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Dendroflora in Spatial Planning Compositions of Children's Squares in Vyshhorod Town

Olha Zibtseva[1*], Olena Troshkina[2], Olena Olkhovska[3]

[1]National University of Life and Environmental Sciences of Ukraine
03041, 15 Heroiv Oborony Str., Kyiv, Ukraine

[2]National Academy of Fine Arts and Architecture
04053, 20 Voznesensky Uzviz Str., Kyiv, Ukraine

[3]Kyiv National University of Construction and Architecture
03680, 31 Povitroflotskyi Ave., Kyiv, Ukraine

Abstract. Various groups of urban residents, including children, need to ensure a high-quality environment. One of the important features of urban plantings is their biodiversity, which is often low in the territories of children's facilities. The purpose of the study is to identify spatial planning solutions and assess the species composition of tree plantations on the territory of six newly created children's parks of the small historical city of Vyshhorod, Kyiv Oblast, which is located near the capital and is marked by positive demographic dynamics. The initial data were obtained as a result of the authors' inventory survey of vegetation in these parks. The spatial planning composition of the dendroflora of these parks is also analysed using a visual method. Based on the obtained data, the level of biodiversity of tree stands in parks under study was estimated: the available number of taxa, Menhinick's richness and diversity index, and the Berger-Parker abundance index were compared. On the territory of these parks, a total of 70 taxa of woody and shrubby plants were identified, among which introduced species predominate. More than half of the identified taxa are found only in one of the parks. The most common types represented on the territory of most children's parks are the following: *Spiraea vanhouttei, Juglans regia, Physocarpus opulifolius*. Cluster analysis revealed groups of parks with a similar assortment of woody plants, and, accordingly, similar biodiversity indicators. The relationship between the assortment of plants and the general spatial solution of parks is traced. It was concluded that the selection of the species composition of woody plants for children's parks should be more thorough, and it is also advisable not to exceed the recommended 10% share of one species in the composition of plantings. The use of "thorny" species that are not recommended for children's territories is quite balanced and rational. The use of the findings in urban planning would help create a multifunctional eco-balanced children's space and increase the sustainability of urban ecosystems

Keywords: richness index, diversity index, dominance index, native woody plants, spatial planning composition

Introduction

Urban landscaping is shaped by the historical and current decisions of a wide range of people and is able to maintain high levels of plant diversity [1], which is an important condition for creating healthy, useful, and sustainable urban plantings [2]. The high biodiversity of woody plants increases not only the

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*Corresponding author

aesthetic appeal of territories [3], but also, most importantly, reduces the vulnerability of plantings to the influence of many factors, in particular, pests, diseases, and climate change [4]. However, despite the wide variety of trees in the natural world and the wide possibilities of its use in the development of urban environments, a rather limited number of species predominate in urban plantings [5]. Therefore, green spaces have limited potential to support biodiversity, in particular, low levels of biodiversity are typical for public places [6]. They are used to create spatial and planning compositions of landscape objects that become too utilitarian, similar to each other, uninteresting, and low in aesthetics [7].

In general, space in cities is limited, and the establishment of green spaces depends on the understanding of the preferences of urban residents [8]. At the same time, it is important to ensure a high-quality environment for various groups of citizens, of which about a third are children. However, despite the fact that children are frequent users of urban green spaces, the design of space for children is determined by adults, which leads to landscapes that limit the daily life of urban children and negatively affect their development [9]. It is noted that school territories formed by adult priorities are often devoid of biodiversity [10]. Currently, children spend less time in their natural environment, which affects their mental and physical health [11].

The historic city of Vyshhorod is located 20 km northwest of the Ukrainian capital Kyiv. Now it is a modern town on the banks of the Dnipro River, which is rapidly developing and has positive demographic dynamics. However, after the complete destruction of the town park in the central part of the town in the 1990s (as evidenced by the 1990 town master plan) and the construction of high-rise buildings, there are now very few public green spaces. There are virtually no parks in the town. Instead, new, mainly children's parks were created in the central part of the town , six of which are the subject of this study.

