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COMPARATIVE FLORISTIC ANALYSIS (2004 AND 2022) OF THE NATURAL MONUMENT “STARI PARK” IN TEMERIN, SERBIA

MILENA LAKIĆEVIĆ^{ID*}, ANJA ĐOKOVIĆ, OLIVERA KALOZI^{ID}



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Faculty of Agriculture, University of Novi Sad, Trg Dositeja Obradovića 8, 21 000 Novi Sad, Serbia

*Corresponding author: milena.lakicevic@polj.edu.rs

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SUMMARY

This paper presents the results of research on the dendroflora of the Natural Monument (NM) “Stari park” in Temerin, Serbia. The park’s natural values are intricately linked to the characteristics of its dendrofloristic elements, i.e. the large dimensions and age of its trees. To gain insight into changes in diversity, the flora recorded in 2004 and 2022 was compared. In 2022, a field study was conducted to provide a detailed dendroflora analysis, including taxonomic analysis, species origin analysis, assessment of the presence of autochthonous, allochthonous, and invasive species, as well as the biological spectrum. Although *Celtis occidentalis* L. remained the most represented species eighteen years later, its percentage decreased from 34% to 21%. This decline can be attributed to the emergence of new dominant species such as *Fraxinus angustifolia* Vahl. (15%), *Ulmus effusa* Willd. (13%), and *Acer platanoides* L. (9%). These four species now collectively constitute 58% of the trees in the park.

Key words:

city park,
biodiversity, invasive
species

INTRODUCTION

Urban public parks contribute positively to city environments, fulfilling a vital social function by providing a healthy setting and diverse recreational opportunities for the community (Srdjevic et al., 2022). They provide various environmental, aesthetic, and recreational benefits closely related to human well-being and quality of life (Huai & Van de Voorde, 2022). Moreover, they serve as oases of nature within urban structures (Lakićević & Srđević, 2017). Urban parks provide numerous ecosystem services, with a primary emphasis on biodiversity conservation (Lakićević et al., 2022). The biodiversity of green spaces in cities often surpasses that of natural environments due to the simplified nature of cultivated species compared to natural ecosystems or decorative planting (Kevrešan & Stevanov, 2017). When designing and refining urban parks, the choice of vegetation is of central importance. Due to specific climatic, edaphic, and other characteristics, autochthonous species are prioritized in vegetation selection. Non-native species can also be considered when establishing urban parks provided they are well-adapted to the local climate conditions (Bayón et al., 2021). While urban parks represent some of the most species-rich urban green spaces, species richness tends to increase with moderate levels of urbanization, often as a result of the introduction of non-native species (Talal & Santelmann, 2019). Challenges arise when introduced non-native plant species exhibit invasive characteristics. Ornamental species, despite their aesthetic appeal, can serve as significant conduits for the invasion of plants, with urban parks playing a pivotal role in the introduction of non-native ornamental plant species (Hu et al., 2023). Invasive species spread rapidly beyond their natural distribution areas and, owing to their morphological, anatomical, and physiological characteristics, as well as bioecological requirements, can readily outcompete the autochthonous flora (Lakićević, 2018). The introduction of a new invasive species can disrupt the

established balance among existing species in the ecosystem, leading to ecosystem homogenization and a decline in biodiversity.

The Natural Monument (NM) “Stari park” in Temerin was designated as such in 2003, owing to the significant value of its dendroflora elements, primarily attributed to their age and size (Lakićević & Đoković, 2022). Covering an area of approximately 3.8 hectares, the NM “Stari park” is the only designed green space in the city center. Historically, the park boasted a rich diversity of species (Korać, 2007). However, nowadays it is characterized by the dominance of tall deciduous trees, notably *Celtis occidentalis* L., which stands as the most prominent species, followed by *Fraxinus angustifolia* Vahl., *Ulmus effusa* Willd., and *Acer platanoides* L. Due to the spontaneous reproduction of these species, the majority of trees in the park exhibit atypical canopy structures, with foliage primarily concentrated in the upper portions. The dense canopy, coupled with perpetual shading, has elevated humidity levels and led to microclimatic alterations. Consequently, such conditions have fostered the proliferation of *Hedera helix* L. across the entire park area while suppressing ground-level species. This study aims to analyze the dendroflora data collected during two distinct periods – 2004 and 2022 – to monitor the various changes that have transpired in the interim, including the spread of invasive species and shifts in the ratio between autochthonous and allochthonous species. The correlation between research findings and the current state of the park, along with its significance in the lives of citizens, is paramount. Through dendroflora analysis, insights into the present floristic composition of the park can be gleaned, elucidating the impacts of these changes on both the ecosystem and the aesthetic appeal of the space enjoyed by citizens. The importance of such analyses extends to the preservation of biological diversity, maintenance of ecosystem equilibrium, and enhancement of overall environmental quality within the park. By monitoring the proliferation of invasive species and alterations in the balance between autochthonous and allochthonous species, potential threats to the natural ecosystem can be identified, and conservation strategies can be devised. As a preventive measure against the proliferation of invasive species, the implementation of effective control programs, eradication of invasive species where feasible, and the promotion of educational initiatives aimed at fostering awareness of nature conservation are recommended. These measures seek to safeguard biological diversity, promote ecological equilibrium, and foster a pleasant and healthy environment for citizens.

