MESOAMERICAN REEF FUND

FINAL TECHNICAL REPORT

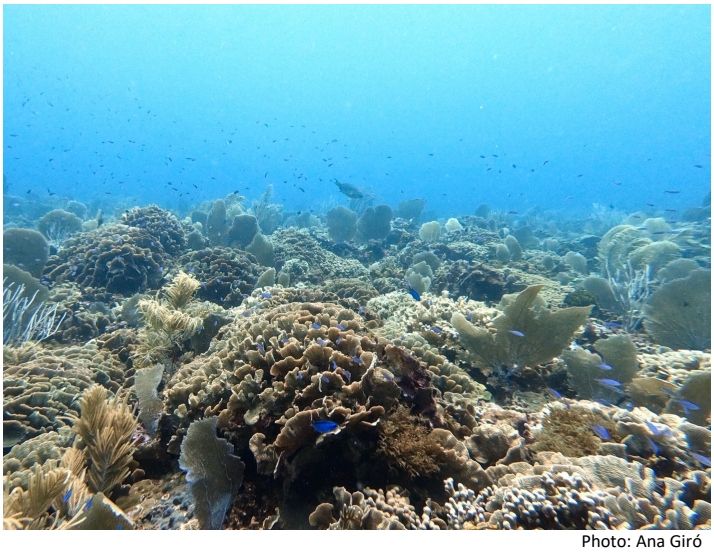

Photo: Ana Giró

1. Title page:

- Project number: GUA 13-008
- Project name: "Phase III Cayman Crown- Communicating the scientific findings of the jewel of the MAR"
- Grantee: Fundación Mundo Azul, Healthy Reefs Initiative and Pixan'Ja
- Author: Ana Giro, Healthy Reefs Initiative and Angela Mojica, Pixan'Ja
- Period of the report: April 15th 2021 to December 15th 2022
- Report date: December 22nd 2022

2. Executive Summary

During the duration of the grant (April 15th 2021 to December 15th 2022), we were able to further analyze data from the Cayman Crown reef beyond earlier explorations (Phase I and Phase II) and compare data from an additional field expedition that took place at the end of November, beginning of December 2022 funded by a counterpart. A document analyzing the occurrence and development of coral disease and its impacts in the Caribbean region, highlighting the Cayman Crown reef was generated. It was determined that there is no presence of SCTLD on the reefs monitored in the Cayman Crown (4 sites) by the end the period reported in this grant.

An important component of this project was to communicate the scientific findings of the Cayman Crown reef, the jewel of the MAR. The scientific information gathered on Cayman Crown was presented and socialized to key audiences in an accessible and customized way to make it relevant, increasing the general awareness of key stakeholders, that will help support effective management measures. The importance of protecting coral reefs, focusing on Cayman Crown, informing on the recent and devastating SCTLD impacts, what is known to date about this coral disease and management actions needed to date were

presented through four webinars with a participation of 217 people. The team also participated in 2 meetings with fishermen from Belize and Honduras (total of 32 people attended the events), where information was presented about the importance of the Cayman Crown reef and the need to protect it. Moreover, the team participated in national congresses where the information about the Cayman Crown was presented. To disseminate the scientific information gathered, we developed an informative video about Cayman Crown, describing the discovery, the reef system, its importance and major scientific findings as well as a call to action. We also developed a scientific paper draft about Cayman Crown reef health monitoring results (the draft paper includes results regarding the health of the reef based on health reef, benthic promoters and detractors indexes, as well as seawater temperature, bleaching and disease monitoring results) that will be submitted next year to be able to reach the scientific community, which is also a key audience.

The information gathered in all the phases of the projects, allowed us to create an important synergy with another project we developed for the Ministry of Environment in Guatemala (MARN) and the Reef Rescue Initiative (under MAR Fund), that offered a national platform to disseminate information about the disease in Guatemala to key stakeholders of all sectors of society, including decision makers at higher levels. The information gathered about the presence or absence of the disease, as well as the stakeholders mapping also served as baseline data for the development of the Guatemala SCTLD National Action Plan. The information was properly cited giving relevance and visibility to the work developed under the three phases of the MAR Fund Small Grants Program.

The following report includes the main objectives and activities developed under this grant as well as the main results generated.

3. Objectives

- **Objective 1.** To document and analyze the occurrence and development of coral disease and its impacts on the Cayman Crown Reef.
- **Objective 2.** To socialize the scientific information gathered on Cayman Crown reef to key audiences in an accessible and customized way to make it relevant, increasing the general awareness of key stakeholders, that will help support effective management measures.

4. Project progress: for each objective, indicate with bullets progress, results, products and organizational links

- *Clearly indicate progress on the project, and results/products to date for each objective and planned activity.*
- *Indicate the progress of the project in relation to the original timetable and explain any delays.*

Objective 1. To document and analyze the occurrence and development of coral disease and its impacts on the Cayman Crown Reef.

