

# Responsibility for conserving marine biodiversity in ABNJ: case study on CBD EBSAs, ISA and the BBNJ Agreement



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# Return to the Lost City

Deep-Sea Oceanographic Expedition to the Lost City Hydrothermal Field, September 2018

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## Overview

- I. Case study on the Lost City
- II. Relevant UNCLOS and ISA provisions
- III. Relevance of BBNJ Agreement
- IV. Next steps



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2018 Expedition

# Why is the Lost City special?

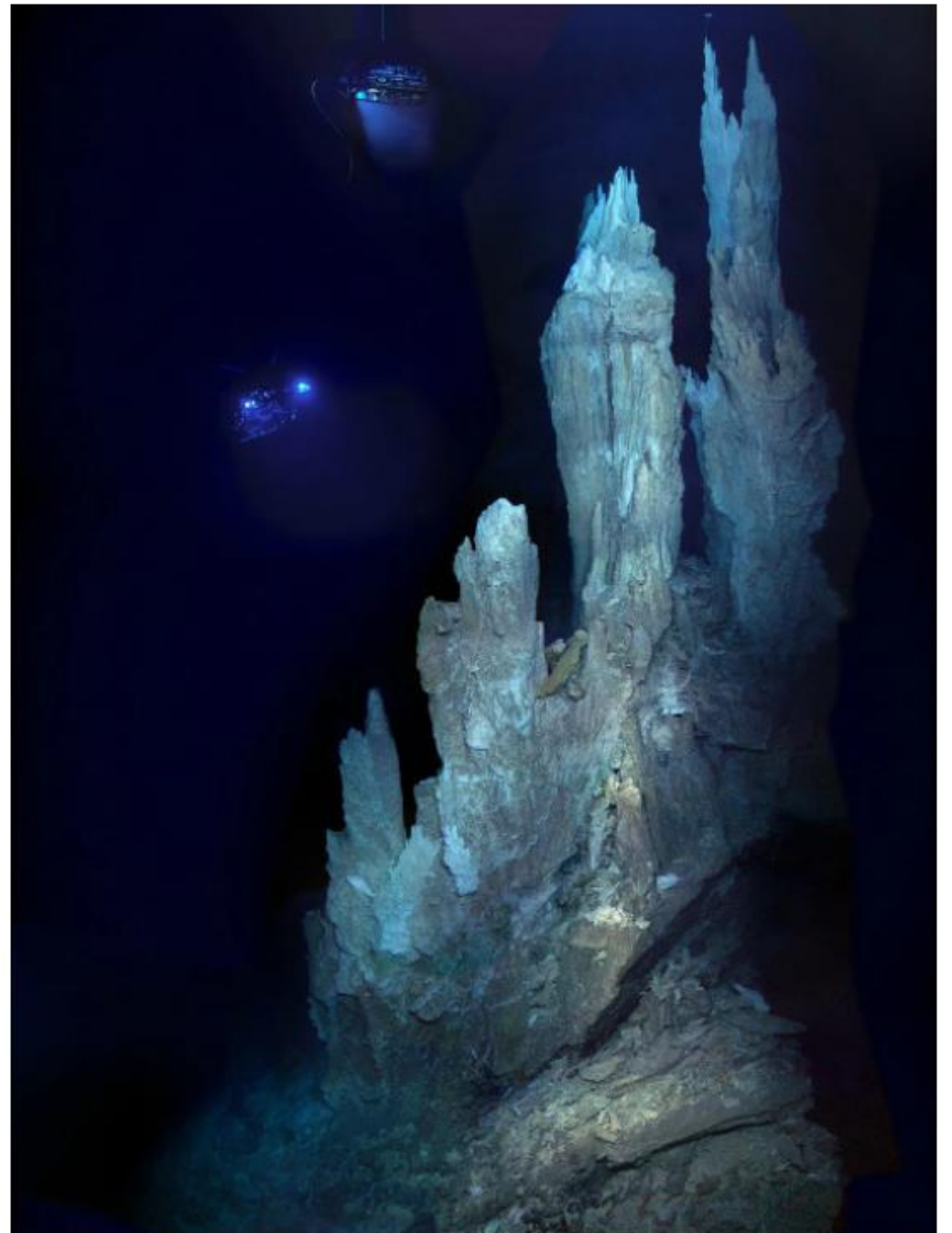
100s of white spires made of calcium carbonate 30 to 60 meters tall

Featured in many studies on the origin of life and the search for life in the solar system

Rocks' chemical reactions represent possible fuels for life

Unique, and also representative of a globally important process

<https://www.smithsonianmag.com/science-nature/diving-deep-reveal-microbial-mysteries-lost-city-180970234/>



Carbonate chimneys of Lost City imaged during a 2005 expedition to the hydrothermal vent system. D. Kelley/M. Elend/UW/URI-IAO/NOAA/The Lost City Science Team



