

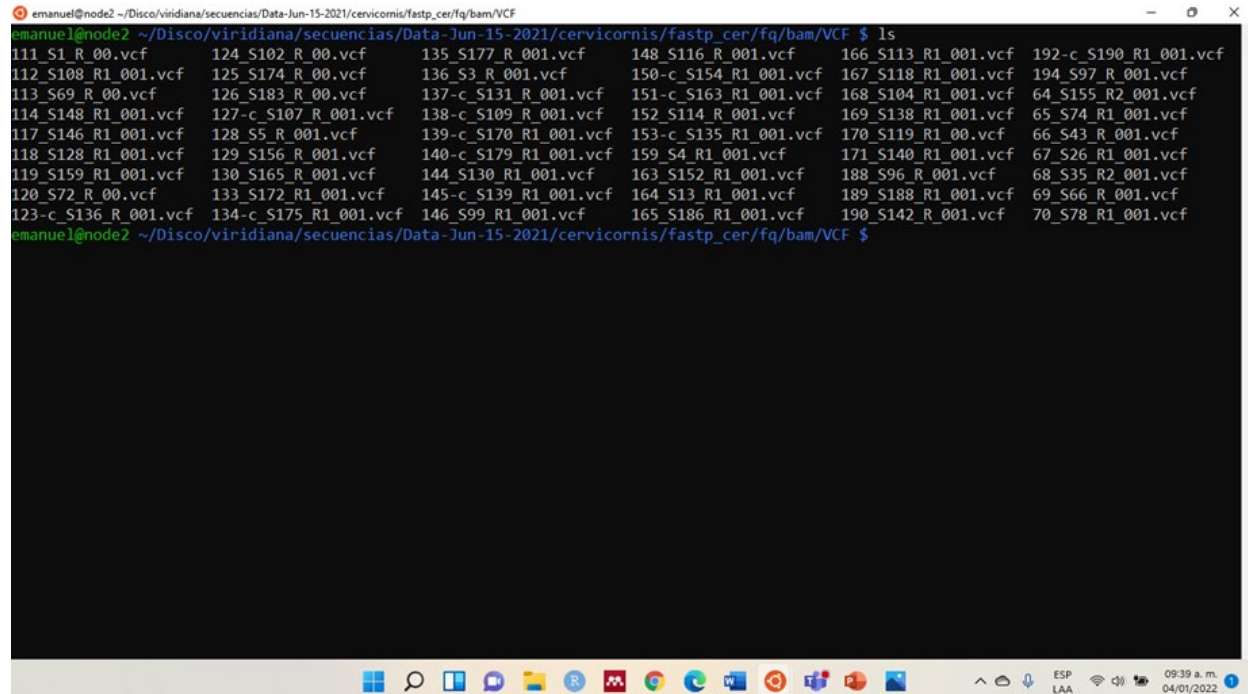
Project Update: January 2022

Bioinformatics analyses were conducted from September to December 2021 and will be completed this month (Fig. 1). The files obtained from this process will be used to perform the population genetics analysis of *Acropora palmata* and *A. cervicornis* in order to obtain final results of the project and conduct the workshop with key authors on reef restoration in Quintana Roo, in March 2022. Additionally, the genotype location maps, and the report of results will be completed.

During December 2021, we made an online presentation for students of the Laboratory of Dr. Carlos Prada, who are involved in this project (Fig. 2), to inform them about the work we are doing in Mexico and encourage them to continue studying genetic diversity and conservation in coral reefs. As part of the PhD programme, the progress of the project was presented to Cinvestav-Merida researchers in the first days of January 2022 for feedback and improvement.

An infographic (Annex 1) on the importance of genetic diversity in reef restoration is also being developed. We will publish this infographic in the social networks of CRIAP-INAPESCA and Cinvestav in February 2022 to spread information about the project.

To make our work known to the Mesoamerican reef region and encourage conservationists to participate in Rufford Small Grants, the project was presented at the Rufford Small Grants Conference, Roatán 2021, in July 2021 (Fig. 3).

