

Floral resources enhance fecundity, but not flight activity, in a specialized aphid predator, *Hippodamia convergens*

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Introduction:

- Adult aphid predators disperse across the landscape seasonally in search of patchily distributed and temporally variable prey aggregations.
- Flight is energetically costly, consuming resources that could be invested in reproduction.
- *Hippodamia convergens* is an important aphid predator in North American cereal crops and other agricultural systems.
- Floral resource consumption can enhance adult survival during periods of low prey availability and may improve reproductive success.

Objective:

We tested how an omnivorous adult diet containing floral resources interacts with body size to influence reproduction and flight behavior compared to a prey-only diet.

Read the article:

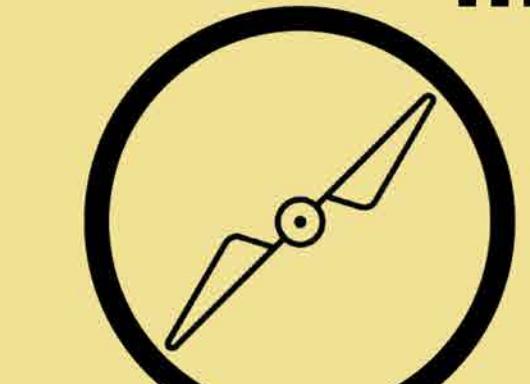
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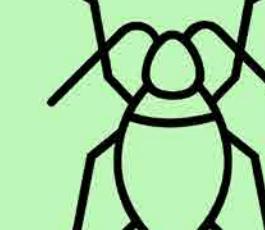
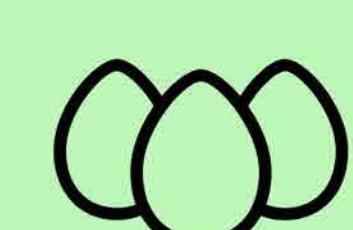
Methods:

- Small and large beetles were produced by controlling larval access to food – 3h daily access versus 24h *ad libitum* access.
- Reproductive performance was tracked for 18 days, and female flight activity was assayed via 3h bouts of tethered flight.

