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ECOLOGICAL AUDIT OF THE PROTECTED AREAS OF EASTERN PODILLYA: CURRENT STATE, PROBLEMS AND PROSPECTS OF IMPROVEMENT

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Annotation. The article describes the main aspects of environmental auditing of the entities of Eastern Podillya. It considers the general description of objects and territories of natural-reserve Fund of the region. It was found out that for effective environmental management of protected objects it is advisable to improve the system of their ecological audit, which will improve the zoological status of the environmental object in order to preserve the biotic and landscape diversity of the region

Key words: biodiversity; nature reserve fund; natural-protected objects and territories; ecological audit; environmental management; Eastern Podillya.

Problem statement. Conservation of Biodiversity (BD) is one of the most important tasks of the global community to achieve its sustainable development. It is important for all spheres of human activity (economic, social, environmental), defining the culture, spirituality and mentality of the society. But now, the volumes of society's activities have approached the boundaries of the resilience of natural ecosystems. Humans, like biological species must realize that its survival depends on the survival of other species of plants and animals, from preserving the entire gene pool in different ecosystems. The solution of the problem of preservation of the BD at the biosphere level originates from local and regional degrees that is a fishbone for maintaining the ecological equilibrium of natural systems. The BD, which was formed during the prolonged biological evolution, is a critical natural resource (35% of all human needs), and its full preservation is possible only by «ex situ» and «in situ». One of the varieties of a species is the conservation of reference sites, which have a large share of the existing richness of flora and fauna of any region.

Presentation of the **main material.** An important aspect of the conservation of the Eastern Podillya (4.5% of the territory of Ukraine), its reproduction and rational use are effective functioning of natural-protected objects and territories (NPO&T).

The modern Nature Reserve Fund (NRF) of Eastern Podillya (on 5.3.2019) included 439 (425 in fact) territories and objects with total area of 66730.48 hectares, which is 2.52% of its total area. The actual NRF area is 56866.68 hectares, which is 2.15% of its total area (table 1) [2], but only in 42.5% of these objects are the boundaries in nature.



Table 1.

**Network of territories and objects of Natural Reserve Fund
East Podillya (as of 05.03.2019)**

No category	Category, type of territories and objects Natural-Reserve Fund	Number (pieces)	Area, hectares	% Com-mandments from area
I.	Natural Reserves	-	-	
Ii.	Biosphere reserves	-	-	
Iii.	National Natural Parks	1	20203.4	0.76
Iv.	Regional landscape Parks	4	18468.38	0.70
V.	Preserves	157	25204.2	0.95
V. 1.	a) national significance:	22	13565.2	
	- Landscaped	4	1208	
	- Forest	1	295	
	- Botanical	15	7970.5	
V. 2.	- General Zoology	2	4091.7	
	b) local significance:	135	11639	
	- Landscaped	56	3797.1	
	- Forest	6	73.7	
	- Botanical	50	5219.55	
	- Hydrological	16	1442.06	
	- Ornithological	4	462.97	
- Entomological	1	13.3		
- General Zoology	2	630.3		
Vi.	Natural monuments:	194	1071.32	0.04
VI. 1.	a) national significance:	9	320.5	
	- Complex (geologic-botanical profile)	2	143	
	- Botanical	2	12.5	
	- General Zoology	1	69	
	- Geological (geomorphological profile)	4	96	
VI. 2.	b) local significance:	185	750.82	
	- complex	5	280.2	
	- Geological	15	30.75	
	- Hydrological	59	2.36	
	- Botanical:	101	363	
- General Zoology:	5	74.51		
Vii.	Reserve Tracts	29	951.4	0.04
Viii.	Botanical Gardens:	-	-	
VIII. 1.	a) national significance	-	-	
VIII. 2	b) Local significance	-	-	
Ix.	Dendrological Parks:	1	December 10	0.0004



IX. 1.	a) national significance	-	-	
IX. 2.	b) of local significance:	1	December 10	
X.	Zoological Parks:	-	-	
X. 1.	A) national significance	-	-	
X. 2.	b) local significance	-	-	
Xi.	Parks-Monuments Park Art:	39	821.8	0.03
XI. 1.	A) national significance	12	429	
XI. 2.	b) local significance	27	392.8	
Together:		425	66730.48	2.52
Are part of the territories of other NRF objects		14	9863.8	0.37
Actual NRF Area		425	56866.68	2.15

