



FONDS FRANÇAIS POUR
L'ENVIRONNEMENT MONDIAL

South West Indian Ocean Seamounts Conservation: from Science to Policy

15th November 2017, Seychelles

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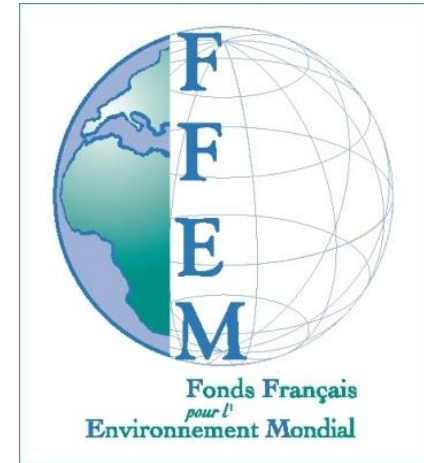


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IUCN FFEM-SWIO Project

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



[2014-2017]



Partners and beneficiaries

- Implementing partners: IRD, Iddri, MNHN, Oxford University
- Other partners: FAO GEF ABNJ Program (-> FAO/UNEP Deep Seas project)
- Final Beneficiaries:
 1. Coastal States
 2. Interested States (fisheries, mining, other resources);
 3. International community



IUCN Seamounts UNDP-supported GEF-financed Project [2009-2013]

Applying an ecosystem-based approach to fisheries management in the high seas: a focus on seamounts in the Southern Indian Ocean

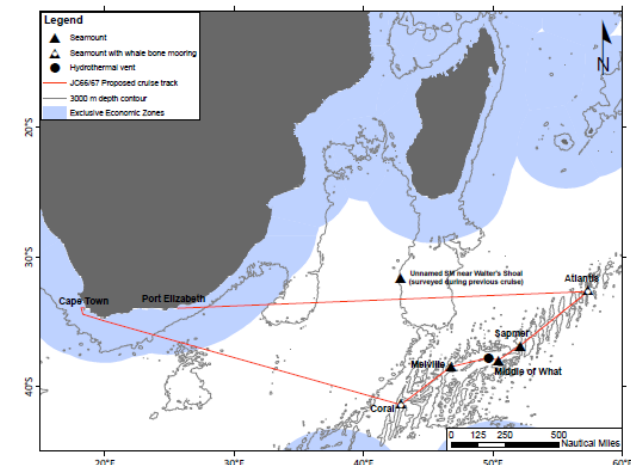
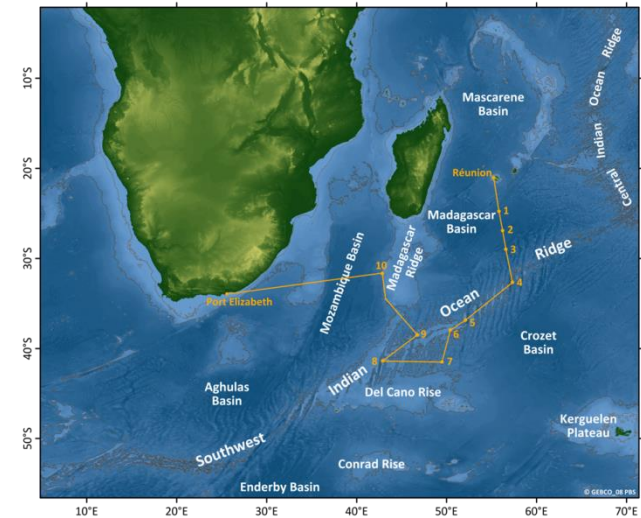
Summary

