

## Restored and modern landscape structures of the Synytsky Park in Cherkasy region

*Yurii Yatsentiuk*<sup>1</sup>

DSc (Geography), Professor, Department of Geography,  
<sup>1</sup> Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia, Ukraine,  
e-mail: [yatsentuky@gmail.com](mailto:yatsentuky@gmail.com), [ID https://orcid.org/0000-0003-2906-4828](https://orcid.org/0000-0003-2906-4828);

*Volodymyr Volovyk*<sup>1</sup>

DSc (Geography), Professor, Department of Geography,  
e-mail: [wolowyk@gmail.com](mailto:wolowyk@gmail.com), [ID https://orcid.org/0000-0001-8663-0342](https://orcid.org/0000-0001-8663-0342);

*Olena Mishchenko*<sup>2</sup>

DSc (Geography), Associate Professor, Department of Physical Geography,  
<sup>2</sup> Lesya Ukrainka Volyn National University, Lutsk, Ukraine,  
e-mail: [mischenko.olena@vnu.edu.ua](mailto:mischenko.olena@vnu.edu.ua), [ID https://orcid.org/0000-0002-6801-7197](https://orcid.org/0000-0002-6801-7197);

*Svitlana Hryshko*<sup>3</sup>

PhD (Geography), Associate Professor, Department of Geography and Tourism,  
<sup>3</sup> Bogdan Khmelnytsky Melitopol State Pedagogical University, Zaporizhzhia, Ukraine,  
e-mail: [gryshko245@gmail.com](mailto:gryshko245@gmail.com), [ID https://orcid.org/0000-0002-5054-3893](https://orcid.org/0000-0002-5054-3893);

*Iryna Kravtsova*<sup>4</sup>

DSc (Geography), Associate Professor, Department of Ecology and Life Safety,  
<sup>4</sup> Uman National University of Horticulture, Uman, Ukraine,  
e-mail: [irinakravzova@gmail.com](mailto:irinakravzova@gmail.com), [ID https://orcid.org/0000-0003-3431-473X](https://orcid.org/0000-0003-3431-473X)

### ABSTRACT

**Problem statement.** In the conditions of increasing anthropogenic environment, loss of biodiversity, important problems are the preservation of quasi-natural areas and the rational design of landscape complexes. An important role in this regard is played by parks-monuments of garden and park art. The organic combination of their nature conservation and recreational functions requires knowledge about the landscape complexes of the territory. The park-monument of garden and park art of local importance “Synytsky Park” (hereinafter - Synytsky Park) was founded in the 18<sup>th</sup> century. In 2023 it was included in the State Register of Immovable Monuments of Ukraine as an object of cultural heritage of national importance. However, a significant number of park’s cultural monuments have been destroyed or have undergone negative changes. Its restoration and further development require knowledge about landscapes that existed here before the park was founded (restored) and exist today (modern).

**Purpose.** The purpose of the article is to identify the features of the landscape complexes of the Synytsky Park.

**Methods.** To achieve the purpose, landscape studies of the territory were conducted, revealing the features of the restored (middle of the 18<sup>th</sup> century) and modern landscape structure of the park. The research was conducted using the following methods: field expeditionary continuous survey (to identify the features of the modern landscape structure); analytical and cartographic analysis (in the process of analyzing existing maps of nature, economy, anthropogenic changes in landscapes); geoinformation methods - QGIS software (to create maps of natural (reconstruction) and modern landscapes).

**Results and Discussion.** The slope terrains dominated and still dominate (44.17 %) both in the restored and in the modern landscape structures of the Synytsky Park. The flat interfluvial terrains occupied 40.4 %, the flood-plain terrains – 14.71 %, the channel terrains – 0.72 %. In the restored landscape structure of the park dominated (39.11%) the tracts of slightly undulating loess surfaces with dark gray podzolic soils under hornbeam oak forests. The landscape structure of the modern territory of the Synytsky Park has become significantly diversified and complicated. Based on 14 types of natural tracts 44 types of anthropogenic tracts have been formed and are currently distinguished. The most common (34.46 %) tracts in the modern landscape structure of the park are slightly undulating loess surfaces with dark gray podzolic soils under ash forest of the flat interfluvial terrains. The area of the channel terrains in the Synytsky Park has decreased by half compared to the middle of the 18<sup>th</sup> century. Due to the flooding of the dominant part of the river flood-plains by pond waters, the flood-plain type of terrains has transformed into a pond-flood-plain type.

**Scientific novelty.** The features of the restored landscape structure of the Synytsky Park were identified for the first time. The features of the anthropogenic transformation of types of terrains and tracts of the park from the middle of the 18<sup>th</sup> century to the present day were identified.

**Practical significance.** The research results will become a scientific basis for the further development and optimization of the landscapes of Synytsky Park.

**Keywords:** *Synytsky Park, landscape structure, terrain, tract, sustainable community development, preservation of ecosystems, rational use of natural resources, hornbeam forest, natural heritage, cultural heritage.*

**In cites:** Yatsentiuk Yurii, Volovyk Volodymyr, Mishchenko Olena, Hryshko Svitlana, Kravtsova Iryna (2025). Restored and modern landscape structures of the Synytsky Park in Cherkasy region. *Visnyk of V. N. Karazin Kharkiv National University. Series Geology. Geography. Ecology*, (63), 479-493. <https://doi.org/10.26565/2410-7360-2025-63-35>

## Introduction

In the conditions of increasing anthropogenic environment, loss of biodiversity, global warming, important problems are the preservation of quasi-natural areas on the earth's surface and the rational design of landscape complexes. In order to preserve nature, nature reserves and territories are created. One of the categories of the nature reserve fund is park-monument of garden and park art. They are simultaneously nature conservation and recreational institutions. The organic combination of their nature conservation and recreational functions requires knowledge about the landscape complexes of the territory.

Synytsky Park is located in the western part of the village Synytsia, in the Palanka rural territorial community of the Uman district of the Cherkasy region (Fig. 1) and occupies an area of 46.0004 hectares [12].

The park was founded in the last quarter of the 18<sup>th</sup> century. By the Resolution of the Cabinet of Ministers of Ukraine dated July 7, 2023 No. 693, it was included in the State Register of Immovable Monuments of Ukraine as an object of cultural heritage of national importance. However, the park has been neglected for many decades, and a significant number of cultural monuments have been destroyed or have undergone negative changes. Currently, the local community is striving to revitalize Synytsky

Park. Its restoration and further development require knowledge about the landscapes that existed here before the park was founded (restored) and exist today (modern).

**Analysis of recent research and publications. Highlighting previously unresolved parts of the overall problem.** The first description of the flora of the Synytsky Park was made by I. V. Tkachuk in 1965 [14]. S. V. Sovhira, G. E. Goncharenko, S. L. Grabovska and R. V. Podzerei identified the general features of the park's vegetation [13].

A. A. Kuzemko and co-authors described 15 biotopes, including 9 natural and 6 anthropogenic [11]. A. I. Kovtonyuk and co-authors studied the composition of the spontaneous flora of the park, determined the indices of the state of transformation of the synanthropic fraction of the flora [5]. O. I. Shynder, Y. V. Yatsentyuk, G. A. Chorna and T. M. Kostuba conducted a tax inventory of tree plantations, studied the spontaneous flora, and identified the features of its geographical, biomorphological, and ecological-coenotic structures [15].

I. V. Kravtsova identified general features of modern landscapes of the Synytsky Park at the level of types of terrains and tracts. However, the names of the tracts don't indicate the characteristics of the soils, and the vegetation is described too generally (coniferous or deciduous species, mixed forest vegetation) [6-8].

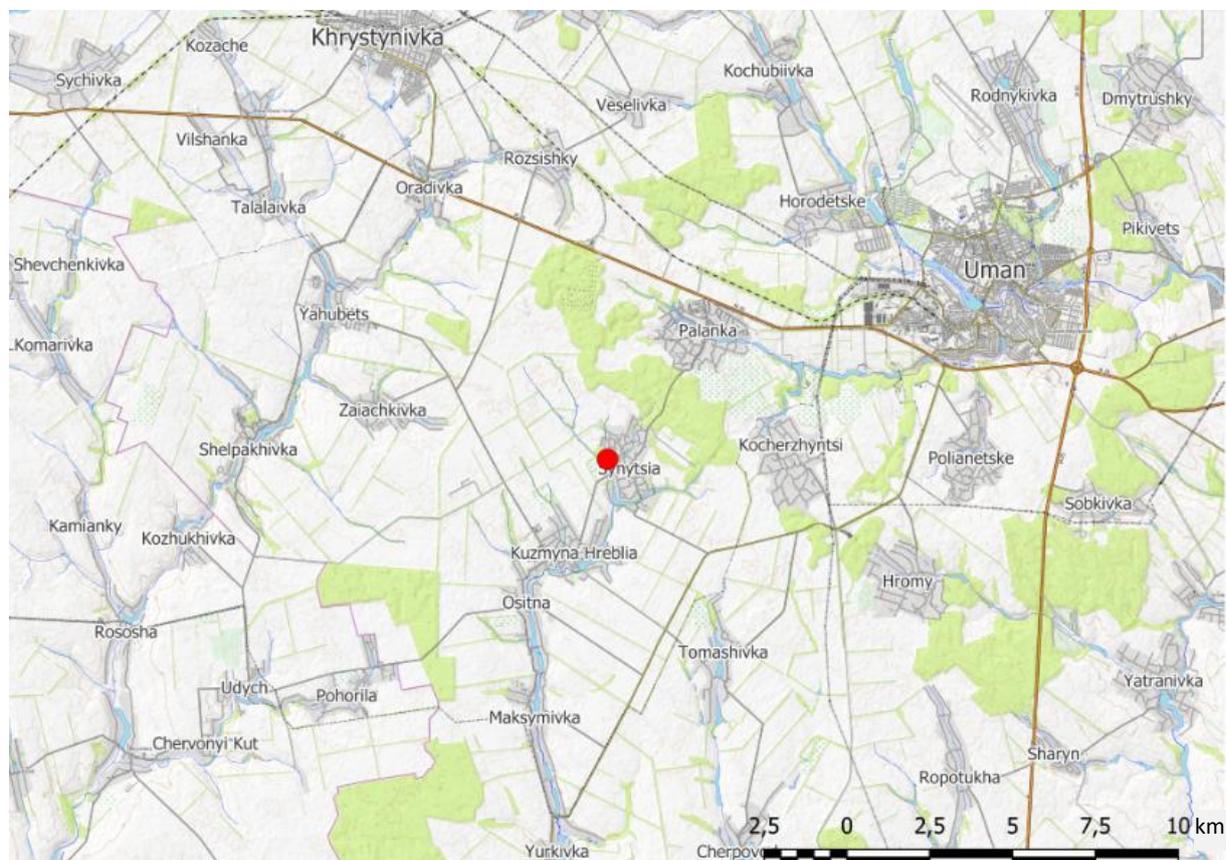


Fig. 1. The location of Synytsky Park (depicted with a red punch)

So, at present, no features of the restored landscape structure of the Synytsky Park have been identified, the modern landscape structure of the park has been described rather superficially and not sufficiently fully and accurately. Therefore, there is a need to conduct landscape studies of this territory. They were conducted by us during 2023-2024, but have not been published so far.

