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PERI-URBAN FORESTS AS A RECREATIONAL ENVIRONMENT FOR THE PUBLIC IN KYIV, UKRAINE

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Abstract

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The study focuses on the recreational assessment of peri-urban forests as spaces for public rest and outdoor activities. Although peri-urban forests provide a multitude social and ecosystem services to the public, little attention has been paid in the scientific literature to evaluating their recreational values. The current study aims to assess the recreational potential of these areas for the public and to explore the role of native and non-native tree species in shaping landscape perception. The research was conducted in the peri-urban forests of three Communal Forest-Park Enterprises: Darnytske, Koncha-Zaspa, and Svyatoshynske, located in Kyiv, Ukraine. Using data from the Ukrainian forest inventory, the recreational assessment of these forests was carried out based on several indicators: proximity to rest areas, available recreation infrastructure, and the scenic value of the landscape. To explore public preferences for rest areas in peri-urban forests, a survey based on a structured questionnaire was conducted. According to the respondents, the primary factor in choosing a rest area is its distance (58% of respondents prioritized this aspect), while the comfort of the rest experience is largely influenced by the recreation infrastructure (30% of respondents selected this factor as a priority). A landscape featuring native (99%) and non-native (1%) tree species also contributes to the appeal of the area, with 12% of respondents considering the esthetic and scenic value of the forest a key determinant for their choice of rest location. To ensure sustainable management of peri-urban forests, it is essential to implement strategic planning that not only creates recreational spaces but also minimizes human impact on ecosystems.

Key words: visitors, scenic value of the landscape, recreation infrastructure, proximity to rest areas, non-native tree species.

Introduction

Forests are a type of natural ecosystems that provide a multitude of essential ecosystem services. Besides their ecological and production functions, the social function of forests is becoming more important (Geacu et al., 2022). A strong connection with nature takes on new meaning in the context of urbanization (Baránková, Špulerová, 2023), and diverse and significant health benefits can be obtained from visiting peri-urban forests (Rathmann et al., 2020). Forest recreation has become a kind of therapy and a popular mode for promoting mental and physical health, as well as enhancing well-being (Liu et al., 2023). Recreational activity can reduce depression, anxiety, and relieve mental stress (Ryan et al., 2023). In addition, peri-urban forests are ideal areas for nature contact and nature connectedness, stimulating physical activity and social interaction (Wang et al., 2022).

At the time when cities worldwide face tremendous pressure caused by accelerated climate change, peri-urban forests supply ecosystem services related to climate mitigation and adaptation (Cheng et al., 2021). Climate change affects recreation in forests by harming nature and reducing recreation quality. However, climate change also affects visitors' recreation behaviors and the recreational value of forests, since rising temperatures increase people›s motivation to visit forests for recreation. Nevertheless, the influence that climate change has on peri-urban forests in the future is unknown (Yu et al., 2023).

To minimize human impacts on the environment during forest recreation, managers of peri-urban forests should know about visitor behavior and their preferences in recreation activities (Korpilo et al., 2018; Trummer, Hegetschweiler, 2023) and focus on providing better recreational conditions. To promote conservation of species richness, reasonable management is necessary in peri-urban forests (Wang et al., 2024). Inappropriate management may lead to reducing the longevity of trees, decreasing their pest and climate change resistance, and declining

the overall landscape attractiveness (Wajchman-Świtalska et al., 2022).

Factors, which have an impact on the landscape perception and are significant in choosing rest areas, have various origins: season and weather components; growing conditions (relief, climate, soils, etc.); forest stand characteristics (trees ages, species composition, density, etc.); convenience, comfortableness, additional abilities (recreation infrastructure, opportunity of collecting mushrooms, berries, etc.); situational aspects (distance to the rest areas, litter, etc.); and social aspects (conflict, crowding, etc.).

Ukraine holds an important principle of free public access to forests, which is enforced through the Forest Code of Ukraine (Forest Code of Ukraine, 1994) and this means that the public may use the forests for recreational activities.

Peri-urban forests of Kyiv are the most important space for the city and mostly belong to the category of recreational and health forests; they serve as recreational, sanitary, hygienic, and health functions. Peri-urban forests create a comfortable environment for people to relax due to mitigation of heat, reduction of the force of the wind, cleaning air, and enrichment it with oxygen, and others (Tokarieva, 2011).

There are 42 equipped recreation areas in the peri-urban forests of Kyiv, and their locations are shown on a map (Municipal association Kyivzelenbud, 2025). These areas attract visitors by offering high-quality outdoor recreation. Moreover, concentrating visitors in designated recreation zones helps reduce pressure on other parts of the forest, thereby minimizing negative impacts on the ecosystem.

