

VASCULAR FLORA OF THE “DĘBOWIEC” NATURE RESERVE
IN THE MAŁOPOLSKA UPLAND (CENTRAL POLAND)

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ABSTRACT. The paper presents the actual vascular flora of the “Dębowiec” nature reserve identified in 2004-2009 and supplemented on the basis of literature data. The vascular flora consists of 306 vascular species, including the following mountain species: *Abies alba*, *Acer pseudoplatanus*, *Anthriscus nitida*, *Chaerophyllum hirsutum*, *Huperzia selago*, *Polygonatum vericillatum*, *Ribes alpinum*, *Sambucus racemosa* and *Valeriana sambucifolia*. It must be stressed that there are 29 rare species in the regional scale of Central Poland.

KEY WORDS: vascular flora, “Dębowiec” nature reserve, rare species, mountain species

INTRODUCTION

The “Dębowiec” nature reserve covers an area of 47 ha. It was created in 1963 in order to protect and maintain a multilayer mixed forest of natural origin with a high participation of *Abies alba*. The area of the reserve belongs to the State Treasury and it is administered by State Forest Authority, the Gidle Forest Inspectorate. The reserve encompasses the following forest compartments: 221a, b, c and 222a, b, c (Fig. 1). The southern, northern and eastern reserve borders are well marked, while the western border is not visible.

Administrationally, the “Dębowiec” nature reserve belongs to the Żytno commune in Radomsko district, Łódź voivodeship. According to KONDRACKI'S (1998) regionalization, the studied area is a part of the Małopolska Upland within the territory of the Włoszczowska Syncline. According to geobotanical division of Poland (SZAFFER 1977), the reserve is localized in the Euro-Siberian area, Middle-European Lowland-Upland Province, Baltic division, subdivision of the Middle Highland Belt, Świętokrzyski Land and a transitory district. According to the naturalistic and forest regionalization (TRAMPLER 1990), the studied area is localized in the Małopolska Land and Świętokrzyska Mountain Province.

In the reserve, the occurrence of the following soil types has been identified (acc. to PLAN URZĄDZANIA GOSPODARSTWA REZERWATOWEGO... 1988-1997): 1) proper podsolcic soil occurring in the southern part of compartment 222, 2) degraded black earth in the eastern part of compartment 221 and in the south-eastern and north-eastern part of compartment 222, 3) muck soil occurs in the north-western compartment 221, north-eastern and south-eastern parts of compartment 222, 4) proper

black earth occupies the major part of compartment 222 and the eastern part of compartment 222, the south-eastern and north-eastern part of compartment 221.

On the area of the reserve, the following forest types occur: 1) moist forest that covers the major part of the

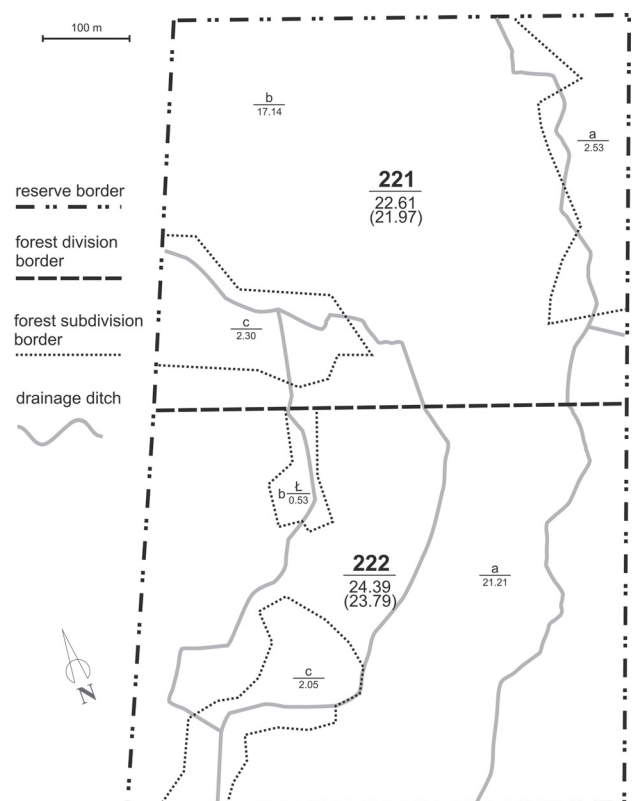


FIG. 1. Situation map of the “Dębowiec” nature reserve

object, i.e. compartments 221b, 222a, 2) alder forests – localized in the compartments 221a, 221c and 222c.

In the reserve, a sampling of the bryoflora (mosses and liverworts) was carried out (KLAMA et AL. 2005, URBAŃSKI and GÓRSKI 2010).

MATERIAL AND METHODS

Field studies were carried out from August to November 2004 and in April 2009, in the total area of the “Dębowiec” nature reserve. Herbarium documentation was prepared in the range of the Łódź voivodeship of the 31st of August 2004. The documentation is deposited in the Department of Botany, Poznań University of Life Sciences (POZNB).

The valorization of the particular groups was carried out in reference to:

- list of protected plants according to the Ordinance of the Minister of the Environment of the 5th of January 2012 referring to the protection of plant species (Journal of law, item 81),
- lists of rare vascular plants in the regional scale, according to the list of perishing and threatened species of vascular flora elaborated for Central Poland by JAKUBOWSKA-GABARA and KUCHARSKI (1999),
- list of threatened plants in the scale of the whole country prepared by ZARZYCKI and SZELĄG (2006),

