

Appendix X

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“Consistent ecosystem functional response across precipitation extremes in a sagebrush steppe”

PeerJ

Section Ax1 Details on the plant community and dynamics

Here we provide more details on the plant community in terms of dominance and rarity. Averaging across time, *Artemisia tripartita* and *Balsamorhiza sagittata* are the two most dominant species in each treatment. Combined, these two species represent 28% of total cover in control plots, 25% of total cover in drought plots, and 25% of total cover in irrigation plots. Four to five species dominate the community in general (Figure Ax-1), indicating a high level of dominance in this plant community.

Section Ax2 Table Ax-1: Statistical results from linear model relating density of Allysum desertorum to precipitation.

```
##
## Call:
## lm(formula = mean_density ~ ppt1 * Treatment, data = filter(dom_annuals,
##     species == "Allyssum desertorum"))
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -111.272  -76.522    0.508   55.905  166.639
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -155.4889   113.7219  -1.367   0.1966
## ppt1           1.1452     0.5245   2.183   0.0496 *
## TreatmentDrought    2.3084   160.8271   0.014   0.9888
## TreatmentIrrigation -10.2347   160.8271  -0.064   0.9503
## ppt1:TreatmentDrought  0.2719    0.7418   0.367   0.7204
## ppt1:TreatmentIrrigation 0.3590    0.7418   0.484   0.6371
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 90.87 on 12 degrees of freedom
## Multiple R-squared:  0.6479, Adjusted R-squared:  0.5012
## F-statistic: 4.417 on 5 and 12 DF, p-value: 0.01632
```

Section Ax3 Table Ax-2: Statistical results from linear model relating density of Bromus tectorum to precipitation.

```
##
## Call:
## lm(formula = mean_density ~ ppt1 * Treatment, data = filter(dom_annuals,
##     species == "Bromus tectorum"))
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -22.336  -8.428  -0.658   4.635  41.814
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    -5.1712    23.6611  -0.219   0.831
## ppt1           0.0560     0.1091   0.513   0.617
## TreatmentDrought -12.2400    33.4619  -0.366   0.721
## TreatmentIrrigation -2.9937    33.4619  -0.089   0.930
## ppt1:TreatmentDrought  0.1190     0.1543   0.771   0.456
## ppt1:TreatmentIrrigation  0.1938     0.1543   1.255   0.233
##
## Residual standard error: 18.91 on 12 degrees of freedom
## Multiple R-squared:  0.6229, Adjusted R-squared:  0.4657
## F-statistic: 3.964 on 5 and 12 DF,  p-value: 0.02353
```

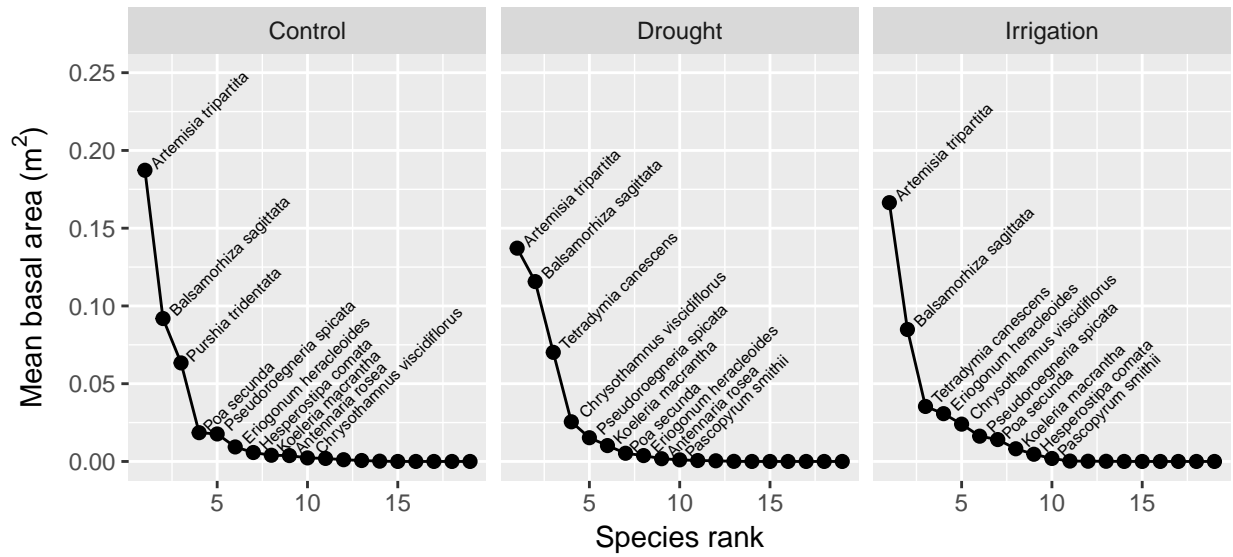


Figure Ax-1 Rank abundance curves for perennial species. Basal area of individuals was summed within years and plots, and then the total area values were averaged across years and plots for each treatment.

