

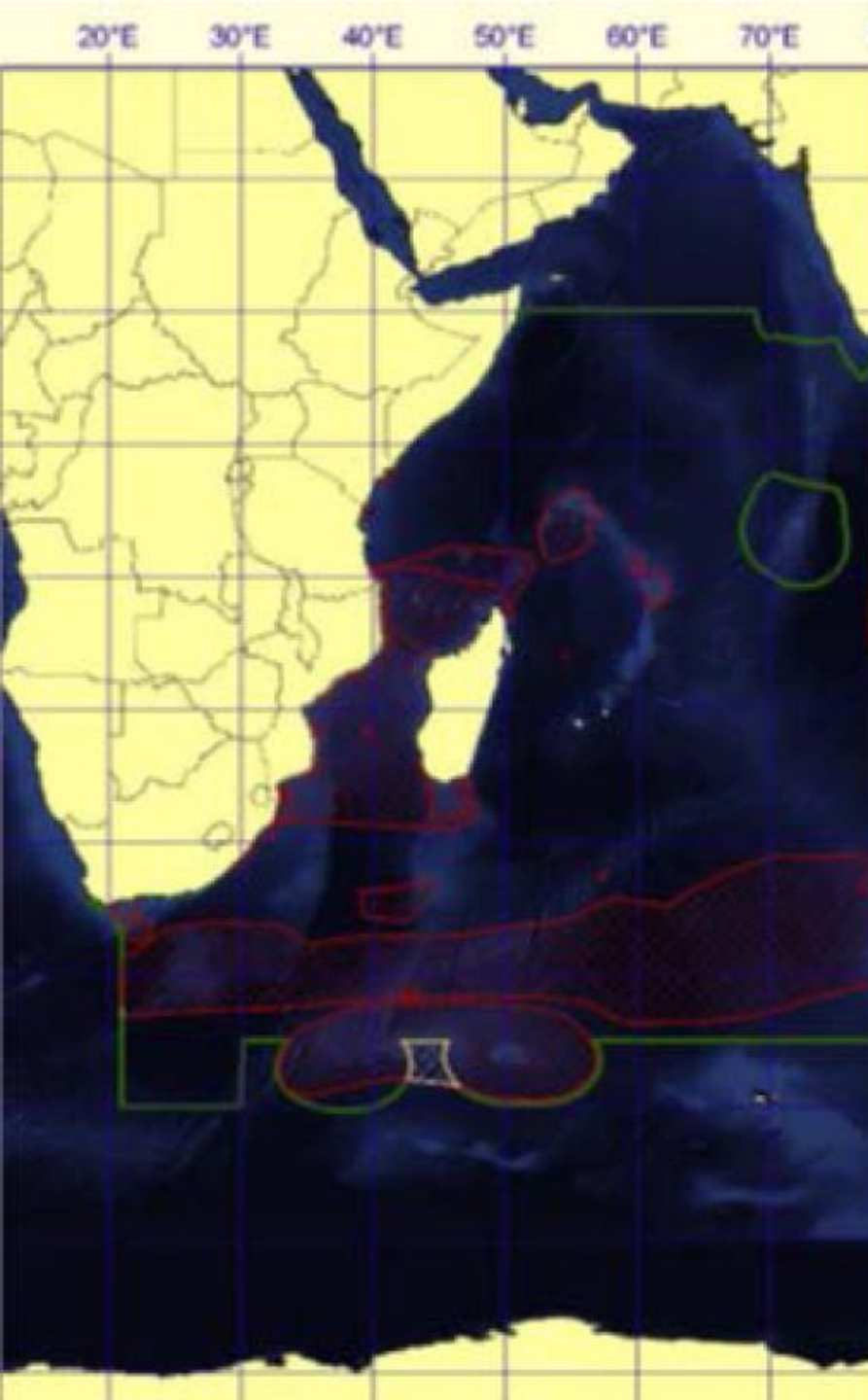
MASPAWIO

A collaborative project for supporting MSP
development
in Western Indian Ocean



**FRANCE-IUCN
PARTNERSHIP**
NATURE AND
DEVELOPMENT





FRANCE-IUCN
PARTNERSHIP
NATURE AND
DEVELOPMENT



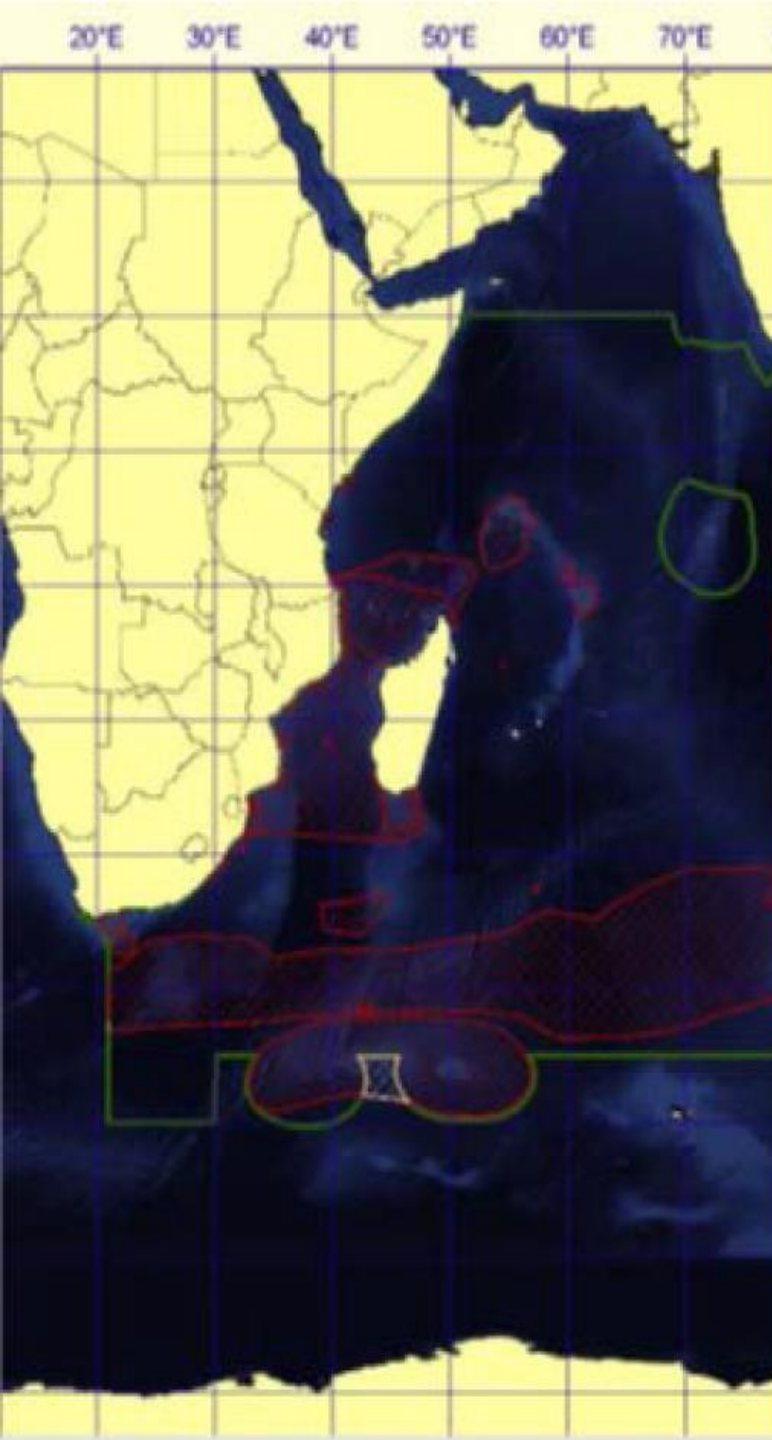
A project managed by IUCN
A project implemented in collaboration
with CORDIO

