

## The Specially Protected Natural Reservation in Urban Areas: the Legal Status, Governance, Development and Use in Tourism and Recreation Activity (on the example of the SPNR System of the City of Lipetsk)

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### ABSTRACT

In the article the questions of the organization of the specially protected natural reservationspecially protected natural reservations in the city and suburbs are considered. Tendencies in identification and creation of city SPNR are analyzed. On the example of Lipetsk the creation problems of local SPNR, typical for Russia, are revealed. In the city governance there was no idea that the created SPNR system had to be included in common regional structure of SPNR, had to be built considering the city development and, finally, to enter in the ecological framework of the city. The significant problem of SPNR creation is an administrative accessory of the land plots within the city and in close proximity to it. The unwillingness of the city authorities to consider large territories as potential local SPNR led them to the idea of creation of chain of especially protected natural objects (separate trees). In most cases, park territories which by definition are created for the organization of population recreational activity have the SPNR status in the cities. Therefore there is a need of combination of nature protection and recreational functions in these territories. SPNR make a basis for structure of the city ecological framework which needs to be divided into internal and external elements (internal and external ecological framework). External elements should be aimed to preservation of biological and landscape diversity and to be the buffer for closely guarded territories (nature reserves). The external ecological framework of the city has to cover the territory of the city and its suburbs. Internal elements should be aimed to preservation of the quasi natural environment in the city and to be the ecological corridors. making the city landscape ecologically transparent.

### KEYWORDS

SPNR, specially protected natural reservation,  
the city nature,  
the ecological framework of the city.

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## Introduction

The problem of creation the protected natural territories can't be referred to category of new issues. Some lands were declared taboo and taken under protection already in the ancient world. Since emergence in 1872 of the first-ever reserved territory in modern understanding of this term - the Yellowstone national park, up to the present period quite a number of protected territories in various parts of Earth was created. However, they were created more often in remote from settlements and the person places. Such placement of the specially protected natural reservations (SPNR) is caused by logic and the existence purposes of this type of territories. Recently in Russian Federation and other countries the work on creation SPNR in the large cities started to be carried out. Today organizational model of SPNR creation in city landscapes is emerging. (Trzyna et al., 2014; Hess & Fischer, 2001; Li, Chen, & He, 2015; Knapp, Kühn, Mosbrugger & Klotz, 2008) There is a set of not resolved and in many aspects controversial issues on this subject (Bobrov, 2014; Buzmakov, & Sannikov 2012). The main of them is whether SPNR creation in the cities is expedient? If the answer to this question is positive, then what is the purpose of their creation and what is the main function of city SPNR? The goal of this research is studying of the features of SPNR organization in city landscapes, identification of their main functions, legal status and mode of protection.

## Results

In the territory of the Lipetsk region the system of especially protected natural landscapes has started to be created in the thirties of the last century. As a main goal of creation of objects of especially protected territories was the saving of certain environment components or landscapes in natural reserves.

From the middle of the 60-th the system of specially protected territories of regional importance begins to take shape. Breeding grounds and nature sanctuaries, including parks of man-induced nature, were allocated. Thus, there were created not only systems of the protected objects aimed on preserving the environment, but also systems on preserving the quasi nature environment. In case of parks allocation as the protected territories, rather the aim of preserving the quasi nature environment in structure of city landscapes, than the purpose of preserving the environment was pursued. In 2005 the Lipetsk city administration has started the program on allocation of specially protected area and object of local significance. Therefore in the Lipetsk territory (within administrative borders) and the adjoining suburban territories the hierarchical structure was created where SPNR of regional and city subordination were specified (table 1, figure 1).

