

Utilizing Biogeochemical Approaches to Aid in Pilot-Scale Seagrass Plantings in a Shallow, Well-Mixed Estuary

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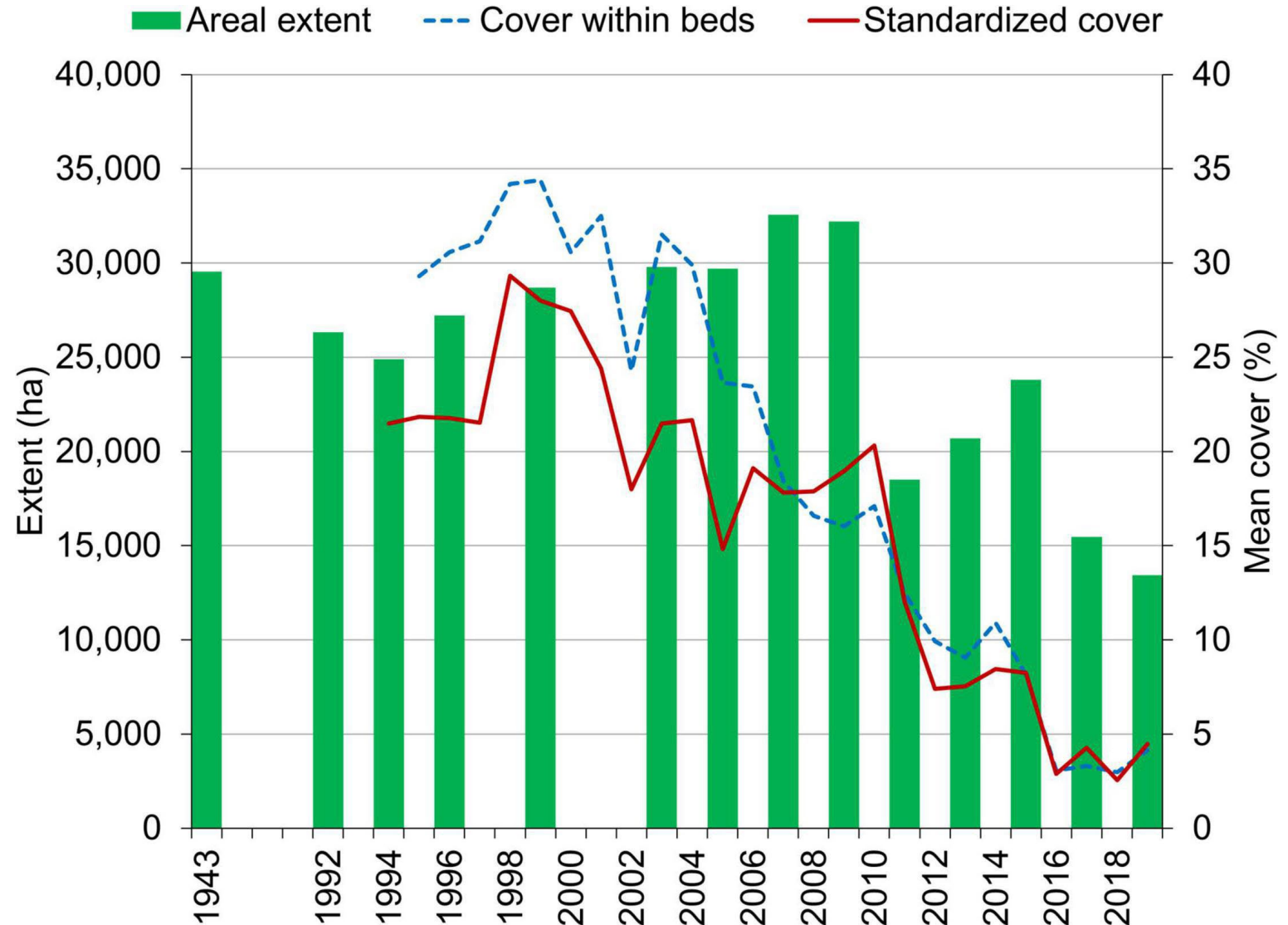
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RESTORE OUR SHORES

