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FLORISTIC DIVERSITY OF THE POST-MANORIAL PARK IN GRODZISK

Różnorodność florystyczna parku podworskiego w Grodzisku

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SUMMARY

The analysis of vascular flora composition of the post-manorial park in Grodzisk is presented in the paper. The occurrence of 313 plant species was noted in its borders and a spontaneous process of succession was observed. Among vascular plants they are 55 trees and shrubs, mainly representatives of native flora. A numerous group of trees of a large decoration value in the aged forest stand was recorded. Some of them reached the size of natural monuments. A large share of apophytes (241 species – 73% of flora) indicates seminatural character of developing communities. Occurrence of rare species, e.g., *Dryopteris cristata, Populus alba, Cucubalus baccifer, Papaver argemone, Ribes nigrum, Asarum europaeum, Viburnum opulus*, *Corydalis solida, Vinca minor, Melittis melissophyllum, Gagea minima*, *Convalaria majalis, Epipactis helleborine, Epipactis palustris, Dactylorhiza majalis, Hierochloë odorata, Trisetum flavescens* is also noteworthy.

INTRODUCTION

Post-manorial parks are considered to be a natural-cultural heritages of previous centuries. They used to be established in accordance with the tendencies of the age, in which they were created (Majdecki 1993). The palace and manorial parks were considered to be provincial botanical gardens. Exotic collections of trees, shrubs and herbaceous plants were numerously gathered in them (Herbin 2001, Czekalski 2000). The dendroflora of post-manorial parks is distinguishable by large scientific and didactic value. An old, seed-abundant specimens are a precious source of a high quality reproductive material. Since 1991 these objects have been legally protected, though over 30% of them are devastated due to lack of professional care. The growing interest in parks as an object of scientific studies was observed in the last half-century (Fijałkowski, Kseniak 1976; Sendek 1994; Macicka-Pawlik, Wilczyńska 1996; Czekalski 2000; Świć, Kurowski 2000 et al.). Numerous works indicate that these frequently forgotten objects are distinguishable by their specific habitat and ecological conditions, that is visible in their large floristic richness.

The numerous remnants of manorial-park complexes are a distinct feature of the agricultural landscape of the Siedlecka Upland, however only historic buildings and old forest stands are included to the register at present (Wolff et al. 1980). The inventory of flora of the manorial-park objects indicates the large diversity of species composition of communities found there.

The aim of the work was a presentation of a complete floristic list of the park in Grodzisk and its many-sided analysis. The occurrence of species rare regionally and in whole Poland .as well as share of native species and anthropophytes was used for indication of the value of the flora of the park.

Location of the park and its habitat conditions

The studied park is situated in Grodzisk village in Sabnie commune (Sokołów Podlaski district), in north-western part of the Siedlecka Upland (Kondracki 2002). A zone of frontal moraines of the Warta glaciations and its recessive phases extends through the area of the commune. An altitude of the studied area reaches 190-200 m. a.s.l. Brown and fawn soils occurring in the borders of the park were formed on moraine clays and clayey sands. The post-manorial complex is situated on grounds belonging to III bonitation class.

The Sabnie commune is situated in Podlasko-Poleski climatic region. It includes an area of Polesie Lubelskie, a part of Podlaska Lowland and Siedlecka Upland (Woś 1999). Influence of severe continental climate, large yearly amplitudes of air temperature, brief spring, long and warm summer and long, cool winter are characteristic features for this region. Mean

temperature of January is -3,2°C, of July 18,2°C. Sum of precipitations varies from 500 to 620 mm yearly. Beginning of the vegetation season usually falls on 5–6 April, the end of vegetation season on 28–29 October.

Historical outline

Name of locality originates from word „grodzisko". Formerly it meant fortified town, protected by system of embankments and ditches. Numerous excavations testify it. Traces of old cemeteries and stone walls can be observed till now.

No data documenting the former history of the building are known. Greenery and architecture observed at present are dating from the beginning of XXth century. Roman Żółkowski was the last owner of the estate in Grodzisk before agrarian reform. The property was located in the southern edge of the village. A wooden mansion was situated close to the road, joined to it by spruce alley with driveway. An ornamental gate was a finial of the avenue. A garden and scenic park adjoined to a mansion. From the northeast the complex was limited by a road leading from Sabnie to Sokołów Podlaski, from the west by Cetynia river, from the south by a ditch. An orchard and apiary were situated in the western part of the estate, whereas farm buildings (area of 11 ha) were located in its western part. The present state of the park is similar to its primary image. The lane course is blurred but total arrangement is still visible. The buildings in its area are in poor condition and need renovation. The total area of the park diminished to 10,66 ha at present. The current owner of the object is a Warsaw Hunting Club „Olszynka".

MATERIAL AND METHODS

Studies on the flora of post-manorial park in Grodzisk were carried out between 2003 and 2004, since March till October at regular two-week intervals. As a result of studies a floristic lists of vascular plants was made. Collected herbarium materials were gathered in the Faculty of Agricultural Ecology.

The determination of the collected vascular plants was made using guidebooks by Szafer, Kulczyński, Pawłowski (1976), Rothmaler (1995), Rutkowski (1998). Tree species were identified on the basis of work by Seneta, Dolatowski (2004). Nomenclature of species was accepted after Mirek et al. (2002).

