Biodiversity of artificial cavities from rupestral assembly Aluniș – Nucu (Buzău)

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Background

Underground artificial cavities generated for various purposes by anthropogenic activities form into subterranean environments that have similar characteristics to caves. These cavities might provide important habitats for some animals and appear to harbour relatively high species richness. Most subterranean artificial cavities have both cultural and natural importance but in their assessment only the cultural value is assumed to be significant and the natural importance is often ignored. We inventory the macroinvertebrate community on the walls of subterranean artificial cavities and identify how wall characteristics are related to the occurrence and the richness of macroinvertebrate species.

Methods

- We sampled 6 rupestral cavities from the rupestral assembly Alunis – Nucu, Buzau County in September 2017 (Fig. 1).

Fig. 1 The location of sample sites rupestral cavities from the rupestral assembly Alunis – Nucu.

- The macroinvertebrates were collected both inside and outside of the cavities along wall transects of 1 m length (stations) with 1 m between each stations.
- For each cavity we recorded the temperature (T) and the relative humidity (RH), presence of vegetation, slope exposure and number of joints.

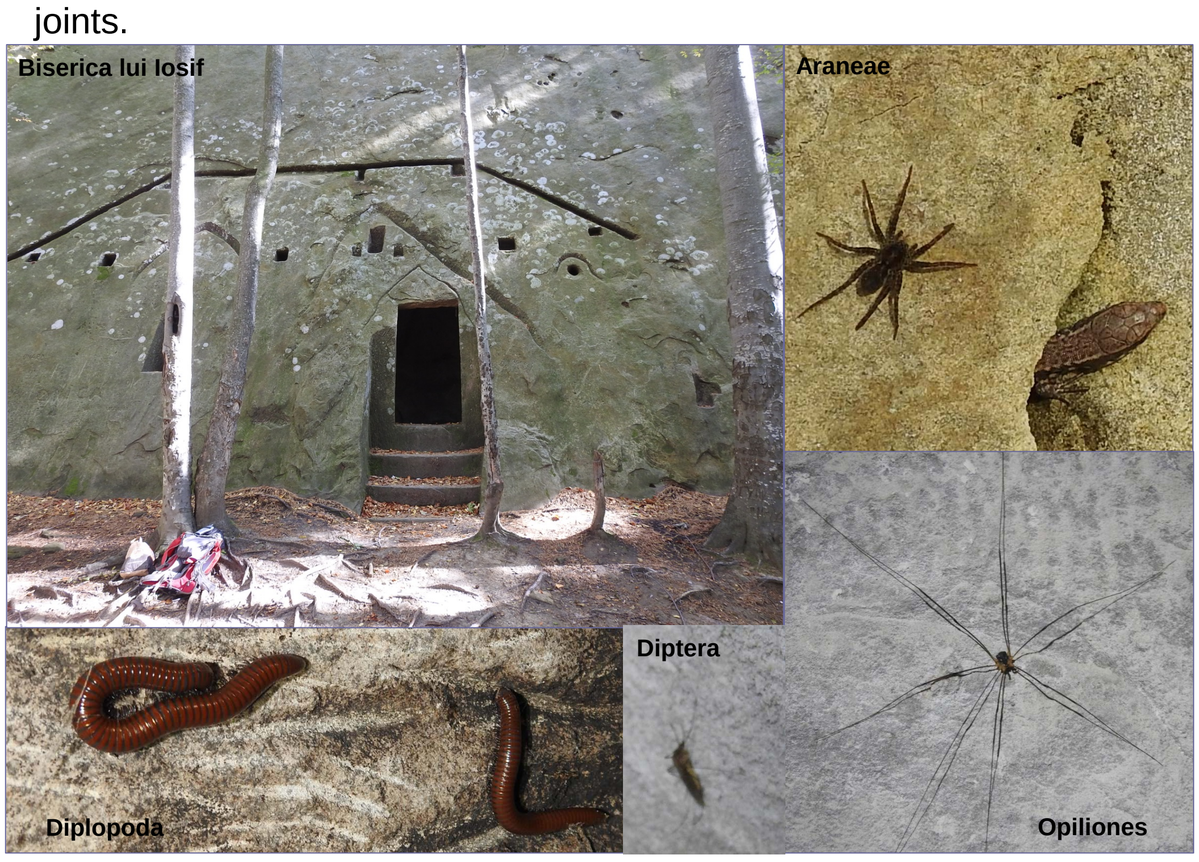

Fig. 2 The rupestral cavities and the most frequent taxa found along wall transects.

Results

The results showed that the species richness was higher inside than outside of the cavities (Fig. 3). The most frequent macroinvetebrate taxa inside of the cavities were Araneae, Diptera and Opiliones whereas outside the cavities were Araneae, Hymenoptera and Coleoptera (Fig. 4). In 8% of the sampled transects we did not detect macroinvertebrates. These transects were outside of the cavities, mostly dry and less covered by moss.