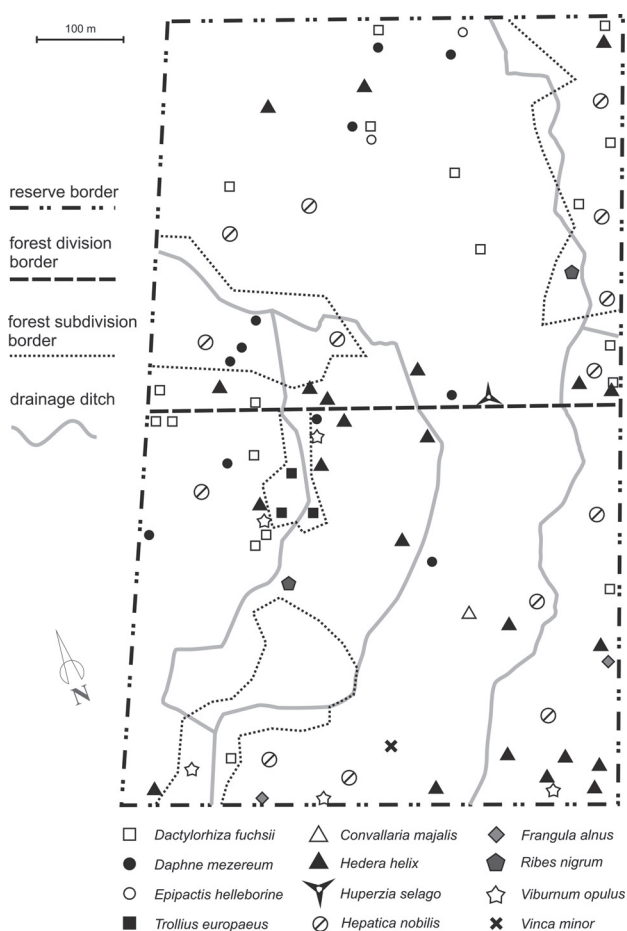


FIG. 2. Distribution of selected protected species on the area of the “Dębowiec” nature reserve

– mountain plant species in Polish lowlands recorded according to ZAJĄC (1996).

Latin names of vascular plant species have been quoted according to the elaboration by MIREK et AL. (2002).

The distribution of the protected species is shown in Figure 2, with the exception of *Galium odoratum* and *Asarum europaeum* (which are common in the total area of the reserve) and except the plants quoted after literature data.

RESULTS

The list of vascular flora of “Dębowiec” nature reserve is shown in Table 1. Next to our own material, it contains data on the reserve published earlier (MOWSZOWICZ 1964, MOWSZOWICZ et AL. 1967, CZYŻEWSKA 1972, KUROWSKI 1986, NOWAKOWSKA 2000 a, b). Unfortunately, it was not possible to utilize the data contained in the work of OLACZEK and SOWA (1981), because, in spite of the fact that the title of the work suggests that it shows the flora of the “Dębowiec” nature reserve, it lists in fact species occurring in an area of about 200 ha. It is an area much bigger than our studied sector. In addition, in the above mentioned work, there is no information referring to the location of the particular species in the forest compartments. Therefore, the information repeated in the later works (OLACZEK 1998, NOWAKOWSKA 2000 a, b) stating that the flora of the reserve includes 343 vascular species is not true, because it refers to the total area described here, covering ca 200 ha.

On the total terrain of the “Dębowiec” nature reserve, there is a documented number of 306 species of vascular flora including two hybrids. The actually confirmed number counts 247 vascular plants and two hybrids, while 59 species have been supplemented on the basis of literature data (MOWSZOWICZ 1964, MOWSZOWICZ et AL. 1967, CZYŻEWSKA 1972, KUROWSKI 1986, NOWAKOWSKA 2000 a, b).

Species diversity in almost the total reserve area is conditioned mainly by natural factors. The particularly floristically rich fragments include compartment 221a (121 species). It is connected with the presence on a comparatively small area of phytocenoses of alluvial and riparian mixed forests (*Fraxino-Alnetum* W. Mat. 1952, *Ficario-Ulmetum minoris* Knapp 1942 em. J. Mat. 1976) and hornbeam forest (*Tilio cordatae-Carpinetum (betuli)* Tracz. 1962) as well as alder forests (*Ribeso nigri-Alnetum* Sol.-Górn. (1975) 1987). A similar phytocenotic differentiation and flora richness (on a larger area) was recorded in compartment 222a. Successive centres of flora diversity are shown by meadow ecosystems in subcompartment 222b.

On the research area, 21 protected species have been found (Fig. 2). The following ones have been covered with total protection:

1. *Carex davalliana* Sm. – quoted by MOWSZOWICZ et AL. (1967) in compartment 221, and by KUROWSKI (1986); during our studies, was not found,
2. *Dactylorhiza fuchsii* (Druce) Soó. – actually, it is present in compartment 221a, 221b and 222a,

TABLE 1 – cont.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
39	<i>Caltha palustris</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
40	<i>Campanula patula</i> L.	.	.	.	+	+	.	+	.	.	.	.	.
41	<i>Campanula trachelium</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
42	<i>Cardamine amara</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
43	<i>Cardamine impatiens</i> L.	.	+	.	+	.	.	.	.	+	.	.	.
44	<i>Cardamine pratensis</i> L.	.	.	.	.	.	.	.	+	.	.	.	.
45	<i>Carex acutiformis</i> Ehrh.	.	+	+	+	+	.	.	.	.	.	.	.
46	<i>Carex appropinquata</i> Schumach.	.	.	.	.	.	.	+	.	.	.	.	.
47	<i>Carex davalliana</i> Sm.	.	.	.	.	.	.	+	.	.	.	.	.
48	<i>Carex digitata</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
49	<i>Carex elongata</i> L.	.	.	.	+	.	.	+	.	.	.	.	.
50	<i>Carex gracilis</i> Curtis	.	.	.	.	.	.	+	.	.	.	.	.
51	<i>Carex hirta</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
52	<i>Carex nigra</i> Reichard	.	.	.	.	.	.	+	.	.	.	.	.
53	<i>Carex ovalis</i> Gooden.	.	.	.	.	.	.	+	.	.	.	.	.
54	<i>Carex pallescens</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
55	<i>Carex panicea</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
56	<i>Craex paniculata</i> L.	.	.	.	.	+	.	.	.	.	.	.	.
57	<i>Carex pseudocyperus</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
58	<i>Carex remota</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
59	<i>Carex riparia</i> Curtis	.	+	+	+	+	.	.	.	.	.	.	.
60	<i>Carex spicata</i> Huds.	.	.	.	+	.	.	+	.	.	.	.	.
61	<i>Carex sylvatica</i> Huds.	+	+	+	+	.	+	.	.	.	.	.	.
62	<i>Carex vesicaria</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
63	<i>Carex viridula</i> Michx.	.	.	.	.	.	.	+	.	.	.	.	.
64	<i>Carex vulpina</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
65	<i>Carpinus betulus</i> L.	+	+	.	+	+	.	.	.	.	.	.	.
66	<i>Centaurea jacea</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
67	<i>Cerastium holosteoides</i> Fr. emend. Hyl.	.	.	.	.	.	.	+	.	.	.	.	.
68	<i>Cerastium macrocarpum</i> Schur emend. Gartner	+	.	.	+	+	.	.	.	.	.	.	.
69	<i>Chaerophyllum aromaticum</i> L.	.	+	+	+	+	.	.	.	+	.	.	.
70	<i>Chaerophyllum hirsutum</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
71	<i>Chamaenerion angustifolium</i> (L.) Scop.	.	.	.	+	.	.	.	.	.	.	.	.
72	<i>Chenopodium album</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
74	<i>Chrysosplenium alternifolium</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
75	<i>Circaea alpina</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
73	<i>Circaea lutetiana</i> L.	.	+	+	+	+	+	.	.	.	.	.	.
76	<i>Cirsium oleraceum</i> (L.) Scop.	+	+	+	+	+	+	+	+	.	.	.	.
77	<i>Cirsium palustre</i> (L.) Scop.	+	.	.	.	.	.	.	.	.	.	.	.
78	<i>Cirsium rivulare</i> (Jacq.) All.	.	.	.	.	.	.	+	+	.	.	.	.
79	<i>Clinopodium vulgare</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
80	<i>Convallaria majalis</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
81	<i>Conyza canadensis</i> (L.) Cronquist	+	.	.	.	.	.	.	.	.	.	.	.
82	<i>Cornus sanguinea</i> L.	.	+	+	+	+	.	.	.	.	.	.	.
83	<i>Corylus avellana</i> L.	+	+	+	+	.	+	.	.	.	.	.	.

