

DENDROFLORA OF A MONUMENTAL PARK IN ZŁAKOWO (POSTOMINO COMMUNE, WEST-POMERANIAN VIOVODESHIP)

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Abstract. Dendroflora of Złakowo Park comprises 36 taxons. The total of 1465 trees was inventoried. The dominant tree species in the park are those associated with the communities of fertile broad-leaved forests. Trees of *Carpinus betulus* are the most numerous, whereas common species include: *Fagus sylvatica*, *Fraxinus excelsior* and *Quercus robur*. The total of 203 trees was classified as valuable of which 77 trees were included in the group with monumental circumferences, 35 trees – were classified as trees with circumferences close to monumental and 91 trees – as splendid. Trees which frequently attained considerable circumferences comprised: *Carpinus betulus*, *Quercus robur*, *Fagus sylvatica*, *Alnus glutinosa*, *Fraxinus excelsior* and *Acer platanoides*.

Key words: dendroflora, monumental park, Złakowo

INTRODUCTION

Rural parks can be referred to as clusters of high greenery established by way of artificial plantings, less frequently by an appropriate adaptation of natural forests [Fijalkowski and Kseniak 1982]. Taking into consideration the way of their establishment in regions of rural settlements in the neighbourhood of manor houses, small mansions as well as palaces, these parks were also known as manor or palace parks. Rural parks constitute an inseparable part of the landscape of our country and are strongly connected with its history and tradition [Ciołek 1954, Drzał and Leszczycki 1974]. There are scholars who see in those parks places of 'storage' of disappearing environments and landscapes and consider them as exceptional 'museums of the past' which may be used one day to reconstruct the destroyed landscape of the Polish countryside [Fornal-Pienia 2007].

Rural parks developed deliberately by man in accordance with the requirements of the epoch in which they were established as well as socio-economic ideology are con-

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sidered as unique types of natural and cultural goods protected by law [Majdecki 1981]. Majority of rural parks which exist in Poland until today derive from the 19th century and were established in the English style. They are the mainstay of valuable dendroflora as well as gene banks [Truchan and Sobisz 2006].

At the present time, many rural parks are in very bad conditions and provide a sad example of careless management or even destructive activity of man [Truchan and Sobisz 2006]. In majority of these objects, stands are significantly thinned, decorative bushes destroyed and lawns overgrown with weeds and self-seeding common species of trees and bushes [Waligóra 1992]. In many instances, neglected parks have lost their original layout; their boundaries and spatial arrangements have become obliterated and most of the original park structures, elements of garden architecture and fencing destroyed. That is why parks which managed to survive until today deserve a special care and protection.

It is estimated that after World War II, there were approximately 10 000 rural parks in Poland [Olaczek 1974, Drzał 1982] and by 1974 their number decreased by half [Drzał and Leszczycki 1974]. At present, 9164 parks and historic gardens have been inventoried in Poland of which 6872 objects are placed in the register of monuments and comprise the area of 18 601 ha. The number of manor parks in Poland is assessed at 3165 [Krajowy... 2006].

In 1970s, there were approximately 437 parks in the former Koszalin Voivodeship, of which 74 were under protection. Nearly all of these objects constituted property of state institutions connected with agriculture and food industry [Kownas and Sienicka 1965, Drzał and Leszczycki 1974]. Data from 1980s speak about 400 parks, including 199 objects which were placed on the list of monuments [Olaczek 1981].

Currently, there are 704 historical parks and gardens in West-Pomeranian Voivodeship, including 325 manor parks and there are only two other voivodeships where the number of manor parks is higher, namely in Wielkopolska (446) and Mazowsze (439) [Krajowy... 2006]. In Sławno district in which the Złakowo Park is situated, there are nine manor parks of which three are located in Postomino commune [Rocznik... 2007]. Majority of parks situated in the above-mentioned district derive from the 19th century. The best known objects are situated in Parsowo and Nosowo and have both been inventoried [Czekalski 1984/1985, Czekalski and Majewski 1984/1985]. The rural park in Złakowo, which derives from the same period, is also very valuable. It is exceptionally picturesque with many valuable trees and bushes as well as historical memorabilia and it certainly deserves interest and restoration to the condition of its previous splendour.

The objective of the authors was to inventory arborescent vegetation (especially trees) of the park in Złakowo, putting the greatest emphasis on the most valuable trees of large dimensions and then, on the basis of the obtained data, to assess the state of dendroflora of this object.

