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Dedicated to Professor Alina Skirgiełło on the occasion of her ninety fifth birthday

Microfungi of *Carpinus betulus* from Poland I. Annotated list of microfungi

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The compiled microfungi list comprises 115 taxons noted in Poland, of them, 28 parasitic. 10 species of microfungi were host specialized (exclusive, or partially exclusive for hornbeam).

Key words: hornbeam fungi, list of species, mycogeography, Poland

INTRODUCTION

The majority of hornbeam species was reported from Eastern Asia. Thus the distribution centrum of the genus *Carpinus* L. is located in Central China (Boratyńska 1993; Chen et al. 1999). It is difficult to establish a precise number of all hornbeam species. Until recently over 80 separated species have been reported. According to Boratyńska (1993) only 21 species can be referred to the genus. The residual taxa are questionable. At present from Europe are known two species: *Carpinus betulus* L. and *C. orientalis* Mill. The hornbeam species are distributed in three regions of the Northern Hemisphaere: North America (1 species), Europe and Asia Minor (2 species) and Eastern Asia (18 species). The genus *Carpinus* supports many microfungi, some of them are confined to the genus or related genera. There are some articles devoted fungi on *Carpinus betulus* e.g. Fakirova (1993), and two other hornbeam species such as *C. virginiana* (Marshall) Sudw. (Farr et al. 1989; Bills, Polishook 1991) and *C. cordata* Blume (Vasilyeva 1998). These plants are partially representative for the three mentioned disjunctive regions. However mycological research of the most interesting region in Central China is largely neglected. We found only single report of *Melampsoridium carpini* (Nees) Dietel on *Carpinus fargesiana* H. Winkler from Sichuan in China (Zhang et al. 1997). Finds on *Carpinus cordata* from Russian Far East (Vasilyeva 1998) showed that we can expect much more exclusive species of microfungi from this region. Microfungi noted on *Carpi-*

nus virginiana and *C. cordata* have only little biogeographical significance, because of fragmentary knowledge of their spatial distribution pattern.

Mycological data of the hornbeam tree in Polish territoty are fragmentary. Wojewoda (2003) noted 129 macromycetes collected by various authors on the host plant, among them 27 parasitic fungi and 102 species of saprotrophs. Under the tree has been noted 82 species of fungi growing in the soil (Wojewoda 2003). Microfungi are insuficiently investigated. Only Białowieża N. P. and Kampinos N. P. are more detaily studied. Other areas posses mostly scarcely data. The listed below microfungi have been collected by many mycologists. In Poland these fungi were collected by Schroeter (1908), Eichler (1902, 1904, 1907), Rouppert (1909), Namysłowski (1909), Stecki (1910), Waśniewski (1911), Siemaszko (1923), Trzebiński et al. (1916), Wróblewski (1918, 1925), Dominik (1936), Skirgiełło (1960), Truszkowska (1959, 1960, 1965), Gołąb (1978), Borowska (1966, 1986, 1987, 1989), Sałata (1972, 1975), Weber-Czerwińska (1974), Truszkowska & Chlebicki (1983), Chlebicki (1986, 1991, 2002, 2005a, 2005b, 2006), Mułenko (1996), Bujakiewicz et al. (1997), Mańka et al. (2002) and Piątek (2004).

The compiled list of microfungi comprises 115 taxons, of them, 28 parasitic species. 10 species of microfungi were host specialized (exclusive species, or partially exclusive species for hornbeam). *Gnomoniae fimbriata* (Pers.) Fuckel appear the most common hornbeam ascomycete in Poland. There are also collected very rare species such as *Camarops plana* Pouzar, *Camarops polysperma* (Mont.) J. H. Mill., *Lasiosphaeria hirsuta* (Fr.) Ces. et De Not., *Lophiostoma curreyi* Sacc., *Nemania atropurpurea* (Fr.) Pouzar, *Oidium carpini* Foitzik and others. Presence of following exclusive species was noted in Polish territory: *Camarops plana*, *Diaporthe carpini* (Pers.) Fuckel, *Encoelia carpini* (Rehm) Boud., *Gnomonia fimbriata*, *Massaria carpinicola* Tul. et C. Tul., *Melampsoridium carpini*, *Melanconis spodiaea* Tul. et C. Tul., *Oidium carpini*, *Pezicula carpinea* (Pers.) Tul. ex Fuckel and *Phyllosticta carpini* Schulzer et Sacc.

LIST OF SPECIES

Abbreviations: coll. collected; distr. district; var. variety; subsp. subspecies; N. P. National Park; R.P. Regional Park; unpubl. unpublished; synonymes and doubtful taxa are designated by italic letters; parasitic species are marked by ♦.

Alysidium resinae (Fr.) M. B. Ellis, anamorphic fungus, ***Botryobasidium***, Basidiomycetes.

Locality: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum*, *Pino-Carpinetum*, *Pino-Quercetum* (Borowska 1987). Host: on dead wood of *Betula pendula, Carpinus betulus, Quercus robur* (Borowska l. c.).

♦ ***Apiosporopsis carpinea*** (Fr.) Traverso, syn.: *Sphaerognomonia carpinea* (Fr.) Potiebnia, *Sphaeria carpinea* Fr.: Fr., *Laestadia carpinea* (Fr.: Fr.) Sacc. *Guignardia carpinea* (Fr.) J. Schroet., *Gnomoniella carpinea* (Fr.) Monod, anamorph: ***Monostichella robergei*** (Desm.) Hoehn., Diaporthales.

LOCALITIES: teleomorph: Zielona Góra, Wołów, Trzebnica, Wrocław (Schroeter 1908), Kampinos N. P., Dębina reserve (Borowska 1966), Białowieża N. P. (Chlebicki et al. 1996); anamorph: Białowieża N. P. (Mułenko 1996).

HOST: on living leaves (teleomorph on overwintered leaves) of *Acer*, *Alnus*, *Betula*, *Carpinus betulus, C. caroliniana*, *Castanea*, *Corylus* and *Ostrya* and *Quercus* (Conners 1967; Barr 1978; Farr et al. 1989). The species was noted in Europe and North America (Conners l. c.; Farr et al. l. c.; Fakirova 1993).

Barrmaelia oxyacanthae (Mont.) Rappaz, syn.: *Anthostomella melanotes* (Berk. et Br.) P. M. D. Martin, Xylariales.

LOCALITY: Lower Silesia, Środa Śląska near Wrocław (Schroeter 1908). HOST: on dead wood of *Ribes petreum, Populus tremula, Carpinus betulus* (Schroeter l. c.), *Salix cinerea* (Chlebicki, unpubl. data). Earlier its localities were referred to *Anthostomella melanotes* (Berk. et Br.) P. M. D. Martin.

Bertia moriformis (Tode) De Not., Sordariales.

LOCALITIES: Białowieża N. P. (Chlebicki et al. 1996). HOST: on decorticated wood of stumps and branches of *Alnus*, *Fagus*, *Picea*, *Tilia*, *Acer* and *Pinus* (Chlebicki 1991; Bujakiewicz et al. 1997). Both varieties of the species: *Bertia moriformis* var *moriformis* as well as *B. moriformis* var. *latispora* were found on hornbeam wood in Białowieża N. P. (Chlebicki l. c.).

Biscogniauxia repanda (Fr.) Kuntze, Xylariales.

LOCALITIES: Byk near Międzyrzec, on *Carpinus betulus* (Eichler 1907). HOST: on dead branches of *Sorbus aucuparia, Sorbus aria* (Pouzar 1986a). Chlebicki and Bujakiewicz (1994) and Chlebicki (2005b) cited some finds from Poland on *Sorbus aucuparia*. Granmo et al. (1989) cited also *Betula, Prunus, Malus, Quercus, Alnus* and *Tilia* as rare host plants. Pouzar (l. c.) considered *Sorbus aucuparia* as the most important host. Ju et al. (1998) mentioned two finds from Ussuriysky reserve on *Malus mandshurica*, however, Vasilyeva (1998) described it as separate taxon, *Biscogniauxia mandshurica* which differs from *B. repanda* by narrower ascospores and umbilicate ostioles. Eichler (l. c.) reported the species as *Nummularia repanda* (Fr.) Nitschke with ascospores 10-12 x 5-6 um. (*B. repanda*: 10-15 x 4-6 um; *B. nummularia*: 10-16 x 6-10 um). Vasilyeva (1988) noted related species *Biscogniauxia succenturiata* (Tode: Fr.) O. Kuntze on *Carpinus cordata* from Russian Far East. Ju et al. (l. c.) revised the type material of *Sphaeria succenturiata* Tode from UPS and considered that it is *Lopadostoma gastrinum*, but the descriptions of Persoon, Fries and Nitschke suggest a *Biscogniauxia* taxon. *B. repanda* is known from Europe, Asia and North America (Granmo et al. 1989; Ju et al. l. c.; Vasilyeva l. c.).

Bispora betulina (Corda) S. Hughes, anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987).

HOST: on dead wood of *Carpinus betulus, Quercus robur, Betula pendula, Tilia cordata* (Borowska 1987), *Carpinus betulus*, *Betula pendula, Fagus orientalis*, *Pyrus* sp., *Populus* sp., *Quercus* sp. (Melnik 2000). It is common species, known from Europe and North America (Ellis 1971).

Bolinia tubulina Sacc. *Camarops tubulina*. Note of this species (Truszkowska 1965) refers to *Camarops polysperma*.

Brachysporium nigrum (Link) S. Hughes, anamorphic fungus, incertae sedis, Ascomycetes.

Localities: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum* (Borowska 1987); Jura Krakowska, Prądnik (Scheuer, Chlebicki 1997).

Host: on rotting wood of *Carpinus betulus* (Belorussia), *Betula, Corylus, Populus tremula* (Melnik 2000).