**Table 1.** SPNR of Lipetsk city and adjoining areas

№	Type of specially protected natural reservation	Name
1	State natural faunal area	«Lipetskiy» <sup>1</sup>
Natural sanctuaries of regional character		

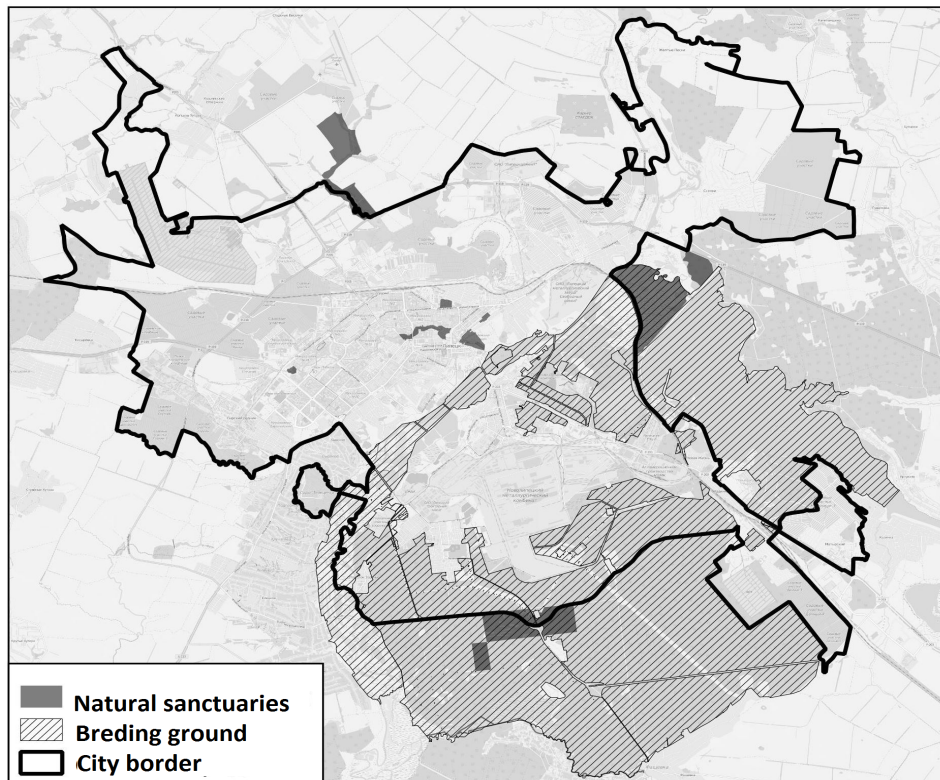
2	Landscape and geological	«The lower reaches of the Stone ravine»
3	Dendrological	«The upper park»
4	Dendrological	«The lower park»
5	Landscape and biological	«Pinery» <sup>1</sup>
6	Landscape and biological	«Groundhogs» <sup>1</sup>
7	Landscape	«Mitrokhin's corner» <sup>2</sup>
8	Zoological	«Alder forest with a colony of gray herons near Sselki village» <sup>2</sup>
9	Landscape and hydrological	«Dvurechka River» <sup>2</sup>
Specially protected natural reservation of local importance		
10	Urban recreational area	"Park" Bykhanov Garden "
11	Urban recreational area	"Natural boundary "Pine wood"
12	Protected natural objects	"Oak on Pervomayskaya St."
13	Protected natural objects	"Elm on Lenin St."
14	Protected natural objects	«Amur cork tree near Evdokiyeysky church»
15	Protected natural objects	«Oak near school No. 47»

Note: 1) SPNR is partially located in the territory of the city; 2) SPNR is located near the city territory.

The Lipetsk state zoological breeding ground was formed in 1989 based on the hunting breeding existing since 1975. The breeding ground area is 18,6 thousand hectares. The Lipetsk breeding ground includes flood basins and terraces above flood-plain of the river Voronezh valley and its inflows. It is organized for preserving and reproduction of fauna of the river valley, including the European beaver, the muskrat and desman listed in the Red Book of the Russian Federation. It is also home for such animals as the forest marten, the squirrel, the badger, the blue hare, the raccoon, the fox, the deer, the boar and the roe.

Natural sanctuaries of Dvurechka river and Pinery is the unique complex aimed to preserve a biodiversity in Fashchevsky forest area. The river Dvurechka is a direct border of the territory of Lipetsk and Yamansky breeding grounds. The nature sanctuary Pinery is completely located in the forests territory of the Lipetsk breeding ground.

The natural sanctuary Pinery consists of several squares of the forest area Fashchevsky of Lenin forestry, occupying 390 hectares. On sandy and loamy sand soils uneven-age plantings of a Scots pine are located. On sites of the old-age pine wood the rare species of insects – horntails giant - was observed. In addition there are also exist several types of rare plants and animals.



