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Laying the Foundations for Management of a Seamount Beyond National Jurisdiction

A case study of the Walters Shoal in the South West Indian Ocean

Relates to agenda item: 4 Working paper ☐ Info paper ☒

Delegation of IUCN
(International Union for Conservation of Nature)

Abstract

This report was published in June 2018. It has been produced in the framework of the IUCN-led project on ''Conservation and sustainable use of seamounts and hydrothermal vent ecosystems in ABNJ of the SWIO'', funded by the French Global Environment Facility ("Fonds Français pour l'Environnement Mondial"; FFEM) [2014-2018].

The report is available online on the IDDRI website, in English and French:
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This report firstly describes the ecological characteristics of seamounts of the Southwest Indian Ocean (SWIO) and of the Walters Shoal. It then reviews the governance framework for the region, assessing the mandates of regional conventions, regional fisheries bodies and relevant sectoral organisations. Finally, it presents some potential options for the conservation and management of the Walters Shoal.

KEY MESSAGES:

- Biodiversity in areas beyond national jurisdiction

Marine areas beyond national jurisdiction (ABNJ) make up approximately half of the planet's surface and host a significant portion of its biodiversity. Seamounts located in these areas generally host large numbers of endemic species, are often hotspots of marine biodiversity, and may act as waypoints for migratory species.

- The Walters Shoal seamount in the South West Indian Ocean

Located at the southern end of the Madagascar Ridge, the Walters Shoal is a shallow water area. It consists of a group of seamounts and domes, the highest summit of which sits just 18 meters below the surface. In the framework of a project funded by the FFEM, the Walters Shoal was the subject of a 26-day multidisciplinary expedition on board the R/V Marion Dufresne (April-May 2017).

- Options to better conserve and manage the Walters Shoal

This report describes the ecological characteristics of the Walters Shoal and, following a review of the governance framework for the management of the regional marine environment, highlights some possible options for a better conservation and management of this seamount.

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June 2018

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Context of the report

This report was elaborated in the context of the project "Conservation and sustainable exploitation of seamount and hydrothermal vent ecosystems of the South West Indian Ocean in areas beyond national jurisdiction" funded by the French Global Environment Facility ("Fonds Français pour l'Environnement Mondial"; FFEM) and led by the International Union for Conservation of Nature (IUCN).

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List of acronyms

ABMT	Area-based management tool
ABNJ	Areas beyond national jurisdiction
APEI	Areas of Particular Environmental Interest
APM	Associated Protective Measure
BFIA	Bottom Fishing Impact Assessment
BPA	Benthic Protected Area
CBD	Convention on biological diversity
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CMM	Conservation and Management Measure
COP	Conference of Parties
EBSA	Ecologically or Biologically Significant Marine Areas
FAO	United Nations Food and Agriculture Organisation
FFEM	Fonds français pour l'environnement mondial
GEF	Global Environment Facility
GFCM	General Fisheries Commission for the Mediterranean
IMO	International Maritime Organisation
IOTC	Indian Ocean Tuna Commission
ISA	International Seabed Authority
IUU	Illegal, Unreported and Unregulated
MCS	Monitoring, Control and Surveillance
MEPC	Marine Environment Protection Committee
MOR	Mid-Oceanic Ridges
MPA	Marine Protected Area
NAFO	Northwest Atlantic Fisheries Organisation
NEAFC	North East Atlantic Fisheries Commission
NFP	National Focal Point
NPFC	North Pacific Fisheries Commission
PSSA	Particularly Sensitive Sea Area
RFB	Regional Fisheries Body
RFMO	Regional Fisheries Management Organisation
SEAFO	South East Atlantic Fisheries Organisation
SIODFA	Southern Indian Ocean Deep Sea Fishers Association
SIOFA	South Indian Ocean Fisheries Agreement
SPAMI	Specially Protected Area of Mediterranean Importance
SPRFMO	South Pacific Regional Fisheries Management Organisation
SSA	Sargasso Sea Alliance
SSC	Sargasso Sea Commission
SWIO	Southwest Indian Ocean
UNCLOS	United Nations Convention on the Law of the Sea
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNFSA	United Nations Fish Stock Agreement
UNGA	United Nations General Assembly
VME	Vulnerable Marine Ecosystem
WIO	Western Indian Ocean

1. Introduction

Marine areas beyond national jurisdiction (ABNJ)[1] make up approximately half of the planet's surface and host a significant portion of its biodiversity. In recent years, the international community has become increasingly aware of the growing threats to marine biodiversity in ABNJ. As a result, the United Nations General Assembly (UNGA) adopted on 24 December 2017 a resolution opening formal diplomatic negotiations for the elaboration of an international legally binding instrument on the conservation and sustainable use of marine biodiversity in ABNJ (Wright, Rochette, Gjerde, & Levin, 2018). In parallel, some regional organisations and initiatives have extended their activities into ABNJ (Rochette *et al.*, 2014).

Seamounts, mostly found in ABNJ, generally host large numbers of endemic species, are often hotspots of marine biodiversity, and may act as waypoints for migratory species. This report explores some potential options for the conservation of a particular seamount in the South West Indian Ocean (SWIO): the Walters Shoal. This unique group of submerged mountains lies 700 km off the southern coast of Madagascar.

This report forms part of a comprehensive conservation project that included a scientific component that aimed to increase knowledge regarding the Walters Shoal: a 26-day multidisciplinary expedition on board the R/V Marion Dufresne (April-May 2017). Data gathered on the benthic and pelagic communities, marine mammals, seabirds and large predators, and also on environmental and oceanographic conditions, will contribute to our understanding of seamount ecosystems in general, and of the Walters Shoal in particular.

The scientific results of the Walters Shoal expedition complements earlier sampling work conducted on SWIO seamounts in 1964 (R/V Anton Bruun), 1988 (Vityaz) and 2009 (R/V Dr. Fridtjof Nansen). The interim results of the benthic survey counts 500 species, some 100 of which are likely new to science. Analyses of the water column samples (pelagic survey) and of marine mammal and seabird observation data are still in progress at the time of writing.

This report firstly describes the ecological characteristics of seamounts of the SWIO and of the Walters Shoal. It then reviews the governance framework for the region, assessing the mandates of regional conventions, regional fisheries bodies and relevant sectoral organisations. Finally, it presents some potential options for the conservation and management of the Walters Shoal.

Overall, this effort supports the future work of decision-makers and lays the foundation for the elaboration of a management plan by providing: a review of the ecological context of the selected site; a review of the governance framework and regional context; and discussion of some potential options for conservation.

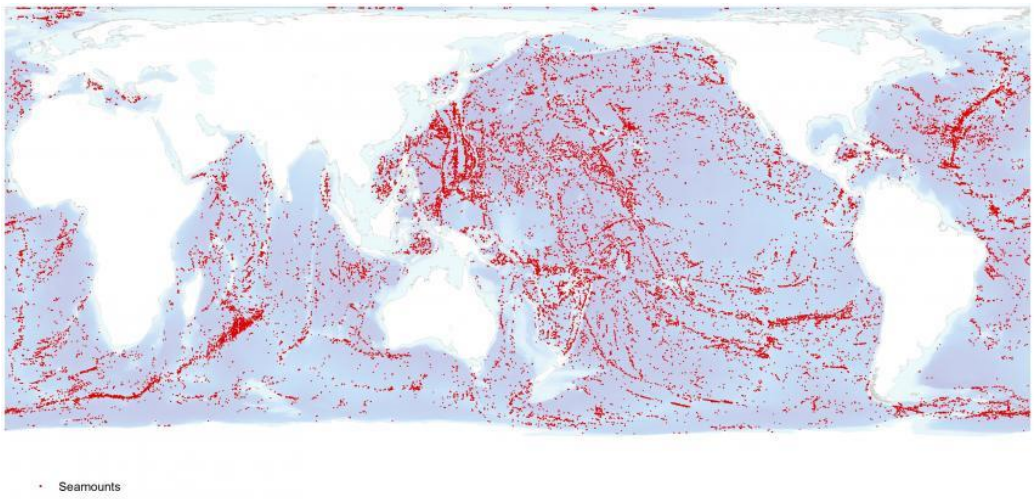
[1] According to the United Nations Convention on the Law of the Sea, ABNJ encompass the "high seas" and "the Area". The high seas are "all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the archipelagic waters of an archipelagic State" (Article 86); the Area is "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction" (Article 1(1)). United Nations Convention on the Law of the Sea (Montego Bay, 10 December 1982, in force 16 November 1994) 1833 UNTS 396.

2. The Walters Shoal

2.1 Characteristics of seamounts

The number of seamounts globally is estimated at about 100,000 (figure 1). Morphologically, they are distinct topographic elevations over 1000m above the seafloor that do not reach the water's surface. Their distribution has primarily mapped using remote sensing (satellite altimetry) (Yesson *et al.*, 2011).

Figure 1. Distribution of seamounts worldwide. Yesson *et al.* 2011



Ecosystems associated with seamounts are recognized as important in terms of biological activity, biodiversity and genetic resources. The current-topographic interactions that these formations generate favour the direct availability of food resources, and seamounts tend to have high levels of endemism. There are numerous laboratory-developed hypotheses on oceanic phenomena (e.g. Taylor's Column) and on the attraction of certain species to seamounts (e.g. due to their magnetic signature). However, fewer than 300 seamounts have been studied extensively and these hypotheses they have not yet been fully verified by scientific field data. We are therefore currently unable to fully understand the functioning of these specific ecosystems, though our understanding is likely to improve as further scientific work is conducted, and as sampling efforts and the use of novel genomics approaches increase (Stocks and Hart, 2007).

2.2 Ecological context of seamounts in the South West Indian Ocean

The Indian Ocean, the third largest in the world, represents approximately thirty percent of the global ocean surface. Dominated by the tropics, the Indian Ocean accounts for a large share of deep coastal and oceanic biodiversity, however this remains largely unknown or only partially described (Ruwa and Rice, 2016) as the South West Indian Ocean region has been the least studied to date. It is characterized by three mid-oceanic ridges (MOR): the Central Indian Ridge (CIR), the Southwest Indian Ridge (SWIR), and the South East Indian Ridge or SEIR) (Das et al, 2005). These MORs host the highest concentrations of seamounts and hydrothermal vents.

Subtropical environmental conditions in the north become temperate in the south with moderate primary production (Wilhem, 2018). In 2009, six seamounts of the Southwest Indian Ridge (SWIR) were scientifically explored including the Walters Shoal. In addition to phytoplankton and zooplankton, 7000 specimens, including fish, shrimp, squid and gelatinous sea creatures were sampled. Forty species of birds, including thousands of individuals, as well as some thirty marine mammals, were also recorded

(Rogers et al, 2009). In 2013, the MIROMEN program (Migration Route of *Megaptera novaeangliae*) also highlighted the presence of marine mammals in this region. Four individuals had chosen the *La Perouse* Seamount, north-west of Réunion, on their migratory route - a site corresponding to a breeding area.[2]

2.3 Ecological context of the Walters Shoal

Located at the southern end of the Madagascar Ridge, the Walters Shoal is a shallow water area. It consists of a group of seamounts and domes, the highest summit of which sits just 18 m below the surface (32°30'S/44°E) (Zucchi *et al.*, 2018). Bathymetric charts from soundings taken in 1973 (R/V Marion Dufresne, Cdt Bilhaut) show the presence of breakers (Berthois, 1973). The summit consists of a flat and peeled area, due to the actions of wave and surface currents at this shallow depth. This seamount is located in an area of specific ocean dynamics that induces a relatively stable flow of water bodies that may hypothetically support structured and persistent biophysical interactions, and thus induce oceanic processes of enrichment (Ravokatra, 2014).

The fish fauna of Walters Shoal differs in composition from deeper seamounts of the region and is poorly diversified. This may be due lower food availability owing to its shallow depth. e.g. macroplankton do not reach the shallower waters of the mount during their overnight vertical migration to the surface, thus precluding the presence of the predatory species characteristic of lower topographic elevations. The absence of large brown algae or complex structures of the kind found on temperate reefs likely also plays a role, as these provide shelter or support for food resources (Collette and Parin, 1991).