Cacumisporium capitulatum (Corda) S. Hughes, anamorphic fungus, incerte sedis.

Localities: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, Tilio-*Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). Host: on dead wood of *Carpinus betulus*.

Camarops tubulina (Alb. et Schw.: Fr.) Shear, Xylariales. The material from Białowieża N. P. reported as *Bolinia tubulina* Sacc. (Truszkowska 1965) is erroneously determined and in fact belongs to *Camarps polysperma* (Nannfeldt 1972). *Camarops tubulina* was noted only on wood of *Picea abies*, *Abies alba* (Nannfeldt l. c.; Hilber, Hilber 1980) and occasionally on *Fagus sylvatica* (Holec 2005).

Camarops plana Pouzar, Boliniales, Ascomycetes (Fig. 1).

Locality: Poland: Białowieża N. P., *Tilio-Carpinetum*, on trunk of *Carpinus betulus*, lying in ditch, August 1961, coll.: W. Truszkowska. Host: on dead wood of trunk of *Carpinus betulus* (Pouzar 1986). The species has been described by Pouzar (1986b) on the basis of material from Slovakia. Truszkowska (1965) reported the species from Białowieża N. P. as *Camarops tubulina* (Alb. Et Schwein.) Shear, see Chlebicki (2006).

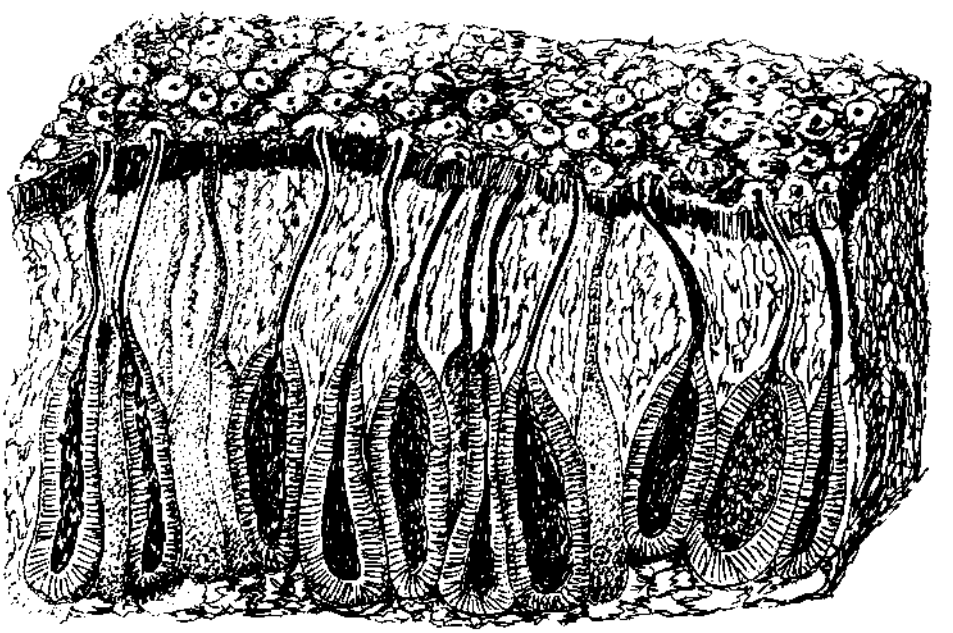

Fig. 1. Section of stroma of *Camarops plana* Pouzar; according to drawing of Ewa Szumińska.

Camarops polysperma (Mont.) J. H. Mill., Boliniales.

LOCALITY: Białowieża N. P. (Truszkowska 1965). HOST: noted on dead branches and trunks of *Alnus glutinosa, A. incana, Acer* sp., *Fagus sylvatica, Carpinus betulus* (Nannfeldt 1972), *Citrus* sp., *Magnolis* sp., *Quercus* sp., *Scordophloeus zenkeri* (Hilber, Hilber 1980), and *Fraxinus excelsior* (Chlebicki unpubl. data). It is a rare species, restricted to the old forests in North Poland and Carpathians (Chlebicki, Bujakiewicz 1994), known from Northern Hemisphere (Farr et al. 1989), Argentina (Mercuri 1972), Europe, North America, Southern America, Africa (Hilber, Hilber l. c.) and East China (Abe, Liu 1995). Some other species of the genus *Camarops* have been noted on hornbeam. *Camarops pugillus* (Schw.: Fr.) Shear was noted in Czech and Sweden (Lundqvist 1987) as well in Austria (Scheuer 1997). *Camarops microspora* (P. Karst.) Shear, mostly noted on *Alnus*, was noted on hornbeam branches in Czech (Pouzar 1986b) and Germany (Nannfeldt l. c.).

Cenangium carpini Rehm *Encoelia carpini*.

*Ceratostomella ampullasca (*Cooke) Sacc. *Endoxyla cirrhosa*.

Chaetopsis grisea (Ehrenb.) Sacc., anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITIES: Dębina reserve, Kampinos N. P. (Borowska 1966), Białowieża N. P. (Borowska 1986). HOST: noted on dead bark and wood, rarely on old leaves of *Acer, Alnus, Carpinus betulus, Fagus, Laurus, Quercus, Salix, Ulmus* (Borowska l. c.). It is species known from Europe.

Chaetosphaeria ovoidea (Fr.) Constant., K. Holm et L. Holm, syn.: *Chaetosphaeria glauca* Hol.-Jech., anamorph: ***Menispora glauca*** Pers., Trichosphaeriales.

LOCALITIES: anamorph is a common fungus in all parts of Poland (Borowska 1986). HOST: noted on bark and wood of *Acer, Carpinus betulus, Betula, Quercus, Fagus*, *Populus* (in Poland). Teleomorph was found on wood of *Fagus sylvatica* and *Quercus* sp. in Czech Republic and on *Populus tremula* in Lithuania (Treigienë, Markovskaya 2003).

Chaetosphaeria inaequalis (Grove ex Berl. et Voglino) W. Gams et Hol.-Jech., anamorph: ***Gonytrichum caesium*** C. G. Nees et T. F. L. Nees var. ***caesium***, Trichosphaeriales.

LOCALITIES: Kampinos N. P., mostly noted on *Carpinus betulus* and *Quercus* sp. (Borowska 1986), known from Europe and North America (Borowska l. c.). HOST: on dead wood and bark of *Abies, Acer, Alnus, Betula, Buxus, Carpinus betulus, Corylus, Robinia, Salix, Taxus, Ulmus, Ilex.*

Chaetosphaeria innumera Berk. et Broome ex Tul. et C. Tul., anamorph: ***Chloridium botryoideum*** (Corda) S. Hughes var. ***botryoideum***, Trichosphaeriales.

LOCALITIES: Kampinos N. P. (Borowska 1986). HOST: on bark of dead plant of *Carpinus betulus, Fagus, Alnus, Betula, Quercus, Salix, Sorbus, Ulmus, Tilia* (Borowska l. c.). The species was noted in Germany, Sweden, Hungary, Great Britain and Canada (Borowska l. c.).

Chaetospheria lentomita W. Gams et Hol.-Jech., anamorph: ***Chloridium pachytrachelum*** W. Gams et Hol.-Jech., Trichosphaeriales.

LOCALITY: Świętokrzyski N. P. (Borowska 1986). HOST: on dead wood of.*Fagus, Carpinus, Quercus, Pinus* (Borowska l. c.).

Chaetosphaeria myriocarpa (Fr.) C. Booth, anamorph: ***Chloridium clavaeforme*** (Preuss) W. Gams et Hol.-Jech., Trichosphaeriales.

LOCALITIES: anamorph: common in all part of Poland, Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko. *Tilio-Carpinetum*, *Pino-Carpinetum*, *Pino-Quercetum* (Borowska 1986, 1987); teleomorph: Jura Krakowska, Prądnik (Scheuer, Chlebicki 1997). HOST: on rotting wood of various trees also on *Carpinus betulus* (Dennis 1968). Anamorph has been noted on *Acer, Alnus, Amygdalus, Betula, Carpinus, Castanea, Cedrus, Corylus, Crataegus, Fagus, Fraxinus, Pinus, Sambucus, Sorbus, Quercus* and *Ulmus* (Borowska l. c.). The species is known from Europe, North America, Asia and New Zeland (Borowska l. c.).

Chaetosphaeria preussii W. Gams et Hol. -Jech., anamorph: ***Chloridium preussii*** W. Gams et Hol.-Jech., Trichosphaeriales.

LOCALITIES: anamorph: Kampinos N. P. (Borowska 1987), known also from Europe and Canada (Borowska 1986). HOST: on dead wood of *Acer, Carpinus betulus, Fraxinus, Quercus* (Borowska l. c.).

Chalara breviclavata Nag Raj et W. B. Kendr., anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITIES: Białowieża N. P., Kampinos N. P. (Borowska 1986). HOST: on dead wood of *Betula, Carpinus betulus, Quercus* and *Tilia* (Borowska l. c.), *Fraxinus* (Nag Raj, Kendrick 1975). The species is known from Europe and Canada (Borowska l. c.).

Chalara cylindrosperma (Corda) S. Hughes, anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITIES: Białowieża N. P. (Borowska 1986). HOST: on dead stems and fruits of *Aconitum, Aesculus, Agathis, Betula, Fagus, Gleditschia, Ilex, Picea, Pinus, Podocarpus, Tilia, Carpinus* (Borowska l. c.). The species was noted in Europe, Canada, India and New Zeland (Borowska l. c.).

Chalara insignis (Sacc., M. Rousseau. et E. Bommer) S. Hughes, Hyphomycetes. LOCALITIES: Warsaw (Borowska 1986). HOST: on dead wood and bark of *Corylus, Picea, Carpinus, Poria* and *Quercus* (Borowska l. c.). It was earlier reported from Great Britain and Canada.

