

New records of *Conocybe* species from Ukraine. II. The section *Conocybe*

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Data about new records of representatives of the genus *Conocybe* Fayod (section *Conocybe*) on the territory of Ukraine are given. Information is added about the habitats of 6 taxa (*C. brachypodii*, *C. echinata*, *C. graminis*, *C. juniana* var. *subsejuncta*, *C. microspora* var. *microspora*, and *C. subxerophytica* var. *brunnea*) new to Ukraine. For all the taxa descriptions and drawings are provided.

Key words: Basidiomycetes, Agaricales, *Conocybe*, distribution, ecology

Prydiuk M. P. (2007): Nové nálezy druhů z rodu *Conocybe* na Ukrajině. II. Sekce *Conocybe*. – Czech Mycol. 59(1): 39–50.

V článku jsou publikovány údaje o nálezech zástupců rodu *Conocybe* Fayod (sekce *Conocybe*), které jsou nové pro Ukrajinu. Jde o *C. brachypodii*, *C. echinata*, *C. graminis*, *C. juniana* var. *subsejuncta*, *C. microspora* var. *microspora* a *C. subxerophytica* var. *brunnea*, u nichž jsou doplněny údaje o stanovištích a publikovány popisy a perokresby důležitých znaků.

INTRODUCTION

In this paper we continue the topic started in the previous one (Prydiuk 2007), in which we reported 7 representatives of the genus *Conocybe* Fayod new to Ukraine, belonging to the sections *Mixtae* (Kühner) Singer and *Pilosellae* (Kühner) Singer. In this article we present information on several species of the section *Conocybe* collected during last years. Previously only 3 species of this section were known from the territory of this country: *C. rickeniana* P.D. Orton, *C. semiglobata* Kühner et Watling, and *C. tenera* (Schaeff.: Fr.) Fayod (Bobyak 1907; Pilát 1940; Ganzha 1960a, 1960b; Wasser 1973, 1974; Wasser and Soldatova 1977; Zerova et al. 1979; Karpenko 1980; Besedina 1998; Prydiuk 2003, 2004; Sarkina 2004). During the past five years we have collected many specimens of *Conocybe*. Six taxa are new to the territory of Ukraine: *Conocybe brachypodii* (Velen.) Hauskn. et Svrček, *C. echinata* (Velen.) Singer, *C. graminis* Hauskn., *C. juniana* var. *subsejuncta* Hauskn., *C. microspora* (Velen.) Dennis var. *microspora*, and *C. subxerophytica* var. *brunnea* Hauskn. Below we present them in detail.

MATERIALS AND METHODS

The microscopic structures were observed in dried material. Microscopic sections of lamellae and pileipellis were made at about 1/2 radius of the pileus and examined in 3 % KOH. The spores were studied in water and 3 % KOH separately.

Data on spore size are based on 20 spore measurements per fruit-body from one habitat. For basidia and cystidia the mean of the smallest and the largest ones per fruit-body is given with 10 measurements in each case.

All collections have been made by the author as the result of a special search for *Conocybe* and *Pholiotina* in Ukraine and deposited in the Herbarium of the M. G. Kholodny Institute of Botany, National Academy of Sciences of Ukraine, Kiev, Ukraine (KW).

In the descriptions the following abbreviations are used: B = average width of the spores in front view; Ls = average length of the spores; L = number of lamellae reaching stipe; l = number of short lamellae (not reaching stipe) between two long ones; n = general number of measured spores; Q = length divided by width; av. Q = average Q.

RESULTS AND DISCUSSION

Conocybe brachypodii (Velen.) Hauskn. et Svrček, in Hausknecht: Czech Mycol. 51: 43, 1999. Figs. 1, 7

Galera brachypodii Velen., Novit. mycol. nov.: 67, 1947. – *Galera albipes* Velen., Novit. mycol.: 128, ('1939') 1940 (non *Conocybe albipes* (Oth) Hauskn., 1998). – *Conocybe mesospora* var. *excedens* Kühner, Le genre *Galera*: 56, 1935; *Conocybe excedens* Kühner et Watling, Notes Roy. Bot. Gard. Edinb. 40: 537, 1983. – *Conocybe excedens* Kühner et Watling var. *pseudomesospora* Singer et Hauskn., Pl. Syst. Evol. 180: 95, 1992. – *Conocybe macrocephala* Kühner et Watling var. *riedheimensis* Hauskn. et Enderle, Österr. Z. Pilzk. 9: 95, 2000.

