



**** UPDATE: The Foundation has extended the deadline for proposal submission. Proposals will be accepted no later than 11:59 pm ET on April 16, 2021 to RFP@marinesanctuary.org with the subject line: 'Iconic Reefs Wave Attenuation Experimental Study Proposal'. ****

Introduction & Summary of Solicitation

This Request for Proposals details an invitation to submit a proposal for a Wave Attenuation Experimental Study to be completed at Eastern Dry Rocks reef of *Mission: Iconic Reefs*--a bold initiative to restore seven key reefs along the Florida Keys reef tract. This project specifically seeks a partner who is willing and able to engage in a long-term wave attenuation and hydrodynamics study at a *Mission: Iconic Reefs* site.

This Wave Attenuation Experimental Study is part of a larger effort to understand the effects of large-scale coral reef restoration on wave attenuation processes at both large and fine spatial scales. This study will therefore provide information both on the highly-localized effects of coral outplanting, as well as the larger-scale implications of ecosystem-wide restoration on nearby coastal areas. As such, this project directly relates to restoration studies and is made possible both through strong partnership between the National Marine Sanctuary Foundation (the Foundation), the National Oceanic and Atmospheric Administration (NOAA), and the Florida Keys National Marine Sanctuary (NMS), as well as through funding from the National Fish and Wildlife Foundation (NFWF) Coastal Resilience Fund.

Mission: Iconic Reefs & Project Overview

Mission: Iconic Reefs (Iconic Reefs)--a coral reef restoration initiative within the Florida Keys NMS--represents the application of current coral restoration techniques together with novel innovation and intervention activities. Of the seven total sites within the Iconic Reefs initiative, Eastern Dry Rocks (EDR) is one of the largest, and sits in direct proximity to the island of Key West and its coastal infrastructure. As such, and through the above-mentioned partnerships, the Foundation and its partners successfully obtained a grant from the NFWF Coastal Resilience Fund to support active restoration of natural coral reef infrastructure at EDR. Specifically, this project will restore approximately 9 acres of reef with reef-building coral species over the 4 year total grant timeline.

In order to evaluate the effects of this EDR coral restoration on localized wave height and energy processes, a thorough study will complement the grant timeframe and highlight both the baseline, continued, and end results of coral restoration at this Iconic Reefs site.

Project Needs

The following figure and information details the EDR Wave Attenuation Experimental Study needs, from which the selected partner will both develop an experimental design to meet these needs and also execute said design.



EDR is currently delineated into 11 segments, which follow the natural spur and groove structure of this offshore reef (Figure 1); this reef segmentation allows for coordination and manageability of restoration activities amongst all active restoration partners working at the site. NFWF grant-related coral restoration outplanting of multiple, reef-building Acroporid coral species (i.e., *A. palmata*, *A. cervicornis*) began at this site in early March 2021 and will continue throughout the duration of the NFWF grant timeframe and beyond. For this study, an understanding is needed of both the highly-localized effects of coral outplanting (e.g., hydrodynamic flow patterns around individual coral colonies or small sections of reef) and the larger effects at an ecosystem scale (e.g., wave attenuation processes for EDR as an entire reef), with comparative measurements for unrestored areas on this reef, at both scales (see the Appendix for locations of Control Sites (i.e., unrestored areas) and Restoration Monitoring Sites). The proposed experimental design should focus its efforts in the pre-identified Restoration Monitoring Sites, as these Sites will be subject to continuous ecological monitoring throughout the duration of the grant timeframe.

The ultimate goal is to understand how coral reef restoration affects wave attenuation and hydrodynamic flow at multiple spatial and temporal scales. The proposed experimental design should be crafted to meet these needs over the remaining grant timeframe.

Examples of potential instrumentation that could be used to meet project needs include, but are not limited to: bottom instruments (e.g., wave and/or wave and current meters) and/or sensors deployed on a buoyed line (e.g., thermistor array).

