



Mesoamerican Reef: Building the Future after Tulum 1997



Developed by Rosario Alvarez with support from Karen Wong

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This document is the result of work coordinated by Rosario Alvarez, not necessarily represent the ideas or official policies of the Mesoamerican Reef Fund – MAR Fund.

Objective and Structure of the Document

Eighteen years have elapsed since the Tulum Declaration was signed¹. In it, the Presidents of Mexico, Guatemala and Honduras, and the Belizean Prime Minister committed to the common purpose of conserving the Mesoamerican Reef System (MAR). This document reflects the success, achievements, failures, and future opportunities for this region, considered one of Earth's most biologically important areas, with one of the highest marine diversity. This compilation aims to analyze the past and present of the reef, in order to strengthen future decision-making processes and to re-positioning the region vis-à-vis government stakeholders, donors, and cooperation agencies.

In order to develop this document, historical and recent documents containing agreements, projects, studies, and analyses were gathered from May to July, 2014. Key government, academic, and civil-society stakeholders in the four countries were interviewed. Their opinions were included in the various sections, along with information from desk research.



Mesoamerican Reef System

¹ http://www.inecc.gob.mx/descargas/ai/doc_32.pdf



Introduction

The Mesoamerican Reef (MAR) is an area spanning approximately 1,000 km along the Caribbean coasts of Belize, Guatemala, Honduras, and Mexico. It starts on Cabo Catoche, north of Quintana Roo, Mexico, it borders the coasts of Belize and Guatemala, and ends in the Isla de la Bahía/Cayos Cochinos complex in the northern coast of Honduras. It is the largest reef system in the Atlantic Ocean. This is a highly bio-diverse area that includes barrier, fringing, and patch reefs, and a highly-associated system of mangroves, coastal lagoons, marine grass, beaches, rivers, and coastal wetlands.

The MAR is the marine equivalent of the Mesoamerican Biological Corridor, which comprises five southern Mexican states (Campeche, Chiapas, Quintana Roo, Tabasco, and Yucatán) and seven Central American countries (Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama).²

The MAR supports (financially, culturally, and environmentally) approximately two million people in four countries, most of whom live in coastal areas and islands. Tourism is the main economic activity in the region, and the second one is fishing. It is estimated that one out of

every five persons in the Caribbean coasts works in tourism-related activities. Every year, the MAR is host to eight million tourists, who generate income estimated at 5 billion USD. Tourists come from various countries, attracted by MAR's natural and cultural resources. It is estimated that 100,000 persons living along the reef depend directly on fishing-related activities. Fish exports in Belize and Honduras reached 300 million USD in 2012.

Various indigenous inhabitants and ethnic groups live on the coastlines of the four countries, including Garífunas, Mayas, and Misquitos, whose livelihoods depend on the same economic activities linked to coastal and marine resources, such as fishing and tourism. In the case of Mexico, fishing is still one of the most important economic activities among the Mayan population that still lives in this area³.

The region also has interesting archeological vestiges. All along the coast there are Mayan structures that could have been used as signals or beacons in times before the Spaniards arrived. Many of these structures indicate the places where there are breaks in the reef or entrances to the area, and in other cases, they even mark the places where there is danger.

² Ardisson et al., 2011

³ Daldabuit, G. M., H. Cisneros & E. Valenzuela. 2006b.

Tulum Declaration

The Mesoamerican Reef constitutes one of the most feasible and overreaching opportunities to execute a multi-national conservation project on a globally-relevant eco-system. The four countries that constitute it, aware of its importance, met to develop an initiative to highlight the ecological value of the MAR and the importance of conserving it.

On June 5, 1997, the World Environment Day, in Tulum, Quintana Roo, Mexico, the Presidents of Mexico, Guatemala, and Honduras, and the Prime Minister of Belize⁴ signed an agreement known as the Tulum Declaration. This agreement promoted the conservation of the reef system by promoting its sustainable use and establishing work linkages among authorities, and promoted developing cooperative programs and projects, as main issues.

The Tulum Declaration is framed within the previous agreements, Tuxtla I (1991) and Tuxtla II (1996) on commitments to consolidate spaces for peace, stability, and development in the region.

Mexico, which hosted the Tulum Declaration, played an important role during the six months leading up to the meeting. Its initiative was significant to achieving this agreement among the four countries. The Tulum Declaration was well received in the four countries, which committed to developing an action plan to further conservation and sustainable use of the MAR.

The Tulum Declaration inspired the four countries' governments, organized civil society, and the international cooperation. Reactions and initial investments in the area were different for each country. Mexico focused on declaring marine protected areas; Belize centered on developing a comprehensive coastal plan; Honduras concentrated on protecting one of its most important areas: Islas de la Bahía and Banco Cordelia, while Guatemala committed to

declaring the Punta de Manabique Wildlife Refuge.

The Comisión Centroamericana de Ambiente y Desarrollo (Central American Commission on the Environment and Development—CCAD in Spanish), constituted by the Ministers of Environment in the seven Central American countries and Mexico (as an observer), has been a regional body that has generated multiple initiatives. With Support from the Global Environment Facility (GEF), through the World Bank and numerous civil-society organizations, worked on designing an Action Plan to manage the MAR. The result was the development of a Fifteen-Year Plan for MBRS Conservation and Sustainable Use, known as the Mesoamerican Barrier Reef System, MBRS, Plan.

