OR091

Cricket community acoustics: a new tool to detect invasive ants.

Jeremy Anso, Amandine Gasc, Laure Desutter-Grancolas, Eric Vidal, Herve Jourdan

New Caledonia archipelago, as a biodiversity hotspot of high endemism, is highly threatened by biological invasions. Among invasives, ants are recognised as major threats for New Caledonian fauna and flora, local agriculture and population. Three main invasive ants are established in the archipelago: *Wasmannia auropunctata*, *Pheidole megacephala* and *Anoplolepis gracilipes*. In this context, early detection is important to promote regulation, control and eradication in order to promote conservation of ecosystems with high biodiversity values. Here, we investigate the impact of 2 invasive ants (*W. auropunctata* and *A. gracilipes*), on the structure and composition of cricket fauna, which are recognized as a major component of forest floors, according to their richness and high abundance all year round. Their diversity and high level of endemism suggest they may be good candidate to be used in community assessment. Crickets also produce consistent sounds through the environment, as males call to attract females at long range. They contribute greatly to acoustic environments. Then acoustic environments can be related, through analysis of sound signal complexity, to the richness of the community and then to perturbation such as ones linked to ant invasions. We investigate how meta-acoustic can be used as a non invasive, innovative, and efficient method to identify biological invasions from ants, to manage natural and invasive free reserves, or to assist traditional methods in conservation and management of endangered ecosystems. We tested its efficiency in the southern part of New Caledonia, contrasting different biotopes invaded or not by one of the three invasive ants found in the area. Our results already demonstrate that crickets communities modifications are efficient biomarkers to detect invasive ants, especially for *W. auropunctata*, as the ants modify the composition and profile of cricket communities. Crickets may be used as an innovative tool to early detect biological invasion, using meta-acoustics.