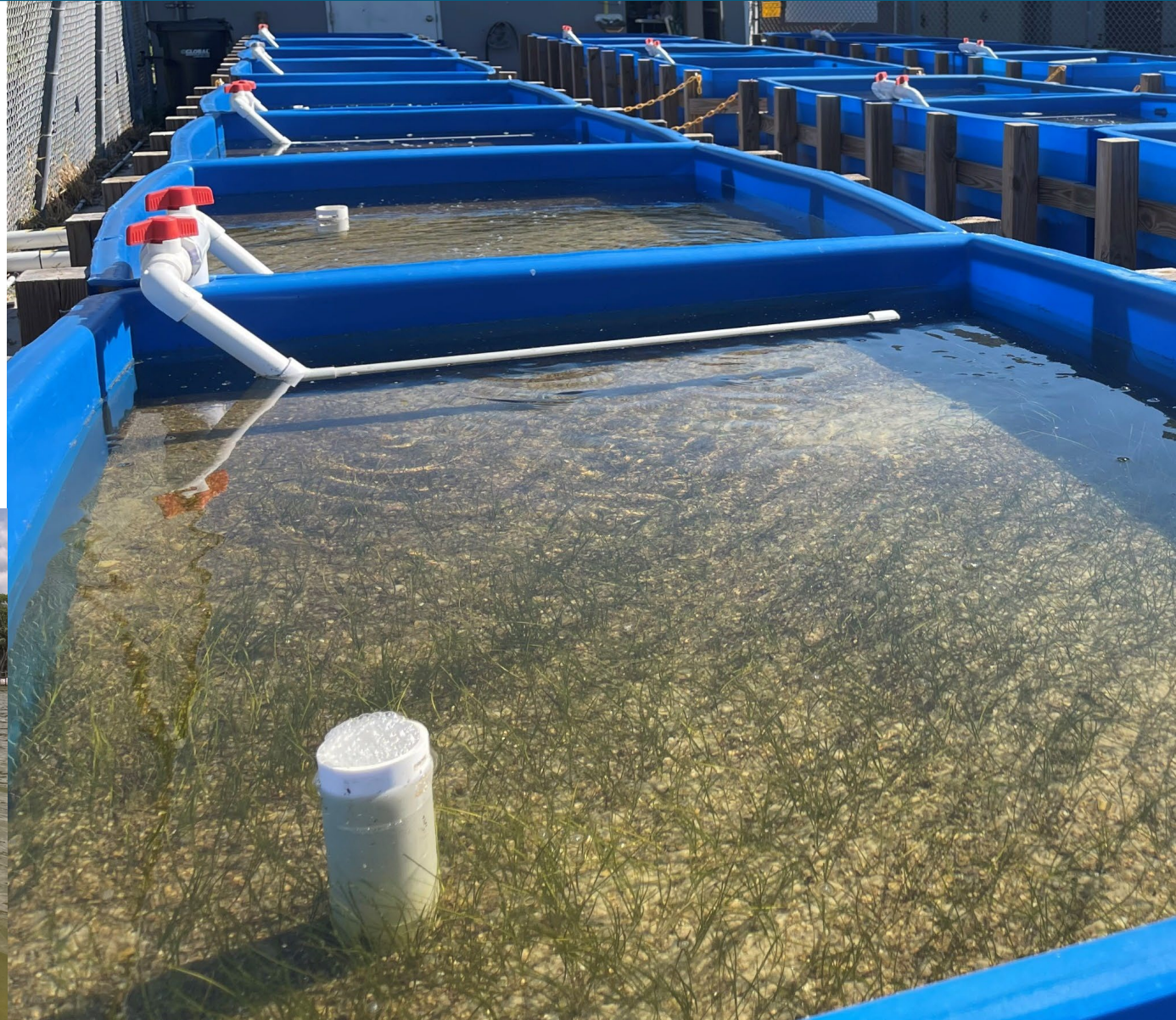
Restore Our Shores



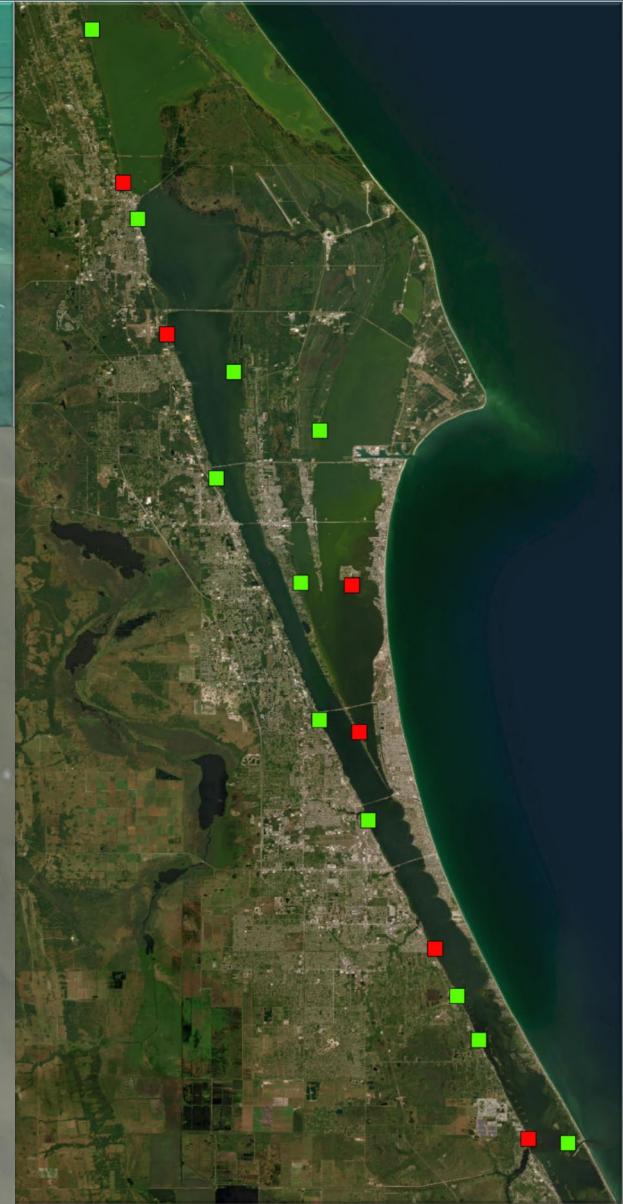
- Shallow, wind-driven estuary on the east coast of Florida bordering 5 counties
- Microtidal and average depth of 1.5 meters
