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This part of

Czech Mycology

is dedicated to Zdeněk Pouzar

on the occasion of his 70th birthday.

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To the 70th birthday of Zdeněk Pouzar

FRANTIŠEK KOTLABA

On March 13, 2002 Dr. Zdeněk Pouzar completed in good health his 70 years of life. He was born in Říčany near Praha, Bohemia, on April 13, 1932. Detailed biographies (the first of them with bibliography) at the occasion of his sixtieth birthday were published not only in mycological (Herink, Kotlaba 1993, Kotlaba 1992a) but also in botanical journals (Kotlaba 1992b), since he occupies himself with vascular plants, too.

Zdeněk Pouzar
Prague, National Museum
Photo 25. 11. 2001 F. Kotlaba

Several remarkable changes took place in the last ten years of the life of my friend and collaborator Zdeněk. His retirement (in mid–1995) as Head of the Mycological Department of the National Museum in Praha (where he worked for 21 years, from 1974 to 1995) and as President of the Czech Scientific Society for Mycology (in 2000) were the most important changes. Subsequently he was elected Honorary President of the Society and continues as Editor-in-Chief of the Society's journal Czech Mycology (formerly Česká mykologie). He worked voluntarily in committees of the Grant Agency of the Czech Republic and also of the Academy of Sciences for six years, where he helped to evaluate many mycological and botanical projects.

Of course, with Zdeněk's retirement and increasing age his activities in mycology and botany did not of course cease, it only slowed down. He often visits the Mycological Department of the Museum to work up his older as well as recent collections of mycological material, to study and identify fungi microscopically, to write labels and papers etc. He often undertakes one-day excursions to mycologically rich localities in the surroundings of Praha (Prague)

and every year one longer excursion to the Šumava Mountains (Bohemian Forest) at the Bohemian border (together with Dr. Jan Holec, who is his successor in the Museum). He continues to be occupied with fungi of various groups, such as Aphyllophorales (mainly polypores and corticia) and also Pyrenomycetes, taxonomy and nomenclature of fungi, biographies of mycologists and so on.

During the past ten years Zdeněk's mycological studies have resulted in a number of papers in English or often in Czech (with English summary). For a list of his publications, see below. Many of these studies were published jointly with other mycologists, as Zdeněk is a very cooperative man: among Czech mycologists he has probably the highest number of joint publications with other authors – and he has in these publication nearly always higher share, based on his broad and profound knowledge. For his broad knowledge and critical approach he is an appreciated reviewer of mycological manuscripts. Zdeněk's most remarkable contribution during past ten years is his authorship of several new species of fungi (many of them in cooperation with other mycologists): *Antrodia pini-cubensis* Vampola, Kotl. et Pouzar 1994, *Antrodiella beschidica* Vampola et Pouzar 1996, *Antrodiella faginea* Vampola et Pouzar 1996, *Antrodiella farinacea* Vampola et Pouzar 1996, *Antrodiella thompsoniana* Vampola et Pouzar 1996, *Dendrothele wojewodae* Pouzar 2002, *Phellinus cavicola* Kotl. et Pouzar 1994 and *Thanatephorus brevisporus* Pouzar 2002.

For his friendly nature, altruism, tolerance to the opinions of other people, an extraordinary interest to discuss problems of any kind and help to solve them, he is often consulted not only by mycologists (students, professional and amateur mycologists) but also by botanists, whom he never refuses his advice or help. He has an excellent memory and a very good knowledge of domestic and foreign mycological literature, which is admirable at his age.

All mycologists wish Zdeněk good health to be able to continue his work in mycology, and to build up knowledge in our beloved (or sometimes dammed) "*scientia amabilis*". Ad multos, multos annos!

Mycological papers by Zdeněk Pouzar since 1994

(For a complete bibliography up to 1993, see Czech Mycol. 47: 92–99, 1993)
[Addition for 1993: Kotlaba F., Pouzar Z.: Zemřel Vojtěch Benedikt (Vojtěch Benedikt died). – Čas. Nár. Muz., Řada přírod., 162: 99].

1994

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Kotlaba F., Pouzar Z.: Nejjižnější lokalita Geastrum corollinum v Čechách a další nové lokality v České a Slovenské republice (The southernmost locality of Geastrum corollinum in Bohemia and other localities in the Czech and Slovak Republics). – Mykol. Listy no. 53: 20–24.

Vampola P., Kotlaba F., Pouzar Z.: Antrodia pini-cubensis, a new polypore from the Caribbean area. – Czech Mycol. 47: 189–192.

Vampola P., Pouzar Z.: Antrodiella genistae, a new polypore for Czech Republic and Slovak Republic. – Czech Mycol. 47: 185–188.

1995

Kotlaba F., Pouzar Z.: Phellinus cavicola, a new xanthochroic setae-less polypore with coloured spores. – Czech Mycol. 48: 155–159.

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Vampola P., Kotlaba F., Pouzar Z.: Rezavec jilmový – Inonotus ulmicola – zajímavý dvojník rezavce šikmého – Inonotus obliquus (Inonotus ulmicola – an interesting double of Inonotus obliquus). – Mykol. Listy no. 55: 13–16.

1996

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1997

Fifty years of our journal. – Czech Mycol. 50: 1.

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1999

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2001

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Kotlaba F., Pouzar Z.: Houby. Mushrooms. – In: Pondělíček M. (ed.) a kol., Český kras včera a dnes. Bohemian karst yesterday and today, p. 43–44 et 89, Karlštejn.
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CZECH MYCOL. 54 (1–2), 2002

Steccherinum albidum: a new species from southern England

NICK LEGON and PETER ROBERTS

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Kew, Surrey TW9 3AE, UK

Legon N. and Roberts P. (2002): Steccherinum albidum: a new species from southern England. – Czech Mycol. 54: 7–9

The hydnoid, corticioid fungus *Steccherinum albidum* (Basidiomycota) is described as new from West Sussex in southern England. Basidiomes are whitish when fresh, resupinate to pileate, and are microscopically distinct in having unusally small, suballantoid basidiospores.

Key words: England, *Steccherinum*, taxonomy.

Legon N. a Roberts P. (2002): *Steccherinum albidum:* nový druh z jižní Anglie. – Czech Mycol. 54: 7–9

Je popisován nový druh *Steccherinum albidum* (Basidiomycota) z hrabství Západní Sussex v jižní Anglii, který patří mezi hydnoidní a korticioidní houby. Plodnice jsou za čerstva bělavé, resupinátní až kloboukaté a mikroskopicky je druh význačný malými téměř alantoidními basidiosporami.

The following specimen was collected on a mossy, fallen, beech trunk at Ebernoe Common, West Sussex, England, and appears to be new and undescribed.

Steccherinum albidum Legon et P. Roberts, sp. nov. Fig. 1

Basidiomata resupinata vel effuso-reflexa, pileis usque 20 × 10 × 5 mm, albida in sicco ochracea. Hymenium hydnoideum, spinis ad 3 mm longis. Systema hypharum dimiticum; hyphae generatoriae 2–5 μm latae, fibulatae, tenuitunicatae; hyphae skeletales 2–5 μm latae, efibulatae, crassitunicatae. Basidia plus minusve clavata, 12–18 × 3–4 μm. Cystidia numerosa, incrustata, 80–90 × 6–9 μm. Basidiosporae plus minusve allantoideae, 3–3.5 (–4) × 1.5 μm.

Basidiomes resupinate to effused-reflexed; pileate areas tough and pliable, with pilei (surface slightly fibrillose) up to 20 × 10 × 5 mm, whitish when fresh, drying pale ochraceous to pallid orange-brown. Resupinate portions with a wide, sterile margin (up to 3 mm wide) which remains white on drying. Hymenium hydnoid, 5–6 spines per mm, each 2–3 mm long, cylindric with slightly pointed to penicillate apex, whitish when fresh, drying slightly ochraceous. Hyphal system dimitic; generative hyphae with thin to slightly refractive walls,

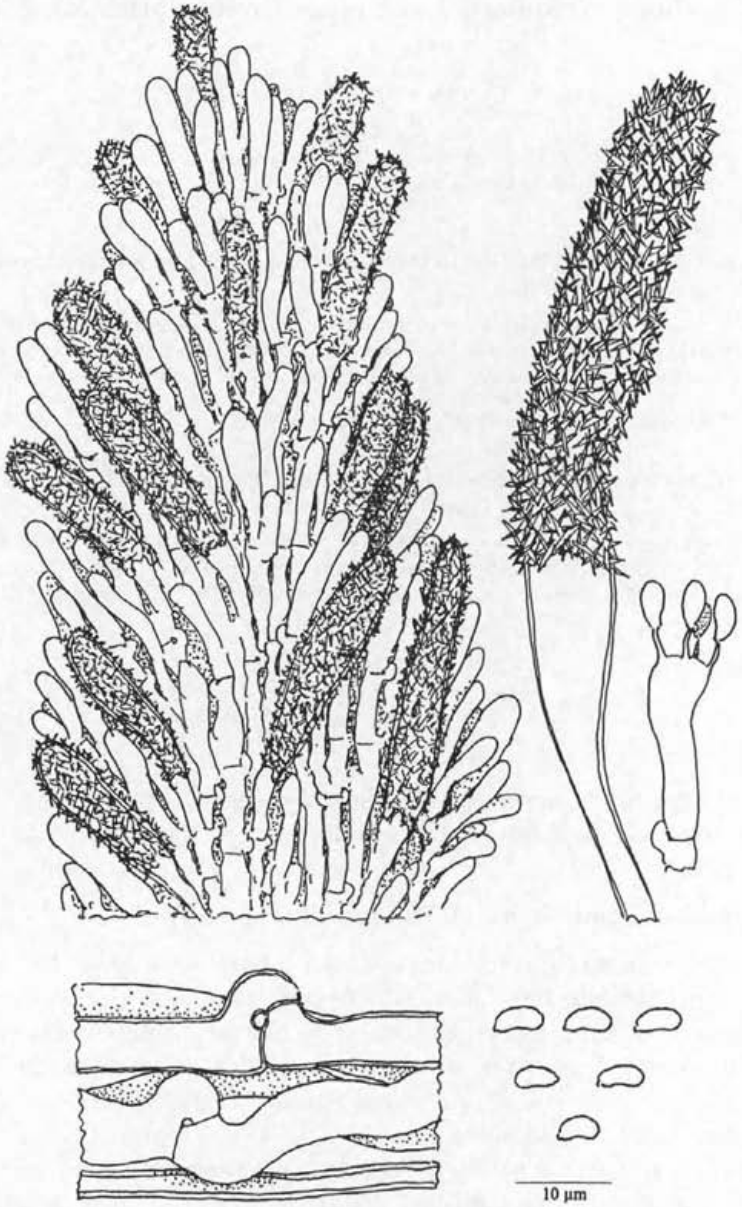

Fig. 1. *Steccherinum albidum*. Cross-section of spine, showing encrusted cystidia (not to scale); cystidium and basidum; thin and thick-walled hyphae; basidiospores.

2–5 μm wide, with clamp-connexions; skeletal hyphae tortuous, thick-walled, 2–5 μm wide. Basidia weakly clavate, 12–18 × 3–4 μm. Cystidia numerous, mostly tubular, encrusted with spiculate mineral crystals, 80–90 × 6–9 μm. Basidiospores cylindrical (Q = 2.0–2.6), weakly allantoid, 3–3.5 (- 4) × 1.5 μm, smooth, thin-walled, negative in Melzer's reagent.

Holotype: ENGLAND: West Sussex, Ebernoe Common, on mossy, fallen, *Fagus* trunk, 13 Sept. 1997, N. W. Legon, K(M) 54968.

Steccherinum albidum is distinguished macroscopically by its effused-reflexed basidiomes, which are whitish when fresh, and microscopically by its small, suballantoid basidiospores (Fig. 1). No comparable species was known to Maas Geesteranus (1974) in his world monograph, nor in subsequent treatments of the genus (including Maas Geesteranus & Lanquetin, 1975; Saliba & David, 1988). The closest species is perhaps *S. ochraceum* (Pers.) Gray, but *S. ochraceum* typically has more deeply coloured, ochraceous to salmon basidiomes and ellipsoid, non-allantoid basidiospores (Q = c. 1.5), well illustrated in Eriksson *et al.* (1984). Additional material of *Steccherinum pallidum* may well be discovered if whitish to pale specimens of "*S. ochraceum*" are systematically searched for and examined microscopically.

ACKNOWLEDGEMENT

Thanks to Prof. Leif Ryvarden, Oslo, for examining and commenting on the type specimen.

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Dacryomyces ovisporus (Dacryomycetales, Basidiomycetes) new to the Czech Republic

WŁADYSŁAW WOJEWODA

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Wojewoda W. (2002): Dacryomyces ovisporus (Dacryomycetales, Basidiomycetes) new to the Czech Republic. – Czech Mycol. 54: 11–17

Dacryomyces ovisporus Bref. (Dacryomycetaceae, Dacryomycetales, Basidiomycetes) was found in PRM. The specimens collected by A. Pilát in the Czech Republic in 1923 and erroneously identified by W. Neuhoff as *Platygloea miedzyrzecensis* Bres. (Platygloeaceae, Platygloeales, Ustomycetes). Young probasidia (basidia without sterigmata) of *Dacryomyces* were similar in shape to young probasidia of *Platygloea*.

Key words: geographical distribution of fungi, *Dacryomyces ovisporus*, Czech Republic.

Wojewoda W. (2002): Dacryomyces ovisporus (Dacryomycetales, Basidiomycetes), nový druh pro Českou republiku. – Czech Mycol. 54: 11–17

Dokladový exemplář *Dacryomyces ovisporus* Bref. (Dacryomycetaceae, Dacryomycetales, Basidiomycetes) byl nalezen v herbářích Národního muzea v Praze. Položky byly sbírány A. Pilátem v České republice a byly mylně určeny W. Neuhoffem jako *Platygloea miedzyrzecensis* Bres. (Platygloeaceae, Platygloeales, Ustomycetes). Mladé probasidie rodu *Dacryomyces* (basidie bez sterigmat) jsou totiž tvarem podobné probasidiím (basidie bez sterigmat) u rodu *Platygloea*.

INTRODUCTION

Dacryomyces ovisporus was described by Brefeld (1888) from Germany. This species is rare in Europe. It is known also from Canada in North America. It is a unique species among Dacryomycetaceae in that the basidiospores are consistently subglobose to broadly oval, and muriform. It had hitherto not been reported from the Czech Republic. In 1970 the author has found specimens of *D. ovisporus* in PRM, labelled as *Platygloea miedzyrzecensis*.

D. ovisporus (Basidiomycota, Basidiomycetes, Dacryomycetales) has bifurcate basidia and subglobose, muriform basidiospores. *Platygloea miedzyrzecensis* Bresadola, Ann. Mycol. 1: 113, Pl. 3, Fig. 3. 1903, is now placed in the *Naohidea* genus as *N. sebacea* (Berk. et Br.) Oberwinkler, Rept. Tottori Mycol. Inst. 28: 114. 1990. Other synonyms are: *Dacryomyces sebaceus* Berk. et Br., Ann. Mag. Nat. Hist., IV, 7: 430. 1871; *Platygloea sebacea* (Berk. et Br.) McNabb, Trans. Brit. Mycol. Soc. 48: 188, Fig. 1C-E. 1965; *Achroomyces sebaceus* (Berk. et Br.) Wojewoda, Grzyby (Mycota), 8: 24, Fig. 92. 1977. *Naohidea sebacea* has cylindrical

basidia with 4 transverse septa, and ellipsoid basidiospores, 8–16 × 5–9 μm, without septa. According to Hawksworth et al. (1995) the genus *Platygloea* is now placed in the Platygloeaceae, Platygloeales, Ustomycetes, Basidiomycota.

TAXONOMY

Dacryomyces ovisporus Brefeld, Unters. Gesammtgeb. Myk. 7: 158. 1888. Dacryomycetaceae, Dacryomycetales, Holobasidiomycetidae, Basidiomycetes, Basidiomycota, Fungi (Hawksworth et al. 1995).

ILLUSTRATIONS

Bandoni 1963: Fig. 1; Brefeld 1888: Pl. 10, Figs. 20–21; Łuszczyński 1993: Fig. 2; McNabb 1973: Fig. 1c-d; Raitviir 1967: Fig. 76; Reid 1974: Fig. 5A-B; Torkelsen 1972: Fig. 3b; 1997: Fig. 26; Wojewoda 1976: Fig. 3.

EXAMINED MATERIAL

1) Czech Republic, Bohemia, near Řevnice, on rotten wood of *Picea abies*, July 1923, leg. A. Pilát, PRM 706130.

Old basidiocarps 2–5 mm in diameter, resupinate, gregarious, dry dark amber to dark brown. Hyphal system monomitic. Hyphae 2.0–4.0 μm wide, thin-walled, hyaline, septate, septa with clamps. Dicaryophyses thin-walled, with clamps. Basidia 54–84 × 4.8–9.6 μm, young cylindrical-subclavate, like young basidia of *Auricularia* or *Platygloea* (without sterigmata), usually with basal clamps, becoming bifurcate. Basidiospores 9.5–15(–20) × 8.5–12(–14) μm, apiculate, subglobose, globose, broadly elliptical or broadly oval, at first without septa, becoming septate (irregularly muriform) by formation of transverse, longitudinal and oblique, thin septa at maturity, hyaline, non-amyloid. Germination to conidia or germ tubes has been not observed (Fig. 1).

2) Czech Republic, Bohemia, Mníšek, on rotten branches of *Pinus sylvestris*, August 1923, leg. A. Pilát, PRM 706131, as *Platygloea miedzyrzecensis* Bres., det. W. Neuhoff (Pilát 1957a, as *P. miedzyrzecensis*).

Hyphae 2–4 μm wide, hyaline, thin-walled, with clamps. Basidia 60–100 × 5.5–12 μm. Basidiospores 12.0–15.5 × 9.5–12 μm (Fig. 2).

ECOLOGY

Basidiocarps of *Dacryomyces ovisporus* grow in summer and autumn, in coniferous and mixed forests (in Poland e.g. in *Querco roboris-Pinetum, Pino-Quercetum* × *Luzulo-Fagetum*? and *Peucedano-Pinetum*), on coniferous wood, especially

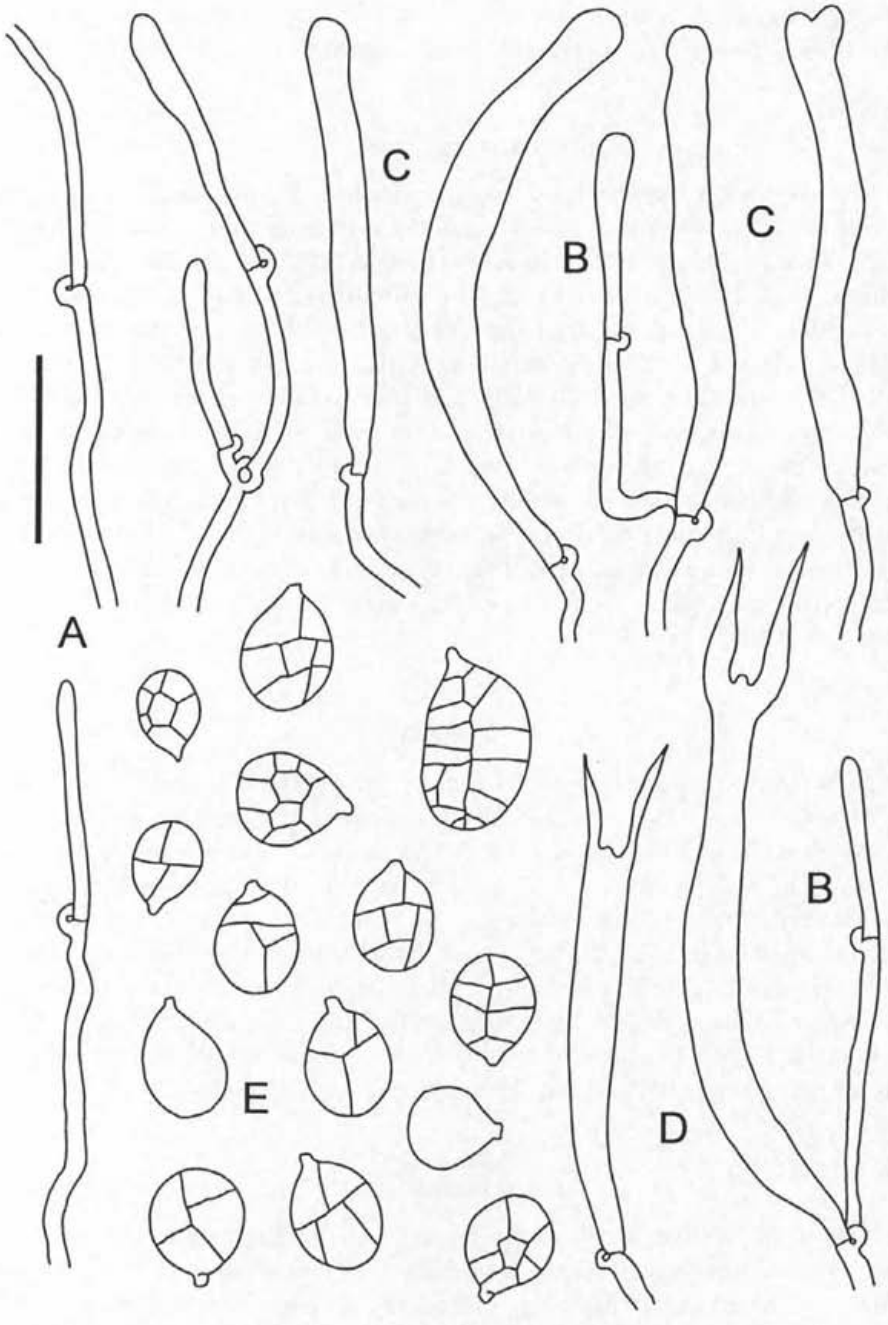

Fig. 1. *Dacryomyces ovisporus* (PRM 706130): **A** – hyphae, **B** – dicaryophyses, **C** – young basidia, **D** – mature basidia, **E** – basidiospores

of *Pinus* (e.g. *P. sylvestris*), also on *Picea*, on trunks and fallen twigs (Ellis and Ellis 1990, Eriksson 1958, Łuszczyński 1997, Torkelsen 1997, Wojewoda 1976),

DISTRIBUTION

This species has hitherto been reported only from Europe and North America. In Europe it has been found in Austria (Krieglsteiner 1991), Estonia (Raitviir 1967), Finland (Laurila 1939), Germany (Brefeld 1888, Krieglsteiner 1991), Great Britain (Reid 1974), Norway (Torkelsen 1972, 1997), Poland (Wojewoda 1976, 1991a, 1993, Łuszczyński 1993), and Sweden (Neuhoff 1936, Eriksson 1958). In North America it has been observed in British Columbia in Canada (Bandoni 1963, Ginns and Lefebvre 1993). In Poland *Dacryomyces ovisporus* is known only from the southern and south-central part of country. It has been found in the Góry Świętokrzyskie Mts. (town of Kielce), in the Kotlina Sandomierska Basin: Jadachy near Sandomierz and the Skołczanka reserve in the town Kraków, and in the Western Carpathians, Pogórze Wiśnickie foothills: the Kamień Grzyb reserve near Wiśnicz Nowy (Łuszczyński 1993, Wojewoda 1976, 1991a, 1993). Maps of this species have been published by Wojewoda 1976, Krieglsteiner 1991, and Łuszczyński 1993.

THREAT

D. ovisporus is a rare species in Europe (McNabb 1973, Raitviir 1967, Reid 1974). In Germany it is known from only 3 localities (Krieglsteiner 1991), in Sweden it was observed in 1936 (Neuhoff 1936) and in 1947 (Eriksson 1958). According to Pilát (1957) it is very rare in Germany and Sweden. In Poland it has been reported only from 4 localities (Łuszczyński 1993). On the Red List of threatened macrofungi in Poland this species belongs to the R (rare) category (Wojewoda and Ławrynowicz 1986, 1992), just as on the Red List of threatened macrofungi in the Polish Carpathians (Wojewoda 1991b). On Red Lists of macrofungi in the Baltic and Nordic Region (Anonymous 1995) *D. ovisporus* is considered threatened for 3 countries: Norway, Poland and Sweden in category 3 (rare).

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The author wishes to thank the Director of the Institute of Botany of the Czechoslovak Academy of Sciences in Průhonice near Prague and the National Museum, Department of Mycology in Prague for inviting me to Prague in 1970, and Mgr. Z. Pouzar, CSc., the Curator of PRM, for kindly providing herbarium specimens of *Platygloea miedzyrzecensis*.

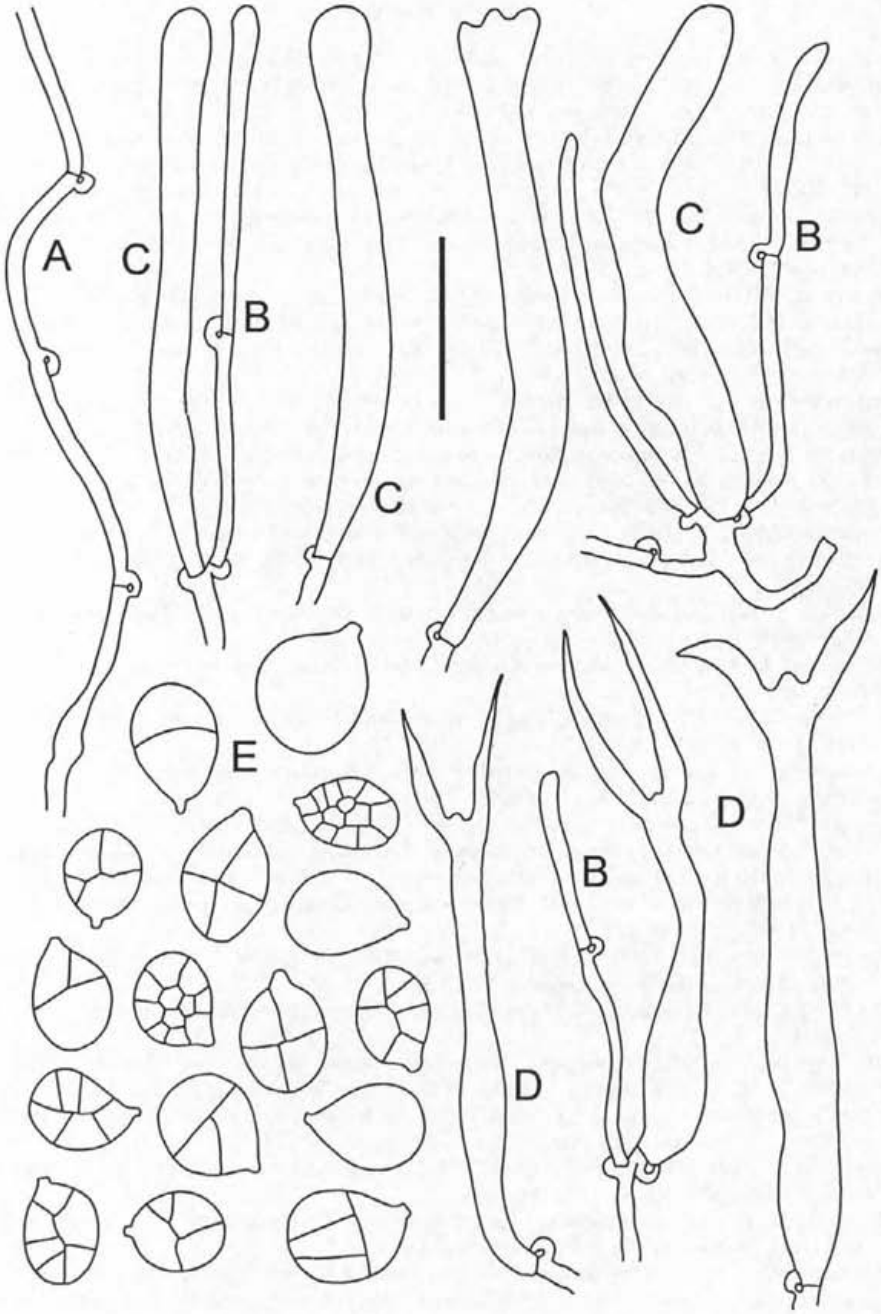

Fig. 2. *Dacryomyces ovisporus* (PRM 706131): **A** – hyphae, **B** – dicaryophyses, **C** – young basidia, **D** – mature basidia, **E** – basidiospores

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Two undescribed Microporellus species and notes on M. clemensiae, M. setigerus, and M. subincarnatus

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Decock C. and Ryvarden L. (2002): Two undescribed Microporellus species and notes on M. clemensiae, M. setigerus, and M. subincarnatus. – Czech Mycol. 54: 19–30

Microporellus brasiliensis sp. nov. and *Microporellus ellipsosporus* sp. nov. are described from Brazil and Senegal, respectively. *Microporellus setigerus* Corner and *Microporellus subincarnatus* Corner are shown to be a synonyms of *Amauroderma schomburgkii* and *Perenniporia stipitata*, respectively.

Key words: Africa, *Amauroderma*, *Microporellus*, *Perenniporia*, South America, taxonomy.

Decock C. a Ryvarden L. (2002): Dva dosud nepopsané druhy rodu Microporellus a poznámky o M. clemensiae, M. setigerus a M. subincarnatus. – Czech Mycol. 54: 19–30

Jsou popisovány druhy *Microporellus brasiliensis* sp. nov. z Brazílie a *Microporellus ellipsosporus* sp. nov. ze Senegalu. Dva druhy jsou považovány za synonyma: *Microporellus setigerus* Corner je ztotožňován s *Amauroderma schomburgkii*, *Microporellus subincarnatus* Corner je ztotožňován s *Pereniporia stipitata*.

INTRODUCTION

During the revision of some genera of polypores from central Africa and South America, two *Microporellus* species were encountered for which no suitable names could be found. They are described as *Microporellus ellipsosporus* sp. nov. and *Microporellus brasiliensis* sp. nov., respectively. Furthermore, two neotropical *Microporellus* species described by Corner (1987) as *M. setigerus* and *M. subincarnatus*, were revised. It is concluded that none of them belongs in *Microporellus*.

MATERIAL AND METHODS

The study is based on specimens from BR, E, and O (herbarium acronyms are from Holmgren *et al.* 1990). Specimens were dissected under a stereomicroscope

[1)] MUCL is a part of the Belgian Co-ordinated Collections of Micro-organisms (BCCM)

and examined in Melzer's reagent, 4 % KOH and lactic acid cotton blue. Colours are described according to Kornerup & Wanscher (1981). All microscopic measurements were done in Melzer's reagent. The terminology used to describe the various hyphae observed in basidiocarps is from Ryvarden (1991). In presenting the size range of several microscopic elements, 5 % of the measurements at each end of the range are given in parentheses when relevant. In the text, the abbreviations used are: $\bar{x}$ = arithmetic mean, R = the ratio of length/width of basidiospores, and $\bar{x}_R$ = arithmetic mean of the ratio R.

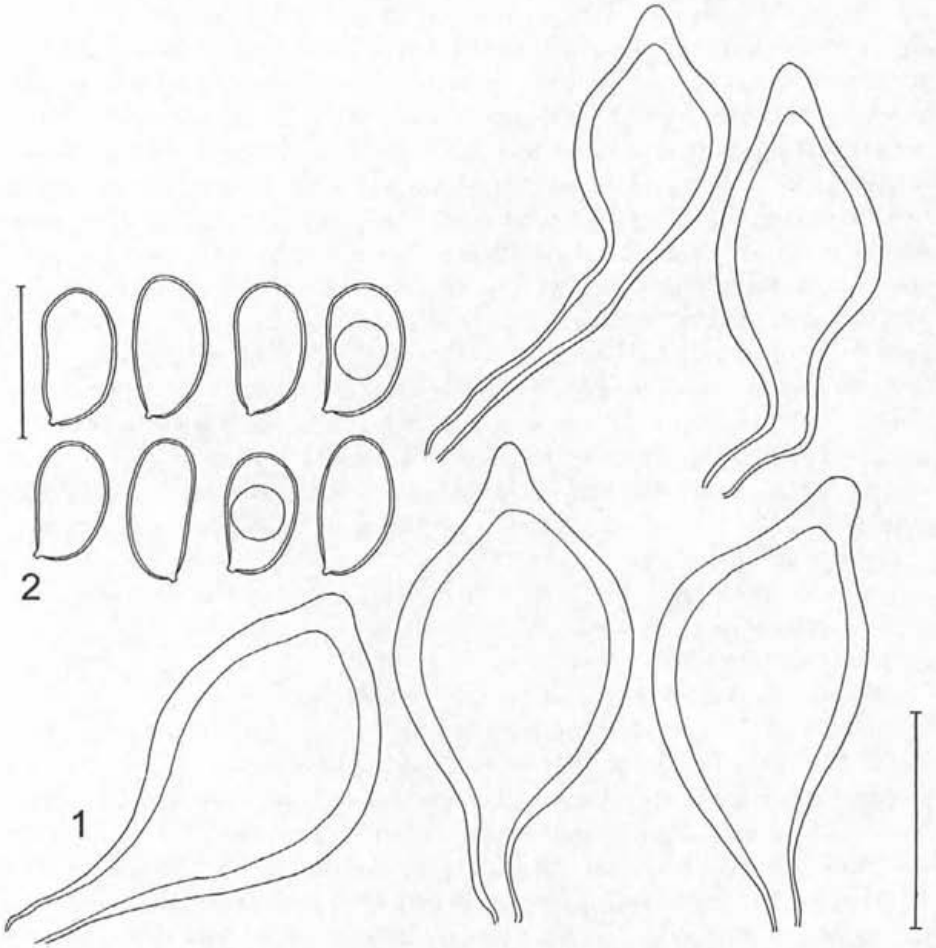
TAXONOMY

Microporellus ellipsosporus C. Decock et Ryvarden, sp. nov.

