

The taxonomy of *Pholiota aurivella* and *Pholiota adiposa* – a return to Batsch and Fries

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Holec J. (1998): The taxonomy of *Pholiota aurivella* and *Pholiota adiposa* – a return to Batsch and Fries. – Czech Mycol. 50: 201–222

The paper presents a new opinion on the delimitation of *Pholiota aurivella* and *Pholiota adiposa*, which, however, corresponds to original descriptions of Batsch and Fries. The conclusions are based on careful studies of fresh as well as herbarium material from the Czech Republic, Slovakia, Sweden, Finland and Austria. The true *Pholiota aurivella* (Batsch: Fr.) P. Kumm. proved to be a species growing on *Salix* and having a subviscid to dry and mat pileus surface, thick dark scales, predominantly clavate cheilocystidia, spores with a broad germ pore and abundant chrysocystidia. The true *Pholiota adiposa* (Batsch: Fr.) P. Kumm. is a fungus occurring on *Fagus* and many other deciduous trees, occasionally also on conifers, and has a strongly glutinous, lustrous pileus with thin scales, cheilocystidia of a different shape, spores with a narrower germ pore and rare chrysocystidia. A new neotype is being designated here for *Pholiota aurivella* instead of the neotype chosen by Jacobsson which proved to be in conflict with Fries' protologue. Revision of the holotype of *Pholiota cerifera* (P. Karst.) P. Karst. showed that this species is identical with *Pholiota aurivella*.

Key words: Agaricales, *Pholiota aurivella*, *Pholiota adiposa*, *Pholiota cerifera*, taxonomy, new delimitation, neotypification.

Holec J. (1998): Taxonomie druhů *Pholiota aurivella* a *Pholiota adiposa* – návrat k původnímu pojetí. – Czech Mycol. 50: 201–222

V článku je publikován nový pohled na vymezení druhů *Pholiota aurivella* a *Pholiota adiposa*, který je ovšem v souladu s původními popisy u Batsche a Friese. Je podložen studiem rozsáhlého materiálu jak čerstvých plodnic, tak herbářových položek z České republiky, Slovenska, Švédska, Finska a Rakouska. Pravá *Pholiota aurivella* (Batsch: Fr.) P. Kumm. se ukázala být druhem rostoucím na *Salix* a majícím jen mírně slizký až suchý a matný klobouk s tlustými tmavými šupinami, převážně kyjovité cheilocystidy, výtrusy s širokým klíčním pórem a početné chrysocystidy. Pravá *Pholiota adiposa* (Batsch: Fr.) P. Kumm. je naproti tomu druh rostoucí převážně na *Fagus* a mnoha dalších listnáčích, méně často i na jehličnanech, který má silně slizký, za sucha lesklý klobouk s tenkými šupinami, cheilocystidy jiných tvarů, užší klíční pór a řídce se vyskytující chrysocystidy. Pro jméno druhu *Pholiota aurivella* byl vybrán nový neotyp namísto neotypu zvoleného Jacobssonem, který je v rozporu s Friesovým protologem. Revize holotypu *Pholiota cerifera* (P. Karst.) P. Karst. ukázala, že tento druh je totožný s *Pholiota aurivella*.

INTRODUCTION

In the period 1992–1996 I studied the taxonomy of *Pholiota* species growing in Central Europe as the subject of my doctoral thesis (Holec 1997a). Some results have been published (Holec 1995a,b; 1996a,b; 1997a,b). During this period

I studied many collections of *Pholiota* from the section *Adiposae* Konrad et Maubl. Field observations as well as study of microcharacters led me to another view on the taxonomy of *Pholiota adiposa* and *P. aurivella* than that in works of recent *Pholiota*-specialists (Kuyper and Tjallingii-Beukers 1986; Tjallingii-Beukers 1987; Jacobsson 1987, 1990). In this paper concepts of *Pholiota aurivella* (Batsch: Fr.) P. Kumm. and *Pholiota adiposa* (Batsch: Fr.) P. Kumm. are presented that are in a much better agreement with those of Batsch (1786) and Fries (1821, 1838, 1874).

MATERIAL AND METHODS

Descriptions of macrocharacters are based on the author's own finds, the given microcharacters are based on all specimens mentioned in the paragraphs "Material examined". Microcharacters have been analysed using a 5 % solution of KOH and an aqueous solution of Congo Red. Fruitbodies collected by the author are deposited in the PRM herbarium (Mycological Department, National Museum, Praha) and marked by the initials JH followed by a number. Several specimens were kindly provided by curators of the following herbaria: BRNM, CB, H, GB, S, UPS, W.

RESULTS AND DISCUSSION

Original description of *Pholiota adiposa* and *P. aurivella* by Batsch

The species *Pholiota adiposa* and *P. aurivella* were described as *Agaricus adiposus* Batsch, Elench. fung., Cont. prima: 147, 1786 and *A. aurivellus* Batsch, Elench. fung., Cont. prima: 154, 1786. The main differences between these species resulting from Batsch's description are summarised in the following table:

Table 1.

description by Batsch (1786)	<i>Agaricus adiposus</i>	<i>Agaricus aurivellus</i>
presence of slime	pileus glutinous ("tota pilei vere adiposa")	the whole fruitbody is dry ("siccus")
scales on pileus	rusty, appressed, only at centre somewhat flaring	pileus finely lanate, the covering breaks up into crowded appressed ochre scales
substrate	unknown tree	basal part of a <i>Tilia</i> stem ("ad tiliae radicem; am untern Ende eines Lindenstammes")

Batsch's figure 113 shows *Agaricus adiposus* as a fungus with a light yellow pileus covered by appressed yellow-rusty scales. On the other hand, the figures 115 a,b depict *Agaricus aurivellus* as a more robust fungus with a yellow pileus covered by darker (yellow-ochre to ochre-orange) and more prominent scales than in *A. adiposus*.

Descriptions by Fries

Fries (1821) sanctioned both names as *Agaricus (Pholiota) adiposus* Batsch: Fries and *Agaricus (Pholiota) aurivellus* Batsch: Fries, respectively. In his sense, *Agaricus adiposus* is a species with a yellow, strongly viscid, shining pileus and ferruginous concentrically arranged scales. The stipe is viscid. The fungus occurs frequently on *Fagus*. *Agaricus aurivellus* was described as a fungus with a yellow to brown pileus, covered by scattered appressed scales. There is no mention of a viscid or glutinous pileus and stipe surface in Fries' description of *Agaricus aurivellus*. According to Fries, the species grows on stems of *Betula* and *Salix*. The main differences between both species resulting from Fries' descriptions are summarised in Table 2:

Table 2.

description by Fries (1821)	<i>Agaricus adiposus</i>	<i>Agaricus aurivellus</i>
colour of pileus	yellow	yellow to brown
pileus surface	strongly viscid, shining	not described
scales on pileus	ferruginous, concentrically arranged	scattered, appressed
substrate	frequently on <i>Fagus</i>	stems of <i>Betula</i> , <i>Salix</i>

Fries refers to Batsch's figures 113 (*A. adiposus*) and 115 (*A. aurivellus*). Under *A. adiposus*, Fries mentions also Batsch's figure 114, which, according to my opinion, represents the true *Pholiota squarrosa*. However, the description of *A. adiposus* by Fries clearly excludes *P. squarrosa* with the statement that the pileus is "valde viscidus" and the fungus is "diversissimus ab *Agarico squarroso*".

Later, Fries (1838, 1874) somewhat changed his descriptions of *A. adiposus* and *A. aurivellus*. However, the delimitation of both species does not differ from the delimitation in *Systema mycologicum*. Under *A. adiposus*, Fries (1838, 1874) writes that the pileus is shining when dry but otherwise glutinous, that the fungus grows on living *Fagus* stems and is common in the northern part of Europe ("in Europa boreali"). The description of *A. aurivellus* is supplemented by the indication that the pileus surface is subviscid. The fungus should grow on wood of deciduous trees ("ad truncos arborum frondosarum"), thus, the preference for *Betula* and *Salix* is not mentioned.

Results of personal observations

Careful field and microscopic study of numerous collections of the *Pholiota adiposa-aurivella* group (based on material from the Czech Republic, Slovakia, Sweden, and Finland) led me to the conclusion that there are in these areas three different species within this group.

