

BOOK REVIEW

BAUERNFEIND E. & HUMPECH U.H.: MAYFLIES OF CENTRAL EUROPE – IDENTIFICATION AND ECOLOGY (INSECTA – EPHEMEROPTERA). Verlag des Naturhistorischen Museums Wien, 2001, 239 pp. ISBN 3-900-275-86-6. Price EUR 53.00.

Difficulties in determining species seriously affect biodiversity and ecological research on freshwater invertebrates as well as the biomonitoring of water quality and aquatic biotopes in general. Contrary to some other aquatic insects groups (e.g., some Trichoptera and most aquatic Diptera), for which there are no reliable larval distinguishing characters or they are yet to be identified, the Ephemeroptera have a relatively high number of morphological characters useful for identification. However, earlier keys are either restricted to local faunas or naturally do not take into account recent knowledge on mayfly taxonomy and ecology.

This volume, covering Austria, Belgium, Czech Republic, Germany, Hungary (west of the River Danube), Luxembourg, the Netherlands, southwestern Slovakia, and Switzerland, is a welcome attempt to fill this gap in our knowledge. Moreover, in addition to a similar recent treatment of North Europe (Denmark, Fennoscandia and northern areas of the European part of Russia) it enables the determination to species level of a substantial part of the European and Westpalaeartic mayfly fauna.

The book consists of three principal parts (introduction, keys and ecology) and is dedicated to Prof. Gertrud Pleskot (1913–1978), a distinguished Austrian specialist in mayfly taxonomy and ecology. Introductory chapters deal with collecting, rearing and preserving specimens. Relevant morphological characters for the identification of larvae, and male and female imagines are shown in figures, and possible problems in using the keys are discussed in detail. Characters apparent on the egg surface (e.g., the shape and number of knob terminated coiled threads – KTC) are presented, but their use requires specialised methods and preparation. I do not think that such characters can be currently used in species determination and, moreover, the egg stage is unknown in numerous species. A checklist of the Central European species, treated in keys, consists of 141 species, here contained in 33 genera and 17 families.

Separate identification keys are presented for larvae and adults. They identify last instar larvae and imagines/subimagines of both sexes, however, in most genera species identification of female subimagines and adults is not possible. For each family a key to species is provided and for Baetidae, Heptageniidae and Leptophlebiidae, a key to genera is also included. Individual genera and species are treated in an excellent way. The number of valid taxa for the whole Europe as defined by Illies (1978), and Central Europe is presented along with the principal taxonomic and identification references, which represent a very valuable annotated bibliography. Critical distinguishing characters are emphasised in both the generic and species treatments. The paragraphs called “Confusing Species” are particularly stimulating. It presents a chance, even for a beginner to distinguish closely related or sibling species and avoid the usual mistakes that lead to misidentification. Over 600

pertinent figures are referred to in the keys, important discriminating characters being indicated by arrows, and most of them are original drawings by the senior author. To facilitate the comparison of confusing species drawings of similar structures are arranged on the same plates.

Generic classification of some families, namely the Ephemerellidae and Baetidae seem to be rather conservative and do not follow the progress in mayfly taxonomy achieved in the past 10–20 years. On the other hand, the author explains his opinion, supported by strong arguments, why e.g. the classical species content of the genus *Ephemerella* (Ephemerellidae) in relation to the predominantly Nearctic genus *Serratella* should be conserved. Evidently, the polyphyletic genus *Baetis* (Baetidae) is split not only into “*Baetis*-like” genera (e.g., *Baetis* s. str., *Acetretella* and *Labiobaetis*) but also to taxa showing more remote taxonomic relationships (e.g., *Alainites*, *Nigrobaetis*) to the type species of *Baetis* s. lat.

There is at least one species missing from the key, although it obviously occurs in the area studied, *Acetretella inexpectata* (Tshernova) which occurs e.g. in Western Slovakia and several places in the south-eastern part of the Czech Republic, records that were published in the eighties. However, the authors mention (p. 114) a recent record of its occurrence in Germany. Sub-specific classification of some polytypic species like e.g., *Baetis lutheri* Müller-Liebenau, *B. vardarensis* Ikononov, *Isonychia ignota* (Walker), *Rhithrogena iridina* Navás and *Potamanthus luteus* (Linné) might be emphasised. On the other hand, Central Europe is only inhabited by nominal subspecies.

The book concludes with a chapter on the biology of Central European mayflies, mostly based on data by Elliott & Humpesch (1983) and Elliott et al. (1988). Besides general notes on embryogenesis, larval growth and development, emergence, swarming, oviposition and fecundity, the chapter contains a very stimulating summary table (pp. 170–179). For each species, the following data are presented: flight period (month) and its range, life cycle and its type according to the classification of Clifford (1982), habitat typology (percentage of crenal, rhithral, potamal and lake and lenitic habitats), feeding type (omnivores, detritivores, filtrators), preferred substrates (macrophytes, algae, roots, rough or fine organic material), saprobic index and status from an environmental protection point of view.

List of references contains about 400 items. Naturally, references to descriptions, diagnoses and species, species-groups and generic revisions prevail but those on mayfly ecology are also cited. In my opinion this list includes all substantial literature published since Linnaean times.

Quick orientation in such a voluminous book is facilitated by a concise index including generic and species names as well as aspects of the ecology of mayflies.

There is hardly any need to emphasize how useful such a comprehensive treatment is for specialists in aquatic entomology. Moreover, the identification key will help workers in hydrobiological practice and perhaps stimulate similar treatments for at least other parts of Europe.

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