

COMMUNITIES, ECONOMY AND REEFS AT RISK, THE MESOAMERICAN REEF IN FACE OF CLIMATE CHANGE

Climate change is putting at risk the livelihoods of near two millions people along the Mesoamerican Reef (MAR), and it is affecting tourism, agriculture and fishing, key economic sectors for national economies. It is threatening both critical natural resources such as fisheries, touristic reefs and sandy beaches, water supply, as well as human built resources such as communities, infrastructure, coastal tourism and real estate developments along the coastal areas.



Coastal ecosystems provide for food, livelihoods and income for local people and national economies. Thousands of artisanal fishermen benefit from the MAR's fisheries, including lobster, conch, snapper and grouper. Its marine and coastal ecosystems – dunes and beaches, coral reefs, mangroves, and wetlands – provide the foundation for local economies and the region's multi-billion dollar tourism industry (more than US\$5 billion), with more than 8 million visitors per year. Additionally, coastal ecosystems reduce vulnerability against natural phenomena: seagrasses and sand dune vegetation stabilize beaches absorbing waves' impact, mangroves and lagoon buffer from river floods and high tides, coral reef barriers reduce wave energy from hurricanes and storms that otherwise would hit the coast.

Despite these enormous socio-economic benefits, marine and coastal resources are declining. The region's economy is built on flawed tourism, fishing and agriculture development models of poorly planned and poorly controlled growth, which overlooks the critical benefits of healthy marine and coastal ecosystems. Mangroves and coastal wetlands are given way to real state and tourist developments and agriculture plantations. Freshwater flows and sea water are increasingly polluted due to coastal development and commercial agriculture (banana, African palm, shrimp farms). Most fisheries have been severely depleted by years of poor institutional arrangements and open access to resources. In addition, climate change-related stressors, such as increased water temperatures (bleaching events occur more often with wider impact), sea level rise (entire cayes and beaches have nearly disappeared in recent years), stronger storms (hurricanes have destroyed critical reef structures, mangroves, dunes) are further affecting the health of ecosystems and their capacity to meet human needs.



Caye in Port Honduras, Belize, rapidly disappearing. Sand beach washed away by tides and currents during the last 3 years. Poles mark original coastline.

Conserving marine ecosystems and addressing climate change impacts on human communities have become the same goal.

The conservation goal: ensure that coastal and marine ecosystems maintain their health and capacity to provide ecosystem goods and services to local communities and national economies and adapt to climate

The hearth of the strategy is to conserve a network of conservation areas that can maintain the vitality of biodiversity at the entire MAR landscape. The network encompasses areas important for their goods and services for human needs, as well as the criteria establish by CBD in his POW for Protected Areas: representativity, redundancy, viability and uniqueness.

As important is the reduction of threats occurring within and outside conservation areas, based on a large ecosystem management approach.

Strategies: TNC will work along these:

- 1) Establish the institutional mechanisms, policies, and plans for successful EBA adaptation agenda for climate change,
- 2) Consolidate the network of conservation areas
- 3) Develop long term financial mechanisms to sustain conservation and low impact developments.

Regional institutional context: México, Belize, Guatemala and Honduras signed presidential agreements on 1998 (Tulum Declaration) and 2006 (Tulum+8 Declaration) to establish the Mesoamerican Reef Systems Initiative. The Minister Council and the Sustainable Development Committee have not operated properly and an action plan has not been done. Countries have been working without coordination, weakening the possibilities of launching large scale initiatives, projects and raise important funds. In face of climate change there is even a more compelling need to present regional initiative attractive to bilateral and multilateral agencies.

CONSERVATION STRATEGIES FOR THE MAR

ESTABLISH MECHANISMS, PLANS AND POLICIES FOR SUCCESSFUL ECOSYSTEM BASED ADAPTION TO CLIMATE CHANGE

TNC will secure high-level commitments by political and private sector leaders and other stakeholders with ecosystem based measures to adapt to climate change, that can drive better decision-making and provide an impetus to many of the fundamental reforms and actions needed. The commitments will include a set of principles and best practices that would guide development projects and conservation actions, for example: best practices for new coastal construction, land use zoning and densities, and protection of critical habitats.