Pileus 6–15 mm, campanulate, then convex-umbonate, smooth, hygrophanous, pale clay-brown, light grey with brownish hue, darker on disc, on drying light ochraceous grey, light grey with ochraceous tinge, striate nearly to centre when fresh. Lamellae narrowly adnate, ventricose, to 2 mm broad, fairly crowded (L = 20–25, l = 1–3), rust brown, with paler flocculose margin. Stem 24–50 × 0.7–1.5 mm, cylindrical, basis clavate, pale brown with grey hue, light brownish, becomes darker below, pruinose-striate, hollow. Flesh thin, pale-brownish, pale ochraceous. Taste and smell indistinct. Spore print light rust brown.

Spores 7.2–9.5(–10.5) × 4.1–5(–5.5) µm, Ls = 8.4 ± 0.65 µm, B = 4.7 ± 0.26 µm, Q = 1.5–2.2, av. Q = 1.79 ± 0.13, n = 80; elliptic in face-view, somewhat flattened on one side in profile, fairly thin-walled, pale honey-brown in water, light reddish brown in alkali, germ-pore central, up to 1.5 µm broad. Basidia 13–24 × 6.5–8.5 µm,

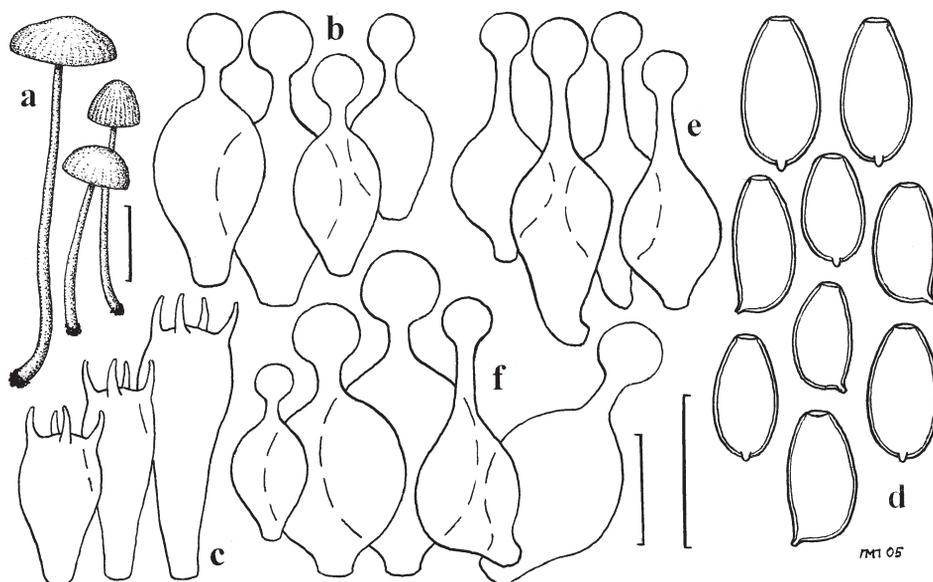


Fig. 1. *Conocybe brachypodii* (Velen.) Hauskn. et Svrček: a – fruit-bodies, b – cheilocystidia, c – basidia, d – spores, e – pileocystidia, f – caulocystidia. Bars = 1 cm for fruit-bodies and 10 µm for microscopic structures.

4-spored, clavate. Cheilocystidia lecythiform, $19\text{--}26 \times 8\text{--}11.5$ µm, head 5–6 µm broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and sphaeropedunculate cells $12\text{--}26$ µm broad intermixed with many pileocystidia similar to cheilocystidia, but having longer neck. Stipitipellis made up of hyaline parallel hyphae $4.5\text{--}10$ µm broad, covered with clusters consisting of lecythiform caulocystidia $15\text{--}29 \times 7\text{--}14.5$ µm with head $3.5\text{--}7$ µm. Veil absent. Clamp-connections present. The reaction with ammonia was positive in all the specimens.

