Final Evaluation Report

Your Details	
Full Name	Alvarado Cerón Viridiana
Project Title	Diversity and genetic structure of natural and restored populations of *Acropora palmata* and *Acropora cervicornis* in northern Quintana Roo State.
Application ID	33040-1
Date of this Report	October 31, 2022

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Georeferenced colonies				
Sequencing genomic DNA				
Genotyped colonies				
Genetic diversity, and gene flow in Acropora populations				
Report writing				
Conference-workshop				
Infographic elaboration				

2. Describe the three most important outcomes of your project.

a). Genotyping and geographic tracking of *Acropopra palmata* and *Acropora cervicornis* coral colonies used in the restoration programme.

b). Information about the diversity and genetic structure of *Acropora* populations in northern Quintana Roo. This will help to better plan restoration programmes.

c). This information was shared with reef restorers, academics, dive centres, and volunteers via a conference-workshop and an infographic.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

During the study, we planned to stay at the University of Rhode Island, where I would learn bioinformatics and use a server with a high amount of RAM and storage to process genomic data. As a result of the COVID 19 pandemic, it was not possible to perform the stay, which resulted in a delay in obtaining the results of the project. Furthermore, my institution in Mexico has limited computing resources to perform genome-wide analyses.

To solve this issue, I attended training in Mexico. Prada's laboratory at the University of Rhode Island provided me with advice. I used a CINVESTAV server, which offered limited processing power but allowed me to perform the analyses. Despite spending more time than expected, we were able to accomplish the project goals.

4. Describe the involvement of local communities and how they have benefitted from the project.

The participation of the local community was reflected once the results of the genetic analysis were shared. This information will be able to be applied to coral reef restoration and conservation programmes in collaboration with INAPESCA.

5. Are there any plans to continue this work?

We plan to assemble a genetic bank with the genotypes identified in this project and test for resistance to climate change (changes in pH and temperature mainly) to choose the best genotypes for coral reef restoration programmes in Quintana Roo, in which the community participates, mainly in the activities of transplantation and monitoring of coral reefs.

6. How do you plan to share the results of your work with others?

- Report writing.
- Conference-workshop.
- Audio-visual material (informative video, infographics).
- Scientific papers.

7. Looking ahead, what do you feel are the important next steps?

- Follow-up on the project and continue to contribute to coral reef conservation.
- To move forward with future projects, I should consider alternatives, i.e., consider multiple choices for completing a specific task or achieving a particular goal.
- My future goals include more contact with people and the application of the knowledge I have gained with the current project to the restoration of reefs.
- Promote scientific dissemination and environmental education.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

The Rufford Foundation logo has been used in the following presentations:

- Cinvestav PhD Project Advances.
- Rufford Conference, Roatán, Honduras 2021.

- University of Rhode Island Conference, 2021
- Rufford Conference, Cancún, México 2022.
- 15th International Coral Reef Symposium, 2022
- XI Mexican Coral Reef Symposium and II Panamerican Coral Reef Symposium, 2022.
- Infographics

9. Provide a full list of all the members of your team and their role in the project.

Centro Regional de Investigación Acuícola y Pesquera (CRIAP): **Dr. Claudia Padilla** and her team provide all the necessary logistic support to carry out the genetic sampling of *A. palmata* and *A. cervicornis* corals. Dr. Claudia Padilla coordinates the Coral reef Restoration Program in Quintana Roo.

Centro de Investigación Científica de Yucatán (CICY): **Dr. Renata Rivera** and her team has trained and supported me in the management of molecular biology techniques for coral genomic DNA extraction.

University of Rhode Island Kingston (URI): **Dr. Carlos Prada** performed the sequencing of coral samples. The team he leads developed genomic libraries and provides bioinformatics analysis consulting.

Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV-IPN): I am part of Laboratory of Coral Reef Ecosystem Ecology (LEEAC) and I working on my doctoral thesis under the direction of **Dr. Ernesto Arias**. Dr. Arias is the head of the LEEAC.

I participated in the collection of coral samples, extracted DNA, drafted the infographics, and conducted bioinformatics and population genetics analyses. With the support of my team, I did all the above.

10. Any other comments?

Although our project could not be completed in February 2022, my team members and I dedicated ourselves to completing the project and achieving the objectives.