



Protecting Cuba's Coastal Environment in an Era of Change: Considering the Economic Value of Natural Ecosystems

Overview

The past 50 years have seen unprecedented environmental degradation in the Caribbean. A major report documents an average decline of coral cover in the Caribbean of more than 50 percent since 1970.¹ Yet many of Cuba's coral reef ecosystems remain remarkably healthy as do many of its marine and terrestrial ecosystems, owing both to the unique way Cuba has developed, with far less-intensive coastal development compared to other countries in the Caribbean, and strong environmental laws and policies.

While recent changes in Cuba have opened doors to a new era of possibilities, new environmental threats also loom. Warming relations with the United States after decades of isolation has already led to a dramatic growth in tourism in Cuba with a flood of tourists coming to the island. During the 12 months immediately following the December 2014 announcement of normalization of relations with the United States, Cuba's tourism rose by nearly 18 percent, an increase nearly quadruple the world average. In 2016, tourism continued its rapid growth, registering a 14 percent increase compared to 2015. Consequently, the government has prioritized tourism development as one of their principal foreign investment opportunities for 2017.

Cuba now faces the same type of pressures that resulted in environmental destruction and unfulfilled economic promises throughout the Caribbean over the past half century². This era of change creates a new set of challenges for Cuba to balance economic development and protection of its natural ecosystems. While there are concerns about the growth of tourism in Cuba, if implemented responsibly and sustainably, tourism also represents a significant opportunity to advance the economic and environmental well-being of Cuba's coastal communities.

In partnership with Cuba's National Center for Protected Areas (*Centro Nacional de Areas Protegidas*, CNAP), and in collaboration with a number of international organizations, including World Resources Institute (WRI) and the Global Socioeconomic Monitoring Initiative for Coastal Management (SocMon), Ocean Doctor is working to "future-proof" Cuba's strong

¹ Jackson JBC, Donovan MK, Cramer KL, Lam VV (editors). (2014) Status and Trends of Caribbean Coral Reefs: 1970-2012. Global Coral Reef Monitoring Network, IUCN, Gland, Switzerland.
https://www.iucn.org/knowledge/publications_doc/publications/?uPubsID=5035

² Walton, Melissa M. (2016). *Tourism in the Caribbean*. Washington, DC: Ocean Doctor

environmental achievements and ensure enduring protections for its natural ecosystems through the application of environmental economics.

This project puts the latest environmental economics tools to work in Cuba's natural ecosystems to develop a better understanding of the value that protecting natural ecosystems can offer Cuba's economy, an effort that will help inform better decisionmaking. The project focuses on Cuba's Canarreos Archipelago, which lies off of Cuba's southwestern coast and includes the Isle of Youth, Cuba's (*Isla de la Juventud*), the seventh largest island in the Caribbean (Figure 1), and Cayo Largo del Sur.

In addition, our team is applying environmental economic principles in the coastal community of Cocodrilo an isolated fishing community on Isle of Youth. Through an initiative called *Red Alerta*, with strong community engagement, we are developing novel sustainable opportunities, including ecotourism, that will improve Cocodrilo's local economy while creating new economic incentives for community members to protect their coastal ecosystems.



Figure 1. Cuba's Canarreos Archipelago (*Archipiélago de Canarreos*)

A Foundation in Environmental Economics

Environmental economics seeks to measure the environmental impacts or costs of economic decisions, helping to address the shortfalls of policies based on traditional economics that place little or no value on the health of natural ecosystems. Robust economic valuation of Cuba's natural resources, in combination with strong community engagement, will be essential to ensure the long-term protection of Cuba's ecosystems.

This project builds on two international environmental economics workshops led by Ocean Doctor to develop a national strategy for the application of environmental economics to marine and coastal areas in Cuba. The project will apply economic valuation methodology to assess coastal ecosystem services by estimating the value of goods and services from natural ecosystems within the Canarreos Archipelago. Additionally the project aims to ensure sustainable development of coastal areas by identifying socioeconomic alternatives for local communities. Once completed, environmental decisionmaking in Cuba will have the benefit of a detailed economic valuation of its natural ecosystems, supported by coastal communities engaged in sustainable economic practices. Eventually, it is envisioned that these tools will be applied throughout Cuba.

