

Remarks to the taxonomy of *Gymnopilus josserandii*
based on records from the Bohemian Forest (Czech Republic)

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Two records of the rare species *Gymnopilus josserandii* (*Agaricales*, *Cortinariaceae*) from the Bohemian Forest are thoroughly described and discussed. Line drawings of microcharacters, a colour photograph of fresh fruitbodies and a distribution map of *G. josserandii* in the Czech Republic are provided. The species is better known under the invalid name *G. subsphaerosporus*. A detailed comparison of its characters with those of the American species *G. subbellulus* has shown that the name *G. subbellulus* represents another species differing above all in the presence of pleurocystidia. *Gymnopilus josserandii* seems to prefer strongly decayed wood of conifers in natural or semi-natural forests. At present, five localities are known in the Czech Republic.

Key words: basidiomycetes, *Agaricales*, *Cortinariaceae*, *Gymnopilus josserandii*, *Gymnopilus subsphaerosporus*, taxonomy, Czech Republic

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V letech 1997 a 2000 byl na Šumavě dvakrát nalezen vzácný druh *Gymnopilus josserandii* (*Agaricales*, *Cortinariaceae*), který byl v Evropě dříve znám pod neplatně publikovaným jménem *Gymnopilus subsphaerosporus*. V článku jsou podrobně popsány znaky nalezených plodnic a zveřejněny kresby mikroznaků a fotografie čerstvých plodnic, cheilocystid a výtrusů. Kromě Šumavy byl *G. josserandii* sbírán v Beskydách V. Antonínem a D. Jandou. V České republice je dosud známo 5 lokalit, které jsou zakresleny v mapě rozšíření. *Gymnopilus josserandii* roste na silně zetlelém dřevě jehličnanů, hlavně v přirozených nebo polopřirozených lesích. Srovnání znaků *G. josserandii* se severoamerickým druhem *G. subbellulus* ukázalo, že *G. subbellulus* představuje jiný druh lišící se zejména přítomností pleurocystid.

INTRODUCTION

The genus *Gymnopilus* (*Agaricales*, *Cortinariaceae*) belongs to the less elaborated genera of fungi in Central Europe. No detailed or monographic study has been published from this area. In Europe, the genus was thoroughly studied only in France (Kühner & Romagnesi 1953), Norway (Høiland 1990), Great Britain (Orton in Watling & Gregory 1993) and Switzerland (Breitenbach & Kränzlin 2000). A monograph of Northern American species was published by Hesler (1969). The present contribution is the first one from a planned series of papers on the taxonomy, ecology and distribution of *Gymnopilus* species in Central Europe. It

is based on collections from the Bohemian Forest (Šumava Mts., protected as the Šumava National Park) typical by the presence of well preserved natural or near-natural forests.

MATERIAL AND METHODS

Description of macro- and microcharacters is based exclusively on my own collections mentioned below. Herbarium specimens are kept in the Mycological Department, National Museum, Prague (herbarium PRM). The colour codes are according to Kornerup & Wanscher (1981). Microcharacters were studied in a 5 % KOH solution. The pigmentation of the pileus and stipe cuticle was studied in pure water. Iodine reaction was studied in Melzer's reagent prepared according to the formula given by Moser (1983), cyanophilous reaction in cotton blue (according to Kotlaba & Pouzar 1964, Singer 1986) after short boiling. For spore size measurements, 20 spores from each collection were randomly selected. Authors' abbreviations are given according to Brummitt & Powell (1992).

Abbreviations: E = length/width ratio of the spores, Q = mean value of E for all spores studied.

RESULTS

Gymnopilus josserandii Antonín, *Fungi non delineati* 11: 13, 2000

Naucoria subsphaerospora Joss., *Bull. Soc. Mycol. Fr.* 64: 21, 1948 (invalid name: published without Latin diagnosis). – *Gymnopilus subsphaerosporus* (Joss.) Kühner et Romagn., *Fl. anal. champ. supér.*: 323, 1953 (invalid combination: based on invalidly published basionym).

