



More than it racemes: Understanding adult butterfly nutrition in *Icaricia icarioides blackmorei*

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OVERVIEW

The prairies of the South Puget Sound in Washington state are rapidly disappearing, along with the many species they support. One such species is the Puget blue butterfly (*Icaricia icarioides blackmorei*), which depends on native prairie sickle-keeled lupine (*Lupinus albicaulis*) as its host plant. An important but under-studied aspect of their life history is adult nutrition. **My focus in this project is to understand what species Puget blue female butterflies feed on, and whether or not their feeding is opportunistic or driven by nutrient availability.** Knowing this information is crucial to preservation efforts.



Female butterfly nectaring on Oregon sunshine

METHODS

To understand adult nectaring preferences and nutrition, we used a variety of techniques. To measure which flower species females prefer and how much they feed, I released and followed female butterflies we found in the field and recorded their activity. Nectaring instances

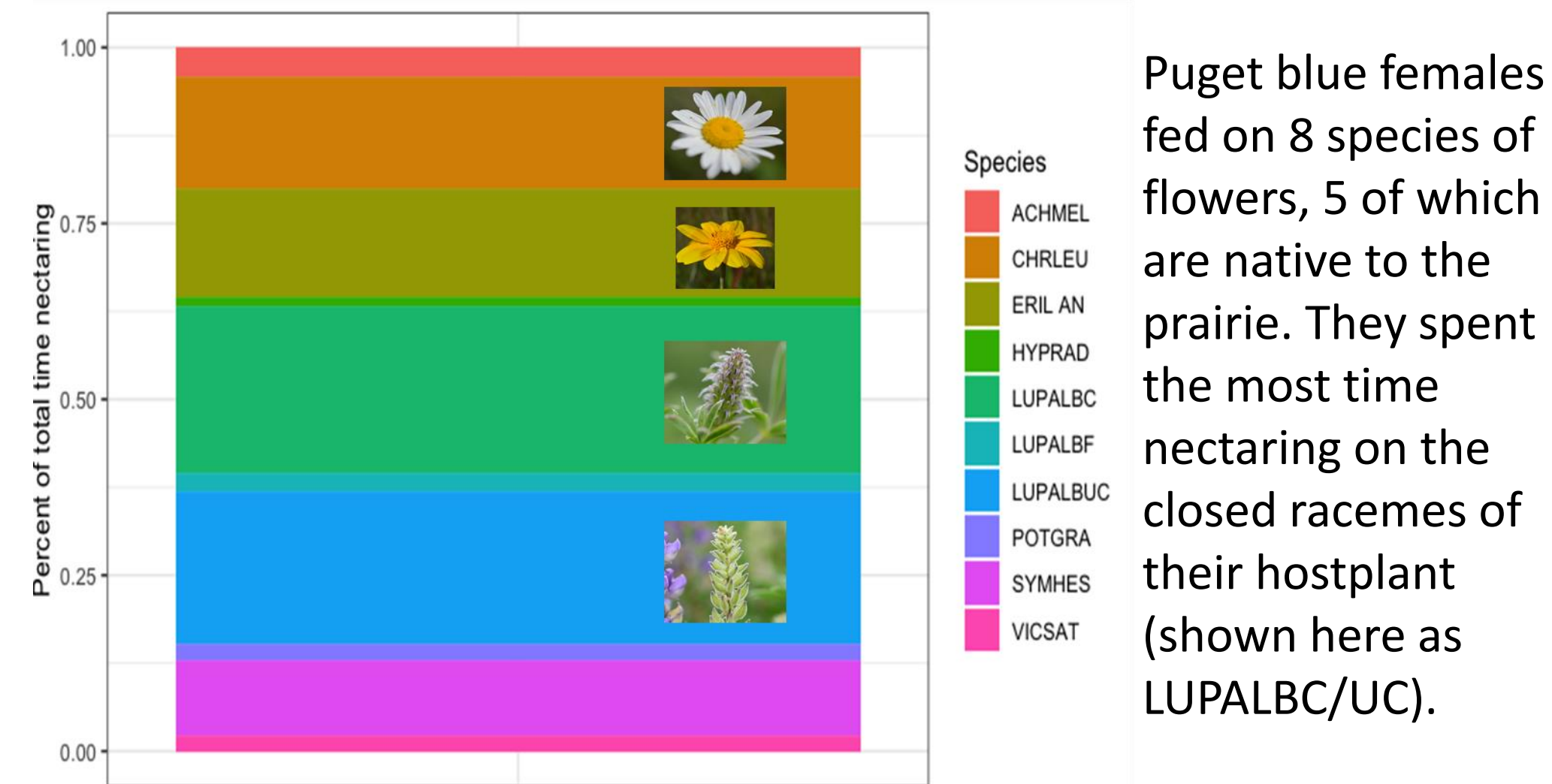


were recorded, and species nectared on were observed. 59 observations were performed, 30 of which nectared during observation. To sample nectar nutrient content, I washed flowers in water and analyzed samples for sugar and amino acids. To assess flower abundance, we laid flower transects at intervals on prairie. In each transect, we counted all flowers by species during regular intervals in the flight season. These counts done this year by June Ariens from the Crone lab.

