

robust binding will withstand frequent usage. The price of 115€ is more than adequate for this work.

This volume is an indispensable tool for everyone with an interest in mayflies. It can be highly recommended for taxonomists, ecologists, and limnologists dealing with South American aquatic insects. It will be difficult for future publications to measure up to this quality.

## References

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Rosser W. Garrison, Natalia von Ellenrieder & Jerry A. Louton (2006): *Dragonfly Genera of the New World: An Illustrated and Annotated Key to the Anisoptera*. Baltimore, MD: The Johns Hopkins University Press. xi + 368pp. ISBN 0-8018-8446-2 (hardcover). Retail price: \$99.

According to the synopsis on the back cover this volume provides “. . . a beautifully illustrated and comprehensive guide to the taxonomy and ecology of dragonflies in North, Middle, and South America. A reference of the highest quality, this book reveals the striking beauty and complexity of this diverse suborder. Although Odonata—dragonflies and damselflies—are among the most studied groups of insects, until now there has been no reliable means to identify the New World genera of either group. This volume provides fully illustrated and up-to-date keys for all dragonfly genera with descriptive text for each genus, accompanied by distribution maps and over 1595 diagnostic illustrations, including wing patterns, and characteristics of the genitalia. For entomologists, limnologists, and ecologists, *Dragonfly Genera of the New World* is an indispensable resource for field identification and laboratory research”.

These statements can only be reaffirmed by the present reviewer. Without doubt this work represents the most comprehensive key ever published for imagines of the 124 described Anisoptera genera of the New World, and furthermore allows for the first time the determination of imagines of all Neotropical genera.

The inclusion of all South American genera is the major achievement of this book, because the odonate fauna of North and Central America was very well documented before, with keys to all genera and species (Westfall & May 1996; Förster 1999; Needham et al. 2000) and even some colour field guides (e.g. Dunkle 1989, 1990). However, the odonate fauna of South America always presented considerable difficulties for determination, because there have been no up-to-date keys available that included all known Anisoptera genera of the whole region. Consequently, any determinations turned out to be very time consuming and prone to errors,

because numerous isolated publications with very fragmentary or imperfect determination keys had to be consulted.

The book is organised into 12 chapters most of which are devoted to the 10 families of Anisoptera that are known from the New World. A short introduction to the morphology and the used anatomical terms is provided, as well as hints for the usage of the keys and some information about the main repositories of collections. Furthermore, there is an illustrated key to all families, an extensive list of about 700 references (only the most recent references are missing, e.g. Rivas 2005, due to the editor's deadline), countrywise distribution tables for all genera, a list of the 1595 figures, and a detailed taxonomical index.

The 10 chapters for the families include short introductions to each family (including the number of described genera and species worldwide and New World, diagnostic characters, and status of classification), richly illustrated keys to the adult males and females of all genera, list of all New World species of each genus, synonymies of genera and species, distributional maps and short diagnoses for all genera, information about described larval stages, as well as notes about habitat preferences, status of classification, and potential for discovery of new species. The chapter for Libellulidae also includes a key to the subfamilies and is divided into three sections for the three subfamilies recognised by the authors. The very numerous illustrations in the systematic chapters include drawings and SEM photos of all characters that are important for a proper determination (such as wing venation and genitals), so that the latter is greatly facilitated for amateurs as well. Especially the quality of the numerous wing drawings is outstanding. Last but not least, there are also eight plates with 24 colour photos included.

The conservative course with regard to higher classification and a new phylogenetic system of Anisoptera could be regarded as somewhat unfortunate but is justifiable for such a field guide, even though other recent field guides have made a different decision (e.g. Theischinger & Hawking 2006). At least all used family taxa are monophyletic, except for the libellid subfamily Corduliinae, which is highly paraphyletic according to all recent studies. However, it is less comprehensible that no keys to the generally recognised subfamilies and tribes have been provided, and that these infrafamilial taxa were completely omitted, except in Libellulidae. No keys to the known larvae have been included either, probably due to the lack of knowledge of the larval stages of most of the Neotropical taxa. However, at least a family key for the larval instars would have been a welcome complement.

