



The search for *Perdita meconis*,
the Mojave Poppy Bee

Alt title: Rain is great?

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Photo: Colin McKenzie



Background

***Perdita meconis*, the Mojave poppy bee**

- After a formal petition for status assessment and a positive 90-day finding from the US Fish and Wildlife Service, it is currently under review for Listing under the Endangered Species Act.
- Species Status Assessment is expected in 2025.
- Understanding its current distribution/presence will be important during this process.

Graphic made by Colleen Meidt

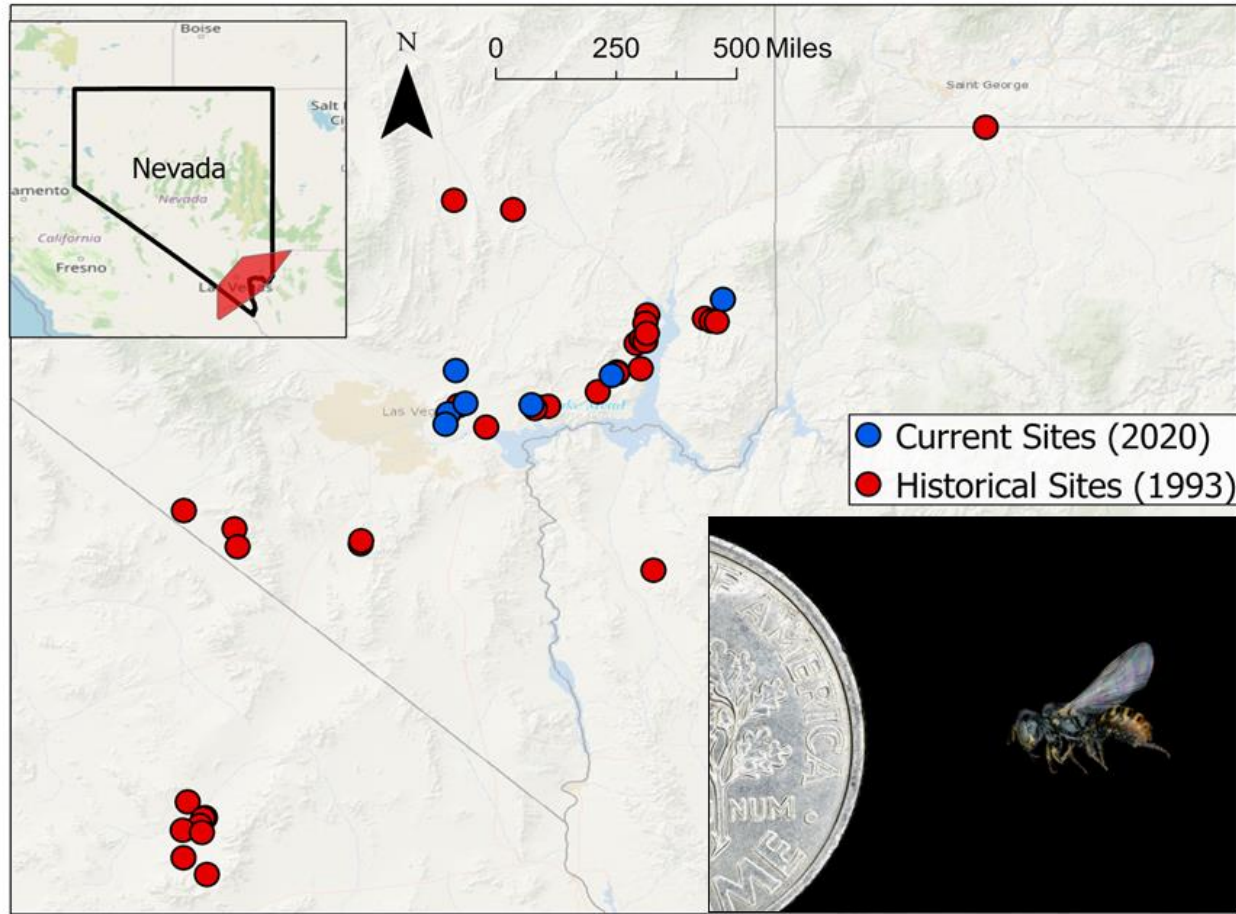


Figure 1: *Perdita meconis* current and historical known locations and photo of bee next to a dime. PC: Chelsey Ritner

Background

***Perdita meconis*, the Mojave poppy bee**

- Historic distribution in California, Nevada, Arizona, and Utah
- Recent records restricted to Clark Co.
- Specialist bee

Host Plants in S. Nevada



Las Vegas bear poppy
A. californica



Great bearclaw poppy

A. merriamii

?



Prickly poppy

Argemone

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Survey methods

**March – June 2022 and
2023**

Located host plants (*A. californica*, *A. merriamii*, and *Argemone*) in bloom using a combination of historic plant records, historic pollinator records, local reports, and satellite imagery

