

Year 2009 Projects

Project Name	Lead Implementer	Project Description	Habitat Type	Acreage	Linear Miles	Linear Feet
Community-Based Red Mangroves Habitat Restoration Project	San Juan Bay Estuary Program	<p>The Condado Lagoon Mangrove Restoration project consisted in the restoration of a mangrove forest along the shores of the Condado Lagoon, which is part of the San Juan Bay Estuary (SJBE) in Puerto Rico. The project's workplan was designed to accomplish two main objectives: (1) the restoration of approximately 3.0 acres of mangroves along the shorelines of the Condado Lagoon through the planting of 900 red mangroves seedlings and (2) to increase the community awareness of, appreciation for, and knowledge about this important natural resource and the San Juan Bay Estuary as a whole, particularly as these relate to their communities, greater San Juan and Puerto Rico as a whole. Both objectives were successfully accomplished. In terms of the first objectives, a total of 1,389 red mangroves seedlings were planted during 25 planting events. After the first year of planting, about 80 % of the propagules survive. Regarding the second objective, a total of 747 volunteers participated for a total of 3,516 direct contact hours. Volunteer assistance includes residents and businesses of the Condado area, which occupy the buildings and high-rise condominiums immediately adjoining the project site. Brochures and other outreach materials were developed and distributed among participants, with information about the resources found in the Condado Lagoon, the challenges facing its restoration and the environmental enhancement actions planned for the area. The planting project was covered by the press media, radio, and local TV news. A service campaign with information about the project, its benefits and partners was developed and published in various newspapers. Finally, a permanent exhibition with information and photos about the project was placed in the Condado Lagoon public park waterfront. The interpretative signs also include information about the functions and values of mangroves, the Condado Lagoon, and the efforts to restore this water body as part of the overall goals of the San Juan Bay Estuary Program (SJBEP) and the NOAA Coastal Restoration Office. We believe that all the outreach material produced, the media coverage, and moreover the opportunity to participate in the process increased the citizen's awareness about the value of the San Juan Bay Estuary and its resources. The active involvement of the community in the forestation project increased their sense of ownership for the natural resources in the Condado Lagoon vicinity. Finally, the media campaign explained to a bigger audience the benefits of the project and relevance of coastal restoration and protection. Three (3) different mangrove planting techniques were implemented during the project. One technique was the Riley's Encased Replanting using PVC pipes; another technique was planting directly the juvenile 2 feet tall mangrove trees. The third technique was developed during the implementation of the project by the SJBEP's scientist, Dr. Jorge Bauza, and it was called the Bauza Restoration Technique as well. We observed that the Bauza Restoration Technique increases the success and growth rate of the seedlings. Moreover, the planting area looks less invasive and in harmony with the seascape that the PVC pipes used for the Riley's Encased Replanting Technique. Indeed, we feel that this will contribute to the protection of the plantings area due to the people sympathy feelings towards restoration effort. This habitat restoration will replace and repair a habitat that has been severely degraded and much of it lost due to human activity, including urban development and natural disturbance events during the past four decades. We strongly believe that the eventual full growth of the mangrove seedling planted will increase the function and values of the Lagoon, will improve the fisheries and the overall diversity of flora and fauna. The planting of red mangrove along the shores of the Laguna del Condado will improve a degraded coastal habitat and ecosystem and will help offset the loss of the substantial mangrove coverage originally found in this area.</p>	Mangrove	2	2	0
La Esperanza Island Habitat Cleanup and Reforestation	San Juan Bay Estuary Program	<p>The project consisted in the removal of 1,800 pounds of aquatic debris and in the planting of 50 native coastal trees. Approximately, 85 volunteers actively participated in the event that lasted four hours. Several government agencies, community groups, residents, environmental organizations, and private companies participated. This activity is coordinated annually since 2007. Educational activities with environmental characters were developed before and after the event.</p>	Barrier Island	4	2	0
Melaleuca quinquenervia Stand Removal at Suarez Canal	San Juan Bay Estuary Program	<p>The cayeput tree, native to the South Pacific region, was introduced to Puerto Rico as an ornamental plant, becoming one of the most popular species for urban areas over the last decade. The cayeput tree is known to aggressively invade freshwater herbaceous wetlands outside its natural range, disrupting the ecology of those areas that become infested. Cayeput trees grow very near to each other, eventually displacing shorter native species by blocking available sunlight. Once the trees have been established, they continuously shed an impressive quantity of leaves and small branches, helping to gradually fill the surrounding wetlands in a</p>	Freshwater Marsh	4	1.5	0