1.1 ***Analyze the information gathered and develop a document describing the presence or absence and current state of SCTLD***

To be able to achieve this objective we analyzed data collected during reef monitoring expeditions for the Caribbean of Guatemala between 2021 and 2022. Two of the field expeditions were done through Phase II of the MAR Fund small grants project and along with counterpart funding from the Healthy Reefs Initiative (HRI); the third field expedition was done through the MAR Fish project and counterpart funding from the HRI. The first expedition was done August/September, 2021 (3 sites in Cayman Crown) using the Atlantic and Gulf Rapid Reef Assessment (AGRRA) methodology to evaluate the health of the reef with a special focus on Stony Coral Tissue Loss Disease (SCTLD). The second expedition to the Cayman Crown reef was in December 2021 (4 sites) to monitor SCTLD. The third field expedition was held in November 2022 (4 sites) monitoring SCTLD and bleaching. Throughout the various field expeditions, we determined that there is no presence of SCTLD on the reefs monitored in the Cayman Crown reef, as well as other

diseases. The data collected for the three field expeditions was essential to develop the document entitled *"Evaluating the presence, absence and current state of Stony Coral Tissue Loss Disease (SCTLD) in the Cayman Crown Reef'' which* describes the presence or absence and current state of SCTLD for the sites monitored in the Cayman Crown reef Annex 1.

The data collected in all of the sites monitored has been uploaded to the AGRRA SCTLD portal and dashboard: https://www.agrra.org/coral-disease-outbreak/. For each of the reef sites monitored we reported about the species seen, the presence or absence of SCTLD and also the presence and impact of bleaching, important information to be able to see how the disease is unfolding.

1.2 Develop a webinar about the SCTLD findings for Guatemala.

During the duration of this grant we were able to create and update key information regarding the SCTLD and its status in Guatemala as well as the Caribbean. We also expanded our communication efforts and activities far beyond the initial webinar proposed to share relevant information regarding the SCTLD.

We organized and participated in various webinars to talk about SCTLD in Guatemala, current state, findings and actions needed for the country. The webinars are:

1 and 2) **Webinar about the reefs in Guatemala and SCTLD, organized by the NGO Semillas del Océano (SDO) and the Healthy Reefs Initiative (HRI):** HRI and Semillas del Océano organized two talks about the Stony Coral Tissue Loss Disease. One of the talks was given by Ana Giró and the other was given by Melina Soto (HRI) and Damaris Dueñas (Roatan Marine Park); during both talks Hazel Araujo (SDO) was the person leading the interview.

The first talk (July the 28th 2021) was transmitted through the Instagram Live platform from both HRI and SDOs accounts. Fifty-five people attended the event; however no more specific information about the gender or sectors attending the presentation is available given that it did not require a registration process to attend the event. There were some questions asked by participants regarding specifics about the disease and how it's transmitted, how we can help stop the spreading of the disease and if the disease affects fish.

The second talk (August 3rd 2021) was given through SDOs zoom platform and 45 people attended the event, which mostly focused on the rescue of affected corals. Invitations are shown in Annex 2.

3) **Coastal and Marine Webinar Congress organized by CEMA, FUNDAECO and UVG:** Ana Giró gave a presentation titled "Stony Coral Tissue Loss Disease Identification and Conservation Actions" on October 21st 2021. This presentation talked about general aspects of the disease, management and action plans in the Mesoamerican Region. A special focus on actions being implemented in the region (treatment, restoration and coral rescue) and information and actions needed for Guatemala (monitoring, contingency plans, preparedness based on the NAP for Guatemala) . There were about 97 participants during this presentation in Zoom and other participants were listening through the Live Facebook page of CEMA. The invitation of the event can be found in Annex 3.

4) **Stony Coral Tissue Loss Disease webinar focused for Guatemala was organized and developed by the Healthy Reefs Initiative and Pixan'Ja** (27th of January 2022). This webinar was transmitted through the Instagram Live platform from the HRI page. The webinar was 45 min long and it had an audience of 20 people who attended, however there is no specific information about the gender or sectors attending the presentation given that the presentation was transmitted live and it did not require a registration process. The main topics of the presentation included a series of questions and comments that helped us guide the conversation. We have had 292 views on the HRI YouTube channel of the event about SCTLD in Guatemala and Actions needed. https://www.youtube.com/watch?v=VVkuY2T0AWc&t=2s

The invitation to the webinar can be found in Annex 4. The recording can be found in the following link: https://www.dropbox.com/s/91ktj0lyvnhzo3y/77432cb32a054b34a9770c6f60b65dec.MOV?dl=0

Within the 4 webinars we have socialized the importance of protecting coral reefs, explained about the recent and devastating SCTLD impacts, what is known to date about this coral disease and to date management actions; we also informed on the project progress and results and the importance of the Cayman Crown reef to more than 217 people who attended these events from Guatemala and the MAR region.

We also want to share the great synergy we were able to have with another project we developed for the Ministry of Environment in Guatemala (MARN) and the Reef Rescue Initiative (under MAR Fund), that offered a national platform to disseminate lots of information about the disease in Guatemala to key stakeholders of all sector of society, including decision makers at higher levels. Our history as pioneers of reef health monitoring in Guatemala and our experience of more than 12 years working in the conservation of the country's reefs has allowed us to play a strategic role in addressing the SCTLD. As the consultants in charge (Pixan'Ja and HRI) of designing and developing the National Action Plan (NAP) to address this disease in the country, the only one within the MAR that has not yet reported the SCTLD, we were able to share and use the results of this project as well as those generated during Phase III, with stakeholders from all sectors of society on a national and regional scale, enriching and complementing the information developed for this tool. For example, through the field work developed under Phase II we communicated the latest results of field expeditions about the absence of the SCTLD in the sites monitored, and we used the stakeholder initial mapping as well as the analysis developed under Phase III as a baseline for the stakeholder analysis developed specifically to support the SCTLD National Action Plan development and implementation of this tool. The information was properly cited giving relevance and visibility to the work developed under the three phases the MAR Fund Small Grant Program have supported since 2019. Annex 5 provides key information regarding the public events organized through this process, from December 2021 till April 2022, to create the SCTLD NAP.

We believe sharing this information as part of this report is critical even though these activities were not part of the grant funded by the Small Grant Program, because of the unique opportunity we had to disseminate and elevate the information generated through a national stakeholder's platform for over 8 months. The attendance at the nine different events varied, between 10 (minimum attendance) and 85 people (busiest event).

Objective 2. To socialize the scientific information gathered on Cayman Crown reef to key audiences in an accessible and customized way to make it relevant, increasing the general awareness of key stakeholders, that will help support effective management measures.

2.1. Conduct a mapping of specific stakeholders and prioritize 2 main audiences that will be included in the socialization process of the results gathered of the Cayman Crown reef.

- **Stakeholder mapping and database creation:** A database has been created with approximately 92 people from different sectors (NGOs, private sector, academia and government). Our starting point to contact stakeholders were the contact lists from both HRI and Pixan'Ja. Some people initially contacted who participated in an exploratory interview were confirmed and updated; and new and more recent stakeholders were added as a result of this activity. The database was developed in Excel taking advantage of its searching and filters capabilities to improve its functionality making the stakeholders directory a practical tool; it can be found in Annex 6.

  This stakeholder mapping helped us understand the level of knowledge and familiarization stakeholders from most sectors of society have in Guatemala regarding coral reef ecosystems, and more specifically regarding Cayman Crown reef system. Comprehending the level of understanding of the targeted audiences is important to improve how messages are delivered,

meaning the use of a more appropriate language, as well as a better framework and clearer objectives. We used the stakeholder mapping we developed to facilitate contacting people, as well as to improve the design of information and material during the socialization process (e.g., the social network events, workshops). Furthermore, this information is essential to create the national stakeholder mapping used for the development of the SCTLD NAP engaging and development process.

- **Stakeholder prioritization - Stakeholder survey through the Google forms platform:** We designed an electronic survey to help us identify and understand who the stakeholders are in regard to the coral reefs in the Caribbean of Guatemala, and more specifically to the Cayman Crown reef. The survey was designed to help us gather the strategic information about the person (organizations) answering the survey: a) what is their general knowledge about the reefs of Guatemala; b) what is their general knowledge about the Cayman Crown reef and if they work in the area or are planning to do so in the future, c) who are their key partners, d) what their knowledge is about the "Stony Coral Tissue Loss Disease" affecting the reefs of the Caribbean, d) help gather their contact information and other key stakeholders that might be important and their capability to support conservation efforts. Based on the previous survey, we designed a specific survey for the academia to gather more information on this specific sector. The surveys were shared with the 87 contacts from the stakeholder mapping list (those we had identified at the time); we received a total of 40 responses between both surveys (36% from ONGs, 21% government, 18% academia, 15% international NGOs and 10% private sector). These results were essential to better comprehend the key actors present in the country based on the topics explored and to guide our prioritization process of the main audiences to work with in a smart way based on their relationship, reef knowledge level and potential to support the Cayman Crown conservation efforts. This information will continue to be relevant for the development of future more accurate communication materials.

  Access the survey, through this link for the survey designed for NGOs, government and private sector:
  https://docs.google.com/forms/d/e/1FAIpQLSfwjFAlournb15Or876_Ckqrn6-gHrVq1vBSwBLAEAh5tvIMQ/viewform?usp=sf_link
  For the survey designed for academia access this link:
  https://docs.google.com/forms/d/e/1FAIpQLSegb42GmeQv3ObceFTZA_oAIGof9ySmk6qL5vYDo9goS8_0ng/viewform?usp=sf_link

  With the information gathered an updated stakeholder mapping related to coral reef for Guatemala with approximately 92 people and more than 40 organizations and entities was created (final number of people and organizations identified and verified at the time of delivery of this specific product). There is a great potential to increase the level of information and knowledge that these stakeholders have regarding coral reefs, more specifically Cayman Crown reef. Though 85% of them indicated that they have heard of this new reef, only 15% are familiar with its location and only 49% know the conservation and management measures conferred by its declaration as a No Take Zone through 20230. Of special interest are practical tools that can add value to these actors and their organizations when it comes to advance and promote the conservation, research and management of coral reefs in the country. Even though 75% of the actors participating in the interview indicated knowing about the SCTLD, the great majority said it was important and necessary to continue learning with the objective to be prepared for the disease and its arrival to Guatemala.

  Another important point was the intersectoral collaboration among stakeholders that already exist and the potential to increase their communication, which could support everyone's organizational objectives. The sectors that seem to be more isolated are academia and the private sector; and the overall participation of the private sector was represented by private diving schools, indicating a significant gap within this sector in the current relationships and interactions. It was determined that the preferred channels to communicate are digital outlets,

likely because of the impacts of the pandemic, their low cost and the efficiency (less time allocated to do a digital activity compared to in person events). The complete report of the stakeholder mapping and prioritization can be found in Annex 7.

All of these products served as a baseline for the development of the SCTLD NAP, more specifically, the key stakeholders mapping process to prioritize those critical actors for the development and future implementation of the NAP. These products were adequately cited, providing visibility to our previous work developed under this grant.