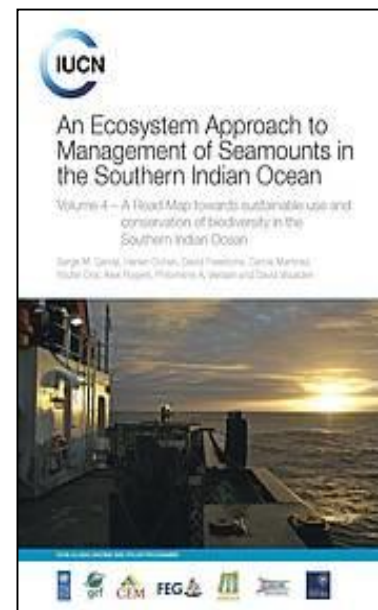
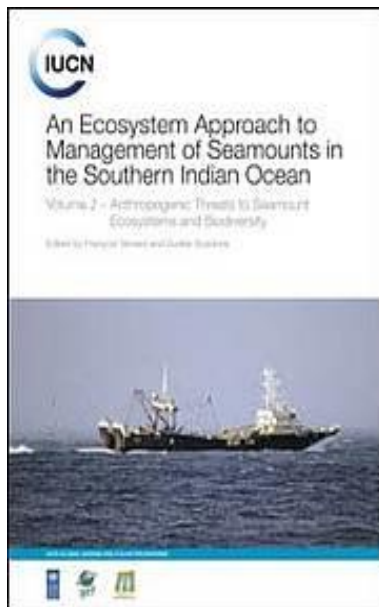
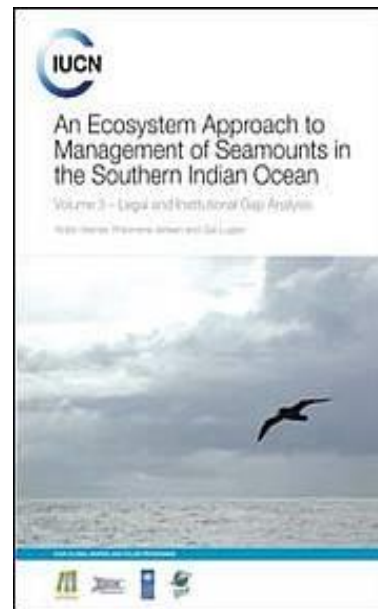
- 6.5 M USD
- 2 expeditions at sea on seamounts of the SWIR
- 2 taxonomic workshops in South Africa 2010 and U.K. 2011
- 1 workshop on governance, South Africa, June 2011
- 1 workshop on integrated management approach, Italy July 2012
- 4 technical publications (overview of biodiversity, threats identification, legal and institutional gap analysis, integrated management approach and road map)
- 9+ scientific peer-reviewed publications

Scientific component: 2 expeditions

Seamounts of the South West Indian Ridge

- November-December 2009; Pelagic focus, on board R/V Fridtjof Nansen
- November-December 2011; Benthic focus, on board RRS James Cook







Project's partners

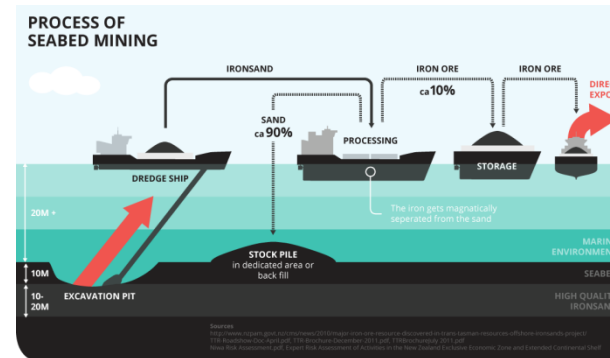
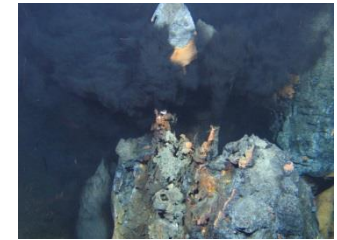
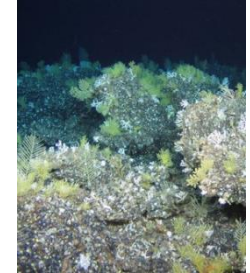


