



Patterns of salamander demographics inferred from drift-net sampling at Eliza Spring

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Abstract

Population monitoring of *Eurycea sosorum* and *Eurycea waterlooensis* populations is a required component of the City of Austin's Habitat Conservation Plan for Barton Springs Pool. While surveys of the substrate near the spring outlets have occurred since 1993, we know little about their movement patterns and life history as it relates to their subterranean habitat. Drift-net sampling is a way to see what organisms are emigrating from the aquifer by passively capturing individuals swimming or drifting out of the springs. For this report, we explored salamander capture data from drift-net sampling that took place in Eliza Spring as a part of three different projects between 2019 and 2022. During 74 days of sampling, 123 salamanders (both live and dead) were caught, over 95% of which were juveniles. *Eurycea waterlooensis* made up 26% of total observations, which was a 76-fold increase from the ratio of *E. waterlooensis* typically observed during our traditional surveys. This result suggests that future sampling methods for the captive assurance colony should include drift-netting because the success rate for capturing *E. waterlooensis* is much higher compared to traditional surveys. The high frequency of juvenile salamanders (of both species) caught in drift nets indicates that passive immigration may be occurring from small individuals that cannot swim against the current of the aquifer. However, the rate of immigration does not appear to be linked to discharge, as we only found a significant relationship between dead salamanders and spring discharge. Live salamander captures were positively correlated with abundance estimates from traditional sampling, lending credence to the hypothesis that immigration to the surface is an important characteristic of local salamander population dynamics.

Keywords: Barton Springs, Plethodontidae, karst aquifer, Caudata, passive sampling, karst spring

Introduction

Federally endangered Barton Springs and Austin Blind salamanders (*Eurycea sosorum* and *E. waterlooensis*, respectively) are neotenic salamanders that live in springs and water-filled voids and

caves of the Barton Springs segment of the Edwards Aquifer (Chippindale et al. 1993; Hillis et al. 2001; McDermid et al. 2015; Devitt & Nissen 2018). Populations of both species have been monitored in the Barton Springs complex by the City of Austin (COA) as part of the Habitat Conservation Plan since 1998 (City of Austin, 2013). Eliza Spring is one of four main springs located in the Barton Springs complex, has the largest known average density of *E. sosorum*, and is only one of four known localities for *E. waterlooensis*. Exhaustive surveys of Eliza Spring started in 1995 on a monthly basis in which the entire spring was methodically searched and all salamanders were counted as an index to estimate population size (City of Austin, 2013; Devitt 2016; Bendik et al. 2021). In 2014, population surveys changed to quarterly capture-recapture surveys using photographic identification in which the spring was methodically searched and salamanders were temporarily removed, photographed, and then released back into the spring (Bendik et al. 2021; also see Devitt 2016 for review of survey methods). Despite these efforts, their subterranean ecology remains largely unexplored because populations are typically only accessible for study at the surface. This is especially true for *E. waterlooensis* which are rarely seen during surveys, and only small juveniles are observed (Bendik et al. 2019). For that reason, COA has supported projects to understand more about these species and their subterranean ecosystem. As part of these efforts, several collections using drift-net sampling at Eliza Spring were performed to collect organisms (including salamanders) from 2019–2022. Drift-net sampling involves attaching a net to a spring-orifice to capture organisms that are passively carried by the flow of water or that are swimming with the direction of flow. This method has been used in multiple studies to successfully collect and study groundwater organisms in central Texas (Holsinger & Longley, 1980; Hutchins et al. 2016; Devitt & Nissen 2018).

In this report, we explore patterns of salamander demographics during several drift-net sampling events. Drift-nets were deployed under different study regimes with different goals; however, we believed information from these sampling events would provide insight into salamander movement from subterranean habitat. Specifically, we ask the following questions: (1) What are the patterns of body size, condition (live or dead), and species of salamanders collected in drift-nets? (2) Is there a correlation between discharge and catch-per-unit effort, and does this relationship differ by species or specimen condition? (3) How does drift-net catch-per-unit-effort compare to capture-recapture sampling efforts in terms of species composition?

Methods

Study Site

Eliza Spring (30.26425, -97.77006) is one of four outlets of the Barton Springs Complex in Zilker Park, Austin, Texas and discharges water from the Barton Springs segment of the Edwards Aquifer into a concrete amphitheater pool through seven outlets (orifices) in the floor and 15 outlets along the side (Figure 1). The pool water depth averages around 0.3 meters.

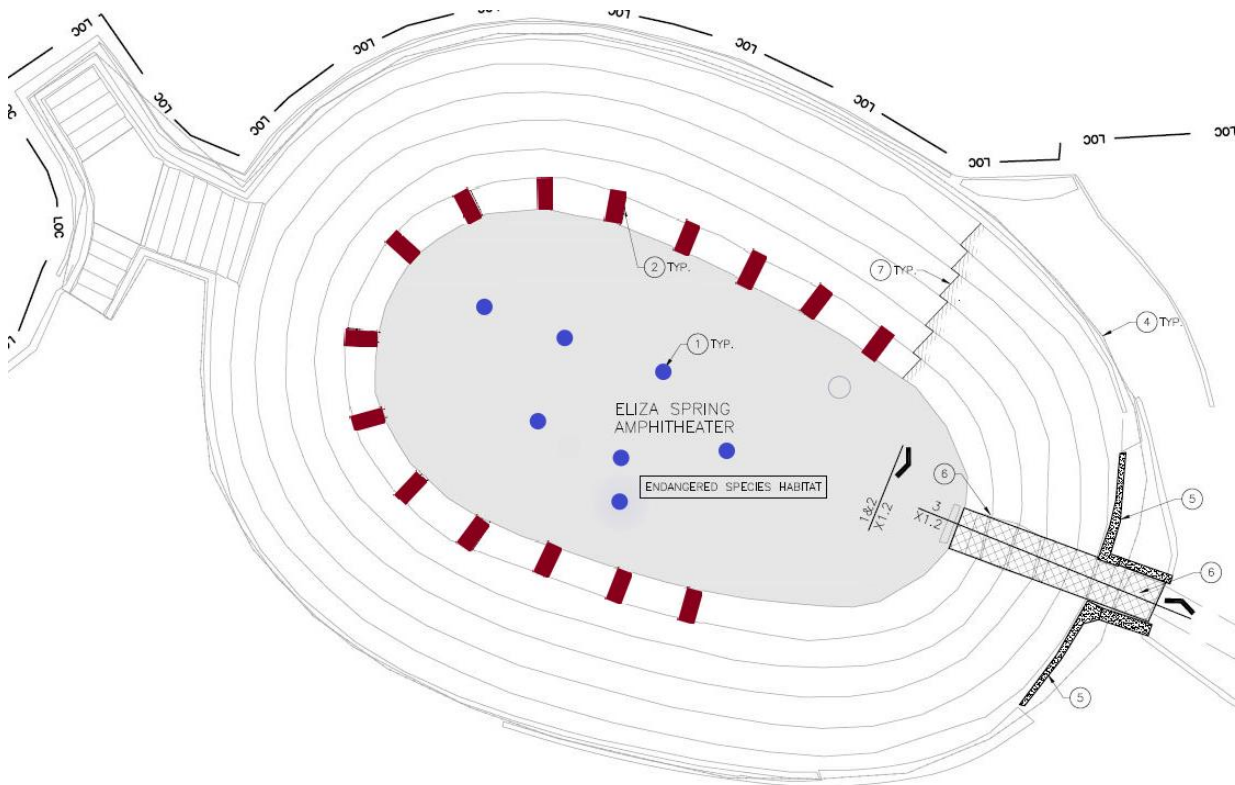


Figure 1: Map of the 7 floor vents (colored blue) and the 15 side vents (colored red) located in the Eliza Spring amphitheater.

Drift-Net Sampling

Drift-nets were placed at Eliza Spring as part of three different studies to collect organisms between 2019–2022. The first sampling began as part of a Texas State University project funded by the Barton Springs Conservation Fund to study the food web and trophic structure of the Barton Springs segment of the Edwards Aquifer (Schwartz et al. 2022). The goal was to collect stygobionts for identification and stable isotope analysis. The second sampling was done in coordination with the University of Texas at Austin for a project on evolutionary development of groundwater salamanders in central Texas. The third collection was done by Austin Watershed Protection staff as part of the Austin Salamander Conservation Center (ASCC) management plan (Chamberlain, 2020) to collect more *E. waterlooensis* for the captive breeding program.

Drift-nets were constructed using either 100-micron mesh net bags attached to PVC pieces or with 500-micron mesh net bags without PVC. The drift-nets were modified over time to try different techniques depending on the sampling goal of the project; all three versions of the drift-nets can be seen in Figure 2. Before drift-nets were deployed, they were filled with several pieces of mesh to provide cushioning and hiding places for any salamanders that flushed into the nets. Drift-nets were then placed over the vent openings and typically checked twice within a 24-hour period, once in the morning and once in the evening, to minimize the duration that salamanders were trapped in the nets. On a few occasions, drift-nets were sampled at more frequent intervals to check if that decreased the number of deaths and injuries. Drift-nets were deployed on one to 14 vents at any given time depending on each project’s sampling goals. To check the drift-nets, they were removed from the vents and samples were carefully poured into white trays and searched thoroughly for any

salamanders. Notes were taken on the species found, size class, and if they were live or dead. Any *E. sosorum* found alive were released back into Eliza Spring and any *E. waterlooensis* found alive were taken immediately to the ASCC. Dead specimens were stored in 95% ethanol and either given to Texas State for stable isotope analyses or retained for further research.

