

Coastal Dune Restoration



Coastal dune restoration in Louisiana.¹

DESCRIPTION	Restoration of coastal sand dunes to provide a natural physical barrier that reduces inundation and wave attack on the coast landward of the dune.	
HOW DOES IT MITIGATE FLOOD RISK?	<ul style="list-style-type: none"> + Barrier to floodwaters: The deflection of flooding from an area. + Surge and wave attenuation: The reduction in peak water levels and wave heights associated with the dissipation of energy by dunes. 	
WHAT OTHER BENEFITS DOES IT PROVIDE?	Habitat restoration/enhancement: Changing the physical, chemical or biological characteristics of a site with the goal of returning or improving the natural functions to the lost or degraded native habitat.	
SCALABILITY	Individual projects planned at scale can have watershed effects.	
Advantages Relative to Traditional Flood Management	Potential Barriers or Issues Relative to Traditional Flood Management	Potential Synergies with other NBS
<ul style="list-style-type: none"> + Beaches and dunes together dissipate waves and prevent overtopping. + Ability to build vertically and recover from storm damage. 	<ul style="list-style-type: none"> + Less robust than traditional measures such as seawalls, i.e., subject to damage during storms with potential loss of flood protection function. + Requires maintenance and availability of appropriate cost-effective sand sources. 	<ul style="list-style-type: none"> + Coastal Wetland Restoration.

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RESOURCES	
EVALUATION TOOLS	DESIGN SUPPORT
<ul style="list-style-type: none"> + ADvanced CIRCulation model (ADCIRC): https://adcirc.org/ + STeady State Spectral WAVE (STWAVE): https://csdms.colorado.edu/wiki/Model:STWAVE + USACE Ecosystem Restoration Model Library: https://cw-environment.ercd.dren.mil/model-library.cfm?CoP=Restore&Option=Search&Type=Restore&Id=ALL + INVEST Habitat Quality: http://releases.naturalcapitalproject.org/invest-userguide/latest/urban_flood_mitigation.html + Open Source Conservation Planning Software: https://www.landscapepartnership.org/maps-data/gis-planning/conservation-planning/conservation-planning-software 	<p>International Guidelines on Natural and Nature-Based Features for Flood Risk Management: https://ewn.ercd.dren.mil/?page_id=4351</p>
CASE STUDIES	<ul style="list-style-type: none"> + Caminada Headland: https://coastal.la.gov/project/caminada-headland-beach-and-dune-restoration/

1 https://cims.coastal.louisiana.gov/outreach/projects/OPL_Full_page.html