**Figure 1.** SPNR in the Lipetsk territory and in the adjoining suburban territories

The nature sanctuary of river Dvurechka comprises the water area of the river in the middle and lower course throughout 11 km. This is the unique SPNR in the system of the protected territories of Lipetsk region as object of protection is not the flood plain or the valley, but the river in general. Initially, the nature sanctuary was created for desman protection. However, today SPNR has lost its character as the territory of protection of rare species habitats. It is caused by economic loading of the villages Fashchevka and Dvurechka.

Nature sanctuaries Mitrokhin's corner and Colony of gray herons near Sselki village were created for protection of inundable landscapes of Matyr river. The nature sanctuary Mitrokhin's corner was formed in 1993. The sanctuary territory is quite large as it occupies 446 hectares. The colony of gray herons is located near highway Lipetsk-Tambov and dam reservoir Matyrsky and occupies 98 hectares.

Mitrokhin's corner is located within the valleys of the rivers Voronezh and Matyr on the left coast of these rivers. The most part of the territory is occupied by meadow natural complexes with a gramineous rich in herbs and brome-grass vegetation. Forest communities are provided by osier-beds, alder trees, maple-and-oak and oak-and-willow groves with dense bushes.

Natural sanctuaries have great value for preserving biodiversity in the region. In its territory in an alder forest the gray herons are observed. On swamps the big bittern and a red heron lodge. As a part of grassy plants there are rare and disappearing plants as russian fritillaria, Biberstein's tulip, common valerian.

The natural sanctuary Groundhogs was created in 1993 on the place of the former airfield ground. The sanctuary territory of 290 hectares is broken into 2 sites. The area of the northern site is 180 hectares, southern is 110 hectares. The largest part of the natural sanctuary territory is in limits of administrative borders of Lipetsk area, but 31 hectares of the 2nd site are located in the territory of Lipetsk city.

The northern site comprises the steppe upland complex located on the place of the airfield ground. On the site numerous explosive funnels in diameter up to 3-4 m and up to 1-2 m in depth remained. The steppe upland site wasn't used for a long time in the economic purposes that led to some recovery of steppe vegetation. There are places where steppe rabbits grows (including a feather grass, listed in the Red Book of the Russian Federation). In mixed-herbs-steppe communities there are rare such plants as the spring adonis, the wood anemone, the gosling, iris leafless, desert fatuoid. Typically steppe bushes as Russian almond and spiraea crenate grows.

The natural sanctuary the Lower reaches of the Stone ravine was formed in 1993 for preserving a geological exposure where the Devonian limestones of the Yelets tier are opened. It represents the part of the valley of the small river Lipovka which is cutting Lipetsk city and moving to the river Voronezh. In borders of a natural sanctuary there are picturesque rocky exposures the high Devonian limestones. The island-hill being the historic center of the city is of special interest.

Natural sanctuaries Lower park and Upper park are located in the city center and organized in 1968. The Lower park is the park for preserving the resort park created in 1805 in the territory of the former steel fabrics. The Upper park is for preserving the park created in 1911.

In plantings of Lower park the oak, a poplar, an alder sticky, a weeping willow prevails. Age of some trees is more than 100-150 years. As the accompanying trees in the park there are also birches, maples, mountain ashes are planted. The Lower park is used as the resort and recreational territory by the Lipetsk mineral health resorts.

The Upper park is broken on the basis of an oak forest of the river Voronezh' high coast in 1911. The basis of the park is constituted by old-age oaks and lindens. The park is used by a row of located sanatorium and hospital as the resort and recreational area.

Natural boundary "Pine wood" is located in the southwest of Lipetsk city in the territory of the 19th residential district on both banks of the river Lipovka in its upper courses. Borders of the natural boundary pass on brows of slopes of upper courses of the Stone ravine and are limited from the West and the East by the embankments of highway and dirt road. The area of the natural boundary constitutes 6,5 hectares.

Waterline of the river is in height of 142 meters (the maximum excess of 160 meters, height of slopes reaches 15 meters). River waters pass on an artificial waterway under embankments. The western embankment in time of increase in a drain carries out a dike role that leads to a spill of water in the beam bottom, and also promotes creation of a boggy complex in natural boundary upper courses. The bed of the river Lipovka attracts waterfowl.