Populations and their status confirmed by survey teams



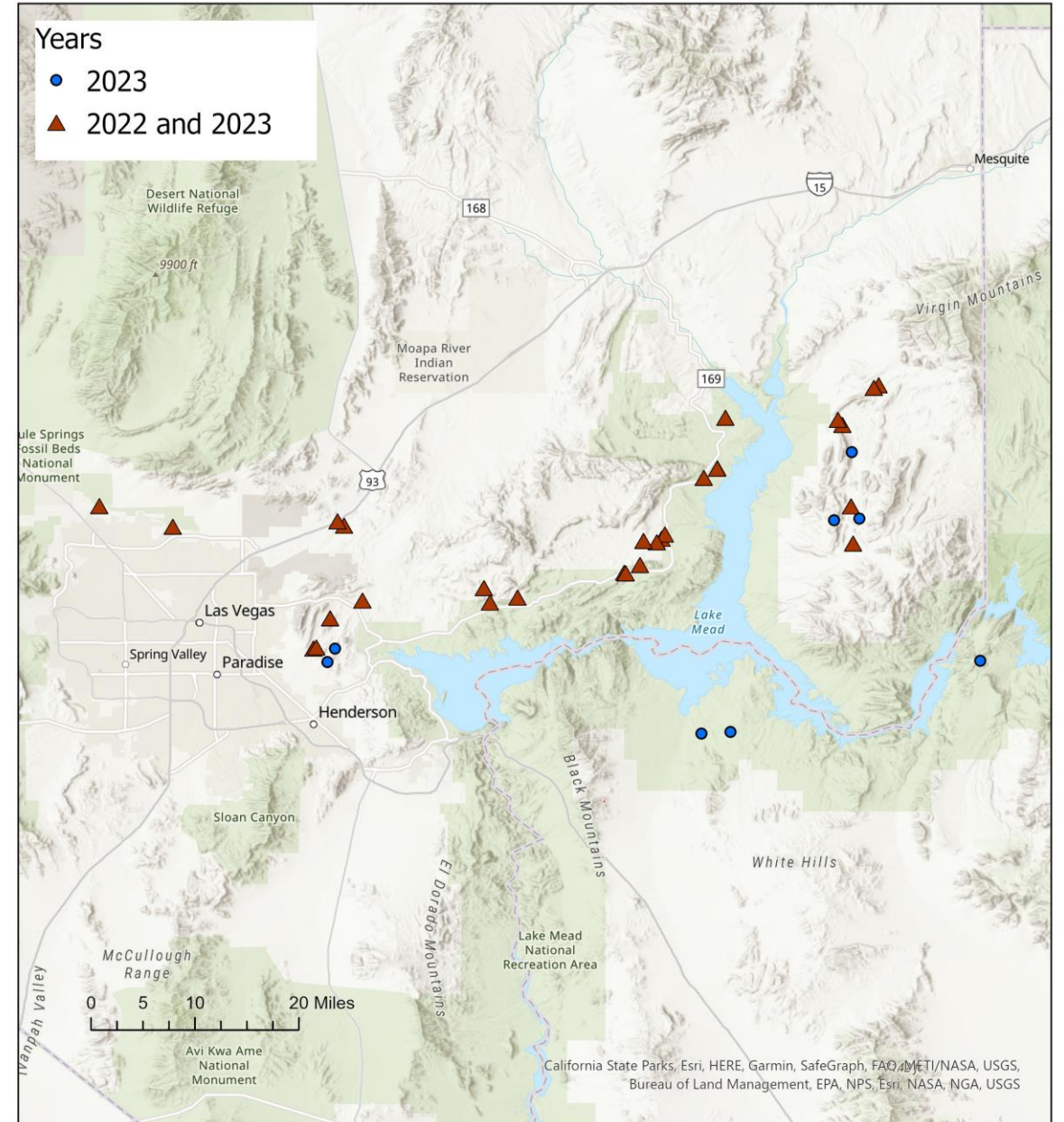
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Survey locations for *Perdita meconis* in 2022 and 2023



Poppy populations in 2022

Most *A. californica*
populations visited
outside Gold Butte were
not in good shape

Many 'poppy graveyards'

Not many plants in bloom



Poppy populations in 2023

A. californica
populations seemed
much better this year!

Large healthy plants
with abundant bloom.

We also expanded our
search and found
additional
populations to
include.



Bee collections and observations

Collected bees from *A. californica* at 20 sites

- 6 sites only visited once
- 14 sites visited >2 times (avg = 2.6 times)



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Timed observations (5 min observations at 20 *A. californica* plants) at 12 sites

- All visited 2-6 times (avg = 3.5 times)



Reproductive Output

21-33 blooming plants included in study per site

- 3 sites in 2022
- 6 sites in 2023

Plant demographics (# of flowers, # of fruits) monitored from mid-April to early June

Up to 50% of mature fruits collected per plant



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Percent of seeds that are fertilized, fertilized & aborted, and unfertilized recorded

