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New, rare and less known macromycetes in Moravia (Czech Republic) – VII

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ANTONÍN V. & VÁGNER A. 2005: New, rare and less known macromycetes in Moravia (Czech Republic) – VII. *Acta Musei Moraviae, Scientiae biologicae* (Brno) **90:** 263–279. – The authors give descriptions of macro- and microfeatures of 11 rare or less known macromycetes collected in Moravia (Czech Republic). *Clavaria tenuipes* and *Clavariadelphus flavoimmaturus* are recorded for the first time in the Czech Republic, *Amanita ovoidea*, *Clitocybe barbularum* and *Marasmius favrei* var. *sorbi* for the first time in Moravia. Finds of *Gamundia striatula*, *Hemimycena mairei*, *Tuber aestivum* and *T. excavatum* represent new records after a long period. In addition, new localities of the rare species *Dermoloma cuneifolium* and *D. pseudocuneifolium* are published.

Key words. Ascomycetes, Basidiomycetes, *Amanita, Clavaria, Clavariadelphus, Clitocybe, Dermoloma, Gamundia, Hemimycena, Marasmius, Tuber,* Moravia, Czech Republic

Introduction

This paper is a continuation of a series of publications on recent collections of interesting or less known macromycetes in Moravia (Czech Republic) published also in this journal.

Macroscopic descriptions are always based on material collected by ourselves. An exclamation mark placed after a herbarium number of the type specimens means that the authors of this paper revised it.

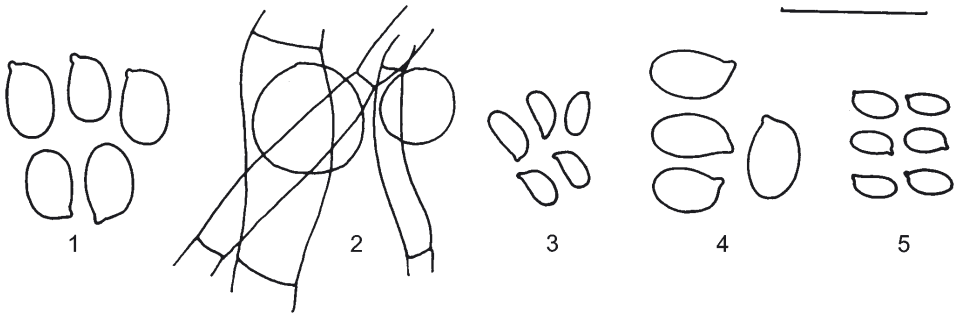
Microscopic characters are described from material mounted in Melzer's reagent, Congo-red, and c. 5% KOH. For the basidiospores the following factors are used: **E** (quotient of length and width in any one spore); **Q** (mean of E-values). In lamellae, **L** means number of lamellae and **l** number of lamellulae tiers between two complete lamellae.

Authors of fungal names are cited according to KIRK & ANSELL (1992), colour abbreviations to KORNERUP & WANSCHER (1983) and herbarium abbreviations follow HOLMGREN (2003).

Herbarium specimens of the described fungi are preserved in the Herbarium of the Dept. of Botany of the Moravian Museum in Brno, Czech Republic (BRNM).

Amanita ovoidea (Bull.: Fr.) Link (Figs 1–2)

Description. Carpophores solitary, fleshy, entirely white and egg-shaped when young. Pileus 130 mm broad, plano-convex, without umbo, with straight margin, smooth, only with scattered thin, rather large, flat, white velar remnants, which are numerous,



Figs 1–5. *Amanita ovoidea*: 1. basidiospores, 2. volva elements; 3. *Clavaria tenuipes*: 3. basidiospores; *Clavariadelphus flavoimmaturus*: 4. basidiospores; *Clitocybe barbularum*: 5. basidiospores. Scale bar = 20 μm.

adpressed and ± triangular on the margin, ivory white to pale yellow (4A3) towards centre, almost white at margin. Lamellae rather close, L = ± 140, l = 2–3, free, ventricose, broad (14 mm), pale yellow (3A2), with concolorous, distinctly finely denticulate-pubescent edge. Stipe 180 × 25 mm, cylindrical, slightly broadened above, with a fusoid bulb at base, finely adpressedly flocculose on white ground at apex, distinctly pale yellow (4A3) irregularly zebred towards base. Complete annulus absent. Volva large, up to 85 mm high, thick-membranaceous, irregularly coarsely lobate, white inside, finely tomentose and whitish outside and pale yellow (4A3) in upper part. Context white, with a fungoid smell.

Basidiospores 9.0–11.5 × 5.7–7.5 μm, E = 1.4–1.9, Q = 1.6, (broadly) ellipsoid, subovoid, thin-walled, hyaline, amyloid. Basidia 46–57 × 10.5–15 μm, 4-spored, clavate. Cystidia absent. Trama hyphae cylindrical to inflated (acrophysalids), ± thin-walled, hyaline, non-dextrinoid, up to 35 μm wide. Pileipellis an ixocutis consisting of radially interwoven, cylindrical, gelatinised, thin-walled, up to 8.0 μm wide hyphae with adpressed to erect, cylindrical to clavate terminal cells. Stipitipellis a cutis composed of cylindrical, parallel, ± slightly thick-walled, up to 6.0 μm hyphae. Volva made up of cylindrical, ± thin-walled, up to 20 μm wide hyphae, with scattered sphaerocysts in internal part. Clamp-connections absent in all tissues.

Habitat. On soil (loess), under *Quercus pubescens* in a thermophilic oak forest.

Locality. Pálava Protected Landscape Area, Milovice, Milovický les, on a slope above a play ground, alt. 300–350 m, coord. N 48°50'06", E 16°41'30", 23 Aug. 2002 leg. V. Antonín (02.84), H. Deckerová and J. Kirschner, det. V. Antonín and H. Deckerová (BRNM 670989).

Remarks. *Amanita ovoidea* is characterised by fleshy, white coloured carpophores, a soon disappearing annulus and a present volva.

It represents a very rare fungus in the Czech Republic. It is also included in the prepared Red list of the macromycetes of the Czech Republic as a critically endangered



Pl. 1. *Clavaria tenuipes* (Miroslav, 7 Nov. 2004 leg. V. Antonín): Carpophores (photo V. Antonín).

species and in the Red book of macromycetes (Kotlaba 1995). Before 2002 it was collected only once (Bohemia, Czech Karst) in the Czech Republic (Kotlaba 1995). Our find represents the first Moravian record and the second one in the Czech Republic.

