procambarus sp.		8
2845	I-35	Hyg-2	2022-10-11	8	Etheostoma fonticola	32	1
2845	I-35	Hyg-2	2022-10-11	9	Procambarus sp.		6
2845	I-35	Hyg-2	2022-10-11	8	Poecilia latipinna	9	1
2845	I-35	Hyg-2	2022-10-11	9	No fish collected		
2845	I-35	Hyg-2	2022-10-11	10	Procambarus sp.		1
2845	I-35	Hyg-2	2022-10-11	10	No fish collected		
2845	I-35	Hyg-2	2022-10-11	11	Etheostoma fonticola	28	1
2845	I-35	Hyg-2	2022-10-11	11	Etheostoma fonticola	29	1
2845	I-35	Hyg-2	2022-10-11	11	Herichthys cyanoguttatus	21	1
2845	I-35	Hyg-2	2022-10-11	11	Procambarus sp.		4
2845	I-35	Hyg-2	2022-10-11	12	Procambarus sp.		1
2845	I-35	Hyg-2	2022-10-11	12	No fish collected		
2845	I-35	Hyg-2	2022-10-11	13	Oreochromis aureus	64	1
2845	I-35	Hyg-2	2022-10-11	13	Procambarus sp.		1
2845	I-35	Hyg-2	2022-10-11	14	No fish collected		
2845	I-35	Hyg-2	2022-10-11	15	No fish collected		
2846	I-35	Open-2	2022-10-11	1	No fish collected		
2846	I-35	Open-2	2022-10-11	2	No fish collected		
2846	I-35	Open-2	2022-10-11	3	No fish collected		
2846	I-35	Open-2	2022-10-11	4	No fish collected		
2846	I-35	Open-2	2022-10-11	5	No fish collected		
2846	I-35	Open-2	2022-10-11	6	No fish collected		

2846	I-35	Open-2	2022-10-11	7	No fish collected		
2846	I-35	Open-2	2022-10-11	8	No fish collected		
2846	I-35	Open-2	2022-10-11	9	No fish collected		
2846	I-35	Open-2	2022-10-11	10	No fish collected		
2847	I-35	Cab-2	2022-10-11	1	Lepomis miniatus	120	1
2847	I-35	Cab-2	2022-10-11	1	Lepomis miniatus	56	1
2847	I-35	Cab-2	2022-10-11	1	Lepomis miniatus	25	1
2847	I-35	Cab-2	2022-10-11	1	Micropterus salmoides	94	1
2847	I-35	Cab-2	2022-10-11	1	Herichthys cyanoguttatus	33	1
2847	I-35	Cab-2	2022-10-11	1	Etheostoma fonticola	34	1
2847	I-35	Cab-2	2022-10-11	1	Etheostoma fonticola	24	1
2847	I-35	Cab-2	2022-10-11	1	Etheostoma fonticola	35	1
2847	I-35	Cab-2	2022-10-11	1	Etheostoma fonticola	34	1
2847	I-35	Cab-2	2022-10-11	1	Etheostoma fonticola	34	1
2847	I-35	Cab-2	2022-10-11	1	Gambusia sp.	9	1
2847	I-35	Cab-2	2022-10-11	1	Gambusia sp.	10	1
2847	I-35	Cab-2	2022-10-11	1	Gambusia sp.	11	1
2847	I-35	Cab-2	2022-10-11	1	Gambusia sp.	10	1
2847	I-35	Cab-2	2022-10-11	1	Gambusia sp.	9	1
2847	I-35	Cab-2	2022-10-11	1	Ambloplites rupestris	48	1
2847	I-35	Cab-2	2022-10-11	1	Procambarus sp.		18
2847	I-35	Cab-2	2022-10-11	2	Lepomis miniatus	133	1
2847	I-35	Cab-2	2022-10-11	2	Gambusia sp.	15	1
2847	I-35	Cab-2	2022-10-11	2	Gambusia sp.	12	1
2847	I-35	Cab-2	2022-10-11	2	Etheostoma fonticola	19	1
2847	I-35	Cab-2	2022-10-11	2	Etheostoma fonticola	26	1
2847	I-35	Cab-2	2022-10-11	2	Procambarus sp.		5
2847	I-35	Cab-2	2022-10-11	2	Palaemonetes sp.		1
2847	I-35	Cab-2	2022-10-11	3	Lepomis miniatus	125	1
2847	I-35	Cab-2	2022-10-11	3	Lepomis miniatus	58	1
2847	I-35	Cab-2	2022-10-11	3	Micropterus salmoides	48	1
2847	I-35	Cab-2	2022-10-11	3	Gambusia sp.	13	1
2847	I-35	Cab-2	2022-10-11	3	Gambusia sp.	13	1
2847	I-35	Cab-2	2022-10-11	3	Lepomis sp.	16	1
2847	I-35	Cab-2	2022-10-11	3	Procambarus sp.		5
2847	I-35	Cab-2	2022-10-11	4	Procambarus sp.		2
2847	I-35	Cab-2	2022-10-11	4	Etheostoma fonticola	28	1
2847	I-35	Cab-2	2022-10-11	5	Procambarus sp.		5
2847	I-35	Cab-2	2022-10-11	5	Gambusia sp.	10	1
2847	I-35	Cab-2	2022-10-11	6	Gambusia sp.	20	1
2847	I-35	Cab-2	2022-10-11	6	Procambarus sp.		2

2847	I-35	Cab-2	2022-10-11	7	Lepomis miniatus	25	1
2847	I-35	Cab-2	2022-10-11	8	Procambarus sp.		1
2847	I-35	Cab-2	2022-10-11	8	No fish collected		
2847	I-35	Cab-2	2022-10-11	9	Etheostoma fonticola	35	1
2847	I-35	Cab-2	2022-10-11	9	Procambarus sp.		1
2847	I-35	Cab-2	2022-10-11	10	Lepomis miniatus	68	1
2847	I-35	Cab-2	2022-10-11	10	Gambusia sp.	12	1
2847	I-35	Cab-2	2022-10-11	11	No fish collected		
2847	I-35	Cab-2	2022-10-11	12	Procambarus sp.		1
2847	I-35	Cab-2	2022-10-11	12	No fish collected		
2847	I-35	Cab-2	2022-10-11	13	Procambarus sp.		2
2847	I-35	Cab-2	2022-10-11	13	Lepomis miniatus	28	1
2847	I-35	Cab-2	2022-10-11	14	Micropterus salmoides	74	1
2847	I-35	Cab-2	2022-10-11	14	Gambusia sp.	10	1
2847	I-35	Cab-2	2022-10-11	14	Procambarus sp.		1
2847	I-35	Cab-2	2022-10-11	15	Etheostoma fonticola	34	1
2847	I-35	Cab-2	2022-10-11	15	Procambarus sp.		5
2847	I-35	Cab-2	2022-10-11	16	Procambarus sp.		3
2847	I-35	Cab-2	2022-10-11	16	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	1	Procambarus sp.		2
2739	Spring Lake Dam	Sagi-1	2022-04-26	1	Palaemonetes sp.		4
2739	Spring Lake Dam	Sagi-1	2022-04-26	1	Lepomis miniatus	30	1
2739	Spring Lake Dam	Sagi-1	2022-04-26	1	Lepomis miniatus	25	1
2739	Spring Lake Dam	Sagi-1	2022-04-26	1	Etheostoma fonticola	22	1
2739	Spring Lake Dam	Sagi-1	2022-04-26	1	Etheostoma fonticola	14	1
2739	Spring Lake Dam	Sagi-1	2022-04-26	2	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	3	Procambarus sp.		3
2739	Spring Lake Dam	Sagi-1	2022-04-26	3	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	4	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	5	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	6	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	7	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	8	Procambarus sp.		3
2739	Spring Lake Dam	Sagi-1	2022-04-26	8	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	9	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	10	Procambarus sp.		1
2739	Spring Lake Dam	Sagi-1	2022-04-26	10	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	11	Etheostoma fonticola	36	1
2739	Spring Lake Dam	Sagi-1	2022-04-26	11	Procambarus sp.		1
2739	Spring Lake Dam	Sagi-1	2022-04-26	12	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	13	No fish collected		