Chloridium clavaeforme vide teleomorph *Chaetosphaeria myriocarpa*.

Chloridium preussii W. Gams et Hol.-Jech., vide teleomorph *Chaetosphaeria preussii*.

Cheirospora botryospora S. Hughes, syn.: *Thyrsidium botryosporum Sacc*., anamorphic fungus, Ascomycetes.

LOCALITIES: Białowieża N. P. (Truszkowska 1965). HOST: plurivorous species, reported on dead twigs of *Cornus alba*, *Hedera helix*, *Fagus grandifolia*, *Quercus robur* in U. K., Austria and U.S.A. (Sutton 1980), *Alnus glutinosa* and *Betula pubescens* ssp. *carpatica* in Poland (Chlebicki et al. 1996), on *Carpinus orientalis* in Caucasus, Georgia (Melnik 2000) and *Carpinus betulus* in Lithuania (Ignataviciûtë, Treigienë 1998).

Chloridium virescens var. ***caudigerum*** (Höhn.) W. Gams et Hol. Jech., syn.: *Cirrhomyces caudigerus* Höhn., anamorphic fungus, teleomorph: ***Chaetosphaeria***, Sordariales.

LOCALITIES: Borowska (1986) mentioned this species on wood of hornbeam from Poland. It occurs in Europe, North America, Africa and Sri Lanka (Borowska l. c.). HOST: on dead wood of *Acer, Alnus, Betula, Carpinus betulus, Fagus, Picea, Quercus, Populus*.

Chloridium virescens var. ***chlamydosporum*** (J. F. H. Beyma) W. Gams et Hol. Jech., anamorphic fungus, teleomorph: ***Chaetosphaeria***, Sordariales.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: on dead bark and wood and overwintered leaves of *Aesculus, Alnus, Carpinus, Cedrus, Fagus, Fraxinus, Populus, Quercus, Salix, Sorbus, Spirea*, dead rots of *Picea* and *Caragana*, dead stems of *Urtica* and *Juncus* (Borowska 1986). It is the most common species of *Chloridium* in Poland (Borowska l. c.). The species was noted in Europe, Asia, North America, Africa, Australia and New Guinea (Borowska l. c.).

Cladosporium cladosporioides (Fresen) G. A. De Vries, anamorphic fungus, teleomorph: ***Mycosphaerella***, Mycosphaerellales.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: It is cosmopolitan species, known on dead wood of vide variety of plants.

Coniochaeta ligniaria (Grev.) Massee, Sordariales.

LOCALITIES: Białowieża N. P. (Truszkowska 1965), known from Europe (Arx, Müller 1954), temperate northern hemisphere (Farr et al. 1989). HOST: on corticated and decorticated branches as well as on herbaceous stems of *Abies, Acer, Alnus, Ceanothus, Cercocarpus, Crataegus, Larix, Oplopanax, Ostrya, Physocarpus, Pinus, Populus, Sambucus, Tsuga* (Farr et al. l. c.).

Cordana pauciseptata Preuss, anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: on dead wood of decorticated twigs of *Alnus incana*, *Carpinus betulus* (in Lithuania), *Fagus orientalis, Rosa* spp., *Populus* sp. (Melnik 2000). Borowska (l. c.) noted it on *Carpinus betulus, Quercus robur* and *Betula pendula* in Poland.

♦ ***Cryphonectria gyrosa*** (Berk. Et Broome) Sacc. et D. Sacc, syn.: *Endothia gyrosa* (Schwein.: Fr.) Fr., Diaporthales.

LOCALITY: Strzelińskie Hills (Truszkowska, Chlebicki 1983). HOST: on twigs of *Acer, Castanea, Corylus, Fagus, Ilex, Liquidambar, Quercus, Ulmus, Vitis* (Farr et al. 1989). It was reported from North America and Australia (Farr et al. l. c.).

Cryptosporella aurea Fuckel *Melanconis xanthostroma*.

Cryptosporiopsis fasciculata vide teleomorph: *Pezicula carpinea*.

♦ ***Cylindrocarpon magnusianum*** (Sacc.) Wollenw, teleomorph: ***Nectria***, Sordariales.

LOCALITY: Wronczyn near Poznań (Mańka et al. 2002). HOST: on living roots of *Carpinus betulus*.

Cylindrotrichum oligospermum (Corda) Bonord., anamorphic fungus, teleomorph: ***Chaetosphaeria***, Sordariales.

LOCALITY: Białowieża N. P. (Borowska 1986). HOST: on dead wood and stems of *Betula, Carpinus, Ulmus, Umbelliferae* (Borowska l. c.). It is the most common species of *Cylindrotrichum*.

?*Cytospora decipiens* Sacc. (Truszkowska, Chlebicki 1983), it is probably *Cytospora leucosperma* (Pers.) Fr.

Cytospora decorticans Sacc., Białowieża N. P. (Truszkowska 1959).

Dasyscyphus fuscescens (Pers.) Gray *Lachnum fuscescens* var. *fuscescens*.

Diaporthe betuli (Pers.) Winter *Diaporthe carpini*.

♦ ***Diaporthe carpini*** (Pers.) Fuckel, syn.: *Diaporthe betuli* (Pers.) Winter, anamorph: ***Discosporina deplanata*** (Höhn.) Höhn., Diaporthales.

LOCALITIES: Zielona Góra, Legnica, Wrocław, Niemcza, Wałbrzych (Schroeter 1908), Warszawa (Kochman 1964), Białowieża N. P. (Truszkowska 1965), Strzelińskie Hills (Truszkowska, Chlebicki 1983). HOST: on senescent twigs of *Carpinus betulus* (Munk 1957), rarely *Corylus avellana* (Wehmeyer 1933) and *C. mandshurica* (Vasilyeva 1998). It was noted in Europe (Fakirova 1993) and Russian Far East (Vasilyeva 1989).

♦ ***Diaporthe eres*** Nitschke syn.: *Diaporthe sordida* Nitschke, Diaporthales.

LOCALITY: Zielona Góra (Schroeter 1908). HOST: on senescent and dead twigs and branches, plurivorous species, noted on 65 host plant species (Wehmeyer 1933; Farr et al. 1989) from temperate areas of northern hemisphaere.

Diaporthe bitorulosa (Berk. et Broome) Sacc. *Wusteneia xanthostroma*.

Diaporthe hyperopta Nitschke f. *major* Wehm. *Melanconis chrysostroma*.

Diaporthe sordida Nitschke = *Diaporthe eres*.

♦ ***Diatrype decorticata*** (Pers.) Rappaz, Xylariales.

LOCALITIES: Białowieża N. P. (Chlebicki et al. 1996), Puszcza Augustowska Forest, Choszczewo (Chlebicki unpubl. data). The species was noted in Europe (Rappaz 1987). HOST: on dead twigs of *Carpinus, Fagus, Tilia, Crataegus, Prunus, Sali* (Rappaz l. c.).

Diatrype flavovirens (Pers.) Fr., Xylariales.

LOCALITIES: Międzyrzec (Eichler 1907), Białowieża N. P. (Chlebicki et al. 1996), Puszcza Augustowska Forest, Dworczysko, near Czarna Hańcza river (Chlebicki, unpubl. data). The species was reported from Europe, North America, Africa, Asia (Rappaz 1987). HOST: on dead twigs and branches of *Carpinus, Prunus spinosa, Sambucus callicarpa, S. racemosa, Acer pseudoplatanus, Quercus pubescens, Hedera helix, Viburnum opulus, Cornus* sp., *Corylus avellana, Fagus sylvatica, Fraxinus excelsior, Cydonia vulgaris, Prunus armeniaca, Salix* sp. and *Tilia* sp. (Rappaz l. c.).

♦ ***Diatrype stigma*** (Hoffm.) Fr., Xylariales.

LOCALITIES: Chirkowa near Świecie (Hennings 1892), Białowieża N. P. (Truszkowska 1959, 1965, Chlebicki et al. 1996), Puszcza Borecka Forest, Boczki Reserve (Chlebicki, Krzyżanowska 1995), Puszcza Augustowska Forest, Czerwone Bagno Reserve, Bagno Ławki (Chlebicki, unpubl. data). HOST: on dead twigs and branches of *Quercus*, *Rosaceae*, *Betulaceae* (Rappaz 1987), *Quercus*

acutissima (Abe 1986). It is known from Europe and North America (Rappaz l. c.; Fakirova 1993) and Japan (Abe 1986).

♦ ***Diatrype subaffixa*** var. ***rappazii*** Chleb., Xylariales (Fig. 2).

LOCALITIES: Białowieża N. P., Puszcza Romincka Forest, Boczki reserve Puszcza Borecka Forest, Czerwony Dwór (Chlebicki, Krzyżanowska 1995; Chlebicki et al. 1996; Chlebicki, unpubl. data). HOST: on dead wigs and branches of *Carpinus betulus* (Chlebicki, Krzyżanowska l. c.). *Diatrype subaffixa* (Schwin.) Cooke is known from type locality in New Jersey (USA) on *Rosaceae* (Rappaz 1987; Chlebicki, Krzyżanowska l. c.).

