



DENDROFLORA OF THE CASTLE PARK IN SZAMOTUŁY (WIELKOPOLSKA REGION, POLAND)

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ABSTRACT. The article presents the composition of the dendroflora in a historic park surrounding the castle in Szamotuły. In total 465 specimens of woody plants were inventoried (51 taxa of 37 species in 21 families). Most of them were native, angiospermous trees of the apophyte and spontaneophyte groups. In the park there are three specimens of *Taxus baccata*, registered as natural monuments. The age of more than 100 trees was estimated at over 100 years. The trunk circumference of more than 60 trees exceeded the minimum value assumed as a criterion of categorisation as a natural monument.

KEY WORDS: historic park, inventory, Wielkopolska, Szamotuły

INTRODUCTION

Szamotuły is a town situated in the Wielkopolska Voivodeship, 35 km northwest of Poznań. The town is located in the lower Warta River basin, in the Wielkopolska Lake District, in the northern part of the Poznań Lake District, in Szamotuły Plain (KONDRACKI 2001), on both banks of the Sama River.

The castle complex, which was registered as a monument on 1 June 1968 under number 109/A, is located in the northern part of Szamotuły, on the left bank of the Sama River. The complex consists of a 15th century residential tower, known as Halszka's Tower or Black Princess's Tower, which was originally an element of the defensive system (it was separately registered as a monument in 1932), a building in the bailey, a late 15th century castle, a late 18th century annex and a park with fragments of the moat and embankments (A LIST OF HISTORIC ESTATES... 2014). At present the castle complex together with a new eastern annex (built in 1990) and a 19th century pheasantry is the seat of the Górk Castle Museum.

The historic buildings are surrounded by a landscape park, which was established in the mid-19th century. According to KUJAWA (1986/87), it may have been established as a result of transformation of the gardens which were there at the time, when the estate was purchased by Prince Ernest von Sachsen-Coburg-Gotha. At present the park occupies an area of

4.2 ha, where 0.12 ha is occupied by a body of water. The shape of the park is irregular, slightly elongated towards northeast. In 1989 the estate was divided into two parts and unfortunately, now it is separated with a wrought iron fence. Half of the park area is the property of the Museum. The other part belongs to the Town and Commune of Szamotuły.

The part of the park, which belongs to the Museum borders on a pond in the south. The pond may be the remains of a medieval south moat. In the west it is adjacent to a deep ditch, which also used to be the moat surrounding the castle. At present it is covered with grass and common ivy (*Hedera helix* L.). The estate borders on a grange in the north and the backwaters of the Sama River in the east.

MATERIAL AND METHODS

The park dendroflora was inventoried in detail in 2011. The circumferences of tree trunks were measured at a height of 130 cm above the soil surface. As far as multi-trunk trees or trees with low bifurcated trunks are concerned, the circumference of each trunk was measured separately. The height of trees was measured with a SUUNTO height meter PM-5/1520. As far as shrubs and vines are concerned, the area occupied by the plants was measured in square meters.

The condition and health of each tree was described. Apart from that, the age of the plants was

analysed with the age chart developed by MAJDECKI (1993). The trees which meet the criteria of being recognised as natural monuments were identified. The estimated minimum tree trunk circumferences, which qualified the specimens of individual species to be protected by law, were assumed according to the criteria provided by the Town and Commune Council of Szamotuły.

The nomenclature and systematic position of the taxa were assumed according to SENETA & DOLATOWSKI (2011). Their geographic-historical status was identified according to CHMIEL (1993), with slight modifications, whereas the Raunkiær lifeforms were identified according to ZARZYCKI et al. (2002).

RESULTS

In total 465 specimens of woody plants of 21 families were inventoried in the historic park surrounding the castle in Szamotuły. The plants represented 51 taxa of 37 species. Angiospermous species were predominant, as they made more than 80% of the total number of specimens in the dendroflora. The *Rosaceae* was the most populous angiospermous family, both in terms of the number of taxa and specimens. As far as gymnosperms are concerned, the *Pinaceae* family had the largest number of taxa, whereas the *Cupressaceae* family was the most populous (Table 1).

Among 378 trees inventoried, *Aesculus hippocastanum* was the predominant species, as it was represented by 76 specimens in the park dendroflora. It

was followed by the native species of *Acer platanoides* (45), *Fraxinus excelsior* (35), *Tilia platyphyllos* (31), *Ulmus laevis* (30), *Quercus robur* (20) and *Tilia cordata* (19). As far as foreign species are concerned, there were numerous representatives of *Robinia pseudoacacia* and *Thuja occidentalis* 'Fastigiata' (Table 1).

