



Meeting Minutes of the Virtual Regional Workshop for the Exchange of Experiences in Post-Storm Response Capacity to Mitigate the Impact of Hurricanes on Coral Reefs

Socios del MAR Insurance Programme



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Acronyms and abbreviations

CCAD	Central American Commission for Environment and Development
CONANP	National Commission of Protected Natural Areas
CONAP	National Council of Protected Areas
CRIAP	Regional Aquaculture and Fisheries Research Centers
CSUCA	Central American Higher University Council
DM	Dive Master
ECOSUR	The Southern Border College
FUNDAECO	Foundation for Eco-development and Conservation
HRI	Healthy Reefs for Healthy People Initiative
ICRI	International Coral Reef Initiative
INAPESCA	National Fisheries Institute
ISF	Insurance Resilience Solutions Fund
KfW	Bank aus Verantwortung / State Development Bank of the Federal Republic of Germany
MAR	Mesoamerican Reef
MAR Fund	Mesoamerican Reef Fund
MPAs	Marine Protected Areas
NGO	Non-Governmental Organization
OMI	International Maritime Organization
OSPESCA	Organization of the Fishing and Aquaculture Sector of the Central American Isthmus
PROCOCODES	Conservation Program for Sustainable Development
PROREST	Program for the Protection and Restoration of Ecosystems and Priority Species
RRI	Reef Rescue Initiative
SCTLD	Stony Coral Tissue Loss Disease
TASA	Turneffe Atoll Sustainability Association

TNC	The Nature Conservancy
UICN	United States Agency for International Development
UNAM	National Autonomous University of Mexico
WTW	Willis Tower Watson
WWF	World Wildlife Fund
ZMES	Especially Sensitive Maritime Area

Introduction

The Mesoamerican Reef System (MAR) is the largest coral reef system in the Atlantic Ocean, stretching over a thousand kilometers along the coasts of Mexico, Belize, Guatemala, and Honduras. The MAR sustains a diversity of ecosystems, including extensive mangrove forests, seagrass meadows, coastal lagoons, and coral reefs. These ecosystems provide essential environmental services that contribute to the livelihoods of communities and the economic growth of MAR countries (Arddison et al., 2011).

The reefs also serve as a natural infrastructure asset that protects coastal populations from the impact of hurricanes and storms. Recent studies, such as the economic valuation of the MAR funded by the Inter-American Development Bank (IDB), estimate the annual economic value of the MAR at US\$450 billion; with the value of different environmental services allocated as US\$183 million for fisheries, US\$3.9 billion for tourism, and between US\$320 and US\$438 million for coastal protection (Ruiz de Gauna et al., 2021).

However, the MAR and its ecosystem services are at risk despite their biological richness and economic importance. Anthropogenic activities such as overfishing, unsustainable coastal development, pollution from solid waste, and wastewater threaten the integrity and health of the region's ecosystems. Furthermore, the increase in extreme climatic events, such as hurricanes, exacerbates these threats and increases reef degradation, thereby reducing its capacity to provide services to multiple beneficiaries, particularly local communities.

Therefore, through the Reef Rescue Initiative (RRI), MAR Fund seeks to strengthen the recovery and resilience capacity of the MAR through financial sustainability, risk management instruments, and capacity building for restoration and emergency response after meteorological events such as hurricanes and storms. So far, RRI, in collaboration with various governmental, non-governmental institutions, and civil society, has formed six Post-Storm Reef Response Committees in the four countries that make up the MAR region, with 14 brigades, 17 trainers, and 140 trained brigade members tasked with providing immediate attention to reefs after extreme weather events such as hurricanes.

With the aim of having the Post-Storm Reef Response Committees share experiences and learnings in immediate response actions to mitigate the impact of hurricanes on coral reefs in the MAR region, on November 16th, 2023, MAR Fund, through RRI, with the financial support of the Insu Resilience Solutions Fund (ISF), convened the *Virtual Regional Workshop for the Exchange of Experiences in Post-Storm Response Capacity to Mitigate the Impact of Hurricanes on Coral Reefs*. The objective of the workshop was for the Post-Storm Response Groups to share experiences and learnings in immediate attention actions to mitigate the impact of hurricanes on coral reefs; identifying challenges, opportunities, and strategies to follow to strengthen their actions, as well as to consolidate regional coordination and strategic alliances, for the resilience and protection of the Mesoamerican Reef (MAR).

The event had 101 participants, including brigade members, and representatives from various organizations such as the National Commission of Natural Protected Areas (CONANP in Spanish), the Regional Center for Aquaculture and Fisheries Research (CRIAP in Spanish), the National Fisheries and Aquaculture Institute (INAPESCA in Spanish), the National Forest Conservation Institute of Honduras (ICF), the National Council of Protected Areas (CONAP in Spanish), Turneffe Atoll Sustainability Association (TASA), Healthy Reefs for Healthy People Initiative (HRI), and The Nature Conservancy (TNC). Donors included the participation of Insurance Resilience Solutions Fund (ISF).

Conclusions of the workshop

During the workshop, conclusions and agreements were reached addressing various dimensions to support the strengthening of response capacity and its activities, as well as the conservation and recovery of the MAR. Among the most relevant are:

1. Coral Restoration, Monitoring, and Innovative Technology

Establishing continuous monitoring systems to assess the health of coral reefs at different stages, before, during, and after extreme weather events such as hurricanes, is necessary. This approach will provide crucial data to understand and address impacts in real-time, facilitating effective responses and restoration plans.

Likewise, it is imperative to introduce innovative technology, such as artificial corals created with 3D printers or underwater photogrammetry, to enhance reef restoration capacities.

2. Funding and Environmental Fiscal Strategy

While current funding sources are limited and do not fully meet all the needs for coral reef management and recovery, it was acknowledged that potential funding sources and opportunities are available. Additionally, the need for more effective management of existing funding mechanisms was highlighted, including identifying and exploring various sources of financial support and understanding the functioning of environmental compensation funds and their associated certifications. This proactive approach aims to strengthen the team's capacity to identify and utilize financial resources more efficiently and effectively.

Equally important was the proposal to create financial mechanisms that provide economic incentives to brigade members, ensuring their continued participation and reducing turnover and dropout rates.

Additionally, a proposal to develop an environmental fiscal strategy in 2024 was made as a crucial step to secure financial resources dedicated to reef conservation and restoration. It was suggested that a regional eco-debt swap scheme involving KfW as a key partner in the region should be explored, following the example of the UN Environment's efforts. This innovative approach could provide additional resources for ecologically significant initiatives.

Regarding parametric insurance, the importance of planning for various scenarios was emphasized. Previous experiences were integrated into budgeting to develop realistic estimates and adapt strategies based on lessons learned. This prepared, experience-based approach will optimize risk management and strengthen response capacity to potential adverse events.

3. Transparency in Public Policy and Sense of Urgency

The importance of ensuring transparency in public policies in reef conservation and recovery was underscored. This commitment is seen as a crucial strengthening element for the effectiveness and trustworthiness of the actions to be implemented. It was emphasized that the recovery of coral reefs should be recognized as a strategic and priority issue for national security through effective coordination among the involved countries.

The urgency of addressing the current state of the reef and its implications is considered an essential factor for effectively mobilizing resources and efforts.

4. Institutional Commitments and Strategic Partnerships

It is important to establish clear agreements in which governmental institutions commit to train their staff and provide greater flexibility and support for the participation of brigade members in response activities.

Furthermore, the importance of promoting and strengthening strategic partnerships with the Navy Secretariat, Ministries of Defense, and Finance of the four countries, to improve advocacy and facilitate information exchange was highlighted. Closer collaboration among key sectors, including governmental institutions, non-governmental organizations, scientists, local communities, fishermen, the military, and the private sector, must be fostered to ensure a comprehensive and coordinated response to extreme weather events.

Additionally, the importance of strengthening the Reef Restoration Network as a key component of this collaboration was emphasized, ensuring that this network plays an active role in preserving and revitalizing coral reefs.

5. Communication, Information Dissemination, and Education

Effective communication and continuous outreach related to reef research are paramount. These efforts should reach all relevant stakeholders, including local communities, government agencies, visitors, and tourists, to foster awareness about the critical importance of these ecosystems.

It is a strategic priority to seek platforms that showcase the work of the brigades through educational programs targeted at the local population and tourists. These programs should promote awareness about the significance of coral reefs, the connectivity between marine and terrestrial ecosystems, and the services they provide. Additionally, actions should be taken to contribute to their conservation and protection.

6. Technical Capacity of Committees and Brigades

Developing a comprehensive training plan for all brigades is essential, covering topics such as first aid, rescue techniques, identification of susceptible species to Stony Coral Tissue Loss Disease (SCTLD) and bleaching, monitoring, colony stabilization, effective restoration methods, nursery deployment, permit acquisition, among other subjects. This plan would ensure consistency and activate the participation of the brigades.

It is important to focus direct brigade training on local individuals, limiting the participation of tourists to mitigate migration.

Moreover, conducting annual logistical drills was proposed as a fundamental practice to identify areas for improvement, capitalize on response experiences from different countries, continuously refine the operational model, and ensure the safety of brigades underwater in various dangerous situations.

Establishing a certification program for brigades through a diploma or technical career, with the support of *El Colegio de la Frontera Sur* (ECOSUR in Spanish) and the Mesoamerican Coastal Marine Network, as an institutional endorsement, could provide the opportunity for brigade members to stay in the long term, transforming this work into a sustainable livelihood.

7. Internal Communication Spaces

It is essential for the committees to take the lead in maintaining effective communication among themselves and with the brigade members.

Establishing specific working groups for each site, connecting them through various communication channels such as WhatsApp chats for early alerts, email for sharing information from reliable sources, and maintaining an online presence through a website or blog, will facilitate the connection among brigades. It is important to allow autonomy for each committee or brigade.

Promoting spaces for training and exchange of experiences that encourage cohesion and learning for the brigades forming communities of practice will increase their effectiveness and agility in decision-making during climate events.

Workshop Agreements

Claudia Ruiz (RRI, MAR Fund):

- In collaboration with Carlos Rodríguez (Strategic Advisor of MAR Fund), will identify potential funding sources and explore certification opportunities and topics related to the training program for brigades.
- Will prepare a summary of the parametric insurance procedure (activation and operation). This will be sent, and a training session will be scheduled for the corresponding committees.
- Will explore strategies that work for the four countries related to seeking environmental compensation funds, such as fines. Martha Medrano will share Honduras' experience with additional environmental compensation fund strategies and their implementation to strengthen available economic resources for reef restoration and post-storm response.

