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BOOK REVIEW

WALDBAUER G.: A WALK AROUND THE POND: INSECTS OVER AND IN THE WATER. Harvard University Press, Cambridge, Massachusetts, London, England, 2006, vi + 286 pp. ISBN 0-674-02211-4. Price USD 22.95.

This book by Gilbert Waldbauer, Professor Emeritus of Entomology at the University of Illinois, Urbana-Champaign, is definitively a good deal more than just "a walk around the pond". In fact, he introduces us to the aquatic insects that have colonised not only ponds, but also lakes, streams and rivers, and not only in North America but also elsewhere.

The volume consists of 12 main chapters. The introductory chapter emphasizes the enormous species diversity of aquatic insects (more than 10,000 species of 84,000 in total in North America), compared with only 790 fish, 155 frogs, toads and salamanders and about 800 crustaceans (crayfish, crabs and their relatives). "The chapters: Who's Who in Water" and "Where they live" briefly characterize the main aquatic and semi-aquatic groups of insects and their habitats, including those groups with few aquatic species – wasps (Hymenoptera), moths and butterflies (Lepidoptera). Several species of aquatic spiders are also mentioned. The following chapter, "The Breath of Life", describes the ways in which aquatic insect respire by means of mere diffusion and cutaneous exchange, via different types of gills (tracheal, accessory, spiracle and haemolymph), rectal breathing and renewable air bubbles to specialized breathing via a plastron, utilizing haemoglobin dissolved in the haemolyph or by piercing air-filled hollows in submerged parts of higher plants. Similarly, the chapter "Going Places" deals with the ways adult aquatic insects move by such as flying and walking and larvae by swimming, walking on the surface of the water, burrowing, foraging and avoiding predators. Mobility of adults during swarming, copulation and oviposition is also mentioned. In addition to the mobility of individuals the movements of populations, like the downstream drifting of larvae, migration to a different body of water or a more favourable habitat are also described.

Three chapters, namely "Finding Food and Eating", "On Being Eaten", and "How Not to Be Eaten" deal with related topics, food and feeding. They describe the ways in which food is obtained by the different categories of aquatic insects (grazers, scrapers, shredders feeding on coarse particulate organic matter, gatherer-collectors feeding on decomposing fine particulate organic matter, filter feeders and predators feeding on small benthic animals including parasites that feed on a host's haemolymph). However, these chapters are not focused only on the morphological adaptation of mouthparts of aquatic insects but deal also with behavioural aspects. For instance, accounts of foraging, searching for food or prey as well as defence mechanisms against predators, food availability, edibility and specificity are included. Particular attention is devoted to the maturation and reproduction of aquatic insects and other processes connected with the production of offspring. Congregation of males and females in mating swarms around prominent objects in the field, chemical stimulation, seasonal and diurnal activity in copulation and oviposition, fertility and fecundity and reproductive activities in both water and air are treated in detail, including such specific phenomena as guarding of eggs by gluing them to the back of males in the giant water bug (Belostomatidae) or "drumming" of stoneflies before copulation. The chapter called "Coping with the Climate" focuses on one of the most important environmental variable affecting aquatic insects, temperature. It deals with the effect of temperature on embryogenesis, larval development, growth, metamorphosis, diurnal and seasonal activity, thermoregulation, migration and spatial as well as geographic distribution. The last chapter, "Our Friends and Enemies" introduces aquatic insects as vectors of some diseases, their role as bioindicators of the quality of aquatic environments and, last but not least, their aesthetic appeal for people in many parts of the world.

This book contains few mistakes and confusing statements. For instance, the oldest fossil of an aquatic insect is definitively not a mayfly (p. 5) and the term "diapause" is used indiscriminately and not distinguished from mere quiescence, „inactive hibernation-like aestivation-like state" (p. 215) or any other type of suspended development. Aquatic insects are not known to possess true (genetically conditioned) larval diapause. Figures at the beginnings of chapters are sometimes rather schematic, those on the title page and on p. 10 are not of "an adult mayfly, dragonfly and damselfly" but a subimago of a mayfly and advanced, fully tanned specimens of Odonata, judging from the length of fore legs of the former and position of the fully spread wings of the latter. Moreover, some statements seem to be rather funny, like that on p. 240: "… And because some [of aquatic insects] are important foods of many people of non-Western societies." Like most other members of "non-Western" cultures, I do not eat insects regularly.

References in "Selected Readings" are arranged in 12 sections following the individual chapters in the text. I am not sure whether this arrangement is the best one since some key or substantial references are missing in one section although cited in another, probably to avoid repeating the same citation twice or several times. This is the case, for instance, for the fundamental monograph by Hynes (1970) on general problems of aquatic animals, whereas the rather specialised Corbet's (1999) monograph on dragonflies is cited six times. References in some sections seem to have been chosen by chance in many cases. For instance proceedings of international conferences on Ephemeroptera and Plecoptera do not include any comprehensive knowledge on the orders in question although they may inform the reader about current trends and tendencies in research.

Quick orientation in such a polythematic book is facilitated by a concise index including not only subjects mentioned in the individual chapters but also numerous authors, the scientific discoveries of which are described or mentioned in the text. However, it lacks a more detailed register of generic and species names of the animals and aquatic plants. For instance, both damselflies (*Calopteryx maculata* and *Enallagma hageni*) and a stonewort (*Chara*) are hidden under "Damselflies; reproduction" in the index. Illustrations are obviously indexed in italics but this fact is explained neither in the introduction or the index.

The quality of hundreds of books on insects, targeted at the public, nature lovers and environmentalists, vary from mere compilations, detailed but tedious descriptions of morphological adaptations, fascinating collections of photographs and, especially in the case of aquatic insects, books directed at fishermen. In my opinion, Waldhauber's book undoubtedly belongs to the "top ten" and his treatment of aquatic insects is outstanding. Generally, there is no point of view in biological science that the author does not use to introduce aquatic insects and aquatic spiders and data on their morphology, physiology, evolution, distribution, aquatic habitats, ecology, behaviour and biodiversity. Moreover, while learning about individual species readers also discover more than a little about the tens of scientists who study this topic.

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