FDmine: A trait database for fauna associated with habitats targeted for seabed mining

Laura M. Trovão[1], Sofia Ramalho[1], Ana Hilário[1] , the FDmine working group

1. *Centre for Environmental and Marine Studies, Department of Biology, University of Aveiro Campus Universitário de Santiago, 3810-193 Aveiro, Portugal*

Presenting author email: lauratrovao@ua.pt

Minerals are essential in the development of the modern high-technology world and, with increasing population and raising demands for new technologies, including for green energy, demand for the metals contained in those minerals is growing significantly. The deep seafloor is predicted to hold significant mineral resources and although seabed mining has not yet started, mining operation will result in significant impact on local biodiversity. However, knowledge is still scarce on how to assess biodiversity loss. Functional trait analyses allow us to capture aspects related to ecosystem processes and functions to better understand the role of species in the ecosystem but also grasp aspects related to how they respond to both natural and anthropogenic disturbance. In this study we created a functional-traits database, supported by literature and expert-based input, that includes 30 traits across 3 descriptors (biological, ecological, and distribution), associated with 169 modalities, transversal to all deep-sea ecosystems targeted for mining, and applicable consistently across different seabed mining scenarios. To test the database, a case study was conducted to compare the functional biodiversity in two areas (one identified as an area of particular environmental interest, and one area conttracted for exploration) in the the Clarion-Clipperton Zone, a polymetallic-rich region in the Pacific Ocean. More important than the results, that show similar functional diversity in both areas, this study helped to identify gaps and caveats, as well as future research priorities in the field of functional ecology in the deep-sea ecosystems targeted for deep-sea mining.