Systematic list of vascular flora of the park was presented in the form of table (tab. 1). The systematic order of families and species names was followed Rutkowski (1998). The attachment of species to geographic-historical groups was accepted after Kornaś (1968), Zając E.U, Zając A. (1975), Zając A. (1979) and Rutkowski (1998).

Table 1. Systematic list of species
Tabela 1. Systematyczny wykaz gatunków

Successive number	Family and species name	Geographic-historical group Grupa geograficzno-historyczna	Persistence Trwałość	Life form Forma życiowa	Protection status Status ochrony
1	2	3	4	5	6
	Lycopodiaceae				
1.	*Lycopodium clavatum* L.	Al	B	H	
	Equisetaceae				
2.	*Equisetum sylvaticum* L.	Al	B	G	
3.	*E. arvense* L.	Ał	B	G	
4.	*E. palustre* L.	Anw	B	G	
5.	*E. hyemale* L.	Ał	B	G	

1	**2**	3	4	5	6
	Aspidiaceae				
6.	*Dryopteris cristata* (L.)A.Gray	Al	B	H	LR
7.	*D. filix-mas* (L.)Schott	Al	B	H	
	Pinaceae				
8.	*Pseudotsuga menziesii* (Mirb.)Franco	u	D	F	
9.	*Picea abies* (L.)H. Karst.	Al	D	F	
10.	*P. pungens* Engelm.	u	D	F	
11.	*Laryx decidua* Mill.	Al	D	F	
12.	*Larix decidua* subsp. *polonica (*Racib.) Domin	Al	D	F	
13.	*Pinus nigra* L.	U	D	F	
14.	*P. sylvestris* L.	Al	D	F	
	Cupressaceae				
15.	*Juniperus communis* L.	Al	K	F	
	Saliceae				
16.	*Salix fragilis* L.	Al	D	F	
17.	*S. caprea* L.	Az	K	F	
18.	*S. alba* L.	Az	D	F	
19.	*S. purpurea* L.	Al	K	F	
20.	*Populus tremula* L.	Al	D	F	
21.	*P. alba* L.	Al	D	F	VU
	Betulaceae				
22.	*Betula pendula* Roth.	Al	D	F	
	Corylaceae				
23.	*Carpinus betulus* L.	Al	D	F	
24.	*Corylus avellana* L.	Al	K	F	
25.	*Alnus glutinosa* (L.) Gaertn.	Al	D	F	
	Fagaceae				
26.	*Qercus robur* L.	Al	D	F	
	Ulmaceae				
27.	*Ulmus laevis* Pall.	Al	D	F	
	Cannabaceae				
28.	*Humulus lupulus* L.	Al	B	F	
	Urticaceae				
29.	*Urtica urens* L.	Ar	J	T	
30.	*U. dioica* L.	Al	B	G	
	Arstolochiaceae				
31.	*Asarum europeum* L.	Al	B	H	

1	2	3	4	5	6
	Polygonaceae				
32.	*Polygonum aviculare* L.	Anw	J-Dw	T	
33.	*P. bistorta* L.	Ał	B	G	
34.	*P. hydropiper* L.	Anw	J	T	
35.	*P. persicaria* L.	Anw	J	T	
36.	*P. amphibium* L.	Anw	B	G	
37.	*Fallopia convolvulus* (L.)A. Löve	Ar	J	T	
38.	*F. dumetorum* (L.) Holub	Al	J	T	
39.	*Reynoutria japonica* Houtt.	Er	B	G	
40.	*Rumex acetosella* L.	Ap	B	G	
41.	*R. acetosa* L.	Ał	B	H	
42.	*R. obtusifolius* L.	Al	B	G	
43.	*R. hydrolapatum* Hudson	Anw	B	H(Hy)	
	Chenopodiaceae				
44.	*Chenopodium hybridum* L.	Ar	J	T	
45.	*Ch. album* L.	Anw	J	T	
46.	*Ch. rubrum* L.	Anw	J	T	
47.	*Atriplex patula* L.	Ar	J	T	
	Amaranthaceae				
48.	*Amaranthus lividus* L.	Ep	J	T	
	Caryophyllaceae				
49.	*Moehringia trinervia* (L.) Clarirv.	Az	J	T	
50.	*Stellaria nemorum* L.	Al	B	H	
51.	*S. holostea* L.	Al	B	G	
52.	*S. graminea* L.	Ał	B	H	
53.	*Cerastium holosteoides* Fries em. Hyl.	Ał	B	Ch	
54.	*Myosoton aquaticum* (L.) Moench.	Al	B	H	
55.	*Lichnis flos-cuculi* L.	Ał	B	H	
56.	*Melandrium album* (Mill.) Garcke	Ał	Dw	T	
57.	*Dianthus cartusianorum* L.				
58.	*Silene otites* (L.) Wibel	Ap	B	H	
59.	*S.vulgaris* (Moench) Garcke	Amk	B	H	
60.	*Cucubalus baccifer* L.	Az	B	H	LR
61.	*Gypsophila muralis* L.	Anw	J	T	
	Ranunculaceae				
62.	*Caltha palustris* L.	Ał	B	H	
63.	*Anemone nemorosa* L.	Al	B	G	

