

Project Name: Proposal II

Channel Marker Reef Ball Micro-Habitats

Contact Information *(Include at least one name, phone number, email address, and organization name if applicable):*

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Reef Innovations / Reef Ball Foundation

Project Location *(Include a map, if possible, and the city, county, longitude/latitude, and watershed):*

Gulf Waters from Texas to South Florida

Florida – Bay, Charlotte, Citrus, Collier, Dixie, Escambia, Franklin, Gulf, Hernando, Hillsborough, Jefferson, Lee, Levy, Manatee, Monroe, Okaloosa, Pasco, Pinellas, Santa Rosa, Sarasota, Taylor, Wakulla, Walton.

Coast Guard GIS provides locations of Channel Markers across the area for deployment.

The actual markers and time for deployment will vary upon survey of the area. There would be equal distribution between the counties over the first year, with increased annual deployments over the next several years depending on the needs of each county.

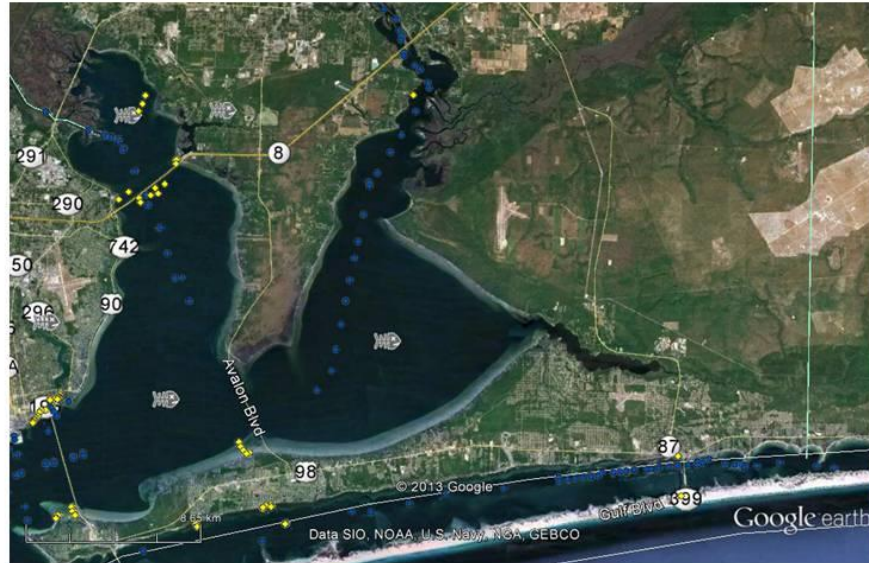
The maps below show proposed locations and the Channel Markers in that area.

As decisions are made for that area we can easily narrow down the Channel Marker Number and ID from the GIS provided by NOAA.

A PDF of the Maps and a Power Point of the Maps is available upon request.

