Protecting deep sea hydrothermal vent biodiversity through ABMTs

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Introduction

Deep-sea hydrothermal vents are unique ecosystems, that may be at risk by the imminent start of deep-sea mining. Vent fields are clusters of active and inactive vents which might be biologically connected. Although vent fauna has been studied extensively, there is less known about inactive vents, their surroundings and the connectivity between them.

Conservation can be regulated through area-based management tools (ABMTs). To protect the vent biodiversity, the dimension of ABMTs needs to be determined.
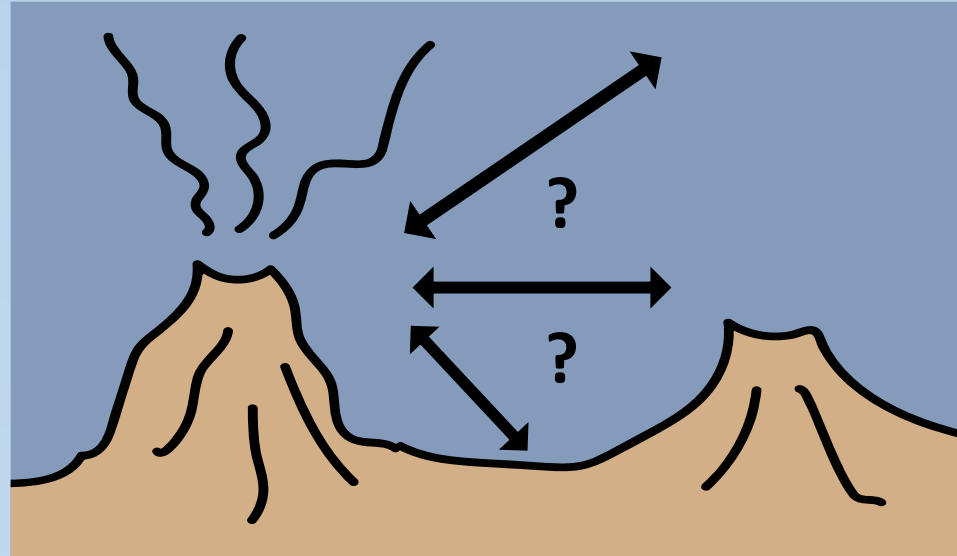

eDNA sampling

Known 18S and COI barcodes from vent species will be used to assess connectivity between the vent site and the surrounding sediments.

eDNA from environmental samples taken from sediment & water at various locations around the Rainbow hydrothermal vent (MAR) (at-vent, off-vent, surrounding & reference areas) will be tested for the presence of vent species through their DNA.

ABMTs & law research

ABMTs are best described as mechanisms to regulate human activities in a specific area. The International Seabed Authority (ISA) refers to various types of ABMTs. It is not clear, however, if these are suitable for the envisaged 3-dimensional protection of vents.

The project assesses whether the ISA's existing ABMTs can be used for protecting hydrothermal vents, and, if not, what alternative options exist.
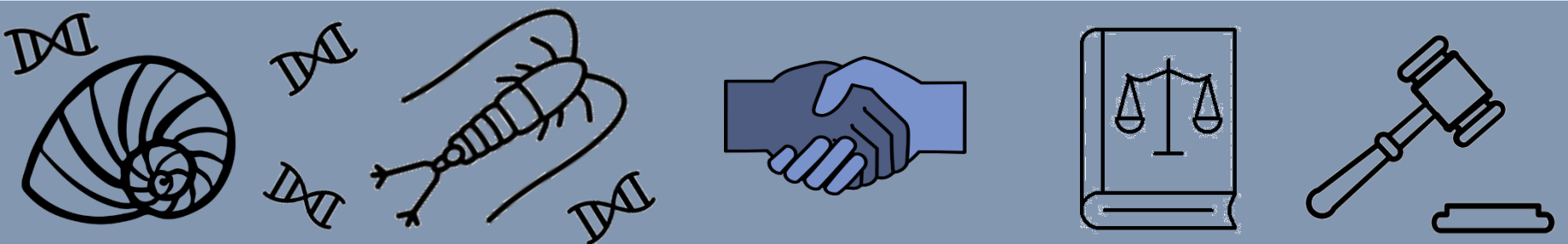
Combined desired outputs

1) Identify and understand the nature and extent of connectivity around vents.
2) Identify what tools/processes address the three-dimensional protection and connectivity.
3) Identify the existing overlaps between operational effectiveness and regulatory effectiveness, and identify what are those gaps.
4) Assess the replicability of existing tools to other regions.
5) Explore what tools are/could be best suited to develop a network approach.
6) Identify the needs of actors (State and non-State) in terms of guidance for the designation and implementation of ABMTs.

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