Evidence of forage distance limitations for small bees (Hymenoptera: Apidae)

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Abstract. The distribution of ground-nesting bees was investigated using transects of water traps in a mosaic of nesting and forage habitats at Shotover Hill in Oxfordshire, UK. The site includes a large area of ground-nesting bee activity and is adjoined on three sides by floristic hay meadows. This study showed that the females of small bee species (<1.5 mm intertegular span) that were foraging in the hay meadows demonstrated a functional limitation to their homing range. The abundance of small bees declined rapidly with increasing distance from areas of high density nesting; declining more rapidly than might be expected from uniform dispersal into the surrounding landscape. By modelling the occurrence of bees along each transect it was found that the probability of observing a small bee in the hay meadows was reduced to 10% at a distance of 250 - 370 m from the nesting habitat. The result emphasises the scale on which habitat fragmentation will begin to impact upon bee diversity, and the relative contribution of managed 'pollen and nectar' strips to areas of nesting habitat.

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