

Ecology as an Independent Science

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Annotation: *This article examines ecology as an independent science. The article describes a brief history of ecology, the basic concepts. The author analyzes the subject, tasks, development trends of ecological science.*

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Introduction

The word "ecology" has become a part of colloquial speech these days. It is used to refer to natural processes in general, as a synonym for the state of the environment, and even as a brand. Of course, this is all true. But ecology is also a science that is no less worthy of attention than chemistry, biology, physics. In this article we will try to briefly describe what ecology is from this point of view.

Let's start with the definition. Literally the word itself means study at home. "Home" for living objects is any habitat, be it a planet, city, forest, other living organism, or a moss bump in a swamp. The definition of ecology is as follows: it is a science that studies the interaction of living organisms with each other and with the environment.

Alexander von Humboldt is considered to be the "father" of ecology. He was the first to study the relationship between organisms and the environment. He established the dependence of plants on the climate in which they live, described the phenomenon of a change in natural zones depending on latitude and height above sea level (now this is called geographic zoning).

Later, Warming Johannes Eugenius created biogeography - a synthesis of botanical geography and zoogeography, a discipline that considers abiotic factors, that is, the effects of inanimate nature, on a par with biotic, that is, associated with living organisms, from the point of view of the theory of natural selection.

The term "ecology" was introduced by Ernst Haeckel in 1866.

The end of the 19th century was a period of flourishing ecology, largely due to discoveries in the field of chemistry (primarily due to the discovery of the nitrogen cycle).

In 1875 Eduard Suss proposed the term "biosphere" to denote the system of living organisms covering almost the entire territory of the Earth, and in the 1920s Vladimir Vernadsky described it in detail in his work "Biosphere" (1926). The same scientist first proposed the concept of "noosphere" to designate a part of the planet, in one way or another changed by human activity and, from his point of view, is the next stage in the development of the biosphere.

The object of the study of ecology is species, populations, biogenesis, biogeocenoses and the biosphere as a whole.

A species (Latin species) is a taxonomic, systematic unit, a group of individuals with common morphological, biochemical and behavioral characteristics, capable of interbreeding, giving fertile offspring in a number of generations, regularly distributed within a certain area and similarly changing under the influence of environmental factors. A species is a really existing unit of the living world, the main structural unit in a system of organisms.

Population is a collection of organisms of the same species living in the same territory. A population is a group of individuals capable of more or less stable self-reproduction (both sexual and asexual), relatively isolated (usually geographically) from other groups with representatives of which (during sexual reproduction) genetic exchange is potentially possible. From the point of view of population genetics, a population is a group of individuals within which the probability of crossing is many times greater than the

probability of crossing with representatives of other similar groups. Usually people speak of populations as groups of a species or subspecies.

A biogenesis is a collection of living organisms that occupy a certain territory and are interconnected.

A biogeocenosis is a set of biogenesis, including communities of living organisms, factors of inanimate nature in a given territory.

The biosphere is the shell of the Earth occupied by living organisms, under their influence and taking part in the process of their life. The biosphere is also called the "film of life".

Environmental factors affecting a living organism are divided into 3 groups:

1. Abiotic - factors of inanimate nature;
2. Biotic - factors of living nature;
3. Anthropogenic - factors of human and technological impact.

Living organisms, as a rule, live in those environmental conditions in which the combination of factors affecting them is most favorable. Both the lack and the excess of the impact of any factor have a negative, depressing effect on a living object.

The term "ecological problem", which we now, unfortunately, hear more and more often, means a change in the natural environment as a result of human impact, leading to a deterioration in the structure and functioning of nature. Environmental problems are subdivided into:

- Atmospheric;
- Water;
- Geological and geomorphological;
- Biotic;
- Complex.

Despite such names, the cause of any environmental problem is the inability of a person to live in harmony with nature, the irrational use of resources, the inability to limit needs.

"After all, if the stars are lit, it means that somebody needs it?" - such a question was asked by the Soviet poet Vladimir Mayakovsky to his contemporaries. What is the meaning of ecology?

First, it summarizes the valuable fundamental knowledge about the structure of animate and inanimate nature, obtained by us from other sciences, helps to understand the basic laws of its functioning.

Secondly, ecology can provide an answer to the question that worries the minds of many: why today nature is in such a disastrous state and how can we change anything?

Thirdly, the results of environmental studies sometimes find application in the most unexpected, remote areas, such as economics and sociology. It turns out that in a number of cases the behavior of people in a group, changes in the population of the country, and even global economic problems are very accurately described by the already known laws of ecology.

Perhaps, not all the discoveries of ecologists are now able to correctly assess humanity. But in the future, they are likely to be of real benefit.

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