



MOSSES IN THE “DĘBOWIEC” NATURE RESERVE IN CENTRAL POLAND

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ABSTRACT. The study presents a list of 67 taxa of mosses in the “Dębowiec” Nature Reserve. A high degree of preservation of forest ecosystems in the object is manifested by the abundant epiphytic flora, including species considered rare on the national scale (with relics of the primeval virgin forests in the lowland) and the absence of bryoneophytes.

KEY WORDS: mosses, nature reserves, Dębowiec

INTRODUCTION

The “Dębowiec” Nature Reserve was established for the protection and maintenance of broad-leaved forest ecosystems, i.e. oak-hornbeam forests with large-leaved lime (on its northern limit of the European range) and elm-ash oak-hornbeam forests. Since the beginning of its existence, i.e. since 1965, it has been of particular interest as an object of geobotanical studies (MOWSZOWICZ 1964, MOWSZOWICZ *et al.* 1967, CZYŻEWSKA 1972, OLACZEK and SOWA 1972, 1981, OLACZEK 1998, NOWAKOWSKA 2000 a, b). Bryological studies in this area were conducted by URBANEK (1965, 1966 a, b, c, 1969) and KLAMA *et al.* (1999, 2005).

The list of mosses published to date for the “Dębowiec” Nature Reserve includes 33 species (KLAMA *et al.* 1999). However, the cited authors concluded that the number of mosses in the object is 62 and at the same time indicated that there are complete, unpublished herbarium materials stored at the Herbarium of the Department and the Laboratory of Pharmaceutical Botany of the Silesian University of Medicine at Sosnowiec (SOSN).

This study was a result of a detailed survey of the plant cover in the object, conducted by researchers of the Department of Botany of the Poznań University of Life Sciences, which constituted the foundation for the preparation of the protection plan. Results of these investigations have already been partly published (KLAMA *et al.* 2005).

GENERAL CHARACTERISTICS OF THE RESERVE

The “Dębowiec” Nature Reserve was established on the power of the Ordinance of the Minister of Forestry and Wood Industry of 20 October 1965 (Monitor Polski

no. 63, item 352 of 1965) and retained by the Ordinance no. 2/2001 of the Governor of the Łódzkie Province of 2 October 2001 on the publication of a list of nature reserves located in the Łódzkie province established by 31 December 1998 (Dziennik Urzędowy Województwa Łódzkiego, no. 206, item 2976).

The object is located in the Łódzkie province, in the Radomsko county, the Żytno commune. It includes whole areas of forest divisions 221 and 222. They comprise the following subdivisions: 221a, b, c and 222a, b, c (Fig. 1). The entire area of the reserve is owned by the State Treasury and it is managed by the State Forests National Forest Holding – the Gidle Forest Inspectorate.

In the regionalization classification by KONDRACKI (1998) the reserve is located in the Małopolska Upland, in the Włoszczowa Basin. In terms of the geobotanical division of Poland (SZAFFER 1977) the analysed object is located in the Euro-Siberian Land, the Central European Lowland-Upland Province, the Baltic Division, the Central Upland Belt Subdivision, the Świętokrzyska Region and the Transition District. According to the nature and forest regionalization classification (TRAMPLER 1990) the reserve is located in the Małopolska Region and the Świętokrzyskie Mountains Province.

MATERIAL AND METHODS

Field studies were conducted in 2004. Mosses were inventoried at 35 randomly selected locations in the reserve (Fig. 2). The reserve was thoroughly surveyed to verify the potential presence of neophytic mosses (OCHYRA 1983, GÓRSKI and URBAŃSKI 2005), which were not found. The nomenclature of species was adopted after OCHYRA *et al.* (2003).

