



# Enhancing resilience and the health of the Western Indian Ocean: 2022-2024 Partners Programme


UNEP/Nairobi Convention Partners Meeting

VIRTUAL MEETING 23-25 March 2021

N. Muthiga, J. O'leary, J. Mensa, R. Bennett and L.  
Rasolofomanana

Wildlife Conservation Society

# COVID-19 Interventions



**COVID-19**  
**IMPACTS ON COASTAL**  
**COMMUNITIES IN KENYA**  
2021

WIOMSA  
WESTER INDIAN OCEAN  
MARINE SCIENCE  
Coasts Ocean and People

ARC CENTRE OF EXCELLENCE  
Coral Reef Studies

WCS

KENYA MARINE AND FISHERIES RESEARCH  
INSTITUTE  
K.M.F.R.I

JCU

**Title:** Responding to shocks in small-scale fishing communities: a panel-data study to track impacts and responses to Covid-19

Panel survey (Before-during-after covid)

Study aims to assess how:

- i) COVID-19 affects household food and nutrition security, livelihoods, and wellbeing in small-scale fishing communities;
- ii) what types of adaptive responses fishers take to buffer these impacts; and
- iii) how certain types of adaptive actions (particularly those that are potentially maladaptive from a social-ecological perspective) are related to key domains of adaptive capacity.

Sites:

Study duration: June 2020 – Oct 2021

# Results

## **Impacts of Covid-19**

Communities were greatly impacted by curfews, rules about gathering, closed travel routes, and bans on certain activities.

- Fishing families experienced loss of income and livelihoods, reduced cash flow, and declining food security.
- Disrupted relationships between fishers, traders, customers, changed market demand, making livelihoods difficult to sustain at a profit.
- Decline of the hotel and tourism industry and lack of access to bigger markets in Mombasa, alongside lack of cash in local communities meant that fish were sold for lower prices, or not sold at all.
- Many were unable to afford sufficient quality or quantities of food, and had been eating only Ugali for months.
- Many reported that they had not received any form of support, despite awareness that aid and support (in the form of money or food) was available.

## **Responses**

- Changing fishing and marketing practices,
- Decreasing the amount and variety of food eaten (which impacted food security),
- Drawing on existing assets and borrowing money or trading fish for commodities when money was lacking.
- A few pursued alternative livelihoods such as tomato farming

## **Conclusion**

- Small-scale fisheries are a crucial safety net for a variety of livelihoods in these communities ensuring that Covid-19 safe policies and protocols support continued fishing or diversification into other informal livelihoods
- Ensure that Covid19 support reaches the most vulnerable will be critical in safeguarding the wellbeing of families in these coastal communities.

# COVID-19 Check-in Surveys

Aim: Assess how the COVID-19 pandemic is affecting small-scale fishing communities in the TBCA

Method: Mobile phone surveys

Dates: May – July 2020

Sites: Villages in Jimbo, Mkwiro, Vanga in southern Kenya

# Summary results

- A significantly greater percentage of respondents reported COVID-19 as major national or regional event affecting their community in 2020
- Most respondents reported their household experienced some type of stress/challenge between May and July 2020.
- Most common challenges/stresses experienced were financial stress, livelihood stress and family stress

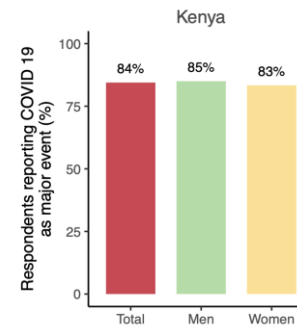


Fig. 1. Percentage of respondents reporting a major national/regional event

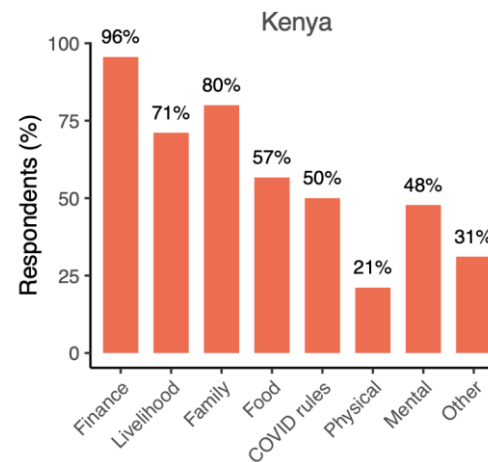


Fig. 2. Percentage of respondents experiencing each stress/challenge between May & July 2020

## Results - contd

- Most respondents reported a drop in livelihoods between May and July 2020 compared to the same season in previous years.
- Respondents were significantly more likely to report Impacts of COVID-19 on: household income, jobs, customers and markets; government rules and enforcement in response to COVID-19; school closures in response to COVID-19; worrying about COVID-19 and its effects on social relations; the closure of borders between Kenya and Tanzania ; and increased food prices (in order of importance)
- None COVID-19 related stress/challenges included Jobs/income, weather, sick (non-COVID), marine enforcement

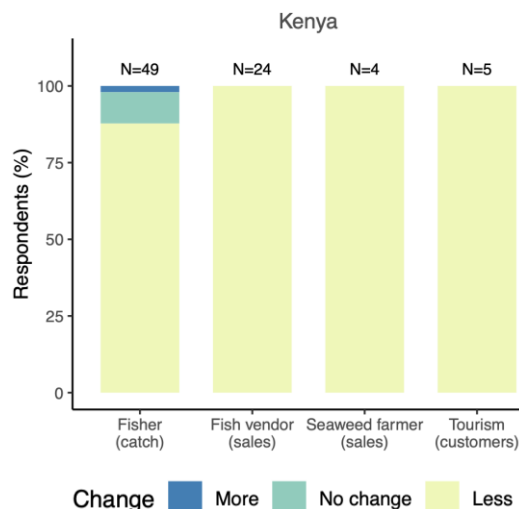


Fig. 3. Change in livelihood experienced by respondents between May and July 2020 compared to same season in previous years.

