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Introduction

- The American Eel (*Anguilla rostrata*) is a catadromous species making extensive migrations to Texas' fresh water systems to develop into adults.
- The State of Texas is in the process of developing management recommendations for the American Eel.
- There is limited to knowledge of recruitment, abundance, and distribution of American eel in Texas.
- Objectives of this study were to:
 1. Establish current geographic distribution of juvenile American Eel along the central to eastern coast.
 2. Determine the temporal window of juvenile American Eel recruitment into fresh water systems in Texas.
 3. Characterize potential relationships between water quality, habitat parameters and juvenile eel distribution and abundance.

Study Area

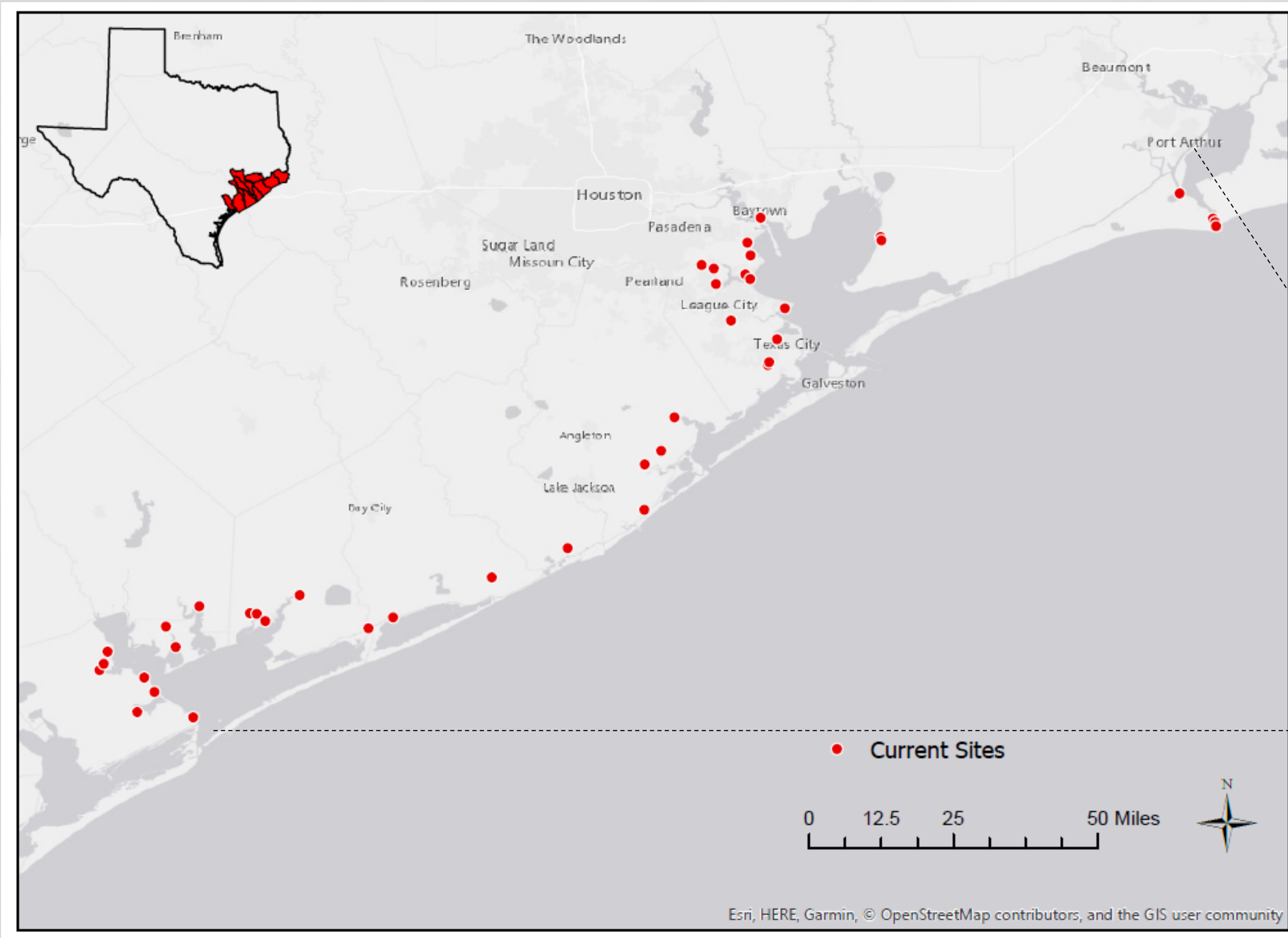


Figure 1: Map of the Texas coast displaying current sampling sites from Port Lavaca to Port Arthur, Texas.