Habitat and distribution. On soil in deciduous (*Acer*, *Fraxinus*, *Populus*, *Quercus*) forests. Apparently this species is fairly common in Europe (Hausknecht 2002, Arnolds 2005). Its distribution in Ukraine is still little known, but it does not seem to be common.

Notes. The features of our specimens well fit those mentioned by Arnolds (2005) and Hausknecht (2002, 2005) for *C. brachypodii*. Only the spores are slightly narrower. The closest species is *C. mesospora* Kühner et Watling, but this has brighter coloured (yellow-orange to brownish orange) pilei, slightly larger spores and a constantly negative ammonia reaction (Hausknecht 2002).

Specimens examined. Ukraine: Luhans'k region, Stanychno-Luhans'ke district, Luhans'k Nature Reserve, Stanychno-Luhans'ke department, $48^{\circ}44'$ N, $39^{\circ}21'$ E, 16 September 2004, leg. M. P. Prydiuk (KW 27147), 17 September 2004, leg. M. P. Prydiuk (KW 27148, 27149), 18 September 2004, leg. M. P. Prydiuk (KW 27150).

Conocybe echinata (Velen.) Singer, Fieldiana Bot. N. S. 21: 103, 1989. Figs. 2, 7

Galera echinata Velen., Novit. mycol. nov.: 69, 1947. – *Conocybe spicula* f. *sordida* Kühner, Le genre *Galera*: 62, 1935; *Conocybe sordida* Kühner et Watling, in Watling: Notes Roy. Bot. Gard. Edinb. 19: 339, 1980.

Pileus 7–10 mm, hemisphaerical-campanulate, then campanulate-convex, smooth, hygrophanous, light brown, nut-brown, beige-brown, paler towards margin, on drying pale ochraceous, striate at margin when fresh, soon non-striate. Lamellae narrowly adnate, ventricose, up to 1.5 mm broad, fairly crowded (L = 15–20, l = 1–3), pale ochraceous, then ochraceous brown, with slightly paler flocculose margin. Stipe 32–55 × 0.3–0.7 mm, cylindrical, basis clavate, slightly thickened, pale brownish, paler at the top, then light brown, pruinose-striate, hollow. Flesh thin, pale ochraceous. Taste and smell indistinct. Spore print light rust-brown.

Spores 7.2–9.1(–9.5) × 4.5–5.5 µm, Ls = 8.4 ± 0.61 µm, B = 4.9 ± 0.3 µm, Q = 1.5–1.9, av. Q = 1.73 ± 0.11, n = 20; elliptic in face-view, slightly flattened on one side in profile, fairly thick-walled, light honey-brown in water, pale reddish brown in alkali, germ-pore central, up to 1 µm broad. Basidia 17–19 × 8–10 µm, 4-spored, clavate. Cheilocystidia lecythiform, 22–33.5 × 11–17 µm, head 5.5–8.5 µm broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and sphaeropedunculate cells 17–29 µm broad intermixed with few pileocystidia similar to cheilocystidia, but smaller. Stipitipellis made up of hyaline parallel hyphae 4.5–12 µm broad, covered with clusters consisting of lecythiform caulocystidia 19–33.5 × 9.5–19 µm with head 5.5–9.5 µm. Veil absent. Clamp-connections present. Ammonia reaction negative.

Habitat and distribution. On soil among grass in forest-margin. Widespread in Europe, in Central Europe common (Hausknecht 1999, Arnolds 2005). In Ukraine apparently rare.

Notes. In our specimens we did not observe a two-coloured stipe, which is one of the main distinctive features of *C. echinata* according to Hausknecht (1999), but other characteristics (particularly microscopic ones) fit well to those mentioned by some authors (Watling 1992; Hausknecht 1999, 2005).

Specimens examined. Ukraine: Chernihiv'ska region, Korop district, Mezyns'kyj National Nature Park, 51°39' N, 33°05' E, 18 August 2004, leg. M. P. Prydiuk (KW 27155).

