The GEMS Project
Gulf of Mexico Ecosystem Service Logic Models and Socio-Economic Indicators
Linking project impacts to economic, health and wellbeing benefits for people

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Introduction to the project

Challenge

Billions of dollars will be spent on restoration of Gulf ecosystems over the coming decades, but there is no shared platform to guide assessment and reporting of restoration progress and effectiveness for the broad set of environmental, social, and economic goals shared by the many institutions working in the Gulf.

Solution

Effective project planning and evaluation can be facilitated by a set of common logic models and socio-economic indicators and metrics relevant across projects, programs, and locations.

Goals

- Help streamline and simplify application and reporting processes
- Simplify and improve reporting of impacts of projects
- Create a transferable tool for implementation of restoration approaches to extend the consistency, efficiency, and reporting benefits of this approach

Process

This project will use Ecosystem Service Logic Models (ESLMs) as a framework to think about ecosystem services and how they can be monitored in relation to Gulf restoration projects. These models, developed for common restoration techniques, will form the basis for a series of workshops held at 5 sites across the Gulf (Figure 4), where participants will use model outcomes to develop socio-economic indicators and metrics important at their site. Regional Gulf workshops will collate information from all local workshops, and produce ESLMs and indicators that are relevant across the Gulf. We will cover multiple restoration strategies during the course of the project.

Ecosystem Service Logic Models

- Ecosystem Service Logic Models represent the way a management action cascades through an ecological system and results in ecosystem services and other human welfare impacts. (Figure 1). These models can:
  - Provide a consistent platform for multiple restoration approaches
  - Help increase monitoring efficiency, when standardized
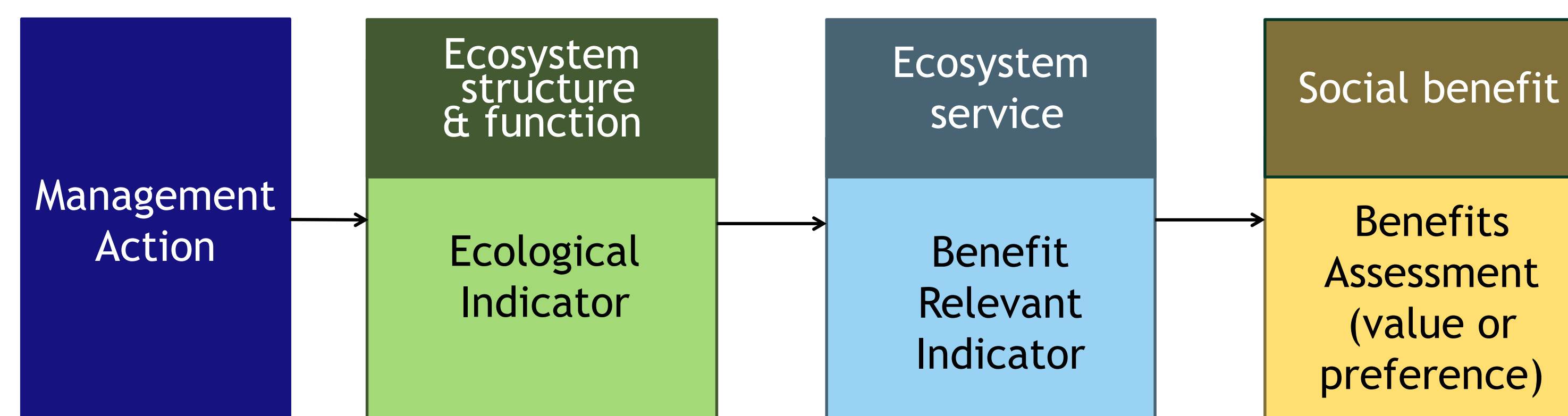 - Help identify uncertainties and knowledge gaps

