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 2021 through a series of monitoring activities outlined in this report. Monitoring in the San Marcos system consisted of surveys specific to HCP Covered Species—Fountain Darter (*Etheostoma fonticola*), Texas Wild-rice (*Zizania texana*), and San Marcos Salamander (*Eurycea nana*). Additional community-level monitoring data were also collected on aquatic vegetation, fish, and benthic macroinvertebrates. The results from 2021 biological monitoring provide valuable data to further assess spatiotemporal trends of aquatic biota in the San Marcos Springs/River ecosystem under varying conditions.

In 2021, San Marcos River monthly median discharge was near 10th percentile levels during the first four months of the year and dropped below 100 cfs in April (99 cfs on April 13), triggering Critical Period sampling components during the routine spring sampling event. Increased precipitation in the region beginning in May resulted in more typical monthly median discharges through September. On October 14, four days prior to fall sampling, localized rainfall led to a high flow pulse with mean daily discharge of 579 cfs, which exceeds the 99th percentile for this statistic. However, by initiation of fall sampling activities, flows had stabilized near 220 cfs. As in previous years, water temperatures were extremely stable throughout the year in spring-fed portions of Spring Lake and increased in variability from upstream to downstream in the river. Maximum optimal water temperature thresholds for Fountain Darter larval and egg production were not exceeded within study reaches at Spring Lake Dam, City Park, and I-35, but exceeded the larval production water temperature threshold for part of the year at Thompson Island and near the Waste Water Treatment Plant.

Aquatic vegetation coverage was higher than long-term seasonal averages at Spring Lake Dam and I-35 during both spring and fall 2021. At City Park, coverage was similar to long-term averages during the spring, but dropped considerably below long-term averages in fall. Given that similar reductions were not observed in other reaches, this was likely not related to the preceding high flow pulse. Instead, this is best explained by increased recreational pressure during summer at City Park when compared to other reaches. Among vegetation taxa, Texas Wild-rice continues to become increasingly dominate in the study reaches, and reached a new maximum coverage of 17,235 m^2 during spring low-flow mapping. Modest reductions were observed between this mapping event and the annual summer 2021 mapping and attributed mainly to recreational impacts near popular access points. Despite these reductions, the summer coverage of 13,965 m^2 is the 3rd highest documented to date, behind the two preceding mapping events.

Fountain Darter seasonality in size structure and density by vegetation taxa demonstrated predictable patterns observed in previous years. Population performance metrics showed variable responses among seasons with inconsistent trends across metrics. Median Fountain Darter density from drop-net sampling was slightly higher than typical in the spring and similar to long-term data in the fall. Median catch rates from timed dip-netting were similar to historical data in the spring and higher in the summer and fall. Median percent occurrence values from random-station dip-netting were similar to historical values in spring, but in contrast to other metrics, lower in summer and fall. Positively skewed distributions of Fountain Darter density are typical

and demonstrate that darters exhibit a clustered distribution with low abundance in most habitats and higher abundance in more suitable habitats. Low percent occurrence and high catch rates in summer and fall 2021 also suggest a higher degree of localization within a limited amount of suitable habitat. This is most likely related to the continued dominance of Texas Wild-rice (low suitability) in the upper study reaches relative to smaller patches of taxa more suitable for Fountain Darters. City Park provides a prime example of this as Texas Wild-rice has become increasingly dominant in this reach following removal of non-native taxa during restoration activities starting around 2013. Since that time, there has been a substantial decline in overall habitat suitability and the percent of random-stations occupied. However, drop-net densities from 2021 were high in this reach showing that darters are still abundant in the quality habitat present.

Fish community sampling demonstrated that median species richness and diversity generally increased from upstream to downstream, whereas richness and relative density of spring-associated fishes decline in the downstream portions of the study area. This is a result of increased abundance and diversity of riverine or generalist species in downstream reaches. Golden Topminnow *Fundulus chrysotus* were captured in fish community sampling and other biomonitoring activities in 2020 and 2021. This represents the first documentation of this species in the system, and repeated captures suggest a viable population may exist in the system. Causal mechanisms for the sudden appearance of this species in the Upper San Marcos River are unclear.

San Marcos Salamander densities were variable among sites in 2021. At the Spring Lake Dam site, they were well below long-term averages and a declining trend is suggested in density data from spring 2017 to fall 2021. Continued monitoring of San Marcos Salamanders will be important in further evaluating this trend.

Macroinvertebrate sampling showed that areas of more lentic-type habitat (e.g., Spring Lake), scored lower because these communities exhibit different habitat conditions compared to the swift-flowing, least-disturbed reference streams used in development of biotic indices. Downstream areas with lotic conditions generally scored higher, because habitat is more similar to the reference streams. However, for a spring-fed system, the importance of this metric is not necessarily the ranking, but rather the consistency of or observance of a trend over time. No temporal trends in bioassessment scores were noted.

Overall, 2021 biological monitoring documented the persistence of appropriate habitat conditions to support the EAHCP Covered Species as well as a diverse community of other aquatic organisms. Texas Wild-rice coverage continues to increase in the system and has resulted in a reduction in suitable habitat for Fountain Darters in the City Park Reach. Although more data is needed, population performance metrics suggest this may be resulting in increased aggregation of darters into the suitable habitat available. San Marcos Salamander monitoring suggests a potential trend of decreasing density below Spring Lake Dam, but more data is needed to confirm this observation and rule out a multitude of confounding factors. Macroinvertebrate bioassessments confirm a healthy riverine community with a diversity of benthic invertebrates that compares well to regional least-disturbed reference streams. Continued monitoring will provide useful data to evaluate and better understand how this complex ecological system responds to dynamic variations in hydrologic, climatic, and anthropogenic 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 HCP biological monitoring program has surpassed its initial purpose (EAHCP 2012), and biological data collected since the implementation of this monitoring program (BIO-WEST 2001–2020) now serves as the foundation for several underlying sections in the HCP, which include the following: (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 HCP 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 HCP mitigation and restoration activities conducted in the San Marcos Springs/River and calculate the HCP habitat baseline and net disturbance determination and annual "incidental take" estimate (EAHCP 2012).

Table 1. Covered Species directly sampled for under the Edwards Aquifer Habitat Conservation Plan in the San Marcos spring and river ecosystems.

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 2021 within the San Marcos Springs/River ecosystem. The results include summaries of current physiochemical conditions, as well as current conditions of floral and faunal communities. For all aquatic organisms, historic observations (BIO-WEST 2001–2021) 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 HCP, 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)

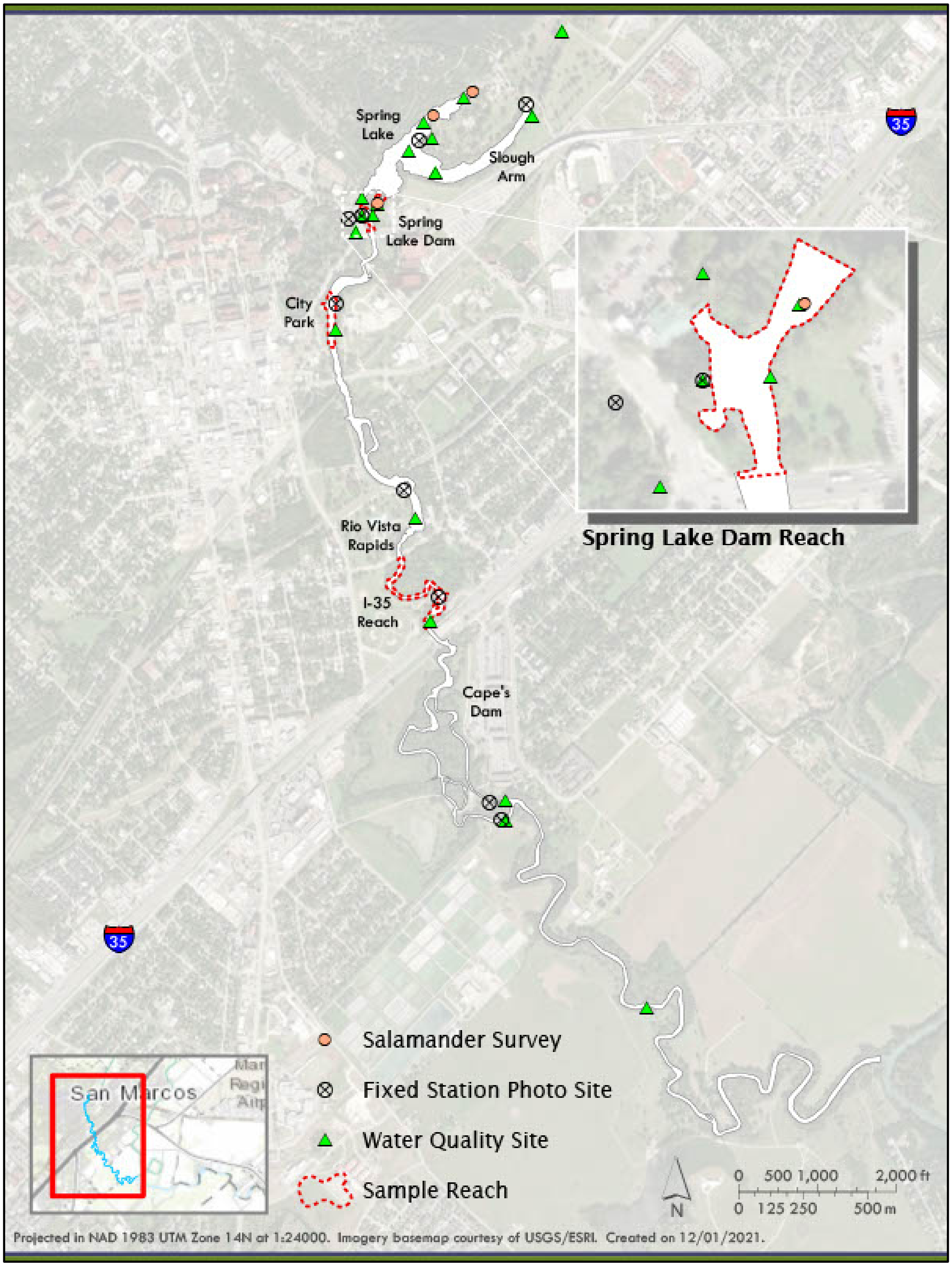

Figure 1. Upper San Marcos River sample reaches, San Marcos Salamander survey sites, water quality sampling sites, and fixed-station photography sites.

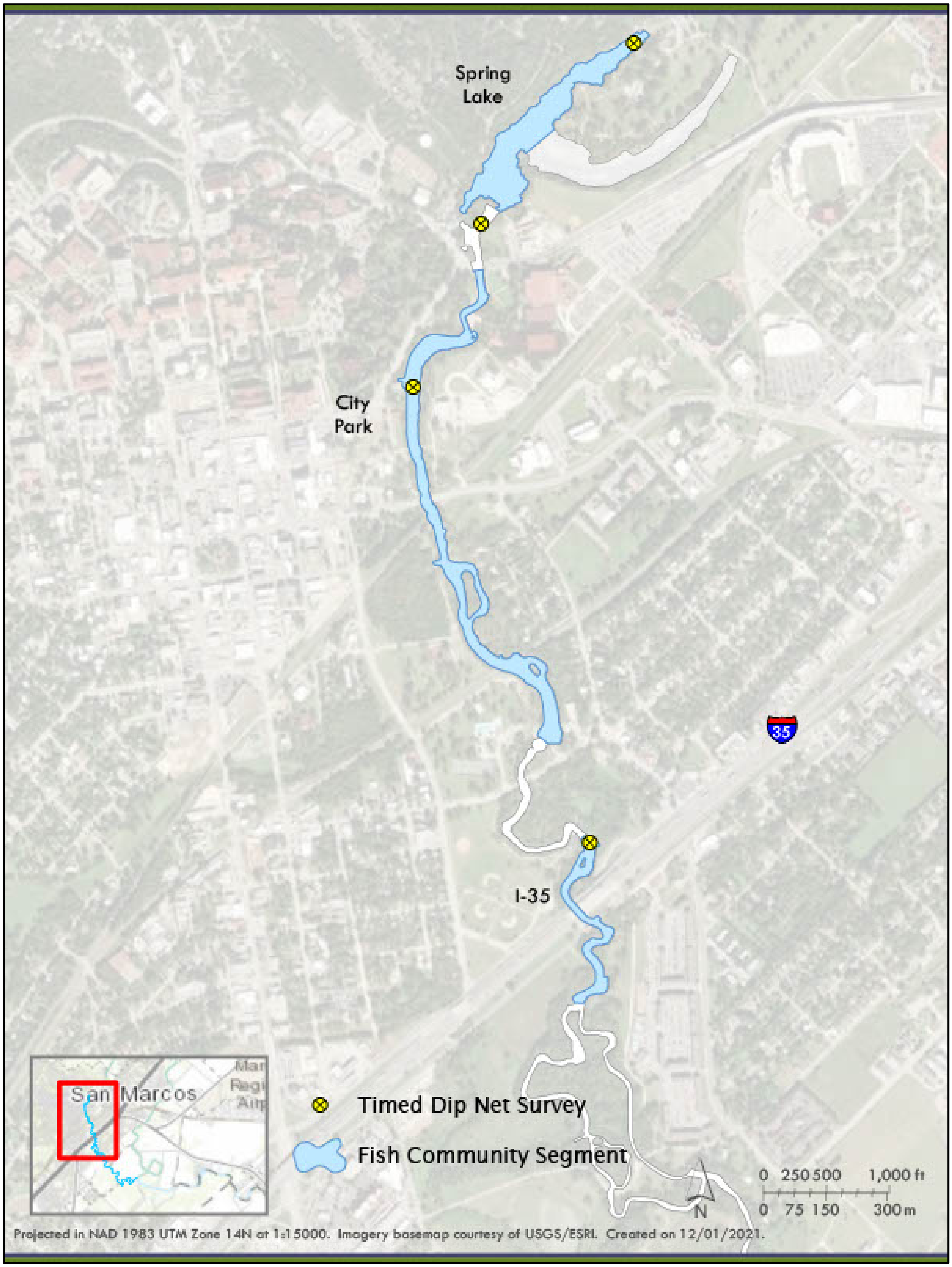

Figure 2. Fish community sampling segments and dip-net timed survey sections for the upper San Marcos River.

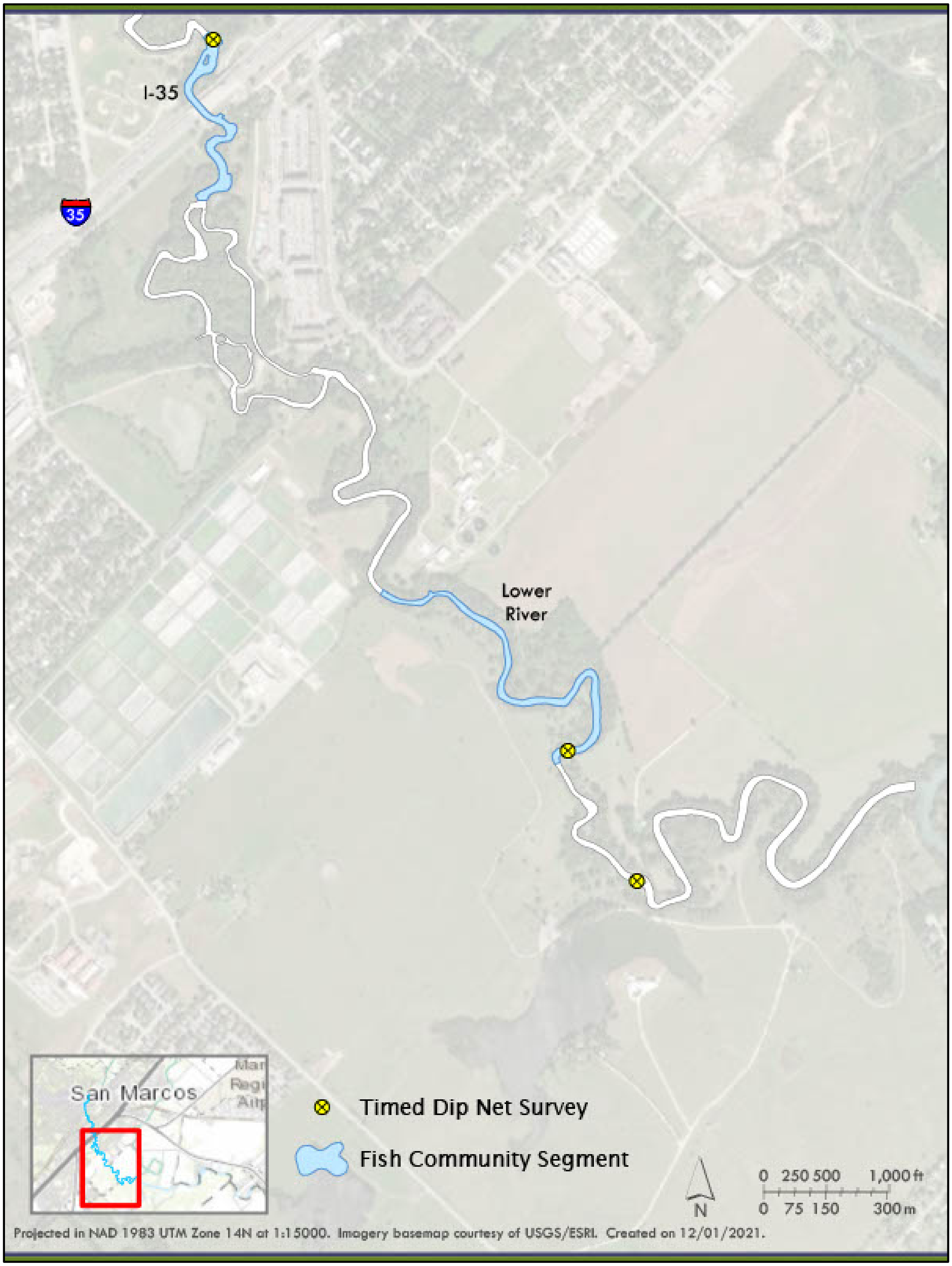

Figure 3. Fish community sampling segments and dip-net survey sections for the lower San Marcos River.

In addition to annual comprehensive sampling outlined above, flow-specific critical period sampling may also be conducted, but is dependent on established HCP flow triggers (EAHCP 2012). In spring 2021, river discharge less than 100 cubic feet per second (cfs) resulted in Critical Period Low-flow sampling (i.e., water quality grabs, habitat assessment, Texas Wild-rice mapping; Appendix A). Critical Period Texas Wild-rice mapping results are presented in the main body of the report. Water grab sampling and habitat assessment results are presented in Appendix B.

The remaining methods sections provide brief descriptions of the procedures utilized for comprehensive 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 HCP biological monitoring program for the San Marcos Springs/River ecosystem (EAA 2017).

San Marcos River Discharge

River hydrology in 2021 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 2021). The annual distribution of mean daily discharge was compared from for the past 5 years using boxplots. The distribution of 2021 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 10-foot sit-in kayak with a plexiglass window for visual observations to complete aquatic vegetation mapping in sample reaches (Figure 1). 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 the Critical low-flow period in April and routine sampling in August (Figure 4).

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 2021 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.

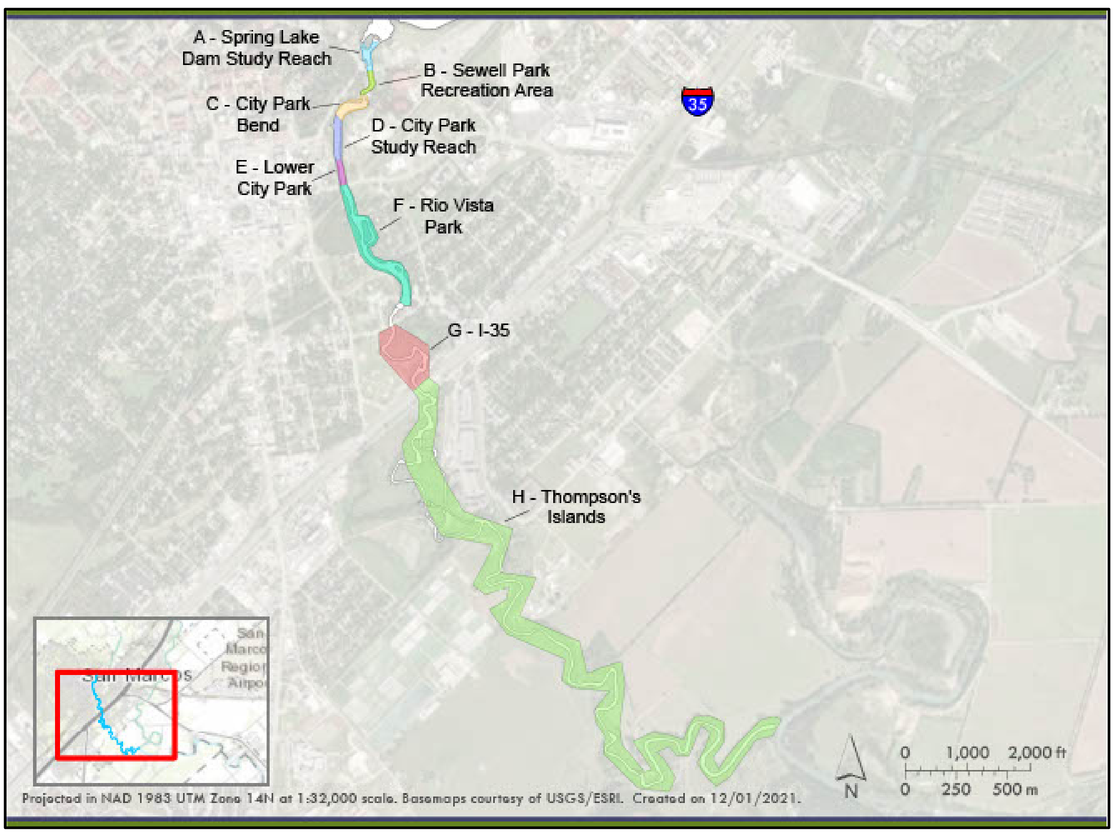

Figure 4. Designated river segments for monitoring Texas Wild-rice coverage.

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 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.

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 (fish/m^2). Timed dip-net total darter counts per study reach were standardized as catch-per-unit-effort (CPUE; [fish/person-hour]) 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 the proportion of occurrence (sum[darter presence]/sum[random stations]) was calculated per sampling event at each site. 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 due to the fact that 2020 was the first year this species was sampled via drop-netting. 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.

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 and fall 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. To prevent recapture on subsequent seine hauls, captured fish were placed in a holding bucket containing river water. After completion of the transect, all fish were released from holding buckets. 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 velocity (ft/s) measured at 15 cm above the river bottom, at mid-column, and at the surface.

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, Waste Water 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

During each routine sampling effort, visual surveys for salamanders were conducted 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 & DISCUSSION

River Discharge

Over the last five years, median daily discharge in the San Marcos River was slightly higher from 2017 to 2019 (166–232 cfs) compared to 2020 (149 cfs) and 2021 (141 cfs). Minimum discharge was also lower in 2020 (119 cfs) and 2021 (99 cfs). Narrower interquartile range (IQR; i.e., less dispersion from median) in 2018 (37) and 2020 (24) compared to other years (46–64) demonstrates that these years had less variable flow conditions. Maximum daily discharge was highest in 2021 (579 cfs) and high flow events were generally infrequent for the past five years, rarely experiencing daily discharge above 400 cfs (Figure 5A).

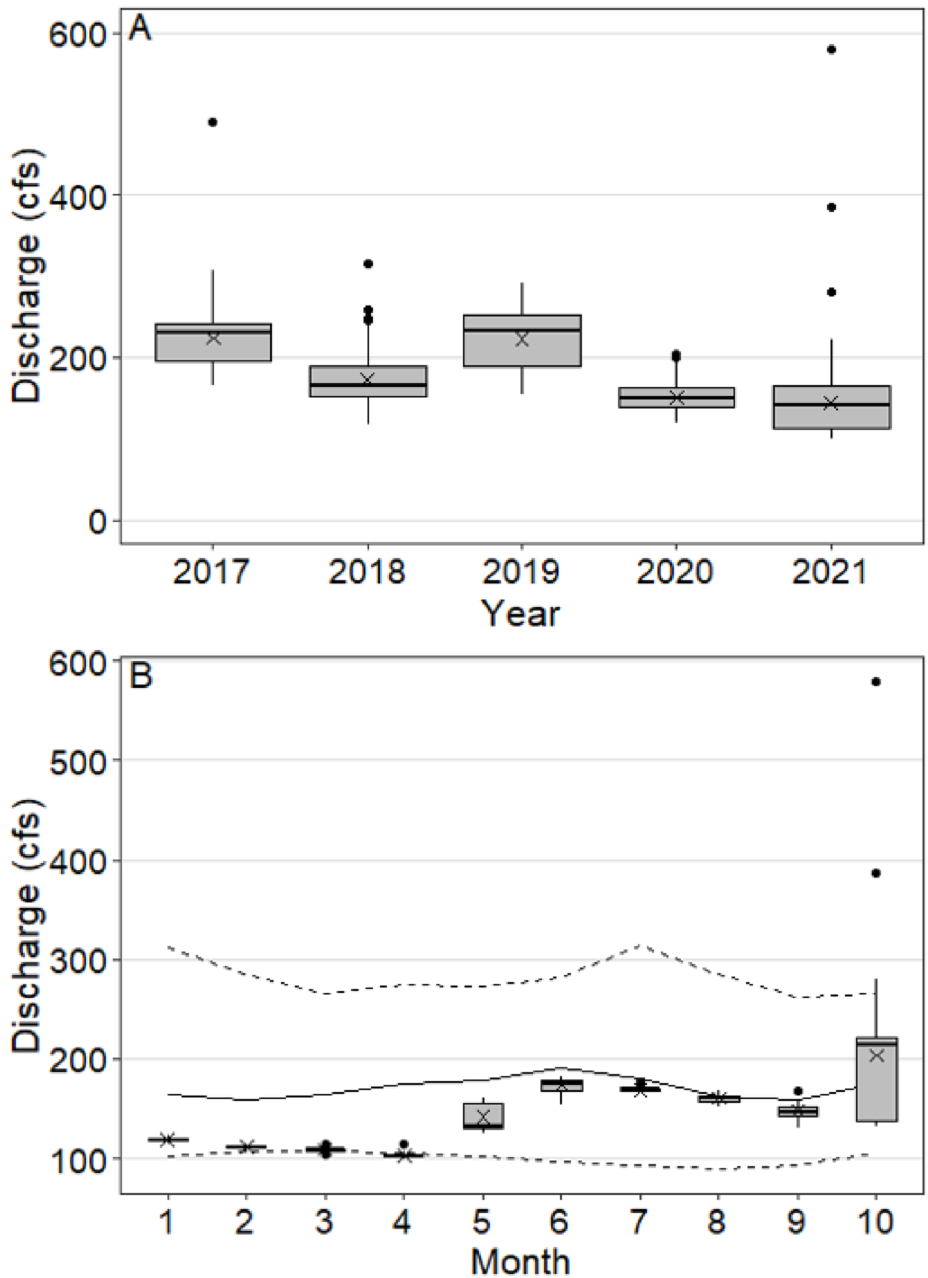

Figure 5. **Boxplots displaying San Marcos River mean daily discharge annually from 2017–2021 (A) and among months (January–October) in 2021 (B). Each month is compared to the 10th percentile (lower dashed line), median (solid line), and 90th percentile (upper dashed line) of their historical (1956–2021) 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.**

Among months, median daily discharge ranged from 103 cfs in April to 214 cfs in October. Median daily discharge descended from the long-term median from January (-46 cfs) to April (-75 cfs) and were aligned with their long-term 10th percentiles (102–108 cfs). Median daily discharge increased from May to October to values more similar to the long-term median.

Routine spring sampling occurred in April, which experienced the lowest flows observed in 2021. Daily discharges in April ranged from 99-109 cfs and were more closely aligned with the long-term 10th percentile (105 cfs) than long-term median (178 cfs). Discharge below 100 cfs in April triggered critical period sampling, which included water quality grab sampling, full-systems Texas Wild-rice mapping, and full-system habitat assessments. During summer sampling in July, daily discharge was similar to the long-term median (180 cfs), ranging from 166–177 cfs (median = 169). During fall sampling in October, daily discharge was more variable compared to other months, ranging from 133–579 cfs (median = 214) and was frequently above the long-term median (175 cfs) (Figure 5B). Maximum discharge in October occurred four days prior the start of drop-net sampling in the upper San Marcos. Moreover, a flow magnitude of 579 cfs is an uncommon event that exceeded the 99th percentile across all years (399 cfs), although daily discharges above 1,000 cfs have occurred historically.

Water Temperature

Median water temperature varied about 2 °C among stations, ranging from 21.20 °C at Rio Vista Park to 23.33 °C at Wastewater Treatment Plant. Temperature variability generally increased from upstream to downstream and temperatures were most stable at stations within or near Spring Lake. Stations from City Park to Wastewater Treatment Plant fluctuated about 5–9 °C. No stations exceeded the Fountain Darter egg production threshold. Thompson Island Natural and Wastewater Treatment Plant were the only stations that surpassed the larval production water temperature threshold (Figure 6). Larval threshold exceedance was recorded at one 4-hr measurement for one day in May at Thompson Island Natural. At Wastewater Treatment Plant, larvae threshold exceedance occurred more frequently (May–September [27 days]), though among exceedance days, only one 4-hr measurement was recorded per day. In summary, 2021 water temperatures in the upper San Marcos were relatively stable despite low flow conditions occurring early in the year.

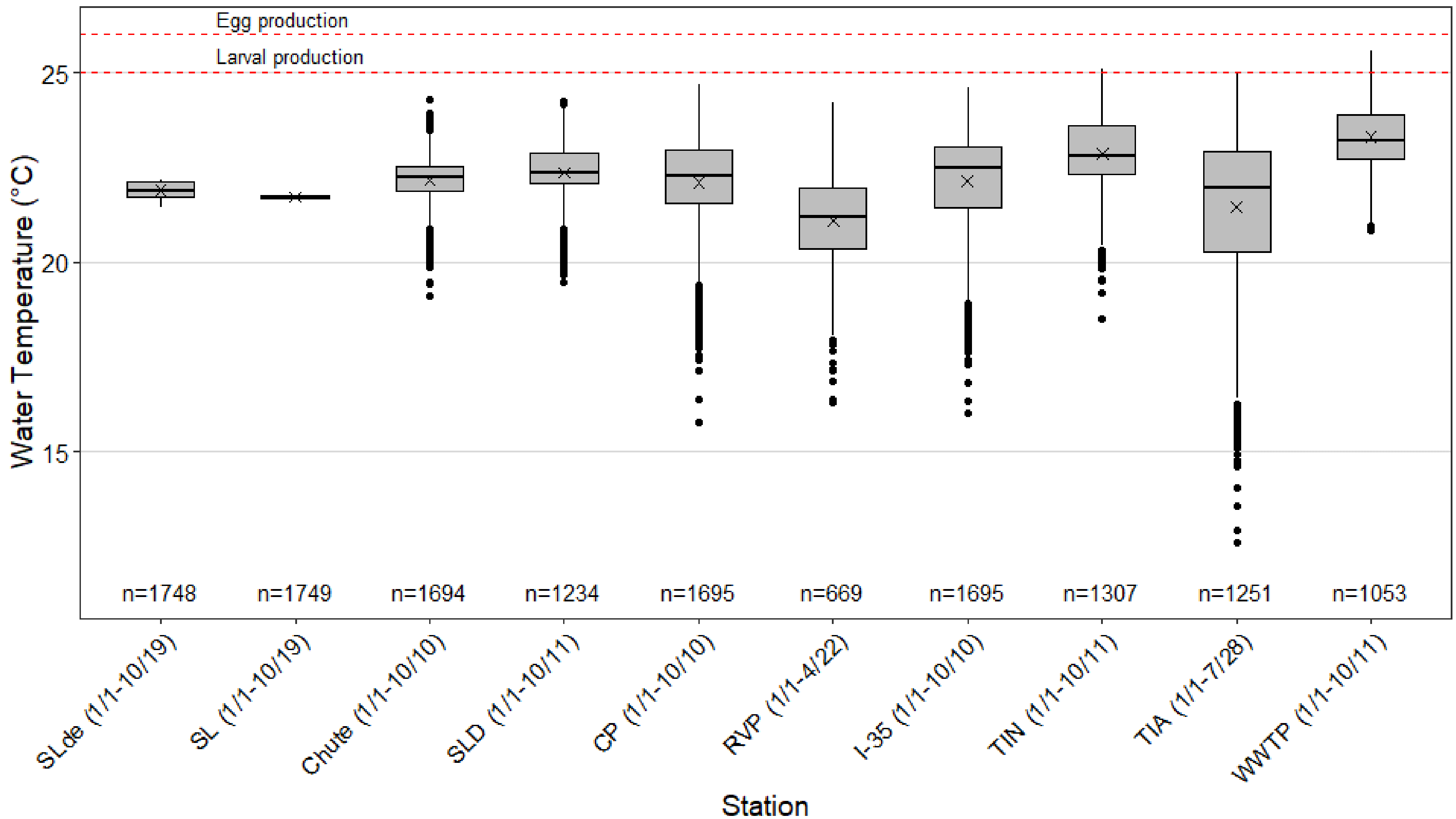

Figure 6. **Boxplots displaying 2020 water temperatures at logger stations (data collection timeframe [Month/Day]). Water temperature data are based on measurements collected at 4-hour increments. Stations include Spring Lake Deep (SLde), Spring Lake (SL), Chute, Spring Lake Dam (SLD), City Park (CP), Rio Vista Park (RVP), I-35, Artificial Channel (TIA), and Waste Water 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).**

Aquatic Vegetation

Spring Lake Dam Reach

Spring Lake Dam reach has seen interesting changes in recent years as Texas Wild-rice has come to dominate. In the recent past this area was highly recreated which routinely impacted the aquatic vegetation community. Since 2015 the stream edge has been fenced and closed to the public. Total vegetation cover has shown an increasing trend and non-native plant species have been mostly extirpated from the reach. Both the spring and fall mapping events showed large increases in total aquatic vegetation cover and were well above long-term averages (Figure 7). The vegetation community in Spring Lake Dam Reach is almost entirely dominated by Texas Wild-rice. From spring 2020 to spring 2021, Texas Wild-rice cover increased nearly 1,000 m^2. Fall data showed similar changes. Excluding Texas Wild-rice, *Potamogeton* and *Hydrocotyle* have remained the two most widespread species in recent years (Figure 8; Figure E1).

City Park Reach

In 2021, total vegetation coverage at City Park remained similar to long-term averages in the spring, but was much lower in the fall (Figure 7). City Park Reach is characterized by high recreational activity. Tubing, wading and swimming are popular activities here, and subsequent trampling of vegetation results in large variations in vegetation cover annually and between seasons. City Park and all other city river access points were closed to the public from late-March to mid-September 2020 due to COVID-19 restrictions. The seven-month closure resulted in higher vegetation coverage in fall 2020, and again in spring 2021. By fall of 2021 however, even moderate recreation activities began to denude Texas Wild-rice, resulting in a 38% decrease from spring 2021. *Cabomba* saw a moderate increase in cover from spring 2021 to fall 2021, likely because it persists in a more inaccessible section of the reach. *Hygrophila* saw a drastic decrease in cover as a result of removal associated with HCP vegetation restoration activities. Overall, species composition in this reach has become increasingly dominated by Texas Wild-rice in recent years (Figure 8; Figure E2).

I-35 Reach

Total vegetation coverage was substantially higher in spring 2021 compared to long-term averages, driven mainly by a steady increase in Texas Wild-rice since 2017 (Figures 7 and 8). However, from spring and fall 2021 Texas Wild-rice saw a slight decrease in coverage, whereas there were moderate increases in cover for several other native species (*Cabomba*, *Hygrophila*, *Sagittaria*) which resulted in similar total coverage between the two events (Figure 8). Due to this reach's close proximity to popular access points, Texas Wild-rice may be more susceptible to recreational impacts than some other species. Bryophytes and *Rhizoclonium* were also present in spring 2021, though were not included in total coverage calculations, which only includes rooted plant taxa (Figures 7 and 8).

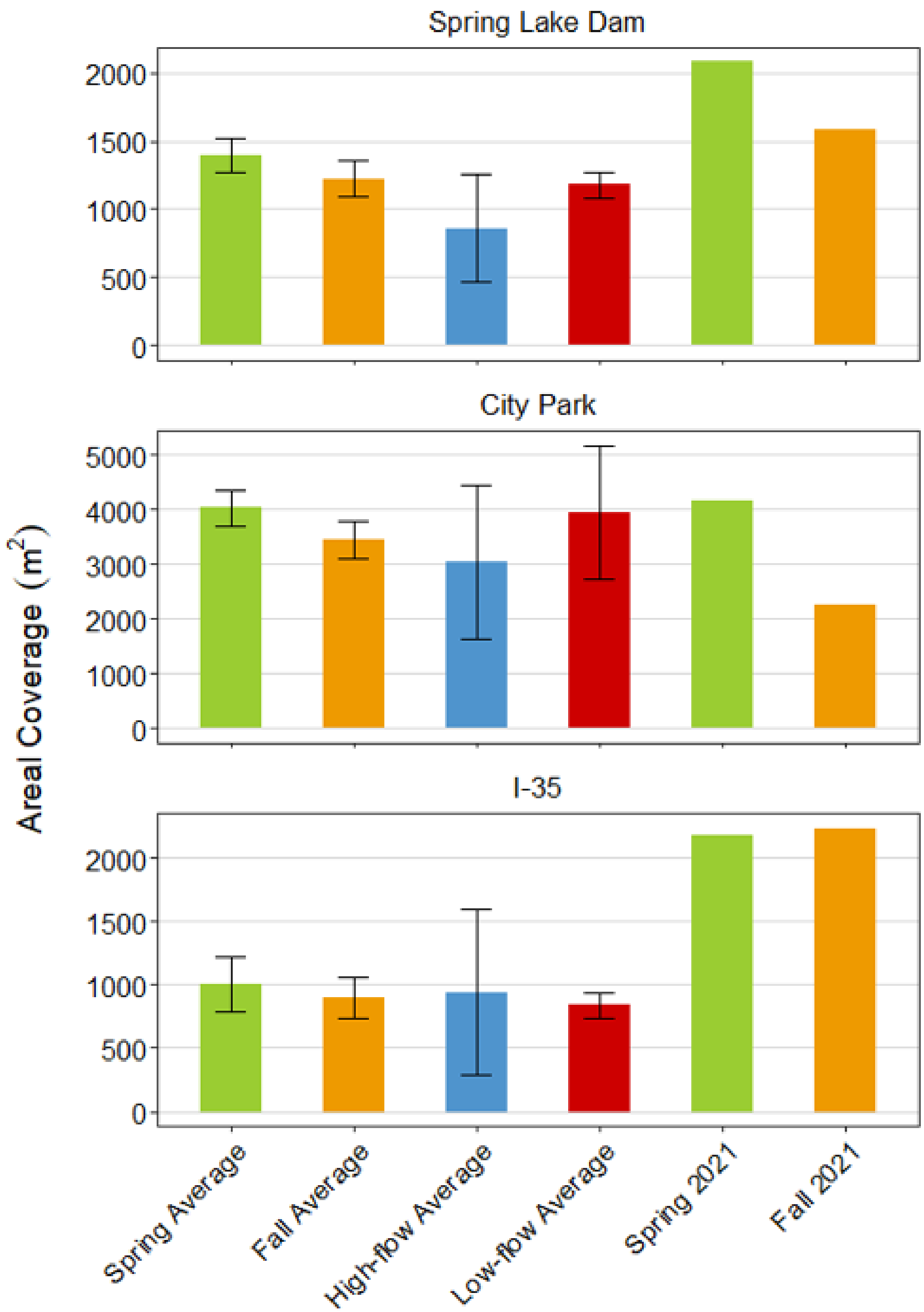

Figure 7. **Areal Coverage (m²) of aquatic vegetation among study reaches in the San Marcos River. Long-term (2001–2021) study averages are provided with error bars representing 95% confidence intervals.**

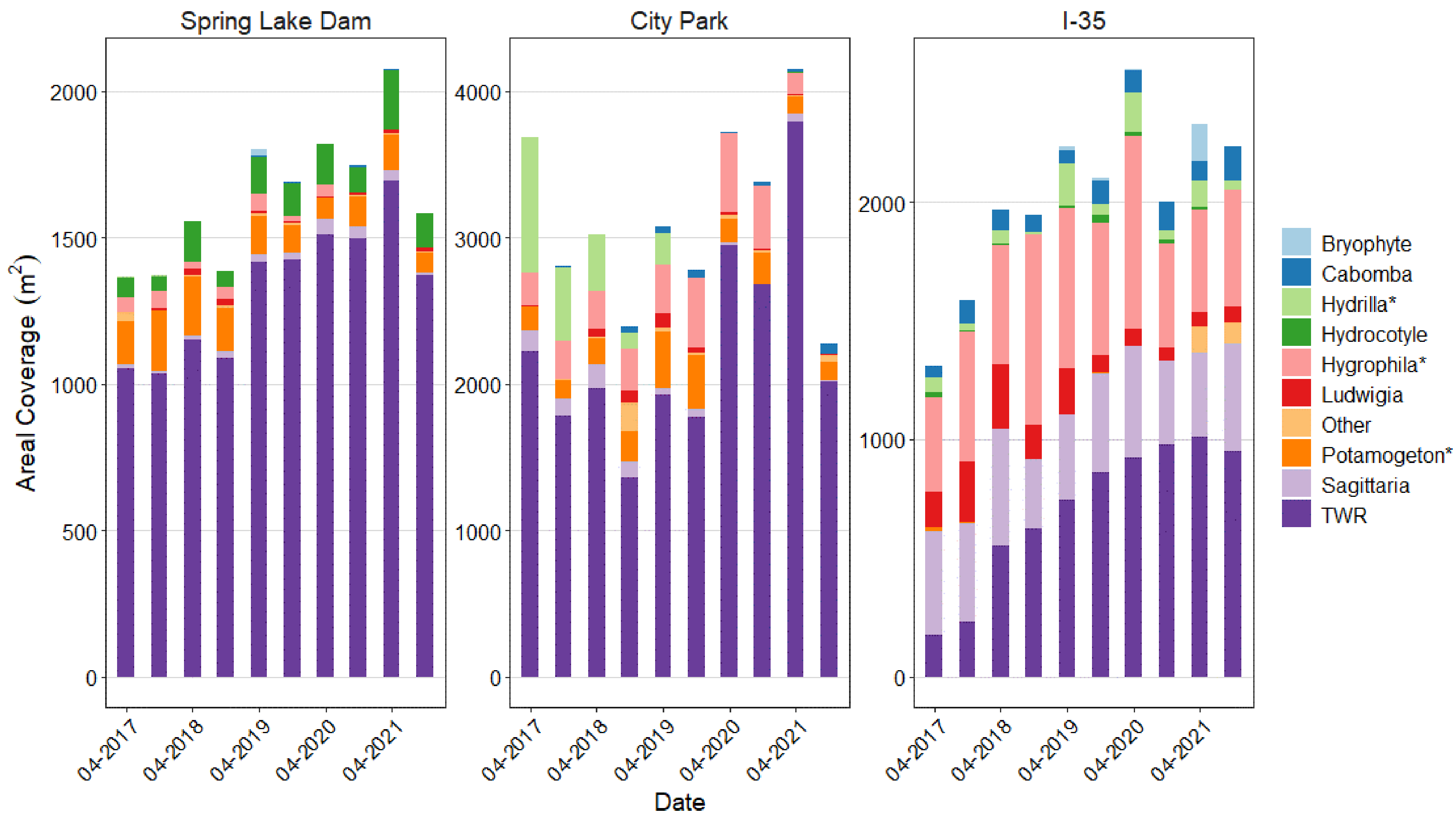

Figure 8. **Aquatic vegetation (m²) composition among taxa (top row) from 2017–2021 in the San Marcos River. (*) in the legend denote non-native taxa.**

Texas Wild-rice

Texas Wild-rice Mapping

In 2021, Texas Wild-rice was mapped during one low-flow event (April) in addition to the annual summer mapping event (July and August). Full system maps for both mapping events are located in Appendix C.

Results of the 2021 low-flow mapping event showed an areal coverage of 17,235 m^2. This was a substantial increase from the previous year and was the highest coverage of Texas Wild-rice quantified since mapping began. Despite river discharge descending below 100 cfs in spring 2021, coverage of Texas Wild-rice continued to expand.

Annual summer mapping showed Texas Wild-rice decreased to 13,965 m^2, dropping below the previous 2020 coverage (Figure 9). The return of recreation in the late spring and summer of 2021 influenced Texas Wild-rice coverage in several public access areas (as seen in Segment A [Figure 10]).

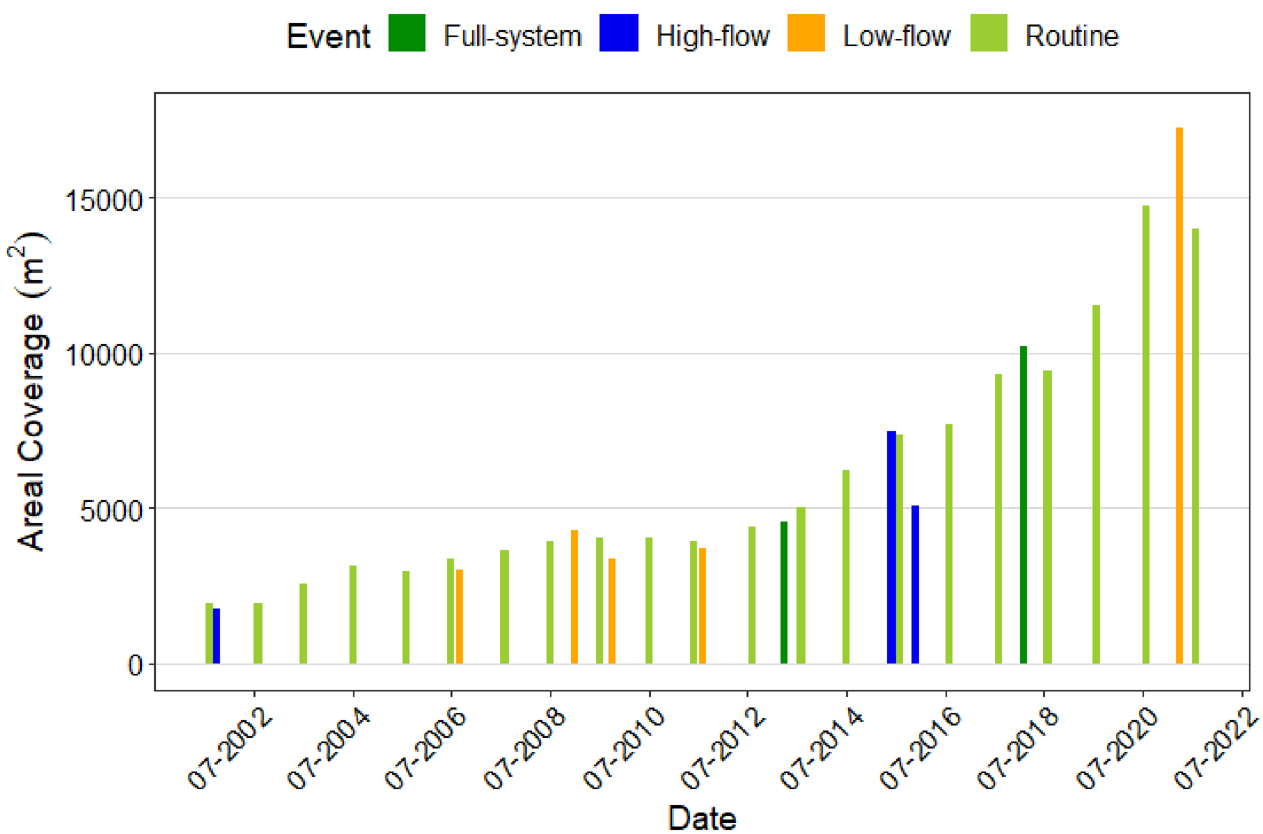

Figure 9. Texas Wild-rice Areal coverage (m^2) from 2001–2021 in the upper San Marcos River.

Between the low-flow and annual mapping events, Texas Wild-rice decreased in all segments except Segment H, totaling a decrease of 3,315 m^2. Segment D had the largest percent loss in Texas Wild-rice, with cover decreasing by over 1,000 m^2 within the 4-month period. This decrease was not unexpected, since this segment generally receives the heaviest recreation during summer months. Surprisingly, Segment A had the second highest loss in Texas Wild-rice (Table 3). This area is not as heavily recreated as other sections of the river and its banks are officially closed to public access. Segment B is also a heavily accessed area and most of the loss in this reach occurred around the Aquarena Street bridge, where Texas Wild-rice had filled in the entire width of the river. Foot paths from access to stairs also reappeared (Figure 10). Although often void of vegetation, these areas had filled in with Texas Wild-rice during COVID-19 park closures in 2020. **(**Figure 10).

Table 3. Change in cover amount (m^2) of Texas Wild-rice between April (low-flow) and August 2021 annual mapping.

RIVER SEGMENT	APRIL 2021 (LOW-FLOW) COVERERAGE	AUGUST 2021 COVERAGE	COVERAGE CHANGE	PERCENT CHANGE
A. Spring Lake Dam Study Reach	1,782	1,372	-410	-23%
B. Sewell Park	1,596	1,308	-288	-18%
C. City Park bend	4,515	3,988	-527	-11%
D. City Park Study Reach	3,816	2,452	-1,364	-35%
E. Lower City Park	1,642	1,335	-307	-19%
F. Veramendi Park to Rio Vista Park	2,463	2,124	-339	-14%
G. I-35 Study Reach	1,034	954	-80	-8%
H. Below I-35	242	317	75	31%

Texas Wild-rice in Segment H, located below the I-35 Bridge, declined significantly after the 2015 Memorial Day floods, with many stands extirpated. The current cover of Texas Wild-rice in this segment indicates an expansion above pre-flood coverage, increasing from 191 m^2 in 2014 to 317 m^2 for this year (Table 3). In recent years, Texas Wild-rice has been steadily increasing in this section mostly as a result of heightened natural expansion. Some Texas Wild-rice was replanted into several of the locations lost during the 2015 flood, including areas between the I-35 bridge and Cape's Dam, as well as along the A.E. Fish Hatchery property. Lastly, Texas Wild-rice stands in the mill race below Cheatham Street and in the Thompson's Island mill race were observed again for the fourth consecutive year.

Figure 10. Texas Wild-rice root masses in heavily recreated areas becomes partially-dislodged from foot traffic (top). A well trafficked foot path through Texas Wild-rice in Sewell Park (bottom).

Fountain Darter

A total of 795 Fountain Darters were observed at 60 drop-net samples in 2021. Drop-net densities ranged from 0.00–39.50 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. Timed dip-netting resulted in a total of 745 Fountain Darters during 10.5 person-hours (p-h) of effort. Site CPUE ranged from 4–127 fish/p-h. Lastly, Fountain Darters were present at 54 out of 180 random-stations and percent occurrence among monitoring events ranged from 10–80%. A summary of occurrences per reach and vegetation taxa can be found in Table 5.

Table 4. Habitat conditions observed during 2021 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	4 (95%)	4 (100%)
Hydrilla[1]	0	0	2 (75%)
Hydrocotyle[1]	4 (95%)	0	0
Hygrophila[1]	0	2 (100%)	4 (100%)
Ludwigia[1]	0	2 (88%)	2 (80%)
Open	4 (100%)	4 (98%)	4 (100%)
Potamogeton[2]	4 (98%)	4 (100%)	0
Sagittaria[2]	4 (100%)	2 (100%)	4
Texas Wild-rice[2]	2 (95%)	2 (85%)	2 (85%)
Substrate			
Clay	0	0	1
Cobble	3	0	0
Gravel	12	3	6
Sand	0	2	3
Silt	3	15	11
Depth-velocity			
Water depth (ft)	1.7 (0.6–3.4)	2.8 (0.7–3.5)	1.3 (0.5–3.4)
Mean column velocity (ft/s)	0.4 (0.0–1.7)	0.4 (0.0–0.8)	0.1 (0.0–1.2)
15-cm column velocity (ft/s)	0.2 (0.0–2.0)	0.1 (0.0–0.8)	0.1 (0.0–0.9)
Water quality			
Water temperature (°C)	22.1 (21.8–22.6)	22.1 (21.6–22.7)	22.7 (21.9–23.2)
DO (ppm)	8.3 (7.8–8.6)	8.4 (7.4–9.7)	8.8 (2.9–10.8)
DO % saturation	94.6 (89.0–99.4)	96.9 (85.1–112.0)	101.0 (32.5–127.1)
pH	7.5 (7.0–7.6)	7.5 (7.0–7.7)	7.7 (7.2–7.7)
Specific conductance (μs/cm)	635 (606–747)	630 (626–750)	629 (621–746)

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

Table 5. Summary of vegetation types sampled among reaches during 2021 random-station surveys in the San Marcos Springs/River and the percent occurrence of Fountain Darters in each reach and vegetation type.

VEGETATION TYPE	SL	SLD	CP	I-35	Total	Occurrence (%)
Cabomba[1]	9	0	3	1	**13**	**46.15**
Ceratophyllum[1]	1	0	0	0	**1**	**0.00**
Heteranthera[1]	0	1	0	0	**1**	**0.00**
Hydrilla[1]	0	0	0	2	**2**	**100.00**
Hydrocotyle[1]	0	4	0	0	**4**	**75.00**
Hygrophila[1]	0	0	3	13	**16**	**75.00**
Ludwigia[1]	0	0	0	2	**2**	**100.00**
Myriophyllum[1]	3	0	0	0	**3**	**0.00**
Nuphar[2]	0	0	0	1	**1**	**100.00**
Potamogeton[2]	0	3	5	0	**8**	**25.00**
Rhizoclonium[1]	6	0	0	0	**6**	**66.67**
Sagittaria[2]	11	1	0	9	**21**	**38.10**
Texas Wild-rice[2]	0	36	49	17	**102**	**13.73**
Total	**30**	**45**	**60**	**45**	**180**	**30.00**
Occurrence (%)	**40.00**	**22.22**	**16.67**	**48.89**	**-**	**-**

[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 2021 was higher in the spring (4.00 darters/m^2) than fall (2.25 darters/m^2) and higher than five-year and long-term medians for both seasons. Interquartile ranges (IQRs) across groups displayed that the variability of density samples was also higher in spring (10.00) and fall (9.00) compared to historical trends (4.00–6.00 and 4.00–4.50, respectively). Higher IQRs and differences between mean and median densities in 2021 showed density distributions were positively skewed, meaning that lower density samples were more common and supports that Fountain Darters were clustered within certain areas at high densities. Median CPUE was similar to historical trends in the spring (38 darters/p-h) and were considerably higher in the summer (100 darter/p-h) and fall (76 darters/p-h). IQRs across seasons show CPUE observations had similar levels of variability in 2021 compared to historical data. Median percent occurrence among reaches were similar to five-year medians in spring, but inconsistent with CPUE results, being lower than five-year medians in summer (23%) and fall (18%) (Figure 11).

In summary, population performance metrics compared well with historical data in spring, but showed inconsistent patterns in summer and fall 2021. Low percent occurrence in the summer and fall combined with typical or high CPUE and density could be due to darters displaying a more 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 these areas with high aggregations of darters (see 'Habitat Suitability' for further discussion).