The natural boundary "Pine wood" represents a combination of biocenoses by various origin and structure. The basis of the natural boundary is constituted by landings of a European pine (*Pinus sylvestris* L.), European white birch (*Betula pendula* Roth) and English oak (*Quercus robur* L.). The steppeified meadow has the signs of active intervention of the man. Meadow sites of the natural boundary in the nineties were dug out by self-capture for kitchen gardens that led to specific floristic impoverishment. Borders of the former sites limited with geometrically correct contours of horse sorrel (*Rumex confertus* Willd) are still accurately traced.

The Bykhanov Garden park in its modern type began to arrange in 1954 in the territory of nursery-garden of Lipetsk Zelenkhoz which, in turn, was created on the basis of fruit nursery-garden and forest-park crops of E. V. Bykhanov. In 1958 the first avenues, beds and lawns were made here. More than 40 types of various plants were landed.

Total area of the object constitutes 12,5 hectares. The territory of the park can be divided into three functional zones, and also as the accompanying territory there is an adjacent avenue down the Gagarin Street. In addition to a zone of servicing of visitors on which attractions, the exhibition center and cinema are located, there are two recreational zones. The first recreational zone represents the regular park with frequent chain of the asphalted paths, the second is the "wild", much more shaded, deep part of a park complex with more frequent forest.

In some extent, the protected areas include parks, tree plantation in the city and the state forestry fund lands. The total area of these protected territories is nearly 25,000 hectares. The main drawback of the system of protected areas is the lack of landscape SPNR and inadequate protection regime. Some nature sanctuaries duplicate territories of the wildlife sanctuary. But as a zoological reserve, duplication is necessary for the preservation of the individual's unique landscapes.

Considering SPNR difference in the urbanized landscape, "Regulations on preserving and development of the natural complex and specially protected natural reservation of the Lipetsk city" prepared and adopted. In spite of the fact that it was based on the the Lipetsk region law "On specially protected natural reservation of the Lipetsk region", there are also essential differences in it. According to the regulation, in the territory of the Lipetsk city allocation of the following SPNR categories is possible: urban recreational areas, forest parks, monuments of landscape gardening art, health and recreation areas and resorts, the protected water objects, the protected landscapes, the protected natural objects.

In the territory of the created urban SPNR the next is forbidden: misstatement of historically developed protected landscape; construction of the capital construction projects not connected with the use of SPNR; violation of habitats of rare and endangered species of plants and animals; fires, burning of dry leaves and grass; procurement and collection of all types of plants and their parts (except for regulated mowing); damage or illegal fellings of trees and bushes; change of functional purpose of the parcel of land or its part if it can lead to increase in anthropogenous loads of the SPNR natural complex; driving and parking of motor car out of the places allocated for these purposes; warehousing and burial of industrial and household wastes.