Santa Rosa County, **Blackwater Channel**

30° 30.775' N 87° 1.496' W

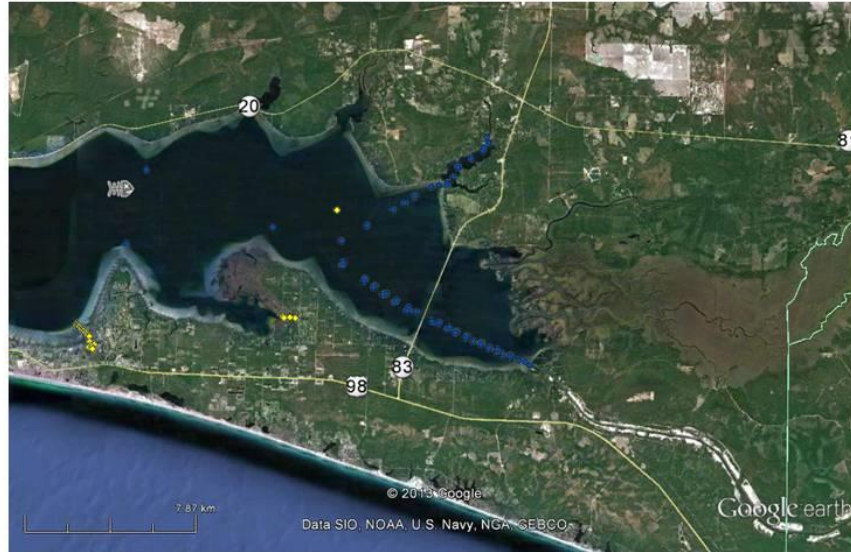


Okaloosa County,



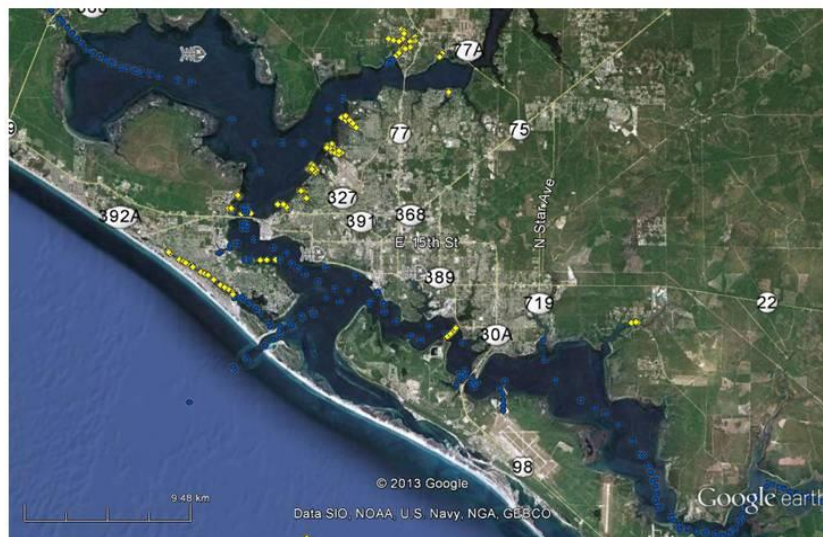
Walton County, Choctawhatchee Bay

30° 25.404' N 86° 7.966' W



Bay County, St Andrews River

30° 7.572' N 85° 40.815' W



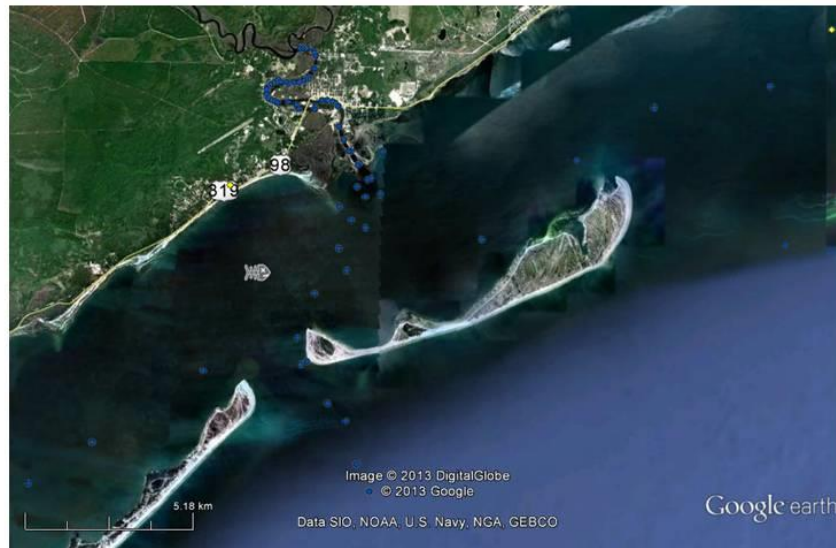
Gulf County,

29° 46.500' N 85° 20.447' W



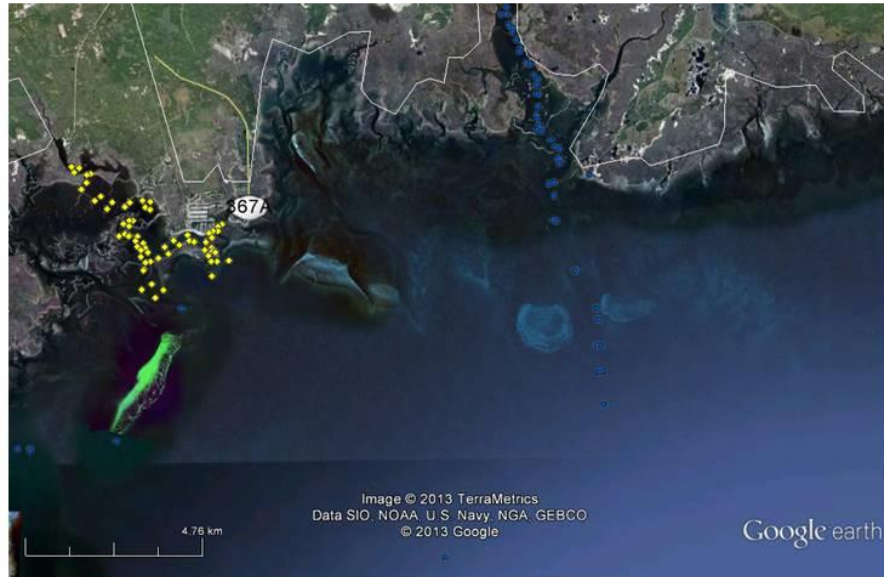
