

The San Juan Bay Estuary and its Initiatives toward a Climate Ready Estuary

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The San Juan Bay Estuary (SJBE) is a tropical estuarine system composed of eight water bodies that are interconnected through channels and canals. The system includes different bays and lagoons such as San Juan Bay, the best recognized component of the entire system. Other systems associated with the SJBE include sandy beaches, natural outcroppings, coral communities, cemented sand dunes, mudflats, marshes, and mangroves. The natural beauty and ecological diversity of the estuary support tourism and water-based recreational activities that generate significant revenue. The SJBE is also valued for its commercial port, cruise ship port-of-call, and historic sites. However, the needs of a growing population have resulted in overexploitation of the system's natural resources and degradation and destruction of many of the components of the estuarine system. Some of the main factors impacting the SJBE system are development of the land, illegal sewage discharges, and aquatic debris. Thus, the SJBE Program was created to identify those actions needed to improve and maintain the integrity of the estuary and its designated uses. This effort has been documented in a Comprehensive Conservation and Management Plan (CCMP). The Program has been involved, since its approval, in the full implementation of the CCMP, including global climate change issues. The first project to discuss will be a public service campaign on climate change using traditional media outlets (radio, TV, and newspaper ads). This campaign, developed in conjunction with students from the Sacred Heart University, offers short and easy recommendations to the public on how to reduce energy consumption, and describes the link between consumption and global warming. Furthermore, the SJBE Program has joined efforts with the Sierra Club and developed the Cool Cities Campaign. This climate change campaign was developed to help cities' mayors and their communities achieve reduction in energy consumption through energy efficiency recommendations, efficient transportation alternatives, renewable energy options, and solid waste management. The first output of this joint venture was the publication of a booklet titled: "*Ciudad Cool: Solucionando el Calentamiento Global en Puerto Rico*" (Cool City: A Solution for Global Warming in Puerto Rico). But, in spite of this effort, there is a lack of information about the vulnerability of tropical estuaries and their associated ecological communities to climate change. Thus, we plan to assess the ecological vulnerability to global climate change and identify applicable adaptation alternatives, particularly to mangrove ecosystems and lagoons' hydrological dynamics. This will be archived, in part, through workshops with local experts, scientists, stakeholders, and managers. Also, we will deploy sensitive radar water level sensors in different water bodies of the SJBE system. The idea is to produce base-line and long-term data to determine possible impacts to estuarine lagoons due to sea level rise. Finally, we will discuss implemented actions, such as mangrove planting activities and water quality monitoring, performed as pro-active, on-the-ground measurements to address global climate change.