

**Xeromphalina brunneola (Tricholomataceae),
a new member of the European mycoflora**

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A new fungus originally described from North America, *Xeromphalina brunneola* O. K. Mill., is recorded as a new element of the European macromycetous mycoflora. A description of macrofeatures and microfeatures is given in detail, and recently known European localities are summarized.

Key words: Tricholomataceae, *Xeromphalina brunneola*, distribution

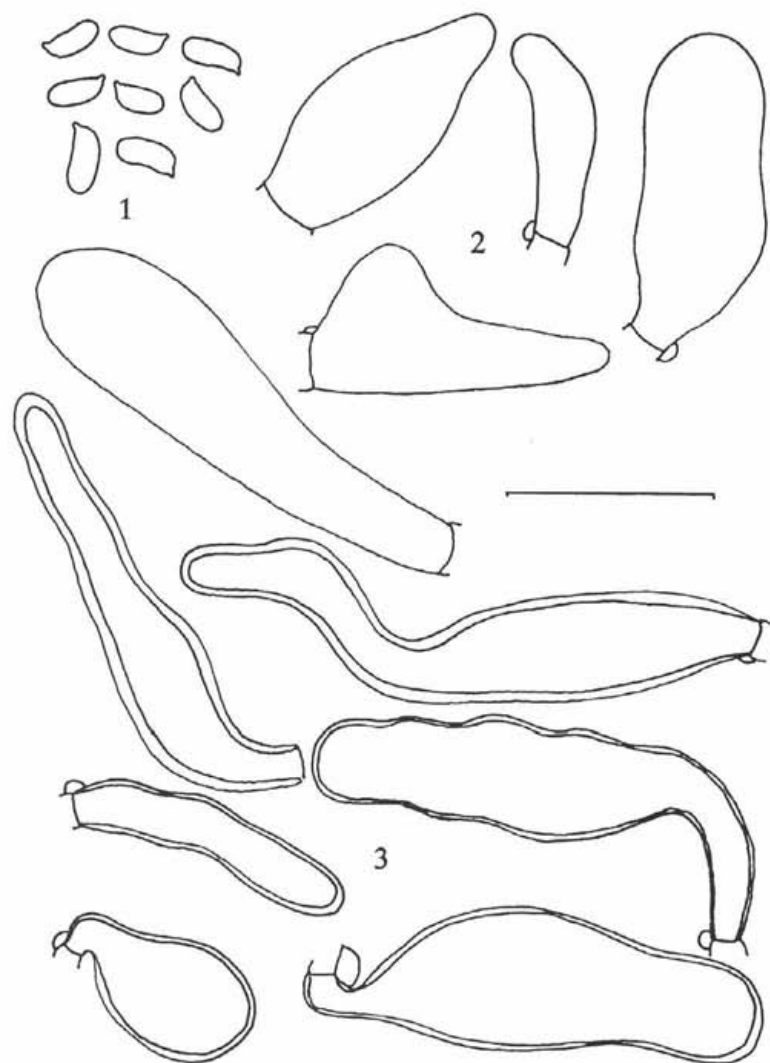
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Xeromphalina brunneola O. K. Mill., původně popsána ze Severní Ameriky, byla poprvé zaznamenána z materiálu v evropských herbářích. Je podán makroskopický a podrobný mikroskopický popis a jsou shrnuty dosud známé evropské lokality.

The small genus *Xeromphalina* Kühner et Maire usually includes only three or four species in European monographs and keys (*X. campanella*, *X. caudicinalis*, *X. fellea*, *X. cornui*, e.g. Klán 1984, Moser 1983). Some other new species were described during the last few years, e.g. *X. junipericola* G. Moreno et Heykoop (Moreno and Heykoop 1996) and *X. minutissima* Esteve-Rav. nom. prov. (Esteve-Raventós 1995). Redhead (1988) studied the genus *Xeromphalina* of the northern hemisphere, and found specimens of some North American species also in European material. *Xeromphalina brunneola* O. K. Mill. is one of them.

During the preparation of the European monograph of the genus *Xeromphalina* and revision of specimens from various herbaria, I found specimens of this species collected in some European countries. This species is not included in the new monograph by Bon (1999). Because they represent the first recognized records in Europe, I decided to write this paper.

The macrodescription is based on the original description by Miller (1968). Microscopical features are described from examined material mounted in Melzer's reagent, Congo Red, and KOH. For the basidiospores the following factors are used: E (quotient of length and width in any one spore); Q (mean of E-values). Authors of fungal names are cited according to Kirk and Ansell (1992).



Figs. 1–3. *Xeromphalina brunneola*. 1. basidiospores, 2. circumcystidia, 3. caulocystidia. Scale bar = 20 μm .

