EMRRP

Assessing and Improving the Resilience of Bay and Coastal Marshes and Islands[1]

Research Need

Coastal marsh and island features provide many critical functions including storm surge protection, water filtration, CO_2 sequestration, and support to the fish and wildlife that utilize these systems. Many coastal systems are experiencing accelerated degradation and acreage loss due to factors such as sea level change, salt water intrusion, and introduction of invasive species among others. Criteria to assess the vulnerability of marsh and island systems to specific drivers are needed to assist the planning community in assessing the restoration potential of sites across the Corps of Engineers, and to prioritize restoration actions. Linkage of restoration techniques to the site-specific processes driving degradation will enhance the likelihood of success of restoration projects, while increasing system sustainability and the provision of goods and services at regional (multi-project) levels.

Project Objectives & Plan

This research will address the following objectives:

• Identify and characterize the processes and conditions contributing to loss of coastal wetland and island features
• Establish criteria for assessing the vulnerability of coastal features and coastal systems to degrading processes and conditions
• Develop, test, and document a methodology to prioritize sites/features based on vulnerability, restoration potential, and return on investment
• Link restoration methods/strategies to the vulnerability classification.

Anticipated products of this research include:

• Criteria to assess the vulnerability of coastal wetland and island features
• Guidance for the restoration/preservation of vulnerable sites

Payoff

Products of this work effort will assist Corps planners in identifying, screening, and prioritizing candidate restoration projects in coastal environments and will assist operations personnel in designing, operating, and maintaining coastal flood and storm damage reduction and navigation projects. Consequently, Corps projects are expected to provide greater benefits and the coastal systems in which they are implemented are expected to demonstrate greater resilience. The products will be aimed at streamlining the planning process for related projects providing more timely and cost-effective product delivery.

Products

Technical Reports (TRs)

Van Zomeren, C. and Acevedo-Mackey, D. (2019). A review of coastal vulnerability assessments: definitions, components, and variables (ERDC/EL SR-19-05), Technical Report. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

Presentations

(2017). Dredging Operations and Environmental Research Program (DOER) IPR, Presentation.

(2018). Poster Presentation highlighting work unit (SuperRARG).

Project Activities

An extensive literature search was conducted to compile existing data and models pertinent to marsh and island vulnerability assessments and associated management; ongoing outreach to USACE Districts to identify specific management challenges, to locate case studies and compile data.

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[1]**Project Alias – Work Unit Documentation Title:** *Assessing and Improving the Resilience of Bay and Coastal Marshes and Islands*