Partnerships for Marine Protected Areas present:

Creating a Baseline for Common Action

Turtle Bay Beach Club Workshop 10-11 February 2021

Dr Tim Stojanovic, University of St Andrews, UK

Allan Majalia, A Rocha Kenya

Judith Ochieng

A Rocha Kenya

Karibu

Welcome

Why a baseline?

Swahili Proverb: "Bahari haivukwi kwa Kuogelea"

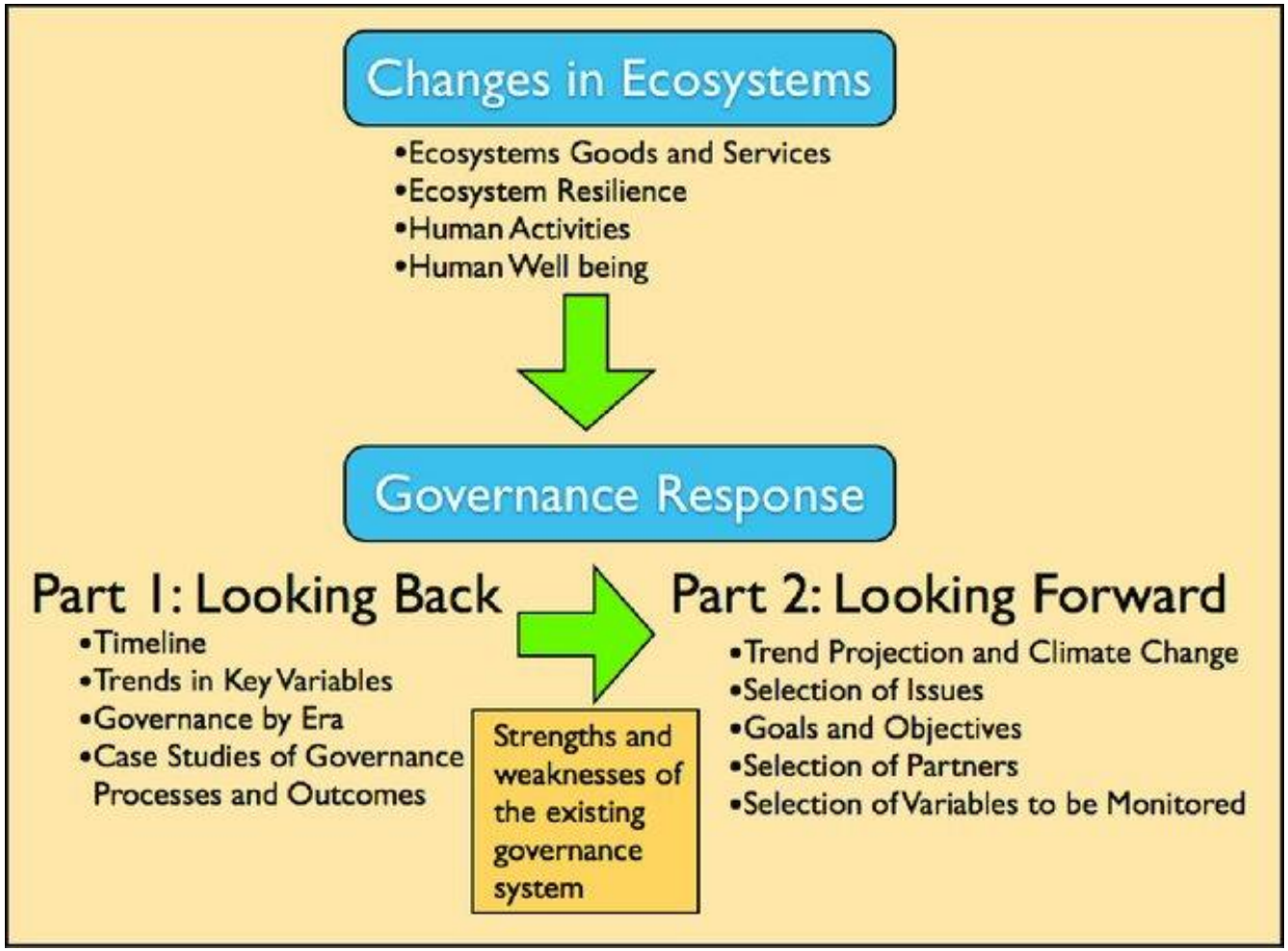
You cannot cross the ocean by swimming – you need to plan and start from somewhere (Baseline)

Background: Governance Baseline Approach

- 1970s- Prof Stephen Olsen, University of Rhode Island (USAID) key academic in coastal management
- 2009 ‘Governance Baseline’ Land Ocean Interactions in the Coastal Zone (LOICZ) Report and Reports and Studies No. 34
  - Developed with EcoCostas Latin American coastal management programme with Glen Page (Sustainametrix)
- Trials
  - Ghana Hen Mpoano, 2010
  - Rhode Island marine plan, 2011
  - Wadden Sea, Netherlands 2012
  - Baltic Sea, 2016
  - Forth-Tay Estuaries, Scotland 2018/2020

- Now apply to Watamu NMP & Mida Creek as part of a Global Challenges Research Fund project. Focus on Protected Areas.
- 2019-2021 Kenyan stakeholders agree that the approach could bring together different organisations

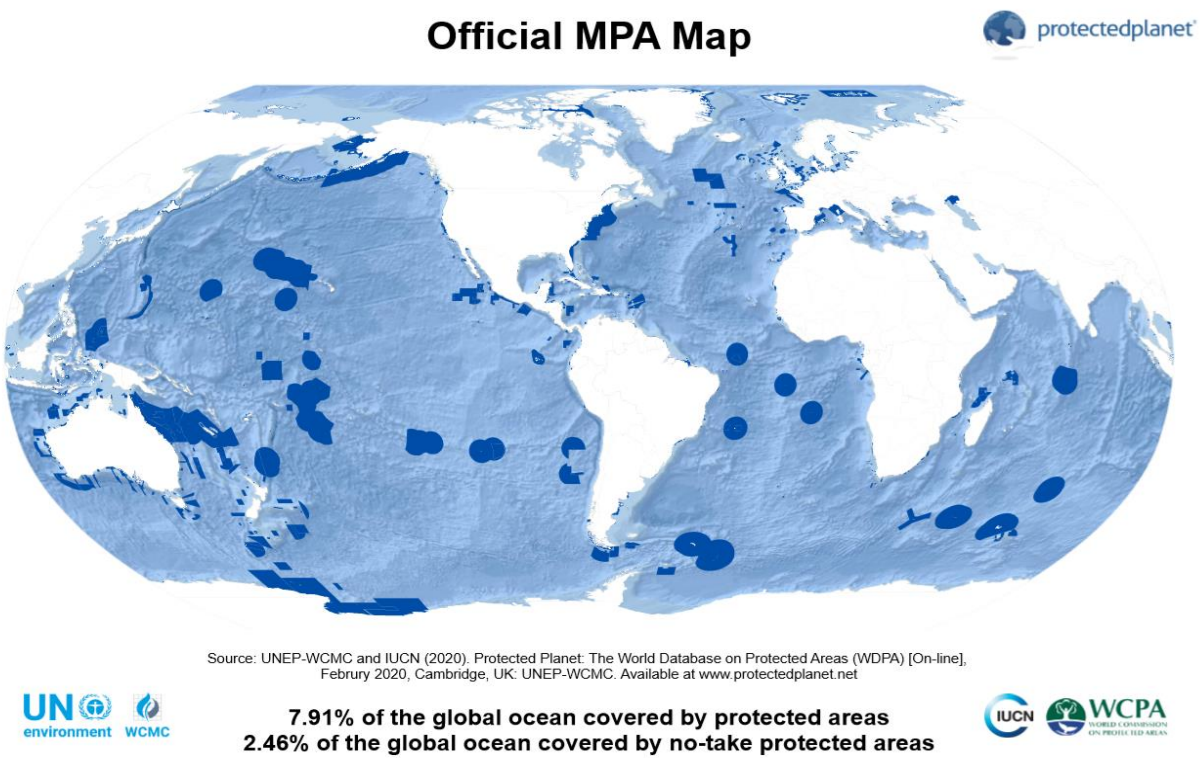
The approach: A Framework for Learning and Partnership



Taking Stock

Source based on: (Olsen,2010)

Marine Protected Areas



- Watamu NMP- Kenya's oldest MPA since 1968
- SDGs Targets: 10% of worlds oceans protected by 2020
- Big expansion of MPAs since 2000s

Source: UNEP WCMC (2021)

Marine Protected Areas

MPA Benefits

- Benefits for Fisheries- spillover effect?
- Positive for Tourism
- Opportunities for alternative livelihoods
- Protect key plants and animals

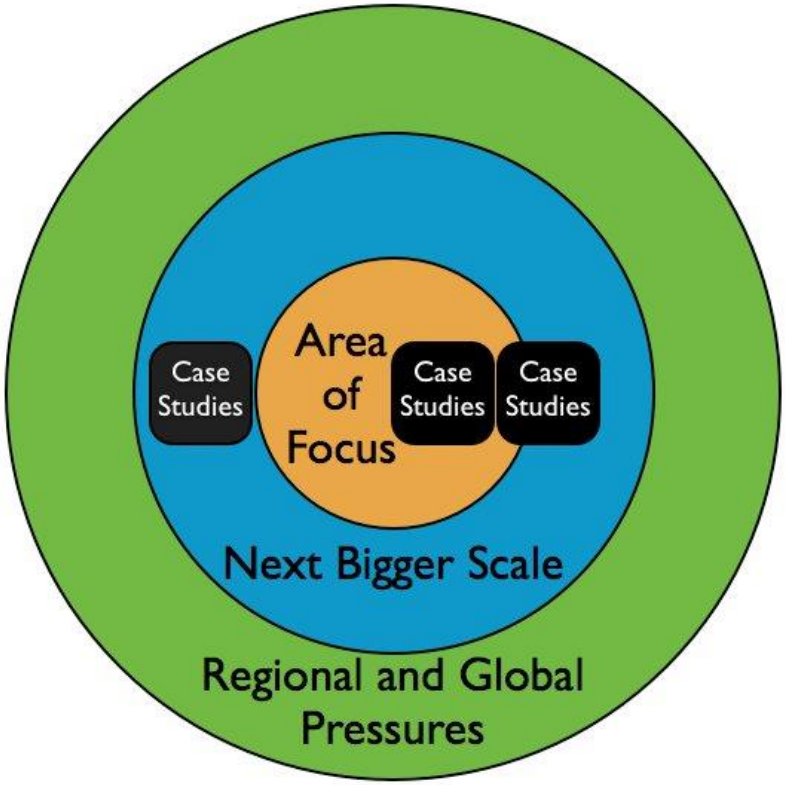
MPA Challenges

- Unsustainable activities
- Decline in habitats and species
- Capacity and resources for management

Source: Photo, A Rocha Kenya Website

Deciding on the area of focus

"Geographically defined area which ecosystem-based initiative has chosen to address" e.g. harbour, watershed, MPA.



Area of Focus: Watamu NMP & Mida Creek

Source: Google Earth

Biodiversity Conservation
A Consideration of Marine Protected Area

Backg

Climate Change, Human Impacts, and the Resilience of Coral Reefs

T. P. Hughes[1,*], A. H. Baird[1], D. R. Bellwood[1], M. Card[2], S. R. Connolly[1], C. Folke[3], R. Grosberg[4], O. Hoegh-Guldberg[5], J. ...
+ See all authors and affiliations

Science 15 Aug 2003:
Vol. 301, Issue 5635, pp. 929-933
DOI: 10.1126/science.1085046

Impacts of 1.5°C of Global Warming on Natural and Human Systems

Coordinating Lead Authors:
Ove Hoegh-Guldberg (Australia), Daniela Jacob (Germany), Michael Taylor (Jamaica)

The 27–year decline of coral cover on the Great Barrier Reef and its causes

Glenn De'ath, Katharina E. Fabricius, Hugh Sweatman, and Marji Puotinen

PNAS October 30, 2012 109 (44) 17995-17999; https://doi.org/10.1073/pnas.1208909109

ECOLOGY LETTERS

Ecology Letters, (2016) **19**: 629–637 doi: 10.1111/ele.12598

Marine protected areas increase resilience among coral reef communities

Camille Mellin,[1,2]* M. Aaron MacNeil,[1] Alistair J. Cheal,[1] Michael J. Emslie,[1] and M. Julian Caley[1]

Recovery of an Isolated Coral Reef System Following Severe Disturbance

James P. Gilmour[1,*], Luke D. Smith[1,†], Andrew J. Heyward[1], Andrew H. Baird[2], Morgan S. Pratchett[2]
+ See all authors and affiliations

Science 05 Apr 2013:
Vol. 340, Issue 6128, pp. 69-71
DOI: 10.1126/science.1232310

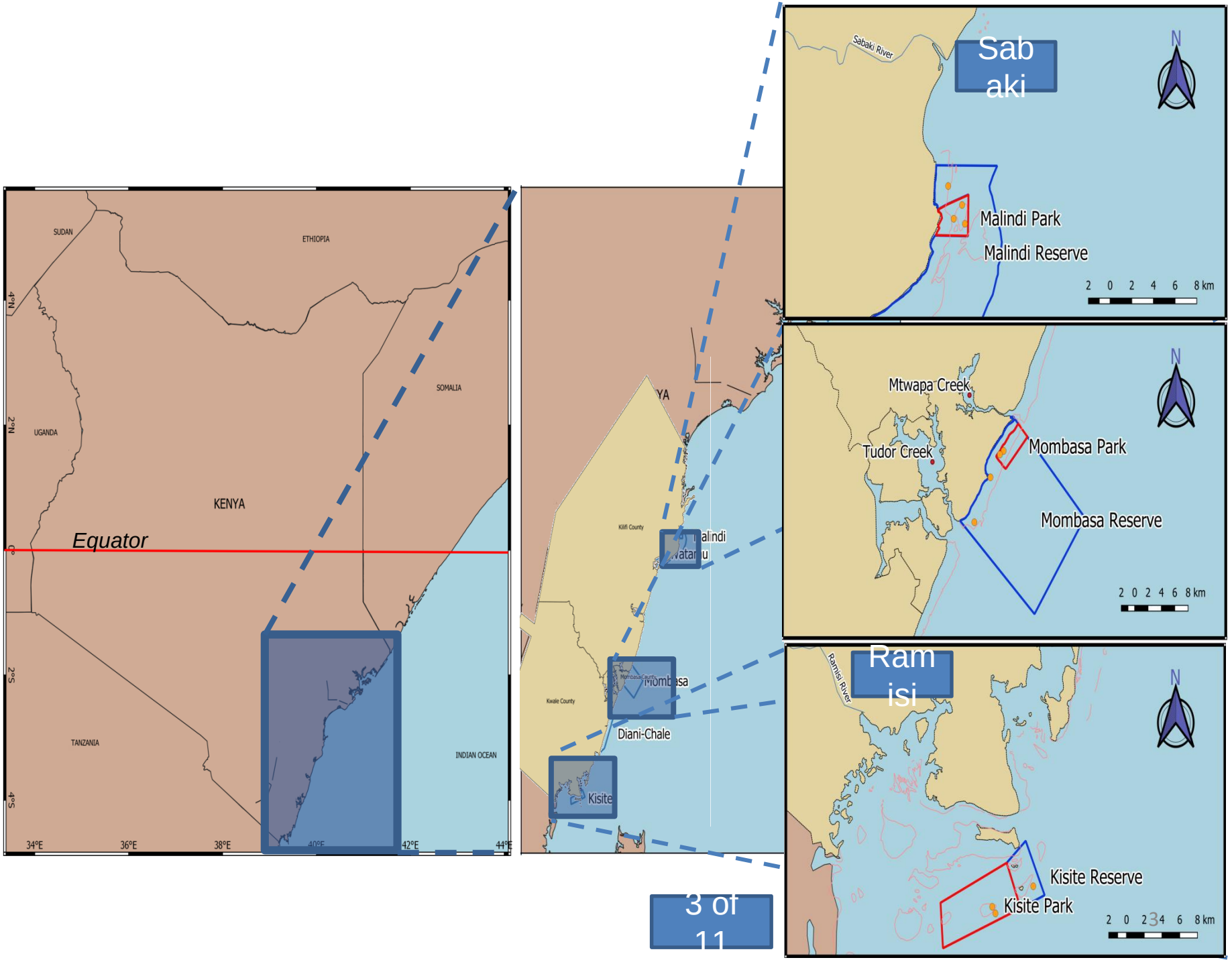
Conservation Biology

Essay | Open Access

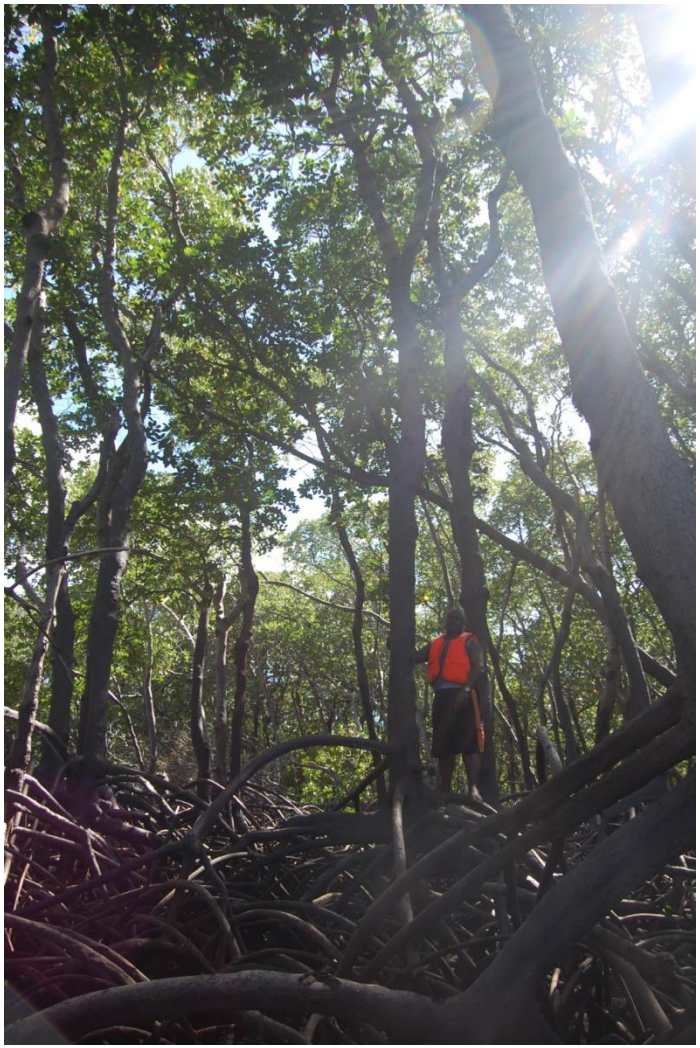
Expanding marine protected areas to include degraded coral reefs

A. Abelson, P.A. Nelson, G.J. Edgar, N. Shashar, D.C. Reed, J. Belmaker, G. Krause, M.W. Beck, E. Brokovich, R. France, S.D. Gaines

First published: 17 March 2016 | https://doi.org/10.1111/cobi.12722 | Cited by: 15


SUDAN
ETHIOPIA
SOMALIA
UGANDA
KENYA
Equator
TANZANIA
INDIAN OCEAN
4°N
2°N
0°
2°S
4°S
34°E
36°E
38°E
40°E
42°E
44°E
Kilifi County
Kwale County
Mombasa County
Mombasa
Diani-Chale
Kisite
Sabaki River
Sab
aki
Malindi Park
Malindi Reserve
2 0 2 4 6 8 km
N
Mtwapa Creek
Tudor Creek
Mombasa Park
Mombasa Reserve
2 0 2 4 6 8 km
Ramisi River
Ram
isi
Kisite Reserve
Kisite Park
2 0 2 4 6 8 km
3 of 11

Globally Important Biodiversity



Coral Reefs
Supports Artisanal Fishery

- Supporting a Population of over 200,000
- Serves for fin & pelagic fish, prawn, lobster, crab markets

