



Staromerchytskyi Park (Kharkiv region): changes in planning, taxonomic composition, landscapes, and plantings for 1997–2018

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Abstract

The paper is dedicated to establishing the trend of changes in planning, taxonomic composition, landscapes, and plantings in the Staromerychytskyi Park-Monument of landscape gardening of national importance for a short period (about 20 years). The park is located in the village of Staryi Merchyk, Bohodukhiv district, Kharkiv region (Ukraine). The history of the creation of this park ensemble is considered. The changes in the planning, and the composition of the dendroflora, which occurred during the entire period of the park's existence, were investigated. An inventory of the park dendroflora and an analysis of the landscapes and plantings, with an interval of 20 years, were conducted. This provides an opportunity for further study and development of recommendations for preserving plantations in ancient parks. According to the Florence Charter, historic parks must be maintained and restored to the condition of their heyday. It was found that due to insufficient maintenance, taxonomic, landscape, and phytocenotic degradation is observed in Staromerychytskyi Park.

Keywords: ancient park, garden and park landscape, plantings, old trees

Authors' contributions: Alla Hryhorenko participated in the surveys of the park territory (2016, 2018), compiled species lists, took part in the discussion of the obtained materials, and formulated the conclusion. Yurii Klymenko conducted a study of the park in 1997. He also participated in the 2016 and 2018 surveys, made drawings, discussed materials, and formulated conclusions.

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Introduction

The Florence Charter on Historic Gardens (ICOMOS, 1982; O'Donnell, 2014), an addendum to the Venice Charter, is a regulatory document regulating measures for protecting ancient parks. According to the Florence Charter,

a historical park is an architectural and plant composition of public interest. An important provision in the reproduction of the historical object is the preservation and further possibility of extending the life of the most valuable plantings in the park and individual

rare trees. The principles of the Florence Charter should be applied to historical parks in Ukraine.

Information about the history of Staromerchytskyi Park, a park-monument of landscape gardening of national importance, and its plantings are included in several publications (Rubtsov, 1956; Lypa, 1960; Zharikov, 1986; Sappa, 1987; Mayak & Cherkasova, 1989; Klymenko et al., 1996). The estate in Saryi Merchyk village existed since 1724. In 1776–1778, it was entirely rebuilt by its owner, Hryhorii Shidlovskiy (1752–1820). The old palace was dismantled, and a new one was built. The author of the palace project is Vasyl Bazhenov (1737–1799), and this palace was constructed by Petro Yaroslavskiy (1750–1810). The architect Oleksandr Palitsyn (1749–1816) significantly expanded the estate's boundaries and planned the park. The parterre was adjacent to the park facade of the palace, the slope from the palace to the ponds was terraced, and behind it – the landscape part of the park remained. This estate was owned by two generations of the Shidlovskiy family, two generations of the Orlovy–Denisovy family, and Yevhenii Dukhovskiy (1835–1920). In 1913, the estate had already experienced an inevitable decline.

After 1918, the estate in Merchyk survived, although its cultural values were either taken away or stolen. The gazebos, the rotunda, and the grotto (buildings characteristic of parks in the Romantic style) were not preserved. In the estate, the All Saints Church was built in the late 1770s in the place of an old church. The church was rebuilt several times: a bell tower and later a refectory were added. The church was closed in 1921. In Soviet times, a zoo-veterinary college was opened in the palace, and the church was used as a gymnasium building. In February 1995, the parish of All Saints Church resumed its activities. In 1997, when the zoo-veterinary college was closed, the palace was still in satisfactory condition. However, after a fire in 2018, it began to turn into ruins. Today, the Church of All Saints in the village of Saryi Merchyk is the small part that was once completed. Currently, the church is separated from the estate by a fence. The buildings of the end of the 18th century have been preserved in the estate: two outbuildings, the service building, the storeroom, and the cellar (quite damaged).

Since 1990, the park received the status of a park-monument of landscape art of national importance by Resolution of the State Committee of Ecology on 30 August 1990, Nr 18 (Ecological Passport, 2022). The park is an environmental and recreational facility of national importance. It is part of the Nature Reserve Fund of Ukraine, following articles 37 and 38 of Law of Ukraine On the Nature Reserve Fund of Ukraine (Law of Ukraine, 1992).

Conducting monitoring studies in parks-monuments of landscape art is an important measure to detect the changes in their layout, biodiversity, landscapes, and plantings.

Material and methods

The research was conducted in 1997 by Yurii Klymenko, and in 2016 and 2018 by Alla Hryhorenko and Yurii Klymenko. The composition of species and cultivars was determined by route surveys. The names of the plants are given according to the WFO (2024). Garden and park landscapes were defined according to the classification of Rubtsov (1956), who distinguished six types: forest, park, meadow, garden, regular, and alpine. Landscape plans were made, area of sections and the area occupied by each type of landscape were calculated using the ArcView GIS 3.2a software. For the analysis of plantings, the park's territory was divided into sections according to the predominant species by the forest management method. Sections in which none of the species reached five units in the composition were allocated to a separate category and considered those having no predominating species. The data were obtained at intervals of 20 years, during which the park was practically not cared for.

Results and discussion

According to official data (NRF, 2009), the park's area is 69 ha. Our calculations of the 1:10000 scale park plan, obtained from the State Cartographic and Geodetic Fund of Ukraine, showed that in 1997 the area was 61 ha (Fig. 1). In 2018, after the separation of the church territory, the park area remained 60.5 ha (Fig. 2; Table 1).

