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Press Release from Reef Renewal Foundation Bonaire
2 November 2023
Bonaire, Caribbean Netherlands

Coral Seeding - Synergies in Technology and Application to Restore Coral Reefs in the Caribbean

Summary
Fundación Dominicana de Estudios Marinos (FUNDEMAR) has joined forces with Reef Renewal Foundation Bonaire (RRFB) and SECORE International to implement innovative approaches for large scale coral restoration. Key actions include optimizing mass breeding of corals, engineering individual steps of Coral Seeding methods, and fostering interdisciplinary collaboration. The overall goal is to scale the impact of regional coral restoration efforts through cross-national knowledge exchanges that allow these innovations to be implemented throughout the Caribbean.

Fundación Dominicana de Estudios Marinos (FUNDEMAR), Reef Renewal Foundation Bonaire (RRFB) and SECORE International are well-established organizations that have been successfully working on distinct aspects of coral restoration – from research on technology development to field implementation. Cooperating for years, they have now combined forces within a new project that aims to foster the application and cost-effectiveness of novel coral breeding technologies at key stages of Coral Seeding methodology: collecting coral spawn and assisted fertilization, mass coral larvae rearing, coral settlement, and improving survival of corals after seeding them on the reef.

Novel Research & Development innovations include multi-colony spawning collectors for underwater coral nurseries and outplanting sites on the reef, as well as novel substrates to facilitate bulk outplanting. To scale up existing technology, utilization of floating devices for culturing coral larvae (Coral Rearing In-situ Basins, CRIBs) will be optimized. Tiny coral offspring will be fed after settlement to give them a headstart and a better survivorship once outplanted. In terms of translating experimental findings into technology, surface deployment of corals freshly settled on special substrates and innovative methods of settling coral larval directly on the reef floor will be piloted.

FUNDEMAR's land-based coral larvae rearing facility in the Dominican Republic will be expanded to double their current capacity, and a new facility, meeting similar needs, will be designed for RRFB in Bonaire. Both facilities will greatly increase each organization's capacity for Coral Seeding, allowing more coral offspring to be reared and safeguarded in a controlled setting before outplanting, while serving as an educational and Research & Development resource at the same time.

> *"As the Caribbean faces increasingly challenging ocean conditions, harnessing the latest technologies for large-scale coral breeding takes on an ever more crucial role in assisting the recovery of endangered coral populations. As restoration-focused organizations, it's important to unite strengths to amplify our efforts and promote the restoration of stronger, more resilient coral reefs.*"

- Francesca Virdis, COO RRFB

Through their partnership, FUNDEMAR, RRFB, and SECORE International drive innovation in Coral Seeding technology and implementation, and provide a framework for collaborative restoration, throughout the Caribbean and beyond. By implementing techniques that boost the genetic diversity of Caribbean coral

populations, they foster stronger reef ecosystems that are better equipped to face environmental challenges, especially in regards to climate change.

> "*To scale the restoration to have a significant impact, we work with experts from different disciplines to optimize our approach, increase efficiency, and scale. Technology and design are the key to achieving these goals. The same concepts used in other industries – scaling production, reducing labor, optimizing logistics, etc. – are directly applicable to coral restoration. We support local partners who have knowledge of their reefs and know how to integrate their local communities to implement restoration on the ground, providing them the training and equipment needed to start and grow their programs.*"

- Aric Bickel, Director of Technology and Implementation SECORE international

This 3-year project is supported by funding of US 1.38 million from the Coral Research & Development Accelerator Platform (CORDAP), a UN grant program designed to fastrack research and development around coral reef recovery worldwide. New funding from CORDAP enables the three organizations to focus not only on technical strategies of Coral Seeding, but also on ways to incorporate and adapt them to other Caribbean locations. Knowledge and resources will be exchanged to promote the replicability of Coral Seeding innovations on other islands, especially via training workshops and knowledge sharing, but also by scientific exchange and other communication channels.

> *"Coral reefs are in a critical period, where threats seem to never end. CORDAP offers a unique financing platform, encouraging coordinated cooperation projects and generating strategic alliances between experts, communities and countries to achieve their survival with haste."*

- Rita Sellares, CEO FUNDEMAR

Background

Caribbean coral reefs are facing rapid ecosystem changes, with mass bleaching events triggered by soaring water temperatures and large-scale die offs caused by Stony Coral Tissue Loss Disease (SCTLD). Coastal communities that depend on healthy reefs are suffering mounting economic losses, both in terms of income and coastal protection. One key aspect of successful restoration amidst these threats is maintaining as well as increasing the genetic diversity of threatened coral populations. Coral Seeding, by taking advantage of corals' reproductive potential, promotes genetic diversity and thus resilience of coral populations by creating large numbers of entirely unique coral offspring and seeding them on the reef.

Photos

Growing corals on settlement substrates that can be seeded onto the reef without further attachment. Credit: Paul Selvaggio.

FUNDEMAR and SECORE staff fertilizing recently collected gametes from grooved brain coral (*Diploria labyrinthiformis*) in FUNDEMAR's lab in Bayahibe, Dominican Republic. Credit: Paul Selvaggio.

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RRFB and SECORE staff deploying a floating nursery device to rear young coral larvae in Bonaire, Dutch Caribbean. Credit: Paul Selvaggio.

About Us

Fundación Dominicana de Estudios Marinos, FUNDEMAR, project lead, is a non-profit organization dedicated to the conservation of coastal-marine ecosystems in the Dominican Republic. FUNDEMAR has pioneered Coral Seeding efforts in the country, currently having one of the highest production of coral settlers in the Caribbean region.

https://www.fundemardr.org/

Reef Renewal Foundation Bonaire is a non-profit organization focused on the protection and restoration of Bonaire's biodiverse coral reefs. With the help of their research partners, RRFB implements innovative, science-based programs that expand and strengthen populations of keystone coral reef species in Bonaire.

https://www.reefrenewalbonaire.org/

SECORE International is a non-profit organization dedicated to creating and sharing the tools and technologies to sustainably restore coral reefs worldwide. SECORE works within a network of implementation and research partners and brings together disciplines, approaches and technologies.

https://www.secore.org/

Coral Research & Development Accelerator Platform (CORDAP) is a UN grant program designed to fastrack research and development around coral reef recovery worldwide. CORDAP supported this 3-year project via funding of USD 1.38 million.

https://cordap.org