A seed-money / pilot project
Aiming at

- fostering regional cooperation on MSP
and
- supporting Nairobi Convention and its
Parties

Drawn up on interconnectivity
and common needs

Driven by a partnership
and collaborative approach



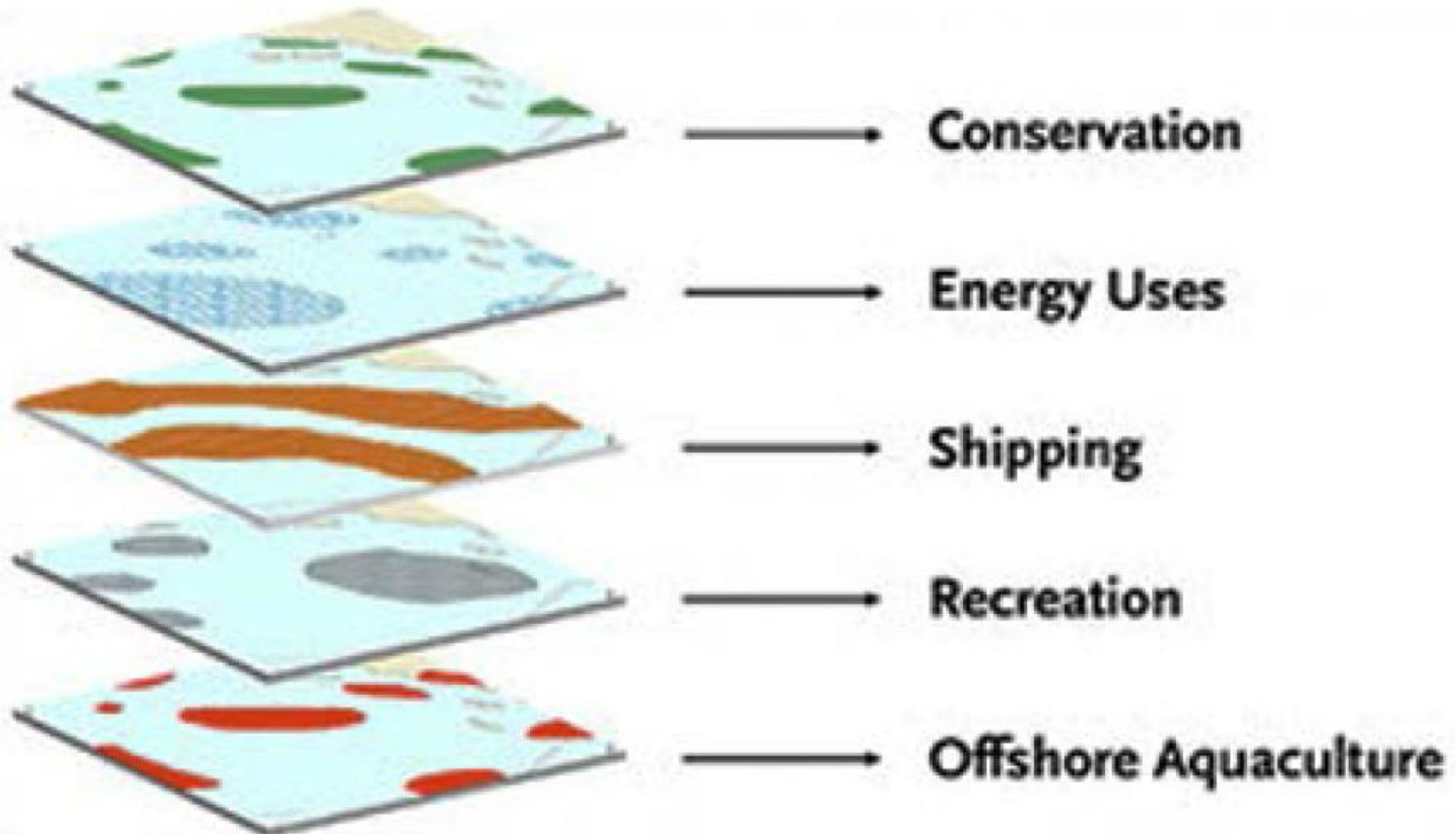
MASPAWIO Objectives / Activities

- Supporting Nairobi Convention and its Parties
- Thinking MSP beyond the borders & fostering regional cooperation
- Sustainable Blue economy - Agenda 2030

- Mapping /Atlas with available data
- Integrating connectivity
- Modelling connectivity evolution
- Co-defining orientations

www.maspawio.net

Combining data: integrated vision



Protected Areas and EBSA



LEGEND:

Protected areas

Point locations

- + Marine Protected Area
- ★ Locally Managed Marine Area

Polygon locations

- Marine Protected Area
- Locally Managed Marine Area

Ecologically or Biologically Significant Marine Areas

- EBSA

DATA SOURCES:

MPAs - LMMA: Compiled from various sources including the World Database of Protected Areas (WDPA), local agencies and personal knowledge.

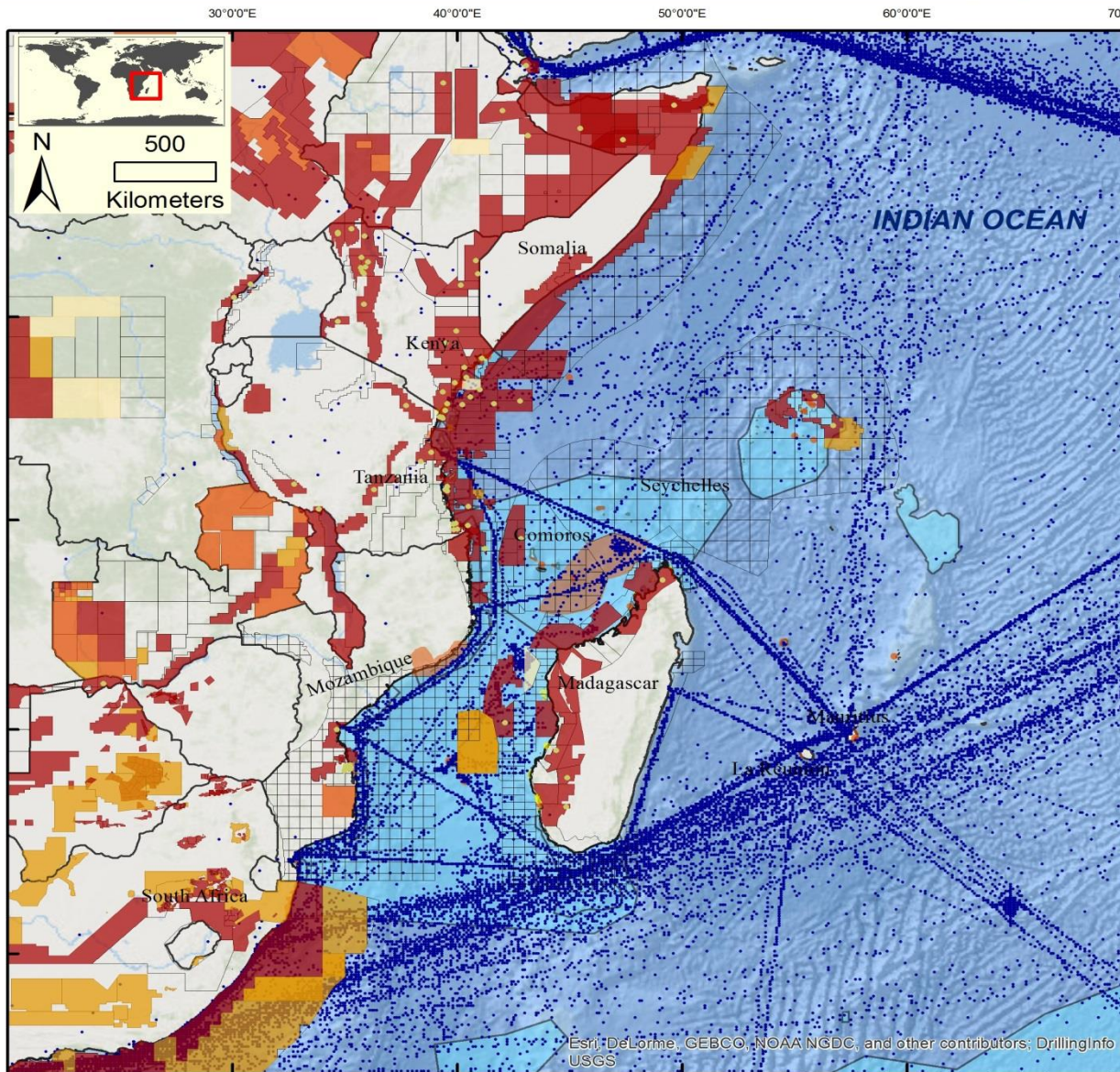
IUCN and UNEP-WCMC (2015). The World Database of Protected Areas (WDPA) [online]. Cambridge, UK: UNEP-WCMC. Available at: www.protectedplanet.net

