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Daniel Leduc, Ashley A. Rowden



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Nematode communities in sediments of the Kermadec Trench, Southwest Pacific Ocean

Daniel Leduc¹, Ashley A. Rowden

National Institute of Water & Atmospheric Research, Private Bag 14-901, Wellington, New Zealand

Daniel.Leduc@niwa.co.nz

ABSTRACT

Hadal trenches are characterised by environmental conditions not found in any other deep-sea environment, such as steep topography and periodic disturbance by turbidity flows, which are likely responsible for the distinct nature of benthic communities of hadal trenches relative to those of the abyssal plain. Nematodes are the most abundant metazoans in the deep-sea benthos, but it is not yet clear if different trenches host distinct nematode communities, and no data are yet available on the communities of most trenches, including the Kermadec Trench in the Southwest Pacific. Quantitative core samples from the seafloor of the Kermadec Trench were recently obtained from four sites at 6000 to 9000 metres depth which allowed for analyses of meiofauna, and nematodes in particular, for the first time. Nematode community and trophic structure was also compared with other trenches using published data. There was a bathymetric gradient in meiofauna abundance, biomass, and community structure within the Kermadec Trench, but patterns for species richness were ambiguous depending on which metric was used. There was a change in community structure from shallow to deep sites, as well as a consistent change in community structure from the upper sediment layers to the deeper sediment layers across the four sites. These patterns are most likely explained by variation in food availability within the trench, and related to trench topography. Together, deposit and microbial feeders represented 48-92% of total nematode abundance in the samples, which suggests that fine organic detritus and bacteria are

¹ Phone: +64 4 386 0389

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