

# Restoration Solutions:

## BARRIER ISLAND & HEADLAND RESTORATION

# RESTORE

## THE MISSISSIPPI RIVER DELTA

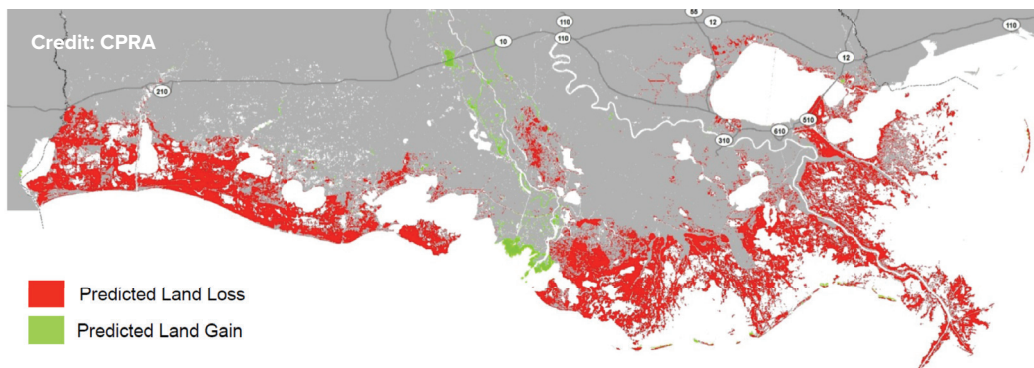


### Louisiana's Land Loss Crisis:

Louisiana has lost 1.2 million acres of land since the 1930s, exposing our communities to increased risk of flooding and threatening wildlife habitat and vital industries. Louisiana's barrier islands are our first line of defense against storm surge and provide critical habitat for birds and other wildlife. Because these islands face so much exposure to the elements, they can erode rapidly. In some places, up to 100 feet of shoreline disappear every year. Without continuing restoration efforts, some estimates suggest our barrier islands could be gone by the end of this century.

### The Solution:

We have the opportunity to prevent further land loss and restore our coast by using a combination of restoration project types included in Louisiana's Coastal Master Plan. Barrier island and headland restoration projects are an important first line of defense to help buffer interior marshes, as well as our communities, from storm surge and intense wave action.

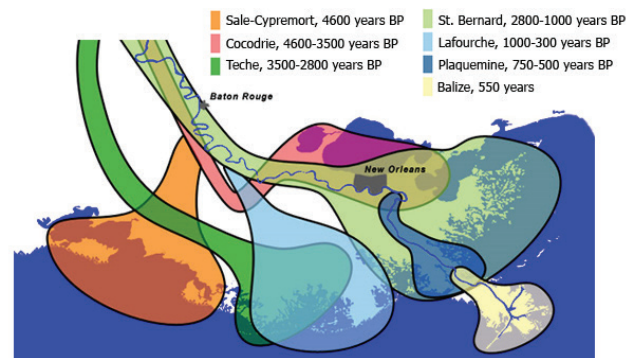


Without action, Louisiana is projected to lose as much as 1,750 square miles of land in the next 50 years.

### What are Barrier Islands and Headlands?

Louisiana's barrier islands and headlands are the remnants of abandoned delta lobes that were formed by the land-building power of the Mississippi River over 7,000 years. Barrier islands are long, narrow, island chains that run parallel to the coastline and are separated from the mainland by a shallow sound. Headlands are essentially younger barrier islands whose connection to the mainland has not yet eroded away.

Barrier islands and headlands act as speedbumps during hurricanes, helping reduce storm surge and offering some protection to communities. They can also act as a buffer for nearby wetlands by reducing wave energy and erosion. Many of these wetlands are vital nurseries for numerous species of fish and shellfish, crucial to Louisiana's billion dollar-per-year fishing industry. Additionally, barrier islands and headlands provide critical habitat for hundreds of thousands of birds, including migratory species that utilize these islands as essential nesting, stopover and wintering habitat.