MATERIAL AND METHODS

In the period May–July 2022, a field survey of the dendroflora of the NM “Stari park” in Temerin was conducted. The species present were determined according to the methodologies outlined by Cvjetićanin et al. (2016), Šilić (1990), Vukićević (1996), Ocokoljić & Ninić-Todorović (2003). The geographical origin of the species was determined according to the criteria established by Cullen et al. (1995) and Vukićević (1996) and classified into the following categories: Asia, Europe, Africa, and North America. Notably, hybrid species, varieties, and cultivars such as *Carpinus betulus* 'Fastigiata', *Quercus robur* L. 'Fastigiata', *Platanus x acerifolia* Willd., *Acer platanoides* 'Atropurpurea' were excluded from this analysis. Non-native species were defined as those whose natural range extends beyond the borders of Serbia (Jovanović, 2007). The invasive status of species within the region of Serbia was determined based on criteria established by Lazarević et al. (2012), and Stojanović & Jovanović (2018). Following the preliminary checklist provided by Stojanović & Jovanović (2018), the invasive status in Serbia was indicated for each invasive species identified. A previous inventory of the dendroflora dating back to 2004 was sourced from the document published by JKP “Temerin” (2021). During the fieldwork, the authors of the paper collected data regarding the composition of flora in 2022. These two datasets – the composition of flora in 2004 and the results of the fieldwork in 2022 – were subsequently compared and analyzed in the paper.

RESULTS AND DISCUSSION

The taxonomic analysis of the field data collected in 2022 reveals the presence of 1,453 individuals, classified into 40 species, 30 genera, and 18 families (Tab. 1). The taxonomic analysis for the park dendroflora in 2004, as provided in the document (JKP “Temerin”, 2021), is also presented in Table 1. Within the dendroflora of NM “Stari park” in Temerin in 2022, Angiosperms dominate with 35 species (88%), while Gymnosperms are represented by a significantly smaller number (5 species, 12%). A comparison with the study conducted by Lakićević et al. (2022) in five parks in Novi Sad (Danube, Futog, Kamenica, Liman, and Railway) shows an insignificant difference in the distribution of Gymnosperms and Angiosperms. According to Lakićević et al. (2022), Gymnosperms constituted 11% of the total, while Angiosperms comprised 89% in the parks of Novi Sad. This similarity might be attributed to the close proximity of Temerin and Novi Sad (approximately 20 kilometers), with similar habitat conditions prevailing in both locations within Vojvodina.