Working with Coastal Communities to Develop Environmentally- and Economically-Sustainable Alternatives to Protect Cuba's Marine Ecosystems: *Red Alerta*

Although an impressive 25 percent of Cuba's waters have been designated as marine protected areas (MPAs) there is little or no management and/or enforcement in many of these areas. Coupled with the fact that many Cuban coastal communities in or adjacent to these areas have few economic alternatives, the impact of illegal fishing in Cuba's coral reef ecosystems is increasingly evident in areas such as the Isle of Youth.



Figure 2. A sculpture adorns the Cocodrilo waterfront

Our focus is on the small coastal fishing community of Cocodrilo which lies on the southern edge of Cuba's Isle of Youth (Figure 3). Project *Red Alerta*³ is designed to support the development of economically- and environmentally-sustainable alternatives for the residents of Cocodrilo to reduce illegal fishing pressure in the adjacent no-take marine protected area (the Punta Frances Marine Protected Area-PFMMA). *Red Alerta* seeks to develop a sustainable model base on the support of local initiatives that ensure sustainable development and protection, while investing in environmental education, sustainability, environmental awareness and the community's connection to its natural environment.



In 2015, Ocean Doctor began working with community leaders in Cocodrilo to explore new ideas that could simultaneously better connect the community with the PFMMA and leverage new economic benefits to community members from the MPA. From these discussions, and largely from Cocodrilo's residents themselves, emerged Project *Red Alerta*, a project that integrates education, science and sustainable alternatives, including ecotourism, while raising

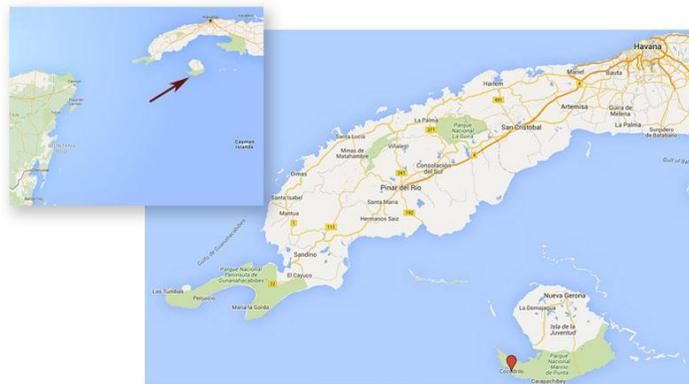


Figure 3. Location of the community of Cocodrilo, on the southern edge of Cuba's Isle of Youth (Isle de la Juventud), the Caribbean's seventh-largest island

³ The project name, "Red Alerta," takes advantage of two different meanings of the word "red" in Spanish and English. "Red Alerta" translates as "Alert Network" from Spanish (where "red" means "network"), while in English, "Red Alerta" is close to the term "red alert," conveying great urgency, appropriate to the dire situation facing Caribbean coral reefs.

environmental awareness and helping ensure the ongoing protection of PFMPA.

Over time, the program will help support economic independence for the community and provide strong incentives to protect the coastal ecosystems of the PFMPA. In addition, the program will have important educational linkages and help foster a growing environmental awareness throughout the community. We anticipate that once successful in Cocodrilo, we will be able to scale-up this approach throughout many of Cuba's communities facing similar challenges.



Figure 4. A Cocodrilo resident teaches his grandson to drive a horse buggy

About Us

Ocean Doctor's Cuba Conservancy Program builds on 16-year legacy of leading collaborative marine research and conservation efforts in Cuba, including research expeditions to map and assess Cuba's coral reef ecosystems; informing conservation policies for protected areas; advancing conservation efforts in Gardens of the Queen, the Caribbean's largest no-take marine reserve; contributing dozens of papers to the scientific literature; training Cuba's next generation of marine scientists; and, through scientific diplomacy, helping to lay the groundwork for restoration of relations between Cuba and the U.S.

Today, Ocean Doctor's efforts have moved from purely scientific research to bold, multidisciplinary efforts in collaboration with Cuban institutions to navigate the profound changes the country now faces, brought about in part due to the change in relations with the U.S. Our work seeks to provide solutions to protect its environmental treasures while also strengthening the environmental and economic resilience of its coastal communities, avoiding the grave mistakes made in many other Caribbean countries. As Cuba enters a new era of change, our approach continues to be based on the tenet that environmental policies with the best chance of enduring future change are based on the best science and include strong public understanding, input and participation. Ocean Doctor is working with top officials in Cuba's environmental agencies and diplomatic corps while also serving as a bridge between key ministries in Havana and local communities.



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