Bumblebee habitats and diets change over their lifecycle

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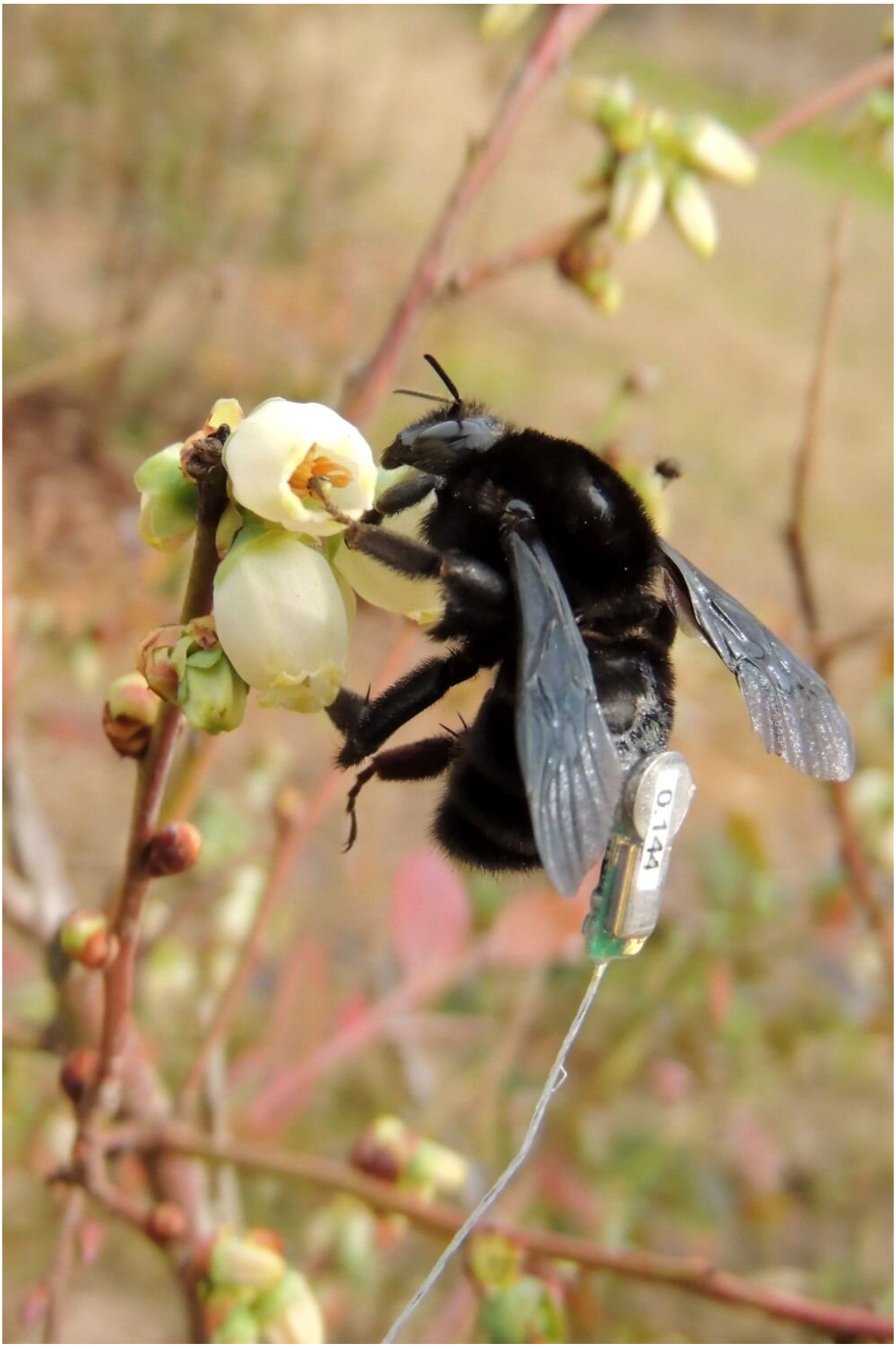
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Bumblebee habitats and diets change over their lifecycle. Credit: Pablo Cavigliasso

Bumblebees change their home ranges and dietary preferences after establishing nests, suggesting that diversified landscapes help support bee populations as their needs change during different phases of their lifecycle, according to a study published July 8 in the open-access journal *PLOS ONE* by Pablo Cavigliasso of the Instituto Nacional de Tecnología Agropecuaria in Argentina, and colleagues. As noted by the authors, the study contributes to the growing understanding of how bumblebees use the environment and provides valuable information for conservation planning and sustainable management of the land at a crucial moment in the bumblebee life cycle.

Bumblebees are important pollinators for many wild and cultivated plants and have experienced steep population declines worldwide. Understanding how bumblebees use the resources in agricultural landscapes is essential to develop meaningful farm-based land-use management plans that sustain bee populations and maximize the potential pollination service they provide to farmers and ecosystems. Toward this goal, Cavigliasso and colleagues studied the habitat selection of 17 queen bumblebees of the species Bombus pauloensis in blueberry fields in Entre Ríos province, Argentina. They attached tiny 0.2g radio transmitters to each queen bee and used radio telemetry to track their locations.

Before establishing nests, the bumblebees moved over larger areas, mostly within blueberry fields. During this life stage, queen bees often conduct reconnaissance flights of the environment in search of suitable

nesting sites. By contrast, after establishing nests, the bees centered their habitat on the edges near forest plantations and switched their diet to wild floral species. During this stage, they prefer landscapes with greater floral diversity to supply their growing worker colony.

The results highlight the importance of a diversified habitat within agricultural areas to help sustain bumblebee colonies. According to the authors, the findings suggest that land owners and managers of agricultural lands should consider the full lifecycle of bees, from nest formation to the emergence of worker bees; this longer-term perspective can help maintain native bees in farmlands from year after year, maximizing the pollination service they provide.

Cavigliasso summarizes: "In this study we provide insight into how bumblebee queens use different habitat elements at crucial periods in their lifecycle, showing the importance of mass flowering crops like blueberry in the first flights, and how diversified landscapes help support bee populations as their needs changes during the during the early phases of its lifecycle."

More information: Cavigliasso P, Phifer CC, Adams EM, Flaspohler D, Gennari GP, Licata JA, et al. (2020) Spatio-temporal dynamics of landscape use by the bumblebee Bombus pauloensis (Hymenoptera: Apidae) and its relationship with pollen provisioning. *PLoS ONE* 15(7): e0216190. doi.org/10.1371/journal.pone.0216190

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