Red List of Ecosystems of Western Indian Ocean coral reefs

Nairobi Convention
Science to Policy Platform
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CORAL SPECIALIST GROUP

CORDIO East Africa

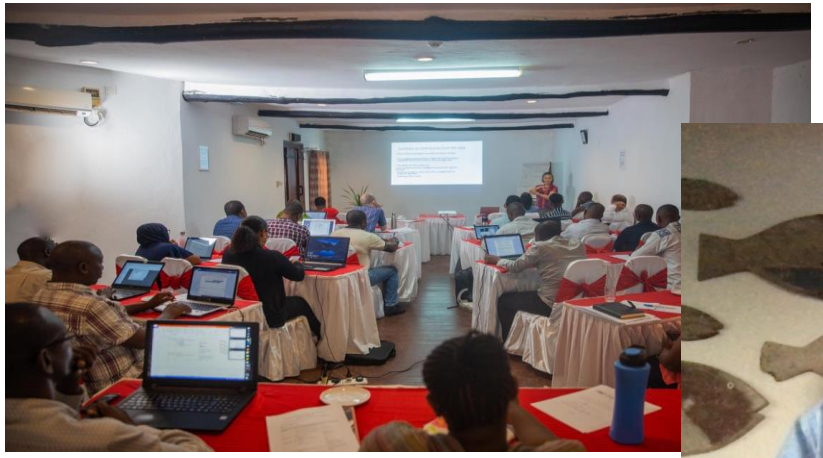
IUCN CEM IUCN Red List of Ecosystems

Norad

Norwegian Agency for Development Cooperation

Contributors…a truly regional initiative

- 18 months, 2 regional workshops
- Contributors **-** data, analysis, workshops, writing (co-authors)
- Co-authors from 13 institutions and 10 countries (7 WIO countries)
- 50 researchers contributed in total, 9 WIO countries
- 35 intuitions **voluntarily** shared their data for this initiative



Collaboration through the regional chapter of the **Global Coral Reef Monitoring Network** and the **Nairobi Convention's Coral Reef Task Force**

Data contributors

The following contributed data to the regional coral reef dataset compiled by the Global Coral Reef Monitoring Network and used in regional and global analyses:

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Workshop participants

The following attended the inception (12-15 March 2019) and/or validation (21-22 January 2020) workshops of this coral reef Red List of Ecosystems process, in Mombasa, Kenya:

