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NOTES ON PHOLIOTA

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The nomenclatural status of the names of the species of *Pholiota* occurring in the Netherlands is investigated. *Pholiota jahnii* is proposed as a new species, and five new combinations are made, viz. *P. populnea*, *P. conissans*, *P. lutaria*, *P. mixta*, and *P. scamba*.

During the preparation of an account of the species of *Pholiota* occurring in the Netherlands (Tjallingii-Beukers, 1986), we noted that several names in *Pholiota* (Fr.) Kumm. were invalid or incorrect. Accordingly some nomenclatural corrections are proposed here in order to bring *Pholiota* nomenclature into concurrence with the latest edition of the International Code of Botanical Nomenclature (Voss & al., 1983).

Pholiota jahnii Tjall. & Bas, *spec. nov.*

Misapplied names.—*Pholiota muelleri* (Fr.) P. D. Orton sensu P. D. Orton, Moser, Romagnesi, Tjallingii-Beukers.—*Pholiota squarrosodiposa* J. Lange sensu Cetto.

Pileus 25–45 mm latus, primo convexus vel plano-convexus, postremo applanatus, indistincte umbonatus, margine inflexo dein recto, appendiculato cum velo flavido, in centro brunneolo-flavidus vel aureo-brunneus, versus marginem pallide flavidus, viscidus, confertim obtectus squamis pusillis, acutis, rufo-brunneis, subnigris ad apicem; squamae erectae in centro, versus marginem appressae, apice penicillato. Lamellae emarginato-sinuatae, adnexae, argillaceae vel bubalinae, margine integro, flavido, postremo aureo. Stipes 40–65 × 5–7 mm, cylindricus, ad basim saepe acutus, in parte apicali sericeus, pallide flavidus, in parte basali fibrillosus, fibrillis rufo-brunneis et stramineis alternantibus, in parte mediana pallide flavidus, squarrosus, squarris patentibus, ochraceis, deinde rufo-brunneis. Caro pallide flava, in stipite versus basim brunneolo-aurea. Odor saporque indistinctus. Sporae 5.0–6.5 × 3.0–4.0 μm , Q = 1.4–1.7, laeves, conspicue pallidae, ovoideae, cum poro germinativo indistincto. Basidia 22–26 × 5–6 μm , tetrasporigera. Cheilocystidia 16–35 × 6–11 μm , cylindrica vel subclavata, saepe irregularia. Chrysocystidia 35–45 × 8–10 μm , frequentia, clavata vel fusiformia, mucronata, marginalia et lateralialia. Ad truncos *Fagi*.—Holotypus: 'C. Bas 7050, 4.X.1976, Beller Holz, Bad Meinberg, Westphalia, Federal Republic of Germany' (L, isotypus in M).

Etymology: dedicated to Dr. H. Jahn, honorary member of the German Mycological Association, in view of his outstanding contributions to the taxonomy and ecology of wood-inhabiting fungi.

This very striking species belongs to subgen. *Pholiota*, sect. *Adiposae*. It has been beautifully depicted by Jahn (1977, 1979) and Ryman & Holmäsén (1984), and amply described by Romagnesi (in Kühner & Romagnesi, 1957) and Tjallingii-Beukers (1977),

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making an English translation of this diagnosis superfluous. So far this species has been known as *P. muelleri* (Fr.) P. D. Orton. However, as already noted by several mycologists (Romagnesi in Kühner & Romagnesi, 1957; Tjallingii-Beukers, 1977; Krieglsteiner, 1985), the application of the epithet *muelleri* to this species is extremely doubtful and both Romagnesi and Krieglsteiner explicitly stated that a new name might well be inevitable.

