

P022*Spatial genetic structure and behaviour of common and declining bumblebees*

Seirian Sumner, Stephanie Dreier, Jinliang Wang, Andrew Bourke, John Redhead, Matt Heard, Claire Carvell

Bumblebees are important pollinators of food crops and wild plants, but their populations are in decline. Although bumblebees have been well-studied in some respects, fundamental aspects of their ecology remain unknown. We used a novel combination of molecular microsatellite markers, intensive field studies and landscape modelling to determine the spatial genetic structure of five species across an agricultural landscape, as a tool for predicting the impact of habitat structure on foraging range and queen dispersal. We sampled the study populations at a fine spatial scale to maximise the likelihood of detecting sister workers at multiple sites, allowing us to estimate the locations of large numbers of wild colonies. Worker foraging ranges differed between species and were significantly related to the amount and spatial distribution of foraging resources across the c. 20km² landscape, depending on their colony locations. Using the reconstructed queen genotypes at these estimated nest locations, we determined whether isolation by distance was present at this scale. We therefore present the first detailed analysis based on queen genotypes of whether or not, within bumblebee species, related queens tend to nest near one another. This project is funded under the UK Insect Pollinators Initiative.