



# Spreading the Seeds of Estuary Health

## Overview

Salt marshes and tidal creeks maintain healthy water, protect coastal communities from flooding and erosion, provide nursery and essential habitat for commercial and recreational fisheries, and support recreational activities that are a part of the coastal lifestyle. This project seeks to educate K-12 students on the importance of restoring these ecosystems, using approaches that also meet current science curriculum standards.

The Guana Tolomato Matanzas, ACE Basin, North Inlet, North Carolina, and Sapelo Island reserves will create a region-wide student-driven program for teachers that will further the understanding of restoring degraded or lost estuary habitats. This project will build upon the successes of previous efforts to teach the importance of the salt marsh habitat through cultivating and transplanting smooth cordgrass, *Spartina alterniflora*, the dominant plant in this region's salt marshes. The project team will transfer information on successful growing techniques for smooth cordgrass among the southeast region reserves. Using existing data on smooth cordgrass cultivation and experiences from past and current efforts, reserve staff, in partnership with the Sea Grant Consortium, will create an online, interactive resource center with a topic-based elementary-targeted curriculum. Teachers will be trained to use these products through four professional development opportunities, one in each of the southeastern states. Ultimately, this will increase the community of practice among participating schools and teachers, increase the use of standards-based curriculum, increase plant growth success, and increase the project's overall long-term success.

## Project Location

- ACE Basin National Estuarine Research Reserve
- Guana Tolomato Matanzas National Estuarine Research Reserve
- North Carolina National Estuarine Research Reserve
- North Inlet-Winyah Bay National Estuarine Research Reserve
- Sapelo Island National Estuarine Research Reserve

## Project Duration

June 1, 2017 to May 31, 2019

## Project Lead

Kenneth Rainer  
 Guana Tolomato Matanzas National Estuarine Research Reserve  
 (904) 823-4500  
[kenneth.rainer@dep.state.fl.us](mailto:kenneth.rainer@dep.state.fl.us)

## Project Type

Science Transfer – promoting the use of science

## Project Partners

- Guana Tolomato Matanzas National Estuarine Research Reserve
- ACE Basin National Estuarine Research Reserve
- North Carolina National Estuarine Research Reserve
- Inlet-Winyah Bay National Estuarine Research Reserve
- Sapelo Island National Estuarine Research Reserve
- South Carolina Sea Grant Consortium

## Anticipated Benefits

- Teachers will have access to new professional development opportunities.
- The project will establish an information network that will increase community of practice among teachers participating in the program.
- Participating teachers will have access to, and subsequently apply, a new topic-based curriculum.
- Student-led restoration efforts will produce increased plant growth and overall long-term restoration success.

## Project Approach

In the first year of the project, the project team will establish an online resource center for teachers and compile lessons for the topic-based curriculum. Teachers from 15 participating schools will receive curriculum training, supplies to build an onsite greenhouse for seed trays and a hydroponic growing pond, and supplies to build floating smooth cordgrass islands to place in an onsite retention pond/water body. Each school will also receive water quality monitoring supplies to measure onsite retention pond/water body water quality pre- and post-placement of the floating smooth cordgrass islands.

Over the course of the school year, teachers will integrate at least two lessons from the topic-based curriculum. Teachers and students will measure plant success by counting the number of seeds that germinate and grow into juvenile smooth cordgrass plugs (capable of transplanting for restoration purposes). Teachers, with student assistance, will also monitor water quality in the hydroponic growing and report their findings via forms available on the online resource center. At the end of the academic school year, teachers and students will transplant juvenile smooth cordgrass plugs (grown from seeds) and hydroponic plugs (as needed) to floating smooth cordgrass islands. These islands will grow throughout the summer.

Based on teacher and student findings, lessons will be adjusted accordingly in order to provide teachers with better lessons for the second year of the project. In the project's second year, two new teacher trainings will be provided for up to 20 additional elementary teachers from 10 participating schools. Teachers will again be asked to implement two lessons from the curriculum and, along with their students, monitor the floating islands and report their findings.

## Targeted End Users and Anticipated Products

- Teachers will have access to an online, interactive resource center with in-class, topic-based lessons on growing and cultivating smooth cordgrass information.
- Teachers will be provided with a suite of topic-based, elementary-targeted curricula, with relevant lesson plans and educational materials pertaining to salt marsh ecology, water quality, and plant growth and adaptation.
- Elementary teachers will receive smooth cordgrass-specific training at one of six professional development opportunities that will train teachers to grow smooth cordgrass with their students for the purpose of salt marsh restoration.

### About the Science Collaborative

*The National Estuarine Research Reserve System's Science Collaborative supports collaborative research that addresses coastal management problems important to the reserves. The Science Collaborative is managed by the University of Michigan's Water Center through a cooperative agreement with the National Oceanic and Atmospheric Administration (NOAA). Funding for the research reserves and this program comes from NOAA. Learn more at [coast.noaa.gov/nerrs](http://coast.noaa.gov/nerrs) or [graham.umich.edu/water/nerrs](http://graham.umich.edu/water/nerrs).*