

Conversion of native grasslands to food and fiber systems impact soil fauna community in Brazilian Pampa

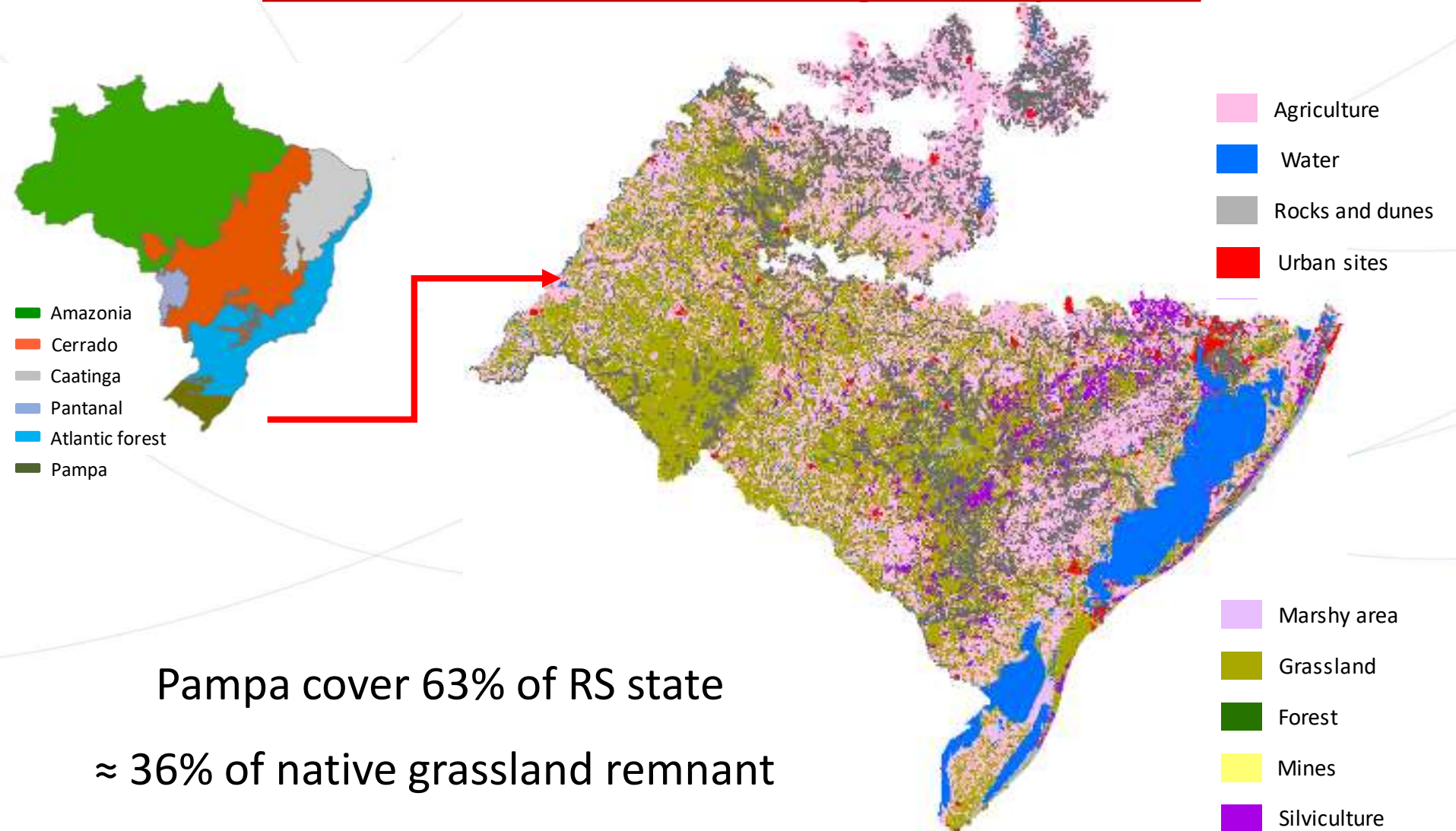
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Brazilian biomes and land-use changes in Pampa biome



Pampa cover 63% of RS state

≈ 36% of native grassland remnant



Habitat



Biodiversity

Forage

Food

Climate regulation

Carbon storage

Water provision

Nutrient cycling

Soil erosion control

Decomposition

Disease / pest control

Interaction with plants

Soil biodiversity?





