

BOOK REVIEW

DOMÍNGUEZ E., MOLINERI C., PESCADOR M.L., HUBBARD M.D. & NIETO C.: *EPHEMEROPTERA OF SOUTH AMERICA*. Pensoft Publishers, Sofia-Moscow, 2006, vi + 640 pp. ISSN 13127276/ ISBN-10: 954-642-259-2, ISBN-13: 978-954-642-259-0. Price EUR 115.00.

Recently, biodiversity has become a key word in biological science and global management schemes, however very few people are able to identify the species that make up "biodiversity". This is particularly the case for mayflies (the order Ephemeroptera), a dominant and diverse group of aquatic insects, not only in South America but of fresh water ecosystem all over the world. Their ubiquity and abundance in freshwater ecosystems make them excellent indicators of water quality, but their use in this respect requires a detailed taxonomic knowledge of the order and simple but qualified keys for routine determination. For many years researchers and students from numerous countries have complained about the lack of "tools" for identifying aquatic invertebrates from Latin America. The keys published in entomological textbooks are mostly highly limited, superficial and rarely cover Neotropical mayflies in sufficient detail.

Altogether over 300 publications have been devoted to the taxonomy and systematics of South American mayflies. Although the history of mayfly research began two centuries ago, acquisition of knowledge accelerated mainly in the last decade when more than 100 contributions were published, including descriptions of 25% of the known species. Sixty-one species were described for the single family Baetidae, which represents half of the presently known species. However, writing an encyclopedic book on the Ephemeroptera of South America is a greater challenge than the small size of the order would indicate. While some taxa were well described and illustrated in the past, others have rather brief and incomplete descriptions rendering many identifications only tentative. As far as I know, a first attempt was made by Heckman (2002, *Encyclopedia of South American Aquatic Insects: Ephemeroptera*. Kluwer Acad. Publishers, 419 pp). Unfortunately the result is a general key that depends on the quality of original descriptions and the respective keys are riddled with errors and contradictions, most of which were created during the production of this publication (for details see, e.g. the review by Peters J.G. & Soldán T., *Eur. J. Entomol.*, 791–792, 2005).

It is obvious that only a group of closely cooperating specialists with a wide background can overcome such a monumental task. Five specialists from two institutions came together to write this second volume on the Aquatic Biodiversity of Latin America (Editors Adis J., Arias J.R., Rueda-Delgado G. & K.M. Wantzen) devoted to Ephemeroptera: Eduardo Domínguez, Carlos Molineri and Carolina Nieto from the National University of Tucumán (UNT), Argentina, and Michael Hubbard and Manuel Pescador from Florida A&M University (FAMU), Tallahassee, Florida, USA. The book was initiated in 1987 and treats 14 families, 103 genera and 470 species (of 39 families, 385 genera and about 3,100 species worldwide).

The book consists of altogether 13 chapters and is devoted to Jan and Bill Peters, distinguished specialists of FAMU, Florida USA, in recognition of their life-long contribution to the knowledge of these insects, and who supervised all the authors when then were students. Introductory chapters deal with morphology

of mayfly nymphs, adults and eggs emphasizing the characters necessary for determination and used in keys, their biology and role in aquatic ecosystems from the point of view of fecundity, production and energy flow. The following chapter is devoted to working with specimens, i.e. collecting, rearing, dissection, mounting of specimens on slides, microscopy, preservation and storage. Further chapters (5–7) deal with the higher classification of the order, distribution (both main biogeographical areas of South America, i.e. the Andean-Patagonic, approximately from 40°S southward and the Neotropical approximately from 40°S northward delimitate the area of interest of this volume) and contains a list of families, subfamilies, genera and species of South American mayflies.

The principal chapter (8) called "Systematics" makes up most of this book. Following a key to families, each of which is treated in the same way: taxonomy, adult characteristics, nymphal characteristics, distribution, biology and keys to South American genera (adults and nymphs), presented in English and Spanish. Individual genera are treated in the same way, individual species in two brief paragraphs called Taxonomy, and Distribution and Biology. Full synonymy and references to the original description, description of complementary stage and eggs and principal taxonomic shifts are included for all the species treated. To the dismay of most taxonomists, no less than 250 synonyms (including the case of a species of *Callibaetis* of the family Baetidae described under eight different names by the same author) or changes in generic attribution necessary to obtain the present comprehensive account of South American mayflies. Moreover, if it is not enough to discourage the most motivated workers, the imaginal and nymphal stages are known far only 10% of the species, and the stages are sometimes described under different specific or even generic names.

The systematic section of the volume is accompanied by 240 plates consisting of line drawings. In nearly all genera, at least the nymphal habitus is illustrated, otherwise, the figures illustrate the structures showing the critical distinguishing characters mentioned in the keys (compound eyes, wings, male external genitalia, abdominal colour patterns of adults, mouthparts, leg chaetotaxy, arrangement of tarsal claws, posterior margin of abdominal terga, colour patterns and gill structures in nymphs). In fact, there are several thousand illustrations since most plates contain about 10–20 drawings. The taxonomic part ends with excellent photographs presented in 16 colour plates. They show mainly subimaginals, and adults, but also e.g. the process of metamorphosis (nymphal-subimaginal metamorphosis and subimaginal-imaginal moulting but also the principal mayfly nymphal habitats and scanning electron micrograms of eggs and details of exochorionic structures that are diagnostic in most genera). The taxonomic section ends with a list of taxa described after the manuscript of this book was completed. Quick orientation in this voluminous book is facilitated by a concise index, which includes generic and species names and references to illustrations.

In my opinion, there are only a few minute details (e.g. missing author's names in the checklist of genera) that can be criticized in this book. There is little need to emphasize how useful such a comprehensive treatment is for Ephemeroptera specialists and experts in hydrobiology and aquatic entomology.

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