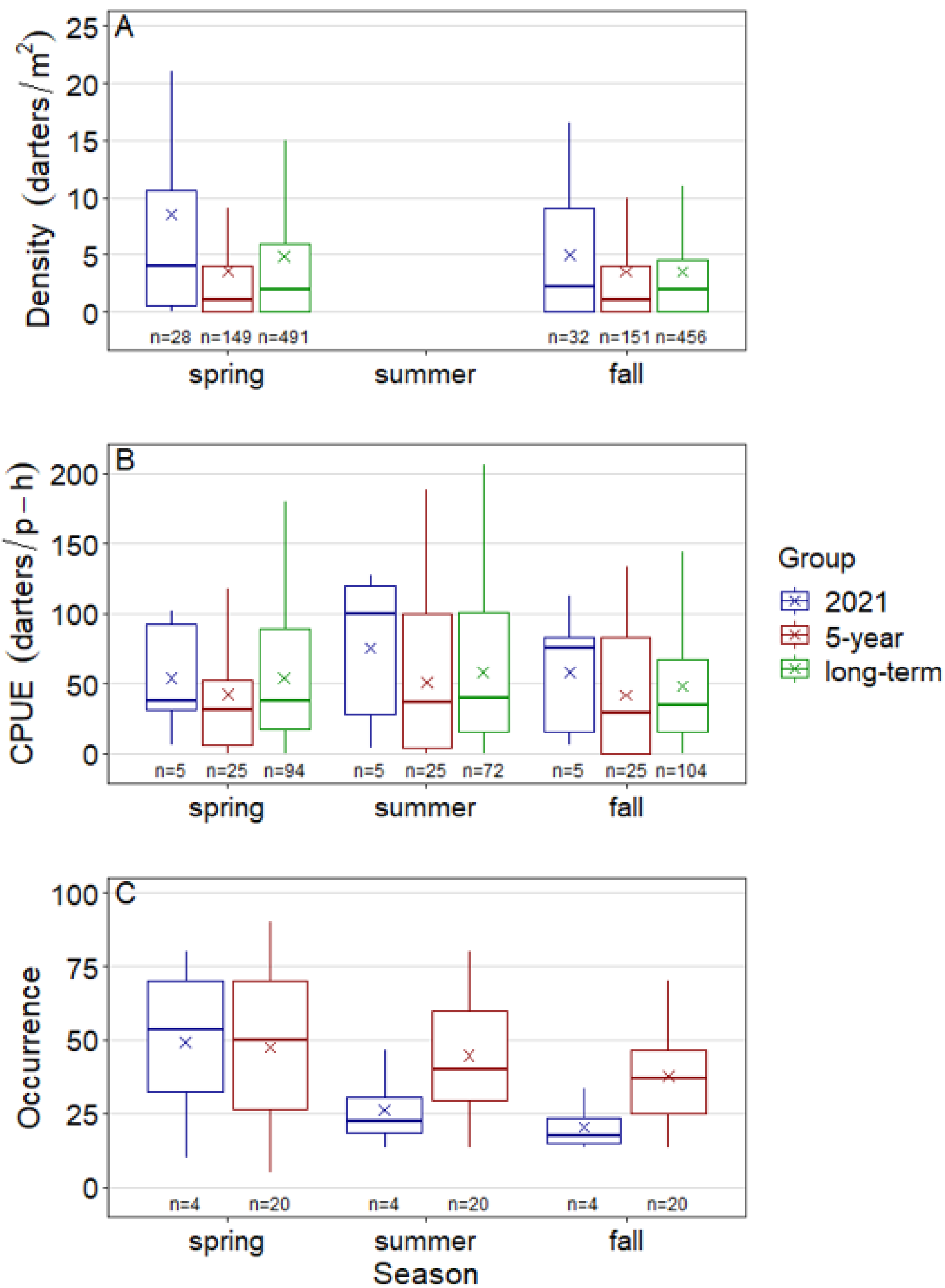

Figure 11. **Boxplots comparing Fountain Darter density from drop-net sampling (A), catch-per-unit-effort (CPUE) from timed dip-netting (B), and proportional occurrence from random station dip-netting (C) among seasons in the San Marcos Springs/River. Temporal groups include 2021, 5-year (2017–2021), and long-term (2001–2021) 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

Fountain Darter density estimates demonstrated variable patterns among reaches when compared to other events over the past five years. At Spring Lake Dam, median density was slightly below the long-term median (1.50 darters/m^2) in the spring (0.75 darters/m^2) and higher in fall (3.00 darters/m^2). In contrast, median density at City Park was greater than the long-term median (2.25 darters/m^2) in spring (5.75 darters/m^2) and lower in fall (0.75 darters/m^2). At I-35, median density in the spring (10.75 darters/m^2) greatly exceeded the long-term median (1.50 darters/m^2) and was above the long-term 75th percentile (5.00 darters/m^2). In fall, I-35 median density (1.50 darters/m^2) was similar to long-term data (Figure 12). Drop-net samples with high densities of Fountain Darters occasionally resulted in higher dispersion and central tendency in all reaches, however, no strong directional or cyclical patterns are evident. Increased density trends in spring 2021 can be attributed to samples within *Cabomba* (31.50–39.50 darters/m^2) at City Park, as well as *Hydrilla* (21.00–26.00 darters/m^2) and *Hygrophila* (14.50–26.00 darters/m^2) at I-35.

A consistent pattern worth noting is that mean density was typically greater than the median, which indicates density distributions for most events were positively skewed. This pattern has been observed for other rare congeners and suggests Fountain Darters are often aggregated within areas where habitat conditions are optimal (see 'Habitat use' for examples) (Henry & Grossman 2008; Davis & Cook 2010; Davis et al. 2011). Evidence of aggregated distributions within suitable habitat supports densities observed at a given event are, at least in part, effected by the vegetation taxa present and available for sampling (e.g., in wadeable areas). Using City Park as an example, densities were much higher when *Cabomba* was sampled in spring 2019 and both events in 2021. Furthermore, data from 2021 sampling suggest that population conditions have improved; however, for spatially clustered populations, random variation in sampling (e.g., timing, site location) can enhance the error and uncertainty of estimates when sample sizes are small (Davis et al. 2011). Based on this, darters may have previously occurred at similar densities during previous events if they were clustered within unsampled habitat patches.

Size structure and recruitment trends

Fountain Darter size structure and recruitment displayed consistent differences when comparing temporal trends in spring from summer and fall. In general, smaller darters are more frequently observed during the spring following the peak reproductive period, as seen by lower median lengths (19–22 mm), violin plots with distributions that are negatively skewed towards smaller size classes, and greater levels of recruitment (40.20–61.09%). In the summer and fall, smaller darters are observed less, which is shown by greater median lengths (25–29 mm), distributions that are more frequently skewed positively towards larger darters, and lower recruitment (15.44–31.25%) (Figure 13).

Current patterns in size class distributions and recruitment were consistent with long-term data except for spring recruitment, which was about 13% higher than the long-term average. Moreover, the lack of confidence interval overlap provides stronger evidence that recruitment was higher than historically observed in spring 2021 (Figure 13). Higher recruitment in the spring may explain the higher densities observed during spring drop-net sampling in City Park and I-35 compared to recent years. However, whether this can be attributed to enhanced environmental conditions or is simply due to random variability associated with site locations is uncertain.

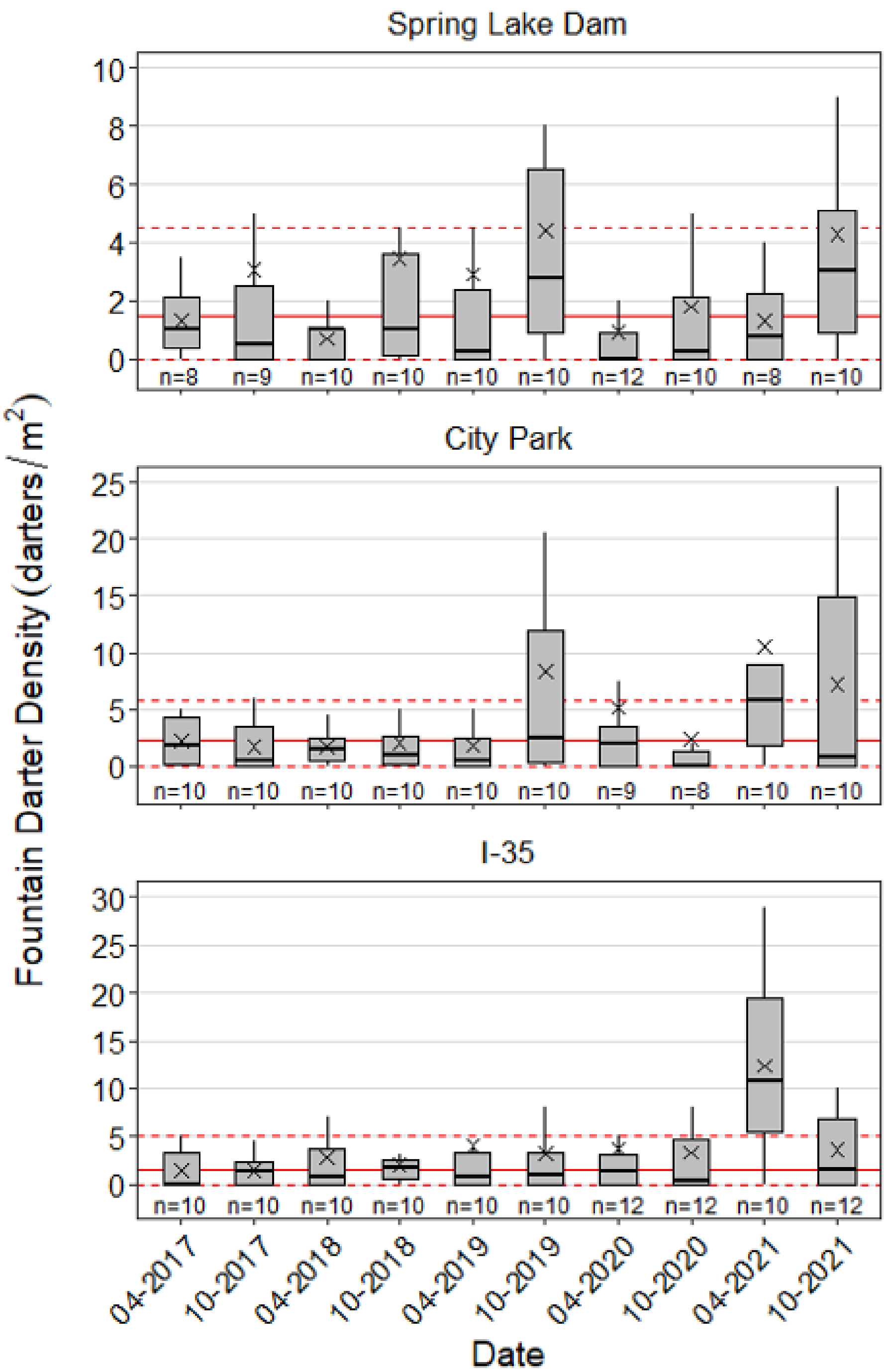

Figure 12. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) among study reaches from 2017–2021 during drop-net sampling in the San Marcos River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents 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 (2001–2021) medians and interquartile ranges, respectively.**

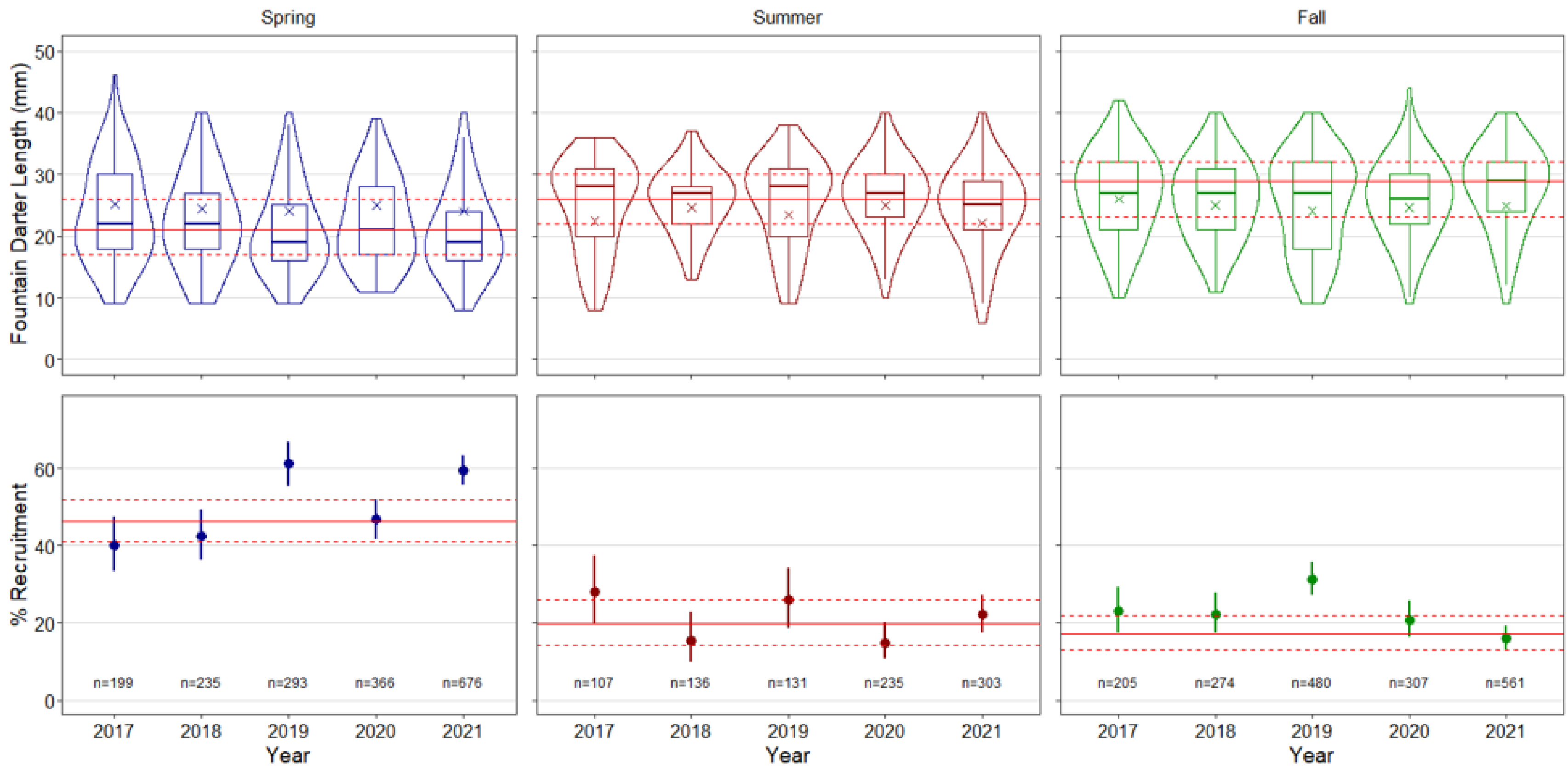

Figure 13. **Seasonal trends of Fountain Darter size structure (mm; top row) and percent recruitment (bottom row) in the San Marcos River from 2017–2021. Spring and fall trends are based on drop-net and timed dip-net data in aggregate, whereas summer trends are based on timed dip-net data only. Size 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 (2001–2020) 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 2021 were highest in *Hydrilla* (25.00 darters/m^2), *Cabomba* (12.75 darters/m^2), *Ludwigia* (10.25 darters/m^2), and *Hygrophila* (9.50 darters/m^2), which were all above their 5-year and long-term observations. In particular, densities within *Hydrilla* were substantially higher than historical trends. However, only two *Hydrilla* sites were sampled in 2021 so this result may not accurately represent density trends within this taxon. Variability in density was highest within *Cabomba* samples which had a higher IQR (16.50) compared to historical data. The maximum density observed in 2021 also occurred in *Cabomba* (39.50 darters/m^2) during spring sampling at City Park. Density distributions for *Hygrophila* (7.38) and *Ludwigia* (10.38) indicate that high density samples were more frequent than historically. The remaining taxa had lower medians (0.00–4.50 darters/m^2) and IQRs (0.25–6.00). In particular, Texas Wild-rice and open habitats showed the lowest densities (Figure 14). Current patterns of vegetation use continue to generally support previous research that observed Fountain Darter densities are highest within ornate vegetation (Schenck and Whiteside 1976; Linam et al. 1993; Alexander and Phillips 2012).

Size structure among vegetation taxa

Based on distribution summary statistics and visual analysis of violin plots, size structure of Fountain Darters varied by vegetation taxa. For all violin plots (i.e., probability density estimate), wider sections denote a greater representation of darters at a given length (Hintze and Nelson 1998). The lowest median lengths occurred in Hydrilla (16 mm), *Cabomba* (20 mm), and *Hygrophila* (21 mm). These taxa also showed negatively skewed distributions suggesting they are important habitat for recent recruits. Taxa with the highest median lengths included Texas Wild-rice (32 mm), *Ludwigia* (31 mm), and *Hydrocotyl*e (29 mm). Positively skewed violin plots suggest these taxa harbored mostly larger adult darters in the 2021 dataset. *Sagittaria* and *Potamogeton* exhibited bimodal distributions, meaning that they provide habitat for both adults and recent recruits (Figure 15). Lastly, open habitats demonstrated a rather flat length distribution, but a complete lack of darters below 15 mm. This highlights the importance of complex habitats such as aquatic vegetation in providing habitat for egg deposition and cover for recently-hatched Fountain Darters.

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 from the San Marcos River in 2021 were taken in shallow moderate- to high-velocity areas in the I-35 Reach and mostly harbored large adult darters. However, data from the Comal River in 2021 demonstrated that *Ludwigia* habitats harbored mostly small darters (BIO-WEST 2021). In the Comal system, most *Ludwigia* habitats sampled occur in slower moving areas of Landa Lake and the Upper Spring Run. This suggests *Ludwigia* can grow in a wide variety of habitat types and that other habitat factors are influencing patterns in Fountain Darter size

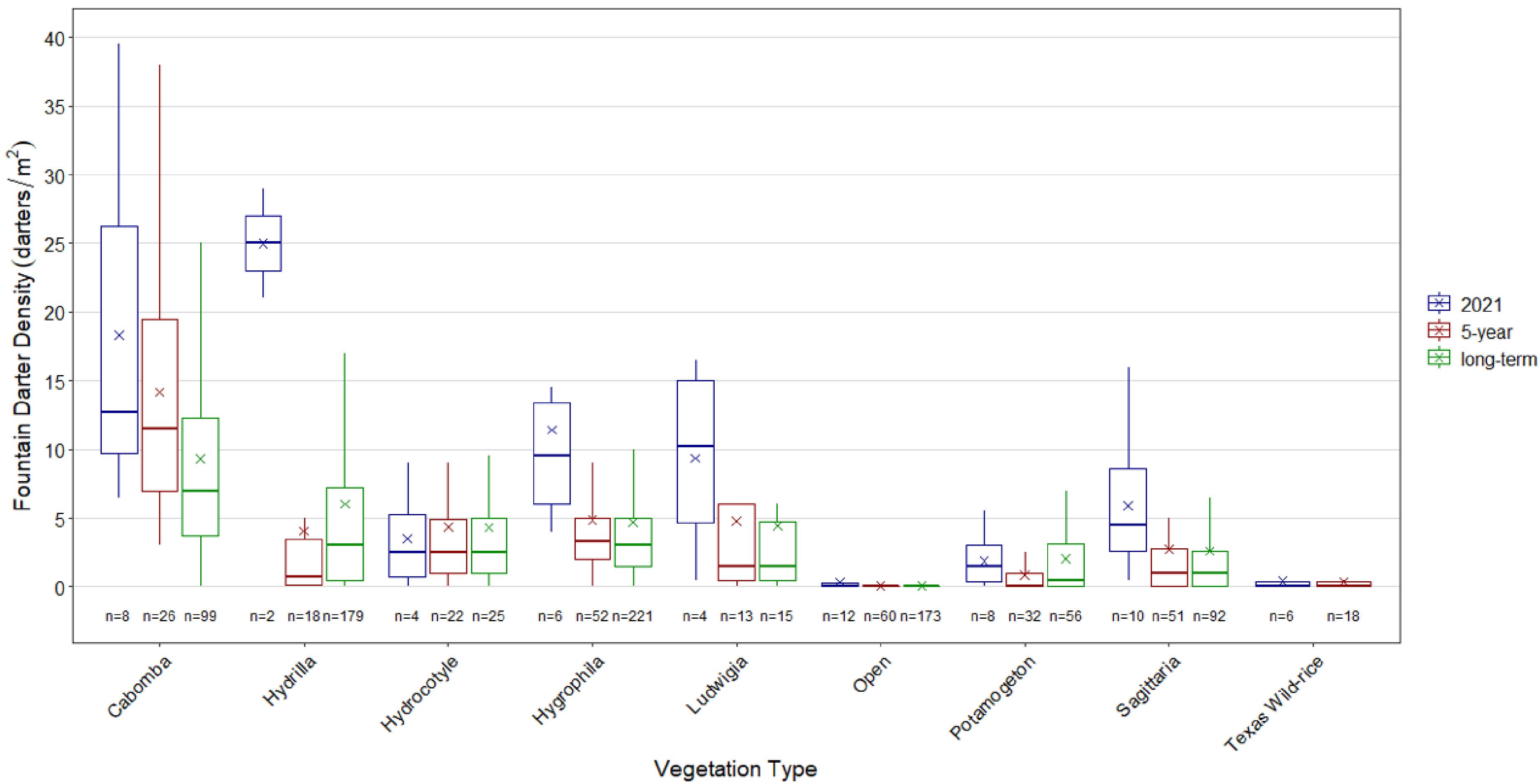

Figure 14. **Boxplots displaying 2021, 5-year (2017–2021), and long-term (2001–2021) drop-net Fountain Darter density (darters/m²) among vegetation types in the San Marcos River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents 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.**

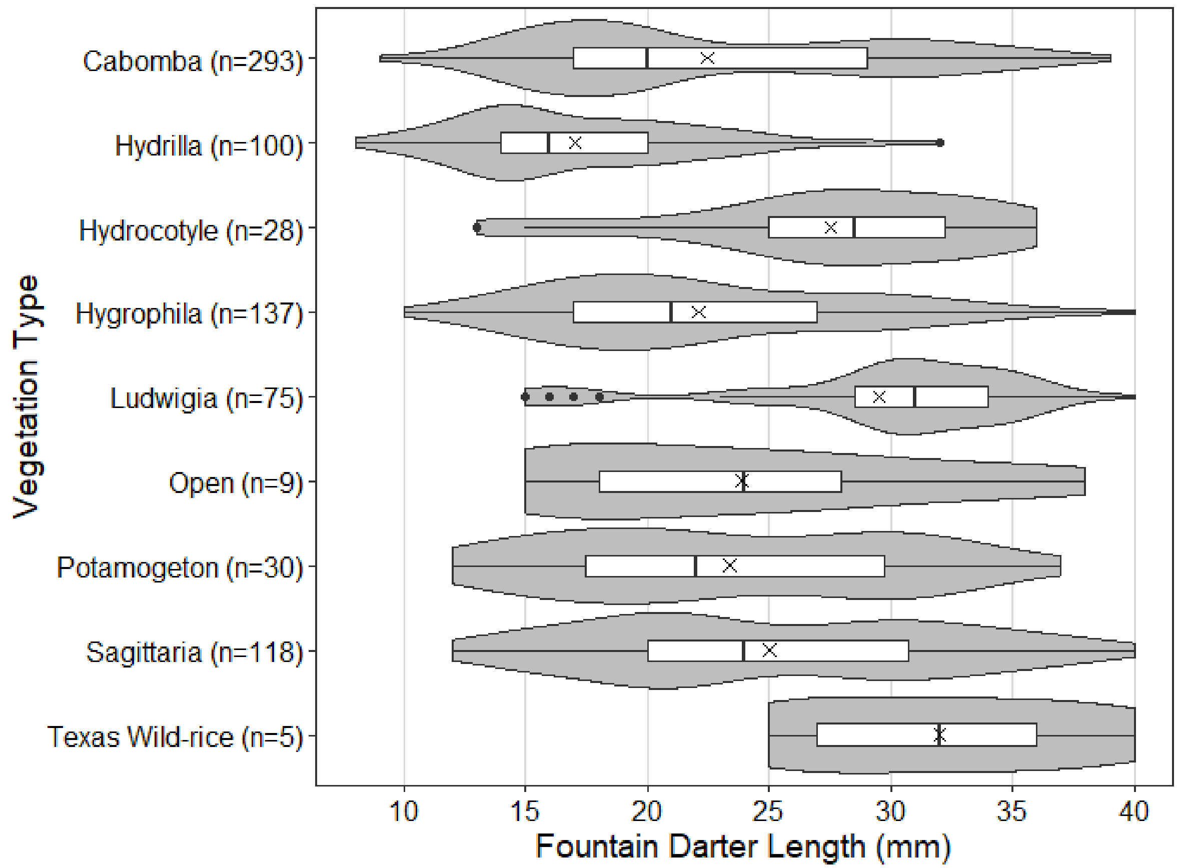

Figure 15. **Boxplots and violin plots (grey polygons) displaying Fountain Darter lengths among dominant vegetation types during 2021 drop-net sampling in the San Marcos River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents 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.**

structure in these areas. Therefore, length distribution data from a single system in a single year should be interpreted in context with additional information on other habitat variables. It may be more appropriate to examine size structure among vegetation taxa over a broader temporal scale (multi-year dataset), which would include more data from a wider variety of habitat conditions.

Habitat suitability

Temporal trends in Fountain Darter habitat suitability at Spring Lake Dam showed OHSI was consistently higher from 2019–2021 (~0.11–0.17) compared to 2017–2018 (~0.12). However, confidence interval (CI) overlap suggests habitat suitability was not substantially different within the past five years or compared to long-term trends. At City Park, OHSI was highest in spring 2017 (~0.23), was relatively consistent between fall 2017 and spring 2021 (~0.16–0.19), and decreased again in fall 2021 (~0.12). OHSI was substantially lower than the long-term mean with no CI overlap in recent years, which suggests a decline in habitat suitability within this reach compared to historical conditions. OHSI at I-35 was mostly stable from 2017–2021 (~0.12–0.16). Similar to Spring Lake Dam, CI overlap demonstrates that any changes in habitat suitability are likely not ecologically meaningful (Figure 16).

Evidence of a decline in Fountain Darter habitat suitability within City Park is apparent based on long-term patterns in OHSI. This trend is due to aquatic vegetation restoration efforts that have removed non-native taxa (i.e., *Hydrilla* and *Hygrophila*) and replaced them with native taxa, mainly Texas Wild-rice. *Hydrilla* and *Hygrophil*a exhibit higher suitability criteria compared to Texas Wild-rice (Figure H2) and Fountain Darters also occur within these non-native taxa at higher densities (Figure 14). From 2013–present, areal coverage of non-native *Hydrilla* and *Hygrophila* at City Park has decreased from ~2,700 to 0 m^2 and ~1,400 to 0 m^2, respectively. Meanwhile, Texas Wild-rice has increased in areal coverage from ~400 to ~3300 m^2 (Figure E2).

The impacts of lower OHSI on Fountain Darter populations are apparent when put into context using random dip-net results. Random dip-net is the most suitable EAHCP method for evaluating the influence of reach-level habitat changes on Fountain Darters since simple random sampling provides an unbiased estimate of occupancy at the reach-level (i.e., vegetation taxa with greater coverage have a higher probability of being sampled). Percentage of occupied stations at City Park in 2021 were below 50% for all three events. Examples of high occupancy can be seen in the Comal River, such as the Old Channel in 2021 (90%), which has a greater representation of more suitable darter habitat (i.e., bryophyte, *Cabomba*; BIO-WEST 2021). Despite lower occupancy, density samples during 2021 drop-netting were much higher in each reach relative to previous years. Observations of low occupancy and high density suggest darters were highly clustered within patches of more suitable habitat and provides stronger evidence that Fountain Darters can yield high densities within areas with lower OHSI. In summary, increasing areal coverage of native vegetation taxa that are more suitable to Fountain Darters (e.g., *Hydrocotyle*, *Cabomba, Ludwigia*), in combination to Texas Wild-rice, would improve the habitat quality for Fountain Darter in the San Marcos River, and likely result in both higher population redundancy and abundance.

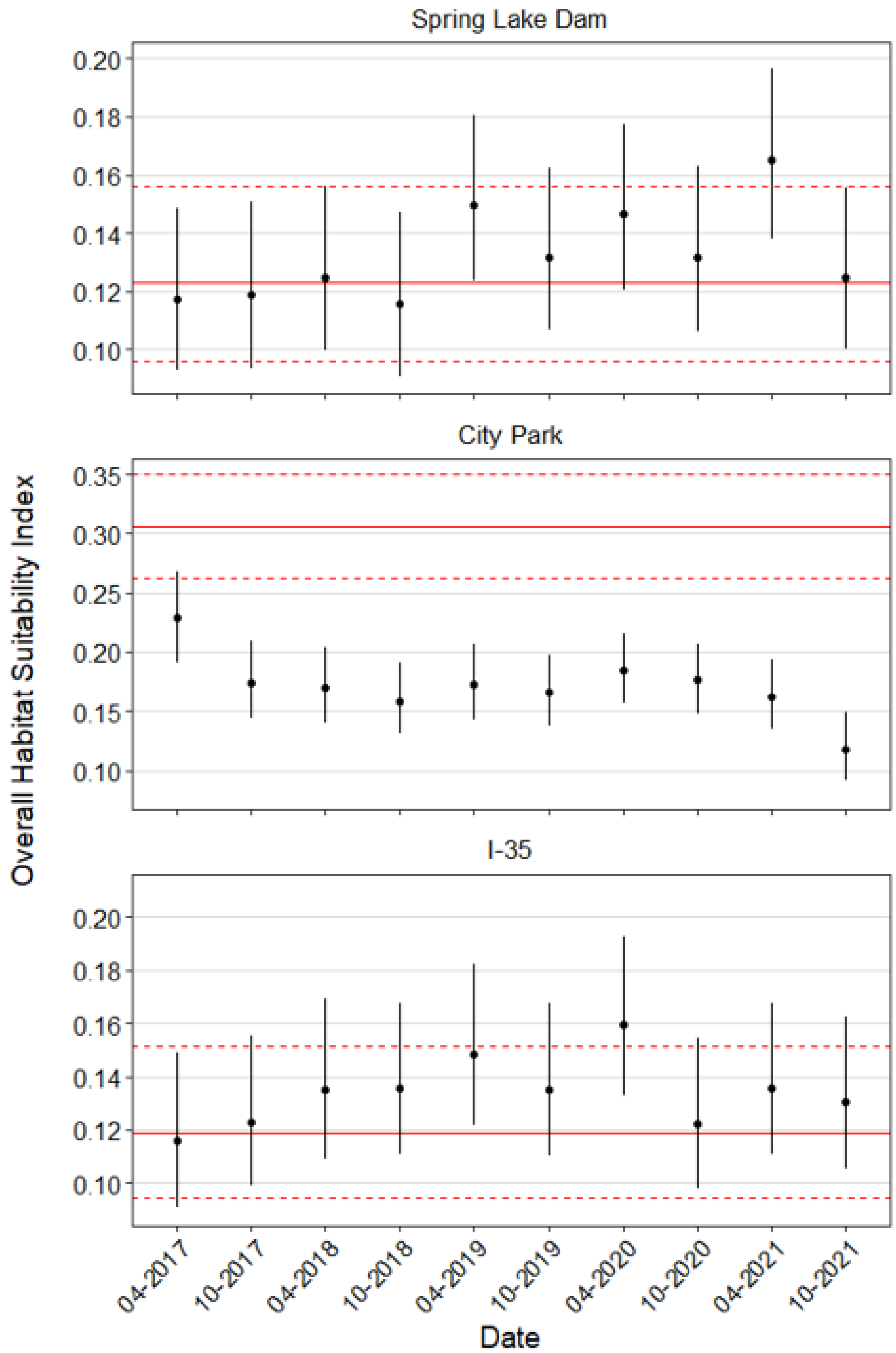

Figure 16. **Overall Habitat Suitability Index (OHSI) (±95% CI) from 2017–2021 among study reaches in the San Marcos River. Solid and dashed red lines denote means of long-term (2003–2021) OHSI and 95% CI, respectively.**

Fish Community

A total of 7,098 fishes represented by 12 families and 34 species were observed in the San Marcos Springs system during 2021 sampling. Overall community summaries can be found in Appendix D. An observation worth noting is a recent detection of Golden Topminnow *Fundulus chrysotus*, which were captured in fish community sampling and other biomonitoring activities in 2020 and 2021. This represents the first documentation of this species in the system, and repeated captures suggest a viable population may exist in the system. Causal mechanisms for the sudden appearance of this species in the Upper San Marcos River are currently unclear (Edwards et al. 2021).

Species richness was generally higher within riverine areas compared to Spring Lake and diversity was higher in the two downstream segments compared to upstream segments. Species richness (9–13) and diversity (0.85–1.32) were more stable in Spring Lake relative to the river, but no obvious temporal patterns were noted. (Figure 17). Spring fishes richness was higher in the Upper River and Middle River (5–8) compared to the Lower River and Spring Lake (3–6) but was relatively stable through time. Relative density of spring fishes was lower and more variable at the Lower River (15.61–67.00%). At Spring Lake and Upper River, relative densities were much higher and stable (85.25–95.87%). Relative density was also higher at the Middle River (62.38–93.25%), but was much more variable compared to study segments upstream (Figure 18). Decreases in the total species and relative density of spring fishes with increasing distance from springlow influence is well documented (Hubbs 1995; Kollaus & Bonner 2012; Craig et al. 2016).

Temporal trends in Fountain Darter density from 2017–2021 were based on microhabitat sampling data. At Spring Lake, median density (0.15–1.15 darters/m^2) and IQR (0.53–1.20) for the past 5 years showed a cyclical pattern, typically greater or similar to long-term observations in the spring and lower in the fall. Median density (0.00–0.05 darters/m^2) and IQR (0.00–0.25) at the Upper River were mostly similar to long-term data. Median density also rarely exceeded the long-term median in the Middle River (0.00–0.35 darters/m^2) and density patterns mostly aligned with historical trends. In the Lower River, median density the past five years ranged from 0.00–0.35 darters/m^2 and was 0.10 darters/m^2 for both events in 2021. Low densities from 2017–2021 align with long-term trends, indicating that the population conditions in 2021 were typical for this section of the river (Figure 19).

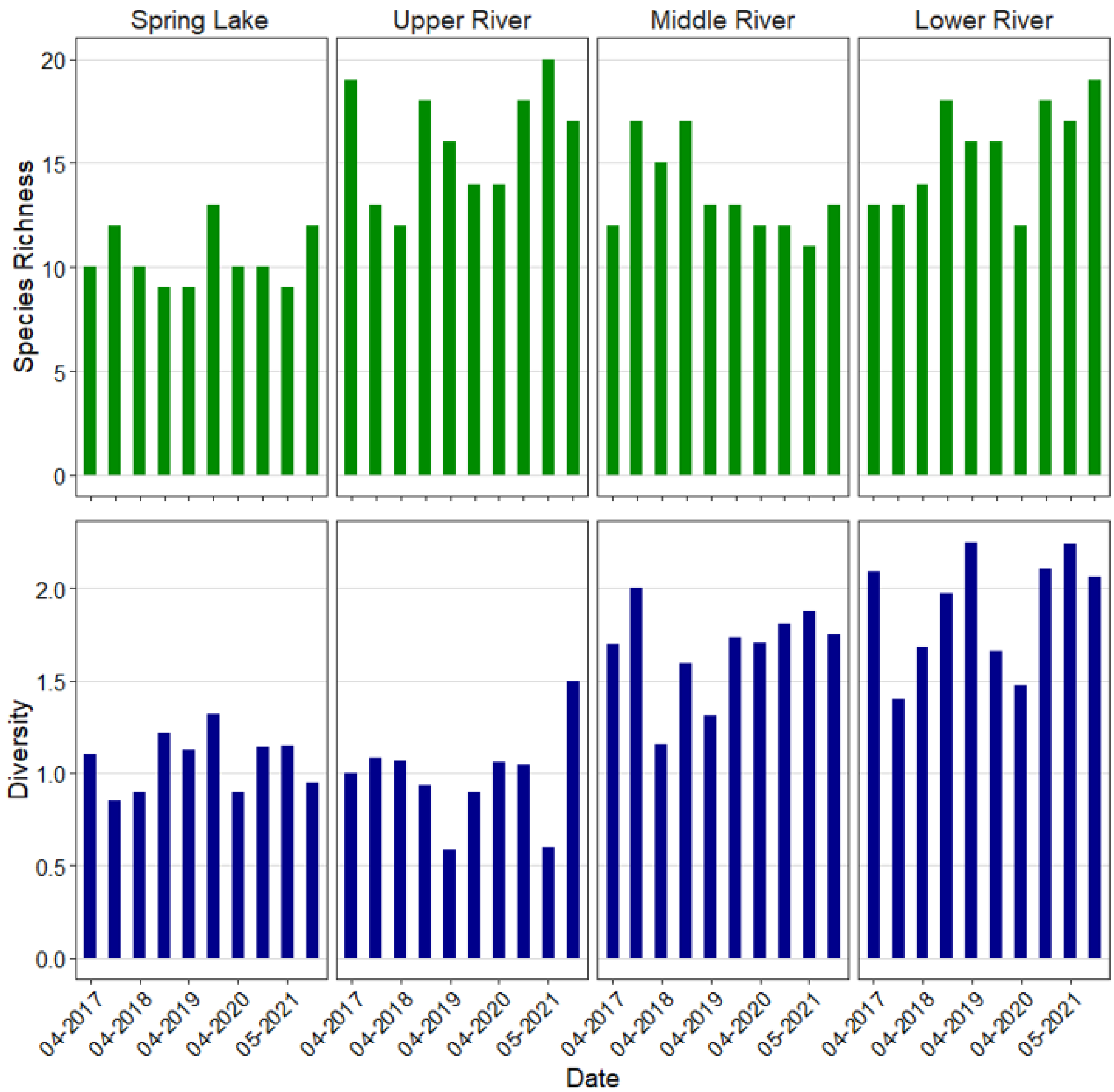

Figure 17. **Bar graphs displaying species richness (top row) and diversity (bottom row) from 2017–2021 based on all three fish community sampling methods in the San Marcos Springs/River.**

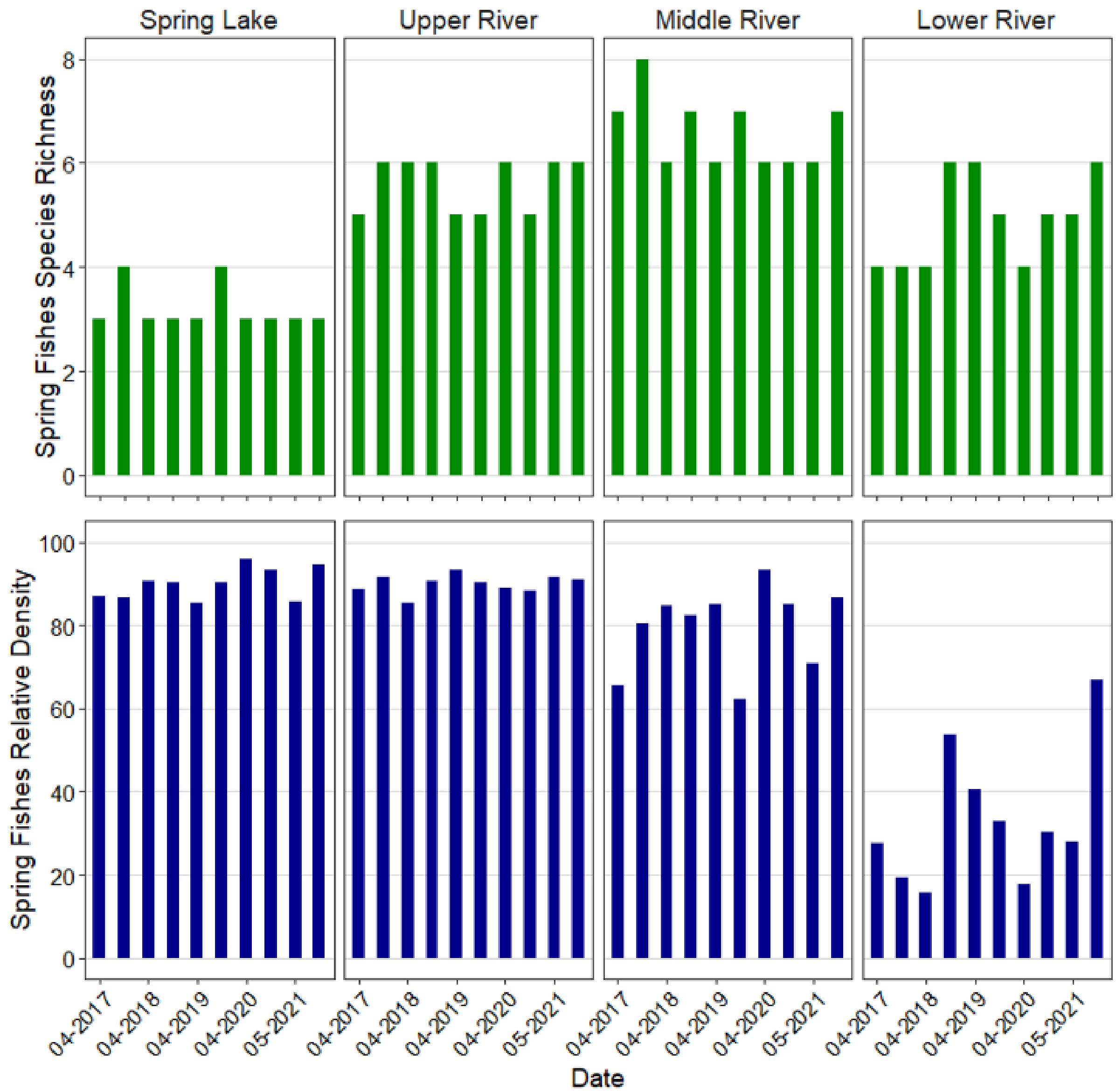

Figure 18. **Bar graphs displaying spring fish richness (top row) and relative density (RD; %) (bottom row) from 2017–2021 based on all three fish community sampling methods in the upper San Marcos Springs/River.**

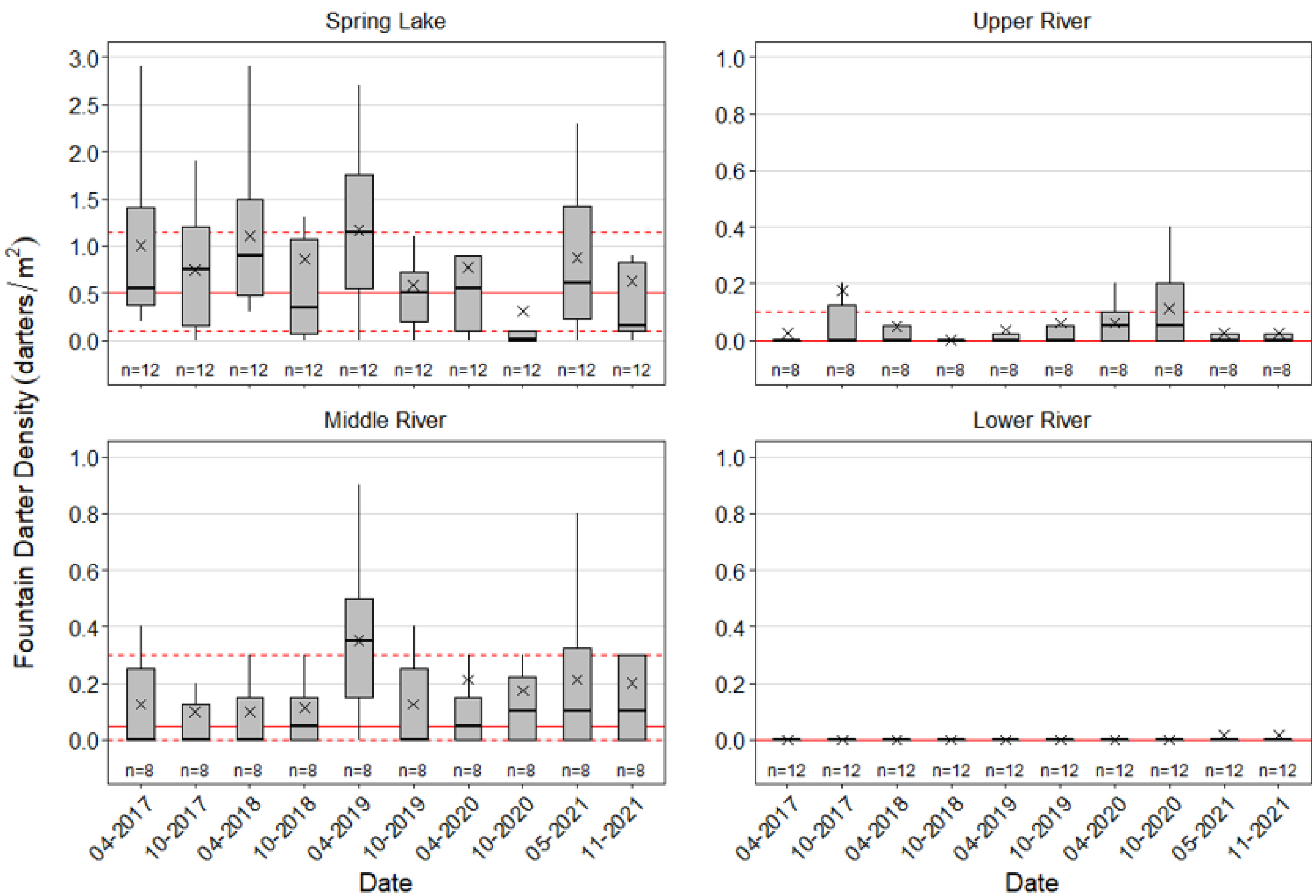

Figure 19. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) among study reaches from 2017–2021 during fish community microhabitat sampling in the San Marcos Springs/River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds 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 (2014–2021) medians and interquartile ranges, respectively.**

San Marcos Salamander

In 2021, 233 San Marcos salamanders were observed in spring and 208 salamanders were observed in fall, totaling 441 salamander observations. At the Hotel Site, salamander densities were higher than the long-term average for the spring and similar for fall (still within 95% CIs). San Marcos salamander densities observed during spring and fall 2021 were lower than the long-term averages at the Riverbed and Spring Lake Dam sites (Figure 20).

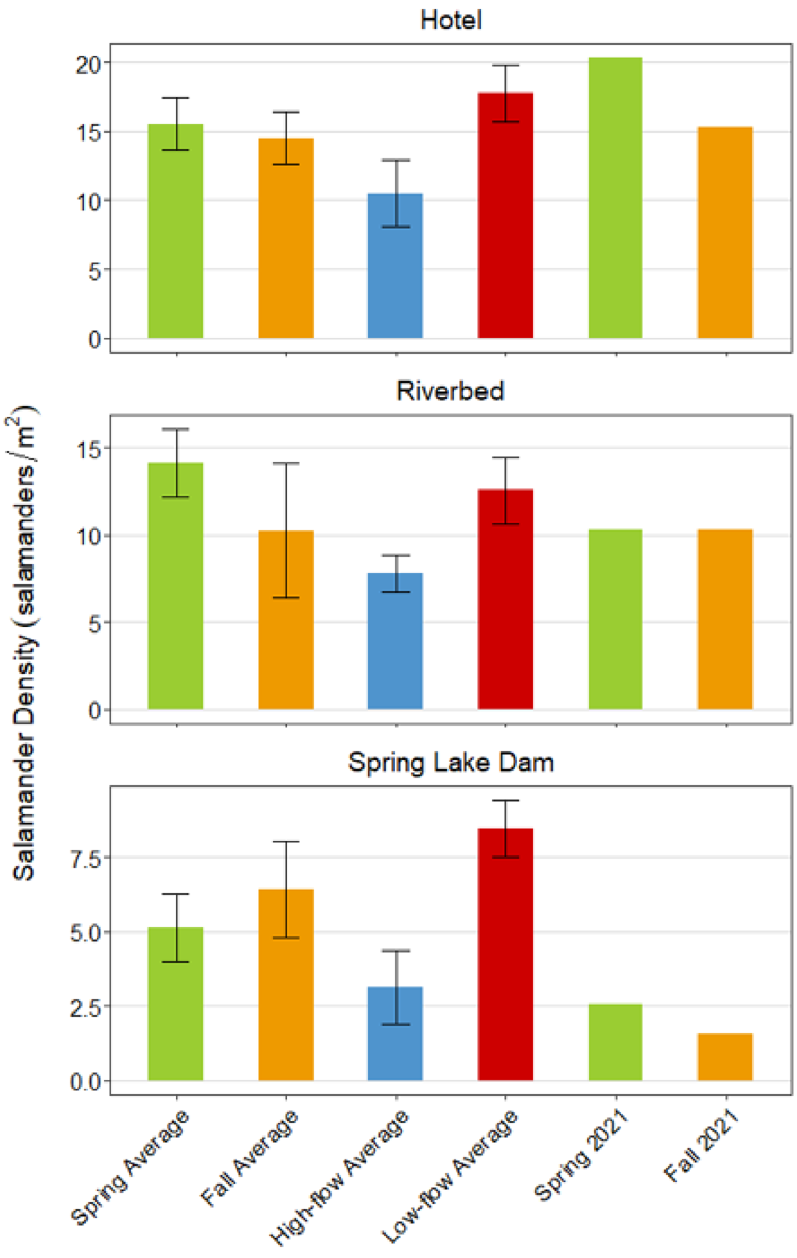

Figure 20. San Marcos Salamander density (salamanders/m^2) among sites in 2021, with the long-term (2001–2021) average for each sampling event. Error bars for long-term averages represent 95% confidence intervals.

Five-year trends at the Hotel Site did not display any distinct patterns in density. At the Riverbed Site, density was higher from 2017–2020 (~15–20 salamanders/m^2) compared to 2021 (~10 salamanders/m^2). Density at Spring Lake Dam generally declined from spring 2017 (~6 salamanders/m^2) to fall 2021 (~1.5 salamanders/m^2), although several events in-between increased closer to average conditions (Figures 20 and 21). Continued monitoring is important to determine if lower densities observed at Riverbed and Spring Lake Dam in 2021 rebound during future events.

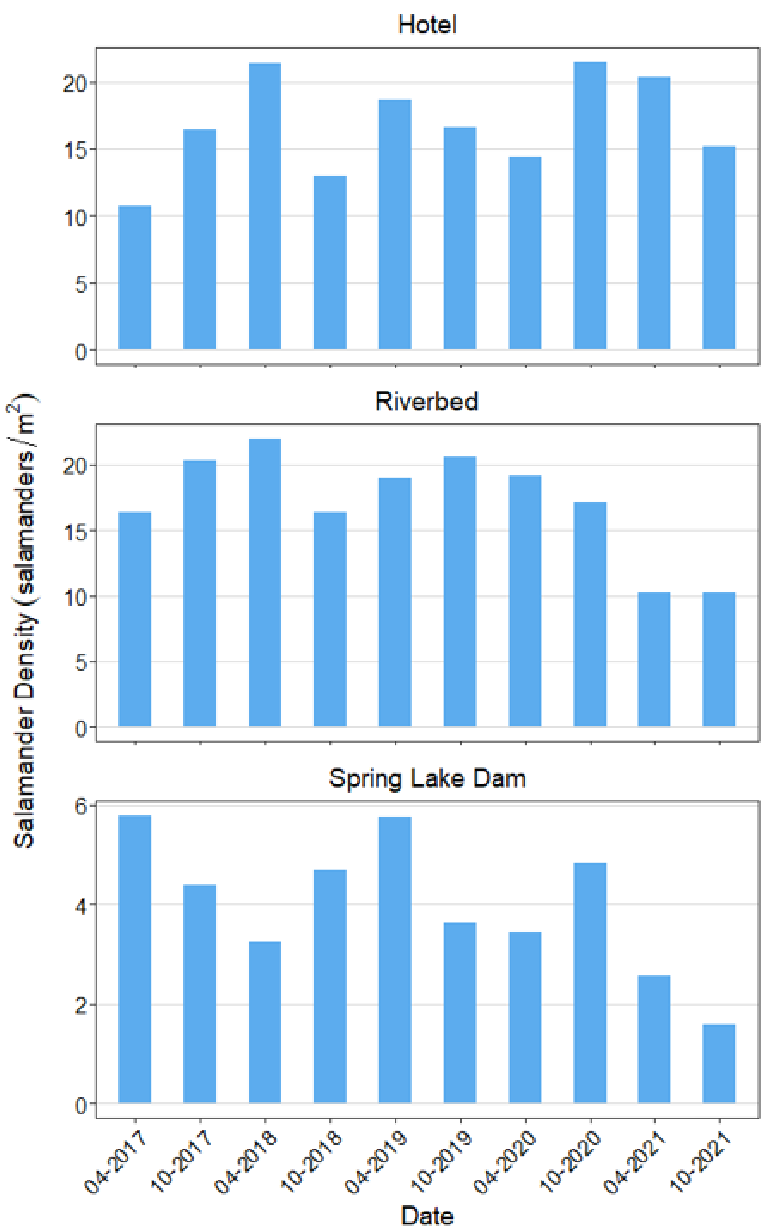

Figure 21. **San Marcos Salamander density (salamanders/m^2) among sites from 2017–2021 in the San Marcos Springs/River.**

Macroinvertebrates

Benthic Macroinvertebrate Rapid Bioassessment

Benthic macroinvertebrate rapid bioassessment data was collected during both the spring and fall sampling events in 2021 (raw data presented in Appendix F). A total of 628 and 589 individual macroinvertebrates, representing 34 and 30 unique taxa were sampled in spring and fall, respectively. Altogether, 39 unique taxa were represented among all samples from 2021. Values for each metric are reported, while metric scores for calculating the B-IBI can be found in Table 6. All samples in 2021 consisted of kick samples with suitable cobble-gravel habitat with no snag sampling supplements.

The overall results of this metric analysis contribute to the B-IBI scores and assessment of the aquatic-life-use (Figure 22). Spring Lake was described as limited for both seasons, whereas Spring Lake Dam was described as "Exceptional" in spring and "High" in fall. The City Park reach maintained its "High" aquatic-life-use from fall of 2020 into spring of 2021 but was later described as "Intermediate" in the fall of 2021. The I-35 reach was described as "Exceptional" in spring and "High" in fall.

In summary, areas of more lentic-type habitat (e.g. Spring Lake), scored lower as these communities are naturally different compared to swift flowing "least-disturbed reference streams." Downstream and tailwater areas with more lotic conditions generally scored higher, as habitat is more similar to reference streams. 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. As such, 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. As evident in Figure 22, there has been an inherent level of consistency in these benthic results over the past five years and no observed trends of concern. Additional monitoring will allow development of a reference dataset, specific to this unique ecosystem.

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

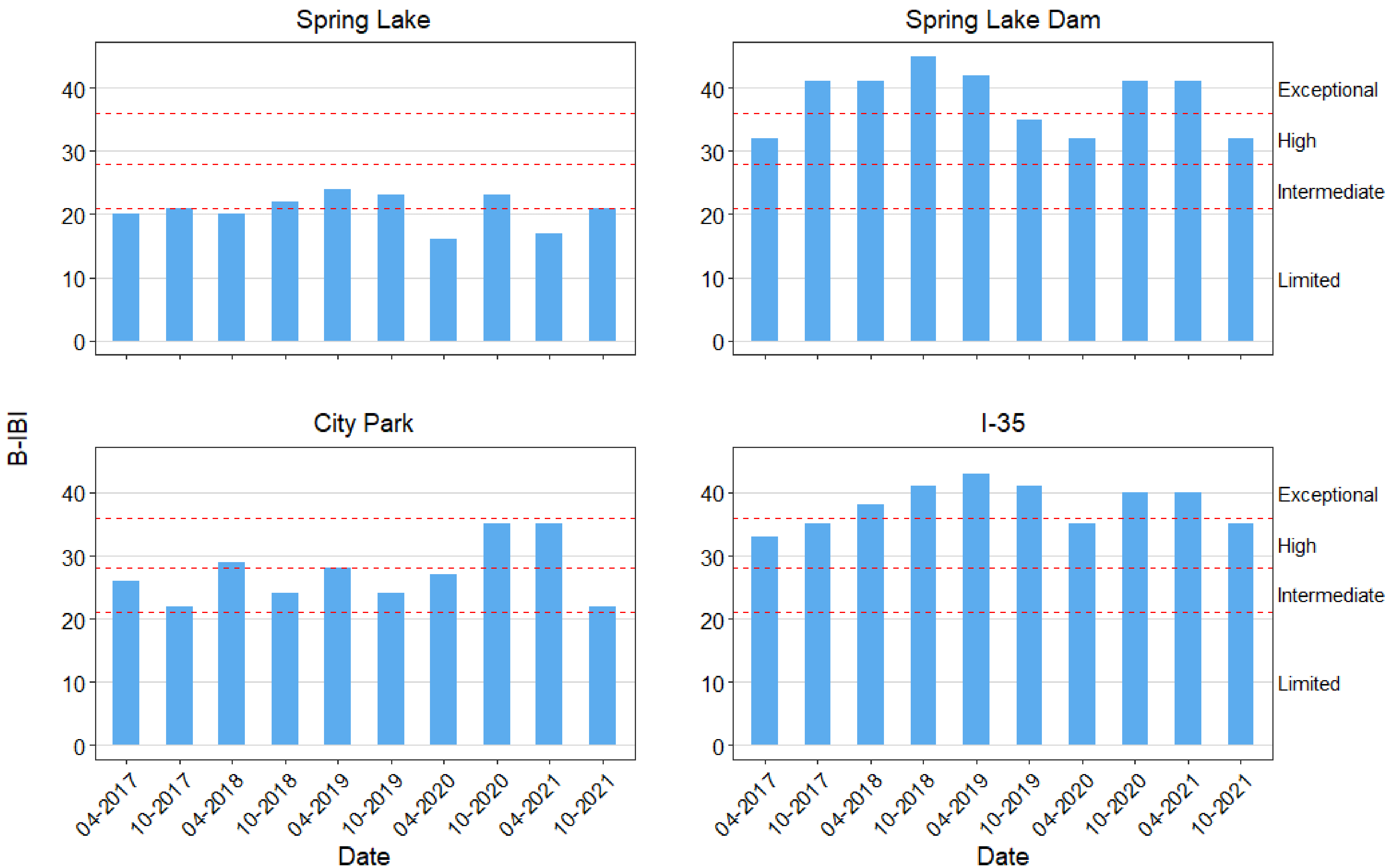

Figure 22. **Benthic macroinvertebrate Index of Biotic Integrity (B-IBI) scores and aquatic-life-use point-score ranges from 2017–2021 in the San Marcos Springs/River. "Exceptional" indicates highest quality habitats.**

CONCLUSION

Aquatic vegetation coverage in 2021 was similar or above long-term seasonal averages for all reaches except City Park in the fall. Decreased total coverage in the fall is likely due to recreation returning to typical levels following park closures in 2020. Aquatic vegetation assemblages were dominated by Texas Wild-rice across all study reaches. Results of the 2021 low flow mapping event showed a Texas Wild-rice areal coverage of 17,235 m^2. This was a substantial increase from the previous year and was the highest coverage of Texas Wild-rice quantified since mapping began. Despite river discharge descending below 100 cfs, Texas Wild-rice continued to thrive and expand in spring 2021. Annual summer mapping showed Texas Wild-rice decreased to 13,965 m^2, dropping below the previous 2020 coverage. Although impacts from recreation were noted in the summer mapping event, total coverage of Texas Wild-rice was still at the 3rd highest level ever quantified.

Current patterns in Fountain Darter size class distributions and recruitment were consistent with long-term trends except for spring recruitment, which was about 13% higher than the long-term average. Higher recruitment in the spring may explain the higher drop-net densities observed at City Park and I-35 during spring 2021. The highest densities were observed in *Cabomba*, *Hydrilla*, *Hygrophila*, and *Ludwigia*, which aligns with previous data and suggests these taxa continue to be important habitat for adults and juveniles. Habitat suitability varied minimally at Spring Lake Dam and I-35. In contrast, OHSI at City Park showed a downward trend from 2017–2021 and each event was substantially lower than the long-term average. This trend is due to aquatic vegetation restoration efforts that have resulted in replacement of non-native taxa that are more suitable Fountain Darter habitat than Texas Wild-rice. Following removal of non-natives, considerable natural expansion of Texas Wild-rice has occurred in City Park and current efforts are being made to add additional native vegetation taxa that are more suitable habitat for Fountain Darters. Among reaches, 2021 drop-net densities were similar or higher than 2017–2020 data, suggesting healthy Fountain Darter populations persist in the study reaches. That being said, for spatially clustered populations, random variation in sampling (e.g., timing, site location) can enhance the error and uncertainty of estimates when sample sizes are small.