#### Formulation of the purpose of the article.

The purpose of the article is to identify the features of the landscape complexes of the Synytsky Park. To achieve this purpose, landscape studies of the territory were conducted, and the features of the restored (by the middle of the 18<sup>th</sup> century) and modern landscape structure of the park were identified.

The research was conducted using the following **methods**: field expeditionary continuous survey (to identify the features of the modern landscape structure); analytical and cartographic analysis (in the process of analysing existing maps of nature, economy, anthropogenic changes in landscapes); analysis of literary sources (to identify existing experience in studying landscape complexes of the park, reconstruction of the natural landscape structure of the territory); geoinformation methods – QGIS software, version 3.28.8 (to create maps of natural (reconstruction) and modern landscapes); measurements (to determine the areas of terrains and tracts).

**Results and Discussion.** From a landscape science point of view, the territory of the Synytsky Park is located within the loess uplands, dissected by ra-

vines and balkas, cut into crystalline rocks with dark gray podzolic soils and podzolic chernozems, with hornbeam oak forests in the past [10, p. 222-223].

Typical are forest-steppe landscape complexes, which are an organic combination of forest areas with meadow-steppe. However, meadow steppes were absent in the park. Instead, the hornbeam forests with dark gray podzolic soils and podzolic chernozems were background.

The landscape complexes of terrestrial and amphibious variants were widespread in natural conditions on the territory of Synytsky Park. The overwhelming majority of the park's natural landscapes belonged to the terrestrial variant.

Slope terrains prevailed and still prevail both in the restored and in the modern landscape structures of the park. They occupy an area of 20.32 ha (44.17 % of the park area). Slightly smaller areas (18.58 ha or 40.4 % of the park area) are occupied by flat interfluvial terrains. 14.71 % (6.77 ha) of the territory of the Synytsky Park is occupied by flood-plain terrains. Together, all of the above types of terrains are terrestrial landscape complexes. The smallest areas (0.33 ha or 0.72 % of the park area) in the restored landscape structure were occupied by channel terrains (Fig. 2). They belong to amphibian landscape complexes.

Within the predominantly slope type of terrain, the following types of natural tracts have formed:

- balka with dark gray podzolic soils under hornbeam oak forests;
- gentle (steepness 3°–5°) loess surfaces

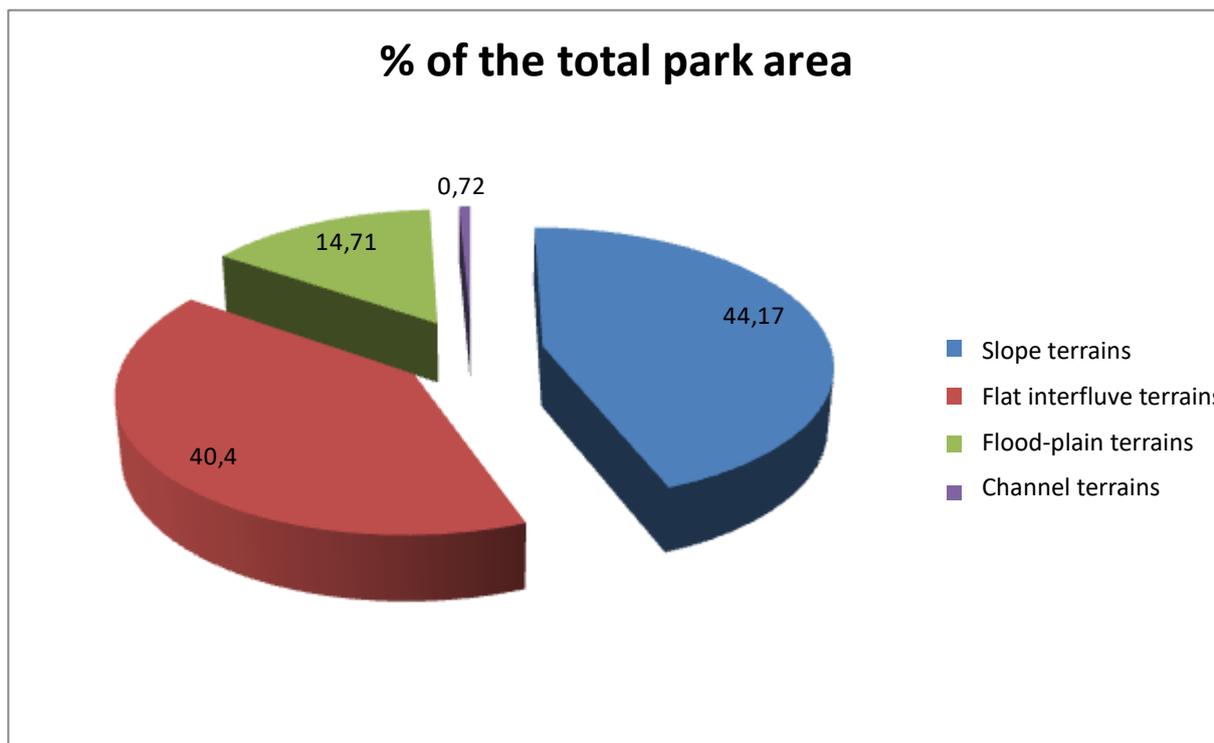


Fig. 2. Restored (by the middle of the 18<sup>th</sup> century) landscape structure at the level of types of terrains of the Synytsky Park

with podzolic chernozems under hornbeam oak forests;  
 ➤ slope (steepness  $5^{\circ} - 8^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests;  
 ➤ steep (with a slope of over  $8^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests;  
 gentle (steepness  $3^{\circ} - 5^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests;  
 ➤ slope (steepness  $5^{\circ} - 8^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests;

➤ steep (with a slope of more than  $8^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests (Fig. 3).  
 Two areas with the tracts of gentle (steepness  $3^{\circ} - 5^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests were discovered in the natural landscape structure. They were located in the right-bank part of the Synytsky Park and formed strips. One of the areas was located in the north-western part of the park, in blocks No. 2, 5, 6 and 11. The second area was located mainly in the central part, and also partially covered the northern, eastern and south-eastern parts of the park (blocks

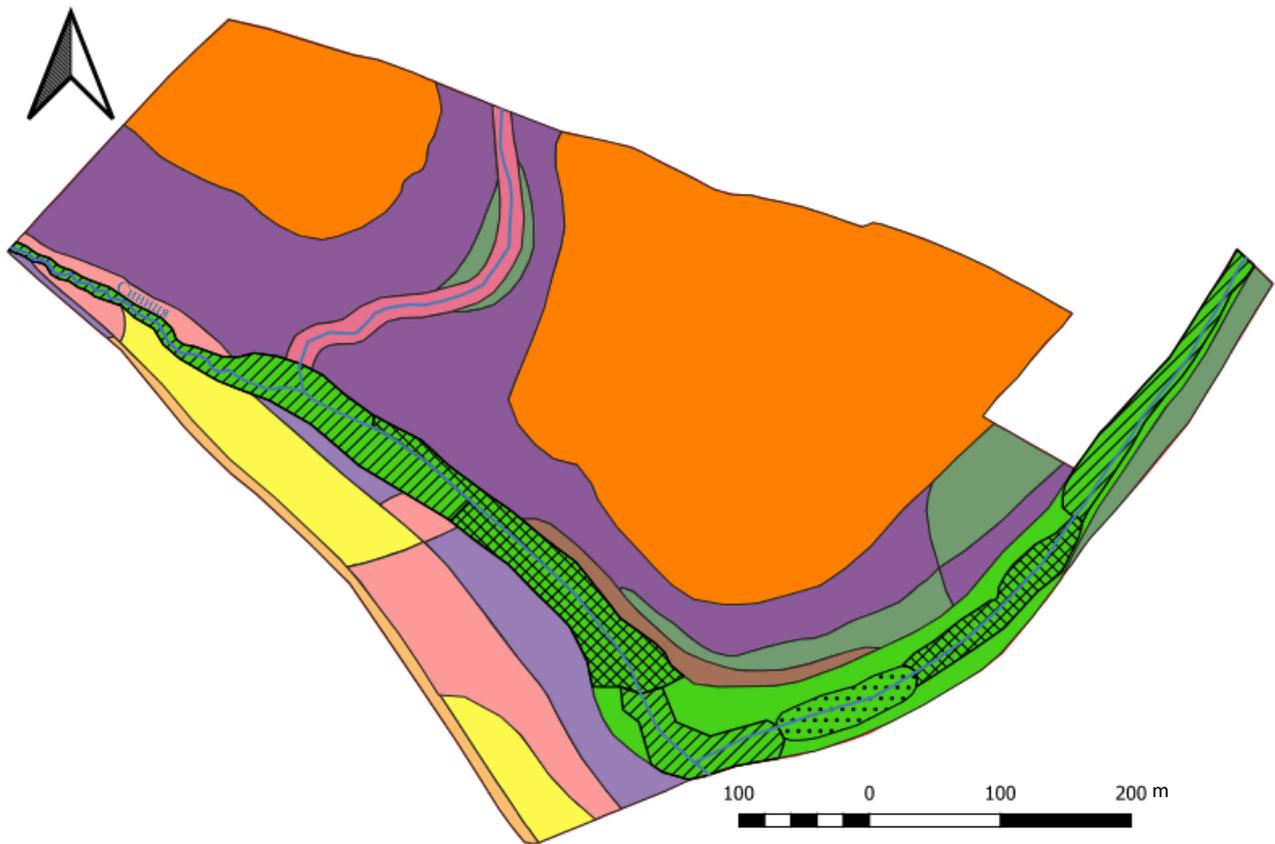
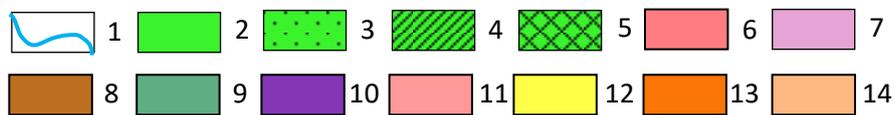


