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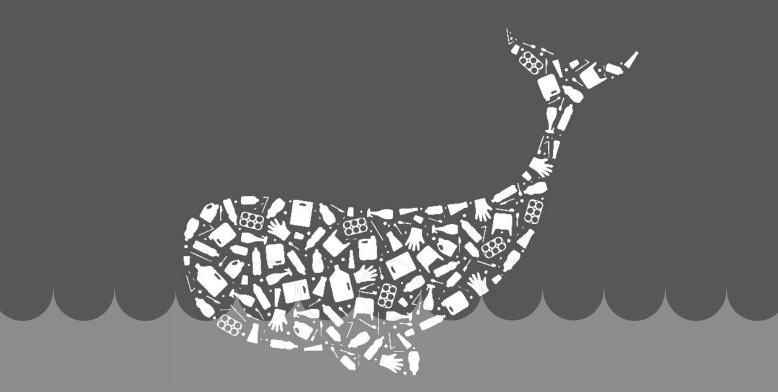
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BOOK OF ABSTRACTS

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Microplastic pollution in karst areas: a threat to caves, groundwater and protected species and habitats

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Microplastics (MPs) are a global problem, contaminating also remote areas, being them extremely mobile. However, MP pollution is poorly known in karst areas, especially in subterranean environment. Groundwater in karst aquifers constitutes about 25% of the global drinking water sources and karst caves are one of the most important and well-known geological features in the world, fragile sites with an exceptional scientific value, rich in endemic fauna, an environmental and cultural heritages, as well as an important economic resource. MPs can endanger the fragile subterranean ecosystems, be ingested by animals, irreversibly damage speleothems and paleontological/archaeological findings depositing on them and pollute karst aquifers. Extending the research started for the Italian project PRIN SHOWCAVE [1], the aim of this study is to investigate and monitor MP pollution in karst superficial and subterranean environments from a geological, biological and environmental point of view, in order to define strategies for protection and conservation purposes. A new detection technique has been developed to study cave sediments [2], subsequently adapted to the different studied matrices. Samples from different karst areas of Italy were collected and investigated. The sediments of three show caves were analyzed, highlighting the presence of MPs and the damaging of speleothems and paleontological remains. Superficial and underground water samples of the Bossea karst system (Piedmont) were analyzed, showing MP pollution in all examined waters, underlining the importance of the entire aquifer karst systems monitoring, even susceptible to contamination by surface pollutants. Different water environment samples of springs and caves in Carso system (Friuli-Venezia Giulia) were collected and will be analyzed to verify the MP pollution in different habitats, hosting particularly protected species such as *Proteus anguinus*. Sediment samples in a not jet explored caves will be collected to verify the MPs pollution even in underground environments not directly affected by human presence.

References:
[1]. V. Balestra, R. Bellopede, A. Cina, C. De Regibus, A. Manzino, P. Marini, P. Maschio, B. Vigna. *GEAM* 163, 24-35, 2021.
[2]. V. Balestra, R. Bellopede. *Environ. Pollut.* 292, 118261, 2022.