San Marcos Salamander density in 2021 was similar to long-term averages at the Hotel site and 5-year trends showed no distinct patterns. Salamander density at Riverbed was below long-term averages in the spring and similar in the fall. At Spring Lake Dam, densities were much lower than the long-term and have generally trended downward since 2017. Future assessments of San Marcos Salamander populations will be critical to evaluate if this trend continues below Spring Lake Dam.

Macroinvertebrate bioassessment results showed areas of more lentic-type habitat (e.g. Spring Lake), scored lower as these communities are naturally different compared to swift flowing least-disturbed reference streams. Downstream and tailwater areas with more lotic conditions generally scored higher, as habitat is more similar to reference streams. 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. As such, the level of score is less important in the San Marcos system, than the consistency that has been evident in the benthic community per reach over time. Additional monitoring will allow development of a reference dataset, specific to this unique ecosystem.

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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 spring 2021. Measurements were taken at the surface, middle, and bottom of the water-column.**

Site	Water Column	Date	Time	Temp (°C)	SpCond (us/cm)	pH	D.O. (mg/L)	Depth (ft)	Velocity (ft/s)	Weather Conditions
	Surface	20210422	8:02	19.91	608.20	8.88	1.58	0.10	-0.02	10mph wind, Cloudy, 54(F), clear water
Sink Creek	Middle	20210422	8:02	19.90	596.00	8.57	1.11	0.45	-0.02	10mph wind, Cloudy, 54(F), clear water
	Bottom	20210422	8:02	19.83	595.80	8.56	0.98	0.90	-0.03	10mph wind, Cloudy, 54(F), clear water
	Surface	20210422	8:24	18.04	589.00	9.06	7.50	0.20	-0.01	10mph wind, Cloudy, 54(F), film on surface of water
DS SM Springs Dr	Middle	20210422	8:24	18.06	588.70	9.06	7.36	0.70	-0.01	10mph wind, Cloudy, 54(F), film on surface of water
	Bottom	20210422	8:24	18.05	586.30	9.05	7.29	1.40	-0.01	10mph wind, Cloudy, 54(F), film on surface of water
	Surface	20210422	8:37	21.47	605.60	8.61	4.83	0.50	0.00	10mph wind, Cloudy, 55(F), clear water
Hotel	Middle	20210422	8:37	21.50	604.00	8.62	4.66	2.70	0.00	10mph wind, Cloudy, 55(F), clear water
	Bottom	20210422	8:37	21.47	605.00	8.63	4.74	5.00	0.00	10mph wind, Cloudy, 55(F), clear water
	Surface	20210422	8:55	21.24	605.40	8.63	5.06	0.10	-0.02	10mph wind, Cloudy, 55(F), clear water
Submarine	Middle	20210422	8:55	21.33	606.10	8.68	4.84	1.30	-0.01	10mph wind, Cloudy, 55(F), clear water
	Bottom	20210422	8:55	21.36	606.00	8.65	4.80	2.60	0.00	10mph wind, Cloudy, 55(F), clear water
	Surface	20210422	9:09	21.53	612.00	8.63	4.94	0.60	0.00	11mph wind, Cloudy, 55(F), clear water
Boat Dock	Middle	20210422	9:09	21.58	606.10	8.67	4.77	6.10	0.00	11mph wind, Cloudy, 55(F), clear water
	Bottom	20210422	9:09	21.55	606.00	8.59	4.38	12.00	0.00	11mph wind, Cloudy, 55(F), clear water
	Surface	20210422	9:28	19.63	617.70	8.84	7.95	0.50	0.00	11mph wind, Cloudy, 55(F), clear water
Boardwalk	Middle	20210422	9:28	19.58	617.60	8.89	8.09	1.80	0.00	11mph wind, Cloudy, 55(F), clear water
	Bottom	20210422	9:28	19.40	616.60	8.90	7.94	3.40	0.00	11mph wind, Cloudy, 55(F), clear water
	Surface	20210422	9:41	21.47	626.00	8.65	5.85	0.40	0.01	11mph wind, Cloudy, 57(F), clear water
Loading Dock	Middle	20210422	9:41	21.50	626.60	8.68	5.61	0.80	0.01	11mph wind, Cloudy, 57(F), clear water
	Bottom	20210422	9:41	21.53	626.40	8.67	5.64	1.50	0.02	11mph wind, Cloudy, 57(F), clear water
	Surface	20210422	10:04	21.37	635.50	8.73	6.11	0.20	0.20	12mph wind, Cloudy, 57(F), clear water
Above Chute	Middle	20210422	10:04	21.39	635.60	8.73	5.91	1.40	0.20	12mph wind, Cloudy, 57(F), clear water
	Bottom	20210422	10:04	21.36	635.60	8.73	5.92	2.90	0.05	12mph wind, Cloudy, 57(F), clear water
	Surface	20210422	10:27	20.94	629.40	9.89	8.26	0.10	2.09	12mph wind, Cloudy, 57(F), clear water
Below SLD	Middle	20210422	10:27	20.95	629.50	9.00	8.20	0.30	1.79	12mph wind, Cloudy, 57(F), clear water
	Bottom	20210422	10:27	20.94	629.50	9.00	8.20	0.50	1.14	12mph wind, Cloudy, 57(F), clear water
	Surface	20210422	10:39	20.68	627.00	8.83	7.00	0.10	0.43	12mph wind, Cloudy, 57(F), clear water
Above SLD	Middle	20210422	10:39	20.71	627.50	8.84	6.71	0.50	0.08	12mph wind, Cloudy, 57(F), clear water
	Bottom	20210422	10:39	20.72	627.70	8.84	6.71	1.10	0.25	12mph wind, Cloudy, 57(F), clear water
	Surface	20210422	10:58	21.67	632.90	8.89	8.34	0.20	1.14	12mph wind, Cloudy, 57(F), clear water
Below Chute	Middle	20210422	10:58	21.67	633.10	8.90	8.32	1.20	0.62	12mph wind, Cloudy, 57(F), clear water
	Bottom	20210422	10:58	21.70	632.80	8.89	8.32	2.40	0.04	12mph wind, Cloudy, 57(F), clear water
	Surface	20210422	11:12	21.03	670.80	9.00	7.07	0.20	1.85	12mph wind, Cloudy, 57(F), clear water
Sessom Creek	Middle	20210422	11:12	21.03	670.80	9.00	7.07	0.20	1.85	12mph wind, Cloudy, 57(F), clear water
	Bottom	20210422	11:12	21.03	670.80	9.00	7.07	0.20	1.85	12mph wind, Cloudy, 57(F), clear water
	Surface	20210422	11:43	21.27	632.00	9.07	9.01	0.20	0.01	9mph wind, Cloudy, 60(F), clear water
City Park	Middle	20210422	11:43	21.27	632.20	9.07	8.99	0.44	0.44	9mph wind, Cloudy, 60(F), clear water
	Bottom	20210422	11:43	21.27	632.40	9.07	9.06	3.00	0.31	9mph wind, Cloudy, 60(F), clear water
	Surface	20210422	12:08	21.01	630.50	9.14	9.22	0.50	0.07	9mph wind, Cloudy, 60(F), clear water
Rio Vista	Middle	20210422	12:08	21.05	631.40	9.16	9.50	2.40	0.42	9mph wind, Cloudy, 60(F), clear water
	Bottom	20210422	12:08	21.06	631.30	9.12	9.55	4.20	0.22	9mph wind, Cloudy, 60(F), clear water
	Surface	20210422	12:34	20.89	630.10	9.25	9.30	0.40	0.19	9mph wind, Cloudy, 63(F), clear water
I-35	Middle	20210422	12:34	20.92	629.00	9.27	9.31	1.30	0.20	9mph wind, Cloudy, 63(F), clear water
	Bottom	20210422	12:34	20.93	629.90	9.30	9.36	2.80	0.09	9mph wind, Cloudy, 63(F), clear water
	Surface	20210422	14:20	19.80	628.00	7.79	7.99	0.50	0.03	14mph wind, Cloudy, light drizzle, 63(F), murky water
TI Artificial	Middle	20210422	14:20	19.60	628.00	7.77	7.17	2.50	0.02	14mph wind, Cloudy, light drizzle, 63(F), murky water
	Bottom	20210422	14:20	19.60	629.00	7.75	6.70	5.00	0.00	14mph wind, Cloudy, light drizzle, 63(F), murky water
	Surface	20210422	14:25	20.60	627.00	7.86	9.08	1.00	1.21	14mph wind, Cloudy, light drizzle, 64(F), clear water
Ti Natural	Middle	20210422	14:25	20.60	627.00	7.87	9.07	0.70	1.08	14mph wind, Cloudy, light drizzle, 64(F), clear water
	Bottom	20210422	14:25	20.60	627.00	7.87	9.07	1.70	0.63	14mph wind, Cloudy, light drizzle, 64(F), clear water
	Surface	20210422	14:54	20.40	644.00	7.96	8.89	0.10	0.99	14mph wind, Cloudy, light drizzle, 63(F), murky water
Wastewater Plant	Middle	20210422	14:54	20.40	644.00	7.96	8.87	1.30	0.88	14mph wind, Cloudy, light drizzle, 63(F), murky water
	Bottom	20210422	14:54	20.40	644.00	7.96	8.86	2.50	0.41	14mph wind, Cloudy, light drizzle, 63(F), murky water

Table B2. Lab results from water quality grab samples collected at select stations during Low-flow Critical Period Monitoring in spring 2021. ND for each parameters denotes that it was not detectable.

Site	Nitrate N (mg/L)	Total N (mg/L)	Ammonium (mg/L)	Soluble Reactive P (mg/L)	Total P (mg/L)	Alkalinity (mg/L)	Total Suspended Solids (mg/L)
Sink Creek	0.36	0.45	ND	ND	0.12	254	3.21
DS SM Springs Dr	0.22	0.27	0.06	ND	0.14	243	13.20
Hotel	0.89	1.08	ND	ND	ND	250	ND
Submarine	0.97	1.07	ND	ND	ND	271	ND
Boat Dock	1.06	1.17	ND	ND	0.14	272	ND
Boardwalk	0.96	1.06	0.05	ND	ND	275	ND
Loading Dock	1.25	1.38	ND	ND	0.16	279	ND
Above Chute	1.28	1.41	ND	ND	0.18	277	ND
Below SLD	1.17	1.29	ND	ND	0.17	271	ND
Above SLD	1.10	1.22	ND	ND	0.11	277	ND
Below Chute	1.28	1.42	ND	ND	ND	280	ND
Sessom Creek	1.42	1.55	ND	ND	0.13	274	ND
City Park	1.23	1.38	ND	ND	ND	276	24.30
City Park (2)	1.23	1.34	ND	ND	0.17	248	20.40
Rio Vista	1.20	1.36	ND	ND	ND	250	ND
I-35	1.19	1.35	ND	ND	ND	268	ND
I-35 (2)	1.19	1.31	ND	ND	0.11	247	3.20
TI Artificial	1.16	1.30	ND	ND	ND	265	3.01
Ti Natural	1.19	1.36	ND	ND	ND	202	3.30
Wastewater Plant	1.67	1.82	ND	ND	ND	266	4.84

Habitat Evaluation

MEMORANDUM

TO: Chad Furl

FROM: Ed Oborny (BIO-WEST)

DATE: **April 29, 2021**

SUBJECT: EA HCP Critical Period Habitat Evaluation – 100 cfs – San Marcos System

100 cfs Habitat Evaluation

SAN MARCOS SYSTEM:
The total system discharge in the San Marcos River is ≈ 100 cfs (Figure 1). The Spring 2021 Comprehensive Biological Monitoring effort for the San Marcos System was initiated on April 12th. This routine monitoring effort (Task 1) is being conducted in conjunction with the < 100 cfs full Critical Period sampling event (Task 2) that was triggered in April. The two monitoring events complement each other closely, with the exception that water quality grab samples are required to be collected longitudinally down the system in association with the full Critical Periodsampling event (Task 2). Additionally, declining below 100 cfs triggered full-system Texas Wild-Rice mapping per species-specific monitoring defined under Task 3.

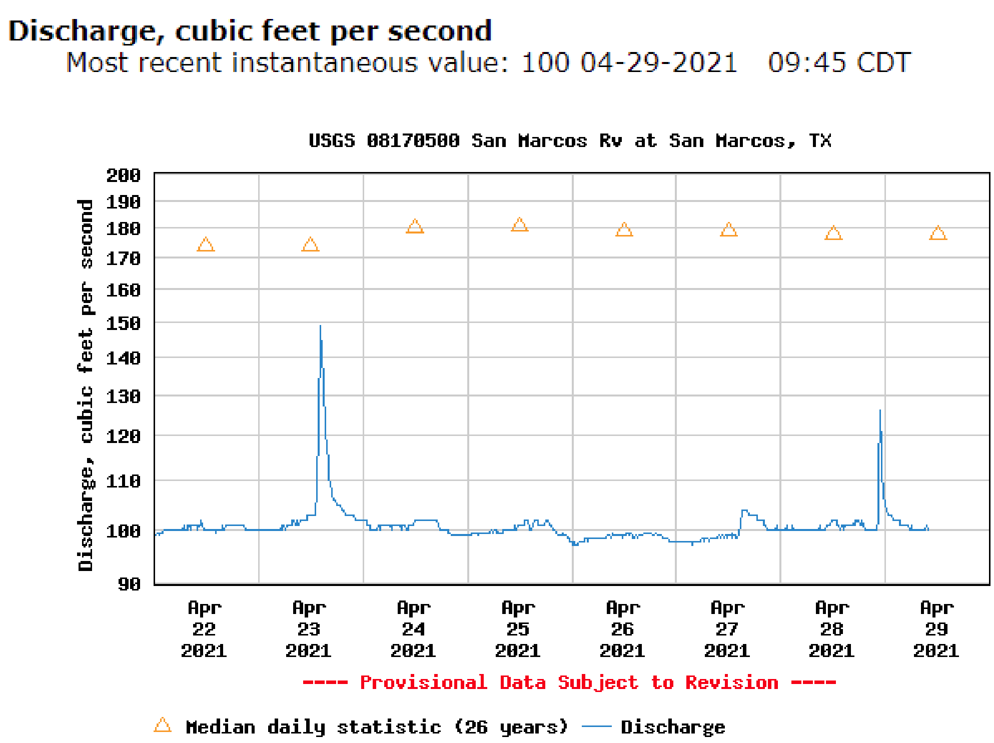

Figure B1. Screen shot of USGS webpage for the *San Marcos* gage (08170500) showing total system discharge.

As of this memorandum, the following activities associated with San Marcos Routine Biological Monitoring (**Task 1**) have been completed or will soon be conducted as noted:

- Aquatic vegetation mapping of the three (Spring Lake Dam, City Park, and I35) study reaches.
- San Marcos Salamander surveys.
- 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.
- Macroinvertebrate Rapid Bioassessment sampling.
- Fish Community sampling via SCUBA and seine (in progress).
- Texas Wild-Rice vulnerable stands measurements (scheduled for Friday, April 30th).

Task 2: Critical Period Monitoring Suite I and II water quality sampling has been completed and samples are presently being analyzed at the analytical laboratory. Additionally, the 100 cfs habitat evaluation was completed on April 27th and is represented by this memorandum. Habitat evaluations are required for every 5 cfs decline putting the next scheduled evaluation at 95 cfs. Per discussions with EAA, BIO-WEST will wait for EAA's notice to proceed relative to these 5 cfs increments.

Task 3: Species-Specific Monitoring full-system Texas Wild-Rice mapping has been initiated and is nearing completion.

Observations and photo documentation associated with the 100 cfs Critical Period habitat evaluation is presented below from upstream to downstream.

Figure B2. Headwaters of Spring Lake looking downstream on April 27, 2021.

The water flow throughout Spring Lake was considerably reduced with the lower discharge which resulted in higher levels of algal build up and siltation within the San Marcos salamander Spring Lake study sites. However, salamander counts were consistent with years past and adult and juvenile San Marcos salamanders and Fountain Darters were observed at all sites.

Figure B3. San Marcos salamander and multiple Fountain Darters hanging out in the Hotel Study reachon April 20, 2021.

Figure B4. View of slough arm in Spring Lake on April 27, 2021.

Observations during macroinvertebrate rapid bioassessment sampling were that water levels were considerably down at all sample sites. However, there were no observations to indicate a dramatic change in the invertebrate community compared to previous sample periods. Aquatic vegetation within the Spring Lake Dam and City Park study reaches continue to be dominated by Texas Wild-Rice (Figure 5) while the I35 study reach supports a more diverse aquatic vegetation community. Recreation is becoming more significant with emphasis in the I35 reach at present. Bryophytes appear to be a little more noticeable in the river compared to recent mappings. No Texas Wild-Rice death has been observed relative to the present 100 cfs discharge or associated shallow depths.

Figure B5. Drop Net Crew at the City Park study reach working in a *Cabomba* site adjacent to TexasWild-Rice on April 27, 2021.

Fountain darter habitat within the study reaches is presently consistent with conditions observed and documented in 2020 comprehensive sampling. Within the Spring Lake Dam study reach, BIO-WEST sampled *Potamogeton*, *Hydrocotyle*, *Sagittaria*, and Open, and collected few darters.At City Park, we caught an above average number of darters, many small (as typical of spring). In particular, the patch of *Cabomb*a near the middle of City Park (Figure 5) was full of small darters. At I35, the aquatic vegetation is considerably more diverse, but most sites are pretty shallow. An above average number of darters, many small, were collected in this reach. However, as water levels continue to decline, the diverse Fountain Darter habitat on River Left side of the island in the I35 reach will start to become dry/exposed.

Figures 6-9 show San Marcos River and habitat conditions present on April 27, 2021.

Figure B6. Texas Wild-Rice and floating aquatic vegetation just downstream of the railroad bridgeadjacent to Rio Vista Park (April 27, 2021).

Figure B7. Downstream view of the San Marcos River at the I35 study reach with the interstate in thebackground (April 27, 2021).

Figure B8. **Stagnant water conditions and no flow over the Thompson Island mill race (April 27, 2021).**

Figure B9. **Riffle habitat adjacent to TPWD discharge on the Thompson Island natural channel of the SanMarcos River (April 27, 2021).**

Overall, water levels are noticeably down at 100 cfs, but BIO-WEST scientists noted no biologicalindicators of alarm at this time relative to past conditions. As previously noted, flow through Spring Lake is presently reduced causing increased algal growth and siltation at certain locations in the lake. Additionally, we observed a considerable number of suspected "pleco holes" along thebank, in edge areas that are typically submerged. 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 shallowareas which will be impacted by declining water levels. Finally, declining water levels are also exposing more wetted areas to wadable conditions. It will be imperative to continue to track habitat conditions for HCP covered species as water levels continue to decline in conjunction withthe heavy recreation season for the San Marcos River rapidly approaching. As always, please don’t hesitate to contact me if you have any questions or concerns.

Ed

APPENDIX C: AQUATIC VEGETATION MAPS

Long-term Biological Goals Study Reaches

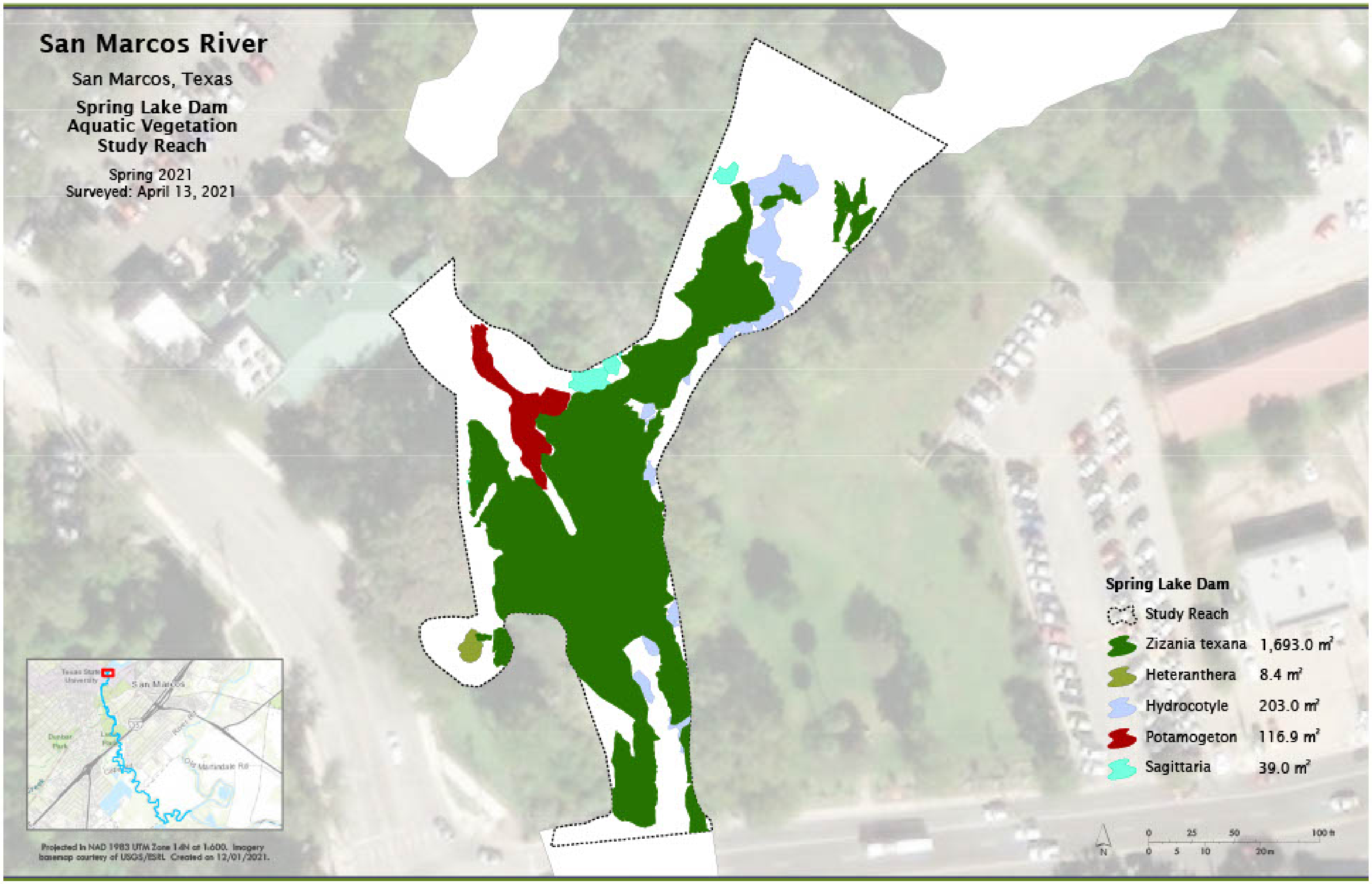

Figure C1. **Map of aquatic vegetation coverage at Spring Lake Dam Study Reach in spring 2021.**

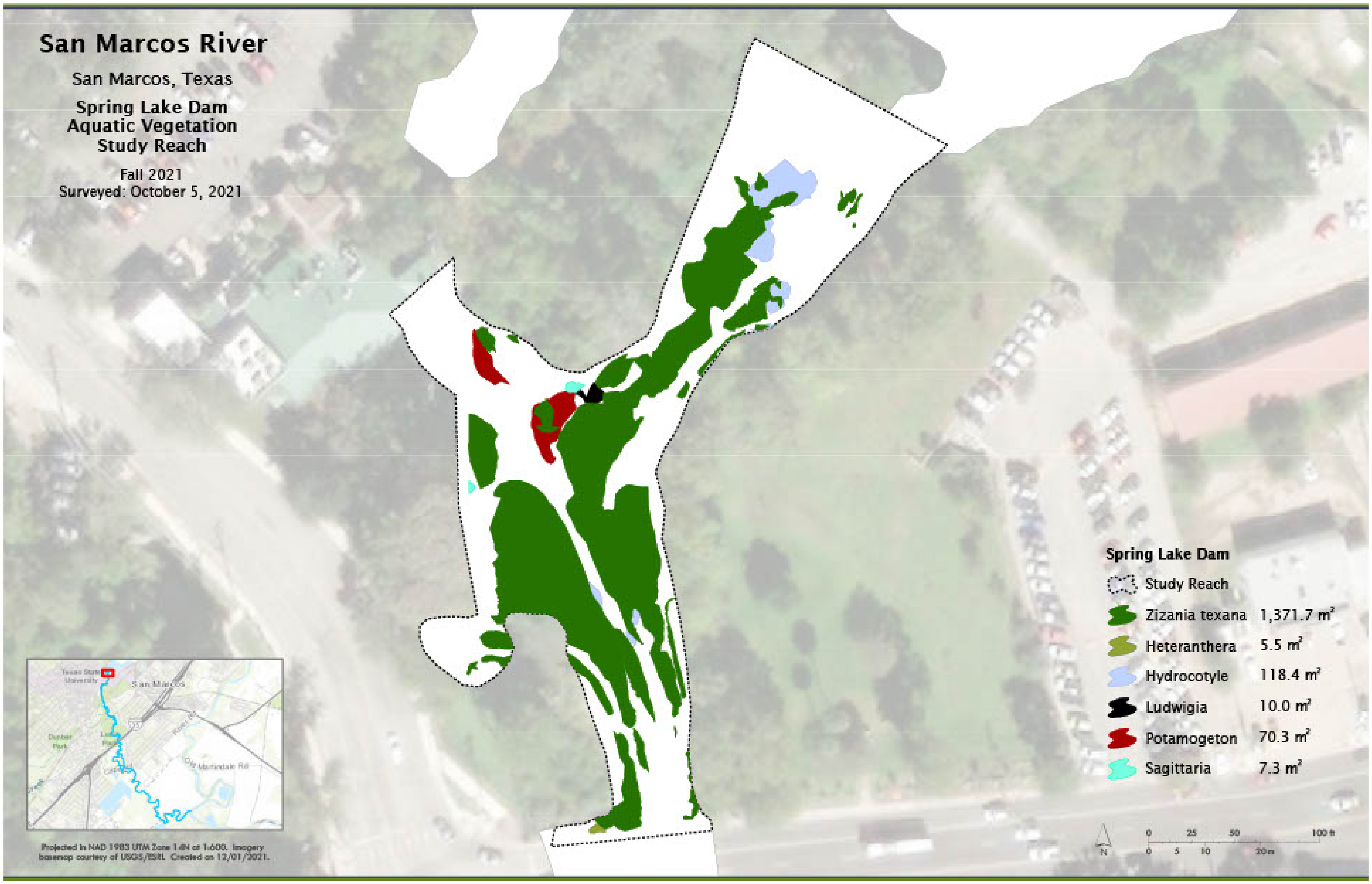

Figure C2. **Map of aquatic vegetation coverage at Spring Lake Dam Study Reach in fall 2021.**

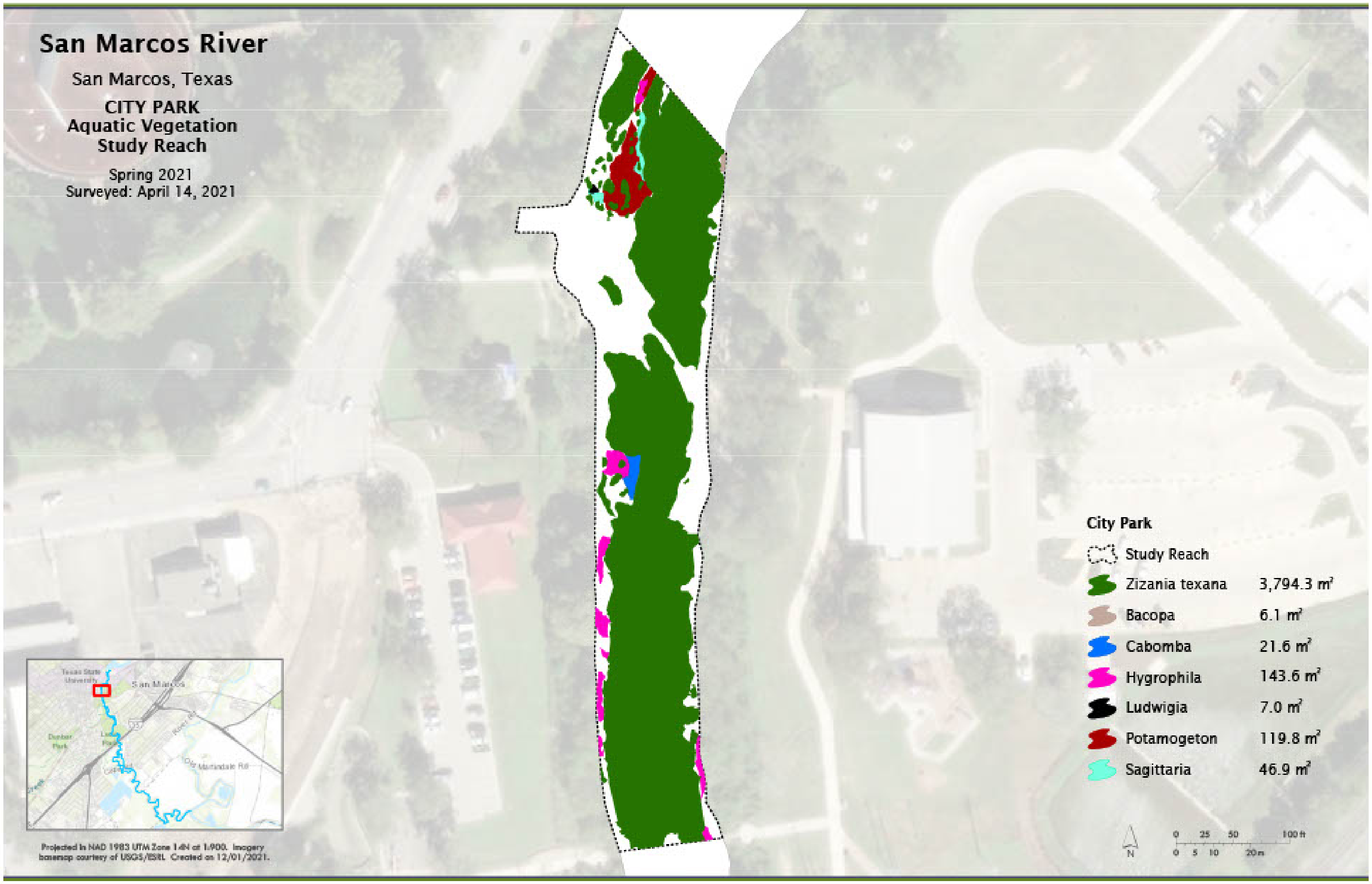

Figure C3. Map of aquatic vegetation coverage at City Park Study Reach in spring 2021.

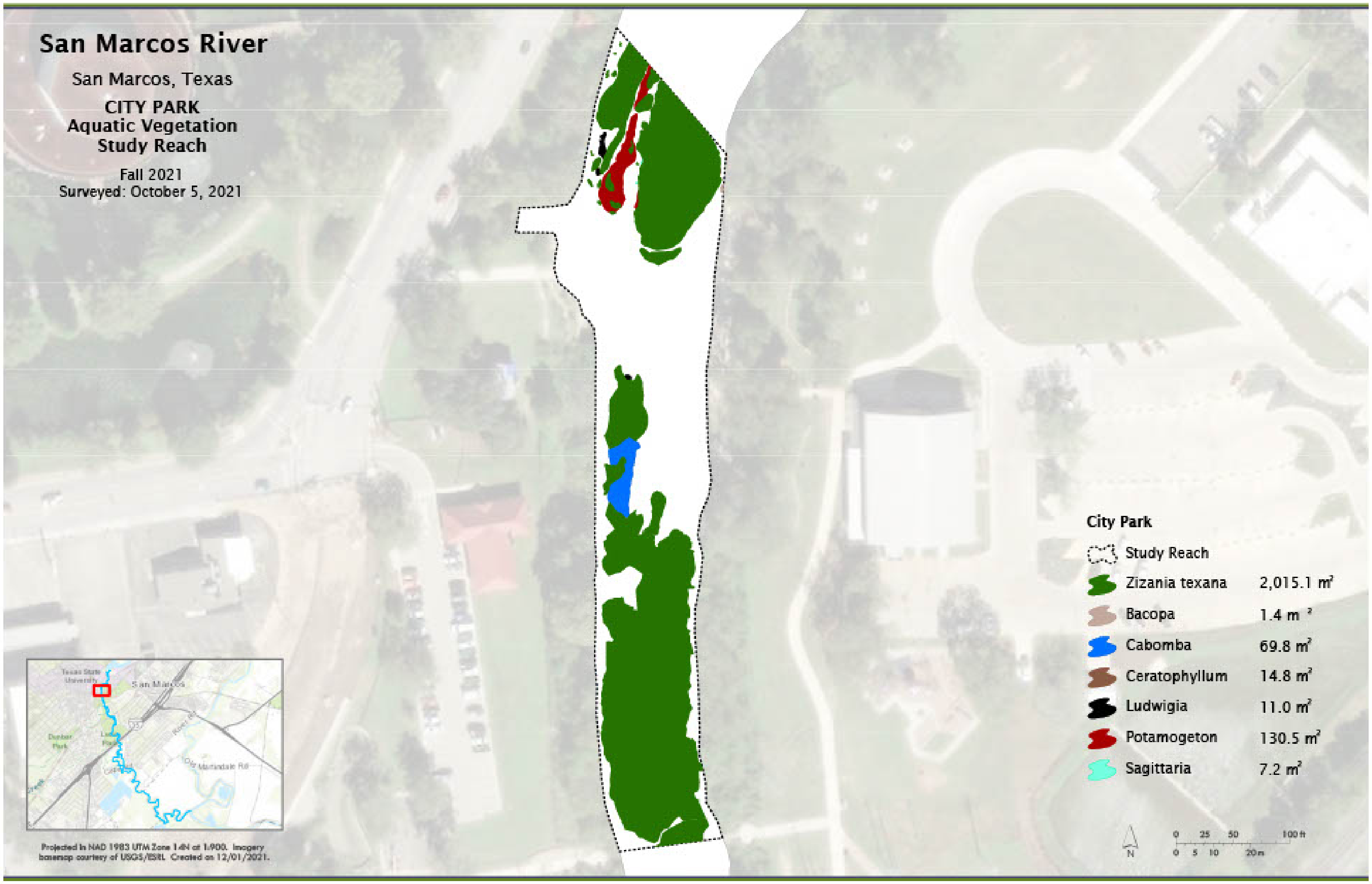

Figure C4. **Map of aquatic vegetation coverage at City Park Study Reach in fall 2021.**

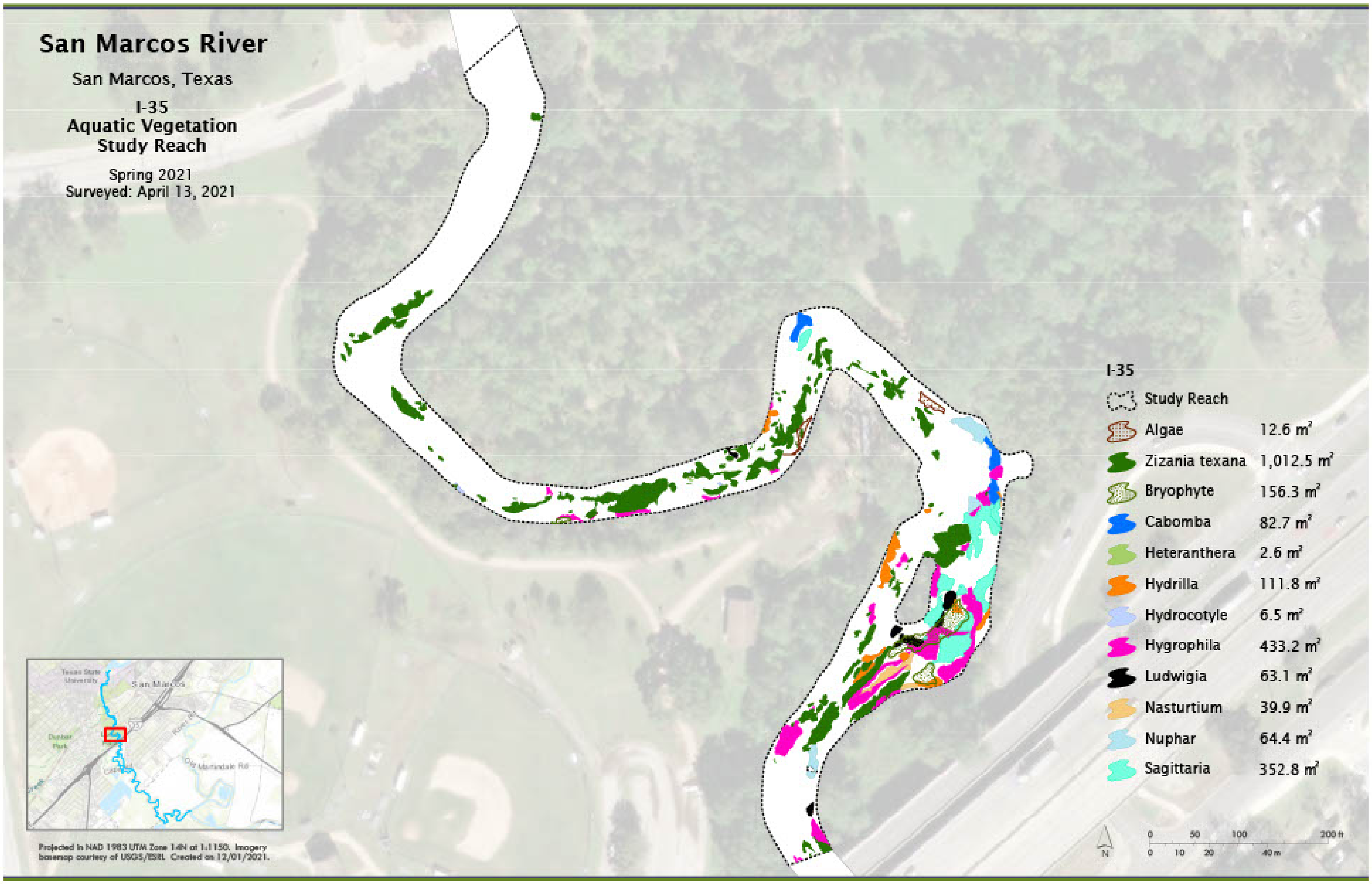

Figure C5. Map of aquatic vegetation coverage at I-35 Study Reach in spring 2021.

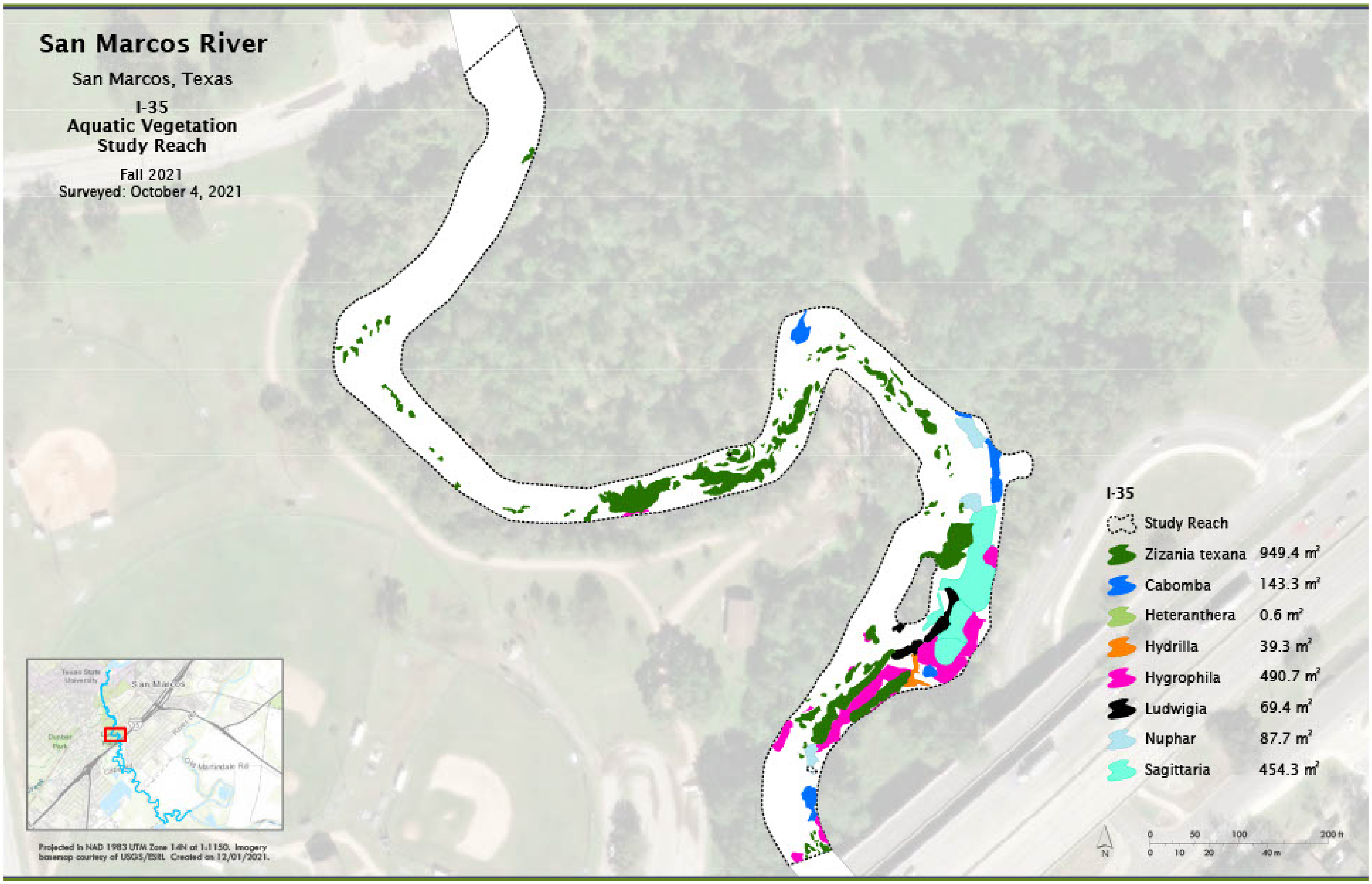

Figure C6. **Map of aquatic vegetation coverage at I-35 Study Reach in fall 2021.**

Low-flow Critical Period Texas Wild-rice Mapping

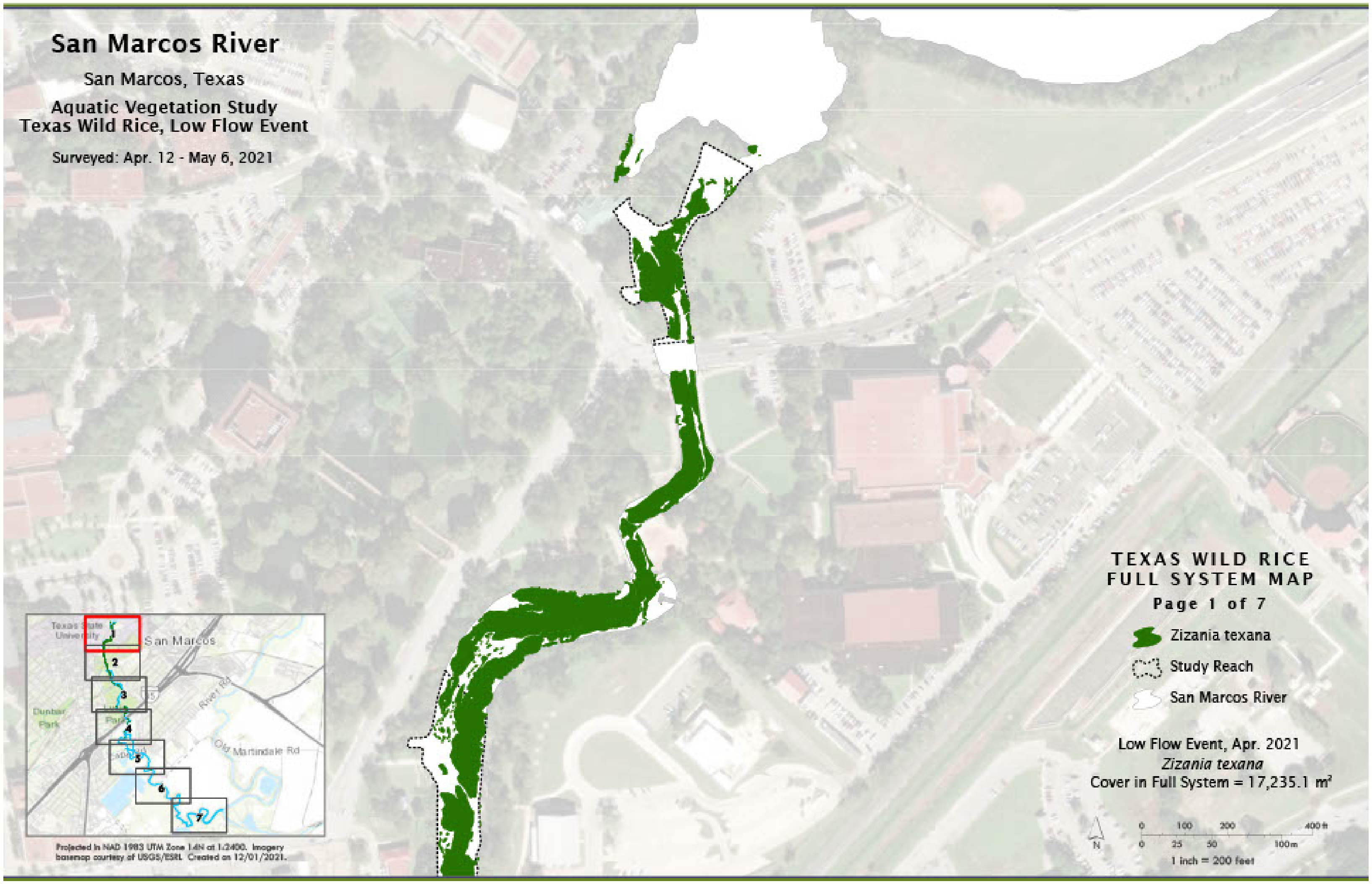

Figure C7. **Map of Texas Wild-rice coverage from Spring Lake to City Park during Low-flow Critical Period in spring 2021.**

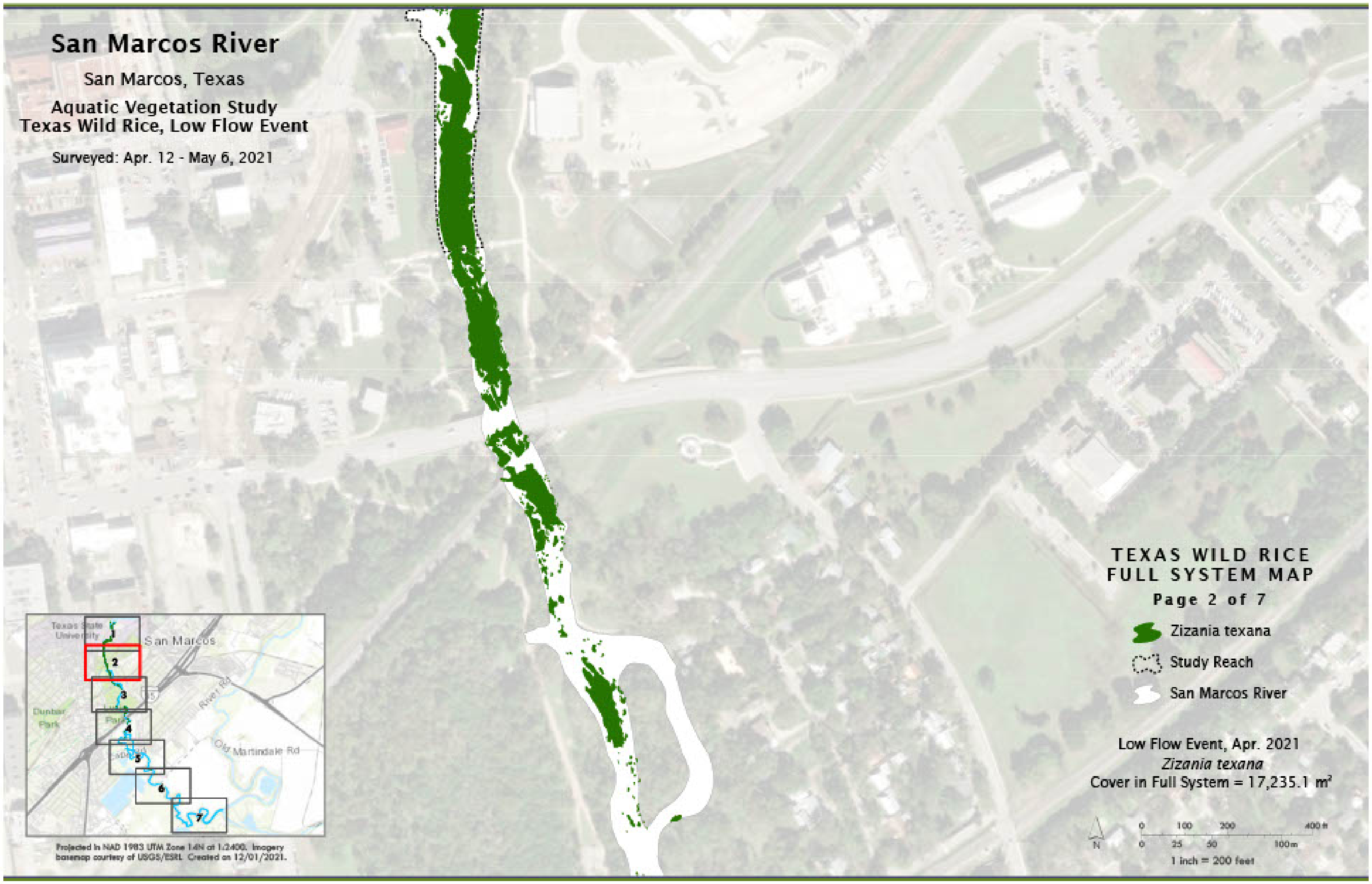

Figure C8. **Map of Texas Wild-rice coverage from City Park Cheatham Street during Low-flow Critical Period in spring 2021.**

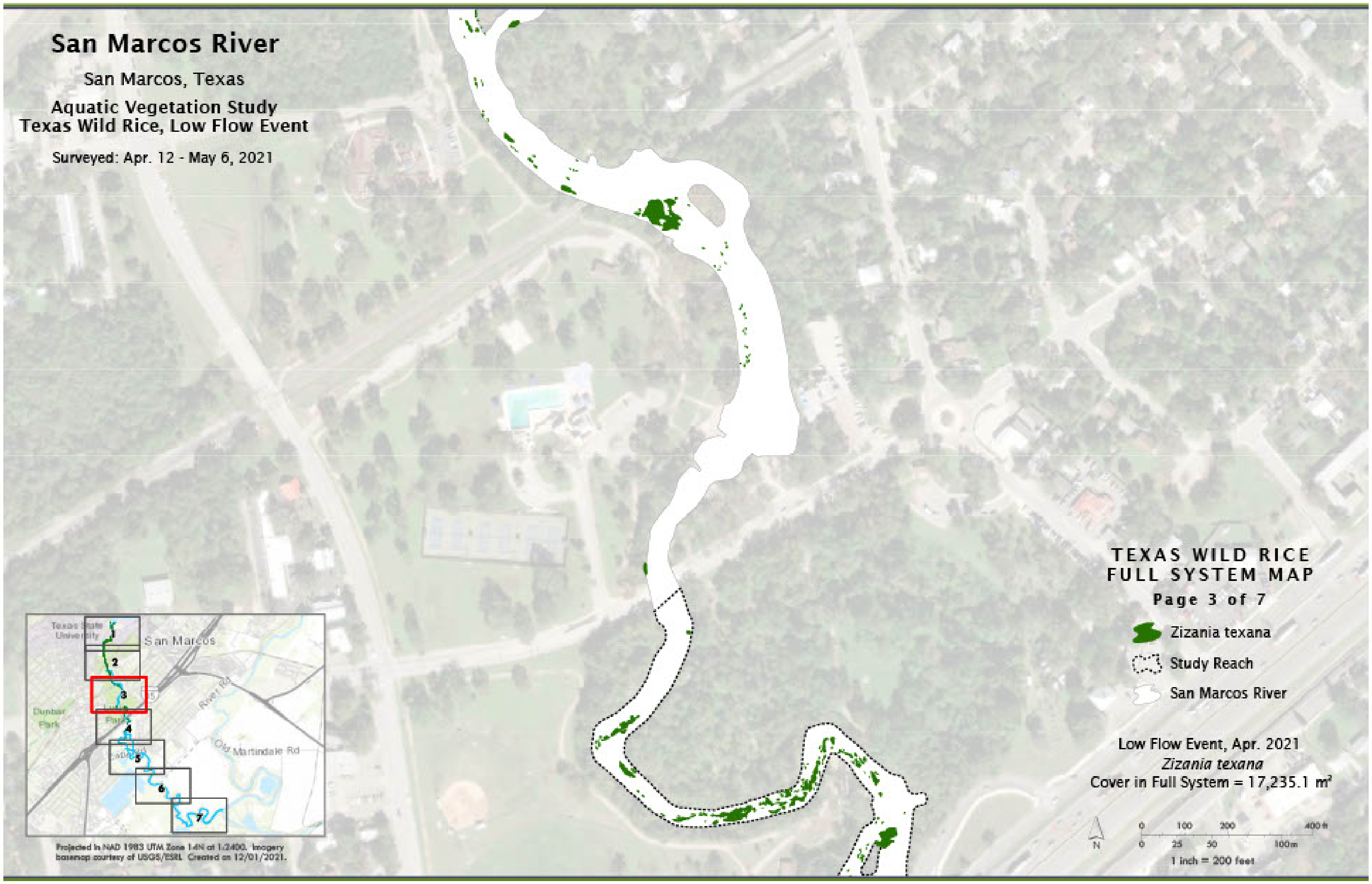

Figure C9. **Map of Texas Wild-rice coverage from Cheatham Street to I-35 during Low-flow Critical Period in spring 2021.**

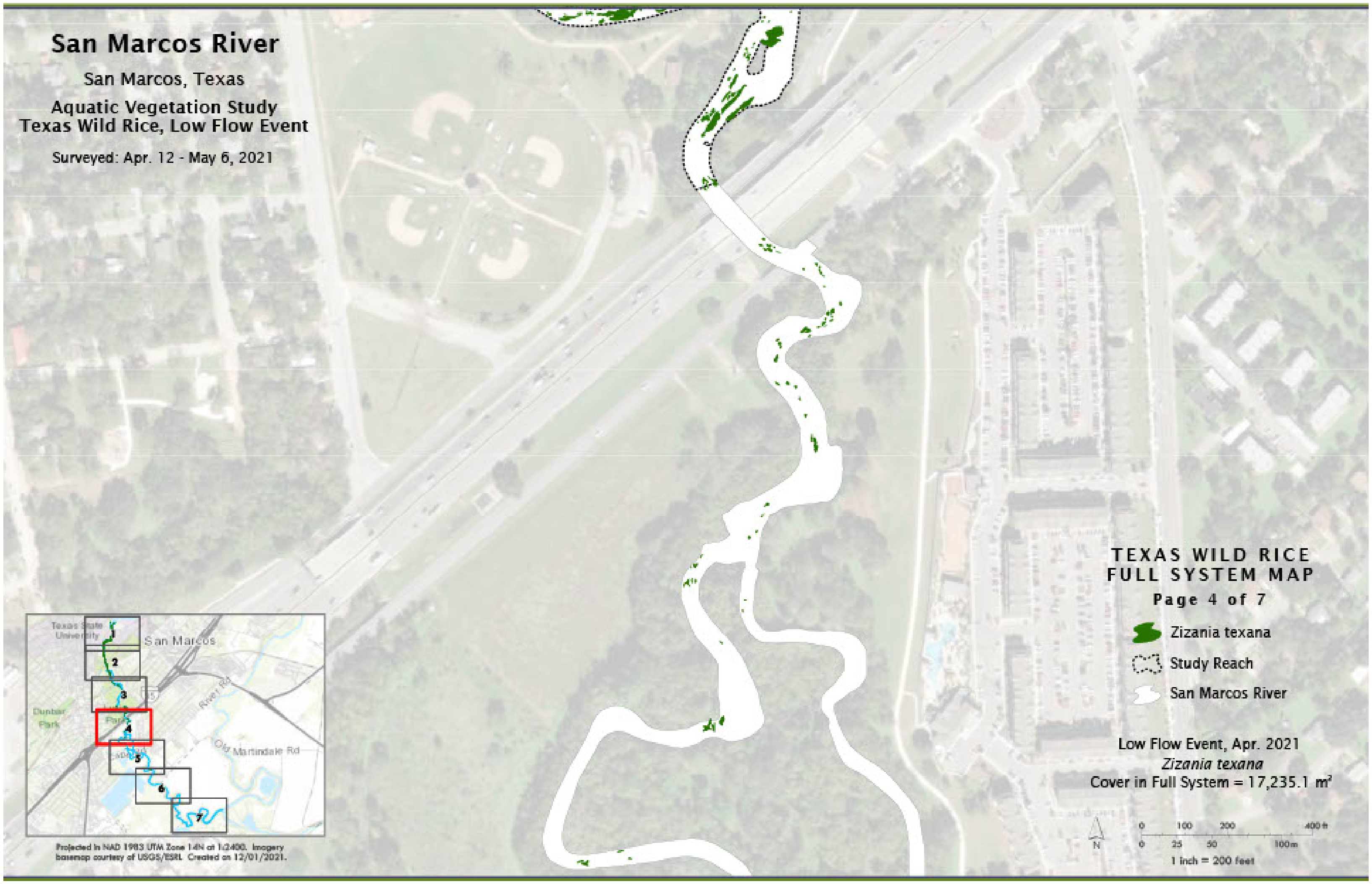

Figure C10. **Map of Texas Wild-rice coverage from Cheatham Street to about Stokes Park during Low-flow Critical Period in spring 2021.**

