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Press release: Rich deep-sea fauna on polymetallic nodules targeted for mining

By highlighting the importance of nodules for the deep-sea biodiversity, scientists involved in the JPI Oceans pilot action on the ecological aspects of deep-sea mining call for criteria for designating preservation zones to be based on robust scientific knowledge.

An international group of researchers from Germany (Senckenberg am Meer), Belgium (Ghent University), France (Ifremer), and Portugal (MARE/IMAR-Azores and University of Aveiro) has published their results from a recent research campaign (SO-239, March-April 2015) onboard the new German research vessel SONNE in the Clarion-Clipperton Fracture Zone (CCZ, Central Eastern Pacific) in Nature, demonstrating that polymetallic nodule fields are hotspots of abundance and diversity for a highly vulnerable abyssal fauna.

The study calls for careful considerations of strategies for biodiversity conservation. Especially the CCZ area is recently of growing interest for industry because of the high concentration of polymetallic nodules present at abyssal depths (> 4000 m water depth). However being one of the remotest areas on earth, very little is known on its biodiversity and ecosystem functioning. In the context of future exploitation licences which will be provided by the International Seabed Authority (ISA) for different license areas in the CCZ, this international group of scientists investigated the abyssal biota present here to understand potential mining impacts.

Based on 17 Remotely Operated Vehicle (ROV 6000 Kiel, GEOMAR) video transects conducted for the first time on these poorly-known abyssal communities, the paper shows that the fauna associated with polymetallic nodules is more abundant and diverse than in areas without or only low nodule numbers, a pattern which is consistent across the four areas licensed for nodule exploration which have been visited during SO239. They also provided, for the first time, ecological data from one Area of Particular Environmental Interest (APEI, Number 3) established by the International Seabed Authority (ISA) to be safeguarded from mining.

Finally, they also report on the high impact and lack of recovery of fauna on 2 trawling tracks and experimental mining simulations up to 37 years

old, suggesting that mining impacts may be long-lasting or even permanent. Based on these observations, the researchers argue that preservation zones within mining areas should be established in areas rich in nodules. The results of this study are considered of the highest importance for policy-makers and the industry to incorporate whilst developing mining strategies and policies.

Cruise SO-239, coordinated by Senckenberg am Meer, Wilhelmshaven is part of the Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans) Pilot Action on "Ecological Aspects of Deep-Sea Mining" coordinated by GEOMAR Helmholtz Centre for Ocean Research Kiel.

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