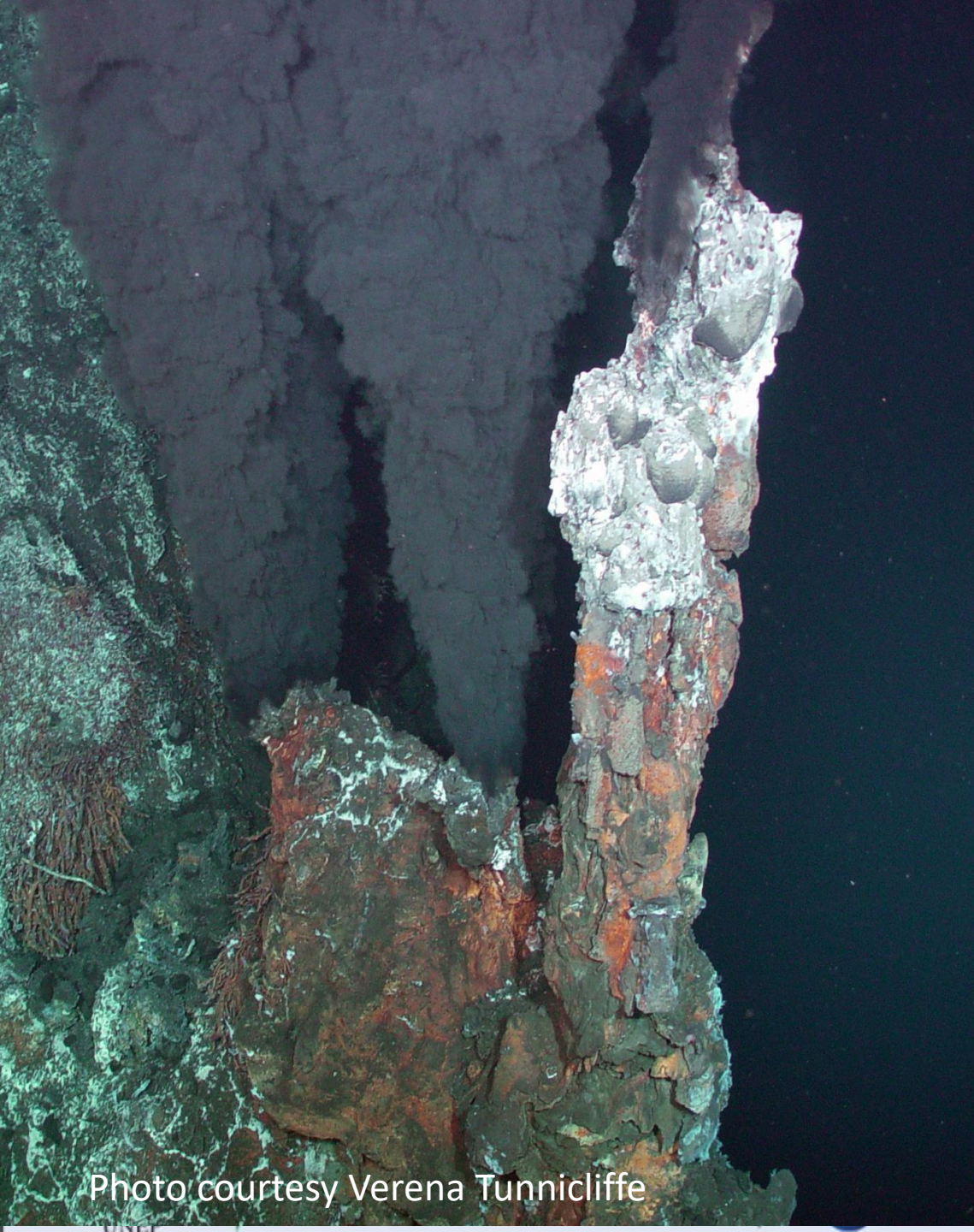


Photo courtesy Verena Tunnicliffe

CBD scientific criteria for ecologically or biologically significant areas (EBSAs) (annex I, decision IX/20) (2008)

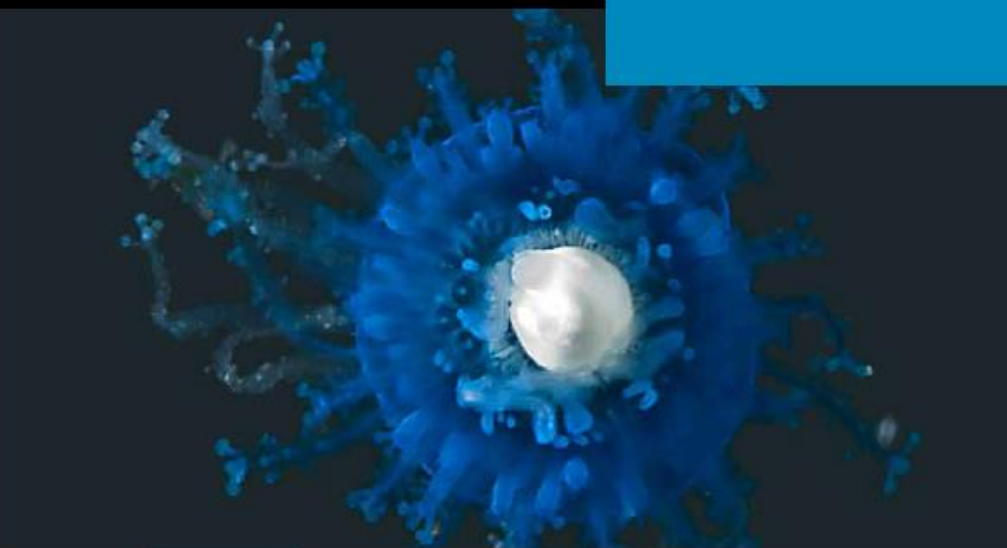
## 2014 REPORT OF THE NORTH-WEST ATLANTIC REGIONAL WORKSHOP Area No. 7: Hydrothermal Vent Fields

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- ✓ Uniqueness or Rarity
- ✓ Special importance for life history stages of species
- Importance for threatened, endangered or declining species and/or habitats (unknown)
- ✓ Vulnerability, Fragility, Sensitivity, or Slow recovery
- ✓ Biological Productivity
- ✓ Biological Diversity
- ✓ Naturalness

<https://www.cbd.int/doc/meetings/mar/ebsaws-2014-02/official/ebsaws-2014-02-04-en.pdf> p. 107





## World Heritage in the High Seas: An Idea Whose Time Has Come

Freestone, D., Laffoley, D., Douvère, F., & Badman, T. (2016).

## Hydrothermal Field

### 3. Potential Outstanding Universal Value

#### 3.1. Potential Justification of World Heritage Criteria

##### CRITERION VII – SUPERLATIVE NATURAL PHENOMENA OR NATURAL BEAUTY AND AESTHETIC IMPORTANCE

The Lost City Hydrothermal Field is globally singular among all known hydrothermal sites in the eerily lovely sculpture of its carbonate precipitates, their size and longevity (120,000 years).

