{rokbox title=| The study area in the Balearic Basin and off Avilés in the Cantabrian Sea, with the stations sampled over the slope ( ), and notations for the specific Multicores (MC) performed. ANTROMARE0611 correspond to a MC performed in 2011 off the Delta Ebro (398 m) :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-recent-reconstruction-of-open-2026-diaz-thumb-et-al.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-recent-reconstruction-of-open-2026-diaz-et-al.jpg{/rokbox}

J.E. Cartes, A. Serrano, A. Lombarte, **D. Díaz-Viñolas**, 2026. **Recent reconstruction of open sea pelagic macrofauna through the analysis of dead remains in the Balearic Sea: influence of natural and human impacts.**
Science of The Total Environment. Volume 1049. 25 September 2026. 182096.
https://doi.org/10.1016/j.scitotenv.2026.182096

Abstract:Reconstructing the recent history of marine communities is essential for evaluating climate variations and human impacts, and zooplankton is a good indicator of long-term changes. The reconstruction of recent deposited remains of pteropods and mesopelagic fish was achieved by analysing seven deep-water cores (at depths between 398 and 1151 m) taken in 2019–2021 at seven stations, mainly located in the Balearic Basin (western Mediterranean). The historical changes found in each core followed a mainland/insular gradient. Stations had different physical characteristics depending on their proximity to deltas, canyons or islands. At the three insular stations (NW Mallorca), a decline in pteropod abundance was recorded after ca. the 1960s. In contrast, at mainland (the Ebro Delta, Barcelona and Avilés) stations, more influenced by river discharges, we found an increase in pteropod abundance in recent decades. This suggests that the pelagic pathway has become more dominant in food chains. This is probably because there has been a reduction in terrestrial inputs, which may cause oceanic species to find more favourable ecological conditions inshore. Mesopelagic fish (myctophids mainly), situated at a higher trophic level, showed less clear or variable trends at each station. Changes in pteropods were further evidenced in mainland areas by the stable isotope history, showing a depletion of δ13C and a simultaneous enrichment of δ15N in the Ebro station, probably due to a low rainfall (positive NAO) and the damming of large rivers in Spain after the mid-20th century. A general decrease in pteropods and mesopelagic fish also occurred alongside an increase in salinity, particularly in the levantine intermediate waters (LIW), after the mid-1970s. Therefore, reconstructing zooplankton communities by analysing sediment cores is an effective way of complementing the history of zooplankton based on living series.

Keywords:Reconstruction,Deep sea zooplankton, Sediment cores, Natural variability, Stable isotopy, Damming.