- Historically seagrass dominated with 6 species
- Regime Shift following two “superblooms” in 2010 & 2016



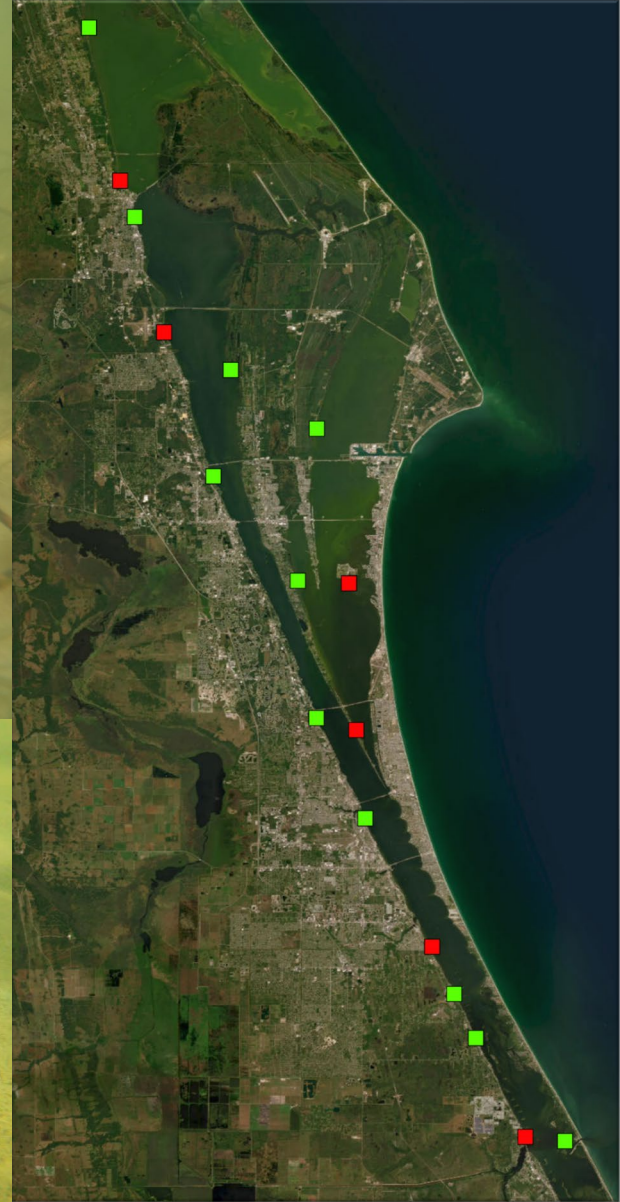
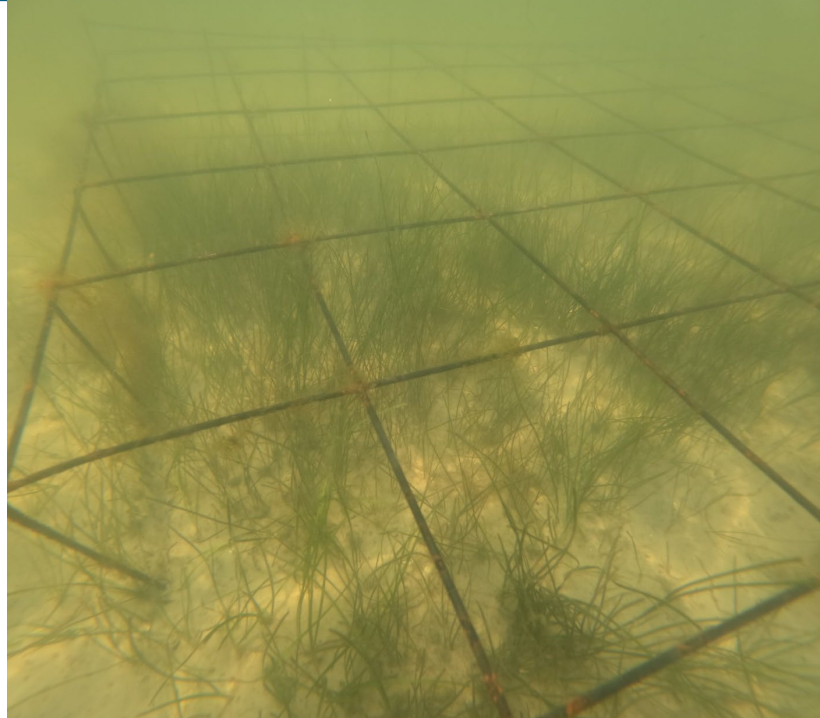
- 2021 Unusual Mortality Event
- Push towards the establishment of seagrass nurseries and scale-up of experimental seagrass plantings
- Opportunity to combine restoration with a research perspective