2.2. ***Develop specific communication messages and resources and conduct 2 of online events to disseminate the scientific information on Cayman Crown reef addressing prioritized audiences.***

We were able to participate in 5 different events relevant to our work in the Cayman Crown Reef focusing on different target audiences including professionals with a broader multidisciplinary technical knowledge of climate change, government officials at different levels in charge of the management and conservation of the Cayman Crown Reef – Temporary Space Closure Zone, local fishermen from Belize and Honduras who are users of the fishing resources in the Cayman Crown general area, as well as NGOs and academia.

1) **Participation in the IV National Congress of Climate Change of Guatemala 2021 (Additional activity, August 5th 2021):** The national congress was organized and financed by the Sistema Guatemalteco de Ciencias de Cambio Climátcio, we participated as speakers and authors of a presentation**.** Together with Dr. Fabio Cresto we submitted an abstract to participate in the IV National Congress of Climate Change of Guatemala 2021. Our presentation was accepted under the thematic section 4: Studies of the ocean and adaptation in coastal marine zones. Title of the presentation: "Integrating climate change in the management and protection of marine ecosystems". Dr. Cresto gave the talk during the event. As presenters, there are no estimations or descriptions on how many participants and from which sectors attended the talk given we had no control over the public platform used by the event organizers; however, we can say that the video on YouTube currently has 318 views. Visit the following links to see the presentation used for this event:
https://www.dropbox.com/s/orxk0xut9myfvlc/IVCongresodeCambio Clim%C3%A1tico.pdf?dl=0
Link to the recording of the event: ttps://youtu.be/zKvdcVgL1jE

2) **Participation in the meeting named Management and Conservation of the Cayman Crown Reef – Temporary Space Closure Zone meeting funded by Oceans 5, Summit and MAR Fish organized by FUNDAECO:** the meeting was held on Friday 15th of October 2021 from 8:00 am to 11:30 am. Our participation in this meeting was specifically to inform government officials (DIPESCA, CONAP officials and park rangers) about the importance of Cayman Crown. We gave a presentation of all the scientific information gathered on the reef and how the scientific findings can help guide the conservation efforts. Five people attended the meeting from DIPESCA, 2 park rangers from CONAP, 1 official from CONAP, 4 people from FUNDAECO and Ana Giro from HRI. The name of the presentation given was: Science for Conservation, Cayman Crown the Jewel of the Mesoamerican Reef. The presentation can be found in this link: https://www.dropbox.com/scl/fi/nogzs85l2xh949lt7ykvy/Corona-Caiman-CONAP-DIPESCA.pptx?dl=0&rlkey=a7q67ctm9gbnmogz2cvv4q4i1

The agenda of the meeting can be found on the following link:
https://www.dropbox.com/s/g1g6lytwdw9sown/Agenda%20Taller%20Manejo%20y%20Conservaci%C3%B3n%20Zona%20de%20Veda%20Espacial%20Marina%20Corona%20Caim%C3%A1n.pdf?dl=0

During this activity with the government, we also supported FUNDAECO by providing the best location to take the government officials to visit and dive in Cayman Crown (they visited the reef on October 14th, before the meeting and presentations). This support was done through an additional meeting with FUNDAECO to explain about the Cayman Crown reef, the location and given our experience, which was the best site to take the people to see the area. This meeting

was held on the 7th of October from 11:00- 12:00, through the Google meets platform (no recording) and it was mostly to help FUNDAECO plan this activity.

3) **Webinar with local fishermen from Belize, organized by TIDE funded by Marisla:** We were invited to participate in a workshop with local fishing communities of Belize to give a presentation about the importance of the Cayman Crown reef and recent scientific findings. A presentation about the general discoveries of Cayman Crown and its importance was shared in a simple language appropriate for fishermen. TIDE was the first to organize the workshop. It was carried out simultaneously in two communities, Punta Gorda and Monkey River, on May 26-27, 2021 a total of 17 people attended the event. The activity took place virtually on May 26-27, 2021, and two communities participated: Punta Gorda and Monkey River. HRI gave a presentation of the wonders of the Cayman Crown reef.
The agenda of this workshop can be seen in the following link: https://www.dropbox.com/scl/fi/mu5kkrdm471gz1j53z41z/TIDE-Marisla-Workshop-Agenda-May-2021.docx?dl=0&rlkey=0fx8q5rhqe6rjnbo5fh4cxkzc

4) **Participated in a workshop with Honduran Fishermen, organized by the Coral Reef Alliance (CORAL) under the MAR Fish project:** this activity took place online in the zoom platform during March 4th 2022. The workshop focused mainly on presenting the main results of a socioeconomic study done by CORAL, of how the Honduran communities are related to Cayman Crown, this to better understand the social and economic role of this reef for these Honduran communities a total of 15 people attended the event. We were invited as a guest speaker to present about the main characteristics and the importance of the Cayman Crown reef for the Mesoamerican Reef System (MAR). The agenda of the workshop can be seen in the following link:
https://www.dropbox.com/s/9299zuvtgt9o4ou/Agenda%20Taller.pdf?dl=0

5) **Participated as a presenter in the National Marine and Coastal Congress**: this activity was held on October 25, 2022. Ana Giró was selected as one of the speakers at this year's event: Ocean Sciences for Sustainable Development, whose main objective was to promote science and research in the coastal marine areas of the country, exposing the recent work carried out in the Central American and Caribbean region. The presentation was focused on reef health with a special focus on the Cayman Crown reef. During the presentation an approximate number of 110 participants were online. The webinar invitation can be found in Annex 8.