Table 1. The balance of areas in Staromerchytskyi Park.

Area category	1997		2018	
	ha	%	ha	%
Buildings	0.45	0.7	0.40	0.7
Water bodies	1.00	1.6	1.00	1.6
Swamp	0.65	1.1	0.65	1.1
Arable lands	0.15	0.3	0.15	0.3
Yard	-	-	0.05	0.1
Sport grounds	0.10	0.2	0.05	0.1
Roads and paths	4.05	6.6	3.60	5.9
Green zone	54.60	89.5	54.60	90.2
Total	61.00	100	60.50	100

The altitudinal difference in the park is 46 m. The park is located on the slopes of the ravine. There was a pond of 1.0 ha, part of which (0.65 ha) has now turned into a swamp. The presence of an island in the northern part of the swampy area evidences that it was once a pond.

From 1997 to 2018, the territory of the parterre was overgrown with self-sowing trees and bushes, which appeared both on the former areas of flower gardens and lawns, and on paths. In 2018, it was already impossible to walk there. Therefore, the plans have not shown the paths since 2018 anymore. Compared to the park's heyday time, many roads became the paths.

According to data from 1949, about 30 species and cultivars of woody plants grew in the Park. Native tree species such as *Quercus robur* L., *Tilia cordata* Mill., *Acer platanoides* L., and *Fraxinus excelsior* L. prevailed there. *Picea pungens* Engelm. (in the source mentioned as a silver fir), *Picea glauca* (Moench.) Voss., *Pinus rigida* Mill., *Pseudotsuga mensiesii* (Mirb.) Franco and other introduced species were also registered in the study area (Lypa, 1960).

Sappa (1987) reported that one of the largest trees of *Picea abies* (L.) Karst. in Ukraine grew in the Staromerchytskyi Park. However, in 1997, it was not rediscovered.

In 1997, 44 species of trees, shrubs, and half-shrubs belonging to 32 genera and 20 families were recorded in the park (Appendix). The division Pinophyta is represented by four species, all trees. The division Magnoliophyta

comprises 40 species (27 trees, 12 shrubs, and one half-shrub). The same taxonomic composition was established in 2018. Hence, it has not changed in 20 years, although the park has not been appropriately maintained for over 100 years. Only the most stable species have survived here. The recent droughts and the European spruce bark beetle attack on the *Picea abies* almost destroyed its plantings in many Ukrainian parks. In Saryi Merchyk, most of the spruce trees were eliminated by 1997. There are solitary plants that are not affected by bark beetles. It is noticeable that the number of age-old *Pinus sylvestris* L. has decreased in plantings. Some of the dead trees are standing, as the law prohibits any felling on the objects of the protected areas. The number of pines in the park remains significant. Bark beetle damage was observed only on one middle-aged pine tree.

In 1997 and 2018, the forest type of garden and park landscape prevailed in the park (Figs. 3 & 4; Table 2).

In 1997, near the southern facade of the park, there was a section of regular landscape – a parterre. Until 2018, it was covered by the self-sowing of different plant species (e.g., *Fraxinus excelsior*, *Acer negundo* L., *Robinia pseudoacacia* L., etc.). It became a forest type of landscape in which none of the species predominates. Hence, in the absence of care, 20 years is enough for the regular landscape to be replaced by forest.

Staromerchytskyi Park is located on the territory of the Zmiiv-Valkiv-Derhachiv geobotanical district of the Kharkiv okrug of

Table 2. Distribution of the green areas of Staromerchytskyi Park by landscape types.

Landscape type	1997		2018	
	ha	%	ha	%
Forest	44.55	81.6	47.15	86.4
Park	2.00	3.7	1.55	2.8
Meadow	5.80	10.6	5.80	10.6
Regular	2.25	4.1	0.10	0.2
Total	54.60	100	54.60	100

the Central Russian Forest subprovince of the Eastern European province of the European-Siberian Forest Steppe Oblast. This territory is characterized by linden-oak, oak (smaller areas are occupied by maple-linden-oak forests), oak-pine forests (located on terraces), floodplain meadows, and meadow steppes on chernozems. In the past, almost the entire territory was covered with forests, which were destroyed in the 19th century (Barbarych, 1977). Both in 1997 and 2018, *Fraxinus excelsior* dominated the plantings of the park (Figs. 5 & 6; Table 3).

Most likely, the park was created based on a natural oak forest (*Querceta roboris*). Therefore, age-old trees of *Quercus robur* and *Fraxinus excelsior*, which grew there even before the park's creation, were noted in the study area.

In 2018, 47 age-old oak trees in the park were measured. The diameters of the trunks of 34 of these oaks ranged from 56–98 cm. Thirteen oaks had trunk diameters between 100–132 cm. The trunk diameter in four *Fraxinus excelsior* trees varied from 70 to 103 cm; in three *Acer platanoides* trees, it ranged from 68 to 72 cm; and in one *Populus alba* tree, it was 90 cm. But over time, most of the oak trees fell out or were cut down. The place of oaks was captured by common ash. Cultures of *Quercus robur* were established only in some areas. Small areas are covered with *Acer campestre* L. trees, the tops of many of which died off due to droughts. The age-old trees of *Pinus sylvestris* indicate the use of coniferous species in the park plantings. Eighteen trees were measured, and six were dry but still standing. The measured trees

Table 3. The distribution of Staromerchytskyi Park green areas between the allotments with the predominance of different species.

