

Marine Spatial Planning in Areas Beyond National Jurisdiction

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Keywords

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Abstract

Pressure on marine areas beyond national jurisdiction (ABNJ) has increased significantly in recent decades, prompting the international community to begin formal negotiations for a legally binding agreement on the conservation and sustainable use of biodiversity in these areas. The current international legal framework does not provide for the creation of holistic and cross-sectoral area-based management tools (ABMTs) in ABNJ. The forthcoming negotiations will consider how to fill this gap. Marine spatial planning (MSP) is one ABMT that could be covered in a new agreement, alongside marine protected areas (MPAs) and other measures. This article introduces the current framework for MSP in ABNJ, provides discussion of selected ongoing initiatives, and proposes some avenues for inclusion of MSP in a new agreement, including general provisions, institutional implications, and possible models for an international MSP process.

Highlights

- Negotiations for an international legally binding instrument (ILBI) regarding marine biodiversity in areas beyond national jurisdiction (ABNJ) provide an opportunity to develop MSP in these areas.
- A framework for collecting, sharing, and updating scientific research will be critical for

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supporting MSP efforts in ABNJ.

- A range of existing instruments and ongoing initiatives can contribute to the development and implementation of MSP in ABNJ.
- A new ILBI could provide a foundation for MSP by refining existing obligations and provisions on cooperation and the integration of biodiversity into marine management.
- The ILBI could set out a tailored process for MSP in ABNJ, including by establishing a coordinating authority, defining the triggers for initiating MSP, and providing oversight and review.

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1. Introduction

Demands on marine space and ecosystems have increased significantly in recent decades, including in marine areas beyond national jurisdiction (ABNJ) [1,2]. Comprising both the water column (“high seas”)⁹ and the seabed (“the Area”),¹⁰ ABNJ represent nearly half of the Earth’s surface and a significant portion of its biodiversity. Marine spatial planning (MSP), increasingly common within national jurisdictions, has evolved as a way to promote “a more rational organization of the use of marine space and the interactions between its uses, to balance demands for development with the need to protect marine ecosystems” [3].

Section 2 provides a brief introduction to MSP and ABNJ, with a particular focus on the ongoing discussions at the United Nations (UN) on a possible new international legally binding instrument (ILBI) for the conservation and sustainable use of biodiversity beyond national jurisdiction (BBNJ). Section 3 outlines the current legal framework for MSP in ABNJ, while section 4 considers ongoing processes and projects that aim to contribute to the development of MSP in ABNJ. Section 5 provides some initial reflections on how to advance MSP in ABNJ through a new ILBI.

2. Context

2.1. Areas beyond national jurisdiction

Until relatively recently, the remoteness of ABNJ placed them beyond the reach of many human activities. Technological advances, increased scientific knowledge, and growing demand for resources have led to increased interest in these areas and pressure on their ecosystems. Traditional maritime activities, such as shipping and fishing, have expanded and intensified, and a range of new activities, such as seabed mining, are under development [1,4]. Environmental impacts have now been observed in even the most remote marine areas [5–9]. Rising sea temperatures, deoxygenation and ocean acidification are predicted to compound these impacts and place further pressure on marine ecosystems [10–13].

The expansion of ocean uses in ABNJ has rapidly outpaced development of scientific knowledge and cooperative governance [14]. As a result, efforts to conserve and sustainably use marine biodiversity have almost entirely focussed on areas within national jurisdictions. The first UN World Ocean Assessment (WOA I) [2] highlighted how our growing use of ocean space has “the potential for conflicting and cumulative pressures,” particularly as, “in most cases, those various activities are increasing without any clear overarching management system or a thorough evaluation of their cumulative impacts on the ocean environment” [15]. The WOA I further stressed the need for a framework to integrate these management activities.

Cognisant of these growing threats and challenges, States have been discussing options for

⁹ I.e. all parts of the sea not included in the Exclusive Economic Zone (EEZ), in territorial seas, or in archipelagic waters.

¹⁰ I.e. the seabed, ocean floor and subsoil, beyond the limits of national jurisdiction.

ensuring conservation and sustainable use of BBNJ for more than a decade. A UN Preparatory Committee (PrepCom), convened to prepare recommendations on elements of a draft text for an ILBI, submitted its final report to the UN General Assembly (UNGA) in July 2017. The report, adopted by consensus, called for the UNGA to take a decision on the convening of an intergovernmental conference (IGC) [16]. More than 130 States subsequently sponsored UNGA Resolution 72/249, adopted on 24 December 2017, convening an IGC to consider the recommendations of the PrepCom and to elaborate the text of an ILBI.