Areas beyond national jurisdiction in the SWIO

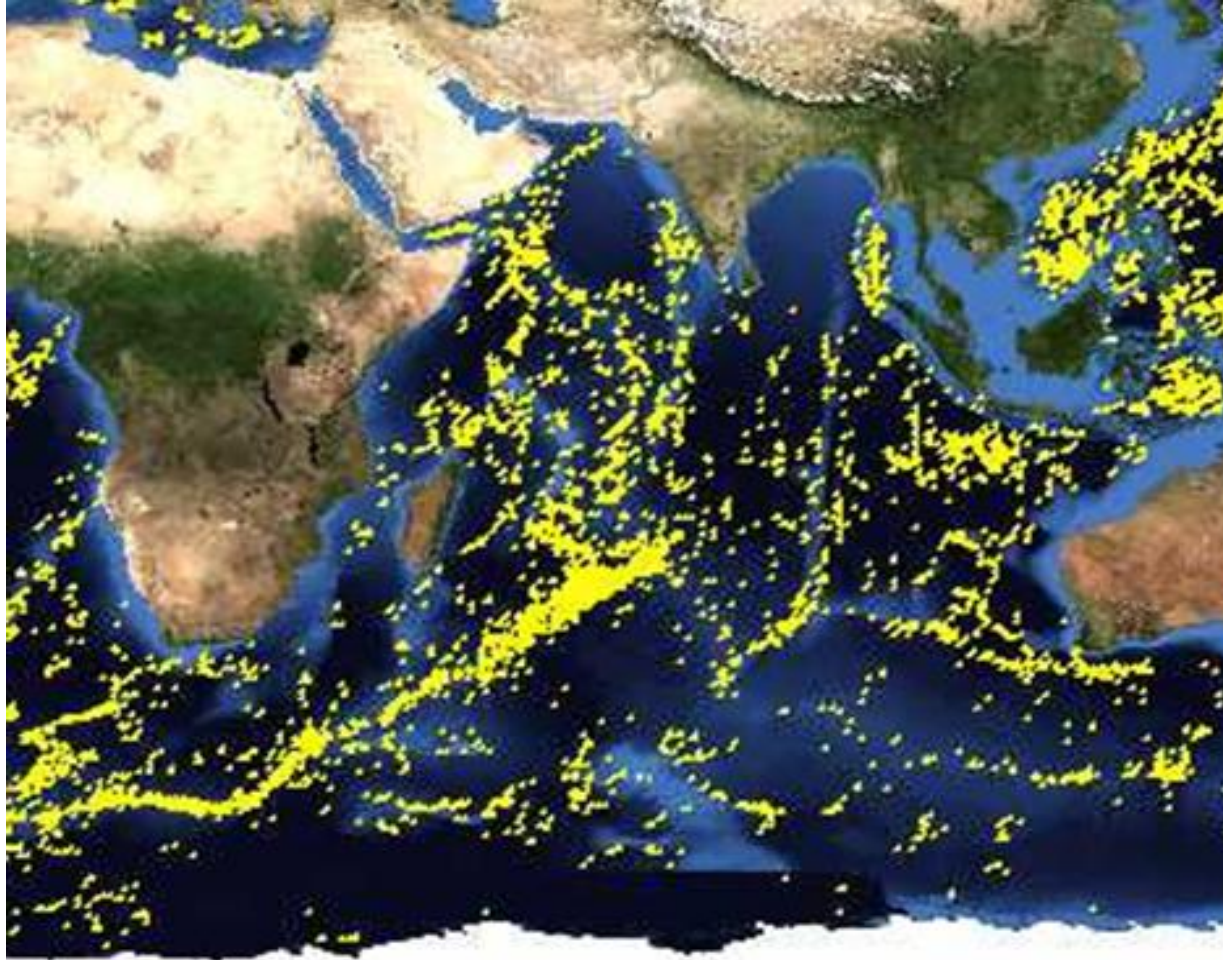
- Links ABNJ \leftrightarrow EEZ/specific coastal ecosystems
- Dual stake for coastal States

IUCN FFEM-SWIO Project:

- Specific ecosystems
- Human activity impacts

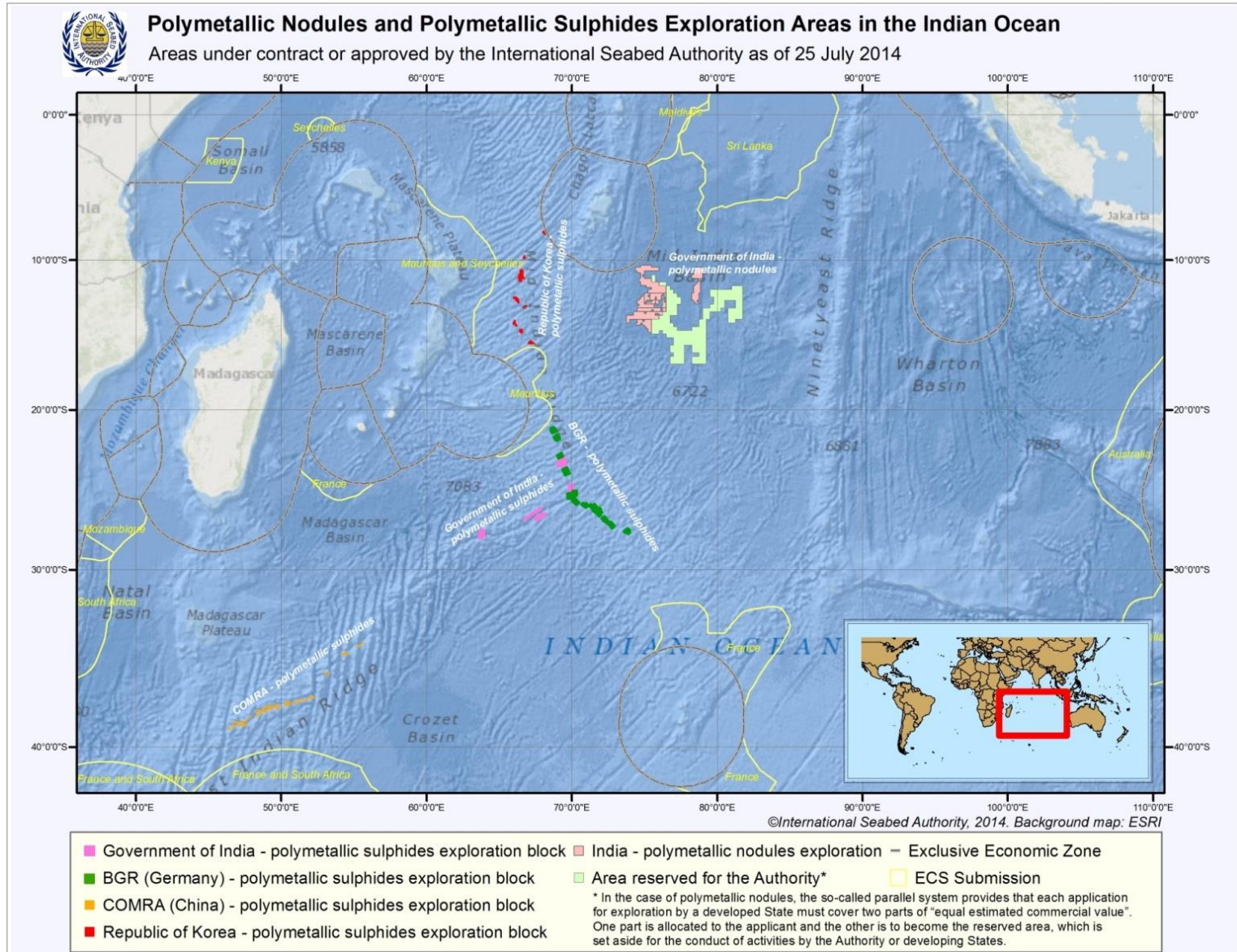


Distribution of seamounts in the Indian Ocean

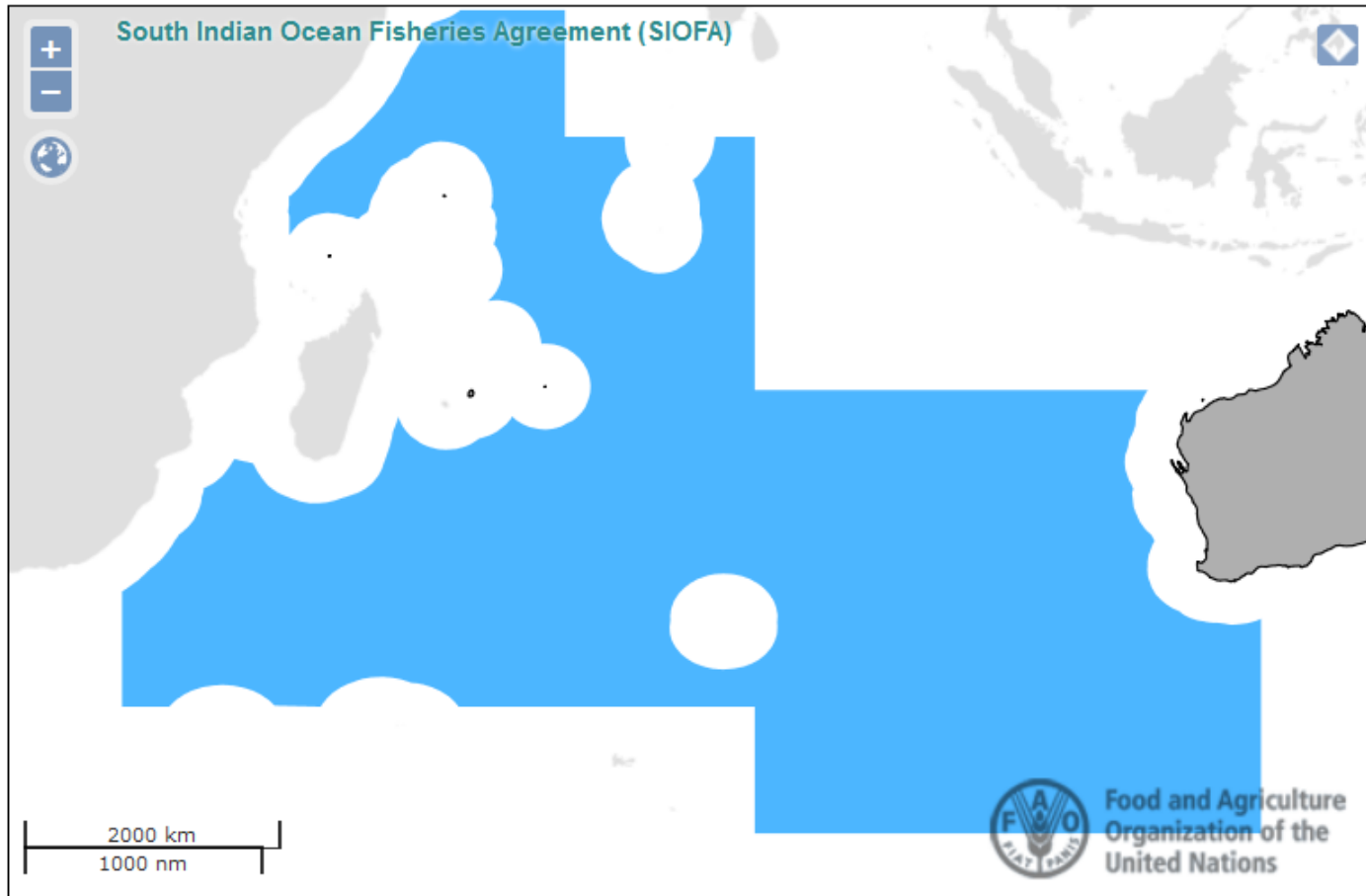


- >1000 m

Exploration blocks International Seabed Authority



Area of competence SIOFA



■ Area of competence ■ Members ⚡ FAO fishing areas ◡ 200 nautical miles arcs