Figs. 1–2

Basidiocarpus annuus, stipitatus, solitarius. Stipes centralis, robustus, usque 55 mm alatus, basi 12 mm crassus et apice usque 7 mm crassus, in sectione circularis vel leviter ellipsoideus, griseo-aurantiacus, atrosuberosus. Pileus circularis, applanatus vel convexus, diametro usque 55 mm, 10 mm crassus, irregularis, laevis vel leviter sulcatus, leviter undulatus, glaber, pallide suberosus, margine abrupte curvato, leviter revoluto. Pori irregulares, rotundati vel angulares 2–3/mm, 250–500 μm diametro, brunneolo-cinerei. Contextus usque 2.5 mm crassus, suberis colore et consistentia. Tubi usque 9 mm crassi, subereo-cinerei, consistentia firme suberosa. Systema hypharum dimiticum. Hyphae generativae fibulatae, hyalinae. Hyphae vegetativae skeletales, eramosae, eseptatae, crassitunicatae, dextrinoideae, cyanophilae, stipite 3.0–5.0 μm, contextu (3.7–)4.0–5.8(–6.8) μm, tubis (3.2–)3.4–4.5(–5.0) μm latis. Basidiosporae plerumque ellipsoideae, interdum reniformes, hyalinae vel pallide luteolae et leviter crassitunicatae, dextrinoideae, cyanophilae, 8.0–9.8–(10.0) × (4.0)–4.2–5.0–(5.5) μm, R =1.7–2.3. Cystidia fusiformia vel plerumque ventricosa, apice rotundata vel leviter lageniformia, laevia usque valde incrustata, crassitunicata et apice valde crassitunicata, hyalina vel pallide luteola, non dextrinoidea, cyanophila, 32–50 × 10–26 μm.

Basidiocarp seasonal, centrally stipitate, solitary. Stipe robust, up to 55 mm tall, 12 mm thick at the slightly bulbous base, down to 7 mm at the apex, circular to slightly ellipsoid in crosss-section, dirty greyish orange, dark dirty cork-coloured. Pileus circular, applanate to convex, up to 50–55 mm in diam., 10 mm thick, with an abruptly curved, slightly enrolled margin (when dried), surface irregular, smooth to slightly concentrically sulcate, wavy, with a few large bands, glabrous, mainly pale cork-coloured (pale greyish orange to pale brownish orange, 5B(3–4)), very faintly zoned, dull. Pore surface rather irregular, dentate, dirty greyish brown (when dried), (53E, 6(3–4)E). Pores irregular, round to angular, 2–3/mm, 250–500 μm in diam., ($\bar{x}$ = 375 μm in diam.). Dissepiments



Figs. 1–2. *Microporellus ellipsosporus*. **1.** Cystidia (bar = 20 μm). **2.** Basidiospores (bar = 10 μm).

thin, entire, smooth. Trama of the stipe with a hard corky consistency and dense fibrous texture, greyish corky-coloured. Context homogeneous, thin, up to 2.5 mm thick at the base, down to 1 mm thick at the margin, with a corky consistency and fibrous texture, pale cork-coloured (pale greyish orange, 5B3). Tube layer concolourous with the context, up to 9 mm deep, with a corky consistency, and fibrous texture. Hyphal system dimitic, identical in the stipe, the context and the trama of the tubes. Generative hyphae hyaline, clamped, 2.5–3.0 μm wide. Vegetative hyphae as non-branched skeletal hyphae, clamped at the basal septum, moderately thick-walled, often with a large lumen, especially in the context,

and then often partly collapsed, non-septate or with a few occasional secondary septa near the thin-walled end, straight to occasionally knobbed, hyaline, strongly dextrinoid, cyanophilous. Skeletal hyphae in the stipe tightly compacted, progressively enlarging from 2.7–3.0 μm wide at the basal septum to 3.0–5.0 um wide ($\bar{x} = 3.8$ μm); in the context progressively enlarging from 2.8–3.2 μm wide at the basal clamp to (3.7)–4.0–5.8–(6.8) μm wide ($\bar{x} = 4.9$ μm); in the trama of the tubes enlarging from 2.5–3.0 μm wide at the basal clamp to (3.2)–3.4–4.5–(5.0) μm wide ($\bar{x} = 3.9$ μm). Basidia and basidioles not seen. Basidiospores mostly ellipsoid, occasionally slightly reniform, with an eccentric apiculus, slightly thick-walled, with 0–1 large oil-drop, hyaline to faintly yellowish, non-dextrinoid, cyanophilous, 8.0–9.8–(10.0) × (4.0)–4.2–5.0–(5.5) μm, R = 1.7–2.3 ($\bar{x} = 9.0 \times 4.6$ μm, $\bar{x}_R = 1.9$). Cystidia present, fusoid to more commonly broadly ventricose, occasionally with a hypha-like base (up to 30 μm long), the apex rounded to sometimes slightly elongated, lageniform, thick-walled, the wall notably thicker at the apex, the latter smooth to coarsely incrusted, hyaline to pale yellowish, non-dextrinoid, cyanophilous, 32–50 × 10–26 μm, ($\bar{x} = 40 \times 18$ μm). Chlamydospores absent.

Type of rot: unknown.

Sexuality: unknown.

Cultural features: unknown.

Substrate: forest floor.

Distribution: known only from the type locality, Senegal.

HOLOTYPE: Senegal: Forêt des Bayottes, *Afzelia africana* forest, Amadou Ba, 21 Dec. 1985, D. Thoen, BR 066216,62 and O (isotype).

Microporellus ellipsosporus is well characterised by its large pores (2–3/mm), large cystidia, and ellipsoid basidiospores. There is no other *Microporellus* species with such basidiospores, having an average L/W ratio almost equaling 2. *Microporellus violaceo-cinerescens* (Petch) David et Rajchenb. is somewhat similar but differs by having more broadly ellipsoid to lacrymoid basidiospores (Ryvarden & Johansen 1980, Dhanda & Ryvarden 1975, David & Rajchenberg 1985). Two specimens of the latter species, including the type of *Cystostiptoporus indicus* Dhanda et Ryvarden, a taxonomic synonym of *M. violaceo-cinerescens* (David & Rajchenberg 1985) showed the following basidiospore measurements: *C. indicus*, type: 7.5–8.8 × 5.3–5.9–(6.3) μm, $\bar{x} = 8.1 \times 5.6$ μm, R = 1.3–1.6, $\bar{x}_R = 1.4$; Pakistan # 28318: (7.8)–8.0–9.3 × (5.3)–5.5–6.2–(6.4) μm, $\bar{x} = 8.7 \times 5.8$, R = 1.3–1.7, $\bar{x}_R = 1.5$ (Fig. 3). David & Rajchenberg (1985) and Ryvarden & Johansen (1980) noted 7–8.5 × 5.0–6.0 μm and 8.0–10.0 × 5.5–7.0 μm, respectively. Hattori & Murakami (1993) recorded 6.5–8.0 × 4.5–6.0 μm while Yang (2000) noted (6.5)–7.0–8.5–(9.0) × (4.5)–5.0–6.5 μm, R = 1.2–1.5–(1.7), $\bar{x}_R = 1.4$.

Specimens of *M. violaceo-cinerescens* examined: Pakistan, Chandigharh, near the botanical garden, sector 14, on buried pieces of wood, 23 Oct. 1967,

V. P. Bhatnagar, O (type of *C. indicus*); Pakistan, Islamabad, on stem of *Diclipte*, 8 Apr. 1984, 28318, O.

Microporellus clemensiae (Murrill) Ryvarden, Mycotaxon 23: 171, 1985. Figs. 4–5

The type specimen of *M. ellipsosporus* was previously identified with *M. clemensiae* (note on the herbarium label), a species originally described from the Philippines (Murrill 1908). However, *M. clemensiae* is a distinct species with a thinner basidiocarp, smaller pores, (5)–6–7/mm, 125–165–(175) μm in diam. ($\bar{x} = 146$ μm), and smaller, subglobose basidiospores (5.2)–5.5–7.0–(7.3) × 4.0–5.0–(5.5) μm, R = 1.2–1.5–(1.7), ($\bar{x} = 6.3 \times 4.7$ μm, $\bar{x}_R = 1.3$). Although present, cystidia are very rare in the type specimen.

Specimens of *Microporellus fuliginosus* Corner (= *Microporellus burkillii* sensu Corner, Hattori 2001) might be conspecific with *M. clemensiae*. Hattori (2001) considered *M. fuliginosus* the correct name for *M. burkillii* sensu Corner, the type specimen of the latter name being a species of *Polyporus* (Ryvarden 1990).

Philippines, Specimens examined: Mindanao, near Camp Keithley, Lake Lanao, on dead roots, Sep.-Oct. 1907, M. S. Clemens, NY (Lectotype).

Microporellus brasiliensis Ryvarden et Decock, sp. nov. Figs. 7–10

Basidiocarpus annuus, sessilis vel substipitatus vel stipitatus, solitarius. Stipes lateralis, robustus, 30–50 mm elatus, 6 mm crassus, in sectione circularis vel irregularis, cinereus. Pileus solitarius, semicircularis, dimidiatus vel flabelliformis, applanatus, 25–70 mm longus, 20–80 mm latus, 2–10 mm crassus, irregularis, laevis vel tuberculatus, glaber, albidus, pallide cinereus vel luteo-griseus, obscure badius, griseo-brunneus, usque murinus, senectute usque pallide brunneus (cinnamomeus) vel brunneus (chocolatinus) mutans, margine acuto, leviter revoluto. Pori rotundati, 6–7(–8)/mm, 75–138–(150) μm diam., albidi. Contextus usque 1–3 mm crassus, albidus, consitencia firme suberosa. Tubi usque 1–2.5 mm crassi, albidi vel palide flavidi, consistentia firme suberosa. Systema hypharum dimiticum. Hyphae generativae fibulatae, hyalinae, 1.8–2.8 μm. Hyphae vegetativae skeletales, eramosae, eseptatae, crassitunicatae, dextrinoideae, cyanophilae, stipite (4.2)–4.5–8.0 μm, contextu (4.0)–4.7–8.0–(9.0) μm, tubis (2.8)–3.0–4.4–(5.0) um. Basidia tetrasterigmatica, clavatae, 13.0–15.0 × 6.0–8.0 μm. Basidiosporae globosae, subglobosae vel lacrimiformae, apiculatae, leviter carassitunicatae, hyalinae vel palide flavidae, non usque leviter dextrinoidea, cyanophilae, 4.0–5.0–(5.2) × × 3.8–4.5 μm, R =1.0–1.3. Cystidia fusiformia vel ventricosa, apice obtusa vel lageniformia, levia vel valde incrustata, crassitunicata, hyalina, non dextrinoidea, cyanophila, 19–39 × 7.5–12.5 μm.

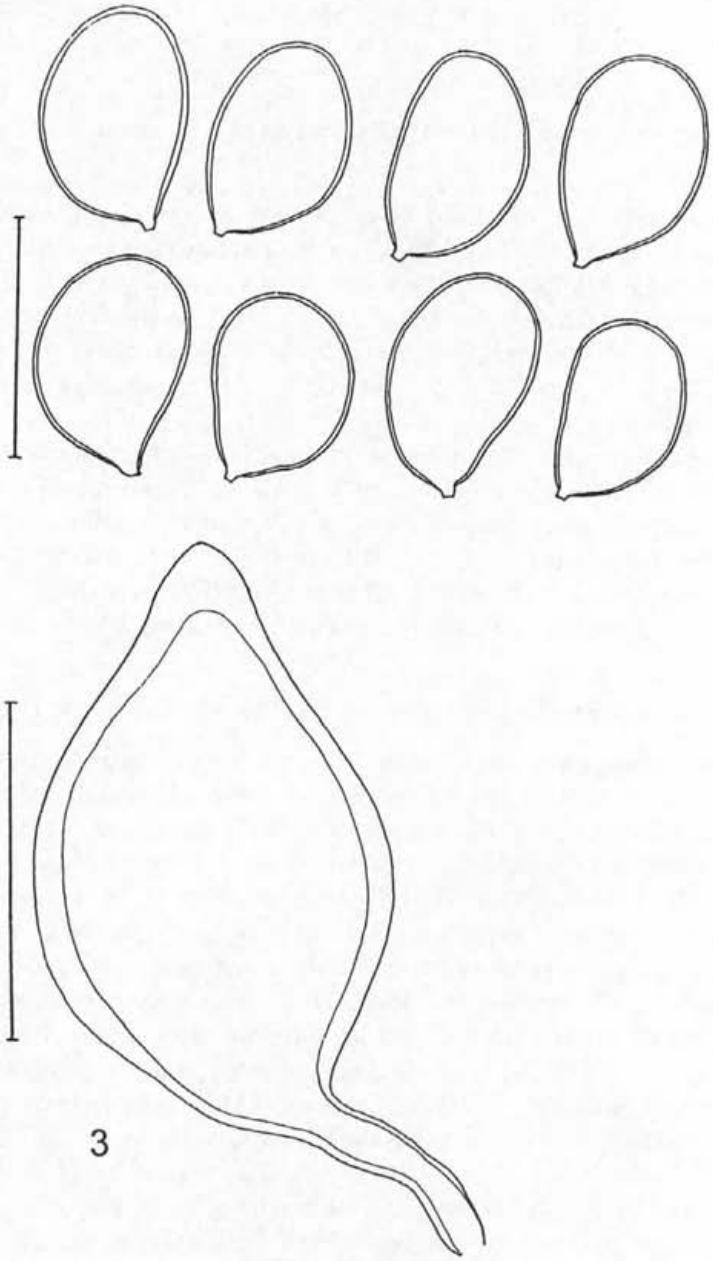
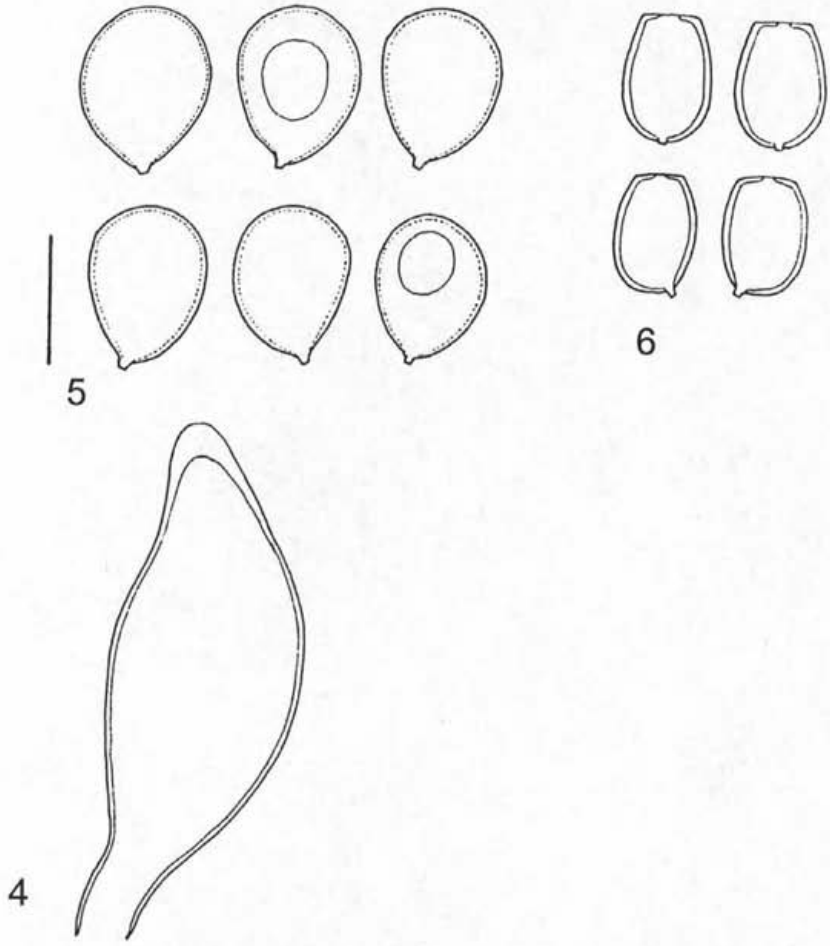
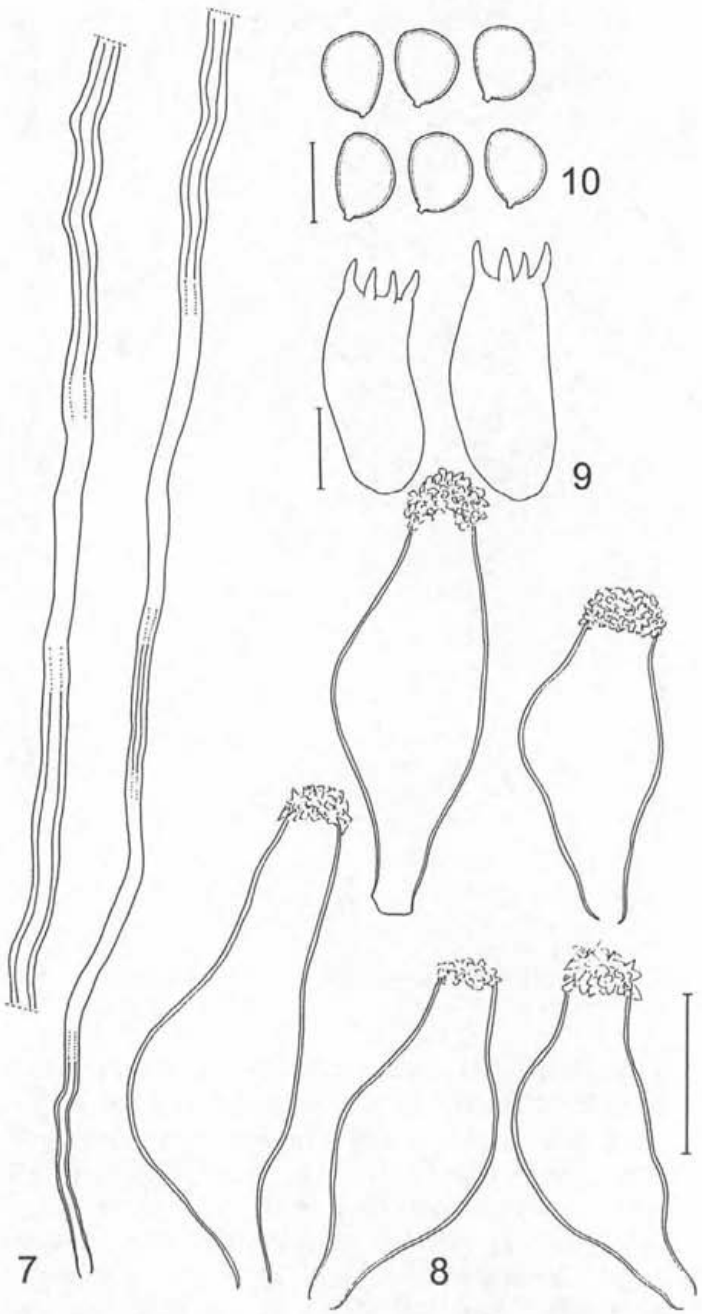


Fig. 3. *Microporellus violaceo-cinerescens*. Cystidia (bar = 20 μm) and basidiospores (bar = 10 μm).



Figs. 4–6. 4–5. *Microporellus clemensiae*. **4.** Cystidia. **5.** Basidiospores. **6.** *Microporellus subincarnatus*, basidiospores (bar = 5 μm).

Basidiocarp annual, pileate, sessile, with a reduced stipe-like base or stipitate. Stipe lateral, up to 30–50 mm tall, 6 mm thick, rather irregular, with a hard corky consistency, mainly greyish or pale yellowish grey. Pileus solitary, dimidiate to spathulate or (semicircular), applanate, up to 70 mm long (25–70 mm), 80 mm wide (20–80 mm), 2–10 mm thick. Pileus surface smooth, slightly to coarsely tuberculate, slightly radially wrinkled, azonate, dull to silky, glabrous, whitish, pale greyish to greyish yellow, pale beige (4C3), pale greyish brown (5(C-D–3), to mouse grey, greyish brown (53E) discolouring to light brown to brown on aging (6(D-E)5, cinnamon, sunburn, cocoa brown). Margin thin, sharp, slightly enrolled in dried specimen, even to lobed, white to greyish, or pale orange,



Figs. 7–10. *Microporellus brasiliensis*. **7.** Skeletal hyphae from the trama of the tubes. **8.** Cystidia (bar = 20 μm). **9.** Basidia (bar = 5 μm). **10.** Basidiospores (bar = 5 μm).

greyish black to purple black on bruising. Pore surface whitish, pale creamy. Pores round to even irregular, 6–7(–8)/mm, 75–138–(150) μm in diam. ($\bar{x}$ = 108 μm). Dissepiments entire, smooth. Context homogeneous, with a hard corky consistency and dense fibrous texture, silky, whitish (probably white when fresh), 1–3 mm thick. Tube layer one, with a hard corky consistency and fibrous texture, whitish to faintly yellowish, 1–2.5 mm thick. Hyphal system dimitic, identical to the context and trama of the tubes. Generative hyphae hyaline, thin-walled, clamped, 1.8–2.8 μm. Vegetative hyphae as non-branched skeletal hyphae, arising from generative hyphae, clamped at the basal septum, non-septate (or occasionally with 1–2 secondary septa in the thin-walled ends, more frequently seen in the trama of the tubes), with a slightly to moderately thickened wall and a wide lumen, hyaline in KOH, strongly dextrinoid, cyanophilous, (4.2)–4.5–8.0 μm in the stipe, in the context enlarging from 3.5–4.0 μm at the basal septum to (4.0)–4.7–8.0–(9.0) μm in the main part ($\bar{x}$ = 6.5 μm), enlarging from 2.3–3.0 μm wide at the basal septum to (2.8)–3.0–4.4–(5.0) μm wide in the main part ($\bar{x}$ = 3.8 μm) in the trama of the tubes. Hymenium embedded in a light amorphous "resin-like" substance when dried. Basidia clavate, clamped at the basal septum, with four sterigmata, 13.0–15.0 × 6.0–8.0 μm. Basidiospores globose, subglobose to tear-shaped, with an apiculus, slightly thick-walled, with 0–1 large oil-drop, hyaline to faintly yellow, non– to faintly dextrinoid, cyanophilous, 4.0–5.0–(5.2) × 3.8–4.5 μm, R = 1.0–1.3 ($\bar{x}$ = 4.7 × 4.1 μm, $\bar{x}_R$ = 1.2). Cystidia present but of very variable abundance between specimens, from very rare to abundant, fusoid to ventricose, the apex obtuse, sometimes slightly elongated, lageniform, and lightly to coarsely incrusted, evenly thick-walled, hyaline, non-dextrinoid, cyanophilous, 19–39 × 7.5–12.5 μm ($\bar{x}$ = 27 × 10 μm). Chlamydospores absent.

Type of rot: unknown.

Sexuality: unknown.

Cultural features: unknown.

Substrate: base and dead trunk of angiosperms.

Distribution: known from two localities in Brazil.

HOLOTYPE: Brazil, Paraná state, Colombo, Embrapa Florestas (Centro Nacional de Pesquisa de Florestas), Estrada da Ribeira km 11, in a mixed ombrophilous forest, at the base and on the trunk (up to 2 m height) of a standing dicotyledonous tree, 900 m a.s.l. A. A. R. de Meijer 3658, 2 Jun. 1999, MBM (Curitiba); O, and MUCL 43102 (isotypes).

Brazil, Other specimen examined: Paraná state, Curitiba, Parque Barigui, in a mixed ombrophilous forest, at the base of the standing trunk of an unknown dicotyledonous tree, 900 m a.s.l., A. A. R. de Meijer 2113, 29 Jan. 1992, MBM (Curituba), O, and MUCL (paratypes).

Microporellus brasiliensis is mainly characterised by its greyish to pale greyish brown basidiocarp, small pores (6–7(–8)/mm, 75–138–(150) μm), presence of

cystidia, and small ($\bar{x}$ = 4.7 × 4.1 μm), mostly subglobose basidiospores. The species is macroscopically variable, depending on its position at the substrate, either sessile on the trunk or stipitate at its base, from buried roots.

Corner (1987) also described two small-pored *Microporellus* species from the Neotropics, viz. *Microporellus subincarnatus* Corner and *Microporellus setigerus* Corner, both based on specimens originating from Amazonas, Brazil. The type specimens of both species, kept in E, were studied.

Microporellus subincarnatus Corner, Beih. Nov. Hedw. 86: 121, 1987. Fig. 6

The study of the type specimen of *M. subincarnatus* demonstrated that it belongs to *Perenniporia stipitata* Ryvarden (Ryvarden 1987, Decock & Ryvarden 1998). The hyphal system of the context is similar to that of *Microporellus* (with long, non-branched, slightly thick-walled, strongly dextrinoid skeletal hyphae), but *Perenniponia stipitata* differs by having slightly branched skeletal hyphae in the trama of the tubes and ellipsoid to slightly ovoid, thick-walled, apically truncate basidiospores with an apical germ pore (Fig. 6 complete), (Ryvarden 1987, Decock & Ryvarden 1998). *Microporellus subincarnatus* is thus a synonym of *Perenniponia stipitata*.

HOLOTYPE: Brazil, Amazonas: Manaus, on rotten wood lying on the ground in a forest, 14 Jun. 1948, E. J. H. Corner, E.

Microporellus setigerus Corner, Beih. Nov. Hedw. 86: 119–120, 1987.

The study of the type specimen of *Microporellus setigerus* demonstrated that the species, as already suspected by Corner himself (Corner 1987), would be better classified in *Amauroderma*. It has arboriform skeleto-binding hyphae in the trama of the tubes and basidiospores with a very finely punctate endospore, both features typical of the latter genus. The pores are small, 6–7/mm, 95–130 μm diam. ($\bar{x}$ = 109), and the basidiospores are subglobose to broadly ellipsoid, (8.3)–8.6–10.0–(10.5) × (6.3)–7.0–8.8–(9.5) μm ($\bar{x}$ = 9.6 × 7.7 μm), finely punctated. They are numerous ending of the arboriform skeleto-binding hyphae enlarged and cystidia-like in the hymenium. Occasionally, the arboriform skeletal hyphae are very reduced then resembling short inflated skeleto-binding hyphae as found for instance in *Polyporus dictyopus* Mont. (Núñez & Ryvarden 1995).

Within *Amauroderma*, *Amauroderma schomburgkii* (Mont. et Berk.) Torrend presents the same characteristics, especially the typical swollen skeletal hyphae often almost sword like in the apices. This is a diagnostic character for the species besides the small pores, the brown context, and the subglobose to very broadly ellipsoid basidiospores (Furtado 1981). *Microporellus setigerus* is thus considered as a taxonomic synonym of *A. schomburgkii*.

HOLOTYPE: Brazil, Amazonas: Manaus, on the ground in a forest, 14 Jun. 1947, E. J. H. Corner, E.

DISCUSSION

Microporellus Murrill is typified by *M. dealbatus* (Berk. et Curtis) Murrill (Murrill 1905) and the genus was initially intended for stipitate polypores. The present concept of the genus dates from David & Rajchenberg (1985), who published an emended description of the type species, which they characterised by the peculiar combination of a stipitate basidiocarp, a dimitic hyphal system with dextrinoid skeletal hyphae, thick-walled, occasionally apically incrusted cystidia, and subglobose, slightly thick-walled basidiospores. The dextrinoid reaction of the skeletal hyphae and the presence of cystidia were never reported before in *Microporellus*. Previously, Ryvarden & Dhanda (1975) used this peculiar combination of macro- and microscopic features to define *Cystostiptoporus* Dhanda et Ryvarden, typified by *Cystostiptoporus indicus* Dhanda et Ryvarden (Ryvarden & Dhanda 1975). David & Rajchenberg (1985) reduced *Cystostiptoporus* to synonymy with *Microporellus*. After detailed observations of mainly Southeast Asian taxa Corner (1987) confirmed the essential micro-features of *Microporellus* as described by David & Rajchenberg (1985) but broadened the generic concept by including some acystidiate taxa as well as some trimitic species (Corner 1987). Decock (2001) also broadened the generic concept by including two sessile species, viz. *Microporellus celtis* (T. T. Chang et W. N. Chou) C. Decock and *Microporellus peninsularis* (Corner) C. Decock, both taxa having the typical microscopic features of the genus.

The macro- and micro-morphological characteristics of *M. ellipsosporus* and *M. brasiliensis* agree in all respects with the current concept of *Microporellus* (Corner 1987, David & Rajchenberg 1985, Decock 2001, Dhanda & Ryvarden 1975). *Microporellus brasiliensis* presents the peculiarity of having a variable basidiocarp habit, from strictly stipitate to strictly sessile. The species is found both at soil level at the base of trunks or on the trunks themselves, being stipitate or sessile respectively, demonstrating the plasticity of the basidiocarp and its relative minor importance at generic or even species level.

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On some Colacogloea species from Canada

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Bandoni R., Krug J. and Ginns J. (2002): On some Colacogloea species from Canada. – Czech Mycol. 54: 31–43

Colacogloea allantospora is proposed as a new species. Canadian collections of *C. bispora* (Hauerslev) Oberw. et Bauer, *C. peniophorae* (Bourd. et Galzin) Oberw. et Bandoni and two unnamed *Colacogloea* spp. are discussed. All are intrahymenial parasites of *Hyphoderma*, *Tubulicrinis spp.*, of unidentified Corticiaceae s. l. In addition to budding, repetition, and germ tubes, *Colacogloea*, germination by a thin-walled vesicle was commonly observed. Weak Congo Red-KOH stained colacosomes intensely in a recent collection of *C. peniophorae*; those in two related but unnamed older collections stained weakly. A *Spiculogloea* (c.f. *S. minuta* Roberts), also grew in the type collection of *C. allantospora*.

Key words: Systematics, mycoparasites, *Colacogloea*, colacosomes, *Spiculogloea*

Bandoni R, Krug J. a Ginns J. (2002): O některých kanadských druzích rodu Colacoglea. – Czech Mycol. 54: 31–43

Je popisován nový druh *Colacoglea allantospora*. Jsou diskutovány kanadské nálezy druhů *C. bispora* (Hauerslev) Oberw. et Bauer, *C. peniophorae* (Bourd. et Galzin) Oberw. et Bandoni a dále dva dosud nepojmenopvané druhy rodu *Colacoglea*. Všechny tyto druhy jsou intrahymeniálními parasity na druzích rodů *Hyphoderma, Tubulicrinis* a na neurčeném druhu čeledi Corticiaceae s.l. Kromě klíčení opakováním a klíčení pomocí hyfy bylo pozorováno u rodu *Colacoglea* také klíčení pomocí tenkostěnných měchýřků. Byly také pozorovány slabě barvitelné colacosomy pomocí kongo červeně v KOH u *C. peniophorae*.

Among heterobasidiomycete collections made by R. F. Cain and now in the Royal Ontario Museum (TRTC), are several taxa he assigned to *Helicobasidium* Pat. Three of Cain's collections, one by J. Ginns, and another by A. & R. Bandoni, are treated here in the genus *Colacogloea* Oberw. et Bandoni (Oberwinkler et al., 1990). *Helicobasidium* species do not form a natural group, and those closely related to *Helicobasdium brebissoni* (Desm.) Donk (Donk, 1966), the type species,

are root parasites of vascular plants. *Colacogloea* species are mycoparasites, growing primarily intrahymenially in their host basidiomes. Their most distinctive feature is the colacosome (Bauer & Oberwinkler 1990; Oberwinkler et al. 1990), an organelle probably associated with absorption of nutrients from the host. Colacosomes develop within hyphae or vesiculose cells in contact with host structures, the walls of both organisms either becoming very thin or absent in the contact zone, the narrowed end of the colacosome actually contacting the host protoplast. Colacosomes are visible in stained preparations of North American collections of *C. peniophorae*, but they are not visible by light microscopy in species such as *C. bispora* (Hauerslev) Oberw. et Bauer (Oberwinkler et al. 1999). We have assigned our collections to *Colacogloea* on the basis of morphological similarities to *C. bispora* and the North American form of *C. peniophorae*, but without electron microscopy for colacosome observations. A distinctive type of germination of conidia and basidiospores was observed which might be useful in linking taxa discussed and described here to other fungi producing colacosomes.

MATERIALS AND METHODS

Microscopic features of the basidiomes were examined using 2% or 3% aqueous Potassium Hydroxide with or without aqueous Phloxine and/or Congo Red; alternatively, mounts were prepared using Melzer's reagent (Hawksworth et al. 1995), or 0.05% (w/v) Cotton Blue in lactic acid. For staining colacosomes in cells of *C. peniophorae* and related taxa, a weak Congo Red–KOH stain (WCR, Bandoni, submitted) was used. The stain solution consisted of 30 ml dist. water, 3 ml of 1% aqueous Congo Red in distilled water (w/v), and 3 ml glycerol. For staining, equal drops of WCR stain and 3% aqueous KOH were mixed on a slide; sections or other material to be stained were placed in the mixture. The preparations were left to stain for ca. 5–10 minutes before covering, and additional stain solution (or 10% aqueous glycerol) was added at the coverslip edge as evaporation occurred. Abbreviations for herbaria cited i. e. DAOM, TRTC, follow Holmgren et al. (1990).

TAXONOMY

Colacogloea allantospora Ginns et Bandoni, sp. nov. Fig. 1, Fig. 4, G-J.

