

## Gender identification of five genera of stingless bees (Apidae, Meliponini) based on wing morphology

T.M. Francoy<sup>1</sup>, R.A.O. Silva<sup>1</sup>, P. Nunes-Silva<sup>1</sup>, C. Menezes<sup>1</sup>  
and V.L. Imperatriz-Fonseca<sup>1,2</sup>

<sup>1</sup>Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto,  
Universidade de São Paulo, Ribeirão Preto, SP, Brasil

<sup>2</sup>Instituto de Biociências, Universidade de São Paulo, São Paulo, SP, Brasil

Corresponding author: T.M. Francoy

E-mail: tfrancoy@rge.fmrp.usp.br

Genet. Mol. Res. 8 (1): 207-214 (2009)

Received November 26, 2007

Accepted November 27, 2008

Published February 25, 2009

**ABSTRACT.** Currently, the identification of pollinators is a critical necessity of conservation programs. After it was found that features extracted from patterns of wing venation are sufficient to discriminate among insect species, various studies have focused on this structure. We examined wing venation patterns of males and workers of five stingless bee species in order to determine if there are differences between sexes and if these differences are greater within than between species. Geometric morphometric analyses were made of the forewings of males and workers of *Nannotrigona testaceicornis*, *Melipona quadrifasciata*, *Frieseomelitta varia*, and *Scaptotrigona* aff. *depilis* and *Plebeia remota*. The patterns of males and workers from the same species were more similar than the patterns of individuals of the same sex from different species, and the patterns of both males and workers, when analyzed alone, were sufficiently different to distinguish among these five species. This demonstrates that we can use this kind of analysis for the identification of stingless bee species and that the sex of the individual does not impede identification. Computer-assisted morphometric analysis of

bee wing images can be a useful tool for biodiversity studies and conservation programs.

**Key words:** Meliponini; Wing morphometry; Conservation; Geometric morphometry; Sex differentiation; Species identification