***Clavaria tenuipes* Berk. et Broome** (Fig. 3, Pl. 1)

Description. Carpophores up to 40 mm high and 6 mm wide, simple, very rarely branched, divided into a sterile and a fertile part, entirely pale hyaline greyish yellow (4B3). Fertile part cylindrical, mostly subacute, less frequently obtuse, ± smooth when young, narrowly clavate or fusoid, obtuse to acute and distinctly longitudinally rugulose when old, glabrous. Sterile part up to 12 mm long and 1(–1.2) mm wide, cylindrical, smooth or finely longitudinally fibrillose, glabrous.

Basidiospores 6.5–8.0 × 3.0–3.5 µm, E = 2.0–3.0, Q = 2.2, cylindrical, pip-shaped, cylindrical-ellipsoid, smooth, thin-walled, non-dextrinoid. Basidia 18–23 × 6.0–7.0 µm, 4-spored, clavate. Basidioles 11–20 × 3.0–6.0 µm, subcylindrical or clavate. Cystidia absent. Context hyphae cylindrical or inflated, thin-walled, non-dextrinoid, up to 25 µm wide. Clamp-connections absent in all tissues.

Habitat. On burnt soil covered with mosses in a xerothermic grassland.

Locality. Miroslav, Miroslavské kopce National Nature Monument, part called "Kopeček u vinohradu", alt. 270–300 m, coord. N 48°56'13", E 16°18'18", 7 Nov. 2004 leg. V. Antonín (04.341), det. O. Jindřich (BRNM 693770).

Remarks. *Clavaria tenuipes* is characterised by having moderately large, mostly single, pale ochraceous carpophores with a mostly cylindrical, then narrowly clavate to fusoid fertile part, rather small basidiospores and tetrasporic basidia; clamp-connections and cystidia absent. It often grows on burnt places.

CORNER (1950) mentioned larger basidiospores (6–12 × 4–5.5 µm). However, DOMAŃSKI (1984) published 4.5–7.5 × 2.7–4 µm and KNUDSEN (1997) 6.5–9.5 × 4–5.5 µm large basidiospores and growth on mineral-rich soil (e.g. clay or fire places) in spring and late autumn. Therefore, our collection surely represents this taxon.

According to CORNER (1950) and JÜLICH (1984), it is known only from France, Great Britain and the Netherlands, and to KNUDSEN (1997) from Denmark, Sweden and Finland. This find represents the first record in Moravia and also in the Czech Republic.

Clavariadelphus flavoimmaturus R. H. Petersen (Fig. 4)

Description. Carpophores 50–80 mm high, up to 12 mm broad, narrowly clavate to clavate, slightly longitudinally rugulose, ± smooth at apex, not divided in a sterile and a fertile part, yellow, paler, whitish yellowish towards base; changing to orange-brown with KOH in dry specimens.

Basidiospores 9.5–12 × 6.0–6.5(–7.0) µm, E = 1.5–2.1, Q = 1.8, (broadly) ellipsoid, smooth, thin-walled, non-dextrinoid. Basidia 50–85 × 10–14 µm, 4-spored, narrowly clavate. Basidioles up to 75 × 14 µm, cylindrical, clavate. Clamp-connections present in all tissues.

Habitat. On soil under *Carpinus betulus* in a mixed forest (*Carpinus, Fagus, Picea*).

Locality. Moravian Karst Protected Landscape Area, Ochoz near Brno, Údolí Říčky Nature Reserve, c. 2 km SE of the village, alt. 300–350 m, coord. N 49°14'40", E 16°44'50", 13 Sept. 2001 leg. et det. A. Vágner (BRNM 666662).

Remarks. *Clavariadelphus flavoimmaturus* is distinguished by moderately large, yellow coloured carpophores and rather large basidiospores. It was not collected in Moravia and the whole Czech Republic before. A key to *Clavariadelphus* species was published by SCHILD (1980). HAGARA (1986, 1987) published a record from Slovakia and a nice photograph of it. It agrees well with our collection. Our find represents the first record in Moravia as well as in the Czech Republic.

Clitocybe barbularum (Romagn.) P. D. Orton (Fig. 5)

Description. Pileus 15–35 mm broad, infundibuliform, then almost applanate and slightly depressed at centre, slightly inflexed at margin, hygrophanous, translucently striate at margin (c. 5 mm), slightly viscid, light brown (6D5) when moist, drying pallescent to greyish orange (5B3), darker at centre. Lamellae moderately close, L = ± 45–47, l = 1–2(–3), decurrent, pale greyish orange to orange-grey (5B2–3), with concolorous, smooth edge. Stipe 18–30 × 3–5 mm, cylindrical or tapering towards base,

fibrillose, flocculose at apex, with a white basal tomentum, dirty white to pale grey-brown. Context without a distinct smell.

Basidiospores (5.0–)5.5–7.0 × 3.0–3.5 µm, E = 1.7–2.2, Q = 1.9, ellipsoid, narrowly ellipsoid, cylindrical-ellipsoid, thin-walled, non-dextrinoid. Basidia 20–27 × 5.0–7.0 µm, 4-spored, (narrowly) clavate. Basidioles 14–27 × 4.0–7.0 µm, cylindrical, clavate. Cystidia absent. Trama hyphae cylindrical, thin-walled, hyaline, non-dextrinoid, up to 7.0 µm wide. Pileipellis an ixocutis consisting of radially arranged, cylindrical, thin- to slightly thick-walled, incrusted, up to 5.0 µm wide hyphae; terminal cells adpressed to suberect, cylindrical to narrowly clavate, sometimes irregular. Stipitipellis a cutis composed of cylindrical, parallel, ± slightly thick-walled, smooth, up to 5.0 µm wide hyphae. Caulocystidia (apex) narrow, cylindrical, thin- to slightly thick-walled, up to 3.0(–4.0) µm wide. Clamp-connections present in all tissues.

Habitat. On soil, in an open xerothermic grassland.

Locality. Miroslav, Miroslavské kopce National Nature Monument, part called "Přední Markův kopec", alt. 380–300 m, coord. N 48°56'22", E 16°18'58", 7 Nov. 2004 leg. et det. V. Antonín 04.345 (BRNM 693678).

Remarks. *Clitocybe barbularum* is characterised by having a rather small, pale brown to beige coloured pileus, ochraceous grey lamellae, a whitish or grey-brown stipe, moderately large basidiospores and a pileipellis in the form of an ixocutis of incrusted hyphae.

It represents a very rare fungus in the Czech Republic. It is included in the list of fungi protected by law in the Czech Republic (Antonín & Bieberová 1995; as a strongly endangered species) and in the prepared Red list of the macromycetes of the Czech Republic (in the data deficiency (DD) category). According to Antonín & Bieberová (1995) it has been collected only twice in the Czech Republic, in both cases in north-west Bohemia. Our find represents the first record in Moravia.

