

Cayos Cochinos Research Station: Overview and Research Opportunities.

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ABSTRACT

The Cayos Cochinos Biological Reserve is a premiere site for studying a broad range of marine and terrestrial habitats in the Caribbean. The 460 square kilometer reserve, situated in the Cayos Cochinos Archipelago, Bay Islands of Honduras includes two forested islands and 12 sand keys, as well as surrounding coral reefs, seagrass beds and other underwater habitats.

The Honduras Coral Reef Fund operates a field station in the reserve. This model facility is developing marine and terrestrial as well as conservation and fisheries research programs for visiting scientists.

Combined with outreach to people in local communities, members of the unique Garifuna culture, the management of the reserve provides a unique experiment in sustainable development. It will allow studies of biological systems and problems affecting coral reefs and fisheries at both a local scale as well as for the wider Caribbean region, while ensuring the livelihoods of the indigenous people which also depend on the marine resources of Cayos Cochinos. The reserve also offers an abundance of terrestrial research opportunities.

One island is partially covered with evergreen Oak Forest with many trees that are several hundred years old and characteristic of seasonal lowland forests.

KEY WORDS: Field Station, Research, Honduras

INTRODUCTION

The Cayos Cochinos Biological Reserve is a premiere site for studying a broad range of marine and terrestrial habitats in the Caribbean. The 460 square kilometers reserve, situated in the Cayos Cochinos Archipelago, Bay Islands of Honduras (90 minutes by boat from La Ceiba) includes two forested islands and 12 sand keys, as well as surrounding coral reefs, seagrass beds and other underwater habitats (Figure 1). The Cayos Cochinos Biological Reserve (CCBR) was created in 1993, taking into account the unique biological and socio-cultural characteristics of the area. The aim was to create a Marine Protected Area (MPA) to carry out scientific work and to establish the conservation criteria to manage the reserve in a sustainable way.

The field station was designed and constructed by private partners from Honduras and Switzerland in conjunction with the Smithsonian Tropical Research Institute (STRI).

The Cayos Cochinos Biological Reserve Field Station supports research and education aimed at understanding marine and island biological and oceanographic processes and patterns that can provide the information necessary for a sustainable management and conservation of natural resources.

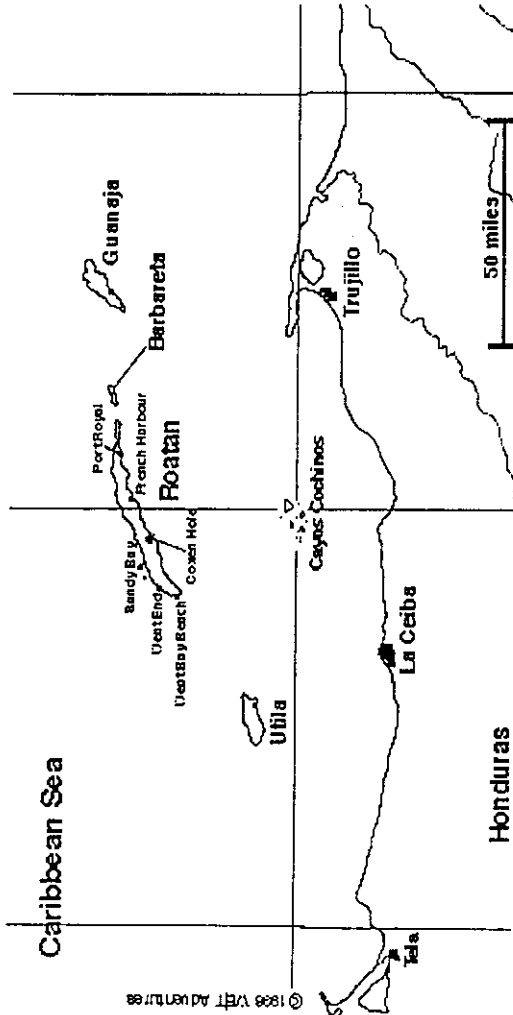


Figure 1. Cayos Cochinos location in the Caribbean Sea, south of Roatan.