##### CRITERION VIII – MAJOR STAGES IN EARTH'S HISTORY AND GEOLOGICAL PROCESSES

The Lost City Hydrothermal Field presents a unique example of fluid chemistry, of lower-temperature (<150 °C) weathering of ultramafic (upper mantle) rock (peridotite) exposed to seawater into serpentinite (a process called 'serpentinization'), and associated microbial and invertebrate communities. Discoveries made at this site have fundamentally expanded our understanding of the diversity of hydrothermal processes on Earth and potentially in extra-terrestrial oceans.

##### CRITERION IX – SIGNIFICANT ECOLOGICAL AND BIOLOGICAL PROCESSES IN THE EVOLUTION OF ECOSYSTEMS, COMMUNITIES OF PLANT AND ANIMALS

The Lost City Hydrothermal Field is postulated as a contemporary analogue for conditions where life on early Earth may have originated and for conditions that might support life within oceans of extra-terrestrial planetary bodies.

##### CRITERION X – SIGNIFICANT BIOLOGICAL DIVERSITY AND THREATENED SPECIES OF OUV

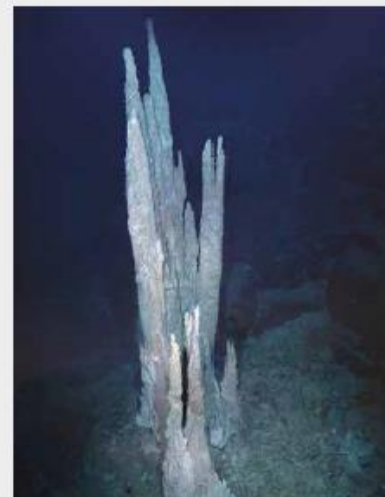
Many of the taxa of the Lost City Hydrothermal Field – microbial and invertebrate – are so far known only from this site and represent 'living libraries', with biochemical and physiological adaptations to their extreme environment yet to be understood.

#### 3.2. Geographic scale and site integrity

The Lost City Hydrothermal Field extends for at least 400 metres across the terrace on top of the Atlantis Massif in the northeast Atlantic. A 20-km wide buffer zone around the Lost City Hydrothermal Field would safeguard the integrity of this site.

#### 3.3. Protection and management

No management system is currently in place for this site. The site would qualify as a Vulnerable Marine Ecosystem (VME) under the criteria of the Food and Agriculture Organization of the United Nations (FAO) and be subject to management by a Regional Marine Fisheries Organization (RMFO).



Photomosaic of a 13 m-tall carbonate chimney called Ryan. Long term seepage of fluids from steep cliffs bounding the eastern side of the Lost City Hydrothermal Field has resulted in beautiful arrays of narrow pinnacles that reach many tens of meters in height.  
© D.S. Kelley and M. Elend, School of Oceanography, University of Washington.



The three-story-tall actively venting carbonate tower called IMAX protrudes from the north face of a much larger edifice called Poseidon in the Lost City Hydrothermal Field. Poseidon rises ~60 m above the surrounding seafloor. The area has been active for >120,000 years.  
© D.S. Kelley and M. Elend, School of Oceanography, University of Washington.



Space shot to our own planet: ROV Hercules approaches a ghostly, white, carbonate spire in the Lost City Hydrothermal Field, about 760 metre below the surface of the Atlantic Ocean.  
Image courtesy of IFE, URI-IAQ, UW, Lost City science party, and NOAA.