2.3. Write a draft of a scientific article to a peer review journal with the objective of sharing the discovery and main findings with the international scientific community

- **Identification of potential scientific journals to submit the scientific article for publication:** Given the time and effort devoted into writing a scientific article, we decided to explore journals based on a couple of important criteria besides the main themes they publish, as a practical way to identify the best matches for the information we want to share and convey. Some of these criteria include a) thematic, b) objectives), c) scope and specific themes, d) publication types, e) publication tariffs, f) accessibility (e.g., open source), g) submission and acceptance process duration, h) impact factor, and i) useful observations for what we are interested in. Visit the following link to see the table we are developing to compare scientific journals, as a practical way to identify the best venues for our article:
https://www.dropbox.com/scl/fi/7qi99ow7flmeyeh8r14wa/Revistas-de-publicaci-n_progress-report.xlsx?dl=0&rlkey=hxmuczd2nnmd786muok0dn313

- **Scientific paper draft**
We wrote the draft of the scientific paper following the structure of Frontiers in Marine Science journal, which we considered an appropriate venue for our paper. This draft encompasses the most robust data sets we have compiled, as well as the most interesting information we have been able to generate in the last couple years.

The draft of the article can be seen here: https://docs.google.com/document/d/1r3_k4xQublDg-sDBEjTTdtFfIZIuKLubvkgnJRP5CBw/edit?usp=sharing

- **Video**

The video we created has the objective of informing different audiences about the discovery of the Cayman Crown reef, the most relevant results gathered through our scientific explorations and monitoring, the conservations measures put in place by both Guatemala and Belize, and the most relevant and urgent call to action to continue support the conservation efforts of this unique ecosystem. We choose to make a general video with not so technical vocabulary to broaden our target audience.

To support the development of the video and to facilitate the collaboration with the videographer, we created a guideline with the ideas and content in an organized fashion, that also contained the specific text to be included in the different sections. The following is the final document used for the development of the video; however, this is the result of several previous drafts that helped us structure the story we wanted to tell in a congruent way, and allowed us to write the text in a more comprehensible style:

https://docs.google.com/document/d/1RRHchGyTGkPCTgSRx9TkAsVeDj_01U_8OHxr_W4By9U/edit?usp=sharing

The great majority of the graphic material provided for this video (photos, videos) was generated by HRI and Pixan'Ja as a result of our various field explorations under the Small Grants Program (Phases I, II), as well as other donors (Summit Foundation, Oak Hill Fund and MAR FISH). We also had the support of Nicole Craig, HRI Country Representative for Belize as one of the narrators of the video. All the sources used during the video that were not ours were properly cited, providing the credits. All of the resources used for the video can be found in the following link:

https://www.dropbox.com/scl/fo/606gxpg23k9684kw7zr3b/h?dl=0&rlkey=genm73sn8pisasrz76fzqnxu6

The video can be watched here:
https://drive.google.com/drive/folders/13yVOLYkJJ6MWbERet_UKLuKizNRqWvI7?usp=share_link

We are anticipating presenting and disseminating this video through the different social networks (Instagram, Facebook and Twitter) and communication channels (YouTube) early next year 2023 to have greater impact. The release of the video will take place after the review and the approval of the donor.

- ***Indicate if the originally planned methodology still applies or if it has been modified. In case of the latter, explain why and what the changes are.***

The general approach and specific methodologies proposed during the original proposal for this grant were valid throughout the process of the grant; however, we made changes regarding the Scientific Article submission and approval. Given the time it is required to get a peer review journal article submitted and approved, which was beyond the duration of this grant, we proposed to change the funding specified for this activity into the development of a video to communicate the most relevant findings of our work on Cayman Crown Reef. The specific changes approved by the donor included the use of USD$2,000 (50% was used to higher a professional videographer and 50% to support additional time of the authors in the development of content, the visual materials, the audios and the revision of the final product) for the development of a video and an extension until December 15th, 2022 to deliver the last two approved products: the draft of the scientific article and the video.

5. **Obstacles:** *Indicate if there have been any obstacles to the development of the project that have prevented achieving the planned goals/activities or if there has been any delay, and how you have solved or plan to solve the situation.*

COVID challenges: as expected COVID challenges affected our field trips, training activities essential to complete our work, as well as in person events, for which we improvised and accommodated in the best possible way (e.g., change in person activities for digital meetings, change the format of important activities including the materials so that participants could be present digitally, replanning of field trips). These events translated into several delays of important activities that caused general delays in the project development.

Delays in the submission and acceptance process for the proposed scientific article: we did not plan well the time it takes to submit and get the acceptance of a peer review article; it was not realistic to finish this during the one-year grant. This is why we change the submission and acceptance for the draft of the paper and a communication video with our main results. The video is a great complementary communication tool that will help us disseminate the information, and the draft will help us go through the expected process of publication.

6. **Links with other organizations**

- **AGRRA -** SCTLD platform and webinars.
- **MPA Connect -** SCTLD webinar organized with Emma Doyle.
- **Semillas del Océano -** webinar on SCTLD organized with Hazel Araujo.
- **FUNDAECO -** meeting with policy officials and fishermen and the National Marine and Coastal Congress.
- **TIDE:** We participated in a workshop with Belizean Fishermen, organized by TIDE.
- **CORAL:** We participated in a workshop with Honduran Fishermen, organized by the Coral Reef Alliance.
- **Dr. Fabio Cresto:** Dr. Cresto is a climate expert with whom we partnered to participate in the IV National Congress of Climate Change of Guatemala 2021.
- **Reef Rescue Initiative and MARN:** We were the consultants in charge of designing and developing the National Action Plan for Guatemala to address the SCTLD.

