

RESTORE Act Ecosystem Restoration Project Proposals
for consideration in the Gulf Coast Ecosystem Restoration Council's Comprehensive Plan
2012

Contact Information: Richard D. Bartleson, Ph.D., Research Scientist, rbartleson@sccf.org , Eric M. Milbrandt Ph.D., Director, SCCF Marine Lab					Date of Submittal: 10/28/2012		
Name of Project: Submersed vascular macrophyte restoration and monitoring in the Caloosahatchee					Org and Rank: SCCF, Priority 2		
Project Description: Biomass of submersed macrophytes in the Caloosahatchee has been decimated by water quality issues, cownose rays and macrograzers. A planned C43 reservoir will increase the suitability for tape grass which once carpeted the shallows of the estuary from Beautiful Island to Iona. Until the reservoir is implemented, tape grass restoration efforts will be targeted east of Ft. Myers. Ruppia restoration will be in between Beautiful Island and Shell Point and shoal grass will be restored in the lower estuary and San Carlos Bay where low salinities or boat propellers have reduced its coverage. Within the Caloosahatchee, targeted areas near shore in shallows, and away from seawalls will be examined for existing vegetation. Exclosures will be installed in vegetated areas and will be cleaned monthly by SCCF and volunteers. When the reservoir is installed and if dry season salinities are decreased enough, tape grass will be added to exclosures east of the Caloosahatchee Bridge. Aerial photos will be examined for prop scar damage in San Carlos Bay and Pine Island Sound. These areas will be visited and if the scars are severe and through turtle grass beds, shoal grass sods grown at SCCF will be transplanted into the scars every 5 meters. Shoot density and height at each site will be monitored 6 times per year inside and outside the exclosures, or inside the planted scars. This project would increase densities of tape grass, widgeon grass and shoal grass in the River by using short, anchored exclosures. Once dense beds are established, the plants can spread through vegetative growth, seed and propagule dispersal. The SCCF RECON probes will record salinity, turbidity, chlorophyll and CDOM hourly at 3 sites in the river, (Shell Point, Fort Myers and Beautiful Island). These values will be used to monitor salinity and light conditions for submersed plants in each area of the river. Water quality monitoring will improve our understanding of nutrient loading effects for MFL and TMDL improvements that will help improve conditions for submersed plants.							
Project Location: Caloosahatchee River							
Responsible Party: SCCF Marine Laboratory				Partners: CHNEP, Lee County, FDEP, SFWMD			
NEP: CHNEP		Project Cost: \$625,000			Dollars Needed: \$515,802		
Start: September 2012				Completion: September 2018			
Status of Project Design and Permitting: This project is in the design stage and permitting has not been started. We obtained permits for similar project within 2 months of submission.							
What Date or Year could Construction Feasibly Begin:							
Your Proposed Timing of Funding (given permits, phasing, staging, etc.)							
FY	12/13	13/14	14/15	15/16	16/17	17/18	Total
	\$93,828	\$79,110	\$81,714	\$84,217	\$87,033	\$89,900	\$515,802
Quantify Environmental Results and How to Measure Them: Increased acreage of dense, seed producing macrophyte meadows. Measured by quarterly shoot and reproductive structure counts.							
Economic Benefits (including ecosystem services): Value of eventual ecosystems service improvements is estimated at \$9,000 /acre /year. Initially 2 acres (100 100m ² exclosures or 10,000 m ²).							

Estimated number of Jobs Created or Preserved: 2 direct +166 associated (Bonefish and Tarpon Trust)
How much Habitat will be restored and conserved?: Initial exclosures 2 acres, with 2,000 acres potentially affected by seeds and reproductive shoot dispersal.
Quantify pollutant reductions: This phase will not provide significant pollutant load reductions.
What living coastal/marine resources will be improved and by how much?: Submersed vascular macrophyte and fish abundance and diversity will be improved with resulting increase in bird abundance and diversity.
How will community resilience be enhanced? Dense submersed vegetation can reduce storm surges and reduce sediment erosion.
Additional Justification: This river is home to numerous juvenile commercially and recreationally important fish species including, estuarine-dependent fish such as red and black drum, spotted sea trout, snook, sheepshead, southern flounder, Florida pompano, striped mullet, bay anchovy, and gulf menhaden. The common snook, an important game fish, is protected by the State of Florida. A species of special concern (federal) and threatened (Florida) status in the Caloosahatchee is the Atlantic sturgeon and Florida manatee while the endangered smalltoothed sawfish also utilizes the estuary. Other resources in the River include blue crab, stone crab, eastern oyster, pink and brown shrimp, hard clams, Florida manatee, and dozens of other species and their supporting habitats such as seagrass beds. The river also provides forage areas for the region's wading bird population. Project will advertise and provide volunteer events to maintain exclosures. SCCF will coordinate with local newspapers to keep public aware of submersed macrophyte values.

