# SUB-REGIONAL WORKSHOP FOR CENTRAL, SOUTH AND EAST AFRICA ON CAPACITY-BUILDING FOR IMPLEMENTATION OF THE CBD PROGRAMME OF WORK ON PROTECTED AREAS

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# Target 11

“By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas; especially areas of particular importance for biodiversity and ecosystem services; are conserved through; **effectively and equitably managed**; **ecologically representative**; **well connected systems** of protected areas; other effective area-based conservation measures; **integrated into the wider landscapes and seascapes**.”

# Importance of Coastal & Marine Areas

Protection and management of natural resources that provide basic social and economic development

Protection of representative samples of biodiversity and associated ecosystems (critical sites and species)

One of the tools of fisheries management / Contribution to food security of coastal populations and the economy

# Importance of Coastal & Marine Areas

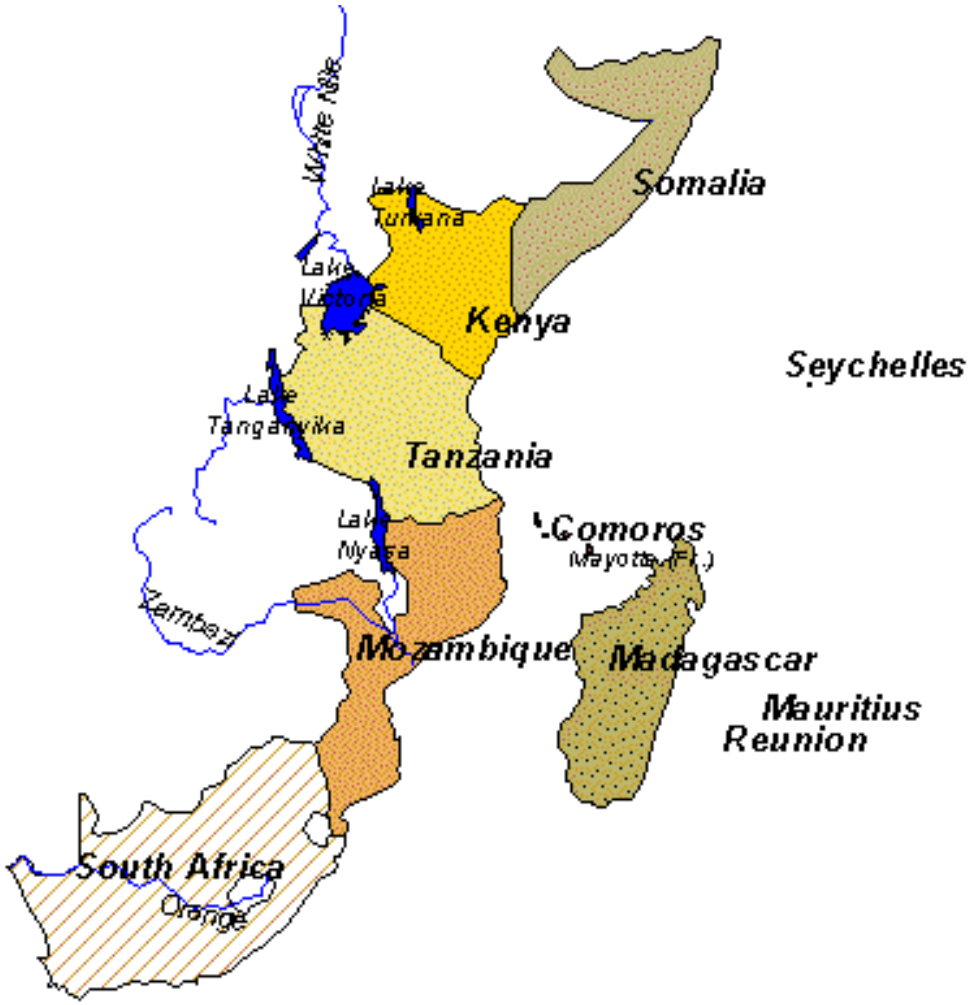
Maintenance of social and cultural values

Important sites for the improvement of knowledge on marine ecosystems

Sites for recreation and sustainable tourism

Contribution to reducing the effects of climate change (mitigation and adaptation)