The recreational value of peri-urban forests is poorly understood, and identifying the main factors influencing it is the first step toward solving this problem. In this study, we focused on the recreational assessment of peri-urban forests, which includes characteristics of the forest stand, convenience, comfortableness, additional abilities, and situational aspects. The general objective of this study was to assess the recreational value of peri-urban forests of Kyiv to the public and recognize the role of native and non-native tree species in the landscape perception. The specific objectives were (i) to evaluate how proximity and accessibility to the rest areas of the peri-urban forest affects people's recreation; (ii) to evaluate the provision of forest recreation infrastructure on quality of forest recreation; (iii) to assess and evaluate the scenic values of the landscape; and (iv) to appraise and evaluate the richness and composition of native and non-native tree species in the peri-urban forests of Kyiv.

The findings of the present study will help ecotourism managers, conservationists, and scientists to better understand the preferences and desires of people in terms of nature-based recreation. In addition, the results will provide insight into how to improve the design and management of peri-urban forest rest areas to satisfy the recreational preferences of visitors.

Material and methods

The study was conducted in peri-urban forests of Kyiv, the capital city of Ukraine. Geographically, it lies between 50°42′91″ and 50°58′58″ N and 30°22′79″ and 30°83′29″ E. The research area's elevation varies from 122 to 186 m above sea level. The mean monthly air temperature ranges from -3.5 to +20.5 °C, while the annual rainfall ranges from 564 to 693 mm (Vishnevskyi et al., 2023). The area of peri-urban forests around Kyiv city is the largest in Ukraine (32,000 km^2) (Tokarieva, 2011) and administratively divided into three Communal Forest Park Enterprises: Darnytske, Koncha-Zaspa, and Svyatoshynske (Fig. 1).

This study consisted of survey, recreational assessment, and study of the dendrodiversity.

The sociological component is an integral part of the recreational assessment of peri-urban forests. The opinion of visitors is important when choosing methods of peri-urban forestry and making management decisions in recreation forests. In particular, it is necessary to understand what factors influence the quality, duration of rest, and frequency of visits to the forest. To determine the importance of various aspects of peri-urban forests for visitors to the recreation forests of Kyiv and their impact on the quality of recreation, we conducted a sociological survey. An online survey method using Google Forms for data collection was conducted during June 5 and July 6, 2023. The total number of respondents was 645. Participation was anonymous and voluntary. The survey was carried out in accordance with the ethical standards and was distributed through social networks in Ukraine.

The questionnaire consisted of three parts. The first part collected respondents' personal information. Respondents from various age categories participated in the survey: 16–30, 31–40, 41–50, 51–64, and 65+ years. Respondents aged over 64 years accounted for 11.8%. The ratio of male to female respondents was 46 and 54%, respectively. The majority of visitors to parks were middle-aged and young people. A total of 43.6% of respondents had a higher level of education. Most respondents worked in the public sector or technical professions. The second part of the questionnaire included research questions aimed at evaluating the following: (a) Does proximity and accessibility of the rest areas of the peri-urban forests affects people's recreation? (b) Could provision of recreation infrastructure attract visitors? (c) Does the scenic of the landscape affect the quality of recreation? (d) Do the peri-urban forests of Kyiv contribute in conservation of native and non-native woody plant species? Answers for these questions were assessed using a five-point Likert scale: 1 point, strongly disagree; 3, neither agree nor disagree; 5, strongly agree.

The third part concerned visit characteristics (season, time of day, duration, days of the week) and types of activities in Kyiv's peri-urban forests. According to respondents, picnicking was the most common recreational activity in peri-urban forests (39%), followed by hiking (23%), sports (16%), and foraging (13%), while excursions (3%) and other activities (2%) were much less frequent.

Recreational assessment (Ra) of Kyiv peri-urban forests was carried out according to Yavorovskyi et al. (2019) using data from the National Forest Inventory of Ukraine (Project of Organization and Development of the Communal Enterprises, 2020a,b,c), provided by the Ukrainian State Project Forestry Production Association "Ukrderzhlisproekt." Scenic value of the distance to the rest areas (Dra), recreation infrastructure and additional ability (Ria), and landscape assessment (Sla) were rated (Table 1), and recreational assessment (Ra) was calculated using equation:

$$Ra = Dra + Ria + Sla. \quad (1)$$

Distance to the rest areas (Dra) is the length from the highway, public transport stops, and parking area.