According to the available master plans of the 1970s-1990s, the species composition of woody plants in small towns of the region was quite limited and consisted mainly of up to 12 species. Among the most common types were: *Acer negundo*, *Robinia pseudoacacia*, *Aesculus hippocastanum*, *Acer saccharinum*, *Populus pyramidalis* (introduced species are now common in most Ukrainian cities). In addition, such native species as *Tilia cordata*, *Populus nigra*, *Betula pendula*, *Alnus glutinosa*, *Sorbus aucuparia*, *Pinus sylvestris*, and also *Salix alba*, *S. caprea*, *Quercus robur*, *Ulmus minor*, *Fraxinus excelsior*, *Picea abies* were also common in small town green spaces. Among the wide range of woody plants recommended for long-term urban gardening by these master plans, introduced species prevailed.

The purpose of the study is to assess the biodiversity and spatial planning compositions of green spaces in urban children's parks of the small historical city of Vyshhorod, Kyiv Oblast, which is characterised by demographically positive trends. This study provides currently almost non-existent data on the quality of green spaces in small towns, in particular, those important public facilities that are intended for children's recreation.

Literature Review

The growth of urbanisation and the processes of transformation of natural ecosystems drew attention to the issues of optimisation of the urban environment, where the main role belongs to urban plant communities, which, subject to rational organisation, significantly affect the most important indicators of environmental quality. At the same time, a scientifically based selection of woody plant species that are resistant to urban environment conditions is an important requirement for ensuring the high efficiency and longevity of urban green spaces being created. An important indicator of the quality of green spaces is considered to be their species diversity, which should guarantee resistance to anthropic and any other load [12].

Biodiversity in cities is of fundamental importance for human health and well-being, and provides a wide range of essential ecosystem services. Nevertheless, it is often perceived as a minor addition, although, the consideration of the requirements of biodiversity allows developing a strategic and thoughtful design with its increase in mind [13]. Urban design with biodiversity in mind is a protocol for creating urban areas that benefit local species and ecosystems.

A number of researchers recommend "liberal use" of woody plants, in which individual species in urban green spaces should not exceed 10% of the total number of trees. When planning a green space, it is recommended to preserve native species and increase the diversity of introduced species [14], which should help increase the stability and decorative nature of plantings [15], and to effectively resist recreational stress – increase the share of shrubs, in particular, in the form of hedges. It was found that park visitors prefer plant communities with large species richness and the absence of shrubs [16]. At the same time,

there is an opinion that the introduction of new species negatively affects the biodiversity of native species [17], which, as a result of the invasion of non-native species, faces serious threats to the ecological balance [18], since invasive species not only reduce natural biodiversity, but also change key ecological processes and destroy the natural ecosystem of parks.

Despite the fact that many urban parks have been created in the world, there is little knowledge about the composition and diversity of trees: there is evidence that more ornamental and exotic trees are used in new parks and that the diversity of trees is affected by the size and age of the park. Urban parks of the same age and landscape design have similar communities of species, and with rapid urbanisation, the homogenisation of park trees is increasing. According to [19], the composition of park trees is now shifted towards alien species, and the species richness of new parks is noticeably higher; however, the diversity index between new and old parks is not statistically significant. The share of individual tree species is more than 10%, which did not comply with the "10/20/30 rule of thumb". It is established that urban parks are characterised by a simple structure and low variety of plantings, which can be influenced by landscape architects [20]. As a rule, single exotic trees and trees with high decorativeness serve as compositional accents, dominants of the space of a landscape object. In the case of big parks, there can be quite a few such dominants, while in mini-parks, as a rule, there are single trees or bushes. Accordingly, such a composition is primitive and limited, with a clear selection of the centre, but without consideration of other compositional means (such as rhythm and meter, contrast and nuance, symmetry and asymmetry, etc.) [21].