Eight years later, the Tulum Declaration was ratified. On July 11, 2006, the “Agreement to Renew the Commitments pertaining to the Mesoamerican Reef within the Framework of the Tulum Declaration” was signed in Panama.

Upon renewing the commitments signed in 2006, the countries agreed to jointly request the International Maritime Organization (IMO⁵) to declare the MAR area as a Particularly Sensitive Sea Area (PSSA) aiming to protect it from increased shipping traffic. This declaration is still pending.



⁴ Mexico: Ernesto Zedillo; Belize: Manuel Esquivel; Guatemala: Alvaro Arzú Yrigoyen; Honduras: Carlos Roberto Reyna

⁵ IMO is the specialized UN agency for maritime matters. By means of agreements, it promotes cooperation among member states and the transportation industry to improve maritime safety and prevent marine pollution.

Conservation Challenges and Threats in the Mesoamerican Reef

Nearly 80% of MAR reefs are located within a 2-km strip adjacent to the shoreline, which make them highly vulnerable to human activities.⁶

In 1994, before the Tulum Declaration, it was considered that the reef ecosystem was in much better conditions than those of many other Caribbean reefs. However, according to information from the Healthy Reefs Initiative⁷, several reef-health indicators (especially fish abundance) are now underneath the average corresponding to the Caribbean.⁸

The HRI report for 2012 mentioned that some of the main threats facing the region include the rapid and disseminated lionfish invasion, and climate change, which alters the chemistry of oceans, causing their acidification, an increase in water temperatures, and coral bleaching, diseases and mortality. Other threats include agro-chemical, sediment, and nutrient discharges into the sea, as a result of agricultural activities on land; marine dredging, which causes loss of feeding grounds (mangroves, marine grass); non-sustainable fishing practices that reduce fish populations and modify the food chain, and hurricanes and storms that cause coral breakage and elimination.

Lionfish is one of the most pressing concerns. They are a venomous species native to the Indo-Pacific ecosystems that were –accidentally or deliberately– released in South Carolina, United States of America, and migrated to the warm waters of the Mesoamerican Reef, where they have settled as an invasive species that is causing serious problems. At present, they constitute a serious threat to coral reefs in areas from Bermuda, Florida, the Gulf of Mexico, the Caribbean islands, Central America down to northern South America.

National and international shipping traffic and pollution caused by intentional and/or accidental discharges have caused physical damage to MAR's ecological characteristics. Even though in Mexico, Belize, Guatemala, and Honduras there are laws, norms and other legal instruments regulating maritime traffic and environmental protection, to date there is no regional legislative agreement, notwithstanding efforts such as the ones undertaken by Mexico and the Gulf of Honduras to that end. Between 1997 and 2008, CONANP in Mexico reported twenty-four ship grounding incidents that have damaged an area estimated at over 12,943 square meters of reef area.

Between 1996 and 2010 at least 40 accidents involving freighters, ferries, cruise ships, fishing vessels, tugboats, and privately-owned yachts and sailboats were reported. They damaged over 50,000 square meters of coral reefs. The main causes for ship groundings are adverse climate conditions (northerly winds, tropical storms, hurricanes), inaccuracies in navigation charts, lack of signaling, negligence, and mechanical ship failure. Reefs have also been damaged due to anchoring, sediment deposits during maneuvers and during ship-rescue efforts.⁹

There are still differences among countries and boundary or political disputes that have yet to be resolved. Conversations among governments and ministers of the four countries are not a simple matter. Some funding sources have expressed the complexity of working at the regional level and have progressively migrated to funding country programs and projects, even though most donors continue to support a regional vision for the reef.

Addressing environmental pollution in the MAR requires more investment than the one presently being destined to planning, public policies, and technical-scientific research. Belize's oil development is being considered a regional threat due to the intended potential extraction

⁶ SEMAR, 2002; Murray, 2007; García-Salgado *et al.*, 2008.

⁷ www.healthyreefs.org

⁸ 2008 Report Card for the Mesoamerican Reef

⁹ Ardisson *et al.*, 2011

and the delicate inter-relation and balance with the other three countries.

In 2004, the MAR Project Coordinating Unit designed the “Common-Application Agreements for the MAR Area”, in which the region’s countries planned to harmonize tourism, fishing and protected-area management issues.¹⁰ However, these have not yet been materialized in the field.

Efforts pertaining to watershed protection have been scarce. Examples of these are the hydrological reserves at Sian Ka’an in Mexico, which have encountered considerable resistance. The Sierra de las Minas water fund is also being developed in Guatemala. The water-governance marks have still not been resolved.

The great tourist coastal developments, such as Cancun, continue to be operations subsidized by the state, evidencing a lack of planning and co-responsibility between the state and private investments.

Fishing is another pending issue in the reef. The fishing sector has not been coherently incorporated into conservation efforts, especially in Mexico. A focus on production has been prioritized over conservation of the whole reef. A good portion of conservation projects and initiatives have focused on establishing and conserving marine protected areas (MPAs). In recent years, initiatives that group together production and conservation, such as fishing refuges have been adopted and have been well received in the region. Fishing structures and interventions must be expanded significantly in the whole reef.