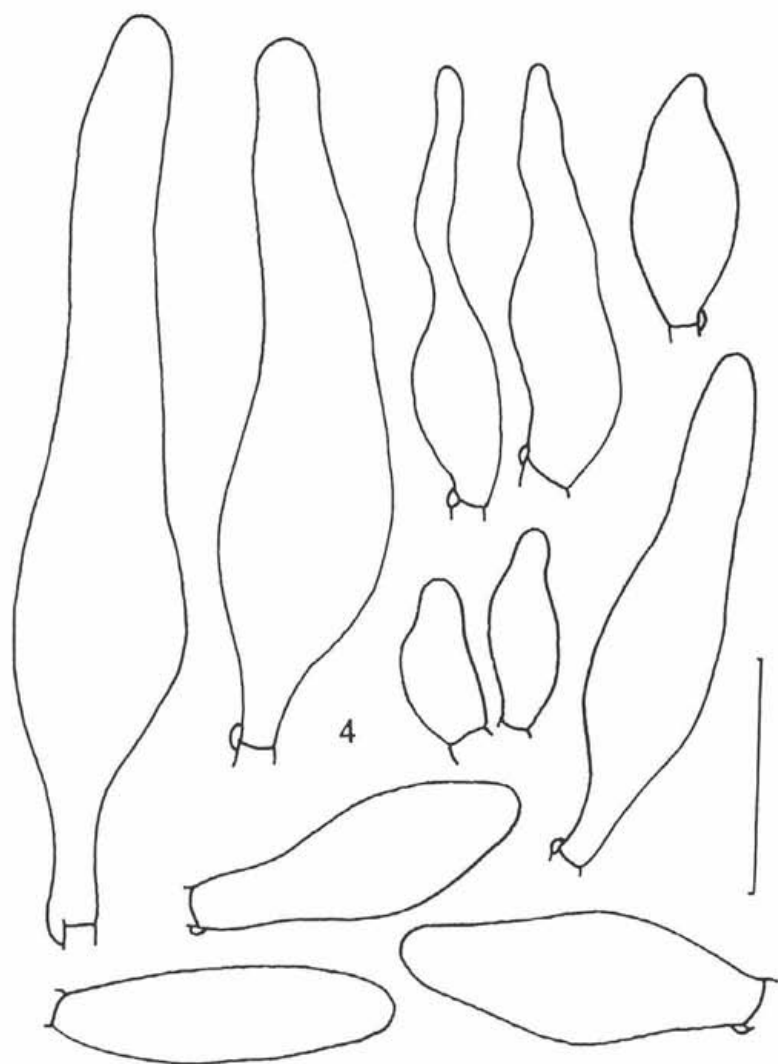


Fig. 4. *Xeromphalina brunneola*. 4. cheilocystidia. Scale bar = 20 μ m.

Xeromphalina brunneola O. K. Mill., *Mycologia* 60: 167. 1968.

Pileus 6–15 mm broad, convex-depressed to nearly plano-depressed, glabrous, moist, margin opaque when moist, evenly dull orange overall. Lamellae close, decurrent, narrow, not intervenose when young, sometimes somewhat intervenose with age, orange-buff, with even, dull edges. Stipe 30–60 × 1–2.5 mm, tapering somewhat towards base, nearly bulbous at base, fistulose, cartilaginous, smooth and orange buff at apex, ochraceous pubescent, darker rusty brown downward. Context thin, brownish, cartilaginous, with persistently disagreeable taste, and at first disagreeable smell.

Basidiospores (5.0-)5.5–7.0(-7.5) × 2.5–3.5 μm , $E = 1.7\text{--}2.3$, $Q = 1.9\text{--}2.1$, narrowly ellipsoid, cylindrical-ellipsoid, often subballantoid, thin-walled, amyloid, hyaline, smooth. Basidia 21–29 × 5.0–6.5 μm , 4-spored, clavate. Basidioles 10.0–27 × 2.5–7.0 μm , cylindrical to clavate. Cheilocystidia 25–85 × (6.5-)8.0–16.5(-19) μm , lageniform, lanceolate, (sub)utriform, clavate, subfusoid, sometimes pedicellate, thin-walled, hyaline, non-amyloid. Tramal hyphae of cylindrical to fusoid cells, thin- to slightly thick-walled, incrustated in grains or plaques, yellow-brown in KOH, up to 15 μ wide; mixed with thick-walled, subhyaline, refractive, up to 20 μm wide hyphae. Pileipellis a cutis of radially arranged, cylindrical, slightly thick-walled, incrustated, dark-yellow-brown in KOH, up to 8 μm wide hyphae; hyphae at pileus margin both smooth and incrustated. Pileus trama of hyphae yellow-brown in H₂O and in KOH. Circumcystidia not frequent, 25–50 × 14–16 μm , clavate, broadly clavate, subfusoid, sometimes irregular, thin- to slightly thick-walled; cylindrical, often irregular to subcoralloid terminal cells or lateral projections present. Stipitipellis a cutis, of parallel, cylindrical, slightly thick-walled, coarsely incrustated, brownish orange in KOH, up to 10 μm wide hyphae. Stipe medulla hyphae yellow-brown in H₂O and in KOH; thick-walled hyphae similar to pileus trama also present. Caulocystidia (23-)30–65 × (6.0-)11–18 μm , clavate, broadly clavate, utriform, cylindrical, sometimes irregular, not or rarely branched, never coralloid, thick-walled, obtuse, yellow- to orange-brown in KOH. Clamp connections present. No hyphae amyloid or dextrinoid.