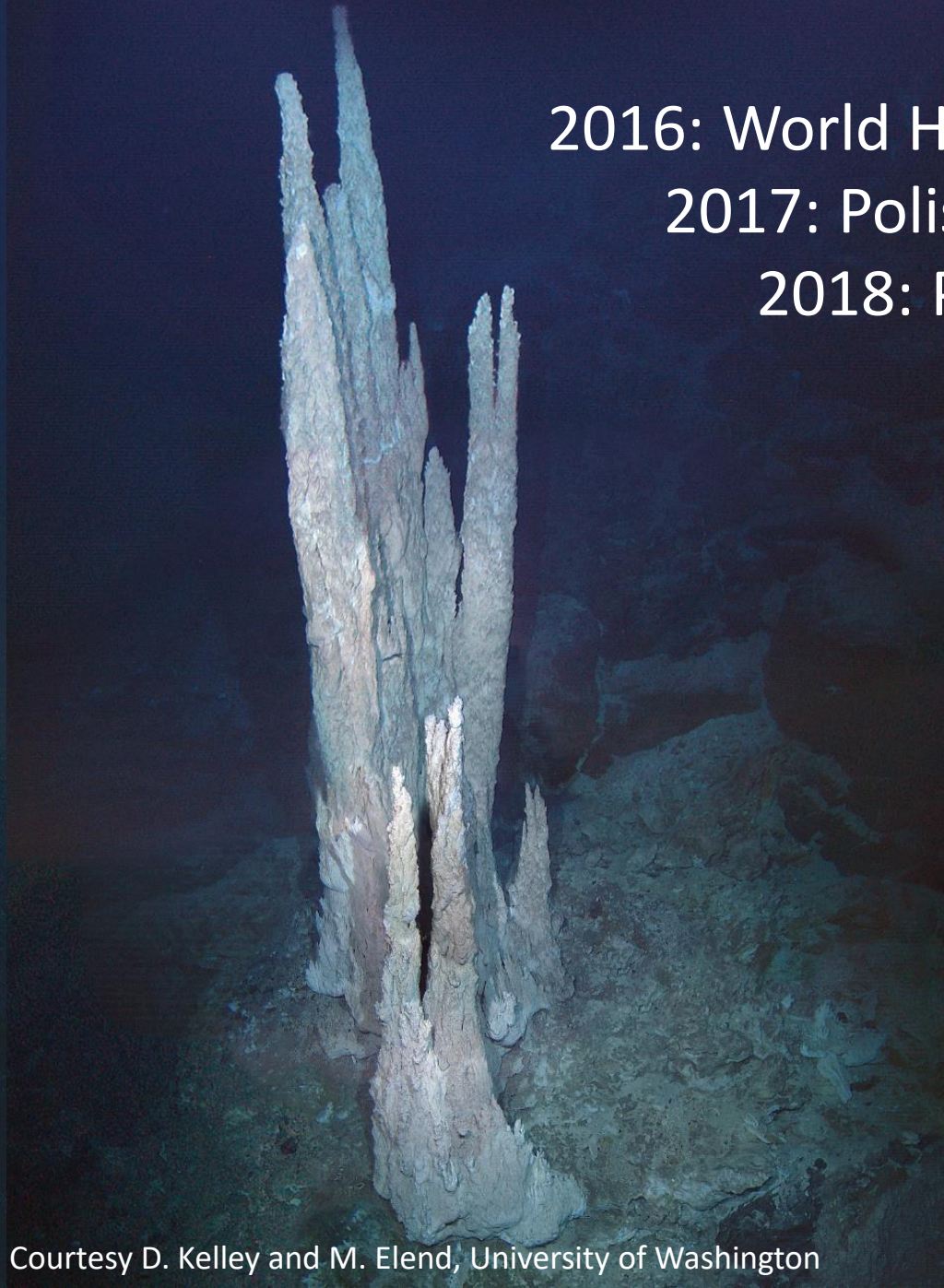


Deep-sea jelly fish, possibly *Poralla rufescens*, undulating several meters above the seafloor just south of the IMAX vent at Lost City.  
Image courtesy of IFE, URI-IAQ, UW, Lost City science party, and NOAA.

# Potential Outstanding Universal Value (OUV), p. 34

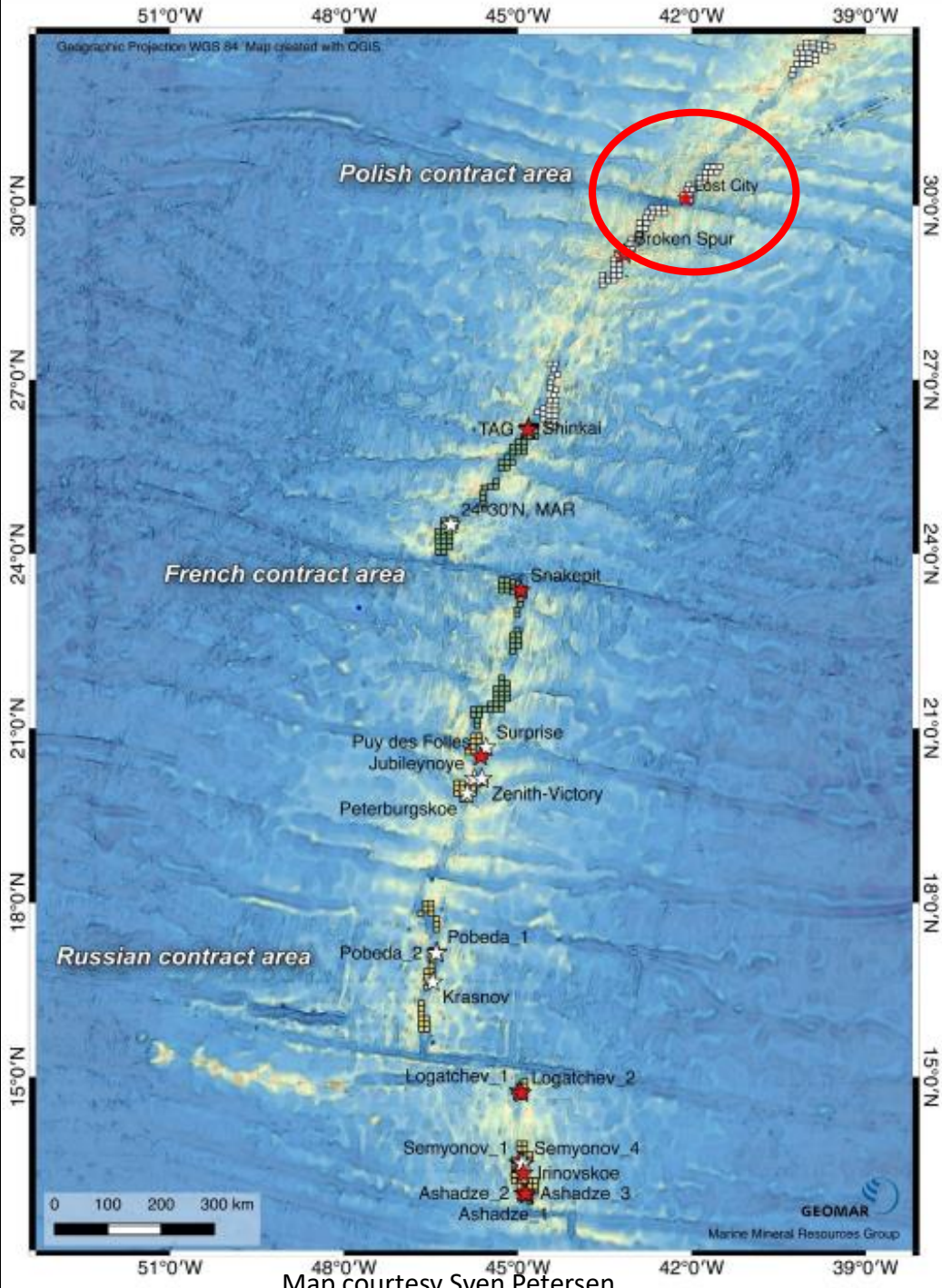
- CRITERION VII – SUPERLATIVE NATURAL PHENOMENA OR NATURAL BEAUTY AND AESTHETIC IMPORTANCE
- CRITERION VIII – MAJOR STAGES IN EARTH'S HISTORY AND GEOLOGICAL PROCESSES
- CRITERION IX – SIGNIFICANT ECOLOGICAL AND BIOLOGICAL PROCESSES IN THE EVOLUTION OF ECOSYSTEMS, COMMUNITIES OF PLANT AND ANIMALS
- CRITERION X – SIGNIFICANT BIOLOGICAL DIVERSITY AND THREATENED SPECIES OF OUV