1) A species with relatively narrow spores [(4–5.3(-5.8) μm], a golden yellow, glutinous pileus with rusty-ochre to rusty brown appressed scales, growing mainly on stems of *Alnus* and *Betula*. This fungus is known as *Pholiota limonella* (Peck) Sacc. and was originally described from North America. Using compatibility tests, Farr et al. (1977) proved that *P. limonella* is a good biological species, morphologically distinguishable from *P. adiposa* by its narrower spores. Later Jacobsson (1987) confirmed the conspecificity of North American and European strains of this fungus. Therefore, Jacobsson was the first to prove the occurrence of *Pholiota limonella* in Europe.

2, 3) Two different fungi with broader spores (the width of most spores in each fruitbody reaches 5–6.5 μm). In my opinion, these two fungi are identical with *Pholiota aurivella* and *Pholiota adiposa* in the original sense of Batsch (1786) and Fries (1821, 1874). They can be distinguished by the characters given in Table 3.

The most important observation leading me to the present conclusion is the fact that the cheilocystidia of fruitbodies collected on *Salix* always had a shape differing from those of fruitbodies growing on other substrata (Figs. 1, 2). The second constant difference is the width of the germ pore which is larger in fruitbodies from *Salix*. Thus, there are three independent characters – ecology, shape of cheilocystidia and width of the germ pore – that are different from those of fruitbodies growing on *Fagus* and other substrata. Moreover, several other differences can be found (see Table 3) that are not so important but altogether support my opinion that the fungus on *Salix* represents another species than the fungus growing above all on *Fagus* but also many other tree species. Concerning the general appearance (habitus) of the fruitbodies of these two species, those of the taxon on *Salix* are more robust, with a thicker and shorter stipe, generally more drier, mat and more scaly (the scales on pileus and stipe are thicker) than those of the taxon on *Fagus* etc.

After searching in literature for names for these two species, I found that already Fries (1821) distinguished them in nearly the same way as I do, namely, under the names *Agaricus aurivellus* and *A. adiposus* (see Table 2). Also Fries' descriptions (Fries 1821, 1874) mention the correlation of different substrata (*A. aurivellus*: *Betula*, *Salix*; *A. adiposus*: *Fagus*) with the nature of the pileus surface (*A. aurivellus*: at most subviscid; *A. adiposus*: strongly viscid, shining). Therefore, I consider Fries' *Agaricus aurivellus* to be conspecific with my fungus

Table 3: Differences between *Pholiota aurivella* and *P. adiposa* based on personal observations (characters in bold print are the most important ones).

	<i>Pholiota aurivella</i>	<i>Pholiota adiposa</i>
shape of the cheilocystidia	clavate to broadly clavate, ellipsoid, obovoid, subglobose to sphaeropedunculate (see Figs 1, 2)	very variable – fusiform, cylindrical, narrowly clavate, narrowly lageniform, obovoid when young, often all these types present on one edge (see Fig. 5)
width of the germ pore	(1-)1.2–1.5(-1.8) μm	0.8–1.2 μm
substrate	<i>Salix</i>	<i>Fagus</i> and various other deciduous trees, sometimes also conifers
pileus surface	viscid (not strongly glutinous) in moist weather, in dry weather dry, mat	strongly glutinous in moist weather, after drying somewhat lustrous (glimmer)
scales on pileus surface (in well developed fruitbodies)	numerous, thick, fibrillose-tomentose (resembling those of <i>Sarcodon imbricatus</i>), at centre more or less recurving, old breaking up into a great number of small fibrillose scales covering almost the whole pileus surface.	scantly to numerous, thin, appressed or tips turning upwards, in moist weather covered by a glutinous layer or somewhat swollen up in the slime, often missing after rainfall, after drying sometimes forming darker patches on the pileus surface
abundance of chrysocystidia	abundant	scattered to rare
spore size	7.5–10.5(-11.5) \times 5–6.5(-7) μm	(7-)7.5–9.5(-11) \times (4.5-)5–6.2(-6.5) μm

growing on *Salix* and Fries' *Agaricus adiposus* with the species from *Fagus* and other substrata. This opinion is supported by the fact that Swedish material of *Pholiota* growing on *Salix*, on loan from the herbaria S, U and G, proved to be conspecific with my material from the Czech Republic and Slovakia. Similarly, Swedish specimens of *Pholiota adiposa* well agrees with material from Central Europe.

A problematic fact is Fries' statement that also *Betula* is a substrate of his *Agaricus aurivellus*. According to Jacobsson's (1987, 1990) and my own results (Holec 1996b, 1997a), it is particularly *Pholiota limonella* (Peck) Sacc. that grows on *Betula* and rarely also *P. adiposa*. Hitherto, I do not know the fungus with clavate cheilocystidia, broad germ pore and relatively dry pileus surface (*Pholiota aurivella* in my sense) from *Betula*. However, this does not change the fact that in Fries' opinion the *Pholiota* growing on *Salix* differs from the *Pholiota* growing on

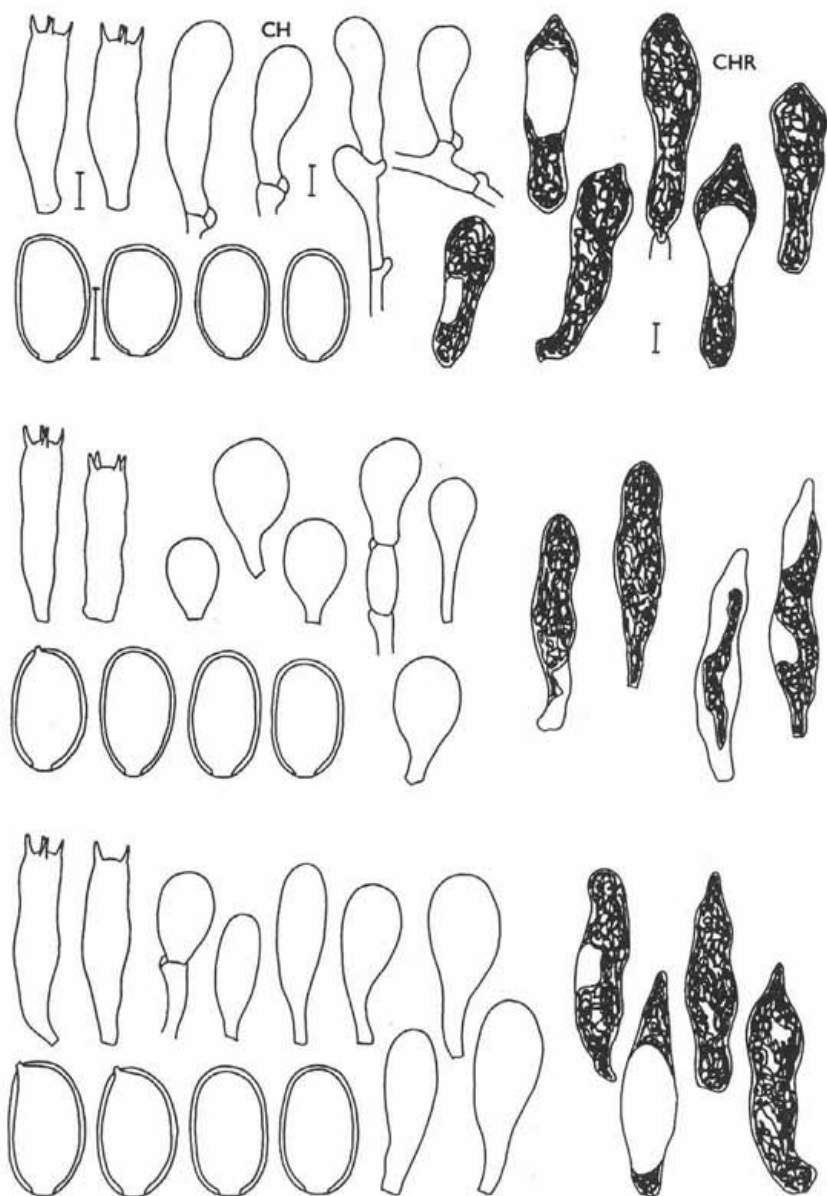


Fig. 1. *Pholiota aurivella* (Batsch: Fr.) P. Kumm. (spores, basidia, cheilocystidia, chrysocystidia).

– Czech Republic, Velký Osek, Libický luh, *Salix*, 7 Oct.1992, JH 326/94 (PRM).

– Czech Republic, Praha, Prokopské údolí valley, *Salix*, 2 Oct.1994, JH 317/94 (PRM).

– Czech Republic, Praha, Máslovická rokle valley, *Salix fragilis*, 12 Oct.1994, JH 340/94 (PRM), the fresh fruitbody is depicted in Fig. 3.

Abbreviations: CH: cheilocystidia, CHR: chrysocystidia. Scale bar = 5 μ m. Ill. J. Holec.

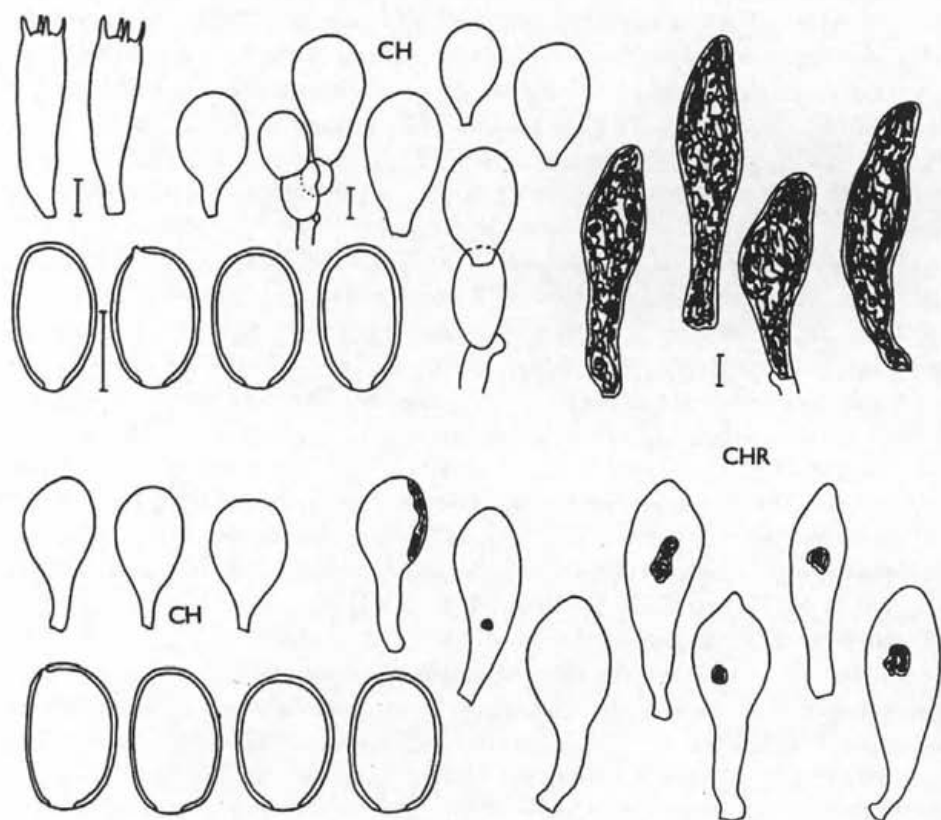


Fig. 2. *Pholiota aurivella* (Batsch: Fr.) P. Kumm. (spores, basidia, cheilocystidia, chrysocystidia).

– Sweden, Uppsala, Botaniska trädgården, *Salix pentandra*, 30 Sep. 1950, J. A. Nannfeldt (UPS – neotype of *Pholiota aurivella* selected in this paper).

– Finland, Mustiala, *Salix pentandra*, P. A. Karsten (H, herbarium P. A. Karsten, No. 2935, holotype of *Pholiota cerifera* (P. Karst.) P. Karst.).

Abbreviations: CH: cheilocystidia, CHR: chrysocystidia. Scale bar = 5 μ m. Ill. J. Holec.

Fagus. In addition, Fries' concept of *Agaricus aurivellus* really covers the fungus from *Salix*, as appears from the literature and the figures he refers to. Batsch (1876) shows the appearance of his *Agaricus aurivellus* on fig. 115. This figure perfectly fits the fungus from *Salix* I know (robust fruitbody, thick, dense and dark scales). The same counts for plate 2074 in *Flora Danica* (*Flora Danica*, vol. 12, fasc. 35, 1832) and plate 209 in *Schaeffer (Fungi Bavar. Palat. nasc., vol. 3, 1771)* depicting old fruitbodies with small tomentose scales (all these figures are cited by Fries 1821). Moreover, Fries also mentions Schumacher's species *Agaricus salicinus*

(Schumacher 1801: 262) which grows on *Salix* and has broad, dark brown scales ("striis interruptis squamisque latis obscure badiis sparsis"). The whole description of *A. salicinus* perfectly agrees with my observations of the fungus from *Salix*. In addition, Schumacher himself writes that his *A. salicinus* is identical with Batsch's *A. aurivellus* and refers to Batsch's table 115 (Batsch 1786). This discussion can be concluded with the statement that Fries' *Agaricus aurivellus* is clearly conspecific with my fungus growing on *Salix* with the characters summarised in Table 3.

However, there is still a problem concerning the conspecificity of Batsch's and Fries' *Agaricus aurivellus*. Batsch found his *Agaricus aurivellus* on a stem of *Tilia*. This substrate is neither mentioned by Fries (1821, 1874) in his description of *A. aurivellus*, nor found by me in any collection of the *Pholiota* with clavate cheilocystidia, broader germ pore etc. The only substrate hitherto known for this fungus (*Pholiota aurivella* in my sense) is *Salix*. However, in my opinion, this single fact does not contradict all the other arguments (see Table 3 and the discussion below the table) for considering Batsch's and Fries' *A. aurivellus* as conspecific. Moreover, if *Pholiota aurivella* is neotypified in accordance with the conclusions in this paper, support can be found in article 7.8 of the Tokyo Code (Greuter et al. 1994) that says that "typification of names adopted in one of the works specified in Art. 13.1(d), and thereby sanctioned (Art. 15), may be affected in the light of anything associated with the name in that work". This means *Pholiota aurivella* can be neotypified in accordance with Fries' data in *Systema mycologicum*. Thus, *Pholiota aurivella* (Batsch: Fr.) P. Kumm. becomes the correct name for the *Pholiota* with clavate cheilocystidia and broad germ pore, growing on *Salix*. As the neotype a specimen collected on *Salix* in Sweden is chosen below. Such a typification will stabilise the usage of the name *Pholiota aurivella* and consequently also of *Pholiota adiposa* (Batsch: Fr.) P. Kumm. and *Pholiota limonella* (Peck) Sacc.

Pholiota aurivella (Batsch: Fr.) P. Kumm.

Figs 1, 2, 3, 4.

Agaricus aurivellus Batsch, Elench. fung., Cont. prima: 154, 1786. – *Agaricus aurivellus* Batsch: Fries, Syst. mycol. 1: 242, 1821. – *Pholiota aurivella* (Batsch: Fries) P. Kummer, Führer Pilzk.: 83, 1871.

Syn.: *Agaricus salicinus* Schumacher, Enumeratio plantarum 1: 262, 1801. – *Agaricus ceriferus* P. Karst., Bidrag Kännedom Finlands Natur Folk 25: 369, 1876. – *Pholiota cerifera* (P. Karst.) P. Karst., Bidrag Kännedom Finlands Natur Folk 32: 297, 1879.

Typus. Uppsala, Botaniska trädgården, in trunco *Salicis pentandrae* vivae, 30 Sep. 1950, leg. J. A. Nannfeldt, det. S. Lundell as *Pholiota aurivella* (UPS)

(neotype, selected here to replace the neotype chosen by Jacobsson, Windahlia 19: 26, 1990, which is in conflict with the protologue of Fries (1821)).