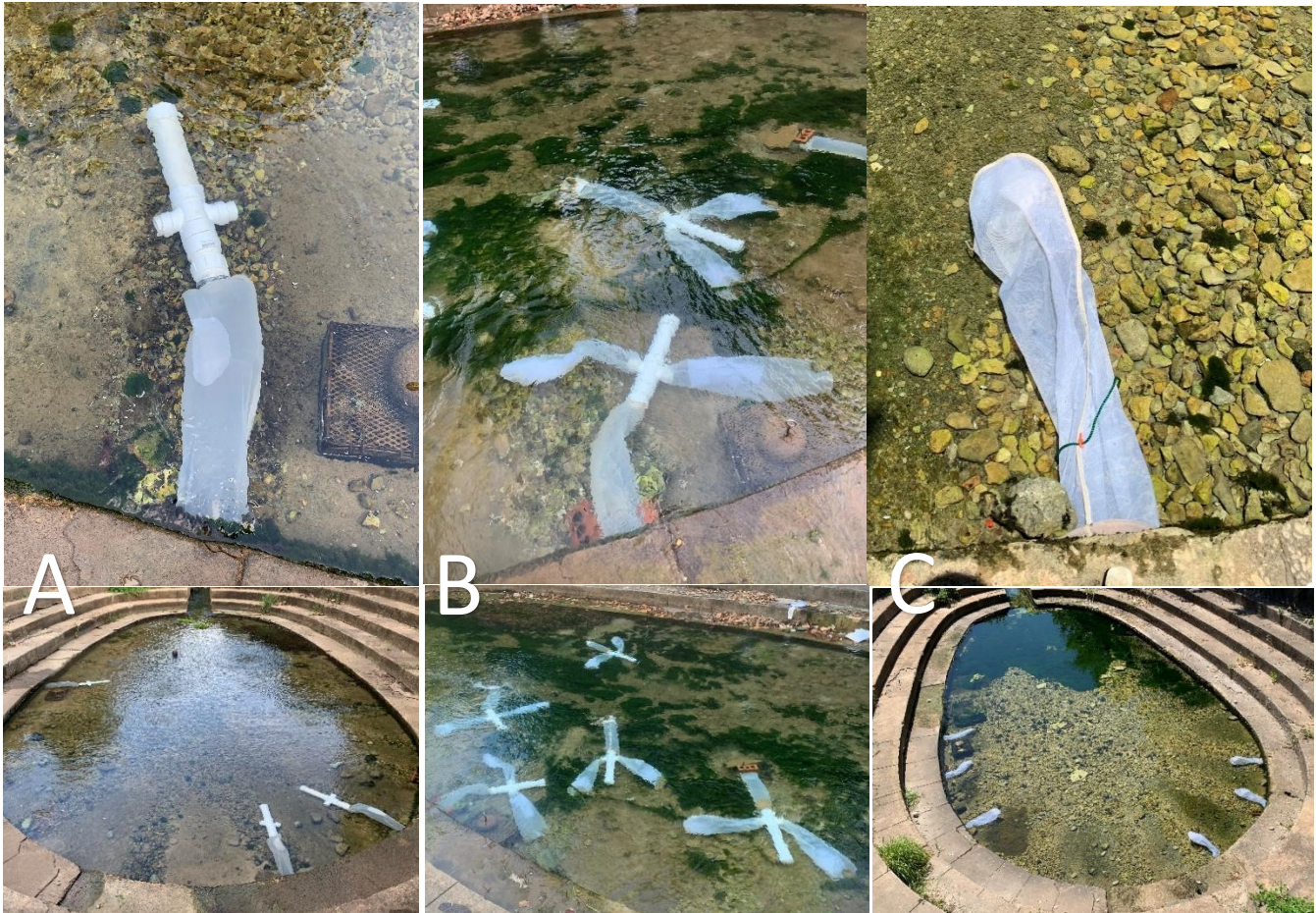


Figure 2: Drift-nets and deployment configurations: (A) drift-nets that used PVC parts in a “T” shape with 100-micron mesh, (B) drift-nets adapted to add 100-micron mesh bags to the PVC “T” to diffuse flow, (C) 500-micron mesh nets attached to side vents.

Data and Analysis

We summed the number of salamanders caught each day and categorized them by species, size class, and whether they were live or dead. Salamanders were not physically measured in the field but sorted by visual assessment into three groups: >2 in., 1–2 in. and <1 in. total length (TL). To account for differences in effort across these different study regimes, we then grouped data into eight sampling periods and calculated catch-per-unit-effort (CPUE) as the total sum of salamanders captured divided by total drift-net deployment time for a given sampling period (days). We obtained the daily spring discharge for Barton Springs from the United States Geological Survey (USGS) gage number 08155500 and calculated the mean discharge for each sampling period and at a 9-month lag. We obtained data for capture-recapture abundance estimates from the City’s annual scientific permit report with the United States Fish and Wildlife Service (City of Austin 2019, 2020, 2021, 2022, 2023).

To test whether there was a significant difference between the number of live versus dead salamanders caught in the drift-nets, we summed the number of salamanders from each sampling period, categorized individuals by status (alive or dead), and ran a Welch’s two-sample t-test (two-tailed). We tested whether there was a difference in the number of live versus dead salamanders caught between the two species using an analysis of variance. We tested for a correlation between spring discharge (USGS gage 08155500) and CPUE by calculating Pearson’s correlation coefficient. Previous studies have found that following periods of high flow, juvenile abundance is correlated with a 9-month lag in total discharge (Bendik & Dries 2018; Bendik et al. 2019). We therefore also tested whether 9-month lagged discharge was related to CPUE. Lastly, we used Pearson’s correlation coefficient to test for a correlation between the drift-net CPUE and the quarterly capture-recapture survey abundance estimates. Statistical significance was evaluated at $\alpha = 0.05$. All drift-net data are provided in the Appendix.

Results and Discussion

A total of 123 salamanders were found during 74 days (4,086.5 trap-hours) of sampling at Eliza Spring (Table 1). The most salamanders found in one single day of drift-net sampling was 11 individuals on the first day of sampling (September 19, 2019). A total of 91 *E. sosorum* and 32 *E. waterlooensis* were found during sampling, a ratio of *E. sosorum* to *E. waterlooensis* that is much higher than we typically observe during our capture-recapture surveys. For example, of the 20,246 salamanders observed during 92 capture-recapture surveys, only 68 salamanders were *E. waterlooensis* (0.34% of all salamander observations; COA unpublished data). However, *E. waterlooensis* made up 26% of all drift-net salamander observations, a 76-fold increase compared to capture-recapture surveys (Table 1). Our results suggest juvenile *E. waterlooensis* at the surface could have high mortality rates because they are rarely encountered during surveys. High mortality is likely due to their lack of vision and behaviors (e.g., failing to seek cover) that make them more susceptible to predation and/or downstream drift-away from suitable habitat. Alternatively, it is possible that *E. waterlooensis* may quickly return to subterranean habitat.

Table 1: Total number of salamanders collected from Eliza Spring drift-nets for 74 sample days from September 2019–July 2022.

Species Found	Number of Salamanders Found
<i>E. sosorum</i> Adult Live	5
<i>E. sosorum</i> Adult Dead	1
<i>E. sosorum</i> Juvenile Live	54
<i>E. sosorum</i> Juvenile Dead	31
<i>E. waterlooensis</i> Adult Live	0
<i>E. waterlooensis</i> Adult Dead	0
<i>E. waterlooensis</i> Juvenile Live	23
<i>E. waterlooensis</i> Juvenile Dead	9
Total	123

Most salamanders (> 95% total; 62% found alive) observed in drift-nets were juveniles less than 1 in. TL (Figure 3 and Figure 4) compared to approximately 38% of captures from capture-recapture surveys (COA, unpublished data). Larger *Eurycea* are stronger swimmers (Azizi & Landberg 2002) and may be

able to swim out of the drift-nets or avoid capture altogether and therefore bias the size demographics of our drift-net samples. Juvenile Jollyville Plateau salamanders (*Eurycea tonkawae*) have been observed at higher abundances downstream of a spring outlet compared to the immediate vicinity of the spring (Bendik et al. 2016). Others have noted similar patterns of juvenile salamander movement (Stoneburner 1978; Bruce 1986; Niemiller & Miller 2007; Fenolio et al. 2014). These patterns may be a consequence of active avoidance of predators such as larger adult salamanders and/or part of their natural dispersal behaviors; alternatively, it may be that smaller salamanders are more likely to passively drift because they have a reduced ability to swim against currents that may flush them away. This would partly explain why there is such a disparity in size class frequency between the drift-net and capture-recapture data.

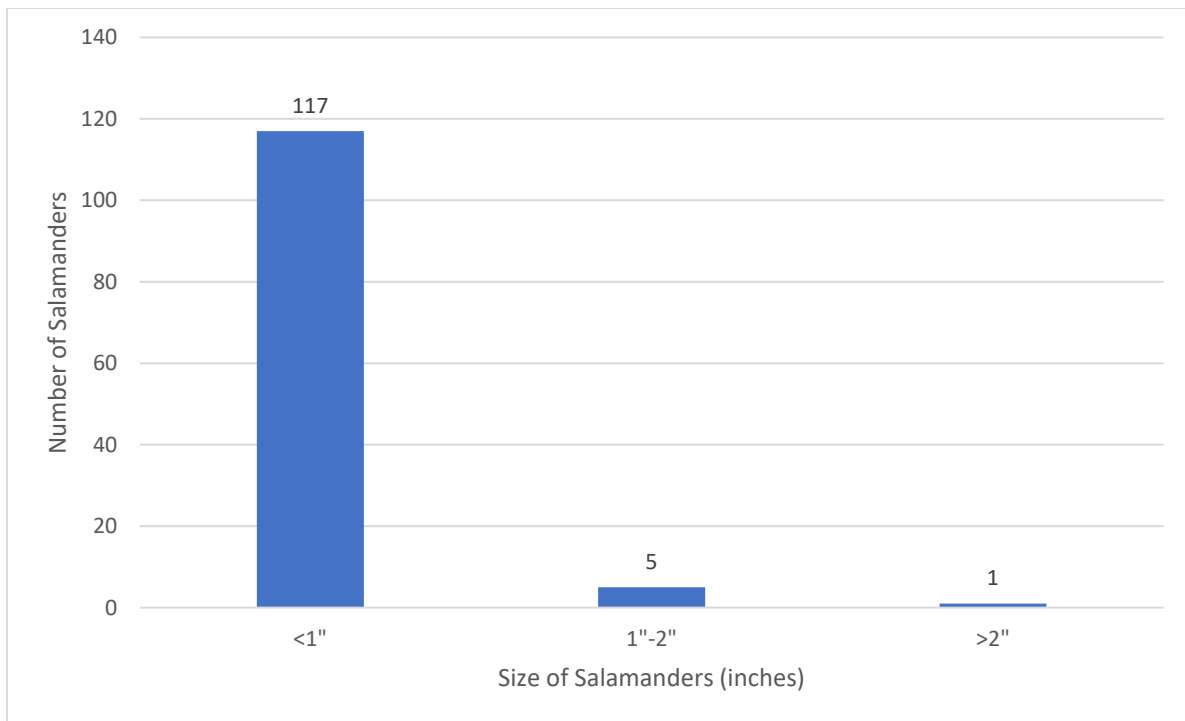


Figure 3: Estimated size distribution of salamanders found during drift-net sampling. Salamanders were not physically measured but sorted through visual observations.