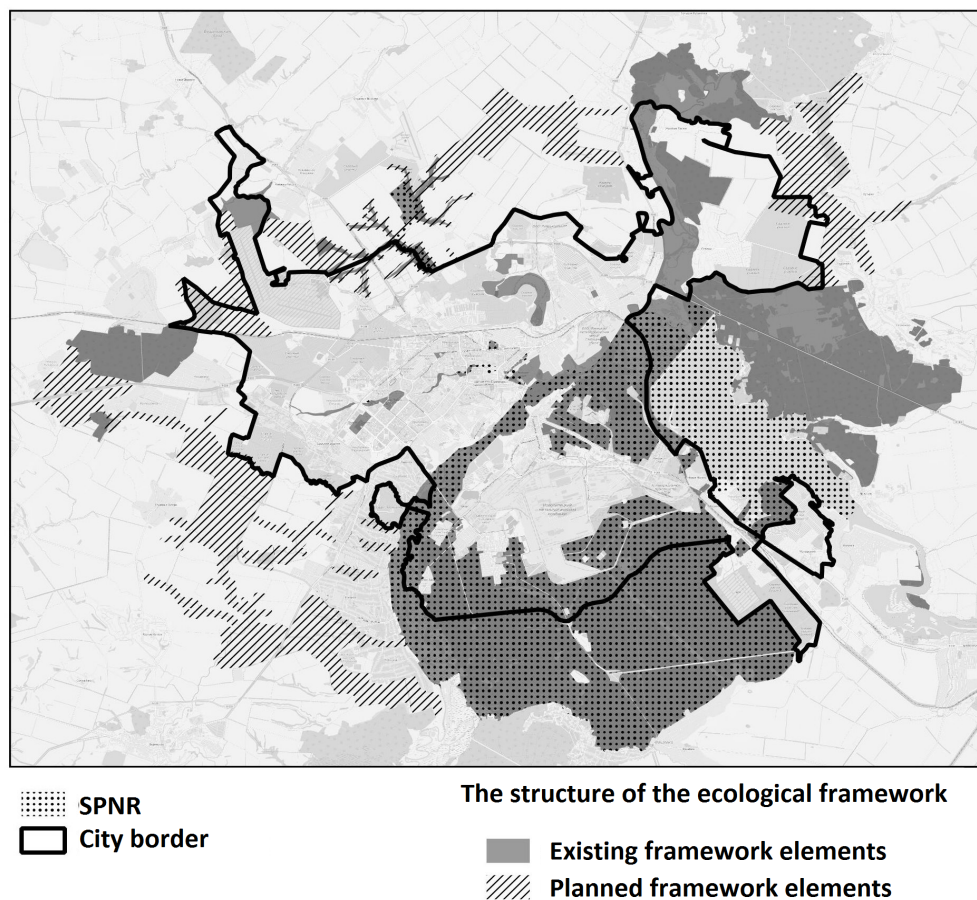


## Discussions

As authors were workgroup members on creation of local character SPNR and took part in works on inspection of the land parcels and objects having nature protection character for giving to it the status of specially protected areas of local character, it would be desirable to give a number of provisions which are represented by the peculiar system "failures" interfering forming of the full system SPNR in the territory of Lipetsk city. It is quite possible that problems of this sort with some variations may be characteristic of other urban areas.

1. Creation of managerial mechanisms and management of process of creation of the city SPNR and "the decisive word" on allocation of some or other site in category of SPNR remains for city officials. The scientists involved into accomplishment of the certain tasks connected with this work act in most cases as contractors, without having any efficient levers of impact on making decision. It is a serious problem as even good initiatives and availability of quite thought over legal framework encounters unwillingness of power structures with all gravity to approach implementation of a serious problem of creation of the thought-over and evidence-based system of city SPNR. City officials had no idea about created system shall be included in general regional structure of SPNR, about considering development of the city and, finally, entering in an ecological framework of the city. In the territory of the Lipetsk city these works weren't carried out and allocation of potential SPNR was made without serious theoretical base. At the same time, creation of an ecological framework of such large industrial city as Lipetsk is an important task.

2. The essence of the concept of a natural and ecological framework is determined by following provisions: creation of the developed system of the protected natural territories as bases of a natural framework; optimization of structure of landscape and land fund, i.e. forming and maintenance of an optimum ratio of natural and anthropogenous landscapes where the necessary biodiversity and stability of a landscape are provided; preserving natural and cultural heritage; preserving and reconstruction of esthetic, historical, recreational and information qualities of the environment. Framework tasks created in a zone of prevalence of steppe landscapes are: preserving from plowing of a virgin soil, stabilization of the water mode of the rivers, optimization of load of natural pastures, protection and recovery of natural landscapes. As well as any system, the ecological framework has quite complex structure (figure 2).



**Figure 2.** Planned and existing natural and ecological framework of Lipetsk city

The principal value in an ecological framework of Lipetsk city is carried out by Fashchevsky and Plekhanovsky forestry and landscape massifs, which generally consist of the forest natural landscapes experiencing anthropogenous impact. Fashchevsky and Plekhanovsky forests are protected by the state since creation of system of forest conservation in the 19th century. Since Peter The Great times the prohibition on the unsystematic felling has existed. In general the forests of the left coast of the river Voronezh stretched from the Tambov region to Voronezh have ecological value for all forest-steppe area. Therefore preserving forests along the river Voronezh is not only the local task, but the task of interregional level. The Plekhanovsky massif has considerably suffered from fires in 2010. The area of the burned-out site constituted 670 hectares. In addition to the fires, the main threat for forests is posed by laying of transport and engineering communications. So the Fashchevsky massif is divided into 9 large sites and 31 small sizes by the district road and wide glades for power lines and pipelines. The Plekhanovsky massif is divided by a Lipetsk – Tambov highway with heavy traffic. Width of a highway constitutes from 30 m in narrow parts to 50 m. The great value for preserving a biodiversity in the region has the inundated sites of an ecological framework. They divide the city into two parts,



