Ethology Encyclopedia Article

Ethology

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Ethology

The study of behavior is divided into two sub-categories: learned behavior and innate behavior. Ethology is the study of innate, or instinctive, behavior. Scientists in this field study the mechanisms underlying specific behavior, as well as their evolution. Ethologists were the first to systematically and scientifically measure the natural activities of animals.

Ethology had its origins in a middle ground between the behaviorists, who believed that all behavior must be learned, and the classicists, who held that all behavior was inborn. According to ethologists, animals are genetically predisposed to learn behaviors that benefit their species, but this natural behavior can be modified, within limits.

The field of ethology was pioneered by three prominent European scientists during the first half of the twentieth century: Konrad Lorenz, Nikolaas Tinbergen, and Karl von Frisch. Lorenz, an Austrian scientist and physician, is referred to as the founder of modern ethology. He discovered the process of imprinting, by which newly hatched ducklings and goslings follow the first animal they see and hear as if it was their mother. Lorenz also conceived of the fight or flight response, a theory that attributes an animal's reaction to conflict as a compromise between two inner drives: to attack or to flee. Nikolaas Tinbergen began by studying the homing behavior of wasps and later worked with Lorenz. Tinbergen applied ethological concepts to anthropology, the study of human interactions, by linking human instinct to rituals. Karl von Frisch studied the sensory systems of fish, discovering that fish are able to see many colors and have relatively sensitive hearing. Von Frisch also demonstrated that honeybees have a sophisticated ability to use the sun's position for orientation and to utilize different dances to indicate a target's direction and distance from the honeycomb. These three researchers won the Nobel Prize in Physiology or Medicine in 1973 for their combined contributions to the field of ethology.

Neuroethology, a discipline that originated in the 1960s, combines ethology with neurobiology. It draws connections between outwardly observable, innate behaviors and the activity of particular regions of the brain.

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