Misidentification

Gymnopilus subbellulus Hesler sensu Breitenbach et Kränzlin, *Pilze der Schweiz* 5: 140, 2000.

Selected icones

Moser in Moser & Jülich, *Farbatlas der Basidiomyceten*, *Gymnopilus* 4, figure at the top, 1992 (as *G. subsphaerosporus*). – Antonín in Antonín & Škubla, *Fungi non delineati* 11: photo no. 5, 2000. – Breitenbach & Kränzlin, *Pilze der Schweiz* 5: p. 140, photo no. 150, 2000 (as *G. subbellulus*).

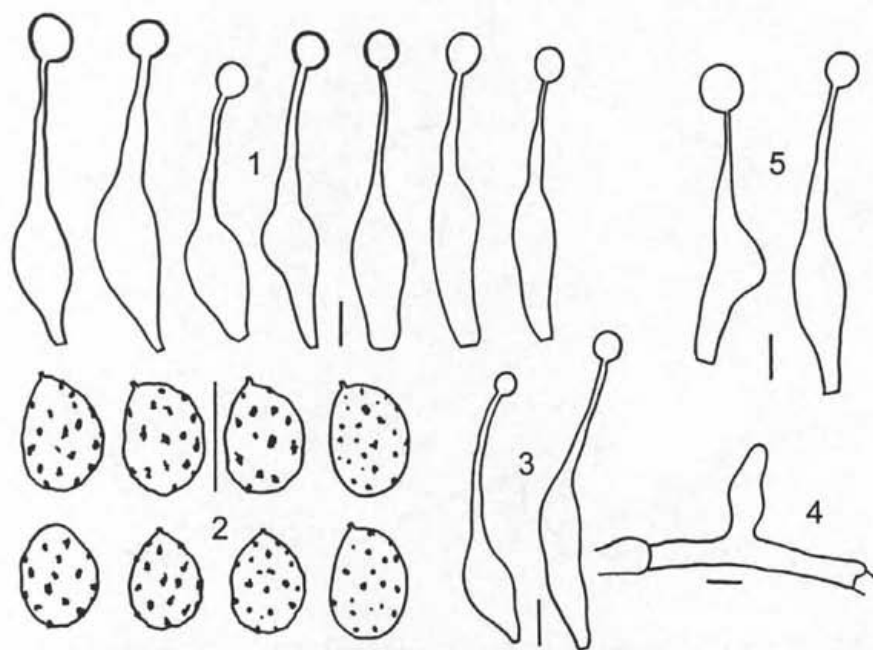


Fig. 1. Microcharacters of *Gymnopilus josserandii*. 1, 5: cheilocystidia, 2: spores, 3: caulocystidia, 4: hypha of the stipe surface with outgrowth. 1-4: nature reserve "Pod kanálem" (PRM 897842), 5: Mt. "Spáleníště" (PRM 891945). Scale bar = 5 μ m.

Collections studied

Czech Republic, Southern Bohemia, Bohemian Forest (Šumava Mts.), Prachatice district, 2.2 km NW of the village of Jelení Vrchy near Nová Pec, nature reserve "Pod kanálem" (strictly protected zone of the Šumava National Park), alt. 860 m, mixed natural montane forest dominated by *Fagus sylvatica*, with admixture of *Picea abies*, *Acer pseudoplatanus*; on decayed stump of *Picea abies* covered with mosses, 30 Sept. 2000, leg. et det. J. Holec, JH 173/2000 (PRM 897842). - Czech Republic, Southern Bohemia, Bohemian Forest (Šumava Mts.), Prachatice district, Lenora, Mt. "Spáleníště" near the village of České Žleby (strictly protected zone of the Šumava National Park), alt. 900 m, mixed natural montane forest (*Fagus*, *Abies*, *Picea*) reminding of a virgin forest, on decayed stump of *Abies alba*, 13 Oct. 1997, leg. et det. J. Holec, JH 755/1997 (PRM 891945).