TABLE 1 – cont.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
84	<i>Crataegus monogyna</i> Jacq.	.	.	.	+	.	.	.	.	.	.	.	.
85	<i>Crepis paludosa</i> (L.) Moench	+	+	.	+	+	.	.	.	.	.	.	.
86	<i>Cruciata glabra</i> (L.) Ehrend.	+	+	.	+	+	.	.	.	.	.	.	.
87	<i>Dactylis glomerata</i> L.	.	.	.	+	+	.	.	.	.	.	.	.
88	<i>Dactylorhiza fuchsii</i> (Druce) Soó	+	+	.	+	.	.	.	.	.	.	.	.
89	<i>Dactylorhiza incarnata</i> (L.) Soó	.	+	+	.	.	.	.	.	.	.	.	.
90	<i>Dactylorhiza maculata</i> (L.) Soó	.	.	.	.	.	.	+	+	.	.	.	.
91	<i>Dactylorhiza majalis</i> (Rchb.) P.F. Hut & Summerh.	.	.	.	.	.	.	+	+	.	.	.	.
92	<i>Daphne mezereum</i> L.	+	+	+	.	.	.	.	.	.	.	.	.
93	<i>Dentaria bulbifera</i> L.	.	+	.	+	.	.	.	.	+	+	.	.
94	<i>Deschampsia caespitosa</i> (L.) P. Beauv.	+	+	+	+	+	+	.	.	.	.	.	.
95	<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	.	+	+	+	.	+	.	.	.	.	.	.
96	<i>Dryopteris dilatata</i> (Hoffm.) A. Gray	.	+	.	+	.	.	.	.	.	.	.	.
97	<i>Dryopteris filix-mas</i> (L.) Schott	+	.	.	.	.	.	.	.	.	.	.	.
98	<i>Dryopteris</i> × <i>subaustriaca</i> Rothm.	.	.	.	+	.	.	.	.	.	.	.	.
99	<i>Eleocharis palustris</i> (L.) Roem. & Schult.	.	.	.	.	.	.	+	.	.	.	.	.
100	<i>Epilobium ciliatum</i> Raf.	+	.	.	.	.	.	.	.	.	.	.	.
101	<i>Epilobium montanum</i> L.	.	.	.	+	.	.	+	.	.	.	.	.
102	<i>Epilobium obscurum</i> Schreb.	+	.	.	.	.	.	.	.	.	.	.	.
103	<i>Epilobium parviflorum</i> Schreb.	.	.	.	+	.	.	.	.	.	.	.	.
104	<i>Epipactis helleborine</i> (L.) Crantz	.	+	.	.	.	.	.	.	.	.	.	.
105	<i>Equisetum arvense</i> L.	+	.	+	+	+	+	.	.	.	.	.	.
106	<i>Equisetum fluviatile</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
107	<i>Equisetum hyemale</i> L.	.	+	.	.	.	.	.	.	.	.	.	.
108	<i>Equisetum palustre</i> L.	.	.	.	.	.	.	+	+	.	.	.	.
109	<i>Equisetum palustre</i> L. × <i>E. arvense</i> L.	.	.	.	.	+	.	.	.	.	.	.	.
110	<i>Equisetum pratense</i> Ehrh.	+	+	+	+	.	+	.	.	.	.	.	.
111	<i>Equisetum sylvaticum</i> L.	+	.	.	.	.	.	.	.	.	.	.	.
112	<i>Euonymus europaea</i> L.	+	+	+	+	.	.	.	.	.	.	.	.
113	<i>Euonymus verrucosa</i> Scop.	.	.	.	.	.	+	.	.	.	.	.	.
114	<i>Eupatorium cannabinum</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
115	<i>Euphrasia rostkoviana</i> Hayne	.	.	.	.	.	.	+	.	.	.	.	.
116	<i>Fagus sylvatica</i> L.	.	.	+	+	.	+	.	.	.	.	.	.
117	<i>Festuca gigantea</i> (L.) Vill.	+	+	.	+	+	.	.	.	.	.	.	.
118	<i>Festuca rubra</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
119	<i>Ficaria verna</i> Huds.	.	+	+	+	+	+	+	+	.	.	.	.
120	<i>Filipendula ulmaria</i> (L.) Maxim.	+	.	+	+	+	.	.	.	.	.	.	.
121	<i>Fragaria vesca</i> L.	+	.	.	+	.	.	.	.	.	.	.	.
122	<i>Frangula alnus</i> Mill.	.	+	.	.	.	.	.	.	.	.	.	.
123	<i>Fraxinus excelsior</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
124	<i>Galeobdolon luteum</i> Huds.	.	+	+	+	.	.	.	.	.	.	.	.
125	<i>Galeopsis terahit</i> L.	.	.	.	.	.	.	.	+	.	.	.	.
126	<i>Galinsoga ciliata</i> (Raf.) S.F. Blake	.	.	.	+	.	.	.	.	.	.	.	.
127	<i>Galium aparine</i> L.	.	+	+	+	.	+	.	.	.	.	.	.
128	<i>Galium boreale</i> L.	.	.	.	.	.	.	+	.	.	.	.	.