2.4 Major threats to Walters Shoal resources

Since the second half of the 20th century, seamounts have faced two emerging threats: the exploitation of fishery resources and the potential for seabed mining (FFEM, 2013).

2.4.1 Fishing

The depletion of biological resources is one of the major risks associated with the fishing trade that the targeted ecosystems are facing. In only a short time, these areas can be strongly impacted by the pressure of fisheries activity. The target species are often of low global abundance and their aggregation on seamounts at certain stages of their life (e.g. reproduction) makes them particularly vulnerable. The isolation of seamounts also makes the evolutionary and ecological mechanisms of these ecosystems substantially different from those in the surrounding waters. Due to limited exchanges with communities of other seamounts or coastal communities, it would take decades to rebuild numbers in the event of weakening stocks (Simard and Spadone, 2012).

Habitat degradation and its effects on associated communities, through a mechanical impact on ecosystem structure, is another of the bottom fisheries related threats. The resuspension of sediments is also an indirect consequence of this type of fishing (bottom trawling), combined with the lack of selectivity of catches. Trawl by-catch can include a broad range of benthic invertebrates, fish and seabirds, including sensitive or vulnerable species. The repercussions on these ecosystems could be observed particularly in terms of predator-prey relationships. The threat to ghost fishing gear, which

[2] See http://www.globice.org/03_ProgrammeMiromenCarte.htm.

continues to "fish" once lost or discarded, is thought to be low on seamounts, but is also a potential threat (Simard and Spadone, 2012).

There are an estimated 268 seamounts in this part of the Indian Ocean at "fishing depth", i.e. summit areas shallower than 2000m. FAO reported in 2009 that the SWIO was experiencing a significant increase in catches. However, fishing statistics in the regional are underdeveloped, with limited accessibility (Kimani *et al.*, 2009). Fishery research programmes and fishing companies have provided the most detailed biological data and bathymetric maps of the region (FAO 2002, Romanov 2003, Shotton 2006). Only syntheses of such data are publicly available and there is no compilation on species distribution. Data obtained from research on longline and commercial fisheries are generally not published (Tracey *et al.* 2011).

Nevertheless, almost 40 years of fishing mark the history of SWIO seamounts (Zucchi *et al.*, 2018). Industry and research for Soviet fishery resources began experimental fishing in the 1970s on the Southwest Indian Ridge (SWIR), Mozambique Ridge and Madagascar Ridge, while bottom trawling started in 1980s (Romanov 2003, Clark *et al.*). The French fleet also conducted experimental trawl fisheries over the same period, on the Madagascar Ridge and SWIR, and in particular on the Walters Shoal (Collette and Parin, 1991). In 1990, new seamounts were being exploited, and the longline fleet was developing on the SWIR. More recently, longliners on Réunion have developed the tuna fishery in southern Madagascar, with a major effort devoted to this type of fishing in the SWIO region (Zucchi *et al.*, 2018).

Species mainly targeted by these fisheries have a low reproductive rate and gather at seamounts during breeding season. They are therefore particularly exposed and vulnerable (low resilience) to overexploitation. Target species include orange roughy - *Hoplostethus atlanticus*, cardinal fish - *Epigonus telescopus*, pelagic armourhead - *Pseudopentaceros richardsoni*, oreo – *Oreosomatidae* and alfonsino – *Beryx splendens*) (Clark *et al.*, 2007).

The Walters Shoal, which lies beyond national jurisdiction, is considered in particular to be a productive fishing ground (Zucchi *et al.*, 2018). It is a known fishing ground for demersal species (Romanov et al, 2003, Bach *et al.*, 2011), and it has also been targeted for deep-sea lobster fishing, including the famous *Palinurus barbarae* (Rogers and Gianni 2011, Bensch *et al.*, 2008), and recreational fishing.

2.4.2 Mining

Mining exploration activities have been conducted since the 1970s-1980s (mainly in the Clarion-Clipperton zone, in the Pacific ocean) (Wilhem *et al.*, submitted manuscript, 2018). As the number of metals exploited worldwide has tripled since the 1970s to meet industrial needs and resources on land are becoming scarce, there is increasing interest in exploiting the deep seabed.

The concentration of metals in the marine environment is found in three forms: polymetallic nodules in the abyssal plains; crusts on seamounts; and hydrothermal sulphides along the ridges. Currently, engineering for the extraction of polymetallic crusts located on seamounts is the least developed. Despite the economic interest and the shallowness of the crusts (above 2500m), extraction processes are still technically complex for this resource (Hein et al 2009 in Wilhem *et al.*, submitted manuscript, 2018). However, extraction processes will likely cause destruction of habitat and associated fauna. They may also generate fine particles rich in toxic metals, which can be transported by bottom currents to the pelagic and suspension feeder fauna (FFEM, 2013). Potential threats from mining also include: noise pollution from extraction techniques (air guns, sonar, machines, drilling); pollution from sludge

and drilling piles that may be contaminated by oil, chemicals and drilling fluids; and oil and gas leaks and spills (Simard and Spadone, 2012).

To date, the International Seabed Authority (ISA) has granted 28 contracts for exploration of seabed minerals beyond national jurisdiction, representing more than 1.2 million square kilometres of seabed. Five contracts have been awarded for exploration in the Indian Ocean:

- Polymetallic nodules:
    1. Location: Central Indian Ocean Basin
       Contractor: Government of India
- Polymetallic sulphides:
    2. Location: Central Indian Ocean (Mid Indian Ridge and South West Indian Ridge)
       Contractor: Government of India
    3. Location: Central Indian Ocean (Mid-Indian Ridge)
       Contractor: Federal Institute for Geosciences and Natural Resources of the Federal Republic of Germany
    4. Location: Mid Indian Ridge
       Contractor: Government of the Republic of Korea
    5. Location: South West Indian Ridge
       Contractor: China Ocean Mineral Resources Research and Development Association (COMRA)

While the number of exploration contracts granted has been increasing in recent years, exploitation is yet to begin.

3. Governance of areas beyond national jurisdiction in the Western Indian Ocean

As for most of the oceans and seas, the ocean governance framework in the WIO is complex and multifaceted, with various regional powers, sovereign States and regional and international organisations contributing different pieces of the puzzle (Leroy, Galletti, & Chaboud, 2016; UNEP-WCMC, 2017). Many organisations, mechanisms and projects are dedicated to the conservation and sustainable use of marine biodiversity in the WIO, but few of them are currently addressing policy issues related to the conservation and sustainable use of marine biodiversity in ABNJ (Rochette & Wright, 2015). This section identifies the main international and regional organisations competent in the WIO and presents their current activities in ABNJ, focusing on the Nairobi Convention, Regional Fisheries Bodies (RFBs) and sectoral organisations.

3.1. The Nairobi Convention

3.1.1. Legal and institutional framework

In the early 1980s, recognising the uniqueness of the coastal and marine environment of the region and the need to take action to protect it against emerging threats, the Governing Council of the United Nations Environmental Programme (UNEP) requested the inclusion of the East African and South-West Atlantic regions within the Regional Seas Programme “with a view to initiating and carrying out (…) a

programme for the proper management and conservation of marine and coastal resources in these areas".[3]

UNEP subsequently supported the development of the Eastern African Action Plan. A meeting of governmental experts was held in September 1982 in the Seychelles in order to prepare a first draft of the East African Action Plan and to identify priority environmental issues. A Conference of Plenipotentiaries was then convened by the UNEP Executive Director from 17 to 21 June 1985 and led to the adoption of:

- The Action Plan for the Protection and Development of the Marine and Coastal Environment of the Eastern African Region;[4]
- The Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention);[5]
- The Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region, entered into force on 30 May 1996;[6]
- The Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region, entered into force on 30 May 1996.[7]

The Nairobi Convention geographical area extends from Somalia in the north to South Africa in the south, covering five mainland States (Somalia, Kenya, Tanzania, Mozambique, South Africa) and five island States (Comoros, France (La Réunion), Madagascar, Mauritius, Seychelles). The implementation of the Action Plan, Convention and protocols later stalled, largely due to a lack of adequate funding and political commitment. The regional system then underwent a period of revitalisation beginning in the late 1990s (Rochette & Billé, 2012). The most recent illustrations of this "new start" is the adoption, in March 2010, of two new legal instruments:

- The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean (not yet in force owing to insufficient ratifications);[8]

[3] UNEP, Report of the Governing Council on the work on its eighth session, 16-29 April 1980, United Nations, New York, 1980, Decision 8/13C: Extension of the Regional Seas Programme to the East African Sea and the South-west Atlantic.

[4] Action Plan for the protection, management and development of the marine and coastal environment of the Eastern African Region, 21 June 1985. Available at: http://www.unep.org/nairobiconvention/sites/unep.org.nairobiconvention/files/rsrs061.pdf (accessed 19 July 2017).

[5] Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, 21 June 1985, in force 30 May 1996. Available at: http://www.unep.org/nairobiconvention/convention-protection-management-and-development-marine-and-coastal-environment-eastern-african (accessed 19 July 2017).

[6] Protocol concerning protected areas and wild fauna and flora in the Eastern African Region, 21 June 1985, in force 30 May 1996. Available at: http://www.unep.org/nairobiconvention/protocol-concerning-protected-areas-and-wild-fauna-and-flora-eastern-african-region (accessed 19 July 2017).

[7] Protocol concerning cooperation in combating marine pollution in cases of emergency in the Eastern African Region, 21 June 1985, in force 30 May 1996. Available at: http://www.unep.org/nairobiconvention/protocol-concerning-co-operation-combating-marine-pollution-cases-emergency-eastern-african-region (accessed 19 July 2017).

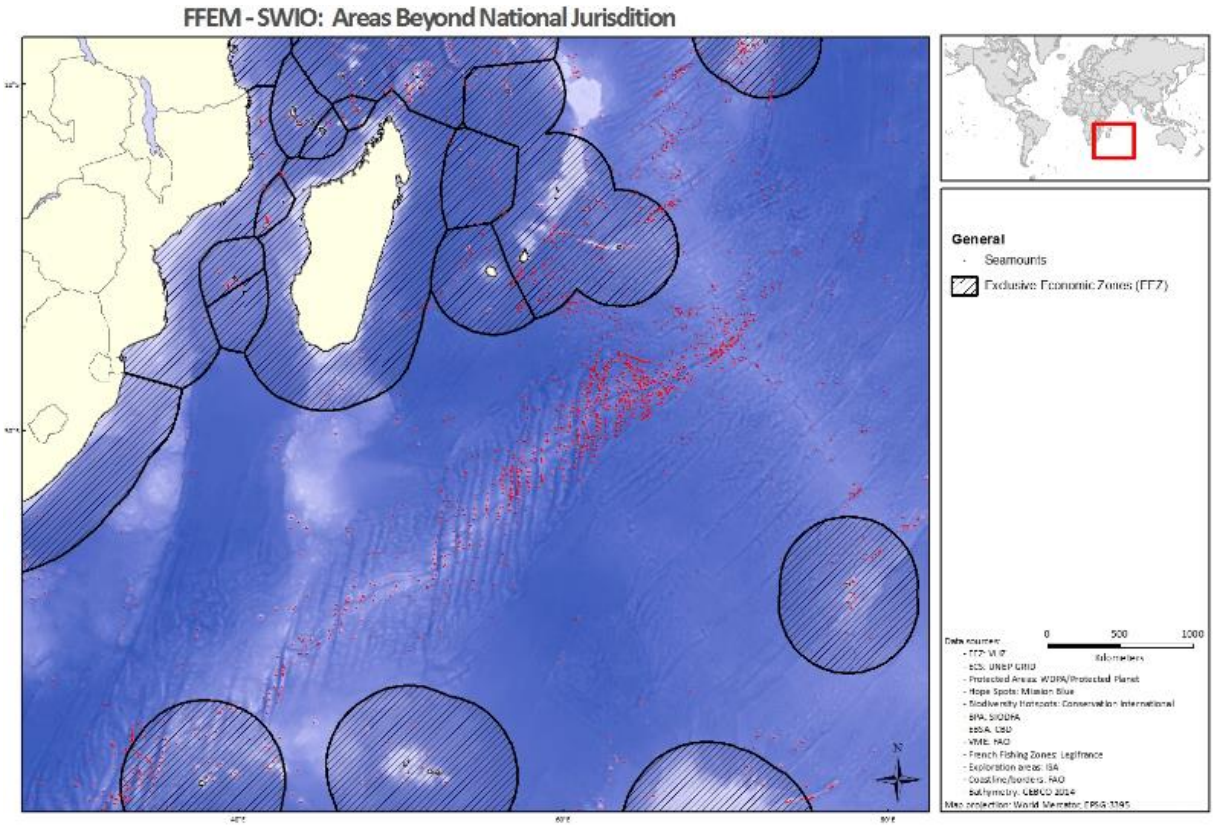
[8] Amended Nairobi Convention for the protection, management and development of the marine and coastal environment of the Western Indian Ocean, Nairobi, 31 March 2010. Available at:

- The Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities, hereafter Land-Based Sources and Activities (LBSA) Protocol (not yet in force owing to insufficient ratifications).[9]

The Nairobi Convention Secretariat is at the centre of these activities and coordinates the implementation of the Convention's work programme. Located at UNEP Headquarters in Nairobi, Kenya, it is guided by the decisions of the Conference of the Parties (COP) held every two years, and supported by National Focal Points (NFPs) that serve as the channel for all formal communications between States and the Secretariat. A Regional Coordinating Unit (RCU) was established in 1997, but is not currently functional.