Out of 18 families, only one (Sapindaceae) is represented by more than 5 species. The families Sapindaceae (6 species, 15%), Fabaceae (5 species, 13%), and Pinaceae (4 species, 10%) emerge as the most dominant in 2022, while all the other families are represented with fewer than 3 species. In 2004, the Sapindaceae family was the most dominant (5 species, 21%), followed by the Fabaceae family (3 species, 13%), whereas all the other families had fewer than 2 species. The most represented families based on the number of individuals in 2004 were Cannabaceae (219 individuals), Oleaceae (108 individuals), Ulmaceae (83 individuals), Fabaceae (63 individuals), Sapindaceae (54 individuals), with all other families having fewer than 50 individuals. Eighteen years later, there were minor changes in the order of the most represented families, with Cannabaceae (305 individuals), Oleaceae (254 individuals), Sapindaceae (236 individuals), Ulmaceae (195 individuals), Fabaceae (127 individuals), Fagaceae (51 individuals) and Moraceae (50 individuals) emerging as the most represented. All other families had fewer than 50 individuals. Comparing these results with those of Lakićević et al. (2022), the most common families in the parks of Novi Sad are Berberidaceae, Oleaceae, Rosaceae, Taxaceae, Cupressaceae, and Pinaceae. The consistent representation of certain families, such as Oleaceae, in both the NM "Stari park" and the parks of Novi Sad suggests their adaptability and suitability for the local environment. This uniformity could be indicative of shared ecological characteristics between the two regions, contributing to the persistence of specific plant families. However, notable variations in dominant families, such as the prevalence of Cannabaceae in the NM "Stari park" compared to Berberidaceae in the parks of Novi Sad, may stem from distinct habitat preferences or management practices. In 2022, *Acer* was the most represented genus (5 species), followed by *Prunus*, *Populus*, *Tilia*, *Quercus*, *Picea*, and *Pinus*, each represented by 2 species, while all other genera are represented by only one individual. The genus *Acer* was also the most dominant in 2004, with four species, followed by the genus *Quercus* (2 species), while all other genera were represented by only one species. Table 1 indicates that the number of species of Angiosperms has increased by 13 (a 59,09% increase), and the number of individuals increased by 806 (1,32 times) over the span of 18 years. Although the number of Gymnosperm individuals remained the same, the number of genes and families has decreased. This suggests that Gymnosperms may not well adapted to the prevailing ecological conditions in this area. The impact of climate change has evidently influenced the adaptation of species in this region.

Table 1. Taxonomic analysis of woody plants in the NM "Stari park" in Temerin

	Number in 2004			Number in 2022		
	Angiosperms	Gymnosperms	Total	Angiosperms	Gymnosperms	Total
Family	14	4	18	16	2	18
Genus	18	5	23	27	3	30
Species	22	5	27	35	5	40
Individuals	610	37	647	1416	37	1453

In 2004, the dendroflora of the NM "Stari park" was predominantly composed of deciduous plants (21 species), followed by conifers and evergreens, both with 3 species each (Fig. 1). In 2022, there is a shift in dominance, with deciduous plants taking the lead (35 species), followed by conifers (4 species), and evergreen species being the least represented (1 species), Fig. 2.

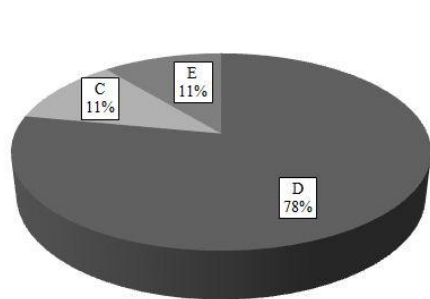


Figure 1. The percentage representation of deciduous (D), coniferous (C) and evergreen (E) species in 2004

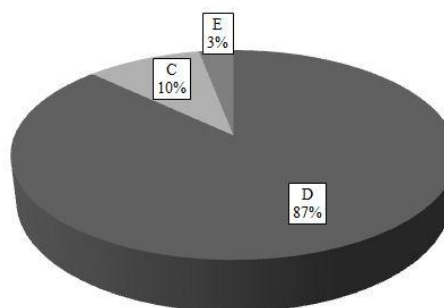


Figure 2. The percentage representation of deciduous (D), coniferous (C) and evergreen (E) species in 2022

Tall trees predominated in the park in 2004 (24 species, 89%), followed by shrubs (2 species, 7%), while the climber *Hedera helix* L. was present with a share of 4% (Fig. 3). It was previously emphasized that in the initial dendroflora inventory period (2004), only two shrub species were present. However, due to recent plantings of ornamental and flowering deciduous shrubs in 2022, species such as *Sambucus nigra* L. (26 individuals), *Cornus mas* L. (25

individuals), *Tamarix tetrandra* Pall. (22 individuals), *Forsythia viridissima* Lindl. (21 individuals), *Lonicera xylosteum* L. (15 individuals), and *Syringa vulgaris* L. (10 individuals) were recorded during the second census period, ultimately increasing the dendroflora diversity (Fig. 4).



Figure 3. Number of trees (T), shrubs (S) and climbers (C) in 2004

Figure 4. Number of trees (T), shrubs (S) and climbers (C) in 2022

A detailed overview of the dendroflora elements of the NM “Stari park” in Temerin in 2004 and 2022 is displayed in Table 2.

