

**UNIVERSITY OF PUERTO RICO
SEA GRANT PROGRAM**

**Research and Information Needs for Innovative
Marine and Coastal Studies in the Caribbean**

US Fish & Wildlife – Caribbean Field Office (Combate, Puerto Rico)
August 26, 2010

Introduction

The University of Puerto Rico Sea Grant College Program (UPRSG) is performing a regional assessment to determine critical research and information needs for innovative marine and coastal studies in the Caribbean. The richness in biodiversity, both terrestrial and marine, is characteristic of the region. Conservation of our mangrove coastlines, seagrasses, coral reefs, and fishes are essential to sustaining our ecosystems. However, to date, we continue to search for more information on the best strategies needed for management and conservation of our resources. Therefore, surveying the regional community of users of marine and coastal resources is essential to an effective assessment of research needs. With this in mind, we carried out a discussion session (focus group) with staff of the US Fish & Wildlife Service Caribbean Field Office and the NOAA Fisheries Caribbean Field Office at Combate, Puerto Rico.

The discussion focused on addressing issues that are presently considered a concern among resource managers. UPRSG requested comments on questions regarding short- and long-term research needed to develop better models and make better decisions, and obstacles that are presently hindering research and/or assessments that may help improve management and conservation of our local resources.

Funding and Support

The NOAA award no. NA08OAR4170748 provided funding for this activity. Dr. Manuel Valdes-Pizzini (Associate Director-UPRSG), Dr. Kurt Grove (Research Coordinator), and Jasmine Seda (Project Assistant) coordinated this activity. Odette Ortiz also served as note taker.

Dates and Venue

The focus group was held at the U.S. Fish and Wildlife Service, Caribbean Field Office in Cabo Rojo, Puerto Rico on Thursday, August 26, 2010 from 10:00 am to 3:00 pm. Eleven participants from the agency and two participants from NOAA Fisheries Caribbean Field Office attended the activity.

Goals

The main objectives of the focus group were the following:

1. Assess research needs of managers and scientists for the improvement of marine and coastal management on a short- and long-term scale.
2. Identify obstacles that may be hindering or delaying the development of research and strategies for marine and coastal management in Puerto Rico.

Discussion Questions and Feedback

The following questions were presented for discussion:

1. What type of research or information is needed on a short-term (less than 5 years) and long-term (5-10 years) period to effectively manage our marine and coastal resources?
2. What obstacles are presently hindering research/ assessments that can help better management and conservation of our marine and coastal resources?

Responses to the first question regarding the short- and long-term research needed for resource management included:

- Inventory and habitat mapping (landscape ecology) on endangered species and those being considered for potential listing (terrestrial and marine) to provide better measures for protection
- Ecosystem restoration projects – consistent and in-depth monitoring of habitats and their ability to adapt to changes in the environment with focuses on the impact of sediment processes; providing nesting areas for certain animals (e.g., birds), etc.
- Studies on strategic conservation planning and its effectiveness
- Accurate and up-to-date quantitative modeling of sediment transport by rivers to nearshore marine habitats
- Accurate and up-to-date modeling of habitats
- Studies on impacts of sea level rise on the hypersaline lagoons of Cabo Rojo (referred to as Cabo Rojo lagoons) and coastal lagoons
- Assessments on what is the best approach to change the perceptions and attitudes of local communities regarding environmental conservation; what are the best (most effective) ways to educate children and how to best influence these communities?; integrate sociologists and psychologists in developing the most effective strategy for educating about conservation
- Studies on the microbial ecology of hypersaline lagoons in Puerto Rico
- Assessments on the rate of erosion of local hypersaline lagoons, especially those that are particularly at risk from sea level rise
- Data collection on queen conch, West Indian top snail (bulgao), octopi, and crabs – things that are fished, but have not been well-studied; information on population size and how they are affected by environmental changes and human impacts
- Data collection on hermit crabs and how they are affected by the population size of conch due to their dependence on shells from other organisms such as conch for protection as they grow
- Studies on the effect (impacts) of human activities (physical contact, nautical activities, pollution) on coastal regions in Puerto Rico
- Inventory of the shark population (known as Top Predators by NOAA) in Puerto Rico (such as around Vieques)
- Studies on the viability, reproductive capabilities, and life cycle of crabs in order to fully implement conservation laws, accompanied with public education
- Assessments of recreational activities and the population size of those species that are affected
- Habitat characterization (biotic and abiotic parameters) of coastal areas, lagoons and wetlands; compilation of their economic value
- Studies on the impacts of climate change on habitats and developing models that help with prediction
- Assessments of local bioluminescent bays – their role as fisheries resources and habitat