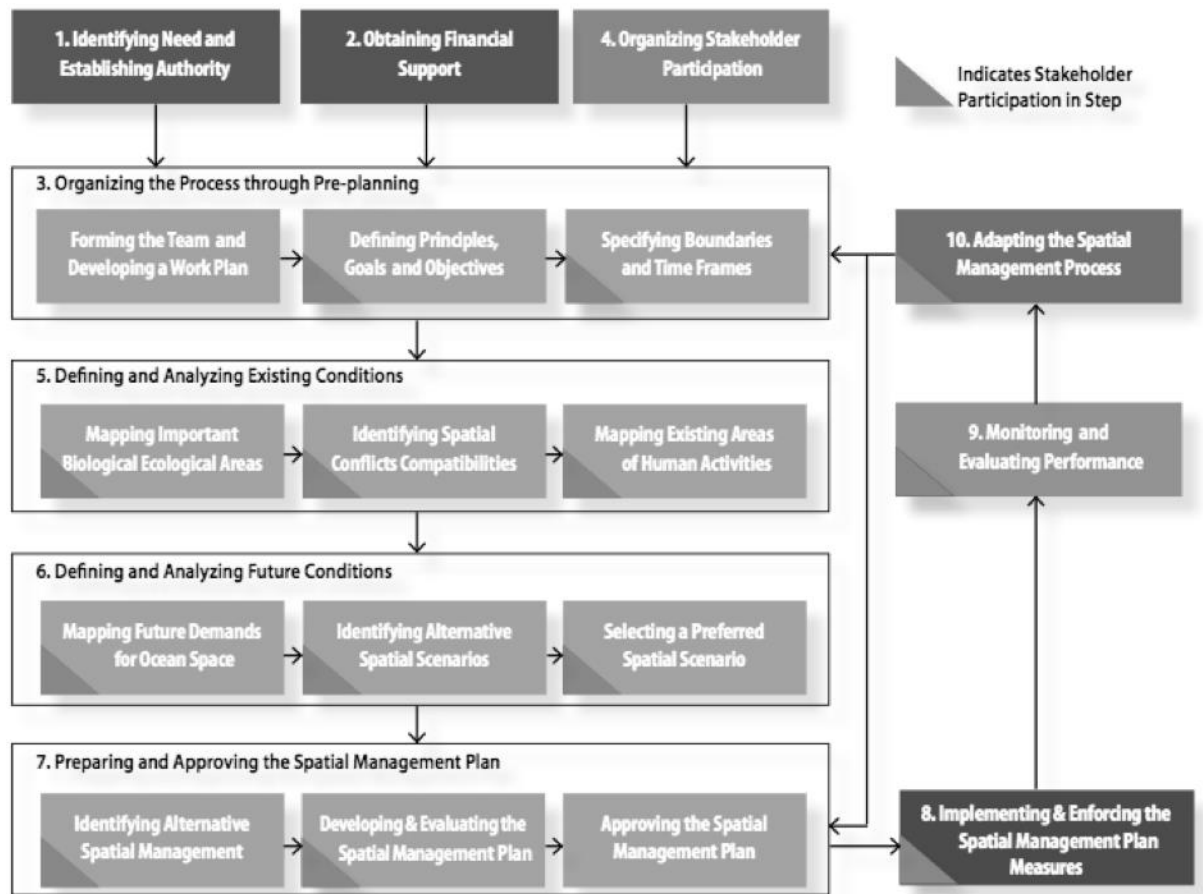
2.2. Marine spatial planning

While a range of sectoral policies and ABMTs have long been in place, mainly within national jurisdiction, MSP has more recently emerged as the leading concept for integrated marine planning and ecosystem-based management. MSP is defined by Ehler and Douvère [17] as:

a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that are usually specified through a political process.

While such planning processes can take many different forms, the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) has developed a 10-step model for the design and implementation of MSP processes (Figure 1) [3], as well as a guide to evaluating MSP processes [18]. The IOC-UNESCO guides are widely regarded as a blueprint for good practice MSP and are frequently used to develop, analyse and evaluate MSP efforts.

Figure 1: Indicative MSP process [3]



Whether or not MSP is able to accomplish the desired outcomes will necessarily be a product of many interrelated factors. Implementation can be hampered by lack of political will, disparity between scales of governance, mismatches between science and policy cycles, fragmentation between MSP and other marine governance systems, failure to define clear goals and metrics, lack of adaptive mechanisms, and inadequate stakeholder engagement and buy-in [3,19–22].

2.3. Challenges for MSP in ABNJ

A range of technological innovations and improved data availability have greatly increased our understanding of marine ecosystems and enabled the development of MSP. However, implementing MSP in ABNJ, particularly in the deep-sea, will come with some specific challenges.

2.3.1. Technical challenges

A range of data is required for effective MSP, including: sound time-series of environmental data; maps of geomorphology; the location of vulnerable and other important marine ecosystems; and the extent of the spatial footprint of human activities in a given area. This is a considerable challenge in ABNJ as the dynamism and scales of the immense open ocean means that longer-term observations are required to differentiate pattern from noise. At the same time, marine systems are increasingly influenced by a changing climate. Access to deep-sea

environments and scientific knowledge of their ecosystems remains patchy, incomplete and uncoordinated [23–27]. While a number of States have produced high resolution maps of the seafloor in their EEZ, most of the ocean floor has not been mapped in any detail [27].

This lack of baseline data, which increases with distance and depth, is largely due to the high costs involved in sampling deep and distant areas [27,28]. There are fewer studies in these areas, resulting in greater reliance on analogues and proxies (e.g. species and habitat distribution models) [29–32] and sector-dependent data (e.g. observer data from fisheries and contractor data from seabed mining). The latter is problematic because of the lack of transparency in sector-based data collection [33,34] and limited collaboration between academic scientists and industry. Furthermore, a lack of data integration and standardization across the countries and organizations involved in sampling ABNJ ecosystems hinders the development of coordinated, holistic, long-term time series.

Monitoring technologies, both remote and in-situ, are rapidly evolving and reducing in cost (e.g. Autonomous Underwater Vehicles could allow us to cost effectively survey ecosystems over much larger areas) [35], while ongoing efforts to develop standards for monitoring should improve data integration issues.¹¹

2.3.2. Legal/policy framework

The existing framework for the management of ABNJ is fragmented, uneven and uncoordinated, resulting in a management regime that is less than the sum of its parts [4,14,25,36–39]. The precise mandates of the plethora of existing organisations are often unclear, and there is little cooperation or coherence between them. There is no agreed set of comprehensive overarching governance principles applicable to ABNJ [40,41], nor shared principles for integrated, ecosystem-based and precautionary management [14].

Establishing “appropriate authority” to both plan and implement MSP is critical [3], but there is currently no such authority for ABNJ. The mandates of existing bodies are currently insufficient for effective MSP, while geographical gaps remain in the coverage of ABNJ by competent management organisations (for example, there are still areas not covered by a regional seas programme or a regional fisheries management organisation) [14,42].

