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# Book Review. Критика и библиография

## Cladocera: The Genus *Daphnia* (including *Daphniopsis*). By J.H. Benzie. Guides to the Identification of the Microinvertebrates of the World 21. Coordinating editor H.J.F. Dumont. ISSN 0928-2440. Kenobi Productions, Ghent. Backhuys Publishers, Leiden. 2005. 376 p., 1445 figs.

The volume on the genus *Daphnia* is a new addition to the series of "Keys to identification of microinvertebrates of inland waters of the World". This series, started in 1992, meets the demands of the new period of biological investigations under conditions of global cultural and economic integration, of global overexploitation of ecosystems. Its critical review is published by N.M. Korovchinsky (Zool. Zh. 2004. Vol. 83. No. 11. P. 1404–1406).

Until recently, the aid to identification of species of aquatic invertebrates was provided as a set of volumes on particular groups "Süsswasserfauna Deutschlands", edited by A. Brauer and published in the beginning of the 20th century as well as a few regional treatments of various invertebrates of Europe. The aforementioned set of keys covered mainly Northern Europe. With some delay, it was followed by the keys to aquatic invertebrates of North America.

Attempts to use the European keys in extraeuropean countries always revealed that they do not apply to local faunas. There were either no information conveniently collected for identification of invertebrates of countries other than Europe, or no information at all. So "The Guides" meet a long felt historical necessity.

The genus *Daphnia* makes a special case. Though its representatives are the commonest and distributed all over the World, the leading authorities in this group did not venture to make an up to-date key to the World's fauna, mainly due to a high polymorphism of species of this group.

Now, finally, Dr J.A.H. Benzie offers a summary to the genus *Daphnia* published as a nice and compact volume with excellent and adequate illustrations. The book consists of the general and special parts. The latter comprises a key to species followed by descriptions of particular species. The book is concluded with indices and a list of references covering the pertaining literature.

The general part consists of the following sections: Introduction, Morphology, Life cycle and population structure, Ecology, Morphological variation, Determination of species boundaries, Hybridization between species, Phylogeny, Biogeography, Speciation, Sampling and preservation, Identification, Nomenclatural issues. The aforementioned items deserve hundreds of pages for their discussion, but in the present case the author found a brief way just to adequately designate their present-day state on 62 pages. Some of these sections are obviously auxiliary, others briefly outline the state of the art.

"Morphology" is presented just sufficiently as an auxiliary information necessary for identification of species. One may note that on some systems of organs scarce information, if any, is given as, e.g., on the nervous system, fat body, and muscles [e.g., the studies of muscles of *Daphnia* by Binder (1931) are not mentioned].

"Ecology" is a brief listing of some factors to which *Daphnia* species are exposed in nature, feeding being treated in more detail.

In contrast, other introductory sections represent the modern problems in the field of *Daphnia* systematics. Morphological variation is treated more closely, cyclomorphosis is recognized and much attention is drawn to hybridization,

The section "Determination of species boundaries" discusses application of modern methods, multivariate morphometrics and genetic methods. Phylogeny and speciation are discussed with consideration of modern methods.

"Hybridization between species" is discussed in detail. Dr Benzie (p. 31) came to a conclusion important in estimation of local collections: "All the hybrid swarms appear to cover broad geographical regions and produce large number of hybrid populations".

"Biogeography" is a fundamental contribution closely connected with the main part of this book. Both extensive areas of some species and very restricted areas of others are shown, e.g., *D. longiremis* — Holarctic, *D. barbata* and *D. dolichocephala* — African, a number of Australian endemics. This volume, with other similar treatments, makes a basis for recording which species disappeared and which are newcomers. In case of the genus *Daphnia* with many species dominant in the communities, such information is vitally important for the problem of assessment and conservation of biological diversity.

"Sampling and preservation", "Identification" give the necessary advice. Unfortunately, cultivation methods are not mentioned at all.

"Nomenclatural issues" are discussed for two periods. Though the first period is designated as 1600's – 1970's, some papers of 1987 are discussed in this section. The beginning of the recent period is noted as 1970 but no explanation for this date is given and the discussed publications date from 1994.

The special part occupies the rest of the book, slightly over 300 pages. The key to species is followed by standard illustrated descriptions of species arranged in alphabetic order. Each species description consists of

the following parts: synonyms, type locality, types, female, male, distribution, biology, remarks.

Subdivision of the genus *Daphina* into three subgenera is suggested: *Daphnia, Hyalodaphnia,* and *Ctenodaphnia* (including *Daphniopsis*).

Altogether 75 species of *Daphnia* are recognized in the present review (one of them, *D. gelida*, is added in proof). Users of this book in Europe and Asia may be interested in how many species of the genus *Daphnia* they deal with in their countries. So, in Eurasia there are 30 species (of them, 6 are known from Europe only and 7 from Central and Southern Asia). Some species (e.g., *D. ambigua* and *D. parvula*) are recent intruders to Europe.

The reviewed book certainly will benefit further investigations of *Daphnia*. At last, a major source of modern data on species of the genus *Daphnia* is available, urgently needed for a long time. I believe that this book is absolutely necessary for carcinologists, ecologists, fishery biologists, experts in assessment of water quality, and for a wide audience of biologists using cladocerans as experimental animals.

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