

## Origin, dispersions and diversification dynamics of Epimeriidae and Iphimediidae (Amphipoda, Crustacea) from the Antarctic shelf

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The physical isolation of the Antarctic shelf and extreme life conditions contribute to its high degree of endemism. The Antarctic shelf fauna would, however, be composed of Gondwanan descendants, but also of more recent colonizers. The peculiar climatic history of this region might have provided environmental prerequisites to the radiation of some lineages, some of which might afterwards colonize the other ocean's shelves. Amphipods from the families Epimeriidae and Iphimediidae are cosmopolitan, but well-represented on the Antarctic shelf. Antarctic epimeriids (represented herein by the genus *Epimeria*) are composed of strictly endemic and presumably more generalist species, while many Antarctic iphimediids appear to be food specialists, with some of them distributed on both sides of the Polar Front. By reconstructing time-calibrated phylogenies based on mitochondrial (COI) and nuclear (28S and H3) markers and including representatives from other oceans, this study aims to investigate, for each of these two families, the origin of the Antarctic component, their propensity towards dispersion in/out of the shelf and the *in situ* diversification patterns. A comparison of observed biogeographic patterns for the two families will give insights into the influence of historical environmental factors on the evolutionary history of organisms with contrasting life history traits. In both phylogenetic reconstructions, all Antarctic and sub-Antarctic (for iphimediids) species formed a clade, sister to a non-Antarctic clade. While the precise timing of origin for the (sub-)Antarctic components could not be inferred in both cases, the (sub-)Antarctic lineages likely arose from late Gondwanan ancestors and hence, did not colonize the Antarctic region after the continent broke apart from the other fragments of Gondwanaland. Moreover, the initial diversification of these two clades occurred during the progressive transition to an Icehouse climate and would therefore be related to cold-waters. A diversification burst within one (or two) iphimediid subclade(s) might have occurred after the mid-Miocene Climate Transition (MMCT). While the Antarctic *Epimeria* lineage appears "locked in the Icehouse", iphimediids historically dispersed at least once from the high Antarctic region to sub-Antarctic islands, after the geographical isolation of Antarctica. However, based on the present taxon sampling, they do not appear to have dispersed further north than sub-Antarctic regions at any point of their evolutionary history.