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PUBLIK PARKS' GREENERY IN RIVNE

Ривне қаласындағы дендро алғандылықты сақтаудың, оналтудың және байытудың тиімді жолдарын белгілеу үшін қалалық саябақтардың дандурларының ағымдағы жай-күйін зерттеу жүргізілді. Зерттеу нәтижелері қаланың бес ауданының орман және бұта өсімдіктерінің түрлілік түрлерінің сандық және сапалық күйін анықтауға мүмкіндік берді. Ривнестің аумағында жалпы ауданы 43.4550 гектар болатын 39 квадрат пен екі бульвар бар екендігі анықталды. Қоғамдық бақшалардың жалпы ауданындағы мемлекеттік бақтар мен бульварлардың үлесі 27,3% құрайды. Қаладағы аландар біржәлкі емес, олардың көпшілігі орталық ауданда шоғырланған. Оңтүстік және батыс өңірлер тұрғындары рекреациялық аумақтармен жабдықталған. Қаладағы көптеген квадраттардың негізі қарапайым отырықсыз немесе ағаштар мен бұталар топтамасымен үйлескен трассалар мен гүлзарлар желісіне енетін жасыл ландшафттар. Қаланың орталық аландарындағы плантациялар аймақтың жағдайына сәтті бейімделген әртүрлі түрлерге ие, бірақ олардың көпшілігі кең таралмайды және өсудің жеке жерлерінде орын алады. Қалалық бұталардың бұталарының тіршілік жағдайы қоршаған ортаның жағдайына байланысты және солтүстік, шығыс, батыс және орталық аудандарда қанағаттанарлықсыз және оңтүстік аймақта жақсы жағдайда болады. Әртүрлі дәрежедегі рекреациялық жүктеме қала аландарының барлық жасыл аймақтарынан өтеді. Бұл жасыл желілердің өмірлік жағдайына әсер етеді, олардың фитомелиорациясы мен эстетикалық функцияларын нашарлатады. Осылайша, топырақ-климаттық аудандастыруға сәйкес өсімдіктердің қалалық жағдайларына бейімделген, орнықты, тұрақты болуына байланысты, әсіресе, қаланың батыс бөлігіндегі жасыл екіпелердің түрлерін және интраспациялық әртүрлілігін арттыру керек.

Түйін сөздер: түрдің құрамы, дандурфлора, шаршы, фитомелиоративті тиімділік.

Для дальнейшего установления эффективных путей сохранения, восстановления и обогащения дендроразнообразия г. Ровно проведены исследования современного состояния дендрофлоры скверов города. Результаты исследований позволили определить количественное и качественное состояние видового разнообразия древесных и кустарниковых растений скверов пяти районов города. Установлено, что на территории города Ровно насчитывается 39 скверов и два бульвара общей площадью 43,4550 га. Доля скверов и бульваров в рамках общегородских озелененных территорий общего пользования составляет 27,3%. Скверы в городе размещены неравномерно, подавляющее их количество сосредоточено в центральном районе. Наименее обеспеченные рекреационными территориями жители южного и западного районов. Основу большинства скверов в городе составляют зеленые газоны, пронизанные сеткой дорожек и цветники в сочетании с рядовыми посадками или группами деревьев и кустов. Насаждения скверов центрального района города отличаются разнообразием интродуцированных видов, успешно акклиматизированных к условиям региона, но большинство из них не получили широкого распространения и встречаются одиночными местами произрастания. Жизненное состояние древесно-кустарниковых растений скверов города зависит от экологических условий и варьирует в широких пределах - от удовлетворительного до неудовлетворительного в северном, восточном, западном и центральном районах и в хорошем состоянии в южном районе. Рекреационную нагрузку разной степени испытывают все зеленые зоны скверов города. Это сказывается на жизненном состоянии зеленых насаждений, ухудшает их фитомелиоративные и эстетические функции. Таким образом, необходимо увеличить как видовое, так и внутривидовое разнообразие зеленых насаждений, особенно в западном районе города, за счет устойчивых, адаптированных к городским условиям растений в соответствии с почвенно-климатическим районированием.

Ключевые слова: видовой состав, дендрофлора, сквер, фитомелиоративная эффективность.

