

PIER 2015 Annual Report

Puerto Rico Sea Grant

Official Level of Effort - Only Approved Funding

Report Generated by YULISSA GARCIA on 12/13/2021

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2015 Level of Effort

National Focus Area Name	SG Federal	Match	Pass Thru	Federal+ Match + Pass Thru	LOE without Leverage (%)	Leveraged (Managed)	LOE with Leverage (%)
Healthy Coastal Ecosystems	\$454,102	\$370,651	\$0	\$824,754	41 %	\$30,923	41 %
Sustainable Fisheries and Aquaculture	\$163,880	\$81,211	\$0	\$245,090	12 %	\$16,096	12 %
Resilient Communities and Economies	\$333,639	\$182,426	\$0	\$516,066	26 %	\$22,579	26 %
Environmental Literacy and Workforce Development	\$261,881	\$111,753	\$56,500	\$430,134	21 %	\$16,096	21 %
TOTAL ALL FOCUS AREAS:	\$1,213,502	\$746,041	\$56,500	\$2,016,044	100 %	\$85,694	100 %

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2015 Impacts & Accomplishments

Protection of Natural Valuable Ecosystems by Community and Schoolchildren

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Impact
- PO Review Complete

RECAP: The Río Hondo Community Forest, part of the Río Guanajibo Watershed, consist of two land parcels for a total of 67.99 acres located in the center of the Rio Hondo neighborhood in Mayaguez, Puerto Rico. The Rio Hondo community is committed to the conservation of this last urban forest in the area, and is aware of the possibility that the property can be developed as a Community Forest.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

Relevance: UPR Sea Grant, in a collaborative effort submitted to the US Forest Service-Community Forest and Open Space Program, the proposal: "Rio Hondo Community Forest" to preserve and protect the forest and water bodies in order to develop the First Caribbean Community Forest in the City of Mayagüez. It is the first time that PR and the Caribbean receive a federal grant for the preservation and conservation of an area as a Community Forest. The federal government granted with up to \$ 400,000 for the purchase of land, ecological studies and legal expenses, equivalent to 50% of the total cost, and the other 50% will be subsidized by the Municipality of Mayaguez.

Response: The project will provide recreational and environmental benefits (walking trails, nature watching, hiking, biking, outreach activities, well-being improvement) to the Rio Hondo Community and the general public, while protecting the water quality of the Rio Guanajibo Watershed.

Results: UPR Sea Grant and PCAET continued outreach efforts to conserve open natural spaces for recreation, conservation, natural laboratory experiences, watershed knowledge and enjoyment of the community and students in a healthy and sustainable environment. (www.naturalezasintoxicos.wordpress.com).

PARTNERS: Proyecto Comunitario Agro Eco Turistico del Barrio Rio Hondo;

Community in Harmony with the Environment

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Impact
- PO Review Complete

RECAP: Environmental Education will build people's power in low income communities to achieve environmental health and justice by preventing and reducing pollution and building healthy sustainable communities and environments. The lack of well-planned activities in land and coastal territories requires a strong educational campaign towards sustainability and the development and promotion of green public policies. (www.bibliotecalegalambiental.wordpress.com).

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

Relevance: UPR Sea Grant education, scientific and technical assistance to community groups in the western Puerto Rico resulted in the allocation of more than \$60,000 in legislative funds for FY 2015. These funds were allocated to three community organizations: Cafiesencia Inc., Casa Juan Pablo II Inc. and Community Project Barrio Rio Hondo, Inc. to enhance and empower communities and their residents towards a healthy and sustainable environments.

Response: Under this educational initiative, UPR Sea Grant promoted the empowerment of 5 new community leaders in the Western Puerto Rico, where each of them are working hand in hand with our program in the protection and conservation of the Rio Grande de Añasco and Rio Guanajibo Watersheds.

Results: UPR Sea Grant helps grow the body of community leaders in Puerto Rico, including new community groups and members as our partners continue working with their environmental projects and contribute to strengthen their skills, abilities, leadership and teamwork. The new alliances increased the number of stakeholders (10 citizens) that are promoting sustainable communities in Puerto Rico.

PARTNERS: Comunidad Quebrada del Agua de Cabo Rojo;

ASSOCIATED PROJECT(S):
MARINE OUTREACH PROGRAM (2014 - 2017)

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Developing and implementing better aquatic safety services in Puerto Rico

NATIONAL FOCUS AREAS: Resilient Communities and Economies

- Impact
- Approved

RECAP: A successful outcome of the implementation of Sea Grant and USLA recommendations regarding the implementation of lifeguard services to reduce drowning incidents has been successful reducing drowning incidents at the St. Regis Hotel in Río Grande where no drowning incidents have been reported for the area.

PROGRAM FOCUS AREAS: Resilient Communities and Economies

Relevance: Puerto Rico Sea Grant has been gathering drowning statistics in Puerto Rican beaches for the last 20 years. More than 30 deaths result from these drowning incidents and the majority of these were at beaches close to economic and tourist centers.

Response: In collaboration with the La Concha and St. Regis hotels (where three tourists died during last year), Puerto Rico Sea Grant invited representatives from the United States Lifesaving Association (USLA) to develop a risk assessment and aquatic safety proposal to provide information regarding personnel needs, essential equipment and training and required budget to establish a lifeguard program to reduce drowning incidents at these beaches.

Results: Even though the hotels considered onerous the implementation of the lifeguard program, the St. Regis Hotel implemented several of the recommendations included in the risk assessment and aquatic safety study developed by USLA officials. Following the recommendations presented, the St. Regis Hotel contracted lifeguards, bought jet skis, developed signage and a banner system informing safe areas where and when to swim, providing a safer environment for the hotel guests. No drowning incidents have been reported at the site since these safety measures were implemented.

PARTNERS: International Hospitality Enterprises; United States Lifesaving Association (USLA);

Capacity building to improve preparedness, relief, and recovery of coastal communities from natural hazards and coastal risks

NATIONAL FOCUS AREAS: Resilient Communities and Economies

- Impact
- Approved

RECAP: PRSG in collaboration with CariCOOS and AEMEAD is providing capacity building opportunities to emergency managers, responders and coastal communities to enhance their capacity to adapt, mitigate and be resilient due to hurricanes, storm surge, coastal flooding and sea level rise.

PROGRAM FOCUS AREAS: Resilient Communities and Economies

Relevance: Puerto Rico has 2.3 million people living in its 44 coastal municipalities. These coastal communities are at risk of storm surge, hurricanes, sea level rise, coastal erosion and flooding. Municipal administrators, emergency managers, public policy developers, emergency responders and coastal communities are in need of new tools, modeling and updated information on climate change expected impacts, to improve their skills and enhance their capacity to adapt and be resilient.

Response: PRSG in collaboration with CARICOOS are advising AEMEAD emergency managers, responders, volunteers and coastal communities regarding the NOAA Climate Tool Kit and other line tools and information that can be applied to Puerto Rico to enhance their response capacity to natural disasters such as hurricanes, storm surge, flooding, and sea level rise and to include this information in their multi risk mitigation plans.