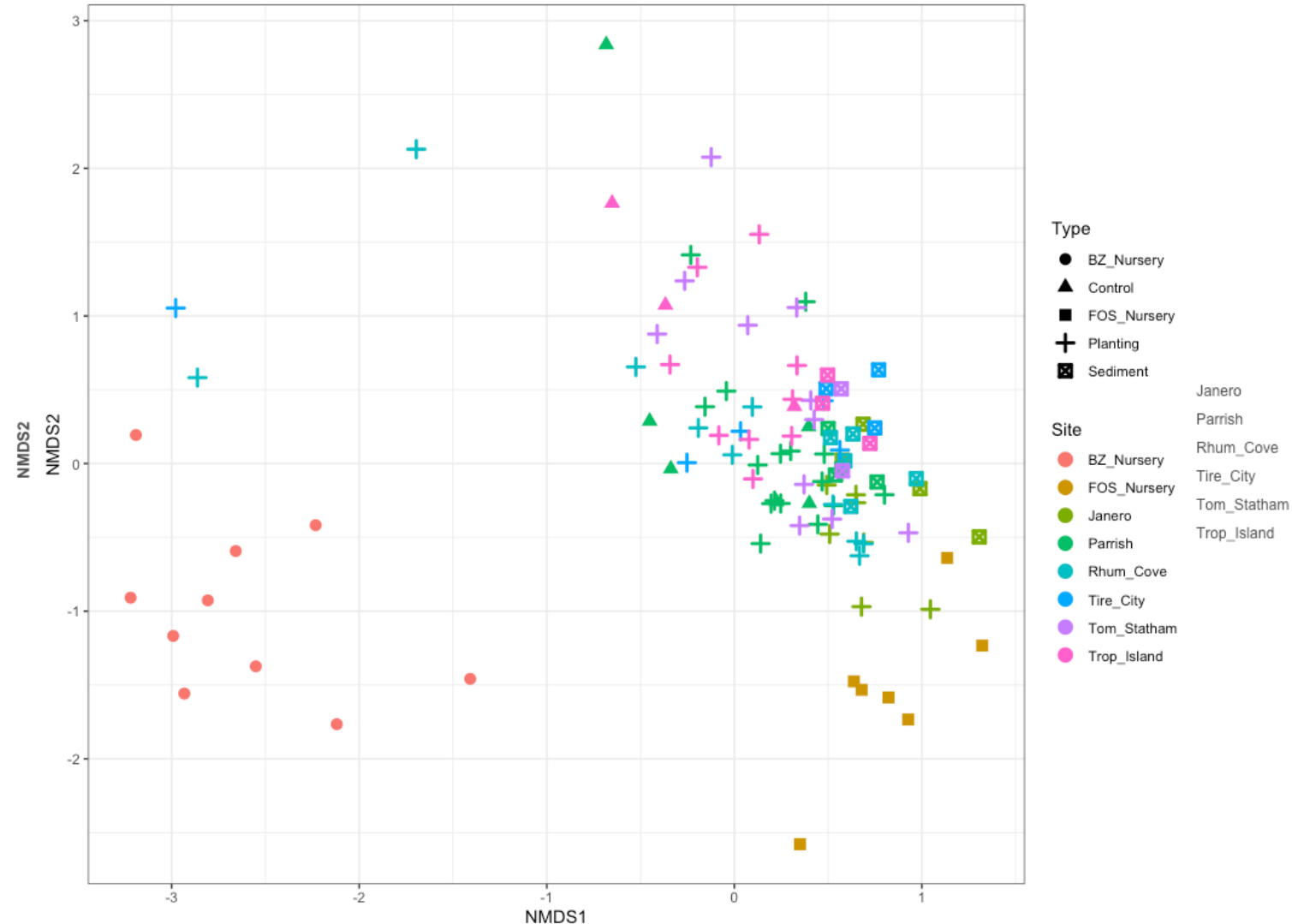
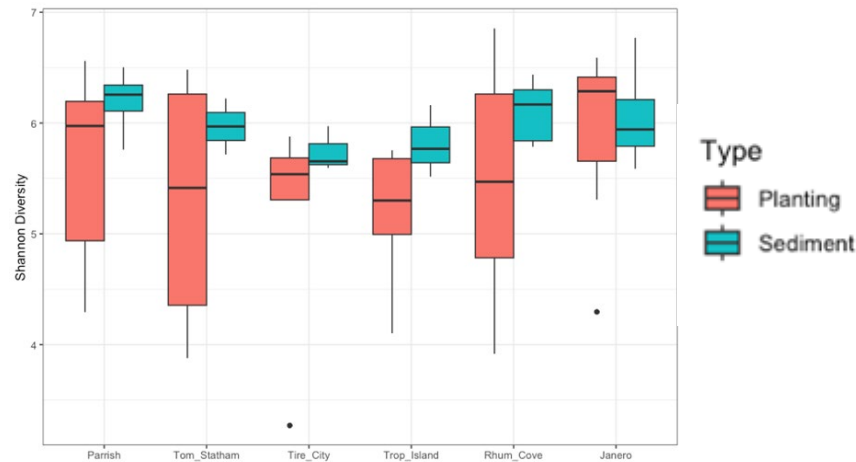
- *Halodule wrightii* (Shoal Grass)
- 16 locations throughout the lagoon, with 24 total beds planted at 2% cover.
- Each bed had control plots, protected planted plots, and unprotected planted plots
- Monitored monthly for 1 year
- Goal to gauge planting success in relation to established monitoring areas



