

Lichenized *Ascomycotina* of the Belchatów Industrial Region (Central Poland)

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181 taxa of lichenized *Ascomycotina* (including four species of lichenicolous fungi) occurring in the Belchatów Industrial Region (BIR) are described. They present the original state of lichen taxonomic diversity and their resources, before the strip brown coal mine and electric power station of BIR were put into operation.

Key words: Lichenized fungi (lichens); lichen biodiversity; Belchatów Industrial Region; Poland.

INTRODUCTION

The Belchatów Industrial Region (BIR) is a typically lowland area, whose plant cover has been much transformed by human impact. It is dominated by anthropogenic secondary communities (pine plantations, psammophilous grasslands, weeds) over natural communities (deciduous forests, pine forests, pine and oak mixed forests) (Czyżewska and Olaczek 1983; Czyżewska and Jakubowska-Gabara 1985).

As a result of constructing the "Belchatów" strip brown coal mine and electric power station and the impact of the respective depression crater this plant cover is much threatened (Fig. 1). As early as in the first years of the BIR construction a decrease in localities and resources of common species were observed. Till 1982 the greatest and irretrievable loss of the natural environment was the destruction of single or the only localities of rare lichens in the region or the whole country (cf. Czyżewska 1988/1989). No complete list of lichen taxa of the region has yet been published.

The aim of the study is to present the original state of taxonomic diversity and resources of the lichen flora of the Belchatów Industrial Region, before the mine and power station started working.

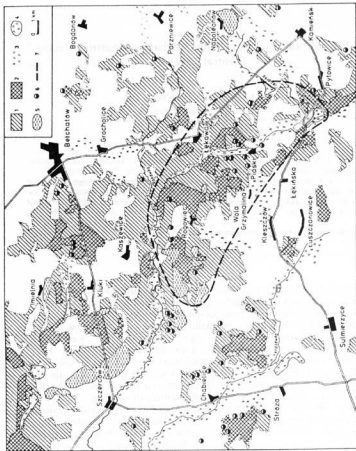


Fig. 1. Selected vegetation elements and the ranges of its changes and damages in the initial stage of the BIR construction (acc. to Czyżewska and Jakubowska-Gabara 1985)
 Vegetation: 1 — forest vegetation, 2 — forest natural vegetation, 3 — aquatic, of rushes and meadows in river valleys; 4 — ponds with aquatic and rush vegetation; pent-bog vegetation; 5 — of large areas, 6 — of small areas; 7 — extent of changes and damages in vegetation

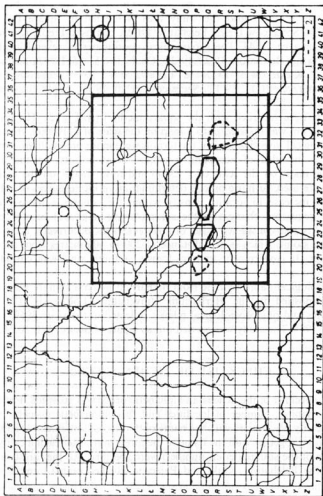


Fig. 2. The area of investigations in the regional grids
 1 — brown coal deposits; 2 — mine dumps

MATERIALS AND METHODOLOGICAL COMMENTS

Investigations were carried out in an area of 544 km² (Fig. 2). The object of the investigations is discussed by Czyżewska and Ołaczek (1983). In the ATPOL grid the study area is located in square DE, e.g. Parzno DE14, Szczerców DE23, Belchatów DE25, Łękińsko DE35, Kamięnsk DE36, Sulmierzyce DE44. The geographical coordinates of several localities are the following: Belchatów 51°22' 19°22', Chabielice 51°15' 19°07', Kamięnsk 51°13' 19°30', Kleszczów 51°13' 19°18', Łęka 51°17' 19°25', Łękińsko 51°13' 19°21', Sulmierzyce 51°11' 19°12', Szczerców 51°20' 19°07', Wola Grzymalina 51°15' 19°20'.

Lichens were recorded with the square method (cf. Fig. 2). The grid of squares 2 × 2 km was inserted onto a map on the scale of 1:100000. However, the lichenological investigations of the terrain were more precise than it might follow from the idea of accepting a square as a locality. In the fields, topographic maps on the scale of 1:25000 and forest maps, on the scale of 1:20000, were used for more precise determination of the resources of lichens. Due to the increase in locality density within the squares a more precise analysis of registered changes in the second study stage will be possible.

A locality was considered a site of a given species' occurrence, arbitrarily considered a point, which is at a distance of 200 to 500 metres from another closest point. In government (public) forests, a forest unit was considered a locality.

Lichenological data originate from herbarium materials (more than 1500 annexes) deposited in the Herbarium Universitatis Lodziensis (LOD-L), floristic notes and phytosociological relevés collected in the years 1969–1972 and 1976–1985. The study was carried out as a part of project WE 10.2.05.03.

A CHECKLIST OF LICHEN SPECIES

In the checklist of the lichens an alphabetic order was accepted. For each species the habitat, number of localities and their alphabetic checklist were given. A locality was named with the name of the closest settlement or name of its forest range, together with the name of the forest unit. After each locality the coordinates of the square (letter, number) were specified. All the forest ranges belong to the Belchatów, Kluki and Pajęczno (Siedlec range) forest inspectorates.

The nomenclature of lichenized *Ascomycotina* and lichenicolous fungi was used according to Czyżewska (1976), Christiansen (1980), Timdal (1984), Laundon (1992), Faltynowicz (1993), Nowak (1993), Randle and Saag (1993), Santesson

(1993), Scheidegger (1993) and Purvis et al. (1994). The nomenclature of species from genera *Peltigera* was revised by J. Miądlikowska (University of Gdańsk).

Abbreviations: dg. – degeneration form; distr. – forest district; for. – forest range; loc. – locality (-ties); n. – near; unit 124, 63c – number of forest unit; L24, P23 – number of squares after the squares net for Belchatów Industrial Region (Fig. 2); *Acer* – *Acer platanoides*; *Betula* – *Betula pendula*; *Fraxinus* – *Fraxinus excelsior*; *Juniperus* – *Juniperus communis*; *Pinus* – *Pinus sylvestris*; *Picea* – *Picea abies*; *Populus* – *Populus tremula*; *Tilia* – *Tilia cordata*; *A-Cal* – *Arctostaphylo-Callunetum*; *Cl-Cal* – *Cladonio-Callunetum*; *D-A* – *Diantho-Armerietum*; *S-Ct* – *Spergulo-Corynephorretum typicum*; *S-Ccl* – *Spergulo-Corynephorretum cladinetosum*; *S-Cth* – *Spergulo-Corynephorretum thymetosum serpyllii*; *F-Ko* – *Festuco-Koelerietum*; *R-Al* – *Ribonigri-Alnetum*; *C-Al* – *Circae-Alnetum*; *Cr-F* – *Carici remotae-Fraxinetum*; *Cl-Pin* – *Cladonio-Pinetum*; *L-Pin* – *Leucobryo-Pinetum*; *P-Q* – *Pino-Quercetum typicum*; *P-Qab* – *Pino-Quercetum abietetosum*; *Pa-Q* – *Potentillo albae-Quercetum*; *T-C* – *Tilio-Carpinetum*; *T-Ct* – *Tilio-Carpinetum typicum*; *T-Cab* – *Tilio-Carpinetum abietetosum*; *T-Cst* – *Tilio-Carpinetum stachyetosum*; * – lichenicolous fungi.

Acarospora fuscata (Schrad.) Th. Fr. – on erratic block by forest road.

1 loc.: Parzno for., unit 53 H26.

Amandinea punctata (Hoffm.) Coppins et Scheideg. – corticolous on *Quercus*, *Salix*, *Acer*, *Tilia*, *Populus*, *Fraxinus*, *Alnus*, *Ulmus*, *Aesculus*, *Pyrus*, *Malus* in *T-C*, on solitary trees, n. church, park and in orchard.

31 loc.: Belchatów-Grocholice L30; Dworszowice Pakoszowe U20; Fryszka n. Widawka River W34; Kluki L25; Kalduny n. Belchatów I31; Kmieczna S31; Lubiec II for., unit 76 I22; Lubiec J22; Łęka O31; Łękińsko R29; Parchliny P22; Parzno H26; Pytowice T33; Pytowiec for., units 199 S32, 212 T33; Roździn I25; Sadulaki for., units 184, 185, 186 L23; Siedlec for., units 59 U19, 68 W19; Słostowice T33; Słostowice for., unit 208 T32; Stróża R21; Stróża for., unit 24 P20; Sulmierzyce S24, T24; Szczerców L25; Wola Wydrzyna for., units 12i P23, 11j Q23; Wola Wydrzyna S28.

* *Athelia arachnoidea* (Berk.) Jülich – on *Scoliciosporum chlorococcum* or *Lecanora conizaeoides*, on *Abies*, *Carpinus*, *Pinus*.

5 loc.: Luszczanowice for., unit 167 S/T28; Stróża for., unit 23, 24 P20; Pytowiec for., unit 212 T32; Wola Wydrzyna for., unit 5 P23.

Arthonia byssacea (Weigel) Almq. – on *Fraxinus* in *C-Al*.

1 loc.: Wola Wydrzyna for., unit 7 P23.

A. spadicea Leight. – on young and old *Alnus* in *C-Al*, *Cr-F*, *R-Al*, *T-Cst*.

14 loc.: Kalduny n. Belchatów I31; Lubiec II for., unit 76 I22; Pytowiec for., unit 199 S32; Restarzew for., unit 333 I19; Sadulaki for., unit 176c L24; Siedlec for., units 59 U19, 69g W19; Stróża for., unit 24n P20, Wola Wydrzyna for., units 5f, 6g, 7, 11, 12 P23, 16 Q22.

Bacidia assulata (Körb.) Vězda – corticolous on old *Quercus* in *Pa-Q* dg.

1 loc.: Wola Wydrzyna for., unit 12j P/Q23.

B. globulosa (Flörke) Hafellner et V. Wirth in V. Wirth – corticolous on *Alnus* in *C-Al*.

1 loc.: Lubiec II for., unit 76 I22.

- B. rubella* (Hoffm.) A. Massal. — corticolous on *Salix*, *Populus*, *Quercus* and *Pyrus*.
4 loc.: Fryszka W34; Sadulaki for., unit 185 L23; Słostowice for., unit 252 U32; Wola Wydrzyna for., unit 11j Q23.
- Baeomyces rufus* (Huds.) Rebent. — terricolous on grassland in gravel-pit, roadsides, pine plantation.
3 loc.: Faustynów P25; Fryszka W34; Stanisławów II N22.
- Bryoria crispa* (Mot.) Bystr. — corticolous on old *Betula*.
7 loc.: Fryszka W34; Kol. Kletnia W34; Parzno for., unit 53 H26; Sadulaki for., unit 186 L23; Sędziejowice for., units 139, 140 I22; Wójcik W33.
- Buellia disciformis* (Fr.) Mudd — on old *Quercus* n. gravel-pit.
1 loc.: Pytowice for., unit 199 S32.
- B. griseovirens* (Turner et Borrer ex Sm.) Almb. — on *Quercus*, *Alnus* in *T-Cst*, *R-Al*, *C-Al*.
4 loc.: Kalduny n. Belchatów I31; Sadulaki for., unit 176c L24; Stróża for., unit 24 P20; Wola Wydrzyna for., unit 7 P23.
- B. nivalis* (Bagl. et Carestia) Hertel in Hafellner — on mortar of little post.
1 loc.: Wola Wydrzyna for., unit 5i P23.
- Calicium glaucellum* Ach. — corticolous on old *Abies*.
1 loc.: Wola Wydrzyna for., unit 5b P23.
- C. salicinum* Pers. — corticolous on old *Quercus* in *T-Cab*.
1 loc.: Siedlec for., unit 74d W19.
- Caloplaca citrina* (Hoffm.) Th. Fr. — on concrete plate in front of bridge over Widawka River, bridges, on mortar of church-walls.
3 loc.: Kalduny I30; Parzno I26; Szczerców L21.
- C. decipiens* (Arnold) Blomb. et Forssell — on mortar of church-walls, bridges, concrete pill-box and plate in front of bridge over Widawka River.
7 loc.: Belchatów—Grocholice L30; Chabielice O21; Lubiec J22; Łękińsko R29; Parzno I26; Szczerców L21; Wola Wydrzyna S22.
- C. holocarpa* (Hoffm. ex Ach.) A. E. Wade — habitats like *C. decipiens* and corticolous on *Populus*, on decaying stumps.
8 loc.: Belchatów—Grocholice L30; Chabielice O21; Kalduny I30; Kol. Kletnia W34; Łękińsko R29; Restarzew for., unit 356 J20; Słostowice T33; Szczerców L21.
- C. saxicola* (Hoffm.) Nordin — on mortar of church- and cemetery-walls, on concrete pill-box.
3 loc.: Lubiec J22; Łękińsko R29; Parzno I26.
- Candelaria concolor* (Dicks.) Stein — on *Salix* sp. div., *Populus*, *Fraxinus*, *Populus* sp. div., *Acer*, *Aesculus* by roads, on solitary oaks.
12 loc.: Dobryszyce W31; Doły Q31; Fryszka W34; Kluki L25; Kmieczna S31; Kol. Kletnia U34; Lubiec J22; Łęka n. church R29; Parchliny P22; Parzniewice O35; between Sulmierzyce and Stanisławów S24; Szczerców L21.
- Candelariella aurella* (Hoffm.) Zahlbr. — on mortar of church-walls, bridge, concrete pill-box and plate in front of bridge over Widawka River.
6 loc.: Belchatów—Grocholice L30; Chabielice O21; Kalduny I30; Lubiec J22; Łękińsko R29; Szczerców L21.

