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INTRODUCTION

In January 2019, the Marine Conservation and Community programs in Mexico joined and moved to one base in Puerto Morelos, Quintana Roo, Mexico. Our aim was to increase the collaborative efforts between the two programs running in Mexico as well as deepen our commitment with our existing partners based in Puerto Morelos.

Puerto Morelos is a town on the Caribbean coast of the Yucatan peninsula. It lies between two popular holiday destination cities: Cancun and Playa del Carmen. Puerto Morelos began as a small fishing village. Now days it is a quite tourism destination of mixed-use neighborhoods of private homes, hotels and condominiums and home to over 9,100 people.

Just off the coast of Puerto Morelos lies the second largest barrier reef in the world, the Mesoamerican Barrier Reef System (MBRS). It is over 1000km in length, extending in front of four Caribbean countries: Mexico, Belize, Guatemala and Honduras. To prevent human activities from irreversibly affecting the Mesoamerican Barrier Reef, Natural Protected Areas have been created that restricted touristic and commercial activities in several ecologically important areas. Puerto Morelos has over 90 square kilometers of the

Mesoamerican Barrier Reef designated as a Marine Protected Area.

To help protect this vital ecosystem, the marine conservation program in GVI Puerto Morelos conducts various different types of environmental surveys regarding the health and abundance of coral and fish target species. We also participate in several other marine conservation projects such as beach cleans and supporting our partners CRIP with their coral reef restoration project.

The community program at GVI Puerto Morelos runs in partnership with Save the Children and provides lessons to children from 6 to 12 years old. Children from Quintana Roo state are under different treats due the touristic activities of the area, being tourism such important activity for the local economy, many local individuals work long hours at hotels, restaurants, attractions, etc. leaving children under temporary abandonment between primary school education hours and the end of the parent's work times. Participants of the community development, children and health projects support these children by planning and presenting health workshops, environmental education, physical education and English lessons.



GVI MISSION STATEMENT

GVI's mission is to build a global network of people united by their passion to make a difference.

Our mission here in Puerto Morelos is to inspire and educate our volunteers with the goal of creating a group of people passionate about preserving the marine environment and raising awareness about important global issues. As a result of working with GVI Puerto Morelos, our volunteers have improved employment opportunities, a greater awareness of global and environmental issues and new skills to bring with them into their future careers. As well as generated a positive impact in the local marine environment and the community through their commitment and passion to undertake the various activities of the programs in Puerto Morelos HUB.



LONG-TERM OBJECTIVES

GVI OBJECTIVES

GVI has several organization-wide objectives that measure our success.

1. **AWARENESS:** Increase cultural understanding and awareness of global issues within our alumni.
2. **IMPACT:** Make long term, sustainable contributions towards key global issues and local issues.
3. **EMPOWERMENT:** Equip our alumni with the knowledge and ability to further contribute towards key global and local issues.

GVI PUERTO MORELOS OBJECTIVES

As a hub, we have several specific objectives that we focus on while making short-term and long-term goals.

1. **MARINE CONSERVATION:**
 - Educate volunteers about the Mesoamerican Barrier Reef, the species that reside there and the impact that humans are having on this sensitive ecosystem
 - Provide data to our partners on the overall health of the reef, to be used for coastal management within the Reefs of Puerto Morelos National Park
 - Provide assistance to our partners in their marine conservation and preservation projects.
2. **DIVE TRAINING:** Provide high quality SCUBA dive training and PADI courses to ensure we build a community of environmentally aware, safe and skilled divers
3. **COMMUNITY:**
 - Improve facilities and provide key equipment and resources to local partners.
 - Provide training to volunteers to increase their impact in the community.
 - Increase in-country capacity by providing training to local members of the community.
 - Create a link in between the marine conservation initiatives and members of the community to sum conservation efforts.