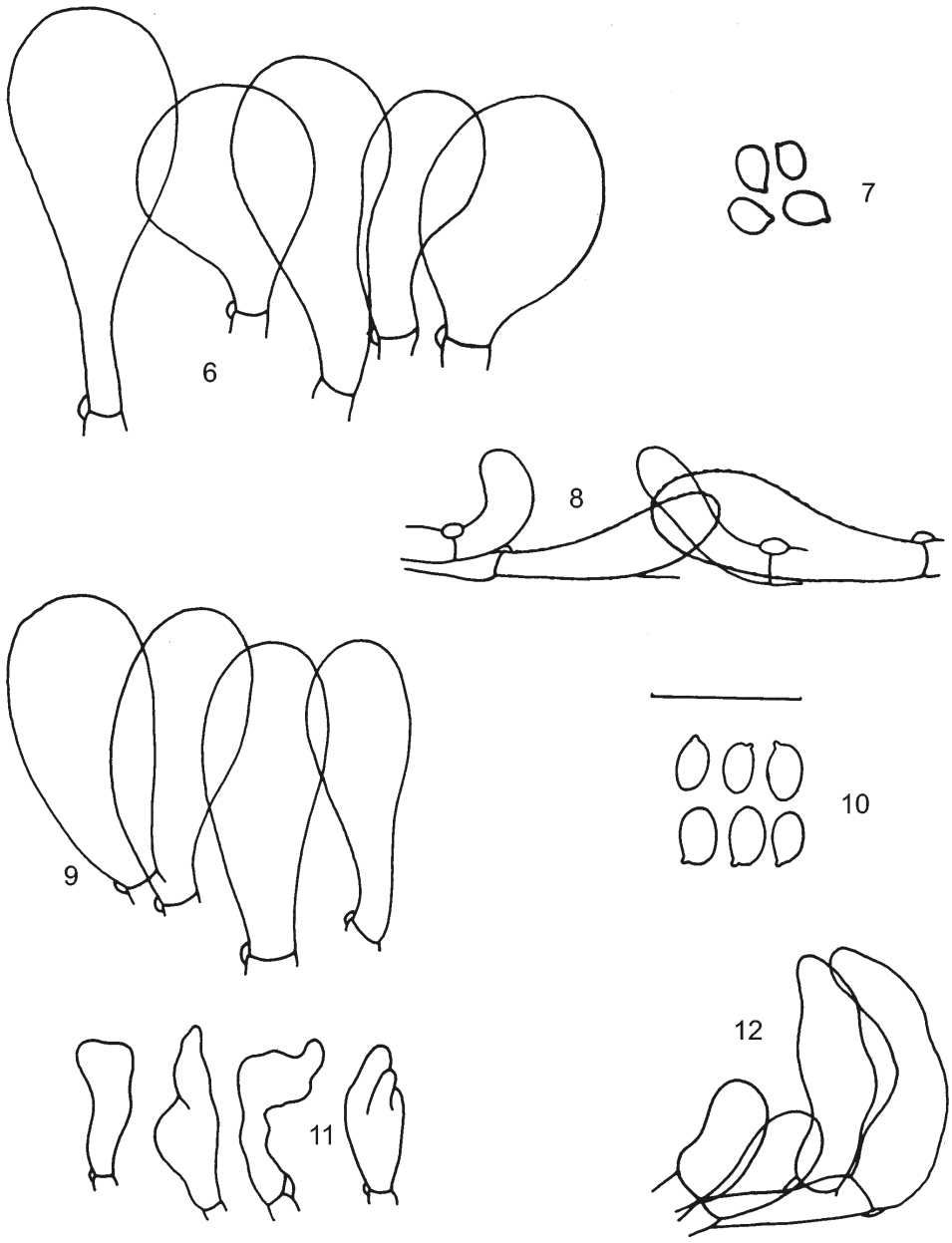
Both macroscopic and microscopic characters agree well with the literature (Bon 1997, Kuyper 1995) except for the smell which should be farinaceous.

Dermoloma cuneifolium (Fr.: Fr.) Bon (Figs 6–8)

Syn. *Dermoloma atrocinereum* (Pers.: Fr.) P. D. Orton

Description. Pileus 20–35 mm broad, broadly conical-convex, with broad, less distinct central umbo, inflexed at margin, finely pruinose, except for a smooth centre slightly radially rugulose, greyish brown (7D3), darker, dark brown (7F4) at centre. Lamellae moderately distant, L = c. 30, l = 1–2, emarginate and attached or shortly decurrent with tooth, ventricose, whitish to greyish, with concolorous, smooth edge. Stipe 25–45 × 5–8 mm, cylindrical, finely longitudinally fibrillose, white flocculose at apex, grey (6B1–2), finely black-brown fibrillose-squamulose in lower part. Context whitish, mild, with a strong farinaceous smell.

Basidiospores (5.0–)5.5–6.2(–7.0) × 4.2–5.0 µm, E = 1.2–1.6, Q = 1.3, broadly ellipsoid, thin-walled, hyaline, non-dextrinoid; crassospores present. Basidia 23–30 ×



Figs 6–12. *Dermoloma cuneifolium*: 6. pileipellis cells, 7. basidiospores, 8. caulocystidia; *Dermoloma pseudocuneifolium*: 9. pileipellis cells, 10. basidiospores, 11. marginal cells, 12. caulocystidia. Scale bar = 20 μm.

8.0–9.0 µm, 4-spored, clavate. Basidioles 15–25 × 5.0–8.0 µm, cylindrical, clavate. Cystidia absent; scattered, e.g. 36 × 14 µm, clavate, thin-walled marginal cells present. Trama hyphae cylindrical or subinflated, thin-walled, hyaline, non-dextrinoid, up to 15 µm wide. Pileipellis a hymeniderm consisting of 33–65 × 21–30 µm, clavate, (sub)vesiculose, pyriform, smooth or incrusted cells, hyaline or dark brown to black brown in KOH. Stipitipellis a cutis composed of cylindrical, parallel, non-dextrinoid, mostly incrusted, up to 5.0 µm wide hyphae. Caulocystidia adpressed to erect, 17–41 × 6.0–13 µm, cylindrical, clavate, subfusoid, ± thin-walled, smooth or incrusted; pigmentation dark brown to black-brown in KOH. Clamp-connections present in all tissues.

Habitat. On soil in subthermophilous and thermophilous forests, under *Acer campestre, Carpinus betulus, Cornus mas, Corylus avellana* and *Tilia*.

