The Role Of Food Input In Shaping Biodiversity Patterns In Benthic Seamount Habitats Across The Equatorial Atlantic

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Seamounts are prominent, globally distributed seafloor features, which are often considered as "hotspots" hosting diverse benthic communities and abundant fish stocks. Concerns about the effects of human impacts, such as bottom trawling and potential seabed mining, have necessitated the development of appropriate management scenarios. However, those need to be underpinned by a thorough understanding of biodiversity spatial distribution, and the environmental drivers which shape the structure of seamount communities.

Here, we investigate differences in benthic community structures in relation to changes in food input in three different seamount sites in the Equatorial Atlantic. The study is based on a comprehensive nested dataset collected during the 'TROPICS' cruise on board the RRS James Cook, and is linked to the ERC Starting Grant projects CACH and CODEMAP (grant nos 278705 and 258482). Shipboard multibeam and backscatter data is combined with ROV-video records, high-resolution bathymetry, in addition to extensive water column characterisation by CTD and Particulate Organic Carbon (POC) filtrations for quantifying food input. Food input is highly variable between the different seamounts, with POC values ranging from 5 - 95 µg/L and high POC concentrations are consistently found at the base of each seamount. Preliminary results suggest that thriving coral communities occur in depths of relatively high POC values, which in terms enhances local biodiversity. Pencil urchin distribution has also been mapped and appears to be driven by POC pulses, which are likely to act as a reproductive cue, causing spatial clustering. Future analysis will focus on quantifying and integrating food input into spatial habitat models.