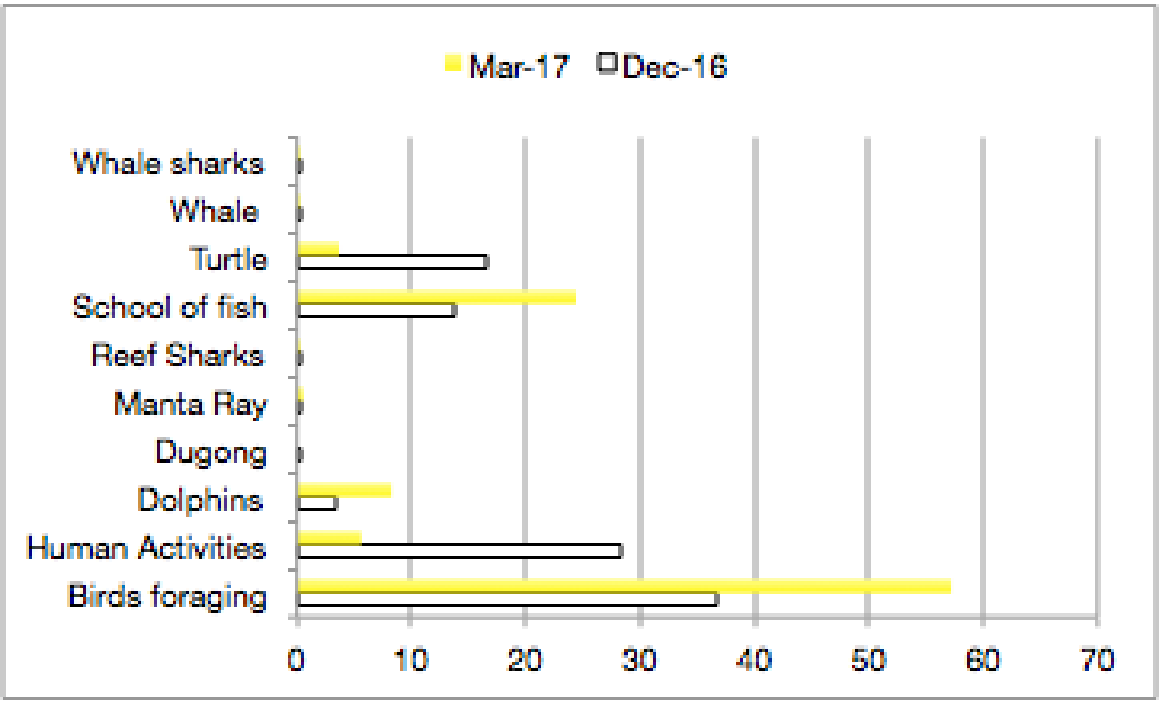
Research & Monitoring

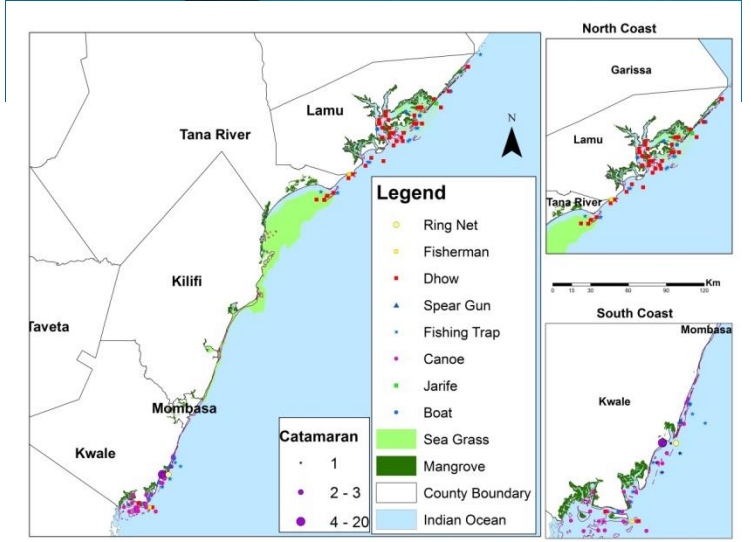
Enhance wildlife conservation, protection, and management

Marine Ecological Monitoring

- Base line data on corals, fish and invertebrates
- Management of Crown of Thorns in MMNP/R
- Training rangers on ecological monitoring

Marine Aerial Census



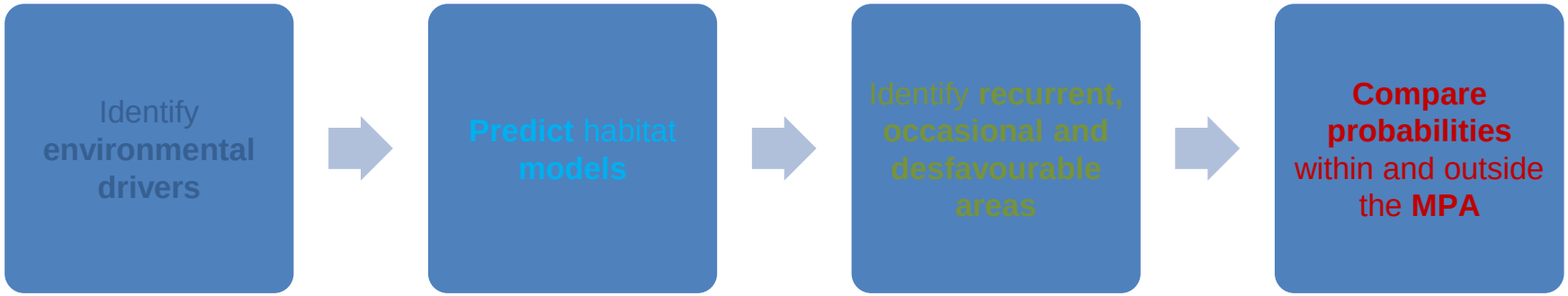


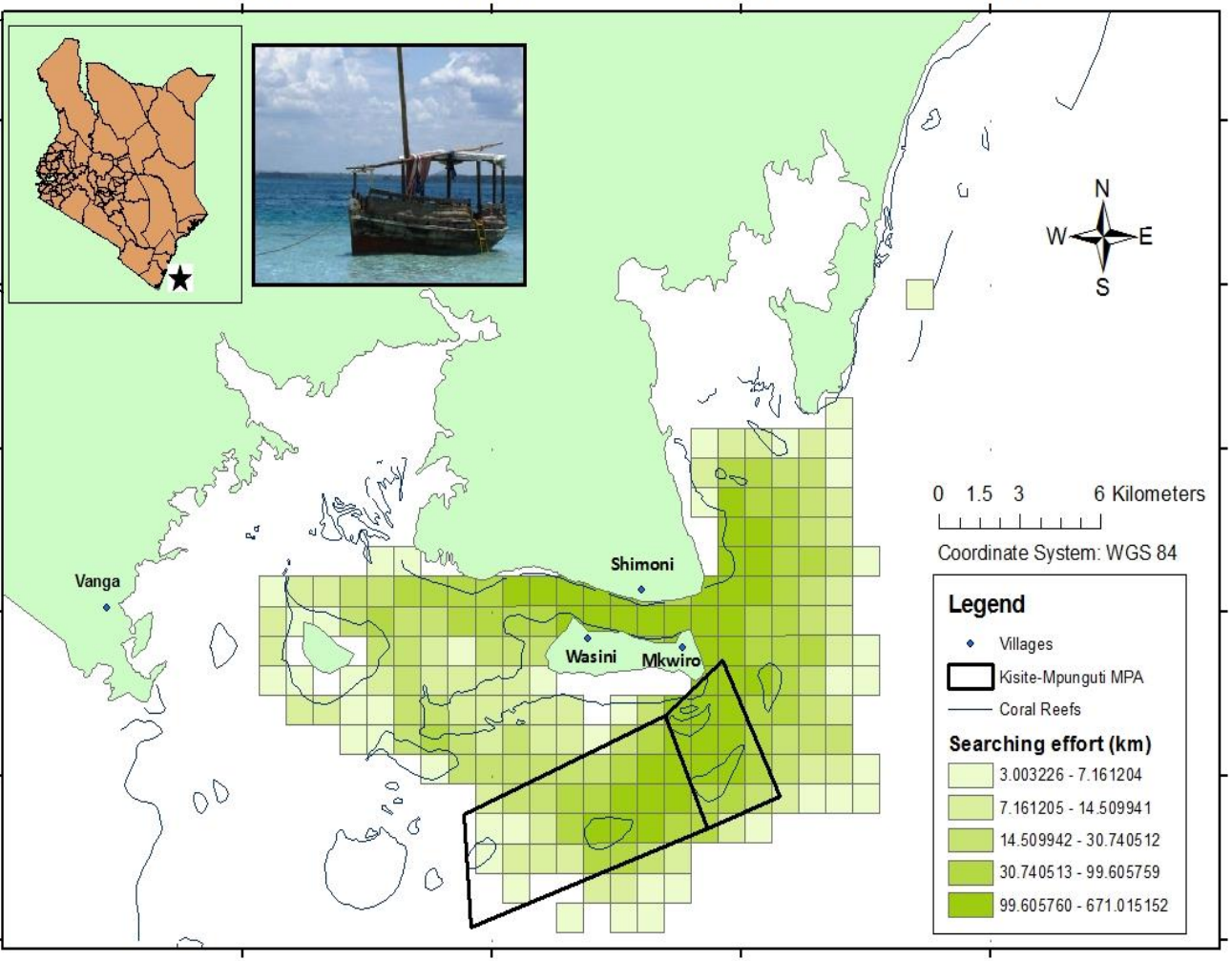
Marine Protected Area Management

Marine Protected Areas (MPAs) - main management approach to protect important habitats and ecosystems including biodiversity hotspots

Kenyan MPAs: designated for the protection of coral reefs

Suitability of the existing MPA?





Data 2006-09	
Surveys	551
Sightings	490
Km	13502

Conservation implications: the role of existing MPA for coastal dolphins

1. Positive benefits of the existing MPA for coastal dolphins
2. Important percentage of recurrent and occasional areas occurred outside the MPA
3. MPA critical habitats for the species' survival
4. MPA is certainly insufficient to satisfy the spatial requirements of the species

Quantifying the effects of MPAs is crucial to evaluate their efficiency as management tools and the protection of the species

Key Governance Issues

- Is the MPA sufficient to protect critical habitats
- Kenya's commitment to protect 30% of our marine environment – we currently cover less than 1%
- Enhance management of existing MPAs – METT adoption and implementation
- Establish financial sustainability for MPAs
- Diversification of MPA types – what are our options

Key Governance Issues

- The protection of marine mammal habitats – how much should we include
- The inclusion of Beach Management in MPA management
- Pollution control – solid waste and liquid waste
- Managing urban protected areas

TIMELINE AND ‘ERAS’ OF GOVERNANCE

by Allan Majalia

Definitions

Timeline - elapsed period of time in an area of focus

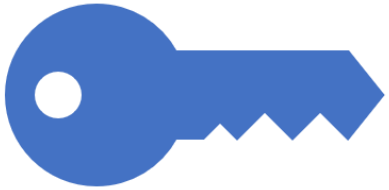
Era – period of time

CONT..

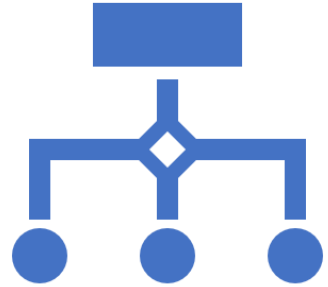
- Era of Governance – period in the governance of an area that is shaped by the values and goals of the society

- In our case we considered: Tourism, Nature Conservation, Laws and Policies and Institutions

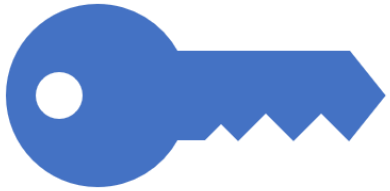
Key Questions



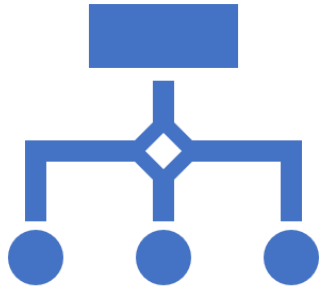
1.1. How have the types and intensity of human activities changed in the area of focus (since Kenyan independence)?



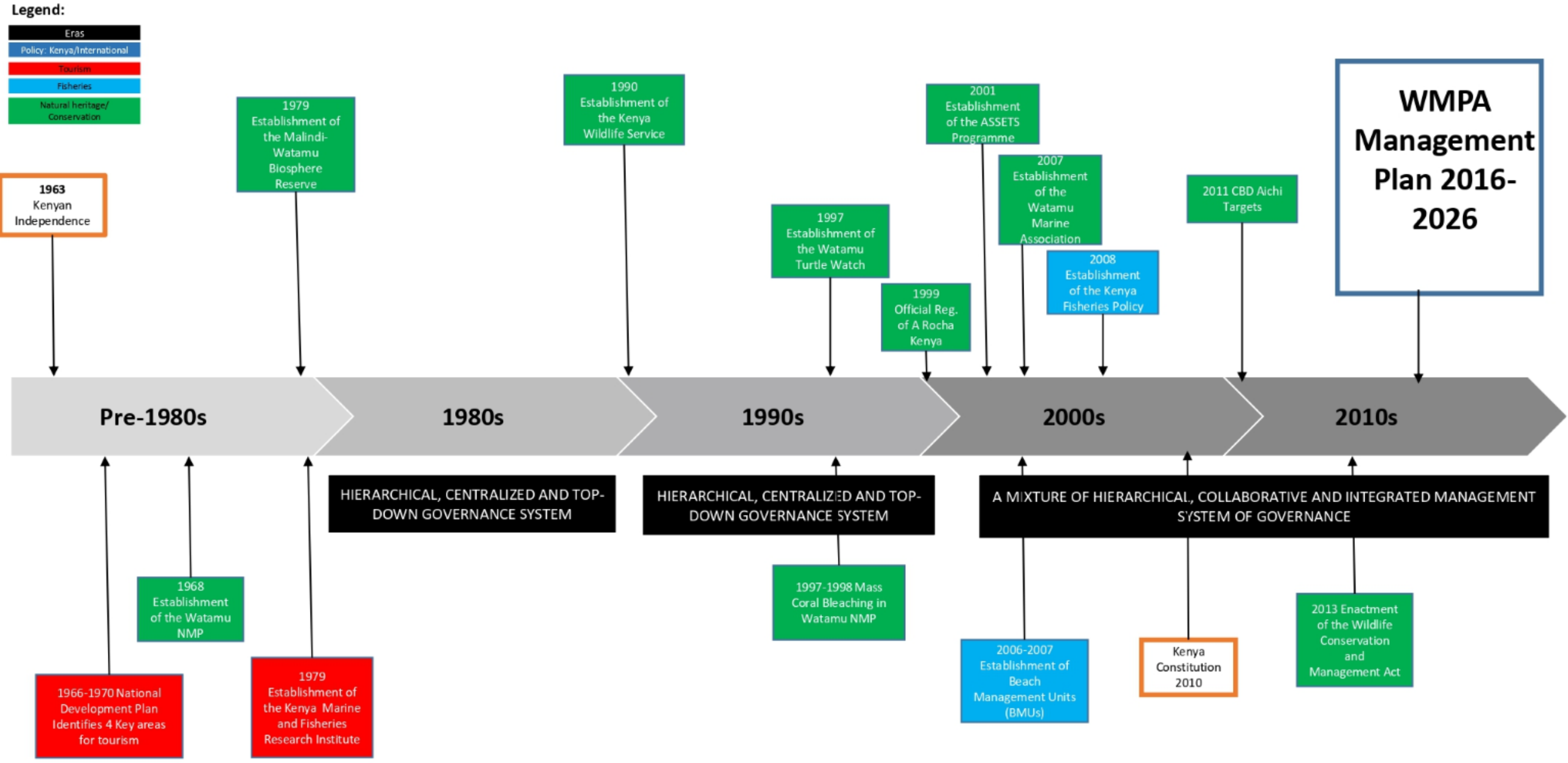
2. What was the response of the governance system to key events and ecosystem change?



3. Which key events or do you think should be added to the timeline?



4. Does the timeline suggest distinct eras in the condition or management of the system?


Legend:
Eras
Policy: Kenya/International
Tourism
Fisheries
Natural heritage/ Conservation
1963 Kenyan Independence
1979 Establishment of the Malindi-Watamu Biosphere Reserve
1990 Establishment of the Kenya Wildlife Service
1997 Establishment of the Watamu Turtle Watch
1999 Official Reg. of A Rocha Kenya
2001 Establishment of the ASSETS Programme
2007 Establishment of the Watamu Marine Association
2008 Establishment of the Kenya Fisheries Policy
2011 CBD Aichi Targets
WMPA Management Plan 2016-2026
Pre-1980s
1980s
1990s
2000s
2010s
1966-1970 National Development Plan Identifies 4 Key areas for tourism
1968 Establishment of the Watamu NMP
1979 Establishment of the Kenya Marine and Fisheries Research Institute
HIERARCHICAL, CENTRALIZED AND TOP-DOWN GOVERNANCE SYSTEM
HIERARCHICAL, CENTRALIZED AND TOP-DOWN GOVERNANCE SYSTEM
1997-1998 Mass Coral Bleaching in Watamu NMP
A MIXTURE OF HIERARCHICAL, COLLABORATIVE AND INTEGRATED MANAGEMENT SYSTEM OF GOVERNANCE
2006-2007 Establishment of Beach Management Units (BMUs)
Kenya Constitution 2010
2013 Enactment of the Wildlife Conservation and Management Act

Group Activity

Participants divided into four

All participants welcomed to input further details using marker pens on the four large drawn versions of the timeline stuck on the walls

Participants can take the seats

SOCIAL TRENDS

Judith Ochieng'
A Rocha Kenya

INTRODUCTION

- **Social Trends** indicate the human components that can be correlated to the condition and use of an ecosystem in a specific place over time

- This approach explores the long term links between marine protected areas and local communities' livelihoods and wellbeing by looking at:

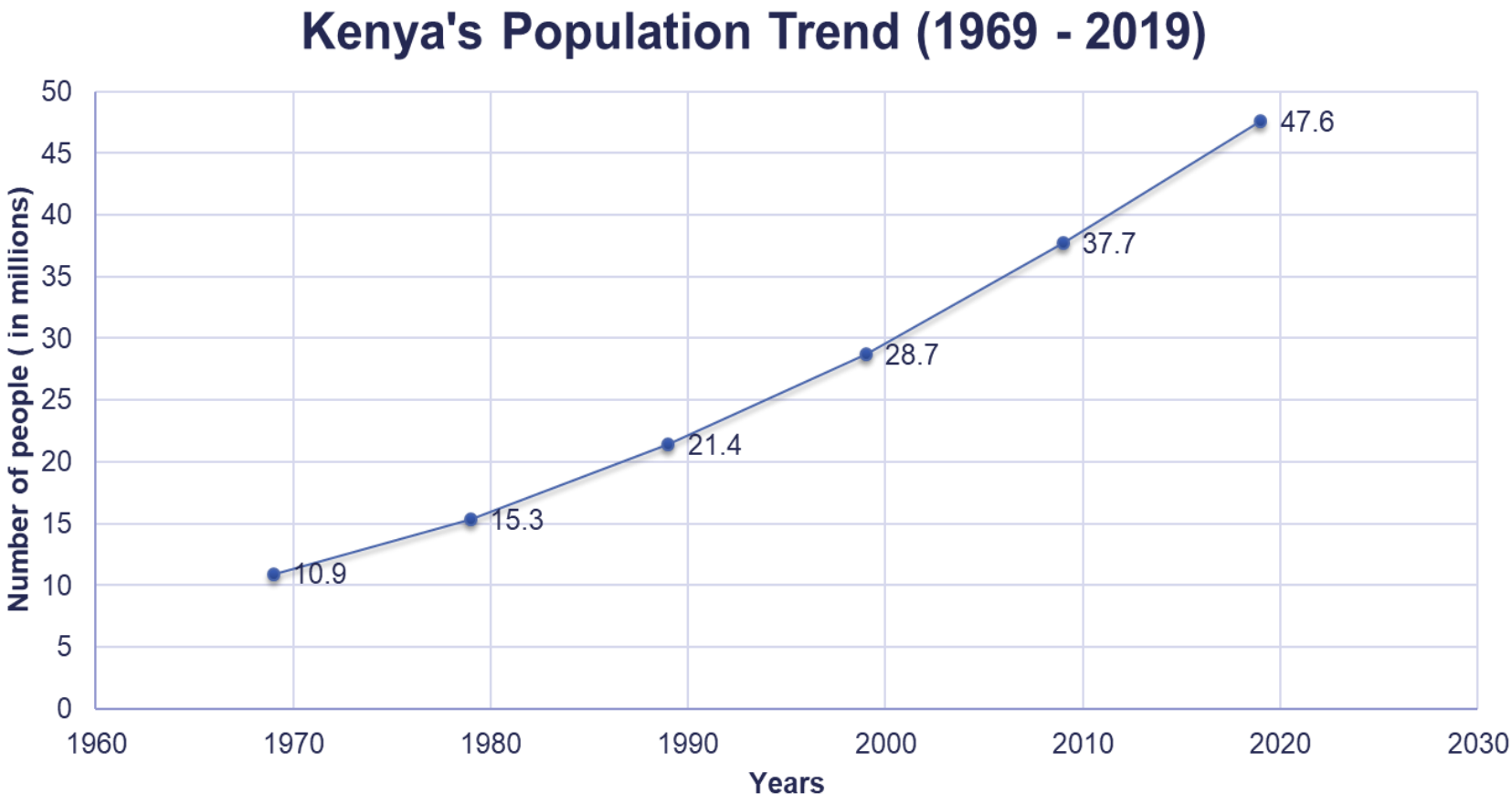
  -**population trends**

  -quality of life of the local communities

KEY QUESTIONS

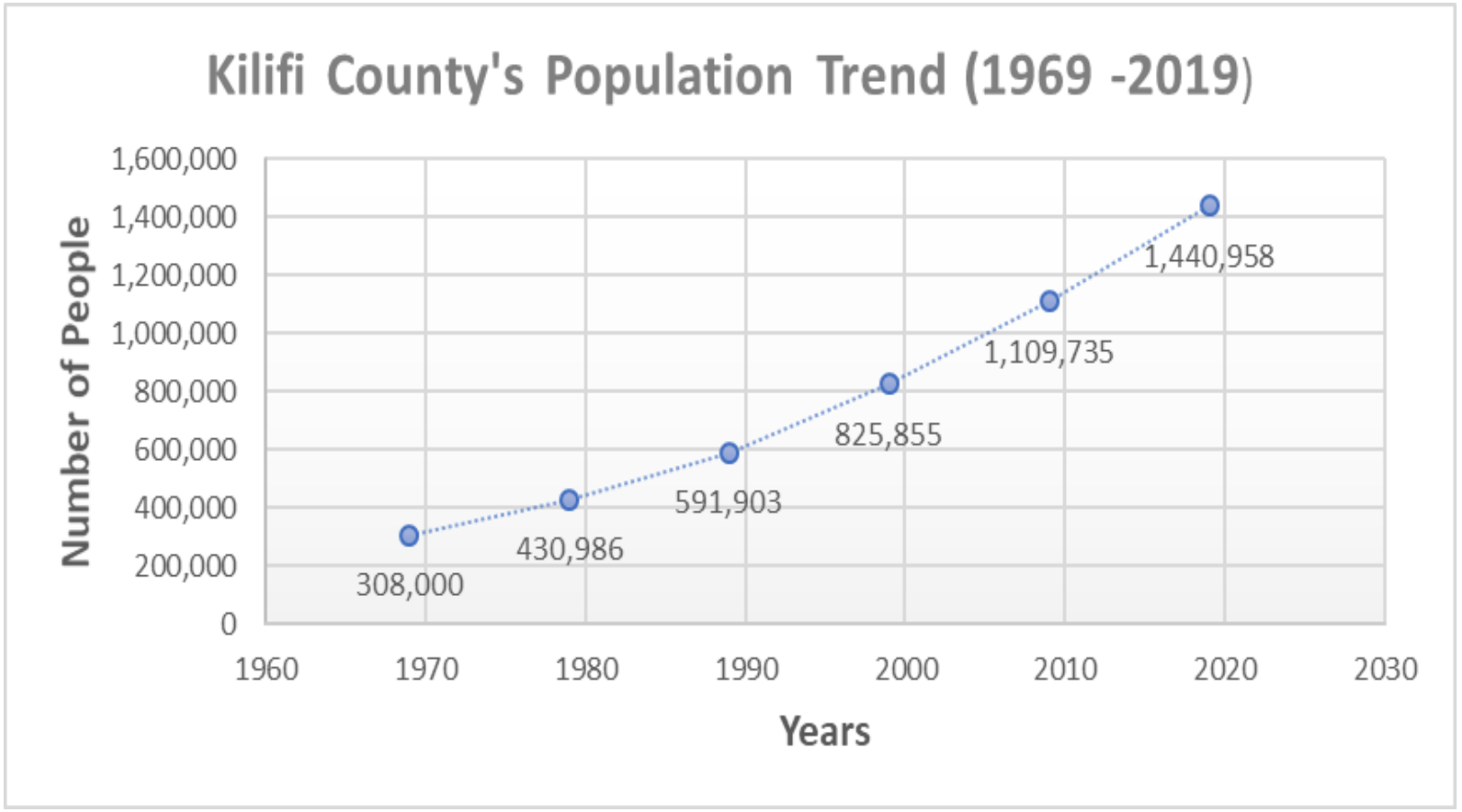
- How would you describe the curve and what does it tell us about the changing condition of the ecosystem?
- What other information do you think is relevant or can be added?
- How reliable (complete and accurate) are the sources of data? Do we agree about this?

SOCIAL TRENDS: POPULATION



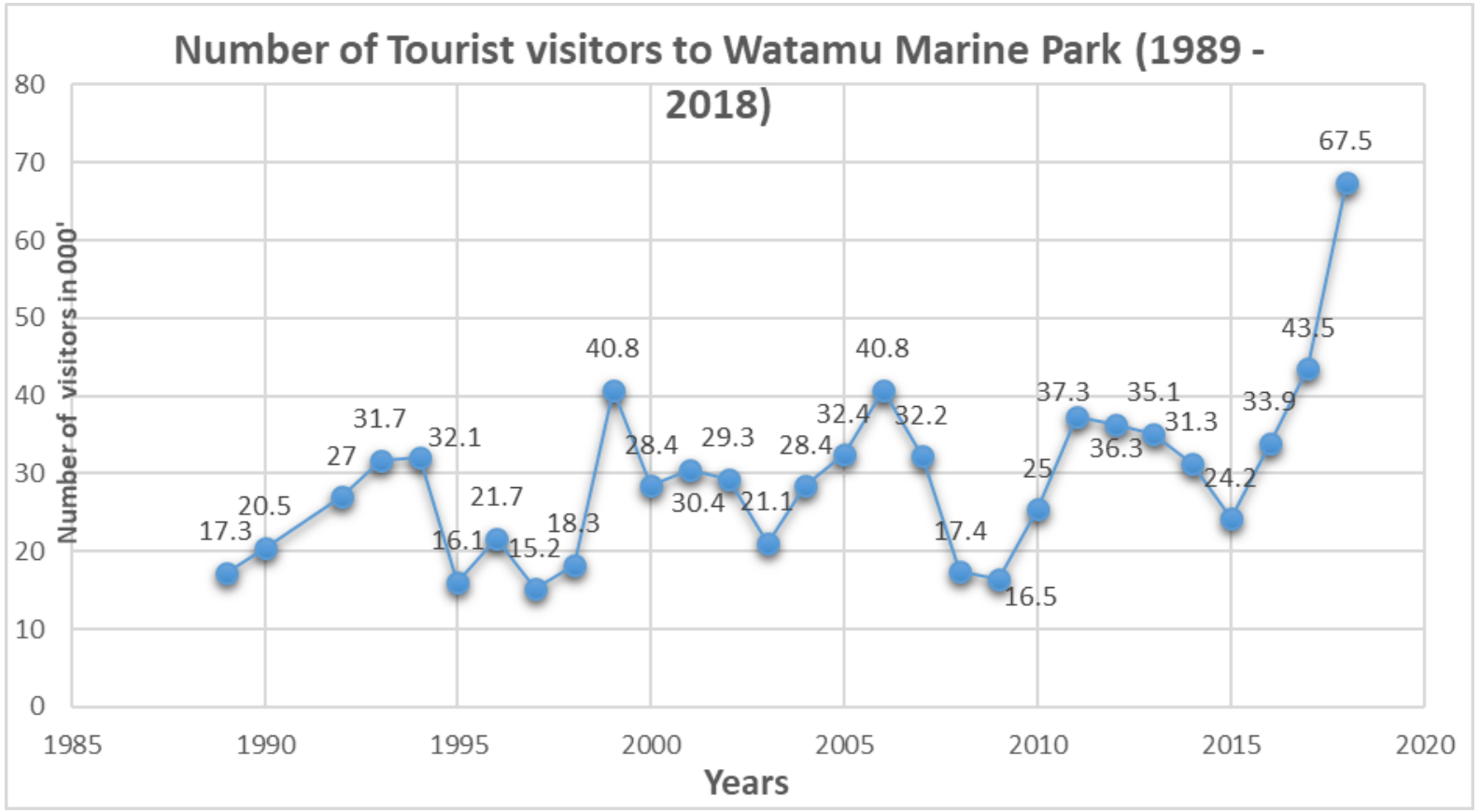
Source: Kenya National Bureau of Statistics 2019

SOCIAL TRENDS: POPULATION



Source: Kenya National Bureau of Statistics, Abstracts (1969-2009)

SOCIAL TRENDS: MIGRATION AND TOURISM



Source: Statistical Abstracts by KNBS (2019)

SOCIAL TRENDS: QUALITY OF LIFE

Malindi sub-county social trends

Measure	Census 2009	Census 2019	National Av. 2019
Population	207,253	333,226	(Kilifi County 7th highest change)
Aged 5+ in employment (Working)	135,115 (65%)	122,508 (37%)	48%
% households lighting by mains electricity		50.4%	50.4%
Never been to school		46,878 (14.5%)	16.3% Urban 8.8%
% water from public tap/stand		40.3%	9.9%

Source: KNBS (2019) Kenya Census Vols 2-4

SOCIAL TRENDS: TRENDS IN LIVELIHOODS (LOCAL VILLAGES)

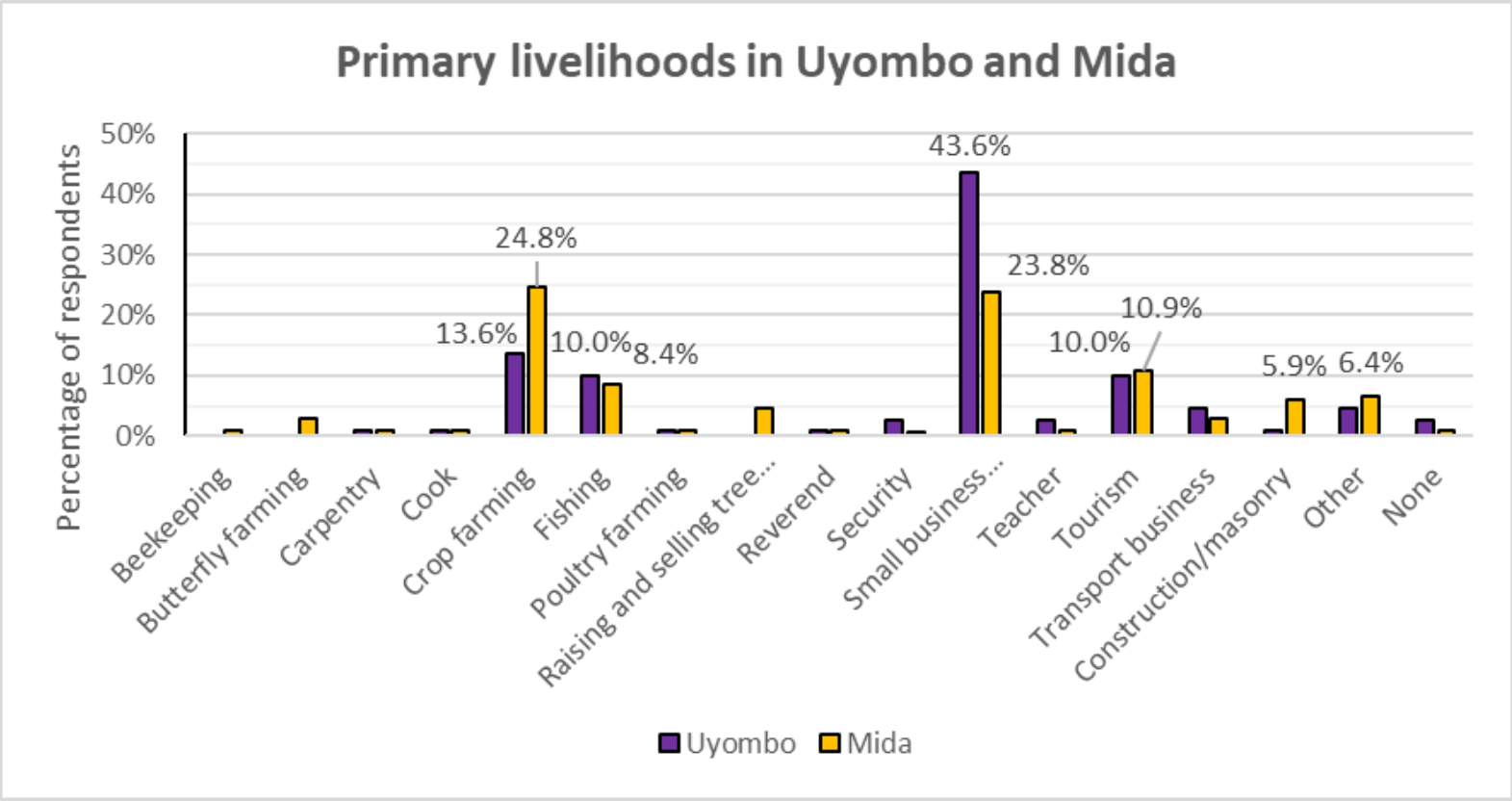


Figure 4: Percentages of primary livelihoods from a survey of 312 Households in 2020.

Source: Harker *et al.* (Unpublished)

Ecological Trends in Watamu Marine National Park, Kenya.

Introduction

- Ecological trends focus on the changes of the ecosystem, species and habitats over certain duration.
- Due to the dynamics in the trends, many species have undergone assessments by IUCN and have been included in the Red List of Threatened Species.
- This helps to prioritize where action is most urgently needed and to identify the major threats.

Cont...

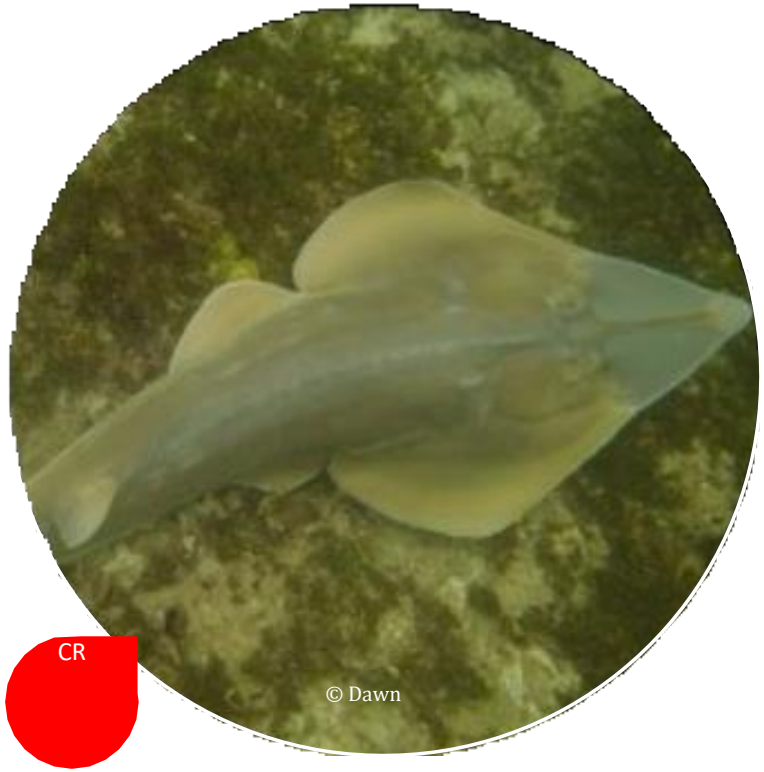
18 Species within the MPA have been found to have an IUCN Red List status.

- Five-Near Threatened Species.
- Eleven-Vulnerable Species.
- Two-Endangered Species.

Source: Cowburn et al., 2018

IUCN Red List Categories

- DD — Data Deficient
- LC — Least Concern
- NT — Near Threatened
- VU — Vulnerable
- EN — Endangered
- CR — Critically Endangered
- EW — Extinct in the Wild
- EX — Extinct



Common Name: Halavi Guitarfish

Common Name: Honeycomb Stingray

IUCN Red List Categories

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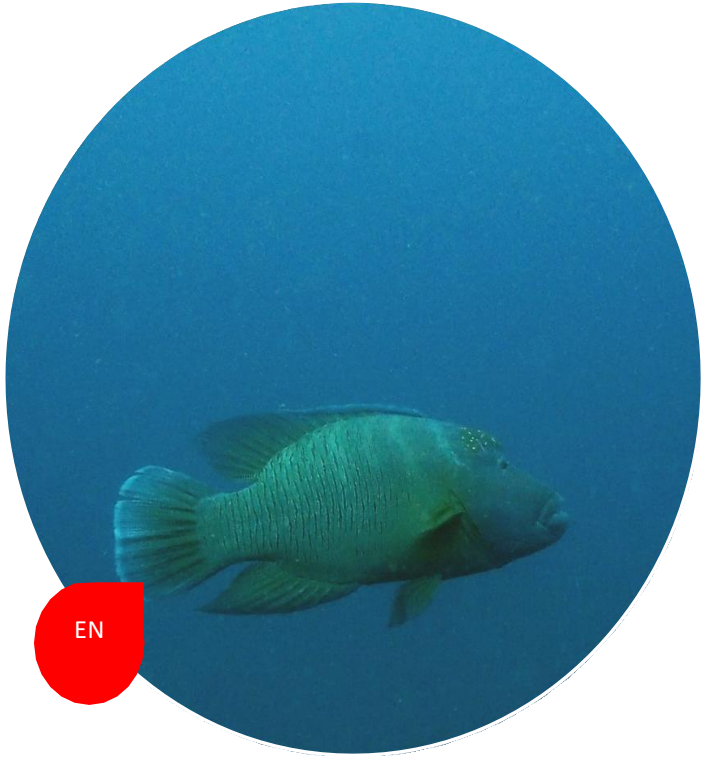
Common Name: Brown-Marbled Grouper



Common Name: Humphead wrasse

IUCN Red List Categories

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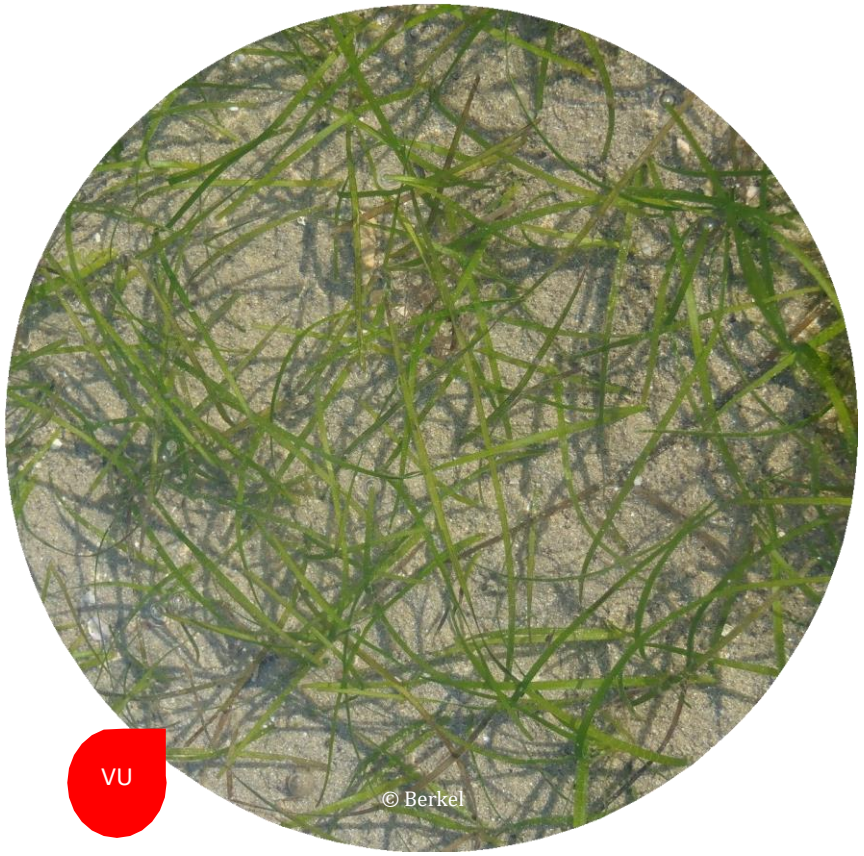
- EX — Extinct

Common Name: Thorny seahorse

Common Name: Sea Cucumber



Common Name: Cape dwarf-eelgrass

IUCN Red List Categories

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- EX — Extinct

Cont.....

- However, some gaps exists in the available data on the various species and habitats within the MPA.

- There’s need to identify the gaps and collaboratively work together to ensure this critical ecosystem doesn't get endangered with extinction.

Ecological Trends 1 : Marine Mammals

IUCN Red List Categories

- DD — Data Deficient
- LC — Least Concern
- NT — Near Threatened
- VU — Vulnerable
- EN — Endangered
- CR — Critically Endangered
- EW — Extinct in the Wild
- EX — Extinct

NT

Common Name: Indo-pacific Bottlenose Dolphin

EN

Common Name: Indian Ocean Humpback Dolphins

Since 2010, 287 marine mammals have been sighted within WMNP.

