

# **The vegetation from Brebu gorges (Romania) as a base for initiation in Romania of multidisciplinary researches of cliffs**

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The studies of the vegetation from Brebu gorges as cliff reference revealed that the abundance and distribution of the plant species is influenced by geological and geo-morphological characteristics of the cliffs. Most of the plant species are clonal developing specific growth strategies on cliffs, being difficult to establish the exact number of individuals. The micro-climatic factors acting on the Brebu cliffs are highly variable. Due to limited soil availability, micro-climatic extremes and water stress the plant species growing on these cliffs support physiological constraints and their stability is precarious due to the habitat instability.

Changes in vegetation composition occurring on cliff have a major impact on the micro-organisms, invertebrates and vertebrates diversity. Most studies of cliff fauna have focused on one or a small number of species. In most faunal studies, the focus of the research is usually not on the habitat but rather directly on the species that occur in situ.

Cliffs' fauna have an important ecological role in an autochthonous nutrient cycle. The large mass of rich organic debris from cracks and crevices are the results of biological activity of some soil invertebrates as earthworms, isopods and mites that feed on dead and decaying plant material. Mites were founded especially in raptor nests, which are important habitats for invertebrates on cliff faces. Ticks are also principal ectoparasites from bird colonies (Ixodidae, Argasidae). The parasitic fauna are found on the raptors themselves and their prey, the animal saprovores are associated with decomposition, and the humus fauna are associated with decomposition of the nest material.

Studies regarding the predator soil mites from cliff ecosystems or adjacent area are not known in Europe. Mites from the suborder Gamasina (Acari: Mesostigmata-Gamasina), in tropical soil web, predatory mites have an important role of transformation and transportation of the organic matter, being secondary and third consumers. They are very sensitive to any modifications of the bioedaphical substrate. Cliff habitats are characterized by specifically environmental conditions, vegetation and soil.

All the environmental factors act synergetic with heterogeneity of cliff surface, the degree of solid rock disintegration and climatic factors. Future work will include: experiments regarding architectural plasticity and growth responses of different plant species growing naturally on cliffs; studies using techniques from other disciplines, including molecular techniques, studies on plant

relationship with micro-organisms, invertebrates, vertebrates (including human beings climbers) and environmental factors.

The driving forces (physical, chemical, biogenic) of rock degradation act simultaneously in different proportion and rate. The complexity of the process asks for multidisciplinary and multi-analytical approach including: geology, petrology, mineralogy, geochemistry and material sciences.

For all the challenges raised by cliff studies it is necessary a complementary and multidisciplinary research team.