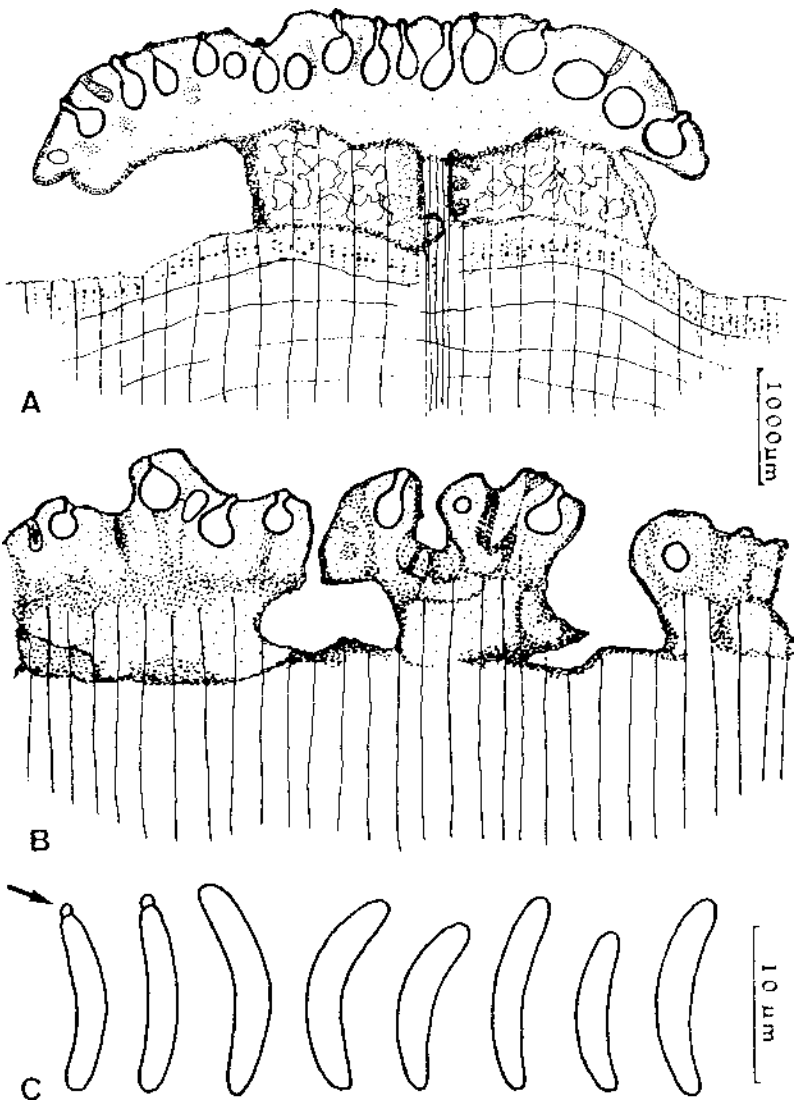

Fig. 2. Section of stroma of *Diatrype subaffixa* var. *rappazii* Chlebicki: A pulvinate stroma KRAMF41521; B undulate stroma KRAMF41577; C ascospores, some with budding apex.

♦ ***Diatrypella favacea*** (Fr.) Ces. et De Not., syn.: *D. verrucaeformis* (Fr.) Nitschke, Xylariales.

Localities: Strzelińskie Hills (Truszkowska, Chlebicki 1983), Białowieża N. P. (Truszkowska 1959, 1965; Chlebicki 1986; Chlebicki et al. 1996), Puszcza Romincka Forest, Boczki reserve (Chlebicki 2005a). Host: on senescent twigs and branches of *Alnus, Betula, Corylus, Carpinus* (Croxall 1950; Chlebicki l. c.). Croxall (1950) and Chlebicki (l. c.) considered *D. verrucaeformis* as synonyme of *D. favacea*.

Discosporina deplanata (Höhn.) Höhn., vide teleomorph: *Diaporthe carpini*.

Enchnoa infernalis (Kunze) Fuckel, Sordariales.

Locality: Lower Silesia, Świdnica (Schroeter 1908). Host: on dead twigs and branches of *Quercus* (Munk 1957; Dennis 1968), *Carpinus betulus* (Schroeter l. c.), *Salix caprea*, *S. myrsinifolia* (Mathiassen 1993). The fungus was reported from Great Britain (Dennis l. c.), Danmark (Munk l. c.), Norway (Mathiassen 1989, l. c.) and Sweden (Eriksson 1992). Similar species, *Enchnoa subcorticalis* (Peck) Barr was noted on branches of *Carpinus caroliniana* (Farr et al. 1989).

♦ ***Encoelia carpini*** (Rehm) Boud., syn.: *Cenangium carpini* Rehm, Helotiales.

Localities: Międzyrzec (Eichler 1902), Białowieża N. P. (Anonim 1968; Kotlaba, Lazebniček 1967). Host: on senescent twigs of *Carpinus betulus*. Related species, *Encoelia furfuracea* (Roth ex Pers.) P. Karst. inhabit genera from *Botyloideae* and *Coryloideae*: *Alnus* and *Corylus* in Great Britain (Dennis 1968). Kutorga (1989) found *E. furfuracea* on decorticated wood and bark of *Alnus* in Lithuania. These relationships can indicate that fungi from the genus *Encoelia* coevolved with various genera of *Betulaceae* from Tertiary.

Endothia gyrosa (Schwein.: Fr.) Fr. *Cryphonectria gyrosa*.

Endoxyla cirrhosa (Pers.) E. Müll. et Arx, syn.: *Ceratostomella ampullasca (*Cooke) Sacc., Xylariales.

Locality: Jura Krakowska, Prądnik (Scheuer, Chlebicki 1997). Host: noted on rotting wood of *Acer, Carpinus betulus, Quercus* (Dennis 1968; Scheuer, Chlebicki l. c.).

Eutypa lata (Pers.) Tul. et C. Tul., Diatrypales, noted on decorticated wood.

Localities: Puszcza Romincka Forest, Boczki reserve (Chlebicki, unpubl. data), noted also on *Acer platanoides*, near Hańcza lake. Host: it is plurivorous and common species (Rappaz 1987).

Eutypa lejoplaca (Fr.) Cooke, Xylariales.

Locality: Białowieża N. P. (Chlebicki et al. 1996). Host: on dead branches of *Acer monspessulanus, A. platanoides, A. pseudoplatanus* (Rappaz 1987), *Carpinus betulus* (Chlebicki et al. l. c.). The species was noted in Europe (Rappaz l. c.).

Eutypella cerviculata (Fr.) Sacc., Xylariales.

Localities: Lower Silesia, Borowa Oleśnicka coll.: *R. Guziak*, 1991, KRAM 41372; Turew near Poznań, coll.: *W. Truszkowska*, noted also in Białowieża N. P. (Truszkowska 1959, Chlebicki et al. 1996). Host: on dead twigs and branches of *Alnus* sp., *Alnus incana, A. tenuifolia, Carpinus betulus, Carpinus americana, Betula nigra, Betula* sp. (Rappaz 1987), *Amelnachier, Corylus, Ostrya, Prunus* and *Quercus* (Farr et al. 1989). It is known in temperate areas of norhtern hemispahere (Farr et

al. l. c.). Vasilyeva (1998) reported *Eutypella corynostomoides* (Rehm) Rappaz on branches of *Carpinus cordata* from Russian Far East.

♦ ***Gibberella baccata*** (Wallr.) Sacc., Hypocreales.

Localities: Oława, Lower Silesia (Schroeter 1908). It is cosmopolitan species. Host: cankering of woody plants such as *Carpinus*, *Citrus*, *Cotoneaster*, *Ficus*, *Juglans*, *Malus*, *Morus*, *Prunus*, *Pyrus*, *Robinia* (Farr et al. 1989), Schroeter (l. c.) noted it on *Robinia pseudoacacia*, *Viburnum opulus* and *Carpinus betulus.*

Glonium lineare (Fr.) De Not., Dothideales.

Localities: Lower Silesia: Dobrogoszcz,, Wrocław, Zyrowa near Strzelce Opolskie, St. Anna Mt. (Schroeter 1908). Host: plurivorous species, noted on dead wood and branches, also on *Carpinus, Liquidambar*, *Fagus*, *Quercus* and *Vitis* (Schroeter l. c., Farr et al. 1989).

Gnomonia fimbriata (Pers.) Fuckel syn.: *Mamiania fimbriata* (Pers.: Fr.) Ces. et De Not., anamorph ***Asteroma carpini*** (Libb.) Sutton, Diaporthales.

Localities: Klęczany (Namysłowski 1909), Międzyrzec (Eichler 1907), Ludwikowo near Poznań, Zagórzek near Gdynia, Nieporuszewo near Grodzisk, Miradz near Strzelno (Dominik 1936) Czerwieńsk, Złotoryja, Jawor, Wrocław, Brzeg, Strzegom, Krasków near Świdnica, Niemcza, Strzelin, Ziębice, Kamieniec near Ząbkowice, Dzierżoniów, Nowa Ruda, Opole, Goszczowiec near Niemodlin, Zakrzów near Strzelce Opolskie (Schroeter 1908), Kuczek near Ciechocinek (Ruppert 1909), Łysa Góra (Waśniewski 1911), Białowieża N. P. (Siemaszko 1923; Truszkowska 1959, 1965; Mułenko l. c.), Sikornik near Kraków (Wróblewski 1925), Wołtuszowa near Rymanów Zdrój (Stecki 1910), Anamorph.

Locality: anamorph: Białowieża N. P. (Mułenko 1996). Host: on leaves of *Carpinus betulus*, *Carpinus cordata* (Vasilyeva 1998), *Ostrya virginiana* (Barr 1978). The fungus is known from Europe, Russian Far East (Vasilyeva l. c.) and North America (Barr l. c.).

Gnomonia setacea (Pers.) Ces. et De Not., Diaporthales.

Localities: Chełm Dolny, Środa Śląska, Lower Silesia (Schroeter 1908). Host: on overwintered leaves of various species (Barr 1978), in Poland noted on *Fagus sylvatica*, *Quercus robur*, *Betula pendula*, *B. pubescens*, *Alnus glutinosa*, *Corylus avellana* (Schroeter l. c.), cupules of *Quercus* and twigs of *Alnus* (Chlebicki et al. 1996). It is cosmopolitan species, Barr (l. c.) noted this fungus on *Betula*, *Alnus*, *Quercus*, *Castanea* and occasionally on *Lycopodium*.