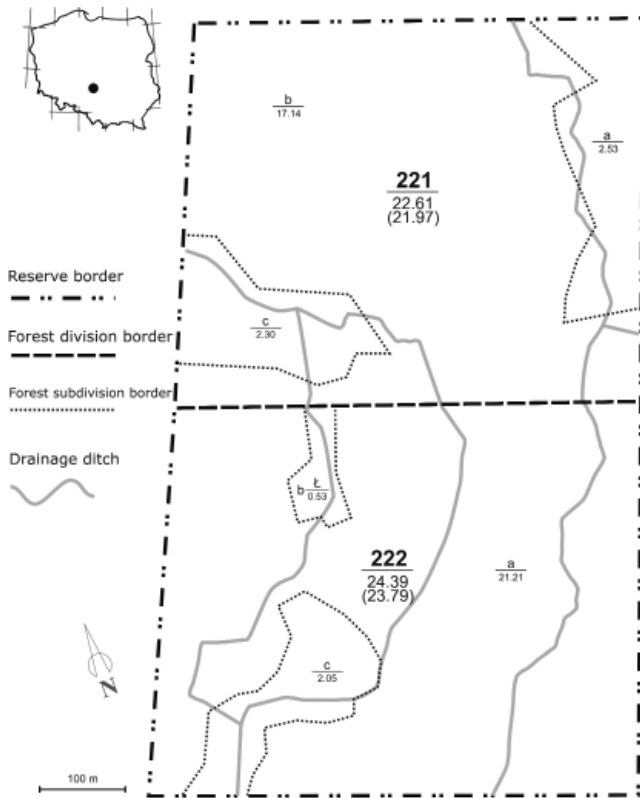


FIG. 1. Survey map of the "Dębowiec" Nature Reserve

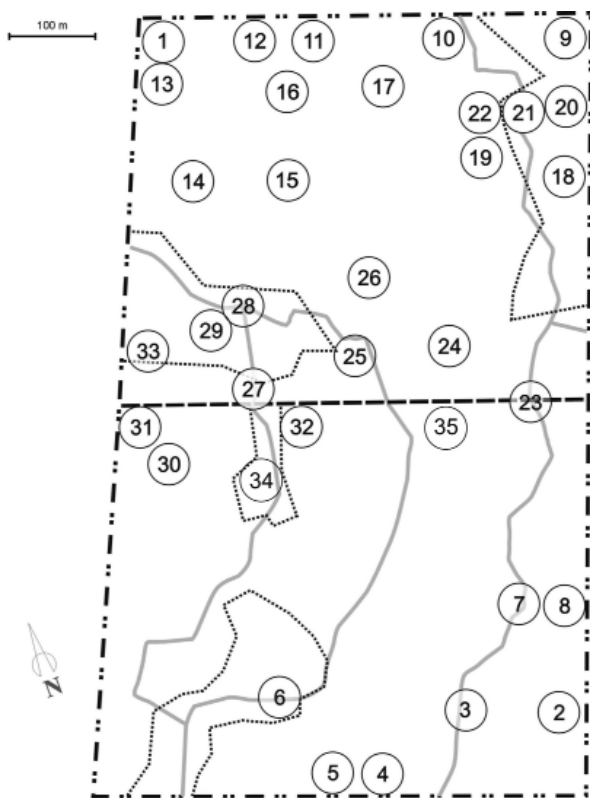


FIG. 2. Locations of moss collection sites in the "Dębowiec" Nature Reserve

RESULTS

General characteristic of moss flora in the reserve

As a result of field studies 63 moss taxa were inventoried. Four species, i.e. *Ceratodon purpureus*, *Plagiothecium curvifolium*, *Pleurozium schreberi*, and *Rhytidiadelphus squarrosus*, previously reported in a study by KLAMA et AL. (1999), were not found. Jointly, taking into consideration all available data it was assumed that the flora of mosses in the "Dębowiec" reserve comprises 67 taxa, including 66 in the rank of species.

A unique feature of this object is the epiphytic flora of mosses. It is exceptional not only in terms of the species composition (*Anomodon longifolius*, *Anomodon viticulosus*, *Homalia trichomanoides*, *Neckera complanata*, *Isothecium alopecuroides*, *Leucodon sciuroides*, *Orthodicranum tauricum*), but also due to their abundant occurrence. The above mentioned mosses are components of the *Anomodonto-Leucodontetum* Wiśniewski 1930 association, common in the reserve.

A list of species

Legend: following the name of a species the position is given in terms of collection sites (see: Fig. 2).

