

## New records of *Pholiotina* species in Ukraine

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In the article, data about new records of representatives of the genus *Pholiotina* Fayod (sections *Pholiotina*, *Piliferae* (Kühner) Singer and *Vestitae* Watling) from the territory of Ukraine are cited. Information about the habitats of 6 species new to Ukraine (*P. aberrans*, *P. cyanopus*, *P. dasypus*, *P. filaris*, *P. mairei*, *P. vestita*) is given. For each species a description and drawings are provided.

**Key words:** Basidiomycetes, Agaricales, *Pholiotina*, *Piliferae*, *Vestitae*

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V článku jsou prezentovány údaje o nálezech zástupců rodu *Pholiotina* (ze sekcí *Pholiotina*, *Piliferae* (Kühner) Singer a *Vestitae* Watling) na Ukrajině. Jde o 6 druhů nových pro toto území (*P. aberrans*, *P. cyanopus*, *P. dasypus*, *P. filaris*, *P. mairei*, *P. vestita*). Každý druh je popsán a vyobrazen a jsou publikovány i údaje o prostředí, kde byl nalezen.

### INTRODUCTION

For a long time mycologists discussed whether the genus *Pholiotina* Fayod was a part of the genus *Conocybe* Fayod (Watling 1982, 1992) or represented a separate genus (Singer 1950, 1975; Kühner and Romagnesi 1953; Moser 1983). Both genera show much similarity in their morphology, however, recent molecular research confirmed the second opinion (Moncalvo et al. 2002): within the *Bolbitiaceae* a conocyboid clade (the genera *Conocybe* and *Gastrocybe* Watling) and a bolbitioid one (*Bolbitius* Fr. and *Pholiotina*) have been recognised. Partly therefore in most modern works (Arnolds 2005, Hausknecht 2005) these genera are treated as independent ones.

Both *Pholiotina* and other species of the family *Bolbitiaceae* rarely attracted attention of mycologists in Ukraine. As a rule, these species were mentioned only in general floristic lists of mushrooms of this country. To date, only 7 species of this genus were known from the territory of Ukraine: *Pholiotina arrhenii* (Fr.) Singer, *P. teneroides* (J.E. Lange) Singer and *P. vexans* (P.D. Orton) Bon (section *Pholiotina*), *P. brunnea* (Watling) Singer (section *Intermediae* (Watling) Arnolds),

*P. velata* (Velen.) Hauskn. (section *Vestitae* Watling), as well as *P. coprophila* (Kühner) Singer and *P. pygmaeoaffinis* (Fr.) Singer (section *Piliferae* (Kühner) Singer) (Bobyak 1907, Pilát 1940, Zerova 1956, Wasser and Soldatova 1977, Zerova, Sosin and Rozhenko 1979, Moser 1993, Besedina 1998, Prydiuk 2003a, 2003b). During the last five years, as result of my investigations, 6 more species of this genus were collected, which are presented here in detail.

#### MATERIALS AND METHODS

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

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

SEM investigations were carried out with a JEOL/EO JSM-6060 using 30 kV accelerating voltage. Air-dried spores were coated with gold for 5-6 minutes.

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

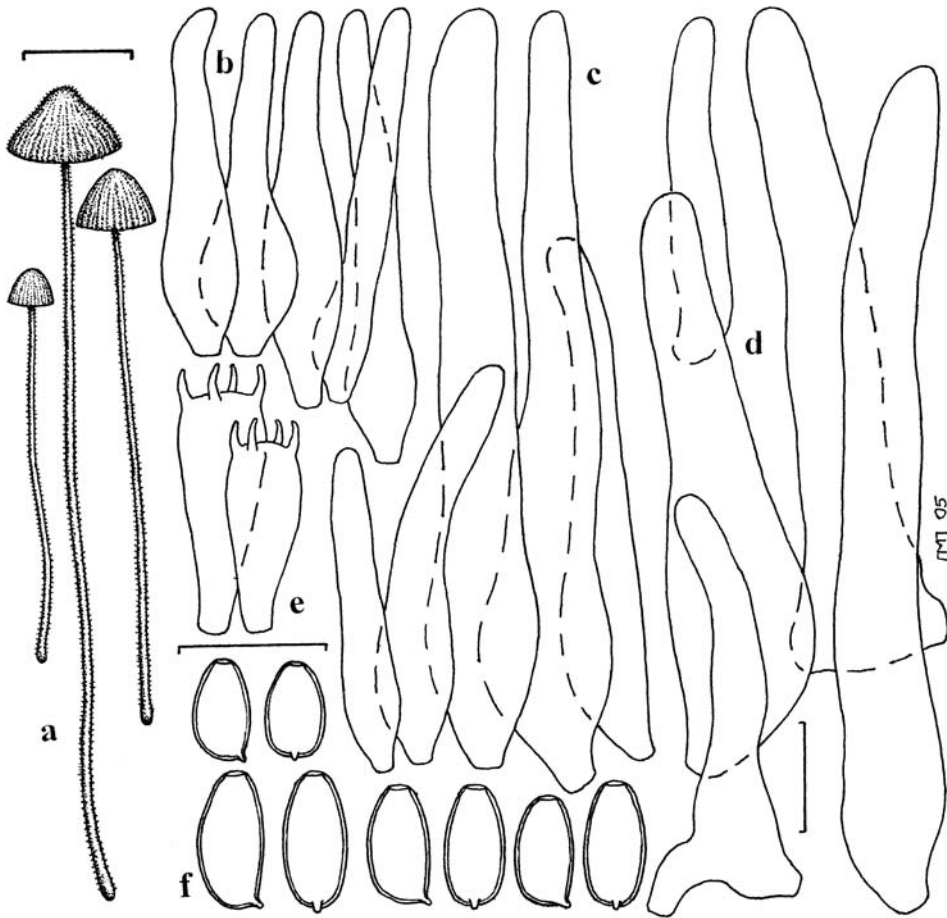
In the descriptions these abbreviations are used: B = average width of the spores in front view; Ls = average length of the spores; L = number of lamellae reaching stipe; l = number of short lamellae (not reaching stipe) between two long ones; n = general number of measured spores; Q = length divided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

