

Walker's  
MAMMALS  
of the WORLD

4th Edition

Ronald M. Nowak • John L. Paradiso  
Volume I

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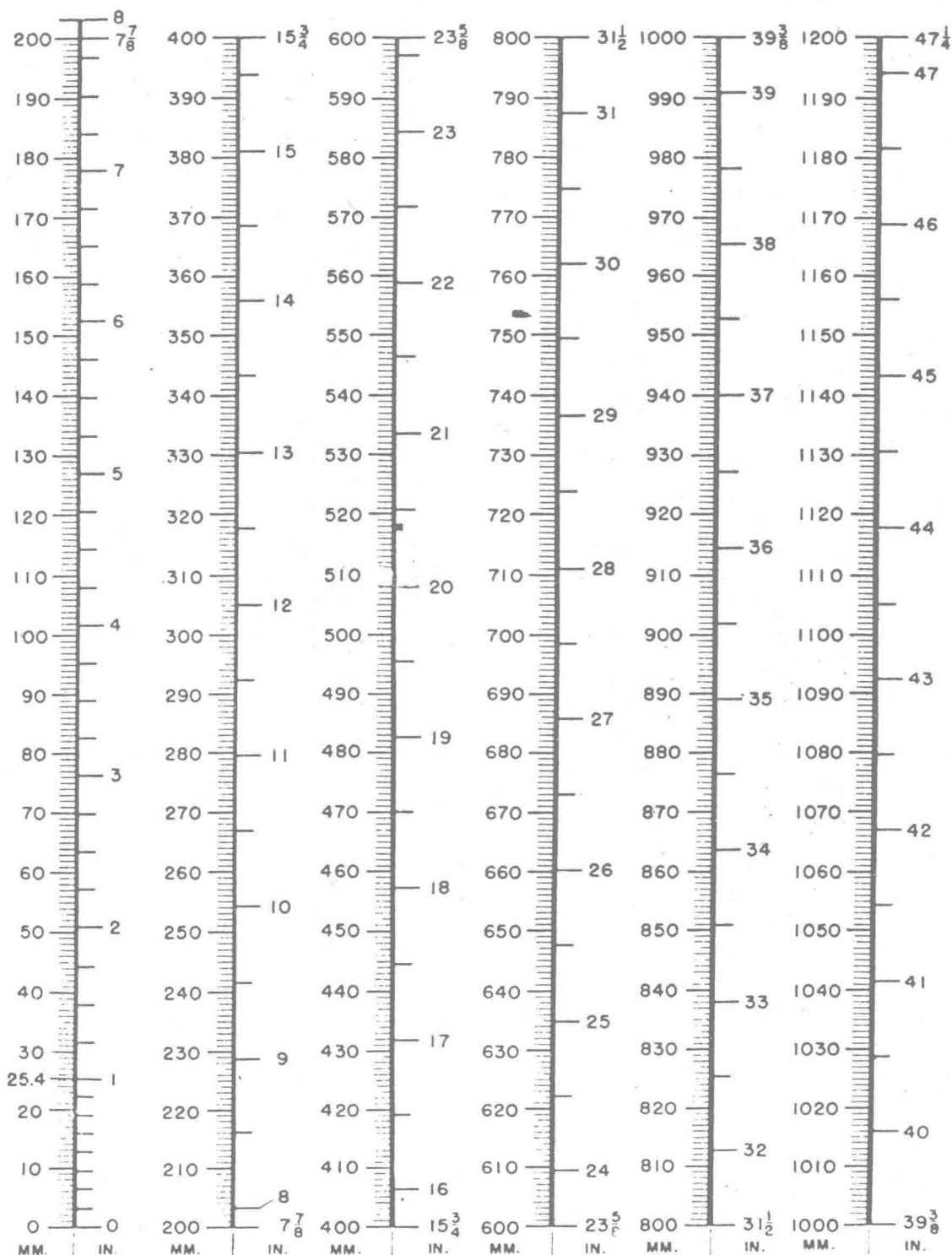
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The first edition of this work appeared under the title *Mammals of the World* by Ernest P. Walker (senior author) and six coauthors: Florence Warnick, Sybil E. Hamlet, Kenneth I. Lange, Mary A. Davis, Howard E. Uible, and Patricia F. Wright. The second and third editions were revised by John L. Paradiso.