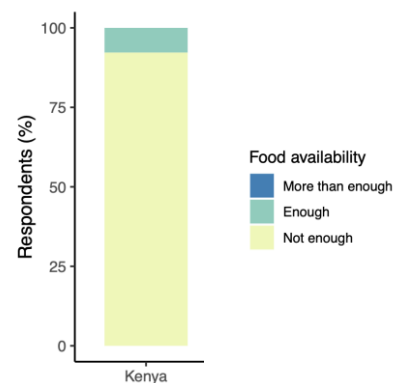
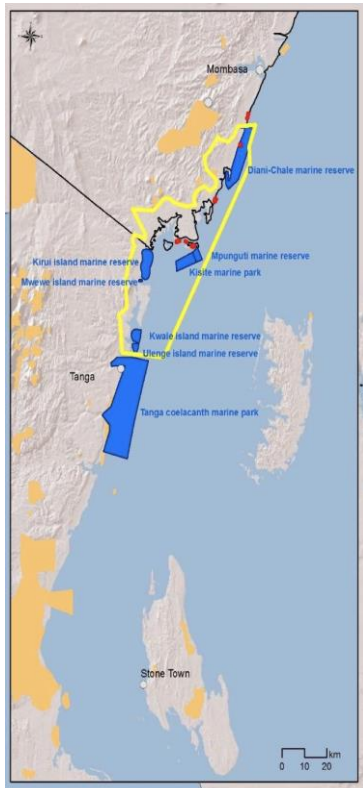


Fig. 4. Household food availability between May and July 2020

# Other COVID-19 interventions

- COVID-19 Protocol
- Mandatory masking, social distancing, sanitization and testing
- Food assistance
- Hand washing stations

## Prioritization of climate refugia in the Western Indian Ocean



### Locations of climate refugia from studies in the WIO

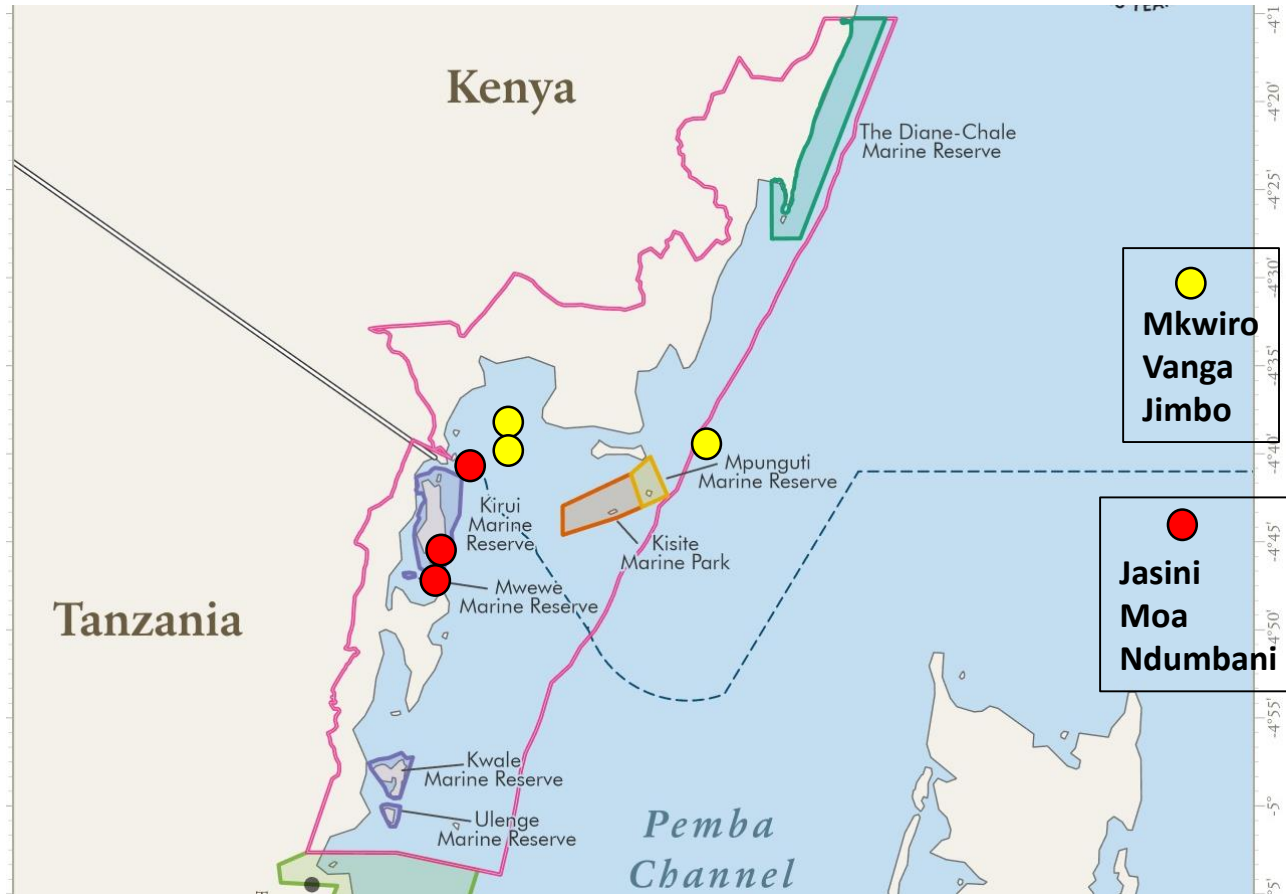
- Southern Kenya–northern Tanzania currently proposed as a Transboundary Conservation Area
- Southern Tanzania–northern Mozambique - Mnazi bay and Quirimbas MNPs that was established as a transfrontier conservation marine area. It's failure can form useful lessons for the region
- Northwestern Madagascar to Mayotte including the Mayotte Marine Reserve and the two reserves in northern Madagascar, namely Ankarea and Ankivonji are also potential climate sanctuaries.
- The northern Mozambique Channel

