

THIN-LAYER PLACEMENT PROJECT SHEET



South Slough National Estuarine Research Reserve

July 2017

Location: South Slough National Estuarine Research Reserve

Type: Habitat restoration

Area: 5-acres within a 20-acre restoration project

City: Charleston

County: Coos

Main Agencies: Oregon Division of State Lands, National Oceanographic and Atmospheric Administration Office for Coastal Management

State/Province: Oregon

Country: United States

Background

The South Slough National Estuarine Research Reserve is managed by the Oregon Division of State Lands with support from the National Oceanographic and Atmospheric Administration (NOAA) Office for Coastal Management. This reserve encompasses 4,771 acres with the purpose of long term research, water quality monitoring, education, and coastal stewardship. The reserve contains a mix of conifer forest and wetlands that supports diverse habitats for fish, birds, and mammals.

This restoration project encompasses 5-acres of once tidal marsh located along Winchester Creek. Kuntz marsh was diked in the early 1900s for crop production and pasture land. The dike excluded tidal flooding while ditches redirected freshwater off the marsh. The combination of reduced sedimentation and increased inundation resulted in the subsidence of the soil surface in Kuntz Marsh. The objective of this project was to restore salt marsh function and establish marsh channels to support fish habitat by removing the existing dike and utilizing the material from the dike to raise the elevations of the marsh through thin layer placement.

Project Description

The addition of sediment to the 5-acre marsh occurred in 1996 by excavating the top 15 to 30 cm of existing marsh soil and vegetation; this material was stockpiled for redistribution once the marsh surface was elevated. Approximately 10,000 cubic meters (13,000 cubic yards) of dredged material was excavated from the Kunz Marsh dike and mechanically spread across the marsh to the desired marsh elevation. The stockpiled marsh soil was redistributed over the dredged material. Three marsh elevations were established above mean lower low water: 2.35 m (high), 1.95 m (middle), and 1.50 m (low) intertidal marsh elevations to assess the formation of tidal channels. Monitoring post-restoration years included



Cornu, 2005

marsh surface elevation, vegetation community development, tidal channel formation, relative abundance of invertebrates, and fish use.

Findings

Salt marsh vegetation communities responded faster in the high and mid marsh elevation. By 1999, permanent marsh species were well established, particularly in the high marsh elevation. Permanent marsh species took longer to establish in the mid and low marsh elevation, but were recovering in a similar trajectory as the high marsh. The plant community was similar in the high, mid, and low marsh elevations after eight years. Tidal channels developed quickly in the low marsh elevation, benefiting fish communities but vegetated slowly while high marsh elevations vegetated quickly but was slow to develop tidal channels. The mid marsh elevation vegetated quickly and developed tidal channels at a rate that also enhanced sediment accretion on the marsh suggesting marsh elevations within the tidal prism and slope of the marsh are important contributing factors to successful marsh restoration.

References

Cornu, C.E. 2005. Restoring Kuntz Marsh. South Slough NER Coastal Resource Management Series. CRMS-2005-1. Coos Bay, Oregon.

Cornu, C.E. and S. Sadros. 2002. Physical and functional responses to experimental marsh surface elevation manipulation in Coos Bay's South Slough. *Restoration Ecology* 10:474-486.

NOAA Office for Coastal Management. Reserve Information. South Slough National Estuarine Research Reserve Website. Accessed 23 February 2017. <https://coast.noaa.gov/nerrs/reserves/south-slough.html>

Point of Contact

Craig E. Cornu
South Slough National Estuarine Research Reserve
P.O. Box 5417
Charleston, OR 97420
Craig.cornu@dsl.state.or.us



US Army Corps
of Engineers®

South Slough National Estuarine Research Reserve

Main Agencies:

Funding for this project has been provided by:



U.S. Fish & Wildlife Service – Coastal Wetlands Conservation Program
U.S. Fish & Wildlife Service – Northwest Economic Adjustment Initiative
Environmental Protection Agency – Wetland Protection Program
National Oceanic and Atmospheric Administration
Oregon Watershed Enhancement Board
Oregon Community Foundation

Information on thin layer placement (TLP) case studies has been compiled as part of a DOTS/EWN project to provide a source of information, knowledge, and experience on TLP of sediment or dredged material in aquatic environments. The Thin Layer Placement Website and Map-Portal are funded by the US Army Engineer Research and Development Center (ERDC). The POC for the Thin Layer Placement Website and Map-Portal is:

- Damarys Acevedo-Mackey, PE
Damarys.Acevedo-Mackey@usace.army.mil, 601-634-4845



US Army Corps
of Engineers®

Engineer Research and Development Center
Dredging Operations Technical Support Program

July 2017