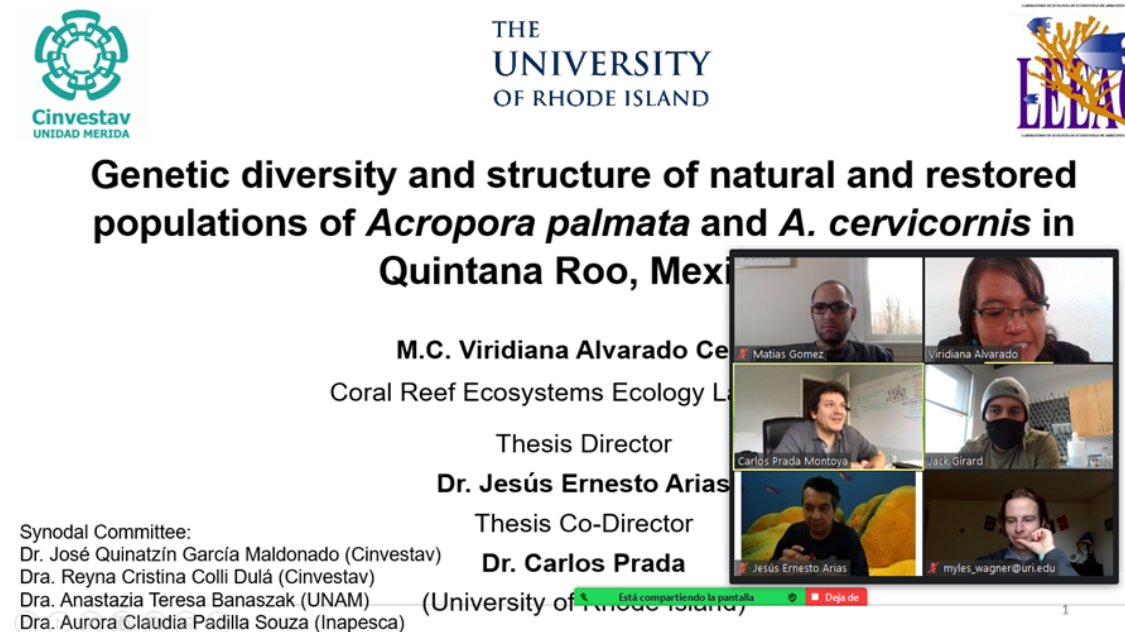


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emanuel@node2 ~/Disco/viridiana/secuencias/Data-Jun-15-2021/cervicornis/fastp_cer/fq/bam/VCF $ ls
111_S1_R_00.vcf      124_S102_R_00.vcf  135_S177_R_001.vcf  148_S116_R_001.vcf  166_S113_R1_001.vcf  192-c_S190_R1_001.vcf
112_S108_R1_001.vcf  125_S174_R_00.vcf  136_S3_R_001.vcf    150-c_S154_R1_001.vcf  167_S118_R1_001.vcf  194_S97_R_001.vcf
113_S69_R_00.vcf     126_S183_R_00.vcf  137-c_S131_R_001.vcf  151-c_S163_R1_001.vcf  168_S104_R1_001.vcf  64_S155_R2_001.vcf
114_S148_R1_001.vcf  127-c_S107_R_001.vcf  138-c_S109_R_001.vcf  152_S114_R_001.vcf  169_S138_R1_001.vcf  65_S74_R1_001.vcf
117_S146_R1_001.vcf  128_S5_R_001.vcf   139-c_S170_R1_001.vcf  153-c_S135_R1_001.vcf  170_S119_R1_00.vcf   66_S43_R_001.vcf
118_S128_R1_001.vcf  129_S156_R_001.vcf  140-c_S179_R1_001.vcf  159_S4_R1_001.vcf    171_S140_R1_001.vcf   67_S26_R1_001.vcf
119_S159_R1_001.vcf  130_S165_R_001.vcf  144_S130_R1_001.vcf  163_S152_R1_001.vcf  188_S96_R_001.vcf    68_S35_R2_001.vcf
120_S72_R_00.vcf     133_S172_R1_001.vcf  145-c_S139_R1_001.vcf  164_S13_R1_001.vcf   189_S188_R1_001.vcf  69_S66_R_001.vcf
123-c_S136_R_001.vcf  134-c_S175_R1_001.vcf  146_S99_R1_001.vcf   165_S186_R1_001.vcf  190_S142_R_001.vcf   70_S78_R1_001.vcf
emanuel@node2 ~/Disco/viridiana/secuencias/Data-Jun-15-2021/cervicornis/fastp_cer/fq/bam/VCF $
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Figure 1. A bioinformatics analysis showing how the VCF files were obtained to determine the SNPs and genotypes of *Acropora palmata* and *Acropora Cervicornis* in order to conduct subsequent population genetic analyses.