Forest recreation infrastructure (Ria) can be diverse and includes rest areas with tables, benches, gazebos, barbecue areas, sports fields, playgrounds, bridges, outdoor lighting, and many

other assets. Monuments, statues, and sculptures may be located on or near rest areas, increasing the attractiveness of recreation in the forest. The opportunities to engage in activities such as collecting mushrooms, berries, and medicinal plants also help diversify recreational experiences in the forest.

A scenic value landscape assessment (Sla) is an evaluation of its esthetics, which takes into account the age and species composition of forest stands.

The scoring method, which identified three levels of recreational assessment (Ra) for peri-urban forests, was used: high (range: 3–8), moderate (9–11), and low (12–15).

The data from the National Forest Inventory of Ukraine were analyzed to determine woody plants. Since the growth characteristics of local species and their impact on the recreational environment generally do not raise concerns, we will focus on the role of non-native species in forest recreation and the ecology of urban forests as a whole. Field work and identification of non-native tree species were conducted to confirm their presence and condition. The woody plants were established using the Dendroflora of Ukraine (Kohno, 2001). The species names were used according to the international classification WFO (2025). Non-native tree species were distributed by floristic regions, according to Takhtajan (1978).

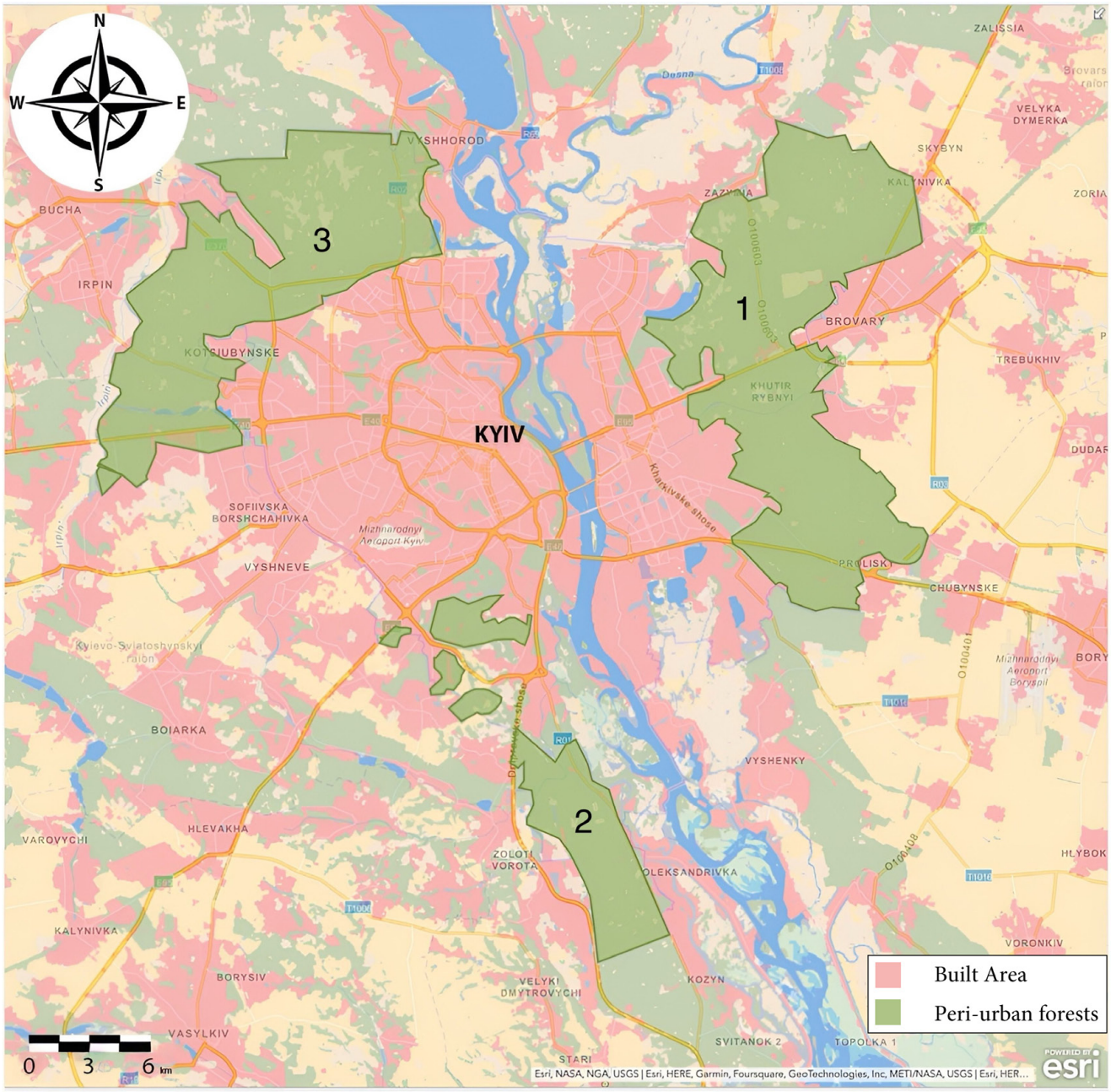

Fig. 1. Map of Kyiv peri-urban forests: Darnytske (1), Koncha-Zaspa (2), and Svyatoshynske (3) Communal Forest Park Enterprises. Note: created by the authors using Sentinel-2 10 m Land Use/Land Cover data (2017), available through ArcGIS Online.

Table 1. Rating scale for distance to rest areas, recreational infrastructure, and scenic landscape assessment.

Level (point)	Assessment		
	Dra, km	Ria	Sla
Very high (1)	< 0.500	Monuments, statues, sculptures, and forest recreation equipment (playgrounds, benches, gazebos, tables, etc.)	30–70% of native species in forest stands, which are older than 80 years; or 80–100% of non-native tree species in forest stands, which are older than 51 years
High (2)	0.501–1.000	Only monuments, statues, sculptures, etc.	80–100% of native species in forest stands, which are older than 81 years; 30–70% of native species in forest stands, which are 51–80 years; or 80–100% of non-native tree species in forest stands, which are 21–50 years
Moderate (3)	1.001–2.000	Only forest recreation equipment (playgrounds, benches, gazebos, tables, etc.)	80–100% of native species in forest stands, which are 51–80 years; 30–70% of native species in forest stands, which are 21–50 years; or 80–100% of non-native tree species in forest stands, which are younger than 20 years
Low (4)	2.001–3.000	Opportunity of collecting mushrooms, berries, etc.	80–100% of native species in forest stands, which are 21–50 years; or 30–70% of native species in forest stands, which are younger than 20 years
Very low (5)	> 3.001	No monuments, statues, sculptures, forest recreation equipment, and the opportunity to collect mushrooms and berries	80–100% of native species in forest stands, which are younger than 20 years

