

{rokbox title=|The study area (Balearic Basin on the square map) over the continental shelf of the Levantine coasts of the Iberian Peninsula, indicating stations sampled (□), and the specific MC2 core (87 m depth) into the Reserve (framed area) that was analysed :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-how-the-reconstruction-viñolas-2022-thumb-et-al.jpg|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-how-the-reconstruction-viñolas-2022-et-al.jpg{/rokbox}

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[How the](#)

[reconstruction of faunal communities in a marine protected area \(Columbretes Reserve, western Mediterranean\) evidence human and natural impacts on fauna.](#)

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Abstract: Reconstruction of marine communities in search of baseline (pristine) conditions is a crucial first step for their future restoration. A recent reconstruction (last century) of the sandy-muddy bottom fauna on the continental shelf of a marine protected area (MPA) was performed in the Columbretes Reserve, including periods after and before the Reserve declaration. The dating of sediments and identification of faunal remains (e.g., shells of benthic bivalves and gastropods and pelagic pteropods) were performed in a core (MC2) at a depth of 87 m in 2018. Radiometric data identified sediments older (below 11 cm) and younger (from the top of the core to 11 cm) than ca. 110 years. Mercury analyses validated the ^{210}Pb data at 5–7 cm (1967–1989), with a significant Hg peak that coincided with a period of military activities occurring until 1982 in the Columbretes Islands. Both human and climatic variables affected benthic and pelagic communities. Among the human impacts, the cessation of trawling activity after the declaration of the MPA (1980s) influenced the most dominant benthos (bivalves and gastropods) by i) increases in their abundance and ii) changes in the feeding guilds, with a return to baseline conditions by the increase in filter feeders after trawling cessation vs a high abundance of detritus feeders occurring under high trawling activity. Human activities apparently did not affect diversity levels. In parallel, we also identified some recolonization by *Octocorallia* since the 1980s. Finally, the increase in the pelagic pteropod *Creseis acicula* since 1995 at the MC2 station probably indicates the result of warming of surface waters in recent decades. Our study based on core reconstructions provides for the first time an historical perspective of the impact of trawling on marine benthos and the positive effect of conservation measures in marine protected areas.

Keywords: Biodiversity baselines, Ecosystem reconstruction, Ecosystem restoration, Conservation

paleobiology, Marine protected area, Sediment dating, Feeding guilds.