Managing freshwater for the future in Florida

Project Location

Rookery Bay National Estuarine Research Reserve, Florida

Project Lead

Kevin Cunniff, Rookery Bay Reserve
kevin.cunniff@dep.state.fl.us

Targeted End Users and Products

- *Project final report*
- *Fact sheets*

Project Partners

- *Rookery Bay Reserve*
- *Collier County*
- *City of Marco Island*
- *Interflow Engineering*
- *Florida Department of Environmental Protection*
- *Nova Southeastern University*
- *South Florida Water Management District*
- *Taylor Engineering*

About the Science Collaborative
The National Estuarine Research Reserve System's Science Collaborative supports collaborative research that addresses coastal management problems important to the reserves. Learn more at *www.nerrs.noaa.gov.*

Overview

One of the few pristine, mangrove-forested estuaries in the country, Florida's Rookery Bay Estuary is a critical breeding ground for the fisheries that underpin the region's economy. Balancing the freshwater needs of the estuary with those of local communities is increasingly challenging as population growth and sea level rise tax freshwater resources. Decision makers need information about freshwater requirements of the estuary and the perspectives of water users to effectively manage water resources. The Rookery Bay reserve led a multidisciplinary team to develop a science-based framework that stakeholders can use to collaborate and make decisions about water resources that maintain the health of the estuary and support its surrounding communities.

Project Benefits

- This project provided water resource managers and decision-makers in southwest Florida with critical information to support management of freshwater flows to the estuary and its surrounding communities.
- The reserve and local and state water management groups are using the project results to develop a comprehensive restoration plan for the estuary that includes recommendations for research and management activities.
- Environmental groups and other organizations are using the project's hydrologic model of the Rookery Bay watershed to determine the impacts of potential land use and water management decisions.
- The modeling has led researchers to work with staff from a state environmental agency to correct missing and incorrect data in an existing hydrologic model to allow for better informed land and water management decisions.

Project Approach

The Rookery Bay reserve worked with an interdisciplinary team of scientists, engineers, municipal officials, and water resource agencies to better understand the freshwater flows needed to maintain the health of the Rookery Bay Estuary and the perspectives of water users and decision makers within the watershed.

Project Approach (continued)

- Stakeholder Engagement: They organized an advisory group composed of stakeholders chosen for their abilities, professional experiences, and knowledge of the community to support and guide the project's research and communication strategies.
- Literature Review: To inform data collection and analysis and the design of the project's collaborative process, the team conducted a literature review of water management related issues, conflicts, and community decision-making; an ecological study of the estuary; and a social science study of stakeholder attitudes and beliefs about the use of freshwater resources.
- Modeling and Analysis: The team also created a locally-scaled hydrological model of the Henderson Creek watershed, established research-based recommendations for freshwater target flows and reservations, and analyzed probable freshwater inflow quantity and timing for water management project scenarios. The results of these efforts were combined to develop a community-based tool to inform future decisions about freshwater allocation and management in southwest Florida.