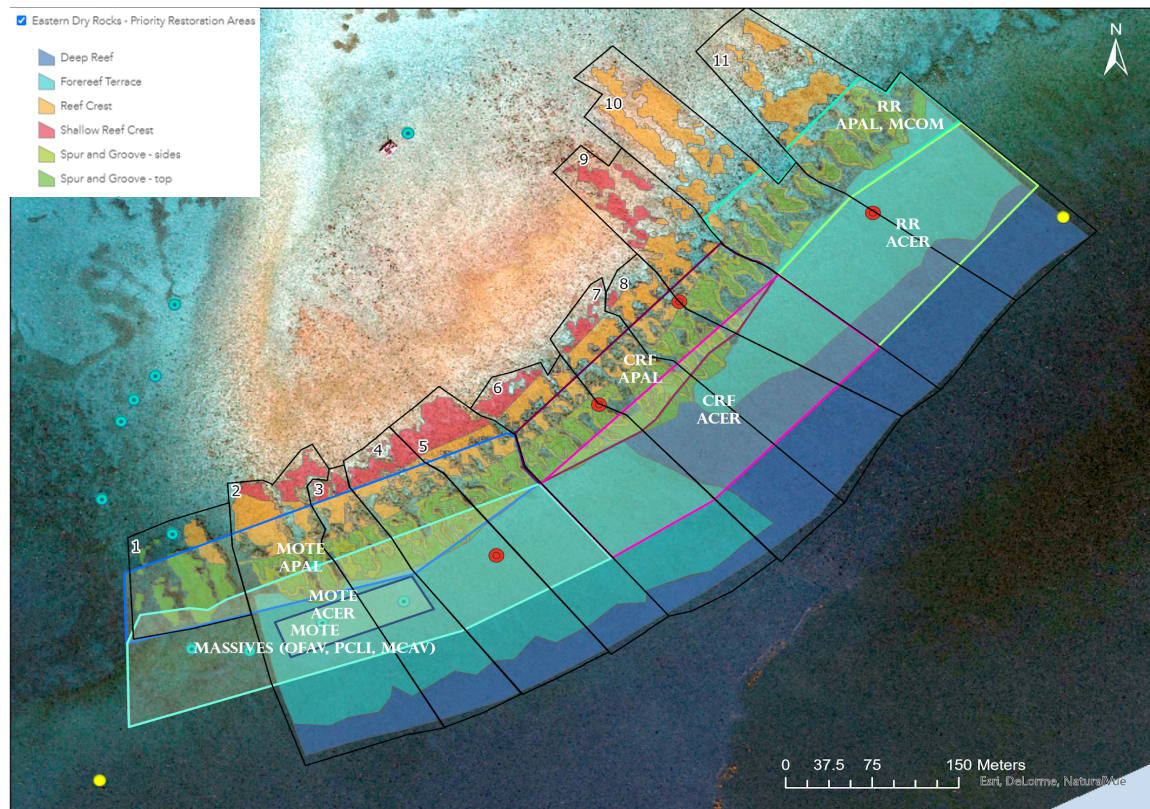




Figure 1. Eastern Dry Rocks reef, shown with site segmentation (11 total segments) and habitat classifications (see legend). Mooring buoys are shown in teal and red (subsurface), with the Sanctuary Preservation Area corners delineated in yellow. Operational Areas for current, active coral restoration are detailed in the polygons that span from reef crest to forereef terrace, and are labeled by practitioner (Mote; CRF; RR) and coral species outplanted (Acer; Apal; Massives).

Deliverables & Requirements

Based on the aforementioned study objectives, the following information details both the deliverables and requirements necessitated of the selected partner:

A. Requirements

- a. Coordination with the Foundation, NOAA partners, the Florida Keys NMS science team and permit coordinator, and the Iconic Reefs Implementation Manager for pre-execution planning (e.g., types of sensor(s) to be deployed; locations; duration of deployment; sample frequencies) and continued active communications and collaboration.
- b. Professional deployment and retrieval of *in-situ* sensors to quantify relevant oceanographic and environmental conditions at relevant spatial and temporal scales related to coral reef restoration at EDR during the above-mentioned NFWF grant cycle. *Note: field instrumentation and deployments must avoid impacts to corals and other protected species and must also minimize damage to the underlying reef framework; all sensors and associated anchors, rebar, or other hardware must be removed at the end of the study, and any damage to the framework be repaired/stabilized as needed. Instrumentation should be securely deployed to withstand potential weather conditions (e.g., storms) and retrieved prior to weather events that exceed secure deployment thresholds.*
- c. Professional, regular maintenance of all *in-situ* sensors, including the regular downloading and secure storage of all data, and battery replacement as needed.
- d. Professional removal services of instrumentation if needed prior to a forecasted weather event (e.g., hurricane) (if possible, and weather permitting) to avoid natural resource damage.

B. Deliverables

- a. A written report detailing the overall experimental design, as well as the overarching implementation plan and planned analyses, throughout the duration of the project.
- b. Regular, written reporting of all in-water activities (e.g., instruments deployed; locations; duration and intervals of data collection; site reconnaissance; maintenance; and data downloading) throughout the duration of the project.
- c. Annual summary reports of the most recent year's data and results, including cumulative effects/changes/means from previous years' data, as applicable.
- d. Data storage (inclusive of open data access and sharing throughout the duration of the project) and public archival of data according to the Public Access to Research Results (PARR) standards and NOAA NCEI standards.

Preference will be given to those with experience working with ESA-listed coral species in the Western Atlantic and Caribbean, such as Elkhorn and Staghorn corals in the Florida Keys.



Proposed Project Budget & Milestones

The Foundation will accept proposals up to a maximum of US\$150,000 over the total 4 year project timeframe.

As Iconic Reefs-funded coral restoration work at EDR began in early March 2021, this project must commence as soon as possible in order to provide a true baseline for pre-restoration conditions (or as near to baseline as possible).

The Foundation expects to award the partner contract in April 2021. The contracting partner will work with all applicable Iconic Reefs partners on pre-execution planning to finalize the experimental design and work through additional implementation needs (e.g., permits, purchases, etc.). Initial project execution and *in-situ* instrumentation deployment may begin as early as May 2021, noting that the grant period will end in February 2025.

