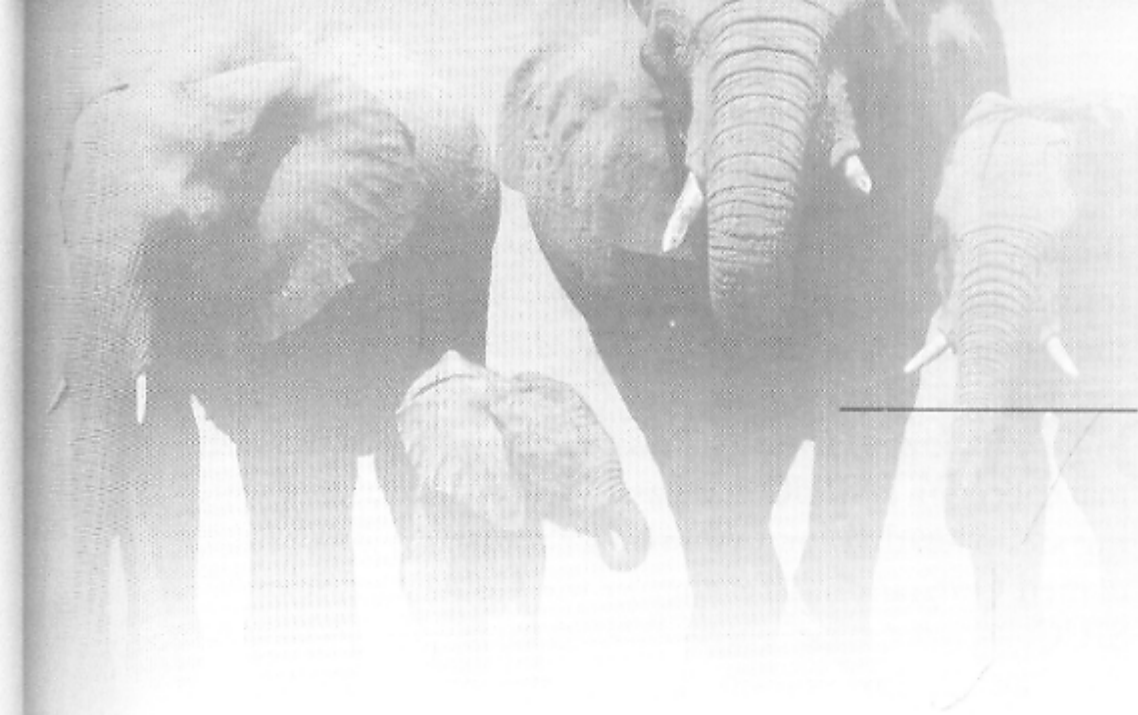




Preface

As was the case throughout the twentieth century, research and resulting insight on all aspects of mammals continues at a rapid pace today. Balancing breadth and depth of coverage, we have maintained a textbook length tailored to a one-semester mammalogy course appropriate for upper-level undergraduates and graduate students with a basic background in vertebrate biology. In this second edition, we have retained the format of 29 chapters arranged in 5 parts. Part 1 (chapters 1 through 4) introduces the subject of mammalogy, history of the discipline, current methods and molecular techniques important in systematics and population analyses, and the evolution of mammals. Part 2 (chapters 5 through 9) covers biological functions and the physical structure of mammals. Adaptive radiation in form and structure among the currently recognized mammalian orders is covered in Part 3 (chapters 10 through 19). Morphology, fossil records, conservation and economics, and a brief synopsis of all extant families are included for each order. Part 4 focuses on behavior, ecology, and zoogeography (chapters 20 through 26). Finally, in Part 5 (chapters 27 through 29), we explore mammalian parasites and diseases, including zoonoses; domestication of mammals; and conservation issues. Literature cited within a chapter is collected at the end of the text to avoid redundancy. Technical terms throughout each chapter are in boldfaced type when they are first introduced, and those terms are defined in both the text and the glossary. Although there is continuity between sections and chapters of the text, instructors can select certain chapters based on individual interest, emphasis, or time constraints without sacrificing clarity and understanding.

Changes to the Second Edition

This edition of *Mammalogy: Adaptation, Diversity, Ecology* updates recent advances in mammalian anatomy and physiology, behavioral ecology, molecular genetics, systematics, conservation, zoogeography, paleontology, and many other complementary and interrelated areas of mammalogy since the first edition in 1999. The second edition includes hundreds of new citations to recent literature, many new photos and figures, study questions designed to help generate critical thinking and discussion, and suggested readings. More specifically, Part 1 includes added coverage and expanded explanations of molecular techniques as well as current thinking concerning mammalian evolution. Part 2 has additional

new information on locomotion, mosaic evolution, and dormancy, as well as expanded coverage on the immune system of mammals. Throughout Part 3, new fossil evidence and updated phylogenies are given for many orders, as are recent advances in natural history for numerous families along with the current conservation status of threatened species. Part 4 includes recent functional information on such topics as humpback whale songs, the nasal area of the star-nosed mole, and the role of the major histocompatibility locus. We also update material on the role of neuroendocrine factors in parental care of offspring, group size in social carnivores, and the role of path integration and the hippocampus in orientation and spatial navigation. Current trends in Lyme disease and other zoonoses are given in Part 5 along with updated material on domesticated species and conservation issues of various mammalian groups.

In terms of form and function, feeding and locomotion, the approximately 4600 species of mammals represent the most diverse class of vertebrates. Mammals are terrestrial, arboreal, or marine; they burrow, run, or fly; and they feed on meat, nectar, blood, pollen, leaves, or a variety of other things. They range in size from 2-gram white-toothed pygmy shrews and hog-nosed bats to 160 million-gram blue whales. We explore the diversity and complexity of all aspects of mammals in this second edition of *Mammalogy: Adaptation, Diversity, Ecology*. We hope this book does justice to past and present mammalogists on whose research and teaching efforts it is largely based. We also trust that it will continue to prove useful to students, the mammalogists of the future, as they better appreciate and explore the mysteries of mammals—those “fabulous furballs.”

Acknowledgments

The four authors of this text bring a combined total of around 140 years of field and laboratory experience with mammals in a variety of settings to the collaborative endeavor of this book. The benefits of this collaboration, including the experience and insights gained from writing the first edition, are reflected in this revised text. Also, we have each gained through the years from the suggestions, ideas, discussions, and constructive criticism of many teachers, colleagues, students, and friends. Many individuals reviewed parts of the manuscript or the entire text of the original edition. Their input as well is reflected in this second edition.

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