2021 Living Shoreline Accomplishments

by the North Carolina Living Shoreline Steering Committee

The North Carolina Living Shoreline Steering Committee brings together federal and state agencies, non-governmental organizations and universities to communicate and collaborate on education and outreach, research, and implementation of living shorelines.

Living shorelines are a suite of options for shoreline erosion control that maintain connections between upland, intertidal, and aquatic areas essential for water quality, ecosystem services, and habitat values.

LEADERSHIP & COLLABORATION

In 2021 the Steering Committee met 4 times, with Implementation, Education, and Research subcommittees meeting between full sessions.

Partners advocated for and secured language in the 2021 <u>Coastal Habitat Protection Plan</u> <u>update</u> to work for the protection of oyster sills from harvest.

IMPLEMENTATION



A total of **5,091 feet (0.96 miles)** of living shorelines were constructed at 30 different sites using granite rocks, 40,101 recycled oyster shell and marl bags, 1,526 QuickReefTM units, 50 ft. of Biomason units, and oyster castles.

At 20 sites, 137,692 plugs of salt marsh grasses were planted.

EDUCATION & OUTREACH

Committee partners adapted Florida's marine contractor living shoreline training for North Carolina marine construction professionals.

- Thirty-two professionals attended the pilot training, which was offered in three virtual sessions and an in-person field session at Morris Landing Clean Water Preserve.
- The <u>training</u> information and <u>manual</u> are available online.



EDUCATION & OUTREACH (continued)

Two virtual real estate agent workshops were held in September for 161 participants.

• The goal of the training was to bring awareness to living shoreline concepts for real estate agents to pass down to clients buying property on estuarine shorelines.

"...by far the best and most informative CE (continuing education) class I've taken since I've been in real estate. I learned a great deal today from actual experts in the field that know their subject thoroughly. It was worth every minute of the 4 hours!..." Real Estate Workshop Participant



Restoration Systems and the North Coastal Federation were featured in a PBS, The Science of New State of Change series: <u>Can living shorelines</u> <u>protect the coast from sea level rise and bigger storms?</u>

Hundreds of students and volunteers were involved in living shoreline plantings and construction events coastwide.

RESEARCH

In 2021, there were several new publications on living shoreline performance during hurricanes and waterfront property owner perceptions:

Graduate student Emory Wellman (ECU) and her collaborators, including her advisor, Assistant Professor Dr. Rachel Gittman, <u>published the results</u> of Wellman's thesis research in the journal Ecological Applications.

- The group constructed oyster reefs from two materials along eroding salt marsh shorelines in Beaufort, NC to test whether the substrates could successfully jumpstart oyster reef formation and protect the vulnerable marshes.
- The researchers found that a new biodegradable material was better able to recruit oysters and provided greater protection for salt marshes threatened by high erosion as compared to the more traditional material.

Graduate student Mariko Polk (UNCW) along with her advisor, Assistant Professor Dr. Devon Eulie and collaborators, <u>conducted a study</u> assessing the performance of living shorelines before and after Hurricane Florence in North Carolina.

- The team found that living shorelines of varying designs and substrates reduce erosion of fringing marsh edge across a range of fetches and bottom conditions during storm events and over longer timescales.
- The study was published in Integrated Environmental Assessment and Management.

RESEARCH (continued)

Dr. Rachel Gittman (ECU) with colleagues, <u>led a study investigating</u> how waterfront property owners perceive and select coastal protection approaches in North Carolina.

- Results from two social science surveys of waterfront residents in 16 coastal NC counties reveal that property owners who had opted for hardening their shorelines were more likely to have neighbors with hardened shorelines.
- However, results also suggested that encouraging waterfront-property owners who have adopted living shorelines to recommend them to neighbors may increase the adoption of living shorelines.



Restoration Systems' patent-pending Quickreef and Biomason substrates were installed by Restoration Systems in two living shorelines in Bogue Sound in 2021, with more sites planned in 2022.

• Multiple research labs will be monitoring the performance of alternative substrates postinstallation.

Carteret County initiated the Building Adaptive Shorelines for Resilient Coastal Communities project, which will utilize a functional living shoreline design approach at the east end of Carrot Island to restore and enhance over 1,500 linear feet of shoreline.

- Carteret County and Moffatt & Nichol, a NC coastal engineering firm, will work directly with the Rachel Carson Reserve staff and the Living Shoreline Subcommittee to provide a resilient shoreline structure design capable of sustaining flood and wave events as well as restore important estuarine habitat.
- Funding has been secured through the National Fish and Wildlife Foundation (\$1,500,000) and the NC Land and Water Fund (\$400,000). Design will begin in early 2022.

N.C. LIVING SHORELINE STEERING COMMITTEE