HISTORY OF THE PALACE-PARK OBJECT IN ZŁAKOWO

The Złakowo palace-park complex was established at the end of the 19th and beginning of the 20th century, when an unknown person designed a park of landscape character. In this type of complexes, the key objects include single as well as groups of trees, flower beds and naturally developing coppices where foreign plant species grow alongside alien species. Terrain irregularities, freely flowing streams and rivers as well as ponds are valuable assets and the surrounding landscape is widely employed to add attractiveness to such parks [Ebiś 1997]. Pathways in such objects were set out curvilinearly, while lanes ran in circles round the area where the palace was situated (Fig. 1). Initially, the complex was rectangular from three sides surrounded by access roads with trees growing on both their sides. The park has remained in its original boundaries until now, although its initial layout has become obliterated. It is difficult today to reconstruct the layout of lanes, while the three ponds which were still here in 1970s have practically disappeared [Różańska 1991]. There are almost no sculptures and other park facilities now and the only left-over from the historic garden architecture is a fountain.

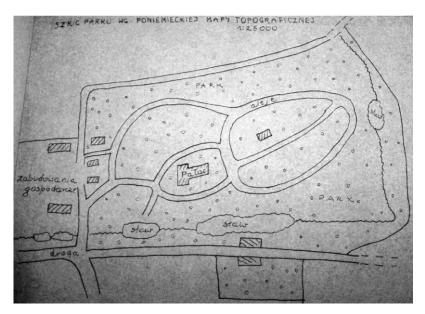


Fig. 1. The boarders of the Złakowo Park according to German topographic map Rys. 1. Granice parku w Złakowie według niemieckiej mapy topograficznej

The property belonged to the family of Puttkamer who owned it from about 1690 to 1910. In 1937, the last proprietor sold the property to the Pomeranian Land Society. In 1950s, the palace was destroyed and all belongings ransacked. Up to early 1990s, the area was used by a Pedigree Breeding Station and now the object belongs to a private person.

STUDY AREA

Złakowo (N – 54°31', E – 16°43') is situated near the eastern boundary of the West-Pomeranian Voivodeship in the district of Sławno, in the north-eastern part of Postomino commune. The village is situated 14 km south-west of Ustka, 5 km north of Postomino and about 400 m from the road Darłowo-Ustka.

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The park is situated in the eastern part of the village and its area amounts to 14 ha [Świnicka and Świnicki 1975]. The land configuration is diverse and picturesque with a water course flowing through the entire park and a fire-fighting water reservoir and a small pond not far from it.

METHODS

Dendroflora inventory was performed in June and July 2004 and later updated from April to June 2008. Plant species names were given after Seneta and Dolatowski [2008]. The frequency of species occurrence was assessed in accordance with Żukowski et al. [1995] with slight modification of classes so that class I comprises very rare species (1-5), II – rare species (6-10), III – scattered (11-20), IV – frequent (21-40), V – very frequent (41-80) and common species (> 80).

During inventory, attention was focused especially on trees describing their species, measuring their circumferences, heights and crown projections. Each specimen was assigned an inventory number and plotted on to a situation-height map at 1:500 scale. In addition, the authors also provided information about bush and vine plant species as well as their approximate location in the park and estimated number of sites. Due to the limited volume of this paper, it was impossible to include an exhaustive table review of the inventoried woody plants and the map presenting their distribution. The above data can be found in the manuscript [Bordewicz 2008].

Only trees with circumference exceeding 20 cm were qualified for circumference measurements. The qualified trees were measured using a measuring tape with 1 cm accuracy. Trees concrescent at the base and forking at the height of over 1.3 m were treated as two specimens. All circumferences were arranged into 14 classes ranging from 1 to 750 cm. Tree heights were measured with 1 m accuracy using for this purpose a Sunto altimeter and individual trees were assigned to appropriate classes at every 4 m grade. The crown projection was expressed as a circle diameter and measured with the assistance of a rangefinder with 1 m accuracy. The health condition of the most valuable trees was determined employing the classification developed by Kamiński and Czerniak [2000].

Trees characterised by the largest circumferences were allocated to one of the following three groups: trees with monumental circumferences [Instrukcja... 1996, Ruciński 1998], trees with circumferences close to monumental (up to 10% smaller than monumental trees) and trees with splendid circumferences (up to 20% smaller than monumental trees).