Convention on Biological Diversity
URL: <http://www.cbd.int/cbd/>

Author: E. Crockett - Date: 12/2010 - Map nr: MOP-2



Protected Areas - EBSA - Commercial shipping - Oil & Gas activities



LEGEND:

Protected areas

Point locations

- Marine Protected Area
- Locally Managed Marine Area

Polygon locations

- Marine Protected Area
- Locally Managed Marine Area

Ecologically or Biologically Significant Marine Areas

- EBSA

Commercial shipping

- Commercial shipping

Oil and Gas activities

- Planned Wells

Contracts status

- Open
- Under negotiation
- Application
- Pre-award
- Force Majeure
- Contract

DATA SOURCES:

MPAs - LMMAs: Compiled from various sources including the World Database of Protected Areas (WDPA)*, local agencies and personal knowledge.

*IUCN and UNEP-WCMC (2015), The World Database on Protected Areas (WDPA) [On-line], Cambridge, UK: UNEP-WCMC. Available at: www.protectedplanet.net.

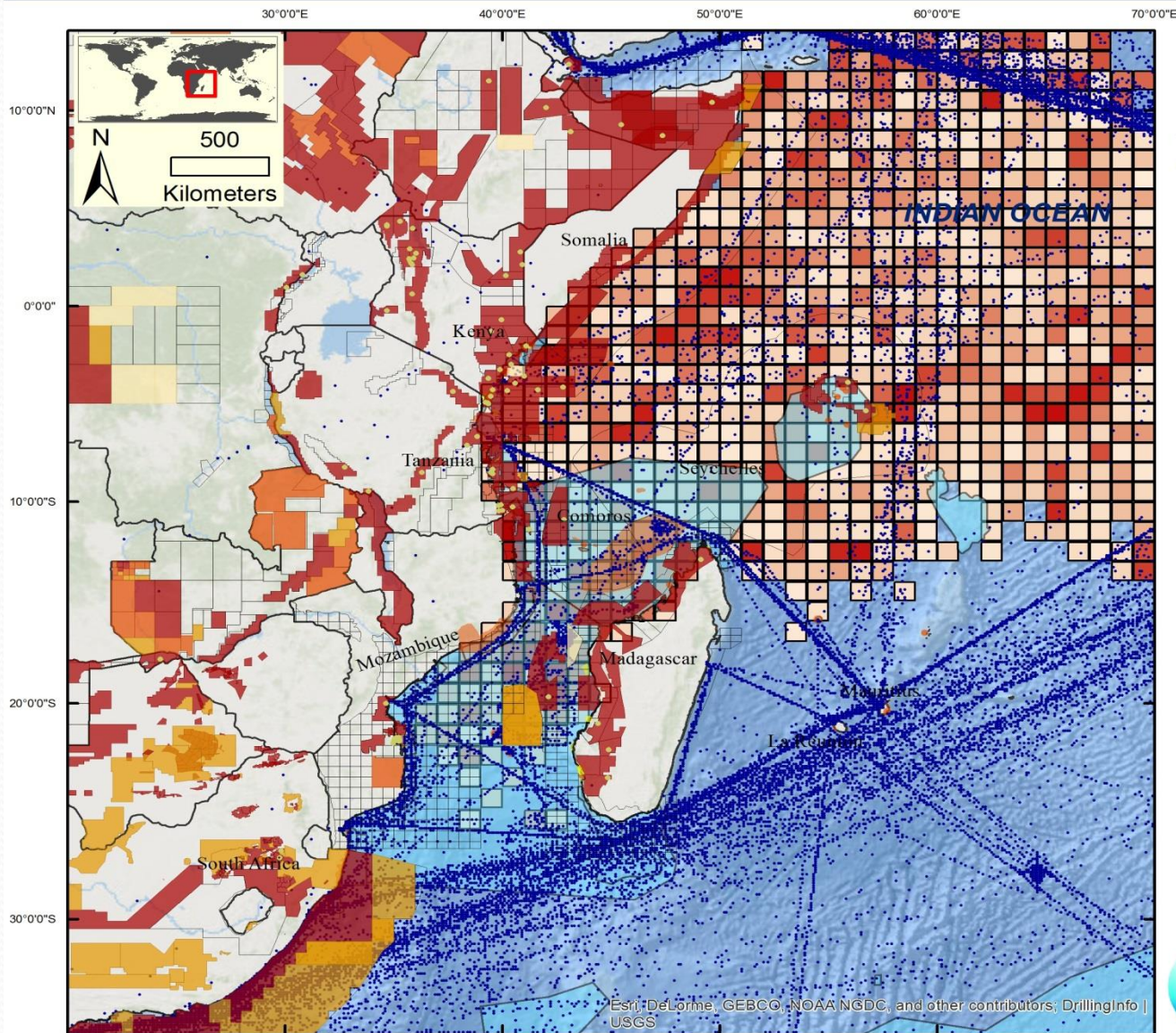
Convention on Biological Diversity. URL: <https://www.cbd.int/ebsa/>

Commercial shipping: JCOMMOPS (2014) - Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) in-situ Observing Platform Support centre (JCOMMOPS)

ALES (2015). Global Drilling Info. USGS. Restricted for WWF use only. Data were downloaded on May 26, 2015.