Site-Specific Actions:

- Guatemala will maintain training plans for 2024. They aim to conduct a drill and bring brigades to Izabal for a dive during the first semester, thus seeking financing.
- Belize (TASA) plans to train and certify instructors in 2024.
- Honduras has initiated the process of seeking financial support to train brigade instructors. They have prepared a proposal to secure funds from potential donors interested in supporting initiatives related to the Marine Protected Area. Claudia Ruiz and Martha Medrano will hold a meeting to coordinate the training of brigade instructors.
- The committees of the four countries will review and update their post-storm response plans annually.
- The response plans of the four countries will be shared among the committees and brigades for dissemination, ensuring consistency in their execution (Google Drive).
- Juan Carlos Huitrón will review the protocols along with instructors and brigade members experienced in making improvement observations (Feb-Mar 2024).
- Each committee will review the protocols, and their observations will be communicated to Juan Carlos.
- HRI will share its experience of inclusion, coordination, and training of fishermen as brigade members.

Opening and Welcome Remarks

Claudia Ruiz, Coordinator of the Reef Rescue Initiative (RRI-MAR Fund), opened the session with a question about post-storm response capacity, fostering participation and mutual learning. She thanked the CCAD for supporting the RRI and its projects, especially the strengthening of post-storm response capacities in the Mesoamerican Reef System.

She acknowledged the governmental organizations involved in managing and protecting natural resources, biodiversity, and fisheries for their contribution to establishing Response Capacity in the region. She expressed gratitude to the technical committee of the RRI, as well as donors such as the Insurance Resilience Solutions Fund, KfW, and the United Nations, whose contributions were essential for conducting the training, workshops, and necessary equipment.

She emphasized the importance of donors such as the International Coral Reef Initiative (ICRI) and strategic partners like The Nature Conservancy (TNC) in the consultation process in 2018, highlighting the collaboration of trainers, experts, brigades, and response groups in the success and ongoing strengthening of reef conservation.

Regional Experiences

The event began with an explanation of the workshop objectives and a series of expert presentations on various experiences in post-storm response capacity.

Brief Overview of the Post-Storm Response Capacities Program in the MAR Region

Claudia Ruiz, Coordinator of the RRI, MAR Fund.

Claudia emphasized the importance of exchanging experiences and learnings, she highlighted that these dialogue spaces allow the identification of challenges and opportunities in the region to enhance response skills and upscale to other sites where this capacity is needed. She stressed the need to continue developing strategies that contribute to the conservation and resilience of the Mesoamerican Reef.

She recalled that MAR Fund is a regional environmental private non-profit fund with the mission of promoting regional financing and linkage for the conservation, restoration, and sustainable use of the Mesoamerican Reef. The projects implemented through programmatic areas align with sustainable development goals such as climate action, life below water, and life on land, including climate change.

Claudia stressed the importance of the Mesoamerican Reef System as one of the largest reefs in the world, spanning four countries with a biologically and culturally diverse area. She highlighted the benefits in terms of environmental services such as tourism, fisheries, and coastal protection, in addition to being a natural infrastructure that protects coastal zone inhabitants from impacts such as floods and storms. She stated that nowadays, the economic benefits it provides to society exceed 4 billion dollars annually.

However, Claudia pointed out the threats that this MAR region is facing, such as the increased frequency and intensity of storms and hurricanes. These events cause damage that affects the structural complexity of the reef, its biodiversity, and the provision of services. Hence, the importance of the RRI, whose objective is to: increase the resilience and recovery capacity of the MAR and the environmental services it provides, through continuous restoration and emergency response, including the grounding response protocol, emergency fund, financial mechanism, parametric insurance, and the establishment of post-storm response groups.

She expressed gratitude for the strategic support of TNC, which provided knowledge, materials, and tools to develop response capacities, including the creation of the early warning protocol, the strengthening of governance through the development and training of response coordination committees.

She concluded that currently, within the MAR region, there are eight protected areas, including 11 key reef sites, all included in the parametric insurance program.

As of the workshop date, thanks to other partners and various donors, six committees had been established, and trained in the four countries, with over 100 brigade members distributed among 14 brigades, and counting up to 17 trainers. Additionally, post-storm response plans have been developed, and several toolkits have been donated. This reflects the regional interest in training and knowledge on the topic, with a desire to integrate it into the management plans of protected areas and efforts dedicated to ecosystem conservation.

Early Warning Protocol, its Application in Quintana Roo, and Brief Overview of Replication in Hawaii and Guam.

Calina Zepeda, Climate Risk, Resilience, and Restoration Specialist, The Nature Conservancy.

Calina explained the context of post-storm situations, indicating that during a hurricane, strong winds and waves with a lot of energy occur, which can dislodge corals, carry them away, fragment them, and sometimes damage their tissue.

In order to mitigate this damage, it is necessary to carry out response efforts in a timely and immediate manner. She explained that the early warning and immediate response protocol is a guide that outlines the stages and actions to be taken before, during, and after the hurricane season begins, with the aim of minimizing the impact on the reef.

She delved into the stages of the protocol: 1) planning and preparation, 2) early warning, 3) rapid damage assessment or damage categorization, 4) primary response, 5) secondary response, 6) follow-up actions.

Calina mentioned the achievements in Quintana Roo, where 33 brigade members from three brigades were trained in Puerto Morelos (2018), 13 in Isla Mujeres (2019), and in 2021, two in Mahahual, totaling 17 brigade members and four new instructors for Mexico.

In 2022, the training was replicated in Micronesia, with the participation of six countries and 24 brigade members. The first parametric insurance in the United States was purchased for Hawaii and the training is scheduled for May 2024.

Among the lessons learned are: 1) Theoretical training for brigades should be conducted in person, with five days of training, 2) It is essential to assess the buoyancy and capacity of brigade members before approving their participation in the course, 3) Lack of commitment from some committees has affected response outcomes, 4) An emergency fund is essential to cover responses, especially when insurance is not activated, and 5) Lack of time limits brigade members' participation, making it necessary to hold courses well in advance.

On the other hand, some of the challenges are: 1) Avoiding brigade members dropping out, 2) Limited training and lack of time for active participation, 3) Ineffective communication between leaders and brigade members, and 4) Lack of commitment from some committees.

Calina concluded with some opportunities such as: 1) Continuing support from the government of Quintana Roo, 2) Commitment and willingness of experienced brigade members, 3) Potential

financing opportunities derived from the Agenda 2030, and 4) Ease of replication and upscaling the initiative.

Response Capacity Building: Experiences and Lessons Learned in Regional Training

Juan Carlos Huitrón, Instructor for coral reef hurricane response brigades.

Juan Carlos presented a summary of the experiences and lessons learned during the courses held from 2018 to 2023. Currently, almost 200 brigade members have been trained. He mentioned that some lessons learned are that the training should be focused on local people who are rooted in their community and to avoid training individuals with high mobility and little permanence in the regions.

He emphasized the importance of voluntary participation in training, which facilitates learning and enhances the retention of brigade members. He highlighted the absence of brigade members in a year after being trained, due to their work, personal activities or relocation, and the lack of other courses or activities to motivate participation, leading to loss of interest.

Juan Carlos pointed out that a crucial point is conducting aquatic skills tests before considering someone as a candidate for the course. Likewise, it is relevant to tailor the courses to each region, considering the distance to the reef and its accessibility, as these factors alter the course dynamics.

An outstanding opportunity lies in promoting the training of diving instructors at the local level. This approach would not only help strengthen the skills of the community but could also motivate interested individuals to become brigade instructors in the future.

Juan Carlos highlighted that one of the current strengths is the existence of very active brigades in Mexico and Guatemala. Additionally, the presence of brigade instructors in the region adds significant value to the implementation of the courses.

He remarked on the importance of toolkits and materials in the courses, recognizing the need to adapt these resources based on effectiveness observed after their experiences.

Juan Carlos mentioned the possibility of offering express courses after hurricanes for brigade members interested in becoming instructors, to address the challenge of not having enough instructors. Furthermore, he stressed the importance of incorporating a first aid and rescue course into the training of new instructors, despite possible additional costs, as it is directly related to the safety of the participants.

Importance of Post-Storm Governance and Reef Responders for Coral Reefs- the 2020 Puerto Morelos Case.

María del Carmen García, Director of the Puerto Morelos Reef National Park, National Commission of Natural Protected Areas, and Jacob Rubio, Trainer and Brigade member of Reef Guardians.

María del Carmen introduced the brigade team, highlighting their passion. Jacob detailed the dedication of the brigade members since 2018, emphasizing the importance of training and courses that have strengthened the vision of a multidisciplinary group. This approach provides strength and clarity to the group, and the implementation of protocols provides organization, order, and well-known procedures, open to continuous improvement.

He emphasized the active participation of key actors, as well as the crucial technical advice, expressing gratitude to Dr. Claudia Padilla for her essential role in the technical foundation.

During the presentation, they shared experiences about the activities carried out by the brigade in Puerto Morelos and the process involved in becoming a brigade member. Jacob mentioned the division of labor in the post-storm brigades and presented statistics revealing the magnitude of the efforts: 2,000 hours invested in the reef, 53 people participated, six boats, 5,000 fragments, 4,500 whole colonies, and the stabilization of over 1,220 overturned colonies.

He highlighted the challenges caused by the delay in the arrival of funds, which were allocated to the second phase of the project, focused on restoration through the creation of nurseries, maintenance activities, and the implementation of monitoring systems.

In 2023, there were unusual challenges related to coral bleaching. Attempts were made to relocate the majority of corals from the nurseries, initially located at 4 meters depth, to a depth of 11 meters, successfully reducing the temperature by 2.4 degrees Celsius, achieving a 20% survival rate.

María del Carmen detailed that the initial funding came from TNC for the first intervention. They managed to collaborate with service providers, boats, free food supply, and the voluntary contribution of brigade members, while MAR Fund resources supported the initiative as the first federally protected natural area in Mexico to request funds from the Conservation for Sustainable Development Program (PROCOCODES in Spanish). Additionally, they secured funds for hurricane-related contingencies and implemented the parametric insurance. María del Carmen emphasized the importance of training brigade members to face hurricanes, highlighting the need to develop additional capacities and skills under a structured program.

Key factors for success include the dedication of individuals who love the reef, the collaboration of committed institutions, the continuity of training and activities, the creation of a sense of ownership and pride, and financial support that, while subject to improvement, covers priority aspects. Additionally, she highlighted the importance of receiving feedback and communicating results to the community and authorities.

She concluded with lessons learned, which were related to the importance of seeking additional funding to ensure the continuity of actions, adapting and continuously improving the protocol according to each region's characteristics. Furthermore, to increase the frequency of monitoring, and the need to involve different levels of government and sectors, including hotels, maritime entities, fishermen, and the community in general, to improve reef conditions.

Cost Analysis of the Post-Storm Response and its Relevance for the Implementation of Financing Mechanisms

Jacqueline Wharton, Consultant, MAR Fund.