2739	Spring Lake Dam	Sagi-1	2022-04-26	14	No fish collected		
2739	Spring Lake Dam	Sagi-1	2022-04-26	15	Etheostoma fonticola	35	1
2739	Spring Lake Dam	Sagi-1	2022-04-26	16	Etheostoma fonticola	33	1
2739	Spring Lake Dam	Sagi-1	2022-04-26	17	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	1	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	2	Etheostoma fonticola	14	1
2740	Spring Lake Dam	Pota-1	2022-04-26	3	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	4	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	5	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	6	Etheostoma fonticola	15	1
2740	Spring Lake Dam	Pota-1	2022-04-26	7	Etheostoma fonticola	20	1
2740	Spring Lake Dam	Pota-1	2022-04-26	8	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	9	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	10	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	11	Etheostoma fonticola	17	1
2740	Spring Lake Dam	Pota-1	2022-04-26	12	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	13	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	14	No fish collected		
2740	Spring Lake Dam	Pota-1	2022-04-26	15	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	1	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	2	Etheostoma fonticola	12	1
2741	Spring Lake Dam	Pota-2	2022-04-26	3	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	4	Etheostoma fonticola	22	1
2741	Spring Lake Dam	Pota-2	2022-04-26	5	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	6	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	7	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	8	Etheostoma fonticola	20	1
2741	Spring Lake Dam	Pota-2	2022-04-26	9	Etheostoma fonticola	19	1
2741	Spring Lake Dam	Pota-2	2022-04-26	10	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	11	Etheostoma fonticola	14	1
2741	Spring Lake Dam	Pota-2	2022-04-26	11	Etheostoma fonticola	21	1
2741	Spring Lake Dam	Pota-2	2022-04-26	12	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	13	No fish collected		
2741	Spring Lake Dam	Pota-2	2022-04-26	14	Etheostoma fonticola	16	1
2741	Spring Lake Dam	Pota-2	2022-04-26	15	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Procambarus sp.		1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Palaemonetes sp.		1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	20	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	22	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	28	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	21	1

2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	28	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	22	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	16	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	23	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	21	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	20	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	16	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	23	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Gambusia sp.	18	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Lepomis miniatus	25	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Etheostoma fonticola	34	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Etheostoma fonticola	17	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	1	Etheostoma fonticola	15	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	2	Lepomis sp.	21	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	2	Procambarus sp.		1
2742	Spring Lake Dam	Sagi-2	2022-04-26	3	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	4	Procambarus sp.		4
2742	Spring Lake Dam	Sagi-2	2022-04-26	4	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	5	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	6	Lepomis sp.	16	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	7	Etheostoma fonticola	31	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	7	Etheostoma fonticola	32	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	7	Gambusia sp.	25	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	8	Etheostoma fonticola	40	1
2742	Spring Lake Dam	Sagi-2	2022-04-26	9	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	10	Procambarus sp.		1
2742	Spring Lake Dam	Sagi-2	2022-04-26	10	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	11	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	12	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	13	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	14	Procambarus sp.		1
2742	Spring Lake Dam	Sagi-2	2022-04-26	14	No fish collected		
2742	Spring Lake Dam	Sagi-2	2022-04-26	15	Lepomis miniatus	44	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	21	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	21	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	23	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	22	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	19	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	26	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	24	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	14	1

2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	23	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	35	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	22	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	16	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	22	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	19	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	15	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	15	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	16	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	14	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	18	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	18	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	16	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	1	Gambusia sp.	18	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	14	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	45	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	25	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	21	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	20	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	10	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	12	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	2	Gambusia sp.	31	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	15	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	23	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	20	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	29	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	27	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	26	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	16	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	3	Gambusia sp.	22	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.	40	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	4	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	5	Gambusia sp.		1

2743	Spring Lake Dam	Ziz-1	2022-04-26	5	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	6	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	6	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	7	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	8	No fish collected		
2743	Spring Lake Dam	Ziz-1	2022-04-26	9	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	9	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	9	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	10	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	11	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	11	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	12	Lepomis miniatus	53	1
2743	Spring Lake Dam	Ziz-1	2022-04-26	13	No fish collected		
2743	Spring Lake Dam	Ziz-1	2022-04-26	14	Gambusia sp.		1
2743	Spring Lake Dam	Ziz-1	2022-04-26	15	No fish collected		
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Astyanax mexicanus	71	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Procambarus sp.		1
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Gambusia sp.	25	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Gambusia sp.	28	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Gambusia sp.	25	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Gambusia sp.	37	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Gambusia sp.	22	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	1	Gambusia sp.	20	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	2	Gambusia sp.	21	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	3	Gambusia sp.	20	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	3	Gambusia sp.	21	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	4	Gambusia sp.	19	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	4	Gambusia sp.	24	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	4	Gambusia sp.	20	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	4	Gambusia sp.	20	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	5	No fish collected		
2744	Spring Lake Dam	Ziz-2	2022-04-26	6	No fish collected		
2744	Spring Lake Dam	Ziz-2	2022-04-26	7	Gambusia sp.	26	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	8	Gambusia sp.	25	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	8	Gambusia sp.	21	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	8	Gambusia sp.	12	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	9	Gambusia sp.	15	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	10	Gambusia sp.	35	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	11	No fish collected		
2744	Spring Lake Dam	Ziz-2	2022-04-26	12	Gambusia sp.	21	1
2744	Spring Lake Dam	Ziz-2	2022-04-26	13	Gambusia sp.		1

2744	Spring Lake Dam	Ziz-2	2022-04-26	14	No fish collected		
2744	Spring Lake Dam	Ziz-2	2022-04-26	15	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	1	Procambarus sp.		1
2745	Spring Lake Dam	Hydr-1	2022-04-26	1	Etheostoma fonticola	35	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	1	Etheostoma fonticola	31	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	1	Etheostoma fonticola	26	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	1	Etheostoma fonticola	19	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	1	Etheostoma fonticola	28	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	1	Etheostoma fonticola	22	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	2	Etheostoma fonticola	21	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	2	Etheostoma fonticola	37	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	2	Etheostoma fonticola	36	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	2	Procambarus sp.		1
2745	Spring Lake Dam	Hydr-1	2022-04-26	3	Etheostoma fonticola	21	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	3	Etheostoma fonticola	26	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	3	Etheostoma fonticola	18	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	4	Procambarus sp.		1
2745	Spring Lake Dam	Hydr-1	2022-04-26	4	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	5	Procambarus sp.		1
2745	Spring Lake Dam	Hydr-1	2022-04-26	5	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	6	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	7	Etheostoma fonticola	24	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	8	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	9	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	10	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	11	Procambarus sp.		1
2745	Spring Lake Dam	Hydr-1	2022-04-26	11	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	12	Ameiurus natalis	28	1
2745	Spring Lake Dam	Hydr-1	2022-04-26	13	Procambarus sp.		1
2745	Spring Lake Dam	Hydr-1	2022-04-26	13	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	14	No fish collected		
2745	Spring Lake Dam	Hydr-1	2022-04-26	15	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	1	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	2	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	3	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	4	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	5	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	5	Procambarus sp.		1
2746	Spring Lake Dam	Hydr-2	2022-04-26	6	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	7	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	8	No fish collected		

2746	Spring Lake Dam	Hydr-2	2022-04-26	9	No fish collected		
2746	Spring Lake Dam	Hydr-2	2022-04-26	10	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	1	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	2	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	3	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	4	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	5	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	6	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	7	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	8	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	9	No fish collected		
2747	Spring Lake Dam	Open-1	2022-04-26	10	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	1	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	2	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	3	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	4	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	5	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	6	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	7	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	8	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	9	No fish collected		
2748	Spring Lake Dam	Open-2	2022-04-26	10	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	1	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	2	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	3	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	4	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	5	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	6	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	7	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	8	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	9	No fish collected		
2806	Spring Lake Dam	Open-1	2022-07-18	10	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	2	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	3	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	4	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	5	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	6	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	7	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	8	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	9	No fish collected		
2807	Spring Lake Dam	Open-2	2022-07-18	10	No fish collected		