Misidentification of *P. aurivella*: *Pholiota adiposa* (Batsch: Fr.) P. Kumm. sensu Jacobsson (1987) p.p. (collections from *Salix*)

Misapplication of the name *P. aurivella*: *Pholiota aurivella* (Batsch: Fr.) P. Kumm. auct. non Fries: Ricken p. p. (1915, = *P. adiposa*); J. E. Lange p. p., Fl. agaric. danic., vol. 3: 55, 1938 (= *P. adiposa*); Kühner and Romagnesi p. p. (1953, = *P. adiposa*); Moser p. p. (1953, 1955, 1967, 1978, 1983, = *P. adiposa*); etc.

Selected illustrations. Batsch (1786): fig. 115. – Schaeffer, Fungi Bavar. Palat. nasc., vol. 3: tab. 209, 1771. – B. Dvořák, Mykologia 4: tab. *P. aurivella*, 1927.

Short characteristics. fasciculately growing fungus with large robust and fleshy fruitbodies; pileus yellow, yellow-ochre, yellow-rusty, slightly viscid in moist weather, otherwise dry, mat, covered by dark thick scales (almost brown-black when old). Spores 7.5–10.5(–11.5) × 5–6.5(–7) μm , germ pore very distinct, 1–1.5(–1.8) μm broad, cheilocystidia mostly clavate to broadly clavate, chrysocystidia abundant. Growing on living and dead stems and branches of *Salix*, mostly *Salix fragilis*.

Description. Fruitbodies growing fasciculately. Pileus 3–15(–20) cm, hemispherical or broadly conical with obtuse apex, margin slightly involute, at maturity convex to plano-convex with inflexed margin, fleshy, scaly. Pileus cuticle viscid (not strongly glutinous) in moist weather, in dry weather dry, mat, light yellow to yellow at margin, yellow-ochre at centre, yellow-rusty to rusty-ochre when old. Scales numerous, densely arranged, approximately triangular, 0.2–1.0 cm broad, thick, fibrillose-tomentose (resembling scales of *Sarcodon imbricatus*), at centre more or less recurved, ochre, rusty to brown, almost brown-black when old, towards the margin appressed, ochre, in moist weather somewhat dissolving in a thin layer of slime. In old fruitbodies the original scales break up into a great number of smaller fibrillose scales covering almost the whole pileus surface. Lamellae crowded, with lamellulae (l=1–3), 0.4–1.0 cm broad, even or slightly ventricose, near the stem slightly emarginate with small decurrent tooth, light beige-yellow when young, then yellow-ochre, at maturity yellow-brown to brown, sometimes with an olive tinge, edge finely unregularly undulate to serrate, somewhat paler than the surface. Stipe 5–15(–18) × 0.5–2 cm, cylindrical, often curved, towards the base somewhat clavate or subbulbous with obconical base, quite dry, with appressed yellow ring when young, later with fibrillose-tomentose ring zone, above the zone light yellow, then yellow to rusty-yellow, minutely floccose, below the zone yellow, yellow-ochre, rusty-yellow, at the base rusty-ochre to rusty-brown, with recurved golden yellow fibrillose-tomentose scales. The stem turns brown on touching. Context firm, fleshy, whitish, light yellow to yellow in pileus and upper part of stem, rusty-yellow to rusty brown in stipe base. Taste mild, smell

indistinct but in the lamellae like smoked meat and in the context aromatically vegetable-like. Spore print brown (Breitenbach and Kränzlin 1995: p. 27, colour no. 57).

Spores $7.5-10.5(-11.5) \times 5-6.5(-7) \mu\text{m}$, ellipsoid to slightly ovoid, sometimes slightly phaseoliform in side view, smooth, with thick brown wall, germ pore very distinct, $(1-1.2-1.5(-1.8) \mu\text{m}$ broad. Basidia $25-32 \times 7.5-9.5 \mu\text{m}$, cylindrical or narrowly clavate, in central part often slightly narrower, 4-spored, sterigmata $4-5 \mu\text{m}$ long. Chrysocystidia $40-60 \times 8.5-13 \mu\text{m}$, numerous on lamellae surface, rare at the edge, cylindrical, fusiform or narrowly clavate, mostly tapering to mucronate, in central part often somewhat narrower, often incurved, wholly filled with a refractive inclusion colouring yellow to yellow-rusty in KOH or NH_4OH solution. Cheilocystidia $19-45 \times 7.5-20 \mu\text{m}$, forming a sterile band on the edge, clavate to broadly clavate, ellipsoid, obovoid, subglobose to sphaeropedunculate (Figs 1, 2), mostly hyaline, exceptionally with a yellow inclusion. Pleurocystidia: see chrysocystidia. Lamellar trama regular, made up of parallel hyphae $3.5-24 \mu\text{m}$ broad, subhymenium gelatinous. Hyphae of velum (in scales on pileus surface) parallel to flexuous, made up of cylindrical or narrowly ellipsoid cells $5-20 \mu\text{m}$ broad, with yellow vacuolar pigment and incrustations. Pileus cuticle a cutis, 2-layered, upper layer made up of parallel to slightly flexuous hyphae $3-13 \mu\text{m}$ broad, slightly gelatinising, with yellow-brown vacuolar, membranous and encrusting pigment, lower layer made up of densely arranged parallel to slightly flexuous hyphae $4-11 \mu\text{m}$ broad, with slightly yellow membranous pigment, locally with yellow incrustations. Stipe cuticle a cutis formed by parallel hyphae $3-5 \mu\text{m}$ broad, strongly yellow-ochre coloured, with membranous, vacuolar as well as encrusting pigment. Clamp connections present in all tissues.

Fructification. Jun., Aug.-Nov., most frequently Sept.-Oct.

Ecology. *Pholiota aurivella* grows as a parasite on living trees and later as a saprophyte on dead wood. Up to now the species has been found only on *Salix*. If the *Salix* species was mentioned on herbarium labels or determined in the field, mostly *Salix fragilis* and less frequently *Salix pentandra* was recorded. *Pholiota aurivella* grows above all on stems or branches high above the ground, often in dense clusters. In the Czech Republic and Slovakia the species occurs from the lowlands up to the submontane belt. It grows in flood plain forests, *Salix*-stands on river and stream banks or around ponds, and also in parks or on solitary standing willows. The preference of *Pholiota aurivella* for *Salix* is very striking. Up to now, the occurrence of this species on other tree genera is not known to me. In one case *Pholiota limonella* has been found on *Salix* (JH 898/97, deposited in PRM). The fruitbodies had a somewhat lustrous pileus surface, the cheilocystidia were cylindrical to narrowly lageniform and the spore width reached $4.5-5 \mu\text{m}$ only.



Fig. 3. *Pholiota aurivella* (Batsch: Fr.) P. Kumm. Fruitbody with prominent dark scales.
– Czech Republic, Praha, Máslovická rokle valley, *Salix fragilis*, 12 Oct.1994, JH 340/94 (PRM).
Microcharacters of this fruitbody are depicted in Fig. 1. Photo J. Holec.

Fig. 4. *Pholiota aurivella* (Batsch: Fr.) P. Kumm. Typical robust fruitbody with thick dark scales and dry mat pileus surface.
– Czech Republic, Praha-Suchdol, Tiché údolí, *Salix fragilis*, 23 Oct.1997, JH 888/97 (PRM).
Photo J. Holec.

Distribution. To know the real distribution of *Pholiota aurivella*, a careful revision of herbarium material is necessary together with searching for it on *Salix* in the field. In almost all recent publications the species is reported together with *Pholiota adiposa* under the name *Pholiota aurivella* (see Misapplications). In the work of Jacobsson (1987), the species is included in *Pholiota adiposa*.

Pholiota aurivella seems to be common in the Czech Republic and Slovakia (Holec 1996b, 1997a), especially in regions with an abundant occurrence of old stems of *Salix*. In addition, its occurrence in Sweden, Finland and Austria is proved (see Material examined). Jacobsson (1987) gives *Salix* as the second most frequent host tree of his *Pholiota adiposa* in northern Europe. These records probably represent *Pholiota aurivella* in my sense, because the true *Pholiota adiposa* is not known to me from *Salix*. Similarly, W. G. Smith (1908: 127), Konrad and Maublanc (Icon. select. fung.: tab. 74, 1926) and Kreisel (1987: 185) report the occurrence of *Pholiota aurivella* s. l. (= *P. adiposa* + *P. aurivella* in the present concept) on *Salix*. Also these records most probably represent the true *Pholiota aurivella*. Therefore, it is very likely that *Pholiota aurivella* grows also in Great Britain, Germany and France or Switzerland. Consequently, I suppose *Pholiota aurivella* s. str. to occur in most European countries. It is to be found in regions with an occurrence of *Salix*, especially in flood plain forests and *Salix* stands on river banks. However, all these assumptions have to be verified by field records as well as a revision of herbarium material in the individual European countries.