1	2	3	4	5	6
64.	*A. ranunculoides* L.	Al	B	H	
65.	*Ficaria verna* Huds.	Al	B	G	
66.	*Ranunculus flammula* L.	Anw	B	H	
67.	*R. cassubicus* L.	Ał	B	H	
68.	*R. repens* L.	Al	B	H	
69.	*R. sclereratus* ***L.***				
70.	*R. auricomus****L.***	Al	B	H	
71.	*R. lanuginosus* ***L.***	Al	B	H	
72.	*R. acris* ***L.***	Ał	B	H	
	Papaveraceae				
73.	*Papaver somniferum* L.	Er	J	T	
74.	*P. argemone* L.	Ar	J	T	VU
75.	*Chelidonium majus* L.	Al	B	H	
	Fumariaceae				
76.	*Fumaria officinalis* L.	Ar	J	T	
77.	*Corylis solida* (L.) Clairv.	Al	B	G	VU
	Brassicaceae				
78.	*Sisymbrium officinale* (L.) Scop.	Ar	J	T	
79.	*S. loeselii* L.	Ep	J	T	
80.	*Descurainia sophia* (L.) Webb. ex Prantl	Ar	J	T	
81.	*Erysimum cheiranthoides* L.	Ar	J	T	
82.	*Rorippa palustris* (L.) Besser	Anw	J	T	
83.	*R. sylvestris* (L.) Besser	Anw	B	H	
84.	*R. amphibia* L. Besser	Anw	B	Hy	
85.	*Armoracia rusticana* P.Gaertn.,B.Mey.et Scherb.	Ar	B	G	
86.	*Lunaria annua* L.	Er	Dw	H	
87.	*Capsella bursa-pastoris* (L.) Medik.	Ar	J	T	
88.	*Thlaspi arvense* L.	Ar	J	T	
89.	*Lepidium ruderale* L.	Ar	J	T	
90.	*Sinapis arvensis* L.	Ar	J	T	
91.	*Raphanus raphanistrum* L.	Ar	J	T	
	Crassulaceae				
92.	*Sedum maximum* (L.) Hoffm.	Amk	B	G	
	Hydrangeaceae				
93.	*Philadelphus coronarius* L.	Er	K	F	
	Grossulariaceae				
94.	*Ribes nigrum* L.	Al	K	F	LR
95.	*R. spicatum* L.	Az	K	F	

1	2	3	4	5	6
	Rosaceae				
96.	*Spiraea salicifolia* L.	Er	K	F	
97.	*Filipendula ulmaria* (L.) Maxim.	Ał	G	H	
98.	*Rubus idaeus* L.	Al	K	Ch	
99.	*R.caesius* L.	Al	K	Ch	
100.	*Rosa rugosa* Thunb.	Er	K	F	
101.	*R. canina* L.	Az	K	F	
102.	*Agrimonia eupatoria* L.	Amk	B	H	
103.	*Sanguisorba officinalis* L.	Ał	B	H	
104.	*Geum urbanum* L.	Al	B	H	
105.	*G. rivale* L.	Ał	B	G	
106.	*Potentilla anserina* L.	Ał	B	H	
107.	*P. argentea* L s.s	Amk	B	H	
108.	*P. reptans* L.	Ał	B	H	
109.	*P. erecta* /L./ Raeusch.	Al	B	H	
110.	*P. collina* Wibel	Anw	B	H	
111.	*Fragaria vesca* L.	Al	B	H	
112.	*F. viridis* Duch.	Al	B	H	
113.	*Alchemilla monticola* Opiz	Ał	B	H	
114.	*Pyrus communis* L.	Er	D	F	
115.	*Malus domestica* Borkh.	Ar	D	F	
116.	*Cratageus monogyna* Jacq.	Al	D	F	
117.	*Sorbus aucuparia* L. em. Hedl.	Al	D	F	
118.	*Padus avium* Miller	Er	D-K	F	
119.	*P. serotina* ***(Ehrh.) Borkh.***	Kn	D	F	
120.	*Prunus spinosa* L.	Al	K	F	
121.	*Sorbaria sorbifolia* (L.)A.Br.	Er	K	F	
	Fabaceae				
122.	*Lupinus polyphyllus* Lindl.	Er	B	H	
123.	*Robinia pseudoacacia* L.	Er	D	F	
124.	*Caragana arborescens* Lam.	Er	K	F	
125.	*Astragalus glycyphyllos* L.	Al	B	H	
126.	*Vicia sepium* L.	Az	B	H	
127.	*V. sativa* L.	Ar	J	T	
128.	*V. angustifolia* ***L***	Ar	J	T	
129.	*V. hirsuta* (L.)S.F.Gray	Ar	J	T	
130.	*V.villosa*	Ar	J	T	