Delta Lobe creation. Credit: Modified from Blum and Roberts, 2012

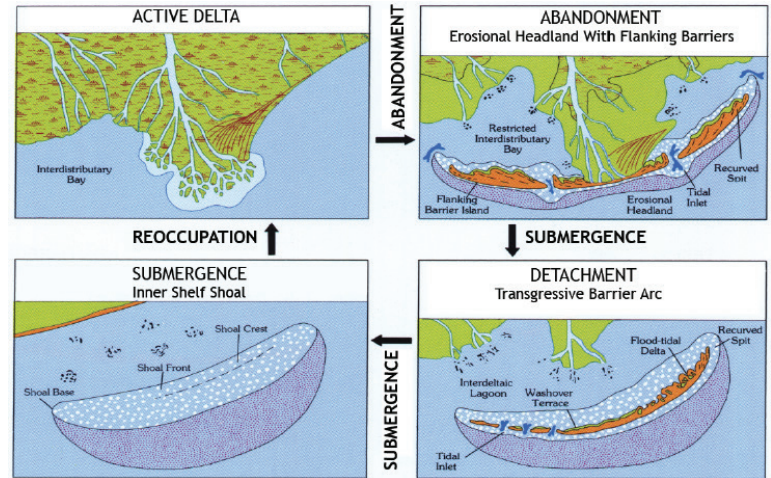
**WHO WE ARE** The Restore the Mississippi River Delta Coalition is working to protect people, wildlife and jobs by reconnecting the river with its wetlands. As our region faces the crisis of threatening land loss, we offer science-based solutions through a comprehensive approach to restoration. We are composed of conservation, policy, science and outreach experts from Environmental Defense Fund, National Audubon Society, the National Wildlife Federation, Coalition to Restore Coastal Louisiana and Lake Pontchartrain Basin Foundation.

# RESTORING Barrier Islands & Headlands

## The Natural Process:

For 7,000 years, the Mississippi River deposited sediment from 31 states and two Canadian provinces across its coast, forming the land of southern Louisiana. As sediment accumulated under water, plant communities began to develop, trapping more sediment and building land. As each delta lobe continued to build, the river's path to the Gulf became longer and more difficult. In response, the river would change course, abandoning the older lobe and cutting a shorter route to the Gulf, starting the process again.

These abandoned lobes gradually sank and eroded, forming extremely productive estuaries and leaving barrier island arcs behind. New lobes form with the river's new route, building up land where marsh plants and trees take hold. This constant ebb and flow creates a dynamic and ever-changing mosaic of habitats and natural resources.



Barrier Island formation. Credit: Modified from Penland & Boyd, 1981

## What Went Wrong:

Wave action, storm surge, subsidence and rising sea levels have dramatically altered Louisiana's barrier islands. Damaged over time, these islands are not able to adequately buffer against natural forces, leading to accelerated deterioration of adjacent coastal wetlands. Louisiana's already vulnerable barrier islands were significantly damaged by hurricanes Katrina and Rita as well as the 2010 BP oil spill. Additionally, the loss of adjacent wetlands increases the quantity of water flowing into and out of the basins, causing the passes between the barrier islands to widen.

## Restoration Solution:

Since the development of Louisiana's 2007 Coastal Master Plan, the state's Coastal Protection and Restoration Authority has reconstructed over 45 miles of barrier islands. These projects use dredged sand and sediment to rebuild and restore barrier island beaches and dunes. By buffering other coastal restoration projects against waves, storms and saltwater intrusion, barrier islands can increase the lifespan of marsh creation projects and increase the land-building and sustaining benefits of sediment diversions and hydrologic restoration projects.



Before and after images of East Shell Island Barrier Island Restoration. Credit: CPRA



The Restore the Mississippi River Delta Coalition has included four barrier island and headland restoration projects in its list of priority restoration projects. All are either under construction or moving through the engineering and design process into construction.

- 1. Barataria Pass to Sandy Point Restoration**  
Can rebuild and renourish over 2,700 acres in Jefferson and Plaquemines Parishes.
- 2. Belle Pass to Caminada Pass Restoration**  
Can rebuild and renourish over 1,400 acres in Jefferson and Lafourche Parishes.
- 3. Timbalier Islands Restoration**  
Can rebuild and renourish over 3,300 acres in Lafourche and Terrebonne Parishes.
- 4. Isles Dernieres Restoration**  
Can rebuild and renourish over 2,000 acres in Terrebonne Parish.