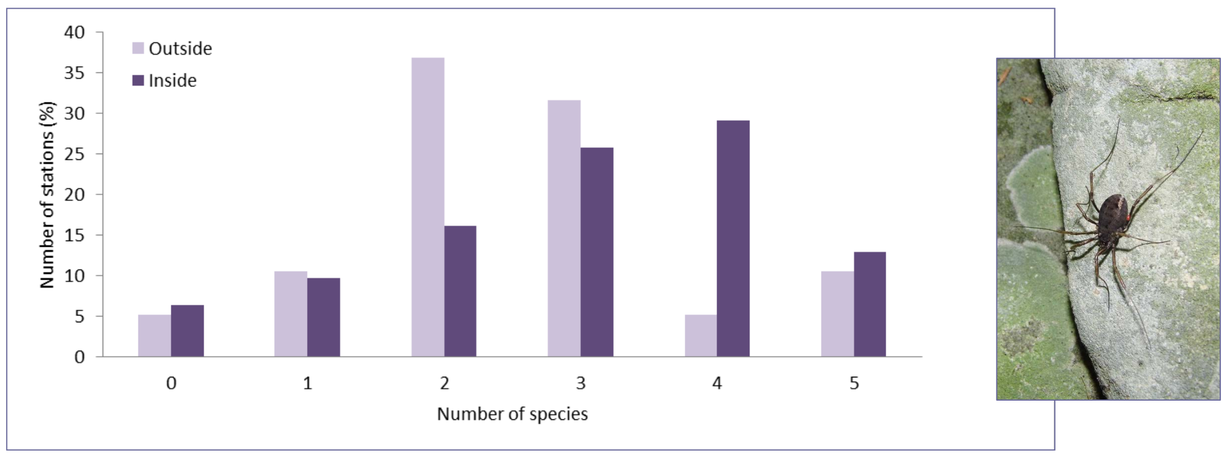

Fig. 3 Number of taxa in the sampling stations (n = 50).

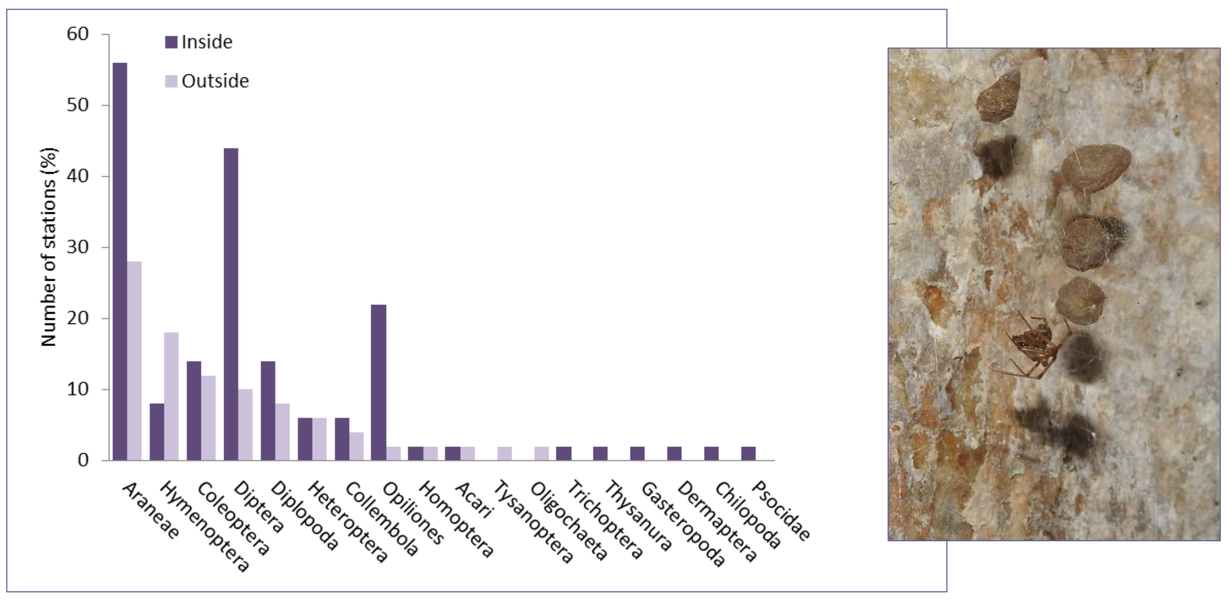

Fig. 4 Frequency of taxa in the sampling stations (n=50).

The temperature was lower whereas the relative humidity was higher inside (T = 11.3-16.1 ºC; RH = 63.7-69.9%) than outside (T = 13.2-20 ºC; RH = 44.2-63.7%) of the rupestral cavities (Table 1).

	Parameters of the stations			
	Temperature (ºC) Mean ±SD	Humidity Mean ±SD	Percent of vegetation cover	
			Bryophytes	Lichens
Inside	13.2 ± 1.8	65 ± 6.3	1.3 ± 4.3	5.2 ± 12.1
Outside	16.7 ± 2.4	52.5 ± 6.2	32.4 ± 31.8	30 ± 24.5

Table 1. Parameters of the stations (n = 50).

Conclusion

Our study indicate that subterranean artificial cavities play an important role for the macroinvertebrates community and their conservation and management might enhance and maintain species richness in areas where the native vegetation have been negatively affected by forestry.

Acknowledgements

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