# Mammalogy 6th edition

As was undoubtedly the case for many, Vaughan's Mammology was my 1st introduction to discipline. Indeed, my mammology course (at the University of Vermont) shaped my career and convinced me that I wanted to become a biologist. That's why I respectfully agreed to write this review. This is a standard classic in mammology and the 6th edition will remain so. Although the same overall structure of the 5th edition has been preserved, there are several changes since the 5th edition. First, Chapters 2 and 3 have swapped places, so now a chapter on the origin of mammals precedes a chapter on mammalian symbols. This change seems a little clumsy to me; It is much easier to distinguish important transitions in mammalian evolution if students are already familiar with ancestral and derivative states. The rest of the chapters are located in the same way (this is strength and weakness, see below), and the table is less detailed than in the 5th edition. Chapter 1 introduces classification and phylogenetics. An example of stinginess applied to nucleotide sequence data is preserved in the 5th edition. It would be good if it was noted that the use of only stinginess is outdated and statistical models based on approaches have been mentioned explicitly (instead indirectly through the concept of molecular clocks). However, as written, the description of phylogenetic analysis distorts the current state of discipline. References given for more information about the evaluation of phylogeny are outdated or even non-existent (the authors suggest that PAUP, a software package, explains phylogenetic methods). Chapter 2 describes the origin of mammals and is a mixed bag. There is, once again, an excellent representation of early synapses, terapsids and cynodots and a description of the evolution of mammalian ear shells very well. Unfortunately, the authors are not clear enough on the definition of Mammalia. While they note that some are in favour of the definition of a crown group, the text appears to oscillate between that definition, which they illustrate in Figure 2-3, and the classic definition adopted in Table 2-3. I think the best way to clarify the differences is for students to explain each taxonomic mechanism and why adherents of each one prefer it to another. Unfortunately, less attention is paid to Mesozoic diversity than in the 5th edition (which was too little to begin with). The surprising omission of eutriconondonts, like Jeholodens and Repenomamus, which provide excellent examples of organisms that exhibit primitive (unlit) pelvic girdle and derivative thoracic belt (no coracoids and interclavik), remains in this edition, as does the unfortunate teleological taste that is repeated a couple of times. This is manifested in the use of terms such as improved posture (referring to parasagital and the statement in the final paragraph that the mammalian structural plan was tested, re-tested and improved during Mesozoic.Chapter 3 is a very good description of mammalian symbols and how these symbols differ from the conditions seen in other tetrapods. The only thing I would add is that Box 3-1 focuses on the evolution of lactation, but does not include a discussion of a very useful recent review (Lefebvre et al. 2010). Chapter 4 presents the classification used by the authors to structure much of the rest of the book. The authors preface the classification with a brief narrative that I would like to see used to convey their justification for taxonomic decisions. For example, it has become widely accepted that classifications should be recognized only by monophyletic groups, but there is much disagreement as to whether or not to try to standardize the series, and it is not mentioned that the stability of classification is essential to its role as a universal infrastructure for communication on biological diversity. The authors simply refer to the 2005 taxonomic list, not the position; as Pauley and others (2009) argue, this is not the best approach. Taxonomic changes should be made only if convincing phylogenetic evidence indicates that the group currently recognized is non-monophilic; moreover, changes should indeed be made in such cases. The classification presented makes both errors; monophyletic orders are unjustifiably broken (e.g. Eulipotirla and Xenartra) and non-monophiletic order (Artiodactyla) is maintained. I suspect, however, that non-systematicists will not find the approach Vaughan et al take to be problematic. Part II is again a review of mammalian diversity, with one chapter (chapter 5) on monotrems, one on metateres (chapter 6), and 13 chapters on eutherians. Chapter 5 differs from its predecessor by incorporating an excellent 5-1 box that focuses on the electro-grid in Ornithorhynchus. Chapter 6 includes a fairly recent metatherian phylogeny in which the micropyoteria is the sister of Diprotodontia, but does not represent other recent phylogenies in which Australasian forms are monophyletic (e.g. Nilsson et al 2010); these alternatives have very different biogeographical effects that are not considered. However, the