Following female butterflies using binoculars to see their activity up close.

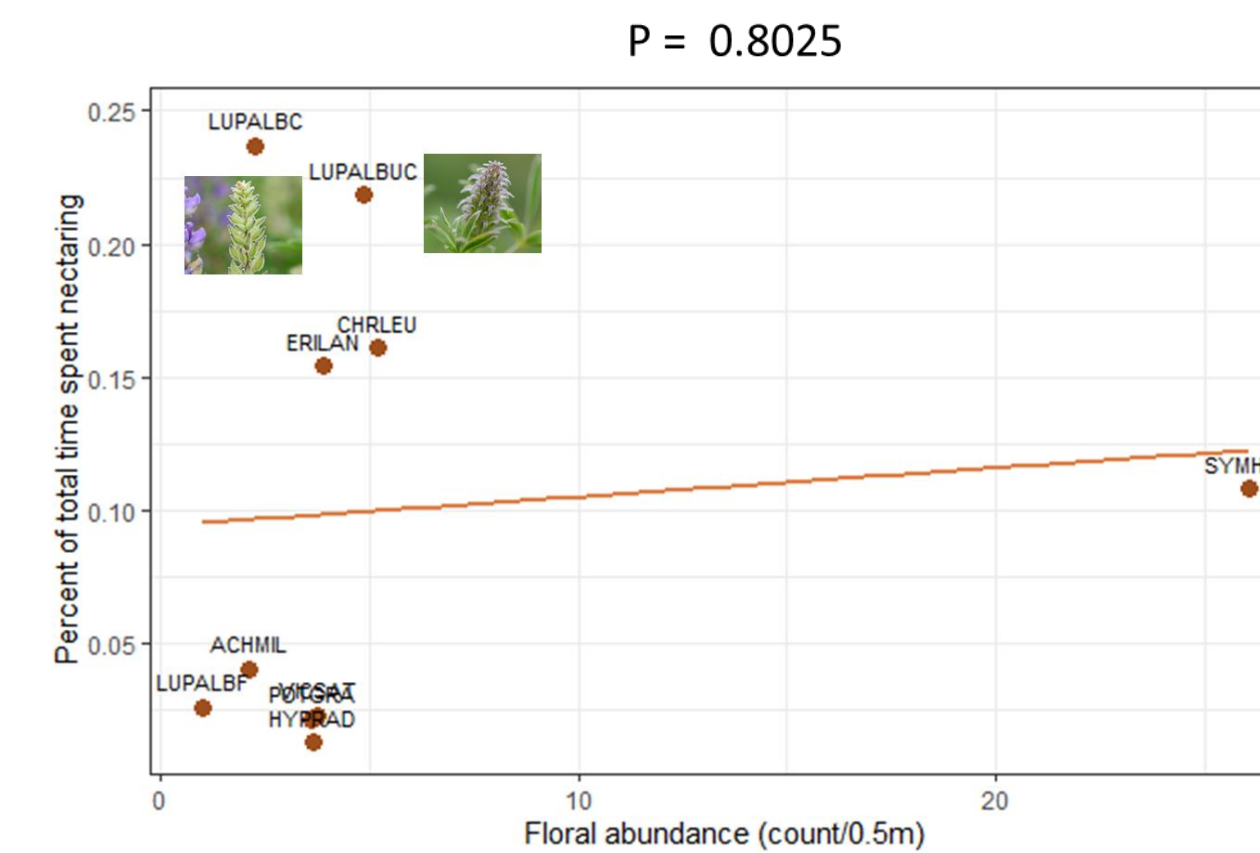
RESULTS

What flowers do they feed on?