Courtesy D. Kelley and M. Elend, University of Washington

2014: EBSA  
2016: World Heritage Report  
2017: Polish Application  
2018: Polish Contract





8 November 2017

RE: Comment on exploration contracts for deep-sea hydrothermal vents

Secretary General  
International Seabed Authority

Dear Mr. Lodge,

We, the undersigned representatives of diverse scientific societies from around the globe, are writing to express our concern over the proposed exploration contract for massive sulfide mineral deposits (specifically, application ISBA/23/LTC/3). This contract would allow exploration of Lost City, TAG, and Broken Spur hydrothermal vents and their surrounding deposits that have been the focus of decades-long, high-priority, international research. A Discovery Program research expedition occurred at TAG in 2001 and a second expedition occurred at this site in less than a year to study the highly unusual hydrothermal systems, which serve as archetypes for similar areas. These areas have been identified by several intergovernmental organizations, including the International Geosphere and Biosphere Programme of Biological Diversity and the World Heritage Centre for Conservation of Nature – as places with outstanding scientific significance that should be conserved. *We are therefore writing to request that you advise the ISA Council and Technical Commission, to explore these areas in light of the scientific significance of these areas.*

We strongly encourage ISA to consider the input of relevant scientific societies when evaluating future exploration contracts. Moreover, we also request that such input be a required part of all contract requests. These unique hydrothermal vent ecosystems, to nearby exploration, let alone seabed mining, is essential to protect these precious ecosystems from being damaged or destroyed. We would like to discuss this matter with you further.

Sincerely,

Dr. Beth N. Orcutt, Ph.D.

• “This exploration area includes the Lost City, TAG, and Broken Spur hydrothermal vents and their surrounding deposits that have been the focus of decades-long, high-priority, international research.”

• “...These unique hydrothermal vent sites are irreplaceable, and their vulnerability to nearby exploration, let alone seabed mining, is entirely unknown. Precaution is needed to protect these precious ecosystems from being damaged forever.”

University of Bremen, Germany  
University of Bergen, Norway  
University of Miami, USA  
Professor, University of Utah, USA  
Institute de Physique du Globe de Paris, France  
Bigelow Laboratory for Ocean Sciences, USA  
Institute de Physique du Globe de Paris, France  
University of Rhode Island, USA  
University of Bergen, Norway  
Researcher, University of Oslo, Norway  
Bigelow Laboratory for Ocean Sciences, USA  
University of California Santa Cruz, USA  
Professor of Biology, Penn State University, USA  
ETH Zurich, Switzerland  
University, USA  
University of Hawai'i, USA  
University of Bergen, Norway  
University of Plymouth, UK  
University of Hawai'i, USA  
Woods Hole Oceanographic Institution, USA  
University of Wyoming, USA  
University of Bergen, Norway  
University of Bergen, Norway  
Professor, University of Georgia, USA  
University of South Carolina, USA  
University of Washington, USA  
Sciences, China  
University of Tennessee Knoxville, USA  
University, UK  
Institute de Physique du Globe de Paris, France  
University of Bergen, Norway  
University, UK  
ISTEC, Japan  
Utah, USA  
USA  
University of Hawai'i at Manoa, USA  
Jaya Wellasa University, Sri Lanka  
Professor, Texas A&M University, Corpus Christi, USA  
University of Bergen, Norway  
Researcher, University of Bergen, Norway  
Researcher, ETZ Zürich, Switzerland  
Geologist, Bigelow Laboratory for Ocean Sciences, USA  
University of North Carolina, USA  
Professor, University of Utah, USA  
University of Bremen, Germany  
University of British Columbia, Canada  
University of Alaska Fairbanks, USA  
University, Australia  
University, Norway





# ISA procedures: No place for consultation or consideration of non-use values

## Regulation 21: Consideration by the Legal and Technical Commission

- 4. The **Commission shall**, in accordance with the requirements set forth in these Regulations and its procedures, **determine whether the proposed plan of work for exploration** will:
  - (a) Provide for effective protection of human health and safety;
  - (b) Provide for effective protection and preservation of the marine environment including, but not restricted to, the impact on biodiversity;
  - (c) Ensure that installations are not established where interference may be caused to the use of recognized sea lanes essential to international navigation or in areas of intense fishing activity.



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- 1) Update Exploration Regs
- 2) Ensure consultation
- 3) Respect non-use

Mr Michael Lodge  
Secretary General  
Members of the Legal and Technical

Accordingly, IUCN respectfully requests that the current Regulations for Prospecting and Exploration be amended and any future exploitation regulations be drafted to ensure effective consultation and consideration of mechanisms to protect areas meeting the criteria for EBSAs, vulnerable marine ecosystems, potential World Heritage sites as well as sites of long-term scientific interest.

12 March 2018

**Subject: Concern over process for granting of exploration contracts without process for consideration of environmental or scientific values**





# INTERNATIONAL SEABED AUTHORITY

THE SECRETARY-GENERAL

23 April 2018

Dear Ms Andersen,

## Updating requires amendment of UNCLOS?

More fundamentally, your letter calls for 'updating' of the processes for review and approval of applications of plans of work for exploration. Given that, as described above, the current processes for review and approval of such applications are prescribed in law, any such 'updating' would presumably require amendments to be made to UNCLOS, the 1994 Agreement and the Regulations of the Authority, in accordance with the processes and decision-making procedures set out in those instruments. Any amendments to the Regulations, for example, would need to be adopted by the Council and the Assembly of the Authority (UNCLOS, art.162(o)(ii)).

