

Book review

Ecology of Coccinellidae. Ivo Hodek and Alois Honek with contributions from Piotr Cerynger and Ivo Kovár. 1996. XVI + 464 pp., 133 tables, 95 figures, 11 plates. Kluwer Academic Publishers, Dordrecht, The Netherlands. ISBN 0-7023-4177-5. NLG 325.00; US \$211.00; £143.00.

Preparing a well-balanced review of the literature on Coccinellidae was a challenge, as limited space forced the authors to select the most important works of all related publications, the number of which has increased rapidly during the last decades. The authors have solved this problem successfully. This volume is not simply an extended edition of the previous book by I. Hodek (*Biology of Coccinellidae*, Academic, Prague and W. Junk, The Hague, 1973), rather, the two volumes partially complement each other, as the chapter on larval identification of *Palaeartic Coccinellidae* has been omitted. The title is somewhat misleading: the reader finds a considerably broader range of information than suggested by the title.

The first chapter deals with the adult beetles' most important morphological and anatomical characteristics as related to feeding habits. The second chapter proposes a new phylogenetic tree of the higher coccinellid taxa based on adult morphology and anatomy. The third chapter surveys the heredity of colour patterns, their seasonal and geographic variability as well as the much discussed problem of Müllerian mimicry in these beetles. Chapter 4 treats the main factors affecting pre-adult and adult development, mating, flight, fecundity, longevity as well as energy conversion and allocation in both larvae and adults.

The fifth chapter reviews the factors influencing distribution and abundance of coccinellid populations. The authors "use the term 'community' in its broadest sense as a set of coccinellid individuals present in a given habitat at a particular time" (p. 95). The term 'assemblage' would have been more appropriate. The description of several methods for the estimation of coccinellid numbers is followed by discussing the effect of geographic and local factors on the number

and distribution of coccinellids. Data are presented on dominance, diversity and niche differentiation as related to the composition of coccinellid assemblages. Many examples of coccinellid assemblages reported from various habitats are surveyed, with special emphasis on their economic importance.

The large sixth chapter is devoted to food relationships. The literature data on food range are extremely variable, mostly due to superficial observations. The authors present the main methods for ascertaining the natural food range of coccinellids appropriately. The data about the amount of food consumed by coccinellid larvae and adults also vary extremely due to the great variability of observational and experimental methods used. Concerning food related behaviour the authors in extenso deal with the searching behaviour of adults and larvae.

The voluminous seventh chapter, amounting to one fourth of the text, surveys the literature on dormancy. This includes the adaptive function of dormancy as well as the anatomical and physiological changes, behavioural and ecological patterns, and physiological mechanisms related to diapause. Two long sections treat dormancy-related behaviour and ecological factors determining diapause in the most important species.

The eighth chapter is on natural enemies. The authors conclude that despite new findings there is still 'no tangible evidence of the impact of enemies on the population changes of coccinellids' (p. 319). In this chapter the term 'parasite' is used for parasitic insects instead of the correct term 'parasitoid'. Surprisingly, in the next chapter the latter term appears. The last chapter gives an overview on the results obtained with coccinellids in biological control and in integrated pest management. This is of great value for pest control specialists.

The list of references is a cornucopia for readers who are searching for more information, as it contains 1692 entries including some publications issued in 1996. There are, however, a few small but nonetheless bothersome inaccuracies. For example, H. F. van

Emden, appears in the list both at E and V (some publications are to be found in both places), although this author is referred to in the text as van Emden. Furthermore, in several cases the differentiation among publications of the same year by letters does not appear in the text, e.g. Elliott and Kieckhefer (1990a,b), are simply referred to as Elliott and Kieckhefer (1990), in four places in the text; in the same way Ewert and Chiang (1966a,b), in 9 places; Iperti (1966a–e), in 10 places; Radwan and Lövei (1982a, b), in 4 places; etc.

Detailed author-, taxonomic- and subject-indices help the reader's orientation in this valuable volume.

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