



# Evaluating Living Shorelines Informing Regulatory Decision-Making in South Carolina

## THE ISSUE

Living shorelines show great promise in coastal South Carolina as a tool to control erosion, increase habitat, and protect coastal areas from hazards both short-term (storms) and long-term (sea level rise).

The SC Department of Natural Resources (SC DNR) has constructed oyster-reef based living shorelines on public land for 15 years. Private property owners see the success of these projects and are interested in using living shorelines to prevent erosion adjacent to their own property.

However, the critical area permitting process does not yet specifically address this emerging strategy. Ultimately, through a science-based approach, the SC Department of Health and Environmental Control (SC DHEC) seeks to develop a comprehensive regulatory process to guide the design and permitting of living shorelines.

## THE PROJECT

This research project will comprehensively analyze potential living shoreline strategies suited to South Carolina's coastal conditions, focusing on oyster-based methods where possible as well as exploring new techniques. The project team will use a stakeholder-driven process, case studies, and experimental research sites to generate the scientific background needed to inform living shoreline regulations.

**The overall goal** is to remove a critical barrier to living shoreline implementation, protecting South Carolina's marshes from erosion and habitat loss, while increasing biodiversity and promoting coastal resilience.

**The objective** is to provide SC DHEC with science-based information and tools to develop specific project standards for permitting living shorelines. A regulatory pathway for private property owners will increase the footprint of living shorelines in South Carolina and reduce permitting time frames for these types of projects.



DNR



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## THE APPROACH

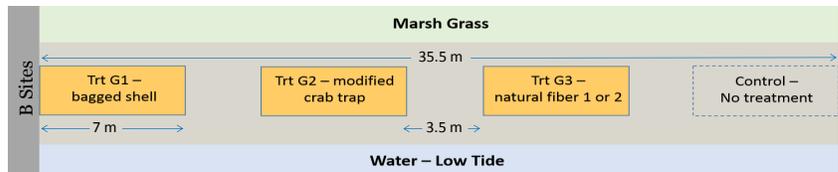
**Analyzing Existing Data:** The SCDNR has completed ~ 200 oyster reef restoration projects since 2001, but a thorough analysis of this dataset related to living shorelines has not yet been conducted. The project team has compiled a preliminary database of projects and data, and seeks to also include information from other organizations where it is available. Results from previous monitoring efforts will be used to identify (a) conditions under which living shorelines have been deployed and their relative success, and (b) gaps in current knowledge and data.

To bring this information into a coast-wide context, existing data will be compiled into a spatial database, characterizing the SC Coastal Zone from the perspective of living shoreline suitability, type, and potential demand. This initial analysis will delineate coastal areas into three categories: *A sites*: site characteristics are optimal for oyster reef development, *B sites*: site characteristics are marginal or unknown for oyster reef development, and *C sites*: site characteristics prohibit oyster reef development.

**Assessing Case Studies:** Private property owners have expressed an interest in living shorelines to protect salt marsh, and ultimately their upland property. The project team will capitalize on this interest to help inform scientific research by characterizing these shorelines for their potential and considering how they compare to existing living shorelines sites on public land.

**Research, Monitoring, and Analysis:** In addition to identifying existing reefs that warrant continued monitoring, experimental research at 16 sites will help to address knowledge gaps.

Within a given site, the experimental framework along the shoreline will include three treatments with a standard length between them. For example, at B sites, where environmental conditions are marginal or unknown for supporting oyster reef growth, two oyster-based treatments may be tested as well as a fiber treatment. Once installed, all sites will be monitored for up to four years.



**Output:** Experimental results, combined with previous monitoring efforts, will yield a final synthesis to determine the relative success for each of the different sites and strategies. The tangible result of this project will be a guidance document for SC DHEC and others implementing living shorelines that describes options for living shorelines and the environmental and physical conditions under which they are each successful.



Modified crab trap



Curlex Bloc

Photo [www.americanexcelsior.com](http://www.americanexcelsior.com)



Oyster bags (SCORE)