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The role of green management in conserving the earth's biodiversity

**G V Fedotova^{1,2,7}, I V Denisov², G K Dzhancharova³, Yu A Kozenko⁴,
T Ev Kozenko⁵ and Yu A Kapustina⁶**

¹ Volga Region Research Institute of Manufacture and Processing of Meat-and-Milk Production, 6, Rokosovskogo st., Volgograd, 400131, Russia

² Russian State Economic University named after G.V. Plekhanov, 36, Stremyanny per., Moscow, 117997, Russia

³ Russian State Agrarian University – Moscow Timiryazev Agricultural Academy, 49, Timiryazevskaya st., Moscow, 127434, Russia

⁴ Volgograd State University, 100, Universitetskij prospect, Volgograd, 400062, Russia

⁵ Volgograd State Medical University, 1, Pavshih borcov square, Volgograd, 400131, Russia

⁶ Ural State Forestry University, 37, Siberian tract st., Yekaterinburg, 620100, Russia

⁷ E-mail: g_evgeeva@mail.ru

Abstract. The scientific paper presents the authors' research on the aspects of nature and process of forming a new direction in the management system of sustainable development – green management. This direction which has recently become quite popular has been declared as a new priority in the implementation of large projects. But so far there is no practice of implementation and regulatory approval of this concept. It is generally accepted that green management is based on the principles of a lean or green economy and harmless attitude to the natural environment. From the authors' point of view, this concept should be interpreted slightly broader, since regular monitoring of the state of the environment should be based, among other things, on the introduction and wide spread of information technologies into the management system.

1. Introduction

The contemporary system of public-private partnership and the functioning of economic entities of different forms of ownership are closely related to the necessity of the formation and the development of an ecological and economic system for the rational management of limited natural resources. Creation of such system should be implemented through the formation and subsequent modernization of informational and digital relationships between the production processes of high-quality products in full compliance with environmental standards [1, 2].

Thus, through the consideration of scientific works on the problems of public administration and regulation of the private entrepreneurial initiatives implementation, taking into account the issues of economically efficient usage of resource in the system of the agro-industrial complex development (here in after referred to as the agro-industrial complex), the key functional manifestations of green management are identified.



Within the framework of contemporary innovative transformations in the structure of agro-industrial complex, there are justification and implementation of logically interrelated functions of green management as a system for implementation of economic operations in accordance with the conditions of resource conservation and maintaining the stable state of the natural environment. These processes are implemented through the development and further expansion of electronic technologies and digital means of data processing. The structure of green management is formed through the implementation of a number of specialized functions within the interaction of public administration bodies with private business organizations, as well as at the level of individual private companies, namely [3]:

- Sustainable procedure of informational and digital support and assurance of economic operations from the point of view of the most accurate estimating of the level of different natural resources requirements.
- Search for the best solutions for transforming the available initial funds with the possibility of their reuse in the production of high-quality agricultural products.
- Determination of ways to obtain the maximum level of economic and production effects, which are expressed on the example of the intermediate and final products of crop and livestock production of the agro-industrial complex.
- Organization and implementation of control of individual production operations in the processing and use of land, as well as the final products of land use in certain areas of the agro-industrial complex in order to establish the degree of compliance of these products with established environmental standards.
- Development and ordering of practice-oriented regulatory instruments at the federal, regional and local authority levels on the problems of rational combination of processes of private entrepreneurial initiatives focused on the implementation and ensuring the stable state of the natural environment.

The implementation of these functions of “green” management is based on the widespread use of electronic digital technologies in which a timely assessment of the prospects for further improvement of the production and structural components of the agro-industrial complex in different territories with a simultaneous assessment of the most likely threats to the development of agricultural production take place.

2. Results

In addition to this scientific approach authors of this scientific paper distinguish six levels of biodiversity maintenance in accordance with the structure of biomass organization, which can be demonstrated in figure 1.

