

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

Original

Microplastic pollution in karst areas: a threat to caves, groundwater and protected species and habitats / Balestra, Valentina; Bellopede, Rossana. - ELETTRONICO. - (2022), p. 12. ((Intervento presentato al convegno Training School "Micro and nanoplastic pollution: detection and mitigation, present and future challenges" tenutosi a Napoli nel 28-30 September 2022.

Availability:

This version is available at: 11583/2972057 since: 2022-10-04T15:47:50Z

Publisher:

Consiglio Nazionale delle Ricerche

Published

DOI:

Terms of use:

openAccess

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

Publisher copyright

(Article begins on next page)



BOOK OF ABSTRACTS

TRAINING SCHOOL MICRO AND NANOPLASTIC POLLUTION: DETECTION AND MITIGATION, PRESENT AND FUTURE CHALLENGES

Naples (NA), Italy
28th - 30th September 2022
Partenope Congress Centre



Funded by
the European Union



The Training School is based upon work from COST Action CA20201 PRIORIRY, supported by COST (European Cooperation in Science and Technology).

COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.

www.cost.eu

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

Valentina BALESTRA^{1,2*}, Rossana BELLOPEDE¹

¹Department of Environment, Land and Infrastructure Engineering (DIATI), Politecnico di Torino, Corso Duca degli Abruzzi 24, 10129 Torino, Italy

²Biologia Sotterranea Piemonte – Gruppo di Ricerca, 12082 Frabosa Soprana (CN), Italy

* valentina.balestra@polito.it

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 yet explored caves will be collected to verify the MPs pollution even in underground environments not directly affected by human presence.

Acknowledgement: The authors are grateful to all people gave them advice and suggestions and supported them during monitoring.

References:

[1]. V. Balestra, R. Bellopede, A. Cina, C. De Regibus, A. Manzano, P. Marini, P. Maschio, B. Vigna. *GEAM* 163, 24-35, 2021.

[2]. V. Balestra, R. Bellopede. *Environ. Pollut.* 292, 118261, 2022.