Fries (1821: 243) provided a very short description of *Agaricus squarrosus* Weigel: Fr. β (unspecified rank) *muelleri* Fr.: Fr. and referred to a description and an illustration by Müller (1780). It seems logical to typify this taxon with Müller's illustration (iconotype). Unfortunately this illustration and this description are hardly interpretable, and the same applies to Fries's protologue. There are, however, several characters that exclude the species currently known as *P. muelleri*, viz. the distinct ring and the whitish pileus with appressed scales. We feel that *A. squarrosus* β *muelleri* is best regarded as a nomen dubium. The name might well refer to an aberrant variant of *P. squarrosa* (Krieglsteiner, pers. comm.).

The first authors to misapply the epithet *muelleri* were probably Saunders & al. (1871), although we immediately admit that their illustration is not very typical for *P. jahnii*, because of the rather broad and thick scales on the pileus. However, Orton (1960) stated that this illustration was representative for the taxon as it occurs in Great Britain. We were able to study one of Orton's collections (Oxon., Stoke Row, 31.X.1953, *P. D. Orton* 82, L) and noted some macroscopical differences and somewhat larger spores (viz. $5.5-7.0 \times 3.0-4.0 \mu\text{m}$) than in Central European gatherings of this species. Despite these little discrepancies we consider this collection as conspecific with *P. jahnii* on account of its partly ovoid and pale-coloured spores.

There are several epithets that need to be discussed in this respect, as they could probably refer to the taxon described here as a new species. However, any discussion and subsequent interpretation of those old names must take into account the difficulty of relying on macroscopical characters solely. Moreover, Fries himself was somewhat wavering in his specific delimitation in this group, as can be seen from a comparison between the treatment of *Pholiota* in the *Systema mycologicum* and the *Epicrisis*.

Agaricus subsquarrosus was described by Fries (1861: 23) as a taxon intermediate between *A. aurivellus* and *A. squarrosus*. The colour of the pileus was described as rusty brown, the scales were said to be appressed and no mention was made of brush-like tips. A subsequent illustration of this species (Fries, 1877) is in close agreement with the protologue, but is unrecognisable for *P. jahnii*. The interpretation of *P. subsquarrosa* (Fr.) Sacc. remains unclear to date. According to Moser (1983) this species is characterised by its very large spores (viz. $8-12 \times 5-6.5 \mu\text{m}$), quite unlike those of *P. jahnii*. No recent description of this taxon seems to have been published and it remains unclear for that reason how much significance should be attributed to this spore character.

It seems not unlikely on the other hand that *P. subsquarrosa* sensu Ricken (1912) is identical with *P. jahnii*. Although the macroscopical description is an almost literal translation of the protologue, Ricken added microscopical observations that are in close agreement with those of *P. jahnii*. Ricken also noted that his specimens showed erect

scales on the pileus, whereas Fries (1861) described them as 'squamis adpressis'. It seems likely that Ricken used the epithet *subsquarrosa* only hesitatingly, as he was unable to find another, more apt epithet in the literature.

The discrepancy between Fries's and Ricken's description makes clear again that the epithet *subsquarrosa* cannot be used for *P. jahnii*.

Fries (1838: 166) mentioned an illustration by Batsch (1786, sub nom. *Agaricus imbricatus*) under *A. squarrosus* β *muelleri*. Unfortunately this illustration is uncoloured and although it could well refer to *P. jahnii*, we prefer to regard the name *A. imbricatus* Batsch as a nomen dubium. Moreover, as this name is illegitimate, being a homonym of *A. imbricatus* Fr.: Fr., a possible reintroduction of the Batschian epithet as a new name seems even less useful (ICBN, Recommendation 72A).

One of us earlier (Tjallingii-Beukers, 1977) mentioned the possibility that *P. squarrosoadiposa* J. Lange could be the same as *P. muelleri* sensu P. D. Orton, and Krieglsteiner (1985) recently suggested that *P. muelleri* sensu auct. and *P. squarrosoadiposa* could be synonymous. Unfortunately, no authentic material of *P. squarrosoadiposa* could be obtained from the Copenhagen herbarium. For the time being we regard therefore the illustration by Lange (1938: pl. 109C) as the iconotype.