Allotments (with predomination of certain species)	1997		2018	
	ha	%	ha	%
<i>Quercus robur</i> L.	7.40	13.5	7.40	13.5
<i>Fraxinus excelsior</i> L.	35.25	64.6	35.25	64.6
<i>Acer campestre</i> L.	1.65	3.0	1.65	3.0
<i>Pinus sylvestris</i> L.	0.25	0.5	0.25	0.5
Glades and meadows	10.00	18.3	7.40	13.5
Allotments in which none of the species predominates	-	-	2.60	4.8
Row of <i>Aesculus hippocastanum</i> L.	0.03	0.1	0.03	0.1
Row of <i>Populus nigra</i> L.	0.02	0*	0.02	0*
Total	54.60	100	54.60	100

Note. * - values ≤ 0.1 % were neglected in total calculations.

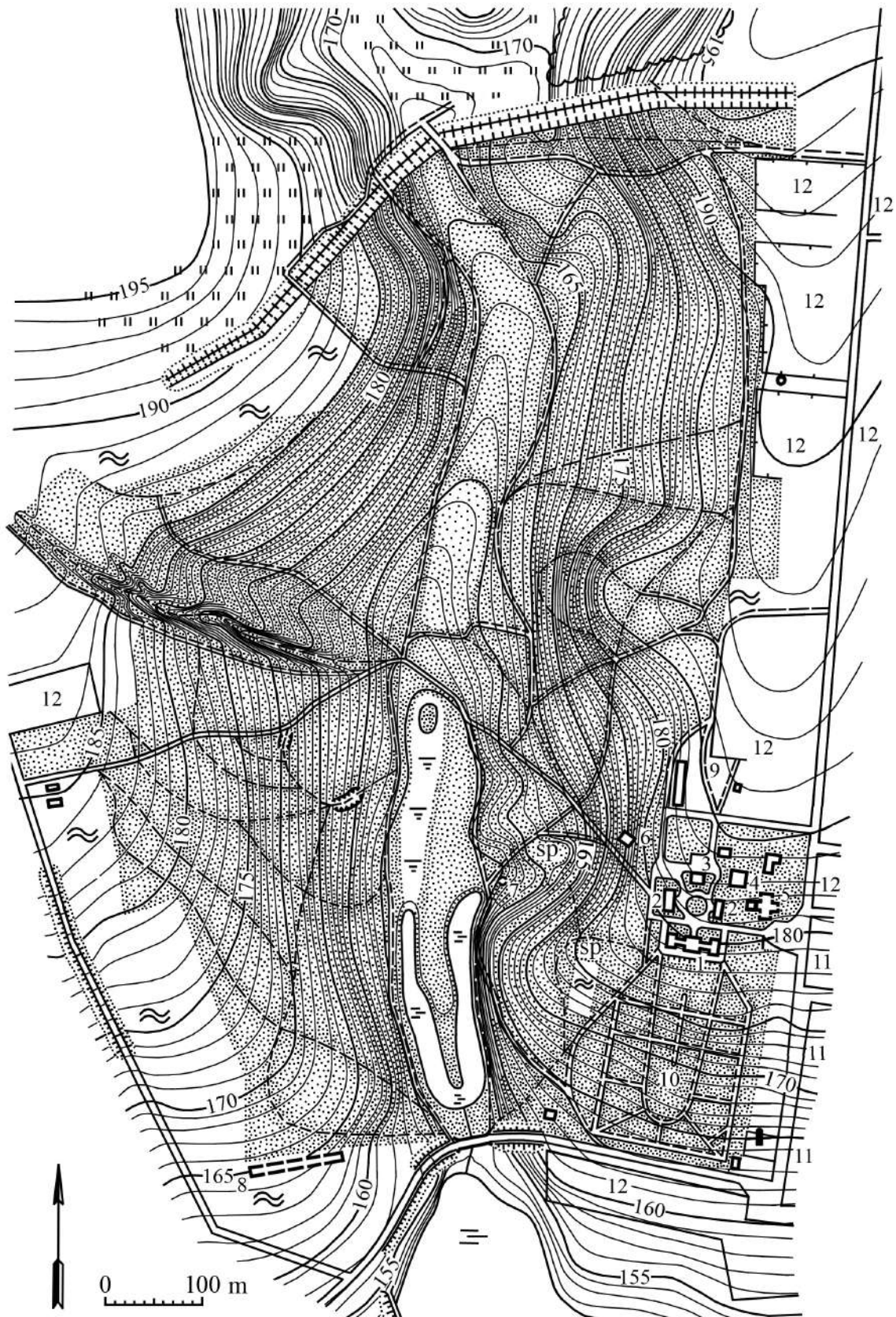


Figure 1. Layout and topography of Staromerchyt'skyi Park in 1997: 1 – palace; 2 – outbuildings; 3 – service corps; 4 – pantry; 5 – bell tower and church ruins; 6 – cellar; 7 – rotunda-well (not preserved); 8 – stables (not preserved); 9 – the place where the carriage house was located (not preserved); 10 – parterre; 11 – the area where the buildings that once belonged to the estate's employees are located (five houses); 12 – Staryi Merchyk village.

