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BOOK REVIEW

Recent fieldguides to neotropical stingless bees

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Book review. Oliveira, F.F., de, B.T.T. Richers, J.R. da Silva, R.C. Farias, & T.A. de Lima Matos. 2013. *Guia Ilustrado das Abelhas "Sem-Ferrão" das Reservas Amanã e Mamirauá, Amazonas, Brasil (Hymenoptera, Apidae, Meliponini)*. IDSM [Instituto de Desenvolvimento Sustentável Mamirauá]; Tefé, Brazil; 267 pp. ISBN 978-85-88758-27-8 [paperback].

Book review. Giraldo, C., A. Rodríguez, F.J. Chamorro, D. Obregón, P. Montoya, N. Ramírez, V. Solarte, & G. Nates-Parra. 2011. *Guía Ilustrada de Polen y Plantas Nativas Visitadas por Abejas: Cundinamarca, Boyacá, Santander, Sucre, Atlántico y Sierra Nevada de Santa Marta, Colombia*. Unibiblos, Universidad Nacional de Colombia; Bogotá, Colombia; 230 pp. ISBN 978-95-87199-83-3 [spiral bound].

Stingless bees (Apidae: Meliponini) are conspicuous elements of the tropical melittofauna, as they are abundant, diverse, and widely used by local people for their honey, pollen, and wax. The number of scientific publications on stingless bees has increased exponentially in recent years (Rasmussen & Gonzalez, 2013), yet their identification at the species level is in many cases impossible, even for trained melittologists.

Frustration is a well-known feeling that is experienced by anyone trying to learn more about these abundant bees when conducting any bee community-related research project. It often takes some effort and time to obtain accurate identifications from local specialists (if available), who themselves frequently struggle to locate proper keys to all species of a genus and to study specimens from different regions to correctly identify these taxa. As in many groups of bees, species concepts in stingless bees are in need of modern revision, identification keys are outdated for many genera, no illustrations of key morphological characters are available for many taxa, and biological information is still restricted to a small fraction of the species (Gonzalez *et al.*, 2013).

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Given this, local bee guides may help to overcome such a taxonomic impediment, as they can provide a relatively easy way to identify a restricted number of species, whose recognition would be supported by additional information such as local names, nesting habits, habitat occurrence, and other biological features. This was precisely the main goal of Oliveira *et al.*, (2013) in their letter-sized, paperback book. Written in Portuguese, this work records a wealth of information on the stingless bees occurring in two biological reserves (Amanã and Mamirauá) in the Brazilian Amazon, which together cover an area comparable to the size of the state of Maryland in the U.S.

The first part of the book offers an overview of the stingless bees, their taxonomy, and biology. It also describes the conservation program aimed to develop sustainable agriculture in the area within which the research took place. To document local knowledge on bees as well as to promote their sustainable use, the authors worked with 120 farmers of 21 communities, 25 of which already were managing colonies and selling bee products locally. The authors provided training to local people on how to collect hives, how to divide colonies, how to extract honey, &c. Such information is available in the book, along with guidelines on how to build hives following standard (e.g., Nogueira-Neto hives) as well as locally-adapted models.

For each of the 34 stingless bee species occurring in the area (~26% of recorded stingless bee species from the Brazilian Amazon), the authors provide local names, geographical distribution, diagnostic features, local habitats, nesting behavior, and host plants. The species' accounts also contain photographs of the nest as well as of several views of the bee (worker caste), including the metatibia. Such images and diversity of information, in addition to the dichotomous taxonomic key presented at the end of the book, are without a doubt useful tools for species identification for any biologist. Accompanying the more than 400 photographs and maps of this book are the line drawing illustrations of the external morphology of *Melipona* Illiger by Camargo *et al.* (1967), which are reproduced as an appendix.

The spiral-bound, pocket-size book written in Spanish by Giraldo *et al.* (2011) presents information on the identification, distribution, and uses of the more important native plant species utilized by honey bees as well as by five common stingless bees occurring in Colombia. Plant hosts were determined based on palynological analyses of honey and pollen from nests across several regions of the country. For each of the 90 plant species, the authors offer color photographs of several reproductive and vegetative structures, including pollen. From a practical point of view, knowledge of the native plants that serve as primary resources for bees is important for beekeepers so that they can recognize, preserve, and plant local species to sustain their colonies. However, such a task is not easy in megadiverse countries like Colombia where, despite having an area slightly larger than the state of Texas in the U.S., it contains more than 25,000 species of flowering plants (Rangel-Ch, 2005).

Both guides are important contributions to the local knowledge of stingless bees in South America, and are beautifully illustrated, easily accessible (one of them is freely available on the internet [<http://www.mamiraua.org.br/pt-br/publicacoes/publicacoes/2013/livros/guia-ilustrado-das-abelhas-sem-ferrao-das-reservas-amana-e-mamiraua-amazonas-brasil-hymenoptera-apidae-meliponini/>]), and written by scientists with the general public as the final user in mind. Transference of knowledge from science to society is key to promote the conservation and sustainable use of the planet's biodiversity. To illustrate the impact of this activity, Oliveira *et al.* (2013) indicate that prior to the beginning of their project in 2009, local people had predatory extraction practices toward bee nests and their products. The authors estimated that on average

each beekeeper extracted as much as two colonies per year, a practice that changed once they were taught of appropriate ways to extract and rear the bees.

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The *Journal of Melittology* is an international, open access journal that seeks to rapidly disseminate the results of research conducted on bees (Apoidea: Anthophila) in their broadest sense. Our mission is to promote the understanding and conservation of wild and managed bees and to facilitate communication and collaboration among researchers and the public worldwide. The *Journal* covers all aspects of bee research including but not limited to: anatomy, behavioral ecology, biodiversity, biogeography, chemical ecology, comparative morphology, conservation, cultural aspects, cytogenetics, ecology, ethnobiology, history, identification (keys), invasion ecology, management, melittopalynology, molecular ecology, neurobiology, occurrence data, paleontology, parasitism, phenology, phylogeny, physiology, pollination biology, sociobiology, systematics, and taxonomy.

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