The trees allow urban parks to perform various conservation and decorative functions and provide residents with the opportunity to be closer to nature [22]. Communication with nature is a multidimensional psychological construct that becomes an important predictor of both mental well-being and environmental behaviour [23]. It is important to enable children to connect with nature for their personal development, physical and mental health, and as interactions with nature increasingly occur in urban settings, it is important to identify ways in which children can be encouraged to connect with nature. Interaction with natural components improves psychological, emotional, and social health [24]. The ability to have access to green spaces on a daily basis allows children to benefit from socialising with nature, promotes physical and mental health, offers children aesthetic experiences and opportunities for recovery, and develops a positive attitude to nature in adult life.

Notably, the psychological needs of a person, along with many others, include the need for creative self-realisation and self-expression, development and self-knowledge, which is closely related to the needs in art, religion, philosophy, and is a component of human cultural needs. However, before a person "grows up" to art, religion, and philosophy, from the first years of life they satisfy this need through play. Its action is so strong, and its significance is so great, that growing up, a person continues to play and this process continues throughout life and affects all areas without exception [7; 25].

Children's willingness to play and interact with nature is affected by the quality of urban green spaces. There is currently little research on the impact of the natural environment on children's learning and development [26], although, it has been determined that the natural landscape can meet the needs of children in a diverse play environment. It was found that a high level of tree cover corresponds to the maximum development of emotional and behavioural regulatory skills in schoolchildren [27]. Green spaces can increase children's levels of physical activity, which requires understanding how to create spaces that encourage attendance and activity [28]. That is why it is necessary to pay more attention to children's needs for green spaces when planning new residential areas.

The function of playing in a landscape object, even if it is small in area and size, can be provided by a scenario approach to solving the spatial planning composition of green spaces. The child's interest in the very space of the park is ensured by well-placed exotic elements – accents of the composition and the planning structure of the object itself. The child, as well as the accompanying adult, should be constantly wandering: "what is next, up ahead, and on the other track?" [21; 29].

Studies [30] have shown the effectiveness of playgrounds in terms of physical activity and inefficiency in terms of the natural aspect. Sensory, emotional, and aesthetic experiences with nature are valuable for children, and direct contact with nature is of paramount importance for deepening children's interest in biodiversity [31]. The similarity of knowledge about plants was found by children from the same type of socio-cultural environment [32]: children from rural areas were more aware of biodiversity and local species, and most of the plants known to children belonged to exotic, in particular edible, medicinal, and much less to decorative ones.

Pocket parks also play an important role in providing access to nature [33]. In general, these are places where children can interact with other people and engage in physical activity in a natural environment [34], and visiting parks improves children's social, mental, and physical health. Designing a children's park or pocket park requires consideration of their cognitive function, which, together with the function of the game, based on a scenario approach to the overall composition of the object, "works" for the development and self-knowledge of the child.

Materials and Methods

An inventory assessment of green spaces in the town has never been performed, so field studies were conducted by the authors in 2016-2018. Field research covered six newly created children's squares in the central part of the town, which were marked by numbers: 1 – "Children's Park" on Shkilna Street; 2 – square near the Centre for Children's Creativity; 3 – square on Symonenko Street ("ABVG-deyka"); 4 – square on Shevchenko Avenue (near the city administration building); 5 – square between multi-storey residential buildings near Mazepa Street; 6 – square near Mazepa Avenue, 24. The species composition and age structure of plantings, their taxation specifications, condition and decorative nature in the context of species were determined [35]. According to preliminary studies, public green spaces in Vyshhorod are represented only by squares, in which 54 species and forms of woody and shrubby plants are identified, among which 78% are introduced species [36]. A very high participation rate is characteristic for *Thuja occidentalis* L. and *Aesculus hyppocastanum* L.; high – for *Thuja occidentalis*, *Acer platanoides* L., *Ulmus scabra* Mill., *Tilia cordata* Mill. As a rule, the basis of old parks was made up of older trees of several native species, to which decorative introduced species were added over time, the share of which is now about 55%. Young trees are represented mainly by decorative forms of conifers. Critical species in the old parks of the city centre are *Thuja occidentalis* (20.6 %), *Aesculus hyppocastanum* (18.3 %).