SUSTAINABLE DEVELOPMENT GOALS

3 - GOOD HEALTH AND WELL-BEING



Mexico has one of the highest records of child obesity prevalence in the world, our health project provides health workshops and physical education to children from 6 to 12 years old, to promote a healthy lifestyle that incorporates an active routine of different sports and physical activities once a week.

The health project provides health workshops on a weekly basis to create awareness of the different diseases that may affect them during their lifetime and gives tips on how to prevent or deal with them. It presents important information on nutrients present on different ingredients and dishes that helps them to understand what is better for their consumption; during 2019, we lead 30 physical activity sessions and 37 Health related lectures.



4- QUALITY EDUCATION



In Mexico, most of the subjects found on public primary schools do not include the English language in their curricula. English language is important for residents of Quintana Roo state, as the primary income is from tourism. International tourism requires a high fluency level of English in local providers to compete in the market. At the moment many English speaking workers come from more developed areas of the country and local members of the community can only have access the lowest income jobs in the industry, as they have less contact with tourists. By increasing the English skills among local children, we are contributing to a positive impact in their life quality, allowing them to target better-paid jobs and to be more competitive.

Save the Children has a permanent program where children attending their ludoteca receive lessons on values, protection against exploitation, responsibilities and many other subjects for their wellbeing. Daily, participants from the GVI projects provide extra eyes and hands to look after children during their activities at the ludoteca in Puerto Morelos. During 2019 participants of community projects supported Save the Children activities for 240 Days. Through the GVI trust this year we improved the safety of the facilities were children attend, we also provided important educational equipment that enhances their learning by providing technology that covers more learning styles.

