Conservation of the Earth's biodiversity in the era of environmental challenges

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Abstract. Biodiversity conservation is the creation of the necessary conditions for the preservation and restoration of the natural set of species of living organisms within certain landscapes and ecosystems through full compliance with established environmental standards and norms when using various components of the natural environment in various spheres of the economy and production. This is a key factor in ensuring the necessary availability of biological resources in conditions of a complicated ecological situation with irrational use of natural resources and non-observance of natural ecological conditions for the preservation and life of various living organisms. For this purpose, it is necessary to form a system of "green" economy, built on the repeated use of components of the natural environment and the use of biological resources in accordance with the natural regime of their restoration.

1. Introduction

Natural biodiversity is complemented by the socio-economic needs of maintaining many types of domesticated and cultivated forms of living organisms within the created natural and economic complexes at a level that ensures the development of productive production and the formation of ecologically safe living conditions for the population at the federal, regional and local levels.

To a large extent, the specified natural production structure of the "green" economy is based on the creation of sustainable interaction between various industries, including the agro-industrial complex (AIC) in the form of balanced interaction. This interaction consists in a scientifically grounded mode of extracting a certain part of biocomponents from the natural environment with the implementation of response measures aimed at preserving it and restoring the qualitative and quantitative characteristics of the used biomass.

The nature of biodiversity is determined by three main parameters:

- Violation of the natural state of the habitat due to irrational use of natural resources and a high level of pressure from various industries, and in particular from the agro-industrial complex.
- Lack or lack of nature-saving technologies in the use of land, as well as in the extraction of minerals and the formation of artificial biocenoses.
• A high level of emission and dumping of waste as a by-product of economic activity on the part of subjects of various economic and industrial sectors.
• Displacement of the predominance of introduced organisms (unusual for this natural environment, which were purposefully or accidentally displaced in the event of unreasonable and irrational agricultural, forestry and other activities) in certain territories, which damages natural-organic structures [1, 2].

In accordance with the peculiarities of the functioning of the subjects of economic and industrial impact on the environment in the agro-industrial complex, a number of problems of maintaining a balanced existence and preserving biodiversity should be noted in violation of living conditions in the natural environment:

• Intensive involvement of new lands in the economic circulation, which reduces the area of existence of wild animals and plants in violation of the natural processes of the existence of biomass in these territories.
• The implementation of crop production and the exploitation of various territories in the livestock system often leads to the disappearance of swamps and a change in the natural regime of movement of water resources due to land reclamation.
• Replacement of natural ecosystems with agrocenoses, which is expressed in the expansion of pastures, as well as in the cultivation and spread of monocultural farming systems.
• Direct damage in the form of excessive use of artificial fertilizers and pesticides in crop production, as well as the use of various types of equipment and production technologies in the process of land use.

The identified problems of biodiversity in violation of the natural state of the environment require comprehensive consideration and productive elimination through the implementation of public administration functions in the field of maintaining and preserving biodiversity, which are carried out in the following areas [3]:

• Development of the processes of legal regulation and scientific and methodological support on the conservation of various types of living organisms in the form of the development of new legal acts or amendments to those already in force on the identification of the specifics of existing problems in the process of using biocomponents of the natural environment with the determination of optimal options for their elimination.
• Regulation of the system of licensing activities in the field of protection and use of objects of the animal world in accordance with the noted dynamics of the ecological situation in certain territories.
• Development and implementation of productive ways to protect specially protected natural areas.
• Ensuring and maintaining a species balance in connection with the implementation of agro-industrial processes and the use of components of hunting resources in various ecosystems, along with an increase in resource potential.
• Expansion of scientifically grounded entrepreneurial activity in the field of agribusiness and the development of hunting economy with the search and provision of effective ways to obtain the maximum possible level of economic profit with the minimum possible damage to biodiversity.
• Regulation of the processes of plant growing and animal husbandry at the local level, ensuring the formation of balanced agrobicenoses, combining economic-production and natural processes.
• Development and implementation of productive measures aimed at counteracting the deterioration of the natural environment with state support for the introduction of production
technologies into the ongoing economic processes, which are characterized by reduced indicators of the use of natural resources.

- Implementation of practice-oriented monitoring of the release of industrial waste with the application of sanctions to the subjects of the private and public sectors of the economy in case of violation of environmental standards that determine the procedure for waste disposal.

2. Strategic priorities for biodiversity conservation

As part of the implementation of the subprogram "Biological Diversity of Russia" as a structural element of the state program of the Russian Federation "Environmental Protection", a number of expected results should be highlighted, which will largely neutralize the problems of maintaining biodiversity, namely [4]:

- Improvement of modern regulatory and legal instruments on the maintenance of the necessary regime for specially protected natural areas and conservation of biodiversity.
- Formation of a highly effective system of training, retraining and advanced training of the staff of state and municipal structures, as well as individual organizations on the resource-saving mode of using biodiversity.
- Significant expansion of the area of specially protected natural areas by the end of 2024 with an increase of at least 5 million hectares through the creation of at least 24 new specified areas.
- Entering all the necessary information into the Unified State Register of Real Estate on the boundaries of specially protected natural areas and their organizational and technical support.
- Modernization of the functioning of the administrative-legal system of regulation of the processes of conservation of rare and endangered objects of the animal world.
- Increasing the level of information and structural efficiency of the system for recording and monitoring rare and endangered species with the identification of positive and negative trends in biodiversity change.
- Development of practice-oriented "road maps" of financing and development of the provided material and financial resources in the conditions of territorial implementation of the strategy for preserving the natural state of the habitat of various living organisms.
- Development and implementation of the "Business and Biodiversity" initiative aimed at increasing the level of special competencies of private entrepreneurship entities related to maintaining the norms of environmental safety of the population and resource conservation.
- Increasing the degree of efficiency of state supervision aimed at regulating the processes of hunting and fishing in accordance with the specifics of various territories.