# Western Indian Ocean Region



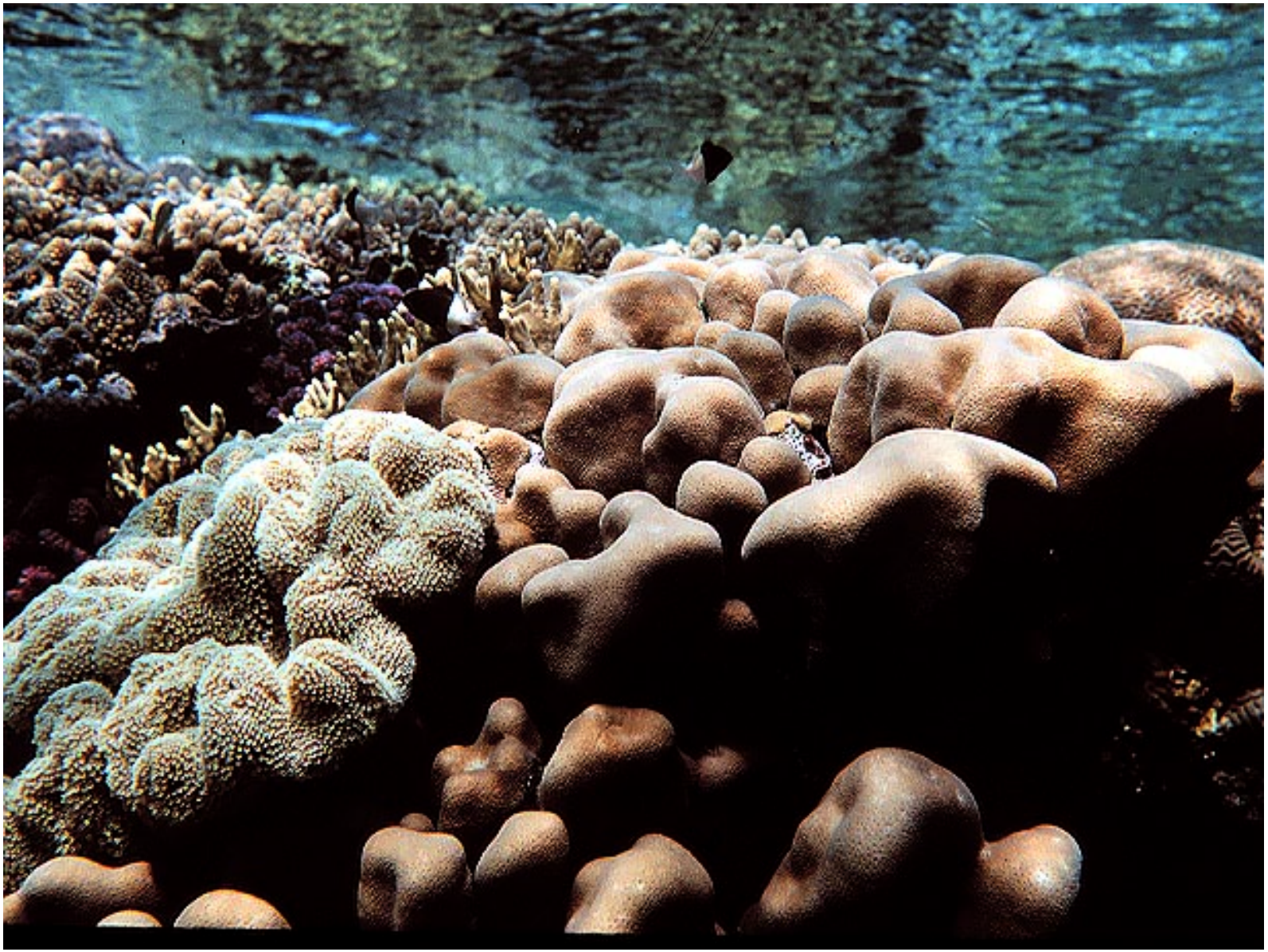

East Africa mainland

Indian Ocean Islands

- Biogeographic division of the Indo-West Pacific
- Nairobi Convention

- Interconnectedness
- Migrations
- Monsoonal seasonality

# Coral Reefs



# Mangrove forests/coastal forests

# Seagrass beds

# Marine mammals

Dugong highly endangered

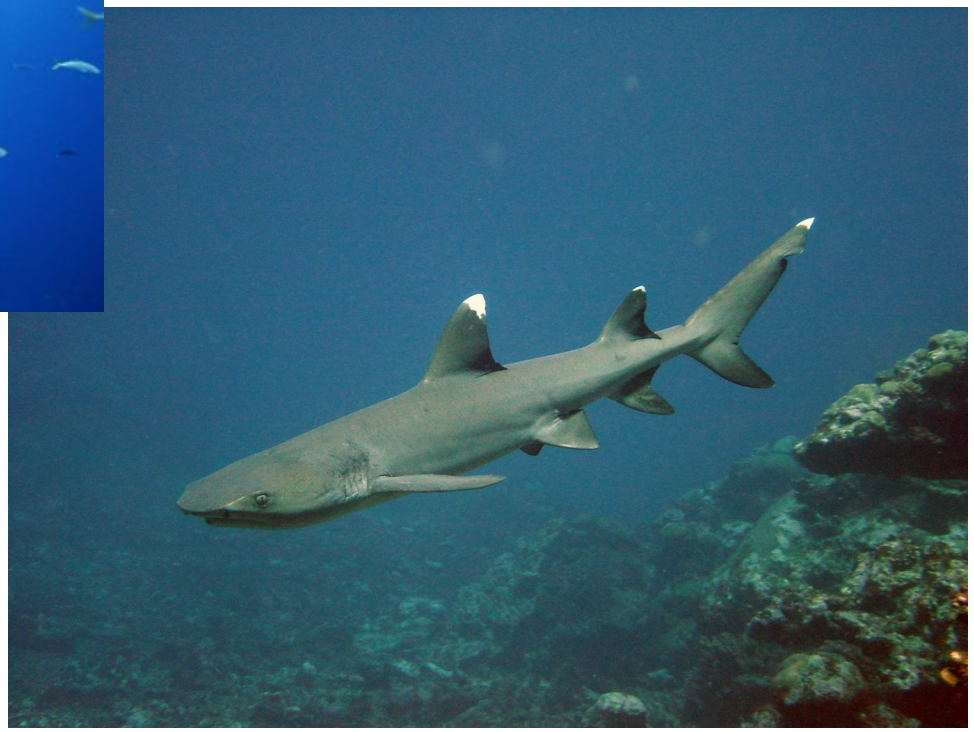
Humpback whales

# Sea turtles

# Sharks

Whale sharks

Reef sharks



# Values

- Biodiversity
- Fisheries
- Tourism
- Shoreline protection
- Beach replenishment
- Climate change mitigation
- Medicinal products
- Minerals