C. vitellina (Hoffm.) Müll. Arg. — on bricks of church-walls, mortar bridge and old *Populus nigra*.

4 loc.: Belchatów—Grocholice L30; Kalduny I30; Kluki L25; Łękińsko R29.

C. xanthostigma (Ach.) Lettau — corticolous on *Populus*, *Acer*, *Fraxinus*, *Populus* sp. div. and on solitary *Salix*, *Malus* in orchard.

11 loc.: Fryszka W34; Dworzowice Pakoszowe U20; Kmieczna S31; Lubiec J22; Łęka O31; Luszczanowice for., unit 167c S/T28; Parchliny P22; Stróża R21; Sulmierzyce T24; Wola Wydrzyna for., unit 12i P23; Wola Wydrzyna S22.

Cetraria aculeata (Schreb.) Fr. — terricolous in *S-C*, *D-A*, *Cl-Cal*, *Cl-Pin* and young pine plantations.

71 loc.: Bożydar M25; Brzezcie L20; n. Bukowa M33; n. Chmielowiec L23; n. Doly P31; n. Faustynów Q25; Folwark P26; Gadka P27; Górka O24; between Górka and Opalańska O24; Grabek for., units 124f, 117i P31; Imielak L22, L23; between Janów and Borowa L33; n. Janówka O22; n. Kalisko P32; n. Kamień O24; Karolów P26; n. Kąsle P31; n. Kąty N25; Kol. Broszcein O20; Kol. Wólka Łękańska N30; Koziniec O23; Kozłowski L20; Kuźnica Lubiecka J23; n. Kuźnica Q23; n. Łęg N29; Łęka O31; between Łęka and Słok N29, O30; n. Magdalenów K22; Moraczev—Bogumiłów O24; n. Oleśnik L29; Opalańska O24; Osina L23; between Parchliny and Tatar P22; Pawłów Szkolny N34; n. Piaski P31, Q30, Q31; between Piaski and Łęka P31; Podwinek Q24; n. Rogowiec O26, O27, O28; n. Rożdżin I25; Rząsawa M29; n. Słok N29; Słostowice for., unit 234 W33; Sokoly for., unit 124f Q32; Stanisławów I M21, N21; Stanisławów II N22; Ścichawa L26; n. Tatar O22, Trzys N24, N25; Wola Grzymalina distr., units 26d, 27b,c O28, 38, 46 O29, 63a O30, 60a P29, 82, 84c P30, 79c Q/R29; Wólka Łękańska N30; Zagadki K21; Żar M24; n. Żłobnica R26.

C. ericetorum Opiz ssp. *ericetorum* — terricolous in *S-Cel*, *Cl-Pin* and pine plantations.

6 loc.: n. Łęg N29; Podwinek Q24; Rząsawa M29; n. Słok N29; Zawadów N31; n. Żar M24.

C. islandica (L.) Ach. — terricolous in *S-Ct*, *S-Cel*, *S-Cth*, *D-A* and also *Cl-Pin*, pine plantations.

80 loc.: Aleksandrów P26; Bożydar M25; Brzezcie L20; Budy for., units 92a N30, 90a O30; Bukowa M33; n. Chmielowiec L23; Czarny Łęg for., unit 129 R31; n. Doly Q31; Folwark F26; Fryszka W34; Gadka P27; Grabek for., units 116g, 117i P31; Imielak L22, L23; n. Kalisko P32; n. Kąsle P31; Kol. Broszcein O20; Kol. Bukowa M33; Koziniec O23; Kozłowski L20; Kurnos I L28; Kurnos II M28; Kuźnica Lubiecka J23; Kuźnica Q23; Lubiec II for., unit 60, 70 I22; n. Łęg N29; between Łęka and Słok N29, O30; Łęka O31; Magdalenów K22; Magdalenów—Sarnów K22; n. Oleśnik L29; n. Parchliny P22; Pawłów Szkolny N34; n. Piaski Q30, Q31; Podwinek Q24; Pytowiec for., unit 207 S32; Rogowiec O27, O28; Rząsawa M29; Sadulaki for., unit 178a L24; n. Słok N29; Słostowice for., units 203 T31, 215, 216 T32, 224 U32; Stanisławów I M21; Stanisławów II N22; Stróża for., unit 26c P20; Trzys N25; Wola Grzymalina distr., units 21k, 22a N28, 16g, 30b, 36b N29, 27c, 34d O28, 38c, 45a, 46, 49a, 54g, 63f O29, 63a,b, 73f O30, 60a, 61a, 68 P29, 84c P30, 69a Q29, 79c Q/R; Wola Wydrzyna for., unit 144 Q23; Wójcik W33; Wólka Łękańska N30; Zagadki K21; n. Żar M24.

— var. *sorediata* (Schaer.) Arnold — terricolous in *S-Ct*, *S-Cel*.

5 loc.: Imielak L23; Kurnos II L28; n. Łęg N29; n. Piaski P31; Rząsawa M29.

C. muricata (Ach.) Ecfeldt — terricolous in *S-C*, *Cl-Cal*, *A-Cal*, *Cl-Pin*.

7 loc.: n. Kalisko P32; n. Łęg N29, O30; Rogowiec O26, O27, O28; n. Trzys N24.

Chaenotheca chrysocephala (Turner ex Ach.) Th. Fr. — corticolous on old *Quercus* in *T-C*, *P-Qab* and pine plantations.

6 loc.: Piekary for., unit 45i U23; Pytowice for., unit 212 T32; Siedlec for., unit 59p U19; Sokoly for., unit 124 Q32; Wola Grzymalina distr., unit 27d O28; Wola Wydrzyna for., unit 5i P23.

Ch. ferruginea (Turner et Borrer) Mig. — corticolous on *Alnus*, *Abies*, *Quercus*, *Pinus*, *Betula*, *Picea* in *T-Cab*, *T-Cst*, *R-Al* and pine plantations.

9 loc.: Luszczanowice for., units 167c,d S/T28, 166j T28; Piekary for., unit 45i U23; Siedlec for., units 59p U19, 74d W19; Sokoly for., units 124, 126 Q32; Walewice for., unit 34d,k S23; Wola Wydrzyna for., unit 16 Q22.

Ch. furfuracea (L.) Tibbel — among roots of pine log, at foot of trunks of *Quercus* and *Alnus*.

3 loc.: Lubiec II for., unit 76 I22; Siedlec for., unit 71 W19; Wójcik W33.

Ch. trichialis (Ach.) Th. Fr. — corticolous on very old *Quercus* in *T-C*.

2 loc.: Siedlec for., units 71, 73 W19.

Chrysothrix candelaris (L.) Laundon — corticolous on very old *Quercus* in *T-Cab*, *Alnus* in *C-Al*.

2 loc.: Siedlec for., unit 74d W19; Stróża for., unit 24 P20.

Cladina arbuscula (Wallr.) Hale et W. L. Culb. — on soil in *Cl-Pin*, *L-Pin*, pine plantations, *Cl-Cal* and *S-Ccl*.

62 loc.: Budy for., unit 92a N30, 90a O31; Chorzenice for., unit 134 N27, 134c O26; Czarny Lug for., unit 129 R31; n. Doly Q31; Faustynów P25; Folwark P26; Grabek for., unit 116g P31; n. Kalisko P32; Kowalce N24; n. Kurzymąka S32; Lubiec II for., unit 70 I22; n. Lęg N29, O30; Lękawa O31; Magdalenów—Sarnów K22; n. Oleśnik L29; n. Piaski Q30, Q31; Podwinek Q24; n. Rogowice O26, O27, O28; Rząsawa M29; Sadulaki for., units 170i K24, 178 L24; n. Słok N29; Słostowice for., unit 240 W33; Stanisławów II N22; n. Trzys N24, N25; Wola Grzymalina distr., units 22a, 26d, 27b,c, 32a, 34d N28, 16, 29, 30, 32, 37b,c, 35c, 36b N29, 25d, 26c,d, 33f O28, 30b,f, 31a, 38c,d, 45a, 46a,b,i, 54g, 65 O29, 73f O30, 52d, 60d, 61a, 69a,g P29, 69a, 79b,d Q29; n. Żar M24.

C. ciliata Stirt. var. *tenuis* (Flörke) Ahti et M. J. Lai — on soil in *Cl-Pin*, rare in pine plantations.

18 loc.: n. Lęg O30; Sadulaki for., unit 178 L24; Stróża for., unit 26 P20; n. Trzys N24; Wola Grzymalina distr., units 22 N28, 30b, 31a, 36b, 37 N29, 26d, 33f, 34d O28, 38d, 45a, 46i, 54g, 63f O29, 73f O30.

C. mitis (Sandst.) Hustich — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *Cl-Pin*, dry young and old pine plantations.

71 loc.: Aleksandrów P26; Antoniówka R26; Bożydar M25; Brzezcie L20; n. Chmielowiec L23; Chorzenice for., unit 134c O26; n. Doly P31; Faustynów P25, Q24, Q25; Folwark P26; Gadka P27; Górka O24; Grabek for., unit 117i P31; Imielak L22, L23; n. Kalisko P32; Karolów P25, P26; n. Kąsle P31; n. Kąty N25; Kol. Broszęcin O20; Kol. Bukowa M33; Kol. Wólka Lękawska N30; Koziniec O23; Kozłowski L20; Kurnos I L28; Kuźnica Lubiecka J23; Kuźnica Q23; Lęg N29; Lękawa O31; between Lękawa and Słok N29; Moraczew—Bogumitów O24; n. Oleśnik L29; Opalańska O24; Osina L23; n. Parchliny P22; n. Piaski Q30, Q31; between Piaski and Lękawa P31; Podwinek Q24; n. Rogowice O26, O27, O28; Roździn I25; Rząsawa M29; Słok N29; Sadulaki for., unit 178 L24; Sokoly for., unit 124f Q32; Stanisławów I M21, N21; Stanisławów II N22; Tatar O22; Trzys N25; Wola Grzymalina

distr., units 31a N29, 27b,c, 34a O28, 38d, 46a O29, 60a, 69g, 79d, 84t P29, 82 P30, 79c Q/R29; Wójcik W33; Wólka Łękańska N30; Zagadki K21; n. Zawadów N31; n. Żar M24; n. Żłobnica R26.

C. portentosa (Dufour) Follmann — on soil in *Cl-Pin*.

15 loc.: Budy for., unit 90a O30; Łęka distr., unit 89f O/N30; Słok for., units 21k, 25d, 30, 37 N29; Słostowice for., unit 239 W33; Stanisławów II N22; Wola Grzymalina distr., units 21, 22 N28, 30, 37, N29, 25, 33f O28, 63f O29.

C. rangiferina (L.) Nyl. — on soil in *Cl-Pin*, pine plantations, *Cl-Cal*, rare in *S-C*.

46 loc.: Antoniówka R26; Budy for. N30, O30; Chorzenice for., unit 134c O26; n. Doły Q31; Folwark P26; Grabek for., unit 116g P31; n. Kalisko P32; n. Kąsie P31; Kowalce N24; n. Kurnos I L28; n. Kurzymańska S32; Lubiec II for., unit 70 I22; n. Łęg N29, O30; n. Piaski P31, Q30, Q31; n. Rogowiec O26, O27, O28; Rząsawa M29; n. Słok N29; Słostowice for., units 216 T32, 240 W33; Stanisławów II N22; Stefanowizna O30; Stróża for., unit 26 P20; n. Trzys N24; Wola Grzymalina distr., units 32a N28; 30b, 31a, 32, 37b, 49 N29, 22a, 25d, 26c,d, 27b,c, 34d O28, 46a,b, 54g, 64, 65 O29, 69a Q29; n. Żar M24.

