

The American Society of Mammalogists

presents

## **The Science of Mammalogy**



**Prepared by the Committee  
on Education and Graduate Students  
and approved by the Board of Directors  
of the American Society of Mammalogists**

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## **The Science of Mammalogy**

Mammalogy—the study of mammals—is a field of science that deals with this one group of organisms from the diverse biological viewpoints of structure, function, evolutionary history, behavior, ecology, classification, and economics. Approximately 4,000 species of living mammals and numerous extinct forms comprise the material for study. The approaches to these diverse organisms—including egg-laying echidnas and platypuses, tiny shrews, bats, mice, seals, whales, apes, and elephants—are as varied as the organisms themselves.

Systematic mammalogy is concerned with the identification, classification, and evolutionary relationships of mammals. Mammalian biogeography considers the area over which the members of each taxon are found (geographic distribution), the types of environment that each inhabits (ecologic distribution), and the occurrence and distribution of living or extinct forms throughout geological time (paleontologic distribution). Morphogenesis deals with the development of form and structure; anatomy deals specifically with the structure and identification of body parts including bones, soft organs, and even cells and cellular components. Physiology, on the other hand, is concerned with the function of these body parts. The ecology of mammals is concerned with the relationship of mammals to their natural environment and evolutionary ecology with how these relationships have come to be throughout the history of changing environments. Behavioral and ecological interests include the daily and seasonal patterns of activities, places used as shelter from weather and enemies, kinds and amounts of materials taken for food, and the life history of species—courtship and mating, production, care, and maturation of young, dispersal, and, for those that are successful, courtship and mating. Other investigations concentrate on interactions such as competition, predation, and parasitism. Population dynamics

focuses on factors causing seasonal, yearly, and multi-yearly fluctuations of density in and between populations. Economic mammalogy is an important and diverse field. One phase seeks to manage wildlife populations, such as deer, rabbits, squirrels, and other game species. Another is the control and management of rodents harmful to agricultural crops and of predators, whose natural habits often result in conflicts of interest with man. A third phase seeks to reduce the incidence of diseases transmissible by wild mammals to domestic animals and humans. Certain mammals are essential for controlled experiments in physiology, nutrition, toxicology, pharmacology, and study of many human diseases.

Living mammals of all kinds are of interest for exhibit in zoological gardens. Public museums display specimens of mammals, often in simulated natural habitats. Research museums contain collections of skins, skulls, skeletons, and entire specimens preserved in alcohol or other fluids. Often large series of specimens from many localities afford material for comparative study of local adaptation in physical characteristics and coloration and for determining geographic distribution. For each animal, the place and date of capture, external dimensions, and other useful data are entered on specimen labels or are available in other records with the collection. Such collections are like books in a library, to be used for many kinds of studies.

Formal training in mammalogy is available in the departments of biology, zoology, or ecology in many colleges and universities. Some educational institutions offer a special curriculum on wildlife that includes courses dealing with mammals. Some institutions have a research museum where one or more staff mammalogists supervise a collection of specimens, conduct research on mammals, and give undergraduate and graduate instruction. Besides lectures and laboratory work, some mammalogy courses include experience in both trapping and preparing mammal specimens. Many universities have field research stations where courses and research opportunities in mammalogy are offered.

The college training for a person desiring to work in mammalogy should be broadly biological, but with attention to related fields. It should include: 1) fundamental courses in biology—cellular, developmental, genetics, evolution, and ecology; 2) zoology—introductory, comparative anatomy, physiology, ethology, and classification; 3) botany—introductory and classification of flowering plants; 4) paleontology—a basic course; 5) mathematics—at least through calculus; 6) chemistry—inorganic, organic, and biochemistry; 7) physics—a basic course; 8) statistics; 9) computer science; and 10) foreign languages—German, French, Russian, or Spanish. Other coursework will depend on the special field of mammalogy that the student desires to pursue. In many instances, after receiving a Bachelor's Degree, further training is sought leading to the Master's Degree and often to the Ph.D. in a special field of zoology, wildlife management, or environmental science. Experience acquired during summer as a research assistant or as an employee at an agency where the student hopes to work later can be invaluable.

Persons trained in mammalogy may find employment in several kinds of organizations. College and university instructors often teach two or more zoological subjects in addition to conducting research. Mammalogists in research museums go on field expeditions, care for the collections, and do research. In a zoological garden, mammalogists identify and label the animals on exhibit, supervise their feeding, breeding, and care, lecture to visitors, write popular articles, and conduct research on the captives.

