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NEW, RARE AND NOTEWORTHY SPECIES OF LICHENS AND LICHENICOLOUS FUNGI FROM BIAŁOWIEŻA FOREST

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K e y w o r d s: lichenized fungi, lichenicolous fungi, new records, Białowieża National Park, Eastern Poland.

A b s t r a c t

Białowieża Forest is the best preserved piece of mixed deciduous forest on European lowland. Owing to large number of old trees and large amounts of dead wood this forest became the refuge for arboreal and xylophilous organisms. In this paper 26 particularly interesting species of lichens and lichenicolous fungi are presented. Nine of these species are very rare in Poland and seven of them are new to Białowieża Forest: *Lecanora compallens, Lichenomphalia umbellifera, Pachyphiale fagicola, Phaeosporobolus usneae, Rinodina degeliana, Trapelia corticola* and *Vouauxiella lichenicola*.

NOWE, RZADKIE ORAZ INTERESUJĄCE GATUNKI POROSTÓW I GRZYBÓW NAPOROSTOWYCH W PUSZCZY BIAŁOWIESKIEJ

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S ł o w a k l u c z o w e: grzyby zlichenizowane, grzyby naporostowe, rzadkie gatunki, nowe notowania, Białowieski Park Narodowy, Wschodnia Polska.

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Abstrakt

Puszcza Białowieska jest najlepiej zachowanym fragmentem mieszanych lasów liściastych na niżu Europy. Ze względu na dużą liczbę starych drzew oraz dużą ilość martwego drewna las ten stał się ostoją dla wielu organizmów epifitycznych i ksylofitów. W artykule zaprezentowano 26 szczególnie interesujących gatunków porostów i grzybów naporostowych. Dziewięć gatunków jest bardzo rzadkich w Polsce, a siedem – nowych w Puszczy Białowieskiej: *Lecanora compallens, Lichenomphalia umbellifera, Pachyphiale fagicola, Phaeosporobolus usneae, Rinodina degeliana, Trapelia corticola* i *Vouauxiella lichenicola*.

Introduction

Białowieża National Park is one of the oldest national parks in Poland. Its strictly protected core zone (4747 ha) covers the best preserved part of Białowieża Forest – the fragment of the most natural forest on lowland of Europe. It has primary character, which centuries ago extended over zone of deciduous and mixed forests. Over half of the National Park area (53%) is occupied by fertile oak-linden-hornbeam forest of the *Tilio-Carpinetum* type. Depending on habitat fertility and soil humidity woodstands of this forest type can be deciduous or mixed deciduous-spruce. Streams and river valleys are overgrown by streamside alder-ash forest *Fraxino-Alnetum* and periodically flooded land depressions by black alder bog forest *Ribeso nigri-Alnetum*. These wet deciduous forest communities cover about 15% of the National Park. The rest of the area is occupied by mixed and coniferous forests (PAWLACZYK 2009).

Białowieża National Park is characterized by a high biological diversity of animals (*Catalogue of the fauna...* 2001), plants (SOKOŁOWSKI 1995), macrofungi (KUJAWA 2009) and lichens. In this area 268 species of lichens have been found so far (CIEŚLIŃSKI 2010).

In the last decade intensity of research on the distribution of lichens and lichenicolous fungi in Poland increased noticeably, using new methods and technologies. As a result, many new lichen species were described. Currently, in Białowieża Forest are known 450 taxons of lichens and about 40 species of lichenicolous fungi (CIEŚLIŃSKI 2003, 2010, KUKWA 2005a, KUKWA, CZARNOTA 2006, KUKWA, JABŁOŃSKA 2008, KUKWA et al. 2008, 2010, KUKWA, FLAKUS 2009).

During the recent studies conducted in Białowieża National Park several interesting species of lichens and lichenicolous fungi were found. Some of them were already known from the area, but only on single sites. Recent studies show that they are much more frequent. Among these are new species, not only for Białowieża National Park, but also for the whole complex of Białowieża Forest.

Materials and Methods

The material was collected during field studies conducted in 2010–2011 in various parts of Białowieża National Park (Białowieża Forest, NE Poland). All specimens were observed with stereomicroscope at first. The chemical analyses were carried out using thin layer chromatography (TLC) according to ORANGE et al. (2001).