Conocybe graminis Hauskn., Österr. Z. Pilzk. 5: 181, 1996. Figs. 3, 7

Pileus 7–10 mm, campanulate, then hemisphaerical with low umbo, smooth, hygrophanous, dark brown, dirty rust brown, on drying pale ochraceous, striate to about 1/2 radius when fresh, soon non-striate. Lamellae narrowly adnate, ventricose, up to 1.5 mm broad, fairly crowded (L = 15–20, l = 1–3), pale brownish, then light rust-brown, with flocculose margin. Stem 25–32 × 0.8–1.2 mm, cylindrical with slightly swollen clavate basis, pale ochraceous, straw-coloured, pruinose-striate, hollow. Flesh thin, whitish. Taste and smell indistinct. Spore print not recorded.

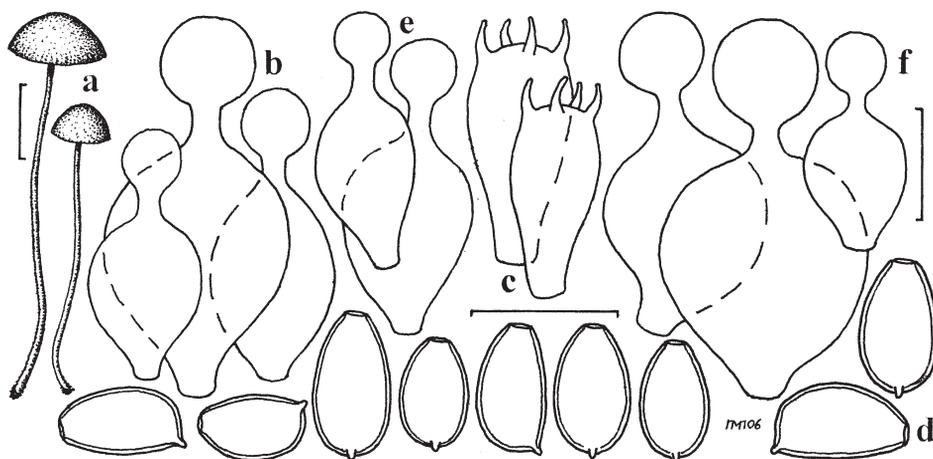


Fig. 2. *Conocybe echinata* (Velen.) Singer: a – fruit-bodies, b – cheilocystidia, c – basidia, d – spores, e – pileocystidia, f – caulocystidia. Bars = 1 cm for fruit-bodies and 10 µm for microscopic structures.

Spores $8-10.5(-11) \times 5-6.5 \mu\text{m}$, $Ls = 9.4 \pm 0.78 \mu\text{m}$, $B = 5.6 \pm 0.39 \mu\text{m}$, $Q = 1.5-1.9$, av. $Q = 1.7 \pm 0.1$, $n = 20$; elliptic or ovate-elliptic in face-view, slightly flattened on one side in profile, fairly thin-walled, pale honey-brown in water, light reddish brown in alkali, germ-pore central, up to $1.5 \mu\text{m}$ broad. Basidia $17-22 \times 8.5-9.5 \mu\text{m}$, 4-spored, clavate. Cheilocystidia lecythiform, $14.5-24 \times 7-9.5 \mu\text{m}$, head $4-5 \mu\text{m}$ broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and sphaeropedunculate cells $14-41 \mu\text{m}$ broad intermixed with few pileocystidia, these similar to cheilocystidia but with longer neck. Stipitipellis made up of hyaline parallel hyphae $5-12 \mu\text{m}$ broad, covered with clusters consisting of lecythiform caulocystidia $19-24 \times 7-12 \mu\text{m}$ with head $4.5-5 \mu\text{m}$, also few non-lecythiform ones present. Veil absent. Clamp-connections present. Ammonia reaction negative.

Habitat and distribution. On soil in connection with dead grass roots in roadside. Very rare in Europe, to date known from Austria, Germany and Italy (Hausknecht 1996). In Ukraine apparently also rare.

Notes. According to the type description of *C. graminis* (Hausknecht 1996) it has a root-like stipe basis and no pileocystidia, but in our specimen the rooting stipe was absent and some pileocystidia were observed in pileipellis. Because of these characteristics this specimen could be mistaken for *C. brachypodii*, but the latter has smaller and narrower spores and a mainly positive ammonia reaction (Hausknecht 2002). As to the root-like stipe basis, this feature can sometimes be absent or very little developed (Hausknecht 1996).