NATURAL HISTORY

The climate is tropical; air temperature average 25 to 29°C and rainfall can exceed two meters per year.

Reef formations in the reserve include shallow patch reefs and solid fringing reefs frameworks to a depth of about 40 meters. Preliminary surveys reveal a high diversity of marine flora and fauna, including about 60 species of hard corals, approximately 42 species of octocorals and more than 70 species of macroalgae. Fish diversity is considered high in comparison with other Caribbean islands; there are around 220 species some of them economically important such as grunts, groupers, basses and snappers. Extensive seagrass beds provide habitat for crustaceans, gastropods and fishes.

The reserve also offers an abundance of terrestrial research opportunities. One island is partially covered with evergreen Oak Forest with many trees that are several hundred years old and characteristic of seasonal lowland forests on more alkaline soils. A tall, mature mixed forest (trees are 30-35 meters tall) is found on a few parts of another island and is clearly adapted to strong seasonality. Total flora of the islands exceeds 200 species. More than 40 species of birds live on the two islands; Great tailed Grackles, Yucatan Vireos, Green-breasted Mangoes, Caribbean Doves, Fork-tailed Emeralds and Brown Pelicans nest in the Archipelago. Anuran, Lizards, snakes and turtles make up some of the 17 species of reptiles and amphibians.

PROJECT FEATURES

Combined with outreach to people in local communities, (members of the unique Garifuna culture), the management of the reserve provides a unique experiment in sustainable development. It will allow studies of biological systems and problems affecting coral reefs and fisheries at both a local scale as well as for the wider Caribbean region, while ensuring the livelihoods of the indigenous people which also depend on the marine resources of Cayos Cochinos.

GENERAL GOALS

To provide facilities and support for scientific research on marine and terrestrial island environments.

- i) To support research on the sustainable use of local natural resources.
- ii) To study physical and ecological relationships on benthic environments.
- iii) To support the development and implementation of conservation policies.
- iv) To foster educational and academic opportunities in the marine fisheries and conservation sciences.

FACILITIES

The Honduras Coral Reef fund operates a field station on Cochino Pequeño Island. This model facility is developing a marine and terrestrial as well as conservation and fisheries program for visiting scientists.

- i) Solar and wind powered laboratory with computer and instrument room. Offices for scientists and students.
- ii) Pier with wet-lab facilities, including a sea water system for aquaria
- iii) Dining facility, which also serves as auditorium and common room.
- iv) Weather monitoring equipment maintained by the U.S. National Oceanic and Atmospheric administration (NOAA), all environmental information is available for scientists.
- v) 15' Boats with outboard engines and scuba tanks. Divers must be certified and researchers are expected to provide their own diving gear.

OPPORTUNITIES FOR RESEARCH AND EDUCATION

The marine environment of Cayos Cochinos is relatively unchanged by direct human impact; artisanal fishery practiced by Garifuna people and tourism are allowed under park regulations. In the past the reef system of the archipelago has experienced some stress and provides excellent opportunities to examine the effects of natural reef disturbances in the Caribbean, such as from the Hurricane Fifi in 1974, as well as the general phenomenon of coral reef bleaching that occurred in the late 1980s and again in 1995. With support from the Honduran Government, the reserve is protected from industrial overfishing and tourist development. Permanent staff, including park rangers, works with the local Garifuna people to develop and maintain projects in the sustainable management of fisheries resources.

Potential research opportunities include many aspects of science, particularly those related to the management of marine resources in protected areas, social and ecological aspects of conservation biology, physical oceanography, basic and applied biology, evolution, natural history, archaeology and the ecology of marine and terrestrial environments. The effects of sediments and organic material on Coral Reefs can be assessed; several rivers discharge their waters near the archipelago. The Cayos Cochinos are also a turtle nestling place. Because of the past history of overfishing in Cayos Cochinos, studies incorporating or dealing exclusively with this aspect of ecology and wildlife management in protected areas are especially encouraged. The station and its facilities provide excellent opportunities for undergraduate and graduate field courses.