Zoology

Zoology, or animal biology, is the branch of biology concerned with the study animals and animal kingdom. The study of zoology includes the interaction of animal kingdom in their ecosystems such as classification, habits, structure, embryology, distribution, evolution, and extinct species.

The word zoology comes from the Greek words *zōion*, meaning "animal", and *logos*, meaning "the study of".

Zoology is broken into many branches because there are so many different ways to study animals; it is also broken into branches based on which animals are being studied

History of Zoology

People have been interested in learning about animals since ancient times. The prominent ancient Greek philosopher Aristotle took detailed notes on animal observations, and inspired other scientists for many hundreds of years.

Aristotle divided animals into two **classes:** one with red-blood and another without such as insects and crustaceans. Then, he further classified creatures into those who were able to walk, flow and swim.

Many universities were founded in Europe in the 16th Century, and by the mid-17th Century, divisions were founded in universities that focused entirely on animal research.

In the 19th Century, the microscope became commonplace in scientific research, and this opened up a whole new realm of possibility; now, the cells of animals could be studied at the microscopic level. Another breakthrough in zoology occurred when the naturalist Charles Darwin developed the theory of evolution

by natural selection. This theory revolutionized zoology and taxonomy (classification).

Now, zoology has become much more complex, where the living things are divided into five kingdoms, in which animal kingdom themselves divided into several smaller categories of Phylum, Class, Order, Family, Genus and, finally, Species.

More recently, the discovery of DNA as life's genetic material led to even more new research and knowledge about the natural world and the evolutionary relationships between animals.

Branches of Zoology

Zoography

Zoography, also called descriptive zoology or zoogeography, is the study of animals and their habitats. It is concerned with the geographic ranges of specific populations of animals, their effects on the ecosystems they live in, and the reasons for a specific spatial distribution of an animal species.

Comparative Anatomy

Comparative anatomy is the study of similarities and differences in the anatomy of different types of animals. Closely related animals like mammals share common bones, even if these bones have been extremely modified in shape. For example, bat wings are essentially very long, thin bones that are homologous to the ones in human fingers. Studying the similar anatomical structures in related organisms provided evidence for evolution from a common ancestor that was later confirmed by genetics research. Comparative anatomy is still used today, often in paleontology, the study of fossils.

Animal Physiology

Animal physiology is the study of the bodily processes that occur in animals that allow them to maintain homeostasis and survive. Homeostasis is the ability of the body to maintain a relatively constant equilibrium even in a changing environment. One example is the regulation of body temperature in mammals. Humans have a normal body temperature of about 37°C (98.6°F), even when the environment is much colder. Animal physiology involves the study of processes like temperature regulation, blood pressure and blood flow, and the release of hormones at specific times in the body.

Ethology

Ethology is the study of animal behavior, usually in regard to their natural environment as opposed to in a lab. Ethology has roots in the work of Darwin, but emerged as a field in the 1930s. It involves the study of animal learning, cognition, communication, and sexuality, and is related to evolutionary biology and ecology. Principles from ethology research are also used in animal training.

Behavioral Ecology

Behavioral ecology emerged from ethology. It is the study of evolution as the basis for animal behavior due to ecological pressures, which are constraints placed upon organisms by their environment, evolution can occur. Behavioral ecologists study animals' competition for resources such as food, territory, and mates and the increased reproductive success that certain traits may give.

Soil Zoology.

Is the study of animals living fully or partially in the soil. Soil communities are extremely complex, with millions of species and billions of individual organisms, ranging from microscopic bacteria and fungi to larger organisms,

such as earthworms, ants and moles, as decomposition of organic matter, which has for example beneficial impacts on soil structure and fertility

Invertebrate and vertebrate zoology

Invertebrate zoology is the sub discipline of zoology that consists of the study of invertebrates, animals without a backbone. Invertebrates are a vast and very diverse group of animals that includes sponges, echinoderms, tunicates, numerous different phyla of worms, molluscs, arthropods and many additional phyla. Single-celled organisms or protists are usually not included within the same group as invertebrates.

Vertebrate zoology is the study of animals with backbones. The Department is organized into four Divisions: Fishes, Amphibians and Reptiles, Birds, and Mammals. Many natural history museums have departments named **Vertebrate Zoology**.

Groupings by Animal

Zoology is also broken down into subcategories based on the type of animal being studied. For example, a distinction is made between invertebrate zoology and vertebrate zoology. There are also many specific terms for each type of animal that is studied. Some examples are:

- **Mammalogy,** the study of mammals. A popular type of mammalogy is primatology, the study of primates.
- **Ornithology**, the study of birds.
- **Herpetology**, the study of amphibians and reptiles.
- **Ichthyology**, the study of fish.

- **Entomology,** the study of insects. Entomology is itself broken down into many categories because there are so many types of insects. Some examples of its subcategories are Lepidopterology, the study of butterflies and moths, Myrmecology, the study of ants, and Coleopterology, the study of beetles.
- **Anatomy** The study of the internal structure of animals
- **Cytology** The study of cell structure, its organelles, and their functions
- **Ecology** The relationship between the organisms and their surrounding environments
- **Embryology** The study of the development of eggs after fertilization
- **Evolution** The study of the origin of animals and their adaptation to their environments over time
- **Genetics** The study of heredity and its variations
- **Geology** The study of the earth and life as recorded by fossils in rocks
- **Histology** The study of the structure and functions of tissues
- **Morphology** The study of the form and structure of animals
- **Neonatology** The study of new born animals to the age of two months
- **Paleontology** The study of fossils and extinct animals
- **Physiology** The study of the functions and various organs in animals
- **Taxonomy** The study of the classification and the naming of organisms