

Matagorda Bay Mitigation Trust—Progress Report

Project Name: Assessing multi-trophic impacts of microplastic pollutants across macroinvertebrate food webs in Matagorda Bay, Texas

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Contract No: 0046

Reporting Period: 09/01/2023-011/31/2023

Task I: Collect free plastic pollutants found along coastal and wetland environments in Matagorda Bay to develop baseline information on chemical composition and pollution level within microplastic loads.

Status of the task during this reporting period: not started in progress completed

- Describe the major accomplishments for this reporting period
 - *Hire of graduate student to conduct research pertaining to partial completion of Task I and II.*
 - *Water and sediment samples taken at multiple depths occurred in October at three sites in each bay (East/West Matagorda, Tres Palacios, Turtle, Vaes, Keller, Cox, Lavaca, and Chocolate).*
 - *Reagents purchased for analysis to determine chemical composition and pollution loads of microplastics in water and sediment samples.*
 - *Water and sediment analysis for microplastic density and identification ongoing; shipments sent to UH-Clearlake for FTIR and RAMAN analysis*
- List the deliverable(s)/milestone(s) completed during this reporting period
 - *Nothing to report*
- Were there any problems or obstacles encountered during this reporting period (e.g., delays, remedial action taken, schedule revision). Yes No If Yes, please explain:
- Briefly describe plans for the next reporting period.
 - *Research team will meet in January to discuss additional field outings to collect additional water, sediment, vegetation, and macroinvertebrates in Spring 2024 prior to determine baseline information on community assemblages. In addition, the team will compare inventories of baseline samples and historical record to identify taxa for microcosm experiments as part of Task II and Task III.*

Task II: Determine the presence, identity, and concentration of toxic or unique chemicals/elements found in plant tissues following the introduction of free plastic pollutants and how these pollutants impact plant growth, development, and nutritional content.

Status of the task during this reporting period: not started in progress completed

- Describe the major accomplishments for this reporting period

- *Hire of graduate student to conduct research pertaining to partial completion of Task I and II.*
- *Water and sediment samples taken at multiple depths occurred in October at three sites in each bay (East/West Matagorda, Tres Palacios, Turtle, Vaes, Keller, Cox, Lavaca, and Chocolate). Vegetation, algae, and plankton were sporadically collected in East/West Matagorda, Turtle, Vaes, Keller, and Cox.*
- List the deliverable(s)/milestone(s) completed during this reporting period
- Were there any problems or obstacles encountered during this reporting period (e.g., delays, remedial action taken, schedule revision). Yes No If Yes, please explain:
- Briefly describe plans for the next reporting period.
 - *Research team will meet in January to discuss additional field outings to collect additional water, sediment, vegetation, and macroinvertebrates in Spring 2024 prior to determine baseline information on community assemblages. In addition, the team will compare inventories of baseline samples and historical record to identify taxa for microcosm experiments as part of Task II and Task III.*

Task III: Determine the presence, identity, and concentration of toxic or unique chemicals/elements of free plastic pollutants found in macroinvertebrates (herbivores, detritivores, and their predators) and how these pollutants impact macroinvertebrate growth, development, and behavior.

Status of the task during this reporting period: not started in progress completed

- Describe the major accomplishments for this reporting period
- List the deliverable(s)/milestone(s) completed during this reporting period
- Were there any problems or obstacles encountered during this reporting period (e.g., delays, remedial action taken, schedule revision). Yes No If Yes, please explain:
- Briefly describe plans for the next reporting period.