Vulnerability analysis and adaptation strategies in face of climate change

Under the MAREA project, TNC will conduct a social and ecological vulnerability analysis to assess how human livelihoods are going to be affected by climate change and their local capacity to adapt. TNC will also identify the locations where natural habitats are going to be greatly affected. Jointly with local stakeholders and governments, a set of adaptation strategies will be develop to manage habitats and human livelihoods.

Make the social and economic case for a ecosystem based adaptacion to Climate Change

TNC will conduct an economic analysis to influence the selection of infrastructure based or nature base actions to adapt to climate change. The study will assess the ecological and economic consequences of business-as-usual growth in the coming decade(s) versus alternative scenarios based on a climate change adapted coastal models, using representative locations and projects in MAR countries.

Build the official Mesoamerican Reef Agenda for Conservation and Adaptation for Climate Change

TNC will support the development of the Agenda, promoted, endorsed and adopted by the four countries governments and key stakeholders. TNC will work closely with CCAD, WWF and MAR Fund, and will support the launching of the Ministers Council and Sustainable Development Committee to coordinate and implement these efforts.



Expansion of Playa del Carmen from 1990 to 2005

Critical inputs to this process that are currently underway are the Vulnerability Analysis for Belize, Guatemala and Honduras under MAREA project, the Adaption Plan for the Gulf of Honduras and the Protected Areas Action Plan for CC for the Mexican Caribbean MPAs.

Influence Climate Change Action Plans to ensure major commitments from national/federal, state and municipal governments and private sector.

TNC will work with governments to ensure that the principles, practices and commitment agreed on Agenda are reflected in government policies and plans. TNC will collaborate on the development of the National (Guatemala, Belize and Honduras), Yucatan and Quintana Roo State Climate Change Adaption Plans and Marine Protected Areas Action Plans, currently under development.

PROMOTE LOW IMPACT COASTAL DEVELOPMENT

Build a private sector constituency and alliance to promote low impact development.

In Mexico, millions of dollars in investments are radically changing the landscape every year. Many investors and most buyers of real estate acknowledge that the basis of their wealth and property depends on well managed coastal and marine resources. They are highly concerned on the current development trends and are willing to act to defend their investments and profits. TNC will catalyze the organization of an alliance with concerned private investor and buyers that will promote principles, concepts and practices among private sector as well as influence governments. The **main** focus will be to influence land use zoning, large infrastructure projects, construction codes and water management. Based on the Mexican experience, TNC will promote these alliances in other MAR countries.

Influence municipal, state or national land use zoning mechanisms, to ensure incorporation of climate change considerations.

TNC will support the Belize Government to develop the National Coastal Zone Management Plan, the Tulum Government to develop its Ecological Land Use Zoning, and the Bay Islands Government to update the Islands Land Use Zoning. Mechanisms to oversee appropriate implementation will be designed jointly with governments.

PROMOTE AN EFFECTIVE NETWORK OF CONSERVATION AREAS

A coalition of government agencies, universities and NGOs, coordinated by The Conservancy, conducted an ecoregional assessment that identified network of 31 conservation areas. The assessment incorporated essential conservation principles such as resiliency, replication, connectivity, representativeness and

integrity. The design also complies with the recommendations of Program of Work of Protected Areas, COP7 of the Convention on Biological Diversity. Most conservation areas are already under a protected areas designation; however, there are important gaps (600,000 has) that must be filled to complete and maintain a connected and functional network (2,3 million has).

Support the designation of the new MPAs:

TNC will conduct national policy work around the formal decrees of Northern Cozumel, Xamanha, Mahahual, and Isla Mujeres wetlands, Central Belize and Turneffe, Omoa and Trujillo, which are critical to complete the gaps in the conservation areas network. Technical studies for all those areas are underway and community, municipal, and state consultation are in process. The goal is to add 500,000 hectares for conservation, to fill the gap identified in the ecoregional plan and national marine gaps.

