The Australian bee genera

An annotated, user-friendly key

Tobias J. Smith





The Australian bee genera

An annotated, user-friendly key

by Tobias J. Smith

2018



Published by The Rader Community Ecology Lab, School of Environmental and Rural Science, University of New England, Armidale, Australia.

Annotated key composed by © Tobias James Smith, 2018

Contact toby@beeawarekids.com.au

Photography and drawing copyright © All photographs and drawings are copyright of the owner as stated on the page on which each appear. PaDIL images are reproduced here under the Creative Commons Attribution 3.0 Australian License (http://www.padil.gov.au/imageuse), and individual photographers are listed with each photo on each page they occur.

This is a not-for-profit publication, produced for education and research only

ISBN 978-1-9215797-77-0

Printed by Fuji Xerox Australia Pty Limited, University of New England, Amidale, Australia

Printing of this book was funded by a grant awarded to Romina Rader as part of an AgriFutures

Australia supported project, "Securing Pollination for More Productive Agriculture: Guidelines

for effective pollinator management and stakeholder adoption". The project is funded through
the Australia Government Department of Agriculture and Water Resources as part of its Rural

R&D for Profit Program, as well as Hort Innovation.





Front cover photo *Homalictus* females gathering pollen from *Hibbertia scandens*, K'Gari/Fraser Island – Photo by Verônica Gama, 2016

Back cover photos Top - Homalictus female gathering pollen from Brachyscome sp., Brisbane –
Photo by Tobias Smith, 2015. Bottom - Hylaeus (Prosopisteron) aralis female, Palm Beach, QLD
Photo by Tobias Smith, 2018

How to cite this book Smith, T. J. (2018) *The Australian Bee Genera: An Annotated, User-Friendly Key*. The Rader Community Ecology Lab, University of New England, Armidale, Australia.

Acknowledgements

First and foremost, I greatly thank Michael Batley (Australian Museum) for his unrelenting patience and generosity in reviewing multiple drafts of this annotated key and providing extensive feedback. Without Michael's expertise and detailed feedback, this key would not have achieved the quality and precision that it has. In addition, I thank Laurence Packer (York University, Canada) for reviewing one of the final drafts and providing detailed feedback.

I thank Romina Rader for helping me realise that this key was worthy of publication, and for her support during the entire process. I also thank Terry Houston (Western Australia Museum), Ken Walker (Museum Victoria), Manu Saunders, and Karen Retra for providing valuable feedback on drafts, and thank members of the Rader Community Ecology Lab at the University of New England who tested parts of this key and provided feedback. I thank Michael Engel for valuable advice and encouragement, and Anne Dollin for useful comments and feedback.

This annotated key is based, in part, on couplets from a number of keys written by the following authors: Charles Michener, Terry Houston, Glynn Maynard, Victor Gonzalez, Michael Engel, and Terry Griswold (publications listed on page 108). Some of the couplets from these authors appear here as they were first written, others have been modified to varying degrees.

In numerous places throughout this annotated key I support descriptions of characters with line drawings. Some of these are my own original drawings. Others are by myself, but are based on original illustrations by others, including: illustrations in Charles Michener's books *The Bees of the World* (2007) and *A Classification of the Bees of the Australian and South Pacific Regions* (1965), and illustrations by Elaine R. S. Hodges that appear in *The Bee Genera of North and Central America* (Michener, McGinley & Danforth, 1994). Likewise, a small number of other drawings within are by myself, but are based on originals by Terry Houston in his publications *A revision of the Australian Hylaeine bees (Hymenoptera: Colletidae)* (1975) and *Revision of the bee genus Ctenocolletes (Hymenoptera: Stenotritidae)* (1983).

Numerous photos presented here are sourced from the PaDIL pollinators website (padil.gov.au/pollinators), and are identified as such throughout, along with the photographer's name for each. I also thank the following photographers for the use of their photographs: Verônica Gama, Michael Batley, Ken Walker, Steve Smith, and Samantha Gray. I thank Rowena McDonald (my mum) for the laborious task of editing this book.

Lastly, I thank my family, Verônica and Rafaela, for being themselves and for being happy and supportive with me going through the long process of putting together this key. This key was largely produced in my own personal time and, as such, many long nights have gone into it.



Photo by Tobias Smith Lasioglossum

Contents

Acknowledgements
Preface
Identification equipment and bee collecting
Using this annotated key
Overview of Australia's bees 4
Bee anatomy and terminology 6
Mouthparts can be tricky
Bee or wasp?
Male or female?13
THE KEYS
Families/subfamilies – Females
– Females and males 27
Apidae
Colletidae
- Colletinae
– Euryglossinae
– Hylaeinae
Halictidae
Megachilidae
Stenotritidae
Resources and References



Photo by Tobias Smith Amegilla