carrying out a role of the ecological framework. The unique anthropogenous landscapes (the preserved turfary near the village of Dvurechki, recultivated Studenovsky quarry and a flood plain of right bank of the river Voronezh near Nizhinka) supplementing an ecological framework are grounds for studying of processes of landscapes stability and their capability to recover. Unfortunately, only the territory of turfary is included into SPNR (The Lipetsk breeding ground). Protective forest belts of roads and fields, city lawns and other elements of the cultivated plantings probably shouldn't be included in an ecological framework. These elements are completely operated by the person, vegetation on them is, as a rule, provided by introducents and weed types. They carry out a role of creating favorable conditions for the person or his activities. They aren't of significant value for landscape or biological diversity. These elements can be carried as necessary in case of development of planning structure for schemes of territorial planning areas and the master plan of the city, for the purpose of creation of the favorable environment.

3. Planning of natural and ecological framework structure development can be based on the theoretical concept of the polarized biosphere of B. B. Rodoman (2002), taking into account landscape features of the territory. Within this concept the city and the nature are considered as territorial poles. The city is surrounded with elements of an ecological framework which serve as the buffer for the natural reserved territories, separating from them the city and farmlands. This concept allows organizing an ecological framework for the region. In case of implementation of an ecological framework on the local level (the city and its suburb), it is necessary to enter the planned structure in regional one, adapting it for local landscapes. Also the structure of an ecological framework on the local level (municipal) needs to be divided into internal and external elements (an internal and external ecological framework). External elements shall be directed to preserving a biological and landscape diversity and be the buffer for strictly protected territories (reserves). The external ecological framework of the city shall surround and cover the territory of the city and its suburbs. Internal elements shall be directed to preserve the quasi natural environment in the city and to serve as ecological corridors, making a city landscape ecologically transparent. When creating the SPNR system on the municipal level, the hierarchical structure shall be built where the ecological framework of the area is entered in an ecological framework of area, etc. (Adams et al. 2006; Aune et al., 2011; Cook, 2002; Knapp, Kühn, Mosbrugger & Klotz, 2008). It is important to note the need of coordinated actions of power structures of different levels, from municipal to federal. At the same time the higher authorities shall understand accurately the capability of accomplishment of specific objectives on the grassroots level, the capability of works financing from the local budget, etc. In other words, authorities shall to understand how much the objective meets the real opportunities of municipal authorities for its accomplishment. Certainly, the main obstacle for implementation of such structure is social-and-ecological imperatives in modern society. However, even assuming material costs on the redemption of lands from owners it is possible to organize acceptable structure of an ecological framework.

4. A vital issue here is an administrative accessory of the parcels of land within the city and in close proximity to it. This problem becomes aggravated when managerial structures of different hierarchical level in whose subordination these sites are don't find mutual understanding among



themselves concerning nature protection activities or when each of them has the programs of action which aren't coordinated among parties. So, in 2007 according to the offer of management of ecology of administration of Lipetsk, we surveyed the potential territory for creation of local SPNR – the avenue of age oaks in the territory of Lenin forestry. In 2008 by means of an age drill the assessment of age of separate trees of this avenue was carried out. After these works it was recommended to give to the avenue the protected status, but when works on statement of this site on the cadastral registration have begun, it became clear that it is located on the federal land. After that all works on this avenue were stopped.

5. The question of specifying in SPNR category the large sites is particularly acute was. This problem is connected with high cost of the city land, representation of officials that "encumbrance" of some city sites by nature protection functions can lead to complications in implementation of any social and economic projects in the future, and also that it can infringe on interests of the existing entities. For this reason, the large inundated sites, extremely valuable from the point of view of preserving ecological equilibrium and biological diversity of the Lipetsk city, in the valley of the river Voronezh located near large industrial enterprises JSC "NLMK" and LLC Lipetskaya pipe company "Free Falcon" weren't delivered on protection.

