The scientific process for describing CBD EBSAs versus ISA Sites and Areas in Need of Protection

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Protecting deep seabed ecosystems under the future Agreement on the Conservation and Sustainable Use of BBNJ and by the ISA – Perspectives of Government, Civil Society, Stakeholders, and Law and Science

Session 4 – The EBSA process and the ISA

14 December 2021

CBD EBSAs vs. ISA SINP/AINP Approaches

- There are significant overlaps between the responsibilities between the CBD and ISA;
- The ISA is already using a modified CBD-EBSA approach, but does not overtly recognize the CBDs description of EBSAs in “the Area”;
- Both CBD and ISA approaches represent scientific expert (criteria based) ABMT processes with important differences in:
    - Purpose and management mandate
    - Implementation
    - Interpretation of results
    - Completeness

- **Opportunity & Necessity:** both the CBD and ISA ***have yet to implement network level criteria*** (representativity, connectivity, replication, adequacy) in their activities. The BBNJ could/should be used to establish the ***working framework and authority*** to implement these necessary ocean wide and cross-sectoral ABMT network analyses and implementation activities

Convention on Biological Diversity

A mandate and responsibility to identify and describe biodiversity in the oceans without the further authority to prescribe or implement management actions...

INTERNATIONAL SEABED AUTHORITY

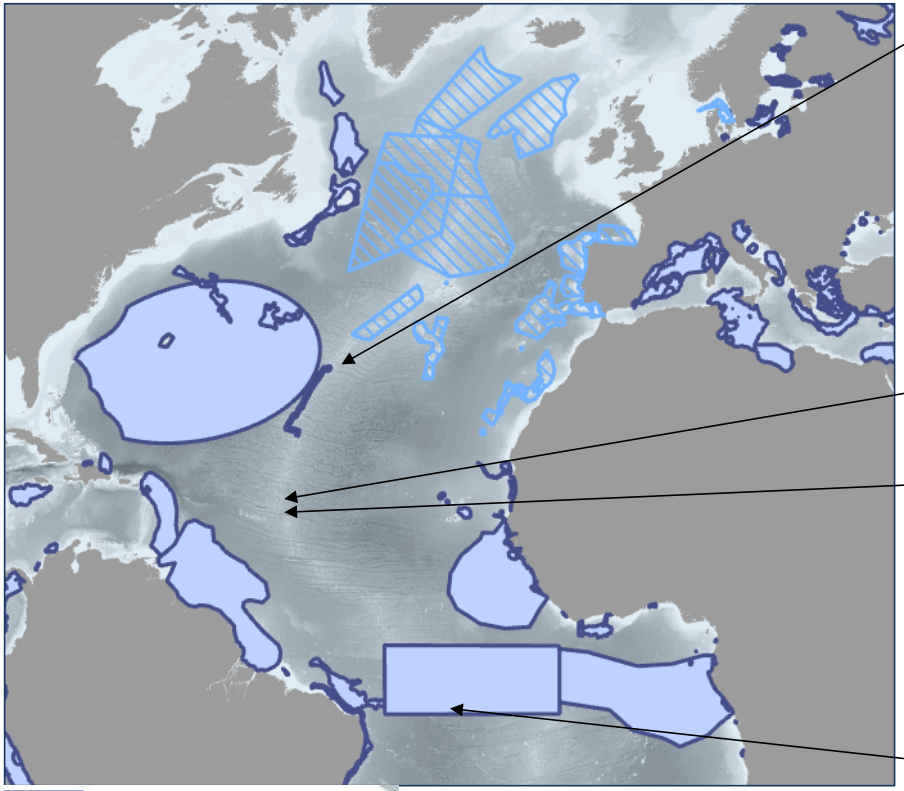
A mandate and responsibility to protect biodiversity in "the Area" but has exhibited a *de facto* focus exclusively on areas of proposed deep sea mining activities...

The resulting scientific and management gaps between these *de facto* regimes are constraining our ability to fully manage the complete biodiversity of the oceans (i.e. comprehensive ecosystem-based ocean biodiversity management in 3D).

BBNJ could help fill these gaps ***or*** the BBNJ could further solidify these gaps under the premise of ***"not undermining"*** existing institutional roles

