
Assessment of ecotoxicological effects of small microplastics on Mediterranean corals.

Odei Garcia-Garin*^{†1}, Iris Cherta¹, Mercè Villar¹, Cristina Linares¹, Alessandra Cani¹, Jazel Ouled-Cheikh¹, Marc Ruiz-Sagalés¹, and Núria Viladrich¹

¹Department of Evolutionary Biology, Ecology and Environmental Sciences, and Biodiversity Research Institute (IRBio). Faculty of Biology. Universitat de Barcelona. (IRBio-UB) – Avinguda Diagonal 643, Spain

Abstract

Extensive research has been conducted on the adverse effects of micro- and nano-plastic pollution on coral species. However, limited attention has been given to the transgenerational impacts of these pollutants on their interactions with energy allocation processes. Furthermore, existing studies have predominantly focused on tropical corals, thereby restricting our comprehension of the global ecological and toxicological consequences of micro- and nano-plastic pollution. To address these knowledge gaps, this study aims to investigate the ecotoxicological implications of micro- and nano-plastics on Mediterranean gorgonians, with a specific emphasis on their energy allocation, and transgenerational effects. By employing a multidisciplinary approach, this study evaluated the allocation of energy resources to basal metabolism, growth, and reproduction. Notably, the study replicated the composition and concentration conditions of micro- and nano-plastics observed in the field to provide realistic predictions regarding their effects. Additionally, the study compared the responses of the mixotrophic species *Eunicella singularis* with the heterotrophic species *Paramuricea clavata* to explore the relationship between trophic plasticity and resilience capacity. The findings derived from this study serve as a crucial tool for projecting future ecological trends in response to anthropogenic impacts and play a pivotal role in ensuring the preservation of Mediterranean octocoral populations. This study is funded by the Institut de Recerca de la Biodiversitat (IRBio) of the Universitat de Barcelona.

Keywords: microplastics, nanoplastics, gorgonian, Mediterranean, coral

*Speaker

[†]Corresponding author: odei.garcia19@gmail.com