Some mammalogists employed by federal and state game departments work in the field on refuges or special hunting areas, whereas others give attention to game-livestock relationships on lands serving both agriculture and sport hunting. A few extension specialists, usually attached to agricultural colleges, work with farmers or organizations with interests in economic relations of mammals. Consulting firms and governmental agencies also employ mammalogists to analyze the impact of new reservoirs, highways, electric power plants, and other large projects on the mammals and other wildlife that inhabit these disturbed areas.

The number of opportunities and the kinds of positions available vary with time and place. Institutions, departments of government, and business organizations that employ mammalogists include colleges and universities, general and natural history museums, zoological gardens and parks, state departments of natural resources, state departments of public health, U.S. Fish and Wildlife Service, U.S. Public Health Service, U.S. National Park Service, U.S. Soil Conservation Service, U.S. Department of Energy, U.S. Environmental Protection Agency, private consulting firms, private game preserves, Peace Corps, communicable disease centers, environmental education centers, veterinary medicine centers, various national laboratories, animal food companies, and pharmaceutical firms.

At present there are many special research projects financed by agencies of the federal government in which young persons schooled in mammalogy are engaged for the summer or perhaps for one or more years. Permanent positions in the several kinds of organizations listed above become available at intervals as replacements or to fill new positions.

## The American Society of Mammalogists

The American Society of Mammalogists, especially through its quarterly publication, the *Journal of Mammalogy*, serves persons having an interest in the field. Major attention is given to North America but other parts of the world are not neglected. The Society was founded on 3 April 1919, and the first issue of the *Journal* was published in November of that year. When incorporated on 29 April 1920, there were 441 charter members. In 1979 the Society had nearly 5,000 members and worldwide subscribers.

The objectives of the Society are broad and varied: 1) promoting interest in mammalogy by holding meetings to present scientific papers resulting from research on mammals; 2) issuing the *Journal*, *Special Publications*, which are

book-length monographs, and *Mammalian Species*, which consists of individual summaries of all aspects of the biology and an extensive bibliography for each species; 3) promoting research; 4) giving special attention to conservation of mammals threatened with reduction or extinction; 5) providing advice to public or private organizations that deal with mammals.

Affairs of the Society are managed by the officers and the Board of Directors, including a President, two Vice-presidents, a Secretary-Treasurer, a Recording Secretary, a Managing Editor, 15 elected Directors, and the living Past Presidents. Three Trustees appointed by the Board of Directors manage the Reserve Fund. Income from dues, subscriptions, and reserve fund investments is used to publish the *Journal* and to carry on other Society business.

The Society holds an annual meeting, usually in June, for presentation of papers, election of officers, hearing committee reports, and adoption of a budget. The program often includes exhibits of specimens of special interest, displays of photographs of mammals, poster sessions, visits to museums or zoological gardens, and local field trips. Students can benefit by attending these meetings because they will meet other students and established mammalogists and participate in formal and informal critiques of current research. The meetings are usually held at university campuses where costs for room and board are modest.

Between annual meetings, activities are carried on by the officers and by standing committees on Anatomy and Physiology, Bibliography, Conservation of Land Mammals, Editorial, Education and Graduate Students, Grants-in-Aid, Historian, Honoraria, Honorary Membership, Index, Information Retrieval, International Relations, Jackson Award, Legislation and Regulation, Mammal Slide Libraries, Marine Mammals, Membership, Merriam Award, Nomenclature, Program, Resolutions, and Systematic Collections.

Four issues of the *Journal*, constituting one volume, are published yearly. Each issue includes several Feature Articles, briefer General Notes, Reviews of recent books in mammalogy, and a brief section of News and Comments of

general interest to mammalogists. Each volume currently consists of about 900 pages, including an index. Longer term cumulative indices are published separately. A worldwide list of "Recent Literature," prepared by the Committee on Bibliography, is published separately and circulated with the *Journal*.

Membership affords full privileges in all activities of the Society. Each member in good standing receives the *Journal*, is entitled to present papers and participate in the annual meetings, and may purchase publications of the Society at a discount. Life members are exempt from dues and receive the *Journal* as long as they desire. A few persons who have rendered long and distinctive service to mammalogy have been elected Honorary Members.

Three students receive an honorarium each year for outstanding research as judged critically by the Committee on Honoraria for Graduate Students on the basis of manuscripts submitted for the honoraria competition. Winning papers are designated on the program of the annual meeting and presentations are given at a special opening session of the meeting.

Anyone interested in mammals may become a member of the Society. Information on dues may be found in any current issue of the *Journal* (available in most University libraries) and applications for membership may be obtained from any member of the Society, by writing to mammalogy departments at major natural history museums, or by writing to the Secretary-Treasurer of the Society.