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TITLE: Seamount influences on mid-water shrimps (Decapoda) and gnathophausiids (Lophogastridea) of the South-West Indian Ridge

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ABSTRACT:

Maintenance of often-observed elevated levels of pelagic diversity and biomass on seamounts, of relevance to conservation and fishery management, involves complex interactions between physical and biological variables that remain poorly understood. To untangle these biophysical processes we explore factors influencing the distribution of epi- and meso-pelagic (0–1000 m) micronektonic crustaceans (>15 mm; order Lophogastridea, family Gnathophausiidea; and order Decapoda) on and off seamounts along the South West Indian Ridge (SWIR, 27° to 42°S) and on a seamount off the Madagascar Ridge (31.6°S, 42.8°E). Thirty-one species of micronektonic crustaceans were caught using mid-water trawls within the study area but there was no apparent latitude-related patterns in species richness or abundance. Species richness predicted by rarefaction curves and numerical abundance was highest in the vicinity (<1 km) of seamounts (species richness: 15 to 21; abundance: 10 ± 2 to 20 ± 1 ind. 10^3 m $^{-1}$) compared with over the abyssal plains and ridge slopes (species richness: 9.2–9.9; abundance: 24 ± 2 to 79 ± 8 ind. 10^3 m $^{-1}$). Multivariate analysis of assemblage composition revealed significant groupings of individual trawl samples with respect to whether the sample was on or off a seamount and hydrographic region, but not with time of sampling relative to diel cycle (day/night or dawn) or depth of sampling (0–500, 500–800, >800 m). The dominant species assemblage comprised the shrimps *Systellaspis debilis* (37%) and *Sergia prehensilis* (34%), and was restricted to seamounts on the subtropical SWIR. Our observations suggest that the ‘oasis effect’ of seamounts conventionally associated with higher trophic levels is also applicable to pelagic micronektonic crustaceans at lower trophic levels. We suggest that the enhanced biomass and species richness attributed is due to ‘habitat enrichment’, whereby seamounts provide favourable habitats for both pelagic and benthopelagic mid-water crustaceans.

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