They consist 4 species:

1. Indian Ocean Humpback Dolphin.
2. Indo-Pacific Bottlenose Dolphin.
3. False Killer Whale.
4. Spinner Dolphin.

Indo-Pacific bottlenose dolphins have been observed to spend 60 % of their time foraging around Watamu MPA.

Source: Michael Mwang'ombe, Watamu Marine Association.

Ecological Trends 3: Sea Turtles

Key Questions.

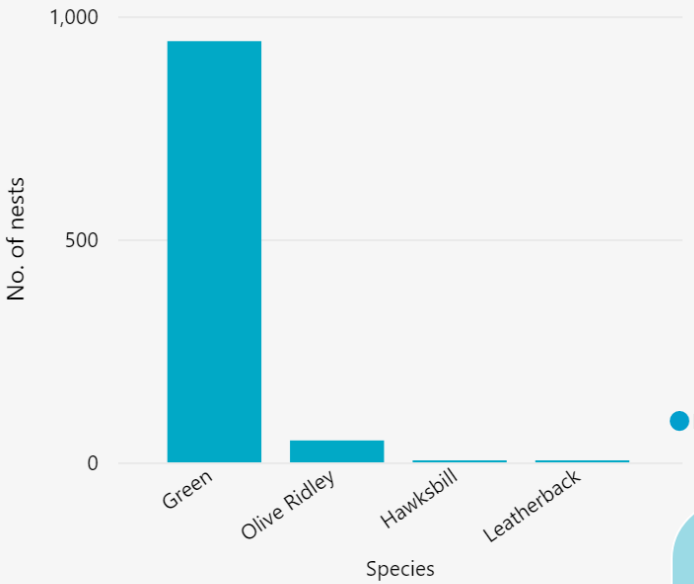
1. What is the ‘shape of the curves’ and what does it imply about the changing condition of the ecosystem?

2. How reliable (complete and accurate) are the sources of data? Do we agree about this?

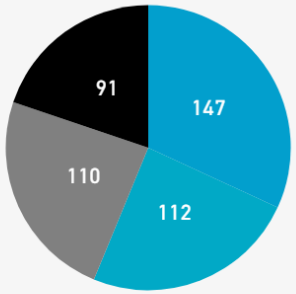
3. What other data can we collect or analyze to understand this?

Sea Turtle Nesting

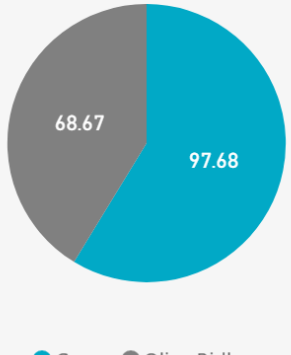
Nesting species in Watamu



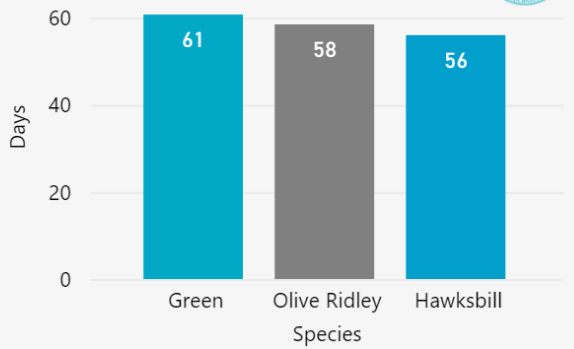
Average eggs laid



Average turtle_track_width(cm)

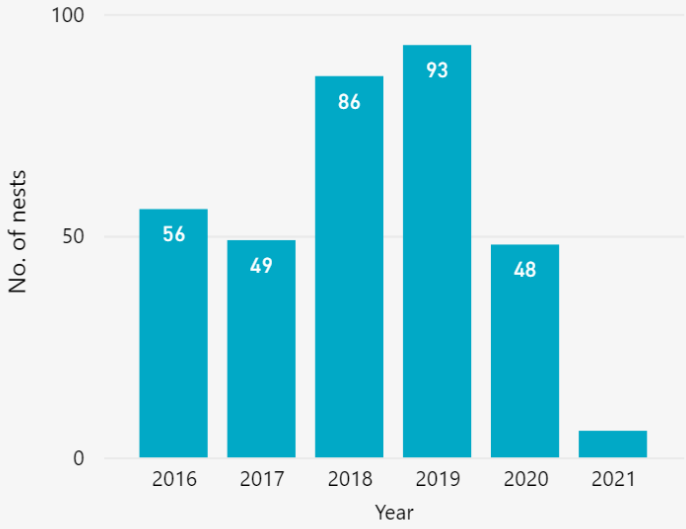


Average incubation days



Average Nest success rate(%)	Total number of nests	Total successful hatchlings
71.17	1055	88462

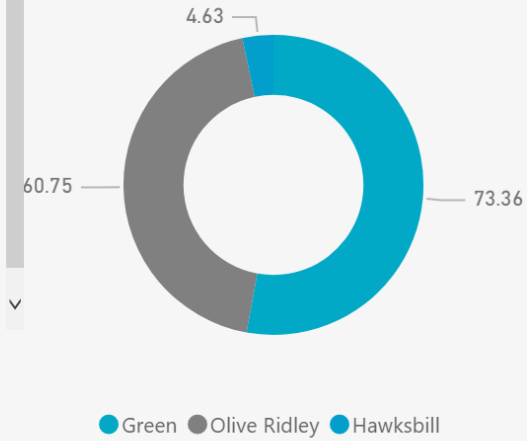
Historical nesting in Watamu



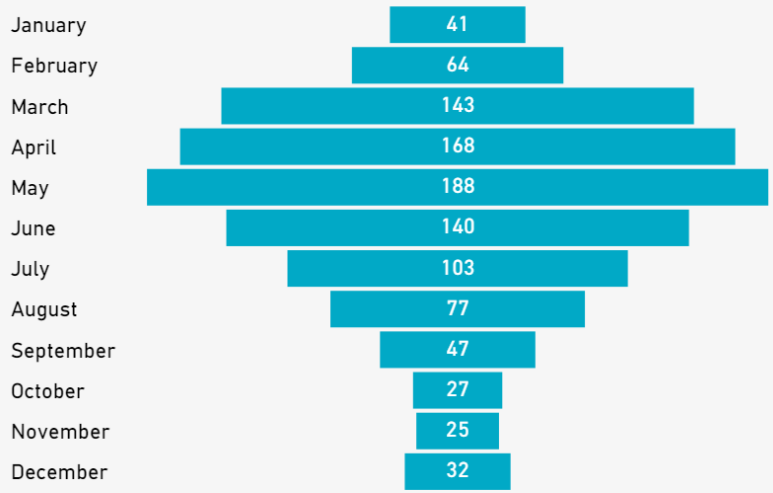
Most common nesting turtles

Turtle_ID	No. of nests
KE0628	35
KE0619	22
3239	17
KE0626	17
4174	16
KE8108	16
4155	15
CC00305	15
4152	14
CC00110	13
CC00190	11
Total	**191**

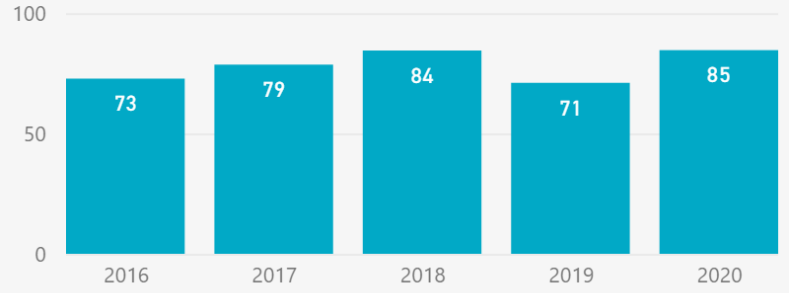
Average nest success rate per Species



Nesting months in Watamu



Average of nest_success_rate per Year

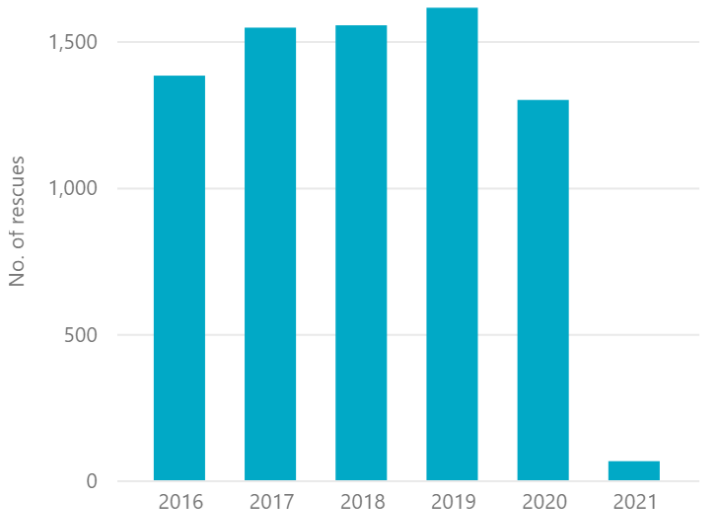


In collaboration with Kenya Wildlife Service

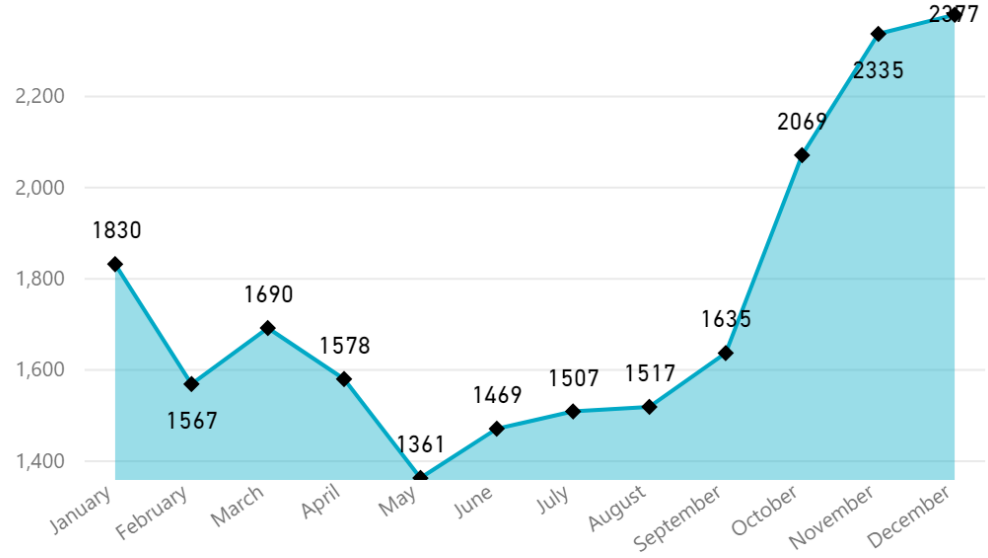
Turtle nesting sites have **shifted from the North to the South** of the Watamu MPA

Turtle ByCatch

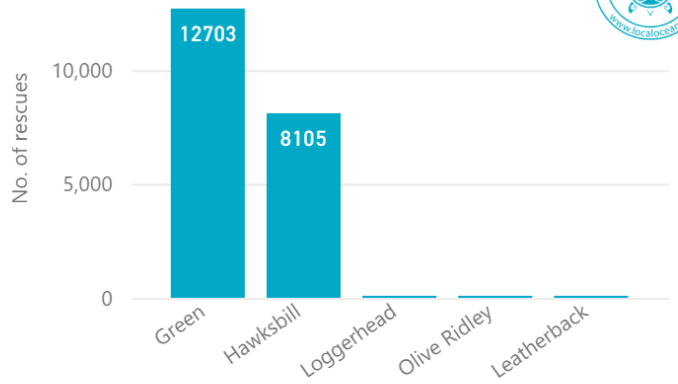
rescues



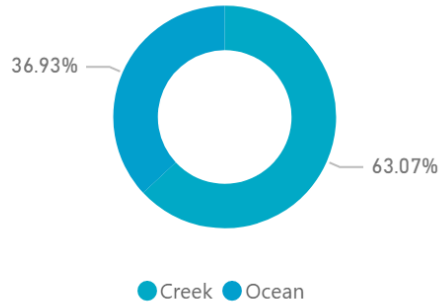
Historical monthly turtle rescue



Species rescued



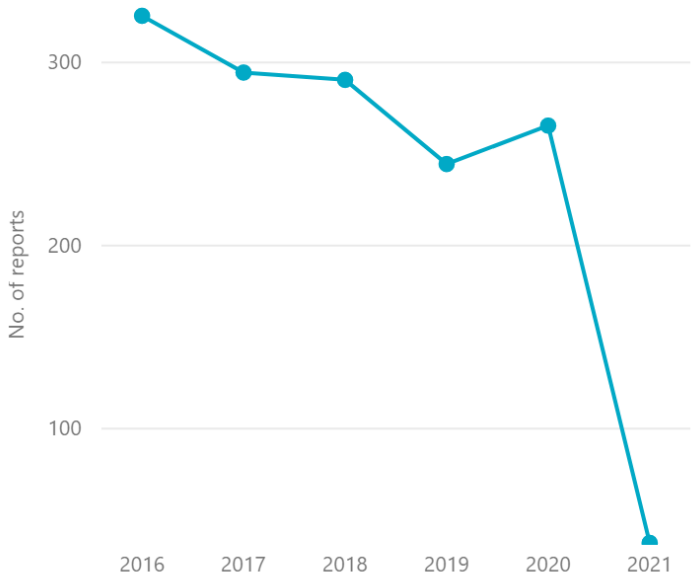
Turtle foraging ground



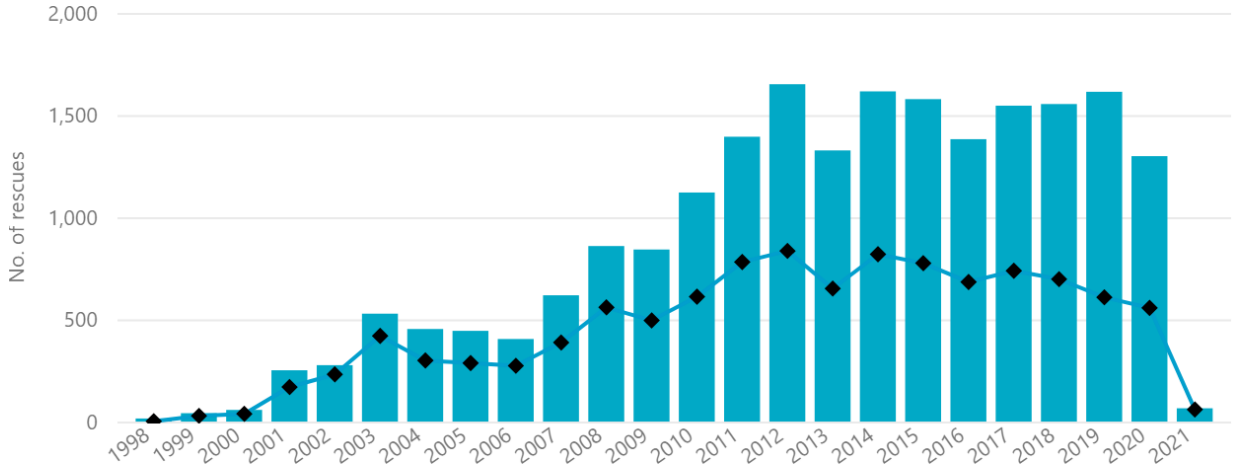
Total historical rescues

20935

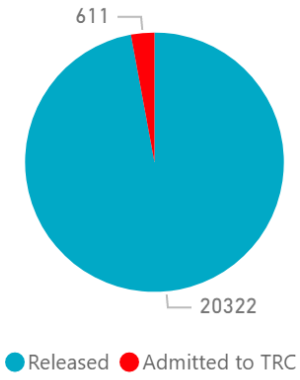
Historical turtle rescue informers



Unique turtles vs total rescues



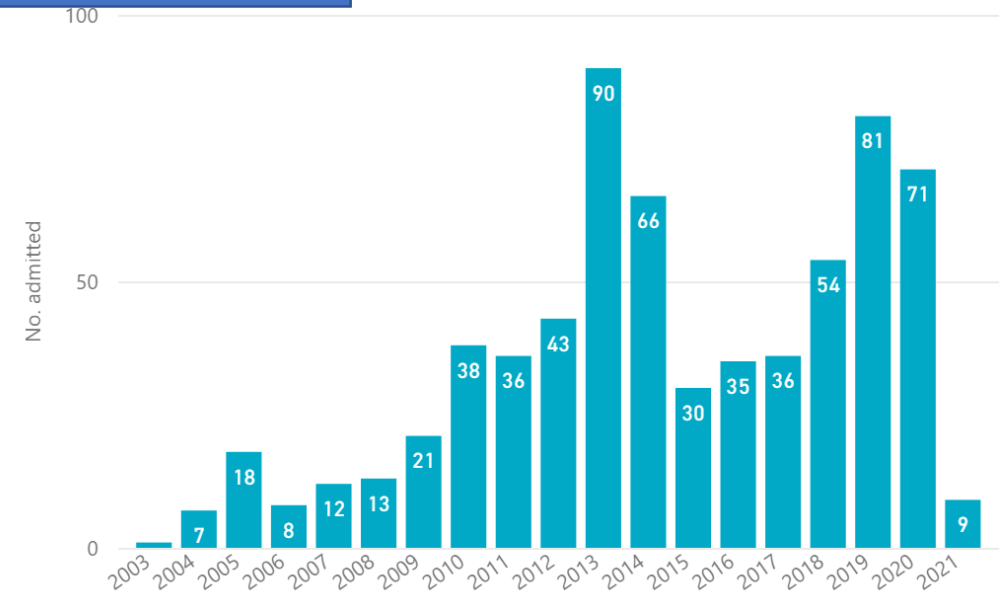
Historical turtle interaction outcomes



In collaboration with Kenya Wildlife Service

Turtle Rehab Centre

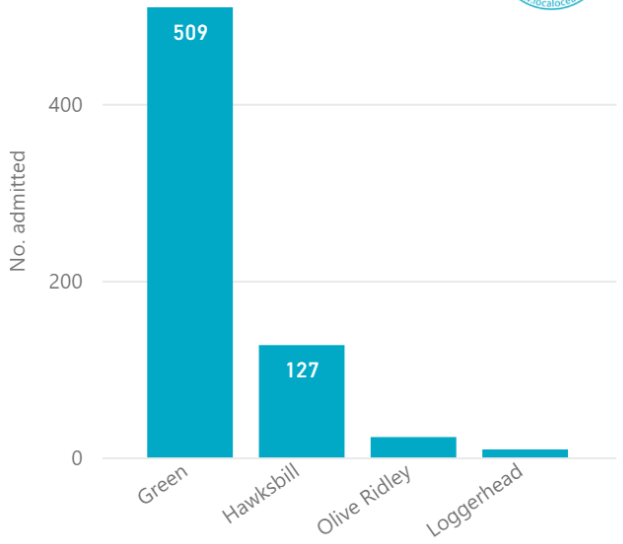
Historical turtle admission



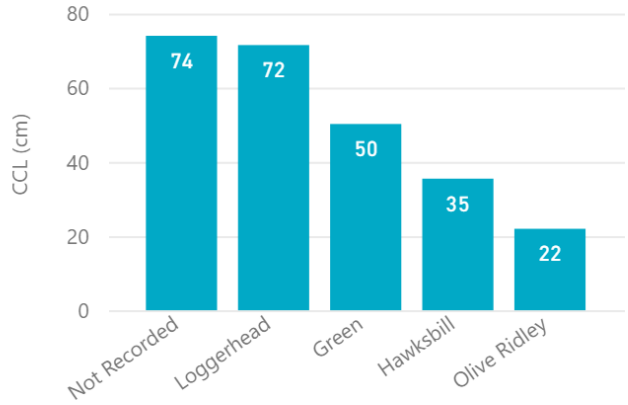
Historical turtle admission

669

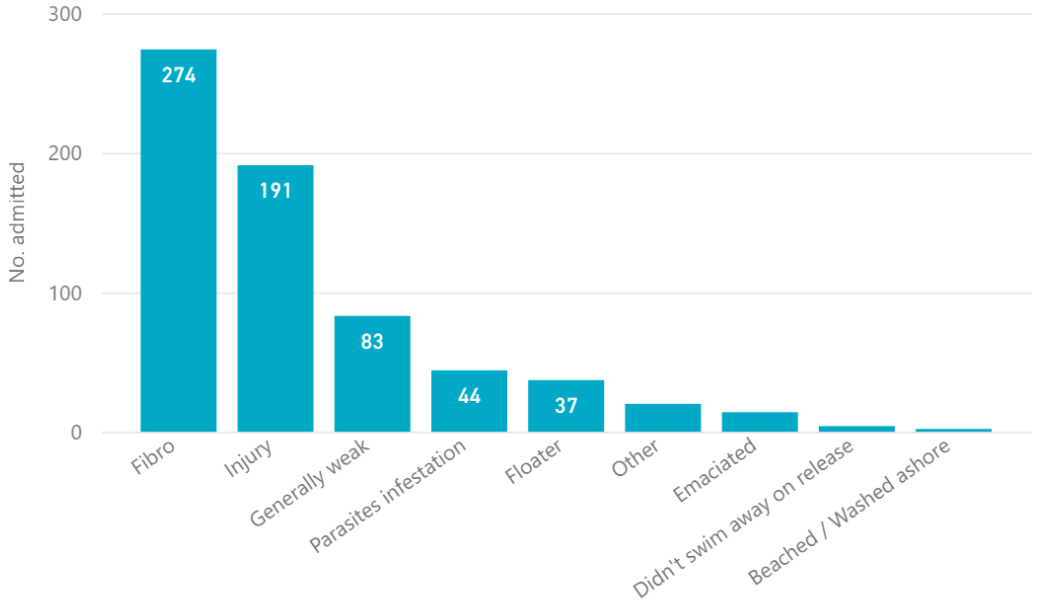
Historical species admitted



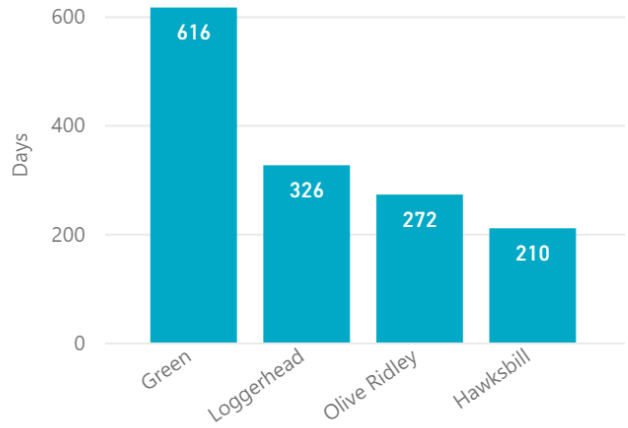
Average curved carapace length (cm)



