

Proposed Projects to Restore Reef Resources

How Projects Were Identified

To identify compensatory restoration projects, the Trustees evaluated the suitability of nearby marine habitats to host reef restoration. Their analysis was based on the similarity of ecological functions provided by each habitat. They performed a Habitat Suitability Analysis using existing data sets compiled from the extensive regional literature and databases of marine species. Their study ranked shallow hard bottom, seagrass, mangrove and deep hard bottom habitat in descending order of similarity to the injured reef. They found factors of similarity to include the numbers of eolianite reef species present and the ecological services provided. Based on that analysis, projects would offer opportunities of comparable value in restoring and replacing lost reef services if they were located in shallow hard-bottom habitats or in habitat mosaics where shallow hard-bottom is coupled with one or more other habitats, as illustrated in the restoration area schematic. The proposed reef projects were developed in recognition of this benefits transfer technique.

Reef Injuries and Lost Services to be Restored

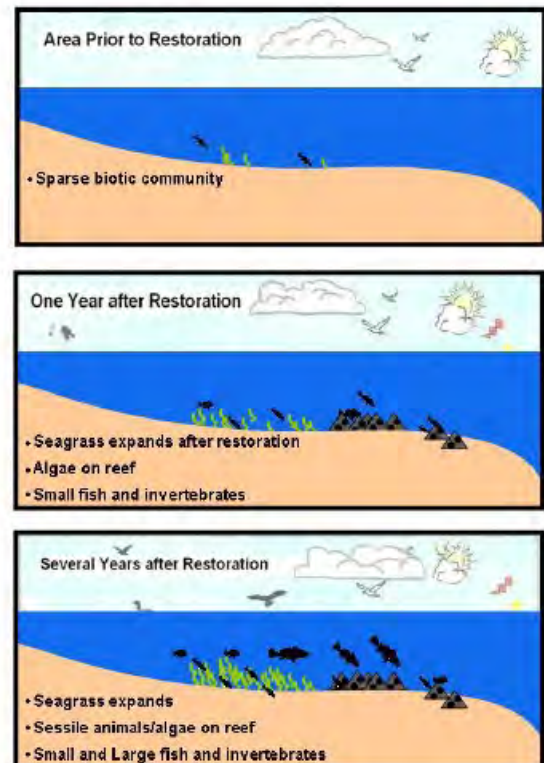
Approximately 10,300 square meters of reef and associated biota were injured by the vessel grounding and required response actions. The injured reef was an eolianite reef, an ancient fossilized sand-dune system submerged by rising sea levels now usually populated with both hard and soft corals and other reef organisms. Nearshore soft coral communities were also injured by the oil. The injured reef provided a three-dimensional habitat for fish, shellfish, corals, algae, sponges, echinoderms, and many other types of organisms. The reef and associated organisms afforded shelter, forage, and breeding and nursery grounds for marine organisms, as well as sport fishing and diving opportunities to human visitors. The physical presence of the reef offered some protection to the coastline during storms. These injured physical features and lost ecological services are what need to be restored.

Proposed Reef Restoration Projects

Of the \$9,688,563 settlement received, \$5,712,336 is available for projects to address lost reef structure and services. The Trustees propose three potential projects that address the injuries sustained by the reef habitat from the barge grounding and subsequent oil spill.

Acquisition of Equivalent Lost Services

This project entails acquisition of coastal habitats that provide comparable and similar services to the lost reef resources. At this time the Trustees are only able to discuss an acquisition strategy and the relative types of project benefits and features due to the sensitivity of the potential land transaction process and related due diligence activities. The project could involve either single habitat categories or a mosaic of habitat types, such as shoreline habitats, with adjoining submerged lands such as mangrove, seagrass, or some combination of desirable habitats.



Restoration Area Schematic



Low-Profile Reef Module



Fill Being Deposited in Blowhole

Modular Reef Construction

This alternative consists of placing prefabricated cement reef-replication modules in a shallow hard-bottom setting to create new habitat similar to the destroyed rock reef. This alternative would consist of using established technology to construct and place cement reef-replication modules in a manner to provide a range of desirable ecological services.

Seagrass Restoration

This project entails the beneficial use of dredged marine sediments from San Juan Harbor's maintenance dredging activities to fill dredge holes totaling about 32 acres within the Condado Lagoon, approximately 1 mile southeast of the barge grounding site. Once these dredge holes or blowholes are filled to grade and leveled, natural seagrass recovery and plant succession can be allowed to proceed unassisted.

Public Comment on the Proposed Projects

The Trustees encourage comments from the public on these projects, as well as any other projects that the public may identify to address the reef injuries.

For Additional Information

Those who want more information about potential projects should refer to the Draft Restoration Plan and Environmental Assessment prepared by the Trustees, which can be downloaded from the following website: <http://www.darrp.noaa.gov/berman/>. Hard copies are available by calling 787-729-6777 or writing San Juan National Historic Site, 501 Norzagaray Street, Old San Juan, Puerto Rico 00901.