Much more significant are the numerous errors concerning the terminology of the wing venation:

- A supplementary intercalary vein of the discoidal field, that originates on an angulated distal side of the discoidal triangle in some groups, is inconsistently labelled: sometimes it is named "suppl. trigonal branch" (e.g. on pp. 69, 74, and 83), and sometimes it is named "suppl. discoidal branch" (e.g. on p. 86).
- On p. 44 the labels for IRp2 and RP2 are incorrect and should be vice versa.
- On p. 140 (Figures 761 and 762) the wing veins are incorrectly labelled: the vein "R<sub>1,2</sub>" must be labelled RP1 and vein "IRP2" must be labelled RP2 (as in Figure 6 on p. 3).
- On p. 210 the strange and new name "spurious vein 1" is used for a venial structure at the wing apex that is usually known to odonatologists as vein IR1. Bechly (1999) suggested that this vein is not homologous to vein IR1 (primary IR1) in the ground plan of Odonata and Ephemeroptera, but a newly acquired structure (vein pseudo-IR1) that is an autapomorphy of Pananisoptera. This term "pseudo-IR1" was used by most subsequent publications on fossil Anisoptera at least. On the other hand, the term "spurious vein" is

confined to false veins (a fold or thickening of the wing membrane between true veins), usually within the order Diptera (e.g. in Syrphidae) (compare Torre-Bueno's "Glossary of Entomology").

- The term "anal angle" is used in a confusing ambiguous way: sometimes it is used for the posterior angle of the discoidal triangle (e.g. on pp. 203 and 209), while it is otherwise used for the tornus in the basal part of the hind margin in the male hind wing. Furthermore, on p. 46 the arrow that should indicate the anal angle in Figure 235 is pointing into the anal triangle instead of to the anal angle.
- The vestige of vein CuP is incorrectly labelled as "CuA crossvein" in several instances (e.g. on pp. 73, 74, 146, 147, and 186). This is in contradiction with the author's claim on p. 3: "We use wing terminology from Riek and Kukalová-Peck (1984) as modified by Bechly (1996) as this is presently considered most correct (Rehn 2003)".
- The concave midrib of the libelluloid anal loop is labelled as "Aspl" throughout the book, but should rather be named Cuspl according to Bechly (1996), because this supplement vein is adjacent to CuA and would be situated between CuA and CuP if the latter vein would not be reduced to a vestigial CuP crossvein (an apparent cua-crossvein) within the cubital cell.
- Unfortunately the labelling of veins CuP and MP is very inconsistent and often erroneous. Vein MP is correctly labelled only on a few pages (e.g. pp. 3, 122, 125, 126, 130, 131, 191, and 195), but vein MP is confused with CuP on most other pages (e.g. pp. 176, 178, 180, 185, 186, 188, 193, 196, 200, 203, 205, 209, 213, 217, 218, 222, 231, and 239).

Notwithstanding the above-mentioned shortcomings, this volume of course represents a major advance for odonatology in general and for New World faunistics in particular, and will certainly be the standard reference for several decades to come.

The price may seem relatively high and might even hamper a broader distribution of this important book among interested amateurs and students, but nevertheless this opus is well worth the money and absolutely indispensable for any odonatologists that are interested in the New World fauna. A second volume with keys to all damselflies or Zygoptera of the New World is in preparation by the same authors and is scheduled to be published in 2007, so that an easy determination of all odonates of the New World will soon be possible for everybody, as it is already possible for the odonate fauna of Europe and Australia. Unfortunately there are no comparable works available yet for all of Asia and Africa.

## References

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Günther Theischinger & John Hawking (2006): *The Complete Field Guide to Dragonflies of Australia*. Collingwood: CSIRO Publishing. 376p. ISBN 0-643-09073-8 (paperback). Retail price: AUZ \$49.95.