At first sight Orton's (1960) description of *P. muelleri* seems to be in accord with Lange's illustration, as both taxa were described as having a pileus with rather broad and thick scales. However, Lange's description is deficient in some respects, and data on the colour of the spores under the microscope, a highly important character for the taxonomy of this group, are lacking. Orton's collection was characterised by pale spores (see p. 78), and therefore we regard this material as conspecific with *P. jahnii*.

Any contention that *P. squarrosoadiposa* and *P. muelleri* sensu auct. (= *P. jahnii*) are distinct enough to warrant separation on specific level, cannot of course be based on a comparison of the respective descriptions solely, but should be supported by exsiccate material. As noted above, no authentic material of *P. squarrosoadiposa* could be obtained, suggesting that this species is very rare. Strangely enough, *P. jahnii* is said to be not uncommon in Denmark in *Fagus*-forests (Rald, pers. comm.), whereas Lange knew his species from only one locality, growing in a tree of *Juglans*. This fact makes the identity of *P. squarrosoadiposa* even more unclear.

We came across one collection from the Netherlands and one from Belgium that fitted Lange's description rather well. This taxon is indeed sufficiently different from *P. jahnii* to warrant recognition on specific level, differing from our new species in its spores being brownish under the microscope, for a great part phaseoliform, notably larger (viz. (6.0–)6.5–8.5 \times 3.5–4.5(–5.0) μm) and having a more distinct germ-pore. Lange (1938) indicated the spores to be 6–6.75 \times 4–4.5 μm , but it should be borne in mind that his measurements are often somewhat too small. Krieglsteiner (1985: 41) mentioned a collection from Oberfranken (Federal Republic of Germany) that is characterised by large spores, and this could possibly also refer to *P. squarrosoadiposa*, especially as this collection was macroscopically different from typical *P. jahnii* too. Although this latter author mentioned the possibility that such collections with larger spores could belong to *P. cerifera*, a species of which the variation has not completely been encompassed, we

wish to emphasize that both our collections from the Netherlands and Belgium are distinct also from *P. cerifera* on account of spore form and colour.

For the time being the collections from the Netherlands and Belgium mentioned are referred to *P. cf. squarrosodiposa* (Tjallingii-Beukers, 1986). We have no intention to designate one of these as neotype for Lange's species, feeling that neotypification in this case should be based on well-annotated material from Denmark.

We do not have much doubt on the other hand that *P. squarrosodiposa* sensu Cetto (1976: pl. 447) actually represents *P. jahnii*, as his photograph clearly shows the blackish, brush-like tips of the pileal scales.

There seem to be several North American taxa that come close to *P. jahnii*, but none of these species described by Smith & Hesler (1968) matches our species completely. Especially *P. abietis* A. H. Smith & Hesler, *P. subvelutipes* A. H. Smith & Hesler and *P. squarrosodiposa* sensu A. H. Smith & Hesler come very close, but these taxa all possess larger and darker coloured spores. There is a fairly large number of species in this North American monograph and the differences between the various species are rather subtle. Several of these species are separated mainly on account of their habitat (an unreliable character in Europe, cf. Krieglsteiner, 1985) and small differences in the colour of the young lamellae. Reassessment of the autonomy of these taxa by means of compatibility studies (Farr & al., 1977) led to the conclusion that in this case the genetical species concept was broader than the morphological species concept. These latter authors therefore synonymized *P. abietis*, *P. connata* A. H. Smith & Hesler, *P. squarrosodiposa*, *P. subvelutipes*, and *P. limonella* (Peck) Sacc.

We feel therefore that the above arguments give sufficient support to our contention that *P. muelleri* sensu Romagn., P. D. Orton, Tjallingii-Beukers, Krieglsteiner, etc. is in need of a new name and that no existing name is available. It is with great pleasure that we dedicate this species to Dr. H. Jahn, who showed us fine collections of this species during a foray of the Netherlands's Mycological Society at Detmold, Westphalia.

