

# Bathing in Protein Powder: Effects of Anther Position on Pollen Placement



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## Introduction

- Plants and pollinators exhibit a **mutualistic** relationship
- Certain floral traits, e.g., **anther position**, can affect **pollination efficiency**<sup>1</sup>

## Prediction

**Intermediate anther exertion** and **smaller anther separation** will be the most efficient in placing pollen onto pollinator bodies

## Methods

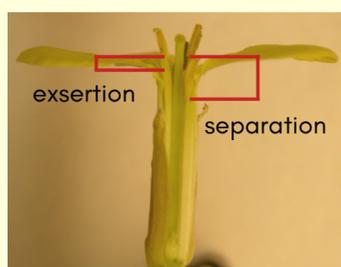
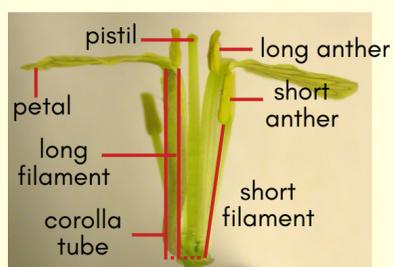
Body parts



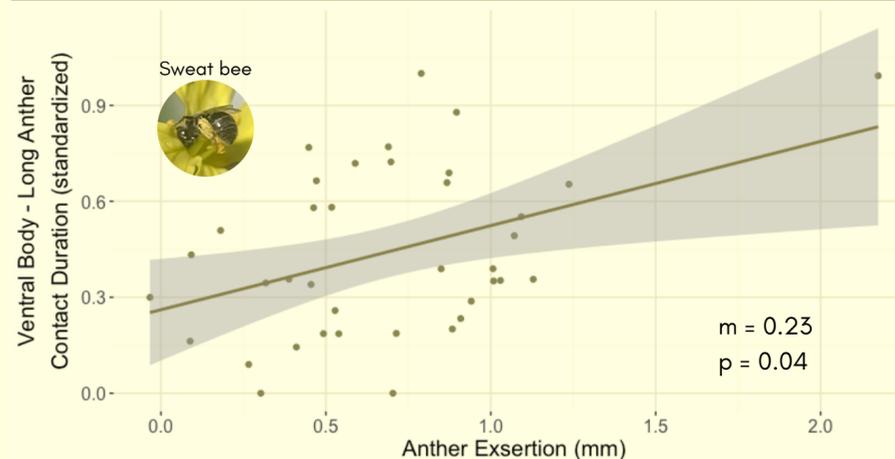
Time contact with anthers



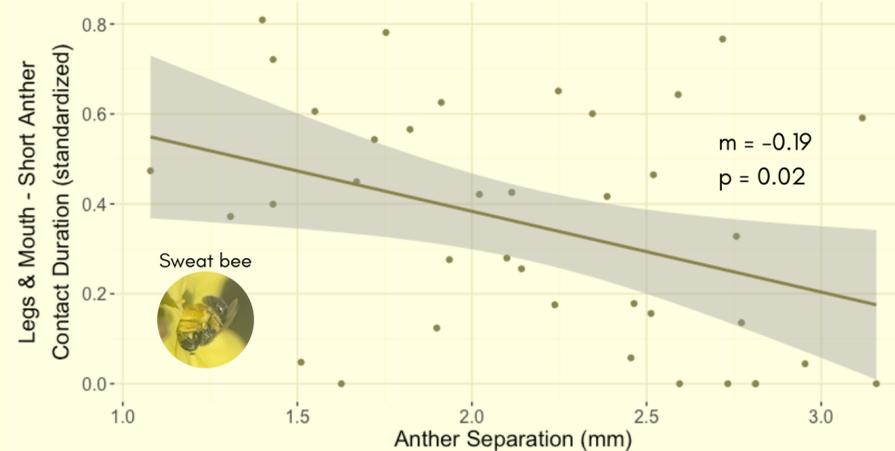
Measure floral traits



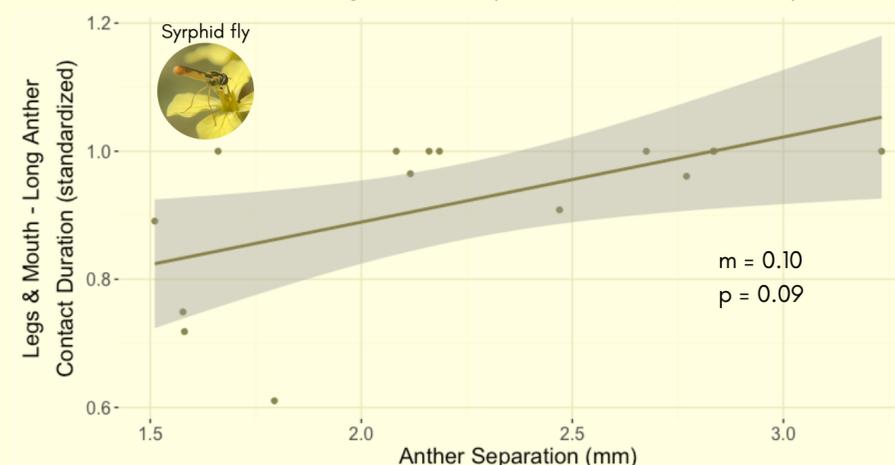
## Results



**Fig. 1:** As anther exsertion in wild radish increases, so does the length of contact time between the long anther and a sweat bee's ventral body ( $m = 0.23$ ,  $p = 0.04$ ).



**Fig. 2:** As anther separation increases, the length of contact time between the short anther and a sweat bee's legs and mouthparts decreases ( $m = -0.19$ ,  $p = 0.02$ ).



**Fig. 3:** As anther separation increases, so does the length of contact time between the long anther and a syrphid fly's legs and mouthparts ( $m = 0.10$ ,  $p = 0.09$ ).

## Discussion

- Linear** relationship between anther **exsertion** and bee ventral body contact
  - Inconsistent** with previous findings of stabilizing selection<sup>1,2</sup>
- Linear** relationship between anther **separation** and bee legs & mouth contact
  - Consistent** with results from **1991** of negative directional selection<sup>1</sup>

## Future Directions

- How does anther position affect pollen placement on other pollinator species?
- How does grooming behavior affect pollen transfer onto stigmas?

## Acknowledgements

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## References

- Conner, J. K., Sahli, H. F., & Karoly, K. (2009). Tests of adaptation: functional studies of pollen removal and estimates of natural selection on anther position in wild radish. *Annals of Botany*, 103(9), 1547-1556.
- Waterman, R., et al. (2022). Strong evidence for positive and negative correlational selection revealed by recreating ancestral variation. *In review*, Department of Plant Biology, Michigan State University.