

## COMPREHENSIVE ASSESSMENT OF KOROSTYSHEV PARK, THE MONUMENT OF LANDSCAPE ART, ZHYTOMYR DISTRICT, UKRAINE

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### Abstract

The article is devoted to the analysis of the past experience from the creation of Korostyshev Park, monument of landscape art. The current state of parkland and its structure is examined with historical, taxonomic, landscape and aesthetic evaluation of park area is conducted perspective. The methods and ways of reconstruction of the parkland are elaborated.

**Key words:** degradation, dendroflora, edificator, geobotanical region, type of park landscape.

### Introduction

Ukraine has significant landscape gardening heritage: on its territory there are 88 parks of national importance, with an area of 5,900 hectares (including 68 vintage area 4,675 hectares), and 414 parks of local importance, with an area of 7,100 hectares. Moreover, the natural reserve fund includes 34 arboretum, 24 botanical gardens, 27 regional and landscape parks (Kuznetsov 2003). There are 18 parks, monuments of landscape art of local importance, in Zhytomyr region. Most of them were created before the beginning of the twentieth century on the basis of existing vegetation. We selected six parks for the study that are located in different geobotanical areas, have a larger area and are less researched. In this paper we present the results from evaluation of Korostishev Park, which is located in Zhytomyr geobotanical region of oak and

oak-hornbeam forests (Barbarych 1977). The objective was to conduct a comprehensive assessment of the Korostyshev Park, the monument of landscape art of local importance.

### Material and Methods

We used materials of creating a park that is stored in the historical museum of Korostyshev town. To achieve the goal of the work, we needed to determine the taxonomic composition of dendroflora. We studied species composition of trees and shrubs by route method. At the same time determining the current health status of the trees using a scale of L. Rysin (Rysin et al. 1988): 0 – healthy trees, 1 – weakened, 2 – very weak, 3 – dries, 4 – fresh deadwood, 5 – old dead wood, 6 – fresh windfall, 7 – old windfall, 8 – fresh windbreak, 9 – old windbreak.

Aesthetic appreciation of the parkland areas were carried out by classification of Kucheryaviy (2008), which includes taxation and emotional scales. Landscapes, analyzed for classification of L. Rubtsov (1956, 1979) are which has allocated 6 types: forest, park, meadow, garden, alpine and regular. He said that landscape is a specially arranged in gardens and parks interconnected systems of vegetation, topography, soil, water and engineering structures that are designed to ensure people certain sanitary conditions, to create the best environment for a particular type of recreation and to provide people the same emotional response. This classification allows us to carry out in different types of landscapes certain measures to optimize them.

In total we conducted researches on the study of the historical features creating the old park including the current state of trees and shrubs, and also carried out a comprehensive assessment of the study area. We answered on these issues in details below.

## Results and Discussion

In the XVI century Korostyshev town of Zhytomyr region belonged to Philon Kmita, governor of Smolensk, later hetman of Lithuania. In 1565 Kmita sold Korostyshev for 400 Lithuanian cents to his relative Ivan Olizar.

In the early nineteenth century the estate was inherited by Earl Gustav Olizar. According to his contemporaries he was an extraordinary and well educated man. In 1821, when he was only 23 years old, was elected leader of the nobility in Kiev province, but in 1824 was re-elected for a second term. At the same time became a member of the Masonic Lodge (Kiev

“United Slavs”). But for his patriotic beliefs young Earl displeased Emperor Alexander I, and was forced to leave his native land. He decided to go south, first to Odessa, where he met with A. Pushkin, then to the Crimea.

Earl Olizar bought at the foot of the Ayu-Dag a piece of land adjacent to the sea and covered with wild bushes. On the territory of their possessions in 200 tithes (218.5 hectares) Olizar built a manor house with outbuildings, wine cellars and a plantation of olive trees. The earl became seriously interested in landscape art in the Crimea, and translated from the French Delile poem “Gardens”, which in turn has had a huge impact on the development of landscape architecture at the time.