Australia has a very diverse odonate fauna with numerous remarkable relict species, so that the dragonflies of this continent are not only of interest for local naturalists in Australia but also for all amateurs and scientists with a broader interest in odonates.

Watson et al. (1991) already provided a guide to the identification of Australian Odonata, but this work was mostly addressed to professional entomologists and is also partly outdated. Therefore, the present book represents the first comprehensive and user-friendly field guide to the Odonata of Australia. The book covers all 30 families, 110 genera, and 324 species found in Australia, and does not only allow the identification of the adult specimens but also of the larvae (as far as they are known).

Unlike Watson et al. (1991), this book is lavishly illustrated with nearly 450 colour photographs, about 300 distribution maps, and much more than 1000 line drawings. All species are figured with beautiful colour photos, either of living specimens or of museum specimens. Photos of many larvae are included as well, but these figures are sometimes too small. The main part of the book comprises the species guide with brief information to the species of all families and genera, including graphical aids for identification, colour photos, and a distribution map for each species. Otherwise, there is an illustrated introduction to the biology of odonates and to Australian habitats, an illustrated glossary of anatomical terms, illustrated keys to the identification of adults and larvae, hints to the study of dragonflies, a checklist of all Australian species, a list of useful references, and an index of scientific and common names.

The authors adopted a modern phylogenetic higher classification of the order Odonata, which is a very welcome and refreshing difference to many other field guides that usually stick to traditional classifications and therefore often tend to hamper a more rapid spreading of more modern taxonomic views. On the other hand, the authors used the outdated Fraser's terminology of odonate wing venation, instead of the more modern homology-based terminology of Riek and Kukalová-Peck (1984), but this is only a very minor shortcoming that does not affect the value of this remarkable book at all.

This wonderful field guide can be wholeheartedly recommended to all who are interested in the biodiversity of Australia and/or of the order Odonata. The book is of equal usefulness for laymen as well as for professional entomologists. The price is absolutely adequate, especially considering the outstanding quality of print.

## References

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Michael J. Winterbourn, Katharine L. D. Gregson & Craig H. Dolphin (2006): *Guide to the Aquatic Insects of New Zealand* (4th edition). *Bulletin of the Entomological Society of New Zealand* 14. 108p. Retail price: NZ\$30.

Twenty-five years ago the first edition of this remarkable guide was published. From the first to the fourth edition, which is now available, the page count has increased by nearly 30 pages to incorporate the advances in New Zealand freshwater research over a quarter of a century. With the new edition you get an up-to-date overview of the aquatic insects of New Zealand. At the same time it offers easy access to relevant original literature.

This identification guide provides keys to the aquatic and water-associated insects that inhabit the three main islands of New Zealand. However, the book essentially covers the larval stages—adult keys are only provided for aquatic beetles and water bugs. Where possible insects are keyed out to genus or even species level depending on the present state of knowledge in the respective groups.

Short introductory chapters familiarise the reader with the use of dichotomous keys, give notes on collecting and preserving specimens, and reflect recent changes in nomenclature. The key to orders is followed by keys to the genera within the respective orders. The keys are accompanied by 285 line drawings in excellent quality that considerably facilitate identification. Most valuable are the numerous notes on distribution, habitat and general information, which are included in paragraphs following the identification of a taxon. Over 400 references lead to relevant publications on taxonomy, faunistics and ecology. For the first time, Macroinvertebrate Community Index (MCI) tolerance scores are also listed. The MCI is commonly used as an indicator of water quality in New Zealand stony streams.

This updated edition is an excellent introduction to the identification of the aquatic insect fauna of New Zealand. Having collected in New Zealand myself, I always found this booklet a reliable help in identifying the local fauna. The price is very reasonable, the more that this booklet is produced in very good quality. I can recommend this identification guide to students as well as ecologists, limnologists and biologists in general with an interest in aquatic insects.

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