3hr test flight on tethered insect flight mill



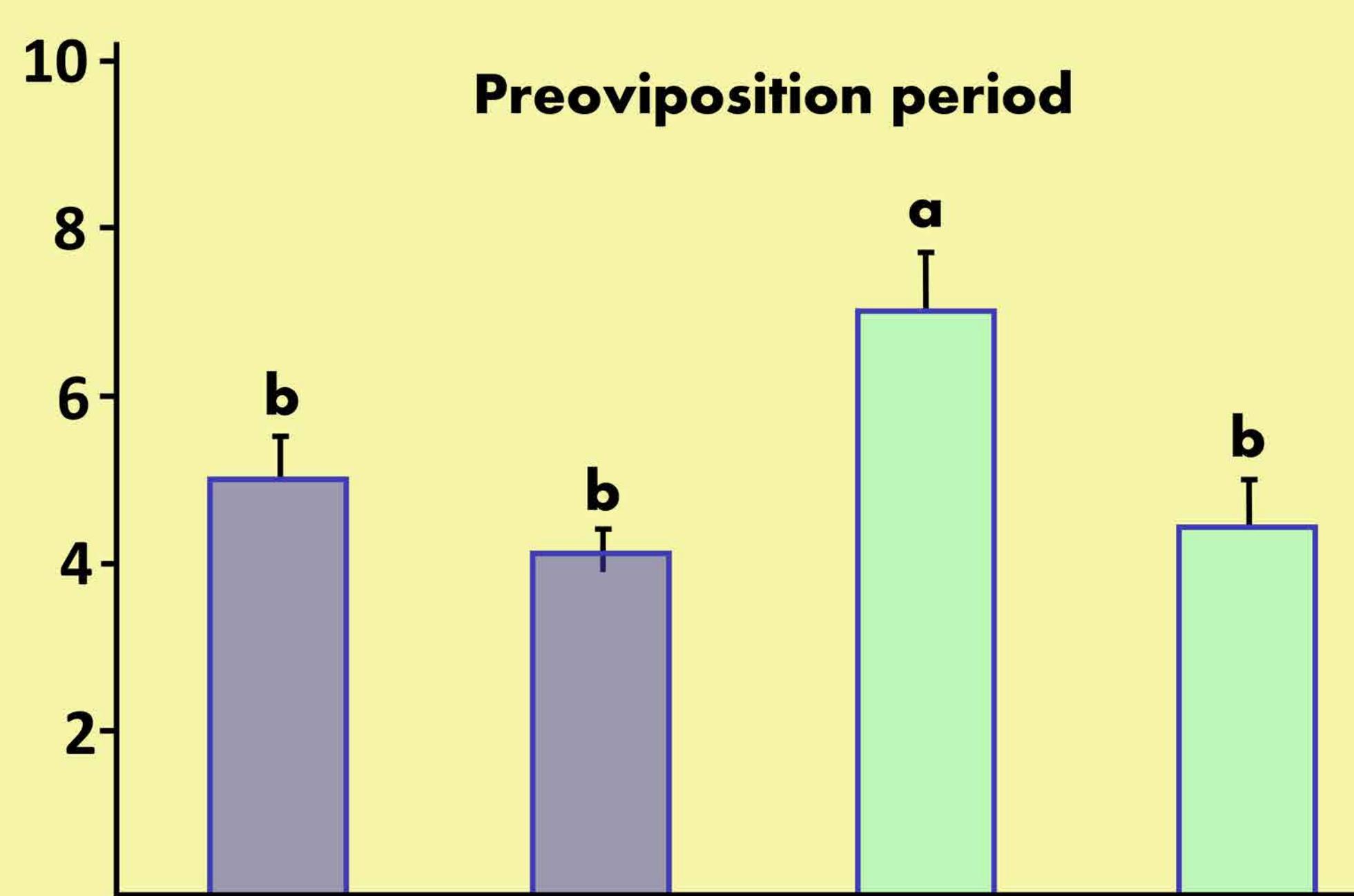