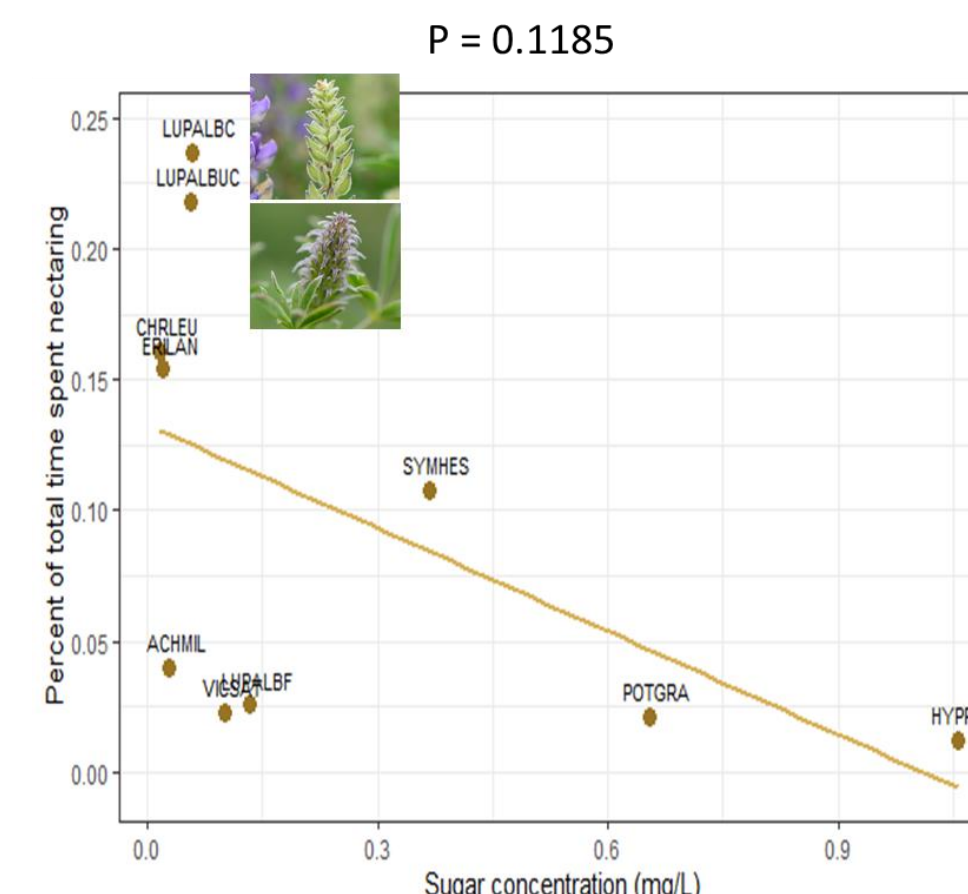
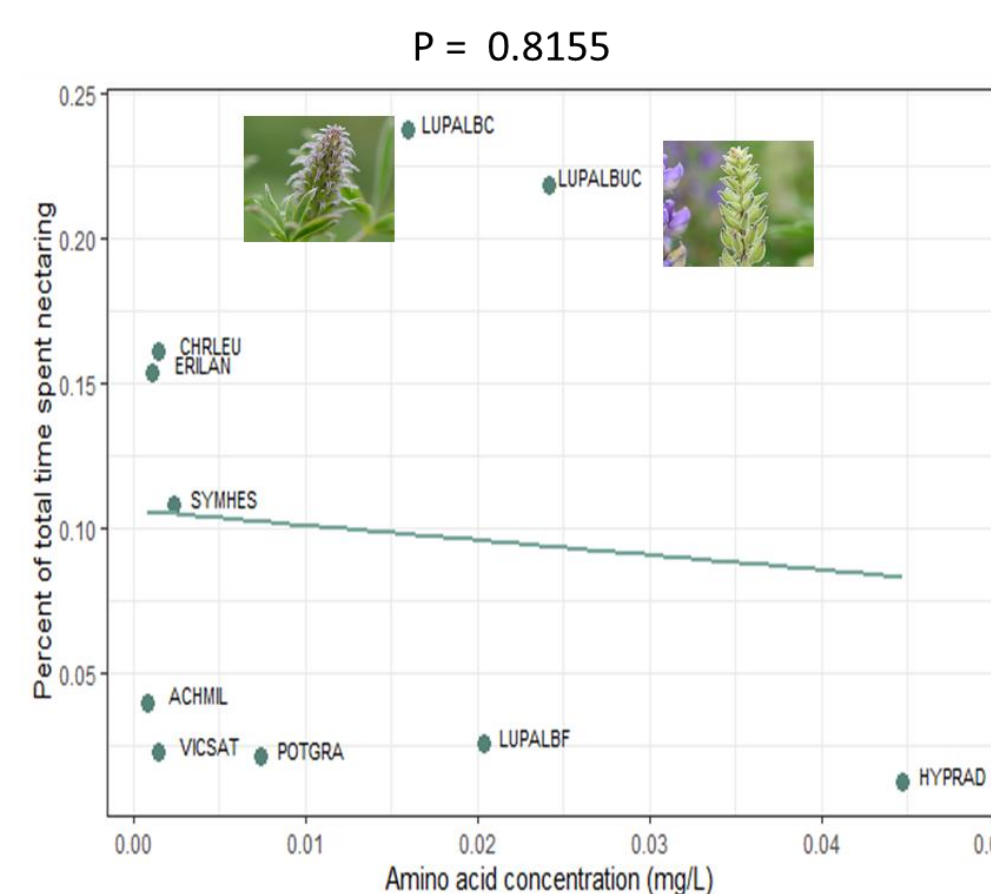
Are they opportunistic feeders?