RESULTS

General dendroflora characteristics

The total of 36 arborescent plant species from 18 families, including 5 coniferous and 31 broad-leaved species, was inventoried (Table 1). In the examined park, the authors found 29 species of trees, six species of bushes and one climbing plant. The total of 1465 trees was inventoried.

Dendroflora of a monumental park in Złakowo ...

Division Gromada	Family Rodzina	No Lp.	Species name Nazwa gatunkowa
Gymnospermae	Pinaceae (20)	1	Abies alba Mill.
, , , , , , , , , , , , , , , , , , ,		2	Abies nordmanniana Steven
		3	Picea abies L.
		4	Pseudotsuga menziesii Mirb.
	Taxaceae (1)	5	Taxus baccata L.
Angiospermae	Aceraceae (153)	6	Acer negundo L.
		7	Acer platanoides L.
		8	Acer pseudoplatanus L.
	Araliaceae	9	Hedera helix L.
	Betulaceae (73)	10	Alnus glutinosa L.
		11	Betula pendula Roth
	Caprifoliaceae	12	Sambucus nigra L.
		13	Symphoricarpos albus L.
	Celastraceae	14	Euonymus europaeus L.
	Cornaceae	15	Cornus alba L.
	Corylaceae (807)	16	Carpinus betulus L.
	Fagaceae (308)	17	Fagus sylvatica L.
		18	Fagus sylvatica L. 'Purpurea'
		19	Quercus robur L.
	Hippocastanaceae (26)	20	Aesculus hippocastanum L.
	Juglandaceae (1)	21	Juglans regia L.
	Oleaceae (121)	22	Fraxinus excelsior L.
	Platanaceae (4)	23	Platanus ×hispanica Mill. Ex Münchh. 'Acerifolia'
	Rosaceae (27)	24	Crataegus monogyna Jacq.
		25	Prunus avium L.
		26	Prunus padus L.
		27	Rubus plicatus Weihe et Nees
		28	Sorbus aucuparia L.
		29	Spiraea salicifolia L.
	Salicaceae (75)	30	Populus × canadensis Moench
		31	Populus tremula L.
		32	Salix caprea L.
	Tiliaceae (31)	33	Tilia cordata Mill.
	· /	34	Tilia platyphyllos Scop.
	Ulmaceae (34)	35	Ulmus minor Mill. emend. Richens
	····· ··· ··· ··· ··· ··· ··· ··· ···	36	Ulmus glabra Huds.

Table 1. The list of taxons of arborescent plants in Złakowo Park Tabela 1. Wykaz taksonów roślin drzewiastych użytku parku w Złakowie

In brackets - number of arborescent plants representing a given family. W nawiasie - liczba okazów reprezentujących daną rodzinę.

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The species composition is dominated by domestic plants (75%), whereas from among alien plant species, immigrants from North America were found to be the most common (14%). There were also plants from Asia (7%) and Europe (the Balkans; 3.5%).

The most numerous trees and bushes found in the examined park were those typical for fertile broad-leaved forests. The most common tree species was *Carpinus betulus* (807 trees). Apart from this tree species, the following ones were also common: *Fagus sylvatica, Fraxinus excelsior, Quercus robur.* Very common species comprise: *Acer platanoides, A. pseudoplatanus, Alnus glutinosa,* common: *Aesculus hippocastanum, Populus ×canadensis, Salix caprea, Tilia cordata,* scattered: *Ulmus minor, U. glabra,* rare: *Abies nordmanniana, Crataegus monogyna, Populus tremula, Prunus avium, P. padus, Pseudotsuga menziesii,* very rare: *Abies alba, Acer negundo, Betula verruco-sa, Juglans regia, Picea abies, Platanus ×hispanica* 'Acerifolia', *Sorbus aucuparia, Taxus baccata, Tilia platyphyllos.*

The following six bush species were inventoried in the examined park: *Cornus alba*, *Euonymus europaeus*, *Sambucus nigra*, *Spiraea salicifolia*, *Symphoricarpos albus* and *Rubus plicatus*. *Rubus plicatus* is found to occur in very many places, while the remaining bushes are found only sporadically.

Vines were found represented only by *Hedera helix*. Many specimens of flowering ivy were found. It is the only species growing in the park which is under legal protection; in this case, it is partial protection [Rozporządzenie... 2004].

