



Decision Support for Managers Restoring Texas Marshes with BUDM

Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

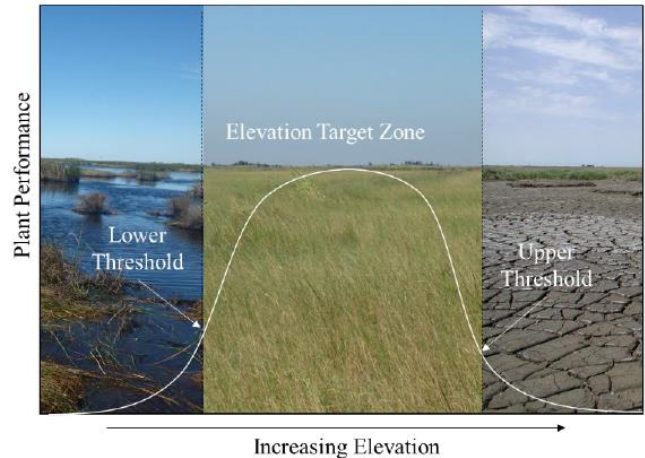
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Focus Area

Dredged Material Management

Problem

Coastal wetland loss is a serious concern along the Gulf of Mexico, especially in Texas and Louisiana where rates of wetland loss and relative sea-level rise are among the highest in the world, extreme storms are becoming more frequent, and flooding events are intensifying. Marsh resilience to sea-level rise and extreme flooding is dependent upon biogeomorphic feedbacks between inundation, sedimentation, and plant growth, which allow marshes to adjust their surface elevation in response to increased flooding. Restoration efforts often seek to maximize these feedbacks and increase marsh elevation capital to help coastal marshes adapt to rising sea levels and extreme flooding events. One option for producing immediate gains in elevation capital is to add sediment layers with beneficial use of dredge material, a priority effort for the USACE through a goal of using 70% of dredge material through beneficial use by 2030, however much remains unknown about the design and long-term viability of these sites.



Study Description

In recent years, the Ducks Unlimited Conservation Staff have been working with partners to develop a state-wide Texas Beneficial Use of Dredge Material Master Plan, which identifies coastal marsh sites for restoration and prioritizes those sites based on past change, future risk to habitats, and opportunity for restoration actions. Although this technique is widely applied, natural resource decision makers have identified two key questions to improve the outcomes of restoration with beneficial use of dredge material: 1) "How high?" What elevation supports optimal marsh function; and 2) "How long?" What is the lifespan of the restored marsh? How long does it take to reach full functionality, and how long is optimal function maintained before additional material placement is necessary or submergence occurs as sea levels rise?

Products

The primary outreach product resulting from this work is the delivery of the elevation targets and timeline for adaptive management data to end-users through the inclusion of this information in the Texas Master Plan for Beneficial Use of Dredge Material. Additionally, the data will be made available to practitioners through a set of journal articles, technical memos, and data releases.

Summary

The USACE currently seeks to beneficially use 70% of dredged material by 2030 and a primary tactic to achieve this is via thin layer placement however much remains unknown about the long-term ecological stability and function of these sites. The USACE-ERDC is partnering with USGS, DU, USFWS, and TPWD to develop a Texas BUDM Master Plan. The overarching objective of this effort is to inform wetland restoration efforts that will reduce threats of sea-level rise and extreme storm events to coastal marshes.



Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.