Localities. Mokrá near Brno, Mokerský les forest, alt. 375–440 m, coord. N 49°14'15", E 16°45'30", 17 Oct. 2001 leg. et det. V. Antonín 01.315 (BRNM 666561). – Moravian Karst Protected Landscape Area, Ochoz near Brno, Velký Hornek Nature Reserve, alt. 300–430 m, coord. N 49°13'45", E 16°42'45", 3 Oct. 2001 leg. A. Vágner, det. V. Antonín (BRNM 667663). – Pálava Protected Landscape Area, Milovice, Milovický les forest, alt. 300–350 m, coord. N 48°50'06", E 16°41'30", 23 Aug. 2002 leg. et det. V. Antonín 02.77 (BRNM 670982).

Remarks. *Dermoloma cuneifolium* is characterised by a moderately large, grey-brown pileus, whitish or greyish lamellae and stipe, rather small basidiospores and a pileipellis in the form of a hymeniderm of smooth cells; cheilo- and pleurocystidia are absent. It represents a rather rare fungus in the Czech Republic. It is included in the prepared Red list of the macromycetes of the Czech Republic and in the Red book of macromycetes (KOTLABA 1995, as *D. atrocinereum*), in both cases under endangered species.

According to KOTLABA (1995), it has been collected at only one locality in Moravia (near Žarošice, Ždánické vrchy Mts., PRM 602738). With our finds, *D. cuneifolium* is known from four Moravian localities.

In Bohemia, it is known from four localities – near Turnov (1964, PRM 520610 and 520743), Poříčko near Čeřenice (1946, PRM 521219), Karlštejn (1944, PRM 602737) and Prokopské údolí valley near Prague (KOTLABA 1995).

Some authors (e.g. BALLERO & CONTU 1987; BON 1999) distinguish two species, *D. atrocinereum* and *D. cuneifolium*, on the base of slightly different basidiospores ((5.5–)6–7(–8) × 3.5–4.5(–5) µm and (4.5–)5–5.5(–6) × (3.5–)4–4.5(–5) µm, respectively) and a subconical or umbonate pileus in *D. atrocinereum*. However, JOSSERAND (1943) and ARNOLDS (1992, 1995) proved that both species are identical. Our results agree with this conclusion.

Dermoloma pseudocuneifolium Herink ex Bon (Figs 9–12)

Description. Carpophores single. Pileus 13–30 mm broad, broadly conical when young, then almost applanate, with broad, obtuse central umbo, inflexed then straight at margin, hygrophanous, translucently striate except for centre, slightly rugulose at centre, glabrous, brown (7E5), drying to pallescent to greyish orange (5B3). Lamellae

moderately distant, L = 20–22, l = 2(–3), emarginate and attached with tooth, ± ventricose, grey (7E1), slightly paler when young, with concolorous, finely tomentose edge. Stipe up to 55 × 8 mm, cylindrical, sometimes laterally depressed, usually curved or irregularly flexuose, matt, finely pubescent at apex, with white basal tomentum, (light) brown (7D–E7). Context without a distinct smell.

Basidiospores 7.0–8.5 × 4.5–5.0(–5.5) µm, E = 1.3–1.8, Q = 1.6, ellipsoid, subamygdaliform, thin-walled, smooth, amyloid, mostly with one guttula. Basidia 26–30 × 7.5–10 µm, 4-spored, clavate. Basidioles 15–29 × 3.0–9.0 µm, cylindrical, clavate. Cystidia absent; scattered clavate or cylindrical, 15–26 × 3.5–9.0 µm, ± thin-walled, irregular to subcoralloid marginal cells present, mixed with basidia and basidioles. Pileipellis a hymeniderm consisting of 29–46 × 13–30 µm large, clavate, broadly clavate, pyriform, subvesiculose, thin-walled or slightly thick-walled cells (mostly at apex). Stipitipellis a cutis composed of cylindrical, parallel, ± slightly thick-walled, non-dextrinoid, up to 5.0 µm wide hyphae. Caulocystidia (apex) a caulohymenium consisting of 18–42 × 5.0–11 µm, clavate, cylindrical, subfusoid, ± thin-walled cells and basidia. Clamp-connections present in all tissues.

Habitat. On soil in open grassland and light broadleaved forests in both xerothermic and submontane areas.

Locality. Miroslav, Miroslavské kopce National Nature Monument, part called "U kamene", alt. 240–250 m, coord. N 48°55'53, E 16°18'13", 7 Nov. 2004 leg. et det. V. Antonín (04.330) (BRNM 695326). – Skřípov, in a private garden, alt. 600 m, coord. N 49°35'25", E 16°49'35", 29 Sept. 2001 leg. et det. V. Antonín 01.285 (BRNM 677277). – Hrubšice, Nad řekami Nature Monument, alt. 230–250 m, coord. N 49°05'35", E 16°18'14", 8 Oct. 1993 leg. et det. V. Antonín 93.337 (BRNM 576748). – Boleradice, Velký Kuntínov forest, alt. 260–300 m, coord. N 48°56'00", E 16°53'35", 30 Aug. 1996 leg. et det. V. Antonín 96.129 (BRNM 612135). – Starý Poddvorov, Zlodějský háj forest, alt. c. 200 m, coord. N 48°52'29", E 16°59'16", 17 June 1995 leg. Z. Bieberová, det. V. Antonín (BRNM 603571).

Remarks. *Dermoloma pseudocuneifolium* is characterised by having a dark brown pileus, grey lamellae and stipe, large, amyloid basidiospores and a hymeniform pileipellis. Fungi collected here agree fully with the holotype specimen (France, Saint Valéry sur Somme, Oct. 1968 leg. M. Bon, herb. M. Bon 81006!) except for the presence of irregular marginal cells (artefact?).

It represents a very rare fungus included in the prepared Red list of the macromycetes of the Czech Republic as a critically endangered species. In Moravia, it was collected until the 1970s only once (Žarošice, 1948, PRM 660653). Therefore, localities mentioned here represent the second to sixth ones. In Bohemia, only one locality in Prague (Stromovka, 1968, PRM 6601460 and 661461) is known.

A second similarly coloured *Dermoloma* species with amyloid basidiospores, *D. josserandii* var. *phaeopodium* (P.D. Orton) Arnolds differs mostly by smaller basidiospores, (4.5–)5.0–6.5(–7.5) × 3.5–5.0(–6.0) µm (ARNOLDS 1993, 1995; holotype: England, Devon, Membury, 1 Nov. 1957 leg. P. D. Orton 4905, E!).

***Gamundia striatula* (Kühner) Raithelh.** (Figs 13–15)

Syn. *Gamundia pseudoclusilis* (Joss. et Konrad) Raithelh.; *Gamundia xerophila* (Lüthi et Rollin) Raithelh.