Armindo Araman (Administração Nacional das Áreas de Conservação (ANAC), Mozambique); Chiranjiwa Naidoo Paupiah (Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping, Mauritius); David Keith (University of New South Wales, Australia); David Obura (CORDIO East Africa, Kenya); Edward Ouko (Regional Centre for Mapping Resource For Development, Kenya); Elisa Cavoto (IUCN, Switzerland); Francisco Zivane (IIP, Mozambique); Hajanirina RAZAFINDRAINIBE (Centre National de Recherches Océanographiques (CNRO), Madagascar); Hamadi Mwamlavya (The Nature Conservancy, Kenya); Hassan Mohamed (World Wildlife Fund Kenya); Ihando Andrianjafy (Ministry of Environment, Madagascar); Isabelle Ravinia (Seychelles National Parks Authority, Seychelles); James Mbugua (CORDIO East Africa, Kenya); January Ndagala (Marine Parks Reserves Unit, Tanzania); Japhet Moroa (Coast Development Authority, Kenya); Jessica Rowland (Deakin University, Australia); John Komakoma (Marine Parks and Reserve Unit, Tanzania); Josphine Mutiso (Kenya Wildlife Service); Judith Nyunja (Kenya Wildlife Service); Juliet Furaha (Kenya Marine and Fisheries Research Institute); Julius Edward (National Environment Management Council, Tanzania); Majambo Gamoyo (CORDIO East Africa, Kenya); Marcos Valderrabano (IUCN, Spain); Melita Samoilys (CORDIO East Africa, Kenya); Mercy Amai (National Environmental Management Authority, Kenya); Mishal Gudka (CORDIO East Africa, Kenya); Moses Egaru (IUCN, Uganda); Mouchtadi Madi (Moheli Marine Park, Comoros); Mwaura Jelvas (Kenya Marine Fisheries Research Institute); Naseeba Sidat (Wildlife Conservation Society, Mozambique); Nassur Ahmada Mroimana (Ministry of Environment, Comoros); Nima Raghunathan (IUCN, UK); Patrick Kimani (Coastal Marine Resource Development, Kenya); Randall Mabwa (CORDIO East Africa); Roberto Komeno (Reef Doctor, Ma
University, UK); Sabrina Meunier (Shoals Rodrigues, Mauritius); S
Saleh Yahya (Institute of Marine Science, Tanzania); Sean Porter (
Institute, South Africa); Stephen Katua (National Environmental M
Sushma Mattan-Moorgawa (University of Mauritius); Swaleh Ali (
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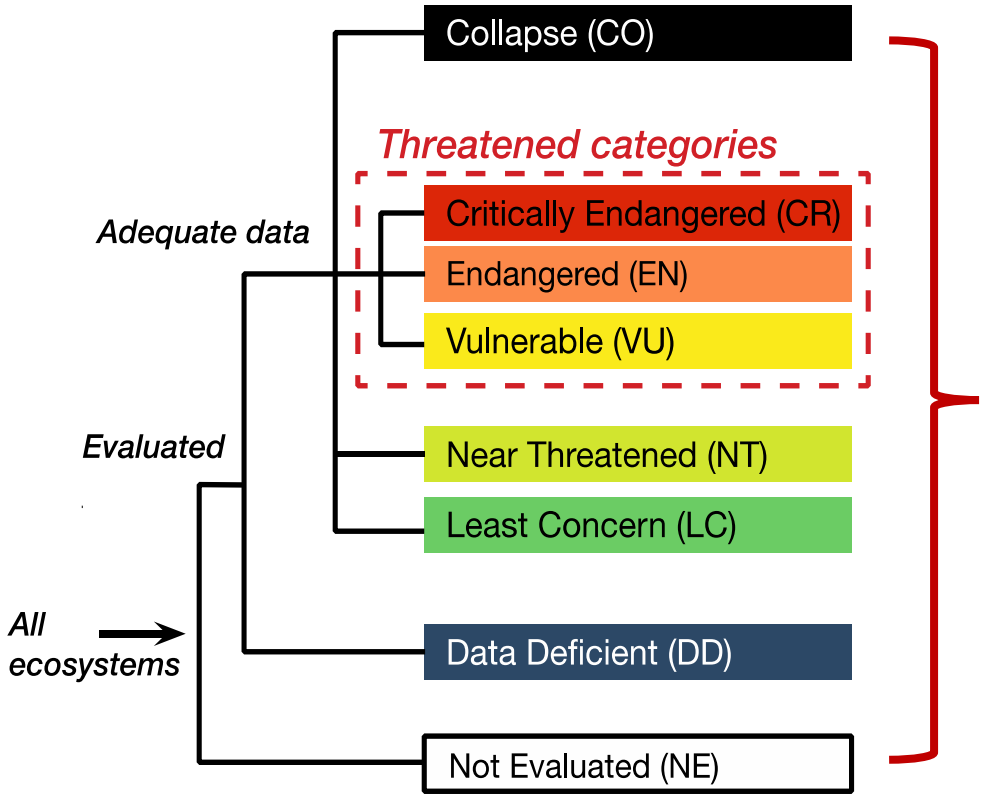
Authority, Kenya).

What is the Red List of Ecosystems?

- Developed by the IUCN Commission on Ecosystem Management and Global Ecosystems Management Programme. Now running under an RLE Partnership of organizations (including CORDIO, WCS, IUCN, etc).
- a **framework for assessing the conservation status of ecosystems**
- Identify ecosystems most at risk of biodiversity loss using a **global standard**
- applicable from sub-national to global levels



Five criteria for assessment:

A – decline in ecosystem extent

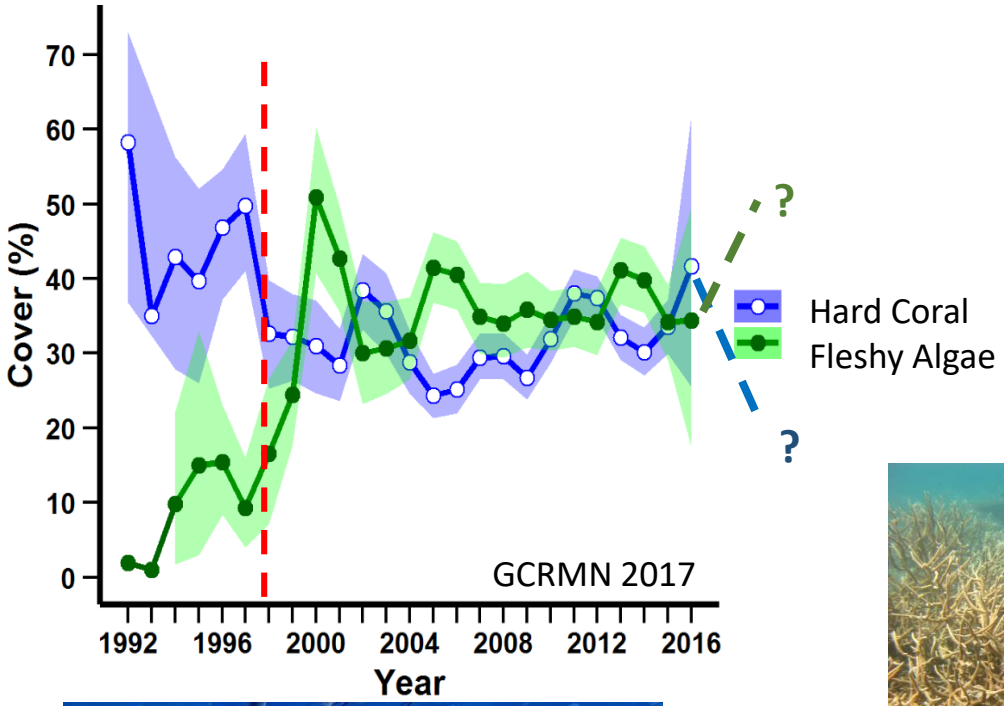
B – small geographic distribution

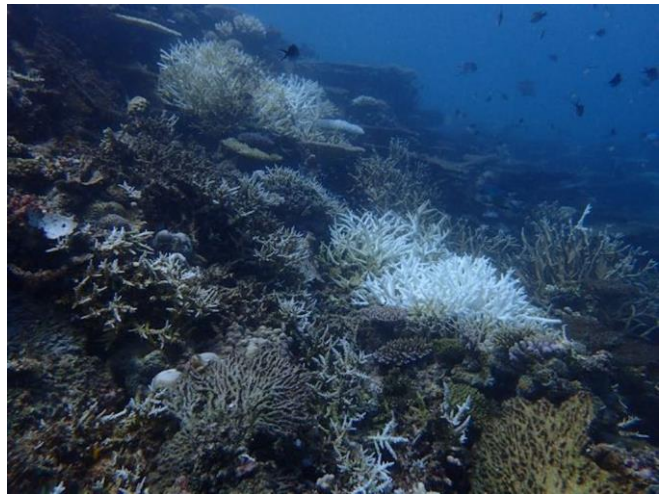
C – abiotic disruption

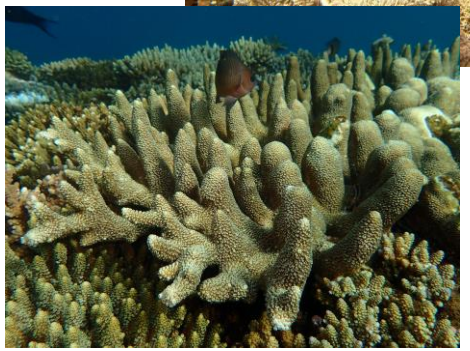
D – biotic disruption

E – quantitative model

Coral reefs – under pressure