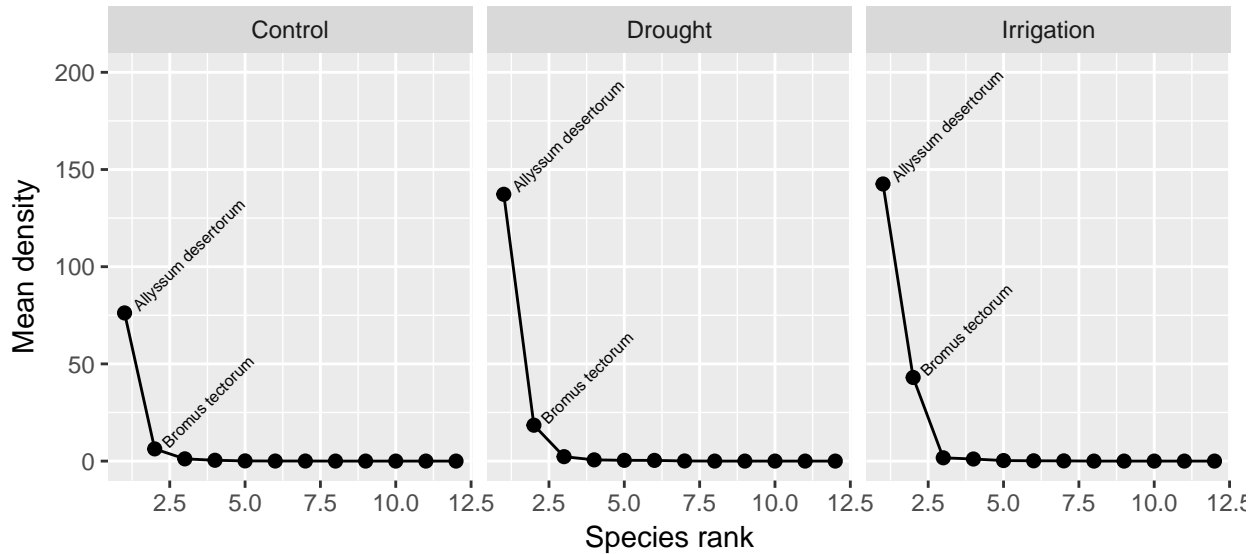


Figure Ax-2 Rank abundance curves for annual species. Density of individuals is averaged across years and plots for each treatment.