Cladonia bacillaris (Leight.) Arnold — on ground in *S-Ct*, *S-Ccl*, *S-Cth*, *Cl-Cal*, pine plantations, on decaying stumps.

32 loc.: n. Brzezcie L20; n. Chmielowiec L23; n. Kalisko P32; n. Kąsie P31; n. Kąty N25; Kol. Bukowa M23; Kol. Wólka Łękańska N30; Kurnos I L28; Kurnos II M28; Kalisko distr., unit 116g P31; Lubiec II for., unit 69 I22; n. Łęg N29; n. Łęka O30; n. Oleśnik L29; between Parchliny and Tatar P22; n. Piaski P30, P31, Q31; between Piaski and Łęka P31; n. Rogowiec O27, O28; Rząsawa M29; Słostowice for., unit 229 U32; vicinity of Stanisławów n. Sulmierzyce S24; n. Tatar O22; Wola Grzymalina distr., units 31a N29, 46a,i, 64 O29, 63a O30, 82 P30; Wólka Łękańska N30; n. Żar M24.

C. cariosa (Ach.) Spreng. — on soil in *S-Ct*, thermophilous grassland in gravel-pit.

3 loc.: Antoniówka R26; Faustynów P25; Trzys N24.

C. cenotea (Ach.) Schaer. — on soil in *Cl-Cal*, decaying stumps.

5 loc.: n. Piaski Q31; n. Rogowiec O27; Sokoły for., unit 126 Q32; Wola Wydrzyna for., units 5b, 26 P23.

C. cervicornis (Ach.) Flot. ssp. *verticillata* (Hoffm.) Ahti — habitats like *C. uncialis*.

49 loc.: Bożydar M25; Brzezcie L20; n. Chmielowiec L23; Chorzenice for., unit 134c O26; Czarny Ług for. R31; n. Doły P31; Faustynów P25; Gadka P27; Grabek for., unit 117i P31; Kalisko P32; n. Kąty N25; Kol. Wólka Łękańska N30; n. Kurnos I L28; n. Kurzymańska S32; n. Łęg N29; Łęka O31; between Łęka and Słok O30; Magdalenów K22; n. Moraczew O24; Opalańska O24, O25; Osina L23; between Parchliny and Tatar P22; Piaski Q30, Q31; between Piaski and Łęka P31; Podwinek Q24; Pytowice for., unit 203 T31; n. Rogowiec O26, O27,O28; Rząsawa M29; Sadulaki for., unit 178 L24; n. Słok N29; Sokoły for., unit 124f Q32; Stróża for., unit 26 P20; Stanisławów I M21; Stanisławów II N22; n. Tatar O22; Trzys N24, M25; Wola Grzymalina distr., units 27b,c O28, 46a,b O29, 63a O30, 82 P30; Wólka Łękańska N30; Zagadki K21; Zawadów N31; n. Żar M24.

C. chlorophaea (Flörke ex Sommerf.) Spreng — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *Cl-Cal*, *A-Cal*, *Cl-Pin*, pine plantations.

35 loc.: Budy for., unit 90a O30; n. Chmielowiec L23; Czarny Ług for., unit 129 Q30; Imielak L22; L23; n. Kąsie P31; Kurnos I L28; n. Kurzymańska S32; Kuźnica Q23; Kalisko distr., units

116g, 117i P31; Lubiec II for., unit 70 I22; n. Lęg N29; n. Oleśnik L29; Opalańka O25; n. Rogowiec O27, O28; Rząsawa M29; n. Słok N29; Sokoly for., unit 124f Q32; Stanisławów II N22; Ścichawa L26; Trzasa N25; Wola Grzymalina distr., units 31a, 36b N29, 25d O28, 46i, 63f O29, 63a, 73f O30, 52d, 61a, 84d P29, 69a Q29; n. Żłobnica R26.

C. coccifera (L.) Willd. — terricolous on grassland in gravel-pit, S-C, in young pine plantation.

4 loc.: Faustynów P25; n. Kalisko P32; Kurnos I L28; n. Żar M24.

C. coniocraea (Flörke) Spreng. — on soil in *Cl-Pin*, *L-Pin*, on *Pinus*, *Alnus*, *Quercus*, *Abies*, *Betula* in deciduous and pine forest, pine plantations.

25 loc.: Budy for., unit 90a O30; n. Lękawa N30; Łuszczanowice for., unit 167f S28; Stanisławów I M21; Stefanowizna O30; Pytowice for., units 199l, 206 S32; Restarzew for., unit 353 J20; Rząsawa M29; Sadulaki for., units 184a, 186 L23, 176b L24; Sokoly for., units 124, 126 Q32; Stróża for., unit 24n P20; Wola Grzymalina distr., units 32a N28, 30, 32, 37c N29, 63f O29, 61a P29, 69a, 70 Q29; Wola Wydrzyna for., unit 16 Q32; n. Żar M24.

C. cornuta (L.) Hoffm. — on soil in *S-Ccl*, *Cl-Pin*, dry pine plantations, on decaying pine stumps.

10 loc.: n. Kurnos I L28; Podwinek Q24; Rząsawa M29; Słostowice for., unit 239 U33; Stanisławów I M21; Wola Grzymalina distr., units 36b N29, 46i O29, 61a P29; Wola Wydrzyna for., unit 5b P23; Wójcik W33.

C. crispata (Ach.) Flot. — on soil in *Cl-Pin*.

2 loc.: Wola Grzymalina distr., units 36b N29, 63f O29.

C. deformis (L.) Hoffm. — on soil in *S-Ccl*, *S-Cth*, *Cl-Cal*, *A-Cal*, *Cl-Pin*, *L-P*, pine plantations, on stumps.

39 loc.: Budy for., unit 90a O30; Ciszka J24; Czarny Ług for., unit 129 O30; Folwark P26; Grabek for., unit 116g P31; Imielak L22; n. Kalisko P32; n. Kąsiec P31; Kowalce N24; n. Kurzymąka S32; n. Lęg N29; n. Lękawa N30; between Parchliny and Tatar P22; n. Piaski P30, Q30, Q31; n. Rogowiec O27, O28; Rząsawa M29; n. Słok N29; Sokoly for., unit 124f Q32; Stanisławów I M21; Stefanowizna O30; Stróża for., unit 26 P20; Trzasa N24; Wola Grzymalina distr., units 22a N28, 30b, 31a, 36b 37c N29, 25d, 33f, 34d O28, 46b, 54g, 63f O29, 63a O30, 60d, 61a P29.

C. digitata (L.) Hoffm. — on soil and at foot of trunks of old *Pinus* in *L-P*, pine plantations and rare on *Alnus* in *R-Al*.

7 loc.: Pytowice for., unit 206 S32; Sadulaki for., unit 176b,c L24; Sokoly for., unit 126h Q32; Stróża for., unit 25b P20; Wola Grzymalina distr., units 22a N28, 52d P29; Wola Wydrzyna for., unit 16 Q32.

C. fimbriata (L.) Fr. — on soil in *S-C*, *F-Ko*, *Cl-Cal*, *Cl-Pin* and pine plantations, on decaying stumps and at foot of trunks of *Pinus* or *Betula*.

68 loc.: Budy for., unit 90a O30; n. Bożydar M25; n. Brzezcie L20; Bukowa M33; n. Chmielowiec L23; Czarny Ług for., unit 129 R31; Folwark P26; Gadka P27; Grabek for., unit 116g P31; Imielak L23; n. Kalisko P32; Karolów P25; Kol. Brudzice T28; Kol. Osiny O23; Kurnos I L28; Kurnos II M28; n. Kurzymąka S32; n. Lęg N29; between Lękawa and Słok O30; Magdalenów K22; Markowizna R23; n. Oleśnik L29; Opalańka O24; n. Parchliny P22; n. Piaski P30, P31, Q31; between Piaski and Lękawa P31; n. Rogowiec O26, O27, O28; n. Roździn I25; Rząsawa M29; Sadulaki for., unit 178 L24; n. Słok N29; Sokoly for., unit 124 Q32; Stanisławów I M21; Stanisławów II N22; Stanisławów n. Sulmierzyce S24; Stefanowizna O30; Stróża for., unit 26 P20; Szpinalów Górny Q33; Ścichawa L26; Walewice for., unit 34 S23; Wola Grzymalina distr., units 30b,f, 31a, 36b, 37c N29, 25, 27c, 33f, 34a O28, 38d.

45a, 46a,b,i, 54g, 63f O29, 63a O30, 69, 79d P29, 84c P30, 69a Q29, 79c Q/R29; Wola Wydrzyna for., units 13i P22, 5b P23, 11m Q23; Zawadów N31; Żar M24.

C. foliacea (Huds.) Willd. — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *D-A*, *F-Ko*, in dry pine forests and pine plantations.

25 loc.: Chorzenice for., unit 134 N27; n. Doly P31; Folwark O26; Imielak L22; n. Janówka O22; n. Kalisko P32; n. Kąty N25; n. Kuźnica Lubiecka J23; Kol. Wólka Łękańska N30; Kuźnica Q30; Lęg N29; between Łęka and Słok N29; n. Parchliny P22; n. Rogowiec O26; Rząsawa M29; Słostowice for., unit 240 W23; Stanisławów I M21; Stanisławów II N22; Stróża for., unit 26 P20; Ścichawa L26; Trzys N25; Wola Grzymalina distr., units 82, 84c P30; Wólka Łękańska N30; n. Zagadki K21.

C. furcata (Huds.) Schrad. — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *D-A*, *Cl-Cal*, *A-Cal*, *Cl-Pin*, young and old pine plantations.

98 loc.: Aleksandrów P26; Antoniówka R26; n. Borowa L34; Bożydar L25; Budy for., unit 90a O30; n. Bukowa M33; n. Chmielowiec L23; Chorzenice for., unit 134c O26; Czarny Ług for., unit 129 R31; Doly Q31; Faustynów P25; Folwark P26; Gadka P27; Górka O24; Grabek for., units 116g, 117i P31; n. Huby Ruszczyckie Q32; Imielak L22; n. Janówka O22; n. Kalisko P32; n. Kamień P24; Kąsle P31; n. Kąty N25; Kol. Brudzice T28; Kol. Wólka Łękańska N30; Kowalec N24; Koziniec O23; Kuros I L28; Kurnos II M28; n. Kurzymała S32; Kuźnica Q23; Lubiec II for., unit 70 I22; n. Lęg N29; Łęka O31; n. Łęka N30; between Łęka and Słok N29, O30; Osina L23; between Parchliny and Tatar P22; Pawłów Szkoły N34; n. Piaski Q30; Podwinek Q24; Pytowice for., unit 207 S32; Rogowiec O26, O27, O28; Rząsawa M29; Sadulaki for., unit 178 L24; n. Słok N29; Słostowice for., unit 216 T32; Sokoly for., units 124i, 126h Q32; Stanisławów I M21; Stanisławów II N22; Stanisławów n. Sulmierzyce S24; Stefanowizna O30; Stróża for., unit 26 P20; Ścichawa L26; Trzys N24, N25; Wola Grzymalina distr., units 20 M28, 21, 22 N28, 16g, 25d, 29, 30b, 31a, 35, 36, 37, 49 N29, 22, 26d, 27c, 33f, 34d O28, 38d, 46a,b,i, 54g, 63f, 65 O29, 63a,j,l O30, 60d, 61g, 68, 69a, 79d P29, 82, 84c P30, 69a, 70 Q29, 79c Q/R29; Wola Wydrzyna for., unit 4 P32; Wólka Łękańska N30; Zagadki K21; n. Żar M24; n. Żłobnica R26.

C. glauca Flörke — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *Cl-Cal*, *A-Cal*, *F-Ko*, *Cl-Pin*.

24 loc.: Antoniówka R26; Bożydar M25; Bukowa M33; n. Doly P31; Faustynów P25; Folwark P26; Karolów P25; n. Kąsle P31; Kozłowski L20; Markowizna R23; Opalańska O24, O25; between Parchliny and Tatar P22; Podwinek Q24; n. Roździn I25; Rząsawa M29; Stanisławów I M21; Stanisławów II N22; Szpinalów Górny Q33; Trzys N24; Wola Grzymalina distr., units 63, 70 O29; n. Żar M24; n. Żłobnica R26.

