

## **Governance of the South West Indian Ocean Seamounts**

Science to Policy meeting before the 9<sup>th</sup> COP of the Nairobi Convention

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***Key issue:** How to regulate seamount exploitation while preserving the biodiversity of these exceptional natural sites?*

### **1 - LOCATION AND CHARACTERISTICS OF THE SWIO SEAMOUNTS**

Seamounts are active or extinct volcanoes located on mid-oceanic rifts or intra-plate hot spots. The number of large seamounts (height > 2 km) in FAO area 51 of the Indian Ocean (west of 80°E) has been estimated at 1090, of which 414 are listed within EEZs [1]. The seamounts are concentrated along the South West Indian Ridge (7700 km from Bouvet Island to Rodrigues), on the Mozambique Plateau and on the plateau that extends over 1100 km south of Madagascar (Madagascar Ridge). Some seamounts are very close to the surface, such as the Walters Shoals, which is 15 m deep. Other seamounts closer to Madagascar are located at a depth of about 300 m. To the north of Mauritius, and as far as the Seychelles, is the *Ride des Mascareignes* with, from south to north, the St. Brandon, Nazareth and Saya de Malha Plateaus. The map presented in the Appendix mainly highlights underwater reliefs less than 2 km below the surface. The vast majority of SWOI seamounts are located outside EEZs.

Because of their magmatic origin, seamounts contain mineral resources. A crust of ferromanganese oxide enriched with cobalt, copper, manganese and sulphur has accumulated around the oldest reliefs [2]. These reserves could exceed the quantities currently present on the continents, but their extraction cost remains prohibitive to be profitable. However, the situation could change in the coming decades as these resources in continental areas become more and more scarce.

### **2 – SEAMOUNT ECOLOGICAL ROLE AND LIVING RESOURCES**

A number of SWIO has been the focus of recent scientific campaigns, notably in 2009, with surveys carried out on six deep seamounts [3], and in 2016-2017, on shallow mounts: *La Pérouse* (west Réunion), a *guyot* in Madagascar Ridge and the Walters Shoal. This research shows the important influence of these reliefs on the characteristics of water bodies and their productivity.

However, seamounts are not always places of high organic production. But in most cases, these are remarkable structures in several respects: abundant biodiversity, concentration of prey for predators, reference points in the movements of migratory species, but also intensive bottom trawl fishing areas.

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The fish resources associated with seamounts supported a significant development of deep-sea commercial fishing as early as the 1960s. At world level, the analysis of catches, in addition to scientific campaigns, has made it possible to identify 535 fish species associated with seamounts, including 370 (70%) of demersal type, i.e. living near the bottom. This group represents 1/3 of known fish families, which is a significant and unique fraction of fish diversity. These are often long-lived species (over 100 years), with late maturation (50 to 60 years) and low fertility, making them extremely vulnerable to intensive fishing. The Soviet fisheries carried out from 1969 to 1998 in the SWIO concerned 81 fish families, including 4 species of *Beryx (alfonsino)* and the orange *Hoplostetetus* (roughy orange or *Hoplostetetus atlanticus*) with very high commercial value, as well as a minimum of 13 shark species in threatened status [4]. In addition to fish, benthic resources (living on the bottom) such as crustaceans (lobsters, crabs), mollusks, sponges and cold water corals (slow growing) are also exploited. Because a large proportion of seamounts are located on the high seas, exploitation is poorly or not at all controlled and opens the way to illegal fishing activities.

Seamounts also attract pelagic fish species such as tuna, rostrum species and large marine mammals. Seamounts serve as navigational landmarks during migrations [5], and are sometimes important (but often temporary) aggregations of pelagic fish caught by seine or long line.

Finally, seamounts are also feeding areas for seabirds. The case of the Walters Shoals is eloquent: *Barau* petrels nesting in Reunion come to capture their prey during the feeding period of chicks, on this *guyot* located 1800 km from Reunion [6].