Jacqueline discussed an assessment that was conducted to examine the costs of reef response in the region. First, she presented the method used to estimate the cost of post-storm response.

She explained that the calculations were in terms of the "maximum absorbable rapid reef response budgets." This involved estimating the cost of mobilizing all existing response capacities in the region for a 60-day response at different sites. The calculation considered the number of trained and certified brigades and responders at each site, site-specific characteristics, response needs, unique features, and estimated input costs based on surveys.

The budget model estimates the cost of mobilizing responders to implement the discussed protocol. Notably, the estimated budgets aim to inform active funding strategy rather than dictate how funds are spent. They are based on response protocols and plans but can be adapted depending on circumstances.

Each site has different response capacities. Likewise, response budgets are sensitive to site-specific characteristics, needs, and local transportation costs. The estimated input costs cover various aspects, with notable contributors being drone usage for damage assessments, salaries for brigade leaders and responders, meals, scuba equipment, coral nurseries, toolbox, diving insurance, and meeting fees.

The results indicate significant variation in response budgets between sites. For instance, mobilizing 60 days of response with all available capacities in Guanaja is estimated to cost around USD\$160,000, while in the Riviera, it's approximately USD\$70,000.

Factors driving cost differences between sites include reef response capacities and variations in fuel and boat rental costs. Salaries for responders consistently account for a little over a third of overall budgets, while transportation and equipment each contribute to around a quarter of expenses.

While these budgets provide an estimate of the maximum resources needed, it's crucial to acknowledge the variable nature of hurricane events. Not every event requires the maximum response for an extended period. To address this, step levels of response were estimated based on research showing that hurricanes vary in intensity.

The budget estimation for reef response was modeled over the past 120 years of observed hurricane events. The analysis reveals both, an average annual probability of a hurricane and considerable variability in response budget requirements over time.

Jacqueline concluded by mentioning that having enough funds for a full response after an event needs anticipated work to secure investment and financial mechanisms. While volunteer activity contributes significantly, estimating reef response costs over time is crucial for developing and implementing financial mechanisms that ensure timely access to funding when needed.

Questions and Answers

Sergio Hernández, CONAP.

Good day, could you provide more details about the challenge related to the lack of clarity in insurance payment? After the insurance was activated in Mexico.

Claudia Ruiz mentioned that there are two insurances, one for Quintana Roo, paid by the state government, and another is the parametric insurance led by MAR Fund in collaboration with Willis Towers Watson and the other partners mentioned before.

Calina Zepeda explained that it is necessary to improve the payment system of the Quintana Roo insurance, currently managed within a trust comprised of governmental institutions, and although there is an advisory committee, with other institutions including TNC participating, their involvement is very limited, and there is no interference or solution regarding this matter. Calina emphasized the importance of conducting an exercise to identify how to ensure that this fund is used as originally intended; and, above all, to be used at the time of a response, as they require an immediate resolution, and at the moment, the funds are disbursed six months later for restoration, so it is really urgent to address this issue.

Pablo Devis

Hello, a question for Juan Carlos: Could you tell us how a typical training works? A brief summary of what it consists of, how many days, how is the follow-up done after the course, etc.

Juan Carlos Huitrón commented that the course to train a brigade member lasts five days. On the first day, theory is provided. On the second day, they conduct initial water practices. The third and fourth days involve underwater practices with diving, and the fifth day is the final evaluation.

The instructor course is shorter because participants complete various presentations and online assignments before the course. They cover theory and practice in the different modules they do. Additionally, at the end of the course, a WhatsApp group is created to provide ongoing support in case of any doubts, comments, or need for assistance on any topic.

Ana Silvia Martínez

Have divers contributed to the spread of coral disease during the post-storm response?

Jacob Rubio commented that it is difficult to point fingers; it is inappropriate to try to conduct that exercise at this time because most interventions occurred prior to these major disease events.

He stated that brigade members could be a vector, just like all reef users, fish, and everything living in such a dynamic system as the sea. However, he believes that brigade members have not been disease vectors, mainly because they have not coincided in time. The actions taken during the year have been less physical; corals have not been touched, and when they are, a cleaning and safety protocol for the corals is followed.

Rodrigo Molina

What is the average daily wage for brigade members in terms of money? and how many days are the minimum contracts for these brigade members? for Jacqueline

Jacqueline Wharton mentioned that the average daily wage for a brigade member is \$100 USD, and for a brigade leader, it is \$150 USD. Regarding the duration of contracts, they estimate a maximum response time of 60 days as the budget limit.

Mario Montaña

What are the differences? or What challenges were encountered when making a real post-storm response compared to training, which is essentially a controlled environment and in smaller situations? What challenges are found in a real situation as opposed to training?

María del Carmen García acknowledged that there are several challenges. Generally, training sessions are done under controlled variables, and one of the challenges is to identify the possible procedures that will be needed during the response. That's why there should always be people with experience, which is one of the advantages of the Puerto Morelos brigade. There are individuals who specialize in corals, and they contribute to determining which procedures are most appropriate to follow.

Another significant challenge is the weather, which often doesn't help. Financing is undoubtedly a challenge during the process as sometimes, actions cannot be completed due to the lack of materials at the time of a post-storm intervention.

Finally, an inherent threat is the personal fears of each participant, their mental apprehensions, fatigue, the "I can't do it anymore" or "I feel dizzy" mindset. Sometimes, they attend for the first time with great initiative but lack of experience which may cause greater harm due to unsafe actions. However, if supported with knowledge and provided with a solid initial experience, they can be guided to truly contribute.

María del Carmen asserted that challenges are overcome by anticipating them, being and having a united team, recognizing each person's skills and weaknesses, and having a lot of creativity and accepting diverse ways of collaboration. This allows overcoming difficulties. The example mentioned with the brigades, in which they had the support of Alltournative with a kayak and a group of people who organized themselves to transport cement in the kayak was something innovative and very useful.

Calina Zepeda

I suppose the response in the Riviera Maya is estimated to be more costly because it includes more sites, a larger area, and more brigade members working simultaneously. It would be good to do the exercise per operational brigade - for Jacqueline.

Jacqueline Wharton commented that the key driver for response costs is the number of brigade members responding. Previously, the model was calculated based on the reef area, but these were not realistic numbers considering the response days. Therefore, the plan was to "mobilize" the trained team, as they are more useful during response and preparation capacity.

The estimate can be made through the tool, considering fixed costs, and using the case of the Riviera Maya, approximately \$70,000 is allocated to start the process (according to the model), and about \$120,000 per day for a brigade of 10 people.

Knowledge exchange and analysis of topics presented in Regional Experiences by groups.

The session was divided into four groups, with the purpose of allowing participants to delve deeper into topics of interest related to the presentations. The conclusions of the participants were as follows:

Group 1. Cost Analysis of the Post-Storm Response and its Relevance for the Implementation of Financing Mechanisms

What financial mechanisms or funding sources are available for reef response? Are they effective/enough/sustainable in the long term?

It was mentioned that the emergency fund has effectively provided immediate funding in critical situations; however, doubts were raised about its long-term sustainability.

The group also commented that private funding would not be truly helpful in case of an emergency, as it typically requires approval from third parties, which can take a long time. Therefore, a mixed financial approach and recoverable donations for small businesses supporting local ecosystem recovery were proposed.

How have you anticipated the needs for reef response and prepared access to financing? Do you need additional support in financial preparation? Would you like to share any lessons learned from your experience?

Additional financial support is required to be properly prepared for emergency situations. Although not all countries have needed to access the funds, knowledge of how they operate is available. It was suggested to develop a proposal that can be easily updated to access the fund in case of an emergency.

It would be beneficial for MAR Fund to share the emergency fund application and other relevant forms with partners, allowing them to familiarize themselves with the process and complete them in advance, thus facilitating their use if necessary.

Reflecting on the current reef response cost modeling tool, are there missing elements? Weak assumptions?

The committees have developed cost models for each area, using real figures from the area. However, it is crucial to recognize that prices increase annually due to inflation, requiring periodic adjustments in costs to maintain effectiveness. Regarding the costs of the brigades, the need for counterparts from local actors and institutions was highlighted, following the logic applied in environmental and civil matters.

It was suggested to carefully consider the planning and counterparts and explore options to provide some payment to the brigade members to cover their expenses. Likewise, the question arose about the protocol in the extreme case that both, the secured site and the operations center are affected, highlighting the importance of having a clear and effective Plan B.

Are there specific requirements on your reef that need to be taken into account?

The distance from the mainland is a highly relevant factor that must be carefully considered in operational costs, particularly fuel and the number of tanks needed, as there are reefs over 30 meters deep, requiring constant rotation of brigade members.

There was uncertainty about how to address the impacts on those reefs that are not covered in the parametric insurance model. The costs associated with carrying out any action on the reefs of Guatemala are significantly higher due to the distance from the coast. This involves mobilizing personnel from the city, transporting tanks and dive equipment, considering areas that can reach a maximum depth of 20 meters in reef areas subject to impacts.

Reef restoration off the coast of San Pedro is seen as a costly task, partly due to inflated costs on the island. On the other hand, in Tela, Honduras, the absence of coral restoration initiatives as a secondary response is attributed to the specific conditions of the area. However, a pilot project is projected in the future to assess its feasibility.

Group 2. Early Warning Protocol, its Application in Quintana Roo, and Brief Overview of Replication in Hawaii and Guam.

Why do you think having brigade members ready to act immediately is important?

Brigade members' swift and effective participation in post-hurricane action campaigns is crucial. Prompt implementation of response outings significantly increases the chances of rescuing colonies and other organisms before developing critical conditions, such as bleaching or mortality, thus improving survival.

It's essential to recover fragmented corals for relocation, acting in a timely manner to prevent the irreversible loss of these ecosystems. Rapid response is critical as coral reefs are affected by various factors, and hurricanes pose an additional risk to their health. Addressing these events promptly can mitigate long-term effects by addressing still-living corals and minimizing future consequences.

The urgency of immediate action is due to the current conditions of climate and local impacts and the biology of corals, which require urgent attention. Timely response and rehabilitation can make the difference between recovery and total loss after a hurricane.

Pre-training is essential, as there is no time during the event to instruct people. Anticipated preparation of trained brigade members is crucial for timely and effective action. In the case of the Bay Islands, the presence of an immediate response brigade is of particular importance, as diving tourism is the main source of income. Providing a second chance to coral colonies threatened by storms and sediments is crucial for preserving these valuable ecosystems.

In your experience as a brigade member, do you consider yourself adequately trained to carry out the response?

Continuous training is essential, as each event is unique and may require innovation. Some members have been participating in training since 2018, even as trainers for INAPESCA. While there is experience in the identification and monitoring of marine organisms (fish, corals, macroalgae, etc.) and coral restoration techniques, there is always room for improvement in training programs, adapting them to current issues.