6. The unwillingness of the city authorities to consider the large territories as potential local SPNR led them to the idea of creation of chain of especially protected natural objects (EPNO). As an example of such attempts giving of the EPNO status to four trees can be done. Without claiming about uselessness of this sort of actions we will note, that finally there can be a substitution of concepts of SPNR chain by EPNO network, which is unacceptable.

7. The proof of need of giving SPNR status to this or that site is also a complex challenge. The more extensive list of endangered species could have served as the most important argument in this case. It is easy to understand that for urban areas creation of such list is almost impossible. Reasoning by the fact that this site differs in a "unique", "not characteristic" landscape encountered misunderstanding and unacceptance of these arguments from the administrative structures responsible for decision making about giving SPNR status to the specific land parcel.

8. The question of scales of SPNR involvement in tourist and recreational activities is particularly acute as well. Rapid development of tourist and recreational activities, expansion of forms and types of tourism worldwide in the last decades led to the fact that the increasing areas of the territories which are earlier not involved in this process now join or be considered as potentially suitable for inclusion in various forms of organized or unorganized tourist and recreational activities. In this respect, the most demanded are natural territories which are located on especially urban areas being in the protected status. In the cities these territories can combine different objects of cultural and historical heritage that also creates prerequisites for the increased desire of their visit by the tourists. In this regard, extreme relevance was acquired by the problem of coexistence of the natural territories having the protected status and status of tourism area. Now there is a polemic in Russian and foreign literature about the possibility of combination of tourist and recreational activities to the SPNR nature protection functions, what is reflected in legislative protection

mode. This question is particularly acute in the cities with dense population where legislative restriction of separate types of tourist and recreational activities for SPNR doesn't mean that these territories won't be involved in unauthorized, spontaneous forms of tourism. Works of the contradictions devoted to searches of removal between use of SPNR in tourist and recreational activities and conservation appeared in recent years. However in the majority they are turned to development of ecological tourism, which has not been shaped yet, "vague" eco-tourism, while reality shows examples of completely different, distant from environmental forms of tourism.

9. In most cases the park territories which by determination are created for the organization of recreational activities of the population have the status of SPNR in the cities. It is possible to add the forest-park territories and coast of water objects which also most often are considered as priority during creation of SPNR to park zones. At the same time, they are popular vacation spots of citizens. In this regard, there is a serious problem of combination of nature protection and recreational functions in these territories. In our opinion, park zones aren't priority sites for creation of SPNR. It is connected with the fact that parks represent natural and anthropogenous landscapes that determines their environment-formation and environment protection feature. The most priority in this respect is the remained typical natural territories even if they are small in its area.

## Conclusion

In the conclusion, it is possible to note that there has revealed a certain regularity of potential SPNR placement in Lipetsk. Besides the fact, that it is usually forest territories, they also gravitate to water-marsh grounds. They adjoin either to the river Voronezh, or to the river Lipovka, or to other water objects. Because of such arrangement of the territories the creation of the most widespread SPNR type in the urbanized landscapes or urban recreational areas is possible. In spite of the fact, that the similar type of SPNR is more vulnerable because it is more subject to anthropogenous loading, the solution of this problem due to zoning of the territory is possible. "Regulations on preserving and development of a natural complex and specially protected natural reservation of the city of Lipetsk" assume allocation in the territory of the created SPNR of number of zones depending on its category: a zone of special protection - within this zone the conditions for preserving natural complexes and objects are provided, strictly regulated visit is allowed; the zone of protection of historical and cultural objects - within this zone the conditions for preserving monuments of historical heritage are provided; a recreational zone - the site intended for active or quiet rest; a zone of visitors service - the territory in which objects of service, cultural, consumer and information services are placed; the zone of economic appointment - within this zone the necessary for ensuring functioning of SPNR economic activity is performed. As in many surveyed areas dwelling species listed in the Red Book of the Lipetsk region were found, the creation of special protection zones, no doubt, provides greater protection of data types and will increase the biodiversity in the Lipetsk city.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

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