#### RESULTS AND DISCUSSION

***Pholiotina aberrans*** (Kühner) Singer, Acta Inst. Bot. Komarov Acad. Sci. USSR, 2 (6): 436, 1950. Fig. 1, 8

*Galera aberrans* Kühner, Botaniste 17: 168, 1926; *Conocybe aberrans* (Kühner) Kühner, Le genre *Galera*: 126, 1935. – *Galera rimosa* Velen., Novit. mycol.: 129, ('1939') 1940; *Pholiotina rimosa* (Velen.) Hauskn. et Svrček, Czech Mycol. 51: 61, 1999. – *Conocybe sulcatipes* sensu Watling, Br. Fungus Fl. 3: 86, 1982; sensu Hauskn., Czech Mycol. 52: 302, 2001; sensu auct. eur.

Pileus 4–10 mm, campanulate to hemispherical, minutely pubescent, hygrophanous, light brown, drying pale brown to whitish ochraceous, margin striate to half-way when fresh. Lamellae narrowly adnate, nearly free, to 1 mm broad, not very crowded (L = 25–30, l = 1–3), ochraceous, then ochraceous brown, mar-



**Fig. 1.** *Pholiotina aberrans*: **a** – fruit bodies, **b** – cheilocystidia, **c** – pileocystidia, **d** – caulocystidia, **e** – basidia, **f** – spores. Bars = 1 cm for fruit bodies and 10  $\mu$ m for microstructures.

gin white, flocculose. Stipe 35–70  $\times$  0.3–1 mm, equal or slightly swollen at base, white with brownish tinge, minutely pubescent. Flesh in pileus pale brown, in stipe brownish white. Taste and smell indistinct. Spore print ochraceous-brown.

Spores 7–9  $\times$  4–5  $\mu$ m, Ls = 7.8  $\pm$  0.55  $\mu$ m, B = 4.5  $\pm$  0.24  $\mu$ m, Q = 1.5–1.96, av. Q = 1.74  $\pm$  0.12, n = 40; elliptic to oblong-elliptic in face-view, slightly flattened on one side in profile, fairly thin-walled, yellowish brown in water, darkening in alkali, germ-pore small but distinct. Basidia 4-spored, 17–22  $\times$  7–8.5  $\mu$ m, clavate. Cheilocystidia fusiform to lageniform, with more or less distinct swollen base, 31–41  $\times$  5–9.5  $\mu$ m, neck 3–4.5  $\mu$ m broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform cells 12–22  $\mu$ m broad, intermixed with numerous

pileocystidia. Pileocystidia fusiform to lageniform,  $29\text{--}72 \times 5\text{--}12 \mu\text{m}$ , with long neck  $3\text{--}6.5 \mu\text{m}$  broad. Stipitipellis of pale brownish, parallel hyphae  $5\text{--}10 \mu\text{m}$  broad covered with numerous caulocystidia. Caulocystidia nearly lageniform or fusiform,  $31\text{--}77 \times 5.5\text{--}14.5 \mu\text{m}$ . Veil not observed. Clamp-connections not observed.

**Habitat and distribution:** on soil among grass at woodland margins, among moss in pine forests. This species is fairly widespread in Europe and rather common in some regions (Arnolds 2005). In Ukraine it is apparently rare.

**Specimens examined:** Ukraine: Rivne region, Dubrovysia district, near the village Krupove, 7 July 2000 (KW 27083), 16 July 2003 (KW 27084).

This species is easily recognised by its very long (up to  $80 \mu\text{m}$  or more) caulo- and pileocystidia. *P. aberrans* is close to *P. mairei* (see below) and *P. parvula* (Døssing et Watling) Bon, but both species have smaller fruit bodies, pileocystidia and spores (Arnolds 2005, Hausknecht 2005). Our specimens have smaller spores than indicated by Kühner and Romagnesi (1953), Svrček (1983), Arnolds (2005) and Hausknecht (2005) ( $7.5\text{--}11 \times 4.5\text{--}6 \mu\text{m}$ ), but their size rather well fit that given by Watling (1982), Svrček (1961) and Moser (1983).

***Pholiotina cyanopus*** (G.F. Atk.) Singer, Lilloa 22: 487, 1951.

Fig. 2, 8

*Galerula cyanopus* G.F. Atk., Proc. Amer. Phil. Soc. 57: 367, 1918; *Conocybe cyanopus* (G.F. Atk.) Kühner, Le genre *Galera*: 128, 1935; *Pholiotina cyanopoda* (G.F. Atk.) Singer, Acta Inst. Bot. Komarov Acad. Sci. SSSR, Series 2(6): 425, 1950.