TABLE 1 – cont.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
129	<i>Galium elongatum</i> C. Presl.	.	.	.	.	+	.	.	.	.	.	.	.
130	<i>Galium mollugo</i> L.	.	.	.	.	+	.	+	.	.	.	.	.
131	<i>Galium odoratum</i> (L.) Scop.	+	+	+	+	.	+	.	.	.	.	.	.
132	<i>Galium palustre</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
133	<i>Galium rivale</i> (Sibth. & Sm.) Griseb.	.	.	.	.	+	.	.	.	.	.	.	.
134	<i>Galium schultesii</i> Vest	.	+	.	+	.	.	.	.	.	.	.	.
135	<i>Galium uliginosum</i> L.	.	.	.	.	.	.	.	+	.	.	.	.
136	<i>Geranium palustre</i> L.	.	.	.	.	+	.	+	.	.	.	.	.
137	<i>Geranium robertianum</i> L.	+	+	+	+	.	.	.	.	.	.	.	.
138	<i>Geum rivale</i> L.	+	+	+	+	+	+	+	.	.	.	.	.
139	<i>Geum urbanum</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
140	<i>Glechoma hederacea</i> L.	+	.	+	+	.	.	.	.	.	.	.	.
141	<i>Glyceria fluitans</i> (L.) R. Br.	+	+	.	+	.	.	.	.	.	.	.	.
142	<i>Glyceria notata</i> Chevall.	.	.	.	.	.	.	+	.	.	.	.	.
143	<i>Gnaphalium sylvaticum</i> L.	+	.	.	.	.	.	.	.	.	.	.	.
144	<i>Gymnocarpium dryopteris</i> (L.) Newman	.	+	.	.	.	.	.	.	.	.	.	.
145	<i>Gymnocarpium robertianum</i> (Hoffm.) Newman	.	.	+	.	.	.	.	.	.	.	.	.
146	<i>Hedera helix</i> L.	+	+	.	+	.	+	.	.	.	.	+	.
147	<i>Hepatica nobilis</i> Schreb.	+	+	+	+	.	.	.	.	.	.	.	.
148	<i>Hieracium lachenalii</i> C.C. Gmell.	.	.	.	.	.	.	+	.	.	.	.	.
149	<i>Hieracium murorum</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
150	<i>Hieracium sabaudum</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
151	<i>Holcus lanatus</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
152	<i>Hottonia palustris</i> L.	.	+	+	+	.	.	.	.	.	.	.	.
153	<i>Humulus lupulus</i> L.	.	.	+	.	.	.	.	+	.	.	.	.
154	<i>Huperzia selago</i> (L.) Bernh. ex Schrank & Mart.	.	+	.	.	.	.	.	.	.	.	.	.
155	<i>Hypericum maculatum</i> Crantz	.	.	.	+	+	.	.	.	.	.	.	.
156	<i>Hypericum perforatum</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
157	<i>Hypericum tetrapterum</i> Fr.	+	.	.	.	.	.	.	+	.	.	.	.
158	<i>Hypochoeris radicata</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
159	<i>Impatiens noli-tangere</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
160	<i>Iris pseudacorus</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
161	<i>Isopyrum thalictroides</i> L.	.	.	.	.	.	+	.	.	.	.	.	.
162	<i>Juncus articulatus</i> L. emend. K. Richt.	+	.	.	.	.	.	.	.	.	.	.	.
163	<i>Juncus bufonius</i> L.	+	.	.	.	.	.	.	.	.	.	.	.
164	<i>Juncus effusus</i> L.	+	.	.	+	+	.	.	.	.	.	.	.
165	<i>Juncus tenuis</i> Willd.	+	.	.	+	.	.	.	.	.	.	.	.
166	<i>Lapsana communis</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
167	<i>Larix decidua</i> Mill.	.	.	.	+	.	.	.	.	.	.	.	.
168	<i>Lathraea squamaria</i> L.	.	+	.	+	.	.	.	.	.	+	.	.
169	<i>Lathyrus pratensis</i> L.	.	+	.	.	+	.	+	.	.	.	.	.
170	<i>Lathyrus vernus</i> (L.) Bernh.	+	+	.	+	.	.	.	.	.	.	.	.
171	<i>Lemna minor</i> L.	.	.	.	.	.	.	.	+	.	.	.	.
172	<i>Leontodon autumnalis</i> L.	+	.	.	.	.	.	.	.	.	.	.	.
173	<i>Leontodon hispidus</i> L.	.	.	.	.	.	.	+	.	.	.	.	.