Figure 1. Ecosystem Service Logic Model Framework

Socio-Behavioral-Economic Indicators

A socio-behavioral-economic indicator:
- Describes characteristics, attributes, and/or behaviors of individuals, social groups or communities
- Is defined as a single measurable variable that quantifies the state or quality of an attribute in the world (Figure 2). Examples include:
  - Fishing/oyster harvest industry → aquaculture jobs
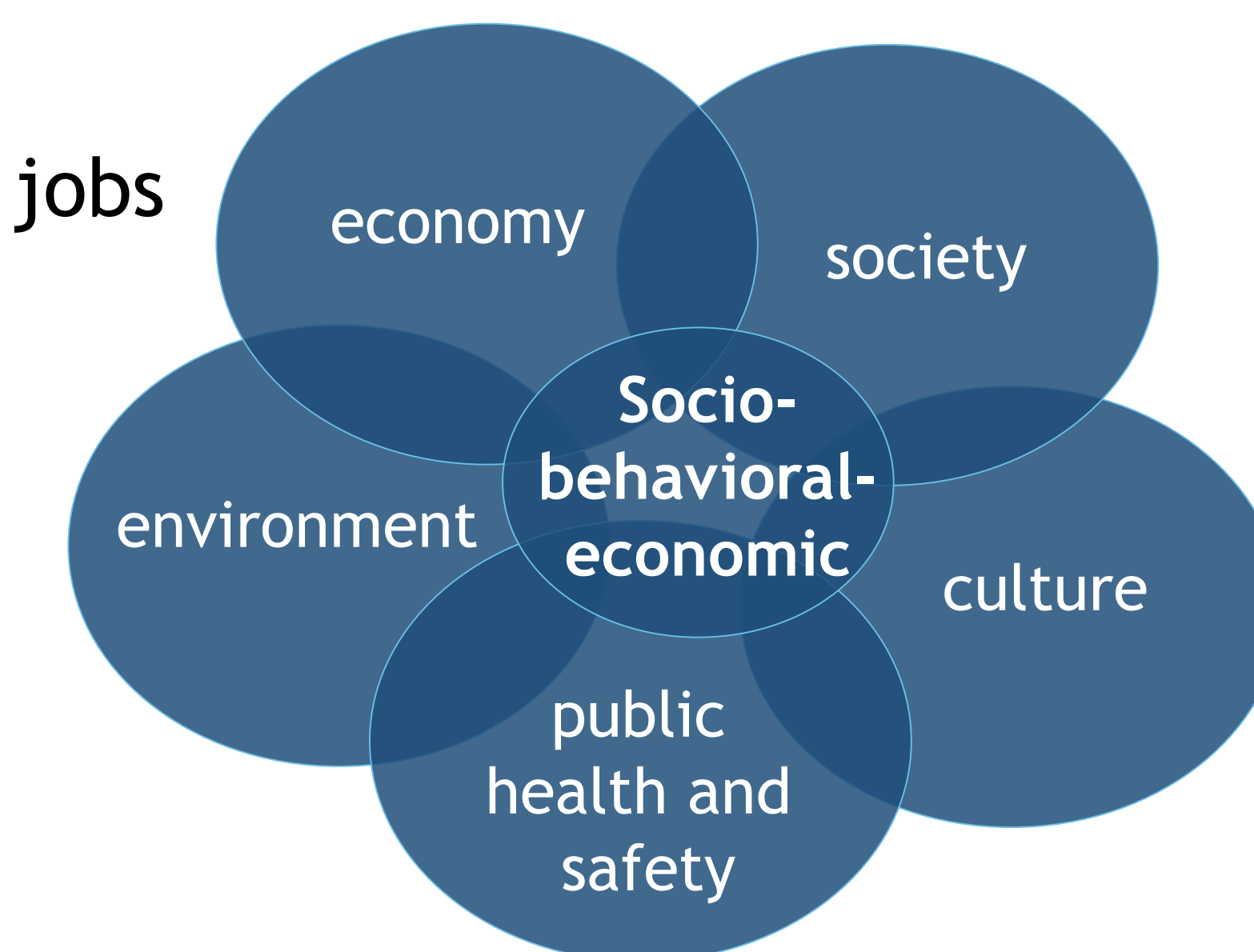 - Education → number of people with additional knowledge of oyster reefs

Figure 2. Socio-behavioral-economic indicator model

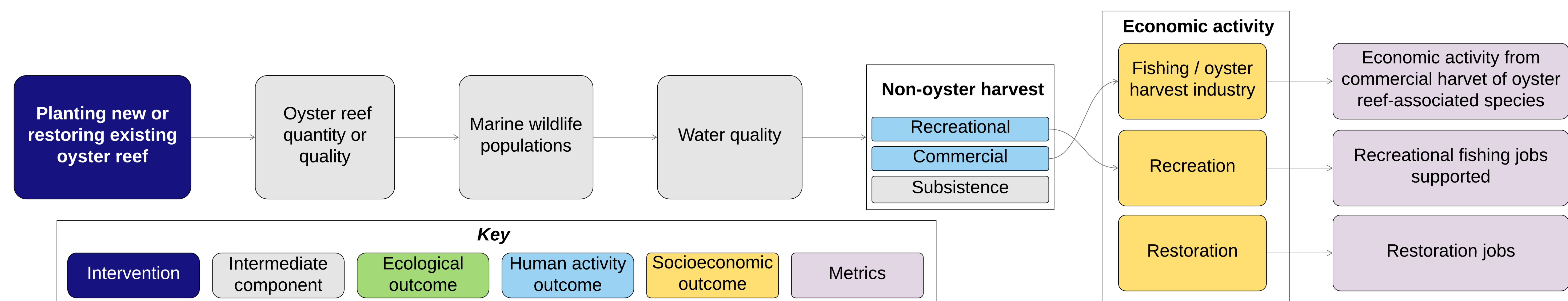## Phase I: Oyster Reef Restoration Ecosystem Service Logic Model

