

BEES OF THE BRAZILIAN SAVANNA

Isabel Alves-dos-Santos

Dept. Ecologia, IBUSP. University of São Paulo. São Paulo 05508-900 Brazil

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Summary

Bees are the most important and diverse pollinator agents in the Cerrado, responsible for the sexual reproduction and seed production of many flowering plants. This chapter presents a list of the bees that occur in the Brazilian Cerrado based on inventories and studies on floral biology. A total of 494 species were registered, belonging to five families, being Apidae the most diverse (ca. 58%). Some notes on the bee biology, nesting habitats and plant relationship are presented. The conservation of wild cerrado bees is absolutely crucial for the success reproductive biology of many plants and should be among the priority items of the environmental agenda. Efforts to survey the bees from areas in central-western Brazil are recommended.

1. Introduction

Bees are important components of the terrestrial ecosystems, because they provide an efficient service doing the transference of pollen grains between the flowers. This movement is called pollination and it is essential for the plants sexual reproduction and important for the maintenance of the genetic variability.

In the Cerrado the importance of the bees is not different from others ecosystems. According to most works about the floral biology and plant reproduction system performed in the Brazilian Cerrado, bees were considered efficient and the most important and diverse pollinator agents (Oliveira & Gibbs 2000, 2002, Gottsberger & Silberbauer-Gottsberger 2006). In an extensive study on the pollination system of woody species of the Cerrado vegetation in central-western Brazil Martins & Batalha (2006) found that 55.6% of the 99 species were mainly pollinated by bees. So, this insect group is quite responsible for the sexual reproduction of the Cerrado flowering plants.

In spite of being the second largest phytogeographic province of Brazil, occupying

originally 23% of the country territory (ca. 2 million km²) and the large number of people studying bees in Brazil (Alves dos Santos 2005), the beefauna of the Cerrado is known only from some faunistic studies performed in a few fragments (mainly in the southeastern of the country) and some others floral biology studies which give the list flower visitors in their results. In this work the author tries to compile and report the bee species that are known from these studies and add some comments about the life history and plant relationship of the some specific groups.

To the compilation of all the data, the available faunistic surveys performed in the Brazilian Cerrado areas were consulted (Fig. 1). Most surveys were published just as thesis, dissertations and reports. Only identified species were considered. This means that the enormous list of morphospecies presented in each study was left behind, because the author was not able to compare the material. Many genera that were not taxonomically revised yet hold an enormous list of sp. (as is the case of *Hylaeus*, *Dialictus* and *Augochlora*). The consequence is that as you can image the richness of the beefauna is higher then the list provided here. The author also avoided using species names that could not be confirmed to be described (*nomen nudum*) and in most cases they were included into the spp groups. The classification of the bees follows Michener (2000) and Silveira *et al.* (2002).

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Biographical Sketch

Isabel Alves dos Santos is a biologist and for the past 15 years she has been studying native bees and melittophilous plants, trying to understand this complex and fascinating interaction. Her interest in this field started in the beginning of the 1990s, during her PhD studies. Her PhD Dissertation at the University of Tübingen, Germany was entitled: "*Bienen und Melittophile Bluetenpflanzen in der Kuestenregion und im Atlantischen Regenwald von Rio Grande do Sul (Brasilien), mit einer Fallstudie zu Langzungenbienen und tristylen Wasserhyazinthen*", which means "Bees and Mellitophilous flowering plants in the Coastal Plain and Atlantic Rainforest in Rio Grande do Sul (Brazil), with a special study on the long-tongued bee and tristyly waterhyacinth". This work was developed in southern Brazil under supervision of Prof. Dr. Dieter Wittmann, who taught her a lot about this fascinate world. She presented the thesis in August 1996 in Germany and received a *magna cum laude* for this work. After that she accumulated some more experiences in other parts of Brazil and some parts of the world. In this trajectory she had the chance to know and work with Prof. V. L. Imperatriz-Fonseca, Prof. P. Nogueira Neto, Prof. C. A. Garófalo, Prof. G. Melo, Prof. C. Michener, Dr. J. Rozen, Dr. J. Cane, Prof. M. Engel, and recently also with Prof. Anders Nilsson, in Uppsala (Sweden). All these people had an important influence in her academic life. Presently, she has a position at the University of São Paulo (Brazil), in the Department of Ecology, where she teaches ecology to undergraduate students and specific subjects in the graduate courses. Together with Prof. Astrid Kleinert, she manages the Bee Laboratory, where there is a team working on stingless bees and solitary bees. She supervises at the moment 12 students (4 undergraduates, 5 masters, 3 PhD), with some additional Post Doc collaborators. Work in the laboratory is especially focused on trying to understand the strategies involved in the bee & plant interactions, nesting biology, development, pollination and function morphology. But of course, there is also concern about the conservation of the native bees, their natural habitats and to learn how to promote and restore their populations.

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