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[Analysis of communities, with an historical reconstruction from a deep submarine seamount in an oligotrophic area \(Valencia Seamount, Balearic Basin, Western Mediterranean\)](#)

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Abstract: Seamounts can have strong influence on the dynamics and production of waters surrounding them, sometimes creating a kind of oasis effect. To assess to what depths and under what conditions this effect may persist on seamounts, we analysed the fauna and recent history of the Valencia Seamount (VS), a deep, small seamount (summit depth: 1056 m) from an oligotrophic zone of the Mediterranean Sea. The (living) epibenthic fauna of the VS summit (up to 1300 m) was composed of filter feeders, surface deposit feeders and carnivores (63 species), structured in a trophic chain as indicated by the high positive relationship (r^2 0.502) between the δN_{15} and δC_{13} of the fauna analysed. This trophic linearisation (compared with Catalan and NW Mallorca slope sites at similar depths) may optimise the energy flux reaching the seamount, with rather high %TOC (0.93–1.19%) and C/N (5.0–5.5) in July. The Valencia Seamount can also act as a reservoir zone for fish (grenadiers: *Nezumia aequalis*, and *Hymenocephalus italicus*) and shrimps (*Plesionika martia*), which are distributed at shallower depths on adjacent slopes, where they are exploited. The specimens caught were mainly juveniles, suggesting that these species may rather form pseudopopulations. Tuna and cetaceans were regularly sighted on the surface of VS during a specific period of the year (June–July). Reconstructing the recent history of Valencia Seamount (MC2 sediment core taken at 1151 m in 2021) we evidenced a decline of zooplankton pteropods (primary consumers) since ca. the 1960s (MC2 dating after ^{210}Pb , metals and microplastic analyses), linked to a decline of Si in sediments suggesting a decrease in primary production due to a decrease in rainfall and river runoff. An increase of vorticity (ω + values), i.e. of cyclonic gyres, and currents after the 1970s over the summit probably increased resuspension of organic matter, which in turn may enhance zooplankton aggregations at VS summit. We hypothesise that this would explain the parallel increase in mesopelagic myctophids in MC2 (from otolith records). Sediments of the Valencia seamount recorded several historical changes. Reconstruction

studies carried out in oceanic areas can therefore help to understand the history and improve the management of fragile systems such as seamounts.

Keywords: