

RETROSPECTIVE ANALYSIS OF CREATION AND DEVELOPMENT OF THE UKRAINIAN POLISSYA' S DENDROLOGICAL PARKS

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Retrospective analysis of creation and development of the Ukrainian Polissya's dendrological parks have been fulfilled. Basing on this, objects of research were classified by location, by period of establishment, by area and analyzed their affiliation today. The results of the analysis of inventory data and quantitative structure of dendrological diversity are shown.

Polissya's dendrological parks, the natural reserve fund, preservation of biodiversity, history of creation of dendrological parks

One of the strategic priorities of the modern global environmental policy is protection of biodiversity which was adopted by the Convention on Biological Diversity (1992), the Pan-European Biological and Landscape Diversity Strategy (1995) and many other conventions and international policy documents. Stopping of the sharp reduction of plant diversity in particular in the critical natural geographic regions is their main task [Ошибка! Источник ссылки не найден.].

According to many scientists and experts over the past decade in Ukraine, against the background of global warming on the Earth as a whole, signs of a new climate are emerging. Intensive growth of the average annual air temperature may lead to modifications of a large part of natural-climatic landscape of our country: somewhere steppe turns into semi-desert, forest steppe is replaced by the forest zone. Nowadays the domestic scholars speak about the fact that not only introduced species, but even native ones don't tolerate the current climate changes [2]. In this regard, the conservation of the species composition of existing natural ecosystems

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and the introduction of species having a higher degree of ecological plasticity to urban landscape become actual.

It is known that the greater the diversity of species, the more stable ecological system. That is why a significant role in solving the noted problems is played by the botanical gardens and dendrological parks that are the favorable places of saving of many native and exotic tree species, including rare and economically valuable ones. About 70% of dendrological parks having national importance are the important centers of introduction and acclimatization of plants today and have been established from the mid-nineteenth century to the mid-twentieth century [3]. From this perspective, one could argue that most tree species are in their reproductive years and can be used as mother plants.

In order to solve the problems of saving of rare dendroflora the dendrosozological catalog of natural reserve fund of forest-steppe have been already formed and dendrosozoflora of Ukraine's steppe have been studied (Popovich, 2011; Popovich, 2013). According to the literature data the species composition of Ukrainian Polissya has the least number of woody species in comparison with other areas: about 160 native and 650 exotic species representing 7% and 28% respectively of the total number of species of Ukraine's dendroflora (Kochno, Kurdyuk, 1994). According to this it becomes actually to research Polissya's dendrosozoflora which is saved in such centers as dendrological parks besides botanical gardens and park-monuments of landscape art.

According O. Bayrak (2013), to assess the current state of dendrological parks in particular local importance it should carry out comprehensive monitoring of their plantations, most of which especially in the Ukrainian Polissya has been studied little [4, 5].

Hence, research of existing dendrological composition in the dendrological parks of Ukrainian Polissya and their territorial organization in order to improve the conditions of biodiversity preservation on specified natural zone acquire relevance.

Objective: to study the legal and regulatory framework for the organization of dendrological parks, to analyze the literature regarding the position of Ukrainian Polissya's dendrological parks in the overall structure of our country, to perform their retrospective analysis of creation and development.

Used materials and methods for research. The written and cartographic materials served for the study. From written materials it has been processed the laws in relation to protected areas of Ukraine, Russia, Belarus and Poland, data from the Ministry of Ecology and Natural Resources of Ukraine, literary and internet resources. During the study as cartographic materials physical and geographical, administrative and satellite maps of Ukraine were used. Breakdown by area of arboretums has been conducted according to the classification of botanical gardens by I. D. Rodichkin [6], made by N. O. Oleksiychenko and N. V. Gatal'ska method has been used for breakdown by period of establishment of the dendrological parks [7] .

The research results

Forest zone is located in the Polissya not only Ukraine, but also covers the territory of Belarus and partly Russia and Poland. From this perspective, we analyzed the location of dendrological parks in the structure of protected areas of these states.

In the classification structure of the protected area the Ukraine's dendrological parks belong to the nature reserve fund and are classified by origination as artificial objects [8]. Based on studies of Konyk N. Y., Dzyba A.A. [9], we found that the relevant law of Belarus provides that dendrological parks belong to the subcategory of botanical natural monuments.

In Russia, the dendrological parks with botanical gardens are actually one of the categories of particularly protected areas, and in Poland only provisions for the Botanical Garden has defined by law and generally appellation of dendrological park (or arboretum) isn't accentuated separately and in the literature of the state an dendrological parks is considered only as a special type of botanical garden [10].