CBD EBSAs vs. ISA SINP/AINP Approaches

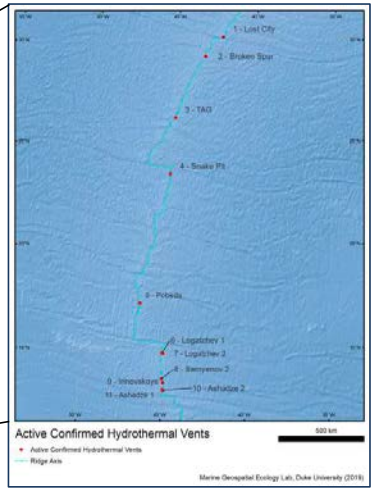
CBD EBSAs



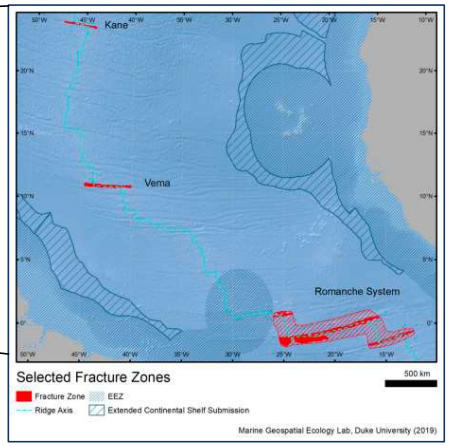
Described EBSA

Proposed EBSA to be considered by COP

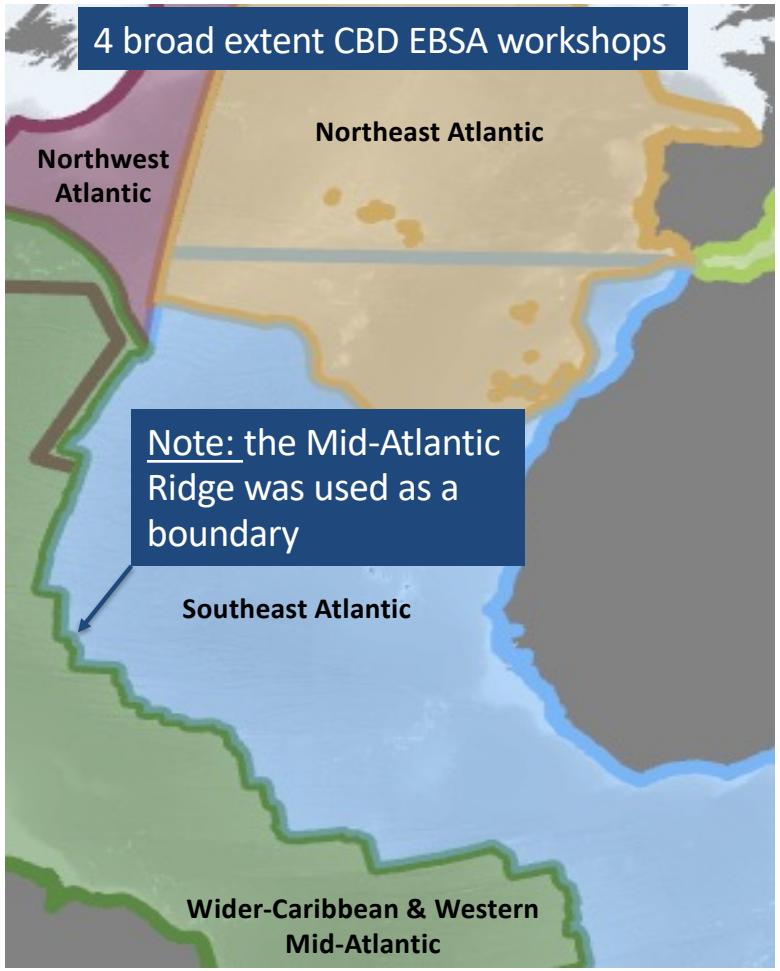
ISA SINPs

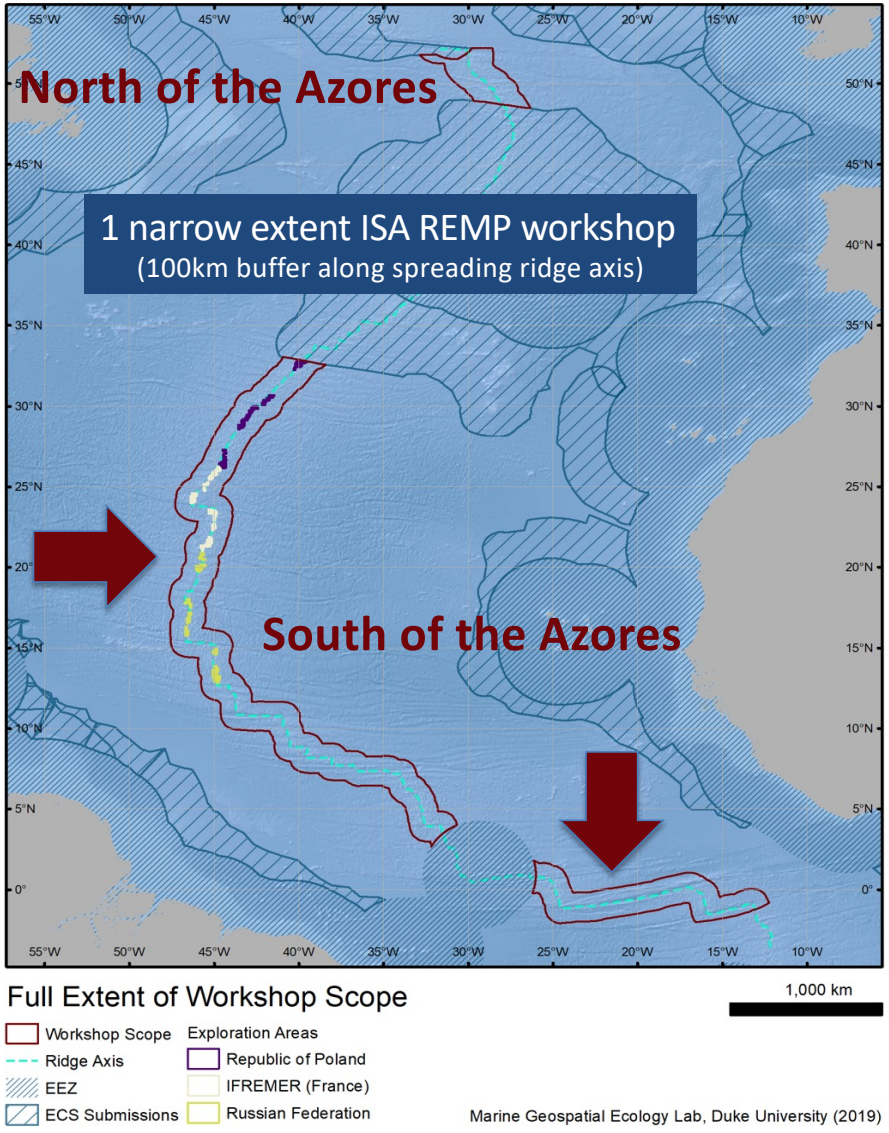


ISA AINPs



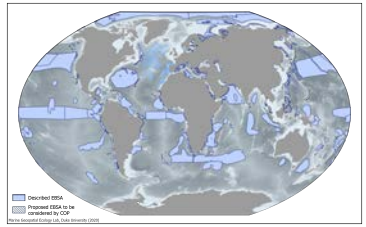
Mid-Atlantic Ridge Ecoregion





workshop spatial extents

CBD EBSAs approach



- The CBD EBSA process is intended to ***describe*** (not designate or establish) individual areas of biological or ecological importance;
- ***No management*** actions are prescribed;
- Current management ***status is not considered***;
- Ecosystem health, stressors, or ***threats are not considered***;
- **All ocean ecosystems** (surface, water column, ocean floor...) can be considered;
- ***Overlapping EBSAs*** can be described (e.g. surface and benthic features);
- Areas can be described in ***ABNJ or*** areas within ***ECSCs and EEZs*** if parties agree;
- Areas are ***described individually*** not as a part of a systematic analysis;
- ***No thresholds*** are set (e.g. an EBSA only has to meet 1 criteria)

The ISA SINP/AINP Approaches

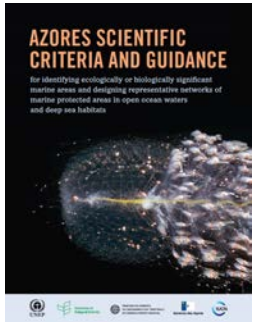
- The ISA SIP process is intended to **designate or establish** individual sites/areas in need of protection;
- ***Protective management*** actions may be prescribed;
- Current management ***status is not considered*** (*e.g.* SINPs considered in lease areas);
- Ecosystem health, stressors, or ***threats are considered***;
- In practice ***only ocean floor features*** have been considered for ABMTs;
- Areas can be described in ***ABNJ*** "Area" only
- Areas are ***described individually*** not as a part of a systematic analysis;
- ***No thresholds*** are set (e.g. a SINP only has to meet 1 criteria)

CBD EBSAs vs. ISA SINP/AINP Approaches

Outline:

- General contrasts between approaches
- EBSA process
- ISA processes
- Conclusions

Annex I of CBD Decision IX/20
Ecologically or Biologically
Significant Areas
2008



Definition:

Ecologically or Biologically Significant Areas are ***geographically discrete areas that provide important services to one or more species/populations of an ecosystem as a whole, compared to other surrounding areas or areas of similar ecological characteristics***, or otherwise meet the criteria as identified in Annex I of Decision IX/20.

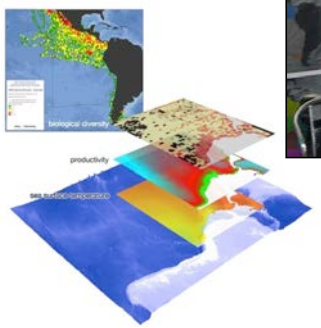
Site level criteria

EBSA Criteria (Decision IX/20 Annex I)

1. Uniqueness or rarity
2. Special importance for life history of species
3. Importance for threatened, endangered or declining species and/or habitats
4. Vulnerability, fragility, sensitivity, slow recovery
5. Biological productivity
6. Biological diversity
7. Naturalness

EBSA Regional Workshops

The regional experts *described* the EBSAs



Each workshop exhibited unique combinations of experts, available data and preparation

Marine Geospatial Ecology Lab
Duke University

15 EBSA Workshops

- Baltic Sea
- Arctic Sea
- Black Sea and Caspian Sea
- East Asian Seas
- Eastern Tropical and Temperate Pacific
- Mediterranean
- Northeast Indian Ocean
- Northeast Atlantic
- North Pacific
- Northwest Atlantic
- Northwest Indian Ocean
- Southeast Atlantic
- Southern Indian Ocean
- South Pacific
- Wider Caribbean and Western Mid-Atlantic

Annex II of CBD Decision IX/20

Ecologically or Biologically Significant Areas

2008

Annex II network criteria:

- **Representativity**,
- **Connectivity**,
- **Replication**
- **Adequacy & Viability**

Note: *Annex II & III were noted but not implemented by the CBD – the BBNJ legally binding instrument could now take these activities forward*

(Annex II of CBD Decision IX/20)