NRF is presented by national nature park (NPP) «Karmelyukovo Podillya» (20203.4 ha), 4 regional landscape parks (RLP): «Murafa» (3452.7 ha), «Mean Pobuzhzhya» (2618.2 ha), «Nemyrivske Pobuzhha» (5678 hectares), «Dniester» (6719.48 hectares), 157 *orders*: botanical (15 national significance, 7970.5 hectares, 50 of local significance – 5219.55 hectares), hydrological (16 local significance, 1442.06 hectares), landscape (4 national Significance, the area of 1208 hectares, 56 of local significance - 3797.1 hectares), forest (1 national value, area of 295 hectares; 6 local significance - 73.7 hectares), general zoological (2 national significance, area of 4091.7 hectares; 2 local significance – 630.3 ha), ornithological (4 local values, 462.97 hectares), entomological (1 local the value of 13.3 hectares), area of 25204.18 hectares (22 - national significance - 13565.2 hectares and 135 - local significance - 11638.98 hectares), 29 *protected tracts*, an area of 951.4 hectares, 194 *natural monuments*, 1071.32 hectares (9 national significance - 320.5 hectares: 2 complex - 143 hectares; 2 botanical - 12.5 hectares; 1 general zoological - 69 ha; 4 geological - 96 hectares; and 185 – local significance – 750.82 ha: 101 botanical – 363 hectares; 59 hydrological – 2.36 hectares; 15 geological – 30.75 hectares; 5 general zoology – 74.51 ha; 5 complex – 280.2 ha), 39 park-monument of landscape art, area of 821.8 hectares (12 national significance - 429 hectares and 27 - local significance - 392.8 hectares), 1 *dendrological park* of local significance, with an area of 10 hectares [3].

For effective functioning of protected objects it is advisable to improve the system of their ecological audit – a documented system, independent process of evaluation (control), which includes gathering and objective estimation of evidence for the establishment of conformity of certain types of activity, measures, conditions, management system.

Ecological audit of protected objects is a managerial tool – a methodology based on the system approach, which evaluates, complying with the criteria of auditing and increases the ecological efficiency for preservation and effective functioning of these objects. The environmental efficiency of management in protected areas is assessed according to the criteria of compliance with environmental legislation, environmental norms and standards, environmental policy, progressive environmental practice, the requirements of improving environmental characteristics for economic activities and



the effectiveness of environmental expenditures [4].

The purpose of state control over the observance of the regime in the nature reserves and territories (NR&T) is to ensure compliance with the environmental legislation, prevention, detection and termination of the offenses. The main function of state control is the State ecological inspection in Vinnytsia region and its territorial subdivisions. In its composition must be a special unit for control of the NR&T regimes. Thus, only in the beginning of 2020 the environmental inspectors in the region had conducted more than 100 different measures to eliminate fires in natural ecosystems on the area near 1000 hectares. For conservation and reproduction of forest ecosystems since 2004, the security control, protection, use, and reproduction of forests. Its responsibilities include supervision, accounting of pests and diseases of the forest, conduct of forestry surveys, appointment and conduct of forestry measures, methodological assistance to the workers of forest protection on the ground, check the conservation of forests nature reserve fund (NRF). State control in the field of conservation should also be carried out, in our opinion, by the environmental authorities.

Inspections in order to control the observance of the NR&T regime must be conducted in accordance calendar schedule, which should become an integral part of the annual (semiannual, quarterly) work plan of inspection units. Depending on the volume of conflicting test problems, they can be complex, target, operative or special.

Complex inspections can cover not only the issue of environmental protection, but also other activities, and to participate in them, experts from ministries and agencies, research institutions, representatives of local authorities and the public should be involved. Target, operative and special inspections have their focus on the separate directions of environmental activity, such as the compliance with regime of protection of territories and objects of NRF, the State of implementation of measures to ensure compliance with environmental legislation, the state of execution of prescriptions regulatory authorities. In addition, the state control of NRF should include the use of documentary inspections and inspections on the ground. In the first case, all available official documentation should be checked, approved in accordance with the current legislation. In the course of this test, an analysis of economic activity should be done in accordance with the project documentation. In the second case, checks should be done after determining the requirements and conditions for reserve regime of these objects. At the same time, their place in the landscape structure is clarified, the removal of the indicators in accordance with the planning and cartographic materials (schematic map). The boundaries of the territories must be fixed by the border-economic pillars, typical security signs, information house in accordance with the description and sketch. At the facilities of NRF, which are represented by forest area, are warned against unauthorized and illegal felling, the damage of trees and shrubs (on the stumps arbitrarily and illegally cut down trees, a diameter of 12 centimeters or more, not marked by the act of state protection of unauthorized felling, where there will be no corresponding stamp). Testing of the NR&T should provide for and check the compliance with of the appropriate protection regime of the territories reserved for the next protected areas. As a result of the audit, the act in three copies of the application, stating and documentary parts,



signed by the reviewer and supervisor of the facility NRF [5-6] shall consist.