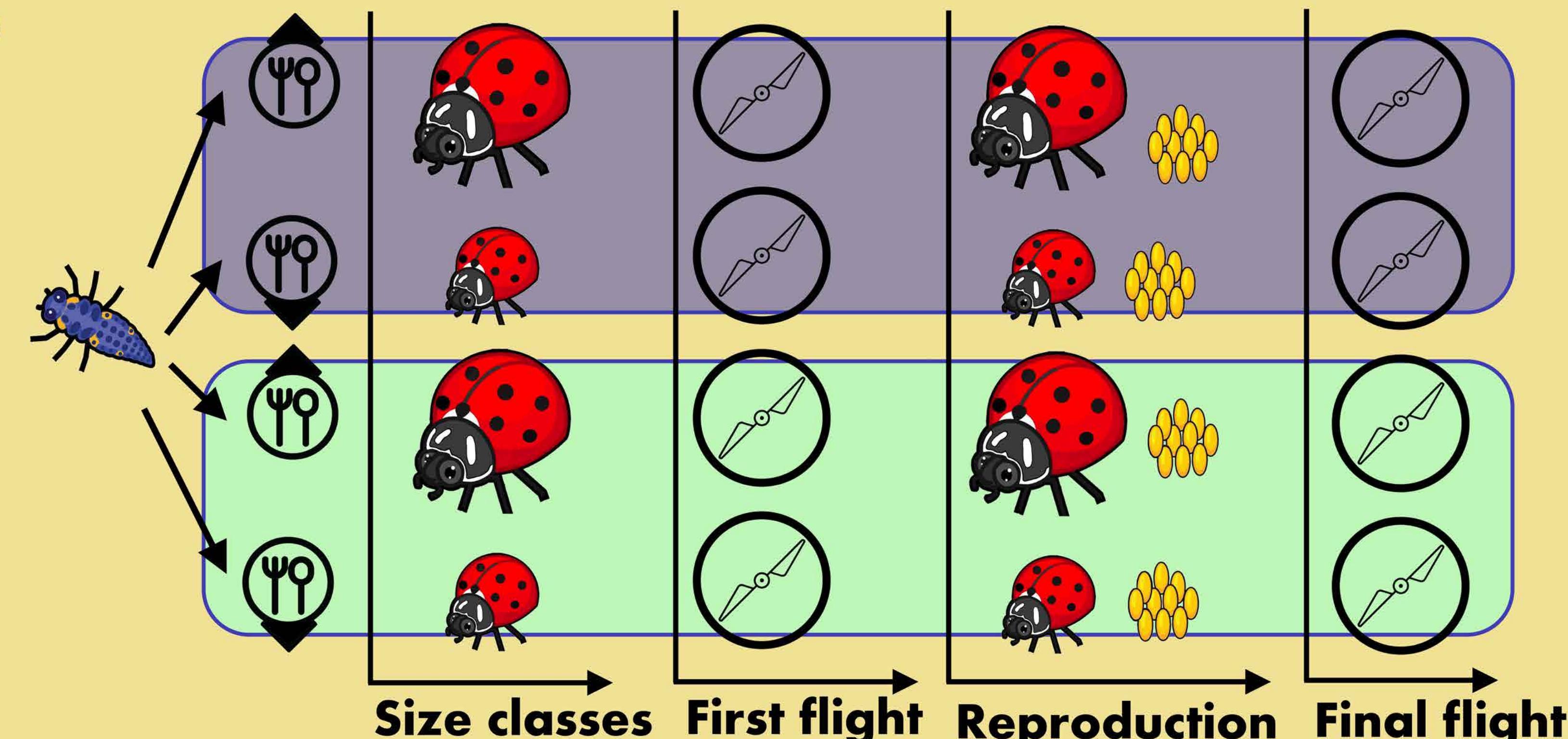
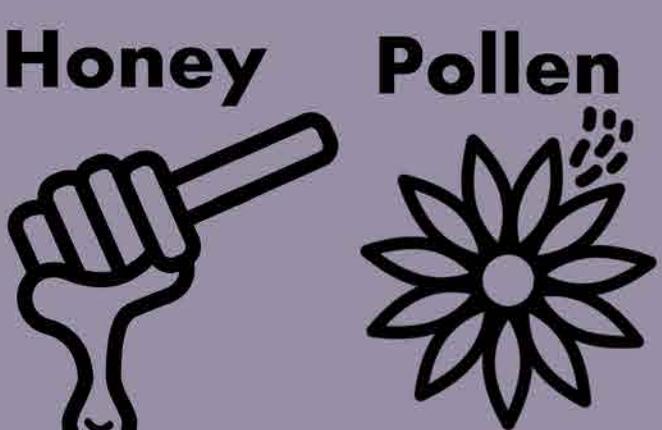
Prey-only



