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DESCRIPTION OF ECOSYSTEMS

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ABSTRACT

The modern science of ecology is becoming one of the most important sciences for life and economics. Ecology has become the most necessary and important science for modern man, for life. Without studying this science, it is impossible to effectively use natural resources without following its laws. In this article, the concept of an ecosystem and its description are investigated from a scientific point of view.

KEYWORDS: *Ecology, Ecosystem, Ecological Culture, Natural Resources, Biology.*

INTRODUCTION

The science of ecosystem ecology studies ecosystems common on earth, in Uzbekistan, including in the Ferghana Valley. their components, their functions, the productivity of changes, etc. The purpose of their study is to study all the patterns of ecosystems in order to increase their productivity, ecosystem management in general.

There are many and varied relationships between living beings and between them, that is, between them and the external mukhits, which are studied by their independent sciences[1]. Example: plant botany, animal zoology, soil environment, soil science, hydrobiology of the aquatic environment, etc. It is worth noting that at present the formation and development of all branches of the national economy depends on ecology and the environment. Therefore, there are several aspects that do not apply to other areas of ecology. The science of ecology is inextricably linked with other sciences, using their methods and materials.

MAIN PART

Living organisms found in nature and the dead rocks that surround them will be inextricably linked to each other. Any biological systems, large and small, include moving organisms that are inside them, controlling their relationship with each other and with environmental factors and providing energy flow in the biotic structure within this system for the exchange of substances between the living and the dead, units are called ecosystems or ecosystems.

An ecosystem is the main functional unit of ecology, which is influenced by living organisms and environmental factors. The study of life on the earth's surface and the laws of nature at the ecosystem level.

The biocenosis and its biotope are inseparable elements that affect each other and form a stable ecological system to a certain extent. Intensive metabolism of substances and energy within the components of the ecosystem is its determining factor. An ecosystem is a thermodynamically open system that stagnates in time. The ecosystem consists of two components, the organic part of which forms the species of living organisms in biocenoses, the inorganic part -the biotope, the habitat of species.

The ecosystem-biotope - consists of a biocenosis, the system of which includes all abiotic and biotic factors of the ecosystem from the point of view of terrain, climate, Botanical Zoological, soil, hydrological and geochemical points of view. Most ecosystems were formed in the process of long-term development and adaptation of species to their habitat. Ecosystems combine to form a biosphere. The term "ecosystem" was first proposed by the English ecologist A. Introduced into science by Tansley (1935). During this period V.N. Sukachev's term "biogeocenosis" is also included. Biogeocenosis va ecosystem atamalaring tushunchasi bir-biriga yakin, lekin bir-birini kaitarmaidi. Tyla shkhshash emas, ikkala ҳolatda ҳam tirik organizmlarning yigindisi va ularning bir-birlari ҳamda muҳit bilan munosabatini ifodalaidi.

V.N.Sukachev believes that biogeocenosis is a simple concentration of living organisms in the habitat and a kind of form of life in constant communication with the environment. Biogeocenoses can occur in different places on the earth's surface. They are divided into simple (small reservoirs) and complex (deserts, steppes) biogeocenoses. The components of ecosystems and the processes occurring in them consist of a biological unit, energy intake and metabolism. Here, the energy coming from the sun is directed in one direction and is changed by a biological unit, turning into a qualitatively high and complex organic substance and turning into a concentrated form of energy. All ecosystems and the biosphere are also considered an open system. Ecosystems that are part of the biosphere control the flow of energy, immigration and emigration of organisms into it, as well as the entry and exit of energy. Organisms that have left the ecosystem and moved to other ecosystems (animal migration) leave their specific atoms where they lived before (metabolic waste), bringing with them some of them to the second ecosystem.

RESULTS AND DISCUSSIONS

In some ecosystems, emissions of the substance are very high, and constancy for the land is maintained by the influx of foreign substances. Such cases can be observed in the river and its tributaries, whose water constantly flows down the mountain. Substances falling from the surrounding slopes drain with water into the lower zones[2]. But in other ecosystems, metabolism becomes autonomous in terms of their arrival and departure. For example, substances and energy generated in ecosystems of deserts, steppes, forests circulate in this zone itself. Substances in ecosystems are not infinite. It is only as a result of their exchange that material, energy resources for life are provided. Metabolism, as well as energy transfer, depend on the constant functional activity of the body[3].

One of the main characteristics of ecosystems is the relationship between autotrophic and heterotrophic organisms that occur in terrestrial, freshwater, marine or artificial ecosystems. According to the trophic (nutritional) structure, ecosystems are divided into the following stages, namely:

1) high autotrophic (independent feeder) stage or “green stage". This stem consists of plants or parts of them.they accumulate organic substances in their body;

2) on the lower heterotrophic stem (feeding by others), various residues (leaf, branch, root) accumulated in the soil decompose with the help of moisture, substances pass from one species to another and form complex compounds.