2807	Spring Lake Dam	Open-2	2022-07-18	1	No fish collected		
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Procambarus sp.		9
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	19	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	9	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	9	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	15	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	12	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	9	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	18	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	17	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	17	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	19	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	22	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	25	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	22	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	10	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	21	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	23	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	13	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	10	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Gambusia sp.	11	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Dionda nigrotaeniata	38	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Lepomis miniatus	38	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Lepomis miniatus	38	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Lepomis miniatus	39	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	1	Palaemonetes sp.		1
2808	Spring Lake Dam	Sagi-1	2022-07-18	2	Procambarus sp.		2
2808	Spring Lake Dam	Sagi-1	2022-07-18	2	Lepomis miniatus	44	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	2	Lepomis miniatus	57	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	2	Lepomis miniatus	30	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	2	Gambusia sp.	21	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	2	Gambusia sp.	17	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	3	Procambarus sp.		1
2808	Spring Lake Dam	Sagi-1	2022-07-18	3	Lepomis miniatus	33	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	3	Gambusia sp.	20	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	4	Procambarus sp.		1
2808	Spring Lake Dam	Sagi-1	2022-07-18	4	Lepomis miniatus	76	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	4	Micropterus salmoides	86	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	5	Lepomis miniatus	107	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	6	Etheostoma fonticola	37	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	7	Lepomis miniatus	37	1

2808	Spring Lake Dam	Sagi-1	2022-07-18	7	Etheostoma fonticola	31	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	7	Etheostoma fonticola	29	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	8	Procambarus sp.		3
2808	Spring Lake Dam	Sagi-1	2022-07-18	8	Lepomis sp.	24	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	8	Lepomis miniatus	41	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	9	No fish collected		
2808	Spring Lake Dam	Sagi-1	2022-07-18	10	Lepomis miniatus	35	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	10	Lepomis miniatus	31	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	11	Procambarus sp.		1
2808	Spring Lake Dam	Sagi-1	2022-07-18	11	Lepomis sp.	35	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	12	No fish collected		
2808	Spring Lake Dam	Sagi-1	2022-07-18	13	Procambarus sp.		2
2808	Spring Lake Dam	Sagi-1	2022-07-18	13	No fish collected		
2808	Spring Lake Dam	Sagi-1	2022-07-18	14	Gambusia sp.	10	1
2808	Spring Lake Dam	Sagi-1	2022-07-18	15	Micropterus salmoides	66	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Palaemonetes sp.		11
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	34	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	16	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	12	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	27	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	21	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	18	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	33	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	32	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	20	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	43	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	37	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	24	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	23	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	16	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	19	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	20	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	20	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	20	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	25	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	22	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	23	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	18	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	13	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	22	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	1	Gambusia sp.	19	1

2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Lepomis sp.	30	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Palaemonetes sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Etheostoma fonticola	26	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Lepomis miniatus	33	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	2	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	3	Palaemonetes sp.		3
2809	Spring Lake Dam	Sagi-2	2022-07-18	3	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	4	Procambarus sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	4	Herichthys cyanoguttatus	60	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	4	Astyanax mexicanus	35	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	4	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	4	Gambusia sp.		1

2809	Spring Lake Dam	Sagi-2	2022-07-18	5	Procambarus sp.		2
2809	Spring Lake Dam	Sagi-2	2022-07-18	5	Palaemonetes sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	5	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	5	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	5	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	5	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	6	Procambarus sp.		2
2809	Spring Lake Dam	Sagi-2	2022-07-18	6	Etheostoma fonticola	28	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	7	Procambarus sp.		4
2809	Spring Lake Dam	Sagi-2	2022-07-18	7	Palaemonetes sp.		3
2809	Spring Lake Dam	Sagi-2	2022-07-18	7	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	7	Etheostoma fonticola	29	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	8	Procambarus sp.		3
2809	Spring Lake Dam	Sagi-2	2022-07-18	8	No fish collected		
2809	Spring Lake Dam	Sagi-2	2022-07-18	9	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	9	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	9	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	10	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	10	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	10	Lepomis miniatus	36	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	10	Procambarus sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	11	Procambarus sp.		3
2809	Spring Lake Dam	Sagi-2	2022-07-18	11	Palaemonetes sp.		2
2809	Spring Lake Dam	Sagi-2	2022-07-18	11	Etheostoma fonticola	27	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	11	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	12	No fish collected		
2809	Spring Lake Dam	Sagi-2	2022-07-18	13	Palaemonetes sp.		2
2809	Spring Lake Dam	Sagi-2	2022-07-18	13	Etheostoma fonticola	34	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	13	Etheostoma fonticola	29	1
2809	Spring Lake Dam	Sagi-2	2022-07-18	13	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	14	Palaemonetes sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	14	Procambarus sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	14	No fish collected		
2809	Spring Lake Dam	Sagi-2	2022-07-18	15	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	3	Gambusia sp.		1
2809	Spring Lake Dam	Sagi-2	2022-07-18	11	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	15	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	15	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	20	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	10	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	15	1

2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	16	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	16	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	35	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	10	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	13	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	16	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	18	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	11	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	16	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	14	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	14	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	14	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	14	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	17	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	18	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	20	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	15	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	21	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	14	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	12	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	12	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	11	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Gambusia sp.	13	1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Procambarus sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	1	Palaemonetes sp.		28
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Lepomis miniatus	41	1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Palaemonetes sp.		5
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Etheostoma fonticola	27	1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Etheostoma fonticola	26	1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	2	Gambusia sp.		1

2810	Spring Lake Dam	Pota-1	2022-07-18	3	Procambarus sp.		2
2810	Spring Lake Dam	Pota-1	2022-07-18	3	Palaemonetes sp.		4
2810	Spring Lake Dam	Pota-1	2022-07-18	3	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	3	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	3	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	3	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	4	Lepomis miniatus	41	1
2810	Spring Lake Dam	Pota-1	2022-07-18	4	Procambarus sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	4	Palaemonetes sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	4	Etheostoma fonticola	31	1
2810	Spring Lake Dam	Pota-1	2022-07-18	4	Etheostoma fonticola	26	1
2810	Spring Lake Dam	Pota-1	2022-07-18	4	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	5	Etheostoma fonticola	25	1
2810	Spring Lake Dam	Pota-1	2022-07-18	5	Palaemonetes sp.		6
2810	Spring Lake Dam	Pota-1	2022-07-18	5	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	5	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	6	Procambarus sp.		2
2810	Spring Lake Dam	Pota-1	2022-07-18	6	Palaemonetes sp.		2
2810	Spring Lake Dam	Pota-1	2022-07-18	6	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	6	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	7	Etheostoma fonticola	35	1
2810	Spring Lake Dam	Pota-1	2022-07-18	7	Etheostoma fonticola	25	1
2810	Spring Lake Dam	Pota-1	2022-07-18	7	Palaemonetes sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	7	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	7	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	7	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	8	Lepomis miniatus	59	1
2810	Spring Lake Dam	Pota-1	2022-07-18	8	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	8	Gambusia sp.		1
2810	Spring Lake Dam	Pota-1	2022-07-18	8	Etheostoma fonticola	25	1
2810	Spring Lake Dam	Pota-1	2022-07-18	9	No fish collected		
2810	Spring Lake Dam	Pota-1	2022-07-18	10	Lepomis miniatus	34	1
2810	Spring Lake Dam	Pota-1	2022-07-18	11	Lepomis sp.	36	1
2810	Spring Lake Dam	Pota-1	2022-07-18	12	Procambarus sp.		2
2810	Spring Lake Dam	Pota-1	2022-07-18	12	Lepomis miniatus	40	1
2810	Spring Lake Dam	Pota-1	2022-07-18	12	Etheostoma fonticola	17	1
2810	Spring Lake Dam	Pota-1	2022-07-18	13	Procambarus sp.		2
2810	Spring Lake Dam	Pota-1	2022-07-18	13	No fish collected		
2810	Spring Lake Dam	Pota-1	2022-07-18	14	Palaemonetes sp.		2
2810	Spring Lake Dam	Pota-1	2022-07-18	14	Etheostoma fonticola	26	1
2810	Spring Lake Dam	Pota-1	2022-07-18	15	Palaemonetes sp.		3

