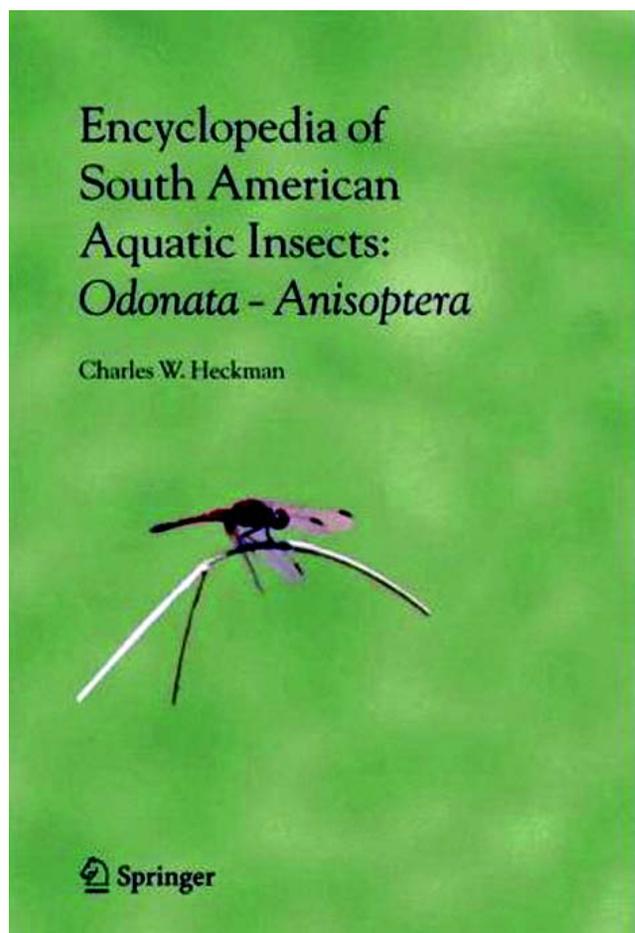
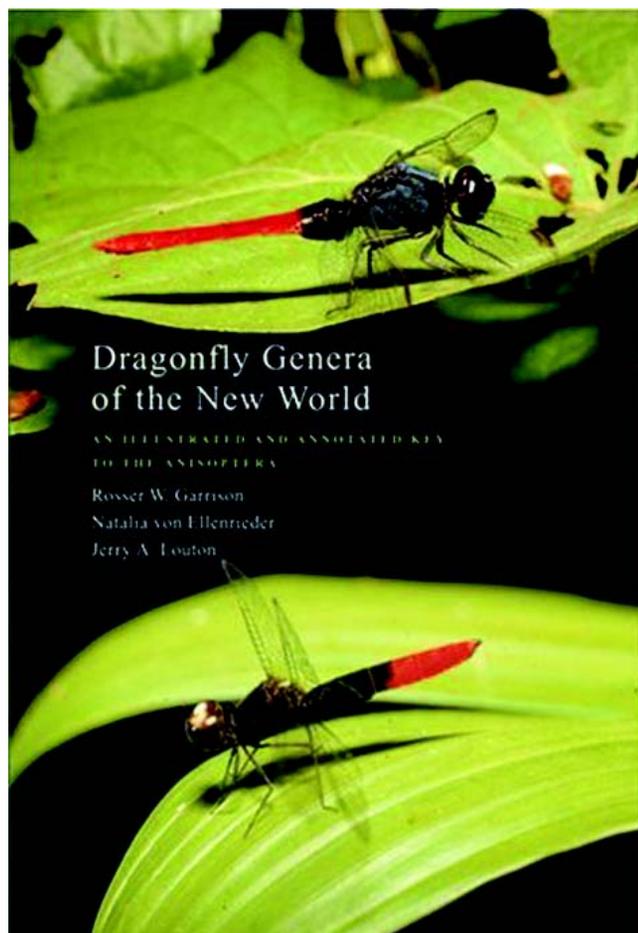


## BOOK REVIEW

Garrison, R.W.; Ellenrieder, N. von & Louton, J.A. 2006. **Dragonfly genera of the New World: an illustrated and annotated key to the Anisoptera**. Baltimore, John Hopkins University, xiv+368pp. ISBN 0-8018-8446-2.

Heckman, C.W. 2006. **Encyclopedia of South American aquatic insects: Odonata – Anisoptera**. Dordrecht, Springer, viii+725pp. ISBN-10 1-4020-4801-7.



The order Odonata, with about 5,600 extant species, includes relatively well-known organisms both taxonomically and biologically, in special those of the Northern Hemisphere. Although they represent one of the smallest groups of insects, the fact that the adults are easily observed in nature allow their utilization as models to the establishment of general behavioral patterns. The dependence of the immature forms (larvae) on fresh water environments enables their utilization as bioindicators. Thus, the identification of adults and larvae are important steps to the development of several research modalities, including behavioral and ecological approaches. Up to now, no handbook or guide with identification keys to the South American Odonata had been published, making it

difficult, especially for beginner taxonomists and non-specialist researchers, to study the group. This difficulty can be attributed in part to the great number of references to be studied, including old references, some of which, rare.

The year of 2006 will be especially important to the progress of the study of the South American dragonfly fauna, one of the richest in the World (almost 700 species are known only in Brazil!) Three books on this continental fauna were published; two of them on the suborder Anisoptera (commented in this review), and an additional one on the Coenagrionidae (the second and last part of a work concerning the Brazilian representatives of the suborder Zygoptera - Lencioni, 2005; 2006).