In the absence of an appropriate authority or a broader culture of cross-sectoral cooperation and management, actors face considerable challenges in coordinating action [36,39,43]. While some progress has been made at the regional level, these initiatives cannot provide cohesive management without coordination, both among themselves and with the various international organisations that have a role including ABNJ (e.g. ISA, IMO) [4,14,37,42–45]. More generally, the comprehensive and integrated nature of MSP will likely entail a level of communication, collaboration and flexibility that goes well beyond the current status quo. In contrast to the

¹¹ Including, e.g.: the Global Ocean Observing System (GOOS); the Group on Earth Observing Biodiversity Observation Network (GEO BON); the Deep Ocean Observing Strategy (DOOS); the Global Ocean Biodiversity Initiative (GOBI); the Migratory Connectivity in the Ocean (MiCO) system; and national Marine Biodiversity Observation Networks (MBON).

fragmented system currently in place, successful MSP requires effective interplay between competent organizations, i.e. non-hierarchical organizations operating in sync based on a common purpose and set of principles [46].

2.3.3. Social context

MSP processes include stakeholder engagement and participatory decision-making tools adapted from community and land use planning [47–49]. As with any planning process, ineffective or unjust outcomes can result from stakeholder engagement that is incomplete, ineffective, or conducted in bad faith [19,20,22].

In the global environmental governance literature, stakeholder involvement is considered a prerequisite for legitimacy [50–52]. Yet the challenge of identifying and consulting relevant stakeholders is magnified in ABNJ. The industries and sectors operating in ABNJ are obvious stakeholders, but the nature of the high seas and of the Area, i.e., that they are a global commons beyond the control of any one State, suggests that a potentially wide range of stakeholders may have a legitimate interest in the conservation of biodiversity and the sustainable use of resources in ABNJ. Indeed, all of humankind has an interest in the preservation of the essential ecosystem services provided by ABNJ. The perceived legitimacy of ocean governance is also linked to questions of equity and distributive justice [51–53], yet MSP processes in national jurisdictions have been criticised for being unfair or top-down [22]. Legitimate MSP in ABNJ must therefore include processes for identifying and engaging stakeholders across the globe in an efficient and transparent manner.

3. Current framework for MSP in ABNJ

While there is no overarching framework for the implementation of MSP in ABNJ, there are nonetheless existing provisions of international law, sectoral ABMTs, and regional frameworks that can provide a foundation for its development.

3.1. International law

The UN Convention on the Law of the Sea (UNCLOS) [54] provides the basic “Constitution for the Ocean”. UNCLOS obliges Parties to: protect and preserve the marine environment (Article 192) protect rare and fragile ecosystems as well as the habitat of depleted, threatened and endangered species and other forms of marine life (Article 194(5)); and cooperate in developing international rules, standards and recommended practices and procedures for environmental protection (Article 197).

These obligations are complemented by the 1992 Convention on Biological Diversity (CBD) [55], which obliges parties to cooperate for the conservation and sustainable use of biological diversity, including in ABNJ. States must ensure that activities under their jurisdiction or control do not cause damage to ABNJ and must monitor and control any activities likely to cause significant harm (Articles 3, 4, 7 and 14). More generally, the CBD calls for parties to promote the protection of ecosystems and to integrate conservation and sustainable use considerations into national decision-making (Articles 8 and 10). Similarly, the 1995 UN Fish Stocks Agreement (UNFSA) [56] calls on States and Regional Fisheries Management

Organisations (RFMOs) to take measures to reduce the impacts of fishing on non-target species and to take measure to protect biodiversity in the marine environment (Article 5).

These international legal provisions have been supported or supplemented by a range of “soft law” declarations, targets and goals. For example, the Aichi Biodiversity Targets (adopted under the auspices of the CBD in 2010) call for the conservation of at least 10 percent of coastal and marine areas by 2020, especially areas of particular importance for biodiversity and ecosystem services [57]. This is reiterated by the UN Agenda 2030 for Sustainable Development, as Sustainable Development Goal 14 (SDG14) requires States to [58]:

By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

3.2. Sectoral ABMTs

A number of international organisations also have a mandate or interest in ABNJ: high seas fisheries are managed by RFMOs or coordinated by Regional Fisheries Bodies (RFBs), with the UN Food and Agriculture Organisation (FAO) also playing a role; exploration and exploitation of the mineral resources are regulated by the ISA; shipping and dumping are regulated through a number of instruments adopted under the auspices of the IMO.

Some sector-specific ABMTs intended to protect marine biodiversity are already available under these existing frameworks and may be relevant for the implementation of MSP in ABNJ, for example: Vulnerable Marine Ecosystems (VMEs); Particularly Sensitive Sea Areas (PSSAs); Areas of Particular Environmental Interest (APEIs); and World Heritage Sites.

3.2.1. VMEs/fishery closures

In relation to bottom fisheries, Resolution 61/105 (2006) requires certain measures to be implemented in order to protect VMEs from significant adverse impacts (SAIs) [59], including closure of areas where VMEs are known to occur or are likely to occur (paragraph 83(c)). Against this background, many RFMOs have closed VMEs to bottom fishing [60–62].

3.2.2. PSSAs/IMO measures

IMO Member States can designate Particularly Sensitive Sea Areas (PSSAs) in areas that are deemed to need special protection through action by the IMO that meet specific ecological, socio-economic or scientific criteria and which may be vulnerable to damage by international maritime activities [63]. The criteria for designation of PSSAs refer to the identification of PSSAs both within and beyond the limits of the territorial sea [64], thereby including the possibility that a PSSA could be identified in ABNJ [65].

3.2.3. APEIs

The ISA has entered into 28 exploration contracts in the Atlantic, Indian and Pacific Ocean [66]. In 2012, as part of its Environmental Management Plan for polymetallic nodule mining in the Pacific Clarion-Clipperton Zone [67,68], the ISA designated 9 Areas of Particular Environmental Interest (APEIs) where no mining is permitted [69,70]. A precautionary

approach required development of the network of APEIs despite limited data availability.¹² In addition, the ISA Mining Code¹³ requires the designation of “impact reference zones” and “preservation reference zones” for monitoring the impacts of seabed mining [71]. The role and significance of these zones is currently unclear, and discussions are underway to clarify their definition and describe their specific requirements, including their temporal nature [72].

3.2.4. World Heritage Sites

The 1972 Convention for the Protection of the World Cultural and Natural Heritage (World Heritage Convention – WHC), administered by 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. There is currently no procedure for inscribing sites in ABNJ,¹⁴ 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 [73].

