

POLLEN CARRYOVER BETWEEN SEQUENTIAL FORAGING TRIPS BY A SOLITARY BEE: IMPLICATIONS FOR DISTANT OUTCROSSING

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The propensity of bees to forage locally in small patches results in very limited pollen travel and often small genetic neighbourhoods for their floral hosts. Nevertheless, distant pollen flow is rare but regularly detected, seemingly at odds with bees' localized foraging patterns.

In this study, we experimentally evaluate a nesting bee's carryover of pollen acquired during her preceding foraging trip and its contribution to host seed set. We used the bee *Osmia californica* foraging at sunflowers. Between foraging trips, females in their nests were moved from their cage with male-fertile sunflowers to an adjacent matching cage with plants of a pollen-less variety. Most females resumed foraging, and all visits resulted in mature seeds, sometimes in abundance.

We conclude that residual pollen on a nesting bee's body can carry over into a subsequent foraging trip and contribute to pollination. A graphical model contrasts this inter-trip carryover mechanism with patch fidelity during a foraging trip to

describe spatial patterns of resultant pollen-mediated gene flow.



A captive female Osmia californica bee collects pollen for her progeny from a sunflower, Helianthus annuus.