The diversity of events, whether natural or anthropogenic, requires reinforcing techniques and refresh procedures. Diving skills have also been developed throughout conservation activities. Brigade members need ongoing training, and to share lessons learned for the benefit of others. Constant experience and evaluation will enable more effective interventions.

What are the reasons that limit you from participating actively as a brigade member?

The main limitations for brigade members to participate actively are their work commitments and availability of time, as they cannot be absent from their duties unless they belong to an organization that carries out similar or associated work, which would allow them to respond to brigade calls without restrictions.

Since participation is usually voluntary, the lack of economic incentives may deter some individuals, especially those concerned about the impact on their employment.

Another factor is fatigue after long restoration days; sometimes, other responsibilities must be attended to simultaneously, such as caring for marine turtles. Additionally, having the right equipment can be a challenge for those who wish to participate actively as brigade member and don't count with it.

Do you know of any site where this protocol could be replicated in your country?

The early warning protocol can be implemented in any hurricane-prone coastal area, with a special focus on active and participatory local communities. Currently, the protocol is already being applied in significant sites within the MAR. During the discussion in this session, attendees mentioned replicating it in the Bay Islands, including Cayos Cochinos, as well as in Tela, Atlántida, and the Mosquitia region in Honduras, in coastal areas of the Mexican Caribbean, including the Riviera Maya and Sian Ka'an, as well as in Cabo Pulmo and other parts of the Pacific, especially in Fishery Refugee Zones. Additionally, it was mentioned that Singapore has shown interest in replicating the protocol.

Group 3. Importance of Post-Storm Governance and Reef Responders for Coral Reefs- the 2020 Puerto Morelos Case.

How can the success case of the "Reef Guardians" from Puerto Morelos be replicated in other brigades?

The participants considered that to replicate the experience, it is important to forge local and strategic alliances, strengthening inter-institutional collaboration with key actors that influence immediate response activities. Empowering local organizations and communities, developing their capacities, and generating a sense of ownership and identity to take ownership of the project.

Inviting, training, and involving local actors in the brigades is essential to achieve ownership and support for reef conservation.

Incentivizing brigade members through recognition of their work and encouraging them to be a multidisciplinary group will enrich the brigades and their response capacity.

Finally, allowing the community to take the lead, not just institutions, to promote a sense of ownership and increase the level of involvement. However, it is relevant for institutions of various kinds (government, civil society, academia, businesses, among others) to participate too.

What social factors promote conservation?

The love for the reef, the connection between stakeholders, and the development of an active and committed community network are key factors in creating multidisciplinary groups and promoting conservation.

Continuous research on the reefs is a priority as it supports strategies tailored to the reality of the ecosystems, and it must be communicated to all stakeholders at all levels, including the local community, visitors, and tourists. This outreach and communication should occur through various channels, such as newsletters, radio, TV, social media, and information centers, as it is crucial for informed decision-making and raising awareness about our dependence on the reef and its conservation.

International cooperation is essential for addressing global challenges and promoting respect for and proper use of resources to ensure long-term sustainability and conservation. This includes respecting and complying with fishing bans and regulations.

Training for monitoring, in collaboration with diving schools, strengthens local capacity and, enhances identification and response to events such as coral bleaching.

How can it be scaled up?

Ensuring collaboration without perceptions of competition or threat among conservation-linked groups, involving tourists, especially frequent divers, and forging alliances between governments, NGOs, businesses, local communities, and international organizations.

Implementing innovative technologies for monitoring and promoting the exchange of experiences, which enriches the knowledge and initiatives of the brigades, is key to scaling up.

Developing a governance mechanism, managing financing, and involving micro-entrepreneurs and artisanal community groups in conservation is crucial. The community must be involved in decision-making and be accountable.

Influence public policies and demonstrate that coral restoration is a matter of national security for countries, emphasizing the urgency and highlighting the reef's services (environmental, social, health, and economic). Recognizing the connectivity of marine and terrestrial ecosystems will facilitate fund allocation with a clearer vision and diverse perspectives.

Does the MAR region have the characteristics to support reef conservation and restoration on a regional scale (not by country)?

The MAR restoration network is consolidated, with various initiatives in each country that have the potential to expand and interconnect. The installed capacity and existing partnerships promote biodiversity and connectivity across different areas. Initiatives for regional management have been implemented; however, it is crucial to analyze constraints such as travel costs, per diems, and immigration requirements.

It is essential to support organizations responsible for managing funds in reporting and executing projects effectively, thereby facilitating the request for additional funds. The signing of the agreement between the four countries, known as Tulum +25, reinforces this joint commitment and continuously strengthens it.

Group 4. Response Capacity Building: Experiences and Lessons Learned in Regional Training.

What activities would you like to stay updated on in your local brigade?

There is a great interest in deepening knowledge about the reef and its dynamics, focusing on the protocol and secondary response with the working group, the identification of species threatened and susceptible to SCTL and bleaching, as well as monitoring, colony stabilization, effective restoration, and placement of nurseries and permits. Participants indicated that training should be more frequent and constant to stay updated and consider topics of interest to brigade members, such as first aid, rescue techniques, transfers, marine safety, moorings, boats, aquatic skills, free diving, snorkeling, and apneas.

Promote the implementation of drills by Response Committees, considering the suggestion to carry out at least four drills annually.

Allow the creative contribution of brigades through ideas and comments to be heard, analyzed, and considered for identity items, such as logos, shirts, and rash vests, as well as for training topics.

How much time do you think you can make available to participate in coral rescue after a hurricane? If you are not a diving instructor or Dive Master, would you like to be trained in this area?

The capacity and time available for participating in coral rescue after a hurricane vary significantly due to the fact that most brigade members have to fulfill their work responsibilities, which directly affects their availability for brigade activities. Individuals who own businesses or work for civil organizations tend to have more flexible schedules.

It was identified that the optimal participation period is two to three consecutive weeks, with interspersed rest days to ensure their safety.

A suggestion from the group was that clear agreements should be established where governmental institutions commit to train their staff and provide greater flexibility and support the participation of brigade members in response activities.

There is interest in becoming certified as a Dive Master and as brigade instructors, as well as in other courses such as identifying species susceptible to SCTL and bleaching.

There is a continuous commitment to developing specialized skills and constantly improving participation in these activities by brigade members.

What do you consider the most significant limitations to being able to attend a coral rescue after a hurricane?

The capacity to mobilize personnel to the affected areas is essential, requiring resources, equipment, and materials to be deployed efficiently and rapidly. Implementation logistics, including permits, funding, and onshore personnel, must be ready for an effective response.

Direct hurricane-related impacts, such as closed roads, storm surges, low visibility, and shortages of critical supplies like gasoline, tanks, boats, and cement, need to be addressed promptly. It is crucial to have adequate equipment and assess the volunteers' capabilities when participating in a rescue operation.

In the specific case of Guatemala, reaching agreements to coordinate the group and improve communication is key.

The safety of the brigade members and the boats should consider weather conditions, as well as the necessary permission from the Port Captaincy to carry out outings.

The lack of funding for all stages, decreased participation in the brigades, and the absence of available brigade members are additional challenges.

To improve preparedness and response, an annual brigade program is suggested to be established that includes exercises for monitoring, activation, and practice. Additionally, diversifying attention beyond post-storm events to cover situations such as strandings, coral diseases, and tourist practices will contribute to a more comprehensive and effective response.

National Experiences

Belize: Post-storm response conducted at Turneffe Atoll, Belize, after the impact of Hurricane Lisa in November 2022.

Valdemar Andrade, Director Ejecutivo, *Turneffe Atoll Sustainability Association*.

Valdemar started his presentation by contextualizing the challenging operational environment faced in the region; whether in Belize or any other country, operations have limited resources. He highlighted the complexities in the decision-making process regarding funding priorities, emphasizing that this is not a standalone event but interconnected with broader activities. He shared the experience of dealing with a category one hurricane in Turneffe Atoll, located 20 miles offshore, and the associated challenges in mobilizing resources for an effective response.

This cyclone triggered the first field test for the Mesoamerican Reef Insurance Program for Belize aimed at the immediate reef recovery.

Regarding the response actions, the Belize Brigade members from the Turneffe Atoll Sustainability Association (TASA) responded to the early warning system, utilizing the protocol developed by TNC and MAR Fund. Hurricane Lisa directly impacted Turneffe, contributing to diminishing the storm's effects on Belize City, the most populated area. The response actions implemented from November 22 to January 20 included rapid damage assessment, primary and secondary responses, and post-response actions. Covering a vast area, the brigade surveyed the entire 30-mile-long and 10-mile-wide Atoll, evaluating the situation.

In terms of specific response actions, the backreef and forereef areas at 10 ft – 25 ft were surveyed, covering a total of 36 km on the western reef and 43 km on the eastern reef. The assessment revealed damage to a few colonies of reef-building corals, with only two sites on the western side recorded with category three damages, prioritized for follow-up response actions.

Valdemar outlined the stabilization of coral branches and fragments through various techniques (using tires, tarred yarn, plastic straws, etc.), emphasizing the significant effort required on the ground. The challenges highlighted by him included the logistical complications due to the offshore location, the impact of storm-related communication disruptions, water visibility that did not improve until a few weeks after the storm.

As lessons learned, Valdemar stressed the importance of recognizing the non-technical team members, including administrative, finance, and logistical personnel, who are crucial in facilitating field operations.

Valdemar expressed gratitude to MAR Fund for their collaboration in the pilot program and emphasized the lessons learned for future improvements in efficiency and impact. He highlighted the commitment and passion required for this challenging work and discussed plans to establish larger emergency reserves beyond the parametric insurance.

Overall, he provided a comprehensive overview of the challenges and lessons learned from their experience, offering insights into the complexities of responding to coral reef damage caused by natural events.

Mexico: The contribution of reef responders in the rescue of coral colonies affected by the Stony coral Tissue Loss Disease (SCTLD) in Chinchorro Bank, Quintana Roo.

Denisse Ángeles Solís - Director of the Banco Chinchorro Biosphere Reserve and the Xcalak Reef National Park, CONANP, and Irving Leonardo Chávez Estrada - Deputy Director of the Xcalak Reef National Park - Banco Chinchorro Biosphere Reserve and leader of brigades.

Denisse started with the context that, similar to other regions, they also have two brigades, composed of 16 people, and were formed in June 2021, mainly dedicated to coral care when a hurricane occurs. They are currently facing the white syndrome disease, which until 2022 had not been identified in the Banco Chinchorro Biosphere Reserve. When they received the first report in April, they decided that some healthy colonies could still be rescued to access the MAR Fund emergency fund.

The immediate response included alerting allies and visitors, requesting support to increase disinfection measures, and collaborating with research groups from other protected areas to work on a rescue proposal.