Gnomoniella carpinea (Fr.) Monod *Sphaerognomonia carpinea*.

Guignardia carpinea (Fr.) J. Schroet. *Sphaerognomonia carpinea*.

Gonytrichum caesium var. ***chloridioides*** W. Gams et Hol.-Jech., teleomorph: ***Chaetosphaeria***, Sordariales.

Locality: Kampinos N. P. (Borowska 1986). Host: on dead wood of *Betula, Carpinus, Fagus, Quercus* and *Tilia* and rarely isolated from the soil (Borowska l. c.). It was noted in France, Niderland, Great Britain and Czechoslovakia (Borowska l. c.).

♦ ***Hapalocystis bicaudata*** Fuckel, syn.: *Melanconis berkeleyi* Tul., anamorph: ***Stilbospora macrosperma*** Pers. ex Mérat., Diaporthales.

LOCALITIES: Czerwieńsk in Zielona Góra region, Wrocław, as *Pseudovalsa macrosperma* Tulasne (Schroeter 1908), Białowieża N. P. (Truszkowska 1965; Chlebicki 1991), Wierzchlas (Weber-Czerwińska 1974), Śnieżnik Mt. in Sudety Mts. (Chlebicki l. c.). HOST: on senescent twigs and branches of trees. Grove (1937) and Sutton (1980) gave as substratum *Carpinus betulus*, *Fagus sylvatica*, *Ulmus* sp. and *Cornus* sp. Chlebicki (l. c.) found it on *Carpinus betulus* and *Ulmus montana*.

Helicoon richonis (Boud.) Linder, incerte sedis, Ascomycetes.

LOCALITY: Kampinos N. P., Sieraków (Borowska 1989), reported from Europe and Canada (Borowska l. c.). HOST: on rooten wood of *Alnus glutinosa, Betula* sp., *Pinus sylvestris, Carpinus betulus*, and cone of *Picea abies* as well as decaying wood of *Quercus, Populus, Salix*, fallen leaves and fruits of these plants (Borowska l. c.).

Helicoon sessile Morgan, incerte sedis, Ascomycetes.

LOCALITIES: Kampinos N. P., Sieraków (Borowska 1989), known from Great Britain, Poland and USA (Borowska 1989). HOST: on rotten wood of *Acer, Quercus, Fagus, Carpinus betulus* and coniferous wood (Ellis, Ellis 1986; Borowska l. c.).

Helicosporium vegetum Nees, see *Tubeufia cerea*.

Helotium phyllophilum (Desm.) Karst. *Hymenoscyphus phyllophilus*.

Helotium fructigenum(Bull.: Merat) Karsten *Hymenoscyphus fructigenus*.

Hymenoscyphus epiphyllus (Pers.) Rehm ex Kauffman, Helotiales.

LOCALITIES: Dębina reserve (Borowska 1966), Łęczna-Włodawa Lake District, Lake Długie (Chmiel 1987, 1990), Roztoczański N. P. (Sałata 1972). HOST: on fallen leaves of various plants,it is common and plurivorous species (Dennis 1968).

Hymenoscyphus fructigenus (Bull.) Fr., syn.: *Helotium fructigenum* (Bull.: Merat) P. Karst., Helotiales.

LOCALITIES: Trzebnica, Wrocław (Schroeter 1908), Wielkopolska Province: Pniewy, Węgrowiec, Osowa Góra, Promno (Lisiewska 1965), Łęczna-Włodawa Lake District, Lake Długie (Chmiel 1987), Kazimierz Landscape Park (Chmiel 1991), Roztoczański N. P. (Sałata 1972), Bachus reserve (Sałata 1988). HOST: on fallen nuts and acorns of *Corylus avellana*, *Fagus sylvatica*, *Quercus* and *Prunus* (Dennis 1968), *Carpinus betulus* (Lisiewska 1965; Chmiel 1987, 1991; Sałata 1972, 1988).

Hymenoscyphus phyllophilus (Desm.) Kuntze, syn.: *Helotium phyllophilum* (Desm.) P. Karst., Helotiales.

LOCALITY: Anielki near Międzyrzec (Eichler 1904). HOST: on dead branches of *Fagus* (Farr et al. 1989), *Carpinus betulus* (Eichler l. c.). Chmiel (unpubl. data) collected this species in Poland on leaves of *Betula*, *Quercus* and *Populus*.

Hypocrea chionea Ellis et Everh., Hypocreales.

LOCALITY: Liski near Międzyrzec (Eichler 1907). HOST: on dead branches of *Carpinus betulus* and *Salix caprea* (Eichler l. c.), *Pinus* (Farr et al. 1989). The species was noted in Europe (Eichler l. c.) and North America (Farr et al. l. c.). Vasilyeva (1998) found *Hypocrea subpachybasioides* Doi on dead twigs of *Carpinus cordata* in Russian Far East.

Hypoxylon atropurpureum (Fr.) Fr. *Nemania atropurpurea*.

Hypoxylon fragiforme (Pers.) J. Kickx. F., Xylariales.

LOCALITY: Białowieża N. P. (Truszkowska 1965; Bujakiewicz et al. 1997). HOST: on dead branches and trunks of *Fagus*, *Corylus*, *Carpinus*. It was mostly found on *Fagus* (Granmo et al. 1989) and occasionally on other trees. Enderle (1982) noted it on *Quercus* and *Carpinus betulus*.

Hypoxylon fuscopurpureum (Schwein.) M. A. Curtis, syn.: *Hypoxylon vogesiacum* (Pers.) Sacc. var. *microsporum* J. H. Miller, Xylariales.

LOCALITY: Białowieża N. P. (Chlebicki et al. 1996). HOST: on dead wood of *Carpinus betulus*, known also on *Quercus* sp. in North America (Farr et al. 1989). The species is known from Europe and Asia on *Acer pseudoplatanus* and *Quercus* sp. (Ju, Rogers 1996).

Hypoxylon fuscum (Pers.) Fr., Xylariales.

LOCALITIES: Mazurian Lake District (Truszkowska 1960), Białowieża N. P. (Truszkowska 1965; Chlebicki et al. 1996), Puszcza Augustowska Forest, Czerwone Bagno (Chlebicki, unpubl. data). HOST: on corticated and rarely decorticated branches and stumps of trees, mostly on *Betulaceae*, *Acer*, *Alnus*, *Betula,Carya,Castanea, Corylus, Fagus, Fraxinus, Ilex, Nyssa, Ostrya, Prunus, Quercus, Sorbus, Tilia* (Munk 1957; Dennis 1968; Abe 1986; Granmo et al. 1989; Farr et al. 1989), *Carpinus cordata* (Vasilyeva 1998). *Alnus* and *Corylus* are recognized as dominant hosts (Granmo et al. 1989). The species was noted in northern hemisphere (Abe 1986; Granmo et al. l. c.; Farr et al. l. c.). A very close species *Hypoxylon macrocarpum* Pouzar was noted in Czech (Pouzar 1978) and Austria (Kahr et al. 1996).

Hypoxylon howeanum Peck, Xylariales.

LOCALITIES: Międzyrzec (Eichler 1907), Białowieża N. P. (Chlebicki et al. 1996), Puszcza Augustowska Forest, Czerwone Bagno reserve (Chlebicki, unpubl. data), Carpathians, Beskid Niski Mts., Rzeszówka Valley in Magura N. P., (Chlebicki unpubl. data). HOST: on dead, corticated branches and trunks of *Quercus serrata, Q. acutissima*, (Abe 1986), *Acer*, *Betula*, *Castanea*, *Fagus*, *Liriodendron*, *Malus*, *Ostrya*, *Oxydendrum*, *Populus*, *Querus*, *Tilia* (Farr et al. 1989), *Carpinus cordata* and *Betula mandshurica* (Vasilyeva 1998), *Acer platanoides*, *Betula pendula*, *Carpinus betulus*, *Corylus avellana*, *Fagus sylvatica*, *Tilia cordata* (Chlebicki 1989; Bujakiewicz et al. 1997). *Corylus*, *Carpinus* and *Fagus* were mentioned as dominant hosts in Europe (Petrini, Müller 1986), and *Quercus* in Japan. It is common species in Poland, noted in Europe, Asia, Japan, North America (Dennis 1968; Abe 1986; Farr et al. 1989; Vasilyeva l. c.).

Hypoxylon multiforme (Fr.) Fr., Xylariales.

LOCALITIES: Strzelińskie Hills (Truszkowska, Chlebicki 1983), Białowieski N. P. (Chlebicki et al. 1996), Ojców nad Prądnikiem (Wróblewski 1925). HOST: on dead branches and wood of various frondose trees, especially on *Betula* (Munk 1957), *Carpinus betulus* (Fakirova 1993), *Alnus* and rarely *Fagus sylvatica*.

Hypoxylon rubiginosum (Pers.) Fr., Xylariales.

LOCALITIES: Strzelińskie Hills (Truszkowska, Chlebicki 1983), Białowieża N. P. (Truszkowska 1965; Chlebicki et al. 1996); Puszcza Romincka Forest,

Boczki reserve and Carpathians, Beski Niski Mts., Rzeszówka Valley in Magura N. P. (Chlebicki, unbupl. data). HOST: on dead wood and branches of trees, known on 54 host plants (Farr et al. 1989), noted in Poland on *Corylus avellana, Populus tremula, Fraxinus excelsior, Carpinus betulus* and *Betula pubescens* subsp. *carpatica* (Chlebicki 2002). It is cosmopolitan species (Farr et al. l. c.).

Hypoxylon serpens (Pers.: Fr.) Kickx *Nemania serpens*.

Hypoxylon vogesiacum (Pers.) Sacc. var. *microsporum* J. H. Miller *H. fuscopurpureum*.