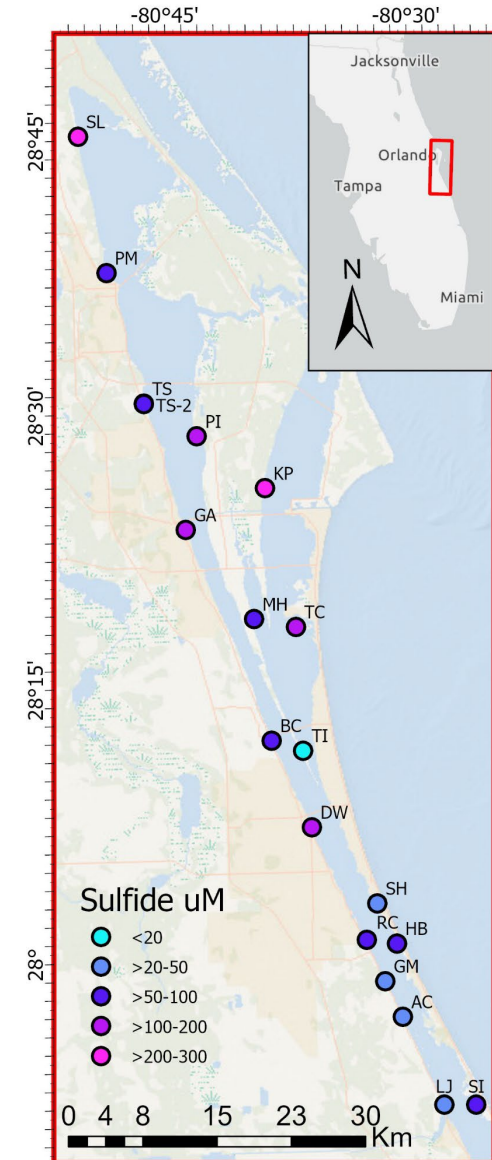
- 6 Sites Selected for Continuous Water Quality Sensors (DO, Water Temp, Salinity, Water Depth, & Light)
- Initial Sediment Samples (Grain Size & % Organic Matter) collected at all sites
- Seagrass Rhizome & Sediment Microbial Samples collected at 6 sensor sites