Pileus  $3\text{--}5 \text{mm}$ , campanulate then convex, smooth, hygrophanous, dark rust-coloured, drying pale avellaneous, striate to centre when moist. Lamellae narrowly adnate, nearly free, to  $1 \text{mm}$  broad, fairly crowded ( $L = 16\text{--}20$ ,  $l = 1\text{--}3$ ), light rust-coloured, margin whitish, flocculose. Stipe  $15\text{--}40 \times 0.5 \text{mm}$ , equal, base clavate, light rust-coloured, pruinose, especially at apex. Flesh in pileus thin, pale rust-coloured, in stipe hollow, dark rust-coloured. Taste and smell indistinct. Spore print light rust-brown.

Spores  $6.5\text{--}9.0 \times 4.3\text{--}6.0 \mu\text{m}$ ;  $L_s = 7.8 \pm 0.72 \mu\text{m}$ ,  $B = 4.9 \pm 0.43 \mu\text{m}$ ;  $Q = 1.4\text{--}1.8$ , av.  $Q = 1.58 \pm 0.1$ ,  $n = 40$ ; broadly elliptic in face-view, slightly flattened on one side in side-view, fairly thin-walled, pale brown in water, rust-orange in alkali, germ-pore small but distinct. Basidia 4-spored,  $14\text{--}19 \times 7.0\text{--}8.5 \mu\text{m}$ , clavate. Cheilocystidia  $19\text{--}31 \times 7\text{--}16 \mu\text{m}$ , lageniform, drawn out into a neck up to  $15 \mu\text{m}$  long from swollen base, with obtuse or subcapitate apex  $3.5\text{--}6 \mu\text{m}$  broad. Pleurocystidia absent. Pileipellis a hymeniform layer of sphaeropedunculate cells  $12\text{--}26 \mu\text{m}$  broad. Stipitipellis of hyaline, parallel, filamentous hyphae covered with clusters of caulocystidia. Caulocystidia  $24\text{--}52 \times 12\text{--}19 \mu\text{m}$ , lageniform, drawn out into a short neck from swollen base, with obtuse or subcapitate apex  $5\text{--}7 \mu\text{m}$  broad. Veil not observed. Clamp-connections not observed.

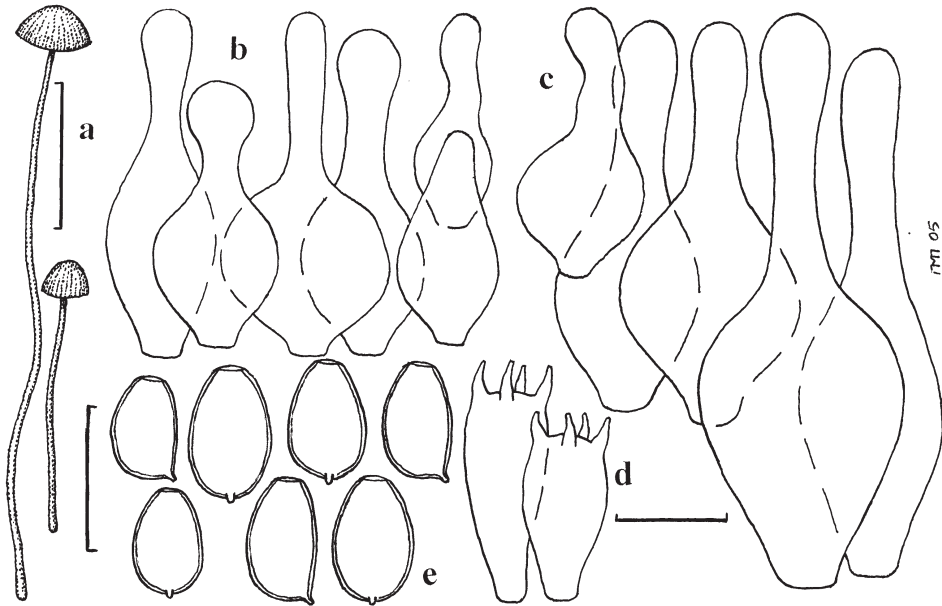


Fig. 2. *Pholiotina cyanopus*: a – fruit bodies, b – cheilocystidia, c – caulocystidia, d – basidia, e – spores. Bars = 1 cm for fruit bodies and 10  $\mu$ m for microstructures.

Habitat and distribution: on soil in meadow. This species is rare although rather widespread in Europe and also known from North America (Arnolds 2005), in Ukraine it is apparently rare and overlooked.