Author : E. Crochelet - Date: 12/2015 - Map n° MSP-2

Protected Areas - EBSA - Commercial shipping - Oil & Gas activities - Fisheries



LEGEND:

Protected areas

Point locations

- Marine Protected Area
- Locally Managed Marine Area

Polygon locations

- Marine Protected Area
- Locally Managed Marine Area

Ecologically or Biologically Significant Marine Areas

- EBSA

Commercial shipping

- Commercial shipping

Monthly catches of tropical tunas:

Thunnus albacares, *Thunnus obesus*
Katsuwonus pelamis

0 +1000 metric tons

Statistical unit 1° square
Purse seiner - All fishing mode

Oil and Gas activities

- Planned Wells

Contracts status

- Open
- Under negotiation
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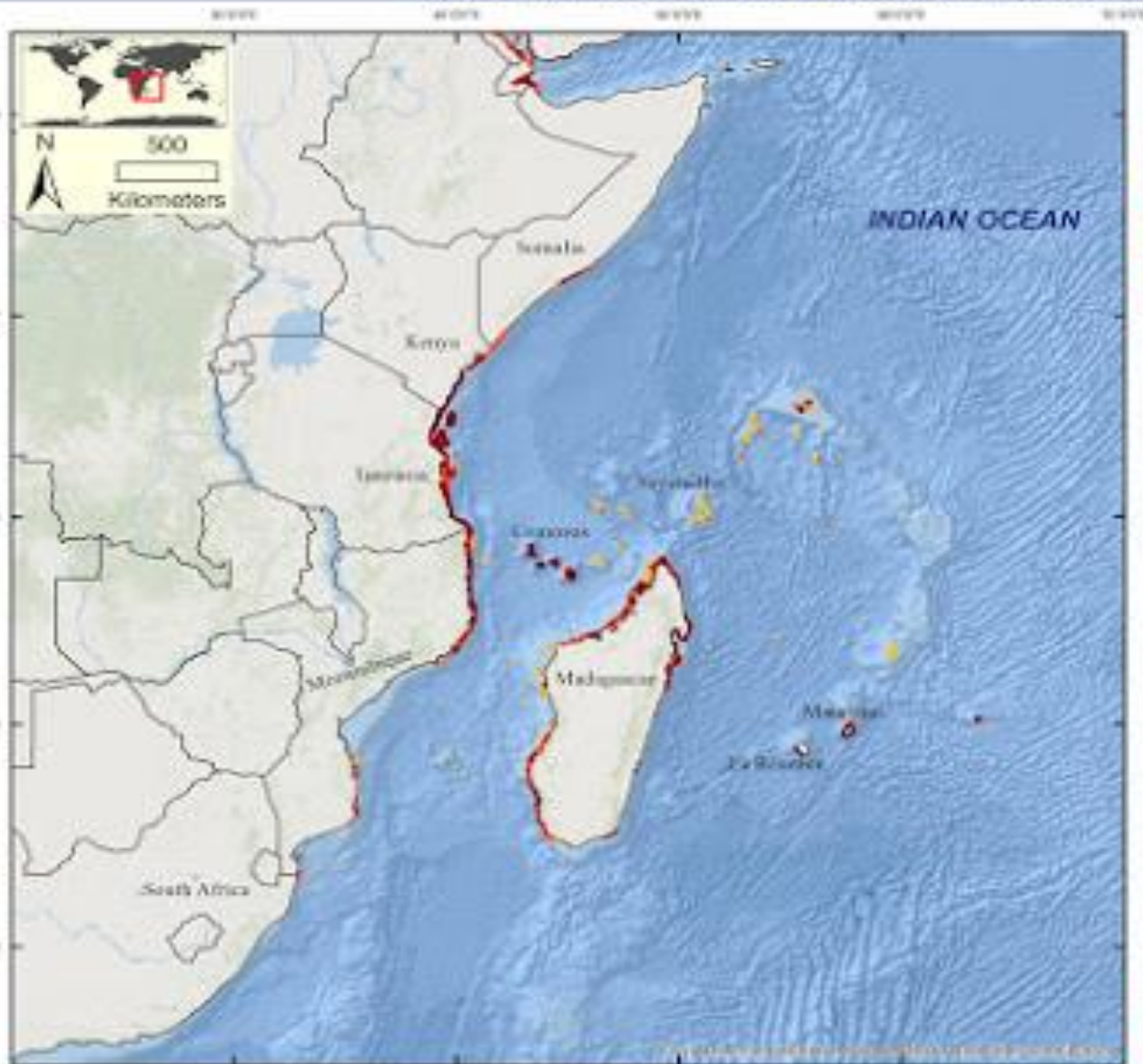
Commercial shipping: JCOMMOPS (2014) - Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) in-situ Observing Platform Support centre (JCOMMOPS)

ALES (2015). Global Drilling Info. USGS. Restricted for WWF use only. Data were downloaded on May 26, 2015.

IOTC Secretariat database (2014).

Author : E. Crochelet - Date: 12/2015 - Map n° MSP-2

Reefs by Integrated Local and Global Threats in 2050



LEGEND:

Coral reefs classified by integrated local and global (climate-related) threats in 2050*



* Local threats include: coastal development, overfishing and destructive fishing, marine-based pollution and damage, and watershed-based pollution. Global threats include: thermal stress (bleach/searing) and ocean acidification.

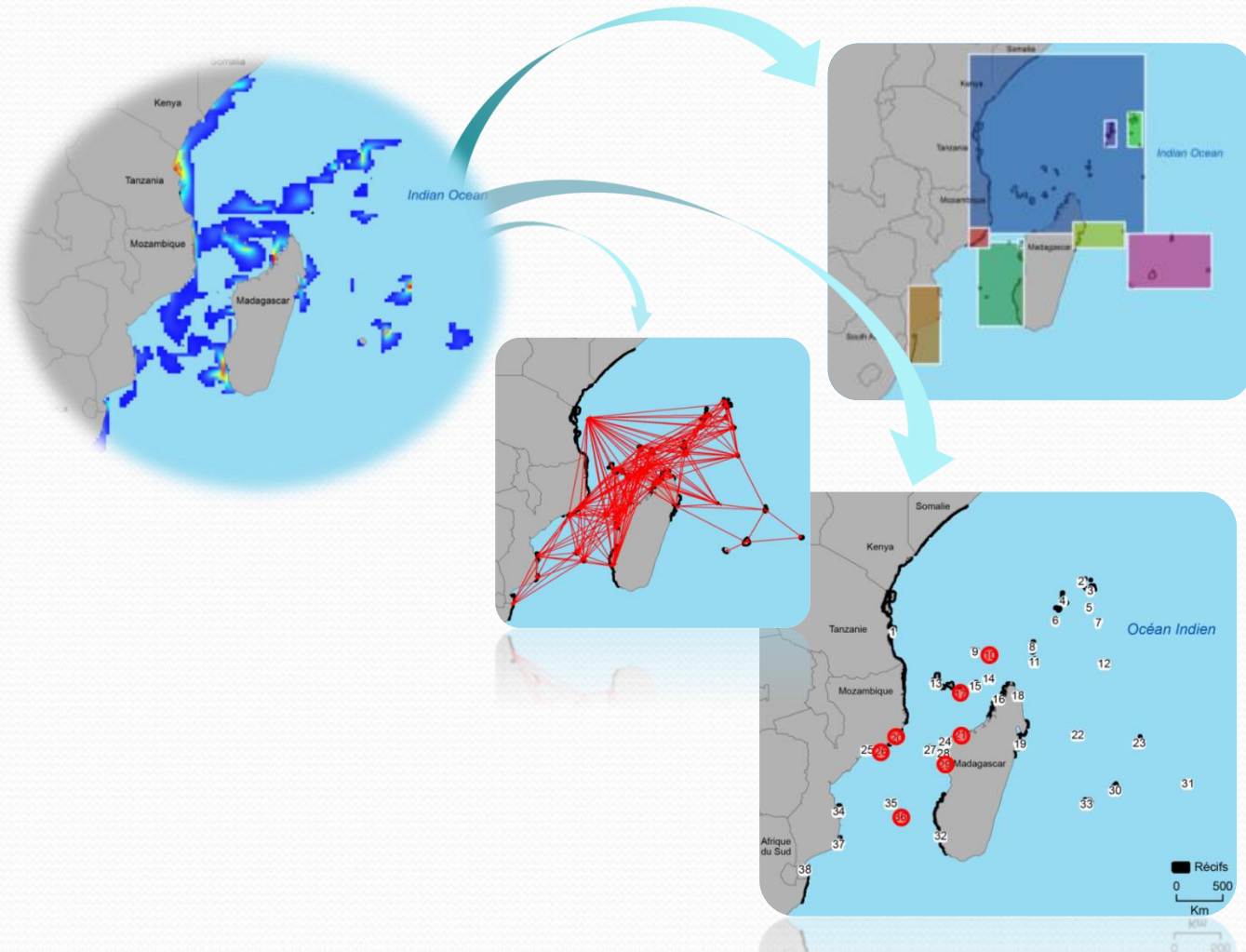
DATA SOURCES:

World Resources Institute, Reefs at Risk Revisited, 2011.