High plant diversity
Species and functional types



High habitat diversity

Our hypothesis



To find high soil biota diversity on grassland sites when compared to crop and forest plantations

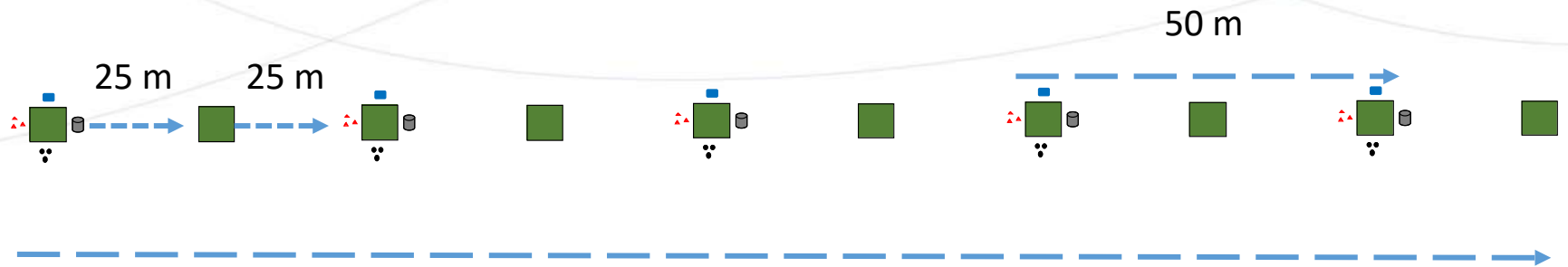
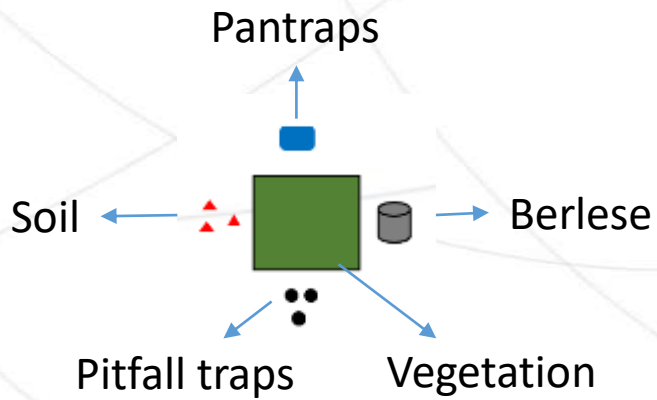
Our main



Evaluate the effects of conversion of native grasslands to fiber and food systems on soil communities across the Brazilian Pampa



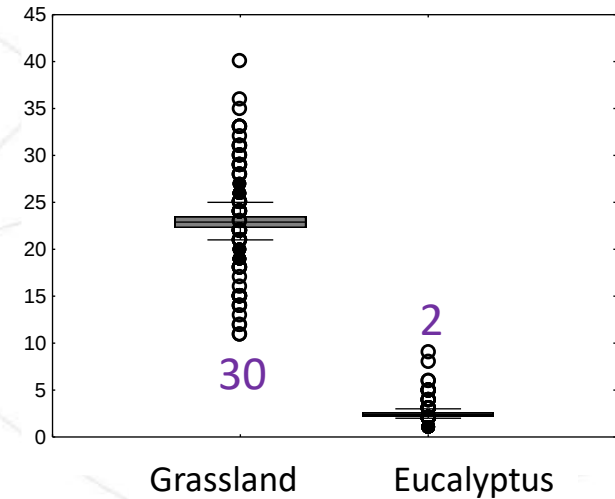
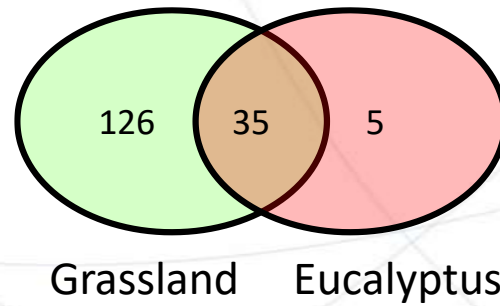
Case I: Eucalyptus x Grassland



Transecto (250m)



