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M. Grazia Pennino, Juan Pablo Zurano, **Manuel Hidalgo**, Antonio Esteban, Carlos Veloy, José M. Bellido, Marta Coll, 2024.

[Spatial patterns of \$\beta\$ -diversity under cumulative pressures in the Western Mediterranean Sea](#)

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Abstract: Understanding the spatial dynamics of biodiversity is an essential issue in marine ecology and requires combining information at local and regional scales. β -diversity is an important measure of biodiversity that informs on the differences in community composition between sites and, thus, in the species turnover in the community structure. In this study, we analysed and predicted the spatial patterns of β -diversity for fishes, invertebrates and the demersal assemblage along the Iberian Mediterranean coast. We used Bayesian Bootstrap Generalized Dissimilarity Models (BBGDMs) to study the effects of environment and human pressures on the β -diversity of invertebrate, fishes and the entire demersal assemblage from 1994 to 2015 using different time windows to account for temporal variability. Then, we used these relationships to predict the spatial patterns of β -diversity in the whole Iberian Mediterranean coast. Our results highlighted that the regional spatial patterns of β -diversity were best described by bathymetry and a cumulative index of coastal impacts. We identified specific regions with the highest β -diversity in the study area, which were complementary to hotspots of species richness and presented different degree of overlapping with existent marine protected areas. Overall, our study illustrates that by modelling spatial turnover using β -diversity we can better understand and predict spatial variation of biodiversity and the effects of particular variables, providing relevant information to end-users and policy makers for designing specific spatial conservation and management strategies.

Keywords: β -diversity, Environmental change, Anthropogenic pressures, Bayesian bootstrap generalized dissimilarity models