Pholiota jahnii has a wide distribution in Europe, occurring from Denmark to Spain and from England to the German Democratic Republic. No records of it are known from the Netherlands. It prefers calcareous soils, and is mainly found on wood of *Fagus*, but it is known to occur on wood of several other deciduous and coniferous trees too.

cerifera. — *Agaricus ceriferus* P. Karst. in Bidr. Känned. Finl. Natur Folk 25: 369. 1876. — *Pholiota cerifera* (P. Karst.) P. Karst. in Bidr. Känned. Finl. Natur Folk 32: 297. 1879.

The name *P. cerifera* is proposed to replace the well-known but incorrect name *P. aurivella* (Batsch: Fr.) Kumm. *Agaricus aurivellus* was described by Batsch (1786) as having a dry pileal surface, and this character is clearly conflicting with the present circumscription of *P. aurivella*. Karsten's description on the other hand is consistent with the current interpretation of *P. aurivella*.

Both Lange (1938) and Kühner & Romagnesi (1953) recognised two varieties within *P. aurivella*, using for these the epithets 'aurivella' and 'cerifera' respectively. The

delimitation of these varieties is rather unclear, however, and we frequently encountered specimens that combined characters of both taxa. Collections intermediate between 'var. *aurivella*' and 'var. *cerifera*' are even somewhat more common in the Netherlands than collections possessing the discriminating characters for either variety. A strongly squarrose stipe can be associated with somewhat smaller spores, but many exceptions occur. While admitting that the variability of *P. cerifera* has not yet completely been assessed (cf. p. 79), we do not want to recognise infraspecific taxa within *P. cerifera* for the time being.

populnea. — *Agaricus populneus* Pers., Mycol. eur. 3: 171. 1828 (basionym). — *Agaricus populneus* Pers.: Fr., Syst. mycol., Index: 36. 1832. — *Pholiota populnea* (Pers.: Fr.) Kuyp. & Tjall., *comb. nov.*

This species has so far been known as *P. destruens* (Brondeau) Gillet. Both epithets, viz. *destruens* and *populneus* date from 1828 and it seems impossible to assign priority for one of these. However, it has generally escaped attention that Fries (1832) did sanction the name *A. populneus*, and this clearly establishes *populneus* as the correct epithet. Unfortunately, no type-material of this species could be found at L.

As the following combinations are invalid under ICBN Art. 33.2, which requires the citation of the basionym with a full and direct reference to its author and original publication with page or plate references and date, they are formally validated here:

conissans. — *Pholiota conissans* (Fr.) Kuyp. & Tjall., *comb. nov.* — *Agaricus conissans* Fr., Epicr.: 187. 1838 (basionym). — *Pholiota conissans* (Fr.) Mos. in Gams, Blätter- und Bauchpilze, 1. Aufl.: 196. 1953 (inval.).

lutaria. — *Pholiota lutaria* (R. Maire) Kuyp. & Tjall., *comb. nov.* — *Tubaria lutaria* R. Maire in Bull. trimest. Soc. mycol. Fr. 44: 47. 1928 (basionym). — *Pholiota lutaria* (R. Maire) Sing., Agaricales mod. Taxon., 3rd Ed.: 552. 1975 (inval.).

mixta. — *Pholiota mixta* (Fr.) Kuyp. & Tjall., *comb. nov.* — *Agaricus mixtus* Fr., Epicr.: 185. 1838 (basionym). — *Pholiota mixta* (Fr.) Mos. in Gams, Blätter- und Bauchpilze, 1. Aufl.: 195. 1953 (inval.).

scamba. — *Pholiota scamba* (Fr.: Fr.) Kuyp. & Tjall., *comb. nov.* — *Agaricus scambus* Fr., Observ. mycol. 2: 45. 1818 (basionym). — *Agaricus scambus* Fr.: Fr., Syst. mycol. 1: 504. 1821. — *Pholiota scamba* (Fr.: Fr.) Mos. in Gams, Blätter- und Bauchpilze, 1. Aufl.: 196. 1953 (inval.).

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