{rokbox title=|Graphical abstract :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-plastic-webs-new-food-dynamics-microplastics-mediterranean-pollution-olmo-et-al-2024-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-plastic-webs-new-food-dynamics-microplastics-mediterranean-pollution-olmo-et-al-2024.jpg{/rokbox}

Ruben Olmo-Gilabert, Valentina Fagiano, Carme Alomar, Beatriz Rios-Fuster, Montserrat Compa, Salud Deudero, 2024. **Plastic webs, the new food: Dynamics of microplastics in a Mediterranean food web, key species as pollution sources and receptors**

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Abstract: In the context of global environmental change, this study presents a novel approach to evaluating microplastic (MP) fluxes and probabilities of pollution within marine food webs. A topological model was built to understand the dynamics of MP pollution in the Mediterranean food webs. The analysis involves two approaches: the first approach includes centrality measures to understand the key role of species in the transmission of trophic effects regarding MPs, and the second approach incorporates MP data by developing the Interaction Pollution Indices (IPIs) at multiple levels to identify species being sources and receptors of MP pollution in the new concept of a plastic-food web. The trophic network consisted of 356 nodes representing not only species, but also aggregations in higher taxa, for a total of 3517 interactions, with 108 species having information on MP frequency of occurrence (FO). The mean probability of dietary MP transference was 0.087 %, and the maximum was 18 %. Species such as the rose shrimp *A. antennatus*, the catshark *S. canicula*, the sole *S. solea*, the sardine *S. pilchardus*, the Norway lobster *N. norvegicus*, and the forkbeard *P. phycis* were found to be significant sources of pollution and played crucial roles in the transmission of effects within the network. By incorporating the IPIs, a deeper understanding of the pollution dynamics at multiple levels was gained, highlighting the value of combining feeding and MP pollution data to develop effective management and conservation strategies. The application of the IPIs holds immense potential for studying bioaccumulation and biomagnification through MP pollutant transferences in marine ecosystems. Its flexibility in incorporating different types of information and units enables its transversal application throughout the field of ecology. This

research provides a crucial step towards developing effective tools for MP pollution mitigation strategies and the preservation of marine ecosystems integrity.

Keywords: Biodiversity, Environmental monitoring, Human health, Interaction Pollution Indices (IPI), Marine contamination, Ecological risk assessment