Franklin County, Carrabelle Channel

29° 48.119' N 84° 38.155' W



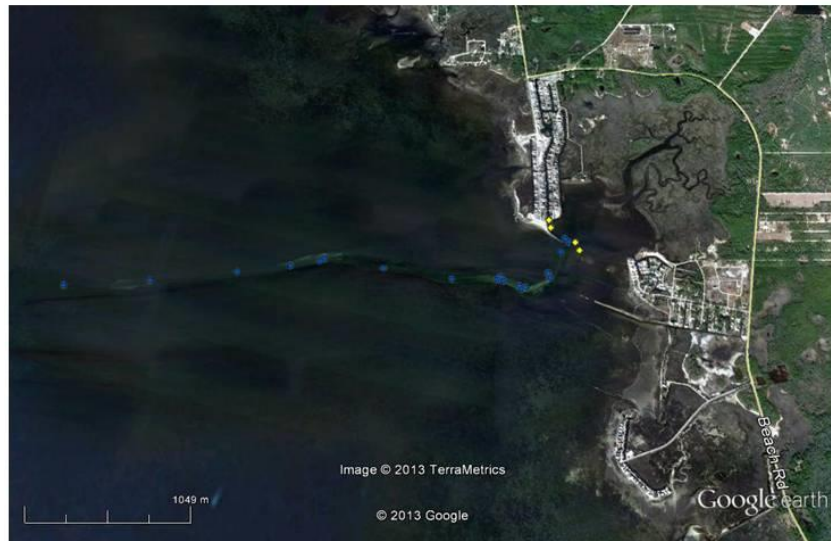
Wakulla County, St. Marks River

30° 2.667' N 84° 13.124' W



Taylor County, Keaton Beach

29° 48.881' N 83° 36.144' W



Taylor / Dixie County Steinhatchee River

29° 39.594' N 83° 25.657' W



Dixie County, Suwannee River

29° 17.078' N 83° 10.659' W



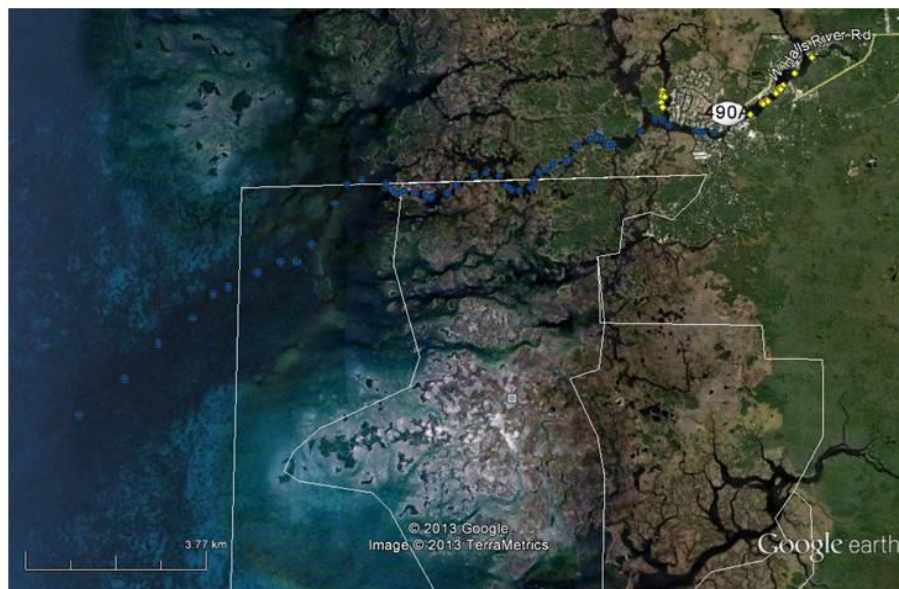
Levy County, Waccassa River

29° 6.827' N 82° 49.053' W