TABLE 1 – cont.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
174	<i>Leucanthemum vulgare</i> Lam.	.	.	.	.	.	.	+	.	.	.	.	.
175	<i>Listera ovata</i> (L.) R. Br.	.	+	.	.	.	.	+	+	+	.	.	.
176	<i>Lotus uliginosus</i> Schkuhr	.	.	.	.	.	.	+	+	.	.	.	.
177	<i>Luzula campestris</i> (L.) DC.	.	.	.	.	.	.	+	.	.	.	.	.
178	<i>Luzula pallescens</i> Sw.	+	.	.	.	.	.	.	.	.	.	.	.
179	<i>Luzula pilosa</i> (L.) Willd.	+	+	.	+	.	+	+	.	.	.	.	.
180	<i>Lychnis flos-cuculi</i> L.	+	.	.	.	+	.	+	+	.	.	.	.
181	<i>Lycopus europaeus</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
182	<i>Lysimachia nummularia</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
183	<i>Lysimachia thyrsoflora</i> L.	.	.	.	.	+	.	.	.	.	.	.	.
184	<i>Lysimachia vulgaris</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
185	<i>Lythrum salicaria</i> L.	.	.	.	+	+	.	+	.	.	.	.	.
186	<i>Maianthemum bifolium</i> (L.) F.W. Schmidt	+	+	+	+	.	.	.	.	.	.	.	.
187	<i>Melampyrum nemorosum</i> L.	.	.	.	+	.	.	+	.	.	.	.	.
188	<i>Melica nutans</i> L.	.	+	.	+	.	.	.	.	.	.	.	.
189	<i>Mentha aquatica</i> L.	.	+	+	+	+	+	.	.	.	.	.	.
190	<i>Mentha arvensis</i> L.	+	.	+	+	.	.	.	.	.	.	.	.
191	<i>Mercurialis perennis</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
192	<i>Milium effusum</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
193	<i>Moehringia trinervia</i> (L.) Clairv.	+	+	.	+	.	.	.	.	.	.	.	.
194	<i>Molinia caerulea</i> (L.) Moench	.	.	.	.	.	.	+	.	.	.	.	.
195	<i>Monotropa hypopitys</i> L.	.	+	.	.	.	.	.	.	.	.	.	.
196	<i>Mycelis muralis</i> (L.) Dumort.	+	.	.	+	.	.	.	.	.	.	.	.
197	<i>Myosotis palustris</i> (L.) L. emend. Rchb.	+	+	.	+	+	.	.	.	.	.	.	.
198	<i>Myosoton aquaticum</i> (L.) Moench	+	+	.	+	+	+	.	.	.	.	.	.
199	<i>Neottia nidus-avis</i> (L.) Rich.	.	.	.	.	.	.	.	.	+	.	.	.
200	<i>Oenanthe aquatica</i> (L.) Poir.	+	+	.	+	.	+	.	.	.	.	.	.
201	<i>Ononis arvensis</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
202	<i>Ophioglossum vugatum</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
203	<i>Oxalis acetosella</i> L.	+	+	+	+	.	+	.	.	.	.	.	.
204	<i>Oxalis fontana</i> Bunge	.	.	.	+	.	.	.	.	.	.	.	.
205	<i>Padus avium</i> Mill.	+	+	+	+	+	+	.	.	.	.	.	.
206	<i>Paris quadrifolia</i> L.	.	+	+	+	.	+	.	.	.	.	.	.
207	<i>Peucedanum palustre</i> (L.) Moench	.	+	+	.	.	.	.	.	.	.	.	.
208	<i>Phalaris arundinacea</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
209	<i>Phegopteris connectilis</i> (Michx.) Watt	.	+	.	.	.	.	.	.	.	.	.	.
210	<i>Picea abies</i> (L.) H. Karst.	+	+	.	.	.	.	.	.	.	.	.	.
211	<i>Pimpinella major</i> (L.) Huds.	.	.	.	.	.	.	+	.	.	.	.	.
212	<i>Pimpinella saxifraga</i> L.	.	.	.	+	.	.	+	.	.	.	.	.
213	<i>Pinus sylvestris</i> L.	.	+	.	+	.	.	.	.	.	.	.	.
214	<i>Plantago lanceolata</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
215	<i>Plantago major</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
216	<i>Plantago media</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
217	<i>Platanthera bifolia</i> (L.) Rich.	.	.	.	.	.	.	+	+	+	.	.	.
218	<i>Platanthera chlorantha</i> (Custer) Rchb.	.	.	.	.	.	.	.	.	+	+	.	.

TABLE 1 – cont.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
219	<i>Poa annua</i> L.	+	.	.	+	.	.	.	.	.	.	.	.
220	<i>Poa nemoralis</i> L.	.	+	.	+	.	.	.	.	.	.	.	.
221	<i>Poa palustris</i> L.	.	.	.	.	.	.	.	+	.	.	.	.
222	<i>Poa pratensis</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
223	<i>Poa remota</i> Forselles	.	.	+	.	.	.	.	.	.	.	.	.
224	<i>Poa trivialis</i> L.	+	.	+	+	.	+	.	.	.	.	.	.
225	<i>Polygonatum multiflorum</i> (L.) All.	+	+	+	+	.	+	.	.	.	.	.	.
226	<i>Polygonatum verticillatum</i> (L.) All.	.	.	.	+	.	.	.	.	+	.	.	.
227	<i>Polygonum hydropiper</i> L.	+	+	.	+	.	+	.	.	.	.	.	.
228	<i>Polygonum lapathifolium</i> L. subsp. <i>lapathifolium</i>	.	.	.	+	.	.	.	.	.	.	.	.
229	<i>Polygonum minus</i> Huds.	+	.	.	.	.	.	.	.	.	.	.	.
230	<i>Polygonum mite</i> Schrank	+	+	.	.	.	.	.	.	.	.	.	.
231	<i>Polygonum persicaria</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
232	<i>Populus tremula</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
233	<i>Potentilla erecta</i> (L.) Raeusch.	.	.	.	+	.	.	+	.	.	.	.	.
234	<i>Potentilla reptans</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
235	<i>Prunella vulgaris</i> Huds.	+	.	.	+	.	.	.	.	.	.	.	.
236	<i>Pteridium aquilinum</i> (L.) Kuhn	.	.	.	+	.	+	+	.	.	.	.	.
237	<i>Pulmonaria obscura</i> Dumort.	+	+	+	+	.	+	.	.	.	.	.	.
238	<i>Quercus robur</i> L.	+	+	+	+	.	.	.	.	.	.	.	.
239	<i>Quercus rubra</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
240	<i>Ranunculus acris</i> L.	.	.	.	+	.	.	+	.	.	.	.	.
241	<i>Ranunculus auricomus</i> L.	.	.	+	+	+	.	+	.	.	.	.	.
242	<i>Ranunculus flammula</i> L.	+	.	.	.	.	.	.	.	.	.	.	.
243	<i>Ranunculus lanuginosus</i> L.	+	+	.	+	.	+	.	.	.	.	.	.
244	<i>Ranunculus repens</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
245	<i>Rhamnus catharticus</i> L.	+	.	.	.	.	.	.	+	.	.	.	.
246	<i>Ribes alpinum</i> L.	.	+	+	.	.	.	.	.	.	.	.	.
247	<i>Ribes nigrum</i> L.	+	+	.	+	.	+	.	+	.	.	.	.
248	<i>Ribes uva-crispa</i> L.	.	+	.	.	.	.	.	.	.	.	.	.
249	<i>Rorippa amphibia</i> (L.) Besser	.	+	.	.	.	.	.	.	.	.	.	.
250	<i>Rubus caesius</i> L.	.	.	.	+	+	.	.	.	.	.	.	.
251	<i>Rubus idaeus</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
252	<i>Rubus pedemontanus</i> Pinkw.	.	+	.	+	.	.	.	.	.	.	.	.
253	<i>Rubus plicatus</i> Weihe & Nees	+	.	.	.	.	.	.	.	.	.	.	.
254	<i>Rubus saxatilis</i> L.	+	+	.	.	.	.	.	.	.	.	.	.
255	<i>Rumex acetosa</i> L.	.	.	.	.	.	.	+	+	.	.	.	.
256	<i>Rumex hydrolapathum</i> Huds.	.	.	+	.	+	.	.	.	.	.	.	.
257	<i>Rumex obtusifolius</i> L.	.	.	.	.	+	.	.	.	.	.	.	.
258	<i>Rumex sanguineus</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
259	<i>Salix cinerea</i> L.	.	.	.	.	+	.	.	.	.	.	.	.
260	<i>Sambucus nigra</i> L.	.	.	.	.	.	.	.	+	.	.	.	.
261	<i>Sambucus racemosa</i> L.	.	+	.	.	.	.	.	.	.	+	.	.
262	<i>Sanicula europaea</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
263	<i>Scirpus sylvaticus</i> L.	.	.	.	+	+	.	.	+	.	.	.	.