Growing from July to November, saprotrophic, in clusters or in groups on coniferous wood, especially of *Picea*.

Collections examined:

AUSTRIA: Lunz, Aug., leg. C. Keissler, in: No. 949. (BPI 757880; PRM 5980, a short-spored form – “var. *myriadea*”). – Carinthia, Turracher Hoke, 18 Aug. 1974 leg. D. A. Reid [K(M) 68765]. – Carinthia, St. Lorenzen, 13 Aug. 1974 leg. D. A. Reid [K(M) 75587].

FINLAND: Etelä-Pohjanmaa, Zyteri, Rantasipi, 15 Aug. 1983 leg. J. Stordal 22920 (O 120213).

ITALY: Varena, Aug. 1923 leg. G. Bresadola (BPI 757835). – ditto, Aug. 1921 leg. G. Bresadola (BPI 757849, a short spored form – “var. *myriadea*”).

NORWAY: Akershus, Ås, 18 Aug. 1978 leg. G. Gulden 891/78 (O 120170). – Vestfold, Sem, Eik, 18 Aug. 1981 leg. S. Aase (O 120214). – Hedmark, Stor-Elvdal, Sørnesset, 14 July 1973 leg. G. Gulden 653/73 (O 120180). – Buskerud, Modum hd., 26 Aug. 1986 leg. J. Stordal 25063 (O 199). – Østfold, Halden, Solli kapell, 16 Sept. 1975 leg. G. Gulden 370/75 (O 120178). – Akershus Co., Eidsvoll Municipality, 13 Sept. 1994 leg. B. Spooner [K(M) 31833].

POLAND: Białowieża forest, 17 Sept. 1981 leg. D. N. Pegler 3400 [K(M) 68763].

SWEDEN: Öland, Böda, 2 Oct. 1980 leg. M. Korhonen and R. Tuomikoski (H).

U. S. A.: Idaho, Priest River, 25 Sept. 1964 leg. O. K. Miller 2866 (MICH, holotype). – Pennsylvania, Butler Co., Monroe, Little Buffalo Creek, 26 Sept. 1936 leg. L. K. Henry (PRM 832209).

Xeromphalina brunneola is characterized in having relatively small, rather dark coloured carpophores, rather small ellipsoid to cylindrical-ellipsoid spores which are often subballantoid, presence of unbranched and often voluminous caulocystidia and presence of thick-walled hyphae in tissues.

It is close to *X. campanella* (Batsch: Fr.) Kühner et Maire. According to Miller (1968) it should differ in having darker coloured carpophores, disagreeable taste, reddish brown pileipellis and stiptipellis at apex in KOH, pigmented caulocystidia and smaller spores. Redhead (1988) discussed those features and stated, that the characters for distinguishing both species in herbarium specimens are not only size but also shape of the spores and the presence of thick-walled hyphae in tissues. My studies supported this conclusion with one addition – the disagreeable taste is distinct also in dry carpophores. Other European species differ especially in having branched to coralloid circum- and caulocystidia.

In comparison with the literature, the original microdescription by Miller (1968) differs in slightly smaller spores ($5.5-6.6 \times 2.5-3.0 \mu\text{m}$) and narrower cheilocystidia ($\times 5.5-8.5 \mu\text{m}$).

A short-spored form was recognized in some collections from the Alps (Austria, Italy). It differs from the typical form only in having smaller spores: $4.5-6.0 \times 2.5-3.5 \mu\text{m}$ ($E = 1.6-2.1$, $Q = 1.8$). It is known only from some exsiccata of Keissler's *Kryptogamae exsiccatae* (as *X. campanella* var. *myriadea*) and two of Bresadola's collections. However, some other studied herbarium specimens called var. *myriadea* (e.g. Rabenhorst, *Fungi europaei*, No. 2001) represent the typical *X. campanella*. According to the diagnosis, the original var. *myriadea* Kalchbr. in Fr. (*Hymenomyces europaei*: 162. 1874) should be two times smaller, densely caespitose, pale fulvous, with pale brick-fleshy lamellae (Fries 1874: “Varietas

insignior est *myriadea* Kalchbrenner in litteris, vulgari dimidio minor, densissime caespitosa, truncis pinnum denso vellere obducens, dilute fulva, lamellis pallide testaceo-carneis").

Xeromphalina brunneola seems to be a boreal-montane species, known from Europe (Austria, Finland, Italy, Norway, Poland, Sweden), North America (Canada, U. S. A.) and Asia (Japan).

In modern literature, only Veikko and Hintikka (1957) published a description of var. *myriadea* from some localities in Finland. According to them, macroscopically, it resembles a smaller (pileus 5–8 mm broad) and paler coloured (pileus pale yellow-brown, slightly darker at centre) *X. campanella*; microscopically it is identical with typical variety of *X. campanella*. The authors also mentioned a different nature of cultures of both varieties. However, both *X. brunneola* and especially its short-spored form have distinctly smaller spores than *X. campanella*. A revision of herbarium specimens (herb. H) showed that var. *myriadea* sensu Veikko and Hintikka (1957) represents a small form of *X. campanella*.

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