

BOOK REVIEW

The Biology of Small Mammals, Joseph F. Merritt, The Johns Hopkins University Press, Baltimore, Maryland. \$60.00, 313 pp., ISBN 978-0-8018-7950-0. 2010

Any attempt to summarize our knowledge of small mammals is a daunting task. Small mammals include both rodents and bats, the two most diverse orders of mammals and much has already been published on these groups individually. Many have made it their life work to study every aspect of their biology, including their ecology, physiology and taxonomy. Joseph Merritt, in his latest book, makes a valiant attempt to cover the necessary ground. Merritt is certainly qualified to tackle the subject: throughout his career, he has worked on many groups of small mammals, including mice, voles, shrews, gerbils, flying squirrels, chipmunks and is currently the senior mammalogist with the Illinois Natural History Survey. His work spans several important topics in ecology, especially population biology and physiological responses to cold. He is also a co-author on a textbook on mammals (Feldhamer *et al.*, 2007), now in its third edition and his approach in this book mirrors that textbook. This book was written to appeal to the general public, as well as professionals. He starts with an introduction and taxonomic review of groups of small mammals, which he defines as mammals less than 5 kg. He then discusses the variety of ways in which small mammals obtain food, how they deal with environmental stress and ends with a discussion of reproductive strategies. Scattered throughout are case studies, highlighting interesting research and natural history of certain species.

Merritt provides a thoughtful and readable overview of the biology of small mammals. This book works as an introduction to small mammals, as it covers a lot of ground. One refreshing aspect of the book is the inclusion of case studies. These allow Merritt more freedom to relate ideas in a narrative format, and it would have been an improvement for there to be even more case studies, especially considering the fact that this book is intended for a general audience. Merritt's goal in this book was to emphasize the vast diversity of adaptations that allow small mammals to thrive. In this respect, he was very successful. His volume does include many different types of adaptations, reflecting the diverse number of ways that small mammals have used to survive in a variety of habitats. The section on environmental adaptations is particularly strong, especially considering Merritt's own research on how small mammals respond to cold temperatures. It is an interesting read for those who are curious about why many scientists decide to devote their lives to studying these mammals.

There were some problems with Merritt's approach. For example, he spends a considerable amount of time discussing foregut vs. hindgut fermentation, two solutions for the problem faced by herbivores as to how to digest cellulose. This seemed out of place in a book about small mammals, as the majority of foregut fermenters are ungulates, and would not qualify as small mammals, even by Merritt's definition. Merritt outlines this book directly from his more general textbook on mammals, which limits his discussion of topics applicable to the study of small mammals specifically. An entire section dealing with the ecology of small mammals would be appropriate, considering the large amount of research that has been conducted on the population and community ecology of this group. Small mammals are ideal for these types of studies, given their small size and high reproductive rate. Immediate examples that come to mind are the long-term ecological research studies on desert rodent community structure and the large number of studies on neotropical bats. Moreover, although this book provides an excellent overview of small mammals, one thing missing is synthesis. Merritt does a good job presenting a large number of studies on a vast array of species, but the overarching and interesting connections between them are lacking. It would have been nice for the reader to come away from this book with something more than a compilation of facts about small mammals.

Overall, *The Biology of Small Mammals* serves as a good starting point for someone interested in learning more about the variety of adaptations small mammals possess to deal with getting food, dealing with physiological challenges in their environment, and reproduction.