		relatively short period of time by creating an elevated island of litter. In addition, the cayeput trees transpire more water than other plants found in non-woody wetlands, possibly lowering the water level in the area. In the end, the wetland area could eventually be filled and drained by the trees, taking on the characteristics of an upland site. The project consisted in the removal of a cayeput (<i>Melaleuca quinquenervia</i>) stand by mechanical and chemical methods, comprising an approximate area of 4.0 acres, found on an herbaceous wetland south of the Suárez Canal, in the Municipality of Carolina. The area was graded and restored to its original levels and herbaceous native plants seeds were dispersed in the area in order to avoid nuisance species re-colonization. The project improves the coastal ecosystems of the SJBE; first, by preventing further degradation of natural habitats from the displacement of native wetland vegetation by an exotic species, and second, by increasing the estuary's biodiversity and its value for wildlife. This is a region that has been severely impacted by urban development.				
SJBE Watershed Reforestation-Torrecilla Alta	Puerto Rico Department of Natural and Environmental Resources	This project is part of a massive reforestation campaign lead by one of our key partners, the PR Department of Natural and Environmental Resources. The agency, in coordination with the watershed municipalities of the San Juan Bay Estuary, our organization and other not-for-profit organizations, developed strategically planting events. These events were developed in areas such as fresh water wetlands, coastal areas, and urban forests. During this year, 1,000 natives trees were planted in the Torrecilla Alta including riparians zones bordering SJBE rivers and creeks.	Freshwater Marsh	5	0	750
The Coral Trail and Reef Enhancement Project in Condado Lagoon	San Juan Bay Estuary Program	An artificial reef trail was installed in the Condado Lagoon creating a near shore snorkeling interpretative trail. The artificial reef trail was made by deploying 45 artificial reef modules over sandy parches. The coral reef trail increased the coral reef fish population and diversity of the area by providing shelter and feeding zones. Moreover, the modules provide an underwater corridor connecting the fragmented seagrasses parches and the offshore coral communities of the lagoon. Through outreach activities and a public service campaign, this project increased people's awareness about the importance of the living resources associated with coral reefs and the San Juan Bay Estuary as a whole. The deployment of 45 artificial reef structures was successful, creating the first underwater coral reef trail in the North Coast of Puerto Rico. The number of reef fish species increased from 6 to 13 after four weeks of deployment. A total of 16 fish species has been observed inhabiting the reef modules including the following species: Bar Jack (<i>Caranx ruber</i>), Bluestriped Grunt (<i>Haemulon sciurus</i>), Blue Tang (<i>Acanthurus coeruleus</i>), Checkered Puffer (<i>Sphoeroides testudineus</i>), Spotted Goatfish (<i>Pseudupeneus maculatus</i>), Great Barracuda (<i>Sphyraena barracuda</i>), Lane Snapper (<i>Lutjanus synargis</i>), Porkfish (<i>Anisotremus virginicus</i>), Rainbow Wrasse (<i>Halichoerus pictus</i>), Sergeant Major (<i>Abudefduf saxatilis</i>), Sharpnose puffer (<i>Canthigaster rostrata</i>), Porcupinefish (<i>Diodon hystrix</i>), Trumpetfish (<i>Aulostomus maculatus</i>), Yellowfin Mojarra (<i>Gerres cinereus</i>), and Yellowtail Snapper (<i>Ocyurus chrysurus</i>). Overall, 115 individuals of reef fishes has been census in the underwater trail. Other reef organism that has been observed inside the reef modules includes the Caribbean Spiny Lobster (<i>Panulirus argus</i>) and the Emperor Helmet snail (<i>Cassis tuberosa</i>). Coral recruitment has been observed in some reef modules after six months of deployment.	Coral Reef	1	0	300
Total				16	5.5	1050