Methods

- Sampled from July 2018 – October 2018 on a Bi-weekly basis
- Currently established 41 sites (Figure 1).
- Water Quality
 - Ambient Conditions – Water depth (m), salinity (psu), dissolved oxygen (mg/L), temperature (°C), Secchi depth (m), sediment type.
- Habitat
 - Dominant shoreline habitat, dominant instream vegetation, and percent submerged instream habitat.
- Fyke net sampling
 - Eight nets deployed per sampling event.
 - Deployed with a down stream orientation, with one wing at banks margin. (Figure 2).
 - Wing width standardized at 13.5ft.
 - One-quarter inch mesh excluder in place to segregate out large individuals from the catch.
 - Set overnight associated with incoming tide.
 - All fish identified and counted, invertebrates placed in relative abundance categories.
 - Length and wet weight recorded for all American Eel juveniles.
 - 10 retained from each collection.

Preliminary Results



Figure 2: a) Fyke net deployment orientation b) Preparing to process catch from cod end of net c) Representation of catch

Current juvenile American Eel Captures

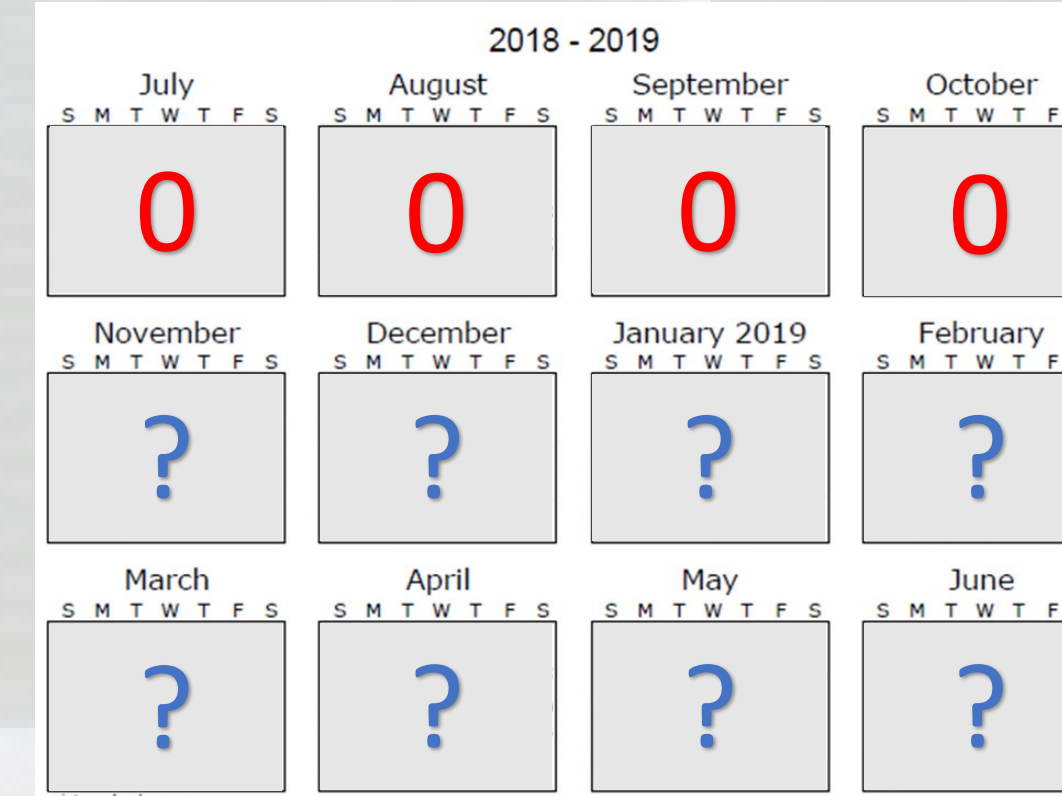


Figure 3. Calendar of current American Eel captures during the sampling period from July, 2018 to October, 2018

Table 1. Summary of nekton species captured with fyke nets from July, 2018 to October, 2018.

