

PhD Fellowship on alien species in terrestrial ecosystems of the Antarctic

We offer a 4-years PhD thesis contract associated to the research project **ANTECO** (CGL2017-89820-P) on **“Biogeography and ecophysiology in native and non-native micro-arthropods in Antarctic environments: a multi-scale approach”**, funded by Spanish Research Agency.

We are looking for a highly motivated graduate student, able to work independently and to actively interact with an international research team. The PhD student will be supervised by Dr. Miguel Ángel Olalla Tárrega (P.I.) and will be based at Rey Juan Carlos University (Madrid, Spain). She/he should be proficient in English (both oral and written) and show a good academic record. Ideally, candidates should hold an MSc Degree in Ecology, Biogeography or related disciplines and have research interests on biological invasions, microarthropods and Antarctic terrestrial ecology. A record of previous experience publishing scientific papers will be highly valuable. Annual Gross Salary will be 16.422 € plus full Social Security Benefits.

Interested candidates should email a motivation letter and CV to Miguel Á. Olalla Tárrega (miguel.olalla@urjc.es)

Project Summary

Antarctic terrestrial ecosystems are especially vulnerable to biological invasion processes in a context of global change that entails a higher degree of human accessibility at the local level and increased temperatures, availability of liquid water and ice-free areas. Habitat availability and the absence of certain ecological functions in these ecosystems involve that profound changes are expected in their structure and functioning under colonisation by non-native species. Although the number of non-native species documented in Antarctica has increased in recent years, there is a lack of knowledge regarding their geographical distribution, expansion capacities and possible negative interactions on native biotas. Specifically, physiological mechanisms of survival in non-native springtail species at Antarctic latitudes have been poorly documented. Previous findings on sub-Antarctic islands suggest that indigenous species exhibit much lower supercooling points than non-native ones, while the pattern reverses in the case of upper lethal temperatures. In addition, non-native species have faster development times under higher temperatures. This supports the hypothesis that invasives would be favored in climate warming scenarios. ANTECO will use a multi-scale approach to study the environmental responses in native and non-native springtails in Antarctica at micro- and macroclimatic levels. A set of ecophysiological analyses is proposed to estimate lethal thermal tolerance limits (upper and lower) using experimental manipulation protocols. The relationship between thermal tolerance limits and distributional range boundaries over biogeographical scales will also be studied. We will continue the intense sampling activity of the research team in recent years, suggesting field campaigns to obtain soil samples and characterize the edaphic fauna in biogeographic regions of Maritime and Continental Antarctica that remain less explored. From an applied point of view, the results obtained will be essential for the management of Antarctic enclaves and the preparation of documents to be presented at the annual consultative meetings of the Antarctic Treaty.