The links with the AGRRA and the MPA Connect team and platform is a long-term relationship given their objective, purpose and continuous support to us and many other partners across the whole Caribbean. All reef health data collected by HRI and partners are housed within the HRI/AGRRA platform and both AGRRA and MPA Connect are leaders regarding management actions to address the SCTLD in the Caribbean. Therefore, we will continue working with them as long as possible to remain part of the most important regional networks and to continue to exchange current information.

7. **Description of activities for next period:** *Briefly describe the activities that will be undertaken in the next period.*

Activities proposed for the current grant were completed, and next steps are being developed under the MAR Fish project. These include: monitoring the health of the reef, continuing to gather information about temperature and pH with permanent loggers placed underwater, and also gathering information about fish sound mapping to be able to locate and confirm Fish Spawning Aggregations in the area.

8. **Project development table:** *Complete the project development table for the period being reported by indicating percentage of accomplishment of indicators/products.*

Project Development Table Phase III is attached as another file in Excel.

9. Lessons learned

Flexibility to redesign relevant project activities is necessary under extraordinary circumstances, as well as persevering despite the potential challenges, which many times are hard or impossible to anticipate. To the last months of this project, we were open to finding a solution to conduct the project in the most appropriate way, maintaining the original objectives.

10. Effects of the project

- **Consolidation of a scientific baseline for the conservation of Cayman Crown Reef**

Throughout the three phases of this ongoing grant (phases I (2019), II (2020), and III (2021)), we have been able to establish permanent study sites, as well as gather compelling data of critical variables (e.g., reef health parameters based on the AGRRA methodology, coral diseases and coral bleaching, seawater temperature and pH, photomosaics, and fish sounds) to better understand and protect the Cayman Crown reef. To date, our work represents the most updated and solid scientific data baseline about the Cayman Crown reef. Our initial efforts scientifically supported the conservation measures in Guatemala and Belize; for Guatemala the declaration of Cayman Crown reef as a no take zone represents the very first marine protected area located on a coral reef. Our monitoring efforts have also allowed us to keep an eye for the dreaded SCTLD, which is decimating coral reefs ecosystem across the Caribbean. This ability allowed us to continue to update the disease status in the country, to inform and support stakeholders and decision makers regarding the SCTLD country response. We hope that with the information generated throughout the different phases funded by the Small Grant Program we will be able to continue to gather funding and strengthen the monitoring program we have established for Cayman Crown reef, specially, as this is the only scientific baseline integrating the health of the reef, bleaching and disease impact for this new system since its official discovery and extends to years previous to its declaration as a protected area in both countries (baseline for comparison).

- **Informing key conservation processes at a national level**

Our presence, work and role in discovering, monitoring and studying the reefs in the country has allowed us to support national high-level processes including the design and development of the national Action Plan to address the SCTLD, which is considered a regional environmental emergency.

- **Targeting audiences and processes for specific communication efforts**

During this phase we were able to generate different communication materials and organize and/or participate in various communication events, expanding the way we had communicated our work and results so far. We specified target audiences, speech and vocabulary, as well as the style and the communication channels depending on the communication objectives and the audience with a total of 509 people reached.

11. Communication of results

Results of the project have been communicated through webinars, workshops, and various social media platforms. The webinars are mainly to share results of this project with the scientific and marine conservation community. Different webinars were held, some specifically for communicating the scientific findings of Cayman Crown, and others were made for communicating the findings regarding SCTLD. The webinars have been described above in this current report. In addition, the video and the draft of the scientific paper we developed are expected to complement and expand our communicating efforts with different audiences and in different venues.

This phase has been instrumental for the dissemination of all the information we have been generating during the three phases of this ongoing project. Given the public knowledge of this reef system, its conservation status in both countries and the progress we have had in collecting and analyzing data, it has been possible to generate more materials and to enhance its communication of most of the results, highlighting the importance of continuing the long-term monitoring program we initiated. These efforts are the scientific baseline to inform conservationists, decision makers and users of the incredible marine biodiversity and ecological services Cayman Crown creates and maintains.

Taking advantage of the synchronicity with other projects (in our case the NAP to address the SCTLD) and the potential to further our collaboration and dissemination of the information we have generated was a highly positive experience. It allowed us to elevate and share our data to higher levels of decision making and to a broader scope of relevant stakeholders, which in many cases, it is not easy or it would have taken much longer.

12. Project continuity

Will the processes established by this project continue operating? How will it be done? Who will provide follow-up?

Currently the HRI is part of the MAR Fish project financed by FFEM through MAR Fund. Its main objective is generating solid science to support the protection of Cayman Crown and Fish Spawning Aggregation sites across the MAR. With this grant we will provide project continuity, especially the monitoring and data gathering of the loggers (pH, temperature and hydrophone) installed underwater; regular field trips are necessary to be able to retrieve and maintain them, as well as download the information for further analysis.

Monitoring efforts for reef health and to detect the SCTLD is expected to continue as part of the HRI efforts, they will continue to monitor reef health in the MAR region (employing the AGRRA and BleachWatch methodology). Regarding SCTLD it is expected that specific monitoring national efforts are funded and supported under the National Action Plan for SCTLD in Guatemala, which is the emergency response hosted and supported by the Guatemala Ministry of the Environment.