From a biological point of view, the following components can be distinguished in the ecosystem structure: a complex of autotrophic organisms – producers (creators), green plants. Heterotrophic organisms are animals that live off macro-microconcentrates or phagotrophs, ready-made primary products[4]. Saprophytes penetrate into complexes of organisms that transfer them to a humus state – reducers or destructors - and form their bacteria, fungi, organisms that feed on the simplest structured and dead organic substances.the patterns of trophic structure are divided into two categories: biophages – feeding on living organic matter, and saprophytes -feeding on dead organic matter. Inside the biophages there are phytophages – herbivores, humans, parasites-primary consults, predators, secondary, tertiary consults.

Most of the biogenic elements (carbon, nitrogen, phosphorus) and organic compounds (carbohydrates, proteins, fats) inside ecosystems are not only inside living organisms, but also on their surface. They create a constant flow of energy between living and dead rocks. 3 living components of ecosystems (producers, phagotrophes and saprophytes) can be considered as 3 functional worlds of nature. How they do this depends on the types of power and the source of energy use[5]. Naturally complex ecosystems, such as desert, steppe, hill, mountain, lake, forest, are suitable for studying in 2 ways, namely: 1) in a holistic (Greek holos – the whole whole) way.at the same time, the integral properties of the energy entering and leaving the ecosystem, as well as various substances, as well as their components, if necessary, are also investigated; 2) megological (from Greek.Heritage – part) the direction in which the composition of the main parts within an ecosystem is studied, and the data obtained from it is distributed, applied to conclusions from another part of the ecosystem.subsequently, ecologists apply an additional experimental method and modeling methods to the study of the ecosystem.

Every year, organisms undergoing photosynthesis occurring on Earth receive 10^{17} гр grams (100 billionT) form organic substances. Approximately the same amount of living matter is oxidized during this time and turns into SO2 and N2O during the respiration of organisms.in past geological periods (from the beginning of the Cambrian to 600 million, 1 billion) part of the organic matter formed by organisms was not used for respiration and did not decompose, accumulated in the form of residues and preserved in the form of subsurface. About 300 million. years ago, as a result of excessive accumulation of organic products, various subsurface resources (coal, oil, gas) were formed. In nature, substances formed by autotrophs are crystallized by heterotrophs, and constant stagnation occurs in the medium. Any biological oxidation that gives energy is called decomposition.

The fermentation process is also an aerobic state in which oxidized organic substances play the role of electron acceptors (oxidizers).

Aerobic respiration is the process of organic matter synthesis (SN3O), which includes all organisms that undergo photosynthesis.

The process of rotting occurs in the unity of abiotic and biotic factors. For example, a fire in desert, steppe, forest areas is a kind of limiting factor, as well as “decomposing agents" of detritus. The final decomposition of plant and animal residues is carried out by heterotrophs or saprophages.

Observations have shown that the bulk of animal remains and 25% of marine plants decompose in an average of 2 months, while the remaining 75% of plants consist mainly of fiber and decompose very slowly. After 10 months, 40% of this balance remained. The most resistant to rotting product is humus or humus substances. Slow mineralization of humus in the detring ecosystem, humus and other organic materials that undergo the process of rotting are of great importance for increasing soil fertility, improving soil structure, creating conditions for plant growth and development.

Decomposition of organic residues in the ecosystem is a long and complex process. The nutrients contained in the Dead Organic Matter in this process return to the metabolism within the ecosystem, while the complex energy nutrients in the ecosystem, detritus nutrition, create a product for the future of organisms.

In the process of rotting and decomposition within the ecosystem, human activity also plays an important role, namely: 1) burning of organic substances (coal, gas, oil); 2) decomposition of humus in the soil during the development of agriculture at a rapid pace; 3) precipitation in the forests of the world, as a result of burning wood, the amount of certain gases from the release of CO_2 and other gases into the atmosphere increases.

In addition to the supply of energy and metabolism to the ecosystem, it also has powerful information networks. It receives physical, chemical signals of the environment that connect the internal combustion engine networks, and the process depends on the state of the environment, the mechanism of its internal control[6].

An example of this is behavioral mechanisms that determine the number and thickness of a population in a subsystem or system of “predatory prey". Such control mechanisms have a complex structure during the long evolutionary development of control and depend on how much its internal mechanisms change depending on the effective ambient temperature. Ecosystem stagnation is a characteristic of each body that causes it to return to its original position after this body is out of balance. From an ecological point of view , stagnation is divided into 2 types:

1) Resistant stagnation. Ecosystems with a disturbed structure and function have the ability to resist destruction, change, providing their structure and function.

2) Elastic stagnation. An ecosystem whose structure and functions are disrupted has the ability to restore its normal state. An ecosystem is not equivalent to a living organism because of its qualitatively new properties, it is the highest structure of a living organism, but not a superstructure, an external structure of the organism.

CONCLUSION

There will be 2 types of communications in managing ecosystem stagnation. The first is positive feedback, which determines the degree of growth and survival of organisms, despite the increase in deviations from the general rule. The second is negative feedback, which reduces fluctuations at the energy input.

In conventional systems, for example, the temperature of a thermostat is controlled through an oven in it, and the temperature of animals is controlled through the brain. In large ecosystems, metabolism and energy flow occur spontaneously (without constant force), controlled by feedback signals.

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