3.1.2. Mandate on ABNJ

Map 1. Areas Beyond National Jurisdiction limits in the South West Indian Ocean. (IUCN, FFEM-SWIO Project, Michael Vollmar, 2017)



Neither the original Nairobi Convention nor the amended text explicitly includes ABNJ in its geographical mandate (Map 1). However, Contracting Parties have recently demonstrated an increasing interest in ABNJ.

In terms of scientific developments, the Nairobi Convention Secretariat is a partner of several projects dealing with the conservation and management of marine biodiversity, some of them covering ABNJ.

http://www.unep.org/nairobiconvention/amended-nairobi-convention-protection-management-and-development-marine-and-coastal-environment (accessed 19 July 2017).

[9] Protocol for the protection of the marine and coastal environment of the Western Indian Ocean from land-based sources and activities, 31 March 2010. Available at: http://www.unep.org/nairobiconvention/protocol-protection-marine-and-coastal-environment-wio-land-based-sources-and-activities (accessed 19 July 2017).

For instance, the Secretariat is part of the "Sustainable Fisheries Management and Biodiversity Conservation of Deep-sea Living Marine Resources and Ecosystems in the Areas Beyond National Jurisdiction (ABNJ)" project, launched in 2014 and funded by the Global Environment Facility (GEF).[10] This project aims to (i) test the applicability of area-based planning tools to deep-sea ABNJ; (ii) share lessons learned from regional experiences; and (iii) test appropriate area-based planning tools in the WIO. The Secretariat is also a partner of the project, "Conservation and sustainable exploitation of seamount and hydro-thermal vent ecosystems of the South West Indian Ocean in areas beyond national jurisdiction", funded by the FFEM[11] (FFEM-SWIO Project). The objective of this project is to strengthen the ABNJ governance framework in the region.

At the political level, during the Eighth COP to the Nairobi Convention (Mahé, Seychelles, 22-24 June 2015), Contracting Parties adopted Decision CP8/10[12] urging States to

> *"Cooperate in improving the governance of areas beyond national jurisdiction, building on existing regional institutions including the Nairobi Convention and developing area based management tools such as marine spatial planning to promote the blue economy pathways in the Western Indian Ocean Region".*

However, there is currently no explicit legal mandate for the development and implementation of conservation or management measures in ABNJ through the Nairobi Convention framework.

3.2. Regional fisheries bodies

3.2.1. Legal and institutional framework

Regional Fisheries Bodies (RFBs) are the key international organisations dedicated to the sustainable management of fishery resources. Member States of RFBs cooperate to ensure the effective conservation and sustainable use of fish stocks. Some RFBs are purely advisory, though most have the mandate to adopt binding management measures.[13] Those with management authority are called Regional Fisheries Management Organisations (RFMOs), and they either cover highly migratory species, such as tuna, or other pelagic and demersal species. International instruments, including the United Nations Convention on the Law of the Sea (UNCLOS), the 1995 United Nations Fish Stocks Agreement (UNFSA)[14] and various UN General Assembly (UNGA) resolutions, oblige RFMOs to take a range of actions in relation to the conservation and sustainable use of fish stocks (Wright, Ardron, Gjerde, Currie, & Rochette, 2015).

[10] See https://www.thegef.org/project/abnj-sustainable-fisheries-management-and-biodiversity-conservation-deep-sea-living-marine (accessed 26 September 2017). N.B. This project is part of the GEF-funded FAO–led Areas Beyond National Jurisdiction Program (ABNJ) – often referred to as Common Oceans.

[11] Fonds français pour l'environnement mondial (French Global Environment Facility)

[12] Available at: http://www.unep.org/nairobiconvention/sites/unep.org.nairobiconvention/files/adopted-_cop-8_decisions-_24-june-2015.pdf (accessed 19 July 2017).

[13] E.g. Fishing limits and quotas; technical measures (such as gear restrictions); measures on monitoring and surveillance (MCS); and measures to combat illegal, unreported and unregulated (IUU) fishing.

[14] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, 4 December 1995, in force 11 December 2001).

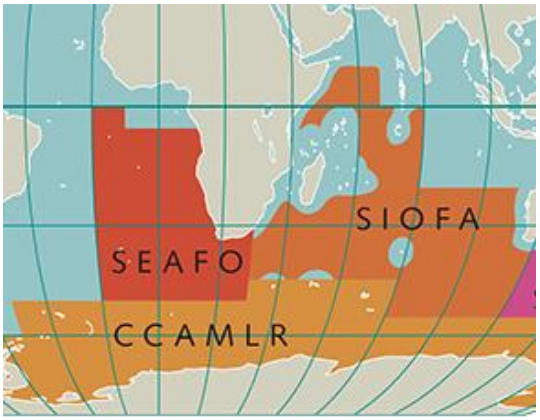
Three fisheries bodies operate in the WIO region, each with different mandates and competences:

- The Indian Ocean Tuna Commission (IOTC), which promotes cooperation with the aim of ensuring management, conservation, and optimum utilisation of stocks of tuna and tuna-like species in the Indian Ocean. The IOTC covers both national waters and ABNJ of the Indian Ocean.
- The South Indian Ocean Fisheries Agreement (SIOFA), which aims to ensure the long-term conservation and sustainable use of fishery resources in ABNJ of the Indian Ocean[15] through cooperation among the Contracting Parties. SIOFA only covers waters beyond national jurisdiction.
- The Southwest Indian Ocean Fisheries Commission (SWIOFC), an advisory fisheries body that promotes sustainable utilisation of the living marine resources of the SWIO region. SWIOFC only covers waters under national jurisdiction.

In addition to these RFBs operating in the SWIO, it is also worth noting that two management bodies have mandates covering the adjacent waters (Figure 2). The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) aims to conserve Antarctic marine life and takes an ecosystem-based approach to managing the area. The South East Atlantic Fisheries Organisation (SEAFO) aims to ensure the long-term conservation and sustainable use of living marine resources and safeguard the environment and marine ecosystems in the South East Atlantic Ocean.

There may be value in increasing cooperation and information exchange between these bodies in order to better understand connectivity and provide further support for the development of appropriate management actions.

Figure 2. Areas of competence of RFMOs in the SWIO and adjacent waters. World Ocean Review



Complementary to these RFBs, the operators of the vessels conducting deep-sea fishing in the region established the Southern Indian Ocean Deep Sea Fishers Association (SIODFA) in 2006. This industry association aims to promote responsible management of the deep-water fishery while conserving biodiversity, especially the deep-water benthos.

[15] I.e. Fish, molluscs, crustaceans and other sedentary species within the competence area, excluding those on the continental shelf of States (UNCLOS, Article 77(4)) and highly migratory species (UNCLOS, Annex I).

3.2.2. Mandate and management tools in ABNJ

As set out above, two RFMOs have a specific mandate to adopt legally binding conservation and management measures (CMMs) in the ABNJ of the WIO region: the IOTC and SIOFA.

At each session of the IOTC, Contracting Parties adopt CMMs concerning the management of tuna and tuna-like species under the IOTC mandate. These decisions take the form of either resolutions or recommendations. Unless there is a specific objection, the former are binding on the Commission Members and require a two-thirds majority; the latter are non-binding and may be adopted by a simple majority. Currently 53 CMMs are in place, 50 of which are binding resolutions. There is, however, limited experience with area-based measures: the IOTC instituted a small time-limited closure of tropical tuna fisheries between 2010-2014, though this has since been superseded by the establishment of an allocation system (quota) and steps to improve reporting of artisanal fisheries (D. M. Kaplan *et al.*, 2014).[16]

In relation to bottom fisheries, in 2006 the UNGA called on RFMOs "with the competence to regulate bottom fisheries to adopt and implement measures (…) as a matter of priority". Resolution 61/105 (2006) specifies the following measures to be implemented in order to protect vulnerable marine ecosystems (VMEs) from significant adverse impacts (SAIs): (i) Impact assessments to manage and prevent SAIs on VMEs; (ii) Improvement of scientific research and data collection and sharing; (iii) Regulation of new and exploratory fisheries; (iv) "Move-on" rules and encounter protocols to require vessels to cease bottom fishing in an area where VMEs are encountered and to report the encounter so that the RFMO can adopt appropriate management measures; and (v) "In respect of areas where [VMEs] are known to occur or are likely to occur based on the best available scientific information, to close such areas to bottom fishing and ensure that such activities do not proceed unless conservation and management measures have been established to prevent [SAIs]".[17] Against this background, many RFMOs worldwide have closed VMEs to bottom fishing (Table 1).

[16] Resolution 10/01, superseded by Resolution 12/13, then Resolution 14/02 (Scovazzi, 2011).

[17] Paragraph 83(c).

Table 1. Summary of VME closures

Body	Closures
North East Atlantic Fisheries Commission (NEAFC)	13 closures (approx. 375,000 km_2)
Northwest Atlantic Fisheries Organisation (NAFO)	20 closures (approx. 379,000 km_2)
South East Atlantic Fisheries Organisation (SEAFO)	12 closures (approx. 504,000 km_2)
North Pacific Fisheries Commission (NPFC)	Formal closures not yet implemented. Tentative agreement on two small seamount closures (approx. 550 km_2).
South Pacific Regional Fisheries Management Organisation (SPRFMO)	Formal closures not yet implemented.
Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	4 closures (approx. 2,200 km_2), 76 VME risk areas closed pursuant to encounter protocols (approx. 820 km_2), 2 marine protected areas. Blanket closure in relation to toothfish fisheries; commercial bottom trawling prohibited throughout the CCAMLR region.
South Indian Ocean Fisheries Agreement (SIOFA)	Formal closures not yet implemented. The South Indian Ocean Deepsea Fisheries Association (SIODFA) has declared 13 voluntary "Benthic Protected Areas".
General Fisheries Commission for the Mediterranean (GFCM)	3 closures (approx. 16,000 km_2). Prohibition of bottom trawling activities in waters deeper than 1000 m.

During their first meeting in October 2013, Contracting Parties to SIOFA recognised the need to give effect to the UNGA resolutions prior to the next meeting in 2015. At the second meeting of SIOFA, in March 2015, the parties failed to agree on binding conservation measures, though it was agreed that "each Contracting Party would endeavour to limit the deep sea trawl fishing effort to recent historical levels until the 2016 annual session of the Meeting of the Parties".[18] An interim recommendation in favour of the prohibition of gillnets was also adopted.