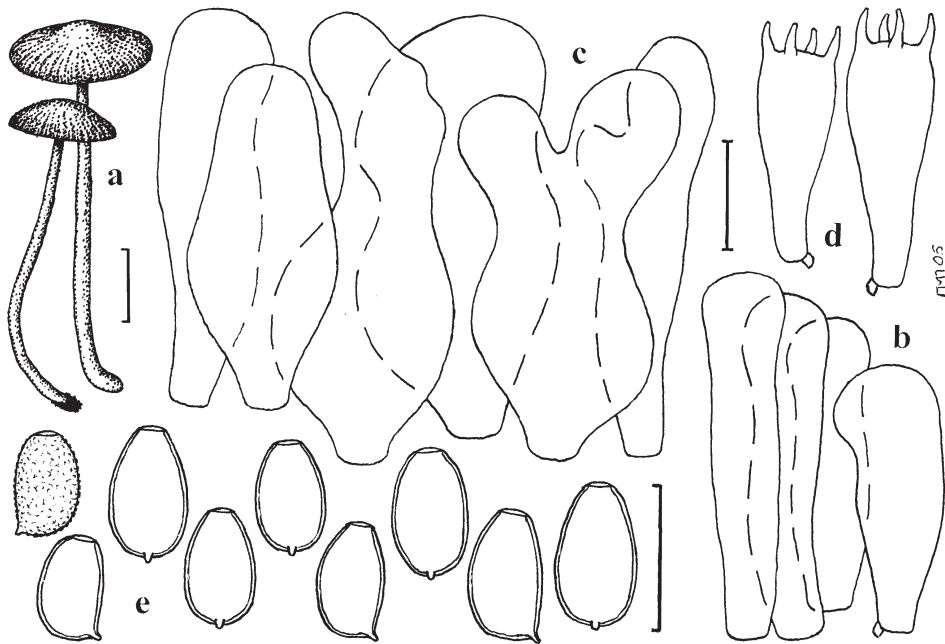
Specimen examined: Ukraine: Kiev region, Obukhiv district, near the village Kopachiv, 16 September 2002 (KW 28823).

We did not observe a bluish green colour of the stipe-base in our specimen, which is characteristic of this species (Watling 1982, Moser 1983, Hausknecht 2005) but, as Arnolds (2005) indicated, the greenish tinge is often weak or hardly visible. The spore size of our specimen is larger than Watling (1982) indicated (6.5–7.5(–8.5)  $\times$  4.5–5  $\mu$ m) but fit rather well those quoted by Hausknecht (2005) ((6.5–)7–8.5(–10)  $\times$  4–5(–7)  $\mu$ m) and Arnolds (2005) (7–9(–10)  $\times$  4.5–5.5  $\mu$ m).

***Pholiotina dasypus*** (Romagn.) P.-A. Moreau, Fungal Diversity 20: 134, 2005.

Fig. 3, 4, 8

*Naucoria dasypus* Romagn., Bull. Soc. Mycol. France 53: 121, 1937. – *Conocybe subnuda* Kühner, Le genre *Galera*: 140, 1935; *Conocybe subnuda* (Kühner) Kühner et Watling in Watling, Notes Roy. Bot. Gard. Edinb. 40: 553, 1983; *Pholiotina subnuda* (Kühner ex Kühner and Watling) Bon, Doc. Mycol. 21(83): 39, 1991. – *Conocybe utriiformis* P.D. Orton, Trans. Br. Mycol. Soc. 43: 196, 1960; *Pholiotina utriiformis* (P.D. Orton) Bon, Doc. mycol. 21(83): 39, 1991. – *Conocybe subverrucispora* J. Veselský et Watling, Česká Mykol. 26: 201, 1972; *Pholiotina subverrucispora* (J. Veselský et Watling) M.M. Moser ap. Gams, Kleine Kryptogamenflora II b/2: 283, 1978.



**Fig. 3.** *Pholiotina dasypus*: **a** – fruit bodies, **b** – cheilocystidia, **c** – caulocystidia, **d** – basidia, **e** – spores. Bars = 1 cm for fruit bodies and 10  $\mu$ m for microstructures.

Pileus 15–20 mm, convex, then expanded-convex with small obtuse umbo, hygrophanous, smooth, fulvous, drying pale fulvous, striate to centre when moist. Lamellae narrowly adnate, nearly free, ventricose, to 2 mm broad, little crowded ( $L = 20\text{--}25$ ,  $l = 1\text{--}7$ ), light rust-coloured, margin whitish, flocculose. Stipe 40–50  $\times$  1.5–2 mm, slightly attenuated upwards, base slightly broadened, white with rusty hue, entirely pruinose. Flesh in pileus thin, white with rust hue, in stem hollow, white. Taste and smell indistinct. Spore print light rust-brown.

Spores 7–9(–9.5)  $\times$  4.5–5.5  $\mu$ m,  $L_s = 8.2 \pm 0.75$   $\mu$ m,  $B = 5.1 \pm 0.3$   $\mu$ m,  $Q = 1.44\text{--}1.8$ , av.  $Q = 1.61 \pm 0.1$ ,  $n = 20$ ; elliptic in face-view, slightly flattened on one side in side-view, very finely roughened, smooth in light microscope, rugulose-verruculose in SEM, pale fulvous in water and alkali, germ-pore small but distinct. Basidia 4-spored, 19–22  $\times$  7–8  $\mu$ m, clavate. Cheilocystidia 19–33  $\times$  6.5–10  $\mu$ m, clavate, subcapitate and utriform. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and spheropedunculate cells 12–26  $\mu$ m broad. Stipitipellis of hyaline, parallel, filamentous hyphae covered with clusters of caulocystidia. Caulocystidia 31–38.5  $\times$  8.5–19  $\mu$ m, clavate, subcapitate or utriform, sometimes branched. Veil not found. Clamp-connections present.