characterization

- Studies on water discharge and outfalls – in-depth evaluation of the effects on coral reefs; establish baselines that will help target different communities (e.g., fisheries)
- Assessments from local communities as to how they perceive the economic value and conservation of the Cabo Rojo lagoons
- Studies on the management of coastal lagoons – hydrologic processes such as fluctuations in water level and salinity; consistent monitoring of the extent or rate of coastal erosion and how to reduce it
- Studies on how to best maximize the environment for local wildlife – identify environmental changes that do not benefit the migratory and local birds that depend on the ecosystem
- How to best provide passive, eco-friendly recreational activities to the local community (e.g., Cartagena lagoon, St. Croix, Culebra) – in what events/activities would the community like to participate at local reserves?
- Characterization of how resources are being used by local communities
- Assessments from local communities (Desecheo, Isla Mona, Cabo Rojo, Culebra) on how they perceive the role of US Fish & Wildlife in environmental conservation (the most recent assessment was done in 2003-2004 in Vieques)
- Identifying local species that will be highly impacted by climate change (e.g., turtle nesting beaches); assessments on whether acquiring more lands for mitigation purposes is necessary in order to deal with these changes
- Compilation of historical data from local lagoons, particularly to determine changes in habitat due to coastal erosion and to identify important species in the area – these data would help to make better decisions in prevention/prediction and will make us more aware of the changes that need to be addressed
- Studies of light pollution – how far into the coastline is there an affect? How does it affect marine organisms (sea turtles) and terrestrial wildlife (birds)? How does it affect the terrestrial plants and coastal vegetation terms of changes in their diurnal cycle and reproduction and how might this affect organisms that use these plants?
- Assessments on the effectiveness of management strategies and regulations after being implemented; to what extent are regulations being followed and the economic impact on locals and tourism of noncompliance
- Identification of exotic and invasive species and developing methods of elimination or management
- Studies of invasive lionfish – how are they able to live at different depth ranges and in different habitats compared to where they are found in their native range?
- Studies on the habitats of marine turtles – identify critical areas that should be expanded; identify illegal hunting areas; study possibility of farming these animals to eliminate illegal poaching and hunting
- How to best distribute and protect resources in response to climate change, particularly habitats such as mangroves and seagrasses due to sea level rise and erosion
- Assessments of the carrying capacity of certain areas that are accessible to the public – how to best develop models, cultural resources, and facilities
- Development of models for adaptive management
- Studies on the impacts of solid waste on natural resources – how to effectively manage solid waste in certain areas

Obstacles that are currently delaying the advancement of research and assessments that could improve marine and coastal management:

- Lack of studies that are applicable to management; need research that develops management

tools rather than solely data

- Scientific data needs to be translated into layman's terms in order to transmit the information effectively to policy makers and general public
- Availability of information to the local community (mostly educational videos); not enough emphasis on educating the community and making them more aware of conserving our natural resources
- Lack of law enforcement by local agencies – agencies/organizations should unite forces to better educate and enforce conservation laws
- Lack of unity (particularly with funds) among organization/institutions/agencies to continuously educate the community about conservation of natural resources

Final Overview

In general, most participants agreed that more emphasis should be given to characterizing reserves that are economically and socially important to local communities and developing passive recreational activities that encourage conservation. The group also emphasized the need to assess critical areas that may suffer from climate change and how to deal with the impacts. The need for education and outreach efforts was also expressed and we (UPR-Sea Grant) encouraged the group to maintain communication with us for future activities with the local schools and community. NOAA Fisheries stressed need to unite Sea Grant efforts with other NOAA efforts through the Coral Reef Conservation Program, for instance, that examined coral reef ecosystem conservation and mapping and monitoring priorities in Puerto Rico and U.S. Virgin Islands.