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TITLE: Bottom-trawling fisheries influence on standing stocks, composition, diversity and trophic redundancy of macrofaunal assemblages from the West Iberian Margin

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ABSTRACT:

Bottom-trawling fisheries operating in Portugal (West Iberian Margin) impose one of the largest footprints per unit of biomass landed in European waters at depths greater than 200 m, affecting the seafloor integrity and the associated benthic fauna. To investigate how trawling pressure is affecting the macrofaunal assemblages, we compared the standing stock (abundance and biomass), community structure and taxonomical and trophic diversity in areas subjected to varying trawling pressure along the SW Portuguese upper slope, between 200 and 600 m. In addition to trawling pressure, several environmental variables, namely depth, grain size and organic matter, were correlated with the biological component, which suggest that the longstanding trawling pressure presents cumulative effects to the habitat heterogeneity known to characterise the West Iberian Margin fauna. Furthermore, our results showed a depletion of macro-infaunal abundances in both the fishing ground and the adjacent area (up to 3 times lower), when compared to the area not trawled. The observed decrease in abundance with increasing trawling pressure was also associated with a loss of species and trophic richness, but univariate diversity indices related with community structure (i.e. Shannon-Wiener index, Pielou's evenness) failed to detect consistent differences across areas. Also observed was a decrease in the number of taxa ? trophic guilds combinations of the core assemblage (i.e. characteristic, dominant or frequent taxa) with increasing trawling pressure. We suggest that, in disturbed sediments, the lower functional redundancy resulting from the loss of species within most feeding guilds increases the vulnerability of trophic interactions and therefore of the whole assemblage to further increases in natural and anthropogenic disturbance or their synergistic effects.

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