Description. Carpophores single. Pileus 20 mm broad, low convex, depressed at centre, with slightly inflexed, irregularly crenulate margin, hygrophanous, translucently striate up to a half the diameter, smooth, only in central depression minutely radially rugulose, glabrous, dark brown (6F6). Lamellae distant, L = c. 20, l = 3, broadly adnate and decurrent with a short tooth, ventricose, broad, grey (6B–C1), with concolorous, finely pubescent edge. Stipe 35 × 2.5 mm, cylindrical, slightly broadened at apex, slightly clavate at base, white flocculose at apex, finely longitudinally fibrillose otherwise, with white basal tomentum, watery brown (6–7E4). Context without any smell.

Basidiospores 5.5–6.5(–7.0) × 3.2–4.0 µm, E = 1.4–1.9, Q = 1.7, ellipsoid, cylindrical-ellipsoid, sometimes suballantoid, minutely echinulate, non-dextrinoid. Basidia 25–31 × 7.0–7.5 µm, 4- (rarely 2-)spored, clavate. Basidioles 14–27 × 3.0–7.0 µm, cylindrical, clavate. Cheilocystidia 18–30 × 4.0–5.5 µm, cylindrical, subfusoid, clavate, irregular, thin-walled. Pleurocystidia similar but scattered. Trama hyphae ± cylindrical, thin-walled, non-dextrinoid, up to 15 µm, in subpileipellis up to 20(–25) µm wide. Pileipellis an ixocutis consisting of ± cylindrical, thin-walled, smooth or scatteredly diverticulate, up to 8.0 µm wide hyphae; terminal cells ± cylindrical, thin-walled, irregular to coralloid. Stipitipellis an ixocutis composed of cylindrical, parallel, ± slightly thick-walled, smooth or minutely incrusted, up to 6.0 µm wide hyphae. Caulocystidia 19–50 × 5.0–8.0 µm, cylindrical, clavate, subfusoid, often irregular to diverticulate, thin-walled. Clamp-connections present in all tissues.

Habitat. On soil, under *Fagus sylvatica* in a beech forest.

Locality. Moravian Karst Protected Landscape Area, Vilémovice, Vývěry Punkvy National Nature Reserve, part called "Pustý žleb", alt. c. 350 m, coord. N 49°21'54", E 16°42'43", 10 Nov. 2004 leg. et det. V. Antonín (04.360) (BRNM 693690).

Remarks. *Gamundia striatula* is distinguished by its rather small, watery brown or grey-brown pileus, grey lamellae and stipe, moderately large, minutely echinulate, non-dextrinoid basidiospores, present cheilo-, pleuro- and caulocystidia and its pileipellis in the form of an ixocutis. Our collection differs by less distinctly developed hymenial cystidia which are smaller and often irregular (see Fig. 14).

It represents a very rare fungus in Moravia with only one known locality near the village of Kuřim in 1948 (ANTONÍN & NOORDELOOS, 2004). Therefore, this find represents the second record after 56 years.

It is included in the prepared Red list of the macromycetes of the Czech Republic as an endangered species.

***Hemimycena mairei* (J.-E. Gilbert) Singer** (Figs 16–17)

Description. Carpophores single. Pileus 6–15 mm broad, conical-convex, with obtuse centre and inflexed margin when young, then plano-convex to applanate, slightly depressed at centre and inflexed to straight at crenulate margin, hygrophanous, slightly translucently striate, smooth or slightly radially rugulose, very finely tomentose, (orange) grey (± 5B2), with almost whitish margin. Lamellae distant, L = 13–14, l = 2(–3), arcuate,

distinctly decurrent, thick, intervenose when old, white, then pale cream coloured, with concolorous, smooth edge. Stipe 15–25 × 1 mm, cylindrical, distinctly broadened at apex (up to 2 mm), finely tomentose, especially at apex, white. Context with earthy-farinaceous smell.

Basidiospores (7.5–)8.0–9.0(–10) × 4.0–5.0 µm, E = 1.7–2.2, Q = 1.9, fusoid, amygdaloid-fusoid, almost limoniform, thin-walled, hyaline, non-dextrinoid. Basidia 28–31 × 6.5–7.5 µm, 4-spored, clavate. Basidioles up to 30 × 3.5–7.0 µm, cylindrical, clavate. Marginal cells 19–26 × 4.0–6.5 µm, irregularly cylindrical or clavate, thin-walled. Trama hyphae cylindrical or inflated, thin-walled, non-dextrinoid, up to 35 µm wide. Pileipellis a cutis consisting of radially arranged, ± cylindrical, ± thin-walled, smooth or scatteredly diverticulate hyphae. Stipitipellis a cutis composed of cylindrical, parallel, slightly thick-walled, non-dextrinoid, scatteredly diverticulate, up to 4.0(–5.0) µm wide hyphae. Caulocystidia absent; lateral projections or adpressed to erect terminal cells present. Clamp-connections present in all tissues.

Habitat. On soil in an open xerothermic grassland.

Locality. Miroslav, Miroslavské kopce National Nature Monument, part called "Přední Markův kopec" alt. 280–300 m, coord. N 48°56'22", E 16°18'58", 7 Nov. 2004 leg. et det. V. Antonín (04.330) (BRNM 695328).

