

Western Indian Ocean post-bleaching assessment 2017

1. Background

The monitoring of the health of coral reefs and the early detection of threats is becoming more and more crucial. With support from the Indian Ocean Commission (IOC), through various projects, WIO countries have joined efforts in undertaking reef conservation actions. These include the development of regional guidelines on the monitoring of the health status of coral reefs and the adoption of a common database to preserve useful data for future use and to facilitate the sharing of monitoring data among countries.

In addition to regular monitoring, ad-hoc interventions are necessary to assess specific issues affecting coral reefs. In 1997-98 the WIO region suffered from the 1st global bleaching event which caused the destruction of 30-50% of corals. In the local summer of 2016, the 3rd global coral bleaching event affected the WIO, and the IOC through the Biodiversity Project supported an initiative to collect coral bleaching data for the 2016 GCRMN coral status report. In order to get a full picture of the impact of the 2016 bleaching event in the WIO, the Biodiversity Project is supporting the reef network to conduct a post bleaching assessment in six countries in the region. The action will respond to the call launched by the International Coral Reef Initiative (ICRI) at its 21st General Meeting to enhance global efforts to assess the impacts of the 2016 coral reef bleaching event, and will inform the development and implementation of appropriate management measures.

2. Purpose

The purpose of this assignment is to build the capacity of the reef networks (or task forces, for some countries) in monitoring the health of coral reefs in the region with regard to coral reefs post-bleaching.

3. Objectives

- to consolidate post-bleaching assessment methods and guidance for the WIO regional reef network;
- to capture and disseminate data on the impact of the 2016 coral reef bleaching event and subsequent recovery in the Western Indian Ocean;
- to facilitate a meeting of regional stakeholders to share and consolidate data.

4. Main activities

The assignment will use the results of the 2016 Regional Coral Reef Status Report to assess the impact of the 2016 global bleaching event and recovery. The interventions will take place in all six beneficiary countries of the Biodiversity Project (Comoros, Kenya, Madagascar, Mauritius, Seychelles and Tanzania) and will encourage participation by the other WIO countries (France, Mozambique, Somalia, South Africa).

- *Training webinar. 21 July 2017*

CORDIO will conduct an on-line training session, through the Reef Resilience platform (<http://www.reefresilience.org/>), to train/update national reef network members on the methods relevant to post-bleaching assessment

- *Field surveys. September-October 2017*

CORDIO will support national teams in carrying out field surveys in the six beneficiary countries. Six field coordinators will coordinate the national surveys with the close involvement of national reef network members.

- ***Regional meeting, 2 November 2017***

A regional meeting will be held (half-day special session during the 10th WIOMSA Scientific Symposium in November 2017). This will serve to exchange the findings of the assessments undertaken in the 6 countries, among other things.

- ***National datasets***

National coordinators will build national datasets with data from surveys as well as organisations/institutions that have conducted their own post-bleaching assessments and who agree to participate in this initiative by contributing their data to the initiative.

- ***Report writing, December 2017***

The report writing process will follow a similar structure to the GCRMN coral reef status report in that each country will produce a chapter of the report, and the report will also contain a regional synthesis. The four non-beneficiary countries are also expected to contribute to the report on the basis of actions they have undertaken or will undertake with their own resources.

5. Roles and responsibilities

CORDIO will assist the regional and national coral reef networks (and task forces) in coral reef data gathering, processing and reporting, using harmonized and interoperable methods and information systems.

National coordinators will lead the fieldwork, data collection, data compilation and report writing processes for their country. Each field coordinator will have one country under his/her responsibility and will report to CORDIO.

6. Timeline

The project will run from **June to December 2017**, with finalization of reports in January/February 2018.

