

**OR133***Ant functional responses along environmental gradients***Xavier Arnan**, Xim Cerda, Javier Retana

Understanding species distributions and diversity gradients is a central challenge in ecology and requires prior knowledge of the functional traits mediating species survival under particular environmental conditions. While the functional ecology of plants has been reasonably well explored, much less is known about that of animals. Ants are among the most diverse, abundant, and ecologically significant organisms on earth, and they perform a great variety of ecological functions. In this study, we analyze how the functional species traits present in ant communities vary along broad gradients in climate, productivity, and vegetation type in the Southwestern Mediterranean. To this end, we compiled one of the largest animal databases to date: it contains information on 211 local ant communities (including eight climate variables, productivity, and vegetation type) and 124 ant species, for which 10 functional traits are described. We calculated two complementary functional trait community indices (trait average and trait dissimilarity) for each trait, and we analyzed how they varied along the three different gradients using generalized least squares (GLS) models that accounted for spatial autocorrelation. Our results show that productivity, vegetation type, and, to a lesser extent, each climate variable per se might play an important role in shaping the occurrence of functional species traits in ant communities. Among the climate variables, temperature and precipitation seasonality had a much higher influence on functional responses than their mean values, whose effects were almost lacking. Our results suggest that strong relationships might exist between the abiotic environment and the distribution of functional traits among Southwestern Mediterranean ant communities. This finding indicates that functional traits may modulate the responses of ant species to the environment. Since these traits act as the link between species distributions and the environment, they could potentially be used to predict community changes under future global change scenarios.