The levels of biodiversity maintenance presented in figure 1 should be manifested in different territories, which are certain natural and economically formed landscapes, as well as structural elements of the territory of the Russian Federation - individual land areas, municipalities, constituent entities of the Russian Federation and the entire territory of the state. In certain territories, the diversity of living organisms should be combined with the specifics of land use in the framework of agriculture and forestry, economic and public land use, as well as in compliance with the nature protection regime of individual territories [4, 5, 6]. In the common system of biodiversity, it is necessary to designate two categories of elements of the wild life - different breeds of fish and wild mammals, the number of which is maintained through the activities of various research organizations. These categories, respectively, are objects of nature management in the form of hunting and fishing, which are regulated by the current legislation. In this regard, it is possible to demonstrate the indicators, characterizing the release of juveniles of various fish into water bodies of fishery purpose (figure 2) and the release of animals from nurseries (figure 3) in order to replenish the biological damage caused to the natural environment.

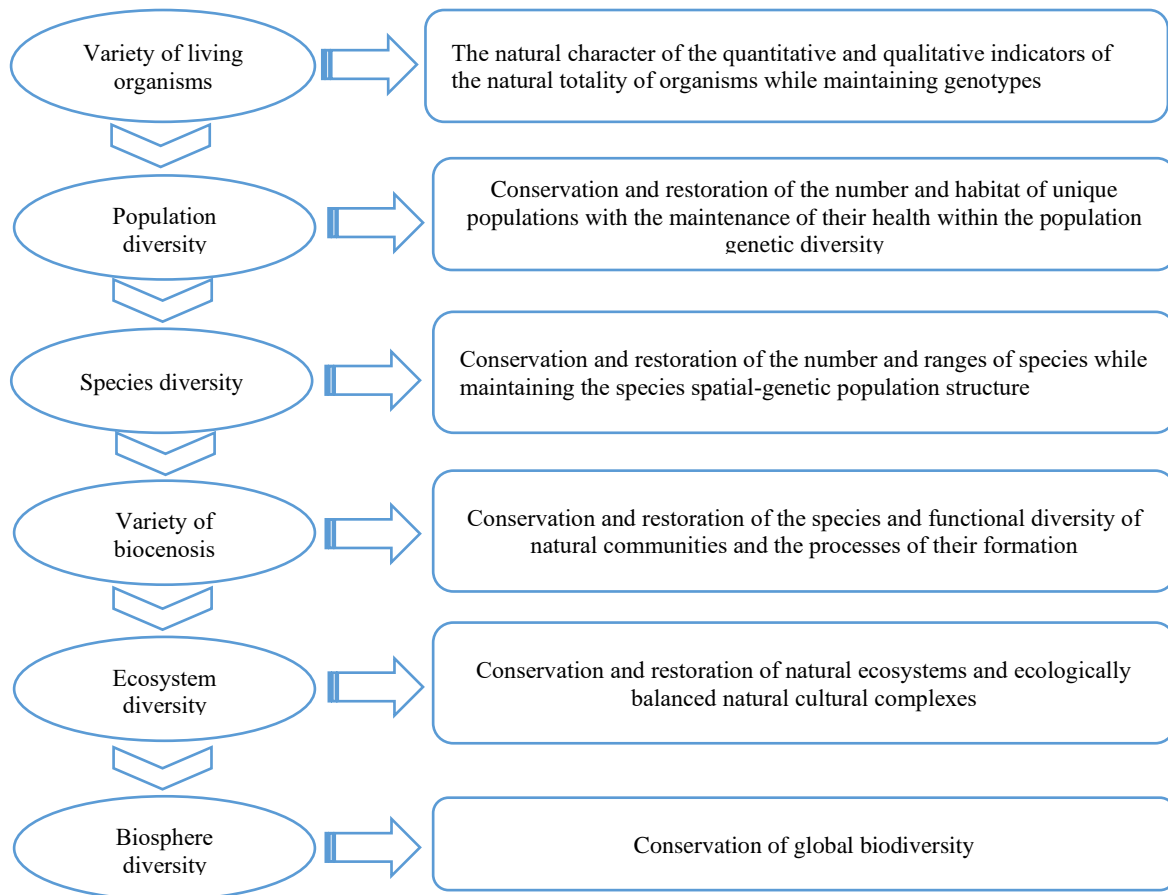


Figure 1. Levels of biodiversity maintenance.