In 1836 Gustav Olizar returned to Korostyshev and for more than 20 years he lived there with his wife. The Earl’s Crimean experience was influential in his decision to fix his father’s estate. According to his plans, the park must combine elements of the past and present, to remind the public of people, events, distant lands and Masonic interests. On the upper terrace, where the castle once stood, was constructed in the regular style parterre (Figure 1), which was placed in the center of the pool with a decorative arch of granite with Masonic symbols. Lawn bosquets correct forms were edged with a border of annuals undersized flowers. In the corners there were planted pyramidal shaped arborvitae, and along the borders with green spherical boxwoods. In the depths of the manor there was built a small two-storey house. The platform before it was planted with Berlin Poplars.

Predominant among the trees were oak, pine, spruce and maple. He also planted trees, imported from Italy, France,

Germany and the Crimea (Yerkulova 2002, 2003; Ershov 1986; Rodichkin I. and Rodichkin O. 1999).

The current state of the park phytodiversity is poor, most trees which were planted by Earl Olizar, dropped out of the plantation (Table 1).

The dendroflora of Korostyshev Park includes a total of 29 species, of which only 14 are introduced. This figure is worth considering in development of the reconstruction project.

For the convenience of analysis, the dominant woody vegetation inventory indices are considered within the sections that have been allocated in accordance with the requirements of landscape inventory.



Fig. 1. Castle of Gustav Olizar (photos of the early 20<sup>th</sup> century).

For each section the main inventory indices has been identified (Table 2).

The former dominant *Quercus robur* is found only in section 6 and takes less

Table 1. Taxonomic composition of the Korostyshev Park, the monument of landscape art.

Species	Introduced species*	Species	Introduced species*
<i>Acer negundo</i> L.	+	<i>Picea pungens</i> Engelm.	+
<i>Acer platanoides</i> L.	-	<i>Populus alba</i> L.	-
<i>Acer pseudoplatanus</i> L.	-	<i>Populus tremula</i> L.	-
<i>Acer tataricum</i> L.	+	<i>Pyrus communis</i> L.	-
<i>Acer saccharum</i> Marshal	-	<i>Quercus robur</i> L.	-
<i>Aesculus hippocastanum</i> L.	+	<i>Robinia pseudoacacia</i> L.	+
<i>Betula pendula</i> Roth.	-	<i>Salix alba</i> L.	-
<i>Carpinus betulus</i> L.	-	<i>Salix fragilis</i> L.	+
<i>Fraxinus excelsior</i> L.	-	<i>Sambucus nigra</i> L.	+
<i>Fraxinus pennsylvanica</i> Marsh.	+	<i>Sorbus aucuparia</i> L.	-
<i>Juglans regia</i> L.	+	<i>Syringa vulgaris</i> L.	+
<i>Malus domestica</i> Borkh.	-	<i>Thuja occidentalis</i> L.	+
<i>Morus alba</i> Borkh.	+	<i>Tilia cordata</i> L.	-
<i>Parthenocissus quinquefolia</i> Planch.	+	<i>Ulmus glabra</i> H.	-
<i>Picea abies</i> L.	+		

\*Note: "+" – an introduced species, "-" – aboriginal species.

than 10 % of the territory. In the first section there is no dominant species, the reason for this is manmade plantations and their functions. This section is a memorial area, which is dedicated to those killed in

the world wars and soldiers-internationalists. In the center was created alley with *Picea pungens* along which were planted flowers. Near was placed a small area for events in honor of the heroes of the war.