Results: Emergency managers, responders and coastal communities are capacitated regarding expected impacts of climate change and the vulnerability of coastal areas. Coastal communities are knowledgeable on the applicability of CARICOOS models on storm surge, wind and currents. Tools related to sea level rise and storm surge for Puerto Rico have improved their skills in emergency decision-making.

PARTNERS: Puerto Rico State Office of Emergency Management and Administration of Natural Disasters (PREMA); Caribbean Integrated Coastal and Ocean Observing System (CarICOOS);

The PR Sea Grant curricular guides about the mangrove and seagrass beds ecosystems have been implemented in Puerto Rican schools.

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Impact
- Approved

RECAP: The Puerto Rico Sea Grant mangroves and seagrass beds ecosystems curricular guides have been implemented in Puerto Rican schools as part of the Department of Education's Science curriculum. Hundreds of students are starting to benefit from this educational effort

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: Puerto Rico has a great need to teach students about the importance and conservation of coastal and marine resources. The Puerto Rico educational system lacks curricular materials to assist educators in their efforts to integrate these topics into their classes. There is a need to provide effective ways for educators to teach fundamental science concepts, develop scientific thinking capacity and explore Puerto Rico's biologically rich and economically important coastal and marine resources.

RESPONSE: Puerto Rico Sea Grant designed two educational guides about the mangroves and seagrass beds ecosystems. The guides provide a scientific background for these topics, lesson plans, activities, laboratory activities, assessments, pre- and post-tests, student manuals, story and activity books. The guides are aligned with the standards established by the DEPR, and provide the flexibility to adapt for higher or lower grades. Training workshops and field trips are included in the educational package provided to educators. The training was designed to illustrate teacher about how to utilize the guides, as well as to increase their knowledge about the topics covered. As part of this educational effort, approximately 75 educators from public and the private school systems benefitted from this opportunity. Many of these educators are part of the DEPR's Mathematics and Sciences Partnership (MSP) Program, as well as the Jobos Bay National Estuarine Research Reserve.

RESULTS: Puerto Rican schools are integrating the educational guides in their classrooms as part of their Science curriculum. The Jobos

Bay National Estuarine Research Reserve is also using the guides to educate the community and the people who visit it daily. On the other hand, JBNERR environmental interpreters integrated the guides to carry out their tours and field trips.

PARTNERS: Puerto Rico Department of Education;

ASSOCIATED PROJECT(S): None listed in the database

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Japanese educators visit the Puerto Rico Sandwatch Program in order to replicate it in their country.

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Impact
- PO Review Complete

RECAP: Japanese educators visited Puerto Rico to learn about the UNESCO Sandwatch program and were trained by Puerto Rico Sea Grant staff through workshops and field activities with the intention of developing a similar program in Japan.

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: Many Japanese educators were motivated to study beach changes after the 2011 9.0 magnitude earthquake and 128 feet high tsunami that inundated a total area of 217 sq miles in Japan. Searching for alternatives in the Internet, they saw the success that the Sandwatch Program had in the Caribbean region and decided to visit Puerto Rico to learn how Puerto Rico Sea Grant trained project participants and how the project was implemented in order to replicate it in Japan.

RESPONSE: Sea Grant trained the two Japanese educators that visited our program on Sandwatch activities including measuring beach changes, identifying problems and addressing issues in the beach environment. They were also taken to several beaches currently being monitored by Sandwatch volunteers in Puerto Rico and had the opportunity to observe students and teachers taking measurements and gathering data. They were also provided with the materials and equipment needed to implement the Program in Japan.

RESULTS: Two Japanese educators trained by Puerto Rico Sea Grant, took the lead, getting their students involved and implemented a Sandwatch program in Japan to enhance the beach environment within a framework of sustainable development.

PARTNERS: UNESCO;

ASSOCIATED PROJECT(S):
MARINE EDUCATION (2014 - 2017)

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Puerto Rico Sea Grant published two issues of Marejada written by UPR students

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Impact
- PO Review Complete

RECAP: PRSG was looking for new perspectives for Marejada while students were looking for learning experiences. PRSG in collaboration with the Center for Spanish Writing of the UPRM, offered a series of journalistic writing workshops that resulted in the publication of two issues of Marejada during 2015

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: Communicating environmental and scientific topics to different audiences is always a complex process that involves understanding the information provided by stakeholders (e.g. scientists, managers, users), enhance it with detailed research, evaluate all the sources, and transform all the input in a complete product that communicates an environmental issue with clarity, reliability, accuracy, and precision. PRSG looks for new perspectives for communicating marine and coastal issues. On the other hand, talented undergraduate and graduate students need opportunities to improve their communication skills.

RESPONSE: In alliance with the Center for Spanish Writing of the UPRM, PRSG offered a series of journalistic writing workshops in which 13 undergraduate and graduate students had the opportunity to benefit from its participation. Participants were able to learn basic concepts about marine and coastal resources, get to know writing, interviewing and documentation techniques, meet with public policy makers and managers of the resources, and visit ecosystems through a field trip coordinated by PRSG.

RESULTS: On 2015, PRSG published two issues of Marejada written by the participants of the workshops. Issues have been distributed in their printed and electronic version. To read them, please access <http://seagrantpr.org/communications-and-publications/marejada-magazine/>.

PARTNERS: University Of Puerto Rico, Mayaguez (UPR);

PRSG collaborated with USFWS in the production of interpretative panels for Laguna Cartagena Wildlife Refuge

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: Due to the ecological relevance of wetlands and, particularly, LCNWR, PRSG collaborated with USFWS in the development and production of interpretative panels.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

RELEVANCE: Wetlands are key ecosystems in Puerto Rico's coastal areas. They offer us green infrastructure, serve as buffer zones, and provide habitat to numerous organisms, especially to resident and migratory aquatic birds. Laguna Cartagena National Wildlife Refuge (LCNWR) is one of the protected areas that are under the jurisdiction of USFWS in Puerto Rico. LCNWR is located at the southwest area of Puerto Rico. Many persons visit this area due to its ecological value, beautiful scenery, wide range of recreational activities that can be done, and the proximity of beaches. Visitors can walk, use bicycle trails, and watch birds in the refuge, but there was a lack of educational materials for visitors at the LCNWR. Interpretative panels are great resources to share information about the refuge and increase awareness about the importance of the wetlands.

RESPONSE: PRSG collaborated with USFWS in the production of a series of interpretative panels about LCNWR, its location, endemic and native plants, restoration efforts, activities that can be done at the refuge and general information for the visitors.

RESULTS: Three panels were produced and are ready to install in the refuge. Also, PRSG collaborated in the improvement of other panels that were already designed by USFWS.

PARTNERS: US Fish and Wildlife Service (US DOI, FWS);

ASSOCIATED PROJECT(S):
COMMUNICATIONS AND PUBLICATIONS (2014 - 2017)

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Puerto Rico Sea Grant collaborates with USFWS in the edition, illustration and graphic design of fact sheets about endangered and threatened animals and plants of Puerto Rico and the USVI

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: PRSG and USFWS are working together in the renewal, update, and publication of fact sheets about threatened and endangered plants and animals in the Caribbean.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

RELEVANCE: Managers, agencies, public policy makers, teachers, and students need reliable and updated information about threatened and endangered animals and plants in Puerto Rico and the USVI. Information about these species will contribute to increase awareness about the species, their populations' status, their characteristics and conservation measures.