Floral availability is not correlated to the amount of time butterflies nectared, meaning they do not feed randomly.



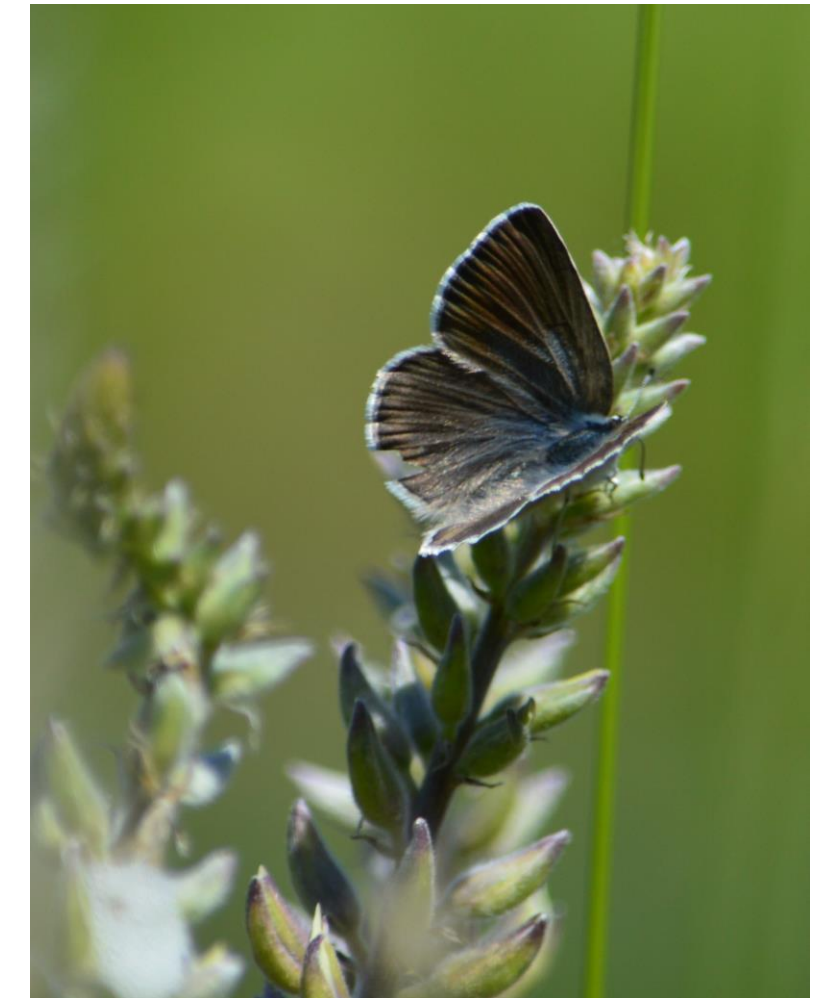
Do available nutrients determine feeding patterns?

Neither amino acid nor sugar concentration were correlated with nectaring, indicating feeding is not dependent on nutrients.



CONCLUSIONS

Puget blue female butterflies spent 48.1% of nectaring time on their larval hostplant, Lupine. Most of this time was spent nectaring on the closed racemes. Oxeye daisy and Oregon sunshine used next most often. Puget blues are **not opportunistic** feeders, meaning they don't feed in proportion to floral availability. Rather than using any species on the prairie, they selected only eight flower species to nectar on and did not feed on these in proportion to their availability. Additionally, their feeding was not correlated with nutrient abundance, meaning their nectaring is not driven by nutrient availability. These species—especially lupine—are important to their nutrition, as they feed on it in both larval and adult life stages. Conservation implications are that these species should be focused on for habitat restoration and management, especially the five native flower species used.



ACKNOWLEDGEMENTS

Thank you to Rachael Bonoan PhD, Elizabeth Crone PhD, Cheryl Schultz PhD for teaching and advising me, and providing me with this opportunity. Thank you also to the Crone and Schultz labs, for their teaching and support.



Collecting sugar from Lupine flowers

Thanks to the Lacey gang for a great three years!



Photo Credits: Rachael Bonoan and Cheryl Schultz