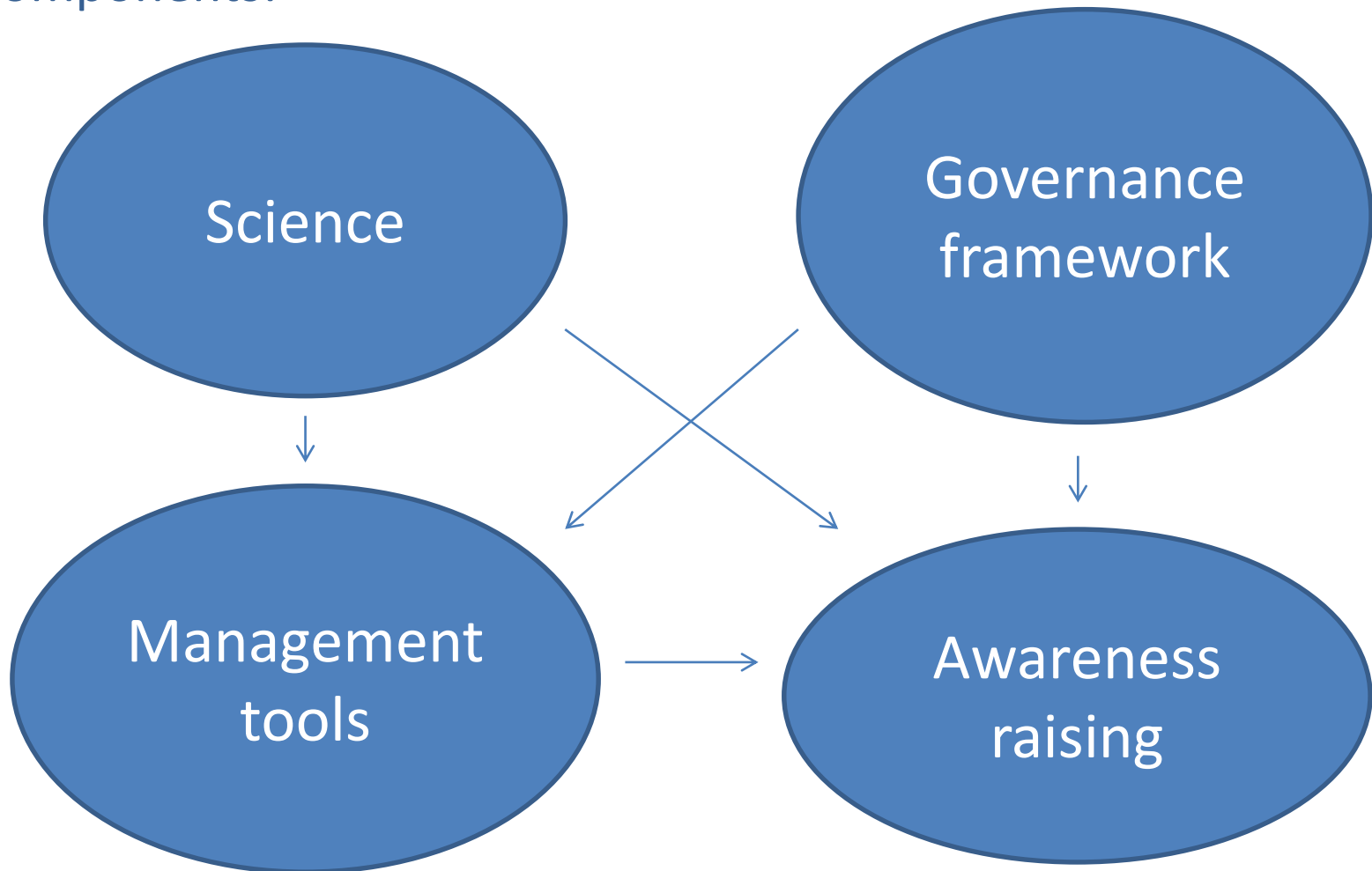
Specific objectives of the IUCN FFEM-SWIO Project

- ✓ **To advance the state of knowledge** of these ecosystems
- ✓ **To improve and strengthen the governance framework**
- ✓ **To suggest sound conservation and management measures**
- ✓ **To raise awareness** of policy makers, the fishing and mining industries and the general public

