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MARIPOLDATA Reading Group

How to protect marine biodiversity in areas beyond national jurisdiction? Marine protected areas in the High Seas

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Definition of ABMT and MPAs

ABMTs and MPAs are spatially determinate measures, designed to prevent harm to the environment, conserve resources and/ or to coordinate activities (Barnes 2016). / Spatially defined maritime space, where regulation of all or some human activities is provided for at a more stringent level than in the surrounding area (Marciniak 2017)./ Can include different levels of conservation (Wang 2019; Marciniak 2019).

(See: IUCN categories: <https://www.iucn.org/theme/protected-areas/about/protected-area-categories>)

We see that there are multiple ways of protecting species, habitats and ecosystems.

Readings for this session

Text 1. Ecological connectivity across ocean depths: Implications for protected area design (O'Leary & Roberts 2018)¹

Review of ecological connectivity papers portraying the horizontal and vertical connectivity of the oceans: **Ecological connectivity between surface and seabed ecosystems**. The paper builds on data from natural sciences, providing examples where we can see this connectivity and concludes with some implications for the design of marine protected areas.

The review reveals that:

- the water column is connected with the seabed

Different depths² are linked through

- **energy production**

¹ **Source:** O'Leary, B. C. and C. M. Roberts (2018). "Ecological connectivity across ocean depths: Implications for protected area design." *Global Ecology and Conservation* 15.

² different depths of the oceans: epipelagic (0e200 m), mesopelagic (200e1000 m), bathypelagic (1000e4000 m), abyssopelagic (4000m to directly above the ocean floor) and hadopelagic (ocean water in submarine trenches)

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- **transfer in food webs**
- **cycling of nutrients and raw materials**
- **shifts in habitat use** as creatures develop and grow, and daily and seasonal vertical migrations

e.g. well-known examples of **linkages between seabed and water column ecosystems, particularly in coastal regions**, that illustrate how

- disruptions affect ecosystem structure: e.g. parrot fish decline affecting coral reefs
- deep-sea fauna relies on species from higher in the water column for food supply
- **Energy transfer between seabed ecosystems and water column** habitats may also be driven from seabed habitats (such as hydrothermal vents, cold-water coral reefs, and seamounts)
- while there is still a lack of data, studies have detected a positive relationship between surface primary productivity and species richness and functioning of deep-sea fish communities
- depletion of whales by commercial whaling **resulted in decreased habitat and nutrient availability in the deep-sea** due to fewer dead whale 'falls', as well as changes in food-web structure

biogeochemical cycling

- **Removing biomass of open water animals through fishing will therefore inevitably have consequences for ecosystem functioning** and provision of services, although the full scale of these consequences cannot currently be quantified.
- **Movements of species between upper and deeper waters facilitate biogeochemical connections across the water column that promote carbon uptake and storage and thereby affect climate regulation**, modify fluxes of nutrients and oxygen in the water column and help sustain the metabolic requirements of midwater and seabed ecosystems

As a result:

- variations in climate and upper ocean conditions are linked to variations in deep-sea communities and biogeochemical processes at the sea floor
- expected that **activities that affect open water habitats and the organisms that mediate transfer of production** (including fishing, deep-sea mining climate change) **will affect deep-sea ecosystems**
- Fishing the water column has **significant impacts on water column habitat**, and **highly likely that fishing the water column will have significant effects on seabed life**
- Exploitation of species in the water column impact the seabed and can in the High Seas also have an impact on deep-sea environments

At the same time:

- We see an increasing number of MPAs protecting the seabed, while the water column stays open to fishing for example

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...while we have imperfect knowledge, we know enough to be sure that....

- **greatest ecological benefits are achieved through full protection of MPAs**
- **fishing the water column will erode those benefits**
- . Continued adoption of vertical zonation and partial protection will mean that MPAs fail to adequately conserve marine life or secure the goods and services provided by the oceans.”

What does this imply for the design of Marine protected areas in the High Seas?

The authors argue that

- protection is urgent and must proceed without full knowledge of how MPAs will perform, how best to locate them and how sensitive outcomes will be to the level of protection given
- protect the whole volume of MPAs and have MPA networks
- ensure continuity of management from seabed to sea surface
- management to be developed strategically with spatial and non-spatial management measures designed to work in concert with each other
- current preference for multiple-use areas that restrict as few activities as possible will fail to address biodiversity loss

Text 2: Mobile Protected Areas for Biodiversity on the High Seas (Maxwell et al 2020)³

The second article also regards connectivity of the oceans, however the focus here is on the migratory connectivity, meaning the fact that some marine species migrate and obviously do not consider the different legal maritime zonesthe authors therefore propose mobile marine protected areas for the protection of such migratory species to account for such migratory connectivity.