Generally, seamounts are geographically isolated structures. Nevertheless, marine currents can provide connectivity between seamounts or with coasts that are more or less close. Taking into account the distance, the average time required to cover it, the temperature and salinity conditions and the life cycle of organisms, biological exchanges between these distant structures can be designed and modelled. Current (satellite) observation tools allow connectivity scenarios to be considered within a large geographical area. A recent study [7] carried out on seven seamounts in the South West Indian Ocean (including Walters Shoal) has thus highlighted the possibility of connection between these structures for certain species with a sufficiently long larval life.

### **3 - CURRENT GOVERNANCE PRINCIPLES OF A SEAMOUNT AND REFORMS THAT STATES MUST BE PREPARED TO IMPLEMENT**

At this point, it is worth recalling the principles that make it possible to consider a development of maritime governance within the framework of the Nairobi Convention. Since we do not "govern" species or ecosystems, but operators and uses at sea, let us decide that "governance" means "administration". If this administration is primarily national, it may have to go through more regional processes (bilateral or multilateral agreements between States, actions under the Nairobi Convention, etc.). The administration of seamounts and other geo-morphological structures (creases, flaws) cannot be designed in complete freedom, neither for the State, nor for regional

organizations, at least not for all seamounts in the Indian Ocean. Such administration must be in line with the following fundamental tenets:

### **3.1. Seamount governance depends on the International Law of the Sea**

For the natural sciences, a seamount is a topographic and ecological unit, but in the law of the sea, **a seamount has no legal status *per se***.

→ **Attention must therefore always be paid to the name and legal status of the maritime space where the seamount is located**. In force since 1994, the new Law of the Sea of the United Nations Convention on the Law of the Sea (UNCLOS) sets out what each State can do on maritime spaces, whatever its motives. This also applies to relevant regional organizations. The main spaces are the territorial sea, the EEZ, the high seas, the legal continental shelf and the international seabed zone. Some of these spaces refer to the water column, others to underwater soils and sub-soils. The seamount being a geo-morphological structure placed on the seabed, it is the legal status of the soil that is first and foremost decisive. There are three possible underwater soil situations, i.e. three governance situations:

- Mount located on soil between *0 and 200 nautical miles (NM)* from the coast: the coastal State exercises its sovereign rights there (e.g. *Mount La Pérouse* for France, *Mount MAD-Ridge* for Madagascar...);
- Mount located between *200 NM and 350 NM*: the mount is in an international zone and is part of the "International Seabed Zone<sup>2</sup>". This is no longer accurate if the coastal State has made a request for recognition of its rights to an extended continental shelf, generally ranging from *200 NM to 350 NM* maximum, and if the request is recognized as acceptable and accepted. Example of the *Saya de Malha* area between Mauritius and the Seychelles;
- Mount located in international space: it grows on a ground located after the outer limits of the legal continental plateaus, simple or extended, e.g. *Walters Shoal Mountains, Coral, Middle of What, Atlantis Bank, Fools Flat* etc.
- → **Secondary attention must be paid to the legal status of the waters (water column and what they contain) surrounding the seamount:** within the "EEZ" ( $\leq$  to 200 NM) of the coastal State or in "international" waters.

Governance of spaces or resources [8] is not satisfactory [9]: fishing practices that do not comply with RFMO measures, illegal fishing situations grouped under the heading "illegal, unreported or unregulated" (IUU) that are difficult for RFMOs and States to control at sea, free, opportunistic and inconsistent access to the seamounts

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<sup>2</sup> Under the jurisdiction of the International Seabed Authority (ISA) with respect to mineral resource extraction requests (only). For biological diversity, the seamount is accessible to all possible fishing operations, subject to regulations laid down by international fisheries law and therefore by the relevant RFMOs for one or more pelagic species or for benthic species (IOTC, CCSBT, APSOI...).

depending on the benefits, risks of competition with mining activities, etc. Is environmental law more effective?

### **3.2. Is seamount governance better driven by Marine Environmental Law?**

In marine environmental law, seamounts are anything but ordinary ecosystems. However, until now, they have not been systematically protected.