Concerning the occurrence of *Pholiota aurivella* s. str. in North America, careful revision of herbarium and fresh material from *Salix* is also necessary. A separate species *Pholiota aurivelloides* has been described by Overholts (1927: 151), the characters of which seem to be identical with the European *Pholiota aurivella* s. str. According to Smith and Hesler (1968) *P. aurivelloides* grows on wood of *Salix*, *Alnus* and *Betula*, which also indicates the possibility that it is the same as *P. aurivella* s. str.

Discussion. The concept of *Pholiota aurivella* presented in this paper differs from those of all mycologists in the 20th century. However, it is supported by many data from fresh material as well as herbarium specimens.

The most important character of *Pholiota aurivella* in the present sense are the mostly clavate shape of the cheilocystidia (Figs 1, 2), the spores with a (1-)1.2-1.5(-1.8) μm broad germ pore and a substrate preference for *Salix*. Moreover, the fungus has a dry and mat, at most subviscid pileus surface, prominent thick scales, somewhat larger spores than *P. adiposa* and abundant chrysocystidia. In all these characters the fungus from *Salix* differs from *Pholiota adiposa*, a fungus growing on *Fagus* and many other substrata (see Table 3).

A return to the Friesian concept of *Pholiota aurivella* as well as *P. adiposa* agrees with the present taxonomic conclusions and seems to be necessary.

Jacobsson (1990) designated a neotype for *P. aurivella* using a specimen collected on *Fagus*, which in fact represents *P. adiposa*. However, Jacobsson's neotype is in conflict with Fries' protologue (where *Betula* and *Salix* are mentioned as the substrate of *Agaricus aurivellus*) and with my observations. According to Article 9.13.b of the ICBN (Greuter et al. 1994), a faulty selected neotype can be replaced by a new one. This is done in the present paper (see paragraph Typus).

Jacobsson (1987: 8, 1989: 110) reported that single-spore mycelia of collections from *Fagus* (SJ 80307, SJ 83119) and *Salix* (SJ 84131 obtained from collection GB 84131, which is a true *P. aurivella* – see Material examined) are intercompatible with each other. These results suggest conspecificity of *P. aurivella* and *P. adiposa*. Unfortunately, this conclusion is based on pairings of three cultures only. It will be necessary to repeat these experiments with a higher number of single-spore strains. For me it is hard to accept the conspecificity of two taxa differing in so many characters (see Table 3). Even if Jacobsson's observations on the intercompatibility of *P. aurivella* s. str. and *P. adiposa* proved to be quite reliable, it is in my opinion still important to distinguish these two taxa on subspecies or variety level.

Material examined. AUSTRIA: Bad Völlau, Gainfarn, *Salix*, 5 Oct.1975, U. Pas-sauer (W). CZECH REPUBLIC: Praha, Prokopské údolí, *Salix* sp., 2 Oct.1994, JH 316/94, 317/94 (PRM). – Praha, Braník, *Salix*, 26 Oct.1993, K. Spěváková (PRM). – Praha, Podhoří, *Salix*, 29 Sep. 1935, J. Herink (PRM). – Praha, Máslovická rokle, *Salix fragilis*, 12 Oct.1994, JH 340/94 (PRM). – Praha, Suchdol, Tiché údolí, *Salix fragilis*, 17 Sep. 1996, Z. Pouzar (PRM); 7 Oct.1996, J. Holec (PRM). – Velký Osek, Libický luh, *Salix*, 7 Oct.1992, JH 531/92, 508/92; 5 Oct.1994, JH 326/94 (PRM). – Veselí n. Lužnicí, Frahelž, dike of the pond Naděje, *Salix*, 31 Oct.1997, JH 902/97 (PRM). – Třeboň, *Salix fragilis*, 13 Oct.1964, J. Kubička (PRM). – Třeboň, Mokré louky, *Salix pentandra*, 28 Sep. 1980, L. Kubičková (PRM, as *P. squarroso-adiposa*). – České Budějovice, Roudné, wood of *Salix*, R. Mašek (CB, as *P. adiposa*). – Morava, Omice, *Salix* sp., 4 Nov.1952, Vostrčil (BRNM, as *P. adiposa*). – Morava, Kuřineč, *Salix* stump, 28 Oct.1942, F. Šmarda (BRNM). – Morava, Kuřim, *Salix*, 29 Aug.1945, F. Šmarda (BRNM). – Brno, Pisárky, *Salix*, 2 Oct.1965, A. Vágner (BRNM). – Dolní Věstonice, *Salix*, 26 Sep. 1954, F. Šmarda (BRNM). – SLOVAK REPUBLIC: Oravské vrchy, Oravské Veselé, *Salix fragilis*, 6 Sep. 1979, L. Kubičková (PRM). – Západné Tatry, Liptovský Hrádok, *Salix fragilis*, 10 Sep. 1979, L. Kubičková (PRM, as *P. adiposa*). – Turňa n. Bodvou, Zadielská dolina, *Salix* sp., 8–14 Oct.1934, A. Pilát (PRM, as *P. adiposa*). – SWEDEN: Stockholm, Djurgarden, *Salix* sp., 18 Oct.1976, A. Strid (S). – Stockholm, Södra Djurgarden, *Salix fragilis*, 3 Nov.1975, N. Suber (S). – Stockholm, Norr Mälarstrand, *Salix fragilis*, A. Anderberg (S). – Uppland, Lovö, Drottningholm, *Salix* sp., Sep. 1895, H. Kugelberg (S). – Uppsala, Botaniska trädgården, *Salix pentandra*, 10 Sep. 1943, E. Narfström (UPS). – Uppsala,

Botaniska trädgården, *Salix*, Sep. 1935, S. Lundell (UPS). – Uppsala, Botaniska trädgården, *Salix pentandra*, 30 Sep. 1950, J. A. Nannfeldt (UPS). – Uppland, Bondkyrka, *Salix fragilis*, 8 Sep. 1943, E. Narfström (UPS). – Kristianstad, Lingenäset, *Salix fragilis*, 7 Oct. 1984, S. Jacobsson (GB 84131). – FINLAND: Turku, Asemapuisto, *Salix fragilis*, 13 Sep. 1935, M. Laurila (H, as *P. heteroclita*). – Mustiala, *Salix pentandra*, P. A. Karsten (H, herbarium P. A. Karsten, No. 2935, holotype of *Pholiota cerifera* (P. Karst.) P. Karst.). – UZBEKISTAN: Samarkand, Kara Tepe, *Salix* sp., 1. Juni 1959, A. Pilát (PRM).

Results of a type study of *Pholiota cerifera* (P. Karst.) P. Karst.

Holotype: Herbarium P. A. Karsten, no. 2935, Mustiala, in *Salice pentandrae*, Sep., leg. P. A. Karsten, det. as *Agaricus (Pholiota)* n. sp. *ceriferus* (H).

The holotype consists of one very young and not well preserved fruitbody – overdried, and too much pressed.

Macrocharacters of the herbarium specimen: pileus 1,6 cm, pressed, lamellae hardly accessible (covered by pileus margin), stipe cylindrical, incurved, 0,5 cm broad, at base somewhat thicker, with rusty-brown scales, velum present between pileus margin and stipe, yellow.