2810	Spring Lake Dam	Pota-1	2022-07-18	15	Gambusia sp.		1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	27	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	28	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	30	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	16	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	27	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	19	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	18	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	16	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	30	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	16	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Etheostoma fonticola	17	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Gambusia sp.	14	1
2811	Spring Lake Dam	Pota-2	2022-07-18	1	Gambusia sp.	15	1
2811	Spring Lake Dam	Pota-2	2022-07-18	2	Palaemonetes sp.		3
2811	Spring Lake Dam	Pota-2	2022-07-18	2	Dionda nigrotaeniata	37	1
2811	Spring Lake Dam	Pota-2	2022-07-18	2	Etheostoma fonticola	17	1
2811	Spring Lake Dam	Pota-2	2022-07-18	3	Etheostoma fonticola	26	1
2811	Spring Lake Dam	Pota-2	2022-07-18	3	Etheostoma fonticola	18	1
2811	Spring Lake Dam	Pota-2	2022-07-18	3	Etheostoma fonticola	24	1
2811	Spring Lake Dam	Pota-2	2022-07-18	3	Gambusia sp.	13	1
2811	Spring Lake Dam	Pota-2	2022-07-18	3	Gambusia sp.	9	1
2811	Spring Lake Dam	Pota-2	2022-07-18	4	Gambusia sp.	40	1
2811	Spring Lake Dam	Pota-2	2022-07-18	4	Gambusia sp.	20	1
2811	Spring Lake Dam	Pota-2	2022-07-18	4	Palaemonetes sp.		1
2811	Spring Lake Dam	Pota-2	2022-07-18	4	Etheostoma fonticola	25	1
2811	Spring Lake Dam	Pota-2	2022-07-18	4	Etheostoma fonticola	23	1
2811	Spring Lake Dam	Pota-2	2022-07-18	4	Etheostoma fonticola	19	1
2811	Spring Lake Dam	Pota-2	2022-07-18	5	Gambusia sp.	25	1
2811	Spring Lake Dam	Pota-2	2022-07-18	5	Etheostoma fonticola	28	1
2811	Spring Lake Dam	Pota-2	2022-07-18	5	Etheostoma fonticola	12	1
2811	Spring Lake Dam	Pota-2	2022-07-18	5	Etheostoma fonticola	26	1
2811	Spring Lake Dam	Pota-2	2022-07-18	5	Etheostoma fonticola	25	1
2811	Spring Lake Dam	Pota-2	2022-07-18	6	Etheostoma fonticola	21	1
2811	Spring Lake Dam	Pota-2	2022-07-18	6	Etheostoma fonticola	11	1
2811	Spring Lake Dam	Pota-2	2022-07-18	6	Etheostoma fonticola	20	1
2811	Spring Lake Dam	Pota-2	2022-07-18	6	Etheostoma fonticola	13	1
2811	Spring Lake Dam	Pota-2	2022-07-18	7	Etheostoma fonticola	30	1
2811	Spring Lake Dam	Pota-2	2022-07-18	7	Etheostoma fonticola	14	1
2811	Spring Lake Dam	Pota-2	2022-07-18	7	Etheostoma fonticola	13	1
2811	Spring Lake Dam	Pota-2	2022-07-18	7	Gambusia sp.	22	1

2811	Spring Lake Dam	Pota-2	2022-07-18	8	Dionda nigrotaeniata	42	1
2811	Spring Lake Dam	Pota-2	2022-07-18	8	Palaemonetes sp.		1
2811	Spring Lake Dam	Pota-2	2022-07-18	9	Palaemonetes sp.		1
2811	Spring Lake Dam	Pota-2	2022-07-18	9	Etheostoma fonticola	25	1
2811	Spring Lake Dam	Pota-2	2022-07-18	9	Etheostoma fonticola	26	1
2811	Spring Lake Dam	Pota-2	2022-07-18	10	No fish collected		
2811	Spring Lake Dam	Pota-2	2022-07-18	11	No fish collected		
2811	Spring Lake Dam	Pota-2	2022-07-18	12	Etheostoma fonticola	25	1
2811	Spring Lake Dam	Pota-2	2022-07-18	12	Etheostoma fonticola	18	1
2811	Spring Lake Dam	Pota-2	2022-07-18	13	Dionda nigrotaeniata	45	1
2811	Spring Lake Dam	Pota-2	2022-07-18	13	Dionda nigrotaeniata	30	1
2811	Spring Lake Dam	Pota-2	2022-07-18	13	Etheostoma fonticola	31	1
2811	Spring Lake Dam	Pota-2	2022-07-18	14	No fish collected		
2811	Spring Lake Dam	Pota-2	2022-07-18	15	Gambusia sp.	19	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Etheostoma fonticola	33	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Etheostoma fonticola	29	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Etheostoma fonticola	28	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Etheostoma fonticola	27	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Etheostoma fonticola	26	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Etheostoma fonticola	15	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Gambusia sp.	21	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Gambusia sp.	22	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Gambusia sp.	15	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Gambusia sp.	14	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Gambusia sp.	19	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Gambusia sp.	21	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	1	Procambarus sp.	1	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	2	Gambusia sp.	34	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	2	Gambusia sp.	21	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	2	Gambusia sp.	21	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	3	Etheostoma fonticola	34	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	3	Etheostoma fonticola	30	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	3	Etheostoma fonticola	40	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	3	Etheostoma fonticola	27	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	3	Etheostoma fonticola	35	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	3	Gambusia sp.	14	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	3	Procambarus sp.		1
2804	Spring Lake Dam	Hydro-1	2022-07-18	4	Etheostoma fonticola	27	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	5	Etheostoma fonticola	29	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	5	Etheostoma fonticola	37	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	6	Etheostoma fonticola	35	1

2804	Spring Lake Dam	Hydro-1	2022-07-18	7	Gambusia sp.	21	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	7	Gambusia sp.	28	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	8	Gambusia sp.	12	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	8	Etheostoma fonticola	35	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	9	Etheostoma fonticola	29	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	9	Gambusia sp.	19	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	10	No fish collected		
2804	Spring Lake Dam	Hydro-1	2022-07-18	11	Gambusia sp.	27	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	12	No fish collected		
2804	Spring Lake Dam	Hydro-1	2022-07-18	13	Etheostoma fonticola	27	1
2804	Spring Lake Dam	Hydro-1	2022-07-18	14	No fish collected		
2804	Spring Lake Dam	Hydro-1	2022-07-18	15	Gambusia sp.	24	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	1	Gambusia sp.	20	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	1	Gambusia sp.	24	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	1	Gambusia sp.	22	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	1	Gambusia sp.	22	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	1	Etheostoma fonticola	27	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	2	Etheostoma fonticola	28	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	2	Etheostoma fonticola	27	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	2	Etheostoma fonticola	24	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	2	Etheostoma fonticola	33	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	2	Gambusia sp.	30	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	2	Gambusia sp.	18	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Gambusia sp.	17	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Gambusia sp.	23	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Gambusia sp.	22	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Gambusia sp.	20	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Gambusia sp.	25	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Etheostoma fonticola	33	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Etheostoma fonticola	35	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Etheostoma fonticola	34	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	3	Procambarus sp.		1
2805	Spring Lake Dam	Hydro-2	2022-07-18	4	Gambusia sp.	24	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	5	Etheostoma fonticola	30	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	5	Etheostoma fonticola	24	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	6	Etheostoma fonticola	24	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	6	Etheostoma fonticola	17	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	6	Gambusia sp.	23	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	7	Gambusia sp.	24	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	8	Etheostoma fonticola	29	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	8	Etheostoma fonticola	30	1

