

BENEFICIAL USE OF DREDGED SEDIMENTS TO RESTORE MORDECAI ISLAND

Navigation channels across the country require regular maintenance dredging to avoid infilling with sediments and becoming impassible. In most cases, the dredged sediments are disposed of in the open ocean or in upland containment facilities. The term “Beneficial Use” describes an alternative practice in which dredged sediments are used to support creation or enhancement of coastal habitats like beaches and estuarine wetlands, or in this case, coastal islands



THE PROBLEM

Mordecai is an undeveloped island that runs parallel to the Barnegat Bay shoreline of Beach Haven, New Jersey. Over the past century, persistent wave action has taken a toll on Mordecai Island, resulting in a loss of roughly 50 percent of its total area and leading to a breach that effectively separated the island into two lobes. Ongoing erosion continues to threaten the existence of Mordecai Island and the vital role that it plays in protecting the Beach Haven shoreline from wave energy. As a demonstration of beneficial use practices, US Army Corps of Engineers' Philadelphia District, used 30,000 cubic yards of dredged sediments to fill the breach joining the two lobes back together.



OUR WORK

Despite growing interest, beneficial use strategies have not been widely embraced due to uncertainties about their long-term performance, and concerns about their potential negative impacts to adjacent habitats. To address these concerns, we are collecting the data needed to quantify the engineering benefits and ecological implications of sediment placement at Mordecai Island.



PROJECT SIGNIFICANCE

Shoreline erosion is a major source of the sediments that end up clogging navigation channels; it is also a significant cause of habitat loss on marsh islands like Mordecai. Beneficial use of sediments to restore these habitats can be a part of the solution. In places like Mordecai Island, where the restored habitat is positioned in such a way that it protects developed shorelines from wave energy, the potential benefits are even greater.



THE COLLABORATION

The National Oceanic and Atmospheric Administration (NOAA)'s National Centers for Coastal Ocean Science (NCCOS) and USACE's Engineering With Nature® (EWN®) Program partnered with the Mordecai Land Trust to track changes in island surface elevation and shoreline position over time and monitor changes in nearshore biological communities. Documenting the performance of sites like Mordecai Island will inform beneficial use strategies nationwide.