Required network properties and components	Definition	Applicable site-specific considerations *(inter alia)*
Ecologically and biologically significant areas	Ecologically and biologically significant areas are geographically or oceanographically discrete areas that provide important services to one or more species/populations of an ecosystem or to the ecosystem as a whole, compared to other surrounding areas or areas of similar ecological characteristics, or otherwise meet the criteria as identified in annex I to decision IX/20.	• Uniqueness or rarity • Special importance for life history stages of species • Importance for threatened, endangered or declining species and/or habitats • Vulnerability, fragility, sensitivity or slow recovery • Biological productivity • Biological diversity • Naturalness
Representativity	Representativity is captured in a network when it consists of areas representing the different biogeographical subdivisions of the global oceans and regional seas that reasonably reflect the full range of ecosystems, including the biotic and habitat diversity of those marine ecosystems.	A full range of examples across a biogeographic habitat, or community classification; relative health of species and communities; relative intactness of habitat(s); naturalness
Connectivity	Connectivity in the design of a network allows for linkages whereby protected sites benefit from larval and/or species exchanges, and functional linkages from other network sites. In a connected network individual sites benefit one another.	Currents; gyres; physical bottlenecks; migration routes; species dispersal; detritus; functional linkages. Isolated sites, such as isolated seamount communities, may also be included.
Replicated ecological features	Replication of ecological features means that more than one site shall contain examples of a given feature in the given biogeographic area. The term "features" means "species, habitats and ecological processes" that naturally occur in the given biogeographic area.	Accounting for uncertainty, natural variation and the possibility of catastrophic events. Features that exhibit less natural variation or are precisely defined may require less replication than features that are inherently highly variable or are only very generally defined.
Adequate and viable sites	Adequate and viable sites indicate that all sites within a network should have size and protection sufficient to ensure the ecological viability and integrity of the feature(s) for which they were selected.	Adequacy and viability will depend on size; shape; buffers; persistence of features; threats; surrounding environment (context); physical constraints; scale of features/processes; spillover/compactness

Two levels of criteria: site criteria and network criteria

Convention on Biological Diversity

Site criteria

- Uniqueness or rarity
- Special importance for life history
- Importance for threatened, endangered or declining species or habitats
- Vulnerability, fragility or slow recovery
- Biological productivity
- Biological diversity
- Naturalness

Site

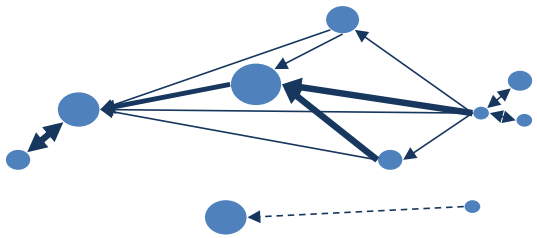
Annex I of CBD Decision IX/20.

Expert workshops

Network criteria

- representativity
- connectivity
- replication
- adequacy

Networks



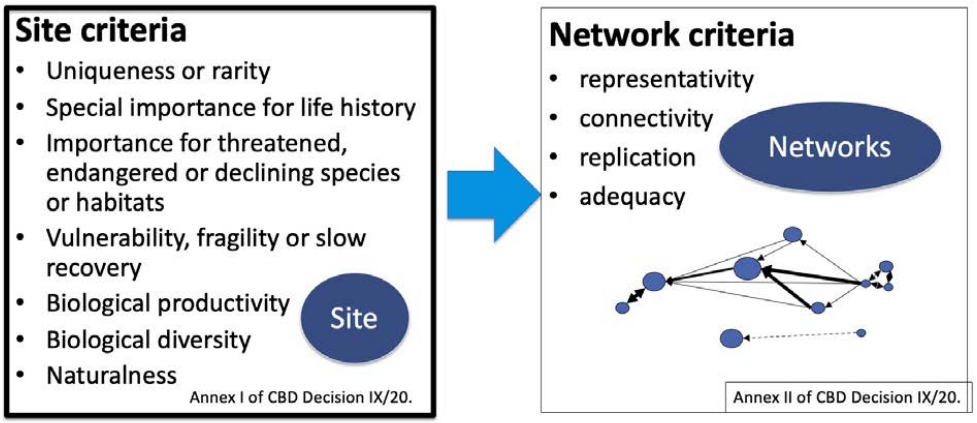
Annex II of CBD Decision IX/20.

Systematic analysis

Implementation questions

Site criteria:

- Does the site meet the criteria?
- Do we have information to substantiate this description?



Expert workshops

Systematic analysis

Network criteria:

- How much of this habitat or feat… …e need to ***represent?*** Can we represe… …newhere else?
- Will the ***connectivi…*** …een sites be maintained? Is … …tial configuration important?
- How… ***…eplicates*** do we need 25%, 30%... o… …f the current feature or population? Or … …previous area or population?

Is the current network ***adequate*** to maintain ***viable*** biodiversity, species populations and ecosystem function? Will it be adequate in the future...?

Network criteria require management objectives

CBD EBSAs vs. ISA SINP/AINP Approaches

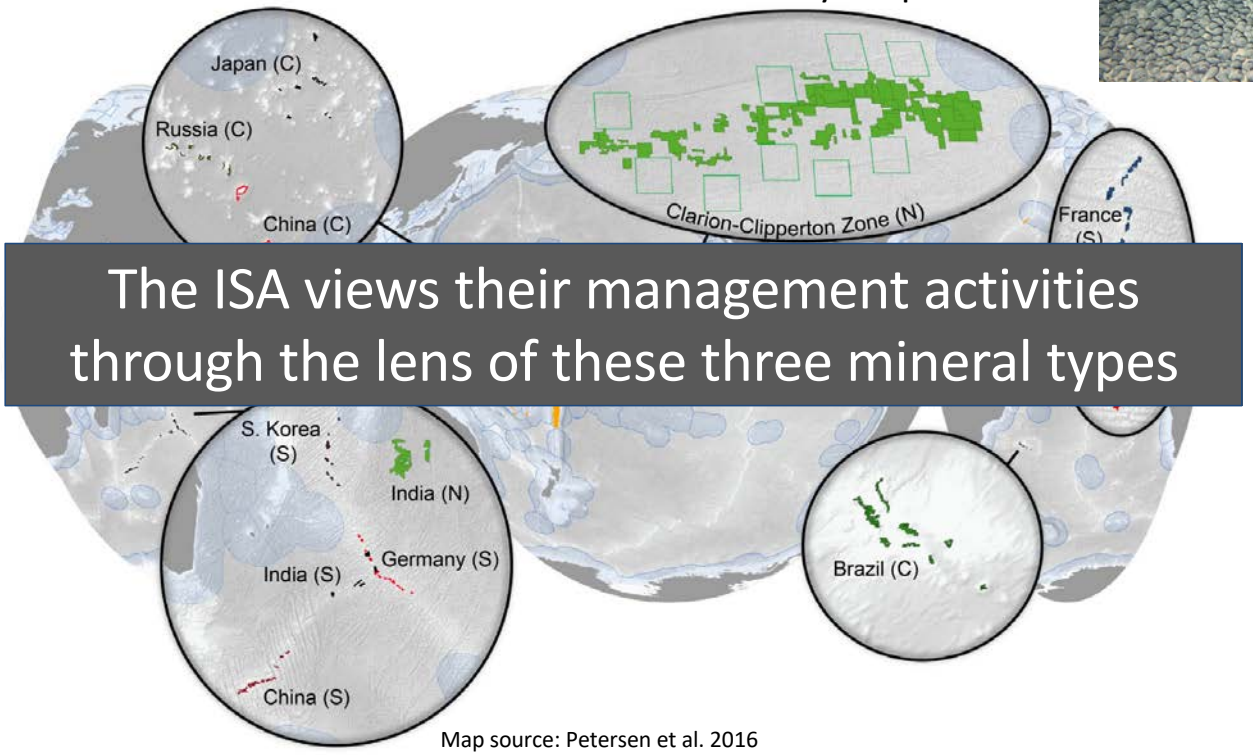
Outline:

- General contrasts between approaches
- EBSA process
- ISA processes
- Conclusions

The Area Based Management Tools (**ABMT**s) considered for REMPs will vary between regions and mineral types and may require different approaches and thresholds to ensure effective management.