June

- Initial communication with coral reef task force members in each beneficiary country
- Gauge interest in participation

July

- 21st - Training webinar on post-bleaching methodology
- Identification of national coordinators and project partners

August

- Commission fieldwork - select teams, confirm sites
- Approach institutions to contribute post-bleaching data
- Begin national compilation of data by coordinators
- Formulate national chapter templates

September/October

- Conduct fieldwork
- Continue building national and regional datasets
- Begin data analysis

November

- Workshop at WIOMSA Symposium to discuss national assessments and reporting
- National coordinators to write national chapters

- Regional analysis and synthesis
- Submission of country assessment draft reports

December

- Submission of final country assessment reports by National Coordinators including chapters from non-beneficiary countries

January/February

- Submit final version of 'Impact of coral bleaching in 2016 in the WIO' report

Post-bleaching surveys

The post-bleaching period refers to the period after coral has bleached and affected coral colonies have either recovered or died. In the WIO, this period generally began around **August 2016 and any benthic surveys done since then will be considered as post-bleaching surveys**. If surveys have already been conducted at sites during the post-bleaching period, these sites **do not need to be resurveyed** in Sept/October 2017. The data collected during the surveys already conducted can be contributed for incorporation into the national and regional datasets.

7. Site selection

Number of sites

The number of sites to be selected in each country for post bleaching surveys will depend on the size of the country, the long-term monitoring history and the proposed fieldwork budget and logistics. A minimum target of 6 sites per country.

Criteria for selecting sites

Site selection for post-bleaching surveys will mainly depend on the site monitoring history. Sites will be classified in three categories (highest priority, high priority and low priority sites), according to the suitability of the site for post-bleaching surveys. A decision tree diagram (*figure 1 below*) was generated as a guide for the selection process of key survey sites.

Priority levels for sites

- i. Highest priority site - long-term monitoring site, where quantitative coral bleaching data was collected in 2016
- ii. High priority site – long-term monitoring site only
- iii. Low priority site - only quantitative coral bleaching data collected in 2016

A key aim of this project is to **maintain data collection at long-term monitoring sites**, thereby contributing to national long-term data series and increasing consistency with site selection. Therefore **long-term monitoring sites are prioritized** over short-term and specific project based sites. Of the highest priority, are those long-term monitoring sites where quantitative bleaching surveys were conducted pre- and during the peak of bleaching in 2016. Due to a limited fieldwork budget for each country, not all long-term sites can be surveyed, hence the need to prioritise the most suitable options. Non-long term monitoring sites where quantitative bleaching data was collected in 2016, are the lowest priority sites and will only be considered if there are no/not enough long-term options, or if there are plans to incorporate this site within long-term monitoring protocols.