RESPONSE: A cooperative agreement between PRSG and the USFWS was established to build awareness about candidate, threatened, and endangered species by producing educational materials with the most up-to-date scientific information available about species protected by the Endangered Species Act (ESA) in the Caribbean. USFWS provides technical assistance, including the latest scientific information about the Caribbean listed species and PRSG provides its expertise in the areas of flora and fauna illustration, document drafting, editing, and production to create original illustrations of species and a collection of fact sheets that will be used and distributed widely by both organizations.

RESULTS: Twenty-seven (27) fact sheets about threatened and endangered animals were completed during the period and are ready to publish. Also, over 50 fact sheets about threatened and endangered plants are being edited and revised by PRSG and USFWS.

PARTNERS: US Fish and Wildlife Service (US DOI, FWS);

ASSOCIATED PROJECT(S):
COMMUNICATIONS AND PUBLICATIONS (2014 - 2017)

Puerto Rico Sea Grant increases its visibility through social networks

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: Social networks have evolved into an excellent tool for Puerto Rico Sea Grant's dissemination efforts.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

RELEVANCE: Social networks improve communication skills, enhance participation as well as social commitment, reinforce peer support, and ensure realization of education based on collaboration strategies. Social networks are inexpensive media resources that, used correctly, contribute substantially to educational purposes and the dissemination of relevant information.

RESPONSE: Since 2009, Puerto Rico Sea Grant has been using Facebook, Twitter, and Flickr pages to share the information that Sea Grant produces and to promote events and activities. For the period reported, Puerto Rico Sea Grant reached over 4,000 likes in Facebook and 1,250 followers in Twitter. Through social networks, we share the information and pictures about PRSG activities and also communicate with our stakeholders via messages. In the PRSG Facebook page people, are free to comment and share information about conservation and sustainable use of marine and coastal resources, request information and communicate their concerns.

RESULTS: Through social media pages, Puerto Rico Sea Grant promotes conservation and sustainable use of marine and coastal resources, and simultaneously, facilitates the process of sharing and searching information. People get informed about our publications, educational services and activities, stories posted in the National Sea Grant's website, fishing closures, among other issues and topics. Also, other blogs, Facebook and Twitter pages from diverse entities, governmental agencies, and media organizations, such as newspapers and environmental electronic magazines and blogs, share the information that Puerto Rico Sea Grant posts in Facebook and Twitter. National Sea Grant reposts our information, too. For Puerto Rico Sea Grant, Facebook has been the most successful social media network.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):

COMMUNICATIONS AND PUBLICATIONS (2014 - 2017)

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Nautical newspaper La Regata and PRSG publish fishing closures cards

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: Nautical newspaper La Regata and PRSG publish and disseminate fishing closures cards.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

RELEVANCE: Fishing closures are a management tool for conservation, and sustainable use of fisheries. Many persons, particularly recreational fishers, are poorly aware about fishing closures. Nautical newspaper La Regata is a trustworthy forum through which commercial and recreational fishers get informed about fishing events, laws and regulations, and environmental issues.

RESPONSE: Nautical newspaper La Regata and PRSG joined efforts in the development of fishing closure cards. The cards have been published through the newspaper (printed and digital versions) and PRSG's Facebook page. Each card shows the name of the fish in English and Spanish, closure dates, and an illustration of the fish.

RESULTS: Since April 2015, La Regata and PRSG have been publishing the cards. Thousands of persons have been able to know the fishing closures. It has also served as forum for the exchange of ideas and opinions about fishing closures.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):

COMMUNICATIONS AND PUBLICATIONS (2014 - 2017)

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Puerto Rico Sea Grant produced a book on marine birds

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: In order to provide valuable information to increase knowledge about marine birds, PRSG produced an attractive and colorful bird book with illustrations and facts about resident marine birds.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

RELEVANCE: Marine birds are part of the complex marine and coastal ecosystems. Climate change, habitat destruction by human means, pollution, and lack of vegetation for nesting are threatening the survival of these species. Reliable information is needed to increase the knowledge and awareness of the general public about the species of marine birds that live around Puerto Rico.

RESPONSE: PRSG produced a book on marine birds. The book includes illustrations and information about habitat, reproduction, feeding, and population of marine birds.

RESULTS: The book will be published on summer 2016.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):
COMMUNICATIONS AND PUBLICATIONS (2014 - 2017)

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Promoting conservation in Tres Palmas Marine Reserve through the development of partnerships and citizen participation

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: Throughout the years, the TPMR's value as one of the top spots for marine recreational activities, including surfing, snorkeling, swimming and diving has skyrocketed. The challenges in managing the reserve grew exponentially with the boost of visitors, the building of networks with relevant agencies and the involvement and role of the local community in decision making has strengthened enforcement and safety issues.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

Relevance: During the past years, Tres Palmas Marine Reserve (TPMR) has been heavily marketed as one of the top 5 best places for snorkeling in Puerto Rico. Given the reserve's attractiveness and popularity, the amount of visitors has significantly increased. This increased amount of visitors has brought new management challenges.

Response: In order to determine criteria for the management approaches of the TPMR in order to evaluate its effectiveness in achieving specified goals and objectives to contribute to the conservation of biodiversity, human caused changes and maintain the integrity of ecological interactions, Puerto Rico Sea Grant coordinated an interagency meeting to discuss the building of networks with relevant agencies and the involvement and role of the local community in decision making.

Results: On August 2015, Puerto Rico Sea Grant, Amigos de Tres Palmas, the DNER and the Municipality of Rincón implemented a series of management strategies aimed at the protection and conservation of TPMR and the education of resource users through the involvement of the local community. This measure attempts to promote adequate conditions to aid the recovery of mangroves, reduce sedimentation and protect the reserves principal attraction *Acropora palmata*, listed as critically endangered. To promote reserve users safety, the TPMR was included in the Sea Grant-CariCOOS breaking surf model, which provides wave height information and includes more than 90 beaches around all Puerto Rico. Two Green Stations were installed in Steps Beach as part of a DNER program that intends to foster better management practices for solid wastes disposal in our beaches. Given the positive results from the partnership, two agreements of collaboration were signed where Amigos de Tres Palmas and the DNER agreed to work together in co-managing the TPMR. In another agreement, signed by Amigos de Tres Palmas, the DNER and the Municipality of Rincón, the three entities agreed to collaborate towards becoming more effective in enforcement, compliance and safety issues.

PARTNERS: Puerto Rico Department of Natural and Environmental Resources; Amigos de Tres Palmas;

ASSOCIATED PROJECT(S):
MARINE OUTREACH PROGRAM (2014 - 2017)

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Reef Responsible - A Market driven approach to a sustainable commercial fishing industry in the VI.

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: VIMAS has been working with local restaurants to certify new and update original restaurants in the Reef Responsible program

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

Relevance The demand for seafood is increasing yet many populations of fish are being overfished, especially around the island of St. Croix. This project promotes the purchasing and consuming of fish caught or farmed using environmentally friendly practices. It educates restaurants on purchasing fish that are legally caught using sustainable methods.