When considering the territorial bases for the maintenance and restoration of biodiversity, it should be noted the key status from the point of view of the current environmental legislation of specially protected natural areas, which are subject to a wide range of restrictions and prohibitions on the use of natural resources and the impact of economic and industrial structures. Various categories of these territories are distinguished, the number of which is presented in table 1.

**Table 1. The number of specially protected natural areas (PAs) by category.**

|                     | 2015  | 2016  | 2017  | 2018  | 2019  | average |
|---------------------|-------|-------|-------|-------|-------|---------|
| PAs of federal, regional and local significance, units including: |       |       |       |       |       |         |
| federal protected areas | 278   | 272   | 272   | 290   | 295   | 281     |
| state nature reserves  | 103   | 103   | 105   | 110   | 108   | 106     |
| national parks       | 48    | 50    | 52    | 56    | 63    | 54      |
In table 1, a five-year period is analyzed, which determines the general dynamics of identification of the number of these territories, depending on the specifics of assessing the natural value of the area and the nature of the landscape. The presented indicators were obtained from the results of collecting and summarizing information at the federal, regional and local levels with the subsequent calculation of average numerical indicators for certain categories of territories. In particular, it should be especially noted the number of state nature reserves at the federal level (106), as well as state nature reserves of regional and local importance (2328) [5].

Along with the domestic experience in the development and adoption of special measures to counteract the processes of reducing the level of biodiversity, foreign practices in this area should be considered.

For example, in the United States and Canada, informal agreements are observed on the conservation of various species of animals and birds, in particular, ducks and geese. In this regard, long-term planning is carried out for the restoration of relevant bird populations through the protection, restoration and management of their habitats [6].

In 1988, this planning and implementation of these measures was confirmed and expanded with the participation of Mexican government authorities, which was reflected in the conclusion of a "Memorandum of Understanding" with the aim of implementing a global strategy for the conservation of migratory birds at the international biosphere level.

The United States has a wetland conservation law, which is expressed in the collection of the necessary funds from the tax on hunting weapons and ammunition, which receives its addition in the form of budgetary contributions approved by Congress.

European countries (Belgium, Austria, Italy) have strict limits on the mass collection of berries and mushrooms, for example, this is reflected in the strict limits of the amount or weight of the gifts of nature (for example, 2 kg per person per day). It is prohibited to collect medicinal ornamental plants without special permission, as well as to collect wild plants and flowers when digging up, removing or damaging their underground parts [7].

At the international level, restrictions have been established on the use of marine biological resources, in particular, on fish catch, which aims to restrain fishing activities to an optimal level, which is compensated by the natural reproduction of fish species. Also, these restrictions are associated with a complete ban in certain areas and the establishment of seasonal catch periods [8].

Using the example of state regulation of environmental management in the United States, it should be noted the complex nature of the adoption of special measures aimed at maintaining biodiversity. In this regard, integration into the structure of general planning of sectoral plans is ensured, which determine the interrelated directions of saving economic use in such areas as [9]:
• Maintaining sustainable forestry, subject to the restoration of forest plantations as one of the key elements of animal habitat and a structural element of territorial and global biomass.
• Rational organization of land use in the implementation of building and placement of any technical means, as well as the expansion and development of the transport and road system with comprehensive monitoring of territorial changes in the distribution of various species of animals and plants.
• Regulation of the processes of development of the agro-industrial complex and agriculture in order to maintain environmentally friendly technologies for the use of land and production of agricultural products with the minimum possible damage through the introduction of fertilizers and pesticides.
• Maintaining a balanced use of water resources, as well as the formation and implementation of a mechanism for long-term and effective management of water biological resources, ensuring the transparency of their distribution system.

3. Conclusion
Thus, maintaining the required level of biodiversity in connection with the designated areas of close interaction of economic and environmental components of the use of environmental components is directly determined by the formation of a scientifically based set of measures aimed at preventing and reducing the current negative impact on the environment. One of the most important examples of these measures is the formation of specially protected natural areas, the legal status of which provides for the prevention of any economic impact on the system of natural biological systems characteristic of them.

As part of solving the problems of preserving various biological resources in the event of a deteriorating environmental situation, it is necessary to develop and implement comprehensive measures to ensure the replenishment of the inflicted bio-damage with a rational combination of economic methods of saving nature management and compliance with environmental safety standards. The processes of implementation of these economic and environmental measures should be based on the most complete set of information data reflecting the true nature of the processes occurring in the biomass in certain territories and the number of certain species of living organisms. The development of effective methods for the restoration and conservation of biodiversity is closely related to certain types of economic activities carried out in connection with the direct land use and use of water resources, since certain land areas and water bodies are the most important components of the habitat of various organisms.

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