Addressing climate change is a worldwide challenge. There are a considerable number of variables that come together to cause impact on land and marine habitats. Governments in the four countries have acknowledge this challenge, but significant investments have not been agreed upon to study the impacts of this change on reef health. Studies have not yet been

undertaken at the regional level to model changes in ocean temperatures and to identify the resistance of Mesoamerican reefs to them, to changes in water pH or to sedimentation processes that will increase sea levels. The cost of generating this knowledge and the investments required to mitigate the effects of climate change are still not known, and there is no formal study to establish a figure that would provide governments and international funders a better understanding of the magnitude of the problem.

Political mechanisms in the four countries difficult coordination and integration of conservation efforts. Within the borders of each country there are also opportunities to improve integration between the various government levels. Protected –area administration in each country requires coordination efforts by several agencies (environmental, social, economic) which are very scarce. There are many asymmetries and imbalances in countries that have not been directly addressed by all countries. For example, the context of territorial disputes between Belize and Guatemala or the negative impact of pollution from Honduran and Guatemalan rivers or pollution in Honduras from the Río Motagua. Coordination efforts are more effective in civil-society organizations, but the lack of government agreements is difi culting progress.

¹⁰ (Ardisson et al., 2011) (UCP, 2004).

Achievements and Progress in Conservation Efforts in the MAR Region after Signing Tulum

Without disregarding the threats and the documented decrease in reef health as the most important focuses, it is important to underscore a considerable number of achievements in the region. Some of the progress achieved after signing Tulum is stated and described below.

Reef Eco-Regional Plan (WWF)

The *World Wildlife Fund*¹¹ developed the first eco-regional plan for the reef as a joint effort by over 60 local and international experts who identified 26 sites that are important because of their bio-diversity. This study was relevant because, for the first time, the region was analyzed focusing on the importance of ecological connectivity, ocean currents, and connections among habitats. The conclusions of this study mention that *“the poor level of development in the region and the good environmental conditions in most of the reef provide a unique conservation opportunity to prevent the type of damage to the habitat that has occurred in other parts of the world”*¹² The study also concluded that there are challenges for regional conservation that include coastal development in Cancun and Belize City; pollution in the Bay of Chetumal; agricultural pollution in La Ceiba and Trujillo and coastal development and overfishing in the Bay Islands of Honduras.

In the most recent analyses, such as the Eco-Regional Evaluation of the Mesoamerican Reef, developed by *The Nature Conservancy*¹³ in 2008 and bi-annual reports on the ecological health of the reef published by the *Healthy Reefs Initiative* (HRI) are less optimistic than WWF in their 2002 conclusions, but these subsequent studies have been very important because they have made it

possible to have information on reef-health conditions throughout time.

Mesoamerican Barrier Reef System (MBRS) Project

Signing the Tulum Declaration provided support to promote cooperation among the four countries. The importance of the region attracted the interest of multilateral agencies. The World Bank, with resources from the Global Environment Fund launched an ambitious six-month project known as *Mesoamerican Barrier Reef System* (MBRS) Project. This Project invested 10.82 million USD in the Central American Commission on the Environment and Development (CCAD) to provide assistance to Belize, Guatemala, Honduras, and Mexico to manage the region as a regional and shared ecosystem, with a focus on regional aspects that are normally not included in country action plans and funding costs that are normally not considered in the budgets of the countries' government-agency budgets.

The Project also had parallel co-funding sources from the World Wildlife Fund (WWF), Oak and Summit private foundations, the United States Agency for International Development (USAID), the United Nations Foundation (UNF), and The Nature Conservancy (TNC). Those contributions have been estimated at an additional 10 million USD. The MBRS Project started with objectives that included safeguarding biodiversity values, preserving functional integrity and creating a framework for the sustainable use of resources in the area. It centered on establishing Marine Protected Areas (MPAs) and their adequate planning, managing, and monitoring.

The MBRS Project is considered as being decisive to launch conservation actions in the region. However, its start-up was complex. The project coordinating office was installed in Belize. MBRS Project investments centered on improving MPA management and improving

¹¹World Wildlife Fund in Mexico www.wwf.org.mx

¹² Kramer, P.A. and Kramer, P.R. (ed. M. McField). 2002. Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef. Washington, D.C., World Wildlife Fund.

¹³Arrivillaga, A. and N. Windevoxhel. 2008. Ecoregional Assessment of the Mesoamerican Reef Marine Conservation Plan. The Nature Conservancy, Guatemala.

existing capacities. Management plans were developed for 17 MPAs. Investments were made to harmonize management policies in cross-border areas, fisheries, and tourism. Belize, Honduras, and Guatemala signed a ministerial-level agreement to use shared resources in these three sectors. A Regional Environmental Monitoring System (REIS) was established. Important studies to measure the quality of fresh-water effluents were funded and surface water hydrodynamic models were developed. Investments were also made in a considerable amount of training and human-capital development.