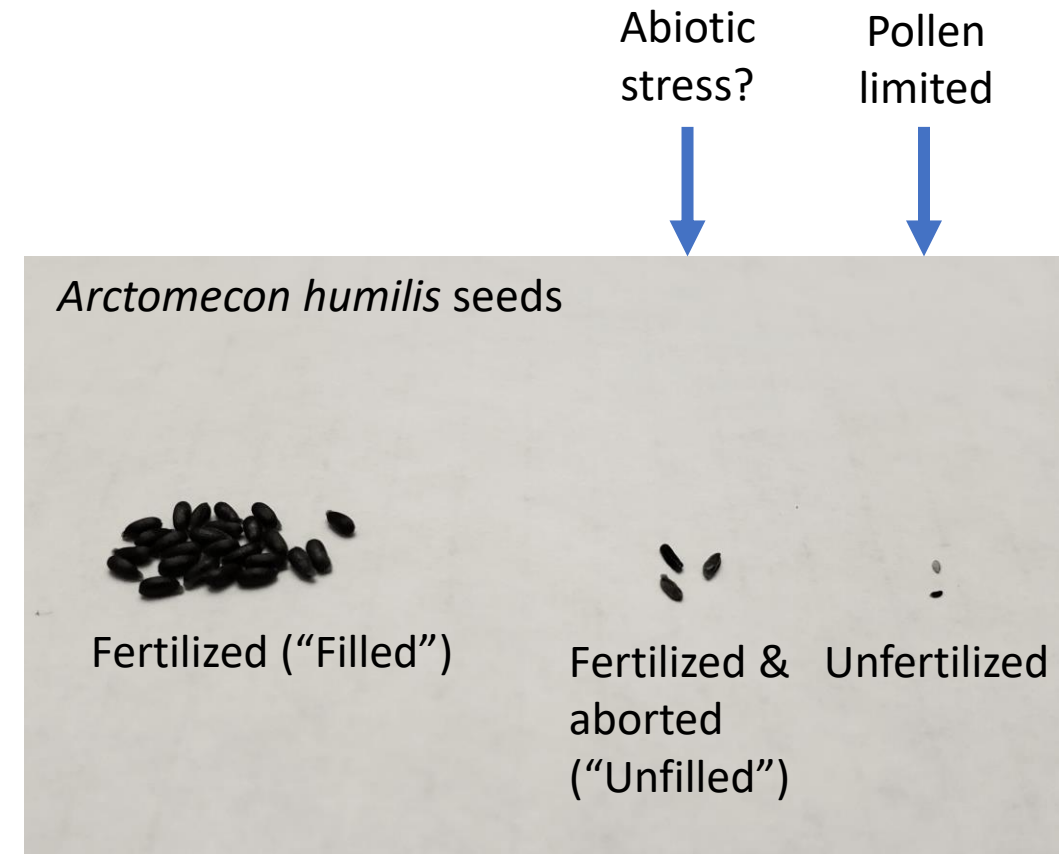


Photo: Alyson DeNettis

Results



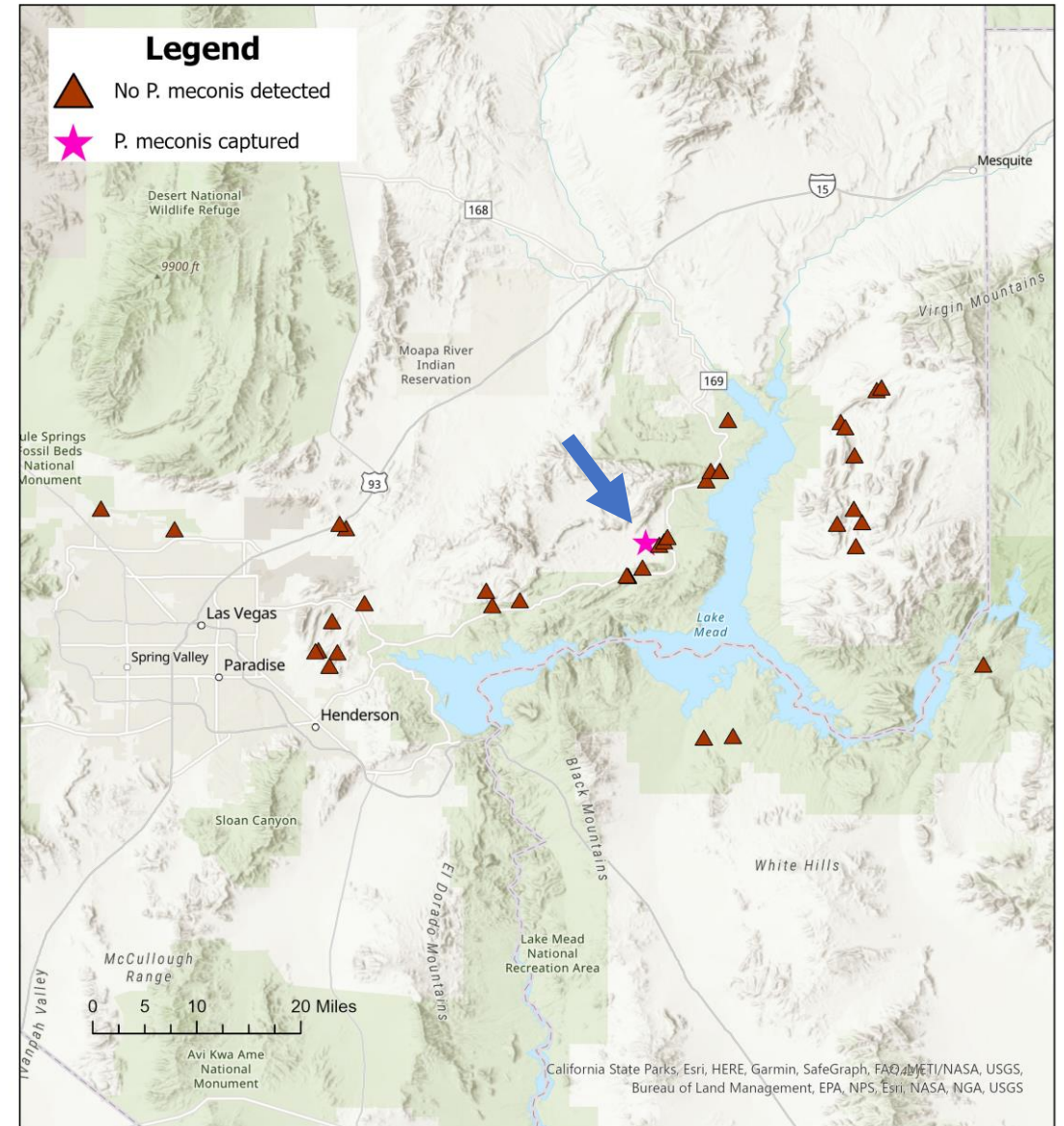
P. meconis detection Results - 2022

We detected *P. meconis* at ONE site.