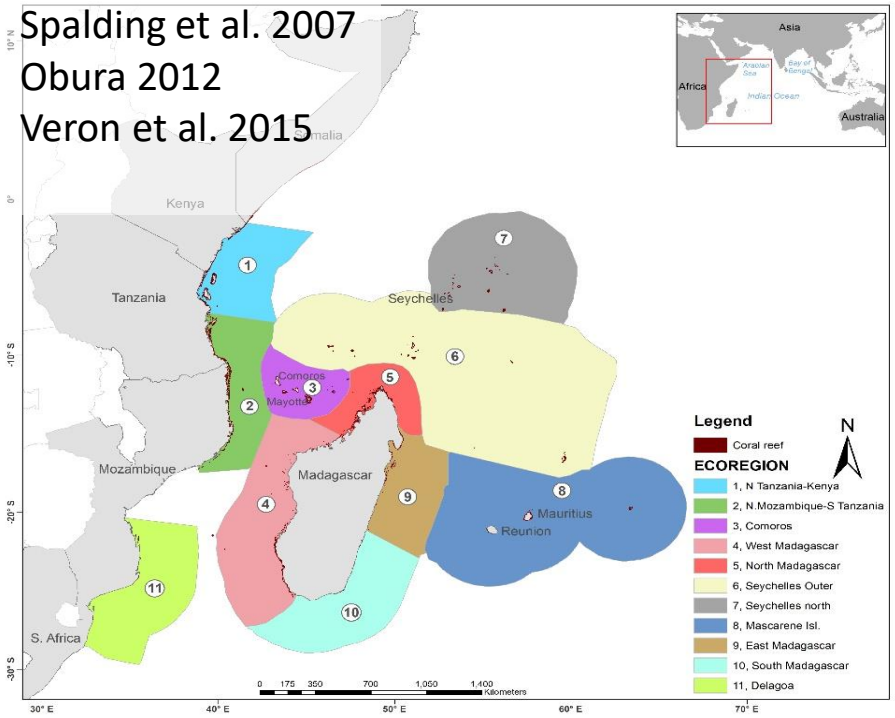






Geographic units of assessments

Spalding et al. 2007
Obura 2012
Veron et al. 2015

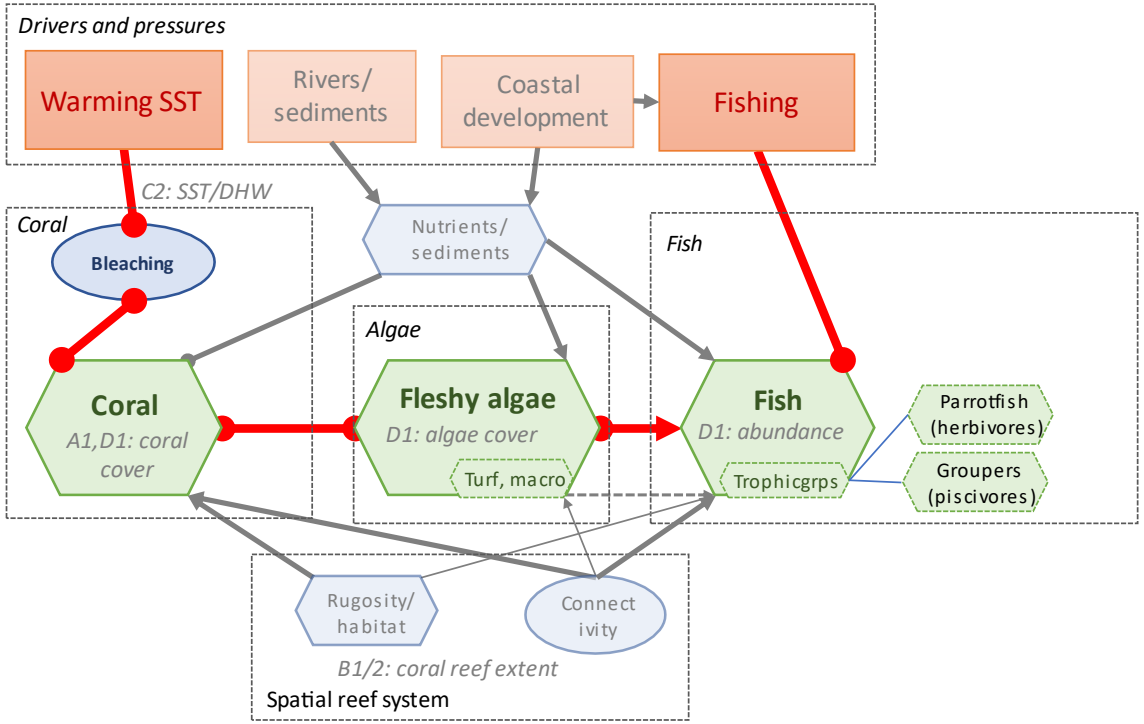


Marine Ecoregions of the World - Spalding et al. 2007

IUCN Global Ecosystem Typology – Keith et al. 2021
(6 levels from 1 (global) to 6 (local)