Author: E. Crockett - Date: 12/28/10 - Map nr PPH-0-3



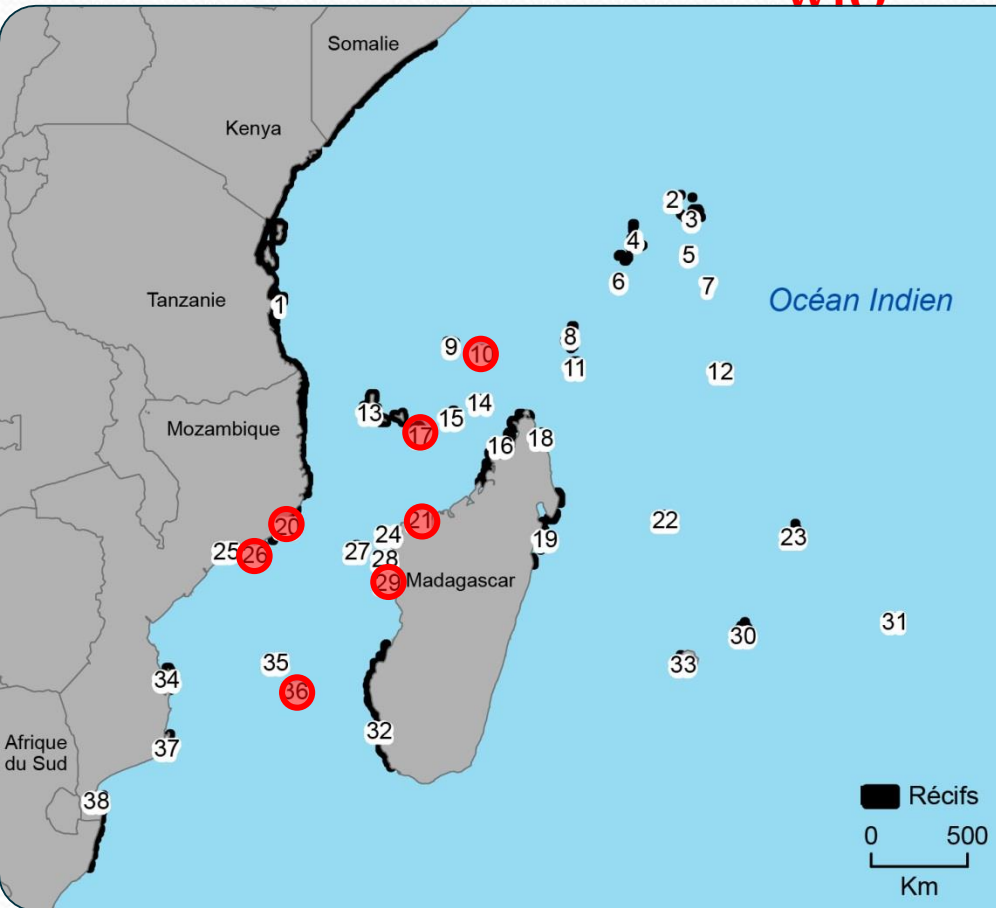
Marine connectivity patterns and habitat degradation scenarios



Regional connectivity in the Indian Ocean

BETWEENNESS CENTRALITY

7 reefs : Occurrences = 4 → the most important for multigenerational connectivity within the WIO

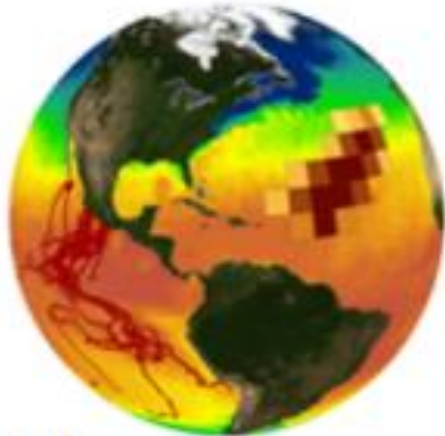


1	Mozambique/Tanzanie Kenya/Somalie	20	Angoche
2	Bird	21	Majunga
3	Seychelles	22	Tromelin
4	Poivre	23	Saint Brandon
5	Platte	24	Besalampy
6	Alphonse	25	Pebane
7	Coëtivy	26	Moma
8	Providence	27	Juan de Nova
9	Aldabra	28	Maintirano
10	Cosmoledo	29	Masoarivo
11	Farqhar	30	Maurice
12	Agalega	31	Rodrigues
13	Comores	32	Morondava - Anakao
14	Glorieuses	33	La Réunion
15	Geyser bank	34	Bazaruto arch.
16	NW tip of Madagascar	35	Bassas da India
17	Mayotte	36	Europa
18	Nosy Ankomba / Anko	37	Maxixe
19	Masoala peninsula Ste Marie	38	Maputo bay to Santa Lucia

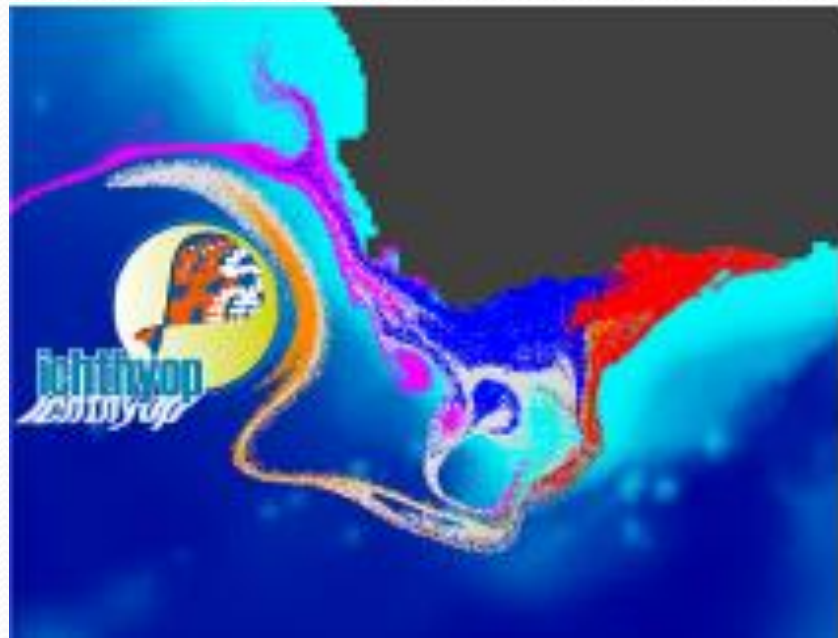
“Occurrences” ranges from 0-5 and gives the number of PLDs for which each reef’s betweenness centrality score was higher than the mean for that PLD.