*Frontispiece:* Photograph by Eugene Maliniak

# SCALES FOR COMPARISON OF METRIC AND U.S. UNITS OF MEASUREMENT

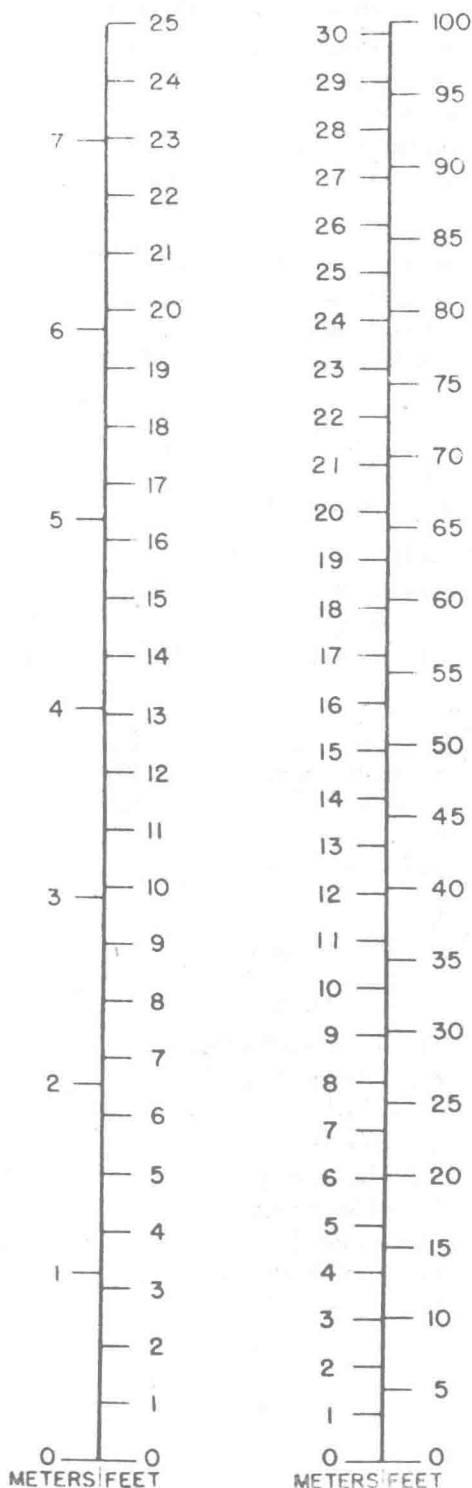
## LENGTH: MILLIMETERS AND INCHES



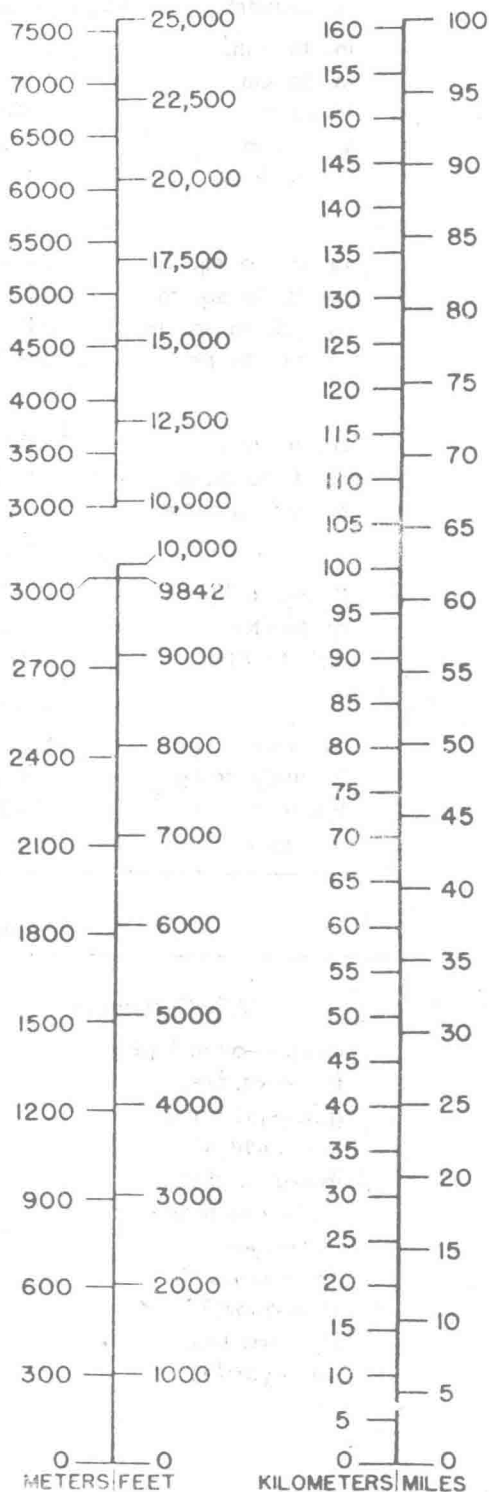
# SCALES FOR COMPARISON OF METRIC AND U.S. UNITS OF MEASUREMENT

## LENGTH

### METERS AND FEET



### KILOMETERS AND MILES



# TABLES FOR CONVERSION

## U.S. Customary to Metric

## Metric to U.S. Customary

### Length

To convert	Multiply by	To convert	Multiply by
in. to mm.	25.4	mm. to in.	0.039
in. to cm.	2.54	cm. to in.	0.394
ft. to m.	0.305	m. to ft.	3.281
yd. to m.	0.914	m. to yd.	1.094
mi. to km.	1.609	km. to mi.	0.621

### Area

sq. in. to sq. cm.	6.452	sq. cm. to sq. in.	0.155
sq. ft. to sq. m.	0.093	sq. m. to sq. ft.	10.764
sq. yd. to sq. m.	0.836	sq. m. to sq. yd.	1.196
sq. mi. to ha.	258.999	ha. to sq. mi.	0.004

### Volume

cu. in. to cc.	16.387	cc. to cu. in.	0.061
cu. ft. to cu. m.	0.028	cu. m. to cu. ft.	35.315
cu. yd. to cu. m.	0.765	cu. m. to cu. yd.	1.308

### Capacity (liquid)

fl. oz. to liter	0.03	liter to fl. oz.	33.815
qt. to liter	0.946	liter to qt.	1.057
gal. to liter	3.785	liter to gal.	0.264