# Threats

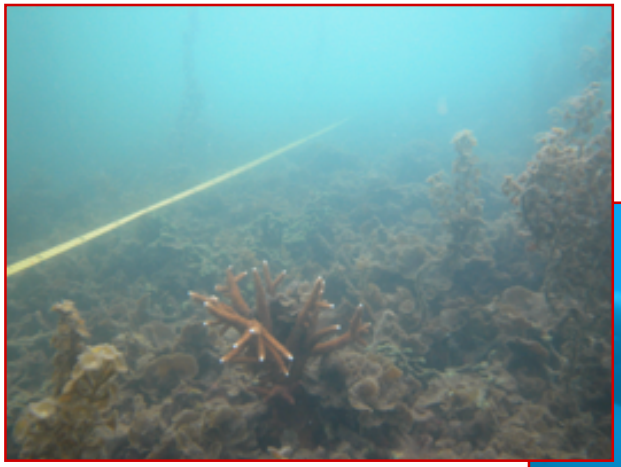
- Overfishing

Gill net

Beach seine

# Ring net

# Sedimentation and pollution

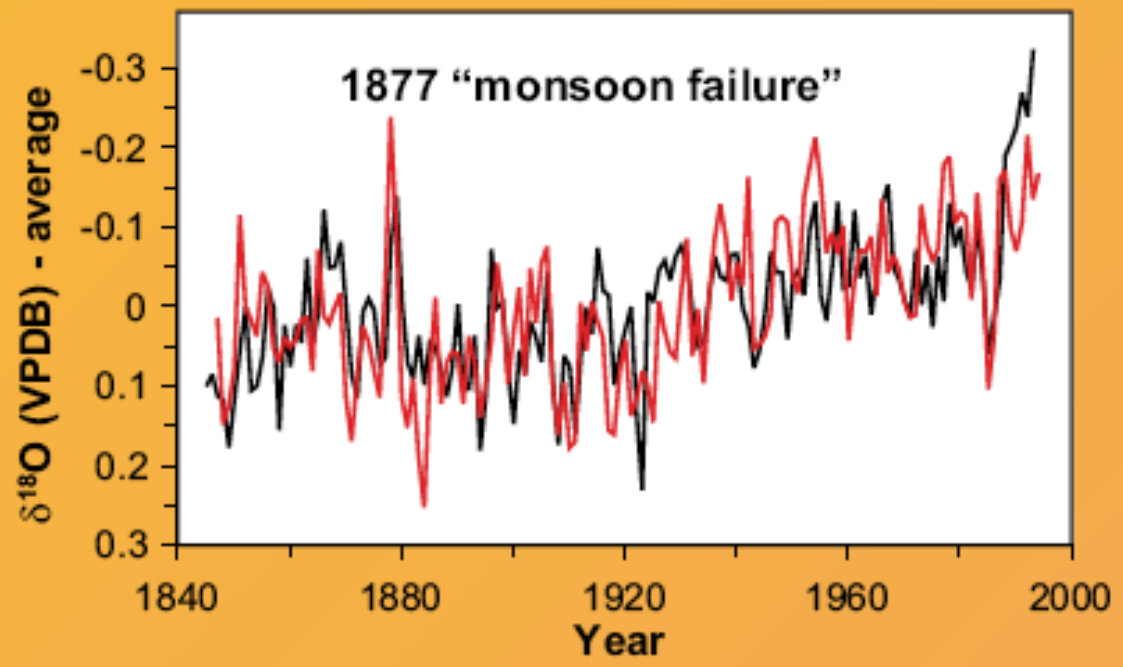


Inner reef

Outer reef

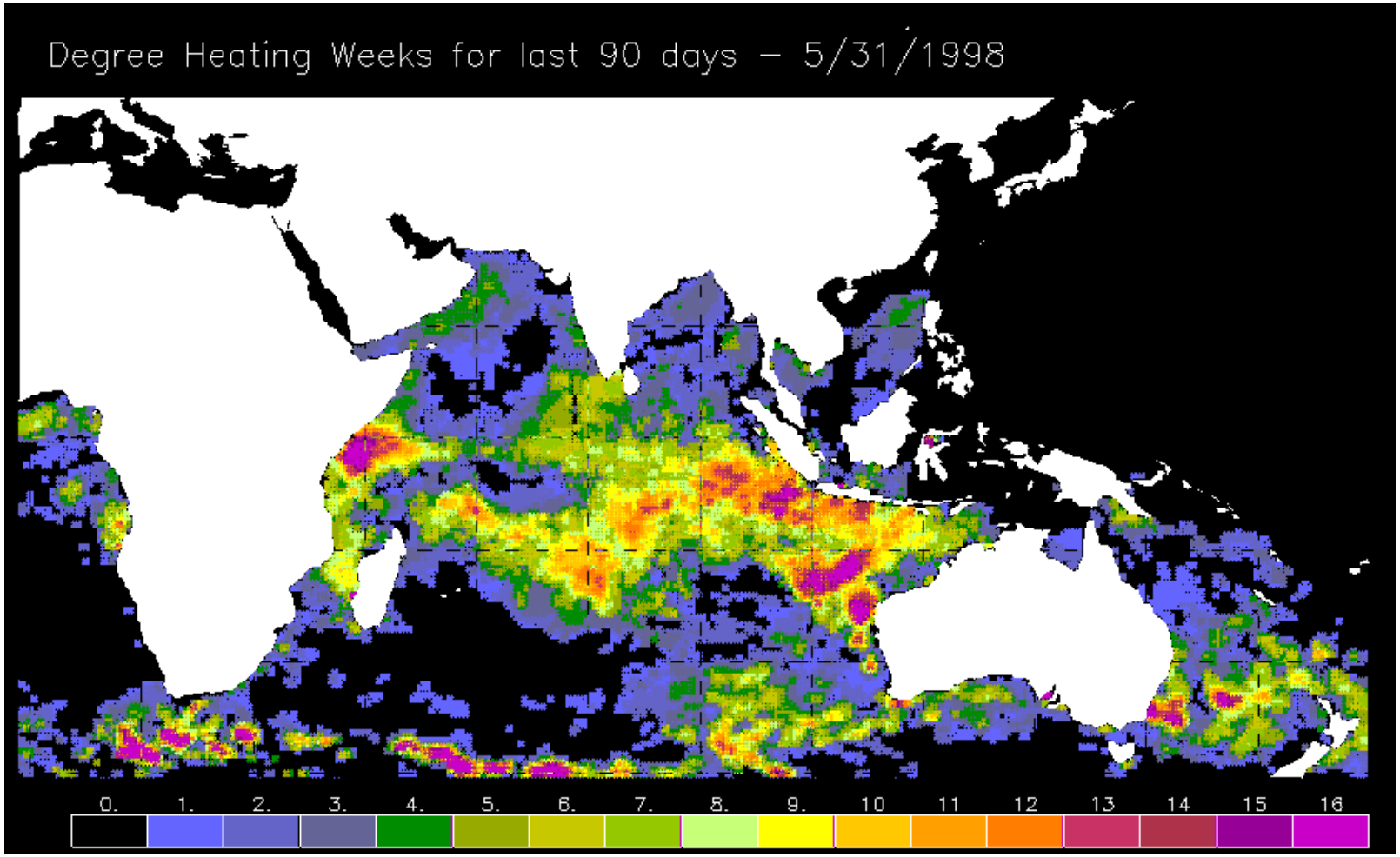
Decreasing influence from land

# Climate change

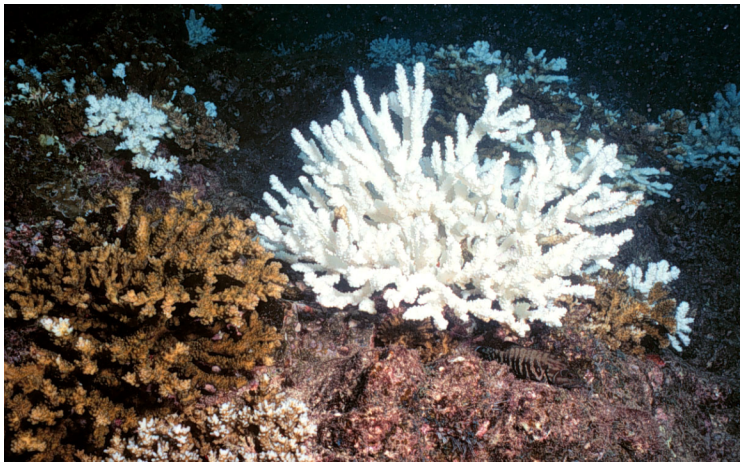



The comparison between annual $\delta^{18}O$ records (August-July, mean removed) from Malindi and from the Seychelles indicate similar inter-annual variability in the equatorial Indian Ocean. The visible and statistically significant correlation between both records reveals that the Mal 96-1 $\delta^{18}O$ time series faithfully tracks SST and ocean current variations in the equatorial Indian Ocean.