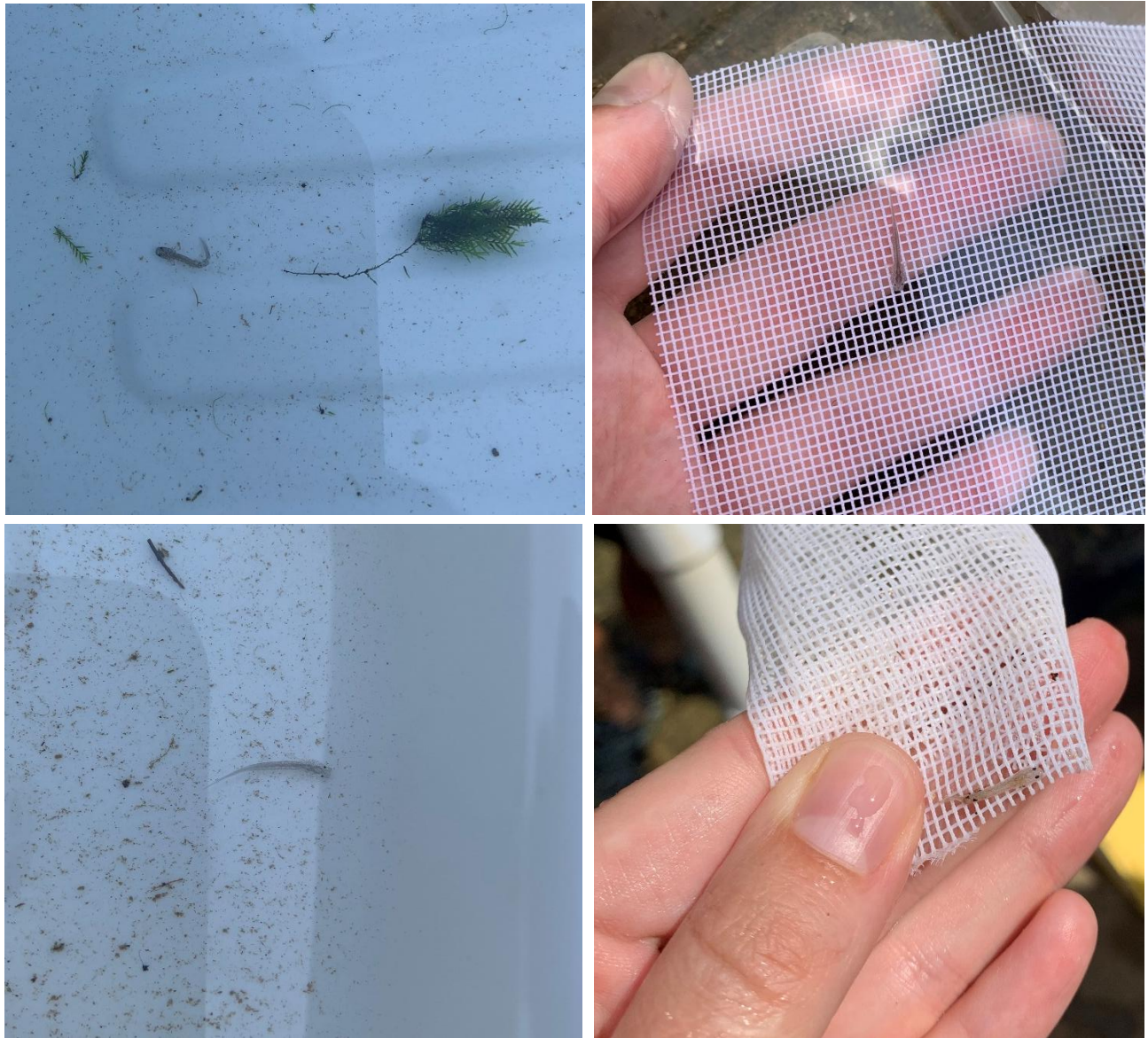


Figure 4: Pictures of the most common size (< 0.5 in. TL juveniles) of salamanders found during drift-net sampling.

Over 33% of the salamanders caught in drift-nets were dead. However, there was no significant difference between the total number of live vs. dead animals ($T = 1.18$, $P = 0.26$) (Table 2) or between species ($F = 2.09$, $P = 0.12$) caught in the drift-nets. We found insignificant positive correlations between CPUE (live + dead) and both contemporary discharge ($r = 0.25$, $P = 0.56$) and lagged discharge ($r = 0.59$, $P = 0.13$) (Figure 5). There was a significant positive correlation ($r = 0.74$, $P = 0.03$) between CPUE of dead salamanders and discharge (Figure 6). Thus, it is possible that the aquifer is flushing out dead salamanders to the surface spring; alternatively, salamanders caught against the drift-net in high velocity spring-flow may obtain injuries resulting in death. To evaluate whether increasing the frequency of drift-net checks would reduce injuries and improve survivorship, we increased the checks from twice a day to 3-4 times a day for seven sample days. We found a total of 21 salamanders: 13 live, 3 dead, and 5 injured. This is a similar ratio of deaths and injuries compared to the regular sampling schedule, but there were some inconsistencies during these seven sample days including different time intervals between checks, different amounts of nets deployed between checks, and different types of

net configurations deployed at a given time. Future sampling should be more consistent to help deduce if the drift-nets are the mechanism causing deaths and injuries. However, our data do not support the hypothesis that increased ad hoc sampling frequency to 3–4 times per day improved chances of finding fewer dead or injured salamanders.

Table 2: Data from all sampling periods (BSS = Barton Springs salamander; ABS = Austin Blind salamander).

Sampling Period	Date Range	Total Number of Nets Deployed	Total Hours Nets Deployed	Total BSS Caught	Total ABS Caught	Total Sals Caught	Total Live Sals Caught	Total Dead Sals Caught	CPUE Total sals/day
1	9/19/19 – 10/2/19	65	945	36	10	46	19	27	1.17
2	1/16/20 – 1/30/20	28	332	15	2	17	17	0	1.23
3	9/14/20 – 9/18/20	24	283.5	8	0	8	7	1	0.68
4	3/8/21 – 3/19/21	22	374	7	3	10	10	0	0.64
5	5/5/21 – 5/28/21	36	460	4	0	4	3	1	0.21
6	8/3/21 – 9/2/21	288	1060.25	15	16	31	21	10	0.70
7	10/19/21 – 10/28/21	36	430.5	5	1	6	4	2	0.33
8	7/7/22 – 8/4/22	36	201.25	1	0	1	1	0	0.12
	Totals	535	4086.5	91	32	123	82	41	

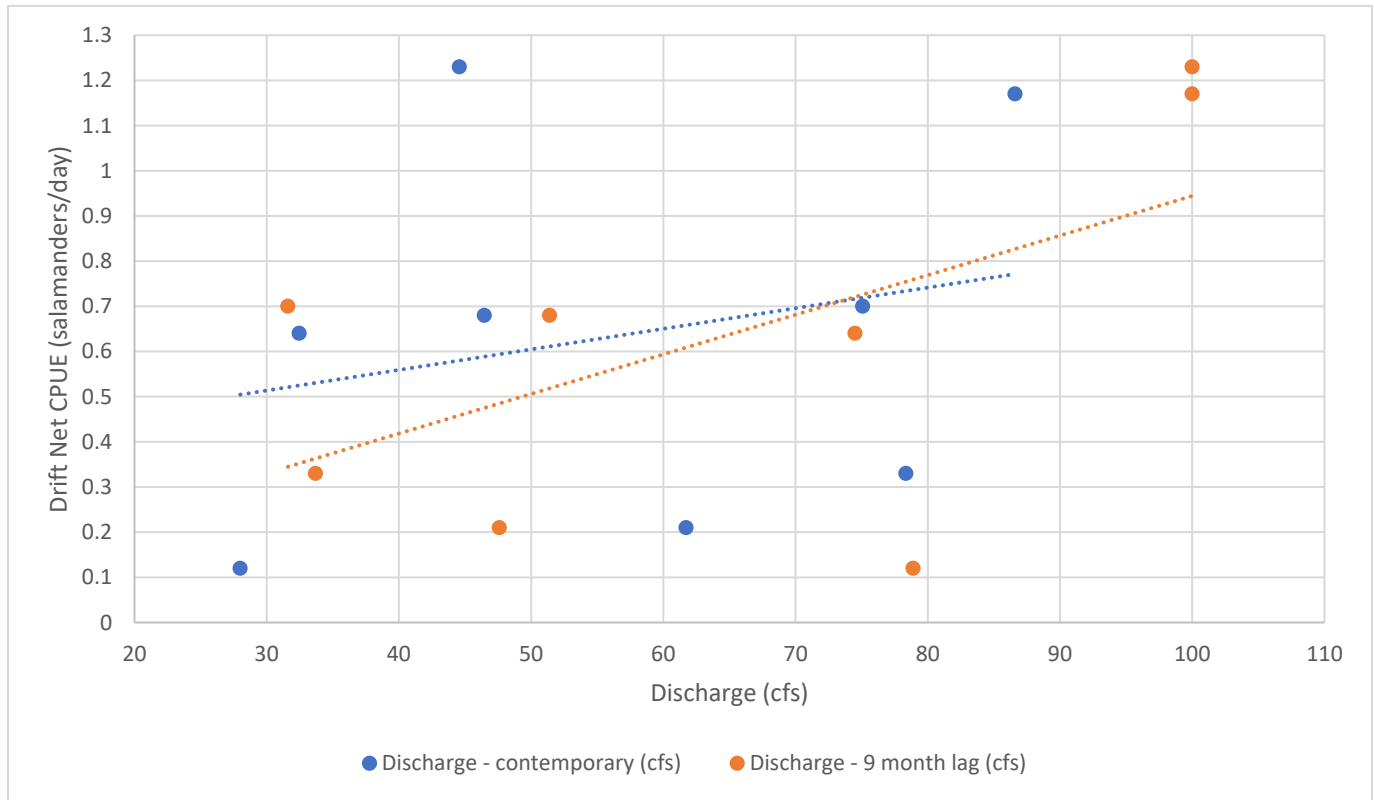


Figure 5: CPUE of salamanders vs. USGS discharge data from Barton Springs Pool (Gage Number 08155500) including 9-month lag discharge.

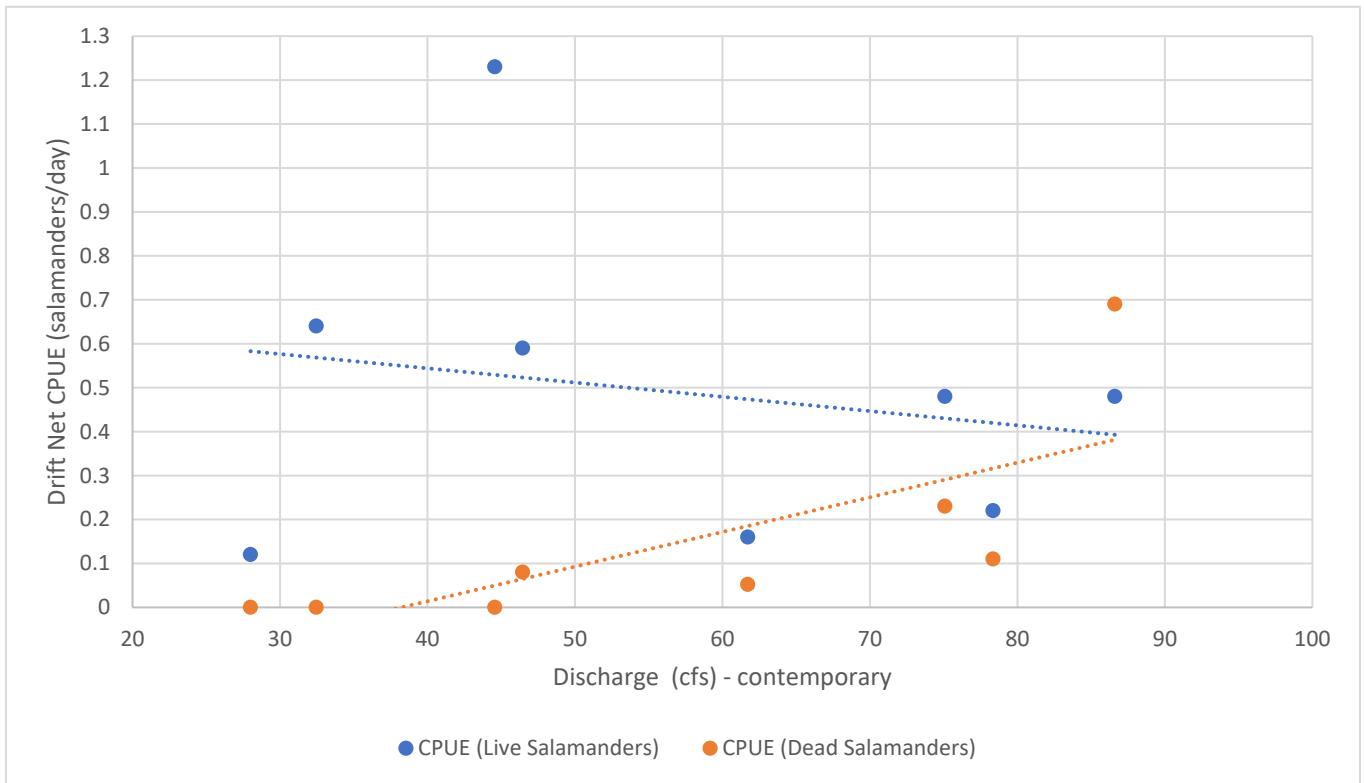


Figure 6: CPUE of live and dead salamanders captured in drift-nets vs. USGS discharge from Barton Springs Pool (Gage Number 08155500).