Richness of plants

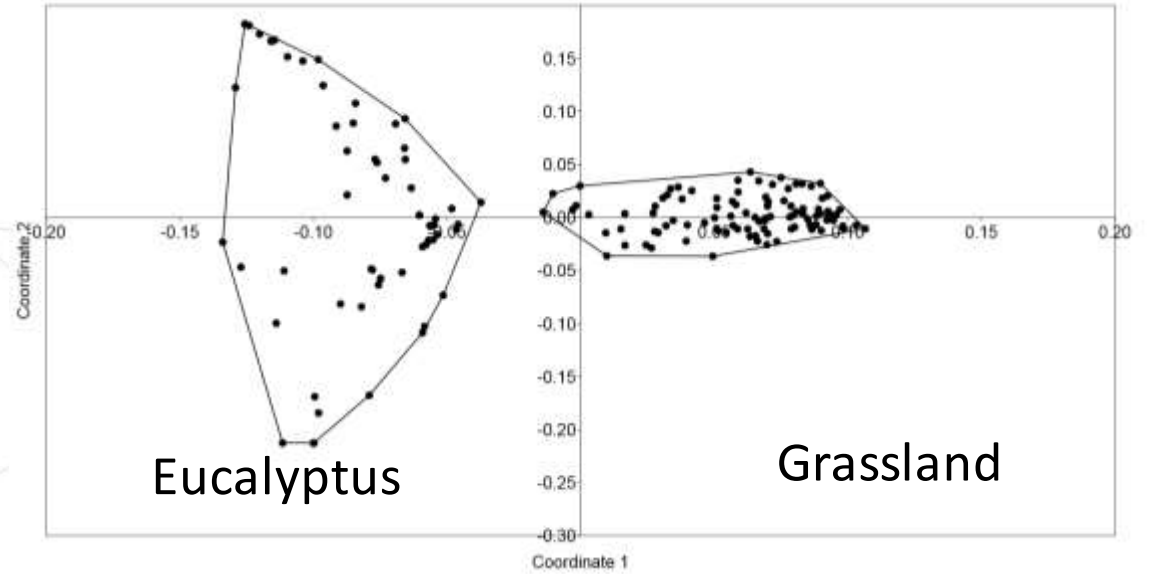


What do we expect to find in both sites regarding soil fauna communities?

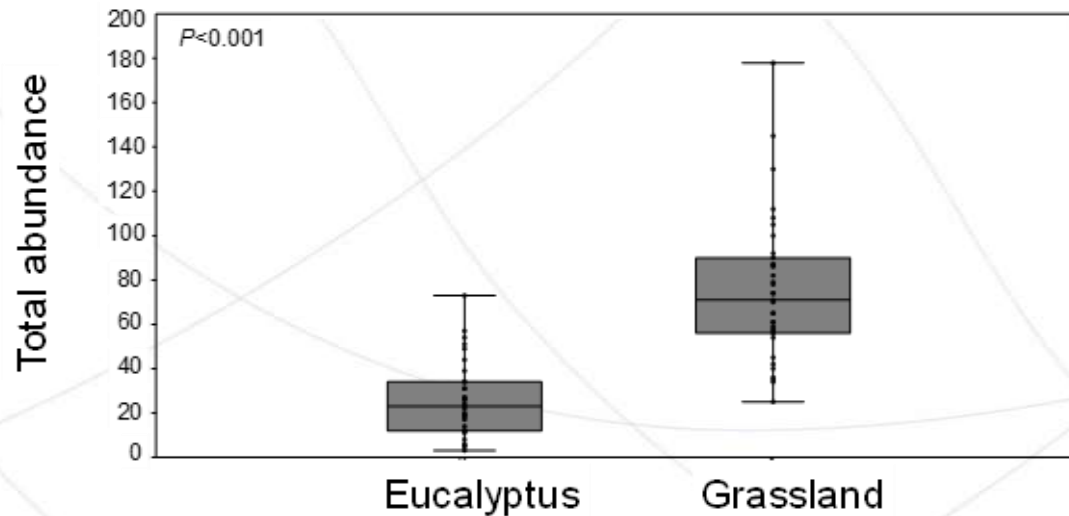
- Different abundances
- Different species compositions
- High species richness

