

## BOOK REVIEW

MARSHALL S.A. 2012: *FLIES: THE NATURAL HISTORY AND DIVERSITY OF DIPTERA*. Firefly Books, New York (U.S.A.) and Richmond Hill (Canada), hardcover, 616 pp., more than 2,000 colour photographs, pictorial key to fly families, glossary, bibliography, index. ISBN 978-1-77085-100-9. Price USD 125.00.

This voluminous book is the first worldwide treatment of the order Diptera to be published. The author, S.A. Marshall, professor of Entomology at the University of Guelph (Canada), is not only a well-known and very experienced dipterist but also an excellent photographer of insects, who is moreover endowed with an indisputably great literary talent and enormous creativity. All these attributes and abilities combined with great experience in science and teaching were utilized in the preparation of this extraordinary publication.

The author considers almost every aspect of flies (Diptera), including their life histories, habits and habitats (with a survey of the biology and interaction of flies with plants and animals, including their great effect on man), a systematic review of Diptera with a discussion of their origin and distribution, which is entitled Diversity, and information on the identification, study, photography, collecting, preserving and rearing of Diptera. The Pictorial keys to the families of Diptera worldwide, which include a review of the morphological characters used, forms a particularly valuable part of the last chapter called "Identifying Flies". The book ends with a useful General glossary and commentary on taxonomic terminology, Selected References, which are separately listed for each chapter, and an Index.

The major merit of this work is its intelligibility and readability, which make it accessible not only to dipterists but to a wide public interested in natural history. The unusual number (over 2,000) of spectacular colour macro-photographs of flies, which form an integral part of this book, greatly increases its attractiveness. Even the most demanding Diptera specialist is likely to be enthusiastic about Marshall's "Flies". This is because not only does it include up-to-date information on all currently recognised families of Diptera but also photographs of at least one representative of each family, including some extremely rare or even "mysterious" ones, 99% of which are of living specimens! If nothing else, the considerable effort over many years that was required of the author to achieve this should be greatly appreciated. Who of the contemporary researchers in Diptera could say that he/she had studied or even seen a species of all the families of flies in the world? Surely, almost nobody, but Steve Marshall has enabled us to fill these gaps in our personal knowledge of this order of insects. Finally, also the esthetical aspects of flies should be stressed. The splendid photographs show us the beauty of the colours, forms and diversity of the often very peculiar structures of flies, all of which further contribute to the attractiveness of this book.

It is admirable that the author was able to summarize the vast amount of published data on taxonomy, phylogeny, biology, distribution etc. in this valuable worldwide survey of the order Diptera. We the reviewers have already been working with flies many years, but nevertheless could not have produced such an enormous synthetic study as this.

Certainly, an extensive treatment of such a diverse group of insects as Diptera (more than 160,000 species described to date) is unlikely to be errorless. In some cases, for example, the systematic arrangements of the groups (families etc.) is debatable mainly because of the recent great increase in the phylogenetic research on Diptera (based on both morphological and molecular data), which has made it particularly difficult to select a suitable taxonomic system from the variety of hypotheses proposed.

Nevertheless, at least one issue should be commented on in this context. Within the nematocerous Diptera, the family Tipulidae is treated in this volume as a single giant group following the long outdated concept of the late C.P. Alexander (which is the standard practice of all American dipterists). This is markedly different from the situation in other groups (e.g. in higher Diptera) where all, often very small and phylogenetically much younger families are widely accepted in recently published phylogenetic analyses. The families Limoniidae, Pediciidae, Cylin-drotomidae are classified as mere subfamilies of Tipulidae although it is known from the fossil record that they diverged from the common stem of Tipulomorpha in the Triassic and Jurassic and differ greatly in their morphology.

There are also some inconsistencies in the arrangement of the families in the presented phylograms and text, including photographic plates, e.g. in the acalyptates. Of the minor omissions, we can note that e.g. in the Acartophthalmidae the immatures are not unknown, because the egg, larvae and puparium of *Acartophthalmus bicolor* are described by Ozerov (1987) who reared them on decaying meat. In the legends of the photographs of *Synneuron annulipes* and *Amphipogon flavum* (the synonymous name *A. spectrum* is used incorrectly) it is stated that they were photographed in the Czech Republic but these images originate from Slovakia (Poľana Mts, see Roháček & Ševčík, 2009) and, moreover, *S. annulipes* is unknown from the Czech Republic. The behaviour of the peculiarly haired males of *A. flavum* is described also in the latter publication based on an observation of them running like clusiid flies on fallen trunks of spruce and rowan trees.

Despite these minor inaccuracies, this excellent book can be recommended to all readers interested in flies be they professional dipterists, teachers or simply nature or photography enthusiasts. There is no other similar comprehensive, well-illustrated and up-to-date book on this extremely diverse and important group of insects.

## REFERENCES

- OZEROV A.L. 1987: Morphology of preimaginal stages and biology of *Acartophthalmus bicolor* Oldenberg (Diptera, Acartophthalmidae). — *Biol. Nauki* **6**: 32–35 [in Russian with English abstr.].  
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