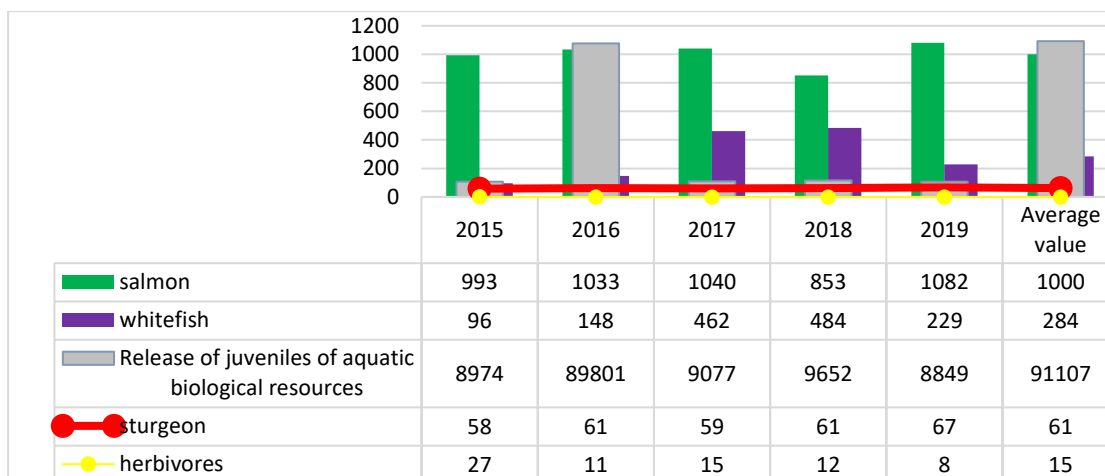


Figure 2. Release of juveniles of aquatic biological resources into water bodies of fishery importance (million pieces).

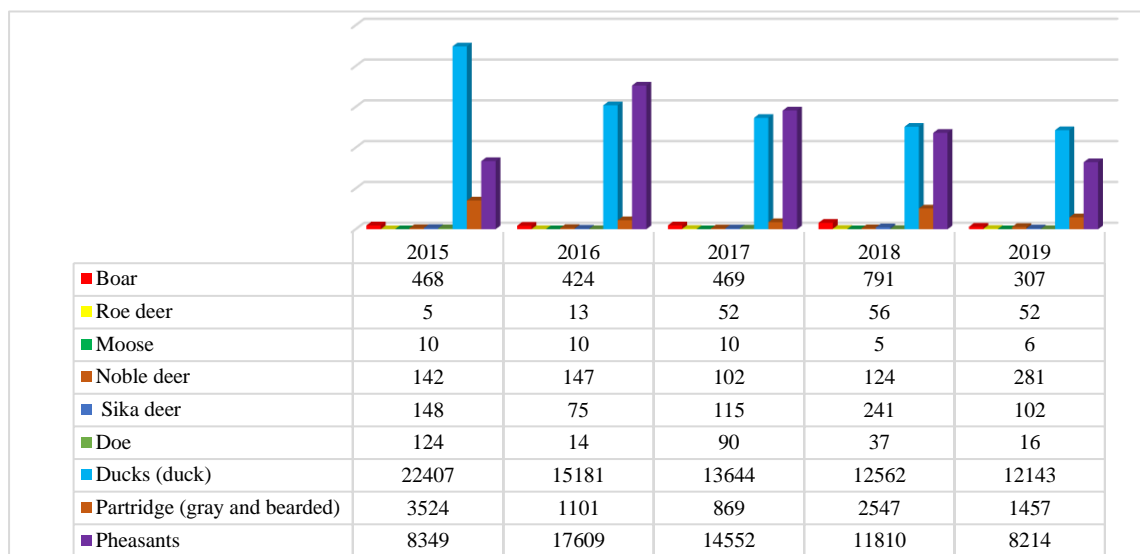


Figure 3. Released of hunting resources from nurseries to assigned hunting grounds (heads).