Fig. 3. Reconstruction (middle of the 18<sup>th</sup> century) of the landscapes of Synytsky Park



1 – Channel type of terrain.

Flood-plain type of terrain. Tracts: 2 – flood-plain meadows; 3 – lowland swamps;  
 4 – alder groves; 5 – willow groves.

Slope type of terrain. Tracts: 6 - balka with dark gray podzolic soils under hornbeam oak forests; 7 - steep (with a slope of over  $8^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests; 8 - steep (with a slope of more than  $8^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests; 9 - slope (steepness  $5^{\circ} - 8^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests; 10 - gentle (steepness  $3^{\circ} - 5^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests; 11 - slope (steepness  $5^{\circ} - 8^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests; 12 - gentle (steepness  $3^{\circ} - 5^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests.

Flat interfluve type of terrain. Tracts: 13 - slightly undulating loess surfaces with dark gray podzolic soils under hornbeam oak forests; 14 - flat loess surfaces with podzolic chernozems under hornbeam oak forests.

No. 2, 6 – 9).

The tracts of gentle (steepness  $3^{\circ}$  -  $5^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests dominated in the landscape structure of the slope terrains in the past. These tracts occupied an area of 10.31 hectares (22.4 % of the modern territory of the Synytsky Park and 50.74 % of the slope terrains).

In addition to the background facies of slope surfaces (with a steepness of  $3^{\circ}$ – $5^{\circ}$ ) with dark gray podzolic soils under hornbeam oak forests, there were also facies of slope surfaces (with a steepness of  $3^{\circ}$ – $5^{\circ}$ ) with gray podzolic soils under hornbeam oak forests, as well as facies of slope surfaces (with a steepness of  $3^{\circ}$ – $5^{\circ}$ ) with meadows of various grasses on dark gray podzolic soils in the structure of this type tracts before anthropogenic transformation.

The tracts of slope (steepness  $5^{\circ}$  -  $8^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests occupied an area of 2.61 hectares. This is 5.7 % of the territory of the Synytsky Park and 12.84 % of the slope terrains. There were four parts of these tracts. The largest part was located in blocks No. 8 and 9. Its area was 1.64 hectares. Most of these tracts were located in block No. 9.

The second largest part (0.65 ha) was located in the block No. 9, on the left bank of the left tributary of the Synytsia River. Two more parts, each measuring 0.16 ha, stretched in the balka, on both banks of the dry brook, in blocks No. 2 and 6.

The tracts of slope (steepness  $5^{\circ}$  -  $8^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests were formed in blocks No. 10, 11 and 12 and occupied a total area of 2.43 hectares. This is 5.3 % of the territory of Synytsky Park and 11.96% of the slope areas. There were four sections of these tracts in the park. The largest section was located in block No. 12 and occupied an area of 1.78 hectares. Three more sections were located in block No. 11. The largest of them (0.34 hectares) was located along the left bank of the Synytsia River. Two more sections were located on the right bank of this river: one - with an area of 0.16 hectares – was located in the western part of the park, the second - with an area of 0.15 hectares - in its south-western part. The latter partially covered block No. 10.

The tracts of gentle (steepness  $3^{\circ}$  –  $5^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests were also formed in blocks No. 11 and 12 and occupied a total area of 2.38 hectares. This is 5.2 % of the territory of the Synytsky Park and 11.71 % of the slope terrains. There were two sections of these tracts. The largest (1.67 ha) was located in block No. 11, in the south-western part of Synytsky Park. The second section was located in block No. 12, in the south of the park. Its area was

0.71 hectares.

In addition to the dominant facies of gentle (steepness  $3^{\circ}$ – $5^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests in the past, facies of slope (steepness  $5^{\circ}$ – $8^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests were also widespread in the structure of the tracts of gentle (steepness  $3^{\circ}$ – $5^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests.

The tracts of steep (with a steepness of over  $8^{\circ}$ ) loess surfaces with podzolic chernozems under hornbeam oak forests were formed on the right bank of the Synytsia River, in blocks No. 10, 11 and 12. They occupied a total area of 1.71 hectares (3.72 % of the modern area of Synytsky Park and 8.42 % of the slope terrains).

Three parts of this type of tract were identified. Two parts were located in block No.11. The smallest part (0.07 ha) occupied the western part of the Synytsky Park, between its modern border and the path. The second area (0.23 ha) was located in the south-western part of the park. In addition to block No. 11, it included part of block No. 10, that is now under the waters of the pond. The third part was the largest, occupying an area of 1.41 ha. It was located in blocks No. 10 and 12, between the Synytsia River and the path. Part of this area is now also under the waters of the pond.

The tract of steep (with a steepness of over  $8^{\circ}$ ) loess surfaces with dark gray podzolic soils under hornbeam oak forests was formed in blocks No. 8, 9 and 10. It was represented by one part and occupied an area of 0.55 ha. This tract stretched in a narrow strip on the left bank of the Synytsia River and on the right bank of its left tributary. In addition to the dominant facies of steep slopes (with a steepness of over  $8^{\circ}$ ) with dark gray podzolic soils under hornbeam oak forests, facies of gentle slopes (with a steepness of  $3^{\circ}$  –  $5^{\circ}$ ) with dark gray podzolic soils under hornbeam oak forests were widespread here.

The tract of balka with dark gray podzolic soils under hornbeam oak forests stretched in a narrow strip in blocks No. 2, 6, 11 and occupied an area of 0.84 ha. Its landscape structure in the past represented facies of gentle (steepness  $3^{\circ}$  –  $5^{\circ}$ ) slopes with dark gray podzolic soils under hornbeam oak forests; steep (steepness  $5^{\circ}$  –  $8^{\circ}$ ) slopes with dark gray podzolic soils under hornbeam oak forests.

Two types of tracts were formed in the structure of the flat interfluvial terrains: flat loess surfaces with podzolic chernozems under hornbeam oak forests and slightly undulating loess surfaces with dark gray podzolic soils under hornbeam oak forests. The latter prevailed and occupied an area of 17.99 hectares (39.11 % of the park area and 96.82 % of flat interfluvial terrains).

There were two large tracts of slightly undulat-

ing loess surfaces with dark gray podzolic soils under hornbeam oak forests. The largest tract (14.12 hectares or 78.49 % of the total area of these tracts in the park) was located in the northern, north-eastern and central parts of the Synytsky Park. It occupied the entire blocks No. 3, 4, 7, the eastern parts of blocks No. 2 and 6, most of block No. 8, the north-western part of block No. 9. The second section of this type of tract was formed in the north-western part of Synytsky Park. It occupied the entire block No. 1, the western part of block No. 2, the northern and north-western parts of block No. 5. The area of this section is 3.87 hectares.

The following types of facies were common in the landscape structure of this type of tract in the past: elevated, relatively flat loess surfaces with light gray podzolic soils under hornbeam oak forests; slightly inclined, lowered loess surfaces with dark gray podzolic soils under hornbeam oak forests; slightly inclined loess surfaces with gray podzolic soils under hornbeam oak forests; slightly inclined, loess surfaces with dark gray podzolic soils under meadows with grassy vegetation.

The tract of flat loess surfaces with podzolic chernozems under hornbeam oak forests occupied a narrow strip extending along the modern border of the Synytsky Park, in its southern and south-western parts, in blocks No. 11 and 12. The area of this tract is 0.59 hectares.

The following types of natural tracts were widespread in the structure of flood-plain terrains in the past: alder groves, willow groves, flood-plain meadows, lowland swamps. The alder tracts occupied the largest areas in the structure of flood-plain terrains (2.73 hectares or 40.32 % of the park's river flood-plains and 5.93 % of its territory) in the past.

Three plots of these tracts were formed in the Synytsky Park. The largest plot of alders with an area of 1.37 hectares (50.18 % of the territory of this type of tract) was located in the western and south-western parts of the park, in blocks No. 10 and 11. The second plot of alders with an area of 0.66 hectares (24.18 % of the territory of this type of tract) was located in the southern part of the Synytsky Park, in block No. 10. The third alder tract covered an area of 0.70 ha (25.64 % of the territory of this type of tract). It was located in the north-eastern part of the park, occupying block No. 9 and, partially, No. 10. Facies of flat areas of flood-plains with thickets of *Alnus glutinosa*; elevated areas of flood-plains with meadow soils under meadow, grassy vegetation; coastal areas of flood-plains with thickets of *Salix alba* distinguished in the structure of the alder tracts.