Description

Fruitbodies growing in small groups, not fasciculate. Pileus 0.5-1.2 cm, nearly hemispherical to conical-convex with involute margin when young, convex to



Fig. 2. Distribution of *Gymnopilus josserandii* in the Czech Republic (for details on individual collections see chapters "Collections studied" and "Distribution in the Czech Republic"). 1: nature reserve "Pod kanálem", Bohemian Forest (PRM 897842), 2: Mt. "Spáleníště", Bohemian Forest (PRM 891945), 3: "Staré Hamry-Jamník", Beskydy Mts., 2 Aug. 1999, coll. no. 99.36 (Antonín & Škubla 2000: 16, BRNM 648481), 4: "Staré Hamry-Jamník", Beskydy Mts., 23 July 2001, coll. no. 01.148 (BRNM); this locality is about 1–1.5 km far from the previous one. 5: secluded place "Čudáčka" near Bílá, Beskydy Mts., coll. no. 01.157 (BRNM).

plano-convex at maturity, in some fruitbodies slightly depressed when old, not hygrophanous, not translucently striate. Surface dry, mat, finely tomentose, rusty-ochre to brown (5D6–7). Lamellae rather sparse, $L=30-40$, $l=1-3$, ventricose, adnexed, rusty-ochre to rusty-brown when young, dark rusty-brown (6E8) at maturity, edge concolorous. Stipe $1.5-3 \times 0.1-0.2$ cm, cylindrical, rusty-ochre, lower part rusty-brown, with white tomentum at base, longitudinally yellow-ochre fibrillose. Taste indistinct (not bitter), smell indistinct.

Spores $(4.0-4.5-6.0(-6.4) \times (3.2-3.5-4.8 \mu\text{m})$, $E = 1.1-1.4(-1.5)$, $Q = 1.3$, rather variable in shape, subglobose, broadly ellipsoid to obovoid in side view, without suprahilar depression but with plane surface near the hilar appendix, in front view subglobose, broadly ellipsoid to broadly lacrymoid; sometimes with a slightly polygonate outline, rusty-ochre in KOH, wall rusty-brown, medium thick, distinctly verruculose, normal spores acyanophilous, those with broken wall cyanophilous, without any reaction in Melzer's reagent or slightly dextrinoid (with reddish-brown hue on mature spores and spores with a broken wall). Basidia $20-30 \times 5-6 \mu\text{m}$, nar-

rowly cylindrical to narrowly clavate, often with a median constriction, 4(2-)spored, sterigmata long, thin, 5–6 μm . Cheilocystidia 30–40 \times 4–8 μm , forming a sterile band on the edge, tibiiform with a narrowly lageniform basal part, long narrow neck (1.0–1.5 μm) and distinct globose head (3.5–5 μm) with a slightly thickened wall. Pleurocystidia absent. Lamellar trama regular, hyphae 4–10(–14) μm broad, near the subhymenium 2–4 μm only, cells cylindrical to slightly inflated (somewhere almost barrel-shaped), with distinct yellow-brown membranous pigment, subhymenium not gelatinous, of densely arranged interwoven hyphae. Pileus cuticle a cutis, not gelatinised, 30–50 μm thick, formed by densely arranged parallel hyphae 2–6 μm broad, with yellow membranous pigment and coarse rusty-brown incrustations, below this layer a hypodermium of parallel to slightly flexuously interwoven hyphae 4–8 μm broad, with the same type of pigmentation, pileocystidia absent. Stipe cuticle 2-layered, lower layer a cutis of parallel, densely arranged, cylindrical hyphae 2–6 μm broad, with yellow-rusty membranous pigment and rusty-brown incrustations, from this layer emerge loosely arranged and interwoven hyphae 2–6 μm broad, cylindrical but with lageniform-fusiform outgrowths or terminal elements and with numerous caulocystidia resembling cheilocystidia in shape but narrower and longer (up to 45 \times 5 μm).