### Mass (weight)

oz. avdp. to g.	28.35	g. to oz. avdp.	0.035
lb. avdp. to kg.	0.454	kg. to lb. avdp.	2.205
ton to t.	0.907	t. to ton	1.102
l. t. to t.	1.016	t. to l. t.	0.984

## Abbreviations

### U.S. Customary

avdp.—avoirdupois  
 ft.—foot, feet  
 gal.—gallon(s)  
 in.—inch(es)  
 lb.—pound(s)  
 l. t.—long ton(s)  
 mi.—mile(s)  
 oz.—ounce(s)  
 qt.—quart(s)  
 sq.—square  
 yd.—yard(s)

### Metric

cc.—cubic centimeter(s)  
 cm.—centimeter(s)  
 cu.—cubic  
 g.—gram(s)  
 ha.—hectare(s)  
 kg.—kilogram(s)  
 m.—meter(s)  
 mm.—millimeter(s)  
 t.—metric ton(s)

## FOREWORD

In the foreword to the first edition of *Mammals of the World*, by Ernest P. Walker (1891–1969) and six coauthors, Fairfield Osborn, then president of the New York Zoological Society, stated that the work represented a unique and highly valuable contribution to zoological literature. The uniqueness and value have been maintained by Ronald M. Nowak and John L. Paradiso in this new two-volume compilation, but the authors have so greatly altered the text and expanded the photographic coverage that the work properly bears its own title.

As suggested by Osborn, no other single series of books can be used as a basic reference to the systematics, description, and natural history of all the known, living mammalian genera. Comparative works have dealt only with the mammals of a particular continent or region, have covered only selected genera, or have provided only lists of names and distributions.

No work other than this one of 1983 contains high quality likenesses of so many genera of post-Pleistocene mammals. For genera that have several species that differ greatly from one another in size or appearance, more than one species ordinarily is shown in well chosen photographs or drawings. For certain kinds of mammals, details of the feet, skull, teeth, and other features also are depicted in order to facilitate identification as to genus.

An advantage of this work over the first edition is the citation of specific references for all new information. The judicious choice of literature used in preparing the accounts of the 1,018 genera will enable serious investigators (whether scientists or not) to delve as deeply into earlier, authoritative literature as their needs require, or at least far enough for them to learn what is and what is not known about such subjects as reproduction of populations, habits, and geographical distribution. This is a major contribution by the two authors.

Persons responsible for preventing the untimely extinction of genera or particular species will find guidance in these pages and the cited literature. Likewise, this new work may contribute to an understanding of the temporal limits of the existence of a particular genus, as to when it developed from, or gave rise to, another genus. Many gaps remain in the fossil record, and accordingly there will be disagreement regarding some of the conclusions in this work, for instance the placing of people (genus *Homo*) and the orangutan (genus *Pongo*) in two separate families. Nonetheless, in such cases, the listing of alternative viewpoints and the citation of pertinent literature will provide serious readers with the means of making their own informed estimates.

E. RAYMOND HALL

*Emeritus Director, Museum of Natural History,  
and Professor of Systematics and Ecology,  
University of Kansas*

## PREFACE

Ernest P. Walker was involved for over 30 years in preparing the first edition of *Mammals of the World*, published in 1964. He began the project, originally called "Genera of Recent Mammals of the World," shortly after becoming assistant director of the National Zoological Park, Washington, D.C., in 1930. In this capacity he accumulated extensive knowledge of mammals, both by direct observation and through contact with other zoo personnel, mammalogists, and naturalists. He was an accomplished photographer and made a point of taking a picture of each kind of mammal that arrived at the National Zoo. He loved all living things, personally working with many different species of wild mammals, and sometimes caring for them in his own office or home.

Walker formally retired at the end of 1956 but continued to maintain an office at the National Zoo. Through a research grant from the National Institutes of Health, and under sponsorship of the New York Zoological Society, he was then able to devote himself full time to the compilation of data and the collection of additional facts and photographs needed for *Mammals of the World*. He employed a team of research and clerical personnel to assist him in assembling information, examining literature, and writing text. Six persons are considered coauthors of the first edition: Florence Warnick, Sybil E. Hamlet, Kenneth I. Lange, Mary A. Davis, Howard E. Uible, and Patricia F. Wright. During the last four years of the project, Walker was compelled, owing to failing health, to leave many details of the work to these coauthors.

Walker wished to present, in nontechnical language, a description of, and the basic facts of natural history about, each genus of living mammal. He wanted a book that could be easily understood and appreciated by the general public, but that would also serve the professional community. Although the latter group has received the book favorably, a consistent criticism has been the lack of citation of specific references for most of the facts presented in the text. In fairness to Walker, it should here be pointed out (as it was in the preface to the first edition) that many of these facts were learned through direct observation by the authors or were taken from unpublished data received orally, through correspondence, or through addition to the manuscript by reviewers. At least 10 persons are thought to have examined the manuscript for each of the original generic accounts. Walker specifically acknowledged the assistance of the following authorities who reviewed the text and/or provided information: Lee Crandall, William Conway, Joseph Davis, and John Tee-Van, all of the New York Zoological Society; Helen Gaylord, Charles O. Handley, Jr., David H. Johnson, Remington Kellogg, Gerrit S. Miller, Arthur Poole, and Harold Shamel, all of the U.S. National Museum; Sydney Anderson, Karl Koopman, Robert E. Logan, James A. Oliver, Hobart Van Deusen, and Richard Van Gelder, all of the American Museum of Natural History; Clyde A. Hill, George H. Pournelle, C. R. Schroeder, Kenhelm Stott, Jr., and Wallace B. Wade, all of the San Diego Zoological Society; R. W. Hayman and John Edwards Hill of the British Museum (Natural History); L. Harrison Matthews, William C. Osman Hill, G. B. Stratton, Barbara J. Weir, and Solly Zuckerman, all of the Zoological Society of London; H.H.T. Jackson, Karl Kenyon, Richard Manville, Arnold Nelson, Dale Rice, Victor Scheffer, Lucille Stickel, and William Stickel, all of the U.S. Fish and Wildlife Service; Harry Hoogstraal, Robert E. Kuntz, and Robert Traub, U.S. Army and Navy Medical Researchers; J. W. Evans, Basil J. Marlow, and E. Le G. Troughton, all of the Australian Museum; J. McNally and R. M. Warneke of the Australian Fisheries and Wildlife Department; Shelley Barker, John H. Calaby, Stephen Davies, and A. G. Lyne, all of the Commonwealth Scientific and Industrial Research Organization, Australia; W.F.H. An-



