

Apple pollination: how honey bees find apple flowers

Apfelbestäubung: wie Honigbienen Apfelblüten finden

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Honey bees are important pollinators of apple (*Malus domestica*) flowers, yet little is known about how the bees find these flowers. As visual and olfactory floral cues are generally regarded as being most important for communication between flowering plants and their pollinators, we investigated visual (color) and olfactory cues of *M. domestica*, and determined their relative importance in attracting apple flower-inexperienced honey bees. Colour analysis using spectrophotometric techniques showed that pinkish-white petals of apple flowers appear UV-blue to bees. Scent analysis by dynamic headspace and gas chromatography / mass spectrometry revealed nearly 20 different compounds, most of them aromatics. Behavioural experiments performed in a flight cage showed that honey bees use both visual and olfactory cues to find apple flowers and that both cues are similarly attractive to the bees. The single scent components responsible for positive responses of honey bees towards olfactory cues need to be identified in a next step. Such components may then be used to manipulate behaviour of bees in order to optimize pollination success and fruit set of apple trees.

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I am a “flower”: do blister beetle larvae of *Meloe* attract bee hosts by mimicking floral volatiles?

Ich bin eine „Blüte“: locken Larven von *Meloe*-Ölkäfern Wirtsbienen durch Mimikry von Blütendüften an?

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Blister beetles (Meloidae) are enigmatic insects and well known for their toxicity due to cantharidin. The adults are herbivorous/ florivorous and the larvae typically parasitize on insects, often on solitary bee larvae as well as their food provision. One of these beetles, *Meloe proscarabaeus* LINNAEUS, 1758, occurs in high densities in the city centre of Salzburg at the bank slope of the Salzach river, where it parasitizes *Andrena vaga* PANZER, 1799 bees. This bee species is specialized on willows (*Salix* spp.) as it collects pollen for its larvae only from plants of this genus. Adult female beetles lay their eggs in the soil and the phoretic first larval instars (triungulins) attach to their bee hosts, which transport the larvae into their nest. A picture of Heiko Bellmann shows a female *Andrena* bee with a high pollen

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Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Entomologica Austriaca](#)

Jahr/Year: 2015

Band/Volume: [0022](#)

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