Hysterium pulicare Pers., Hysteriales.

LOCALITY: Białowieża N. P. (Chlebicki et al. 1996). HOST: on dead wood of *Betula, Cornus, Eucalyptus, Malus, Quercus* (Farr et al. 1989). This species is very common on *Quercus, Betula* and *Alnus* in Lithuania.

Kirschsteiniothelia aetiops (Berk. et M. A. Curtis) D. Hawksw., Dothideales.

LOCALITY: Białowieża N. P. (Chlebicki et al. 1996). HOST: on dead wood of *Populus* in North America (Farr et al. 1989), *Quercus robur* and *Corylus avellana* in Sweden (Eriksson 1992) and *Carpinus betulus* in Austria (Scheuer 1997). The species was noted in temperate regions (Farr et al. l. c.).

Laestadia carpinea (Fr.) Schroet. *Sphaerognomonia carpinea*.

♦ ***Kretzschmaria deusta*** (Hoffm.) P. M. D. Martin, Xylariales.

LOCALITIES: Botanical Garden, Kraków, Skały Panieńskie (Namysłowski 1909), Białowieża N. P. (Chlebicki et al.. 1996). HOST: on dead and senescent trunks and stumps of *Acer, Aleurites, Alnus, Citrus, Fagus, Ilex, Liriodendron, Nyssa, Poncirus, Quercus, Tilia, Ulmus* (Farr et al. 1989), *Carpinus betulus* and *Alnus* (Chlebicki et al. l. c.). It is cosmopolitan species.

Lachnum fuscescens var. ***fuscescens*** (Pers.) P. Karst, syn.: *Dasyscyphus fuscescens* (Pers.) Gray, Helotiales.

LOCALITIES: Dębina reserve, Kampinos N. P. (Borowksa 1966), Kazimierz Landscape Park, Parchatka (Chmiel 1991), Białowieża N. P. (Chmiel 1997), Chełm environs., (Chmiel, unpubl. data). HOST: noted on fallen leaves of *Quercus*, *Fagus* (Dennis 1968) and *Carpinus betulus,* (Chmiel 1991), Roztoczański N. P. on *Fagus sylvatica* (Chmiel, unpubl. data).

Lasiosphaeria canescens (Pers.) P. Karst., Sordariales.

LOCALITY: Puszcza Romincka Forest, 'Boczki' Reserve (Chlebicki, unpubl. data). HOST: on decorticated branches of *Fagus silvatica, Quercus* (Eriksson 1992) and *Carpinus betulus*.

Lasiosphaeria hirsuta (Fr.) Ces. et De Not., Sordariales.

LOCALITY: Białowieża N. P. (Truszkowska 1965). HOST: on decaying wood of various trees, also *Carpinus betulus* and *Tilia cordata* in Białowieża N. P. (Truszkowska 1965).

Lasiosphaeria hispida (Tode) Fuckel, Sordariales.

LOCALITY: Białowieża N. P. (Truszkowska 1965). HOST: on dead twigs of *Betula pubescens*, *Carpinus betulus* (Truszkowska l. c.).

Lasiosphaeria ovina (Pers.) Ces. et De Not., Sordariales.

LOCALITY: Białowieża N. P. (Truszkowska 1965). HOST: on decaying wood of various trees, also on *Betula, Carpinus* and *Tilia* in Białowieża N. P. (Truszkowska l. c.).

Lasiosphaeria spermoides (Hoffm.) Ces. et De Not., Sordariales.

LOCALITY: Białowieża N. P. (Chlebicki et al. 1996). HOST: on dead wood of old stumps, reported mostly on *Fagus sylvatica*, occasionally on other trees (Munk 1957).

Lauriomyces catenatus (Preuss) R. F. Castañeda et W.B. Kendr., teleomorph: ***Damatioscypha***, Helotiales.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: on dead wood of *Carpinus betulus* (Borowska l. c.).

Lophiostoma curreyi Sacc syn.: *Lophiostoma hysterioides* (Schwein.) Sacc., Dothideales.

LOCALITY: Puszcza Romincka Forest, Żytkiejmska Struga reserve (Chlebicki 2005a). HOST: on decorticated branches of various host plants (Farr et al. 1989).

Mamiania fimbriata (Pers.: Fr.) Ces. et De Not. *Gnomonia fimbriata*.

♦ ***Massaria carpinicola*** Tul. et C. Tul., anamorph: ***Hendersonia carpinicola*** Sacc., Pyrenulales.

LOCALITIES: Wołów, Opole (Schroeter 1908), Białowieża N. P. (Truszkowska 1959). *Massaria urceolata* (Wallr.) Sacc. is also known on *Carpinus*. HOST: on twigs of *Carpinus*.

♦ ***Melampsoridium carpini*** (Nees) Dietel, Uredinales.

LOCALITY: Zwierzyniec Tenczyński (Tęczyński) near Chrzanów (Raciborski 1888; Majewski 1977). The species is known in Europe, North America, Russian Far East, China and Japan (Majewski l. c.; Zhang et al. 1997). HOST: on leaves of *Carpinus betulus*, *C. orientalis*, *Corylus avellana,* some Asiatic species of *Carpinus* and *Ostrya,* also American species *Ostrya virginiana* (Majewski l. c.) and *Carpinus fargesiana* (Zhang et al. 1997).

♦ ***Melanconis chrysostroma*** (Fr.) Tul. et C. Tul., syn.: *Valsa chrysostroma* (Fr.) Tul. et C. Tul., *Diaporthe hyperopta* Nitschke in G. Otth, *Melanconis hyperopta* (Nitschke) Wehmeyer, *Melanconis carpinigera* (Berk. et M. A. Curtis) Petrak, anamorph: ***Melanconium microsporum*** Nees (Eriksson 1992), Diaporthales.

LOCALITIES: Puławy (Kochman 1964), Upper and Lower Silesia (Truszkowska 1976), Strzelińskie Hills (Truszkowska, Chlebicki 1983), Białowieża N. P. (Truszkowska 1959, 1965, l. c.; Chlebicki et al. 1996). HOST: on senescent twigs and branches of hornbeam. The species was noted on *Carpinus* and rarely on *Quercus*, known from Europe and North America (Wehmeyer 1941; Fakirova 1993). *Melanconis chrysostroma* var. *ellisii* (Rehm) Wehm. is known only from *Carpinus caroliniana*. Conners (1967) suggested that *Melanconis chrysostroma* var. *carpinigera* (Berk.) Wehm. belongs to *M. chrysostroma* var. *ellisii.* Vasilyeva (1987) pointed out that such species as *Melanconis chrysostroma* (Fr.) Tulasne which inhabits *Carpinus*, *Melanconis stilbostoma* (Fr.) Tulasne noted on *Betula*, *Melanconis alni* Tulasne noted on *Alnus* and *Melanconis ostryae* (Dearn.) Wehm. noted on *Ostrya*, are very

similar to one another and should be included in one species. Also *Melanconis flavovirens* (Otth) Wehm. on *Corylus avellana* is strictly related to this group of species.

♦ ***Melanconis spodiaea*** Tul et C. Tul, syn.: *Melanconiella spodiaea* (Tul. et C. Tul.) Sacc., anamorph: ***Melanconium ramulorum*** Corda (Eriksson 1992), Diaporthales.

LOCALITIES: Niemodlin (Schroeter 1908). It is uncommon species, reported by Munk (1957) from Danmark, by Eriksson (l. c.) from Sweden and noted by Dennis (1968) in England. HOST: on senescent branches of hornbeam. It is peculiar fungus restricted to the *Carpinus* ssp. The ascospores of *M. spodiaea* are pale brown at full maturity. Saccardo (1882) separated and considered it as a type species of a new genus *Melanconiella*, but Wehmeyer (1941) included it again in *Melanconis*.

Melanconis xanthostroma (Mont.) J. Schröt., syn.: *Wuestneia xanthostroma* (Mont.) Reid et Booth, *Cryptosporella aurea* (Fuckel) Sacc., *Diaporthe bitorulosa* (Berk. et Broome) Sacc., Diaporthales.

LOCALITIES: Trzebnica, Niemcza, Strzegom, Ziębice, Opole (Schroeter 1908), Białowieża N. P. (Truszkowska 1959; Chlebicki et al. 1996), noted in Europe (Reid, Booth 1989) and USA (Farr et al. 1989). HOST: on dead twigs of *Castanea sativa*, *Carpinus betulus*, *Corylus avellana*, *Ostrya carpinifolia*, *Fagus sylvatica* (Reid, Booth l. c.) and *Liquidambar* (Farr et al. l. c.).

Melanomma pulvis-pyrius (Pers.) Fuckel, Melanommatales.

LOCALITIES: Międzyrzec (Eichler 1907), Strzelińskie Hills (Truszkowska, Chlebicki 1983), Białowieża N. P. (Truszkowska 1965; Chlebicki et al. 1996); Carpathians, Beski Niski Mts., Rzeszówka Valley in Magura N. P. (Chlebicki unpubl. data). HOST: on dead wood of various plants. It is very common species.

Melogramma campylosporum Fr., syn.: *Melogramma bulliardi* Tul. et C. Tul., Diaporthales.

LOCALITIES: Międzyrzec (Eichler 1907), Wola Justowska near Kraków (Wróblewski 1925), Białowieża N. P. (Truszkowska 1959, 1965; Chlebicki et al. 1996). HOST: on dead branches of *Carpinus betulus*, *Corylus avellana.* Vasilyeva (1998) described a new species *Melogramma corylina* Lar. Vass. from Russian Far East on *Corylus heterophylla* which has somewhat longer spores (45-56 um long).

Metasphaeria nigrovelata Feltg. = *Sagedia carpinea* (Pers.) Hoehnel, lichenized fungus!