Specimens examined. Ukraine: Kyiv region, Obukhiv district, surrounding of the village of Khalepja, $50^{\circ}06' \text{N}$, $30^{\circ}49' \text{E}$, 18 September 2002, leg. M. P. Prydiuk (KW 27075).

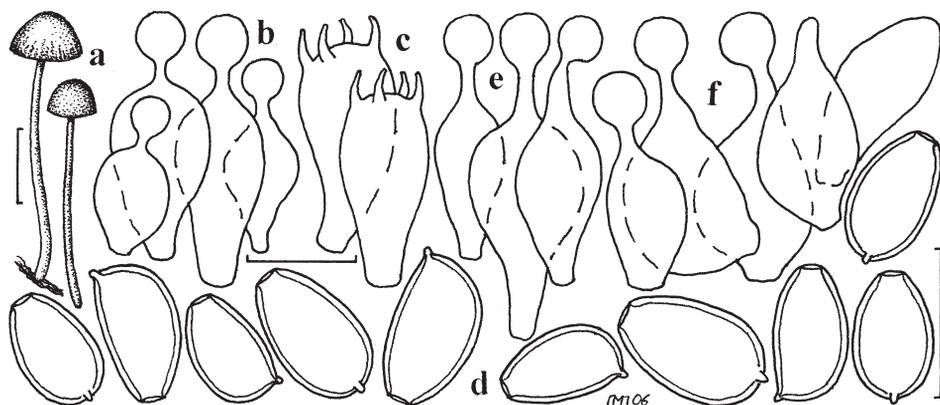


Fig. 3. *Conocybe graminis* Hauskn.: a – fruit-bodies, b – cheilocystidia, c – basidia, d – spores, e – pileocystidia, f – caulocystidia. Bars = 1 cm for fruit-bodies and 10 µm for microscopic structures.

Conocybe juniana (Velen.) Hauskn. et Svrček var. *subsejuncta* Hauskn., Österr. Z. Pilzk. 8: 52, 1999. Figs. 4, 7

Pileus 7–10 mm, hemisphaerical-campanulate, then convex, smooth, hygrophanous, rust-brown, mat brown, on drying pale ochraceous, striate at margin when fresh, soon non-striate. Lamellae narrowly adnate, ventricose, up to 1 mm broad, not crowded ($L = 20\text{--}25$, $l = 1\text{--}3$), ochraceous-brownish, then light rust-brown, with flocculose margin. Stem $32\text{--}35 \times 0.3\text{--}0.5$ mm, cylindrical with clavate basis, pale brown, at top paler to whitish, pruinose, hollow. Flesh thin, ochraceous. Taste and smell indistinct. Spore print not recorded.

Spores $7\text{--}9.5 \times 4.5\text{--}5.5$ µm, $L_s = 8.6 \pm 0.75$ µm, $B = 5 \pm 0.32$ µm, $Q = 1.6\text{--}1.9$, av. $Q = 1.71 \pm 0.08$, $n = 20$; ovate-elliptic in face-view, slightly flattened on one side in profile, thick-walled, light honey in water, reddish brown in alkali, germ-pore central, up to 1.5 µm broad. Basidia $19\text{--}22 \times 8\text{--}9$ µm, 4-spored, clavate. Cheilocystidia lecythiform, $22\text{--}31 \times 9.5\text{--}15$ µm, head 5–7 µm broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and sphaeropedunculate cells 17–40 µm broad intermixed with many yellowish coloured pileocystidia similar with cheilocystidia. Stipitipellis made up of hyaline parallel hyphae 7–12 µm broad, covered with clusters of lecythiform caulocystidia $19\text{--}34 \times 9\text{--}18$ µm with head 5–9.5 µm broad. Veil absent. Clamp-connections present. Ammonia reaction negative.

Habitat and distribution. On soil among grass at deciduous forest (*Quercus*) margin. Widespread in Europe and common in many regions, known also from Central Asia (Arnolds 2005). The distribution in Ukraine is still poorly known, apparently it is not common.

