Title: The role of disease in bee foraging ecology<!–<RunningTitle>The role of disease in bee foraging ecology</RunningTitle>–>

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The role of disease in bee foraging ecology

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Highlights

- **Diseases have a central, but poorly understood role in bee foraging ecology**
- **Flowers are hubs for horizontal transmission of parasites within and between bee species**
- **Nutritional and non-nutritional pollen and nectar chemistry affects bee immunity and disease**
- **Diseases modify foraging behaviour by impairing foraging ability or changing floral preferences**
- **Parasites affect pollination services by reducing bee populations or changing foraging behaviour**

Abstract

Diseases have important but understudied effects on bee foraging ecology. Bees transmit and contract diseases on flowers, but floral traits including plant volatiles and inflorescence architecture may affect transmission. Diseases spill over from managed or invasive pollinators to native wild bee species, and impacts of emerging diseases are of particular concern, threatening pollinator populations and pollination services. Here we review how parasites can alter the foraging behaviour of bees by changing floral preferences and impairing foraging efficiency. We also consider how changes to pollinator behaviours alter or reduce pollination services. The availability of diverse floral resources can, however, ameliorate bee diseases and their