The MBRS Project reached its proposed objectives, as documented in the results of the project published by the World Bank. However, a set of circumstances, which included institutional processes and arrangements of the funding agency, the World Bank, that were designed for national- and not regional-level projects, and a general difficulty in generating consensus and synergies among the countries' main stakeholders complicated project implementation. At the end of the fifth year of MBRS Project implementation, preparations started for the second phase of the project, in which CCAD was again the promoter. The MBRS Project II never materialized and the project concluded on June 30, 2007. The lack of funding once Phase I was concluded made it impossible to continue important actions, such as the REIS monitoring system.

One of the lessons learned with the MBRS Project was that innovative mechanisms need to be established to access regional funding and that there is constant need for open dialog and consultations among the various stakeholders. Stakeholders from different sectors in the four countries that an effort such as the MBRS should be replicated, taking into account that those factors hindering its implementation should not be repeated.

Signing the Tulum+8 agreements (in 2006) was an attempt to revive the dynamics and drive

generated by the Tulum Declaration, which did not have the expected success. There has not been any other solid initiative with a regional vision in the Mesoamerican Reef except for MAR Fund.

MAR Conservation Progress and Achievements

A historical milestone has been achieved by the four countries with the inclusion of 35% of their territorial waters and 67% of their coral reefs as marine protected areas. Around 63 marine and/or coastal protected areas spanning 2,800,000 ha (11 MPA in Mexico, 25 in Belize, 3 in Guatemala, and 9 in Honduras) have been declared. All of them are part of the national protected-area systems in each country. Many of them have been allotted funds in the national budgets and have management plans and unique conservation strategies.

National and international civil-society organizations have achieved important progress in the region. Regional initiatives implemented by civil society have been able to keep away from political controversies among countries, and have taken advantage of the collaboration generated by declarations or events. They have been constant in funding their own and their allies' projects in the region.

As to generating and disseminating knowledge, several institutions promote activities with students, fishermen, region's inhabitants, park rangers, and service providers on issues such as the value, function, fragility and use of coral reefs to reduce the impacts generated by human activities and to raise community awareness to further their conservation.¹⁴

In the whole region, as an additional common conservation movement, fishing refugees have been decreed, as a key strategy that aligns civil-society groups, fishing cooperatives, and government agencies. They have been declared

¹⁴ Ardisson et al., 2011. Rodriguez-Martínez, 2999. MAR, 2003

in Mexico, Guatemala, Honduras, and Belize. Countries share experiences and refugees are successfully replicated.

Country Efforts

The governments of each one of the four countries sharing the reef have given their political endorsement to conserving their “part of the reef”. In different measures, each one is coordinating its government agencies, and international and local civil-society organizations. Even before the Tulum Declaration was signed, there was a national conservation fund in each country, which invested strategically in the area. The four countries have developed their own legislative frameworks to strengthen conservation and the sustainable use of natural resources.

Belize

Belize has kept its leading role insofar as sustainable fisheries management. Credit must be given to this country because, notwithstanding the pressures of oil exploration and the large cruise-ship industry, it has achieved significant progress in conserving its spawning aggregation zones. Seven out of its 13 aggregation areas are constantly patrolled and receive more protection than those in any other country. Insofar as its protected areas, Belize’s MPAs previously covered 14% of its territorial waters, but as a result of the Turneffe Declaration in 2012, they now cover 20% of them. In 2011, Belize became the first country in the world to prohibit trawling shrimp fishing in all its territorial waters and its exclusive economic zone.

Belize’s fisheries regulation includes important issues such as:

- ✓ Prohibiting parrot-fish and surgeon-fish fishing. Belize is the first country with a national law to protect reef fish.
- ✓ Establishing strict fishing regulations for Nassau groupers
- ✓ Creating refuge areas when all types of fishing is banned
- ✓ Establishing strict control of fishing gear
- ✓ Controlling the status of deep-sea fishing licenses

In October 2014, the European Union recognized the progress achieved by Belize in reforming its legal framework and adopting new inspection, control, and surveillance rules. This enabled the elimination of the commercial barriers that had been imposed on Belize in March, 2014.

Mexico

Mexico has significantly increased its protected areas from 1997 to date. Six MPAs have been decreed in the MAR region. It is important to underscore private-sector and civil-society participation in promoting sustainable fishing products. The Marine Stewardship Council’s certification “Certified Sustainable Seafood MSC” awarded to Sian Ka’an and Banco Chinchorro lobsters makes them the first examples of certified products in the whole reef.

Fishing refuges have been decreed in Mexico, in Espíritu Santo Bay in November 2012, in Banco Chinchorro and Punta Herrero on September 2013, and now, there is a proposal to establish another one in Cozumel. The Kanan-Cay alliance has been crucial to establish these. Kanan-Kay represents the coming together of 40 organizations in the Mexican Caribbean. This collective form of working is noteworthy because of the importance it is placing on fishing cooperatives and civil-society groups.

Examples of this successful experience in other areas of Mexico, such as the case of Isla Natividad in the biosphere reserve El Vizcaíno, where abalone-fishing areas were closed at the initiative of the cooperative groups themselves. This has been an example and a spearhead for fishing refuges in the Mesoamerican Reef.