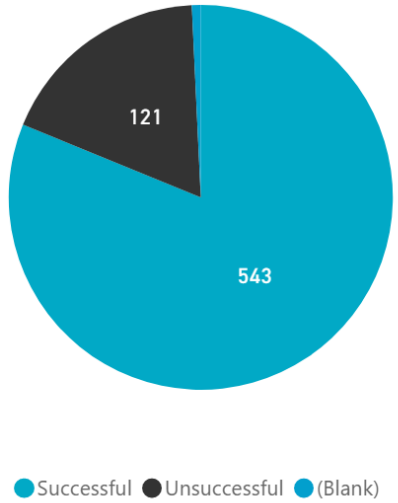
Historical reasons for admission



Maximum no. of days in Rehab



Historical rehabilitation outcomes



In collaboration with Kenya Wildlife Service

Ecological Trends 3: Corals

Ecological Trends : Coral Reef Cover

- Declines in the ecosystem health of reefs has been observed in Kenya's MPAs.
- In 1998, the coral community in WMNP suffered >70% mortality as a result of severe thermal stress and bleaching.
- Bleaching mortality, low recruitment rates and nutrient levels are potential key factors reducing the resilience of coral communities in the MPA.
- Since 1998, the park has experienced multiple bleaching events i.e., 2005, 2007, 2010, 2013, 2016 & 2020.

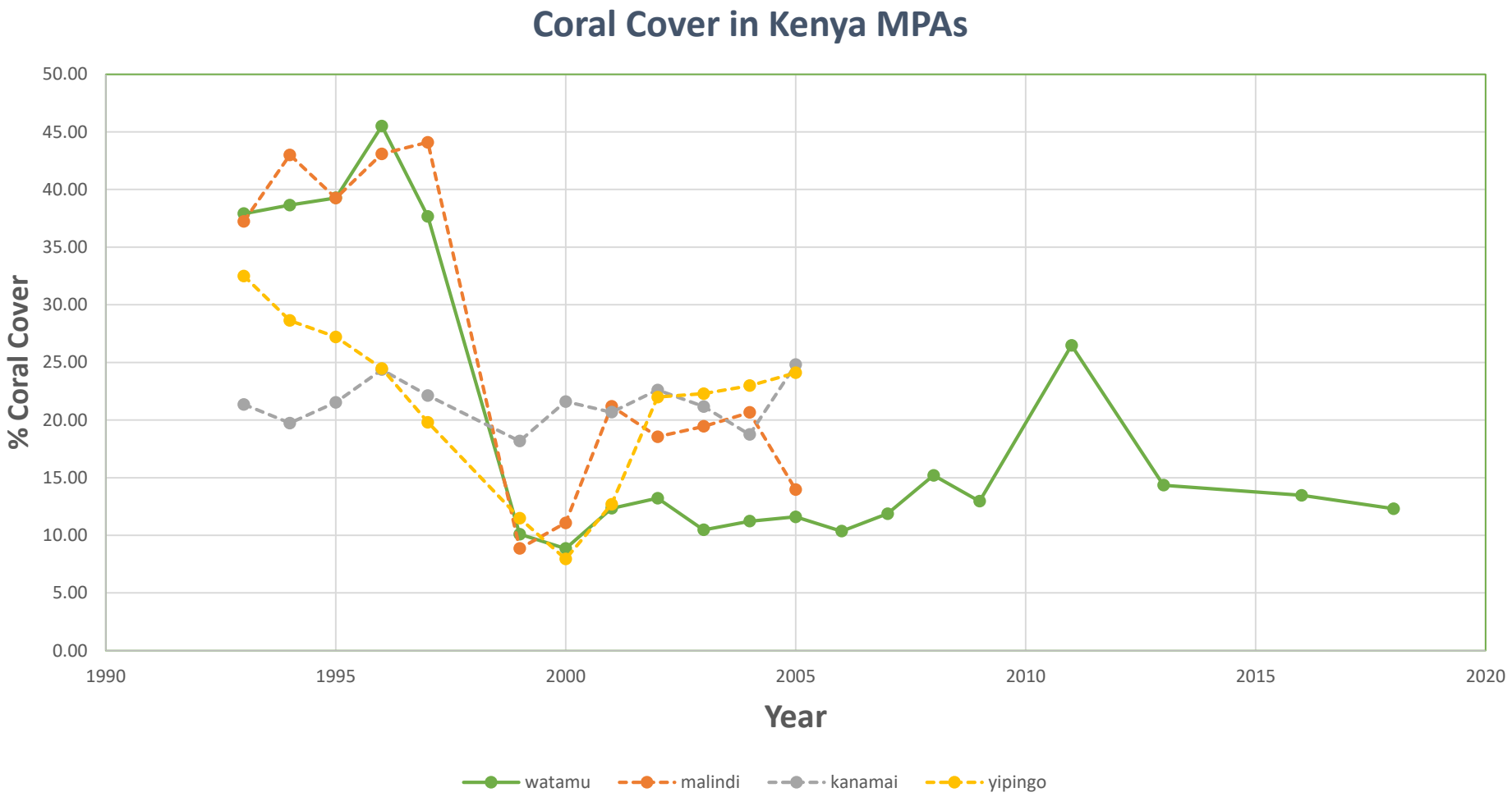
Key Questions.

1. What is the ‘shape of the curves’ and what does it imply about the changing condition of the ecosystem?

2. How reliable (complete and accurate) are the sources of data? Do we agree about this?

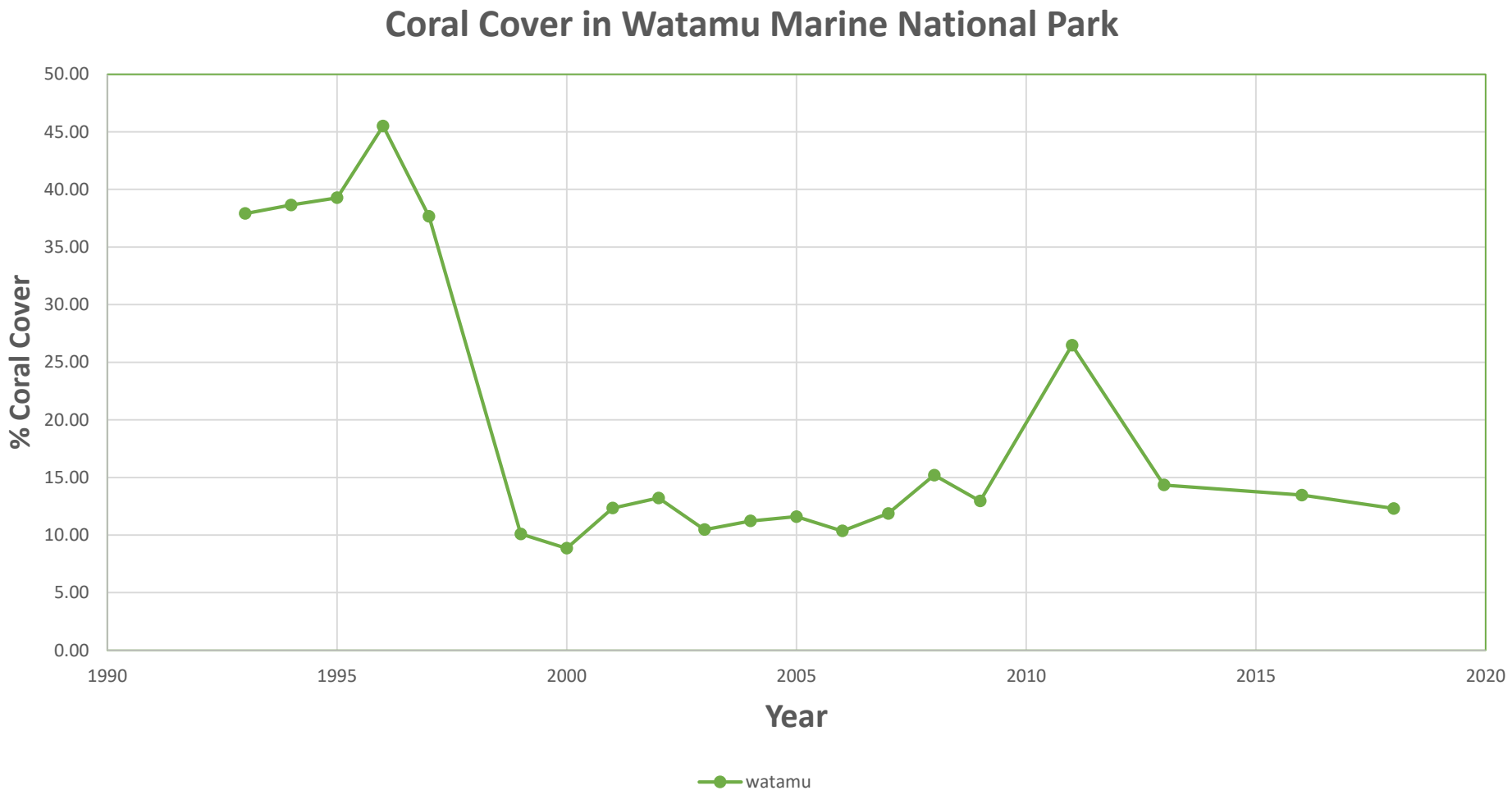
3. What other data can we collect or analyze to understand this?

Ecological Trends : Coral Reef Cover



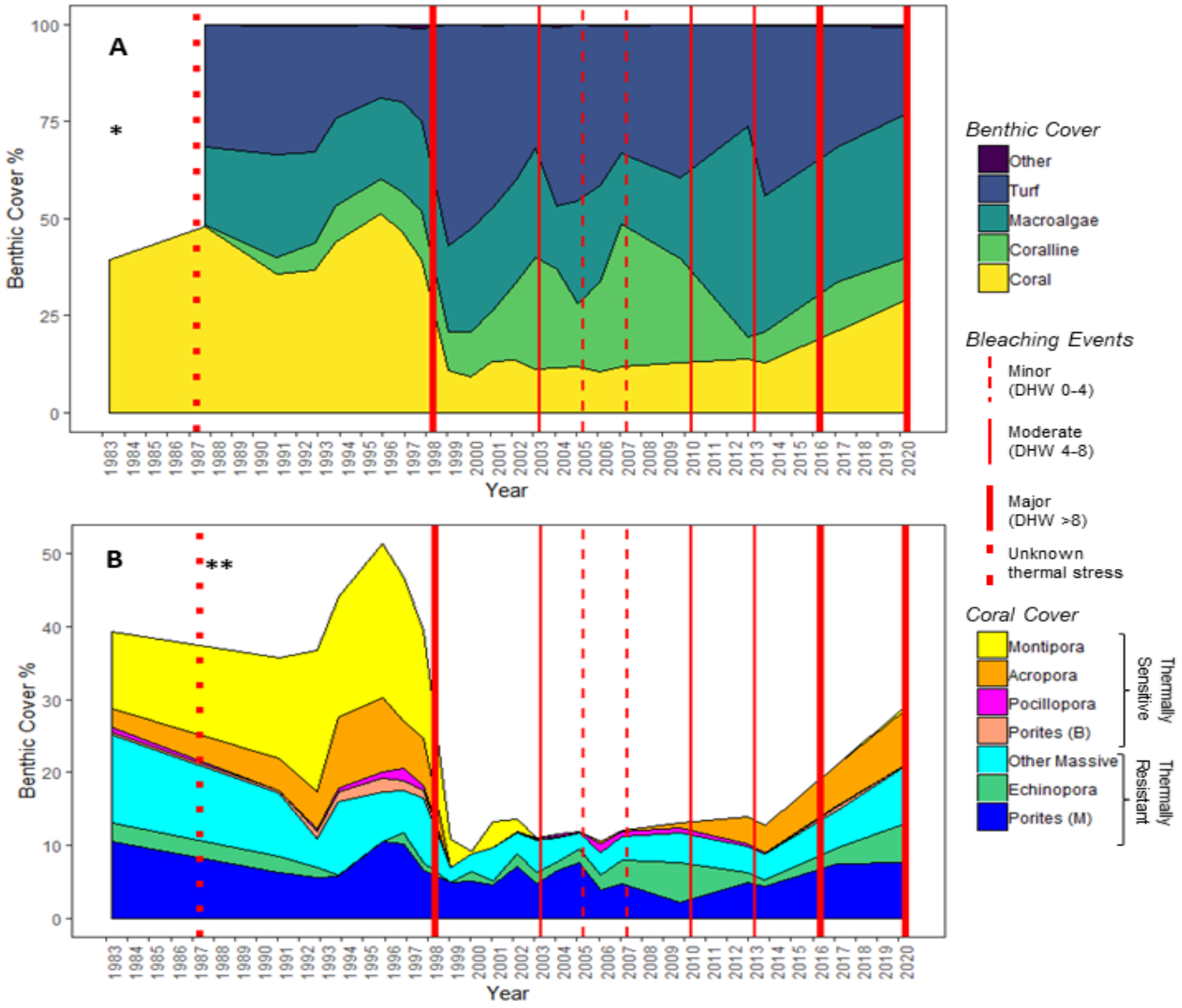
Source: Data Wildlife Conservation Society Kenya and N.A. Muthiga / Ocean & Coastal Management 52 (2009) 417–423

Ecological Trends: Coral Reef Cover



Source: Data Wildlife Conservation Society Kenya and N.A. Muthiga / Ocean & Coastal Management 52 (2009) 417–423

Trends in other Benthic Communities in WMNP



A. Timelines of Benthic Cover

B. Timelines of Coral Cover

Source: Benjamin Cowburn, Unplished Data

Integrated Management Effectiveness tool (IMET)

Improving management effectiveness of PAs

BIOPAMA IMET

- A tool between multiple tools for harvesting and organising information
- Organised for a common understanding of the problems to solve and solutions to adopt
- Structured towards a result-focused and a proactive approach towards prioritisation and decision-making
- Consolidates Planning, Monitoring & Evaluation
- Allows to compare and to follow situations over time
- Supports better understanding of situations and the improvement of management effectiveness of PAs and PAs networks

The framework for assessing management

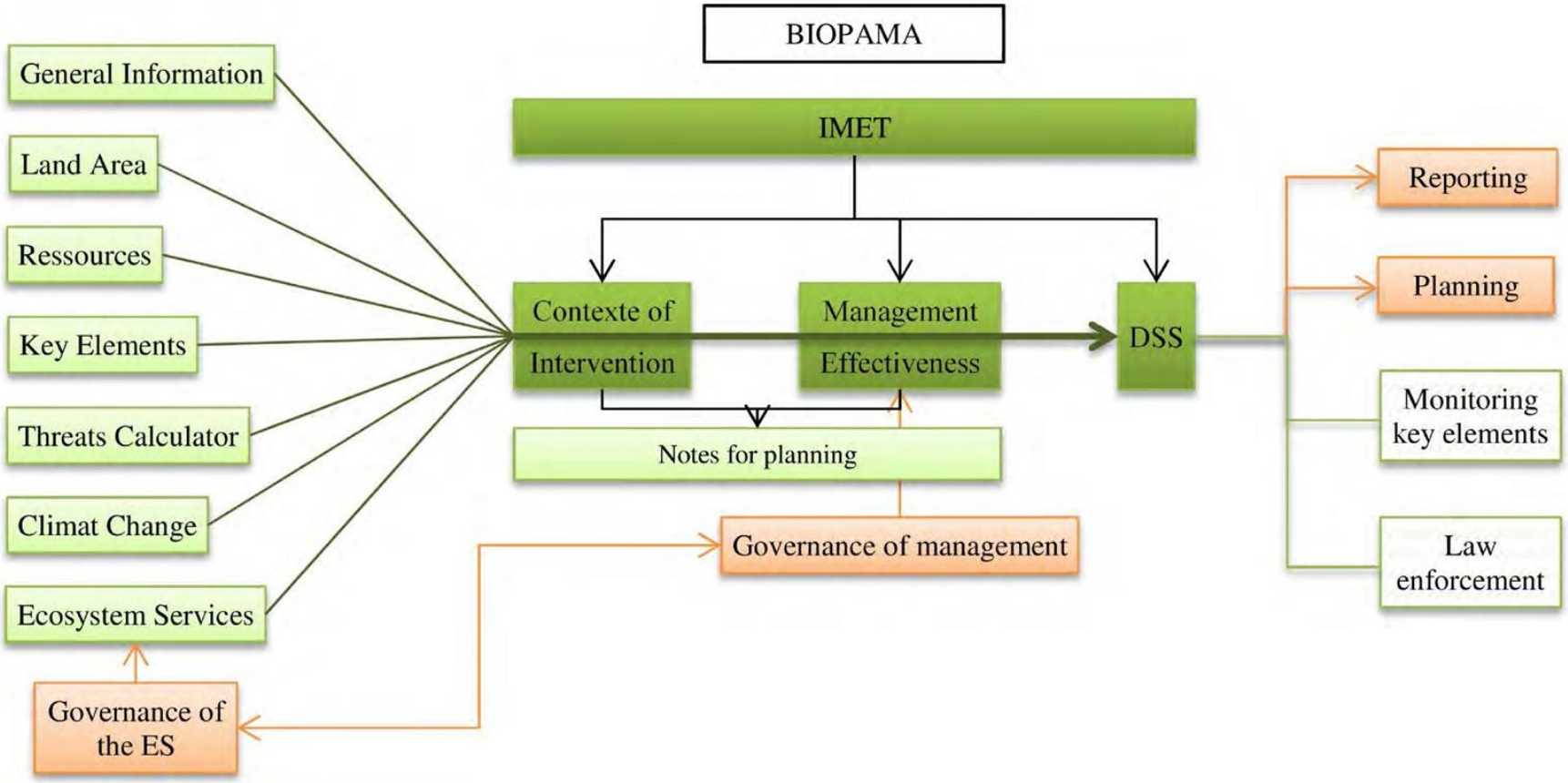
BIOPAMA IMET - Rationale

- Management of protected areas is complex
- It is essential to:
  - invest in better decisions-making & structuring information systems
  - strengthen the coordination of the different management aspects towards well-defined result- oriented actions