Ecology

Gymnopilus josserandii was found in natural montane forests in the 1st (strictly protected) zone of the Šumava National Park, in both cases on strongly decayed stumps of conifers (*Picea*, *Abies*). The records from the Beskydy Mts. (Czech Republic, Moravia) by Antonín (see Antonín & Škubla 2000: 13–16 and unpublished finds in paragraph "Distribution in the Czech Republic") are both from forests almost untouched by man as well as from man-made stands. I agree with Antonín that the species prefers natural or semi-natural forests and grows only on strongly decayed wood of conifers, possibly also broadleaved trees (Josserand 1948: *Fagus* with a question mark).

Distribution in Europe

Gymnopilus josserandii is well documented from France (Josserand 1948, as *Naucoria subsphaerospora*), Switzerland (Breitenbach & Kränzlin 2000: 140, as *G. subbellulus*), the Netherlands (Arnolds et al. 1995, as *G. subsphaerosporus*), Germany (e.g. Luschka 1993: 197, as *G. subsphaerosporus*) and the Czech Republic (Antonín & Škubla 2000: 13–16). A colour photograph, probably from Austria (herbarium specimen IB 67/114), was published by Moser (in Moser & Jülich, Farbatlas der Basidiomyceten, as *G. subsphaerosporus*). The species is not reported from Great Britain (Orton in Watling & Gregory 1993) and Norway (Høiland 1990).

Distribution in the Czech Republic

Bohemia: Bohemian Forest, 2 localities, see Collections studied. Moravia: 3 localities: "Staré Hamry-Jamník", near a hunter's cottage, Beskydy Mts., on decaying stump of *Picea abies*, 2 Aug. 1999, leg. D. Janda and V. Antonín, coll. no. 99.36 (Antonín & Škubla 2000: 16, BRNM 648481). – "Staré Hamry-Jamník", Beskydy Mts., semi-natural spruce forest, strongly decayed stump of *Picea abies*, 23 July 2001, leg. V. Antonín and D. Janda, coll. no. 01.148 (BRNM); this locality is about 1–1.5 km far from the previous one. – Secluded place "Čudácka" near Bílá, Beskydy Mts., man-made spruce forest surrounded by rests of semi-natural stand, on strongly decayed stump of *Picea abies*, 25 July 2001, leg. V. Antonín and D. Janda, coll. no. 01.157 (BRNM).

Discussion

This rare species is known as *Gymnopilus subsphaerosporus* (Joss.) Kühner et Romagn. in European literature. Unfortunately, the name is invalid because of a lacking Latin diagnosis. Consequently, Antonín (2000) described the species and named it validly *Gymnopilus josserandii* in honour of Marcel Josserand who recognised it for the first time and published a perfect description with exact line drawings.

The fruitbodies described here are typical by the following characters: very small fruitbodies, up to 1.2 cm broad pileus with finely tomentose surface, brown with rusty tinge, dark rusty-brown lamellae when mature, indistinct (not bitter!) taste, small, subglobose, broadly ellipsoid to broadly lacrymoid, not distinctly dextrinoid spores, cheilocystidia of a typical shape – tibiiform with a narrowly lageniform basal part, long narrow neck and globose head, numerous caulocystidia of a similar shape, no pleuro- and pileocystidia.

My records perfectly agree with the original description by Josserand (1948: 21–23) and the later description and colour photograph by Antonín (2000: 13–16). However, I did not observe so much types of caulocystidia as Antonín did, but only those resembling the cheilocystidia. The fruitbodies found by Josserand and Antonín were larger with pilei up to 2.4 cm broad and stipe reaching up to 5×0.3 cm.