Response: VIMAS has joined with staff from local agencies and organizations to develop an education and outreach program that promotes a sustainable fishing industry.

Results: VIMAS has been working with partners to create the Reef Responsible program and supporting educational materials. During this reporting period, one workshop was held to certify 4 additional restaurants as Reef Responsible. In addition, an exhibit on the program was done at "The Taste of St. Croix", an annual event which attracts hundreds of St. Croix residents. A promotional event was also held highlighting the certified restaurants that was attended by about 250 people on St. Croix. Planning has started to implement the program on St. Thomas in the near future.

PARTNERS: The Nature Conservancy;

ASSOCIATED PROJECT(S):

[VIRGIN ISLANDS MARINE ADVISORY SERVICE \(2014 - 2017\)](#)

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Coastal Nature Reserve: "Caño Madre Vieja"

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: The Caño Madre Vieja (CMV), part of the Río Culebrinas Watershed, comprises an area of about 66 acres of estuary-wetland-coastal zone in the Municipality of Aguada. The area includes a coastal mangrove forest, freshwater wetlands and a federally designated coastal barrier. Fishes, crustaceans and nesting areas for migratory birds were documented in the zone. Also, the CMV provides coastal protection, flood mitigation, pollutant filtration and erosion control in the north-west coast of Puerto Rico.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

Relevance: UPR Sea Grant, in a collaborative effort with state, federal agencies and community organizations prepared the proposal Landscape-scale Restoration Initiative to Establish Biological Corridors, Improve Trust Species Habitat and Maintain the Ecosystem functionality of Edge Habitats to protect the water quality, reduce and mitigate the risks of fire in wilderness areas and to improve habitats for species at risk in the Western and Central Region of Puerto Rico, including the Río Culebrinas Watershed and the CMV estuary.

Response: UPR Sea Grant continues their collaboration with CAPCA and the DNER to complete the Natural Reserve Designation Petition Report for the establishment, for the first time, of the Caño Madre Vieja Natural Reserve in the northwest coast of Puerto Rico. Once the document is completed, the DNER will submit it to the PR Planning Board for the Reserve Designation.

Results: UPR Sea Grant and CAPCA continued outreach efforts for the CMV designation as a Natural Reserve and the implementation of best management practices in a collaborative effort with the DNER. (www.reservanaturalcanomadrevieja.wordpress.com)

PARTNERS: Puerto Rico Department of Natural and Environmental Resources; Ciudadanos Aguadeños Pro Conservación del Ambiente;

ASSOCIATED PROJECT(S):

[MARINE OUTREACH PROGRAM \(2014 - 2017\)](#)

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Coastal Nature Reserve: "Caño Boquilla"

NATIONAL FOCUS AREAS: Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: The Caño Boquilla Natural Reserve (CBNR), part of the Río Grande de Añasco Watershed, was declared Natural Reserve in 2002. The reserve comprises 120 acres of maritime zone, wetlands, estuaries and mangroves in the Mayaguez-Añasco Bay and included nine nautical miles outside the coastal zone. The reserve estuary discharges into one of the most important western sand beaches where two species of marine turtles nest, and is habitat for more than 80 bird and 50 fish species.

PROGRAM FOCUS AREAS: Healthy Ecosystems and Habitats

Relevance: UPR Sea Grant, in a collaborative effort with Dewey University, DNER, MSA and GCA is implementing the proposal: "Forestación Comunitaria Sabanetas-Algarrobo Reserva Natural Boquilla" to restore and revitalize the CBNR for the benefit of the people and the wildlife that lives in this coastal environment. The project was aligned with the Puerto Rico Statewide Assessment and Strategies for Forest Resources and has 2 goals: a. Coastal Restoration and Rehabilitation: planting mangroves and *Pterocarpus* species; trash and marine debris removal, and b. Education and Stewardship: train volunteers, engage citizens and offer workshops and seminars to enhance community knowledge and commitment to protect the reserve's natural habitats and species.

Response: The newly restored ecosystem could serve as a community learning platform for protection and conservation while strengthening community education and entrepreneurship. The proposal was approved for the year 2015-2016 with a total budget of \$37,000.

Results: UPR Sea Grant and MSA continued outreach efforts in the CBNR through publications posted on the "Reserva Natural Caño Boquilla" blog, at www.granreservaboquilla.wordpress.com.

PARTNERS: Dewey University; Mayaguezanos Por la Salud y el Ambiente; Puerto Rico Department of Natural and Environmental Resources;

ASSOCIATED PROJECT(S):

[MARINE OUTREACH PROGRAM \(2014 - 2017\)](#)

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Puerto Rico Sea Grant published three videos on Marine Protected Areas (MPA)

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development; Healthy Coastal Ecosystems

- Accomplishment
- PO Review Complete

RECAP: In response to a lack of educational resources about Marine Protected Areas in Puerto Rico, PRSG published three videos to highlight the beneficial impacts of MPA's.

PROGRAM FOCUS AREAS: Education and Workforce Development ; Healthy Ecosystems and Habitats

Relevance: Marine Protected Areas (MPA) in Puerto Rico have a great ecological, social, cultural and economic importance. MPAs' are habitats for commercial fishes, provide recreational opportunities, render services as green infrastructure, which tender economic benefits and contribute to the resiliency of coastal communities. On the other hand, MPAs' are the scenario of diverse uses and conflicts that are inevitable when different groups of people have different ideas about how areas of the ocean should be managed. There is a lack of information and products related to the MPAs' and also there is a need to communicate the importance of these protected areas in terms of conservation and sustainable uses. Through our videos, PRSG can provide better information about the function of marine and coastal ecosystems, help people to understand the complexities of coastal environments, support management and decision-making processes and raise awareness of economic contributions of coastal areas.

Response: PRSG published three videos on the topic of Marine Protected Areas. These issues addressed the need for information about MPAs' and contributed to an increase in environmental education and ocean literacy. The videos highlight the importance of MPAs' as effective tools for supporting natural and cultural heritage conservation objectives. MPAs' highlighted include: Desecheo, La Parguera, and Canal Luis Peña.

Results: The videos altogether have more than 2,700 views and are available through PRSG's YouTube channel: <https://www.youtube.com/user/programaseagrantpr>.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):

[COMMUNICATIONS AND PUBLICATIONS \(2014 - 2017\)](#)

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Puerto Rico Sea Grant conducted Ocean Chats

NATIONAL FOCUS AREAS: Resilient Communities and Economies

- Accomplishment
- PO Review Complete

RECAP: RECAP: PRSG conducted one Ocean Chat about the project Assessing Coastal Vulnerability of Small Islands in Puerto Rico and USVI and over 20 persons were in attendance.

PROGRAM FOCUS AREAS: Resilient Communities and Economies

RELEVANCE: Communicating research findings, is one of PRSG's top priorities. Ocean Chats are short presentations of our research projects followed by a session of questions, discussions and comments. Through the Ocean Chats PRSG researchers share research findings with scientists, public policy makers, marine and costal resources managers, students, researchers, and community members.

RESPONSE: For the period reported, PRSG con held one Ocean Chat about the project Assessing Coastal Vulnerability of Small Islands in Puerto Rico and USVI.