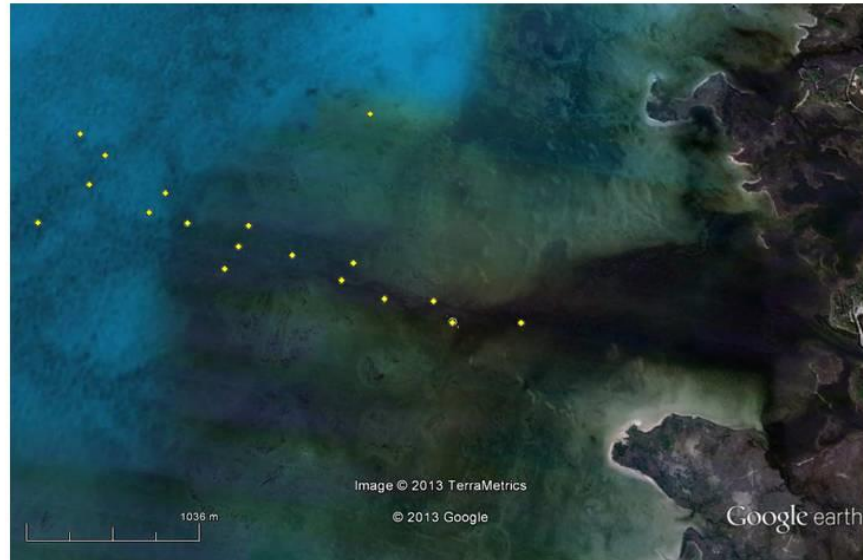
Citrus County, Homosassa River

28° 44.939' N 82° 40.903' W



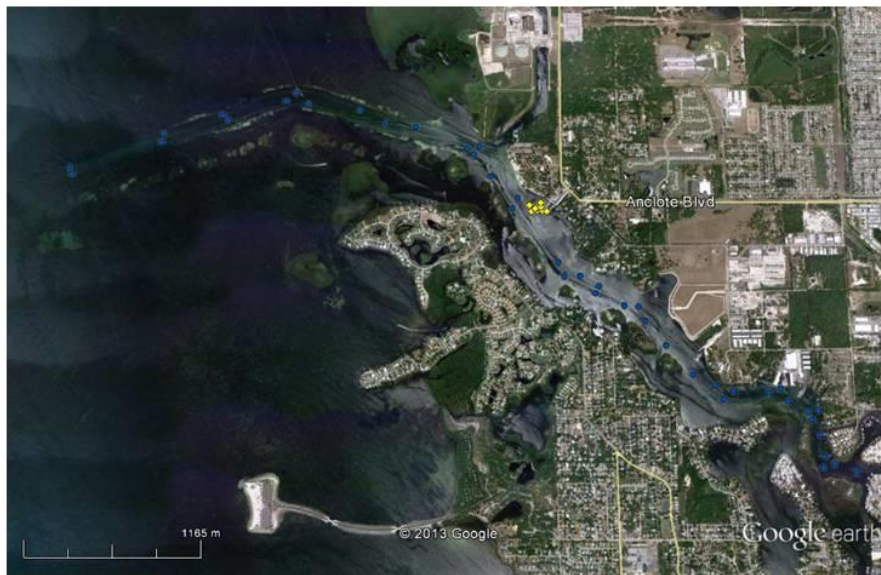
Hernando County, Bayport Channel

28° 32.278' N 82° 40.737' W

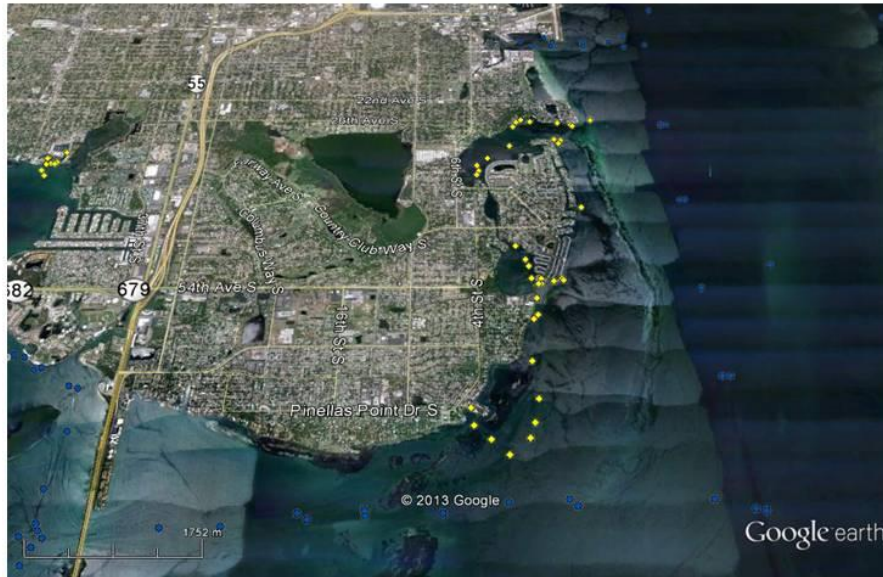


Pasco County, Anclote River

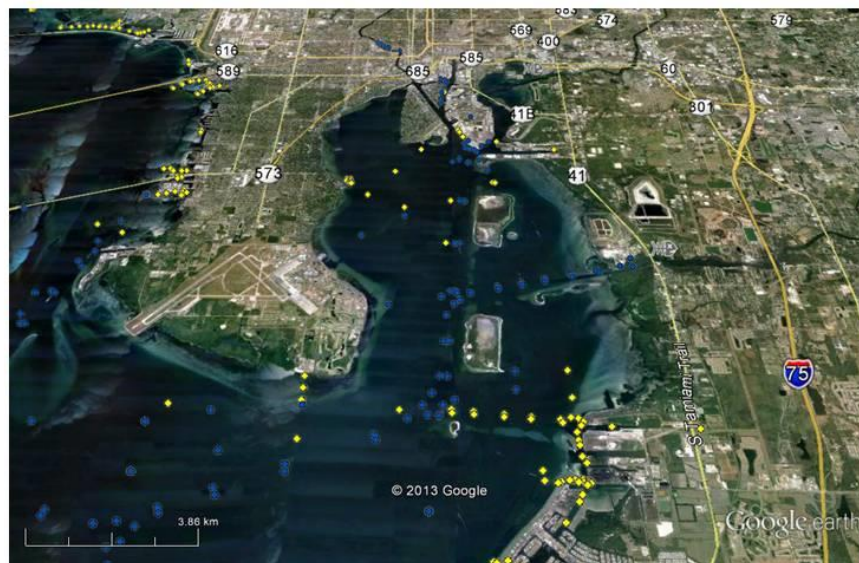
28° 10.018' N 82° 47.584' W



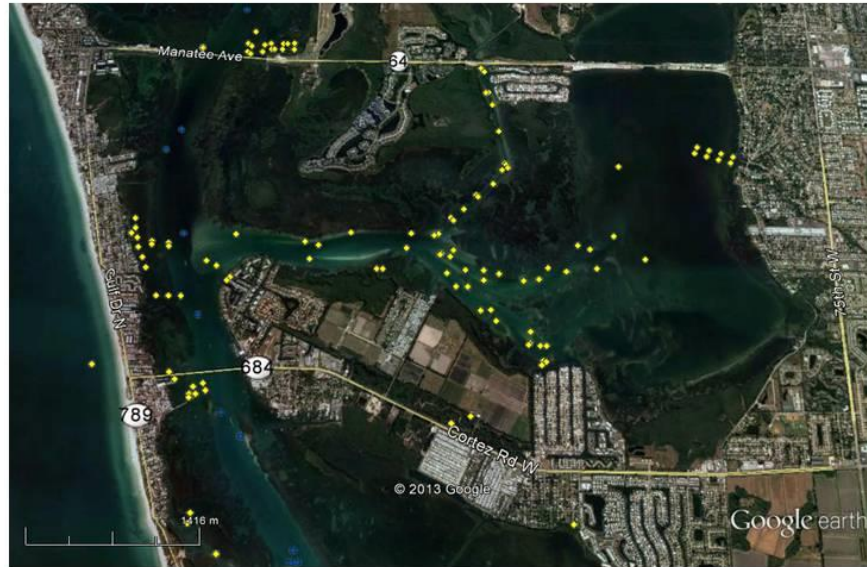
St Petersburg, Big Byou



