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Immagine di copertina: affioramento gessoso con vegetazione a *Sedum* spp., tipica dell'habitat 6110*, presso Tossignano (BO) in località Monte Donato (A. Velli, 2 giugno 2015).

Diversity, distributional patterns and distance decay in epilythic bryophyte assemblages in forest habitats

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Bryophytes represent a fundamental component of diversity in forest ecosystems. They provide crucial information about the state of the habitat not only by their taxonomical diversification, but also by the variety of life forms and life strategies they adopt to maximize water retention and spore dispersal. However, most of the studies dealing with bryophyte ecology and functional role in forest habitats have focused on epiphytic and epigeous communities, which constitute their more representative component, neglecting the epilythic ones.
In this study we thus examined how environmental and anthropogenic drivers shape distributional patterns of epilythic bryophytes and affect their diversity, as assessed by a set of different indicators describing, among other things, the variety of their life forms, life strategies and chorological types. We also investigated distance decay patterns, as a first step for testing at which spatial scale environmental and anthropogenic drivers affect beta diversity more significantly. Species turnover was estimated at different levels, as a nested design was adopted for sampling.
Overall, 64 surveys on epilythic bryophyte vegetation were carried out at 32 sampling locations scattered throughout the Serra de Sintra massif, in central Portugal, on a total of 320 boulders sampled and 1600 plots.
Regression analysis and gradient analyses of environmental and anthropogenic descriptors on diversity indicators and distribution patterns, respectively, were performed. In order to discriminate the effect of environmental drivers at different grains, two different sets of descriptors, one to be tested at sample level, the other one at substrate level, were selected. For distance decay, all the spatial levels were considered and compositional as well as spatial distances were aggregated through the various levels.
From the results it emerges that for epilythic bryophytes such factors as thickness of the canopy cover and diversification of micro-habitats represent the crucial drivers. As for anthropogenic drivers, while alteration of the habitat structure and physical pressure on it severely decrease biodiversity, creation of artificial habitats characterized by abundance of species from different bio-geographical regions and constant supply of water appears to significantly enhance it. Besides, from the analysis of distance decay patterns it emerges that the trend already described in literature for vascular plants holds for bryophytes as well the dissimilarity of species composition increasing as geographic distance increases.