BIOLOGY OF LEAF BEETLES

PIERRE JOLIVET and KRISHNA K. VERMA 2002.
Intercept Limited, Andover, England. 332 pp. ISBN 1-898298-86-6. Hardcover, $162.00 US.

This book aims to be a summary of the present knowledge of the Chrysomelidae. The volume contains 12 chapters: after an introductory chapter there are chapters titled Classification, Paleontology, Food Plants and Evolution, Food and Feeding, Developmental Stages, Ecology, Biogeography, Island Faunas, Defense Strategies, Anatomy, Reproduction, Association with Other Organisms, and finally Phylogeny of the Subfamilies. I was looking forward to this book because of the reputation of the authors and because of the potential utility for students. (I should note that I am an author of two chapters in an upcoming book edited by Dr. Jolivet and others; one chapter is a phylogeny of the subfamilies of Chrysomelidae).

This book contains much useful information and it is abundantly illustrated. It is very helpful to have so many illustrations of taxa and morphological features between one set of covers. In general, this text gives a fairly complete overview of the topics discussed. For example, the chapter on Food and Feeding covers host plant evolution briefly, gives a short section on the feeding and feeding habits of each of 20 chrysomelid subfamilies recognized by the authors, followed by sections on choice of host plant and plant part, entomophagy, nematophagy, coprophagy and cannibalism, as well as a section on parallel diversification of Chrysomelidae with their host plants. This chapter is of general interest to any collector who wants to improve her collecting skills or who wants to capture a particular taxon or life stage more frequently.

The Ecology chapter, as an additional example, covers aquatic and subaquatic leaf beetles, adaptations to desert life, to alpine environments and to polar regions (including morphological, physiological and developmental adaptations). Chrysomelidae in the canopy and in caves are treated, as well as, niche separation and diapause.

Several chapters have many wonderful illustrations. The Classification chapter had a fantastic series of antennal modifications of Galerucinae. The Biogeography chapter has a plate, which provides a splendid visual review of the megamerine Sagrinae. The Paleontology chapter is also graced with many illustrations. I especially appreciate being shown a phylogenetic tree with a hypothesis of plant ordinal relationships.

The most complete and comprehensively illustrated chapters are those on Development and Anatomy. These chapters cover and illustrate all topics a beginning student really needs to know, with illustrations of almost every important feature. The treatment of the wing and wing venation was quite comprehensive and the development of the reproductive tract, especially the male genitalia, are well done. My only disappointment was that the treatment of the hard parts of the female genital system did not quite get the detailed treatment that the antennae do in chapter 2, but this is a minor point. In total those chapters were well written, complete and richly illustrated and I will assign them to my graduate students.

However, this book is not for beginners; this text has a very particular view of the phylogenetic and classification literature, which makes it misleading for the uninitiated. Moreover, it is not consistently referenced; some topics receive complete and thorough citation of the relevant literature, other topics have no citations at all, and most difficult are the topics in which the citation is incomplete but some works familiar to the authors are cited. The lack of thorough citations is general, but is especially misleading in the Phylogeny and Classification chapters.

In the three chapters dealing with phylogeny and classification (including the Paleontology chapter) it becomes obvious that the phylogenetic philosophy of the authors clearly follows Ernst Mayr and other evolutionary taxonomists. The authors tend not to cite Hennigan (phylogenetic)

systematists and when they do they may misinterpret them. This is exemplified by the following quotation discussing homoplastic characters in the Chrysomelidae.

"Crowson has also pointed out that these tendencies have appeared polyphyletically among Chrysomelidae: hence a cladistic approach, based on derived characters is not likely to yield reliable results." (p. 9)

Here they refer to Crowson (1994) in the preface to a volume edited by Jolivet *et al.* The passage by Crowson reads, "With so many character states polyphyletic in the family, and some of them liable to secondary loss, the uncritical application of cladistic procedures in Chrysomelidae, particularly at the level of subfamilies, is likely to give unreliable results." (Crowson 1994 p.xxii).

This type of misinterpretation of phylogenetic authors is consistent throughout the work. Additionally, the most comprehensive phylogenetic treatment of the Chrysomelidae based on morphological characters of all three life stages and all subfamilies was granted scant attention, meriting only the following passage. "Reid (1995) attempted a cladistic analysis of subfamilial relationships, and he finds Chrysomelinae, Galerucinae and Alticinae in the same clade".

Unfortunately, the editing in the volume is also inconsistent, both in use of English vocabulary and grammar, as well as in the identification of the subfamily for a mentioned genus or species. In many places the authors are assiduous about orienting the reader to the subfamilial classification of a genus discussed, in other places the reader is on his own. In several situations, the reader may be lost if he is not familiar with the taxa or the anatomy. For example, when the Lepidopteran genus *Heliconius* was discussed, an overzealous application of the spell checker transformed that genus into the plant genus *Heliconia*, which is also discussed in several places in the book. These editorial issues are a minor distraction to an experienced biologist but would interfere with student comprehension.

The prices that I was quoted for this volume over the Internet, range between 52 and 60 English pounds or up to $162 US. This price makes it difficult for me to recommend this book to the non-specialist, however, this is a useful reference for persons collecting broadly in the Chrysomelidae or needing a general reference to anatomy and development.

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References

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