TABLE 1 – cont.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
264	<i>Scrophularia nodosa</i> L.	.	.	.	+	+	.	+	.	.	.	.	.
265	<i>Scrophularia umbrosa</i> Dumort.	.	.	.	.	.	+	.	.	.	.	.	.
266	<i>Scutellaria galericulata</i> L.	+	+	.	+	+	+	.	.	.	.	.	.
267	<i>Selinum carvifolia</i> (L.) L.	.	.	.	.	+	.	+	.	.	.	.	.
268	<i>Setaria pumila</i> (Poir.) Roem. & Schult.	.	.	.	+	.	.	.	.	.	.	.	.
269	<i>Sium latifolium</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
270	<i>Solanum dulcamara</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
271	<i>Solidago canadensis</i> L.	+	.	.	.	.	.	.	.	.	.	.	.
272	<i>Sorbus aucuparia</i> L. emend. Hedl.	+	+	.	+	.	.	.	.	.	.	.	.
273	<i>Stachys palustris</i> L.	.	.	.	+	+	+	.	.	.	.	.	.
274	<i>Stachys sylvatica</i> L.	+	+	.	+	.	.	.	.	.	.	.	.
275	<i>Stellaria graminea</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
276	<i>Stellaria holostea</i> L.	.	+	.	+	.	.	.	.	.	.	.	.
277	<i>Stellaria media</i> (L.) Vill.	.	+	.	+	.	.	.	.	.	.	.	.
278	<i>Stellaria palustris</i> Retz.	.	.	.	.	.	.	.	+	.	.	.	.
279	<i>Stellaria uliginosa</i> Murray	+	.	.	.	.	.	.	.	.	.	.	.
280	<i>Succisa pratensis</i> Moench	.	.	.	.	.	.	+	.	.	.	.	.
281	<i>Taraxacum officinale</i> Web.	+	+	.	+	.	+	.	.	.	.	.	.
282	<i>Thalictrum flavum</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
283	<i>Thalictrum lucidum</i> L.	.	.	.	.	.	.	.	+	.	.	.	.
284	<i>Thelypteris palustris</i> Schott	.	+	.	+	.	.	.	.	.	.	.	.
285	<i>Tilia cordata</i> Mill.	.	+	.	.	.	.	.	.	.	.	.	.
286	<i>Tilia platyphyllos</i> Scop.	+	+	.	+	.	+	.	.	.	.	.	.
287	<i>Trifolium pratense</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
288	<i>Trifolium repens</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
289	<i>Trollius europaeus</i> L.	.	.	.	.	+	.	.	.	.	.	.	+
290	<i>Ulmus glabra</i> Huds.	.	.	.	.	.	+	.	.	.	.	.	.
291	<i>Ulmus laevis</i> Pall.	+	+	.	+	.	+	.	.	.	.	.	.
292	<i>Ulmus minor</i> Mill. emend. Richens	.	.	+	.	.	.	.	.	.	.	.	.
293	<i>Urtica dioica</i> L.	+	+	+	+	+	+	.	.	.	.	.	.
294	<i>Vaccinium myrtillus</i> L.	.	.	.	+	.	.	+	.	.	.	.	.
295	<i>Valeriana dioica</i> L.	.	.	.	.	.	.	+	.	.	.	.	.
296	<i>Valeriana sambucifolia</i> J.C. Mikan	+	+	+	+	+	+	.	.	.	.	.	.
297	<i>Veronica beccabunga</i> L.	+	+	.	+	.	+	.	.	.	.	.	.
298	<i>Veronica chamaedrys</i> L.	.	+	.	+	+	.	.	.	.	.	.	.
299	<i>Viburnum opulus</i> L.	.	+	.	+	.	.	.	.	.	.	.	.
300	<i>Vicia cracca</i> L.	.	.	.	.	+	.	+	.	.	.	.	.
301	<i>Vicia sepium</i> L.	.	.	.	.	+	.	+	.	.	.	.	.
302	<i>Vinca minor</i> L.	.	.	.	+	.	.	.	.	.	.	.	.
303	<i>Viola mirabilis</i> L.	.	.	.	+	.	.	.	.	+	.	.	.
304	<i>Viola palustris</i> L.	+	.	.	.	.	.	.	.	.	.	.	.
305	<i>Viola reichenbachiana</i> Jord. ex Boreau	+	+	+	+	.	+	+	+	.	.	.	.
306	<i>Viola riviniana</i> Rehb.	+	+	.	+	.	.	+	.	.	.	.	.

