Wing Damage Effects on Foraging and Reproduction in Alfalfa Leafcutting Bee (*Megachile rotundata*)

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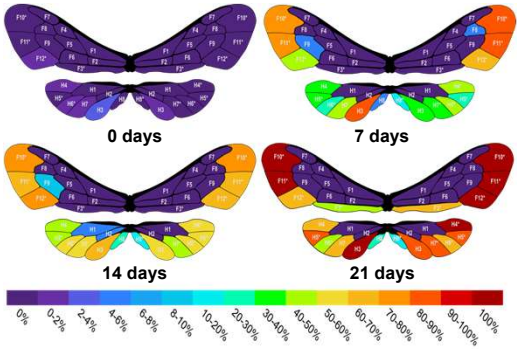
Abstract

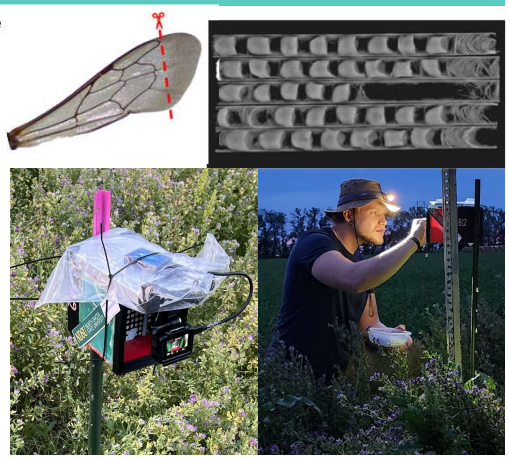
Introduction



- Wing damage has negative effects on foraging, predation risk, and offspring provisioning [1,4].

Methods

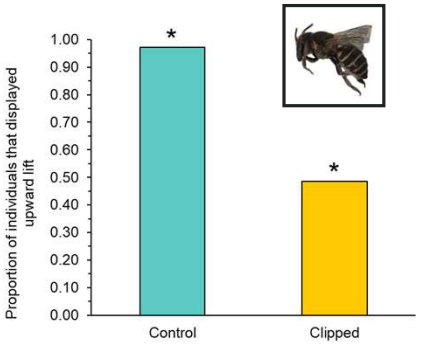
- Recently emerged (<24 hrs) females were collected and marked.
- A subsample of the females had their wings clipped.
- Both clipped and control females were released at nesting boxes with males.
- Over the course of a week, each box was recorded daily for 14 hrs using GoPros.
- Nest were collected at the end of the experiment, x-rayed, and analyzed.
- Flight performance was assessed using a drop test.



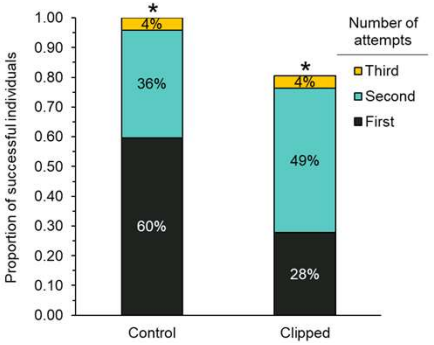
Results

Performance

Wing damage affected upward lift (p<0.0001).

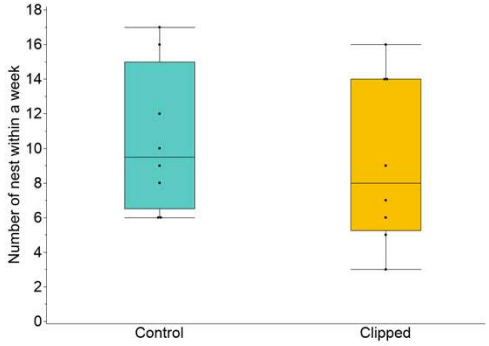


Wing damage decreased flight performance (p<0.0001).

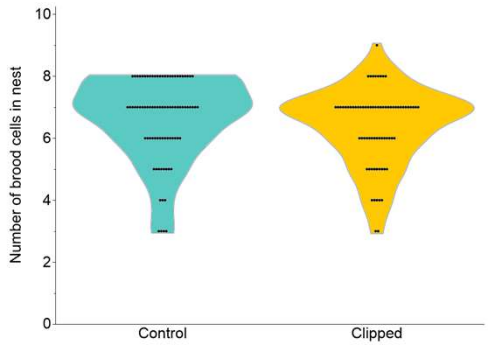


Reproduction

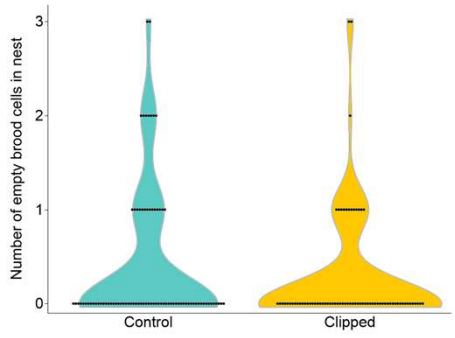
Wing damage had no effect on nests construction (p=0.5899).



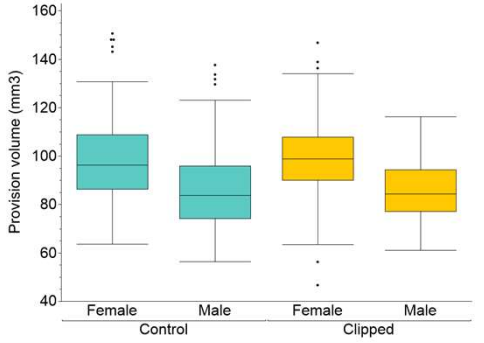
Wing damage had no effect on brood cell construction (p=0.2242).



Wing damage has no effect on the number of empty brood cells (p=0.2251).



Wing damage has no effect provisioning (p=0.8549)



Conclusion

- It takes time to compensate for wing damage.
- Compensation for wing damage may be due to mechanical compensation or flight behavior.
- If there's no compensation, wing damage alone does not appear to affect foraging, reproduction, and offspring provisioning for *Megachile rotundata*.

Future Directions

- Examine foraging behavior:
  - Frequency
  - Duration
  - Type

Foraging Video

- Conclude analysis of providing for diapausers.
- Assess offspring quality:
  - Survival
  - Weight
- Investigate mechanical compensation for wing damage.

Acknowledgments

We would like to thank the USDA-ARS, Fargo for providing facility instrumentation support, and partial funding (USDA-ARS 58-3060-9-032). We would also like to thank NSF (NSF OIA Re-II Track-2 #1826834) for partial funding of this project. Additionally, we thank Brooke Kohler, Ava Fremgen & Isaac Mills for painting and clipping females; Reagan Chambers & Cameron Kolthoff for camera work in the field; Sara Nash, Alex Tennant & Cade Benson for analyzing recorded data. Finally, we would like to thank Joshua Rinehart for helping establish the field experiment.

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