Consolidation of the largest marine park in the MAR, the Bay Islands.

The Honduran government created in May 2010 the largest marine protected area in the MAR, covering 684,000 hectares, representing 30% of all marine areas under protection. Given the importance of the area and the Honduran Government lack of resources it is strategic to support national and local efforts to consolidate appropriate management for this MPA. TNC, under MAREA project, will support with the vulnerability analysis, adaptation strategies and information for the management plan.

Fishing refuges or no take zones:

A key part of this strategy will be the declaration of no-take zones as part of the conservation area network, with a goal of adding at least 20 locations with new no-take zones by 2014. This network of marine protected areas and no-take zones will protect at least 80 percent of the 38 validated fish spawning aggregation sites (SPAGs) and 60 percent of the potential SPAGs. The recovery of fisheries is essential to ensure coral reefs restoration and its capacity to adapt to climate change, on the one hand, and to sustain the livelihood of fishermen. The marine no-take zone networks will include various habitats to encompass the different stages of the life cycle of fisheries.

TNC will support partners to work directly with promising fishing communities to ensure support, design establish, manage, patrol and monitor the fish banks. TNC is supporting



Coral reefs in good condition.



Seagrass beds in Sian Ka'an, buffer sands from waves' energy



Groupers spawning aggregation.

Sarstun, Cayos Cochinos and Banco Chinchorro and plans to support Bay Islands, Manabique, Sian Ka'an and Yum Balam Biosphere Reserves, and the entire Belize network.

Securing governance and political commitment to establish fishing refuges and supporting mechanisms:

Secure a federal commitment from CONAPESCA, UNIPESCA, DIGEPESCA and FISHERIES Department to endorse and support the establishment of fishing refuges and the consolidation of users' rights systems in the MAR. TNC will promote agreement between protected areas, fisheries agencies with national police, navy and prosecution institutions to ensure support to and coordination with community surveillance and patrolling. Development of fishing refuges strategies for Quintana Roo, Belize and Honduras are underway.

Create a network of "fishing refuges extension agents".

The design and management of fish banks require one to one process in each location, and gradually involve fishermen, design the area, build agreements with local authorities and monitor the results. A network of community managers and experts is essential to spread out the process. Exchanges, training and support for local activities such monitoring and patrolling are part of this component. This will complement 2011-12 RARE's Fishing Refuges Campaigns.

DEVELOP LONG TERM FINANCIAL MECHANISMS TO SUSTAIN CONSERVATION AND LOW IMPACT DEVELOPMENTS

A funding shortfall exists between the funds needed to effectively manage the Network and the existing funding levels of conservation agencies. We will fund the design of one new sustainable financing mechanism for each country that can help address this funding shortfall, and promote its establishment. Promising options to be explored based on ecosystem services payment are diving, sportfishing, hotel and airport departure fees.