2805	Spring Lake Dam	Hydro-2	2022-07-18	8	Etheostoma fonticola	30	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	9	Procambarus sp.		1
2805	Spring Lake Dam	Hydro-2	2022-07-18	9	Etheostoma fonticola	34	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	9	Gambusia sp.	30	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	10	Etheostoma fonticola	36	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	10	Etheostoma fonticola	22	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	10	Procambarus sp.		1
2805	Spring Lake Dam	Hydro-2	2022-07-18	11	Gambusia sp.	30	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	11	Etheostoma fonticola	28	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	11	Etheostoma fonticola	31	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	11	Etheostoma fonticola	27	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	11	Etheostoma fonticola	29	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	12	Etheostoma fonticola	14	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	13	Etheostoma fonticola	36	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	14	No fish collected		
2805	Spring Lake Dam	Hydro-2	2022-07-18	15	Procambarus sp.		1
2805	Spring Lake Dam	Hydro-2	2022-07-18	15	Etheostoma fonticola	31	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	16	Etheostoma fonticola	31	1
2805	Spring Lake Dam	Hydro-2	2022-07-18	17	Procambarus sp.		1
2805	Spring Lake Dam	Hydro-2	2022-07-18	17	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	1	Lepomis miniatus	95	1
2826	Spring Lake Dam	Pota-1	2022-10-10	1	Procambarus sp.		1
2826	Spring Lake Dam	Pota-1	2022-10-10	2	Palaemonetes sp.		1
2826	Spring Lake Dam	Pota-1	2022-10-10	2	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	3	Etheostoma fonticola	26	1
2826	Spring Lake Dam	Pota-1	2022-10-10	3	Palaemonetes sp.		1
2826	Spring Lake Dam	Pota-1	2022-10-10	4	Procambarus sp.		1
2826	Spring Lake Dam	Pota-1	2022-10-10	4	Etheostoma fonticola	15	1
2826	Spring Lake Dam	Pota-1	2022-10-10	4	Palaemonetes sp.		1
2826	Spring Lake Dam	Pota-1	2022-10-10	5	Etheostoma fonticola	27	1
2826	Spring Lake Dam	Pota-1	2022-10-10	6	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	7	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	8	Etheostoma fonticola	24	1
2826	Spring Lake Dam	Pota-1	2022-10-10	9	Etheostoma fonticola	22	1
2826	Spring Lake Dam	Pota-1	2022-10-10	10	Etheostoma fonticola	37	1
2826	Spring Lake Dam	Pota-1	2022-10-10	10	Palaemonetes sp.		1
2826	Spring Lake Dam	Pota-1	2022-10-10	11	Etheostoma fonticola	34	1
2826	Spring Lake Dam	Pota-1	2022-10-10	12	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	13	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	14	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	15	No fish collected		

2826	Spring Lake Dam	Pota-1	2022-10-10	16	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	17	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	18	Etheostoma fonticola	12	1
2826	Spring Lake Dam	Pota-1	2022-10-10	19	No fish collected		
2826	Spring Lake Dam	Pota-1	2022-10-10	20	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	1	Palaemonetes sp.		1
2827	Spring Lake Dam	Pota-2	2022-10-10	1	Gambusia sp.	21	1
2827	Spring Lake Dam	Pota-2	2022-10-10	2	Procambarus sp.		2
2827	Spring Lake Dam	Pota-2	2022-10-10	2	Lepomis miniatus	51	1
2827	Spring Lake Dam	Pota-2	2022-10-10	2	Lepomis miniatus	32	1
2827	Spring Lake Dam	Pota-2	2022-10-10	2	Lepomis miniatus	47	1
2827	Spring Lake Dam	Pota-2	2022-10-10	3	Gambusia sp.	7	1
2827	Spring Lake Dam	Pota-2	2022-10-10	4	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	5	Procambarus sp.		1
2827	Spring Lake Dam	Pota-2	2022-10-10	5	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	6	Procambarus sp.		1
2827	Spring Lake Dam	Pota-2	2022-10-10	6	Etheostoma fonticola	33	1
2827	Spring Lake Dam	Pota-2	2022-10-10	7	Etheostoma fonticola	12	1
2827	Spring Lake Dam	Pota-2	2022-10-10	8	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	9	Palaemonetes sp.		1
2827	Spring Lake Dam	Pota-2	2022-10-10	9	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	10	Etheostoma fonticola	14	1
2827	Spring Lake Dam	Pota-2	2022-10-10	11	Procambarus sp.		1
2827	Spring Lake Dam	Pota-2	2022-10-10	11	Etheostoma fonticola	37	1
2827	Spring Lake Dam	Pota-2	2022-10-10	12	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	13	Lepomis miniatus	80	1
2827	Spring Lake Dam	Pota-2	2022-10-10	13	Lepomis miniatus	63	1
2827	Spring Lake Dam	Pota-2	2022-10-10	13	Etheostoma fonticola	21	1
2827	Spring Lake Dam	Pota-2	2022-10-10	13	Etheostoma fonticola	18	1
2827	Spring Lake Dam	Pota-2	2022-10-10	14	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	15	No fish collected		
2827	Spring Lake Dam	Pota-2	2022-10-10	16	No fish collected		
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Gambusia sp.	20	1
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Gambusia sp.	17	1
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Etheostoma fonticola	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Etheostoma fonticola	33	1
2828	Spring Lake Dam	Sag-1	2022-10-10	1	Procambarus sp.		3
2828	Spring Lake Dam	Sag-1	2022-10-10	2	Gambusia sp.	14	1

2828	Spring Lake Dam	Sag-1	2022-10-10	2	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	2	Gambusia sp.	10	1
2828	Spring Lake Dam	Sag-1	2022-10-10	2	Gambusia sp.	19	1
2828	Spring Lake Dam	Sag-1	2022-10-10	2	Gambusia sp.	17	1
2828	Spring Lake Dam	Sag-1	2022-10-10	2	Gambusia sp.	16	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	12	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	12	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	21	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	20	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	12	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	10	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Gambusia sp.	11	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Etheostoma fonticola	32	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Etheostoma fonticola	26	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Etheostoma fonticola	24	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Etheostoma fonticola	21	1
2828	Spring Lake Dam	Sag-1	2022-10-10	3	Palaemonetes sp.		2
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Etheostoma fonticola	26	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	11	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	22	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	25	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	14	1
2828	Spring Lake Dam	Sag-1	2022-10-10	4	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	5	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	5	Gambusia sp.	18	1
2828	Spring Lake Dam	Sag-1	2022-10-10	5	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	5	Gambusia sp.	10	1
2828	Spring Lake Dam	Sag-1	2022-10-10	5	Gambusia sp.	15	1
2828	Spring Lake Dam	Sag-1	2022-10-10	5	Etheostoma fonticola	28	1
2828	Spring Lake Dam	Sag-1	2022-10-10	5	Etheostoma fonticola	34	1

2828	Spring Lake Dam	Sag-1	2022-10-10	5	Palaemonetes sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	6	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	7	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	7	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	7	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	7	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	8	Etheostoma fonticola	35	1
2828	Spring Lake Dam	Sag-1	2022-10-10	8	Etheostoma fonticola	25	1
2828	Spring Lake Dam	Sag-1	2022-10-10	8	Palaemonetes sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	9	Palaemonetes sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	9	Etheostoma fonticola	28	1
2828	Spring Lake Dam	Sag-1	2022-10-10	9	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	9	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	10	Palaemonetes sp.		2
2828	Spring Lake Dam	Sag-1	2022-10-10	10	Etheostoma fonticola	35	1
2828	Spring Lake Dam	Sag-1	2022-10-10	11	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	11	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	11	Etheostoma fonticola	35	1
2828	Spring Lake Dam	Sag-1	2022-10-10	11	Etheostoma fonticola	30	1
2828	Spring Lake Dam	Sag-1	2022-10-10	11	Palaemonetes sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	12	Procambarus sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	12	Etheostoma fonticola	25	1
2828	Spring Lake Dam	Sag-1	2022-10-10	12	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	12	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	12	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	12	Gambusia sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	12	Palaemonetes sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	13	Etheostoma fonticola	37	1
2828	Spring Lake Dam	Sag-1	2022-10-10	14	Procambarus sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	14	No fish collected		
2828	Spring Lake Dam	Sag-1	2022-10-10	15	Etheostoma fonticola	31	1

2828	Spring Lake Dam	Sag-1	2022-10-10	15	Procambarus sp.		1
2828	Spring Lake Dam	Sag-1	2022-10-10	16	No fish collected		
2828	Spring Lake Dam	Sag-1	2022-10-10	15	Etheostoma fonticola	34	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Procambarus sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Palaemonetes sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Lepomis miniatus	76	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Lepomis miniatus	26	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Lepomis miniatus	30	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Lepomis miniatus	50	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Lepomis miniatus	62	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Lepomis miniatus	32	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	20	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	15	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	36	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	15	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	10	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	10	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	10	1
2829	Spring Lake Dam	Sag-2	2022-10-10	1	Gambusia sp.	10	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Lepomis miniatus	63	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Gambusia sp.	30	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Gambusia sp.	26	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Gambusia sp.	10	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Gambusia sp.	10	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Gambusia sp.	24	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Gambusia sp.	12	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Gambusia sp.	20	1
2829	Spring Lake Dam	Sag-2	2022-10-10	2	Palaemonetes sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Lepomis miniatus	109	1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Lepomis miniatus	89	1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Lepomis miniatus	60	1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Lepomis gulosus	135	1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Gambusia sp.	25	1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Gambusia sp.	18	1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Gambusia sp.	20	1
2829	Spring Lake Dam	Sag-2	2022-10-10	3	Palaemonetes sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	4	Lepomis miniatus	85	1
2829	Spring Lake Dam	Sag-2	2022-10-10	4	Lepomis miniatus	25	1
2829	Spring Lake Dam	Sag-2	2022-10-10	4	Herichthys cyanoguttatus	30	1
2829	Spring Lake Dam	Sag-2	2022-10-10	4	Gambusia sp.	30	1
2829	Spring Lake Dam	Sag-2	2022-10-10	4	Gambusia sp.	12	1