'Biogeographic ecotype' – province & ecoregion

Conceptual model



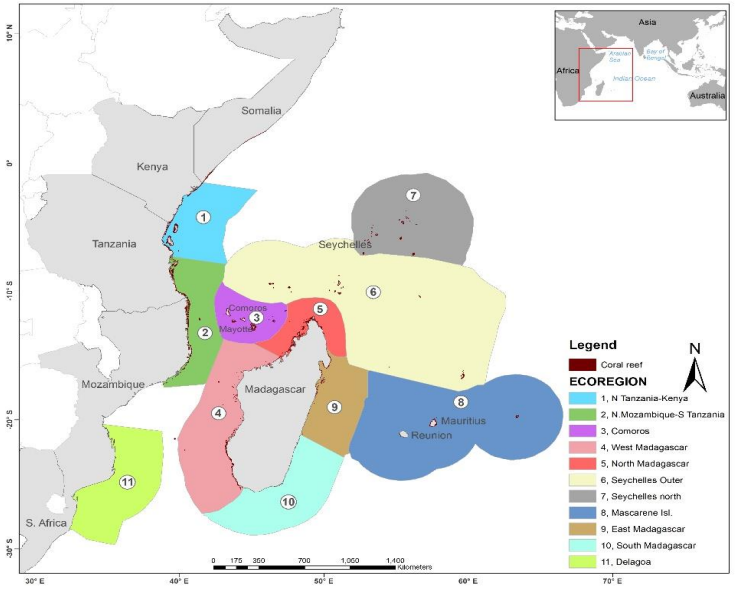
- What does a functioning coral reef look like (in the WIO)?
- What are its key components?
- How do they interact with one another and what processes are they involved in?
- **Key interactions assessed**

	CRITERIA	INDICATORS/THRESHOLDS
Spatial/area	A – decline in ecosystem extent	Past 50 years, coral cover < 10%
	B – small geographic distribution	Standard area thresholds
Integrity	C – abiotic disruption	Future 50 years, RCP 6; DHW > 12, > 2* decade
	D – biotic disruption	Past 50 years 1. Coral cover < 5% 2. Algae:coral ratio – 0.833 3. Parrotfish abundance – 10% initial 4. Grouper abundance – 20% initial

Stepped algorithm:

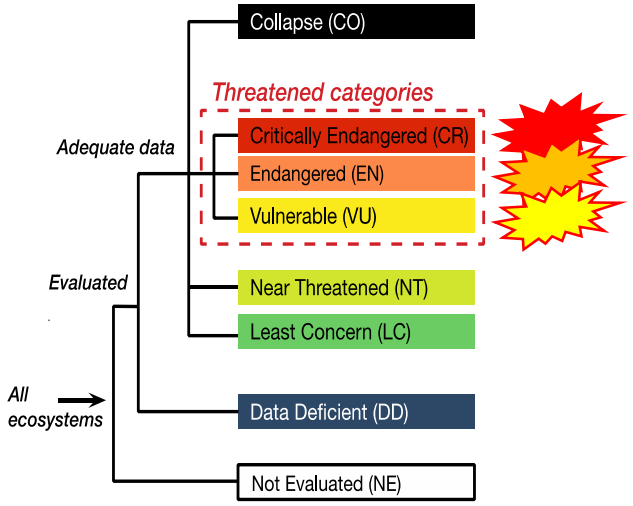
Western Indian Ocean – RLE results in a nutshell

In review: Nature Sustainability (anticipated May 2021)



Findings

- The region and all ecoregions are in threatened categories
- Greatest threat is from future warming
- Lesser threat is from fishing impacts
- Impact of past bleaching events masked by some levels of recovery
- Did not assess coral composition, may underestimate actual risk