In the list of species, the following abbreviations have been used: 'BNP' – Białowieża National Park, 'f.s.' – forest section. All recorded sites are located in the ATPOL grid square system (CIEŚLIŃSKI, FAŁTYNOWICZ 2003). Lichenicolous fungi are marked with an asterisk (*), saprobic fungus is marked with a cross (+), and taxa new to Białowieża Forest are marked with an exclamation point (!).

The phytosociological nomenclature of forest habitats in which species were found follows MATUSZKIEWICZ (2001), with exception of *Sphagno-Betuletum pubescentis* (SOKOŁOWSKI 1993). The nomenclature of lichen species follows SMITH et al. (2009), and lichenicolous fungi follows CZYŻEWSKA and KUKWA (2009). The specimens are deposited in the herbarium at the Jan Kochanowski University (KTC).

List of species

Cladonia norvegica Tønsberg & Holien

This species is similar to *Cladonia macilenta*. Its podetia are grey-blue, pointed at apices and often curved. Basal squamules are small, grey-blue, elongate, finely divided and rarely sparingly sorediate below (SMITH et al. 2009). Superficial red spots on basal squamules are characteristic of *Cladonia norvegica*. It grows mostly on soil and on the trunk of *Betula* and *Picea* in old, humid forest ecosystems.

The species is rarely reported from Poland. It belongs to indicators of lowland old-growth forests (CZYŻEWSKA, CIEŚLIŃSKI 2003). In the NE part of the country it has been reported from only three localities (CIEŚLIŃSKI 2003, CZYŻEWSKA et al. 2005). The species so far is known in Białowieża National Park from one site (KUKWA et al. 2008).

Specimens examined: BNP **[Cg55]**: on the base of trunk of *Betula pendula* in *Sphagno-Betuletum pubescentis*, f.s. no. 316B/D, 29.04.2011; on the base of trunk of *Betula pendula* in *Sphagno-Betuletum pubescentis*, f.s. no. 317C, 29.04.2011.

Clypeococcum hypocenomycis D. Hawksw.

This species is quite frequent in Poland (CZYŻEWSKA, KUKWA 2009). It has also been reported in Białowieża National Park (KUKWA 2005a, KUKWA, CZARNOTA 2006).

Specimens examined: BNP **[Cg55]**: on thallus of *Hypocenomyce scalaris* growing on lignum in *Serratulo-Pinetum*, f.s. no. 256B, 11.05.2010; **[Cg56]**: on the thallus of *Hypocenomyce scalaris* growing on *Alnus glutinosa* in *Ribeso nigri-Alnetum*, f.s. no. 258B, 12.05.2010.

Epicladonia sandstedei (Zopf) D. Hawksw.

This lichenicolous fungus grows on squamules and podetia of *Cladonia* species, and forming the characteristic galls containing punctate dark brown pycnidia.

This species is known from few localities in Białowieża Forest and Białowieża National Park (KUKWA, JABŁOŃSKA 2008, KUKWA et al. 2010).

Specimens examined: BNP **[Cg55]**: on podetia and squamules of *Cladonia coniocraea* growing on trunk of *Alnus glutinosa*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; on squamules of *Cladonia coniocraea* growing on lignum in *Serratulo-Pinetum*, f.s. no. 256B, 11.05.2010.

Fellhanera gyrophorica Sérus., Coppins, Diederich & Scheidegger

It is characterized by a corticolous thallus, which may also grow on corticolous mosses, forming large, and conspicuous patches up to 2–3 cm across (SÉRUSIAUX et al. 2001). Diagnostic features are always present superficial large pycnidia, pinkish to pale orange-brown. Pycnidia react with C+ red, because of production of gyrophoric acid.

The species is known so far in Białowieża National Park from several sites (CIEŚLIŃSKI 2003, SPARRIUS 2003). Recent studies indicate that it is much more common. It grows both at the younger and at the older specimens of trees. *Fellhanera gyrophorica* is also common species in the Pojezierze Olsztyńskie Lakeland (KUBIAK 2011). This species belongs to indicators of lowland old-growth forests in Poland (CZYŻEWSKA, CIEŚLIŃSKI 2003).

Specimens examined: BNP **[Cg55]**: on trunk of *Quercus* sp. in *Querco-Piceetum*, f.s. no. 314A, 14.05.2010; on trunks of *Alnus glutinosa*, *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010; on trunk of *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 289C, 12.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 413A/C, 11.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 287C, 13.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 340D, 29.04.2011.