The Chakay collective trademark is another successful experience in Mexico. Six Quintana Roo fishing cooperatives harvest lobster in a sustainable manner; each fisherman harvests live lobsters, but release reproductive-age individuals, berried females, and juveniles. They label each lobster individually and sell them with no intermediaries under the fair-trade scheme. Fishermen also participate in reef research, conservation, and recovery activities.

Organizations such as Oceanus in Mexico have been successful in replenishing pink conch in Banco Chinchorro areas, and they are training Belizean and Honduran fishermen on how to restore reefs. Oceanus creates artificial reefs with PET bottles and tires in front of the Holbox areas affected by erosion as an alternative to protect beaches, restore reefs, and use waste materials.

Guatemala

An outstanding feature in Guatemala is the fiscal incentive provided by the Government for conservation and sustainable businesses. It is also important to mention Guatemala's efforts to declare three fishing refuges and recovery areas within the bay of Punta de Manabique in 2012. They span 345 Ha and provide additional protection to 1,519 square meters of the wild life refuge constituted by the bay. These refuges and those of the La Graciosa and Santa Isabel lagoons establish a good conservation trend, although monitoring and patrolling efforts to ensure norm compliance in these areas must still be reinforced.

Guatemala's Ministry of Agriculture, Livestock and Food (MAGA), established a temporary lobster fishing ban from March 1 to June 30 in the bays of Amatique and Santo Tomás de Castilla, the mouths of Río Dulce and Río Sarstún, and the bays of La Graciosa and Santa Isabel. Similar closed seasons were established for shrimp and sea cucumbers. Lobster closed seasons are being harmonized by Belize, Guatemala, and Honduras.

Honduras

In Honduras, the shark sanctuaries declared in 2011 evidenced an interesting governmental vision, as it became the second country in the world to decree a law against fishing all types of sharks. The monitoring and validation work being undertaken in one of its most important MPAs, Banco Cordelia, and its designation in 2012 as a very important wildlife area has posed a great opportunity for zoning and community participation. The importance of Cordelia lies in that it has 70% live-coral cover, while most reefs

in the Mesoamerican Reef have only 19% such cover.¹⁵ The coral reefs at Cordelia have a considerable amount of coral whose scientific name is *Acropora cervicornis*, a highly endangered species. In the bay of Tela in Honduras, important zones have been declared protected areas. Other protected areas declarations, such as the Texiguat Wildlife Refuge, in 1988; the Punta Sal National Park (Jeannette Kawas) in 1994, and the declaration of the Punta Izopo National Park as a RAMSAR site in 1996 are evidence of the important commitment to reef conservation assumed by Honduras. Other actions in Honduras include an indefinite closure of sea cucumber fishing, and as of 2013, temporary fishing bans for several species, such as lobsters, shrimp, Queen Conch, and groupers.



¹⁵ TNC

Regional Efforts

MAR Connectivity Network

Civil-society groups, the academic community and governments are unifying research and monitoring methodologies, as is the case of the *MAR Connectivity Network*¹⁶ in which CONANP, ECOSUR, CINESTAV, NOAA, and the University of Miami-RSMAS¹⁷ provide a forum for constant exchanges of experiences and ideas among researchers and protected-area managers. The network has produced results such as assessing biodiversity of reef fish larvae, distributions, and oceanographic dynamics. These results include fish species of ecologic and socioeconomic importance for the four reef countries, such as groupers, snappers, parrot fish, and hogfish.

Gulf of Honduras

The Gulf of Honduras Project encompassed a tri-national mass of marine waters and coasts in the exclusive economic zones of Belize, Guatemala, and Honduras. This project was implemented from August 2005 to August 2010 by the Central American Commission on Maritime Transport (COCATRAM) and co-executed by the Central American Commission on the Environment and Development (CCAD). Its objective was to reverse degradation of marine and coastal ecosystems within the Gulf of Honduras, controlling pollution related to sea transport in the main ports and shipping routes, preventing ship groundings and spills, and reducing land pollution sources.

Mesoamerican Reef Conservation Program

After the *Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef* (Kramer, et al, 2000) was published, WWF developed the Mesoamerican Reef Conservation Program, which is still ongoing. The program focuses on consolidating the Regional Protected Area System, promoting territorial spatial planning and adequate land use when managing

watersheds and fisheries by means of market links (eco-certification) and strengthening fishing regulations.

Watersheds

There are few land-based initiatives to protect the reef ecosystem from land. WWF is the only organization implementing this type of initiative along the whole reef. WWF implements better agricultural practices reducing, replacing or eliminating chemical inputs (herbicides, pesticides); reducing water consumption (using precision agriculture), and controlling erosion. All of this is being done with the aim of reducing agricultural impacts on marine ecosystems.

They have been able to reduce agro-chemical runoff pollution and they are undertaking procedures to certify some crops such as African oil palm in 2015. They have 50 meteorological stations for precision agriculture in rivers located in southern Mexico, Belize, Guatemala, Honduras, and Costa Rica.

There are still considerable gaps in the approach to address reef ecosystem problems from a watershed perspective. Lauretta Burke performed an analysis of watersheds, and sediment and nutrient transport patterns and discharge. She concluded that 80% of sediments and nutrients transported through the watersheds and discharging into the MAR come from Honduras.