Monostichella robergei (Desm.) Hoehn., vide teleomorph: *Sphaerognomonia carpini*.

Mycosphaerella maculiformis Pers.: Fr. *Mycosphaerella punctiformis*.

Menispora ciliata Corda, anamorphic fungus, teleomorph: ***Chaetosphaeria***, Sordariales.

LOCALITIES: Kampinos N. P., Krzywa Góra, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: on dead bark, wood and stems of *Quercus robur, Carpinus betulus, Betula pendula, Fagus sylvatica, Prunus, Picea, Tilia cordata, Calamagrostis, Phragmites* and *Tanacetum* (Borowska 1986, l. c.). The fungus is known in Europe, Canada and New Zeland.

Menispora glauca Pers., see *Chaetosphaeria ovoidea*.

Mollisia ventosa P. Karst., Helotiales.

LOCALITY: Kruklany in Puszcza Borecka Forest, *Pino-Quercetum* and *Querco-Carpinetum* communities (Ginko 1986). HOST: on dead twigs of *Pinus sylvestris*, *Salix* sp. (Saccardo 1889), *Carpinus betulus* (Ginko l. c.). The fungus was reported from Finland, Poland and Great Britain (Saccardo l. c.; Ginko l. c.).

Mycosphaerella punctiformis (Pers.) Starbäck, Mycosphaerellales.

LOCALITIES: Liski near Międzyrzec (Eichler 1907) Lwówek, Jawor, Ścinawa, Syców, Opole, Henryków, Boguszyn near Kłodzko (Schroeter 1908). HOST: on overwintered leaves, it is plurivorous species, noted on *Carpinus betulus* in Bulgaria (Fakirova 1993).

♦ ***Nectria cinnabarina*** (Tode) Fr., anamorph: ***Tubercularia vulgaris*** Tode: Fr., Hypocreales.

LOCALITY: Białowieża N. P. (Truszkowska 1959; Chlebicki et al. 1996). HOST: on living twigs of various plants. It is very common species.

Nectria coccinea (Pers.) Fr., Hypocreales.

LOCALITY: Białowieża N. P., on dead branch (Chlebicki, unpubl. data). HOST: on ascomata of various pyrenomycete fungi and wood of trees such as *Acer, Betula, Carpinus, Castanea, Corylus, Fagus, Fraxinus, Hedera, Ilex, Morus, Populus, Quercus, Sambucus, Taxus, Tilia, Ulmus* (Booth 1959), *Ailanthus, Albizia, Ceanothus, Cornus, Malus, Melia, Umbellularia* (Farr et al. 1989). It is cosmopolitan species.

Nectria episphaeria (Tode) Fr., syn.: *Nectria sanguinea* (Sibth: Fr.) Fr., Hypocreales.

LOCALITIES: Białowieża N. P. (Truszkowska 1965; Chlebicki, Skirgiełło 1995), Puszcza Augustowska Forest (Chlebicki, unpubl. data). HOST: on old stromata of *Diatrype stigma*, (Truszkowska l. c.) as well as on old stromata of *Diatrype* sp., *Diatrype decorticata* and *D. stigma* (Chlebicki, Skirgiełło l. c.).

♦ ***Nectria radicola*** Gerlach et L. Nilsson, anamorph: ***Cylindrocarpon destructans*** (Zinss.) Scholten, Sordariales.

LOCALITY: Wronczyn near Poznań (Mańka et al. 2002). HOST: on living roots of *Carpinus betulus*.

Nemania atropurpurea (Fr.) Pouzar, syn.: *Hypoxylon atropurpureum* (Fr.) Fr., Xylariales.

LOCALITY: Białowieża N. P. (Pouzar 1985a). The species is known mainly from temperate regions, Taiwan and New Guinea (Ju, Rogers 1999). HOST: on dead branches and trunks of *Fagus sylvatica*, *Populus nigra, Tilia platyphyllos, Ulmus carpinifolia, Carpinus betulus, Fomes pinicola* (Pouzar l. c.).

Nemania serpens (Pers.) Gray, syn.: *Hypoxylon serpens* (Pers.) Kickx, Xylariales.

LOCALITIES: Białowieża N. P. (Chlebicki et al. 1996); Puszcza Romincka Forest, Boczki reserve (Chlebicki, unpubl. data); the Carpathians, Beskid Niski Mts., Rzeszówka Valley in Magura N. P. (Chlebicki, unpubl. data). The species was known in temperate and subtropical regions (Farr et al. 1989), East China (Abe, Liu 1995). HOST: on decayinjg wood of various deciduous trees (Pouzar 1985b), also on *Carpinus betulus*. It was noted in Poland on *Populus tremula, Fagus sylvatica, Quercus robur* (Chlebicki, unpubl. data).

♦ ***Oidium carpini*** Foitzik, teleomorph ***Erysiphe***, Erysiphales.

LOCALITIES: Kraków, Tarnów (Piątek 2004). HOST: on living leaves of *Carpinus betulus*. It is rare fungus in Poland.

Orbilia leucostigma (Fr.) Fr., incertae sedis, Ascomycetes.

LOCALITY: Kruklany in Puszcza Borecka Forest, *Pino-Quercetum* and *Querco-Carpinetum* communities (Ginko 1986). It is a rare species (Dennis 1968). HOST: on dead wood of trees, noted also on *Carpinus betulus* (Ginko l. c.).

♦ ***Pezicula carpinea*** (Pers.) Tul. ex Fuckel, anamorph: ***Cryptosporiopsis fasciculata*** (Tode ex Tul.) Petrak, Helotiales.

LOCALITIES: teleomorph: Międzyrzec, Liski (Eichler 1902), Zielona Góra, Zgorzelec, Lwówek Śląski, Syców, Brynica (Schroeter 1908), Warszawa environs, Pyry (Kochman 1971), Las Piwnicki reserve (Hołownia 1977); anamorph: Białowieża N. P., (Chlebicki, unpubl. data). HOST: on twigs of *Carpinus betulus*, *C. caroliniana*, *Fagus*, *Castanea* and *Populus* (Dennis 1968; Conners 1967; Truszkowska, Chlebicki 1983). Anamorph was earlier reported from Strzeliñskie Hills (Truszkowska, Chlebicki l. c.) on *Populus tremula*. Grzywacz (1993) reported it from Poland as *Dermatea carpinea* (Pers.) Rehm. Conners (l. c.) reported anamorph on *Carpinus caroliniana* from Ontario (Canada).

Phaeostalagmus cyclosporus (Grove) W. Gams, anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITY: Kampinos N. P. (Borowska 1987). HOST: on dead bark and wood of *Acer, Alnus, Betula, Castanea, Fagus, Fraxinus, Picea, Prunus, Ulmus, Quercus, Corylus, Ilex, Rhododendron, Sambucus, Ulex, Carex, Rumex* (Borowska 1986).

Phaeostalagmus tenuissimus (Corda) W. Gams et Hol.-Jeh., anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITY: Białowieża N. P., Kampinos N. P. (Borowska 1987). HOST: on rotten wood and fallen fruits of *Castanea, Fagus, Ilex, Picea, Pinus, Quercus, Rubus, Salix, Carpinus betulus.* The fungus was reported in Europe, Canada and Kazakhstan (Borowska 1986).

♦ ***Phyllactinia guttata*** (Wallr.) Lév., Erysiphales.

LOCALITIES: Miradz near Strzelno, Lipno, Zalesie near Piaseczno, Górzez near Jawor, Wałbrzych, Szczytów near Dzierżoniów, Bochotnica naer Kazimierz Dolny, Włostowice near Puławy (Schroeter 1908; Sałata 1985). HOST: on living leaves, plurivorous species. It occurs in Poland on *Acer negundo*, *Alnus glutinosa*, *A. incana*, *Betula obscura*, *B. pendula*, *B. pubescens* subsp. *pubeacens* and subsp. *carpatica*, *Corylus avellana*, *C. sanguinea*, *C. tubulosa*, *Crataegus oxyacantha, Fagus sylvatica, Fraxinus excelsior, Quercus robur*, *Syringa vulgaris* and *Ulmus minor* (Hennings 1892; Schroeter l. c., Sałata l. c.). This species is rare in Lithuania on *Betulaceae* (Grigaliûnaitë 1997). Besides it occurs on 76 species of host plants in USA (Farrr et al. 1989).

♦ ***Phyllosticta carpini*** Schulzer et Sacc., anamoorphic fungus, teleomorph: ***Guignardia***, Dothideales.

LOCALITIES: Siedlce (Trzebiński et al. 1916), Malta near Poznań, as *Phyllosticta carpinea* Sacc. (Dominik 1936). The fungus was reported from Europe and North America (Farr et al. 1989). HOST: on living leaves of *Carpinus betulus*, *Alnus* (Trzebiński et al. l. c.; Farr et al. l. c.).

Pleurophragmium rousselianum (Mont.) S. Hughes *Pseudospiropes rousselianus*.

Polydesmia pruinosa (Gerd ex Berk. et Broome) Boud., Helotiales.

LOCALITY: Kruklanki in Puszcza Borecka Forest, *Circaeo-Alnetum* (Ginko 1986). It is very common fungus (Dennis 1968). HOST: on dead twigs and branches of various trees, also on *Carpinus betulus* (Ginko l. c.), dead twigs and ascocarps as well as on ostioles of perithecia of other fungi (Dennis l. c.).

Propolis farinosa (Pers.) Fr., syn.: *Propolomyces farinosus* (Pers.) Sherwood, *Propolomyces versicolor* (Fr.: Fr.) Dennis, *Propolis faginea* (Schrad.) P. Karst., Rhytismatales.