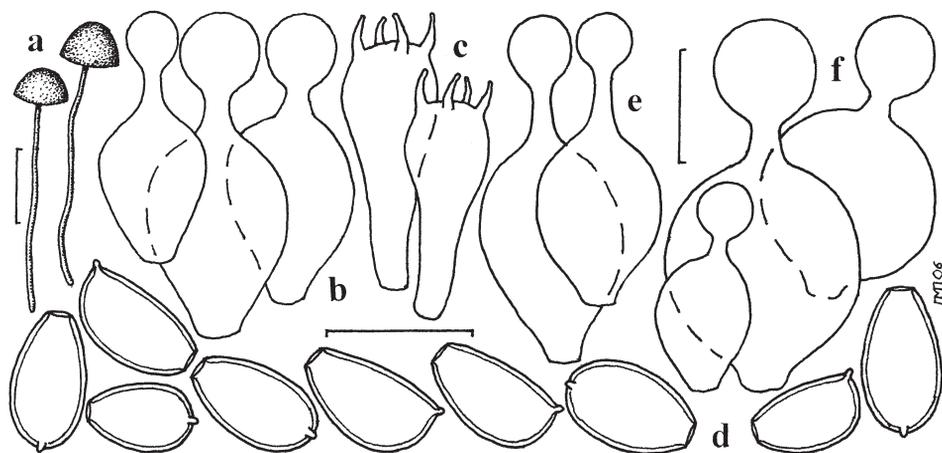


Fig. 4. *Conocybe juniana* (Velen.) Hauskn. et Svrček var. *subsejuncta* Hauskn.: a – fruit-bodies, b – cheilocystidia, c – basidia, d – spores, e – pileocystidia, f – caulocystidia. Bars = 1 cm for fruit-bodies and 10 μ m for microscopic structures.

Notes. This variety differs from *C. juniana* var. *juniana* (= *C. magnicapitata* P.D. Orton) by clearly smaller non-lentiform spores and smaller fruit-bodies. Another variety of this species, *C. juniana* var. *sordescens* also has larger spores (Hausknecht 1999). Our specimen has somewhat narrower spores, but other features well fit those given by Hausknecht. The close species *C. rickeniana* P. D. Orton has slightly larger and more thick-walled spores and brighter coloured fruit-bodies. *C. echinata* is very similar to *C. juniana* var. *subsejuncta*, but that species has smaller, more thin-walled and paler spores (Arnolds 2005; Hausknecht 1999, 2005).

Specimens examined. Ukraine: Poltavs'ka region, Dykan'ka district, surrounding of Dykan'ka, 49°47' N, 34°35' E, 24 October 2003, leg. M. P. Prydiuk (KW 27082).

Conocybe microspora* (Velen.) Dennis var. *microspora, Bull. Soc. Mycol. Fr. 69: 189, 1953. Figs. 5, 7

Galera microspora Velen., České houby 3: 542, 1921. – *Galera sparteae* sensu Ricken, Blätterpilze: 226, 1915; sensu Konrad et Maubl., Ic. sel. fung. 2: pl. 172, fig. 2, 1927. – *Conocybe robertii* sensu Enderle, Z. Mykol. 59: 35, 1993.

Pileus 5–10 mm, convex-campanulate, then plane-convex, smooth, hygrophanous, leather-brown, yellowish brown, light rust-brown, slightly darker on disc, on drying ochraceous-brown, darker on disc, striate to 1/2 radius when fresh. Lamellae narrowly adnate, ventricose, up to 1 mm broad, not crowded (L = 20–25, l = 1–3), yellow-brown, then rust-brown, with faintly flocculose margin. Stem 20–38 × 0.3–1 mm, cylindrical with slightly swollen basis to 1.5 mm broad, pale

