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## Coral Reef Conservation Fund – Funded Projects

**Evaluation and Fisher Education of Coral No-trap Areas (FL),** *Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, The Florida Keys National Marine Sanctuary*  
Coral Reef Conservation Fund 2014 Grant: \$72,960.58 Partner Contributions: \$72,961.00

The Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute will support effective management of coral systems throughout the Florida Keys by reducing lobster trap impacts to corals reefs. Coral habitat throughout the Florida Keys has been declining for decades. Recent research identified the use of Florida’s spiny lobster traps as a source of coral loss. The primary mechanism by which the lobster traps damage corals is through storm driven transport. Management has established zones with different regulatory structures throughout the area to increase coral protection; many of which prohibit the use of traps. Fishermen compliance with no-trap regulations and prevention of trap intrusions into these zones is unknown.

Non-compliance with regulations may stem from lack of awareness of the regulation or the area to which it covers. In particular, the newly designated Acropora management zones are not well known to lobster trap fishermen, do not have boundary markers, and are not designated on charts. Some of the management zones are also the smallest areas ever designated for coral-protection in the Keys. While these small areas improve fishermen access to adjacent non-coral areas, the areas may be too small to prevent storm-driven movement of traps and trap debris into the protected areas. This project will address the lack of clear information on boundaries for these zones and the movement of traps into these areas during storms

**Digital Deck Expansion for Fisheries Data Reporting (PR),** *Point 9, Puerto Rico and the US Virgin Islands*  
Coral Reef Conservation Fund 2014 Grant: \$75,000.00 Partner Contributions: \$75,000.00

The Point 97 will leverage the success of a pilot project by expanding the use of the Digital Deck catch report application to at least 15 fishers from Puerto Rico, improve a desktop application for fishers that lack access to mobile technology, and develop a roadmap for full implementation and adoption of the Digital Deck system in Puerto Rico. Because the platform is already in place, expanding the system to additional fishers will simply require outreach, recruitment, and training of fishers who own a smart-phone or have access to an internet connected desktop computer. To develop the roadmap, Point 97 staff, partner agencies (Puerto Rico Department of Natural and Environmental Resources, Southeast Fisheries Science Center, and Caribbean Fishery Management Council) and fisher organizations (Rincon Fisherman’s Union) will work together to identify the necessary steps, support, and logistics needed to coordinate and execute a full implementation of the Digital Deck system. Ultimately, a fully implemented and integrated Digital Deck system will allow fishers to legally submit catch report data electronically, and remove the paper-based reporting requirement and provide submitted catch report data in near real time to fishery managers. Access to timelier and higher quality data will enable fisheries managers to more effectively monitor fisheries regulations such as Annual Catch Limits to better support sustainable fisheries in the Caribbean.



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**Sediment Run-off Reduction in Coral Bay St. John (USVI), Coral Bay Community Council, Inc., Coral Bay, St John, US Virgin Islands**

Coral Reef Conservation Fund 2014 Grant: \$67,009.93 Partner Contributions: \$67,146.16

The Coral Bay Community Council, Inc. will install sedimentation reduction practices in two drainage basins and make recommendations in other areas to continue sediment reduction efforts in Coral Bay. From 2009-2011, the Coral Bay Community Council along with the Environmental Protection Agency and the National Oceanic and Atmospheric Administration put forth considerable effort towards improving water quality and reducing sediment runoff into Coral Bay. Six drainage basins in Coral Bay were targeted for mitigation, with a total of 74 sedimentation reduction installations. Coral Bay Community Council, Inc. has spent the past two years assembling project reports from this effort and updating the 2008 Coral Bay Watershed Management Plan to include lessons learned, monitoring research results, and revised project lists and is now ready to pursue the next round of implementation projects.

This work will continue design and implementation of a variety of watershed management and stabilization techniques to reduce sediment loading to coastal habitats. While this project targets two drainage basins within Coral Bay, the techniques used are designed to be replicable throughout the U.S. Virgin Islands and elsewhere.

**Outreach and Adaptive Management for the West Maui Fishery Management Area (HI), The Coral Reef Alliance, Kahekili Herbivore Fisheries Management Area, Hawaii**

Coral Reef Conservation Fund 2014 Grant: \$30,000.00 Partner Contributions: \$50,000.00

The The Coral Reef Alliance will assist successful implementation of local management plans for West Maui coral reef systems by promoting effective management of the relatively new Kahekili Herbivore Fisheries Management Area through targeted education and outreach. Specifically this project seeks to build management capacity by ensuring that results of science and monitoring of the five year old fisheries management area is communicated to community stakeholders. This will include, but is not limited to providing engaged citizens with the tools necessary to complete useful monitoring reports to appropriate agencies and access the results of these efforts. In doing so, we hope to increase the understanding of the importance of this new management approach and improve support and compliance.