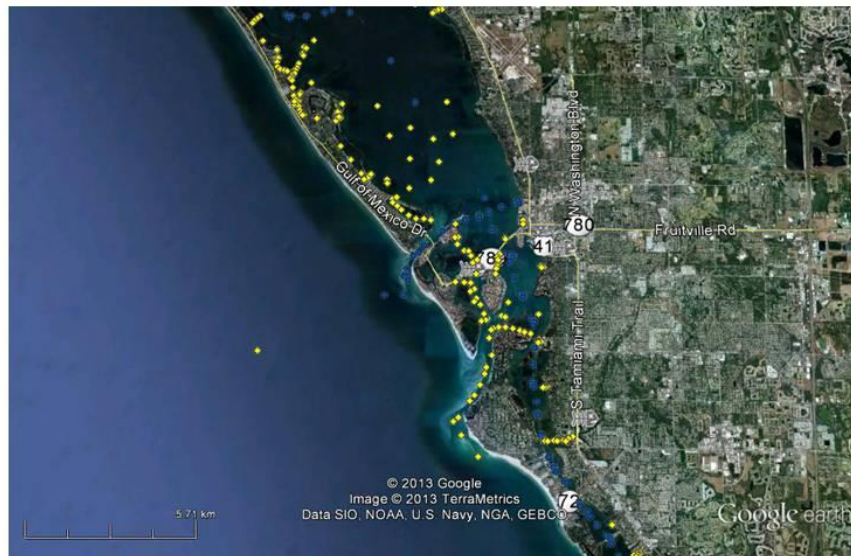
Hillsborough County



Manatee County

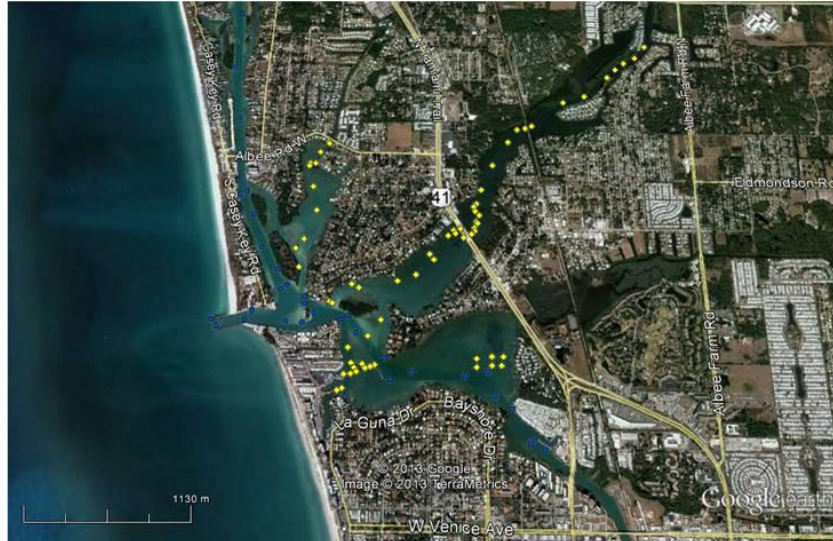


Sarasota Bay



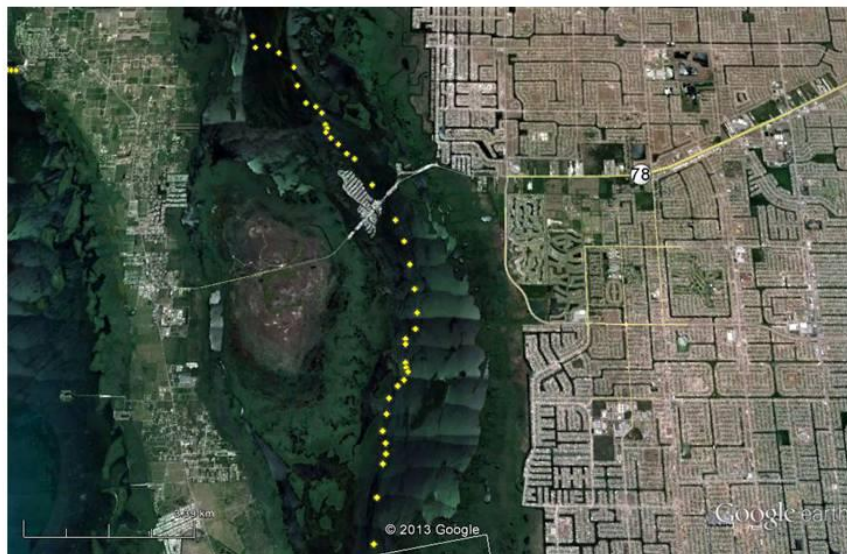
Venice, Dona Bay Channel

27° 6.967' N 82° 27.271' W



Naples, Matlacha Pass

26° 36.897' N 82° 3.404' W



North Keys

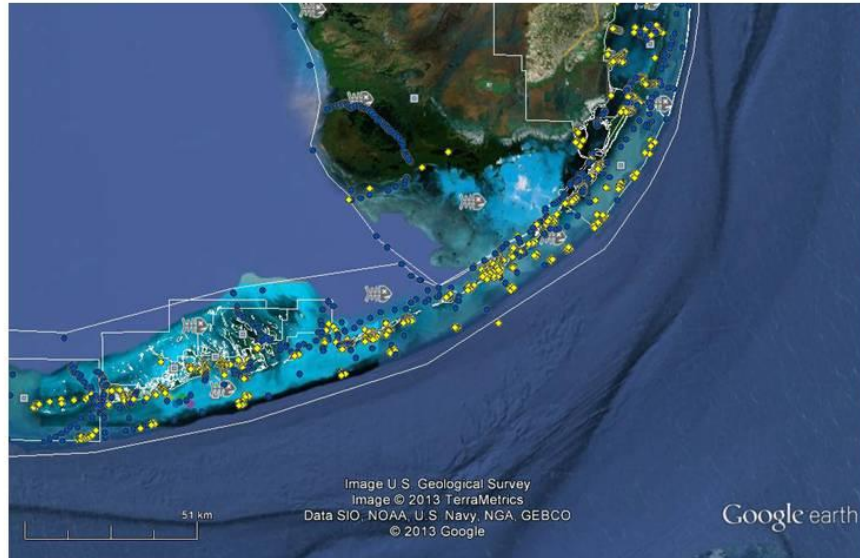
25° 26.762' N 80° 18.333' W



Marco Island South



Florida Keys



Project Description *(Describe all aspects of the project):*

Each County in the state has a number of channel markers they are responsible for maintaining under their USCG channel marker permit. Deployment of a Reef Ball® on each channel marker would provide increased micro habitat for finfish and invertebrate recruitment throughout the Gulf of Mexico. Production of Reef Balls is provided by Reef Innovations in Sarasota, FL. or the regional production sites (RPS) proposed for the area.