sell, Department of Game and Fisheries, Northern Rhodesia; F. J. Appelman, Rotterdam Zoo; James A. Bateman, Kaffrarian Museum, South Africa; Stanley Breeden, Brisbane; William H. Burt, University of Michigan; George Cansdale, Chessington Zoo, England; T. Donald Carter, Boonton, New Jersey; W. P. Crowcroft, South Australian Museum; Don Davis, U.S. Army Attaché; Cory T. de Carvalho, São Paulo; Carlos de Paula Couto, Museu Nacional, Brazil; E.H.M. Ealey, Monash University; D. P. Erdbrink, Geological Institute, Utrecht, Netherlands; Fritz Frank, Oldenburg; B. Elizabeth Horner, Smith College; Lloyd G. Ingles, Fresno State College; C.F.H. Jenkins, Australian Department of Agriculture; Lim Boo Liat, Institute for Medical Research, Kuala Lumpur; Eric Lindgren, Shenton Park, Western Australia; Gordon Lyne, Brown University; George Mack, Queensland Museum; J. Meester, Transvaal Museum; Edgardo Mondolfi, Caracas; Michi Nomura, Oiso-machi, Kanagawa Pref., Japan; Juhani Ojasti, Universidad Central de Venezuela; Robert T. Orr, California Academy of Sciences; Ralph S. Palmer, New York State Museum; D. R. Paulian, Institut de Recherches Scientifiques, Tananarive; R. L. Peterson, Royal Ontario Museum; W.D.L. Ride, Western Australian Museum; Albert Schwartz, Albright College; Vincent Serventy, Scarborough, Western Australia; C. A. Spinage, Berkshire, England; Mary Taylor, Wellesley College; J. A. Thomson, University of Melbourne; Bernardo Villa-R., Ciudad Universitaria, San Angel, Mexico; Norman A. Wakefield, Teacher's College, Carlton, Victoria; John Warham, Melbourne; A. Van Wijngaarden, Wageningen, Netherlands.

The first edition of *Mammals of the World* included an entire third volume comprising a bibliography of the literature of mammalogy through about the end of 1960. In the two decades that have since passed there has been an enormous increase in mammalian research and in the resulting literature. An especially great amount of new information has been obtained through the systematic study of the ecology and behavior of mammals under natural conditions. Many genera, known during the preparation of the first edition only by casual observation, have now been studied in detail. The second and third editions of *Mammals of the World*, published in 1968 and 1975, included many new facts, several accounts of newly described genera, and over 350 new photographs. There was, however, no attempt to extensively revise and expand the text.

The present edition incorporates major changes in format and content. The overall length of the text has been increased by nearly 50 percent (physical size of the volumes remains about the same, however, because much blank space has been eliminated and type size has been reduced). Approximately 90 percent of the generic accounts have received substantive modification, and many have been completely rewritten. It was decided to break with the original practice of restricting the information on each genus to a single page, and to expand the accounts of those genera for which more data were available. Nonetheless, much of the text remains the same as in the earlier editions, especially those portions covering physical description. We have also tried to keep to Walker's basic objective of having a book that can be useful to both scientists and the public in general. Ordinal and familial accounts usually precede the generic accounts, and give information applicable to all members of the group involved. When possible, the following topics have been covered for each genus: scientific and common name, number and distribution of species, measurements, physical description, habitat, locomotion, daily and seasonal activity, diet, population dynamics, home range, social life, reproduction, longevity, and relationship with people. There has been little emphasis on such subjects as internal morphology, physiology, genetics, laboratory experimentation, parasitology, pathology, and paleontology. Walker's World Distribution Charts have been retained, but revised to reflect changes in taxonomy, distributional knowledge, and pagination. As in the earlier editions, the metric system is used throughout; conversion scales and tables are found on the end papers of both volumes.

It was Walker's objective to include a satisfactory photograph of a living representative of every genus in *Mammals of the World*. In the preface to the first edition, he wrote:

In selecting photographs we have kept in mind the idea of conveying a better image of the mammal than could be given in a word picture. On the order and family pages are photographs illustrating points mentioned in these general texts. The photographs included on almost every generic page are fairly representative of each group. In some instances, several photographs are used when the members of the genus differ greatly in appearance or where more are needed to show structural peculiarities or poses. Many attractive and appealing photographs have been rejected because they did not show the characteristic form of the mammals to the best advantage.