High habitat diversity → Niche differentiation → High diversity

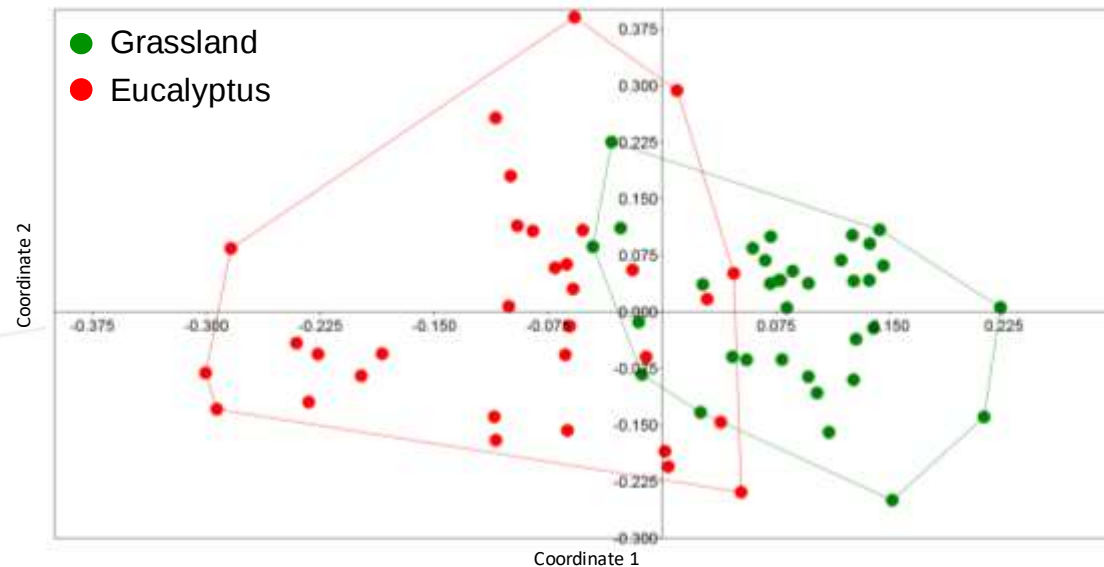




Results



Mean abundance of soil fauna (all groups) and standard deviation in 10 pairs of grassland and eucalyptus.

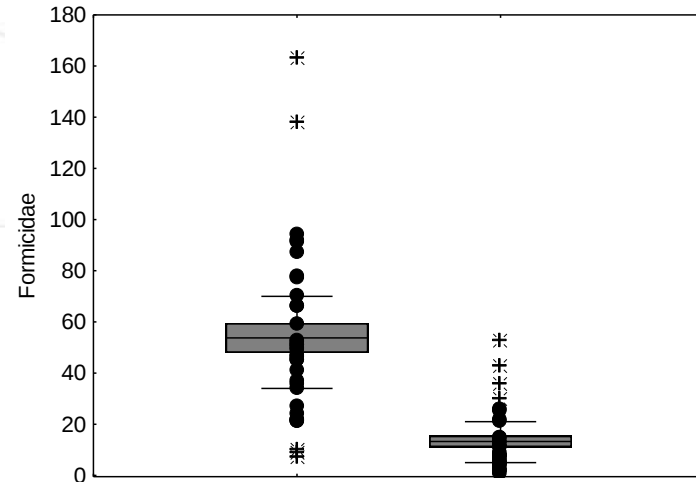
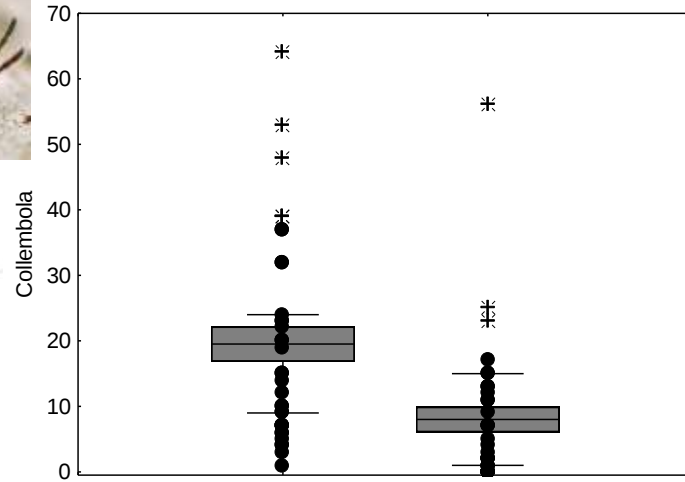
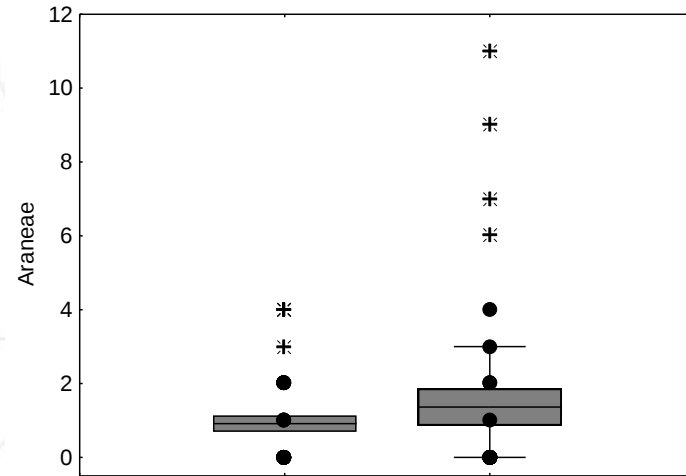
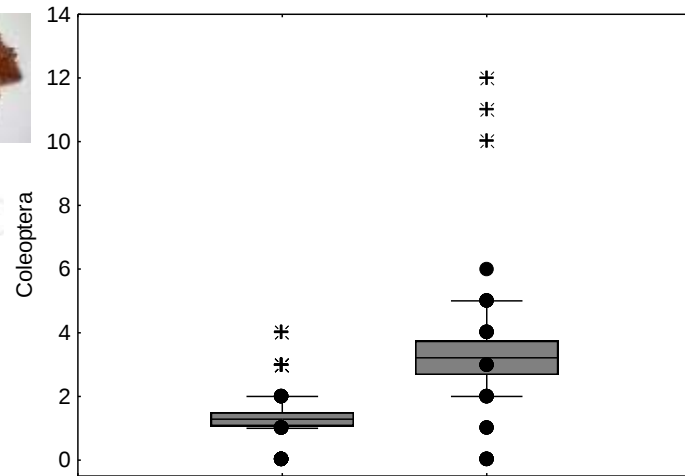