Conclusion

Though we are still working on the technical and analytical aspects of the project, various stakeholders have been made aware of it. The project objectives will be met after the analyses are completed, and the final product will be provided (reports, maps, presentation of results).



The slide features logos for Cinvestav Unidad Mérida, The University of Rhode Island, and LEEAC. The title is "Genetic diversity and structure of natural and restored populations of *Acropora palmata* and *A. cervicornis* in Quintana Roo, Mexico". The presenter is M.C. Viridiana Alvarado Ceja, Thesis Director, from the Coral Reef Ecosystems Ecology Laboratory. The co-director is Dr. Jesús Ernesto Arias González, Thesis Co-Director, from the Prada Laboratory. A screenshot of a Zoom meeting shows participants: Matias Gomez, Viridiana Alvarado, Carlos Prada Montoya, Jack Girard, Jesús Ernesto Arias, and myles_wagner@uri.edu. A synodal committee list includes Dr. José Quinatzín García Maldonado (Cinvestav), Dra. Reyna Cristina Colli Dulá (Cinvestav), Dra. Anastazia Teresa Banaszak (UNAM), and Dra. Aurora Claudia Padilla Souza (Inapesca).

Figure 2. Webinar. Participants: Dr. Carlos Prada Montoya, Prada Laboratory, Department of Biology of The University of Rhode Island, Kingston, USA; Dr. Ernesto Arias González, LEEAC Laboratory, Department of Marine Resources of CINVESTAV, Mérida.



The left side shows a woman in a purple dress presenting a certificate to another woman in a black dress. The right side is a poster for the "CONFERENCIA RUFFORD SMALL GRANTS ROATÁN 2021". The poster includes logos for Rufford, Semillas del Océano, Roatan Marine Park, and Healthy Reefs. The title is "CONFERENCIA RUFFORD SMALL GRANTS ROATÁN 2021". The subtitle is "Sistema Arrecifal Mesoamericano Nuevas tendencias en esfuerzos científicos y de conservación". The date is "05 DE JULIO DE 2021" and the location is "Paradise Beach Hotel, West Bay Roatán, Honduras". Contact information is provided: "Más Información jsacche@semillasdelocean.org randazzoiseimannangela@gmail.com". The poster features a blue background with white illustrations of coral and fish.

Figure 3. Presentation of recognition for participation in the Rufford Small Grants Conference, Roatan 2021.

IMPORTANCIA DE LA DIVERSIDAD GENÉTICA EN LA RESTAURACIÓN DEL CORAL *ACROPORA PALMATA*



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Acropora palmata, conocido como coral *cuerno de alce*, es una de las principales especies constructoras de arrecifes en el mar Caribe.

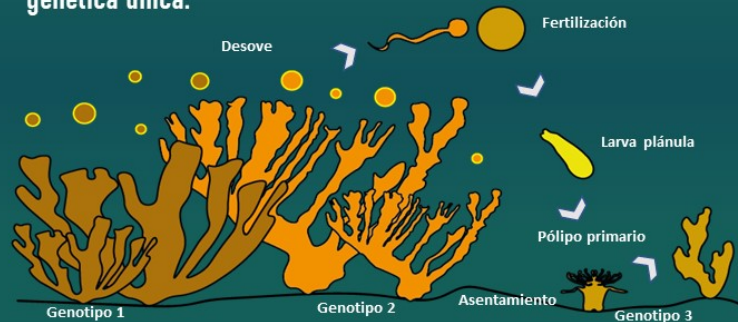
Acropora presenta dos tipos de reproducción:

1 Asexual por fragmentación: se generan nuevas colonias con la misma información genética (clones).



2 Sexual: *Acropora* es una especie hermafrodita, es decir, que produce ambos gametos, óvulos y espermatozoides.

Cada año en verano ocurre el desove, en el cual los gametos son liberados al mar. Para lograr la fecundación se requiere de al menos dos colonias con información genética diferente (genotipos diferentes) y generar nuevos individuos con una identidad genética única.



La reproducción sexual aumenta la diversidad genética de la especie.

Por esta razón en la restauración de arrecifes es importante conocer los genotipo de las colonias para el trasplante y conocer la diversidad genética de la población de corales.



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