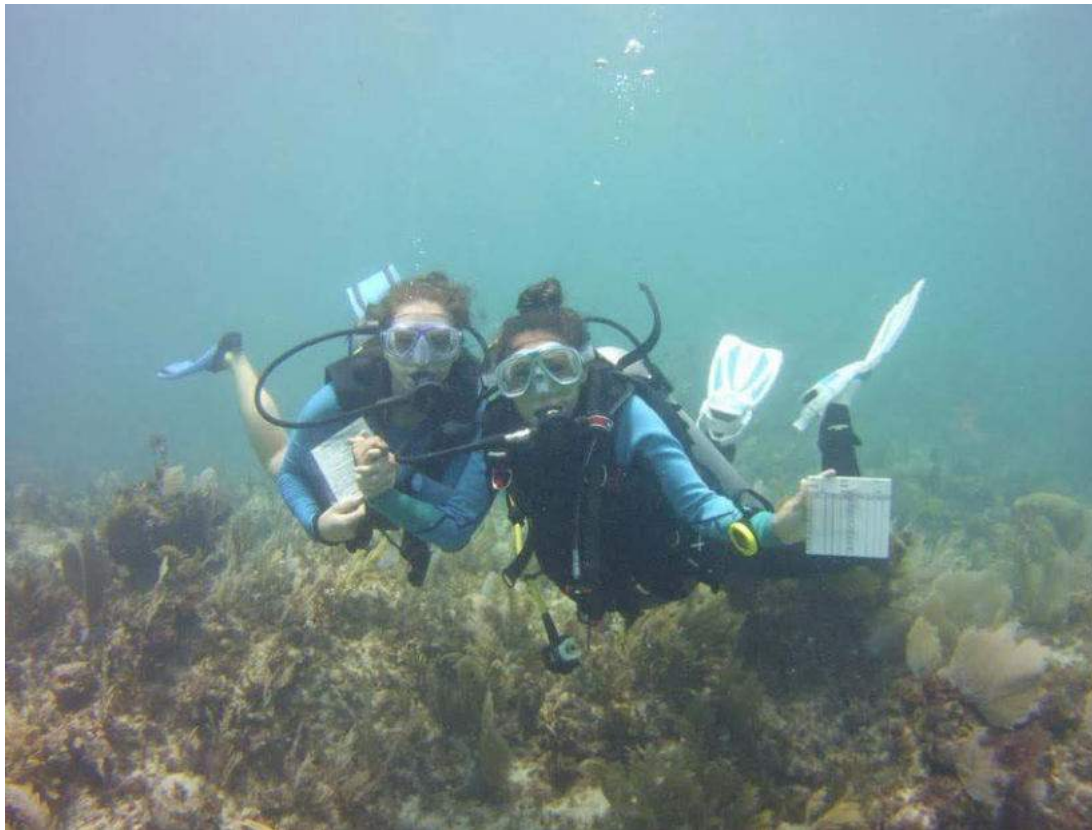


13 – CLIMATE ACTION



We educate our volunteers on the effects of climate change and the ways in which they can minimize their own impact on the planet. We promote environmentally sustainable lifestyles and habitats during the program. Volunteers are encouraged to share the information they have learned to their friends and families.

Additionally, we conduct Coral Watch surveys as a long-term monitoring project. Coral Watch is a citizen science program based at the University of Queensland in Brisbane, Australia. Coral Watch surveys quantify coral bleaching information so that coral bleaching events can be monitored worldwide. Coral bleaching events are caused by high ocean temperatures, events that are caused by elevated ocean temperatures correlated with climate change. Volunteers are trained to complete Coral Watch surveys and help collect essential information about the health of the reef. This year we conducted 58 coral watch surveys.



14- LIFE BELOW WATER



Volunteers of the marine conservation program contribute to conserving the reef by assisting our partner CRIP with their coral restoration project. Corals fragments are grown in lab conditions in our partner's facility. Volunteers assist with the care of the coral fragments and the maintenance of the tanks and equipment used to grow the corals.

Volunteers also have the opportunity to help with the maintenance of in-water nurseries and the transplanting of the coral fragments onto the reef. The main goal of this project is to replace coral colonies at severely degraded sites therefore speeding up their recovery. In the year 2019, volunteers and staff collectively spent 2,175 hours at the coral lab assisting our partners. We were also proud to assist our partner CRIP with their coral restoration event in Isla Mujeres where 3'100 microfragments of 12 different coral species were transplanted onto a degraded section of reef.



During September of 2019, we assisted our partner the Healthy Reefs Initiative with the collection of data regarding the health of coral reefs from four new different monitoring sites. The goal of the project was to demonstrate the impact of bleaching events and Stony Coral Tissue Loss Disease (SCTLD) on local coral species. Staff and volunteers collected data on the health and sizes of over 800 corals of varying species across the four sites. We determined which coral species were suffering from the highest levels of bleaching and Stony coral tissue loss disease, as can be seen in Figure 1 and Figure 2 respectively.