# Concerns won't go away soon!



Ecologically or Biologically Significant Marine Areas  
*Special places in the world's oceans*



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## View Areas Meeting the EBSA Criteria

All Regions

Arctic

Baltic Sea

Black and Caspian Seas

East Asian Seas

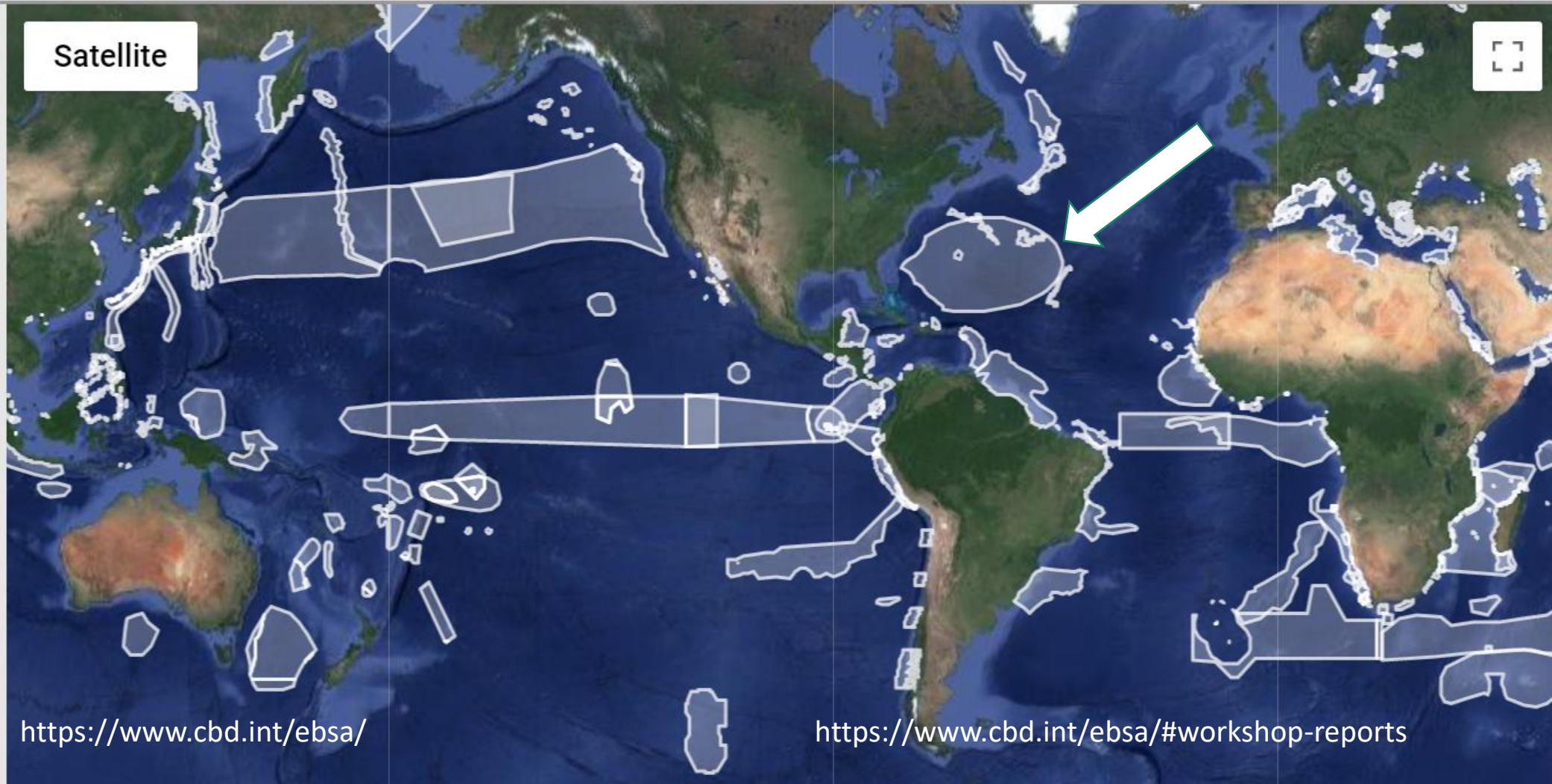
Eastern Tropical and Temperate Pacific

Mediterranean

North Pacific

North-East Indian Ocean

North-west Atlantic



<https://www.cbd.int/ebsa/>

<https://www.cbd.int/ebsa/#workshop-reports>



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2018 Expedition

UNCLOS Art. 145: Necessary measures shall be taken ....to ensure effective protection for the marine environment from harmful effects...



Photo courtesy Verena Tunnicliffe



# UNCLOS Art. 145: Necessary measures shall be taken ....to ensure effective protection for the marine environment from harmful effects...

To this end the Authority shall adopt appropriate rules, regulations and procedures for inter alia:

(a) The prevention, reduction and control of pollution and other **hazards to the marine environment**, including the coastline, and of interference with the ecological balance of the marine environment,

particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities;

(b) 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**.

# ISA Exploration Regulations (2010)

## The Legal and Technical Commission

“shall develop and **implement procedures for determining**, on the basis of the best available **scientific and technical information** [. . .] whether proposed exploration activities in the Area would have

**serious harmful effects on vulnerable marine ecosystems** and ensure that, if it is determined that certain proposed exploration activities would have serious harmful effects on vulnerable marine ecosystems,

those activities are **managed to prevent such effects or not authorized to proceed**.