Principal coordinate analysis based using all taxa abundances in Brazilian Pampa. Circles indicate sampling units.



Abundance

Results



Grassland

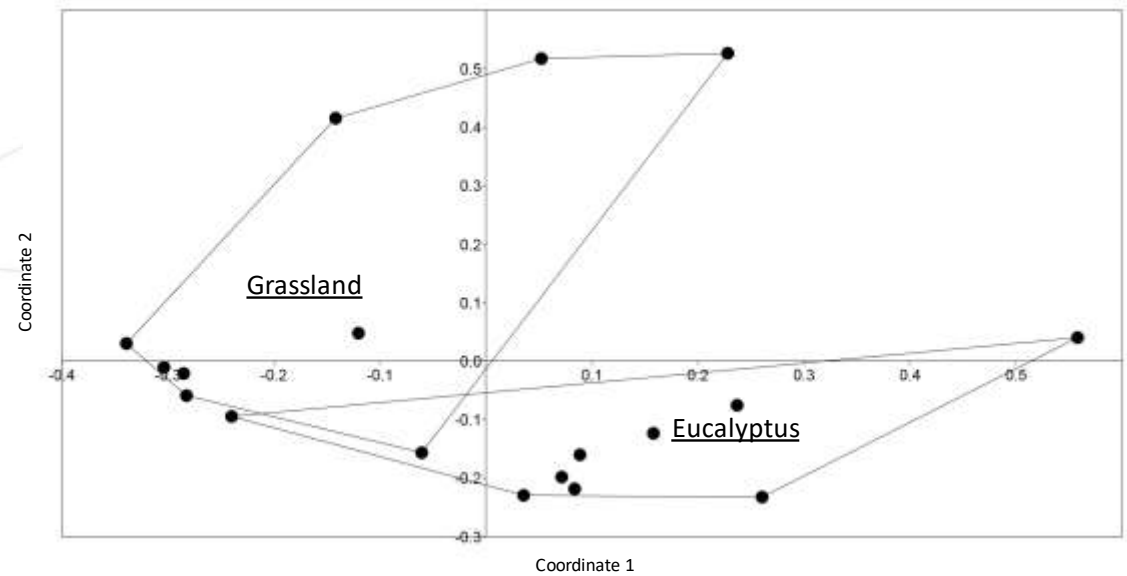
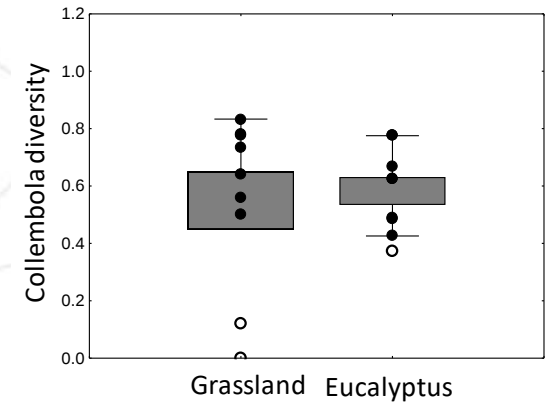
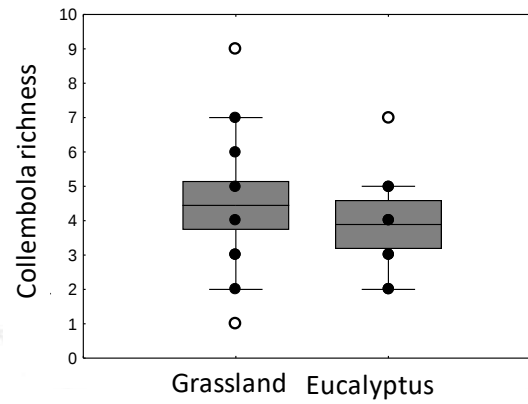
Eucalyptus