Map of the proposed Kenya-Tanzania TBCA



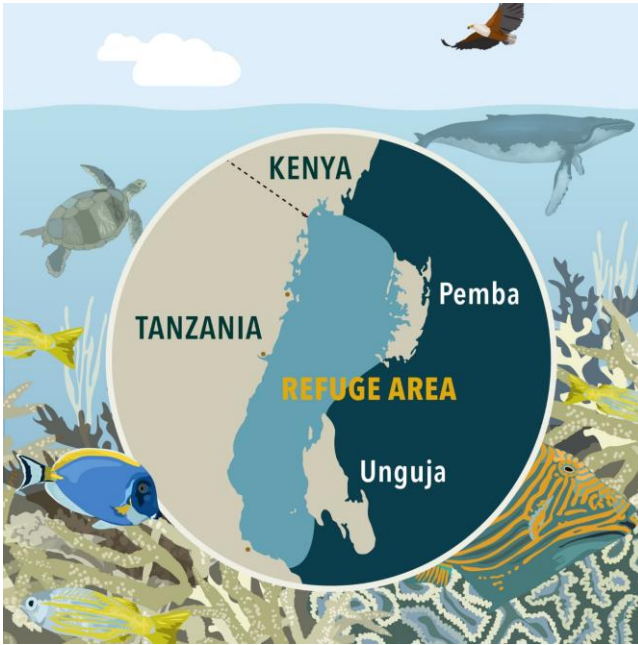


# Focal Communities –TBCA study





# TBCA: Climate Refuge



## EAST AFRICA'S **MARINE CLIMATE REFUGE**

WCS RESEARCH HAS REVEALED A RARE OCEAN 'COOL SPOT' OFF THE COAST OF KENYA AND TANZANIA WHICH IS PROTECTING CORAL REEF BIODIVERSITY

The illustration depicts a cross-section of the ocean. On the left, a mountain range on the coast of Tanzania is shown with runoff channels leading to deep channels in the sea bed. The water in these channels is depicted as cooler and more stable. The bottom of the illustration shows a vibrant coral reef ecosystem with various species of coral, fish, and a shark. A boat is visible on the surface of the water.

**Historic runoff** from northern Tanzania's mountains carved deep channels into the sea bed.

These deep channels help keep sea water temperatures lower and more stable than other coastal areas.

This protects corals and the reef ecosystem from some of the damage caused by warming seas.

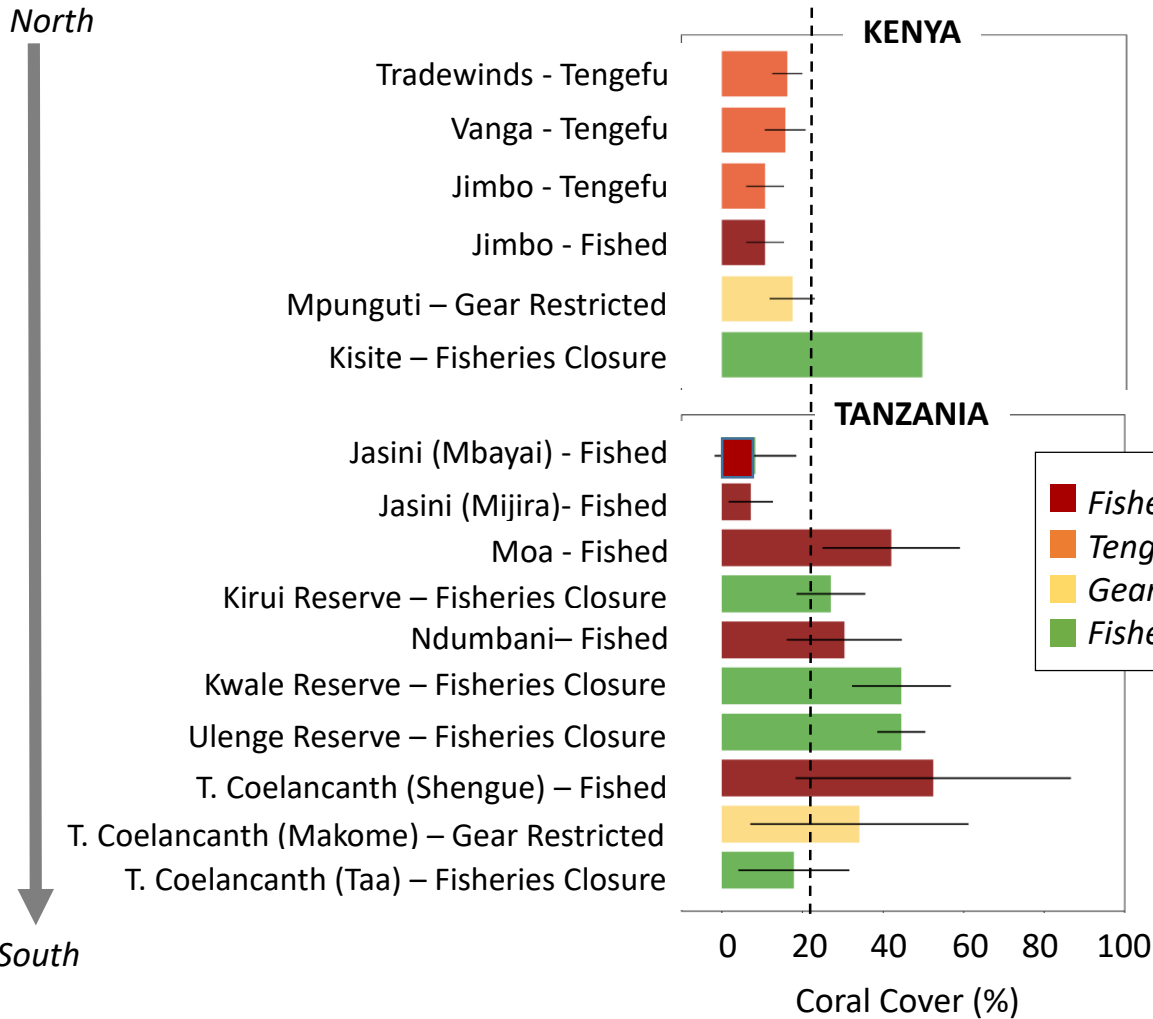
Healthy reef ecosystems are extremely productive, sustaining fisheries, coastal livelihoods and many other species such as oceanic fish, seabirds and marine mammals.

