

# Finding Solutions: Hurricanes



**Projects:**  
**Mangrove Coast Collaborative**  
**(2020 – 2025)**  
**Lead: Dr. Danielle Ogurcak (FIU)**

**Comprehensive Vulnerability**  
**Assessment**  
**(2024 – present)**  
**Lead: Dr. Randall Parkinson (FIU)**

Hurricanes are a significant threat to Southwest Florida, where the combination of coastal geography and a warm climate creates ideal conditions for these powerful storms. When hurricanes make landfall in this region, they can bring devastating winds, torrential rain, flooding, and long-term economic impacts. The area's infrastructure, including homes, businesses, and essential services, can be severely affected, disrupting daily life and necessitating extensive recovery and rebuilding efforts.

Hurricane Irma in 2017 and Hurricane Ian in 2022 are prime examples of the devastating impacts hurricanes can have on Naples, FL, and its surroundings. Hurricane Irma made landfall in Collier County as a Category 3 storm, bringing sustained winds of 115mph and causing widespread damage to both built environments and coastal wetlands. The storm surge flooded streets and neighborhoods, leading to significant property damage and displacement of residents. Recovery of mangrove wetlands Similarly. Hurricane Ian struck with catastrophic force as a Category 4 storm, leading to severe flooding, wind damage, and prolonged power outages. The aftermath of these storms underscored the vulnerability of the Collier County area to storm surge, highlighting the importance of hurricane preparedness, resilient infrastructure, and healthy mangrove ecosystems to mitigate future risks.



## The Solution: Understanding Impacts & Increasing Resilience

The Mangrove Coast Collaborative project began in the aftermath of Hurricanes Maria and Irma as Rookery Bay and Jobos Bay (Puerto Rico) NERRs jointly recognized the need to understand and enhance the resilience of their mangrove ecosystems and the surrounding communities. With funding from the NERRS Science Collaborative, the project focused on collaboratively addressing the effects of strong hurricanes through mapping the spatial extent of impact and recovery, conducting field assessments, modeling effects to ecosystem services, and engaging with natural resource managers to better understand data needs and challenges to decision-making. The project team generated new tools and datasets that will be invaluable for following trajectories of recovery into the future. The wide network of individuals engaged in the project built a foundation for future collaboration across the region. For more information check out the project ArcGIS Story Map at this QR code:



Rookery Bay is currently conducting a comprehensive vulnerability assessment to understand the effects of predicted sea level rise to 2050. With ninety-five percent of the Reserve's 110,000 acres classified as estuarine or coastal wetland, the natural, cultural, and built resources within the Reserve are extremely vulnerable to small increases in sea level. The goal of the project, which is funded by NOAA, is to create a tool that models the effects of sea level rise scenarios on Rookery Bay's habitats and infrastructure, providing a forecast of the spatially-explicit risks of flooding from coastal waters on these resources. The project will be completed in 2026 and the results used to inform an adaptive management action plan for the Reserve.

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Rookery Bay, located in southwest Florida, is recognized as one of the few remaining pristine, mangrove-forested estuaries in the U.S. As part of the National Estuarine Research Reserve System, it serves as an outdoor classroom and laboratory for students and scientists. For more information, visit [www.rookerybay.org](http://www.rookerybay.org).

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION / OFFICE OF RESILIENCE AND COASTAL PROTECTION

