2018-2020 Living Shoreline Accomplishments

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Introduction

The Living Shoreline Steering Committee (Committee) was formed during the summer of 2018 to bring together federal and state agencies, non-governmental organizations and universities to communicate and collaborate on education and outreach, research, and implementation of living shorelines as a means to support sustainable management of estuarine shorelines. This Committee also acts as the Albemarle-Pamlico National Estuary Partnership (APNEP) Living Shoreline Implementation Team and is co-led by APNEP and the North Carolina Coastal Federation (federation).

The Committee meets multiple times a year to discuss ongoing education and outreach, research, and implementation of living shorelines in North Carolina. Work by these members in 2020 includes research and monitoring of natural marshes and living shorelines, wave attenuation and transformation and the use of alternative living shoreline construction materials. Education and outreach efforts by members have increased the awareness and shown the benefits of living shoreline techniques to the public as well as to real estate agents, contractors, and engineers. In addition, numerous (or actual #) living shorelines were constructed in 2020 throughout the state. [MT1]

The purpose of this document is to showcase the progress made since 2018 by the partner members of the Committee on the advancement of living shoreline knowledge and benefits and their promotion and use coastwide.

2018 Living Shoreline Major Accomplishments

- The Nature Conservancy and scientists, Jenny Davis and Carolyn Currin from NOAA's Beaufort Lab have developed a Living Shoreline Explorer app for Carteret and Onslow Counties to assist users with determining where it is suitable to use a living shoreline. It can be found on The Nature Conservancy's North Carolina Coastal Resilience online mapping tool: https://maps.coastalresilience.org/northcarolina/ [maps.coastalresilience.org]
- The Nature Conservancy's Restoration Explorer application [coastalresilience.org] (app) on the Coastal Resilience Tool helps users identify where they can use oyster reefs to stabilize their shoreline. Using this online this tool you can identify sites for subtidal shoreline oyster reef restoration within the Pamlico Sound.

2019 Living Shoreline Major Accomplishments

- The Living Shoreline Steering Committee met in January and May of 2019 and finalized the Working Strategy Document.

- The Education and Outreach, Research, and Implementation/Incentives subcommittees worked throughout the year to demonstrate the benefits of living shorelines and increase their use in the state.

- The North Carolina Coastal Federation was the local host of Restore America's Estuaries' (RAE) Third National Living Shorelines Tech Transfer Workshop that was held in October 2019 in Beaufort. The workshop was attended by approximately 250 professionals from the U.S. and Canada. Committee members played a major role in the development of the workshop agenda and coordinated and led field trips for all attendees.

- The Wilmington District of the U.S. Army Corps of Engineers (USACE) issued their new Regional General Permit for living shorelines in March 2019. The Coastal Resources Commission adopted 15A NCAC 7H .2700 General Permit for Construction of Marsh Sills for Wetland Enhancement in Estuarine and Public Trust Waters in July 2019.

    - These new federal and state general permit does not require any coordination with state and federal agencies as long as the permit conditions are met; therefore, creating a streamlined general permit process that is consistent with other CAMA general permits.

2020 Living Shoreline Major Accomplishments

- Partners constructed a total of 6,384 linear feet (~ 1.2 miles) of living shoreline.
- The N.C. Coastal Reserve produced APNEP's and Division of Environmental Quality's series of technical virtual workshops in August. One workshop focused on restoration and living shorelines, and aimed to get input on priorities for advancing living shorelines and other strategies to protect and restore wetlands. Input from the workshop was used to develop recommended actions in the 2021 CHPP.
- The N.C. Coastal Reserve, N.C. Coastal Federation and N.C. Sea Grant started adapting the Florida two-day living shoreline training course and manual for North Carolina marine contractors, environmental consultants, engineers and regulatory staff.
- The North Carolina Coastal federation was invited to participate on a panel on the Environmental and Energy Study Institute's Congressional briefing on "Coastal Resilience in the Southeast: Science, Policies, and Programs Furthering Local Resilience Goals." During the briefing, Dr. Lexia Weaver presented on "Implementing Living Shorelines through Community Engagement, Partnerships, Science, Policies and Funding" to the 142 participants.

- Researchers from Duke University and East Carolina University compiled a database of 46 peer-reviewed papers on living shorelines. They found that besides restoring salt marshes and mangroves, 91% of living shorelines incorporated structural materials like oyster shell and rock. Most research conducted was at sites less than 5 years old. The majority of the studies exclusively reported on ecological outcomes (89%), and of those, ecological processes were measured in 74% of studies. Processes related to coastal protection were measured most frequently (52% of ecological studies), followed by biological interactions, water filtration, nutrient cycling, and carbon sequestration. This study suggests that living shorelines research is on the rise, but there is a need for more long-term data, socio-economic research.

- Since 2010, NOAA scientists have been looking at fringing natural marshes and living shorelines with sills and how they respond to sea-level rise. Results to date demonstrate significant loss of shoreline vegetation and erosion along natural shorelines, but are seeing greater surface accretion rates and reduced erosion at sites with living shorelines (stone sills). Vegetation at all sites is resilient to hurricanes. Changes in marsh surface elevation results in vegetation changes, with high marsh species occupying previous low marsh areas at sill sites.

- Researchers from ECU, UNCW, UNC-Chapel Hill IMS, and Duke University have secured funds from NOAA, NSF, USACE, and NC Sea Grant and are working collaboratively to study the effects of wave energy from hurricanes, ambient wind waves, and boat wakes on different living shoreline designs. Results to date suggest living shorelines perform well in terms of providing erosion protection during major storm events (e.g., Category 1 Hurricanes). However, research is ongoing to determine the impacts of wind waves and boat wakes on the shoreline protection capabilities of living shorelines.

[MT1]This probably needs to be updated based on what we receive for 2020