2829	Spring Lake Dam	Sag-2	2022-10-10	4	Gambusia sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	5	Lepomis miniatus	51	1
2829	Spring Lake Dam	Sag-2	2022-10-10	5	Lepomis miniatus	68	1
2829	Spring Lake Dam	Sag-2	2022-10-10	5	Lepomis gulosus	140	1
2829	Spring Lake Dam	Sag-2	2022-10-10	5	Gambusia sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	5	Gambusia sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	6	Gambusia sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	7	Procambarus sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	7	No fish collected		
2829	Spring Lake Dam	Sag-2	2022-10-10	8	Lepomis miniatus	95	1
2829	Spring Lake Dam	Sag-2	2022-10-10	8	Lepomis miniatus	77	1
2829	Spring Lake Dam	Sag-2	2022-10-10	8	Lepomis miniatus	41	1
2829	Spring Lake Dam	Sag-2	2022-10-10	9	Lepomis miniatus	81	1
2829	Spring Lake Dam	Sag-2	2022-10-10	9	Lepomis miniatus	46	1
2829	Spring Lake Dam	Sag-2	2022-10-10	9	Lepomis miniatus	30	1
2829	Spring Lake Dam	Sag-2	2022-10-10	10	Procambarus sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	10	No fish collected		
2829	Spring Lake Dam	Sag-2	2022-10-10	11	Lepomis miniatus		1
2829	Spring Lake Dam	Sag-2	2022-10-10	12	Lepomis miniatus		1
2829	Spring Lake Dam	Sag-2	2022-10-10	12	Gambusia sp.		1
2829	Spring Lake Dam	Sag-2	2022-10-10	13	No fish collected		
2829	Spring Lake Dam	Sag-2	2022-10-10	14	No fish collected		
2829	Spring Lake Dam	Sag-2	2022-10-10	15	No fish collected		
2830	Spring Lake Dam	Open-1	2022-10-10	1	Gambusia sp.	28	1
2830	Spring Lake Dam	Open-1	2022-10-10	1	Gambusia sp.	30	1
2830	Spring Lake Dam	Open-1	2022-10-10	1	Gambusia sp.	25	1
2830	Spring Lake Dam	Open-1	2022-10-10	1	Gambusia sp.	24	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	20	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	20	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	20	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	20	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	21	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	24	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	15	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	18	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	21	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	22	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	20	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	18	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	22	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	22	1

2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	20	1
2830	Spring Lake Dam	Open-1	2022-10-10	2	Gambusia sp.	20	1
2830	Spring Lake Dam	Open-1	2022-10-10	3	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	3	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	3	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	3	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	3	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	3	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	3	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	4	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	4	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	4	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	5	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	5	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	5	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	6	No fish collected		
2830	Spring Lake Dam	Open-1	2022-10-10	7	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	7	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	7	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	8	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	9	No fish collected		
2830	Spring Lake Dam	Open-1	2022-10-10	10	Gambusia sp.		1
2830	Spring Lake Dam	Open-1	2022-10-10	11	No fish collected		
2830	Spring Lake Dam	Open-1	2022-10-10	12	No fish collected		
2830	Spring Lake Dam	Open-1	2022-10-10	13	No fish collected		
2830	Spring Lake Dam	Open-1	2022-10-10	14	No fish collected		
2830	Spring Lake Dam	Open-1	2022-10-10	15	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	1	Gambusia sp.	25	1
2831	Spring Lake Dam	Hydro-1	2022-10-10	1	Gambusia sp.	22	1
2831	Spring Lake Dam	Hydro-1	2022-10-10	2	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	3	Gambusia sp.	20	1
2831	Spring Lake Dam	Hydro-1	2022-10-10	4	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	5	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	6	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	7	Etheostoma fonticola	31	1
2831	Spring Lake Dam	Hydro-1	2022-10-10	7	Etheostoma fonticola	23	1
2831	Spring Lake Dam	Hydro-1	2022-10-10	7	Procambarus sp.		1
2831	Spring Lake Dam	Hydro-1	2022-10-10	8	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	9	Gambusia sp.	24	1
2831	Spring Lake Dam	Hydro-1	2022-10-10	10	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	11	Procambarus sp.		1

2831	Spring Lake Dam	Hydro-1	2022-10-10	11	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	12	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	13	Procambarus sp.		1
2831	Spring Lake Dam	Hydro-1	2022-10-10	13	No fish collected		
2831	Spring Lake Dam	Hydro-1	2022-10-10	14	Gambusia sp.	25	1
2831	Spring Lake Dam	Hydro-1	2022-10-10	15	No fish collected		
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Etheostoma fonticola	33	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Procambarus sp.		1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	20	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	20	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	15	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	21	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	22	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	15	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	18	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	18	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	1	Gambusia sp.	20	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	2	Gambusia sp.	30	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	2	Gambusia sp.	19	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	2	Etheostoma fonticola	32	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	2	Etheostoma fonticola	31	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Gambusia sp.	24	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Gambusia sp.	20	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Gambusia sp.	15	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Gambusia sp.	24	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Gambusia sp.	16	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Gambusia sp.	14	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Gambusia sp.	14	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	3	Etheostoma fonticola	27	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	4	Etheostoma fonticola	38	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	4	Etheostoma fonticola	28	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	4	Gambusia sp.	25	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	4	Gambusia sp.	18	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	4	Procambarus sp.		1
2832	Spring Lake Dam	Hydro-2	2022-10-10	5	No fish collected		
2832	Spring Lake Dam	Hydro-2	2022-10-10	6	No fish collected		
2832	Spring Lake Dam	Hydro-2	2022-10-10	7	Gambusia sp.		1
2832	Spring Lake Dam	Hydro-2	2022-10-10	8	Etheostoma fonticola	23	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	9	Gambusia sp.		1
2832	Spring Lake Dam	Hydro-2	2022-10-10	10	Etheostoma fonticola	26	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	11	Gambusia sp.		1

2832	Spring Lake Dam	Hydro-2	2022-10-10	11	Procambarus sp.		1
2832	Spring Lake Dam	Hydro-2	2022-10-10	12	Gambusia sp.		1
2832	Spring Lake Dam	Hydro-2	2022-10-10	13	No fish collected		
2832	Spring Lake Dam	Hydro-2	2022-10-10	14	Etheostoma fonticola	31	1
2832	Spring Lake Dam	Hydro-2	2022-10-10	15	Gambusia sp.		1
2832	Spring Lake Dam	Hydro-2	2022-10-10	15	Gambusia sp.		1
2833	Spring Lake Dam	Open-2	2022-10-10	1	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	2	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	3	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	4	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	5	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	6	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	7	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	8	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	9	No fish collected		
2833	Spring Lake Dam	Open-2	2022-10-10	10	No fish collected		

APPENDIX H: FOUNTAIN DARTER HABITAT SUITABILITY ANALYTICAL FRAMEWORK

OBJECTIVES

The goal of this analysis was to develop an index to quantify Fountain Darter habitat suitability within biological monitoring study reaches based on aquatic vegetation composition. Specific objectives included: (1) build Habitat Suitability Criteria (HSC) for each vegetation taxa; (2) use HSC to calculate an Overall Habitat Suitability Index (OHSI) based on vegetation community composition mapped at a given study reach during each monitoring event; (3) evaluate the efficacy of OHSI as a measure of Fountain Darter habitat suitability by testing whether Fountain Darter occurrence can be predicted based on OHSI.