As a result, reef conditions within the managed area will also be communicated to decision makers, local community stakeholders, and the broader public, highlighting the need to actively improve watershed and wastewater management and socialize the importance of the Herbivore Fisheries Management Area as a fisheries management strategy.



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**Acceleration of Watershed Restoration Efforts in Puerto Rico, *Protectores de Cuencas, Inc.*, Puerto Rico**  
Coral Reef Conservation Fund 2014 Grant: \$75,000.00 Partner Contributions: \$75,000.00

The Protectores de Cuencas, Inc. will accelerate restoration efforts in priority Puerto Rico watersheds, stabilize over 20 acres of drainage area and reforest over 10 acres of land. This will be accomplished by decreasing restoration costs by constructing a native and conservation plant nursery that will yield up to 10,000 native trees and 10,000 vetiver plants in two years. All of these projects will stabilize soils and prevent erosion and run-off to coral reef systems downstream.

The nursery/greenhouse will support several on-going projects including: –a) implementation of the Culebra Watershed Management Plan, b) reduction of sediment loads to coastal waters to improve and delimit public access at Bahía Mosquito in Vieques, and c) continue efforts associated with the Shade Coffee Round Table initiative in the Guánica and the central coffee farming region. Protectores de Cuencas, Inc. will also assist farms in completing the certification process and greatly improving soil conservation on the farms with our partners USDA-Natural Resource Conservation Service and US Fish and Wildlife Service.

**Stormwater planters to treat contaminated runoff in Guánica (PR), *Ridge to Reefs, Inc.*, Puerto Rico**  
Coral Reef Conservation Fund 2014 Grant: \$75,000.00 Partner Contributions: \$85,000.00

The Ridge to Reefs, Inc will use a pump and treat approach to utilize effluent to provide water and nutrients to stormwater planters along the Guánica waterfront or Malecon area. Stormwater runoff and return flow from washwater discharges and sewage leaks combine to create a contaminated stew that is discharged to Guánica Bay several times daily. High concentrations of bacteria and nutrients that are discharged from this area have been highly documented. This project will mitigate contamination from the largest storm water drainage area in the main town area of this priority watershed and prevent harmful pollutants from reaching the coral reef system that is in decline.

To increase awareness, the Ridge to Reefs, Inc. will utilize stormwater art to help educate the public about the importance of addressing contamination of the Guánica Bay and helping to inspire its cleanup.

**Threshold and pollution reduction targets tool-kit for coral managers (HI), *University of Hawaii – Manoa*, Maui, Hawaii**

Coral Reef Conservation Fund 2014 Grant: \$88,326.00 Partner Contributions: \$163,020.00

The University of Hawaii - Manoa will provide stakeholders and reef managers with science-based nutrient and sediment concentration targets for various Best Management Practices.

From 2002-2006 local action strategies were developed to reduce LBS by 25% in watersheds on Kauai, Molokai and Maui according to the guidelines of the US-CRTF. However, basic biological information regarding the suitability and efficacy of the proposed reductions to alleviate threats to corals is still lacking. Prompt and effective management and conservation actions rely on the evaluation of LBS response thresholds and threat reduction levels, which have direct applications to the development of best land management practices to promote the recovery and persistence of reef-building corals. The University of Hawaii will use sequencing by synthesis to identify the key genes in the stress responses of corals exposed to sediment and nutrient pollutions. Antibodies designed to specifically target the proteins encoded by previously



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identified genes will be used to measure how much of these biomarkers corals produce in response to a range of pollutant concentrations. Molecular data will be correlated with physiological measurements in order to determine the threat reduction levels for each stressor in four different main reef-building corals of the WMR.

**Setting Nutrient Thresholds With Coral & Microbial Genomics, *University of Hawaii, Hawaii***

Coral Reef Conservation Fund 2014 Grant: \$73,996.00 Partner Contributions: \$73,996.00

The University of Hawaii will aim to link water quality thresholds directly to dynamic coral microbiome composition and physiological responses adaptable to a diversity of tropical high island biogeochemical contexts. Specifically, The University of Hawaii will : (1) Develop a coral/microbial nutrient response gene expression panel, (2) Document water quality gradients in the West Maui Priority Watershed: Honolua to Olowalu, (3) Assay nitrogen and phosphorus response genes in coral samples from field gradients and (4) Establish coral/microbial response thresholds to determine levels of N and P causing coral nutrient stress.