Fuscidea arboricola Coppins & Tønsberg

So far the species is known only from northern Poland (KUKWA et al. 2008, KUBIAK et al. 2010). From area of Białowieża National Park it has been reported for the first time by SPARRIUS (2003).

Specimens examined: BNP **[Cg55]**: on trunk of *Alnus glutinosa*, near Hwoźna river in *Ribeso nigri-Alnetum*, f.s. no. 256A, 08.05.2010; on trunk of *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010.

!*Lecanora compallens* Herk & Aptroot

This sorediate lichen species forms immersed thallus with punctiform soralia, soon aggregating into irregular patches, usually covering most of the thallus. The yellow, to slightly mint-green, soredia react with K+ yellow to yellow-brown (SMITH et al. 2009).

Characteristic features of the species are the chemistry, with substances usnic acid and zeorin, detectable by TLC. *Lecanora compallens* may be confused with the morphologically similar *Lecanora expallens*, common sorediate lichen in Poland, but these two taxa can be easily distinguished by their chemistry.

The species has been distinguished recently in Poland. In northern Poland it has been reported by KOWALEWSKA and KUKWA (2003), and KUBIAK et al. (2010). The species is new to Białowieża Forest.

Specimens examined: BNP **[Cg55]**: on trunks of *Quercus robur*, *Tilia cordata*, *Carpinus betulus*, *Populus tremula* and *Fraxinus excelsior* in *Tilio-Carpinetum*, f.s. no. 372, 05.2009.

Lecanora thysanophora R.C. Harris

This is a sorediate lichen species. Characteristic features of the species are the chemistry, with substances known as "thysanophora unknowns" detectable by TLC, and the conspicuous white, fibrous prothallus (compare KUKWA 2005b).

The species has been recorded for the first time in Białowieża National Park by KUKWA (2005b), as a result of taxonomic revision of herbarium historical materials of the *Haematomma ochroleucum* species. Recent researches conducted in Białowieża National Park indicate that the species is quite frequent both at the younger and at the older specimens of deciduous trees.

Specimens examined: BNP **[Cg55]**: on trunks of *Alnus glutinosa*, *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no 314C, 09.05.2010; on trunks of *Carpinus betulus* and *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 413A/C, 11.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 258B, 12.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 289C, 12.05.2010; on trunks of *Carpinus betulus* and *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 340D, 29.04.2011.

Lecidella flavosorediata (Vězda) Hertel & Leuckert

This is common lichen in northern Poland (KUKWA et al. 2008, KUBIAK et al. 2010). From area of Białowieża Forest it has been reported for the first time from Białowieża village by KUKWA et al. (2008). New to Białowieża National Park.

Specimen examined: BNP **[Cg55]**: on trunk of *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 372, 05.2009.

Lepraria elobata Tønsberg

The species is rather common in Poland (KUKWA 2006). It has been reported previously in Białowieża National Park by KUKWA (2002). *Lepraria elobata* is common in Białowieża National Park and it grows on various species of trees.

Specimens examined: BNP **[Cg55]**: on trunk of *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010; on trunks of *Carpinus betulus* and *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 287C, 13.05.2010; on trunk of *Tilia cordata* and *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 340D, 29.04.2011; **[Cg56]**: on trunk of *Alnus glutinosa*, near Hwoźna river in *Ribeso nigri-Alnetum*, f.s. no. 258B, 12.05.2010.

Lepraria vouauxii (Hue) R.C. Harris

The species is rather common in Poland (KUKWA 2006). It has been reported previously in Białowieża National Park by KUKWA (2002). *Lepraria vouauxii* is common in Białowieża National Park. It grows on various species of trees but prefers older specimens.

Specimens examined: BNP **[Cg55]**: on trunks of *Fraxinus excelsior* and *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 258B, 12.05.2010; on trunk of *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; in the crown of trees of *Fraxinus excelsior* and *Tilia cordata*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 340C, 09.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010; on trunks of *Carpinus betulus* and *Acer platanoides* in *Tilio-Carpinetum*, f.s. no. 413A/C, 11.05.2010; **[Cg56]**: on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 289C, 12.05.2010.

!*Lichenomphalia umbellifera* (L.: Fr.) Redhead, Lutzoni, Moncalvo & Vigalys

The species is one of few lichens in Poland in which mycobiont is *Basidiomycota*. It is characterized by a dark green, granulate thallus *Botrydina*-type, which grows yellow-brown cap fruiting bodies (SMITH et al. 2009). *Lichenomphalia umbellifera* is known from north-eastern Poland (CZYŻEWSKA et al. 2005). It usually grows on soil, bryophytes, and on decaying stumps in shady places (FAŁTYNOWICZ 2003).