RESULTS: Over 20 persons attended the Ocean Chat and were able to obtain information about the project Assessing Coastal Vulnerability of Small Islands in Puerto Rico and USVI and make questions and comments on related topics such as coastal erosion and economic value of small islands in PR and the USVI.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):
COMMUNICATIONS AND PUBLICATIONS (2014 - 2017)

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Commercial and Recreational Fish Users Education.

NATIONAL FOCUS AREAS: Resilient Communities and Economies

- Accomplishment
- PO Review Complete

RECAP: Puerto Rico Sea Grant fisheries extension has been serving as a long-term facilitator and a non-advocate advisor for a diverse group of local fishers of Puerto Rico representing commercial, recreational, skin-diver, kayak recreational sport-fishers, and wild ornamental fishers.

PROGRAM FOCUS AREAS: Resilient Communities and Economies

Relevance- Advisory services have been oriented to help commercial fishers to set priorities and develop long-range plans that include alternatives for product diversification. The specialized advisories have been extended to include recommendations to resource managers, particularly to the PR-Department of Natural and Environmental Resources, and the PR Department of Agriculture, on matters related to marine resources regulations, government incentive programs, and other critical fishers' needs.

Response- This project continues providing specialized assistance in marine advisories for the sustainable use of the fishery resources, to commercial and recreational fishers, resource managers and scientific investigators, oriented toward applied science for the conservation of these resources. Outreach included technical support to maintain commercial and recreational fishers informed about fishing regulations, biological aspects of regulated species, and issues dealing with environmental conservation.

Results- With Puerto Rico Sea Grant advisories, FEPDEMAR (Federación de Pescadores de P.R. y Defensores Del Mar, Inc.) has become the main recognized organization representing fishery workers of Puerto Rico, by relying on their traditional knowledge, while asserting their social standing, their political status, and preserving their role in the natural environment. This has been proved when the PR Governor and the DNER Secretary had committed in writing to attend main issues to support artisanal commercial fishers, especially as appointing members to the DNER fishery advisory committee.

PARTNERS: Federación de Pescadores de Puerto Rico y Defensores Del Mar, Inc. (FEPDEMAR); Puerto Rico Department of Agriculture; Puerto Rico Department of Natural and Environmental Resources; Caribbean Fishery Management Council (CFMC);

ASSOCIATED PROJECT(S):
MARINE OUTREACH PROGRAM (2014 - 2017)

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MOP Fisheries & Aquaculture Electronic Portal

NATIONAL FOCUS AREAS: Resilient Communities and Economies

- Accomplishment

- PO Review Complete

RECAP: The Puerto Rico Sea Grant (PRSG) fisheries specialist's electronic portal "Marine Outreach Program in Fisheries and Aquaculture, Puerto Rico Sea Grant College Program" is available for public use. More than 9,381 visitor "hits" from twenty five different countries have been received.

PROGRAM FOCUS AREAS: Resilient Communities and Economies

Relevance- With the World-Wide-Web expansion, instant access of information is available. PR-MOP fisheries is making science information available as an outreach product within the Web, promoting the wise utilization of coastal natural assets while increasing public awareness of the need to protect our local resources. The portal provides a local open forum for discussion and reporting on matters specifically related to fisheries and mariculture. Marine users from public and private sectors receive direct support and advice, while promoting collaborative ecosystem-based management.

Response- An electronic "blog" site administrated by MOP-fisheries was created and opened to public access: <http://prsgfisheriesoutreach.wordpress.com/>. Relevant information related to fisheries and aquaculture outreach and investigations conducted by MOP has been summarized and posted for forum discussions. A section in the portal provides for SEAMAP-C publications and data downloading. Others sections include applied fisheries studies, fisheries management announcements, collaborators publications and information on mariculture outreach projects.

Results- The web-portal provides detailed information of the works conducted by the MOP fisheries/aquaculture specialist, access to fisheries studies, their results and reports, including fishery independent studies, links to other publication sources and relevant marine advisories. The site also promotes the aquaculture/mariculture development in Puerto Rico, while increasing the public's awareness on maintaining sustainable fisheries and to ensure responsible and productive use of the resources.

PARTNERS: Federación de Pescadores de Puerto Rico y Defensores Del Mar, Inc. (FEPDEMAR); Puerto Rico Department of Agriculture; Puerto Rico Department of Natural and Environmental Resources; Caribbean Fishery Management Council (CFMC);

ASSOCIATED PROJECT(S):

[MARINE OUTREACH PROGRAM \(2014 - 2017\)](#)

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La Parguera Marine Interpretative Center

NATIONAL FOCUS AREAS: Resilient Communities and Economies

- Accomplishment
- PO Review Complete

RECAP: The Marine Interpretative Center of La Parguera when fully operational will serve to educate in being able to appreciate and to protect the great ecological value of La Parguera

PROGRAM FOCUS AREAS: Resilient Communities and Economies

Relevance- To the present, "La Parguera" lacks a scientific and historical information center of the sea, keys and coastal zones, and of a place to offer educational activities. The health on coastal and marine resources has decreased substantially during the past decades in "La Parguera". Therefore, one of the center's objectives is to serve as a strategic point to educate residents and visitors on the marine environment and health of the resources, but especially on the importance of stimulating a marine environmental and conservationist ethic.

Response- While serving as a member of the MICP steering committee, UPRM Sea Grant Program has a protagonist role by providing advisory and collaboration during the facilities setup. MOP will provide educational material related to life and habitat of marine species. The exhibitor will have explanations of environmental issues such as overfishing, global warming, acidification, and of "La Parguera history". The Center will receive Sea Grant collaboration in the Installation of a saltwater aquarium system and will also provide expertise in marine fisheries.

Results- It is anticipated that the Center will be receiving over one hundred visitors per month, which will receive printed, framed and video exhibitions information, in addition to personal communication through person to person question answering. It is expected that local community members, students and retired citizens participate and become active volunteers of the Center.

PARTNERS: Puerto Rico Department of Natural and Environmental Resources;

ASSOCIATED PROJECT(S):

[MARINE OUTREACH PROGRAM \(2014 - 2017\)](#)

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Climate Education for Virgin Islands High School Students

NATIONAL FOCUS AREAS: Resilient Communities and Economies

- Accomplishment
- PO Review Complete

RECAP: VIMAS has started to provide high school students with the necessary information to understand global climate change and how they can work to mitigate it. Additional climate change education will continue this summer on St. Thomas and in Sept. on St. Croix.

PROGRAM FOCUS AREAS: Resilient Communities and Economies

Relevance: Island communities are particularly vulnerable to the impacts of climate change. Small islands like St Croix and St. Thomas have a major portion of its population located in coastal areas threatened by increased sea level rise. The Virgin Islands (VI) have already lost a significant portion of their coral reefs through the direct and indirect impacts of increased sea water temperatures over the last decade. Impacts from sea level rise, increasing sea water temperatures and increases in the intensity of hurricanes as well as other effects of climate change will continue and intensify in coming years and will have major repercussions in the Virgin Islands.