WCS IS WORKING WITH GOVERNMENTS, PARTNERS & COMMUNITIES TO SAFEGUARD THIS PRECIOUS AREA

© MARINE & COASTAL 2021

McClanahan 2021

# Ecological Status: Coral Cover



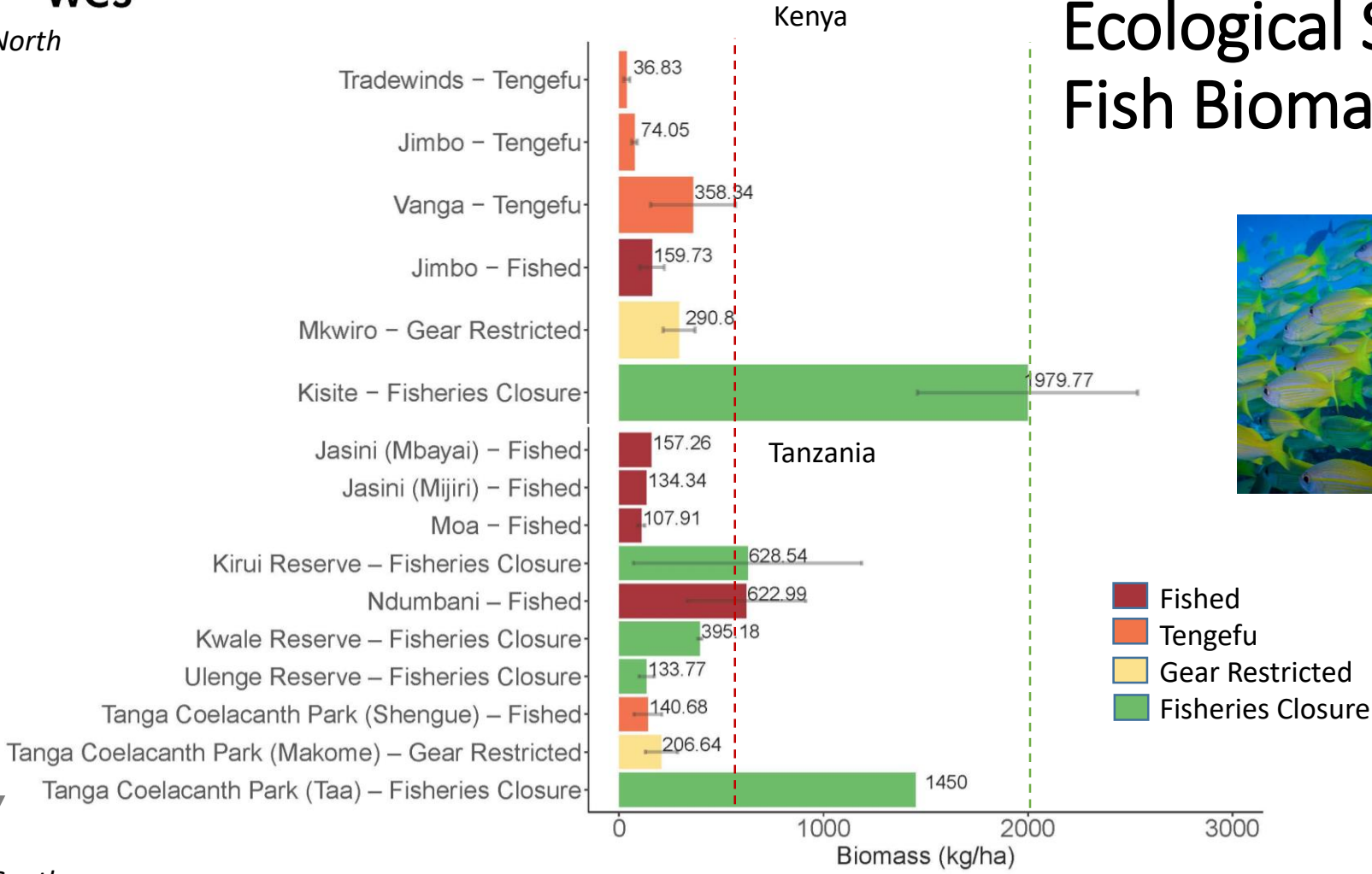


# Ecological Status: Fish Biomass

North



South



- Fished
- Tengefu
- Gear Restricted
- Fisheries Closure



# Proposed Tandavandriava Nosy Be MPA

- WCS is currently leading the process to protect the Tandavandriava Nosy Be as an MPA.
- Activities comprise ecological surveys, socio-economic surveys, studies on key conservation targets as well as capacity building for the Tandavandriava Platform that will co-manage the proposed MPA with WCS.
- A request for “temporary protection” of the Tandavandriava Nosy Be was submitted to the government in the North-West in November 2020. This is a first step in the process for the creation of a new marine protected area.