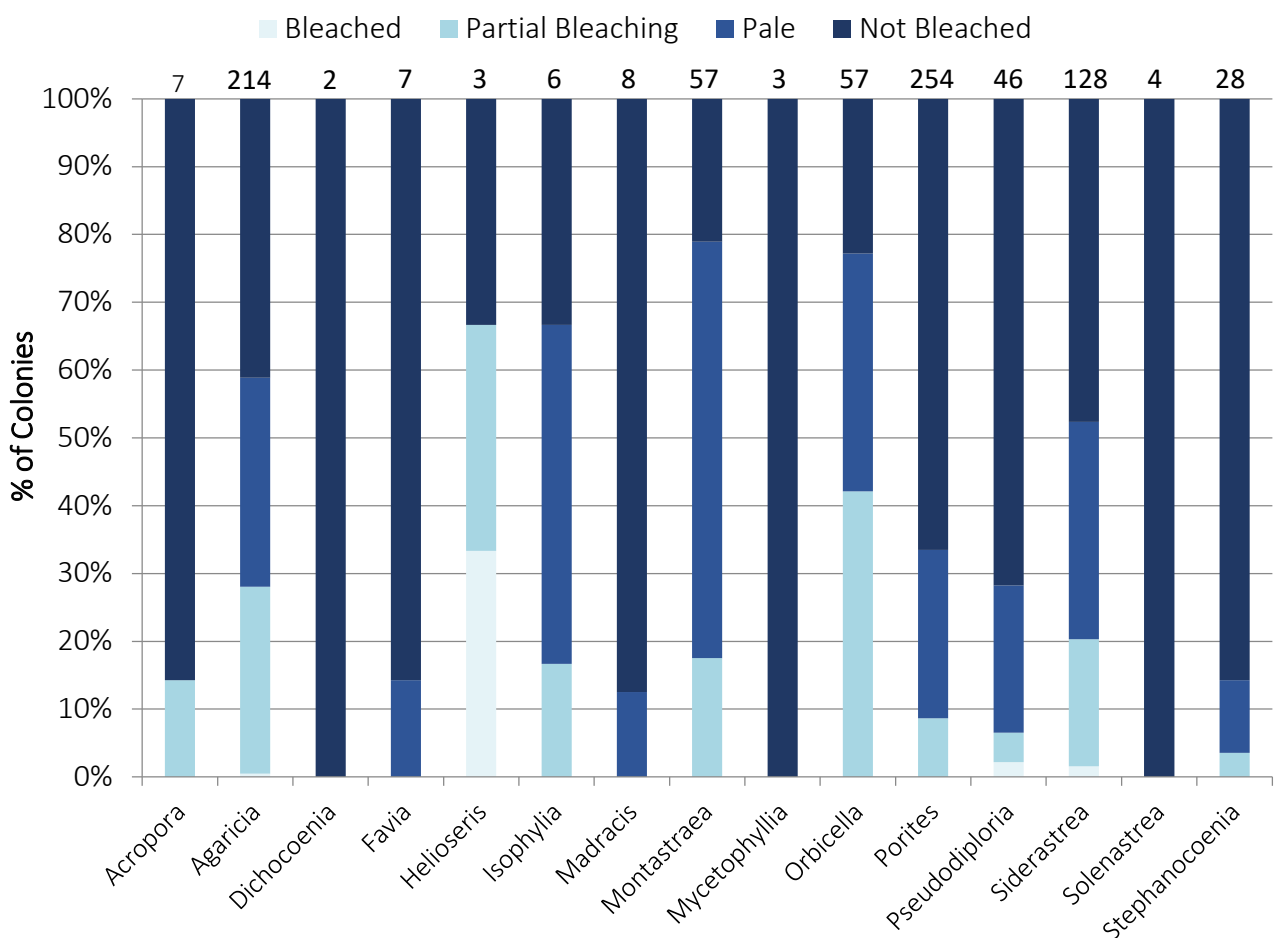


Figure 1: The percentage (%) of coral colonies with bleaching of each coral genera that was sampled. Bleaching is described using the following categories; Not bleached, Pale, Partially Bleached, and Bleached. Numbers on top of the columns indicate the number of the colonies surveyed of each genus.