The data were analyzed with Excel statistical functions using Microsoft Office XP software. The results are displayed in tables, pie graphs, and bar graphs.

Results

Most respondents (58%) ranked distance to rest areas as the key factor in assessing peri-urban forest recreation, followed by infrastructure (30%) and landscape scenery (12%).

Proximity and accessibility to the rest areas of the peri-urban forest (Dra)

When planning a visit to the forest, people primarily focus on the proximity of rest areas. Survey participants noted that good transportation links increase the likelihood of visiting, especially for those without private vehicles. More than half of the rest areas (67%) are situated at a distance considered moderate in terms of accessibility assessment (Fig. 2). Vacationers typically visit these forests on weekends, are willing to spend up to one hour traveling to the recreation area, and generally spend 3–5 hours in the forest depending on the season. The typical visiting time is from 10 am to 7 pm, with a peak between 1 and 5 pm. Visits are most frequent, and the duration of stay is longest from May to September, while visits are less frequent and shorter from December through February.

Forest recreation infrastructure (Ria)

Recreation infrastructure (e.g., benches, tables, playgrounds) is the second most important factor contributing to the quality of rest in peri-urban forests and was rated as good in 35% of the assessed rest areas (Fig. 2). Recreation infrastructure (e.g., benches, tables, playgrounds) is the second most important factor contributing to the quality of rest in peri-urban forests and was rated as good in 35% of the assessed rest areas (Fig. 2). However, since 18% of rest areas lacked any equipment or recreational facilities, there is a clear need to provide better infrastructure in the peri-urban forests of Kyiv. The design of these areas should consider the convenience of access and approaches for the sustainable and long-term use of forest recreational areas. Seasonal factors should also be taken into account, such as the arrangement of spaces for both winter and summer recreation. Additionally, it is important to increase the number of educational elements in the infrastructure (such as information stands, pointers, and signs about local flora and fauna), which can not only enhance the attractiveness of recreation areas but also raise awareness about the importance of nature conservation and the sustainable use of forest resources. The creation of ecotourism trails (eco-trails) and additional recreation areas will be a key factor in increasing ecological awareness among the public and will also help to minimize anthropogenic impact.

Scenic values of the landscape (Sla)

The assessment of the scenic quality of the peri-urban forests of Kyiv is an important aspect of analyzing their esthetic and recreational value. A significant number of rest areas (42%) received a very high scenic landscape assessment (Fig. 2); these areas are typically characterized by mature forest stands with a predominance of native species.