Taxus baccata is a valuable component of the park. Three trees of this species are protected by law. On 29 March 1988 they were recorded in the voivodeship register of natural monuments under number 582 as a tree group. Apart from them, near the historic buildings there are 15 shrubs sheared into more or less spherical forms.

Apart from the sheared yews, 11 other taxa were inventoried in the shrub group. They can be found in the part of the park that belongs to the Museum. The greatest total area is occupied by *Juniperus ×pfitzeriana* (Table 1).

Of four vine species identified, *Hedera helix* was the most numerous and it occupied the largest area. It grew not only in the ditch which used to be the moat surrounding the castle, but also on the trunks of 26 trees.

As results from the age analysis, 115 trees inventoried in the park were over 100 years old. They are the most valuable component of the tree stand in the park. It is also very important that 65 trees reached the sufficient size to be recognised as natural monuments. Among them there are 26 specimens of *Ulmus laevis*, 13 specimens of *Aesculus hippocastanum*, 9 specimens of *Quercus robur*, 8 specimens of *Fraxinus excel-*

Table 1. List of woody plants inventoried in the historic park surrounding the castle in Szamotuły

Family/Taxa	Number of specimens	Trunk circumference (cm)	Height (m)	Total area (m ²) ¹	GHS	LF
Division Gymnosperms						
Ginkgoaceae						
<i>Ginkgo biloba</i> L.	7	14–28	3.0–5.0	–	D	M
Taxaceae						
<i>Taxus baccata</i> L.	3 ² 15 ³	103–206 –	12.0–15.0 1.8–2.0	– 82.0	D	M N
Pinaceae						
<i>Abies koreana</i> E.H. Wilson	1	46	5.0	–	D	M
<i>Abies concolor</i> (Gordon et Glend.) Lindl. ex Hildebr.	1	140	17.0	–	D	M
<i>Pseudotsuga menziesii</i> (Mirb.) Franco	1	28	6.0	–	D	M
<i>Picea abies</i> (L.) H. Karst.	5	74–187	12.0–25.0	–	Ken	M
<i>Picea orientalis</i> (L.) Link.	3	28–38	5.5	–	D	M
<i>Picea omorika</i> (Pančić) Purk.	2	43–48	4.0–5.0	–	D	M
<i>Larix decidua</i> Mill.	4	38–58	7.0–12.5	–	D	M
Cupressaceae						
<i>Thuja occidentalis</i> L. 'Fastigiata'	17	19–41	4.0–6.5	–	D	M
<i>Chamaecyparis lawsoniana</i> (A. Murray bis) Parl.	6	19–63	2.5–7.5	–	D	M
<i>Juniperus sabina</i> L. 'Tamariscifolia'	3	–	–	79.5	D	N
<i>Juniperus virginiana</i> L.	1	96	14.0	–	D	M
<i>Juniperus ×pfitzeriana</i> (L. Späth) P.A. Schmidt	9	–	–	200.0	D	N
Division Angiosperms						
Salicaceae						
<i>Populus alba</i> L.	1	387	20.0	–	Ap	M

