

Understanding South Carolina’s “swash cycle”

Project Location

North Inlet-Winyah Bay National Estuarine Research Reserve, South Carolina

Project Lead

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Targeted End Users and Products

- [Project final report](#)

Project Partners

- [North Inlet-Winyah Bay Reserve](#)
- [City of Myrtle Beach](#)
- [City of North Myrtle Beach](#)
- [Coastal Carolina University](#)
- [Horry County](#)
- [Long Bay Hypoxia Working Group](#)
- [South Carolina Sea Grant Consortium](#)
- [South Carolina Department of Natural Resources](#)
- [Town of Surfside Beach](#)

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

Myrtle Beach is an economic pearl in South Carolina’s grand strand, a sixty-mile stretch of beaches and resort communities that support a multi-billion dollar tourism industry. Fishing and water sports top the list of local attractions, making coastal water quality a priority concern. Addressing that concern, however, is a challenge along this heavily developed coast, where much of the polluted stormwater runoff flows into “swashes,” or tidal creeks that traverse beaches to connect directly to the ocean. To manage stormwater in a way that protects water quality, local decision makers need more information about the role that these swashes play in fueling hypoxia, or low levels of dissolved oxygen, in coastal waters. In response, the North Inlet-Winyah Bay reserve spearheaded a project to investigate how swashes collect, transform, and export the nutrients and organic matter that fuel hypoxia in the coastal waters of the Myrtle Beach area.

Project Benefits

- Provided the scientific support and justification necessary to enable the development of effective management strategies to protect estuarine and coastal water quality in the Myrtle Beach area.
- Project results indicated that efforts to reduce the loading of nutrients into swashes would enhance coastal water quality and that stormwater management practices that control runoff volume, such as enhancing infiltration into the soil, are more likely to be effective in reducing nutrients.
- Local decision-makers and coastal managers are using these results design local drainage projects and the project is supporting the use of a Low Impact Development Manual developed by another collaborative research project in South Carolina.

Project Approach

The North Inlet-Winyah Bay reserve led an interdisciplinary team to understand how local land use and stormwater management practices affect the flow and transformation of nutrients and organic matter moving into, through, and out of swashes (tidal creeks) into coastal ocean waters and impact water quality in the Myrtle Beach area.

- **Monitoring:** The team worked with stormwater managers, decision-makers, and scientists to develop a method to select swashes for study and monitored the nutrients and organic matter flowing into these swashes via stormwater and ground water, studied how the internal conditions of the swash transformed these pollutants, and then assessed how much of it reached coastal waters.
- **Stakeholder Engagement:** Local and state stakeholders participated in workshops and experiential learning activities, such as watershed tours.