

BOOK REVIEW

BEUTEL, R. D. AND R. A. B. LESCHEN (EDS.). 2005. **Coleoptera, Beetles. Volume 1: Morphology and Systematics (Archostemata, Adephaga, Myxophaga, Polyphaga partim). Handbook of Zoology. Insecta. Part 38.** Walter de Gruyter, Berlin, Germany, xi + 567 pp. 29 × 21.5 cm. ISBN 978-3-11-017130-3. Price: \$334.80. Available from: www.degruyter.com.

German challenged readers have historically only had limited access to the German language Handbook of Zoology volumes that have appeared at regular intervals since the mid-19th century. The publisher switched to English with the publication of the Lepidoptera volumes (Kristensen 1999, 2003), making these milestone references available to a much wider readership. The Coleoptera series is the second English language set. Four volumes are planned, with the first reviewed here, the second scheduled for publication late 2007, and subsequent volumes at intervals thereafter. Volumes 2 and 3 will cover family level systematics, as most of the present volume, and volume 4 will treat evolution, physiology, development, and other broad aspects of beetle biology. This is an epic project with the objective of establishing a concise baseline of comparative information about taxonomy, morphology, phylogeny, and natural history of the beetle fauna of the world.

This first volume comprises 80 chapters, including several introductory chapters and suborders Archostemata, Myxophaga, and polyphagan series Staphyliniformia, Scarabaeiformia, and Elateriformia, in part. This accounts for about 40% of global beetle diversity. Thirty-eight contributors are listed. Beutel is sole or lead author on 12 chapters and John Lawrence on six. Clarke Scholtz and Vasily Grebennikov wrote all 16 scarabaeoid chapters. Several other contributors wrote multiple chapters. One or the other volume editor is listed as an author or co-author on 19 chapters, suggesting a significant effort above and beyond editorial duty to push the project to completion. A short preface describes the methodological approach adopted by editors and includes a dedication to Michael Hansen, who died unexpectedly during initial preparation of the volume.

The first chapter is a brief, concentrated summary of putative sister-group relationships, beetle groundplans, character transformations, and characters that support monophyly among recognized higher taxa within the order. Chapter 2 is a checklist of families and subfamilies that follows Lawrence and Newton's (1995) classification with a few recent additions and changes. Chapter 3 provides a synopsis of the rapidly changing state of molecular systematic studies of Coleoptera, including a critique of the relative utility of genes that have been employed at various phylogenetic levels. Chapter 4 contains descriptions of the morphology of Coleoptera life stages (excluding egg), to the extent they can be summarized for the entire order in four pages.

The bulk of the volume is sections and subsections presented as chapters. Each major family-group taxon is introduced separately, followed by more detailed family treatments. These are reasonably standardized, featuring sections on distribution, biology, ecology, morphology of known life stages, and phylogeny. References are included in most chapters, but are combined for some smaller families at the end of the relevant superfamily chapter. Some inconsistency in coverage and presentation is obvious and expected due to different levels of knowledge, taxonomic complexity, diversity, and author styles. Large families are broken down into subfamilies, and occasionally tribes, though not always in consistent ways. For example, the hydrophilid chapter describes synapomorphies and diagnostic features to the level of tribes, but includes only about a page on biology and ecology. In contrast, the next chapter on the similar sized Histeridae deals briefly with diagnostic and phylogenetically informative characters for subfamilies only, but includes a whopping 13 pages of solid text on life history and behavior, much of it highlighting species-specific predator/prey and symbiotic relationships. The chapter on Staphylinidae stands out as perhaps the most effective presentation of a major group of lineages within the necessary constraints of space. Content and style of illustrative material is likewise variable. Generally, illustrations are carefully chosen to depict diagnostic characters rather than providing a comprehensive overview of body forms via habitus illustrations or photographs from life. Illustrations in some chapters approach lavish, but this would be considered a coffee table book only in a room full of coleopterists.

For that room full of coleopterists, the most valuable single contribution of this series of volumes is concise compilations of authoritative snapshots of the state of knowledge about comparative biology of the world beetle fauna. Family and family-group treatments are detailed enough to stand as comprehensive baselines for charting paths for future comparative morphology, systematics, and phylogenetic studies. Inclusion of modern, cladistically based hypotheses of relationships within and among families provides access to an impressive body of phylogenetic information in a single source. Beginning students of Coleoptera will find these volumes valuable for making informed decisions about which taxa to specialize on for phylogenetic and revisionary studies. Beginners and seasoned professionals alike will find a convenient reference for improving their understanding of groups that might not be the subject of detailed study otherwise. My favorite kinds of content are tidbits of taxonomic and life history information from disparate sources about rare and obscure taxa. Did you know that the type series of the first known South American torridincolids were collected from the stomach of a characid fish? Other examples, among many, include almost all that is known about the Crowsoniellidae, known from three specimens, and Jurodidae, known from one. These jewels of information are the stuff dreams are made of for aspiring coleopterists!

The book itself is sturdily bound, and pages seem durable, with a smooth matte finish. Text and figures are flawlessly crisp throughout. Of course, such quality and wealth of information does not come without a cost. The exorbitant price tag is an unfortunate sign of the times and also probably reflects a limited production run of a high quality product. As such, these volumes will not fit comfortably within the budgets of many individuals. But, they are essential for the serious student of Coleoptera. Inform your local library's purchasing agent of the series. Combine resources and buy a copy for the lab. Register it as a high priority request for your next gift receiving opportunity. The current series of the Handbook of Zoology has a long and distinguished pedigree. Slight paraphrasing of a previous review is as relevant to the current volume as it was in 1875 for the original series, "...eminently useful and worthy of [their] high reputations for perspicacity and practical good sense (Lankester 1875)."

Literature Cited

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