

## Book Reviews

**Mosquitoes and Their Control.** By Norbert Becker and Dusan Petric, Marija Zgomba, Clive Boase, Christine Dahl, John Lane, and Achim Kaiser. 2003. Kluwer Academic/Plenum Publishers, New York. 498 p. 188.00Euros hardbound. ISBN 0-306-47360-7.

Much maligned, the mosquito has a repellent reputation in the realm of human judgment owing to its tendency to feed on same, and thereby produce human discomfort and, in the process, serve as a vector for diseases. Clearly those are more than enough reasons for the arguably inherently bellicose *Homo sapiens* to declare war on a taxon. How dare these species attempt to feed on us?

Among the ornaments of my office at Washington State University is a small, curious collection of mosquito repellents in small, paper-labeled bottles, mostly from the mid-20th century, with sometimes colorful names such as *Skat*, *6-12*, *Mesquitone*, and *Bug-a-boo*, that are past examples of the last line of personal defense against the nefarious mosquito. But this was, and is, war, and as every militarist or sports fan knows, the best defense is a good offense. *Mosquitoes and Their Control*, a recent book by a group of international authors, is a sophisticated scientific guide, with plenty of technical content, to identifying, and dealing appropriately with, the offensive mosquito.

*Mosquitoes and Their Control* is organized into 4 major sections. Section I, on general aspects, contains 4 chapters entitled "Biology of Mosquitoes," "Medical Importance of Mosquitoes," "Mosquito Research," and "Morphology of Mosquitoes." Chapter 1 is an overview of the systematics of mosquitoes. Chapter 2 addresses matters related to eggs, larvae, and pupae, along with general information on adult emergence and hibernation. Chapter 3 includes brief descriptions of mosquitoes as vectors for transmission of malaria, viruses, and filariasis, and some information on the diseases themselves. The discussion of mosquito research, the subject of Chapter 4, includes discussions of a number of interesting topics, including sampling, preserving, rearing, examining, and attracting mosquitoes, the latter of which even the nonspecialist likely has had some informal experience.

The book is taxonomically focused on the mosquitoes of Europe. The roughly 70-

page taxonomic key (Section II) covers 92 species in 8 genera, and includes drawn illustrations of adults of both sexes and fourth-instar larvae. The book does not cover North American species of mosquitoes, other than those also found in Europe.

About 180 pages of detailed descriptions of the morphology, biology, and geographic range of each species follow the taxonomic key. This section (III) contains additional, mainly morphological drawings, and the level of detail here, although impressive, may overwhelm the nonspecialist.

Section IV, on control of mosquitoes, contains 6 chapters with titles of "Biological Control," "Chemical Control," "Physical Control," "Personal Protection," "Integrated Pest Management," and "Implementation and Integration of Mosquito Measures into Routine Treatments." Chapter 11, on biological control, examines predators of mosquitoes, including vertebrates, invertebrates, parasites, and pathogens. Aspects of insecticides in the control of mosquitoes, including the history of use, kinds of chemicals, and resistance responses, are examined in Chapter 12. The use of physical treatments, mainly on surface water, to control mosquitoes is briefly surveyed in Chapter 13. Mosquito repellents and other personal defenses are the content of Chapter 14, and integrated pest management is the topic of Chapter 15. The general implementation of control programs and the specific programs in place in many of the European countries constitute the 2 subchapters of Chapter 16. More than 30 pages of references, a subject index, and a taxonomic index follow the text.

Upon close examination, *Mosquitoes and Their Control* is not an ecological treatment of the subject of mosquitoes, any more than most books on weed control are ecological discussions of plant movements in space and time. Most readers can readily appreciate the antimosquito tone of the book in view of the health problems that have been inflicted upon people by the pesky insects. But I found little evidence of any discussion in the book of the ecological benefits that mosquitoes have brought to the planet and, indirectly, to its people.

I am not being facetious. I can remember as a young man visiting the Everglades in Florida with my family, and I recall my mother, who along with the rest of us had

been descended upon in broad daylight by waves of small, black mosquitoes, stating clearly that she could *never* live *here*, because of all the mosquitoes. That experience has subsequently served as the partial basis of a personal theory that *anywhere comfortable enough for my mother to live has been, or soon will be, covered with climate-controlled condominiums*. You see, the mosquito served a purpose; it kept my mother out of there, and a bunch of other people too. It has done the same thing, through threat of disease transmission, or through plain annoyance, in many other areas of the planet, to the benefit of the ecology of the planet, if not to the benefit of immediate human interests in health, real estate, and agriculture. The now quaint bottles of mosquito repellent in my office were, notwithstanding their pungent active ingredients, ecologically conservative tools for personal defense that allowed mosquitoes to still serve their broader function of preventing human habitation and development of every square meter of terra firma on the planet. Ecologically, many of humankind's diverse, integrated efforts to control mosquitoes for health, welfare, and comfort, so thoroughly described in the 6 chapters of Section IV, may have noble motivations, but may also have doubtful long-term merits. As the authors note in Chapter 3, mosquitoes may be, in terms of morbidity and mortality caused by vector-borne diseases, the most dangerous animals on the planet. But they are not the most dangerous animals *to* the planet. On the landscape scale, on the planetary scale, the mosquito has significant ecological value. *Mosquitoes and Their Control*, with all of its authors and details, makes no mention of the ecological value of mosquitoes.

So, research scientists and students involved with any aspects of mosquitoes will appreciate this recent book on these important insects. The book is impressively detailed in its discussions of mosquitoes, how to identify them, and how to control them. But you will find little appreciation for the mosquito in this book. For that you will need to consider the mosquito on a landscape scale, from the perspective of the planet, and not just from that of the spatially voracious, resource-consuming, self-important people who live there.—*David L. Scarnecchia*, Washington State University, Pullman, Washington.