rest of the chapter is excellent and differs from its predecessor only minimally. Chapter 7 introduces euterians and contains new materials on the resolution of the earliest radiation; The hypotheses of Epithera, Exafroplasanthalia and Atlantogenate are presented, as well as a clear discussion of the biogeographical effects of each of them. This is a great addition to the 6th edition. Chapters on Aphrodite (Chapters 8 and 9) are minimally revised, although there are box 9-2 on the extinction of the sea cow Steller. Chapter retains the non-philogenetic grouping of xenartran orders Cingulata, Pilosa (which seems to me split unnecessarily) with Pholidota. I find it very cumbersome, artificial and potentially confusing; that some members of these groups demonstrate converged mymekophagic adaptations makes this clustering of dachshunds more problematic. There's no reason not to include material about Pholidota in the chapter that concerns his likely sister group Carnivora. Chapter 11 is pretty much identical to the 5th edition. Fortunately, the glaring error in the 12-1 table headlines that was present in the 5th edition has been corrected (Monotremes has been replaced by Characteristics Primate), the phylogeny of the 12-3 primates has been appropriately revised, and a new box has been added to the ultrasonic communication in the tarsiers. The chapter on Glires (chapter 13) has been duly revised to focus on new phylogenetic hypotheses, but otherwise little has changed. Chapter 14 again divides Eulipotyphla unnecessarily; monophyletic group in both phylogenetic hypotheses shown in figure 14-1. However, the excellent new material on water predation Sorex palustris is presented by Box 14-1. The bat chapter (Chapter 15) is once again excellent. The head of Carnivora (Chapter 16) begins with an updated phylogeny that is appropriately used to structure the rest of the chapter. The new material is

presented in box 16-1 about the possible use of the Earth's magnetic field Vulpes vulpes in the search for prey. Periszodactil Chapter (Chapter 17) now includes material (Box 17-1 and figure 17-15) at the height of Ceratotherium cottoni as a separate species and the terrible threat of extinction it faces. Each of chapters 18 and 19 addresses terrestrial cetartiodactyls and cetaceans separately. This is very unfortunate, and although the authors illustrate the paraphiletic nature of Artiodactyla in figure 18-1, and note that the revision should be made in future editions, they really should have made appropriate changes to this edition. However, the content chapters are good and new material is presented in each. Part III retains its emphasis on reproduction, physiology and echolocation (chapter 20-22), and again is an excellent distillation of these themes. However, the 20-10 pattern retains its unfortunate layout (thick arrows), which can be interpreted to suggest that the peramelide chorioallantoic placenta is homologous with primates. In addition, I would also like to see the inclusion of findings drawn from phylogenetic analyses that the hemochorial placenta is probably a generic condition for Eutherians (Wildman et al. 2006). However, it's a pretty minor quibble, and it's a great section. The final section (Part IV) again covers ecology, behavior, biogeography and conservation ethics, as well as material that was available online The 5th edition (domestication and disease) is now included in the printed copy. The Ecology Chapter (Chapter 23) has new material that is very welcome, such as the Islands of Habitat (Box 23-2), the right whale diet, and the role of bats as pollinators. The chapter on behavior (chapter 24) is almost identical to that of the 5th edition, but with the welcome addition of the material about pinniped polygyny and the role of genetic data on the conclusion of marriage systems. Unfortunately, the paraphilic name of the genus (Spermophilus) is used when discussing the alarming call in Belding gophers. Chapter 25 (zoogeography) is almost identical to chapter 5 of the 5th edition, as is Chapter 26 (conservation ethics). The last two chapters are new to a tough copy; they are both quite runaway, but nevertheless are a welcome addition. After all, the 6th edition of Mammalogy is once again a nifty tool for communicating a sense of wonder at mammalian biology and diversity that mammologists share. In fact, most of the materials that are new to the 6th edition seem to have been chosen for this laudable purpose. Ultimately, however, I think that the era of any textbook as a source of material in higher education may be nearing an end. I stopped requiring any text for my mammology class, and instead taught from mainstream literature. I just can't justify the requirement to purchase this or any text (about $100) when most of the basic literature I teach is from available online. However, for those who feel differently, probably most, the 6th edition of Mammalogy, by Vaughan et al. retains its leading place as an excellent text for courses in mammalian biology. Literature cited mammalogy 6th edition pdf. vaughan mammalogy 6th edition pdf