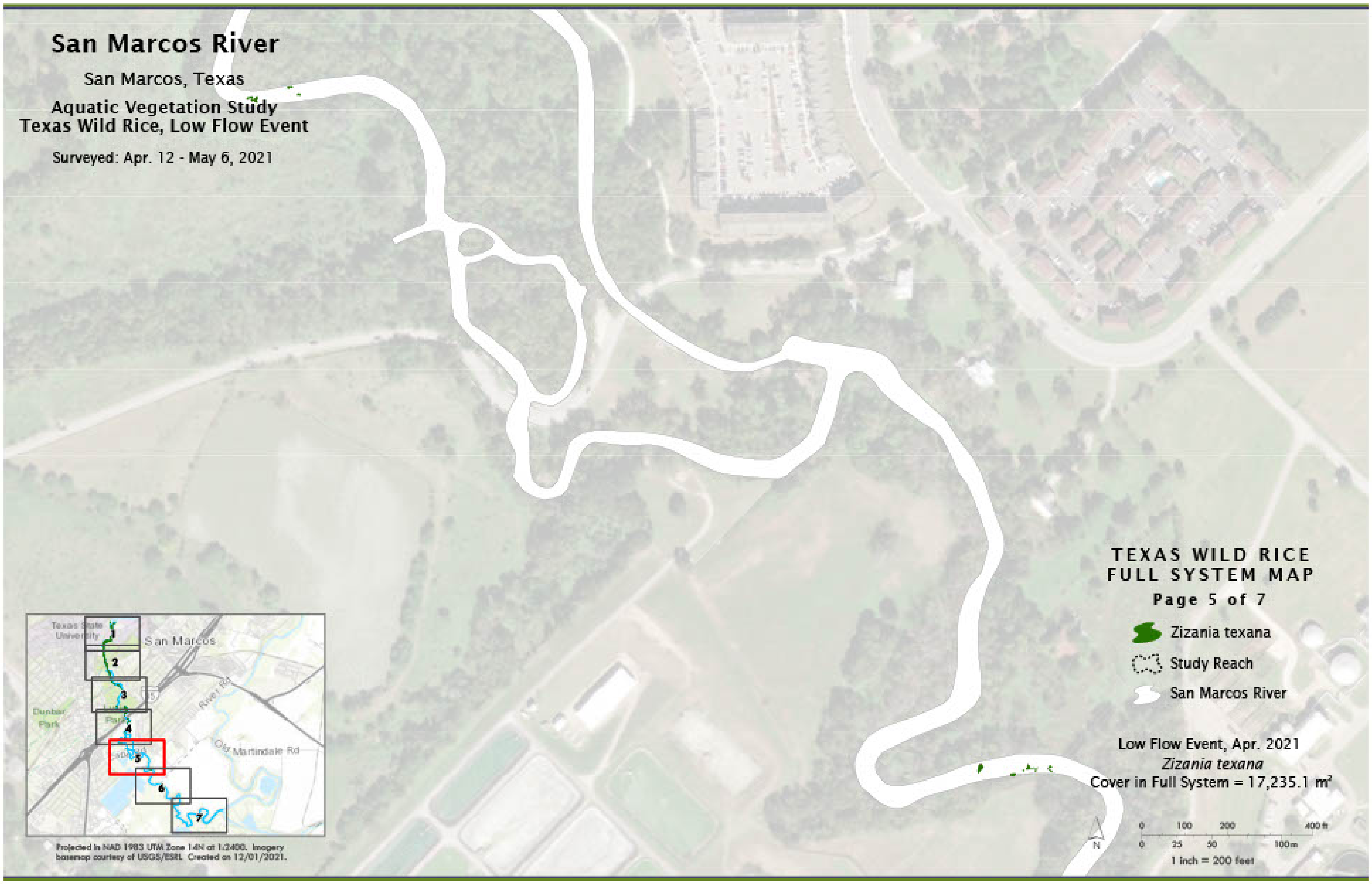

Figure C11. **Map of Texas Wild-rice coverage from about Stokes Park to Waste Water Treatment Plant during Low-flow Critical Period in spring 2021.**

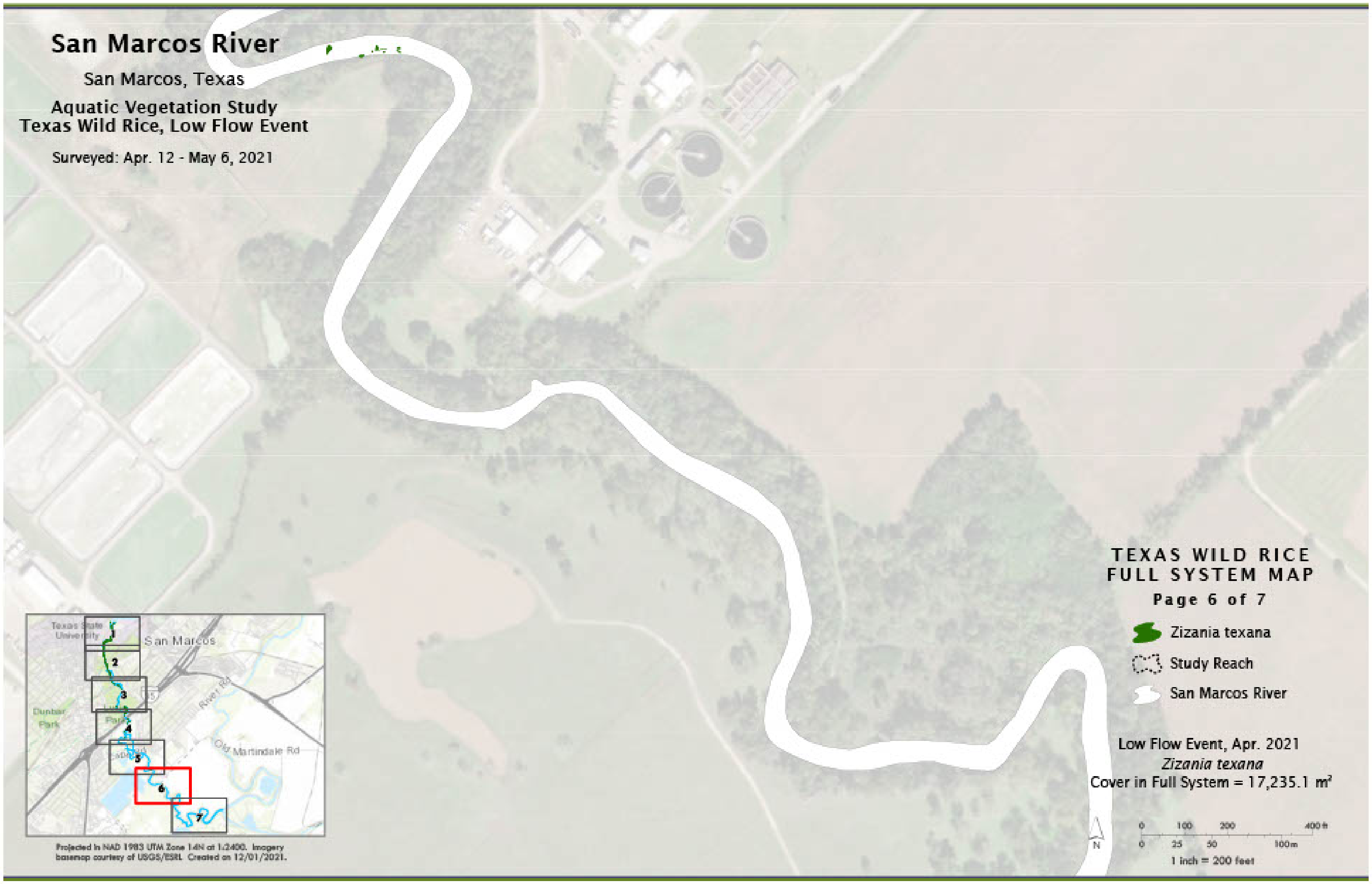

Figure C12. **Map of Texas Wild-rice coverage from Waste Water Treatment Plant to about Cypress Tree Island during Low-flow Critical Period in spring 2021.**

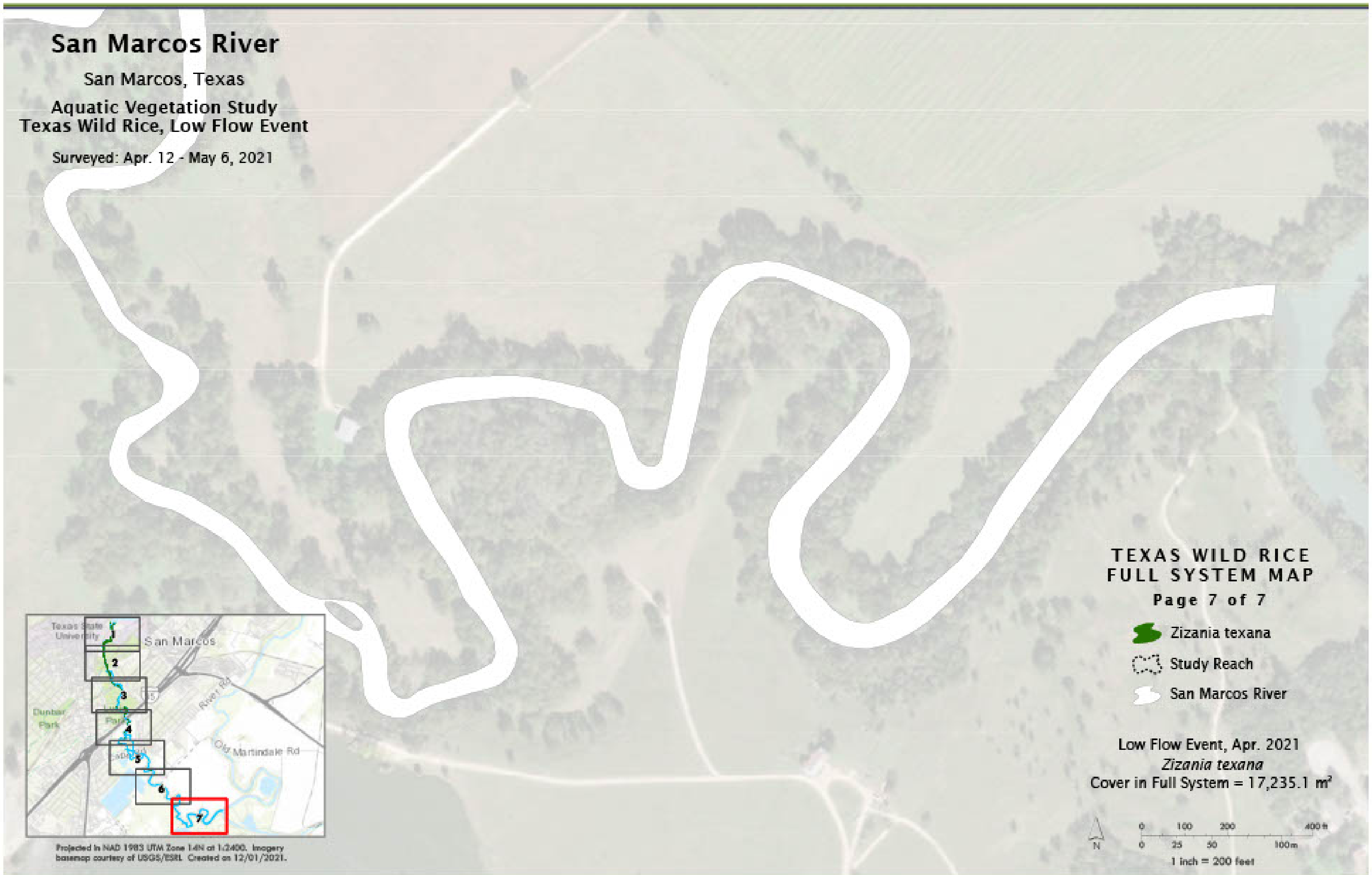

Figure C13. **Map of Texas Wild-rice coverage from about Cypress Tree to the Blanco River confluence during Low-flow Critical Period in spring 2021.**

Texas Wild-rice Annual Mapping

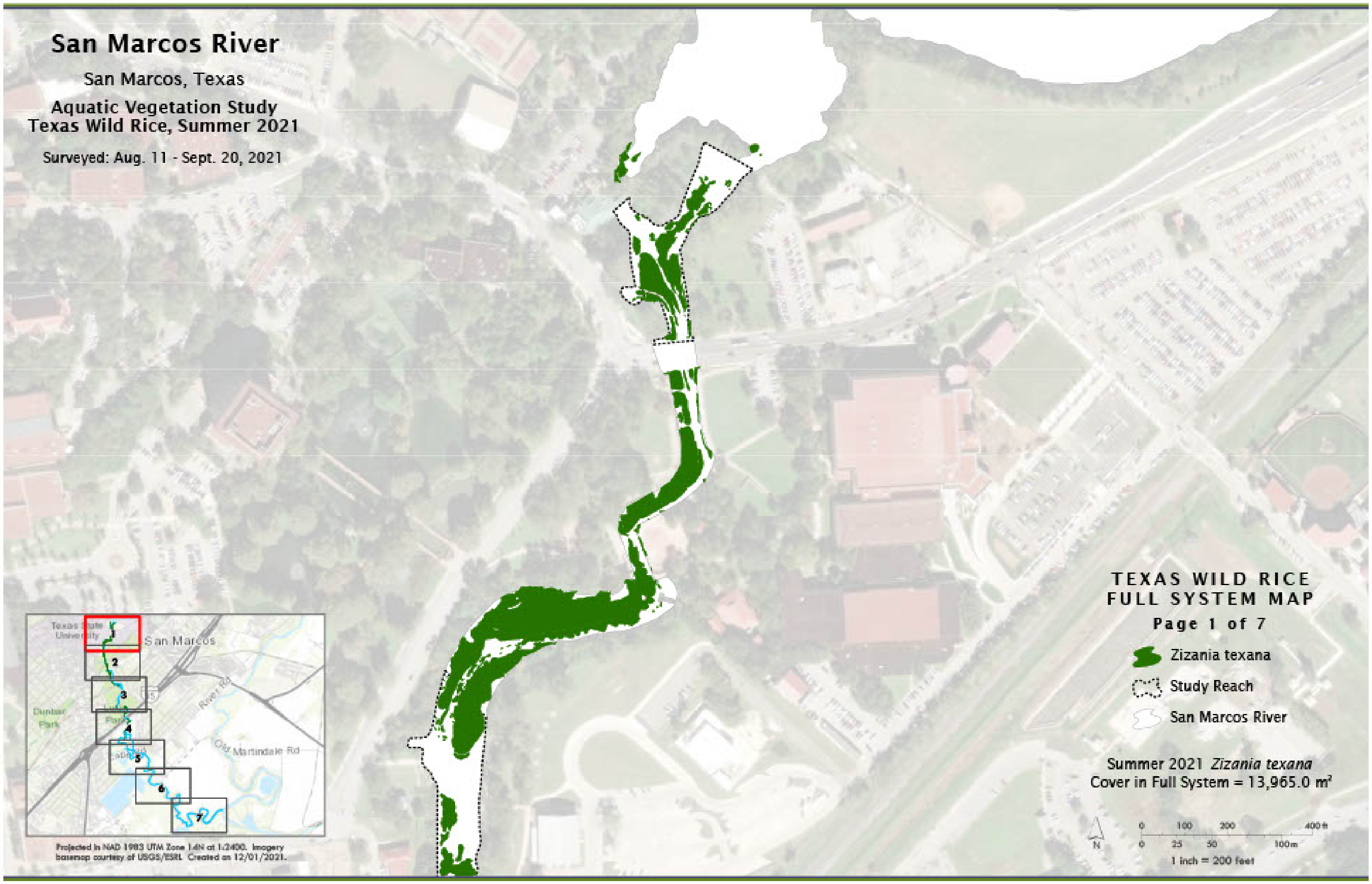

Figure C14. Map of Texas Wild-rice coverage from Spring Lake to City Park in summer 2021.

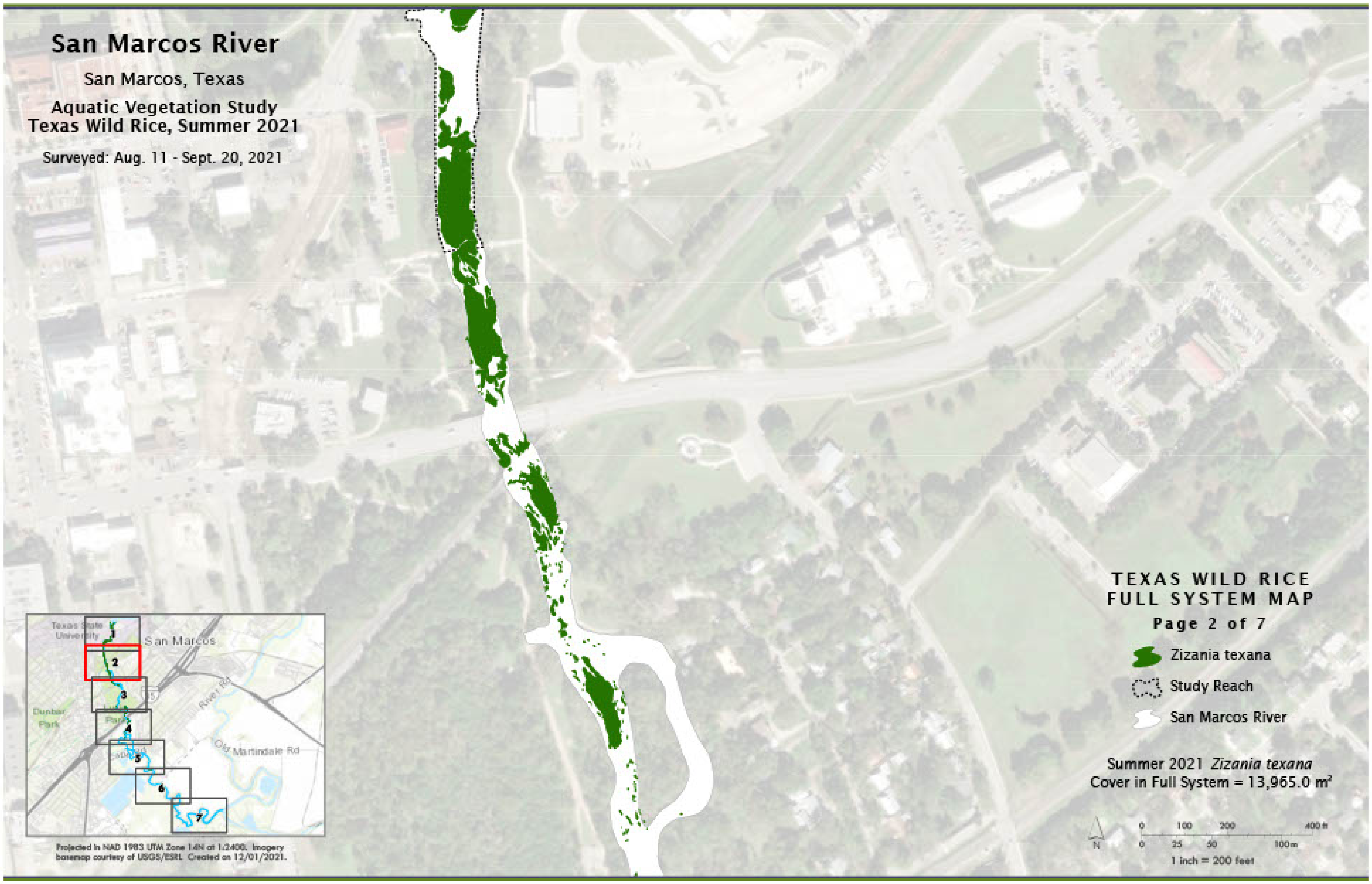

Figure C15. **Map of Texas Wild-rice coverage from City Park Cheatham Street in summer 2021.**

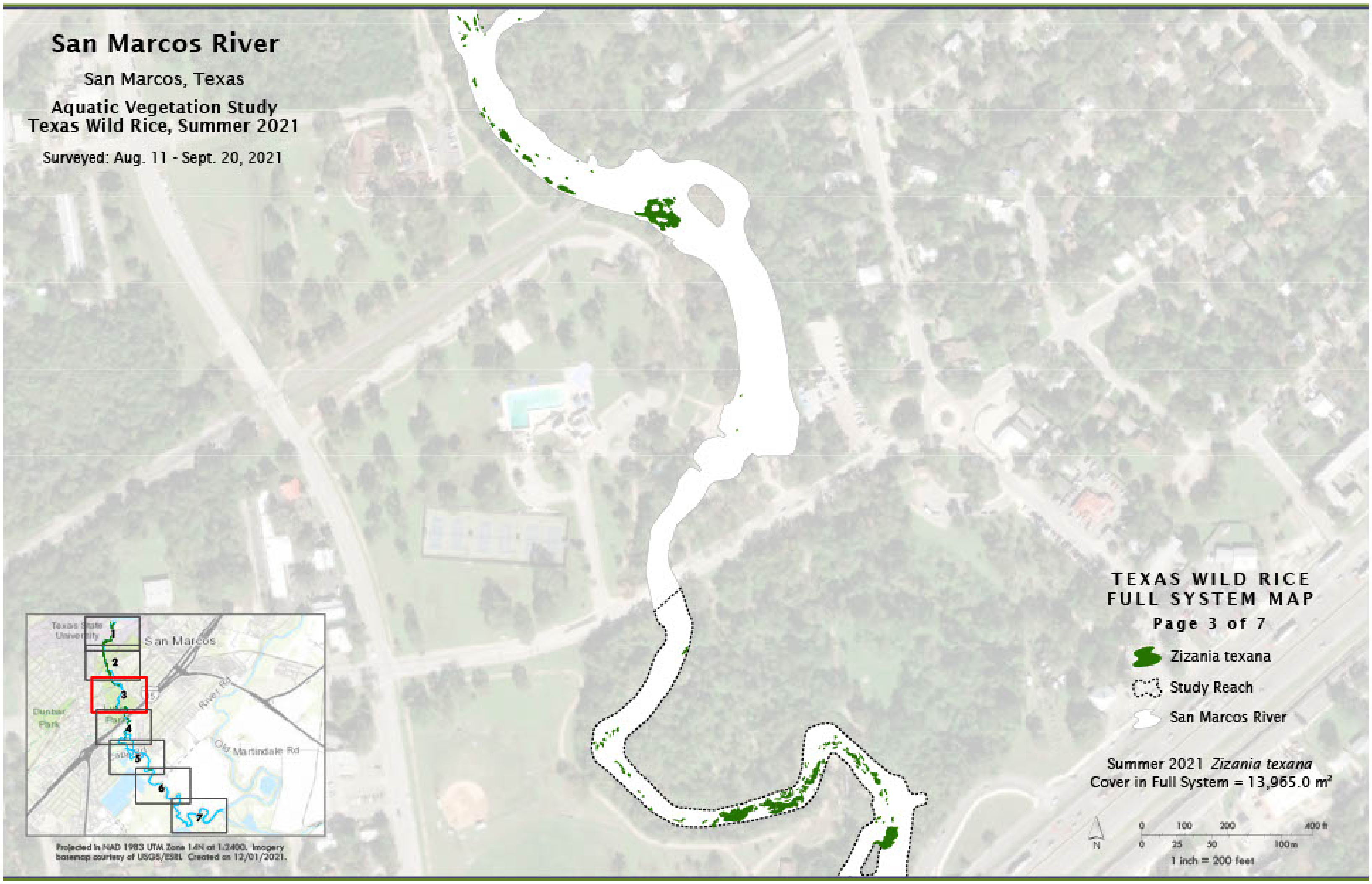

Figure C16. **Map of Texas Wild-rice coverage from Cheatham Street to I-35 in summer 2021.**

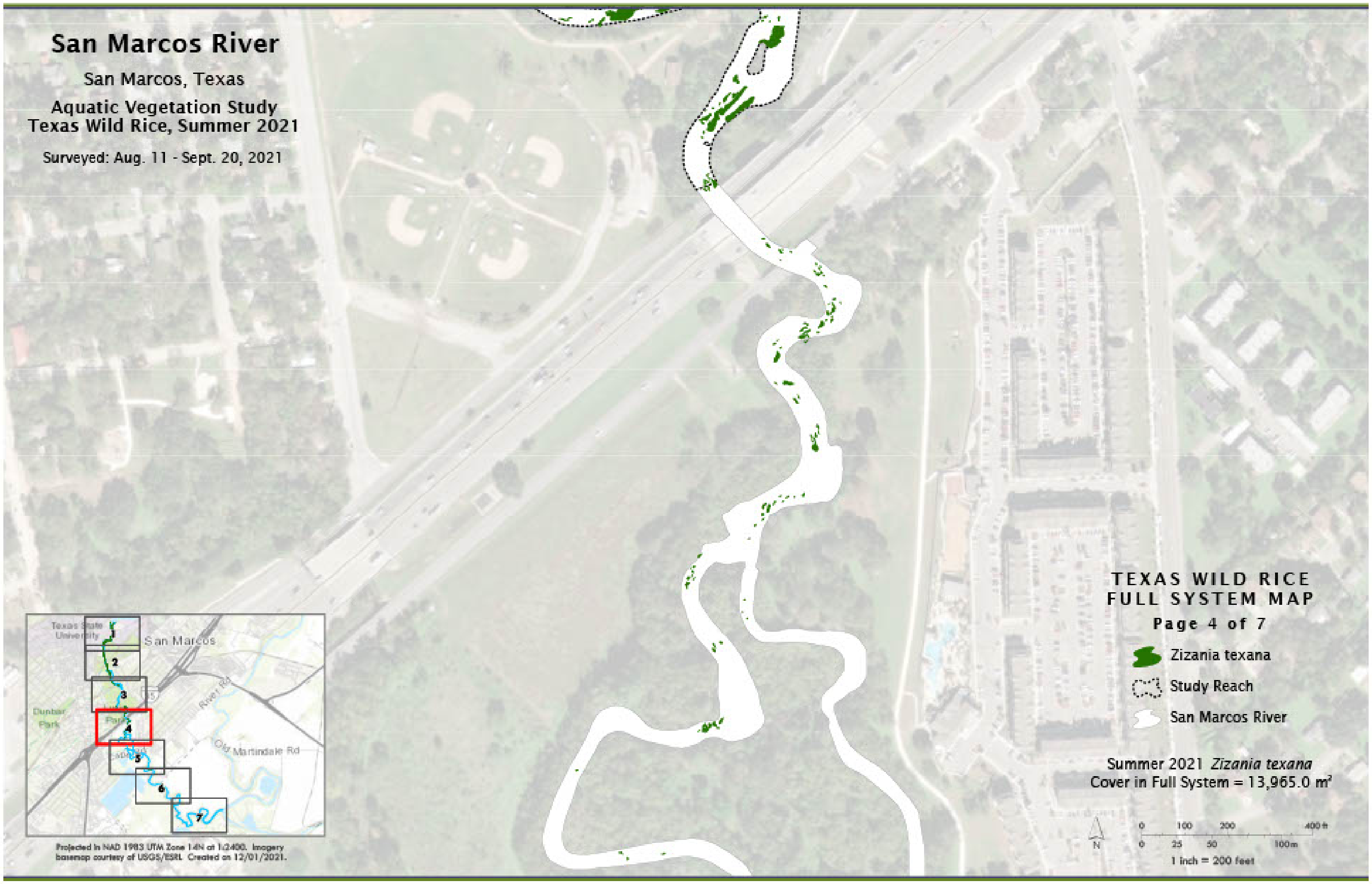

Figure C17. Map of Texas Wild-rice coverage from Cheatham Street to about Stokes Park in summer 2021.

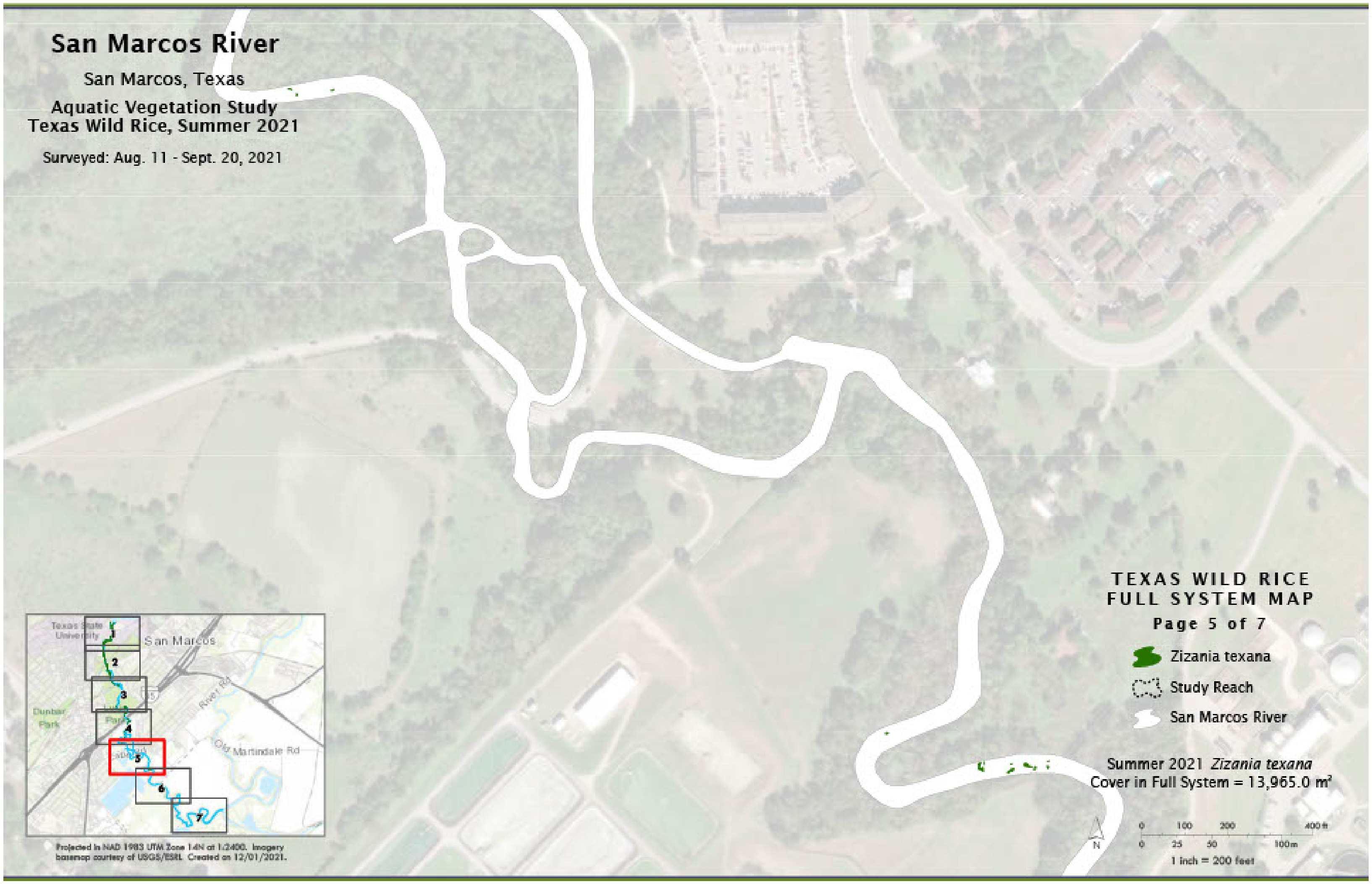

Figure C18. **Map of Texas Wild-rice coverage from about Stokes Park to Waste Water Treatment Plant in summer 2021.**

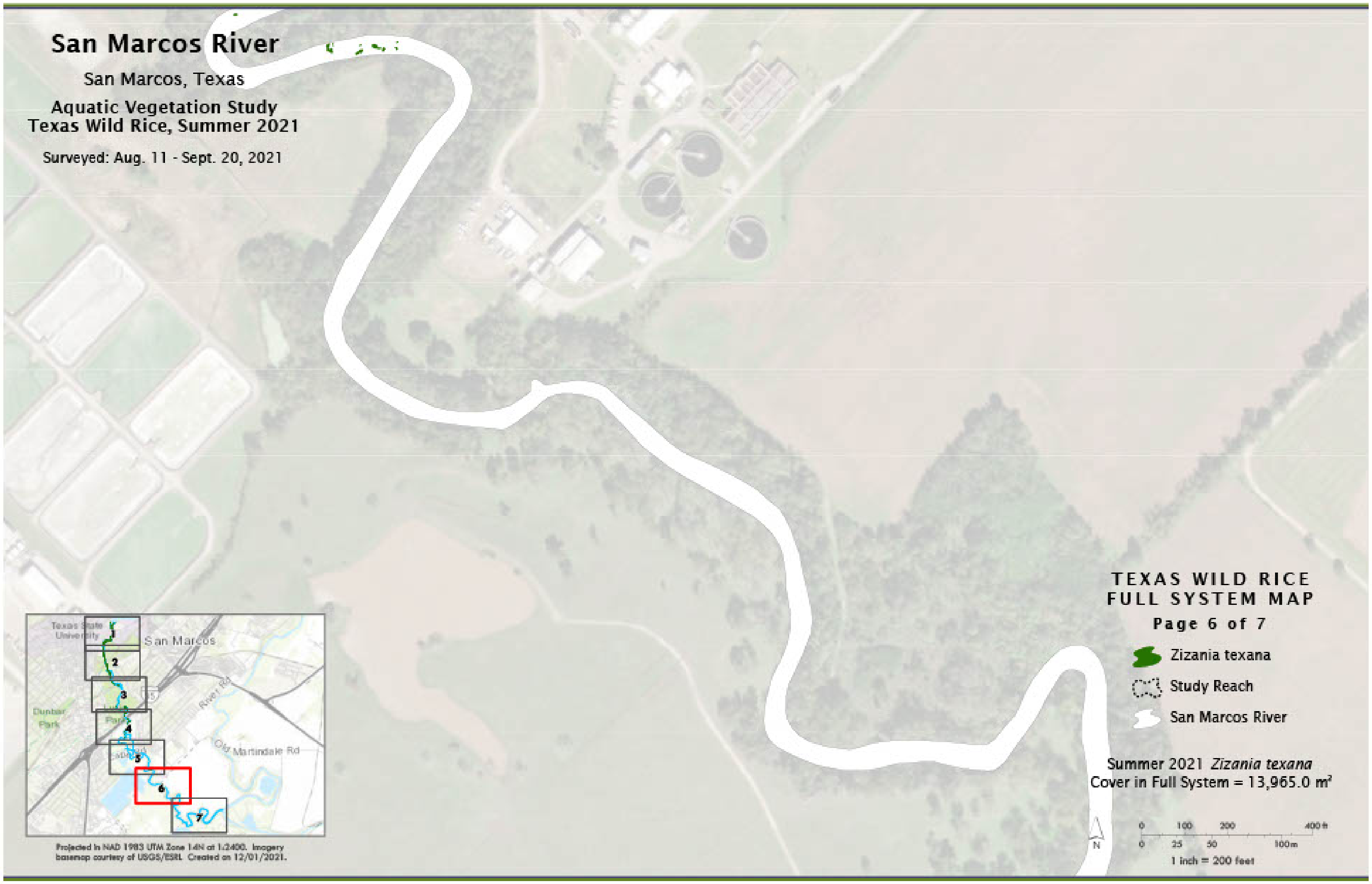

Figure C19. **Map of Texas Wild-rice coverage from Waste Water Treatment Plant to about Cypress Tree Island in summer 2021.**

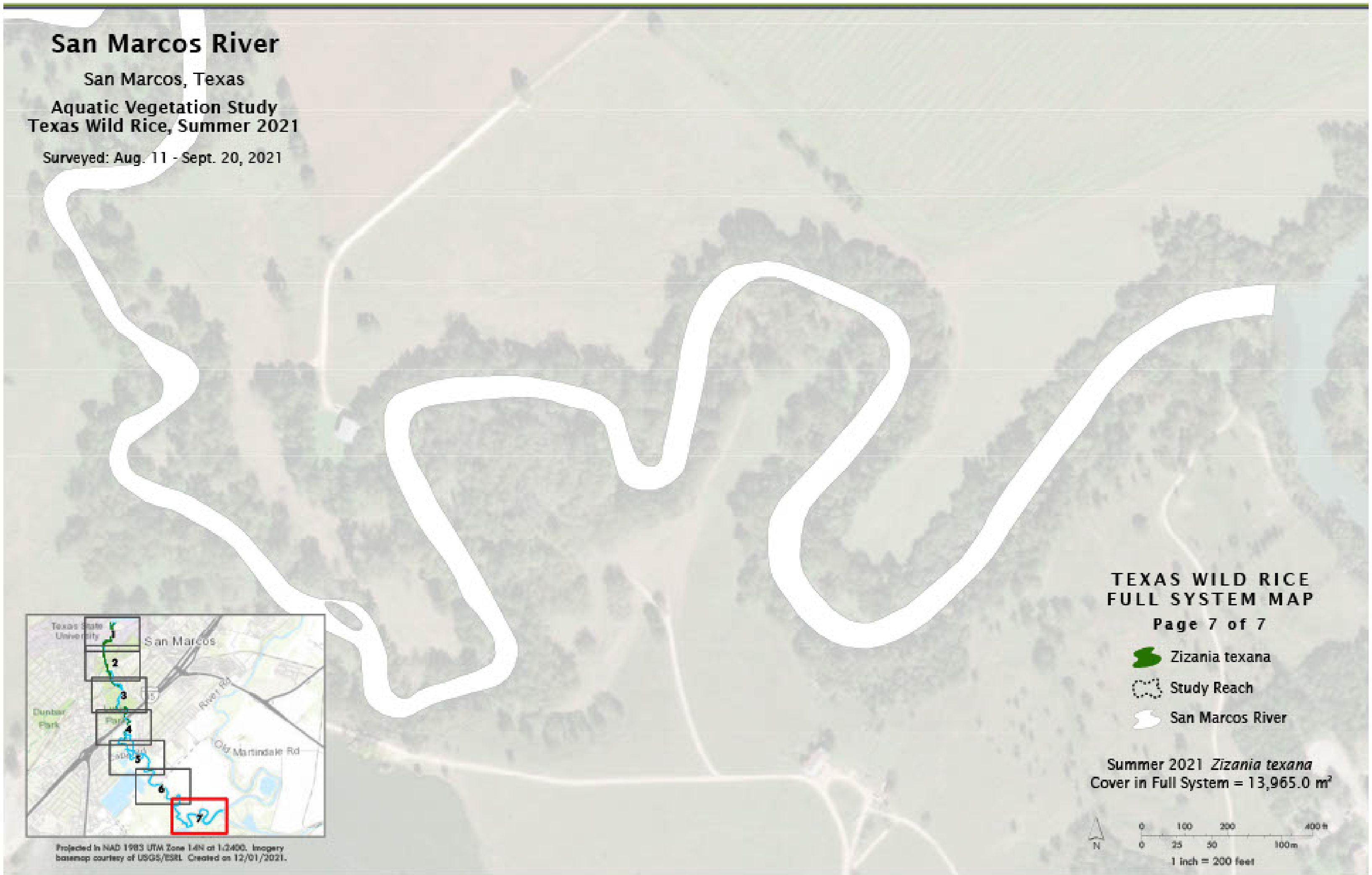

Figure C20. Map of Texas Wild-rice coverage from about Cypress Tree to the Blanco River confluence in summer 2021.

APPENDIX D: TEXAS WILD-RICE PHYSICAL OBSERVATIONS

For the 2021 low-flow mapping event, 403 stands and 204 points of Texas Wild-rice were mapped. The extent of Texas Wild-rice was unchanged compared to previous years. The most downstream extent of rice is located at the power line right of way as it crosses the river at A.E. Wood State Fish Hatchery (29.8664456N; -97.9271326W). Comparatively, 595 stands and 396 points mapped in August of 2020. A majority (209) of mapped stands were found to be in water deeper than 3 feet and 194 stands were found to be in water less than 3 feet in depth (Table D1). Approximately 32% of Texas Wild-rice stands were found to be associated with another aquatic plant species. Two non-native aquatic plant species, *Hydrilla* and *Hygrophila* were the most commonly associated aquatic plant species with Texas Wild-rice (Table D2). Although the association with native aquatic plant species has increased over the last few years. There was 53 Texas Wild-rice stands in bloom at the time of mapping and bloom percent ranged from 5 to 90%.

Table D1. Distribution of Texas Wild-rice stands based on water depth (n=403) during Low-flow Critical Period Monitoring in April 2021.

WATER DEPTH (ft)	# OF TWR STANDS	FREQUENCY (%)
0 to 0.9	49	12
1-1.9	73	18
2-2.9	72	17
3 +	209	52

Table D2. Associated species found with Texas Wild-rice stands (n=132) during Low-flow Critical Period Monitoring in April 2021.

SPECIES	# OF TWR STANDS	FREQUENCY (%)
Hydrilla verticillata	52	39
Hygrophila polysperma	26	20
Sagittaria platyphylla	16	12
Hydrocotyle verticillata	8	6
Potamogeton illinoensis	4	3
Ludwigia repens	5	3
Cabomba caroliniana	3	1
Vallisneria spiralis	1	<1

For the annual summer mapping event conducted in July and August of 2021 of the 415 mapped stands 261 were found to be in water deeper than 3 feet and 154 stands were found to be in water less than 3 feet in depth (Table D3). Approximately 32% of Texas Wild-rice stands were found to be associated with another aquatic plant species. Two non-native aquatic plant species, *Hydrilla* and *Hygrophila* were the most commonly associated aquatic plant species with Texas Wild-rice (Table D4). There was 44 Texas Wild-rice stands in bloom at the time of mapping and bloom percent ranged from 5 to 80%

Table D3. Distribution of Texas Wild-rice stands based on water depth (n=415) during annual mapping in August 2021.

WATER DEPTH (ft)	# OF TWR STANDS	FREQUENCY (%)
0 to 0.9	17	4
1-1.9	81	19
2-2.9	56	13
3 +	261	63

Table D4. Associated species found with Texas Wild-rice stands (n=121)

SPECIES	# OF TWR STANDS	FREQUENCY (%)
Hygrophila polysperma	32	26
Hydrilla verticillata	22	18
Sagittaria platyphylla	17	14
Potamogeton illinoensis	14	11
Hydrocotyle verticillata	12	10
Cabomba caroliniana	9	8
Ludwigia repens	7	6
Vallisneria spiralis	1	<1
Ceratophyllum demersum	3	3
Heteranthera dubia	4	3

Observations for vulnerable Texas Wild-rice were conducted four times during 2021 (Table D5). These qualitative measurements included the following categories: the percent of the stand that was emergent (including the percent with seed or flower), 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. The average daily discharge for the San Marcos River at the time of Low Flow 1 sampling was 125 cfs well below the historical mean daily discharge of 185. The mean daily discharge of Low Flow sample 2 (February, 20) was 111 cfs, again below the historical daily mean of 157 cfs. In late April ample precipitation boosted aquifer levels and discharge returned to near average. During May sampling discharge was near the historical daily mean. During October sampling discharge was above the historical average daily mean (Table D5.

As in the previous year, physical observations were made for vulnerable Texas Wild-rice stands within three general study areas, the Spring Lake Dam / Sewell Park location, Veramendi Park and the I-35 location. These locations are heavily trafficked with river recreation and are also located near river access points where river recreationists enter, exit or linger for the duration of the day. Therefore, during peak recreation season Texas Wild-rice patches at these locations are subjected to harsher disturbances compared to Texas Wild-rice located in any other part of the river. At the end of this section, coverage of each vulnerable stand, percent of stands at water depths less than 0.5 feet, and percent of vulnerable stands flowering and seeding can be found in Table D6, Figure D6, and Figure D7, respectively.

Table D5. 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	Low Flow Physical Observation	January, 5	121
2	Low Flow Physical Observation	February, 24	111
3	Spring Biological Monitoring	April, 5	132
4	Fall Biological Monitoring	October, 29	213

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

Spring Lake Dam/Sewell Park Reach

The stands in this reach maintained a high degree of cover, likely due to the decrease in recreational pressure during the first three sampling events when Sewell Park river access had been closed between March 2020 and March 2021. The summed coverages show relatively consistent cover over four consecutive sampling events with a large decrease in cover between spring and fall. Photos from this reach can be seen in Figures D1 and D2.

In general, Texas Wild-rice maintained larger stands until the last sampling event when loss in cover occurred in every stand. Stands # 4/5 and #7 became increasingly fragmented between spring and fall events. Stand #7 was highly eroded along the long edge with clear walking paths throughout (Figure D3).

During spring sampling Event I, velocity at individual stands ranged from 0.55 ft/sec. to 1.86 ft/sec and depths at all stands was deeper than 0.5ft. Little root exposure from scouring was noted in this section, with only moderate scouring at stand #3 and #4. Six stands, # 1, #2, #6 and #7 were noted in minor bloom. Blooming minimal in most of these. For Event II sampling velocity ranged from 0.10 ft/ sec to 1.90 ft/sec. All of stand #6 was occurring in water depth less than 0.5 ft with much of the growth converted to emergent leaves. Root exposure remained minor. Blooming was abundant in all stands with Stand #3, #4 and #7 in 15% bloom or more. During spring stand flow ranged from .22 ft/ sec to 1.81 ft/ sec. Root exposure remained minor. Only stand # 6 was observed in bloom. For the fall event velocity ranged from 0.05 ft/ sec to 1.73 ft/ sec. Flowering was nonexistent. Root exposure and erosion was considerable in stands #3 and #7. especially along the long edge of #7 and was moderate in others. In many stands top growth had receded to small leaves or the root ball of individuals remaining (Figure D3).

Figure D1. **Texas Wild-rice (February 29) below Aquarena Springs Drive Bridge extended to the bridge and across the river channel. Usually, this area is dominated by bare areas and wading trails. Note the freeze damage occurring on emergent Texas Wild-rice as a result of February winter storms.**

Figure D2. **River bed scour can expose Texas Wild-rice roots a considerable amount leaving raised mounds where the plants persist. These mounds then become in danger of undermining.**

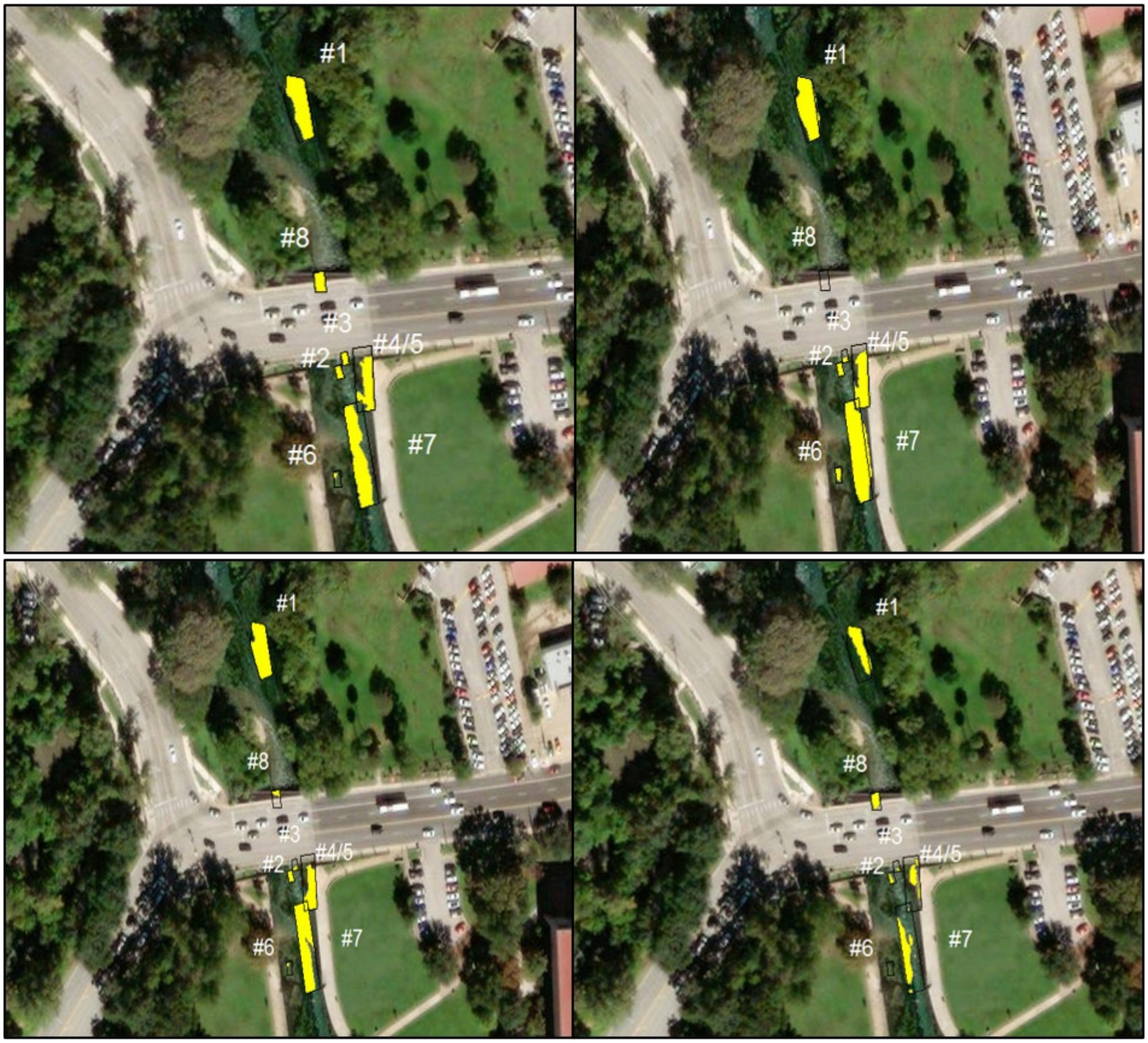

Figure D3. **Event I 2021(top left); Event II 2021 (top right); spring (bottom left) and fall (bottom right) vulnerable Texas Wild-rice plots in the Spring Lake dam / Sewell Park location. Yellow polygons indicated Texas Wild-rice stands. Black rectangles indicate the stand plots.**

Veramendi Park

Total cover of vulnerable Texas Wild-rice stands in Veramendi Park was highest during Event II and subsequently decreased thereafter. During Event I sample period, velocities ranged from 0.45 ft/ sec. to 1.0 ft/sec. All stands were noted occurring in water depths deeper than 0.5 ft. Root exposure was minimal across all stands and blooming was minimal. During Event II sampling, velocities ranged from 0.33 ft/sec. to 9.3 ft/ sec. No stands were noted occurring in water less than 0.5 ft in depth. Root exposure was minimal. During the spring event velocities ranged from 0.65 ft/ sec to 1.23 ft/ sec. with stand #3 noted as expanding under the Hopkins Street bridge. Root exposure was moderate in stand # 2 and minimal in the others. By fall sampling velocity ranged from 0.44 ft/ sec to 1.88 ft/ sec. Stand #1 was noted as fragmented compared to previous conditions and had moderate root exposure around the front edge of the stand (Figure D4).

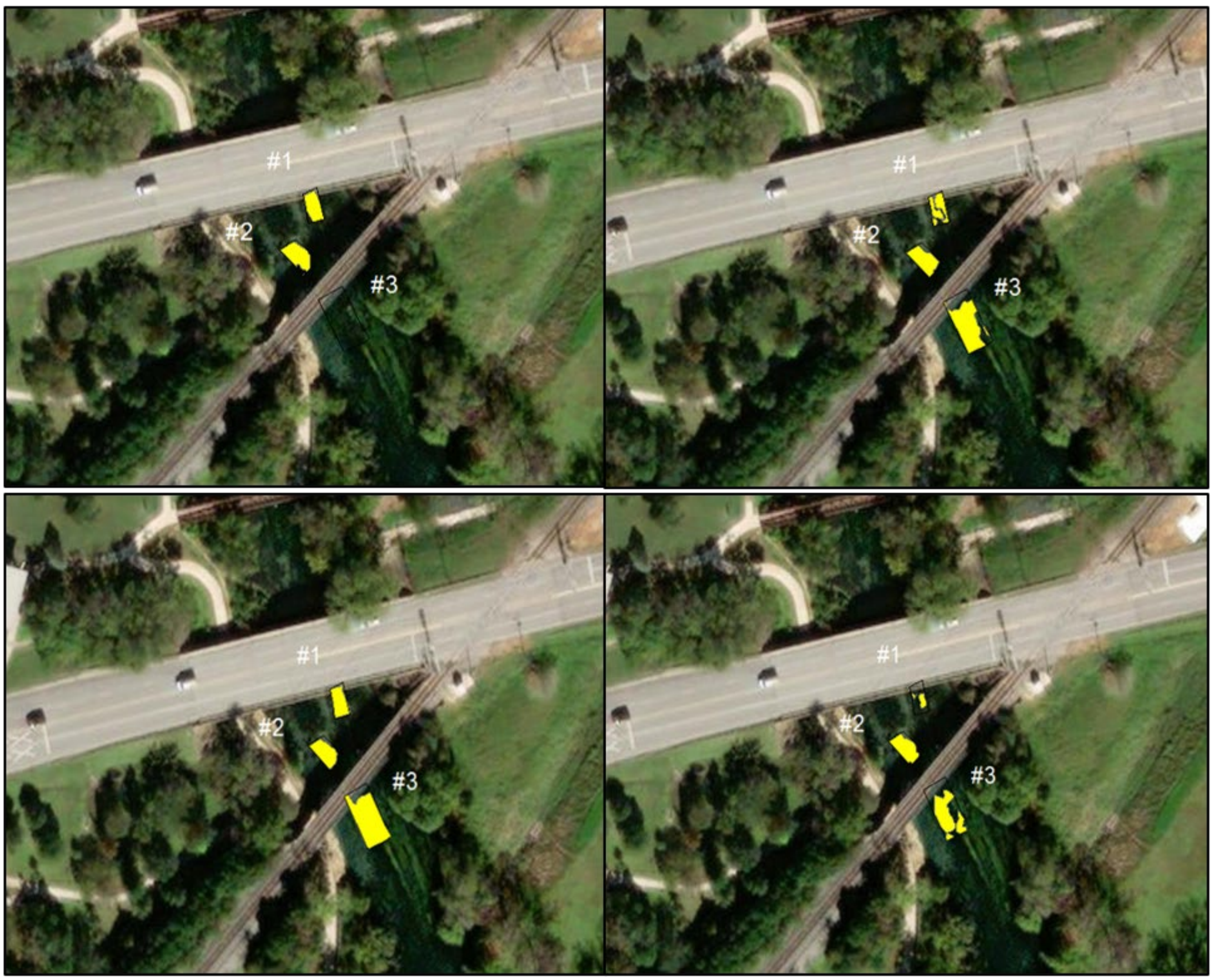

Figure D4. **Event I (top left); Event II (top right); spring (bottom left) and fall (bottom right) vulnerable Texas Wild-rice at the Veramendi Park location. Yellow polygons indicated Texas Wild-rice stands. Black rectangles indicate the stand plots.**

I-35 Reach

The coverages of vulnerable Texas Wild-rice stands in this reach was highest in Event II. The vulnerable stands here continued to be impacted by recreation even as the parks upstream were closed. Recreationalists from downstream access points congregated here. Velocities for Event I sampling ranged from 0.11 ft/ sec to 1.32 ft/ sec. All of stand #7 was observed in water 0.5 ft deep or less. Root exposure was minimal around all stands. During Event II sampling velocities ranged from 0.20 to 1.72 ft/ sec. Root exposure was noted as moderate, but erosion had exposed roots on the upstream end of stand #1. Flowering was abundant across several stands during this time. Due to lower river flows water flow at stand #7 was diverted leaving this stand in almost stagnant conditions. During the spring event velocities at plant stands ranged from 0.34 ft/ sec. to 1.55 ft/ sec. Stand #7 was still partially exposed in water less than 0.5 ft. No patches were observed blooming. Root exposure was minimal overall and moderate along the edges of a few patches (Figure D5).

The fall event sampling showed velocities ranging from 0.06 ft/ sec. to 2.33 ft/ sec. No portions of any Wild rice patches were in 0.5 ft of depth or less. Root exposure was considerable in stand # 4 but minimal in all others. No flowering or seed heads were observed. Over the course of 2021 this reach saw several patches that appeared after an absence and then disappeared again. In most cases this is attributed to expansion of stands into the sampling plot. Although in a few cases buried roots did re-sprout leaves only to lose them thereafter. Overall, the vulnerable Texas Wild-rice stands located in this area have maintained cover well compared to prior years when a number of stands fragmented and disappeared. Restoration plantings have helped re-colonize previously occupied areas as well as new areas with Texas Wild-rice (Figure D5).