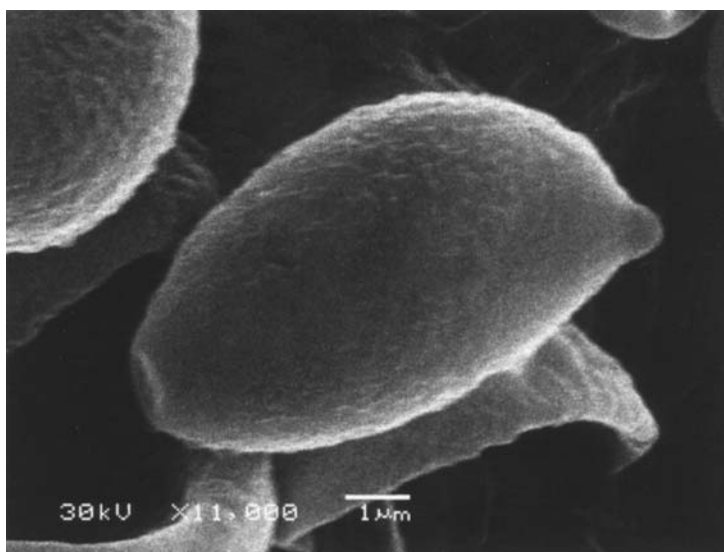


Fig. 4. Spores of *Pholiotina dasypus* in SEM. Bar = 1  $\mu$ m.

**Habitat and distribution:** on litter in pine forest. Widespread in Europe and North Africa, recorded from Mexico (Arnolds 2005). This species is apparently overlooked in Ukraine, it is probably rare but widespread in this country.

**Specimen examined:** Ukraine: Suny region, Seredyna-Buda district, Desnians'ko-Starohutskyj National Nature Park, near the village Stara Huta, 16 August 2003 (KW 28824).

This species is recognised by its finely rough spores, utriform cystidia and white stipe. Spores of our specimens were shorter than Kühner and Romagnesi (1953) (8.5–10.5  $\mu$ m), Hausknecht (1993, 2005) (6.5–10.5  $\mu$ m) and Arnolds (2005) (6.5–10.5(–11.5)  $\mu$ m) indicated for this species and much smaller than Veselský and Watling (1972) mentioned for *Conocybe subverrucispora*: (8.5–)9.5–11.5(–13.6)  $\times$  5–6.5(–7.5)  $\mu$ m. They looked smooth under a light microscope, but were distinctly rugulose-verruculose in SEM (Fig. 4). Veil has not been found at our specimen, but Hausknecht (1993) indicated that the veil is well seen mainly in young, fresh fruit bodies and at favourable weather conditions.



***Pholiotina filaris*** (Fr.) Singer, Beih. Bot. Centralbl., Abt. B, 56: 170, 1936.

Fig. 5, 8

*Agaricus togularis* var. *filaris* Fr., Ic. sel. Hymenomyc. Vol. 2: 2, 1884; *Conocybe filaris* (Fr.) Kühner, Le genre *Galera*: 139, 1935; *Pholiota filaris* (Fr.) J.E. Lange, Fl. agaric. danic. 1: 6, 1940. – *Galera pusilla* Ouel., Fl. Mycol. France: 81, 1888.

Pileus 8–12 mm, convex, plano-convex, then applanate with low umbo, smooth, hygrophanous, brown, drying dark ochraceous to pale ochraceous, in centre darker, cinnamon with rusty tinge, margin striate to half-way when moist. Lamellae narrowly adnate, nearly free, to 1 mm broad, fairly crowded ( $L = 25\text{--}30$ ,  $l = 1\text{--}3$ ), yellowish rust-coloured, margin white, flocculose-denticulate. Stipe 20–50 × 0.5–1.5 mm, annulate, equal, base slightly swollen, apex ivory, pruinose, below ring white, silky-fibrillose; ring small but conspicuous, felt-like, striate above, whitish, in about the middle of stipe. Flesh in pileus thin, yellowish brown, in stipe hollow, paler, but dark-brown at base. Taste and smell indistinct. Spore-print rust-coloured.

Spores 6.5–8.5(–9) × 3.5–5 μm,  $L_s = 7.6 \pm 0.69$  μm,  $B = 4.3 \pm 0.44$  μm,  $Q = 1.5\text{--}2$ , av.  $Q = 1.76 \pm 0.12$ ,  $n = 20$ ; elliptic in face-view, slightly amygdaliform in side-view, fairly thick-walled, sienna in water, darkening in alkali, germ-pore small. Basidia 4-spored, 17–26 × 5.5–7 μm, clavate. Cheilocystidia lageniform, 22–34 × 6–10 μm, neck 3–4 μm broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform and spheropedunculate cells 14–29 μm broad. Stipitipellis consisting of hyaline, parallel hyphae 6–9 μm broad. Veil made up of interwoven hyaline hyphae 1.5–8 μm broad. Clamp-connections present.

**Habitat and distribution:** on bare soil in deciduous forest. Fairly rare in Europe (Hausknecht 2005). In Ukraine this species is apparently also rather rare.

**Specimen examined:** Ukraine: Donetsk region, Sloviansk district, National Nature Park “Sviati Gory”, near the village Bogorodychne, 28 September 2004 (KW 27141).

This species is distinguished from other annulate one by small fruit bodies and spores (Watling 1982). The spores of our specimens were smaller than Singer (1950), Moser (1983) and Hausknecht (2005) indicated and are closer to the size given by Watling ((6.5–)7–8.5(–9.5) × (4–)4.5–5 μm) (Watling 1982).