In Białowieża National Park the species has well developed fruiting bodies and grows in humid places on decaying wood. The species is new to Białowieża Forest.

Specimens examined: BNP **[Cg55]**: on lignum in *Sphagno-Betuletum pubescentis*, f.s. no. 316B/D, 29.04.2011; on lignum in *Sphagno-Betuletum pubescentis*, f.s. no. 317C, 29.04.2011; on lignum in *Tilio-Carpinetum*, f.s. no. 340A, 30.04.2011.

Monodictys epilepraria Kukwa & Diederich

This lichenicolous fungus is very frequent in Białowieża National Park. So far it has been recorded from this area from several localities (KUKWA, CZARNOTA 2006, KUKWA, JABŁOŃSKA 2008).

Specimens examined: BNP **[Cg55]**: on thallus of *Lepraria incana* growing on trunk of *Quercus robur* in *Tilio-Carpinetum*, f.s. no. 225, 08.05.2010; on thallus of *Lepraria incana* growing on trunks of *Alnus glutinosa* and *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; on thallus of *Lepraria incana* growing on lignum in *Serratulo--Pinetum*, f.s. no. 256B, 11.05.2010; on thallus of *Lepraria incana* growing on trunk of *Picea abies* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010; on thallus of *Lepraria incana* growing on trunks of *Carpinus betulus* and *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 287C, 13.05.2010; on thallus of *Lepraria incana* growing on trunk of *Quercus robur* in *Querco-Piceetum*, f.s. no. 314A, 14.05.2010; **[Cg56]**: on thallus of *Lepraria incana* growing on trunk of *Alnus glutinosa*, near Hwoźna river in *Ribeso nigri-Alnetum*, f.s. no. 258B, 12.05.2010; on thallus of *Lepraria incana* growing on trunks of *Fraxinus excelsior* and *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 258B, 12.05.2010.

!*Pachyphiale fagicola* (Hepp) Zwackh

This species is characterized by a crustose, superficial but thin, green-grey thallus and often more crowded darker brown apothecia. It is easily identified by the presence of *Trentepohlia* photobiont, and the shape and size of ascospores (SMITH et al. 2009).

In the study area *Pachyphiale fagicola* was growing in the company of: *Hypogymnia physodes, Parmelia sulcata, Ropalospora viridis, Physcia tenella, Ph. stellaris, Ph. adscendens* and *Melanelixia fuliginosa* subsp. *glabratula*. This is a very rare species in Poland, which is placed in the category Vulnerable (VU) at "Polish Red List" (CIEŚLIŃSKI et al. 2006). The species is new to Białowieża National Park and to Białowieża Forest.

Specimen examined: BNP **[Cg55]**: in the crown of tree of *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010.

Phaeopyxis punctum (A. Massal.) Rambold, Triebel & Coppins

The species forms black apothecia on squamules of *Cladonia* species, and produces non-septate ascospores.

The species has already been reported in Białowieża National Park from a few localities (KUKWA 2005a, KUKWA, CZARNOTA 2006, KUKWA et al. 2010).

Specimens examined: BNP **[Cg55]**: on squamules of *Cladonia coniocraea* and *Cladonia* sp. growing on lignum in *Serratulo-Pinetum*, f.s. no. 256B, 11.05.2010.

!*_Phaeosporobolus usneae_ D. Hawksw. & Hafellner

The specimens agree with the description by HAWKSWORTH and HAFELLNER (1986), and produces conidia 6–12 celled, overall 15–25 μm diam, and individual cell is 4–6 μm diam. In examined material are also conidia deviated in size, up to 10 μm in diam, or number of cells, up to 30 cells.

So far only *Phaeosporobolus alpinus* has been reported from Białowieża National Park (KUKWA et al. 2010). In Poland *Phaeosporobolus usneae* has been found only from the Świętokrzyskie Mts., but from the historical herbarium materials of lichens (ŁUBEK 2009). The species is new to Białowieża National Park and to Białowieża Forest.