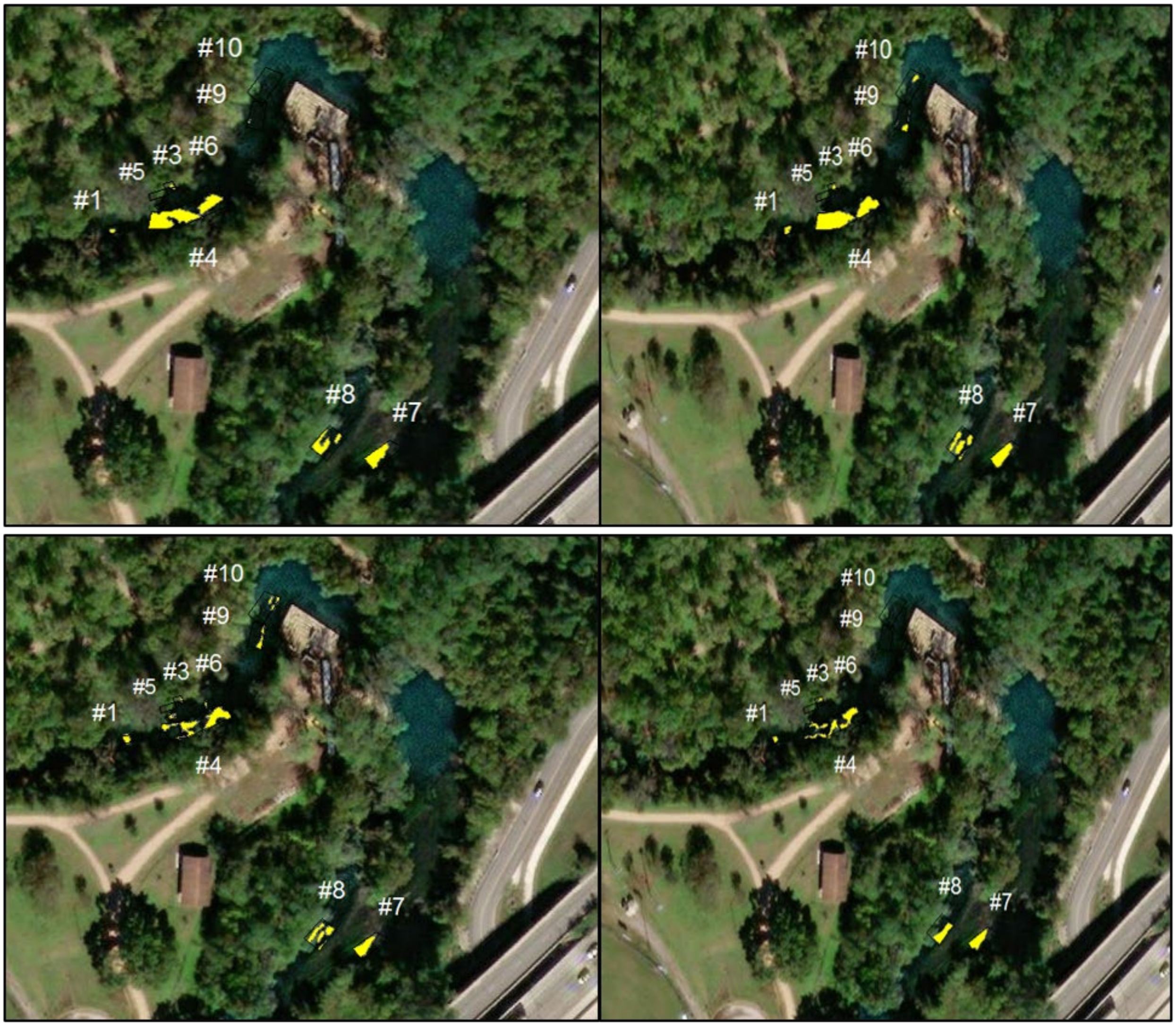

Figure D5. **Event I (top left); Event II (top right); spring (bottom left) and fall (bottom right) vulnerable Texas Wild-rice in the I-35 location. Yellow polygons indicate Texas Wild-rice stands. Black rectangles indicate the stand plots.**

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. No data ('N/D') indicates cover could not be calculated due to data collection error by the GPS unit.**

LOCATION	FALL 2020	LOW-FLOW EVENT I	LOW-FLOW EVENT II	SPRING 2021	FALL 2021
Sewell Park 1	114.71	87.40	110.26	108.85	58.08
Sewell Park 2	8.53	8.02	8.46	8.55	5.10
Sewell Park 3	3.00	7.02	3.35	2.67	1.87
Sewell Park 4/5	55.70	54.75	74.31	54.13	25.87
Sewell Park 6	3.32	2.41	7.60	2.06	point
Sewell Park 7	156.00	122.17	174.62	154.23	68.75
Sewell Park 8	9.04	19.30	Gone	6.08	14.55
Sum of Cover	**350.30**	**301.07**	**378.60**	**336.57**	**174.22**
Veramendi 1	16.14	27.24	61.71	31.04	6.32
Veramendi 2	26.93	33.07	91.27	32.26	35.00
Veramendi 3	56.64	N/D	221.68	95.57	55.04
Sum of Cover	**99.71**	**-**	**374.66**	**158.87**	**96.36**
I-35-1	3.70	1.64	4.65	5.35	2.51
I-35-2	0.50	Gone	Gone	2.49	Gone
I-35-3	1.21	1.35	1.75	1.03	1.17
I-35-4	61.39	72.33	84.09	48.52	39.57
I-35-5	Gone	Gone	Gone	Gone	Gone
I-35-6	Gone	Gone	Gone	1.48	Gone
I-35-7	22.67	23.59	27.11	20.50	22.00
I-35-8	23.83	20.43	23.76	21.43	19.75
I-35-9	Gone	0.51	5.67	7.18	Gone
I-35-10	1.28	Gone	3.08	5.89	Gone
Sum of Cover	**114.58**	**119.85**	**150.11**	**113.87**	**85.00**

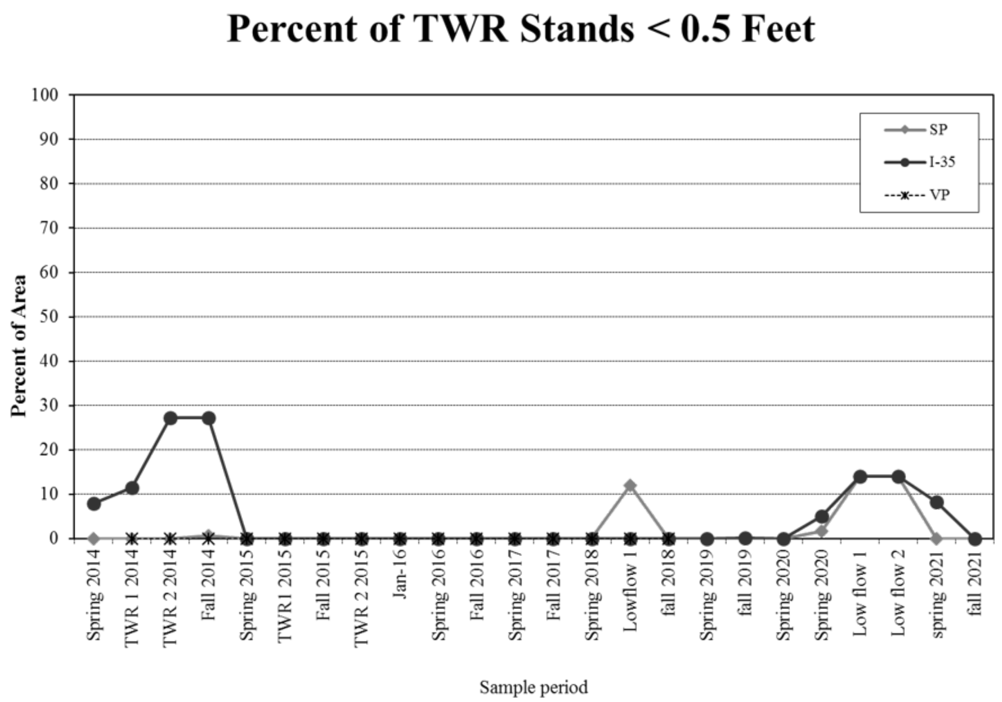

Figure D6. Percent of Texas Wild-rice stands at water depths less than 0.5 feet 2014–2021.

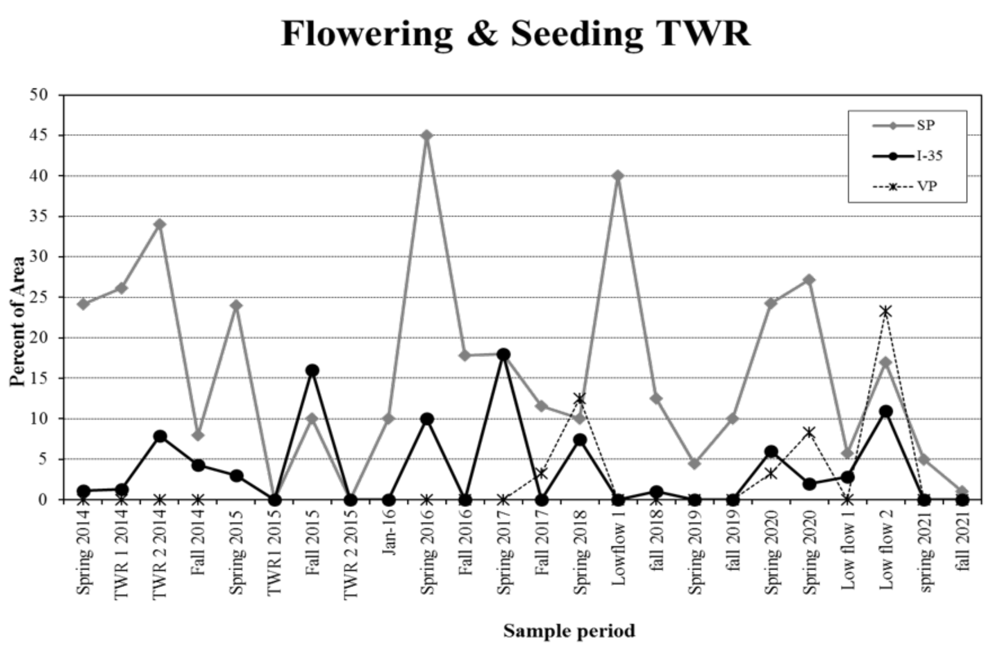

Figure D7. Percent of flowering and seeding Texas Wild-rice stands from 2014–2021.

APPENDIX E: TABLES AND FIGURES

TABLES

Texas Wild-rice Mapping

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

HCP LTBG RIVER SEGMENTS	APRIL 2021 (LOW-FLOW) COVERERAGE	AUGUST 2021 COVERAGE	COVERAGE CHANGE	PERCENT CHANGE
Spring Lake	145	115	-30	-21%
Spring Lake Dam to Rio Vista Park	15,814	12,579	-3,235	-20%
I-35 Study Reach	1,034	954	-80	-8%
Below I-35	242	317	+75	+31%

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 2021.

TAXA	SPRING LAKE DAM		CITY PARK		I-35	
	#	%	#	%	#	%
Cyprinidae						
Dionda nigrotaeniata	1	0.3	4	0.5	8	0.9
Notropis chalybaeus	0	0.0	0	0.0	1	0.1
Characidae						
*Astyanax mexicanus**	0	0.0	6	0.8	3	0.3
Ictaluridae						
Ameiurus natalis	0	0.0	1	0.1	2	0.2
Loricariidae						
*Hypostomus plecostomus**	1	0.3	0	0.0	1	0.1
Fundulidae						
Fundulus chrysotus	0	0.0	0	0.0	1	0.1
Poeciliidae						
Gambusia sp.	223	59.5	328	44.7	471	53.5
*Poecilia latipinna**	0	0.0	3	0.4	0	0.0
Centrarchidae						
*Ambloplites rupestris**	0	0.0	3	0.4	16	1.8
*Lepomis auritus**	0	0.0	1	0.1	0	0.0
Lepomis gulosus	1	0.3	0	0.0	0	0.0
Lepomis miniatus	35	9.3	18	2.5	40	4.5
Lepomis sp.	3	0.8	6	0.8	4	0.5
Micropterus salmoides	1	0.3	10	1.4	1	0.1
Percidae						
Etheostoma fonticola	107	28.5	354	48.2	334	37.9
Cichlidae						
*Herichthys cyanoguttatus**	3	0.8	0	0.0	0	0.0
Total	**375**		**734**		**881**	

Asterisks (*) denotes introduced species

Table E3. Overall number (#) and percent relative abundance (%) of fishes collected during fish community sampling in 2021.

TAXA	SPRING LAKE		UPPER RIVER		MIDDLE RIVER		LOWER RIVER	
	#	%	#	%	#	%	#	%
Lepisosteidae								
Lepisosteus oculatus	3	0.1	0	0.0	0	0.0	0	0.0
Anguillidae								
Anguilla rostrata	0	0.0	1	0.0	0	0.0	0	0.0
Cyprinidae								
Campostoma anomalum	0	0.0	0	0.0	0	0.0	4	0.6
Cyprinella venusta	0	0.0	0	0.0	0	0.0	92	13.2
*Cyprinus carpio**	0	0.0	0	0.0	0	0.0	1	0.1
Dionda nigrotaeniata	1552	44.3	292	13.3	69	9.8	0	0.0
Notemigonus crysoleucas	0	0.0	0	0.0	0	0.0	2	0.3
Notropis amabilis	0	0.0	19	0.9	17	2.4	86	12.3
Notropis chalybaeus	0	0.0	0	0.0	56	7.9	0	0.0
Notropis volucellus	0	0.0	0	0.0	0	0.0	1	0.1
Catostomidae								
Moxostoma congestum	0	0.0	0	0.0	2	0.3	0	0.0
Characidae								
*Astyanax mexicanus**	915	26.1	62	2.8	57	8.1	45	6.5
Ictaluridae								
Ameiurus natalis	0	0.0	1	0.0	0	0.0	0	0.0
Loricariidae								
Loricariidae sp.	0	0.0	15	0.7	4	0.6	152	21.8
Fundulidae								
Fundulus chrysotus	0	0.0	2	0.1	0	0.0	0	0.0
Poeciliidae								
Gambusia affinis	0	0.0	17	0.8	4	0.6	10	1.4
Gambusia geiseri	0	0.0	1268	57.8	91	12.9	29	4.2
Gambusia sp.	129	3.7	4	0.2	136	19.3	0	0.0
*Poecilia formosa**	0	0.0	3	0.1	0	0.0	0	0.0
*Poecilia latipinna**	0	0.0	15	0.7	0	0.0	1	0.1
Centrarchidae								
*Ambloplites rupestris**	1	0.0	4	0.2	0	0.0	5	0.7
Lepomis auritus	19	0.5	90	4.1	67	9.5	35	5.0
Lepomis cyanellus	0	0.0	2	0.1	0	0.0	1	0.1
Lepomis gulosus	0	0.0	2	0.1	0	0.0	1	0.1
Lepomis macrochirus	90	2.6	3	0.1	10	1.4	29	4.2
Lepomis megalotis	1	0.0	8	0.4	0	0.0	16	2.3
Lepomis microlophus	37	1.1	2	0.1	0	0.0	0	0.0
Lepomis miniatus	4	0.1	31	1.4	13	1.8	0	0.0
Lepomis sp.	485	13.8	221	10.1	88	12.5	82	11.8

Micropterus punctulatus	0	0.0	0	0.0	0	0.0	1	0.1
Micropterus salmoides	79	2.3	57	2.6	26	3.7	24	3.4
Micropterus treculii	0	0.0	0	0.0	0	0.0	3	0.4
Percidae								
Etheostoma fonticola	180	5.1	54	2.5	41	5.8	25	3.6
Etheostoma spectabile	0	0.0	0	0.0	0	0.0	18	2.6
Percina apristis	0	0.0	10	0.5	8	1.1	8	1.1
Percina carbonaria	0	0.0	0	0.0	0	0.0	26	3.7
Cichlidae								
*Herichthys cyanoguttatus**	7	0.2	10	0.5	17	2.4	0	0.0
Total	**3502**		**2193**		**706**		**697**	

Asterisks (*) denotes introduced species

FIGURES

Aquatic Vegetation

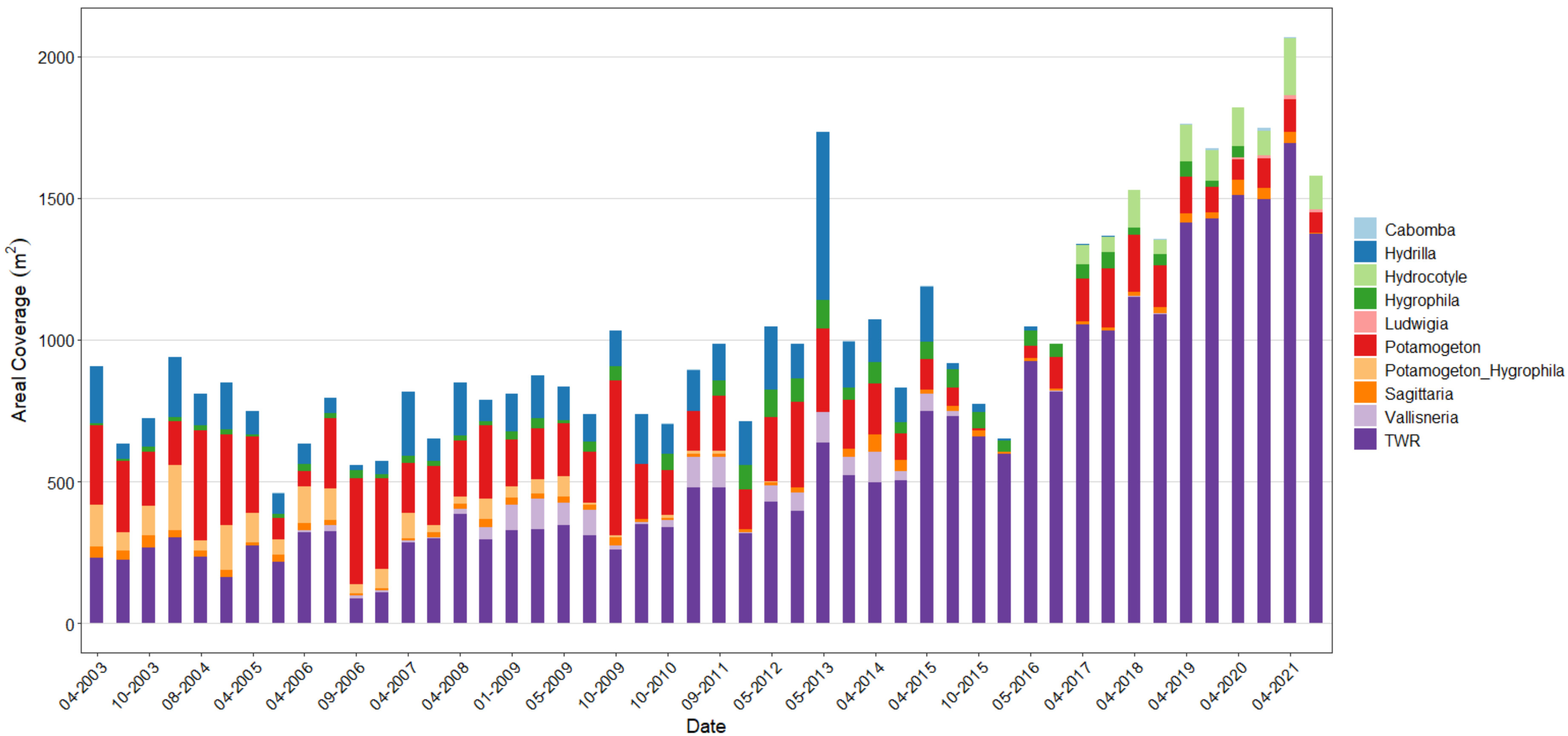

Figure E1. **Aquatic vegetation composition (m^2) among select taxa from 2003–2021 at Spring Lake Dam. Rare vegetation types were excluded; therefore, the sum of areal coverage per event does not represent the total vegetation coverage. Cleaning of historical datasets is currently being conducted and rare taxa will be included in the future.**

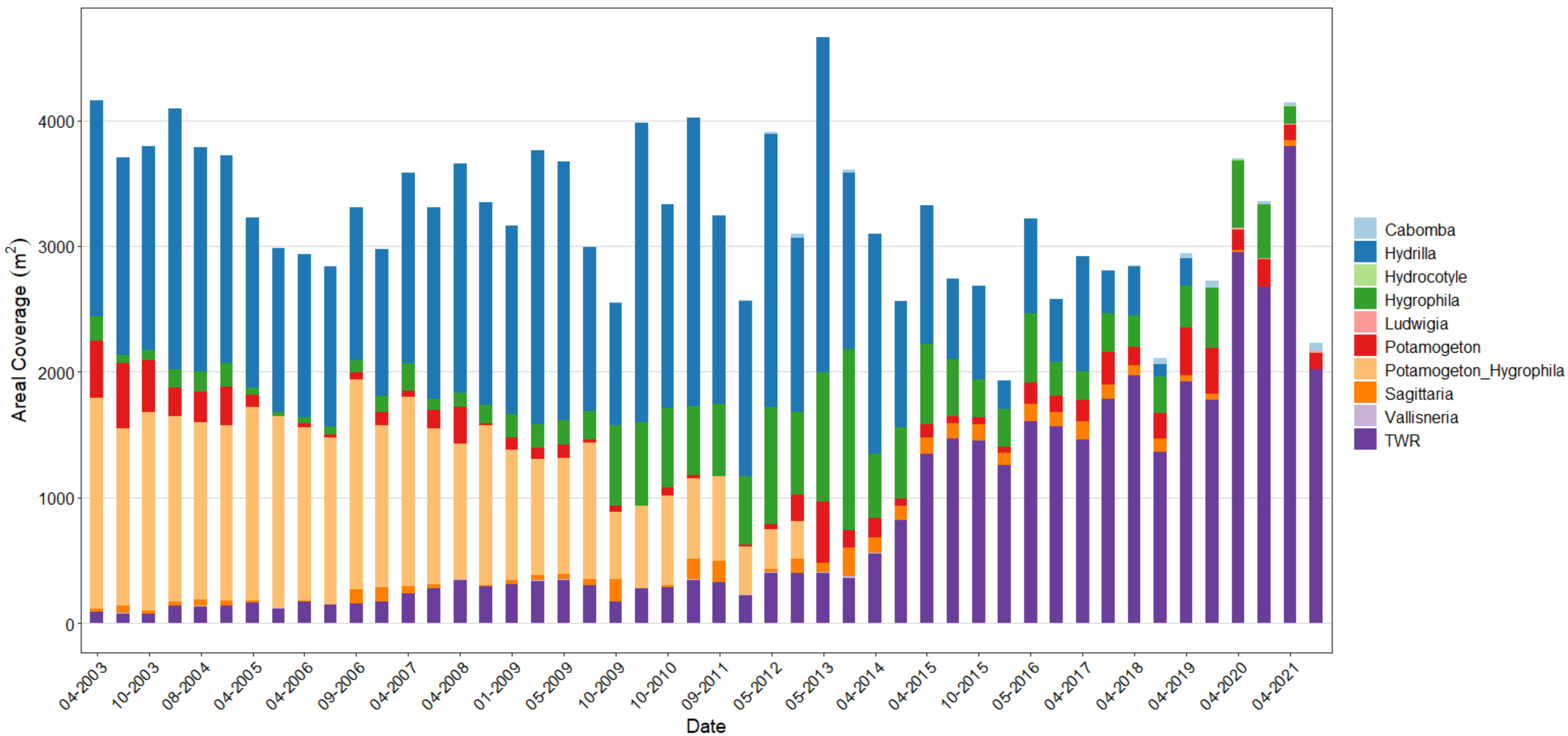

Figure E2. **Aquatic vegetation composition (m²) among select taxa from 2003–2021 at City Park. Rare vegetation types were excluded; therefore, the sum of areal coverage per event does not represent the total vegetation coverage. Cleaning of historical datasets is currently being conducted and rare taxa will be included in the future.**

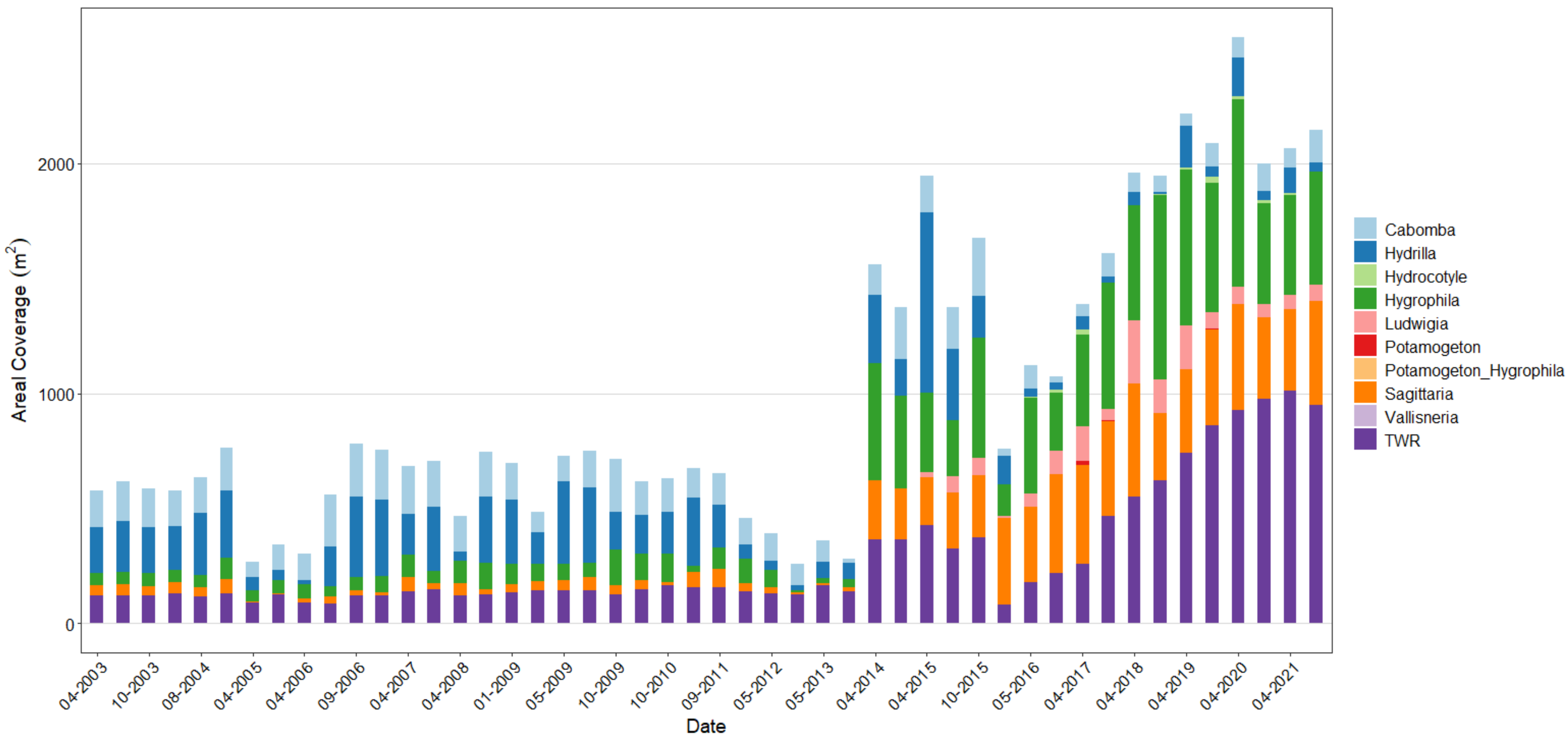

Figure E3. **Aquatic vegetation composition (m^2) among select taxa from 2003–2021 at I-35. Rare vegetation types were excluded; therefore, the sum of areal coverage per event does not represent the total vegetation coverage. Cleaning of historical datasets is currently being conducted and rare taxa will be included in the future.**

Fountain Darter

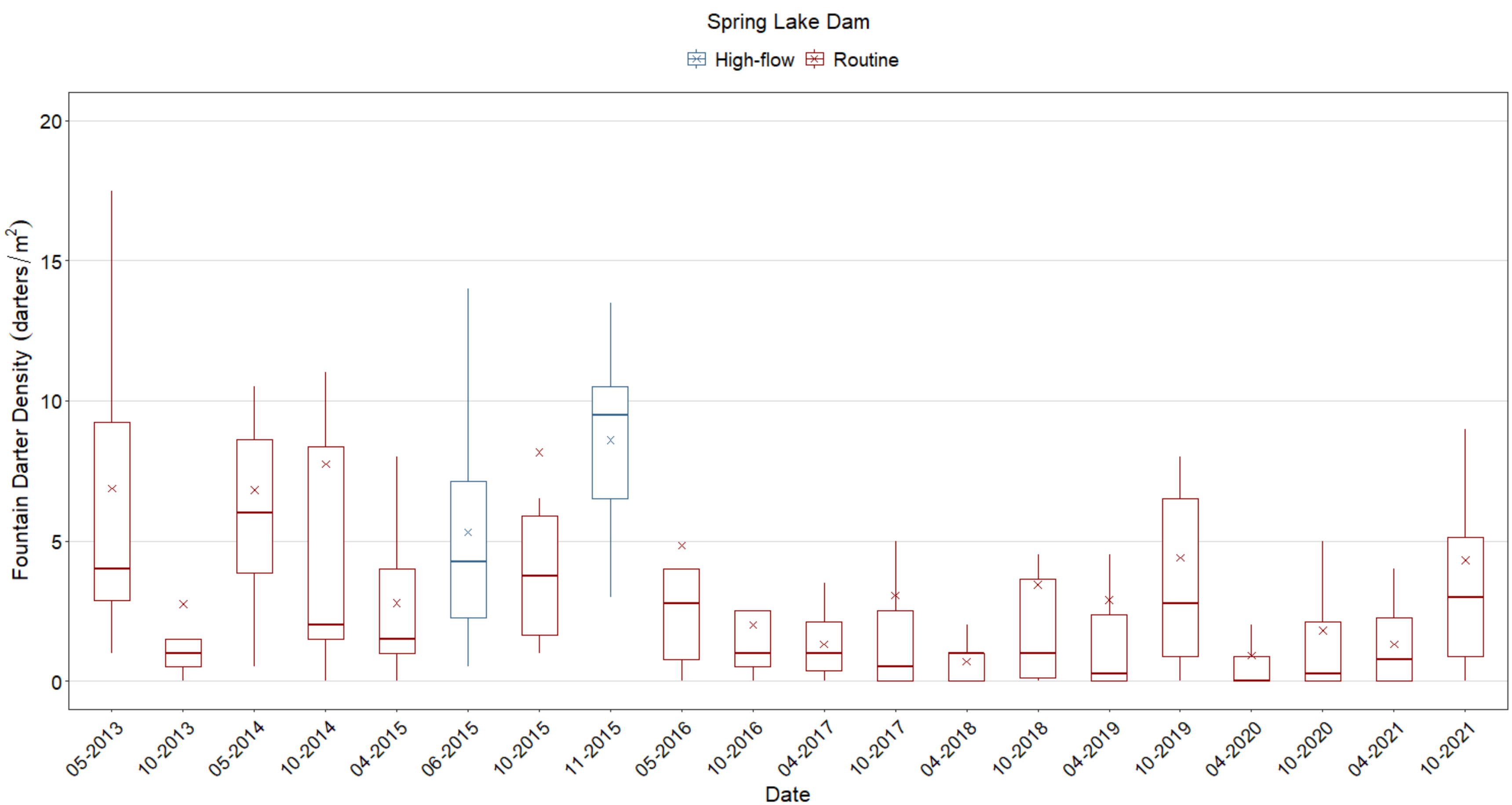

Figure E4. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) from 2013–2021 during drop-net sampling at Spring Lake Dam. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

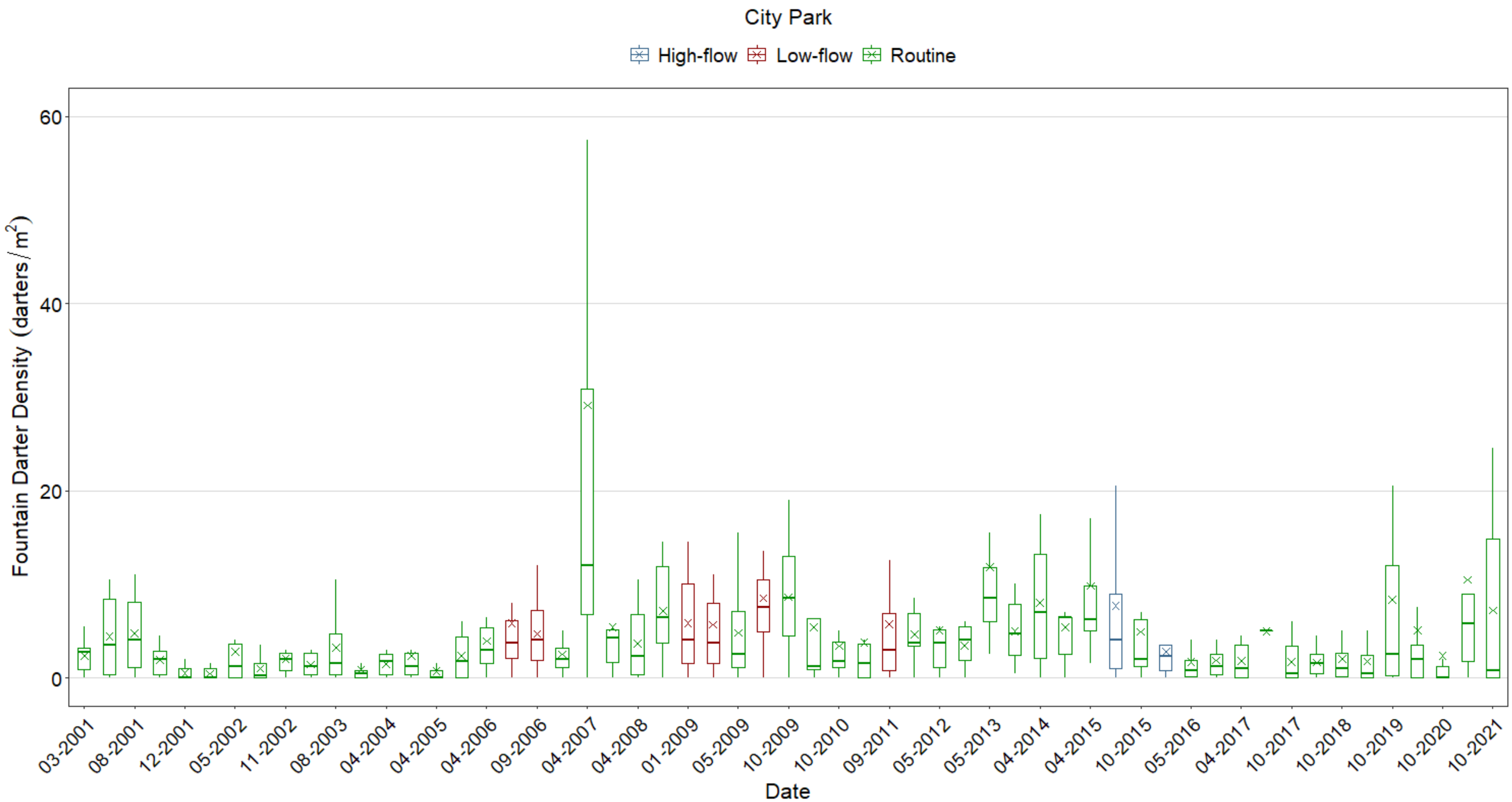

Figure E5. **Boxplots displaying temporal trends in Fountain Darter density (darters/m²) from 2001–2021 during drop-net sampling at City Park. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

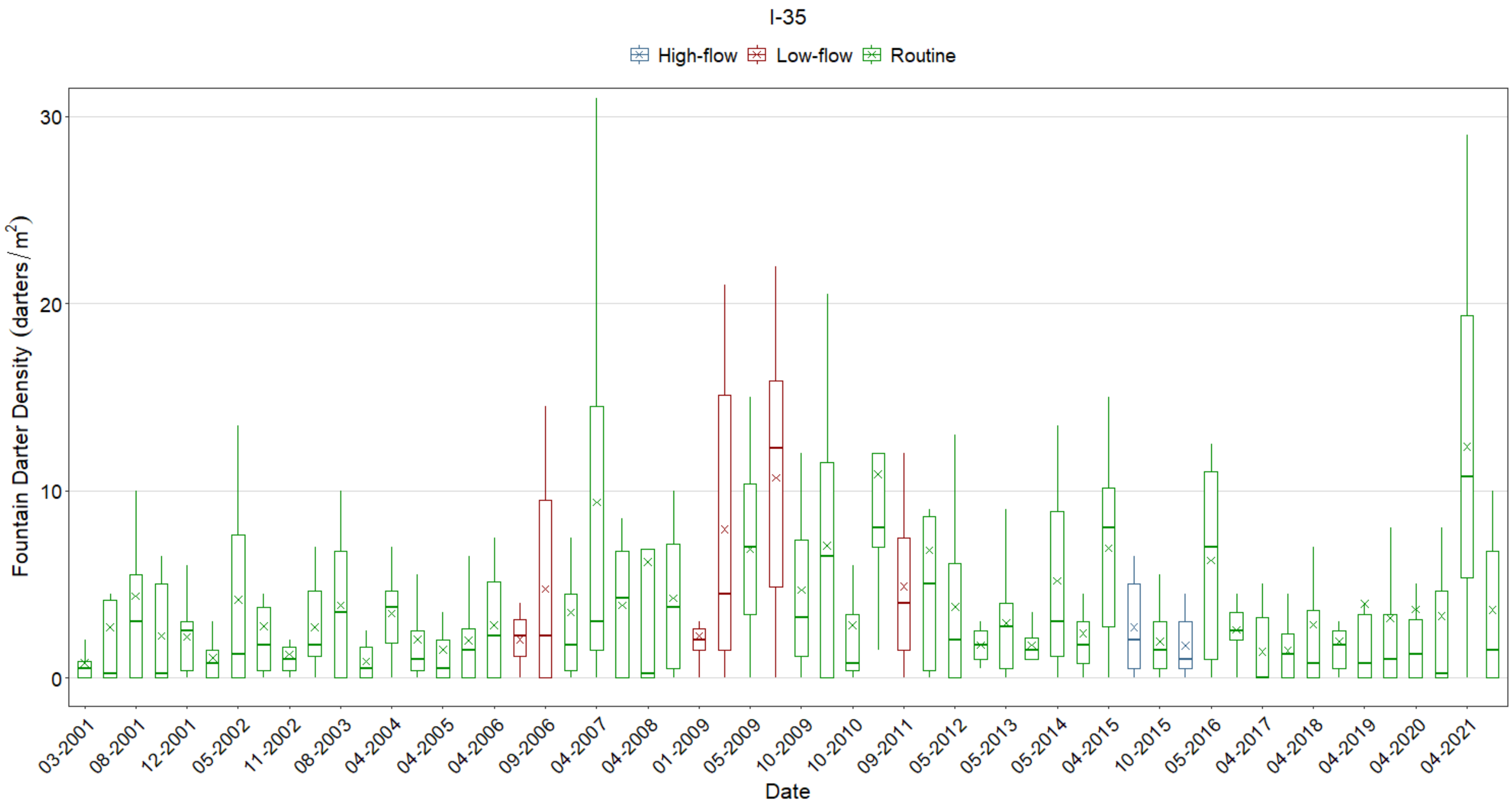

Figure E6. **Boxplots displaying temporal trends in Fountain Darter density (darters/m²) from 2001–2021 during drop-net sampling at I-35. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

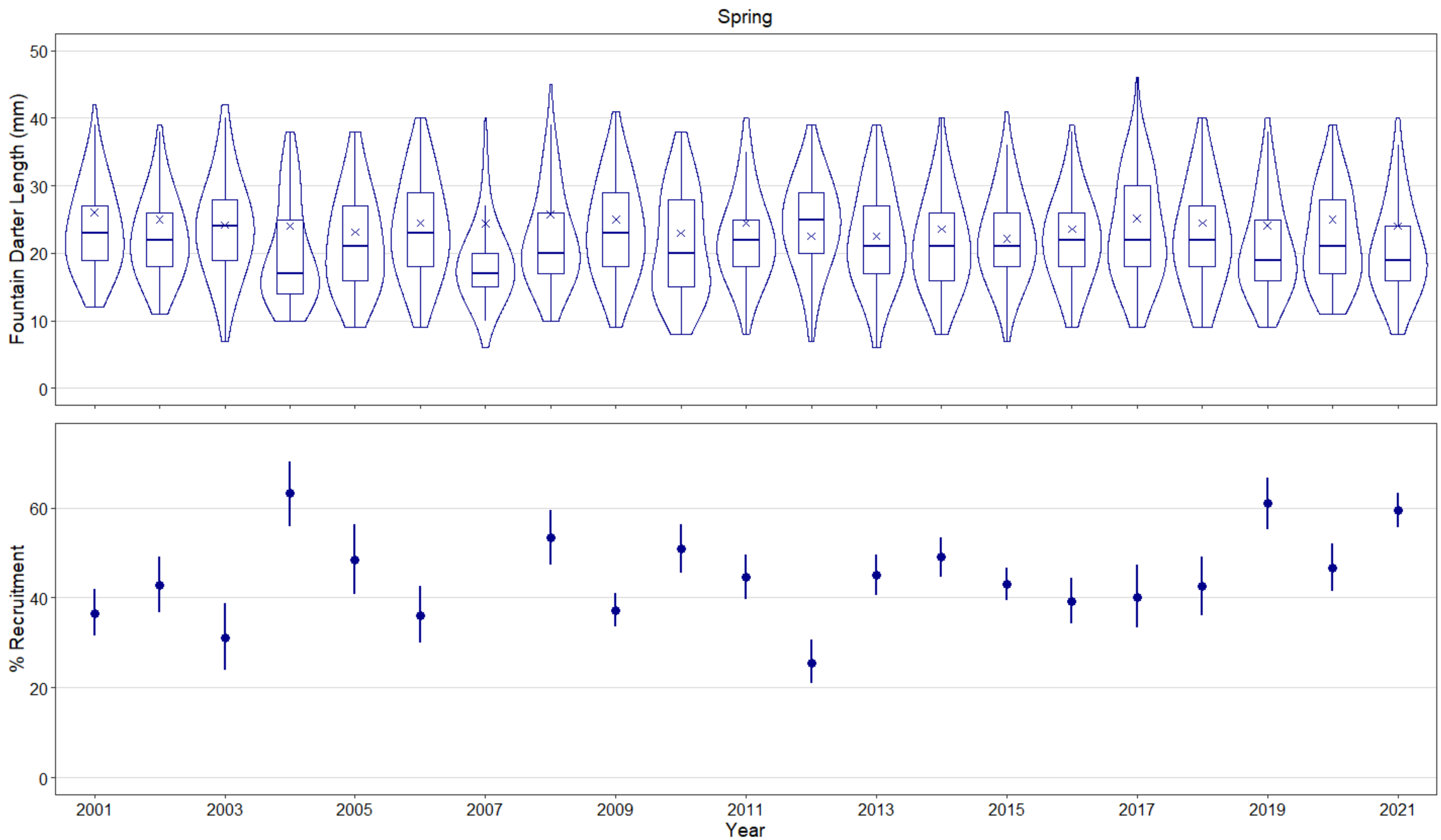

Figure E7. **Fountain Darter size structure (mm; top row) and percent recruitment (bottom row) in the San Marcos Springs and River during spring sampling (i.e., drop-net and timed dip-net data) events from 2001–2021. Size structure is displayed with boxplots (median, quartiles, range) and violin plots (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.**

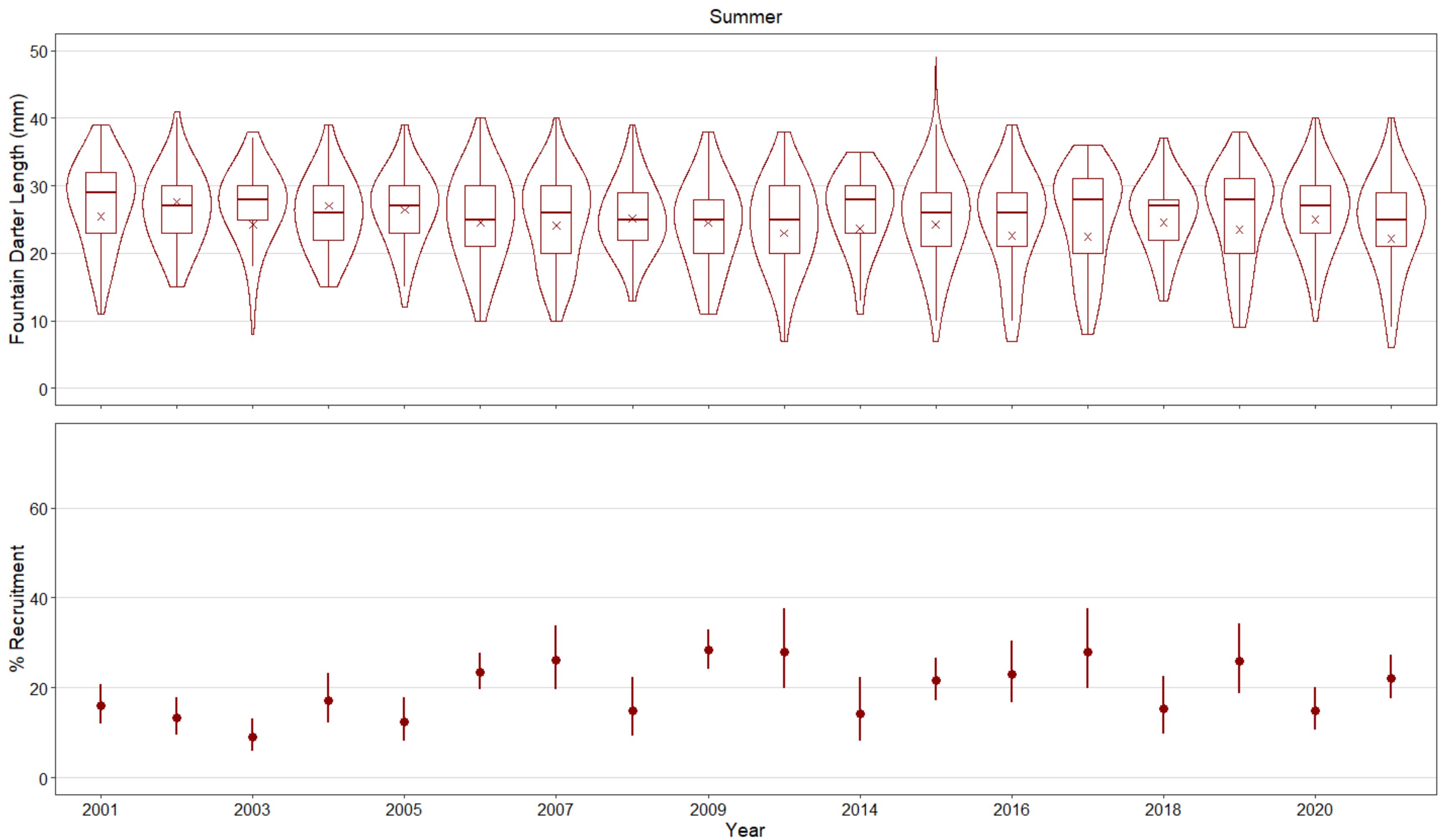

Figure E8. **Fountain Darter size structure (mm; top row) and percent recruitment (bottom row) in the San Marcos Springs and River during summer sampling (i.e., drop-net and timed dip-net data) events from 2001–2021. Size structure is displayed with boxplots (median, quartiles, range) and violin plots (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 2001–2021. 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.**

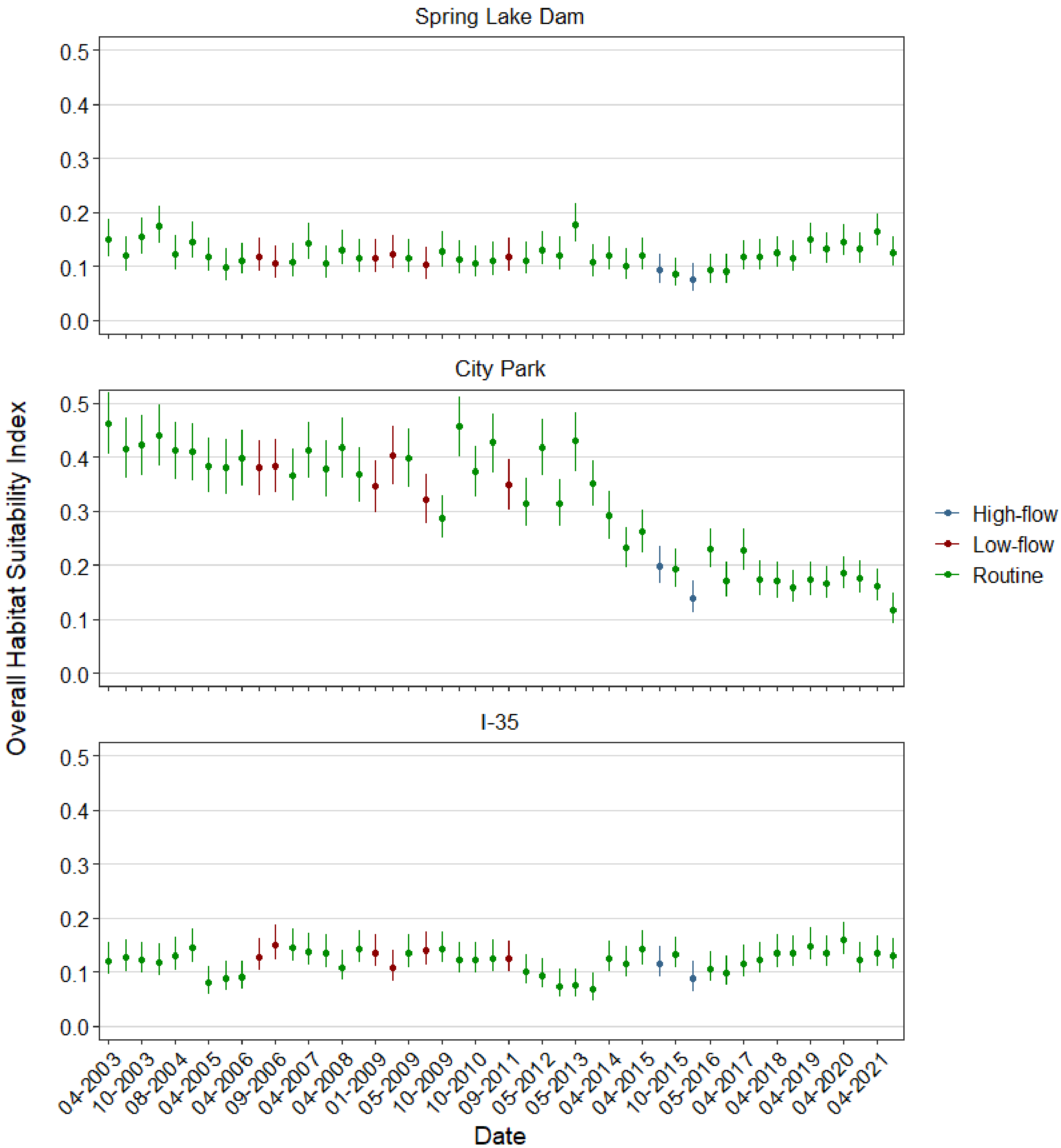

Figure E10. Overall Habitat Suitability Index (OHSI) (±95% CI) from 2003–2021 among study reaches in the San Marcos River.