# SST Indian Ocean: 1998 El Nino



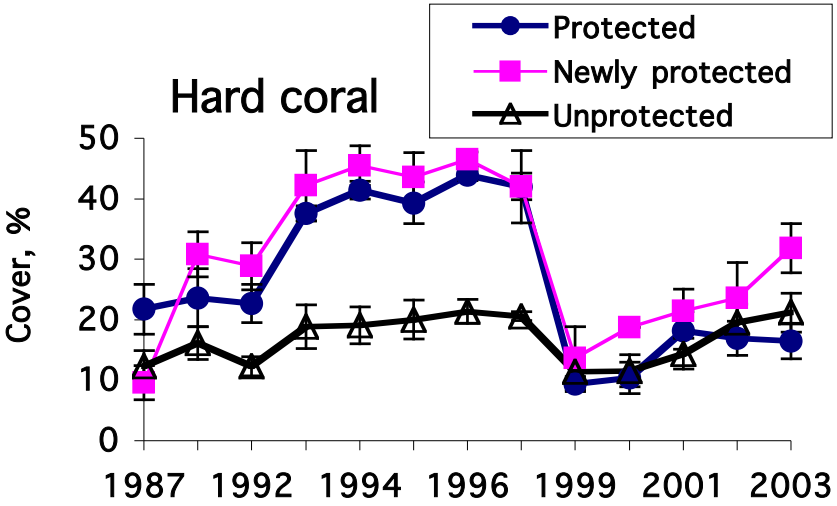
# Bleaching

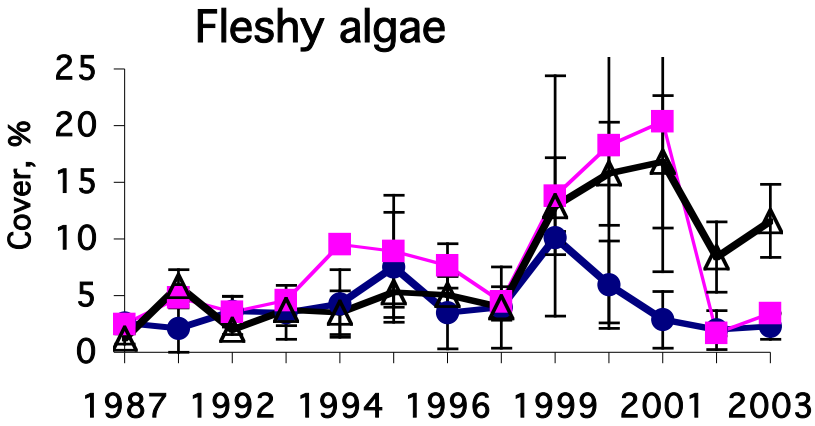


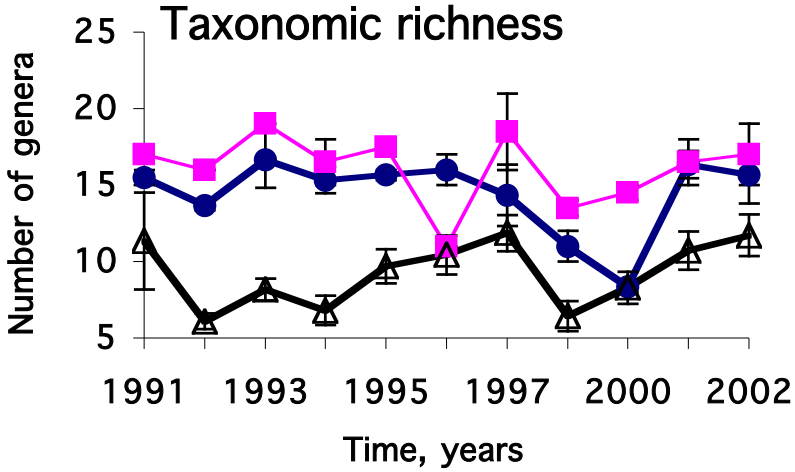
| Country | Site | Coral Cover before bleaching | Coral Cover after bleaching | Mortality |
|---|---|---|---|---|
| Kenya | MPAs | 40 | 11 | 73 |
| | UP | 21 | 11 | 48 |
| Tanzania | 16 sites | 30-80 | 5-45 | not determined |
| Zanzibar | Chumbe | 20 - 30 | 60 | slight |
| Mozambique | | ND | ND | 20-80 |
| Madagascar | Masoala | 38 | 28 | 26 |
| South Africa | Sondwana | 62 | 72 | none |
| Seychelles | Amirantes | 40-90 | 7-47 | 75 |
| Reunion | Fringing reef | 30 - 50 | ND | slight |

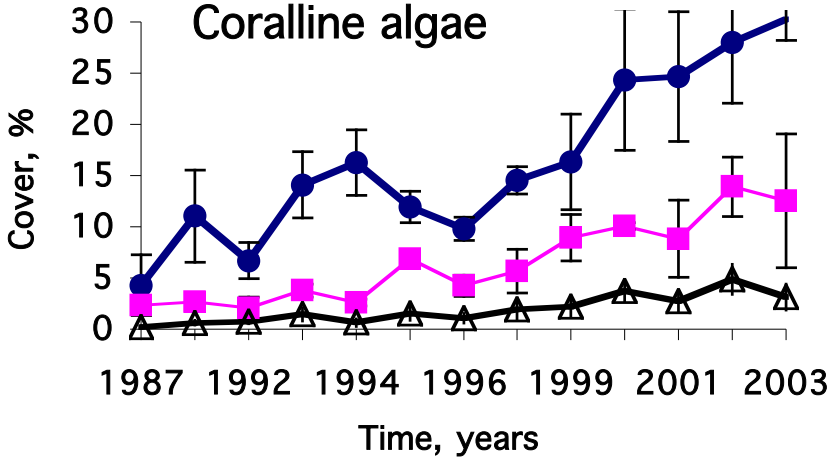
Source: Goreau et al 2000

# Comparison of substrate categories, species richness, and topographic complexity between protected and unprotected reefs