This project can be run through the Reef Ball Foundation which is a 501(c) 3 publicly supported non-profit and international environmental NGO working to rehabilitate marine reefs. This has proven beneficial where nonprofit organization involvement is desirable. Their mission is to rehabilitate our world's ocean reef ecosystems and to protect our natural reef systems using Reef Ball artificial reef technologies.

A proposal has been submitted for funds to set up an RPS facility in the Panhandle and Big Bend regions in Florida. This would reduce the cost of deliver to the various projects in the region and reduce the cost per micro habitat unit.

A crew of 3 workers could work their way across the west coast of Florida installing the micro habitats over a period of 3 to 10 years, or the units and deployment training could be supplied to the individual county for implementation. Reef Innovations would provide the product and quality control of the project.

Estimated Project Costs (Describe the estimated costs of the project, including any assumptions for contingency and ongoing operations/maintenance. Identify other secured funding sources such as matching funds, in-kind contributions or state/federal dollars. In addition, if possible, complete and submit the Cost Appendix Sheet associated with this Form):

Deployment cost is based on the distance of travel, depth of water and unit size combined with the man hours. Annual total expenditure from the grant cost will not exceed the proposal budget for the combined years. The deployment draw for the awarded funds balance will flow from one year to the next until the funds are depleted, or the project reaches its deadline. If the requested amount of funds for this project is reduced, it can function at a lower deployment rate. See the attached Reef Ball Price Sheet for Module Costs and size specs or view at <http://reefinnovations.com>

The Channel Marker Reef Ball® Micro Habitat project would be based on deployment of 5 Reef Balls® per day. Working in an area for 3 Days would = a week of 15 units. Some areas with less travel time may allow more units to be deployed per day. If the proposals for regional production sites are approved it would reduce the shipping cost to get the modules from Sarasota, FL to the location of deployment.

Table 1. Daily and weekly cost estimates for channel marker micro habitat deployment by Reef Innovations.

Daily / Weekly Coast of Channel Marker Reef Ball Micro Habitat Deployed by Reef Innovations				
		Day		Week
Planning / Cordinating		\$100		\$300
	Man Power	\$600		\$3,000
	**3 men Per diem	\$390		\$1,170
100	**Crew Travel	\$180		\$180
5 reef modules		*\$500	3days	\$1,500
	Miles			
Vessel Base Charge	per day	\$1,000		\$3,000
Vessel Miles Road	\$1/Mile	\$200		\$200
Vessel miles Water	30@\$0 15@\$50	\$50		\$150
	Totals	\$3,020		\$9,500
	50 weeks 3 crew 40 hr week =			\$475,000

* Cost will vary depending on size of module

** Per diem and travel will vary depending on length of trips and locations.

Funding *(Indicate if the project is submitted for any potential funding or if it may be used to leverage additional funding, if so please describe the funding source [e.g. State/Federal Grants]):*

This project would be funded as a regional project using Pot 2 \$.

Additional funding could come from the Counties Artificial Reef Program if they already have funds, or if they wish to continue after the project funds are used. Areas with volunteers may contribute to the stock pile of modules, thus reducing that cost.

Technical Feasibility *(Describe the technologies involved and any relevant past experience or proven success with similar projects):*

The technology for this project has been tried and tested in Sarasota Florida.

There are three protocols for placing the units:

1. Unit incorporation during marker replacement as part of the regular maintenance
2. Lowering the Reef Ball over an existing channel marker piling
3. Placing a two piece unit around the piling of an existing marker

Environmental Benefits *(Describe the nature, magnitude, and timing of any environmental benefits attributable to the project. If possible, describe potential environmental performance measures [e.g. pollutant reduction]. Please address any potential environmental impacts associated with implementing or maintaining the project [e.g. loss of a habitat or conversion of habitat from one type to another during implementation]):*

Reef Balls have a proven track record for providing habitat for juvenile finfish and invertebrate recruitment. They also provide increased settlement substrate for sessile oysters, corals and macro algae.

The nature, magnitude, and timing of any environmental benefits

These Channel Marker Reef Ball® Micro Habitat will benefit the environment from deployment for 100's of years increasing in complexity and biodiversity throughout the years.

Economic and Social Benefits *(Describe the economic and social benefits including those related to the project's improved ecosystem services and any estimates on jobs created or preserved):*

Placement of the Channel Marker Reef Ball® Micro Habitat will increase the overall health of the coastal ecosystem by increasing the surface area for species recruitment, retention, and provides a transition pathway for inshore to offshore migrations of finfish and invertebrate populations.

