Microplastic and microfibre pollution in ponor Kovai – izvor Riina karst system (BiH)

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ZBORNIK SAŽETAKA

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Microplastic (MP) and microfiber (MF) pollution in karst areas is still poorly studied, especially in subterranean environments. MPs are a global issue, contaminating also remote areas, being them extremely mobile. In karst systems, MPs pollute waters, are assimilated and/or ingested by oganisms, and are an ecosystems threat. Adverse effects on ecosystems and animal health have been studied for MFs too. Anthropogenic MFs can be natural, regenerated, and synthetic, and derived from larger primary textiles manufactured for different human use, impacting natural environments. Despite the general consensus on the biodegradability and reduced dangerousness of the non-synthetic fibres in the environment, little is known about their degradation in ecosystems, and they release toxic compounds into the environment.

In this preliminary study we collected and investigated several sediment samples in five caves of the ponor Kovači – izvor Ričine system (Bosnia-Herzegovina), during the Scientific and Speleological Expedition held in 2022. This system is located in the Grabovica Plateau, an interesting karst area still little studied in many ways. Detected MPs and MFs (5-0.1 mm) will be counted and characterized by size, shape, and color via visual identification under a microscope, with and without UV light, exploiting fluorescence given by additives added in many materials. Analyses with μFTIR-ATR will be carried out on different particles to determine material typology.

Our preliminary research will improve knowledge on micropollutants in Bosnia-Herzegovina and karst areas, providing a baseline for future research. MP and MF pollution studies and monitoring in karst environments are under-represented in literature, therefore, analyses on a greater number of subterranean environments should be done to better understand this kind of pollution. This work could be useful for mitigation and management plans for species protection, habitat conservation, and water management.