



Reference SON: 2016 ER 12 - *Correlation of Vegetative Density with Particle Size Distribution of Historically Placed Dredged Sediments for Substrate Nourishment to Enhance Ecosystem Function*, 2017 ER 16 - *Quantifying the relationship between SAV habitat and geomorphological features to inform SAV restoration efforts*

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Project Development

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Funded: FY17-FY21

Keywords: Coastal vegetation, restoration, substrate, source material

Last updated:

06/24/2025

Framework of Optimum Selection of Source Material and Geomorphological Characteristics for Desired Vegetation and SAV in Restoration Projects

Research Need

The success of coastal & estuarine vegetation restoration efforts requires the creation of a suitable and sustainable physical environment for growth. However, correlations between coastal vegetation growth, substrate characteristics and geomorphological conditions have not been developed. Improved guidance/best management practices are needed to aid in selection of source material and design of geomorphological features to enhance ecosystem function.

Project Purpose & Objectives

The objective of this research is to develop a framework that will inform and expedite decision making for future coastal vegetation restoration efforts during the planning process. This will be achieved through:

- analysis of previous restoration efforts
- assessment of the effectiveness of source material placement
- statistical analysis to establish correlations
- determination of suitable substrate and geomorphological characteristics required for a wide variety of coastal vegetation types

Value of Research and Development (Payoff)

The framework developed will directly benefit restoration project planning and adaptive management by informing manager decisions regarding source material selection for coastal ecosystem restoration.

Products

Technical Reports (TRs)

Eisemann, E.R., Thomas, C.C., Balazik, M.T., Acevedo-Mackey, D., and Altman, S. (2021). Environmental factors affecting coastal and estuarine submerged aquatic vegetation (ERDC/EL

SR-21-6), Technical Report. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

Yarnall, A.H., Eisemann, E.R., Reif, M.K., Slyvester, C.S., Balazik, M.T., and Altman, S. (*In editing*) Predicting seagrass habitat suitability with remote sensing and machine learning: A case study in the Mississippi-Alabama Barrier Islands. (ERDC/EL TR 25-X), Technical Report. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

Technical Notes (TNs)

Eisemann, E.R., Altman, S., Acevedo-Mackey, D., and Reif, M.K. (2019). Relating seagrass habitat to geomorphology and substrate characteristics around Ship Island, MS (ERDC/TN EMRRP-EBA-24), Technical Note. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.