

Meiofaunal community compositions around hydrothermal vents in three seamounts in NW Pacific -Vent copepods want to stay with vent polychaetes?

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In contrast to specific large benthic invertebrates in chemosynthetic ecosystems around deep-sea hydrothermal vents, meiofaunal communities in such habitats have only recently been investigated. This is especially true in the Northwest Pacific Ocean, even though there are many seamounts with active hydrothermal vents in their calderas. We studied the variations in meiofaunal composition around hydrothermal vents on chimney structures (vent chimneys) and in the adjacent non-vent fields in the calderas of three neighboring seamounts (Bayonnaise Knoll, Myojin Knoll, and Myojin-sho Caldera), in Izu-Ogasawara Arc, NW Pacific. A typical meiofaunal composition (nematodes as the most abundant taxon; harpacticoid copepods as the second) was observed in the sediments on sea-floor in the non-vent (control) fields, and even in the sediment at the base of chimneys. On the surfaces of vent chimneys, on the other hand, copepods and their nauplii were the most abundant. There were significant differences in copepod compositions on vent chimneys between the three seamounts, and even between different substrates on the same chimneys. *Stygiopontius* (Dirivultidae, Siphonostomatoida), a typical vent copepod group, was abundant and often predominant on the dense mats of tubes of *Paralvinella* polychaetes living in the closest proximity to vent fluids among vent metazoan macrofauna. These copepods, however, showed the lower density on the beds of *Neoverruca* barnacles although their beds were adjacent to *Paralvinella* mats at cm scales. No significant genetic difference was observed among local populations of *Stygiopontius*, suggesting they are the same species. Furthermore, stable carbon and nitrogen stable isotopic ratios and radiocarbon abundances in meiofaunal soft tissues revealed the dirivultids utilized mainly chemolithoautotrophic microbes at vents. These results show that *Stygiopontius* copepods prefer *Paralvinella* mats as their habitats or have similar environmental preferences (such as higher water temperature or existence of chemolithoautotrophic microbes) to *Paralvinella*.

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