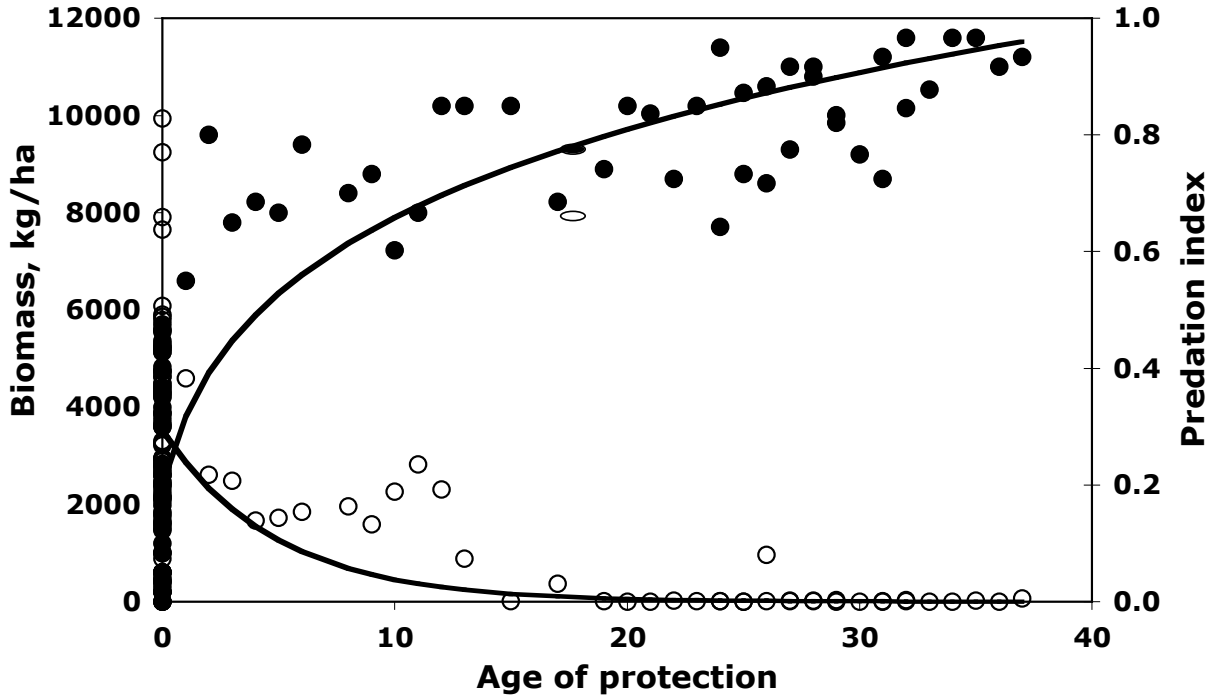


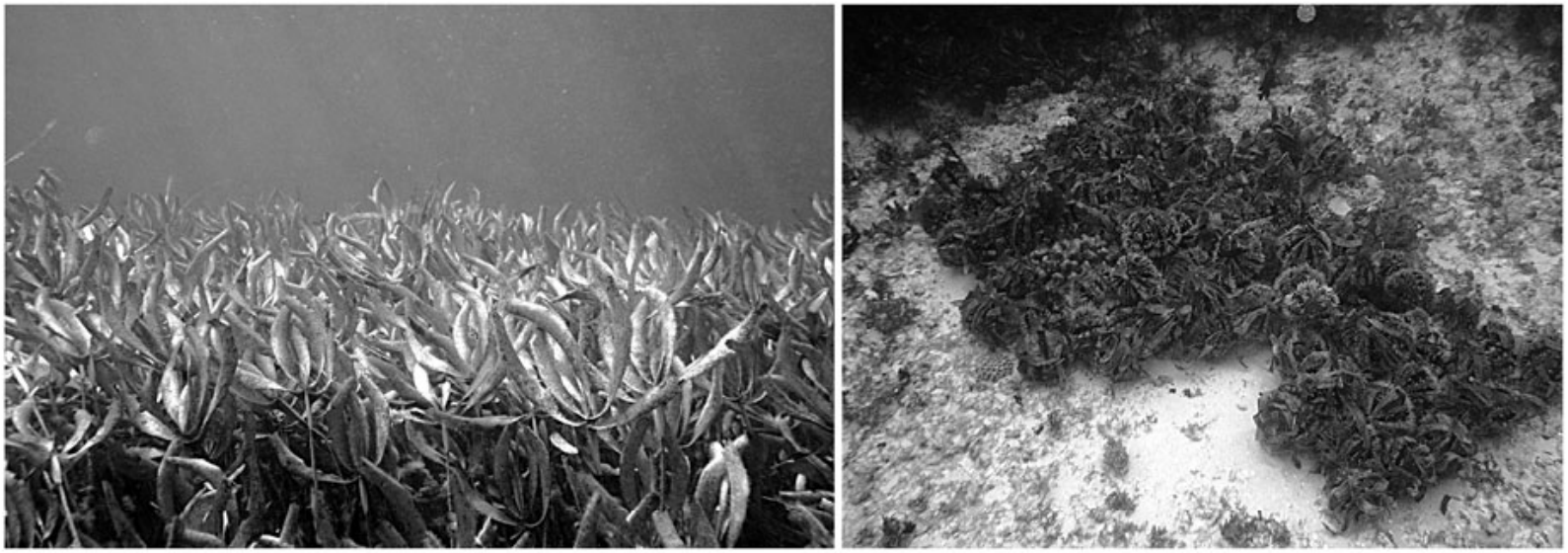



# Phase shifts: Predation of sea urchins



# Phase shifts: contd

a)

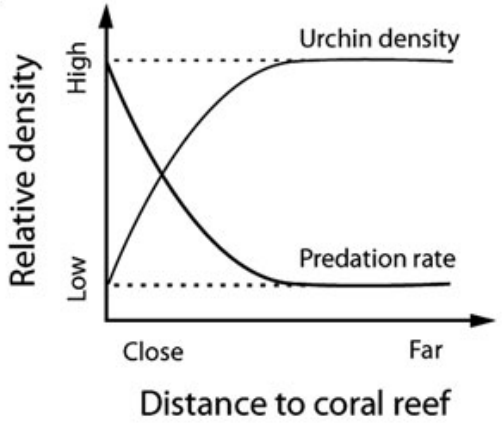


b)

Fishing → Low predation pressure → **High urchin density** → **High grazing pressure on seagrasses**

Protection → **High predation pressure** → Low urchin density → Low grazing pressure on seagrasses

c)




d)

**MPA**

(-) High urchin density → Seagrass loss

+ Predation

**Fished**

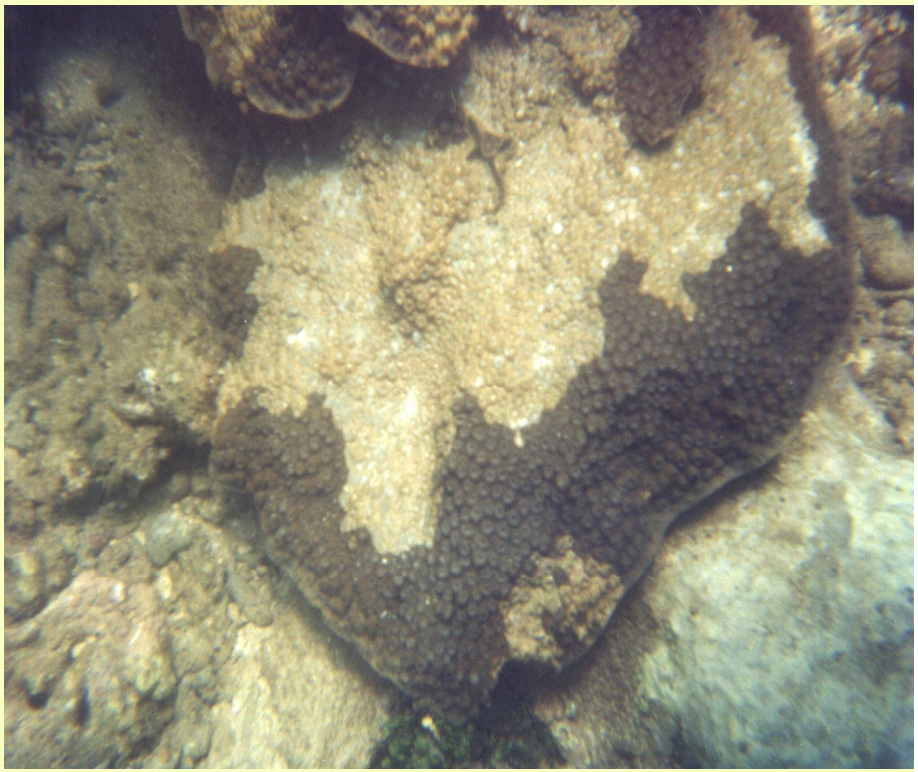
High urchin density → Seagrass loss

Coral Diseases - “Bandless fungal disease”

First observed in February 2002 last seen April 2002

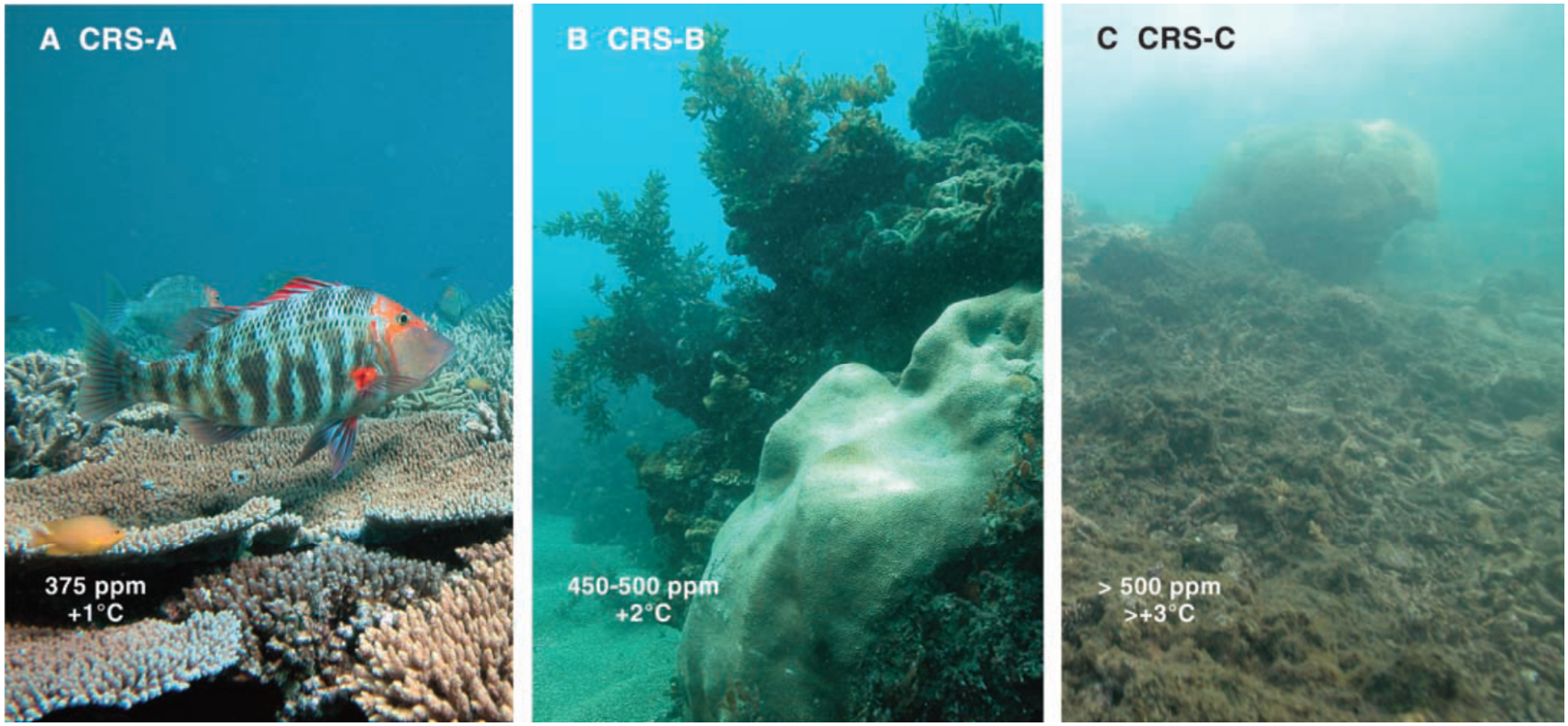
Water temperature 27.5°C

Range- N. Tanzania to N. Kenya - 600 km of coastline



# Crown of thorns infestations

# Threats: Ocean acidification




Projected effects of ocean acidification (Hoegh-Guldberg et al 2007)

# Marine Protected Areas: Resolutions

IUCN 1988 General assembly resolution

*"Provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world through the creation of a global, representative system of marine protected areas and through management in accordance with the principles of the World Conservation Strategy of human activities that use or affect the marine environment."*

- Other calls have included the World Summit on Sustainable Development - create representative systems of MPAs by 2012

- International Coral Reef Initiative Call to Action

- Ramsar Convention

# Marine Protected Areas Design principals

- Depending on the objective of an MPA especially the level and type of protection required, several principles are taken into consideration in their design. These include:
- *Ecological* – including: Diversity, naturalness, Representativity, Uniqueness, Integrity, Productivity, Vulnerability, Significance, Research opportunity (these criteria are fundamentally the same for all protected areas including terrestrial sites)

- *Economic* – including: 'consumptive' uses, such as fisheries and other resource harvesting; and 'non-consumptive' uses, such as tourism

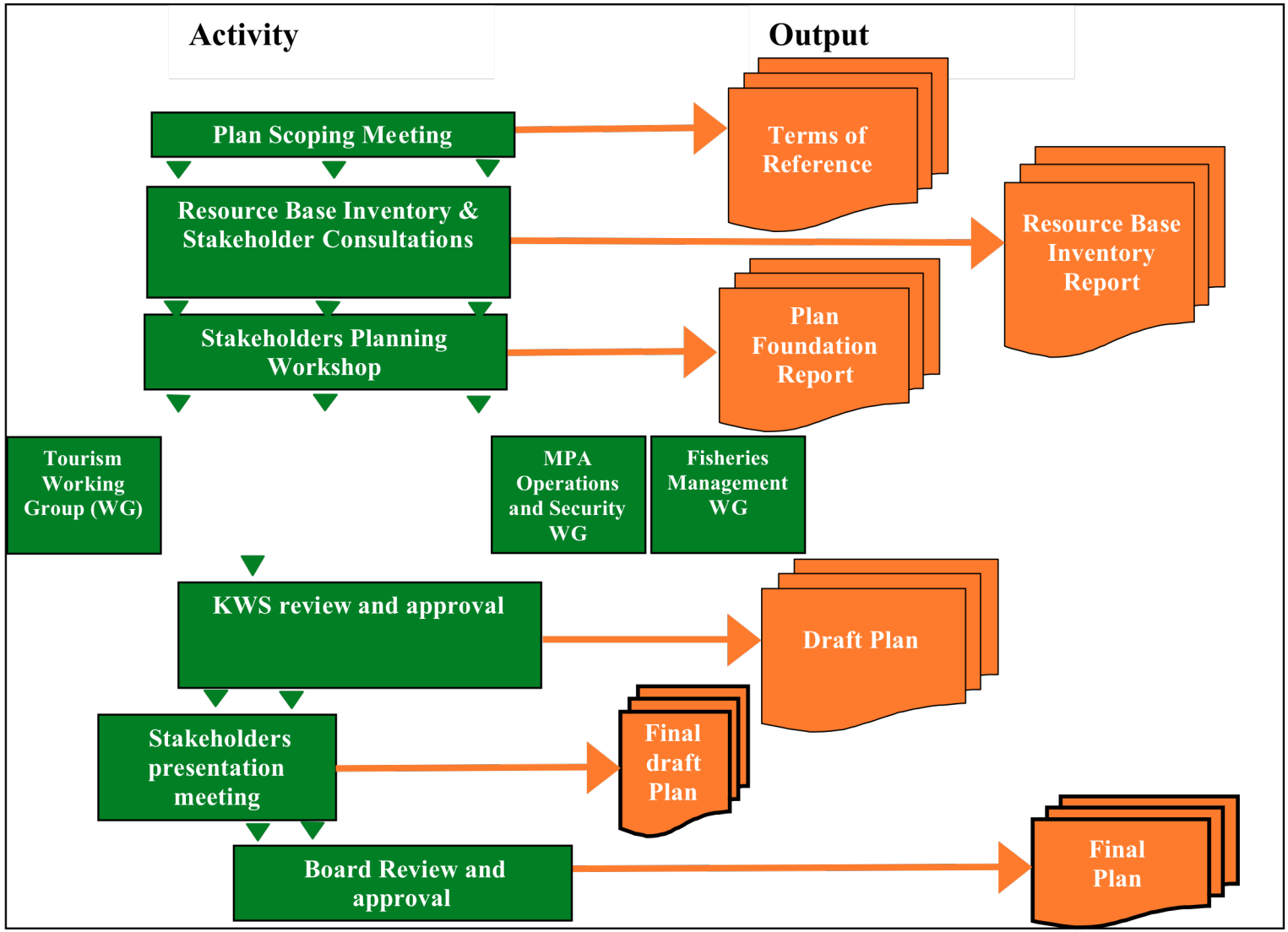
- *Social* – including: Social or political acceptance, Public health, Recreation, History and heritage, Culture, Aesthetics, Conflicting uses, Education

- *Pragmatic* – including: Urgency, Size, Degree of threat, Effectiveness, Manageability, Potential impact or benefits, Uniqueness, Integrity

# The Establishment of Marine Protected Areas

- Identification and documentation of problems
- Identification of "management units" and stakeholders
- Definition of inventory (management of natural resources, species, habitats ...) for future reference valuation
- Defining Objectives of creation (Objectives ecological and socio-economic)
- Establishment of management structures
- Defining rules and regulations
- Development and validation of management tools (management plan, zoning ....)
- Operational planning management activities to achieve the objectives
- Implementation and monitoring of management activities