13. Potential risks and mitigation measures table

Please include the potential risks and mitigation measures table presented with the original proposal and indicate if some of the risks were made effective and what measures were taken, and/or if there are additional risks that were not initially considered.

Tema	Riesgos Potenciales	Medidas de mitigación	Observaciones
Derechos humanos:			
Desarrollo y estímulo del respeto a los derechos humanos y a las libertades fundamentales de todos	Conflictos y/o falta de credibilidad, inclusión, respecto en la participación de los diferentes actores claves en el proyecto.	Evitar la exclusión, desigualdad, violencia a través de espacios seguros donde exista el respeto y una participación equitativa (reglas de interacción para eventos dinámicos y el intercambio de opiniones).	Durante los webinars y entrevistas se buscó el respeto por las personas. Para los eventos participativos se presentaron las reglas a seguir y las herramientas digitales para garantizar el respeto, la participación de todos de manera ordenada, el escuchar a todos de manera respetuosa. No se presentaron riesgos adicionales ni se materializaron los riesgos anticipados.
Derechos de pueblos indígenas o comunidades locales	N/A	N/A	NA
Promoción de trato preferencial injustificado de ciertos grupos en relación con los servicios básicos, acceso a recursos o toma de decisiones sobre esos recursos	N/A	N/A	NA
Se considera y aplica el consentimiento previo libre e informado (CLPI) cuando existan acciones que puedan afectar a la comunidad	Sectores o grupos no se sienten incluidos en los procesos relacionados al proyecto.	Mantener un proceso transparente de comunicación respecto a los procesos y las fases del proyecto para la inclusión de los diferentes grupos.	Se mantuvo un proceso transparente durante el proyecto. Todas las actividades de comunicación tuvieron públicos meta especificos, la información fue de acceso público, se dieron a conocer y se explicaron las cuestiones referentes a las actividades o la información en cuestión, y se mantuvo al donante informado en todo momento de la planificación, el

			desarrollo y los resultados. No se presentaron riesgos adicionales ni se materializaron los riesgos anticipados.
Otro (s)	N/A	N/A	NA
Tema	**Riesgos Potenciales**	**Medidas de mitigación**	
Igualdad de género y empoderamiento de la mujer:			
La promoción de los derechos humanos de mujeres y niñas, la lucha contra prácticas discriminatorias y el cuestionamiento de funciones y estereotipos que crean desigualdad y exclusión	Conflictos y/o falta de credibilidad, inclusión en la participación de mujeres y niñas a través de proyecto (incluyendo mujeres y niñas de los diferentes sectores/actores claves y de las mismas investigadoras).	Evitar la exclusión y desigualdad a través de espacios seguros donde exista el respeto y una participación equitativa (reglas de interacción para eventos dinámicos y el intercambio de opiniones).	Se buscaron espacios de respeto y participación. Para los eventos participativos se presentaron las reglas a seguir y las herramientas digitales para garantizar el respeto, la participación de todos de manera ordenada, el escuchar a todos de manera respetuosa. No se presentaron riesgos adicionales ni se materializaron los riesgos anticipados.
Fortalecimiento de la participación de las mujeres en los procesos de toma de decisiones	Que las mujeres no quieran participar, o que no sean informadas en sus respectivas organizaciones para que puedan asistir y participar en los eventos en línea que se llevará cabo en el proyecto	Promover la participación de la mujer por medio de invitaciones directas; tener en cuenta los horarios propuestos para los eventos de manera que sean congruentes con los horarios laborales evitando pedir tiempo de asistencia en horas fuera el trabajo dedicadas a la familia u otros asuntos personales	Se tuvo participación de mujeres en todo el proyecto, las lideres del proyecto son mujeres. Las mujeres participantes de otras organizaciones tuvieron la misma oportunidad que otros participantes, y se garantizó su participación libre, así como el respeto. No se presentaron riesgos adicionales ni se materializaron los riesgos anticipados.
Garantía que tanto mujeres como hombres puedan participar en forma significativa e igualitaria, tengan acceso equitativo a los recursos del proyecto y reciban beneficios sociales y económicos comparables	El interés en participar de un grupo puede ser mayor que el otro	Brindar todos los recursos de manera significativa e igualitaria tanto para mujeres como hombres para promover la equidad y la inclusión.	Se buscaron maneras dinamicas e intercativas para promover y manetner la participación de las diferentes audiencias durante los diferentes eventos realizados; se aprovecharon varias herramientas digitales de diferentes plataformas (Zoom (levnatar

			la mano para participar, dividirse en cuartos de conversación y plenaria, compartir patalla para presentar ideas), Mural (plataforma para facilitar el compartir opiniones y proveer información clave), Mentimeter (sistema de votación anónima para observar tendencias y apoyar la toma de decisiones). No se presentaron riesgos adicionales ni se materializaron los riesgos anticipados.
Otro (s)	N/A	N/A	NA
Tema	**Riesgos Potenciales**	**Medidas de mitigación**	
Sostenibilidad ambiental:			
Se busca mantener y mejorar el capital natural	Posibles daños al ecosistema por causas ajenas al proyecto (fenómenos climáticos, actividades pesqueras no sostenibles, encallamiento de embarcaciones, accidentes); posibles daños generados por el proyecto (daños por anclas o por encallamiento de la embarcación de caso de accidente o desperfecto)	Mantener un proceso transparente acerca de las operaciones del proyecto en campo y las metodologías de investigación, las cuales no son extractivas, invasivas, o de alto impacto; pero de observación.	No se tuvieron actividades de campo. Se divulgó información clave para impulsar la protección de los ecosistemas marinos, promoviendo la educación ambiental de las diferentes audiencias, respondiendo dudas y promoviendo acciones de respuesta. No se presentaron riesgos adicionales ni se materializaron los riesgos anticipados.
Se evita cualquier posible impacto adverso a los recursos naturales y el medio ambiente, o se minimizan y mitigan los impactos adversos, y, como último recurso, si no es posible contrarrestarlos o evitarlos, se compensan			