Grassland

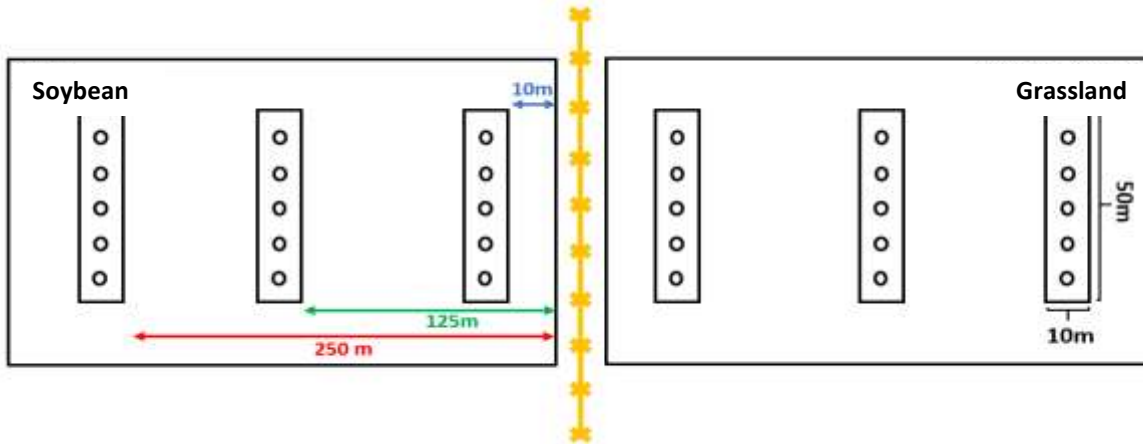
Eucalyptus



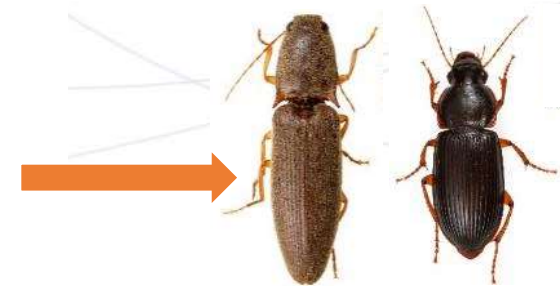
Eudaphic Collembola



Case II: Soybean x Grassland



9 pairs → 18 transection → 90 samples



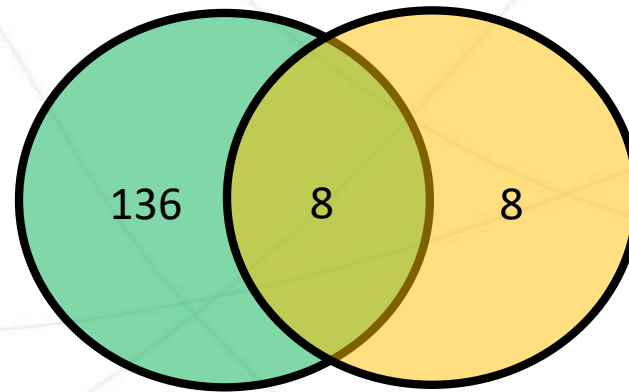