The easiest way to characterise the richness of a community is to use the number of identified taxa (usually species). To assess the diversity of biological communities, various indices are used – numerical indicators that are calculated based on the number of taxa in the community and the number of individuals in different taxa. In this case, diversity includes two components: richness (number of taxa) and alignment (relative diversity of taxa). One of the simplest diversity indices that does not include the relative number of taxa is Menhinick's index, which uses only the number of identified taxa and the total number of individuals. It is recommended to use Menhinick's index to compare communities of different sizes, although, in the case of this index, a decrease in the sample size leads to an overestimation of the diversity.

The analysis of plantings of six squares was carried out based on data from the sub-tree inventory survey of their territories conducted by the authors in previous years. Based on these data, the simplest generally accepted biodiversity indicators were determined for the green spaces of each of the squares [35], for the calculation of which only the number of identified taxa and the total number of plant individuals are estimated, and the number of plant specimens of the most numerous species: Menhinick's richness and diversity index, and Berger-Parker dominance index were used by the authors in previous studies. Cluster analysis in the Statistica 10 environment was used to process the results obtained. The planning structure is provided for larger and more interesting objects 1, 4, and 6.

Results and Discussion

The selection of woody plants for the arrangement of children's facilities has a number of specific requirements, while the richness of green spaces created is traditionally considered mainly as an educational, incentive, and not an environmentally stabilising factor.

The rapid development of the city since the beginning of the 21st century is accompanied by changes in landscaping, primarily in relation to public green spaces – new squares appear. In the central part of the town, where the lack of recreational space is particularly noticeable due to the destruction of the former square with an area of 9 hectares, a number of mostly children's squares are arranged, most of which are marked by a small area (about 0.1 hectares) and young plantings of mainly introduced ornamental woody plants.

On the territory of the largest newly created square 1 (on Shkilna Str.), which is called Children's Park (Fig. 1, object No. 1 in Table 1), located between two educational institutions for children: a lyceum and a gymnasium, the maximum number of studied objects is calculated – 265 specimens of trees and shrubs of 21 types and shapes, including such exotic ones as *Aesculus carnea 'Briotti', Physocarpus opulifolius f. Diablo, Ginkgo biloba* L., *Catalpa bignonioides* Walt., *Potentilla fruticosa 'Elizabeth*. The number of trees per 1 hectare (as in most of the city parks under study) exceeds the optimal value by 1.5 times.

Figure 1. Location of the newly created square (2) (object No. 1) between the lyceum (1) and gymnasium (3), the allocated research area – 1.08 ha
Source: [37]

The most quantitatively represented plant species in the square are *Spiraea vanhouttei* and A*cer platanoides f. Globosum*, however, the share of participation of the latter does not exceed 10% of the total number of specimens of woody plants and other existing taxa. The square performs mainly a transit function, which is determined by its location between residential buildings and two educational institutions. The planning structure is linear and symmetrical, with a clearly defined centre – a round platform that is scaled and repeated in the rest of the square. There is a general randomness and dispersion of vegetation and the absence of plant groups in the central part of the square. Along the paths, to emphasise the linear structure, there could be rhythmically placed plantings, single or group, which are currently absent. The functional purpose of each part of the square is not clearly defined. The object needs to improve its spatial planning composition.

On the territory of square No. 2, 16 species of woody plants were found, and on the territory of square No. 3 (near the Symonenko Str.) – 23 species and forms of woody and shrubby plants, including such rare ones as *Catalpa bignonioides*, *Juniperus squamata* Lamb., *J. squamata f. Blue Swede*, *Corylus colurna* L., *Magnolia soulangeana* Soul.-Bod., *Rhus typhina*, *Physocarpus opulifolius f. Diablo*. In terms of participation, only *Spiraea vanhouttei* and *Cornus alba* L. exceed the 10% critical threshold.