Specimens examined: BNP **[Cg55]**: on thalli of *Bryoria fuscescens* and *Evernia prunastri* growing in the crown of tree of *Quercus robur* in *Querco-Piceetum*, f.s. no. 314A, 14.05.2010; on thalli of *Evernia prunastri* and *Ramalina farinacea* growing in the crown of tree of *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; on thalli of *Usnea filipendula* and *Ramalina farinacea* growing in the crown of tree of *Tilia cordata*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 340C, 09.05.2010.

***_Phoma cytospora_** (Vouaux) D. Hawksw.

The species has already been recorded in Białowieża National Park from one locality (KUKWA, FLAKUS 2009).

Specimens examined: BNP **[Cg55]**: on thallus of *Hypogymnia physodes* growing on lignum in *Serratulo-Pinetum*, f.s. no. 256B, 11.05.2010; **[Cg56]**: on thallus of *Hypogymnia physodes* growing on trunk of *Alnus glutinosa*, near Hwoźna river in *Ribeso nigri-Alnetum*, f.s. no. 258B, 12.05.2010.

Reichlingia leopoldii Diederich & Scheid.

The species previously described as a lichenicolous fungus growing on sterile powdery lichens, but later considered as lichenized fungus (*Hyphomycetes*) (APTROOT, SIPMAN 2001). From the north-eastern Poland *Reichlingia leopoldii* is known form Augustowska Forest and Biebrzański National Park (CZYŻEWSKA et al. 2005), and Pojezierze Olsztyńskie Lakeland (KUBIAK 2011). It is also known from Białowieża National Park (MOTIEJŪNAITĖ, CZYŻEWSKA 2008).

Specimens examined: BNP **[Cg55]**: on trunk of *Alnus glutinosa* in *Ribeso nigri-Alnetum*, f.s. no. 256A, near Hwoźna river, 08.05.2010; on trunks of *Fraxinus excelsior* and *Alnus glutinosa*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 413A/C, 11.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010; **[Cg56]**: on trunk of *Fraxinus excelsior* in *Tilio-Carpinetum*, f.s. no. 258B, 12.05.2010.

!*Rinodina degeliana* Coppins

The species is characterized by a whitish grey to greenish grey thallus, growing irregularly, and composed of compact or scattered areoles. Soralia of this species forming on the underside of raised areole margins, and they are concolourous with the thallus or lighter. Soralia react with PD+ intensive yellow, and with K+ yellow (SMITH et al. 2009).

Rinodina degeliana is currently known from 11 localities in northern and central parts of Poland (KUBIAK 2010). This is the first record of the species in whole Białowieża Forest.

Specimen examined: BNP **[Cg55]**: in the crown of tree of *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 340C, 09.05.2010.

Ropalospora viridis (Tønsberg) Tønsberg

This sterile, crustose species is very similar to *Fuscidea pusilla*, but it is easily to diagnose using TLC, by the presence of perlatolic acid as major substance (SMITH et al. 2009).

The species has already been reported on a few localities in Białowieża National Park by CIEŚLIŃSKI (2003) and SPARRIUS (2003).

Specimens examined: BNP **[Cg55]**: on trunks of *Tilia cordata* and *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 342B, 10.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 289C, 12.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 287C, 13.05.2010; on trunk of *Carpinus betulus* in *Tilio-Carpinetum*, f.s. no. 369A, 14.05.2010.

+*Sarea resinae* (Fr.) Kunze

This saprobic fungus is rarely reported from Poland (FAŁTYNOWICZ 2003, KOSSOWSKA et al. 2007). In Białowieża National Park it is known only recently on two sites (KUKWA et al. 2008).

Specimen examined: BNP **[Cg55]**: on resine of *Picea abies* in *Serratulo-Pinetum*, f.s. no. 256B, 11.05.2010.

Sclerophora pallida (Pers.) Y.J. Yeo & Spooner

The species is distinguished, from other species of the *Sclerophora* genus, by the smaller size and pale yellow or grey colour of the apothecia, and presence on young apothecia of yellow pruina (SMITH et al. 2009).

This is a very rare species in Poland, which is placed in the category Critically Endangered (CR) at "Polish Red List" (CIEŚLIŃSKI et al. 2006). The species has been previously reported in Białowieża National Park only from one site (CIEŚLIŃSKI 2003). During the present study it has been found on old *Fraxinus excelsior*, where it was growing in the company of *Bacidia rubella* and *Lepraria vouauxii*.

Specimen examined: BNP **[Cg55]**: in the crown of tree of *Fraxinus excelsior*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 340C, 09.05.2010.

