Questions: Do grass influence…

Pool grasses, test with and without graminoids

Native vs exotic

Perennial vs exotic

All statistical analyses were performed using R Version 4.0.0 (cite) and are available in reproducible documents at <http://jennabraun.github.io/many_analysts_jb/index.html>.

To test for evidence that grasses influences seedling recruitment in ecs, we fit generalized linear mixed-models (GLMM) using the R package glmmTMB (citation) with negative binomial error distributions to account for overdispersion detected in the data (performance, citation). The number of seedlings within a quadrat was using as a response variable, and each stage of development – less than 0.5 m, between 0.5 m and 2 m and greater than 2 m. Our exploratory analyses indicated a correlation between small and medium sizes so we modelled outcomes for small and large seedlings only, representing initial establishment and more successful establishment. We modelled the outcome as logistic because there were so many zeroes, therefore models predict the probability of euc seedling or older seedling presence.

Resource availability mediates the outcome of plant-plant interactions (citations) and so we included annual precipitation as an interaction… Further, our exploratory analyses indicated property-level differences in seedling density, therefore we included precipitation…. We included each grass: exotics, natives with an interaction terms for precipitation. We dropped the insignificant interactions from the model and compared these candidate models using AIC.

Results

We completed a total of 351 surveys over 3 seasons at 18 properties. Within a quadrat, small - (< 0.5 m) and medium-sized (between 0.5 m and 2 m) were significantly correlated (Pearsons: 0.27, p < 0.001). There was no relationship between large-sized seedlings and small seedlings (Pearsons: 0.04, p = 0.471) or large-sized and medium seedlings (Pearson’s: 0.007, p = 0.902).

There were no differences between seasons in the number of small or medium-sized seedlings, but there was a differences in large-sized.

The properties vary in annual precipitation.