For the further establishment of effective ways of preserving, rehabilitating and enriching dendro diversity in Rivne, studies of the current state of the dendroflora of city public parks have been carried out. The results of the studies made it possible to determine the quantitative and qualitative state of the species diversity of woody and bush plants of the five districts of the city. It was established that in the territory of Rivne there are 39 public parks and two boulevards with a total area of 43.4550 hectares. The share of public gardens and boulevards in the total area of public gardened areas is 27.3%. The public parks in the city are unevenly located; the vast majority of them are concentrated in the central district. The inhabitants of the southern and western regions are the least equipped with recreational territories. The bases of most public parks in the city are green lawns, pierced with roads and flowers, in combination with rows of landings or groups of trees and bushes. The plantations of the central city public parks feature a variety of introduced species that have been successfully acclimated to the conditions of the region, but most of them are not widespread and occur in separate places of growth. The living condition of the shrubs of the city public parks depends on the environmental conditions and varies from satisfactory to unsatisfactory in the northern, eastern, western and central regions and in good condition in the southern region. Recreational load of varying degrees undergo all green areas of city public parks. It affects

the vital state of greenery, worsens their phytomelioration and aesthetic functions. Thus, it is necessary to increase both the species and the intraspecific diversity of green plantations, especially in the western part of the city, due to sustainable, adapted to urban conditions of plants in accordance with soil-climatic zoning.

Keywords: *species composition, dendroflora, public parks phytomeliorative efficiency.*

Formation of green plantations of the city is carried out by combining natural phytocoenoses with cultivated flora. The system of the city's greening includes various categories of city plantations, including public parks, boulevards, embankments, etc.

Research of multifamily of parks and the degree of recreational load on the city's landscapes are actual issues in nowadays, as green plantations of urbanized areas undergo a permanent man-made impact. In our opinion, the analysis of the dendroflora of parks makes it possible to identify the prospects of certain species of trees and shrubs for a particular district of the city, which will allow to effectively solve problems related with selection of assortment of stable tree species.

The object of research is the dendroflora of the parks in Rivne. The materials in the management of housing and communal services of the Rivne City Council, the Communal enterprise «Rivne City TSC» and their own researches were used.

During 2017-2019 the research was conducted by us of public parks and boulevards in Rivne, it was

determined the species composition and condition of green plantations, calculated the coefficient of phytomelioration efficiency of the five districts of the city.

Methods of research are route surveys, cameral and analytical. The systematic position, the nomenclature of taxa they were determined by V. Ya. Zayachuk, M. A. Kochno, O. A. Kalinichenko [1; 2; 3]. The total area of most of the objects of greenery was determined by the satellite map in Rivne (M 1:20).

The public garden is an element of the architectural and artistic design of the inhabited areas, arranged and planted with an area of not less than 0,02 hectares [4, p. 3; 5]. According to the location in urban development they are divided into two groups: public gardens in squares and public gardens in the streets [6].

On the territory in Rivne there are 39 public gardens and two boulevards with the total area of 43,4550 hectares, tabl. 1.

Table 1

Placement of public gardens in Rivne

Types of public gardens	Number, pieces	Area, hectares
On the maidans	2	1,2747
On the squares	4	3,8533
Near monuments and sculptures	10	9,9625
On the streets between buildings and at the intersection of streets	17	18,9095
Decorative near memorials	3	0,2963
On the waterfront	3	5,4078
Boulevards	2	3,7509

The share of public gardens and boulevards in the total area of public gardened areas is 27.3%. They are decorated with trees, bushes, flower beds and lawns, in combination with small architectural forms and sculptures, monuments, and some are with places for rest.

The basis of most public gardens in the city are green lawns, permeated with a network of tracks and flower beds in combination with ordinary landings or groups of ornamental or fruit trees, shrubs, a small height which allows you to maintain the open nature of the space. At the same time, the use of high tree species in public gardens gives them a closed

character, isolates them from the urban environment and simultaneously well shades the resting places, perform phytomelioration functions.

Boulevards have been long a widespread means of organizing walking movement combined with short breaks. In the city the design of boulevards also became in the planning practice of greenery system. Thus, on the studied territory there are two Boulevards - Independence and B. Khmel'nitsky, which are located in the middle of streets with two-way traffic and are fenced off from the roadway by ordinary landing of ornamental trees.

Boulevard of Independence (Nezalezhnosti) adorn two fountains, alley of roses and flower beds, along which there are places for rest. Part of the boulevard goes smoothly into Nezalezhnosti Maidan. Separate areas are decorated with row and single plantings of trees and shrubs: *Ailanthus altissima* Swinge, *Platanus acerifolia* Willd., *Magnolia kobus* DC, *Crataegus monogyna* Jacq., *Acer platanoides* L. □ *Globosum* □, *Catalpa bignonioides* Walt., *Quercus robur* L. □ *Fastigiata* □, *Paeonia arborea* Don, *Taxus baccata* L., *Syringa vulgaris* L. and *S. amurensis* Rupr. etc.