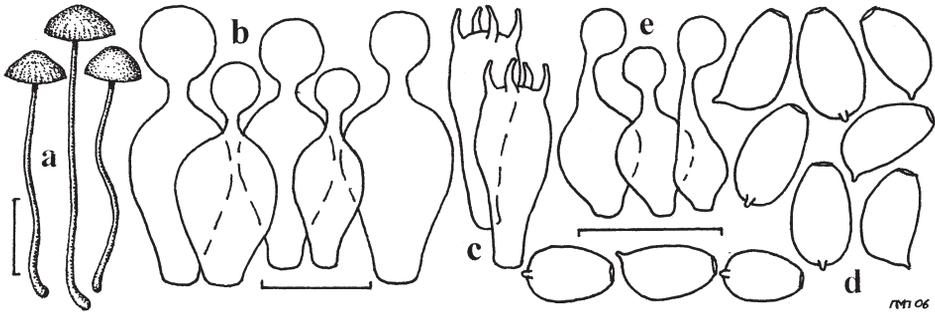


Fig. 5. *Conocybe microspora* (Velen.) Dennis var. *microspora*: a – fruit-bodies, b – cheilocystidia, c – basidia, d – spores, e – caulocystidia. Bars = 1 cm for fruit-bodies and 10 μ m for microscopic structures.

brownish, grey-brownish, at top paler, pruinose, hollow. Flesh thin, ochraceous whitish. Taste and smell indistinct. Spore print not recorded.

Spores 5.5–7.5(–8) \times 3.5–4.5 μ m, Ls = 6.6 \pm 0.61 μ m, B = 4 \pm 0.32 μ m, Q = 1.5–2, av. Q = 1.66 \pm 0.13, n = 40; elliptic in face-view, slightly flattened on one side or slightly amygdaliform in profile, thin-walled, light yellow in water, orange-yellow in alkali, germ-pore central, up to 1 μ m broad. Basidia 16–19 \times 7–8 μ m, 4-spored, clavate. Cheilocystidia lecythiform, 17–25 \times 7–10.5 μ m, head 4–7 μ m broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and sphaeropedunculate cells 12–24 μ m broad intermixed with many pileocystidia similar to cheilocystidia. Stipitipellis made up of hyaline parallel hyphae 5–12 μ m broad, covered with clusters of lecythiform caulocystidia 14.5–18 \times 5–8 μ m with head 4–5 μ m broad; also few clavate cells present. Veil absent. Clamp-connections present. Ammonia reaction negative.

Habitat and distribution. On soil among grass in dry meadow. Widespread but not common in Europe (Hausknecht 2002, Arnolds 2005), in Ukraine apparently rare.

Notes. This variety is characterised by small fruit-bodies and very small slightly amygdaliform spores. *C. microspora* var. *brunneola* (Kühner et Watling) Singer et Hauskn. differs by spores distinctly phaseoliform in profile (Watling 1982, 1992; Hausknecht 2002, 2005; Arnolds 2005). *C. microspora* var. *microspora* can be confused with *C. dumetorum* (Velen.) Svrček, which however has minutely verrucose spores of similar shape (Arnolds 2005). Also *C. brachypodii* and *C. roberti* Singer et Hauskn. are fairly close to *C. microspora* var. *microspora*, but the first of them differs by larger lighter coloured fruit-bodies and larger spores as well as a positive ammonia reaction, and the second has much smaller fruit-bodies, smaller ovate-elliptic spores and distant lamellae (Hausknecht 2002). Our specimens have larger cystidium heads (4–7 μ m) than Hausknecht (2002) (3–5(–6) μ m) and Arnolds (2005) (2.5–5 μ m) indicated, but the other characteristics fit very well.

Specimens examined. Ukraine: Donetsk region, Slovians'k district, Sviati Gory National Nature Park, surrounding of the village of Bogorodyche, 49°01' N, 37°32' E, 1 October 2004, leg. M. P. Prydiuk (KW 27139, 27140).

Conocybe subxerophytica Singer et Hauskn. var. *brunnea* Hauskn., Österr. Z. Pilzk. 11: 74, 2002. Figs. 6, 7

Pileus 7–12 mm, conical-convex, then convex, smooth, hygrophanous, orange-brown, light rust-brown with reddish hue, drying orange-ochraceous, brownish-ochraceous, not striate but slightly radially-wrinkled. Lamellae narrowly adnate, ventricose, up to 1.5 mm broad, fairly crowded ($L = 18\text{--}25$, $l = 1\text{--}3$), pale brown, then rust-brown, with paler flocculose margin. Stem 40–50 × 0.7–1 mm, cylindrical with slightly swollen clavate basis, pale rust-brown, pruinose, hollow. Flesh thin, ochraceous. Taste and smell indistinct. Spore print not recorded.