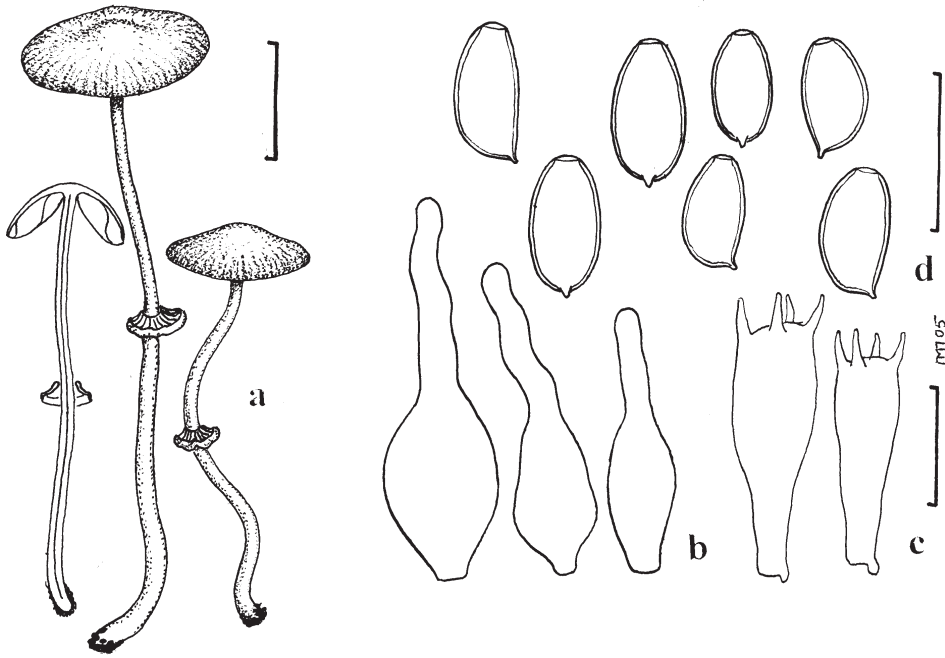
***Pholiotina mairei*** (Watling) Enderle, Beitr. Kenntn. Pilze Mitteleur. 2: 113, 1986.

Fig. 6, 8

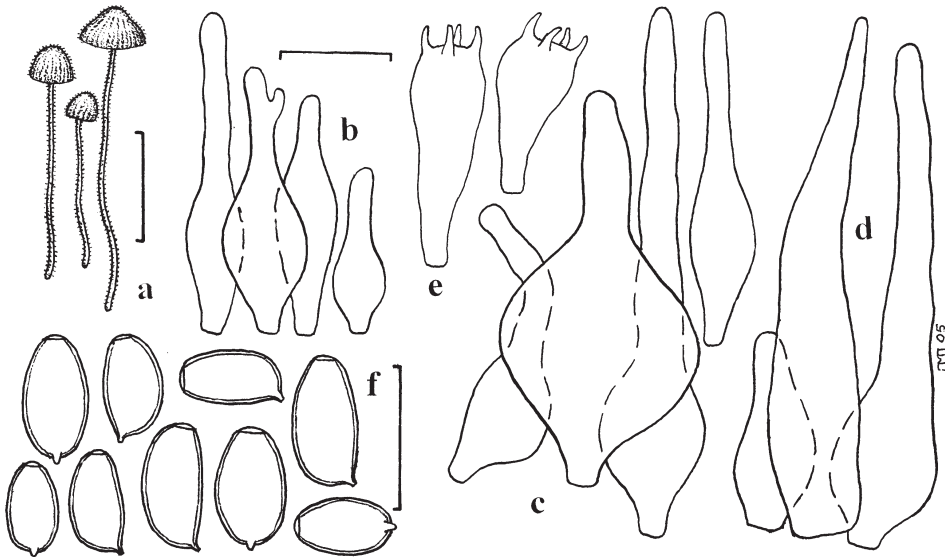
*Conocybe mairei* Kühner, Le genre *Galera*: 131, 1935; *Galera mairei* (Kühner) J.E. Lange, Dansk Bot. Ark. 9: 40, 1938; *Pholiotina mairei* (Kühner) Singer, Acta Inst. Bot. Komarov Acad. Sci. SSSR, Ser. 2(6): 435, 1950; *Conocybe mairei* (Kühner) Watling, Bibl. Mycol. 61: 41, 1977.

Pileus 3–7 mm, campanulate, then convex, slightly umbonate, minutely pubescent, hygrophanous, light brown, drying pale brown to ochraceous, margin striate to disc when moist. Lamellae narrowly adnate, to 1 mm broad, fairly crowded ( $L = 20\text{--}25$ ,  $l = 1$ ), ochraceous, then rust-coloured, margin white, flocculose. Stipe 15–30 × 0.3–0.5 mm, equal or slightly swollen at base, pale brown, minutely pubes-





**Fig. 5.** *Pholiotina filaris*: **a** – fruit bodies, **b** – cheilocystidia, **c** – basidia, **d** – spores. Bars = 1 cm for fruit bodies and 10 µm for microstructures.



**Fig. 6.** *Pholiotina mairei*: **a** – fruit bodies, **b** – cheilocystidia, **c** – pileocystidia, **d** – caulocystidia, **e** – basidia, **f** – spores. Bars = 1 cm for fruit bodies and 10 µm for microstructures.

cent. Flesh pale ochraceous in pileus and stipe. Taste and smell indistinct. Spore-print ochraceous with rusty tinge.