Add any photos or maps that explain project:

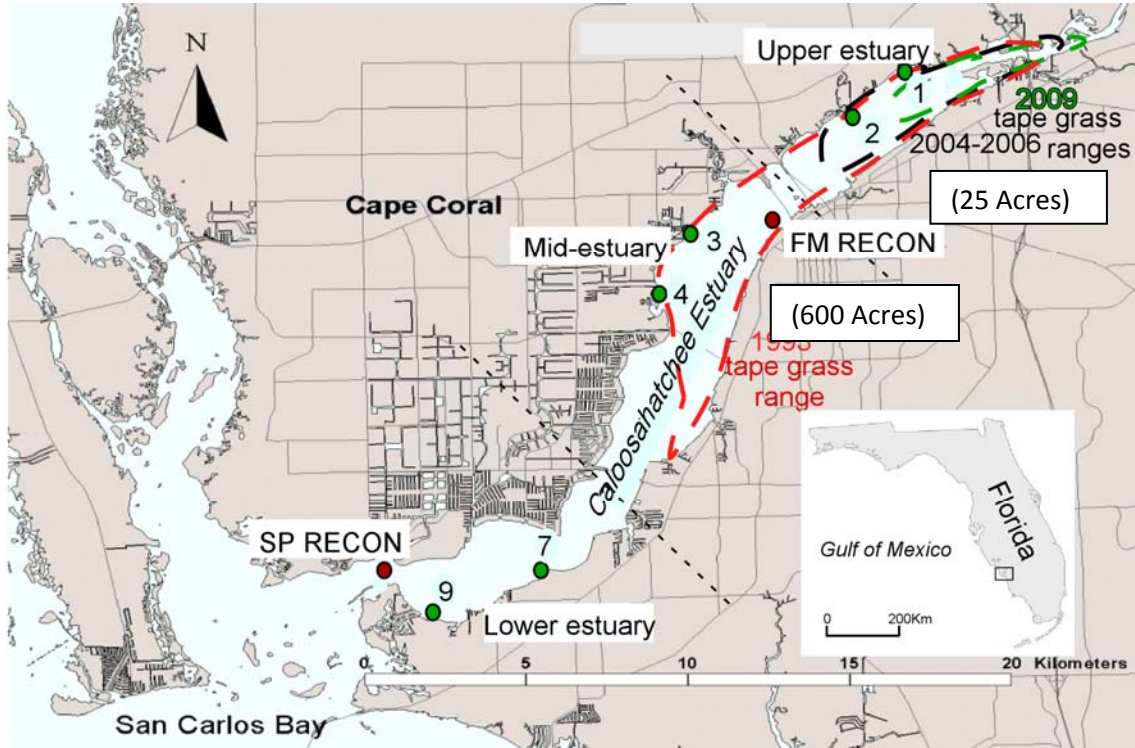


Figure 1. Site map and approximate extent of tape grass beds at points in time. Green dots 1, 2, 3, 4, 7 and 9 are transplant sites. Red dots are SCCF's River, Estuary and Coastal Observing Network (RECON) Fort Myers (FM) and Shell Point (SP) stations. 1993 tape grass distribution is from Hoffacker (1994).



Figure 2a. Unenclosed *Ruppia maritima* (current conditions).



Figure 2b. *Ruppia* in enclosure producing seeds. 6 months after planting.



Figure 3. Previous *Vallisneria* in Caloosahatchee Estuary.