# Recommendations for the NC COP on climate refugia

## Technical:

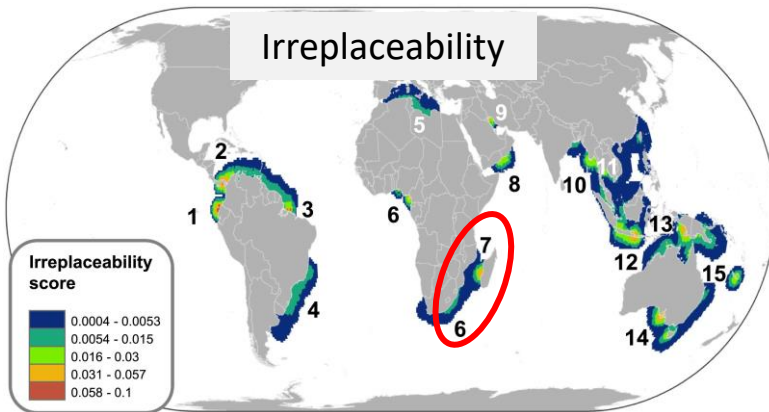
1. Urge member states to evaluate and improve the effectiveness of MPAs across the WIO with a focus on the MPAs in the areas identified as climate refugia.
2. Urge Parties and relevant organizations to collaborate to identify, map, designate and develop management strategies to protect the climate refugia in the WIO.

## Policy:

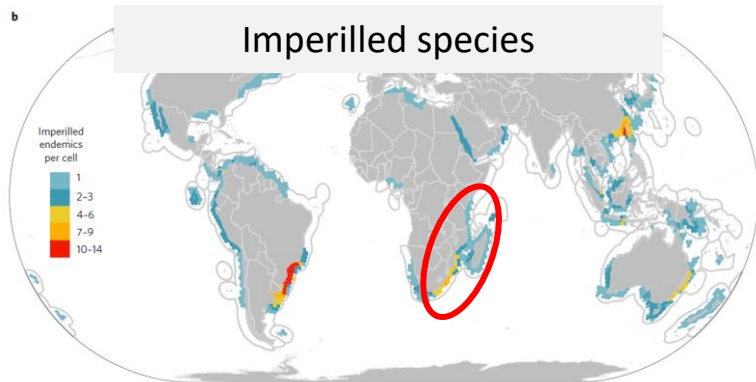
1. Urge member states to evaluate and improve the effectiveness of MPAs across the WIO with a focus on the MPAs in the areas identified as climate refugia.
2. Urge Parties and relevant organizations to collaborate to identify, map, designate and develop management strategies to protect the climate refugia in the WIO.
3. Encourage member states to implement their global and regional binding commitments in the protection and management of the coastal zone and ocean governance.



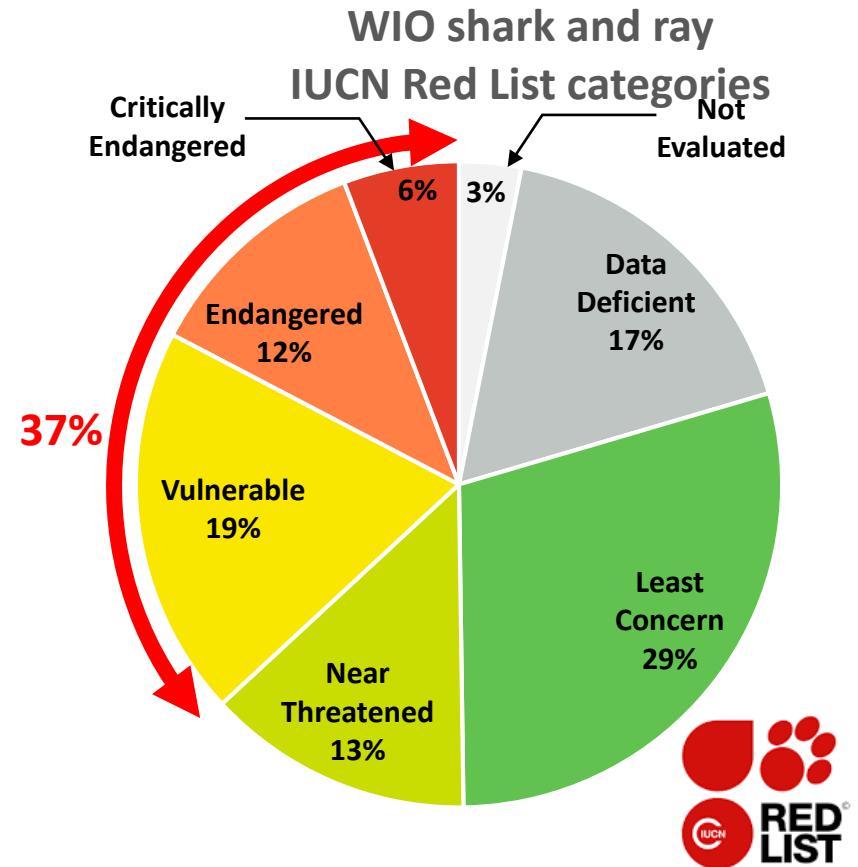
# Sharks and rays in the Western Indian Ocean



Adapted from Dulvy et al. (2014) *eLife*: DOI: [10.7554/eLife.00590](https://doi.org/10.7554/eLife.00590)