Spores 9.5–12 × 6.5–8 × 6–6.7 μm, $L_s = 10.9 \pm 0.71$ μm, $B = 7.1 \pm 0.32$ μm, $Q = 1.4\text{--}1.7$, av. $Q = 1.53 \pm 0.08$, $n = 20$; elliptic in face-view, lentiform, narrowly-elliptic and slightly flattened on one side in profile, thick-walled, honey-brown in water, reddish brown in alkali, germ-pore central, up to 1.5 μm broad. Basidia 15–18 × 8–11 μm, 4-spored, clavate. Cheilocystidia lecythiform, 14.5–20.5 × 6–7.5 μm, head 3.5–5 μm broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and sphaeropedunculate cells 16–24 μm broad. Stipitipellis made up of hyaline parallel hyphae 6–12 μm broad, covered with clusters of lecythiform caulocystidia 17–31 × 7–9.5 μm with head 4–5 μm broad, mixed with some clavate and (at stipe top) narrowly lageniform and cylindrical cells (24–43 × 6–7 μm). Veil absent. Clamp-connections present. Ammonia reaction negative.

Habitat and distribution. On soil among grass on roadside. Fairly rare in Europe (Hausknecht 2002, Arnolds 2005), in Ukraine apparently also rare.

Notes. This variety has somewhat larger fruit-bodies, a darker radially-wrinkled pileus and more crowded lamellae than *C. subxerophytica* var. *subxerophytica*, but its microscopical features are rather similar to that variety (Hausknecht 2002, 2005). *C. semiglobata* is close to *C. subxerophytica*, but mainly differs by non-lentiform spores (Hausknecht 2002, 2005; Arnolds 2005). Microscopical features of our specimen are generally similar to those indicated by Hausknecht (2002, 2005) and Arnolds (2005), but on the stipe surface, besides lecythiform caulocystidia, also narrowly-lageniform and cylindrical elements are present (mainly at stipe top). It must be mentioned here that a minor number of non-lecythiform caulocystidia can be present in many species of the *Conocybe tenera*-group (Hausknecht, pers. comm.).

Specimens examined. Ukraine: Donetsk region, Slovians'k district, Sviati Gory National Nature Park, surrounding of the village of Bogorodyche, 49°01' N, 37°32' E, 1 October 2004, leg. M. P. Prydiuk (KW 28826).

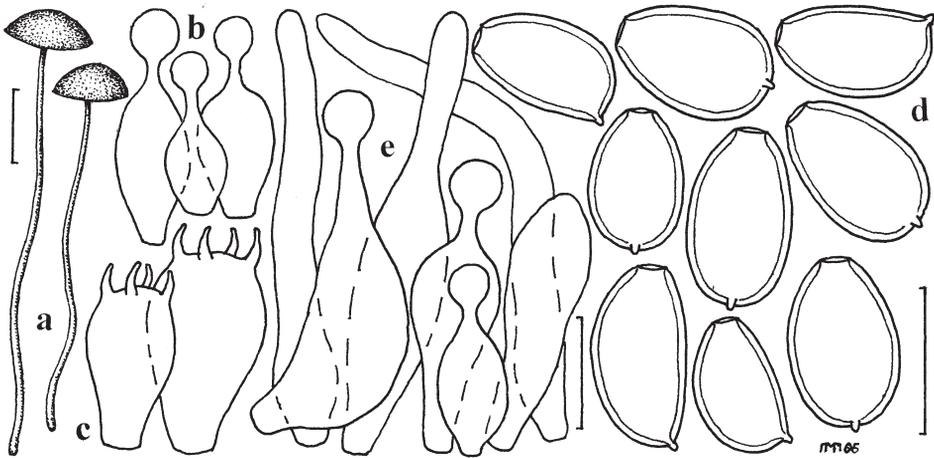


Fig. 6. *Conocybe subxerophytica* Singer et Hauskn. var. *brunnea* Hauskn.: a – fruit-bodies, b – cheilocystidia, c – basidia, d – spores, e – caulocystidia. Bars = 1 cm for fruit-bodies and 10 µm for microscopic structures.



Fig. 7. Distribution of the species of *Conocybe* found in Ukraine.

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