



Book Reviews

Bat Ecology. Edited by T. H. KUNZ & M. Brock FENTON.
Chicago: University of Chicago Press (2003), Pp. xix + 779.
Price \$55.00 paperback.

Instead of 'bats in the belfry', there is now the unique opportunity to place a large quantity of bats on the bookshelf with *Bat Ecology*. This extensive volume gives a comprehensive overview on the current status of research on bats, with the main emphasis on advances in bat ecology. It will undoubtedly become 'the' standard book on bat ecology for the next decade(s), similarly to Kunz's (1982) first book on the ecology of bats. The field has moved extensively since then, so an update has been much needed. The editors have done an excellent job of bringing together a group of internationally recognized specialists representing a broad range of topics and disciplines. Although not all topics could be expanded upon at full length, this book touches upon most of the relevant themes and gives a valuable and up-to-date introduction to the field.

What makes bats such exciting study animals? With more than 1100 extant species, bats (Chiroptera) are, next to rodents, the most speciose group of mammals. Key innovations, such as echolocation in Microchiroptera and the development of active flight in Mega- and Microchiroptera, give bats access to a wide range of resources and habitats at night and have led to the unprecedented adaptive radiation in this group of mammals. It is therefore not surprising that their broad distribution and wide range of lifestyles, extensive morphological and behavioural adaptations to crepuscular or nocturnal habitats, as well as their important roles in ecosystems as pollinators, seed dispersers and predators have made bats an ever-increasing source of fascination for researchers and laypeople alike. However, because of the difficulties of studying these highly mobile and mostly nocturnal creatures in the field, research on bats is often hampered by methodological constraints. In addition to these constraints are conceptual shortcomings and the difficulty of testing in the field fundamental ecological questions, such as the influence of predation and competition on species composition and dynamics. Consequently, research on bats has not often permitted extrapolation of results to broader contexts. This impression has been aggravated in the past both by a lack of extensive and standardized data and a lack of rigid statistical testing. However, as this book convincingly shows, this situation is changing substantially.

First, impressive progress has been made in the development and use of methods for more in-depth field studies of this elusive group of animals, including advances in

disturbance-free documentation of bat behaviour with infrared and thermal cameras, improvements in the quality of ultrasound sound recordings and analysis techniques, inclusion of methods to study energetics and spatial use with telemetry and transponder systems, and genetic techniques to elucidate social systems and phylogenetic relations. But it is not methodological progress alone that has brought research on bats forward. Even though there are still large gaps in our knowledge concerning the ecological and evolutionary backgrounds of many bat species, synthesis of results through comparisons across taxa is emerging now more prominently than before. Whereas previous research was often limited to studies within bats, most of the chapters of the book support the comparative approach across taxa. For instance, physiological adaptations found in bats are compared to patterns seen in other taxa, particularly birds or small mammals. This approach is crucial in that it offers ways to draw conclusions about general principles governing organization and dynamics of species ensembles and assemblages, where approaches with controlled experiments would have failed or would have been impossible to conduct in the first place.

The book is divided into three sections: Life History and Social Biology, Functional Ecology and Macroecology. Each section consists of five chapters that span topics from roost-site selection, sensory ecology, communication, sexual selection, migration, life histories, ecomorphology and physiological ecology, to patterns of ecological organization, trophic strategies, disease ecology and conservation ecology.

Judging by the differences in length and structure of the chapters, the editors gave a relatively free hand to the authors regarding length, format and content. This allows on one hand more flexibility for each chapter, but it has led on the other hand to the book's rather heterogeneous structure. Probably because of different times of submission, the completeness of references in the chapters varies; this, however, does not render the book less valuable, because most of the recent literature is present. Although all chapters start with a more or less detailed introduction followed by an extensive compilation of the most important findings in the area, they end in a variety of ways: with a discussion combined with conclusions, with a conclusion and an overview as extra topics and/or with a special section on future directions and challenges. This variability sometimes makes it cumbersome to grasp uniformly the ideas of the authors about past results and future development in their respective fields. Some authors apparently had the opportunity to exchange chapters for mutual information before publication of the book, because they refer to each other and link

perspectives. Others, however, may not have had this opportunity, because some chapters do not adhere to definitions given in others; for instance, the careful classification regarding the use of the terms 'guild', 'ensemble' and 'assemblage' have not been transported systematically into all chapters.