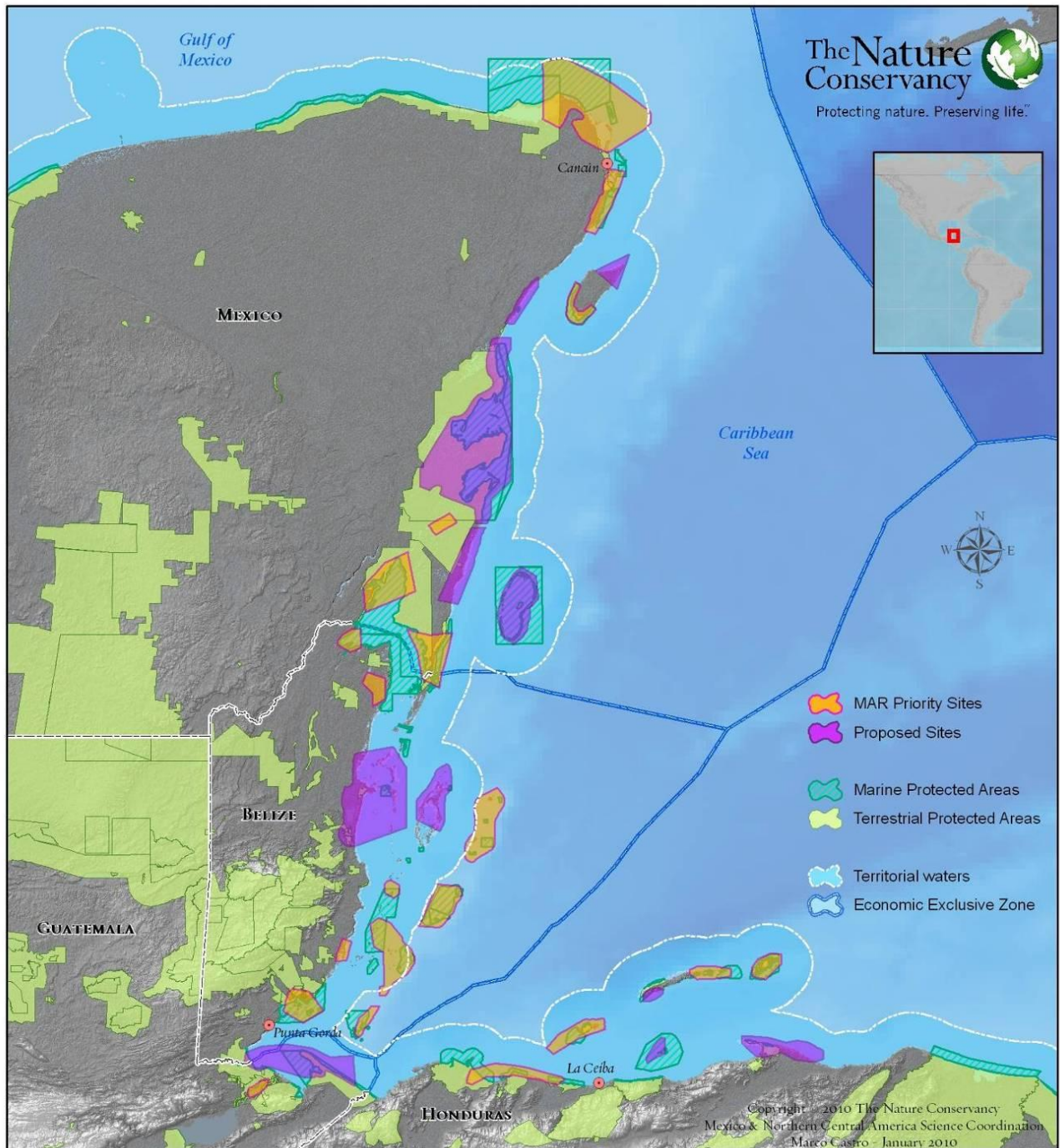
Belize Reef for Life

TNC, Oak Foundation, a multilateral bank and the Belize Government are working together to close a deal, where the government commits to key conservation actions and a capital fund of US\$ 100 million is established to support climate change adaptation and conservations activities in coastal and marine areas. Commitments from the Belize Government will ensure the accomplishment of the aforementioned objectives and strategies, and will be achieve with the support form TNC and the capital fund. Some are:

1. 30% of the Belize ZEE will be under protection.
2. 20% of Belize territorial waters will become no take zones.
3. A Coastal Zone Management Plan where adaptation to climate change is fully incorporated.

Large EBA funding channelized to MAR

TNC will support governments to develop compelling EBA action plans and projects that can be funded by bilateral and multilateral donors. Large fund are in pipeline for these countries and more funds are being set up, being critical to access them and to support their strategic execution. As an example, Guatemala just received a loan of US\$ 250 million from the Interamerican Development Bank for climate change adaptation for the country.



Map shows TNC Priority areas for 2010-2012

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