Quarterly Report for Matagorda Bay Mitigation Trust
December 31, 2022

Project: Lavaca Bay Ecosystem Assessment: Gathering Key Baseline Data Among Nursery Habitats Spread Across a Pollution Gradient

Organizations:
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Project Term: 03/01/2022 – 08/31/2024
Reporting Period: 3/1/2022 – 11/30/2022 (3)

The contracted project with the Matagorda Bay Mitigation Trust was initiated as of March 1, 2022. After this date, we identified and got approval for a subcontractor with expertise in areas not covered by researchers at Texas A&M University-Corpus Christi. The chosen contractor was BIOWEST, Inc.

Task 1 - Ecological Assessment: Conduct a seasonal ecological assessment in fringing and back marshes in Lavaca, Cox, and Keller bays.

Status: Initiated

Spring ‘22

- BIO-WEST prepared for and participated in a site evaluation / site selection reconnaissance field effort on Friday, April 29th with coastal scientists from TAMU-CC. Following formal site selection, BIO-WEST initiated seasonal avian community sampling in the Lavaca Bay complex on May 17-19, 2022. This effort involved a team of two biologists performing timed point counts (8 per site) at each of four established sites within the Lavaca River Delta, Cox Bay, Keller Bay, and Carancahua Bay. At each site, two acoustic recorders were deployed and set to record autonomously throughout the remainder of the Spring breeding bird season. Point count surveys were performed in predominately emergent marsh habitats and produced a total of 1,587 individual birds represented by 53 species. The observed bird community was typical of the Texas Gulf Coast, with multiple species of rail inhabiting the marsh, and an abundance of foraging tern, heron, and wading bird species utilizing the edge habitat. In addition, several iconic species were observed including King Rail, American Oystercatcher, and Black Skimmer.

- BIO-West initiated data reduction and analysis of collected timed point count data. Acoustic analysis for Spring sampling was also initiated by reviewing recordings for evidence of calling Eastern Black Rail and Whooping Crane.
- CSSC selected 8 sampling sites within four zones after their recon trip with Bio-West, see map 1. These sites were first sampled on May 10th. Sampling included pulling three replicate epibenthic sled tows at each site for a total of 24 samples. Nurdle surveys were conducted at all eight sites.
- CSSC performed the second Spring sampling trip on May 26th. Nurdle surveys were conducted at all eight sites. CSSC currently has 48 marsh edge epibenthic samples in house.

Summer ‘22

- BIO-WEST traveled to the study sites in August to retrieve the acoustic recorders that had been in place since the completion of the Spring 2022 sampling event.
- BIO-WEST continued data reduction and analysis of collected timed point count data from Spring. Additionally, acoustic analysis for the summer quarter was initiated by reviewing recordings for evidence of calling Eastern Black Rail and Whooping Crane. Fall avian surveys will be conducted in late October / early November.
- CSSC completed the first of two Summer sampling events on August 9th. Three replicate tows were taken at all eight sites, accounting for 24 marsh edge epibenthic sled samples.
- CSSC completed the second Summer sampling event on August 22nd. All 24 marsh edge epibenthic samples are accounted for. Nurdle surveys were conducted at all eight sites. CSSC currently has 96 marsh edge epibenthic sled samples in house.

Fall ‘22

- BIO-WEST prepared for and conducted Fall 2022 avian community sampling in the Lavaca Bay complex from November 29 through December 1, 2022. This effort involved a team of two biologists performing timed point counts (10 per site) at each of four established sites within the Lavaca River Delta, Cox Bay, Keller Bay, and Carancahua Bay. At each site, two acoustic recorders were deployed and set to record autonomously throughout the remainder of the Fall breeding bird season. Point count surveys were performed in predominately emergent marsh habitats and produced a total of 2,244 individual birds represented by 66 species. The observed bird community was typical of the Texas Gulf Coast, with multiple species of rail inhabiting the marsh, and an abundance of foraging heron, wading bird species and terns utilizing the edge habitat. In addition, several iconic species were observed including Reddish Egret, Roseate Spoonbill, and Black Skimmer.
- BIO-WEST initiated data reduction and analysis of collected timed point count data. Acoustic analysis for Fall sampling was also initiated by reviewing recordings for evidence of calling Eastern Black Rail and Whooping Crane. The next seasonal avian survey is scheduled for Winter 2023.

- CSSC completed the first of two Fall sampling events on October 26th. Water levels were extremely low this date due to a proceeding northern front. As a result, LB_3 was not sampled, and samples for sites LB_5 & LB_6 were taken far from the marsh edge where bay water was available. In addition to low water levels, the boat ramp at the top of Olivia Bay was under construction and the sea state was rough enough to prohibit traveling via boat to sites LB_7 and LB_8. Three replicate tows were taken at 5 of the 8 sites for a total of 15 samples taken on this date. Nurdle surveys were conducted at all sampled sites.
- CSSC completed the second Fall sampling event on November 10th. Water levels on this date were much better such that all sites had water reaching the marsh edge. The Olivia boat ramp was still under construction however the sea state was calm enough for us to travel to our further sites LB-7 and LB_8. Three replicate epibenthic sled tows were performed at each site for a total of 24 samples taken on this date. Nurdle counts were also performed at each site. CSSC currently has 135 marsh edge epibenthic sled samples in house.

Task 2 – Data Comparison: Comparison of seasonal ecological data from this study and the MBMT Colorado River Delta project and TWDB Guadalupe River Delta project.

Status: Not yet begun

Map 1


LB_2
LB_1
LB_4
LB_3
LB_7
LB_8
LB_5
LB_6
Carancahua Bay
Carancahua Bay
Lavaca Bay
Cox Bay
Keller Bay
Chocolate Bay
Matagorda Bay
0
1.5
3
6
Miles
N