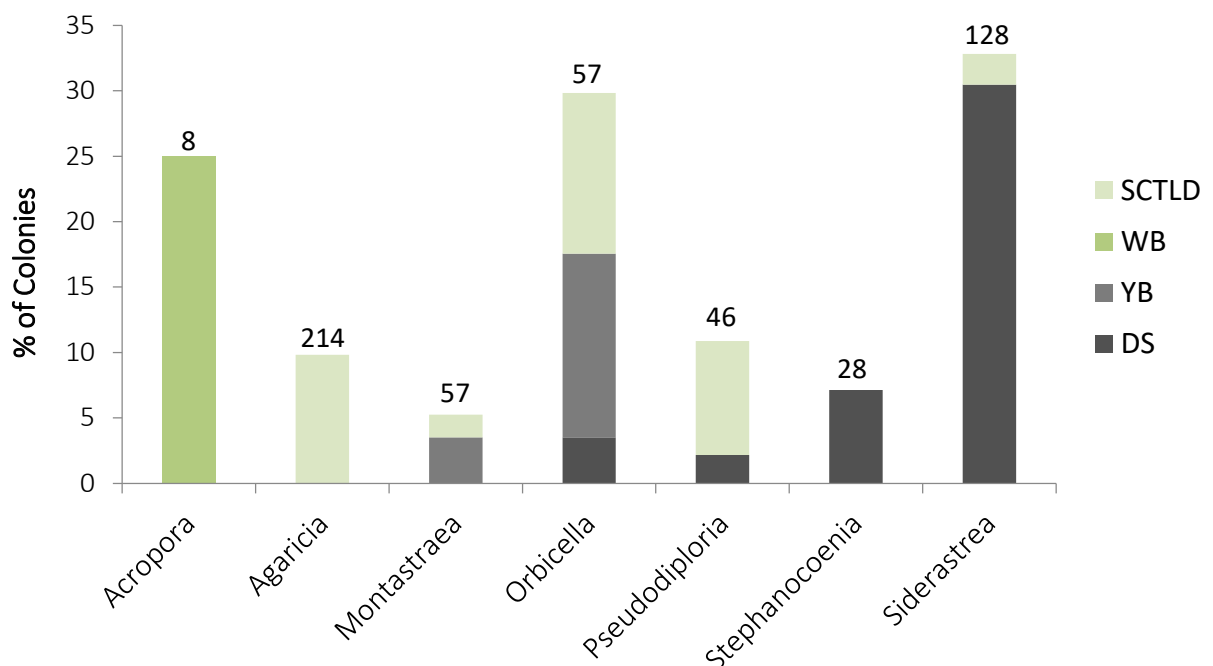


Figure 2: The percentage (%) of coral colonies afflicted with diseases of the sampled genera that were afflicted with diseases. Each column indicates the total percentage (%) of diseased coral colonies of each genus with the contribution of each disease type indicated: SCTLD for Stony Coral Tissue Loss Disease; WB for White Band Disease; YB for Yellow Band Disease; and DS for Dark Spot Disease. Numbers on top of the columns indicate the number of colonies surveyed of each genus.

Throughout the year, volunteers and staff did quarterly monitoring using the Mesoamerican Barrier Reef System Synoptic Monitoring Program (SMP) methodology. Using this methodology we collect information about coral health and diversity, benthic community dynamics, fish biomass, and fish recruitment. During the year, we collected this data for four different sites and sent this information on to our partners at CRIP and the Healthy Reefs Initiative. Additionally we collect information about invasive lionfish populations and several megafauna species that are sighted on every dive. This information is essential to monitor the biomass, distribution and population sizes of several species that are indicators of reef health.

In order for the volunteers to be able to carry on the above-mentioned underwater activities in a sustainable and environmentally responsible manner, high quality SCUBA dive-training courses from the PADI association were offered by our staff to the volunteers. From the initial open water courses all the way through to professional courses of Dive Master and the Instructors Development Course.



In addition, we proudly offer our volunteers the PADI unique Coral Reef Research Diver (CRRD) certification, which is only available through GVI's marine conservation programs as well as the Emergency First Responder (EFR) course and certification to prepare them to act in case of an emergency.