¹² Though the APEI designations were only made after exploration contracts had already been signed, which appears to be in conflict with a precautionary approach.

¹³ The ‘Mining Code’ comprises separate Regulations on prospecting and exploration for polymetallic nodules, polymetallic sulphides, and ferromanganese crusts in the Area. Each of these Regulations includes provisions relating to “serious harm to the marine environment”.

¹⁴ 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.

Table 1. Existing sectoral ABMTs

Agreement/body	ABMT	Description	Usage
Part XI implementing agreement (1994) establishing the International Seabed Authority	Areas of Particular Environmental Interest (APEI); preservation reference zones (PRZ)	APEI: Areas where no mining is permitted on a provisional basis. PRZ: Representative areas in which no mining shall occur to enable assessment of environmental changes caused by mining activities.	9 APEIs in the Clarion-Clipperton Zone (North Central Pacific) as part of its Environmental Management Plan for polymetallic nodule mining in the area. Further regional environmental management plans are under development.
International Maritime Organization (IMO)	Particularly Sensitive Sea Areas (PSSAs)	IMO Member States can designate PSSAs, including in ABNJ, in areas that are deemed vulnerable to damage by international maritime activities and need special protection due to their significance for ecological, socio-economic or scientific attributes.	None designated in ABNJ
International Convention for the Prevention of Pollution from Ships, 1973 (as modified by the Protocol of 1978)	Special Areas (SAs)	IMO Member States can designate Special Areas under MARPOL to provide relatively large-scale sea areas a higher level of protection from ship discharges or emissions due to their oceanographic and ecological conditions and level of sea traffic.	2 SAs in ABNJ (Mediterranean and Antarctic)
International Convention for the Safety of Life at Sea, 1974	Areas to be Avoided (ATBAs)	IMO Member States can designate areas that should be avoided by all ships or certain classes of ships, in which navigation is particularly hazardous or in which it is exceptionally important to avoid casualties.	None designated in ABNJ
Regional Fisheries Management Organisations/Arrangements (non-tuna)	“Vulnerable marine ecosystems”	“Vulnerable Marine Ecosystems” are areas closed to deep sea bottom fisheries by non-tuna RFMOs to protect deep sea biodiversity pursuant to UNGA resolutions and FAO Technical Guidelines	Approximately 30 VMEs closed to bottom fishing in the North-East Atlantic, North-West Atlantic, and South-East Atlantic

Convention for the Protection of the World Cultural and Natural Heritage, 1972	World Heritage Sites	World Heritage Sites are designated by parties to the World Heritage Convention for their “outstanding universal value”. ¹⁵ States are required to adopt measures and provide resources for their protection. UNESCO recently published a report considering how the WHC could be applied to ABNJ [73].	None designated in ABNJ
International Convention for the Regulation of Whaling, 1946	Sanctuaries	Parties can establish sanctuaries in which commercial whaling is prohibited.	Two established: Indian Ocean (1979) and Southern Ocean (1994). Proposal repeatedly submitted for a Sanctuary in the South Atlantic, but has not attained the three-quarters majority of votes needed.

¹⁵ I.e. they have cultural, historical, scientific or other significance.

3.3. Regional legal and policy frameworks

Four Regional Seas programmes currently have at least a limited mandate covering conservation and sustainable development in ABNJ.¹⁶ In 2016, the United Nations Environment Assembly adopted a resolution 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” [74]. Some regional organisations have developed ABMTs in ABNJ, including the establishment of Marine Protected Areas (MPAs) [4,37,42] (Table 2).

Perhaps the best-known example of a regional organisation attempting to engage in broad-based cross-sectoral cooperation for the conservation and sustainable use of BBNJ is the OSPAR Commission. OSPAR has, together with the North East Atlantic Fisheries Commission (NEAFC), developed a non-binding “Collective Arrangement” that aims to facilitate coordination between organisations with mandates in the region [75].¹⁷ OSPAR and NEAFC have both implemented ABMTs covering overlapping areas: OSPAR has declared a network of MPAs in ABNJ [76–78]; NEAFC has designated areas closed to bottom trawling [79].

¹⁶ In the Mediterranean Sea, the Southern Ocean, the North-East Atlantic, and the South West Pacific.

¹⁷ OSPAR and NEAFC are the first, and so far only, participants that have endorsed this arrangement, although other authorities with management competencies in the region have also been invited to participate (e.g. the IMO and the ISA).

Table 2. Existing regional initiatives for the establishment of ABMTs

Area	Organisations/ Conventions	ABMT actions/measures	Notes/comments
The North-East Atlantic	<ul style="list-style-type: none"> • OSPAR • NEAFC 	<ul style="list-style-type: none"> • OSPAR network of MPAs • NEAFC fisheries closures • Collective Arrangement between competent organisations on cooperation 	<ul style="list-style-type: none"> • OSPAR MPAs and NEAFC fisheries closures only partially overlap • Progress on identifying Ecologically or Biologically Significant Marine Areas (EBSAs) in the region has been slow
Mediterranean	<ul style="list-style-type: none"> • Mediterranean Action Plan (MAP), Barcelona Convention • General Fisheries Commission for the Mediterranean and Black Sea (GCFM) 	<ul style="list-style-type: none"> • MPA partly covering high seas (Pelagos Sanctuary) • Memorandum of Understanding between MAP and GCFM • Project to develop a network of Specially Protected Areas of Mediterranean Importance in the open seas, including the deep seas [80] • Proposal to designate parts of the Pelagos Sanctuary as a PSSA • Fisheries measures 	<ul style="list-style-type: none"> • The project on open seas has been dormant since 2014 and no further SPAMIs have been declared in open seas [81] • The PSSA proposal appears to have stalled
The Southern Ocean	<ul style="list-style-type: none"> • Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) 	<ul style="list-style-type: none"> • South Orkney Islands southern shelf MPA designated in 2009 • Ross Sea MPA adopted in 2016, and long-term research and monitoring plan adopted in 2017 	<ul style="list-style-type: none"> • Process to establish a circumpolar network of MPAs has stalled, with discussions now focused on individual MPA proposals [82] • Parties failed to agree on further MPAs at the most recent meeting
South Pacific	<ul style="list-style-type: none"> • South Pacific Regional Environment Programme (SPREP) 	<ul style="list-style-type: none"> • SPREP Convention applies to four “high seas pockets” 	<ul style="list-style-type: none"> • No measure has been taken so far
South East Pacific	<ul style="list-style-type: none"> • Permanent Commission for the South Pacific (CPPS) 	<ul style="list-style-type: none"> • Member States of CPPS committed themselves in 2012 “Galapagos Declaration” 	

