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Review of *Mammalogy, 5th edition* by T. A. Vaughan,
J. M. Ryan, and N. J. Czaplewski

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Vaughan, T. A., J. M. Ryan, and N. J. Czaplewski. 2011. *MAMMALOGY*. 5th ed. Jones and Bartlett Publishers, Sudbury, Massachusetts, 750 pp. ISBN 978-0-7637-6299-5, price (paper), \$100.00.

Last summer I spent time with old friends. Terry Vaughan and company have significantly updated their text, *Mammalogy*, for the 5th edition (2011). The book is 62% larger than the 1st edition in 1972 (Vaughan 1972). Vaughan, Ryan, and Czaplewski skewer topics with a simplicity derived from years of mammalian research and teaching, and it is a pure pleasure to read. The synthetic nature of *Mammalogy* (2011) and exceptional clarity in writing make this edition an ideal book that is not just for class. Because much new research has been integrated into each chapter, all mammalogists will appreciate new introductions to each group and newly synthesized classification, ecology, physiology, and other subject-driven chapters. I found myself picking up the book where I had left off and treating it more like a novel than a text. Further, I kept interrupting myself and wandering to other topics (what's going on these days with primates, or the latest in bats, or the latest in whale evolution). It was a rich, rewarding summer.

Mammalogy, 4th ed. (Vaughan et al. 2000), lacked the recent revolutionary phylogeny and resulting classificatory changes, which made that edition too difficult to continue to use. That is remedied here, and I like and need the new classification close at hand on the insides of front and back covers. The cladogram of the new scheme of orders is explained in Chapter 1, and the majority of chapters follow this arrangement. Further, the most recent thinking in evolution of a group and its related newly discovered fossils is very strong and very welcome. Each group is discussed in relation to direction of polarity, and then variation along this gradient to get to the most derived members is described. Students like understanding how each group started out and what aspects are optimized for success of that group. Chapters are very clear in this regard. Each chapter now lists important concepts and vocabulary along with a summary at chapter's end. My students appreciate this additional study aid, and so far glossary and index seem pretty thorough. Illustrations in chapters and outlines of each chapter's material are available electronically from the publisher, which makes for easy integration into MS PowerPoint and other instructional media. Two new chapters on diseases and history of domesticated mammals are welcome but are available only online.

The first 4 chapters—*Introduction, Characteristics, Origins, and Classification*—are a standard start for a class. However, segments from what I call “cross-sectional” chapters at the end of the book, such as *Ecology, Zoogeography, and Great American Interchange*, are easily interspersed with these ready images from the publisher. These make it easy to enlarge a topic of any group.

Next comes diversity of mammals. I have not yet fully adjusted to the new sequence of groups in higher level phylogeny. Molecular findings now strongly support the concept of long isolation of Africa and corresponding Afrotheria, but I still like to get “modern primitives” and odd groups done 1st before jumping into more modified mammals such as rodents, carnivores, ungulates, and whales. Old habits and shared, primitive groupings die hard. At least I can explain the logic of grouping by dietary niche, which will not be changing as much as classification above ordinal level. Each chapter unveiling a new group is introduced with an original Vaughan drawing. I like this personal touch, particularly the tarsier (those tree-frog toes are so cool) and molossid bat (must be the leathery ears) introducing primate and bat chapters. Further, many new illustrations (e.g., a fused thorax of a natalid bat and ground sloth face anatomy) and new photographs (otter shrew, chorusing gibbons, toes and toe pads of hyraxes, many additional rodents, and many others) are included. All lines of the drawings have good contrast. Some might argue that a lack of color photos detracts from the book, but not only does it keep the price down (paperback for about \$68 on the Web), but given the extraordinary color appearing in nature films, high-definition TV, and Web, why compete here? Besides, a quick jump to the ASM Mammal Slide Library (wonder if good-quality CD will soon be available?) or Web right before class can help fill in any missing photos.

In the chapter on bats, for example (no bias there), new research on natural history, phylogeny contraindicating traditional suborders, flapping versus static flight, echolocation (with assistance from Chapter 22) enriched by modern acoustics and technology, and recent morphological discoveries have been incorporated and synthesized. I felt I was brought up to date in an evening of reading. The same was true with Primates and all previously associated members of “Insectivora.” Having many of the latter sorted into their own chapters means that they have been given more thorough treatment. The latest on metatherian orders, new behavioral data for Carnivora, and new fossil and molecular evidence of cetacean ancestors and sister groups are very interesting. I have a long list of references that I now must investigate both for research and lecture.

Last are the subject-driven chapters (Chapters 20–27)—*Reproduction, Physiology, Echolocation, Ecology, Behavior, Conservation, and Domestication and Diseases*—of Parts III and IV. The book's extended *Table of Contents* (as opposed to Brief Contents) are specific and extensive (8 pages) and make it easy to find a particular topic. Not only can I find nasal countercurrent heat exchange in kangaroo rats

quickly but also evolution of echolocation in bats and different echolocation patterns for different habitats. New topics such as landscape ecology, metapopulations, infrasound signals of communication, prion disease, and devil facial tumor disease also are separated out rather nicely in the *Table of Contents*. This book has an encyclopedic feel, but it is not at all dry reading. In fact, it was more like a treasure hunt, and I kept finding new things to look up. I did, however, find a few misspelled words in parts of the text, but I was pleased with the correct use of Latin throughout. Some of you will not like such a heavy and somewhat slippery paperback book, but that too keeps the cost down. It is easy to pack into a backpack.

My university, in step with many others, has abandoned comparative anatomy, and few students take human anatomy. The result is that many do not know what function certain organs have or what and how muscles move bones in the skeleton. *Mammalogy* (2011) retains its strong morphological flavor. I for one appreciate this aspect because students are no longer getting it anywhere else. This is still my book of 1st choice for looking up details of mammals, and its level of accuracy is high.

Mammalogy (2011) is an example of how a field in a particular organismal group has matured through waves of new techniques and technology of the past 40 years. Most of you reading this will find your name among its pages. We have come a long way. To quote the authors: "Modern Mammalogy is a dynamic and exciting field in need of curious minds." This book will satisfy many curious minds. For this past fall semester I had a classroom of undergraduates and 1 senior who were ready to answer the call of the authors. Now, you must go find *Balbaroo fangaroo*. You will find a clue in the book.—PATRICIA W. FREEMAN, *School of Natural Resources, University of Nebraska State Museum, 428 Hardin Hall, University of Nebraska—Lincoln, Lincoln, NE 68583-0974, USA; e-mail: pfreeman1@unl.edu*.

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