The Foundation and its partners will also work closely with the contracted partner throughout the final year of the grant to analyze and summarize study findings.

Instructions for Proposal Submission

The following information should be provided within the proposal, not to exceed 10 pages in length:

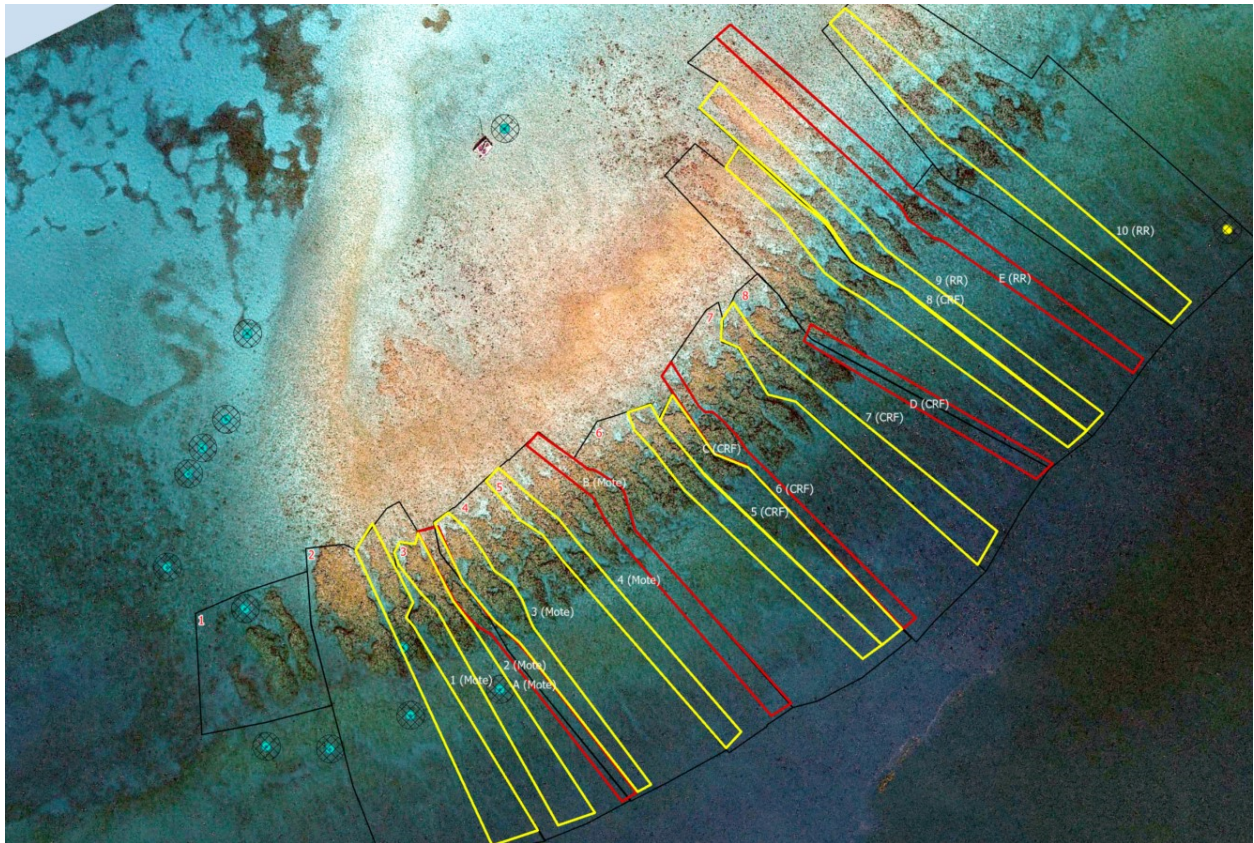
- Description of the scope of work, including: objectives in relation to coral restoration and coastal resilience; overall study approach; project timeline and milestones; project team and scope of involvement; instrumentation deployment plan (type(s) of instrument(s); sample frequency and duration; data type(s); proposed locations); deliverables and interim milestones.
- Detailed project budget, including expenses summary with cost breakdown per working dive day, and inclusive of all equipment and personnel; supplies; overhead; matching funds and/or in-kind contributions, as applicable only.
- Summary of relevant work expertise (e.g., CV with publications and/or text narrative), as it relates to: large- and fine-scale flow patterns within a coral reef ecosystem context; any additional or noteworthy relevant skills.
- Description of field/dive team to be utilized, inclusive of all applicable details (e.g., vessel; fuel; diving experience).
- Provision of all applicable business licenses, and insurances.

Proposals will be accepted no later than 11:59 pm ET on April 16, 2021 (**UPDATED**) to RFP@marinesanctuary.org with the subject line: 'Iconic Reefs Wave Attenuation Experimental Study Proposal'. Any questions should be directed to Shannon Colbert, Policy and Conservation Director, at Shannon@marinesanctuary.org.

We are happy to arrange conference calls to discuss this RFP, provide additional information, and address any relevant questions.



Appendix



Appendix Figure 1. Control Sites (red) and Restoration Monitoring Sites (yellow) at Eastern Dry Rocks reef.