Family/Taxa	Number of specimens	Trunk circumference (cm)	Height (m)	Total area (m ²) ¹	GHS	LF
<i>Populus ×canadensis</i> Moench	3	260–340	28.0–30.0	–	D	M
<i>Salix fragilis</i> L.	1	103	14.0	–	Ap	M
<i>Salix babylonica</i> var. <i>pekinensis</i> Henry ‘Tortuosa’	1	18	3.0	–	D	M
<i>Salix ×sepulcralis</i> Simonk. ‘Chrysocoma’	11	77–293	7.0–16.0	–	D	M
Betulaceae						
<i>Betula pendula</i> Roth	2	84–87	15.0	–	Ap	M
<i>Alnus glutinosa</i> (L.) Gaertn.	5	160–280	13.0–18.0	–	Sp	M
Corylaceae						
<i>Corylus avellana</i> L.	1	–	–	6.0	Sp	N
<i>Carpinus betulus</i> L.	2	138–168	17.0	–	Sp	M
Fagaceae						
<i>Quercus robur</i> L.	20	62–410	7.0–19.0	–	Sp	M
Ulmaceae						
<i>Ulmus laevis</i> Pall.	30	36–350	6.0–25.0	–	Ap	M
Polygonaceae						
<i>Fallopia baldschuanica</i> (Regel) Holub	1	–	–	6.5	D	N
Hydrangeaceae						
<i>Deutzia</i> sp.	8	–	–	33.5	D	N
Platanaceae						
<i>Platanus ×hispanica</i> Mill. ex Münchh. ‘Acerifolia’	1	351	17.0	–	D	M
Rosaceae						
<i>Spiraea japonica</i> L.f.	3	–	–	7.0	D	N
<i>Chaenomeles speciosa</i> (Sweet) Nakai	3	–	–	10.0	D	N
<i>Sorbus aucuparia</i> L.	4	23–33	7.0–9.0	–	Sp	M
<i>Crataegus ×media</i> Bechst. ‘Paul’s Scarlet’	1	88	5.0	–	D	M
<i>Pyracantha coccinea</i> M. Roem. ‘Orange Glow’	3	–	–	13.0	D	N
<i>Cotoneaster ×suecicus</i> G. Klotz ‘Coral Beauty’	2	–	–	23.0	D	N
<i>Prunus cerasifera</i> Ehrh.	1	115	8.0	–	Ken	M
<i>Prunus cerasifera</i> Ehrh. ‘Woodii’	1	35; 38; 40	5.0	–	D	M
Leguminosae						
<i>Robinia pseudoacacia</i> L.	31	33–373	6.5–25.0	–	Ken	M
<i>Wisteria floribunda</i> (Willd.) DC.	2	–	–	15.0	D	N
Anacardiaceae						
<i>Cotinus coggygria</i> Scop.	2	–	–	12.0	D	N
<i>Cotinus coggygria</i> Scop. ‘Purpureus’	1	–	–	5.0	D	N
Aceraceae						
<i>Acer platanoides</i> L.	45	26–304	6.0–25.0	–	Ap	M
<i>Acer platanoides</i> L. ‘Globosum’	3	60–68	4.5–6.0	–	D	M
<i>Acer pseudoplatanus</i> L.	2	63–141	13.0–16.0	–	Ap	M
Hippocastanaceae						
<i>Aesculus hippocastanum</i> L.	76	46–380	5.5–25.0	–	Ken	M
Vitaceae						
<i>Parthenocissus quinquefolia</i> (L.) Planch.	3	–	–	165.0	D	N
Tiliaceae						
<i>Tilia platyphyllos</i> Scop.	31	165–353	10.0–27.0	–	Ap	M
<i>Tilia cordata</i> Mill.	19	118–315	7.0–27.0	–	Ap	M
Araliaceae						
<i>Hedera helix</i> L.	27	–	–	12850.0	Ap	Ch
Oleaceae						
<i>Fraxinus excelsior</i> L.	35	31–336	8.0–28.0	–	Ap	M
<i>Fraxinus excelsior</i> L. ‘Pendula’	1	190	2.0	–	D	M
<i>Forsythia ×intermedia</i> Zabel	2	–	–	14.5	D	N

¹The estimated value, ²tree, ³shrub.

GHS (geographic–historical status): Ap – apophytes, D – diaphytes, Ken – kenophytes, Sp – spontaneophytes.

LF (life forms): Ch – woody chamaephytes, M – megaphanerophytes, N – nanophanerophytes.

Table 2. Proportions of geographic-historical groups in the historic park surrounding the castle in Szamotuły

Geographic-historical status (GHS)	Number of specimens	Proportions %
Apophytes	193	41.5
Spontaneophytes	32	6.9
Kenophytes	127	27.3
Diaphytes	113	24.3
Total	465	100

sior, 2 specimens of *Acer platanoides*, *Alnus glutinosa* and *Tilia cordata* and 1 specimen of *Platanus × hispanica* ‘Acerifolia’, *Robinia pseudoacacia* and *Tilia platyphyllos*.

As far as the geohistorical classification is concerned, the native species of apophytes and spontaneophytes are the most numerous group. They are represented by 225 specimens in total (193 and 32 specimens, respectively), which makes about 48.5% of the total dendroflora in the park (Table 2).

There are three Raunkiær lifeforms among the specimens inventoried in the park. Megaphanerophytes are the most numerous group. Nanophanerophytes and woody chamaephytes are the other two groups (Table 3).