Identified to
morphospecies
level



Results

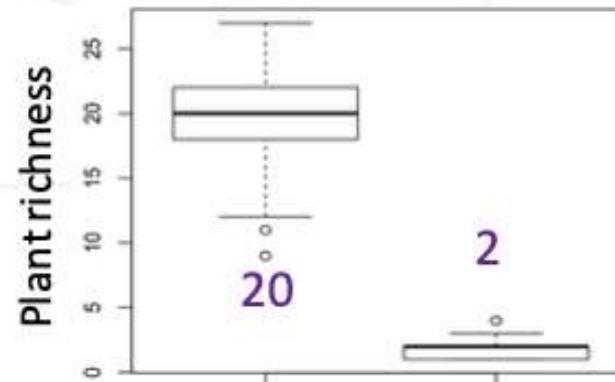


Richness of plants



Grassland

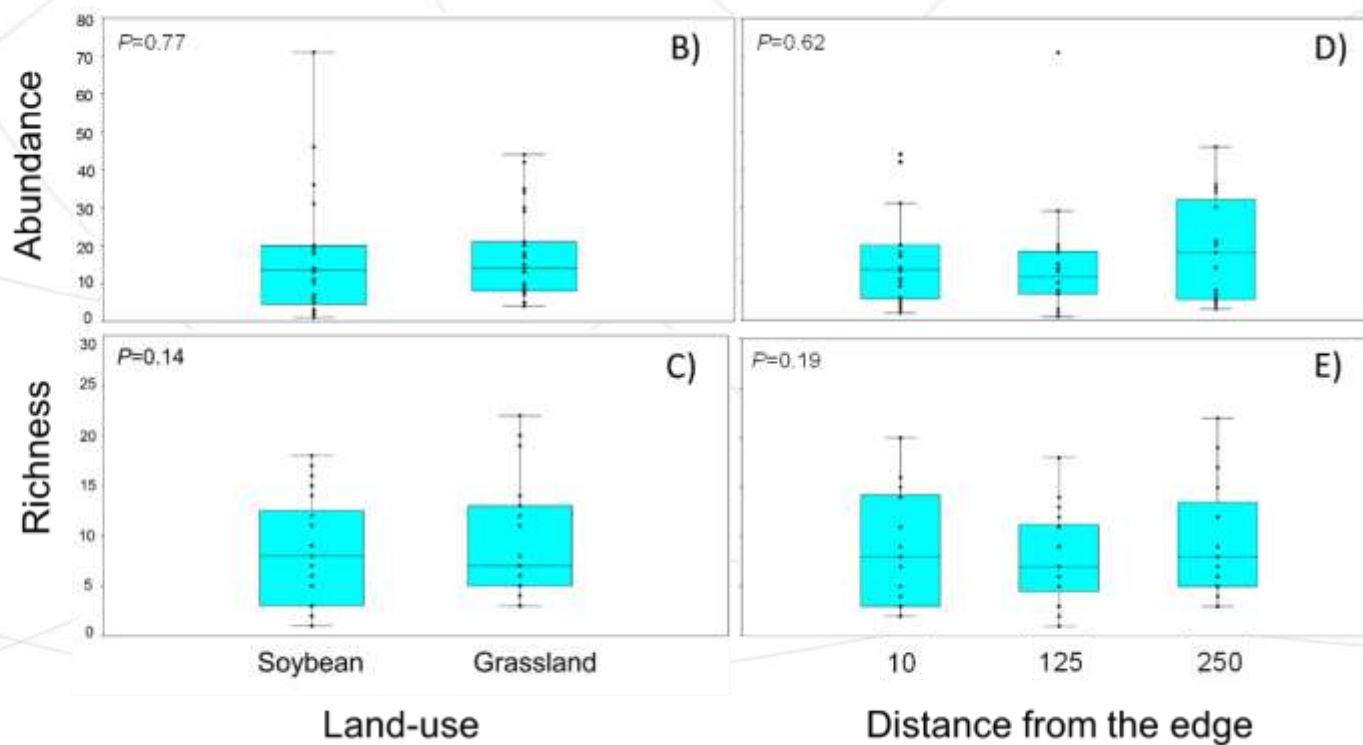
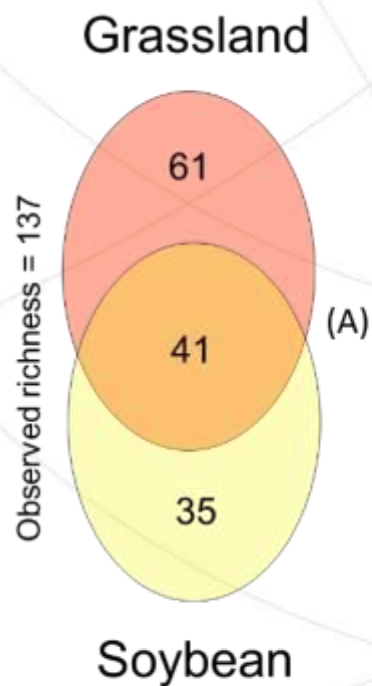
soybean