Basidiomata nulla, in sporocarpis fungi *Tubulicrinis calothrix* parasitica. Hyphae hyalinae, 1.5–3.0 μm crassae, parietibus tenuibus, ramosae, fibulatae, singulares aut interdum funiculosae. Basidia circa 15–20 × 2–3 μm magna, interdum basim probasidiiforme leviter inflata, basi plerumque 2 μm lata,

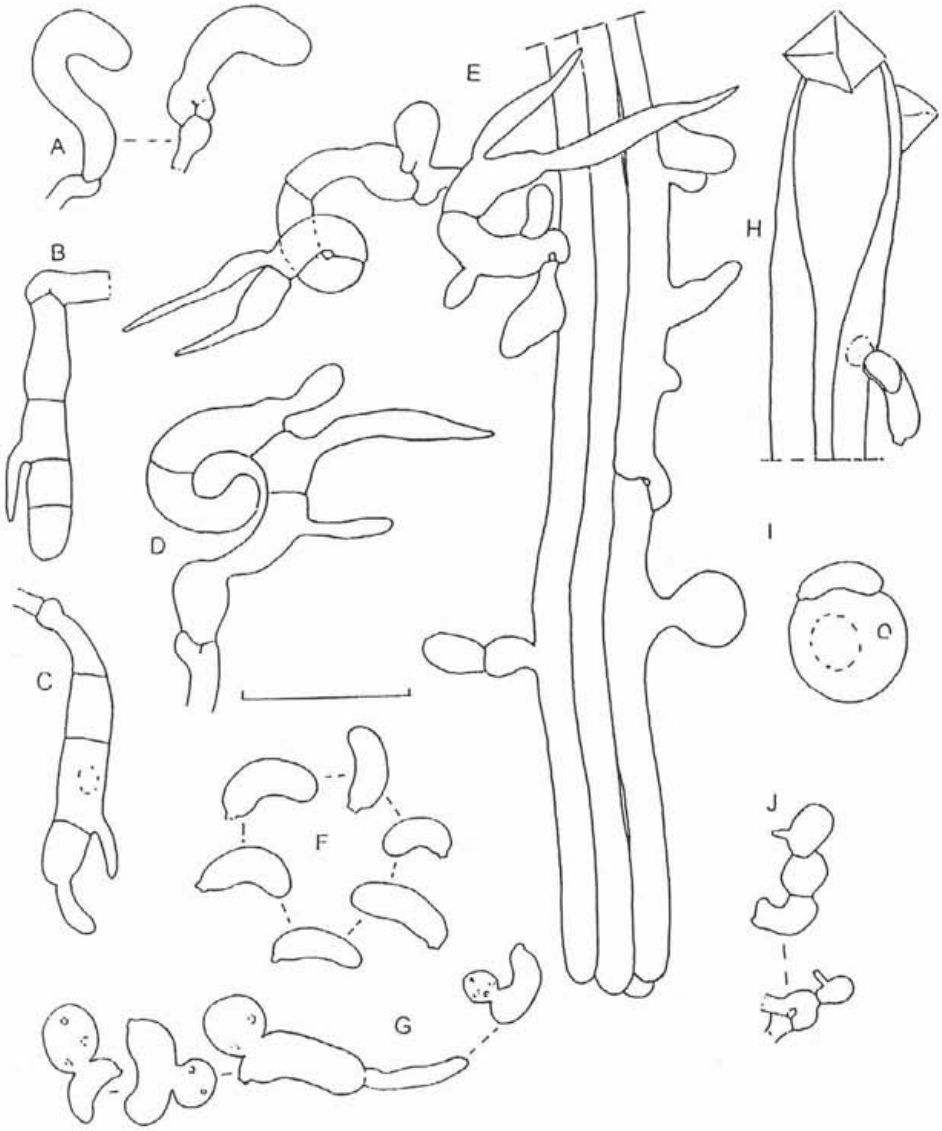

Fig. 1. A-J. *Colacogloea allantospora*, all from J. Ginns 7959 (HOLOTYPE), DAOM. **A.** Two probasidia, that on the right with a slight basal swelling. **B-D.** Mature septate basidia with developing epibasidia and, on **D.**, a developing basidiospore (note also the probasidium-like basal part). **E.** Hyphal strand bearing two basidia above, left. **F.** Basidiospores. **G.** Germinating basidiospores. **H.** Germinated basidiospore with vesicle adhering to host cystidium. **I.** Basidiospore and vesiculose cell of uncertain origin. **J.** Haustorium-like structures. (Bar = 10 μm)

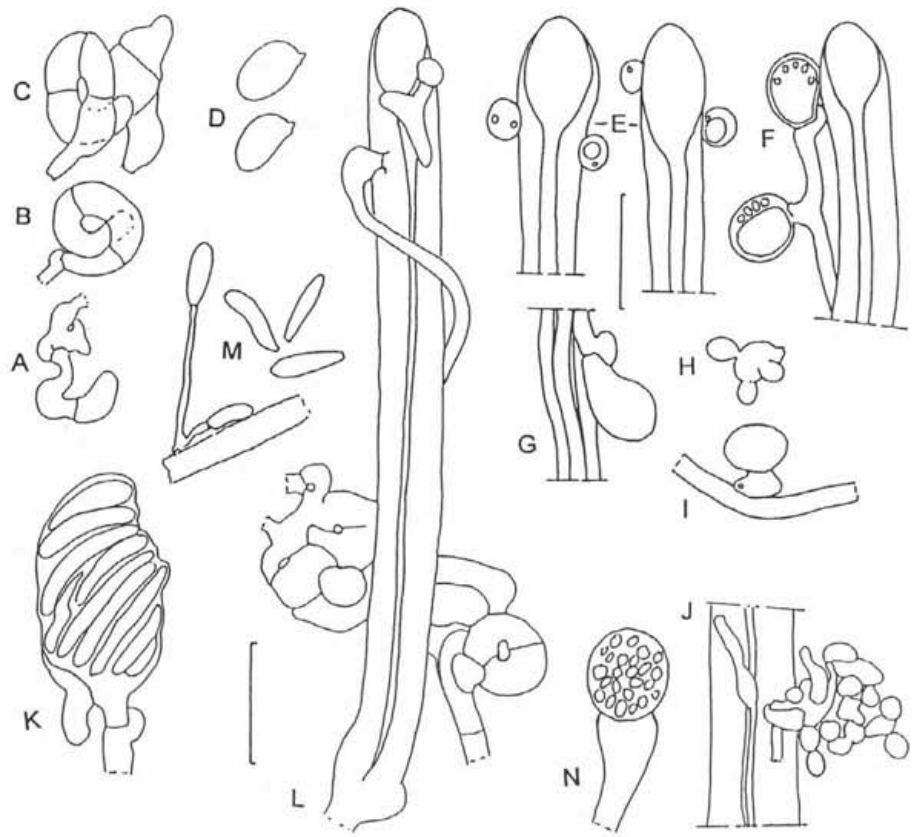

Fig. 2. A-N. *Colacogloea bispora*, from TRTC 20116. **A-C.** Mature probasidia. **D.** Basidiospores. **E.** Small globose cells (of the parasite?) associated with host cystidia. **F.** Hypha and vesiculose cells of parasite associated with host cystidium. **G.** Small portion of hyphal strand with enlarged vesiculose cell arising from one hypha. **H.** Budding basidiospore. **I.** Basidiospore germinating by thin-walled vesicle. **J.** Hypha, presumably of the parasite, growing within lumen of host cystidium, extending through the wall and budding on the right. **K.** Large vesicle possibly representing a host cell in which a coiled (? *Colacogloea*) hypha is present. **L.** Hyphae of parasite associated with host cystidium below; hyphae above without visible clamp connections and possibly not of the *Colacogloea*, one either extending into or out of the cystidium at the upper left. **M.** Conidia of unknown origin from within host basidiome, two apparently germinating and their tubes fused. **N.** Cell containing spore-like bodies, of uncertain origin and function. (Bars = 10 μm; that on the upper right for figures E-I. only; all others, lower left bar).

distale 4 ad 3 μm lata, recta vel curvata aut spiralia, maturitate e cellulis 2–4 composita; epibasidia ad 24 μm longa, 1–2 μm crassa, tubiformia vel fusiformia, aut epibasidia interdum nulla et dein sterigma e cellula basidii crescens. Basidiosporae (4.5–)5.5–8 × 2–3 μm magnae, allantoideae, hyalinae, laeves, non amyloideae nec cyanophilae, repetitione aut fistula aut vescicula germinantes.

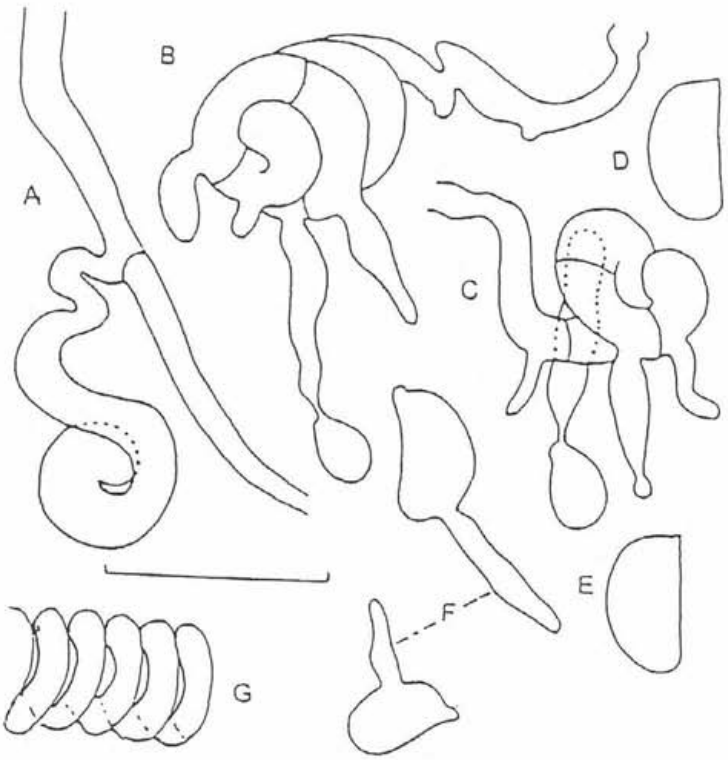

Fig. 3. *Colacogloea bispora* from TRTC 20116, drawn by R. F. Cain. **A.** Young probasidium. **B, C.** Septate basidia with epibasidia and developing spores. **D, E.** Basidiospores. **F.** Germinating basidiospores. **G.** Coiled hypha. (Bar = ca 10 μm)

Holotypus: Canada, Yukon 29. 6. 1989, leg. J. Ginns (DAOM 221328).

Separate basidiocarps lacking, hyphae growing within basidiomata of *Tubulicrinis calothrix* (Pat.) Donk, the basidia mostly developing external to those of the host. Hyphae 1.5–3 μm in diam., hyaline, thin-walled, branched, with clamp connections; structures resembling tremelloid haustoria infrequent (Fig. 1J); hyphal strands (Fig. 1E) scattered, composed of closely adherent parallel hyphae, walls of some thin, others slightly thickened and without cytoplasm. Basidia (Fig. 1A-E) ca. 15–20 × 2–3 μm, some with a slight basal probasidial swelling, but most only 2 μm at the base, up to 3 μm in diam. elsewhere, straight to hooked or coiled, 2–4–celled, occasionally borne on strand hyphae (Fig. 1E); epibasidia up to 24 μm long including tapered sterigma, 1–2 μm in diam., tubular to fusiform, sometimes absent and the sterigma arising directly from the basidial cell. Basidiospores (4.5–)5.5–8 × 2–3 μm, allantoid (Fig. 1F), the diameter slightly greater distally than proximally, the wall smooth, non-amyloid, non-cyanophilous;

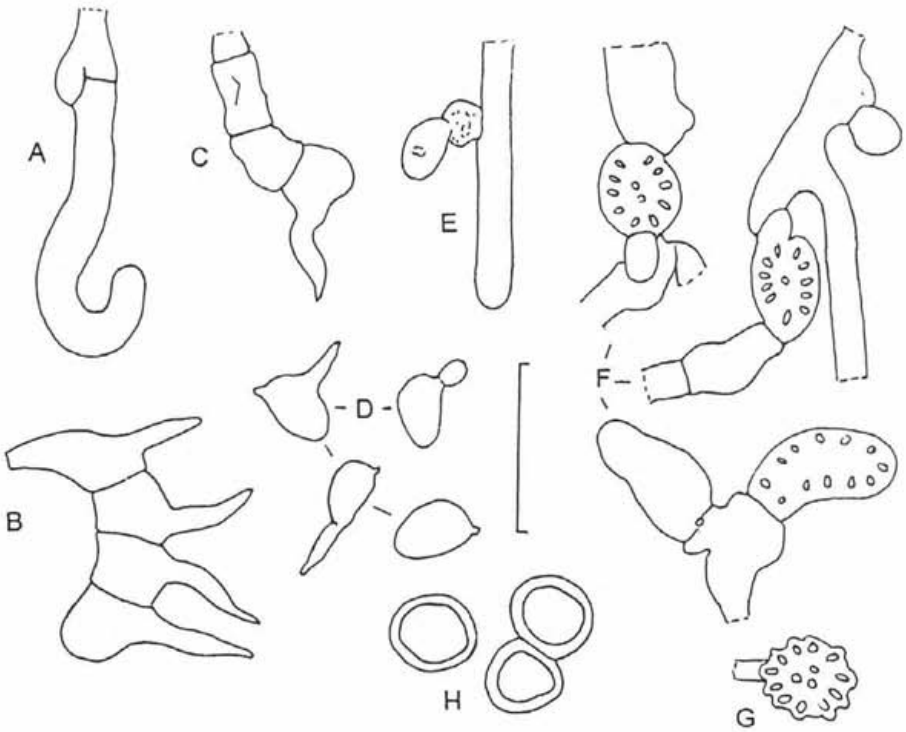

Fig. 5. *Colacogloea* spp. (A-H, from TRTC 31243). **A.** Probasidium. **B, C.** Basidia with epibasidia. **D.** Basidiospores, two germinating by repetition and a third by (?)budding. **E.** Basidiospore germinating by vesicle formation, the vesicle appressed to a (?)host hypha. **F, G.** Cells thought to be sites of colacosomes. The vesiculose cell in **G** is thin-walled (?naked), lobed, and with guttules or vacuoles situated in each lobe. **H.** Thick walled conidia of unknown origin. (Bar = 10 μm)

germination by repetition, by germ tube (Figs. 1G), or by vesicle (Fig. 1G, H; Fig. 4G, H)

Habitat: Growing within basidiomata of *Tubulicrinis calothrix* (Pat.) Donk on wood of *Picea*.

Specimen examined: Canada: Yukon Territory, Highway 2, km 562, Moose Creek Campground. 29 June 1984. Coll. J. Ginns 7959, HOLOTYPE, (DAOM 221328).

No external indication of the presence of the parasite was seen in dried specimens, and only scattered patches of the *Colacogloea* were found in the host hymenium. The hyphal strands, large enough to be seen under high power with a dissecting microscope, are inconspicuous but are sometimes seen extending across crevices in the host hymenium.

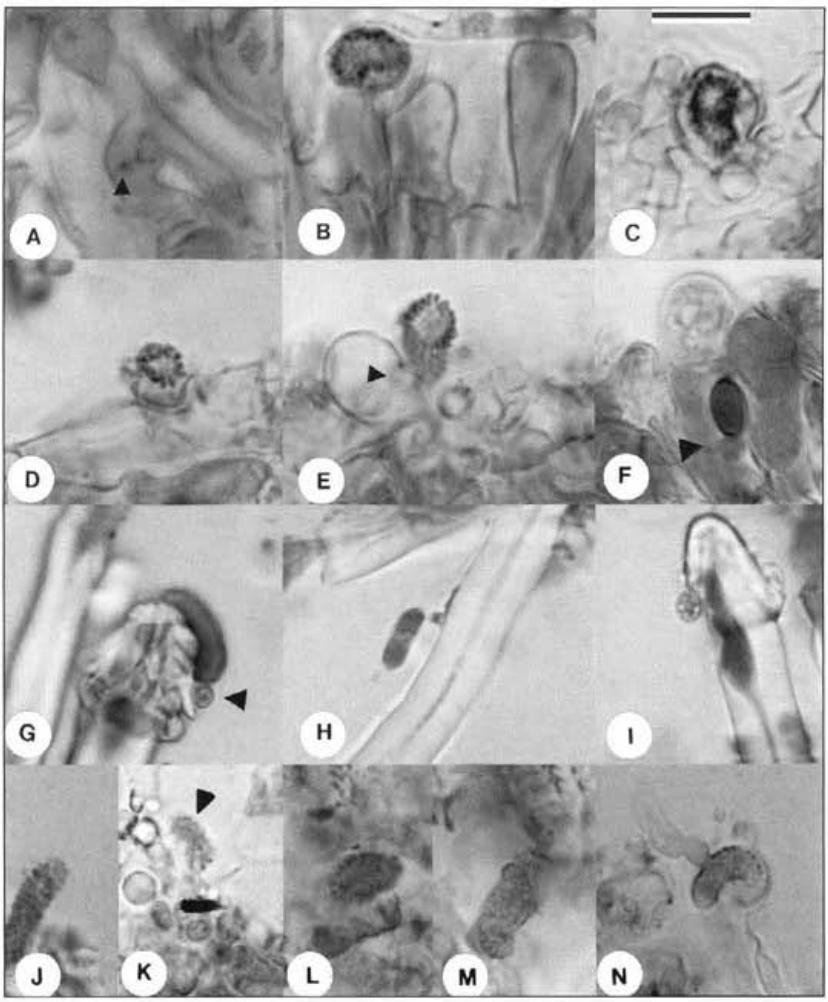

Fig. 4. A-F. *Colacogloea peniophorae* (from A. & R. Bandoni, 13041); **G, H, J.** *Colacogloea allantospora* (from J. Ginns, 7595, Holotype); **I.** *C. bispora* (from TRTC 20116). **K, L.** *Platygloea* sp. (from TRTC 31243); **M.** *Platygloea* sp. (from TRTC 31246); *Spiculogloea* cf. *minuta* Roberts (from the Holotype of *C. allantospora*) **A.** Hyphae of host showing dolipore septum (arrow). **B, C.** Vesiculose ("gall-like") cells containing membranes and attached colacosomes. **D.** Ruptured gall-like cell, the cupulate wall remnant visible immediately below the membrane and colacosomes. **E.** Ruptured cell (arrow within cell wall points to opening) and extruded membrane with attached colacosomes. **F.** Conidium germinating by a vesicle (arrow) which appears to be adhering to a host basidium; a wall vestige is faintly visible at the opposite end (base) of the conidium. **G, H.** Spores from *C. allantospora* germinating by vesicle formation, the vesicles in contact with host cystidia. **I.** Globose cell attached to host cystidium of *C. bispora*, the protoplast possibly in contact with that of the host structure. **J, K.** Extruded protoplasts, in J. Ginns 7595 and TRTC 31243, respectively, resembling those in *C. peniophorae* preparations, above. **L, M.** Colacosomes in gall-like cells, from TRTC 31243 and TRTC 31246, respectively (those in M stained very weakly). **N.** Basidium of *Spiculogloea* cf. *minuta* Roberts; note conspicuous rough wall above. (All figures at same magnification. Bar in C = 10 μm)

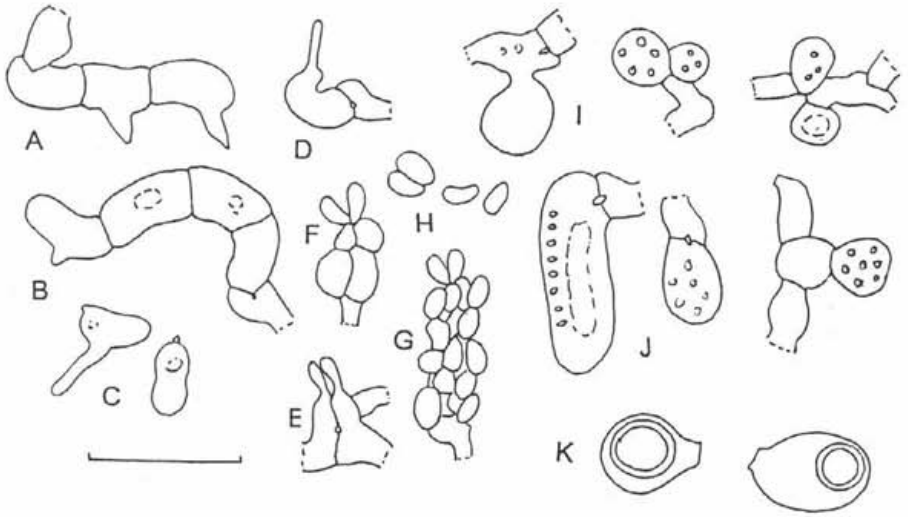

Fig. 6. *Colacogloea* sp. (Figures all from TRTC 31246). **A, B.** Basidia with developing epibasidia. **C.** Basidiospores possibly belonging to this unidentified species. **D.** Structure resembling tremelloid haustorium. **E, F.** Conidiogenous cells bearing conidia. **G.** Elongate cluster of conidia, the type of development not known. **H.** Conidia. **I, J.** Vesiculose cells, possibly sites of colacosomes. **K.** Structures of unknown origin and function, possibly chlamydospores developed in vesiculose cells. (Bar = 10 μm)

The spores assumed to belong to the *Colacogloea* are very close in size and form to those of *T. calothrix*, the host. Basidiospore size in the latter was given as (4.5–)5–7 × (1.5–)2–3 μm by Weresub (1953), (4.5–)5.5–7.5 × (1.5–)2–2.5(–3) μm by Jülich and Stalpers (1980), and 6–7(–8) × 1.5–1.8(–2) μm by Hjortstam et al. (1988). Basidiospores of *T. calothrix* are described as "allantoid" in Hjortstam et al. (1988), but their figures show spores with only slight curvature near the proximal end of the spore. *Colacogloea allantospora* basidiospores are bent centrally and the curvature is typically greater than illustrated in the figures cited. Basidiospore measurements are further complicated by the presence of another intrahymenial parasite, a species of *Spiculogloea* (Fig. 4N) possibly *S. minuta* Roberts (Roberts 1997). Basidiospores assumed to belong to this fungus were few, 6.5–8.5 × (2.5–)3.5–4 μm, bent fusiform, tapered especially proximally, the distal end rounded and only slightly narrower than the central region, maturing 1–septate. Because of the similar size and general form, it is possible that our measurements include some basidiospores of the host and both parasites.

Although structures resembling tremelloid haustoria (Fig. 1J) were found, none were attached to host hyphae. It is known that *Spiculogloea* species do have such haustoria (Roberts 1997); those seen here could belong to the *Spiculogloea* present or might simply be artifacts.

Colacogloea allantospora closely resembles *C. bispora* in its hyphal strands, basidia, and spore germination; the Holotype also grew on the same host species as the Canadian collection of *C. bispora*. It differs in the form and size of the basidiospores.

Colacogloea bispora (Hauerslev) Oberw. et Bauer, Kew Bull. 54: 764,1999. Figs. 2, 3; 4I.

= *Platygloea bispora* Hauerslev, Friesia XI: 331, 1987.

= *Achroomyces bisporus* (Hauerslev)Hauerslev, Mycotaxon 49:218. 1993.

A specimen given a tentative new name in *Helicobasidium* by R. Cain (TRTC 20116) differs little from *Colacogloea bispora* (Hauerslev) Oberw. et Bauer (Oberwinkler et al., 1999); we consider it to be conspecific with *C. bispora*. In Cain's collection, the hyphae are mostly 1.5–2 μm in diam., thin-walled, with clamp connections. Hyphae often are associated with host cystidia, (Fig. 2F, G, L) and sometimes grow within the cystidial lumen (Fig. 2J), but some of these might belong to other species. Hauerslev (1987) reported tightly coiled hyphae in his material, and Cain illustrated such hyphae in his collection (Fig. 3G). Hyphal strands, indistinguishable from those found in *C. allantospora* (Fig. 1E), but without basidia, were also found in this collection. The basidia are 2–4–celled, curved to coiled (Fig. 2A-C; Fig. 3A-C); the basidiospores are 5–7 × 3–4 μm, ovoid to suballantoid (Fig. 2D; 3D-F); germination is by budding (Fig. 2H), by repetition (Fig. 3F), or by formation of a thin-walled vesicle (Fig. 2I). The germ vesicles typically occur in contact with host structures, as in Fig. 2I; it usually is flattened in the contact zone and sometimes contains a single refractive or dark granule (Fig. 2I). Blastic conidia (Fig. 2J) were observed on hyphae associated with host cystidia, and the numerous spheroidal cells adhering to host cystidia (Figs. 2E; 4I) could originate from those conidia or from budding basidiospores. Anomalous structures present in the host basidiome (Figs. 2K, M, N), are of unknown origin, although that in Fig. 2K could consist of coiled hyphae of the parasite growing within a host cell. Habitat: Intrahymenial on basidiomata of *Tubulicrinis calothrix* (Pat.) Donk growing on wood of *Pinus banksiana*.

Collection examined: Canada: Ontario; Thunder Bay District, Little Dog Lake, 11 Sept. 1944. Coll. R. F. Cain (TRTC 20116).

Colacogloea peniophorae (Bourd. et Galzin) Oberw. et Bandoni, Can. J. Bot. 68: 2534, 1990

= *Platygloea peniophorae* Bourd. et Galzin, Bull. Soc. Mycol. Fr. 25: 17, 1909

Material stained with WCR is illustrated in Fig. 4A-F. Many host cells can be distinguished from those of the parasite on the basis of either form, e.g., basidia

and cystidia, or by dolipore septa which are stained by WCR (Fig. 4A) in this host. Colacosome-containing vesiculose hyphal cells (Fig. 4B, C) are also plainly visible. In these, it can also be seen that colacosomes occur in large numbers, they are in evenly spaced patterns, and they are attached to membrane systems within their cells. Tapping microscope preparations, or applying pressure to the coverslip, results in release of some protoplast and membrane systems (Fig. 4D, E). Extruded membranes bear the colacosomes on their outer (exposed) surfaces, and the organelles are then more clearly visible than those within the cells. Presumably, the extruded protoplasts are those of the host; as the colacosomes are oriented with their pointed apices attached to the membrane, but TEM studies obviously are necessary to obtain a clear picture of the interface of the host and parasite.

A germinating conidium of *C. peniophorae* (Fig. 4F) shows a vesicle (arrow) at what appears to be the distal end of a conidium and an irregular vestige of the parent wall at the proximal end. The latter vestige regularly is present at the attachment point, its form ranging from narrow, pointed to flap-like (as in Fig. 4F). The germ vesicle is in contact with a host basidium.

Habitat: On *Hyphoderma* (?) *argillaceum* (Bres.) Donk on decaying logs of *Populus trichocarpa*.

Collection examined: Canada: British Columbia; Delta, South Arm Marsh Wildlife Reserve, Ferry Rd., Ladner. 27 April 2001. A. & R. Bandoni 13041 (DAOM).

Most features of the specimen examined appeared to fit descriptions for the North American form of *C. peniophorae*. However, the closely situated pairs of conidia tend to remain attached to one another when released from the conidiogenous cells in most collections. In this collection, however, the conidia develop in close pairs, but generally separate after release.

ADDITIONAL COLLECTIONS

Two additional collections made by R. Cain were examined, but the material is scanty and not well preserved. Consequently, we have labeled them only as *Colacogloea* species. They are as follows:

Colacogloea sp. TRTC 31243. Fig. 4K, L; Fig. 5

This is a small collection with inconspicuous discolored areas inhabited by the *Colacogloea*. Few basidia (Fig. 5A-C) were found, and they were mostly incomplete. Basidiospores (Fig. 5D), equally infrequent, were 4.5–5.5 × 2–3 μm, reniform to suballantoid, germinating by repetition, by budding, or by a thin-walled vesicle (Fig. 5E). Hyphal cells (Fig. 5F), many closely resembling the colacosome-containing "gall" cells and hyphae of C. *peniophorae*, are present. Staining with WCR

did show colacosomes in such cells (Fig. 4L) although staining was weak. Among these cells are some with extremely thin walls protruding around organelles as shown in Fig. 5G (lower right). Basidiospore form (Fig. 5D) is similar to that in C. *peniophorae* but the spores are smaller; conidia of the *C. peniophorae* type were absent. Chlamydospores (Fig. 5H) were abundant; these were 5–6 μm in diam, the wall ca. 1 μm thick, the surface sometimes minutely roughened, the spores single or catenate. Their origin could not be found and they probably are extraneous.

Habitat: On "*Peniophora suboryanella* Rogers ined.", on *Abies balsamea*.

Collection examined: Canada: Ontario: Lake Timagami, Kokoko Bay, 27 Aug. 1946, Coll. R. F. Cain. (TRTC 31243).

Colacogloea sp. TRTC 31246. Fig. 4M, Fig. 6.

As with collection TRTC 31243, above, this collection is small and the mycoparasite is not abundant, although it is readily found in discolored spots on the host hymenium. The hyphae are 2–3 μm in diam., with clamp connections; they bear conidia which often arise initially, one each from the clamp apex and from the subtended cell apex (Fig. 6E). Development of this initial pair resembles that of conidia in most North American collections of *C. peniophorae*, but in that species, the pairs often adhere because of the basal wall vestiges. In TRTC 31246, successive conidia develop and adhere to one another, producing an elongate clump (Fig. 6G). The type of proliferation responsible for such clump formation is not known. Few basidia (Fig. 6A, B) were found, most of these were curved to coiled, ca. 24–26 × 3(–4) μm; epibasidia mostly short, conical. The basidiospores are 5–7 × 2–3 μm, allantoid in side view, peanut shaped when viewed dorsally or ventrally (Fig. 6C). The hyphae bear abundant vesiculose cells (Fig. 6I, J), many of which resemble those containing colacosomes in *C. peniophorae*. Stained with WCR, these cells did have colacosomes, but they did not stain intensely (Fig. 4M). Two swollen terminal vesicles (Fig. 6K) were seen in which chlamydospore-like structures had developed, but it is not clear that they were produced by the parasite. Subglobose *Tremella*-like basidiospores were also present; they were mostly 4 × 3–4 μm. The host fungus was in poor condition and was not identified.

Habitat: Intrahymenial in the basidiome of a resupinate species of Corticiaceae s. l. on *Populus* sp.

Specimen examined: Canada: Ontario; Renfrew Co., Chalk River, Petawawa Forest Experiment Station. 16 Oct. 1953. Coll. R. F. Cain (TRTC 31246).

DISCUSSION

Species of *Colacogloea* differ from many superficially similar mycoparasites in producing colacosomes at their host/parasite interfaces rather than haustoria. Colacosomes occur abundantly in hyphae contacting host hyphae or other

structures; hyphae in some such associations loosely coiled around one another (Bauer and Oberwinkler, 1990). The individual organelles are globose to ellipsoid, narrowed to a short point on the side toward the host, this narrowed portion (axial core) actually penetrating the host wall (Bauer & Oberwinkler, 1990). Colacosome size ranges from ca. 0.5 μm in diam. for globose forms to almost 1.0 μm in the longest dimension for ellipsoidal types (see Figs. 4 D,E for the latter). North American collections of *C. peniophorae,* currently considered conspecific with the European form, differ from the latter in having colacosomes in conspicuous cells referred to by Martin (1940) as 'gall-like' cells. Colacosomes also occur in narrow hyphae associated with host structures in the North American form of the species. Although small, the colacosomes of this form are visible (Fig. 4B-E) both within the enlarged cells and when they and their associated membranes are extruded from such cells. This form of *C. peniophorae* was examined here in order to determine whether features visible by light microscopy could be used in assigning unknown specimens lacking the "galls" to this genus without prior electron microscope study.

Illustrations from reported electron microscope observations (Oberwinkler and Bauer 1990; Oberwinkler et al. 1990, 1999) show direct contact of colacosomes and host protoplasts via areas of either very thin walls or no walls at the interface. Rupture of such cells and protoplast release might therefore be expected if pressure is applied to coverslips of microscope slide preparations of the *C. peniophorae* material. The technique appears to be of some value with relatively recent collection of this species, but yielded few such protoplasts in the two unnamed taxa with similar "gall" cells (Fig. 4 L, M) and in *C. allantospora* (Fig. 4J) which lacks the "gall" cells.

Colacogloea species thus far described are intrahymenial parasites mainly of species of *Hyphoderma* and *Tubulicrinis*. The type species, *C. peniophorae,* has also been reported on hosts in other genera, but it is unclear whether a single taxon or several distinct ones are involved in such reports. Nor is it certain that that the North American form is conspecific with the European *C. peniophorae.* Differences occur between the two in conidiogeny (Bandoni 1973; Oberwinkler et al. 1990), some features of the basidiome, and in the absence of the gall-like cells in the European form (Oberwinkler et al. 1999). These total differences suggest the probability that the North American and European forms are not conspecific. Conidial development in *Colacogloea* sp. 31246 (Fig. 6E-G) suggests a close relationship to the North American *C. peniophorae.*

Structures resembling tremelloid haustoria have been observed in specimens examined here (e.g. in Figs. 1J, 6D). Whether these function as haustoria, or are simply haustorium-like artifacts, is not known, and the production of functional tremelloid haustoria by *Colacogloea* species cannot yet be ruled out. In the case of the *C. allantospora* collection, *Spiculogloea* species are known to produce

tremelloid haustoria and the species present could have produced the structures seen. In specimens with two simple-pored "auricularioid" parasites such as this, the origin of such structures might be difficult to determine even in TEM micrographs.