Spores  $6-8(-8.5) \times 3.5-5 \mu\text{m}$ ,  $L_s = 7.3 \pm 0.6 \mu\text{m}$ ,  $B = 4.2 \pm 0.35 \mu\text{m}$ ,  $Q = 1.5-2$ , av.  $Q = 1.74 \pm 0.12$ ,  $n = 40$ ; elliptic in face-view, slightly flattened on one side in profile, thin-walled, ochraceous in water, fulvous in alkali, germ-pore small, indistinct. Basidia 4-spored,  $15-19 \times 6-7 \mu\text{m}$ , clavate. Cheilocystidia lageniform,  $14-29 \times 5-7 \mu\text{m}$ , with long neck  $2-3 \mu\text{m}$  broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform cells  $10-24 \mu\text{m}$  broad intermixed with numerous pileocystidia. Pileocystidia lageniform,  $24-48 \times 6-10(-19) \mu\text{m}$ , with swollen base and long neck  $2.5-3 \mu\text{m}$  broad. Stipitipellis consisting of pale brownish, parallel hyphae  $2.5-7 \mu\text{m}$  broad, covered with numerous caulocystidia. Caulocystidia lageniform and obclavate,  $17-50 \times 6-10 \mu\text{m}$ . Veil absent. Clamp-connections not observed.

Habitat and distribution: on soil in deciduous forests (*Populus*, *Fraxinus*, *Acer*). Widespread in Europe (Arnolds 2005), in Ukraine apparently overlooked.

Specimen examined: Ukraine: Luhansk region, Stanychno-Luhanske district, Luhansk Nature Reserve (Stanychno-Luhanske plot), 17 September 2004 (KW 27145), 19 September 2004 (KW 27146).

*P. mairei* is similar to *P. parvula* and *P. aberrans* (see above). It differs from the first one by smaller pileocystidia, larger fruit bodies and larger spores (Arnolds 2005, Hausknecht 2005). *P. aberrans* has larger fruit bodies, spores and cystidia (Watling 1982, Arnolds 2005, Hausknecht 2005). Our specimens of *P. mairei* have slightly larger spores than Watling (1982) indicated ( $6-7(-7.5) \times 3-4 \mu\text{m}$ ) but their size generally agree with those cited by Singer (1950), Kühner and Romagnesi (1953), Arnolds (2005) and Hausknecht (2005).

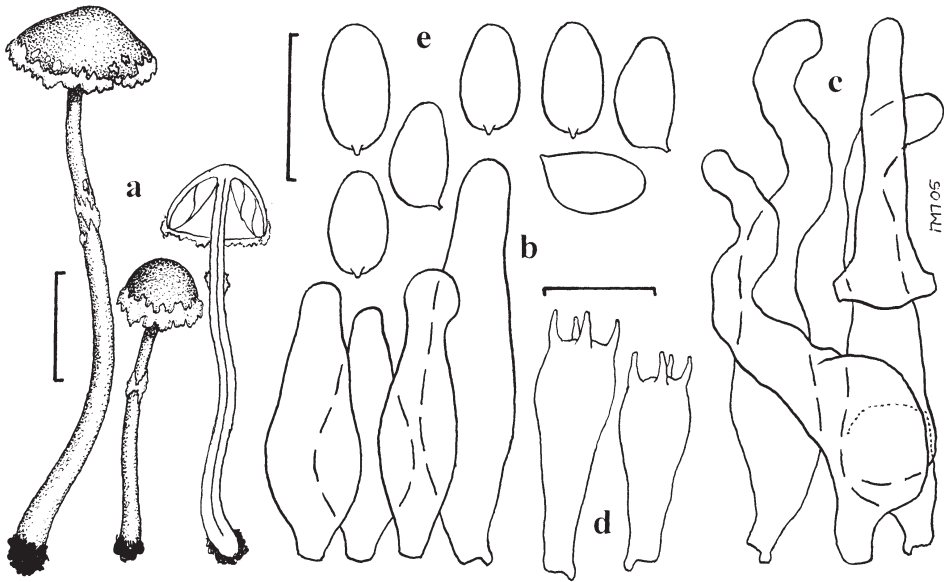
***Pholiotina vestita*** (Fr.) Singer, Beih. Bot. Centralbl., Abt. 56B: 170, 1936.

Fig. 7, 8

*Galera vestita* Fr. apud Quél., Mém. Soc. Émul. Montbéliard, Sér. II, 5: 248, 1872; *Conocybe vestita* (Fr.) Kühner, Le genre *Galera*: 155, 1935.

Pileus 6–12 mm, hemispherical then plano-convex with low umbo, smooth, hygrophanous, light brown, drying to honey-coloured, brownish yellow, margin ornamented with fugacious white patches of felty tomentose veil. Lamellae narrowly adnate, nearly free, to 1.5 mm, crowded ( $L = 30-40$ ,  $l = 1-3$ ), pale brown, then rusty, margin pale, faintly flocculose. Stipe 25–55  $\times$  1–2 mm, equal, base clavate, swollen to 3–5 mm, in upper part of stipe with fugacious ring-like white floccules of veil, at apex ivory, pruinose, below white, silky fibrillose. Flesh pale ochraceous in pileus, in stipe darkening to brown at base, hollow. Taste and smell indistinct. Spore-print light rust-coloured.

