**PATTERNS OF DIVERSITY AND PHYLOGENETIC STRUCTURE OF TERRICOLOUS LICHEN COMMUNITIES IN A MEDITERRANEAN MOUNTAIN**

Chiara Vallese1\*; Luca Di Nuzzo2; Michele Di Musciano1,3; Lucia Muggia4; Luana Francesconi1; Paolo Giordani5; Renato Benesperi2; Gabriele Gheza1; Valter Di Cecco6; Luciano Di Martino6; Juri Nascimbene1

1 Biodiversity and Macroecology Group, Department of Biological Geological and Enviromental Sciences, University of Bologna; 2 Dipartimento di Biologia, University of Florence; 3 University of L'Aquila, Department of Life, Health and Environmental Sciences; 4 Department of Life Sciences, University of Trieste; 5 Dipartimento di Farmacia (DIFAR), Università di Genova; 6 Majella National Park, Office for Monitoring and Conservation of Plant Biodiversity; \*E-mail: chiara.vallese2@unibo.it

Mediterranean areas are expected to be much affected by the rapid variation in climatic components due to global change. In Mediterranean mountains, an increase in aridity has been predicted as a result of a reduction of annual precipitation and an increase in the mean temperature. Due to their poikilohydric nature, lichens are extremely sensitive to climatic factors. In particular, this applies to high elevation ranges where communities are mainly composed of terricolous cold-adapted species that may suffer increasing warming and aridity. To test this hypothesis, we explored the relationships between climatic variables and both taxonomic and phylogenetic diversity of terricolous lichen communities along an elevational gradient in the Majella Massif (Central Apennines, Abruzzo, Italy). We analysed (1) species richness patterns in terms of heat-adapted, intermediate, and cold-adapted species; (2) pairwise beta-diversity patterns, also accounting for its two components, species replacement and richness difference; (3) phylogenetic diversity and evolutionary distinctiveness indices; (4) phylogenetic structure indices that should reflect specific assembly mechanisms. Our results indicate that lichen richness decreases in cold-adapted species with increasing mean temperature while enhances in all temperature-affinities groups with higher annual precipitation. The communities living in the wettest sites show the highest values in terms of phylogenetic diversity resulting more evolutionarily isolated and less closely related than expected by chance (overdispersion) as a result of competitive exclusion. Beta-diversity patterns reveal that the main component for these communities is the richness difference. These dynamics indicate that species loss across the gradient is the main expected response of terricolous lichens in a climate change scenario. This is mainly due to the loss of the cryophilous component that is also the most phylogenetically fostered. We conclude that increasing warm and drought conditions will dramatically impact taxonomic and phylogenetic diversity of terricolous lichen communities in the Mediterranean Mountains.