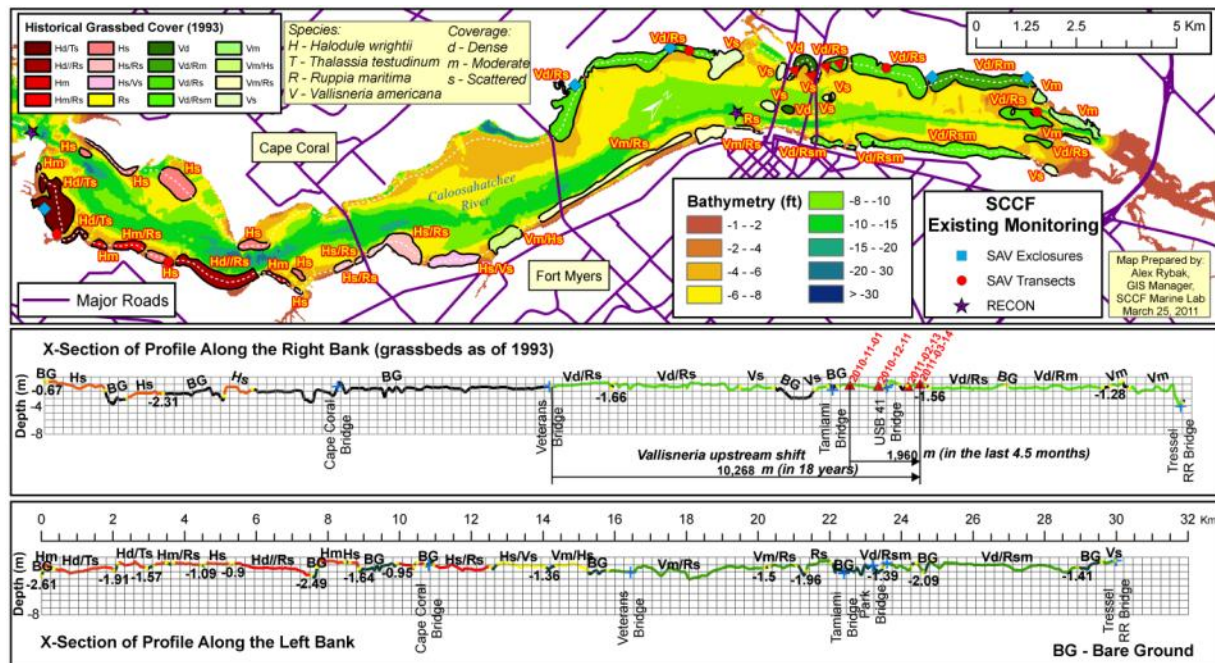


Figure 4. Historical distribution of submersed angiosperms (Hoffacker 1994) and recent downstream occurrence of tape grass.