C. gracilis (L.) Willd. — habitats like *C. glauca*.

65 loc.: Antoniówka R26; Brzezcie L20; Budy for., unit 90a O30; n. Chmielowiec L23; Chorzenice for., unit 134c O26; Czarny Ług for., unit 129 R31; n. Doly P31, Q31; Folwark P26; Grabek for., unit 117i P31; Imielak L23; n. Kalisko P32; n. Kąsle P31; n. Kąty N25; Kowalec N24; Kurnos I L28; Lubiec II for., unit 70 I22; n. Lęg N29; n. Łęka N30; n. Oleśnik L29; between Parchliny and Tatar P22; Piaski Q30; n. Piaski P31, Q30, Q31; Podwinek Q24; n. Rogowiec O26, O27, O28; n. Rząsawa M29; Sadulaki for., unit 178 L24; n. Słok N29; Słostowice for., units 224 U32, 240 W33; Stanisławów I M21; Stanisławów II N22; Stefanowizna O30; Stróża for., unit 26 P20; Ścichawa L26; n. Tatar O22; Trzys N25; Wola Grzymalina distr., units 22a, 34d N28, 30b,f, 31a, 32, 37c, 49 N29, 25d, 26d, 27b,c, 33f O28, 38, 54, 63, 65 O29, 63a O30, 61a, 68, 69, 79d P29, 79c Q/R29; Wola Wydrzyna for., unit 11 Q23; Żar M24.

C. grayi Merrill ex Sandst. — in *Cl-Pin*.

1 loc.: Wola Grzymalina distr., unit 69b P29.

C. macilenta Hoffm. ssp. *macilenta* — on decaying stumps and on soil in pine plantations.

4 loc.: Ciszka n. Roździn J24; Czarny Ług for., unit 129 Q30; Restarzew for., unit 355 J20; Wola Grzymalina distr., unit 11m Q23.

— ssp. *floerkeana* (Fr.) — on soil in *S-Ccl*, *S-Cth*, *Cl-Pin* and on decaying stumps.

12 loc.: Brzezcie L20; Gadka P27; n. Kalisko P32; Kol. Bukowa M33; Kurnos I L28; n. Oleśnik L29; n. Rogowiec O26; Rząsawa M29; Sadulaki for., unit 178a L24; Stanisławów I M21; Wola Grzymalina distr., unit 21 N28; n. Żar M24.

C. phyllophora Hoffm. — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *D-A*, *F-Ko*, *Cl-Cal*, *A-Cal*, *Cl-Pin*, *L-P* and pine plantations.

74 loc.: Antoniówka R26; Bożydar M25; Brzezcie L20; n. Chmielowiec L23; Czarny Ług for., unit 129 R31; Faustynów P25; vicinity of Faustynów Q24; Folwark P26; Gadka P27; Grabek for., units 116g, 117i O31; Imielak L22, L23; n. Kalisko P32; Karolów P25; n. Kąsice P31; n. Kąty N25; Kol. Bukowa M33; Kol. Wólka Łęawska N30; Kowalce N24; Kozłowski L20; Kurnos I L28; Kurnos II M28; n. Kurzymąka S32; Kuźnica Q23; Lubiec II for., units 69, 70 I22; n. Lęg N29; Łęka O30, O31; Łęka distr., unit 89 O/N30; between Łęka and Słok O30; Magdalenów K22; Opalańka O25; between Parchliny and Tatar P22; Piaski Q30, Q31; between Piaski and Łęka P31; Podwinek Q24; Pytowice for., unit 203 T31; Rogowiec O26, O27; Rząsawa M29; Sadulaki for., unit 178 L24; Słostowice for., units 224 U32, 239 U33; Sokoly for., unit 124f Q32; Stanisławów I M21, M22, N21; Stanisławów II N22; Stefanowizna O30; Stróża for., unit 26 P20; Ścicha L26; Tatar O22; Trzys N24, N25; Wola Grzymalina distr., units 32a N28, 30b,f, 31a, 36b N29, 38d, 46a,b, 54g, 63f O29, 60a P29, 79c Q/R29, 69a Q29; Wola Wydrzyna for., unit 4c P23; Wójcik W33; Wólka Łęawska N30; Zagadki K21; n. Żar M24; n. Żłobnica R26.

C. pleurota (Flörke) Schaer. — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *Cl-Pin*.

19 loc.: n. Brzezcie L20; n. Chmielowiec L23; Grabek for., unit 117i P31; n. Kąty N25; Kol. Wólka Łęawska N30; Kurnos II M28; Kuźnica Q23; n. Lęg N29; Osina L23; Piaski Q30; n. Rogowiec O27; n. Tatar O22; Wola Grzymalina distr., units 27b,c O28, 46a O29, 69g, 79 P29, 79c Q/R29; Zagadki K21; n. Zawadów N31.

C. polycarpoides Nyl. — on soil in pine forest.

1 loc.: Sadulaki for., unit 170i K24.

C. pyxidata (L.) Hoffm. — in *S-C*, *D-A*, occasionally in pine forest.

8 loc.: n. Kalisko P32; Karolów P25; n. Kąsice P31; n. Rogowiec O26; Rząsawa M29; Stanisławów I M21; n. Tatar O22; Trzys N25.

C. ramulosa (With.) J. R. Laundon — on soil in *Cl-Pin*.

8 loc.: Wola Grzymalina distr., units 22 N28, 29, 30, 32 N29, 25 O28, 47 O29, 68, 69 P29.

C. rangiformis Hoffm. — on ground in thermophilous grasslands, occasionally in pine plantations.

5 loc.: Antoniówka R26; Faustynów P25; Podwinek Q24; Stanisławów I M21; Stanisławów n. Sulmierzyce S24.

C. scabriuscula (Delise in Duby) Nyl. — on soil in *Cl-Pin*, pine forest with *Calluna* and *Cl-Cal*.

3 loc.: Kąsice P31; n. Piaski Q31; n. Rogowiec O26.

- C. squamosa* Hoffm. — in *Cl-Pin*, pine plantations, *Cl-Cal*, on decaying stumps.
39 loc.: Budy for., unit 90a O30; Chorzenice for., unit 134 N27; Czarny Ług for., unit 129 Q30; n. Doły Q31; Folwark P26; Grabek for., unit 116g P31; between Kaszewice and Ścichawa L26; Kowalec N24; n. Kurnos I L28; Lubiec II for., unit 70 I22; n. Łęka N30; n. Piaski Q30, Q31; Pytowiec for., unit 207 S32; Słostowice for., unit 239 W33; Stróża for., unit 26 P20; n. Rogowiec O26; Rząsawa M29; n. Słok N29; Stefanowizna O30; Trząs N24, N25; Wola Grzymalina distr., units 21, 22a, 32a N28, 30b,f, 37c, 49 N29, 25d, 26d, 27c, 33f O28, 38c,d, 45a, 46b, 54g O29, 52d, 61a, 69 P29.
- C. subulata* (L.) Weber ex F. H. Wigg. — on soil in *S-Ct*, *S-Ccl*, *S-Cth*, *Cl-Cal*, thermophilous grasslands in gravel-pit, *Cl-Pin*, pine plantations.
73 loc.: Aleksandrów P26; Antoniówka R26; Bożydar M25; Brzezic L20; n. Chmielowiec L23; Czarny Ług for., unit 129 R31; Faustynów P25; n. Folwark O26; Gadka P27; Górka N24; Imielak L23; n. Kalisko P32; Karolów P26; n. Kaście P31; n. Kąty N25; Kol. Osiny O23; Kol. Wólka Łęka N30; n. Kurnos I L28; Kurnos II M28; Kuźnica Lubiecka J23; Kuźnica Q23; Lubiec II for., units 60, 70 I22; n. Łęg N29, O30; Łęka O31; between Moraczew and Bogumiłów O24; Oleśnik L29; Opalańka O24; Osina L23; n. Parchliny P22; Piaski Q30, Q31; between Piaski and Łęka P31; Podwinek Q24; n. Rogowiec O26, O27, O28; Rząsawa M29; Sadulaki for., unit 178 L24; n. Słok N29; Słostowice for., unit 216 T32; Sokoly for., unit 124 Q32; Stanisławów I M21; Stanisławów II N22; vicinity of Stanisławów n. Sulmierzyce S24; Stróża for., unit 26 P20; Tatar O22; Trząs N25; Wola Grzymalina distr., units 30b, 31a N29, 27b,c, 34a O28, 46, 54, 63, 64, 65 O29, 60a, 61a, 79d P29, 82, 84c P30, 116g, 117i P31, 79 Q/R29; Wola Wydrzyna for., units 5b P32, 11m Q23; Wójcik W33; Wólka Łęka N30; Zagadki K21; Zawadów N31; n. Żar M24.
- C. sulphurina* (Michx.) Fr. — on humus in pine plantation.
1 loc.: Ciska n. Roździn J24.
- C. uncialis* (L.) Web. ex H. Wigg. — terricolous in *S-Ct*, *S-Ccl*, *S-Cth*, *Cl-Cal*, *A-Cal*, *Cl-Pin*, dry pine plantations.
77 loc.: Aleksandrów P26; Antoniówka R26; Bożydar M25; Brzezic L20; Budy for., unit 90a O30; Bukowa M33; n. Chmielowiec L23; Chorzenice for., unit 134c O26; Czarny Ług for., unit 129 R31; n. Doły P31; Faustynów P25; vicinity of Faustynów Q24; Folwark P26; Gadka P27; Grabek for., unit 117i P31; Imielak L22; Kalisko P32; Karolów P25; between Kaszewice and Słok L26; n. Kaście P31; n. Kąty N25; Kol. Wólka Łęka N30; Kozłowski L20; Kurnos I L28; Kuźnica Q23; n. Kurzymąka S32; Kuźnica Lubiecka J23; Lubiec II for., unit 69 I22; n. Łęg N29; Łęka O31; between Łęka and Słok N29; Magdalenów K22; n. Moraczew O24; Opalańka O24; Osina L23; between Parchliny and Tatar P22; n. Piaski P31, Q30, Q31; between Parchliny and Łęka P31; Podwinek Q24; Rogowiec O26, O27, O28; n. Roździn I25; Rząsawa M29; Sadulaki for., unit 178 L24; Słok N29; Słostowice for., unit 224 U32; Sokoly for., unit 124f Q32; Stanisławów I M21; Stanisławów II N21; Stróża for., unit 26 P20; n. Tatar O22; Trząs N24, N25; Wola Grzymalina distr., units 22a N28, 30b, 36b, 37c, N29, 25d, 26d, 27b,c, 37f O28, 38d, 45a, 46a,l O29, 63a, 73f O30, 79d P29, 84c P30, 79c Q/P29; Wójcik W33; Wólka Łęka N30; n. Zawadów N31; Żar M24; n. Żłobnica R26.
- **Clypeococcum hypocenomycis* D. Hawksw. — on *Hypocenomyce scalaris*, on *Pinus*, *Carpinus*.
7 loc.: Czarny Ług for., unit 129g Q30; Imielak L22; Kalduny n. Belchatów I31; Luszczanowice for., unit 166j T28; Stanisławów n. Sulmierzyce S24; Stróża for., unit 25b P20; Wola Grzymalina distr., unit 63c O29.

Dibaeis baeomyces (L. fil.) Rambold et Hertel — on soil in pine plantation with *Festuca ovina*, forest roadside.

2 loc.: Pytowice for., unit 203 T31; Walewice for. S23.

Dimerella pineti (Ach.) Vězda — corticolous on young and old *Alnus* and *Quercus* in T-Ct dg., T-Cst, C-Al, Cr-F, R-Al and oak plantation.

22 loc.: Kalduny n. Belchatów I31; Lubiec II for., unit 76, 78 I22; Luszczanowice for., unit 167f S/T28; Parzno for., unit 53 H/126, 56 I25; Pytowice for., units 199 S32, 208 T32; Restarzew for., unit 333 I19; Sadulaki for., units 184, 185 L23, 176, 186 L24; Siedlec for., unit 59p U19; Sokoly for., unit 124 Q32; Stróża for., units 23d, 24n P20; Walewice for., unit 34d S23; Wola Wydrzyna for., units 6, 7, 11 P23, 16 Q22.

Diploicia canescens (Dickson) Massal. — on mortar of bridge.

1 loc.: Wola Wydrzyna for., unit 5i P23.

Evernia prunastri (L.) Ach. — corticolous on *Quercus*, *Alnus*, *Acer*, *Fraxinus*, *Populus* sp. div., *Populus*, *Abies* in T-C, C-Al, and on solitary trees, n. church, park.