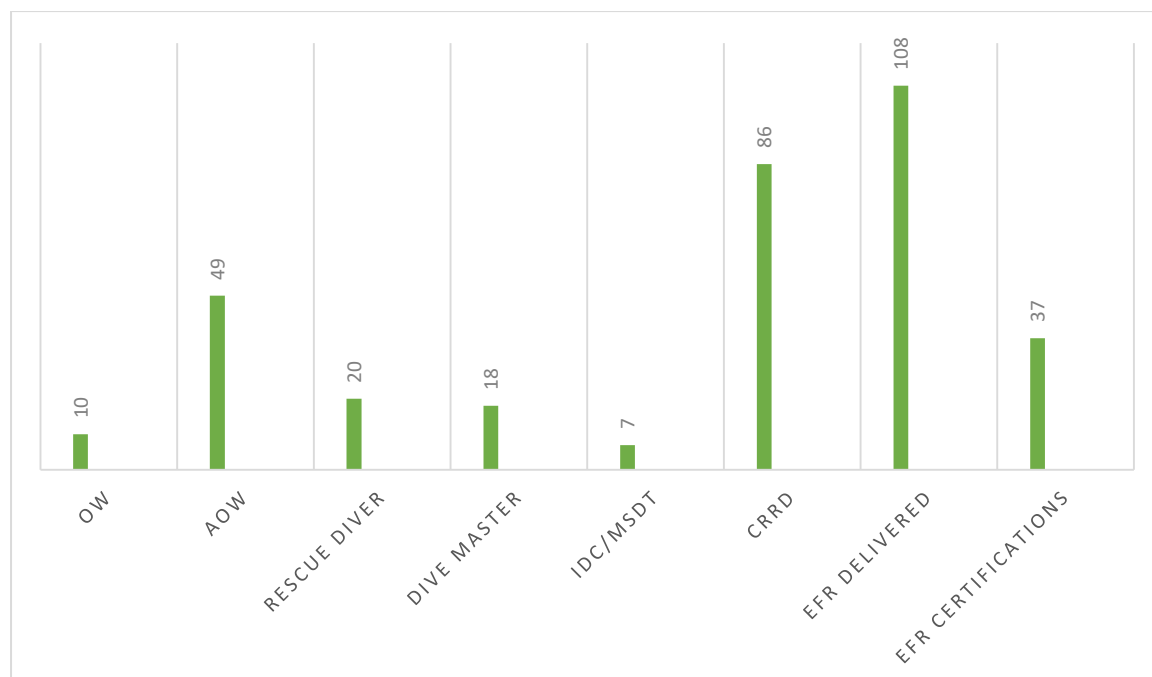


Figure 3: Amount of PADI SCUBA diver certification for the different levels gained by volunteers in base in 2019. As well as amount of EFR courses delivered by our staff and EFR certifications gained by volunteers and partners.

On the Community side, during November and December, the Childcare project changed the subjects of environmental education, making a priority the presenting of lessons related to marine conservation topics.



15 – LIFE ON LAND



Volunteers from the Marine Conservation Program participate in weekly beach cleans, removing trash and debris from the local beaches of Puerto Morelos. Doing regular beach cleans is important as it prevents animals from accidentally ingesting or becoming entangled in the debris after it washes up on shore. In 2019, we collected 606kg of debris from our local beaches. The trash was sorted and 115.8kg of recyclable materials were cleaned and

sent to a local recycling center. During every beach clean, we collect data about the type of trash gathered. The data collected from every beach clean is sent to our partner, The Ocean Conservancy. The Ocean Conservancy collects data about what types of debris are littering our oceans to improve our knowledge of the ocean trash issue and promote good policies that will keep plastic out of our waterways. Next year we plan on finding new beaches within driving distance that do not get cleaned regularly and conducting town cleans to increase our impact.



17 – PARTNERSHIPS FOR THE GOALS



Continuing with GVI's mission, throughout 2019, the volunteers and staff were able to interact and collaborate with an ever-growing number of partners dedicated to marine conservation and community development. From continuing collaboration with partners like the NGO's Amigo de Sian Ka'an, The Healthy Reef Initiative, Centro Ecologico Akumal and Save the Children to government agencies like CONANP. This year Puerto Morelos HUB was able to strengthen the collaboration with its partners as well as the formalization of new partnerships. CRIP with its coral restoration project opened its doors to our new base, allowing us to lend a hand with their amazing efforts in preserving and restoring the coral reef ecosystem. CONANP Puerto Morelos and CONANP Costa Occidental Isla Mujeres, Punta Cancun and Punta Nizuc also approached us to help them in the monitoring of the coral reef ecosystem and to assist them in fieldwork on their coral nurseries and coral transplantation efforts. The NGO Saving Our Sharks has closed ranks with us and has been keen in giving presentations on their work to conserve bull sharks in our region as well as asked our volunteers and staff for assistance in field work. The Autonomous University of Mexico has approached our team to carry on environmental education events in the community to create awareness of the richness of our sea and the threats that beseech it. In all, GVI Puerto Morelos currently is partners with 13 organizations and government branches.