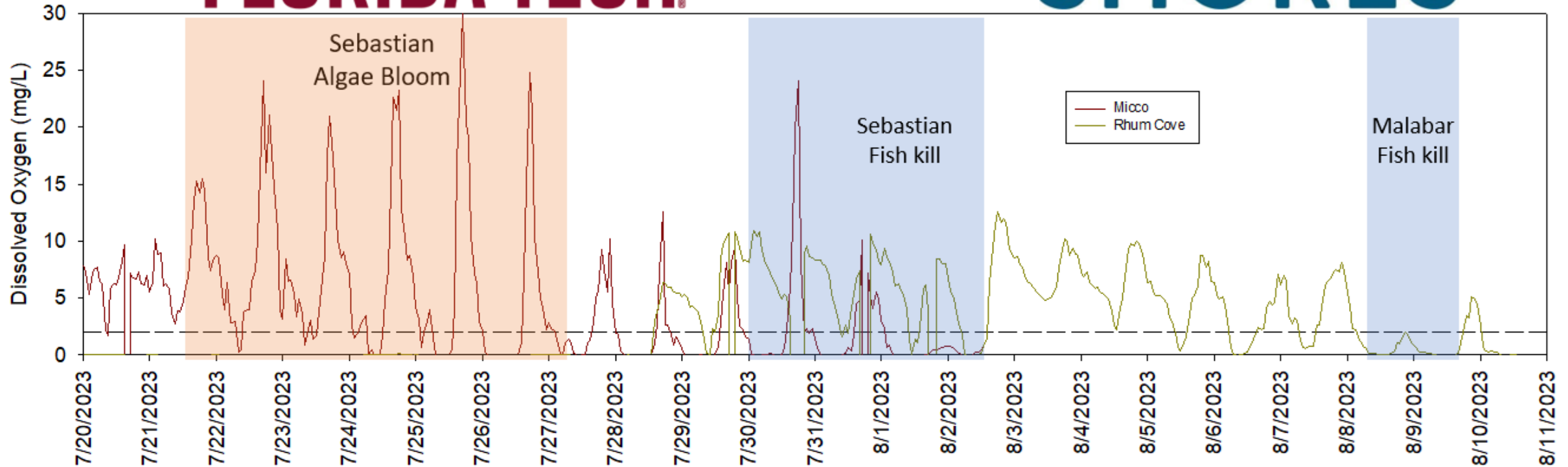


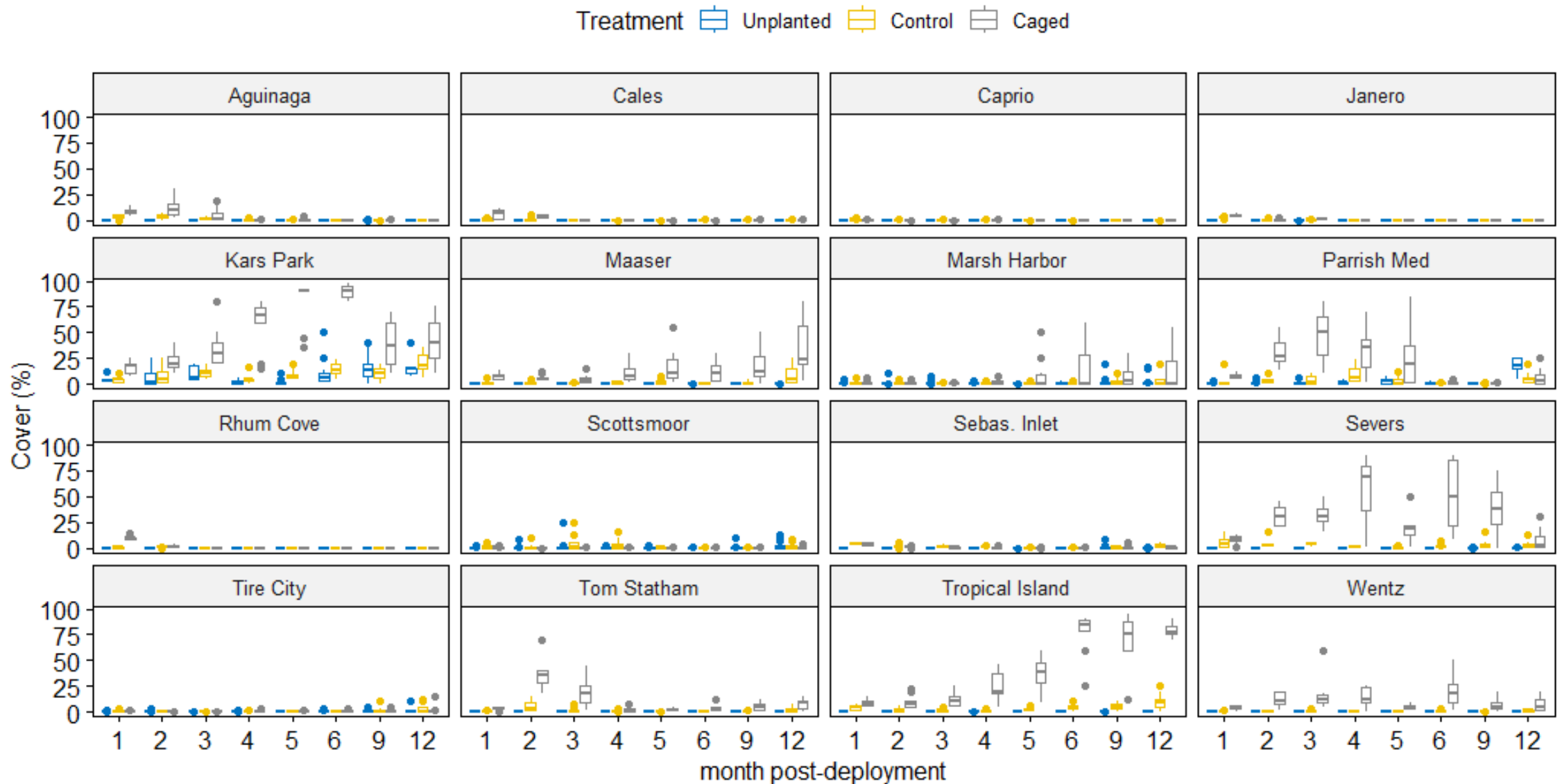
- 6 Sites sampled for 1 year, with the final sample list as follows:
 - 58 planted rhizome samples.
 - 21 adjacent sediment samples.
 - 9 adjacent natural seagrass samples.
 - 17 nursery rhizome samples.