Microcharacters (see also Fig. 2): Spores (8-)8.3–9.2(-9.8) × 5.8–6.1(-6.4) μm (20 spores measured), broadly ellipsoid, with thick brown wall, germ pore very distinct, 1.5–1.8 μm broad. Basidia not found. Basidioles cylindrical to narrowly clavate, 23–31 × 6 μm. Chrysocystidia abundant, narrowly clavate to clavate, in some cases slightly mucronate, with a small refractive inclusion colouring yellow to yellow-rusty in KOH or NH₄OH solution, sometimes completely hyaline. Cheilocystidia hardly visible, clavate to broadly clavate, 26–29 × 14–15 μm, hyaline. Pleurocystidia: see chrysocystidia. Hyphae of velum flexuous, made up of cylindrical to narrowly fusiform cells 6–15 μm broad, hyaline. Pileus cuticle a slightly gelatinised cutis, 2-layered, upper layer made up of densely arranged parallel to slightly flexuous hyphae 3–4.5 μm broad, yellow-brown encrusted, lower layer made up of densely arranged hyaline hyphae 3–5 μm broad. Pileus context consists of interwoven hyaline or slightly yellow-brown encrusted hyphae 3–9 μm broad. Stipe cuticle a cutis of densely arranged parallel hyphae 3–6 μm broad, hyaline. Stipe context made up of densely arranged parallel hyphae 4.5–9 μm broad, hyaline. Clamp connections present in all tissues.

A revision of the holotype proved that *Pholiota cerifera* (P. Karst.) P. Karst. originally collected on *Salix pentandra* is identical with *P. aurivella* s. str. (see also Fig. 2). Therefore, the name *Pholiota cerifera* (P. Karst.) P. Karst. can not be used as the correct name for a species found mostly on *Fagus* and having glutinous pileus surface as was proposed by Kuyper and Tjallingii-Beukers (1986), and must be regarded a synonym of *Pholiota aurivella* (Batsch: Fr.) P. Kumm.

Pholiota adiposa (Batsch: Fr.) P. Kumm.

Fig. 5

Agaricus adiposus Batsch, Elench. fung., Cont. prima: 147, 1786. – *Agaricus adiposus* Batsch: Fries, Syst. mycol. 1: 242, 1821. – *Pholiota adiposa* (Batsch: Fr.) P. Kummer, Führer Pilzk.: 83, 1871.

Misidentifications of *P. adiposa*: *Pholiota aurivella* (Batsch: Fr.) P. Kumm. sensu Ricken (1915) p.p.; sensu J. E. Lange p.p., Fl. agaric. danic., vol. 3: 55, 1938; sensu Kühner and Romagnesi (1953) p.p.; sensu Moser (1953, 1955, 1967, 1978, 1983) p.p.; etc.

Misapplications of the name *P. adiposa*: *Pholiota adiposa* (Batsch: Fr.) P. Kumm. auct. non Batsch et Fries: Ricken (1915, = *P. jahnii*); Konrad et Maublanc, Icon. select. fung., vol. 1, fasc. 4: tab. 75, 1928 (= *P. jahnii*); J. E. Lange, Fl. agaric. danic., vol. 3: 54, 1938 (= *P. jahnii*); Kühner and Romagnesi (1953, = *P. jahnii*); Moser (1953, 1955, 1967, 1978, 1983, = *P. jahnii*); etc.

Selected illustrations. Batsch (1786): fig. 113. – Cooke, Ill. Brit. fung.: tab. 353, 1884. – B. Dvořák, Mykologia 3: tab. *Pholiota adiposa*, 1926. – Bresadola, Icon. mycol., vol. 14: tab. 699, 1930. – J. E. Lange, Fl. agaric. danic., vol. 3: fig. 108D, 1938. – Breitenbach and Kränzlin (1995): fig. 421.

Short characteristics. fasciculately growing fungus with large fleshy fruitbodies, pileus yellow, strongly glutinous in moist weather, after drying somewhat lustrous, with thin rusty-ochre to rusty-brown scales. Spores (7-)7.5–9.5(-10.7) × (4.5)–5–6.2(-6.5) μm , germ pore 0.8–1.2 μm broad, chrysocystidia scattered to rare, cheilocystidia of various shape: fusiform, cylindrical, narrowly clavate, narrowly lageniform, obovoid when young, often all these types present on one edge. Growing on stems or on branches of living and fallen trees, mostly *Fagus sylvatica*, but also on various other deciduous trees, sometimes also conifers.

Description. Fruitbodies fasciculate. Pileus 4–14(-20) cm, hemispherical to slightly campanulate when young, with involute margin, convex to plano-convex at maturity, in some fruitbodies with low obtuse umbo and inflexed margin, fleshy, scaly. Pileus cuticle strongly glutinous in moist weather, after drying somewhat lustrous (glimmering), golden yellow in young fruitbodies, at maturity yellow to ochre-yellow, in some fruitbodies light yellow-ochre to lemon yellow or, on the contrary, dark yellow-ochre to ochre brown towards the centre, in old fruitbodies completely brown-ochre (often covered with spore dust). Scales scattered to dense, 0.3–0.7(-1) cm broad, thin, approximately triangular, appressed or slightly ascending, in moist weather covered by a glutinous layer or somewhat swollen up in the slime, often missing after rainfall, after drying sometimes forming darker patches on pileus surface, colour rusty-ochre to rusty-brown. Lamellae crowded, with lamellulae (l=1–3), 0.5–1.2 cm broad, subventricose, near the stem slightly emarginate with small decurrent tooth or adnate, yellow-ochre when young,

then yellow-brown to ochre-brown, edge somewhat paler. Stipe 5–20 × 0.8–2.5 (-3) cm, cylindrical, towards the base sometimes slightly broadened or thickened, often curved, scaly, dry or at most slightly viscid, with indistinct annular zone disappearing with age, above this zone light yellow or yellow, smooth, below it yellow-ochre to rusty-ochre at the base, scales appressed or flaring, yellow-ochre, rusty-ochre to rusty-brown. Context firm, light yellow, in stipe base rusty-ochre. Taste mild, smell indistinct or like smoked meat. Spore print brown (Breitenbach and Kränzlin 1995: 27, colour no. 57).

Spores (7-)7.5–9.5(-11) × (4.5-)5–6.2(-6.5) μm , ellipsoid to slightly ovoid, smooth, with thick brown wall, germ pore distinct, 0.8–1.2 μm broad. Basidia 25–35 × 6.5–9.5 μm , cylindrical or narrowly clavate, with 4 (exceptionally 2 or 3) sterigmata, 3.5–4 μm long. Chrysocystidia 25–56 × 7.5–11 μm , scattered to rare, cylindrical or narrowly clavate, often curved, tapering, in some cases slightly mucronate, partly or wholly filled with a refractive inclusion colouring yellow to yellow-rusty in KOH or NH_4OH solution, present on lamellae surface and rarely also on the edge. Cheilocystidia 20–50 × 5–17 μm , variously shaped – fusiform, cylindrical, narrowly clavate, narrowly lageniform, obovoid when young (Fig. 3), often all these types present on one edge, their wall thin but exceptionally slightly thickened, mostly colourless, sometimes with a yellow inclusion. Lamellar trama regular, made up of parallel hyphae 5–15 μm broad, near the subhymenium only 2–4.5 μm broad, individual cells cylindrical or slightly fusiform, subhymenium gelatinous, made up of branched 2–4 μm broad hyphae. Hyphae of velum (from scales on pileus surface) flexuous, 6–15 μm broad, hyaline, made up of cylindrical, narrowly ellipsoid to barrel-shaped cells. Pileus cuticle an ixocutis, 3-layered, upper layer thin, gelatinous, strongly pigmented, made up of parallel to slightly flexuous hyphae 1.5–4.5 μm broad, pigment membranal, vacuolar and encrusting, middle layer strongly gelatinous, made up of flexuous hyphae 3–8(-12) μm broad, with indistinct light yellow membranal pigmentation, lower layer made up of hyaline, densely arranged parallel 3–11 μm broad hyphae with light yellow membranal pigment, not soluble in KOH. Stipe cuticle made up of parallel cylindrical hyphae 3–6 μm broad, partly slightly gelatinous, strongly yellow-ochre pigmented, the pigment vacuolar, membranal and encrusting. Clamp connections present in all tissues.

Fructification. Apr., Aug.-Dec., most frequently Sept.-Oct.

