**What information is there about restoring mangroves in the Caribbean after the passage of hurricanes? (October 2022)**

***Question to the MPA Help community:* “After the passage of Hurricane Iota through the islands of Providencia and Santa Catalina in November 2020, about 95% of the red mangrove trees were lost, and there are not enough live propagules or seedlings to continue the restoration process. We are therefore required to bring propagulos or seedlings from other islands in the Caribbean or the Colombian mainland, but we are concerned about the impacts that this may bring.**

**Collaboration is requested with studies in other areas of the Caribbean on mangrove restoration after the passage of hurricanes, genetic studies of red mangrove populations and funding or advisory opportunities on these issues, preferably in Spanish.”**

*Note: The original question and lightly edited responses below were posted to the* [*MPA Help listserve*](https://list.octogroup.org/mailman/listinfo/mpahelp) *run by* [*OCTO*](https://octogroup.org/)*. OCTO does not guarantee the accuracy of the responses.*

*Do you have anything to add? Send additional responses to* *sarah@octogroup.org**.*

**RESPONSES**

We live on Bonaire, have been working on mangrove restoration quite some years now. And are currently boosting our fringing mangrove forest as first defense line for increasing extreme weather conditions, as climate change mitigation.

And yes, mangroves protect coasts but also get destroyed in the process of doing so. Currently we are setting up a network for mangrove and seagrass restoration in the Caribbean, American Tropical region. There are common threats (hurricanes, sargassum, erosion to name a few) where experience from colleagues can help us. Would you like to join us for the kick off meeting which we will have soon (tentative date October 21)? We are still building the network (website, mailings, webinars) and plan to organize a regional workshop around March 2023)

Personally I would not be afraid to bring propagules from other areas. The propagules float for a couple of weeks and can be transported from one island/coast to another. Bonaire’s east coast has probably been populated in such a way, Rhizophora mangle probably being a mega population with sinks and sources.

Unfortunately I am not aware of genetic studies. Please reach out to us if you would like to learn more about our efforts and/or the network.

The Vieques Conservation and History Trust is a community-based organization in the island of Vieques that has done several years of experimenting with red mangrove restoration to replenish local populations after Hurricane María in 2017. <https://m.facebook.com/search/top/?q=vieques+conservation+%2526+historical+trust+%2528vcht%2529>

Their methods consist of collecting local propagules and nursing them in land tanks through phases, each with different sunlight, nutrient, and salinity levels; and transplanting them near where they were collected after a year or so. They will be able to explain more in-depth.

I highly recommend that you reach out to the Jobos Bay National Estuarine Research Reserve in Salinas, Puerto Rico (impacted by hurricane Maria in 2017).

They also have an overview on the National site: [National Estuarine Research Reserve System (noaa.gov)](https://coast.noaa.gov/nerrs/reserves/jobos-bay.html)

I know there was a lot of mangrove work done in Charlotte Harbor after Hurricane Charlie went through (2004?). They can try reaching out to Sanibel Captiva.

I’ll focus my response specifically on the funding angle. Verra currently provides a methodology for mangrove restoration that generates carbon credits that can be sold to finance the restoration work. We are also shortly coming out with a methodology, developed by TNC and partners, on generating fungible assets for damage savings and protection of human populations from mangrove (and other coastal habitat) restoration. You can find out more at [www.verra.org](http://www.verra.org).

I don’t have restoration information for the Caribbean, but a couple of items to note.

Below is a paper from Hurricane Andrew in south Florida. It focuses more on the natural recovery, but there might be some useful information.

After Hurricane Maria, we struggled with restoration in Puerto Rico. We saw black and white mangroves get completely knocked down in Reserva Natual Bosque de Pinones but red mangroves quickly colonized. We were collecting data for a while, but I don’t know if anyone kept up with that effort. Someone at Departamento de Recursos Naturales y Ambientales might know something useful. I don’t know who to contact there.

Our biggest challenge was increased salinities. Areas all over the island that had healthy mangroves before Maria ended up with trapped salt water. Salinities continued to increase over time. Some people did test plantings, but if the hydrology was not restored, I had little hope of success. Most of those died. Most of our work was around Playa Jobos and Punta Tuna.

<https://www.researchgate.net/publication/225242076_Regeneration_in_fringe_mangrove_forests_damaged_by_Hurricane_Andrew>

The area that I have been working for 20 years known as the Mabodamaca Community Nature Reserve in Isabela has mangroves from basins where the 4 types of Caribbean mangroves are found.

This area was impacted and 95% of its mangroves died after Hurricane Maria. Since then, we have been working with the community on its restoration and we moved to another area near the mangroves in the basins. We are currently with Surfrider and the community working on mangrove reforestation.

It will be a pleasure to hear from you and if there is any possibility of collaboration we will be at your service.

An intern with us did a literature review on this topic after reading your request.

<https://octogroup.org/wp-content/uploads/2023/01/Genetic-population-connectivity-R.-mangle.pdf>

Enjoy reading it, it is insightful and may be of help.