WORKING PROJECT TITLE	Determining the potential of invasive insects to respond to climate change
CORE TEAM MEMBER	Susana Clusella-Trullas
ACADEMIC LEVEL OF THE PROJECT	PhD/Postdoc
PROJECT BACKGROUND	Invasive insects are an increasing threat to native diversity but the question of how well they will perform in face of climate change remains unexplored. In particular, the knowledge of their adaptive evolutionary trait change in response to climate change is limited. This line of enquiry poses several known challenges, e.g. 1. Responses to climate change can include both evolutionary and plastic trait changes; 2. The (climate) drivers of selection can be multidimensional (temperature, water, photoperiod) and 3. Multiple phenotypic traits shape the adaptive capacity of an individual. We have recently shown that *Harmonia axyridis*, a global invasive beetle, has limited evolutionary capacity given parameters of the thermal performance curve for walking speed but heritability estimates of temperature tolerance were significant, albeit low (Logan et al. 2020). Despite these interesting findings, the data only reflect one facet of performance and do not include adaptive responses in the wild. This project aims to use multiple approaches (physiological assays, experimental evolution and field measurements) to better account for some of the challenges (1-3) listed above. By using *H. axyridis* as an insect model, this project will provide a more comprehensive picture of how to define the thermal adaptive capacity of invasive insects to future climate scenarios.
FURTHER READING	Roy H.E., Brown P.M.J., Adriaens T., Berkvens N., Borges I., Clusella-Trullas S., et al. 2016. The harlequin

ladybird, *Harmonia axyridis*: An inspiration for global collaborations on invasion biology. *Biological Invasions* 18:997-1044.

Logan M.L., Minnaar I.A., Keegan K.M., Clusella-Trullas S. 2020. The evolutionary potential of an insect invader under climate change. Evolution 74: 387-427.

Hoffmann A.A. & C.M. Sgrò. 2011. Climate change and evolutionary adaptation. Nature 470: 479-485.

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