Among the elements of scenic beauty, visitors are particularly attracted by the diversity of vegetation. The mosaic structure of the peri-urban forests creates a variety of landscapes that change throughout the seasons. Seasonal variability adds vivid colors and diversity to the landscape. The terrain and water bodies enhance

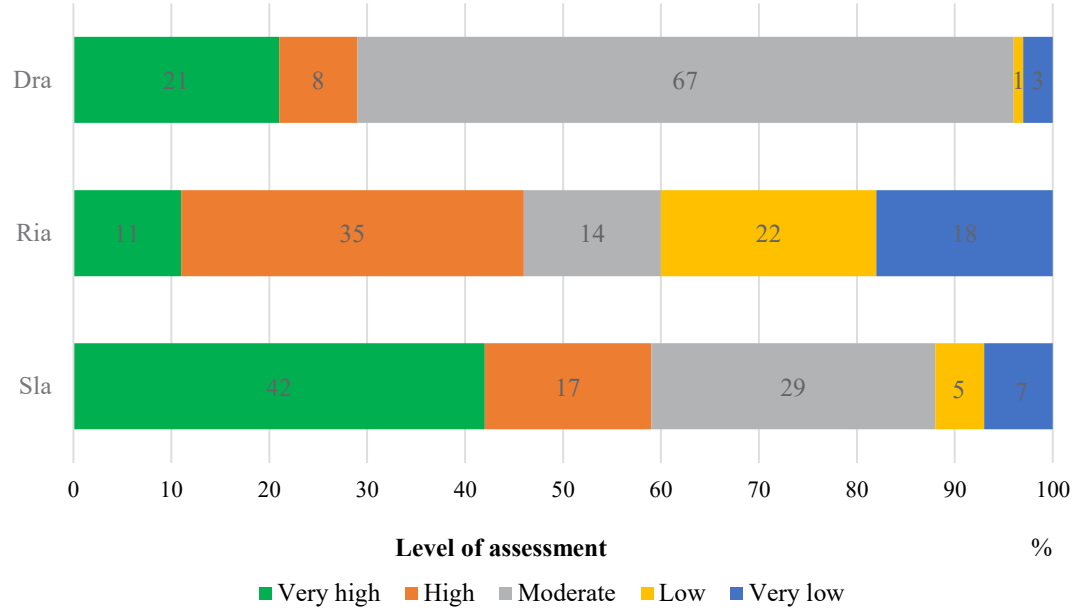

Fig. 2. Assessment of Recreational Indicators: Distance to Rest Areas (Dra), Recreation Infrastructure (Ria), and Landscape Attractiveness (Sla).

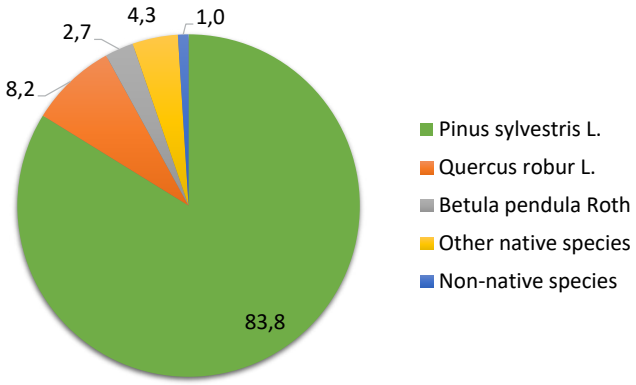

Fig. 3. Woody plants in peri-urban forests of Kyiv.

the depth and perspective of the natural vistas. Well-organized trails and observation points allow visitors to fully appreciate the beauty of the natural environment.

The overall level of recreational assessment (Ra), based on the evaluation of Distance to Rest Areas (Dra), Recreation Infrastructure (Ria), and Landscape Attractiveness (Sla), is moderate (Fig. 2), although the majority of recreation areas (64%) are rated as having a high recreational value.

Richness and composition of native and non-native tree species

Native and non-native tree species grow in the forest stands of peri-urban forests and in rest areas (Fig. 3). The most common native species are *Pinus sylvestris* L. (83.8%), *Quercus robur* L. (8.2%), and *Betula pendula* Roth. (2.7%). Other native species (*Alnus glutinosa* (L.) Gaertn., *Carpinus betulus* L., *Fraxinus excelsior* L., *Populus nigra* L., *P. tremula* L., *Tilia cordata* Mill.) occupy 0.01–2.00%, and non-native tree species make up 1.0%.