In 2016, Contracting Parties adopted CMM 2016/01 on the management of bottom fishing in the SIOFA Area, calling the scientific committee to develop (i) "a SIOFA Bottom Fishing Impact Assessment Standard (BFIAS) which takes account of the latest scientific information available; (ii) maps of where VMEs are known to occur, or likely to occur, in the Agreement Area; (iii) guidelines for evaluating and approving electronic observer programs for scientific data collection for consideration by the Meeting of the Parties; and (iv) standard protocols for future protected areas designation (areas which should be closed to fishing)".[19] Moreover, Parties tasked the Scientific Committee to provide by 2020 recommendations on "(i) an appropriate SIOFA bottom fishing footprint (…); (ii) a SIOFA Bottom Fishing

[18] In this context, the extent of historical fishing effort is generally referred to as the fishing 'footprint'. Fisheries management bodies, including RFMOs, have used the footprint approach as a management tool to meet a number of ends, including: as in this case, restriction of fishing effort pending further discussion and decisions regarding formal conservation and management measures; and identification of new and exploratory fisheries, i.e. those that are outside the footprint, that must be subject to regulation.

[19] CMM 2016/01 on the management of bottom fishing in the SIOFA Area, 5.

Impact Assessment (SIOFA BFIA)."[20] In the meantime, "each Contracting Party, CNCP and PFE shall, unless otherwise approved by the Meeting of the Parties, establish and apply specific measures to limit the level and spatial extent of the bottom fishing effort of vessels flying their flag".[21]

In 2017, Parties adopted CMM 2017/01 Conservation and Management Measure for the Interim Management of Bottom Fishing in the SIOFA Agreement Area. However, no fisheries closures have been adopted so far, despite the proposal by some member States that SIODFA's voluntary closures (see below) could be adopted as formal SIOFA fisheries closures. Opponents argued that there was not yet scientific evidence validated by the Scientific Committee regarding the appropriateness of these voluntary closures.

Following the initial meetings to establish SIOFA, there was concern among some commercial fishery operators that little more could be achieved at the political level until a fisheries agreement was ratified, yet this process was proving time-consuming and there was no certainty as to when an agreement would be concluded. In the meantime, fishing operations continued unabated with no leadership or direction regarding capturing catch and effort data. Realising that they would play the major role in implementing an eventual agreement, three of the four operators in the region approached the FAO to seek its assistance in organising informal meetings to advance management and prepare for implementation of SIOFA.

A key outcome of the early meetings of SIODFA was the decision to declare eleven areas in the southern Indian Ocean as "Benthic Protected Areas" (BPAs). Overall, 94.5% of seamounts and 93.3% of the seafloor of fishable depth using current technology (i.e. less than 1500m) remain available to fishing.[22] SIODFA has expressed its concern that fishing effort will expand in the coming years.[23] In October 2013, the organisation announced that a further two areas were to be closed. Unlike RFMO closures, the SIODFA BPAs apply only to member companies, with no means of compelling non-members or new operators to comply, and, as with other closures, the SIODFA closures cannot control other activities in these areas. As illustrated in Map 2, the Walters Shoal is recognised as a BPA.

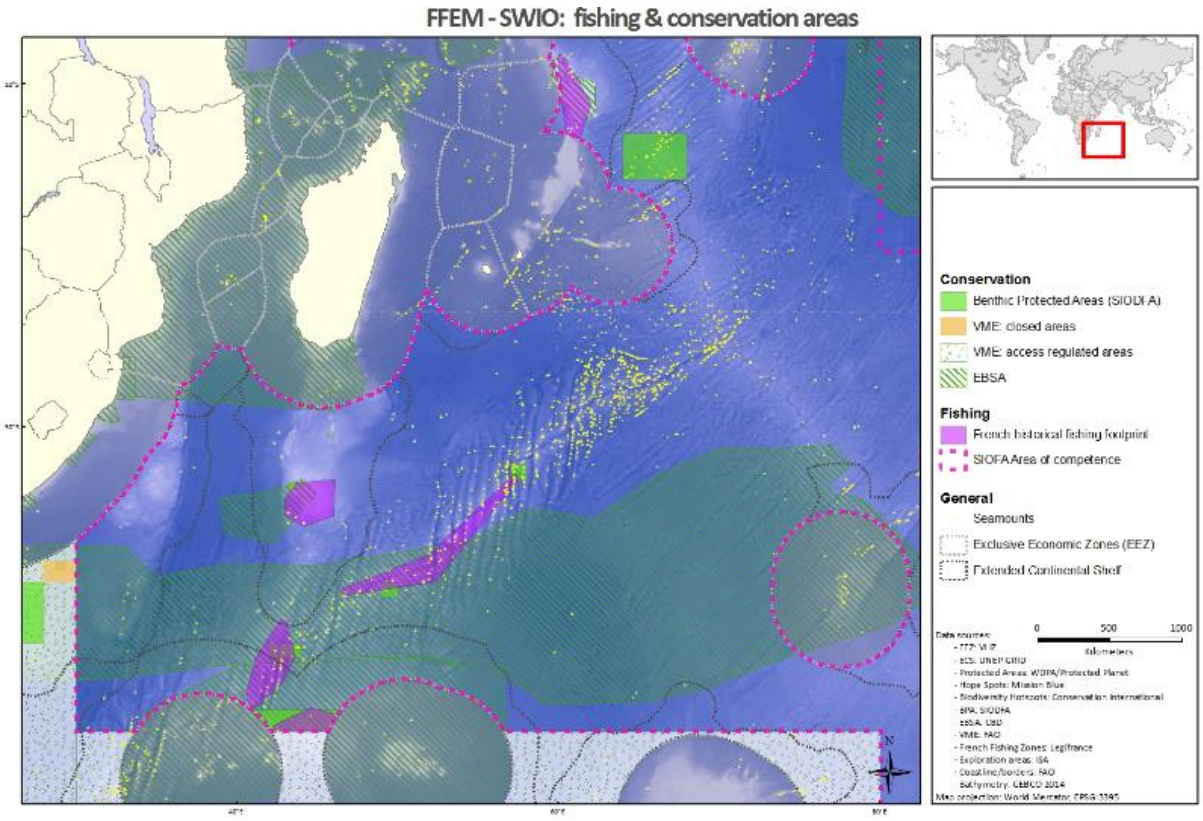
[20] Ibid.

[21] Ibid, 9.

[22] However, as the trend of fisheries is to fish progressively deeper over time (Watson and Morato, 2013), it is reasonable to conclude that deeper areas left accessible to fishing may be targeted in the future.

[23] Report of the Second Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement, Mauritius, 17-20 March 2015, Appendix Q.

Map 2. Fishing and conservation related zones in the SWIO (IUCN, FFEM-SWIO Project, Michael Vollmar, 2017)



3.3. Sectoral organisations

3.3.1. The International Maritime Organisation

The International Maritime Organisation (IMO) is the UN specialised agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships. Under the IMO umbrella, several rules and treaties have been adopted covering maritime safety, security and the protection of the marine environment.

IMO member States can designate Particularly Sensitive Sea Area (PSSAs) where specific regulations are applied to protect the marine environment from the environmental impacts of navigation and marine pollution (Mayol, Labach, Couvat, Ody, & Robert, 2013). The criteria for designation of PSSAs refer to the identification of PSSAs both within and beyond the limits of the territorial sea,[24] thereby including the possibility that a PSSA could be identified in ABNJ.[25] According to Roberts *et al.* (2010), "it seems clear, in principle at least, that a PSSA could be designated on the high seas, either in isolation or in combination with a high seas MPA (…) any State could submit such a proposal to the IMO, although approval will require broad consensus among IMO member States, which, based on previous

[24] Revised guidelines for the identification and designation of particularly sensitive sea areas, A 24/ Res.982, 6 February 2006. PSSA Proposal Review Form approved by MEPC 55/23, 10 October 2006, Paragraph 4.3. Available at: http://www.imo.org/en/OurWork/Environment/PSSAs/Pages/Default.aspx (accessed 6 July 2017).

[25] Though UNCLOS Article 211(6) refers to ''a particular, clearly defined area of their respective EEZs'', DOALOS was of the opinion that this phrase did not include the entire EEZ and that there is no maximum restriction on size: IMO, LEG 87/17, Annex 7, 2.

experience in IMO, is likely to be contentious" (Roberts, Chircop, & Prior, 2010). However, no PSSA has yet been established in ABNJ.

3.3.2. The International Seabed Authority

The International Seabed Authority (ISA) is the competent international organisation responsible for regulating and controlling activities associated with the exploration for, and the exploitation of, the mineral resources of the deep seabed in ABNJ ("The Area").[26] The ISA is constituted pursuant to the provisions of UNCLOS and the Part XI Implementation Agreement.[27] Article 136 of UNCLOS provides that the Area and its resources are the common heritage of mankind: all rights in the resources are vested in mankind as a whole, and the ISA acts on its behalf.[28] In this role, the ISA has entered into 28 exploration contracts in the Atlantic, Indian and Pacific Oceans.

In 2012, as part of its Environmental Management Plan for the Clarion Clipperton Zone,[29] the ISA designated 9 Areas of Particular Environmental Interest (APEI) to the marine environment in the area.[30] No mining is permitted in these areas. These designations were made in advance of contractor-designated "Impact reference zones" and "preservation reference zones".[31] No APEI has been established in the WIO so far.

3.3.3. UNESCO and the World Heritage Convention

The 1972 Convention for the Protection of the World Cultural and Natural Heritage (World Heritage Convention – WHC), administered by the United Nations Educational, Scientific and Cultural Organization (UNESCO), provides for the designation of World Heritage Sites. These sites are of "outstanding universal value" (i.e. they have cultural, historical, scientific or other significance) determined according to a set of criteria by the UNESCO World Heritage Committee. Such sites are legally protected by international treaties and States are required to adopt measures and provide resources for their protection.

[26] Resources are defined as "all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules". The resources to which the ISA's mandate for exploitation extends do not include the biological and genetic resources of the Area.

[27] Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, 28 July 1994, in force 28 July 1996).

[28] UNCLOS Article 137 (2).

[29] ISBA/17/LTC/WP.1, Draft environmental management plan for the Clarion-Clipperton Zone, 28 January 2011 adopted 22 July 2012 ISBA/18/C/22; ISA. Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone, 2012, ISBA/18C/22. (http://www.isa.org.jm/files/documents/EN/18Sess/Council/ISBA-18C-22.pdf).

[30] Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters. 2013; ISBA/19/C/17; Section V.31.6.

[31] Impact reference zones are "areas to be used for assessing the effect of each contractor's activities in the Area on the marine environment and which are representative of the environmental characteristics of the area". Preservation reference zones are "areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the flora and fauna of the marine environment" (Regulation 31(7)).

There is currently no procedure for inscribing sites in ABNJ,[32] however, interest in extending coverage has been growing. In 2011, the General Assembly of States Parties to the WHC endorsed the audit of the Convention's global strategy, which included a recommendation calling upon the parties to "reflect upon appropriate means to preserve sites that correspond to conditions of outstanding universal value, which are not dependent on the sovereignty of States Parties". To facilitate further discussion, UNESCO recently published a report considering how the WHC could be applied to ABNJ (UNESCO 2016), with options including: negotiation of a modification to the WHC; a 'bold' interpretation of the WHC;[33] and negotiation of an optional protocol. The decision to extend the WHC and/or develop a procedure for inscribing sites in ABNJ is one to be taken by the parties to the WHC.

3.4. Extension of Madagascar's continental shelf and possible inclusion of the Walters Shoal

Under UNCLOS, coastal States have the sovereign rights to explore and exploit the natural resources of their continental shelf.[34] The continental shelf is defined as the natural prolongation of the land territory to the outer edge of the continental margin, or 200 nautical miles from a defined baseline,[35] whichever is greater.[36] However, where the continental shelf extends beyond 200 nautical miles, States must make a submission to the Commission on the Limits of the Continental Shelf (CLCS)[37] defining the outer limits.[38] The outer limits of the continental shelf may not exceed 350 nautical miles from the baseline or 100 nautical miles beyond the 2,500-metre isobath.[39]

On 29 April 2011, the Republic of Madagascar submitted information on the limits of its continental shelf to the CLCS.[40] Upon completion of the consideration of the submission, the Commission will make recommendations.[41] Madagascar's submission includes the Walter's Shoal within the limits of its continental shelf (see Figure 3 and Map 3).