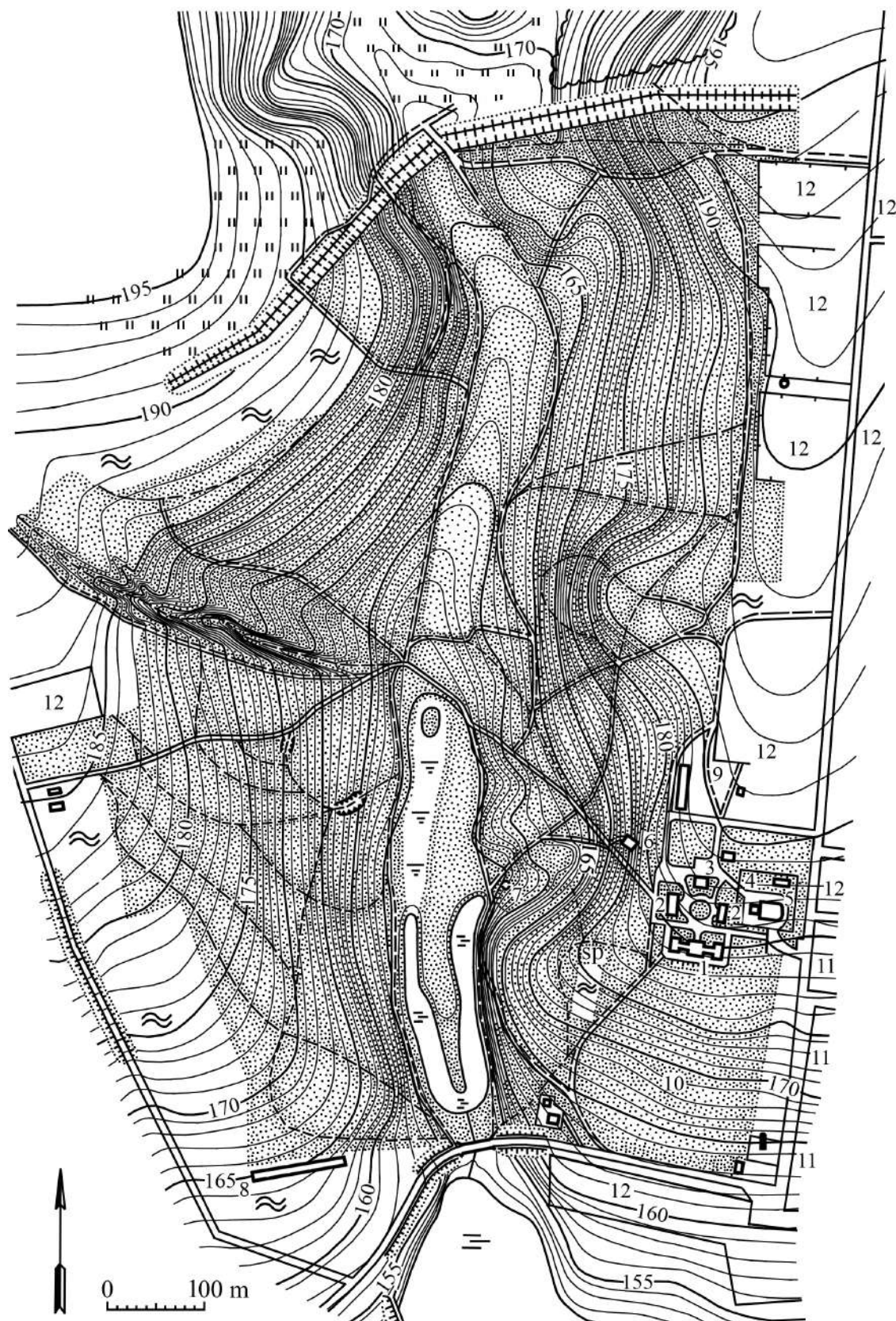


Figure 2. Layout and topography of Staromerchytskyi Park in 2018: 1 – palace (ruins); 2 – outbuildings; 3 – service corps; 4 – the place where the pantry used to be (not preserved); 5 – church (restored but not in its original form); 6 – cellar; 7 – rotunda-well (not preserved); 8 – stables (not preserved); 9 – the place where the carriage house was located (not preserved); 10 – the place where the parterre was; 11 – the area where the buildings that once belonged to the estate’s employees are located (five houses); 12 – Staryi Merchyk village.