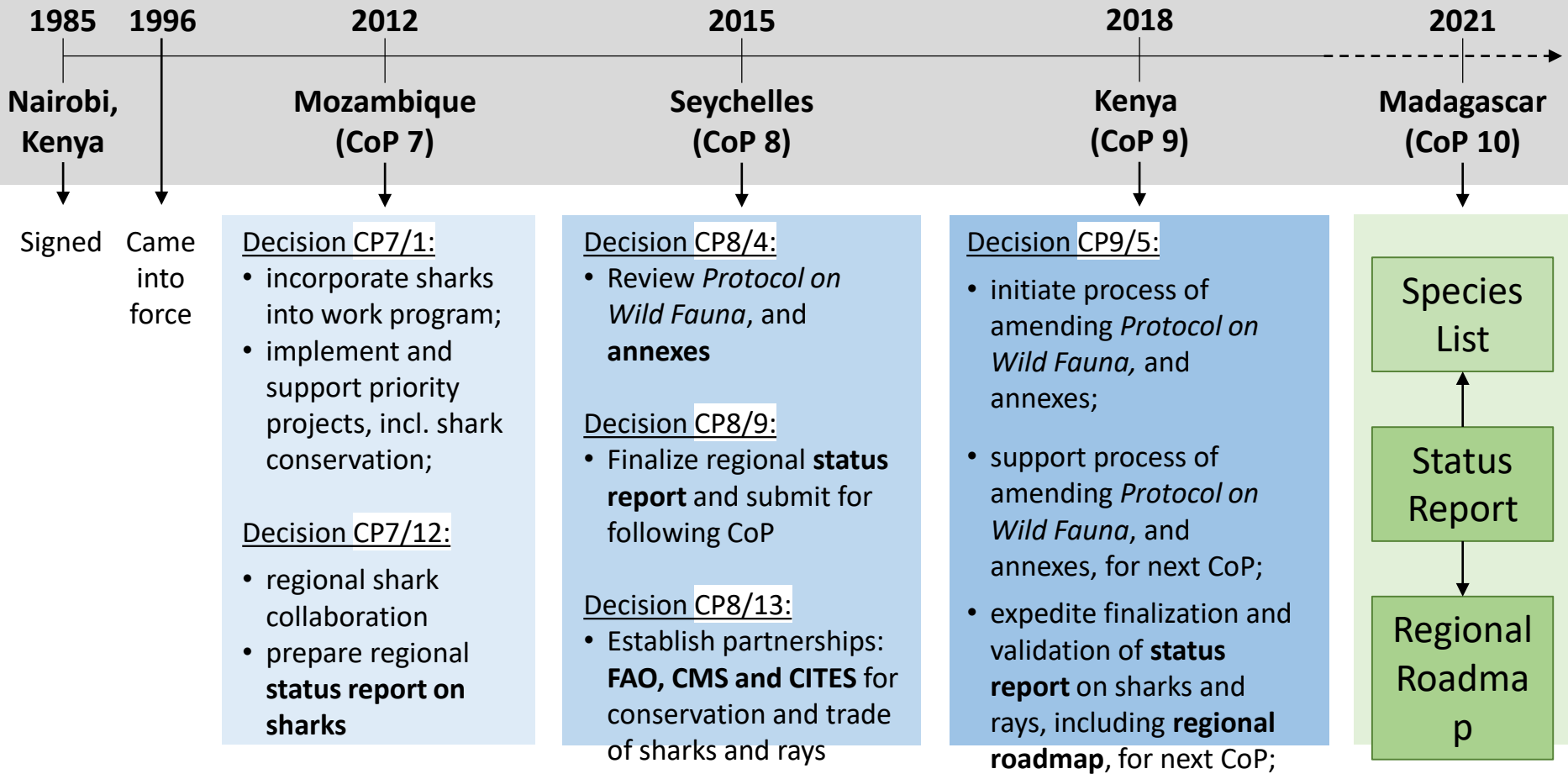


Davidson & Dulvy (2017) *Nature, Ecology & Evolution*: DOI: [10.1038/s41559-016-0040](https://doi.org/10.1038/s41559-016-0040)





# Sharks and the Nairobi Convention

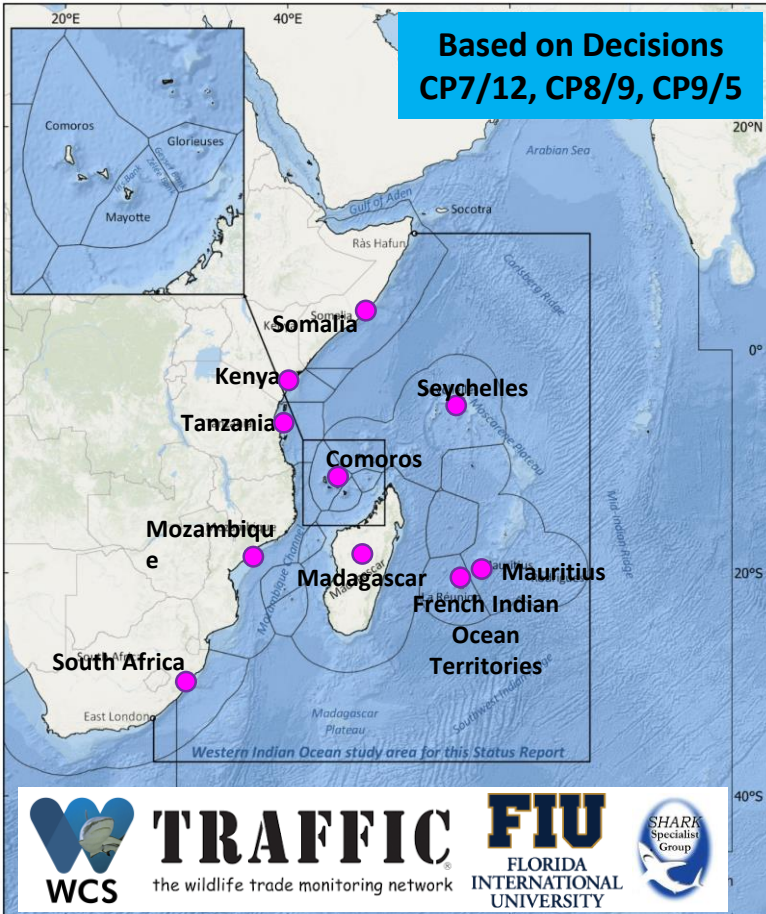






# Regional status report on WIO sharks and rays

Based on Decisions  
CP7/12, CP8/9, CP9/5



## Objectives

- Analyze fisheries, trade, management status and gaps (national and regional) for all ten Nairobi Convention Member States
- Document successes, constraints, and priority needs
- Provide suggestions for improved management and sustainable fisheries for sharks and rays
- Propose policy recommendations for consideration, at NC CoP
- Propose species for listing on Annexes of Convention Protocol

## Findings

- Fisheries for and trade in sharks and rays throughout WIO region
- Major gaps in knowledge: species status, fisheries, trade
- Poor species-level monitoring/recording: 'sharks, rays, skates, etc. nei'
- Landings in artisanal fisheries poorly documented in most countries
- Fisheries and trade controls vary across region, incomplete in most countries
- Little legislation for or including chondrichthyans
- Few measures to limit fishing and fishing mortality
- Numerous constraints to improved management:
  - e.g. capacity limitations, inadequate knowledge and political will



# Species recommended for listing in NC annexes

## Annex I: Protected species of wild flora (N/A)

## Annex II: Species of wild fauna requiring special protection

Article 4: “take all appropriate measures to ensure the strictest protection of the endangered wild fauna species listed in annex II.”