- **Attention must be paid to the species that live and are found there**, and the environmental rights of the species. The question is whether they are legally protected. However (except for seabirds or certain large marine mammals) we note the very low number of species that are protected and listed in CITES for example (some sharks and rays...) to prevent capture or simply to trace trade. There is also the problem of poorly listed species on seamounts, which are poorly known and which CITES cannot consider in the short term.
- **Attention must be paid to certain particularly fragile ecosystems sheltered by the seamounts**. This is the case when there are vulnerable marine ecosystems, known as VMEs, which are supposed to create constraints for marine resource operators, as fishing that encounters VMEs is supposed to behave differently from normal fishing operations, for example.

### **3.3. From 'administration' to 'management' of seamounts**

With the development of knowledge and controls [10], we know that seamounts are, or have been, places of high productivity, for some, and large farms, some notoriously over-exploited, without any sustainability, including by States not bordering the IO, authorized or not. However, through ecological and economic connectivity, seamounts have an impact on the situation of coastal civil societies, which must begin to feel concerned because of the risk of the very rapid disappearance of the IO marine biological heritage and sources of food and genetic security. To move from "administration" to "management", it is difficult for a State to act in isolation. The State alone cannot manage a network [11] of seamounts scattered in EEZs, for example, let alone if they are located beyond the limits of its jurisdiction, and therefore outside the jurisdiction of the State.

The state of play shows us that: a) the use of the instrument of marine protected areas is confined to areas under jurisdiction, which leaves a set of seamounts outside legal protection. Nevertheless, the reform of the law of the sea (2018-2020) **allows for the creation of marine spaces in international zones through the right to invent "zone-based management" instruments**. b) Very few extraordinary marine sites are "classified" by international environmental law (e.g. Atlantis Bank) and there is an operational inefficiency of mere classification without further legal conservation governance. This legal conservation must therefore be built.