Within some genera there is considerable variation in coloration, color pattern, or size of the species. The relative sizes of species within a genus cannot always be shown in the photographs, and only a few of the species with outstandingly different color patterns are shown, but information regarding such variations is given in each generic text.

Some of the photographs of mammals in captivity are of immature individuals which do not have fully developed adult characters, or old individuals that have been in captivity a long time and have become more heavy-bodied than those in the wild.

Many of the photographs have been retouched to eliminate distracting, extraneous objects; a few have been retouched to make anatomical characters visible that were obscure or to restore some that were missing in the original photograph. Fidelity to life has been followed in every instance, although we cannot vouch for the accuracy of drawings and paintings that have been copied. We must assume, however, that the author of the article tried to have the drawing or painting as accurate as information then available permitted.

Despite Walker's heroic efforts, the first edition did not actually contain a photograph of a living representative of every genus. And, though additional photos were subsequently found, we judged that the third edition still included nearly 400 accounts of living genera that were accompanied only by a photo of a museum specimen or dead individual, by a drawing, by an unsatisfactory photo of a live animal, or by no illustration at all. Thanks to the cooperation of many persons and institutions, over 100 of those generic accounts, we think, now do have an acceptable photo of a living representative. The total number of illustrations new to the current edition, either to replace or supplement older material, is about 350. It is to be expected that fewer photos will be found for future editions, as many of the genera that are still not well illustrated are seldom, if ever, collected alive, and some are probably extinct. Persons who know of photos that would improve future editions of this book are encouraged to contact the Johns Hopkins University Press.

One of the problems with previous editions of *Mammals of the World* was the inconsistent treatment of the names and distributions of the species within genera. To resolve this difficulty, and to perhaps contribute to the usefulness of the book, it was decided to list the name and range of every species of every genus. For most genera with more than one species we have attempted to arrange the list in systematic order, with more closely related species grouped together. In cases in which sufficient information was not available, species are listed in alphabetical order.

Because of limited space, distributions of wide ranging species can not be given in detail. To avoid possible confusion, we offer the following parenthetical explanations of examples of distributional information:

*Z. hudsonius*, southern Alaska to Labrador and northern Georgia (the species occurs in the region bounded approximately by swaths connecting southern Alaska, Labrador, and northern Georgia);

- B. bengalensis*, Pakistan to Burma, Sri Lanka, Penang Island off west coast of Malay Peninsula, Sumatra, Java (the species occurs from Pakistan to Burma, and also occurs on the islands of Sri Lanka, Penang, Sumatra, and Java, but does not occur on the mainland east of Burma);
- A. albiventer*, mountains of southeastern Peru, western Bolivia, northern Chile, and northwestern Argentina (the species occurs in only the mountainous parts of all four of the areas indicated).

If more than one reference is cited in support of the systematic aspects of a generic account, each of the references was consulted in making a decision regarding the names, number, arrangement, and distributions of the species listed. All references do not necessarily agree with the information that is given in our accounts. Major points of systematic controversy are discussed after the accepted list of species.

It would not have been possible to list all species, had it not been for the existence of published sources that provide the names and distributions of the mammals of major parts of the world. Especially helpful were Hall (1981) (used partly in manuscript form through the kindness of E. Raymond Hall and Don E. Wilson), Cabrera (1957, 1961), Ellerman and Morrison-Scott (1966), Corbet (1978), Meester and Setzer (1971), Chasen (1940), Laurie and Hill (1954), Taylor (1934), Ride (1970), and Rice (1977). Some of these sources were not available during the preparation of the first edition of *Mammals of the World*. When the manuscript of the present edition was approximately half completed, we obtained a copy of Corbet and Hill's (1980) list of the world's mammalian species. We used that book to check our own compilation and as a guide to additional literature, but not as a primary source. In the same manner, we used Seal and Makey's (1974) ISIS directory and Alcasid's (undated) list of Philippine mammals.

The number and arrangement of mammalian orders that was accepted in the first edition of *Mammals of the World* is maintained here, but alternative views are discussed in the ordinal accounts. Substantial changes have been made in the number and arrangement of families. The names and contents of suborders and subfamilies are given at the beginning of, respectively, the ordinal and familial accounts. Accepted subgeneric designations appear at appropriate places within the lists of species in generic accounts. The genus remains the basic unit of treatment, though a few generic texts contain separate species accounts. The total number of taxonomic categories accepted in this edition are: 19 orders, 134 families, 1,018 genera, and 4,154 species. Of the genera, 17 were named subsequent to preparation of the third edition of *Mammals of the World*: *Ningauia* Archer, 1975; *Aproteles* Menzies, 1977; *Craseonycteris* Hill, 1974; *Abrawayaomys* Cunha and Cruz, 1979; *Megaoryzomys* Lenglet and Coppo, 1979; *Bibimys* Massoia, 1979; *Andagalomys* Williams and Mares, 1978; *Megadendromus* Dieterlen and Rupp, 1978; *Kadarsanomys* Musser, 1981; *Margaretamys* Musser, 1981; *Komodomys* Musser and Boeadi, 1980; *Anonymomys* Musser, 1981; *Srilankamys* Musser, 1981; *Niviventer* Marshall, 1976; *Salpingotulus* Pavlinov, 1980; *Hyperplagiodontia* Rímoli, 1977; and *Makalata* Husson, 1978. During the same period, *Catagonus* Ameghino, 1904, previously known only by Pleistocene fossils, was discovered alive.

