

Assessment of biological diversity of underground anthropic habitats in cultural landscapes

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Abstract

Subterranean habitats of anthropic origin (e.g. tunnels, mines, rupestrian settlements) have similar characteristics of natural voids, such as caves. These anthropic habitats have been shown to provide habitats for wildlife and harbor high species richness. In particular, rupestrian underground shelters have both natural and cultural importance. However, their assessment assumes the cultural value as significant whilst the natural importance is often ignored. Despite the contribution of subterranean anthropic habitats to underground biodiversity, few studies investigated invertebrate fauna of these habitats. We studied invertebrate communities structure and composition and the environmental factors that affect them using transects, following light intensity in the underground shelters, and in the surrounding surface habitats, in the rupestrian settlement Alunis-Bozioru, from Buzau County, Romania. The diversity of the rupestrian settlement was studied both at community-level and species-level (for Collembola, Diplopoda, Araneae, Opiliones and Coleoptera). The results showed an overlap in the taxa composition of invertebrate assemblages between the underground shelters and the surrounding surface habitats. The most abundant species in the underground shelters and surrounding surface habitats were among:

1. Araneae *Achaearanea tepidariorum*, *Tegenaria* sp., *Lepthyphantes leprosus*, and *Pardosa* sp.;
2. Diplopoda *Cylindroiulus boleti*, and
3. Opiliones *Lacinius dentiger*.

The underground shelters harbored a diverse invertebrate community dominated by taxa associated with dark habitats. The main factors affecting taxa composition were humidity and vegetation cover in the surface habitats. Overall, our results indicated that rupestrian underground shelters could provide substitute habitats and might play an important role in conservation of subterranean biodiversity in the context of increasing human pressures on subterranean ecosystems.

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