24 species of woody plants were identified on the territory of square No. 4 near the administration building in the town centre (Fig. 2). The square has a well-thought-out spatial and planning composition. Most of the territory is reserved for a children's playground. Outdoor structures are located on the territory: cafe, kiosk. The square has several functional areas, which is convenient for people of different age groups to use, given its location in the central part of the town. A children's playground in the middle of the lawn, oriented towards the town centre, is clearly highlighted. Dense green spaces frame the territory and serve as a backdrop for playground equipment. Excessive independence of functional zones in terms of spatial planning can be considered a disadvantage.

Figure 2. Square near the administration building in the town centre (object No. 4)
Source: [37]

The smallest number of taxa (12) and the minimum total number of woody plant specimens (36) were found on the territory of a small square No. 5 (between multi-storey residential buildings near Mazepa Str.). On the territory of square No. 6 (Fig. 3) 29 species and forms of woody and shrubby plants were identified, where the participation rate does not exceed 10%, and the number of specimens of native species is only 8.6%.

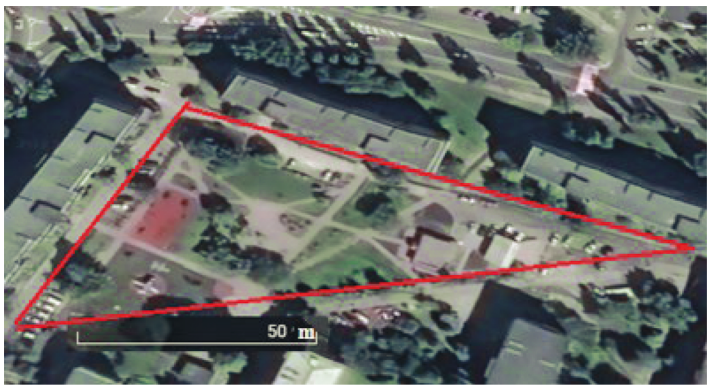

Figure 3. Square near residential buildings near Mazepa Ave., 24 (object No. 6)
Source: [37]

Square No. 6 is the most interesting in terms of composition. The territory in the form of a large triangle is highlighted by the geometric structure, and the theme of the triangle is repeated in all its parts. There is a harmonious attitude of open areas to green spaces; thoughtfulness of the composition from the standpoint of its scenario construction. The alternation of closed and open parts of the spatial planning composition creates the effect of surprise during the movement of visitors. An increase in the number of group plantings would highlight clear functional zones in the square, considering the needs of all residents of nearby buildings. In total, from 12 to 29 species and forms of woody plants are represented on the territory of each of the squares under study. The best indicators are in squares No. 4 (near the city administration building) and No. 6 (near multi-storey residential buildings, also located in the central multi-storey part of the town).

Table 1. Indicators of dendroflora diversity in children's squares in Vyshhorod

Indicators	Squares					
	1	2	3	4	5	6
Number of species	21	16	23	24	12	29
Total number of plants	265	166	169	98	36	141
Indexes: richness	0.08	0.1	0.14	0.24	0.33	0.21
diversity	1.29	1.24	1.77	2.42	2	2.44
domination	0.5	0.33	0.41	0.13	0.36	0.12

Source: compiled by the authors

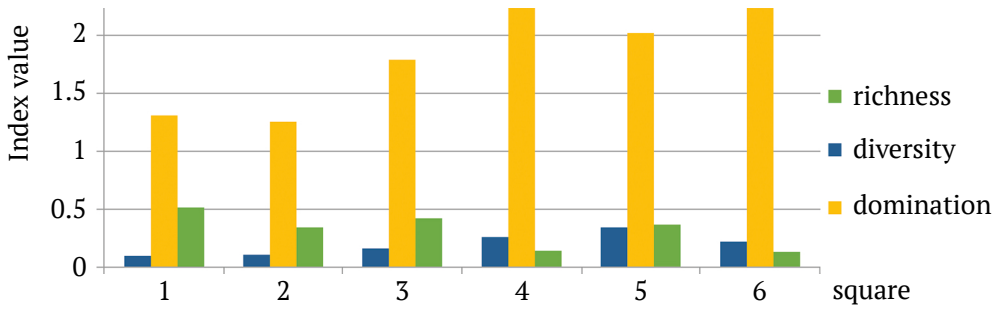

Figure 4. Biodiversity indicators of tree plantations in 6 children's squares
Source: compiled by the authors