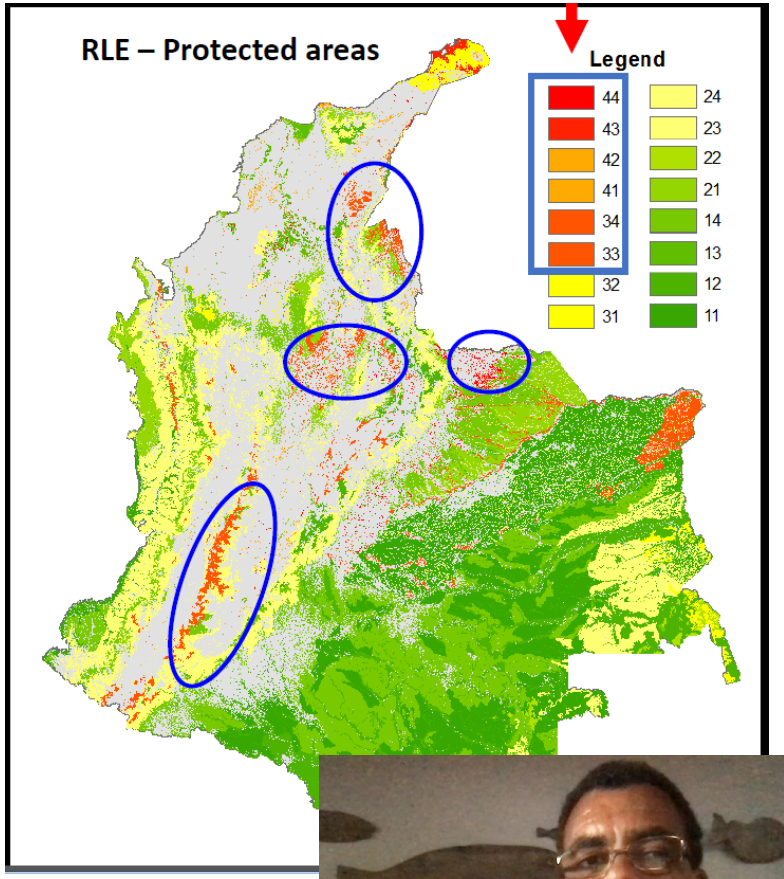


Next steps

- National policy processes – Kenya, Tanzania, Mozambique – through 'National Coral Reef Assessments'
- Extend RLE coral reefs to other GCRMN regions global coverage within 3-4 years
- Extend RLE assessment to mangrove and seagra systems for integrated approach

Applications of RLE within national frameworks (from RLE Partnership)

- Identifying ecosystems at high risk
- Enacting legislation to protect threatened ecosystems:
  - European Union
  - Australia
  - South Africa
  - Norway
  - Colombia
    - Identifying ecosystems most at risk nationally
    - Priorities for Protected areas and OECM



RLE	% Area in NPAs	% Area in Indigenous Terr.
CR	4%	33%
EN	12%	18%
VU	16%	47%
LC	20%	49%

Recommendations to the Nairobi Convention

Policy

1. Identify priority reef areas requiring effective protection … protected areas or other effective conservation measures (OECM), addressing international conservation area targets … in a way that is compatible with sustainable use and equity at local levels.
2. Prioritization of coral reefs and threatening activities within MSP and Sustainable Blue Economy processes and implementation … to resolve local stressors … fisheries and land-based development.

Technical

3. Stimulate support for national policy processes related to coral reef and marine ecosystem conservation and sustainable management e.g. national coral reef action or management plans and strategies

4. Promote the inclusion of the Red List of Ecosystems as an indicator in the Global Biodiversity Framework of the CBD … relevance to monitoring SDG 14 and of national reporting in convention processes.

Prior COP decisions focused on coral reefs

Decision CP7/6: Strengthening management, valuation of Ecosystems Goods and Services and assessments

Decision CP8/13: Enhancing Cooperation, Collaboration and Support with Partners (in relation to the regional coral reef status report published in 2017)

Decision CP.9/11: Development of marine protected areas and critical habitat outlooks.