Despite its vulnerability, the local population has little knowledge or understanding of climate change science. Among local students, the lack of knowledge seems particularly apparent in the public schools where climate change is not a part of the curriculum. In addition, few if any outreach programs exist on climate change in the VI.

Response: This project will provide climate change education to high school students so that they are better equipped to adapt to the changing climate and its local impacts as they continue their education and enter the workforce. Increased awareness of the problem will assist with better resource management and planning and better mitigation of climate change impacts, and the reduction of individual carbon footprints through changes in behavior.

Results: During this reporting period, VIMAS/St. Croix gave twelve climate change education presentations to high school students and assisted them with a climate change presentation at a community event. The post-test for the program showed a significant improvement in climate literacy. The St. Croix agent started to work with NOAA Climate Stewards Education (CSEP) program to develop a funding proposal to continue climate change education during the fall of 2016. She also participated in monthly professional development seminars and is currently planning to do a presentation on the climate change activities in the 2016 National Marine Educators Conference. Additionally, climate change education will be provided in the VIMAS Youth Ocean Explorers Summer Program on St. Thomas this summer.

PARTNERS: University of Virgin Islands;

ASSOCIATED PROJECT(S):

[VIRGIN ISLANDS MARINE ADVISORY SERVICE \(2014 - 2017\)](#)

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Community Engagement

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: VIMAS has been working to promote its programs, services, and products within the USVI community. VIMAS continues to serve as advisors on government and nonprofit boards and committees.

PROGRAM FOCUS AREAS: Education and Workforce Development

Relevance: In order for the Virgin Islands Marine Advisory Service to be effective, people must be aware of the program and the services it offers. To increase public awareness of VIMAS and Sea Grant, and promote the program's goals, VIMAS agents participate in several community activities and boards. Objectives will be carried out through events such as community affairs and public presentations. In addition, VIMAS agents will provide technical assistance to governmental agencies and boards about marine resources such as the VI Fisheries Advisory Committee, the East End Marine Park (EEMP) Committee, the St. Thomas East End Reserve (STEER) Committee, Blue Flag Committee, as well as the VI Nonpoint Source Pollution (NPS) Committee.

Response: VIMAS is working to increase awareness of marine issues, scientific research, career opportunities and Sea Grant activities through participation in community affairs, public presentations and media.

Results: During this reporting period, VIMAS participated in the St. Croix and St. Thomas Agriculture Fairs to promote Sea Grant and VIMAS activities. VIMAS also participated in Lockhart Elementary School Fair, Community Service Fair at Antilles School, the St. Thomas Yacht Club, the annual St. Croix Earth Day Eco Fair, Reef Fest (STT) and Afternoon on the Green (STT). During this period VIMAS also led 52 field activities and did 32 classroom presentations. VIMAS agents serve on government and local environmental committees such as the Fisheries Advisory Board (STX) and the Nonpoint Source Pollution Committee (STX) and the St. Thomas East End Reserve Committee (STT), STX Agriculture and Food Fair Committee (STX), and Blue Flag USVI Jury (STT&STX).

PARTNERS: The Nature Conservancy;

ASSOCIATED PROJECT(S):

Marine Nature and Conservation Newspaper Column

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: VIMAS is increasing marine education by regular newspaper submissions and other media.

PROGRAM FOCUS AREAS: Education and Workforce Development

Relevance: If the community is to protect and conserve marine resources they need to have an understanding of them. This can be done in a variety of ways such as publications, public and school presentations, field activities, as well as through the media. This project would involve writing articles on marine nature and conservation as well as promoting the VIMAS program and website. The local newspapers are widely read on a daily basis in the VI. VIMAS will increase this type of education by regularly writing and publishing in the newspaper and other media.

Response: VIMAS has started to make more regular submissions to the local media in order to increase awareness of marine issues.

Results: During this period, articles were published in the online VI Source on several events and issues (Ag Fair Brings Joy, Wonder, Food - St. Thomas Source - 11/23/2015; Reef Fest Teaches and Entertains - St. Thomas Source - 11/9/2015; Community Convenes for Coastweeks 30th Annual Cleanup - 9/21/15), in the local newspapers (Marine Conservation to be Promoted at Reef Fest 2015 - St. Croix Avis - 11/6/2015; Life Aquatic at Reef Fest - Daily News - 11/9/2015; Montessori Students Learn Under the Waves - Daily News - 03/11/2015; VI Teachers Invited to go Back to Class to Learn about Birds - 4/28/15), the online VI Consortium (UVI's Marine Advisory Service Bringing Marine Education To Public and Private Schools - The Virgin Island's Consortium - 9/1/2015; Coastweeks Beach Cleanup Kicks Off on Sept. 9, Volunteers Needed - Virgin Islands Consortium - 09/11/2015) and through UVI's press releases (University's VIMAS Uses Art to Educate Students on Marine Biology - UVI's Press Release - 12/16/2015). Also during this period, VIMAS also conducted 11 radio interviews to promote VIMAS related activities.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):

[VIRGIN ISLANDS MARINE ADVISORY SERVICE \(2014 - 2017\)](#)

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Marine Debris Education and Community Engagement

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: VIMAS increased awareness of marine debris and engaged over 1000 people in reducing marine debris in the VI

PROGRAM FOCUS AREAS: Education and Workforce Development

Relevance: Marine debris is a problem throughout the VI as well as in many Caribbean islands. It is a deterrent to tourism, a human health hazard, degrades marine habitats and can impact marine plants and animals. Past studies have shown that about 80% of VI marine debris is from recreational use of the beaches and surrounding areas. If we are to mitigate this problem we must increase community awareness and engage the community in actions that will result in behavior change. Coastweeks is an annual event in the VI (promoted internationally by The Ocean Conservancy) where hundreds of volunteers are engaged in coastal and underwater cleanups. This event is coordinated locally by VIMAS agents who make classroom presentations and coordinate beach and underwater cleanups. Participating in coastal cleanups allow participants to engage in an activity which helps our marine environment and develops a sense of stewardship, promoting positive behavior change.

Response: VIMAS increased awareness about the problem of marine debris and engaged the community in activities to address the issue. VIMAS coordinated the annual coastal cleanup event in Sept. and Oct. In addition classroom presentations were made to local schools on the issue.

Results: During this reporting period VIMAS coordinated 16 coastal cleanups engaging 875 volunteers during the annual Coastweeks event. Additionally, 2 cleanups were done outside of the Coastweeks event. All data were transmitted to TOC. VIMAS also made marine debris presentations to 19 classes/groups during this reporting period.

PARTNERS: Ocean Conservancy;

Puerto Rican school, participating in the Sandwatch Project, won first place in a contest of UNESCO

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: One of the schools participating in the Sandwatch Project in Puerto Rico won first prize in a contest hosted by UNESCO. As part of the prize, the House of Representatives of Puerto Rico conferred students and teachers with an official acknowledgement for their performance in the Project, as well as their academic achievements.

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: Beaches are dynamic sites in constant change, and in Puerto Rico, erosion is a serious issue. To bring attention to the diverse range of situations faced by our coast, it is important that data about the beaches is gathered and analyzed in the most efficient way possible. On the other hand, part of the solution involves including students when searching for alternatives to safeguard this valuable natural resource. UNESCO developed the Sandwatch Project, aiming at educating about the beaches, the changes they suffer, and the anthropogenic impact on them.