Despite these limitations, the overall impression is that of a well written, highly informative book that compiles the current status of the field. Most chapters contain enough information in the introduction so that they stand alone. Only the chapter on sensory ecology lacks an introduction detailed enough for a nonspecialist to understand the components of the bat sensory system and its significance for different sensory tasks. This information, in particular the structure and function of echolocation in bats, is given in a subsequent chapter on interactions between bats and insects. Overall, the book demonstrates the impressive progress that has been made in research on bat ecology in the past two decades. There is a much greater awareness regarding standardization of sampling protocols and control of data quality. Another major conceptual advance concerns the inclusion of phylogenetic relations as an important variable when comparing taxa. Furthermore, the strong interest of the community in advancing the field towards multidisciplinary research is demonstrated by the increased application of behavioural and physiological experiments to test hypotheses, and the development of models to explain past and present distribution, to explain diversity patterns and to predict changes in ecosystem composition and functioning in the future.

The book is not only essential for bat ecologists with a keen interest in scientific progress in this field but also for a broader readership interested in the behavioural, ecological, morphological and physiological underpinnings of this species-rich and highly diverse group of mammals. The recognition of the immense diversity of this group of vertebrates, combined with new methodology and emerging synthesis of comparisons with other taxa, provide an exciting springboard to continue the quest for one of the most fundamental questions in ecology: what underlying factors create, shape and maintain diversity through time and space? The answers to this question are particularly important for conservation, because anthropogenic changes in landuse practices will continue to affect diversity from local and regional to global scales. Only with a solid background in the ecological requirements and plasticity of organisms will we be able to face this complex challenge. As Simmons & Conway stated in their chapter, 'Evolution of Ecological Diversity', 'The diversity of extant and fossil bats is both a blessing and a curse to those who strive to understand their ecology and evolution.' Let's take it as a blessing, and let this book be inspirational for the next decade on bat research.

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Animal Rights: Current Debates and New Directions. Edited by Cass R. SUNSTEIN & Martha C. NUSSBAUM. Oxford: Oxford University Press (2004), Pp. xi + 352. Price \$29.95.

For behavioural biologists, even those interested in ethics and animal protection, a book called *Animal Rights* written largely by lawyers and philosophers might seem an easy one to scratch off the birthday list. But stay that pen for just a moment.

Animal behaviour plays a key role in animal ethics. Most ethical reflection about animals includes claims about their characteristics, notably their capacity for pain, emotions, cognition and self-awareness, and animal behaviour is perhaps the key discipline for understanding such capacities. Moreover, some applied behavioural research is done specifically to improve the lives of animals and to answer questions about their welfare. However, animal ethics philosophy and the relevant biological research have developed so separately, and with such different concepts and vocabulary, that the fields typically function as two solitudes, each talking past the other at best (Fraser 1999). This book has some potential to help close the gap.

The book consists of 14 chapters plus an introduction and a valuable bibliographic essay that identifies some 50 works on animal ethics. The 16 authors include a judge, three attorneys, 10 academics in departments of law, philosophy or both, and two behavioural biologists. The editors were either very selective, very lucky or very demanding with the authors, because most chapters are clearly written and a pleasure to read. Most are accessible to the general reader, with the exception of perhaps two chapters (4 and 12), which, although highly insightful, seem written more for humanities scholars. The chapters are grouped as 'Current Debates' (chapters 1–8) and 'New Directions' (9–14), but there are plenty of debates in the later chapters and some new directions in the earlier ones.

The two longest chapters (1 and 5, by Stephen Wise and Gary Francione, respectively) set the stage by providing paradigmatic animal rights arguments. For example, Francione's chapter roundly condemns current animal use; it gives the usual history involving Descartes' denial of consciousness to animals and Bentham's view that moral concern for animals hinges on their capacity to suffer; it claims that consciousness and self-consciousness are widespread among animal species; it uses what others term the 'argument from marginal cases' (page 279), noting that we give rights to mentally disabled humans but not to animals of equivalent or greater mental capacity; it claims that our failure to give equal consideration to other species reflects speciesism, analogous to racism and sexism; and it makes abundant use of the analogy between animal use and human slavery. Francione concludes that we have 'a moral obligation to stop using animals for food, biomedical experiments, entertainment, or clothing' (page 132), and