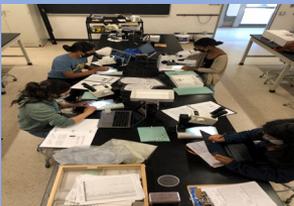


Background:

- Bees and flies are important pollinators in natural and agricultural systems.
- As bee populations decline, it is important to focus on pollinating flies (syrphids) which provide similar pollination services as bees but are largely understudied.
- Floral richness and diversity can support a larger amount of habitat and food for pollinators like bees and flies.
- Using historical data from the 90's and data collected in 2021, I examined if the proportion of flies in the pollinator community changed in Coastal California sand dune.
- I also examined the effects plant richness has on the proportion of flies in the pollinator community.

Methods:

- Collected bees & flies from four sites in Santa Cruz County in the summer of 2021
- ID'ed insects to species/morpho-species
- Used the Randall Morgan Insect Collection from the 1990's using SCAN
- Tested hypothesis using generalized linear models (GLM) and likelihood ratio tests
- Proportion of flies (dipteran pollinators) found using $\frac{\# \text{ of diptera}}{\# \text{ of diptera} + \# \text{ of bees}}$



Results:

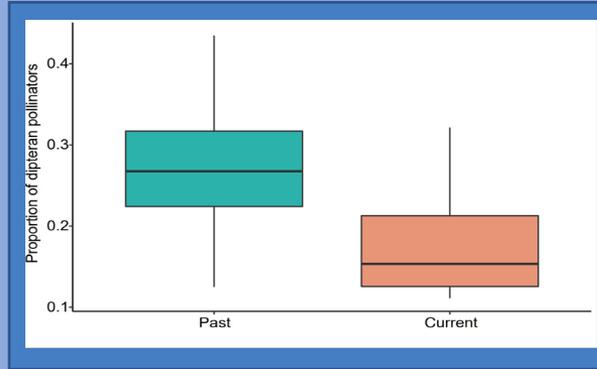


Figure 1.1: Results of GLM showed a marginally significant difference ($P = 0.072$, $f = 3.24$).

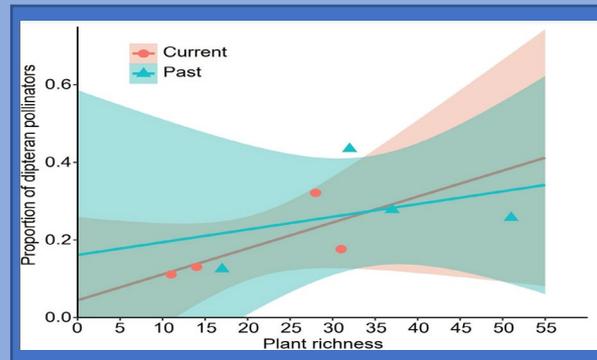


Figure 1.2: Results of GLM showed no significant difference ($P > 0.10$ and error bands are a 95% confidence interval).

Discussion:

- There is a larger proportion of syrphids in the 1990's when compared with the data from 2021.
- Plant richness does not influence the amount of dipteran pollinators.
- Plant richness stayed relatively the same between the 1990's and 2021.
- The change in proportion of dipteran pollinators can be due to temperature differences, differences in nesting habitat between bees and flies, or habitat loss.
- Future studies further examining why there is a decrease in dipteran population sizes can be useful in the conservation of pollinators.



Acknowledgements:

A big thank you to my mentors Gizelle Hurtado, Justin Luong, and Chris Lay. A huge thanks to my pollinator pals: Chiara Cantos, Natalie Reyes, and Fana Scott. A special thanks to the Norris Center and CAMINO for funding this opportunity.