The willow tracts were widespread at the bottom of the current pond, in block No. 10 in the past. They occupied an area of 1.97 ha, i.e. 29.1 % of all

flood-plain terrains of the Synytsky Park and 4.28 % of its territory. There were two areas of willow tracts in the park. One of them was located in the southern part of the Synytsky Park and occupied an area of 1.36 ha (69.04 % of this type of tract). The second area was located in the eastern part of the park and occupied of 0.61 ha (30.96 % of this type of tract). The facies of coastal flood-plain areas with thickets of *Salix alba*; lowered, waterlogged flood-plain areas with thickets of *Typha angustifolia* were widespread in the landscape structure of the willow tracts [20].

Flood-plain meadow tracts were widespread in the eastern, south-eastern, and southern parts of the Synytsky Park, at the bottom of the current pond. They are now flooded by the pond's waters. The area of flood-plain meadows was 1.61 hectares, or 23.78 % of all flood-plain terrains of the park and 3.5 % of its territory.

There were three sections of flood-plain meadows within the studied territory. One of them was located on the right bank of the left tributary of the Synytsia River, the second – on the left bank of this tributary, the third – on the right bank of the Synytsia River, in its mouth area. The facies of elevated sections of flood-plains with meadow soils under insufficiently moistened herbaceous communities and facies of lowered sections of flood-plains with meadow soils under overmoistened meadow phytocenoses were widespread in the landscape structure of this type of tracts.

The tract of lowland marsh was located in the south-eastern part of the Synytsky Park. Now it is flooded by the waters of the pond. The area of the tract was 0.46 hectares (6.79 % of the flood-plain terrains of the park and 1 % of the area of the entire park). The structure of the lowland marsh tract included the following facies: thickets of *Carex*; thickets of *Typha angustifolia*; thickets of *Phragmites australis*.

Natural aquatic complexes of amphibian landscapes are distinguished in the structure of river beds similar to tracts and complex tracts of terrestrial landscapes. The channel type of terrains is represented by the aquatic complexes of the Synytsia River and its two left tributaries. They together occupied 0.33 ha or 0.72 % of the park's territory. The total length of rivers within the park before anthropogenic transformation was 2.07 km.

Two types of aquatic areas are distinguished in the river beds: pools and fords. They are paragenetic aquatic complexes that alternate with each other from the source to the river mouth and differ in depth and flow speed, composition of bottom sediments, floristic and faunal composition [16].

Within the boundaries of the Synytsky Park, there were mainly pools in the past. The remains of

fords were found only on the left tributary of the Synytsia River, which previously flowed on the bottom of the balka. Pools are the deepest aquatic sections of rivers between fords. They are characterized by greater depths, lower flow velocity, silty or silty-clay bottom, water stratification by temperature and quantitative indicators of the development of hydrobionts [2, p. 47].

There are distinguished 3 types of aquatic tracts in the landscape structure of the pools: central deep water, central shallow water and coastal shallows [9, p. 97]. The width of the pools sections within the Synytsky Park ranged from one to three meters. Therefore, only aquatic tracts of central deep water and coastal shallows were distinguished in the studied area. They alternated on different banks depending on which bank the river washes, because the latter meanders. In one place, the river washes the left bank. Therefore, central deep water was formed near it and in the central part, and a coastal shallow on the opposite bank. Downstream, the river washes the right bank. As a result, central deep water was formed near it and in the central part, and a coastal shallow on the opposite bank. And this situation is repeated due to the migration of rivers.

The fords are characterized by shallow depths, a rocky-gravel bottom, and a fast and turbulent current. There are 5 types of natural aquatic tracts distinguished in their landscape structure: islands, rapids, central channel, shallow channels and branches, and bays [9, p. 44]. The tracts of islands, central channel, shallow channels and branches were widespread within the boundaries of the Synytsky Park in the past. The ford was probably only on the left tributary of the Synytsia River, which flows on the bottom of the balka. We discovered the remains of such an aquatic area in block No. 2. Here, there were tracts of an island, central channel, and shallow channel.

Today, the landscape complexes of the Synytsky Park are used for the purpose of nature protection as a part of the nature reserve fund of Ukraine. At the same time, as a garden and park complex, the territory is used for recreation of the population.

The landscapes of the park have been greatly transformed due to ancient human economic development. The integral index of anthropogenic landscape change ranges from 6.51 to 7.40 [1]. The percentage of areas of natural elements (forests, swamps, meadows, flood-plains, balkas, etc.) of the south-western part of Cherkasy region is lower than average (21–30 %) [4, p. 28]. However, directly within the boundaries of the Synytsky Park, this indicator is high. Natural elements occupy about 78 %.

Synytsky Park was created precisely as a cultural landscape. It is a valuable garden and park landscape. A necessary condition for its normal

functioning and preservation is constant care for it, rational management of regulated nature use. However, this territory fell into decline and overgrown. This was due to the cessation of human care of the park at different periods of its existence and, especially, due to the destruction of buildings, structures and communications.

Recently, through the efforts of the local community, Synytsky Park has been gradually improved. Paths have been restored, emergency trees have been cut down and fallen trees have been removed, thickets have been cleared, garbage has been removed, a playground has been created, benches, bins and signs for tourist attractions have been installed, and the road has been blocked with traffic restrictions to prevent unauthorized removal of wood from the park. As a result, the landscapes of Synytsky Park are becoming more and more "cultural", and the park is gradually becoming a place to meet the cultural needs of the population (and not only local people).

The economic development of the park territory has led to the formation of its modern landscapes (Fig. 4). The most common tracts in the modern landscape structure of the Synytsky Park are slightly undulating loess surfaces with dark gray podzolic soils under ash forest of the flat interfluvial terrains. They occupy an area of 15.85 ha (34.46 % of the park area). *Fraxinus excelsior*, *Ulmus glabra*, *Acer platanoides*, *Acer negundo*, *Acer campestre*, *Tilia cordata*, *Carpinus betulus* grow here. There are isolated specimens of such trees: *Picea obovata*, *Larix sibirica*, *Pinus sylvestris*, *Acer pseudoplatanus*.

Two sections of these tracts are distinguished. The smallest in area (3.88 ha) is located in the north-western part of the park, occupying the entire block No. 1, the western part of block No. 2, and most of block No. 5. Within its boundaries, the following facies are distinguished: hills made of a mixture of loess loam and soil, 1 - 1.5 m high, 1.5 - 2 m in diameter, covered with meadow vegetation; bulwark 1 - 1.5 m high, 1 - 1.4 m wide, 18 m long, without vegetation. The second section with an area of 11.97 hectares occupies parts of blocks No. 2 - 4, 6 - 9. In the structure of this section, in the north of block No. 3, a facies of overgrown fruit plantations of *Cornus mas* and *Malus domestica* is distinguished; in block No. 4, facies of pits 0.5 - 1 m deep, 1 - 1.7 m in diameter in loess loams, under grassy vegetation, facies of a ditch 0.3 - 0.5 m deep, 0.5 - 1 m wide and a bulwark 0.2 - 0.4 m high, 0.5 - 0.8 m wide without vegetation are distinguished.

Tracts of slightly undulating loess surfaces with dark gray podzolic soils under thickets of shrubs and undergrowth of forest species were formed in block No. 4 and occupy an area of 0.8 hectares (Fig. 4). *Fraxinus excelsior*, *Acer platanoides*, *Acer campestre*,

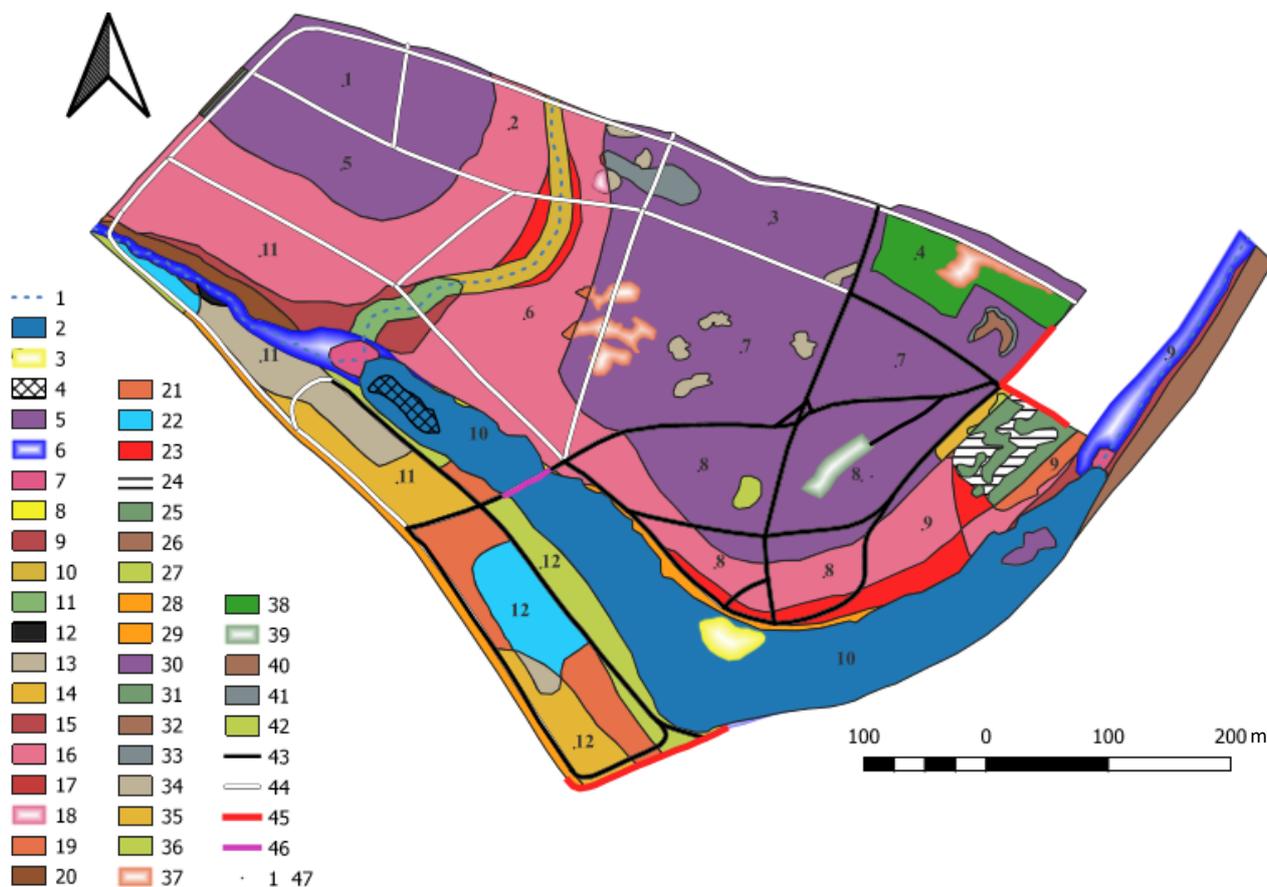


Fig. 4. Modern landscapes of Synytsky Park:

*Channel type of terrain.* Tracts: 1 – drying river beds with a muddy bottom, littered with branches and remnants of tree trunks, which is overgrown with grassy vegetation.