On our opinion the legislation in Ukraine compared to other states gives quite clearly the definition and considers status of arboretums as one of the categories of

protected territories [8]. In addition, in 2004 the methodical recommendations "Composition, content, development, coordination and approval of project of territorial organization of dendrological parks have been developed in the sector of reserve management. Over the past few years, the criteria of a comprehensive assessment of current state of park-monuments of landscape art for the example objects of forest-steppe zone have been developed by Gatal'ska N. V. [6]. Based on the analysis of the literary sources we have revealed that there are no clear criteria for the provision of appropriate administrative rank for arboretums, the approaches to zoning arboretums are not sufficiently developed, including criteria for the allotment of reserve zone and determining optimal recreation load in the zones.

According to the Ministry of Ecology and Natural Resources of Ukraine as of 01.01.2014 Ukraine has 58 dendrological parks, including 19 facilities nation and 39 local importance, while in 2009 there were 36 [4]. In order to detect the position of the objects of study in the general structure of Park Ukraine, we conducted a general analysis and identified the features by location, by period of establishment, by area and analyzed their affiliation.

By natural conditions most of dendrological parks as national and local importance are in the forest-steppe zone (80%), while 10% - in the areas of Polissya and steppe. The largest quantity of dendrological parks are registered in Ternopil and Ivano-Frankivsk regions (9 objects), a small amount are in Zhytomyr, Transcarpathian, Sumy, Khmelnytsky, Chernivtsi, and they are not in Volyn, Donetsk, Lugansk and Odessa regions [3, 4] (fig. 1).

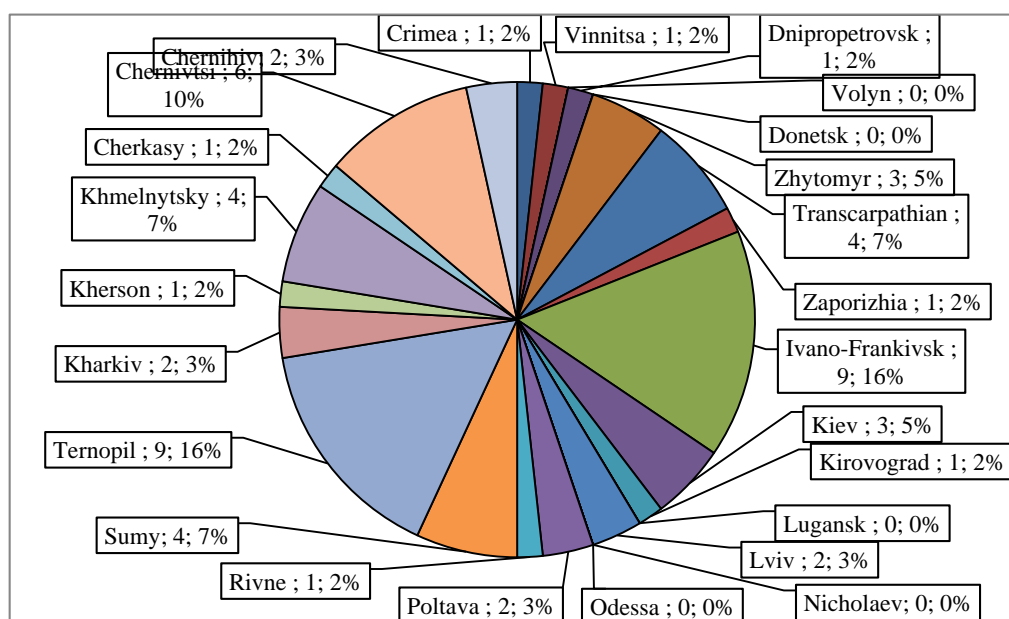


Figure1. The distribution of dendrological parks of Ukraine by the administrative arrangement

The largest share in the structure of dendrological parks is occupied by the objects with small size (30 ha): the share is 58% among dendrological parks of national importance and is 92% among local importance. The largest arboretum of national importance is "Alexandria" (405.8 ha), "Hermakivskyy" (56.0 ha) and "Rudkivskyy" (59.0 ha) are average by area (30-100 ha).

An important social factor that significantly affects the state of the territory of each park is the affiliation to the respective organizations, which are land owners or land users [4]. Most of dendrological parks of national importance Ukraine is subordinated to the state forest enterprises (21%), research institutions (21%) and universities (16%). Among dendrological parks of local importance 31% of them belong to the state forest enterprises, in addition, a significant portion of them belongs to the town (10%) and rural (8%) councils, about 10% of research objects are in private property.

