HUMAN IMPACTS ON MARINE FUNCTIONAL CONNECTIVITY

Session 1: Pervasive human impacts on the environment and trends in marine connectivity

Fishing impact on the seascape connectivity influence on benthic species distributions

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Composition of substrate is a primary structural driver shaping benthic species distributions in marine ecosystems. However, neighboring context such as the heterogeneity and connectivity of the seascape can also determine the density and the probability of occurrence of species with close connections to the bottom. In this sense, bottom fishing trawlers is a long-lasting pervasive human impact on benthic ecosystems that does not only affect directly the species but also the ecological functions that the seascape connectivity has on the species distributions. Here, we apply network tools to calculate different substrate connectivity metrics (e.g. degree, closeness and betweenness centrality) and assess how fishing fingerprint alters their influence on the spatial distribution of several benthic species. To do, we perform a comparative exercise with information of contrasting regions off the Iberian peninsula and across benthic species with different life history traits. We show that seascape connectivity can heterogeneously influence the distribution of species with positive and negative effects of connectivity metrics attending to their different spatial ecology. The study also supports our expectations that, under certain circumstances, fishing can buffer the influence of seascape connectivity on the spatial distribution. Our results can provide further mechanistic information to the field of spatial distribution modeling as well as strengthening the scientific basis that supports the spatial management of commercial fisheries.

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