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Role of physico-chemical environment on gastropods community at hydrothermal vents on the East Pacific Rise (13˚N/EPR)

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Hydrothermal vents display extreme and highly variable environmental conditions that are expected to be among the most important factors in structuring associated benthic populations and communities. We tested this assumption, focusing on the distribution of gastropods, as well as on the population structure and reproductive biology of one dominant gastropod species in vestimentiferan and alvinellid habitats (Matabos et al. submitted). A total of 14 biological samples from both types of habitats (i.e. 12 in alvinellid habitat and 2 in vestimentiferan habitat) was collected at three sites (2 discrete vents per site) on the East Pacific Rise 13˚N vent field in May 2002. At all vents except one, pH, total sulphide and reduced iron concentrations were measured in situ and correlated to temperature. Assuming the consistency of these relationships within a single vent, physico-chemical ranges were estimated for each biological sample, from the corresponding fine scale temperature measurement ranges. A total of 12 gastropod species were identified from all samples, and 2 main faunal assemblages were distinguished: one dominated by *Lepetodrilus elevatus* in *Alvinella* as well as *Riftia* habitats, and one dominated by the the peltospirids *Nodopelta heminoda*, *N. subnoda*, and *Peltospira operculata* confined in the *Alvinella* habitat. With respect to lepetodrilids, peltospirid gastropods were dominant in the more acidic, sulfidic-richer, and hotter environments. Although this pattern could be related to specific physiological tolerances to temperature and sulphide toxicity, the weak correlation between community structure and physico-chemical variables suggests that additional factors are also involved. Particularly, the low species richness and the overwhelming dominance of *L. elevatus* in one faunal assemblage suggest that this species may outcompete

peltospirids and greatly affect community structure. This hypothesis is supported by large differences in the demographic structure and reproductive biology of *L. elevatus* between the 2 faunal assemblages.