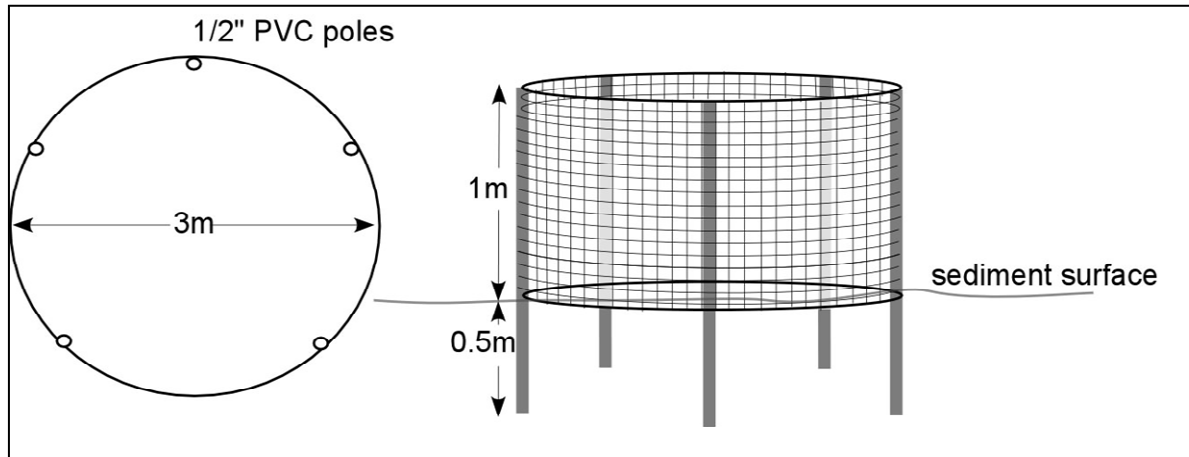


Figure 2. Exclosure diagram. Exclosures are anchored with a 2 m long pvc pipe inserted 1 m into the sediment, and marked by a buoy. Support poles were initially 1/2 inch and were replaced by 3/4 inch schedule 40 pvc pipe). New exclosures will be 0.3m tall and will be covered to reduce wave effects, will have additional stakes supporting each pole. Mesh size (1/2") was approved by NMFS to prevent sawfish bill entanglement. Multiple exclosures will be placed at each site to increase coverage.

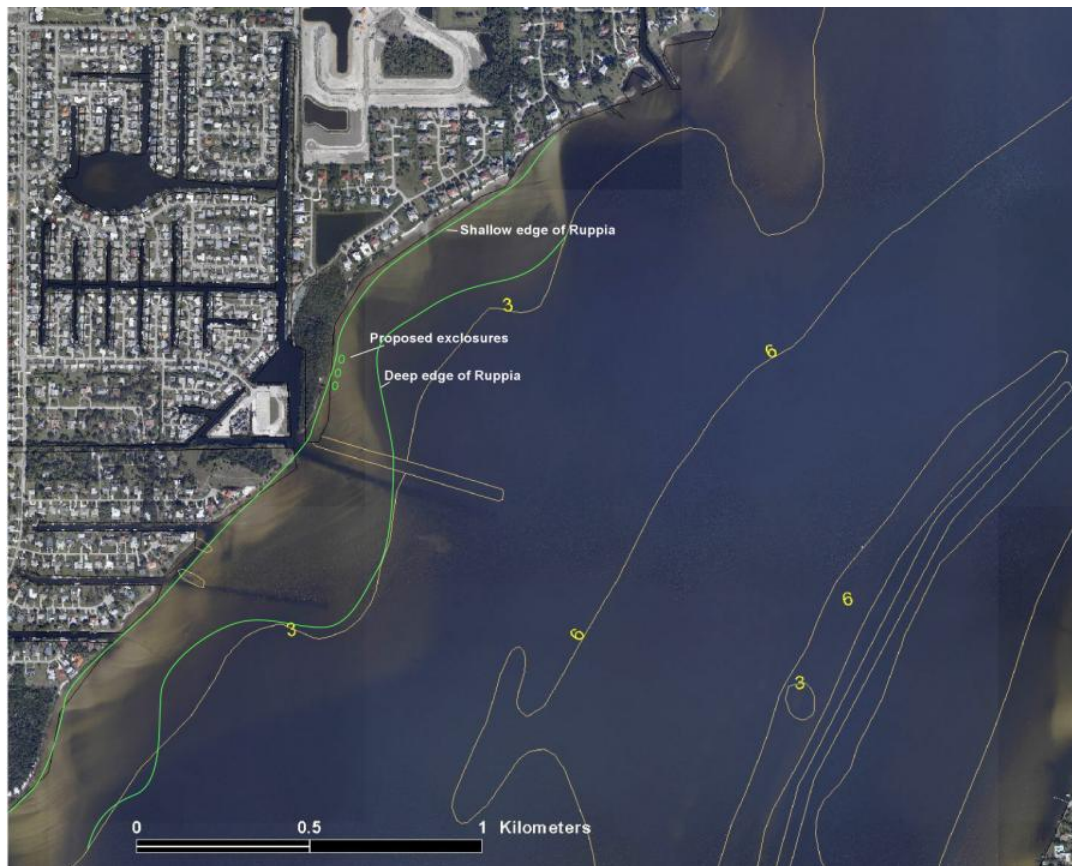


Figure 6. Example of proposed site exclosure locations. Exclosure areas drawn slightly larger than proposed 30m x 20m. Deep edge of Ruppia was 110 cm in April 2009. Exclosures are at 45 cm depth.