Hydrodynamic connectivity model

Eulerian advection-diffusion algorithm



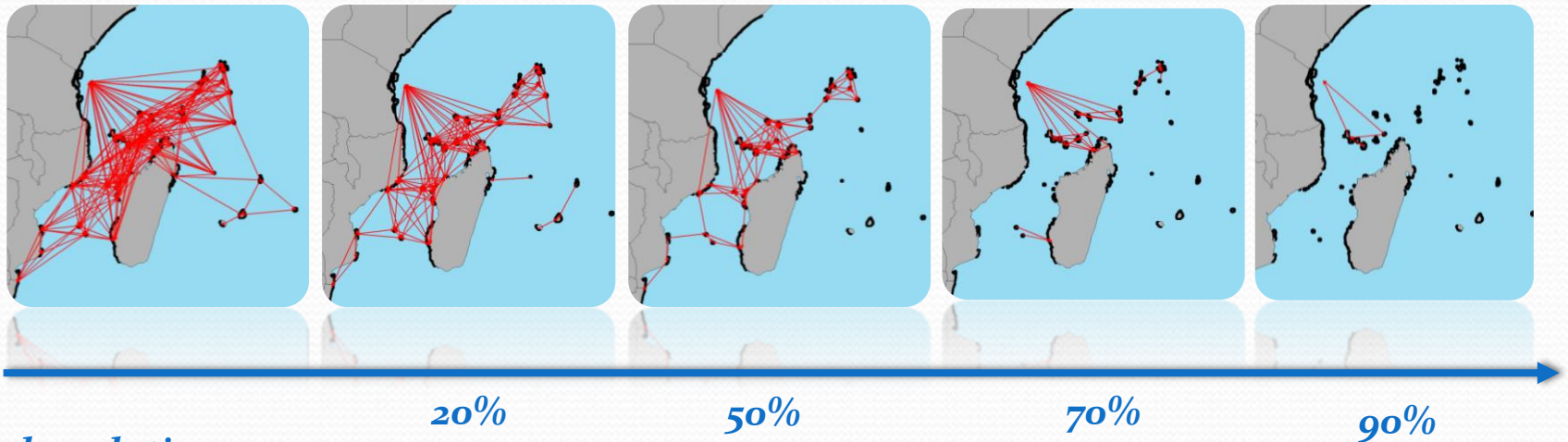
Marine
Geospatial
Ecology
Tools



Lagrangian advection-diffusion
algorithm

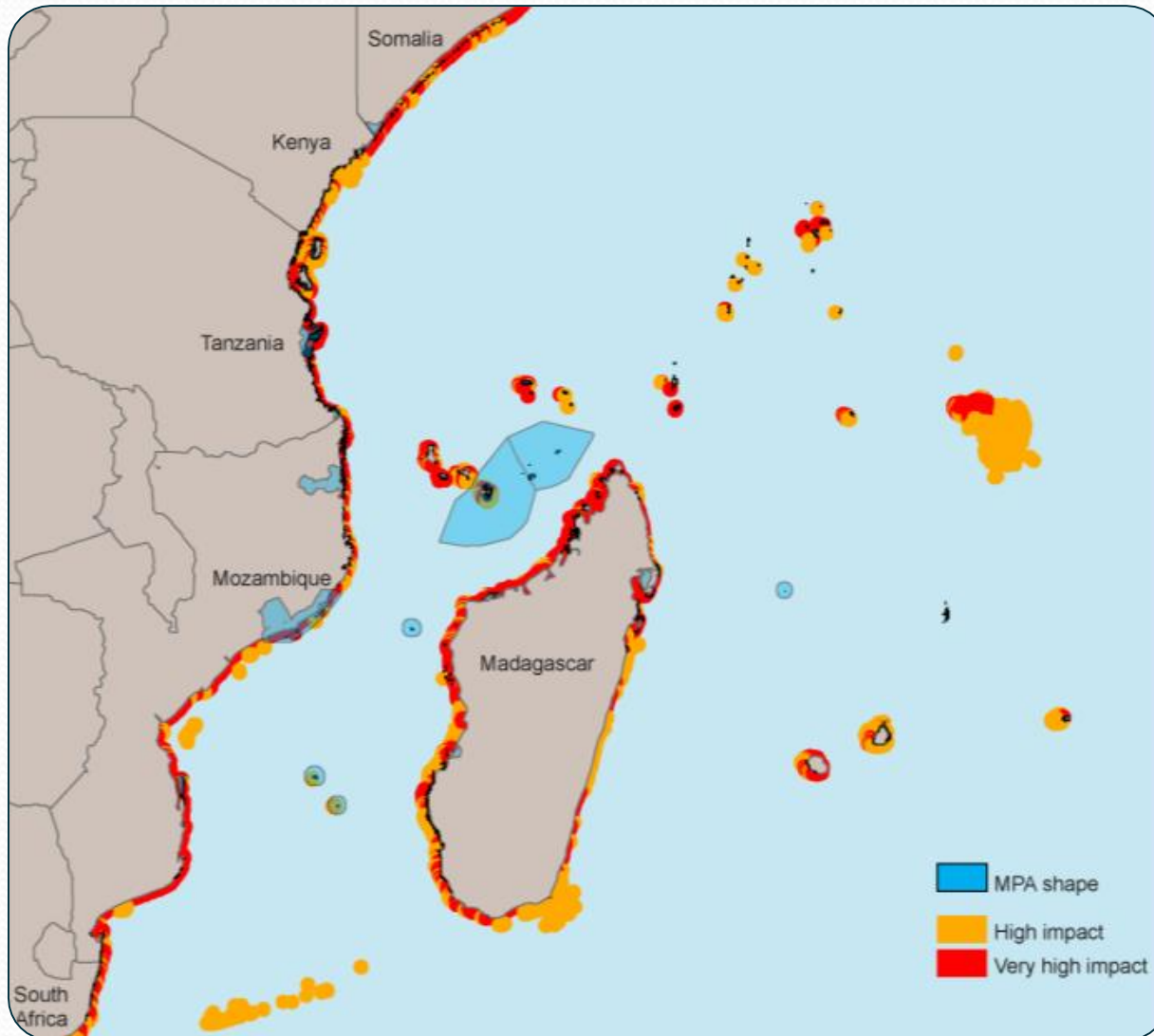
+ HABITAT DEGRADATION SCENARIOS

Exploratory assessment of different scenarios concerning habitat degradation consequences on coral reef ecosystems connectivity patterns, to better inform planning , management of coastal and marine resources and conservation measures



Habitat degradation

Habitat deterioration V/s conservation efforts



- Only **15%** of highly impacted reefs with MPAS
- Still a lot to do!

GEF/FFEM

Seamount projects

Applying an Ecosystem Approach to Fisheries
Management in the High Seas

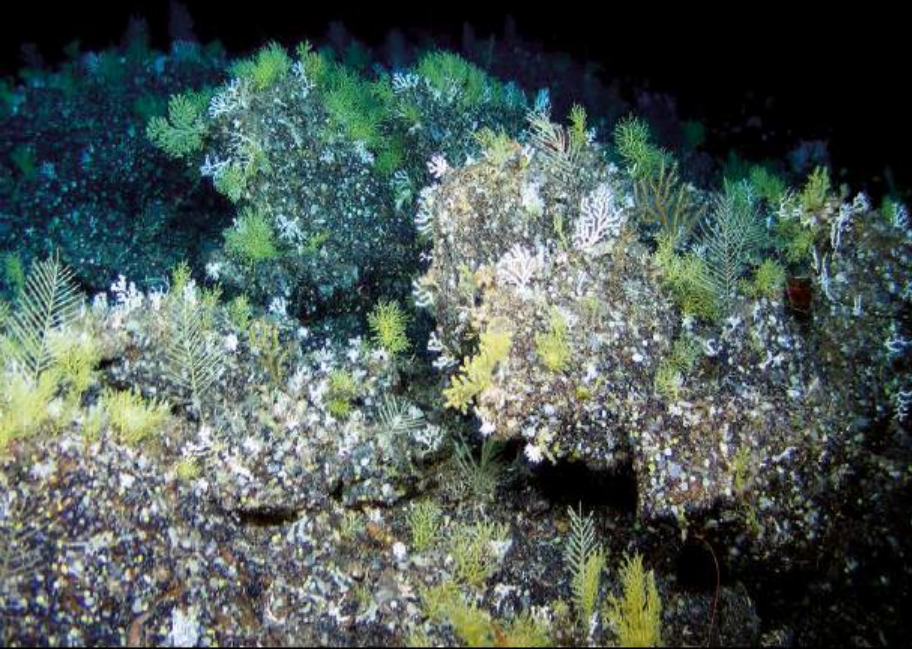




Empowered lives.
Resilient nations.