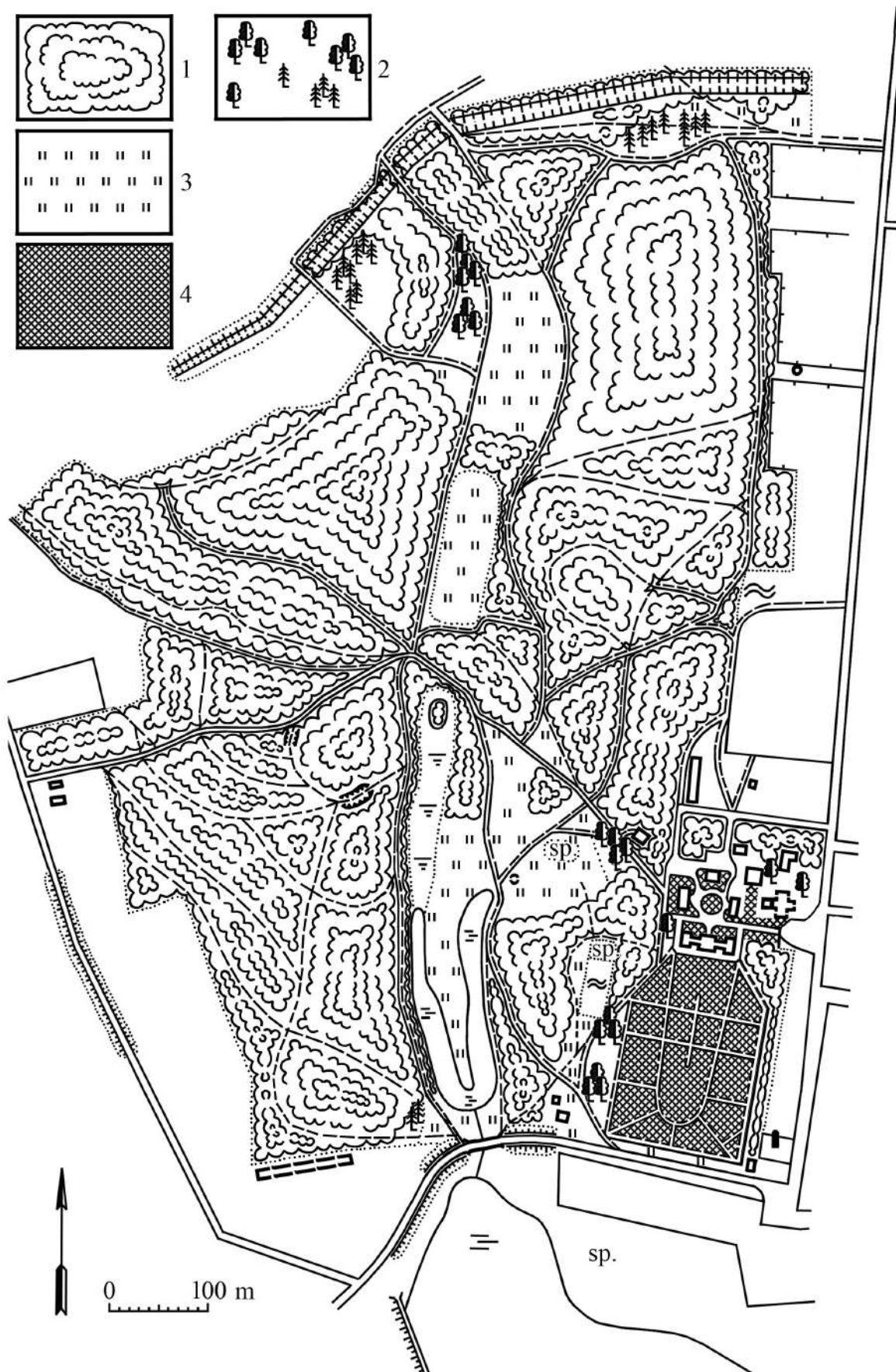


Figure 3. Landscape plan of Staromerchytskyi Park in 1997. Types of landscapes: 1 – forest (44.55 ha, 81.6 % from the green area); 2 – park (2.00 ha, 3.7 %); 3 – meadow (5.80 ha, 10.6 %); 4 – regular and its elements (2,25 ha, 4.1 %).