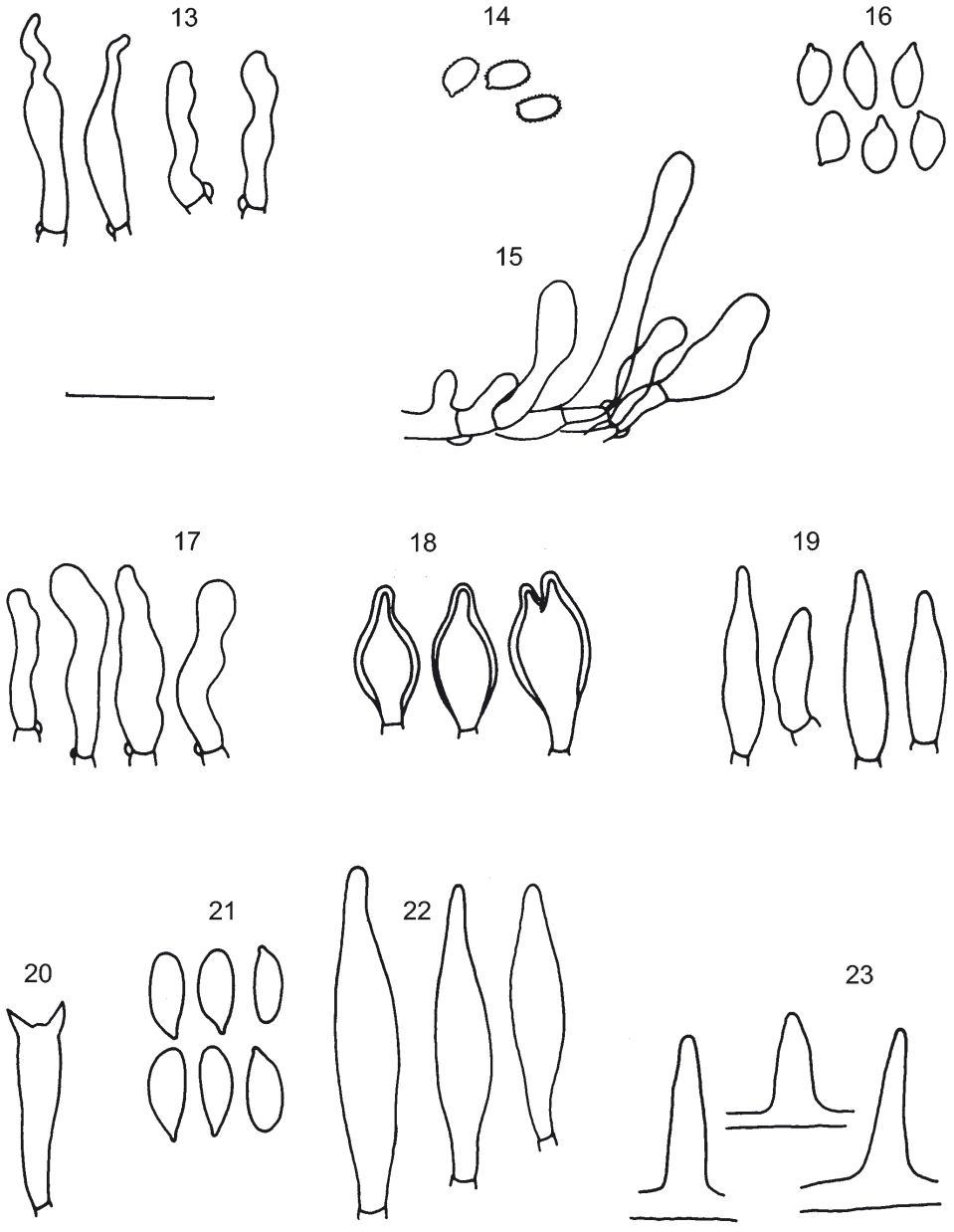
Remarks. *Hemimycena mairei* has rather small carpophores with a grey-beige coloured pileus, thick, decurrent lamellae, moderately broad basidiospores, rather indistinct, irregular marginal cells, a pileipellis consisting of smooth or scatteredly diverticulate hyphae; well-developed caulocystidia are absent.

It represents a very rare fungus. It is included in the prepared Red list of the macromycetes of the Czech Republic in the data deficiency (DD) category. Only one collection was known from the Czech Republic (Moravia, Žarošice, 19 Aug. 1946 leg. V. Vacek, PRM; ANTONÍN & NOORDELOOS 2004). However, during the last year, it has been collected several times in Moravia: 1) Brno, private garden, 3 Oct. 2004 leg. D. Dvořák (herb. D. Dvořák), 2) Brno, in grass in Královopolská Street, 25 Oct. 2004 leg. D. Dvořák (herb. D. Dvořák), 3) Rokytná, Krumlovsko-rokytenské slepence National Nature Reserve, 29 Oct. 2004 leg. D. Dvořák (herb. D. Dvořák), 4) Moravský Krumlov, Krumlovsko-rokytenské slepence National Nature Reserve, place called "Floriánek", 29 Oct. 2004 leg. D. Dvořák (DVOŘÁK pers. comm.). Therefore, totally six (five recent) collections are known from Moravia and the Czech Republic.

Marasmius favrei Antonín var. *sorbi* Antonín (Figs 18–23)

Description. A description of macroscopic characters was not made by the collector.

Basidiospores (9.0–)10–11.5 × 4.0–5.0 µm, E = 1.8–2.8, Q = 2,4, narrowly fusoid, ellipsoid-fusoid, thin-walled, non-dextrinoid. Basidia e.g. 25 × 6.0 µm, 2-spored. Basidioles 10–30 × 4.5–8.0 µm, clavate, subfusoid, subcylindrical. Cystidia 24–50 × 6.5–10 µm, lageniform, fusoid, thin-walled. Trama hyphae consisting of ± cylindrical, thin-walled, hyaline, non-dextrinoid, up to 10 µm wide hyphae. Pileipellis a hymeniderm consisting of 18–32 × 8.0–18 µm, fusoid, limoniform, sublageniform, (sub)vesiculose,



Figs 13–23. *Gamundia striatula*: 13. cheilocystidia, 14. basidiospores, 15. caulocystidia; *Hemimycena mairei*: 16. basidiospores, 17. marginal cells; *Marasmius favrei* var. *sorbi*: 18. pileipellis cells, 19. pileocystidia, 20. basidium, 21. basidiospores, 22. hymenial cystidia, 23. caulocystidia. Scale bar = 20 μm.

rostrate, thick-walled, hyaline cells, sometimes with a mucose cap. Pileocystidia 17–30 × 5.0–6.0 µm, lageniform, (sub)fusoid, thin-walled. Stipitipellis a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, up to 5.0(–7.0) µm wide hyphae. Caulocystidia (9.0–)16–24 × (3.0–)5.0–6.0 µm, fusoid, conical, sublageniform, thin- to slightly thick-walled. Clamp-connections absent in all tissues.

Habitat. On petioles of *Sorbus aucuparia* leaves.

Locality. Českomoravská vrchovina (Czech-Moravian Highland), near Horní Rozsíčka, alt. 450–540 m, coord. N 49°27'10", E 16°12'20", 19 Nov. 2000 leg. J. Čáp, det. V. Antonín (BRNM 695419).

Remarks. *Marasmius favrei* is characterised by small carpophores with a 1–4 mm broad, rugulose, white pileus, white lamellae and a rather short, slightly pruinose stipe with a white apex and a red-brown or brown base, large basidiospores, well-developed, fusoid or lageniform cheilo- and pleurocystidia, a hymenidermal pileipellis with pileocystidia and well-developed caulocystidia; it grows on decaying leaves of various *Populus* species. Var. *sorbi* differs by smaller basidiospores and a different ecology.

Both varieties represent very rare fungi – var. *favrei* is known from two finds in southern Bohemia from 1965 and 2003 and var. *sorbi* from one old (1957) record from southern Bohemia and two more recent ones from southern Bohemia (1991) and the collection presented here from Moravia (ANTONÍN & NOORDELOOS 1993). It is included in the prepared Red list of the macromycetes of the Czech Republic in the data deficiency (DD) category.

Therefore, the find near Horní Rozsíčka represents the first record in Moravia.

