**Supplementary Table 1**. List of annual plant species in each season and their relative abundance across all subplots and all time points within each season.

|  |  |  |
| --- | --- | --- |
| Species | Summer | Winter |
| *Allium spp.* | 0.000 | 0.003 |
| *Amaranthus fimbriatus* | 2.115 | 0.000 |
| *Amaranthus palmeri* | 0.046 | 0.000 |
| *Amaranthus species* | 0.033 | 0.000 |
| *Anisocoma acaulis* | 0.000 | 0.023 |
| *Bouteloua aristidoides* | 32.703 | 0.000 |
| *Bouteloua barbata* | 6.307 | 0.000 |
| *Bromus madritensis* | 0.013 | 30.694 |
| *Bromus tectorum* | 0.000 | 0.883 |
| *Calyptridium monandrum* | 0.000 | 0.437 |
| *Camissonia strigulosa* | 0.000 | 0.503 |
| *Camissoniopsis pallida* | 0.000 | 0.520 |
| *Cryptantha micrantha* | 0.000 | 4.709 |
| *Cryptantha spp.* | 0.000 | 1.346 |
| *Cryptantha spp. 2* | 0.000 | 0.760 |
| *Cryptantha spp. 3* | 0.000 | 0.003 |
| *Dasyochloa pulchella* | 0.278 | 0.283 |
| *Descurainia pinnata* | 0.000 | 2.399 |
| *Eriogonum fasciculatum* | 0.013 | 0.000 |
| *Eriogonum spp.* | 0.000 | 1.293 |
| *Eriogonum spp. 1* | 2.664 | 0.180 |
| *Eriogonum spp. 2* | 0.007 | 0.000 |
| *Eriophyllum wallacei* | 0.000 | 2.782 |
| *Erodium cicutarium* | 0.007 | 36.712 |
| *Euphorbia maculata* | 0.469 | 0.000 |
| *Euphorbia micromera* | 1.428 | 0.000 |
| *Festuca myuros* | 0.000 | 1.076 |
| *Gilia stellata* | 0.000 | 1.196 |
| *Gutierrezia sarothrae* | 0.033 | 0.000 |
| *Gutierrezia spp.* | 0.000 | 0.043 |
| *Langloisia setosissima* | 0.000 | 0.053 |
| *Lepidium lasiocarpum* | 0.000 | 0.007 |
| *Logfia depressa* | 0.000 | 0.020 |
| *Logfia spp.* | 0.000 | 0.007 |
| *Mentzelia albicaulis* | 0.000 | 1.100 |
| *Mentzelia spp. 2* | 0.000 | 0.027 |
| *Mollugo cerviana* | 1.686 | 0.000 |
| *Nemacladus glanduliferus* | 0.000 | 0.393 |
| *Pectocarya heterocarpa* | 0.000 | 0.630 |
| *Phacelia fremontii* | 0.000 | 0.003 |
| *Phacelia spp. 1* | 0.000 | 0.093 |
| *Polemoniaceae spp.* | 0.000 | 0.237 |
| *Polemoniaceae spp. 1* | 0.000 | 0.253 |
| *Portulaca halimoides* | 11.648 | 0.000 |
| *Portulaca oleracea* | 39.862 | 0.000 |
| *Schismus barbatus* | 0.000 | 11.127 |
| *Sphaeralcea ambigua var. ambigua* | 0.026 | 0.000 |
| *Sphaeralcea spp. 1* | 0.026 | 0.000 |
| *Unknown grass spp. 1* | 0.410 | 0.120 |
| *Unknown grass spp. 2* | 0.225 | 0.000 |
| *Unknown spp. 1* | 0.000 | 0.057 |
| *Unknown spp. 2* | 0.000 | 0.017 |
| *Unknown spp. 3* | 0.000 | 0.007 |
| *Unknown spp. 4* | 0.000 | 0.003 |

**Appendix 1.** All other pairwise comparisons of differences in species composition not related to our focal question

We also found several other differences in annual plant community composition among treatments that were not related to our planed comparisons. In Summer 2018 the *Winter+* treatment significantly differed from the *Control* (F1,1=6.05, P=0.03) and that difference was primarily driven by *Bouteloua aristidoides* (Poaceae) in the *Winter+* treatment. In Winter 2019, the *Summer-* treatment significantly differed from the *Control* (F1,1=4.22, P=0.008) and that difference was driven by *Mentzelia albicaulis* (Loasaceae) and *Bromus madritensis* (Poaceae) in the *Summer-* treatment. In Sumer 2019 the *Winter-* plots differed from *Control* (F1,1=6.63, P=0.004), *Summer-* (F1,1=8.95, P=0.02), and *Summer+* (F1,1=14.42, P=0.03) and those differences were driven by *P. oleracea* (Portulacaceae) and *Portulaca halimoides* (Portulacaceae)in the *Winter-* plots.