Table 2. An overview of the dendroflora of the NM “Stari park” in Temerin

Angiosperms					
Species	Origin	Deciduous, coniferous, evergreen species	Habitus type	Number of individuals from 2004	Number of individuals from 2022
<i>Hedera helix</i> L. (Fam. Araliaceae)	Asia	E	C	NA	NA
<i>Carpinus betulus</i> 'Fastigiata' (Fam. Betulaceae)	Cultivar	D	T	0	20
<i>Catalpa bignonioides</i> Walt. (Fam. Bignoniaceae)	North America	D	T	1	0
<i>Celtis occidentalis</i> L. (Fam. Cannabaceae)	Europe	D	T	219	305
<i>Lonicera xylosteum</i> L. (Fam. Caprifoliaceae)	Asia	D	S	0	15
<i>Sambucus nigra</i> L. (Fam. Caprifoliaceae)	Africa	D	S	0	26
<i>Cornus mas</i> L. (Fam. Cornaceae)	Europe	D	S	0	25
<i>Cercis siliquastrum</i> L. (Fam. Fabaceae)	Asia	D	T	0	11
<i>Gleditsia triacanthos</i> L. (Fam. Fabaceae)	North America	D	T	7	9
<i>Gymnocladus dioicus</i> Nutt. (Fam. Fabaceae)	North America	D	T	0	12
<i>Robinia pseudoacacia</i> L. (Fam. Fabaceae)	North America	D	T	22	56
<i>Sophora japonica</i> L. (Fam. Fabaceae)	Asia	D	T	34	39
<i>Quercus robur</i> L. (Fam. Fagaceae)	Europe	D	T	23	48
<i>Quercus robur</i> L. 'Fastigiata' (Fam. Fagaceae)	Cultivar	D	T	1	3

<i>Juglans nigra</i> L. (Fam. Juglandaceae)	North America	D	T	1	0
<i>Broussonetia papyrifera</i> Vent. (Fam. Moraceae)	Asia	D	T	6	25
<i>Maclura aurantiaca</i> Nutt. (Fam. Moraceae)	North America	D	T	1	15
<i>Morus alba</i> L. (Fam. Moraceae)	Asia	D	T	0	10
<i>Forsythia viridissima</i> Lindl. (Fam. Oleaceae)	Asia	D	S	0	21
<i>Fraxinus angustifolia</i> Vahl. (Fam. Oleaceae)	Europe	D	T	108	223
<i>Syringa vulgaris</i> L. (Fam. Oleaceae)	Europe	D	S	0	10
<i>Platanus x acerifolia</i> Willd. (Fam. Platanaceae)	Hybrid	D	T	2	2
<i>Crataegus monogyna</i> Jacq. (Fam. Rosaceae)	Africa	D	T	0	3
<i>Prunus cerasifera</i> Ehrh. (Fam. Rosaceae)	Asia	D	T	2	22
<i>Prunus serotina</i> Ehrh. (Fam. Rosaceae)	North America	D	T	0	10
<i>Populus alba</i> L. (Fam. Salicaceae)	Europe	D	T	20	22
<i>Populus deltoides</i> Marshall (Fam. Salicaceae)	North America	D	T	0	1
<i>Acer campestre</i> L. (Fam. Sapindaceae)	Africa	D	T	9	44
<i>Acer negundo</i> L. (Fam. Sapindaceae)	North America	D	T	3	7
<i>Acer platanoides</i> L. (Fam. Sapindaceae)	Europe	D	T	12	132
<i>Acer platanoides</i> 'Atropurpurea' (Fam. Sapindaceae)	Cultivar	D	T	0	38
<i>Acer pseudoplatanus</i> L. (Fam. Sapindaceae)	Europe	D	T	2	2
<i>Aesculus hippocastanum</i> L. (Fam. Sapindaceae)	Europe	D	T	28	13
<i>Tamarix tetrandra</i> Pall. (Fam. Tamaricaceae)	Europe	D	S	0	22
<i>Tilia argentea</i> Desf. (Fam. Tiliaceae)	Europe	D	T	26	0
<i>Tilia cordata</i> Mill. (Fam. Tiliaceae)	Europe	D	T	0	11
<i>Tilia platyphyllos</i> Scop. (Fam. Tiliaceae)	Europe	D	T	0	19
<i>Ulmus effusa</i> Willd. (Fam. Ulmaceae)	Europe	D	T	83	195
Gymnosperms					
Species	Origin	Deciduous, coniferous, evergreen species	Habitus type	Number of individuals from 2004.	Number of individuals from 2022.
<i>Buxus sempervirens</i> L. (Fam. Buxaceae)	Africa	E	S	10	0
<i>Juniperus virginiana</i> L. (Fam. Cupressaceae)	North America	C	T	2	0
<i>Picea abies</i> Karst. (Fam. Pinaceae)	Europe	C	T	16	8
<i>Picea omorika</i> Pančić (Fam. Pinaceae)	Europe	C	T	0	1
<i>Pinus nigra</i> Arn.	Europe	C	T	6	17