[32] While the definitions of 'natural' and 'cultural' heritage in the Convention do not appear to limit protection of heritage to areas under national jurisdiction, provisions regarding the nomination process do seem to restrict the nomination of sites to those "situated on the territory" of any of its States Parties.

[33] I.e. Parties can "incrementally and pragmatically agree to minor changes in the way that they interpret or apply a treaty" or "agree to, and formally announce, a change in the way that they intend to interpret and apply a treaty in the future".

[34] Article 77.

[35] UNCLOS, Article 5. The baseline is generally the low-water mark.

[36] UNCLOS, Article 76.

[37] For further information, see the website of the CLCS: http://www.un.org/Depts/los/clcs_new/clcs_home.htm. A list of submissions and their current statuses is available at: http://www.un.org/depts/los/clcs_new/commission_submissions.htm.

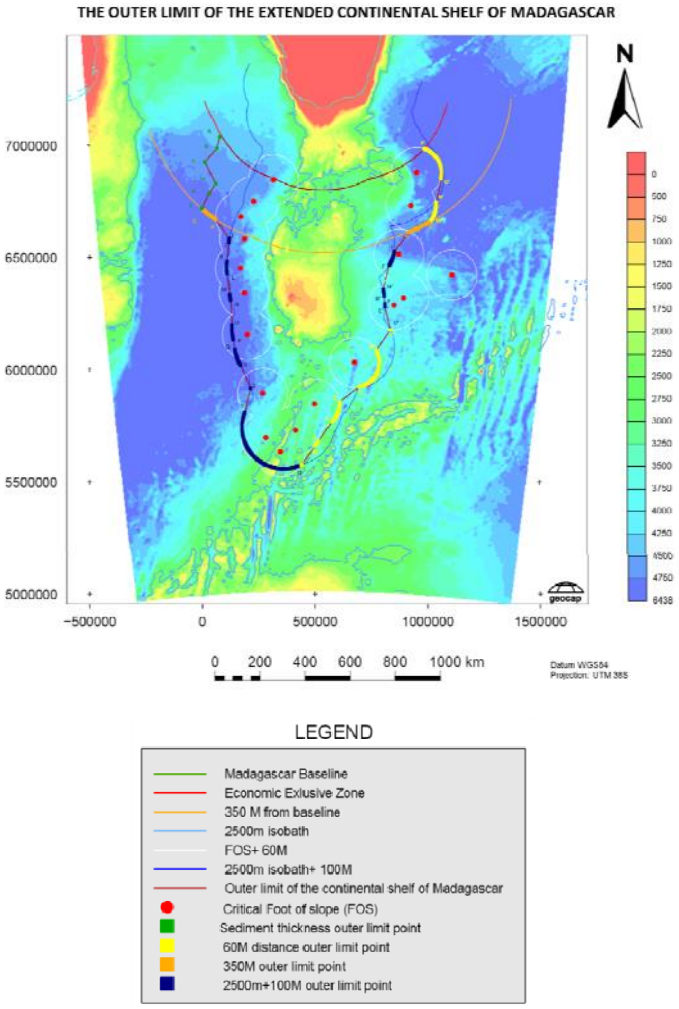
[38] Article 76(4). A continental shelf extending beyond 200 nautical miles is sometimes referred to as an "extended continental shelf", though UNCLOS itself does not use this term.

[39] I.e. The line connecting the depth of 2,500 meters. UNCLOS, Article 76(5-6).

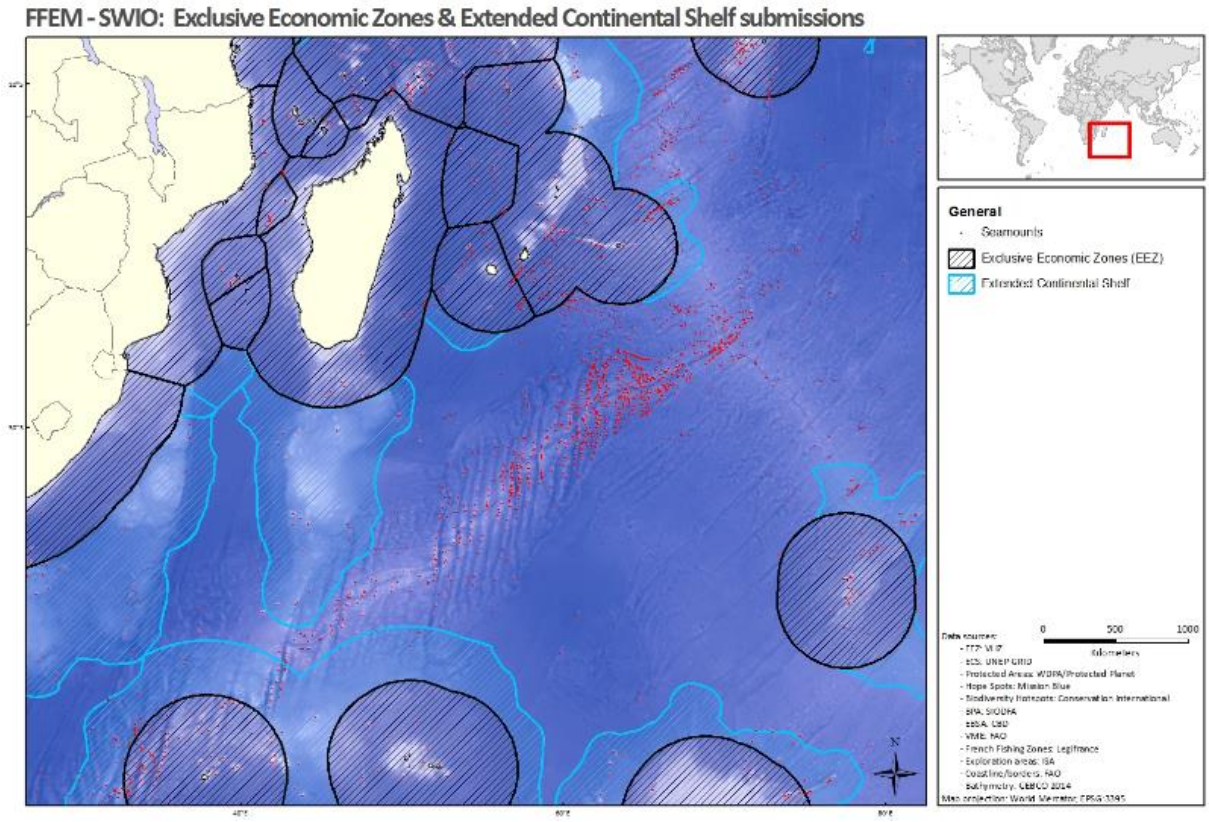
[40] See https://www.un.org/Depts/los/clcs_new/submissions_files/submission_mgd_56_2011.htm

[41] Pursuant to Article 76 of the Convention.

Figure 3. Continental shelf of Madagascar as submitted to the CLCS



Map 3. Continental shelf submission of Madagascar (IUCN, FFEM-SWIO Project, Michael Vollmar, 2017)



4. Possible options for the conservation and management of the Walters Shoal

Several options are possible to conserve and manage the Walters Shoal, from the adoption of sectoral measures aimed at limiting impacts from certain maritime activities to the establishment of an MPA. This section studies and assesses the opportunity and feasibility of such measures.

4.1. Limiting impacts from maritime activities

4.1.1. Fishing

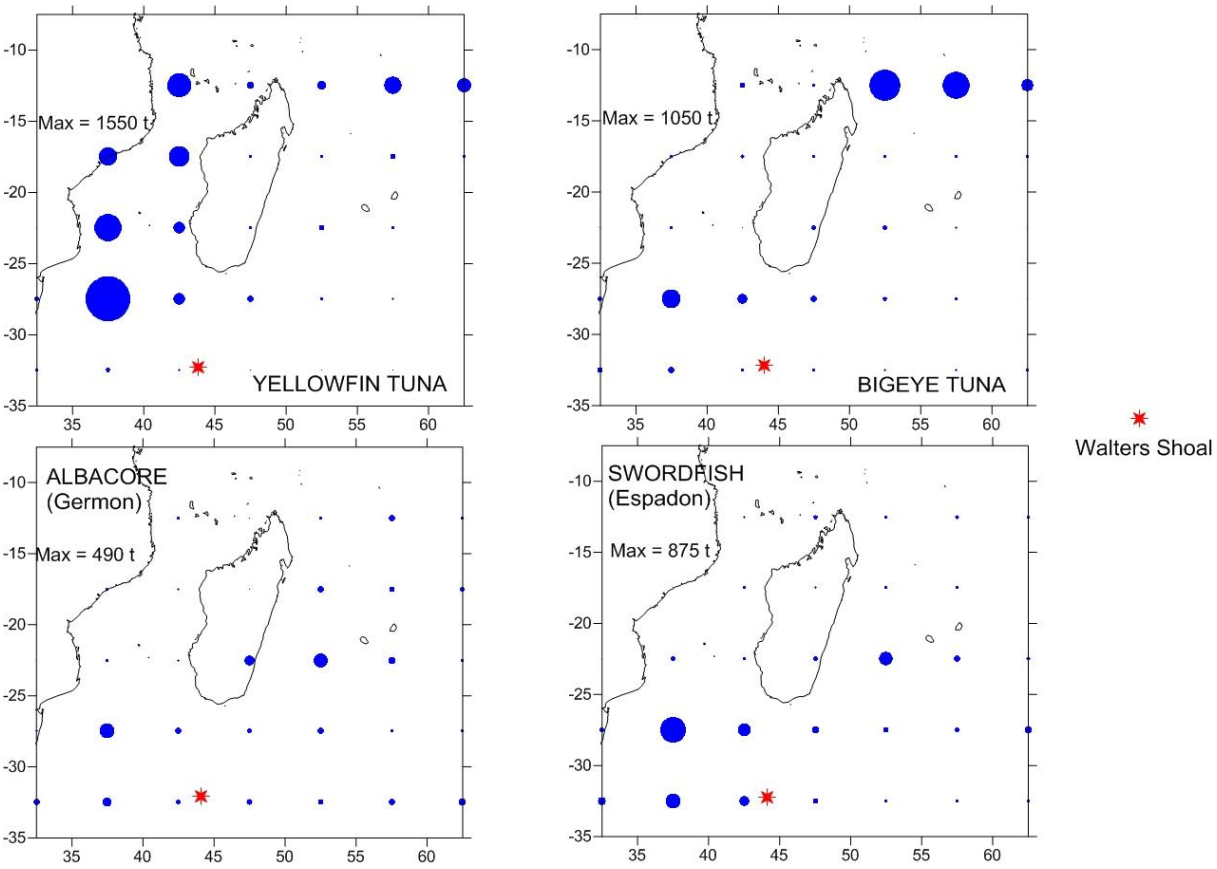
IOTC fisheries closures

There are currently few operational examples of fisheries closures for highly migratory pelagic species, though in recent years interest has been growing in understanding and developing such measures (Game *et al.*, 2009; Harley & Suter, 2007; Hyrenbach, Forney, & Dayton, 2000; D. Kaplan, Chassot, Gruss, & Fonteneau, 2010; D. M. Kaplan *et al.*, 2014; Maxwell & Morgan, 2012; Torres-Irineo, Gaertner, Delgado De Molina, & Ariz, 2011; Young, Maxwell, Conners, & Shaffer, 2015). Pelagic ecosystems are generally characterized by high levels of species mobility, large spatial scales, and limited scientific knowledge, such that existing practice in relation to fisheries closures and MPAs cannot necessarily be applied directly to this context. Some have called for development of pelagic MPAs (Game *et al.*, 2009; Robison, 2009; Sara M. Maxwell, Natalie C. Ban, 2014; Young *et al.*, 2015), noting that "recent advances across conservation, oceanography and fisheries science provide the evidence, tools and information to address these criticisms and confirm MPAs as defensible and feasible instruments for pelagic conservation" (Game *et al.*, 2009). However, few scientific studies accurately determine if such

measures are effective (D. M. Kaplan *et al.*, 2014) and no consensus exists as yet on effectiveness and good practice: some commentators have tentatively noted the success of certain measures (D. M. Kaplan *et al.*, 2014; Torres-Irineo *et al.*, 2011), but others have argued that the benefits of closures and area-based measures decrease significantly for mobile species (Grüss *et al.*, 2011; Le Quesne & Codling, 2008; Moffitt, Botsford, Kaplan, & O'Farrell, 2009).