Other bee visitors to *A. californica*
(preliminary)

- *Perdita robustula*
- *Hylaeus*
- Honey bees
- *Anthophora*
- *Andrena*
- *Lasioglossum (Dialictus)*
- *Ashmeadiella*

Survey locations for *Perdita meconis* in 2022 and 2023



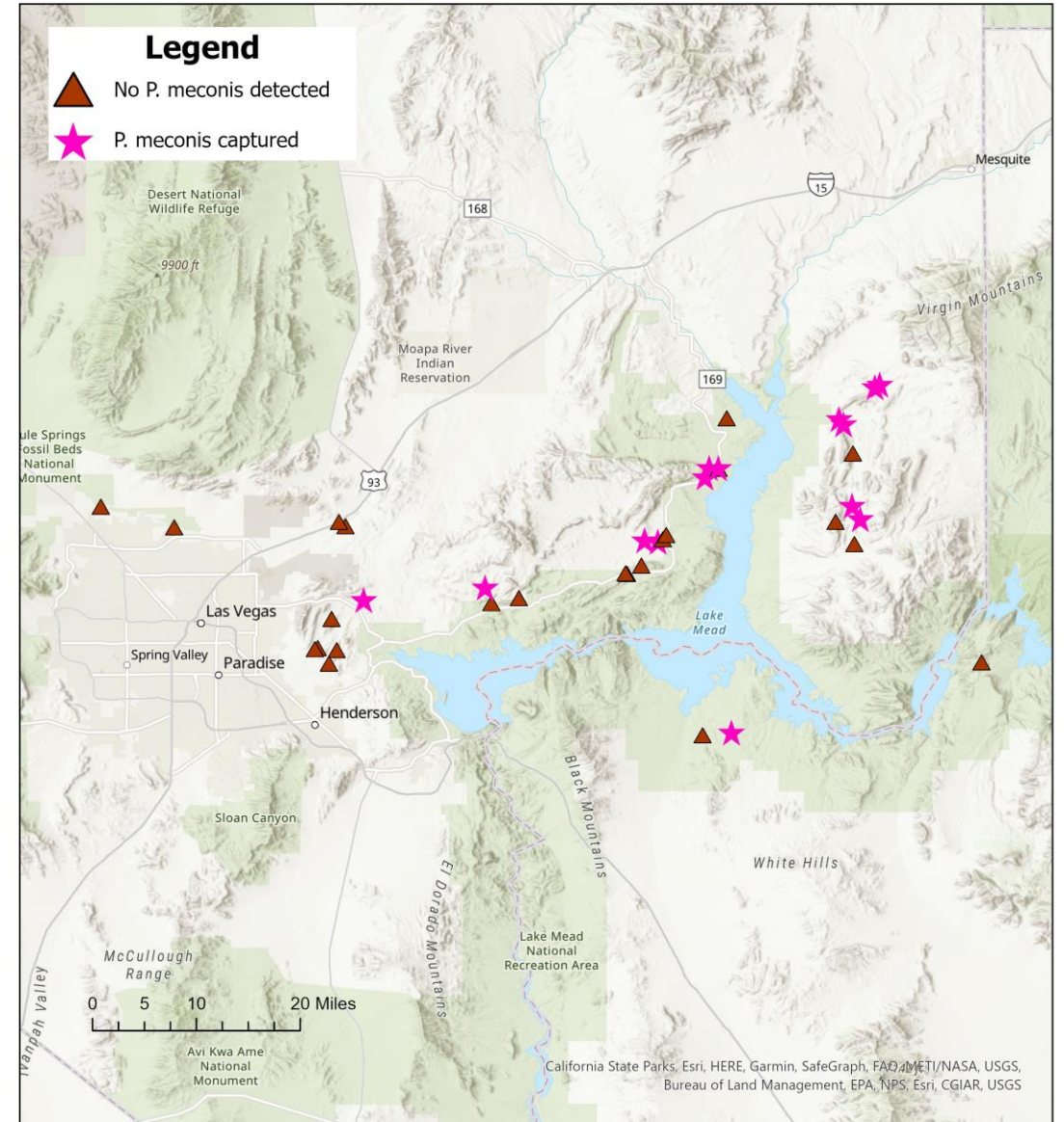
P. meconis detection Results - 2023

We detected *P. meconis* at
FOURTEEN sites!

