

NC COASTAL FEDERATION RESTORATION & PROTECTION PROJECT:

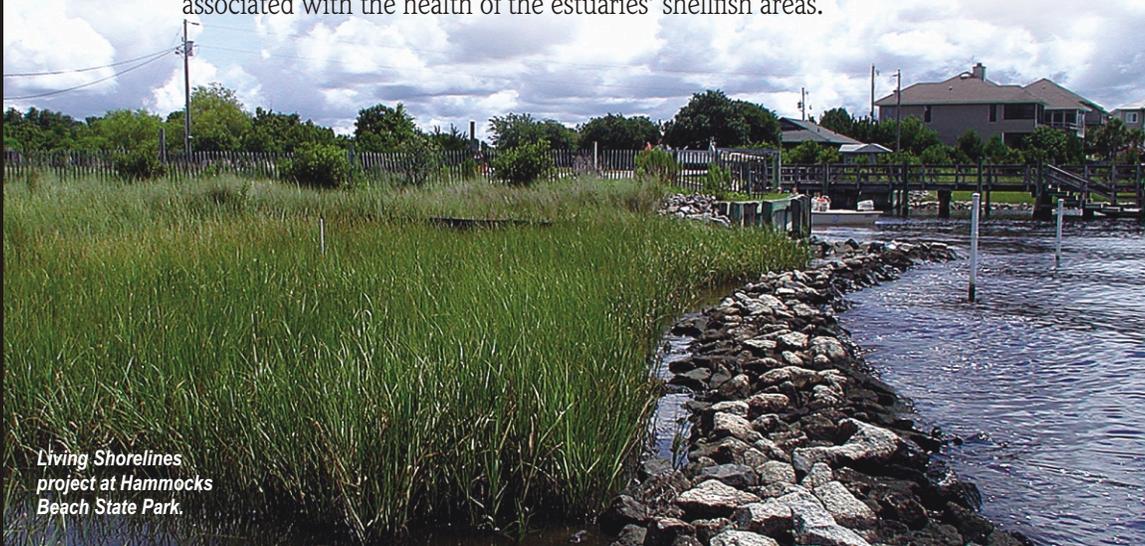
## LIVING SHORELINES

Coastal marshes are declining throughout NC's coastal region, and will continue to do so in the coming decades due to storms, boat wakes, development impacts and sea level rise. Since 1999, the North Carolina Coastal Federation has implemented a pilot cost share program to encourage the demonstration of "Living Shorelines" projects along the estuarine coasts of North Carolina. Broadly defined, a "Living Shorelines" project is an innovative approach that combines various stabilization methods to control shoreline erosion, while restoring and/or preserving the characteristics of the estuarine marshes and upland buffers.

Through grant support from sources such as NOAA, Restore America's Estuaries, NC Clean Water Management Trust Fund, and others, NCCF has provided cost share funds for nineteen project sites, and the Federation has provided technical assistance and guidance for numerous property owners and partners throughout NC's estuarine region.

### Why Are Living Shorelines Important?

North Carolina's diverse coastal marsh systems provide critical nursery habitat for many recreationally and commercially valuable fisheries. Wetlands provide direct and indirect food sources for countless animals, including amphibians, mammals, insects and waterfowl, and they filter out pollution and sediment from stormwater runoff. In this way, wetlands protect the water quality, by acting as the "kidneys" of the estuary. Because they absorb stormwater and wave energy, marshes provide flood protection and erosion control. Coastal marshes are also a very important part of North Carolina's natural heritage and beauty, and are closely associated with the health of the estuaries' shellfish areas.



*Living Shorelines  
project at Hammocks  
Beach State Park.*

## What Kinds of Projects Are Included In NCCF's Living Shorelines Program?

Where possible, the best approach to erosion is to locate structures away from the erosion threat or such that they may be adjusted during their structural lifetime. The best option is to plan for the future – build away from the shorelines and live with some erosion. Where setting back from the shoreline is not feasible, Living Shoreline approaches allow property owners to evaluate options from an ecological perspective – this means choosing a method that will provide effective erosion control with the least negative impact on the environment.

Living Shoreline projects incorporate bio-engineering techniques to avoid a “hardened” shoreline, which results from the traditional approaches of vertical walls or riprap. Vertical walls and riprap revetments do not absorb wave energy like sloping vegetation. Instead, the energy is reflected back along the shoreline, which can increase the erosion in these areas and scour marshes that naturally grow here. Bulkheads replace the broad, diverse tidal area with a vertical surface, greatly reducing the potential habitat for numerous estuarine animals that rely on these fringes to survive.

Depending on site-specific conditions, Living Shoreline projects range from simple plantings to more complex approaches that combine some stone, wood, bio-logs or other structures with bank regrading and marsh

plantings. As the erosion energy increases, projects may progress in hardness from grading slopes and planting marsh grasses to vegetated or restored marsh shorelines fronted by offshore sloping stone sills or breakwaters. As with any shoreline stabilization project, it is advisable to consult with an expert to determine the best approach for a particular site.

### Where To Find More Information On NCCF's Living Shorelines Program

To learn more about Living Shorelines and NCCF's program, please check out our website at [www.nccoast.org](http://www.nccoast.org) or call our Ocean office at 252-393-8185. For residents in northeastern and southeastern NC, NCCF's field offices in Wilmington and Manteo can also provide assistance.



# North Carolina Coastal Federation

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## About the North Carolina Coastal Federation

The North Carolina Coastal Federation is the state's largest non-profit working to protect and restore coastal North Carolina. There are many exciting opportunities to get involved in restoration projects and help preserve our coastal environment. If you would like to support our efforts, please consider becoming an NCCF member. You also can learn about volunteer opportunities and other programs by checking out NCCF's website at [www.nccoast.org](http://www.nccoast.org), call 252-393-8185, or come by NCCF headquarters at 3609 Hwy 24 in Ocean, located between Morehead City and Swansboro.