**IS THERE STILL A CHANCE TO ESCAPE FROM CLIMATE CHANGE? THE MORPHO-FUNCTIONAL TRAITS IN *Lobaria pulmonaria* RESPOND TO THE MICROCLIMATE.**

Paolo Giordani1\*, Renato Benesperi2, Benedetta Porcu1, Silvia Tripi1, Paola Malaspina1, Elisabetta Bianchi2, Beatrice Billi2, Lorella Dell'Olmo2, Luca Di Nuzzo2, Federico Durante3, Sonia Fadda4, Andrea Maxia4, Andrea Serra4, Chiara Vallese5, Emmanuele Farris4, Lorenzo Marini3, Alessandro Chiarucci5, Juri Nascimbene5

1 Università di Genova, Italy; 2 Università di Firenze, Italy; 3 Università di Padova, Italy; 4 Università di Sassari, Italy; 3 Università di Bologna, Italy; \* E-mail: giordani@difar.unige.it

*Lobaria pulmonaria* (L.) Hoffm. is among the most threatened lichens in Europe. In Italy, it is now mainly restricted in humid forests with a high ecological continuity, although there are still potential contacts between Apennine and Alpine populations. Recent models have estimated that, in the coming decades, climate change will have a decisive impact on its range of distribution throughout Italy, resulting in a high risk of extinction. However, these models, based on macroclimatic data, considerably underestimate the contribution of local microclimatic variations to the species probability of occurrence. We hypothesize that morphological-functional traits of *L. pulmonaria* are linked to the local availability of water and light, rather than to the variability of these factors on the macro scale. If this hypothesis would be confirmed, the microclimatic conditions could contribute to mitigating the effects of climate change on the geographic distribution of the species. To test this hypothesis, we sampled populations of *L. pulmonaria* along climatic gradients in Italy, from the Alps to the Mediterranean region. In each site, we collected data on the population size, the morphological characteristics of the thalli and the forest structure. Some quantitative functional traits, measured on a sample of lobes, were then put in relation with micro-, meso- and macroclimatic variables to determine the relationships between the traits considered and the environmental factors. The relationships observed between functional traits and microenvironmental factors are compatible with a scenario in which *L. pulmonaria* can withstand the negative effects of climate change in some refuge locations.