

{rokbox title=|Functional dendrogram and groups differentiated across the tropical and equatorial Atlantic Ocean :: Image: Authors|
thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-modelling-diversity-copepods-atlantic-ecoregions-martinez-et-al-2025-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-modelling-diversity-copepods-atlantic-ecoregions-martinez-et-al-2025.jpg{/rokbox}

Lorena Martínez-Leiva, José M. Landeira, **Maria Luz Fernández de Puelles**, Santiago Hernández-León, Víctor M. Tuset and Effrosyni Fatira, 2025.

Modelling the alpha and beta diversity of copepods across tropical and subtropical Atlantic ecoregions.

npj biodiversity 4, 3 (2025). <https://doi.org/10.1038/s44185-025-00073-x>

Abstract: Copepods, the most abundant individuals of the mesozooplankton, play a pivotal role in marine food webs and carbon cycling. However, few studies have focused on their diversity and the environmental factors influencing it. The objective of the present study is to model the alpha and beta diversity of copepods across the tropical and subtropical ecoregions of Atlantic Ocean using both taxonomic and functional approaches. The study used a dataset of 226 copepod species collected by stratified plankton hauls (0–800 m depth) across the tropical and equatorial Atlantic, from oligotrophic waters close to the Brazilian coast to more productive waters close to the Mauritanian Upwelling. To perform the functional analysis, six traits related to the behaviour, growth, and reproduction of copepods were selected. Several alpha diversities were estimated using taxonomic metrics (SR, $\Delta+$, and $\Lambda+$) and functional metrics (FDis, FEve, FDiv, FOr, FSpe), and modeled with GAM model across spatial and environmental gradients, and day/night. The overall and two components of β -diversity (turnover and nestedness) were shared between depth and stations. The surface layers of stations from oligotrophic, equatorial, and Cape Verde ecoregions displayed higher values of taxonomic α -diversity. More unpredictable were the facets of functional α -diversity, although they showed a tendency to be positive with depth during the daytime. The GAM analysis revealed spatial gradients as the key factors modelling the taxonomic α -diversity, whereas depth was the most relevant for functional α -diversity. The turnover component drove taxonomic β -diversity in depth and station, whereas the nestedness component acquired relevance for the functional β -diversity. The taxonomic structure of the copepod community varied spatially across depths and ecoregions, but this was not linked to functional changes of the same magnitude.

Keywords: copepods, diversity, atlantic, ecoregions