Existing numeric water quality thresholds do not consider effects of land based source pollution (LBSP) on corals. Visual biocriteria of disease or mortality are lagging indicators of LBSP effects; once observed these impacts may be difficult to reverse. The methodology used in this project can be used in adaptive watershed LBSP mitigation to monitor coral nutrient stress at timescales relevant to management objectives

**Science for management and stewardship in the Caribbean, *Oceans Applied Research, LLC., Eastern Caribbean, Grenada, St. Vincent***

Coral Reef Conservation Fund 2014 Grant: \$80,000.00 Partner Contributions: \$110,000.00

The Oceans Applied Research, LLC will focus on capacity needs that continually emerge as the highest priorities for Caribbean Marine Protected Area managers: monitoring, management planning and community and stakeholder engagement. The proposed activities build on a subset of projects implemented under the 2-year Australia-Caribbean Coral Reef Collaboration. In total, work has been planned to address 13 priority needs across 4 MPAs and 2 countries (Grenada and St Vincent and the Grenadines). Our work program includes the production of 10+ different outputs, each of which will be targeted to our partner MPAs and provided to managers as a template accompanied by general guidance. This ensures that all MPAs in the region can benefit from the program of work and creates an opportunity to collaboratively refine all of our materials and build them into training and capacity building curriculum down-road. The MPA managers and regional organizations we are already partnered with are extremely supportive of the proposed work program. This is evidenced within our letters of support; MPA managers from both countries have committed in-kind contributions in staff time to ensure this project is successful.

**Enhancing Enforcement Capacity in Priority Caribbean MPAs, *MPA Enforcement International LLC, Caribbean***

Coral Reef Conservation Fund 2014 Grant: \$69,649.62 Partner Contributions: \$69,661.00

The MPA Enforcement International LLC will deliver tailored MPA enforcement training for nine priority Caribbean MPAs and will build capacity for more effective MPA management and coral reef conservation in five priority countries/territories. Based on the findings of expert enforcement assessments, practical MPA enforcement training programs will be developed and



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implemented during 4-5 days in each of four host locations. An estimated total of 55-60 participants will benefit from the training, including MPA managers and field staff as well as important local enforcement partners from relevant agencies and groups. Specialist instruction will be provided by MPA Enforcement International and supplemented by local contributing enforcement partners. In addition to enhancing enforcement capacity of the participating MPAs, we anticipate strengthening local agency partnerships for MPA enforcement. To reinforce best practices learned in training, and to ensure real progress by MPA managers in the protection of natural resources, the project includes follow-up assistance to each of the MPAs for the design and implementation of desired site-specific outputs, such as a strategic enforcement plan, a compliance reporting protocol tailored to the MPA's decision-making and communications needs, or steps to develop joint standard operating procedures. The project will help establish solid enforcement programs at each MPA and aid in the achievement of positive conservation outcomes for marine and coastal resources.

**Micronesia Socioeconomic Monitoring Team & Data Compilation, *Micronesia Conservation Trust*, Palau, Marshall Islands and the Federated States of Micronesia**

Coral Reef Conservation Fund 2014 Grant: \$50,000.00 Partner Contributions: \$50,000.00

The Micronesia Conservation Trust will lay the foundation for a regional socioeconomic monitoring mechanism by addressing two immediate concerns: the establishment of a regional Socioeconomic Monitoring Team of SEM-Pasifika experts and the compilation of existing data in preparation for the eventual development of jurisdictional databases, and ultimately a centralized, regional SEM database. Over the past five years, more than eleven socioeconomic assessments using the guidelines provided by SEM-Pasifika have taken place across Micronesia. However, the progress towards a systematic regional monitoring mechanism remains elusive. Valuable socio-economic monitoring data from these efforts have largely been left un-compiled, limiting their utility in influencing management decisions. Additionally, resources are not typically available for local teams to continue to utilize acquired skills on a regular basis, causing capacity to wane, and additional training to become necessary. Notably, trainings and assessments add significantly to the workload of people who already have a great deal of existing responsibilities. This situation, coupled with a lack of institutional mandate and resources among local partner agencies to implement such monitoring on their own, has resulted in isolated trainings that are not sufficient to spearhead systematic and locally-adaptive regional monitoring.