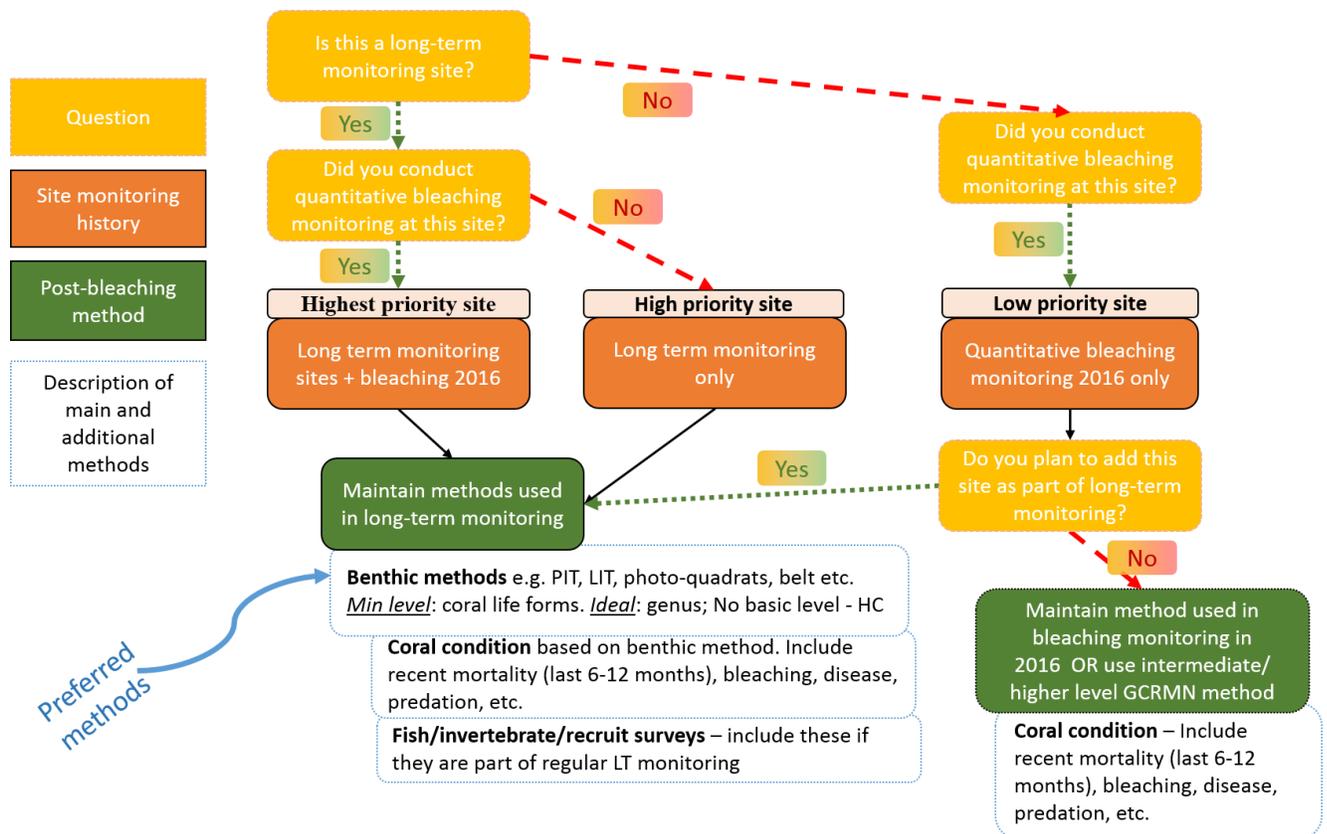


Figure 1: Decision tree diagram for site and methodology selection

8. Methodology for post bleaching assessment

Key results/outcomes from surveys

- Attain the change in live coral cover (coral mortality/recovery) as a result of the 2016 bleaching event
- Assess the condition of coral after 2016 bleaching
- Collect all other long-term monitoring data

Data to be collected

Surveys must maintain the same methods used for long-term monitoring i.e. if line-intercept transects have been used for benthic surveys in previous years, use the same method during post-bleaching surveys.

	GCRMN Methods	Adjustment	Identification	Rationale
Benthic	line-intercept transects (LIT), point-intercept transects (PIT), photo-quadrats	inclusion of ‘recently dead coral’ category (died in last 6-12 months)	genus level, family and life-forms. Basic level i.e. hard-coral is too low	obtain live hard coral cover values to compare with pre-bleaching levels
Coral condition	line-intercept transects (LIT), point-intercept transects (PIT) and belt transects	Perform along the same line/belt/quadrat as benthic surveys		A common consequence of bleaching is the increased incidence of coral disease and

				predation
<i>Optional methods - depending on whether these have been part of long term monitoring historically, based on each monitoring team.</i>				
Fish	belt transects, point-counts		species level, family level. Ideally size class estimates, but at the simplest level just counts	collect to help maintain long-term data series or act as baseline (if first time). Too soon to notice any change in composition of fish communities due to bleaching
Recruit and invert	recruit: quadrat invert: belt transects	only be conducted if these data have been collected as part of long-term monitoring, but should not be introduced where it has never been done	coral: genus level, family or life-forms inverts: maintain existing identification list	

Detailed methods- refer to 2014 SWIO coral reef monitoring manual by D Obura

(http://commissionoceanindien.org/fileadmin/resources/ISLANDSpdf/Coral_Reef_Monitoring_Manual.pdf)

a) *Benthic*

- i. line-intercept transect (LIT) - pgs. 19-21
- ii. point-intercept transect (PIT) – pg. 22
- iii. photo-quadrat – pgs. 37-42

b) *Coral condition*

- i. line-intercept transect (LIT) – pg. 19-21
- ii. belt transect – pgs. 28-31

c) *Fish*

- i. belt transect – pgs. 24-26
- ii. point-counts – pgs. 36-37

d) *Recruit*

- i. Quadrat – pgs. 31-35

e) *Invert*

- ii. Quadrat – pgs. 31-34
- iii. belt transect – pgs. 27-28