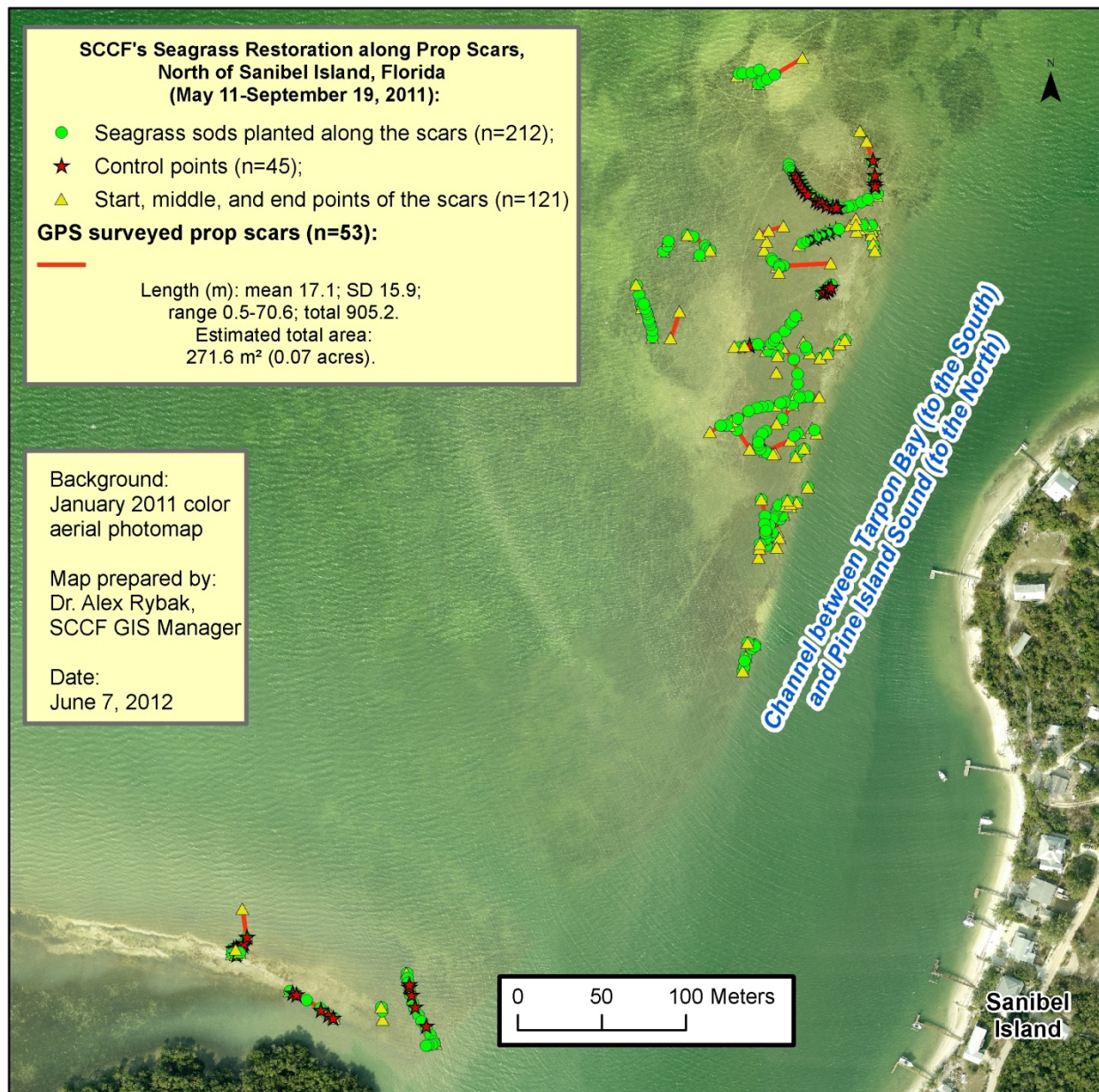


Figure 7. Example of prop-scar restoration. First year results of shoalgrass restoration included a 437% increase in shoalgrass coverage within planted scars. Many areas are in need of restoration because of scarring.

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