In coordination with other protected areas, monitoring was carried out to confirm the presence of the disease and determine the most affected areas. In collaboration with the National Autonomous

University of Mexico (UNAM in Spanish), rescues of pillar coral colonies and meandering corals were initiated to preserve genetic diversity. Additionally, efforts were made to diversify rescue strategies due to the distance between the reserve and the UNAM and INAPESCA laboratories on the mainland. On-site rescues were conducted, and funds were accessed through the organization *Espacios Naturales y Desarrollo Sustentable*, as well as the Mexican Ocean Foundation.

Honduras: Success in National Coordination and Strengthening of Post-Storm Response Governance for Coral Reefs in Honduras.

Martha Medrano - Coordinator of the Coordinating Committee of the Marine National Park Bay Islands, Forest Conservation Institute

Martha provided the context of Honduras and how the co-management system works in protected areas to achieve efficient management and conservation goals.

The National Institute of Forest Conservation, Protected Areas, and Wildlife is the institution responsible for managing protected areas. However, they have created a co-management system that involves local governments through municipalities, non-governmental organizations, and the central government, with the Secretary of Natural Resources and Environment as the focal point, supported by the Directorate General of the Merchant Marine.

Currently, Honduras has three coordinating committees: the one for the Marine National Park Bay Islands, the one for the protected areas subsystem of the Bay of Tela (which includes three protected areas: the Blanca Jeannette Kawas National Park, the Punta Izopo National Park, and the Wildlife Refuge of the Bay of Tela). They have their response plans for reef care, with guidelines for efficient execution after meteorological events. The development of these plans was made possible thanks to the financial and technical assistance of MAR Fund Reef Rescue Initiative.

So far 69 brigade members have been certified. The current response capacity includes 55 certified brigade members, of which 40 are divers and 15 are snorkelers. Five brigade instructors have been trained, of which three remain active. In the Bay Islands, the need to have a single committee, divided by island, with operations and brigade leaders for efficient execution has been raised. In total, there are 10 brigade members in Utila, 11 in Roatán, and seven in Guanaja.

Martha emphasized that future plans include socializing the committee with local authorities and businesses, training more brigade members, and evaluating the actions taken. Additionally, there are plans to conduct drills, enhance communication efforts, and establish partnerships with universities for internships and training.

She stressed the importance of having the capacity to respond to reef-related issues. The participation of brigade members in monitoring and conserving marine ecosystems, identifying coral bleaching, cleaning coral nurseries, conducting inspection tours to identify damage from groundings, as well as learning about innovative restoration and recycling techniques, is crucial.

Guatemala: Lessons Learned and Experiences in Post-Storm Response Capacity Building and Network of Allies in the Guatemalan Caribbean

Otto Palencia, Regional Director of the Foundation for Eco-development and Conservation, FUNDAECO.

Otto began by highlighting that in 2023, Guatemala formed its post-storm response capacity, as the last ones in this process. Currently, they are in the consolidation phase.

He presented the current map of the protected area of Punta de Manabique, a managed and conserved space, which comprises approximately 102,000 hectares of coastal-marine areas, with 5,300 hectares of reefs aimed at preservation.

He mentioned that the coordination committee is mainly composed of governmental institutions, with participation from a non-governmental organization. They have held meetings to structure the committee, develop a response plan, address questions about financial proposals, and access the emergency fund.

Currently, they have the early warning protocol and certified instructors in Guatemala, being part of the 18 formed and trained brigades, with 15 of them coming from Guatemala City.

Otto emphasized that, despite challenges such as slow capacity building, the goal is to create more local brigades and sustain the process over time. They identified opportunities in raising awareness among companies about the importance of reefs, although they face certain complications due to the remote location of the reefs, which results in a lack of ownership or connection to them.

Highlighting that building response capacity is an ongoing process that involves all sectors, Guatemala is working to create local capacity and educate the population about the importance of reefs. Their future plans include drills, training sessions, and assessments to ensure reef conservation and continue to leverage the valuable services they provide.

Questions and Answers

Andrea Sánchez

Is the use of probiotics considered to combat the disease? Are brigades involved in its application?

Denisse Solís mentioned that at the moment, it has not been considered. It has been discussed in various meetings with researchers. If it was to be decided in the future as a viable option, it would be implemented through the brigades.

Adrián Morales

Is there any funding mechanism for the instructors in the Cozumel brigades?

Oceanus National Park. We have already shared the post-storm response manual, but we need support to consolidate the brigades and coordinate the operation.

María del Carmen mentioned that in Cozumel, they can approach Blanca, the Park Director, to inquire about funding. There are some governmental assistance programs available, along with additional funding from MAR Fund, TNC, or other sources. Authorization is required to handle corals, which is why it is important to engage with the Park, and collaborate with researchers and organizations like Oceanus which has a permission, CRIAP, UNAM, Dr. Ernesto Arias, and the Natural Protected Areas. She took the opportunity to call for coordinated efforts to make response processes to bleaching and syndromes more efficient, as threats persist and coastal development continues without consideration for the reef.

Jacqueline Wharton.

She commented on the payment distribution process, which is something they are looking to improve. They aim to secure financing and ensure that it reaches its intended recipients as soon as possible. Monitoring costs and reporting are important aspects. Preparatory work is crucial; if

response plans are used and developed in advance and adjusted as needed, financing and response can be updated accordingly. When done in advance, financing can be distributed more quickly. Supporting administrative and logistical aspects is also vital.

Pablo Devis

If you had to mention a success factor for achieving a good, efficient, and effective response capacity, what would it be?

Denisse commented that undoubtedly it would be the participation and collaboration of all stakeholders. In the case of Chinchorro, many actors were involved in the response, and without their participation, it would have not been possible to achieve the results.

It's challenging for all brigade members to be present due to tourist activities or weather conditions, hence the need for more stakeholders to be involved to ensure participation is not diminished.

Martha mentioned that the participation of different stakeholders in all areas is crucial, but political will is essential. That's the key factor—the involvement of local and central governments to drive actions forward. It's necessary to establish communication and build alliances among organizations, governments, and communities.

Knowledge exchange and analysis of topics presented in the National Experiences by groups

Group 1. Belize: Post-storm response conducted at Turneffe Atoll, Belize, after the impact of Hurricane Lisa in November 2022.

This room focused on questions and comments related to Belize's post-storm case. It started with an explanation from Claudia R. to provide more context on how the MAR Fund Insurance works. Right away, a question inspired by Valdemar's presentation was raised as he emphasized the need for additional funding to support the infrastructure and the work done by the brigades. It was also requested that the baseline and limits for the insurance funds to be used by Marine Protected Areas (MPAs) be clarified, as there seemed to be expectations to use the funds for its day-to-day management. Finally, Selem also suggested that for this to be successful, it had to be done not only from organizations like TASA, but with the Fisheries department, through the government of Belize, and there needs to be a buy-in.

To answer this question Claudia clarified that the funds from the MAR Fund insurance cover the reef response, which involves the restoration and emergency response of the reef after a hurricane. She explained that the risk is the storm, and the use for the payout is the reef restoration. She also said that the mechanisms and procedures to access the funds are structured to expedite the payout, so they can be released within 15 days or less, and that the process is simple, but it requires the Response Committee and the brigades to work together to request the funding. For example, they have to ensure to have the response plan updated, and a proposal prepared by the time a situation like this is presented. The proposal, she added, is a very short document of just a couple of pages in which the main activities and budget must be indicated.

Jacqueline stressed the fact that the objective of the payout is for the post-storm response and not for day-to-day expenses. The reason for this is because when paying the insurance there is a premium paid on top of it, so it is more a cost than a saving. The reason for paying this extra

premium is to have more funds available quickly. Therefore, it is really used for that responsive piece and not for the day-to-day costs of an MPA, as it would not make sense to pay that premium. This is the traditional way of thinking about disaster finance. However, if there are other items like communications that impact the ability to respond and are needed immediately, they need to be added to the budget, so those are the learning pieces from the first experiences that need to be considered when preparing the proposal templates.

She also said to consider all the pieces and do it ahead of time as it is much better to prepare it to have that conversation between MAR Fund, its donors, and MPA managers earlier rather than in the aftermath of an event. She finalized her intervention by saying that this is the kind of template or agreement that must be in place going forward.

Kira from Belize expressed that there are many lessons learned from this Belize experience as they didn't know they had to have a budget or a plan prepared and that they didn't consider communications as part of the response. However, it was discussed that the issue was that there might be a gap in communication as there were several workshops in which this was communicated, so a better job of communicating this has to be done.

It was also added that in a project or initiative of this nature, initially, communication occurs at a high level, and information is not necessarily communicated to those who need it. A recommendation based on this experience was proposed to have in place a manager, a co-manager, a team, and ensure that when communicating with the manager, key team members are identified to include them in all the discussions and keep communications open.

Selem also expressed that it is essential to adopt a realistic approach when stating the specific purpose of the funds and establishing corresponding support mechanisms. Otherwise, there is a risk that this initiative simply becomes a means to access funds without effectively contributing to the financing of the brigades and other essential needs. Transparency about resource allocation, detailed descriptions of their intended use, and specific measures to support these allocations are necessary, as well as to get prepared ahead of time. Learn from the experience and take note of lessons learnt, and to focus on quality over quantity were suggestions from Selem that everybody seemed to agree with.

At the end of this discussion Jacqueline Wharton suggested having an annual logistics drill to help identify missing or workable factors, to enable the leveraging of response experiences from other countries to enhance the model. This was well received by everyone in the room.

Group 2. Mexico: The contribution of reef responders in the rescue of coral colonies affected by the Stony coral Tissue Loss Disease (SCTLD) in Chinchorro Bank, Quintana Roo.

What has been the main challenge faced by the brigades after a hurricane?

One of the main challenges faced by the brigades is waiting for suitable conditions to enter the affected area. The limited availability of personnel is also a significant constraint. Additionally, some sites are difficult to access, and at times, the necessary financial resources are not immediately available, which can delay required actions.

The importance of obtaining the necessary permits in advance was emphasized, including permits for species management and access to protected natural areas, among others. Likewise, the need for alternative communication technologies to cell phone networks was highlighted, as these networks are often limited or disrupted after a hurricane. These elements are essential to ensure an effective and timely response by the brigades in critical situations.

Has any brigade experienced a situation that has become risky, and how was it handled?

A risky situation was mentioned, such as a decompression incident; however, recommendations were made to prevent them. Firstly, the importance of having diving insurance such as the Divers Alert Network (DAN), was highlighted as a key requirement. Additionally, the need for proper technical training and exercising caution during such activities was emphasized.