Additional information:

Objectives	*Output / Expected Results*	*Activities*	*Assumptions & risks*	*Proposed mitigation measures*	*Additional risks initially not considered*	*Risks made effective and measures taken*
Objective 1. To document and analyze the occurrence and development of coral disease and its impacts on the Cayman Crown Reef.	Information on coral reef disease with a specific emphasis on the SCTLD and its impacts on the Cayman Crown Reef has been generated and analyzed.	1.1. Analyze the information gathered through field data and develop a document describing the presence or absence and current state of SCTLD	Weather conditions and public health concerns derived from the pandemic can affect the implementation of monitoring and data collection (part of Phase II); problems with the boat engine can cause delays during the field trips; it is essential to be able to collect the information and analyze it.	Maintain flexibility related to trip dates and availability of team members to accommodate unconducive weather, or unexpected issues resulting in delays or changes in the planned dates. Collect and analyze potential disease appearance on our study sites from other partners working in the field.	Inability of team members to participate in field activities due to physical reasons. Issues with emigration, port authority and or coast guards, which ended or could have ended in further delays or limitation in the field to conduct our underwater work. Issues with local fishermen potentially threatening our personal security.	The pandemic has caused delays in the field activities, which is linked to the analysis of the information regarding disease and its impacts on Cayman Crown. We have taken contingency plans regarding the pandemic.

		1.2 Develop a webinar about the SCTLD findings for Guatemala will be developed.	All events will be online; therefore, remote attendance and interactions can be challenging considering the significant increase of remote work due to the pandemic; finding suitable dates can be challenging depending on the time of the year and any other events taking place around similar dates.	Maintain flexibility related to trip dates to accommodate unconducive weather. Since the data gathered on the field will be used to develop the webinar.	Audiences may be overwhelmed because of the number of online events and meetings they are currently participating in.	The pandemic has caused delays in the field activities which give us the information to develop the webinar on SCTLD. We engaged the audience through dynamic and interactive participation of the webinar events (use of dynamic participation using Mural and interactive surveys and polls through zoom and mentimeter).

Objective 2. To socialize the scientific information gathered on Cayman Crown reef to key audiences in an accessible and customized way to make it relevant, increasing the general awareness of key stakeholders, that will help support effective management measures.	Scientific information gathered on Cayman Crown reef has been socialized and disseminated with key targeted audiences.	2.1. Conduct a mapping of specific stakeholders and prioritize 2 main audiences that will be included in the socialization process of the results gathered of the Cayman Crown reef.		Mapping of specific stakeholders through online surveys to see the knowledge they have about the reefs. Email follow ups to get a better response.	Audiences may be overwhelmed because of the amount of emails and online events they are currently participating in.	Email follow ups to get a better response for the mapping of specific stakeholders.

		2.2. Develop specific communication messages and resources and conduct 2 of online events to disseminate the scientific information on Cayman Crown reef addressing prioritized audiences.		Online events will be dynamic and interactive to try and engage the attendees as much as possible. Maintain flexibility related to trip dates to accommodate unconducive weather. Since the data gathered on the field will be used to develop the online events.	Audiences may be overwhelmed because of the number of online events and meetings they are currently participating in.	Try to engage the audience through dynamic and interactive participation of the webinar events.

		2.3. Write and submit a scientific article to a peer review journal with the objective of sharing the discovery and main findings with the international scientific community.		*Maintain flexibility related to trip dates to accommodate unconducive weather. Since the data gathered on the field will be used to develop the scientific paper.*	*Inability of team members to participate in field activities due to physical reasons may cause delay in field activities which causes delay in the data analysis and process of the draft document.* *Delays or longer terms to submit and receive the acceptance of the scientific drafts into a peer review journal.*	*Selection of the best criteria and main themes per journal based on the message we want to convey.* *It took us longer than expected to go through the writing and submitting the scientific paper into a journal. We had to request a grant extension to finish the draft and we also exchanged the funding to pay for the publication for the development of a communicative video to be able to finish and closed the grant under specific dates.*

14. Due diligence: please share only the documents that are in a updated or more recent form in comparison to the documentation shared with the proposal

There haven't been any changes

Sources of Funding: In the table below, please update the status of the contribution from other sources according to the project proposal. Indicate if the proposal is still under revision, was not accepted, is under implementation or has finalized. If the amount has changed please share a new letter of commitment.

The project has been finalized and the amounts have not changed. The In Kind contribution from other sources is shown below

Source of Funds (Matching funds) **IN KIND CONTRIBUTIONS**	Total Grant Amount	Amount Allocated for this Project	Term (Month / Year)	Year of Award	Status of Funds
Healthy Reef Initiative	$12,756.00	$			In Kind Funds
Pixan'Ja	$ 3,236.00	$			In Kind Funds
TOTAL	$ 15,992.00	$			

Annex
https://www.dropbox.com/scl/fo/73eeumn5ez4qu6q1ggj06/h?dl=0&rlkey=ctn0v12thzz018ktzex9x0x9b