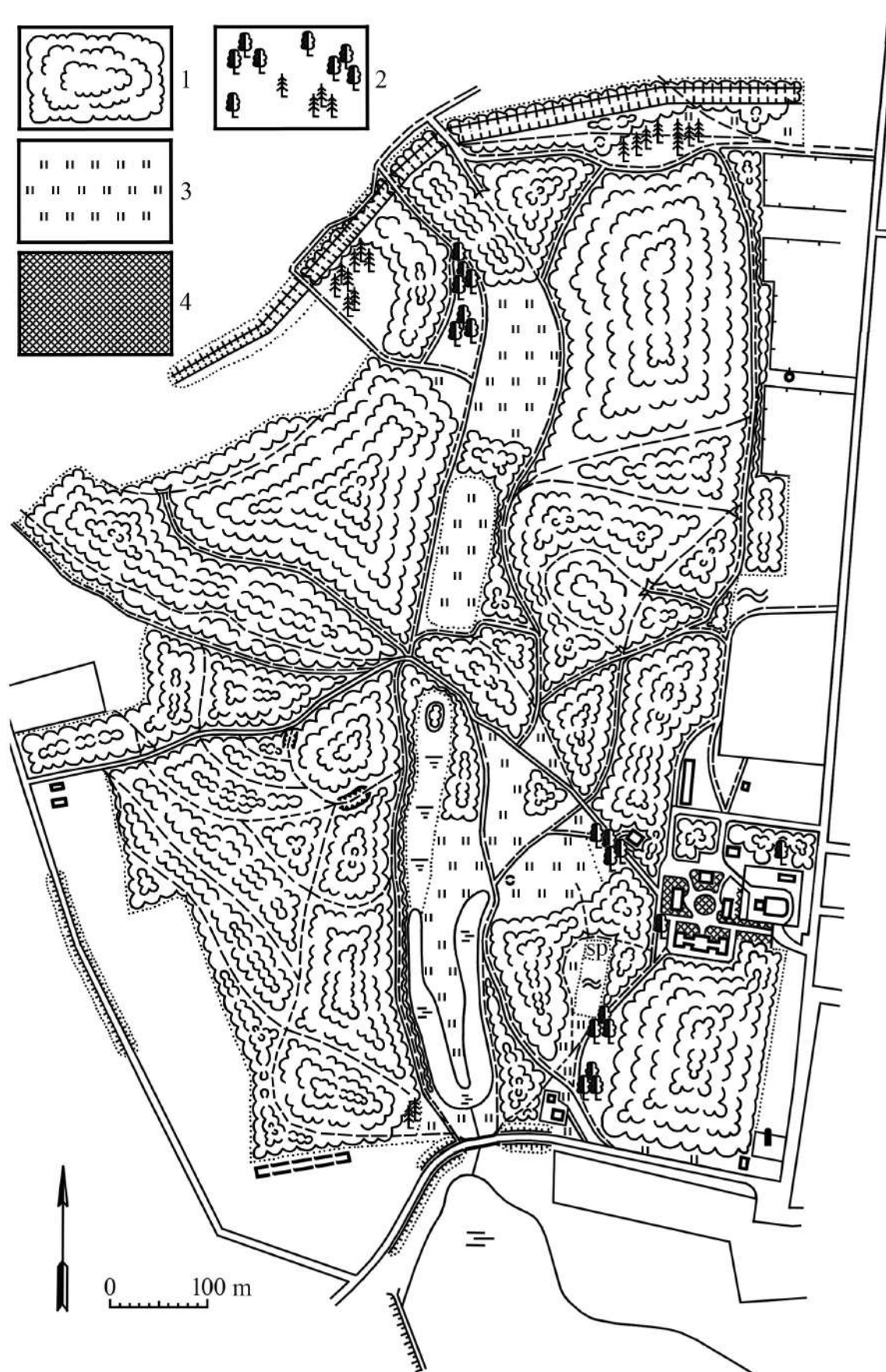


Figure 4. Landscape plan of Staromerchytskyi Park in 2018. Types of landscapes: 1 – forest (47.15 ha, 86.4 % from the green area); 2 – park (1.55 ha, 2.8 %); 3 – meadow (5.80 ha, 10.6 %); 4 – (0.10 ha, 0.2 %).