20 loc.: Belchatów—Grocholice L30; Doly Q31; Fryszerka W34; Kluki L25; Lękawa O31; Parchliny P22; Parzno for., unit 53 H26; Pytowice for., units 199 S32, 212 T32; Sadulaki for., units 184, 185, 186 L23; Słostowice for., unit 229 U32; Sokoly for., unit 124 Q32; Stróża R21; Wola Grzymalina distr., unit 63 O29; Wola Grzymalina P29; Wola Wydrzyna for., units 11g, 12i P23, 12j P/Q23.

Flavoparmelia caperata (L.) Hale — corticolous on *Alnus*, rare *Quercus*, in C-Al, R-Al, old oak plantation.

9 loc.: Parzno for., unit 53 H/J26; Sadulaki for., unit 185 L23; Wola Grzymalina for., unit 27d O28; Wola Wydrzyna for., units 5f, 6, 7, 11, 12 P23, 16 Q22.

Hypocenomyce caradocensis (Leight ex Nyl.) P. James et Goth Schneid. in D. Hawksw., P. James et Coppins — corticolous on old *Abies* in T-Cab.

2 loc.: Luszczanowice for., unit 167c S/T28; Wola Wydrzyna for., unit 5b P23.

Hypocenomyce scalaris (Ach.) M. Choisy — on *Pinus*, *Abies*, *Picea*, *Betula*, *Acer*, *Alnus*, *Carpinus*, *Populus* sp. div. in pine plantations, T-Ct dg., T-Cab, P-Q, trees by roads.

Common, e.g. Czarny Ług for., unit 129g Q30; Doly Q31; vicinity of Fryszerka W34; Imielak L22; Kalduny I31; Kąsiej Q31; Kluki L25; Luszczanowice for., units 165 S28, 166j T28, 167e S/T28; Parchliny P22; Parzno H26; Parzno for., unit 53 H/J26; Piekary for. U23; Pytowice for., units 206 S32, 208c T32; Restarzew for., unit 333 I19; n. Rogowice O26, O28; Roździn I25; Sadulaki for., units 177b, 182, 183 L24, 184 L23; Siedlec for., unit 69, 71 W19; Słostowice for., unit 229 U32; Sokoly for., unit 126 Q32; Stanisławów n. Sulmierzyce S24; Stróża for., unit 25b P20; Stróża R21; Sulmierzyce S24; Wola Grzymalina distr., units 16, 44j N29, 26d O28, 61a P29, 63c O29; Wola Wydrzyna for., units 5b, 6, 7 P23, 16 Q32; Wójcik W33.

Hypogymnia physodes (L.) Nyl. — corticolous on deciduous and coniferous trees, and shrubs in all forests, also on solitary trees, rare by roads.

Very common, e.g. Belchatów—Grocholice L30; Doly Q31; Faustynów P25; Kalduny n. Belchatów I31; Kluki L25; Luszczanowice for., unit 167f S28; Parchliny P22; Parzno for., unit 53 H26; Pytowice for., units 199h,l, 206 S32, 208, 212c T32; Restarzew for., units 333 I19, 353 J19; n. Rogowice O26, O28; Sadulaki for., units 171g K24, 184, 185, 186 L23, 176b,c L24; Słostowice for., unit 229 U32; Sokoly for., units 125, 126 Q31; Stanisławów I M21; Stanisławów n. Sulmierzyce S24; Stróża for., units 25b, 26n P20; Stróża R21; n. Sulmierzyce S24; Wola Grzymalina distr., units 16g, 34b, 37b, 44j N29, 46b, 63b O29, 63j O30, 61a P29; Wola Wydrzyna for., units 5b,i Q23, 16 Q32; Zagadki K21.

H. tubulosa (Schaer.) Hav. — corticolous on *Betula*, *Salix*, *Alnus*, *Quercus*, *Cerasus*, *Pinus* in T-C, L-P, on solitary trees, fences.

13 loc.: Fryszlerka W34; Kąsiec–Dół Q31; Łękińsko R29; Magdalenów–Sarnów K22; n. Parzno H26; Podlesie H23; Roździn I25; Sadulaki for., units 184, 185, 186 L23; Sokoly for., unit 126 Q32; Wójcik W33; Zagadki K21.

Imshaugia aleurites (Ach.) S. L. F. Mayer — on *Pinus* and *Alnus* in L-P, pine plantations, P-Q, C-Al, Cr-F.

22 loc.: n. Gomunice U34; Kalduny I31; n. Pytowice for., units 206 S32, 212c T32; Rogowice O26; between Roździn and Parzno I25; Rząsawa M29, O28; Sadulaki for., units 171g K24, 184 L23, 177b L24; Słostowice for., units 206 T32, 239 U32; Stróża for., units 25b, 26h P20; Wola Grzymalina distr., units 16g, 30, 37b N29, 34b O28, 46b O29, 63j O30; Wola Wydrzyna for., unit 16 Q22.

Lecania cyrtella (Ach.) Th. Fr. — on *Populus*, *Salix fragilis* n. church, *Malus* in orchard, forests.

9 loc.: Dworzowice Pakoszowe U20; Fryszlerka W34; Kol. Kletnia W34; Lubiec J22; Restarzew for., units 353 J19, 355, 356 J20; Słostowice for., unit 208 T32; Wola Wydrzyna for., unit 12i P23.

Lecanora albescens (Hoffm.) Branth. et Rostr. — on mortar of church- and cemetery-walls, little post.

4 loc.: Belchatów–Grocholice L30; Chabielice O21; Łękińsko R29; Wola Wydrzyna for., unit 5i P23.

L. argentata (Ach.) Malme — on *Alnus* in C-Al.

1 loc.: Stróża for., unit 24 P20.

L. carpinea (L.) Vain. — corticolous on *Quercus* and *Populus* in T-C, Pa-Q dg. and pine plantations.

14 loc.: Fryszlerka W34; Kalduny I31; Kol. Kletnia W34; Lubiec J22; Luszczanowice for., unit 167f S28; Pytowice for., unit 199h,j S32; Sadulaki for., units 184, 185, 186 L23; Stróża for., unit 24 P20; n. Sulmierzyce S24; Wola Wydrzyna for., units 6g P23, 11g, 12j P/Q23.

L. chlorotera Nyl. — corticolous on *Populus*, *Fraxinus*.

8 loc.: Kol. Kletnia U34; Lubiec J22; Pytowice for., unit 199 S32; Restarzew for., unit 353 J19; Słostowice for., unit 252 U32; Stróża for., unit 26 P20; Wola Grzymalina P29; Wola Wydrzyna for., unit 6g P23.

L. chloropolia Erichsen — on *Malus* in orchard.

1 loc.: Wola Grzymalina for., unit 12i P23.

L. conizaeoides Nyl. ex Cromb. — corticolous on *Pinus*, *Abies*, *Picea*, *Betula*, *Quercus*, *Alnus*, *Carpinus* in all investigated areas.

Very common, e.g. Dół Q31; Imielak L22; Kalduny I31; Kąsiec Q31; Lubiec II for., unit 76 I22; Luszczanowice for., unit 167d S/T28; Pytowice for., units 199, 206 S32; Restarzew for., units 324 I19, 356 J20; between Rząsawa and Słok M29; Sadulaki for., units 171g K24, 184a L23, 176, 177b, 182, 183 L24; Sokoly for., unit 124 Q32; Słostowice for., unit 229 U32; Stanisławów I M21; Stanisławów n. Sulmierzyce S24; Stróża for., units 23d, 26h P20; Sulmierzyce S24; Walewice for., unit 34d S23; Wola Grzymalina distr., units 16g, 30, 37b, 44j N29, 46b O29, 69g,m P29; Wola Wydrzyna for., units 5i, 6, 7, P23, 16 Q22.

L. crenulata Hook. — mortar on tree-trunk of *Tilia* in park.

1 loc.: Pytowice T33.

- L. dispersa* (Pers.) Sommerf. — on concrete plate in front of bridge over Widawka River, bridges, on church-wall and pill-box.
6 loc.: Chabielice O21; Dworszowice Pakoszowe U20; Kalduny I30; Lubiec J22; Parzno I26; Szczerców L21.
- L. expallens* Ach. — on *Alnus* in forests.
5 loc.: Pytowice for., unit 208 T32; Wola Wydrzyna for., unit 6, 7, 11, 12 P23.
- L. hagenii* (Ach.) Ach. var. *hagenii* — on decaying stump, on *Ulmus* n. church.
2 loc.: Słostowice T33; Sulmierzyce T24.
- L. intumescens* (Rabent.) Rabenh. — corticolous on *Alnus*, *Quercus*, and *Populus* in T-C, R-Al, C-Al.
12 loc.: Kalduny I31; Łuszczanowice for., unit 166j S28; Pytowice for., unit 199 S32; Stróża for., units 23d, 24 P20; Wola Wydrzyna for., units 6, 7, 11, 12 P23, 11g P/Q23, 16 Q22; Wójcik W33.
- L. muralis* (Schreb.) Rabenh. — on mortar, concrete pill-box, on root of *Betula*.
3 loc.: Belchatów—Grocholice L30; Fryszlerka W34; Lubiec J22.
- L. populicola* (DC. in Lam. et DC.) Duby — on solitary *Populus*, rare *Salix*.
3 loc.: Dworszowice Pakoszowe U29; Kol. Kletnia W34; Magdalenów—Sarnów K22.
- L. pulicaris* (Pers.) Ach. — on old *Pinus*, *Alnus*, *Fraxinus*, *Populus nigra*.
12 loc.: Imielak L22; Kalduny I31; Lubiec II for., unit 76 I22; Parchliny P22; Restarzew for., unit 353 J19; Sadulaki for., units 176c, 183 L24, 184 L23; Siedlec for., unit 68d W19; Słok for., unit 30f N29; Stróża for., unit 24 P20; n. Sulmierzyce S32.
- L. saligna* (Schrad.) Zahlbr. — on *Populus* sp. in park, *Salix*, solitary *Quercus*, wooden rails of bridge, *Malus* in orchard.
5 loc.: Dworszowice Pakoszowe U20; Kmiecizna S31; Pytowice for., unit 199 S32; Słostowice T33; Wola Wydrzyna for., unit 12i P23.
- L. symmicta* (Ach.) Ach. — corticolous on *Populus*, *Alnus*, *Quercus* in T-C, Pa-Q, n. Widawka River.
5 loc.: Łuszczanowice for., unit 166j S28; Pytowice for., unit 199 S32; Stróża for., unit 23d P20; Wola Wydrzyna for., unit 11g P/Q23; Wójcik W33.
- L. varia* (Hoffm.) Ach. — on old *Pinus*, *Alnus* and *Cerasus*.
3 loc.: Lubiec J22; Podlesie H23; Wójcik W33.
- Lecidella elaeochroma* (Ach.) M. Choisy — corticolous on *Populus*, *Alnus*.
8 loc.: Fryszlerka W34; Kol. Kletnia W34; Lubiec J22; Łuszczanowice for., unit 167c S/T28; Pytowice for., unit 199 S32; Restarzew for., unit 350 J19; Stróża for., unit 23d P20; Wola Wydrzyna for., unit 6g P23.
- L. stigmatea* (Ach.) Hertel et Leuckert — on mortar and bricks of church-wall, on concrete pill-box, on bridge.
2 loc.: Lubiec J22; Łękińsko R29.
- **Lichenonium erodens* M. S. Christ. et D. Hawksw. — on *Lecanora conizaeoides*, on *Alnus*, *Larix*.
3 loc.: Kalduny n. Belchatów I31; Restarzew for., unit 356 J20; Sokoly for., unit 126 Q32.
- **L. lecanorae* (Jaap) D. Hawksw. — on *Lecanora conizaeoides*, on *Pinus*, *Abies*, *Larix*, *Alnus*, *Salix*, *Betula*.

19 loc: Kalduny I31; Kąsice Q31; Lubiec II for., unit 76 I22; Łuszczanowice for., unit 167c S/T28; Pytowice for., unit 199 S32; Restarzew for., unit 324 I19, 353 J19, 356 J20; Rząsawa M29; Sadulaki for., unit 177b L24; Słok for., unit 30f N29; Słostowice T33; Sokoly for., unit 124 Q32; Stanisławów I M21; Stanisławów n. Sulmierzyce S24; Stróża for., unit 26h P20; n. Sulmierzyce S24; Wola Wydrzyna for., units 5b P23, 16 Q22.

Lepraria incana (L.) Ach. — on deciduous and coniferous trees in forests.