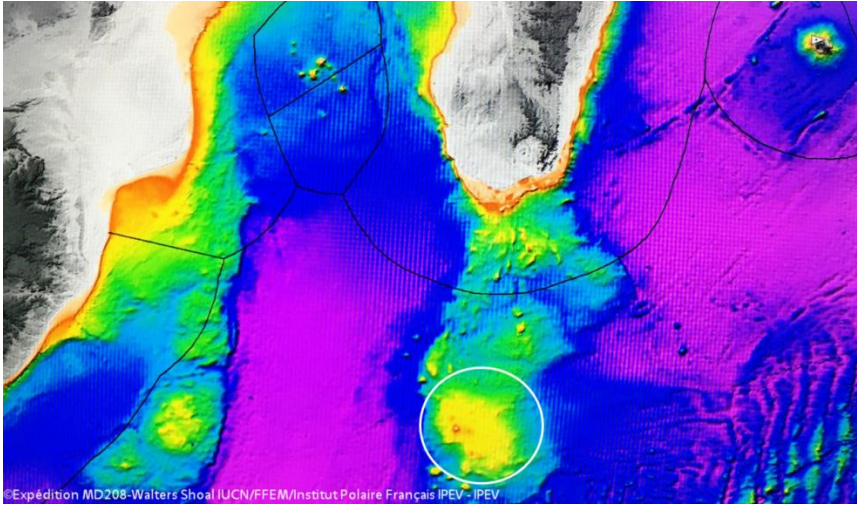


Project structure

4 components:



Scientific Expedition



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- Expedition-at-sea Walters Shoal MD208
- 23 April – 18 May 2017
- Seamount located in ABNJ 700-km off Madagascar; summit area 18m below surface (very shallow)



Preliminary results of the expedition

Walters Shoal Expedition MD208 – R/V Marion Dufresne – April/May 2017
Walters Shoal 32°30'S/44°E
South West Indian Ocean

Le océanographique, carried out within the framework of the IUCN FREM-SWIO project in partnership with the French National Museum of Natural History (MNHN) and the Research Institute for Development (IRD), delivers the first results on the benthic component of the Walters Shoal exploration. Expedition website: <https://www.iucn.org/science/highseas>

Summit area

- flat and pebbly area
- no large erect algae, no gorgon, no large sponges, no corals
- little variety of *Cyathochaeta*
- no abundance of large fish
- sharks: common but not abundant presence
- monkeys described as abundant
- common lion fish (*Scolopendras*)
- presence of very large grouper
- massive alveolar constructions of encrusting calcareous algae (*Corallia* sp.)
- fauna reminiscent of the "coral/pillar" Mediterranean
- small oyster species
- significant abundance of a species of gastropod
- significant absence of any species of star fish or sea cucumber
- ophiurids, represented by a single small species (apparently)
- 1 single sea urchin test
- abundance of brown seaweed *Loxosiphonia*
- algae flora other than shaved and mainly composed of red algae
- small mobile fauna (crustaceans, molluscs, worms) and fixed fauna (hydroids, bryozoans, sponges) – the near absence of sponges is striking) sheltered by coralline encrustments

In total, the benthic fauna and flora of the summit area amounts to at least 210 species, a figure that could reach and exceed 230 when all sponging residues have been sorted and sessile fauna (hydroids, bryozoans, sponges) will have been separated by species:

Fish	20
Echinoderms	3
Crustaceans	17
Amphipods	29
Isopods	42
Molluscs	70
Sponges	++
Algae	60
Hydroids, Sclerozooids, Bryozoans, Sclerozooids, Sponges	+

200 to 600m

- very bold fronts
- sea floor made of detrital sediments
- old constructions of encrusting algae
- oyster conglomerates from the edge of the plateau
- living organisms lost in detrital sediments

The fauna of 200-500 meters does not share any species with the plateau, and the 500-1000 meters is significantly different from the previous one, just as the 1500-2000 meters is again completely renewed. In species numbers, the fauna of the slopes is 130 species at least up to 100 after examining the sponges and sorting the sponging residues.

Slope

- gentle slope,
- increase in the share of pelagic sedimentation (ostracods)
- increase in the ratio of living organisms to sediments
- greater proportion of sea urchins *Asteriasomatidae* ("soft sea urchins"), erect *Scleractinia* (sponges, sponges) and free algaecorals
- remarkable absence of large sea cucumbers (*Polysiphonia*, *Cladophora*)