!*Trapelia corticola* Coppins & P. James

This is usually sterile species. It is characterized by a thin, effuse, green to greenish brown thallus consisting of scattered areoles. Soralia are greenish, usually punctiform and markedly convex. Like other species of genus *Trapelia*, it reacts with C+ red (SMITH et al. 2009).

In Poland the species has been reported mainly from southern parts of Poland (CZARNOTA, KUKWA 2009), and only from one locality from northern Poland (ZALEWSKA 1998). It grows mostly on decaying wood, logs and stumps, and on the base of trees. The species prefers humid natural forest ecosystems. In some countries it is considered to be an indicator of ecological continuity of woodlands (COPPINS, COPPINS 2002).

Specimens found in Białowieża National Park were growing in humid places in fertile oak-linden-hornbeam forest, on the log in the company of other species: *Absconditella lignicola*, *Cladonia coniocraea*, *Placynthiella dasaea*, *P. icmalea* and *Micarea prasina*. These are the first known localities in Białowieża Forest.

Specimens examined: BNP **[Cg55]**: on log in *Tilio-Carpinetum calamagrostietosum*, f.s. no. 316/B, 29.04.2011; on log in *Tilio-Carpinetum*, f.s. no. 340D, 29.04.2011.

Tremella cladoniae Diederich & M. S. Christ.

The species has already been reported in Białowieża National Park from a few localities (KUKWA 2005a, KUKWA, FLAKUS 2009).

Specimens examined: BNP **[Cg55]**: on squamules of *Cladonia* sp. growing on trunk of *Alnus glutinosa*, near Orłówka river in *Fraxino-Alnetum*, f.s. no. 314C, 09.05.2010; on squamules of *Cladonia* sp. growing on lignum in *Serratulo-Pinetum*, f.s. no. 256B, 11.05.2010.

Tremella hypogymniae Diederich & M. S. Christ.

The species has already been reported in Białowieża National Park from a few localities (KUKWA 2005a, KUKWA, FLAKUS 2009).

Specimen examined: BNP **[Cg55]**: on thallus of *Hypogymnia physodes* growing on trunk of *Tilia cordata* in *Tilio-Carpinetum*, f.s. no. 287C, 13.05.2010.

Tremella lichenicola Diederich

The species has already been recorded in Białowieża National Park from one locality (KUKWA 2005a).

Specimen examined: BNP **[Cg55]**: on thallus of *Mycoblastus fucatus* growing on trunk of *Alnus glutinosa*, near Hwoźna river in *Ribeso nigri-Alnetum*, f.s. no. 256A, 08.05.2010.

!*Vouauxiella lichenicola* (Linds.) Petr. & Syd.

This species is scattered in Poland (FAŁTYNOWICZ 2003). It grows on apothecia and on thalli of different species of *Lecanora* genus. In Białowieża National Park it was growing on thallus of *Lecanora pulicaris*. The species is new to Białowieża Forest.

Specimen examined: BNP **[Cg56]**: on thallus of *Lecanora pulicaris* growing on twigs of *Alnus glutinosa*, near Hwoźna river in *Ribeso nigri-Alnetum*, f.s. no. 258B, 12.05.2010.

Conclusions

Intensive lichenological studies carried in different regions of Poland, including Białowieża Forest, provide new data on the occurrence of lichens and lichenicolous fungi. Each new and verified site is very important for the knowledge on habitat preferences and distribution of the species in Poland.

Despite the long period of lichenological studies in Białowieża Forest the knowledge about distribution and ecology of rare lichen species is still unsatisfactory. In the present study we report five species of lichens new for biota of this forest complex. Most of them are rare species, or of inconspicuous size, and they are often overlooked in the field, such as: *Lichenomphalia umbellifera, Pachyphiale fagicola, Rinodina degeliana* and *Trapelia corticola.* These species merit particular attention because of its rarity in Poland. Given the present data, known number of lichen species in Białowieża National Park (CIEŚLIŃSKI 2010) increased to 274, and in Białowieża Forest – to 455.

Lichenicolous fungi are poorly explored in Białowieża Forest. We report in this paper two new species of this group: *Phaeosporobolus usneae* and *Vouauxiella lichenicola,* which is an important supplement to the knowledge of their species richness and occurrence in the region. Given all previous data in Białowieża National Park so far have been recorded 30 species of lichenicolous fungi.

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