In electron micrographs of *C. bispora* by Oberwinkler et al. (1999), some colacosome-containing cells have an extremely thin, lobed wall (ca. 0.1 μm thick). For example, in their Figures 2B and 2D, it can be seen that such thin-walled lobes mark the presence of internal colacosomes. A superficially similar cell, i.e., as seen by light microscopy, is shown here in Figure 5G of *Colacogloea* sp. 31243, the wall thin or absent, the margin lobed, and each lobe with an internal clear spot. The germination of basidiospores and conidia by an external vesicular extension (Figs. 1G, H; 2H, I; 4F-H), also thin-walled, the shape conforming with the host surface in some in some instances, e.g., Fig. 2I, 4M, suggests the possibility of this being a colacosome-containing vesicle. Colacosomes contact host protoplasts and presumably interact with the host (Oberwinkler and Bauer 1990) in gaining nutrients from the latter. Thus, early development of colacosomes , i.e., at germination of basidiospores and conidia, would be advantageous. Although germination by vesicle formation was observed in all species discussed here, the structures were examined only by light microscopy and it is not known whether colacosomes actually occur in the vesicles. The small refractive or dark spots visible in some instances (Figs 1G, 2I) might be colacosomes, but TEM study is required for their identification. Globose cells attached to host cystidia (Fig. 2E, 4I) could also represent similar development from the yeast states via direct transformation of the cell itself. There is a need for TEM studies of germinating *Colacogloea* basidiospores and conidia in the presence of host hyphae to determine the nature of the germ vesicles.

Key to taxa discussed

1. Basidiospores ovoid to reniform ... 2
1. Basidiospores allantoid; host = *Tubulicrinis calothrix* ... *C. allantospora*
   2. Intrahymenial in *Tubulicrinis* spp.; basidiospores 1. ovoid, 5–7 × 3–4 μm ... C. *bispora*
   2. Intrahymenial in other corticioid species ... 3
3. Conidia produced, each subtended by a clamp connection or arising as a pair from the clamp and its subtended cell ... 4
3. Conidia unknown; basidiospores ovoid to reniform, 4.5–5.5 × 2–3 μm ... *Colacogloea* sp. (31243)
   4. Hymenial conidia closely paired, originating one each from a clamp and its subtended cell ... 5
   4. Conidia borne singly, proliferation through the clamp (mainly European collections) ... C. *peniophorae*

5. Conidia paired or single when freed into the mucedinoid surface layer (mostly N. American) ... C. *peniophorae*
5. Conidia initially paired, adhering in complex columns ... *Colacogloea* sp. (31246)

Acknowledgments

Fig. 3 was photocopied from drawings by the late Roy F. Cain; the copy is presented without modification. We thank the Natural Sciences and Engineering Research Council of Canada for support of portions of this study. We thank Dr. Jean Mouchacca (Paris) for a loan of *Helicobasidium* collections examined in the initial part of this study but not cited in the paper. We also thank E. Jovel and A.-A. Bandoni for assistance with manuscript preparation.

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The genus Phellinus in the Šumava Mts.

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Tomšovský M. (2002): The genus Phellinus in the Šumava Mts. – Czech Mycol. 54: 45–78

The ecology and distribution of species of *Phellinus (Basidiomycetes, Hymenochaetaceae)* in the Šumava Mts. was studied. The study area represents the Czech part of the Šumava mountain range at the border of the Czech Republic, Germany and Austria. The area was intensively studied during the years 1997–2000. The data based on the author's own records were complemented with unpublished records based on collections deposited in the PRM herbarium. Altogether 18 species of *Phellinus* were confirmed for the Šumava Mts. The distribution, altitude range, substrate specificity and vegetation preference of each species are evaluated. The text is completed with distribution maps of the species.

Key words: Basidiomycetes, Hymenochaetaceae, *Phellinus*, Šumava Mts. (Czech Republic), ecology, distribution

Tomšovský M. (2002): Rod ohňovec (Phellinus) na Šumavě. – Czech Mycol. 54: 45–78

Ekologie a rozšíření zástupců rodu ohňovec *Phellinus* (Basidiomycetes, Hymenochaetaceae) na Šumavě byly studovány. Zájmové území – pohraniční hřeben Šumavy na hranicích s Německem a Rakouskem – bylo prozkoumáváno v letech 1997–2000. Celkem zde bylo potvrzeno 18 druhů rodu ohňovec. Práce zahrnuje geografické a vertikální rozšíření, substrátovou specificitu a vegetační preference sledovaných druhů. Text je doplněn mapami rozšíření jednotlivých druhů.

INTRODUCTION

The Šumava Mts. (Bohemian Forest, Böhmerwald) represent a mountain range in Central Europe forming a natural borderline between the Czech Republic on the one side and Germany (Bavaria) and Austria on the other side. The Czech part of the Šumava Mts. is situated between 470 and 1378 m above sealevel (Chábera 1987). The area is covered mainly by forest more or less influenced by human activities. However, remnants of natural vegetation are still relatively well represented. The main vegetation includes mixed montane forests with *Fagus sylvatica, Picea abies* and *Abies alba*, scree forests, montane spruce forests and numerous peatbogs. The largest part of the Šumava Mts. in the Czech Republic is protected as a National Park. The most recent studies on fungi in the Šumava Mts. are works by J. Holec (Holec 1997, 2000, Holec and Pouzar 1999, Holec et al. 1999) and N. Luschka who included data from the Bavarian part of the

Šumava Mts. (Bavarian Forest), mainly from the National Park Bayerischer Wald (Luschka 1993). This paper is based on data included in the author's MSc. Thesis (Tomšovský 2000), that deals with ecology and distribution of genera *Coltricia, Hymenochaete, Inonotus, Onnia* and *Phellinus* in the Šumava Mts.

Genus *Phellinus* Quél. is characterised by perennial, resupinate to effuse-reflexed or pileate basidiocarps. The colour of the basidiocarps is yellowish, rusty, yellowish brown, brown, dark brown or grey. The surface of the basidiocarps is tomentose, hispid, glabrous or deeply cracked. Basidiocarps turn black in KOH. Long, smooth, dark setae are usuallly present in the hymenium, in some species also in the trama. Basidiospores are globose to cylindrical, smooth, hyaline to rusty brown, thin- to thick-walled, dextrinoid or negative in Melzer's reagent. The hyphal system is dimitic. The hyphae are simply septate (without clamps), skeletals yellow to brown, often thick-walled. The genus *Phellinus* is distributed all over the world and altogether 26 species have been recorded from the Czech Republic (Kotlaba 1984, Kotlaba and Pouzar 1995, Vampola 1993): *Phellinus alni* (Bond.) Parmasto, *P. cavicola* Kotlaba et Pouzar, *P. chrysoloma* (Fr.) Donk, *P. cinereus* (Niemelä) M. Fischer, *P. conchatus* (Pers.: Fr.) Quél., *P. contiguus* (Pers.: Fr.) Pat., *P. ferrugineofuscus* (P. Karst.) Bourdot, *P. ferruginosus* (Schrad.: Fr.) Pat., *P. hartigii* (Allesch. et Schnabl) Pat., *P. igniarius* (L.: Fr.) Quél., *P. laevigatus* (P. Karst.) Bourdot et Galzin, *P. lundellii* Niemelä, *P. nigrolimitatus* (Romell) Bourdot et Galzin., *P. pilatii* Černý, *P. pini* (Fr.) A. Ames, *P. populicola* Niemelä, *P. pouzarii* Kotlaba, *P. pseudopunctatus* A. David, Dequatre et Fiasson, *P. punctatus* (P. Karst.) Pilát, *P. rhamni* (M. Bondartzeva) H. Jahn, *P. ribis* (Schumach.: Fr.) Quél., *P. robustus* (P. Karst.) Bourdot et Galzin, *P. torulosus* (Pers.) Bourdot et Galzin, *P. tremulae* (Bondartzev) Bondartzev et Borissov, *P. tuberculosus* (Baumg.) Niemelä, *P. viticola* (Schw.) Donk

Some modern authors split *Phellinus* as conceived here in several smaller genera (e.g. Hansen and Knudsen, 1997) mostly described by Murrill (1907).

MATERIAL AND METHODS

This paper is based mainly on the author's own finds from the years 1997–2000. Some records originate from excursions made together with Dr. J. Holec and Dr. Z. Pouzar. During the field work fungi were collected and essential data on their host and habitat were recorded. Dried fruitbodies are deposited in the herbarium of the Mycological Department, National Museum in Prague (PRM). Fungi found and identified by the author are marked MT.

Data collected by the author were complemented with unpublished records of specimens deposited in the PRM herbarium. Some records found by J. Holec are marked JH followed by the number of the record in his field notebook. These specimens are deposited in PRM, but do not have a PRM number yet.

Some mentioned finds that are recorded but not deposited in any herbarium marked *not.* in place of *leg.* (Kotlaba 1999). The distribution, substrate specificity, altitude range and vegetation preference of each species are evaluated. The distribution of the species is compared with data published by Luschka (1993) from the German part of the Šumava Mts. (Bavarian Forest).

Data on species distribution are complemented with maps. The maps describe the currently known distribution of the species. Records found before 1990 are not included in the maps.

RESULTS AND DISCUSSION

Phellinus alni (Bondartzev) Parmasto

Phellinus igniarius var. *alni* (Bondartzev) Niemelä, *Phellinus ossatus* M. Fischer

Number of records: 35 records from 31 localities.

Substrate: Trunks of *Alnus glutinosa* (43 %), *Sorbus aucuparia* (40 %) and *Fagus sylvatica* (17 %). The species was found on living trees (71 %), fallen trunks (14 %), stump (8 %) and dead standing trees (3 %).

Vertical distribution: 600–1120 m a.s.l.

Distribution in the Šumava Mts.: The species is distributed over the whole area of the Šumava Mts. (Fig. 1)

Results and discussion: The occurrence of the species is mainly dependent on the presence of appropriate substrate. *Phellinus alni* is more common at lower altitudes of the Šumava Mts., mainly in alder woods and stands, on the banks of streams and margins of peatbogs, but also on trees along roads and in villages.

Phellinus alni is in most literature (Breitenbach and Kränzlin 1986, Kotlaba 1984, Ryvarden and Gilbertson 1994) merged with *Phellinus igniarius.* According to studies by Fischer (1995) records from *Alnus, Fagus, Malus* and *Sorbus* belong to *Phellinus alni.* The identification of finds growing on some other tree species (*Acer, Populus, Quercus*) is questionable. Dunger (1987) reports these records as *Phellinus ossatus*, while it is the synonym of *Phellinus alni* described by Fischer (1987). The species is also known from the Bavarian Forest (Luschka 1993).

List of records:

Borová Lada, Knížecí Pláně, *Sorbus aucuparia*, 13. VIII. 1997, leg. F. Kotlaba, PRM 891464. – Borová Lada, Žďárské sedýlko, 1010 m a.s.l., *Fagus sylvatica*, 23. IX. 1999, leg. et det. MT, PRM 894234. – Horní Vltavice, Polka, 870 m a.s.l., *Sorbus aucuparia*, 23. IX. 1999, not. MT. – Horská Kvilda, 1070 m a.s.l., *Sorbus aucuparia*, 19. IX. 1999, leg. et det. MT, PRM 894229. – Horská Kvilda, Zhůří, 1140 m a.s.l., *Sorbus aucuparia*, 19. IX. 1999, not MT. – Kašperské Hory, Rýžovní stream, 610 m a.s.l., *Alnus incana*, 17. X. 1997, leg. et det. J. Holec, JII 857/97. – Kvilda, 1080 m a.s.l., *Sorbus aucuparia*, 15. IX. 1998, not. MT. – Lenora, Malá niva peatbog, 750 m a.s.l., *Alnus incana*, 3. VI. 1998, leg. J. Holec, det. MT, PRM 894039. – Modrava, Filipova Huť, 950 m a.s.l., *Sorbus aucuparia*, 24. IX. 1998, leg. et det. MT, PRM 893880. –

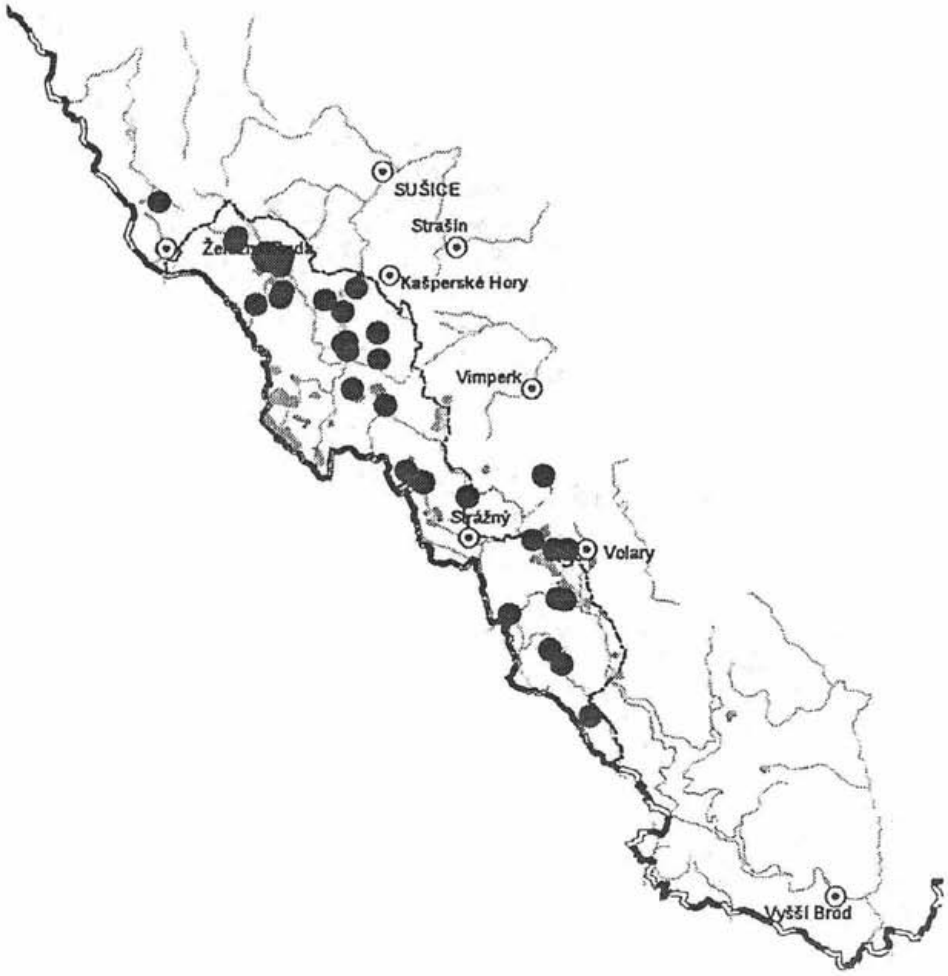

Fig. 1. Distribution of *Phellinus alni* in the Šumava Mts.

Nová Pec, Rosenauer chapel, 860 m a.s.l., *Fagus sylvatica*, 31. V. 1999, leg. et det. J. Holec, JH 4/99. – Nová Pec, Smrčina Mt., 1180 m a.s.l., *Sorbus aucuparia*, 25. IX. 1997, leg. J. Holec, det. MT, PRM 891340. – Prášily, 870 m a.s.l., *Sorbus aucuparia*, 13. VI. 1999, leg. et det. MT, PRM 894036. – Prášily, Slunečná hill, 890 m a.s.l., *Fagus sylvatica*, 11. VI. 1999, leg. et det. MT, PRM 894196. – Prášily, U Cettlovy Hůrky peatbog, 830 m a.s.l., *Alnus incana*, 16. IX. 1999, leg. et det. MT, PRM 894040; ibid. 825 m a.s.l., 17. IX. 1999, PRM 894037. – Prášily, U Cettlovy Hůrky peatbog, *Alnus incana*, 12. VIII. 1997, leg. F. Kotlaba, PRM 891490. – Prášily, Frauenthal, 810 m a.s.l., *Alnus incana*, 10. X. 1998, leg. et det. MT, PRM 893877. – Prášily, Kamenitý vrch, 830 m a.s.l., *Alnus incana*, 11. VI. 1999, leg. et det. MT, PRM 894233. – Srní, Horní Hrádky, 910 m a.s.l., *Sorbus aucuparia*, 16. IX. 1998, leg. et det. MT, PRM 893884. – Srní, Horní Hrádky, 920 m a.s.l., *Fagus sylvatica*, 19. IX. 1998, leg. et det. Z. Pouzar, PRM 897295. – Srní, Křemelná-Zadní Paště, 680 m a.s.l., *Alnus incana*, 14. VI. 1999, leg. et det. MT, PRM 893881. – Srní, Vydra stream, 890 m a.s.l., *Sorbus aucuparia*, 24. IX. 1998, leg. et det. MT, PRM 893879; ibid. 680 m a.s.l., *Alnus incana*, 24. IX. 1998, leg. et det. MT, PRM 893885. – Stožec, Černý Kříž, 740 m a.s.l., *Alnus incana*, 10. IX. 1998, leg. et det. MT, PRM 893888; ibid. 8. IV. 1999, PRM 893887; ibid. *Sorbus aucuparia*, 10. IX. 1998, leg. et det. MT, PRM 893886; ibid. 8. IV. 1999, PRM 893882. – Stožec, Spálený luh, 800 m a.s.l., *Alnus incana*, 11. VII. 1996, leg. F. Kotlaba, PRM 889716. – Stožec, Schwarzenberg Canal, 890 m a.s.l., *Sorbus aucuparia*, 27. VII. 1995, leg. J. Holec, det. MT, PRM 885016. – Volary, Brixův Dvůr, 795 m a.s.l., *Sorbus aucuparia*, 8. IV. 1999, leg. et det. MT, PRM 893883. – Volary, Dobrá, Jedlový stream, 750 m a.s.l., *Alnus incana*, 8. IV. 1999, leg. et det. MT, PRM 893878. – Železná Ruda, Hůrecké slatě peatbogs, 870 m a.s.l., *Alnus incana*, 20. IX. 1999, leg. et det. MT, PRM 894230; ibid. 875 m a.s.l., 25. VIII. 1998, PRM 8894038. – Železná Ruda, Špičák – Černé lake, 970 m a.s.l., *Fagus sylvatica*, 25. VIII. 1999, not. MT.

Phellinus chrysoloma (Fr.) Donk

Phellinus abietis (P. Karst.) Pilát, *Porodaedalea chrysoloma* (Fr.) Fiasson et Niemelä

Number of records: 20 records from 17 localities.

Substrate: Trunks and branches of *Picea abies*. 65 % of finds were found on fallen trunks, 13 % on living trunks, 5 % on dead standing trunks, 5 % on fallen branches.

Vertical distribution: 600–1230 m a.s.l.

Distribution in the Šumava Mts.: *Phellinus chrysoloma* is a rather rare species, distributied throughout the whole area of the Šumava Mts. (Fig. 2). The species occurres mainly in montane mixed forests, rarely in humid spruce forests.

Results and discussion: The species prefers localities with a natural tree composition. *Phellinus chrysoloma* was not found in artificial spruce forests nor in montane spruce forests at the highest altitudes of about 1300 m a.s.l. On the other hand the species is known from higher altitudes in the mountains of Slovakia (Kotlaba 1984).

Phellinus chrysoloma is also distributed in the Bavarian Forest (Luschka 1993).

List of records:

České Žleby, Spáleniště Mt., 930 m a.s.l., *Picea abies*, 16. VI. 1998, leg. et det. J. Holec, PRM 892398. – České Žleby, Radvanovický hřbet Mt., 890 m a.s.l., *Picea abies*, 8. X. 1998, leg. et det. MT, PRM 893901; ibid. 860 m a.s.l., 18. X. 1997, leg. et det. J. Holec, JH 861/97. –

Fig. 2. Distribution of *Phellinus chrysoloma* in the Šumava Mts.

Horská Kvilda, Zhůřské slatě peatbogs, *Picea abies*, 11. VII. 1969, leg. et det. M. Svrček, PRM 889790. – Lenora, Malá niva peatbog, 750 m a.s.l., *Picea abies*, 3. VI. 1998, leg. et det. J. Holec, PRM 892329. – Nová Pec, Houska, 730 m a.s.l., *Picea abies*, 3. VI. 1998, leg. et det. MT, PRM 893902. – Prášily, Ždanidla Mt., 1230 m a.s.l., *Picea abies*, 9. VII. 1998, leg. et det. J. Holec et MT, PRM 896978. – Srní, Dračí skály, 700 m a.s.l., *Picea abies*, 1. VII. 1999, leg. et det. MT, PRM 893903. – Srní, Křemelná stream, 760 m a.s.l., *Picea abies*, 12. VI. 1999, leg. et det. MT, PRM 894043; ibid. 810 m a.s.l., *Picea abies*, 12. VI. 1999, leg. et det. MT, PRM 894041. – Srní, Vydra stream, 680 m a.s.l., *Picea abies*, 11. X. 1997, leg. MT, det. J. Holec, PRM 893904; ibid. 680 m a.s.l., *Picea abies*, 8. X. 1997, leg. et det. J. Holec, JH 630/97; ibid. 700 m a.s.l., *Picea abies*, 24. IX. 1998, not. MT. – Stožec, Kamenná hill, 930 m a.s.l., *Picea abies*, 4. VII. 1997, leg. et det. J. Holec, PRM 890942. – Stožec, Medvědice, *Picea abies*, 24. X. 1990, leg. et det. F. Kotlaba et Z. Pouzar, PRM 871376. – Stožec, Stožecká skála, 976 m a.s.l., *Picea abies*, 23. VI. 1999, leg. et det. MT, PRM 893889. – Zátoň, Jilmová skála, 1010 m a.s.l., *Picea abies*, 13. X. 1998, leg. et det. MT, PRM 894042. Železná Ruda, Černé lake, X. 1927, leg. A. Hilitzer, det. Z. Pouzar, PRM 870569. – Železná Ruda, Pancíř Mt., 1020 m a.s.l., *Picea abies*, 27. VIII. 1998, leg. et det. MT, PRM 893905. – Železná Ruda, Hůrecké slatě peatbogs, 870 m a.s.l., *Picea abies*, 20. IX. 1999, leg. et det. MT, PRM 894044.

Phellinus cinereus (Niemelä) M. Fischer
Phellinus igniarius var. *cinereus* Niemelä

Number of records: 26 records from 20 localities.

Substrate: Trunks of *Betula*. The species was collected on living trunks (80 %), stumps (10%), dead standing trees (10 %).

Vertical distribution: 700–1140 m a.s.l.

Distribution in the Šumava Mts.: *Phellinus cinereus* is distributed mainly in the area of Vltavský luh (southern part of the Šumava Mts. between the villages Černý Kříž and Nová Pec) and in peatbogs of the central part (Fig. 3).

Results and discussion: This species grows in wet localities with birch trees, mainly on peatbog margins. *Phellinus cinereus* is very closely related to *P. nigricans* (Fr.) P. Karst. and these species are often confused in literature. According to Fischer (1995) *P. nigricans* is not distributed in Central Europe at all.

Phellinus cinereus is also known from the Bavarian Forest, but is rather rare there (Luschka 1993).

List of records:

Borová Lada, Žďárecká slať peatbog, *Betula pendula*, 13. VIII. 1997, leg. F. Kotlaba, PRM 891489. – Borová Lada, Vltavský stream, 950 m a.s.l., *Betula pubescens*, 23. IX. 1999, leg. et det. MT, PRM 894231. – Horská Kvilda, Zhůřské slatě peatbogs, 1140 m a.s.l., *Betula pubescens*, 15. IX. 1999, leg. et det. MT, PRM 894205; ibid. PRM 894224. – Horská Kvilda, Zhůřské slatě peatbogs, 950 m a.s.l., *Betula pubescens*, 1. VII. 1999, leg. J. Holec, det. MT, JH 75/99. – Lenora, Velká niva peatbog, 850 m a.s.l., *Betula pubescens*, 31. V. 1999, leg. J. Holec, det. MT, JH 9/99; ibid. *Betula* sp., 23. VIII. 1995, leg. et det. J. Holec, PRM 885117. – Lenora, Velká niva peatbog, *Betula pubescens*, 21. VII. 1965, leg. F. Kotlaba, PRM 870758. – Lenora, Soumarský most, 750 m a.s.l., *Betula pubescens*, 28. VIII. 1998, leg. et det. MT, PRM 893907; ibid. 740 m a.s.l., *Betula pendula*, 12. V. 1999, PRM 893985. – Lenora, Malá niva peatbog, 750 m a.s.l., *Betula pubescens*, 21. IX. 1999, leg. et det. MT, PRM 894226. – Nová Pec, Jezerní luh, 905 m a.s.l., *Betula pubescens*, 31. V. 1999, leg. J. Holec, det. MT, JH 3/99. – Nová Pec, Pěkná, 730 m a.s.l., *Betula pubescens*, 10. IX. 1998, leg. et det. MT, PRM 893910; ibid. *Betula*

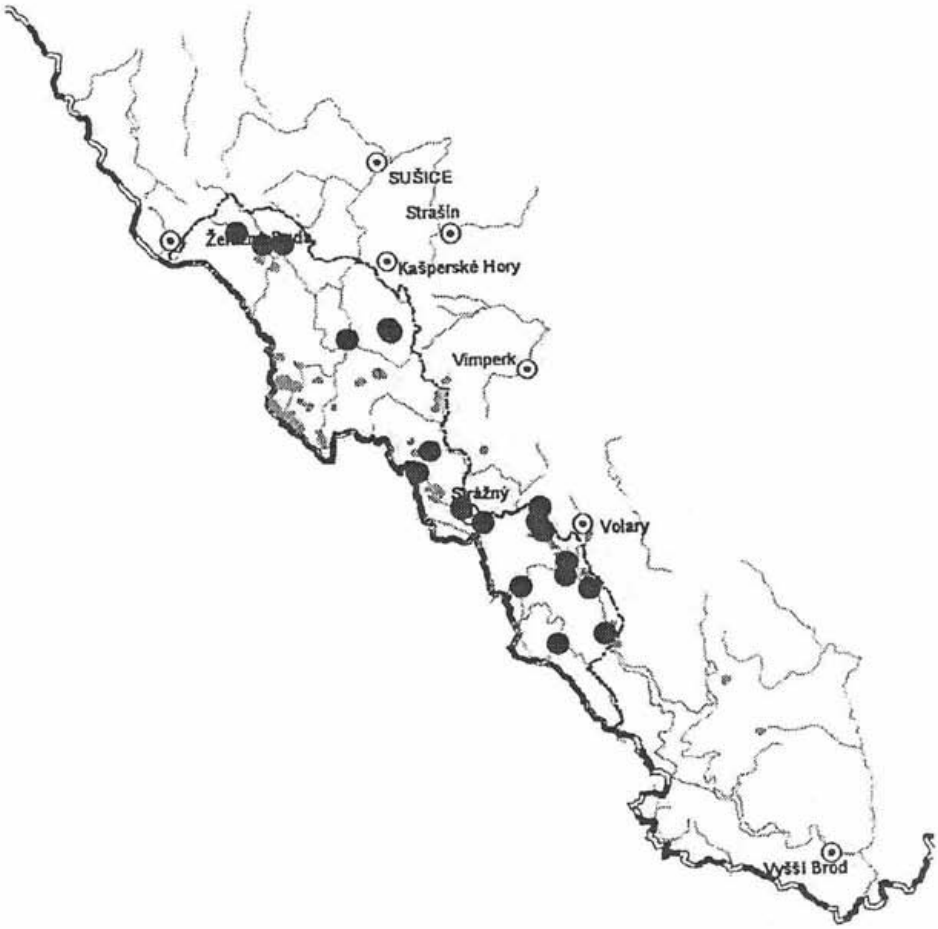

Fig. 3. Distribution of *Phellinus cinereus* in the Šumava Mts.

pendula, 12. V. 1999, PRM 893981; ibid. *Betula pubescens*, 28. VII. 1996, leg. J. Holec, det. MT, PRM 888832. – Nová Pec, Houska peatbog, 730 m a.s.l., *Betula pendula*, 27. VII. 1996, leg. J. Holec, det. MT, PRM 888829. – Prášily, U Cettlovy Hůrky peatbog, 825 m a.s.l., *Betula pubescens*, 17. IX. 1999, leg. et det. MT, PRM 893983; ibid. PRM 894199. – Prášily, Frauenthal, 820 m a.s.l., *Betula pendula*, 10. X. 1998, leg. et det. MT, PRM 893909. – Srní, Vydra stream, 890 m a.s.l., *Betula pendula*, 24. IX. 1998, leg. et det. MT, PRM 893909. – Stožec, Nové Údolí, 800 m a.s.l., *Betula pubescens*, 8. IX. 1998, leg. et det. MT, PRM 893908. – Stožec, Černý Kříž, 735 m a.s.l., *Betula pendula*, 12. V. 1999, leg. et det. MT, PRM 893975. – Strážný, 820 m a.s.l., *Betula pendula*, 23. IX. 1999, leg. et det. MT, PRM 893982. – Strážný, Splavské rašeliniště peatbog, 810 m a.s.l., *Betula* sp., 1. VIII. 1996, leg. J. Holec, det. MT, PRM 888808. – Železná Ruda, Hůrecké slatě peatbogs, 870 m a.s.l., *Betula pubescens*, 20. IX. 1999, leg. et det. MT, PRM 894225; ibid. leg. J. Holec, det. MT, PRM 894198.

Phellinus conchatus (Pers.: Fr.) Quél.
Porodaedalea conchata (Pers.: Fr.) Fiasson et Niemelä

Number of records: 6 records from 6 localities.

Substrate: Diferent species of *Salix*. The fungus was collected on living trees (3x), fallen trees (2x), a living branch and a stump.

Vertical distribution: 630–950 m a.s.l.

Distribution in the Šumava Mts.: The few localities are distributed over the entire area of the Šumava Mts. (Fig. 4). *Phellinus conchatus* grows there in stands along the streams, roads and on the margins of peatbogs.

Results and discussion: *Phellinus conchatus* is a very rare species in the Šumava Mts. This fact is rather surprising when compared with its distribution in the Carpathian Mountains in Slovakia (Kotlaba 1984), where is the species very common. Luschka (1993) presents the species as common in lower parts of the Bavarian Forest. On the other hand *Phellinus conchatus* has not been found in N. P. Bayerischer Wald. Dunger (1989) considered the species a boreal-montane-oceanic element.

List of records:

Lenora, Dobrá, 800 m a.s.l., *Salix* sp., 8. IV. 1999, leg. et det. MT, PRM 893906. – Srní, road Srní – Čeňkova Pila, 730 m a.s.l., *Salix caprea*, 24. IX. 1998, leg. J. Holec, det. Z. Pouzar, PRM 897409. – Srní, Vydra stream, 630 m a.s.l., *Salix caprea*, 3. VI. 1999, leg. et det. J. Holec, JH 21/99. – Srní, Vydra stream, 820 m a.s.l., *Salix caprea*, 9. X. 1998, leg. et det. MT, PRM 894204. – Strašín, Na buku, 750 m a.s.l., *Salix fragilis*, 23. IX. 1998, leg. et det. M. Svrček, PRM. – Železná Ruda, Nový Brunst, 950 m a.s.l., *Salix caprea*, 18. VI. 1997, leg. J. Holec, det. MT, PRM 890884.

Phellinus contiguus (Pers.: Fr.) Pat.
Fuscoporia contigua (Pers.: Fr.) G. Cunn.

Only one record of *Phellinus contiguus* is known from the Šumava foothills (Javornická hornatina) at the village of Strašín. The species is rather thermophilous. Dunger (1989) considers *Phellinus contiguus* a submeridional-temperate element. Kotlaba (1984) presents the record from the highest altitude from former

Fig. 4. Distribution of *Phellinus conchatus* in the Šumava Mts.

Czechoslovakia at 650 m a.s.l. On the other hand one record from National Park Bayerischer Wald is published (Luschka 1993). Also Jahn (1967) presents one record of this species from higher altitudes (1500 m a.s.l. in Lower Tauern).

Record:

Strašín, V luhu, cca. 700 m a.s.l., *Sambucus nigra*, 28. VII. 1998, leg. et det. M. Svrček (Holec et al. 1999)

Phellinus ferrugineofuscus (P. Karst.) Bourdot

Phellinidium ferrugineofuscum (P. Karst.) Fiasson et Niemelä

The only locality where *Phellinus ferrugineofuscus* has been recorded is the primeval forest Boubínský prales (Kotlaba 1965, 1984). This is also the only locality of the species in the Czech Republic. The species is growing on the old fallen trunks of *Picea abies*. *Phellinus ferrugineofuscus* is a significant boreal-montane element of higher mountains of central Europe (Alps, High Tatras – according to Breitenbach and Kränzlin, 1986; Kotlaba 1984) in localities with natural vegetation. The species has not been recorded from the Bavarian Forest (Luschka 1993).

List of records:

Zátoň, Boubínský prales, *Picea abies*, 12. V. 1964, leg. et det. F. Kotlaba et Z. Pouzar, PRM 868919. – Zátoň, Boubínský prales, 1050 m a.s.l., *Picea abies*, 8. I. 1988, leg. et det. J. Vlasák, PRM 869448.

Phellinus ferruginosus (Schrad.: Fr.) Pat.

Polyporus ferruginosus (Schrad.): Fr., *Fuscoporia ferruginosa* (Schrad.: Fr.) Murrill

Number of records: 6 records from 4 localities.

Substrate: *Acer pseudoplatanus, Corylus avellana, Fagus sylvatica, Padus avium* and *Ulmus glabra*. 5 records were collected on fallen trunks, one on a fallen branch.