BIOPAMA IMET is

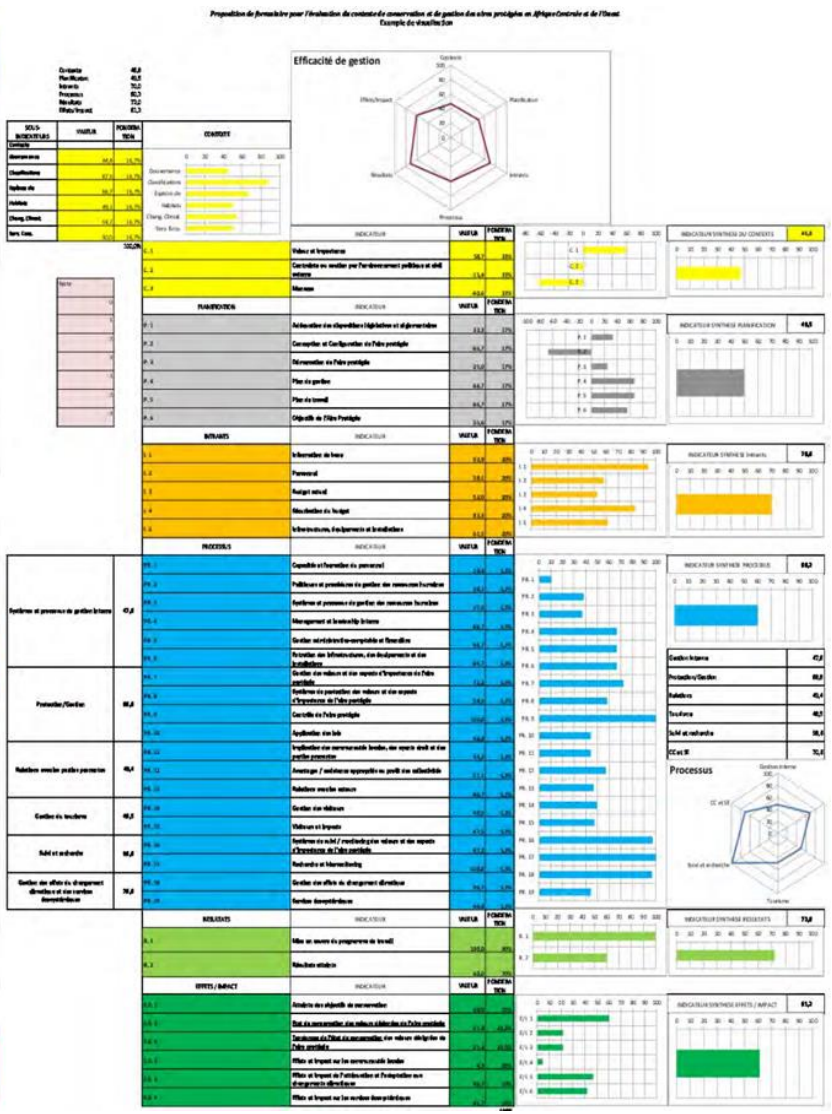
- **NOT a new tool**: it associates others tools *eg. METT*
- **NOT difficult**:
  - Logical links between various elements
  - Statistical analysis
  - Visualisation guide
- **However:**
  - ***Each individual assessment requires the guidance/support of trained coaches***
  - ***3 days are required for a 1st compilation at PA level***

IMET a modular tool

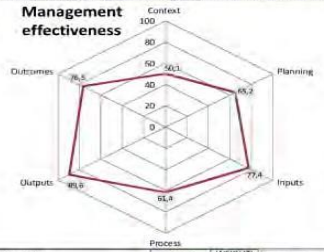


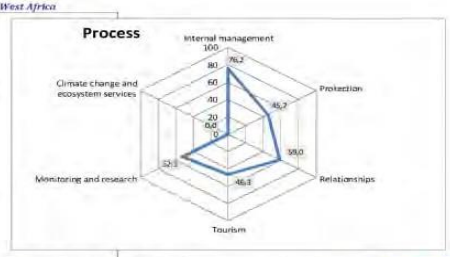
BIOPAMA IMET Framework

CONTEXT OF INTERVENTION
1. General information about the protected area
2. Land areas, boundaries, shape index and level of control of the protected area
3. Human, financial and material resources of the protected area
4. Key factors (terrestrial and marine protected areas): i) flagship, endangered, endemic, invasive, exploited, with insufficient data; ii) habitats; iii) land-cover-change and iv) management of natural resources
5. Pressures on and threats to the protected area
6. Climate change and conservation
7. Ecosystem services and dependence of communities in the protected area on these services
MANAGEMENT EFFECTIVENESS
1. Context
2. Planning
3. Inputs
4. Process
5. Outputs
6. Outcomes
QUALITY OF GOVERNANCE (working in progress)



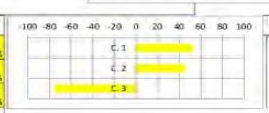
Overal IMET value	*70,03*
Context	50,1
Planning	65,2
Inputs	77,4
Process	61,4
Outputs	89,6
Outcomes	76,5

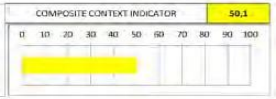




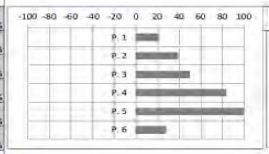
SUB-INDICATORS	VALUE	WEIGHTING
Context		
Classifications	71,4	20,0%
Key species	56,3	20,0%
Land cover / habitats	29,6	20,0%
Climate Change	#DIV/0!	20,0%
Ecos. Servs.	#DIV/0!	20,0%
		100,0%

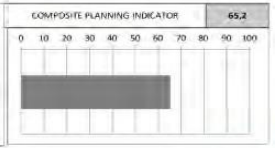
	INDICATOR	VALUE	WEIGHTING
C. 1	Value and importance	52,4	33,3%
C. 2	Constraint or supporting factors from the external political and civil environment	45,5	33,3%
C. 3	Threats	-74,8	33,3%



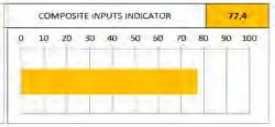


PLANNING	INDICATOR	VALUE	WEIGHTING
P. 1	Adequacy of legal and regulatory provisions	21,2	16,7%
P. 2	Design and layout of the protected area	38,9	16,7%
P. 3	Demarcation of the protected area	50,0	16,7%
P. 4	Management plan	83,3	16,7%
P. 5	Work plan	100,0	16,7%
P. 6	Objectives of the protected area	27,8	16,7%

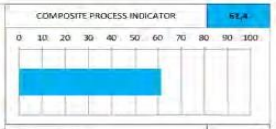




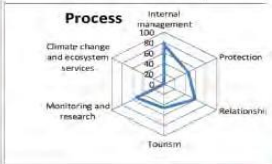
INPUTS	INDICATOR	VALUE	WEIGHTING
I. 1	Basic information	41,1	20,0%
I. 2	Staff	94,1	20,0%
I. 3	Current budget	100,0	20,0%
I. 4	Securing the budget	100,0	20,0%
I. 5	Infrastructure, equipment and facilities	51,6	20,0%



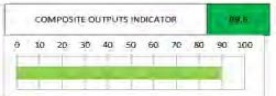
PROCESS	INDICATOR	VALUE	WEIGHTING
A - Internal management systems and processes (76,2)	PR. 1 Staff capabilities programme and training	82,1	5,6%
	PR. 2 Human resource management policies and procedures	63,9	5,6%
	PR. 3 Staff motivation (job suitability)	75,0	5,6%
	PR. 4 Management orientation of the protected area	83,3	5,6%
	PR. 5 Budget and financial management	82,1	5,6%
	PR. 6 Maintenance of infrastructure, equipment and facilities	69,4	5,6%
B - Management / Protection of the values (45,7)	PR. 7 Managing the values and key elements of the protected area with specific actions	59,0	5,6%
	PR. 8 Ranger patrols management (Law enforcement)	47,2	5,6%
	PR. 9 Intelligence / investigations / case development /charging management (Law enforcement)	40,0	5,6%
C - Stakeholder relations (59,0)	PR. 10 Cooperation with the stakeholders	79,1	5,6%
	PR. 11 Appropriate benefits/assistance for local communities	58,8	5,6%
	PR. 12 Environmental education and public awareness	46,3	5,6%
D - Tourism management (46,3)	PR. 13 Management of visitors' facilities and services	59,3	5,6%
	PR. 14 Management of visitors' impact	83,3	5,6%
E - Monitoring and research (52,1)	PR. 15 Monitoring systems for natural and cultural resources	64,1	5,6%
	PR. 16 Research and biomonitoring	40,0	5,6%
F - Management of the effects of climate change and ecosystem services (#DIV/0!)	PR. 17 Management of the effects of climate change	#DIV/0!	5,6%
	PR. 18 Ecosystem services	#DIV/0!	5,6%



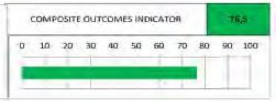
Internal management	76,2
Protection	45,7
Relationships	59,0
Tourism	46,3
Monitoring and research	52,1
Climate change and ecosystem services	#DIV/0!



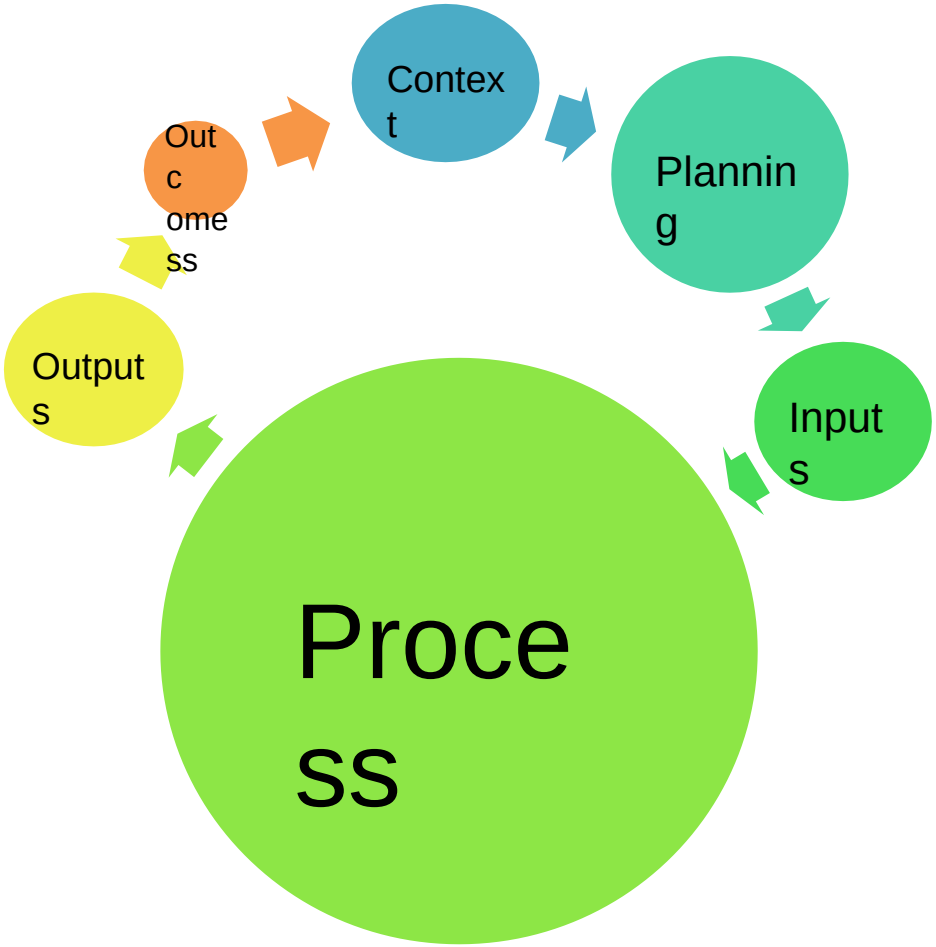
OUTPUTS	INDICATOR	VALUE	WEIGHTING
O/P. 1	Implementation of the work /action plan	83,3	33,3%
O/P. 2	Annual outputs – targets – achievement	83,3	33,3%
O/P. 3	Area domination	87,5	33,3%



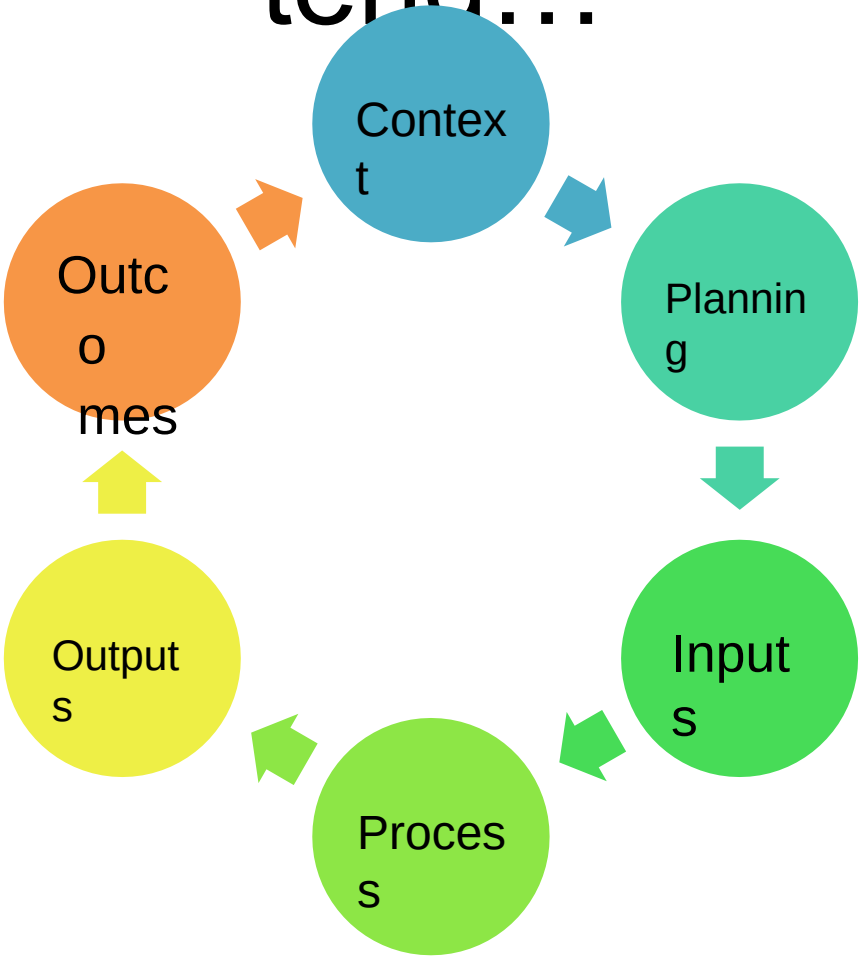
OUTCOMES	INDICATOR	VALUE	WEIGHTING
E/I. 1	Achievement of long-term conservation objectives of the management	88,9	33,3%
E/I. 2	Conditions and trends of the key conservation elements of the protected area	83,3	33,3%
E/I. 3	Effects and outcomes for stakeholders on quality of life	56,1	33,3%



Based on our experience, what we normally see:



To what we should tend…



Beyond data collection & scores achieved, IMET provides a framework for…

- **Sustainable biodiversity conservation efforts at field level**
- **The Green List process**
- **Dialogue for site and national level**:
  - assessments
  - objectives and benchmarks setting
  - prioritization of interventions
  - Operational planning
- **Capacity building throughout the overall PA management cycle**
- **Supporting an integrated "*Planning, Monitoring and Evaluation*" approach**

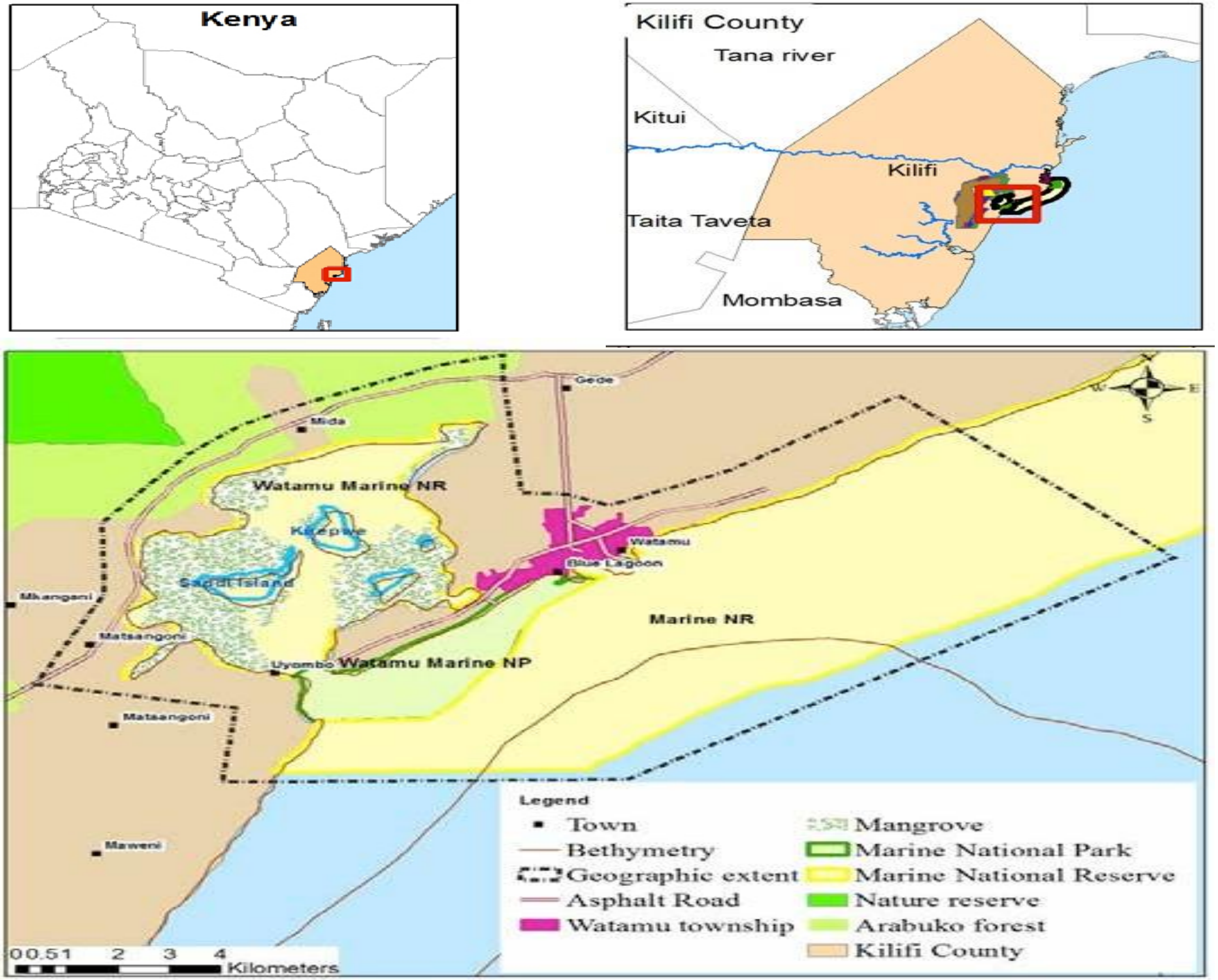
Watamu Marine Protected Area Management Plan 2016-2026

Introduction

- Developed in accordance with The Wildlife Conservation and Management Act, 2013 using the Protected area Planning framework
- Gazetted on 23rd August 2019 via Legal notice No. 7883
- Implementation done by a management committee

Implementation

The Plan details the strategies to address ecological, tourism development and management, community partnerships and administration in Watamu Marine Park, Watamu Marine National Reserve and half of Malindi Marine National Reserve.