Nodules Exploration Regulations, Reg. 31(4) (2010)

Hydrothermal vents (Reg. 33(4), ISBA/16/A/12/Rev.1)

Seamounts and cold water corals (Reg. 33(4), ISBA/18/A/11)

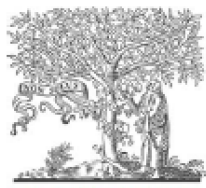


# Under Exploration Regulations, “serious harmful effects” defined as:



© Lily Simonson

“any effect ... which represents a **significant adverse change** in the marine environment determined according to the rules, regulations and procedures adopted by the Authority **on the basis of internationally recognized standards and practices**”



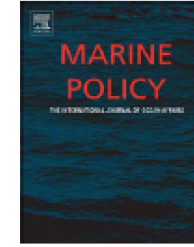
ELSEVIER

Contents lists available at ScienceDirect

Marine Policy

2016

journal homepage: [www.elsevier.com/locate/marpol](http://www.elsevier.com/locate/marpol)



Defining “serious harm” to the marine environment in the context of deep-seabed mining



Lisa A. Levin<sup>a,\*</sup>, Kathryn Mengerink<sup>b</sup>, Kristina M. Gjerde<sup>c</sup>, Ashley A. Rowden<sup>d</sup>,  
Cindy Lee Van Dover<sup>e</sup>, Malcolm R. Clark<sup>d</sup>, Eva Ramirez-Llodra<sup>f</sup>, Bronwen Currie<sup>g</sup>,  
Craig R. Smith<sup>h</sup>, Kirk N. Sato<sup>i</sup>, Natalya Gallo<sup>i</sup>, Andrew K. Sweetman<sup>j</sup>, Hannah Lily<sup>k</sup>,  
Claire W. Armstrong<sup>l</sup>, Joseph Bridger<sup>m</sup>

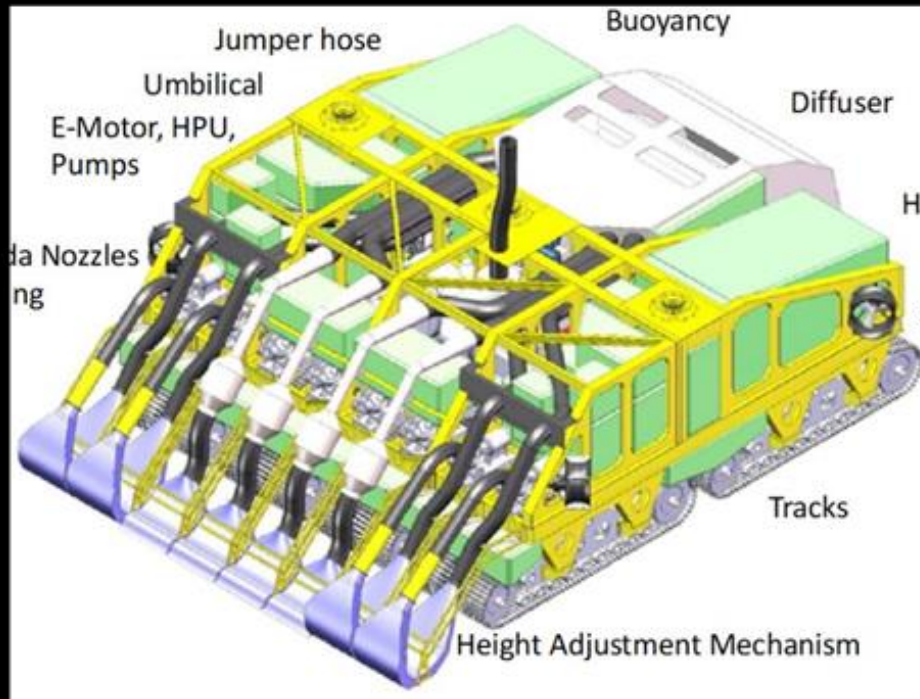
- Extent
- Duration/frequency
- Intensity or magnitude



- Probability
- Sensitivity/vulnerability
- Cumulative effects



# ISA: provisions for EIAs: exploration and ...



- 2021: NORI EIA: “no legal obligation to [consult] and a preferred process is not prescribed.”

- Standards and Guidelines on EIA:
  - 1) no stakeholder mapping or consultation required
  - 2) LTC: no power for substantive review
  - 3) Council: no opportunity to respond

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2018 Expedition



# Proactively establish system of well-connected effectively protected MPAs and other ABMTs



# Harmonize EIA and SEA practices

Ensure

- inclusive
- cross-sectoral
- informed





# Make key principles operational

e.g. UN Fish Stocks Agreement Article 6: Precautionary Approach

**1. States shall apply the precautionary approach widely ... in order to protect the living marine resources and preserve the marine environment.**

**2. States shall be more cautious when information is uncertain, unreliable or inadequate.**





But major issue: current system lacks essential attributes necessary for functional polycentric governance systems

Photo courtesy Schmidt Ocean Institute

Gjerde, KM and Yadav, SS, 2021. Polycentricity and Regional Ocean Governance, *Frontiers in Marine Science*  
<https://www.frontiersin.org/articles/10.3389/fmars.2021.704748/full>



# Essential attributes necessary for functional polycentric governance systems

## Attribute 1

- Multiple, overlapping decision-making centers with some degree of autonomy

## Attribute 2

- Choosing to act in ways that take account of others through processes of cooperation, coordination, competition, conflict and conflict resolution.