*Pond-flood-plain type of terrain.* Tracts: 2 - pond with an average depth of 0.9 - 1.1 meters with a muddy bottom; 3 - island 51 m long, 17 - 41 m wide , 1 - 1.1 m high, composed of loess loams, with sparse park trees, young plantings of ornamental shrubs and perennial grasses; 4 - swampy island 71 m long, 6 - 17 m wide , 1 - 1.3 m high, composed of loess loams, under alder; 5 - swampy island 54 m long, 12 - 28 m wide , 0.8 - 1.1 m high, composed of loess loams, under willow; 6 - leveled, overmoistened alluvial surfaces with meadow soils under alder; 7 - leveled, swampy alluvial surfaces with bog soils under alder; 8 - leveled alluvial surfaces with meadow soils under willow; 9 - leveled, overmoistened alluvial surfaces with meadow soils under flood-plain meadows.

*Slope type of terrain.* Tracts: 10 - balka with dark gray podzolic soils under an ash forest; 11 - balka with dark gray podzolic soils under an alder; 12 - gentle (steepness 3° – 5°) loess surfaces with podzolic chernozems under an alder; 13 - gentle (steepness 3° – 5°) loess surfaces with podzolic chernozems under plantation of *Picea abies*; 14 - gentle (steepness 3° – 5°) loess surfaces with podzolic chernozems under an ash forest; 15 - gentle (steepness 3° – 5°) loess surfaces with dark gray podzolic soils under an alder; 16 - gentle (steepness 3° – 5°) loess surfaces with dark gray podzolic soils under ash forest; 17 - gentle (steepness 3° – 5°) loess surfaces with dark gray podzolic soils under plantation of *Picea abies*; 18 - gentle (steepness 3° – 5°) loess surfaces with dark gray podzolic soils under forest clearings with thickets of *Sambucus nigra*, *Acer platanoides* and *Acer negundo*; 19 - gentle (steepness 3° – 5°) loess surfaces with dark gray podzolic soils under synanthropized meadows; 20 - slope (steepness 5° - 8°) loess surfaces with podzolic chernozems under alder; 21 - slope (steepness 5° - 8°) loess surfaces with podzolic chernozems under ash forest; 22 - slope (steepness 5° - 8°) loess surfaces with podzolic chernozems under plantation of *Picea abies*; 23 - slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under ash forest; 24 - slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under orchard; 25 - slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under meadow vegetation; 26 - slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under plantation with dominance of *Acer negundo*; 27 - steep (steepness over 8°) loess surfaces with podzolic chernozems under ash forest; 28 - steep (steepness over 8°) loess surfaces with dark gray podzolic soils under ash forest.

*Flat interfluve type of terrain.* Tracts: 29 - flat loess surfaces with podzolic chernozems under ash forest; 30 - slightly undulating loess surfaces with dark gray podzolic soils under ash forest ; 31 - low (up to 0.7 m), 3 m wide bulwark from a mixture of soils and loess loams under old-growth plantations of *Fraxinus excelsior*; 32 - shallow (up to 0.3 m), 1.1 m wide ditch from a mixture of soils and loess loams, without vegetation; 33 - slightly undulating loess surfaces with dark gray podzolic soils under plantation of *Picea abies*; 34 - slightly undulating loess surfaces with dark gray podzolic soils under forest clearings with thickets of *Sambucus nigra*, *Acer platanoides* and *Acer negundo*; 35 -

slightly undulating loess surfaces with dark gray podzolic soils under an orchard; 36 - slightly undulating loess surfaces with dark gray podzolic soils under meadow vegetation; 37 - slightly undulating loess surfaces with dark gray podzolic soils under synanthropized meadows; 38 - slightly undulating loess surfaces with dark gray podzolic soils under thickets of shrubs and undergrowth of forest species; 39 - slightly undulating loess surfaces with dark gray podzolic soils under hay meadows, with a playground; 40 - a depression 2-3 m deep, 2-6 m wide with meadow vegetation; 41 - an embankment up to 1 m high, 1-2 m wide from a mixture of soil and loess loam under plantations of *Fraxinus excelsior*; 42 - a depression 2-3 m deep with the remains of the foundation of the palace of barons M.Y. and Y.M. Korf under plantations of *Fraxinus excelsior*.

Tracts: 43 - sand and gravel paths 2-3 m wide; 44 - dirt paths 0.5-2 m wide, overgrown with grassy vegetation.

*Architectural monuments*: 45 – “Park and park buildings. Entrance gates and fence”; 46 – “Park and park buildings. Bridge”.

47 - numbers of the blocks.

*Malus domestica*, *Robinia pseudoacacia* grow here. Among the shrubs *Rosa canina*, *Prunus spinosa* and *Euonymus europaeus* are found.

The tracts of slightly undulating loess surfaces with dark gray podzolic soils under synanthropized meadows are represented by four plots with a total area of 0.56 ha. One of them is located in block No. 4, surrounded on all sides except the northern one by the previous type of tracts, has an area of 0.21 ha and is a steppe meadow. The other three plots are located on the border of blocks No. 6 and 7, on the central clearing. Their areas are 0.16, 0.10 and 0.09 ha, respectively. *Sambucus ebulus*, *Coronilla varia*, *Trifolium pratense*, *Taraxacum officinale*, *Campanula bononiensis*, *Saponaria officinalis* and *Chenopodium ucrainicum* grow here.

The tract of flat loess surfaces with podzolic chernozems under an ash forest has formed in the extreme southern and south-western parts of the Synytsky Park, on an area of 0.54 hectares. A significant number of centuries-old trees are concentrated here. *Fraxinus excelsior* predominates. In addition to it, *Quercus robur*, *Tilia cordata* and *Populus nigra 'Italica'* have been found.

The tracts of slightly undulating loess surfaces with dark gray podzolic soils under forest clearings with thickets of *Sambucus nigra*, *Acer platanoides* and *Acer negundo* together occupy an area of 0.28 hectares. 8 plots of these tracts have been identified in the park. Three of them with an area of 0.02 hectares each are located in the eastern part of block No. 2. Another 3 plots with an area of 0.04 hectares and one with an area of 0.05 hectares are located in block No. 7. The eighth plot with an area of 0.04 hectares was formed in the south-east of block No. 3.

The tract of slightly undulating loess surfaces with dark gray podzolic soils under plantations of *Picea abies* was formed on the basis of 150 specimens of this species of trees 50–55 years old. It is located in the eastern part of block No. 2 and in the western part of block No. 3 and occupies an area of 0.24 hectares.

The tract of slightly undulating loess surfaces with dark gray podzolic soils under hay meadows, with a playground, was formed in the north-eastern

part of block No. 8 and occupies an area of 0,18 ha. The structure of this tract contains technical elements: benches, children's swings, slides, and a labyrinth.

The tract of slightly undulating loess surfaces with dark gray podzolic soils under an orchard was formed in block No. 9, along the sand-gravel path leading to the central entrance to the park (Fig. 4). It occupies an area of 0.12 hectares. The following trees grow here: *Juglans regia*, *Pyrus communis*, *Prunus cerasifera*, *Malus domestica*.

The tracts of slightly undulating loess surfaces with dark gray podzolic soils under meadow vegetation were formed in the same part of the park as the previous tract. They are represented by two plots with a total area of 0.02 hectares.

Depression 2-3 m deep with the remains of the foundation of the palace of barons M.Y. and Y.M. Korf under plantations of *Fraxinus excelsior* (area 0.07 ha) is occupied an important place in the modern landscape structure of the Synytsky Park. Here in the middle of the 18<sup>th</sup> century a house with columns of the Polish landowner Fedir Stefanovych Iielovitskyi was built. His father, Stefan Mykolayovych, founded and formed the Synytsky Park, and Fedir Stefanovych continued the formation of the valuable garden and park landscape [19]. In 1868, the Synytsky estate, together with the park, became the property of Baron Josyp Mykolaiovych Korf. A new two-story palace with 48 rooms was quickly built near the old house of Iielovitskyi. A fountain was arranged near the palace. A large role in the development of the Synytsky Park was played by the baron's son, Mykola Josypovych Korf. Unfortunately, the palace was destroyed. However, its remains are protected as a part of the architectural monument of national importance "Park and park buildings. Ensemble" (the last quarter of the 18<sup>th</sup> century - the 1870s).