Vertical distribution: 600–1000 m a.s.l.

Distribution in the Šumava Mts.: The species has been recorded only from the southern part of the Šumava Mts. (area of the Boubínskostožecká hornatina Mts.) (Fig. 5). Three specimens were collected in Opolenec Natural Reserve near Vimperk (Šumava foothills).

Results and discussion: *Phellinus ferruginosus* is a rather rare species of montane mixed forests of the southern part of the Šumava Mts.. On the other hand the species is rather common in localities of relative natural conditions (altitude, vegetation) in the Carpathian Mountains in the eastern part of the Czech Republic and Slovakia (Kotlaba 1984, the author's observations). Luschka (1993) mentions

Fig. 5. Distribution of *Phellinus ferruginosus* in the Šumava Mts.

Phellinus ferruginosus as being common in southern parts of the Bavarian Forest, but it is not known from National Park Bayerischer Wald.

List of records:

České Žleby, Spáleniště, 930 m a.s.l., *Fagus sylvatica*, 24. IX. 1999, leg. et det. J. Holec, JH 342/99. – Zátoň, Jilmová skála, 1000 m a.s.l., *Acer pseudoplatanus*, 13. X. 1998, leg. et det. J. Holec, PRM 897666. – Zátoň, Zátoňská hora, 970 m a.s.l., *Ulmus glabra*, 14. X. 1996, leg. et det. J. Holec, PRM 889512. – Vimperk, Opolenec, *Corylus avellana*, 14. X. 1997, leg. et det. Z. Pouzar, PRM; ibid., *Padus avium*, 5. X. 1998, PRM; ibid. 10. X. 1996, leg. J. Holec, det. Z. Pouzar, PRM.

Phellinus hartigii (Allesch. et Schnabl) Pat.

Number of records: 11 records from 11 localities.

Substrate: *Abies alba* (72 %) and *Picea abies* (27 %). The species was collected on fallen trunks (36 %), dead standing trunks (36 %), stumps (18 %) and a living trunk (one specimen).

Vertical distribution: 680–1120 m a.s.l.

Distribution in the Šumava Mts.: The species is equally distributed in the whole area of the Šumava Mts (Fig. 6).

Results and discussion: *Phellinus hartigii* occurs in the Šumava Mts. mainly in localities with *Abies* trees. The records on *Picea* are from artificial spruce forests. The species has not been collected in natural spruce forests at the highest altitudes. Luschka (1993) mentions *Phellinus hartigii* as a common species in the Bavarian Forest.

List of records:

České Žleby, Spáleniště Mt., 880 m a.s.l., *Abies alba*, 13. X. 1997, leg. MT, det. Z. Pouzar, PRM 893974. – České Žleby, Žlebský kopec, 1030 m a.s.l., *Abies alba*, 13. IX. 1999, not. MT. – České Žleby, Radvanovický hřbet Mt., 910 m a.s.l., *Abies alba*, 8. X. 1998, leg. et det. MT, PRM 893893. – Horská Kvilda, Černé stráně, 940 m a.s.l., *Abies alba*, 14. VIII. 1997, not. F. Kotlaba. – Kvilda, Lapka Mt., 1110 m a.s.l., *Picea abies*, 11. X. 1998, leg. et det. MT, PRM 893892. – Nová Pec, Smrčina Mt., 1120 m a.s.l., *Abies alba*, 16. VII. 1998, not. J. Holec. – Prášily, Hůrecký vrch, 900 m a.s.l., *Picea abies*, 10. VI. 1999, leg. et det. MT, PRM 893894. – Prášily, Frauenthal, 820 m a.s.l., *Picea abies*, 10. X. 1998, leg. MT, det. Z. Pouzar, PRM 893942; ibid. PRM 893890. – Srní, Křemelná stream, 870 m a.s.l., *Abies alba*, 14. VI. 1999, leg. et det. MT, PRM 893973. – Srní, Vydra stream, 650 m a.s.l., *Abies alba*, 12. X. 1998, leg. et det. MT, PRM 893891. – Srní, Vydra stream, 680 m a.s.l., *Abies alba*, 12. X. 1998, not. MT. – Železná Ruda, Debrník, 770 m a.s.l., *Abies alba*, 22. IX. 1999, not. MT.

Phellinus igniarius (L.: Fr.) Quél.

Fomes igniarius var. *trivialis* Bres. in Killerm.

Number of records: 16 records from 16 localities.

Substrate: Different species of *Salix*, mainly *Salix caprea* (70 %), but also *S. alba, S. aurita, S. fragilis* etc. Most specimens were collected on living trees (82 %).

Fig. 6. Distribution of *Phellinus hartigii* in the Šumava Mts.

Vertical distribution: 600–1110 m a.s.l.

Distribution in the Šumava Mts.: The species is distributed equally over the area of the Šumava Mts. (Fig. 7)

Results and discussion: The occurence of *Phellinus igniarius* is dependent on presence of species of *Salix* species and a suitable substrate is probably the most important factor for its occurrence. *P. igniarius* is distributed in the Šumava Mts. mainly in localities influenced by human activities, e.g. by road sides, in villages and on the banks of streams and rivers.

List of records:

Kašperské Hory, Amálino valley, 660 m a.s.l., *Salix* sp., 12. X. 1997, leg. et det. MT, PRM 893979. – Kvilda, 1110 m a.s.l., *Salix caprea*, 11. X. 1998, not. MT. – Lenora, Dobrá, 740 m a.s.l., *Salix alba*, 12. V. 1999, leg. et det. MT, PRM 8893976. – Lenora, Malá niva peatbog, 750 m a.s.l., *Salix caprea*, 21. IX. 1999, leg. et det. MT, PRM 894228. – Nová Pec, Klápa, 800 m a.s.l., *Salix caprea*, 4. VI. 1998, not. MT. – Prášily, Stodůlky, 840 m a.s.l., *Salix alba*, 12. VI. 1999, leg. et det. MT, PRM 893980. – Prášily, former village Stará Hůrka, 940 m a.s.l., *Salix caprea*, 10. VI. 1999, leg. et det. MT, PRM 893998. – Prášily, 860 m a.s.l., *Salix caprea*, 11. VI. 1999, leg. et det. MT, PRM 894222. – Prášily, former village Vysoké Lávky, 920 m a.s.l., *Salix caprea*, 10. VI. 1999, leg. et det. MT, PRM 893977. – Srní, Antýgl, 900 m a.s.l., *Salix caprea*, 24. IX. 1998, leg. et det. MT, PRM 894203. – Srní, Hrádecký stream, 800 m a.s.l., *Salix caprea*, 30. VI. 1999, leg. et det. MT, PRM 893897. – Stožec, Nové Údolí, 820 m a.s.l., *Salix aurita*, 8. IX. 1998, leg. et det. MT, PRM 893895. – Stožec, Spálený luh peatbog, 800 m a.s.l., *Salix fragilis*, 11. VII. 1996, leg. et det. F. Kotlaba, PRM 889718. – Strašín, U Studničky, *Salix caprea*, 27. VII. 1998, not. M. Svrček. – Strážný, Vyhlídka, 890 m a.s.l., *Salix caprea*, 23. IX. 1999, leg. et det. MT, PRM 894200. – Želnava, Záhvozdí, 840 m a.s.l., *Salix caprea*, 24. VI. 1999, not. MT.

Phellinus laevigatus (P. Karst.) Bourdot et Galzin

Number of records: 30 records from 19 localities.

Substrate: *Betula pubescens* and *B. pendula*. The species has not been found on other tree genera in the Šumava Mts. *Phellinus laevigatus* was collected on fallen trunks (63 %), fallen branches (13 %), stumps (13 %) and in one case on a fallen piece of bark.

Vertical distribution: 700–1000 m a.s.l.

Distribution in the Šumava Mts.: The species is distributed in the valley of the Vltava river in the south and on slopes of valleys of streams and rivers (the Vydra, the Křemelná, the Otava) in the central part of the Šumava Mts. One specimen was collected in the peatbog "U Cettlovy Hůrky" (Fig. 8).

Results and discussion: The occurence of the species depends strongly on the type of vegetation. In spite of its growing on birch trees, *P. laevigatus* does not occur in all types of vegetation where *Betula* is present. *Phellinus laevigatus* was found in two types of vegetation: in relict pinewoods with *Betula* on scree and in peatbogs with lots of fallen trunks and without human impact. The species is also known from the Bavarian Forest (Luschka 1993) where it

Fig. 7. Distribution of *Phellinus igniarius* in the Šumava Mts.

was recorded on *Betula* and *Salix*. Dunger (1989) considers *Phellinus laevigatus* a boreal-montane-continental element.

List of records:

Lenora, Malá niva peatbog, 750 m a.s.l., *Betula pubescens*, 3. VI. 1998, leg. et det. J. Holec, PRM 892328; ibid. 18. IX. 1998, PRM 897269; ibid. 7. X. 1997, JH 612/97; ibid. 18. IX. 1997, leg. MT, det. J. Holec, PRM 893916. – Lenora, Velká niva peatbog, *Betula pendula*, 25. X. 1990, leg. et det. Z. Pouzar, PRM 871474; ibid. *Betula* sp., 8. VIII. 1997, leg. et det. J. Holec, JH 273/97. – Vyšší Brod, Loučovice, Luč Mt., 660 m a.s.l., *Betula pubescens*, 3. VIII. 1999, leg. et det. MT, PRM 893899. – Nová Pec, Jezerní luh, 905 m a.s.l., *Betula pubescens*, 31. V. 1999, leg. et det. J. Holec, JH 2/99. – Prášily, U Cettlovy Hůrky peatbog, 845 m a.s.l., *Betula*, 12. X. 1996, leg. et det. J. Holec, JH 696a/96. – Srní, Dračí skály, 680 m a.s.l., *Betula pubescens*, 1. VII. 1999, leg. et det. MT, PRM 893898. – Srní, Horní Hrádky, 900 m a.s.l., *Betula pubescens*, 16. IX. 1998, leg. et det. MT, PRM 893911; ibid., 870 m a.s.l., *Betula pubescens*, 30. VI. 1999, leg. et det. MT, PRM 893914. – Srní, Křemelná stream, 740 m a.s.l., *Betula pubescens*, 12. VI. 1999, leg. et det. MT, PRM 894064; ibid. 750 m a.s.l., *Betula pubescens*, 12. VI. 1999, leg. et det. MT, PRM 894066. – Srní, Vydra stream, 730 m a.s.l., *Betula pubescens*, 25. IX. 1999, leg. et det. Z. Pouzar, JH 364/99; ibid. 710 m a.s.l., leg. et det. J. Holec, JH 363/99; ibid. 730 m a.s.l., *Betula pendula*, JH 366/99; ibid. leg. J. Holec, det. MT, JH 367/99. – Srní, Vydra stream, 700 m a.s.l., *Betula* sp., 24. IX. 1998, leg. et det. MT, PRM 893912; ibid. 820 m a.s.l., *Betula pubescens*, 24. IX. 1998, PRM 893915. – Srní, Vydra stream, 620 m a.s.l., *Betula pubescens*, 11. X. 1997, leg. MT, det. J. Holec, PRM 894063; ibid. 750 m a.s.l., *Betula pubescens*, leg. et det. J. Holec, JH 730/97. – Srní, Vydra stream, 760 m a.s.l., *Betula* sp., 3. VI. 1999, leg. et det. J. Holec, JH 45/99; ibid. 880 m a.s.l., *Betula pubescens*, 28. VI. 1999, leg. et det. MT, PRM 8893900; ibid. 920 m a.s.l., PRM 893913. – Srní, Vydra stream, 740 m a.s.l., *Betula pendula*, 12. X. 1998, leg. J. Holec et MT, PRM 897638; ibid. leg. et det. J. Holec, PRM 897639. – Stožec, Mrtvý luh peatbog, 740 m a.s.l., *Betula pubescens*, 16. X. 1996, leg. et det. Z. Pouzar, PRM 889539.

Phellinus lundellii Niemelä

Number of records: 14 records from 11 localities.

Substrate: *Betula* spp. Specimens of this species were found on stumps (50 %), fallen trunks (29 %) and living trunks (21 %).

Vertical distribution: 650–1120 m a.s.l.

Distribution in the Šumava Mts.: The species occurrs in the central part of the Šumava Mts., mainly in peatbogs of surroundings of the village of Modrava. One specimen was recorded in the southern part of the Šumava next to Soumarský bridge (Fig. 9).

Results and discussion: *Phellinus lundellii* is a typical montane species in the Šumava Mts. growing in localities with primary occurence of birch trees (margins of peatbogs, stream banks). Human activities are not a negative factor for occurence of this species, because one specimen was collected by a road next to Soumarský bridge.

Phellinus lundellii is also distributed in the Bavarian Forest but the species is very rare there (Luschka 1993).

List of records:

Horská Kvilda, Hamerský stream, 900 m a.s.l., *Betula pendula*, 29. VI. 1995, leg. J. Holec, det. MT, PRM 884704. Horská Kvilda, Zhůřské slatě peatbogs, 1130 m a.s.l., *Betula* sp., 15. IX. 1999,

Fig. 8. Distribution of *Phellinus laevigatus* in the Šumava Mts.

leg. J. Holec, det. MT, PRM 894221. – Kvilda, Teplá Vltava stream, 1100 m a.s.l., *Betula pubescens*, 28. VI. 1995, leg. J. Holec, det. MT, PRM 884686. – Lenora, Soumarský most, 750 m a.s.l., *Betula* sp., 12. V. 1999, leg. et det. MT, PRM 894061. – Modrava, Cikánská slať peatbog, 1090 m a.s.l., *Betula* sp., 26. IX. 1998, leg. et det. J. Holec, PRM 897479. – Modrava, Hraniční slať peatbog, 1140 m a.s.l., *Betula pendula*, 9. X. 1998, leg. et det. J. Holec, PRM 897596. – Modrava, Přední mlynářská slať peatbog, 1040 m a.s.l., *Betula pendula*, 14. X. 1998, leg. et det. Z. Pouzar, PRM 897677; ibid. leg. et det. J. Holec, PRM 897679; ibid. PRM 897681. – Modrava, Novohuťské močály peatbogs, 1215 m a.s.l., *Betula* sp., 14. IX. 1999, leg. et det. MT, PRM 894220. – Prášily, U Cettlovy Hůrky peatbog, 825 m a.s.l., *Betula* sp., 17. IX. 1999, leg. et det. Z. Pouzar, PRM 894060. – Srní, Křemelná stream, 740 m a.s.l., *Betula pubescens*, 12. VI. 1999, leg. et det. MT, PRM 894223. – Srní, Vydra stream, 650 m a.s.l., *Betula pubescens*, 11. X. 1997, leg. MT, rev. T. Niemelä, PRM 894058; ibid. 24. IX. 1998, PRM 894059.

Phellinus nigrolimitatus (Romell) Bourdot et Galzin
Fomes nigrolimitatus (Romell) Egeland

Number of records: 28 records from 16 localities, 1 unpublished record before year 1990.

Substrate: Fallen trunks of *Picea abies* usually in later stage of decomposition.

Vertical distribution: 900–1375 m a.s.l.

Distribution in the Šumava Mts.: This rare species is distributed over the whole area of the Šumava Mts. (Fig. 10).

Results and discussion: *Phellinus nigrolimitatus* grows in localities with natural character of vegetation with numerous fallen trunks of *Picea abies* and constant humidity. The species is a typical boreal montane-element that is more common in higher altitudes in primary spruce forests. Typical localities of *Phellinus nigrolimitatus* are mainly spruce forests on glacial cirques of lakes (Černé, Čertovo, Laka, Plešné and Prášilské). The species was also recorded on timber in houses (J. Vlasák, pers. comm.).

Phellinus nigrolimitatus is also distributed in montane spruce forest of the Bavarian Forest (Luschka 1993).

List of records:

České Žleby, Spáleniště Mt., 900 m a.s.l., *Picea abies*, 12. VII. 1996, leg. et det. F. Kotlaba, PRM 889709. – České Žleby, Žlebský kopec, 1050 m a.s.l., *Picea abies*, 3. IX. 1999, leg. et det. J. Holec, JH 150/99. – Kvilda, Prameny Vltavy, 1160 m a.s.l., *Picea abies*, 13. X. 1996, leg. et det. J. Holec, PRM 889482. Modrava, Cikánská slať peatbog, 1075 m a.s.l., *Picea abies*, 26. IX. 1998, leg. et det. J. Holec, PRM 897472; ibid. 1070 m a.s.l., *Picea abies*, 9. X. 1998, leg. et det. J. Holec, PRM 897595. – Nová Pec, Hraničník Mt., 1200 m a.s.l., *Picea abies*, 29. VII. 1996, leg. et det. J. Holec, PRM 888860; ibid. PRM 888834. – Nová Pec, Plechý Mt., 1330 m a.s.l., *Picea abies*, 26. VIII. 1996, leg. et det. J. Holec, PRM 889112; ibid. 1370 m a.s.l., 8. IX. 1998, leg. et det. MT, PRM 893927; ibid. 1120 m a.s.l., 23. IX. 1997, leg. et det. J. Holec, PRM 891272. – Nová Pec, Plechý Mt., 1340 m a.s.l., *Picea abies*, 30. VII. 1996, leg. et det. J. Holec, PRM 888849; ibid. 1350 m a.s.l., PRM 888848. – Nová Pec, Plešné jezero, 1120 m a.s.l., *Picea abies*, 23. IX. 1997, leg. J. Holec, det. MT, PRM 891271; ibid. PRM 891281. – Nová Pec, Smrčina Mt., 1200 m a.s.l., *Picea abies*, 4. VI. 1998, leg. et det. MT, PRM 894067; ibid. 1180 m a.s.l., PRM 894070. – Nová Pec, Trojmezná Mt., 1300 m a.s.l., *Picea abies*, 29. VIII. 1996, leg. et det. J. Holec, PRM 889183. – Prášily, Prášilské lake, 1200 m a.s.l., *Picea abies*, 2. VI. 1999, leg. et det. J. Holec, JH

Fig. 9. Distribution of *Phellinus lundellii* in the Šumava Mts.

14/99; ibid. 23. IX. 1998, leg. et det. MT, PRM 893962. – Stožec, Medvědice, 900 m a.s.l., *Picea abies*, 2. VIII. 1996, leg. et det. J. Holec, PRM 888806; ibid. 15. X. 1996, leg. et det. J. Holec, PRM 889524; ibid. *Picea abies*, 24. X. 1990, leg. et det. F. Kotlaba et Z. Pouzar, PRM 872103. – Zátoň, Boubínský prales, *Abies alba*, 8. VIII. 1956, leg. et det. Z. Pouzar, PRM 869168. – Železná Ruda, Plesná Mt., 1200 m a.s.l., *Picea abies*, 13. VI. 1999, leg. et det. MT, PRM 893926. – Železná Ruda, Černé lake, 1050 m a.s.l., *Picea abies*, 28. IX. 1994, leg. et det. J. Holec, PRM 885694; ibid. 1100 m a.s.l., PRM 885692. – Železná Ruda, Čertovo lake, 1070 m a.s.l., *Picea abies*, 16. X. 1995, leg. J. Holec, det. Z. Pouzar, PRM 885581.

Phellinus pini (Fr.) A. Ames
Porodaedalea pini (Thore) Murrill

Number of records: 4 records from 4 localities.

Substrate: Trunks of *Pinus sylvestris* and *P. rotundata*

Vertical distribution: 600–852 m a.s.l.

Distribution in the Šumava Mts.: This species was collected only in one locality in central part (peatbog "U Cettlovy Hůrky") and three localities in southern part of the Šumava Mts (peatbog "Houska" at Nová Pec, two localities near Vyšší Brod). (Fig. 11).

Results and discussion: *Phellinus pini* is a rather thermophilous species. Although it's substrate, pine trees, is widely distributed in the Šumava Mts. *Phellinus pini* is very rare there. The three older records of this species published by Kotlaba (1984) concern the surroundings of Lipno damlake. The species is also distributed in the Bavarian Forest (Luschka 1993).

List of records:

– Prášily, U Cettlovy Hůrky peatbog, 825 m a.s.l., *Pinus sylvestris*, 23. IX. 1998, leg. et det. Z. Pouzar, PRM 897392. – Nová Pec, Houska, *Pinus rotundata*, 20. VIII. 1981, 720 m., leg. S. Kučera. det. F. Kotlaba, PRM 829210. – Vyšší Brod, Loučovice, Čertova stěna, 670 m a.s.l., *Pinus sylvestris*, 3. VIII. 1999, leg. et det. MT, PRM 893917. – Vyšší Brod, Loučovice, Luč, 660 m a.s.l., *Pinus sylvestris*, 3. VIII. 1999, leg. et det. MT, PRM 893930.

Phellinus pouzarii Kotlaba

This very rare species is known from Boubín primeval forest, the only locality in the Šumava Mts. (Kotlaba 1984, Holec 1997). *Phellinus pouzarii* occurs only on thick fallen trunks of *Abies alba* and the fruitbodies often grow from its incised surface. This outstanding ecology is the cause of its sparse occurence in the Šumava Mts. There are only two other localities known from the Czech Republic (Kotlaba 1984, Beran 1996). The only locality of *Phellinus pouzarii* in Germany (Mittelsteighütte near Zwiesel) is situated in NP Bayerischer Wald (Luschka 1993, Nuss 1999).

Records:

Zátoň, Boubín-Pažení, 1100 m a.s.l., *Abies alba*, 17. X. 1995, leg. et det. J. Holec, PRM 890751; ibid. 23. VII. 1995, PRM 885015.

Fig. 10. Distribution of *Phellinus nigrolimitatus* in the Šumava Mts.

Phellinus punctatus (P. Karst.) Pilát

Fomitiporia punctata (P. Karst.) Murrill, *Phellinus friesianus* (Bres.) Bourdot et Galzin

Number of records: 37 records from 32 localities.

Substrate: *Salix* (69 %), *Alnus incana* (7 %), *Fraxinus excelsior* (7 %), *Corylus avellana* (5 %), once each also: *Fagus sylvatica, Lonicera nigra, Padus racemosa* and *Sambucus racemosa.* Most records were made on living trees (61 %), fallen trunks (13 %), stumps (10 %), dead standing trees (5 %), living branches (5 %) and dead branches (3 %).

Vertical distribution: 600–1110 m a.s.l.

Distribution in the Šumava Mts.: The species is common in the whole area of the Šumava Mts. (Fig. 12).

Results and discussion: *Phellinus punctatus* is one of the most common species of *Phellinus* in the Šumava Mts. The species is common mainly in localities with stands of *Salix* and other hardwood trees, e.g. on banks of brooks, margins of peatbogs and forests, stands along roads etc.

The species occurs also in the Bavarian Forest but it is relatively rare in the area of National Park Bayerischer Wald (Luschka 1993).

List of records:

České Žleby, Spáleniště Mt., 870 m a.s.l., *Fraxinus excelsior*, 13. X. 1997, leg. MT, det. Z. Pouzar, PRM 894052; ibid. leg. et det. J. Holec, JH 737/97. Horní Vltavice, Nová Polka, 910 m a.s.l., *Salix caprea*, 23. IX. 1999, not. MT. Horská Kvilda, Zhůří, 1050 m a.s.l., *Salix aurita*, 9. X. 1997, leg. et det. J. Holec, JH 661/97. Kašperské Hory, Rýžovní stream, 610 m a.s.l., *Corylus avellana*, 17. X. 1997, leg. et det. J. Holec, JH 853/97. Kašperské Hory, Amálino valley, 660 m a.s.l., *Salix* sp., 12. X. 1997, leg. et det. MT, PRM 894048. – Kvilda, 1110 m a.s.l., *Salix caprea*, 11. X. 1998, not. MT. – Kvilda, 1050 m a.s.l., *Salix caprea*, 1. IX. 1990, leg. et det. F. Kotlaba, PRM 872152. – Lenora, Malá niva peatbog, 750 m a.s.l., *Salix caprea*, 21. IX. 1999, leg. J. Holec, det. MT, PRM 894201. – Lenora, Dobrá, 760 m a.s.l., *Salix alba*, 12. V. 1999, leg. et det. MT, PRM 894045. – Lenora, Malá niva peatbog, 750 m a.s.l., *Alnus incana*, 21. IX. 1999, not. MT. – Modrava, Rokyta, 920 m a.s.l., *Salix caprea*, 30. VI. 1999, leg. et det. MT, PRM 894202,893926. – Nová Pec, Ovesná, 740 m a.s.l., *Salix* sp., 9. IX. 1998, not. MT. – Nová Pec, Houska, 730 m a.s.l., *Lonicera nigra*, 24. VI. 1999, leg. et det. MT, PRM 893923; ibid. *Salix* sp., 3. VI. 1998, leg. et det. MT, PRM 893919. – Nová Pec, Pěkná, 730 m a.s.l., *Alnus incana*, 10. IX. 1998, leg. et det. MT, PRM 893918. – Nová Pec, Klápa, 800 m a.s.l., *Salix caprea*, 4. VI. 1998, not. MT. – Prášily, 980 m a.s.l., *Fagus sylvatica*, 9. VII. 1998, leg. J. Holec et MT, PRM 896986. – Prášily, 880 m a.s.l., *Salix cinerea*, 26. VIII. 1998, leg. et det. MT, PRM 894049. – Prášily, 860 m a.s.l., *Salix caprea*, 11. VI. 1999, leg. et det. MT, PRM 894012. – Prášily, Slunečná-Gruberg, 890 m a.s.l., *Salix caprea*, 23. IX. 1998, not. MT. – Prášily, Frauenthal, 805 m a.s.l., *Alnus incana*, 10. X. 1998, leg. et det. MT, PRM 893924. – Prášily, Horní Ždanidla-Gsenget, 1060 m a.s.l., *Salix cinerea*, 26. VIII. 1998, leg. et det. MT, PRM 893921. – Prášily, Vysoké Lávky, 920 m a.s.l., *Salix caprea*, 10. VI. 1999, leg. et det. MT, PRM 894050. – Prášily, Stodůlky, 835 m a.s.l., *Padus racemosa*, 12. VI. 1999, leg. et det. MT, PRM 894057. – Srní, Horní Hrádky, 900 m a.s.l., *Sambucus racemosa*, 16. IX. 1998, leg. et det. MT, PRM 893922; ibid. *Salix aurita*, not. J. Holec. – Srní, road from Srní to Čeňkova Pila, 730 m a.s.l., *Salix caprea*, 24. IX. 1998, leg. J. Holec, det. MT, PRM 894045. – Srní, Vydra stream, *Salix caprea*, 3. VI. 1999, not. J. Holec. – Srní, Vydra stream, 680 m a.s.l., *Corylus avellana*, 8. X. 1997, leg. et det. J. Holec, JH 632/97. – Srní, Vydra stream, 800 m a.s.l., *Fraxinus excelsior*, 9. X. 1998, leg. et det. MT, PRM 893920. –

Fig. 11. Distribution of *Phellinus pini* in the Šumava Mts.

Stožec, Nové Údolí, 850 m a.s.l., *Salix* sp., 28. VIII. 1996, leg. J. Holec, det. MT, PRM 889167. – Strážný, Vyhlídka hill, 890 m a.s.l., *Salix caprea*, 23. IX. 1999, not. MT. – Železná Ruda, Hamry, 640 m a.s.l., *Salix caprea*, 25. VIII. 1999, leg. et det. MT, PRM 894047. – Železná Ruda, 760 m a.s.l., *Salix cinerea*, 25. VIII. 1998, leg. et det. MT, PRM 894056. – Železná Ruda, Debrník, 780 m a.s.l., *Salix* sp., 7. VII. 1998, leg. et det. MT, PRM 894054. – Železná Ruda, Nový Brunst, 990 m a.s.l., *Salix* sp., 27. VIII. 1998, leg. et det. MT, PRM 893925. Želnava, Záhvozdí, 840 m a.s.l., *Salix caprea*, 24. VI. 1999, leg. et det. MT, PRM 894053.

Phellinus tremulae (Bondartzev) Bondartzev et Borissov
Fomes tremulae (Bondartzev) Borissov

Number of records: 25 records from 21 localities.

Substrate: Trunks of *Populus tremula*. The species was collected on living trunks (68 %), fallen trunks (16 %) and dead standing trunks (16 %).

Vertical distribution: 600–1030 m a.s.l.

Distribution in the Šumava Mts.: The species is distributed over the whole area of the Šumava Mts. Most localities are situated in the valleys of the Vydra, the Vltava and the Křemelná rivers (Fig. 13).

Results and discussion: The distribution of *Phellinus tremulae* depends mainly on the presence of its only host, *Populus tremula*. The fungus occurs in most of the localities where the host species occurs, e.g. in margins of peatbogs, banks of streams and mixed forests of wet conditions.

Phellinus tremulae is also distributed in the Bavarian Forest (Luschka 1993).

List of records:

Kvilda, *Populus tremula*, 7. X. 1990, leg. et det. F. Kotlaba, PRM 872118. – Lenora, Malá niva peatbog, 750 m a.s.l., *Populus tremula*, 7. X. 1997, leg. et det. J. Holec, JH 618/97; ibid. 3. VI. 1998, leg. et det. J. Holec, PRM 892332. – Lenora, Dobrá, 800 m a.s.l., *Populus tremula*, 8. IV. 1999, leg. et det. MT, PRM 893936. – Lenora, Soumarský most, 750 m a.s.l., *Populus tremula*, 28. VIII. 1998, leg. et det. MT, PRM 893935; ibid. 25. VII. 1995, leg. et det. J. Holec, PRM 885038. – Nová Pec, Pěkná, 730 m a.s.l., *Populus tremula*, 10. IX. 1998, leg. et det. MT, PRM 893937. – Nová Pec, Rossbach, 890 m a.s.l., *Populus tremula*, 22. VI. 1999, leg. et det. MT, PRM 893939. – Prášily, former village Zadní chalupy, 850 m a.s.l., *Populus tremula*, 11. VI. 1999, leg. et det. MT, PRM 894232. – Prášily, Stodůlky, 835 m a.s.l., *Populus tremula*, 12. VI. 1999, leg. et det. MT, PRM 894065. – Srní, Hrádecký stream, 790 m a.s.l., *Populus tremula*, 30. VI. 1999, leg. et det. MT, PRM 893934. – Srní, Horní Hrádky, 900 m a.s.l., *Populus tremula*, 30. VI. 1999, leg. et det. MT, PRM 893943. – Srní, Křemelná stream, 760 m a.s.l., *Populus tremula*, 12. VI. 1999, leg. et det. MT, PRM 894051. – Srní, Vydra stream, 680 m a.s.l., *Populus tremula*, 24. IX. 1998, leg. et det. MT, PRM 893933; ibid. 760 m a.s.l., leg. et det. MT, PRM 893931; ibid. 720 m a.s.l., 11. X. 1997, leg. MT, det. Z. Pouzar, PRM 893938; ibid. 760 m a.s.l., 9. X. 1998, leg. et det. MT, PRM 893941, ibid. ca. 800 m a.s.l., 7. VIII. 1998, leg. et det. F. Kotlaba, PRM 892708. – Srní, Zadní Paště, 790 m a.s.l., *Populus tremula*, 14. VI. 1999, leg. et det. MT, PRM 893932. – Strašín, Zábrdí, 650 m a.s.l., *Populus tremula*, 22. X. 1997, leg. et det. M. Svrček, PRM. – Vyšší Brod, Loučovice, Luč Mt., 630 m a.s.l., *Populus tremula*, 3. VIII. 1999, leg. et det. MT, PRM 893940. – Železná Ruda, Hamry, 640 m a.s.l., *Populus tremula*, 25. VIII. 1999, leg. et det. MT, PRM 894068. – Železná Ruda, Špičácké sedlo, 1030 m a.s.l., *Populus tremula*, 27. VIII. 1999, leg. et det. MT, PRM 894218. – Želnava, Záhvozdí, 840 m a.s.l., *Populus tremula*, 24. VI. 1999, not. MT.

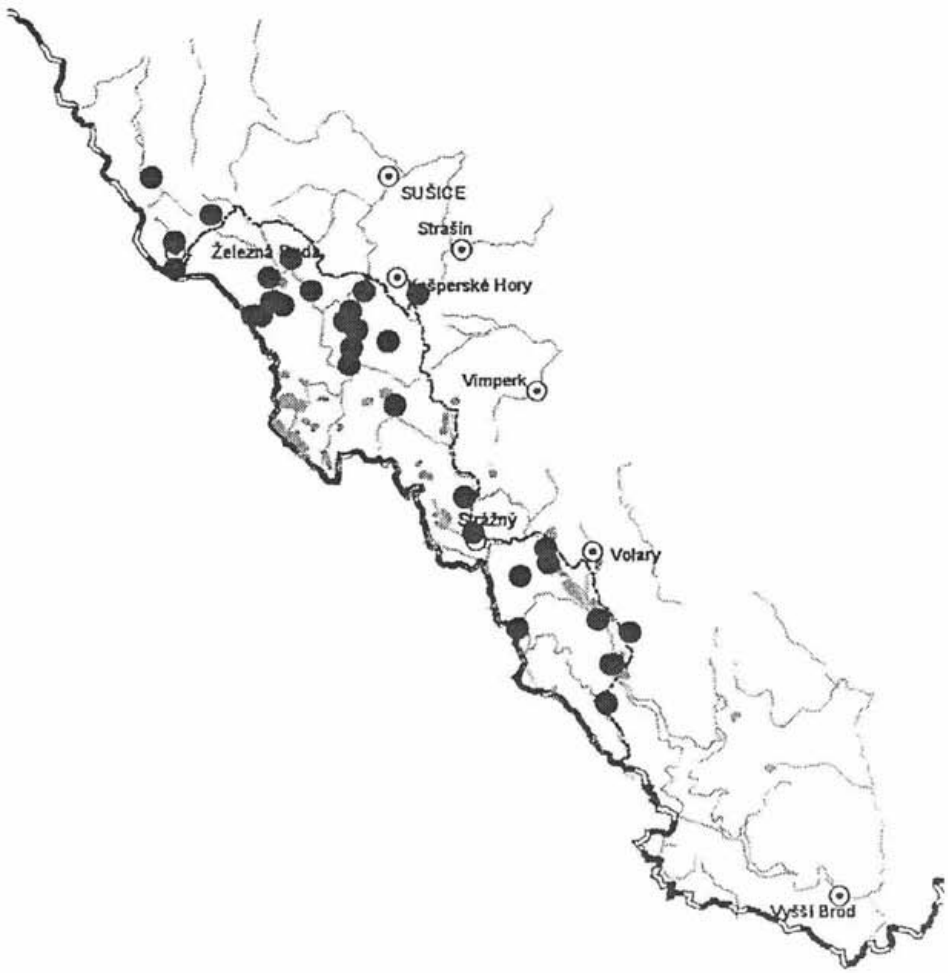

Fig. 12. Distribution of *Phellinus punctatus* in the Šumava Mts.

