

Analysing the flora richness in Caucaia-CE

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Introduction

Collecting information of the existence of species in specific locations is critical for determining its diversity and richness. Which species are found in a specific location? Which species are on risk of extinction? Why are there more species in this or that type of vegetation? All of these and other questions are present in the day-to-day work of ecologist and botanist researchers, and it is critical to have this information documented and available in order to answer them; this is where herbariums come into play. A herbarium is a collection of pressed, dried, and organized plant specimens based on taxonomic classification. The herbarium contains flora diversity registers and can be used as a foundation for many scientific studies. Having these digital collections is important for making them more accessible not only to scientists but also to the general public, as well as for protecting these collections.

The database used in this work contains the different species found in the city of Caucaia located in the Brazilian state of Ceará. The city has a coastal extension of 44 kilometers, where part of it is in an area of environmental protection. The vegetation formations of the city include Coastal Zone Vegetation Complex, Shrubby Caatinga and Cerrado (IPECE 2017). In this short project for the discipline of Computational Methods in the Serrapilheira/ICTP-SAIR Training Program in Quantitative Biology and Ecology, I plan to do an initial data analysis, following some steps to clean the database and organize it. Subsequently, I would like to calculate the genus richness of the city and look at how the richness of species differs depending on vegetation type.

Database

The database used for this work was a compilation of the

These are plant species data from the city of Caucaia in Ceará. Data were collected using the Specieslink database. Where is this herbarium spreadsheet where the plant was deposited, the code, taxonomic classification, the type of vegetation and substrate where the species is found, and the geographic coordinates of the collection site.

The dataset contains 28 columns, we have

This dataset includes all plants registered in a herbarium database from the municipality of Caucaia.

If the species cell contains an AN it represents that the person who registered the plant in the herbarium didn't identify the species.

The number of herbariums in the dataset

Results and Discussion

I started checking for the richness in each specific vegetation.

Following that we have the

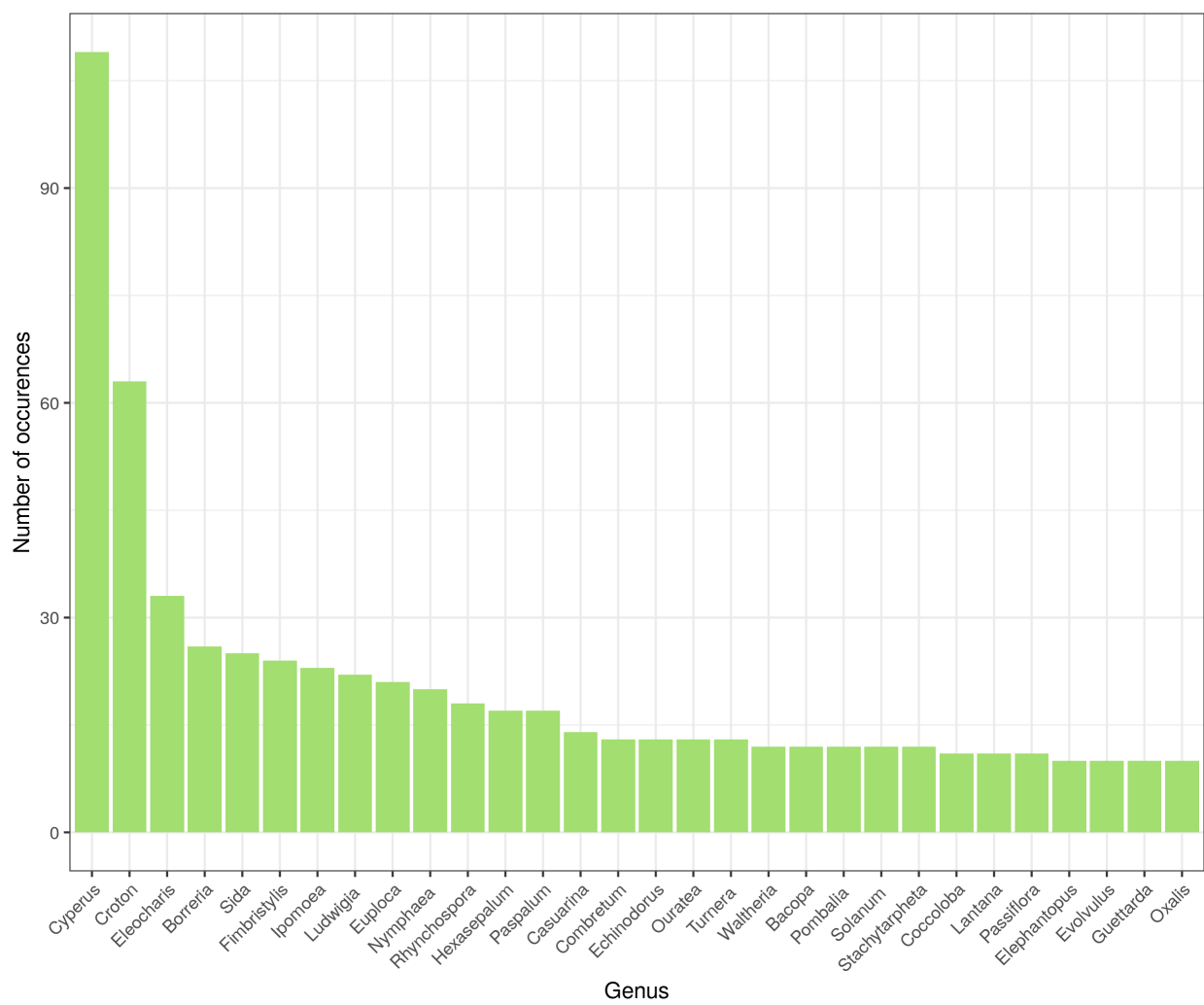


Figure 1: The 30 most common genus in the city of Caucaia-CE.

Conclusion

This short project was helpful to put in practice the topics discussed in the class, especially around the good practices that should be used when creating R projects. While working with a biodiversity database, it was possible to see the common problems with these databases regarding errors on collection names, manual typos and more. It was also possible to see the importance of working closely with a botanist and ecologist. The preparation of the database took most of the time while working on the project. This step of the data analysis is extremely important to pay close attention, since any erroneous cleaning decisions can result in inaccurate conclusions. Finally, for future work I would like to calculate richness considering the different vegetation and substrates.

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References

IPECE. 2017. “Perfil Municipal 2017.” *Instituto de Pesquisa e Estratégia Econômica Do Ceará*. <https://www.ipece.ce.gov.br/perfil-municipal-2017/>.