* Species represented by empty shells to be sorted in the sponging residues

Ecological balance of the summit area – In terms of biogeographic affinities and composition, it is remarkable that the only "big" molluscs are all clearly species of tropical affinity, which at the Walters Shoal reach the extreme limit of their geographic distribution: 2 species of cones (*Conus*), 1 *Cyathochaeta*, 1 *Scolopendras*, *Mollusca*, *Crustacea*, 2 species of sponges. With the exception of one species of porcellan, all these species have been collected alive at least one and tissue sampling will enable the Walters Shoal population to be genetically located in regional connectivity. An anecdotal observation provides interesting insights at the decomposition stage: divers once collected very large larvae from *Toxopea*, a gastropod predator of sea cucumbers. The *Toxopea* are known for their large larval dispersal capacity, with larvae that spend 6 to 12 months in the plankton. This observation shows that the *Toxopea* larvae are able to reach the Walters Shoal. On the other hand, the total absence of sea cucumbers makes the search a totally unproductive environment for juvenile and benthic adults, and not a specimen, not a *Toxopea* shell was observed / collected on the bottom. Alongside this tropical compartment, between half and three-quarters of the fauna of benthic molluscs is represented by small- or even very small- species, unlike *Polysiphonia*, indicates the absence of plankton larval development; we hypothesize that this compartment is endemic to the Walters Shoal, made up of new species for science. This hypothesis can be verified by the end of 2017, as soon as the samples of some key families (*Cladophora*, *Cladophora*, *Cladophora*, *Cladophora*) have been submitted to the specialists. Sequencing of algae may also give rise to observations on the similarity or non-similarity with the flora of the Madagascar Great South, which our team sampled in 2010. In context of low diversity of crustaceans on the Summit, only the group of Amphipods, small *Scolopendras*, presents a specific richness and abundance, not negligible, here again, the similarity with the fauna of South Madagascar can be established. Another original fact is the presence of a single species of small *Cladophora* which is also abundant on all pastures samples.

Ecological balance of the slope – Preliminary observations of molluscs on the slope show the importance of non-pelagic species in the 200-500 meter zone, as in the summit zone, half of which could be endemic and new to science. Among non-endemic species, a *Styela* and a *Bursa* belong to species in southern Madagascar and the Mozambique Channel, and we have comparative data to locate the Walters Shoal population genetically in a context of regional connectivity. The total absence of certain well-represented families in West or Madagascar (*Cladophora*, *Cladophora*, *Cladophora*) is remarkable. Beyond 1500 meters, the strong character of the Walters Shoal obviously poses. The presence, at 2000 meters, of the gastropod *Toxopea*, bonus, describe and known so far only from South Africa.

General review of the benthic composition – The Walters Shoal is a seamount whose geographical position makes the recruitment of benthos necessarily (distance, currents) a tropical / subtropical origin (Madagascar). The latitude (24° S) probably explains that most of the possible recruitments did not lead to the establishment of local populations or, consequently, to the *in situ* evolution of species. The fauna (one fourth) of the Walters Shoal is undoubtedly "new", but is probably half of small, endemic and new species for science. In terms of ecological focus, a seamount with a summit area covered with *Cladophora* is a remarkable environment. For these reasons, the Walters Shoal remains a unique biogeographic object in the Indian Ocean. From the latter *Polysiphonia* sponges, which has drawn our attention to the Walters Shoal, we collected only three juveniles and some *Polysiphonia* larvae. According to information gathered in Durban, it appears that there has not been and is no commercial fishery on the shoal. Except for occasional recreational fishing, it is likely that the resources exploited are limited to sponges. The evening of our arrival on the beach, on 28.04.2017, we observed the radar signature of a Chinese ship on the summit zone; the next morning the ship had disappeared. We did not see any other vessels during the 16-hour stay in the area. On 05.05.2017, when we took the route to Durban, we crossed the same Chinese ship that was heading again towards the Walters Shoal.

Sources: Drafting an preliminary findings by Philippe Bouchet (Principal Investigator, MNHN), in collaboration with Laura Cordeiro (Durban, MNHN) and Sébastien Couvret (Scientific draw, MNHN) – 11.6.2017

MUSÉUM National de Histoire Naturelle
 IRD Institut de Recherche pour le Développement
 IPEV Institut Polynésien d'Études et de Recherches

For more information on the project and the expedition, please contact: aurelie.spadone@iucn.org or sabrina.guyot@iucn.org

- Summary of the first results on the benthic component available
- Further analysis on going
- Will determine percentage of endemic species; exact number of new species discovered; origin of species (subtropical/subpolar, Indian/Atlantic ocean, etc.)
- Pelagic & environment component: analysis ongoing.

✓ Estimate of 100 new species among the benthic organisms sampled during the Walters Shoal expedition

Expedition blog & website

www.iucn.org/science4highseas

waltersshoal | BLOG FR

Secure | <https://science4highseas.wixsite.com/waltersshoal/blog-fr>

Create a WIX site!

EXPEDITION "WALTERS SHOAL"

32°30'S / 44°E

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#science4highseas

OPERATION - Collecte de zooplancton et micronecton sur le mont Walters

May 15, 2017 par Rasoloarijaio, Etudiant en master, Université Nelson Mandela Metropolitan (Afrique du Sud)




Le zooplancton occupe une position clé dans la chaîne alimentaire pélagique. Il assure le transfert des énergies trophiques du phytoplancton vers les niveaux trophiques élevés dont le micro-necton, les poissons pélagiques et les baleines. A travers cette campagne océanographique, on va se focaliser sur la productivité et la biodiversité zooplanctonique du mont Walters, ainsi que l'interaction trophique et la diversité pélagique.

Qu'est-ce que le zooplancton et le micro-necton ?


Le zooplancton est...