Spores  $6.5-8.5 \times 4-5 \mu\text{m}$ ,  $L_s = 7.4 \pm 0.53 \mu\text{m}$ ,  $B = 4.6 \pm 0.21 \mu\text{m}$ ,  $Q = 1.5-1.8$ , av.  $Q = 1.63 \pm 0.11$ ,  $n = 20$ ; elliptic in face-view, amygdaliform in profile, thin-walled, brownish yellow in water and rusty in alkali, germ-pore absent. Basidia  $17-22 \times$



**Fig. 7.** *Pholiotina vestita*: **a** – fruit bodies, **b** – cheilocystidia, **c** – caulocystidia, **d** – basidia, **e** – spores. Bars = 1 cm for fruit bodies and 10  $\mu\text{m}$  for microstructures.

6.5–8  $\mu\text{m}$ , 4-spored, clavate. Cheilocystidia fusiform, 22–36  $\times$  7–10  $\mu\text{m}$ , apex hardly differentiated, slightly swollen, 2.5–5.5  $\mu\text{m}$  broad. Pleurocystidia absent. Pileipellis a hymeniform layer of pyriform cells 10–16  $\mu\text{m}$  broad. Stipitipellis made up of pale brownish, parallel hyphae 5–7  $\mu\text{m}$  broad with numerous caulocystidia at stipe apex. Caulocystidia flexuous, fusiform, lageniform, 25–50  $\times$  7–10  $\mu\text{m}$ . Veil of thin-walled hyaline hyphae 6–10  $\mu\text{m}$ . Clamp-connections present.

**Habitat and distribution:** on bare soil in deciduous forest. Rare although widespread in Europe (Arnolds 2005). In Ukraine it is apparently rare, but earlier might have been confused with *P. velata*.

**Specimen examined:** Ukraine: Chernihiv region, Korop district, Mezyns'kyj National Nature Park, near the village Rozlioty, 18 August 2004 (KW 27159).

This species is easily distinguished by the thick, well-developed appendiculate veil and the spores amygdaliform in profile lacking a germ-pore. *P. velata* (Velen.) Hauskn. is close, but has spores with a distinct germ-pore and many subcapitate cheilocystidia (Arnolds 2005).

Thus, 13 species of the genus *Pholiotina* are known from Ukraine now. Among 6 recently found species *P. filaris* belongs to the section *Pholiotina*, two other belong to the subsections *Vestitinae* (*P. vestita*) and *Verrucisporae* (Singer) Arnolds (*P. dasypus*) of the section *Vestitae* Watling, and the three other species to the subsections *Piliferinae* (*P. aberrans* and *P. mairei*) and *Cyanopodinae* (Singer) Arnolds (*P. cyanopus*) of the section *Piliferae* (Kühner) Singer (Arnolds 2005).

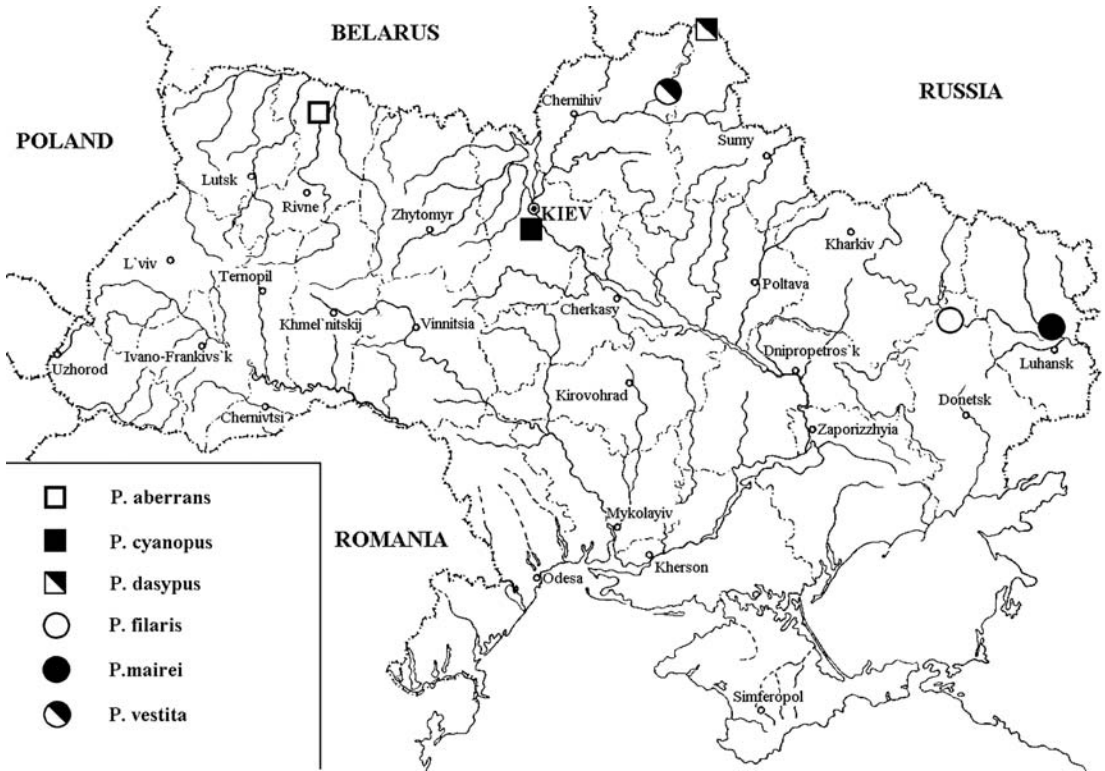


Fig. 8. Distribution of the *Phlotina*-species found on the territory of Ukraine.

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