Polymetallic nodules
5000-6000 m
abyssal plain

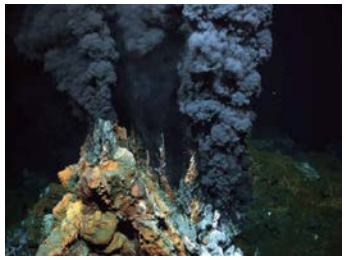
Polymetallic crusts
800-3000 m
seamounts,
guyots,
ridges, plateaus



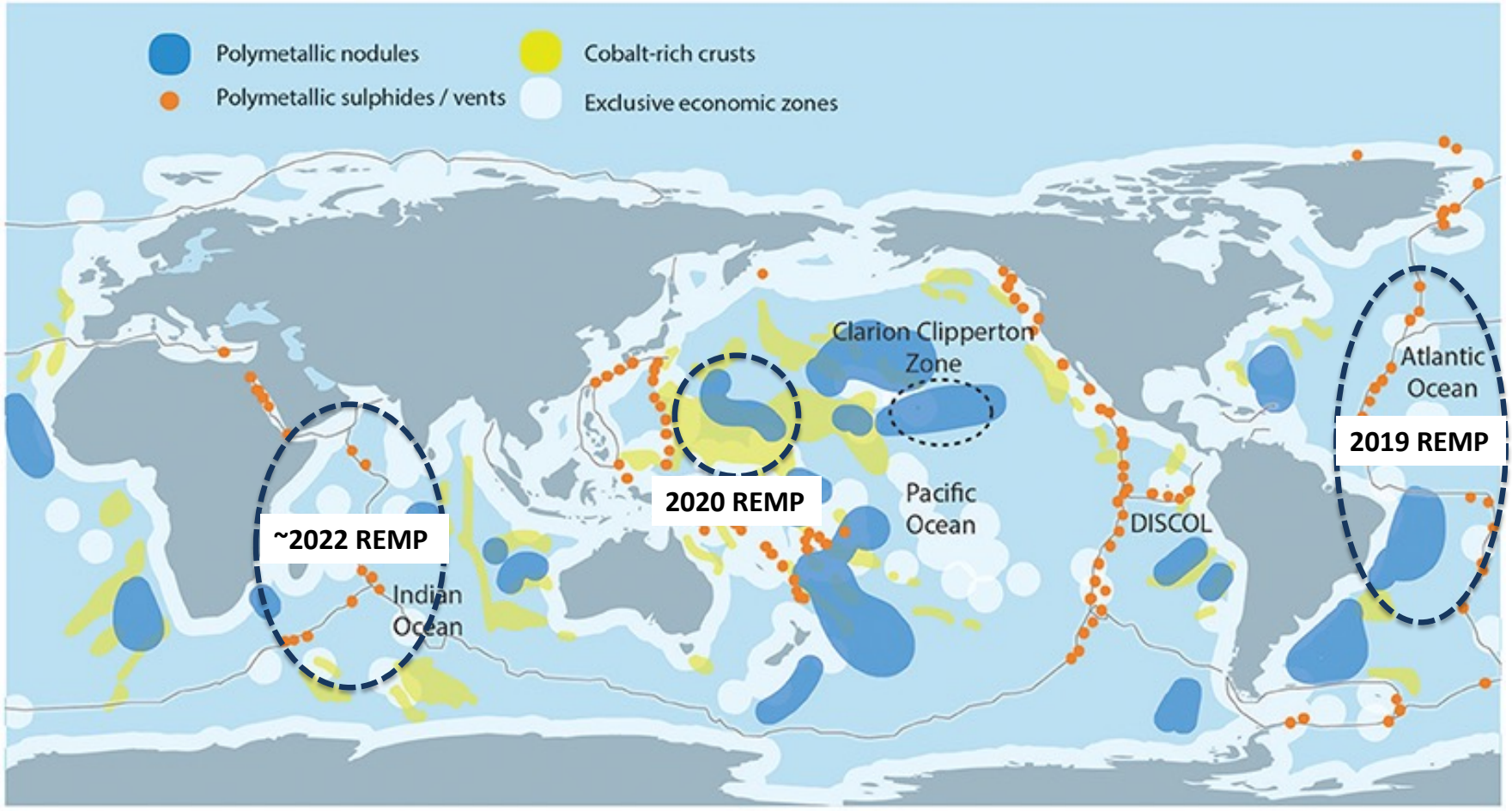
The ISA views their management activities through the lens of these three mineral types

Map source: Petersen et al. 2016

Polymetallic sulphides
1500-3500 m
mid-ocean ridges
back-arc spreading centers
island arcs

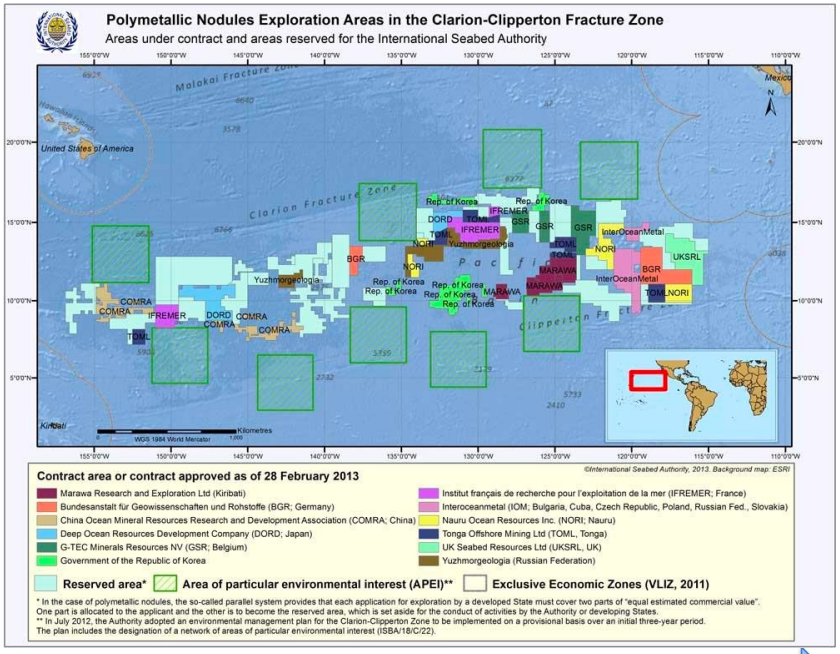


ISA REMP Regional Workshops



Background map: Miller et al. 2018

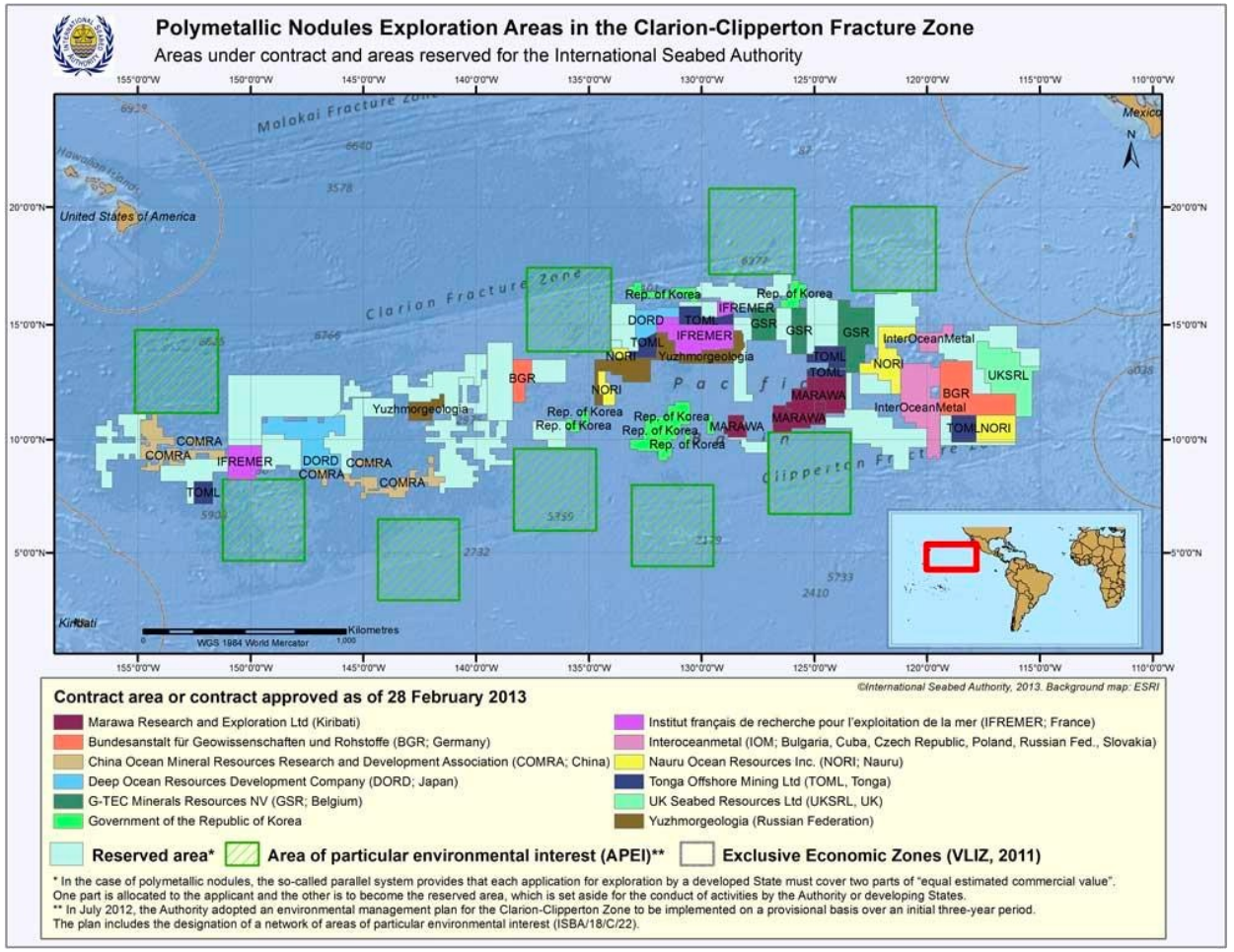
Areas of Particular Environmental Interest (APEI)