Common, e.g. Łękawa O31; Łuszczanowice for., units 165a, 167f S28; Parzno for., unit 53 H/I26; Pytowice for., units 199m S24, 199h, j S32, 212c T32; Sadulaki for., units 185, 186 L23, 176c L24; Słostowice for., unit 229 U32; Sokoly for., units 125, 126 Q31; Stróża for., units 24n, 26 P20; n. Sulmierzyce S24; Walewice for., unit 34d S23; Wola Grzymalina for., unit 27d O28; Wola Wydrzyna for., units 5b, i, 6g, 7, 11, 12i P23, 16 Q22, 12j P/Q23.

L. lobificans Nyl. — on naked and mossy bark of *Quercus* and *Alnus* in wet forests.

9 loc.: Lubiec II for., unit 76 I22; Pytowice for., unit 199n S32; Siedlec for., units 59 U19, 69g W19; Stróża for., units 23d, 24n, 26 P20; Wola Wydrzyna for., units 6g P23, 16 Q22. Det. 1998.

Melanelia elegantula (Zahlbr.) Essl. — corticolous on *Acer* in park.

2 loc.: Dworszowice Pakoszowe U20; Wola Wydrzyna S22.

M. exasperata (De Not.) Essl. — corticolous on *Acer* in park.

1 loc.: Dworszowice Pakoszowe U20.

M. exasperatula (Nyl.) Essl. — corticolous on *Quercus*, *Acer*, *Populus* sp. div., *Fraxinus* and *Malus*, especially on solitary trees, n. church.

15 loc.: Belchatów—Grocholice L30; Fryszlerka W34; Kmieczna S31; Lubiec J22; Łękawa O31; Łękińsko R29; Łuszczanowice for., unit 165a S28; Parchliny P22; Sadulaki for., units 184, 185, 186 L23; Stróża R21; Wola Wydrzyna for., units 6g, 12i P23, 12j P/Q23.

M. fuliginosa (Fr. ex Duby) Essl. in Egan — corticolous on *Quercus*, *Alnus*, *Populus* in T-C, Pa-Q, P-Q, R-Al and also on solitary trees.

15 loc.: Kalduny I31; Łuszczanowice for., unit 167f S/T28; Parzno for., unit 53 H26; Pytowice for., units 199 S32, 212c T32; Restarzew for., unit 333 I19; Sadulaki for., units 184, 185, 186 L23, 176c L24; Stróża for., unit 26 P20; Walewice for., unit 34d S23; Wola Grzymalina distr., units 27d, 63j O30; Wola Wydrzyna for., unit 11g P/Q23.

— f. *endoferruginea* Czyż. — corticolous on *Alnus* in R-Al.

2 loc.: Parzno for., unit 53 H/I26; Wola Wydrzyna for., unit 16 Q22.

M. subargentifera (Nyl.) Essl. — *Salix* by road, *Acer* in park.

2 loc.: Łękawa O31; Słostowice T33.

M. subaurifera (Nyl.) Essl. — on *Quercus* in Pa-Q dg., *Populus*, *Alnus* in R-Al and on solitary trees.

8 loc.: Fryszlerka W34; Lubiec J22; Pytowice for., unit 199 S32; Sadulaki for., unit 176c L24; Wola Wydrzyna for., units 6, 7, 11 P23, 12j P/Q23.

Micarea denigrata (Fr.) Hedl. — lognicolous on wooden fences and rails of bridges, on upper part of pine stumps.

6 loc.: Czarny Ług for., unit 129 Q30; Kmieczna S31; Lubiec J22; Magdalenów—Sarnów K22; Słostowice distr., unit 206 T32; Szczerców L21.

M. misella (Nyl.) Hedl. — on decaying stump, clearing.

1 loc.: Restarzew for., unit 355 J20.

- M. nitschkeana* (Lahm et Rabenh.) Harm. — on *Populus* in forests.
2 loc.: Luszczanowice for., unit 166j S28; Pytowice for., unit 199 S32.
- M. prasina* Fr. — on decaying pine stumps, *Abies* in *T-C*, *Alnus* in *C-Al*.
5 loc.: Fryszlerka W34; Luszczanowice for., unit 167d S/T28; Parzno for., unit 53 H/126; Pytowice for., units 199 S32, 208 T32.
- Neofuscelia loxodes* (Nyl.) Essl. — on mortar and bricks of church-wall.
1 loc.: Łękińsko R29.
- Ochrolechia arborea* (Kreyer) Almb. — corticolous on *Alnus* in *Cr-F*.
1 loc.: Stróża for., unit 23d P20.
- O. subviridis* (Hoeg) Erichsen — corticolous on *Alnus* in *C-Al*, *R-Al*, *Quercus* in *T-C* and *Abies* in *T-Cab*.
5 loc.: Pytowice for., units 208, 212 T32; Sadulaki for., unit 176c L24; Sokoly for., unit 126 Q32; Wola Wydrzyna for., unit 16 Q22.
- Opegrapha varia* Pers. var. *varia* — corticolous on *Ulmus*.
1 loc.: Fryszlerka W34.
- Parmelia saxatilis* (L.) Ach. — on *Alnus*, *Quercus*, *Carpinus*, *Abies* in *T-C*, *C-Al*, oak plantation.
10 loc.: Fryszlerka W34; Kol. Ruszczyń Q31; Parzno for., unit 53 H26; Sadulaki for., units 184, 185, 186 L23; Sokoly for., units 124, 126 Q32; Wola Grzymalina distr., unit 63 O29; Wójcik W33.
- P. sulcata* Taylor — on *Quercus*, *Populus*, *Fraxinus*, *Populus* sp. div., *Acer*, *Salix*, *Alnus*, *Malus* in forests and on solitary trees.
23 loc.: Doly Q31; Fryszlerka W34; Kluki L25; Kmieczna S31; Lubiec J22; Łęka O31; Łękińsko R29; Parchliny P22; Szezerców L21; Pytowice for., units 199h,j S32, 212 T32; Sadulaki for., units 185, 186 L23; Słostowice for., unit 208 T32; Sokoly for., units 124, 126 Q32; Stróża for., units 24, 26 P20; Stróża R21; Wola Wydrzyna for., units 12i P23, 11g P/Q23; Wola Grzymalina distr., unit 27d O28; Wola Grzymalina P29.
- Parmelina tiliacea* (Hoffm.) Hale — corticolous on *Tilia*, *Alnus*, *Populus*, *Quercus*, *Populus* sp. div., *Acer*, *Fraxinus* in parks, meadows, n. churches, parks, roadside-trees.
11 loc.: Bełchatów – Grocholice L30; Dworszowice Pakoszowe U20; Kluki L25; Lubiec J22; Łęka O31; Parzno I26; Pytowice T33; Rogowice O27; Sulmierzyce T24; Wola Grzymalina distr., unit 71a Q29; Wola Grzymalina P29.
- Parmeliosis ambigua* (Wulfen) Nyl. — on *Betula*, *Pinus*, *Alnus*, *Quercus*, *Carpinus*, *Populus* in *C-Al*, *Cr-Al*, *T-C*, *Pa-Q*, *R-Al*, old pine plantations, occasionally on solitary trees or decaying stumps.
14 loc.: Czarny Ług for., unit 129 Q30; Doly Q31; Kalduny I31; Pytowice for., units 203 T31, 208 T32; between Roździn and Parzno I25; Sadulaki for., unit 176c L24; Sokoly for., unit 126 Q32; Stróża for., unit 24n P20; Wola Grzymalina distr., units 16g N29, 34b O28, 63c O29; Wola Wydrzyna for., unit 11g P/Q23; Wójcik W33.
- Peltigera canina* (L.) Willd. — in *D-A*, grassy roadside scarps, edges of thicket and pine plantations.
5 loc.: Kurnos I L28; Podwinek Q24; Słostowice for., units 215 T32, 239 U33; Wola Grzymalina distr., unit 63 O30.

- P. didactyla* (With.) Laundon var. *didactyla* — on ground in *S-C*, *D-A*, thermophilous grassland, on roadside scarps, young pine plantations and edges of pine plantations.
13 loc.: Antoniówka R26; Gadka P27; between Gôrka and Opalańka O24; Grabek for., unit 116i P31; Lubiec II for., unit 70 I22; n. Piaski Q31; Rząsawa M29; Słostowice for., units 228, 251 U32; Szpinalów Górny Q33; Teofilów L23; Wola Wydrzyna for., unit 13i P22; n. Żłobnica R25.
- P. malacea* (Ach.) Funck — terricolous in *Juniperus* thicket, gaps in pine plantations.
2 loc.: Rząsawa M29; Słostowice for., unit 239 U33.
- P. praetextata* (Flörke ex Sommerf.) Zopf — at foot of trunk of old *Quercus* in *T-Cab*.
1 loc.: vicinity of Piaski, n. Góry Sokole forester's lodge Q31.
- P. rufescens* (Weis.) Humb. — on ground in *S-C*, *D-A*, thermophilous grassland, sunny pine plantations.
7 loc.: Kurnos I L28; Pawłów Szkolny N34; Pytowice for., unit 203 T31; Słostowice for., unit 224i U32; Wola Grzymalina distr., unit 77h P30; n. Żłobnica R26; Żwirowa Góra n. Pytowice T32.
- Pertusaria albescens* (Huds.) M. Choisy et Werner in Werner var. *albescens* — on *Quercus* and *Populus*.
2 loc.: Słostowice for., unit 252 S/T28; Sokoly for., unit 124 Q32.
— var. *corralina* auct. — corticolous on *Acer* in park, *Populus* sp. div. in meadow and *Quercus* around of gravel-pit.
3 loc.: Kluki L25; Lękawa O31; Sadulaki for., unit 184 L23.
- P. amara* (Ach.) Nyl. — corticolous on *Quercus*, *Carpinus*, *Abies* in *T-C*, *Pa-Q* dg., on *Alnus* in *C-Al* and *R-Al*.
9 loc.: n. Huby Ruszczyńskie Q31; Pytowice for., unit 212c T32; Sadulaki for., unit 184 L23; 176c L24; Sokoly for., unit 124 Q32; Wola Grzymalina distr., unit 27d O28; Wola Wydrzyna for., unit 5i P23, 11g P/Q23, 16 Q22.
— var. *slesvicensis* Erichsen — corticolous on old *Carpinus* in young pine plantation.
1 loc.: Wola Grzymalina distr., unit 63c O29.
- P. coccodes* (Ach.) Nyl. var. *coccodes* — corticolous on *Quercus*, *Carpinus* in *T-C* dg., *Alnus* in *T-Cst*.
3 loc.: Koł. Ruszczyń Q31; Pytowice for., unit 212 T32; Sokoly for., unit 126 Q32.
- P. coronata* (Ach.) Th. Fr. — on old *Carpinus* in young pine plantation.
1 loc.: Wola Grzymalina distr., unit 63c O29.
- P. haemisphaerica* (Flörke) Erichsen — on *Quercus* in *T-C* and *Alnus* in *R-Al*.
2 loc.: Sadulaki for., unit 176c L24; Sokoly for., unit 124 Q32.
- Phaeophyscia nigricans* (Flörke) Moberg — on mortar of church-walls.
4 loc.: Belchatów—Grocholice L30; Chabielice O21; Lubiec J22; Parzno I26.
- Ph. orbicularis* (Neck.) Moberg — on solitary *Populus* sp. div., *Salix*, *Acer*, *Tilia*, on mortar and concrete pill-box.

9 loc.: Belchatów—Grocholice L30; Dworzowice Pakoszowe U20; Kluki L25; Lubiec J22; Łęka O31; Łękińsko R29; Parchliny P22; Parzniewice O35; Ściegna n. Stróża Q21.

— var. *hueana* (Harm.) Erichsen — on old *Ulmus* sp. div. and *Salix* n. Widawka River.

2 loc.: Fryszka W34; Kmieczna S31.

Phlyctis argena (Spreng.) Flot. — corticolous on *Quercus*, *Carpinus*, *Alnus*, *Fraxinus* in forests, park and on solitary *Populus*, *Tilia* and *Acer*.

16 loc.: Dworzowice Pakoszowe U20; Łękińsko R29; Luszczanowice for., unit 167c S/T28; Parzno for., unit 53 H26; Pytowice for., unit 199h,l,n S32; Sadulaki for., units 184, 185 L23, 176c L24; Siedlec for., unit 74d W19; Sokoly for., units 125, 126 Q31; Wola Grzymalina distr., units 27d O28, 63j O30; Wola Wydrzyna for., units 12a,j P23, 12j P/Q, 16 Q22.