Omnivorous

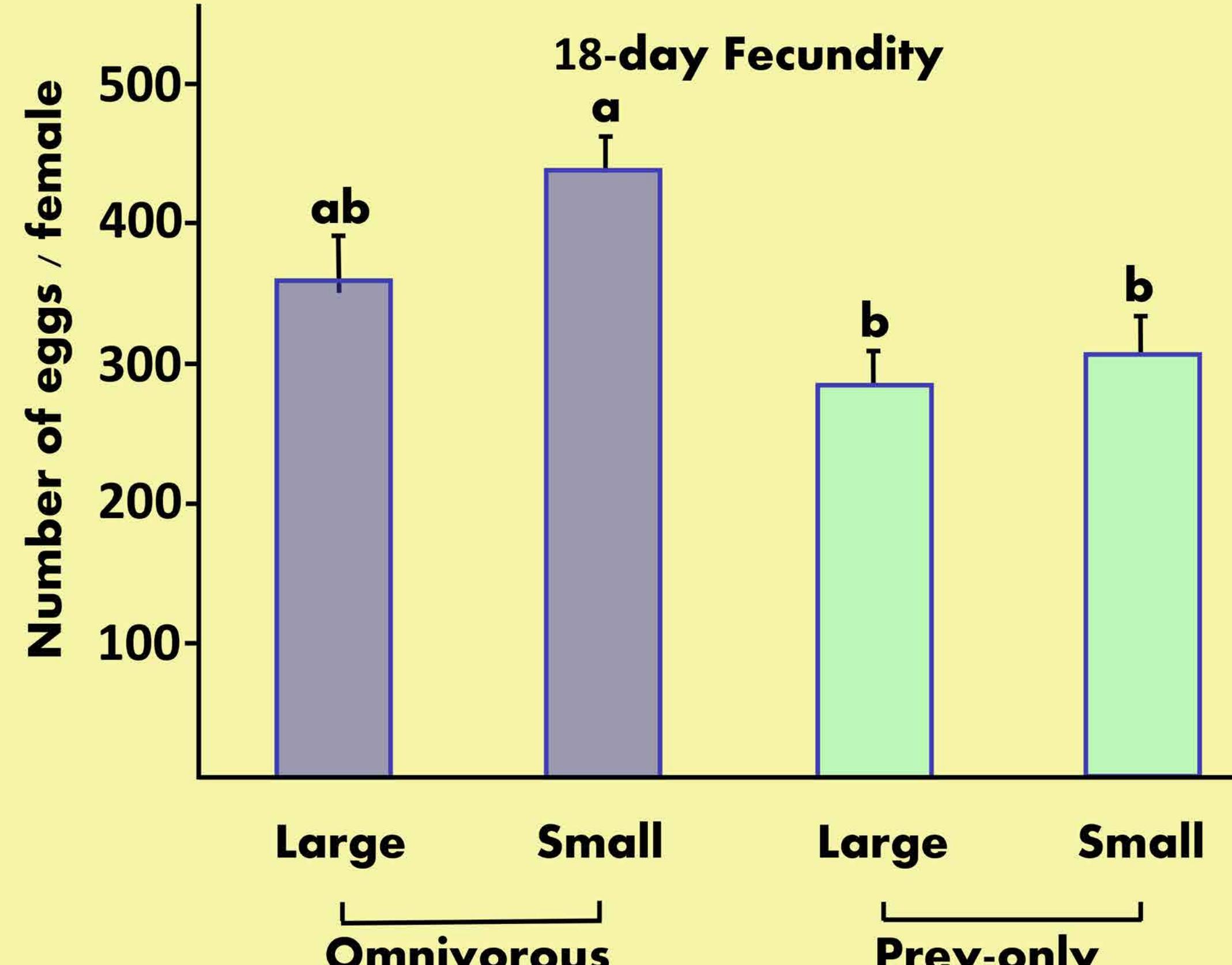
Epeorus kuehniella eggs

Schizaphis graminum aphids



Reproduction results:

- Diet composition and body size interacted to influence preoviposition period, with large prey-only treatments delaying oviposition the longest.
- The omnivorous diet improved 18 d fecundity relative to a prey-only diet, but egg fertility was unaffected.