Plus

Posts Récents

 **Médecin sur le Marion Dufresne**

May 30, 2017

 **OPERATION - Observation de la mégafaune marine**

May 22, 2017

Live Tracking

Opérations en cours (room)

Point sur la contribution du FFEM

May 15, 2017 | Janique Etienne, chargée de projets Haute Mer et Littoral au Fond Français pour l'Environnement Mondial (FFEM)

Documentary “The Last Frontier”

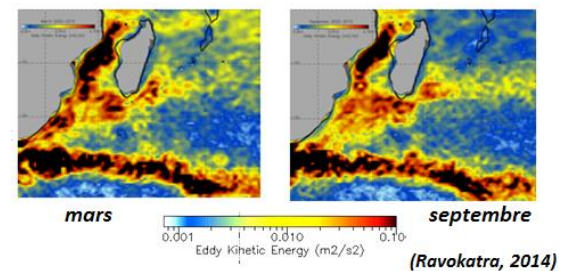
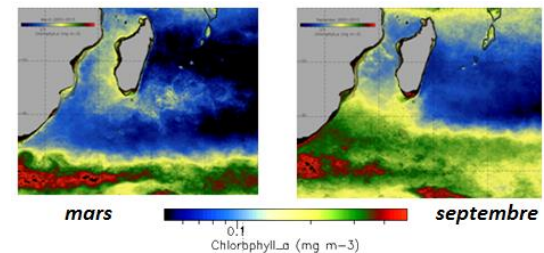
- Written by James Nikitine
- Produced & Directed by James Nikitine and Fabiano D’Amato
- Format 26 min
- Launch at IMPAC 4 :
[Film release during the official side-event , Thursday 7.09.2017, 18:30, Ovo Beach](#)



Project's results

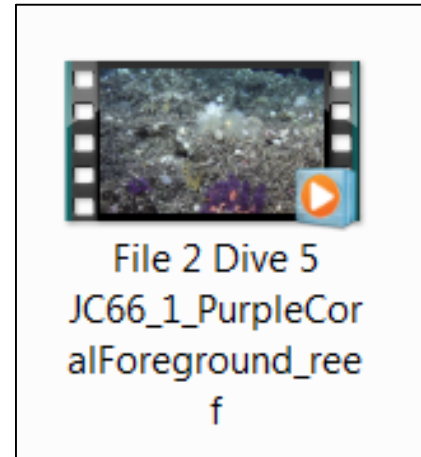
- **Science**

- Bibliographic Review (IUCN, IRD)
- Analysis of satellite surface data (IRD)



- Video analysis of ROV dive images on 5 seamounts of the South West Indian Ridge (Oxford University)

*Data from NERC (U.K.) J066 Expedition
on board RSS James Cook, 2011.
Project IUCN UNDP-GEF.*



- Feasibility study on connectivity of seamounts through numerical models (E. Crochelet, IRD)
- On going:
 - Connectivity study on seamounts in the SWIO (E.Crochelet, IRD)
 - Analysis of data gathered during Walters Shoal expedition (benthic + pelagic/environment components)

- **Governance**

- Review of the Indian Ocean Governance Framework (IRD)
- Supporting the implementation of SIOFA (IUCN, IRD)
- Study: Development of possible scenarios for the SWIO on area-based management tools (IDDRI)



Developing area-based
management tools in areas
beyond national jurisdiction:
possible scenarios for the
Western Indian Ocean

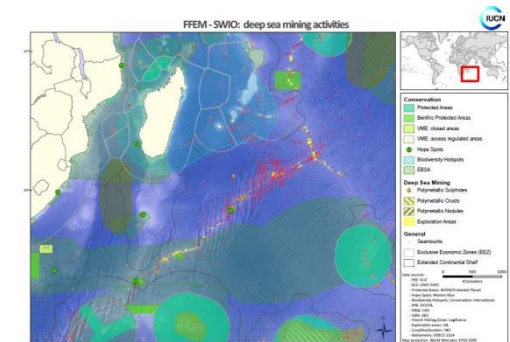
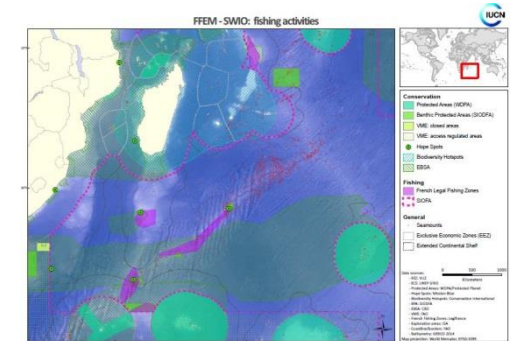
Julien Rochette, Glen Wright (IDDRI)

June 2015

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- **Management tools**
 - Review and comparison of existing scientific criteria used to designate priority conservation areas
 - GIS mapping to determine the zones to protect in priority in the SWIO and potential network of MPAs
 - Elements of a management plan for a seamount in the SWIO: the case of the Walters Shoal (on going)





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