The thickest tree found growing in the examined park is pedunculate oak with the circumference of 739 cm, while the thinnest one – common hawthorn with its circumference of 30 cm. Circumferences of the majority of trees ranged from 50-250 cm. Over 45% of trees measured from 101 to 150 cm in girth (Fig. 2).

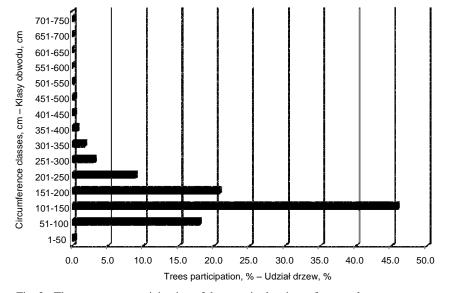


Fig. 2. The percentage participation of the trees in the circumference classes Rys. 2. Procentowy udział drzew w klasach obwodu

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The tallest trees in the park included five specimens of the European Ash measuring 31 m in height. Heights of the majority of trees ranged from 14.1 to 26 m. Over 30% of the inventoried trees measured from 14.1 to 18 m (Fig. 3).

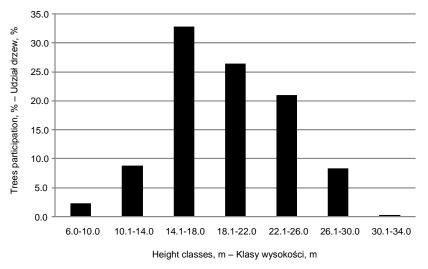


Fig. 3. The percentage participation of the trees in the height classes Rys. 3. Procentowy udział drzew w klasach wysokości

The crown projections of more than half (63%) of the measured trees ranged from 5.1 to 10 m and nearly 1/4 of the trees (23.7%) were characterised by crown projections of 10.1 to 15 m. Trees with crown projections of less than 5 m constituted 4.9%, while those from 15.1 to 20 m interval – 6.4%. The rarest crown projections were those measuring from 20.1-25 m (1.8%) and from 25.1-30 m (0.2%).

The most valuable trees

The performed inventory identified 203 valuable trees from the following categories: trees with monumental circumferences -77 specimens, with circumferences close to monumental -35 trees and splendid trees -91. Table 2 collates trees with monumental circumferences.

The most valuable trees comprised representatives of 18 species derived from 12 families.

Trees of the following species were found to attain considerable circumferences: *Carpinus betulus, Quercus robur, Fagus sylvatica, Alnus glutinosa, Fraxinus excelsior* and *Acer platanoides* (Table 2). The girths of the above-mentioned specimens ranged from 27 cm (*Hedera helix*) to 739 cm (*Q. robur*). The circumferences of valuable trees most frequently ranged from 151 to 250 cm. Over 30% of the examined specimens had circumferences ranging from 151 to 200 cm.

Heights ranging from 18.1 to 30 m were recorded in over 70% of the most valuable trees, while about 30% measured from 22.1 to 26 m.

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Species name Nazwa gatunkowa	No Lp. 2	Circumference Obwód cm 3	Height Wysokość m 4	Crown projection Rzut korony m 5	Health condition Stan zdrowotny 6
1					
Abies nordmanniana	1	350	28	9	2
	2	310	7	_	0
Acer platanoides	3	320	22	16	5
	4	299	15	7	4
	5	247	20	16	4
	6	230	22	16	5
	7	226	19	15	2
	8	223	22	15	2
	9	220	22	14	2
Acer pseudoplatanus	0	262	24	15	5
Alnus glutinosa	11	290	26	14	5
0	12	275	25	14	4
	13	260	23	14	5
	14	239	24	14	3
	15	236	25	7	5
Carpinus betulus	16	228	25	18	4
1	17	226	15	14	1
	18	215	23	16	5
	19	212	24	12	5
	20	210	17	12	3
	21	210	19	13	5
	22	209	25	14	4
	23	208	26	11	4
	24	201	23	13	4
	25	200	18	12	5
Crataegus monogyna	26	115	8	7	4
	27	104	11	8	5
	28	101	10	9	5
Fagus sylvatica	29	345	30	25	5
0	30	345	28	18	5
	31	338	29	19	5
	32	333	26	16	1
	33	327	24	14	3
	34	313	27	16	5

Table 2. The list of monumental circumference trees in Złakowo ParkTabela 2. Wykaz drzew o obwodach pomnikowych w parku w Złakowie

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Table 2 – cont. / Tabela 2 – cd.