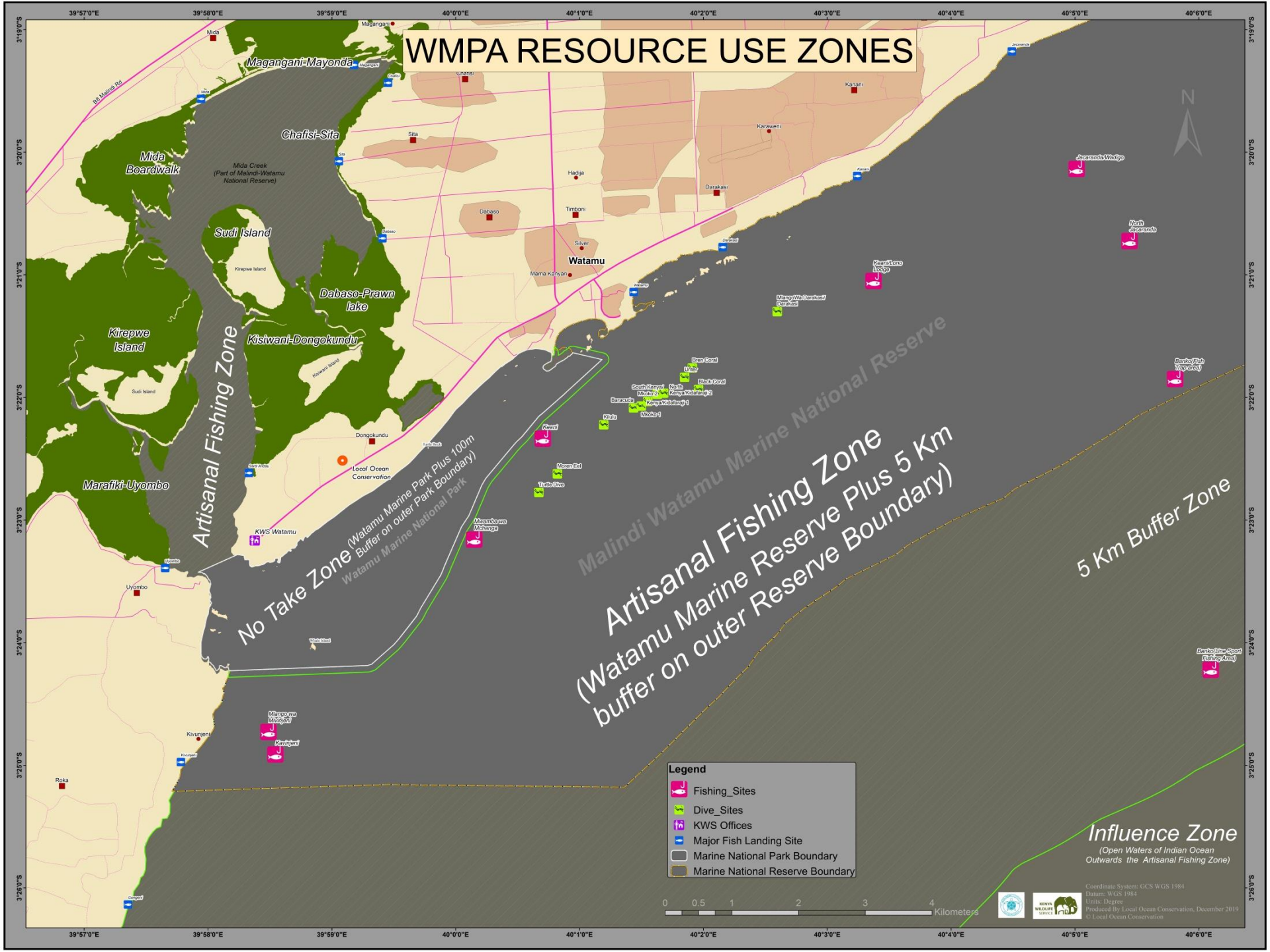


Kenya
Kilifi County
Tana river
Kitui
Kilifi
Taita Taveta
Mombasa
Gede
Mida
Watamu Marine NR
Watamu
Blue Lagoon
Mkangani
Matsangoni
Uyombo
Watamu Marine NP
Marine NR
Mataangoni
Maweni
Legend
Town
Bethymetry
Geographic extent
Asphalt Road
Watamu township
Mangrove
Marine National Park
Marine National Reserve
Nature reserve
Arabuko forest
Kilifi County
0 0.5 1 2 3 4
Kilometers

Implementation

Management programmes-

- **Ecological management programme** – threatened marine species such as sea turtles, marine mammals, dugong, sharks and rays
- **Tourism development** – enhance tourism
- **Community partnership and education** - strengthen community partnership
- **MPA operation and security** -competent workforce, enhance stakeholders and infrastructure.


WMPA RESOURCE USE ZONES
Magangani-Mayonda
Chafisi-Sita
Mida Boardwalk
Mida Creek (Part of Malindi-Watamu National Reserve)
Sudi Island
Kirepwe Island
Dabaso-Prawn lake
Kisiwani-Dongokundu
Marafiki-Uyombo
Artisanal Fishing Zone
No Take Zone (Watamu Marine Park Plus 100m Buffer on outer Park Boundary)
Watamu Marine National Park
Malindi Watamu Marine National Reserve
Artisanal Fishing Zone (Watamu Marine Reserve Plus 5 Km buffer on outer Reserve Boundary)
5 Km Buffer Zone
Influence Zone
(Open Waters of Indian Ocean Outwards the Artisanal Fishing Zone)
Local Ocean Conservation
KWS Watamu
Watamu
Legend
Fishing_Sites
Dive_Sites
KWS Offices
Major Fish Landing Site
Marine National Park Boundary
Marine National Reserve Boundary
0 0.5 1 2 3 4 Kilometers
Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree
Produced By Local Ocean Conservation, December 2019
© Local Ocean Conservation

The Biggest Threats

- Climate Change- High
- Unregulated and Illegal fishing/overfishing- very high
- Beach alteration(coastal development)- very high
- Beach erosion- High
- Land tenure system- very High
- Poaching- high
- Habitat destruction- high

Priority Actions in each Programme

- Ecological: 2.2,2.3, 3.4,3.6.3.8 and 4.6
- Tourism:1.1,1.2,1.4, 2.1
- Commmunity:1.1, 1.2. 1.3, 1.8,2.1, 2.2, 3.2, 3.7
- Park operations: 1.1, 2.1,2.2,2.6,3.4,4,2,4.5,4.6,4.8

Priority actions

- Strengthening legal and policy issues
- Strengthening stakeholder relations- Formation of Tourism forum, Regulation of Beach and boat operators associations, Fisheries management committee
- Monitoring and regulation of Tourist activities
- Law enforcement
- Centralized Data System
- Collaboration with community- Community consultative forum
- Beach Management Plan
- Outreach

Group exercise

- List all and any issues you feel need to be addressed in the MPA in order to achieve the Management Plan vision.

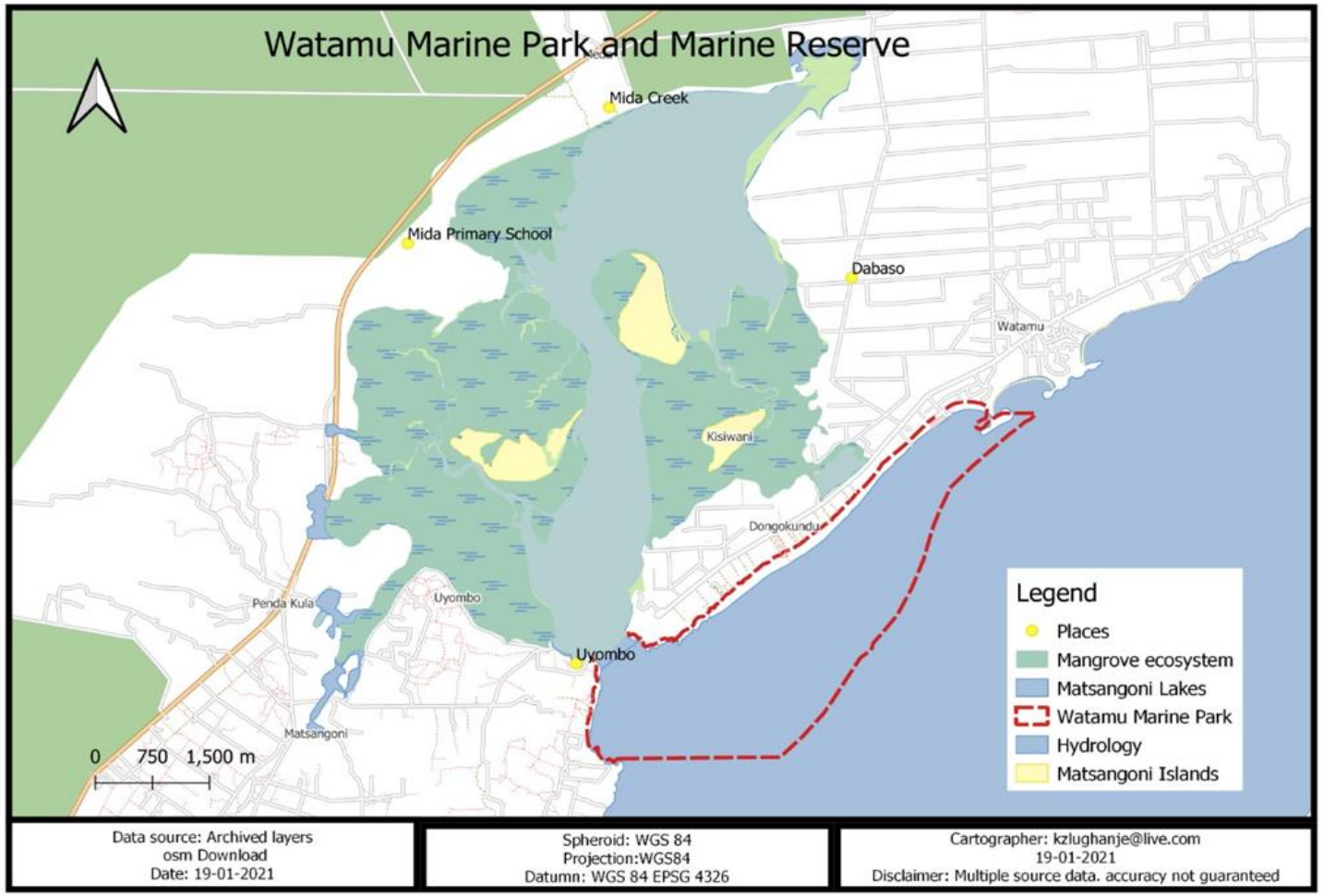
  - Ecological management programme
  - Tourism development
  - Community partnership and education
  - MPA operation and security

Findings from local community engagement meetings

Judith Ochieng

A Rocha Kenya

Locations of the local community groups in relation to the MPA



- Mida
- Dongokundu
- Uyombo
- Dabaso
- Watamu

Why engage the local communities?

- Strengthening the governance of WMPA in the long term requires understanding local communities' experience and involvement with the MPA.

Key Findings

Communities are aware of the degraded state of the marine ecosystem

They recognize the need to conserve it

Participants applauded KWS enforcement efforts which have significantly contributed to improving the ecosystem

- Communities expressed a concern regarding **lack of long term support and engagement** by NGOs and govt agencies

- **Resource use conflicts** were also an issue highlighted by community members for example between boat operators and fishermen

Cont...

- They were concerned about **encroachment of the riparian zone and developments** along the beach

- They expressed concern about the **top-down approach** used in policy making by govt institutions and NGOs as it excludes them

Cont...

- Resource user groups such as hoteliers raised the issue of being charged **entry fees when accessing the marine reserve**.
- **Communities seem not to understand who is in charge** especially in areas where the park borders the marine reserve
- **Women were underrepresented** and could not easily air out their views

Feedback

We invite your comments and feedback on this

“Pro-conservation Livelihoods and Community Capabilities for Marine Protected Area Governance”

Judith Ochieng
A Rocha Kenya

Carbon-credits for mangrove/sea grass

- To conduct a feasibility study to assess the viability of mangroves and sea grass in WMPA for carbon sequestration

- Started with site visit to Mikoko Pamoja in Gazi

Eco-certification of boat tour operators

- Investigate whether a well-designed eco-certification scheme would be accepted and supported by boat operators, tourists and hotels.

Alternative food livelihoods for fishers in closed seasons

- Aims to train fisher communities on restorative agriculture (FGW) as an alternative to fishing especially during *kusi* where they struggle to get a good catch because the sea is too rough

Feedback/Comments

Other current initiatives?

Looking forward:

Trends in Climate Change

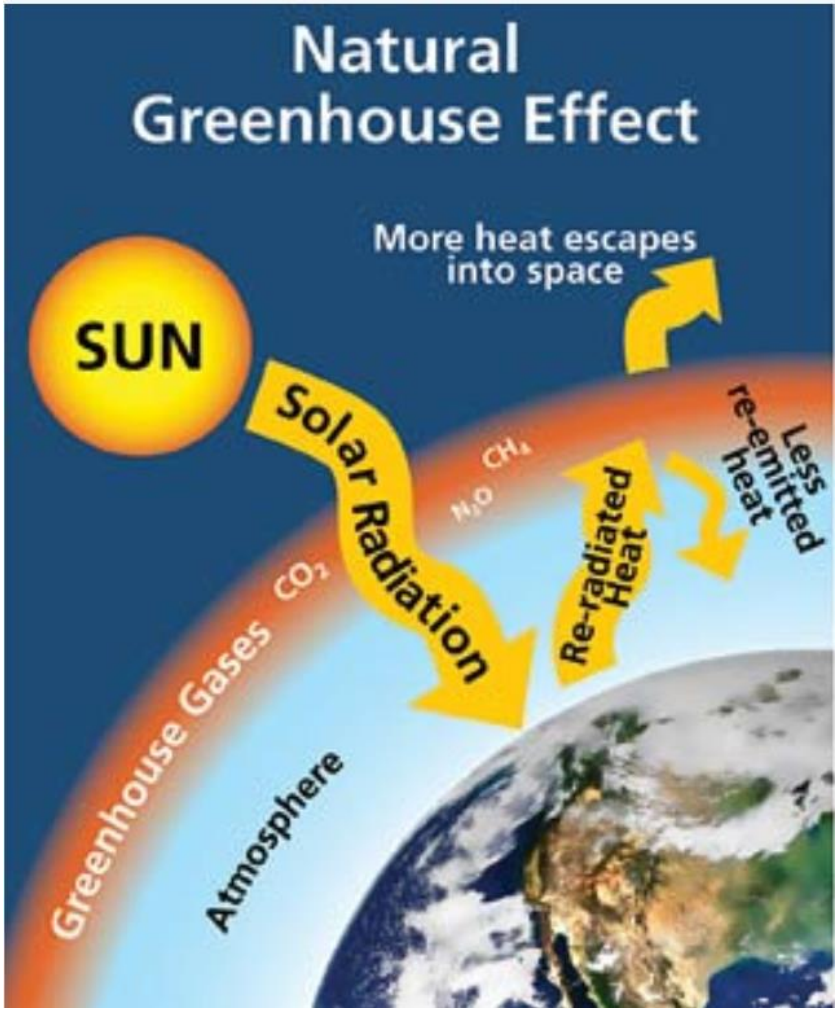
Colin Jackson, A Rocha Kenya

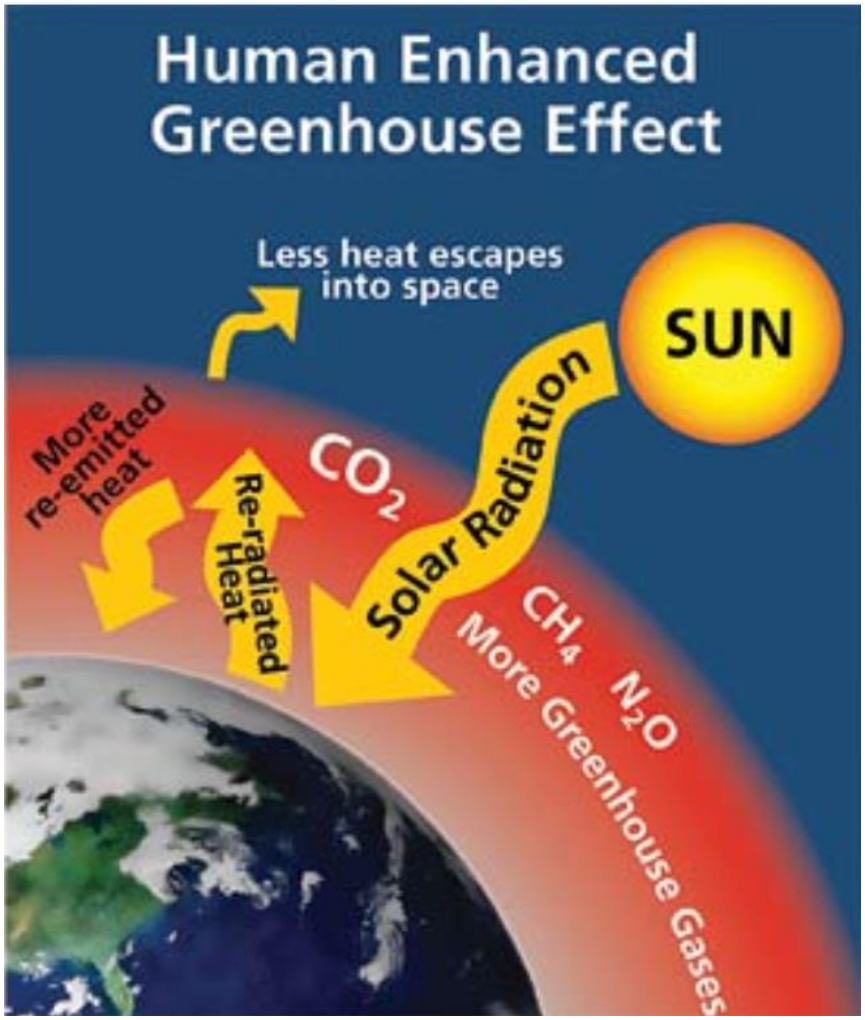
Dr Tim Stojanovic, University of St Andrews, UK

Key Questions: Climate change

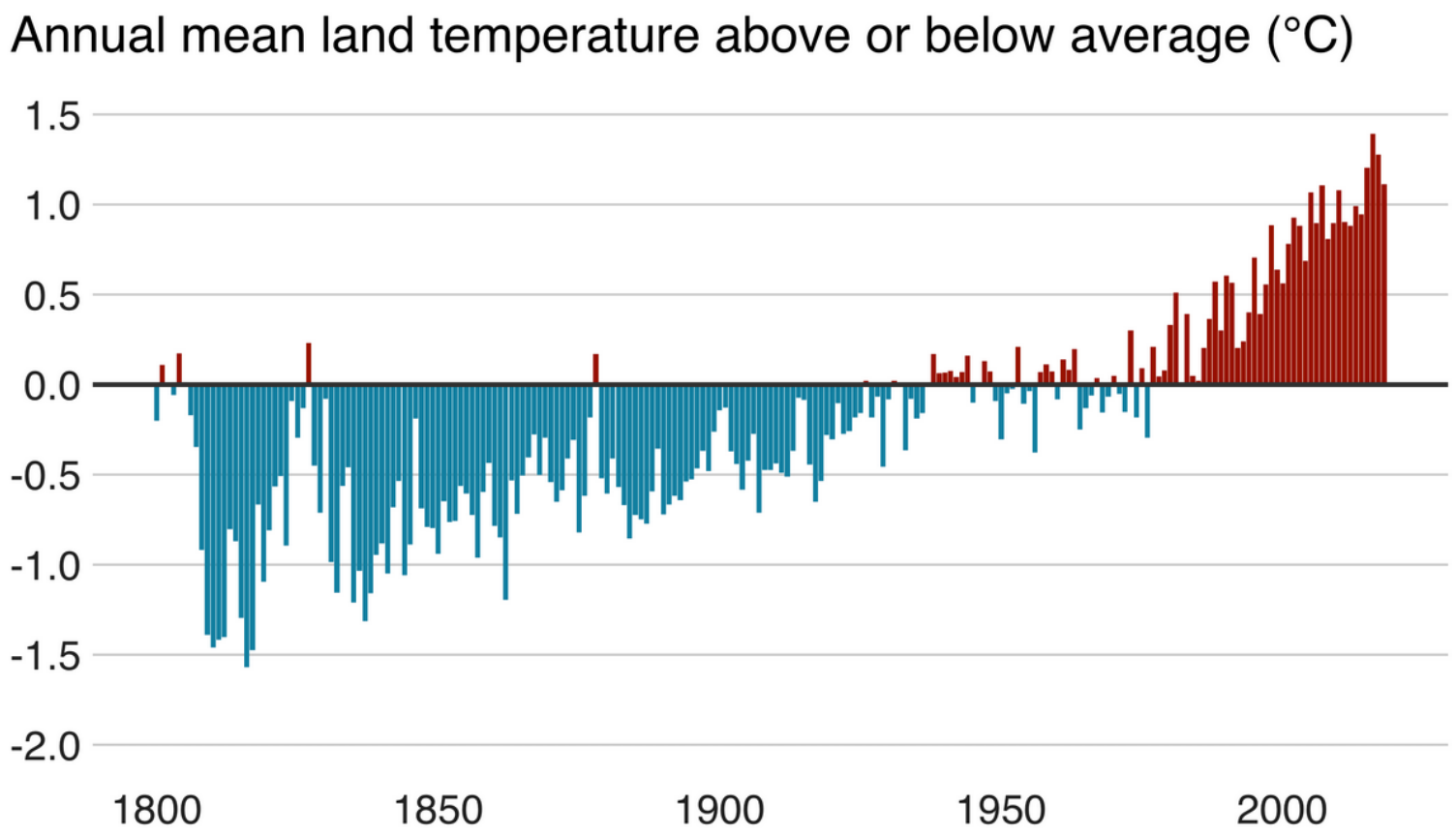
1. A brief reminder of Climate Change
2. What are current trends and what is the projection for change?
3. What is the range of anticipated change?
4. How will vulnerable features and human well-being be impacted?

