

Multiscale variability of seamount megafauna in the Mozambique Channel, potential oceanographic and geological drivers

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Seamounts support ecosystems historically viewed as unique, diverse and productive, but potentially threatened by human activities, such as the exploitation of mineral and/or biological resources (e.g.: polymetallic crusts and fishing). Ecological paradigms need to be supported by more extensive studies particularly in under-sampled areas such as Indian Ocean, regional scale studies and taking into account the heterogeneity of habitats (Clark et al. 2010; Rowden et al. 2010). The Mozambique Channel, between the eastern African margin and Madagascar, is characterized by several modern isolated carbonate systems forming the Eparses islands, and flat top seamounts corresponding to ancient carbonate platforms subsequently affected by tectonic and volcanism (Courgeon et al. 2016). Seamount tops, and terraces along slope islands, all between 300 and 800m depth, have been surveyed by a deep-towed camera, and benthic megafauna communities investigated by photo and video analysis. Community structure varies in density, taxonomic composition and diversity between seamounts at regional scale, along the latitudinal gradient (11°S to 21°S) and according to the distance to the coast. Oceanographic regimes and surface primary productivity are potential drivers of these regional patterns. Diversity also varies at seamount scale, positively influenced by geomorphological and substrate heterogeneity. Although diversity and endemism level need a greater sampling effort to be properly estimated, this first ecological study on the Mozambique Channel seamounts suggests that the complex oceanography and the long term evolution of carbonate platforms drive here a high diversity of benthic communities by a nested scale environmental control. This research was co-funded by TOTAL and IFREMER as part of the PAMELA (Passive Margin Exploration Laboratories) scientific project (Pamela-Moz01 (Olu, 2014) and Pamela-Moz04 (Jouet & Deville, 2015) cruises) and by the Terres Australes et Antarctiques Françaises (TAAF, 10th EDF Indian Ocean, BIOMAGLO project) for the exploration of the Mayotte Island (Biomaglo cruise (Corbari et al. 2017).

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