In the modern landscape structure of the Synytsky Park, the second place (9.5 hectares or 20.65 % of the park's territory) is occupied by tracts of gentle (steepness 3°–5°) loess surfaces with dark gray podzolic soils under ash forest of slope type of terrain (Fig. 4). Two sections of these tracts are distinguished. A smaller area (4.58 ha) was formed around the

balka, in block No. 2; in a significant part of block No. 5; in the northern and western parts of block No. 11. In the western part of block No. 6, to the west of the dried-up brook, facies of the bottom of a drained pond under *Alnus glutinosa* were discovered.

The larger area (4.92 ha) was formed around the balka, in blocks No. 2 and 6, in the southern part of the latter; in the south-western part of block No. 7; in the southern part of block No. 8; in the southern and south-western parts of block No. 9. In block No. 6, facies of orchards remains (walnut, apple and plum) were discovered. Currently these gardens are densely overgrown with growth of local forest species and the introducer *Acer negundo*. In the southern part of block No. 8, two facies were formed: steep (over 8°), 2 m high slopes in loess loams with meadow vegetation; depression in loess loams 2-3 m deep, 2-6 m wide, 25 m long with meadow vegetation.

The tract of balka with dark gray podzolic soils under ash forest was formed on an area of 0.55 ha at the base of a drying up brook, in blocks No. 2 and 6. In block No. 2, facies of bottom of balka under age-old trees of *Populus alba* and of different ages trees of *Alnus glutinosa* were discovered. This tract turns into a tract of balka with dark gray podzolic soils under alder. It occupies an area of 0.28 ha and is located in the south-west of block No. 6. Within this tract, a facies of an earth mound 1–1.2 m high, 3 m wide with meadow vegetation is distinguished.

Around the balka, in blocks No. 2 and 6, two tracts of slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under ash forest with a total area of 0.28 ha were formed. Another section of this type of tract with an area of 0.76 ha was formed in the southern part of block No. 8, in the south-western and central parts of block No. 9.

The tract of slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under an orchard was formed in the extreme eastern part of the park, in block No. 9, on an area of 0.32 hectares. 20-45-year-old trees of *Juglans regia*, *Pyrus communis*, *Prunus cerasifera*, *Malus domestica* grow here.

In this same part of block No. 9, on areas free from trees and shrubs, the tracts of slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under meadow vegetation have formed. There are 4 sections of these tracts with a total area of 0.44 ha distinguished. In the structure of these tracts, a facies of *Picea abies* from 25 to 60 years old is distinguished.

The total area of the tracts of gentle (steepness of 3° - 5°) loess surfaces with dark gray podzolic soils under synanthropized meadows in the Synytsky Park is 0.2 ha. Three plots of them have been formed. The largest (0.18 ha) plot is located in the south-eastern part of block No. 9. The following species of meadow grass grow here: *Hypericum*

*perforatum*, *Poa angustifolia*, *Jacobaea vulgaris*, *Inula helenium*, *Trifolium pratense*, *Medicago falcata*. The other two plots were formed in the eastern part of block No. 6. *Sambucus ebulus*, *Securigera varia*, *Trifolium pratense*, *Taraxacum officinale*, *Campanula bononiensis*, *Chenopodium ucrainicum* grow here.

The tract of slope (steepness 5° - 8°) loess surfaces with dark gray podzolic soils under plantations with dominance of *Acer negundo* was formed in the extreme eastern part of block No. 9. It occupies an area of 0.61 hectares. *Acer negundo*, 20-35 years old, dominates here. In addition, there are single specimens of *Juglans regia*, *Quercus robur*, *Populus nigra* 'Italica', *Fraxinus excelsior*, *Populus tremula*.

In the southern part of block No. 8 and in the south-western part of block No. 9, the tract of steep (steepness over 8°) loess surfaces with dark gray podzolic soils under ash forest is distinguished (Fig. 4). It is located on the shore of the pond, extends for 340 meters, has an area of 0.26 hectares. Here grow old trees of *Fraxinus excelsior* and *Alnus glutinosa*, a facies with old specimens of *Pinus nigra* is distinguished.

The tracts of gentle (steepness 3°-5°) loess surfaces with dark gray podzolic soils under alder in Synytsky Park occupy an area of 0.56 ha. The largest of them (0.37 ha) was formed in the central and south-western parts of block No. 11. This is an alder of natural origin. The first tier here is formed by a *Alnus glutinosa* 70 years old and up to 23 m high. As admixtures, *Ulmus glabra*, *Acer platanoides*, *Tilia cordata*, *Fraxinus excelsior*, *Fraxinus excelsior* are found. The smallest in area (0.19 ha) is located in the south-western part of block No. 6 (Fig. 4). It is represented by a restored grove of *Alnus glutinosa*.

The tract of slope (steepness 5° - 8°) loess surfaces with podzolic chernozems under alder was formed in the south-western part of block No. 11. It extends from north-west to south-east by 212 meters and has an area of 0.32 hectares.

The tracts of gentle (steepness 3° - 5°) loess surfaces with podzolic chernozems under alder occupy an area of 0.96 ha. The largest tract (0.87 ha) is located in block No. 11. Here grow 291 trees of *Picea abies*, approximately 55 years old and 20-25 m high. In the form of single admixtures, there are *Ulmus glabra*, *Aesculus hippocastanum*, *Carpinus betulus*, *Acer platanoides*, *Acer campestre*, *Prunus padus*. The second tract with an area of 0.09 ha is located in block No. 12. The age of the spruces is 50 years, height - 20-22 m.

The tracts of slope (steepness 5° - 8°) loess surfaces with podzolic chernozems under plantation of *Picea abies* occupy a total area of 0.93 ha. The largest area (0.79 ha) is occupied by the tract in the cen-

tral part of block No. 12. Here grow 310 trees of spruce about 50 years old and 20-22 m high. The plantation was created as a monodominant, but now an undergrowth of deciduous species, primarily *Acer platanoides*, has formed. There is a lot of *Sambucus nigra* here, and *Ulmus glabra*, *Acer pseudoplatanus*, *Fraxinus excelsior*, *Morus alba* grow. The second tract of this type was formed in the south-western part of block No. 11 and has an area of 0.14 ha.

There are two tracts of gentle (steepness 3° – 5°) loess surfaces with podzolic chernozems under ash forest with a total area of 1.42 hectares. The larger tract (0.8 hectares) was formed in the south-eastern part of block No. 11. The second tract occupies the southern part of block No. 12. In addition to the *Fraxinus excelsior*, *Ulmus glabra*, *Ulmus laevis*, *Acer platanoides*, *A. pseudoplatanus*, *A. campestre*, *A. negundo*, *Tilia cordata* grow here.

There are 4 tracts of slope (steepness 5° - 8°) loess surfaces with podzolic chernozems under ash forest in the Synytsky Park. Together, they occupy an area of 1.11 hectares. Two of them are located in block No. 11, and two more in block No. 12. The largest tracts (0.56 and 0.44 hectares) have been formed in the latter block. The tracts of block No. 11 occupy insignificant areas (0.11 and 0.01 hectares). In addition to the *Fraxinus excelsior*, *Quercus robur*, *Ulmus glabra*, *Acer platanoides*, *A. pseudoplatanus*, *A. campestre*, *Carpinus betulus*, *Tilia cordata* grow here. The two-tiered forest stand reaches a height of 30 meters. There are age-old specimens of *Fraxinus excelsior*, *Carpinus betulus* and *Acer platanoides*.

The tracts of steep (steepness over 8°) loess surfaces with podzolic chernozems under ash forest occupy an area of 0.97 ha. The largest tract (0.77 ha) is located in block No. 12, on the right bank of the pond. Two more tracts were formed in block No. 11, one of them with an area of 0.13 ha - on the bank of the pond, the other with an area of 0.07 ha - in the south-west. The species composition of these tracts is the same as the previous ones. In addition to them, there are age-old specimens of *Alnus glutinosa*, *Larix sibirica*, *Picea obovata*, *Pinus sylvestris*, *Populus alba*.

The channel type of terrain of the Synytsky Park has undergone significant changes in the process of anthropogenic transformation. A significant part of the river beds is flooded with pond waters, the rest has turned into tracts of drying river beds with a muddy bottom, littered with branches and remnants of tree trunks, which is overgrown with grassy vegetation. The drying river bed of the Synytsia River today has a length of only 309 m, and its left tributary, located in the north-east of the park, is 312 m. Both the river and its tributary appear only at the end of winter and in spring, during the melting

of snow. Another tributary of the Synytsia River, which flows in the balka, has not appeared for the last five years. The length of its dried river bed is 393 m. Thus, the total length of this type of tract within the park is 1014 m, and the area is 0.16 ha (0.35 % of the park area). This is half the number compared to the middle of the 18<sup>th</sup> century [17].

Due to the flooding of the dominant part of the river flood-plains by pond waters, the flood-plain type of the terrain was transformed into a pond-flood-plain type. Its modern landscape structure is dominated by pond tracts with an average depth of 0.9 - 1.1 meters with a muddy bottom (7.16 hectares or 15.57 % of the park area).

Three islands were created within the pond, on the basis of which three types of tracts were formed. The tract of island 51 m long, 17–41 m wide, 1–1.1 m high, composed of loess loams, with sparse park trees, young plantings of ornamental shrubs and perennial grasses is located in the central part of the pond and occupies an area of 0.21 ha. *Populus alba*, *Pinus nigra*, *Fraxinus excelsior* and *Tilia cordata* grow here. The decorative compositions include *Berberis thunbergii*, *Syringa vulgaris*, *Corylus colurna*, *Salix matsudana*, *Lonicera caprifolium*, *Catalpa ovata*, *Pyracantha coccinea*.

In the western part of the pond, on an area of 0.16 ha, a tract of a swampy island 71 m long, 6 - 17 m wide, 1 - 1.3 m high, composed of loess loams, under alder has formed. The age of the alder is about 35 years, height is 14-17 m, some trees are dry. In addition to the *Alnus glutinosa*, there are several specimens of *Quercus robur*. In the eastern part of the pond, on an area of 0.1 ha, the tract of a swampy island 54 m long, 12 - 28 m wide, 0.8 - 1.1 m high, composed of loess loams, under willow was formed. *Salix alba* and *Salix purpurea* about 30 years old grow here.