		<p>to promote action to protect living resources in ABNJ</p> <ul style="list-style-type: none"> • CPPS is involved in a number of ongoing projects relating to ABNJ 	
Western Africa	<ul style="list-style-type: none"> • Abidjan Convention 	<ul style="list-style-type: none"> • Establishment of a working group to study all aspects of the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction within the framework of the Abidjan Convention 	
Western Indian Ocean	<ul style="list-style-type: none"> • Nairobi Convention 	<ul style="list-style-type: none"> • Discussion of the feasibility of extending the geographical coverage of the Nairobi Convention to ABNJ 	
Sargasso Sea	<ul style="list-style-type: none"> • Sargasso Sea Commission (SSC) • 2014 Hamilton Declaration (signed by Azores, Bahamas, British Virgin Islands, Bermuda, Canada, Cayman Islands, Monaco, UK and US). 	<ul style="list-style-type: none"> • Nine governments committed to taking collaborative action for the conservation of a unique high seas ecosystem through competent international organisations • Seamounts in Sargasso Sea EBSA closed and midwater trawling subject to gear restrictions (NAFO 2015) • European Eel Range states considering measures to protect eel spawning areas in Sargasso Sea – the Convention on Migratory Species (Second meeting May 2018) • Discussions in ICCAT for Conservation measures since 2012 	<ul style="list-style-type: none"> • Project has demonstrated reluctance of sectoral organisations to take the EBSA process seriously • And the difficulty of securing precautionary action in a data poor environment

4. Ongoing initiatives

This section provides an overview of selected ongoing processes and projects that may be of relevance to the development of MSP in ABNJ.

4.1. Ecologically or Biologically Significant Marine Areas (EBSAs)

In 2004, the Convention on Biological Diversity (CBD) began a process to develop and apply scientific criteria to identify and describe EBSAs in open ocean waters and deep sea habitats [24,83,84]. To date, 14 regional expert workshops have described more than 300 EBSAs. EBSAs that have been reviewed by the CBD Conference of Parties (COP) are added to an EBSA repository, and States and competent international organizations are requested to consider mechanisms to enhance protection and management. The interim results of these workshops have been summarized [85,86] and directly linked to potential uses within an MSP framework [85]. Ongoing efforts to further strengthen the scientific and technical robustness of the EBSA process will enhance their utility for defining and mapping existing conditions [24], and it has been argued that more extensive EBSAs could themselves form the basis for MSP [87].

4.2. Migratory Connectivity in the Ocean (MiCO)

Migratory species are subject to a range of anthropogenic pressures over the course of their life histories, yet conservation strategies have generally not considered spatial connectivity over their life cycle. The MiCO system¹⁸ seeks to fill a major knowledge gap regarding global migratory routes and connected areas for migratory species by providing actionable information conveying connectivity among “nodes” (aggregations of areas used for a particular activity, e.g. feeding or nesting) and “corridors” (routes animals use between nodes). This knowledge will be directly fed into ongoing management processes and could play a critical role in informing conservation efforts of migratory species in ABNJ.

4.3. ATLAS

The H2020 ATLAS Project¹⁹ in the North Atlantic is focussed on strengthening the evidence base to support implementation of ecosystem-based management (EBM) in the deep-sea. ATLAS will apply a generic MSP framework and methodology [88] to develop ‘blue growth’ scenarios for a representative range of regional case studies. The robustness of the science base and the capacity of the area-based management proposals to absorb these new scenarios will be tested either by increasing the footprint of existing ventures or by introducing completely new activities.

The project also aims to address data gaps by gathering new information on sensitive Atlantic ecosystems to better understand their connectivity, functioning and responses to future changes

¹⁸ See www.mgel.env.duke.edu/mico/

¹⁹ See www.eu-atlas.org.

in human use and ocean climate to better inform their conservation. Improved understanding of climate impacts are particularly important, as they could severely limit the effectiveness of deep-sea ABMTs unless sufficient resilience is incorporated into their design and implementation [89,90]. One of the keys to successful delivery of cost-efficient MSP is data sharing and ATLAS is committed to working with business, NGOs and governments to create an open access shared knowledge base and to develop innovative approaches that can address business, policy and socio-economic needs.

4.4. SEMPIA

Also in the Atlantic, a process is underway to support the ISA's development of a Regional Environmental Management Plan for deep-sea mining on the Mid Atlantic Ridge. In 2013, the EU MIDAS Project²⁰ initiated an expert-driven consultation and data gathering exercise that has subsequently been termed the 'SEMPIA process' (Strategic Environmental Management Planning in the Atlantic). Experts involved with SEMPIA have drafted design principles for APEIs on the Mid-Atlantic Ridge and produced a scientific rationale to justify APEI spacing and location [91]. As this work develops, SEMPIA will need to evolve into a more MSP-like process: recognising an imperfect environmental baseline; taking account of living and non-living resources on the seabed and in the water column; mediating complex stakeholder interests, including the interests and sovereign rights of adjacent States; better incorporating interlinkages between the benthic and pelagic systems; and considering interactions with other uses of the area (e.g. submarine cables and deep sea fisheries) [39].