APEI Criteria	Assessment Approach
large areas	spatial analysis of ecosystem extent vs. relative areas
self-sustaining populations	metapopulation & dispersal distance connectivity analysis
broad range of habitat variability	Habitat models & representativity analysis
no direct mining effects	disturbance & recovery models
no indirect mining effects	physical models (plumes)
unknown impacts	precautionary approach

The Clarion-Clipperton CCZ-EMP example

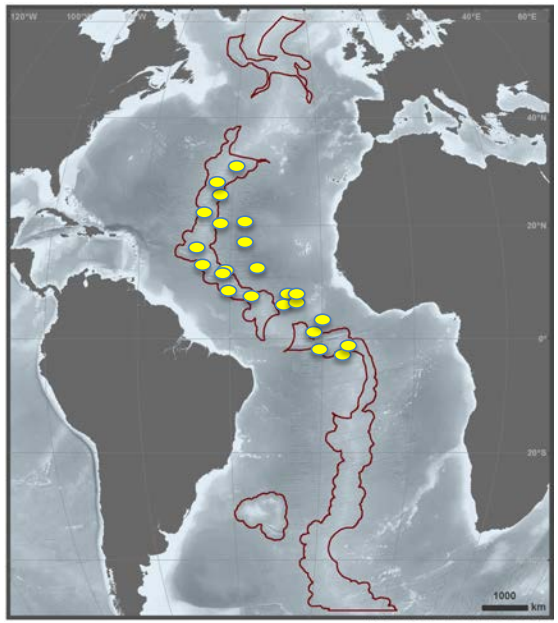
...in practice all APEIs were placed outside of contract areas



Moving from spatially coarse APEI only approaches

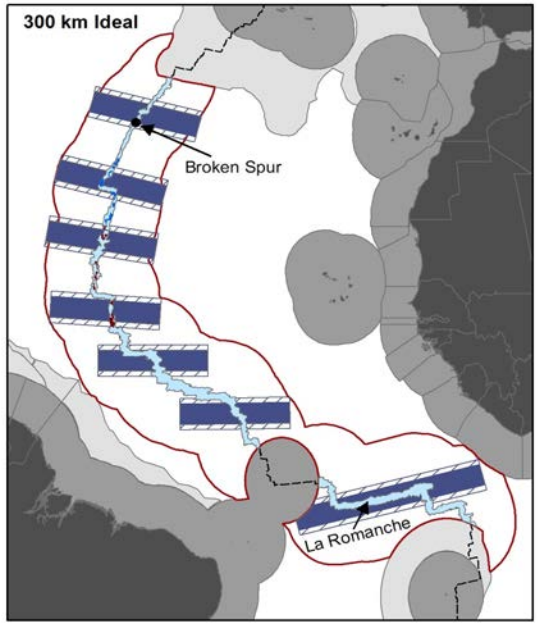
Caveat: Increased spatial precision requires increased quality and coverage of data

Specific sites can *not* be reconfigured



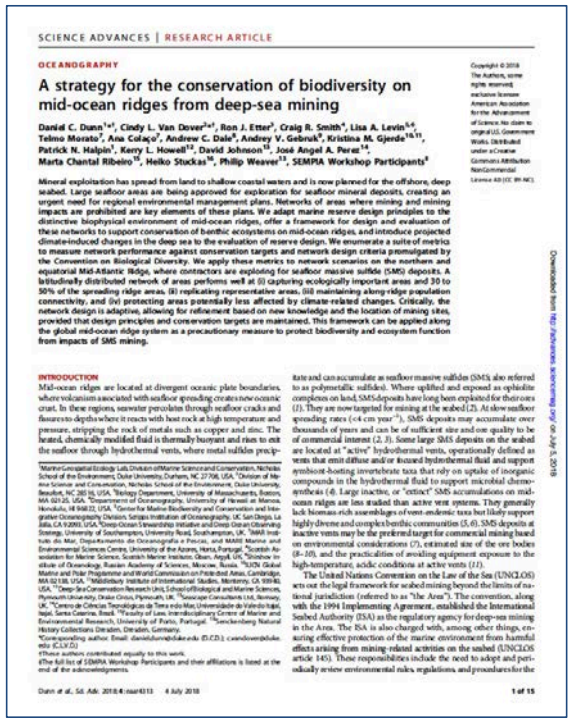
Spatially precise, site approach

Coverage based areas may be reconfigured



Spatially coarse, large APEI approach

SEMPIA



SCIENCE ADVANCES | RESEARCH ARTICLE

OCEANOGRAPHY

A strategy for the conservation of biodiversity on mid-ocean ridges from deep-sea mining

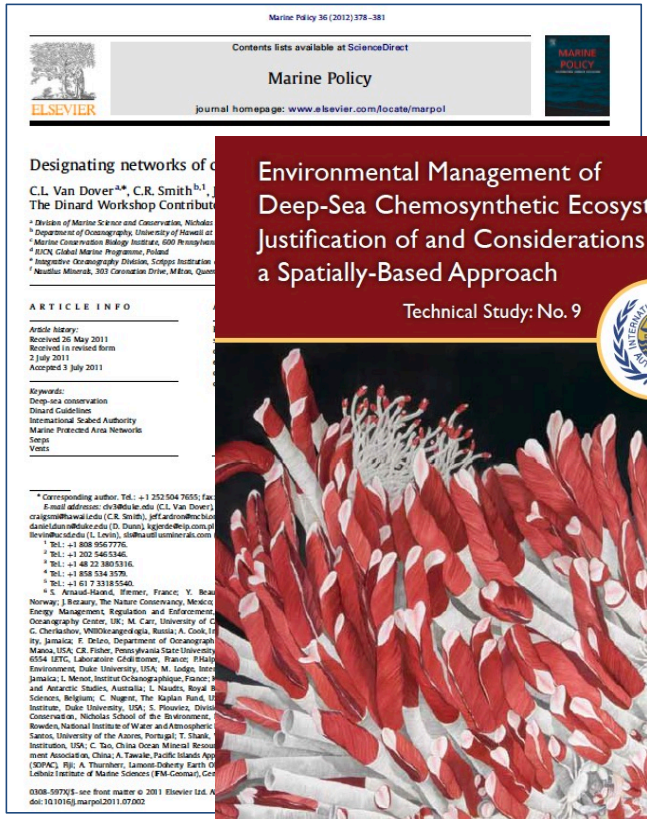
Daniel C. Dunn[1*†], Cindy L. Van Dover[2*†], Ron J. Etter[3], Craig R. Smith[4], Lisa A. Levin[5,6], Telmo Morato[7], Ana Colaço[7], Andrew C. Dale[8], Andrey V. Gebruk[9], Kristina M. Gjerde[10,11], Patrick N. Halpin[1], Kerry L. Howell[12], David Johnson[13], José Angel A. Perez[14], Marta Chantal Ribeiro[15], Heiko Stuckas[16], Phillip Weaver[17], SEMPIA Workshop Participants[‡]

