

- POLLARD S.D. 1989: Constraints affecting partial prey consumption by a crab spider, *Diaea* sp. indet. (Araneae: Thomisidae). *Oecologia* **81**: 392–396.
- SAMU F. 1993: Wolf spider feeding strategies: optimality of prey consumption in *Pardosa hortensis*. *Oecologia* **94**: 139–145.
- SAMU F. & BÍRÓ Z. 1993: Functional response, multiple feeding and wasteful killing in a wolf spider (Araneae: Lycosidae). *Eur. J. Entomol.* **90**: 471–476.
- SOLOMON M.E. 1949: The natural control of animal populations. *J. Anim. Ecol.* **18**: 1–35.
- TOFT S. 1995: Value of the aphid *Rhopalosiphum padi* as food for cereal spiders. *J. Appl. Ecol.* **32**: 552–560.
- WISE D.H. 1993: *Spiders in Ecological Webs*. Cambridge University Press, Cambridge, 328 pp.

Received August 15, 1996; accepted December 18, 1996

*Eur. J. Entomol.* **94**: 459–460, 1997  
ISSN 1210–5759

## BOOK REVIEW

SASA M. & KIKUCHI M.: *CHIRONOMIDAE (DIPTERA) OF JAPAN*. University of Tokyo Press, Tokyo, 1995, 333 pp., 96 plates. ISBN 0-86008-516-3. Price USD 120.00.

This comprehensive book summarises the results of taxonomic studies of Sasa and his group on non-biting midges (Chironomidae) in Japan over the last 20 years. There were only some 160 species of chironomids known from Japan until the 1970th, mainly recorded or described by Tokunaga.

Sasa started his study in the taxonomy and ecology of chironomids at the newly founded National Institute for Environmental Studies (NIES) in Tsukuba in 1976 and continued it after he moved to Toyama in 1982. The number of species newly recorded by Sasa and co-workers from this region exceeds 700, of which more than 500 were described as new species. This represents a remarkable amount of work and makes a substantial contribution to the knowledge of Japanese chironomid fauna. Most of these results are compiled in the present book.

The book is divided into three parts. A short introduction gives basic information about the role of chironomids in freshwater ecosystems and their possible effects on human life. Methods of collection, preservation and preparation of permanent mountings are also included and a brief description

of morphology of adults, larvae and pupae closes the introductory chapter.

The second part of the book presents a checklist of chironomid taxa recorded from Japan, with references of the original description, type localities and other collection sites. This represents a substantial progress in chironomid study and a valuable faunistic contribution for further chironomid studies in Japan.

The bulk of the work is devoted to the key of adult males recorded from Japan, supplemented by 84 plates containing drawings of male hypopygia.

After a thorough reading of the book I have found several shortcomings that are worth mentioning. I cannot agree with the recommendation of gum-chloralhydrate based mounting media for valuable material such as types of newly described species. These media exhibit often a tendency to crystallisation and the danger of damaging of embedded objects is too high. They may be used for routine work on large series of all developmental stages of chironomids but type material should be mounted in true permanent media such as Canada balsam or Euparal. Of course, it is only a technical detail but important with respect to the high number of newly described species by Sasa and to the fact that the present book may serve as a guide for young research workers in Japan and other countries.

More important is the overall taxonomic approach of Sasa and Kikuchi. Many of the new species were described according to adult males only. This is an unusual approach in the modern taxonomy of chironomids and resembles the situation in the first half of this century in Europe. At that time German workers (e.g., Thienemann) were concerned on immature stages, whilst others (e.g., Edwards, Goetghebuer and Kieffer) worked almost exclusively with imagines. In consequence two taxonomic schemes developed side by side. The result was that the taxonomy of chironomids became very confused. The approaches of Sasa and colleagues bear similar dangers because the immature stages are neglected almost completely in his system. Moreover, in some groups modern taxonomic methods are adopted routinely, significantly in the application of cytotaxonomy in the genus *Chironomus*. Modern systematics of this genus is based, primarily, on the structure of polytene chromosomes of larval salivary glands (Keyl, 1962; Martin, 1979; Michailova, 1989). With respect to the high variability of morphological characters of adults which makes it often impossible to distinguish closely related species morphologically and to the high number of sibling species in this genus, descriptions of new species lacking the cytotaxonomical characters are of dubious value.

The ignorance of immature stages leads to some strange conclusions in systematics. For example, genus *Monopelopia* is placed, without any comments, into the tribe Macropelopiini despite the apomorphic features of the imago which rank it clearly into the tribe Pentaneurini (Fittkau, 1962).

Many of modern taxonomic papers widely accepted all over the world are listed in references but, largely, they are ignored in the text. As a result the reader is faced with somewhat archaic system. This impression is strengthened by the drawings of hypopygial plates which seem to be prepared

mechanically without indicating the important characters for distinguishing particular species.

Most of descriptions of new species were published in research reports of NIES or the Toyama Prefectural Environmental Pollution Research Centre. These papers are not widely available outside of Japan. Descriptions of new taxa should be published in refereed international journals to make them accessible to scientists all over the world for comparison. Combined with the impermanent character of mountings there is a danger that some of species described by Sasa and colleagues cannot be re-examined in the future and, therefore, may be regarded by some authors as nomina dubia.

Generally, I find this book as a good basis for further investigation of Japanese chironomid fauna. However, Sasa and colleagues should respect modern taxonomic methods and accept new systematic trends if they do not want to remain isolated. Furthermore it is necessary to include immature stages into taxonomic studies.

#### REFERENCES

- FITTKAU E.J. 1962: *Die Tanypodinae (Diptera: Chironomidae). (Die Tribus Anatopyniini, Macropelopiini und Pentaneurini)*. Akademie Verl., Berlin, 453 pp.
- KEYL H.G. 1962: Chromosomenentwicklung bei Chironomus II. Chromosomenumbauten und phylogenetische Beziehung der Arten. *Chromosoma* **13**: 464–514.
- MARTIN J. 1979: Chromosomes as tools in taxonomy and phylogeny of Chironomidae. *Entomol. Scand. (Suppl.)* **10**: 67–74.
- MICHAILOVA P.V. 1989: The polytene chromosomes and their significance to the systematics of the family Chironomidae. *Acta Zool. Fenn.* **186**: 1–107.

J. Matěna