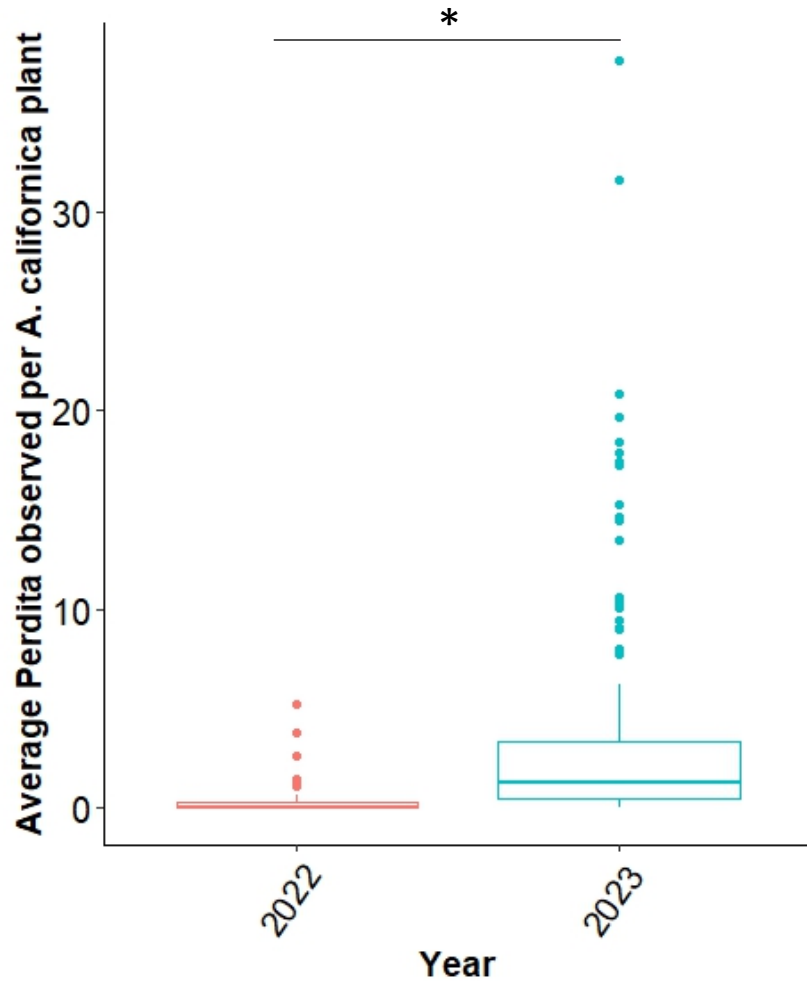


So many *Perdita* this year!

Survey locations for *Perdita meconis* in 2022 and 2023



Average *Perdita* observed per *A. californica* plant was greater in 2023

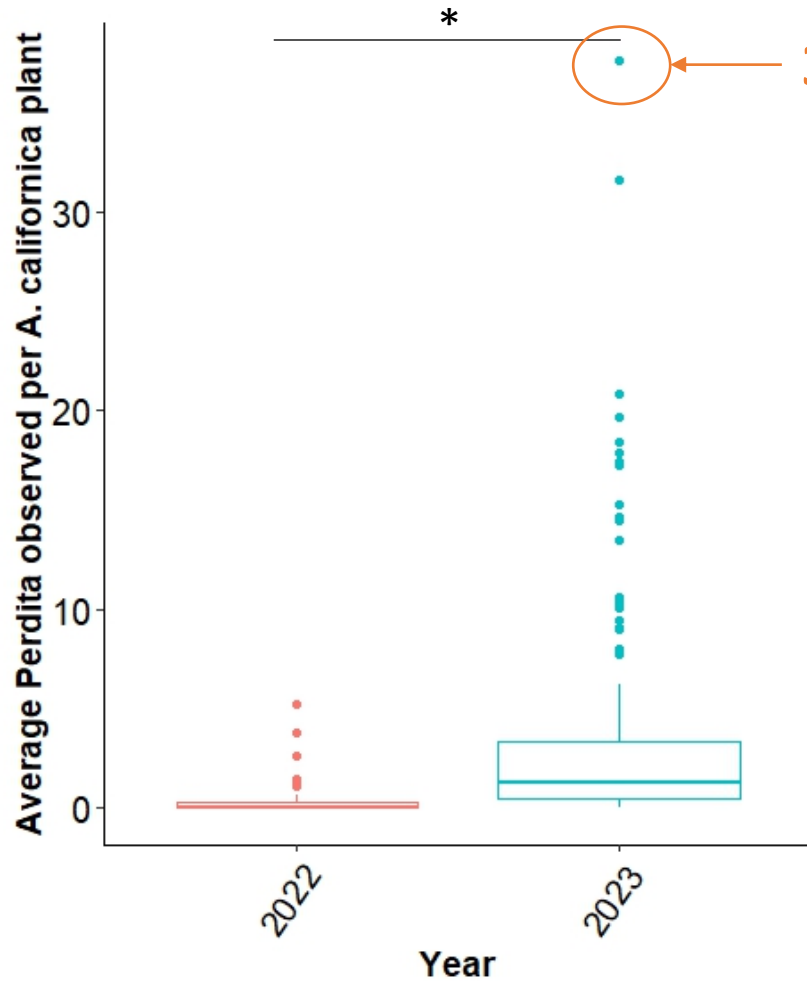


2022: 0.42 ± 0.12 S.E. *Perdita* per plant

2023: 3.68 ± 0.53 S.E. *Perdita* per plant

*LMM: $\chi^2 = 28.09$, $df = 1$, $p < 0.001$

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Reproductive Output Results - 2022