Systematic composition of non-native tree species in peri-urban forests included 66 species, 2 subspecies, 2 variants and hybrid that belonged to 49 genera, and 27 families (Table 2).

Among all non-native tree species, 14% of species were planted near rest areas as landscaping, 76% of species grow in forest stands, and 10% of species grow in both variants.

Non-native tree species that grow in peri-urban forests of Kyiv come from different floristic regions. The largest number of woody plants (29%) belongs to the Atlantic-North American floristic region (Fig. 4). This is explained by the richness of the North American dendroflora, as well as the relative similarity of climatic conditions with the study region. A relatively high number of species are from the Circumboreal (16%), East Asian (14%), and Circumboreal + Mediterranean (9%) floristic regions. The issue of using non-native tree species in peri-urban forests is controversial and definitely requires further research. A number of non-native tree species have long been growing in peri-urban forests of Kyiv, influencing their recreational assessment and enhancing their aesthetic value.

Discussion

Forests provide many ecosystem services to humans, such as climate regulation, air purification, soil protection, fresh water supply, habitat for biodiversity, recreation, tourism, and more (Salbitano et al., 2016). Recreational opportunities are one of the cultural services provided by forest ecosystems (Kaisová, Laco, 2021; Krnáčová et al., 2021), and accounting for such services is essential in forest management. The benefits of recreation constitute a significant part of the total economic value of forests and

Table 2. Non-native tree species in peri-urban forests and their frequency.

Frequency	Species, subspecies, variants
In rest areas	
Singly (1–9 trees)	*Abies alba* Mill., *Berberis aquifolium* Pursh, *Buxus sempervirens* L., *Catalpa bignonioides* Walter, *Chaenomeles japonica* (Thunb.) Lindl. ex Spach, *Crataegus nigra* Waldst. & Kit., *Hydrangea arborescens* L., *Juglans regia* L., *Juniperus sabina* L., *Larix×eurolepis* A. Henry, *Picea pungens* Engelm., *Spiraea salicifolia* L., *Spiraea vanhouttei* (Briot) Zabel, *Syringa vulgaris* L., *Taxus baccata* L.
Often (10–99 trees)	*Lycium barbarum* L., *Thuja occidentalis* L.
In forest stands	
Singly (1–9 trees)	*Acer tataricum* subsp. *ginnala* (Maxim.) Wesmael, *Chaenomeles japonica* (Thunb.) Lindl. ex Spach, *Elaeagnus angustifolia* L., *Juglans ailantifolia* var. *Cordiformis, J. nigra* L., *Larix decidua* Mill., *Menispernum dauricum* DC., *Mespilus germanica* L., *Morus alba* L., *Philadelphus tenuifolius* Rupr., *Prunus tomentosa* Thunb., *Spiraea japonica* L.f., *Vitis silvestris* Roth
Often (10–99 trees)	*Acer pseudoplatanus* L., *Aesculus hippocastanum* L., *Berberis aquifolium* Pursh, *B. thunbergii* DC., *Catalpa bignonioides* Walter, *Celtis occidentalis* L., *Cotinus coggygria* Scop., *Crataegus sanguinea* Pall., *Fagus sylvatica* L., *Gleditsia triacanthos* L., *Juglans ailantifolia* Carrière, *J. cinerea* L., *J. manshurica* Maxim., *Juniperus virginiana* L., *Ligustrum vulgare* L., *Lonicera tatarica* L., *Pinus nigra* subsp. *pallasiana* (Lamb.) Holmboe, *P. sibirica* Du Tour, *P. strobus* L., *Populus deltoides* W.Bartram ex Marshall., *P. nigra var. pyramidalis* (Rozier) Spach, *Prunus avium* (L.) L., *Pr. cerasifera* Ehrh., *Pr. serotina* Ehrh., *Spiraea salicifolia* L., *Sp. vanhouttei* (Briot) Zabel, *Symphoricarpos albus* (L.) S.F.Blake, *Tilia platyphyllos* Scop.
In large numbers (more than 100 trees)	*Acer negundo* L., *A. saccharinum* L., *Amelanchier spicata* (Lam.) C. Koch., *Amorfa fruticosa* L., *Caragana arborescens* Lam., *Celastrus orbiculatus* Thunb, *Cornus alba* L., *Fraxinus pennsylvanica* Marshall, *Larix×eurolepis* A. Henry, *L. sibirica* Ledeb., *Parthenocissus quinquefolia* Planch., *Phellodendron amurense* Rupr., *Physocarpus opulifolius* (L.) Maxim., *Picea abies (L.) H.Karst.*, *Pinus banksiana* Lamb., *Ptelea trifoliata* L., *Quercus rubra* L., *Robinia pseudoacacia* L., *Syringa vulgaris* L., *Toxicodendron radicans* (L.) Kuntze

