

# LIVING SHORELINE

## St. Marys Riverkeeper, UNF create new oyster reef



SUBMITTED PHOTOS

Above, St. Marys Riverkeeper Anna Laws stands in front of an array of crab traps filled with oyster shells. Eventually, oysters will grow over the whole structure, creating a reef, like the older ones seen behind her. Right, University of North Florida professor Kelly Smith prepares for the task ahead.



BY KENDRA SHAFER  
For the News-Leader

As the tide crept higher and higher, undergraduate students from the University of North Florida's Coastal and Marine Biology Program hustled to install crab trap structures along the mud-slick shoreline.

The students joined forces early May 1 with volunteers from the St. Marys Riverkeeper to plant beat-up old crab traps into the surf, with the understanding they will appear as dream palaces to oysters.

In all, arrays of 70 crab traps were added to the living shoreline along the Amelia River at Fernandina Beach's Old Town, completing a project that began with an initial crab trap reef in 2019, said St. Marys Riverkeeper Anna Laws.

"We used reclaimed crab traps filled with oysters to rebuild a reef offshore," she said. "The first group of traps has held together quite well over two years and shown significant oyster growth. Now, we are taking what we have learned and adding a line of structures to act as a wave break. We also have designated specific traps for a student study."

The shoreline was lively at sunrise as students and Amelia Island Sailing Club volunteers carried traps to the coast, wired them together and secured them in the proper location. Fifteen students listened closely through the misty salt wind to the directions of their



St. Marys Riverkeeper Anna Laws gives instructions to sailing club volunteers.

instructor, University of North Florida biology professor Kelly Smith.

"It was an excellent learning experience for them," Smith said. "They get a lot out of seeing the challenges of setting up an experiment in low tide." Her students will be comparing two types of structures, one using cemented oysters and one using loose oysters, to see which recruits the most new oysters over time, she said. Some University of North Florida geography and GIS students of Dr. Chris Baynard also participated, adding a high-tech element to the morning with their drone flying overhead.

This experiment, and others

like it, are extremely important in the rapidly evolving study of living shorelines, Laws said. Living shorelines are made of natural materials that reduce coastline vulnerability to sea level rise and increasingly stronger storm events. They also prevent erosion, improve water quality, provide fisheries habitat, increase biodiversity and promote recreation.

"Oysters are the superstars in the world of living shorelines," Laws said. "If we can re-grow oysters here – and have the benefit of creating a wave break that will allow the marsh grass to spread – we are going to have a really positive change here in the next few years."

From the shore, the Old Town Living Shoreline can be viewed from the Fernandina Plaza Historic State Park, unless it's high tide and the reef is underwater. The Amelia River is the mouth of the St. Marys River, which begins in the Okefenokee Swamp in Georgia and makes a 130-mile path to the Atlantic Ocean. The St. Marys Riverkeeper promotes coastal resiliency projects such as this one throughout the watershed, Laws said.

### Living shorelines

Living shorelines are growing in popularity in coastal states as an option to traditional "hardened" shorelines,

### Timeline of a Living Shoreline

**April 29, 2019** – The initial reef is deployed. Refurbished crab traps are installed along the shoreline to create a natural wave break, slowing erosion while creating new oyster habitat.

**May 2019** – Within the first two weeks, all traps showed signs of new oysters. The reef seems to be holding together despite the high energy waves.

**May 2020** – A year has passed. The COVID-19 pandemic prevents the St. Marys Riverkeeper from adding to the shoreline as planned.

**March 2021** – University of North Florida students collected 100 gallons of oyster shells as part of the Oyster Shell Recycling program at Guana Tolomato National Estuarine Research Reserve in St. Johns County. Volunteers from the riverkeeper collected the shells from Guana, then traveled to UNF in Jacksonville to pick up more than 50 used crab traps, which UNF students had collected during the previous year.

**April** – The crab traps were transported to a staging area at White Oak Conservation Park in Yulee, where UNF and riverkeeper volunteers prepared them. They coated them with concrete slurry and filled them with oyster shells.

**May 1** – Phase Two of the shoreline is installed.

such as sea walls. In many places, homeowners are waiting months or even years to get permits for living shorelines.

Jan Mackinnon, a biologist with the Georgia Department of Natural Resources Coastal Resources Division, is the project manager for Georgia's living shoreline projects, including Sapelo Island and Little St. Simons Island. She is a huge advocate for living shorelines and said the two biggest obstacles are slow permitting and oyster shell sourcing.

"Oysters are natural ecosystem engineers for the Southeast," Mackinnon said. "We have lost a lot of reefs over the decades." Oyster shells must be treated to prevent bacterial contamination before use in living shoreline projects, Mackinnon said. Restaurants are the primary sources.

Some other natural biodegradable materials used in living shorelines include coconut fiber, mangroves, reclaimed seawall reef balls, rip rap (limestone) and other native plants.

### Why crab traps?

Many living shorelines consist primarily of stacks of net bags of oyster shells, creating an extension of the shoreline

when combined with native plants.

When the first set of crab traps were installed at the Old Town Living Shoreline in 2019, the St. Marys Riverkeeper was fortunate to have the assistance of Dan "the Oysterman" DeGuire, a former commercial oysterman who died in 2020. He used crab traps to grow oysters for years. They obtained the traps from a nonprofit organization that collected them rather than letting them go into a landfill.

"It was a kind of recyclable thing to take these old traps and turn them into something useful," according to Rick Frey, DeGuire's friend and founder of the St. Marys Riverkeeper. "Also, it creates a structure that the oysters would cling to much easier and much quicker."

The Old Town Living Shoreline is now one of the regular stops for the eco-tour boats that travel daily out of the Fernandina Harbor Marina.

"The tourists get a lesson in the importance of oysters to the ecosystem," Frey said. "One oyster can filter up to 50 gallons of water a day. They're really amazing."

Submitted by the St. Marys Riverkeeper

### Benefits of Living Shorelines

- Filter pollutants from water to improve water quality.
- Reduce potential for shoreline erosion issues.
- Absorb storm energy and protect property.
- Connect animals to their critical nursery areas.
- Allow for natural sand and soil movement.
- Provide enhanced recreation areas.
- Reduce wave energy and associated shoreline erosion (property loss).
- Reduce storm water flow rates thereby reducing erosion and reducing pollution entering the bay or estuary.
- Buffer the effects of storms, especially tropical storms and hurricanes.
- Build up shoreline areas by trapping sediments and stabilizing coastal land.

Source: University of North Florida