Fish Community

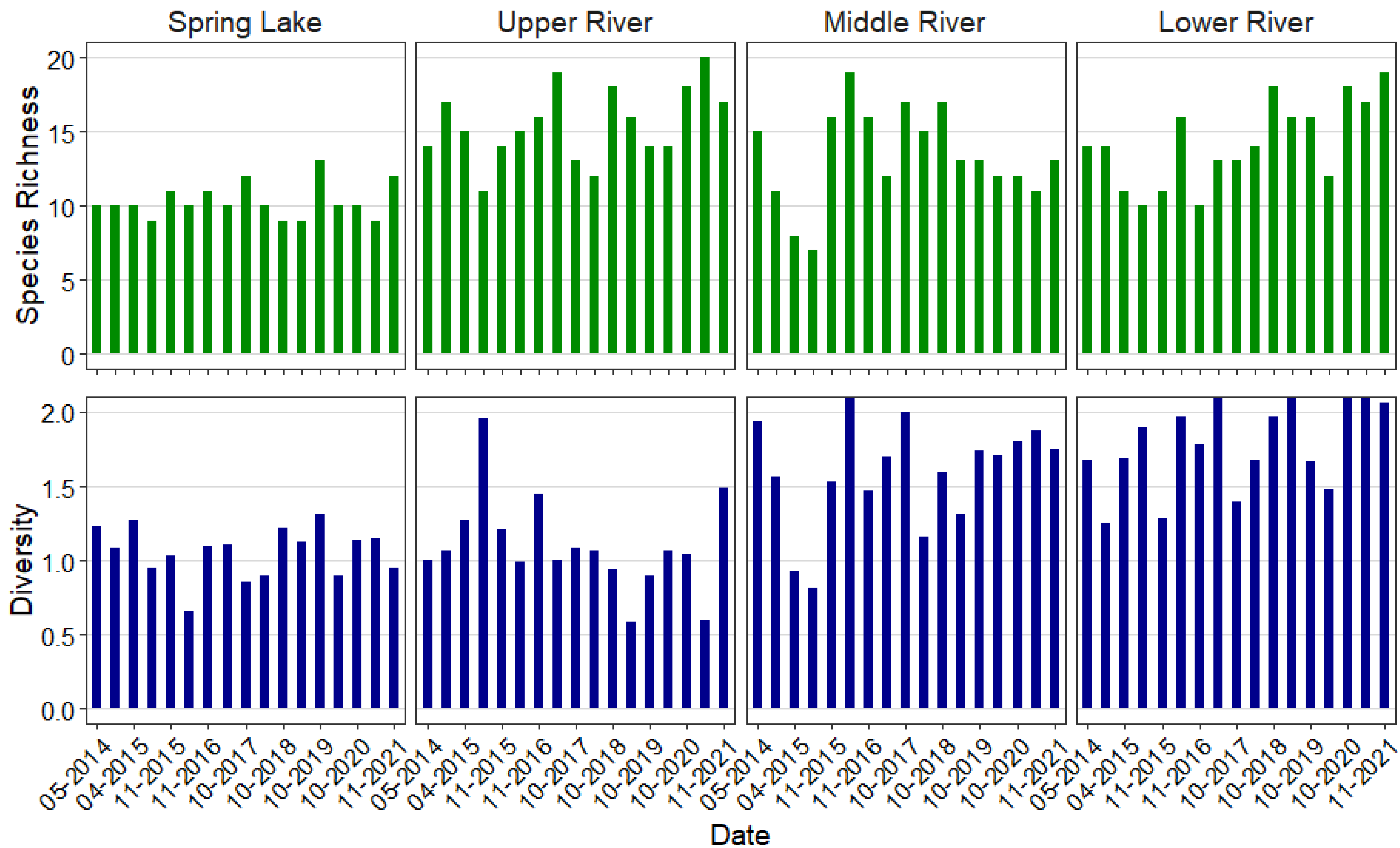

Figure E11. **Bar graphs displaying temporal trends in species richness and diversity among study reaches from 2014–2021 during fish community sampling in the San Marcos Springs/River.**

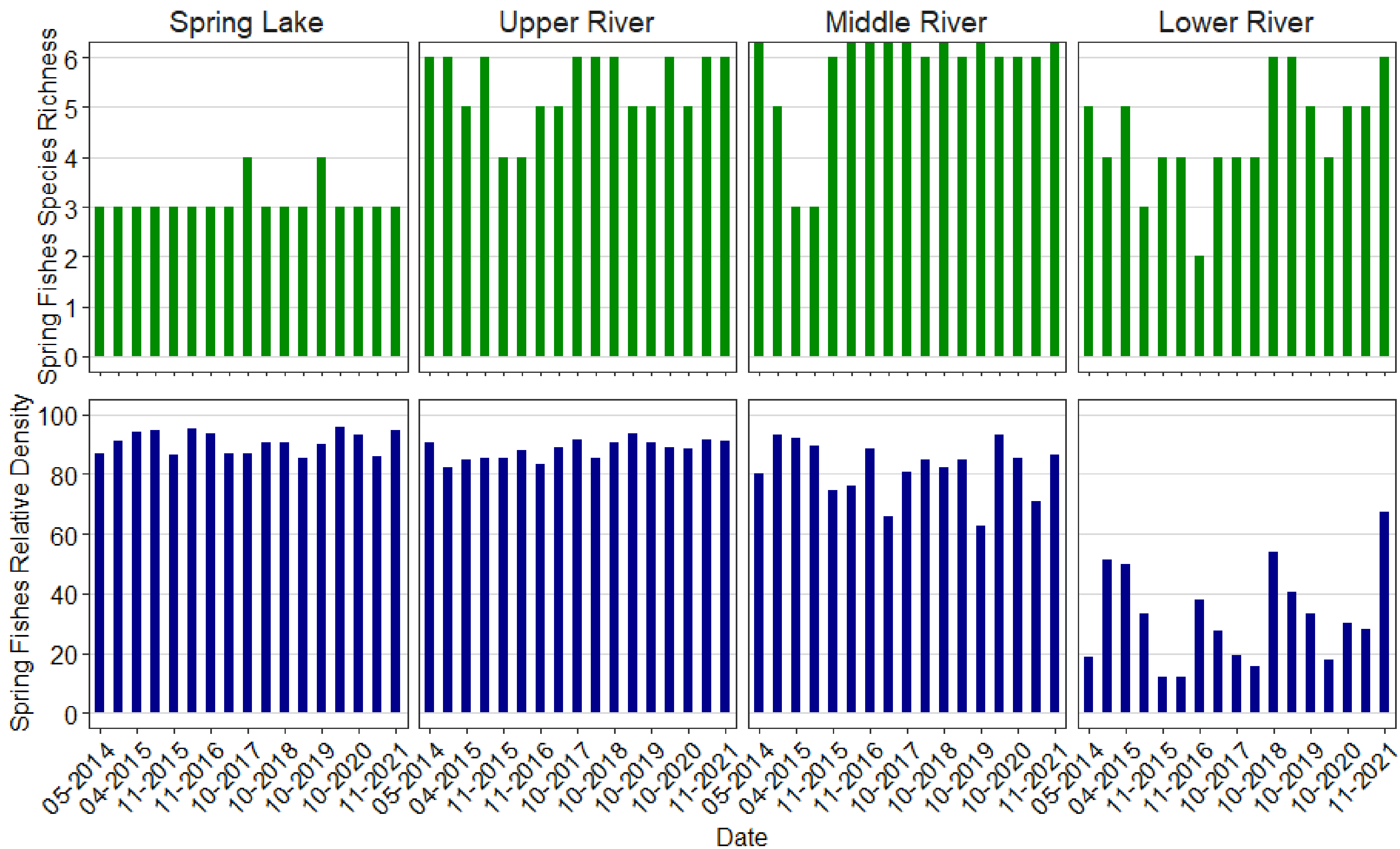

Figure E12. **Bar graphs displaying temporal trends in spring fishes species richness and percent relative density among study reaches from 2014–2021 during fish community sampling in the San Marcos Springs/River.**

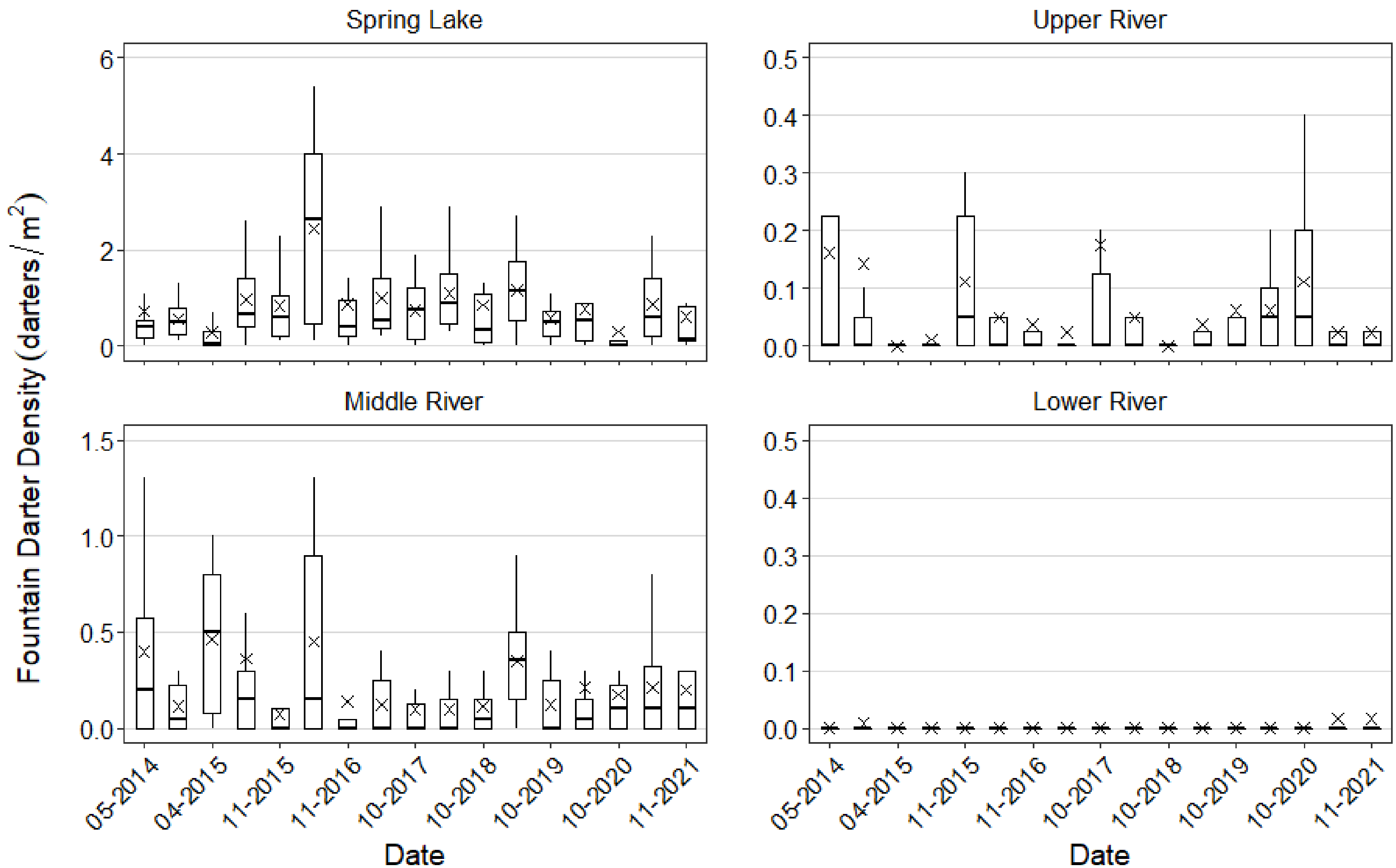

Figure E13. **Boxplots displaying temporal trends in Fountain Darter density (darters/m^2) among study reaches from 2014–2021 during fish community microhabitat sampling in the San Marcos Springs/River. The thick horizontal line in each box is the median, x represents the mean, and the upper/lower bounds of each box represents the interquartile range. Whiskers represent minimum/maximum values up to 1.5 times the interquartile range.**

San Marcos Salamander

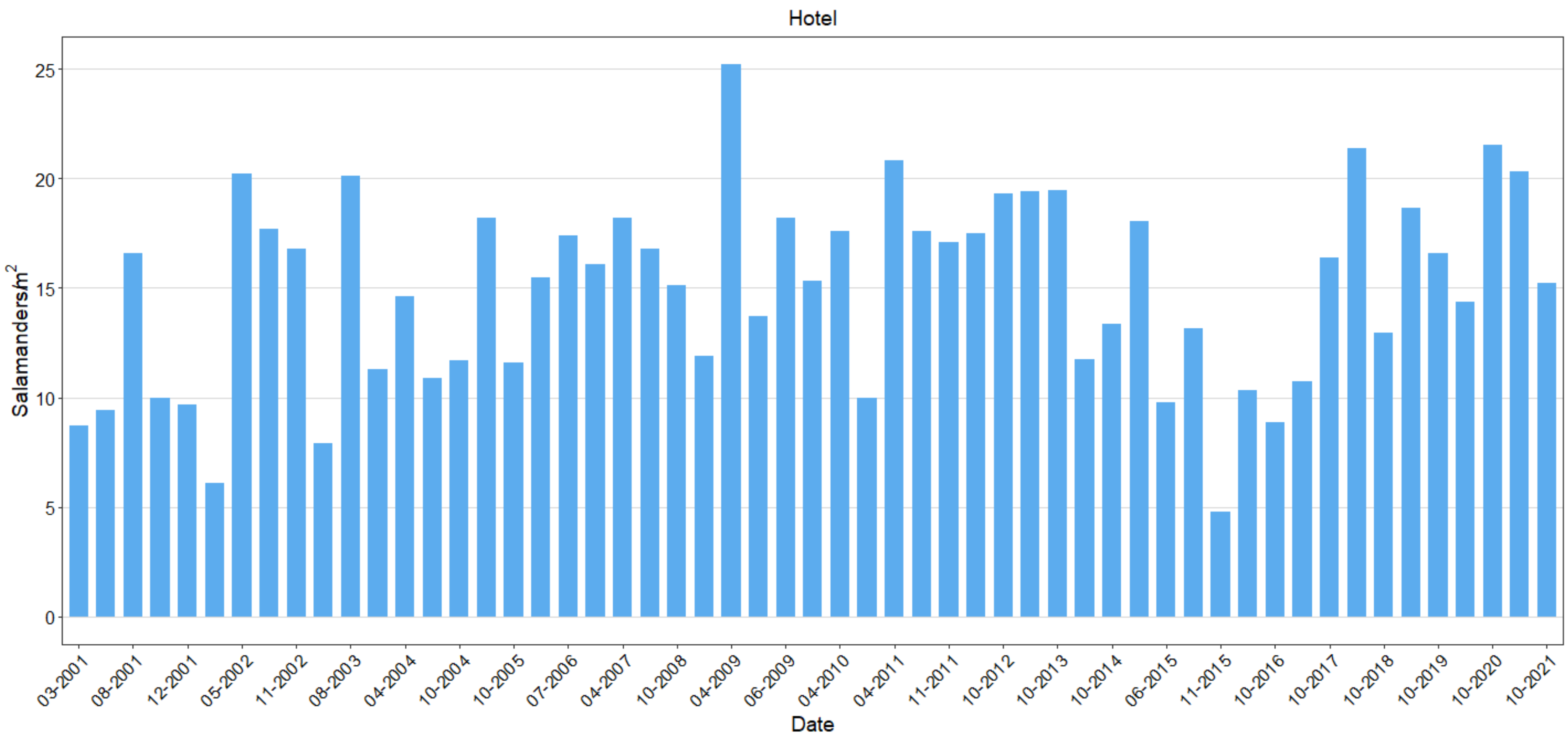

Figure E14. **San Marcos Salamander density from 2001–2021 at the Hotel Site.**

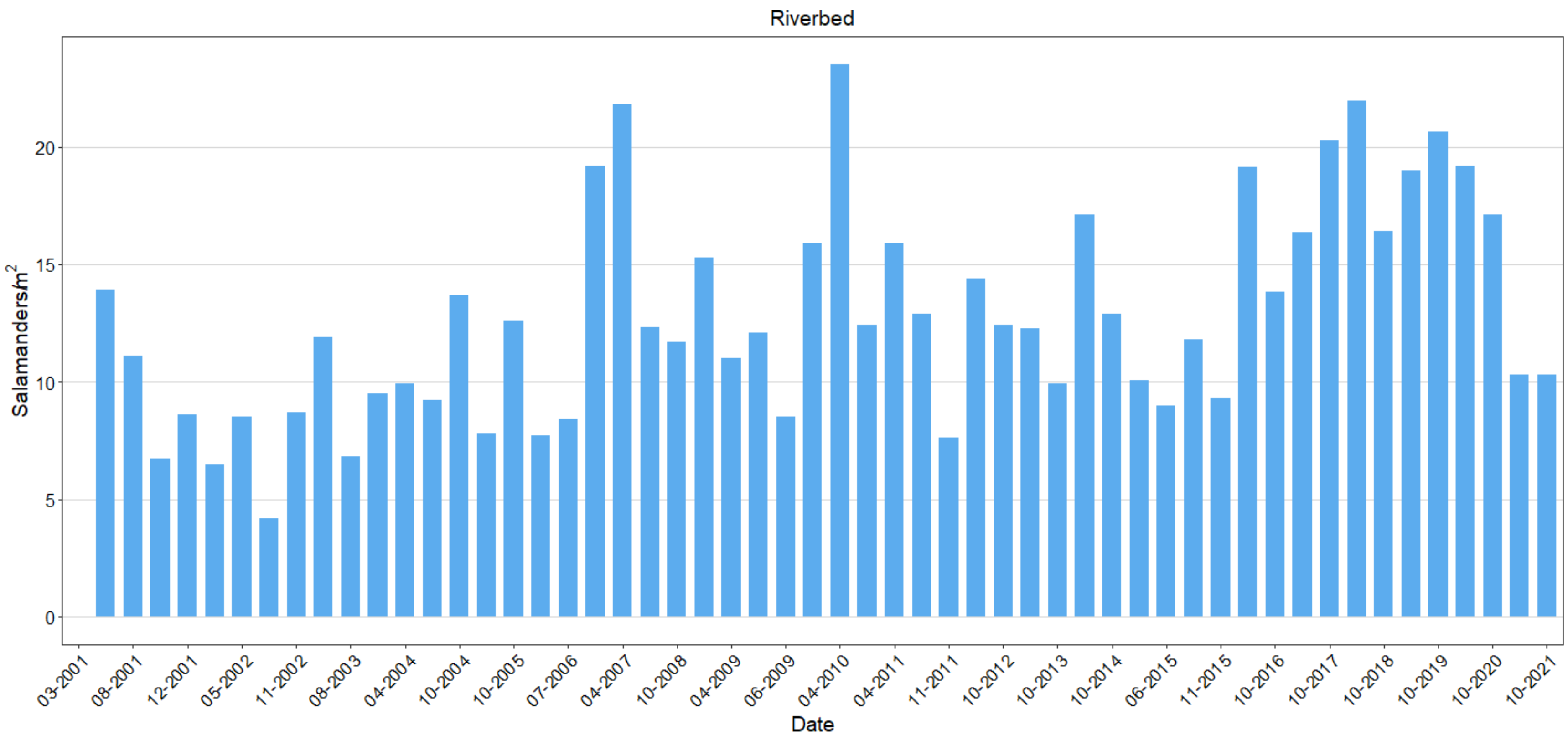

Figure E15. San Marcos Salamander density from 2001–2021 at the Riverbed Site.

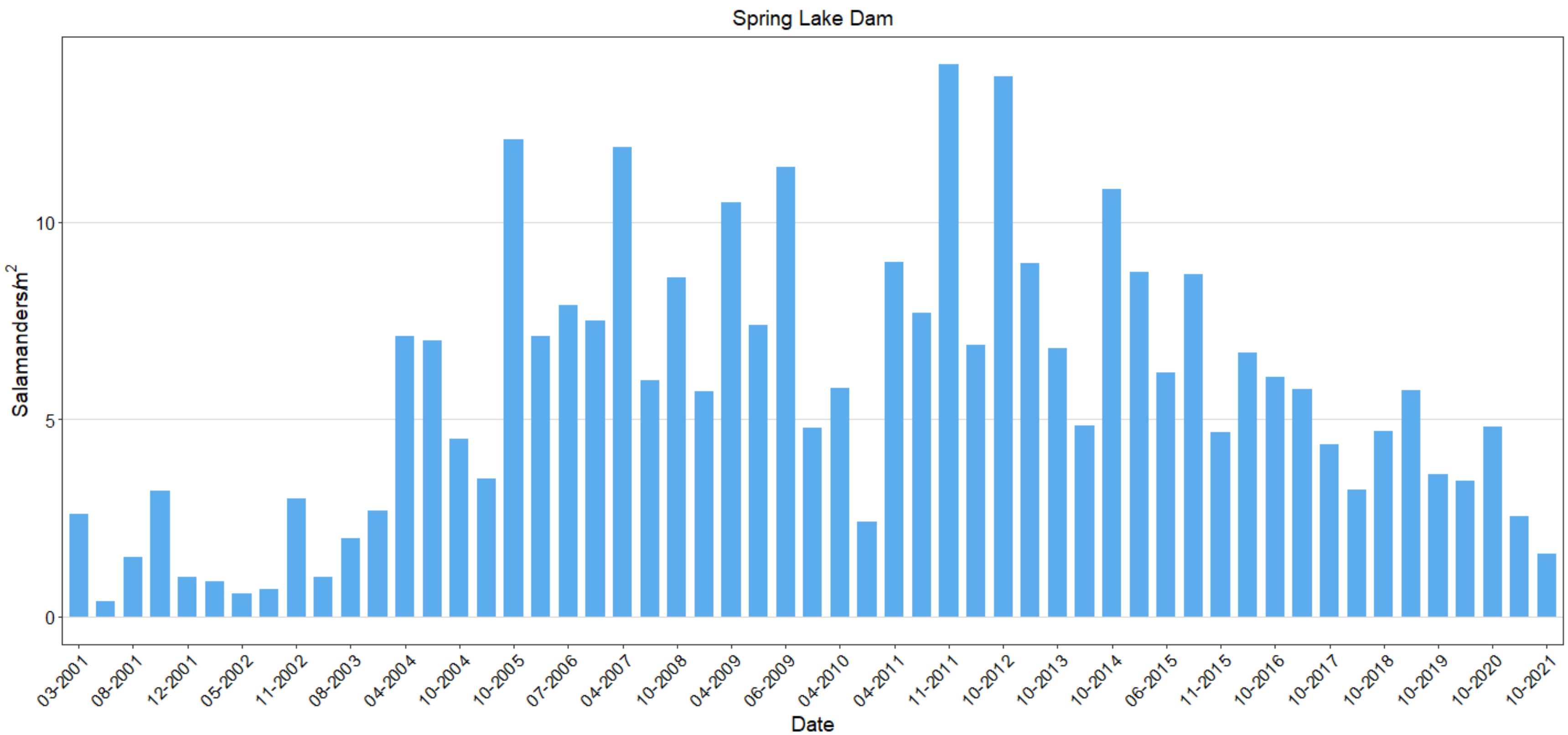

Figure E16. San Marcos Salamander density from 2001–2021 at the Spring Lake Dam Site.

APPENDIX F: MACROINVERTEBRATE RAW DATA

Site	Location	Date	Class	Order	Family	FinalID	Counts
Headwaters	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Leptohyphidae	Leptohyphes	19
Headwaters	San Marcos	18-Oct-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	3
Headwaters	San Marcos	18-Oct-21	Malacostraca	Amphipoda	Talitridae	Hyalella	16
Headwaters	San Marcos	18-Oct-21	Insecta	Diptera	Simuliidae	Simulium	2
Headwaters	San Marcos	18-Oct-21	Insecta	Hemiptera	Naucoridae	Ambrysus	15
Headwaters	San Marcos	18-Oct-21	Gastropoda	Basommatophora	Physidae	Physa	4
Headwaters	San Marcos	18-Oct-21	Insecta	Coleoptera	Psephinidae	Psephenus	2
Headwaters	San Marcos	18-Oct-21	Clitellata			Oligochaeta	10
Headwaters	San Marcos	18-Oct-21	Turbellaria	Tricladida		Planariidae	20
Headwaters	San Marcos	18-Oct-21	Insecta	Odonata	Libellulidae	Brechmorhoga	4
Headwaters	San Marcos	18-Oct-21	Insecta	Lepidoptera	Crambidae	Crambidae	1
Headwaters	San Marcos	18-Oct-21	Insecta	Trichoptera	Heliocopyschidae	Helicopsyche	2
Headwaters	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	35
Headwaters	San Marcos	18-Oct-21	Insecta	Trichoptera	Philopotamidae	Chimarra	3
Headwaters	San Marcos	18-Oct-21	Insecta	Trichoptera	Hydropsychidae	Smicridea	4
Headwaters	San Marcos	18-Oct-21	Insecta	Coleoptera	Elmidae	Macrelmis	2
Headwaters	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Baetidae	Fallceon	10
Headwaters	San Marcos	18-Oct-21	Insecta	Diptera	Chironomidae	Chironomidae	2
Headwaters	San Marcos	19-Apr-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	7
Headwaters	San Marcos	19-Apr-21	Insecta	Coleoptera	Psephinidae	Psephenus	2
Headwaters	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Baetidae	Baetodes	1
Headwaters	San Marcos	19-Apr-21	Insecta	Coleoptera	Elmidae	Neoelmis	1
Headwaters	San Marcos	19-Apr-21	Insecta	Hemiptera	Naucoridae	Ambrysus	25
Headwaters	San Marcos	19-Apr-21	Insecta	Odonata	Libellulidae	Brechmorhoga	2
Headwaters	San Marcos	19-Apr-21	Clitellata			Oligochaeta	3
Headwaters	San Marcos	19-Apr-21	Turbellaria	Tricladida		Planariidae	9
Headwaters	San Marcos	19-Apr-21	Insecta	Odonata	Coenagrionidae	Argia	3
Headwaters	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Leptohyphidae	Leptohyphes	4
Headwaters	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4
Headwaters	San Marcos	19-Apr-21	Insecta	Trichoptera	Philopotamidae	Chimarra	27

Headwaters	San Marcos	19-Apr-21	Insecta	Coleoptera	Elmidae	Macrelmis	6
Headwaters	San Marcos	19-Apr-21	Insecta	Coleoptera	Elmidae	Microcylloepus pusillus	2
Headwaters	San Marcos	19-Apr-21	Insecta	Diptera	Chironomidae	Chironomidae	6
Headwaters	San Marcos	19-Apr-21	Insecta	Diptera	Simuliidae	Simulium	8
Headwaters	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Baetidae	Fallceon	4
Headwaters	San Marcos	19-Apr-21	Gastropoda	Neotaenioglossa	Hydrobiidae	Hydrobiidae	2
Headwaters	San Marcos	19-Apr-21	Insecta	Trichoptera	Hydropsychidae	Smicridea	4
Headwaters	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Leptophlebiidae	Thraulodes	1
Headwaters	San Marcos	19-Apr-21	Insecta	Megaloptera	Corydalidae	Corydalus cornutus	1
Headwaters	San Marcos	19-Apr-21		Decopoda	Cambaridae	Cambaridae	1
Headwaters	San Marcos	19-Apr-21	Malacostraca	Amphipoda	Talitridae	Hyalella	33
Headwaters	San Marcos	19-Apr-21	Insecta	Trichoptera	Heliocopyschidae	Helicopsyche	5
Spring Lake	San Marcos	18-Oct-21	Clitellata			Hirudinea	1
Spring Lake	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	23
Spring Lake	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Baetidae	Callibaetis	5
Spring Lake	San Marcos	19-Apr-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	2
Spring Lake	San Marcos	19-Apr-21	Clitellata			Hirudinea	1
Spring Lake	San Marcos	19-Apr-21	Clitellata			Oligochaeta	1
Spring Lake	San Marcos	19-Apr-21	Insecta	Diptera	Chironomidae	Chironomidae	8
Spring Lake	San Marcos	19-Apr-21	Malacostraca	Amphipoda	Talitridae	Hyalella	118
Spring Lake	San Marcos	19-Apr-21	Insecta	Diptera	Ceratopogonidae	Bezzia complex	1
Spring Lake	San Marcos	19-Apr-21		Decopoda	Cambaridae	Cambaridae	1
Spring Lake	San Marcos	18-Oct-21	Insecta	Hemiptera	Naucoridae	Ambrysus	1
Spring Lake	San Marcos	18-Oct-21	Gastropoda	Basommatophora	Physidae	Physa	1
Spring Lake	San Marcos	18-Oct-21	Insecta	Trichoptera	Leptoceridae	Nectopsyche	1
Spring Lake	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Baetidae	Callibaetis	4
Spring Lake	San Marcos	18-Oct-21	Insecta	Diptera	Chironomidae	Chironomidae	11
Spring Lake	San Marcos	18-Oct-21	Insecta	Odonata	Coenagrionidae	Enallagma	3
Spring Lake	San Marcos	18-Oct-21	Insecta	Odonata	Coenagrionidae	Argia	2
Spring Lake	San Marcos	18-Oct-21	Clitellata			Oligochaeta	2

Spring Lake	San Marcos	18-Oct-21		Decopoda	Cambaridae	Cambaridae	3
Spring Lake	San Marcos	18-Oct-21	Malacostraca	Amphipoda	Talitridae	Hyalella	105
Spring Lake	San Marcos	18-Oct-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	1
Spring Lake	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	13
I-35	San Marcos	19-Apr-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	7
I-35	San Marcos	19-Apr-21	Insecta	Trichoptera	Leptoceridae	Nectopsyche	20
I-35	San Marcos	18-Oct-21	Clitellata			Hirudinea	1
I-35	San Marcos	18-Oct-21	Insecta	Odonata	Coenagrionidae	Argia	2
I-35	San Marcos	18-Oct-21	Insecta	Trichoptera	Heliocopyschidae	Helicopsyche	5
I-35	San Marcos	18-Oct-21	Clitellata			Oligochaeta	1
I-35	San Marcos	18-Oct-21	Insecta	Trichoptera	Leptoceridae	Oecetis	1
I-35	San Marcos	19-Apr-21	Gastropoda	Neotaenioglossa	Thiaridae	Tarebia	3
I-35	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	49
I-35	San Marcos	19-Apr-21	Malacostraca	Amphipoda	Talitridae	Hyalella	15
I-35	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Leptophlebiidae	Thraulodes	15
I-35	San Marcos	19-Apr-21	Insecta	Diptera	Simuliidae	Simulium	4
I-35	San Marcos	19-Apr-21	Insecta	Diptera	Chironomidae	Chironomidae	2
I-35	San Marcos	19-Apr-21	Clitellata			Hirudinea	2
I-35	San Marcos	19-Apr-21	Turbellaria	Tricladida		Planariidae	6
I-35	San Marcos	18-Oct-21	Insecta	Diptera	Chironomidae	Chironomidae	8
I-35	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Leptophlebiidae	Thraulodes	16
I-35	San Marcos	18-Oct-21	Gastropoda	Neotaenioglossa	Thiaridae	Tarebia	6
I-35	San Marcos	18-Oct-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	4
I-35	San Marcos	18-Oct-21	Malacostraca	Amphipoda	Talitridae	Hyalella	6
I-35	San Marcos	18-Oct-21	Turbellaria	Tricladida		Planariidae	3
I-35	San Marcos	18-Oct-21	Insecta	Hemiptera	Naucoridae	Limnocoris	6
I-35	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Leptohyphidae	Leptohyphes	2
I-35	San Marcos	18-Oct-21	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4
I-35	San Marcos	18-Oct-21	Insecta	Lepidoptera	Crambidae	Crambidae	1
I-35	San Marcos	18-Oct-21	Insecta	Diptera	Simuliidae	Simulium	2
I-35	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Baetidae	Acentrella	4

I-35	San Marcos	18-Oct-21	Insecta	Trichoptera	Philopotamidae	Chimarra	2
I-35	San Marcos	18-Oct-21	Insecta	Trichoptera	Hydropsychidae	Smicridea	1
I-35	San Marcos	18-Oct-21	Insecta	Hemiptera	Naucoridae	Ambrysus	3
I-35	San Marcos	19-Apr-21	Insecta	Hemiptera	Naucoridae	Ambrysus	7
I-35	San Marcos	19-Apr-21	Insecta	Hemiptera	Naucoridae	Limnocoris	18
I-35	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Baetidae	Fallceon	10
I-35	San Marcos	19-Apr-21	Insecta	Diptera	Empididae	Hemerodromia	1
I-35	San Marcos	19-Apr-21	Insecta	Coleoptera	Elmidae	Microcylloepus pusillus	1
I-35	San Marcos	19-Apr-21	Insecta	Coleoptera	Elmidae	Hexacylloepus ferrugineus	1
I-35	San Marcos	19-Apr-21	Clitellata			Oligochaeta	2
I-35	San Marcos	19-Apr-21	Insecta	Coleoptera	Elmidae	Macrelmis	1
I-35	San Marcos	19-Apr-21	Insecta	Odonata	Coenagrionidae	Argia	5
I-35	San Marcos	19-Apr-21	Insecta	Odonata	Libellulidae	Brechmorhoga	3
I-35	San Marcos	19-Apr-21	Insecta	Trichoptera	Glossosomatidae	Protoptila	7
I-35	San Marcos	19-Apr-21	Insecta	Trichoptera	Heliocopyschidae	Helicopsyche	10
I-35	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	3
I-35	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Leptohyphidae	Leptohyphes	13
I-35	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Baetidae	Acentrella	14
I-35	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Baetidae	Fallceon	2
I-35	San Marcos	19-Apr-21	Insecta	Coleoptera	Psephinidae	Psephenus	1
City Park	San Marcos	18-Oct-21	Clitellata			Hirudinea	3
City Park	San Marcos	18-Oct-21	Insecta	Trichoptera	Leptoceridae	Nectopsyche	8
City Park	San Marcos	18-Oct-21	Insecta	Hemiptera	Naucoridae	Limnocoris	1
City Park	San Marcos	18-Oct-21	Insecta	Trichoptera	Hydropsychidae	Smicridea	1
City Park	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Baetidae	Acentrella	4
City Park	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Baetidae	Acentrella	44
City Park	San Marcos	19-Apr-21	Insecta	Trichoptera	Leptoceridae	Nectopsyche	6
City Park	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Baetidae	Fallceon	5
City Park	San Marcos	19-Apr-21	Insecta	Hemiptera	Naucoridae	Limnocoris	13
City Park	San Marcos	19-Apr-21	Malacostraca	Amphipoda	Talitridae	Hyalella	14
City Park	San Marcos	19-Apr-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	11

City Park	San Marcos	19-Apr-21	Gastropoda	Neotaenioglossa	Thiaridae	Tarebia	1
City Park	San Marcos	18-Oct-21	Insecta	Trichoptera	Heliocopyschidae	Helicopsyche	1
City Park	San Marcos	18-Oct-21	Insecta	Diptera	Chironomidae	Chironomidae	1
City Park	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	26
City Park	San Marcos	18-Oct-21	Insecta	Ephemeroptera	Baetidae	Fallceon	9
City Park	San Marcos	18-Oct-21	Insecta	Odonata	Coenagrionidae	Argia	3
City Park	San Marcos	18-Oct-21	Insecta	Odonata	Calopterygidae	Hetaerina	1
City Park	San Marcos	18-Oct-21	Clitellata			Oligochaeta	8
City Park	San Marcos	19-Apr-21	Insecta	Trichoptera	Glossosomatidae	Protoptila	10
City Park	San Marcos	19-Apr-21	Insecta	Trichoptera	Heliocopyschidae	Helicopsyche	10
City Park	San Marcos	19-Apr-21	Insecta	Odonata	Coenagrionidae	Argia	1
City Park	San Marcos	19-Apr-21	Insecta	Diptera	Simuliidae	Simulium	2
City Park	San Marcos	18-Oct-21	Gastropoda	Neotaenioglossa	Pleuroceridae	Elimia	6
City Park	San Marcos	19-Apr-21	Insecta	Diptera	Chironomidae	Chironomidae	5
City Park	San Marcos	19-Apr-21	Clitellata			Oligochaeta	8
City Park	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Leptophlebiidae	Thraulodes	1
City Park	San Marcos	19-Apr-21	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4
City Park	San Marcos	18-Oct-21	Malacostraca	Amphipoda	Talitridae	Hyalella	78
City Park	San Marcos	19-Apr-21	Turbellaria	Tricladida		Planariidae	9

APPENDIX G: DROP-NET RAW DATA

SiteCode	Reach	Site_No	Date	Dip_Net	Species	Length	Count
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	18	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	20	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	15	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	11	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	14	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	20	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	14	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	16	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	11	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	12	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	11	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	22	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Gambusia sp.	10	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	38	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	34	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	18	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	38	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	21	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	23	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	18	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	18	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Etheostoma fonticola	18	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Lepomis sp.	18	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Palaemonetes sp.		8
2675	Spring Lake Dam	Sagi-1	18-Oct-21	1	Procambarus sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Lepomis miniatus	94	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Etheostoma fonticola	22	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Etheostoma fonticola	28	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Etheostoma fonticola	32	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Etheostoma fonticola	20	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Etheostoma fonticola	28	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	27	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	12	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	15	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	15	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	16	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	17	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	15	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Gambusia sp.	14	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Palaemonetes sp.		8

2675	Spring Lake Dam	Sagi-1	18-Oct-21	2	Procambarus sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Etheostoma fonticola	35	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Etheostoma fonticola	36	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Etheostoma fonticola	15	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Etheostoma fonticola	29	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Etheostoma fonticola	33	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Lepomis miniatus	78	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Lepomis miniatus	67	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Procambarus sp.		6
2675	Spring Lake Dam	Sagi-1	18-Oct-21	3	Palaemonetes sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Gambusia sp.	17	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Lepomis miniatus	24	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Lepomis miniatus	55	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Etheostoma fonticola	25	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Etheostoma fonticola	32	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Etheostoma fonticola	24	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Etheostoma fonticola	33	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Etheostoma fonticola	23	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Etheostoma fonticola	18	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Procambarus sp.		3
2675	Spring Lake Dam	Sagi-1	18-Oct-21	4	Palaemonetes sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	5	Lepomis miniatus	40	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	5	Lepomis miniatus	62	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	5	Lepomis miniatus	51	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	5	Palaemonetes sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	5	Procambarus sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	6	Gambusia sp.	14	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	7	Etheostoma fonticola	31	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	7	Etheostoma fonticola	30	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	7	Palaemonetes sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	8	Etheostoma fonticola	34	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	8	Etheostoma fonticola	27	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	8	Palaemonetes sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	8	Procambarus sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	9	Etheostoma fonticola	28	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	9	Gambusia sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	9	Procambarus sp.		3
2675	Spring Lake Dam	Sagi-1	18-Oct-21	10	Procambarus sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	10	No fish collected		
2675	Spring Lake Dam	Sagi-1	18-Oct-21	11	Lepomis miniatus	58	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	11	Lepomis miniatus	44	1

2675	Spring Lake Dam	Sagi-1	18-Oct-21	11	Etheostoma fonticola	34	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	11	Procambarus sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	12	Procambarus sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	12	No fish collected		
2675	Spring Lake Dam	Sagi-1	18-Oct-21	13	Lepomis miniatus	62	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	13	Procambarus sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	13	Palaemonetes sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	14	Procambarus sp.		1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	14	Etheostoma fonticola	22	1
2675	Spring Lake Dam	Sagi-1	18-Oct-21	15	Procambarus sp.		2
2675	Spring Lake Dam	Sagi-1	18-Oct-21	15	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	1	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	2	Palaemonetes sp.		1
2676	Spring Lake Dam	Ziz-1	18-Oct-21	2	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	3	Lepomis miniatus	32	1
2676	Spring Lake Dam	Ziz-1	18-Oct-21	3	Gambusia sp.	25	1
2676	Spring Lake Dam	Ziz-1	18-Oct-21	4	Palaemonetes sp.		2
2676	Spring Lake Dam	Ziz-1	18-Oct-21	4	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	5	Palaemonetes sp.		1
2676	Spring Lake Dam	Ziz-1	18-Oct-21	5	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	6	Etheostoma fonticola	36	1
2676	Spring Lake Dam	Ziz-1	18-Oct-21	7	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	8	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	9	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	10	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	11	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	12	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	13	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	14	No fish collected		
2676	Spring Lake Dam	Ziz-1	18-Oct-21	15	No fish collected		
2677	Spring Lake Dam	Pota-1	18-Oct-21	1	Herichthys cyanoguttatus	46	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	2	Etheostoma fonticola	30	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	3	No fish collected		
2677	Spring Lake Dam	Pota-1	18-Oct-21	4	Etheostoma fonticola	20	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	5	Etheostoma fonticola	29	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	5	Etheostoma fonticola	31	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	6	Etheostoma fonticola	14	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	7	Etheostoma fonticola	29	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	7	Etheostoma fonticola	28	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	7	Etheostoma fonticola	31	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	7	Etheostoma fonticola	25	1

2677	Spring Lake Dam	Pota-1	18-Oct-21	8	No fish collected		
2677	Spring Lake Dam	Pota-1	18-Oct-21	9	Etheostoma fonticola	27	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	10	No fish collected		
2677	Spring Lake Dam	Pota-1	18-Oct-21	11	No fish collected		
2677	Spring Lake Dam	Pota-1	18-Oct-21	12	No fish collected		
2677	Spring Lake Dam	Pota-1	18-Oct-21	13	No fish collected		
2677	Spring Lake Dam	Pota-1	18-Oct-21	14	Etheostoma fonticola	32	1
2677	Spring Lake Dam	Pota-1	18-Oct-21	15	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	2	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	3	Procambarus sp.		7
2696	I-35	Ludw-1	20-Oct-21	3	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	4	Procambarus sp.		7
2696	I-35	Ludw-1	20-Oct-21	4	Etheostoma fonticola	29	1
2696	I-35	Ludw-1	20-Oct-21	4	Etheostoma fonticola	30	1
2696	I-35	Ludw-1	20-Oct-21	5	Etheostoma fonticola	29	1
2696	I-35	Ludw-1	20-Oct-21	5	Procambarus sp.		3
2696	I-35	Ludw-1	20-Oct-21	6	Etheostoma fonticola	30	1
2696	I-35	Ludw-1	20-Oct-21	6	Etheostoma fonticola	33	1
2696	I-35	Ludw-1	20-Oct-21	6	Procambarus sp.		1
2696	I-35	Ludw-1	20-Oct-21	7	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	8	Etheostoma fonticola	31	1
2696	I-35	Ludw-1	20-Oct-21	8	Etheostoma fonticola	27	1
2696	I-35	Ludw-1	20-Oct-21	8	Etheostoma fonticola	29	1
2696	I-35	Ludw-1	20-Oct-21	8	Etheostoma fonticola	30	1
2696	I-35	Ludw-1	20-Oct-21	8	Etheostoma fonticola	25	1
2696	I-35	Ludw-1	20-Oct-21	8	Procambarus sp.		5
2696	I-35	Ludw-1	20-Oct-21	9	Procambarus sp.		3
2696	I-35	Ludw-1	20-Oct-21	9	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	10	Procambarus sp.		2
2696	I-35	Ludw-1	20-Oct-21	10	Etheostoma fonticola	30	1
2696	I-35	Ludw-1	20-Oct-21	11	Procambarus sp.		4
2696	I-35	Ludw-1	20-Oct-21	11	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	12	Procambarus sp.		1
2696	I-35	Ludw-1	20-Oct-21	12	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	13	Procambarus sp.		2
2696	I-35	Ludw-1	20-Oct-21	13	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	14	Etheostoma fonticola	28	1
2696	I-35	Ludw-1	20-Oct-21	14	Procambarus sp.		2
2696	I-35	Ludw-1	20-Oct-21	15	No fish collected		
2696	I-35	Ludw-1	20-Oct-21	1	Procambarus sp.		2
2696	I-35	Ludw-1	20-Oct-21	1	No fish collected		

2696	I-35	Ludw-1	20-Oct-21	2	Procambarus sp.		11
2697	I-35	Hygr-1	20-Oct-21	1	Etheostoma fonticola	25	1
2697	I-35	Hygr-1	20-Oct-21	1	Etheostoma fonticola	30	1
2697	I-35	Hygr-1	20-Oct-21	1	Etheostoma fonticola	18	1
2697	I-35	Hygr-1	20-Oct-21	1	Gambusia sp.	22	1
2697	I-35	Hygr-1	20-Oct-21	1	Procambarus sp.		6
2697	I-35	Hygr-1	20-Oct-21	2	Etheostoma fonticola	28	1
2697	I-35	Hygr-1	20-Oct-21	2	Etheostoma fonticola	30	1
2697	I-35	Hygr-1	20-Oct-21	2	Etheostoma fonticola	22	1
2697	I-35	Hygr-1	20-Oct-21	2	Gambusia sp.	24	1
2697	I-35	Hygr-1	20-Oct-21	2	Gambusia sp.	20	1
2697	I-35	Hygr-1	20-Oct-21	2	Procambarus sp.		12
2697	I-35	Hygr-1	20-Oct-21	3	Etheostoma fonticola	30	1
2697	I-35	Hygr-1	20-Oct-21	3	Etheostoma fonticola	33	1
2697	I-35	Hygr-1	20-Oct-21	3	Etheostoma fonticola	31	1
2697	I-35	Hygr-1	20-Oct-21	3	Gambusia sp.	20	1
2697	I-35	Hygr-1	20-Oct-21	3	Procambarus sp.		10
2697	I-35	Hygr-1	20-Oct-21	4	Etheostoma fonticola	25	1
2697	I-35	Hygr-1	20-Oct-21	4	Etheostoma fonticola	34	1
2697	I-35	Hygr-1	20-Oct-21	4	Etheostoma fonticola	27	1
2697	I-35	Hygr-1	20-Oct-21	4	Etheostoma fonticola	31	1
2697	I-35	Hygr-1	20-Oct-21	4	Procambarus sp.		7
2697	I-35	Hygr-1	20-Oct-21	5	Etheostoma fonticola	22	1
2697	I-35	Hygr-1	20-Oct-21	5	Etheostoma fonticola	32	1
2697	I-35	Hygr-1	20-Oct-21	5	Procambarus sp.		2
2697	I-35	Hygr-1	20-Oct-21	6	Etheostoma fonticola	34	1
2697	I-35	Hygr-1	20-Oct-21	6	Etheostoma fonticola	33	1
2697	I-35	Hygr-1	20-Oct-21	6	Etheostoma fonticola	33	1
2697	I-35	Hygr-1	20-Oct-21	6	Procambarus sp.		5
2697	I-35	Hygr-1	20-Oct-21	7	Procambarus sp.		1
2697	I-35	Hygr-1	20-Oct-21	7	No fish collected		
2697	I-35	Hygr-1	20-Oct-21	8	Procambarus sp.		5
2697	I-35	Hygr-1	20-Oct-21	8	No fish collected		
2697	I-35	Hygr-1	20-Oct-21	9	Gambusia sp.	20	1
2697	I-35	Hygr-1	20-Oct-21	9	Procambarus sp.		2
2697	I-35	Hygr-1	20-Oct-21	10	Procambarus sp.		2
2697	I-35	Hygr-1	20-Oct-21	10	No fish collected		
2697	I-35	Hygr-1	20-Oct-21	11	Etheostoma fonticola	26	1
2697	I-35	Hygr-1	20-Oct-21	12	Procambarus sp.		2
2697	I-35	Hygr-1	20-Oct-21	12	No fish collected		
2697	I-35	Hygr-1	20-Oct-21	13	Procambarus sp.		1

2697	I-35	Hygr-1	20-Oct-21	13	No fish collected		
2697	I-35	Hygr-1	20-Oct-21	14	Etheostoma fonticola	29	1
2697	I-35	Hygr-1	20-Oct-21	15	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	1	Procambarus sp.		1
2698	I-35	Sagi-1	20-Oct-21	1	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	2	Procambarus sp.		3
2698	I-35	Sagi-1	20-Oct-21	2	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	3	Lepomis miniatus	52	1
2698	I-35	Sagi-1	20-Oct-21	3	Procambarus sp.		1
2698	I-35	Sagi-1	20-Oct-21	4	Etheostoma fonticola	32	1
2698	I-35	Sagi-1	20-Oct-21	4	Procambarus sp.		1
2698	I-35	Sagi-1	20-Oct-21	5	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	6	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	7	Procambarus sp.		1
2698	I-35	Sagi-1	20-Oct-21	7	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	8	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	9	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	10	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	11	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	12	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	13	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	14	No fish collected		
2698	I-35	Sagi-1	20-Oct-21	15	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	15	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	1	Etheostoma fonticola	29	1
2699	I-35	Sagi-2	20-Oct-21	2	Procambarus sp.		4
2699	I-35	Sagi-2	20-Oct-21	2	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	3	Etheostoma fonticola	30	1
2699	I-35	Sagi-2	20-Oct-21	3	Etheostoma fonticola	31	1
2699	I-35	Sagi-2	20-Oct-21	3	Procambarus sp.		4
2699	I-35	Sagi-2	20-Oct-21	4	Etheostoma fonticola	36	1
2699	I-35	Sagi-2	20-Oct-21	4	Lepomis miniatus	75	1
2699	I-35	Sagi-2	20-Oct-21	5	Etheostoma fonticola	21	1
2699	I-35	Sagi-2	20-Oct-21	5	Procambarus sp.		2
2699	I-35	Sagi-2	20-Oct-21	6	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	7	Procambarus sp.		1
2699	I-35	Sagi-2	20-Oct-21	7	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	8	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	9	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	10	Procambarus sp.		1
2699	I-35	Sagi-2	20-Oct-21	10	No fish collected		

2699	I-35	Sagi-2	20-Oct-21	11	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	12	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	13	No fish collected		
2699	I-35	Sagi-2	20-Oct-21	14	Procambarus sp.		2
2699	I-35	Sagi-2	20-Oct-21	14	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	1	Procambarus sp.		5
2700	I-35	Ludw-2	20-Oct-21	1	Gambusia sp.	20	1
2700	I-35	Ludw-2	20-Oct-21	1	Etheostoma fonticola	31	1
2700	I-35	Ludw-2	20-Oct-21	2	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	3	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	4	Procambarus sp.		1
2700	I-35	Ludw-2	20-Oct-21	4	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	5	Procambarus sp.		1
2700	I-35	Ludw-2	20-Oct-21	5	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	6	Ambloplites rupestris	69	1
2700	I-35	Ludw-2	20-Oct-21	7	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	8	Procambarus sp.		2
2700	I-35	Ludw-2	20-Oct-21	8	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	9	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	10	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	11	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	12	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	13	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	14	No fish collected		
2700	I-35	Ludw-2	20-Oct-21	15	No fish collected		
2701	I-35	Hygr-2	20-Oct-21	1	Gambusia sp.	20	1
2701	I-35	Hygr-2	20-Oct-21	1	Gambusia sp.	16	1
2701	I-35	Hygr-2	20-Oct-21	1	Etheostoma fonticola	28	1
2701	I-35	Hygr-2	20-Oct-21	1	Etheostoma fonticola	30	1
2701	I-35	Hygr-2	20-Oct-21	1	Procambarus sp.		3
2701	I-35	Hygr-2	20-Oct-21	2	Gambusia sp.	24	1
2701	I-35	Hygr-2	20-Oct-21	2	Etheostoma fonticola	20	1
2701	I-35	Hygr-2	20-Oct-21	2	Procambarus sp.		6
2701	I-35	Hygr-2	20-Oct-21	3	Etheostoma fonticola	24	1
2701	I-35	Hygr-2	20-Oct-21	3	Procambarus sp.		7
2701	I-35	Hygr-2	20-Oct-21	4	Etheostoma fonticola	32	1
2701	I-35	Hygr-2	20-Oct-21	4	Etheostoma fonticola	31	1
2701	I-35	Hygr-2	20-Oct-21	4	Etheostoma fonticola	22	1
2701	I-35	Hygr-2	20-Oct-21	4	Procambarus sp.		7
2701	I-35	Hygr-2	20-Oct-21	5	Procambarus sp.		3
2701	I-35	Hygr-2	20-Oct-21	5	No fish collected		

2701	I-35	Hygr-2	20-Oct-21	6	Gambusia sp.	14	1
2701	I-35	Hygr-2	20-Oct-21	6	Etheostoma fonticola	22	1
2701	I-35	Hygr-2	20-Oct-21	6	Etheostoma fonticola	21	1
2701	I-35	Hygr-2	20-Oct-21	6	Etheostoma fonticola	24	1
2701	I-35	Hygr-2	20-Oct-21	6	Procambarus sp.		7
2701	I-35	Hygr-2	20-Oct-21	7	Procambarus sp.		2
2701	I-35	Hygr-2	20-Oct-21	7	No fish collected		
2701	I-35	Hygr-2	20-Oct-21	8	Gambusia sp.	19	1
2701	I-35	Hygr-2	20-Oct-21	8	Procambarus sp.		1
2701	I-35	Hygr-2	20-Oct-21	9	Gambusia sp.	34	1
2701	I-35	Hygr-2	20-Oct-21	9	Procambarus sp.		2
2701	I-35	Hygr-2	20-Oct-21	10	No fish collected		
2701	I-35	Hygr-2	20-Oct-21	11	No fish collected		
2701	I-35	Hygr-2	20-Oct-21	12	No fish collected		
2701	I-35	Hygr-2	20-Oct-21	13	Procambarus sp.		1
2701	I-35	Hygr-2	20-Oct-21	13	No fish collected		
2701	I-35	Hygr-2	20-Oct-21	14	No fish collected		
2701	I-35	Hygr-2	20-Oct-21	15	Procambarus sp.		1
2701	I-35	Hygr-2	20-Oct-21	15	No fish collected		
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	9	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	12	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	13	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	15	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	15	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	14	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.	10	1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1

2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	1	Etheostoma fonticola	35	1
2702	I-35	Cabo-1	20-Oct-21	1	Etheostoma fonticola	28	1
2702	I-35	Cabo-1	20-Oct-21	1	Etheostoma fonticola	30	1
2702	I-35	Cabo-1	20-Oct-21	1	Etheostoma fonticola	29	1
2702	I-35	Cabo-1	20-Oct-21	1	Lepomis miniatus	125	1
2702	I-35	Cabo-1	20-Oct-21	1	Lepomis miniatus	48	1
2702	I-35	Cabo-1	20-Oct-21	1	Lepomis miniatus	25	1
2702	I-35	Cabo-1	20-Oct-21	1	Lepomis miniatus	25	1

2702	I-35	Cabo-1	20-Oct-21	1	Lepomis miniatus	27	1
2702	I-35	Cabo-1	20-Oct-21	1	Procambarus sp.		11
2702	I-35	Cabo-1	20-Oct-21	1	Palaemonetes sp.		2
2702	I-35	Cabo-1	20-Oct-21	2	Lepomis miniatus	50	1
2702	I-35	Cabo-1	20-Oct-21	2	Lepomis sp.	15	1
2702	I-35	Cabo-1	20-Oct-21	2	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	2	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	2	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	2	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	2	Procambarus sp.		12
2702	I-35	Cabo-1	20-Oct-21	3	Etheostoma fonticola	35	1
2702	I-35	Cabo-1	20-Oct-21	3	Etheostoma fonticola	31	1
2702	I-35	Cabo-1	20-Oct-21	3	Lepomis miniatus	42	1
2702	I-35	Cabo-1	20-Oct-21	3	Lepomis sp.	21	1
2702	I-35	Cabo-1	20-Oct-21	3	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	3	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	3	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	3	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	3	Procambarus sp.		11
2702	I-35	Cabo-1	20-Oct-21	4	Dionda nigrotaeniata	80	1
2702	I-35	Cabo-1	20-Oct-21	4	Dionda nigrotaeniata	37	1
2702	I-35	Cabo-1	20-Oct-21	4	Dionda nigrotaeniata	66	1
2702	I-35	Cabo-1	20-Oct-21	4	Dionda nigrotaeniata	65	1
2702	I-35	Cabo-1	20-Oct-21	4	Dionda nigrotaeniata	36	1
2702	I-35	Cabo-1	20-Oct-21	4	Ambloplites rupestris	57	1
2702	I-35	Cabo-1	20-Oct-21	4	Lepomis miniatus	60	1
2702	I-35	Cabo-1	20-Oct-21	4	Lepomis miniatus	38	1
2702	I-35	Cabo-1	20-Oct-21	4	Lepomis miniatus	79	1
2702	I-35	Cabo-1	20-Oct-21	4	Etheostoma fonticola	37	1
2702	I-35	Cabo-1	20-Oct-21	4	Etheostoma fonticola	28	1
2702	I-35	Cabo-1	20-Oct-21	4	Etheostoma fonticola	32	1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1

2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	4	Procambarus sp.		7
2702	I-35	Cabo-1	20-Oct-21	5	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	5	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	5	Procambarus sp.		2
2702	I-35	Cabo-1	20-Oct-21	6	Dionda nigrotaeniata	42	1
2702	I-35	Cabo-1	20-Oct-21	6	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	6	Procambarus sp.		1
2702	I-35	Cabo-1	20-Oct-21	7	Etheostoma fonticola	36	1
2702	I-35	Cabo-1	20-Oct-21	7	Etheostoma fonticola	15	1
2702	I-35	Cabo-1	20-Oct-21	7	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	7	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	7	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	7	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	7	Procambarus sp.		5
2702	I-35	Cabo-1	20-Oct-21	8	Lepomis miniatus	53	1
2702	I-35	Cabo-1	20-Oct-21	8	Lepomis miniatus	26	1
2702	I-35	Cabo-1	20-Oct-21	8	Procambarus sp.		4
2702	I-35	Cabo-1	20-Oct-21	9	Etheostoma fonticola	35	1
2702	I-35	Cabo-1	20-Oct-21	9	Procambarus sp.		3
2702	I-35	Cabo-1	20-Oct-21	10	Lepomis miniatus	65	1
2702	I-35	Cabo-1	20-Oct-21	10	Etheostoma fonticola	31	1
2702	I-35	Cabo-1	20-Oct-21	10	Etheostoma fonticola	32	1
2702	I-35	Cabo-1	20-Oct-21	10	Etheostoma fonticola	33	1
2702	I-35	Cabo-1	20-Oct-21	10	Etheostoma fonticola	16	1
2702	I-35	Cabo-1	20-Oct-21	10	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	10	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	10	Procambarus sp.		10
2702	I-35	Cabo-1	20-Oct-21	11	Lepomis miniatus	50	1
2702	I-35	Cabo-1	20-Oct-21	11	Lepomis miniatus	34	1
2702	I-35	Cabo-1	20-Oct-21	11	Lepomis miniatus	30	1
2702	I-35	Cabo-1	20-Oct-21	11	Etheostoma fonticola	31	1

2702	I-35	Cabo-1	20-Oct-21	11	Etheostoma fonticola	25	1
2702	I-35	Cabo-1	20-Oct-21	11	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	11	Procambarus sp.		3
2702	I-35	Cabo-1	20-Oct-21	12	Etheostoma fonticola	38	1
2702	I-35	Cabo-1	20-Oct-21	12	Dionda nigrotaeniata	59	1
2702	I-35	Cabo-1	20-Oct-21	12	Procambarus sp.		9
2702	I-35	Cabo-1	20-Oct-21	13	Lepomis miniatus	50	1
2702	I-35	Cabo-1	20-Oct-21	13	Lepomis miniatus	24	1
2702	I-35	Cabo-1	20-Oct-21	13	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	14	Gambusia sp.		1
2702	I-35	Cabo-1	20-Oct-21	14	Procambarus sp.		1
2702	I-35	Cabo-1	20-Oct-21	15	Procambarus sp.		4
2702	I-35	Cabo-1	20-Oct-21	15	No fish collected		
2702	I-35	Cabo-1	20-Oct-21	12	Etheostoma fonticola	16	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	22	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	22	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	28	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	15	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	15	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	8	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	15	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	12	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	9	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	10	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.	9	1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	1	Gambusia sp.		1

2703	I-35	Cabo-2	20-Oct-21	1	Lepomis miniatus	120	1
2703	I-35	Cabo-2	20-Oct-21	1	Ambloplites rupestris	58	1
2703	I-35	Cabo-2	20-Oct-21	1	Astyanax mexicanus	42	1
2703	I-35	Cabo-2	20-Oct-21	1	Etheostoma fonticola	25	1
2703	I-35	Cabo-2	20-Oct-21	1	Etheostoma fonticola	32	1
2703	I-35	Cabo-2	20-Oct-21	1	Etheostoma fonticola	27	1
2703	I-35	Cabo-2	20-Oct-21	1	Palaemonetes sp.		2
2703	I-35	Cabo-2	20-Oct-21	1	Procambarus sp.		22
2703	I-35	Cabo-2	20-Oct-21	2	Etheostoma fonticola	10	1
2703	I-35	Cabo-2	20-Oct-21	2	Etheostoma fonticola	20	1
2703	I-35	Cabo-2	20-Oct-21	2	Astyanax mexicanus	41	1
2703	I-35	Cabo-2	20-Oct-21	2	Lepomis miniatus	35	1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	2	Procambarus sp.		15
2703	I-35	Cabo-2	20-Oct-21	3	Lepomis miniatus	57	1
2703	I-35	Cabo-2	20-Oct-21	3	Etheostoma fonticola	28	1
2703	I-35	Cabo-2	20-Oct-21	3	Etheostoma fonticola	32	1
2703	I-35	Cabo-2	20-Oct-21	3	Etheostoma fonticola	23	1
2703	I-35	Cabo-2	20-Oct-21	3	Etheostoma fonticola	35	1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	3	Procambarus sp.		8
2703	I-35	Cabo-2	20-Oct-21	4	Lepomis miniatus	35	1
2703	I-35	Cabo-2	20-Oct-21	4	Procambarus sp.		11
2703	I-35	Cabo-2	20-Oct-21	5	Lepomis miniatus	77	1
2703	I-35	Cabo-2	20-Oct-21	5	Lepomis miniatus	45	1

2703	I-35	Cabo-2	20-Oct-21	5	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	5	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	5	Procambarus sp.		13
2703	I-35	Cabo-2	20-Oct-21	6	Ambloplites rupestris	30	1
2703	I-35	Cabo-2	20-Oct-21	6	Etheostoma fonticola	25	1
2703	I-35	Cabo-2	20-Oct-21	6	Procambarus sp.		13
2703	I-35	Cabo-2	20-Oct-21	7	Etheostoma fonticola	31	1
2703	I-35	Cabo-2	20-Oct-21	7	Etheostoma fonticola	16	1
2703	I-35	Cabo-2	20-Oct-21	7	Etheostoma fonticola	27	1
2703	I-35	Cabo-2	20-Oct-21	7	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	7	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	7	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	7	Procambarus sp.		4
2703	I-35	Cabo-2	20-Oct-21	8	Etheostoma fonticola	36	1
2703	I-35	Cabo-2	20-Oct-21	8	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	8	Procambarus sp.		7
2703	I-35	Cabo-2	20-Oct-21	9	Etheostoma fonticola	14	1
2703	I-35	Cabo-2	20-Oct-21	9	Procambarus sp.		4
2703	I-35	Cabo-2	20-Oct-21	10	Procambarus sp.		6
2703	I-35	Cabo-2	20-Oct-21	10	No fish collected		
2703	I-35	Cabo-2	20-Oct-21	11	Etheostoma fonticola	30	1
2703	I-35	Cabo-2	20-Oct-21	11	Gambusia sp.		1
2703	I-35	Cabo-2	20-Oct-21	11	Procambarus sp.		4
2703	I-35	Cabo-2	20-Oct-21	13	Procambarus sp.		2
2703	I-35	Cabo-2	20-Oct-21	13	No fish collected		
2703	I-35	Cabo-2	20-Oct-21	14	Procambarus sp.		2
2703	I-35	Cabo-2	20-Oct-21	14	No fish collected		
2703	I-35	Cabo-2	20-Oct-21	15	Procambarus sp.		1
2703	I-35	Cabo-2	20-Oct-21	15	No fish collected		
2703	I-35	Cabo-2	20-Oct-21	9	Etheostoma fonticola	37	1
2703	I-35	Cabo-2	20-Oct-21	9	Etheostoma fonticola	35	1
2703	I-35	Cabo-2	20-Oct-21	12	Procambarus sp.		3
2703	I-35	Cabo-2	20-Oct-21	12	No fish collected		
2704	I-35	Open-1	20-Oct-21	1	No fish collected		
2704	I-35	Open-1	20-Oct-21	2	No fish collected		
2704	I-35	Open-1	20-Oct-21	3	Lepomis miniatus	90	1
2704	I-35	Open-1	20-Oct-21	4	No fish collected		
2704	I-35	Open-1	20-Oct-21	5	No fish collected		
2704	I-35	Open-1	20-Oct-21	6	No fish collected		
2704	I-35	Open-1	20-Oct-21	7	Lepomis miniatus	63	1
2704	I-35	Open-1	20-Oct-21	8	No fish collected		