Mesoamerican Reef (MAR) Program

In 2004, *The Nature Conservancy* created a Mesoamerican Reef Program with components shared by its Merida, Guatemala, Belize, and Honduras offices. In the 2004 – 2009 period, the following progress was attained:

- ✓ Second Ecoregional Assessment of the Mesoamerican Reef
- ✓ Support to the Protected Area Decree: eight Conservation Action Plans (CAP) in Banco Chinchorro, Sian Kaan, Yum Balam, Tulum,

¹⁶http://www.marfund.org/en/new_projects/introduction.html

¹⁷ CONANP: Comisión Nacional de Áreas Naturales Protegidas; ECOSUR: El Colegio de la Frontera Sur; CINESTAV: Centro de Investigación y Estudios Avanzados,

NOAA: National Oceanic and Atmospheric Administration; RSMAS: Rosenstiel School of Marine and Atmospheric Science.

Alacranes, Belize's Southern Reef Complex, Mayan Marine-Mountainous Corridor, which cover a 2-million hectare area.

- ✓ Three training modules: Training Manual for Marine Park Managers; Management Effectiveness Manual, and Marine-Coastal Protected Area Participative Planning Manual.
- ✓ Public Use Plans for Half Moon Caye and Blue Hole in Belize.

The Nature Conservancy's MAR program halted its operations in 2009 because of lack of funding.

MAR Leadership Program¹⁸

One of the most widely acknowledged regional initiatives is the MAR Leadership Program. Its efforts to promote training, exchanges by area managers, and exchanges of experiences by various countries have fostered human networking in the region and have strengthened MAR projects. The Leadership Program has brought value to the region as a result of shared knowledge, leadership training, exchange of experiences, identification of needs for cooperation and coordinated efforts. The program fosters close cooperation and good relations among the leaders of several countries. It has provided support to 47 leaders from four generations of sustainable coastal development, fisheries, recovery sites, protected area management, and the last generation, which includes the new field of interest: solid waste.

Reefs for Life

The initiative Reefs for Life, which aims to destine 10% of Belize's territorial waters to fishing reserves, is a good example of joint participation by civil society, government, and funding agencies. This initiative includes creating a permanent funding mechanism that takes advantage of investments aimed at climate-change adaptation.

Reefs for Life objectives includes consolidating a network of MPAs, with an emphasis on the central area of Belize, which includes the Turneffe and Lighthouse Reef atolls; establishing a network of fishing refuges and a

management system in the central and south regions of Belize; testing better surveillance technologies and developing zoning incentives, regulations, and mechanisms for coastal development.

Healthy Reef Initiative (HRI)

The initiative Healthy Reefs for Healthy People (HRI) was launched in 2004. It is an effort implemented by several institutions to monitor MAR health and the human decisions that have an impact on it. The organizations that participated in its creation were WWF, MAR, the World Bank, the Summit Foundation, and Perigee Environmental.

This initiative seeks to answer two fundamental questions: What is a healthy reef and how can its conditions be monitored with common indicators? How can scientific information be transferred to decision makers in order to establish the connections that result in conservation actions?

Throughout time, this initiative that has been implemented for 10 years has earned the respect of a considerable number of actors. Every two years, the HRI publishes a report on the ecological health of the reef and on alternate years, it publishes a report on the management by each of the four countries constituting the MAR. These reports seek to implement effective management actions and to emphasize the responsibilities of the public and private sectors, civil society, and the academic community. These reports have become a collective thermometer and an important tool. As with any assessment report, its results meet with different attitudes depending on its contents.

Caribbean Challenge Initiative

The Caribbean Challenge Initiative (CCI) applies to most Caribbean countries. In the case of the reef, the CCI only applies to Belize. The initiative proposes that 20% of all Caribbean waters be protected and a 40-million dollar fund be created

¹⁸ <http://liderazgosam.org/informacion-general/>

for 8 countries¹⁹ with participation of international organizations such as TNC, KfW, and the GEF. Caribbean government leaders have joined business leaders in a collective effort to protect their marine and coastal environments. The CCI proposes two general goals:

1. The “20 by 20” goal. To sustainably manage and conserve 20% of their marine and coastal environments by the year 2020.
2. Financial goal. To achieve the 20 by 20 goal, it will have sustainable financial mechanisms to provide constant resources in each of the participating countries.

MAR Fund

In February 2004, as the need for a regional fund and a coordinating institution became more evident, the representatives of conservation funds operating in each one of the MAR countries, supported by international institutions such as WWF, TNC, and RedLAC,²⁰ agreed to promote the creation of a Fund for the Mesoamerican Reef (the Mesoamerican Reef Fund–MAR Fund). The MAR Fund is a private and participative fund, with a Board of Directors, constituted by donors, experts, the CCAD, and environmental funds from each of the countries that constitute the Mesoamerican Reef: *Protected Areas Conservation Trust PACT* (Belize), *Fundación para la Conservación de los Recursos Naturales y Ambiente en Guatemala* (Foundation for the Conservation of Natural Resources and the Environment in Guatemala–FCG), *Fundación Biosfera* (Biosphere Foundation, Honduras) and the *Fondo Mexicano para la Conservación de la Naturaleza* (Mexican Nature Conservation Fund, Mexico). Its mission is to inspire regional and innovative solutions to critical issues in the Mesoamerican region, by means of significant long-term financial support so that future generations can enjoy and benefit from a reef system in good conditions.