An important aspect of the ecological audit of the protected areas of the region should be public environmental control, which is in the Law of Ukraine «On the nature-reserve fund of Ukraine» is carried out by the civil inspectors in the environment, who conduct their activities in accordance with the Regulation on public control in the field of environmental protection environment, approved the Ministry of ecology and natural resources of Ukraine in 2002. Public inspectors, who are over 18 years old, should act together with state-owned environmental inspectors with appropriate rights and their work should be coordinated by environmental protection agencies.

According to the Law of Ukraine «On the nature-reserve fund of Ukraine» preservation of territories and objects of NRF shall carry out state service of security. Its activity is provided by: 1) installation of the reserve regime; 2) organization of systematic observations on the state of protected natural systems and objects, carrying out complex researches in order to develop the scientific foundations of their preservation and effective use growth; 3) compliance with the requirements for the protection of territories and the objects of NRF during economic, managerial and other activities, the development of project and design and planning dock, land management, forestry, conducting environmental impact assessment; 4) introduction of economic levers for stimulation of their protection; 5) the implementation of state and public control over the observance of the regime of their protection and use; 6) establishment of the increased liability for violations of their protection and use, as well as for the destruction and damage of natural reserves and objects; 7) conduct of wide international cooperation in this area; 8) conduct of other measures for the conservation of territories and objects NRF [5-7].

Protection of natural reserves, national nature parks, as well as botanical gardens, dendrological parks, zoos of national importance shall carry out services of their protection. Protection of territory and the facilities of other categories must rely on institutions and organizations in which they are located (conservation obligations liabilities). If necessary, their protection may provide special administration of nearby natural reserves, national and regional landscape parks. Local governments, local executive bodies should promote protection and government of territories and the objects of NRF, which will ensure that they are entrusted with their tasks.

The improvement of the protection of the natural objects in the region must be carried out in order to form the ranger units, as it is widespread abroad. This should include the following areas: organizational measures, improvement of logistical equipment, prevention of delinquency, work with the population and visitors, rescue measures of assistance, etc. At the same time traditional precinct method of separate detours by pass guards should be closely combined with the creation of such a special security service, the mobility of which depends on the equipped vehicles and stable communication

The territorial security organization in the region should be determined by the results of the analysis: information on cases of illegal penetration to the closed territory, facilities of driveways, communications, protected area objects that will be bound by the special protection. Areas of influence of protection must be extended to



the territory, because only such an approach can provide for the prevention of offences. It is necessary to protect not only the nature-protected area within its official limits, but also the specific objects and areas that are located nearby. Therefore, the project of organization of the protected area, protection of its natural complexes should determine all the problematic areas of protection, the need for equipment and preventive measures. Should be ensured: the number and location of borders and support points; organization of checkpoints and road barriers installation; the organization of pickets. The preventive measures should include: installation of marking the boundaries of natural protected areas, its separate areas and areas of special protection. The equipment of parking and places of rest of the house, publications in social networks, local press, performances on television and in rural landings, the issue of booklets and prospectuses, installation of stands, extensive disclosure of information on offences and offenses, biotechnical measures to lure animals in controlled areas. When planning security services are very good for those activities that are doable in modern conditions. Also, special attention should be paid to the most critical for saving the biodiversity in the period of time, in particular: flowering of the genus and endangered plant species, and poultry breeding, reptiles, amphibians and mammals, spawning fish, flammable period, during the flood, in snowy waters, during autumn rains and so on [5-7].

Conclusions. Ecological audit of the protected objects of Eastern Podillya should be the main basis for their preservation and effective use. To preserve the status of protected area and protection of its natural landscape complexes it is advisable to plan measures for training and professional development of the inspection staff. They should be focused on learning environmental legislation and organization of the state guard service, interaction between the inspectors, units on the basis, frontier pledge, forest security services, fish protection services, public environmental inspectors, volunteers and other services, as well as obtaining basic knowledge about the environmental and historical and cultural values of the protected area. The understanding-and-prophylactic measures to the local population and visitors should be a priority in the preparation and retraining of personnel of the state protection service of protected objects. It will facilitate the work of the state security service and the inclusion of a lawyer in the administration of the institution of reserve facility. Increasing the activity of the state protection service of protected objects should be carried out due to increased monetary costs, improvement of social working conditions, maintenance of a form, means of individual protection and ex-trend assistance, insurance of life and health, systems of moral incentive.

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***Анотація.** В статті розглянуті основні аспекти екологічного аудиту заповідних об'єктів Східного Поділля. Подано загальну характеристику об'єктів і територій природно-заповідного фонду регіону. З'ясовано, що для ефективного екологічного менеджменту заповідних об'єктів доцільно вдосконалити систему їх екологічного аудиту, яка дозволить поліпшити соціологічний статус природоохоронного об'єкта з метою збереження біотичного і ландшафтного різноманіття регіону.*

***Ключові слова:** біорізноманіття; природно-заповідний фонд; природоохоронні об'єкти та території; екологічний аудит; екологічний менеджмент; Східне Поділля.*



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