When abundance estimates from quarterly capture-recapture surveys were high, we also expected to see high numbers of salamanders in the drift-net samples, perhaps indicating greater immigration to the surface. Our results supported this hypothesis to a degree, as there was a significant positive correlation ($r = 0.74$, $P = 0.04$) between CPUE of live salamanders and abundance estimates (Figure 7). This relationship did not hold for dead salamanders ($r = -0.34$, $P = 0.41$) (Figure 7). Drift-net sampling did not always occur in the same month as surveys, so surface conditions could have varied at the different sampling times.

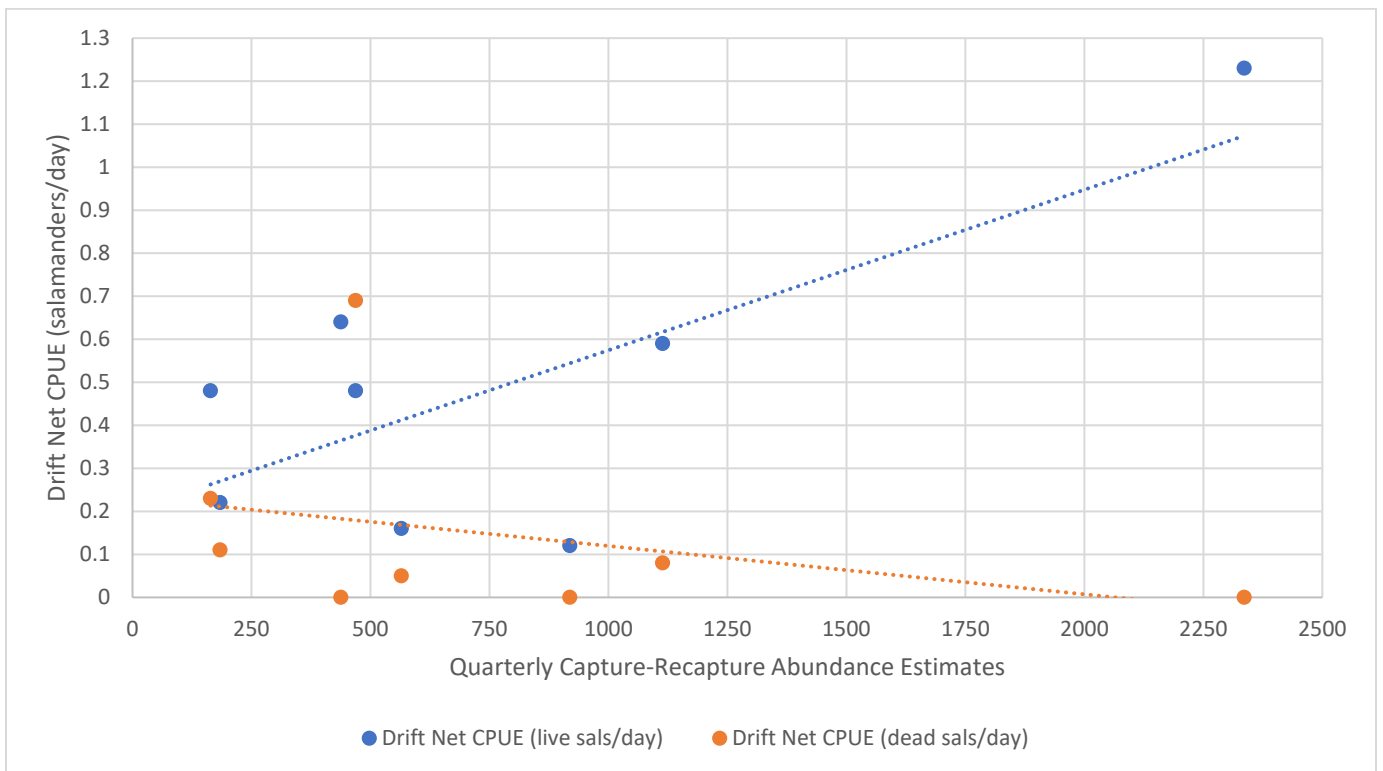


Figure 7. CPUE of live and dead salamanders captured in drift-nets vs. the *E. sosorum* abundance estimates from quarterly capture-recapture surveys conducted around the same time (City of Austin, 2019, 2020, 2021, 2022, 2023).

Recommendations

Although *E. waterlooensis* are rarely observed during capture-recapture surveys, our drift-net data indicate that juveniles emerge from the aquifer at a rate higher than expected. Our results suggest that using drift-nets for collection of this species is likely to be more efficient than collecting them during capture-recapture surveys. Because collections of live *E. waterlooensis* are necessary for our captive assurance colony (Chamberlain 2020), we recommend using drift-netting techniques to meet collection quotas.

Future drift-net sampling efforts could be done in coordination with our standard capture-recapture surveys to further evaluate whether abundances at the surface are related to the number of salamanders being expelled from the aquifer. Because elucidating patterns in population size requires many years of data (e.g., Bendik & Dries 2018), it is possible we did not have a large enough sample size to adequately test the relationship between drift-net counts and surface abundance. How salamanders immigrate to the surface and how and whether the surface populations are reliant on colonization from subterranean migrants is an important and unresolved question that impacts our understanding of species resiliency. A better understanding of this will, in turn, allow us to implement the best management practices for the species in accordance with the City of Austin’s Habitat Conservation Plan (City of Austin, 2013). Therefore, we recommend continuing to evaluate drift-net sampling techniques for the purposes of understanding patterns of surface and subsurface population dynamics.

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References

- Azizi E, Landberg T. 2002. Effects of metamorphosis on the aquatic escape response of the two-lined salamander (*Eurycea bislineata*). *The Journal of Experimental Biology* 205:841–849.
- Bendik NF, McEntire KD, Sissel BN. 2016. Movement, demographics, and occupancy dynamics of a federally-threatened salamander: evaluating the adequacy of critical habitat. *PeerJ* 4:e1817.
- Bendik NF, Chamberlain DA, Devitt TJ, Robinson D. 2019. Barton Springs and Austin blind salamander capture-recapture study: interim report. City of Austin, Austin. Available at https://services.austintexas.gov/watershed_protection/publications/document.cfm?id=339918
- Bendik, N. F., Chamberlain, DA, Devitt, TJ, Donelson, SE, Nissen, B, Owen, JD, Robinson, D, Sissel, BN, Sparks, K. (2021). Subterranean movement inferred by temporary emigration in Barton Springs salamanders (*Eurycea sosorum*). *PeerJ*, 1-26.
- Bruce, RC. (1986). Upstream and downstream movements of *Eurycea bislineata* and other salamanders in a southern Appalachian stream. *Herpetologica* 42:149–155.
- Chamberlain, D. (2020). Barton Springs Salamander (*Eurycea sosorum*) and Austin Blind Salamander (*Eurycea waterlooensis*) captive breeding population management plan. SR-20-03. Watershed Protection Department, Austin, Texas. 25 pp.
- Chippindale, PT, Price, AH, & Hillis, DM. (1993). A new species of perennibranchiate salamander (*Eurycea*: Plethodontidae) from Austin, Texas. *Herpetologica* 49:248–259.
- City of Austin. (2013). Major amendment and extension of the habitat conservation plan for the Barton Springs Salamander (*Eurycea sosorum*) and the Austin Blind Salamander (*Eurycea waterlooensis*) to allow for the operation and maintenance of Barton Springs and adjacent springs. Watershed Protection Department, Austin, Texas. 275 pp.
- City of Austin (2019). Annual Report U.S. Fish and Wildlife Service Scientific Permit (TE-833851). Watershed Protection Department, Austin, Texas. 19 pp. <https://services.austintexas.gov/edims/document.cfm?id=355452>
- City of Austin (2020). Annual Report U.S. Fish and Wildlife Service Scientific Permit (TE-833851). Watershed Protection Department, Austin, Texas. 22 pp. <https://services.austintexas.gov/edims/document.cfm?id=355453>
- City of Austin (2021). Annual Report U.S. Fish and Wildlife Service Scientific Permit (TE-833851). Watershed Protection Department, Austin, Texas. 43 pp.

- City of Austin (2022). Annual Report U.S. Fish and Wildlife Service Scientific Permit (TE-833851). Watershed Protection Department, Austin, Texas. 130 pp.
- City of Austin (2023). Annual Report U.S. Fish and Wildlife Service Scientific Permit (TE-833851). Watershed Protection Department, Austin, Texas. 18 pp.
- Devitt, TJ. (2016). Monitoring methods for the Barton Springs and Austin Blind salamanders (*Eurycea sosorum* and *Eurycea waterlooensis*): 1993–2014 and beyond. City of Austin, Watershed Protection Department, Austin, Texas. SR-16-10. 8 pp.
<https://services.austintexas.gov/edims/document.cfm?id=266622>
- Devitt, TJ, & Nissen, BD. (2018). New occurrence records for *Eurycea sosorum* Chippindale, Price & Hillis, 1993 (Caudata, Plethodontidae) in Travis and Hays counties, Texas, USA. *Check List*, 14(2), 297–301.
- Fenolio, DB, Niemiller, ML, Bonett, RM, Graening, GO, Collier, BA, & Stout, JF. (2014). Life history, demography, and the influence of cave-roosting bats on a population of the Grotto Salamander (*Eurycea spelaea*) from the Ozark Plateaus of Oklahoma (Caudata: Plethodontidae). *Herpetological Conservation and Biology* 2:394–405.
- Grant, EHC., Green, LE., & Lowe, WH. (2009). Salamander occupancy in headwater stream networks. *Freshwater Biology* 54:1370–1378.
- Hillis, DM, Chamberlain, DA., Wilcox, TP, & Chippindale, PT. (2001). A new species of subterranean blind salamander (Plethodontidae: Hemidactyliini: *Eurycea: Typhlomolge*) from Austin, Texas, and a systematic revision of central Texas paedomorphic salamanders. *Herpetologica* 57:266–280.
- Holsinger, J. R., Longley, G. (1980). The subterranean amphipod crustacean fauna of an artesian well in Texas. *Smithsonian Contributions to Zoology*: 62 pp.
- Hutchins, BT, Engel, AS, Nowlin, WH, & Schwartz, BF. (2016). Chemolithoautotrophy supports macroinvertebrate food webs and affects diversity and stability in groundwater communities. *Ecology* 97:1530–1542
- McDermid, K, Sprouse, P, & Krejca, J. (2015). Geographic Distribution: *Eurycea sosorum* (Barton Springs salamander). *Herpetological Review* 46:556–578.
- Niemiller, ML., & Miller, B T. (2007). Subterranean reproduction of the southern two-lined salamander (*Eurycea cirrigera*) from short mountain, tennessee. *Herpetological Conservation and Biology* 2:106–112.
- Schwartz, B, Hutchins, B, Nowlin, W, Engel, AS, Castillo, V, Cottrell, A, Paterson, A, Corrington, C, Rigoni, H. (2022). Food webs and trophic structure of the groundwater ecosystem supporting Barton Springs and Austin Blind salamanders. San Marcos, TX: Texas State University. 44 pp.
- Stoneburner D. 1978. Salamander drift: observations on the two-lined salamander (*Eurycea bislineata*). *Freshwater Biology* 8:291–293.

Appendix

All data collected from each sampling date from 2019–2022 (BSS = Barton Springs salamander; ABS = Austin Blind salamander; Drift-net type = Based on nets from Figure 2).