The two books treated here are very distinct in their aims. While the one by Garrison et al. was intended to the genus-level identification of the New World adult dragonflies, that by Heckman has the ambitious intention of allowing for the identification of adults of all the species and all the described larvae of Anisoptera recorded in South America. Both books are composed mainly by long identification keys and diagnoses. The authors of the first book are eminent researchers, with innumerable publications on the taxonomy of Neotropical dragonflies. On the other hand, the author of the second one is virtually unknown to the odonatologist community, since few of his publications treat subjects related to the order.

The book by Garrison et al. clearly is a very important work, especially due to the treatment of the South American fauna, since the North and Central American representatives have been dealt with in many handbooks and guides, some of which of good quality (e.g. Needham et al., 2000). Richly illustrated, with 1,626 ink drawings (the majority original and made by the authors themselves), the book also presents eight color plates with photographs of representatives of all families taken in the field. After a brief introduction treating some questions on the utilization of the book, and including elements of adult morphology, collecting, preservation and a list of the main collections housing New World material, the families are separated and treated in distinct chapters. Independent keys to males and females, diagnoses, updated lists of species (with indication of their described larvae), maps of geographic distribution of genera and information on the rearing preferential habitats are given for each family. The status of the classification and the potential for the discovery of new species are also mentioned. In relation to this item, clear justifications are not presented for the positioning of the taxa in the established categories (e.g. "likely", "unlikely", etc). A section with additional information on each genus, although small, is very complete, and includes most of the important literature needed for specific identification. About 700 references are presented along the book.

The identification keys were generated by a computational program (DELTA) and some of their couplets are not dichotomic, with their organization and disposition not following the usual patterns. Two or more characters are used in the majority of the couplets in the keys. In some cases, one has the impression that the number of couplets could be reduced and that some of the genera could be easily identified, without being keyed out in different couplets. In all cases, however, the correct identification of the taxa is assured due to the carefully arrangement of characters and the excellent quality of the illustrations, always positioned beside the correspondent couplet. Other important aspect in the organization of the keys is the unprecedented use of some characters, allowing the correct identification of females belonging to closely related genera. Due to the page layout and to the many intercalate figures (numbered, captioned, detached, etc), the pages with keys are much polluted. This minor problem, however, does not depreciate this wonderful publication, notable by the careful elaboration and revision. As a masterpiece on dragonfly taxonomy, we consider this book an obligatory item to any entomologist interested in the New World fauna.

The book by C. Heckman is one volume of an encyclopedia concerning the aquatic insects of South America. In principle,

the elaboration of such an ambitious work by a single person seems to be very audacious, considering the large number of species in the region and the small number of comprehensive works published on them. This initiative created a huge expectation among the specialists, but the final result certainly is not much satisfactory. Almost all 800 illustrations, mostly ink drawings, were obtained from the original articles and generally modified only in their disposition. Introductory chapters treat general aspects of adult and larvae morphology, ecology, zoogeography, preservation and taxonomy. Some suggestions for the improvement of the knowledge on South American dragonflies are also presented. In the following sections, dichotomic keys to the families, genera and species (for adults and larvae, partially compiled or adapted from other sources) are presented. Due to the scanty knowledge on some groups, keys for females and larvae obviously are not presented for all genera. There are no separate sections for the treatment of the taxa. Diagnoses are presented inside the keys, as well as other additional information (e.g. geographic distribution, synonyms and measurements). This arrangement makes the keys less practical, since in many couplets not all characters mentioned in one statement are also mentioned in the other. Although based on an extensive bibliographic survey, many important references, including keys and recent revisions, were ignored, as those on *Macrothemis* Hagen, 1868 and *Rhodopygia* Kirby, 1889 (May, 1998 and Belle, 1998, respectively). About 550 publications are listed in the final section.

The problems in Heckman's book can be partly explained by the author's inexperience on dragonfly taxonomy. No species list, an obligatory item in this kind of publication, is presented. Thus, the universe of entities treated cannot be easily accessed. Two indispensable steps for the elaboration of an identification guide were seemingly ignored: the exam of specimens in collections, and the critical analysis of the literature for taxonomic decisions. These procedures are currently necessary due to the insufficient knowledge on many groups of South American Anisoptera, which makes it dangerous to treat them in a purely encyclopedic manner. Moreover, the *status* of some taxa and the use of some names are in disagreement with current use by the majority of specialists. In a general way, the organization and revision were not careful, since errors of orthography, associations, dates, couplet numbering, etc, are abundant. Thus, some of the keys do not assure the correct identification of genera and species. Notwithstanding, the Herculean effort by Heckman can be important for the specialists as a kind of taxonomic database, and for the preparation of other revised editions or new books.

The publication of these two books is extremely welcome. Although they overlap in many topics, they can be treated as complements. For the beginners in the dragonfly taxonomy, the book by Garrison et al. (2006) is highly recommended. Due to its general approach and didactics, high quality and actualization, the correct identification of the 124 genera of Anisoptera recorded in the New World is assured. For the specialists, the book by Heckman (2006) can be useful, especially for consulting and comparing the illustrations published in hundreds of articles. However, this is an expensive book, costing over three times as much as that by Garrison et al. (2006).

With the publication of these two manuals and of those on the Brazilian Zygoptera (Lencioni, 2005; 2006), certainly there

will be a popularization of the knowledge concerning South American Odonata, which will contribute to the formation of new specialists and impel the progress of the taxonomy of the order and correlate disciplines.

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