Common Name	Scientific Name	Abundance
Diamond Killifish	<i>Adinia zenica</i>	6
Bay Anchovy	<i>Anchoa mitchilli</i>	18848
American Eel	<i>Anguilla rostrata</i>	0
Silver Perch	<i>Bairdiella chysoura</i>	5
Gulf Menhaden	<i>Brevoortia patronus</i>	1
Darter Goby	<i>Ctenogobius boleosoma</i>	82
Sand Sea Trout	<i>Cynoscion arenarius</i>	3
Spotted Seatrout	<i>Cynoscion nebulosus</i>	871
Sheepshead Minnow	<i>Cyprinodon variegatus</i>	14
Fat Sleeper	<i>Dormitator maculatus</i>	16
Gizzard Shad	<i>Dorosoma cepedianum</i>	1
Threadfin Shad	<i>Dorosoma petenense</i>	1877
Spotfin Mojarra	<i>Eucinostomus argenteus</i>	1
Flagfin Mojarra	<i>Eucinostomus melanopterus</i>	160
Golden Topminnow	<i>Fundulus chrysotus</i>	2
Gulf Killifish	<i>Fundulus grandis</i>	17
Saltmarsh Topminnow	<i>Fundulus jenkinsi</i>	4
Bayou Killifish	<i>Fundulus pulvereus</i>	19
Longnose Killifish	<i>Fundulus similis</i>	6
Western Mosquitofish	<i>Gambusia affinis</i>	125
Violet Goby	<i>Gobioides broussonnetii</i>	17
Naked Goby	<i>Gobiosoma bosc</i>	203
Code Goby	<i>Gobiosoma robustum</i>	85
Rio Grande Cichlid	<i>Herichthys cyanoguttatus</i>	2
Least Killifish	<i>Heterandria formosa</i>	1
Bluegill	<i>Lepomis macrochirus</i>	8
Rainwater Killifish	<i>Lucania parva</i>	21
Grey Snapper	<i>Lutjanus griseus</i>	1
Inland Silverside	<i>Menidia beryllina</i>	410
Atlantic Croaker	<i>Micropogonias undulatus</i>	2
Striped Mullet	<i>Mugil cephalus</i>	1
Speckled Worm Eel	<i>Myrophis punctatus</i>	27
Leatherjack	<i>Oligoplites saurus</i>	6
Sailfin Molly	<i>Poecilia latipinna</i>	35
Star Drum	<i>Stellifer lanceolatus</i>	22
Blackcheek Tonguefish	<i>Symphurus plagiusa</i>	16
Sargassum Pipefish	<i>Syngnathus pelagicus</i>	6
Gulf Pipefish	<i>Syngnathus scovelli</i>	8
Hogchoker	<i>Trinectes maculatus</i>	4

Fyke Net Efficiency

- No American Eel have been captured to date.
- 38 species have been captured.
- Speckled Worm Eel (*Myrophis punctatus*) ranging from 70mm to 170mm have been captured in fyke nets at 11 of the 41 sites (Figure 4).
- Captured in variable shoreline habitat and in salinities ranging from 0.27 to 31.71 psu.

