



Mobile Bay National Estuary Program

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Habitat Creation and Shoreline Stabilization on Mon Louis Island, Mobile County, AL *Project Abstract*

Background:

Mon Louis Island's Mobile Bay shoreline has experienced significant erosion and loss of habitat over recent decades not only from tropical weather events but also routine effects like wakes from ship channel traffic and prevailing winds. This gradual and chronic loss of shoreline has prevented natural establishment of oyster reef and salt marsh habitat. Homeowners have reported spending thousands of dollars annually to preserve and protect property, frequently using management practices that exacerbate habitat loss and compromise its re-establishment (e.g., bulkheads).

While not offering protection from catastrophic weather events, construction of near shore reef structures and planting intertidal marsh vegetation would stabilize shorelines from chronic, routine impacts and re-establish critical habitat for NOAA Trust Resources, including commercially and economically important fish and shellfish. Alabama's oyster fishery – with historic presence in the project area – has suffered from impacts of recent storms, drought, and resultant proliferation of predacious oyster drills. The project will provide settlement substrate and enhance seed stock of this commercially important resource and will provide fishery habitat for commercially and recreationally important fish and shellfish.

Description:

This project involves installation of wave-attenuating structure 300 to over-500 feet from and along the Mon Louis Island-Mobile Bay shoreline and planting of native marsh vegetation in intertidal areas along the shore to create and enhance subtidal and intertidal habitat and stabilize sediments. Erosion and habitat loss along the Mon Louis Island shoreline between the mouth of Fowl River and Alabama Port has been caused by wave energy from Mobile ship channel traffic, prevailing winds, and occasional tropical weather events. MBNEP and partners have recruited and engaged owners of property along a 1,500-linear foot length of eroded residential shoreline to design and implement this project to 1) attenuate routine wave energy, 2) create/enhance oyster reef and marsh habitat, and 3) demonstrate technologies alternative to shoreline armoring on a scale available to property owners concerned with loss of near shore habitat.

Objectives:

- Create 0.25 acres of reef structures favorable for oyster settlement to provide nursery, forage, and refuge habitat for invertebrates and fish and enhance water quality
- Create up to 0.45 acres of salt marsh habitat to provide nursery, forage, and refuge habitat for invertebrates, fish, and birds; stabilize shoreline sediments, and filter stormwater runoff
- Attenuate the routine wave energy from ship traffic and prevailing southeasterly winds using installed wave attenuating reef structures and stabilize intertidal sediments by planting emergent marsh vegetation

- Engage 12-18 private property owners in designing and implementing a public shoreline restoration project that employs living shorelines technologies and concepts on a scale available to property owners

Supporting Factors:

This project represents a first attempt to engage multiple private property owners in the design and implementation of a project to offer shoreline protection and provide ecosystem services from installed habitat features. Other “living shorelines” projects have been undertaken locally on public shorelines or those owned by a single agreeable entity, but this project requires agreement and commitment by ten to twenty individual property owners. Certain issues of concern remain to be resolved, including:

- Shoreline boundaries/ownership given past erosion and potential for accretion
- Riparian rights over oysters within 1,800 feet of mean high water
- Maintenance of materials used for reef structure construction, should disruption occur as a result of storm conditions
- Access/ingress/egress through constructed reef structures
- Engineering issues involving constructed reef structures
- Installation of warning signage to prevent navigation accidents
- Project effect on individual property values

Project Components:

Initially, a contract or agreement of commitment for property owners/partners must be developed to adequately address the concerns of shoreline property owners represented above.

Contractors will place rock to create broad-based, north-south running, low-profile, wave attenuating reef structures approximately 30” in height in two feet of water (at mean high tide). Gaps between reef structure segments will be of sufficient width to allow ingress/egress not only of boat or water craft traffic, but also of water. Subsequently, volunteers will work in supervised teams to shape reef structures according to engineering specifications to ensure 1) that routine wave energy is adequately damped and 2) that reef structure profiles are low (deep) enough to escape significant wave energy during extraordinary weather events. Although reef structures will be exposed under normal tidal conditions (approximately six inches emergent at mean high tide), warning/safety signage will be installed on reef segments in accordance with Alabama Marine Police recommendations.

Native emergent marsh vegetation, including *Juncus roemerianus* and *Spartina alterniflora*, will be planted intertidally by volunteers along the shoreline in any areas acceptable to waterfront property owners/partners.

Oyster settlement and species diversity/richness will be monitored quarterly on installed reef structures. Shoreline stability and changes will be monitored shoreward of reef segments, as will appearance/presence of submerged aquatic vegetation. Intertidal marsh plant density and diversity will also be monitored.