Figure 3. Example Oyster Reef Restoration Ecosystem Service Logic Model

Study Sites

Galveston Bay, TX
Mobile Bay, AL
Back Bay of Biloxi, MS
Chandeleur-Breton Sounds, LA
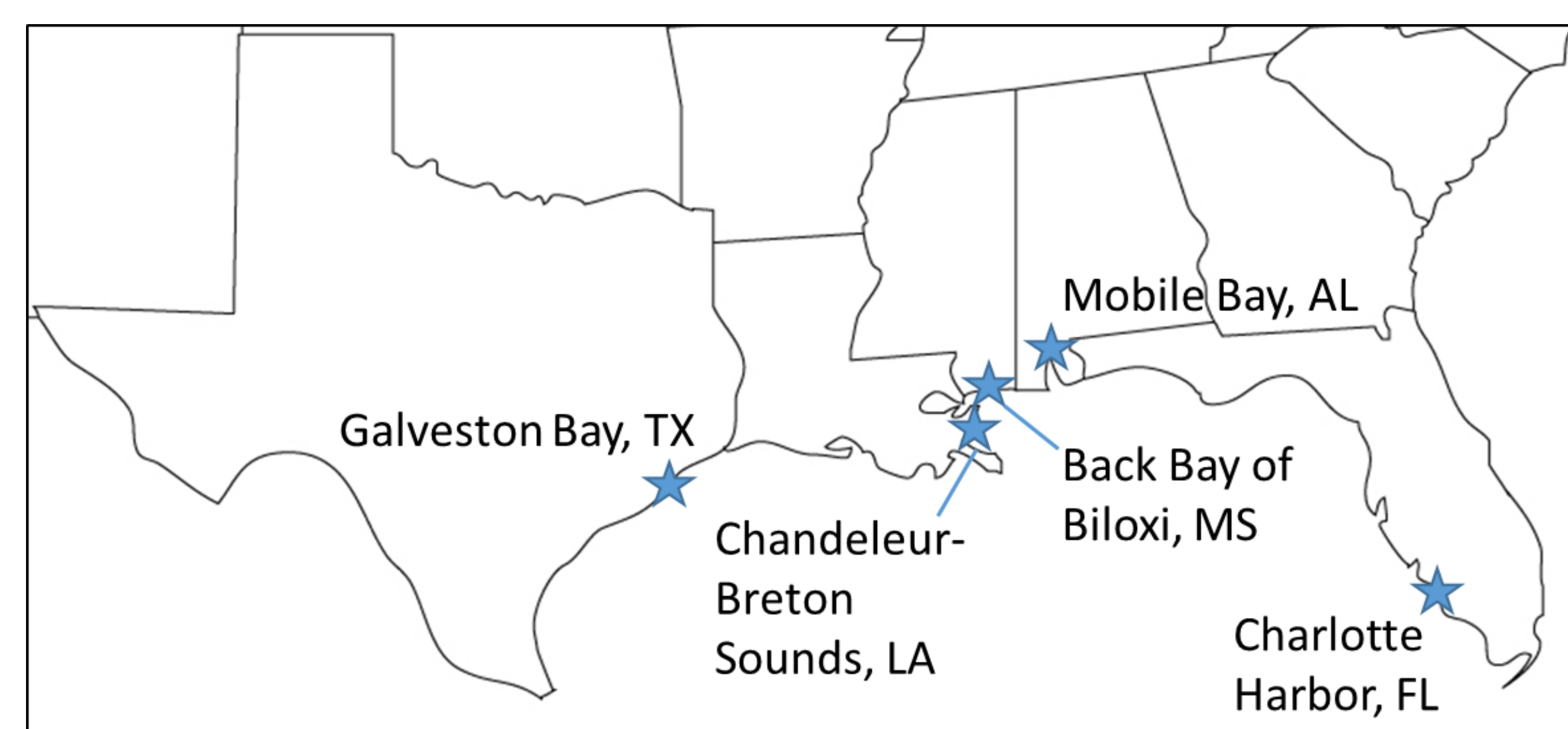Charlotte Harbor, FL

Figure 4. Map of GEMS project locations

For completed Phase I Oyster Reef Restoration ESLMs and finalized metrics, and more information about the GEMS project, please visit: https://nicholasinstitute.duke.edu/project/gems