# Planning and evaluation:Kenya



# Mombasa marine park and reserve

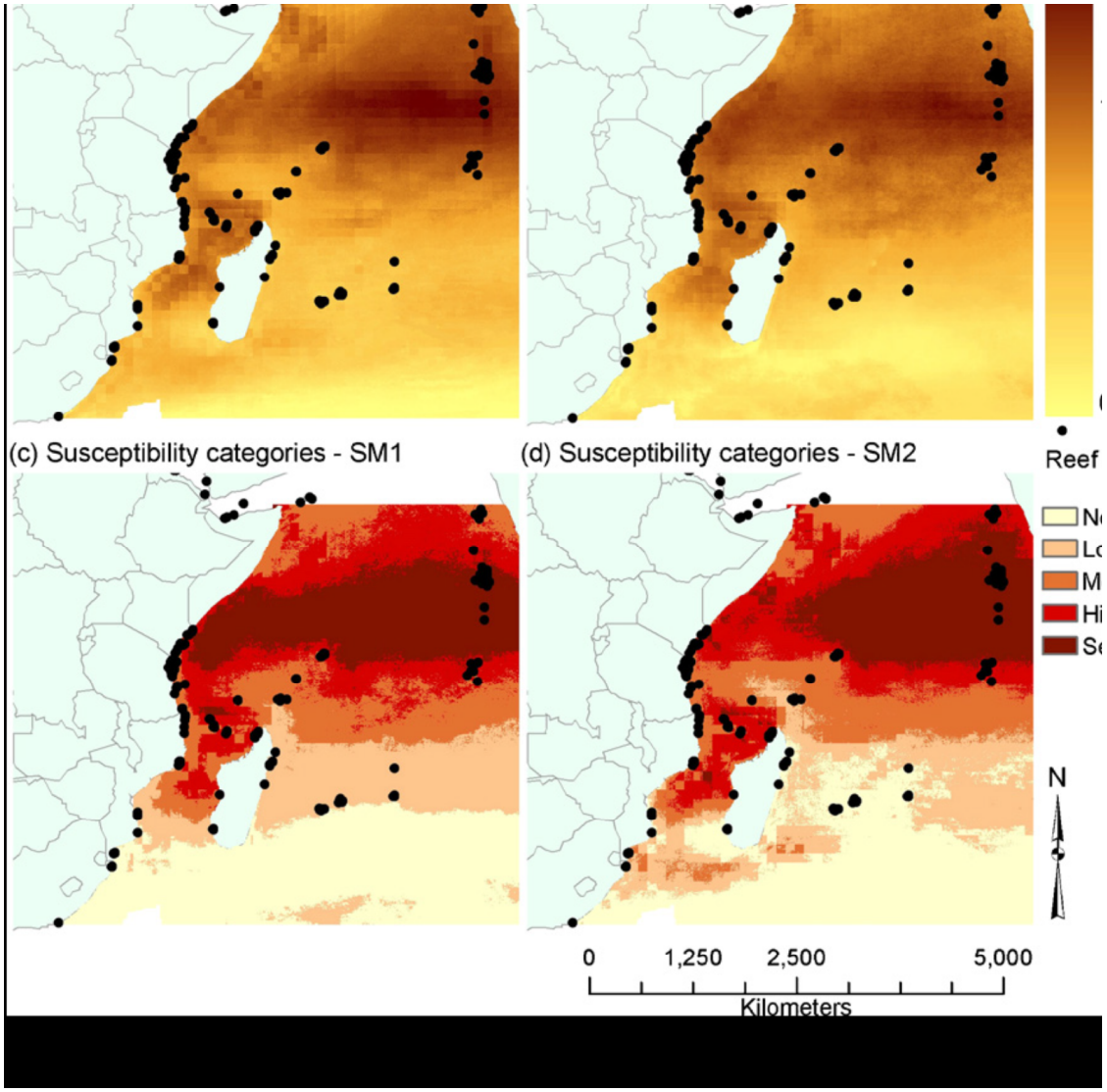
# Cousin Is. Marine Reserve Seychelles

# Mafia Is. marine park

# Global standard of classification

| Table 1.2.2. IUCN categories of protected areas | | |
|---|---|---|
| **Cat #** | **Category Type** | **Main Purpose(s)** |
| I | Strict nature reserve | Area managed mainly for science |
| | Wilderness area | Area managed mainly for wilderness protection |
| II | National Park | Managed mainly for ecosystem protection and recreation |
| III | National Monument | Managed mainly for conservation of specific natural features |
| IV | Habitat/species management areas | Managed mainly for conservation through management intervention |
| V | Protected land/seascapes | Managed mainly for land/seascape conservation and recreation |
| VI | Managed resource protected area | Managed mainly for sustainable use of natural ecosystems |

# Current status of MPAs




Environmental variability

50% NT areas in region in medium to high environmentally susceptible areas

Source: Maina et al 2008

# Regional ME Assessment Initiative

Regional Workbook based on WCPA/METF methodology

Tested in 3 countries

- Kenya: Kiunga MNR, Malindi MNP/MNR, Watamu MNP/MNR, Mombasa MNP/MNR, Kisite/Mpunguti MNP/MNR
- Tanzania: Mafia I. MP, Mnazi Bay-Ruvuma Estuary MP
- Seychelles: Cousin I. Special Reserve

Selection criteria

- Established MPA
- Management in place
- Management plan

# Assessment Process

Establish implementation teams

Emphasis on self-assessment with participation of stakeholders

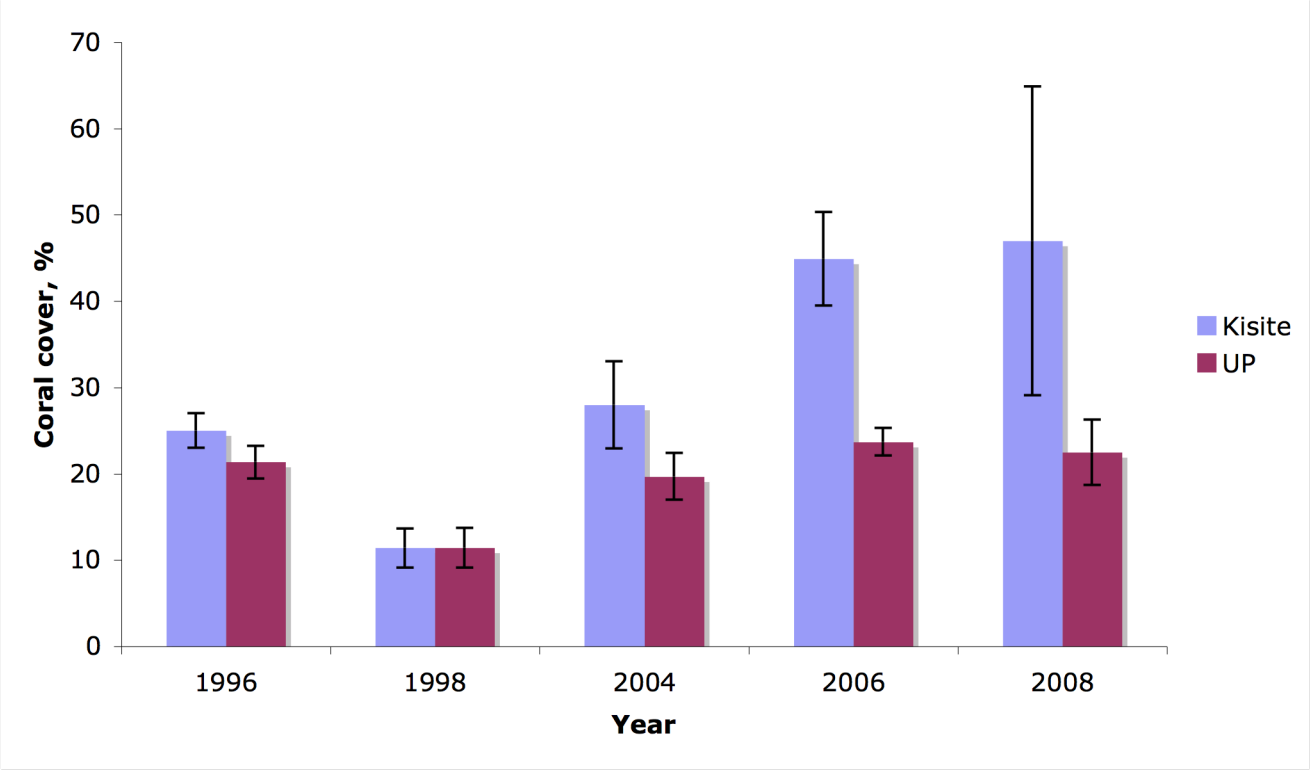
Review by staff and stakeholders
Consultative workshops

