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BOOK REVIEW

LANCASTER J. & DOWNES B.J. 2013: AQUATIC ENTOMOLOGY. First Edition. Oxford University Press, Oxford, 296 pp. ISBN 978-0-19-957321-9 (hbk.), ISBN 978-0-19-957322-6 (pbk). Prices: EBook: USD 48.29, Hardcover: USD 95.98, Paperback: USD 62.83.

At first glance, this book looks very impressive. It may be even more attractive to aquatic entomologists, because only a few other books on the ecology, ecophysiology and evolution of aquatic insects such as this one, were published over the last two decades (see also Boukal, 2013: *Eur J. Entomol*. **110**: 544).

There are an extraordinarily wide range of niches in freshwater environments, which are inhabited by various invertebrates, including insects. Although aquatic insects are only a minor part of the total diversity of insects, they are the dominant invertebrate fauna in most freshwater ecosystems and therefore from an ecological point of view an important and probably crucial part of the invertebrate fauna in freshwaters. This book focuses on the specific characteristics of the freshwater environment as well as on aquatic insects and their life patterns in this environment. It treats and primarily explains the functional morphology and many aspects of the ecophysiology of aquatic insects keeping insect systematics to the minimum.

This book is not too voluminous but is relatively rich in topics and information, and consists of 5 parts and 14 chapters. Each part and chapter start with a brief introduction aimed at motivating the reader and explaining why the topic is important to investigate. The first part focuses mainly on insects by briefly introducing the architecture and structure of insects and presenting an annotated survey of aquatic insect orders (Chapter 1), and the evolution, habitats, biogeography and distribution of aquatic insects (2). In contrast, the second and third parts concentrate mainly on environmental characteristics and the ecophysiology and adaptations of water insects. The second part, entitled Environmental Constraints on Distribution, includes chapters dealing with gas exchange, types of underwater respiration and ventilation (3), physico-chemical gradients (temperature and thermoregulation, water balance, excretion and osmoregulation) (4), and biomechanics of living in and on still and flowing water (5). Part 3, Sensory Systems, Movement and Dispersal focuses on underwater and water surface film light properties and photoreception in an ontogenetic context (6), mechano- and chemoreception and communication (7) and locomotion not only in and on still and running water (8) but also dispersal by flight of water insects in the terrestrial environment (9). Part 4, Population Dynamics and Population Persistence, presents an overview of the reproductive biology of aquatic insects. Three topics are covered in this part: structure and function of internal male and female reproductive organs, maturation, fecundity, parthenogenesis, reproduction and mating behaviour (10), preoviposition, oviposition, egg structure and principles of gas exchange in eggs (11) and embryogenesis, hatching, larval development, moulting, metamorphosis, types of larvae and pupae, environmental influences on development, eclosion, habitat transition, dormancy, diapause and quiescence, voltinism and life history strategies (12). The last part, entitled Trophic Relationships, presents an account of feeding devices, spectrum of feeding niches and foraging strategies (13) and finally the structure of alimentary system and nutrition, digestion and absorption in aquatic insects (14). The text is illustrated with 126 excellent figures (black-and-white schemes, drawings and photographs).

This wide-ranging text, in addressing numerous aspects of insect life under and on the surface of water, covers major aspects of the aquatic environment that determine reproduction and utilization of feeding niches by aquatic insects. The authors successfully present and process an extremely large number of minor and major aspects with a high degree of balance and well supported by information. Only a few subchapters differ somewhat in their presentation. They are poor in only presenting very general principles (e.g., subchapters 1.2 – first information on insect life cycles, 9.6 – Flight polymorphisms, 13.4 – Parasites). However, a reader who needs more detailed information and understanding of these topics can easily find references to articles or monographs that deal with these topics more thoroughly. Despite this, the book represents a high quality overview of aquatic entomology.

After reading *Aquatic Entomology* I conclude it not only looks but it is a very good publication. It will please and provide help not only to students of aquatic insects and entomologists engaged in research on this topic but is a suitable textbook for courses in freshwater entomology, biology of aquatic invertebrates/organisms and a supplementary textbook for courses on freshwater ecology, hydrobiology, limnology and conservation of water biota. It is a useful publication for all those who want to develop an understanding and knowledge of the water environment and aquatic insects on the basis of creditable and modern references.

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