Based on the retrospective analysis of the creation of Ukrainian dendrological parks we found that most of dendrological parks of national and local importance

were laid in the period from the mid-twentieth century to 1991 (37% and 54% respectively). A significant share of dendrological parks of national importance is occupied by ones that were laid during the period from the mid-nineteenth century to 1917 (32%): "Funny Bokovenky" (1893), Ustymivsky (1893), "Askaniya Nova" (1887), "Sumy" , "Storozhynetskiy" (1912), "Chernivetskiy" (end of the nineteenth century). The dendrological parks of national importance are a special category because they were created from the late eighteenth century to the middle of the nineteenth century: "Alexandria" (1788), "Obroshynskiy" (1730), "Sofievka" (1796) "Trostianets" (1834). These dendrological parks have considerable historical, cultural and ecological value, as a significant share of their dendroflora is occupied by the centuries-old trees needing the special measures for their protection (fig. 2) [3].

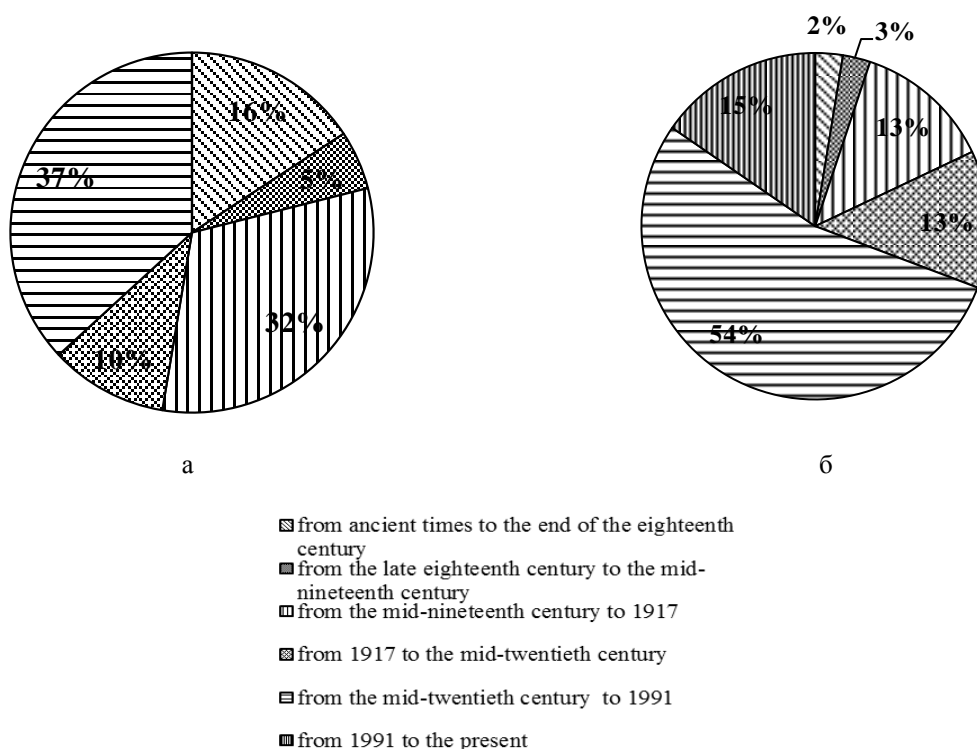


Fig. 2. The distribution by period of creation of Ukraine's dendrological parks of national (a) and local (b) importance

On the territory of Ukrainian Polissya 6 dendrological parks have the reserve status, 2 of them have nation importance ("Syretsky dendrological park" and

"Dendrology park of Bereznovsky forest college") and 4 of them have local importance ("Hladkovytsky", "Elita", "Pilyava", "Yunnatsky") by the administrative rank [11].

The dendrological parks were laid only in three of the eight northern regions of Ukraine, located in the Ukrainian Polissya: Zhitomir (3), Kiev (2) and Rivne regions (1) (Table).

Overview of dendrological parks of Ukrainian Polissya

The name of the park	Year of creation / Approval reserve status	Administrative arrangement (region)	Area, ha	The total number of species and forms (pcs.)
Dendrological parks of national importance				
"Syretsky dendrological park"	1949/1983	Kyiv	7,5	479
"Dendrological park of Bereznovsky forest college"	1979/1989	Rivne	29,5	750
Dendrological parks of local importance				
"Pilyava"	in the mid-nineteenth century/ 1967	Zhytomyr	6,1	75
"Hladkovytsky"	1957/1964	Zhytomyr	4,0	73
"Yunnatsky"	1957/2006	Kyiv	13,7	200
"Elita"	1984/1988	Zhytomyr	4,8	300

By area, all objects of study are small in size: the smallest ones is the dendrological parks "Hladkovytsky" (4.0 ha), "Elita" (4.8 ha), a little more ones are "Pilyava" (6.1 ha), (7.5 ha) and "Yunnatsky" (13.7 ha) and the largest dendrological park of Ukrainian Polissya is (29.5 ha) (Fig. 3).