Boulevard of B. Khmelnytsky became the main pedestrian link between all objects of the system of servicing residents of the eastern district of the city - shopping, children's facilities, public transport stops.

The main composite axis of the boulevard is directed at the monument to B. Khmelnytsky. In the green zone, created by a six-row landing of *Aesculus hippocastanum* L., isolated specimens of *Picea abies* Karst. and two flowerbeds, there is a children's playground. It should be noted that the vast majority of *Aesculus hippocastanum* L. are damaged by *Cameraria ohridella*.

For reseach of the public gardens greenery the territory of the city is divided into five districts: northern, eastern, western, southern and center.

The public gardens in the city are unevenly located. Most of them are concentrated in the central region, tabl. 2. The inhabitants of the southern and western regions are the least equipped with recreational territories.

Table 2

Planting of the city of Rivne (on the example of public gardens and boulevards)

Characteristics of public gardens and boulevards	Areas of the city				
	North	East	Western	South	Central
S district, ha	1084	910	1420	1870	540
S of public gardens and boulevards, ha	14,596 2	5,4170	2,8564	0,3500	20,2354
Number of objects of planting, pieces	6 public gardens, 1 square	2 public gardens, 1 square, 1 boulevard	2 public gardens	1 public garden	22 public gardens, 2 squares, 2 maidans, 1 boulevard
Total number of trees and shrubs, units, including:	1856	1976	1256	228	5564
Number of families, pcs.	20	19	15	4	31
Number of generations, pcs.	37	34	23	8	58
Number of species (forms, hybrids), pcs.	54 (2 f.)	52 (3 f., 1 h.)	25 (2 f.)	10 (1 f.)	89 (11 f, 2 h.)
Phytomelian-Ratio Efficiency	3,923	2,811	1,464	0,795	15,504

The greeneries of the northern district are represented in six public gardens and Prosvita Square. According to research results, 54 species and 2 forms of trees and shrubs belonging to 20 families, 37 generas of the branches Pinophyta and Magnoliophyta are growing in the public gardens of this area. Among them, the Pinophyta Division has 8 species and 1 form (16.07% of the total number of trees and shrubs in the area), namely: *Abies alba* Mill., *Larix deciduas* Mill., *Picea abies* Karst., *Picea pungens* Engelm., *Pinus sylvestris* L., *Juniperus communis* L., *Juniperus communis* L. □ *Hibernica* □, *Juniperus sabina* L., *Thuja occidentalis* L.

The Division of Magnoliophyta has 83.93% of the total number of taxa belonging to 18 families and 31 generas. The largest species diversity is characterized by the family Rosaceae Juss. (15

species) and Pinaceae Lindl. (5 species). Families of Cupressaceae F. Neger, Salicaceae Lindl., Aceraceae Lindl., Oleaceae Lindl. there are 4 species. The rest are represented by 1 or 2 species. Families of Betulaceae C. A. Agardh., Rosaceae Juss., Aceraceae Lindl., Salicaceae Lindl., Tiliaceae Juss., Caprifoliacea Vent., Buxaceae Dumort., Oleaceae Lindl., Juglandaceae Lindl. prevailing in number of instances (80.01%).

It should be noted that the living conditions of the shrubs of the district depend on the ecological conditions of growth and range from satisfactory to unsatisfactory.

The eastern district of the city presents public gardens on the St. Bandera Street and Avtomobilisty, Peremohy Square, Boulevard of B. Khmelnytsky. The landscaped territories of

general use complement the tract «Sosonky» which is an environmental object of state importance.

According to research results, the dendroflora of the city's eastern district has 51 species, 3 forms of trees and shrubs belonging to 16 families and 32 genera of the branches Pinophyta and Magnoliophyta. The Pinophyta division has 9 species of trees and bushes of the families Pinaceae Lindl. and Cupressaceae F. Neger (26.92%). Dominant in Magnoliophyta are families of Rosaceae Juss., Salicaceae Lindl., Aceraceae Lindl., Oleaceae Lindl., Betulaceae C.A. Agardh. Trees, shrubs and vineyards of families Hippocastanaceae Torr. Gray, Fagaceae A. Br., Tiliaceae Juss., Juglandaceae Lindl., Cornaceae Link, Caprifoliaceae Vent., Buxaceae Dumort., Vitaceae Lindl., Ulmaceae Mirb., Simarubaceae Lindl., Moraceae Lindl. represented by 1-2 species. The peculiarity of the area is the presence of prevalent tree species in the city squares, namely: *Betula davurica* Pall., *Robinia pseudoacacia* L. □ *Umbraculifera* □, *Pinus nigra* Arn., *Prunus Pissardi* Carr., *Ailanthus altissima* (Mill.) Swingle, *Morus Alba* L. The living condition of shrubs is generally satisfactory.