**Enhancing management of herbivorous fish in Pohnpei LMMAs, *Conservation Society of Pohnpei*, Micronesia**

Coral Reef Conservation Fund 2014 Grant: \$40,000.00 Partner Contributions: \$40,500.00

The Conservation Society of Pohnpei will identify reproductive life history traits and assess habitat use and fishing vulnerability for key commercial herbivores in Pohnpei, Micronesia. The project will build on existing state and stakeholder-driven conservation initiatives that include seasonal sales bans around reproduction and locally managed marine areas. The project will conduct a market assessment and a site-based investigation of multi-species spawning sites to identify spawning seasonality for market management and habitat use for marine protected area design and spacing. Life history parameters will be evaluated using standard macroscopic and microscopic techniques, while fisheries vulnerabilities, movement patterns and habitat use will use tag-recapture methodologies. The proposed project builds on recent conservation



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success in stakeholder communities and will further engage the recently developed fishers' marine advisory council. Broad-scale participatory opportunities will be provided to stakeholders, with the intent of using existing and project findings to design innovative and conventional bottom-up conservation and management in the state.

**Improving Coral Conservation Management Capacity in Samoa, *Conservation International Foundation, Samoa***

Coral Reef Conservation Fund 2014 Grant: \$59,579.72 Partner Contributions: \$59,666.00

The Conservation International Foundation proposes to facilitate the collaboration and development of a standardized monitoring and evaluation program for MMA management between the two Samoan Ministries (Ministry of Agriculture and Fisheries and Ministry of Natural Resources and the Environment, as well as improve local awareness of MMA values and regulations for effective long-term management. The grantee will achieve this through two outcomes. First, establish a collaborative program for consistent and regular MMA Biophysical Trend Monitoring, to enable improved decision making for coral reef and associated coastal marine habitats in Samoa. Second, work to improve awareness in Samoan communities of the value of their MMAs, how MMAs relate to sustainable livelihoods, as well as their applicable governing by-laws and regulations. The Independent State of Samoa houses a vast diversity of coral reef, lagoon, seagrass, and mangrove ecosystems, which receive inadequate investment for monitoring coupled by inconsistent monitoring methodology across responsible government ministries. The long-term outcomes of this project, the MMAs, and the lessons learned from implementation provide important contributions to Samoa's National Biodiversity Strategy and Action Plan, Samoa's Programme of Work on Protected Areas, and the Pacific Oceanscape initiative.

**Coral monitoring and ecosystem-based management in Kosrae, *The University of Guam, Federated States of Micronesia***

Coral Reef Conservation Fund 2014 Grant: \$49,335.00 Partner Contributions: \$51,000.00

The The University of Guam proposes to integrate a suite of existing and new monitoring datasets for applied use with ecosystem-based management policies on Kosrae, Federated States of Micronesia. Improving partnerships and technical capacity are central themes of previous and ongoing trainings supported by environmental agencies Yet, funding remains limited for technical partnerships to focus upon individual jurisdictional needs in bridging the gap between science-and-management. The grantee will address three key questions: Are the dominant and desirable fish passing through Kosrae's markets associated with gradients in fish biomass and herbivore size observed in monitoring data? If so, are fish biomass and size indicative of overall coral-reef ecosystem 'condition' (as defined within)? Finally, how do modern abundances of marine resources compare to those 15 years ago? Answers to these questions are needed to refine and establish fisheries regulations, marine protected area efficacy, and watershed-based piggery management. This project is founded in a deep collaboration between University of Guam Marine Lab and numerous Kosrae resource management agencies. This team would utilize existing coral monitoring data from two sources, and create a new fisheries-dependent monitoring program for Kosrae State. Once the scientific findings are completed, they will immediately be used to refine organizational action strategies plans of local partners to incorporate the policies recommended.



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**Building Resilient Micronesian Coastal and Marine Resources, Hatohobei Organization for People and Environment, Republic of Palau and Yap, Federated States of Micronesia**

Coral Reef Conservation Fund 2014 Grant: \$45,880.00 Partner Contributions: \$64,700.00

The Hatohobei Organization for People and Environment will provide direct support to several communities to develop specific actions (e.g. zoning and rule development) that can immediately improve resource management and also build capacity of community facilitators from various community, governmental, and non-governmental organizations. Many communities in Palau and Yap have expressed concerns over the high degree of vulnerability of their coral reefs, fisheries, and shorelines, to various local threats and climate changes. However, little guidance has been available for community level decision making on “how to” develop actions that best improve long-term resilience of these coastal and marine resources. While tools have been developed for professional managers on the design of resilient marine protected areas, there have been few to help communities design locally managed areas (LMAs) to ensure ecological needs are considered to allow marine resource to continue to provide them with the benefits they depend on. Therefore, LMAs tend to lack the permanent and/or spatial protection often needed to provide long-term benefits and resilience. Additionally, without an understanding of coastal processes, management strategies for shorelines have tended to focus on reactive, engineering approaches, such as seawalls. This project will address this problem through the use of two new tools that provide communities with in-depth “how to” guidance for building long-term resilience of coastal and marine resources.