METHODS

Habitat Suitability Criteria

HSC are a form of resource selection function (RSF) defined as any function that is proportional to the probability of use by an organism (Manly et al. 1993). HSC were built separately for the Comal and San Marcos river/springs systems using logistic regression based on random-station dip-net data and drop-net data converted to presence/absence. Logistic regression is a form of classification model that uses presence/absence data to predict probabilities based on a set of covariates (Hastie et al. 2009). The response variable for this analysis, probability of darter occurrence, was used to quantify criteria for each vegetation type, ranging from 0 (i.e., not suitable) to 1 (i.e., most suitable) (Figure G1).

OHSI Calculation

To calculate the OHSI for each monitoring event, HSC values for each vegetation strata were first multiplied by the areal coverage of that vegetation strata, and these values were summed across all vegetation strata within each study reach, to generate a Weighted Usable Area (WUA) of vegetation only as follows:

Eq. 1

$$WUA = \sum_{i=1}^{N}(A_i \ x \ HSC_i)$$

where N is the total number of vegetation types, A_i is the areal coverage of a single vegetation type, and HSC_i is the habitat suitability criteria of that single vegetation type (Yao & Bamal 2014).

This WUA was then divided by the total wetted area within the reach to generate OHSI, as follows:

Eq. 2

$$OHSI = \frac{WUA}{\sum_{i=1}^{N}(A_i)}$$

In this way, OHSI can also be thought of as the proportion of weighted usable area (Yao & Bamal 2014), ranging from 0 (unsuitable overall habitat) to 1 (most suitable overall habitat). Standardizing by reach size allows for a comparison of habitat quality between reaches of different sizes.

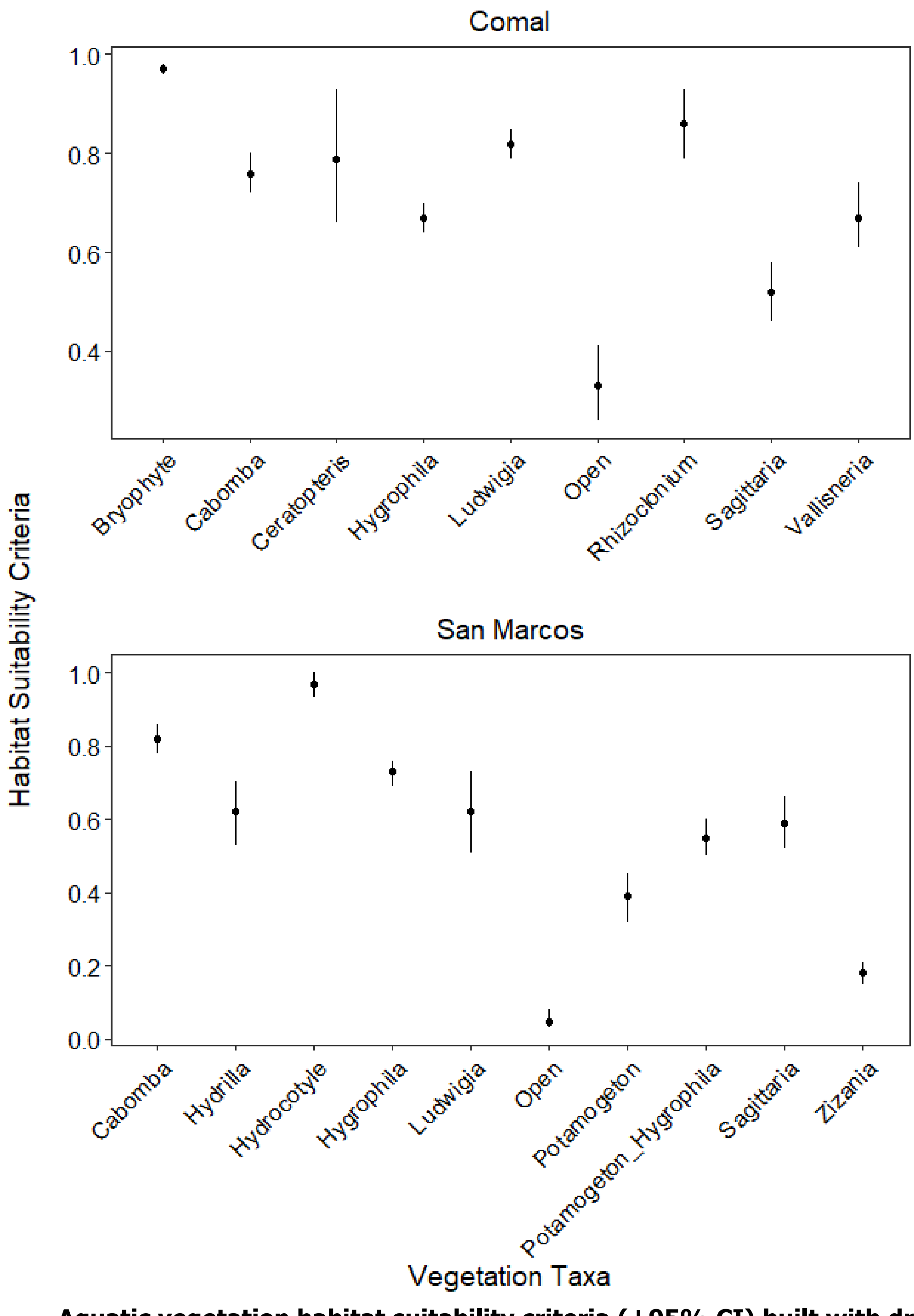

Figure H1. **Aquatic vegetation habitat suitability criteria (±95% CI) built with drop-net and random dip-net datasets using logistic regression.**

OHSI Evaluation

OHSI Evaluation Methods

To examine the relationship between OHSI and Fountain Darter population metrics, random-station dip-net data from 2017-2020 was organized in a way that treats each monitoring event per study reach as independent. This results in the response variable quantified as the proportional occurrence of Fountain Darters per reach at a given monitoring event based on the independent variable OHSI.

To predict Fountain Darter occurrence, two modeling approaches that are able to analyze proportions were used, which included: (1) GLM with a binomial distribution and (2) Random Forest Regression (RF). RF is an ensemble learning technique that builds many decision trees to predict a response variable (Breiman et al. 1984). Each decision tree of the "forest" is built by selecting a random subset of the dataset with replacement and a random set of covariates (Liaw & Wiener 2002). RF are considered more advantageous compared to traditional decision tree models and GLM because they correct for overfitting (Breiman 2001) and can provide more accurate predictions with many covariates (Cutler et al. 2007). For this analysis, we built RF models with 500 trees.

GLMs and RFs were built separately for the Comal and San Marcos systems. First, 50% of each dataset was randomly selected to train each model. Second, 5-fold cross validation (CV) was used to independently test the predictive performance of each model with the remaining 50% of the dataset (i.e., test data). Predictive performance was compared among models based on the correlation (R) and deviance (D) between observed and predicted values. Mean CV R ± standard error (SE) and CV D ± SE were calculated based on predictions from the 5 CV folds. Models with the highest CV R were considered as the best models for making predictions and elaborated on further in the results.

Lastly, figures were built to display fitted predictions across observed OHSI values to examine if there was a positive relationship between Fountain Darter occurrence and OHSI. Fitted predictions were also presented with a LOWESS smoothed function to visualize if trends of OHSI are linear or nonlinear (Milborrow 2020). In sum, if the models displayed strong predictive power and Fountain Darter occurrence showed a positive relationship with OHSI, then OHSI was considered a useful measurement of habitat suitability for Fountain Darters.

OHSI Evaluation Results

Predictive performance for the Comal models showed that RF (0.81 ± 0.18) predictions were more accurate than GLM (0.62 ± 0.20). San Marcos models were similar, showing better predictive accuracy for RF (0.97 ± 0.02) compared to GLM (0.93 ± 0.06) (Table G1). Comparisons between observed vs. predicted occurrence for the RF 5-fold CV demonstrated lowest predictive accuracy at observed proportions about 0.20 or less for the Comal and San Marcos (Figure G2).

