Stakeholder concerns: scientific developments and their implications for the conservation of deep-sea biodiversity

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Designing IRZs and PRZs in the context of an overall conservation strategy

Background paper: Workshop on the Design and Monitoring of Impact and Preservation Reference Zones: Note for the guidance of invited experts on key issues to be addressed.

Where should IRZs and PRZs be located? How many IRZs and PRZs should there be within each contract area? How large do IRZs and PRZs need to be?

Monitoring: What types of monitoring is needed, for what and how?

Conservation objectives to be established in regulations: Monitoring for impacts and whether ecologically and biologically meaningful limits on impacts risk being (or may be) exceeded

A lot of excellent work has been done these past few days
The Porcupine Seabight deep-water fishery and its impact

Fishery at 500 – 1500 m
By-catch includes all 78 species intersecting the fishery

10.1111/j.1439-0485.2009.00330.x
The Porcupine Seabight deep-water fishery and its impact

Fishing Area
52,000 km²

Reduction in Fish Abundance

Area of Impact
142,000 km²
2.74 × fishing area

1995 UN Fish Stocks Agreement: 2nd UNCLOS implementing agreement

Key conservation provisions - Articles 5 & 6

**Biodiversity**
- “protect biodiversity in the marine environment” [5(g)]
- minimize impacts on non-target, associated and dependent species [5(f)]
- protect habitats of special concern [6.3(d)]

**EIAs**
- assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks; Assess the impact of fishing on... species belonging to the same ecosystem [5(d)]

**Data**
- collect and share, in a timely manner, complete and accurate data [5(j)]

**Precautionary approach**
- apply the precautionary approach widely... be more cautious when information is uncertain, unreliable or inadequate [6.1 & 6.2]
- Not use the absence of adequate scientific information as a reason for postponing or failing to take conservation and management measures [6.2]
- Cautious approach to new or exploratory fisheries to allow for assessment of impacts and on that basis potentially allow gradual development of commercial fisheries over time [6.6]

**Enforcement**
- implement and enforce conservation and management measures through effective monitoring, control and surveillance [5(l)]
Biodiversity loss from deep-sea mining

“Biodiversity losses from deep-sea mining are unavoidable and possibly irrevocable... the International Seabed Authority ... must recognize this risk... to inform discussions about whether deep-seabed mining should proceed, and if so, what standards and safeguards need to be put into place to minimize biodiversity loss...”


https://t.co/2guyvGfmC
ISA regulations

• How much biodiversity loss will the ISA regulations allow or permit?

• Over what time frame will the loss be permitted given that in many/most cases the loss will be irreversible on human timescales?

• Can limits be placed and enforced to be sure that the ‘permissable' loss is not exceeded?
  - Measurable (indicators etc), monitorable, biologically/ecologically meaningful and enforceable limits.

• How will the ISA justify the biodiversity loss – e.g. what is the benefit in relation to the common heritage of humankind that would justify the loss of biodiversity in the Area?
“Clearly we are in the midst of one of the great extinction spasms of geological history” E.O. Wilson, The Diversity of Life (the Anthropocene)

UN 1st World Ocean Assessment

“This truly vast deep-sea realm constitutes the largest source of species and ecosystem diversity on Earth... There is strong evidence that the richness and diversity of organisms in the deep sea exceeds all other known biomes... and supports the diverse ecosystem processes and functions necessary for the Earth’s natural systems to function”

- Climate change related stressors – e.g. deoxygenation, acidification, temperature changes etc (Sweetman et al 2017; Levin et al 2016)
- Pollution:– plastics, POPs
- Fisheries impacts 200-2000m+ (1st WOA; Clark, ICES, others)
Ist UN World Ocean Assessment (2016)

Chapter 51: Biological communities on seamounts and other submarine features potentially threatened by disturbance (pages 15-16)

• “The documented widespread extent of deep-water trawl fisheries has led to pervasive concern for the conservation of fragile benthic habitats.”

Nth WOA (20XX)?

• “The documented widespread extent of deep-water trawl fisheries *seabed mining in ABNJ* has led to pervasive concern for the conservation of fragile benthic habitats.”

• The extent of benthic impacts has been described for local fishing grounds *mining areas* but has not been assessed globally; however, if the impacts of these regional studies are generalized, we can extrapolate that fishing, and in particular deep-water trawling, *seabed mining in ABNJ* has caused severe, widespread, long-term destruction of these environments globally.”
Coherence/Applicability with international norms and objectives

UNCLOS Article 145 “ensure effective protection for the marine environment...the need for protection from harmful effects...and the prevention of damage to the flora and fauna of the marine environment”

Sustainable Development Goal 14.2

“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”

Effectively monitoring the environmental impacts of seabed mining through inter alia IRZs and PRZs is critical but we need to know/decide what we’re monitoring for and what we’re monitoring to prevent and how...
And thanks to the Adessium Foundation, Synchronicity Earth, Pew Charitable Trusts, Kaplan Fund, Oceans 5, DSCC member organizations and the many scientists, NGOs and others working on deep-sea biology, ecology and conservation.
Why is this important? What do we know about the deep-sea?

Global Marine Assessment/World Ocean Assessment
Chapter 36F - Open Ocean Deep Sea

• “This truly vast deep-sea realm constitutes the largest source of species and ecosystem diversity on Earth”

• “There is strong evidence that the richness and diversity of organisms in the deep sea exceeds all other known biomes... and supports the diverse ecosystem processes and functions necessary for the Earth’s natural systems to function”

• “Deep-sea ecosystems are crucial for global functioning; e.g., remineralization of organic matter in the deep sea regenerates nutrients that help fuel the oceanic primary production that accounts for about half of atmospheric oxygen production.”