**Building Management Capacity in Taka Bonerate MNP, Indonesia, Wildlife Conservation Society, Indonesia**

Coral Reef Conservation Fund 2014 Grant: \$74,952.40 Partner Contributions: \$75,000.00

The Wildlife Conservation Society will aim to revitalize and improve co-management of Taka Bonerate Marine National Park in south Sulawesi, Indonesia. The grantee will address critical information gaps by collecting, analyzing, and sharing data on the ecological, socioeconomic, and governance status of the park, and by building the management capacity of stakeholders through various training programs. Short-term outcomes will include improvements in science-based information available for park management; stakeholder knowledge and acceptance of training needs; and management capacity. Partners include the Ministry of Forestry, the Taka Bonerate Marine National Park Authority, district fisheries and tourism departments, village officials, and local communities.

**Crafting Opportunities in Reef Areas for Life Necessities, Fauna & Flora International, Inc., Philippines**

Coral Reef Conservation Fund 2014 Grant: \$40,000.00 Partner Contributions: \$42,000.00

Fauna & Flora International, Inc. will contribute to the improvement of coastal conservation in the Philippines by building and creating an environment for participatory governance that provides stakeholders access to options that address coastal degradation and poverty. Three specific outcomes are expected to result from this project: (1) Sustainable coastal resource management; (2) Reduction of incidences of illegal fishing practices; and (3) Diversification of indigenous peoples’ income in ancestral water areas, reducing dependence on the direct marine resource extraction. This project will shape, sustain and enhance norms among individuals and institutions in the natural resource conservation movement to make them more effective at mobilizing a broader coastal resource conservation importance. Conservation objectives will be institutionally integrated into Ancestral Domain planning procedures and documents.



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**Funding was also provided during the 2014 cycle by Royal Caribbean Cruises, Ltd.**



**Enhancing Capacity for Coral Reef Resilience Management in the Cayman Islands, *Central Caribbean Marine Institute, Caymen Islands***

Coral Reef Conservation Fund 2014 Grant: \$69,981.50 Partner Contributions: \$298,911.00

Understanding why some reefs become degraded while others are resilient in response to the same global stressors can improve ecosystem-based management and conservation. Live coral cover around Little Cayman is equivalent to or higher than other locations in the Caribbean and has been shown to be on a positive trajectory. This project seeks to identify physical and ecological mechanisms that underpin resilience and recovery by using 15+ years of ecological data and continuous local oceanographic data from our Coral Reef Early Warning System. The distribution of five Ecologically Distinct and Globally Endangered (EDGE) and two IUCN Red Listed coral species will also be determined, as well as a description of the surrounding community structures and environment, and correlation of the abundance and health of these species to those habitats that may be more capable of buffering the impacts due to climate change, ocean acidification, or both. Project outcomes include the development of a useful ranking tool (based on factors such as diversity, abundance, recruitment, health/ stress, resilience) for improving ecosystem-based management of vulnerable coral species; Improved management practices through utilizing results of the tool to develop workshop to train resource managers and stakeholders and Create a more engaged community who understand that local protection is a priority for sustaining coral reefs.

**Establishing Coral Nurseries in Jamaica, *The CARIBSAVE Partnership, Jamaica***

Coral Reef Conservation Fund 2014 Grant: \$35,000.00 Partner Contributions: \$35,000.00

Coral transplantation is increasingly recognized as a useful management tool in the protection and restoration of coral reefs. Various transplantation techniques are now widely used to accelerate the recovery of reefs, particularly inside marine protected areas where the coral stressors that caused the decline of the reef (e.g. overfishing, pollution) have been significantly reduced. This project will use the latest coral transplantation techniques to establish coral nurseries and restore reefs inside two well-managed fish sanctuaries in Jamaica: Bluefields Bay Fish Sanctuary and Boscobel Fish Sanctuary. Coral species and clades (genetic groupings) will be selected for their resilience to climate change and other stressors. These will be grown in nurseries before being transplanted onto artificial reef or lifeless coral inside fish sanctuaries to provide habitat for fish and climate-resistant coastal protection. The project will help strengthen coastal resilience and provide habitat for marine life. The coral nurseries and artificial reefs will also provide an attraction for tourists, and employment for local stakeholders as tour guides and coral gardeners. The following outcomes can be expected from the project: Two established and maintained coral nurseries; Corals successfully transplanted at both sites; Local stakeholders trained in coral gardening and tour guiding skills; A management plan developed and implemented by the partner NGO.