The green zone of the territory of the western district includes squares at the crossroads of the street Soborna - Mlynivska and Jubilee (Soborna - Korolyova St.). It has been established that 25 species and 2 forms of shrubs belonging to 15 families and 23 genera of the branches Pinophyta and Magnoliophyta grow in the public gardens. By species composition is dominated by the family Rosaceae Juss. and Oleaceae Lindl. All other families have 1-2 species.

Thus, in the Jubilee public garden there are 20 species of trees and shrubs belonging to 12 families, 17 genera. The dominant species are *Tilia cordata* L., *Acer platanoides* L., *Salix alba* □ *Vittelina pendula* □, *Betula pendula* Roth. etc.

The territory of the public gardens at the crossroads of the Soborna-Mlynivska Street mainly represented by lawns, flower beds and shrubs *Juniperus sabina* L., *Forsythia europaea* Deg. Bald., *Ligustrum vulgare* L., *Symphoricarpos albus* (L.) Blake, *Berberis vulgaris* L. It should be noted that most trees and shrubs are in satisfactory condition.

To the greened areas of the city-wide significance in the southern district of the city belongs to the «Dzherelo», which is harmoniously connected with the architecture of the private building that surrounds it. In the park, there are 10 species of trees and shrubs that belong to 4 families of the Pinophyta and Magnoliophyta divisions. This is *Pinus sylvestris* L., *Salix matsudana* Koidz, *Salix caprea*

L., *Salix alba* □ *Vittelina pendula* □, *Populus tremula* L. Recently planted alley *Spiraea vanhouttei* Zab. A special role in the landscape composition of the square is played by a well-equipped source. Trees and shrubs of the area under the age of 10 years are well-maintained.

Green plantations of the general use of the central district of the city are represented by 22 public gardens, two squares (Teatralna, Pryvokzalna); Boulevard of Nezalezhnosti, two maidans (Nezalezhnosti and Magdeburg Law). Most of the public gardens in this area have a high level of attractiveness due to the use of successful compositional methods of green building, different composition of green plantations and forms of their arrangement: solitaires, alleyways, arrays, landscape groups, hedgerows, borders, lawns, flower beds, containers and vases, vertical greenery, etc.

It is determined that in the public gardens of the central region of the city there are 89 introduced and local species of trees and shrubs, 11 forms, 2 hybrids belonging to 31 families and 58 genera Pinophyta and Magnoliophyta with 5564 plants' specimens.

The Division of Pinophyta (27.48%) is represented by 3 families of genera *Chamaecyparis* Spach, *Thuja* L., *Juniperus* L., *Larix* Mill., *Picea* A. Dietr., *Pinus* L, *Taxus* L., has 13 species and 4 forms of trees and shrubs. The *Platyclusus* subfamily is represented by two specimens of *Platyclusus orientalis* L.

Magnoliophyta (72.52%) has 76 species of 28 families and 42 genera. The dominant family is Rosaceae Juss. - 21 species, 1 form and 1 hybrid (13.03%). Representatives of other families are also growing here: Tiliaceae Juss. (9.04%), Cornaceae Link (5.97%), Salicaceae Lindl. (5.48%), Buxaceae Dumort. (5.19%), Aceraceae Lindl. (4.65%), Betulaceae C.A. Agardh. (4.51%), Caprifoliaceae Vent. (3.97%), Berberidaceae Torr. et Gray (2.88%). 11 families have 10 to 60 specimens of trees and bushes predominantly from 1 to 3 species. The family Paeoniaceae L. has 7 specimens of the bushes, Platanaceae Lindl. - 8 trees, Hydrangeaceae Endl. - 10 bushes, and the families Ulmaceae Mirb., Simarubaceae Lindl., Celastraceae Lindl. - 1-4 specimens of trees. The planting of public gardens in the central district of the city is characterized by a variety of species that have been successfully acclimated to the conditions of the region.

Conclusions. Recreational load of various degrees undergo all green areas of the city's public gardens which affects the living conditions of trees and shrubs, deterioration of their phytomelioration and aesthetic functions. Optimization of the

dendroflora of the investigated area due to an increase in the species diversity of green plantations, especially in the southern and western areas, is a prerequisite for improving their phytomelioration efficiency.

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