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2018 Expedition

# IUCN WCC Resolution 122 Protection of deep-ocean ecosystems ... through a moratorium (Sept. 2021)

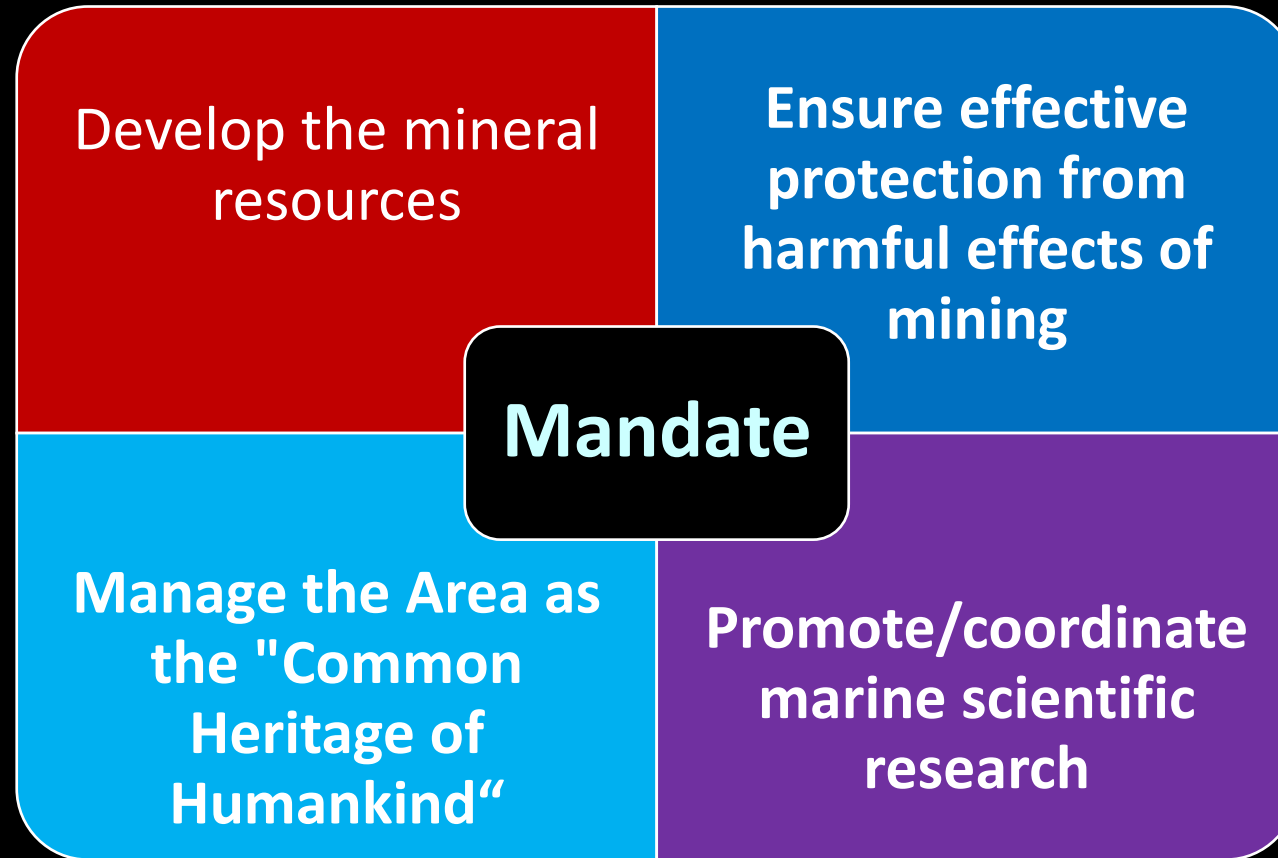
The IUCN World Conservation Congress, at its session in Marseille, France:

CALLS on all State Members, individually and through relevant international fora, to:

- a. support and implement a moratorium on deep seabed mining, issuing of new exploitation and new exploration contracts, and the adoption of seabed mining regulations for exploitation, including 'exploitation' regulations by the International Seabed Authority (ISA), unless and until:
  - i. rigorous and transparent impact assessments have been conducted, the environmental, social, cultural and economic risks of deep seabed mining are comprehensively understood, and the effective protection of the marine environment can be ensured;
  - ii. the precautionary principle, ecosystem approach, and the polluter pays principle have been implemented;
  - iii. policies to ensure the responsible production and use of metals, such as the reduction of demand for primary metals, a transformation to a resource-efficient circular economy, and responsible terrestrial mining practices, have been developed and implemented; and
  - iv. public consultation mechanisms have been incorporated into all decision-making processes related to deep-sea mining ensuring effective engagement allowing for independent review, and, where relevant, that the free, prior and informed consent of indigenous peoples is respected and consent from potentially affected communities is achieved; and
- b. promote the reform of the ISA to ensure transparent, accountable, inclusive, effective and environmentally responsible decision making and regulation.

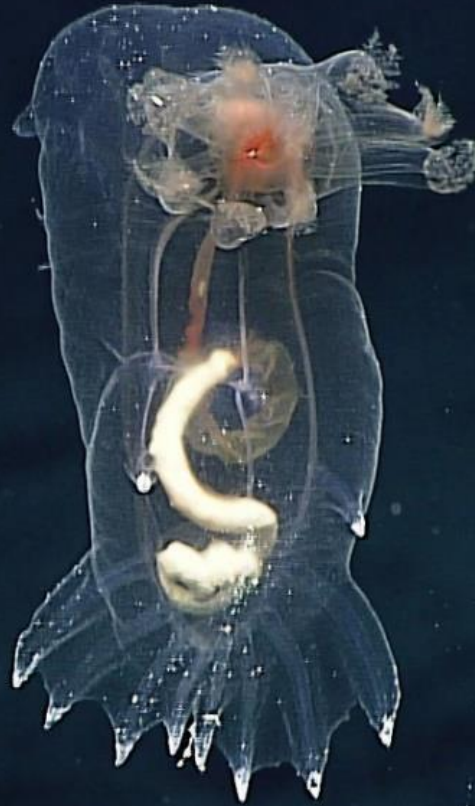


# Re-balance the mandate of ISA



**A precautionary pause is consistent with ISA mandates !**

# Improve transparency and eliminate conflicts of interest





# Three final recommendations

- 1. Lost City:** Update exploration regulations / ensure any future exploitation regulations incorporate global best practice and respect non-use values
- 2. BBNJ Agreement:** historic opportunity to advance cross-sectoral cooperation but needs ambition: obligations, environmental objectives, coherence
- 3. Coherence:** Urgent need to advance good governance practices within States & International Organizations



Thank you for your  
attention!

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