

Do bumblebee nesting and foraging behaviours explain species-specific responses to agricultural landscape simplification?

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1 Abstract

For central-place foragers like bumblebees, spatial proximity of nesting and floral resources is key for supporting colony growth and reproduction. Agricultural landscape simplification may favour species adapted to profit from spatiotemporally sparse but highly abundant flowers, or those with the broadest nesting habitat niches; these traits may even explain species invasions or range expansions. We previously showed that native *Bombus* abundance declines in response to landscape simplification, while that of an invasive species (*Bombus impatiens*) does not. We now aim to identify the behavioural underpinnings of these patterns. We performed queen nest searching surveys, quantified colony densities, and fit spatially explicit models of foraging distance (including the effects of floral abundance on patch visitation) for two bumblebee species (*B. mixtus* and *B. impatiens*). Our work will provide insights regarding pollinator movement and habitat use in anthropogenically disturbed landscapes, while also deepening our understanding of how these systems may influence species invasions.