In any case, scientists currently consider tuna fisheries to have little to no impact on the Walters Shoal ecosystems. As illustrated by Figure 1, longline fisheries are distant from the Walters Shoal and there are no purse seine tuna fisheries South from 15S,[42] i.e. all purse seine fisheries are well outside the Walters Shoal area.

Figure 4. Main areas of longlines fisheries in the Western Indian Ocean. F. Marsac, SARDARA database (IRD)



Against this background, it does not seem appropriate to propose an IOTC fisheries closure in the Walters Shoal area.

SIOFA Fisheries closures

In contrast to pelagic ecosystems, benthic ecosystems are well suited to area-based management tools (ABMTs), including fisheries closures. Bottom fishing has been reported in the Walters Shoal area (FAO, 2010), thus it would be relevant to consider whether the area contains VMEs that should be closed to fishing or whether other management measures might be appropriate.

[42] Except in the Mozambique Channel.

Although the BPAs currently in place will remain in force for the members of SIODFA, it is clear that Parties to SIOFA are also obliged to take certain measures: the UNFSA makes it clear that RFMOs are the primary vehicle for collaboration on fisheries management and UNGA resolutions require closures and other measures for the protection of VMEs.

As highlighted above, no fisheries closures have been adopted by SIOFA so far. Pressure on SIOFA to take such measures as soon as possible is however mounting. At the second SIOFA meeting, SIODFA submitted an "Expression of Concern" at the failure to adopt measures, and the Deep Sea Conservation Coalition (DSCC) argued:

> *The draft measure CMM 14.02 for the protection of VMEs circulated last year falls far short of the commitments to protect VMEs that States Parties to SIOFA have repeatedly made through the UNGA resolutions over the past 11 years. A new measure or measures for the protection of VMEs should be drafted, adopted and implemented on an urgent basis.* [43]

One relatively simple route for the adoption of VME closures within the SIOFA framework would be to study the feasibility of converting the SIODFA's BPAs – which include the Walters Shoal – into formal VME closures. Such a proposal was tabled at the third (La Réunion, France, 3-8 July 2016) and fourth (Mauritius, 26-30 June 2017) meetings of the SIOFA. This proposal was supported by the majority of parties and civil society, but was ultimately not passed due to the objections of France and South Korea, which highlighted the lack of scientific data reviewed by the SIOFA Scientific Committee. France, representing its Territories in the region, also argued that the closure should apply to bottom trawling but not to other fishing gears, such as bottom longlining. This position is supported by a French legal provision that aims to expand the fishing fleet in the SIOFA area, including in several areas currently covered by the SIODFA BPAs.[44] In turn, States that practice bottom trawling have rejected this counter-proposal. There is also ongoing debate amongst the SIOFA member States regarding the procedure for defining fisheries footprints.

If the transformation of the whole set of BPAs into formal RFMO fisheries closures is not politically viable, an alternative option could be to discuss proposals for each area separately.

Unilateral national initiatives

Flag States retain the right to regulate their vessels even where the relevant RFMO has not adopted measures, and nothing prevents one or several States from unilaterally declaring that they will prohibit or restrict fishing in the Walters Shoal area by vessels flying their flag. There is some precedent for a unilateral national initiative to prohibit or restrict fishing in ABNJ.

In the Southwest Atlantic, Spain, the only State known to conduct significant bottom fishing activities, published a list of authorised vessels[45] and, in the absence of a RFMO for the region, unilaterally declared nine areas closed to bottom fishing by its vessels in July 2011 (pursuant to a European Union

[43] Ibid.

[44] Arrêté du 6 février 2017 transposant la recommandation CMM 2016/01 de l'Accord relatif aux pêches dans le Sud de l'océan Indien NOR : DEVM1625024A.

[45] FAO 'Deep-Sea High Seas Fisheries: Vessels Authorized to Conduct Bottom Fisheries in Areas beyond National Jurisdiction (UNGA 61/105, Paragraph 87)', available at ftp://ftp.fao.org/Fi/DOCUMENT/UNGA/deep_sea/UNGA61_105.pdf (accessed 25 February 2017).

(EU) regulation that implemented the UNGA resolutions).[46] Between 2007-2009, Spain's Oceanographic Institute (Instituto Español de Oceanografía; IEO) conducted a series of 11 multidisciplinary research cruises with the aim of identifying VMEs in the region and making a preliminary assessment of how fishing activity was affecting these areas (Portela *et al.*, 2010). The research found that, overall, the particular fisheries in question only had a small adverse impact on VMEs in the region, but nonetheless identified nine areas that should be closed to bottom trawling to prevent significant adverse impacts. Beginning in July 2011, these areas were closed for bottom fishing for a period of six months (Gianni *et al.*, 2011). Spain also restricted its bottom fishing footprint to two areas already fished for 25 years.[47]

In New Zealand, the Government worked in consultation with industry, environmental NGOs and government departments to implement closures in its footprint area in advance of measures being formally taken by the competent RFMO for the region (the South Pacific RFMO - SPRFMO).[48] Lightly trawled areas were closed to bottom fishing, moderately trawled areas were opened subject to application of a move-on rule, and heavily trawled blocks generally remained open to bottom fishing.[49] Although these closures no doubt represent an improvement on a business-as-usual scenario, Penney and Guinotte (2013) conducted a detailed analysis of the New Zealand closures, concluding that the existing sites are "sub-optimal for protecting likely coral VMEs" (A. J. Penney & Guinotte, 2013) and Penney *et al.* (2009) concluded that "effective protection of benthic VMEs in the Pacific Ocean high seas will probably require the establishment of a series of international spatial closures designed to protect adequate and representative areas of habitats and ecosystems" (A. Penney, Parker, & Brown, 2009).

4.1.2. Shipping

The designation of a sea area as a PSSA is made by a non-legally binding resolution from the IMO Marine Environment Protection Committee (MEPC). This resolution is then given effect by the adoption of "associated protective measures" (APMs).[50] It seems that there is no specific threat to the

[46] Council Regulation (EC) No 734/2008 of 15 July 2008 on the Protection of Vulnerable Marine Ecosystems in the High Seas from the Adverse Impacts of Bottom Fishing Gears 2008 8, preamble 2. It was envisaged that this regulation would mainly apply to the South West Atlantic (and to the SIO, as no RFMO was in the region at that time). European Union Report on the Implementation of Measures Pertaining to the Protection of Vulnerable Marine Ecosystems from the Impact of Bottom Fishing on the High Seas in UNGA Resolution 61/105 of 2006 and UNGA Resolution 64/72 of 2010 (2010) 2.

[47] European Union, 'EU Report on the Implementation of Measures Pertaining to the Protection of Vulnerable Marine Ecosystems from the Impact of Bottom Fishing on the High Seas in UNGA Resolution 61/105 of 2006 and UNGA Resolution 64/72of 2010' (2010) at p. 6, available at https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/20110520_report_en.pdf (accessed 25 February 2017).

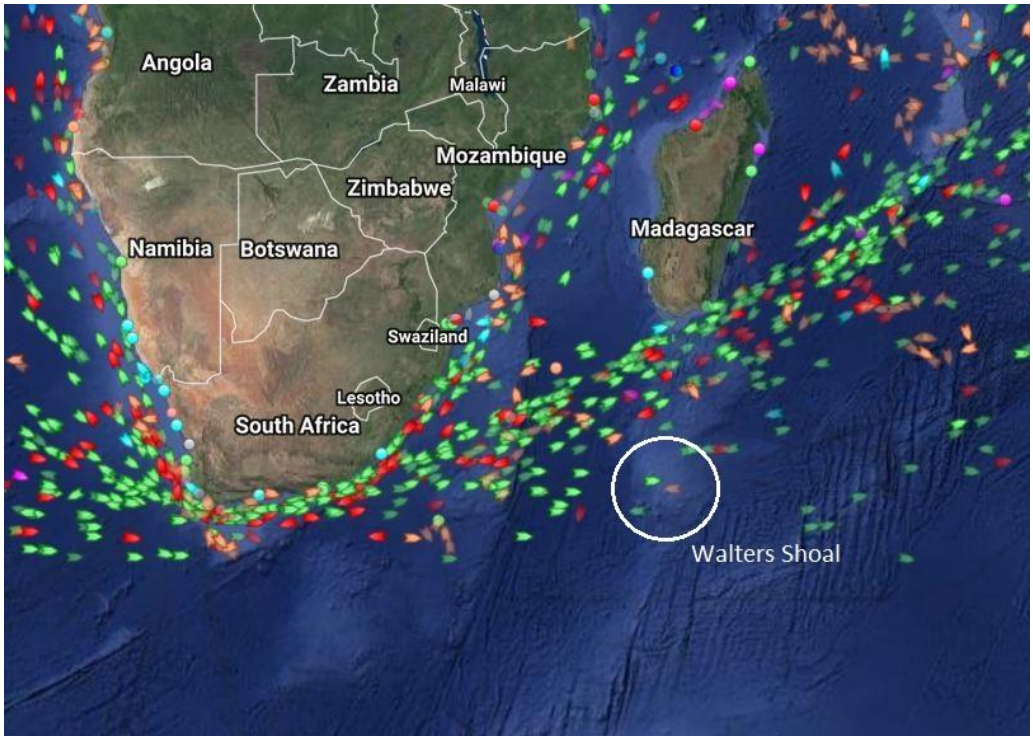
[48] New Zealand Government, 'Report on New Zealand's Implementation of Operative Paragraphs 80 and 83-90 of Resolution 61/105' at pp. 7–12, available at http://www.un.org/depts/los/general_assembly/contributions_fisheries/new_zealand.pdf (accessed 25 February 2017).

[49] Ibid. at p. 8. Additional precautionary closures of representative blocks in the moderately and heavily trawled areas may be implemented and further blocks may be closed in any area found to contain significant evidence of VMEs.

[50] These can include: pollution control measures, such as the designation of Special Areas under Annexes I-V of the MARPOL Convention, where discharges from ships are more strictly controlled or prohibited; declaration of the proposed PSSA as an "area to be avoided" by ships; navigation measures, such as ship routeing and reporting

Walters Shoal from shipping activity. As illustrated by Map 4, major shipping routes do not pass through the Walters Shoal area. The establishment of a PSSA and APMs do not therefore seem particularly relevant.

Map 4. Shipping traffic in the Western Indian Ocean (Source: https://www.marinetraffic.com)



4.1.3. Mining

In 2012, as part of its Environmental Management Plan for the Clarion-Clipperton Zone,[51] the ISA designated nine Areas of Particular Environmental Interest (APEIs) to the marine environment in the Area.[52] No mining is permitted in these areas. These designations were made in advance of contractor-designated "Impact reference zones" and "preservation reference zones".[53] At the same time, the ISA Regulations on prospecting and exploration for polymetallic nodules, polymetallic sulphides, and

systems; pilotage schemes; and vessel traffic management systems. The IMO may also pursue the development and adoption of other measures, provided they have an identified legal basis.

