Long-term changes in the abundance and phenology of nocturnal insects as potential drivers of population change in bats in agricultural landscapes

Supervisory team:
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Project description:
Dramatic declines in insect abundance has been shown across continents, but few studies have linked these declines with impacts on higher trophic levels, such as bats. Using the world-class Rothamsted Insect Survey (RIS) data, we will investigate how bats respond to advances in the seasonal timing of insect migrations as well as changes in the distribution and abundance of insects across the UK, by matching RIS data with extensive National Bat Monitoring Programme data to derive impactful 25-year trends. Field experiments will be conducted to estimate the strength of the spatial relationship between insect migration events and bat activity in order to test whether bats are increasingly mismatched with their insect prey. We will estimate the role of landscape structure, climate and other abiotic and biotic drivers on these trends. The project is strongly multidisciplinary, drawing on biology, biophysics and behavioural ecology and has at its core, strong mathematical and statistical components. The Bat Conservation Trust (BCT) is a stakeholder in this studentship and with new understanding generated from this research, BCT will translate findings into meaningful advice for land owners, and promote this advice to policy makers, land owners and farming bodies. The results of the study will also be shared with the Eurobats Intersessional Working Group on Insect Decline as a Threat to Bat Populations in Europe.