**Table 2. Feature plantations Korostyshev Park, monument of landscape art.**

Section	Composition plantings**	Stand density	Crown cover	Area, ha	Predominant species	Height, m	Diameter, cm	Sanitary condition	Class aesthetic value
1	3Pp2Fe2Tc2Ac1Ah+Ug	0,5	0,4	2,11	<i>Picea pungens</i>	20	22	2	II
					<i>Aesculus hippocastanum</i>	24	52	2	
					<i>Ulmus glabra</i>	26	50	2	
					<i>Tilia cordata</i>	24	30	1	
					<i>Betula pendula</i>	22	24	1	
					<i>Acer saccharum</i>	26	54	4	
2	4Rp2Fe2Ap1Ac1Ug+Pt,Pa	0,4	0,3	1,92	<i>Robinia pseudoacacia</i>	26	38	1	II
					<i>Fraxinus excelsior</i>	28	44	1	
					<i>Acer platanoides</i>	26	40	1	
					<i>Acer saccharum</i>	25	34	2	
					<i>Ulmus glabra</i>	28	62	2	
					<i>Populus tremula</i>	30	88	2	
3	3Fe2Pt2Ug1Tc1Ac1Ap	0,6	0,5	2,11	<i>Populus alba</i>	29	84	3	III
					<i>Fraxinus excelsior</i>	30	68	2	
					<i>Populus tremula</i>	29	72	2	
					<i>Ulmus glabra</i>	28	80	1	
					<i>Tilia cordata</i>	26	36	1	
					<i>Acer saccharum</i>	30	98	2	
4	3Cb3Fe2Rp1Ap1Pt	0,7	0,8	1,9	<i>Acer platanoides</i>	27	38	1	III
					<i>Carpinus betulus</i>	26	40	1	
					<i>Fraxinus excelsior</i>	29	50	2	
					<i>Robinia pseudoacacia</i>	27	46	2	
					<i>Acer platanoides</i>	24	34	1	
					<i>Populus tremula</i>	29	62	2	
5	4Ap2Tc2Ug2Pt	0,3	0,4	1,6	<i>Acer platanoides</i>	26	34	0	II
					<i>Tilia cordata</i>	28	88	1	
					<i>Ulmus glabra</i>	26	36	1	
					<i>Populus tremula</i>	29	98	2	
					<i>Salix alba</i>	28	98	2	
					<i>Ulmus glabra</i>	30	96	2	
6	3Sa2Ug2At2Ap1Tc+Qr	0,8	0,7	3,2	<i>Acer tataricum</i>	24	36	1	III
					<i>Acer platanoides</i>	24	38	1	
					<i>Tilia cordata</i>	26	68	2	
					<i>Quercus robur</i>	29	100	2	

\*\*Note: Pp – *Picea pungens*, Qr – *Quercus robur*, Fe – *Fraxinus excelsior*, Ap – *Acer platanoides*, Ac – *Acer saccharum*, Ug – *Ulmus glabra*, At – *Acer tataricum*, Tc – *Tilia cordata*, Rp – *Robinia pseudoacacia*, Sa – *Salix alba*, Pt – *Populus tremula*, Cb – *Carpinus betulus*, Pa – *Populus alba*.

For the second section the dominant introduced species is *Robinia pseudoacacia*. Despite the fact that both *Fraxinus excelsior* and *Acer platanoides* give plentiful seeding, in the territory they they occupy only 20 % of the territory. This suggests that the conditions for the germination of undergrowth *Robinia pseudoacacia* are ideal, and its degree of adaptation as an introduced species is still relatively high.

In other sections are the same situations. *Quercus robur* was ousted from phytocenosis by *Fraxinus excelsior*, *Acer platanoides*, *Carpinus betulus*, *Tilia cordata* etc. One of the reasons for this is that after revolution 1917 care of parkland was not performed. *Quercus robur* was being cut as a precious wood, and new cultures of this species were not propagated.

Most of the mature and over mature trees in the park are greatly weakened or dead, exposed to the influence of pests and diseases. *Tilia cordata*, *Ulmus glabra* and *Carpinus betulus* are also weakened. In 5 section *Acer platanoides* is completely healthy.

About aesthetic evaluation of phytocenoses park there is next situation. First class aesthetic value is missing, the second classes are 1<sup>st</sup>, 2<sup>nd</sup> and 4<sup>th</sup> sections, and the third classes are 3<sup>rd</sup>, 5<sup>th</sup> and 6<sup>th</sup> sections. As mentioned above, the first section is a memorial area, so plant care is performed regularly. In 4<sup>th</sup> section reconstructive work took place. As a result snags and windfall trees were removed and the network of road and paths were repaired (Figure 2).

