

Western Indian Ocean regional coral reef monitoring and related activities Overview and progress

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1. Introduction

Coral reefs constitute an invaluable heritage & a common federating theme for regional cooperation in Western Indian Ocean region due to the connectivity of their marine environments and the ecological and socio-economical services they provide.

As threats are increasing, a severe coral bleaching event occurred in 1997-1998 due to a rise in seawater temperatures, with significant ecological and socio-economic consequences. The 2015-2016 event, considered to be the third global El Nino-related coral bleaching event, affected a large number of reefs, with its severity varying from place to place.

Coral reefs (and associated ecosystems of seagrass beds and mangroves) in the region are important for coastal communities and are of great commercial value. Sustainable management of these sensitive and vulnerable habitats has been highlighted since 1995. Annual monitoring of the health status of these unique ecosystems was recognised in 1997 as part of the Global Coral Reef Monitoring Network (GCRMN).

The South western Indian Ocean Islands States coral reef network was launched in Nosy Be, Madagascar in 1997. The Nairobi Convention Coral Reef Task Force was launched during the Conference of Parties in 2001.

Critical needs in the coral reefs ecosystem were identified in 2005-2006. Some of these relate to data collection at sites within the coral reef ecological network. Through a series of regional meetings, it has been recognized that it is important for stakeholders to share and build strategy and coral reef action plans, as well as to promote continuous capacity-building amongst stakeholders, develop new ecological (and socio-economical) indicators to add to the classical coral cover habitat complexity (CCHC), including fishing techniques, coral diseases, and invasive species.

2. Revitalization with a biannual road map

The Indian Ocean Commission is facilitating a rebirthing process of the Reef network under the umbrella of the Nairobi Convention, aiming to produce a regional report on the coral reefs. With scientific inputs from CORDIO, a roadmap for the period 2015-2016 for the South Western Indian Ocean coral reef network was drafted during a workshop held in February 2015 in Albion, Mauritius. It includes four major components relating to governance, capacity building, information system and drafting of the report.

In the area of **capacity building** the following activities have been implemented:

- Training in Global Coral Reef Monitoring (GCRM) methods in Sainte Marie Islands and Nosy Be, Madagascar

- Training in Reef check methods in Anjouan and Grande Comoros
- 2 webinars, guide drafting/ dissemination and 2 field training workshop in coral bleaching assessment organised in Moroni and Zanzibar
- Coral reef diseases identification training in Mauritius
- Training in the new coral reef database (BD-Recif)

In the **governance** component, a number of activities have also been undertaken:

- drafting and validation of national charters
- Regional charter review
- Data sharing agreement and development
- Communication material production (posters, leaflets, booklets...)
- Preparation of coral reef bleaching monitoring strategies for Comoros and Madagascar
- Transboundary conservation area between Kenya and Tanzania preparatory phase

Within the **information system component**, an online platform developed by The Nature Conservancy (TNC) has been created and used extensively (<http://www.reefresilience.org/groups/network/indian-ocean-commission/>) together with an online reporting form for coral reef bleaching (www.cordioea.net/WIO-bleaching-2016). A new coral reef database (BD-RECIF) has been developed, building on the Coral Reef Monitoring Database (COREMO) and the Coral Reef Information System (CRIS).

The **reporting** component is characterized by the 2016 Western Indian Ocean coral reef status report. The following are some of the activities that have been completed:

- Mobilisation of national and regional experts
- Technical note and guidance (working together with CORDIO and GCRMN)
- Provision of metadata and summary data templates
- Coral reef session at the 9th WIOMSA scientific symposium in Durban: where progress was made on national/regional chapters outlines
- Workshop to validation national reports
- Report writing workshop held in Zanzibar
- Support to the coral reef bleaching assessment and reporting

Final editing of the regional report is expected to be completed by the end of April 2017.

The long term coral reef monitoring from 227 sites demonstrates that the Western Indian Ocean reefs may be turning into simpler less-resilient reefs vulnerable to shifts in algae and herbivore dynamics. Fortunately, these changes can be managed through committed and consistent actions over large scales to manage both fishing, nutrient loads and other forms of pollution.

3. Conclusions and Recommendations

Trends in the health of coral reefs shows that active management and interventions are required at a time when pressures are increasing for resource use in the coral reefs. Pressures arise from a growing coastal population and other markets, pollution, and climate change.

Retrospective analysis of the Coral Reef Network since its formation in 1997, during which two major coral bleaching events have occurred (1997-1998 and 2015-2016) shows that the regional network for reef health monitoring is still operational. The network is composed of national teams whose capacities vary from place to place and from time to time depending on the sustainability of human capital and funding. It is noted that the pool of expertise available in the region can better support coral reef management and conservation.

The following actions are recommended for the next 2 years:

- Post bleaching assessment of coral reefs, including diseases and effects of marine invasive species
- Coral reef restoration
- Networking of the Marine Protected Areas (MPA) including Locally Managed Marine Areas (LMMA)
- Mapping of Coral reefs and associated ecosystems
- Deployment of the BD-Recif database
- Institutional anchoring of the Coral Reef Task Force to national Integrated Coastal Zone Management (ICZM) committees
- Celebration of the 20 years anniversary of the Coral Reef Network to increase visibility and built sustainability
- Review of the Coral Reef Task Force terms of reference and action plan