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FACTORS INFLUENCING THE DECLINE OF BIODIVERSITY IN AZERBAIJAN

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ФАКТОРЫ, ВЛИЯЮЩИЕ НА СОКРАЩЕНИЕ БИОРАЗНООБРАЗИЯ В АЗЕРБАЙДЖАНЕ

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Abstract. The natural vegetation and its flora of Azerbaijan are exposed to anthropogenic influences, leading to a decrease in the number of a number of valuable plant individuals or their complete destruction. The main result of the factors affecting the reduction of biodiversity in Azerbaijan is the disruption of the ecological balance of the country, which threatens rare and endemic species. As a result of the reduction of biodiversity, the ecosystems of Azerbaijan are weakened and rare species are at risk of extinction. The sustainability of natural resources and the environment is seriously threatened. As a result of the disruption of ecosystem stability, the ability of local populations to use natural resources is limited and the resilience of ecosystems to climate change is reduced.

Аннотация. Естественная растительность и ее флора Азербайджана подвергаются антропогенному воздействию, приводящему к уменьшению численности ряда ценных растительных особей или полному их уничтожению. Основным результатом факторов, влияющих на сокращение биоразнообразия в Азербайджане, является нарушение экологического баланса страны, что ставит под угрозу редкие и эндемичные виды. В результате сокращения биоразнообразия экосистемы Азербайджана ослабевают, а редкие виды оказываются под угрозой исчезновения. Под серьезной угрозой оказывается устойчивость природных ресурсов и окружающей среды. В результате нарушения стабильности экосистем ограничиваются возможности местного населения использовать природные ресурсы и снижается устойчивость экосистем к изменению климата.

Keywords: biodiversity, ecology, species protection, Azerbaijan.

Ключевые слова: биоразнообразие, экология, охрана видов, Азербайджан.

The conservation and sustainable use of natural resources is one of the most important and global problems of the 21st century. Changes in temperature and precipitation as a result of global climate change, the competition of foreign animal and plant species with native species, their suppression or extinction, have a negative impact on biodiversity. Biological diversity means the diversity of all living organisms, microorganisms, plants and animals on earth. Biodiversity, an

integral part of natural resources, is a huge but still undervalued resource. It covers all ecosystems and is the basis for the existence of life. Currently, there are more than 15 million living species in the world, and every day about a hundred of them are destroyed without recovery, and their destruction is often not felt. However, humanity suffers enormous damage from such losses. The natural wealth of the Earth is decreasing day by day. Biological diversity is not only the diversity of species, but also the totality of features that allow the entire living world to survive and develop [1, 3, 5].

A number of measures and methods are being implemented in Azerbaijan to prevent the decline of biodiversity. These methods are implemented both at the state level and in cooperation with international organizations. Many reserves, sanctuaries and national parks have been created to protect biodiversity. Rare and endangered species are protected in specially protected natural areas and their survival in their natural environment is ensured.

According to the “Global Assessment of Biological Diversity”, more than 30,000 animal and plant species are threatened with extinction. Throughout geological history, the rate of extinction of mammals in the last 100 years has exceeded the maximum rate by 40 times. In the last 400 years, 484 animal species and 654 plant species have become extinct [5, 6].

The main reasons for the rapid decline in biodiversity are based on a number of factors. The destruction of biodiversity is related to the development of a market economy, widespread human migration, the development of international trade and tourism, rapid population growth and economic development, and the intensification and spread of natural water, soil, and air pollution.

The main causes of animal species extinction are the introduction of new species accompanied by the suppression or destruction of local [2].

The extent of these factors varies depending on the ecosystem. Changes in the natural appearance of the Earth's surface are more intense in the tropical forest zone, and less in temperate, boreal and arctic regions, and the volume of introductions of exotic species depends on the nature of human economic activity.

Regions that are not affected by human activity generally receive fewer species introductions. The global decline in biodiversity in recent years is one of the most important ecological issues. Estimates based on animal and plant fossil data indicate that the extinction of mammal and bird species is occurring at a rate of one species every 500–1000 years [7].

Data on the decline of living resources are regularly provided by the World Conservation Union Nature, which publishes the Red Book of Azerbaijan, which lists species on the verge of extinction. Due to the lack of data, it is impossible to determine the number of species that have become extinct over the past 30 years. The main directions of anthropogenic impact on biodiversity can be divided into two main groups: direct and indirect. Both effects are largely determined by the conditions of economic development of society. Direct impact can be attributed first to the direct destruction of animal and plant populations, and then to the destruction of the natural ecosystem [8].

The first case includes the illegal excessive hunting of animals and destruction of plants, the use of toxic chemicals in agriculture and forestry to combat pests and weeds, the loss of animals in engineering and construction structures, the destruction of “dangerous and harmful animals and plants” by the population; the illegal collection of living organisms in private collections [4].

The second type of impact is the use of natural ecosystems in agriculture, the application of inefficient methods in forestry that lead to a decrease in biodiversity, various types of construction work, the extraction of minerals, the draining of swamps, the exposure of soils to water and wind erosion, hydraulic construction work, the construction of reservoirs, and the removal of small rivers.

The indirect impact can be conditionally divided into 3 directions:

1. Physical impact, i.e. change in the physical properties of the environment, change in climate and weather; change in the physical properties of soil and subsoil; regulation of river flow; withdrawal of water from water bodies; conducting seismological exploration and blasting operations; impact of electromagnetic fields, impact of noise; thermal pollution.

2. Chemical impact is the pollution of water, air and soil, which includes industrial enterprises, transport, accidental release of petroleum products into the environment, household waste, agriculture (herbicides, pesticides, chemical fertilizers), the use of toxic chemicals in pest control, military facilities, as well as the global movement of pollution, including “acid rain”.

3. Biological impact is determined by the disruption of the structure of natural biocenoses as a result of the purposeful and unintentional introduction, the spread of alien species, the spread of diseases in animals and plants, the open interference of genetically modified organisms in agro-ecosystems, eutrophication of water bodies, the destruction of animal food resources, etc. [3].

Typically, various types of human activity (agriculture, construction, mining, transport, industry, recreation, etc.) have a direct and indirect impact on the environment and, in turn, on biodiversity. Thus, they can have an impact in several directions. Therefore, anthropogenic impact is usually complex, accompanied by synergistic and cumulative effects.

The conversion of forests and grasslands to cultivated land leads to local extinctions of plant and animal species. Recent global studies have shown that habitat transformation and degradation are the main factors responsible for the extinction of 83% of mammals and 85% of birds (of the total) [1, 2].

The impact of climate change on biodiversity is due to the expansion of habitats for agriculture, deforestation, dam construction, mining, and urban development. Some species that are threatened with extinction are more vulnerable to climate change. Because frogs reproduce in water, changes in precipitation may cause their birth rates to decline [1].

Rising environmental temperatures are closely linked to the increase in fungal diseases, which in turn is leading to a decline in amphibian populations.

In arid ecosystems, climate projections predict that deserts will become hotter and drier. Rising temperatures and heat stress pose a significant threat to organisms that are already at critical levels. Changes in precipitation patterns will also have a significant impact on the biodiversity of arid areas [6].

The main result of the factors affecting the decline of biodiversity in Azerbaijan is the disruption of the country's ecological balance, which puts rare and endemic species at risk. As a result of the decline in biodiversity, Azerbaijan's ecosystems are weakened, and rare species are facing the threat of extinction. As a result, the sustainability of natural resources and the environment is seriously threatened. As a result of the disruption of the stability of ecosystems, the local population's ability to use natural resources is limited and the resilience of ecosystems to climate change is reduced.

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