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
9/19/2019	TX State	morning	1	1	0	0	1	0	0	0	0	24	9/25/2019	Type A	Adult BSS released (>2" TL); Schwartz team found 1 BSS juv while sorting - counting as dead in the categories
9/19/2019	TX State	morning	2	0	0	0	1	0	0	0	0	24	9/25/2019	Type A	1 dead BSS juv collected by Schwartz
9/19/2019	TX State	morning	3	0	0	0	0	0	0	0	0	24	9/25/2019	Type A	
9/19/2019	TX State	morning	4	0	0	1	2	0	0	1	1	24	9/25/2019	Type A	1 live ABS juv taken to CB with gas bubble, 1 dead BSS collected by Schwartz, 1 live BSS released; Schwartz team found 1 BSS juv and 1 ABS juv while sorting - counting as dead in the categories
9/19/2019	TX State	morning	5	0	0	0	1	0	0	0	2	24	9/25/2019	Type A	1 dead ABS juv collected by Schwartz looks like it was beat up or chewed up; Schwartz team found 1 BSS juv and 1 ABS juv while sorting - counting as dead in the categories
9/20/2019	TX State	morning	1	0	0	0	0	0	0	0	0	24	9/25/2019	Type A	
9/20/2019	TX State	morning	2	0	0	0	0	0	0	0	0	24	9/25/2019	Type A	
9/20/2019	TX State	morning	3	0	0	0	2	0	0	2	0	24	9/25/2019	Type A	2 almost dead BSS juv collected by Schwartz, 1 live ABS juv taken to CB, 1 live ABS possible hybrid taken to CB but later determined to be ABS
9/20/2019	TX State	morning	4	0	0	0	0	0	0	0	0	24	9/25/2019	Type A	
9/20/2019	TX State	morning	5	0	0	0	0	0	0	0	0	24	9/25/2019	Type A	
9/23/2019	TX State	evening	1	0	0	0	0	0	0	1	0	7	9/25/2019	Type A	1 live ABS juv taken to CB
9/23/2019	TX State	evening	2	0	0	0	0	0	0	0	0	7	9/25/2019	Type A	
9/23/2019	TX State	evening	3	0	0	0	0	0	0	0	0	7	9/25/2019	Type A	
9/23/2019	TX State	evening	4	0	0	1	0	0	0	0	0	7	9/25/2019	Type A	1 live BSS juv released
9/23/2019	TX State	evening	5	0	0	0	0	0	0	0	0	7	9/25/2019	Type A	
9/24/2019	TX State	morning	1	0	0	0	0	0	0	0	0	16	9/25/2019	Type A	
9/24/2019	TX State	morning	2	0	0	0	0	0	0	0	0	16	9/25/2019	Type A	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
9/24/2019	TX State	morning	3	0	0	0	0	0	0	0	0	16	9/25/2019	Type A	
9/24/2019	TX State	morning	4	0	0	1	0	0	0	0	0	16	9/25/2019	Type A	1 live BSS juv released
9/24/2019	TX State	morning	5	0	0	0	1	0	0	0	0	16	9/25/2019	Type A	1 dead BSS juv collected by Schwartz
9/25/2019	TX State	morning	1	0	0	1	0	0	0	0	0	24	9/25/2019	Type A	1 live BSS juv taken to CB with gas bubbles
9/25/2019	TX State	morning	2	0	0	0	1	0	0	0	0	24	9/25/2019	Type A	1 dead BSS juv collected by Schwartz
9/25/2019	TX State	morning	3	0	0	1	1	0	0	0	0	24	9/25/2019	Type A	1 live BSS juv released, 1 dead BSS juv collected by Schwartz team
9/25/2019	TX State	morning	4	0	0	0	1	0	0	0	1	24	9/25/2019	Type A	1 dead BSS juv collected by Schwartz, 1 dead ABS juv collected by Schwartz
9/25/2019	TX State	morning	5	0	0	1	0	0	0	0	0	24	9/25/2019	Type A	1 live BSS juv released
9/25/2019	TX State	evening	1	0	0	0	0	0	0	0	0	7	9/25/2019	Type A	
9/25/2019	TX State	evening	2	0	0	0	0	0	0	0	0	7	9/25/2019	Type A	
9/25/2019	TX State	evening	3	0	0	1	0	0	0	0	0	7	9/25/2019	Type A	1 live BSS juv released
9/25/2019	TX State	evening	4	0	0	0	1	0	0	0	0	7	9/25/2019	Type A	1 dead BSS juv collected by Schwartz
9/25/2019	TX State	evening	5	0	0	0	0	0	0	0	0	7	9/25/2019	Type A	
9/26/2019	TX State	morning	1	0	0	0	0	0	0	0	0	16	9/25/2019	Type A	
9/26/2019	TX State	morning	2	0	0	0	0	0	0	0	0	16	9/25/2019	Type A	
9/26/2019	TX State	morning	3	0	0	2	2	0	0	1	0	16	9/25/2019	Type A	1 live ABS juv taken to CB, 2 live BSS juv released, 1 dead BSS juv collected by Schwartz, 1 headless salamander collected by Schwartz and counted as BSS
9/26/2019	TX State	morning	4	0	0	0	0	0	0	0	0	16	9/25/2019	Type A	
9/26/2019	TX State	morning	5	0	0	0	1	0	0	0	0	16	9/25/2019	Type A	1 dead BSS juv collected by Schwartz
9/26/2019	TX State	evening	1	0	0	0	0	0	0	0	0	7.5	9/25/2019	Type A	
9/26/2019	TX State	evening	2	0	0	0	0	0	0	0	0	7.5	9/25/2019	Type A	
9/26/2019	TX State	evening	3	0	0	0	0	0	0	0	0	7.5	9/25/2019	Type A	
9/26/2019	TX State	evening	4	0	0	0	0	0	0	0	0	7.5	9/25/2019	Type A	
9/26/2019	TX State	evening	5	0	0	0	0	0	0	0	0	7.5	9/25/2019	Type A	
9/27/2019	TX State	morning	1	0	0	0	0	0	0	0	0	16.5	9/25/2019	Type A	
9/27/2019	TX State	morning	2	0	0	0	0	0	0	0	0	16.5	9/25/2019	Type A	
9/27/2019	TX State	morning	3	0	0	0	0	0	0	0	0	16.5	9/25/2019	Type A	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
9/27/2019	TX State	morning	4	0	0	0	2	0	0	0	0	16.5	9/25/2019	Type A	1 dead BSS juv collected by Schwartz, 1 dead BSS juv collected by Schwartz that looked decomposed like maybe it came out of the vent already dead
9/27/2019	TX State	morning	5	0	0	0	0	0	0	0	0	16.5	9/25/2019	Type A	
9/30/2019	TX State	evening	1	0	0	0	0	0	0	0	0	8	9/25/2019	Type A	
9/30/2019	TX State	evening	2	0	0	0	0	0	0	0	0	8	9/25/2019	Type A	
9/30/2019	TX State	evening	3	0	0	0	0	0	0	0	0	8	9/25/2019	Type A	
9/30/2019	TX State	evening	4	0	0	0	0	0	0	0	0	8	9/25/2019	Type A	
9/30/2019	TX State	evening	5	0	0	0	0	0	0	0	0	8	9/25/2019	Type A	
10/1/2019	TX State	morning	1	0	0	0	0	0	0	0	0	17.5	9/25/2019	Type A	
10/1/2019	TX State	morning	2	0	0	0	0	0	0	0	0	17.5	9/25/2019	Type A	
10/1/2019	TX State	morning	3	0	0	1	0	0	0	0	0	17.5	9/25/2019	Type A	1 live BSS juv released
10/1/2019	TX State	morning	4	0	0	0	0	0	0	0	0	17.5	9/25/2019	Type A	
10/1/2019	TX State	morning	5	0	0	0	3	0	0	0	0	17.5	9/25/2019	Type A	2 dead BSS juv collected by Schwartz, 1 dead BSS juv that looked like it still had embryo around it collected by Schwartz
10/1/2019	TX State	evening	1	0	0	0	0	0	0	1	0	6	9/25/2019	Type A	1 live ABS juv taken to CB
10/1/2019	TX State	evening	2	0	0	0	0	0	0	0	0	6	9/25/2019	Type A	
10/1/2019	TX State	evening	3	0	0	0	0	0	0	0	0	6	9/25/2019	Type A	
10/1/2019	TX State	evening	4	0	0	0	3	0	0	0	0	6	9/25/2019	Type A	3 dead BSS juv collected by Schwartz
10/1/2019	TX State	evening	5	0	0	0	0	0	0	0	0	6	9/25/2019	Type A	
10/2/2019	TX State	morning	1	0	0	0	0	0	0	0	0	15.5	9/25/2019	Type A	
10/2/2019	TX State	morning	2	0	0	1	0	0	0	0	0	15.5	9/25/2019	Type A	1 live BSS juv released
10/2/2019	TX State	morning	3	0	0	0	0	0	0	0	0	15.5	9/25/2019	Type A	Net had come off vent
10/2/2019	TX State	morning	4	0	0	1	0	0	0	0	0	15.5	9/25/2019	Type A	1 live BSS juv released
10/2/2019	TX State	morning	5	0	0	0	0	0	0	0	0	15.5	9/25/2019	Type A	
1/16/2020	TX State	evening	1	0	0	0	0	0	0	0	0	5.5	1/24/2020	Type A	
1/16/2020	TX State	evening	4	0	0	0	0	0	0	0	0	5.5	1/24/2020	Type A	
1/17/2020	TX State	morning	1	0	0	0	0	0	0	1	0	17	1/24/2020	Type A	1 live ABS juv taken to CB
1/17/2020	TX State	morning	4	0	0	2	0	0	0	0	0	17	1/24/2020	Type A	1 live BSS juv released, 1 live BSS very tiny juv possibly still with embryo released