Mineral exploitation has spread from land to shallow coastal waters and is now planned for the offshore, deep seabed. Large seafloor areas are being approved for exploration for seafloor mineral deposits, creating an urgent need for regional environmental management plans. Networks of areas where mining and mining impacts are prohibited are key elements of these plans. We adapt marine reserve design principles to the distinctive biophysical environment of mid-ocean ridges, offer a framework for design and evaluation of these networks to support conservation of benthic ecosystems on mid-ocean ridges, and introduce projected climate-induced changes in the deep sea to the evaluation of reserve design. We enumerate a suite of metrics to measure network performance against conservation targets and network design criteria promulgated by the Convention on Biological Diversity. We apply these metrics to network scenarios on the northern and equatorial Mid-Atlantic Ridge, where contractors are exploring for seafloor massive sulfide (SMS) deposits. A latitudinally distributed network of areas performs well at (i) capturing ecologically important areas and 10 to 50% of the spreading ridge areas, (ii) replicating representative areas, (iii) maintaining along-ridge population connectivity, and (iv) protecting areas potentially less affected by climate-related changes. Critically, the network design is adaptive, allowing for refinement based on new knowledge and the location of mining sites, provided that design principles and conservation targets are maintained. This framework can be applied along the global mid-ocean ridge system as a precautionary measure to protect biodiversity and ecosystem function from impacts of SMS mining.

Using EBSA Annex I & II criteria

Criteria references:

Dinard

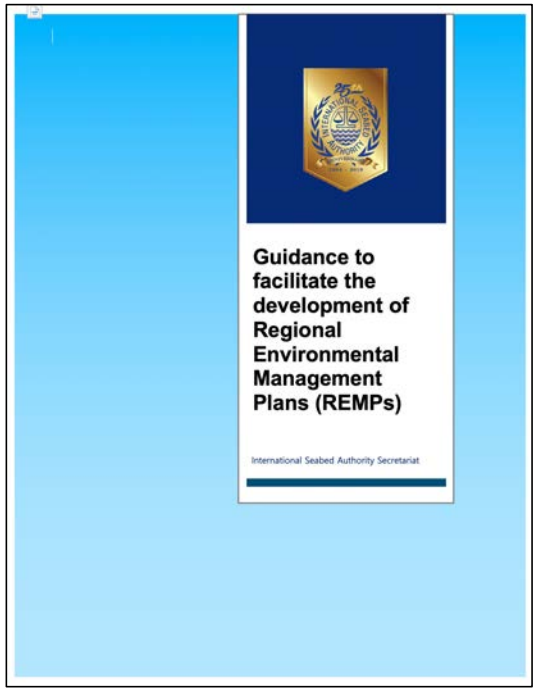


ISA Technical Study no. 9

6.6.1 A two-level approach for identifying CERs (Chemosynthetic Ecosystem Reserves)... whereby:

1) **individual sites** of extraordinary value are selected; and
2) **networks** incorporate these and other sites as required to achieve conservation management goals.

Criteria references:



2019 REMP Guidance Document further outlined

- **Fine scale sites** (“fine filter approach”) Sites in Need of Protection SINPs
- **Coarse scale areas** (“Coarse filter approach”) Areas in Need of Protection AINPs

Criteria based approaches

There is significant agreement and overlap of the general criteria used in marine spatial analysis

Organization	CBD	FAO	IMO	UNESCO	RAMSAR	**Birdlife**	**IUCN**
Site criteria	**EBSA**	**VME**	**PSSA**	**WHS**	**RAMSAR**	**IBA**	**KBA**[a]
Uniqueness or rarity	✓	✓	✓	✓	✓	✓	✓
Special importance for life history stages of species	✓	✓	✓	✓	✓	✓	✓
Importance to threatened or endangered species	✓	✓	✓	✓	✓	✓	✓
Vulnerability, fragility, sensitivity or slow recovery	✓	✓	✓	X	?	X	?
Productivity	✓	X	✓	✓	X	X	?
Biodiversity	✓	X	✓	✓	✓	X	?
Naturalness	✓	X	✓	✓	✓	X	?
Structure	X	✓	✓	X	X	X	?
Historical geomorphological importance	X	X	X	✓	X	X	X

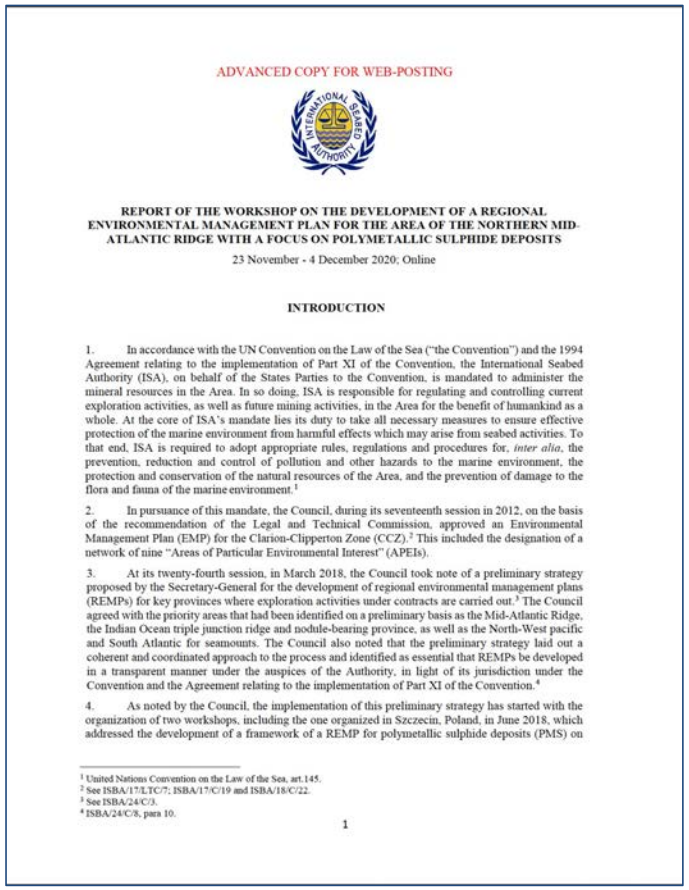
ISA SINPs/AINPs have used a combination of EBSA & VME criteria

Dunn et al. 2014

These initial criteria are targeted to identify ***individual sites***

Sites /Areas in Need of Protection criteria

Compilation of scientific information to describe sites in need of protection relating to Article145 of the Convention



ADVANCED COPY FOR WEB-POSTING

REPORT OF THE WORKSHOP ON THE DEVELOPMENT OF A REGIONAL ENVIRONMENTAL MANAGEMENT PLAN FOR THE AREA OF THE NORTHERN MID-ATLANTIC RIDGE WITH A FOCUS ON POLYMETALLIC SULPHIDE DEPOSITS

23 November - 4 December 2020; Online

INTRODUCTION

1. In accordance with the UN Convention on the Law of the Sea ("the Convention") and the 1994 Agreement relating to the implementation of Part XI of the Convention, the International Seabed Authority (ISA), on behalf of the States Parties to the Convention, is mandated to administer the mineral resources in the Area. In so doing, ISA is responsible for regulating and controlling current exploration activities, as well as future mining activities, in the Area for the benefit of humankind as a whole. At the core of ISA's mandate lies its duty to take all necessary measures to ensure effective protection of the marine environment from harmful effects which may arise from seabed activities. To that end, ISA is required to adopt appropriate rules, regulations and procedures for, *inter alia*, the prevention, reduction and control of pollution and other hazards to the marine environment, the protection and conservation of the natural resources of the Area, and the prevention of damage to the flora and fauna of the marine environment.[1]

2. In pursuance of this mandate, the Council, during its seventeenth session in 2012, on the basis of the recommendation of the Legal and Technical Commission, approved an Environmental Management Plan (EMP) for the Clarion-Clipperton Zone (CCZ).[2] This included the designation of a network of nine "Areas of Particular Environmental Interest" (APEIs).