Physcia adscendens (Fr.) H. Olivier — on *Populus*, *Salix*, *Quercus*, *Populus* sp. div., *Fraxinus* on solitary trees, in parks and also on mortar of church- and cemetery-walls, edges forests.

11 loc.: Dworzowice Pakoszowe U20; Fryszka W34; Kluki L25; Kmieczna S31; Łękińsko R29; Parchliny P22; Restarzew for., unit 356 J20; Słostowice T33; Stróża R21; Wola Wydrzyna for., units 6g, 12j P23.

Ph. aipolia (Ehrh. ex Humb.) Fűrnr. — corticolous on *Populus*, *Quercus*, *Populus* sp. div. in *T-Cst*, pine plantations.

5 loc.: Kol. Kletnia W34; Magdalenów—Sarnów K22; Słostowice for., unit 228 U34; n. Sulmierzyce S24; Wola Wydrzyna for., unit 6g P23.

— var. *cercidia* (Ach.) Nyl. — *Quercus* in Jewish cemetery and on *Populus* in park.

2 loc.: Pytowice T33; n. Sulmierzyce S24.

Ph. caesia (Hoffm.) Fűrnr. — on bricks and mortar of church-wall and concrete pill-box, bridge.

4 loc.: Belchatów—Grocholice L30; Kalduny I30; Lubiec J22; Parzno I26.

Ph. stellaris (L.) Nyl. — corticolous on *Populus*, *Salix* and *Populus* sp. div.

4 loc.: Fryszka W34; Kalduny I31; Lubiec J22; Roźdźin I25.

Ph. tenella (Scop.) DC. in Lam. et DC. — on solitary *Populus*, *Acer*, *Quercus*, *Populus* sp. div., *Alnus*, *Salix*, *Fraxinus* as well as in forests, n. churches, in park, *Malus* in orchard.

22 loc.: Dworzowice Pakoszowe U20; Belchatów—Grocholice L30; Fryszka W34; Kalduny I30; Kluki L25; Kmieczna S31; Kol. Kletnia W34 (c. apoth.); Lubiec J22; Łęka O31; Łękińsko R29; Luszczanowice for., unit 165a S28; Parchliny P22; Pytowice T33; Roźdźin I25; Sadulaki for., unit 184 L23; Słostowice T33; Stróża for., unit 23d P20; Stróża R21; between Sulmierzyce and Stanisławów S24; Ściegna n. Stróża Q21; Wola Wydrzyna for., unit 12i,j P/Q23; Szeroców L21.

Physconia enteroxantha (Nyl.) Poelt — on *Acer*, *Quercus*, *Salix*, *Populus* sp. div. in parks, edge of forest, by roads.

4 loc.: Kluki L25; Łęka O31; Parchliny P22; Sadulaki for., unit 185 L23.

Ph. grisea (Lam.) Poelt — corticolous on old *Salix*, *Acer*, *Populus* sp. div., *Robinia* by roads, n. church, church-wall, old *Quercus*, *Fraxinus* in park.

8 loc.: Dworzowice Pakoszowe U20; Parzniewice O35; Parzno I26; Słostowice T33; Stróża R21; Sulmierzyce T24; Ściegna Q21; Wola Wydrzyna S22.

Ph. perisidiosa (Erichsen) Moberg — on *Salix* by road.

1 loc.: Parchliny P22.

Placynthiella icmalea (Ach.) Coppins et P. James — on wooden rails of bridge and fence, often together with *Micarea denigrata*, decaying stumps, humus, on *Quercus*.

8 loc.: Kalduny I31; Kmiecizna S31; Lubiec II for., unit 76 I22; Restarzew for., unit 355 J20; Sadulaki for., unit 170i K24; Słostowice for., unit 255 S/T28; Szczerców L21; Wola Wydrzyna for., unit 11g P/Q23.

P. oligotropha (Laundon) Coppins et P. James — on sand in *S-Ccl*, *S-Cth*, *Cl-Cal*, roadside scarp and clearing.

13 loc.: Folwark P26; Fryszka W34; Imielak L23; n. Kąsiec P31; Kurnos II M28; n. Oleśnik L29; Rząsawa M29; Słostowice for., unit 251 S/T29; Wola Grzymalina distr., units 21 N28, 31a N29, 63a O30, 60a P29; Zagadki K21.

P. uliginosa (Schrad.) Coppins et P. James — terricolous in *S-Ct*, *S-Ccl*, *S-Cth*, *F-Ko*, thermophilous grasslands, *Cl-Cal*, *Cl-Pin*, pine plantations and very rare wooden rails of bridges.

41 loc.: n. Brzezcie L20; Danielów Q34; n. Faustynów Q24, Q25; Gadka P27; between Janów and Borowa L33; n. Kalisko P32; n. Kamień O24; Karolów P26; n. Kąsiec P31; n. Kąty N25; Kmiecizna S31; Kol. Kletnia W34; Kozłowski L20; Kuźnica Q23; Kalisko distr., unit 117i P31; n. Lęg N29; Magdalenów K22; Markowizna R23; Opalańka O25; Piaski Q30; n. Piaski Q31; between Piaski and Lękawa P31; Rogowiec O27; Rząsawa M29; Sadulaki for., unit 184a L23; Stanisławów I M21; Trząs N25; Wola Grzymalina distr., units 31a N29, 34a O28, 38d, 46a, 54g, 63f, O29, 63a O30, 60a P29, 82 P30, 79c Q/R29; Wólka Łękańska N30; Zawadów N31; Żar M24.

Platismatia glauca W. L. Culb. et C. F. Culb. — corticolous on *Betula*, *Pinus*, *Quercus*, *Carpinus*, *Alnus* in *T-Cab*, dg., *Cl-Pin* and pine plantations.

14 loc.: Parzno for., unit 53 H26; n. Rogowiec O28; Sadulaki for., unit 185 L23; Sędziejowice for., unit 140 I22; Słostowice distr., unit 206 S/T28; Sokoly for., units 124, 126 Q32; Stróża for., units 26, 27 P20; Wola Grzymalina distr., units 34b O28, 63c O29, 61a P29, 70d Q29; Wola Wydrzyna for., unit 12j P/Q23.

Pleurosticta acetabulum (Neck.) Elix et Lumbsch in Lumbsch, Kothe et Elix — on *Populus nigra* in park.

1 loc.: Lękawa O31.

Porina aenea (Wallr.) Zahlbr. — corticolous on young *Fraxinus* in *T-Cst*, *C-Al*.

2 loc.: Siedlec for., unit 68d W19; Wola Wydrzyna for., unit 6g, P23.

Porpidia crustulata (Ach.) Hertel et Knoph in Hertel. — on brick.

1 loc.: Wola Wydrzyna for., unit 5i P23.

Pseudevernia furfuracea (L.) Zopf — corticolous on *Pinus*, *Betula*, *Alnus*, *Populus*, *Quercus*, *Acer*, *Abies* in *L-P*, pine plantations, *P-Q* and also on solitary trees, by roads.

24 loc.: Czarny Ług for., units 129g Q31; Doły Q31; Imielak L23; Kalduny I31; Lękińsko R29; Podlesie H23; n. Rogowiec O26, O28; Sadulaki for., units 184 L23, 177b, 182, 183 L24; Słostowice for., unit 229 U33; Stróża for., units 25b, 26, 27 P20; Wola Grzymalina distr., units 16g, 37b N29, 46i O29, 63j O30; Wola Grzymalina P29; Wola Wydrzyna for., unit 16 Q22; Wójcik W33; Zagadki K21.

Punctelia subrudecta (Nyl.) Krog — corticolous on old *Quercus*, *Acer*, *Alnus*, *Carpinus*, *Populus* sp. div. in *C-Al*, *Pa-Q* dg., in park and also on solitary trees.

6 loc.: Kluki I25; Łęka O31; Pytowice for., unit 199n S32; Sadulaki for., unit 184 L23; Wola Grzymalina distr., unit 63c O29; Wola Wydrzyna for., unit 12g P23.

Pycnothelia papillaria (Ehrh.) Dufour — on ground in *S-Ccl*, rare in *Cl-Pin*.

7 loc.: n. Kalisko P32; n. Łęg N29; between Piaski and Łęka P31; Rogowiec O27; Rząsawa M29; Stanisławów I M22; Wola Grzymalina distr., unit 79c Q/R29.

Ramalina farinacea (L.) Ach. - corticolous on old *Quercus* and *Salix* sp. div. in *T-C*, *P-Qab* and *C-Al*.

4 loc.: Fryszlerka W34; Sadulaki for., unit 185 L23; Sokoły for., unit 126 Q32; Wola Wydrzyna for., unit 5i P23.

R. fraxinea (L.) Ach. — corticolous on *Populus* and *Populus* sp. div. by roads.

2 loc.: Kluki L25; Wola Grzymalina P29.

R. obtusata (Arnold) Bitter — on oak in *Pa-Q* dg, on *Tilia*, *Fraxinus* n. church.

3 loc.: Stróża R21; between Sulmierzyce and Stanisławów S24; Sulmierzyce T24.

R. pollinaria (Westr.) Ach. — on *Quercus* and *Populus* in *T-C* dg., *P-Qab*, oak plantation.

5 loc.: Sadulaki for., unit 184 L23; Siedlec for., unit 74d W19; Sokoły for., unit 126 Q32; Wola Wydrzyna for., units 5, 6g P23.

Rinodina pyrina (Ach.) Arnold — on *Populus* by forest.

1 loc.: Kol. Kletnia W34.

Sarcogyne regularis Körb. — on mortar of cemetery-wall.

1 loc.: Łękińsko R29.

Scoliosporum chlorococcum (Graewe ex Stenh.) Vězda — corticolous on deciduous and coniferous trees.

Common, e.g. Czarny Ług for., unit 129 Q30; Doły Q31; Fryszlerka W34; Grabek for., unit 116 P31; Kalduny I31; Kluki L25; Łuszczanowice for., unit 165a S28; Magdalenów—Sarnów K22; Parzno for., unit 53 H/J26; Podlesie H23; Pytowice for., units 199g,l, 206 S32, 208 T32; Restarzew for., units 324 I19, 350 J19, 356 J20; n. Rogowiec O27, O28; Sadulaki for., units 171g K24, 184a L23, 176b I24; Siedlec for., units 59 U19, 68, 69, 74 W19; Sokoły for. Q31; Stanisławów I M21; Stróża for., unit 24n P20; n. Sulmierzyce S24; Wola Grzymalina distr., units 16g, 30, 37b, 44j N29, 63c O29, 69g P29; Wola Wydrzyna for., units 50bj P23, 12j P/Q23; Wójcik W33.

Stereocaulon condensatum Hoffm. — on ground in *S-Ccl*, *F-Ko*, rare in *Cl-Pin*.

14 loc.: n. Brzezcie L20; Faustynów P25; Folwark P26; Imielak L22, L23; Lubiec I for., unit 82 J23; Karolów P25; Opalańka O24; Rząsawa M29; Stanisławów I N22; Stanisławów II M21, N21; Wójcik W33; Wólka Łęka N30.

S. incrustatum Flörke — on sand in *S-Ccl*.

2 loc.: Stanisławów I M21, N21.

Strangospora pinicola (A. Massal.) Körb. — corticolous on old *Acer* n. bus stop.

1 loc.: Parzniewice O35.

Thelocarpon laureri (Flot.) Nyl. — on erratic blocks and stones, on wooden rails of bridges and fences, on upper part of pine stumps.

6 loc.: Kmieczna S31; Koziniec O23; Magdalenów—Sarnów K22; Słostowice for., units 228 U32, 227 U33; Szczerców L21.

Trapeliopsis flexuosa (Fr.) Coppins et P. James — on *Betula*, *Pinus*, *Juniperus*, decaying stumps.

11 loc.: Cisca n. Roździn J24; n. Fryszka W34; n. Gomunice U34; Kalduny I31; Kuźnica Lubiecka J23; Parzno for., unit 53 H26; Sadulaki for., unit 184a L23; Słostowice for., unit 255 U32; Wola Grzymalina distr., unit 16 N29; Wola Wydrzyna for., unit 12b Q32; Wójcik W33.

T. granulosa (Hoffm.) Lumbsch. — on soil in *S-Ct*, *S-Cel*, *S-Cth*, *Cl-Cal*, *Cl-Pin*, *Cl-Pin*.

25 loc.: Bożydar M25; n. Brzezie L20; n. Chmielowiec L23; n. Doły P31; Faustynów P25; Folwark P26; Gadka P27; n. Kąsice P31; n. Kąty N25; Kozłowski L20; n. Kurnos I L28; n. Lęg N29; n. Lękawa O30; Piaski Q30; between Piaski and Lękawa P31; n. Rogowiec O27, O28; Rząsawa M29; Stanisławów I M22; n. Tatar O22; Wola Grzymalina distr., units 21 N28, 63a O29, 82 P30, Q/R29; Wójcik W33.