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
1/21/2020	TX State	evening	1	0	0	0	0	0	0	0	0	7.5	1/24/2020	Type A	
1/21/2020	TX State	evening	4	0	0	0	0	0	0	0	0	7.5	1/24/2020	Type A	
1/22/2020	TX State	morning	1	0	0	0	0	0	0	0	0	16.5	1/24/2020	Type A	
1/22/2020	TX State	morning	4	0	0	2	0	0	0	0	0	16.5	1/24/2020	Type A	2 live BSS juv released (one had gas bubbles)
1/22/2020	TX State	evening	1	0	0	0	0	0	0	0	0	7	1/24/2020	Type A	
1/22/2020	TX State	evening	4	0	0	0	0	0	0	0	0	7	1/24/2020	Type A	
1/23/2020	TX State	morning	1	0	0	0	0	0	0	0	0	19.5	1/24/2020	Type A	
1/23/2020	TX State	morning	4	0	0	2	0	0	0	0	0	19.5	1/24/2020	Type A	2 live BSS juv released (one had gas bubbles)
1/23/2020	TX State	evening	3	0	0	0	0	0	0	0	0	4.5	1/24/2020	Type A	
1/23/2020	TX State	evening	4	0	0	0	0	0	0	0	0	4.5	1/24/2020	Type A	
1/24/2020	TX State	morning	3	0	0	1	0	0	0	0	0	17	1/24/2020	Type A	1 live BSS juv released
1/24/2020	TX State	morning	4	0	0	1	0	0	0	0	0	17	1/24/2020	Type A	1 live BSS juv released
1/27/2020	TX State	evening	3	0	0	0	0	0	0	0	0	6.5	1/24/2020	Type A	
1/27/2020	TX State	evening	4	0	0	0	0	0	0	0	0	6.5	1/24/2020	Type A	
1/28/2020	TX State	morning	3	0	0	0	0	0	0	0	0	17	1/24/2020	Type A	
1/28/2020	TX State	morning	4	0	0	2	0	0	0	0	0	17	1/24/2020	Type A	2 live BSS juv released
1/28/2020	TX State	evening	3	0	0	0	0	0	0	0	0	7	1/24/2020	Type A	
1/28/2020	TX State	evening	4	0	0	0	0	0	0	0	0	7	1/24/2020	Type A	
1/29/2020	TX State	morning	3	0	0	2	0	0	0	0	0	17	1/24/2020	Type A	2 live BSS juv released
1/29/2020	TX State	morning	4	0	0	2	0	0	0	1	0	17	1/24/2020	Type A	2 live BSS juv released, 1 live ABS juv taken to CB
1/29/2020	TX State	evening	3	0	0	0	0	0	0	0	0	7	1/24/2020	Type A	
1/29/2020	TX State	evening	4	0	0	0	0	0	0	0	0	7	1/24/2020	Type A	
1/30/2020	TX State	morning	3	0	0	1	0	0	0	0	0	17	1/24/2020	Type A	1 live BSS juv released
1/30/2020	TX State	morning	4	0	0	0	0	0	0	0	0	17	1/24/2020	Type A	
9/14/2020	TX State	evening	1	0	0	0	0	0	0	0	0	7	9/16/2020	Type A	
9/14/2020	TX State	evening	2	0	0	0	0	0	0	0	0	7	9/16/2020	Type A	
9/14/2020	TX State	evening	3	0	0	0	0	0	0	0	0	7	9/16/2020	Type A	1 adult crayfish in sample
9/15/2020	TX State	morning	1	0	0	1	0	0	0	0	0	16	9/16/2020	Type A	1 live BSS juv released
9/15/2020	TX State	morning	2	0	0	0	0	0	0	0	0	16	9/16/2020	Type A	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
9/15/2020	TX State	morning	3	0	0	2	0	0	0	0	0	16	9/16/2020	Type A	2 live BSS juv released
9/15/2020	TX State	evening	1	0	0	0	0	0	0	0	0	7.5	9/16/2020	Type A	
9/15/2020	TX State	evening	2	0	0	0	0	0	0	0	0	7.5	9/16/2020	Type A	2 adult crayfish, lots of sediment
9/15/2020	TX State	evening	3	0	0	0	0	0	0	0	0	7.5	9/16/2020	Type A	Lots of sediment
9/16/2020	TX State	morning	1	0	0	0	0	0	0	0	0	16	9/16/2020	Type A	Net had come off vent
9/16/2020	TX State	morning	2	0	0	0	0	0	0	0	0	16	9/16/2020	Type A	
9/16/2020	TX State	morning	3	0	0	1	0	0	0	0	0	16	9/16/2020	Type A	1 live BSS juv released
9/16/2020	TX State	evening	1	0	0	0	0	0	0	0	0	7.5	9/16/2020	Type A	
9/16/2020	TX State	evening	2	0	0	0	0	0	0	0	0	7.5	9/16/2020	Type A	
9/16/2020	TX State	evening	3	0	0	0	1	0	0	0	0	7.5	9/16/2020	Type A	1 dead BSS juv piece/part of body - did not preserve
9/17/2020	TX State	morning	1	0	0	0	0	0	0	0	0	16.5	9/16/2020	Type A	
9/17/2020	TX State	morning	2	0	0	0	0	0	0	0	0	16.5	9/16/2020	Type A	
9/17/2020	TX State	morning	3	0	0	3	0	0	0	0	0	16.5	9/16/2020	Type A	2 live BSS juv released
9/17/2020	TX State	evening	1	0	0	0	0	0	0	0	0	8	9/16/2020	Type A	
9/17/2020	TX State	evening	2	0	0	0	0	0	0	0	0	8	9/16/2020	Type A	
9/17/2020	TX State	evening	3	0	0	0	0	0	0	0	0	8	9/16/2020	Type A	
9/18/2020	TX State	morning	1	0	0	0	0	0	0	0	0	16	9/16/2020	Type A	
9/18/2020	TX State	morning	2	0	0	0	0	0	0	0	0	16	9/16/2020	Type A	
9/18/2020	TX State	morning	3	0	0	0	0	0	0	0	0	16	9/16/2020	Type A	
3/8/2021	TX State	evening	1	0	0	0	0	0	0	0	0	8	3/14/2021	Type A	
3/8/2021	TX State	evening	3	0	0	0	0	0	0	0	0	8	3/14/2021	Type A	
3/9/2021	TX State	morning	1	0	0	0	0	0	0	0	0	17	3/14/2021	Type A	
3/9/2021	TX State	morning	3	0	0	0	0	0	0	0	0	17	3/14/2021	Type A	
3/9/2021	TX State	evening	1	0	0	0	0	0	0	0	0	8.5	3/14/2021	Type A	
3/9/2021	TX State	evening	3	0	0	1	0	0	0	0	0	8.5	3/14/2021	Type A	1 live BSS juv was alive but caught in seam of the net and not sure it survived but was released and counted as alive
3/10/2021	TX State	evening	1	0	0	0	0	0	0	0	0	21	3/14/2021	Type A	
3/10/2021	TX State	evening	3	0	0	0	0	0	0	0	0	21	3/14/2021	Type A	
3/11/2021	TX State	morning	1	0	0	1	0	0	0	0	0	15	3/14/2021	Type A	1 live BSS juv released

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
3/11/2021	TX State	morning	3	0	0	1	0	0	0	0	0	15	3/14/2021	Type A	1 live BSS juv released
3/11/2021	TX State	evening	1	0	0	0	0	0	0	0	0	8	3/14/2021	Type A	
3/11/2021	TX State	evening	3	0	0	0	0	0	0	0	0	8	3/14/2021	Type A	
3/12/2021	TX State	morning	1	0	0	3	0	0	0	2	0	15	3/14/2021	Type A	3 live BSS juv released, 2 live ABS juv taken to CB, Didn't have net numbers written for this day so put them all under the same net
3/12/2021	TX State	morning	3	0	0	0	0	0	0	0	0	15	3/14/2021	Type A	
3/16/2021	TX State	morning	6	0	0	0	0	0	0	0	0	24	3/14/2021	Type A	
3/16/2021	TX State	morning	21	0	0	0	0	0	0	0	0	24	3/14/2021	Type A	
3/17/2021	TX State	morning	6	0	0	0	0	0	0	0	0	25	3/14/2021	Type A	
3/17/2021	TX State	morning	3	0	0	0	0	0	0	0	0	25	3/14/2021	Type A	
3/18/2021	TX State	morning	6	0	0	0	0	0	0	0	0	22	3/14/2021	Type A	
3/18/2021	TX State	morning	3	0	0	1	0	0	0	0	0	22	3/14/2021	Type A	1 live BSS juv released
3/19/2021	TX State	morning	6	0	0	0	0	0	0	0	0	23.5	3/14/2021	Type A	
3/19/2021	TX State	morning	3	0	0	0	0	0	0	1	0	23.5	3/14/2021	Type A	1 live ABS juv taken to CB
5/5/2021	TX State	evening	2	0	0	0	0	0	0	0	0	9.5	5/12/2021	Type A	
5/5/2021	TX State	evening	3	0	0	0	0	0	0	0	0	9.5	5/12/2021	Type A	
5/6/2021	TX State	morning	2	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
5/6/2021	TX State	morning	3	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
5/6/2021	TX State	evening	2	0	0	0	0	0	0	0	0	9	5/12/2021	Type A	
5/6/2021	TX State	evening	3	0	0	0	0	0	0	0	0	9	5/12/2021	Type A	
5/7/2021	TX State	morning	2	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
5/7/2021	TX State	morning	3	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
5/11/2021	TX State	evening	2	0	0	0	0	0	0	0	0	8.5	5/12/2021	Type A	
5/11/2021	TX State	evening	3	0	0	0	0	0	0	0	0	8.5	5/12/2021	Type A	
5/12/2021	TX State	morning	2	0	0	0	0	0	0	0	0	18	5/12/2021	Type A	
5/12/2021	TX State	morning	3	0	0	0	0	0	0	0	0	18	5/12/2021	Type A	
5/19/2021	TX State	morning	2	0	0	0	0	0	0	0	0	19	5/12/2021	Type A	
5/19/2021	TX State	morning	3	0	0	0	0	0	0	0	0	19	5/12/2021	Type A	
5/19/2021	TX State	evening	2	0	0	0	0	0	0	0	0	7	5/12/2021	Type A	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
5/19/2021	TX State	evening	3	0	0	0	0	0	0	0	0	7	5/12/2021	Type A	
5/20/2021	TX State	morning	2	0	0	1	0	0	0	0	0	17	5/12/2021	Type A	1 live BSS juv released
5/20/2021	TX State	morning	3	0	0	0	0	0	0	0	0	17	5/12/2021	Type A	
5/20/2021	TX State	evening	2	0	0	0	0	0	0	0	0	7.5	5/12/2021	Type A	
5/20/2021	TX State	evening	3	0	0	1	0	0	0	0	0	7.5	5/12/2021	Type A	1 live BSS juv released
5/21/2021	TX State	morning	2	0	0	0	0	0	0	0	0	16	5/12/2021	Type A	
5/21/2021	TX State	morning	3	0	0	0	0	0	0	0	0	16	5/12/2021	Type A	
5/25/2021	TX State	morning	3	0	0	0	1	0	0	0	0	16.5	5/12/2021	Type A	1 dead BSS juv and COA kept specimen - all springs were colored brown from the amount of sediment
5/25/2021	TX State	morning	5	0	0	0	0	0	0	0	0	16.5	5/12/2021	Type A	
5/25/2021	COA	evening	3	0	0	0	0	0	0	0	0	8.5	5/12/2021	Type A	
5/25/2021	COA	evening	5	0	0	0	0	0	0	0	0	8.5	5/12/2021	Type A	
5/26/2021	COA	morning	3	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
5/26/2021	COA	morning	5	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
5/26/2021	COA	evening	3	0	0	0	0	0	0	0	0	7	5/12/2021	Type A	
5/26/2021	COA	evening	5	0	0	0	0	0	0	0	0	7	5/12/2021	Type A	
5/27/2021	COA	morning	3	0	0	0	0	0	0	0	0	17	5/12/2021	Type A	
5/27/2021	COA	morning	5	0	0	0	0	0	0	0	0	17	5/12/2021	Type A	
5/27/2021	COA	evening	3	0	0	0	0	0	0	0	0	7.5	5/12/2021	Type A	
5/27/2021	COA	evening	5	1	0	0	0	0	0	0	0	7.5	5/12/2021	Type A	1 alive BSS adult released (~2" TL)
5/28/2021	COA	morning	3	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
5/28/2021	COA	morning	5	0	0	0	0	0	0	0	0	15.5	5/12/2021	Type A	
8/3/2021	UT	3:45 PM	3	0	0	0	0	0	0	0	0	4.25	8/18/2021	Type A	
8/3/2021	UT	3:45 PM	4	0	0	0	0	0	0	0	0	4.25	8/18/2021	Type A	
8/3/2021	UT	3:45 PM	5	0	0	0	0	0	0	0	0	4.25	8/18/2021	Type A	
8/3/2021	UT	3:45 PM	8	0	0	0	0	0	0	0	0	4.25	8/18/2021	Type A	
8/3/2021	UT	3:45 PM	9	0	0	0	0	0	0	0	0	4.25	8/18/2021	Type A	
8/3/2021	UT	3:45 PM	11	0	0	0	0	0	0	0	0	4.25	8/18/2021	Type A	
8/4/2021	UT	9:30 AM	3	0	0	1	0	0	0	0	0	17.5	8/18/2021	Type A	1 alive BSS juv released
8/4/2021	UT	9:30 AM	4	0	0	0	0	0	0	0	0	17.5	8/18/2021	Type A	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/4/2021	UT	9:30 AM	5	0	0	0	1	0	0	0	0	17.5	8/18/2021	Type A	1 dead BSS juv and COA kept specimen
8/4/2021	UT	9:30 AM	8	0	0	0	0	0	0	0	1	17.5	8/18/2021	Type A	1 dead ABS juv and COA kept specimen
8/4/2021	UT	9:30 AM	9	0	1	0	1	0	0	0	0	17.5	8/18/2021	Type A	1 dead BSS adult (1"-2" TL), 1 dead BSS juv and COA kept both specimens
8/4/2021	UT	9:30 AM	11	0	0	0	0	0	0	0	0	17.5	8/18/2021	Type A	
8/4/2021	UT	3:30 PM	3	0	0	0	0	0	0	1	0	6	8/18/2021	Type A	1 live ABS juv taken to CB but later died - still counting as alive
8/4/2021	UT	3:30 PM	4	0	0	0	0	0	0	0	0	6	8/18/2021	Type A	
8/4/2021	UT	3:30 PM	5	0	0	0	1	0	0	0	0	6	8/18/2021	Type A	1 dead BSS juv and kept by COA
8/4/2021	UT	3:30 PM	8	0	0	0	0	0	0	0	1	6	8/18/2021	Type A	1 dead ABS juv and kept by COA
8/4/2021	UT	3:30 PM	9	0	0	0	0	0	0	0	0	6	8/18/2021	Type A	
8/4/2021	UT	3:30 PM	11	0	0	0	1	0	0	0	0	6	8/18/2021	Type A	1 dead BSS juv that got caught in the side "tee" vent of the PVC net and specimen not collected
8/6/2021	UT	11:40 AM	2	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/6/2021	UT	11:40 AM	3	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/6/2021	UT	11:40 AM	5	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/6/2021	UT	11:40 AM	8 (us)	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/6/2021	UT	11:40 AM	8 (ds)	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/6/2021	UT	11:40 AM	9	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/6/2021	UT	2:00 PM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/6/2021	UT	2:00 PM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/6/2021	UT	2:00 PM	5	0	0	0	0	0	0	1	0	2	8/18/2021	Type B and C	
8/6/2021	UT	2:00 PM	8 (us)	0	0	0	0	0	0	1	0	2	8/18/2021	Type B and C	
8/6/2021	UT	2:00 PM	8 (ds)	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/6/2021	UT	2:00 PM	9	0	0	0	0	0	0	1	0	2	8/18/2021	Type B and C	
8/6/2021	UT	3:50 PM	2	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/6/2021	UT	3:50 PM	3	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/6/2021	UT	3:50 PM	5	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/6/2021	UT	3:50 PM	8 (us)	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/6/2021	UT	3:50 PM	8 (ds)	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/6/2021	UT	3:50 PM	9	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/10/2021	UT	11:00 AM	2	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	11:00 AM	3	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	11:00 AM	5	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	11:00 AM	8 (us)	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	11:00 AM	8 (ds)	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	11:00 AM	9	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	1:30 PM	2	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	1:30 PM	3	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	1:30 PM	5	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	1:30 PM	8 (us)	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	1:30 PM	8 (ds)	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	1:30 PM	9	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	1:30 PM	18	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	1	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	4	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	5	0	0	1	0	0	0	0	0	2	8/18/2021	Type B and C	1 live BSS juv released