Ecology. *Pholiota adiposa* grows as a parasite on stems and branches of living trees, later also as a saproparasite or saprophyte on fallen stems and dead wood. It typically grows several meters above the ground, contrary to the related species *Pholiota jahnii* that typically grows on stem bases, roots and wood buried in the ground. The most frequent substrate is wood of *Fagus sylvatica*. In the PRM herbarium (National Museum Praha) finds from the following tree species are represented also: *Aesculus hippocastanum*, *Acer pseudoplatanus*, *Acer platanoides*, *Celtis occidentalis*, *Juglans regia*, *Malus pumila*, *Populus tremula*,

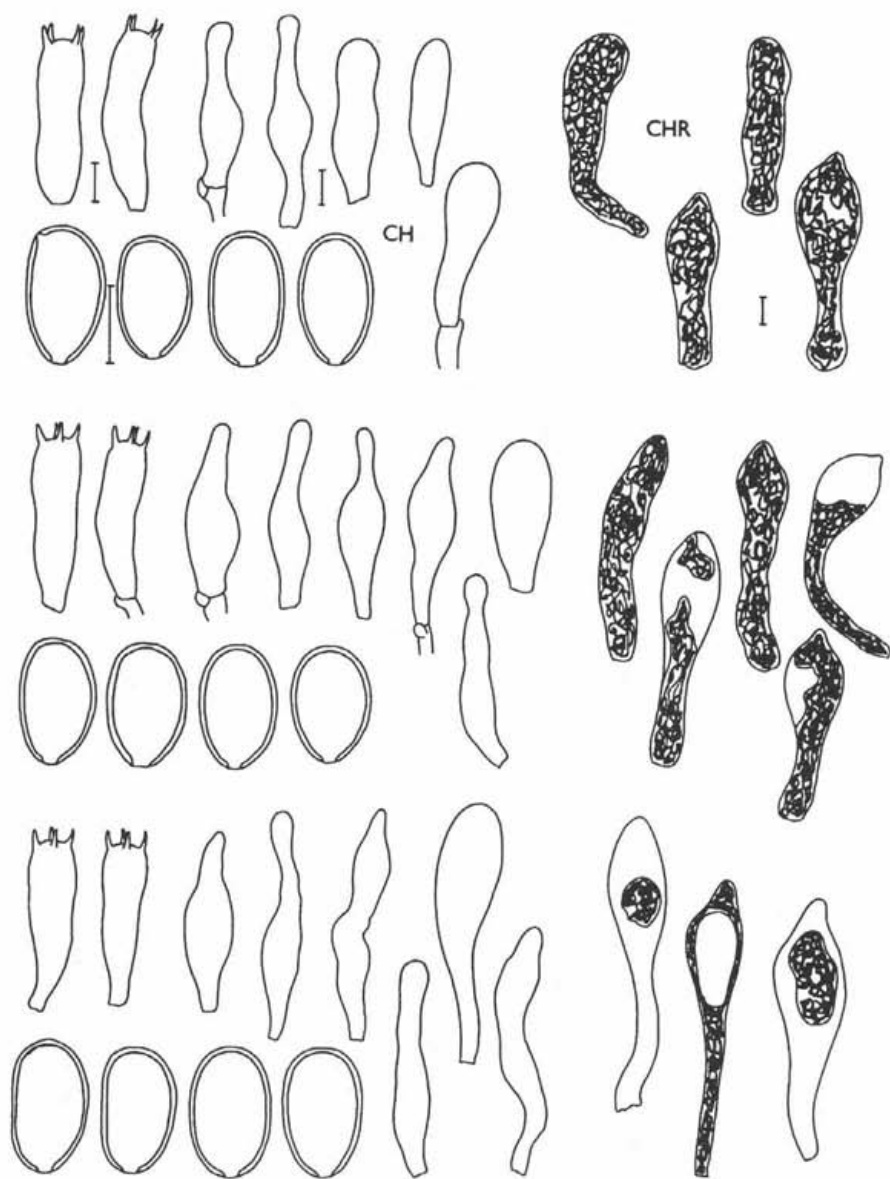


Fig. 5. *Pholiota adiposa* (Batsch: Fr.) P. Kumm. (spores, basidia, cheilocystidia, chrysocystidia).
 - Czech Republic, Šumava mountains, Dobrá, Medvědice nature reserve, *Fagus sylvatica*, 28 Oct.1992, JH 647/92 (PRM).
 - Czech Republic, Stříbrná Skalice, Studený vrch, *Fagus sylvatica*, 12 Oct.1992, JH 555/92 (PRM).
 - Sweden, Sibbarp, 500 m S Grytsjön, *Fagus*, 16 Oct.1980, S. Jacobsson (GB 80307, neotype of *Pholiota adiposa* (Batsch: Fr.) Kumm. selected by Jacobsson 1987).
 Abbreviations: CH: cheilocystidia, CHR: chrysocystidia. Scale bar = 5 μ m. Ill. J. Holec.

Sorbus aucuparia, *Quercus* sp., *Tilia cordata*, *Tilia* sp. and also *Abies alba* a *Picea abies*. Jacobsson (1987) mentions also one find on *Betula*.

Distribution. Common in all parts of Europe as well as in North America (Smith and Hesler 1968).

Discussion. *Pholiota adiposa* is clearly recognisable by the characters given in Table 3 and in the paragraph Short characteristics. The most important characters are the shape of the cheilocystidia (Fig. 3), width of the germ pore and substrate preference. The pileus is strongly glutinous in moist weather and after drying somewhat lustrous. The related species *P. aurivella* differs by the characters summarised in Table 3. On wood of *Fagus* also grows *Pholiota jahnii* which species differs from *P. adiposa* by its numerous, dark brown to brown black scales on pileus surface, growth at the bases of trees, on roots or wood covered by soil and above all by its smaller spores [(4.5-)5-7(-7.5) × 3.3-4.0(-4.5) μm] with a minute germ pore (spore measurements according to Holec 1997a). This species had for a long time (nearly the whole 20th century) been included in *Pholiota adiposa*. The taxonomy and nomenclature of *Pholiota jahnii* is thoroughly discussed by Kuyper and Tjallingii-Beukers (1986).

Pholiota limonella, discovered for Europe by Jacobsson (1987), looks very similar and differs from *P. adiposa* by its slightly smaller, especially narrower spores [6.5-9(-10) × 4-5.3(-5.8) μm; Holec 1997a] and partly also by substrate preference (mostly *Alnus*, *Betula* but also *Picea*, *Abies* and various deciduous trees, see Jacobsson 1987, 1990; Holec 1997a). Reliable identification of *P. limonella* is possible only on the basis of spore width. It is necessary to measure at least 10 spores to establish the prevailing values (less than 6 μm: *P. limonella*, more than 6 μm: *P. adiposa* and *P. aurivella*).

The change of the original concept of *Pholiota adiposa* (to a small-spored species, named *P. jahnii* at present) was started by Ricken (1915). Consequently, the name *Pholiota aurivella* has erroneously been used for the true *P. adiposa* sensu Fries. However, the erroneous concept of *P. aurivella* and *P. adiposa* has been applied by almost all leading mycologists in the 20th century except for Bresadola (1930: Tab. 699), who correctly interpreted *Pholiota adiposa* as a species with 5-6 μm broad spores growing above all on beech stems.

Jacobsson (1987) restored the original Friesian concept of *Pholiota adiposa* and selected a neotype for this name - viz. a specimen from Sweden collected on *Fagus* (GB 80307). I studied this specimen and found it to represent the true *Pholiota adiposa* in the original sense of Batsch and Fries. However, Jacobsson included collections from *Salix* in *Pholiota adiposa* and placed the name *Pholiota aurivella* in the synonymy of *P. adiposa*.

Later, Jacobsson (1990) changed his original opinion on the nomenclature and neotypification of *P. adiposa*. He named the fungus on *Fagus* *Pholiota aurivella* and designated a new neotype for it (specimen GB 83119 collected on *Fagus*).

A very curious situation resulted from this change. The name *Pholiota adiposa* rehabilitated and neotypified by Jacobsson in 1987 was then (Jacobsson 1990) proposed to be placed on the list of nomina rejicienda and replaced by the name *Pholiota aurivella*! This change was caused by the fact that some mycologists (e. g. T. Kuyper, see Jacobsson 1990: 28) did not agree with the rehabilitation of the original concept of *Pholiota adiposa* by Jacobsson in 1987. In their opinion, the name *P. adiposa* had for a long time been used for the species recently named *Pholiota jahnii* Tjall.-Beuk. et Bas and therefore is a source of confusion. On the other hand, Kuyper means (according to Jacobsson 1990: 28) that the name *Pholiota aurivella* has been used in the same sense since Fries (1821). However, my results clearly showed that the true *Pholiota aurivella* is another fungus having different characters and growing on *Salix*.