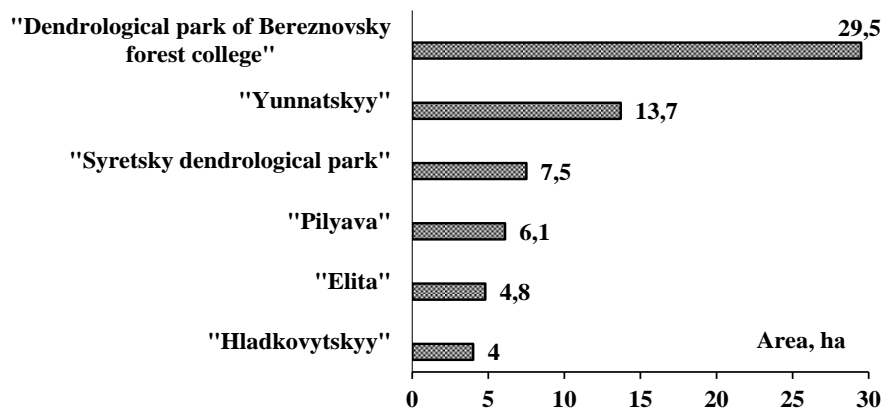


Fig. 3. The distribution of dendrological parks of Ukrainian Polissya by area

The dendrological parks of Ukrainian Polissya are subordinated to the state forest enterprises (2), to the research institutions (1), to the educational institution (1), to the environmental center of youth (1), to the state agricultural farm (1).

The collections of dendrological parks of Ukrainian Polissya account between 75 and 480 taxa of trees, among which are age-related trees and significant number of plantations of exotic species. The richest collections of woody plants are presented in "Dendrological park of Bereznovsky forest college" (more than 750 species and forms) and "Syretsky park" (479 species), much smaller ones are in the arboretums "Elita" and "Yunnatskyy" (200-300 species and forms) (fig. 4) [12].

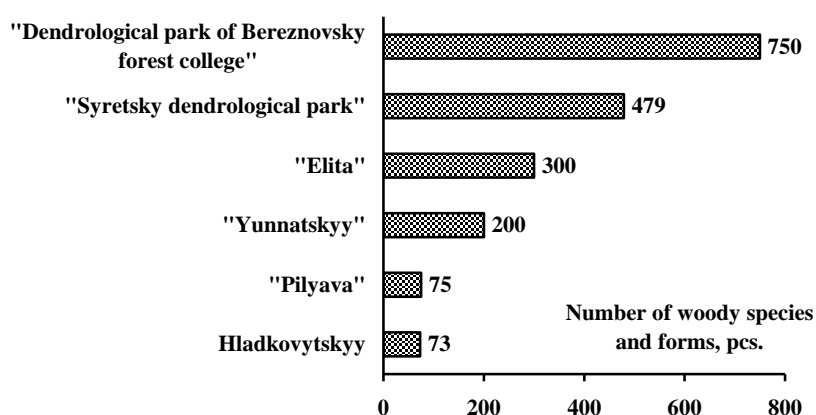


Fig. 4. The distribution of dendrological parks of Ukrainian Polissya by the number of tree species and forms

It should be noted that during the study of the literature, we found some differences as to the number of species composition, the area of research dendrological parks, limited information about the arboretums particular of Zhytomyr Polissya [5]. However, there is some information about other the dendrological parks located in the Ukrainian Polissya which currently don't have protected status: Klesivsky (Rivne region), Kroshnyansky dendrological parks and dendrological parks of Malynsky forestry college (Zhytomyr region). There are the value collections of woody plants in the territories of above noted parks, that's why they require more detailed study.

Conclusions

1. 6 dendrological parks (10%) of 58 ones are on the territory of the Ukrainian Polissya, 2 of which have national ("Syretsky dendrological park" and "Dendrology park of Bereznovsky forest college") and 4 of which have local importance ("Hladkovytsky", "Elita", "Pilyava", "Yunnatsky"). The majority of the objects established and acquired protected status in the second half of the twentieth century.

2. Species composition of Ukrainian Polissya's dendroflora is represented the lowest number of species of woody plants in comparison to other natural zones of our country. The collections of dendrological parks of Ukrainian Polissya have age plantations and numerous exotic species, so they require the complex monitoring of plantations, development of recommendations for the isolation of protected zones within dendrological parks for the effective preservation of specimens.

3. Currently in Ukraine there are no clear criteria for the provision of appropriate administrative rank to the dendrological parks, not sufficiently developed legal framework and methodological approaches to zoning dendrological parks, including criteria for the allotment of protected areas and determining optimal recreation load in all zones of dendrological parks.

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