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/10/2021	UT	3:30 PM	8 (ds)	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	9	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	10	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	11	0	0	0	0	0	0	1	0	2	8/18/2021	Type B and C	1 live ABS juv but not doing well and we agreed it wouldn't make it, so Ruben put it in Paxgene fixative and kept it
8/10/2021	UT	3:30 PM	14	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	3:30 PM	18	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	1	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	2	0	0	0	0	0	0	1	0	2	8/18/2021	Type B and C	1 live ABS juv taken to CB
8/10/2021	UT	5:30 PM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	4	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	5	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	8 (ds)	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	9	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	10	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	11	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	14	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/10/2021	UT	5:30 PM	18	0	0	0	0	0	0	1	0	2	8/18/2021	Type B and C	1 live ABS juv Ruben took for his study
8/11/2021	UT	8:10 AM	2	0	0	0	0	0	0	1	0	13	8/18/2021	Type B and C	1 live ABS juv taken to CB
8/11/2021	UT	8:10 AM	3	0	0	0	0	0	0	0	0	13	8/18/2021	Type B and C	
8/11/2021	UT	8:10 AM	4	0	0	0	0	0	0	0	0	13	8/18/2021	Type B and C	
8/11/2021	UT	8:10 AM	5	0	0	0	0	0	0	0	0	13	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/11/2021	UT	8:10 AM	8 (ds)	0	0	0	0	0	0	0	0	13	8/18/2021	Type B and C	
8/11/2021	UT	8:10 AM	9	0	0	2	0	0	0	0	0	13	8/18/2021	Type B and C	2 live BSS juv released - both looked a little injured maybe
8/11/2021	UT	8:10 AM	11	0	0	1	0	0	0	1	0	13	8/18/2021	Type B and C	1 live BSS juv released, 1 live ABS juv given to Ruben for his study
8/11/2021	UT	8:10 AM	18	0	0	0	0	0	0	0	0	13	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	4	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	5	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	6	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	8 (ds)	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	9	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	11	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	14	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	18	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	11:00 AM	19	0	0	0	0	0	0	1	0	2	8/18/2021	Type B and C	1 live ABS juv taken to CB - wasn't doing well decided it wouldn't make it so later Ruben put it in fixative and kept it for his study
8/11/2021	UT	11:00 AM	20	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	2	0	0	0	0	0	0	1	0	2.5	8/18/2021	Type B and C	1 live ABS juv taken to CB
8/11/2021	UT	1:40 PM	3	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	4	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	5	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	6	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/11/2021	UT	1:40 PM	8 (ds)	1	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	1 live BSS adult released (~2" TL)
8/11/2021	UT	1:40 PM	9	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	11	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	13	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	14	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	18	1	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	1 live BSS adult released (~2" TL)
8/11/2021	UT	1:40 PM	19	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	1:40 PM	20	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	4	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	5	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	6	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	8 (ds)	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	9	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	11	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	13	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	14	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	18	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	19	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	3:30 PM	20	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	2	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/11/2021	UT	4:30 PM	3	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	4	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	5	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	6	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	8 (ds)	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	9	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	11	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	13	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	14	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	18	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	19	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/11/2021	UT	4:30 PM	20	0	0	0	0	0	0	0	0	1	8/18/2021	Type B and C	
8/13/2021	UT	7:30 AM	1	0	0	0	0	0	0	0	0	15	8/18/2021	Type B and C	
8/13/2021	UT	7:30 AM	2	0	0	0	0	0	0	0	0	15	8/18/2021	Type B and C	
8/13/2021	UT	7:30 AM	3	0	0	0	0	0	0	0	0	15	8/18/2021	Type B and C	
8/13/2021	UT	7:30 AM	6	0	0	0	0	0	0	0	0	15	8/18/2021	Type B and C	
8/13/2021	UT	7:30 AM	11	0	0	0	0	0	0	0	0	15	8/18/2021	Type B and C	
8/13/2021	UT	7:30 AM	18	0	0	0	0	0	0	0	0	15	8/18/2021	Type B and C	
8/13/2021	UT	7:30 AM	19	0	0	0	0	0	0	0	0	15	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	1	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	2	0	0	0	0	0	0	0	1	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	3	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/13/2021	UT	10:30 AM	4	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	5	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	6	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	8 (ds)	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	9	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	11	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	18	1	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	19	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	10:30 AM	20	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	1	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	4	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	5	0	0	0	0	0	0	0	1	2	8/18/2021	Type B and C	1 dead ABS juv - hard to tell if it was alive but taken to CB and Dee Ann looked and declared it dead
8/13/2021	UT	12:25 PM	6	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	8 (ds)	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	9	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	11	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	18	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	19	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/13/2021	UT	12:25 PM	20	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/16/2021	COA	11:30 AM	1	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/16/2021	COA	11:30 AM	2	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/16/2021	COA	11:30 AM	14	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/16/2021	COA	11:30 AM	18	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/16/2021	COA	11:30 AM	19	0	0	0	0	0	0	0	0	3	8/18/2021	Type B and C	
8/16/2021	COA	1:45 PM	9	0	0	0	0	0	0	0	0	2.25	8/18/2021	Type B and C	
8/16/2021	COA	1:45 PM	11	0	0	0	0	0	0	0	0	2.25	8/18/2021	Type B and C	
8/16/2021	COA	2:00 PM	1	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/16/2021	COA	2:00 PM	2	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/16/2021	COA	2:00 PM	14	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/16/2021	COA	2:00 PM	18	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/16/2021	COA	2:00 PM	19	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	1	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	2	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	3	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	4	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	5	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	6	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	8 (ds)	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	9	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	11	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	14	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	17	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/18/2021	UT	11:30 AM	18	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	19	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	11:30 AM	20	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	1	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	4	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	5	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	6	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	8 (ds)	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	9	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	11	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	14	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	17	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	18	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	19	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	1:30 PM	20	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	1	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	2	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	3	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	4	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	5	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/18/2021	UT	3:00 PM	6	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	8 (ds)	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	9	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	11	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	14	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	17	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	18	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	19	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/18/2021	UT	3:00 PM	20	0	0	0	0	0	0	0	0	1.5	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	1	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	2	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	3	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	5	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	6	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	9	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	11	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	13	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	14	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	18	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	19	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	1:30 PM	20	0	0	0	0	0	0	0	0	1.75	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	1	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/19/2021	UT	3:30 PM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	5	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	6	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	9	0	0	0	0	0	0	0	1	2	8/18/2021	Type B and C	1 dead ABS juv and kept by COA
8/19/2021	UT	3:30 PM	11	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	13	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	14	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	18	0	0	1	0	0	0	0	0	2	8/18/2021	Type B and C	1 live BSS juv that was super tiny and had injured tail so Dee Ann took it to CB to monitor but it died the next day - counted as alive on here
8/19/2021	UT	3:30 PM	19	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	3:30 PM	20	0	0	0	0	0	0	0	0	2	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	1	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	2	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	3	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	5	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	6	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	9	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	11	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	13	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	14	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	18	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
8/19/2021	UT	6:00 PM	19	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/19/2021	UT	6:00 PM	20	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type B and C	
8/20/2021	COA	8:30 AM	1	0	0	0	0	0	0	0	0	14	8/18/2021	Type C nets	
8/20/2021	COA	8:30 AM	2	0	0	1	0	0	0	0	0	14	8/18/2021	Type C nets	1 live BSS juv released
8/20/2021	COA	8:30 AM	6	0	0	0	0	0	0	0	0	14	8/18/2021	Plain nets	
8/20/2021	COA	8:30 AM	13	0	0	0	0	0	0	0	0	14	8/18/2021	Type C	
8/20/2021	COA	8:30 AM	14	0	0	0	0	0	0	0	0	14	8/18/2021	Type C	
8/20/2021	COA	8:30 AM	18	0	0	0	0	0	0	0	0	14	8/18/2021	Type C	
8/20/2021	COA	8:30 AM	19	0	0	0	0	0	0	0	0	14	8/18/2021	Type C	
8/20/2021	COA	3:00 PM	1	0	0	0	0	0	0	0	0	6.5	8/18/2021	Type C	
8/20/2021	COA	3:00 PM	2	0	0	0	0	0	0	0	0	6.5	8/18/2021	Type C	
8/20/2021	COA	3:00 PM	6	0	0	0	0	0	0	0	0	6.5	8/18/2021	Type C	
8/20/2021	COA	3:00 PM	13	0	0	0	0	0	0	0	0	6.5	8/18/2021	Type C	
8/20/2021	COA	3:00 PM	14	0	0	0	0	0	0	0	0	6.5	8/18/2021	Type C	
8/20/2021	COA	3:00 PM	18	0	0	0	0	0	0	0	0	6.5	8/18/2021	Type C	
8/20/2021	COA	3:00 PM	19	0	0	0	0	0	0	0	0	6.5	8/18/2021	Type C	
8/23/2021	COA	3:45 PM	1	0	0	0	0	0	0	0	0	5.75	8/18/2021	Type C	
8/23/2021	COA	3:45 PM	2	0	0	0	0	0	0	0	0	5.75	8/18/2021	Type C	
8/23/2021	COA	3:45 PM	6	0	0	0	0	0	0	0	0	5.75	8/18/2021	Type C	
8/23/2021	COA	3:45 PM	14	0	0	0	0	0	0	0	0	5.75	8/18/2021	Type C	
8/23/2021	COA	3:45 PM	18	0	0	0	0	0	0	0	0	5.75	8/18/2021	Type C	
8/23/2021	COA	3:45 PM	19	0	0	0	0	0	0	0	0	5.75	8/18/2021	Type C	
8/23/2021	COA	3:45 PM	20	0	0	0	0	0	0	0	0	5.75	8/18/2021	Type C	
8/26/2021	COA	3:00 PM	1	0	0	0	0	0	0	0	0	6	8/18/2021	Type C	
8/26/2021	COA	3:00 PM	2	0	0	0	0	0	0	0	0	6	8/18/2021	Type C	
8/26/2021	COA	3:00 PM	14	0	0	0	0	0	0	0	0	6	8/18/2021	Type C	
8/26/2021	COA	3:00 PM	18	0	0	0	0	0	0	0	0	6	8/18/2021	Type C	
9/2/2021	COA	10:00 AM	1	0	0	0	0	0	0	0	0	2	8/18/2021	Type C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
9/2/2021	COA	10:00 AM	2	0	0	0	0	0	0	0	0	2	8/18/2021	Type C	
9/2/2021	COA	10:00 AM	3	0	0	0	0	0	0	0	0	2	8/18/2021	Type C	
9/2/2021	COA	10:00 AM	6	0	0	0	0	0	0	0	0	2	8/18/2021	Type C	
9/2/2021	COA	10:00 AM	14	0	0	0	0	0	0	0	0	2	8/18/2021	Type C	
9/2/2021	COA	10:00 AM	19	0	0	0	0	0	0	0	0	2	8/18/2021	Type C	
9/2/2021	COA	12:30 PM	1	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type C	
9/2/2021	COA	12:30 PM	2	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type C	
9/2/2021	COA	12:30 PM	3	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type C	
9/2/2021	COA	12:30 PM	6	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type C	
9/2/2021	COA	12:30 PM	14	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type C	
9/2/2021	COA	12:30 PM	19	0	0	0	0	0	0	0	0	2.5	8/18/2021	Type C	
10/19/2021	TX State	evening	1	0	0	0	0	0	0	0	0	7.25	10/24/2021	PVC drift net	
10/19/2021	TX State	evening	2	0	0	0	0	0	0	0	0	7.25	10/24/2021	Type A	
10/19/2021	TX State	evening	3	0	0	0	0	0	0	0	0	7.25	10/24/2021	Type A	
10/20/2021	TX State	morning	1	0	0	0	0	0	0	0	0	15.5	10/24/2021	Type A	
10/20/2021	TX State	morning	2	0	0	0	0	0	0	0	0	15.5	10/24/2021	Type A	
10/20/2021	TX State	morning	3	0	0	0	0	0	0	0	0	15.5	10/24/2021	Type A	
10/20/2021	TX State	evening	1	0	0	0	0	0	0	0	0	8.75	10/24/2021	Type A	
10/20/2021	TX State	evening	2	0	0	0	0	0	0	0	0	8.75	10/24/2021	Type A	
10/20/2021	TX State	evening	3	0	0	0	0	0	0	0	0	8.75	10/24/2021	Type A	
10/21/2021	TX State	morning	1	0	0	0	0	0	0	0	0	14.5	10/24/2021	Type A	
10/21/2021	TX State	morning	2	0	0	0	0	0	0	0	0	14.5	10/24/2021	Type A	
10/21/2021	TX State	morning	3	0	0	0	0	0	0	0	0	14.5	10/24/2021	Type A	
10/21/2021	TX State	evening	1	0	0	0	0	0	0	0	0	8.5	10/24/2021	Type A	
10/21/2021	TX State	evening	2	0	0	0	0	0	0	0	0	8.5	10/24/2021	Type A	
10/21/2021	TX State	evening	3	0	0	0	0	0	0	0	0	8.5	10/24/2021	Type A	
10/22/2021	TX State	morning	1	0	0	0	0	0	0	0	0	16.75	10/24/2021	Type A	
10/22/2021	TX State	morning	2	0	0	0	0	0	0	0	0	16.75	10/24/2021	Type A	
10/22/2021	TX State	morning	3	0	0	0	0	0	0	0	0	16.75	10/24/2021	Type A	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
10/25/2021	TX State	evening	1	0	0	0	0	0	0	0	0	7	10/24/2021	Type A	
10/25/2021	TX State	evening	2	0	0	0	0	0	0	0	0	7	10/24/2021	Type A	
10/25/2021	TX State	evening	3	0	0	0	1	0	0	0	0	7	10/24/2021	Type A	1 live BSS juv very tiny and not doing well but released anyways
10/26/2021	TX State	morning	1	0	0	1	0	0	0	0	0	17	10/24/2021	Type A	1 live BSS juv released
10/26/2021	TX State	morning	2	0	0	0	0	0	0	1	0	17	10/24/2021	Type A	1 live ABS juv but later died and given to Ruben but still counted as alive
10/26/2021	TX State	morning	3	0	0	1	0	0	0	0	0	17	10/24/2021	Type A	1 live BSS juv released
10/26/2021	TX State	evening	1	0	0	0	0	0	0	0	0	7	10/24/2021	Type A	
10/26/2021	TX State	evening	2	0	0	0	0	0	0	0	0	7	10/24/2021	Type A	
10/26/2021	TX State	evening	3	0	0	0	0	0	0	0	0	7	10/24/2021	Type A	
10/27/2021	TX State	morning	1	0	0	0	0	0	0	0	0	17.5	10/24/2021	Type A	
10/27/2021	TX State	morning	2	0	0	0	0	0	0	0	0	17.5	10/24/2021	Type A	
10/27/2021	TX State	morning	3	0	0	0	0	0	0	0	0	17.5	10/24/2021	Type A	
10/27/2021	TX State	evening	1	0	0	0	0	0	0	0	0	5.25	10/24/2021	Type A	
10/27/2021	TX State	evening	2	0	0	0	0	0	0	0	0	5.25	10/24/2021	Type A	
10/27/2021	TX State	evening	3	0	0	0	0	0	0	0	0	5.25	10/24/2021	Type A	
10/28/2021	TX State	morning	1	0	0	0	1	0	0	0	0	18.5	10/24/2021	Type A	1 dead BSS juv found when TX State was sorting the sample - Victor told us and sent a picture - not sure what net it came from so just put it as Net 1
10/28/2021	TX State	morning	2	0	0	0	0	0	0	0	0	18.5	10/24/2021	Type A	
10/28/2021	TX State	morning	3	0	0	1	0	0	0	0	0	18.5	10/24/2021	Type A	1 live BSS juv released
7/7/2022	COA	evening	1	0	0	0	0	0	0	0	0	4	7/21/2022	Type C	
7/7/2022	COA	evening	2	0	0	0	0	0	0	0	0	4	7/21/2022	Type C	
7/7/2022	COA	evening	3	0	0	0	0	0	0	0	0	4	7/21/2022	Type C	
7/7/2022	COA	evening	6	0	0	0	0	0	0	0	0	4	7/21/2022	Type C	
7/7/2022	COA	evening	18	0	0	0	0	0	0	0	0	4	7/21/2022	Type C	
7/7/2022	COA	evening	19	0	0	0	0	0	0	0	0	4	7/21/2022	Type C	
7/7/2022	COA	evening	21	0	0	0	0	0	0	0	0	4	7/21/2022	Type C	
7/11/2022	COA	afternoon	1	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/11/2022	COA	afternoon	2	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/11/2022	COA	afternoon	3	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	