Work on the present edition began in late 1976; segments of the manuscript were given to the publisher from mid-1979 to early 1982. Because the manuscript was submitted piecemeal, and because some modifications were made subsequent to the initial submission, the final date of publication of utilized references varies from group to group. With respect to systematic information, we consider the book nearly complete in its coverage of

descriptions of new species and major revisions up to the end of 1979. Much information published through late 1981, however, has been included.

Unlike the first edition of *Mammals of the World*, the present edition contains textual references for all new information, except minor changes in measurements. A few citations are given complete within the text, but most are listed in full in the Literature Cited section at the end of volume 2. If no reference appears within a paragraph or long passage, it may be assumed that the information was taken from the first edition. The relatively few textual references that did occur in the first edition, and that have been used again, have been incorporated in the Literature Cited section of the present edition. The huge Bibliography of the first edition has not been reprinted; it is now over 20 years out of date and most of the references therein were not actually used in preparing the text of the first edition. We have cited only those sources that were necessary in compiling the new text and have not attempted a comprehensive literature review. If several references appear at the same point in the text, and are not in alphabetical order, they are generally listed in order of the importance of their contribution to the statements being made.

This edition contains substantial information on the relationship between people and other mammals, especially with regard to economic importance and conservation. Such information generally appears at the end of generic accounts. The distributional data provided at the beginning of the accounts usually refers to the original situation in historical time. Changes in distribution caused by human influence are covered at the end of the accounts. We indicate any species or subspecies that, at the time of preparation of the manuscript, was classified in a category of concern by the International Union for Conservation of Nature and Natural Resources (IUCN) or the United States Department of the Interior (USDI), or that was on appendix 1 or 2 of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). By definition, appendix 1 includes species threatened with extinction which are or may be affected by trade. Appendix 2 includes species which, although not necessarily now threatened with extinction, may become so unless trade is subject to strict regulation. It should be noted that all species of the order Primates, the order Cetacea, and the family Felidae are on appendix 2, except for those species on appendix 1. It must be emphasized that these designations are subject to constant change. We followed lists issued by the USDI in 1980 and by the CITES in 1981. The dates given in the text for IUCN classifications refer to the dates of the various individual data sheets in the IUCN *Red Data Book*, issued through 1978.

Many persons contributed to the preparation of this edition. We are grateful to all of those who sent photographs, reprints, or other information, even if their materials were not used. Particularly deserving of mention is Dr. P. K. Das, Director, Zoological Survey of India, who went to considerable trouble and expense to provide many good photographs of museum specimens, which, unfortunately, were not suitable for our purposes. Credit for each photograph that was used is given in its legend.

It has been a great pleasure working with the members of the editorial staff of the Johns Hopkins University Press. They were continually helpful and showed great understanding and patience. In particular we would like to thank Michael A. Aronson, former editor-in-chief, who initially invited us to prepare the book and who was of considerable assistance in planning the project. Much kindness and dedication were also shown by Susan P. Fillion, Jack Goellner, Wendy Harris, James S. Johnston, Mary Lou Kenney, Barbara Lamb, Anders Richter, Glenn Saltzman, and Barbara Tilly. The Composing Room of Michigan was responsible for typesetting and composition and performed especially well in the difficult task of meshing the many illustrations with the text.

In the course of our work we visited a number of zoos in the United States and Europe, mainly in search of new photographs. We were hospitably received and assisted at these zoos by: Heinrich Dathe and Dieter Lau, East Berlin; Heinz-Georg Klös and Peter Rahn,

West Berlin; B. M. Lensink and D. Dekker, Amsterdam; Walter Van den Bergh, Antwerp; Jacques Nouvel and Dominique Paillet, Paris; C.G.C. Rawlins and Michael Lyster, London; Lucille Farella, Bronx; John F. Eisenberg and Jessie Cohen, Washington, D.C.; and Susan Hathaway and Marvin L. Jones, San Diego. Marvin L. Jones also generously provided us with his unpublished list of record longevities of captive mammals.

Teri Ayers, Cheryl Peterson, and Virginia Laahs did extensive research and secretarial work for us. Kenneth E. Kinman went through the previous edition of *Mammals of the World* and pointed out numerous corrections and modifications needed in the systematic aspects of the book. Thu Nowak and Anne Paradiso, our wives, provided valuable clerical assistance. Each of the following persons took at least 10 hours of his or her time to assist us in proofreading: C. Kenneth Dodd, Jr., Linda M. Hurley, Clare J. Kearney, Marilyn Lobe, Lee H. Robinson, Robert J. Sousa, and Ray Stanton. Others who provided an unusual amount of help include: Michael Archer, Wim Bergmans, Anh Galat-Luong, Colin P. Groves, John E. Hill, J. Knox Jones, Jr., Hans E. Kaiser, John H. Miles, Jr., Guy G. Musser, Francis Petter, Jean-Jacques Petter, William E. Poole, and Jane Thornback.