(Fam. Pinaceae)						
<i>Pinus strobus</i> L.		North America	C	T	0	8
(Fam. Pinaceae)						
<i>Taxus baccata</i> L.		Europe	E	S	3	3
(Fam. Taxaceae)						
Legend:	NA	(Not Available)	means	that	data	is not accessible;
	C - coniferous species;	D - deciduous species;	E - evergreen species;	T – trees;	S - shrubs,	C - climber

Comparative analysis was conducted for the ten most dominant species in 2004 and 2022 (Fig. 5). The most abundant species in the initial period remain the most represented in the subsequent research period. The most abundant deciduous tree species in 2022 in the NM “Stari park” were as follows: *Celtis occidentalis* L. (305 individuals, 21%) which was the most dominant, followed by *Fraxinus angustifolia* Vahl. (223 individuals, 15%), *Ulmus effusa* Willd. (195 individuals, 13%), and *Acer platanoides* L. (132 individuals, 9%). Notably, the species *Acer platanoides* L. has seen a fourteen-fold increase compared to the initial observation period, increasing from 12 individuals (2%) in 2004 to 132 individuals (12%) in 2022. In certain areas of the park, this species is so abundant that it forms dense clusters, and its behavior within the park could be characterized as invasive. All other species are represented by fewer than 60 individuals, clearly indicating the dominance of the aforementioned four species. The only species whose numbers have declined over the years is *Aesculus hippocastanum* L., with 28 individuals (5%) recorded in 2004, and 13 individuals (1%) in 2022. The decrease in the number of horse-chestnut individuals in the park between the two analyzed periods may be attributed to the presence and spread of the leaf miner *Cameraria ohridella* Desch & Dimić, as well as of presence of two pathogens: *Botryosphaeria parva* Pennycook & Samuels and *Guignardia aesculi* Stew. The presence of these entomological and phytopathological damages was observed by the authors of the paper during their fieldwork.