Phellinus tuberculosus (Baumg.) Niemelä
Phellinus pomaceus (Pers.) Maire

Number of records: 5 records from 4 localities.

Substrate: *Prunus* (*Prunus domestica, P. spinosa*), and *Cerasus avium*. The fungus was collected on living trees (2 specimens), dead standing trees and a fallen branch.

Vertical distribution: 600–950 m a.s.l.

Distribution in the Šumava Mts.: *Phellinus tuberculosus* has been recorded from three localities in the central part of the Šumava Mts. and one locality in the Šumava foothills (nature reserve Opolenec near Vimperk) (Fig. 14).

Results and discussion: *Phellinus tuberculosus* is a typical parasite of fruit trees. So that specimens of this species were collected mainly in old orchards and gardens of former villages in the central part of the Šumava Mts. The species also occures in the Bavarian Forest, but it is rare in the area of National park Bayerischer Wald (Luschka 1993).

List of records:

Prášily, Stará Hůrka, 940 m a.s.l., *Cerasus avium*, 10. VI. 1999, leg. et det. MT, PRM 894062. – Srní, road from Srní to Čeňkova Pila, 730 m a.s.l., *Prunus domestica*, 1. VII. 1999, leg. et det. MT, PRM 893944. – Srní, Zadní Paště, 790 m a.s.l., *Prunus domestica*, 14. VI. 1999, leg. et det. MT, PRM 893945. Sudslavice, Opolenec, 600 m a.s.l., *Prunus spinosa*, 2. IX. 1990, leg. et det. F. Kotlaba, PRM 872096; ibid. 630 m a.s.l., 5. X. 1998, not. Z. Pouzar.

Phellinus viticola (Schw. in Fr.) Donk
Phellinus isabellinus (Fr.) Bourdot et Galzin, *Fuscoporia viticola* (Schw. in: Fr.) Murrill

Number of records: 135 records from 96 localities.

Substrate: *Picea abies* (93 %), more rarely *Pinus *pseudopumilio* (6 %), one record on *Pinus sylvestris*. The species was collected mainly on fallen trunks (93,8 %), fallen branches (6 %), sometimes also on stumps.

Vertical distribution: 600–1378 m a.s.l.

Distribution in the Šumava Mts.: The species is very common in the entire Šumava Mts (Fig. 15).

Results and discussion: *Phellinus viticola* is one of the most common polypores of the spruce forests in the Šumava Mts. The fungus occurs in all types of spruce forest, in mixed forests and sometimes also on margins of peatbogs on *Pinus *pseudopumilio*. *Phellinus viticola* is a typical boreal – montane element that is more common at higher altitudes.

The species is also very common in the Bavarian Forest (Luschka 1993).

List of records:

Borová Lada, Buková slať peatbog, *Pinus *pseudopumilio*, 13. VIII. 1997, leg. et det.

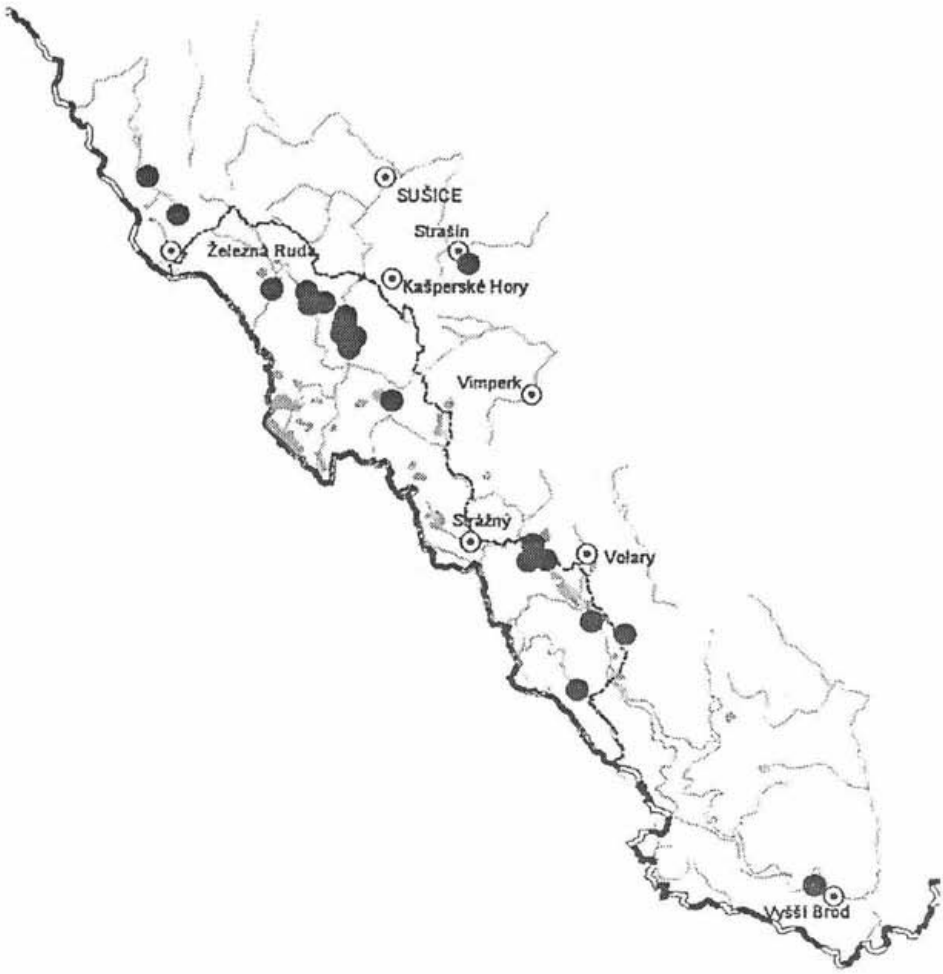

Fig. 13. Distribution of *Phellinus tremulae* in the Šumava Mts.

F. Kotlaba, PRM 891475. – Borová Lada, Františkov, *Picea abies*, 5. IX. 1990, leg. et det. F. Kotlaba, PRM 872099. – Borová Lada, Vyhlídka Mt., 1065 m a.s.l., *Picea abies*, 22. IX. 1994, leg. et det. Z. Pouzar, PRM 882349. – Borová Lada, Žďárecká slať peatbog, 980 m a.s.l., *Picea abies*, 7. VIII. 1997, leg. et det. J. Holec, JH 233/97; ibid. JH 238/97; ibid. JH 240/97. – České Žleby, Radvanovický hřbet, 950 m a.s.l., *Picea abies*, 8. X. 1998, leg. et det. MT, PRM 893952. – České Žleby, Žlebský kopec, 990 m a.s.l., *Picea abies*, 13. IX. 1999, leg. et det. MT, PRM 894088. – Horská Kvilda, Sokol Mt. (Antýgl), 1200 m a.s.l., *Picea abies*, 4. IX. 1990, leg. et det. F. Kotlaba, PRM 872145. – Horská Kvilda, Zhůřské slatě peatbogs, 1130 m a.s.l., *Picea abies*, 15. IX. 1999, leg. et det. MT, PRM 894208; ibid. *Pinus *pseudopumilio*, PRM 894209; ibid. 3. IX. 1990, leg. et det. F. Kotlaba, PRM 872079. – Horská Kvilda, Mezilesní slať peatbog, 1100 m a.s.l., *Picea abies*, 18. IX. 1999, leg. et det. MT, PRM 894082. – Horská Kvilda, Zhůří – Nad hutí, *Picea abies*, 23. X. 1990, leg. et det. Z. Pouzar et F. Kotlaba, PRM 872108. – Kvilda, Prameny Vltavy, 1070 m a.s.l., *Picea abies*, 7. IX. 1990, leg. et det. F. Kotlaba, PRM 872091. – Kvilda, Olšinka, 1035 m a.s.l., *Picea abies*, 21. IX. 1994, leg. et det. Z. Pouzar, PRM 882350. – Kvilda, Hamerské domky, 1100 m a.s.l., *Picea abies*, 20. IX. 1994, leg. et det. Z. Pouzar, PRM 882342. – Kvilda, Tetřevská slať peatbog, 1130 m a.s.l., *Picea abies*, 2. X. 1994, leg. et det. Z. Pouzar, PRM 882356; ibid. *Pinus *pseudopumilio*, PRM 882344. – Kvilda, Tetřev Mt., 1255 m a.s.l., *Picea abies*, 24. IX. 1994, leg. et det. Z. Pouzar, PRM 882345; ibid., 1250 m a.s.l., PRM 882357. – Kvilda, between Vilémov and Františkov, 1080 m a.s.l., *Picea abies*, 15. IX. 1998, leg. J. Holec, det. MT, PRM 894092. – Kvilda, Pod Tetřevem, 1130 m a.s.l., *Picea abies*, 15. IX. 1998, leg. et det. 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MT, PRM 894188. – Nová Pec, Hraničník Mt., 1200 m a.s.l., *Picea abies*, 29. VII. 1996, leg. J. Holec, det. MT, PRM 888864. – Nová Pec, Jelení lake, 950 m a.s.l., *Picea abies*, 9. IX. 1998, leg. et det. MT, PRM 893963. – Nová Pec, Jezerní luh, 910 m a.s.l., *Picea abies*, 26. IX. 1997, leg. et det. J. Holec, PRM 891357. – Nová Pec, Plechý Mt., 1340 m a.s.l., *Picea abies*, 30. VII. 1996, leg. J. Holec, det. MT, PRM 888858; ibid. 1310 m a.s.l., 15. VII. 1998, leg. et det. J. Holec, PRM 897063; ibid. 1330 m a.s.l., 26. VIII. 1996, leg. et det. J. Holec, PRM 889078. – Nová Pec, Plešné lake, 1280 m a.s.l., *Picea abies*, 8. IX. 1998, leg. et det. MT, PRM 893957. – Nová Pec, Říjiště, 950 m a.s.l., *Picea abies*, 22. VI. 1999, leg. et det. MT, PRM 893960. – Nová Pec, Plechý Mt., 1370 m a.s.l., *Picea abies*, 8. IX. 1998, leg. et det. MT, PRM 893955. – Nová Pec, Smrčina Mt., 1180 m a.s.l., *Picea abies*, 4. VI. 1998, leg. et det. MT, PRM 894090; ibid. 1200 m a.s.l., PRM 894085. – Nová Pec, Trojmezná Mt., 1300 m a.s.l., *Picea abies*, 29. VIII. 1996, leg. et det. J. Holec, PRM 889122; ibid. 1350 m a.s.l., 8. IX. 1998, leg. et det. MT, PRM 893959. – Prášily, 890 m a.s.l., *Picea abies*, 10. VI. 1999, leg. et det. MT,

Fig. 14. Distribution of *Phellinus tuberculosus* in the Šumava Mts.

PRM 894073. – Prášily, 1000 m a.s.l., *Picea abies*, 9. VII. 1998, leg. et det. MT, PRM 894217; ibid. 18. VI. 1997, leg. et det. J. Holec, JH 39/97. – Prášily, Frauenthal, 820 m a.s.l., *Picea abies*, 10. X. 1998, leg. et det. MT, PRM 893954, ibid. PRM 893900. – Prášily, Hůrecký hill, 1010 m a.s.l., *Picea abies*, 10. VI. 1999, leg. et det. MT, PRM 894237. – Prášily, Kamenitý hill, 830 m a.s.l., *Picea abies*, 11. VI. 1999, leg. et det. MT, PRM 894219; ibid. PRM 894075. – Prášily, Prášilské lake, 1115 m a.s.l., *Picea abies*, 23. IX. 1998, leg. et det. MT, PRM 893956; ibid. 1250 m a.s.l., PRM 893971. – Prášily, Slunečná Mt., 900 m a.s.l., *Picea abies*, 11. VI. 1999, leg. et det. MT, PRM 894084. – Prášily, U Cettlovy Hůrky peatbog, 825 m a.s.l., *Picea abies*, 23. IX. 1998, leg. J. Holec, det. MT, PRM 894211. – Prášily, Ždanidla Mt., 1180 m a.s.l., *Picea abies*, 9. VII. 1998, leg. et det. MT, PRM 894078; ibid. 1250 m a.s.l., PRM 894081; ibid. 1200 m a.s.l., 13. VI. 1999, PRM 893953. – Srní, Dračí skály, 700 m a.s.l., *Picea abies*, 1. VII. 1999, leg. et det. MT, PRM 893971; ibid. PRM 893964. – Srní, Horní Hrádky, 740 m a.s.l., *Picea abies*, 30. VI. 1999, leg. et det. MT, PRM 8893951; ibid. 920 m a.s.l., 16. IX. 1998, leg. et det. MT, PRM 893968; ibid. 800 m a.s.l., *Picea abies*, 15. X. 1998, leg. J. Holec, det. MT, PRM 894212; ibid. 910 m a.s.l., *Picea abies*, 30. VI. 1999, leg. et det. MT, PRM 893946; ibid. 850 m a.s.l., *Picea abies*, 19. IX. 1998, leg. J. Holec, det. MT, PRM 894087. – Srní, Hrádecký stream, 770 m a.s.l., *Picea abies*, 30. VI. 1999, leg. et det. MT, PRM 893928; ibid. 780 m a.s.l., *Picea abies*, 18. VI. 1998, leg. et det. J. Holec, PRM 892417; ibid. 810 m a.s.l., 7. X. 1998, PRM 897531. – Srní, Křemelná Mt., 760 m a.s.l., *Picea abies*, 12. VI. 1999, leg. et det. MT, PRM 894074. – Srní, Vydra stream, 680 m a.s.l., *Picea abies*, 11. X. 1997, leg. et det. J. Holec, JH 726/97; ibid. 750 m a.s.l., leg. MT, det. J. Holec, PRM 894077. – Srní, Vydra stream, 840 m a.s.l., *Pinus sylvestris*, 19. IX. 1998, leg. et det. Z. Pouzar, PRM; ibid. 740 m a.s.l., *Picea abies*, 24. IX. 1998, leg. J. Holec, det. MT, PRM 894210; ibid. 820 m a.s.l., *Picea abies*, leg. et det. MT, PRM 893950; ibid. 880 m a.s.l., *Picea abies*, 9. X. 1998, leg. et det. MT, PRM 893948. – Srní, Vydra stream, 760 m a.s.l., *Picea abies*, 3. VI. 1999, leg. J. Holec, det. MT, JH 35/99; ibid. 800 m a.s.l., *Picea abies*, 25. VI. 1996, leg. et det. J. Holec, PRM 888404; ibid. 920 m a.s.l., 28. VI. 1999, leg. et det. MT, PRM 893970. – Stožec, Jelení vrch, 860 m a.s.l., *Picea abies*, 9. IX. 1998, leg. et det. MT, PRM 893961. – Stožec, Kamenná hill, 970 m a.s.l., *Picea abies*, 11. VII. 1996, leg. et det. F. Kotlaba, PRM 889710; ibid. 960 m a.s.l., 23. VI. 1999, leg. et det. MT, PRM 893958. – Stožec, Medvědice, *Picea abies*, 24. X. 1990, leg. et det. Z. Pouzar et F. 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Holec, PRM 885673; ibid.1250 m a.s.l., 12. IX. 1996, leg. J. Holec, det. MT, PRM 889433. – Železná Ruda, Hůrecké slatě peatbogs, 860 m a.s.l., *Picea abies*, 17. VI. 1997, leg. J. Holec, det. MT, PRM 890895; ibid. 870 m a.s.l., PRM 890869. – Železná Ruda, Hůrecké slatě peatbogs, 875 m a.s.l., *Picea abies*, 25. VIII. 1998, leg. et det. MT, PRM 894076; ibid. 870 m a.s.l., 20. IX. 1999, PRM 894207; ibid. 880 m a.s.l., 10. X. 1997, leg. et det. J. Holec, JH 696/97. – Železná Ruda, Laka lake, 1150 m a.s.l., *Picea abies*, 30. IX. 1994, leg. et det. Z. Pouzar, PRM 882351. – Železná Ruda, Medvědí jámy, 980 m a.s.l., *Picea abies*, 24. VIII. 1998, leg. et det. MT, PRM 894072. – Železná Ruda, Můstek Mt., 1150 m a.s.l., *Picea abies*, 27. VIII. 1999, leg. et det. MT, PRM 894095; ibid. 1230 m a.s.l., PRM 894099. – Železná Ruda, Na Pošťáku Mt., 990–950 m a.s.l., *Picea abies*, 30. VII. 1997, leg. L. Voříšková, det. MT, PRM 894213. – Železná Ruda, Pancíř Mt., 1015 m a.s.l., *Picea abies*, 27. VIII. 1998, leg. et det. MT, PRM 893966; ibid. 1100 m a.s.l., PRM 894098; ibid. PRM 894094; ibid. 1150 m a.s.l., *Picea abies*, 26. VIII. 1999, leg. et det. MT, PRM 894096; ibid. 1160 m a.s.l., PRM 894206. – Železná Ruda, Plesná Mt., 1120 m a.s.l., 26. VIII. 1998, leg.

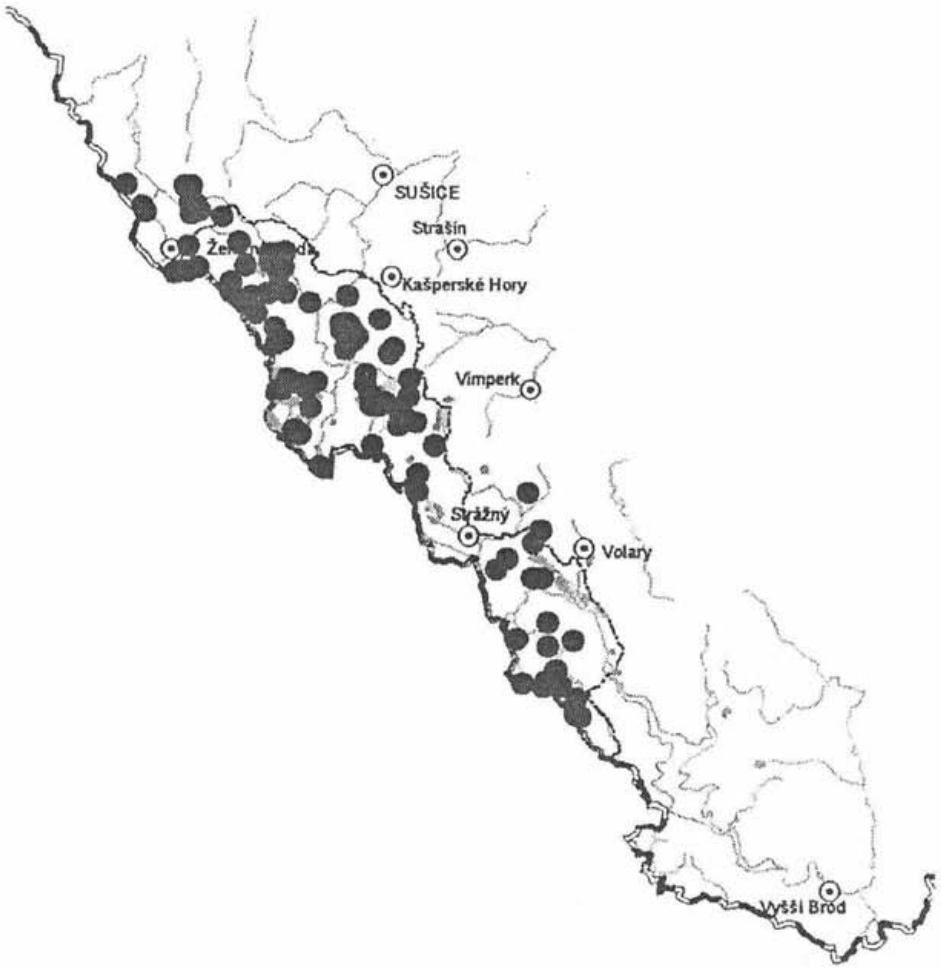

Fig. 15. Distribution of *Phellinus viticola* in the Šumava Mts.

et det. MT, PRM 894097; ibid. 1080 m a.s.l., PRM 894071; ibid. 1110 m a.s.l., PRM 894079; ibid. 1190 m a.s.l., 13. VI. 1999, PRM 893967; ibid. 1250 m a.s.l., *Picea abies*, 10. VII. 1996, leg. et det. F. Kotlaba, PRM 889708. – Železná Ruda, Prameniště, 950 m a.s.l., *Picea abies*, 13. IX. 1996, leg. J. Holec, det. MT, PRM 889410; ibid. 960 m a.s.l., 26. VIII. 1999, leg. et det. MT, PRM 894086.

CONCLUSIONS

Altogether 18 species of *Phellinus* have been confirmed for the Šumava mountains and their distribution, substrate specifity, altitude range and vegetation preference was evaluated.

The occurrence of species in the Šumava mountains is influenced mainly by the following factors: available substrate, altitude and impact of human activities on the vegetation. Four ecological groups of species can be distinguish, each influenced by different combinations of the following factors:

a) substrate (tree species) and type of substrate (e.g. living trunks, fallen branches etc.): *Phellinus alni, P. cinereus, P. hartigii, P. igniarius, P. punctatus, P. tremulae, P. tuberculosus, P. viticola.*

b) substrate and naturalness of vegetation: *P. ferrugineofuscus, P. nigrolimitatus, P. pouzarii.*

c) substrate and altitude: *Phellinus contiguus, P. conchatus, P. lundellii, P. pini.*

d) substrate, naturalness of vegetation and altitude: *Phellinus laevigatus.*

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Nemania pouzarii, a new species from Oahu Island, Hawaii

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Rogers J.D. and Yu-Ming Ju (2002): Nemania pouzarii, a new species from Oahu Island, Hawaii. – Czech Mycol. 54: 79–81

A new species of *Nemania* is described and named in honor of Dr. Z. Pouzar. It resembles *N. carbonacea*, differing in the shorter ascus stipes, larger ascospores, less fragile and less extensive stromata. Cultures are described. An anamorph is unknown.

Key words: pyrenomycetes, Xylariaceae, *Nemania pouzarii* sp. nov.

Rogers J.D. a Yu-Ming Ju (2002): Nemania pouzarii, nový druh z ostrova Oahu (Havajské ostrovy). – Czech Mycol. 54: 79–81

Je popsán nový druh rodu *Nemania* na počest Dr. Z. Pouzara. Druh připomíná *Nemania carbonacea*, ale liší se kratší stopkou vřecka, většími askosporami, méně křehkými a drobnějšími stromaty. Jsou popsány také čisté kultury. Anamorfa je dosud neznámá.

A *Nemania* collection from the Island of Oahu, Hawaii, USA is here described as new. This taxon was collected during an expedition to obtain material for a treatment of the pyrenomycetes of the Hawaiian Islands, with initial emphasis on family Xylariaceae. It is a distinct pleasure to name this *Nemania* in honor of our colleague, Z. Pouzar. Dr. Pouzar was the first investigator to utilize *Nemania* S. F. Gray for a group of xylariaceous fungi that had previously been considered as *Hypoxylon* (Miller, 1961; Petrini and Rogers, 1986; Pouzar, 1985a, 1985b). Moreover, it is noteworthy that Dr. Pouzar is a highly versatile mycologist, an authority on Basidiomycetes as well as on Ascomycetes. He is highly respected among his colleagues for the acuteness of his observations and his taxonomic acumen. He is truly a giant among mycologists!

Nemania pouzarii J. D. Rogers et Y.-M. Ju, sp. nov. Figs. 1–6

Stromata mammiformia cum basi lata, plerumque 2 vel aliquot aggregata, 1–3 mm diam; externe nigra; textura sub superficie carbonacea; textura inter perithecia molli albida sparsa praedita. Perithecia plus minusve globosa, 0.5–0.8 mm

diam. Ostiola papillata. Asci 110–120 μm longitudine tota × 8–10.5 μm crassi, partibus sporiferis ca. 80 μm longitudine, stipitibus 30–40 μm longitudine, annulo apicali in liquore iodato Melzeri cyanescente, subcylindrici, 3 μm alto, 2.5 μm lato. Ascosporae brunneae, unicellulares, ellipsoideae vel ellipsoideo-inequilaterales plerumque apicibus angustatis, leves, (12–)13.5–15 × (5–)6.5–7.5 μm, rima germinativa longa recta praeditae. Paraphyses abundae.

Stromata mammiform with broad base, usually 2 or more aggregated, 1–3 mm diam; surface black; tissue beneath surface carbonaceous; tissue between perithecia soft whitish sparse. Perithecia more or less globose, 0.5–0.8 mm diam. Ostioles papillate. Asci 110–120 μm total length × 8–10.5 μm, the spore-bearing part ca. 80 μm long, the stipes 30–40 μm long, with apical ring bluing in Melzer's iodine reagent, subcylindrical, 3 μm high, 2–5 μm broad. Ascospores brown, one-celled, ellipsoidal or ellipsoid-inequilateral, usually with narrow ends, smooth, (12–)13.5–15 × (5–)6.5–7.5 μm, with germ slit long and straight. Paraphyses abundant. Anamorph unknown.

Specimen examined: USA: Hawaii, Island of Oahu, Judd Trail, on decayed wood, J. D. Rogers, 3 Jan. 2001 (HOLOTYPE, BISH; ISOTYPE, WSP70285). Culture deposited in American Type Culture Collection.

All cultures incubated at ca. 20C under natural cycle of daylight and darkness on various media in 9 cm diam Petri plates.

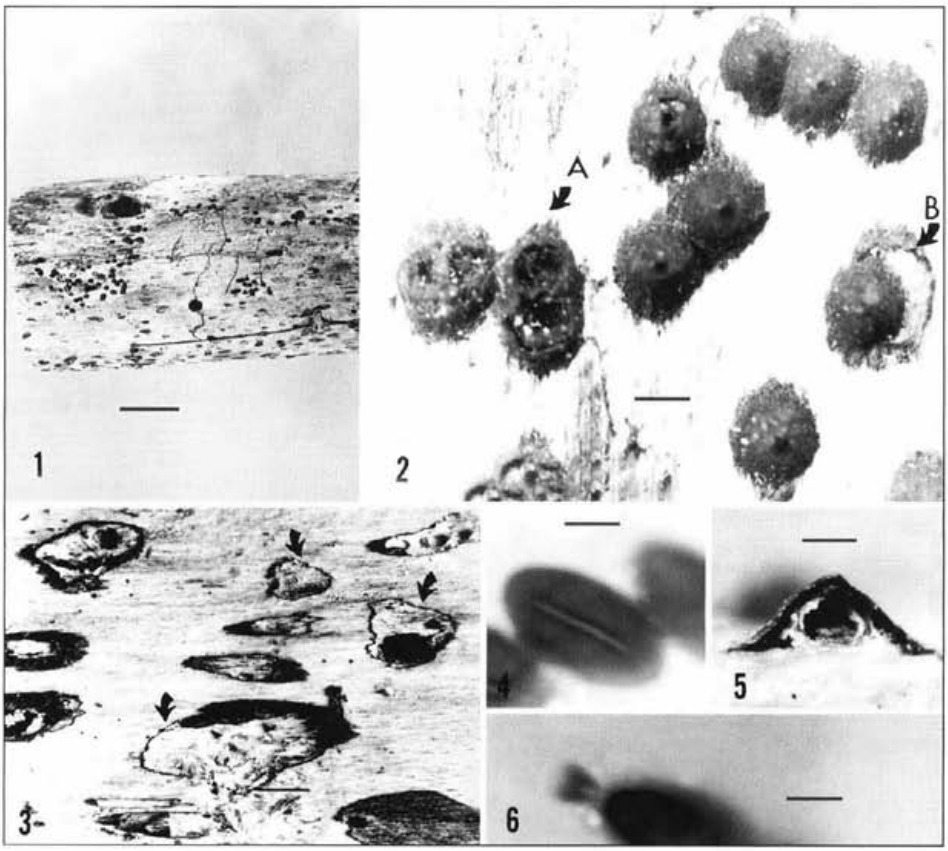
Colony on 2% Difco Malt Extract covering 6 cm diam of Petri plate in 6 wk, appressed, white, forming distinct concentric zones. Reverse orange, brightest toward center of plate. No sporulation noted.

Colony on 2% Difco Oatmeal agar covering 7 cm diam of Petri plate in 6 wk, dense, white with trace of concentric zones. Reverse slightly purplish. No sporulation noted.

Colony on SME agar (Kenerley and Rogers, 1976) covering Petri plate in 4 wk, appressed, thin, white. Reverse uncolored. No sporulation noted.

Culture deposited in American Type Culture Collection.

Nemania pouzarii resembles *N. carbonacea* Pouzar in general morphology (Granmo et al., 1999). It differs in the slightly longer ascospores, the asci with short stipes, and the much less widespreading and the rather hard nonfragile stromata. *Nemania pouzarii* stromata occur in discrete spots on highly decayed wood that are bounded by black zone lines. Unlike most cultured *Nemania* species it did not produce an anamorph on SME medium or on the other media tested. *Nemania carbonacea* has apparently not been cultured (Granmo et al., 1999; Ju and Rogers, 2002) and, thus, a cultural comparison could not be made.



Figs. 1–6. *Nemania pouzarii*. **1.** Habit of stromata on host. **2.** Habit of stroma on host. Figure is oriented perpendicular to Fig. **1.** Stroma at A has been cut to expose perithecia. Stroma at B has been partially dislodged and shows scar on host. **3.** Host surface with scars indicating former attachment sites of stromata. Arrows indicate especially conspicuous zone lines. **4.** Ascospore with germ slit, the full length not shown owing to curvature of spore. **5.** Longitudinal cut through stroma exposing perithecium and remains of surrounding white tissue. **6.** Ascus apical ring with ascospore impinging on the base.

Figs. 1–3, 5 by photomicrography. Figs. 4 and 6 by bright field microscopy. Fig. 4 from water mount. Fig. 6 from Melzer's iodine mount. Fig. 1 bar = 3 cm; figs. 2 and 3 bar = 0.6 mm; figs. 4 and 6 bar = 4.5 μm; fig. 5 bar = 0.3 mm.

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CZECH MYCOL. 54 (1–2), 2002

Two new species of Psathyrella

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Esteve-Raventós F. and Villarreal M. (2002): Two new species of Psathyrella. – Czech Mycol. 54: 83–91

Psathyrella lutulenta and *P. ornatispora* are described as new species, found on the Iberian Peninsula. *P. lutulenta* belongs to sect. *Spadiceogriseae*, and is characterised by its limophilous habitat, pinkish-grey pileus on drying and sublageniform cystidia. Some holotypes of close North American taxa, as well as that of the European *P. almerensis* have been studied for comparison. *P. ornatispora* belongs to sect. *Cystopsathyra*, was found in a greenhouse, and is characterised by the absence of hymenial cystidia and blackish colours of the basidiomata.

Key words: Systematics, *Psathyrella lutulenta*, *P. ornatispora*, Iberian Peninsula.

Esteve-Raventós F. a Villarreal M. (2002): Dva nové druhy rodu Psathyrella. – Czech Mycol. 54: 83–91

Jsou popsány dva nové druhy *Psathyrella lutulenta* a *P. ornatispora* nalezené na Pyrenejském poloostrově. *P. lutulenta* náleží do sekce *Spadiceogriseae* a je význačná růstem v bažinách. Načervenale šedým kloboukem při zasychání a lahvicovitými cystidami. Pro srovnání byly studovány holotypy některých severoamerických taxonů, které se ukázaly býti podobné a také evropského druhu *P. almerensis*. *P. ornatispora* náleží do sekce *Cystopsathyra*, byla nalezena ve skleníku a je charakterisována nedostatkem hymeniálních cystid a černavým zbarvením plodnic.

INTRODUCTION

The genus *Psathyrella* (Fr.) Quél. is commonly considered one of the most difficult among agarics. On the Iberian Peninsula, the knowledge of this genus was very poor, but in the last decades interesting contributions have been made (Esteve-Raventós and Enderle 1992; Heykoop and Esteve-Raventós 1994; Heykoop and Moreno 1998, 2001), with descriptions of new species and a chorological compilation (Heykoop 2001), which will result in a starting-point towards a better understanding of this genus in the western mediterranean countries. In this work, we introduce two new species, one of them found in a greenhouse, hence assuming its mostly probable tropical or subtropical origin.