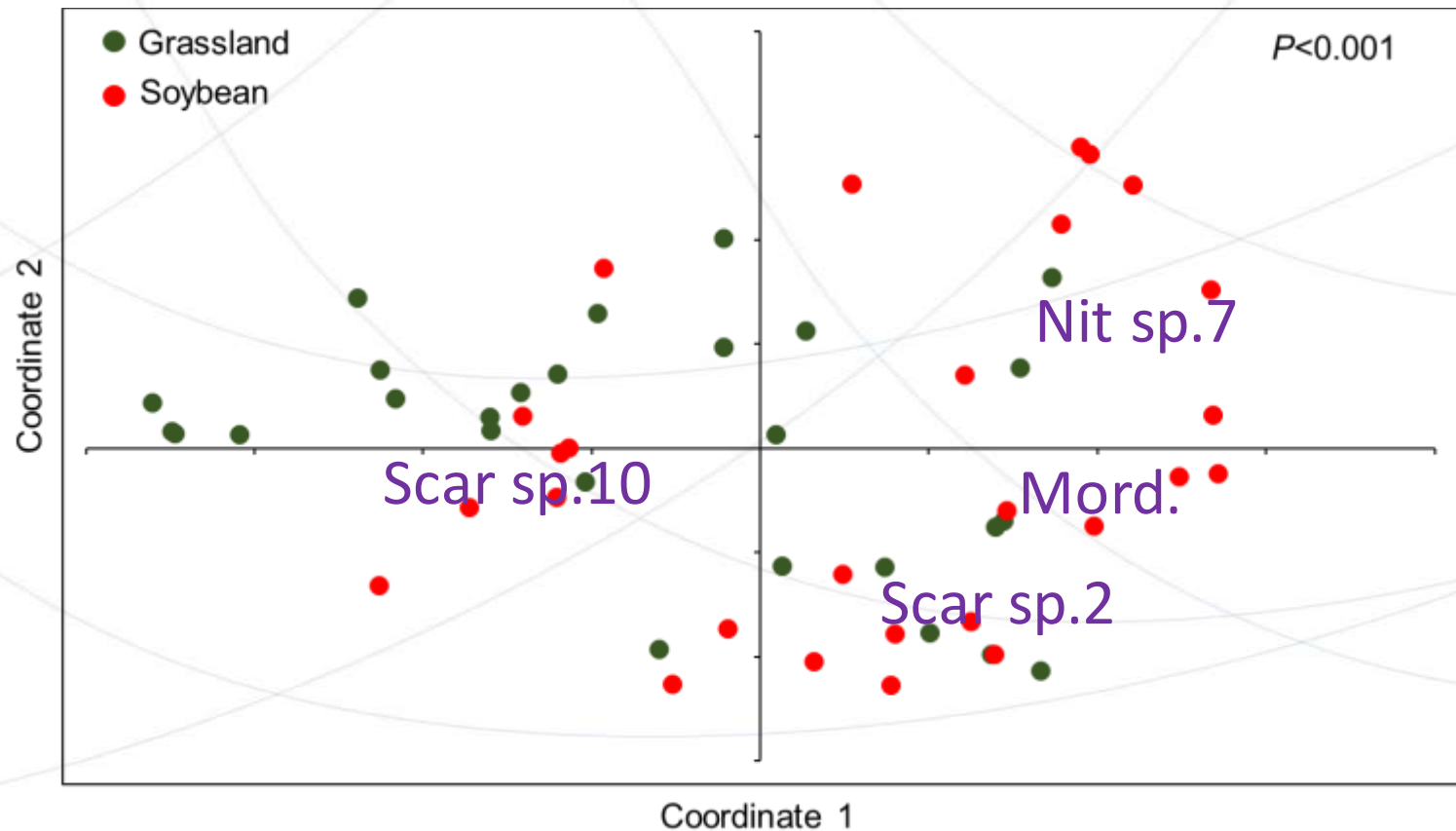


Grassland

Soybean







Principal coordinate analysis based using all beetle morphospecies abundances in Brazilian Pampa. Circles indicate sampling units.



Conclusion

We concluded that conversion of native grassland of Brazilian Pampa into food and fiber systems affects the composition and richness within soil fauna communities, and these changes might affect ecosystem services.



Next step

- ❏ Identification of the organisms to species level
- ❏ Description of functional traits
- ❏ Description of new species (Collembola)





Thanks for your attention

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