It is the tree plantings of these two newly created squaress that are characterised by relatively better indicators: higher indices of richness, diversity, and a lower index of dominance. Thus, on the territory of square No. 1 (the largest, so-called Children's Park), half of the plantings are represented by one specie. In total, on the territory of four squares under study, the most common type is *Spiraea* × *vanhouttei* (Briot) Zabel. The share of native species among their total number is only 16.7 to 39.1% in the plantings of various squares. *Syringa vulgaris* L. and *Acer platanoides* L. are widespread Introduced species predominate on the territory of all squares. The introduced ornamental species include: *Ginkgo biloba* L., *Catalpa bignonioides* Walter, *Liriodendron tulipifera* L., *Rhus typhina* L., *Kolkwitzia amabilis* Graebn., garden forms of *Juniperus* L. and *Picea* A. Dietr., and beautifully blooming shrubs. In addition, contrary to existing recommendations, both thorny and strongly fragrant and allergenic plants are represented on the territories of children's squares. Interestingly, local dendrologists explain the presence of thorny plants by introducing "vandal-proof" gardening.

The species that would have been represented in all 6 squares under study were not identified. On the territory of 5 of the 6 experimental squares there are two common types: *Spiraea* × *vanhouttei* and *Cornus alba f. varigata*; on the territory of 4 parks – there are also two common species: *Juglans regi*a L. and *Physocarpus opulifolius* (L.) Maxim. *'Diabolo'*. On the territory of half of the experimental squares, 12 taxa are represented, in particular, Juniperus sabina L. and its decorative forms, decorative forms of *Malus, Rosa rugosa* Thunb., *Philadelphus coronarius* L., *Berberis thunbergii*, *Syringa vulgaris*, *Weigela florida* (Bunge) A.DC., *Catalpa bignonioides*, *Acer platanoides* L.; 16 species are found in only two squares, and more than half – 38 species – occur only on the territory of one of the children's squares. According to the cluster analysis of the available assortment of tree species on the territory of the children's squares, they can be grouped into three clusters (Fig. 5).

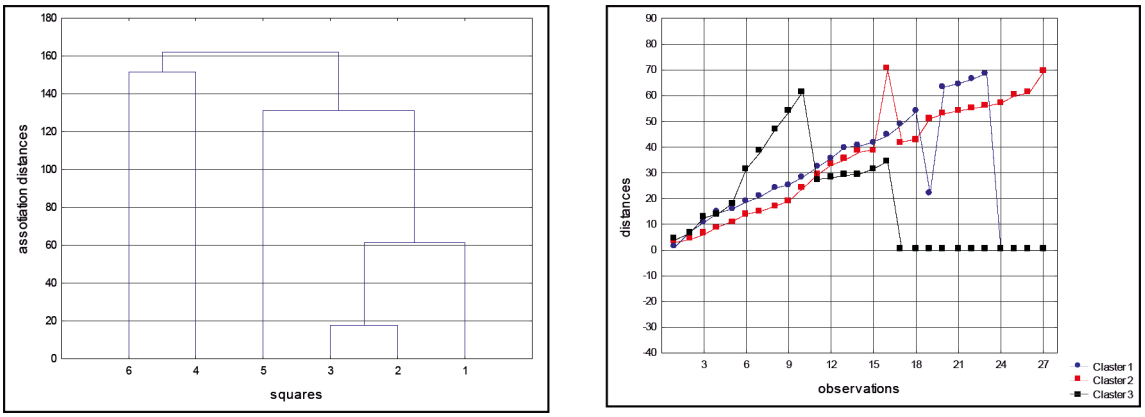

Figure 5. Diagram of cluster analysis of the assortment of woody plants on the territory of the squares under study (a) and their association (b)

The first cluster includes squares No. 4 and No. 6 (with similar, relatively better characteristics in terms of biodiversity indicators); the second – square No. 5 (a small square with a minimum number of plant species and specimens), and the third – squares No. 1, 2, 3 (with lower biodiversity indicators and the dominance of several species represented on their territories).