Photo cred: Kirstie Kandarlis

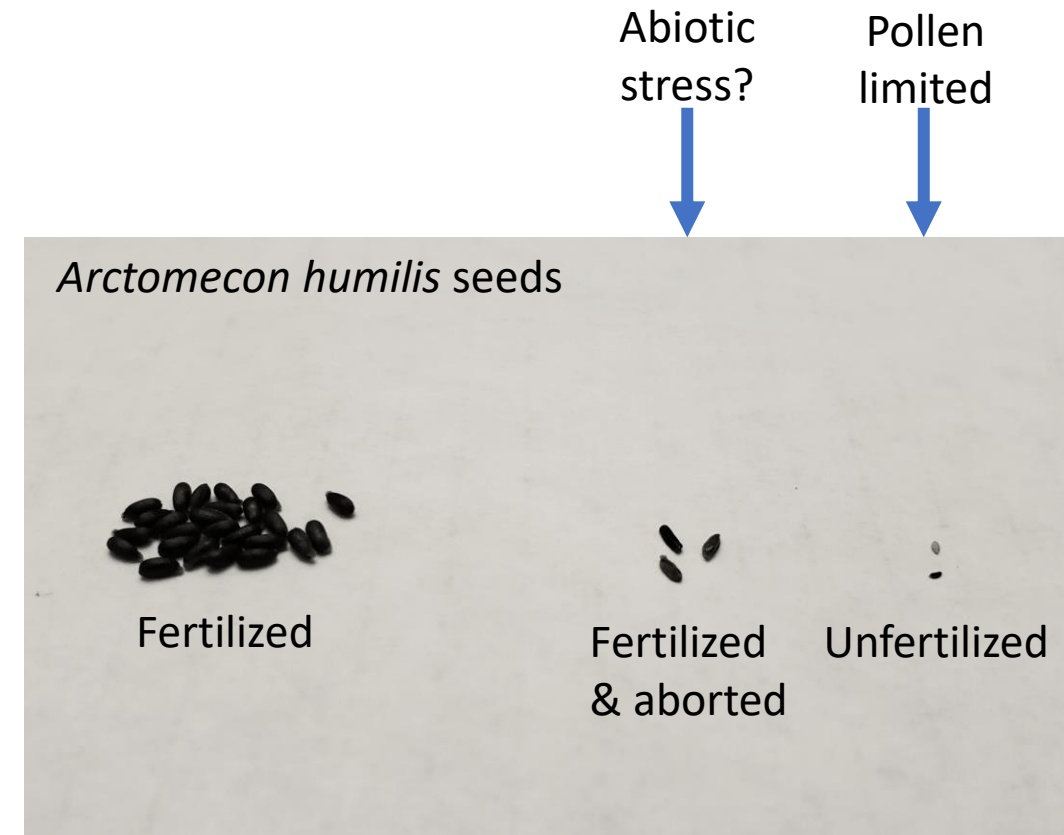
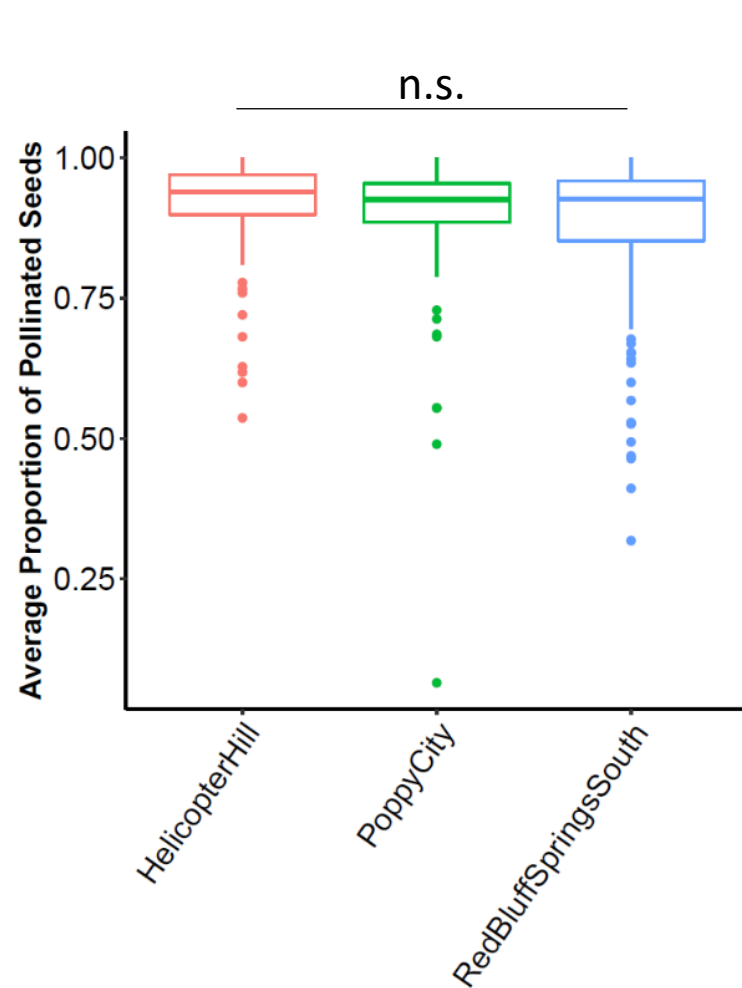


Photo: Alyson DeNettis

No significant difference in proportion of pollinated ovules between the sites.

Pollination rates were very high with over 85% of ovules being fertilized.