1	2	3	4	5	6
131.	*V. cracca* L.	Ał	B	H	
132.	*Lathyrus pratensis* L.	Ał	B	H	
133.	*Melilotus alba* Medik	Amk	J	T	
134.	*M. officinalis* /L./ Pall.	Az	J-Dw	T	
135.	*Medicago falcate* ***L.***	Amk	B	H	
136.	*M. lupulina* L.	Amk	J-Dw	T	
137.	*Trifolium dubium* Sibth.	Ał	J	T	
138.	*T. repens* L.	Ał	B	H	
139.	*T. hybrydum* L.	Ał	B	H	
140.	*T. medium* L.	Amk	B	H	
141.	*T. pratense* L.	Ał	Dw	T	
142.	*T. arvense* L.	Aps	J	T	
143.	*Lotus corniculatus* L.	Ał	B	H	
144.	*Anthyllis vulneraria* L.	Amk	B	H	
145.	*Coronilla varia* L.	Amk	B	H	
	Geraniaceae				
146.	*Geranium pyrenaicum* Burm. Fil.	Ep	B	H	
147.	*G. robertianum* L.	Al	I	T	
148.	*G. pusillum* L.	Ar	J	T	
	Aceraceae				
149.	*Acer negundo* L.	Ep	D	F	
150.	*A. pseudoplatanus* L.	Al	D	F	
	Hippocastanaceae				
151.	*Aesculus hippocastanum* L.	Ep	D	F	
	Balsaminaceae				
152.	*Impatiens parviflora* DC.	Ep	J	T	
153.	*I. noli-tangere* L.	Al	J	T	
	Celastraceae				
154.	*Euonymus verrucosus* Scop.	Al	K	F	
155.	*E. europaeus* L.	Al	K	F	
	Rhamnaceae				
156.	*Frangula alnus* Mill.	Al	K	F	
	Tiliaceae				
157.	*Tilia platyphyllos* Scop.	Al	D	F	
158.	*T. cordata* Mill	Al	D	F	
	Malvaceae				
159.	*Malva alcea* L.	Ar	Dw	H	

1	2	3	4	5	6
	Clustaceae				
160.	*Hypericum perforatum* L.	Ał	B	H	
	Violaceae				
161.	*Viola tricolor* L.	Aps	J	T	
162.	*V. reichenbachiana* Rchb.	Al	B	H	
163.	*V. riviniana* Rchb.	Al	B	H	
164.	*V. odorata* L.	Al	B	H	
	Cucurbitaceae				
165.	*Echinocystis lobata* (F Michx.)Torr. et A.Gray	Er	J	T	
	Lythraceaea				
166.	*Lythrum salicaria* L.	Ał	B	H	
	Cornaceae				
167.	*Cornus sanguinea* L.	Ep	K	F	
168.	*C. mas* L.	Al	K	F	
	Apiaceae				
169.	*Chaerophyllum temulum* L.	Al	J	T(H)	
170.	*Anthriscus sylvestris* /L./ Hoffm.	Al	B	H	
171.	*Pimpinella saxifraga* L.	Amk	B	H	
172.	*Aegopodium podagraria* L.	Amk	B	H	
173.	*Aethusa cynapium* L.	Ar	J	T	
174.	*Peucedanum oreoselinum* /L./ Moench.	Al	B	H	
175.	*P.palustre* L. (L.)Moench	Anw	B	H	
176.	*Heracleum sphondylium* L.	Az	B	H	
	Primulaceae				
177.	*Primula veris* L.	Al	B	H	
178.	*Lysimachia nummularia* L.	Ał	B	G	
179.	*L. vulgaris* L.	Ał	B	G (H)	
	Oleaceae				
180.	*Fraxinus excelsior* ***L.***	Al	D	F	
181.	*Syringa vulgaris* L.	Er	K	F	
182.	*Ligustrum vulgaris* L.	Ep	K	F	
	Apocynaceae				
183.	*Vinca minor* L.	Al	B	Ch	DD
	Rubiaceae				
184.	*Galium palustre* L.	Anw	B	H	
185.	*G. aparine* L.	Al	J	T	
186.	*G. verum* L.	Ał	B	G	
187.	G. *mollugo* L.	Ał	B	G	

1	2	3	4	5	6
	Convolvulaceae				
188.	*Calistegia sepium* (L.)R.Br.	Az	B	H	
189.	*Convolvulus arvensis* L.	Amk	B	G	
	Boraginaceae				
190.	*Echium vulgare* L.	Amk	J	H	
191.	*Symphytum officinale* L.	Anw	B	G	
192.	*Anchusa officinalis* L.	Amk	J	H	
193.	*Myosotis palustris* /L / L. em. Rchb.	Anw	B	H	
194.	*M. sylvaticum* (Ehrh)Hoffm.	Ar	B	H	
195.	*Cynoglossum officinale* L.	Ar	B	H	
	Lamiaceae				
196.	*Ajuga reptans* L.	Al	B	H	
197.	*Scutellaria galericulata* L.	Anw	B	H	
198.	*Melittis melissophyllum* L.	Al	B	H	
199.	*Galeopsis pubescens* Bess.	Az	J	T	
200.	*Lamium album* L.	Ar	B	H	
201.	*L. maculatum* ***L.***	Al	B	H	
202.	*Galeobdolon luteum* Huds.	Al	B	C	
203.	*Leonurus cardiaca* L.	Ar	B	H	
204.	*Ballota nigra* L.	Ar	B	H	
205.	*Betonica officinalis* L.	Ar	B	H	
206.	*Glechoma hederacea* L.	Ał	B	H	
207.	*Thymus serpyllum* L.	Ap	B	H	
208.	*Lycopus europeus* L.	Anw	B	H	
209.	*Mentha arvensis* L	Anw	B	H	
210.	*M. piperita* L.		B	H	
211.	*Prunella vulgaris* L.	Ał	B	H	
	Solanaceae				
212.	*Solanum dulcamara* L.	Al.	L	Ch	
	Scrophulariaceae				
213.	*Verbascum thapsus* L.	Amk	J	H	
214.	*V. nigrum* L.	Amk	J	H	
215.	*Veronica chamaedrys* L.	Ał	B	H	
216.	*V. serpyllifolia* L.	Ał	B	H	
217.	*V. persica* Poir.	Ep	J	T	
218.	*V. spicata* L.	Amps	B	H	
219.	*V.triphyllos* L.	Ar	J	T	