1	2	3	4	5	6
	35	312	28	16	2
	36	311	29	18	5
Fagus sylvatica 'Purpurea'	37	375	16	10	0
	38	358	18	18	1
	39	318	27	18	5
Fraxinus excelsior	40	343	25	22	4
	41	295	29	18	3
	42	250	28	12	5
Hedera helix	43	27	0	0	4
Juglans regia	44	238	15	12	5
Picea abies	45	314	29	9	3
Platanus ×hispanica 'Acerifolia'	46	436	28	25	4
Prunus avium	47	222	25	11	1
I Tunus avium	48	206	23	14	5
	49	200	18	9	5
	50	195	25	11	4
	51	170	23	10	5
	52	161	18	10	4
	53	160	14	9	4
	54	158	16	12	5
	55	142	17	11	5
	56	114	17	7	4
Prunus padus	57	123	14	7	5
	58	113	14	4	5
	59	108	12	4	1
Sorbus aucuparia	60	100	14	3	1
Quercus robur	61	739	25	24	3
-	62	500	26	25	3
	63	528	18	16	4
	64	525	27	25	4
	65	497	28	24	2
	66	495	27	25	1
	67	474	25	17	4
	68	456	28	25	3
	69	430	26	18	1
	70	426/372	26	22	1
	71	422	27	24	3

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1	2	3	4	5	6
	72	385	28	22	2
	73	382	25	20	2
	74	380	27	16	4
Tilia cordata	75	528	26	20	4
Ulmus minor	76	382	26	15	1
	77	239	18	8	1

Table 2 - cont. / Tabela 2 - cd.

The health condition of the majority of the examined trees (over 75%) was very good or good with very few trees dying out or dead.

It seems necessary that "candidates" for legal protection in the form of nature monuments should be selected from among trees with monumental circumferences (Table 2).

RECAPITULATION

The park in Złakowo is an important object from the point of view of its dendrological value with its 36 taxons of arborescent plants. The most precious value of this complex is its 203 trees of splendid dimensions, including 77 specimens of monumental circumferences. The health condition and circumferences of 48 trees indicates that they should be covered by legal protection in the form of monuments of nature. The authors also found numerous picturesque trees of unusual shape forms as well as many sites of flowering *Hedera helix* which is under legal protection in Poland. One of the important assets of the park in Złakowo is its varied landscape relief.

The unattended park lost its original boundaries and original spatial layout and, at the present time, it is more like a forest than a park and, therefore, we can find here primarily native species associated with communities of fertile broad-leaved forests. Free spaces are being taken over by self-seeded domestic maples and hornbeams and smaller gaps are settled by *Rubus plicatus* and *Symphoricarpos albus*.

The park dendroflora does not have a high "collector" value. It is quite probable that many valuable species and specimens of herbaceous plants were removed from the park and some part simply died out.

The current poor condition of the park does not, by any means, belittle its value. The results of the performed inventory should be used as a basis for the revitalization of the park in Złakowo. All changes should take place as soon as possible in order to avoid its further devastation. In addition, measures should be undertaken which would allow illegal cutting of trees.

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DENDROFLORA ZABYTKOWEGO PARKU W ZŁAKOWIE (WOJEWÓDZTWO ZACHODNIOPOMORSKIE)

Streszczenie. Dendroflora parku w Złakowie liczy 36 taksonów. Zinwentaryzowano 1465 drzew. Na obszarze parku dominują gatunki związane ze zbiorowiskami żyznych lasów liściastych. Najliczniej występuje *Carpinus betulus*, do gatunków pospolitych należą także *Fagus sylvatica, Fraxinus excelsior* i *Quercus robur*. Za cenne uznano 203 drzewa, w tym 77 drzew o obwodach pomnikowych, 35 zbliżonych do pomnikowych oraz 91 drzew okazałych. Znaczne obwody najczęściej osiągają *Carpinus betulus, Quercus robur, Fagus sylvatica, Alnus glutinosa, Fraxinus excelsior* oraz *Acer platanoides*.

Słowa kluczowe: dendroflora, park zabytkowy, Złakowo

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