RESPONSE: As part of the Sandwatch Project, currently being undertaken in 38 countries and which the Sea Grant Program is responsible for implementing in Puerto Rico, UNESCO hosted a contest in which students had to compare the before and after of a beach currently being studied and monitored. They were tasked with finding older pictures, along with actual ones, and compare them in an essay detailing their findings. The contest was named A Snapshot in Time - Beaches Past and Present.

RESULTS: Students in the José Rodríguez de Soto Elementary School in Guánica, Puerto Rico, won first prize in a Caribbean countries UNESCO-hosted contest. A \$700.00 cash prize was given to the school for the purchase of educational materials. Also, the local legislature gave students and teachers an official acknowledgement for their excellent work within the Sandwatch Project as well as their outstanding academic achievements.

PARTNERS: UNESCO;

The Puerto Rico Sea Grant Program takes part in the PRDE Contacto Verde educational project.

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: The Puerto Rico Department of Education and the Puerto Rico Department of Natural and Environmental Resources chose the Puerto Rico Sea Grant Program as one of the leading institutions for natural resources education in the Island.

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: There is a clear need for Puerto Rican youths to learn firsthand the importance of preserving our natural resources. The best way to do this is to get the young people directly involved with these resources. In this manner, the students know and understand that we are part of the environment which surrounds us, and must be cared for and protected.

RESPONSE: Puerto Rico Sea Grant offers students and teachers the opportunity to learn both inside and outside the classroom through workshops, field activities, laboratories and field trips. Sea Grant has also prepared a series of educational guides and curricular materials about marine and coastal ecosystems that aid, both students and teachers, in understanding these resources.

RESULTS: The Puerto Rico Department of Education and the Puerto Rico Department of Natural and Environmental Resources chose the Sea Grant Program as one of the leading institutions for natural resources education in the Island, trusted to provide experiences to students, teachers, parents, and the rest of the school community that allow them to engage directly with the natural resources. Also, they placed Sea Grant in a list of highly recommended institutions to provide teaching-learning activities within the Contacto Verde Project.

PARTNERS: Puerto Rico Department of Education; Puerto Rico Department of Natural and Environmental Resources;

Puerto Rico Sea Grant collaborates with the Interdisciplinary Center for Coastal Studies

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: PRSG collaborates with the Interdisciplinary Center for Coastal Studies in the development of lectures and workshops to augment research interest among university students and develop their communication and literacy skills.

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: Augmenting research interest among university students and their communication and literacy skills is a high priority for the UPR, Mayagüez Campus.

RESPONSE: The Interdisciplinary Center for Coastal Studies conducts a series of lectures and workshops devoted to: share research findings on topics related to the coast, increase ocean literacy and develop research and documentation skills among university students. PRSG produces posters to announce the activities, promotes them through social networks and mailing lists, and provides the Marine Education and Information Resources Center and materials to develop the activities.

RESULTS: Over 100 persons have participated in the lectures and workshops coordinated with the Interdisciplinary Center for Coastal Studies.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):

[COMMUNICATIONS AND PUBLICATIONS \(2014 - 2017\)](#)

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PRSG collaborated with USFWS in the development of educational sheets for children

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: PRSG collaborated with USFWS in the development of educational sheets for children in order to guide them through their visits to the nursery and promote among them interest in the protection and conservation of the plants.

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: Environmental education processes should start at an early stage. There are many children that, together with the adults, visit the nursery located at the USFWS National Wildlife Refuge (NWR) in Cabo Rojo. In the nursery, they get to know a wide variety of plants that are mostly classified as threatened or endangered species. Many of these plants grow close to Puerto Rico's coastal areas. Educational sheets will strongly support the process of education about Puerto Rican flora.

RESPONSE: PRSG collaborated with USFWS in the development of a group of educational sheets for children that visit NWR's nursery. These sheets serve as a tool to explore the nursery, learn details about the plants, and have fun while learning.

RESULTS: PRSG and USFWS developed educational sheets with activities to do at the nursery. The sheets include a welcome message given by a comic character (the character also serves as a guide through the sheets), observation and exploration exercises to do at the nursery, drawing activities, word-search games and a certificate. Sheets are ready to print and use with the visitors.

PARTNERS: US Fish and Wildlife Service (US DOI, FWS);

ASSOCIATED PROJECT(S):

[COMMUNICATIONS AND PUBLICATIONS \(2014 - 2017\)](#)

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PRSG published an issue of Fuede y Verguilla dedicated to fishers' traditions

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: In order to highlight fishing communities' traditions, PRSG published an issue of Fuede y Verguilla dedicated to the tradition of "Virgen del Carmen", patron saint of the fishers.

PROGRAM FOCUS AREAS: Education and Workforce Development

RELEVANCE: Religious and cultural practices of Puerto Rican fishing communities have been part of our society for centuries. These practices describe a way of life for many people in the coasts and deserve to be highlighted and communicated to the magazine's audience.

RESPONSE: PRSG published an issue of Fuede y Verguilla dedicated to the tradition of "Virgen del Carmen", patron saint of the fishers.

RESULTS: This issue has been distributed in its printed and electronic versions. It can be found in http://seagrantpr.org/wp-content/uploads/2015/10/fuede_y_verguilla_vol9num1.pdf.

PARTNERS: None listed in Database

ASSOCIATED PROJECT(S):

[COMMUNICATIONS AND PUBLICATIONS \(2014 - 2017\)](#)

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The Puerto Rico Sea Grant Education Component (PRSGED) connects teachers to marine science through professional development opportunities to enhance ocean literacy.

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: A marine educational training model has been developed that receives high marks from educators. The model educates participants about marine topics, facilitates marine education resource materials and motivates them to continue participating in the program. Approximately 9,220 students will be impacted by the information offered by the teachers who completed the workshops.

PROGRAM FOCUS AREAS: Education and Workforce Development

Relevance: Most Puerto Rican teachers lack formal or informal studies on issues related to marine sciences. This lack of knowledge is reflected in the classroom where discussion of these issues is limited. Training for in service teachers and hands-on student field learning experience are efficient ways to disseminate new and relevant research results to enhance marine environmental stewardship.

Response: Puerto Rico Sea Grant Education Component (PRSGEC) developed nine (9) professional development programs related to specific topics, including marine birds, marine vegetation, whales, sands classification, Encounter with the sea, sea turtles, coral, plankton, etc.

Result: A total of one hundred thirty seven (137) teachers attended the workshops and returned a Workshop Evaluation Form. The 97% of the educators who responded to an evaluating form rated the workshops activities excellent or good. Participants responding to a questionnaire believed they learned new information about marine topics (95%) and marine topics related materials (94%) at the workshops they attended and were confident that they could use the materials (93%). Pre and post-test assessment indicated significant improvement in student content knowledge. The knowledge gain for the participant was 84%.