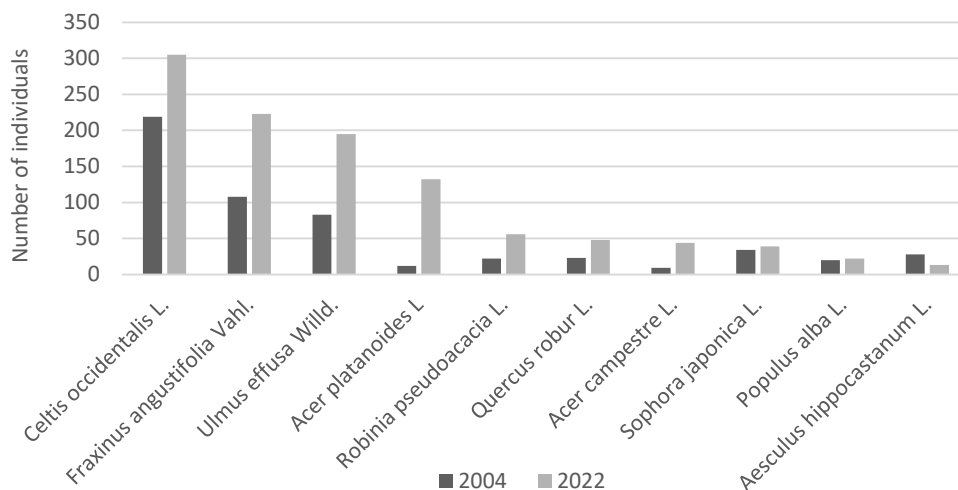


Figure 5. The abundance of the 10 most numerous species in 2004 and 2022

Out of the total number of species recorded in the park in 2022, 17 were autochthonous species and 19 were allochthonous species. The analysis of the geographical origin of dendroflora from 2004 (Fig. 6) shows that the highest representation of species originates from Europe (12 species, 48%), North America (7 species, 28%) and Asia (4 species, 16%), followed by species with African origin (2 species, 8%). The analysis of dendroflora from 2022 (Fig. 7) shows an increase in autochthonous species. Preserving autochthonous species is vital for maintaining the authenticity, ecological stability, and unique characteristics of a region. It ensures the continuity of regional identity and contributes to the overall well-being of the environment and its inhabitants (Šišić, 2011). Within the autochthonous species, there are ecologically valuable species such as *Aesculus hippocastanum* L., which is an arctotertiary relic of the Balkans (Maksimović et al., 2012), as well as *Picea omorika* Pančić, which is an endemic species of the Balkan Peninsula, and a tertiary relic (Ivetić & Aleksić, 2016). The species originating from Europe are represented the most (17 species, 47%), followed by those originating from North America and Asia (each represented by 8 species, 22%), and Africa (3 species, 9%).

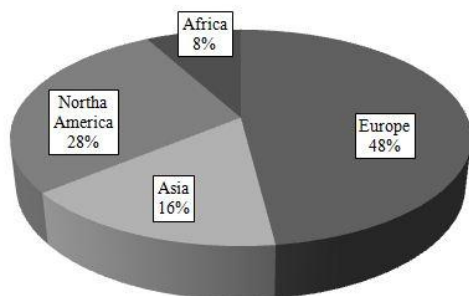


Figure 6. Spectrum of geographical origin of the dendrological species analyzed in 2004

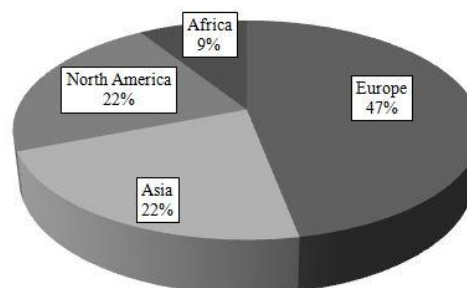


Figure 7. Spectrum of geographical origin of the dendrological species analyzed in 2022

Table 3 presents all the invasive dendroflora species registered in 2004 and 2022. In the first inventory period, there were 8 invasive species (265 individuals, 29%), whereas 9 invasive species were present in 2022 (454 individuals, 24%). Invasive species of the investigated flora have originated from three different continents: Asia, Europe, and North America (Tab. 3). In both periods under consideration, 10 species are characterized as invasive, following Stojanović & Jovanović (2018). According to the same authors, the species *Pinus nigra* Arn. and *Syringa vulgaris* L., although native to Europe, are considered invasive in the Autonomous Province of Vojvodina. The majority of invasive species originate from North America (6 species), and one individual is from Asia. Therefore, out of nine invasive species recorded in the park in 2022, five species are characterized as invasive in the whole territory of Serbia (+,*) and five are invasive only in the Autonomous Province of Vojvodina (*). Out of the ten registered invasive species in both of these periods, two species were characterized as "highly invasive" (HI) (*Acer negundo* L., *Robinia pseudoacacia* L.), other two were characterized as "sporadically invasive" (SI) (*Celtis occidentalis* L., *Prunus serotina* Ehrh.), and the remaining one was marked as "potentially invasive" (PI) (*Broussonetia papyrifera* Vent.), following the preliminary checklist done by Lazarević et al (2012). The other five invasive species (*Gleditsia triacanthos* L., *Juglans nigra* L., *Maclura aurantiaca* Nutt., *Syringa vulgaris* L., *Pinus nigra* Arn.) were not classified according to Lazarević et al. (2012).

Table 3. Comparative analysis of the invasive species in 2004 and 2022

Plant species	Invasiveness status	Geographical origin	Number of individuals 2004	Number of individuals 2022
<i>Angiospermae</i>				
<i>Acer negundo</i> L.	+,*, HI	North America	3	7
<i>Broussonetia papyrifera</i> Vent.	+,*, PI	Asia	6	25
<i>Celtis occidentalis</i> L.	+,*, SI	Europe	219	305
<i>Gleditsia triacanthos</i> L.	*	North America	7	9
<i>Juglans nigra</i> L.	*	North America	1	-
<i>Maclura aurantiaca</i> Nutt.	*	North America	1	15
<i>Prunus serotina</i> Ehrh.	+,*, SI	North America	-	10
<i>Robinia pseudoacacia</i> L.	+,*, HI	North America	22	56
<i>Syringa vulgaris</i> L.	*	Europe	-	10
<i>Gymnospermae</i>				
<i>Pinus nigra</i> Arn.	*	Europe	6	17
Legend:	HI	-	"highly	invasive";
SI	-	"sporadically		invasive";
PI - "potentially invasive";	+, *	- the species is invasive throughout the territory of Serbia (including the territory of the Autonomous Province of Vojvodina);		
* - indicates that the species is invasive only in the territory of the Autonomous Province of Vojvodina				

