Book Reviews

Australian ladybirds

AUSTRALIAN LADYBIRD BEETLES (COLEOPTERA: COCCINELLIDAE). THEIR BIOLOGY AND CLASSIFICATION by Adam Ślipiński, Australian Biological Resources Study, Canberra. 2007. xviii+286pp. Hardback. ISBN 978 0 642 56855 7. AU $90

This large format and impressively presented book is one of several to have been published on single themes by the Australian Biological Resources Study (an ugly mouthful generally known as ABRS in Australia), an Australian Federal Government agency which is part of the Department of the Environment and Water Resources (see: http://www.environment.gov.au/biodiversity/abrs/). More later on ABRS.

The book is hardback, well-bound and sturdy, which is just as well as it will be exposed to considerable thumbing through. The A4 pages have double-spaced text with generous 2cm margins around, handy for making notes. A quirky feature is the picking out of new taxa with marbled pale blue pages. Although English is not the author's first language, the book reads well, with few lapses in clarity (e.g. remarks on p.186).

The subject is the Australian ladybirds. A caveat: I am not an expert on the group, but two things in my defence: (i) in the last 15 years I have tried to identify rather too many of these insects; (ii) they resemble chrysomelids in their morphological variation. The book provides 10 pages on general biology, 5 on classification, 12 on morphology, and 80 pages of illustrations, with the rest of the book taken up with the traditional faunistic treatment: keys, taxonomy and descriptions of each of the 57 genera. Perhaps surprisingly, this is the first monographic treatment of the Australian Coccinellidae, a popular group in many countries. However, the Australian fauna is dominated by difficult and inconspicuous little black jobs (LBJs), unlike the northern hemisphere faunas. Ślipiński estimates 500 species of Coccinellidae in Australia, of which only about half have been described. Only 15 genera and 33 species (<7%) belong to the traditional 'ladybirds', the spotty Coccinellini. In contrast, for example, the British ladybird fauna is almost entirely coccinelline and is prominent in the public imagination (Majerus 1994). Coccinellids are a significant, but difficult to identify, element of the fauna of virtually any vegetated habitat in Australia. So dealing with this family has, until now, been a stumbling block for anyone attempting to sort biodiversity survey material. For example, recent collections I have sorted included 26 species of LBJ from malaise traps in the Pilbara, 17 from sampling a single tree species in the semi-desert of western New South Wales, 16 from coastal heath near Newcastle (New South Wales), and even 10 from isolated Lord Howe Island.

The great value of this work, then, is that at last generic names can be placed safely on species in a hitherto 'too difficult' group, and with these names come interesting biological associations. The book provides an excellent review of the relatively little biological information known for the Australian coccinellids. Thus many genera are coccidophagous or acarophagous, which may contribute to their great diversity, as both scales (Williams, 1991) and plant-inhabiting mites (Walter *et al.*, 1998) are abundant and speciose in Australia. Furthermore, descriptions of larvae and a key are provided for 33 coccinellid genera (some based on non-Australian species), providing the first opportunity to identify immature stages without resorting to rearing.

The descriptions and biological observations are profusely and beautifully illustrated, a major feature of the book. There are 1154 numbered illustrations, all but 4 are photographs. Every genus is represented by colour photographs of habitus, dissections of key anatomical elements, pupae and larvae where available, together with supplementary scanning electron micrographs for most genera. Line drawings, predominant in Ślipiński's previous monographs, are conspicuous by their total absence. This complete takeover by digital macrophotography of all structures presents a new standard in illustration which the rest of us can only endeavour to emulate. We should try.

A monograph like this stands or falls on two things, taxonomy and identification of the taxa. In the taxonomic treatment each subfamily (one renamed) and tribe is redefined and redescribed, 10 genera are newly described, 2 raised from synonymy and 7 placed in synonymy, and 9 new species described. Ślipiński rightly identifies Sasaji's (1968) morphological analysis of coccinellids as the seminal paper

on classification of the family. It was a work that inspired my chrysomelid studies. Here it is easily superceded. I await with interest Ślipiński's forthcoming systematic analysis of the group.

The taxonomy in this volume is not based on detailed systematic analysis (because the world fauna remains poorly described), but taxonomic decisions are based on a cladistic rationale and most changes are carefully discussed (excepting the subjective synonymy of *Bucolus* and *Bucolinus*). Its a little disconcerting to find 14 monotypic and endemic genera (25%) but this is a strong indication that the fauna is unusually morphologically diverse. Its almost identical to the number of endemic monotypic genera in the Australian Chrysomelinae, a similar sized taxon (Reid 2006).

I have attempted to test the adult key using material from the surveys mentioned above. Virtually every couplet includes more than one character. It would be easier to use if (1) each couplet number had its source couplet number indicated in brackets, so that the key can be worked backwards quickly, and (2) comparatives were defined, although in this case the profuse illustrations eliminate doubts. There are still slight problems with identification, but this is inevitable for such a difficult group: couplet 3 - Lord Howe island specimens of *Telsimia* have obvious, but not sharply defined, impressions on the metaventrite; in couplet 19, *Coccinella transversalis* appears to have a recurved postcoxal line – the origin of this line may be different from *Adalia* but this would not be obvious to a non-expert; couplet 33 – the prosternum is foreshortened rather than covered by coxae; couplet 34 – the tibiae of *Cryptolaemus* are flattened and almost entirely externally excavate, so that from some directions they appear angulate; couplet 39 – this is the only means of separating the large genera *Parastethorus* and *Scymnus*, but species may be indeterminate, with rugose surface sculpture in the critical area; couplet 56 – Lord Howe *Rhyzobius* do not quite fit. But its a good first pass, I may be a coccinellid dunce, and these problems affect few species. Furthermore, identification from the key is aided by comprehensive descriptions of character variation under each taxon. The key to larvae, based on one or two species per genus, will probably need revision, especially to accommodate additional genera, but it is a most useful start.

The body of the book comprises formal treatments of each supraspecific taxon, in the format: nomenclature, diagnosis, description, immatures, biology, distribution, additional remarks, species checklist. Standard stuff, well laid out and explained. It is interesting to see how much intrageneric variation exists in features that in other groups might qualify as genus-diagnostic, for example numbers of antennal segments, ventrites. This comprehensive descriptive work re-iterates the difficulties presented by the small coccinellids and therefore how much of a major undertaking this monograph has been. However, the descriptive section would be easier to use if the taxa were in alphabetic order.

A webkey for Australian Coccinellidae is promised, so it could be asked: ''why bother with the book?'' But the problem with webkeys is their transience, as Mr Toad would say: ''here today, gone tomorrow''. Without long-term institutional support for web portals and software, these things die. Anyhow, web or hardcopy, what could be better than having both?

The traditional taxonomic work, illustrations and descriptions for this book and its publication have all been funded by an Australian government agency, ABRS, despite the taxonomy-unfriendly political climate here in Australia, which is merely part of a universal phenomenon. Over the last 20 years ABRS has single-handedly provided the financial means for revising difficult groups in Australia. We should all stand up and shout 'hurrah'. More seriously, such ventures may not be significant in terms of scientific citation indices and are unlikely to cloud the horizons of *Science* or *Nature* - but they become significant if endorsed by the community. If you use this excellent book and find it useful, write to ABRS and tell them.

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