# THE ROLE OF ETHOLOGY IN THE NATURAL DEVELOPMENT OF SERVICE ANIMALS

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**Abstract.** The article discusses the science of ethology, which is an inseparable part of zoology. It analyzes the behavioral mechanisms and natural characteristics of animals from all angles, expands the human understanding of integral processes in the natural world, and highlights the role of ethology in developing a holistic and humanistic view of behavior and character. The article provides analytical information on these topics.

**Key words**: ethology, instinct, vegetative, neurophysiology, evolution, behaviorism, zoology, ontogenesis, microevolution, individual, zygote, population, physiological, psychology.

Nowadays, the domestication process of widely spread and well-known domestic animals, which began in ancient times, resulted in the domestication of animals that have found a special place among themselves, and the animal that has found a unique place among domestic animals is the dog.

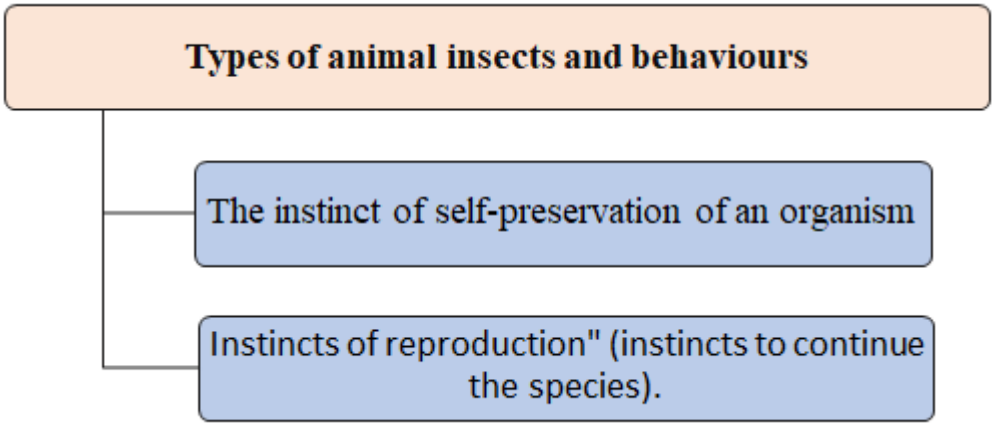
Humans have advanced the intelligence, sense of smell, good vision, hearing, speed, and agility of dogs. They have brought them closer to themselves than to other animals. The symbiosis between humans and animals, meaning the mutual benefit of each other, has led to the use of animals only for hunting and herding purposes during the period of mutual closeness. In other words, ancient humans domesticated animals to perform physical work and to obtain products such as milk, meat, and skin.

Ethology is a scientific field that studies the behavior, natural environment, and social interactions of animals, and is one of the branches of biology that focuses on understanding the behavior and instincts of animals from a genetic standpoint. The term "ethology" comes from the Greek words ethos, meaning "character" or "nature," and logos, meaning "study" or "science." Ethology is primarily concerned with analyzing the genetic components (i.e. innate or instinctual aspects) of animal behavior and studying the evolution of these behaviors. The field was first established in biology in 1859 by French zoologist Jean-Baptiste Lamarck, and it focuses on the unique characteristics and behaviors of different animal species

The study of how animals adapt to natural conditions and the improvement and learning of their basic movements has a long history. In the 18th and 19th centuries, naturalists, such as the German scholar G. Riemarus and French scholars J.L. Buffon and J.A. Fabre, and partly experimental materials of the French

zoologist F. Cuvier, identified and identified the types of instinctual behaviors. They directly influenced the development of Darwin's theory of evolution. A lot of evidence collected about animals in their natural habitats served as a basis for identifying the main types of temperament and behavior and analyzing their instinctual reactions.

An instinct is a concept that consists of innate reflexes that occur automatically without conscious control, such as the instincts for feeding and reproducing. It constitutes the basis of the animals' ability to adapt, natural interactions, and elementary reasoning. Animals have their own specific instincts and orientations. (Picture 1.)




*1st picture. The unique characteristics of animals' instincts.*

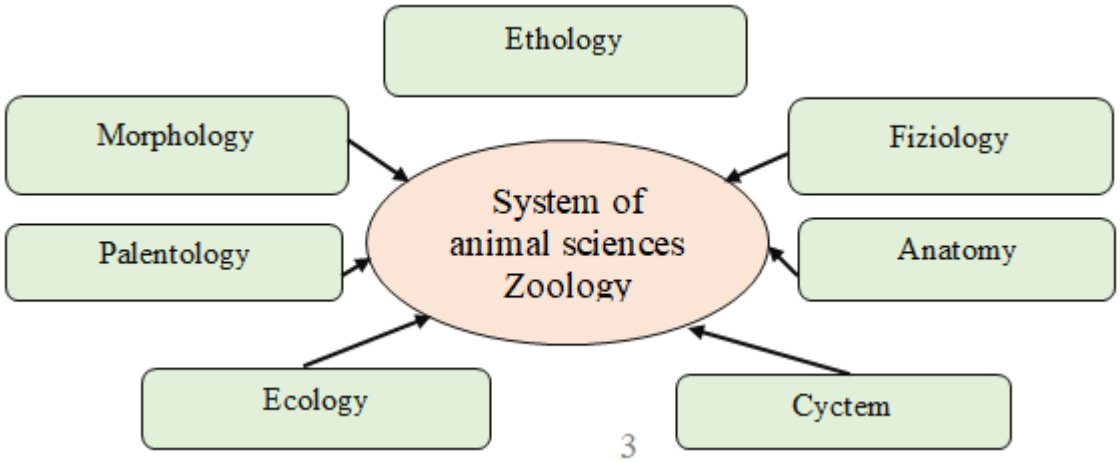
In addition, there are several types of instincts with different directions, each of which actively responds to stimulating factors in its own direction. For example, vegetative instincts regulate the internal secretory functions of the organism, such as saliva secretion, producing necessary amounts of fluids from various glands, digestion system, etc. Ethical instincts include maternal instincts, protection instincts, recognition instincts, sexual instincts, parental instincts, hunting instincts, and so on.