1	2	3	4	5	6
220.	*V. officinalis* L.	Al	B	C	
221.	*V. verna* L.	Amk	J	T	
222.	*Rhinanthus serotinus* /Schönh./ Oborný	Ar	J	T	
	Plantaginaceae				
223.	*Plantago major* L.	Al	B	H	
224.	*P. intermedia* Gilib.	Anw	B	H	
225.	*P. media* L.	Ał	B	H	
226.	*P. lanceolata* L.	Ał	B	H	
	Caprifoliaceae				
227.	*Sambucus nigra* L.	Al	K	F	
228.	*Viburnum opulus* L.	Er	K	F	
229.	*Symphoricarpos albus* (L.) S. F. Blake	Er	K	F	
230.	*Lonicera xylosteum* L.	Al	K	F	
	Adoxaceae				
231.	*Adoxa moschatellina* L.	Al	B	G	
	Dipsacaceae				
232.	*Knautia arvensis* /L./ J.M. Coult.	Ał	B	H	
	Campanullaceae				
233.	*Campanula patula* L.	Ał	B	H	
234.	*C. trachelium* L.	Al.	B	H	
	Asteraceae				
235.	*Eupatorium cannabinum* L.	Anw	B	H	
236.	*Solidago virgaurea* L.	Al	B	H	
237.	*S canadensis* L.	Ep	B	H	
238.	*Bellis perennis* L.	Ał	B	H	
239.	*Conyza canadensis* /L./ Cronquist	Ep	J	T	
240.	*Erigeron acris* L.	Ep	B	H	
241.	*E. annuus* Pers.	Ep	Dw-B	T	
242.	*Gnaphalium sylvaticum*	Al	B	H	
243.	*Helichrysum arenarium* /L./ Moench	Ap	B	H	
244.	*Inula britannica* L.	Anw	B	H	
245.	*Bidens tripartita* L.	Anw	J	T	
246.	*B. cernua* L.	Anw	J	T	
247.	*Rudbeckia lacinata* L.	Ep	B	H	
248.	*Anthemis nobilis* L.	Er	B	H	
249.	*A. arvensis* L.	Ar	J	T	
250.	*Achillea ptarmica* L.	Ał	B	H	

1	2	3	4	5	6
251.	*A. millefolium* L.	Ał	B	H	
252.	*Tanacetum vulgare* L.	Al	B	H	
253.	*Artemisia absinthium* L.	Ar	B	Ch	
254.	*A. vulgaris* L.	Ał(nw)	B	Ch	
255.	*A. campestris* L.	Aps	B	Ch	
256.	*Cirsium arvense* /L./ Scop.	Al	B	G	
257.	*Cichorium intybus* L.	Ar	B	G	
258.	*Leontodon autumnalis* L.	Ał	B	H	
259.	*Mycelis muralis* (L.)Dumort.	Al	B	H	
260.	*Taraxacum officinale* F.H. Wigg.	Ał	B	H	
261.	*Lapsana communis* L.	Al	J	T (H)	
262.	*Hieracium pilosella* L.	Aps	B	H	
	Liliaceae				
263.	*Gagea lutea* (L.)Ker-Gawl.	Al	B	G	
264.	*G. minima* (L.)Ker-Gawl.	Al	B	G	VU
265.	*Allium vineale* L.	Amk	B	G	
266.	*Convallaria majalis* L.	Al	B	G	
267.	*Maianthemum bifolium* (L.)F.W Schm.	Al	B	G	
268.	*Polygonatum odoratum* (Mill) Druce	Al	B	G	
269.	*Asparagus officinalis* L.	Amp	B	G	
	Iridaceae				
270.	*Iris pseudacorus* L.	Aw	B	Hy	
	Juncaceae				
271.	*Juncus temuis* Willd.	Ep	B	H	
272.	*J.conglomeratus* L. em. Leers.	Ał	B	G	
273.	*J. bufonius* L.	Anw	J	T	
274.	*Luzula campestris* (L.)DC.	Ał	B	H	
275.	*L. nemorosa* (Poll.)E.Meyer	Al	B	H	
	Poaceae				
276.	*Festuca gigantea* (L.)Vill.	Al.	B	H	
277.	*F. pratensis* Huds.	Ał	B	H	
278.	*F. rubra* ***L.***	Ał	B	H	
279.	*Lolium perenne* L.	Ał	B	H	
280.	*Poa annua* L.	Ał	J-Dw	T	
281.	*P. nemoralis* L.	Al	B	H	
282.	*P. trivialis* L.	Ał	B	H	
283.	*P. palustris* ***L.***	Anw	B	H	