- Final revision by team
- Compilation of MEA Reports

# Benefits of MPAs

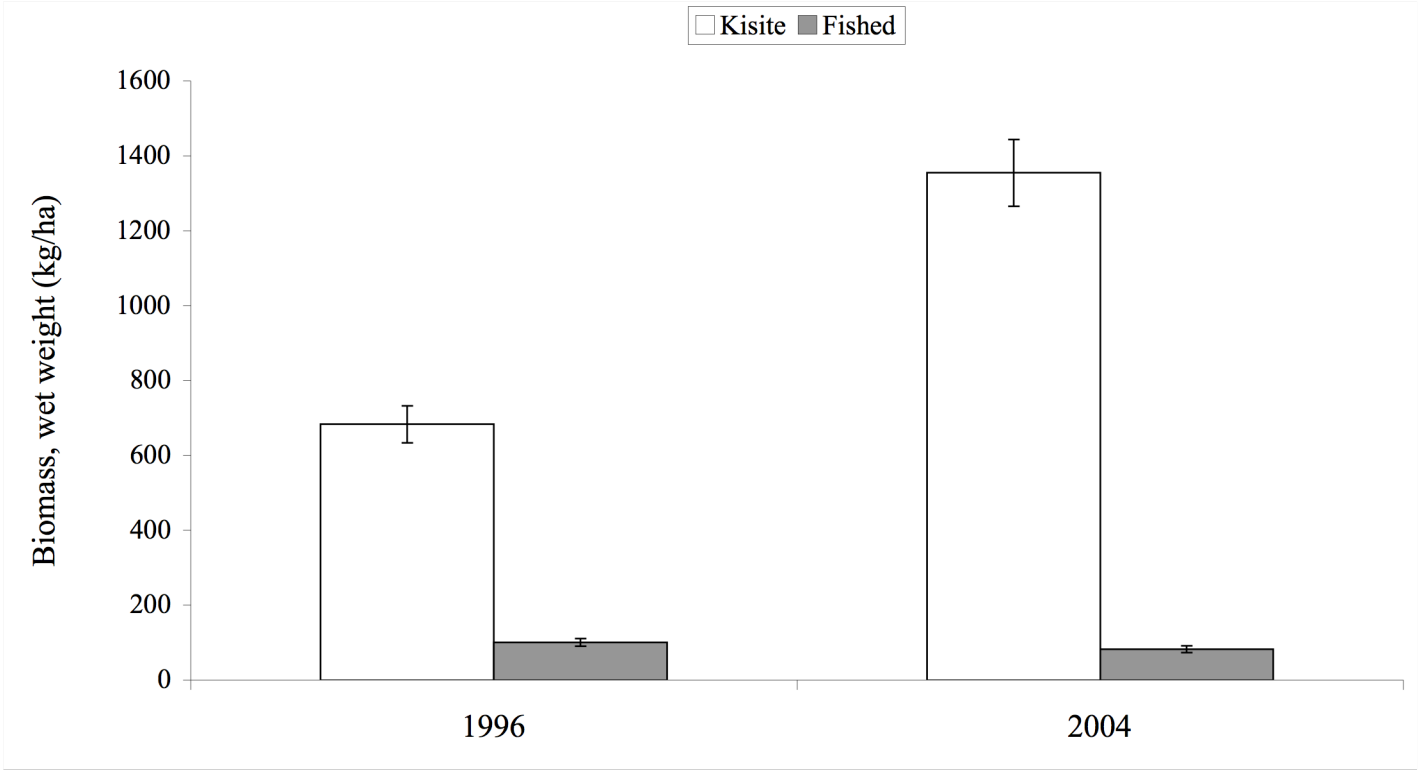
- Arresting, reducing declines and restoring ecosystems, habitats and species
- Arresting, reducing declines and restoring fisheries stocks
- Tourism
- Support recreation, education
- Sacred sites and other social benefits
- Climate change mitigation and adaptation

# Results Kisite: Coral cover




- Coral cover significantly higher in Kisite
- Effect of 1998 ENSO bleaching event

# Changes in fish biomass: Kisite



# Ecologically representative network of well connected and managed protected areas

MPA network can be defined as: A set of individual MPAs, operating **cooperatively** and **synergistically**, at various spatial scales and with different levels of protection in order to achieve ecological, social and economic benefits.

More efficient and more comprehensive than individual sites could do.(WCPA / IUCN 2005)

MPA networks today considered one of the most robust system for the conservation of marine and coastal resources on a large scale

# Why establish networks of MPAs

Better scientific understanding of the linkages at various levels, also the needs of key species between marine and terrestrial habitats, etc.

Most MPAs are too small to achieve ecological sustainability

Better address indirect threats, protection of migratory species, preservation of habitat linkages

# Benefits of networks of MPAs

1. At the ecological level:Large spatial scales;Reduction of degradation and recovery of marine resources, more effective management for migratory species
2. At the social level: helps management, conflict resolution and allows multiple use systems
3. At the economic level:Takes into account the ecological linkages, economies of scale and efficient use of resources
4. Contribution to sustainable development / strengthening of coastal zone management

Conservation large scale and local benefits

# Interconnectedness

MPAs are affected by the larger ecological, social, economic, and political context of the coastal/ocean areas of which they are a part.

A wide variety of economic and social activities taking place in the coastal zone and ocean affect the functioning of MPAs.

In addition, activities further inland and upland can have significant impacts on coastal/ocean areas

# Integrated Coastal Area Management (ICAM)

The main goals of ICAM

1.improve the governance process that is supported by and benefits communities and nations;

2.improve the economy, health and social well-being of people who depend upon coastal resources;

3.improve environmental quality to maintain biodiversity and ecosystem productivity

Different types of area management systems can be nested into the ICM framework thus increasing the spatial and jurisdictional levels of management

# Ecosystem Based Management

Ecosystem-based management focuses on a particular ecosystem's structure, function, and processes to sustain and foster ecosystem services for human society.

EBM depends on the interconnectedness of ecological, social, and economic parameters in developing management actions

The use of scientific information to adapt to changing situations and learning from management experiences is especially important in this approach.

# Group exercice

**Objective:**

exchange ideas and prepare country-specific future work plans regarding marine protected areas

**Questions:**

What are the **specific Action** in your country for achieving the Aichi target 11 for coastal and marine areas

***1. Increased coverage****: identification of new MPA (number, location, specific objectives) e.g will be LMMA*

*2. Improving the **representativeness** of ecosystems: identify critical coastal and marine ecosystems not yet or not suficiently protected e.g. mangroves, seagrass beds*

*3.Improving the **effective and equitable management*** e.g. improved management of specific MPAs, management planning and training, ME, creating policy frameworks for community management etc

***4.Integration into broader seascapes** / links with other sectors (fisheries, tourism, land use planning) e.g. ICM, networks or transboundary*