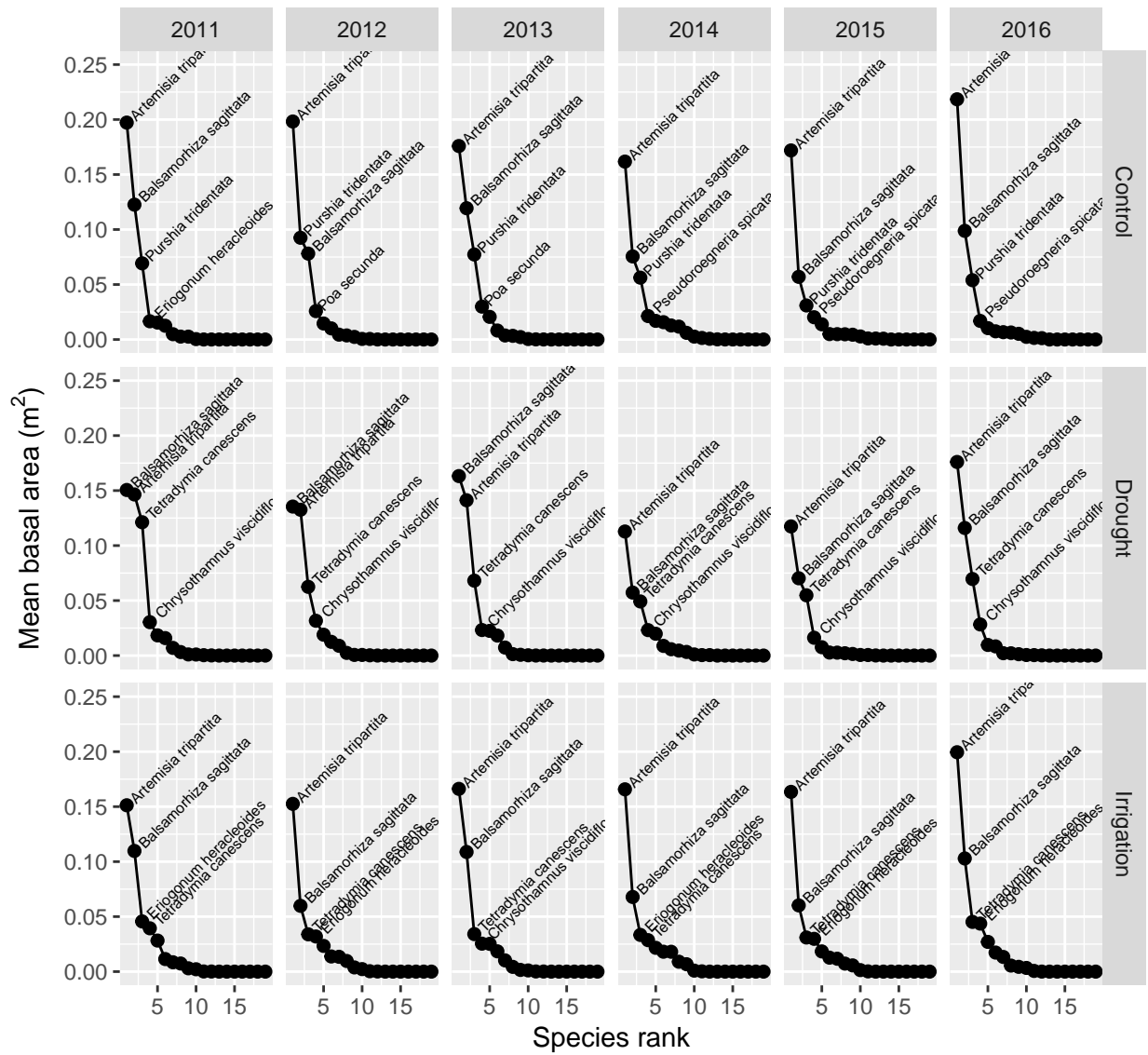


Figure Ax-3 Time series of rank abundance curves for perennial species in each treatment. Values of mean area were averaged over plots. The four most dominant species are labelled in each panel.