The importance of having emergency contact numbers and updated insurance details readily available was stressed. Furthermore, the importance of having a brigade leader trained to implement emergency protocols if needed was highlighted. It was also mentioned that to wait for authorization before entering affected areas was crucial, acknowledging the potential risk to brigade members in these situations. Additionally, the need for signed liability waivers from all brigade members was emphasized. In this context, it was noted that MAR Fund has environmental and social management protocols designed to protect both environmental and social aspects during coral reef recovery interventions. These collective measures contribute to ensuring the safety and overall well-being of brigade participants.

What alternative financial schemes are known for strengthening the brigades?

Participants mentioned programs such as PROCODES for contingencies, the Program for the Protection and Restoration of Priority Ecosystems and Species (PROREST), the emergency fund from MAR Fund, parametric insurance, MAR Fund's small grants program, and the program for the protection of maritime resources in Central America. They also noted the need to involve the hotel and tourism sectors to finance more of these activities; for example, diving centers could contribute in providing maintenance for diving equipment. Lastly, it was mentioned that IUCN has funds to support these types of post-storm events.

Group 3. Honduras: Success in National Coordination and Strengthening of Post-Storm Response Governance for Coral Reefs in Honduras.

How can we achieve maintaining the basic number of brigade members at each site to provide adequate attention to the reefs post-storm?

Conducting multiple training sessions throughout the year, with at least two annual training sessions for the brigade members.

Training individuals from local communities as divers and brigade members, providing alternative employment opportunities. It is also important to prioritize trained brigade members who are residents or work in and around the region to encourage their retention.

Implementing a monthly participation strategy involving brigade members, organizations, and institutions associated with post-response capacity, engaging them in various activities such as environmental education, monitoring, and restoration to maintain their interest and continuous participation.

One proposal was to alternate one or two weeks off per month for each brigade participant to ensure the availability of at least one complete brigade every week. Vacancies could be filled with external brigade members, such as tour operators and fishermen, whose participation would depend on their work schedules. Additionally, it's important to regulate the availability of brigade members by communicating their status (active/inactive), considering possible absences due to travel or other reasons.

Promoting the activities of the brigades and highlighting the relevance and privilege of being a brigade member, for local professional divers. Providing incentives such as stable job opportunities in defined locations for immediate attention.

Maintaining active communication through WhatsApp or other means, sharing weekly information or informative capsules, making calls for participation, and offering virtual or in-person courses or talks on a quarterly basis.

Establishing a Coral Nursery for people in charge of the reforestation to conduct evaluations and optimize time and resources.

What internal sources of funding can we obtain for the execution of post-storm reef care?

Establishing fines for environmental damages with the condition of allocating a specific portion for restoration was presented as a proactive measure. Seeking private funds or sponsorships for the brigades, along with the inclusion of a dedicated budget line for the brigades, regardless of the occurrence of meteorological events, with the purpose of creating a post-storm fund, is essential.

Considering the contribution of visitors as a potential source of funding opens up new possibilities. Creating a logo or badge for sponsors and companies that financially support the brigades not only encourages their participation but also provides them with visibility, highlighting their commitment to the environment.

The implementation of environmental fees by tourism operators, municipalities, chambers of commerce, and the Ministry of Tourism constitutes an additional source of financing. Allocating a percentage of carbon credits from protected natural areas and directing penalties for environmental crimes, as well as tourist entrance fees, to post-storm reef care further strengthens available resources.

The application of environmental instruments such as environmental fees, fines, and penalties developed by local authorities contributes to assessing direct impacts on reef coverage. Additionally, financial or in-kind support from the Network of Partners, such as supermarkets, restaurants, hardware stores, and gas stations, adds another dimension of support.

Charging a symbolic tax to local businesses and a percentage to tourists through Zolitur, bounded to the Reef Emergency Fund, as well as requesting donations through websites and specific fundraising events, constitute additional strategies to bolster necessary funding.

What strategies can be implemented to mitigate the challenges of coordinating committees when there are changes in government?

Creating a document or record that compiles the historical information of the committee's operations, providing a detailed guide for new members. Additionally, establishing official legal documents that formalize agreements between local coordinating committees and governmental institutions, ensuring operational continuity.

Assigning the sub-coordination of the committees to a co-managing NGO to guarantee stability and provide support during governmental changes. Establishing contacts in all involved governmental areas and maintaining an updated shared folder with relevant documents, formalized in a legal framework.

Incorporating brigades as an essential part of protected areas management plans, highlighting their relevance. Improving the visibility of the brigades and assigning a non-governmental organization to monitor during governmental transitions, preferably coordinated by the academy.

Having a team of independent workers and coordinators unaffected by changes in government. Conducting annual drills and integrating post-storm response as an essential component in the management plan of the Marine Protected Area, maintaining coordination within the co-management committee.

Promoting transparency and accountability in all committee operations, keeping all stakeholders informed about decisions, achievements, and challenges. Extending the program to ministerial level and creating shared folders with universal access on platforms such as BOX or Google, ensuring constant availability of information.

Maintaining active groups in chats with surveys and feedback messages to assess the actions of the brigades and encourage continuous participation.

How to generate interest among local people to become brigade members?

Empowering communities about their resources involves socializing and educating them about the consequences of marine ecosystem loss. However, the costs associated with joining the brigade members' program, including insurance, medical examinations, and other requirements, may discourage participation. A long-term strategy could focus on cultivating interest from youth, promoting brigades among elementary and high school students so they consider joining when they reach adulthood.

Making it possible to become a brigade member and work in restoring a way of living appeals to the economic and food security protection of the population near the reef. Creating a specific career path, such as reef restoration technician, could offer a sustainable alternative.

Additionally, implementing a free SCUBA diving training program for youth from communities, covering costs like DAN insurance and medical visits, could minimize participation costs. It was suggested to acquire local diving insurance instead of DAN insurance. Professional divers could undergo physical exams, and in case of financial limitations, could access scholarships.

Establishing strategic links with community actors would facilitate identifying suitable candidates for diving scholarships and coral restoration workshops. Sharing impactful stories of those who have directly experienced the effects of storms on reefs, highlighting the impact of positive intervention, would contribute to awareness.

Effective dissemination through social networks would be essential to inform about reef conservation and the need for post-storm brigade members. Posting photos, videos, and updates would keep the audience engaged. Additionally, recognizing and celebrating the achievements of brigade members through certificates, awards, or public acknowledgments could incentivize their contribution to reef conservation.

Group 4. Guatemala: Lessons Learned and Experiences in Post-Storm Response Capacity Building and Network of Allies in the Guatemalan Caribbean.

What strategies do you recommend for engaging strategic partners?

Generate a strategic plan to strengthen partnerships and increase the visibility of the brigades. Conduct visits to far off partners to introduce the initiative and emphasize the importance of the brigades' work. Explain how, despite the distance, everyone contributes to the well-being of the reef. It is necessary to establish effective collaborations with institutions dedicated to reef conservation to strengthen efforts and share knowledge and resources.

It was mentioned that it is important to involve key stakeholders who directly benefit from the reef, such as service providers, scientists, and fishermen, in the design and implementation of brigade actions.

Socialize the initiative among different stakeholders so that they feel an integral part of it. Foster a sense of ownership and involvement along with identifying and highlighting a social leader or "artist" who can showcase the valuable work of the brigades and capture the public's attention.

It is necessary to identify important forums to raise awareness about the critical role of the reef and the work of the brigades. Actively participate in conferences, events, and gatherings.

Establish strategic partnerships with diving centers in Guatemala and Mexico to expand the outreach of brigade activities and promote participation.

Maintain transparency in the management of funds used to carry out actions. Provide detailed information about the allocation and results of financial resources.

Organize press conferences to communicate widely brigade activities, highlight achievements, and raise awareness among the audience about the importance of conserving the reefs.

Develop a directory that includes all individuals associated with the reef, from academics and students to fishermen, facilitating communication and collaboration.

Bring in expert divers and marine conservationists to strengthen the skills of the brigades and provide specialized training.

Promote the participation of fishermen and local communities who have knowledge of the reef. Communicate the actions taken and highlight the relevance of their involvement.

Train the brigade members on the importance of their work and how the navy and government entities are involved. Maintain the continuity of these strategic alliances.

HRI offered to share its experience in coordination and communication for reef-related issues.

It was proposed to exchange experiences to learn from the brigades in Guatemala that involve the Navy, with the aim of replicating the model in Mexico.

Involve the Navy, the private sector, and seek forums to raise awareness about the importance of reefs in the MAR.

What areas should be prioritized for capacity building and training for the response committee? What areas should be prioritized for training and capacity building for the brigade members?

It is critical to recognize the condition of the corals to prioritize intervention methods and increase survival, thus optimizing the available resources. This scientific approach ensures a more effective and targeted intervention.

Emphasizing the signing of support agreements between strategic partners and establishing annual feedback on results contributes to maintaining trust and strengthening long-term relationships.

The implementation of good diving practices is essential to prevent the spread of EPTCD disease and other threats. Additionally, reef monitoring should address detailed knowledge about coral species, their biological importance, as well as diseases and conditions like bleaching.

It is crucial to train brigade members in restoration techniques using native species of the country. Knowing the current condition of the reef provides a basis for planning and executing effective responses and achieving specific goals.

Managing coral species, along with communicating the location of reef areas and their various types, will allow for the precise assessment of hurricane impacts. This detailed knowledge provides the foundation needed for implementing restoration and conservation strategies tailored to each situation.

Approaches to communication that are implemented in your country and that may be replicable in other MAR countries. Strategies to consolidate coordination, communication, and joint work of the committee.

The HRI's experience in reef coordination and communication can be valuable in providing support in this area. Facilitating exchanges of experiences among brigades will enhance synergy and collective learning.

To improve the organizational structure, the creation of an organigram with clearly defined roles and activities was proposed. Integrating a representative from the scientific committee into each brigade ensures direct connection with specialized knowledge.

Implementing a Regional Committee Forum, facilitated through MAR Fund, is suggested to encourage effective exchange among different parties. Including diver fishermen in these discussions for their contribution (perspectives and experiences) was also recommended.

Exchanging experiences with brigades from Mexico, especially with Navy members who are brigade members, is a strategic step. Organizing frequent meetings with the entire brigades' team, utilizing different formats (virtual and in-person), can strengthen cohesion and training.

To increase the visibility of Guatemalan brigades in decision-making forums, highlighting their achievements and contributions was also proposed. Utilizing social media and establishing a distinctive visual identity for the brigades, including uniforms and accessories to reinforce their presence and recognition.

Finally, identifying leaders within the brigades will promote solid and effective leadership. This comprehensive approach strengthens the organizational structure and improves the visibility and effectiveness of the brigades overall.

Questions and Answers

Eilyn Aguilar, brigade member

In group three, an idea emerged that the brigades or the restoration theme could somehow become a livelihood for local people. It would be effective to create a kind of diploma or professional technician program, considering approaching it through the academia to give it value as a profession.

