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[Body condition of the deep water demersal resources at two adjacent oligotrophic areas of the western Mediterranean and the influence of the environmental features](#)

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Abstract: Body condition indices not only are often used as reliable indicators of the nutritional status of individuals but also can they be utilized to provide insights regarding food availability and habitat quality. The aim of this study was to evaluate the connection between the body condition of the demersal species and the environmental features in the water column (i.e. the hydrographic conditions and the potential trophic resources) in two proximate areas, the north and south regions of the Balearic Islands (western Mediterranean), viz., the Balearic sub-basin (BsB) and the Algerian sub-basin (AsB), respectively, with different geomorphological and hydrodynamic features. Body condition indices were calculated for individuals of 21 demersal species including 11 teleosts, 4 elasmobranchs, 3 cephalopods and 3 crustaceans, which represented > 70–77% of the deep water resources, captured by bottom trawling. The morphometric indices, viz., Relative Condition Index (Kn) and Standardised Residuals (SR) from the length–weight relationship, were used. The results for each one of the 21 species indicated a significantly better condition in terms of Kn and SR in the BsB, for 7 and 9 species, respectively. In addition, a general model, including the 21 species together, showed better body condition in the BsB, and during the summer. The spatial and temporal differences in the body condition are discussed in the context of the environmental variables characterising both the study areas, which showed significant variations, for some of the hydrographic features (chlorophyll a, dissolved oxygen, salinity, potential density and temperature), as well as for some of the potential trophic resources (mesopelagic and epibenthic fauna). These findings suggest an environmental effect on the body condition of the deep-water resources in the Balearic Islands, one of the most oligotrophic areas of the western Mediterranean, and reveal more suitable environmental conditions for these species on the northern insular margin, off the Archipelago. In addition to these ecological connections, the results also hold interest for the management and conservation of the habitats essential for the sustainability of fisheries.

Keywords: Demersal resources, Body condition, Hydrography, Trophic resources, Balearic Islands, Western Mediterranean