1	2	3	4	5	6
284.	*P. pratensis* ***L.***	Anw	B	H	
285.	*Dactylis glomerata* L.	Ał	B	H	
286.	*D. polygama* Horv.	Al	B	H	
287.	*Apera spica-venti*(L.)P.Beauv.	Ar	J	T	
288.	*Gliceria maxima* (Hart.)Holmb.	Anw	B	Hy	
289.	*Bromus inermis* Leyss.	Amk	B	H	
290.	*B. tectorum* L.	Ar	Dw	T	
291.	*B. hordeaceus* L.	Ał	Dw	H	
292.	*Brachypodium sylvaticum* (Huds.)P.B.	Al	B	H	
293.	*Elymus hispidus* (Opiz) Meld.	Er	B	G	
294.	*E. repens* (L.) Gold.	Anw	B	G	
295.	*Arrhenatherum elatius* (L.)P.B.exJ.et C.Presl	Ał	B	H	
296.	*Avenula pubescens* (Huds.)Dumort.	Ał	B	H	
297.	*Trisetum flavescens* (L.)P.B.	Al	B	H	DD
298.	*Deschampsia caespitosa* (L.)P.Beauv.	Ał	B	H	
299.	*Anthoxanthum odoratum* L.	Ał	B	H	
300.	*Holcus lanathus* L.	Ał	B	H	
301.	*Hierochloë odorata* (L.) P. Beauv.	Al	B	H	VU
302.	*Corynephorus canescens* (L.)P.B.	Ap	B	H	
303.	*Agrostis capillaris* L.	Ap	B	H	
304.	*A. gigantea* Roth.	Ał	B	H	
305.	*Phleum pratense* L.	Ał	B	H	
306.	*Phalaris arundinaceae*	Anw	B	Hy	
307.	*Phragmites austrialis* /Cav./ Trin. ex Steud.	Anw	B	G	
	Cyperaceae				
308.	*Schoenoplectus lacustris* (L.) Palla	Anw	B	Hy	
309.	*Carex leoporina* L.	Amk	B	H	
310.	*C. palescens* L.	Ał	B	G	
	Orchidaceae				
311.	*Epipactis helleborine* (L.) Crantz	Al	B	G	
312.	*E. palustris* (L.) Crantz	Ał	B	G	EN
313.	*Dactylorhyza majalis* (Rchb. P. F. Hunt & Summerh.	Ał	B	G	VU

Explanations: column 1 – successive number; column 2 – family and species name; 3 – geographic-historical group – Ar – archaeophytes, Ep – eprcophytes, Er – ergasiophygophytes, apophytes: Ał meadow, Anw – waterside, Ap – psammophilous, Amk – xerothermic grassland, Al – forest, Az – shrub; column 4 - persistence: J – annuals, J-Dw – annuals-biennials, Dw – biennials, B – perennials, K – shrubs, K-D – shrubs-trees, D – trees, Pn – creepers; column 5 – life forms: T – terophytes, H – hemicryptophytes, G – geophytes, F – fanerophytes, Ch – chamephytes; column 6 – protection status: EN – species endangered extinction, VU – vulnerable species, LR – low risk taxa, DD – data deficiency species.
Objaśnienia: kolumna 1 – nazwa gatunku; kolumna 2 – grupa geograficzno-historyczna: Ar – archeofit, Ep – epekofit, Er – ergazjofigofit, A – apofity: ł – łąkowe, nw – nadwodne, p – piaszczysk, mk – muraw kserotermicznych, l – leśne, z – zaroślowe; kolumna 3 – trwałość: J – jednoroczne, J-Dw – jednoroczne lub dwuletnie, Dw – dwuletnie, B – byliny, K – krzewy, K-D – krzew lub drzewo, D – drzewo, Pn – pnącze; kolumna 4 – forma życiowa: T – tereofit, H – hemikryptofit, G – geofit, F – fanerofit, Ch – chamefit; 5 – Categories of threat: EX – extinct in Wild, CR – critically endangered, EN and E – endangered extinction, UV and V – vulnerable, LR – low risk taxa, R – rare, DD – data deficiency taxa.

Division of apophytes, considering the groups of natural communities from which they originate was made on the basis of papers by Kornaś (1957), Zając M., Zając A. (1992). Biological type according to Raunkiaer and persistence of species after work by Kornaś (1957), Korniak (1992) and Chmiel (1993) was also given.
Categories of threat were accepted after Głowacki et al. (2003) and Zarzycki et al. (2002).
Categories of threat:
I – according to Głowacki et. al. (2003)
EX – extinct in wild
CR – crititically endangered
EN and E – endangered extinction
UV and V – vulnerable
LR – low risk taxa
R – Rare
DD – data deficiency taxa
II – according to Zarzycki et. al. (2003)
EW – extinct in wild
E – extremely endangered
[E] – isolated populations extremely endangered extnction
V – vulnerable
[V] – isolated vulnerable populations
R – rare

RESULTS

Characteristic of dendroflora

The occurrence of one-hundred-year-old precious deciduous and coniferous forest stand in irregular arrangement (tab. 2) is a distinguishing feature of the park. Among them they are: *Betula pendula, Quercus robur, Fraxinus excelsior, Acer platanoides, Acer negundo, Aesculus hippocastanum, Tilia cordata, Populus alba, Larix decidua, Pinus sylvestris* and *Picea abies* (fig. 1,2,3).