Holotypes are deposited at the University of Alcalá Herbarium (AH). The methods used for the morphological study of the samples has been the usual

ones for agarics. Authors abbreviations follow Kirk and Ansell (1992). Colours are referred to Munsell (1994) and spore measurements follow the method proposed by Heinemann and Rammeloo (1985).

Psathyrella lutulenta Esteve-Rav. et M. Villarreal, sp. nov.
(Figs. 1–5)

Etymology: from the Latin word "lutum" = mud, referring to the muddy soil on witch it grows.

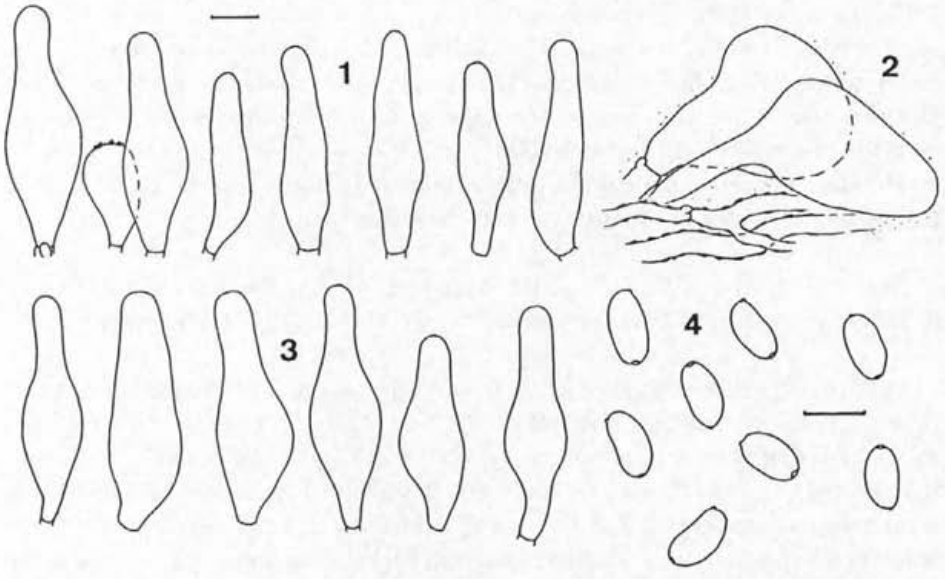
Basidiomata gregaria. Pileus 10–40 mm latus, hemisphaericus vel convexus, deinde applanatus, subumbonatus, initio brunneus marginem versus pallidior, in sicco griseo-roseus, striatus, hygrophanus, micaceus. Velum album, fugax. Lamellae c. 30 stipitem attingentes, adscendentes, –4 mm latae, liberae, primo pallide griseae, demum obscure tabacinae, acie albae. Stipes 25–70 × 1.5–3 mm, cylindraceus, cavus, albus, fibrillosus, apice pruinosus. Sporae 9–11.5 × 5.5–6.5 μm, laeves, ellipsoideae raro phaseoliformes, rufulo-brunneae, subopacae, poro germinativo 1.2–1.5 μm lato munitae. Basidia 25–31 × 9.5–12.5 μm, clavata, 4–sporigera. Pleurocystidia 39–52 × 12–17 × 6–8 μm, numerosa, utriformia vel lageniformia, tenuitunicata. Cellulae marginales: cheilocystidia pleurocystidiis similia, numerosa; cellulae sphaeropedunculatae et clavatae 18–25 × 9–17 μm, numerosae, intermixtae. Pileipellis e cellulis formata. Terrestris ad terram lutulentam inter gramina et herbas (e. g. *Typha*, *Phragmites* et *Juncus*).

Typus: Hispania, Madrid, Coslada, 27 Nov. 1996, legit M. de la Cruz, F. Esteve-Raventós, C. Sánchez et M. Villarreal, AH 21379.

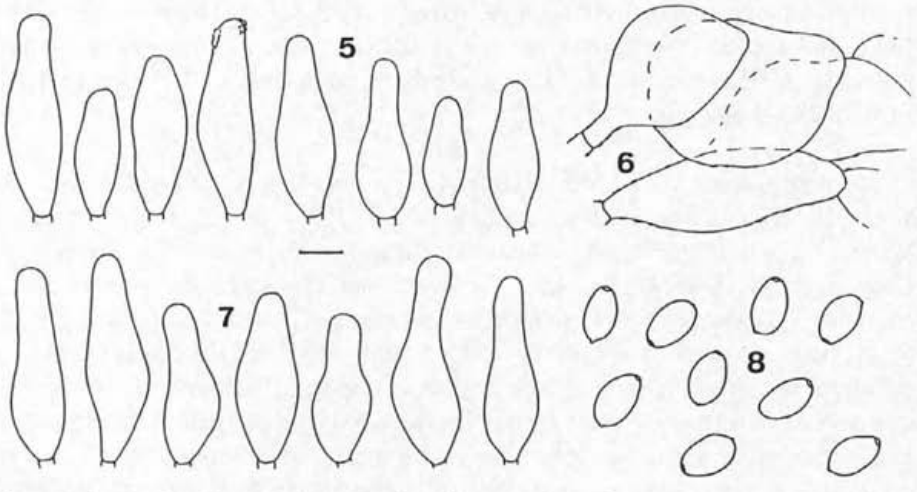
Pileus 10–40 mm in diam., hemisphaerical to convex, spreading to applanate, shallowly umbonate, at first entirely brown (Mu 7.5YR 4/3, 4/4), paler at the margin, where it is light brown to pink (7.5YR 6/3, 7/4), drying out from the centre to light reddish-brown to pink (5YR 6/3, 7/3), striate up to half-way from margin, hygrophanous, very slightly micaceous, smooth. Veil present at the margin of young primordia, leaving whitish arachnoid renmants on the pileus surface, soon evanescent. Lamellae c. 30. reaching the stipe, 1.5–4 mm broad, ascending, free, at first pinkish-grey (7.5YR 6/2), finally dark brown (7.5YR 3/4) with a slight violaceous hue, edge whitish. Stipe 25–70 × 1.5–3 mm, cylindrical, hollow, white, becoming light grey (10YR 7/1) towards the base with age, with fibrillose surface and pruinose apex. Context beige in the pileus, in the stem whitish. Smell fungoid, taste not recorded.

Spores (9–)9.15–10.36–11.5 × 5.5–5.97–6.42(–6.5), Q = 1.6–1.73–1.92(–1.98) [n = 21], ellipsoid in face-view, in profile usually ellipsoid, adaxially flattened, sometimes slightly phaseoliform, in water reddish-brown, in NH_4OH 10 % dark brown, subopaque, with fairly distinctive central germ pore (1.2–1.5 μm). Basidia 25–31 × 9.5–12.5 μm, clavate, four-spored, with sterigmata 4–4.5 μm long. Pleurocystidia 39–52 × 12–17 × 6–8 μm, narrowly utriform to lageniform, fairly numerous, thin-walled, hyaline. Lamellar edge formed by a mixture of rather numerous cheilocystidia, 40–49 × 11–14 × 4.5–7 μm, similar to pleurocystidia

Psathyrella lutulenta Esteve-Rav. et M. Villarreal (Holotype). Basidiomata.



Figs. 1–4. *Psathyrella lutulenta* Esteve-Rav. et M. Villarreal (Holotype): **1.** Cheilocystidia; **2.** Pileipellis; **3.** Pleurocystidia; **4.** Spores. (Bar = 10 μm)



Figs. 5–8. *Psathyrella baileyi* A. H. Sm. (Holotype): **5.** Cheilocystidia; **6.** Pileipellis; **7.** Pleurocystidia; **8.** Spores. (Bar = 10 μm)

in shape or slightly narrower, mixed with abundant sphaeropedunculate cells, 18–25 × 9–17 μm, thin-walled, hyaline. Hymenophoral trama pale yellow in NH_4OH 10 %, with parietal pigment, made up of cylindrical, parallel hyphae

4–15 μm wide. Pileipellis a hymenoderm constituted by 1–2 layers of globose to subglobose cells, (12–)17–37(–45) μm wide, slightly embedded in gelatinous material; hyphae of the hypoderm 6–11 μm wide, with yellowish-brown encrusting pigment. Caulocystidia present in the upper part of the stipe, similar to hymenial cystidia, in clusters. Clamp connections present at all septa.

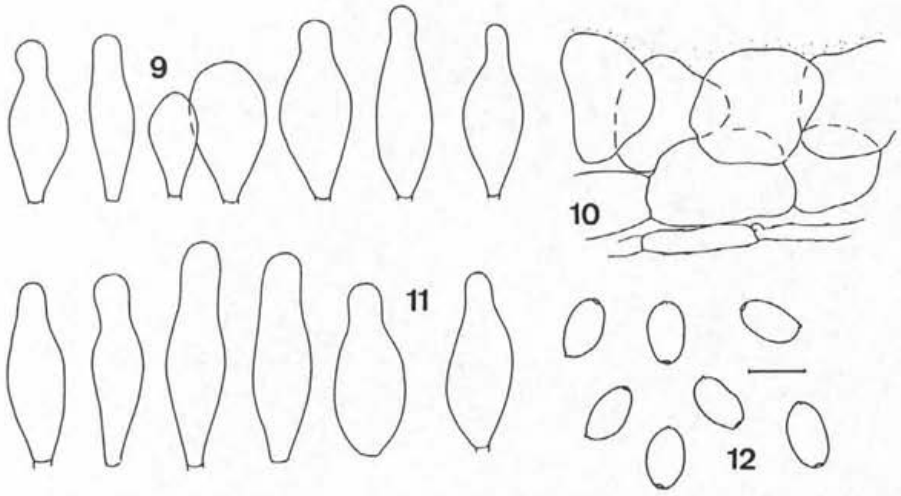
Habitat: gregarious, on muddy, nitrified soil, under the canopy of *Typha latifolia* L., *Scirpus holoschoenus* L. and *Juncus maritimus* Lam.

Material studied: SPAIN. Madrid: Coslada, 27. Nov. 1996, coll. M. de la Cruz, F. Esteve-Raventós, C. Sánchez and M. Villarreal, AH 21379 (Holotypus).

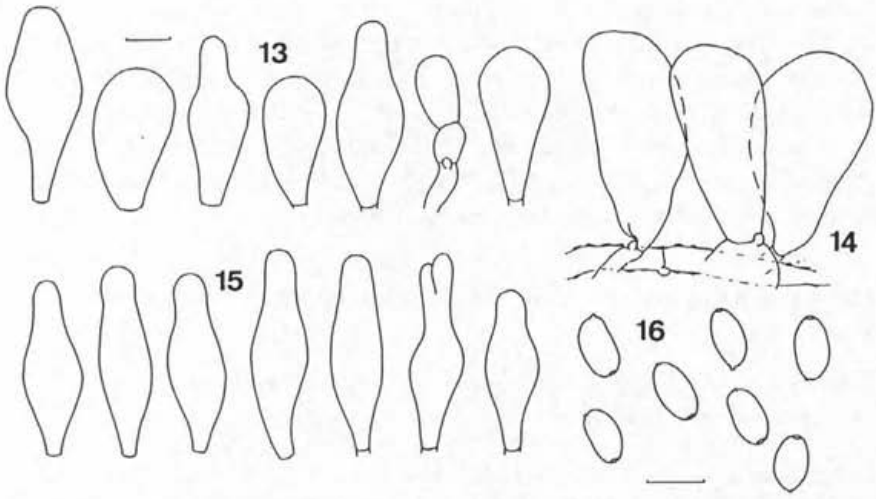
Additional material studied. *Psathyrella almerensis*: The Netherlands: prov. Ijsselmeerpolders, Zuidelijk, Flevoland, 23. Nov. 1976, on rests of *Typha*, *Phragmites* and *Cirsium*, on dike of sandy clay with many shells, coll. J. Daams, (L) –holotypus–. *Psathyrella baileyi*: USA: Michigan, Isle Royale National Park, gregarious on wet earth, coll. V. Bailey, (MICH) H. & V. Bailey no. 125 – holotypus–. *Psathyrella pseudolimicola*: USA: Idaho, Papoose Creek, Nezperee National Forest, Aug., gregarious on mud in a cow pasture (mud and manure present), coll. A. H. Smith, (MICH) Smith 65850 –holotypus–. *Psathyrella subpalustris*: USA: Michigan, Washtenaw County, Pinckney Recreation Area, May, scattered on debris among sedges near edge of a bog, coll. A. H. Smith, (MICH) Smith 21412 –holotypus–. *Psathyrella vinescens*: USA: Michigan, Cheboygan County, Burt Lake, scattered on wet soil near a woodland pool, coll. A. H. Smith, (MICH) Smith 33732 –holotypus–.

The new species fits within sect. *Spadiceogriseae* subsect. *Lutenses* Kits van Wav. (Kits van Waveren, 1985, 1987; Fouchier, 1995), owing to the numerous cheilocystidia intermixed with abundant sphaeropedunculate cells. Its habitat brings to mind *P. almerensis* Kits van Wav., but this speciesgrows directly on remnants of *Typha*, *Phragmites* and *Cirsium*, and is characterised by the more or less cylindrical to narrowly utriform cystidia and very small basidiomata.

Following the monograph of North American species by Smith (1972), several taxa would seem to come close to our taxon on account of their similar habitats or morphological features. After the revision of the holotypes of *P. baileyi* A. H. Sm., *P. pseudolimicola* A. H. Sm., *P. subpalustris* A. H. Sm., *P. vinescens* A. H. Sm. and, we have concluded that all these species belong to sect. Spadiceogriseae (Romagn.) ex Kits van Wav. (Kits van Waveren, *loc. cit.*); however, only *P. pseudolimicola* (Figs. 9–12) shares similar macro- and micromorphological features, on account of the ratio of cheilocystidia/sphaeropedunculate cells along the gill-edge, size of the spores and habitat. However, in this last species the pileus has a "cinnamon-buff" component, also present in the exsiccatum, the

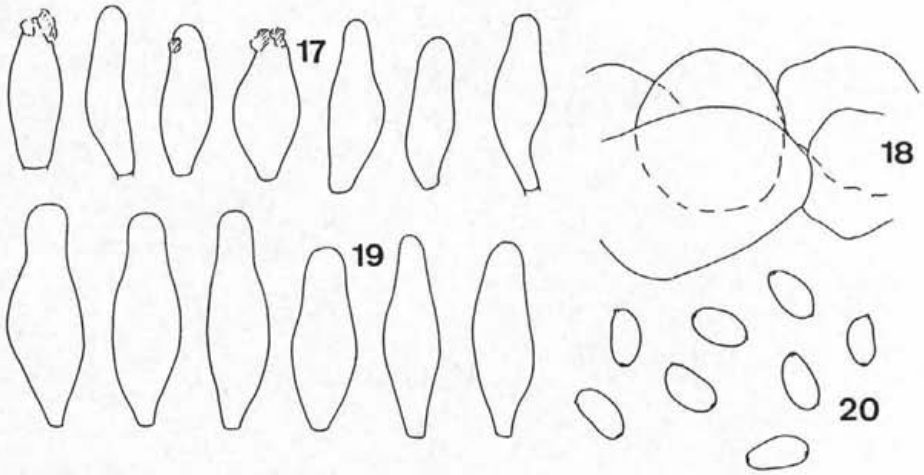


Figs. 9–12. *Psathyrella pseudolimicola* A. H. Sm. (Holotype): **9.** Cheilocystidia; **10.** Pileipellis; **11.** Pleurocystidia; **12.** Spores. (Bar = 10 μm)



Figs. 13–16. *Psathyrella subpalustris* A. H. Sm. (Holotype): **13.** Cheilocystidia; **14.** Pileipellis; **15.** Pleurocystidia; **16.** Spores. (Bar = 10 μm)

lamellar-edge shows mostly sphaeropedunculate cells, with few, broadly utriform, (sub-)capitate cheilocystidia, 30–40 × 10.5–16.5 μm, without neck, and similar pleurocystidia; its basidia are also shorter, measuring 20–23 × 9–11 μm. The pileipellis and spores are similar to those of *P. lutulenta*.



Figs. 17–20. *Psathyrella vinescens* A. H. Sm. (Holotype): **17.** Cheilocystidia; **18.** Pileipellis; **19.** Pleurocystidia; **20.** Spores. (Bar = 10 μm)

P. baileyi (Figs. 5–8) and *P. vinescens* (Figs. 17–20) belong to subsect. *Lutenses*; the first differs by its long stipe (–10 cm), spores 9–9.7 × 5.5–6.3 μm, which are not adaxially flattened, and short basidia 20–23 × 8.5–9.5 μm, whereas the second shows mostly globose caulocystidia, much shorter utriform cheilocystidia (25–35 × 9–13 μm) and smaller spores (7.5–9.2 × 4.3–5 μm).

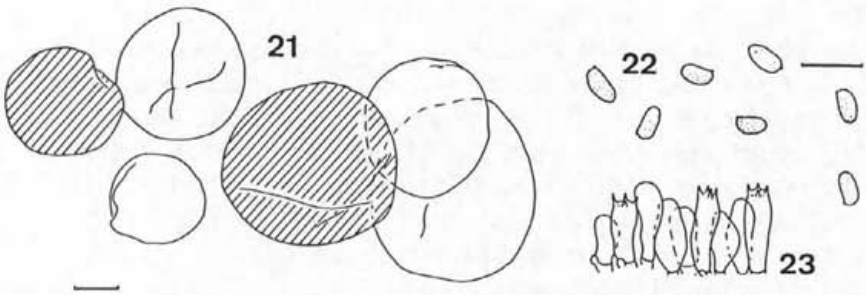
P. subpalustris (Figs. 13–16) fits within subsect. Spadiceogriseae; it shows a hymenoderm constituted only by one layer of globose cells, and practically only sphaeropedunculate cells along the lamellar edge.

Psathyrella ornatispora M. Villarreal et Esteve-Rav., sp. nov. (Figs. 21–23)

Etymology: from the latin word "ornatus" = ornamented and "sporis" = spores, because of its ornamented spores.

Basidiomata gregaria. Pileus 12–30 mm latus, convexus vel plano-convexus, manifeste umbonatus, obscure griseus, haud striatus, haud hygrophanus, totus granuloso-farinosus vel furfuraceus. Velo badio furfuraceus vel floccoso-squamulosus. Lamellae c. 43 stipitem attingentes, confertae, ventricosae, 1–2 mm latae, liberae, obscure tabacinae vel obscure brunneae et purpureo-tinctae, acie concolore. Stipes 30–38 × 2.5–3.5 mm, cylindraceus, ad basim leviter incrassatus, cavus, obscure brunneo-cinereus vel brunneo-purpureus, ob velum floccoso-furfuraceus. Sporae 4.5–6.8 × 2.5–3.4 μm, punctato-asperae, ellipsoideae, griseo-luteae, perspicuae, poro germinativo nullo. Basidia 12–16 × 5–7 μm, clavata, 4-sporigera. Pleurocystidia et cheilocystidia nulla. Pileipellis e cellulis formata. Terrestris in hibernaculo subtropico.

Typus: Hispania, Madrid, Atocha Railway Station, 7. Feb. 1997, legit F. Esteve-Raventós, C. Sánchez, M. Sosa et M. Villarreal, AH 26978.



Figs. 21–23. *Psathyrella ornatispora* M. Villarreal et Esteve-Rav. (Holotype): **21.** Elements of the pileipellis; **22.** Spores; **23.** Lamellar edge. (Bar = 10 μm)

Basidiomata gregarious. Pileus 12–30 mm in diam., convex to plano-convex, with broad central umbo, sometimes slightly depressed with age, brown (7.5 YR 4/2, 4/3) to dark brown (7.5YR 3/2), dry, with granular mealy-scaly or furfuraceous surface, not striate, apparently not hygrophanous, margin revolute in adult specimens. Veil forming a discontinuous floccose-furfuraceous layer on cap, very dark grey (10YR 3/1) to very dark greyish brown (10YR 3/2). Lamellae c. 43, reaching the stipe, very crowded, 1–2 mm broad, ventricose, free, tobacco brown (7.5YR 4/2, 3/2) to very dark brown or nearly black (7.5YR 2.5/1, 2.5/2) with purplish hue, edge entire and concolorous. Spore-print blackish. Stipe 30–38 × 2.5–3.5 mm, cylindrical, flexuose, somewhat bulbillous at the base, hollow, uniformly dark grey (7.5YR 4/1) to very dark grey (7.5YR 3/1) with purplish-violaceous hue, surface entirely covered by sparse blackish flocci on a fibrillose background. Context purplish-grey. Smell and taste not characteristic.

Spores 4.5–5.13–6.15(–6.8) × 2.5–2.76–3.2(–3.4); Q = (1.53–)1.56–1.86–2.16 (–2.2) [n = 21], narrowly ellipsoid to ellipsoid, minutely punctate, verruculose when observed under a S. E. M., in water pale yellowish-grey, darker in NH_4OH 10 %, translucent, without germ pore. Basidia 12–16 × 5–7 μm, clavate, 4-spored, hyaline, with sterigmata 1–1.5 μm long. Pleurocystidia and cheilocystidia absent or not differentiated from basidioles. Hymenophoral trama parenchymatous, with broad cells (7–20 μm broad), intermixed with some cylindrical hyphae 3–6 μm broad, with intraparietal grey-yellowish pigment in NH_4OH 10 %. Pileipellis a hymenoderm formed by 2–3 layers of subglobose cells, 15–30 μm broad, with yellowish-grey intraparietal pigment. Veil present on the pileus and stipe, consisting of chains of globose to subglobose cells, 25–55 μm, with parietal dark brown pigment. Caulocystidia absent. Clamp connections present at all septa.

Habitat: on soil of a greenhouse.

Material studied: SPAIN. Madrid: Atocha railway station: 7. Feb. 1997, coll. F. Esteve-Raventós, C. Sánchez, M. Sosa and M. Villarreal, AH 26978 (Holotypus).

This new species shows very distinctive features and can be easily recognised and separated from other members of sect. *Cystopsathyra* (Singer) Kits van Wav. by its overall blackish colours, small punctate spores and absence of cystidia.

Gröger (1986), when describing *P. globosivelata*, made a compilation of the species belonging to this section, containing a total of six species (*P. friburgensis* not validly described yet), three of them described from Europe (Orton, 1964; Gröger, *loc. cit.*), and the rest from North America (Singer, 1959; Smith 1972). None of them shares the peculiar characters of *P. ornatispora*. Moreover ornamented spores and absence of typical cystidia seem to be previously undescribed features in this section. More recently Contú (1991) described *P. bivelata* from Cagliari Botanical Garden, a taxon which shows a granulose-punctate veil of ellipsoid, catenulate cells at the pileus centre, and a "hyphoid" whitish marginal veil.

According to Singer (1962), who considers *Cystopsathyra* a subgenus of *Psathyrella*, this taxon would be characterised not only by the granulose veil formed by sphaerocysts, but also by the presence of pleurocystidia. From a morphological point of view, *P. ornatispora* reveals that the presence of cystidia in *Cystopsathyra* is not significant.

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CZECH MYCOL. 54 (1–2), 2002

The mycoflora of Roman coastal woodlands 7th contribution: some species of the WWF oasis of Macchiagrande: Chaetocalathus craterellus and Crepidotus calolepis

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In this seventh contribution dedicated to the knowledge of the mycoflora of Roman coastal woodlands, the authors describe two species collected in the Macchiagrande (RM) World Wildlife Fund oasis, i.e. *Chaetocalathus craterellus* and *Crepidotus calolepis*. The two species are described in detail and illustrated with (colour photographs and) line drawings; their taxonomy is briefly discussed.

Key words: Basidiomycetes, *Chaetocalathus, Crepidotus, Chaetocalathus craterellus, Crepidotus calolepis*, taxonomy, Italy, Latium.

Migliozzi V. a Camboni M. (2002): Mykoflora římských pobřežních lesů. 7. příspěvek: některé druhy lokality Macchia grande (území WWF). – Czech Mycol. 54: 93–100

Článek je věnován mykofloře římských lesnatých území. Autoři popisují dva druhy sbírané v Macchiagrande (RM) – uzemí pod ochranou Světového fondu pro ochranu přírody a to *Chaetocalathus craterellus* a *Crepidotus calolepis*. Oba druhy jsou podrobně popsány a vyobrazeny, jejich taxonomie je krátce diskutována.

PRELIMINARY NOTE

This contribution has been realised as part of the work of the "group" working on the Study of the Distribution of Fungal Species of the strictly Mediterranean area of Latium. This group is formed by mycologists belonging to the CRSM (Centro Romano Studi Micologici, Rome), NM (Nuova Micologia, Rome) and A. Mico. L. (Associazione Micologica Laziale, Ostia Lido).

Chaetocalathus craterellus (Durieu et Lév.) Singer

Syn.: *Agaricus craterellus* Durieu et Lév.
Pleurotus craterellus (Durieu et Lév.) Fayod
Calathinus craterellus (Durieu et Lév.) Quél.
Pleurotellus craterellus (Durieu et Lév.) Quél.

Crinipellis craterellus (Durieu et Lév.) Pat.
Lachnella craterellus (Durieu et Lév.) Locq.
Pleurotellus patelloides P. D. Orton

Macroscopic characters

Habit: pleurotoid.

Cap: 0.3–1.2 (–1.8) cm across, generally resupinate, conchate, subspheric at first, later expanded campanulate, flattened at last. The cuticle is white, off-white or cream white and looks silky or densely felt-like, even hirsute, due to the presence of clusters of minute hairs. The margin is hirsute and becomes sulcate only in adult specimens. Towards the disc, near the point where the carpophore is attached to the substrate, the coloration is more intense, more or less cream.

Hymenophore: constituted by gills of the same colour as the cap, crowded in young specimens, converging in a more or less excentric point opposite to where the cap is attached to the woody substrate. At this point an almost invisible pseudostipe may be present, like a tiny projection on the pileal surface. The lamella edge can be slightly ventricose in adult specimens.

Flesh: very exiguous to absent, reviving after being remoistened. Smell and taste not distinctive.

Ecology: the specimens described and illustrated here were found on November 11^{th}, 2001, numerous and abundant in different spots, on dead twigs of *Smilax* in Mediterranean scrub, in the Macchiagrande WWF oasis (cartographic reference IGM 3732 Fregene), at sea level, on consolidated sandy soil. Their occurrence was observed the same day also on other dried out woody debris. Tree species occurring in this locality include *Quercus ilex*, *Erica arborea*, *Arbutus unedo*, *Pistacia lentiscus* and *Phyllirea angustifolia*. The species has also been observed in the Castelfusano pineland (RM), in a similar environment.

Microscopic characters

Spores: smooth, thin-walled, hyaline, dextrinoid with Melzer's reagent; ellipsoid, sometimes with an irregular outline because of an enlarged but not rounded base, in other cases slightly constricted; apiculus small. The spores measure 7.0–8.5 (–9.0) × 5.5–6.5 (–7.0) μm.

Basidia: claviform, 4-spored, measuring (25–) 27–32 × (6–) 7–8.5 μm, bearing medium to small-sized sterigmata.

Cheilocystidia: lobate, coralloid, with several irregularly shaped ends. They measure 25–40 (–80) × 5–10 (–13) μm, the terminal elements reaching 2.5–4 μm across.

Pleurocystidia: not observed.

Chaetocalathus craterellus (Durieu et Lév.) Singer. Basidiomata

Crepidotus calolepis (Fr.) P. Karst. Basidiomata

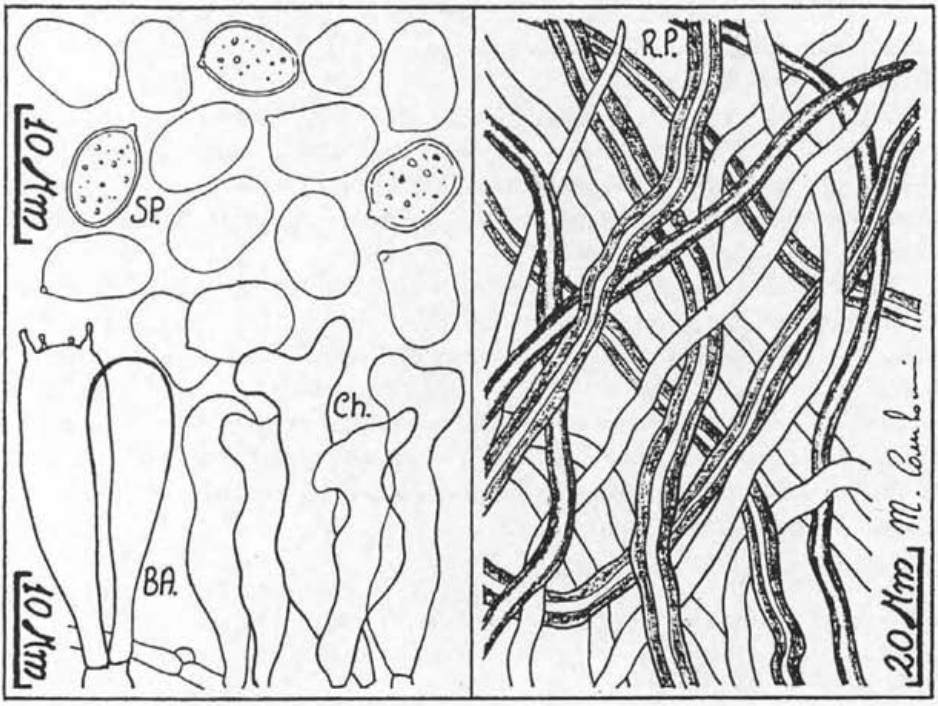

Fig. 1. *Chaetocalathus craterellus*: spores, basidia, cheilocystidia, pileus covering.

Pileipellis: composed of elongate elements, 160–42 (–500) × (3.0–) 4.0–6.5 (–8.0) µm, similar to setae, with a thick wall (up to 2 µm across), tapering but with a blunt end, dextrinoid with Melzer's reagent.

Clamp connections: present and abundant.

Discussion

Chaetocalathus craterellus is the only species of the genus *Chaetocalathus* Singer occurring in Europe, while many other species exist in other parts of the world. Macroscopically this fungus has a pleurotoid habit and could be confused, if the colour of the gills is not observed, with some species in the genus *Crepidotus*. On the other hand, microscopically it closely resembles species of the genus *Crinipellis* Pat. (morphology of cheilocystidia, spores and pileipellis). Kühner's (1980) remark is worth being reported: "En 1942, [Singer] a separé, dans un genre *Chaetocalathus* Sing., ceux des *Crinipellis* dont le chapeau est fixé au support par le sommet, en écrivant que les crins de la surface piléique sont, comme ceux des *Crinipellis* mésopodes, pseudoamyloïdes ou amyloïdes. Il est pour nous évident que *Chaetocalathus* ne peut être admis que comme sous-genre de *Crinipellis*".

Nevertheless, *Chaetocalathus* is nowadays considered by several authors as an autonomous genus within the tribe *Marasmieae* Fayod ex Schroet. (Antonín et Noordeloos 1997, Bon 1999).

In Europe *C. craterellus* is widely distributed and has been recorded in Albania (Antonín 1993), Croatia (Antonín and Noordeloos 1997), France (Bidaud 1987), Germany, Great Britain (Watling and Gregory 1989), the former Yugoslavia (Stropnik et al. 1988), Portugal and Spain (Pascual-Vidal 1989, Siquier et al. 1998).

As for Italy, the species has earlier been recorded by Perco (1988) and Lonati (1995). This latter record, which is the first for Latium, is atypical for absence of the cheilocystidia and shows remarkable similarities with plate 360 published in Lonati (2000).

Macroscopically. *C. craterellus* is strikingly similar to *Pleurotellus hypnophilus* (Berk.) Fayod (compare Zuccherelli 1993); to separate these two taxa it is sufficient to observe the spore morphology: *P. hypnophilus* has ellipsoid-cylindric spores with a lesser diameter (2.6–3.0 μm).

Crepidotus calolepis (Fr.) P. Karst.

Syn.: *Agaricus calolepis* Fr.
Crepidotus mollis var. *calolepis* (Fr.) Pilát
Crepidotus mollis subsp. *calolepis* (Fr.) Norstein
Crepidotus fulvotomentosus Peck
Crepidotus calolepidoides Murrill

Macroscopic characters

Habit: conchate to conical-conchate during the first development stages, later, when mature, even completely flattened.

Cap: semicircular, laterally attached to the substrate, small to medium, measuring (1.5–) 2.0–4.0 (–5.5) cm across. Surface dry to moderately gelatinous due to the presence of a thin separable pellicle, uniformly covered by many little brownish, rusty brown or rusty orange scales. The scales are usually denser next to the point of attachment to the substrate. The cap colour is yellow, dull yellow, pale ochre-yellow; in immature fruiting bodies the surface is definitely paler next to the cap margin, also because the squamules, not yet well developed, are rarer. Margin thin, regular.

Gills: crowded, white at first, later pale greyish, brownish grey, finally brownish ochre. This colouring process starts from the centre of the carpophore, while the outer part of the gills remains paler for a long time.