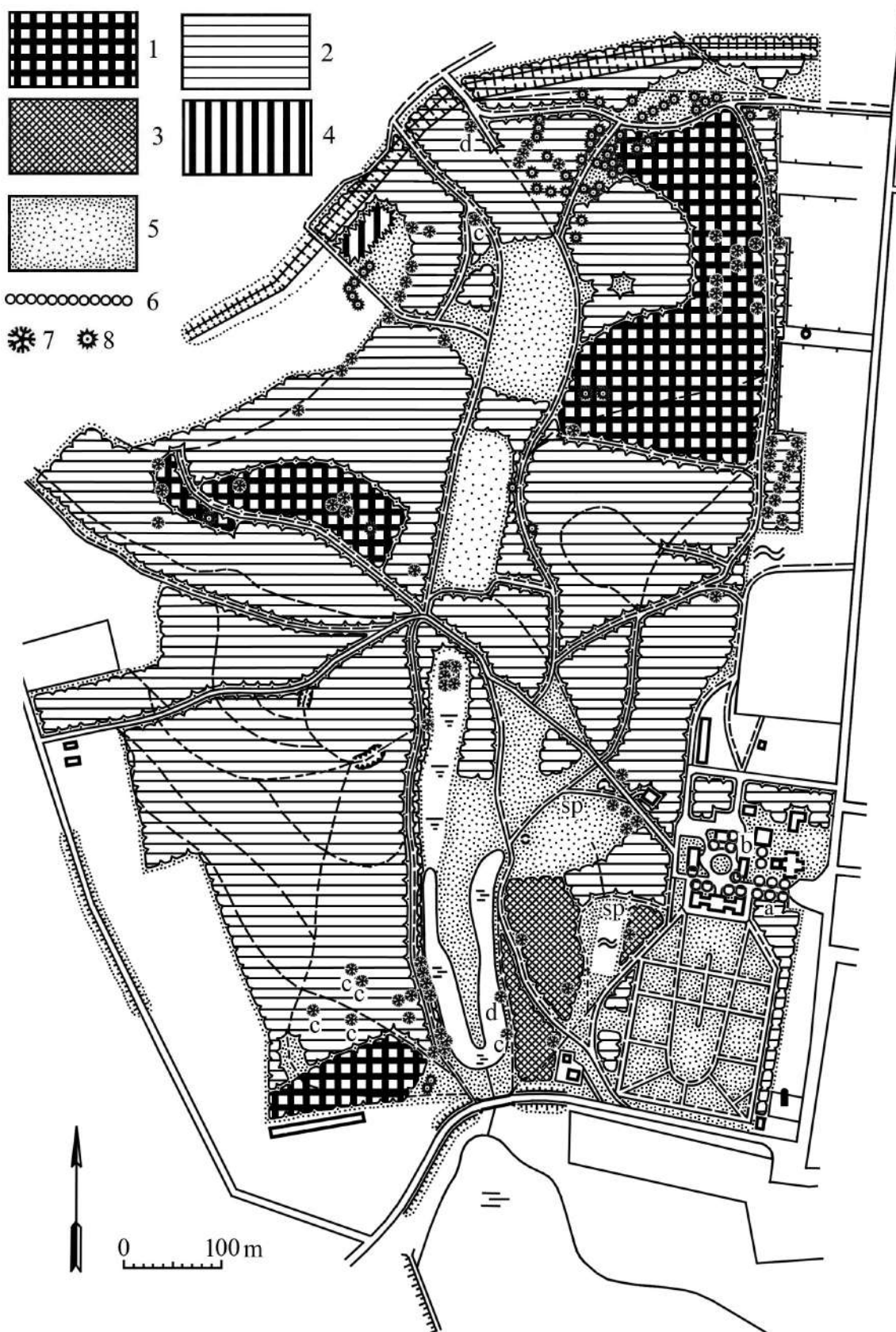


Figure 5. Plantings plan of Staromerchytskyi Park in 1997: 1 – *Quercus robur* (7.40 ha, 13.5 % of the green area); 2 – *Fraxinus excelsior* (35.25 ha, 64.6 %); 3 – *Acer campestre* (1.65 ha, 3.0 %); 4 – *Pinus sylvestris* (0.25 ha, 0.5 %); 5 – glades and meadows (10.00 ha, 18.3 %); 6 – rows of deciduous trees (a – a row of *Aesculus hippocastanum* (0.03 ha, 0.1 %), b – a row of *Populus nigra* (0.02 ha, 0.1 %)); 7 – centuries-old deciduous trees (unmarked – *Quercus robur*, c – *Fraxinus excelsior*, d – *Acer platanoides*); 8 – individual conifer trees (*Pinus sylvestris*).

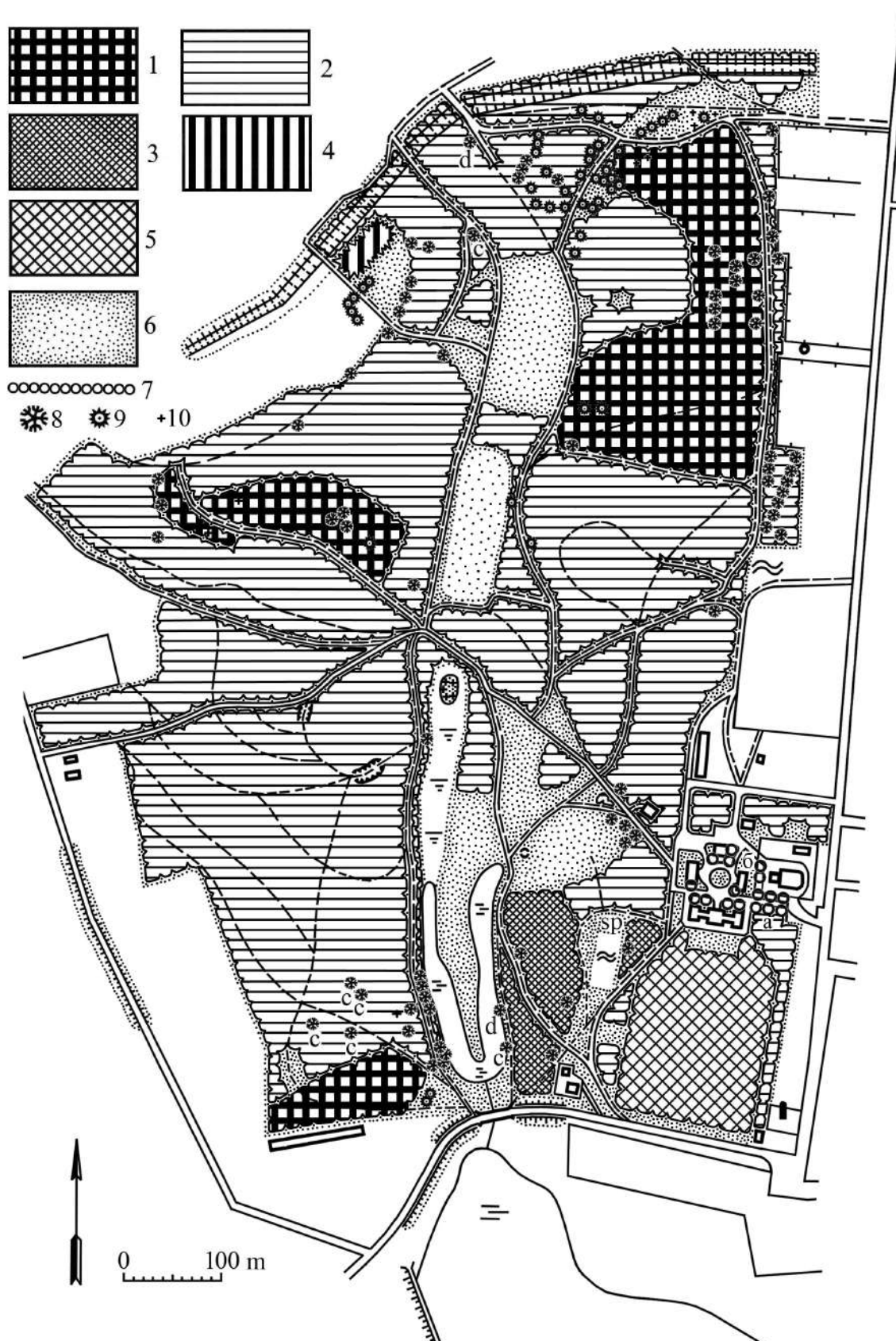


Figure 6. Plantings plan of Staromerchytskyi Park in 2018: 1 – *Quercus robur* (7.40 ha, 13.5 % of the green area); 2 – *Fraxinus excelsior* (35.25 ha, 64.6 %); 3 – *Acer campestre* (1.65 ha, 3.0 %); 4 – *Pinus sylvestris* (0.25 ha, 0.5 %); 5 – allotments in which none of the species predominates (2.60 ha, 4.8 %); 6 – glades and meadows (7.40 ha, 13.5 %), 7 – rows of deciduous trees (a – a row of *Aesculus hippocastanum* (0.03 ha, 0.1 %), b – a row of *Populus nigra* (0.02 ha, 0.1 %)); 8 – centuries-old deciduous trees (unmarked – *Quercus robur*, c – *Fraxinus excelsior*, d – *Acer platanoides*); 9 – individual conifer trees (*Pinus sylvestris*); 10 – dried-off old trees.

had trunk diameters between 35 and 102 cm. Some coniferous species are only mentioned in literary sources but have not recently been discovered in the park area.