23 shark species, 20 ray species

## Annex III: Harvestable species of wild fauna requiring protection

Article 5: “Any exploitation of such wild fauna species shall be regulated in order to restore and maintain the populations at optimum levels.”

51 shark species, 19 ray species

## Annex IV: Protected migratory species

Article 6: “...co-ordinate their efforts for the protection of migratory species listed in annex IV”

23 shark species, 20 ray species

## Shark and ray species proposed for listing on Annex II

Family	Species	Common name	IUCN	Criteria for listing on Annex II
Alopiidae	<i>Alopias pelagicus</i> <sup>a</sup>	pelagic thresher shark	EN	IOTC; IUCN EN
Alopiidae	<i>Alopias superciliosus</i> <sup>a</sup>	bigeye thresher shark	VU	IOTC
Alopiidae	<i>Alopias vulpinus</i> <sup>a</sup>	common thresher shark	VU	IOTC
Carcharhinidae	<i>Carcharhinus amblyrhynchos</i>	grey reef shark	EN	IUCN EN
Carcharhinidae	<i>Carcharhinus longimanus</i> <sup>b</sup>	oceanic whitetip	CR	CMS I; IOTC; IUCN CR
Carcharhinidae	<i>Carcharhinus obscurus</i>	dusky shark	EN	IUCN EN
Cetorhinidae	<i>Cetorhinus maximus</i>	basking shark	EN	CMS I; IUCN EN
Centrophoridae	<i>Centrophorus granulosus</i>	gulper shark	EN	IUCN EN
Centrophoridae	<i>Centrophorus leslei</i>	African gulper shark	EN	IUCN EN
Centrophoridae	<i>Centrophorus squamosus</i>	leafscale gulper shark	EN	IUCN EN
Centrophoridae	<i>Centrophorus uyato</i>	little gulper shark	EN	IUCN EN
Echinorhinidae	<i>Echinorhinus brucus</i>	bramble shark	EN	IUCN EN
Ginglymostomatidae	<i>Pseudoginglymostoma breviceaudatum</i>	shorttail nurse shark	CR	IUCN CR
Lamnidae	<i>Carcharodon carcharias</i>	great white shark	VU	CMS I
Lamnidae	<i>Isurus oxyrinchus</i>	shortfin mako shark	EN	IUCN EN
Lamnidae	<i>Isurus paucus</i>	longfin mako shark	EN	IUCN EN
Pentanchidae	<i>Holohalaelurus favus</i>	honeycomb izak	EN	IUCN EN
Pentanchidae	<i>Holohalaelurus punctatus</i>	whitespotted izak	EN	IUCN EN
Rhincodontidae	<i>Rhincodon typus</i> <sup>c</sup>	whale shark	EN	CMS I; IOTC; IUCN EN
Sphyrnidae	<i>Sphyrna lewini</i>	scalloped hammerhead	CR	IUCN CR
Sphyrnidae	<i>Sphyrna mokarran</i>	great hammerhead	CR	IUCN CR
Stegostomatidae	<i>Stegostoma tigrinum</i>	zebra shark	EN	IUCN EN
Triakidae	<i>Mustelus manazo</i>	starspotted smoothhound	EN	IUCN EN
Glaucoptegidae	<i>Glaucoptegus halavi</i>	Halavi guitarfish	CR	IUCN CR
Mobulidae	<i>Mobula alfredi</i> <sup>d</sup>	reef manta ray	VU	CMS I; IOTC
Mobulidae	<i>Mobula birostris</i> <sup>d</sup>	giant manta ray	EN	CMS I; IOTC; IUCN EN
Mobulidae	<i>Mobula eregoodoo</i> <sup>d</sup>	longhorned pygmy devil ray	EN	CMS I; IOTC; IUCN EN
Mobulidae	<i>Mobula kuhlii</i> <sup>d</sup>	shortfin devil ray	EN	CMS I; IOTC; IUCN EN
Mobulidae	<i>Mobula mobular</i> <sup>d</sup>	spinetail devil ray	EN	CMS I; IOTC; IUCN EN
Mobulidae	<i>Mobula tarapacana</i> <sup>d</sup>	sicklefin devil ray	EN	CMS I; IOTC; IUCN EN
Mobulidae	<i>Mobula thurstoni</i> <sup>d</sup>	bentfin devil ray	EN	CMS I; IOTC; IUCN EN
Myliobatidae	<i>Aetomylaeus bovinus</i>	duckbill ray	CR	IUCN CR
Myliobatidae	<i>Aetomylaeus vespertilio</i>	ornate eagle ray	EN	IUCN EN
Myliobatidae	<i>Myliobatis aquila</i>	common eagle ray	CR	IUCN CR
Pristidae	<i>Pristis pristis</i>	largetooth sawfish	CR	CMS I; IUCN CR; CITES I
Pristidae	<i>Pristis zijsron</i>	green sawfish	CR	CMS I; IUCN CR; CITES I
Rajidae	<i>Raja ocellifera</i>	twineyed skate		
Rajidae	<i>Rostroraja alba</i>	spurnose skate		
Rhinidae	<i>Rhina ancylostomus</i>	bowmouth guitarfish		
Rhinidae	<i>Rhynchobatus australiae</i>	bottlenose wedget		
Rhinidae	<i>Rhynchobatus djiddensis</i>	whitespotted wedget		
Rhinidae	<i>Rhynchobatus laevis</i>	smoothnose wedget	CR	IUCN CR
Rhinobatidae	<i>Acroteriobatus leucospilus</i>	greyspot guitarfish	EN	IUCN EN