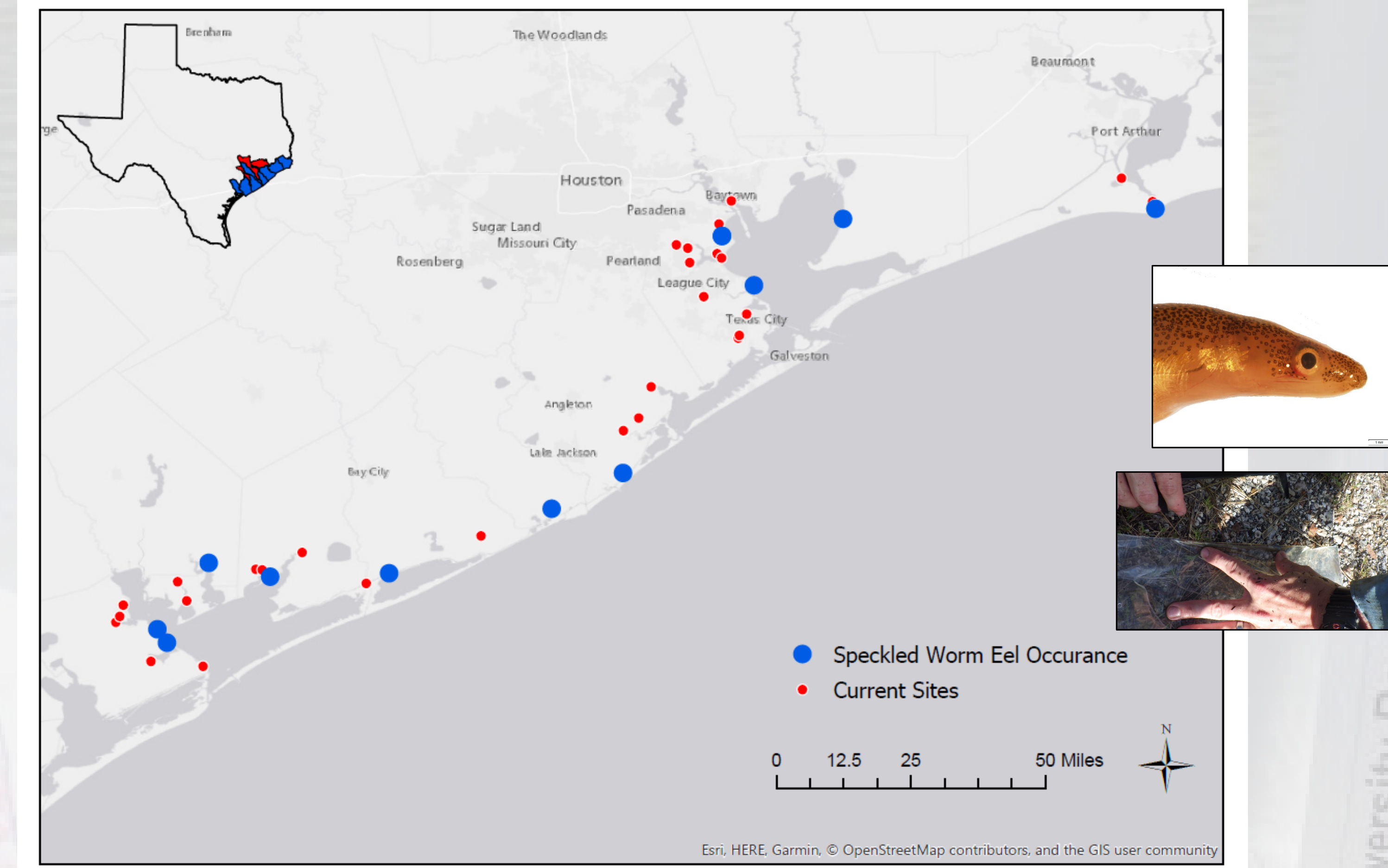


Figure 4. Current Speckled Worm Eel occurrence and distribution inside the study area.

Conclusions

- Current efforts and methods have not captured juvenile American Eel in the specified sampling area.
- American Eel and Speckled Worm Eel are known to co-occur and Speckled Worm Eel have been mistakenly identified as American Eel in studies in Florida (Bonvechio, 2016)
- Fyke nets are effective at capturing size classes of Speckled Worm Eel that are similar to juvenile American Eel.
- Fyke nets have seldom been used in Texas and may be an effective method for studying recruitment of commercially and recreationally important species in previously un-studied tidal creeks.

Future Work

- Set an array of 3 eel mops as a subset of fyke net deployments.
- Electro-fish near obstructions, such as spillways and dams.
- Expand spatial range of sampling.

Literature Cited

Bonvechio K.I. 2016. Comparison of glass eel stags of American eel and Speckled Worm eel in a northeast Florida Estuary. Fisheries Management and Ecology 23: 350-355.

Acknowledgments

- Field and lab assistance: Stephen Curtis, Cory Scanes, Kaylei Chau, Natasha Zarnstorff, Sherah Loe, Tyler Swanson, Josh Jaeger, and Samantha Salas.
- Funding: Texas Parks and Wildlife Department

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