Within the boundaries of the Synytsky Park, 2 tracts of leveled, over moistened alluvial surfaces with meadow soils under alder with a total area of 1.19 hectares have formed. The largest of them (0.66 hectares) is dense coastal thickets in the eastern upper reaches of the pond and around the drying brook. This is mainly a spontaneous forest. In addition to *Alnus glutinosa*, in it *Salix alba* and *S. purpurea* 20-35 years old grow. A somewhat smaller area (0.53 ha) is occupied by a tract in the valley of the Synytsia River. This is an alder forest of natural origin, the basis of which is formed by *Alnus glutinosa*, approximately 70 years old and up to 23 m high. It is mixed with *Ulmus glabra*, *Aesculus hippocastanum*, *Acer platanoides*, *Tilia cordata*.

Within the park, there are 2 tracts of leveled, swampy alluvial surfaces with bog soils under alder with a total area of 0.15 ha (Fig. 4). The largest of them (0.11 ha) was formed in the western upper

reaches of the pond and in the mouth of the Synytsia River, the smallest (0.04 ha) - in the eastern upper reaches of the pond and in the mouth of the left tributary of the Synytsia River.

There are 2 tracts of leveled, over moistened alluvial surfaces with meadow soils under flood-plain meadows with a total area of 0.23 ha in block No. 9. The smallest of them (0.08 ha) was formed on the shore of the pond, the largest (0.15 ha) was formed on the left bank of the tributary of the Synytsia River. *Carex hirta*, *Trifolium pratense* and *Mentha longifolia* grow here.

Small plots (0.02 ha) are occupied by two tracts of leveled alluvial surfaces with meadow soils under willows. They are located on the left bank of the pond, in the south of blocks No. 6 and 8. Here grow planted specimens of *Salix alba*, *S. purpurea*, *S. babylonica*, *Populus nigra* 'Italica'. In addition to them, there are *Alnus glutinosa*, *Acer campestre*, *A. platanoides*, *Ulmus glabra*.

The important infrastructural components of the modern landscapes of the Synytsky Park are tracts of sand and gravel paths 2-3 m wide. Their total length is 3242 meters, and their area is 0.81 hectares (1.76 % of the park area).

In addition to the decorated paths, tracts of dirt paths 0.5-2 m wide, overgrown with grassy vegetation have been formed in Synytsky Park. Their total length is 3288 meters, and the area is 0.41 hectares (0.89 % of the park area).

There are architectural monuments of national significance "Park and park buildings. Ensemble", "Park and park buildings. Entrance gate and fence", "Park and park buildings. Bridge" in the Synytsky Park. The first of them covers the entire park. The second monument covers the remains of the entrance gate with a red brick fence, which was used to enclose the estate. The third monument is an arched nine-span bridge, which was made at the beginning of the 19<sup>th</sup> century from red brick in the classicist style. The bridge served as the entrance to the estate and connected the main avenue of the park with the palace, which has not survived.

Thus, the Synytsky Park protects the valuable natural and cultural heritage of Ukraine. Therefore, it is a biocenter of the local ecological network of the Uman district of the Cherkasy region, which performs an important function of preserving biotic and landscape diversity [18].

**Conclusion.** It was found that both in the restored (middle of the 18<sup>th</sup> century) and in the modern landscape structures of the Synytsky Park, slope terrains prevailed and still prevail (44.17 % of the park area). Slightly smaller areas (40.40 % of the

park area) are occupied by flat interfluvial terrains. 14.71 % of the modern territory of the park was occupied by flood-plain terrains in the past. The smallest areas (0.72 % of the park's territory) in the restored landscape structure were occupied by channel terrains.

The tracts of gentle (with a steepness of 3° – 5°) loess surfaces with dark gray podzolic soils under hornbeam oak forests dominated (50.74 % of slopes and 22.4 % of the current park area) in the landscape structure of the slope terrains in the middle of the 18<sup>th</sup> century. The tracts of slightly undulating loess surfaces with dark gray podzolic soils under hornbeam oak forests dominated in the structure of the flat interfluvial terrains (96.82 % of the flat interfluvial terrains and 39.11 % of the park area).

The largest areas in the structure of flood-plain terrains (40.32 % flood-plain and 5.93 % of the park territory) were previously occupied by alder tracts. The aquatic tracts of the central deep water and coastal shallows of the pools areas dominated (93.9 % of the riverbeds) in the structure of the channel terrains of the Synytsky Park.

The landscape structure of the modern territory of the Synytsky Park has become significantly diversified and complicated in the process of economic development. Based on 14 types of tracts that existed here in the middle of the 18<sup>th</sup> century, 44 types of anthropogenic tracts have been formed and are currently distinguished. The most common (34.46 % of the park area) tracts in the modern landscape structure of the park are slightly undulating loess surfaces with dark gray podzolic soils under ash forest of the flat interfluvial terrains. The second place (20.65 % of the park area) is occupied by tracts of gentle (steepness 3° – 5°) loess surfaces with dark gray podzolic soils under ash forest of the slope terrains. Thus, hornbeam forests have been replaced by plantations with a predominance of *Fraxinus excelsior* in most of the park. The area of the channel terrains in the Synytsky Park has decreased by half compared to the middle of the 18<sup>th</sup> century. A significant part of the rivers is flooded with pond waters, the rest has turned into drying channels. Due to the flooding of the dominant part of the river flood-plains by pond waters, the flood-plain type of terrains has transformed into a pond-flood-plain type. The pond tracts with an average depth of 0.9 - 1.1 meters with a muddy bottom dominate (15.57 % of the park area) here.

Promising are the forecasting of the further development of landscape complexes, the development of measures to optimize the modern landscape structure of the Synytsky Park.

#### Bibliography

1. Барановський, В.А., Шищенко, П.Г., Дмитрук, О.Ю. (2004). Україна. Техногенна небезпека. Масштаб 1:3 000 000. Київ.

2. Денисик, Г. І. (1998). *Природнича географія Поділля*. Вінниця: ЕкоБізнесЦентр.
3. Денисик, Г., Яценюк, Ю., Воронька, В., Воловик, В. (2021). Біоцентри екологічної мережі міста Вінниці. *Вісник Харківського національного університету імені В. Н. Каразіна, серія «Геологія. Географія. Екологія»*. (54), 267-277. DOI: <https://doi.org/10.26565/2410-7360-2021-54-20>.
4. *Екологічний атлас України*. (2009). Гол. ред. Л.Г. Руденко. Київ: «Центр екологічної освіти та інформації».
5. Ковтонюк, А.І., Діденко, І.П., Куземко, А.А. (2021). Раритетна фракція спонтанної флори садово-паркових ландшафтів Середнього Побужжя. *Journal of Native and Alien Plant Studies*. 1. 136-144. DOI: <http://doi.org/10.37555/2707-3114.1.2021.247565>.
6. Кравцова, І.В., Лаврик, О.Д. (2018). Просторово-часовий аналіз формування структури сучасних садово-паркових ландшафтів Правобережної України. *Вісник Київського національного університету імені Тараса Шевченка. Географія*. 4(73). 39-44. DOI: <http://doi.org/10.17721/1728-2721.2019.73.8>.
7. Кравцова, І. (2024). Садово-паркові ландшафти Центральної Європи як ландшафтно-технічні системи. *Журнал «Ландшафтознавство»*. 6(2). 41-53. DOI: <http://doi.org/10.31652/2786-5665-2024-6-41-53>
8. Кравцова, І. В. (2023). Структура садово-паркових ландшафтів Центральної Європи. *Український журнал природничих наук*. 1. 89-108. DOI: <http://doi.org/10.35433/naturaljournal.1.2023.89-108>
9. Лаврик, О. (2015). Річкові ландшафтно-технічні системи. Умань: ВПЦ «Візаві».
10. *Національний атлас України* (2007). Гол. ред. Л. Г. Руденко. Київ: ДНВП «Картографія».
11. Куземко, А.А., Дідух, Я.П., Онищенко, В.А., Шеффер, Я. (2018). *Національний каталог біотопів України*. Київ: ФОП Клименко Ю.Я.
12. *Природно-заповідний фонд Черкаської області*. (2006). Черкаси: Вертикаль.
13. Совгіра, С.В., Гончаренко, Г.С., Грабовська, С.Л., Подзерей, Р.В. (2011). Квazіприродні ландшафти Центрального Побужжя. Київ: Науковий світ.
14. Ткачук, І.В. (1965). Про маловідомий парк у селі Синиця на Черкащині. *Матеріали III з'їзду Українського ботанічного товариства*. Київ, 288.
15. Шиндер, О.І., Яценюк, Ю.В., Чорна, Г.А., Коструба, Т.М. (2024). Флора парку-пам'ятки садового паркового мистецтва «Синицький парк» (Черкаська область). *Чорноморський ботанічний журнал*. 20 (4). 410–438. DOI: <http://doi.org/10.32999/ksu1990-553X/2024-20-4-4>.
16. Яценюк, Ю.В., Воронька, В.П., Гришко, С.В. (2021). Ландшафтні комплекси регіонального ландшафтного парку „Мурафа”. *Людина та довкілля. Проблеми неоекології*. (35): 93-104. DOI: <https://doi.org/10.26565/1992-4224-2021-35-09>.
17. Denysyk, Hr. I., Yatsentyuk, Yu. V., Denysyk, B. Hr., Chyzh, O. P., & Voina, I. M. (2024). *Modern Anthropogenic Hydrosphere of Ukraine*. *Ukrainian Geographical Journal*. 4: 12–21. DOI: <https://doi.org/10.15407/ugz2024.04.012>.
18. Sinica. *Słownik geograficzny Królestwa Polskiego*. (1889). Warszawa: Wieku. 10. 618
19. Volovyk Volodymyr, Lavryk Oleksandr, Yatsentyuk Yuriy, Maksiytov Andrii. (2022). Polish ethnocultural landscape of Podillya: structure, use, protection of cultural heritage. *Visnyk of V. N. Karazin Kharkiv National University, series "Geology. Geography. Ecology"*. (57), 68-80. DOI: <https://doi.org/10.26565/2410-7360-2022-57-06>.
20. Яценюк, Ю. В. Проект утримання та реконструкції території парку-пам'ятки садово-паркового мистецтва місцевого значення “Синицький парк”. Вінниця.