- Amblystegium serpens* (Hedw.) Schimp. – 26
Anomodon longifolius (Schleich. ex Brid.) Hartm. – 3, 10, 28
Anomodon viticulosus (Hedw.) Hook. & Taylor – 3, 16, 28
Atrichum undulatum (Hedw.) P. Beauv. – 1, 3, 4, 7, 9, 12, 14, 22, 24, 25, 28, 30
Aulacomnium androgynum (Hedw.) Schwaegr. – 12
Brachytheciastrum velutinum (Hedw.) Ignatov & Huttenen – 1, 2, 3, 9, 26
Brachythecium rivulare Schimp. – 1, 7
Brachythecium rutabulum (Hedw.) Schimp. – 1, 2, 3, 6, 10, 15, 17, 18, 23, 26, 27, 28, 31
Brachythecium salebrosum (Hoffm. ex F. Weber & D. Mohr) Schimp. – 15, 30
Calliergon cordifolium (Hedw.) Kindb. – 29
Calliergonella cuspidata (Hedw.) Loeske – 1, 2, 6, 10, 12, 13, 16, 17, 28, 31
Ceratodon purpureus (Hedw.) Brid – literature data: KLAMA et AL. (1999)
Cirriphyllum piliferum (Hedw.) Grout – 4
Climacium dendroides (Hedw.) F. Weber & D. Mohr – 1, 6, 8, 10, 17, 28
Cratoneuron filicinum (Hedw.) Spruce – 27
Dicranella heteromalla (Hedw.) Schimp. – 4, 9, 14, 30
Dicranum scoparium Hedw. – 1, 5, 12, 16, 29
Drepanocladus aduncus (Hedw.) Warnst. – 17
Eurhynchiastrum pulchellum (Hedw.) Ignatov & Huttenen – 25
Eurhynchium angustirete (Broth.) T.J. Kop. – 1, 3, 7, 9, 10, 12, 14, 15, 16, 17, 20, 22, 24, 25, 27, 28, 31
Fissidens adianthoides Hedw. – 3, 6, 10, 25, 27
Fissidens taxifolius Hedw. – 3, 7, 22, 24, 27
Fontinalis antipyretica Hedw. – 7, 21, 23
Herzogiella seligeri (Brid.) Z. Iwats. – 1, 6, 9, 10, 13, 14, 16, 1, 25, 28
Homalia trichomanoides (Hedw.) Schimp. – 1, 2, 6, 10, 12, 14, 15, 16, 18, 19, 22, 23, 24, 25, 26, 27, 29, 31