Mineral prospecting and exploration contracts have already been issued to mining contractors, who will expect to be able to advance their projects in some portion of the contracted areas once exploration has been completed. This will have an impact on how area-based planning proceeds. Selecting a preferred spatial scenario is within the mandate of the ISA, but should be undertaken in a transparent and inclusive manner. Furthermore, any relationship between the ISA and the proposed ILBI on BBNJ has yet to be determined. While considering alternative spatial scenarios is likely to be difficult given the timescales and level of ecological uncertainty involved, such flexibility will be necessary if the ISA wishes to protect globally important areas. Identification of alternatives may therefore need to be considered as part of any future contracts.

The need for a spatial planning process that includes the interests of all stakeholders is underscored by the recent approval of a 15-year contract for exploration in an area of the Mid-Atlantic Ridge that has been recognized as both an EBSA and identified as potentially meeting the "outstanding universal value" criteria of the World Heritage Convention [26,73].

4.5. Portugal's Extended Continental Shelf (ECS)

²⁰ www.eu-midas.net

Portugal, which has an exceptionally large maritime domain,²¹ has included its extensive extended continental shelf in its national marine spatial plan. European Union (EU) coastal countries are in the process of implementing the EU MSP Directive,²² and since 2014 Portugal has put in place a suite of legislation, including a National Ocean Strategy (NOS) for 2013-2020; a “base law” for MSP; and a Decree-Law, further developing the base law and setting out the process for development and evaluation of a Marine Spatial Plan for the entirety of her National Maritime Space (NMS), from the baseline to the outer limit of the continental shelf [92,93]. This Situation Plan is currently under development and will “represent and identify the spatial and temporal distribution of existing and potential uses and activities, and identify the natural and cultural values of strategic relevance for environmental sustainability and inter-generational solidarity” (Decree-Law 38, 2015). This plan will contemplate high seas uses, and will need to be cognisant of various maritime boundaries, including the boundary between the Portuguese continental shelf and adjacent ABNJ (the Area and superjacent high seas). This plan brings into focus the need for mechanisms to enable ecosystem-based management and planning across national and international boundaries.

4.6. Costa Rica Thermal Dome

The Costa Rica Thermal Dome (CRTD) is a unique oceanographic feature in the Eastern Tropical Pacific that provides valuable ecological services and socio-economic benefits to the Central American countries [94]. The Dome is not static: its geographical footprint is continuously changing between areas within and beyond national jurisdiction [95–97]. The CRTD has also been identified as potentially meeting the “outstanding universal value” criteria of the World Heritage Convention [73,98], while the Costa Rican coastal component forms part of the Papagayo Upwelling System EBSA.

The Central American Integration System provides a basis for regional cooperation, with three sector-specific Commissions addressing environment and development, fisheries and aquaculture, and maritime transportation.²³ The CRTD is also within the geographical scope of the Antigua Convention (not yet in force), a UNEP Regional Seas programme.²⁴ The Inter-American Tropical Tuna Commission (IATTC), which has specific fisheries management

²¹ The entire Portuguese National Maritime Space (NMS) amounts to approximately 3.8 million km², i.e. 97% of the nation’s territory (this includes the EEZs of the mainland and of the archipelagos of Madeira and the Azores, and the area of continental shelf beyond 200 nautical miles). The NMS corresponds to about 4% of the Atlantic and 1% of the global ocean, and encompasses 50% of the volume of EU waters.

²² Directive 2014/89/EU of 23 July 2014 establishing a framework for maritime spatial planning.

²³ Established by the Tegucigalpa Protocol to the Charter of the Organization of Central American States. 1695 UNTS 382. Entered into force on 23 July 1992. This Protocol amended the Charter of the Organization of Central American States (OCAS) No. 8048. Signed at Panama City on 12 December 1962.

²⁴ Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the North-East Pacific. Available at: <https://www.ecolex.org/details/treaty/convention-for-cooperation-in-the-protection-and-sustainable-development-of-the-marine-and-coastal-environment-of-the-northeast-pacific-tre-001350/>

responsibilities, is the only regional body with a management mandate in the parts of the CRTD located in ABNJ.²⁵

Scientific and technical evaluations confirm the CRTD to be a unique and important system, but development of MSP is frustrated by the inadequacy of existing frameworks: there is no competent body that can comprehensively address MSP; there is a need to develop solid scientific baselines and identify priority areas;²⁶ there is no formal process for identifying and including stakeholders; and any proposed MSP arrangements would need to take account of the ongoing UN process.

The littoral countries in the region could, for example, agree to collectively manage adjacent ABNJ, either by extending existing agreements or negotiating new arrangements [99]. Such an agreement could establish an institutional structure with competence to address MSP and coordinate with existing regional bodies, but such an undertaking would require considerable political will and support [98].

4.7. Western Indian Ocean

Although a plethora of organisations contribute to a complex and multi-faceted governance framework in the Western Indian Ocean (WIO) [44,100], competent organisations have made only limited use of their ability to adopt ABMTs and there is no coordinated strategy for the conservation and sustainable use of BBNJ in the region.

The Nairobi Convention, the Regional Seas programme for the WIO, does not explicitly include ABNJ in its geographical mandate,²⁷ though COP Decision CP8/10 (2015) urges States to cooperate to improve the governance of ABNJ and develop ABMTs such as MSP. Other decisions have encouraged States to cooperate in ongoing projects regarding ABNJ and to develop ecosystem-based approaches to managing their EEZs and adjacent waters (Decisions CP8/6 and CP8/5 respectively).

At the same time, two projects of interest are ongoing. Firstly, the WIO is a pilot area for the development of ABMTs in ABNJ within the Common Oceans Deep Seas project.²⁸ The project has produced a report regarding institutional arrangements and cross-sectoral cooperation in the region, identifying the current status and possible future steps for enhancing cooperation

²⁵ Convention for the Establishment of the Inter-American Tropical Tuna Commission. 80 UNTS 3. Entered into force on 3 March 1950. Article 2, 3.

²⁶ In this regard, MarViva Foundation is currently executing a project that aims to recommend a consensual, regional, high seas governance scheme for the CRTD (financed by the International Climate Initiative (IKI) and coordinated by the Global Ocean Biodiversity Initiative (GOBI)).