The aim of this Fund is to provide funding to protect and conserve the marine ecosystems

¹⁹ Bahamas, British Virgin Islands, the Dominican Republic, Grenada, Jamaica, Puerto Rico, St. Lucia, St. Kitts & Nevis, St. Vincent & the Grenadines

²⁰ WWF: World Wildlife Fund

that compose it and that are ecologically unique and vulnerable, as well as to promote the value and need to conserve resources, facilitating the incorporation of civil society in local decision making to guarantee the future availability of resources in the region.

MAR Fund started its conservation efforts with no sinking funds to invest in the region and no equity fund. It started its equity fund at the end of 2011 with 10 million Euros from the KfW German Development Bank. In December 2013, it received a 1-million Euro contribution from the French Fund for Global Environment (FFEM), and in December 2014, it received an additional 7-million Euros contribution from the KfW for the Mesoamerican Reef-Recovery Initiative to be implemented by MAR Fund and CCAD. At the end of 2014, it had invested 1,692,679 USD in conservation activities in the region.

MAR Fund is considered, second to the Tulum Declaration, the only entity with a regional vision that can promote funding at solid scales. In its initial years, its priorities focused on strengthening protected-area management, but now it will expand its scope of action to also invest in climate-change issues, which is being well accepted by the various organizations and institutions.



TNC: The Nature Conservancy.

RedLAC: Network of Environmental Funds of Latin America and the Caribbean

MAR Fund has generated new funding channels and an integrating perspective in the four countries. Key stakeholders acknowledge the transparent way in which it manages resources.

Donors, experts, and institutions recommend that MAR Fund consider the following as part of its institutional strengthening process:

- To keep an open attitude with regard to the places where financial support is being destined and to efficiently communicate the selection criteria and strategies for sites being supported.
- To look for a mechanism that continues to allow an adequate level of implementation, in order to achieve conservation objectives.
- To recover, update, and share the regional databases in order to improve decision making and to keep an adequate historical memory.
- To look for mechanisms to make compatible political interests in the region. Frequently, regional conservation initiatives face differing public official attitudes that affect regional agreements.
- To increase the relevance and permanence of regional processes so that they are not hindered by short-term government and staff turnover within the government in power.
- To recognize the new increasingly complex regional context, which includes a greater number of local and international organizations working in the region; the results of creating local leadership; a private sector that is more aware of conservation issues, and a community that is more receptive to understanding the links between conservation and its own wellbeing.

Conservation and Sustainable Development Opportunities in the MAR

The opportunity posed by the MAR to develop a multi-national conservation project is very important. The governments of the four countries are making efforts within their borders,

but it is not always easy for them to generate agreements with their neighbors. Civil-society organizations constitute a good way to achieve multi-national integration and to establish conservation actions when governments stop cooperating as a result of political contexts.

Conservation

The joint proposal by Mexico, Belize, Guatemala, and Honduras to propose MAR as a PSSA²¹ (Ardisson et al., 2011) is an excellent opportunity to develop an action at the regional level. There is progress and experience in key issues that may be shared among the four countries. For example, Belize's Coastal Zone Management Act, a law that Mexico does not have, or the experience in establishing and implementing fishing refuges that Mexico can share.

The varied conservation efforts provide an opportunity to have a "crossed fertilization" among countries, through exchanges, conversations, etc. that can promote the sense of integration and the sense of belonging to one single region. The Regional Plan to Respond to the Lionfish Threat is an example of a regional reaction that constitutes an opportunity to strengthen and resume collaboration and to achieve a regional strategy to control lionfish.

Information/Knowledge

MAR's social context is not the same as it was eighteen years ago. At present the region has more civil-society organizations interested in reef conservation and a private sector that is more engaged in implementing conservation actions and in finding solutions to common threats.

The conditions of the reefs in the region make MAR a natural laboratory to undertake scientific research, either in pristine or impacted areas. The Banco Chinchorro reefs have not experienced substantial perturbations, so they are in a condition that is natural or almost natural. The state of knowledge of this system, as a reference framework, was published in 2003 in the special issue of the magazine "Bulletin of Marine Science"²².

²¹ PSSA: Particularly Sensitive Sea Area

²² Suarez Morales and Camarena-Luhers, 2003

The varied conservation efforts provide an opportunity to have a “crossed fertilization” among countries, through exchanges, conversations, etc. that can promote the sense of integration and the sense of belonging to one single region.

Homogenizing Fishing-Management Instruments

It is important to develop a project that integrates the four countries in crosscutting issues. For example, homogenizing fishing-management instruments (establishing fishing seasons or close seasons for highly-migratory species). There is an opportunity to standardize monitoring methodologies by implementing Ecosystem-based Fishery Management (EBFM) and to standardize monitoring methodologies to determine critical habitats in the whole reef. Mexico has incorporated some additional criteria for reef monitoring that can contribute to updating and standardizing methodologies.