n.s. - $\chi^2 = 0.896$, $df = 2$, $p = 0.639$

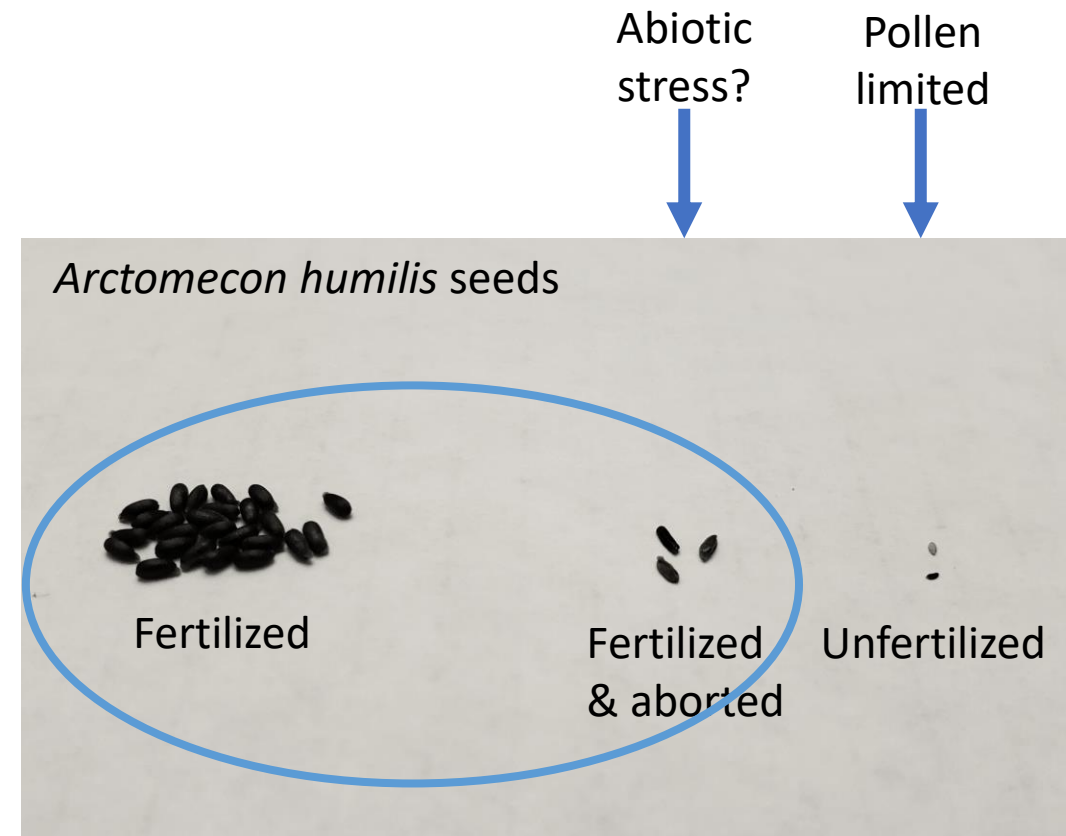
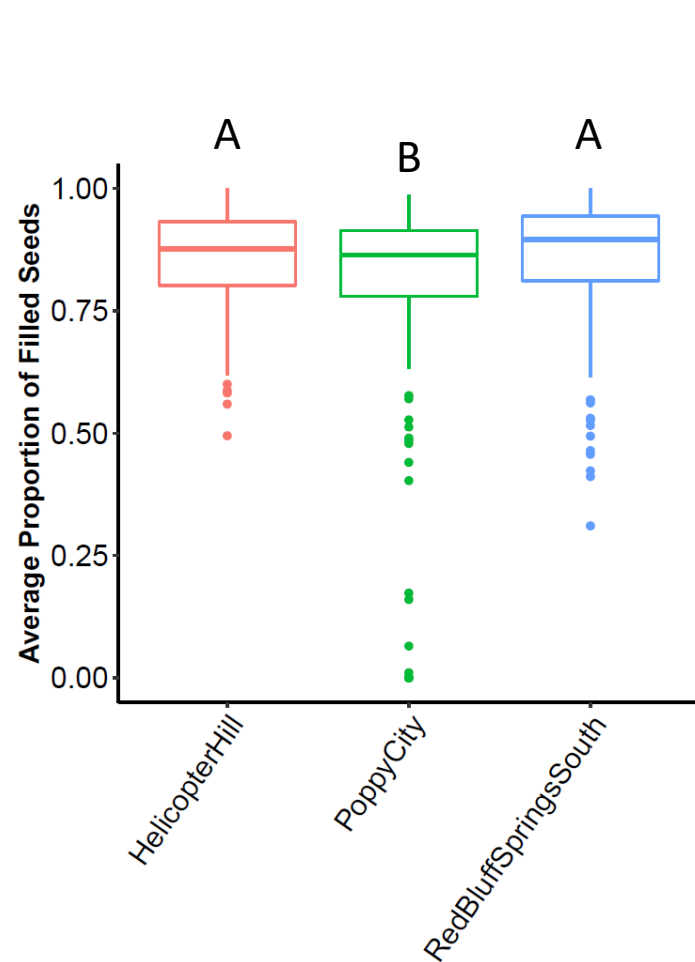


Photo: Alyson DeNettis

Significantly lower number of filled (fertilized and developed) seeds at Poppy City.

The proportion of filled seeds was overall high, with over 75% of all ovules resulting in filled seeds across all populations.