²⁷ Article 2 states that “the ‘Convention area’ shall comprise the riparian marine and coastal environment including the watershed of the Contracting Parties to this Convention”.

²⁸ Funded by the Global Environment Facility and coordinated by the UN Food and Agriculture Organization and. See <http://www.fao.org/3/a-i7539e.pdf>.

[100]. Secondly, the FFEM-SWIO project²⁹ focuses on seamount and hydrothermal vent ecosystems of the South WIO ABNJ. In addition to a scientific component,³⁰ the project has developed possible scenarios for implementing ABMTs in the WIO [101], as well as a case study laying the foundations for management of a particular seamount in ABNJ, the Walters Shoal [44].

4.8. Growing momentum for MSP in ABNJ

Given the absence of a global framework for MSP in ABNJ, these efforts represent promising first steps toward improved cooperation and management, though they are still far from resembling comprehensive MSP. Three recent declarations may provide further support and momentum for ongoing initiatives. Firstly, in 2016, the United Nations Environment Assembly (UNEA) of UNEP adopted a resolution that encouraged the parties to Regional Seas conventions to consider the possibility of extending their geographical coverage [102]. Secondly, the Scientific and Technical Advisory Panel of the Global Environment Facility has made a recommendation to support development of ABMTs in ABNJ and to enhance the capacity of relevant bodies to “act as platforms for integrated conservation and management of ABNJ that are adjacent to their existing regional mandates” [103]. Thirdly, IOC-UNESCO and the Directorate-General for Maritime Affairs and Fisheries of the European Commission (DG MARE) have adopted a joint roadmap to accelerate MSP, highlighting the role of MSP for implementation of the UN Agenda 2030 for Sustainable Development [104].

5. Advancing MSP in ABNJ

With the opening of negotiations for a new ILBI, States now have a unique opportunity to develop the international legal basis and processes for MSP in ABNJ. However, there has only been limited consideration to date of how MSP could be developed in ABNJ or included in an ILBI [105,106]. Further discussions are therefore required on a range of issues, particularly regarding decision-making and institutional mechanisms that can enhance cooperation and coordination without undermining the mandates of existing bodies. This section aims to provide some preliminary ideas for advancing MSP in ABNJ through a new international agreement.

5.1. General provisions for MSP

5.1.1. Definitions and scope

The PrepCom Chair’s non-paper suggests the following definition of MSP in the ABNJ context [107]:

²⁹ Funded by Fonds Français pour l'Environnement Mondial (FFEM) and coordinated by IUCN. See http://wio-c.org/wp-content/uploads/2015/12/ffem_swio_project.pdf.

³⁰ In particular, a 26-day multidisciplinary expedition on board the R/V Marion Dufresne (April-May 2017). See <https://www.iucn.org/theme/marine-and-polar/our-work/international-ocean-governance/conservation-seamounts-ecosystems/ffem-swio-project/walters-shoal-expedition>.

Marine spatial planning is a cross-sectoral ABMT that provides a framework for the orderly and sustainable use of the oceans as envisioned by UNCLOS with a view to balance demands for development with the need to protect the marine environment. Sectoral ABMTs (e.g. fisheries closures, PSSAs, APEIs), other cross-sectoral ABMTs (e.g. MPAs), strategic environmental assessments (SEAs) and EIAs are an integral part of this overarching planning approach. Marine spatial planning approaches would be ecosystem-based, adaptive and include all relevant stakeholders in the area under consideration.

With regard to measures such as ABMTs, including MPAs, the recommendations submitted to the UNGA by the PrepCom show general agreement that the instrument would address: objectives; a process indicating the relevant roles and responsibilities of States parties for identification of areas, including criteria for such areas; a designation and decision-making process, including consultation and assessment of proposals; and provisions for implementation, monitoring and review.

5.1.2. Principles

Principles can be an important precursor to the development of coherent and integrated management regimes and can reinforce the collective responsibilities of all States [40,41]. By providing a shared vision for MSP in ABNJ, and for management of ABNJ in general, principles could pave the way for more effective cooperation and implementation. Many of the general principles and approaches that were the subject of broad consensus during the PrepCom meetings are relevant to MSP, including: international cooperation and coordination; stakeholder engagement; and the use of approaches that are ecosystem-based, precautionary, and integrated.

5.1.3. Obligations to coordinate and cooperate

Coordination and cooperation will be critical for the establishment of MSP in ABNJ. Cooperation can enhance effective implementation by helping to build and maintain trust, addressing capacity problems, clarifying ambiguities, and discouraging “free riding” [4,14,74]. The ILBI could place obligations upon States to cooperate with other States and relevant competent organisations in the development of MSP. The ILBI could go further, placing an obligation on States to cooperate to: develop marine spatial plans; establish a framework for MSP under the agreement; and implement relevant measures.

Such obligations could either be general, requiring ongoing development and implementation of MSP, or specific, requiring an MSP process in certain circumstances or for particular ends. For example, an MSP process could be initiated: (1) to manage activities adjacent to an MPA or other ABMT declared under the ILBI; (2) to provide more integrated and cross-sectoral protection for areas meeting the criteria for EBSAs; (3) to mediate potentially conflicting uses; or (4) to enhance planning for new or emerging activities, or the expansion of existing activities into new areas.

5.1.4. Legal basis

The legal basis for ABMTs, including MSP, could be based on pre-existing cooperation

obligations in UNCLOS and the UNFSA. The ILBI could add specificity to these general obligations, e.g., “In giving effect to their duty to cooperate, States Parties shall adopt measures to ensure long-term conservation and sustainable use of marine biodiversity of ABNJ”. Similarly, the ILBI could build on CBD provisions regarding in-situ conservation (Article 8) to require States to cooperate to: (1) establish a system of protected areas and other ABMTs, including MSP; and (2) apply internationally agreed scientific criteria and guidelines.

Equally important could be provisions to promote the integration and mainstreaming of marine biodiversity considerations into sectoral management and decision-making processes (CBD, Article 10). In this regard, the ILBI could call on States Parties to specifically integrate biodiversity into decision-making and to adopt measures to avoid and minimize adverse impacts.