We were fortunate to have had the following outstanding reviewers for the different sections of the manuscript: Robert L. Brownell, Jr., U.S. Fish and Wildlife Service, Cetacea, Pinnipedia, Sirenia; Michael D. Carleton, U.S. National Museum of Natural History, Myomorpha (Rodentia); Joseph A. Chapman, Frostburg State College, Maryland, Lagomorpha; Larry R. Collins, U.S. National Zoological Park, Monotremata, Marsupialia; Joan M. Dixon, National Museum of Victoria, Marsupialia; John F. Eisenberg, U.S. National Zoological Park, Insectivora, Dermoptera; Vagn Flyger, University of Maryland, Sciuromorpha (Rodentia); Alfred L. Gardner, U.S. National Museum of Natural History, Chiroptera; L. David Mech, U.S. Fish and Wildlife Service, Carnivora; Henry W. Setzer, U.S. National Museum of Natural History (curator of mammals, retired), Pholidota, Tubulidentata, Proboscidea, Hyracoidea, Perissodactyla; Ronald O. Skoog, Commissioner, Alaska Department of Fish and Game, Artiodactyla; Richard W. Thorington, Jr., U.S. National Museum of Natural History, Primates; Barbara J. Weir, Wellcome Institute, Zoological Society of London, Hystricomorpha (Rodentia); Ralph M. Wetzel, University of Connecticut, Edentata; and Don E. Wilson, U.S. National Museum of Natural History, Chiroptera. These reviewers made many corrections and suggestions for improvement, but we retain full responsibility for all errors and other problems that may still be present. It should be added that our reviewers were generally given a minimal amount of time to examine the manuscript, and we did not follow all of their suggestions.

We know that there is room for improvement in the book, and we request readers to point out errors and omissions to the Johns Hopkins University Press. It has been an honor and a challenge to try to update and modify the work of Ernest P. Walker, a person of remarkable experience, energy, and devotion to the wild mammals of the world. We hope that he would not be disappointed.

RONALD M. NOWAK  
JOHN L. PARADISO

*Office of Endangered Species  
Fish and Wildlife Service  
U.S. Department of the Interior  
Washington, D.C. 20240*

# EXPLANATION OF WORLD DISTRIBUTION OF MAMMALS CHARTS

For maximum usefulness, it has been necessary to devise the simplest practicable outline of the approximate distribution of the genera in the sequence used in the text. The tabulation should be regarded as an index guide to groups of mammals or to geographic regions. At the same time it gives a good overall picture of the general distribution of mammals.

The major geographic distribution of the genera of Recent mammals that appears in the tabulation is designed to show their natural distribution at the present time or within comparatively recent times. It should be noted that most of the animals occupy only a portion of the geographic region that appears at the head of the column. Some are limited to the tropical regions, others to temperate zones, and still others to the colder areas. Mountain ranges and streams sometimes have been natural barriers that prevent the spread of animals on the lands that are a part of the same continent. Also, many restricted ranges cannot be designated either by letters to show the general area or by footnotes because of limited space on the tabulation. *It therefore should not be assumed that a mark indicating that an animal occurs within a geographic region implies that it inhabits all that area.* For more detailed outlines of the ranges of the respective genera, it is necessary to consult the generic texts.

## EXPLANATION OF GEOGRAPHIC COLUMN HEADINGS

*Europe and Asia* constitute a single land mass, but this land mass has widely different types of zoogeographic areas created by high mountain ranges, plateaus, latitudes, and prevailing winds. The general distribution of Recent mammals can be shown much more accurately by using two columns, Europe and Asia, than with a single one headed Eurasia.

*Most islands are included with the major land masses nearby unless otherwise specified,* though in many instances some of the mammals indicated for the continental mass do not occur on the islands.

With Europe, we include the British Isles and other adjacent islands, including those in the Arctic.

With Asia, we include the Japanese Islands, Taiwan, Hainan, Sri Lanka, and other adjacent islands including those in the Arctic.

With North America, we include Mexico and Central America south to Panama, adjacent islands, the Aleutian chain, the islands in the Arctic region, and Greenland, but not the West Indies.

With South America, we include Trinidad, the Netherlands Antilles, and other small adjacent islands, but not the Falkland and Galapagos Islands unless named in footnotes.

With Africa, we include only Zanzibar Island and small islands close to the continent, but not the Cape Verde or Canary Islands.

*The island groups treated separately are:*

Southeastern Asian Islands, in which are included the Andamans, Nicobars, Mentawis, Sumatra, Java, Lesser Sundas, Borneo, Celebes, Moluccas, and the many other adjacent small islands;

New Guinea and small adjacent islands;

Australian region, in which are included Australia, Tasmania, and adjacent small islands;

Philippine Islands and small adjacent islands;

West Indies;

Madagascar and small adjacent islands; and

other islands that have only one or a few forms of mammals and are named in footnotes.

Seals, sea lions, walruses, and fresh-water dolphins frequent the water areas adjacent to the lands for which they are recorded.

Whales, porpoises, and oceanic dolphins are designated by the water areas they inhabit.

*Footnotes indicate the major easily-definable deviations from the distribution indicated in the tables.*

*Explanation of symbols used in World Distribution Table*

- † The mammals are extinct.
- The mammals occur on the land or in the water area.
- N Northern portion
- S Southern portion
- E Eastern portion
- W Western portion
- Ne Northeastern portion
- Se Southeastern portion
- Sw Southwestern portion
- Nw Northwestern portion
- C Central portion

Examples: N, C for northern and central, Nc for north-central. Numerals refer to footnotes indicating clearly defined limited ranges within the general area.