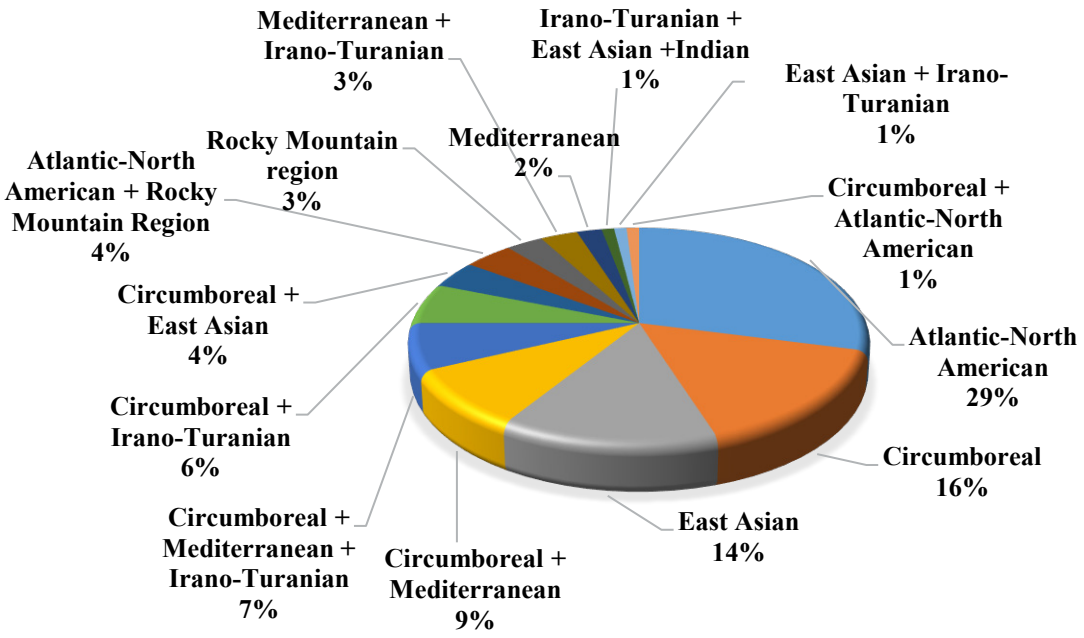

Fig. 4. Representation of non-native tree species in peri-urban forests of Kiev by individual floristic regions.

are important when choosing appropriate forest policies (Bartczak et al., 2008; Zandersen, Tol, 2009).

Currently, the demand for recreational services provided by forested ecosystems is increasing. Surveys to identify the preferences of visitors to recreational forests have been conducted in various countries (Hegetschweiler et al., 2022; Wang et al., 2022). It has been noted that visitors perceive peri-urban forests in multifunctional terms (Rolfe, Windle, 2015), and many factors determine the recreational value of forests (Termansen et al., 2008). The results of our research confirm the importance of various factors

on the quality of rest. Nowadays, it is essential to understand the needs and preferences of visitors, as well as how the recreational setting in peri-urban forests (such as tree species composition, forest density, terrain variation, availability of historical sites, and distance) influences their management (Agimass et al., 2018). What is undeniable is that one of the challenges facing managers of peri-urban forests is balancing the diverse needs of visitors (Grebner et al., 2022) with the need to preserve nature.

Our research, consistent with previous studies (Kim, Nicholls, 2016; Park et al., 2019), confirms that the distance to recreational areas in peri-urban forests significantly influences visitor behavior. It is the most fundamental and essential factor in the recreation and effects on the number of visitors, the type of recreation activities (Cao et al., 2020), and the choosing of rest place and could help to explain satisfaction levels of visitors (Qian et al., 2018). Modern research shows trends toward reducing the distance to the rest areas in the forest (Tan et al., 2023), and our research confirms that for a one-day outdoor getaway, visitors prefer places located closer to the city.

A deeper understanding of the factors that affect the likelihood of people's participation in active outdoor recreation is extremely important for peri-urban forest management (Andkjær, Arvidsen, 2015). Our research confirms the findings of Gundersen and Vistad (2016), which show that the use of recreation forests is strongly linked to infrastructure and recreational equipment. In particular, the responses received during the survey indicate that well-equipped rest areas with tables, benches, gazebos, barbecue areas, sports fields, playgrounds, bridges, outdoor lighting, monuments, statues, and sculptures attract visitors, promoting quality and diverse recreation.