***Tuber aestivum* Vittad.** (Pl. 2)

Description. Carpophores 20–52 × 17–44 mm, irregularly globose or tuberose, with distinct, 2–4 mm large pyramidal warts, black-brown. Context dirty whitish then brownish, distinctly white veined (marbled).

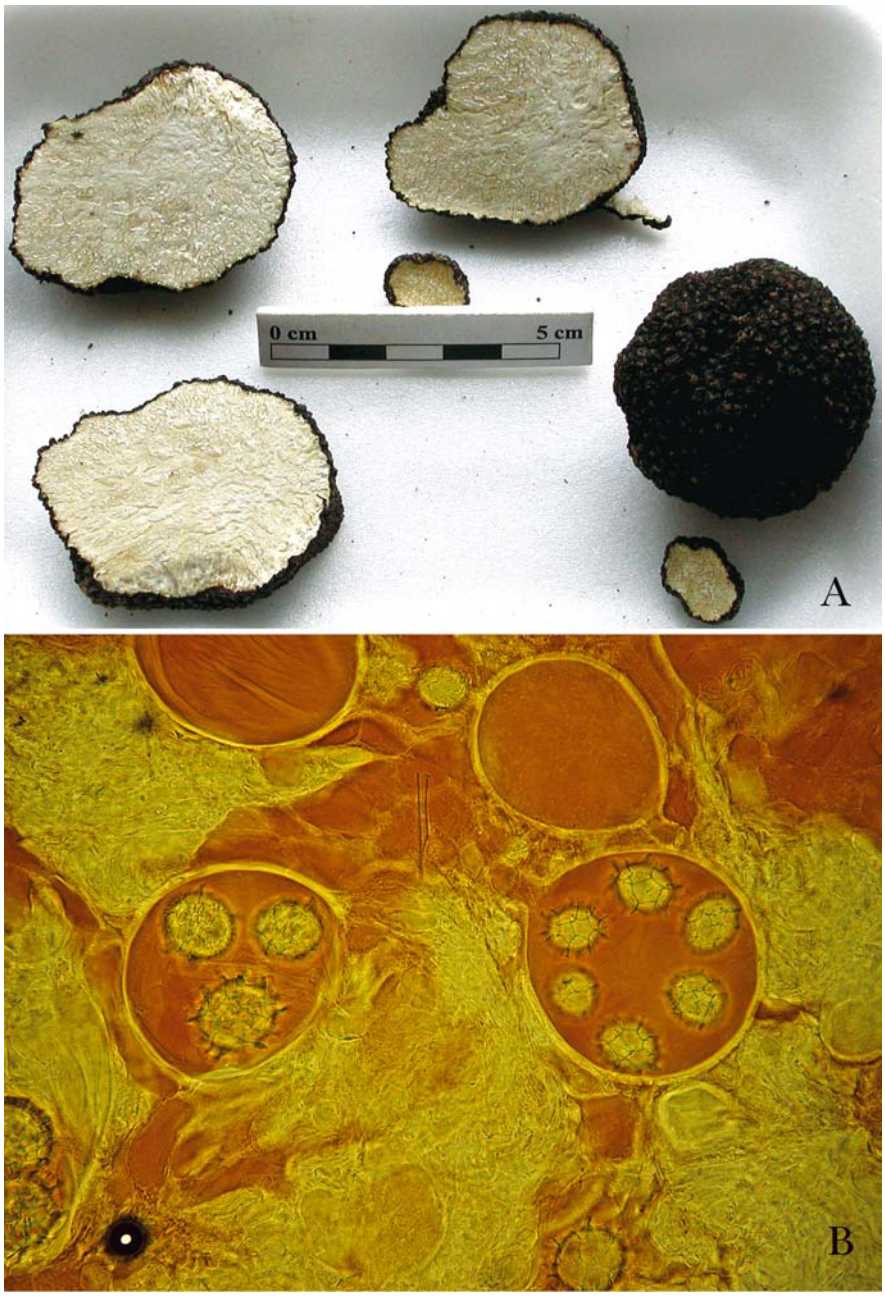
Ascospores 28–30 × 20–24 µm, globose to subglobose, reticulate. Asci 85–105 × 70–85 µm, (sub)globose, pedunculate, mostly 4-spored.

Habitat. Found on soil surface (probably dug out by animals) under *Quercus* (Dambořice) in a thermophilous mixed broadleved forest.

Locality. Dambořice, Klínek, c. 1.4 km NNW of the village, alt. 250–300 m, coord. N 49°03'03", E 16°54'26", July 2004 leg. V. Hrazdil, det. A. Vágner (BRNM 695417).

Remarks. *Tuber aestivum* is characterised by having underground, globose to subglobose, sometimes slightly irregular, black-brown carpophores with distinct pyramidal warts, a whitish, then brownish gleba with numerous white veins and (sub)globose, reticulate ascospores. This species was identified according to MONTECCHI & SARASINI (2000).

Tuber aestivum represents a rare fungus in the Czech Republic. It is included in the list of fungi protected by law in the Czech Republic (ANTONÍN & BIEBEROVÁ 1995), in the Red book of macromycetes (KOTLABA 1995), in both cases ranged under critically



Pl. 2. *Tuber aestivum* (Dambořice, July 2004 leg. V. Hrazdil): A. Carpophores (photo V. Hrazdil), B. asci with ascospores (photo V. Antonín).

endangered fungi, and in the prepared Red list of the macromycetes of the Czech Republic under endangered species.

Before 1970, it was collected in the following places in Moravia (see also HOUDA 1994; KŘÍŽ 1952; ŠMARDA & KŘÍŽ 1960):

- Chřiby Mts., near Buchlov castle, without date (between 1865 and 1906) leg. G. Niessl (BRNM 130484) – probably the oldest find of this species in the Czech Republic.
- Květná (1926, leg. M. Tomášek, PRM 485702, 37325 and 778341).
- several localities near Veverská Bítýška (Veveří castle, 1951 leg. K. Kříž, PRM 778344, BRNM 695447; Mečkov, 1951 leg. K. Kříž, PRM 778318; Krnovec forest, 1953–1958 leg. K. Kříž, BRNM 225508, 225513, 225515, 225518).
- Čebínka hill near Kuřim (1957 leg. F. Šmarda, BRNM 225519).
- near Heroltice (1926 leg. O. Opálka, BRNM 130483; 1951).
- Spálené Brdo hill near Tišnov (1926 leg. O. Opálka, BRNM 335749).
- near Mičov (close to Olomouc, 1955; HOUDA 1994).
- Kapansko forest near Starý Poddvorov (1955 leg. M. Svrček, PRM 879698; 1966 leg. V. Skalník, BRNM 695448).