Table 1. GVI Puerto Morelos in Country Partners in 2019

Name	Type
Centro Regional de Investigación Pesquera (CRIP)	Federal Government Branch
Comisión Nacional de Áreas Naturales Protegidas Parque Nacional Arrecifes de Puerto Morelos (CONANP)	Federal Government Branch
Comisión Nacional de Áreas Naturales Protegidas Parque Nacional Costa Occidental Isla Mujeres, Punta Cancun y Punta Nizuc (CONANP)	Federal Government Branch
Healthy Reef Initiative	Non-Government Organization
Centro Ecologico Akumal	Non-Government Organization
Amigos de Sian Ka'an	Non-Government Organization
Save the Children	Non-Government Organization
XTC dive shop	Private Company
Tolok Divers	Private Company
Universidad Autónoma de México (UNAM) Unidad Puerto Morelos	Public University
Coral Watch	Citizen Science
Ocean Conservancy	Citizen Science
Reef	Citizen Science





CONCLUSION

We received 86 volunteers for the marine conservation program who participated directly with our in country partners coral reef restoration project.

27 volunteers for the community program who participated in daily activities with the kids at the ludoteca of our partners Save the Children.

Throughout 2019 our staff numbers fluctuated between 5 and 7 paid staff, with a maximum of 3 unpaid staff at any given time. Nevertheless, eight scholars total throughout the year. Four of them GVI volunteers that were truly committed making a positive impact. Two of them eventually became full time paid staff, one of which still is with the team.

We had one member from the community join us as a part of the National Scholarship Program on the 29 of June and collaborate with us both in the community program and the marine conservation program for 3 months.

GVI Puerto Morelos interacts with 12 in country partners, from non-government organizations to branches of the federal government, private companies and citizen science organizations.

We provided 14 EFR training sessions for our volunteers, staff and in country partners staff as well as community members. A hundred and eight participants undertook the EFR training, 37 obtained the Emergency First Responder Certification.



Our staff and volunteers collaborated for a total of 2'175 hours in the coral laboratory activities.



The team collaborated in three seagrass cleaning dives, picking all kinds of trash from this wonderful ecosystem and helping to create a healthier ocean.



On the community program, side of the HUB, volunteers and staff imparted 30 physical activity sessions and 37 health related lectures to the community children at the local ludoteca. Supporting a total of 40 days of activities in the same installations for he children.



BIGGEST SUCCESSES

In 2019, in GVI Puerto Morelos we had a year filled with challenges and accomplishments.

In January, we relocated the marine conservation program HUB in Akumal to Puerto Morelos, at the same merging with the community program HUB from Playa del Carmen into one HUB with two different programs.

Starting a completely new adventure for our participants and staff in the new community.



In July 2019, the first group of Under 18 participant undertook the marine conservation project. Fifteen participants participated in this new activity completely carried out in Puerto Morelos.

The GVI Puerto Morelos team undertook the monitoring of the health of the reef on eight sites throughout the year as well as monitored two new sites south of Puerto Morelos to determine the presence of the coral diseases, in particular the white syndrome disease.

In August, the entire GVI Puerto Morelos team joined forces to create a massive fundraising event that included volunteers from both programs. The GVI Olympics fundraiser main objective was to generate funds to improve the facilities of the ludoteca for the children of the community.