The Greenhouse Effect explained





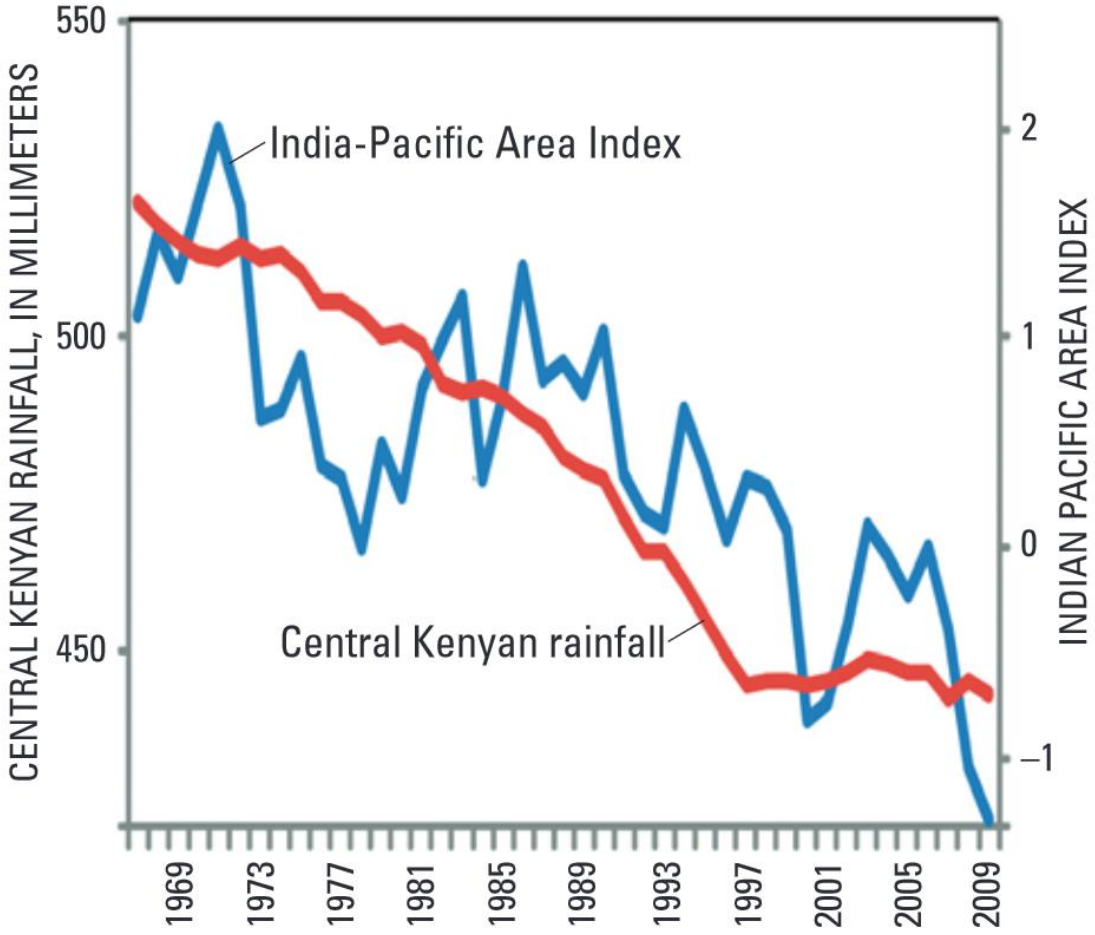
Global mean land temperature change over 200 years



Note: Average is calculated from 1951-1980 land surface temperature data

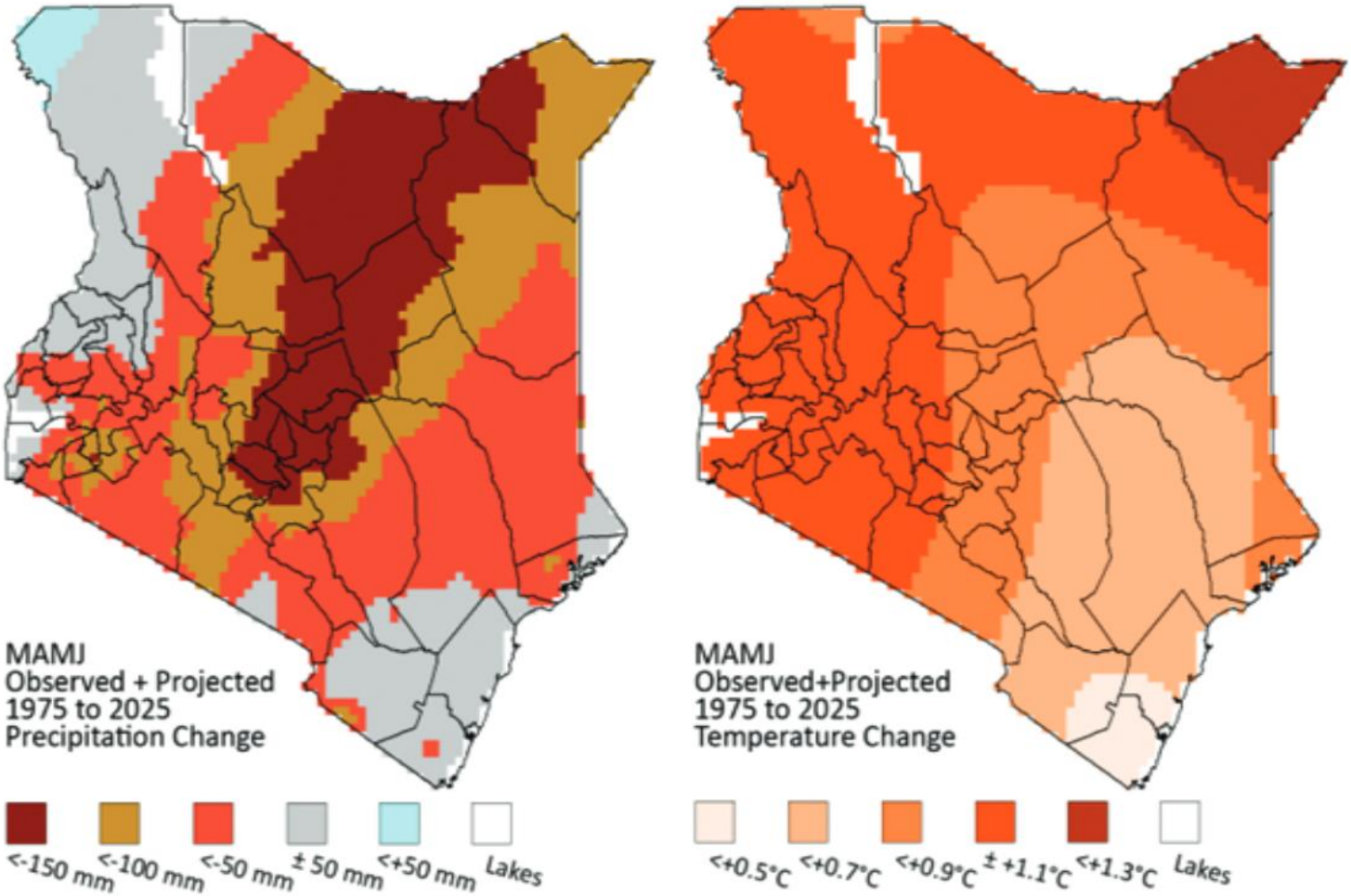
Source: University of Berkley https://www.bbc.com/news/science-environment-24021772

Change in rainfall in central Kenya – 1965-2009



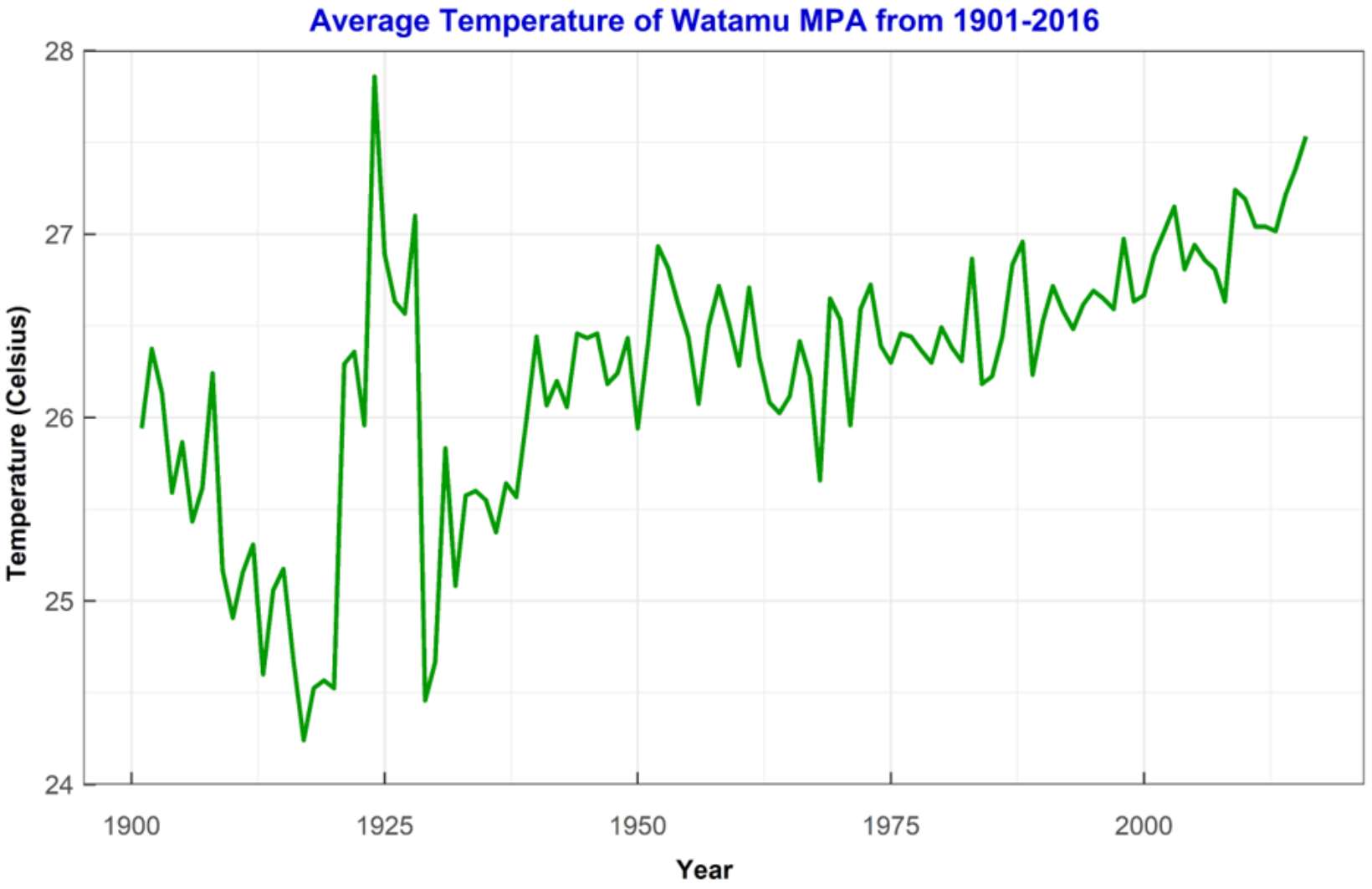
Source: USAID Fact Sheet: Climate Trend Analysis of Kenya—August 2010

Observed and projected change in rainfall and temperature across Kenya 1975-2025



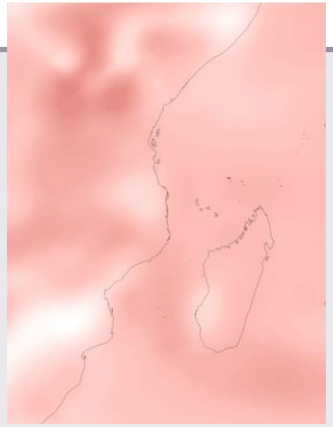
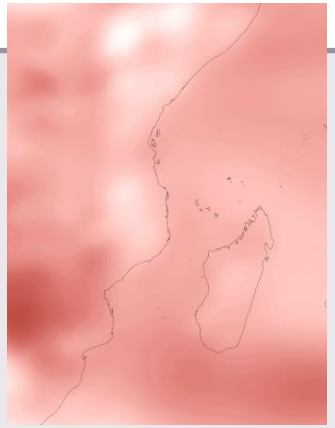
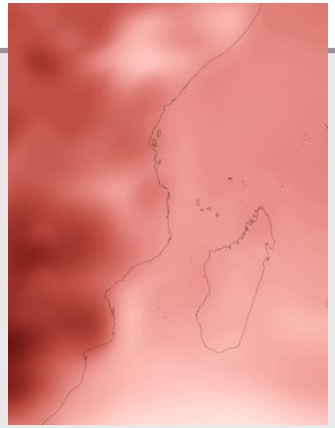
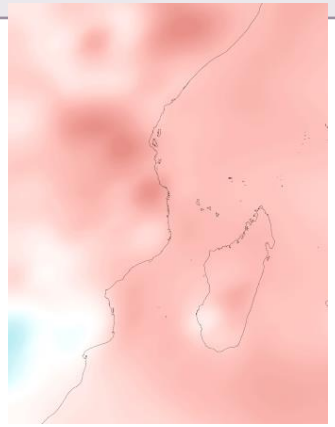
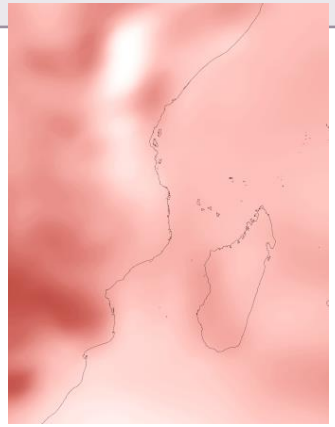
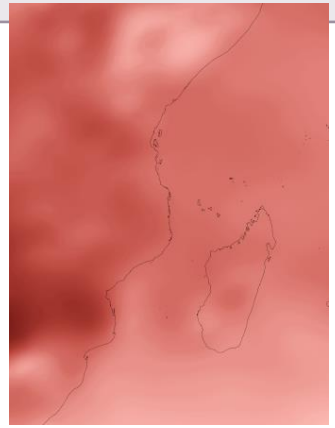
Source: USAID Fact Sheet: Climate Trend Analysis of Kenya—August 2010

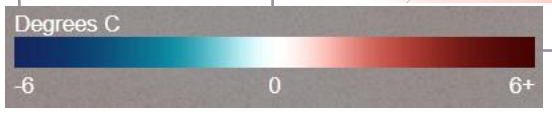
Climate Change: historical trends



Source: prepared by B Kao, based on Data from World Bank Climate Change

Climate Change: projections/impacts

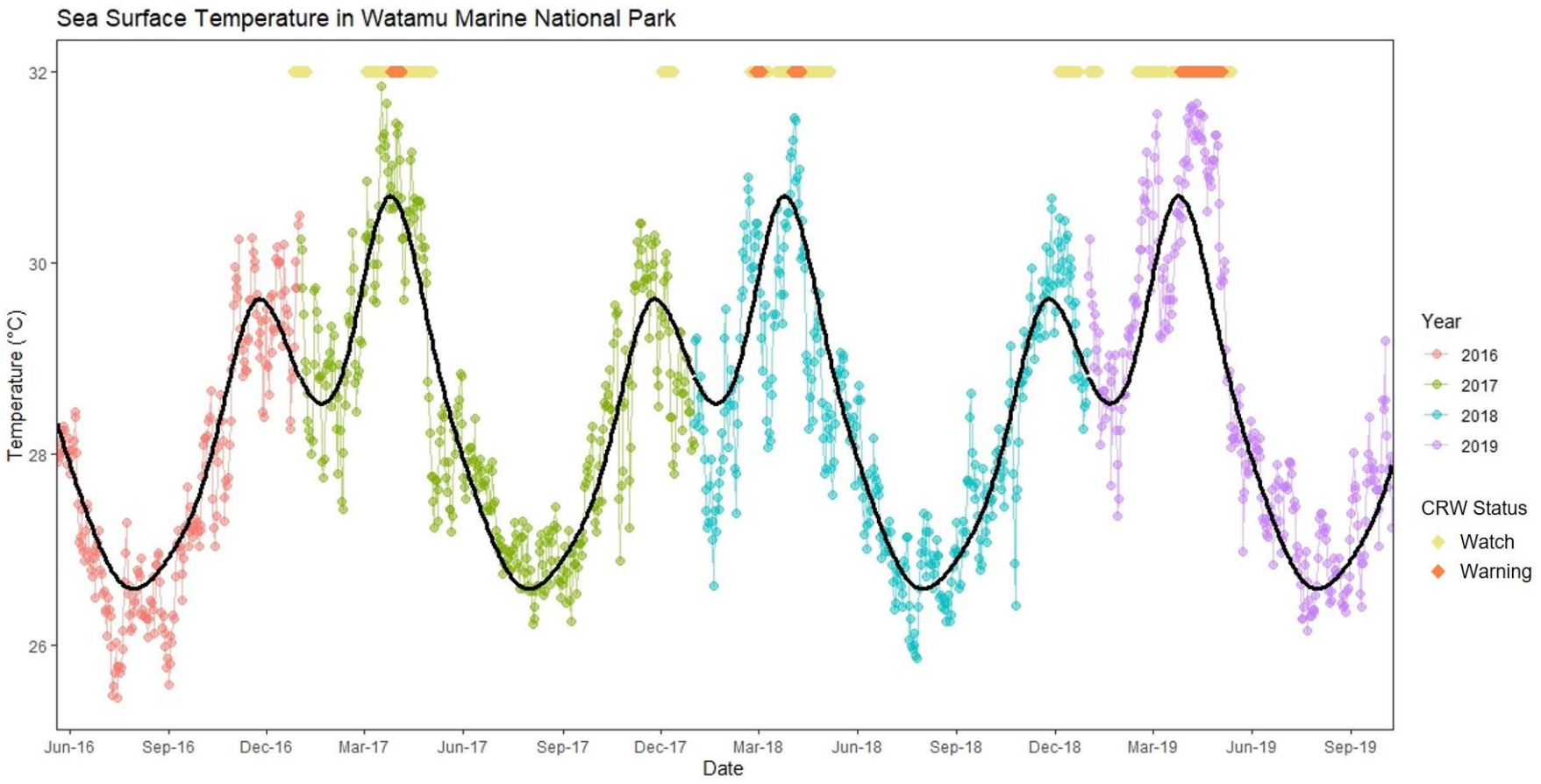
Projection	2020	2040	2060
RCP2.6			
RCP6.0			



degrees Celsius deviation of temperature from 20th century average

Source: prepared by B Kao, based on Data from NOAA GFDL CM3 Climate Model

Impacts on features: Coral Reef



Source: modelled by Dr M Carter, based on Data from WCS Kenya

Looking ahead – what do we expect?

- A warming climate
  - Average Temperatures will increase
  - Affect coral reef - bleaching
  - Rising sea levels
  - And…???
- Drier conditions – less rain
  - Or – higher rainfall but in shorter period
  - Affect agriculture, fish? Turtles?

- What will that mean for the MPA?? Us?? Uncertain…
- Definitely worse…
- Need to be prepared and take what action we can…
- Hence a Management Plan

Visioning

We commit to working together in partnership for the benefit of the national marine park and the creek, and those who depend upon it

Tunaahidi ushirikiano kwa manufaa ya hifadhi ya bahari ya Watamu pamoja na wale wanayoitegemea ili kujikimu kimaisha

We commit to caring for the plants and animals of the seas around Watamu National Marine Park and Mida Creek

Tunajitoa kutunza mimea na wanyama wa baharini wanaopatikana katika hifadhi ya Watamu National Marine Park na Mida Creek

We commit to not extracting fish or other animals illegally from Watamu National Marine Park

Tunaahidi ya kwamba hatutavua samaki wala viumbe wengine katika hifadhi ya bahari ya Watamu National Marine Park

We commit to sharing knowledge about the national marine park, with the aim of understanding changes and monitoring its health

Tunaahidi ya kwamba tutashirikiana kupitia kueneza habari kuhusu hifadhi ya bahari ya Watamu kwa malengo ya kuelewa mabadiliko yanayotokea

We commit to finding ways that local people, especially the poorest and disadvantaged, can benefit from the marine protected area

Tunaahidi ya kwamba tutaangalia kwa undani njia mbadala ambazo wanajamii maskini na wanyonge watanufaika kupitia hifadhi ya bahari ya Watamu

We commit to good (best environmental) practices which will reduce our impact on the seas and the creek.

Tunaahidi ya kwamba tutazingatia mbinu endelevu ili kupunguza athari kwa bahari

We commit to efforts which will reduce the impact of climate change on the ecosystems recovery, and to further explore how we can aid where there has been damage

Tunaahidi kuzingatia juhudi zitakazopunguza makali ya athari mbaya za mabadiliko ya tabia-nchi na kutafuta njia za kurekebisha sehemu zilizoharibika

We commit to sharing knowledge about the national marine park and the creek, with the aim of finding new practical opportunities for co-operation with one another

Tunaahidi ushirikiano katika kutoa habari kuhusu hifadhi ya bahari ya Watamu kwa malengo ya kupata fursa mbali mbali za kushirikiana na washikadau wote

Asanteni