[51] ISBA/17/LTC/WP.1, Draft environmental management plan for the Clarion-Clipperton Zone , 28 January 2011, adopted 22 July 2012, ISBA/18/C/22; ISA. Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone. 2012. ISBA/18C/22; available at http://www.isa.org.jm/files/documents/EN/18Sess/Council/ISBA-18C-22.pdf; accessed 25 February 2017.

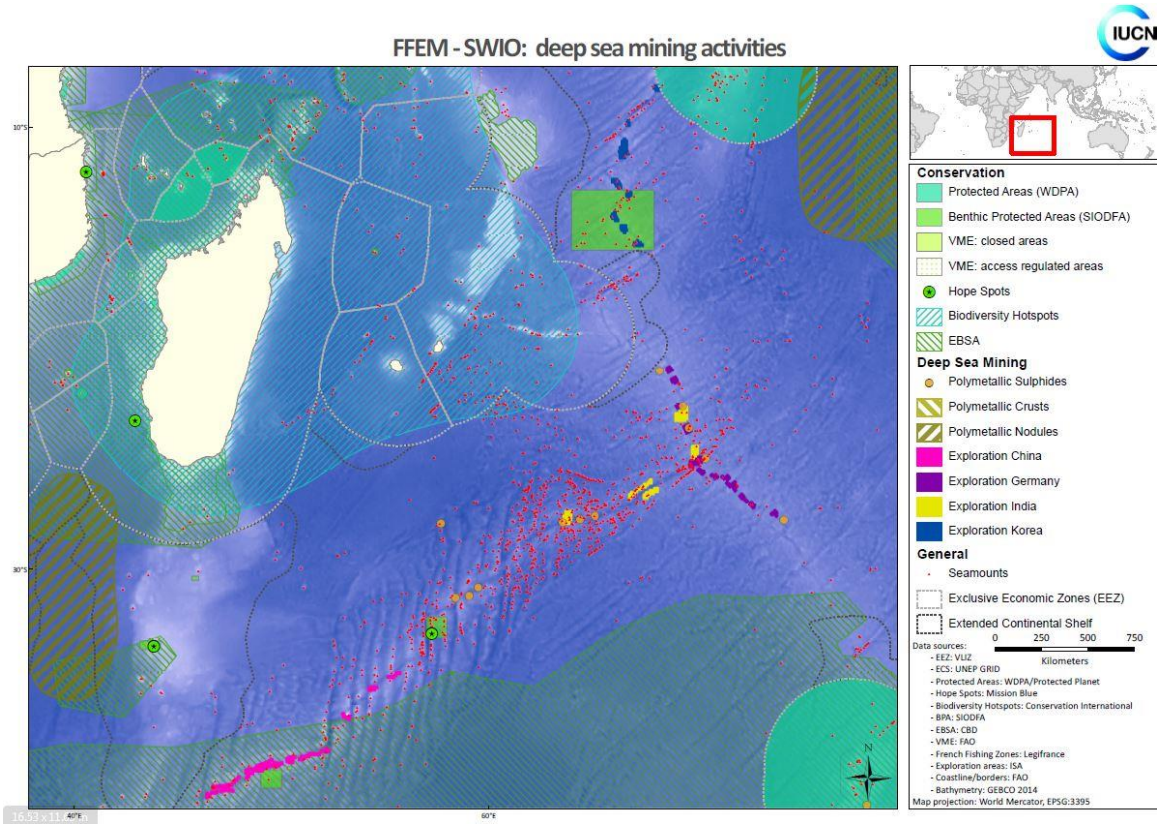
[52] Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters. 2013; ISBA/19/C/17; Section V.31.6.

[53] Impact reference zones are "areas to be used for assessing the effect of each contractor's activities in the Area on the marine environment and which are representative of the environmental characteristics of the area". Preservation reference zones are "areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the flora and fauna of the marine environment". Regulation 31(7).

ferromanganese crusts in the Area[54] provide that "prospecting shall not be undertaken if substantial evidence indicates the risk of serious harm to the marine environment".[55]

Exploration for mineral resources is ongoing in the Indian Ocean, including in its Western part (Map 5). The ISA is yet to define any APEIs in the region, nor has any assessment been conducted regarding their need and feasibility. This is therefore a step WIO States, and the international community more generally, may be interested in taking in conjunction with the ISA.

Map 5. Deep-sea mining activities in the South West Indian Ocean (UICN, Projet FFEM-SWIO, Michael Vollmar, 2017)



4.2. Establishment of a marine protected area

MPAs are widely acknowledged as an important tool for biodiversity conservation, and ecologically connected networks of MPAs are crucial for sustaining high seas ecosystems (Sumaila, Zeller, Watson,

[54] Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters ISBA/19/C/17 and Decision of the Assembly of the International Seabed Authority regarding the amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area ISBA/19/A/9; Decision of the Assembly of the International Seabed Authority relating to the regulations on prospecting and exploration for polymetallic sulphides in the Area ISBA/16/A/12/Rev.1; Decision of the Assembly of the International Seabed Authority relating to the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area ISBA/18/A/11. See http://www.isa.org.jm/mining-code/Regulations; accessed February 2017.

[55] Regulation 2(2). These regulations apply to prospecting and exploration only, and it remains to be seen whether eventual regulations on the exploitation of these resources will contain similar provisions.

Alder, & Pauly, 2007). The international community has committed, in numerous global forums, to establish a network of MPAs covering a significant percentage of the oceans (Rochette, Gjerde, *et al.*, 2014).[56] Therefore interest in the establishment of multi-purpose MPAs in ABNJ is strong,[57] yet currently no global mechanism exists to make this possible. Nonetheless, some efforts have been made to develop specific initiatives to conserve marine biodiversity in ABNJ through the creation of MPAs. Against this background, several options exist to establish a MPA in the Walters Shoal area.

4.2.1. Establishing a marine protected area through the Nairobi Convention

Some regional initiatives and organisations have progressively extended their activities to ABNJ, including through the establishment of MPAs (Rochette, Unger, *et al.*, 2014). Four areas are currently covered by a Regional Sea with a specific mandate in ABNJ: the Mediterranean through the Barcelona Convention,[58] the Southern Ocean through the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR),[59] the North-East Atlantic through the OSPAR Convention[60] and the South Pacific through the Nouméa Convention.[61]

Three Regional Seas have already developed specific actions in ABNJ through the creation of MPAs:

- **Mediterranean**: The Pelagos Sanctuary for marine mammals was created in 1999 by France, Italy and Monaco. The Pelagos Sanctuary was recognized as a Specially Protected Area of Mediterranean Importance (SPAMI) in 2001 (Scovazzi, 2011).[62] This Sanctuary incorporates the territorial waters of these three States, but also ABNJ.[63]
- **Southern Ocean**: In 2009, CCAMLR endorsed a roadmap established by its Scientific Committee in order to fulfill the international requirements to establish a coherent and representative network of MPAs by 2012. The same year, CCAMLR adopted its first MPA on

[56] See, e.g., The Plan of Implementation of the World Summit on Sustainable Development (2002) available at: https://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf; accessed 7 July 2017; The Strategic Plan for Biodiversity 2011–2020 ('Aichi Targets'), available at: https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf; accessed 7 July 2017 (target 11 states: "By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes."; and the Rio+20 "Future We Want" outcome document (UNGA Resolution of 27 July 2012, A/RES/66/288).

[57] I.e., MPAs that regulate a large variety of human activities with the ultimate objective of conserving marine biodiversity.

[58] Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, 1995.

[59] Convention on the Conservation of Antarctic Marine Living Resources, 1980.

[60] Convention for the Protection of the Marine Environment of the North-East Atlantic, 1992.

[61] Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, 1986.

[62] UNEP/MAP. Report of the twelfth ordinary meeting of the Contracting Parties to the Convention for the protection of the Mediterranean Sea against pollution and its protocols, Monaco, 14-17 November, 2001,UNEP(DEC)/MED IG.13/8, 30 December 2001, Annex IV.

[63] The situation of the Mediterranean Sea is particular in that there is no point located at a distance of more than 200 nautical miles from the closest land or island. Therefore, "any waters beyond the limits of national jurisdiction (high seas) would disappear if all the coastal States decided to establish their own exclusive economic zones (EEZ)" (Scovazzi, 2011). There are currently still ABNJ in the Mediterranean Sea because some States have not yet declared EEZs. Some States have declared Ecological Protection Zones or Fisheries Protection Zones, while there are "grey zones" where States' declarations overlap (UICN 2010).

the South Orkney Islands continental shelf,[64] and in 2016 the Ross Sea was also designated as a MPA.

- **North East Atlantic**: Contracting Parties to the OSPAR Convention established a network of 6 MPAs in ABNJ in 2010 (O'Leary *et al.*, 2012),[65] and agreed an additional MPA in 2012 (Freestone, Johnson, Ardron, Morrison, & Unger, 2014).[66]

As previously noted, the Nairobi Convention geographical coverage is limited to areas within national jurisdiction. The designation of the Walters Shoal as a MPA is therefore not currently possible. However, the opportunity of extending the geographical coverage of the framework convention into ABNJ could be considered. Indeed, the United Nations Environment Assembly (UNEA) of UNEP adopted a resolution in 2016 that "encourages the contracting parties to existing regional seas conventions to consider the possibility of increasing the regional coverage of those instruments in accordance with international law" (Christiansen, 2010). The parties to the Convention could therefore continue their discussions on the extension of the Nairobi Convention mandate, with a view to eventually instituting a process to develop MPAs in ABNJ.

Expansion of the mandate of the Nairobi Convention would in theory allow for such action to be taken in the WIO region. However, some important limitations are to be noted. First, such MPAs are binding only on the parties to the Regional Seas Programme and not on third parties. This means that even if the Nairobi Convention were to take this step, any future MPA or management measures would not be applicable to non-parties. Second, the management of such MPAs would also require coordination and cooperation with other bodies. As the Nairobi Convention's mandate is limited, it would need to cooperate with other bodies to ensure that complementary protective measures were taken, by, e.g., SIOFA on fisheries and the ISA on deep-sea mining. Without cooperation between these organisations, any MPA declared under a Regional Seas Programme would be little more than "lines on a map".

4.2.2. A coalition-based approach

An alternative to the Regional Sea approach would be the use of a coalition-based approach. Inspiration could be taken from the Pelagos Sanctuary in the Mediterranean, a small-scale, State-led effort focussing on cetacean conservation, and the efforts of the Sargasso Sea Alliance (SSA) (now the Sargasso Sea Commission), a broad and cooperative initiative launched and led by civil society and a champion territory.

The Pelagos Sanctuary for Mediterranean Marine Mammals was established by France, Monaco and Italy in 1999 to protect the eight resident cetacean species in the area,[67] incorporating both the territorial waters of these three States and areas that were, at that time, beyond national jurisdiction. In 2001, the Sanctuary was recognised as a Specially Protected Area of Mediterranean Importance (SPAMI) by the Parties to the Protocol concerning Specially Protected Areas and Biological Diversity in

[64] CM 91-03 (2009), Protection of the South Orkney Islands Southern Shelf, §1.

[65] OSPAR Decisions 2010/1-6; OSPAR Recommendations 2010/12-17.

[66] OSPAR Commission, 2012 Status Report on the OSPAR Network of Marine Protected Areas (2013), <www.ospar.org/documents/dbase/publications/p00618/p00618_2012_mpa_status%20report.pdf>

[67] Agreement concerning the creation of a marine mammal sanctuary in the Mediterranean, adopted in Rome, Italy, 25 November 1999. See: https://www.tethys.org/activities-overview/conservation/pelagos-sanctuary/; accessed 6 July 2017.

the Mediterranean;[68] consequently all contracting parties to this Protocol must abide by the regulations adopted for the Sanctuary. A joint management plan was approved in 2004 and steps have been taken to respect the MPA (Mangos & André, 2008; Mayol *et al.*, 2013). The founding States have also committed to seeking recognition as a PSSA by the IMO, though this has not yet come to fruition and the process appears to have stalled (Freestone *et al.*, 2014).