3. *Dactylorhiza incarnata* (Druce) Soó. – it was quoted by KUROWSKI (1986) and NOWAKOWSKA (2000 a); during our studies it was not found,
4. *Dactylorhiza maculata* (L.) Soó. – it was quoted by MOWSZOWICZ et AL. (1967) in compartments 221 and 222, and by KUROWSKI (1986); during our studies, it was not found,
5. *Dactylorhiza majalis* (Rchb.) P.F. Hut & Summers. – it was quoted by MOWSZOWICZ et AL. (1967) in compartments 221 and 222, and by KUROWSKI (1986); during our studies it was not found,
6. *Daphne mezereum* L. – it is present in compartment 221a, b, c,
7. *Epipactis helleborine* (L.) Crantz. – it is present in compartment 221b,
8. *Hepatica nobilis* Schleb. – it is common in the reserve; it is present in compartments 221a, b, c and 222a,
9. *Huperzia selago* (L.) Bernh. ex Schrank & Mart. – it was found in the southern part of compartment 221b, not far from a feeding rack; in the reserve this species was mentioned earlier by NOWAKOWSKA (2000 b) without a definite indication of locality; the distribution of this species in Central Poland was presented by KUCHARSKI and KURZAC (1996),
10. *Neottia nidus-avis* (L.) Rich. – it was quoted by NOWAKOWSKA (2000 a); during our studies it was not found,
11. *Platanthera bifolia* (L.) Rich. – it was quoted by MOWSZOWICZ et AL. (1967, in compartments 221 and 222) and by KUROWSKI (1986); during our studies it was not found,
12. *Platanthera chlorantha* (Custer) Rchb. – it was quoted by KUROWSKI (1986); during our studies, it was not found,
13. *Trollius europaeus* L. – it is present in compartment 222b; it was quoted by MOWSZOWICZ (1964) and KUROWSKI (1986).

In the nature reserve, the following plants are covered by partial protection:

1. *Asarum europaeum* L. – it is common in the whole reserve,
2. *Convallaria majalis* L. – it is present in compartment 222a,
3. *Fragula alnus* Mill. – it is present in compartment 221b,
4. *Galium odoratum* (L.) Scop. – it is common in the whole reserve,
5. *Hedera helix* L. – it is present in compartments 221a, b, 222a and c; flowering specimens were found in the reserve by CZYŻEWSKA (1972),
6. *Ribes nigrum* L. – it was found in compartments 221a, b, 222 a and c,
7. *Viburnum opulus* L. – it was present in compartments 221b and 222a,
8. *Vinca minor* L. – it was found in compartment 222a.

On the terrain of the reserve, MOWSZOWICZ et AL. (1967) and KUROWSKI (1986) reported the presence of one species from the list of threatened species in Poland (ZARZYCKI and SZELĄG 2006): *Carex davalliana* Sm. (V threat category). During our studies it was not found.

In the nature reserve, there exist 30 rare species in the regional scale of Central Poland (JAKUBOWSKA-GABARA and KUCHARSKI 1999; Fig. 3. Table 2).

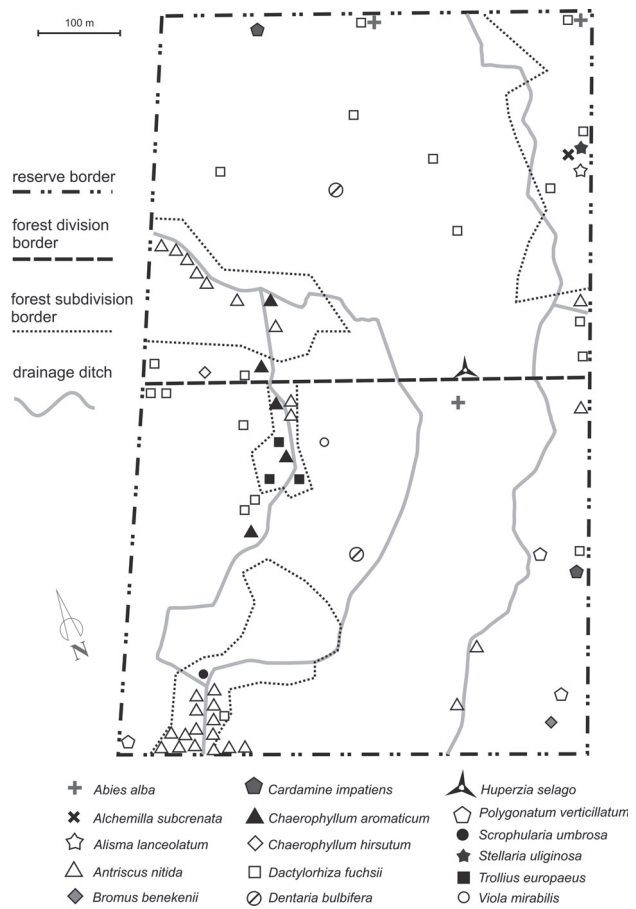


FIG. 3. Distribution of selected rare species for Central Poland on the area of the "Dębowiec" nature reserve

Among floristic originalities of the reserve, one can mention mountain species which sporadically occur on lowlands (ZAJĄC 1996). Among them, the following ones have been recorded (Fig. 4): *Abies alba*, *Acer pseudoplatanus*, *Anthriscus nitida*, *Chaerophyllum hirsutum*, *Huperzia selago*, *Polygonatum verticillatum*, *Ribes alpinum*, *Sambucus racemosa* and *Valeriana sambucifolia*.

Forest ecosystems of the nature reserve are free of expansive neophytes (Fig. 5). Only on forest borders, along the eastern fringe of the object, single specimens of *Quercus rubra* (in compartment 222a) have been recorded. On the road adjoining compartment 221a, the following plants are present: *Galinsoga ciliata*, *Juncus tenuis*, *Oxalis fontana*, *Conyza canadensis*. They represent a component which develops here fragmentarily in the phytocenosis *Prunello-Plantaginetum* Faliński 1963.

On the border between the compartments, also from the eastern side, there is a big cluster of *Solidago canadensis*. Its occurrence together with *Oxalis fontana* was already earlier reported by OLACZEK and SOWA (1972). The only kenophyte observed inside the forest complex is *Epilobium ciliatum*. It has been observed on a meadow on a blown down tree. The appearance of this species is rather an accidentally sown specimen thanks to