Such species, as *Acer platanoides, Fraxinus excelsior, Tilia cordata, Alnus glutinosa, Carpinus betulus* and single specimens of *Ulmus laevis* and *Pseudotsuga menziesii* prevail in young 30–50-year-old tree stand. *Betula pendula*, *Acer platanoides, Tilia cordata*, *Carpinus betulus* were noted the most frequently in spontaneously developing brushwood. They were accompanied by *Sambucus nigra, Corylus avellana, Syringa vulgaris, Symphoricarpos albus, Prunus spinosa, Cornus sanguinea. Euonymus verrucosus*, *Euonymus europaeus* and *Frangula alnus* were also found among spontaneously developing species. They probably originate from adjacent natural forest and shrub communities. A single groups of ornamental bushes, e.g. *Philadelphus coronarius*, *Caragana arborescens, Sorbaria sorbifolia, Rosa canina* and *Rosa rugosa* were recorded in the flora of the park. The isolated specimens of fruit-bushes *Ribes nigrum, R. spicatum, Rubus idaeus* and *R. caesius* were also observed. *Lonicera xylosteum* occupies large area of the herb layer in the central part of the park.

The analysis of the vascular flora

Occurrence of 313 vascular plant species was noted in area of the post-manorial park in Grodzisk. They were included to 57 families and 173 botanical genera.

The flora of the park consists of 29 tree species, 26 bushes and 258 herbaceous species, of which 190 are perennials, 6 – biennials, 4 – annuals or biennials, 57 – annuals and 1 liana.

Apophytes (241species – 77% of the analysed flora) prevailed over other geographic-historical groups. Most of the native species are attached to natural communities. They are forest and shrub species (110 species – 45,6%), such as *Corylus avellana, Stellaria holostea, Fallopia dumetorum, Adoxa moschatellina,*

Table 2. List of tree species and their share in forest stand (in %)

Species	Share in %	Trunk circumference in cm (height – 130 cm)
Betula pendula	3	100
Quercus robur	2	100
Fraxinus excelsior	6	162
Acer platanoides	16	131
Acer negundo	9	163
Aesculus hippocastanum	5	180
Tilia cordata	12	132
Populus alba	3	163
Salix alba	4	130
Larix decidua	10	160
Pinus sylvestris	16	162
Picea abies	14	130

Fig. 1. Fragment of lime-chestnut allez
Ryc. 1. Fragment alei lipowo-kasztanowcowej

Fig. 2. Group of monumental limes
Ryc. 2. Grupa zabytkowych lip

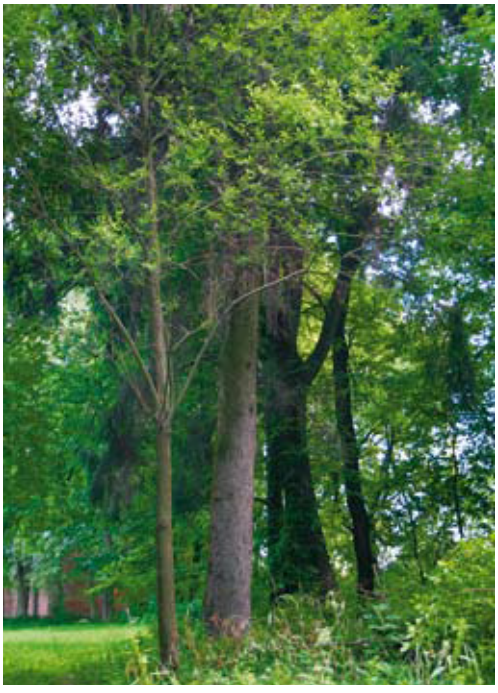

Fig. 3. Aged spruce specimen
Ryc. 3. Wiekowy okaz *Picea abies* (L.) H. Karst

Fig. 4. *Epipactis helleborine* (L.) Crantz

Fig. 5. *Melittis melissophyllum* L.

Fig. 6. Spring aspect of herb layer with *Corydalis solida* (L.) Clairv.
Ryc. 6. Aspekt wiosenny runa z *Corydalis solida* (L.) Clairv.

Asarum europaeum, Rubus caesius, Geum urbanum, Urtica dioica, and meadow ones (62 species – 25,7%), e.g. *Alchemilla monticola, Lotus corniculatus, Plantago major, Bellis perennis, Taraxacum officinale, Polygonum bistorta, Phleum pratense, Alopecurus pratensis*, *Poa trivialis*. Species characteristic for waterside communities are more frequent (35 species – 14,5%) in close proximity of river and ponds. They are, e.g. *Eupatorium cannabinum, Poa palustris, Phalaris arundinacea, Schoenoplectus lacustris, Ranunculus flammula*. Dry, well insolated, higher elevated sites are covered by termophilous species, originating from xerothermic and psammophilous communities, e.g., *Arenaria serpyllifolia, Silene vulgaris, Silene otites, Veronica spicata, Verbascum nigrum, Agrimonia eupatoria* and *Hypericum perforatum*.

