Methods:

Shrub microsites are defined as underneath the dripline of the shrub. Cameras were placed just inside the dripline. They are located on the south side of the shrub. Open microsites are at least 1.5 m from the edge of the dripline of any larrea individual. It is not under dripline of any shrub, but in some cases there was shrubs located nearby. The numbering of blooming shrubs and cacti were counted within a 2 m radius of each the shrub and microsite. The number of blooming annuals, percent cover and species richness were counted within a 0.5 m2 quadrat in each shrub and microsite.

Each day, 12 Polaroid Cube+ HD cameras were deployed. Potted Malacothrix glabrata was dug up and placed into pots from a nearby population to use as phytometers. These were placed in paired fashion in shrub and open sites. The number of blooms of the Malacothrix were snipped to be equal between shrub and open sites, but left to vary between replicates. On the first 2 days of the preblooming trial this wasn’t done however. The number of blooms on the pot were counted. The number of blooms on the larrea were counted. Larrea with 5 or less blooms were considered not-blooming. Post blooming means the larrea has a lot of blooms.

Cameras were placed onto phytometers and left undisturbed. Most videos are about 1.5 hrs in length. These were reviewed in lab. Pollinator visitation was tracked, number of flowers visited, time spent on flower, behaviour and identity of visitor.

Pan trap methods

To quantity pollinator communitys and compare shrub open, as well as aid identification in videos, pan traps were used. They were placed the same as cams, on same shrubs but different days. They were filled with water with Dawn original dish detergent. They were placed by 10 am at the latest morning, and picked up after 5:30 pm to capture peak pollinator activity. The insects were removed from the water and placed in 95% isopropyl alcohol. They are 6 inch? Solo brand plastic bowls. The colour of the pan traps are yellow, white and blue. They were placed in a triangular shape, and the order of the colours varied.

They were only placed on sunny days. There are 9 days of pan traps pre-blooming and 10 days post-blooming. Placed under 6 shrub open pairs per day.

The insects were pinned and dried to aid identification. Small specimens were identified while in ethanol. Mites were not counted at all. Used a variety of books to help ID. Bees, wasps and syrphid flies were IDed to genus, rest to family except thrips and spiders. Left those at order because they don’t matter too much. The specimens are located within our collection in Lortie Lab at York University. Each pinned specimen has unique ID. Specimen list available at: some online repo.

Visitation

Insect use and pollinator visitation was tracked to larrea as well. Each larrea was observed for 15 min period, before and after blooming, The number and identity of visits were recorded. Not length of time on flowers though. Visitors were collected to aid identification.

To see microsite differences, 32 HOBO pendant data loggers were used to record temperature and light availability.

At a nearby site, I collected stigma from both larrea, and Malacothrix growing naturally in open and under shrub. I collected 3 stigmas from 3 flowers from one plant growing under and away. The distance to the 3 closest conspecific neighbours was measured. Open area at least 1 m away from dripline of any larrea. Not growing under other shrub either. The stigma were placed individually into micro-centrifuge tubes in denatured alcohol. Back in the lab, the stigma were mounted onto microscope slides, and the tubes spun down in centrifuge at 4200 rpm for 4.5 minutes and pellet pipetted onto slide. These were both mounted in fuchsin jelly (Kearns book).

The slides were imaged using a Canon 60D SLR and Olympus nfk 2.5X photo eyepiece. The photos were taken using 4x objective. These photos were stitched together in photoshop. ImageJ was used to help count the different species of pollen.

Heterospecific pollen were identified using a reference collection created from surrounding sites. This ref collection was photographed using Lumenera microscope camera at 100 x and 400x and the size of grains was measured to help ID. Reference collected was uploaded to global pollen project and the slides are in Lortie lab collection.

Analysis

Results

Not really any differences under and away from shrubs

Overall pollinator visitation to flowers was low.

Most common visitor was tiny black, likely soft-winged flower beetles. Second most common was syrphid flies – I think epeolodes? Then bees and small flies. The overall diversity of visitors was x. There were x number of hovers.

Total video time: Before/During blooming

Get counts for: Total plant visits, total flower visits, and total unique flowers visited.

Also look at mean visit length. Can add to all.data file. Also proportion of flowers visited, and proportion of unique flowers visited.

What do I do about zeroes for mean length?