In comparison to other regional marine areas, the institutional landscape in the Sargasso Sea is underdeveloped. No Regional Seas Programme or broad-based RFB covers the region.[69] The only land in this area is Bermuda, a British overseas island territory. The SSA, a partnership between the Government of Bermuda, NGOs, scientists and private donors, was launched in 2011 with the aim of establishing a management regime using existing sectoral bodies and measures, and to act as a case study of what can, and cannot, be achieved within existing institutions covering ABNJ (D. M. Kaplan *et al.*, 2014).[70] Bermuda, with the support of the Alliance, has already submitted information regarding the Sargasso Sea for its potential designation as an EBSA,[71] and a range of additional actions for advancing the conservation of this region are currently being considered.

The Pelagos and Sargasso Sea examples demonstrate that a limited number of States can advance conservation and sustainable use of ABNJ, but with considerable limitations. Learning from this approach, some WIO States could champion a process towards a better conservation of ABNJ ecosystems, including by jointly declaring the Walters Shoal as an MPA and committing to conserving its biodiversity. This process could also be a first step to ultimately recognising the area as an MPA through an extended Nairobi Convention.

4.2.3. Inscription as a World Heritage Site

Nominating the Walters Shoal for inscription on the World Heritage List appears, at present, to be unfeasible. Parties to the WHC would first have to decide to allow for this possibility under the WHC. Assuming that the WHC is ultimately extended to ABNJ, the Walters Shoal would then have to be nominated in accordance with the agreed procedures, and would have to be made for recognition of its "outstanding universal value". Nonetheless, States in the SWIO region may wish to keep in mind the possibility for such recognition as they further develop scientific knowledge of the SWIO and the Walters Shoal.

4.3. Dissociated management between the water column and the seabed

Should Madagascar's submission on the extent of its continental shelf be accepted by the CLCS, this would have significant ramifications for the potential options available for the protection of the

[68] UNEP/MAP. Report of the twelfth ordinary meeting of the Contracting Parties to the Convention for the protection of the Mediterranean Sea against pollution and its protocols, Monaco; 14-17 November 2001, UNEP(DEC)/MED IG.13/8, 30 December2001, Annex IV.

[69] The International Commission for the Conservation of Atlantic Tunas (ICCAT) is the only competent RFMO in the region: its area of competence covers a much greater area than the Sargasso Sea alone, and it is only responsible for the conservation of tunas and tuna-like species. The North Atlantic Fisheries Organization (NAFO) regulatory area may overlap slightly with the Sargasso Sea, but this is insignificant.

[70] See Sargasso Sea Alliance website, http://www.sargassoalliance.org/about-the-alliance; accessed 25 February 2017.

[71] Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Eleventh Meeting, XI/17. Marine and Coastal Biodiversity: Ecologically or Biologically Significant Marine Areas, UNEP/CBD/COP/DEC/XI/17, p. 23, item 13.

Walters Shoal. In particular, such a ruling would give Madagascar exclusive rights to explore and exploit the resources of the seabed around the Shoal (the status of the superjacent waters would, however, remain unchanged). This would mean that the ISA and RFMOs would have no mandate to implement management measures for the resources of the seabed in the area.[72] In such a case, the establishment of a comprehensive MPA or other ABMT in the area would require action by Madagascar to implement measures concerning the continental shelf, along with complementary action by sectoral bodies concerning the superjacent waters that would remain part of the high seas.

There is already some precedent for the protection of areas that are under mixed jurisdiction. Portugal, which exercises rights over an extensive continental shelf, has taken steps to conserve some of these areas and include them in their national planning. In particular, Portugal has worked together with the OSPAR Commission to create MPAs encompassing the Portuguese continental shelf and the superjacent waters, and is also currently developing a plan for these areas that contemplates possible uses of the waters superjacent to its continental shelf.

[72] Specifically, Article 77.4 states, "The natural resources referred to in this Part consist of the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil".

		Options	Legal basis	Relevance for the Walters Shoal	Conclusion
Limiting impacts from sectoral activities	**Fishing**	Fisheries closures under IOTC	Agreement for the Establishment of the Indian Ocean Tuna Commission	No scientific consensus exists on effectiveness of fisheries closures for highly migratory pelagic species Walters Shoal not impacted by tuna fisheries.	Not relevant
		Fisheries closures under SIOFA	Southern Indian Ocean Fisheries Agreement, especially Article 4 UNGA Resolutions 59/25 (2004) and 61/105 (2006)	Bottom fishing has been reported in the Walters Shoal area	Relevant
		Unilateral national initiative(s)	States sovereignty Nothing prevents one or several States to unilaterally declare that they will prohibit or restrict fishing in the Walters Shoal area by vessels flying their flag	Bottom fishing has been reported in the Walters Shoal area	Relevant, but legal effect limited to fishing vessels flying the flag of the State willing to adopt such measure
	Shipping	Establishment of a PSSA and associated protective measures	IMO revised guidelines for the identification and designation of particularly sensitive sea areas, 2006	No specific threat to the Walters Shoal from shipping activities	Not relevant
	Mining	Designation as a APEI	UNCLOS Part XI	Exploration of mineral resources underway in the Western Indian Ocean	Need to assess the opportunity and feasibility to establish an APEI in the Walters Shoal area
Establishment of a MPA		MPA under the Nairobi Convention	Nairobi Convention geographical coverage limited to areas under national jurisdiction 2016 UNEA Decision encouraging "the contracting parties to existing regional seas conventions to consider the possibility of increasing the regional coverage of those instruments in accordance with international law"	Significance of the Walters Shoal recognized by several scientific assessments, including the EBSAs process	Relevant, but not possible under the current legal framework Need to explore the opportunity to extend the Nairobi Convention geographical coverage into ABNJ
		Coalition-based approach	States sovereignty		Relevant, even if limited legal effect

			Pelagos Sanctuary and Sargasso Sea Alliance precedents		Could be a first step before the regional recognition of the Walters Shoal MPA through the Nairobi Convention
		Inscription as a World Heritage site	World Heritage Convention	Significance of the Walters Shoal already recognized; would require consideration of whether this meets the criteria for "outstanding universal value"	Relevant, but not possible under the current legal framework
Dissociated management between the water column and the seabed			UNCLOS, Parts VI and XI	Walters Shoal included in the Madagascar's submission on the extension of its continental shelf	Depending on the recommendation of the CLCS, the management of the Walters Shoal could require an extensive cooperation and complementary actions between Madagascar (competent for the seabed) and sectoral organisations which could regulate activities in the water column

5. Identification of priority measures

5.1 Strengthen scientific knowledge of the Walters Shoal

The individual and cumulative threats to and effects of the full range of human activities on marine ecosystems and biodiversity in general, and seamounts in particular, in ABNJ are still largely unknown. These threats and their effects must be taken into account in order to be able to develop a robust, holistic ecosystem-based management scheme. Biodiversity provides options for organisms to respond to environmental challenges by maintaining their variability, such that maintenance of biodiversity is essential to ecosystem stability. Loss of biodiversity can temporarily or permanently move an ecosystem into a different set of biogeochemical conditions, leading to changes or disruption of the ecosystem's functioning.

Strengthening scientific knowledge on the Walters Shoal would contribute to the understanding of seamount ecosystems more generally. In 2016, the United Nations noted that seamounts are largely unknown and mention the major gaps existing in the global scientific knowledge on these ecosystems (Ruwa and Rice, 2016; Extent of Assessment of Marine Biological Diversity, 2017).

In order to identify sites that face challenges with a view to their protection and management, the following steps should be followed:

- Collection of referential data (mapping seabed, conservation, fishing and mining exploration/exploitation zones, zones with a potential for covering vulnerable marine ecosystems, etc.);
- Sampling and inventory of benthic and pelagic fauna, marine avian and megafauna, etc.;
- Measure of environmental conditions (temperature, current, vertical profiles in the water column, etc.);
- Listing and details on commercial and non-commercial species, with a stock assessment and monitoring of species with low productivity (Garcia *et al.* 2013; FAO 2009) to contribute to document the health and productivity of these ecosystems.

To be able to assess and to forecast the recovery of seamount ecosystems following human-induced impacts and long-term implications of climate change to seamount communities, IUCN listed in 2012 knowledge gaps to fill on physical, ecological and connectivity aspects (IUCN, 2012).

- Current-seamount interactions, particularly in relation to tidally-driven effects;
- Linkages between current-seamount interactions and seamount food webs;
- Resolution of the importance of upwelling, vertical mixing, retention and resuspension on primary production;
- The basis of seamount food webs, particularly bentho-pelagic coupling;
- Factors influencing the seamount-scale distribution of benthic organisms;
- The importance of seamount ecosystems to the surrounding ocean, especially to visitors such as aquatic predators;
- Connectivity of seamount populations, and distributional geographic ranges of seamount species; the differences (and similarities) of seamount and non-seamount communities, including consideration of ecosystem structure and endemism;
- The differences (and similarities) of seamount and non-seamount communities, including consideration of ecosystem structure and endemism;
- Life histories of seamount species; and

- The nature of the association between commercially targeted species and the seamount ecosystem.

The assessment and control of harmful human activities on seamounts in ABNJ is a major challenge. The results of scientific expertise and the associated recommendations, decisions or management measures will have to be made accessible and transmitted by the States to the relevant authorities such as regional organizations or agreements.

5.2. Strengthening fisheries management measures

Fishing activity, especially bottom fishing, appears to pose the greatest potential threat to the Walter Shoal. There are clear international rules and precedents for action on bottom fishing, and the governance framework for fisheries in the region is developing as SIOFA establishes itself.

At this stage, therefore, it seems necessary to take the following steps:

- Identification of VMEs by SIOFA Contracting Parties;
- Establishment of fisheries closures and conversion of the SIODFA BPAs into formal fisheries closures where appropriate, as well as consideration of other relevant management measures;
- Further development of MCS measures.

5.3. Discussing the extension of the Nairobi Convention into ABNJ

As already highlighted, neither the original Nairobi Convention nor the amended text explicitly includes ABNJ in its geographical mandate. However, Contracting Parties have recently demonstrated an increasing interest in ABNJ through the development of several scientific projects and the adoption of political decisions. Decision CP8/10[73] urges States to "cooperate in improving the governance of areas beyond national jurisdiction, building on existing regional institutions including the Nairobi Convention and developing area based management tools such as marine spatial planning to promote the blue economy pathways in the Western Indian Ocean Region*".*

The United Nations Environment Assembly of the United Nations Environment Programme adopted a resolution in 2016 that "encourages the contracting parties to existing regional seas conventions to consider the possibility of increasing the regional coverage of those instruments in accordance with international law."(Watson & Morato, 2013) There is therefore momentum toward developing a more concrete role for the Nairobi Convention into ABNJ. Even if the question of the expansion of the Nairobi Convention into ABNJ is not at the agenda yet, discussions on this opportunity, and study of its feasibility, should be encouraged.

5.4. Strengthening cooperation and coordination between regional organisations

The WIO is currently not the most advanced region in terms of ongoing efforts to improve the governance of ABNJ, but there are already some positive signals. The discussions within the Nairobi Convention are, at the very least, an opportunity for the coastal States of the WIO region to reflect on their potential interest and role in ABNJ, while the ongoing development of SIOFA is likely to result in fisheries conservation and management measures being taken in the near future. Moreover, 2016 saw the emergence of improved coordination between the Nairobi Convention, SWIOFC and IOTC, and a

[73] Available at: http://www.unep.org/nairobiconvention/sites/unep.org.nairobiconvention/files/adopted-_cop-8_decisions-_24-june-2015.pdf (accessed 19 July 2017).

meeting was organised to discuss areas of common interest and possible cooperation.[74] These efforts could be continued to better ensure coordination and cooperation for ABNJ governance in the region.

[74] UNEP, 'Scoping Meeting on Collaboration Between Regional Seas Programmes and Regional Fisheries Bodies in Southwest Indian Ocean' (2016), available at http://www.unep.org/ecosystemmanagement/water/regionalseas40/Portals/50221/UNEP_SWIO_SM1_4_ReportMeeting.pdf; accessed 25 February 2017.

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