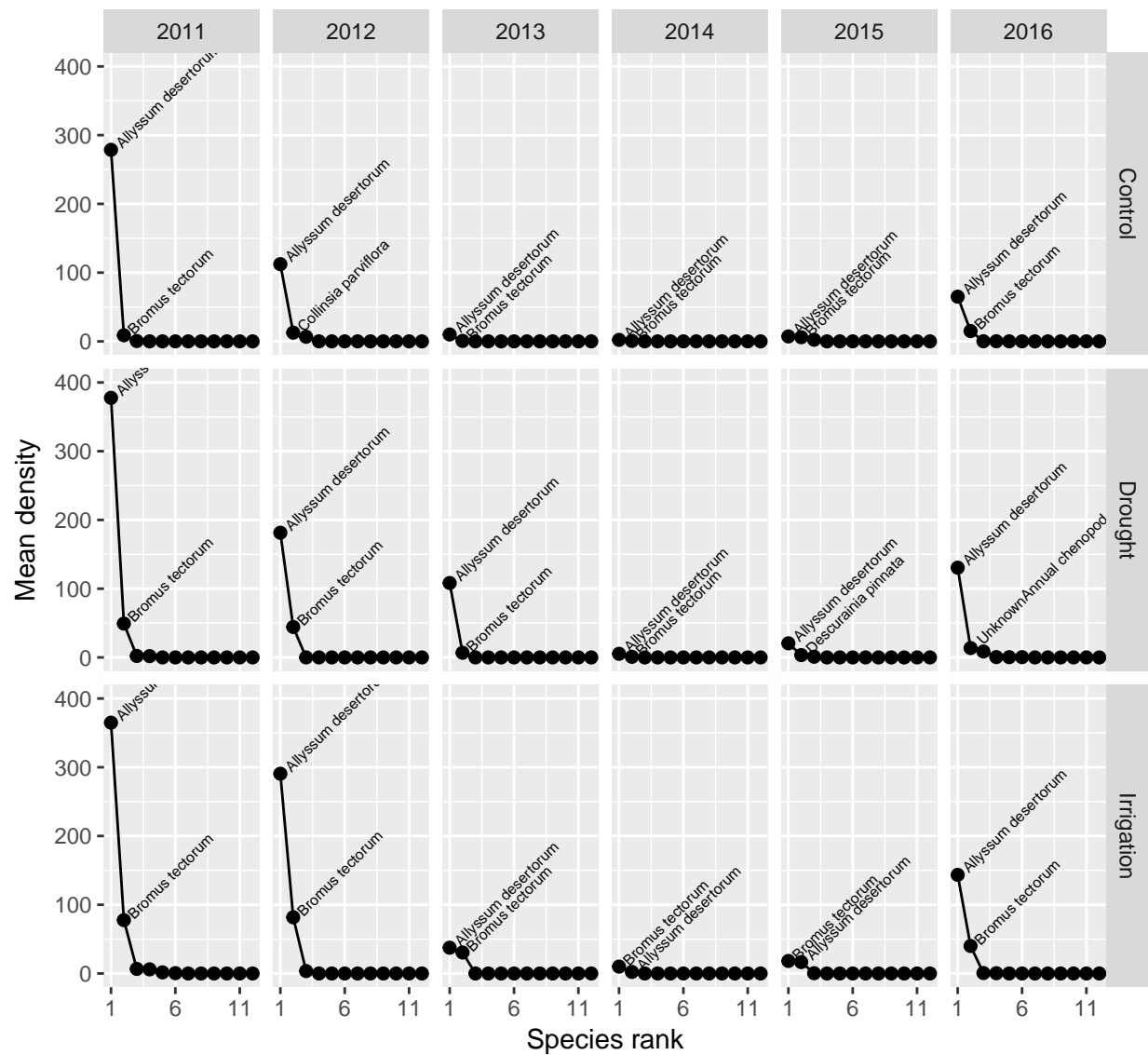


Figure Ax-4 Time series of rank abundance curves for annual species in each treatment. Values of density were averaged over plots. The two most dominant species are labelled in each panel.

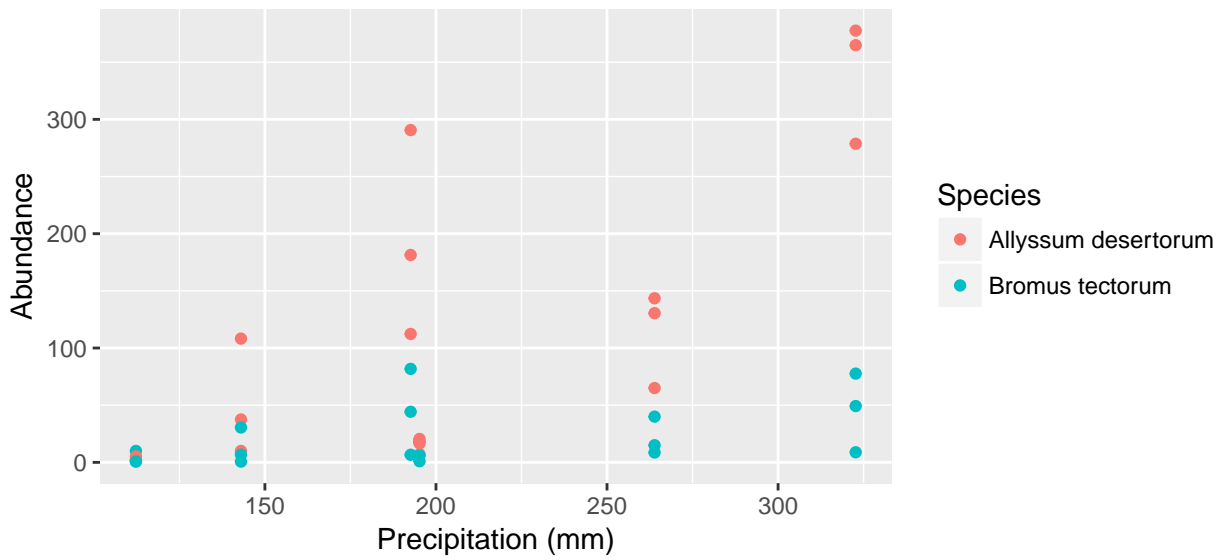


Figure Ax-5 Relationship between precipitation and abundance of dominant annuals.