Donors Committed to MAR

There are several donors that recurrently support conservation and sustainable-development in MAR. Some of the main ones are:

KfW

This is a government-owned German development bank with headquarters in Frankfurt, established on December 16, 1948. The KfW provides funding for policy development. Its main objectives are to reduce poverty, ensure peace, and co-design globalization.

Summit Foundation

Established in 1991, Summit supports organizations whose efforts are aimed at improving quality of life and sustainability. It invests in three main strategies: Conserving the Mesoamerican reef, improving the urban quality of life, and caring for adolescent girls (the latter two are implemented mainly in New York’s surrounding areas). Its investments in MAR focus on solving the three most important threats: overfishing, massive tourism, and effluents from agricultural activities.

Oak Foundation

A private foundation that started to operate in 1983 with resources from “Duty Free” stores. It commits its resources to issues of global concern that produce effects on the neediest population of Belize, Bulgaria, Denmark, Ethiopia, India, the United Kingdom, the United States, and Zimbabwe. Since 1998, the Oak Foundation has been channeling resources to conserve the portion of the reef that runs along the Belizean coasts. It provides support to training, research, communication, and public policies in order to improve marine areas, marine-resource management, funding, and economic development.

USAID

The United States Agency for International Development invests resources to reduce poverty and strengthen resilient and democratic societies. With resources from the US Federal budget, it provides support to the four countries bordering the Mesoamerican Reef so that they protect their natural resources and adapt to the impact caused by changing climate patterns. In 2004, it provided 3 million USD in funding, for a period of three years, to the International Coral Reef Action Network (ICRAN), whose activities concluded in 2012.

A regional program funded by USAID to manage aquatic resource and economic alternatives (MAREA) for 13,888.734 USD started in January 2010 and end in March 2015. It invests in Central American countries (including Costa Rica and Panama) to support coastal-marine

management practices and market solutions adapted to local sustainability.

USAID's present strategy is to invest in each one of the reef countries, targeting issues such as justice and economic growth. USAID is also implementing a climate-change mitigation component, but it does not necessarily target marine-coastal environments.

Global Environment Facility (GEF)

The Global Environment Facility is an organization based on international cooperation, in which 183 countries cooperate with each other and with civil-society institutions and the private sector to face environmental challenges. Since it was created in 1991, the GEF has provided 12.5 billion USD in funding by means of grants to 165 countries. The Global Environment Facility, GEF, in its fifth assembly that took place in Cancun in May 2014, announced that it would invest 10 million USD to protect the Mesoamerican Reef. "The objective of the project is to improve regional cooperation to maintain the ecological integrity of the Mesoamerican Reef", said the Central American Commission on the Environment and Development, which is leading project implementation with WWF as the GEF agency. There are very varied expectations about the changes that these additional resources will generate on ecosystem health. The project seeks to harmonize national laws to combat lionfish. It will also invest in the integral management of watersheds, establishing public-private mechanisms, and in national capacities for integral marine planning. GEF's announcement in Cancun generated skeptical and triumphalist reactions.

IDB

The International Development Bank, established in 1959 as the main development funding source in Latin America and the Caribbean, provides support to the region in order to reduce poverty and inequalities. It

operates as a regular bank, but it also gives grants, provides technical assistance, and engages in research. At present there are three projects –two of them are regional and one is specifically for Mexico– being funded by IDB, for a total amount of 1.5 million USD. For Mexico: Environmental Practices to Conserve Tourist Destinations in the Mesoamerican Reef (520,000 USD)²³, and at the regional level: Making the most of the Global Conservationist Community to Boost Tourism (570,000 USD)²⁴ and Project on Environmental Practices to Conserve Tourist Destinations in the Mesoamerican Reef (420,000 USD)²⁵.

FFEM

The French Fund for Global Environment²⁶ Works to promote environmental protection in developing countries. It was established in 1994. Its investments in the Mesoamerican Reef focus on strengthening governance in marine and coastal areas at the local and regional levels.

²³ <http://www.iadb.org/es/proyectos/project-information-page,1303.html?id=ME-M1065>

²⁴ <http://www.iadb.org/es/proyectos/project-information-page,1303.html?id=RG-M1206>

²⁵ <http://www.iadb.org/es/proyectos/project-information-page,1303.html?id=RG-T2331>

²⁶ <http://www.ffem.fr/accueil-FFEM>

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List of Interviewees

- Alejandro Arrivillaga. Senior Regional Monitoring Manager, RARE Conservation
- Alejandro Martínez, Manager of the Mesoamerican Reef Program, The Nature Conservancy
- Andreas Lehnhoff, MAR Director, WWF
- Carlos Saavedra, The Summit Foundation
- Edas Muñoz Galeano. Áreas Protegidas, Recursos Naturales y Ambiente (Protected Areas, Natural Resources and Environment), Honduras
- Eglé Flores. COBI
- Gabriela Nava. Oceanus, A.C.
- Juan Bezaury, Director of Foreign Relations Mexico, The Nature Conservancy
- Luis Bourillón. Executive Director, COBI
- María Eugenia Arreola, Leadership Program MAR, FMCN
- Maricarmen García, Director of the Reserve of the Banco Chinchorro Biosphere, CONANP
- Miguel Ángel García. Oceanus, A.C.
- Ricardo Gómez, Director Regional, CONANP