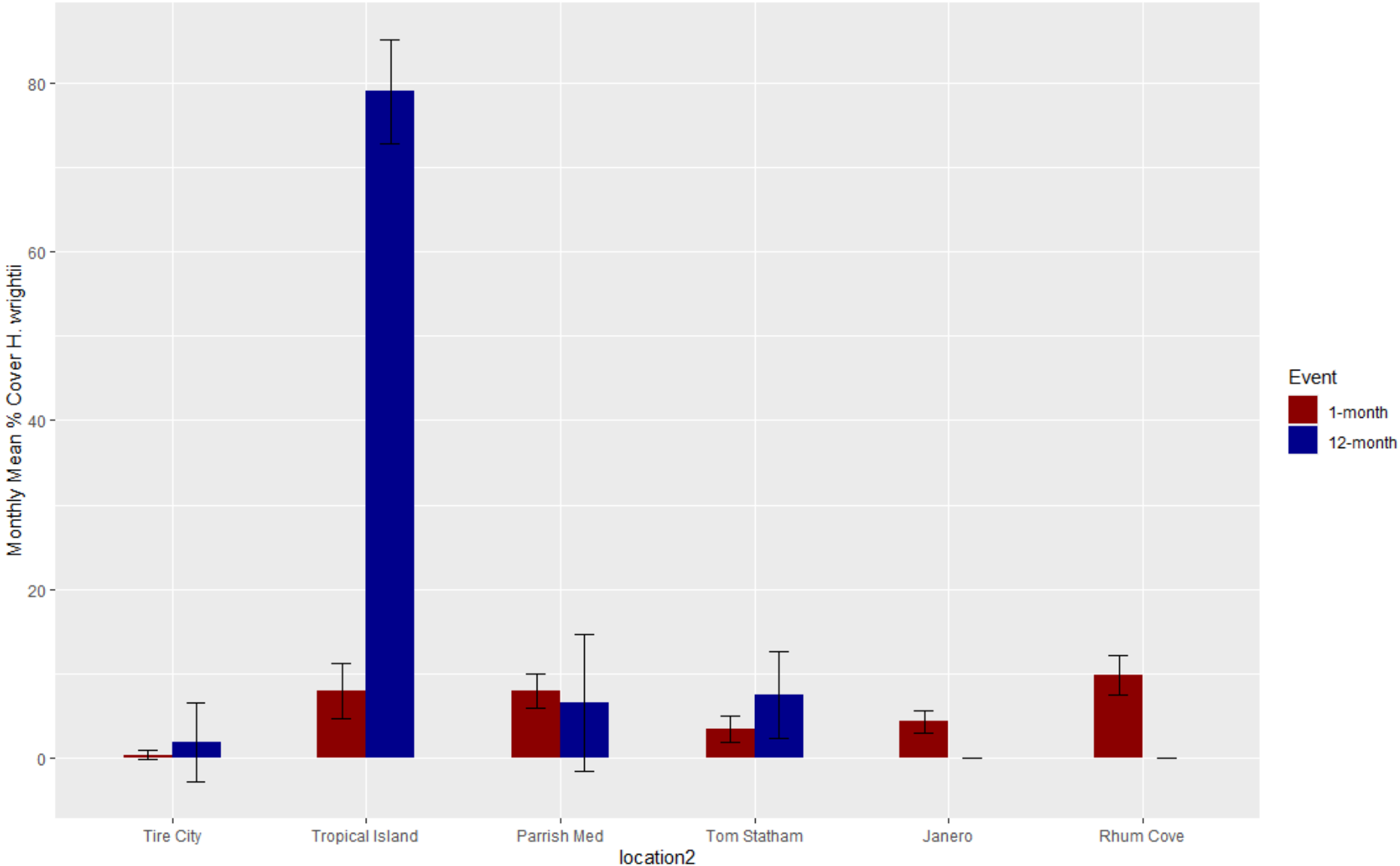


- Hydrogen Sulfide is a known toxin for Halodule
- Samples are immediately preserved & run via colorimetric analysis
- Sulfide is produced via microbial reduction of sulfate under hypoxic conditions





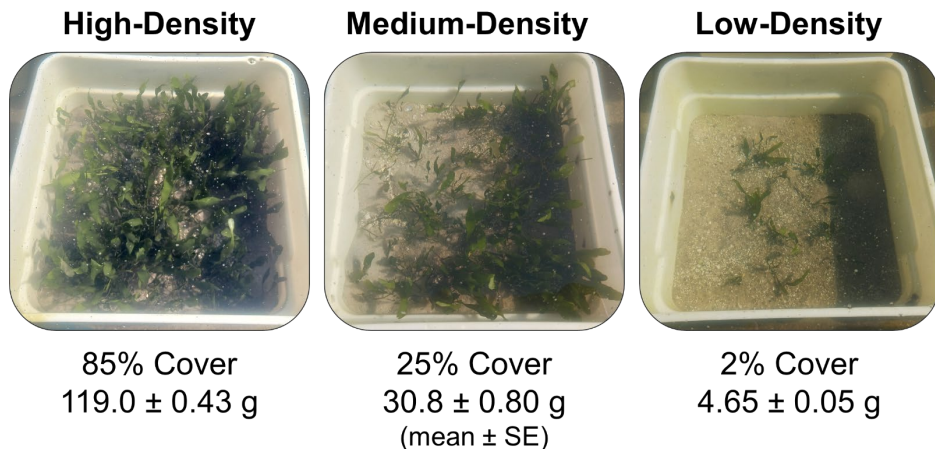




- Caulerpa & Seagrass planting comparison study
- Expanded Microbial Study
- Nursery Mesocosm & Lab Research



- Continue learning about site selection
- Promote feedback between restoration and science
- Applying results into future experiments



Project Funding – Indian River Lagoon National Estuary Program, City of Melbourne Beach, British Ecological Society, & Mote Marine Lab

Additional Seagrass Project Partners - University of Central Florida CEE Lab, Hubbs Seaworld Research Institute, & Rockledge Gardens

Project Support - St. Johns River Management District & Florida Oceanographic Society

Thank you to all ROS staff, interns, & volunteers to make these projects possible!

Special thanks to Amber Santoso, Kelsey Koonce, Lori Morris, Lauren Hall, Loraé Simpson, Don Deis, Robert Virnstein, Jeff Eble, Toby Daly-Engel, Holly Sweat, Rebecca English & Hope Leonard for everything from advice to field/lab support!