LOCALITIES: Czerwieńsk near Zielona Góra (Schroeter 1908). HOST: mostly on dead wood of various trees, noted in Great Britain on *Acer, Chamaenerion, Corylus, Fagus, Fraxinus, Ilex, Larix, Lonicera, Malus, Pinus, Populus, Prunus, Quercus, Rhamnus, Salix, Sambucus, Sorbus* and *Tilia* (Dennis 1968). It is a very common species, noted also on branches, pine cones, woody stems (Dennis l. c.), on subfossil oak *Quercus robur* and cutted by beavers trunks (Chlebicki unpubl. data).

Pseudospiropes rousselianus (Mont.) M. B. Ellis, syn.: *Pleurophragmium rousselianum* (Mont.) S. Hughes, anamorphic fungus, incertae sedis, Ascomycetes.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: on dead wood of *Carpinus betulus* (Borowska l. c.).

Rhinocladiella atrovirens Nannf., anamorphic fungus, teleomorph: ***Capronia***, Chaetothyriales.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: on dead wood of *Carpinus betulus* (Borowska l. c.).

Rosellinia corticium (Schw.) Sacc, Xylariales.

LOCALITY: Białowieża N. P. (Chlebicki et al. 1996; Chlebicki 2006). HOST: on dead bark and wood of various trees (Munk 1957). It is one of the most common species of *Rosellinia* in Europe. According to Petrini (1993) many collections identified as *Rosellinia aquila* (Fr.) De Not., syn.: *R. byssiseda* (Tode) Schroeter, in fact are not this fungus. Thus it is also possible that *R. corticium* was earlier included in *R. aquila*. HOST: on dead bark and wood of various trees, on *Acer pseudoplatanus*, *Eucalyptus* sp., *Ilex aquifolium*, *Salix* sp., *Salvia officinalis* and *Vitis vinifera*. Fakirova (1993) noted it in Bulgaria on *Carpinus betulus*, Vasilyeva (1998) noted the same fungus on branches of *Carpinus cordata* in Russian Far East.

Rosellinia mammiformis (Pers.) Ces. et De Not., Xylariales.

LOCALITY: Białowieża N. P. (Chlebicki et al. 1996). Host: known on dead wood, stems and branches of various herbs and trees.

Rutstroemia bolaris (Batsch.) Rehm, Helotiales.

LOCALITIES: Międzyrzec, Liski (Eichler 1902), Wrocław (Schroeter 1908), Białowieża N. P. (Skirgiełło 1960), Roztoczański N. P. (Sałata 1972), Wołwinów near Chełm (Sałata, Bednarczyk 1977), Kazimierz Landscape Park (Chmiel 1991). HOST: on fallen twigs of *Carpinus betulus, C. caroliniana*, *Corylus* and *Casta-*

nea (Schroeter l. c.; Conners 1967; Farr et al. 1989). It is known from North America and Europe.

♦ ***Sclerotinia sclerotiorum*** (Lib.) De Bary, Helotiales.

Localities: Wronczyn near Poznań (Mańka et al. 2002). Host: in living roots of *Carpinus betulus*.

Sphaerognomonia carpinea (Fr.) Potiebnia *Apiosporopsis carpinea*.

♦ ***Splanchnonema carpini*** (Fuckel) M. E. Barr, syn.: *Pleomassaria carpini* (Fuckel) Sacc., anamorph: ***Hendersonia carpini*** Sacc., Pleosporales.

Localities: Zielona Góra, Wołów, Ziębice, Opole (Schroeter 1908), Bielany near Kraków (Wróblewski 1918), Białowieża N. P. (Truszkowska 1965). Host: on senescent twigs of *Carpinus betulus*, *Carpinus caroliniana* (Farr et al 1989; Barr 1990). The species was noted in Europe and North America (Farr et al. l. c.).

Stilbospora macrosperma Pers. ex Mérat teleomorph: *Hapalocystis bicaudata*.

Taeniolella exilis (P. Karst.) S. Hughes, anamorphic fungus, teleomorph: ***Glyphium***, Hysteriales.

Localities: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Quercetum* (Borowska 1987). Host: on dead wood and bark of *Betula* (Ellis 1971). The species is know from Europe and North America (Ellis l. c.).

Taeniolina scripta (P. Karst.) M. E. Kirk, syn.: *Taeniolella scripta* (P. Karst.) S. Hughes, anamorphic fungus, teleomorph: ***Glyphium***, Hysteriales.

Localities: Białowieża N. P. (Chlebicki unpubl. data). Host: on dead wood of *Betula*, *Corylus*, *Fagus* and *Sorbus aucuparia* (Ellis 1971). The species is known from Europe.

♦ ***Taphrina carpini*** (Rostr.) Johansson, Taphrinales.

Localities: Sałata (1975) cited many localities of this fungus gathered by Magnus (1895), Schroeter (1908), Szulczewski (1938), Rouppert (1912), Zaleski and Glaser (1953), Trzebiński (1916). It has been noted in Strzelińskie Hills (Schroeter 1908), Pomorze Lake District, Wielkopolska and Małopolska Upland, the Sudetes and the West Carpathians (Sałata 1974). Host: it is witches' brooms on twigs and branches noted in Europe on *Carpinus betulus* and *C. orientalis* (Sałata 1974) whereas in North America *Taphrina australis* (Atk.) Giesenh. occurs on *Carpinus caroliniana* (Conners 1967; Farr et al. 1989). A related species, *Taphrina virginica* Sadebeck is known from *Ostrya* in North America (Farr et al. 1989). Moreover *Taphrina coerulescens* (Desmaz. et Mont) Tul., leaf blister occasionally was noted on *Ostrya* (Farr et al. l. c.).

Trematosphaeria pertusa (Pers.) Fuckel, Pleosporales.

Locality: Białowieża N. P. (Truszkowska 1965). Host: on decorticated branches of *Carpinus betulus, Corylus avellana, Populus tremulus, Tilia cordata* (Truszkowska l. c.).

Trimmatostroma betulinum (Corda) S. Hughes, anamorphic fungus, incertae sedis, Ascomycetes.

Locality: Kampinos N. P., Krzywa Góra, *Tilio-Carpinetum* (Borowska 1987). The species is known from Europe (Ellis 1971). Host: on dead twigs of *Betula*. Ellis (l. c.); Borowska (l. c.) noted this fungus on *Betula pendula, Quercus robur* and *Carpinus betulus*.

Tubeufia cerea (Berk. Et M. A. Curtis) Höhn, ***Helicosporium vegetum*** Nees, anamorphic fungus, Pleosporales.

LOCALITIES: Kampinos N. P., Krzywa Góra, Sieraków, Zamczysko, *Tilio-Carpinetum, Pino-Carpinetum, Pino-Quercetum* (Borowska 1987). HOST: on dead wood of *Carpinus betulus, Quercus robur, Tilia cordata* (Borowska l. c.).

♦ ***Valsa ambiens*** (Pers.) Fr., anamorph: ***Cytospora leucosperma*** (Fr.) Fuckel, Diaporthales.

LOCALITIES: Czerwieńsk (Zielona Góra region), Wrocław (Schroeter 1908), Białowieża N. P. (Chlebicki et al. 1996). HOST: on senescent twigs, noted on over 40 species in North America (Farr et al. 1989).

Wuestneia xanthostroma (Mont.) Reid. et Booth *Melanconis xanthostroma*.

Xylaria corniformis (Fr.) Fr., Xylariales.

LOCALITIES: Białowieża N. P. (Lessøe 1987; Chlebicki et al. 1996), Puszcza Romincka Forest, Boczki reserve (Chlebicki, unpubl. data). HOST: on branches and decorticated wood of *Alnus, Fagus, Olea, Populus* (Traverso 1906), *Carpinus, Fagus, Quercus* (Farr et al. 1989) *Fagus, Carpinus betulus* (Laessøe 1987). It was noted in Poland on *Alnus glutinosa* and *Carpinus betulus* (Chlebicki, unpubl. data). The species was reported from Europe, North Africa, Asia and North America (Laessøe l. c.; Farr et al. l. c.).

Xylaria hypoxylon (L.) Grev., Xylariales.

LOCALITIES: Dolina Szwajcarka Valley near Ciechocinek (Rouppert 1909), Białowieża N. P. (Chlebicki et al. 1996). HOST: on dead branches and stumps, it is plurivorous species known also on *Carpinus betulus.*

Xylaria longipes Nitschke, Xylariales.

LOCALITY: Białowieża N. P. (Chlebicki et al. 1996). HOST: on dead stumps and branches, mostly reported on *Acer*.

Zignoëlla fallax (Sacc.) Sacc., Sordariales.

LOCALITY: Białowieża N. P. (Truszkowska 1965). HOST: on decorticated branches of various deciduous trees. Truszkowska (l. c.) noted it in Białowieża on *Carpinus betulus* and *Betula* sp.

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Grzyby mikroskopijne grabu *Carpinus betulus* w Polsce

Streszczenie

Praca zawiera krytyczną listę grzybów mikroskopijnych zebranych na grabie w Polsce. Ogółem odnotowano 115 taksonów, w tym 28 gatunków pasożytniczych. Najliczniejszym ga tunkiem okazał się grzyb *Gnomonia fimbriata*, odnotowano także bardzo rzadkie gatunki jak *Camarops plana*, *C. polysperma*, *Lasiosphaeria hirsuta*, *Lophiostoma curreyi*, *Nemania atropur purea*, *Oidium carpini* i inne. Stwierdzono także obecność 10 gatunków wyłącznych dla grabu (wyspecjalizowanych troficznie): *Camarops plana*, *Diaporthe carpini*, *Encoelia carpini*, *Gno monia fimbriata*, *Massaria carpinicola*, *Melampsoridium carpini*, *Melanconis spodiaea*, *Oidium carpini*, *Pezicula carpinea* i *Phyllosticta carpini*.