3. At its twenty-fourth session, in March 2018, the Council took note of a preliminary strategy proposed by the Secretary-General for the development of regional environmental management plans (REMPs) for key provinces where exploration activities under contracts are carried out.[3] The Council agreed with the priority areas that had been identified on a preliminary basis as the Mid-Atlantic Ridge, the Indian Ocean triple junction ridge and nodule-bearing province, as well as the North-West pacific and South Atlantic for seamounts. The Council also noted that the preliminary strategy laid out a coherent and coordinated approach to the process and identified as essential that REMPs be developed in a transparent manner under the auspices of the Authority, in light of its jurisdiction under the Convention and the Agreement relating to the implementation of Part XI of the Convention.[4]

4. As noted by the Council, the implementation of this preliminary strategy has started with the organization of two workshops, including the one organized in Szczecin, Poland, in June 2018, which addressed the development of a framework of a REMP for polymetallic sulphide deposits (PMS) on

[1] United Nations Convention on the Law of the Sea, art.145.
[2] See ISBA/17/LTC/7; ISBA/17/C/19 and ISBA/18/C/22.
[3] See ISBA/24/C/3.
[4] ISBA/24/C/8, para 10.

1

Sites in need of protection (SINPs) are fine-scale sites, where there is observation or evidence of vulnerable or sensitive species/ecosystems. They are described on an individual basis, using, within the context of ISA[11], the Food and Agriculture Organization's criteria for vulnerable marine ecosystems (**VMEs**).

Areas in need of protection (AINPs) are large-scale areas of ecological importance due to their uniqueness and/or biodiversity. At the Evora workshop, candidate areas were described using, in the context of ISA, the scientific criteria of the CBD for Ecologically or Biologically Significant Marine Areas (**EBSA**s).

Table 1. Comparison of approaches for applying area-based management tools

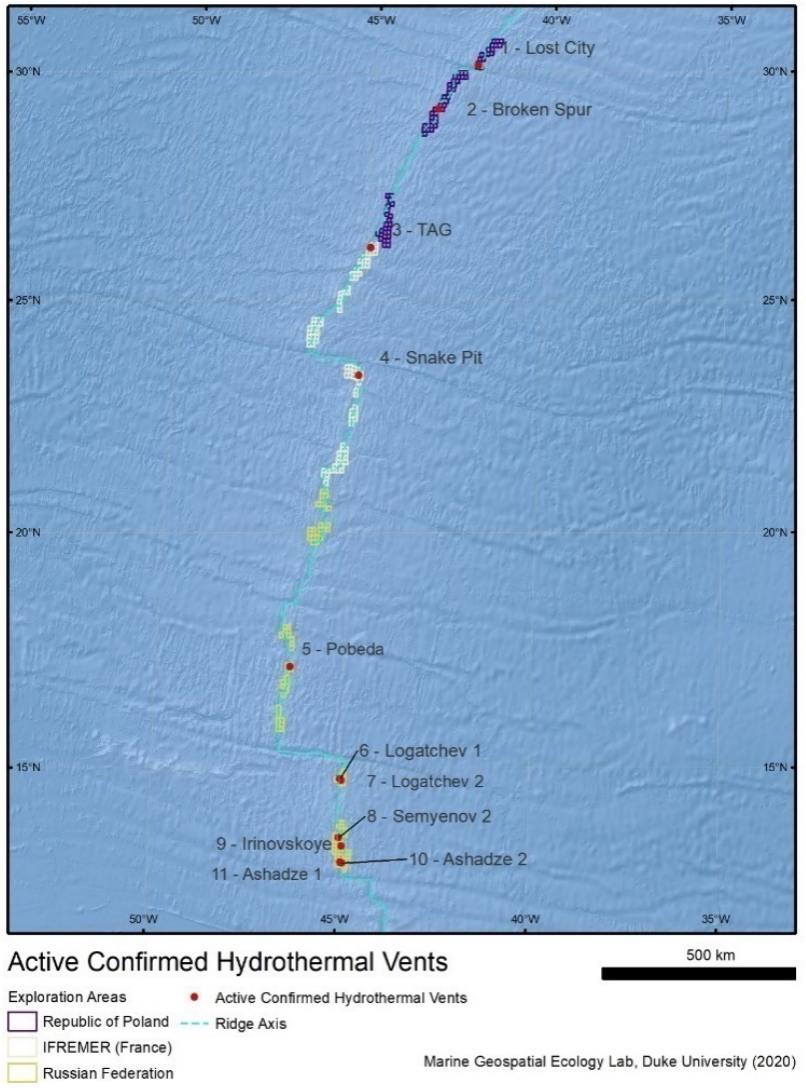
Approaches for ABMT	Spatial Precision	Potential management
Site in need of protection to maintain ecological balance of the marine environment from harmful effects of mining activities	fine scale sites	avoidance, enhanced management or closure
Areas of Particular Environmental Interest	coarse scale areas	Avoidance, enhanced management or closure
Areas/sites of increased precaution	defined areas	Elevated precaution, increased data collection or monitoring

Pg. 79 MAR REMP final report

Sites in need of protection

11 confirmed (known) active hydrothermal vent sites were described at the workshop as meeting the criteria of sites in need of protection

Each site is documented by a separate template in the Appendix 1.1 of the nMAR REMP final report.



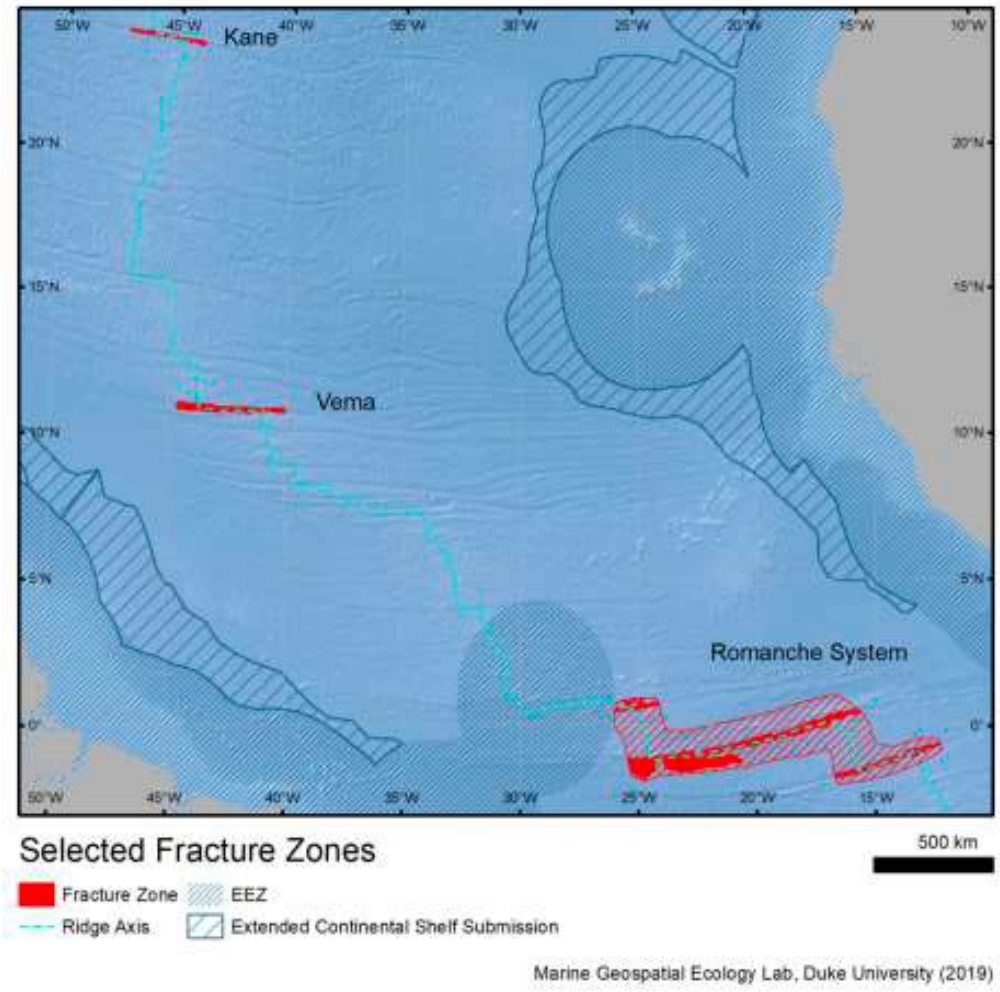
Areas of Coarse-scale Planning

(*e.g.* Areas of Particular Environmental Interest)
relating to Art.145 of the Convention

2 selected fracture zones and 1 fracture zone system were described at the workshop as meeting the APEI criteria.