DISCUSSION

The historic park surrounding the castle in Szamotuły is one of very few estates of the kind in the register of monuments in the Wielkopolska Voivodeship. Although the history of the buildings in the park was thoroughly investigated and documented, there is not much information about the park. There is no data about the date when the park was established or when it was designed. As far as iconographic sources are concerned, there is one Prussian map made in 1892, where the park and castle complex can be seen. The only available inventory was made between 1986 and 1987. It was commissioned by the Department of Environment Protection, Water Management and Geology of the Voivodeship Council in Poznań.

Over the period of nearly three decades between the two inventories there were changes both in the species structure and the population of individual taxa. The total number of trees is similar, i.e. 381 trees between 1986 and 1987 vs 378 trees in 2011 (at present the number is greater as there were new trees planted in the part of the park owned by the town). There was a decrease in the number of specimens of *Alnus glutinosa*, *Fraxinus excelsior*, *Picea abies* and *Robinia pseudoacacia*. On the other hand, *Abies concolor*, *Abies koreana*, *Acer platanoides* ‘Globosum’, *Betula pendula*, *Chamaecyparis lawsoniana*, *Ginkgo biloba*, *Larix decidua*, *Picea omorika*, *Picea orientalis*, *Salix*

Table 3. Proportions of Raunkiær lifeforms in the historic park surrounding the castle in Szamotuły

Life forms (LF)	Number of specimens	Proportions %
Megaphanerophytes	378	81.3
Nanophanerophytes	60	12.9
Woody chamaephytes	27	5.8
Total	465	100

(3 taxa), *Sorbus aucuparia* are “new” species, which were not inventoried in the 1980s. By contrast in 2011 no specimens of *Abies alba*, *Crataegus monogyna*, *Euonymus europaeus*, *Juglans regia*, *Pinus strobus* or *Tilia americana* were found in the park. Apart from that, KUJAWA (1986/87) reported the presence of individual specimens of the following shrubs: *Sambucus nigra*, *Symphoricarpos albus*, *Ligustrum vulgare* and *Corylus avellana*. However, in 2011 there were no plants of these species in the park.

As far as the species with the most numerous representations are concerned, it was *Aesculus hippocastanum* in both inventories. In 1986 and 1987 *Ulmus glabra* had numerous representation, whereas in 2011 *Ulmus laevis* was the most populous. As results from this statement, there were numerous representations of elm-trees in both inventories. However, in 1986–1987 the trees were identified as *Ulmus glabra*, whereas in 2011 – as *Ulmus laevis*. *Robinia pseudoacacia* and *Acer platanoides* also had numerous representations, but apart from the former species, the trees of the latter species were in different positions in both inventories.

At present the part of the park owned by the Museum is distinguished by greater diversity of the dendroflora and better condition of the trees. There are no shrubs in the part of the park owned by the town. The area under the trees is covered only by an extensive lawn. There are a lot of leaning trees with asymmetric or reduced, highly positioned crowns. As a result, there may be some broken tree branches and windthrows in the near future. The Protection of monuments programme in the Commune and Town of Szamotuły 2013–2016 (THE PROTECTION... 2013) stressed the need to start revitalisation works to improve the aesthetics of the park and the safety of its users.

Native species are predominant in the park dendroflora. It is a characteristic feature of landscape parks in the commune of Szamotuły (BYKOWSKA & KOLASIŃSKI 2009, KORSZUN & GENSTWA 2009, KORSZUN & STACHOWIAK 2009) and other regions of Wielkopolska (e.g. CZARNA et al. 2009). The historic park surrounding the castle in Szamotuły is particularly valuable for its old trees, the presence of natural monuments and conspicuous trees, which could be protected by law.

CONCLUSIONS

1. The historic park surrounding the castle in Szamotuły is an estate of high historic and natural value.
2. 465 specimens of woody plants were inventoried in the park, where trees made more than 80% of the population. Angiospermous plants were predominant.
3. As far as the division into geographic-historical groups is concerned, the native species of apophytes and spontaneophytes were the most numerous groups. Among the Raunkiaer lifeforms the most specimens came from the megaphanerophyte group.
4. The old tree stand includes more than 100 trees whose age was estimated at over 100 years. Among them there are three specimens of *Taxus baccata*, which have the status of natural monuments. More than 60 trees reached the sufficient size to receive an individual form of protection.

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