**Authors Contribution:** All authors have contributed equally to this work

**Conflict of Interest:** The authors declare no conflict of interest

### References

1. Baranovskyi, V.A., Shyshchenko, P.Hr., & Dmytruk, O.Yu. (2004). *Ukraine. Man-made danger. Scale 1:3 000 000*. Kyiv [in Ukrainian].
2. Denysyk, Hr. I. (1998). *Natural geography of Podillia*. Vinnytsia: EcoBusiness Center, [in Ukrainian].
3. Denysyk, Hr., Yatsentyuk, Yu., Vorovka, V., & Volovyk, V. (2021). *The biocentres of the ecological network of Vinnytsia city*. *Visnyk of V. N. Karazin Kharkiv National University, series "Geology. Geography. Ecology"*. 54. 267-277. [in Ukrainian]. DOI: <https://doi.org/10.26565/2410-7360-2021-54-20>.
4. *Ecological atlas of Ukraine* (2009). Chief editor L. Hr. Rudenko. Kyiv: Center for Environmental Education and Information, [in Ukrainian].
5. Kovtonyuk, A. I., Didenko, I. P., Kuzemko, A. A. (2021). *Rare fraction of spontaneous flora of the garden and park landscapes of the Middle Pobuzhzhia*. *Journal of Native and Alien Plant Studies*. 1. 136-144. [in Ukrainian]. DOI: <http://doi.org/10.37555/2707-3114.1.2021.247565>.
6. Kravtsova, I., Lavryk, O., (2018) *Spatial-temporal analysis formation of the structure of modern garden-park landscapes of Right-bank Ukraine*. *Bulletin of Taras Shevchenko National University of Kyiv. Geography*. 4(73). 39-44. [in Ukrainian]. DOI: <http://doi.org/10.17721/1728-2721.2019.73.8>.

7. Kravtsova, I., (2024). Garden and park landscapes of Central Europe as landscape and technical systems. *Journal «Landscape Science»*, 6(2). 41-53. [in Ukrainian]. DOI: <http://doi.org/10.31652/2786-5665-2024-6-41-53>.
8. Kravtsova, I. V., (2023). The structure of landscape gardening landscapes in Central Europe. *Ukrainian Journal of Natural Sciences. 1.* 89-108. [in Ukrainian]. DOI: <http://doi.org/10.35433/naturaljournal.1.2023.89-108>
9. Lavryk, O., (2015). *River landscape and technical systems. Uman: Publishing and printing center "Vizavy"*, [in Ukrainian].
10. *National atlas of Ukraine. (2007). Chief editor L. Hr. Rudenko. Kyiv: State Scientific and Production Enterprise "Cartography"*, [in Ukrainian].
11. Kuzemko, A.A., Didukh, Ya.P., Onyshchenko, V.A., & Sheffer, Ya., (2018). *National habitat catalogue of Ukraine. Kyiv: An individual entrepreneur Klymenko Yu.Ya.*, [in Ukrainian].
12. *Nature reserve fund of Cherkasy region. (2006). Cherkasy: Vertical*, [in Ukrainian].
13. Sovhira, S.V., Honcharenko, H.Ye., Hrabovska, S.L., & Podzerei, R.V. (2011). *Quasi-natural landscapes of Central Pobuzhzhia. Kyiv: Scientific world*, [in Ukrainian].
14. Tkachuk, I.V., (1965). *About a little-known park in the village of Sinytsia in Cherkasy region. Materials of the III Congress of the Ukrainian Botanical Society. Kyiv, p.288.* [in Ukrainian].
15. Shynder, O.I., Yatsentyuk, Y.V., Chorna, H.A., Kostruba, T.M. (2024). *Flora of the "Synytsky Park" landscape gardening monument (Cherkasy Region). Chornomorski Botanical Journal. 20(4): 410–438.* [in Ukrainian]. DOI: <http://doi:10.32999/ksu1990-553X/2024-20-4-4>.
16. Yatsentyuk, Yu. V., Vorovka, V.P., & Hryshko, S.V. (2021). *The Landscape Complexes of the Regional Landscape Park «Murafa». Man and Environment. Issues of Neoecology. Vol. 35. P. 93-104.* [in Ukrainian]. DOI: <https://doi.org/10.26565/1992-4224-2021-35-09>.
17. Denysyk, Hr. I., Yatsentiuk, Yu.V., Denysyk, B. Hr., Chyzh, O. P., & Voina, I. M. (2024). *Modern Anthropogenic Hydrosphere of Ukraine. Ukrainian Geographical Journal. 4: 12–21.* DOI: <https://doi.org/10.15407/ugz2024.04.012>.
18. *Sinytsia. Geographical dictionary of the Kingdom of Poland. (1889). Warsaw: Wieku, 10. p. 618* [in Polish].
19. Volovyk Volodymyr, Lavryk Oleksandr, Yatsentyuk Yuriy, Maksiytov Andrii. (2022). *Polish ethnocultural landscape of Podillya: structure, use, protection of cultural heritage. Visnyk of V. N. Karazin Kharkiv National University, series "Geology. Geography. Ecology". 57. 68-80.* DOI: <https://doi.org/10.26565/2410-7360-2022-57-06>.
20. Yatsentiuk, Yu.V. (2024). *Project of the maintenance and reconstruction of the territory of the park-monument of garden and park art of local importance "Synytsky Park". Vinnytsia.* [in Ukrainian].

## Відновлена та сучасна ландшафтні структури Синицького парку у Черкаській області

**Юрій Яцентюк**<sup>1</sup>

д. геогр. н., професор, кафедра географії,  
<sup>1</sup>Вінницький державний педагогічний університет  
імені Михайла Коцюбинського, Вінниця, Україна;

**Володимир Воловик**<sup>1</sup>

д. геогр. н., професор, кафедра географії;

**Олена Міщенко**<sup>2</sup>

д. геогр. н., доцент, кафедра фізичної географії,  
<sup>2</sup>Волинський національний університет імені Лесі Українки,  
Луцьк, Україна;

**Світлана Гришко**<sup>3</sup>

к. геогр. н., доцент, кафедра географії та туризму,  
<sup>3</sup>Мелітопольський державний педагогічний університет  
імені Богдана Хмельницького, Запоріжжя, Україна;

**Ірина Крайцова**<sup>4</sup>

д. геогр. н., доцент, кафедра екології та безпеки життєдіяльності,  
<sup>4</sup>Уманський національний університет садівництва, Умань, Україна

Метою статті є виявлення особливостей ландшафтних комплексів парку-пам'ятки садово-паркового мистецтва місцевого значення «Синицький парк» (далі – Синицький парк). Для досягнення мети впродовж 2023-2024 років було проведено ландшафтознавчі дослідження території. Вперше виявлено особливості відновленої (на середину XVIII ст.) ландшафтної структури парку. Більш детально проаналізовано і уточнено інформацію про особливості сучасної ландшафтної структури Синицького парку. Виявлено особливості антропогенної трансформації типів місцевостей та урочищ парку з середині XVIII ст. до наших днів. Вперше розроблено карти реконс-

трукції (середина XVIII ст.) ландшафтів та сучасних ландшафтів Синицького парку. Виявлено, що як у відновленій, так і в сучасній ландшафтних структурах Синицького парку переважали і переважають (44,17 %) схилі місцевості, 40,4 % території займають плакорні місцевості. 14,71 % від сучасної території парку у минулому займали заплавні місцевості, 0,72 % - руслові місцевості. Найбільші площі в середині XVIII ст. займали урочища слабо хвилястих лесових поверхонь з темно-сірими опідзоленими ґрунтами під грабовими дібровами плакорних місцевостей (39,11 %) та пологих (крутизною 3<sup>0</sup>-5<sup>0</sup>) лесових поверхонь з темно-сірими опідзоленими ґрунтами під грабовими дібровами (22,4 %). Виявлено, що у процесі господарського освоєння значно урізноманітнілась та ускладнилась ландшафтна структура сучасної території Синицького парку. На основі 14-ти типів урочищ, що існували тут в середині XVIII ст., сформувалось і виділяється наразі 44 типи антропогенних урочищ. Найбільш поширеними (34,46 %) урочищами парку є слабо хвилясті лесові поверхні з темно-сірими опідзоленими ґрунтами під ясеневим лісом плакорного типу місцевостей. Виявлено, що, у порівнянні з серединою XVIII ст., площі руслового типу місцевостей Синицького парку зменшились вдвічі. Значна частина річищ затоплена водами ставка, решта перетворилась на пересихаючі русла. У зв'язку із затопленням домінуючої частини річкових заплавлі водами ставка, заплавної тип місцевостей трансформувалась на ставково-заплавної. На більшій частині парку грабові діброви замінені насадженнями із переважанням ясену звичайного.

**Ключові слова:** *Синицький парк, ландшафтна структура, місцевість, урочище, сталий розвиток громади, збереження екосистем, раціональне використання природних ресурсів, грабова діброва, природна спадщина, культурна спадщина.*

**Внесок авторів:** всі автори зробили рівний внесок у цю роботу

Надійшла 15 квітня 2025 р.

**Конфлікт інтересів:** автори повідомляють про відсутність конфлікту інтересів

Прийнята 2 червня 2025 р.