The Table 3 values indicate that the total number of invasive species increased from 8 in 2004 to 9 in 2022. A large number of invasive species originating from North America can be explained by intensive urbanization, which further leads to specific microclimatic conditions favoring the adaptation and speedy proliferation of these species (Gavrilović, 2016). The comparative analysis of isolated invasive species suggests a slight increase in the number of individuals, especially in the examples of *Celtis occidentalis* L., *Robinia pseudoacacia* L., and *Broussonetia papyrifera* Vent. One reason why *Celtis occidentalis* L. has a large number of individuals in the park is that when the park was established, this species was considered exotic, and only later did it begin to manifest its invasive character.

Species and ecosystems are interrelated and interdependent, while human impact on any individual species or ecosystem can instigate a chain reaction, influencing others in a cascading manner (Sponel, 2013). Therefore, it is important that human impact is focused on the need to maintain a stable ecosystem specific to a certain area, which is achieved by planting autochthonous species. Additionally, proper management of existing invasive species is also important. The management of invasive species in the park necessitates a multifaceted strategy, encompassing an understanding of diverse biological phenomena and strategies. In biological control, natural enemies are employed to handle invasive species, with classical biological control specifically involving the introduction of a specialized adversary for the regulation of invasive species (Müller-Schärer et al., 2004). Beyond biological approaches, mechanical methods can also be applied, including techniques like removing specific invasive species, particularly undergrowth, along with routine maintenance and control measures. De Barros Ruas et al. (2022) also pointed out that the invasion of species into new regions raises significant concern among researchers due to perceived threats to native biodiversity, ecosystem functioning, and human aesthetic and wellbeing.

CONCLUSION

With the research conducted in 2022 in the territory of the NM “Stari park” in Temerin, 1,453 individuals were documented, classified into 40 species, 30 genera, and 18 families. Compared to the data from 2004 provided in the document (JKP “Temerin”, 2021), the number of individuals increased by 806, with 7 more genera and 13 more species, while the number of families remained the same. Four species outnumber all others in the park in terms of the number of individuals. The most dominant one in 2022 was *Celtis occidentalis* L. (305 individuals, 21%), followed by *Fraxinus angustifolia* Vahl. (223 individuals, 15%), *Ulmus effusa* Willd. (195 individuals, 13%), and *Acer platanoides* L. (132 individuals, 9%). Deciduous woody species outnumber coniferous and evergreen woody species in the total dendroflora of the NM “Stari park”. Among the 40 species in the dendroflora, 17 are autochthonous, and 19 are allochthonous. The examined flora contains invasive species from three different continents, with the majority of these being of North American origin (8). Out of 19 non-native species recorded in the park, 8 are characterized as invasive, and two native species – *Pinus nigra* Arn. and *Syringa vulgaris* L. – are considered invasive only in the Autonomous Province of Vojvodina, following Stojanović & Jovanović (2018). Among the 9 documented invasive species, two are highly invasive, two are sporadically invasive, and one is a potentially invasive plant species, while the other four are not on the preliminary checklist of invasive species done by Lazarević et al. (2012).

The NM “Stari park” in Temerin serves various important functions including ecological, social, historical, aesthetic, and urbanistic roles. Currently, the greatest threat to its biodiversity is the irregular maintenance of the park’s dendroflora. Continuous monitoring of the dendroflora would provide insight into its dynamics and trends that can be anticipated over time. Defined maintenance procedures should be implemented for the entire park, particularly targeting invasive species which require special control measures. Controlling the spread of invasive species in the park demands a multifaceted approach that encompasses an understanding of various biological phenomena and strategies. Biological control entails deploying natural enemies to manage invasive species; classical biological control specifically involves introducing specialized adversaries to regulate invasive species (Müller-Schärer et al., 2004). Alongside biological methods, mechanical approaches can also be employed, such as removing specific invasive species, particularly undergrowth, and implementing regular maintenance and control measures.

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