

BOOK REVIEWS

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Blumberg, M. S. 2002. *BODY HEAT: TEMPERATURE AND LIFE ON EARTH*. Harvard University Press, Cambridge, Massachusetts, 240 pp. ISBN 0-674-00762-X, price (hardbound), \$22.00.

This is a marvelous little book. In a volume no larger than a pocket field guide, Mark Blumberg explains how mammals and some other organisms maintain high, nearly constant body temperatures, and then explores many implications of such body heat. He starts with the physics and physiology of heat exchange and ends with rhythms of body temperature, sleep, and activity. Along the way he expounds on a wide variety of fascinating topics, including behavioral thermoregulation and the design of Roman baths, temperature-dependent sex determination in turtles, “warm-blooded” insects and flowers, how and why bird brains and mammalian testicles stay cool, the adaptive role of fever, the relation of energy balance to dieting and obesity, and even why chili peppers taste hot. Blumberg calls himself a biopsychologist, and one of his most interesting sections is a discourse on the metaphorical use of temperature in human language: the reasons why we use terms like cold-blooded killers, sexual frigidity, warm colors, hot dates, and fiery tempers. Blumberg eloquently expounds and explores the connections among his diverse subjects to achieve an unorthodox synthesis. In so doing, he teaches a lot of important basic biology and a good deal of psychology. His presentation is compelling and accurate. I found no serious errors. The only topic that I would like to have seen better developed is the role of temperature in the biology of the great majority of organisms that are ectothermic, the body temperatures of which are not high and regulated but fluctuate with environmental temperatures.

Blumberg’s writing is a work of art. He explains scientific facts and complicated concepts in clear, simple language. He conveys his own sense of wonder, excitement, and curiosity. Even your in-laws should be interested and will be able to understand. I am awed at how Blumberg manages to explain complex phenomena, such as the physics of heat exchange and the allometric scaling of metabolic rate, without using a single equation or even a graph. For those like me, who have difficulty writing for a nontechnical audience, the book is worth studying for this reason alone.

If you are interested in mammals, biology, natural history, or psychology, you will enjoy reading this little book. If you are like me, when you finish, you will want to meet the author, who is clearly a gifted person with broad interests. You can unhesitatingly assign this book to students, promote it to colleagues, and even recommend it to nonscientist family and friends.—JAMES H. BROWN, *Department of Biology, University*

of New Mexico, Albuquerque, NM 87131, USA; jhbrown@unm.edu

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Jameson, E. W., Jr., and H. J. Peeters. 2004. *MAMMALS OF CALIFORNIA*. California Natural History Guides, No. 66, University of California Press, Berkeley, 429 pp. ISBN 0-520-23582-7, price (paper), \$19.95.

This book is a retitled 2nd edition of California Natural History Guides, No. 52, *California Mammals*, published in 1988. It is considerably improved. The book has been downsized so that it more closely resembles a field guide, and the design is more attractive and functional than its predecessor. Color plates, black-and-white drawings, and skull illustrations are retained from the 1st edition. Most are adequate, although the outline sketches of skulls remain relatively crude and some are printed out of kilter. The nicely rendered color plates would have been more useful if diagnostic features were pointed out on the animals. Range maps, which appeared collectively at the back of the earlier version, now accompany individual species descriptions. Although the maps are somewhat small and sometimes difficult to read (especially for species with very limited geographic distributions), the arrangement is handy. Useful too are newly added identification keys to families and orders, and a revised taxonomy for some species.

The book is divided into 2 main sections, 1 entitled *Mammal Ecology*, and a 2nd comprising *Species Accounts*. The former is expanded from the earlier edition and contains discussions about studying mammals, origins, reproduction, social groups, population fluctuations, thermoregulation, seasonal dormancy, senses, migration and movements, relation of mammals to California society, food, and identification. These chapters are reasonably well constructed and are quite readable, although topical coverage is general, uneven in places (treatments of furbearers and pathogens seem overly long), and some parts are a bit out of date. For instance, the now well-established techniques for recording and analyzing bat sounds using electronic detectors go unmentioned in the chapter dealing with study methods. Introductory passages to the orders and families in the *Species Accounts* have been expanded and are much more informative than in the 1st edition. Natural-history data provided in individual species accounts add greatly to the quality of the book.

Despite improvements, *Mammals of California* has its shortcomings, particularly in places where it matters most, namely the identifications and occurrences of species in the state. Curiously, many of the problems are carryovers of points identified by Williams (1989) in his review of the 1st edition. The authors understandably do not provide range maps for

introduced species or for species occupying the entire state, but maps remain missing for species that do not satisfy these criteria: *Sorex sinuosus*, *Lasiurus blossevillii*, *L. cinereus*, all *Myotis* species except *M. velifer*, *Pipistrellus hesperus*, *Nyctinomops macrotis*, *Mustela erminea*, *Spermophilus mollis*, *Neotamias obscurus*, *Dipodomys simulans*, and *Reithrodontomys raviventris*. Missing too are distribution maps for all marine mammals.