The record photographed by Breitenbach & Kränzlin (2000: 140) and identified as *Gymnopilus subbellulus* Hesler certainly represents *Gymnopilus josserandii*. Almost all characters well agree with the descriptions mentioned above. The only exception represents the bitterish taste given by Breitenbach and Kränzlin. The authors obviously knew the invalid status of the name *G. subsphaerosporus* (which is cited by them as a synonym of *G. subbellulus*) and decided to use the valid name by Hesler. The correctness of this conclusion is discussed below.



Fig. 3. *Gymnopilus josserandii*, fresh fruitbodies, Czech Republic, Southern Bohemia, Bohemian Forest, nature reserve "Pod kanálem", on decayed stump of *Picea* covered with mosses, 30 Sept. 2000, leg. et det. J. Holec, JH 173/2000 (PRM 897842).

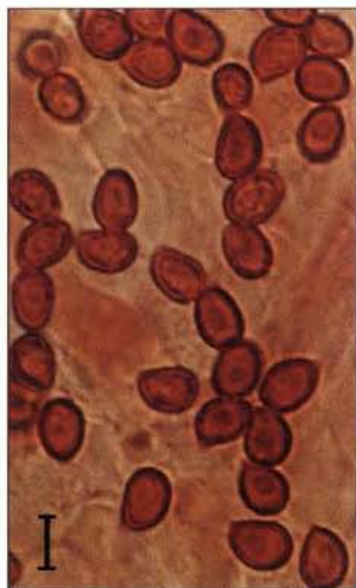
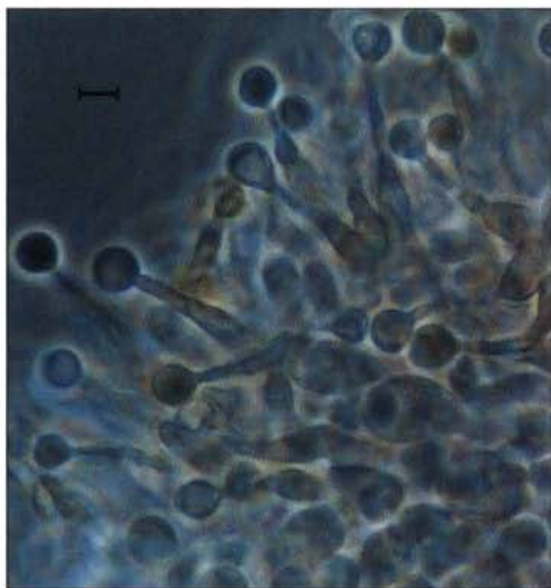


Fig. 4. *Gymnopilus josserandii*, photographs of microcharacters of the fruitbodies from Fig. 3; cheilocystidia (left), spores (right). Scale bar = 5 μm .

Gymnopilus subbellulus Hesler, North American species of *Gymnopilus*: 46, 1969 (in *Mycologia Memoir* no. 3) was described as a species of *Gymnopilus* sect. *Microspori*. It is distinguished by the following characters: non-dextrinoid, ellipsoid, ovoid or subglobose spores reaching $3.5\text{--}5.0 \times 2.4\text{--}3.8 \mu\text{m}$, pleuro- and cheilocystidia both present, furfuraceous pileus, mild taste, stipe 0.3–0.4 cm thick etc. Many characters are really very close to *G. josserandii* (= *G. subsphaerosporus*) but the presence of pleurocystidia is in conflict with all published descriptions of *G. josserandii* as well as with the finds presented here where no pleurocystidia were observed in spite of long and careful search. Moreover, the spores of *G. subbellulus* seem to be more prolonged and slightly smaller (see e.g. line drawing by Hesler 1969: p. 90, fig. 18) than those of *G. josserandii*. For these reasons I consider *Gymnopilus subbellulus* Hesler a species different from *Gymnopilus josserandii* Antonín.

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