

## BOOK REVIEW

WHEELER A.G. Jr: BIOLOGY OF THE PLANT BUGS (HEMIPTERA: MIRIDAE). Pests, Predators, Opportunists. xv + 507 pp., Cornell University Press, Ithaca and London, 2001. Price USD 95,- (cloth). ISBN 0-814-3827-6.

A.G. Wheeler has been working on his major opus for more than thirty years. I remember vividly the meeting of American heteropterists which took place some twelve years ago where nearly everybody predicted that owing to his meticulousness he would never complete his project. He did, and excellently.

The mirids are the most speciose family of the true bugs. They have never been favoured by *Liebshabers* owing to their small size, fragility, difficult identification (minute attributes of pretarsus necessary for allocation to suprageneric taxa, quality of easily rubbed off pubescence and study of male genitalia usually necessary for identification of genera and species) and frequent loss of extremities in collection specimens. Exactly for the same reasons the family has always been liked by *Feinschm-äckers*. And by applied biologists as well, since it includes pollinating species, species sucking on weeds or preying on arthropodan pests and their eggs (often used in biological control), and noxious species causing mechanical or physiological injury to plants or functioning as vectors of plant viruses.

The still largely unknown biology of mirids is fascinating since the family includes species exploiting generally unavailable resources (such as insects caught by insectivorous plants, spiders in their webs, meloid haemolymph) and possessing unusual physiological traits (such as osmoregulation by salivation, sequestration of toxic secondary metabolites of plants, occurrence of zoophytophagous species ...).

A. Wheeler first introduces the family, then explains the scope and format of the review, considers higher classification and principal genera, provides an excursion into the history of study of trophic ecology of mirids, considers morphology and methods of identification of adults and juveniles, and provides an overview of ecology and behavior (including consideration of flight and pterygopolymorphism, reproductive and oviposition behavior, egg physiology, development, life history and

population dynamics patterns, mortality factors, and antipredatory defenses). Some subjects are further explored in depth, which is particularly true of a broadly conceived chapter on morphology, physiology and behavior in relation to feeding. Detailed attention is paid to mirids and plant diseases, and to their trophic ecology (leaf and stem feeding, exploitation of inflorescences, nectar and pollen feeding and pollination, feeding on fruit and other plant and fungi sources, predation, scavenging). The ancestral feeding habits of Heteroptera are discussed and feeding trends in mirids tracked down.

The book is supplemented by three appendices concerning (1) valid names and subfamily allocations of species mentioned in the text, (2) equivalent common (English vernacular) and scientific names of species, and (3) common and scientific names of plants mentioned in the text; and an excellent Glossary. The list of references is (unbelievably complete (over 4200 entries covering papers published in all the languages)). There are two indexes, one based on scientific names of animals, the other on subjects.

All topics of mirid biology are treated in a logical sequence; subdivisions of chapter are well organized; no aspects are avoided; and, in parts important for applied entomology, the focus is on the biological aspects, never on technology. Illustrations are plentiful and everybody will learn on the bugs and the injuries they are causing to plants from 24 plates of color photographs. In all these respects the book stands as an exemplar for writers of similar comprehensive monographs on biology of insects. The book is recommended to all hemipterists, to insect morphologists and ecologists, as well to applied entomologists. It should be consulted by anybody who is willing and able to summarize numerous scattered data on any group of insects into an integrated picture of what the creatures do and what is our present fractional knowledge of their doings. By devoting many years of his life to this hard task Al Wheeler has contributed even more to hemipterology and entomology than had he amplified the long series of his outstanding original papers.

P. Štys