

## BOOK REVIEW

### Hawkmoths of Australia. Identification, Biology and Distribution. Monographs on Australian Lepidoptera, Volume 13

Maxwell S. Moulds, James P. Tuttle and David A. Lane

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Colour plates, Illustrations, Maps, Photographs

I first discovered the larvae of hawkmoths at the age of four. I found them interesting, and once I had seen them, wondered what they were, what they turned into and why I had not noticed them before. I had no way of finding out what they were or what they turned into without putting the caterpillars in shoe boxes and rearing them to adulthood. I still have this curiosity and so do the authors of this book, and then some.

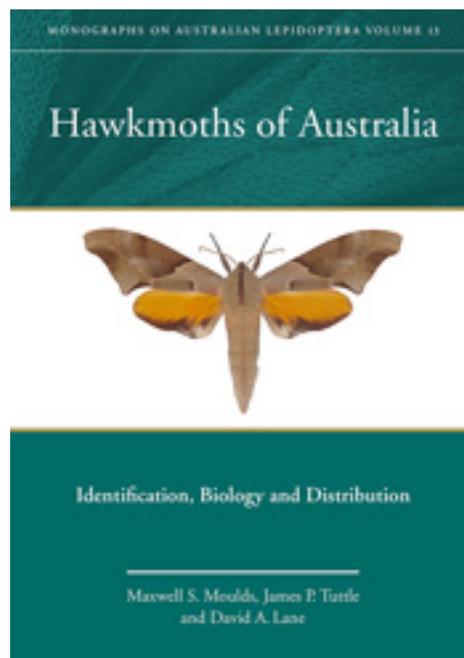
There are 87 species plus two subspecies in 31 genera from Australia and territories covered, with extra-territorial distributions included where relevant. Seventy-one life histories are documented in detail. The majority of these are recorded for the first time, or if previously described, such descriptions have mostly been piece meal and mostly only of the last instar. Five species are newly recorded from Australia (*Acherontia lachesis*, *Amphyterus panopus*, *Cypa decolor*, *Marumba timora*, *Macroglossum melas*) as well as three from Christmas Island (*Agrius convolvuli*, *Theretra nessus*, *Theretra olenlandiae*).

While the higher classification (of subfamilies and tribes) follows Kitching and Cadiou (2000) these taxa are not used in the layout of the book which is alphabetically by genus and then species. Historically there have been an additional nine species and one subspecies described since Kitching and Cadiou and these have been added. In addition, this book makes 19 taxonomic changes (p. 3) which effectively adds several more species, and describes one new genus.

There are some real gems here. The authors have clearly reared thousands of larvae to confirm adult identifications which has to have been a monumental effort. Along the way they have photographed the different instars, pupae and where possible the eggs as well as the adults. Some species such as *Agrius convolvuli* and *Hyles livornicoides* have a variety of colour forms which can confuse the inexperienced but are clearly shown in the colour plates. This threw me a bit when I was younger.

The layout and content goes way beyond a typical field guide or taxonomic revision. There are 35 pages of detailed introductory chapters, most of which would be expected in such a volume but of note is one on the morphology of all life stages and another with detailed instructions on how to rear the immature (no mention of shoe boxes though). The morphology chapter is the most detailed since Rothschild and Jordan (1903).

Then there are the larval and pupal keys and the associated host records. While some of this may have been published previously such as larval keys to ornamental and economic plants, it is good to see it updated and many new ones added. Twenty one species are now recorded as pests of cultivated plants. Keys to the immature stages are rarely seen in taxonomic revisions and then only the final instars which is perhaps surprising, especially in Lepidoptera, since it is the caterpillar stage that is the potential pest, not the adult. I have never seen a pupal key to Lepidoptera before, let alone one to the Sphingidae.



The bulk of the book (243pp) is taken up with species descriptions (preceeded by a brief generic introduction). One of the real gems here is the description of all the immature stages (rarely a few exceptions) including each of the five separate larval instars (rarely upto seven or eight in larger species). A gem because of the detail and because it clarifies a boyhood curiosity about whether similar-looking caterpillars were different species. This is supported by 93 (mostly colour) plates of all life stages, but with most photographs showing differences between instars or other variability of the larvae.

Another gem is the documentation of the parasites and predators of individual sphingid species (more than 90% of these records are new). This is usually overlooked and not considered important. As a child this annoyed me and no doubt it continues to annoy people when the expected adult does not appear, only to be replace by tachinid flies or parasitic wasps. The recorded species are listed for individual species and there are three black and white plates of egg parasites (mostly Chalcidoidea as well as *Telenomus*, Scelionidae), tachinids (from larvae or pupae) and wasp larval parasites (Braconidae and Ichneumonidae).

A couple of interesting bits that I have learnt is that the species I have been calling the privet hawkmoth is not *Psilogramma menephton* but actually *P. cauarinae* which despite the name does not occur on Casuarina. Another is the occurrence of the Death's head hawkmoth, *Acherontia lachesis*. It is currently extending its range in Indonesia and New Guinea and has reached Dauan Island (Australia) in the Torres Strait. Adults are known to rob honey from exotic species of *Apis*.

This book covers anything you want to know about hawkmoths and is essential reading. It is not a "cure" for curiosity for there is more to be learnt, and it likely to stimulate the interest of budding entomologists for generations to come.

#### References

- Kitching, I.J. and Cadiou, J-M. (2000). *Hawk moths of the world: an annotated and illustrated checklist (Lepidoptera: Sphingidae)*. Natural History Museum, London, and Cornell University Press, Ithaca.
- Rothschild, L.W. and Jordan, K. (1903). A revision of the lepidopterouss family Sphingidae. *Novitates Zoologicae* 9 (suppl.), 1-972.

Graham Brown  
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