GENERA OF RECENT MAMMALS	PAGE NUMBER	NORTH AMERICA	WEST INDIES	SOUTH AMERICA	MADAGASCAR	AFRICA	EUROPE	ASIA	SOUTHEAST ASIA ISLANDS	PHILIPPINE ISLANDS	NEW GUINEA	AUSTRALIAN REGION	ANTARCTIC REGION	ARCTIC REGION	ATLANTIC OCEAN	INDIAN OCEAN	PACIFIC OCEAN
MONOTREMATA TACHYGLOSSIDAE																	
TACHYGLOSSUS	4										0	01					
ZAGLOSSUS	5										0						
MONOTREMATA ORNITHORHYNCHIDAE																	
ORNITHORHYNCHUS	6											0E,1					
MARSUPIALIA DIDELPHIDAE																	
MARMOSA	14	0S		0													
MONDELPHIS	15	0S		0													
LESTODELPHYS	16			0S													
PHILANDER	17	0S		0													
DIDELPHIS	18	0		0													
METACHIOPS	20	0S		0													
LUTREOLINA	21			0													
CHIRONECTES	21	0S		0													
CALUROMYS	22	0S		0													
CALUROMYSIOPS	23			0Nw													
GLIRONIA	24			0Wc													
MARSUPIALIA MICROBIOTHERIIDAE																	
DROMICIOPS	25			0Sw													
MARSUPIALIA THYLACINIDAE																	
THYLACINUS	26											02					
MARSUPIALIA DASYURIDAE																	
MUREXIA	28										0						
NEOPHASCOGALE	29										0						
PHASCOLOSOREX	29										0						
MYOICTIS	30										0						
PLANIGALE	31										0S	0N,E					
ANTECHINUS	32										0	01					
PHASCOGALE	34										0						
DASYCERCUS	35										0						
DASYURUS	36										0	01					
SARCOPHILUS	38										02						
DASYUROIDES	39										0Nc						
NINGAUI	40										0						
SMINTHOPSIS	40										0S	01					
ANTECHINOMYS	42										0						
MARSUPIALIA MYRMECOBIIDAE																	
MYRMECOBIUS	43										0S						
MARSUPIALIA PERAMELIDAE																	
PERORYCTES	46										0						
MICROPERORYCTES	47										0W						
PERAMELES	47										01						
ECHYMIPERA	48										03	0Ne					
RHYNCHOMELES	49								04								
ISOODON	49										0S	01					
CHAEROPUS	51										0						
MARSUPIALIA THYLACOMYIDAE																	
MACROTIS	52										0C,S						
MARSUPIALIA NOTORYCTIDAE																	
NOTORYCTES	53										0						

1. And Tasmania. 2. Tasmania only. 3. And the Bismarck Archipelago. 4. Ceram only.



GENERA OF RECENT MAMMALS	PAGE NUMBER	NORTH AMERICA	WEST INDIES	SOUTH AMERICA	MADAGASCAR	AFRICA	EUROPE	ASIA	SOUTHEAST ASIA ISLANDS	PHILIPPINE ISLANDS	NEW GUINEA	AUSTRALIAN REGION	ANTARCTIC REGION	ARCTIC REGION	ATLANTIC OCEAN	INDIAN OCEAN	PACIFIC OCEAN
MARSUPIALIA CAENOLESTIDAE																	
CAENOLESTES	55			0Nw													
LESTOROS	55			01													
RHYNCHOLESTES	56			02													
MARSUPIALIA VOMBATIDAE																	
VOMBATUS	57											0E,3					
LASIORHINUS	58											0E,S					
MARSUPIALIA PHASCOLARCTIDAE																	
PHASCOLARCTOS	59											0E					
MARSUPIALIA PHALANGERIDAE																	
TRICHOSURUS	61											03					
WYULDA	63											0Nw					
PHALANGER	64								0		04	0Ne					
MARSUPIALIA PETAURIDAE																	
GYMNOBELIDEUS	65											0Se					
PETAURUS	66										0	0					
PSEUDOCHEIRUS	67										0	03					
SCHOINOBTES	69											0E					
DACTYLOPSILA	70										0	0Ne					
MARSUPIALIA BURRAMYIDAE																	
CERCARTETUS	71										0	0					
DISTOECHURUS	72										0						
ACROBATES	72											0E					
BURRAMYS	74											0Se					
MARSUPIALIA MACROPODIDAE																	
HYPSPRYMNODON	77											0Ne					
POTOROUS	77											0S,3					
BETTONGIA	78											03					
AEPYPRYMNUS	80											0E					
CALOPRYMNUS	81											0C					
ONYCHOGALEA	82											0					
LAGORCHESTES	83											0					
SETONIX	83											0Sw					
LAGOSTROPHUS	85											0W,S					
THYLOGALE	86										05	0E,3					
PETROGALE	87											0					
DENDROLAGUS	88										0	0Ne					
DORCOPSIS	90										0						
MACROPUS	91										0S	03					
WALLABIA	98											0E					
MARSUPIALIA TARSIPEDIDAE																	
TARSIPES	99											0Sw					
INSECTIVORA ERINACEIDAE																	
PODOGYMNURA	102										0S						
ECHINOSOREX	102								0Se	06							
HYLOMYS	103							0	0	0							
ERINACEUS	105					0	0	0									
HEMIECHINUS	105					0Ne		0W,C									
PARAECHINUS	107					0N		0Sw									

1. Peru only. 2. Chile only. 3. And Tasmania. 4. And the Bismarck Archipelago and Solomon Islands.  
5. And the Bismarck Archipelago. 6. Sumatra and Borneo only.