Charles Darwin emphasized the importance of natural selection and variation in determining the behavior and physical characteristics of animals. He provided examples of instinctive behaviors that could be shaped by the natural process of selection, such as the development of particular behavioral traits in response to environmental factors. The research of ethologists such as D. Spalding of England, C.O. Whitman of the United States, and O. Heinroth of Germany has had a significant impact on the development of ethological theories. Heinroth's research, in particular, has demonstrated the foundational nature, ongoing expression, and species-specificity of certain forms of behavior.

Ethology as a scientific field that studies animal behavior based on genetics and variability was established in the 1930s, distinguishing itself from other scientific approaches that had more of a physiological and psychological focus,

such as zoopsychology, behaviorism, and others. Its main founders are considered to be the Austrian zoologist K. Lorenz and the Dutch zoologist N. Tinbergen. The initial observations of the former (1931-37) were based on the research of American scientists C. Whitman and V. Craig, Germans J. von Uexküll and O. Heinroth, and other experts in the field, including Frenchman J. Leuba, Americans G. Jennings, V. McDougall, and others. Lorenz, Tinbergen, and their colleagues (including Dutchman G. Baerends, Germans V. Eibl-Eibesfeldt and P. Leyhausen, and others) developed the principles of the instinct theory in their works, focusing on instinctive movements and behavior

The development and formation of the goals of ethology lasted from the mid-1930s to the end of the 1950s in Europe. In the United States, it was met with sharp opposition from comparative psychologists and behaviorists. As a result, in the 1960s and 1970s, there was a trend towards changing the fundamental concepts of the Lorenz-Tinbergen teachings and synthesizing them with the principles of other biological and natural sciences. Ethology emerged as a separate discipline, which is characterized by an integrative and developmental approach that takes into account the whole spectrum of animal behavior, from instinctive to learned, and aims to study the behavior of animals in their natural environment. Ethology is based on the principles of evolutionary biology and is closely related to physiology, ecology, population genetics, and behavioral genetics. Currently, ethology is closely related to experimental psychology and other fields of science, and its relationships are strengthening (Picture 2.)




*2nd picture. The relationship of ethology with other sciences.*

The natural behavior and movements of animals in their natural environment are considered the traditional research objects of ethology. The complete description of the specific behaviors and movements of animals, which are characteristic of different species (determined using objective evaluation methods, such as taking pictures, identifying regular repetitive actions, and determining the timing of various states), serves as the basis for creating a list (ethogram) of behaviors that are specific to each species. The ethograms of different types of

animals are analyzed comparatively, and conclusions are drawn. This serves as a basis for studying the evolutionary aspects of their behaviors and movements. For this purpose, ethologists use various animals, including primates, which are similar to humans. Due to the high efficiency of this method, some ethologists have started to use it to study human behaviors and movements as well.

When studying the development of individual organisms and observing the behavior of animals, ethologists make wide use of laboratory methods. One such method is to rear animals by subjecting them to certain ecological factors in order to study the animal's behavior. This method is particularly useful in studying the ontogeny of behavior and is important in identifying critical stages in an animal's development.

Ontogeny (from the Greek words "ontos" meaning "being" and "genesis" meaning "origin") refers to the series of changes an organism undergoes from the beginning of its development until the end of its life. The term was coined by the German scientist Ernst Haeckel in 1866. Ontogeny begins with the formation of the zygote, the single cell resulting from the fusion of gametes.

In organisms that reproduce sexually, the new organism develops from the division of the zygote into two cells, then four, and so on until it forms an embryo. During this process, the organism undergoes changes that result in the development of all its organs and systems. Ontogeny reveals all the morphological, physiological, and functional processes that occur during an organism's development, including changes in the quantity and quality of its interrelated parts.

Many instinctive movements in the organism occur in response to certain triggering stimuli called "releases". These releases are the first time the animal encounters them and are not learned through individual experiences. For example, the red spot on the empty belly of a male stickleback fish triggers the aggressive behavior of other male sticklebacks. The mechanism that ensures the emergence of a specific reaction under a particular stimulus is called a "fixed action pattern mechanism". To identify specific triggers, a certain type of activity called imprinting is required. In this case, if this stimulus affects this animal during a certain "sensitive" period of ontogeny after hatching, it will be beneficial to them even when they grow up.

Recently, it has become known that certain "sensitive" periods are characteristic of some behavioral patterns in animals. For example, in birds, the formation of migration ability is observed during such periods. Understanding the communication mechanisms and learning of animals plays an important role in the process of recognizing basic stimuli and imprinting. The high-level basic stimuli (stimuli) of these are shown by their own unique visual and color characteristics, characteristic emotional signals, and the triggering of relevant reactions of other individuals without prior training.

The notion that certain behaviors of animals are innate and instinctive has been suggested by Lorenz and later elaborated on by Tinbergen in terms of both external and internal factors, such as hormones, temperature, and other stimuli.

According to this hypothesis, there are internal mechanisms that control instinctive behavior, which are shaped by the accumulation of a certain "movement energy" specific to a particular drive (hunger, thirst, etc.), which is processed in relevant nerve centers. The buildup of this energy beyond a certain threshold triggers the expression of instinctive behavior, including the search phase of the behavior. This phenomenon is observed not only in birds but also in other animals that exhibit a wide range of behavioral variability.

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