Seamounts Project

An Ecosystem Approach
to Management of Seamounts
in the Southern Indian Ocean



IUCN Seamounts project

Conservation and sustainable exploitation of seamount and hydrothermal vent ecosystems of the South West Indian Ocean in areas beyond national jurisdiction

SEAMOUNTS

Mountains of Life

PLANKTON produces more than **50%** of the **O₂** we breathe and is the primary producer for all life in the ocean

High concentrations of plastics above and downstream of the seamount

FISH, APEX PREDATORS, MARINE MAMMALS gather around them, some even using the magnetic signature of the seamounts

TO MIGRATE AND NAVIGATE through the vast ocean

A LOT REMAINS TO BE DISCOVERED about seamount ecology, species and dynamics

UNIQUE SPECIES high biodiversity and potential genetic resources

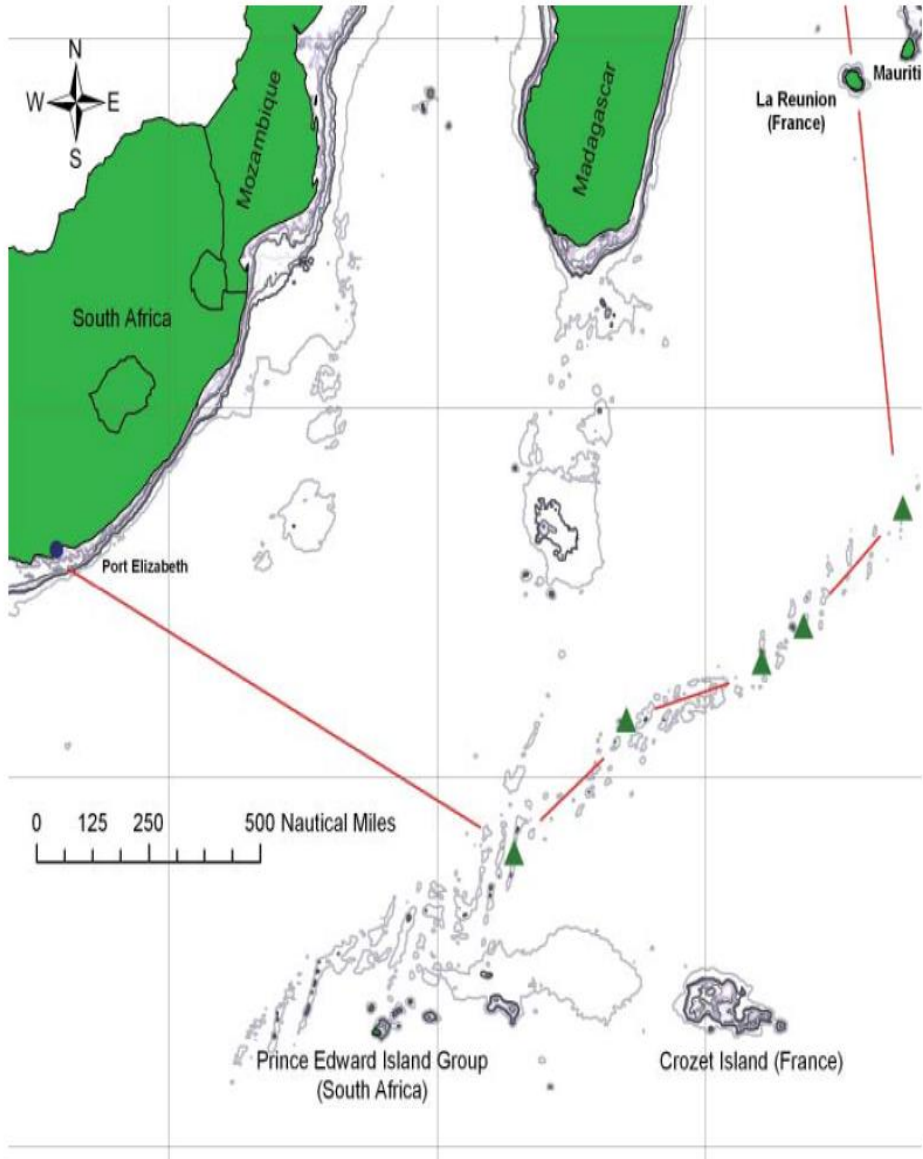
HYDROTHERMAL VENTS support chemosynthetic ecosystems which don't need light to live, and use the heat of the Earth as primary energy

