

Community-based Coastal Remediation in the Insular Caribbean's Two Largest Nations: Cuba and the Dominican Republic

Coral Restoration Workshop Report

Bayahibe, Dominican Republic

February 7-11, 2022



From February 7-11, 2022, The Ocean Foundation, Fundación Dominicana para Estudios del Mar (FUNDEMAR), SECORE International, and Centro de Investigaciones Marinas (CIM-UH) de la Universidad de La Habana carried out a workshop focused on novel coral seeding (larval propagation) methods and techniques and their expansion to new sites, especially in Cuba. The workshop took place in Bayahibe, which is located just outside the Parque Nacional del Este National Park in the Dominican Republic.



Credit: Fernando Bretos

The workshop was funded by a grant from the Caribbean Biodiversity Fund (CBF) Ecological-based Adaptation (EbA) Facility. The project, entitled *Community-based Coastal Remediation in the Insular Caribbean's Two Largest Nations: Cuba and the Dominican Republic*, is engaging scientists from both countries in the implementation of innovative nature-based solutions to build coastal resilience.

Purpose

During the workshop, seven Cuban scientists, half of them graduate students studying coral reef ecology at the University of Havana, learned about the novel coral seeding methods and techniques developed by SECORE International and implemented by FUNDEMAR. The term coral seeding or larval propagation refers to collection of coral spawn (coral eggs and sperm, the gametes) which are allowed to fertilize in the laboratory. These larvae are then settled on special substrates that are later dispersed on the reef without the need for mechanical attachment. In contrast to coral fragmentation methods that work with clonal coral fragments, coral seeding supports genetic diversity, thus supporting the corals' adaptation to a changing environment, for instance to coral bleaching caused by elevated sea water temperatures in turn induced by climate change. This method further opens up the possibility to scale up restoration by gaining millions of coral babies out of one coral spawning event. The workshop was conducted as a south-south exchange, whereby scientists from two

developing countries were exchanging information and learning from each other. The Cuban scientists learned about coral seeding to replicate it at two sites, Guanahacabibes National Park (GNP) in Western Cuba, where clonal restoration of *Acropora cervicornis* (staghorn coral) is ongoing since 2017 and Jardines de la Reina National Park (JRNP), where 20 years of coral research has established a strong baseline which will be useful in determining the success of this technique.

Activities

Over the course of four days, 24 participants from Cuba, the Dominican Republic, United States, and Mexico attended presentations by SECORE and FUNDEMAR on their lessons learned with larval propagation in the Dominican Republic and across the Caribbean while the Cuban delegation shared their own experiences in coral restoration using fragments. Participants went SCUBA diving and snorkeling to see FUNDEMAR's coral nurseries, coral plantings, and experimental set-ups. The workshop was immersive and collaborative and will provide the training for a new generation of Cuban coral restoration specialists.

Outputs of the workshop include long-term plans for reef restoration using coral seeding in JRNP and GNP in Cuba. This workshop kicked off what we hope will be a long and fruitful relationship among the participating organizations and countries.



Credits: Lalo Boné (top), Vanessa Cara-Kerr (bottom)

Next Steps

Next steps include a two-week long coral research expedition to JRNP from February 19-March 5, 2022 to determine sites for spawn collection, locate sites for deployment of floating mesocosms to raise coral babies and Coral Rearing In-situ Basins (CRIBs), and for eventual placement of settled corals back onto the reefs. From March 30-April 5, a team of Cuban scientists will conduct a similar expedition at GNP and will also provide maintenance to existing clonal coral nurseries, which had been neglected and have now degraded by algae during the COVID pandemic. Two Cuban scientists, Dr. Pedro Chevalier of Acuario Nacional de Cuba and Amanda Ramos of CIM-UH will return to Bayahibe, DR in May to participate in coral spawning work. This will focus on the collection of spawn from *Diploria labyrinthiformis* to raise coral babies. Two simultaneous expeditions will take place in August at GNP and JRNP to collect *Acropora palmata* spawn, deploy CRIBs, and acclimate coral settlement substrates prior to their use and finally bring the coral babies back to the wild.

About the Partners

TOF is the only community foundation for the ocean and has a mission to support, strengthen, and promote those organizations dedicated to reversing the trend of destruction of ocean environments around the world. We focus our collective expertise on emerging threats in order to generate cutting edge solutions and better strategies for implementation.

SECORE International is a leading non-profit organization in developing scalable methods and techniques for reef restoration using coral seeding and sharing these methods and techniques among implementation partners across the Caribbean and beyond.

FUNDEMAR is a Dominican environmental organization that has partnered with SECORE since 2018 in implementing coral seeding for reef restoration activities and has been running a coral restoration program using coral fragments since 2011.

CIM-UH is the most important marine research center in Cuba responsible for training many Cuban marine scientists. TOF and CIM-UH have collaborated since 1999 on biodiversity research and habitat health projects.

Avalon Dive Centers and **Guanahacabibes National Park (GNP)** are essential partners that provide logistical and scientific expertise. Avalon Dive Center's vessel *RV Oceans for Youth* is the platform upon which all coral research and enhancement efforts are carried out. GNP, at 140 square miles, is one of Cuba's oldest and largest marine protected areas. GNP staff coordinate research and community workshops.

CBF is the realization of a bold vision to create reliable, long-term funding for conservation and sustainable development in the Caribbean region. CBF and its grants are co-financed by the International Climate Initiative (IKI) of the German Federal Ministry for Environment, Nature Conservation, and Nuclear Safety through the German Development Bank (KfW).



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



A project of the Caribbean Biodiversity Fund, co-financed by the International Climate Initiative (IKI) of the German Federal Ministry for Environment, Nature Conservation, and Nuclear Safety through KfW.