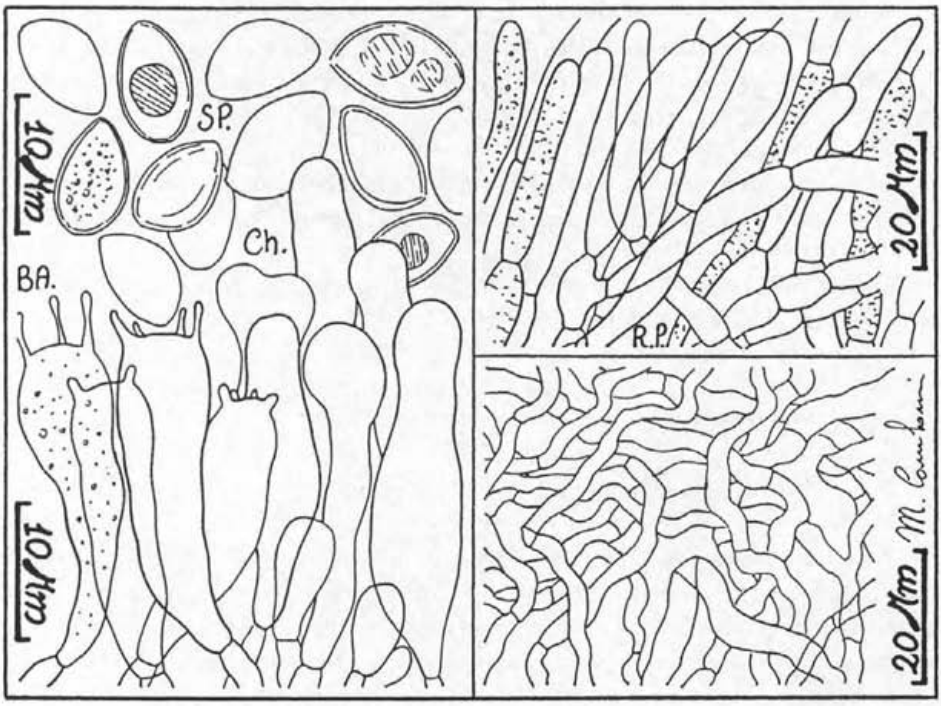

Fig. 2. *Crepidotus calolepis*: spores, basidia, cheilocystidia, structure of the scales of the pileus covering, structure of the white mycelial felt.

Stipe: absent to hardly recognisable. Next to the attachment of the fruiting body to the substrate it is always possible to observe a distinct white mycelial felt, which later retracts and diminishes as the fruiting body develops.

Flesh: white to cream white, elastic. Smell and taste not distinctive.

Ecology: the specimens described and illustrated here have been collected on a decaying *Quercus robur* stump, next to the Macchiagrande WWF oasis (cartographic reference IGM 3732 Fregene), at sea level, on consolidated sandy soil. Other collections have been made all along the Latium coasts, in several localities, always on fallen trunks or branches of broad-leaved trees (S. Severa, Castelfusano, Decima Malafede, Tre Cancelli, Lido dei Pini and Parco Nazionale del Circeo). The species is also common in inland areas of Latium.

Microscopic characters

Spores: smooth, moderately thick-walled, ochraceous with a yellowish hue; irregularly ellipsoid to ellipsoid or almost amygdaliform, measuring (7.5–) 8.0–10.0 × × 5.0–6.0 (–6.5) μm; germ pore absent, apiculus rather small.

Basidia: claviform to cylindrical-claviform, 4-spored, measuring (17–) 20–28 (–32) × 6–7 μm; sterigmata rather long, up to 6–7 (–9) μm.

Cheilocystidia: 30–45 × 7–10 (–13) μm, claviform to apiculate, sometimes lageniform or slightly constricted.

Pleurocystidia: not observed.

Pileipellis: the scales are formed by evenly arranged long, catenulate hyphae, with a rough to strongly encrusted surface. The terminal cell, not well differentiated, measures 15–50 × 5–11 (–13) μm.

The attachment to the substrate is formed by irregularly arranged, tangled and contorted hyphae, with a diameter of 2.5–5 (–6.5) μm.

Clamp connections: not observed.

Discussion

Crepidotus calolepis belongs to subgenus *Crepidotus* (= subgenus *Gelocutis* Pilát, nom. inval.), which is principally characterised by smooth spores, short hyphae in the pileipellis and absence of clamp connections. This subgenus corresponds to the *C. mollis* complex, which comprehends *C. mollis*, *C. calolepis* and *C. calolepis* var. *squamulosus* (= *C. mollis* var. *squamulosus*).

We follow the systematics proposed by Senn-Irlet (1995). According to this study, *C. mollis* is characterised by fruiting bodies devoid of scales on the cap, which is uniformly yellowish or cream yellowish, and by spores measuring 7–10 × 5–6.5 μm (8–11 × 5–7 μm according to Ortega et Buendia, 1989).

On the other hand, *Crepidotus calolepis* var. *calolepis* and *C. calolepis* var. *squamulosus* are recognisable due to the occurrence, of evident reddish orange, reddish, brown red to brown minute scales on the cap. While in *C. mollis* the pileipellis hyphae are smooth to only weakly encrusted, in *C. calolepis* they are always encrusted, sometimes in a very obvious way. The distinction between var. *calolepis* and var. *squamulosus* is made on the basis of the spore size:

– 7–10 × 5–7 μm in var. *calolepis*;

– 8.5–12 × 6–7.5 μm in var. *squamulosus*.

Further data may be found in Senn-Irlet (loc. cit.: Fig. 35 and Table IV).

Crepidotus calolepis is a species with a prevalently Mediterranean distribution, even if it has been recorded also from Great Britain and Ireland (Watling et al. 1989, fruiting bodies of reduced size, 5–15 mm), boreal Europe (Norstein 1990), Denmark (Lange 1938), Moldova (Roux 1997), Estonia, Sweden and North America (Senn-Irlet, loc. cit.). Numerous records exist for the Mediterranean area; besides those already cited we can mention Italy, Portugal (Hausknecht et Reinwald 2001) and Spain (Pascual et Vidal 1989).

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On the ecology of Scytinostroma portentosum found in Poland

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Bujakiewicz A. (2002): On the ecology of Scytinostroma portentosum found in Poland. – Czech Mycol. 54: 101–104

Scytinostroma portentosum (Berk. et Curt.) Donk is recorded for the first time from Poland.

Key words: Basidiomycota, Lachnocladiales, *Scytinostroma portentosum*, Poland

Bujakiewicz A. (2002): K ekologii druhu Scytinostroma portentosum nalezeného v Polsku. – Czech Mycol. 54: 101–104

Druh *Scytinostroma portentosum* (Berk. et Curt.) Donk byl poprvé nalezen v Polsku.

INTRODUCTION

Scytinostroma portentosum (Berk. et Curt.) Donk [*Corticium portentosum* Berk. et Curtis; *Scytinostroma hemidichophyticum* Pouzar 1966]

The position of the genus *Scytinostroma* as a genus has remained in dispute over the years. Some authors place it in *Corticiaceae* s.l. (Jülich 1984, Krieglsteiner 2000), others have put it into *Lachnocladiaceae* as a family of its own (Domański 1975, Parmasto 1970, after Strid 1975) and still others consider it to belong to the order *Lachnocladiales* (Hansen and Knudsen 1997). There are 9 species of *Scytinostroma* recognised over the world, and 5 species occur in Europe (Krieglsteiner 2000).

RESULTS AND DISCUSSION

Scytinostroma portentosum, a troublesome fungus, sometimes split into two different, not always easy distinguishable species (Pouzar 1966, Domański 1975, Jülich 1984, Arnolds et al. 1995) is a widely distributed but rarely recorded species. It forms resupinate perennial basidiomes of a strong naphthalene smell, with dimitic hyphal system, dextrinoid skeletal hyphae, abundant long dendrohyphidia in the hymenium and globose or subglobose smooth amyloid spores.

It occurs mainly in lowlands in north temperate regions as well as in southern countries, i.e. in Australia, New Zealand, Asia (India, China, Siberia), in South America and North America and in Europe (Teng 1996, Krieglsteiner 2000). In

Europe it was recorded in Spain, Italy, Yugoslavia, France, the Netherlands and Great Britain, Switzerland, Austria, Hungary, Germany, Slovak Republic and also in the Nordic countries (Denmark, Norway, Sweden and Finland (Jülich 1984, Ryman and Holmasen 1984, Krieglsteiner 2000).

Scytinostroma portentosum is a saprophytic wood-inhabiting fungus active in the late initial and optimal stadium of a white rot decomposition and can also be a root parasite. It occurs exclusively on wood of broad-leaved trees, e.g. in the Nordic countries on *Salix caprea*, *Ulmus*, *Fagus* (Hansen and Knudsen 1997) and *Alnus* (Strid 1975), in the Netherlands on *Salix*, *Fraxinus* and *Syringa* (Arnolds et al. 1995), in Great Britain on *Fraxinus* (Pegler and Legon al. 1992, Pegler 1996), in Germany on *Hedera helix* (Breitenbach and Kränzlin 1986) and on *Salix*, *Fagus*, *Fraxinus*, *Quercus*, *Populus*, *Robinia*, *Acer*, *Betula*, *Carpinus*, *Corylus* and *Sambucus* (Krieglsteiner 2000). Pouzar (1966), describing *Scytinostroma hemidichophyticum*, reports the following broad-leaved species as its substratum in the Slovak Republic: *Fagus sylvatica*, *Quercus pubescens*, *Salix caprea*, *Robinia pseudacacia*, *Carpinus betulus* and *Alnus glutinosa*. It sometimes grows on mosses and debris of grasses (Domański 1975).

The species occurs in mesophilous, mainly beech and oak-hornbeam forests, but also in alluvial, riverside ash-alder forests and grows throughout the whole year, mostly in spring and autumn (Krieglsteiner 2000).

Scytinostroma portentosum is placed in group C of endangered European macrofungi (Ing 1993). In Poland category of threat E is suggested.

This rare and interesting species was found in Poland for the first time in Puszczykowskie Góry reserve in Wielkopolski National Park, between Łęczyca and Puszczykowo, about 20 km SW of Poznań (Fig. 1). Basidiomes were recorded on April 10th, 1992 (leg. I. Wilczyńska, det. Å. Strid) on a decayed stump of *Alnus glutinosa* (?) in the association *Astrantio-Fraxinetum* Oberd. 1953. A phytosociological relevé made by dr A. Brzeg on May 15, 1993 consists of the following data: density of trees A – 70%, shrubs B – 30%, cover of herb layer C – 70%, mosses D – 5%; area of plot – 650 sq.m, number of species – 44 Ch. D. Ass. – *Astrantia major* (1.1), *Mercurialis perennis* (3.3), *Leucojum vernum* (+), *Crepis paludosa* (1.1): Ch. All. – *Padus avium* (1.1), *Ficaria verna* (2.3), *Chrysosplenium alternifolium* (2.3), *Carex remota* (2.2), *Stachys sylvatica* (+), *Gagea lutea* (+); Ch. Cl. – *Acer platanoides* a (1.1), b (+), *Corylus avellana* b (1.1), c (+), *Euonymus europaeus* b (+), *Cornus sanguinea* b (+), *Aegopodium podagraria* (2.2), *Ranunculus lanuginosus* (2.2), *Galeobdolon luteum* (2.1), *Anemone nemorosa* (2.2), *Anemone ranunculoides* (1.1), *Fagus sylvatica* (r); accompanying species – *Alnus glutinosa* a (4.4), c (+), *Sambucus nigra* c (3.3), *Caltha palustris* (2.3), *Urtica dioica* (2.2), *Ranunculus repens* (2.2), *Galium aparine* (2.1), *Veronica beccabunga* (1.2), *Solanum dulcamara* (1.2), *Impatiens parviflora* (1.1), *Lysimachia vulgaris* (+), *Ajuga reptans* (+), *Glechoma hederacea* (+), *Alliaria officinalis* (+), *Ribes nigrum* (+),

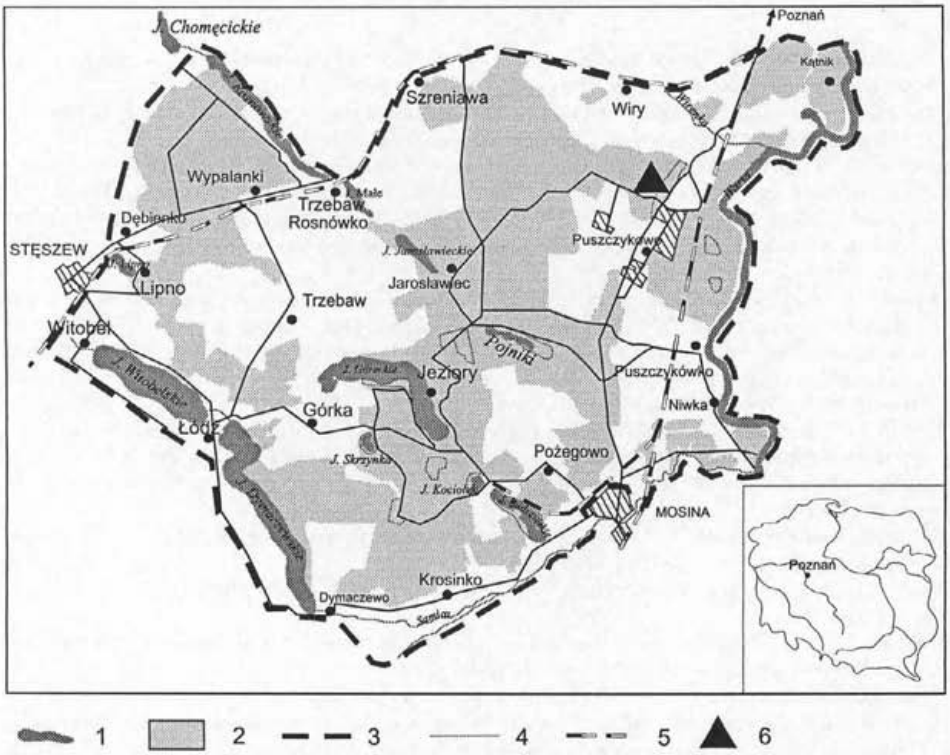

Fig. 1. Locality of *Scytinostroma portentosum* in Poland (map according to Szafran (1959), scanned by Dorota Obiegała): **1** – lakes, **2** – forests, **3** – boundaries of Wielkopolski National Park, **4** – boundaries of the reserves, **5** – railroad, **6** – locality of *S. portentosum*.

Stellaria media (+), *Athyrium filix-femina* (r), *Dryopteris spinulosa* (r) and the mosses: *Plagiomnium ellipticum* (1.1), *Plagiothecium nemorale* (1.1), *Brachythecium rutabulum* (1.1), *Rhizomnium punctatum* (1.1), *Caliergonella cuspidata* (+), *Eurhynchium hians* (+).

Even if the habitat of *Scytinostroma portentosum* described above may suggest an ecological binding of that fungus with streamside carrs, this requires further study.

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Notes on the taxonomy of Cordyceps longisegmentis based on collections from the Czech Republic

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Holec J. and Suková M. (2002): Notes on the taxonomy of Cordyceps longisegmentis based on collections from the Czech Republic. – Czech Mycol. 54: 105–111

Fresh and herbarium material of the rare species *Cordyceps longisegmentis* (Ascomycetes, Clavicipitaceae) from the Czech Republic is thoroughly described and discussed. Fresh stromata were found in relict pine woods in the Bohemian Forest. Revision of the herbarium material from PRM showed that most collections labelled as *Cordyceps capitata* are in fact *Cordyceps longisegmentis*. In the collections studied the length of ascospore parts was constantly smaller than in the North American material. Other European mycologists have also observed this fact. Consequently, the European and American populations could be slightly different. Differences between the related species *C. longisegmentis* and *C. capitata* are discussed.

Key words: fungi, Ascomycetes, *Cordyceps*, taxonomy, ecology, distribution, Bohemian Forest

Holec J. a Suková M. (2002): Notes on the taxonomy of Cordyceps longisegmentis based on collections from the Czech Republic. – Czech Mycol. 54: 105–111

V článku je podrobně popsán a diskutován vzácný druh *Cordyceps longisegmentis* (Ascomycetes, Clavicipitaceae). Popis je založen na čerstvém materiálu sbíraném v reliktních borech na Šumavě a je doplněn o některá pozorování získaná studiem sušených plodnic z herbáře mykologického oddělení Národního muzea. Revize herbářového materiálu ukázala, že téměř všechny starší položky původně určené jako *Cordyceps capitata* představují druh *C. longisegmentis*. U všech studovaných položek byla délka částí askospor menší než je udáváno v pracích založených na studiu materiálu ze Severní Ameriky. Totéž pozorovali i jiní evropští mykologové. Mohlo by to znamenat, že evropské a severoamerické populace tohoto druhu se poněkud liší. V článku jsou také probírány rozdíly mezi *C. longisegmentis* a příbuzným druhem *C. capitata*.

INTRODUCTION

Since 1992 the first author has carried out an intensive mycofloristic investigation of the Czech part of the Bohemian Forest (see e.g. Holec 1997a, 1997b, 1998, 1999, 2000, 2001a, 2001b; Holec & Pouzar 1999). This important mountain range is situated on the border between the Czech Republic on the one side and Germany and Austria on the other side. The local name of the Czech part is "Šumava". The most valuable area is protected as the "Šumava National Park"; on the German side as the "Nationalpark Bayerischer Wald". The mycoflora of

the German national park has been thoroughly described by Luschka (1993). Records from the Czech part are published in numerous smaller contributions of various authors (e.g. Hilitzer, Kavina, Velenovský, Pilát, Herink, Kubička, Svrček, Kotlaba, Pouzar, Holubová-Jechová, Réblová etc.). Short and incomplete reviews of these works were published by Svrček (1965), Váňa (1996) and Holec (1997a, 2000). Many rare, interesting or even new species of fungi are found in the Bohemian Forest every year. Finds of the rare species *Cordyceps longisegmentis* are discussed here. The results are completed by a study of herbarium specimens of *C. longisegmentis* from various regions of the Czech Republic. The ecology and distribution of *Cordyceps* species in the Bohemian Forest has been thoroughly described in a previous paper (Holec 2001b).

MATERIAL AND METHODS

Macrocharacters were observed on fresh stromata. Microcharacters were studied using hand-made sections of dried material. Sections were observed in various media: pure water, 5 % KOH solution, Melzer's reagent, and a 0.5 % solution of Toluidine Blue. Abbreviations: diam.: diameter, PRM: mycological herbarium of the National Museum, Prague.

RESULTS

Cordyceps longisegmentis Ginns, Mycologia 80(2): 219, 1988

Macrocharacters (according to fresh stromata found in the Bohemian Forest: PRM 897286, 897871): Stromata solitary or growing in a small group, 5–12 cm high, divided into a long stipitate part and an upper fertile part. Fertile part nearly globose, 0.7–1.0 cm diam., sharply separated from the stipe, viscid when fresh, lustrous, minutely verrucose by the protruding ostioles of the perithecia, upper part black-brown, lower part ochre-brown. Stipe 4–11 × 0.5–0.7 cm, cylindric, longitudinally striate, bright green-yellow, minutely grey-blackish granulose in upper part, basal part directly attached to fruitbody of *Elaphomyces* sp., no mycelial cords or fibrils observed.

Microcharacters (studied in well-preserved dried material from the Bohemian Forest: PRM 897286, 897871; size of ascospore parts is based on measurements of all collections studied, see below): Cortical layer of the fertile part about 20–30 μm thick, pale olive-greenish, a distinct palisade of parallel to slightly flexuose septate hyphae 2.0–3.5 μm diam., in upper part embedded in a pale greenish gelatinous substance visible in Melzer's reagent but not in KOH, the substance stains slightly purplish in Toluidine Blue (metachromatic reaction). Tissue between this layer and

perithecia olive-brown, a textura epidermoidea, cells 2.5–8.0 μm diam., with wall thickened up to 0.5 μm, olive-brown. Perithecia embedded, ellipsoid with ostiolum, 450–550 × 280–320 μm (without ostiolum). Perithecium wall 20–33 μm thick, outer layer pale beige-brown to brown, of elongated to nearly isodiametric cells with refractive wall up to 1 μm thick, size 3–4.5 × 2.5–3 μm, inner layer pale ochre to pale beige-brown, of elongated thick-walled cells, size 6.5–16 × 1.5–2.5 μm. Periphyses cylindric, hyaline, smooth, apical part clavate, up to 3 μm broad, basal part septate. Asci cylindric, slightly attenuated in basal and apical part, 350–430 × 10–14.5 μm, thin-walled, not amyloid, with distinct ascoapical apparatus visible as two hyaline bodies separated by a narrow channel. Paraphyses not found. Ascospores not colouring in Melzer's reagent, filiform, narrow, multiseptate, breaking into parts when mature, parts (14.5-)25–40(-43) × (2.5-)3.5–4.8(-5.2) μm (the smaller values relate to terminal parts, which are distinctly smaller than the medium ones), fusiform-cylindric with slightly attenuated and truncate apices, wall 0.8–1.2 μm thick, thickened up to 2.5–5 μm at apices, content with many droplets when young, homogeneous when old. Stroma interior made up of cylindric but flexuose and slightly interwoven hyphae 2.5–7.0 μm diam., hyaline, thin-walled. Cortical layer of the stipe about 300–400 μm thick, olive-brown, a textura porrecta of parallel cylindric hyphae 3–7 μm diam., frequently septate, wall about 0.5 μm thick, green-brown, hyphae in the uppermost layer with olive-brown incrustations, with nests of interwoven hyphae forming a granulate covering on the stipe surface. Stipe interior a textura intricata of loosely arranged interwoven hyphae 1.5–5 μm broad, septate, hyaline, wall about 0.5 μm thick.

Collections studied: Czech Republic: Bohemian Forest, "Povydří" protected area, W of Vydra river, stony NNE slope under "Mnich" rock (about 2.3 km SEE of Srní village), altitude 850 m, relict pine wood composed of *Pinus sylvestris* and *Picea abies*, sporadically with *Betula*, with undergrowth of *Sphagnum*, other mosses, and *Vaccinium myrtillus*; growing on *Elaphomyces* sp. among mosses, 19 Sept. 1998, leg. et det. J. Holec, PRM 897286 (JH 568/1998). – Bohemian Forest, "Povydří" protected area, E of Vydra river, 1.9 km NNE of Srní village, relict pine wood composed of *Pinus sylvestris, Betula*, sporadically with *Picea abies*, on stony ground, stones covered with mosses, W slope; obviously on *Elaphomyces* sp. (but fruitbody not found) among mosses covering a big stone, 9 Oct. 2000, leg. et det. J. Holec, PRM 897871 (JH 203/2000). – Bohemia, Čáslav, 1854, leg. Veselsky, det. as *C. capitata* (PRM 169290). – Eastern Bohemia, Kačina, 1844, leg. Peyl, det. as *C. capitata* (PRM 169284, 169285). – Bohemia, Sušice ("Schuschitz", probably a village in eastern Bohemia near Chrudim), leg. Peyl, det. as *C. capitata* (PRM 169286). – Moravia, Žarošice, mixed broadleaved forest dominated by *Quercus*, on *Elaphomyces*, Sept. 1940, leg. V. Vacek, det. as *C. capitata* (PRM 169289).

Cordyceps capitata (Holmsk.: Fr.) Link, Handb. 3: 347, 1833

= *Cordyceps canadensis* Ellis et Everh., Bull. Torrey Bot. Club 25: 501, 1898.

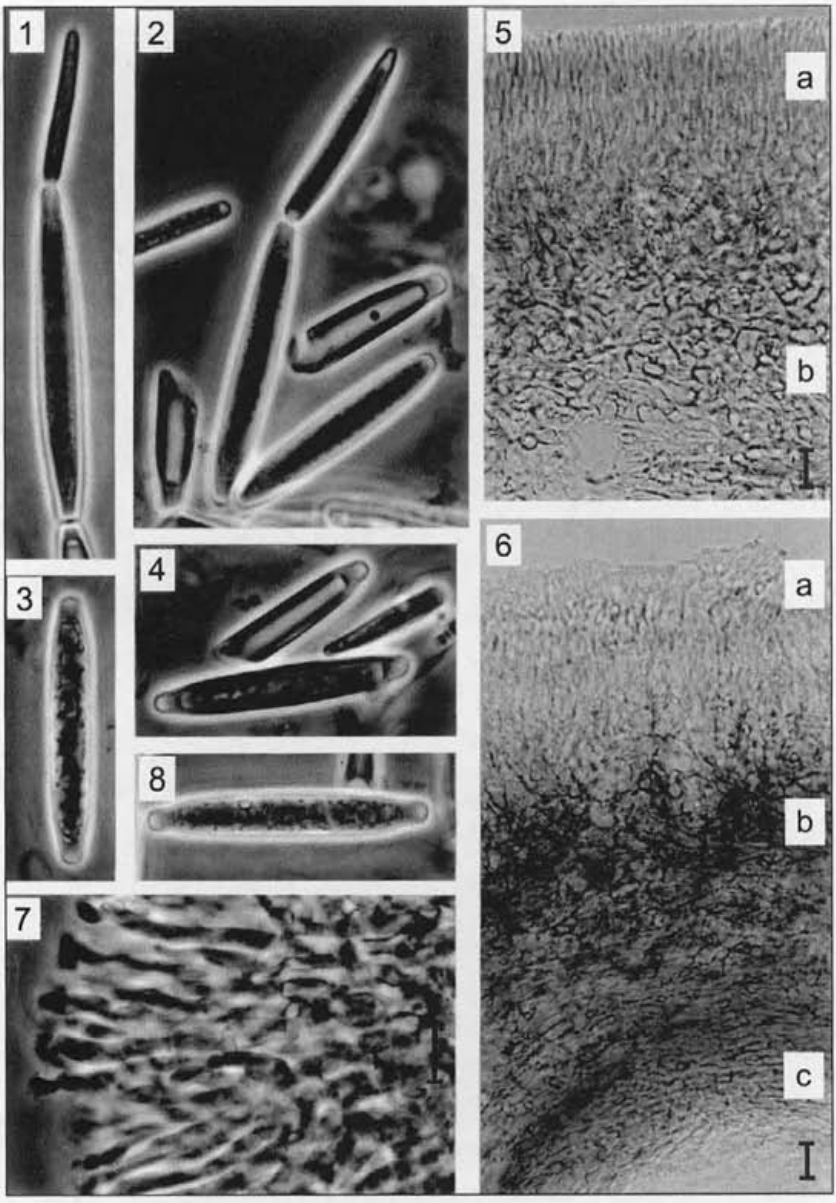
Short description (according to fresh stromata, see below): Stromata growing in a group but not fasciculate, divided into a long stipitate part and an upper fertile part. Fertile part nearly globose, about 1 cm broad, sharply separated from the stipe, finely verruculose from the protruding ostioles of the perithecia, dark brown with yellowish colour shining through. Stipe up to 18 cm long (in spite of this length no fruitbodies of *Elaphomyces* were observed), 0.3 cm thick, cylindric, longitudinally striate, above-ground part 8 cm long, greyish-yellowish, floccose, underground part 10 cm long, white.

Diagnostic microcharacters: Cortical layer of the fertile part made up of densely interwoven hyphae showing a pseudoparenchymatous structure in section. Ascospores filiform, at maturity breaking into several parts, size of the parts (15-)17–20(-23) × 2.5–3.0(-3.5) μm, shape cylindric or slightly fusiform-cylindric, thin-walled, with truncate apices when mature.

Collection studied: Czech Republic: Bohemian Forest, 3 km N of site called Březník near Modrava village (distr. Klatovy), "Cikánská slať" peat bog, eastern part between the Modravský potok stream and the central part of the peat bog, altitude 1070 m, humid to waterlogged spruce forest with undergrowth of *Vaccinium myrtillus* and *Sphagnum* (forest with a natural character); obviously on *Elaphomyces* (its fruitbodies not found) among *Sphagnum*, 9 Oct. 1998, leg. et det. J. Holec, PRM 897594 (JH 926/1998).

Habitats of *C. longisegmentis* with special emphasis on the Bohemian Forest

Most collections of *Cordyceps longisegmentis* held at PRM are from the 19th century. No data on the habitats are written on their labels. The only collection provided with these data is from Moravia (Žarošice, leg. V. Vacek, PRM 169289). The species was found in a mixed broadleaved forest dominated by *Quercus* at an altitude of about 400 m. The two recent finds of *Cordyceps longisegmentis* from the Bohemian Forest are from relict pine woods of the association *Betulo carpaticae-Pinetum* Mikyška 1970. This forest type is typical by its occurrence on rocks, boulder slopes or screes. The tree layer is composed of *Pinus sylvestris, Picea abies* and *Betula* (mainly *B. carpatica*). The soil surface is densely covered with mosses (often *Sphagnum*), lichens and *Vaccinium myrtillus*. The geological background is made by granite. The vegetation is natural, minimally influenced by man and included in the first (strictly protected) zone of the "Šumava National Park". This fact also refers to the habitat of *Cordyceps capitata* in the "Cikánská slať" peat bog. The species was found in a humid to waterlogged montane spruce forest with undergrowth of *Vaccinium myrtillus* and *Sphagnum*. The only find



Figs. 1, 2, 3, 4, 8: Ascospore parts observed in phase contrast. Terminal parts are short and narrow. The wall of mature parts is distinctly thickened at apices. Fig. **5:** Longitudinal section of the fertile part of the stroma mounted in KOH, a: cortical layer (palisade of narrow hyphae), b: tissue between cortical layer and perithecia (textura epidermoidea). Fig. **6:** Longitudinal section of the fertile part of the stroma mounted in Melzer's reagent, a: cortical layer, hyphal ends are embedded in a gelatinous substance, b: see above, c: perithecium wall. Fig. **7:** Cortical layer of the fertile part of the stroma; the hyphae form a palisade-like structure. Scale bar = 10 μm.

Fig. 9. Fresh stromata of *Cordyceps longisegmentis* in the field (Bohemian Forest, "Povydří" protected area, PRM 897286, for details see collections studied).

Fig. 10. Fresh stromata of *Cordyceps longisegmentis* with their substrate - *Elaphomyces* sp. (for explanations see Fig. 9).

of *C. capitata* from the German part of the Bohemian Forest (Luschka 1993) is from an almost identical habitat (waterlogged spruce forest of the association *Soldanello-Piceetum bazzanietosum* at an altitude of 755 m). In the Bohemian Forest, both *Cordyceps* species seem to be confined to relics of natural vegetation.

DISCUSSION

Cordyceps longisegmentis is readily recognised by its long and broad ascospore parts (longer than 30 μm, 4–5 μm broad, see Ginns 1988) with truncate, thick-walled apices and narrowly fusiform shape. In the related and similarly looking species *Cordyceps capitata*, the ascospore parts are thin-walled, cylindric and usually measure 12–27 × 2–3.5 μm (Maas Geesteranus 1963, Ginns 1988). Moreover, the cortical layer of the stroma has a palisade-like structure in *C. longisegmentis*, whereas in *C. capitata* the layer consists of interwoven hyphae pseudoparenchymatous in section (Mains 1957, Maas Geesteranus 1963, Ginns 1988).

Until 2000, *Cordyceps longisegmentis* has not been reported from the Czech Republic. However, the species was collected here in the past (as *C. capitata*, see collections studied). The recent finds described here are the first ones for the Bohemian Forest (see also Holec 2001b).

In Europe, *Cordyceps longisegmentis* was recognised by Maas Geesteranus (1963), but the finds were published under the name *Cordyceps canadensis* Ellis et Everh. Maas Geesteranus applied the conclusions of Mains (1957), who clearly described differences between the two taxa in the *C. capitata* group using material from North America. Mains used the name *Cordyceps canadensis* for the species with greater ascospore parts. However, a review of the original descriptions of *C. capitata* and *C. canadensis* and a detailed type study of *C. canadensis* showed (Ginns 1988) that the two taxa are conspecific. Thus, the name *C. canadensis* is a synonym of *Cordyceps capitata* (Holmsk.: Fr.) Link. As no older name was available for the species with greater ascospore parts, Ginns (1988: 219) described it as a new species under the name *Cordyceps longisegmentis*. Consequently, older European finds published as *Cordyceps canadensis* (Maas Geesteranus 1963, Dennis 1981, Phillips 1981) should be reported as *Cordyceps longisegmentis*. The correct name was used e.g. by Arnolds et al. (1995) and Hansen & Knudsen (2000).

It is worth mentioning that in collections of *Cordyceps longisegmentis* from the Czech Republic the length of ascospore parts is only (14.5-)25–40(-43) μm. Similarly, Maas Geesteranus (1963) reports (19.7-)22.5–49.5(-62.0) μm for collections from the Netherlands (given as *C. canadensis*) and Hansen & Knudsen (2000) 30–47 μm for material from the Nordic countries. On the other hand, Ginns (1988) gives (12-)40–65 μm for material from Canada and the United States. The comparison shows that the length of ascospore parts is somewhat different in

European and North American collections. Except for the length, other characters remain identical. Consequently, the European and North American populations seem to be conspecific at the present state of knowledge. It is possible, however, that the European populations distinguished by shorter ascospore parts slightly differ from the American ones. An isoenzyme or DNA study would be desirable to evaluate the difference.

The related species *Cordyceps capitata* has also been found in the Czech part of the Bohemian Forest (see results). Its find (PRM 897594) perfectly fits the descriptions in the literature (Mains 1957, Maas Geesteranus 1963, Dennis 1981, Breitenbach & Kränzlin 1981, Kobler 1984). The species is macroscopically indistinguishable from *C. longisegmentis*. However, microcharacters summarised in the first paragraph of the discussion enable its reliable identification.

Kobayasi & Shimizu (1960) observed that the fertile parts of the stromata of *Cordyceps longisegmentis* (named *C. capitata* in their paper) were "glossy", whereas those of *C. capitata* lacked the glossiness. Ginns (1988) confirmed this observation stating "the specimens of *C. longisegmentis* I examined at 10 × were glossy, whereas those of *C. capitata* were dull". We also observed a lustrous surface on fresh fertile parts of the stromata of *C. longisegmentis*. Unfortunately, the character of the fresh surface was not noticed in our find of *C. capitata*. Under a stereomicroscope at a magnification of 10–20 times, no difference in character of the surface was seen on dried material of both taxa from the Bohemian Forest.

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