THEY ARE CONSIDERED ONE OF THE POSSIBLE ORIGINS OF LIFE ON EARTH

UNDER POTENTIAL THREATS Intensive fishing and trawling
Future mining activities

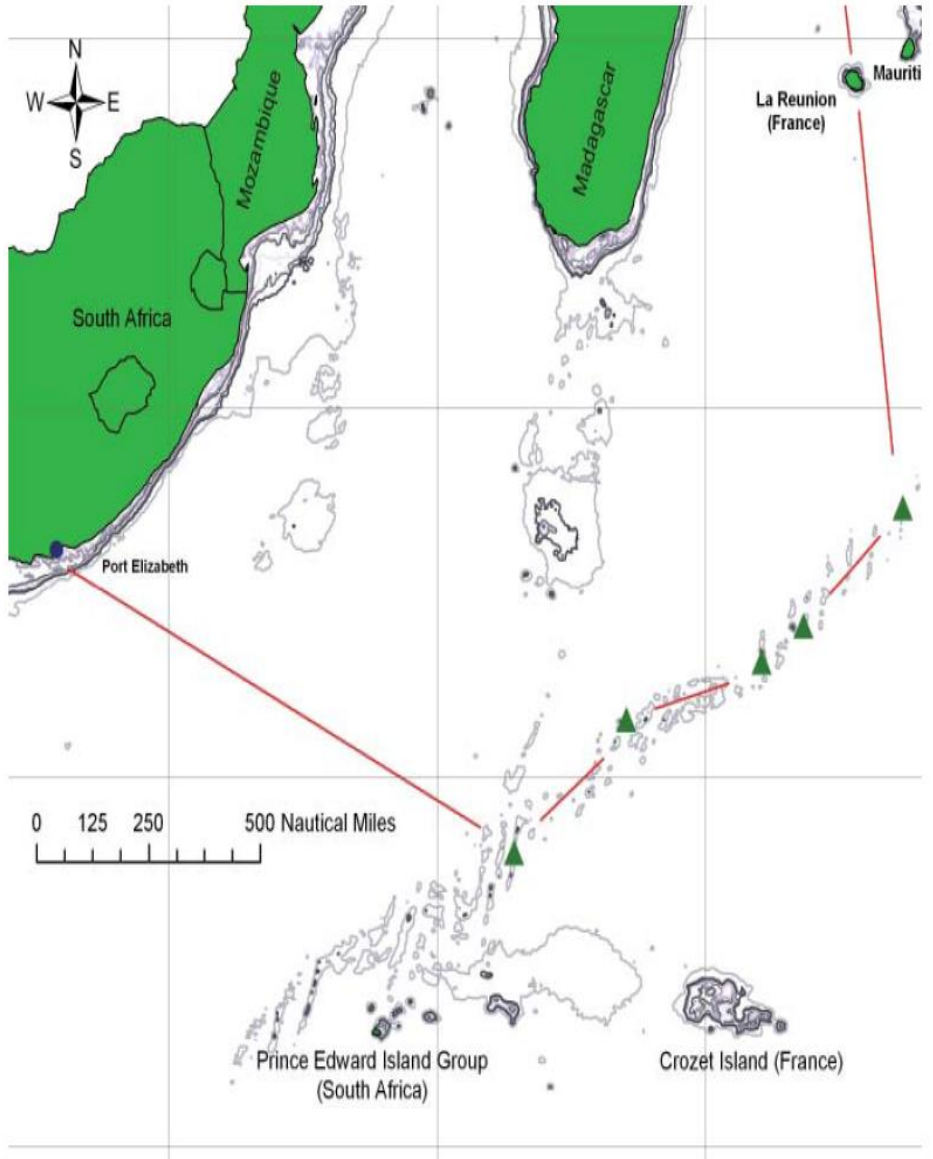
NEEDS

Research, management and protection of these structures
A high seas governance framework



4 main Objectives

1. Improve scientific understanding and capacity for monitoring, assessment and analysis of high seas biodiversity and fisheries around seamounts
2. Enhance governance frameworks for high seas resources conservation and management



3. Identify options for conservation and management measures applicable to high seas areas in the southern Indian Ocean

4. Learning, awareness raising and knowledge sharing



An Ecosystem Approach to the Management of the Southern Ocean

Volume 1 – Overview of Biodiversity

Alex D. Rogers



An Ecosystem Approach to the Management of the Southern Ocean

Volume 2 – Anthropogenic Impacts on Ecosystems

Edited by François Simard



An Ecosystem Approach to the Management of the Southern Ocean

Volume 3 – Legal and Institutional Frameworks

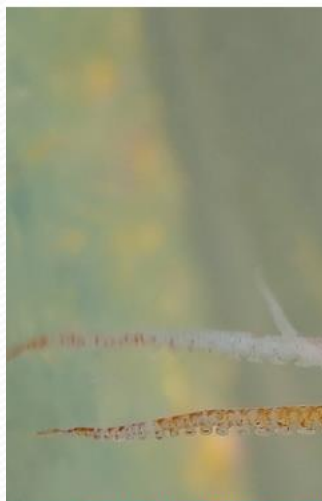
Robin Warner, Philomène Verlaan



An Ecosystem Approach to the Management of Seamounts in the Southern Indian Ocean

Volume 4 – A Road Map towards sustainable use and conservation of biodiversity in the Southern Indian Ocean

Serge M. Garcia, Harlan Cohen, David Freestone, Carole Martinez, Nilufer Oral, Alex Rogers, Philomène A. Verlaan and David Vousden



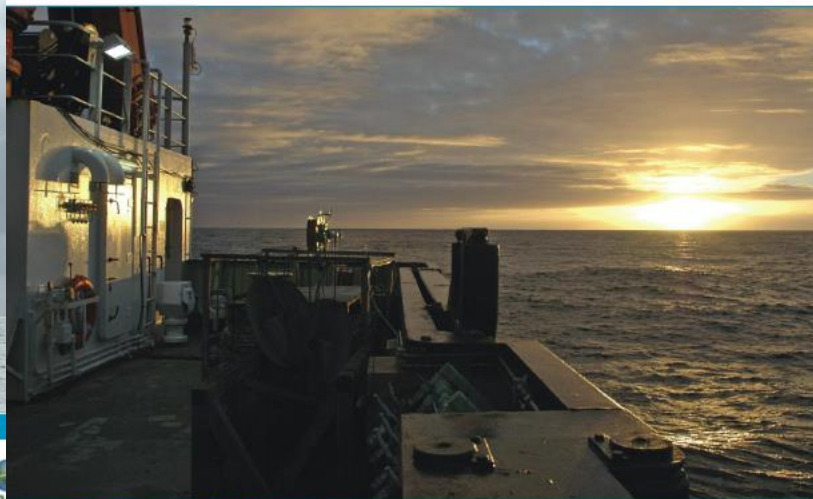
IUCN GLOBAL MARINE AND POLAR PROGRAMME



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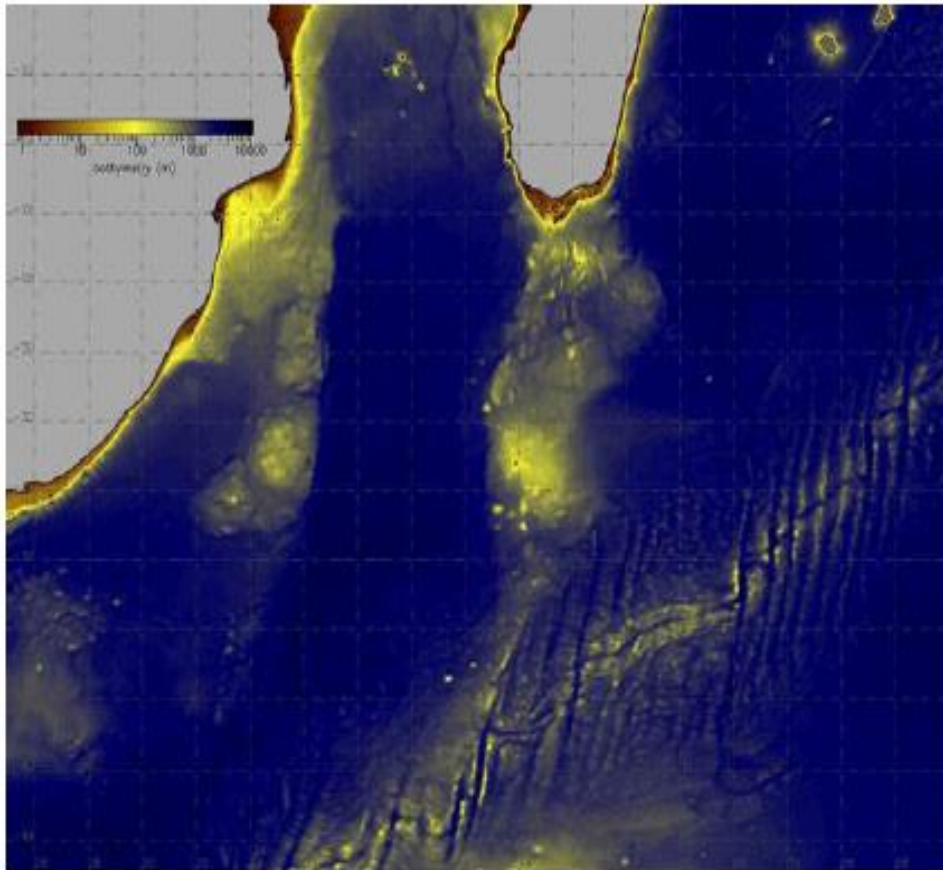


IUCN Seamounts project

Conservation and sustainable exploitation of seamount and hydrothermal vent ecosystems of the South West Indian Ocean in areas beyond national jurisdiction

SEAMOUNTS

Mountains of Life



- Reinforce existing ABNJ frameworks, develop regional capacities and partnerships.
- Assess the feasibility of an extension to the Nairobi convention in ABNJ.
- Support the first developments of SIOFA.
- Propose a management plan for Walters Shoal using marine spatial planning.
- Propose MPA networks in the regional ABNJ with enforcement strategy.
- Share experiences among regional and international scientific and international institutions. Some of this will include the publication of a roadmap directing future efforts.
- Evaluate possible financial tools to benefit conservation and management.