

Long-term changes in the species and functional diversity of a fine sand macrobenthic community in the English Channel

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In the eastern Bay of Seine which, is a representative area of coastal zones exposed to numerous anthropogenic disturbances, data from a long-term monitoring program of the benthic macrofauna based on a framework of 60 stations sampled during 7 cruises from 1988 to 2016 were used to investigate the link between species and functional diversity at different scales and assess how long-term changes in the community structure may have altered the ecosystem functioning. To cover the different facets of α -diversity, a selection of species and functional diversity indices were calculated and the links between these metrics were determined from a Principal Component Analysis. The β -diversity was analysed by applying multivariate methods on both species and traits composition matrices. Population fluctuations of a few very abundant species led to the major variations observed in the structure of the community in both taxonomic and functional aspects. A certain redundancy was found among species and functional diversity indices in terms of richness, evenness and heterogeneity. Likewise, at regional scale, similar patterns were reported on the spatial structure of the community in terms of species and trait composition. These patterns persist over time suggesting that the community structure and its functioning are rather resilient.