T. viridescens (Schrad.) Coppins et P. James — on decaying stump.

1 loc.: Słostowice for., unit 255 U32.

Tuckermannopsis chlorophylla (Willd.) Hale — corticolous on *Betula*, *Pinus*, *Quercus*, *Abies*, *Juniperus*, on solitary trees as well as in *L-P*, pine plantations, *T-C*.

13 loc.: n. Doły Q31; Lubiec II for., unit 70 J22; Parzno for., unit 53 H26; Sadulaki for., units 184, 185, 186 L23; Słostowice for., unit 229 U32; Sokoly for., units 124, 126 Q32; Wola Grzymalina distr., units 61a P29, 70d Q29; Wójcik W33; Zagadki K21.

T. sepincola (Ehrh.) Hale — on twigs of *Betula*, *Juperus*, *Quercus* in forests (especially by forest roadsides) or on solitary trees.

8 loc.: Czarny Ług for., unit 129g Q31; Doły Q31; Fryszka W34; Kol. Kletnia W34; between Rząsawa and Słok M29; Wola Grzymalina for., unit 69g P29; Wola Wydrzyna for., unit 11g P/Q23; Wójcik W33.

Usnea hirta (L.) Weber ex F. H. Wigg. — corticolous on *Pinus* in old pine plantations and on *Betula* in alley n. church.

5 loc.: Magdalenów—Sarnów K22; between Roździn and Parzno I25; Słostowice for., unit 240 W33; Wola Grzymalina distr., unit 34b O28; Wola Grzymalina Q29.

Verrucaria sp. — on stones in sands, mortar on church-wall; no spores.

2 loc.: Chabielice O21; Wójcik W33.

Vulpicida pinastri (Scop.) J.-E. Mattsson et M. J. Lai — on *Quercus* and *Betula* in *P-Q*, *T-Cab*, *Pa-Q*.

6 loc.: Lubiec II, unit 70 I22; Łuszczanowice for., unit 167f S/T28; Słostowice for., unit 203 T31; Sokoly for., unit 126 Q32; Wola Wydrzyna for., units 5b P23, 11b P/Q23.

Xanthoparmelia somloensis (Gyeln.) Hale — on erratic block.

1 loc.: Parzno for., unit 53 H26.

Xanthoria candelaria (L.) Th. Fr. — corticolous on *Acer*, *Tilia*, *Fraxinus*, *Populus* sp. div., *Robinia*, *Salix* by roads, n. churches and on solitary trees, *Quercus* in park.

10 loc.: Dworszowice Pakoszowe U20; Kluki L25; Kmieczna S31; Lubiec J22; Lękińsko R29; Parchliny P22; Parzno I26; Pytowice T33; Roździn I25; Słostowice T33.

- X. elegans* (Link) Th. Fr. – mortar on church-wall.
1 loc.: Chabielice O21.
- X. fallax* (Hepp) Arnold – corticolous on *Acer* in park, old *Ulmus* n. church.
2 loc.: Łękawa O31; Sulmierzyce T24.
- X. parietina* (L.) Th. Fr. – corticolous on *Populus*, *Salix*, *Betula*, *Populus* sp. div., *Tilia*, *Acer*, *Aesculus*, *Fraxinus*, *Quercus*, *Malus* in parks, orchard, roadsides, n. churches and also mortar and stones.
21 loc.: Belchatów–Grocholice L30; Dworszowice Pakoszowe U20; Kalduny I31; Kluki L25; Kmieczna S31; Kol. Kletnia W34; Lubiec J22; Łękawa O31; Łękińsko R29; Magdalenów–Sarnów K22; Parchliny P22; Parzniewice O35; Pytowice T33; Roźdźin I25; Stróża R21; Sulmierzyce T24; Szczerców L21, L22; Ściegna n. Stróża Q21; Wola Wydrzyna for., unit 6g, 12i P23.
- X. polycarpa* (Hoffm.) Th. Fr. ex Rieber – corticolous on *Populus* sp. div., *Salix*, *Aesculus*, *Quercus*, *Populus* in parks and on solitary trees.
9 loc.: Dworszowice Pakoszowe U20; Kmieczna S31; Parchliny P22; Pytowice T33; Roźdźin I25; Słostowice T33; Słostowice for., unit 228 U34; Szczerców L21, L21.

CONCLUSIONS

In the Belchatów Industrial Region, 181 taxa of epiphytic, epigeic, epilithic and epixyloous lichens (including the lichenicolous fungi of *Athelia arachnoidea*, *Clypeococcum hypocenomycis*, *Licheniconium erodens* and *L. lecanorae*) are described. It may be assumed that all of them present an initial state of the lichen flora resources, before the Belchatów strip brown coal mine and electric power station were put into operation.

The most widespread and virile are epigeic psammophilous lichens, growing on psammophilous grasslands, and pine forest lichens, growing in dry pine forests and in pine plantations. Out of these, 16 species have from 31 to 100 localities. They are species of the genera *Cladonia* and *Cladina*, *Cetraria aculeata*, *C. islandica*, etc. Over 100 localities are those of acidophilous ubiquitous, pine epiphytes: *Hypocenomyce scalaris*, *Hypogymnia physodes*, *Lecanora conizaeoides*, *Lepraria incana* i *Scoliciosporum chlorococcum*. Besides *H. scalaris* these lichens are also common on deciduous trees in young tree stands or those growing in degenerated phytocoenoses. 54 taxa possess from 1 to 2 localities, and 71 from 3 to 10 localities (see Checklist).

22.9% of the total number of taxa have the status of threatened lichens according to the Red Data Book Categories (Cieśliński, Czyżewska and Fabiszewski 1992). The category of endangered (E) species comprises *Arthonia byssacea*, *Buellia disciformis*, *Chrysothrix candelaris*, *Flavoparmelia caperata*, *Melanelia exasperata*, *Parmelina tiliacea*, *Peltigera praetextata*, *Pleurosticta acetabulum*, *Punctelia subrudecta* and *Ramalina fraxinea*.

The category of vulnerable (V) species comprises *Bacidia assulata*, *B. rubella*, *Bryoria crista*, *Calicium glaucellum*, *C. salicinum*, *Cetraria islandica*, *Chaenotheca furfuracea*, *Ch. trichialis*, *Evernia prunastri*, *Hypogymnia tubulosa*, *Lecanora intumescens*, *Melanelia subargentifera*, *Micarea nitschkeana*, *Ochrolechia arborea*, *O. viridis*, *Opegrapha varia*, *Peltigera canina*, *P. malacea*, *Physcia aipolia*, *Platismatia glauca*, *Pycnothelia papillaria*, *Ramalina farinacea*, *R. pollinaria*, *Stereocaulon incrustatum*, *Strangospora pinicola*, *Tuckermannopsis chlorophylla*, *T. sepincola*, *Usnea hirta*, *Vulpicida pinastri*, *Xanthoria candelaria* and *X. fallax*.

The best preserved forest epiphytes grow in the forest ranges of Wola Wydrzyna and Siedlec, in old parks (Łękawa, Kluki) and on solitary trees, e.g. near churches.

Although in the Belchatów Industrial Region there occur species that are rare in the local and regional scale, e.g. *Bacidia assulata*, *Calicium glaucellum*, *Melanelia elegantula*, *M. exasperata*, *Punctelia subrudecta*, *Ramalina fraxinea*, *R. obtusata*, *Xanthoparmelia somloensis*, and *Lepraria lobificans*, *Micarea misella* and lichenicolous fungi are only recently reported in Poland, some species of the genera *Arthonia*, *Arthopyrenia*, *Bacidia*, *Bryoria*, *Calicium*, *Chaenotheca*, *Graphis*, *Pyrenula*, *Usnea* and other were not recorded in spite long searches.

REFERENCES

- Cieśliński S., Czyżewska K., Fabiszewski J. 1992. Czerwona lista porostów zagrożonych w Polsce [Red list of threatened lichenized fungi in Poland]. In: K. Zarzycki, W. Wojewoda, Z. Heinrich, (ed.), Lista roślin zagrożonych w Polsce [List of threatened plants in Poland]. Inst. Botaniki PAN, Kraków: 57–74.
- Christiansen M. S. 1980. *Lichenoconium erodens* and some other fungi parasitic on *Lecanora conizaeoides*. *Lichenologist* 12 (1): 149–151.
- Czyżewska K. 1976. A new form of *Parmelia fuliginosa* (Fr.) Nyl. from Central Poland. *Fragm. Flor. Geobot.* 22, 1–2: 137–139.
- Czyżewska K. 1988 (1989). Changes in the lichen flora influenced by the Belchatów Industrial Region. *Acta Mycol.* 24: 93–100.
- Czyżewska K., Jakubowska-Gabara J. 1985. Szata roślinna przyszłego Belchatowskiego Okręgu Przemysłowego oraz zachodzące w niej zmiany we wstępnym okresie inwestycji [Plant cover of the planned Belchatów Industrial Region and changes occurring in it during the initial construction stage]. In: S. Liszewski (ed.), Zmiany w środowisku przyszłego Belchatowskiego Okręgu Przemysłowego. Stan z okresu przedinwestycyjnego i wstępnej fazy pracy elektrowni [Changes in the planned Belchatów Industrial Region. Preconstruction and initial electric power station operation periods]. PWN, Warszawa–Łódź: 127–139.
- Czyżewska K., Olaczek R. 1983. Belchatowski Okręg Przemysłowy w badaniach Instytutu Biologii Środowiskowej Uniwersytetu Łódzkiego [Belchatów Industrial Region as a subject of the studies of the Institute of Environmental Biology of Łódź University]. *Acta Univ. Lodz., Folia sozol.* 1: 89–123.

- Faltnowicz W. 1993. A Checklist of Polish lichen forming and lichenicolous fungi including parasitic and saprophytic fungi occurring on lichens. *Pol. Bot. Stud.* 6, 65 pp.
- Laundon J. 1992. *Lepraria* in the British Isles. *Lichenologist* 24: 315–350.
- Nowak J. 1993. Flora Polska. Porosty (Lichenes). VI, 3. *Physciaceae sensu stricto*. Inst. Bot. PAN, Kraków, 128 pp. + Tables.
- Purvis O. W., Coppins B. J., Hawksworth D. L., James P. W., Moore D. M. (eds.) 1994. The lichen flora of Great Britain and Ireland. Natural History Museum Publications, London, 710 pp.
- Randlane T., Saag A. 1993. World list of Cetrarioid lichens. *Mycotaxon* 47: 395–403.
- Santesson R. 1993. The lichens and lichenicolous fungi of Sweden and Norway. Lund, 240 pp.
- Schneider C. 1993. A revision of European saxicolous species of genus *Buellia* De Not. and formerly included genera. *Lichenologist* 25 (4): 315–364.
- Timdal E. 1984. The genus *Hypocenomyce* (*Lecanorales, Lecideaceae*), with special emphasis on the Norwegian and Swedish species. *Nord. J. Bot.* 4: 83–108.

Porosty (lichenized *Ascomycotina*) Belchatowskiego Okręgu Przemysłowego (Polska Środkowa)

Streszczenie

Badania prowadzono w Belchatowskim Okręgu Przemysłowym w latach 1969–1972 i 1976–1985. Obiekt badań omówiono w pracy Czyżewskiej i Olaczka (1983). Porosty przedstawiono na tle regionalnej siatki kwadratów o boku 2 × 2 km (Fig. 2; kwadrat DE według siatki ATPOL) o powierzchni 544 km².

Łącznie stwierdzono 181 taksonów: 177 taksonów porostów epifitycznych, epiksylicznych, epigeicznych i epilitycznych oraz cztery gatunki grzybów naporostowych (por. także Czyżewska 1988/1989). Na uwagę zasługują *Lepraria lobificans*, *Micarea misella* i grzyby naporostowe: *Athelia arachnoidea*, *Clypeococcum hypocenomycis*, *Lichenocnium erodens* i *L. lecanorae*, gatunki wyróżniane w Polsce od niedawna.

Wydaje się, że zgromadzone materiały obrazują stan wyjściowy różnorodności taksonomicznej i zasobów porostów przed uruchomieniem kopalni węgla brunatnego i elektrowni w Belchatowskim Okręgu Przemysłowym.