Based on Decisions  
CP7/12, CP8/4, CP9/5



# Regional roadmap: shark and ray conservation

1999 (FAO)

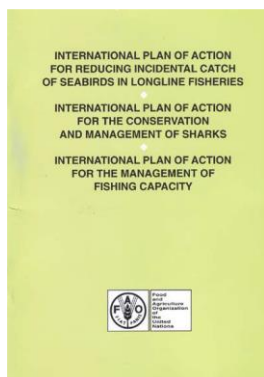
IPOA-Sharks

April 2017 (Mauritius)

Regional technical workshop

November 2017 (Tanzania)

WIOMSA special session



Food and Agriculture Organization of the United Nations

Sharks and Rays of the Southwest Indian Ocean: Status Review and Development of a Roadmap for Conservation and Management

Advancing the development of a regional roadmap for the conservation and management of sharks and rays in the Southwest Indian Ocean

## Roadmap objectives:

- Improve data collection, reporting and use
- Strengthen policy/legislation
- Reinforce management and conservation measures
- Strengthen national and regional capacity
- Improve compliance and enforcement
- Improve awareness-raising and communication

Based on Decision CP9/5

ROADMAP MATRIX – June 2018

Roadmap matrix: Roadmap objectives, recommended actions, links to existing programs/projects that could facilitate, support or guide activities, and priority status (high – H, medium – M or low – L) for each activity at national and regional (WIO) levels.

Objective	Actions	Linked Projects/Programmes	Priority
1. Improve Data Collection, Reporting and Use	Develop regional projects to expand and improve monitoring of chondrichthyan catches at national level, for artisanal, small-scale and industrial fisheries, and assimilate data at regional level. These projects should include inter alia: <ul style="list-style-type: none"> <li>• developing/standardizing survey methods where appropriate,</li> <li>• training personnel to collect data,</li> <li>• training personnel to identify chondrichthyans to species level,</li> <li>• developing appropriate local field guides (translated) to assist in species identification in situ, and</li> <li>• developing appropriate guides (translated) for the collection of biological samples.</li> </ul>	<ul style="list-style-type: none"> <li>➢ Development of field guides: starting with existing published materials, such as:               <ul style="list-style-type: none"> <li>• FAO (<a href="http://www.fao.org/home/en/">http://www.fao.org/home/en/</a>)</li> <li>• FAO marine species biological data collection manual (<a href="http://www.fao.org/3/a-i633e.pdf">http://www.fao.org/3/a-i633e.pdf</a>)</li> <li>• WIOMSA (<a href="http://www.wiomsa.org/">www.wiomsa.org/</a>)</li> <li>• IOC and SmartFish guides (<a href="http://commissionoceanindien.org/activities/smartfish-activities-activities/the-sharks-and-rays-initiative/">http://commissionoceanindien.org/activities/smartfish-activities-activities/the-sharks-and-rays-initiative/</a>)</li> <li>• IOTC (<a href="http://www.iotc.org/science/species-identification-cards">http://www.iotc.org/science/species-identification-cards</a>)</li> </ul> </li> <li>➢ Taxonomic expertise to develop guides</li> <li>➢ Training: training of trainers (TOT) approach</li> </ul>	National – H Regional – H 1 year for training; Build up guides: 5 years
	Develop and implement standardised catch monitoring systems for small-scale/informal fishers and sport fishing activities, with a particular emphasis on species-level identification, recording and reporting.	<ul style="list-style-type: none"> <li>➢ Rapid Assessment Tool (WWF)</li> <li>➢ Kenya State Department of Fisheries</li> <li>➢ Kenya Beach Management Units</li> <li>➢ BYCAM project</li> <li>➢ WCS, CORDIO, other NGOs, fisheries ministries</li> </ul>	National – H Regional – H Training and manuals 1 year
	Standardise chondrichthyan catch and landing data capture methods for industrial fisheries, with a particular emphasis on species-specific recording and reporting.	Engage with IOTC and FAO on final reporting to FAO from IOTC – to standardise reporting and to obtain species-level data where possible. FAO WP on statistics ( <a href="http://www.iotc.org/science/wp/working-party-data-collection-and-statistics-epsdc">http://www.iotc.org/science/wp/working-party-data-collection-and-statistics-epsdc</a> )	National – H Regional – H 1 year



# Recommended actions for Nairobi Convention COP

Recalling Decision CP7/12: Conservation of Sharks, Article 4 of the Nairobi Convention Protocol: *Species of Wild Fauna Requiring Special Protection* and Article 5 of the Nairobi Convention Protocol: *Harvestable Species of Wild Fauna*, we urge the Conference of Parties to take the following steps, to reduce impacts on shark and ray populations in the WIO, to improve their conservation status:

- 1. List appropriate shark and ray species on Nairobi Convention Annexes**, as presented in the proposed species list: *Recommendations for Shark and Ray Listings in the Annexes of the Nairobi Convention Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region*.
- 2. Urge member states to implement their binding commitments**, as a minimum, in terms of species protections and trade controls at national level, as imposed by the multilateral agreements to which they are party, including inter alia:
  - protection of all shark and ray species listed in CMS Appendix I;
  - protection of all shark and ray species prohibited in IOTC Resolutions;
  - trade controls for all shark and ray species listed in CITES Appendices.
- 3. Encourage member states to voluntarily implement species protections and/or catch restrictions** for threatened species and species subject to trade controls, i.e. not already protected under other agreements, through:
  - Following the guiding text of the Nairobi Convention, in terms of strictly protecting endangered wild fauna species;
  - Protecting and managing species listed in Nairobi Convention Annexes;
  - Protecting species listed under CITES Appendix I, for which commercial trade bans should already be in place;
  - Protecting all IUCN Critically Endangered and Endangered species;
  - Developing management measures for IUCN Vulnerable and Near Threatened species.

# Acknowledgements



Local communities  
Students  
NGOs and CBOs  
National Institutions  
Regional institutions  
Donors