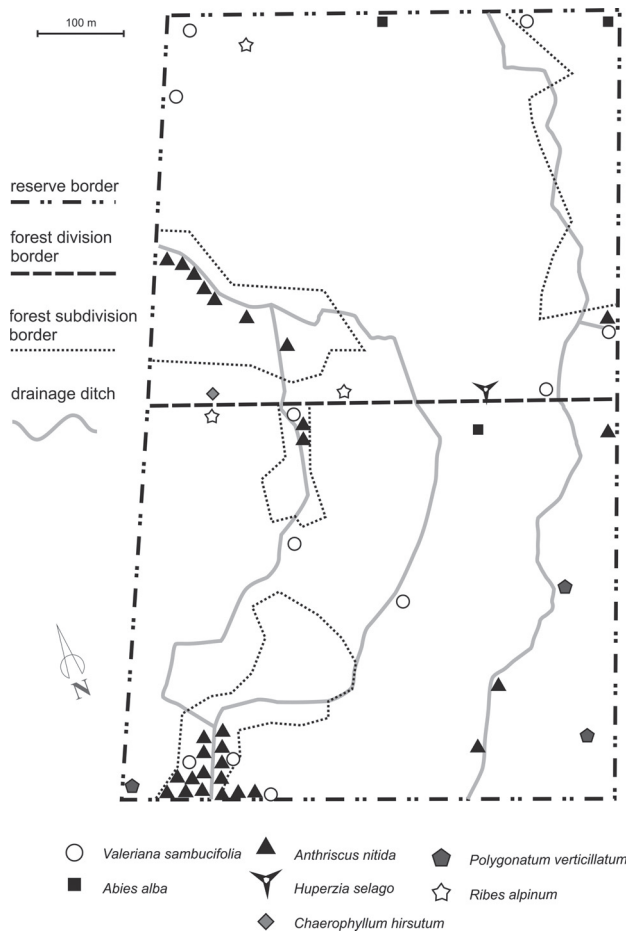


FIG. 4. Distribution of mountain species in the "Dębowiec" nature reserve

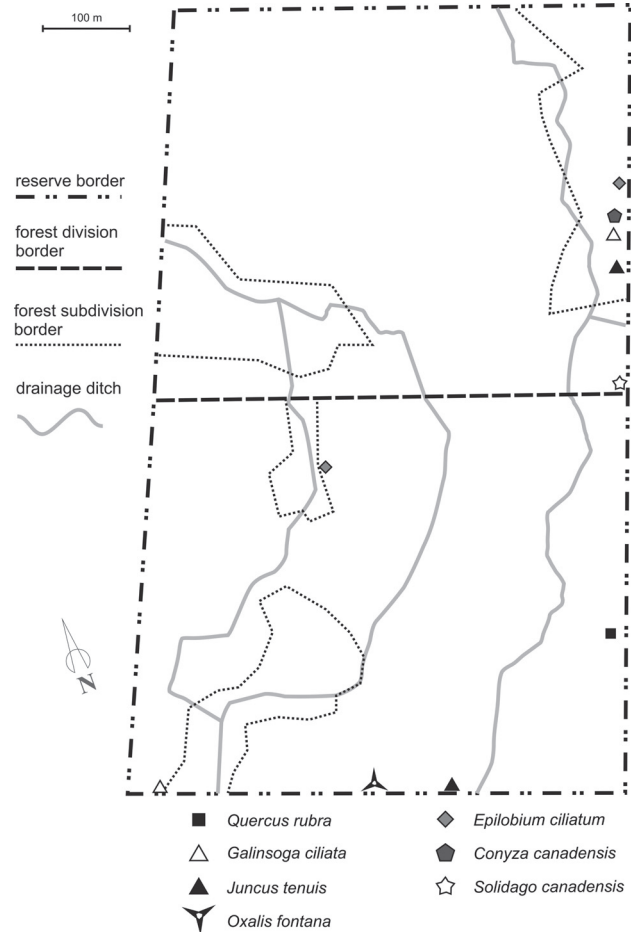


FIG. 5. Distribution of kenophytes in the "Dębowiec" nature reserve

TABLE 2. List of threatened vascular plants in the "Dębowiec" nature reserve [acc. to the list of JAKUBOWSKA-GABARA and KUCHARSKI (1999) for Central Poland]

Threat category	Name of species
CR	<i>Alisma lanceolatum</i> , <i>Carex davalliana</i>
EN	<i>Dactylorhiza maculata</i>
VU	<i>Alchemilla subcrenata</i> , <i>Dactylorhiza fuchsii</i> , <i>D. incarnata</i> , <i>Dentaria bulbifera</i> , <i>Huperzia selago</i> , <i>Neottia nidus-avis</i> , <i>Ophioglossum vulgatum</i> , <i>Platanthera bifolia</i> , <i>P. chlorantha</i> , <i>Poa remota</i> , <i>Thalictrum flavum</i> , <i>Trollius europaeus</i>
LRnt	<i>Anthriscus nitida</i> , <i>Cardamine impatiens</i> , <i>Cirsium rivulare</i> , <i>Dactylorhiza majalis</i> , <i>Polygonatum verticillatum</i> , <i>Stellaria uliginosa</i>
LRlc	<i>Abies alba</i> , <i>Bromus benekenii</i> , <i>Chaerophyllum aromaticum</i> , <i>Circaea alpina</i> , <i>Lathraea squamaria</i> , <i>Listera ovata</i> , <i>Scrophularia umbrosa</i>
DD	<i>Chaerophyllum hirsutum</i> , <i>Viola mirabilis</i>

favourable light conditions (tree stands are not shaded from the meadow side). In the surrounding of the reserve from the eastern side (e.g. in compartment 225), there occurs a great number of *Erechtites hieracifolia*. This southern species spreads rather quickly on forest areas in lighted localities, like clearings or forest skirts (GÓRSKI et AL. 2003).

CONCLUSIONS

1. "Dębowiec" nature reserve was created for scientific and didactic purposes; a multilayer mixed forest of natural origin with a high participation of *Abies alba*.

2. In the floristic composition of the reserve, the core consists of species connected with shadowed deciduous forests. A high participation is also observed here by apophytes of non-forest assemblies among which meadow apophytes constitute the most numerous group.

3. Vascular flora consisting of 306 species of vascular plants includes the following mountain species: *Abies alba*, *Acer pseudoplatanus*, *Anthriscus nitida*, *Chaerophyllum hirsutum*, *Huperzia selago*, *Polygonatum verticillatum*, *Ribes alpinum*, *Sambucus racemosa* and *Valeriana sambucifolia*.

4. It must be mentioned that there occur 21 protected species and 29 rare species in the regional scale of Central Poland.

5. The presented detailed elaboration of the vascular flora in the "Dębowiec" nature reserve will constitute the basis for future tracing of changes which will take place in the successive years in the forest plants of the protected object.

6. In our opinion, it is necessary to undertake every effort to preserve the naturalness of the phytocenoses of "Dębowiec" nature reserve in its actual state because this object, according to prof. R. Olaczek and prof. R. Sowa, "represents one of the most valuable forest reserves on the Polish lowland" (OLACZEK and SOWA 1981).

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