5.2. Institutional implications

Multilateral environmental agreements generally include provision for a number of institutional mechanisms and bodies, including a Conference of the Parties and at least one Scientific and Technical body. While there is clearly a need for a mechanism for channelling the best available science, there is substantial disagreement on the need for, and potential power of, a centralised process or body. It will therefore be useful to explore a variety of possible approaches. Regardless of the eventual institutional structure, the ILBI will inevitably need to support development of MSP over time.

To enable MSP in ABNJ, a new ILBI would need to establish some formal authority to oversee both the planning and implementation phases of MSP [103]. A new agreement could either explicitly establish such an authority or outline a process by which States or regional bodies can do so.

Possible institutional arrangements mentioned in the Chair’s non-paper include a decision-making body/forum whose role would include: promoting coherence, cooperation and coordination; making decisions and recommendations; establishing subsidiary bodies as necessary; and reviewing implementation of the instrument. Many of these functions would be central to implementation of any sort of MSP regime. Also envisaged is a scientific/technical advisory body and a secretariat to provide administrative and logistical support.

The authority to plan and implement MSP would be of little use without adequate resourcing. An ILBI could therefore outline potential funding mechanisms, paths for collaboration, and support between countries of differing capacities. The Global Environment Facility is one such mechanism, and has already supported several MSP-related projects in ABNJ [108] and called for greater focus on this area. Further discussions are necessary on the scope of the financial resources required for the effective implementation of an ILBI, including MSP in ABNJ, whether a financial mechanism should be established, and what form it could take.

As described above (in section 2.4.1), implementation of MSP requires a common base of data for stakeholders to work from. A framework for collecting, sharing, and updating scientific research will be critical if a new agreement is to support MSP efforts in ABNJ. Also critical is how a new agreement handles the notion of uncertainty in the data and models used. The ILBI

may at least reaffirm the need to apply the precautionary principle, thereby strengthening ABMT implementation, rather than allowing scientific uncertainty to hamper management and protection efforts.

Finally, it would be crucial for a new ILBI to provide for some form of reporting to a global body or process. Experience with the implementation of the UNFSA, for example, suggests that implementation of global commitments may be slow or limited where there is no structured and regular reporting process to ensure progress. Inclusion of such provisions would therefore be necessary to promote appropriate reporting and ensuring effective development of MSP processes.

Other provisions will need further discussion and elucidation, including the possibility of a clearinghouse mechanism to facilitate exchange of information and data, an idea that garnered considerable support in the PrepCom discussions, as well as provisions regarding: financial resources; settlement of disputes; responsibility and liability issues; monitoring, review and compliance.

5.3. Possible models for an MSP process

Options for addressing MSP in a new ILBI could include: “do nothing”; a global MSP process; a “hybrid” or “regionalised” MSP process with international support and oversight.

If States chose not to explicitly include MSP in a new ILBI, the development of MSP will continue to proceed on an ad hoc basis, with responsibility for ensuring coordination and coherence remaining in the hands of existing organisations and processes. Given the limited success of this approach to date, it seems likely that implementation of MSP will only be successful when appropriate coordination and cooperation arrangements are in place [4,105]. Excluding MSP from the purview of the negotiations would therefore be a missed opportunity: MSP has clearly emerged as the leading management tool for ocean spaces [109,110]; efforts to implement MSP in ABNJ clearly show that there is a role for a global framework; and a new agreement is a rare opportunity to take ambitious steps to strengthen and advance the international framework for ocean governance.

A new ILBI could instead take a comprehensive and binding approach to MSP, building on the UNESCO 10-step model. Under a centralised global process, selection of a preferred spatial scenario, scale (e.g. open ocean, sea basin), and preparation and approval of the spatial management plan could be tasks for a global decision-making body. Decisions could be based on scientific advice and taken in consultation with all stakeholders, including relevant competent bodies. Such a comprehensive process would require financial support, as well as a scientific and technical body with the capacity to guide the process through each stage, including stakeholder engagement and defining and analysing existing conditions. This approach would provide a clear, consistent and authoritative structure to the process.

A hybrid approach could also be pursued. For example, general guidance and objectives could be developed at the global level, while a regionally focused coordination mechanism could be tasked with coordinating the management response. Responsibility for taking specific management actions could remain with existing competent bodies, where they exist, in order to

encourage the integration of biodiversity into sectoral processes. A global body would actively work to enhance cooperation and coordination, while providing oversight and monitoring. The ILBI would also need to provide for regions and activities not currently covered by competent organisations (e.g. by specifying a default process, requiring States to cooperate to cover these regions, providing for the extension of existing mandates, etc.). As many competent regional and sectoral institutions face a range of capacity issues, the ILBI would also need to ensure the provision of additional and adequate resources.

6. Conclusion

The challenges facing marine biodiversity in ABNJ and the emergence of MSP as a key tool for ecosystem-based management of marine spaces provide a clear impetus for developing MSP in ABNJ, while ongoing efforts highlight the need for a supportive and cohesive international framework.

A new ILBI could provide a foundation for effective interplay between existing organisations by developing the requisite common purpose, shared obligations and principles. By reaffirming and refining existing obligations, the agreement could also encourage greater cooperation and the integration of biodiversity considerations into management.

The ILBI could also set out processes, guidance and review mechanisms for MSP in ABNJ. Specifically, the ILBI could:

- Provide a framework for collecting, sharing, and updating scientific research needed to support MSP efforts in ABNJ;
- Place obligations on States to cooperate to develop MSP and implement measures;
- Specify triggers for the initiation of an MSP process;
- Explicitly establish a coordinating authority, or outline a process by which such an authority can be established or designated; and
- Set out specific processes and mechanisms to develop, support and implement MSP in ABNJ.

The opening of negotiations for a new ILBI on the conservation and sustainable use of marine biodiversity in ABNJ provides the international community with an historic opportunity to improve the governance framework for the global ocean. Development of appropriate provisions for MSP should be a key part of an ambitious new agreement.

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