There are cluttering scrubland and on the grassy tiers the rest of the park. Low



Fig. 2. Fourth section after reconstruction.

Table 3. Distribution of the types of landscapes at Korostyshev Park.

Type of landscape	Area	
	ha	%
Forest	4.28	33.2
Park	7.66	59.4
Meadow	0.51	4.0
Garden	0.00	0.0
Regular	0.37	2.8
Alpine	0.08	0.6
All	12.90	100.0

patency territory, depth perspective, coloring/illumination at a low level, and the underbrush are sparse. This area requires reconstruction and restoration work at the first place.

We conducted a landscape analysis of Korostyshev Park territory (Table 3).

The forest type of landscape is about 1/3 of the territory, mostly along the river Teterev. The basis of the tree stand is formed by *Acer platanoides*, *Tilia cordata*, *Ulmus glabra*, *Salix alba* and



Fig. 3. Park type of landscape in Korostyshev Park.

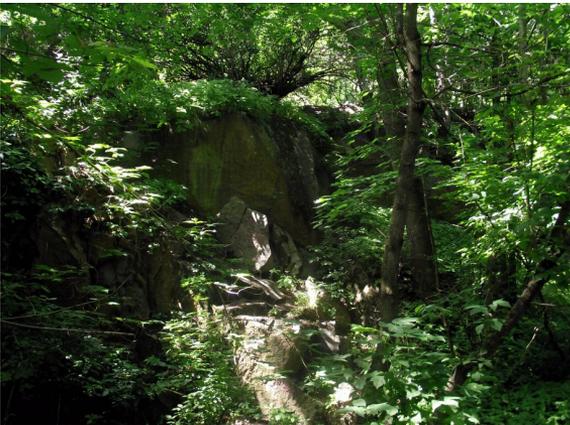


Fig. 4. Alpine type of landscape.

*Populus tremula*. The park type of landscape (Figure 3) is about 60 % of the study area (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 5<sup>th</sup> sections). This figure is high for historic parks in Ukraine.

Regular type of landscape that presents alleys of *Picea pungens* and *Acer saccharum*, meadow and alpine types occupy less than 1 % of the territory. Given that Korostyshev is on the Ukrainian crystalline shield it is particularly interesting that there are the sections of outcrop granite (Figure 4.)

## Conclusions

After conducting of our research, we can draw the following conclusions:

1. According to the archival materials about Korostyshev Park, monument of landscape was created in the late sixteenth century. In the early nineteenth century it was renovated by Earl Gustav Olizar in regular and landscape styles.

2. During management graph Olizar park was in the corresponding state. After 1917 due to lack of care, the parkland occurred taxonomy degradation. Most species, especially exotic ones, have died out of plantations. Former dominants *Quercus robur* was superseded by *Fraxinus excelsior*, *Acer platanoides*, *Tilia cordata* and *Carpinus betulus*.

3. At this time, the composition of dendroflora is represented by 29 species of which 26 trees, 2 shrubs and 1 tree climber. Only 14 species have been introduced species.

4. Most of the park mature trees are strongly weakened or dead and stands exposed to the influence of pests and diseases. Moreover, even native species of trees are in a weakened state.

5. Territory, which has second class aesthetic value, occupy 3.90 hectares (30 %). It is cluttering both scrubland and on the grassy tiers the rest of the park. Low patency territory, depth perspective, coloring and illumination at a low level, and the underbrush is sparse.

6. Types of landscapes are as follows: forest – 4.28 ha (33.2 %), park – 7.66 ha (59.4 %), meadow – 0.51 ha (4.0 %), regular and its elements – 0.37 ha (2.8 %), alpine – 0.08 ha (0.6 %).

7. Reconstruction is primarily needed in 3<sup>rd</sup>, 5<sup>th</sup> and 6<sup>th</sup> sections. Necessary to carry out the cutting of dead, windfall trees and impassable. Also need to eliminate clutter, repair and optimize road and network of paths. Cuttings of *Quercus robur* were planted on-site restore its edificatory role.

8. Necessary to create a composition of native species of trees and shrubs that are more stable under these conditions.

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