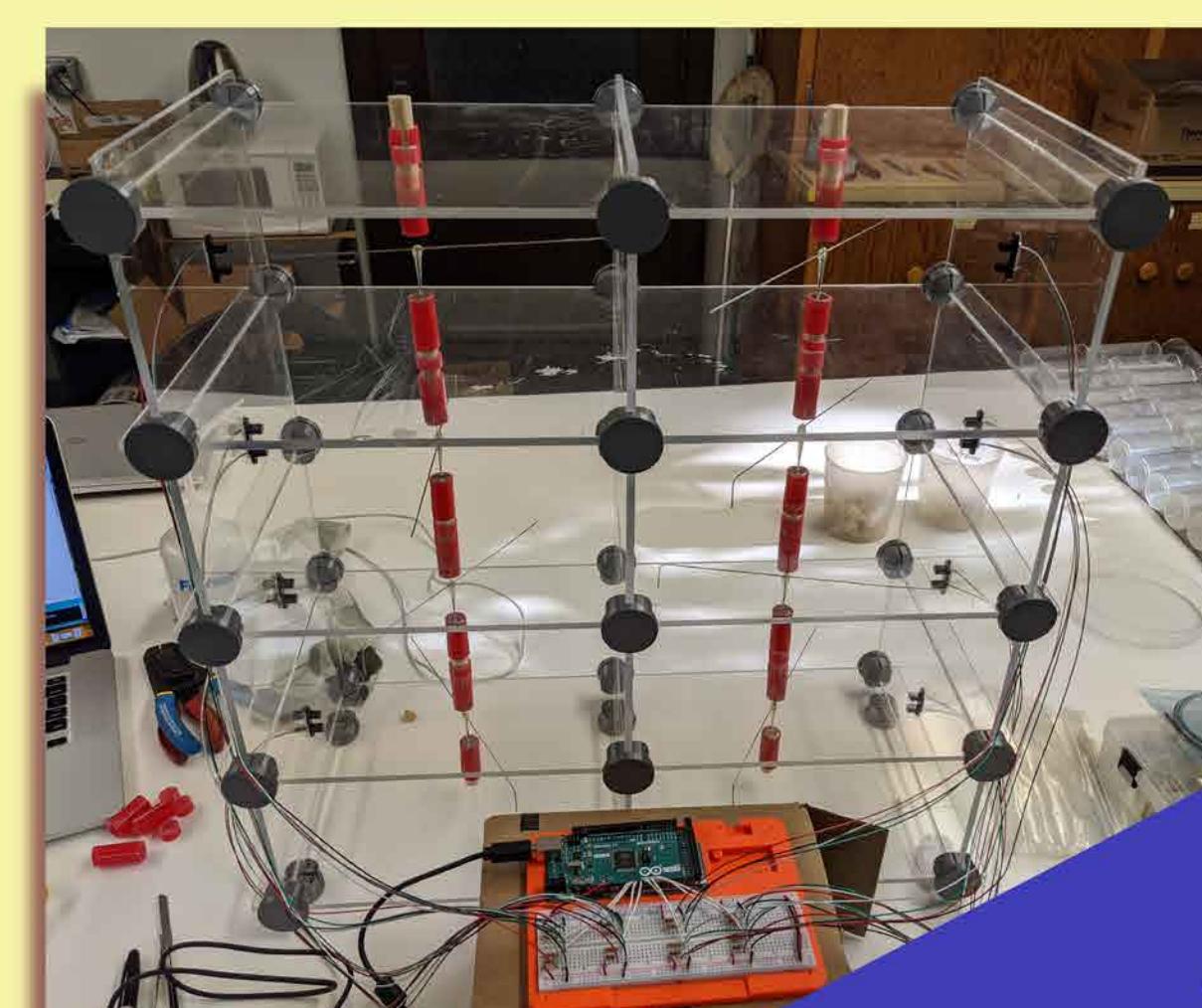
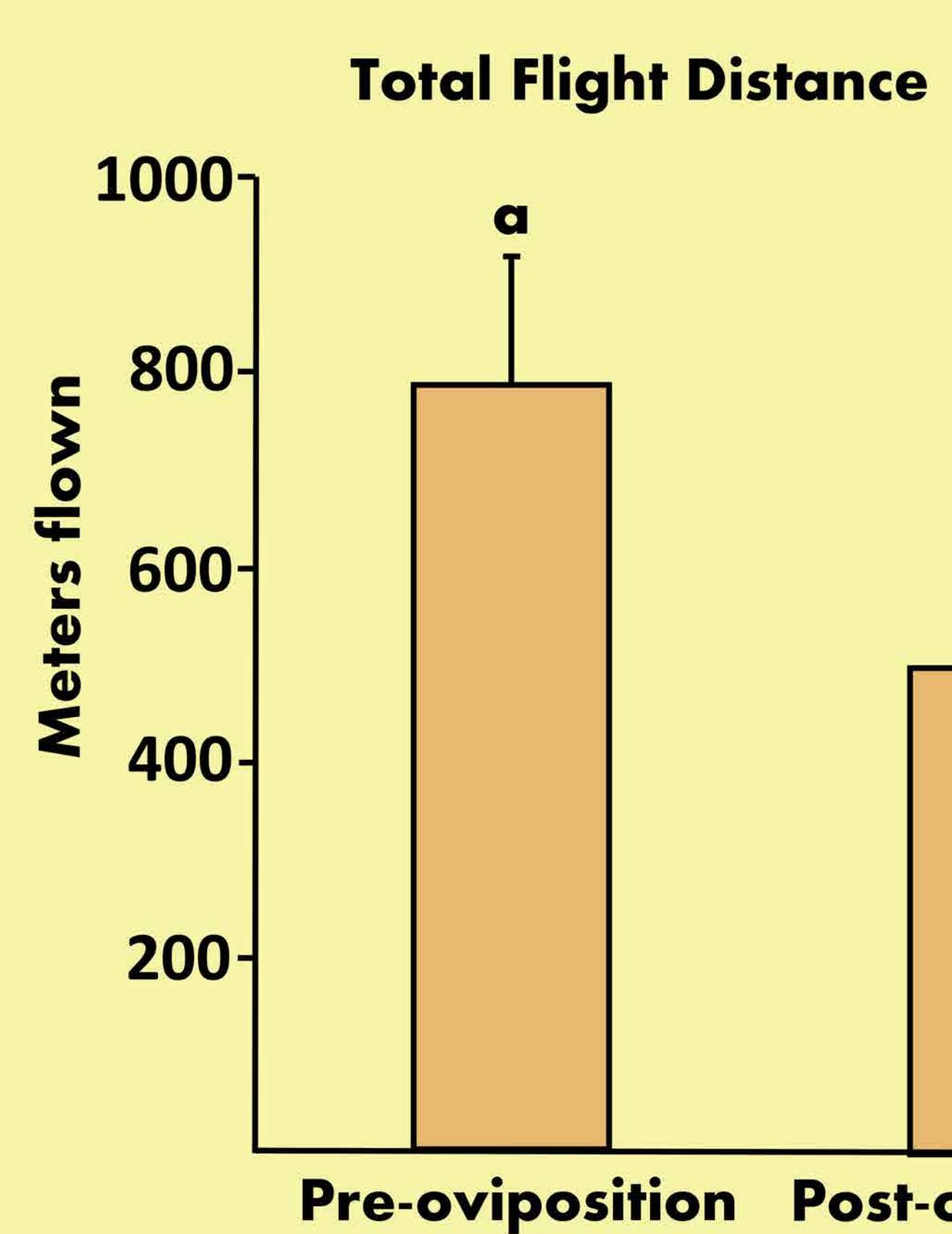


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Flight results:

- Females flew up to 7 km in 6h, but neither body size nor diet influenced flight distance, this suggests all treatments generated energy reserves sufficient for flights of short duration.
- Pre-reproductive females flew > 60% further than they did post-reproduction, likely due to the energetic costs of oviposition.



Tethered insect flight mill

Conclusion: Access to pollen and nectar increased reproductive success and altered oviposition patterns in *H. convergens*, indicating the importance of floral resources in the agricultural landscape to conservation of this predator and its biological control services.

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