Sample Date	Sampling Group	Time of Day Nets Checked	Net Number	BSS Adult Live	BSS Adult Dead	BSS Juvenile Live	BSS Juvenile Dead	ABS Adult Live	ABS Adult Dead	ABS Juvenile Live	ABS Juvenile Dead	Hours Deployed	Sampling Period Date	Drift Net Type	Notes
7/11/2022	COA	afternoon	6	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/11/2022	COA	afternoon	19	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/11/2022	COA	afternoon	20	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/12/2022	COA	evening	1	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/12/2022	COA	evening	2	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/12/2022	COA	evening	3	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/12/2022	COA	evening	6	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/12/2022	COA	evening	14	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/12/2022	COA	evening	18	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/12/2022	COA	evening	20	0	0	0	0	0	0	0	0	5	7/21/2022	Type C	
7/21/2022	COA	evening	1	0	0	0	0	0	0	0	0	8	7/21/2022	Type C	
7/21/2022	COA	evening	2	0	0	0	0	0	0	0	0	8	7/21/2022	Type C	
7/21/2022	COA	evening	3	0	0	1	0	0	0	0	0	8	7/21/2022	Type C	1 live BSS juv released
7/21/2022	COA	evening	6	0	0	0	0	0	0	0	0	8	7/21/2022	Type C	
7/21/2022	COA	evening	14	0	0	0	0	0	0	0	0	8	7/21/2022	Type C	
7/21/2022	COA	evening	18	0	0	0	0	0	0	0	0	8	7/21/2022	Type C	
7/21/2022	COA	evening	20	0	0	0	0	0	0	0	0	8	7/21/2022	Type C	
7/26/2022	COA	afternoon	3	0	0	0	0	0	0	0	0	4.25	7/21/2022	Type C	
7/28/2022	COA	evening	3	0	0	0	0	0	0	0	0	5.5	7/21/2022	Type C	
7/28/2022	COA	evening	14	0	0	0	0	0	0	0	0	5.5	7/21/2022	Type C	
7/28/2022	COA	evening	18	0	0	0	0	0	0	0	0	5.5	7/21/2022	Type C	
7/28/2022	COA	evening	20	0	0	0	0	0	0	0	0	5.5	7/21/2022	Type C	
8/4/2022	COA	evening	1	0	0	0	0	0	0	0	0	6.5	7/21/2022	Type C	
8/4/2022	COA	evening	2	0	0	0	0	0	0	0	0	6.5	7/21/2022	Type C	
8/4/2022	COA	evening	3	0	0	0	0	0	0	0	0	6.5	7/21/2022	Type C	
8/4/2022	COA	evening	14	0	0	0	0	0	0	0	0	6.5	7/21/2022	Type C	