PARTNERS: Puerto Rico Department of Education; Puerto Rico Department of Natural and Environmental Resources; University Of Puerto Rico, Humacao (UPR); G Works;

ASSOCIATED PROJECT(S):

[MARINE EDUCATION \(2014 - 2017\)](#)

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Marine and coastal education programs for K-12 students

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: Puerto Rico Sea Grant efforts contributed towards the development of an ocean literate citizenry the development of an impending workforce that is diverse, knowledgeable and adequately prepared to advance the understanding of marine and coastal environments and its sustainability.

PROGRAM FOCUS AREAS: Education and Workforce Development

Relevance: A well informed, marine-science literate and environmentally responsible citizenry is needed to ensure a sustainable future for Puerto Rico's marine and coastal environments. Scientific knowledge of the sea and its importance on planet Earth should be part of the culture and general education in the school curriculum of the educational system of Puerto Rico. It's necessary to enrich science curriculum in schools to strengthen the study and the interest of marine environments. The participation of students in K-12 topics related to marine science and marine careers activities is essential to the development of a future ocean literate work force with the necessary tools to deal with marine and coastal environmental issues of Puerto Rico.

Response: The Marine Science Adventure Program, includes a wide range active, high-quality, content-rich learning experiences with corresponding support services for school-aged children and their teachers. The program introduces students to the marine environment through exhibitions, laboratories, conferences and field activities in different coastal nature reserves in Puerto Rico. Using a multidisciplinary (STEM) approach to resolve environmental problems, develop science applications, and community involvement this program presents coastal and marine resources as educational tools.

Result: The SGEC delivered a total of 29 education events for 2,401 K-12 levels students with 93 teachers (school programs). Students acquire new knowledge (76.2% knowledge gain) about marine and coastal ecosystems and a better understanding and appreciation of the various fields of study in the marine sciences.

PARTNERS: Puerto Rico Department of Education;

ASSOCIATED PROJECT(S):
MARINE EDUCATION (2014 - 2017)

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PRSGEC trains volunteers to play an active role in enhancing, monitoring and protecting sea turtles in east and southeast of Puerto Rico

NATIONAL FOCUS AREAS: Environmental Literacy and Workforce Development

- Accomplishment
- PO Review Complete

RECAP: PRSG trains volunteers (university students and citizens) to protect sea turtle nesting beaches by providing resource management and services that the government can not finance due to the actual economic crisis.

PROGRAM FOCUS AREAS: Education and Workforce Development

Relevance: Sea turtle conservation projects are contingent upon the support of citizen volunteers. Volunteers collect nesting data and keep a watchfull eye for the protection of sea turtles and their habitats. On these days of economic crisis the absense of the Department of Natural and Environmental Resources staff makes citizens volunteers an important and essential part of marine turtle conservation efforts. There is a great need to provide citizens with opportunities to survey nesting beaches, to identify, study and portect the turtles nests, monitor the population health and behaviour and identify threats and take conservation as well as legal actions to protect them. The challenge lies in organizing projects that yield quality outcomes both scientifically and educationally.

Response: PRSGEC developed three (2) sea turtle training workshop related to specific topics, including sea turtle biology, how to collect data, beach ecology, nest relocation, laws and regulations.

Result: Twenty (20) university students participated in active learning experiences for sea turtle monitoring; experience that the regular undergraduate courses do not offer. This volunteers program is more than just a tool for data collection. PRSG training efforts are developing sea turtle volunteers that provide the resource management and services that due to the economic crisis the government can't subsidize. Volunteers worked 504 hours per year, helped to collect quality sea turtle nesting data and identified and reduced sea turtle threats.

PARTNERS: Puerto Rico Department of Natural and Environmental Resources;

ASSOCIATED PROJECT(S):
MARINE EDUCATION (2014 - 2017)

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2015 Leveraged Funding

Project Level

Source	Project	Title	Amount	Type
National Marine Fisheries Service (US DOC, NOAA, NMFS)	9919 - Marine Outreach Program (A/151-1-14)	SEAMAP-C	\$64,833.00	Managed
US Fish and Wildlife Service (US DOI, FWS)	9924 - Communications and Publications (C/161-1-14)	Paneles Centro Interpretativo Las Salinas, Cabo Rojo	\$20,860.00	Managed

	TOTAL:	\$85,693	
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Program Level

No Program Level Leveraged Funding for this year

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Performance Measures

2015 Communities implementing hazard resiliency practices

County of the Coastal Community	Name of Coastal Community	Number of Resiliency Training/Tech Assistance provided	Community hazard resiliency improved
	representatives of 28 of the 44 coastal municipalities	1	Yes

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2015 Sea Grant Products - (tools, technologies, info services)

Description	Developed	Used
Two educational guides were developed and used by teachers and students.	Yes	Yes
Two issues of Marejada magazine were published.	Yes	Yes
PRSG collaborated with USFWS in the production of three interpretative panels for Laguna Cartagena Wildlife Refuge	Yes	Yes
Puerto Rico Sea Grant collaborates with USFWS in the edition, illustration and graphic design of 27 fact sheets about endangered and threatened animals and plants of Puerto Rico and the USVI	Yes	Yes
PRSG collaborated with USFWS in the development of educational sheets for children	Yes	Yes
PRSG published three videos on the topic of Marine Protected Areas	Yes	Yes

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2015 Economic (market and nonmarket) impacts

(No Data)

2015 National Performance Measures - General

Performance Measure	Annual Target	Reported	Program Comment
Number of fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities.	4,196	35	
Number of communities that implemented sustainable economic and environmental development practices and policies (e.g., land-use planning, working waterfronts, energy efficiency, climate change planning, smart growth measures, green infrastructure) as a result of Sea Grant activities.	223	8	
Number of acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities.	331,630	392	
Number of resource managers who use ecosystem-based approaches in the management of land, water, and living resources as a result of Sea Grant activities.		9	
Number of people engaged in Sea Grant supported informal education programs.	773,973		
Number of Sea Grant-supported graduates who become employed in a career related to their degree within two years of graduation.	118	10	

2015 Program Performance Measures

(No Data)

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2015 Metrics

Staffing Numbers	Individuals	SG FTEs	non-SG FTEs
Administrative	5.00	2.68	1.53
Communications	14.00	3.50	5.00
Education	1.00	1.00	

Extension	10.00	5.10	1.97
Research	63.00	3.86	2.02

Core Funding	Proposals	Institutions Involved	From Home Institution
Pre-Proposals	17	15	8
Full Proposals	10	12	3
Proposals Funded	8	10	1

Student Support	Number of New Students	Number of Continuing Students	Number of Degrees Awarded
Sea Grant Supported Undergraduate Students	33	10	
Sea Grant Supported MS/MA Graduate Students	3	11	1
Sea Grant Supported PhD Graduate Students	1	1	
Other Sea Grant Supported Professional Degree Graduate Students			

Other Metrics	Amount
VolunteerHours	898
Number of P-12 Students Reached Through Sea Grant-Trained Educators or Directly through Sea Grant Education Programs	14220
Number of P-12 Educators who participated in Sea Grant education programs	90
SG-Sponsored/Organized Meetings/Workshops	60
Attendees in SG Meetings/Workshops	3368
Public or Professional Presentations	144
Attendees at Public or Professional Presentations	8000
Clean Marina Program -- Certifications	
HACCP -- Number of people with new certifications	