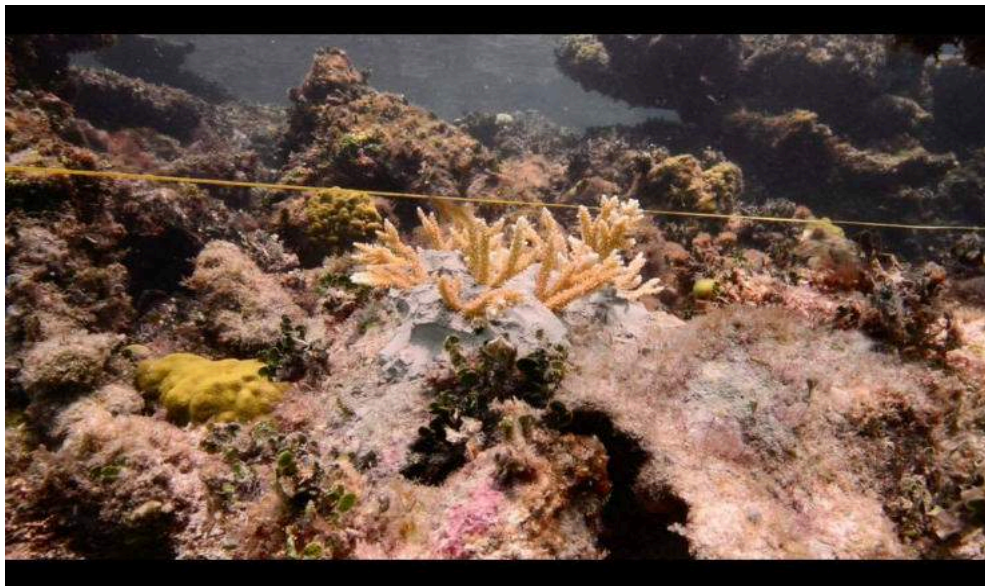
On June 8, staff and volunteers made a community event in the main park of Puerto Morelos for The Worlds Ocean Day. An environmental education event directed for the local community to learn about the magnificent natural resource of the coral reef ecosystem they have and help create a conservation conscience. Over 150 community member participated in the event as well as six of our in country partners.



On October, one lucky volunteer and one staff member participated in a conch shell population study in the Chinchorro bank, a marvelous natural protected off the coast of Mexico and near the border with Belize. During six days they collaborated with a team from our partner CRIP in collecting data from this conch shell population to assess the local stock in the area to create guidelines on its use as a sustainable fishing resource.



The GVI Puerto Morelos team collaborated in the generation, maintenance and transplanting of 24'396 coral heads, that were relocated to 20 different sites.



PLANS FOR 2020

This year, challenges await our team of staff and volunteers. To start, we still have the commitment with our main local partner CRIP to continue collaborating with them in their objective of generating and transplanting 265 thousand new coral heads to the reef by 2022. We are still a long way from the objective but we are sure that with the passion and commitment of our staff and volunteers we will be able to accomplish it.

This year we have also started working on a new project with CRIP and The Healthy Reef Initiative, starting a Caribbean King Crab marine aquaculture experiment to grow out specimens from this species in tanks to be able to liberate them in areas of the reef where macro algae are over running the coral. This wonderful herbivorous invertebrate is the perfect underwater gardener for our corals to control the macro algae problem.

Also with CRIP, we are working in designing and starting to other new projects:

- Tagging and monitoring sharks to learn more of their migration patterns in the Caribbean, helping gain more valuable information on this apex predators to help protect them.
- Designing and starting an ocean water quality monitoring program. This would be a great way to gain information on the hazard of water pollution for the reef ecosystem as well as determine the best areas to restore the coral.

As a way to make the training of our volunteers and staff team more efficient, on 2020 we are planning on changing the reef monitoring protocol from the MNRS synoptic monitoring program to the Atlantic and Gulf Rapid Reef Assessment (AGRAA) methodology

For our community program, we will continue to advocate our help to helping our partner Save the Children in their activities in the community, but are also looking into ways to expand this program.