After 1970, it is known only from the vicinity of Vranov near Brno (Baba, 1973 leg. F. Jeřábek, BRNM 695449) and Adamov (Alexandrovka, 1972 leg. M. Svrček and J. Moravec, PRM 879293). Since this time, it has not been collected in Moravia. LÁZNIČKA (1987) ranged it under extinct species in south-west Moravia.

Therefore, the find close the village of Dambořice published here represents a new record after more than 30 years.

***Tuber excavatum* Vittad.** (Pl. 3)

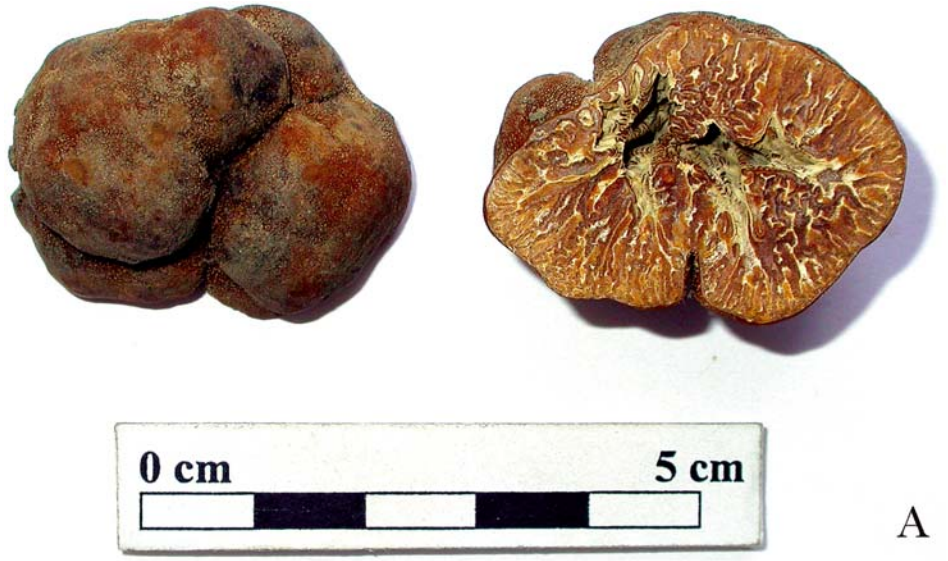
Description. Carpophores up to 40 × 30 mm, ± irregularly ellipsoid, distinctly lobate, finely granulose-papillate, brown. Context with a distinct central cavity, ochraceous-brown to pale greyish brown, whitish veined (marbled).

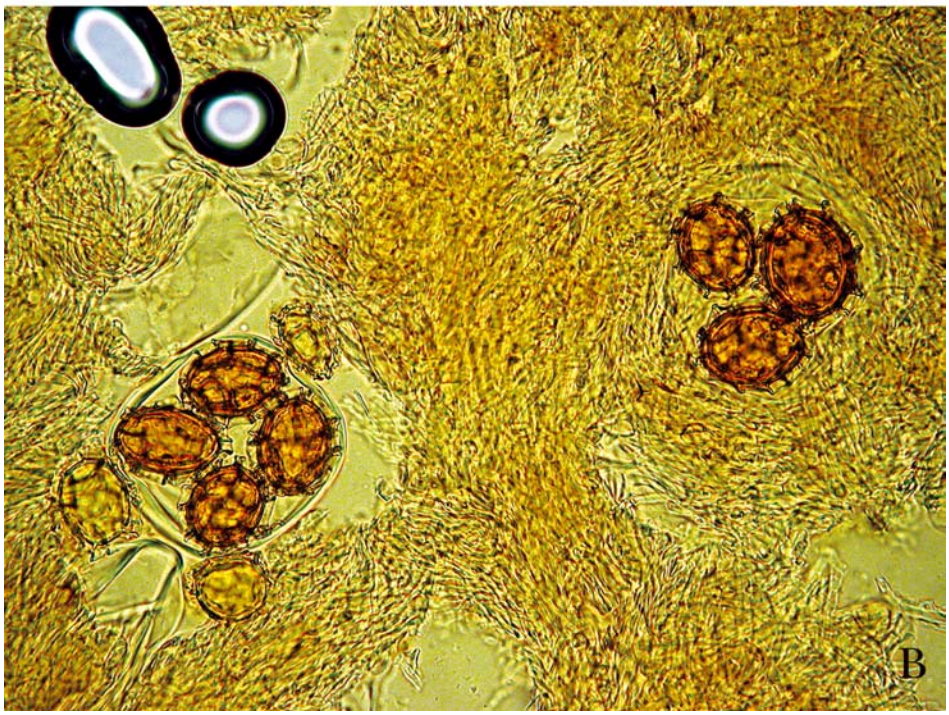
Ascospores 36–50 × 27–32 µm, globose, subglobose, broadly ellipsoid, reticulate. Asci 80–145 × 75–83 µm, subglobose, pedicellate.

Habitat. Found on soil surface (probably dug out by animals) under *Quercus* (Kobeřice) and under *Picea* and *Pinus* (Královopolské Vážany).

Locality. Ždánický les (Ždánice Forest), Kobeřice near Brno, c. 1.5 km SE of the village, 19 July 2004, alt. c. 250 m, coord. N 49°04'55", E 16°54'23", leg. V. Hrazdil, det. A. Vágner (BRNM 691251). – Královopolské Vážany, in a private garden, alt. c. 250 m, coord. N 49°12'55", E 16°52'30", 28 July 2004 leg. S. Šelbický, det. A. Vágner (BRNM 695389).

Remarks. *Tuber excavatum* is distinguished by having brown coloured, finely granulose-papillate carpophores with an ochraceous to greyish-brown, whitish veined gleba, and reticulate basidiospores. This species was identified according to MONTECCHI & SARASINI (2000).





Pl. 3. *Tuber excavatum* (Kobeřice, 19 July 2004 leg. V. Hrazdil): A. Carpophores (photo V. Hrazdil), B. asci with ascospores (photo V. Antonín).

Before 1970, it was collected at the following few localities in Moravia:

- Vicinity of Veverská Bítýška near Brno (1951 leg. K. Kříž, BRNM 225510 and 225512, 1952 leg. K. Kříž and J. Křížová, BRNM 225511; Kříž & Šmarda 1960).
- Ruda forest near Tvořihráz close to Znojmo (1965 leg. J. Lazebníček and K. Kříž, BRNM 305843 and leg. K. Brychta and K. Kříž, BRNM 695446; Šmarda 1966).
- White Carpathian Mts., Květná near Strání (in approx. the 1920s; PRM 38409 and 778407).
- Kotouč hill near Štramberk (1952 leg. K. Kříž, BRNM 225507).

Since this time, no collections of *Tuber excavatum* were made in Moravia. Therefore, both finds published here represent new records after more than 50 years.

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