Significance: $\chi^2 = 8.12$, $df = 2$, $p = 0.017$

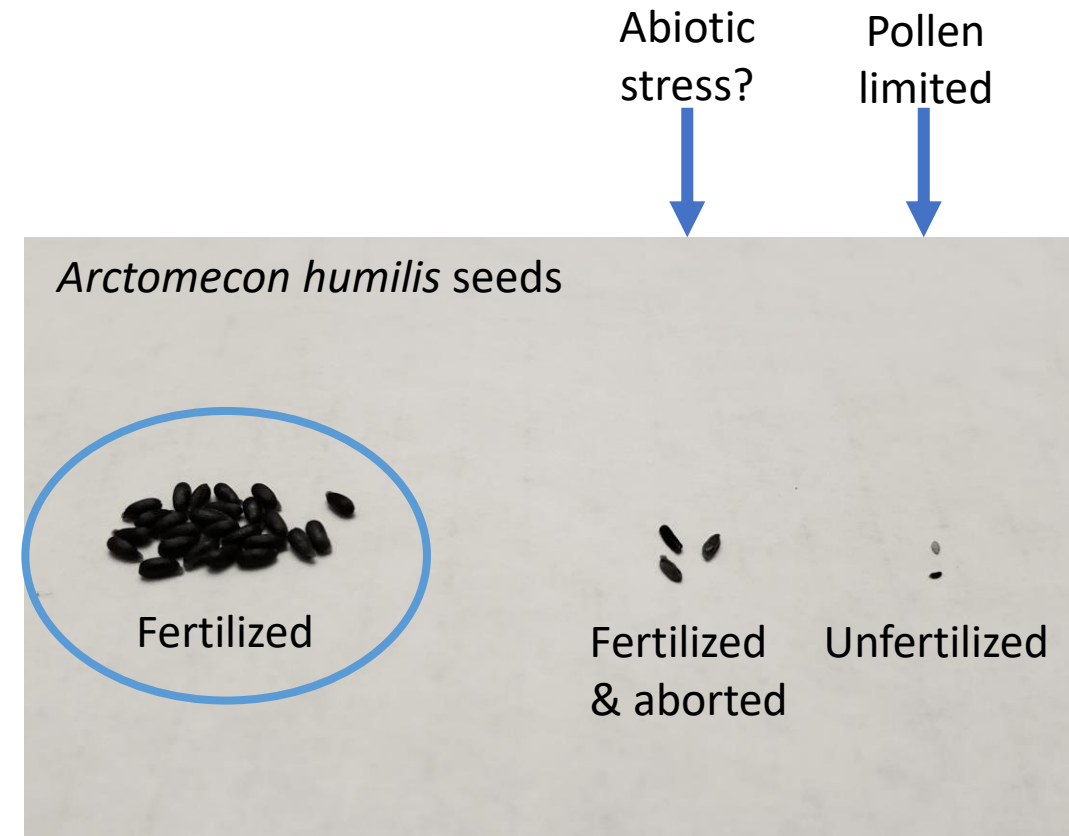
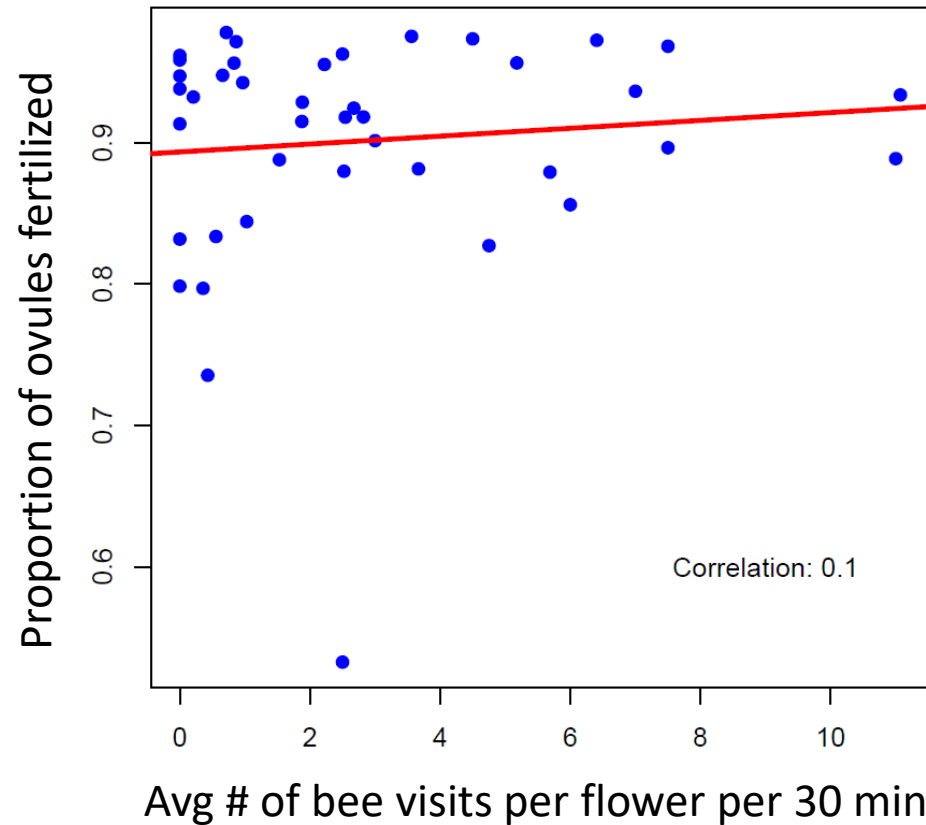


Photo: Alyson DeNettis

No significant correlation between bee visitation rates and pollination of ovules.

They do not seem to be pollination limited even when no *P. meconis* detected.



Overview

- 2023 was a great year for *Arctomecon californica* and *Perdita meconis*.
- *P. meconis* detected at 14 sites this year.
- No evidence yet of pollination limitation for *A. californica* even in bad years for *P. meconis*.
 - More sites added in 2023, data currently being gathered and analyzed.



Thank you!!

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Lesley DeFalco

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2022 Poppy Bee Team:

Olivia Steinmetz
Colin McKenzie
Jesse Margolies
Sarit Chanprame



2023 Poppy Bee Team:

Olivia Steinmetz
Daniel Lahn
Kirstie Kandaris
Jesse Margolies
Ann Mull
Kole Prestwich