Fitted predictions of occurrence as a function of OHSI showed that occurrence increased with increasing OHSI for the Comal and San Marcos. In the Comal, LOWESS smoothed predictions exhibited a non-linear asymptotic trend. Occurrence increased about 0.60 to 0.80 when OHSI increased from about 0.65 to 0.75 and remained around 0.80 at OHSI values >0.75. In the San Marcos, LOWESS smoothed predictions exhibited a more linear trend compared to the Comal and occurrence increased from about 0.25 to 0.55 as OHSI increased from 0.25 to 0.60 (Figure G3).

Table H1. Summary model performance statistics for predicting Fountain Darter occurrence based on OHSI. Summary statistics includes deviance (D) and correlation (R) for training data and 5-fold cross-validation (SE).

	Comal		San Marcos	
	GLM	RF	GLM	RF
Training Data				
Deviance	1.10	1.03	1.23	1.20
Correlation	0.48	0.77	0.70	0.89
Cross-Validation				
Deviance	1.12 (0.05)	1.05 (0.06)	1.24 (0.07)	1.21 (0.05)
Correlation	0.62 (0.20)	0.81 (0.18)	0.93 (0.06)	0.97 (0.02)

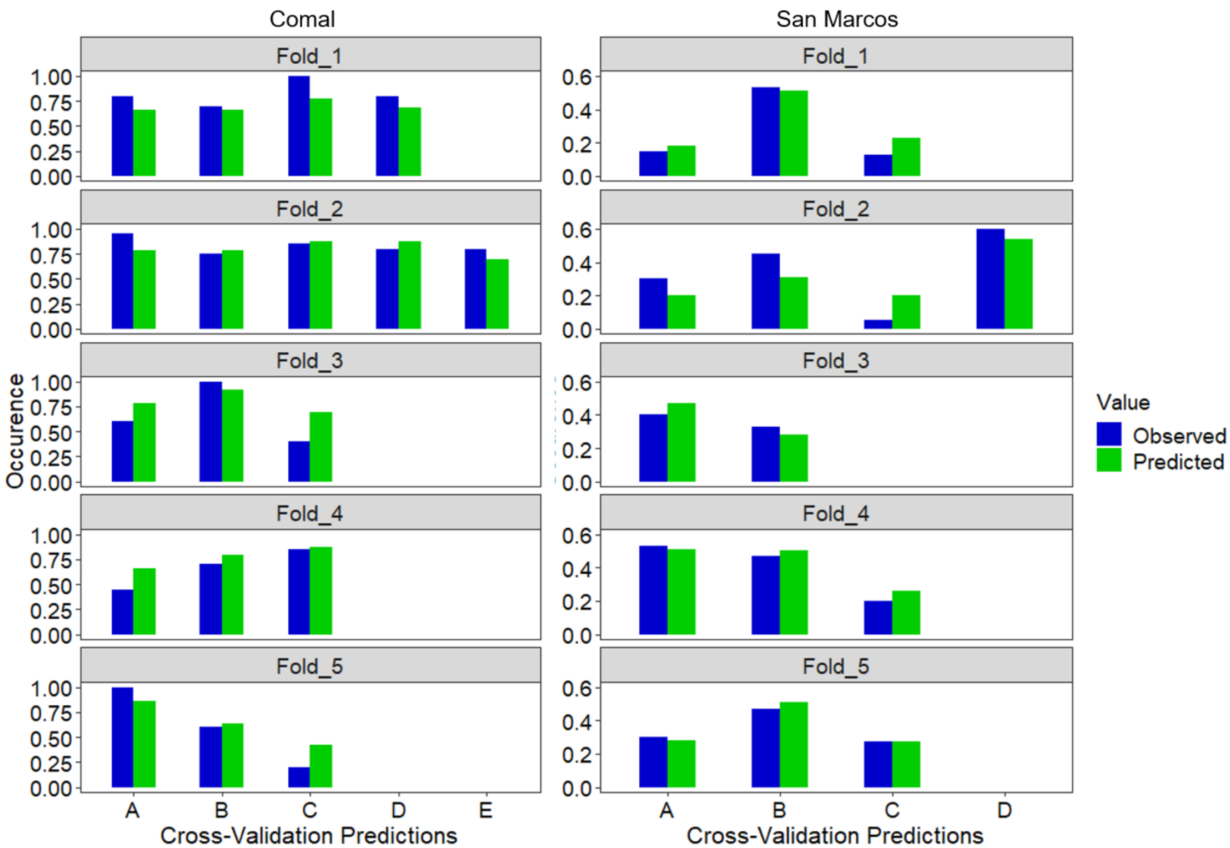

Figure H2. Observed vs. predicted Fountain Darter occurrence in relationship to OHSI from Random Forest 5-fold cross-validation.

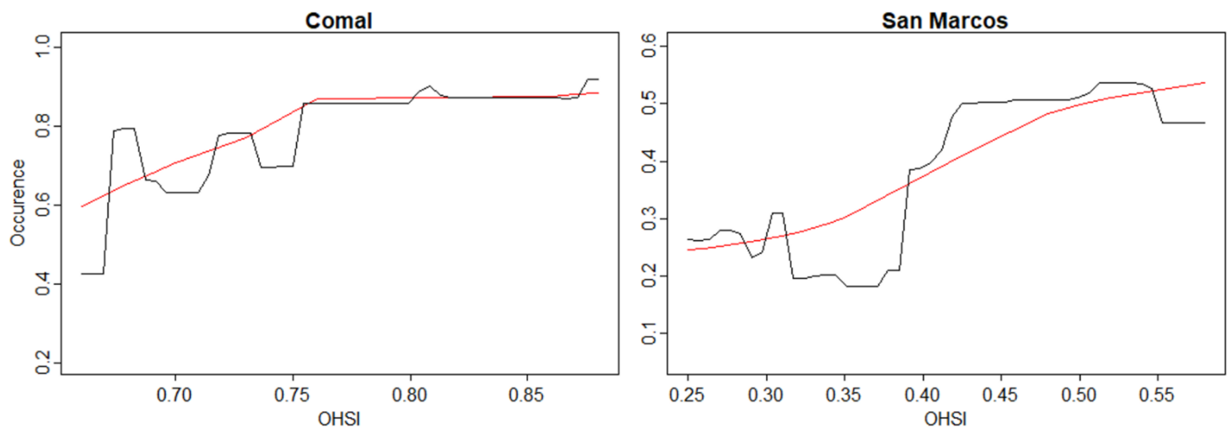

Figure H3. **Fitted occurrence predictions for OHSI in the Comal Springs/River and San Marcos River. The red lines are LOWESS smoothed fitted predictions used to visualize nonlinear trends.**

OHSI EVALUATION DISCUSSION

Model CV R >0.80 for all RFs demonstrate good model performance and that Fountain Darter occurrence can be accurately predicted based on OHSI. Further, similar performance statistics for training data and test data via cross-validation indicated that the training models were not overfit and can reliably predict independent observations in the future. That being said, predictions were least accurate at observed occurrence values about 0.20 or less, which is likely due to smaller sample sizes in this range. As random station dip-net sampling continues during future biomonitoring activities, predictions at these lower occurrence values will likely improve. Fountain Darter occurrence also increased with increasing OHSI. The positive relationship between occurrence and OHSI and good model performance supports that OHSI is an ecologically relevant index for evaluating Fountain Darter habitat suitability based on vegetation community composition.

In sum, this analysis demonstrated that OHSI based on vegetation-specific HSC and reach-level vegetation composition data can accurately predict Fountain Darter occurrence and is a useful measurement for quantifying habitat suitability. However, additional data collection can assist in addressing multiple limitations of this analysis. Firstly, random station dip-net data with simple random sampling is only available from about 2017-2020, which limits the ability to predict occurrence from historical observations. Further, model performance would likely improve at lower occurrence values as additional data are collected and a more robust dataset is generated. Secondly, this analysis assumed that vegetation alone determines Fountain Darter occurrence. For example, decreased predictive accuracy at lower darter occurrence values may be due to other habitat factors (e.g., depth-flow conditions, river discharge) or biotic factors (e.g., competition, predation) rather than due to smaller sample sizes of lower occurrence values; however, a multi-factor ecological model is beyond the scope of this work. In addition, OHSI can only be assessed for vegetation taxa that have been sampled previously and building HSC for rare vegetation taxa not represented may improve predictions. That being said, RF models demonstrated that occurrence can be predicted accurately without including additional habitat variables or vegetation types, supporting that this assumption does not hinder this analysis and does not appear to restrict the inference value of OHSI.

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