Conclusions

1. Due to insufficient care, the taxonomic, landscape, and phytocenotic degradation occurs in Staromerchytskyi Park.
2. The pace of taxonomic degradation slows down over time. The taxonomic composition could remain stable for decades in the future if a significant number of species disappear during the first stages.
3. Lack of care leads to replacing a regular landscape (parterre) with a forest type of landscape, involving species that spread quickly by self-sowing.

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Appendix. Consolidated list of woody plant species occurring in Staromerchytskyi Park (1997, 2018).

Nr	Species / variety	Family	Life form *
Pinophyta			
1	<i>Picea abies</i> (L.) H.Karst.	Pinaceae	T
2	<i>Pinus nigra</i> J.F.Arnold	Pinaceae	T
3	<i>Pinus sylvestris</i> L.	Pinaceae	T
4	<i>Platycladus orientalis</i> (L.) Franco	Cupressaceae	T

Nr	Species / variety	Family	Life form *
Magnoliophyta			
5	<i>Acer campestre</i> L.	Sapindaceae	T-S
6	<i>Acer negundo</i> L.	Sapindaceae	T
7	<i>Acer platanoides</i> L.	Sapindaceae	T
8	<i>Acer tataricum</i> L.	Sapindaceae	T
9	<i>Aesculus hippocastanum</i> L.	Sapindaceae	T
10	<i>Berberis vulgaris</i> L.	Berberidaceae	S
11	<i>Betula pendula</i> Roth.	Betulaceae	T
12	<i>Caragana arborescens</i> Lam.	Fabaceae	S
13	<i>Chamaecytisus ruthenicus</i> (Fisch. ex Woł.) Klásk.	Fabaceae	SS
14	<i>Cornus sanguinea</i> L.	Cornaceae	T
15	<i>Corylus avellana</i> L.	Betulaceae	S
16	<i>Crataegus monogyna</i> Jacq.	Rosaceae	T-S
17	<i>Euonymus europaeus</i> L.	Celastraceae	S-T
18	<i>Fraxinus excelsior</i> L.	Oleaceae	T
19	<i>Juglans regia</i> L.	Juglandaceae	T
20	<i>Lonicera tatarica</i> L.	Caprifoliaceae	S
21	<i>Lycium barbarum</i> L.	Solanaceae	S
22	<i>Malus domestica</i> Borkh.	Rosaceae	T
23	<i>Malus sylvestris</i> (L.) Mill.	Rosaceae	T
24	<i>Morus alba</i> L.	Moraceae	T
25	<i>Populus alba</i> L.	Salicaceae	T
26	<i>Populus nigra</i> L. var. <i>italica</i> Münchh.	Salicaceae	T
27	<i>Populus tremula</i> L.	Salicaceae	T
28	<i>Prunus armeniaca</i> L.	Rosaceae	T
29	<i>Prunus cerasifera</i> Ehrh.	Rosaceae	T
30	<i>Prunus cerasus</i> L.	Rosaceae	T
31	<i>Prunus domestica</i> L.	Rosaceae	T
32	<i>Prunus padus</i> L.	Rosaceae	T
33	<i>Prunus spinosa</i> L.	Rosaceae	S
34	<i>Pyrus communis</i> L.	Rosaceae	T
35	<i>Quercus robur</i> L.	Fagaceae	T
36	<i>Rhamnus cathartica</i> L.	Rhamnaceae	S-T
37	<i>Robinia pseudoacacia</i> L.	Fabaceae	T
38	<i>Rosa canina</i> L.	Rosaceae	S
39	<i>Sambucus nigra</i> L.	Adoxaceae	S
40	<i>Salix alba</i> L.	Salicaceae	T
41	<i>Sorbus aucuparia</i> L.	Rosaceae	T
42	<i>Syringa vulgaris</i> L.	Oleaceae	S
43	<i>Tilia cordata</i> Mill.	Malvaceae	T
44	<i>Ulmus glabra</i> Huds.	Ulmaceae	T

Старомерчицький парк (Харківська область): зміни у плануванні, таксономічному складі, ландшафтах та насадженнях за період 1997–2018 років

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Стаття присвячена встановленню тенденції змін у плануванні, таксономічному складі, ландшафтах та насадженнях у Старомерчицькому парку-пам'ятці садово-паркового мистецтва загальнодержавного значення за нетривалий проміжок часу (близько 20 років). Розташований парк у селі Старий Мерчик Богодухівського району Харківської області. Розглянуто історію створення цього паркового ансамблю. Досліджено зміни в плануванні та складі дендрофлори, які відбувалися протягом усього періоду існування парку. Проведено інвентаризацію дендрофлори парку, аналіз ландшафтів та насаджень з інтервалом у 20 років. Це дає можливість подальшого аналізу та рекомендацій для збереження насаджень у старовинних парках. Відповідно до Флорентійської хартії, історичні парки повинні підтримуватись та поновлюватись з метою досягнення стану періоду їхнього розквіту. Встановлено, що через недостатній догляд у Старомеричицькому парку спостерігається таксономічна, ландшафтна та фітоценотична деградація.

Ключові слова: старовинний парк, садово-парковий ландшафт, насадження, вікові дерева