2704	I-35	Open-1	20-Oct-21	9	No fish collected		
2704	I-35	Open-1	20-Oct-21	10	No fish collected		
2704	I-35	Open-1	20-Oct-21	11	No fish collected		
2704	I-35	Open-1	20-Oct-21	12	No fish collected		
2704	I-35	Open-1	20-Oct-21	13	No fish collected		
2704	I-35	Open-1	20-Oct-21	14	No fish collected		
2704	I-35	Open-1	20-Oct-21	15	Gambusia sp.	10	1
2705	I-35	Ziz-2	20-Oct-21	1	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	2	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	3	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	4	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	5	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	6	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	7	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	8	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	9	No fish collected		
2705	I-35	Ziz-2	20-Oct-21	10	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	1	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	2	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	3	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	4	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	5	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	6	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	7	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	8	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	9	No fish collected		
2616	Spring Lake Dam	Hydr-1	26-Apr-21	10	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	1	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	2	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	3	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	4	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	5	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	6	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	7	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	8	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	9	No fish collected		
2617	Spring Lake Dam	Open-1	26-Apr-21	10	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	1	Etheostoma fonticola	32	1
2618	Spring Lake Dam	Pota-1	26-Apr-21	2	Etheostoma fonticola	14	1
2618	Spring Lake Dam	Pota-1	26-Apr-21	2	Etheostoma fonticola	20	1
2618	Spring Lake Dam	Pota-1	26-Apr-21	3	Gambusia sp.	13	1

2618	Spring Lake Dam	Pota-1	26-Apr-21	4	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	5	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	6	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	7	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	8	Etheostoma fonticola	19	1
2618	Spring Lake Dam	Pota-1	26-Apr-21	8	Procambarus sp.		2
2618	Spring Lake Dam	Pota-1	26-Apr-21	9	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	10	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	11	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	12	No fish collected		
2618	Spring Lake Dam	Pota-1	26-Apr-21	13	Etheostoma fonticola	22	1
2618	Spring Lake Dam	Pota-1	26-Apr-21	14	Etheostoma fonticola	22	1
2618	Spring Lake Dam	Pota-1	26-Apr-21	15	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	1	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	2	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	3	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	4	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	5	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	6	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	7	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	8	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	9	No fish collected		
2619	Spring Lake Dam	Pota-2	26-Apr-21	10	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	13	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	14	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	15	Procambarus sp.		1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	15	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	1	Etheostoma fonticola	32	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	1	Gambusia sp.	22	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	1	Gambusia sp.	14	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	1	Gambusia sp.	15	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	1	Procambarus sp.		3
2620	Spring Lake Dam	Sagi-1	26-Apr-21	2	Gambusia sp.	10	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	2	Gambusia sp.	22	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	2	Gambusia sp.	14	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	3	Etheostoma fonticola	30	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	3	Etheostoma fonticola	32	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	3	Etheostoma fonticola	30	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	3	Gambusia sp.	19	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	3	Gambusia sp.	12	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	3	Gambusia sp.	10	1

2620	Spring Lake Dam	Sagi-1	26-Apr-21	4	Etheostoma fonticola	29	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	4	Gambusia sp.	18	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	4	Gambusia sp.	17	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	5	Etheostoma fonticola	29	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	5	Gambusia sp.	30	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	5	Gambusia sp.	15	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	5	Palaemonetes sp.		1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	6	Etheostoma fonticola	28	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	7	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	8	Procambarus sp.		1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	8	Etheostoma fonticola	31	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	9	Procambarus sp.		1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	9	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	10	Procambarus sp.		1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	10	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	11	Gambusia sp.	12	1
2620	Spring Lake Dam	Sagi-1	26-Apr-21	12	No fish collected		
2620	Spring Lake Dam	Sagi-1	26-Apr-21	13	Procambarus sp.		1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	1	No fish collected		
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Lepomis miniatus	80	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Lepomis miniatus	55	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Gambusia sp.	17	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Gambusia sp.	15	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Gambusia sp.	22	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Gambusia sp.	14	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Gambusia sp.	15	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	2	Gambusia sp.	9	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	3	No fish collected		
2621	Spring Lake Dam	Hydr-2	26-Apr-21	4	Lepomis miniatus	65	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	5	Lepomis miniatus	48	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	5	Lepomis miniatus	69	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	5	Gambusia sp.	10	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	5	Gambusia sp.	19	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	6	Gambusia sp.	17	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	7	Procambarus sp.		1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	7	No fish collected		
2621	Spring Lake Dam	Hydr-2	26-Apr-21	8	No fish collected		
2621	Spring Lake Dam	Hydr-2	26-Apr-21	9	Etheostoma fonticola	13	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	10	Etheostoma fonticola	15	1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	11	No fish collected		
2621	Spring Lake Dam	Hydr-2	26-Apr-21	12	No fish collected		

2621	Spring Lake Dam	Hydr-2	26-Apr-21	13	Procambarus sp.		1
2621	Spring Lake Dam	Hydr-2	26-Apr-21	13	No fish collected		
2621	Spring Lake Dam	Hydr-2	26-Apr-21	14	No fish collected		
2621	Spring Lake Dam	Hydr-2	26-Apr-21	15	Gambusia sp.	36	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Lepomis gulosus	160	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Herichthys cyanoguttatus	65	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Procambarus sp.		3
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	38	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	30	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	38	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	38	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	27	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	29	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	28	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	20	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	25	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	20	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	21	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	18	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	33	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	17	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	28	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	20	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	20	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	27	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	14	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	21	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	20	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.	17	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	1	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Procambarus sp.		4
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1

2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Lepomis sp.	14	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Lepomis miniatus	78	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	3	Micropterus salmoides	35	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Procambarus sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	5	Procambarus sp.		3
2622	Spring Lake Dam	Sagi-2	26-Apr-21	5	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	5	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	6	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	6	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	6	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	6	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	6	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	6	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	7	Lepomis miniatus	50	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	7	Procambarus sp.		2
2622	Spring Lake Dam	Sagi-2	26-Apr-21	7	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	7	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	8	Procambarus sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	8	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	9	Lepomis miniatus	59	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	9	Procambarus sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	10	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	11	No fish collected		
2622	Spring Lake Dam	Sagi-2	26-Apr-21	12	No fish collected		
2622	Spring Lake Dam	Sagi-2	26-Apr-21	13	Etheostoma fonticola	40	1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	14	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	14	Gambusia sp.		1

2622	Spring Lake Dam	Sagi-2	26-Apr-21	14	Procambarus sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	15	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	15	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	15	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	2	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2622	Spring Lake Dam	Sagi-2	26-Apr-21	4	Gambusia sp.		1
2623	Spring Lake Dam	Open-2	26-Apr-21	1	Gambusia sp.	15	1
2623	Spring Lake Dam	Open-2	26-Apr-21	1	Etheostoma fonticola	18	1
2623	Spring Lake Dam	Open-2	26-Apr-21	2	Procambarus sp.		1
2623	Spring Lake Dam	Open-2	26-Apr-21	8	Gambusia sp.	27	1
2623	Spring Lake Dam	Open-2	26-Apr-21	8	Gambusia sp.	10	1
2623	Spring Lake Dam	Open-2	26-Apr-21	8	Gambusia sp.	21	1
2623	Spring Lake Dam	Open-2	26-Apr-21	8	Gambusia sp.	11	1
2623	Spring Lake Dam	Open-2	26-Apr-21	9	Gambusia sp.	20	1
2623	Spring Lake Dam	Open-2	26-Apr-21	9	Gambusia sp.	15	1
2623	Spring Lake Dam	Open-2	26-Apr-21	10	Gambusia sp.	12	1
2623	Spring Lake Dam	Open-2	26-Apr-21	11	Gambusia sp.	18	1
2623	Spring Lake Dam	Open-2	26-Apr-21	11	Gambusia sp.	13	1
2623	Spring Lake Dam	Open-2	26-Apr-21	12	No fish collected		
2623	Spring Lake Dam	Open-2	26-Apr-21	13	Gambusia sp.	17	1
2623	Spring Lake Dam	Open-2	26-Apr-21	13	Gambusia sp.	17	1
2623	Spring Lake Dam	Open-2	26-Apr-21	13	Gambusia sp.	18	1
2623	Spring Lake Dam	Open-2	26-Apr-21	13	Lepomis sp.	13	1
2623	Spring Lake Dam	Open-2	26-Apr-21	14	Gambusia sp.	18	1
2623	Spring Lake Dam	Open-2	26-Apr-21	14	Gambusia sp.	15	1
2623	Spring Lake Dam	Open-2	26-Apr-21	15	No fish collected		
2623	Spring Lake Dam	Open-2	26-Apr-21	2	No fish collected		
2623	Spring Lake Dam	Open-2	26-Apr-21	3	Gambusia sp.	15	1
2623	Spring Lake Dam	Open-2	26-Apr-21	4	Etheostoma fonticola	24	1
2623	Spring Lake Dam	Open-2	26-Apr-21	4	Etheostoma fonticola	15	1
2623	Spring Lake Dam	Open-2	26-Apr-21	5	Gambusia sp.	15	1
2623	Spring Lake Dam	Open-2	26-Apr-21	5	Etheostoma fonticola	16	1
2623	Spring Lake Dam	Open-2	26-Apr-21	6	Gambusia sp.	20	1
2623	Spring Lake Dam	Open-2	26-Apr-21	7	No fish collected		
2624	City Park	Open-1	27-Apr-21	1	Poecilia latipinna	31	1
2624	City Park	Open-1	27-Apr-21	1	Poecilia latipinna	30	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	25	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	28	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	38	1

2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	31	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	40	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	27	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	19	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	13	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	24	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	16	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	24	1
2624	City Park	Open-1	27-Apr-21	1	Gambusia sp.	18	1
2624	City Park	Open-1	27-Apr-21	1	Procambarus sp.		4
2624	City Park	Open-1	27-Apr-21	2	Gambusia sp.	24	1
2624	City Park	Open-1	27-Apr-21	2	Gambusia sp.	22	1
2624	City Park	Open-1	27-Apr-21	2	Gambusia sp.	24	1
2624	City Park	Open-1	27-Apr-21	2	Gambusia sp.	21	1
2624	City Park	Open-1	27-Apr-21	2	Gambusia sp.	22	1
2624	City Park	Open-1	27-Apr-21	2	Gambusia sp.	15	1
2624	City Park	Open-1	27-Apr-21	2	Etheostoma fonticola	25	1
2624	City Park	Open-1	27-Apr-21	2	Etheostoma fonticola	28	1
2624	City Park	Open-1	27-Apr-21	4	Gambusia sp.	40	1
2624	City Park	Open-1	27-Apr-21	5	Poecilia latipinna	35	1
2624	City Park	Open-1	27-Apr-21	5	Procambarus sp.		1
2624	City Park	Open-1	27-Apr-21	5	Gambusia sp.		1
2624	City Park	Open-1	27-Apr-21	6	Procambarus sp.		2
2624	City Park	Open-1	27-Apr-21	6	No fish collected		
2624	City Park	Open-1	27-Apr-21	7	Etheostoma fonticola	33	1
2624	City Park	Open-1	27-Apr-21	8	No fish collected		
2624	City Park	Open-1	27-Apr-21	9	Procambarus sp.		1
2624	City Park	Open-1	27-Apr-21	9	No fish collected		
2624	City Park	Open-1	27-Apr-21	10	No fish collected		
2624	City Park	Open-1	27-Apr-21	11	No fish collected		
2624	City Park	Open-1	27-Apr-21	12	No fish collected		
2624	City Park	Open-1	27-Apr-21	13	No fish collected		
2624	City Park	Open-1	27-Apr-21	14	No fish collected		
2624	City Park	Open-1	27-Apr-21	15	No fish collected		
2625	City Park	Open-2	27-Apr-21	1	Gambusia sp.	43	1
2625	City Park	Open-2	27-Apr-21	2	Gambusia sp.	20	1
2625	City Park	Open-2	27-Apr-21	2	Gambusia sp.	14	1
2625	City Park	Open-2	27-Apr-21	2	Gambusia sp.	15	1
2625	City Park	Open-2	27-Apr-21	3	Gambusia sp.	19	1
2625	City Park	Open-2	27-Apr-21	4	Gambusia sp.	11	1
2625	City Park	Open-2	27-Apr-21	4	Gambusia sp.	18	1

2625	City Park	Open-2	27-Apr-21	5	No fish collected		
2625	City Park	Open-2	27-Apr-21	6	No fish collected		
2625	City Park	Open-2	27-Apr-21	7	No fish collected		
2625	City Park	Open-2	27-Apr-21	8	Gambusia sp.	20	1
2625	City Park	Open-2	27-Apr-21	9	No fish collected		
2625	City Park	Open-2	27-Apr-21	10	Procambarus sp.		1
2625	City Park	Open-2	27-Apr-21	10	No fish collected		
2625	City Park	Open-2	27-Apr-21	11	Gambusia sp.	20	1
2625	City Park	Open-2	27-Apr-21	11	Gambusia sp.	22	1
2625	City Park	Open-2	27-Apr-21	12	No fish collected		
2625	City Park	Open-2	27-Apr-21	13	No fish collected		
2625	City Park	Open-2	27-Apr-21	14	No fish collected		
2625	City Park	Open-2	27-Apr-21	15	No fish collected		
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	15	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	35	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	25	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	20	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	40	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	35	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	35	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	34	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	40	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	35	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	50	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	38	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	30	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	42	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	20	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	18	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	18	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	30	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	14	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.	22	1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	1	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	1	Procambarus sp.		4
2626	City Park	Hygr-1	27-Apr-21	1	Lepomis miniatus	53	1
2626	City Park	Hygr-1	27-Apr-21	1	Etheostoma fonticola	18	1

2626	City Park	Hygr-1	27-Apr-21	1	Etheostoma fonticola	18	1
2626	City Park	Hygr-1	27-Apr-21	1	Etheostoma fonticola	14	1
2626	City Park	Hygr-1	27-Apr-21	1	Etheostoma fonticola	13	1
2626	City Park	Hygr-1	27-Apr-21	2	Procambarus sp.		5
2626	City Park	Hygr-1	27-Apr-21	2	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	2	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	2	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	2	Etheostoma fonticola	13	1
2626	City Park	Hygr-1	27-Apr-21	3	Lepomis miniatus	60	1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	3	Procambarus sp.		1
2626	City Park	Hygr-1	27-Apr-21	4	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	4	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	4	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	4	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	4	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	4	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	4	Etheostoma fonticola	28	1
2626	City Park	Hygr-1	27-Apr-21	4	Etheostoma fonticola	16	1
2626	City Park	Hygr-1	27-Apr-21	4	Procambarus sp.		2
2626	City Park	Hygr-1	27-Apr-21	5	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	5	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	5	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	5	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	5	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	5	Procambarus sp.		1
2626	City Park	Hygr-1	27-Apr-21	6	Procambarus sp.		1
2626	City Park	Hygr-1	27-Apr-21	6	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	6	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	7	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	8	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	9	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	9	Etheostoma fonticola	31	1
2626	City Park	Hygr-1	27-Apr-21	9	Procambarus sp.		1

2626	City Park	Hygr-1	27-Apr-21	10	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	11	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	11	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	12	Procambarus sp.		1
2626	City Park	Hygr-1	27-Apr-21	12	No fish collected		
2626	City Park	Hygr-1	27-Apr-21	13	Procambarus sp.		1
2626	City Park	Hygr-1	27-Apr-21	13	No fish collected		
2626	City Park	Hygr-1	27-Apr-21	14	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	14	Gambusia sp.		1
2626	City Park	Hygr-1	27-Apr-21	15	Procambarus sp.		1
2626	City Park	Hygr-1	27-Apr-21	15	No fish collected		
2627	City Park	Hygr-2	27-Apr-21	1	Procambarus sp.		12
2627	City Park	Hygr-2	27-Apr-21	1	Gambusia sp.	25	1
2627	City Park	Hygr-2	27-Apr-21	1	Gambusia sp.	20	1
2627	City Park	Hygr-2	27-Apr-21	1	Gambusia sp.	21	1
2627	City Park	Hygr-2	27-Apr-21	1	Gambusia sp.	20	1
2627	City Park	Hygr-2	27-Apr-21	1	Gambusia sp.	15	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	19	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	17	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	38	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	11	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	18	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	19	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	14	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	19	1
2627	City Park	Hygr-2	27-Apr-21	1	Etheostoma fonticola	17	1
2627	City Park	Hygr-2	27-Apr-21	1	Micropterus salmoides	30	1
2627	City Park	Hygr-2	27-Apr-21	2	Gambusia sp.	31	1
2627	City Park	Hygr-2	27-Apr-21	2	Gambusia sp.	19	1
2627	City Park	Hygr-2	27-Apr-21	2	Gambusia sp.	18	1
2627	City Park	Hygr-2	27-Apr-21	2	Gambusia sp.	22	1
2627	City Park	Hygr-2	27-Apr-21	2	Procambarus sp.		1
2627	City Park	Hygr-2	27-Apr-21	3	Procambarus sp.		6
2627	City Park	Hygr-2	27-Apr-21	3	Etheostoma fonticola	32	1
2627	City Park	Hygr-2	27-Apr-21	3	Etheostoma fonticola	37	1
2627	City Park	Hygr-2	27-Apr-21	3	Etheostoma fonticola	18	1
2627	City Park	Hygr-2	27-Apr-21	4	Etheostoma fonticola	35	1
2627	City Park	Hygr-2	27-Apr-21	4	Gambusia sp.	34	1
2627	City Park	Hygr-2	27-Apr-21	4	Gambusia sp.	22	1
2627	City Park	Hygr-2	27-Apr-21	4	Gambusia sp.	35	1
2627	City Park	Hygr-2	27-Apr-21	4	Gambusia sp.	32	1

2627	City Park	Hygr-2	27-Apr-21	4	Gambusia sp.	33	1
2627	City Park	Hygr-2	27-Apr-21	4	Gambusia sp.	18	1
2627	City Park	Hygr-2	27-Apr-21	4	Lepomis miniatus	39	1
2627	City Park	Hygr-2	27-Apr-21	4	Procambarus sp.		2
2627	City Park	Hygr-2	27-Apr-21	5	Gambusia sp.	37	1
2627	City Park	Hygr-2	27-Apr-21	5	Etheostoma fonticola	18	1
2627	City Park	Hygr-2	27-Apr-21	5	Procambarus sp.		2
2627	City Park	Hygr-2	27-Apr-21	6	Procambarus sp.		4
2627	City Park	Hygr-2	27-Apr-21	6	No fish collected		
2627	City Park	Hygr-2	27-Apr-21	7	Gambusia sp.	16	1
2627	City Park	Hygr-2	27-Apr-21	7	Procambarus sp.		3
2627	City Park	Hygr-2	27-Apr-21	8	Etheostoma fonticola	40	1
2627	City Park	Hygr-2	27-Apr-21	8	Etheostoma fonticola	18	1
2627	City Park	Hygr-2	27-Apr-21	8	Etheostoma fonticola	16	1
2627	City Park	Hygr-2	27-Apr-21	9	Procambarus sp.		2
2627	City Park	Hygr-2	27-Apr-21	9	Gambusia sp.	42	1
2627	City Park	Hygr-2	27-Apr-21	9	Gambusia sp.	34	1
2627	City Park	Hygr-2	27-Apr-21	10	Gambusia sp.		1
2627	City Park	Hygr-2	27-Apr-21	11	No fish collected		
2627	City Park	Hygr-2	27-Apr-21	12	No fish collected		
2627	City Park	Hygr-2	27-Apr-21	13	No fish collected		
2627	City Park	Hygr-2	27-Apr-21	14	No fish collected		
2627	City Park	Hygr-2	27-Apr-21	15	Etheostoma fonticola	35	1
2627	City Park	Hygr-2	27-Apr-21	16	No fish collected		
2627	City Park	Hygr-2	27-Apr-21	2	Gambusia sp.	31	1
2628	City Park	Cabo-1	27-Apr-21	1	Etheostoma fonticola	26	1
2628	City Park	Cabo-1	27-Apr-21	1	Dionda nigrotaeniata	25	1
2628	City Park	Cabo-1	27-Apr-21	1	Micropterus salmoides	29	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	27	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	19	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	17	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	17	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	12	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	17	1
2628	City Park	Cabo-1	27-Apr-21	2	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	2	Gambusia sp.	11	1
2628	City Park	Cabo-1	27-Apr-21	2	Gambusia sp.	21	1

2628	City Park	Cabo-1	27-Apr-21	2	Gambusia sp.	18	1
2628	City Park	Cabo-1	27-Apr-21	2	Gambusia sp.	22	1
2628	City Park	Cabo-1	27-Apr-21	2	Gambusia sp.	19	1
2628	City Park	Cabo-1	27-Apr-21	2	Gambusia sp.	11	1
2628	City Park	Cabo-1	27-Apr-21	2	Gambusia sp.	9	1
2628	City Park	Cabo-1	27-Apr-21	2	Lepomis sp.	13	1
2628	City Park	Cabo-1	27-Apr-21	3	Lepomis miniatus	55	1
2628	City Park	Cabo-1	27-Apr-21	3	Etheostoma fonticola	19	1
2628	City Park	Cabo-1	27-Apr-21	3	Etheostoma fonticola	31	1
2628	City Park	Cabo-1	27-Apr-21	3	Gambusia sp.	21	1
2628	City Park	Cabo-1	27-Apr-21	4	Etheostoma fonticola	19	1
2628	City Park	Cabo-1	27-Apr-21	4	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	4	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	4	Etheostoma fonticola	14	1
2628	City Park	Cabo-1	27-Apr-21	4	Procambarus sp.		2
2628	City Park	Cabo-1	27-Apr-21	5	Gambusia sp.	35	1
2628	City Park	Cabo-1	27-Apr-21	5	Gambusia sp.	15	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	21	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	18	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	38	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	17	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	19	1
2628	City Park	Cabo-1	27-Apr-21	5	Etheostoma fonticola	18	1
2628	City Park	Cabo-1	27-Apr-21	5	Procambarus sp.		1
2628	City Park	Cabo-1	27-Apr-21	6	Lepomis miniatus	70	1
2628	City Park	Cabo-1	27-Apr-21	6	Etheostoma fonticola	18	1
2628	City Park	Cabo-1	27-Apr-21	6	Etheostoma fonticola	14	1
2628	City Park	Cabo-1	27-Apr-21	6	Etheostoma fonticola	14	1
2628	City Park	Cabo-1	27-Apr-21	6	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	6	Etheostoma fonticola	29	1
2628	City Park	Cabo-1	27-Apr-21	6	Etheostoma fonticola	22	1
2628	City Park	Cabo-1	27-Apr-21	6	Etheostoma fonticola	19	1
2628	City Park	Cabo-1	27-Apr-21	6	Procambarus sp.		4
2628	City Park	Cabo-1	27-Apr-21	6	Gambusia sp.	10	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	22	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	30	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	30	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	30	1

2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	16	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	18	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	7	Etheostoma fonticola	18	1
2628	City Park	Cabo-1	27-Apr-21	7	Gambusia sp.	38	1
2628	City Park	Cabo-1	27-Apr-21	7	Gambusia sp.	31	1
2628	City Park	Cabo-1	27-Apr-21	7	Gambusia sp.	18	1
2628	City Park	Cabo-1	27-Apr-21	7	Gambusia sp.	18	1
2628	City Park	Cabo-1	27-Apr-21	7	Procambarus sp.		1
2628	City Park	Cabo-1	27-Apr-21	8	Procambarus sp.		2
2628	City Park	Cabo-1	27-Apr-21	8	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	9	Etheostoma fonticola	33	1
2628	City Park	Cabo-1	27-Apr-21	9	Etheostoma fonticola	30	1
2628	City Park	Cabo-1	27-Apr-21	9	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	10	Etheostoma fonticola	21	1
2628	City Park	Cabo-1	27-Apr-21	10	Etheostoma fonticola	30	1
2628	City Park	Cabo-1	27-Apr-21	10	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	10	Procambarus sp.		2
2628	City Park	Cabo-1	27-Apr-21	11	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	11	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	11	Micropterus salmoides	28	1
2628	City Park	Cabo-1	27-Apr-21	11	Procambarus sp.		1
2628	City Park	Cabo-1	27-Apr-21	12	Lepomis miniatus	80	1
2628	City Park	Cabo-1	27-Apr-21	12	Etheostoma fonticola	17	1
2628	City Park	Cabo-1	27-Apr-21	12	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	12	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	12	Procambarus sp.		2
2628	City Park	Cabo-1	27-Apr-21	13	Etheostoma fonticola	32	1
2628	City Park	Cabo-1	27-Apr-21	13	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	13	Etheostoma fonticola	20	1
2628	City Park	Cabo-1	27-Apr-21	13	Etheostoma fonticola	17	1
2628	City Park	Cabo-1	27-Apr-21	14	Procambarus sp.		1
2628	City Park	Cabo-1	27-Apr-21	14	No fish collected		
2628	City Park	Cabo-1	27-Apr-21	15	Etheostoma fonticola	18	1
2628	City Park	Cabo-1	27-Apr-21	15	Etheostoma fonticola	15	1
2628	City Park	Cabo-1	27-Apr-21	16	Etheostoma fonticola	18	1
2628	City Park	Cabo-1	27-Apr-21	17	Procambarus sp.		1
2628	City Park	Cabo-1	27-Apr-21	17	No fish collected		
2628	City Park	Cabo-1	27-Apr-21	10	Micropterus salmoides	30	1

2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	16	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	17	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	18	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	14	1
2629	City Park	Cabo-2	27-Apr-21	2	Palaemonetes sp.		1
2629	City Park	Cabo-2	27-Apr-21	2	Ambloplites rupestris	17	1
2629	City Park	Cabo-2	27-Apr-21	2	Micropterus salmoides	27	1
2629	City Park	Cabo-2	27-Apr-21	3	Etheostoma fonticola	21	1
2629	City Park	Cabo-2	27-Apr-21	3	Gambusia sp.	21	1
2629	City Park	Cabo-2	27-Apr-21	3	Gambusia sp.	19	1
2629	City Park	Cabo-2	27-Apr-21	3	Palaemonetes sp.		1
2629	City Park	Cabo-2	27-Apr-21	3	Procambarus sp.		1
2629	City Park	Cabo-2	27-Apr-21	4	Procambarus sp.		2
2629	City Park	Cabo-2	27-Apr-21	4	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	5	Palaemonetes sp.		1
2629	City Park	Cabo-2	27-Apr-21	5	Lepomis miniatus	58	1
2629	City Park	Cabo-2	27-Apr-21	5	Etheostoma fonticola	35	1
2629	City Park	Cabo-2	27-Apr-21	5	Etheostoma fonticola	29	1
2629	City Park	Cabo-2	27-Apr-21	5	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	5	Lepomis sp.	18	1
2629	City Park	Cabo-2	27-Apr-21	6	Procambarus sp.		1
2629	City Park	Cabo-2	27-Apr-21	6	Etheostoma fonticola	27	1
2629	City Park	Cabo-2	27-Apr-21	6	Etheostoma fonticola	17	1
2629	City Park	Cabo-2	27-Apr-21	6	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	6	Etheostoma fonticola	25	1
2629	City Park	Cabo-2	27-Apr-21	6	Lepomis miniatus	70	1
2629	City Park	Cabo-2	27-Apr-21	6	Micropterus salmoides	15	1
2629	City Park	Cabo-2	27-Apr-21	6	Lepomis sp.	14	1
2629	City Park	Cabo-2	27-Apr-21	7	Procambarus sp.		2
2629	City Park	Cabo-2	27-Apr-21	7	Etheostoma fonticola	33	1
2629	City Park	Cabo-2	27-Apr-21	7	Etheostoma fonticola	9	1
2629	City Park	Cabo-2	27-Apr-21	7	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	7	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	8	Etheostoma fonticola	38	1
2629	City Park	Cabo-2	27-Apr-21	8	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	8	Etheostoma fonticola	17	1
2629	City Park	Cabo-2	27-Apr-21	9	Etheostoma fonticola	22	1

2629	City Park	Cabo-2	27-Apr-21	9	Etheostoma fonticola	17	1
2629	City Park	Cabo-2	27-Apr-21	9	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	9	Etheostoma fonticola	17	1
2629	City Park	Cabo-2	27-Apr-21	9	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	9	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	9	Procambarus sp.		1
2629	City Park	Cabo-2	27-Apr-21	10	Gambusia sp.	10	1
2629	City Park	Cabo-2	27-Apr-21	10	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	10	Etheostoma fonticola	31	1
2629	City Park	Cabo-2	27-Apr-21	11	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	11	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	11	Procambarus sp.		3
2629	City Park	Cabo-2	27-Apr-21	12	Etheostoma fonticola	18	1
2629	City Park	Cabo-2	27-Apr-21	13	Procambarus sp.		2
2629	City Park	Cabo-2	27-Apr-21	13	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	13	Etheostoma fonticola	30	1
2629	City Park	Cabo-2	27-Apr-21	13	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	13	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	13	Micropterus salmoides	34	1
2629	City Park	Cabo-2	27-Apr-21	13	Micropterus salmoides	28	1
2629	City Park	Cabo-2	27-Apr-21	14	Procambarus sp.		1
2629	City Park	Cabo-2	27-Apr-21	14	No fish collected		
2629	City Park	Cabo-2	27-Apr-21	15	Procambarus sp.		1
2629	City Park	Cabo-2	27-Apr-21	15	Etheostoma fonticola	17	1
2629	City Park	Cabo-2	27-Apr-21	16	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	16	Etheostoma fonticola	16	1
2629	City Park	Cabo-2	27-Apr-21	17	Etheostoma fonticola	39	1
2629	City Park	Cabo-2	27-Apr-21	18	Etheostoma fonticola	16	1
2629	City Park	Cabo-2	27-Apr-21	18	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	18	Etheostoma fonticola	18	1
2629	City Park	Cabo-2	27-Apr-21	18	Procambarus sp.		1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	34	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	21	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	18	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	30	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	12	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	14	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	14	1

2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	35	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	16	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	20	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	19	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	18	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	13	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	13	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	17	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	18	1
2629	City Park	Cabo-2	27-Apr-21	1	Etheostoma fonticola	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Dionda nigrotaeniata	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Dionda nigrotaeniata	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Micropterus salmoides	30	1
2629	City Park	Cabo-2	27-Apr-21	1	Procambarus sp.		3
2629	City Park	Cabo-2	27-Apr-21	1	Palaemonetes sp.		4
2629	City Park	Cabo-2	27-Apr-21	1	Gambusia sp.	10	1
2629	City Park	Cabo-2	27-Apr-21	1	Gambusia sp.	15	1
2629	City Park	Cabo-2	27-Apr-21	1	Gambusia sp.	14	1
2629	City Park	Cabo-2	27-Apr-21	1	Gambusia sp.	12	1
2629	City Park	Cabo-2	27-Apr-21	1	Lepomis sp.	15	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	16	1
2629	City Park	Cabo-2	27-Apr-21	2	Etheostoma fonticola	18	1
2630	City Park	Pota-1	27-Apr-21	1	Etheostoma fonticola	30	1
2630	City Park	Pota-1	27-Apr-21	1	Dionda nigrotaeniata	50	1
2630	City Park	Pota-1	27-Apr-21	2	Lepomis auritus	83	1
2630	City Park	Pota-1	27-Apr-21	3	No fish collected		
2630	City Park	Pota-1	27-Apr-21	4	Gambusia sp.	31	1
2630	City Park	Pota-1	27-Apr-21	5	No fish collected		
2630	City Park	Pota-1	27-Apr-21	6	No fish collected		
2630	City Park	Pota-1	27-Apr-21	7	No fish collected		

2630	City Park	Pota-1	27-Apr-21	8	No fish collected		
2630	City Park	Pota-1	27-Apr-21	9	No fish collected		
2630	City Park	Pota-1	27-Apr-21	10	No fish collected		
2630	City Park	Pota-1	27-Apr-21	11	No fish collected		
2630	City Park	Pota-1	27-Apr-21	12	No fish collected		
2630	City Park	Pota-1	27-Apr-21	13	No fish collected		
2630	City Park	Pota-1	27-Apr-21	14	No fish collected		
2630	City Park	Pota-1	27-Apr-21	15	No fish collected		
2631	City Park	Pota-2	27-Apr-21	1	Ambloplites rupestris	18	1
2631	City Park	Pota-2	27-Apr-21	1	Etheostoma fonticola	17	1
2631	City Park	Pota-2	27-Apr-21	2	Palaemonetes sp.		1
2631	City Park	Pota-2	27-Apr-21	2	Etheostoma fonticola	19	1
2631	City Park	Pota-2	27-Apr-21	2	Gambusia sp.	18	1
2631	City Park	Pota-2	27-Apr-21	3	No fish collected		
2631	City Park	Pota-2	27-Apr-21	4	No fish collected		
2631	City Park	Pota-2	27-Apr-21	5	No fish collected		
2631	City Park	Pota-2	27-Apr-21	6	Etheostoma fonticola	16	1
2631	City Park	Pota-2	27-Apr-21	7	Etheostoma fonticola	17	1
2631	City Park	Pota-2	27-Apr-21	8	No fish collected		
2631	City Park	Pota-2	27-Apr-21	9	Etheostoma fonticola	13	1
2631	City Park	Pota-2	27-Apr-21	10	No fish collected		
2631	City Park	Pota-2	27-Apr-21	11	No fish collected		
2631	City Park	Pota-2	27-Apr-21	12	No fish collected		
2631	City Park	Pota-2	27-Apr-21	13	No fish collected		
2631	City Park	Pota-2	27-Apr-21	14	No fish collected		
2631	City Park	Pota-2	27-Apr-21	15	No fish collected		
2632	City Park	Sagi-1	27-Apr-21	1	Etheostoma fonticola	24	1
2632	City Park	Sagi-1	27-Apr-21	1	Gambusia sp.	14	1
2632	City Park	Sagi-1	27-Apr-21	1	Procambarus sp.		1
2632	City Park	Sagi-1	27-Apr-21	2	Lepomis miniatus	70	1
2632	City Park	Sagi-1	27-Apr-21	3	Procambarus sp.		4
2632	City Park	Sagi-1	27-Apr-21	3	Etheostoma fonticola	30	1
2632	City Park	Sagi-1	27-Apr-21	3	Etheostoma fonticola	21	1
2632	City Park	Sagi-1	27-Apr-21	3	Etheostoma fonticola	22	1
2632	City Park	Sagi-1	27-Apr-21	3	Etheostoma fonticola	26	1
2632	City Park	Sagi-1	27-Apr-21	3	Gambusia sp.	15	1
2632	City Park	Sagi-1	27-Apr-21	3	Lepomis miniatus	65	1
2632	City Park	Sagi-1	27-Apr-21	3	Lepomis miniatus	48	1
2632	City Park	Sagi-1	27-Apr-21	4	Etheostoma fonticola	21	1
2632	City Park	Sagi-1	27-Apr-21	4	Etheostoma fonticola	29	1
2632	City Park	Sagi-1	27-Apr-21	4	Etheostoma fonticola	24	1

2632	City Park	Sagi-1	27-Apr-21	4	Etheostoma fonticola	23	1
2632	City Park	Sagi-1	27-Apr-21	4	Procambarus sp.		1
2632	City Park	Sagi-1	27-Apr-21	5	Procambarus sp.		3
2632	City Park	Sagi-1	27-Apr-21	5	No fish collected		
2632	City Park	Sagi-1	27-Apr-21	6	Etheostoma fonticola	25	1
2632	City Park	Sagi-1	27-Apr-21	6	Etheostoma fonticola	20	1
2632	City Park	Sagi-1	27-Apr-21	7	No fish collected		
2632	City Park	Sagi-1	27-Apr-21	8	Etheostoma fonticola	21	1
2632	City Park	Sagi-1	27-Apr-21	8	Gambusia sp.	11	1
2632	City Park	Sagi-1	27-Apr-21	8	Procambarus sp.		1
2632	City Park	Sagi-1	27-Apr-21	9	Etheostoma fonticola	16	1
2632	City Park	Sagi-1	27-Apr-21	10	Etheostoma fonticola	38	1
2632	City Park	Sagi-1	27-Apr-21	11	Etheostoma fonticola	15	1
2632	City Park	Sagi-1	27-Apr-21	12	Ambloplites rupestris	25	1
2632	City Park	Sagi-1	27-Apr-21	12	Procambarus sp.		1
2632	City Park	Sagi-1	27-Apr-21	13	No fish collected		
2632	City Park	Sagi-1	27-Apr-21	14	No fish collected		
2632	City Park	Sagi-1	27-Apr-21	15	No fish collected		
2633	City Park	Sagi-2	27-Apr-21	6	Gambusia sp.	15	1
2633	City Park	Sagi-2	27-Apr-21	6	Gambusia sp.	23	1
2633	City Park	Sagi-2	27-Apr-21	7	Gambusia sp.	14	1
2633	City Park	Sagi-2	27-Apr-21	8	Gambusia sp.	15	1
2633	City Park	Sagi-2	27-Apr-21	8	Procambarus sp.		1
2633	City Park	Sagi-2	27-Apr-21	9	Etheostoma fonticola	20	1
2633	City Park	Sagi-2	27-Apr-21	9	Etheostoma fonticola	32	1
2633	City Park	Sagi-2	27-Apr-21	9	Procambarus sp.		1
2633	City Park	Sagi-2	27-Apr-21	10	No fish collected		
2633	City Park	Sagi-2	27-Apr-21	11	Etheostoma fonticola	38	1
2633	City Park	Sagi-2	27-Apr-21	12	Procambarus sp.		1
2633	City Park	Sagi-2	27-Apr-21	12	No fish collected		
2633	City Park	Sagi-2	27-Apr-21	13	Procambarus sp.		1
2633	City Park	Sagi-2	27-Apr-21	13	No fish collected		
2633	City Park	Sagi-2	27-Apr-21	14	Procambarus sp.		1
2633	City Park	Sagi-2	27-Apr-21	14	Etheostoma fonticola	21	1
2633	City Park	Sagi-2	27-Apr-21	14	Etheostoma fonticola	27	1
2633	City Park	Sagi-2	27-Apr-21	15	No fish collected		
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	27	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	20	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	18	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	10	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	9	1

2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	11	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	10	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	11	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	12	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	15	1
2633	City Park	Sagi-2	27-Apr-21	1	Gambusia sp.	10	1
2633	City Park	Sagi-2	27-Apr-21	1	Etheostoma fonticola	22	1
2633	City Park	Sagi-2	27-Apr-21	1	Etheostoma fonticola	21	1
2633	City Park	Sagi-2	27-Apr-21	1	Etheostoma fonticola	22	1
2633	City Park	Sagi-2	27-Apr-21	1	Etheostoma fonticola	21	1
2633	City Park	Sagi-2	27-Apr-21	1	Etheostoma fonticola	30	1
2633	City Park	Sagi-2	27-Apr-21	1	Etheostoma fonticola	22	1
2633	City Park	Sagi-2	27-Apr-21	1	Etheostoma fonticola	19	1
2633	City Park	Sagi-2	27-Apr-21	2	Etheostoma fonticola	24	1
2633	City Park	Sagi-2	27-Apr-21	2	Etheostoma fonticola	25	1
2633	City Park	Sagi-2	27-Apr-21	2	Gambusia sp.	11	1
2633	City Park	Sagi-2	27-Apr-21	2	Gambusia sp.	13	1
2633	City Park	Sagi-2	27-Apr-21	2	Gambusia sp.	12	1
2633	City Park	Sagi-2	27-Apr-21	2	Gambusia sp.	12	1
2633	City Park	Sagi-2	27-Apr-21	2	Procambarus sp.		3
2633	City Park	Sagi-2	27-Apr-21	3	Etheostoma fonticola	17	1
2633	City Park	Sagi-2	27-Apr-21	4	Etheostoma fonticola	34	1
2633	City Park	Sagi-2	27-Apr-21	4	Etheostoma fonticola	30	1
2633	City Park	Sagi-2	27-Apr-21	4	Etheostoma fonticola	29	1
2633	City Park	Sagi-2	27-Apr-21	4	Gambusia sp.	20	1
2633	City Park	Sagi-2	27-Apr-21	4	Procambarus sp.		2
2633	City Park	Sagi-2	27-Apr-21	5	Procambarus sp.		1
2633	City Park	Sagi-2	27-Apr-21	5	Gambusia sp.	20	1
2633	City Park	Sagi-2	27-Apr-21	5	Gambusia sp.	14	1
2633	City Park	Sagi-2	27-Apr-21	5	Gambusia sp.	10	1
2634	I-35	Hydri-1	28-Apr-21	1	Procambarus sp.		16
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	20	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	12	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	28	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	14	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	15	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	12	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	10	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	10	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	14	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	9	1

2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	9	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	16	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	14	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	14	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	10	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	17	1
2634	I-35	Hydri-1	28-Apr-21	1	Gambusia sp.	14	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	20	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	24	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	18	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	16	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	13	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	22	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	13	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	17	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	1	Etheostoma fonticola	16	1
2634	I-35	Hydri-1	28-Apr-21	2	Etheostoma fonticola	16	1
2634	I-35	Hydri-1	28-Apr-21	2	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	2	Etheostoma fonticola	13	1
2634	I-35	Hydri-1	28-Apr-21	2	Etheostoma fonticola	13	1
2634	I-35	Hydri-1	28-Apr-21	2	Etheostoma fonticola	15	1
2634	I-35	Hydri-1	28-Apr-21	2	Lepomis miniatus	63	1
2634	I-35	Hydri-1	28-Apr-21	2	Procambarus sp.		5
2634	I-35	Hydri-1	28-Apr-21	2	Gambusia sp.	12	1
2634	I-35	Hydri-1	28-Apr-21	2	Gambusia sp.	11	1
2634	I-35	Hydri-1	28-Apr-21	2	Gambusia sp.	12	1
2634	I-35	Hydri-1	28-Apr-21	2	Micropterus salmoides	38	1
2634	I-35	Hydri-1	28-Apr-21	3	Procambarus sp.		10
2634	I-35	Hydri-1	28-Apr-21	3	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	3	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	3	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	3	Etheostoma fonticola	12	1
2634	I-35	Hydri-1	28-Apr-21	3	Etheostoma fonticola	13	1
2634	I-35	Hydri-1	28-Apr-21	3	Etheostoma fonticola	16	1
2634	I-35	Hydri-1	28-Apr-21	3	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	4	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	4	Etheostoma fonticola	19	1
2634	I-35	Hydri-1	28-Apr-21	4	Etheostoma fonticola	21	1
2634	I-35	Hydri-1	28-Apr-21	4	Etheostoma fonticola	25	1

2634	I-35	Hydri-1	28-Apr-21	4	Etheostoma fonticola	16	1
2634	I-35	Hydri-1	28-Apr-21	4	Etheostoma fonticola	13	1
2634	I-35	Hydri-1	28-Apr-21	4	Procambarus sp.		8
2634	I-35	Hydri-1	28-Apr-21	4	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	4	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	5	Procambarus sp.		7
2634	I-35	Hydri-1	28-Apr-21	5	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	5	Etheostoma fonticola	18	1
2634	I-35	Hydri-1	28-Apr-21	5	Etheostoma fonticola	17	1
2634	I-35	Hydri-1	28-Apr-21	5	Etheostoma fonticola	20	1
2634	I-35	Hydri-1	28-Apr-21	5	Etheostoma fonticola	22	1
2634	I-35	Hydri-1	28-Apr-21	5	Etheostoma fonticola	15	1
2634	I-35	Hydri-1	28-Apr-21	5	Etheostoma fonticola	19	1
2634	I-35	Hydri-1	28-Apr-21	6	Etheostoma fonticola	22	1
2634	I-35	Hydri-1	28-Apr-21	6	Etheostoma fonticola	10	1
2634	I-35	Hydri-1	28-Apr-21	6	Etheostoma fonticola	8	1
2634	I-35	Hydri-1	28-Apr-21	6	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	6	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	6	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	6	Procambarus sp.		5
2634	I-35	Hydri-1	28-Apr-21	7	Etheostoma fonticola	24	1
2634	I-35	Hydri-1	28-Apr-21	7	Etheostoma fonticola	15	1
2634	I-35	Hydri-1	28-Apr-21	7	Etheostoma fonticola	11	1
2634	I-35	Hydri-1	28-Apr-21	7	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	8	Procambarus sp.		2
2634	I-35	Hydri-1	28-Apr-21	8	Etheostoma fonticola	15	1
2634	I-35	Hydri-1	28-Apr-21	8	Etheostoma fonticola	12	1
2634	I-35	Hydri-1	28-Apr-21	9	Procambarus sp.		1
2634	I-35	Hydri-1	28-Apr-21	9	Gambusia sp.		1
2634	I-35	Hydri-1	28-Apr-21	9	Etheostoma fonticola	11	1
2634	I-35	Hydri-1	28-Apr-21	10	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	10	Etheostoma fonticola	10	1
2634	I-35	Hydri-1	28-Apr-21	11	No fish collected		
2634	I-35	Hydri-1	28-Apr-21	12	Procambarus sp.		2
2634	I-35	Hydri-1	28-Apr-21	12	Etheostoma fonticola	9	1
2634	I-35	Hydri-1	28-Apr-21	13	Procambarus sp.		1
2634	I-35	Hydri-1	28-Apr-21	13	Etheostoma fonticola	16	1
2634	I-35	Hydri-1	28-Apr-21	13	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	14	Procambarus sp.		1
2634	I-35	Hydri-1	28-Apr-21	14	No fish collected		
2634	I-35	Hydri-1	28-Apr-21	15	Etheostoma fonticola	21	1

2634	I-35	Hydri-1	28-Apr-21	16	Etheostoma fonticola	13	1
2634	I-35	Hydri-1	28-Apr-21	17	Etheostoma fonticola	15	1
2634	I-35	Hydri-1	28-Apr-21	18	Etheostoma fonticola	19	1
2634	I-35	Hydri-1	28-Apr-21	18	Etheostoma fonticola	18	1
2634	I-35	Hydri-1	28-Apr-21	18	Etheostoma fonticola	10	1
2634	I-35	Hydri-1	28-Apr-21	2	Etheostoma fonticola	20	1
2634	I-35	Hydri-1	28-Apr-21	2	Etheostoma fonticola	15	1
2634	I-35	Hydri-1	28-Apr-21	3	Ameiurus natalis	15	1
2634	I-35	Hydri-1	28-Apr-21	18	Etheostoma fonticola	14	1
2634	I-35	Hydri-1	28-Apr-21	19	Gambusia sp.		1
2635	I-35	Hygr-1	28-Apr-21	11	Procambarus sp.		3
2635	I-35	Hygr-1	28-Apr-21	11	No fish collected		
2635	I-35	Hygr-1	28-Apr-21	12	No fish collected		
2635	I-35	Hygr-1	28-Apr-21	13	No fish collected		
2635	I-35	Hygr-1	28-Apr-21	14	No fish collected		
2635	I-35	Hygr-1	28-Apr-21	15	No fish collected		
2635	I-35	Hygr-1	28-Apr-21	1	Procambarus sp.		40
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	21	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	22	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	32	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	34	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	26	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	18	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	11	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	18	1
2635	I-35	Hygr-1	28-Apr-21	1	Gambusia sp.	12	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	28	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	29	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	27	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	20	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	23	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	28	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	22	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	16	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	15	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	16	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	18	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	20	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	22	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	19	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	13	1

2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	21	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	19	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	19	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	14	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	18	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	15	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	28	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	16	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	20	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	19	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	21	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	25	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	14	1
2635	I-35	Hygr-1	28-Apr-21	1	Etheostoma fonticola	10	1
2635	I-35	Hygr-1	28-Apr-21	2	Etheostoma fonticola	17	1
2635	I-35	Hygr-1	28-Apr-21	2	Etheostoma fonticola	22	1
2635	I-35	Hygr-1	28-Apr-21	2	Etheostoma fonticola	18	1
2635	I-35	Hygr-1	28-Apr-21	2	Etheostoma fonticola	19	1
2635	I-35	Hygr-1	28-Apr-21	2	Etheostoma fonticola	20	1
2635	I-35	Hygr-1	28-Apr-21	2	Etheostoma fonticola	17	1
2635	I-35	Hygr-1	28-Apr-21	2	Gambusia sp.	17	1
2635	I-35	Hygr-1	28-Apr-21	2	Gambusia sp.	16	1
2635	I-35	Hygr-1	28-Apr-21	2	Gambusia sp.	18	1
2635	I-35	Hygr-1	28-Apr-21	2	Gambusia sp.	10	1
2635	I-35	Hygr-1	28-Apr-21	2	Gambusia sp.	10	1
2635	I-35	Hygr-1	28-Apr-21	2	Procambarus sp.		10
2635	I-35	Hygr-1	28-Apr-21	3	Procambarus sp.		8
2635	I-35	Hygr-1	28-Apr-21	3	Etheostoma fonticola	28	1
2635	I-35	Hygr-1	28-Apr-21	3	Etheostoma fonticola	28	1
2635	I-35	Hygr-1	28-Apr-21	3	Etheostoma fonticola	26	1
2635	I-35	Hygr-1	28-Apr-21	3	Etheostoma fonticola	17	1
2635	I-35	Hygr-1	28-Apr-21	3	Etheostoma fonticola	15	1
2635	I-35	Hygr-1	28-Apr-21	3	Etheostoma fonticola	17	1
2635	I-35	Hygr-1	28-Apr-21	3	Gambusia sp.	28	1
2635	I-35	Hygr-1	28-Apr-21	3	Gambusia sp.	10	1
2635	I-35	Hygr-1	28-Apr-21	4	Etheostoma fonticola	22	1
2635	I-35	Hygr-1	28-Apr-21	4	Etheostoma fonticola	29	1
2635	I-35	Hygr-1	28-Apr-21	4	Procambarus sp.		2
2635	I-35	Hygr-1	28-Apr-21	5	Procambarus sp.		1
2635	I-35	Hygr-1	28-Apr-21	5	Etheostoma fonticola	21	1
2635	I-35	Hygr-1	28-Apr-21	5	Etheostoma fonticola	19	1

2635	I-35	Hygr-1	28-Apr-21	5	Etheostoma fonticola	27	1
2635	I-35	Hygr-1	28-Apr-21	6	Etheostoma fonticola	17	1
2635	I-35	Hygr-1	28-Apr-21	6	Procambarus sp.		2
2635	I-35	Hygr-1	28-Apr-21	7	Procambarus sp.		3
2635	I-35	Hygr-1	28-Apr-21	7	Etheostoma fonticola	22	1
2635	I-35	Hygr-1	28-Apr-21	7	Etheostoma fonticola	15	1
2635	I-35	Hygr-1	28-Apr-21	7	Etheostoma fonticola	22	1
2635	I-35	Hygr-1	28-Apr-21	7	Gambusia sp.	29	1
2635	I-35	Hygr-1	28-Apr-21	8	Etheostoma fonticola	21	1
2635	I-35	Hygr-1	28-Apr-21	8	Etheostoma fonticola	24	1
2635	I-35	Hygr-1	28-Apr-21	8	Gambusia sp.	32	1
2635	I-35	Hygr-1	28-Apr-21	8	Procambarus sp.		1
2635	I-35	Hygr-1	28-Apr-21	9	Procambarus sp.		1
2635	I-35	Hygr-1	28-Apr-21	9	No fish collected		
2635	I-35	Hygr-1	28-Apr-21	10	Fundulus chrysotus	39	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	15	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	12	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	20	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	35	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	20	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	36	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	14	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	16	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	18	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	22	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	13	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	12	1
2636	I-35	Sagi-1	28-Apr-21	1	Etheostoma fonticola	14	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	31	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	18	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	12	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	9	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	21	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	18	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	10	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	15	1
2636	I-35	Sagi-1	28-Apr-21	1	Gambusia sp.	11	1
2636	I-35	Sagi-1	28-Apr-21	1	Procambarus sp.		16
2636	I-35	Sagi-1	28-Apr-21	2	Gambusia sp.	16	1
2636	I-35	Sagi-1	28-Apr-21	2	Gambusia sp.	13	1
2636	I-35	Sagi-1	28-Apr-21	2	Gambusia sp.	12	1

2636	I-35	Sagi-1	28-Apr-21	2	Gambusia sp.	12	1
2636	I-35	Sagi-1	28-Apr-21	2	Gambusia sp.	8	1
2636	I-35	Sagi-1	28-Apr-21	2	Etheostoma fonticola	20	1
2636	I-35	Sagi-1	28-Apr-21	2	Etheostoma fonticola	26	1
2636	I-35	Sagi-1	28-Apr-21	2	Etheostoma fonticola	20	1
2636	I-35	Sagi-1	28-Apr-21	2	Procambarus sp.		6
2636	I-35	Sagi-1	28-Apr-21	3	Etheostoma fonticola	38	1
2636	I-35	Sagi-1	28-Apr-21	3	Etheostoma fonticola	13	1
2636	I-35	Sagi-1	28-Apr-21	3	Etheostoma fonticola	14	1
2636	I-35	Sagi-1	28-Apr-21	3	Gambusia sp.	15	1
2636	I-35	Sagi-1	28-Apr-21	3	Gambusia sp.	23	1
2636	I-35	Sagi-1	28-Apr-21	3	Gambusia sp.	9	1
2636	I-35	Sagi-1	28-Apr-21	3	Procambarus sp.		8
2636	I-35	Sagi-1	28-Apr-21	4	Procambarus sp.		1
2636	I-35	Sagi-1	28-Apr-21	4	No fish collected		
2636	I-35	Sagi-1	28-Apr-21	5	Procambarus sp.		7
2636	I-35	Sagi-1	28-Apr-21	5	Gambusia sp.	22	1
2636	I-35	Sagi-1	28-Apr-21	5	Gambusia sp.	28	1
2636	I-35	Sagi-1	28-Apr-21	5	Ambloplites rupestris	17	1
2636	I-35	Sagi-1	28-Apr-21	5	Ambloplites rupestris	17	1
2636	I-35	Sagi-1	28-Apr-21	6	Procambarus sp.		2
2636	I-35	Sagi-1	28-Apr-21	6	No fish collected		
2636	I-35	Sagi-1	28-Apr-21	7	Procambarus sp.		1
2636	I-35	Sagi-1	28-Apr-21	7	Etheostoma fonticola	21	1
2636	I-35	Sagi-1	28-Apr-21	8	Etheostoma fonticola	33	1
2636	I-35	Sagi-1	28-Apr-21	9	Procambarus sp.		2
2636	I-35	Sagi-1	28-Apr-21	9	Gambusia sp.	11	1
2636	I-35	Sagi-1	28-Apr-21	10	Procambarus sp.		1
2636	I-35	Sagi-1	28-Apr-21	10	No fish collected		
2636	I-35	Sagi-1	28-Apr-21	11	No fish collected		
2636	I-35	Sagi-1	28-Apr-21	12	Procambarus sp.		2
2636	I-35	Sagi-1	28-Apr-21	12	No fish collected		
2636	I-35	Sagi-1	28-Apr-21	13	No fish collected		
2636	I-35	Sagi-1	28-Apr-21	14	Etheostoma fonticola	16	1
2636	I-35	Sagi-1	28-Apr-21	15	Lepomis miniatus	60	1
2637	I-35	Sagi-2	28-Apr-21	1	Procambarus sp.		3
2637	I-35	Sagi-2	28-Apr-21	1	Ambloplites rupestris	25	1
2637	I-35	Sagi-2	28-Apr-21	1	Lepomis miniatus	75	1
2637	I-35	Sagi-2	28-Apr-21	1	Lepomis miniatus	20	1
2637	I-35	Sagi-2	28-Apr-21	1	Lepomis miniatus	22	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	17	1

2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	12	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	13	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	15	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	19	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	15	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	20	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	16	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	12	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	22	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	13	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	25	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	14	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	13	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	18	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	19	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	17	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	10	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	15	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	15	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.	19	1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	1	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	30	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	19	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	15	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	16	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	17	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	20	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	17	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	23	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	20	1
2637	I-35	Sagi-2	28-Apr-21	1	Etheostoma fonticola	15	1
2637	I-35	Sagi-2	28-Apr-21	2	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	2	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	2	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	2	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	2	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	2	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	2	Procambarus sp.		5
2637	I-35	Sagi-2	28-Apr-21	3	Lepomis miniatus	48	1

2637	I-35	Sagi-2	28-Apr-21	2	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	3	Gambusia sp.		1
2637	I-35	Sagi-2	28-Apr-21	3	Ambloplites rupestris	23	1
2637	I-35	Sagi-2	28-Apr-21	4	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	5	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	5	Procambarus sp.		1
2637	I-35	Sagi-2	28-Apr-21	6	Procambarus sp.		3
2637	I-35	Sagi-2	28-Apr-21	6	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	7	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	8	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	9	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	10	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	11	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	12	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	13	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	14	Procambarus sp.		1
2637	I-35	Sagi-2	28-Apr-21	14	No fish collected		
2637	I-35	Sagi-2	28-Apr-21	15	No fish collected		
2638	I-35	Hygr-2	28-Apr-21	5	Etheostoma fonticola	22	1
2638	I-35	Hygr-2	28-Apr-21	5	Etheostoma fonticola	25	1
2638	I-35	Hygr-2	28-Apr-21	5	Etheostoma fonticola	15	1
2638	I-35	Hygr-2	28-Apr-21	5	Etheostoma fonticola	12	1
2638	I-35	Hygr-2	28-Apr-21	6	Etheostoma fonticola	22	1
2638	I-35	Hygr-2	28-Apr-21	6	Procambarus sp.		2
2638	I-35	Hygr-2	28-Apr-21	7	Procambarus sp.		2
2638	I-35	Hygr-2	28-Apr-21	7	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	8	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	8	Procambarus sp.		1
2638	I-35	Hygr-2	28-Apr-21	9	No fish collected		
2638	I-35	Hygr-2	28-Apr-21	10	Etheostoma fonticola	15	1
2638	I-35	Hygr-2	28-Apr-21	10	Procambarus sp.		5
2638	I-35	Hygr-2	28-Apr-21	11	Procambarus sp.		1
2638	I-35	Hygr-2	28-Apr-21	11	Etheostoma fonticola	20	1
2638	I-35	Hygr-2	28-Apr-21	12	Procambarus sp.		2
2638	I-35	Hygr-2	28-Apr-21	13	Procambarus sp.		2
2638	I-35	Hygr-2	28-Apr-21	14	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	14	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	14	Etheostoma fonticola	15	1
2638	I-35	Hygr-2	28-Apr-21	15	Procambarus sp.		1
2638	I-35	Hygr-2	28-Apr-21	15	No fish collected		
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	9	1

