

Species richness of ants visiting bromeliad inflorescences

Volker Schmid¹, Anne Zillikens^{1,2}, Josefina Steiner²

¹Zoological Institute, Univ. of Tübingen, Germany ²Dept. of Embryology, Federal Univ. of Santa Catarina (UFSC), Florianópolis, Brazil
volker.schmid@stud.uni-regensburg.de anne.zillikens@uni-tuebingen.de steiner@mbox1.ufsc.br

Introduction

Ants are frequently attracted in great numbers to extrafloral-nectary bearing inflorescences of the bromeliad species *Aechmea lindenii* (see photo on the right) and *A. nudicaulis* occurring in southern Brazil. We assessed species richness as a measure of diversity of associated ant species in different habitat types using species accumulation curves and nonparametric species estimators.



Methods

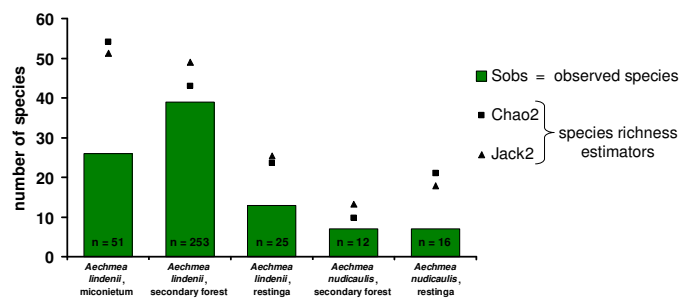
- Examined bromeliad species: *Aechmea lindenii* and *A. nudicaulis*.
- Study site: Florianópolis, Santa Catarina, southern Brazil.
- Habitat types: secondary forest, miconietum (lower vegetation in edge area of secondary forest), restinga (vegetation on and between sand dunes).
- Computing species accumulation curves and two nonparametric species richness estimators (Jack2, Chao2) using the computer program „EstimateS“ (Colwell 2005)*.

*Colwell, R. K. (2005). EstimateS: Statistical estimation of species richness and shared species from samples. Version 7.5. Persistent URL <purf.ocii.org/estimates>.

Results

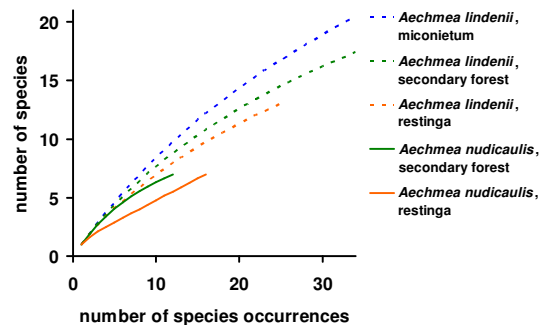
Observed and estimated species richness

- Both estimators predicted highest species richness for *A. lindenii* in miconietum.
- Number of observed species for *A. lindenii* in secondary forest and *A. nudicaulis* in secondary forest almost reached predictions.
- Least richness (10-12 species) predicted for *A. nudicaulis*, secondary forest.



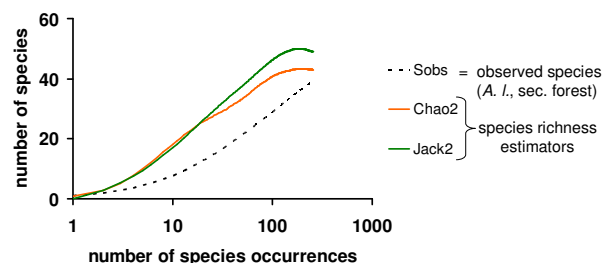
Comparison of species accumulation curves

- Secondary forest curves lay above restinga curves.
- Miconietum curve showed steepest growth.
- *A. lindenii* curves lay above *A. nudicaulis* curves.



Performance of species richness estimators

- At about 150-200 species occurrences both estimators reached a plateau and predicted higher species richness than observed.
- For small samples (up to 50-100 species occurrences) the estimators predicted lower species richness than observed.
- The species accumulation curve took a logarithmic course after ~100 species occurrences.



Conclusions

- We expect at least 20 ant species to be associated with *Aechmea* inflorescences, probably except for *A. nudicaulis* in secondary forest. (Whether that exception is a stochastic or systematic phenomenon can only be determined with further research. For *A. lindenii* in secondary forest we can call our inventory not far from complete.)
- Bromeliad species and habitat type influence the number of associated ant species.
- The species richness estimators Chao2 and Jack2 show good performance for large sample sizes, for smaller sizes species richness is underestimated.

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