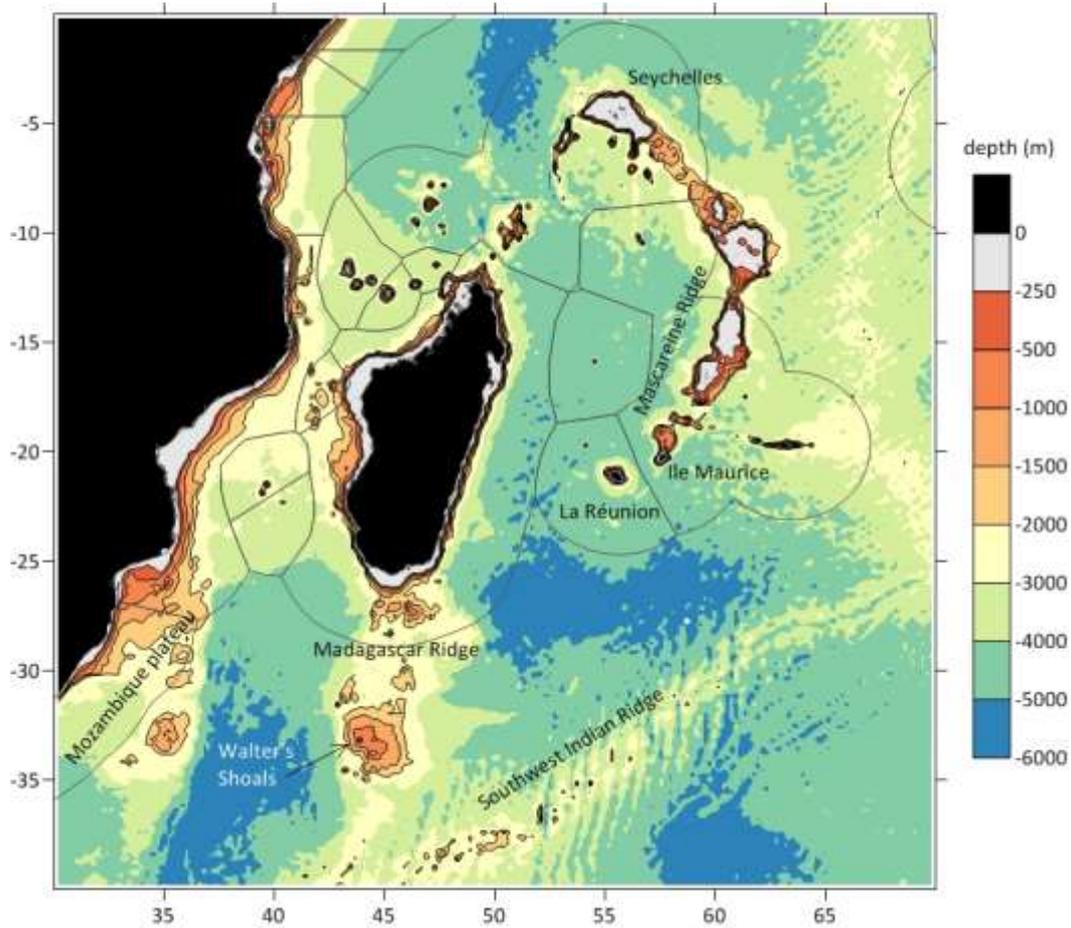
## **4- RECOMMENDATIONS**

The dual question of 1) governance of the access to seamounts resources of regional/global importance, and 2) conservation of ecosystems, resources and related biological balance, is

raised to the attention of the COP 9 of the Nairobi Convention (August 2018), hence to the Party States, in order to arouse their interest to take public decisions to resolve shared issues: environment, food security, apportionment of markets, reduction of economic vulnerability, conservation of the marine natural and genetic heritage of the Indian Ocean, not so much for itself but to ensure sustainable exploitation.

It is then recommended to the Nairobi Convention:

1. To promote **marine spatial planning** studies in order to compile an inventory of the existing and planned at-sea activities in the whole South West Indian Ocean (SWIO) region, in both areas under national jurisdiction and international waters.
2. To encourage **historical data rescue** activities on seamounts of the SWIO in order to set up a knowledge base on the marine natural heritage, its potential and its vulnerability.
3. To develop **multidisciplinary capacities** in the administration of the riparian states in order to design **management plans** that are dedicated to seamounts conservation in EEZ and their adjacent waters where distant and/or connected seamounts are located.
4. To examine the issue of **extending its geographical competence beyond national jurisdiction** because of different types of **connectivity (economic, ecological...)** between seamounts located in international waters and coastal zones, provided that the Nairobi Convention is competent for coastal zones and **circumstances that affect them indirectly**.
5. As for the **seamounts included on the legal continental shelf (LCS)** of a coastal State, to draw the attention of the States to such complex situation whereby pelagic resources fall within the jurisdiction of the international fishing regulations while living benthic (fish excluded) and mineral resources come under the jurisdiction of the state which owns the LCS; therefore, it is recommended that the Nairobi Convention **facilitates the implementation of harmonized conservation/exploitation policies** of those entities.
6. To account for new measures from RFMOs, in particular the **recent classification (29/06/2018) by the SIOFA of 5 seamounts** located in international waters (Walters shoal, Coral, Middle of What, Atlantis Bank, Fools Flat) as **Protected Areas**, with ban of trawl fishing and mandatory boarding of observers for all other gears, pending a final management plan by SIOFA in 2019.
7. To support the States to engage any form of **network protection** –partial or total– of marine regional natural heritage that is partially documented by the LMEs, the EBSA process, or the oceanographic cruises, but which remains with any legal protection.
8. To capitalize on opportunities provided in the **UN binding international instrument on the governance of the oceans**, currently under development, in order to enable convergence of the Indian Ocean States on the 5 authorized themes: i) spatial management and MPAs in international waters; ii) marine technology transfer; iii) sharing advantages of the genetic diversity; iv) combating IUU fishing and v) environmental impact assessments.



Seafloor topography of the SWIO: the topographic features culminating at depth less than 2 km are represented in orange tones and bounded by isobaths (black lines). The shelves that are less than 250 m deep are shown in grey.