Homalothecium sericeum (Hedw.) Schimp. – 3
Hypnum cupressiforme Hedw. var. *cupressiforme* – 1, 2, 3, 5, 7, 9, 10, 11, 12, 14, 16, 17, 18, 20, 22, 24, 25, 26, 27, 28, 30, 31
Hypnum cupressiforme Hedw. var. *filiforme* Brid. – 11, 24
Hypnum pallescens (Hedw.) P. Beauv. – 2, 3, 7, 9, 14, 15, 20, 24, 26, 27, 30, 32
Isothecium alopecuroides (Lam. ex Dubois) Isov. – 2, 3, 8, 9, 10, 11, 14, 15, 16, 19, 20, 22, 24, 25, 26
Leptodictyum riparium (Hedw.) Warnst. – 1, 10, 17, 23
Leucobryum glaucum (Hedw.) Ångstr. – 12
Leucodon sciurooides (Hedw.) Schwaegr. – 10, 19, 23, 28
Mnium hornum Hedw. – 6, 10, 12, 13, 16, 17, 23
Mnium stellare Reichenbach ex Hedw. – 2, 6, 21, 29
Neckera complanata (Hedw.) Huebener – 3, 10, 19, 23, 31
Orthodicranum montanum (Hedw.) Loeske – 2, 4, 5, 6, 7, 9, 12, 14, 16, 19, 24, 26, 29, 30
Orthodicranum tauricum (Sapjegin) Smirnova – 17, 23
Orthotheciella varia (Hedw.) Ochyra – 3, 6, 7, 10, 17, 27, 28
Oxyrrhynchium hians (Hedw.) Loeske – 3, 7, 12, 15, 19, 25
Oxyrrhynchium speciosum (Brid.) Warnst. – 24, 25
Plagiomnium affine (Blandow ex Funck) T.J. Kop. – 14
Plagiomnium cuspidatum (Hedw.) T.J. Kop. – 1, 2, 6, 9, 12, 14, 15, 16, 17, 18, 20, 23, 25, 26, 27, 28, 31
Plagiomnium elatum (Bruch & Schimp.) T.J. Kop. – 34
Plagiomnium medium (Bruch & Schimp.) T.J. Kop. – 9, 35
Plagiomnium undulatum (Hedw.) T.J. Kop. – 2, 3, 6, 7, 10, 12, 15, 16, 17, 21, 25, 27, 28, 31
Plagiothecium cavifolium (Brid.) Z. Iwats. – 14, 24, 26
Plagiothecium curvifolium Schlieph. ex Limpr. – literature data: KLAMA et AL. (1999)
Plagiothecium denticulatum (Hedw.) Schimp. – 1, 4
Plagiothecium laetum Schimp. – 15, 30
Plagiothecium latebricola Schimp. – 13, 15
Plagiothecium nemorale (Mitt.) A. Jaeger – 2, 3, 6, 9, 24, 25, 26, 27
Platygyrium repens (Brid.) Schimp. – 3, 6, 7, 9, 11, 12, 18, 19, 27, 28, 31
Pleurozium schreberi (Willd. ex Brid.) Mitt. – literature data: KLAMA et AL. (1999)
Pohlia nutans (Hedw.) Lindb. – 2, 9, 12
Polytrichastrum formosum (Hedw.) G.L. Sm. – 1, 3, 4, 5, 6, 9, 10, 14, 16, 20, 24, 26, 29
Polytrichastrum longisetum (Brid.) G.L. Sm. – 12
Polytrichum juniperinum Hedw. – 12
Rhizomnium punctatum (Hedw.) T.J. Kop. – 2, 6, 12, 14, 16, 17, 18, 21, 25, 29, 31
Rhytidiadelphus squarrosus (Hedw.) Warnst. – literature data: KLAMA et AL. (1999)
Rhytidiadelphus triquetrus (Hedw.) Warnst. – 12
Rosulabryum capillare (Hedw.) J.R. Spence – 2, 6
Rosulabryum laevifillum (Syed) Ochyra – 4, 27
Sanionia uncinata (Hedw.) Loeske – 33
Sciuro-hypnum oedipodium (Mitt.) Ignatov & Huttenen – 3, 26
Tetraphis pellucida Hedw. – 2, 6, 9, 12, 16
Thuidium tamariscinum (Hedw.) Schimp. – 9, 10, 12, 13, 14, 17, 18, 20

CONCLUDING REMARKS

1. The "Dębowiec" Nature Reserve is characterised by a high degree of natural character of forest ecosystems. In the flora of mosses found in the object we need to stress the absence of neophytic species as well as the presence of the so-called relics of primeval virgin forests in the lowland (according to CIEŚLIŃSKI et AL. 1996). This group is represented here by *Anomodon longifolius*, *A. viticulosus* and *Homalia trichomanoides*.

2. The analysed area is the site where grow endangered bryophytes, listed in the national Red Data Books of species (ŻARNOWIEC et AL. 2004, KLAMA 2006). These include a moss *Anomodon longifolius* and a previously reported liverwort *Porella platyphylla* (KLAMA et AL. 2005).

3. An indicator of the high degree of naturalness of forest ecosystems in the "Dębowiec" reserve is the abundant epiphytic flora of bryophytes. Future protection activities in the object need to be first of all directed at the preservation of the current high moisture content in the forest ecosystems. It needs to be added here that in the lowland epiphytes are a group of plants disappearing from forests (KLAMA 2003, 2004, ŻARNOWIEC 2003).

4. The "Dębowiec" Nature Reserve is also a location where a group of species covered by strict species protection are found (*Anomodon longifolius*, *A. viticulosus*, *Homalia trichomanoides*, *Neckera complanata*) as well as those covered by partial protection (*Calliergonella cuspidata*, *Climacium dendroides*, *Dicranum scoparium*, *Eurhynchium angustirete*, *Leucobryum glaucum*, *Pleurozium schreberi*, *Rhytidiadelphus squarrosus*, *Rhytidiadelphus triquetrus*, *Thuidium tamariscinum*).

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