Despite the fact that clustering was carried out only considering the presence (or absence) of taxa of woody plants on the territory of squares, the resulting cluster association clearly shows the similarity of plant communities of squares in terms of biodiversity indicators. At the same time, biodiversity indicators did not depend on the size of square area, on the total number of plant specimens, but were completely determined by the preferences and decisions of their designers and builders.

Given the mostly small areas of squares, which is conditioned by the dense urban fabric in the central part of Vyshhorod, all of them have regular planning and perform the task of reducing the radius of accessibility from residential areas to "islands of nature". In compositional terms, most of the green spaces in the territories of the studied landscape objects are placed randomly, without much thought for the establishment of their spatial and planning composition and require appropriate adjustment. To compare indicators of biodiversity on the territory

of different objects, researchers often use the Shannon and Simpson indices [35]. However, it was determined that the Berger-Parker dominance index for sanitary protection zones of industrial enterprises in Zaporizhzhya [38] ranged from 0.21-0.78 compared to 0.14-0.28 in children's squares under study. At the same time, in the territories of three schools in Vyshhorod [39], according to the authors' calculations, tree plantings had similar, but slightly better indicators: the richness index also ranged widely: from 0.08 to 0.46; the diversity index was slightly higher: from 1.49 to 3.32; the dominance index was not so pronounced, it ranged from 0.14 to 0.28.

Notably, when designing the parks, the designers considered only the aesthetic aspect and, to a certain extent, the utilitarian one. But the environmental component was neglected. The selection of the species composition of newly established squares was determined by the available wide range of plants of the local garden centre (mainly by introduced species) according to the physiological principle and the limit of the total cost of work on creating the object. However, the high proportion of introduced plants in green spaces will contribute to the interest of children from childhood in the biodiversity of tree species, which is one of the signs of stable development of territories.

Children in modern society lose touch with nature and green plants [40-42], which, in particular, playgrounds are designed to prevent. Researchers suggest that trees are important elements of healthy child communities [43] that should be integrated at various scales, from landscaping around homes, schools, and kindergartens to connected systems of urban paths, parks, and public gardens. In parks, children can interact with other people and engage in physical activity in a natural environment. Therefore, their attendance can improve children's social, mental, and physical health [34]. However, among the characteristics that facilitate visits to children's squares, the only ones that can be noted in the studied facilities are the presence of young trees that do not currently form shaded areas and do not facilitate physical activity, and the presence of open space, which is mostly insufficient for active recreation. In addition, the small size of squares does not contribute to social interaction. The authors of this study suggest that designers should provide for and consider the functions of the created territories in order to help children lead an active healthy lifestyle.

Similar to English researchers [28], the authors also suggest that it is necessary to pay more attention to children's needs regarding the quantity and quality of green spaces when planning residential areas and considering measures to increase children's physical activity.

According to a number of researchers [42], a negative anthropic impact on vegetation on the territory of children's squares and playgrounds was observed during a third of children's playtime. As a result, half of all existing trees and shrubs were damaged on the plots. However, given that the squares under study are visited mainly by mothers with preschool children and have limited opportunities for physical activity in their territories due to small areas, the problem of vandalism is not relevant here.

Conclusions

During the inventory survey of tree stands of newly established children's squares in Vyshhorod, a total of 70 taxa of woody and shrubby plants were identified, among which introduced species predominated. More than half of the identified taxa occurred only in one of the squares under study. The most common types represented on the territory of most children's squares were the following: *Juglans regia*, *Spiraea* × *vanhouttei*, *Cornus alba f. varigata*, *Physocarpus opulifolius*.