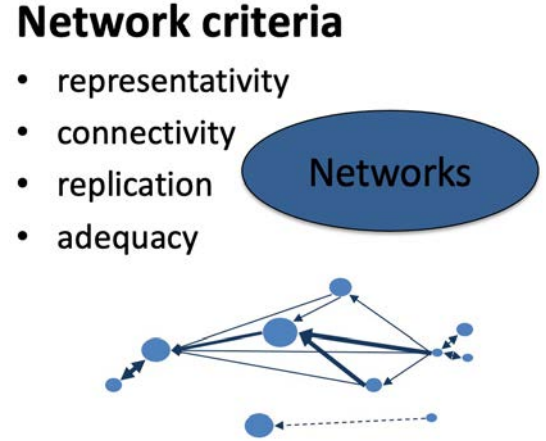
Fracture Zones: Scientific information is compiled in Appendix 2.

1. Kane Fracture Zone
2. Vema Fracture Zone
3. Romanche Fracture Zone System



Continuing REMP planning ABMT needs

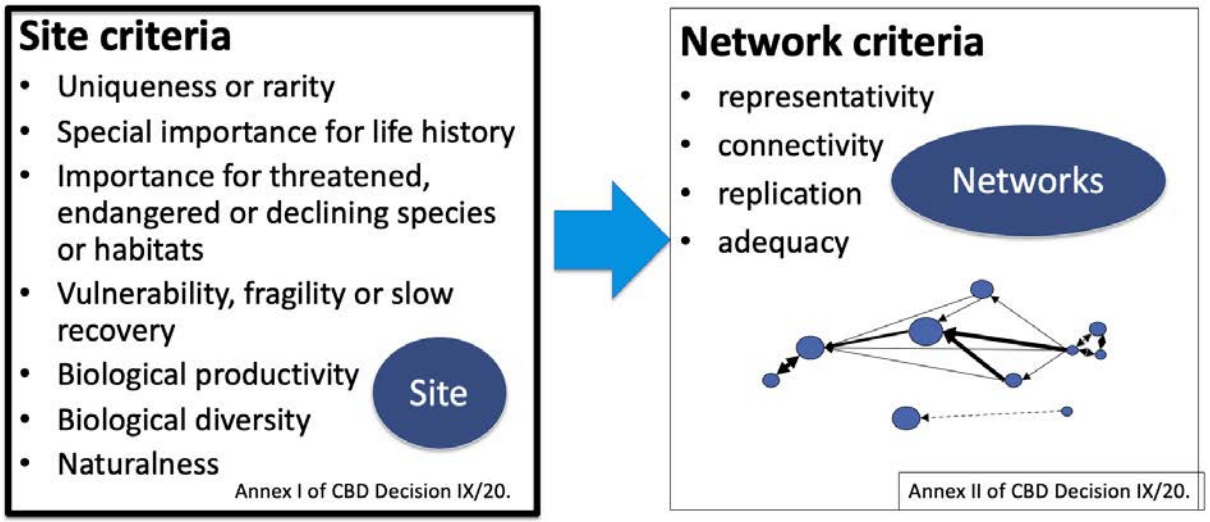
"...The workshop discussed but **did not attempt to apply broader scale network or regional criteria** (*i.e.* representativity, connectivity, replication or adequacy) in our current work. It is the consensus of this workshop that these **network criteria** for the region as a whole, as outlined in the ISA REMP guidance document (2019), **be applied in the future for this region** and be incorporated into future REMP updates." pg 79 nMAR REMP final report



Convention on Biological Diversity

INTERNATIONAL SEABED AUTHORITY

Both ISA & CBD need to move from Site to Network scale approaches

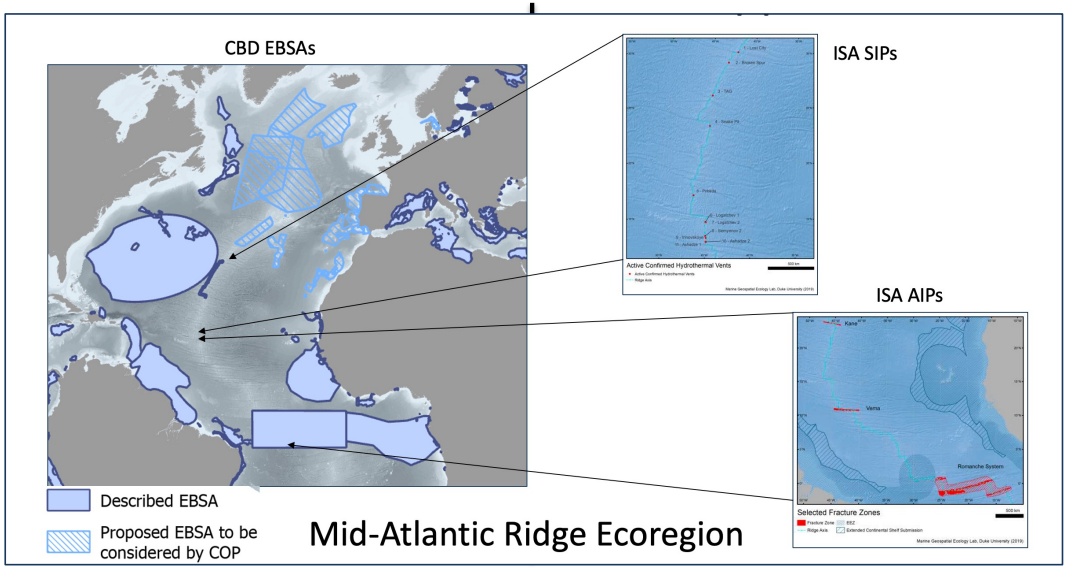


Expert workshops

Systematic analysis

Convention on Biological Diversity

INTERNATIONAL SEABED AUTHORITY



CBD does not have the mandate to move ahead with Annex II & III to implement network analysis criteria

ISA does not have the *de facto* scope to move ahead to implement network analysis criteria across broad ecosystems and regions

CBD EBSAs vs. ISA SINP/AINP Approaches

- There are significant overlaps between the responsibilities of the CBD and ISA.
- The ISA is using a modified CBD-EBSA approach, but does not overtly recognize the CBDs description of EBSAs in “the Area”
- Both CBD and ISA approaches represent scientific expert (criteria based) ABMT processes with important differences in:
    - Purpose and management mandate
    - Implementation
    - Interpretation of results
    - Completeness

- **Opportunity & Necessity:** both the CBD and ISA have yet to implement network level criteria (representativity, connectivity, replication, adequacy) in their activities. ***The BBNJ could/should be used to establish the working polycentric systems framework and authority to implement these necessary ocean wide and cross-sectoral activities***

INTERNATIONAL SEABED AUTHORITY

Food and Agriculture Organization of the United Nations and RFMOs

The BBNJ Negotiations

Convention on Biological Diversity

IMO International Maritime Organization

BBNJ should focus on where each of these overlapping ocean institutions reach the limits of their authority, scope and competencies in the development of a **global network of ABMTs**

Developing necessary new capacities and new cooperation is not undermining...

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Thank you.