The keys are especially troublesome. There still are no keys to families of Carnivora, Pinnipedia, Cetacea, Perissodactyla, Artiodactyla, Rodentia, and Lagomorpha, which contain the vast majority of species in California. In addition, within Carnivora, there are no keys to species of canids, felids, or procyonids. Keys to species of some rodent genera also are missing (*Sciurus*, *Tamiasciurus*, *Reithrodontomys*). A table of comparative features is provided for chipmunks (*Neotamias*) instead of a key.

Too frequently the keys provided are not dichotomous. Alternative character states are often missing, so that there is unequal character representation in the 2 parts of a couplet, as revealed in the following keys: mammalian orders (p. 104; couplets 4, 5); *Sorex* species (p. 115; 4, 5, 7, 8, 9); bat families (p. 133; 1); vespertilionid species (p. 137; 3, 7); sciurid genera (p. 258; 1, 2); *Spermophilus* species (p. 261; 3, 4, 5); heteromyine genera (p. 297; 1); *Dipodomys* species (p. 299; 5); pocket-mouse genera (p. 314; 1); *Chaetodipus* species (p. 314; 4); and *Perognathus* species (p. 314; 1). In addition, characters occasionally are ordered differently in the two parts of a couplet (e.g., p. 137, 3, key to vespertilionid species). These kinds of omissions or inconsistencies make the keys difficult to use effectively.

Within most families, keys are first provided for genera (e.g., genera of soricids and talpids) followed by separate keys for species within each genus (e.g., *Mustela*, *Spermophilus*, *Dipodomys*), but this treatment is not uniform (e.g., genera and species of vespertilionids and leporids are combined in single keys). In most cases, species could have been keyed just as effectively if combined into 1 key for each family. Both procedures were employed for species of *Lasiurus*, which are keyed out in 2 places (pp. 137, 143).

The authors persist in providing accounts of species not known to occur in the state of California (e.g., *Idionycteris phyllotis*, *Odocoileus virginianus*), while simultaneously making only brief mention of several that certainly do occur in the state (e.g., *Sigmodon arizonae*, *Perognathus xanthonotus*, *P. arenarius*). Extirpated species are treated unevenly. Why, for instance, is a complete account given for gray wolves (*Canis lupus*) but no account provided for grizzly bears (*Ursus arctos*), the state symbol?

Confusion about construction of the binomial is perpetuated in the section on *Identification of Mammals* (pp. 101–103). As beginning taxonomists learn (or at least used to learn), the binomial consists of 2 parts, the genus name (e.g., *Castor*) and

the specific epithet or trivial name (e.g., *canadensis*), which together form the species name (e.g., *Castor canadensis*). The authors substitute the term “specific name” for trivial name and, in so doing, confuse the reader. This is revealed clearly on p. 103, where “specific name” and “species name” are used interchangeably.

The authors claim (p. 101) to use Wilson and Reeder (1993) as their source of species names, but they depart from that reference in a number of cases, as follows (Wilson and Reeder’s usages are in parentheses): *Sorex sinuosus* (*S. ornatus*), *Lasiurus blossevillii* (*L. borealis*), *Lutra canadensis* (*Lontra canadensis*), *Felis rufus* (*Lynx rufus*), and *Panthera concolor* (*Puma concolor*). The basis for these modifications should be indicated. The chipmunk genus *Tamias* is called *Neotamias* throughout, also without attribution.

Some minor details needing attention include the following: carnassials are labeled for the upper jaw only in Fig. 4 (p. 12); outline drawings for skulls of *Scapanus latimanus* and *S. orarius* (Figs. 18, 19, on pp. 126, 127) are identical, and the nature of the unicuspid shown by arrows is not given; despite reference to them (key on p. 323), tuberculate teeth are not identifiable in Fig. 127a; although referred to in text, the southern California populations of *Vulpes vulpes* are omitted on the range map (p. 167); distribution maps for *Erethizon dorsatum* and *Microtus californicus* should include the coastal region of northwestern California; the families Zapodidae and Heteromyidae are mentioned on p. 103, but elsewhere they are treated as Dipodidae and Geomyidae (Heteromyinae; pp. 287, 297); and plantar tubercles and open/closed rooted molars need to be defined in the glossary.

In this reviewer’s opinion, the shortcomings of the 2nd edition outweigh the improvements. The authors seem to desire a book that is simultaneously a field guide, a laboratory manual, and a summary of mammalian biology. That they do not succeed may be due to the lack of stated objectives, as pointed out by Williams (1989). Regrettably, most of the changes appearing in the book constitute modest window dressing, whereas useful substantive modifications have been overlooked or ignored. The out-of-print and taxonomically dated *Mammals of the Pacific states* (Ingles 1965) remains the best guide to California mammals.—TIMOTHY E. LAWLOR, Department of Biological Sciences, Humboldt State University, Arcata, CA 95521, USA; tell@humboldt.edu

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