Aysha Carolina Peña Torres, brigade member, United for Mother Earth (Unidos por la Madre Tierra)

To follow Eilyn's comment, she mentioned the importance of identifying the institutions or departments to approach. She emphasized that the brigades, as organized groups that they are, should approach academia, put pressure and identify what needs to be done to get the endorsement of the academia to grant a diploma, like the existing restoration technician diploma.

María del Carmen García

Continuing the conversation regarding making the brigades a way of life, she mentioned that she has tried to promote it, but the challenge lies on the funding—who would pay for it. It is impossible to sustain it solely through funding from Civil Society Organizations. Regarding the professionalization of brigade members, platforms such as the Mexican Federation or the World Confederation of Underwater Activities should be sought.

María del Carmen emphasized the importance of not losing sight of the legal permission aspect, which should be done through high education institutions. Each natural area should have a restoration program directed towards a specific point, considering the current conditions that require flexibility. - "*Bleaching has taught us all many lessons.*"

Carlos Rodríguez

During his participation, he mentioned that the Central American University Superior Council (CSUCA in Spanish), which includes Mexico, could be an instance to approach and address the certification issue. Likewise, he recalled that last year the Council of Ministers of Guatemala approved the Regional Strategy for Blue Growth (ERCA in Spanish), and they created a network of universities, which could be another space for influence.

He invited Claudia Ruiz to approach both institutions because they are responsible for seeking this systematic education such as diploma courses. He added that another meeting point could be ECOSUR since they are working with the Marine-Coastal Network of the Mesoamerican Pacific. He emphasized the need to find funds for this and pointed out that climate change funds are already starting to operate, which represents an opportunity. Perhaps something could be managed through ERCA funds, for indigenous peoples and local communities, including fishermen and fisherwomen.

Carlos mentioned the possibility of including an initiative of this nature in the new funds that will begin to arrive from Canada and IUCN in 2024.

Claudia added that the brigade members are issued a credential that certifies them, allowing instructors to generate income and build capacities in the region.

Carlos reminded the instances they can approach, such as CCAD, whose secretary is Jair Urriola. There is a Procaribe Dos project with funds available for the next 10 years. The CSUCA brings together universities, and the Organization of the Fisheries and Aquaculture Sector of Central America (OSPESCA in Spanish), where they can speak with the Regional Secretary and move forward with the Regional Blue Growth Strategy.

Rodrigo Molina, brigade member

Mentioned that they should have a uniform to give a team image to the brigades. María del Carmen added to the proposal by suggesting the MAR Brigade Day to strengthen identity, and MAR Fund could issue a call, offer a prize, or something that acknowledges the work.

Carlos referred to Nestlé and Nescafé launching their circular economy strategy, suggesting the possibility of presenting a proposal for the brigade topic, their training, equipment, and perhaps a complete image, not just uniforms, but an integral branding for visibility.

Before closing the session, Claudia commented that MAR Fund is very interested in supporting response capacity and is working on securing financing to strengthen an endowment fund that will provide funds for the future, that is, in the long term to continue paying for parametric insurance.

Claudia invited reflection on the importance of involving the private sector to make them participate in the process, as they are among the main users, and invited the participants to

suggest ways on how to better approach the private and hotel sector, and what steps should be taken.

Aysha Carolina Peña Torres

Emphasized that hoteliers are interested in numbers; that it is important to make them see how much the reef contributes economically by attracting tourists. Safeguarding the same space, which provides scenic beauty, landscape, and all ecosystem services will provide a direct economic return to the hotel. She pointed out the amount of tourism revenue generated from the services that the reefs provide.

Juan Carlos Huitrón

He slightly disagreed with Aysha, arguing that once hoteliers see the numbers, which are significant, they either refuse to participate or delay their response. He believes that the best way they can contribute is through taxes, not necessarily monetary ones, but in-kind contributions. For example, each dive center should have at least one certified brigade member from their staff. This would be a requirement imposed by the government or the protected area in order to operate within that area.

This way, the sports center, hotel, etc., would be obliged to have that brigade member trained, and if there is staff turnover, the quota of certified brigades must be maintained. This would ensure that several brigades are available at all times at each dive site. Juan emphasized that while this may sound complicated now, it could work in the future if implemented at a political level.

Ana Giró, Coordinator for Guatemala, Healthy Reefs for Healthy People Initiative.

She mentioned that there are several hotel chains in the area that are working on restoration issues, like Iberostar. It would be advantageous to approach them and see if the brigades and its importance can be promoted with them, since they have supported previous work.

Carlos Rodríguez

Indicated that the private sector and the means of accessing resources should be studied and analyzed together. Attention should be directed towards building an Environmental Fiscal System for each country in Central America and creating strategies where they can be influenced. In Mexico, something different is governed, but it could be done with the new legislation starting from 2024.

Carlos recalled that Honduras, Guatemala, and Mexico had a United Nations program called BIOFIN, which values biological diversity. This program was reactivated in the last meeting in Panama, where efforts to swap debt associated with the environment were resumed. The principle of this program is to use debt swaps for environmental fiscal strategies. It is a political work that must be influenced through the Ministries of Finance, and addressing swaps as an Ecoregion; having KfW as a partner can contribute to the political order and achieve better results for implementation in the MAR.

María del Carmen García

She echoed Carlos's comment that it is crucial to encompass the fiscal strategy system. On November 15th, the advisory council of Puerto Morelos, Dr. Lorenzo Álvarez, presented the current state of the reef, unfortunately, 80% of Acropora on the reef crest and in the lagoon has died.

The images were striking, and the representative from the tourism sector mentioned that there is a fund from tourist entry fees, which has already formed a trust, and they would request resources for reef restoration. There is sensitivity, but the problem must be addressed on multiple fronts.

Involving the private sector is difficult; however, they must be sensitized, and the images of bleaching must be utilized, demonstrating the before and after to help them understand the reef's conditions.

Finally, María del Carmen backed the proposal to generate fiscal strategies and international commitments and find hotel leaders who have initiatives that can be replicated with voluntary certifications.

Aysa Carolina Peña Torres

Aysa mentioned that she is not deeply familiar with the topic but suggested that it could be analyzed and proposed using carbon credit payments to sensitize hoteliers and entrepreneurs in the region.

María Guerrero, Chief Dive Safety Officer, Dive Instructor, and President of the Underwater Activities Association, National Polytechnic Institute

María commented that she was amazed by the progress of each area. She requested support from the audience to elevate the standards in Cozumel. She acknowledged the work of Puerto Morelos and reiterated that Cozumel wants to join efforts to improve reef conditions and current brigade capabilities. María also mentioned that they have received training but felt that the full program was not completed. Additionally, they are not organized, and there are no committees or brigade members.

Claudia responded to the call and suggested arranging a meeting to assess their requirements and needs, as well as coordinating with individuals who could join. María del Carmen agreed to the proposal and offered to extend the invitation to Blanca Quiroga, Director of the Cozumel Reef National Park.

Closing

Judith Morales, Technical Director of MAR Fund, concluded the workshop by thanking the participants and highlighting the importance of exchanges to strengthen response capacity in the Mesoamerican Reef System. She congratulated the participants and organizers, emphasizing the necessary collaboration for the success of the response. Judith acknowledged the fundamental work of the brigades under challenging conditions and highlighted that the post-storm response in MAR is a successful example for other eco-regions worldwide. She thanked everyone and concluded the workshop.

Annex 1. Agenda

Date:	November 16th, 2023, from 08:00 a 15:30 hrs CST
Modality:	Virtual with simultaneous English-Spanish interpretation.
Website:	Click in the following link
Presentations:	Experiencias regionales Experiencias nacionales

Time	Activity
8:00 - 8:05	Housekeeping Announcements
8:05 - 8:10	Welcome
8:10 - 8:15	Opening words
8:15 - 8:20	Event Program, Workshop Objectives, and Methodology.
8:20 - 9:40	Regional Experiences
8:20 - 8:30	Brief Overview of the Post-Storm Response Capacities Program in the MAR Region.
8:30 - 8:50	Early Warning Protocol, its Application in Quintana Roo, and Brief Overview.
8:50 - 9:00	Response Capacity Building: Experiences and Lessons Learned in Regional Training.
9:00 - 9:20	Importance of Post-Storm Governance and Reef Responders for coral reefs - the 2020 Puerto Morelos Case.
9:20 - 9:40	Cost analysis of the Post-Storm Response and its Relevance for the implementation of financing mechanisms.
9:40 - 9:50	Questions & Answers
9:50 - 10:05	Break
10:05 -10:40	Break Out Groups to Exchange Experiences and Analyze the Topics Presented on the Regional Experiences
10:05 -10:40	GROUP 1 Cost analysis of the Post-Storm Response and its Relevance for the implementation of financing mechanisms.
10:05 -10:40	GROUP 2 Early Warning Protocol, its Application in Quintana Roo, and Brief Overview.
10:05 -10:40	GROUP 3 Response Capacity Building: Experiences and Lessons Learned in Regional Training.
10:05 -10:40	GROUP 4 Importance of Post-Storm Governance and Reef Responders for coral reefs - the 2020 Puerto Morelos Case.
10:40-11:00	Plenary with questions and contributions from the audience.

Time	Activity
11:00 - 12:20	National Experiences
11:00 - 11:20	Belize: Post-storm response conducted at Turneffe Atoll, Belize, after the impact of Hurricane Lisa in November 2022.
11:20 - 11:40	Mexico: The contribution of reef responders in the rescue of coral colonies affected by the Stony coral Tissue Loss Disease (SCTLD) in Chinchorro Bank, Quintana Roo.
11:40 - 12:00	Honduras: Success in National Coordination and Strengthening of Post-Storm Response Governance for Coral Reefs in Honduras.
12:00 -12:20	Guatemala: Lessons Learned and Experiences in Post-Storm Response Capacity Building and Network of Allies in the Guatemalan Caribbean.
12:20 -12:30	Questions & Answers
12:30 -13:30	Lunch
13:30 -14:00	Break Out Groups to Exchange Experiences and Analyze the Topics Presented on The National Experiences
13:30 -14:00	GROUP 1 Belize: Post-storm response conducted at Turneffe Atoll, Belize, after the impact of Hurricane Lisa in November 2022.
13:30 -14:00	GROUP 2 Mexico: The contribution of reef responders in the rescue of coral colonies affected by the Stony coral Tissue Loss Disease (SCTLD) in Chinchorro Bank, Quintana Roo.
13:30 -14:00	GROUP 3 Honduras: Success in National Coordination and Strengthening of Post-Storm Response Governance for Coral Reefs in Honduras.
13:30 -14:00	GROUP 4 Guatemala: Lessons Learned and Experiences in Post-Storm Response Capacity Building and Network of Allies in the Guatemalan Caribbean.
14:00 -14:20	Plenary with questions and contributions from the audience.
14:20 - 14:25	Questions and contributions from the audience.
14:25 -14:45	Conclusions and points of agreement.
14:45 -15:00	Closing of workshop.

