

Protecting Coastal and Natural Buffers

Initiative Summary Statement:

Restore and protect coastal resources such as mangrove forests and saltwater wetlands that serve as natural buffers and storm protection along the coastline.

Initiative Description:

Objective: This Initiative describes activities to restore and protect coastal ecosystems (i.e., habitats where land and tidal water meet) and the unique benefits they provide in mitigating the risk of damage from coastal erosion and storm surge to County residents and infrastructure. Mangrove forests, saltwater wetlands, and barrier islands, including beaches and dunes, are some of the coastal resources in the County that can contribute to significantly lowering the risk of erosion and storm damage. Mangroves are a unique coastal tree or shrub that can grow in saline or brackish water. Their complex root systems form a lattice structure that traps sediment, provides protection from wave action and is a biodiversity habitat for many fish and shrimp species. This natural coastal protection can eventually lead to the formation of mangrove islands, which are natural buffers that can absorb the effects of coastal flooding.

Beaches are an important part of the environment, economy, and culture of the County. The stabilization of shorelines can be accomplished through coastal hardening and nature-based solutions. Nature-based solutions such as constructing living shorelines are often preferred to coastal armaments such as seawalls, which can have negative impacts on erosion.

Need: Coastal resources were severely impacted due to Hurricane Ian and require ongoing maintenance. Unfortunately, approximately 22.8 miles of the 47 miles of Gulf beaches in Lee County experience critical erosion.²¹ As natural components of the surrounding barrier

²¹ Clark, Ralph, and Guy Weeks. "Critically Eroded Beaches in Florida." Florida Department of Environmental Protection, July 2023. [https://hagertyconsult.sharepoint.com/sites/LeeCountyLong-TermRecoveryTaskForce/Shared%20Documents/General/04.%20Plan%20Development/06.%20Initiative%20Profiles/13.%20Revised%20Initiatives%20\(November%202023\)/Initiative%20Profiles%20-%20Updated%20November%202023%20--%20For%20Public%20Input%20-%20TEAM%20DRAFT.docx](https://hagertyconsult.sharepoint.com/sites/LeeCountyLong-TermRecoveryTaskForce/Shared%20Documents/General/04.%20Plan%20Development/06.%20Initiative%20Profiles/13.%20Revised%20Initiatives%20(November%202023)/Initiative%20Profiles%20-%20Updated%20November%202023%20--%20For%20Public%20Input%20-%20TEAM%20DRAFT.docx).

islands, beaches bore the brunt of the storm-induced wave action from Hurricane Ian. Coastal Lee County experienced storm surge, with catastrophic levels of 10 to 15 ft above ground level on Fort Myers Beach and Estero Island.²² The receding flood waters left scoured beaches and damaged infrastructure. Forty-six of the 47 miles of beachfront shoreline experienced some erosion with 35 miles categorized as major.²³ Due to storm surge, upland plants and mangrove forests were inundated with saline flood waters riddled with debris, severely impacting natural resources. Areas of the County are classified as a Coastal High Hazard or Special Flood Hazard Area along the coasts that are exposed to additional hazards due to wind and wave action. These areas are identified on Flood Insurance Rate Maps (FIRMs) as zones V. Natural areas of mangroves can serve as buffers and lower the potential risk from storm surge flooding and erosion due to wave action in these higher risk zones. Barrier islands and mangrove forests in part helped to mitigate the effects of storm surge from Hurricane Ian in the County and could continue to provide risk mitigation to future events.

Shoreline stabilization efforts need innovative and impactful investments to increase community resilience in multiple sectors. Due to the relationship between tourism and beaches, wide sandy beaches with native dune vegetation, which is a softer approach to stabilization, is preferred to hard infrastructure approaches that do not allow for recreation. The establishment of living shorelines is also a proven method to lessen the impact of storm surge and absorbing, rather than deflecting, wave energy. Lessening the impacts of storm surge and rising sea levels will help the economy and critical infrastructure in addition to the natural resources.

Regional Approach: The regional approach to protecting coastal resources will include mapping critical areas along the coastline that should be protected or restored over time through development incentives, development controls or strategic land acquisition. Utilizing mapping tools, coastal communities can emphasize the need to restore natural

²² National Oceanic and Atmospheric Administration (NOAA). National Hurricane Center Tropical Cyclone Report: Hurricane Ian (AL092022). September 2022. https://www.nhc.noaa.gov/data/tcr/AL092022_Ian.pdf.

²³ Florida Department of Environmental Protection, Office of Resilience and Coastal Protection. Hurricane Ian and Hurricane Nicole Post-Storm Beach Conditions and Coastal Impact Report. December 2022 (revised in August 2023).

https://floridadep.gov/sites/default/files/Hurricane%20Ian%20%26%20Nicole_Final%20Report_Aug.%202023.pdf

areas, including those areas already owned by local governments, that serve as natural barriers for coastal flooding. Nature-based solutions can also provide environmental, economic, and social benefits when coastal wetlands and habitats are restored.

Additionally, increased regional collaboration will help bolster current efforts to protect beaches and shorelines. The Coastal Advisory Council helped define management policies for critically eroded beaches in the County. Plans are developed and implemented cooperatively including federal, state, and local resources.

Natural buffers require actions that both protect against and help adapt to rising water levels from storm surge and rising sea levels. To implement this Initiative, local comprehensive plans and land development codes can include policies that promote preservation or restoration of the coastline through incentives or regulation.

Impact: The outcome impact of this Initiative would be increased protection of coastal communities from hazards such as erosion, storm surge, and coastal flooding. Moving forward, the region can work to improve resilience to storm surge and sea level rise by acquiring, maintaining, and/or encouraging the protection and restoration of mangroves, beach and dune systems, and other natural buffers. Barrier islands protect the mainland as well as lagoons, wetlands, and salt marshes from the impact of natural hazards including storm surge. The revival and protection of these natural buffers can build coastal resilience to future events, particularly to hurricanes that cause storm surge and coastal flooding. Ultimately, protecting these natural buffers also maintains the biodiversity and the integrity of the ecosystem. This in turn makes the marine life and the fishing industry healthier and also provides nesting, resting and food sites for a variety of species including sea turtles and native and migratory birds. Recreational activities like birding and the exploration of other native species are enjoyed by residents and tourists alike.

Key Considerations:

- Consider and development policy recommendations that emphasize the acquisition, protection, or restoration of natural buffers including but not limited to:
 - Mangrove forests;
 - Wetlands;
 - Dunes; and
 - Living shorelines.

Co-Sponsoring Branches:

Natural Resources, Infrastructure, Planning & Capacity, and Economic Recovery

Stakeholders:

- National Park Service (J.N. Ding Darling National Wildlife Refuge)
- South Florida Water Management District
- Florida Department of Environmental Protection
- Florida Fish and Wildlife Conservation Commission
- County departmental experts on natural resources, parks, and planning
- Municipal departmental experts on natural resources, parks, and planning
- University Partnerships

Potential Funding Sources:

- National Oceanic and Atmospheric Administration
- Environmental Protection Agency
- United States Department of the Interior
- Federal Emergency Management Agency
- United States Army Corps of Engineers
- United States Fish and Wildlife Service
- The Land and Water Conservation Fund Coalition
- Florida Department of Environmental Protection
- Florida Division of Emergency Management
- Florida Fish and Wildlife Conservation Commission
- National Audubon Society