In addition, the issue raised by researchers (Wajchman-Switalska et al., 2021) regarding the balance between the "artificiality" of forest recreational areas (adapted to the needs of various user groups) and the "naturalness" of environmental conditions, which have a broad therapeutic effect, is also relevant to the urban forests of Kyiv.

Landscape scenic assessment plays an essential role in planning recreational spaces, promoting ecotourism, and preserving natural heritage.

In various countries, methods such as expert assessments, public surveys, photo documentation, and geographic information systems (GIS) are employed to analyze panoramic views (Daniel 2001; Tveit et al., 2018; Giné et al., 2021). Special indices, like the ecological aesthetics index, are introduced to account for landscape diversity, accessibility of viewpoints, and seasonal variability. Our research supports the theory (Ozkan, Ozdemir, 2015) that visual factors such as tree composition, size, and shape influence aesthetic value.

A comprehensive landscape assessment also considers the impact of the landscape on an individual's psychological well-being (Ode et al., 2008). The responses of participants in this study align with the findings of other research (Nevřelová et al., 2022) regarding aesthetic experiences in forests.

The species diversity of trees in peri-urban forests is an integral part of the recreational environment and, to some extent, affects the quality of recreation. Non-native tree species are a global phenomenon, and their environmental and economic impacts are increasingly recognized and considered in forest management (Bindewald et al., 2021). They also have a notable presence and play various roles in European forestry (Dimitrova et al., 2022), evoking a range of associations and emotions in visitors (Pötzelsberger et al., 2020). Although non-native tree species make up only 1% of Kyiv's peri-urban forests, they play an important role in enhancing the recreational value of these forests, and visitors generally respond positively to them. It is known that replacing native tree species with non-native ones generally leads to a decline in native biodiversity (Dumas, 2016) and may pose a threat to ecosystem functioning and the provision of ecosystem services, with some of these species potentially being invasive (Langmaier, 2020).

At the same time, it is not feasible to completely abandon the planting of non-native tree species in forest recreation areas. Furthermore, most non-native tree species have been present in Kyiv's peri-urban forests for over 100 years, have not shown invasive properties, and require proper management. Moreover, according to our research, non-native species of the urban forests of Kyiv have adapted well, thanks to the fact that the naturalization of non-native tree species results from climate and soil changes (Gregor, Kasperek, 2021), as well as from anthropogenic factors, which facilitate the adaptation of these species.

The results of this study may serve as the basis for planning and locating recreational infrastructure, developing conservation measures, and managing forests for multiple functions.

Conclusion and recommendations

The majority of respondents (58%) identified the distance to rest areas as a key factor in evaluating recreation in suburban forests, followed by infrastructure (30%) and landscape scenery (12%).

When planning a visit to a forest, people focus primarily on the proximity of rest areas and good transport connections. Recreational infrastructure (e.g., benches, tables, and playgrounds) is the second most important demand for visiting a peri-urban forest. The third demand is the scenery of Kyiv›s peri-urban forests, consisting of mature forest stands with a predominance of native species and the diverse mosaic structure of peri-urban forests.

The overall level of recreational assessment is medium, although most recreational areas (64%) are rated as having a high recreational value. More than half of the rest areas (67%) are located at a medium distance from their residence. Recreationalists usually visit these forests on weekends, willing to spend up to one hour traveling to the recreation area. They generally spend 3–5 hours in the forest depending on the season. Typical visit times are from 10 to 7 pm, with a peak between 1 and 5 pm. Visits are most intense from May to September. Infrastructure was rated as good at 35% of the rest areas, but 18% of the rest areas had no facilities. In the forest stands of suburban forests and in recreation areas, native tree species dominate, such as *Pinus sylvestris* L. (83.8%) and *Quercus robur* L. (8.2%), but we also recorded the occurrence of 1% of non-native tree species, mainly from the Atlantic-North American floristic region. Only 14% of all non-native species were planted near recreation areas.

For the peri-urban forests of Kiev, we recommend sustainable and long-term use of forest recreation areas, taking into account seasonal factors. In addition, we propose to increase the number of educational elements in the infrastructure (information stands, indicators and signs about local flora and fauna), which can not only increase the attractiveness of recreation areas but also raise awareness of the importance of nature protection

and sustainable use of forest resources. The creation of eco-tourist trails (ecotrails) and other recreation areas will be a key factor in raising public environmental awareness and will also help minimize anthropogenic impact.

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