Annex 2. Workshop Photos

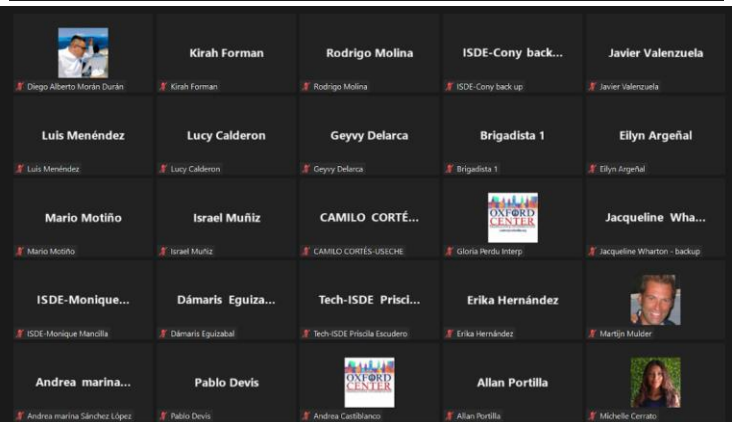
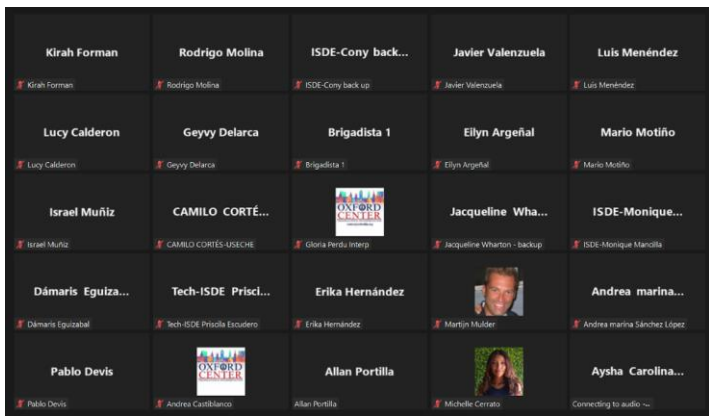
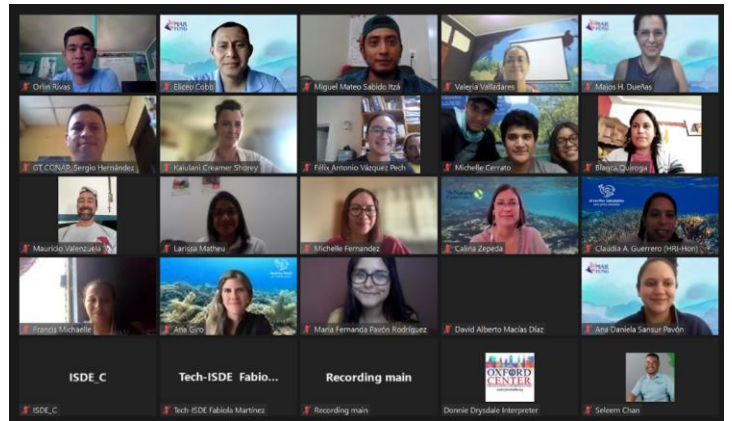


Image 1-4. Workshop Participants

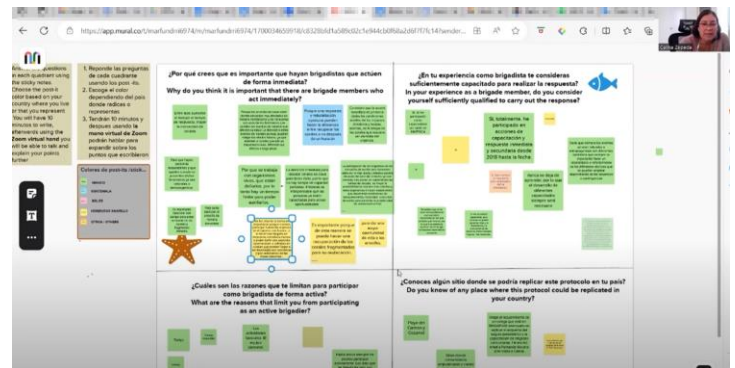
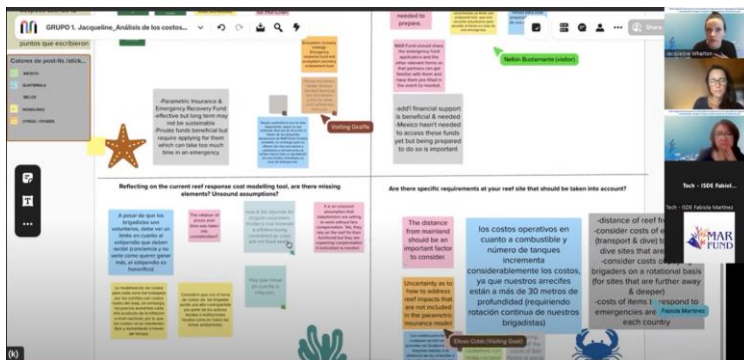


Image 5. Regional Working Group 1

Image 6. Regional Working Group 2

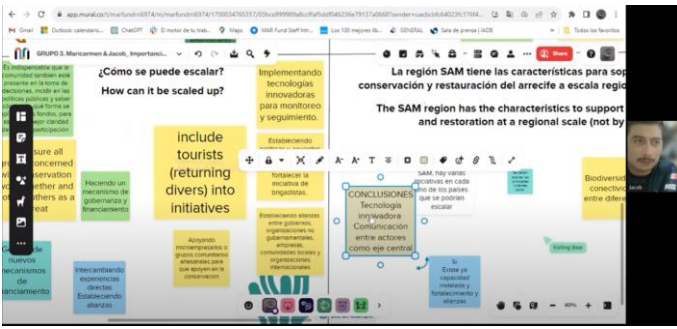


Image 7. Regional Work Group 3

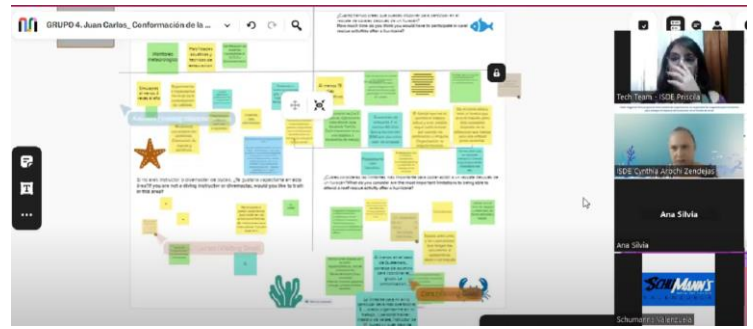


Image 8. Regional Work Group 4

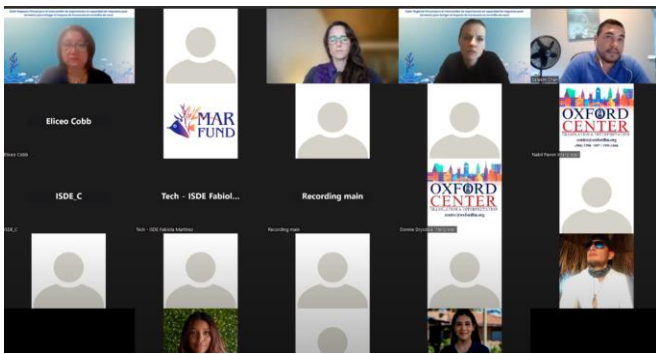


Image 9. National Working Group 1

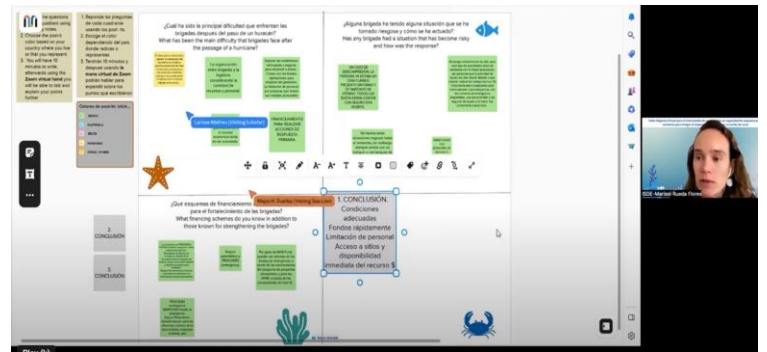


Image 10. National Working Group 2

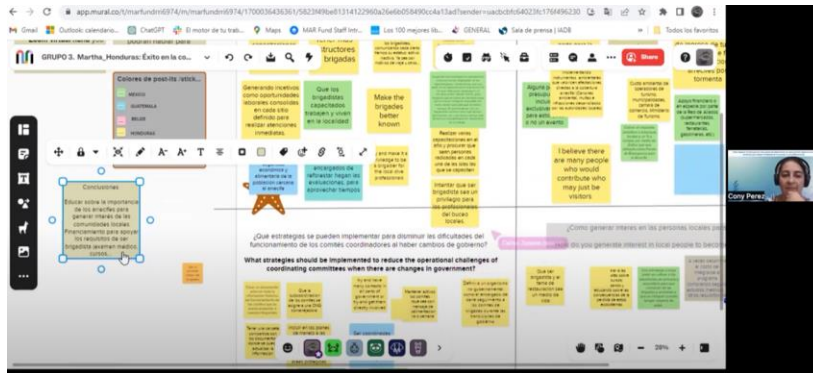


Image 11. National Working Group 3

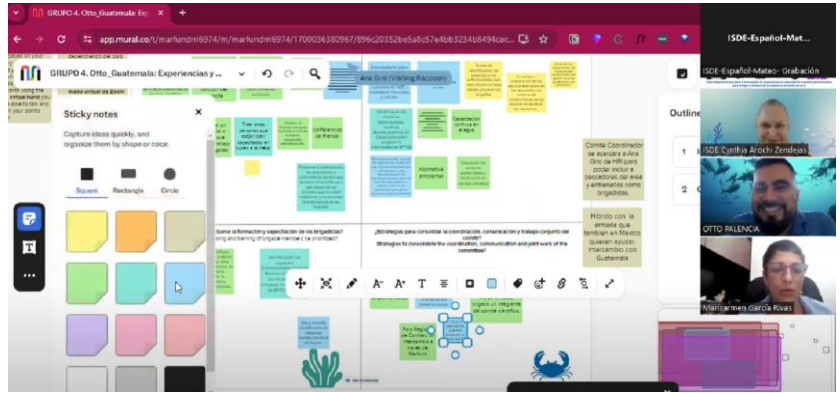


Image 12. National Work Group 4