According to the indicators presented in figures 2-3, the average indicators for the five-year period were calculated, which reflects the ambiguous situation in the replenishment of wildlife biodiversity - an increase in indicators for 2018 is seen with a subsequent decrease already in 2019, for the release of aquatic biological resources and of a number of animal breeds [7]. The general picture of the replenishment and use of biological resources must be supplemented with data on the types of committed environmental crimes, the number and nature of which is also an important factor in the deterioration of the state of the natural environment table 1.

Table 1 also presents the dynamics of damage to natural systems of biological resources, as in the previous cases, over a five-year period with the calculation of average indicators. At the same time, it should be noted that there is a high rate of violations in the handling of environmentally hazardous substances, illegal logging and damage to forest plantations, which are negative factors in the general disruption of the environment in large areas, and which also negatively affects the global state of biosystems.

In addition, table 1 indicates the main directions for the development and implementation of special measures focused on creating conditions for the restoration of the number of animal and plant species in accordance with the specifics of their natural habitat. A number of these directions, for example, fire protection, bio-saving lending are produced with the aim of preserving and restoring natural ecosystems. They act as one of the key factors in increasing the level of environmental safety in the framework of agro-industrial complex and further processing of agricultural raw materials into various types of agricultural products.

One of the most important conditions for the conservation of biodiversity is the formation of specialized and clearly structured databases reflecting the quantitative and qualitative parameters of biological resources. Such databases should make it possible to estimate the current state of various types of resources with the ability to predict the most likely options for their change in the future. This information can also be supplemented with data characterizing the specifics of climate change and structural elements of various landscapes in order to collect and analyze data on the state of the natural environment. One of the examples of the named landscapes is a wetland, which is natural habitat for a wide range of living organisms [8].

Table 1. Number of different categories of environmental crimes.

	2015	2016	2017	2018	2019	average value
The total number of environmental crimes, including:	24857	23688	24379	23899	22230	23811
violation of environmental protection rules throughout the work	14	19	32	23	20	22
violation of the rules for the handling of environmentally hazardous substances and wastes	36	44	124	70	63	67
water pollution	29	28	40	39	43	36
air pollution	6	7	13	13	29	14
marine pollution	3	3	5	4	2	3
illegal hunting	1928	1906	1936	1931	1824	1905
illegal logging	14192	14233	14422	13763	12350	13792
destruction or damage of forest plantations	1063	598	690	642	645	728
violation of the regime of specially protected natural areas and natural objects	58	78	74	106	68	77

Therefore, it is necessary to form an informational and digital inventory of available biological resources and the conditions of their location. At the same time, this generalized electronic information system acts as a key resource in the functioning of state and municipal government bodies that regulate the development of the agro-industrial complex, forestry and other areas of nature management through continuous and comprehensive control [9, 10, 11]. To increase the level of efficiency of these management structures, specialized electronic communication networks can be created, serving as the basis for creating a unified management system aimed at coordinating and systematizing the measures taken to protect and create conditions for replenishing biological resources in the environment.

3. Conclusion

For the formation of a sustainable system of green economy in a crisis situation of the COVID-19 pandemic, it is necessary to comply with the following socio-economic, legal and technological conditions:

- Creation of effective regulatory frameworks for state regulation of production and consumer processes with the expansion of the use of digital technologies for ensuring economic communications.
- Rational implementation of investment policy while expanding public management support for small and medium-sized enterprises while expanding digital communications between economic partners, and reducing costs in areas that deplete natural capital. Strengthening government regulation and support for the energy efficiency policy in various sectors of the economy [12].
- State regulation of taxation to stimulate 'green' innovations in the private and public sectors of the economy (economic and technological innovations in the reuse of waste and rational use of natural resources).

- Expansion of electronic and technological provision of medical care and analysis of the current epidemiological situation in connection with the spread of COVID-19 through digital technologies.
- Greening the system of state and municipal purchases and placing orders in the private sector with the introduction of increased environmental safety requirements by private business entities.

The use of digital technologies ensures the implementation of conditions with the required informing the participants of public-private cooperation about the process of building a green economy. At the same time, complex organizational, legal and economic measures are being developed to overcome the crisis situation with the spread of COVID-19.

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