2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	42	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	39	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	17	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	25	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	10	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	10	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	16	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	17	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	15	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	11	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	12	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	11	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	11	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	17	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	12	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	12	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	11	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	20	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	10	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	10	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.	11	1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	1	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	23	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	26	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	17	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	22	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	17	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	22	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	20	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	16	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	21	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	14	1
2638	I-35	Hygr-2	28-Apr-21	1	Etheostoma fonticola	14	1
2638	I-35	Hygr-2	28-Apr-21	1	Ambloplites rupestris	24	1
2638	I-35	Hygr-2	28-Apr-21	1	Ambloplites rupestris	14	1
2638	I-35	Hygr-2	28-Apr-21	1	Hypostomus plecostomus	21	1
2638	I-35	Hygr-2	28-Apr-21	1	Procambarus sp.		20
2638	I-35	Hygr-2	28-Apr-21	2	Etheostoma fonticola	26	1
2638	I-35	Hygr-2	28-Apr-21	2	Etheostoma fonticola	21	1

2638	I-35	Hygr-2	28-Apr-21	2	Etheostoma fonticola	11	1
2638	I-35	Hygr-2	28-Apr-21	2	Etheostoma fonticola	20	1
2638	I-35	Hygr-2	28-Apr-21	2	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	2	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	2	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	2	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	2	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	2	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	2	Procambarus sp.		8
2638	I-35	Hygr-2	28-Apr-21	3	Procambarus sp.		3
2638	I-35	Hygr-2	28-Apr-21	3	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	3	Etheostoma fonticola	23	1
2638	I-35	Hygr-2	28-Apr-21	3	Etheostoma fonticola	25	1
2638	I-35	Hygr-2	28-Apr-21	3	Ambloplites rupestris	24	1
2638	I-35	Hygr-2	28-Apr-21	4	Etheostoma fonticola	18	1
2638	I-35	Hygr-2	28-Apr-21	4	Etheostoma fonticola	30	1
2638	I-35	Hygr-2	28-Apr-21	4	Etheostoma fonticola	18	1
2638	I-35	Hygr-2	28-Apr-21	4	Etheostoma fonticola	22	1
2638	I-35	Hygr-2	28-Apr-21	4	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	4	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	4	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	4	Procambarus sp.		3
2638	I-35	Hygr-2	28-Apr-21	5	Gambusia sp.		1
2638	I-35	Hygr-2	28-Apr-21	5	Procambarus sp.		7
2639	I-35	Cabo-1	28-Apr-21	1	Procambarus sp.		17
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	38	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	42	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	22	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	17	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	30	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	15	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	14	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	25	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	10	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	12	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	17	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	18	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	21	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	10	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	11	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	17	1

2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	10	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	10	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	10	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	10	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	15	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.	12	1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	34	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	23	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	37	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	35	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	25	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	29	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	25	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	22	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	21	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	19	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	19	1
2639	I-35	Cabo-1	28-Apr-21	1	Etheostoma fonticola	18	1
2639	I-35	Cabo-1	28-Apr-21	1	Palaemonetes sp.		1
2639	I-35	Cabo-1	28-Apr-21	1	Lepomis miniatus	47	1
2639	I-35	Cabo-1	28-Apr-21	1	Astyanax mexicanus	17	1
2639	I-35	Cabo-1	28-Apr-21	1	Lepomis sp.	9	1
2639	I-35	Cabo-1	28-Apr-21	1	Ambloplites rupestris	15	1
2639	I-35	Cabo-1	28-Apr-21	2	Procambarus sp.		3

2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	2	Lepomis sp.	15	1
2639	I-35	Cabo-1	28-Apr-21	3	Procambarus sp.		5
2639	I-35	Cabo-1	28-Apr-21	3	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	3	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	3	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	4	Procambarus sp.		5
2639	I-35	Cabo-1	28-Apr-21	4	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	4	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	4	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	5	Procambarus sp.		2
2639	I-35	Cabo-1	28-Apr-21	5	No fish collected		
2639	I-35	Cabo-1	28-Apr-21	6	Procambarus sp.		5
2639	I-35	Cabo-1	28-Apr-21	6	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	6	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	7	Lepomis miniatus	50	1
2639	I-35	Cabo-1	28-Apr-21	7	Procambarus sp.		6
2639	I-35	Cabo-1	28-Apr-21	8	No fish collected		
2639	I-35	Cabo-1	28-Apr-21	9	Lepomis miniatus	22	1
2639	I-35	Cabo-1	28-Apr-21	9	Procambarus sp.		2
2639	I-35	Cabo-1	28-Apr-21	10	Ambloplites rupestris	18	1
2639	I-35	Cabo-1	28-Apr-21	10	Procambarus sp.		1
2639	I-35	Cabo-1	28-Apr-21	11	No fish collected		
2639	I-35	Cabo-1	28-Apr-21	12	Procambarus sp.		2
2639	I-35	Cabo-1	28-Apr-21	12	No fish collected		
2639	I-35	Cabo-1	28-Apr-21	13	Procambarus sp.		2
2639	I-35	Cabo-1	28-Apr-21	13	Etheostoma fonticola	35	1
2639	I-35	Cabo-1	28-Apr-21	13	Gambusia sp.		1
2639	I-35	Cabo-1	28-Apr-21	14	Procambarus sp.		1
2639	I-35	Cabo-1	28-Apr-21	14	No fish collected		
2639	I-35	Cabo-1	28-Apr-21	15	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Procambarus sp.		17
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	20	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	32	1

2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	22	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	22	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	15	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	12	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	15	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	20	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	24	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	20	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	18	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	9	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	23	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	17	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	24	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	15	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	15	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	24	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	16	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.	14	1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	34	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	18	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	28	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	26	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	13	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	31	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	20	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	26	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	19	1

2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	25	1
2640	I-35	Cabo-2	28-Apr-21	1	Etheostoma fonticola	18	1
2640	I-35	Cabo-2	28-Apr-21	1	Ambloplites rupestris	18	1
2640	I-35	Cabo-2	28-Apr-21	1	Ambloplites rupestris	22	1
2640	I-35	Cabo-2	28-Apr-21	2	Etheostoma fonticola	19	1
2640	I-35	Cabo-2	28-Apr-21	2	Etheostoma fonticola	15	1
2640	I-35	Cabo-2	28-Apr-21	2	Etheostoma fonticola	16	1
2640	I-35	Cabo-2	28-Apr-21	2	Etheostoma fonticola	15	1
2640	I-35	Cabo-2	28-Apr-21	2	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	2	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	2	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	2	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	2	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	2	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	2	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	3	Ameiurus natalis	18	1
2640	I-35	Cabo-2	28-Apr-21	3	Procambarus sp.		6
2640	I-35	Cabo-2	28-Apr-21	4	Procambarus sp.		3
2640	I-35	Cabo-2	28-Apr-21	4	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	4	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	4	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	4	Etheostoma fonticola	27	1
2640	I-35	Cabo-2	28-Apr-21	5	Procambarus sp.		2
2640	I-35	Cabo-2	28-Apr-21	5	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	5	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	5	Ambloplites rupestris	15	1
2640	I-35	Cabo-2	28-Apr-21	5	Lepomis miniatus	105	1
2640	I-35	Cabo-2	28-Apr-21	6	Procambarus sp.		1
2640	I-35	Cabo-2	28-Apr-21	6	No fish collected		
2640	I-35	Cabo-2	28-Apr-21	7	No fish collected		
2640	I-35	Cabo-2	28-Apr-21	8	No fish collected		
2640	I-35	Cabo-2	28-Apr-21	9	Etheostoma fonticola	16	1
2640	I-35	Cabo-2	28-Apr-21	9	Etheostoma fonticola	28	1
2640	I-35	Cabo-2	28-Apr-21	9	Etheostoma fonticola	16	1
2640	I-35	Cabo-2	28-Apr-21	9	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	10	Procambarus sp.		2
2640	I-35	Cabo-2	28-Apr-21	10	No fish collected		
2640	I-35	Cabo-2	28-Apr-21	11	Procambarus sp.		1
2640	I-35	Cabo-2	28-Apr-21	11	Etheostoma fonticola	16	1
2640	I-35	Cabo-2	28-Apr-21	12	Procambarus sp.		1
2640	I-35	Cabo-2	28-Apr-21	12	No fish collected		

2640	I-35	Cabo-2	28-Apr-21	13	Procambarus sp.		1
2640	I-35	Cabo-2	28-Apr-21	13	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	13	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	14	No fish collected		
2640	I-35	Cabo-2	28-Apr-21	15	No fish collected		
2640	I-35	Cabo-2	28-Apr-21	15	Procambarus sp.		1
2640	I-35	Cabo-2	28-Apr-21	2	Procambarus sp.		3
2640	I-35	Cabo-2	28-Apr-21	3	Etheostoma fonticola	16	1
2640	I-35	Cabo-2	28-Apr-21	5	Gambusia sp.		1
2640	I-35	Cabo-2	28-Apr-21	5	Gambusia sp.		1
2641	I-35	Open-1	28-Apr-21	1	No fish collected		
2641	I-35	Open-1	28-Apr-21	2	No fish collected		
2641	I-35	Open-1	28-Apr-21	3	No fish collected		
2641	I-35	Open-1	28-Apr-21	4	No fish collected		
2641	I-35	Open-1	28-Apr-21	5	No fish collected		
2641	I-35	Open-1	28-Apr-21	6	No fish collected		
2641	I-35	Open-1	28-Apr-21	7	No fish collected		
2641	I-35	Open-1	28-Apr-21	8	No fish collected		
2641	I-35	Open-1	28-Apr-21	9	No fish collected		
2641	I-35	Open-1	28-Apr-21	10	Gambusia sp.	20	1
2641	I-35	Open-1	28-Apr-21	10	Gambusia sp.	22	1
2641	I-35	Open-1	28-Apr-21	11	No fish collected		
2641	I-35	Open-1	28-Apr-21	12	No fish collected		
2641	I-35	Open-1	28-Apr-21	13	No fish collected		
2641	I-35	Open-1	28-Apr-21	14	No fish collected		
2641	I-35	Open-1	28-Apr-21	15	No fish collected		
2642	I-35	Open-2	28-Apr-21	1	No fish collected		
2642	I-35	Open-2	28-Apr-21	2	No fish collected		
2642	I-35	Open-2	28-Apr-21	3	No fish collected		
2642	I-35	Open-2	28-Apr-21	4	No fish collected		
2642	I-35	Open-2	28-Apr-21	5	No fish collected		
2642	I-35	Open-2	28-Apr-21	6	No fish collected		
2642	I-35	Open-2	28-Apr-21	7	No fish collected		
2642	I-35	Open-2	28-Apr-21	8	No fish collected		
2642	I-35	Open-2	28-Apr-21	9	No fish collected		
2642	I-35	Open-2	28-Apr-21	10	No fish collected		
2643	I-35	Hydr-2	28-Apr-21	1	Procambarus sp.		35
2643	I-35	Hydr-2	28-Apr-21	1	Lepomis miniatus	94	1
2643	I-35	Hydr-2	28-Apr-21	1	Lepomis miniatus	72	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	16	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	11	1

2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	13	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	15	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	18	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	21	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	16	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	13	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	17	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	15	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	10	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	13	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	15	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	16	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	12	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	14	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	12	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	14	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	9	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	12	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	12	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.	10	1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	1	Gambusia sp.		1

2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	20	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	28	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	28	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	25	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	32	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	15	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	20	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	20	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	13	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	15	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	19	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	19	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	11	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	15	1
2643	I-35	Hydr-2	28-Apr-21	1	Etheostoma fonticola	16	1
2643	I-35	Hydr-2	28-Apr-21	1	Notropis chalybaeus	18	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	29	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	21	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	18	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	13	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	17	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	14	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	15	1
2643	I-35	Hydr-2	28-Apr-21	2	Etheostoma fonticola	10	1
2643	I-35	Hydr-2	28-Apr-21	2	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	2	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	2	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	2	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	2	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	2	Procambarus sp.		9
2643	I-35	Hydr-2	28-Apr-21	3	Etheostoma fonticola	23	1
2643	I-35	Hydr-2	28-Apr-21	3	Etheostoma fonticola	11	1
2643	I-35	Hydr-2	28-Apr-21	3	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	3	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	3	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	3	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	3	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	3	Procambarus sp.		13
2643	I-35	Hydr-2	28-Apr-21	4	Procambarus sp.		5
2643	I-35	Hydr-2	28-Apr-21	4	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	4	Gambusia sp.		1

2643	I-35	Hydr-2	28-Apr-21	4	Etheostoma fonticola	15	1
2643	I-35	Hydr-2	28-Apr-21	5	Etheostoma fonticola	19	1
2643	I-35	Hydr-2	28-Apr-21	5	Etheostoma fonticola	22	1
2643	I-35	Hydr-2	28-Apr-21	5	Etheostoma fonticola	13	1
2643	I-35	Hydr-2	28-Apr-21	5	Procambarus sp.		5
2643	I-35	Hydr-2	28-Apr-21	5	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	6	Etheostoma fonticola	12	1
2643	I-35	Hydr-2	28-Apr-21	6	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	6	Procambarus sp.		1
2643	I-35	Hydr-2	28-Apr-21	7	Procambarus sp.		2
2643	I-35	Hydr-2	28-Apr-21	7	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	7	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	7	Etheostoma fonticola	20	1
2643	I-35	Hydr-2	28-Apr-21	8	Etheostoma fonticola	20	1
2643	I-35	Hydr-2	28-Apr-21	8	Etheostoma fonticola	18	1
2643	I-35	Hydr-2	28-Apr-21	8	Etheostoma fonticola	18	1
2643	I-35	Hydr-2	28-Apr-21	8	Procambarus sp.		3
2643	I-35	Hydr-2	28-Apr-21	9	Etheostoma fonticola	24	1
2643	I-35	Hydr-2	28-Apr-21	9	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	9	Procambarus sp.		1
2643	I-35	Hydr-2	28-Apr-21	10	Procambarus sp.		3
2643	I-35	Hydr-2	28-Apr-21	10	Etheostoma fonticola	14	1
2643	I-35	Hydr-2	28-Apr-21	11	Etheostoma fonticola	15	1
2643	I-35	Hydr-2	28-Apr-21	12	Etheostoma fonticola	24	1
2643	I-35	Hydr-2	28-Apr-21	12	Etheostoma fonticola	24	1
2643	I-35	Hydr-2	28-Apr-21	13	Procambarus sp.		4
2643	I-35	Hydr-2	28-Apr-21	13	No fish collected		
2643	I-35	Hydr-2	28-Apr-21	14	No fish collected		
2643	I-35	Hydr-2	28-Apr-21	15	Etheostoma fonticola	24	1
2643	I-35	Hydr-2	28-Apr-21	16	Procambarus sp.		1
2643	I-35	Hydr-2	28-Apr-21	16	Etheostoma fonticola	22	1
2643	I-35	Hydr-2	28-Apr-21	17	Etheostoma fonticola	22	1
2643	I-35	Hydr-2	28-Apr-21	17	Procambarus sp.		3
2643	I-35	Hydr-2	28-Apr-21	17	Gambusia sp.		1
2643	I-35	Hydr-2	28-Apr-21	18	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Lepomis miniatus	34	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Gambusia sp.	25	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Gambusia sp.	26	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Gambusia sp.	20	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Gambusia sp.	24	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Gambusia sp.	25	1

2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Gambusia sp.	15	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Etheostoma fonticola	16	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	1	Etheostoma fonticola	20	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	2	Etheostoma fonticola	34	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	2	Lepomis miniatus	39	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	2	Gambusia sp.	28	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	2	Gambusia sp.	25	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	2	Gambusia sp.	21	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	3	Gambusia sp.	15	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	3	Gambusia sp.	29	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	3	Gambusia sp.	15	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	3	Gambusia sp.	22	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	3	Gambusia sp.	20	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	4	Etheostoma fonticola	23	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	4	Etheostoma fonticola	12	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	4	Etheostoma fonticola	22	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	5	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	6	Lepomis miniatus	42	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	6	Gambusia sp.	23	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	7	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	8	Lepomis miniatus	52	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	9	Gambusia sp.	38	1
2678	Spring Lake Dam	Pota-2	18-Oct-21	10	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	11	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	12	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	13	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	14	No fish collected		
2678	Spring Lake Dam	Pota-2	18-Oct-21	15	No fish collected		
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Etheostoma fonticola	34	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Etheostoma fonticola	21	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Lepomis miniatus	50	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	22	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	18	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	35	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	20	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	12	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	21	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	12	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	20	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Gambusia sp.	22	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	1	Procambarus sp.		1

2679	Spring Lake Dam	Sagi-2	18-Oct-21	2	No fish collected		
2679	Spring Lake Dam	Sagi-2	18-Oct-21	3	Lepomis miniatus	33	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	3	Lepomis miniatus	12	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	3	Gambusia sp.	45	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	3	Gambusia sp.	11	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	3	Gambusia sp.	15	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	3	Gambusia sp.	15	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	3	Procambarus sp.		1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	4	Lepomis miniatus	50	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	5	Etheostoma fonticola	20	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	5	Lepomis miniatus	37	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	6	Gambusia sp.	10	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	7	Procambarus sp.		1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	7	No fish collected		
2679	Spring Lake Dam	Sagi-2	18-Oct-21	8	Etheostoma fonticola	28	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	8	Dionda nigrotaeniata	65	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	8	Gambusia sp.	17	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	8	Procambarus sp.		1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	9	Lepomis miniatus	58	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	9	Lepomis miniatus	45	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	9	Palaemonetes sp.		1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	10	No fish collected		
2679	Spring Lake Dam	Sagi-2	18-Oct-21	11	Etheostoma fonticola	38	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	11	Gambusia sp.	12	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	11	Procambarus sp.		1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	12	Procambarus sp.		1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	12	No fish collected		
2679	Spring Lake Dam	Sagi-2	18-Oct-21	13	Procambarus sp.		1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	13	Lepomis miniatus	46	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	13	Etheostoma fonticola	35	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	13	Gambusia sp.	33	1
2679	Spring Lake Dam	Sagi-2	18-Oct-21	14	No fish collected		
2679	Spring Lake Dam	Sagi-2	18-Oct-21	15	Procambarus sp.		2
2679	Spring Lake Dam	Sagi-2	18-Oct-21	15	No fish collected		
2680	Spring Lake Dam	Ziz-2	18-Oct-21	1	Gambusia sp.	48	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	1	Gambusia sp.	26	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	1	Gambusia sp.	21	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	1	Lepomis miniatus	38	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	40	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	36	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	25	1

2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	12	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	11	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	15	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	21	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Gambusia sp.	28	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	2	Procambarus sp.		1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	3	Lepomis miniatus	70	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	4	Gambusia sp.	20	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	4	Gambusia sp.	40	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	4	Gambusia sp.	23	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	4	Palaemonetes sp.		1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	5	No fish collected		
2680	Spring Lake Dam	Ziz-2	18-Oct-21	6	No fish collected		
2680	Spring Lake Dam	Ziz-2	18-Oct-21	7	Gambusia sp.	23	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	7	Gambusia sp.	26	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	7	Gambusia sp.	23	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	8	Procambarus sp.		1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	8	No fish collected		
2680	Spring Lake Dam	Ziz-2	18-Oct-21	9	No fish collected		
2680	Spring Lake Dam	Ziz-2	18-Oct-21	10	No fish collected		
2680	Spring Lake Dam	Ziz-2	18-Oct-21	11	Palaemonetes sp.		1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	11	Gambusia sp.	20	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	12	Procambarus sp.		1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	12	Lepomis miniatus	36	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	12	Etheostoma fonticola	27	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	13	No fish collected		
2680	Spring Lake Dam	Ziz-2	18-Oct-21	14	Etheostoma fonticola	40	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	14	Etheostoma fonticola	25	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	14	Etheostoma fonticola	32	1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	14	Procambarus sp.		1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	15	Palaemonetes sp.		1
2680	Spring Lake Dam	Ziz-2	18-Oct-21	15	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	1	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	2	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	3	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	4	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	5	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	6	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	7	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	8	No fish collected		
2681	Spring Lake Dam	Open-1	18-Oct-21	9	No fish collected		

2681	Spring Lake Dam	Open-1	18-Oct-21	10	No fish collected		
2682	Spring Lake Dam	Hydr-1	18-Oct-21	1	Gambusia sp.	34	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	1	Gambusia sp.	18	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	1	Etheostoma fonticola	30	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	2	Gambusia sp.	20	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	2	Gambusia sp.	32	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	2	Gambusia sp.	29	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	2	Gambusia sp.	20	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	3	Gambusia sp.	30	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	3	Gambusia sp.	30	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	3	Etheostoma fonticola	25	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	4	Gambusia sp.	21	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	4	Gambusia sp.	20	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	4	Gambusia sp.	28	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	4	Etheostoma fonticola	36	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	5	Gambusia sp.	20	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	5	Gambusia sp.	17	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	5	Gambusia sp.	25	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	5	Gambusia sp.	20	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	5	Etheostoma fonticola	26	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	5	Etheostoma fonticola	20	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	5	Etheostoma fonticola	16	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	6	Procambarus sp.		1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	6	No fish collected		
2682	Spring Lake Dam	Hydr-1	18-Oct-21	7	Etheostoma fonticola	32	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	7	Etheostoma fonticola	33	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	7	Etheostoma fonticola	23	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	8	Etheostoma fonticola	32	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	8	Etheostoma fonticola	33	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	8	Etheostoma fonticola	26	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	8	Etheostoma fonticola	33	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	8	Gambusia sp.	40	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	9	Gambusia sp.	15	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	10	Etheostoma fonticola	22	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	10	Etheostoma fonticola	27	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	10	Procambarus sp.		1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	11	Gambusia sp.	28	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	12	Etheostoma fonticola	28	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	13	Procambarus sp.		1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	13	Gambusia sp.	28	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	13	Gambusia sp.	25	1

2682	Spring Lake Dam	Hydr-1	18-Oct-21	14	Etheostoma fonticola	29	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	14	Gambusia sp.	18	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	15	Gambusia sp.	24	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	15	Etheostoma fonticola	34	1
2682	Spring Lake Dam	Hydr-1	18-Oct-21	15	Procambarus sp.		2
2682	Spring Lake Dam	Hydr-1	18-Oct-21	16	No fish collected		
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Etheostoma fonticola	27	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Etheostoma fonticola	25	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Gambusia sp.	30	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Gambusia sp.	27	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Gambusia sp.	23	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Gambusia sp.	17	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Gambusia sp.	26	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Gambusia sp.	22	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	1	Gambusia sp.	22	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	2	Gambusia sp.	25	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	2	Gambusia sp.	27	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	3	Etheostoma fonticola	30	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	4	Gambusia sp.	22	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	5	No fish collected		
2683	Spring Lake Dam	Hydr-2	18-Oct-21	6	Procambarus sp.		1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	6	Etheostoma fonticola	29	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	7	Gambusia sp.	27	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	7	Gambusia sp.	17	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	8	Etheostoma fonticola	27	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	9	Etheostoma fonticola	36	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	10	Procambarus sp.		1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	10	No fish collected		
2683	Spring Lake Dam	Hydr-2	18-Oct-21	11	Gambusia sp.	27	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	11	Herichthys cyanoguttatus	50	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	12	Gambusia sp.	22	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	13	Procambarus sp.		1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	13	Etheostoma fonticola	35	1
2683	Spring Lake Dam	Hydr-2	18-Oct-21	14	No fish collected		
2683	Spring Lake Dam	Hydr-2	18-Oct-21	15	No fish collected		
2683	Spring Lake Dam	Hydr-2	18-Oct-21	4	Etheostoma fonticola	29	1
2684	Spring Lake Dam	Open-2	18-Oct-21	1	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	2	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	3	Hypostomus plecostomus	35	1
2684	Spring Lake Dam	Open-2	18-Oct-21	4	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	5	No fish collected		

2684	Spring Lake Dam	Open-2	18-Oct-21	6	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	7	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	8	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	9	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	10	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	11	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	12	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	13	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	14	No fish collected		
2684	Spring Lake Dam	Open-2	18-Oct-21	15	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	1	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	2	Astyanax mexicanus	50	1
2685	City Park	Ziz-1	19-Oct-21	3	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	4	Astyanax mexicanus	85	1
2685	City Park	Ziz-1	19-Oct-21	4	Astyanax mexicanus	83	1
2685	City Park	Ziz-1	19-Oct-21	4	Astyanax mexicanus	74	1
2685	City Park	Ziz-1	19-Oct-21	5	Astyanax mexicanus	60	1
2685	City Park	Ziz-1	19-Oct-21	6	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	7	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	8	Astyanax mexicanus	74	1
2685	City Park	Ziz-1	19-Oct-21	9	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	10	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	11	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	12	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	13	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	14	Procambarus sp.		2
2685	City Park	Ziz-1	19-Oct-21	14	No fish collected		
2685	City Park	Ziz-1	19-Oct-21	15	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	1	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	2	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	3	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	4	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	5	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	6	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	7	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	8	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	9	No fish collected		
2686	City Park	Ziz-2	19-Oct-21	10	No fish collected		
2687	City Park	Open-1	19-Oct-21	1	No fish collected		
2687	City Park	Open-1	19-Oct-21	2	No fish collected		
2687	City Park	Open-1	19-Oct-21	3	No fish collected		

2687	City Park	Open-1	19-Oct-21	4	No fish collected		
2687	City Park	Open-1	19-Oct-21	5	No fish collected		
2687	City Park	Open-1	19-Oct-21	6	No fish collected		
2687	City Park	Open-1	19-Oct-21	7	Etheostoma fonticola	18	1
2687	City Park	Open-1	19-Oct-21	8	No fish collected		
2687	City Park	Open-1	19-Oct-21	9	Etheostoma fonticola	38	1
2687	City Park	Open-1	19-Oct-21	10	No fish collected		
2687	City Park	Open-1	19-Oct-21	11	No fish collected		
2687	City Park	Open-1	19-Oct-21	12	No fish collected		
2687	City Park	Open-1	19-Oct-21	13	No fish collected		
2687	City Park	Open-1	19-Oct-21	14	No fish collected		
2687	City Park	Open-1	19-Oct-21	15	No fish collected		
2688	City Park	Cabo-1	19-Oct-21	9	Gambusia sp.	15	1
2688	City Park	Cabo-1	19-Oct-21	9	Gambusia sp.	10	1
2688	City Park	Cabo-1	19-Oct-21	9	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	10	Etheostoma fonticola	22	1
2688	City Park	Cabo-1	19-Oct-21	10	Etheostoma fonticola	25	1
2688	City Park	Cabo-1	19-Oct-21	10	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	11	Procambarus sp.		2
2688	City Park	Cabo-1	19-Oct-21	11	Etheostoma fonticola	28	1
2688	City Park	Cabo-1	19-Oct-21	11	Etheostoma fonticola	20	1
2688	City Park	Cabo-1	19-Oct-21	12	Etheostoma fonticola	31	1
2688	City Park	Cabo-1	19-Oct-21	13	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	13	No fish collected		
2688	City Park	Cabo-1	19-Oct-21	14	Etheostoma fonticola	24	1
2688	City Park	Cabo-1	19-Oct-21	14	Etheostoma fonticola	16	1
2688	City Park	Cabo-1	19-Oct-21	14	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	15	No fish collected		
2688	City Park	Cabo-1	19-Oct-21	1	Lepomis miniatus	57	1
2688	City Park	Cabo-1	19-Oct-21	1	Etheostoma fonticola	25	1
2688	City Park	Cabo-1	19-Oct-21	1	Etheostoma fonticola	24	1
2688	City Park	Cabo-1	19-Oct-21	1	Etheostoma fonticola	20	1
2688	City Park	Cabo-1	19-Oct-21	1	Gambusia sp.	11	1
2688	City Park	Cabo-1	19-Oct-21	1	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	1	Palaemonetes sp.		1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	26	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	31	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	17	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	26	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	17	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	35	1

2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	30	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	30	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	10	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	27	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	16	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	18	1
2688	City Park	Cabo-1	19-Oct-21	2	Etheostoma fonticola	17	1
2688	City Park	Cabo-1	19-Oct-21	2	Lepomis miniatus	72	1
2688	City Park	Cabo-1	19-Oct-21	2	Gambusia sp.	15	1
2688	City Park	Cabo-1	19-Oct-21	2	Gambusia sp.	12	1
2688	City Park	Cabo-1	19-Oct-21	2	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	3	Micropterus salmoides	72	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	35	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	35	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	18	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	31	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	34	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	28	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	20	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	24	1
2688	City Park	Cabo-1	19-Oct-21	3	Etheostoma fonticola	32	1
2688	City Park	Cabo-1	19-Oct-21	3	Lepomis miniatus	60	1
2688	City Park	Cabo-1	19-Oct-21	3	Gambusia sp.	16	1
2688	City Park	Cabo-1	19-Oct-21	3	Gambusia sp.	19	1
2688	City Park	Cabo-1	19-Oct-21	3	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	4	Etheostoma fonticola	18	1
2688	City Park	Cabo-1	19-Oct-21	4	Etheostoma fonticola	25	1
2688	City Park	Cabo-1	19-Oct-21	4	Etheostoma fonticola	18	1
2688	City Park	Cabo-1	19-Oct-21	4	Etheostoma fonticola	12	1
2688	City Park	Cabo-1	19-Oct-21	4	Gambusia sp.	12	1
2688	City Park	Cabo-1	19-Oct-21	5	Etheostoma fonticola	28	1
2688	City Park	Cabo-1	19-Oct-21	5	Etheostoma fonticola	30	1
2688	City Park	Cabo-1	19-Oct-21	5	Procambarus sp.		2
2688	City Park	Cabo-1	19-Oct-21	6	Gambusia sp.	18	1
2688	City Park	Cabo-1	19-Oct-21	6	Gambusia sp.	9	1
2688	City Park	Cabo-1	19-Oct-21	6	Gambusia sp.	13	1
2688	City Park	Cabo-1	19-Oct-21	6	Gambusia sp.	12	1
2688	City Park	Cabo-1	19-Oct-21	7	Etheostoma fonticola	31	1
2688	City Park	Cabo-1	19-Oct-21	7	Etheostoma fonticola	30	1
2688	City Park	Cabo-1	19-Oct-21	7	Etheostoma fonticola	24	1
2688	City Park	Cabo-1	19-Oct-21	7	Etheostoma fonticola	23	1

2688	City Park	Cabo-1	19-Oct-21	7	Lepomis sp.	10	1
2688	City Park	Cabo-1	19-Oct-21	7	Gambusia sp.	13	1
2688	City Park	Cabo-1	19-Oct-21	7	Procambarus sp.		1
2688	City Park	Cabo-1	19-Oct-21	8	Etheostoma fonticola	30	1
2688	City Park	Cabo-1	19-Oct-21	8	Etheostoma fonticola	28	1
2688	City Park	Cabo-1	19-Oct-21	8	Gambusia sp.	10	1
2688	City Park	Cabo-1	19-Oct-21	8	Gambusia sp.	16	1
2688	City Park	Cabo-1	19-Oct-21	8	Gambusia sp.	15	1
2688	City Park	Cabo-1	19-Oct-21	9	Etheostoma fonticola	35	1
2688	City Park	Cabo-1	19-Oct-21	9	Etheostoma fonticola	31	1
2688	City Park	Cabo-1	19-Oct-21	9	Etheostoma fonticola	32	1
2688	City Park	Cabo-1	19-Oct-21	9	Etheostoma fonticola	32	1
2688	City Park	Cabo-1	19-Oct-21	9	Etheostoma fonticola	19	1
2689	City Park	Cabo-2	19-Oct-21	1	Gambusia sp.	23	1
2689	City Park	Cabo-2	19-Oct-21	2	Gambusia sp.	24	1
2689	City Park	Cabo-2	19-Oct-21	2	Etheostoma fonticola	32	1
2689	City Park	Cabo-2	19-Oct-21	2	Etheostoma fonticola	31	1
2689	City Park	Cabo-2	19-Oct-21	2	Etheostoma fonticola	14	1
2689	City Park	Cabo-2	19-Oct-21	2	Etheostoma fonticola	14	1
2689	City Park	Cabo-2	19-Oct-21	2	Etheostoma fonticola	9	1
2689	City Park	Cabo-2	19-Oct-21	2	Procambarus sp.		1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	16	1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	25	1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	25	1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	20	1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	24	1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	28	1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	25	1
2689	City Park	Cabo-2	19-Oct-21	3	Gambusia sp.	20	1
2689	City Park	Cabo-2	19-Oct-21	3	Etheostoma fonticola	19	1
2689	City Park	Cabo-2	19-Oct-21	3	Etheostoma fonticola	19	1
2689	City Park	Cabo-2	19-Oct-21	3	Procambarus sp.		2
2689	City Park	Cabo-2	19-Oct-21	4	Gambusia sp.	20	1
2689	City Park	Cabo-2	19-Oct-21	5	Lepomis miniatus	90	1
2689	City Park	Cabo-2	19-Oct-21	5	Etheostoma fonticola	31	1
2689	City Park	Cabo-2	19-Oct-21	5	Etheostoma fonticola	27	1
2689	City Park	Cabo-2	19-Oct-21	5	Etheostoma fonticola	9	1
2689	City Park	Cabo-2	19-Oct-21	5	Etheostoma fonticola	21	1
2689	City Park	Cabo-2	19-Oct-21	5	Etheostoma fonticola	22	1
2689	City Park	Cabo-2	19-Oct-21	5	Procambarus sp.		1
2689	City Park	Cabo-2	19-Oct-21	6	Procambarus sp.		1

2689	City Park	Cabo-2	19-Oct-21	6	No fish collected		
2689	City Park	Cabo-2	19-Oct-21	7	Gambusia sp.	24	1
2689	City Park	Cabo-2	19-Oct-21	7	Gambusia sp.	25	1
2689	City Park	Cabo-2	19-Oct-21	8	No fish collected		
2689	City Park	Cabo-2	19-Oct-21	9	Etheostoma fonticola	33	1
2689	City Park	Cabo-2	19-Oct-21	9	Etheostoma fonticola	34	1
2689	City Park	Cabo-2	19-Oct-21	9	Etheostoma fonticola	25	1
2689	City Park	Cabo-2	19-Oct-21	9	Lepomis miniatus	37	1
2689	City Park	Cabo-2	19-Oct-21	9	Procambarus sp.		1
2689	City Park	Cabo-2	19-Oct-21	10	Etheostoma fonticola	30	1
2689	City Park	Cabo-2	19-Oct-21	10	Etheostoma fonticola	18	1
2689	City Park	Cabo-2	19-Oct-21	10	Etheostoma fonticola	16	1
2689	City Park	Cabo-2	19-Oct-21	11	Etheostoma fonticola	28	1
2689	City Park	Cabo-2	19-Oct-21	11	Procambarus sp.		2
2689	City Park	Cabo-2	19-Oct-21	12	Etheostoma fonticola	33	1
2689	City Park	Cabo-2	19-Oct-21	12	Etheostoma fonticola	13	1
2689	City Park	Cabo-2	19-Oct-21	12	Etheostoma fonticola	18	1
2689	City Park	Cabo-2	19-Oct-21	12	Etheostoma fonticola	21	1
2689	City Park	Cabo-2	19-Oct-21	12	Etheostoma fonticola	24	1
2689	City Park	Cabo-2	19-Oct-21	12	Procambarus sp.		1
2689	City Park	Cabo-2	19-Oct-21	13	Gambusia sp.	18	1
2689	City Park	Cabo-2	19-Oct-21	14	Etheostoma fonticola	15	1
2689	City Park	Cabo-2	19-Oct-21	14	Etheostoma fonticola	32	1
2689	City Park	Cabo-2	19-Oct-21	14	Etheostoma fonticola	25	1
2689	City Park	Cabo-2	19-Oct-21	14	Etheostoma fonticola	30	1
2689	City Park	Cabo-2	19-Oct-21	14	Etheostoma fonticola	16	1
2689	City Park	Cabo-2	19-Oct-21	15	Etheostoma fonticola	29	1
2689	City Park	Cabo-2	19-Oct-21	16	No fish collected		
2690	City Park	Open-2	19-Oct-21	1	No fish collected		
2690	City Park	Open-2	19-Oct-21	2	No fish collected		
2690	City Park	Open-2	19-Oct-21	3	No fish collected		
2690	City Park	Open-2	19-Oct-21	4	No fish collected		
2690	City Park	Open-2	19-Oct-21	5	No fish collected		
2690	City Park	Open-2	19-Oct-21	6	No fish collected		
2690	City Park	Open-2	19-Oct-21	7	No fish collected		
2690	City Park	Open-2	19-Oct-21	8	No fish collected		
2690	City Park	Open-2	19-Oct-21	9	No fish collected		
2690	City Park	Open-2	19-Oct-21	10	No fish collected		
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1

2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	20	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	14	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	20	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	22	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	20	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	20	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	16	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	20	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	17	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	12	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	18	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	12	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	10	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.	15	1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	1	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	1	Etheostoma fonticola	30	1
2691	City Park	Ludw-1	19-Oct-21	2	Procambarus sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	2	Etheostoma fonticola	31	1
2691	City Park	Ludw-1	19-Oct-21	2	Etheostoma fonticola	32	1
2691	City Park	Ludw-1	19-Oct-21	2	Etheostoma fonticola	30	1
2691	City Park	Ludw-1	19-Oct-21	2	Etheostoma fonticola	33	1
2691	City Park	Ludw-1	19-Oct-21	2	Etheostoma fonticola	23	1
2691	City Park	Ludw-1	19-Oct-21	2	Etheostoma fonticola	24	1
2691	City Park	Ludw-1	19-Oct-21	3	Procambarus sp.		5

2691	City Park	Ludw-1	19-Oct-21	3	Etheostoma fonticola	33	1
2691	City Park	Ludw-1	19-Oct-21	3	Etheostoma fonticola	36	1
2691	City Park	Ludw-1	19-Oct-21	3	Etheostoma fonticola	32	1
2691	City Park	Ludw-1	19-Oct-21	3	Etheostoma fonticola	35	1
2691	City Park	Ludw-1	19-Oct-21	3	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	3	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	3	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	3	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	4	Etheostoma fonticola	33	1
2691	City Park	Ludw-1	19-Oct-21	4	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	4	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	4	Procambarus sp.		3
2691	City Park	Ludw-1	19-Oct-21	5	Etheostoma fonticola	34	1
2691	City Park	Ludw-1	19-Oct-21	5	Etheostoma fonticola	24	1
2691	City Park	Ludw-1	19-Oct-21	5	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	6	Etheostoma fonticola	30	1
2691	City Park	Ludw-1	19-Oct-21	6	Etheostoma fonticola	32	1
2691	City Park	Ludw-1	19-Oct-21	6	Etheostoma fonticola	35	1
2691	City Park	Ludw-1	19-Oct-21	6	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	6	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	6	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	7	Etheostoma fonticola	35	1
2691	City Park	Ludw-1	19-Oct-21	7	Etheostoma fonticola	36	1
2691	City Park	Ludw-1	19-Oct-21	7	Etheostoma fonticola	31	1
2691	City Park	Ludw-1	19-Oct-21	7	Etheostoma fonticola	32	1
2691	City Park	Ludw-1	19-Oct-21	7	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	7	Gambusia sp.		1
2691	City Park	Ludw-1	19-Oct-21	8	Etheostoma fonticola	37	1
2691	City Park	Ludw-1	19-Oct-21	8	Etheostoma fonticola	29	1
2691	City Park	Ludw-1	19-Oct-21	8	Etheostoma fonticola	34	1
2691	City Park	Ludw-1	19-Oct-21	8	Etheostoma fonticola	31	1
2691	City Park	Ludw-1	19-Oct-21	8	Etheostoma fonticola	40	1
2691	City Park	Ludw-1	19-Oct-21	8	Procambarus sp.		1
2691	City Park	Ludw-1	19-Oct-21	9	Etheostoma fonticola	35	1
2691	City Park	Ludw-1	19-Oct-21	9	Etheostoma fonticola	35	1
2691	City Park	Ludw-1	19-Oct-21	9	Etheostoma fonticola	30	1
2691	City Park	Ludw-1	19-Oct-21	9	Etheostoma fonticola	30	1
2691	City Park	Ludw-1	19-Oct-21	10	Ameiurus natalis	35	1
2691	City Park	Ludw-1	19-Oct-21	11	Etheostoma fonticola	32	1
2691	City Park	Ludw-1	19-Oct-21	12	Etheostoma fonticola	25	1
2691	City Park	Ludw-1	19-Oct-21	12	Gambusia sp.		1

2691	City Park	Ludw-1	19-Oct-21	12	Procambarus sp.		1
2691	City Park	Ludw-1	19-Oct-21	13	Etheostoma fonticola	37	1
2691	City Park	Ludw-1	19-Oct-21	14	No fish collected		
2691	City Park	Ludw-1	19-Oct-21	15	Procambarus sp.		2
2691	City Park	Ludw-1	19-Oct-21	15	No fish collected		
2692	City Park	Pota-1	19-Oct-21	1	Lepomis miniatus	83	1
2692	City Park	Pota-1	19-Oct-21	1	Gambusia sp.	22	1
2692	City Park	Pota-1	19-Oct-21	1	Gambusia sp.	20	1
2692	City Park	Pota-1	19-Oct-21	1	Gambusia sp.	20	1
2692	City Park	Pota-1	19-Oct-21	1	Gambusia sp.	18	1
2692	City Park	Pota-1	19-Oct-21	2	No fish collected		
2692	City Park	Pota-1	19-Oct-21	3	Gambusia sp.	21	1
2692	City Park	Pota-1	19-Oct-21	3	Gambusia sp.	18	1
2692	City Park	Pota-1	19-Oct-21	4	Gambusia sp.	15	1
2692	City Park	Pota-1	19-Oct-21	5	No fish collected		
2692	City Park	Pota-1	19-Oct-21	6	Gambusia sp.	30	1
2692	City Park	Pota-1	19-Oct-21	7	No fish collected		
2692	City Park	Pota-1	19-Oct-21	8	No fish collected		
2692	City Park	Pota-1	19-Oct-21	9	No fish collected		
2692	City Park	Pota-1	19-Oct-21	10	Etheostoma fonticola	37	1
2692	City Park	Pota-1	19-Oct-21	10	Gambusia sp.	18	1
2692	City Park	Pota-1	19-Oct-21	11	No fish collected		
2692	City Park	Pota-1	19-Oct-21	12	No fish collected		
2692	City Park	Pota-1	19-Oct-21	13	Procambarus sp.		1
2692	City Park	Pota-1	19-Oct-21	13	No fish collected		
2692	City Park	Pota-1	19-Oct-21	14	No fish collected		
2692	City Park	Pota-1	19-Oct-21	15	Gambusia sp.	16	1
2693	City Park	Pota-2	19-Oct-21	1	No fish collected		
2693	City Park	Pota-2	19-Oct-21	2	Lepomis miniatus	85	1
2693	City Park	Pota-2	19-Oct-21	3	No fish collected		
2693	City Park	Pota-2	19-Oct-21	4	No fish collected		
2693	City Park	Pota-2	19-Oct-21	5	No fish collected		
2693	City Park	Pota-2	19-Oct-21	6	No fish collected		
2693	City Park	Pota-2	19-Oct-21	7	No fish collected		
2693	City Park	Pota-2	19-Oct-21	8	No fish collected		
2693	City Park	Pota-2	19-Oct-21	9	No fish collected		
2693	City Park	Pota-2	19-Oct-21	10	No fish collected		
2693	City Park	Pota-2	19-Oct-21	11	No fish collected		
2693	City Park	Pota-2	19-Oct-21	12	Gambusia sp.	23	1
2693	City Park	Pota-2	19-Oct-21	13	No fish collected		
2693	City Park	Pota-2	19-Oct-21	14	No fish collected		

2693	City Park	Pota-2	19-Oct-21	15	No fish collected		
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	30	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	28	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	11	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	18	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	13	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	15	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	17	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	13	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	14	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	15	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	20	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	12	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	14	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	13	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	11	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	12	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	13	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	18	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	14	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	10	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.	13	1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1

2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	32	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	30	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	34	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	17	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	17	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	34	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	18	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	17	1
2694	City Park	Ludw-2	19-Oct-21	1	Etheostoma fonticola	15	1
2694	City Park	Ludw-2	19-Oct-21	2	Lepomis sp.	15	1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	2	Etheostoma fonticola	16	1
2694	City Park	Ludw-2	19-Oct-21	3	Procambarus sp.		3
2694	City Park	Ludw-2	19-Oct-21	3	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	3	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	3	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	3	Etheostoma fonticola	31	1
2694	City Park	Ludw-2	19-Oct-21	3	Etheostoma fonticola	35	1
2694	City Park	Ludw-2	19-Oct-21	3	Etheostoma fonticola	15	1
2694	City Park	Ludw-2	19-Oct-21	3	Etheostoma fonticola	16	1

2694	City Park	Ludw-2	19-Oct-21	4	Etheostoma fonticola	30	1
2694	City Park	Ludw-2	19-Oct-21	4	Etheostoma fonticola	34	1
2694	City Park	Ludw-2	19-Oct-21	4	Etheostoma fonticola	15	1
2694	City Park	Ludw-2	19-Oct-21	4	Etheostoma fonticola	25	1
2694	City Park	Ludw-2	19-Oct-21	4	Etheostoma fonticola	29	1
2694	City Park	Ludw-2	19-Oct-21	4	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	4	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	4	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	4	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	4	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	4	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	4	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	4	Procambarus sp.		2
2694	City Park	Ludw-2	19-Oct-21	5	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	5	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	5	Procambarus sp.		2
2694	City Park	Ludw-2	19-Oct-21	6	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	6	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	6	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	7	Etheostoma fonticola	30	1
2694	City Park	Ludw-2	19-Oct-21	7	Etheostoma fonticola	30	1
2694	City Park	Ludw-2	19-Oct-21	7	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	7	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	8	No fish collected		
2694	City Park	Ludw-2	19-Oct-21	9	Etheostoma fonticola	35	1
2694	City Park	Ludw-2	19-Oct-21	9	Etheostoma fonticola	32	1
2694	City Park	Ludw-2	19-Oct-21	10	Etheostoma fonticola	35	1
2694	City Park	Ludw-2	19-Oct-21	10	Etheostoma fonticola	31	1
2694	City Park	Ludw-2	19-Oct-21	10	Etheostoma fonticola	28	1
2694	City Park	Ludw-2	19-Oct-21	10	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	11	Etheostoma fonticola	34	1
2694	City Park	Ludw-2	19-Oct-21	11	Etheostoma fonticola	27	1
2694	City Park	Ludw-2	19-Oct-21	11	Procambarus sp.		2
2694	City Park	Ludw-2	19-Oct-21	12	No fish collected		
2694	City Park	Ludw-2	19-Oct-21	13	Etheostoma fonticola	35	1
2694	City Park	Ludw-2	19-Oct-21	13	Gambusia sp.		1
2694	City Park	Ludw-2	19-Oct-21	14	Procambarus sp.		1
2694	City Park	Ludw-2	19-Oct-21	14	No fish collected		
2694	City Park	Ludw-2	19-Oct-21	15	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	1	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	2	No fish collected		

2695	I-35	Ziz-1	20-Oct-21	3	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	4	Gambusia sp.	17	1
2695	I-35	Ziz-1	20-Oct-21	5	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	6	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	7	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	8	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	9	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	10	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	11	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	12	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	13	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	14	No fish collected		
2695	I-35	Ziz-1	20-Oct-21	15	No fish collected		
2695	I-35	Ziz-1	20-Oct-21				
2706	I-35	Open-2	20-Oct-21	1	No fish collected		
2706	I-35	Open-2	20-Oct-21	2	No fish collected		
2706	I-35	Open-2	20-Oct-21	3	No fish collected		
2706	I-35	Open-2	20-Oct-21	4	No fish collected		
2706	I-35	Open-2	20-Oct-21	5	No fish collected		
2706	I-35	Open-2	20-Oct-21	6	No fish collected		
2706	I-35	Open-2	20-Oct-21	7	No fish collected		
2706	I-35	Open-2	20-Oct-21	8	No fish collected		
2706	I-35	Open-2	20-Oct-21	9	No fish collected		
2706	I-35	Open-2	20-Oct-21	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.

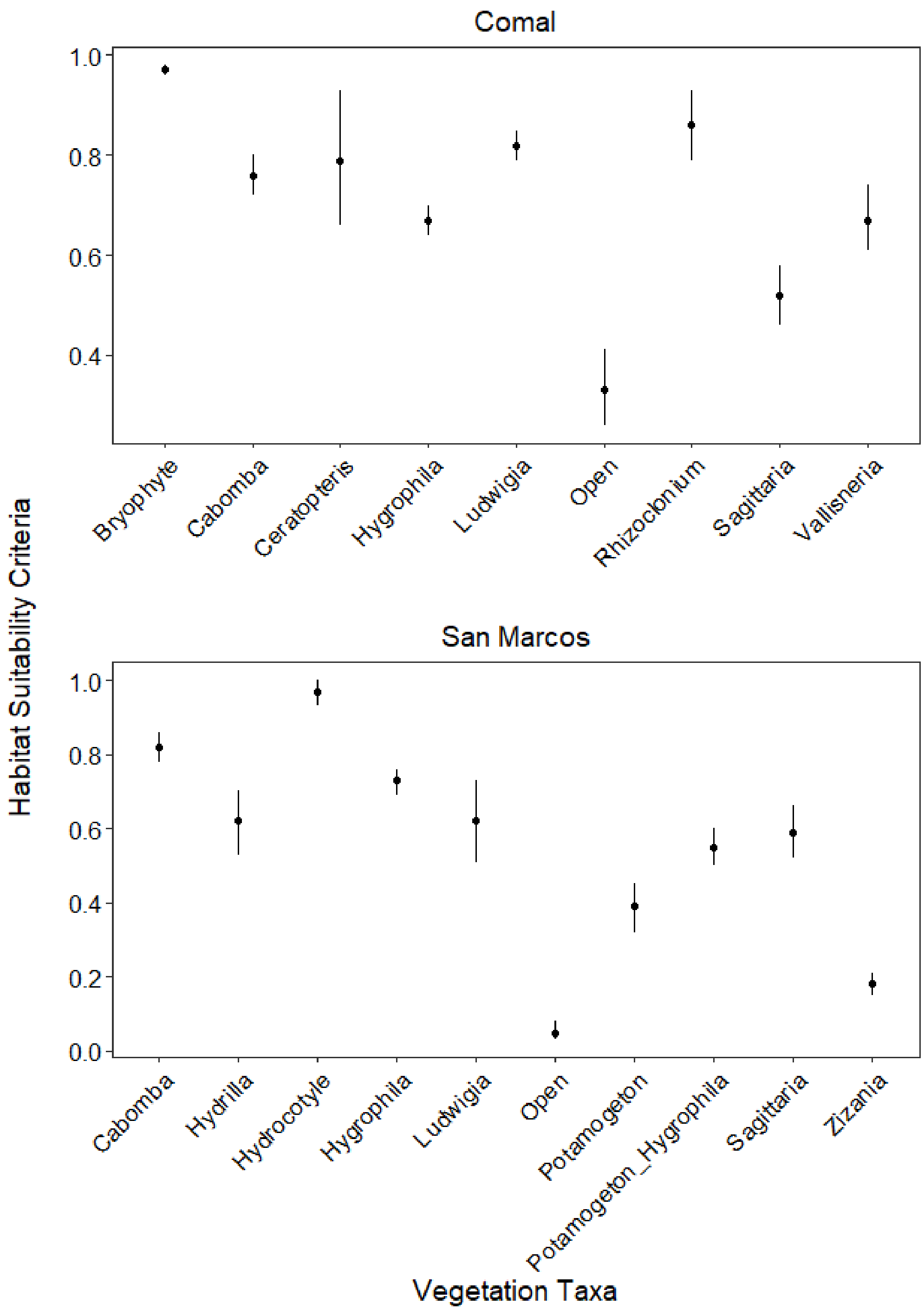

Figure H1. **Aquatic vegetation habitat suitability criteria (±95% CI) built with drop-net and random dip-net datasets using logistic regression.**

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)

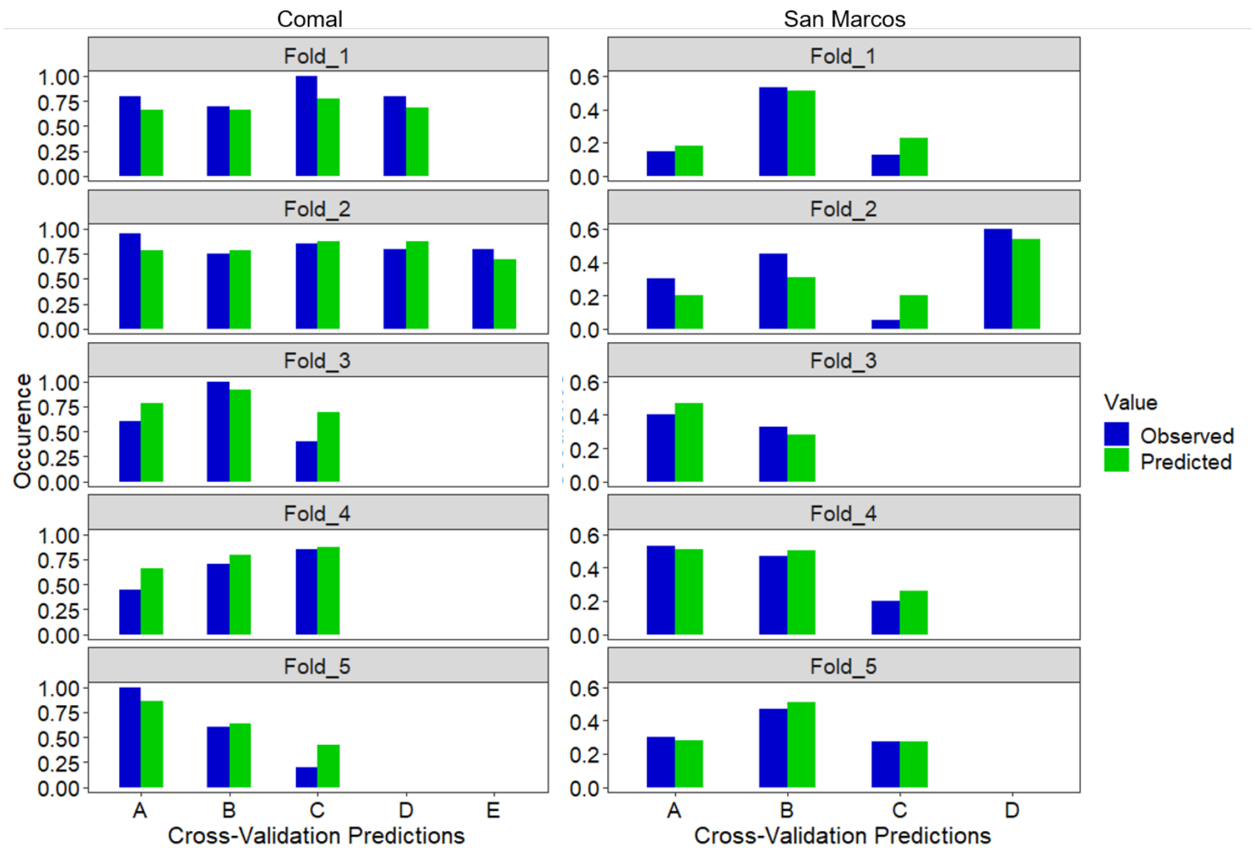

Figure H2. Observed vs. predicted Fountain Darter occurrence in relationship to OHSI from Random Forest 5-fold cross-validation.

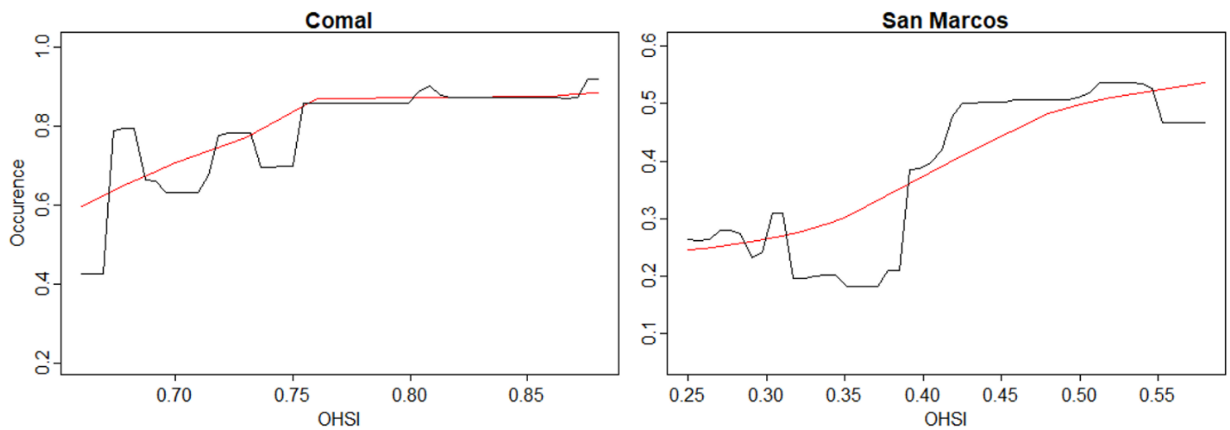

Figure H3. Fitted occurrence predictions for OHSI in the Comal Springs/River and San Marcos River. The red lines are LOWESS smoothed fitted predictions used to visualize nonlinear trends.

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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