

# The role of individuals and their traits in determining the impacts of environmental change: from blowflies to mosquitoes?

## Description

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by **Christina Cobbold**

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- Tuesday
- Building 5 Paraninfo (Envases de Cartón)
- 12:00 – 13:00

Environmental change is having profound effects on populations from dramatic global declines in biodiversity to increased incidence and geographical spread of vector borne diseases, such as dengue. Predicting complex species-environment interactions is crucial for guiding conservation and mitigation strategies in a dynamically changing world. Many individual organisms can rapidly respond to their changing environment through phenotypic plasticity, where variable traits are expressed depending on environmental conditions experienced. For individuals, the effects of phenotypic plasticity can be quantified by measuring environment–trait relationships, but it is often difficult to predict how phenotypic plasticity affects dynamics at the level of the population. I will present a mathematical framework for capturing the interaction of environment, individuals and their traits to establish the role of phenotypic plasticity in mitigating the effects of climate change. I will show how this approach leads to both interesting mathematical questions and novel dynamics and can be used to helping to explain the location, magnitude and timing of historical dengue outbreaks.

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