Main overview:

- marine species migrate
- climate change impacts on ecosystems
- need for innovative and dynamic tools for ocean protection
- need for mobile MPAs (boundaries shift across space and time) to protect dynamic habitats and migratory species in a changing ocean (need for protection might be necessary in different times (e.g. breeding times) or places)
- still a need for static MPAs to protect e.g. seamounts

Examples.....: dynamic spatial management already used in national waters (e.g. closure of fishing areas based on oceanographic conditions that correlate with bycatch OR reduced vessel speed when whales are detected

³ **Source:** Maxwell, Sara M, Kristina M Gjerde, Melinda G Conners, and Larry B Crowder. "Mobile Protected Areas for Biodiversity on the High Seas." *Science* (New York, N.Y.) 367.6475 (2020): 252-254. Web.



dynamic ABMTs in the High Seas due to advances in science and technology advances in satellite imagery, animal tracking, communication, computing capacity

Ideas for dynamic ABMT measures: changes in shipping routes, discharge limitations, gear restrictions

How to define boundaries of dynamic mMPAs

- through environmental characteristics (surface temperature)
- presence of specific species (through visual or acoustic detection)
- predating habitats or species occupancy (through modelling)

Limitations: cannot go into EEZs, monitoring difficult, communication issues when boundaries shift

Monitoring idea: to use automatic identification system (AIS) to monitor ships (maybe the need for obligation of such use)

Reading Group Discussions

Both articles are normative, calling for stronger protection and a change in the status quo: e.g. strongly advise against vertical zoning; call for mobile MPAs

This shows how different the scientific calls and the existing legal and political structures are. From the science side we need more stringent action and different approaches to account for the connectivity in the oceans. Need to reflect on the science in BBNJ to inform the decision-making.

On the one hand we know about ecological connectivity and the need for full protection of MPAs for full benefits; as well as the need for dynamic tools, on the other hand, the legal structure of current ocean governance framework divides the oceans into different zones (BBNJ: Seabed- CHM; Water Column-Freedom of the Seas; vs. areas within national jurisdiction), managed by different organisations.

How can the existing legal regimes and fragmented framework account for connectivity?

Some considerations of the MPA process:

Identification of MPAs in the High Seas

At what point will the Scientific and Technical committee come into the process? Will the experts be consulted before decision-making at the COP?

Which experts will the Scientific and Technical Committee include? If we reflect on the readings, we would need experts from a wide array of disciplines to make recommendations on MPAs and ABMTs in the High Seas.

Can EBSAs be a basis for High Seas MPAs? They are not mentioned often and rather hesitantly in BBNJ discussions and the draft text, seemingly, there is an interest to keep discussions separate in the different

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forums and different ministries are responsible for attending the conferences and working on respective issues.

Establishment of MPAs in BBNJ

There is the question to what extent will ocean protection measures in the high Seas will be obligations vs. voluntary guidelines?

Regarding mobile MPAs, the reading calls for inclusion of this in the draft text- would there need to be such a paragraph included to use dynamic measures in the future? Probably so, because ABMTs definition as it stands in the draft text (Art.1 (3)) requires the specifying geographically defined areas. However, the question remains if this would be politically desirable and therefore implementable.

Questions arise if reliable technology is available to provide non-biased information for mobile MPAs. Certainty is an issue: How spontaneously would mMPAs be established to allow for planification for stakeholders who want to use the ocean space?

How can the relationship between regional and sectoral agreements and the BBNJ agreement be operationalized? Can cooperation take place without undermining existing organisations? The not undermining argument seem to be often used by fishing and shipping states to keep the management of existing organisations which do not necessarily have the mandates for protection, but rather for sustainable use and have interests to use ocean resources. The idea to look at the EU Common Fisheries Policy: here, the Commission can propose measures, in case the member states do not come up with adequate measures. Can this be replicated for BBNJ? What would RFMOs and other regional organisations need in capacity-building to effectively identify MPAs and implement them? Would additional experts in their scientific and technical committees support their work? Inhowfar do regional organisations differ in their capacities and mandates?

Cooperation exists between CITES and RFMOs (See e.g.

https://cites.org/sites/default/files/eng/prog/shark/docs/Sharks_E_fsht09_IOTC.pdf)

Quality versus quantity

We see increasing quantitative targets for MPAs, also the establishment for large-scale MPAs. The new 30% by 2030 initiative seeks to gather political momentum for ocean protection. Inhowfar do quantitative targets support ocean conservation? Political statements can drive the momentum and lead to further policy-action. However, based on the readings, quantity targets do not necessarily lead to the intended outcome if MPAs do not allow for surface to seabed protection.

Monitoring

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Advanced technology can support monitoring of species, as well as human activities in the oceans. Maxwell et al (2020) suggest an obligation for automatic identification system to be used on all vessels to guarantee tracking. However, how can illegal activity be proven with satellite imagery etc, other than detecting the location?

Compliance

How can compliance of the protection measures be ensured? Maybe through reporting activities? What happens with non-parties to the agreement and non-parties to UNCLOS? There would be the need for cooperation for the implementation of marine protection measures universally.

Implementation and compliance will be crucial for the effectiveness of the agreement.

BBNJ MPAs process

Overview provided by IDDRI: <https://www.iddri.org/en/publications-and-events/study/long-and-winding-road-negotiating-high-seas-treaty>

So far, some ideas on the process have been discussed, including the proposal of MPAs by states, consultation with all relevant stakeholders, a scientific and technical body with an advisory role, a COP for decision-making. However, questions remain on:

Definitions of ABMTs/MPAs

Who will be in the scientific and tech body?

Implementation: by whom?

What happens in the case of non-parties?

Monitoring and review: by whom?

Who will fund it?

How can compliance be guaranteed?

Connection between parallel processes

An interesting discussion also evolved around in how far different processes are connected – BBNJ, Climate COPs, CBD...Some ideas for the next reading group sessions!

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