Draft 1

Rationale

Residual dry matter (rdm) is a common measure of productivity in drylands.  It is comprised of both direct and indirect drivers on plant composition and structure including resource availability, plant-plant interactions, and interactions with consumers.

Arthropods….

We used a rainfall gradient of arid grasslands in Southern California. At Panoche and other semi-arid dryland sites, blunt-nosed leopard lizards are secondary consumers on grasshoppers and other invertebrates. A survey of rdm under shrubs and in the open will facilitate an assessment of productivity associated with foundation plant species and estimate the strength of plant-plant interactions.  Importantly, burrow density will also be recorded at each sampling instance to infer secondary-consumer (and indirect) effects on community dynamics. The missing link, i.e. connector taxa in these systems, invertebrates will be also be sampled and identified using pan traps and pitfall traps.

Methods

Site description -> maybe a map?

Field and lab methods

Between the dates of June 23rd and July 8th, 2019, I sampled 3 sites each within 3 desert regions. At each site, I chose 30 shrub open pairs. The shrub was Ephedra californica, at Mojave it was ephedra and larrea tridentata. Open sites were located at least 1.5 m away. At each microsite, a 0.5m by 0.5 m quadrat was placed on the northern aspect, the open sites were chosen by throwing the quadrat over my shoulder. Within each quadrat, I estimated cover, and measured the max vegetation height. Count number of burrows in a 1.5m radius around quadrat.

In each microsite record: Plant height and estimate cover: RDM, green veg, bare/small twiggy cover, dead branches and large wood, large rocks.

Shrub x, y, z. Species. Put RDM in paper bags, label.

8 ephedra/open pairs or 8 ephedra/larrea/open trios for mojave

Dig into ground, parallel to surface. These go in centre of 0.5m quadrat. Fill halfway with a 50% propylene gycol/water mix. Leave out for approximately 72 hours, top up with water as need. Pick up and collect remaining RDM from the right side of the pitfall. If totally unaccessible (i.e. there is shrub roots there) or if surface was disturbed place on left side. Left side only happened ~5 times. Sieve out inverts, place gycol mixture back in bottle. Glycol mixture was reused. Don’t count springtails or similarly tiny inverts because they didn’t all get caught by the sieve. Place in separate vials, add label and 95% ethanol.

RDM was dried in a blank oven at 85 celsius for 72 hours and then weighed using blank scale.

Insects were identified depending on the group. They were morphotyped.

Analysis

-Fit GLM with RDM & burrows as responses

-Indicator species analysis for insects

- Abundance and diversity depends on rdm/shrub?

-RDA or CCA for veg + sites