There is a direct relationship of increased habitat to the enjoyment of recreational

fishing, which supports a wide variety of local fishing businesses, and support industries throughout the affected region. This project will also directly support local and regional economies by providing jobs within the scope of the project.

Community Resilience *(Describe if the project assists Florida's ability to anticipate, withstand, or recover from hazards or threats [e.g. hurricane preparedness, establishing living shorelines]):*

The additional structural support of the Channel Marker Reef Ball® Micro Habitat on the channel marker stabilizes and supports the individual channel marker from the impact of storms and regional environmental disturbances thereby reducing the economic impact of finding and replacing the markers.

Conflicts or Complements to Existing Efforts *(Describe any ongoing activities in the project implementation area, if the project is part of another plan, and why the project does or does not interfere with that work. Please consider how the project may complement existing local, regional, and state efforts/plans/objectives):*

No conflicts to existing efforts. The Channel Marker Reef Ball® Micro Habitat will complement and provide transitional habitats from living shorelines to deep water artificial reef systems produced and maintained through the current and past environmental projects.

Complies with Federal, State, Local, and Tribal Laws/Regulations *(Describe any concerns or potential conflicts):*

None know

Readiness for Implementation *(Describe if the project has had any design or permitting work started or completed attach permits or design work]. Please address any issues that may delay start or finish of the project):*

Sarasota, FL is already deploying Channel Marker Reef Ball® Micro Habitat on their Channel Markers. Reef Innovations could begin expansion of the Channel Marker Reef Ball Micro-Habitats immediately.

Permitting of Navigational Aids is done by the US Coast Guard. It requires a diagram of the Channel Marker with the Reef Ball Micro-Habitat be approved by the Coast Guard.

Developing an expedited permit process can be established for retrofit of existing Channel Markers, with a Reef Ball.

Public Acceptance *(Describe any known or potential public approval or opposition to the project):*

In public meetings I have received a great deal of support for the idea of proving Channel Marker Reef Ball® Micro Habitat on channel markers.

On April 9, 2013 Wakulla County Restoration Act Committee approved and encouraged the concept.

Sarasota, FL is currently fitting channel markers with a reef ball as part of the replacement process.

Additional Information you wish to provide *(Please include any maps, designs, drawings, photos, or background resources that may assist in completely and accurately understanding the project):*



Scientific Data, is available at www.reefball.org

Full Product Descriptions are available at www.reefinnovations.com

Scientific Statement:

Critical fish and invertebrate habitat is being lost at a rapid rate due to anthropogenic disturbance such as, urban development, propeller scars, boat groundings, and dredging. With the loss of critical fish habitat, fish populations have decreased leading to smaller recreational and commercial catches, and greater fisher dissatisfaction. With increasing habitat degradation and decreasing fish populations, greater interest in using artificial reefs to restore habitat in an attempt to enhance fin fish and invertebrate populations has developed. This project will help to mitigate habitat loss within coast systems by providing isolated microhabitats.

Marine channels are generally placed in deeper water with minimal habitat structure due to required depth for vessel clearance. The nature of these systems does not provide suitable habitat for juvenile recruitment. The addition of the reef ball micro habitats on the channel markers will increase the overall surface area for finfish and invertebrate species recruitment in addition to physical stabilization of the channel markers. The Reef Ball Artificial Reef Modules were developed and extensively tested for these types of applications. World wide deployment of the modules have stabilize and enhance natural habitats while increasing finfish and invertebrate populations in impacted areas.

Placement of these microhabitats throughout the coastal regions of Florida's Gulf Coast would increase the overall habitat area within the effected coastal systems. Possibly helping to reduce the impact of increasing coastal development, and population growth. Increased habitat surface area and complexity have been shown to increase fin fish and invertebrate populations and diversity. Increased species number and diversity is further linked to increased recreational fisherman satisfaction. Thereby increasing public awareness of the importance of the coastal ecosystem.

Cost Appendix Sheet

Cost Item Cost Estimate

Planning Coordinating	\$15,000 / year
Construction/ Deployment	\$460,000 / year
Monitoring	\$2500.00 / event x 40 annually (2 per county, 5 markers)
Monitoring Subtotal:	\$100,000.00
Project Cost	\$ 575,000.00 / year
TOTAL:	10 years \$6,591,730.48

Estimated Costs by Year (3% inflation/ yr)

Year 1	\$575,000.00
Year 2	\$592,250.00
Year 3	\$610,017.50
Year 4	\$628,318.02
Year 5	\$647,167.56
Year 6	\$666,582.58
Year 7	\$686,580.05
Year 8	\$707,177.45
Year 9	\$728,392.77
Year 10	\$750,244.55

http://www.dep.state.fl.us/deepwaterhorizon/files/Project_Submittal_Form_distributed.pdf