In addition, Kuyper and Tjallingii-Beukers (1986) noticed the difference between the characters of the fungus growing on *Fagus* and other substrata (erroneously named *Pholiota aurivella* in the 20th century) and Fries' description of *Agaricus aurivellus*. There is no mention of the strongly glutinous pileus surface in the description of Fries (1821), which is, however, one of the most important characters of "*Pholiota aurivella*" (= *P. adiposa* in this paper) sensu authors of the 20th century. Consequently, Kuyper et Tjallingii-Beukers (1986) proposed to use the name *Pholiota cerifera* (P. Karst.) P. Karst. for this species. However, the original *Pholiota cerifera* was described according to one small fruitbody growing on a living stem of *Salix pentandra* (P. Karsten, Bidrag Kännedom Finlands Natur Folk 25: 369, 1876, as *Agaricus ceriferus*). Revision of the holotype of *P. cerifera* clearly showed that the specimen is identical with *Pholiota aurivella* in the sense of Fries and the results published in this paper. Therefore, the name *Pholiota cerifera* (P. Karst.) P. Karst. must be placed into the synonymy of *Pholiota aurivella* (Batsch: Fr.) P. Kumm.

In my opinion, this complicated situation must be solved by restoring the original concept of *P. adiposa* (as a fungus with a glutinous pileus and growing mainly on *Fagus*) by returning to Jacobsson's neotypification of this name (Jacobsson 1987) and by rejecting Jacobsson's neotypification of *P. aurivella* (Jacobsson 1990), because this is in conflict with the protologue of that species. In addition, the new neotype for *P. aurivella* proposed in this paper restricts then the use of that name for the taxon growing on *Salix* and having clavate cheilocystidia and a broader germ pore. Consequently, the application of the names *Pholiota adiposa* and *Pholiota aurivella* will be in agreement both with the data of the original authors and the new taxonomic conclusions presented in this paper.

Material examined. CZECH REPUBLIC: Northern Bohemia, Staré Křečany near Rumburk (=Altehrenberg), *Tilia cordata*, 15 Oct.1943, H. Marschner (PRM, as *P. aurivella*). - Ibid., *Aesculus hippocastanum*, 2 Nov.1944, H. Marschner

(PRM, as *P. aurivella*). – Ibid., *Acer pseudoplatanus*, 9 Oct.1965, H. Marschner (PRM, as *P. aurivella*). – Šluknov, Vlčí hora (=Wolfsberg), *Picea*, 23 Oct.1944, H. Marschner (PRM, as *P. aurivella*). – Vlašim, Křesín, *Malus pumila*, 12 Oct. 1957, M. Deyl (PRM, as *P. aurivella*). – Kladno, Lány, Lánská obora, *Fagus sylvatica*, 22 Oct.1967, L. Kotlabová (PRM, as *P. aurivella*). – Křivoklátsko, Kamenné Žehrovice, hájovna Ploskov-Polesí, *Fagus sylvatica*, 10 Oct.1993, M. Réblová (PRM). – Křivoklátsko, nature reserve Vůznice, Janův vrch hill, *Quercus* sp., 22 Oct.1992, JH 610/92 (PRM). – Křivoklátsko, nature reserve Kohoutov, *Acer platanoides*, 15 Oct.1992, JH 563/92 (PRM). – Karlštejn, Bubovický potok stream-waterfalls, *Acer platanoides*, Sep. 1949, M. Svrček (PRM, as *P. aurivella*). – Mníšek pod Brdy, Voznice, *Abies alba*, 17 Oct.1948, M. Svrček (PRM, as *P. aurivella*). – Praha, Královská obora, *Aesculus hippocastanum*, 21 Nov.1942, J. Herink (PRM, as *P. aurivella*). – Praha, Stromovka, *Fagus sylvatica*, 9 Oct.1992, JH 534/92 (PRM). – Praha, Petřín, Nebozízek, *Acer pseudoplatanus*, 5 Sep. 1966, E. Wichanský (PRM, as *P. aurivella*). – Praha, Kinského sady, *Acer platanoides*, 2. Dec.1961, E. Wichanský (PRM, as *P. aurivella*). – Praha, Břevnov, *Populus*, Oct.1935, J. Herink (PRM, as *P. aurivella*). – Praha, Bohnice, *Juglans regia*, 20 Oct.1944, B. Vošoust (PRM, as *P. aurivella*). – Jevany, Voděradské bučiny, *Fagus sylvatica*, 24 Sep. 1993, JH 229/93 (PRM). – Stříbrná Skalice, Studený vrch, *Fagus sylvatica*, 12 Oct.1992, JH 552/92, 559/92, 549/92, 555/92, 539/92 (PRM). – Blatná, Bělčice, Bělčická hora, *Populus tremula*, 29 Sep. 1975, F. Kotlaba (PRM, as *P. aurivella*). – Šumava, Dobrá, Medvědice, *Abies alba*, 28 Oct.1992, JH 648/92; *Fagus sylvatica*, 28 Oct.1992, JH 646/92, 647/92 (PRM). – Stožec, *Picea abies*, 14 Oct.1995, JH 384/95 (PRM). – Lenora, Boubínský prales, *Picea abies*, 18 Sep. 1948, J. Herink (PRM). – Zátoň, Pažení mountain, *Abies alba*, 12 Sep. 1946, J. Herink (PRM). – between Horní Vltavice and Strážný, *Acer platanoides*, 10 Oct.1993, Z. Palice (PRM). – between Filipova Huť and Modrava, *Sorbus aucuparia*, 13 Oct.1995, JH 363/95 (PRM). – Česká Třebová, Třebovské stěny, *Fagus sylvatica*, 20 Oct.1994, JH 386a/94 (PRM). – SLOVAK REPUBLIC: Bratislava, Vajnorská cesta, *Celtis occidentalis*, 4 May 1989, 5 Oct.1995, J. Paclt (PRM). – LIECHTENSTEIN: Mauren, Schaanwald, *Fagus sylvatica*, 5 Oct.1995, F. Kotlaba (PRM, as *P. aurivella*). – SWEDEN: Stockholm, Bellevue-parken, *Tilia*, 3 Nov.1955, R. Schöldström (UPS, as *P. aurivella*). – Västmanland, Kolbäck par., Strömsholm, *Tilia*, 5 Oct.1986, H. Kaufmann (UPS). – Silvakra, Stensoffa, *Fagus*, 26 Oct.1983, S. Jacobsson (GB 83119, neotype of *Pholiota aurivella* (Batsch: Fr.) Kumm. designated by Jacobsson 1990). – Sibbarp, 500 m S Grytsjön, *Fagus*, 16 Oct.1980, S. Jacobsson (GB 80307, neotype of *Pholiota adiposa* (Batsch: Fr.) Kumm. designated by Jacobsson 1987).

ACKNOWLEDGEMENTS

I wish to thank Dr. Z. Pouzar (Prague) as well as the anonymous reviewer of the paper for valuable comments on the manuscript. The work was supported by grants from the Grant Agency of Charles University, Prague (project no. 97/94), and the Grant Agency of the Czech Republic (project no. 206/97/0273).

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Fig. 3. *Pholiota aurivella* (Batsch: Fr.) P. Kumm. Fruitbody with prominent dark scales.
– Czech Republic, Praha, Máslovická rokle valley, *Salix fragilis*, 12 Oct.1994, JH 340/94 (PRM).
Microcharacters of this fruitbody are depicted in Fig. 1. Photo J. Holec.

Fig. 4. *Pholiota aurivella* (Batsch: Fr.) P. Kumm. Typical robust fruitbody with thick dark scales and dry mat pileus surface.
– Czech Republic, Praha-Suchdol, Tiché údolí, *Salix fragilis*, 23 Oct.1997, JH 888/97 (PRM).
Photo J. Holec.