Considering anthropophytes, archaeophytes – 34 species (47,2%) had the larger share in the flora of the studied area. Common ruderal species, as *Malva alcea, Chenopodium hybridum, Atriplex patula, Urtica urens, Descurainia sophia, Leonurus cardiaca, Ballota nigra* and *Lamium album* can be included to that group. A group of newcomers consists of epecophytes (15 species – 20,8%) e.g., *Ligustrum vulgaris, Veronica persica, Impatiens parviflora, Rudbeckia laciniata, Solidago canadensis, Acer negundo*. Presence of 19 ergasiophygophytes (26,4%) was noted in the area of studied park. That group included wild ornamental species, as *Spiraea salicifolia* (probably hybrid), *Sorbaria sorbifolia, Viburnum opulus, Caragana arborescens, Lupinus polyphyllus* and fruit-trees, e.g., *Pyrus communis, Malus domestica* and *Prunus spinosa*.

Structure of life forms and biological groups indicates a seminatural character of the analysed flora. Among hemicryptophytes – (142 species, 45,4%) and phanerophytes (54 species, 17,2%) prevail native species (92% and 66%). Similarly, most geophytes also belong to natives (87%). On the contrary the group of terophytes (60%) consists mainly of anthropophytes.

A group of species rare in the region includes such species, as, e.g. *Dryopteris cristata, Populus alba, Cucubalus baccifer, Papaver argemone, Ribes nigrum, Asarum europaeum, Viburnum opulus*, *Corydalis solida, Vinca minor, Melittis melissophyllum, Gagea minima*, *Convalaria majalis, Epipactis helleborine, Epipactis palustris, Dactylorhiza majalis, Hierochloë odorata* and *Trisetum flavescens*.

CONCLUSION

1. The post-manorial park in Grodzisk is a valuable historical-natural monument, however lack of professional care is visible.
2. The flora of the studied object consists of 313 vascular plant species. Among them there are 29 tree species, 26 – shrubs, 285 – herbaceous species. They are mainly representatives of native flora.
3. A numerous specimens of trees observed in the area of park has a large decorative values. Ten of them reached a nature monuments size.
4. The occurrence of rare species, as *Dryopteris cristata, Populus alba, Cucubalus baccifer, Papaver argemone, Ribes nigrum, Asarum europaeum, Viburnum opulus*, *Corydalis solida, Vinca minor, Melittis melissophyllum, Gagea minima*, *Convalaria majalis, Epipactis helleborine, Epipactis palustris, Dactylorhiza majalis, Hierochloë odorata, Trisetum flavescens* is especially noteworthy.

DISCUSSION

The post-manorial park in Grodzisk, similarly like other numerous village parks in Poland (Dąbrowicz 1993, Stypiński, Giełwanowska 1987) has been abandoned for many years. A analysis of the flora of the park showed a distinct domination of the native species and only a little share of anthropophytes (segetal and ruderal species coming from adjacent areas). Similar dependences in the flora of parks were published by Czekalski (2000), Dąbrowicz (1993), Macicka-Pawlik, Szotkowski (1992), Wilczyńska (1996);

The presence of interesting species of seminatural communities – forest, meadow, rush and swampy ones (Dąbrowicz 1993, Fijałkowski, Kseniak 1976) is a result of spontaneous growth of vegetation in abandoned area of the parks and differentiated habitat conditions, such as, water basins, clearings, grass and forest areas.

The occurrence of numerous group of regionally rare species as well as species rare in Poland in the flora of the studied park indicates the significance of this object. The village parks, especially in deforested regions, play a role of refuges of rare plants and species endangered extinction (Dubiel et al. 1998, Dąbrowicz 1993, Skrajna 2004).

STRESZCZENIE

W opracowaniu przedstawiono analizę flory roślin naczyniowych parku podworskiego w Grodzisku, na terenie którego od wielu lat następował spontaniczny proces sukcesji. We florze parku stwierdzono występowanie 313 gatunków, w tym jedynie 55 gatunków to drzewa i krzewy reprezentujące głównie florę rodzimą. W wiekowym drzewostanie zachowała się liczna grupa drzew o wartościach dekoracyjnych, a część

z nich osiągnęło wymiary drzew pomnikowych. Duży udział apofitów (241 – 73% flory) wskazuje na półnaturalny charakter wykształcających się zbiorowisk. Wartość parku podnosi występowanie rzadkich gatunków roślin: *Dryopteris cristata, Populus alba, Cucubalus baccifer, Papaver argemone, Ribes nigrum, Asarum europaeum, Viburnum opulus*, *Corydalis solida, Vinca minor, Melittis melissophyllum, Gagea minima*, *Convalaria majalis, Epipactis helleborine, Epipactis palustris, Dactylorhiza majalis, Hierochloë odorata, Trisetum flavescens*.

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