

Ecophysiology of vent communities, Manus Basin, Papua New Guinea: insights from stable isotope geochemistry, minor element content and shell microstructure

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Hydrothermal vents are source of heat as well as sulphur and carbon compounds on which characteristic trophic levels forms. Around vents, the distribution of communities is limited by step temperature, salinity, pH gradients and nutrient availability. The fauna shows characteristic niche partitioning for different groups of animals associated with numerical dominance of a few species (Collins *et al.*, 2012).

In the Western Pacific Ocean, a large and active hydrothermal field of the Manus Spreading Center is the hydrothermal field 1 at 2500 m depth. The gastropods *Ifremeria nautili* and *Alviniconcha hessleri* are among the most abundant macroorganisms living at the site. *I. nautili* reaches the highest density (500–700 adults/m²) in the vicinity of active hydrothermal vents, where sulfide and methane emissions mix with sea water to form the ‘shimmering water’ zone, at ambient pressures of 250 bars (Reeves *et al.*, 2012). Alongside with the two gastropods, a barnacle *Echionelasmus ohtai manusensis* and a deep-sea coral were investigated as well.

Shell microstructures as well as minor element contents and stable isotope compositions of the macroorganisms provide information about local adaptation, niche characteristics, specific metabolic activity and food sources during their lifetime (Bojar *et al.*, 2018).

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