Using cluster analysis, the squares were divided into three clusters according to the available assortment of woody plants, and, accordingly, similar biodiversity indicators.

The study suggests that the selection of the species composition of woody plants for creating children's squares should be more detailed. At the same time, it is advisable not to exceed the recommended 10% share of each used species in the total composition of plantings of each of the created squares. Instead, the use of "thorny" species that were not previously recommended for landscaping children's facilities can be quite balanced and rational. The presence of evergreen coniferous plants on the territory of squares will help increase the aesthetic assessment of the environment and the importance of cultural ecosystems and services throughout the year.

Careful selection of the assortment in accordance with well-thought-out spatial planning compositions would create landscape objects that would not only improve the aesthetics of the urban environment but also positively influence the perception and psychological state of visitors. The establishment of the square space with the help of vegetation should include the needs of visitors, especially children, in development, self-realisation, and knowledge in a playful way. Carefully thought-out arrangements and selected plant species composition can help implement these ideas.

The authors consider it necessary to create larger children's parks, which would encourage children to engage in physical activity and promote their health. In the future, it is planned to continue studying the biodiversity of woody plants in Ukrainian towns, in particular, green spaces of limited use: on the territory of hospital and school institutions, industrial enterprises, etc., and compare the results obtained by category of objects.

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Дендрофлора в просторово-планувальних композиціях дитячих скверів м. Вишгорода

Ольга Василівна Зібцева[1], Олена Анатоліївна Трошкіна[2], Олена Владиславівна Ольховська[3]

[1]Національний університет біоресурсів і природокористування України
03041, вул. Героїв Оборони, 15, м. Київ, Україна

[2]Національна академія образотворчого мистецтва і архітектури
04053, вул. Вознесенський узвіз, 20, м. Київ, Україна

[3]Київський національний університет будівництва і архітектури
03680, Повітрофлотський проспект, 31, м. Київ, Україна

Анотація. Забезпечення якісного довкілля потребують різні групи міських жителів, зокрема діти. Однією з важливих ознак міських насаджень є їхнє біорізноманіття, яке часто є низьким на територіях дитячих закладів. Мета дослідження – виявити просторово-планувальні рішення та оцінити видовий склад деревних насаджень на території шести новостворених дитячих скверів малого історичного міста Вишгорода Київської області, розташованого неподалік столиці, і яке відзначається позитивною демографічною динамікою. Вихідні дані були отримані в результаті проведеної авторами інвентаризації зелених насаджень цих скверів. Також візуальним методом проаналізовано просторово-планувальну композицію дендрофлори цих скверів. За отриманими даними було оцінено рівень біорізноманіття деревних насаджень дослідних скверів: порівняно наявну кількість таксонів, індекси багатства і різноманіття Менхініка, індекс домінування Бергера-Паркера. На території цих скверів загалом виявлено 70 таксонів деревних і кущових рослин, серед яких переважають інтродуценти. Понад половини виявлених таксонів трапляються лише на одному зі скверів. Найпоширенішими, представленими на території більшості дитячих скверів, є такі види, як *Spiraea vanhouttei, Juglans regia, Physocarpus opulifolius*. За допомогою кластерного аналізу виявлено групи скверів з подібним асортиментом деревних рослин, і, відповідно, подібними показниками біорізноманіття. Прослідковано взаємозв'язок асортименту рослин із загально-просторовим рішенням скверів. Автори дійшли висновку, що добір видового складу деревних рослин для дитячих скверів має бути ретельнішим, також доцільно не перевищувати рекомендовану 10 %-ву частку одного виду в складі насаджень. Використання не рекомендованих для дитячих територій «колючих» видів є доволі виваженим і раціональним. Врахування результатів досліджень у міському плануванні сприятиме створенню багатофункціонального екозбалансованого дитячого простору та підвищенню стійкості урбоекосистем

Ключові слова: індекс багатства, індекс різноманіття, індекс домінування, аборигенні деревні рослини, просторово-планувальна композиція