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PHOLIOTA GYMNOPODIA, COMB. NOV. A REDESCRIPTION OF A FORGOTTEN SPECIES

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A description is given of the remarkable species *Pholiota* (*Flammula*) *gymnopodia*, which was found in 1939. It was identified by Mr. A.C.S. Schweers; since then, this species has not been recorded from the Netherlands nor from any other country in Europe. It is mentioned in most taxonomic works of the end of the 19th and the beginning of the 20th century, but it is completely absent from the more recent literature. The new combination *Pholiota gymnopodia* is proposed.

In the author's herbarium, there is an exsiccatum of a find of 1939 under the name of *Flammula gymnopodia* (Bull.: Fr.) Fr. The fungus was identified by Mr. A.C.S. Schweers, a prominent member of the Dutch Mycological Society, probably with the help of Rea (1922). Because this species was unknown from the Netherlands and seemed to be very rare elsewhere, we decided not to publish this collection and to wait for new records. The fungus was depicted in a water-colour painting by Mr. A.M. Middelhoek, an excellent illustrator of micro-organisms and fungi (Fig. 2).

The species is based on Fries' (1874) interpretation of Plate 601 of Bulliard (1791–1798). In Persoon (1801) the species is included but without mention of the colour of the spores. Fries (1874) described the spore colour as 'ferruginous' and placed the species in *Flammula*. Disregarding this important character, Quélet (1888) classed *Agaricus gymnopodia* in *Clitocybe*, which was followed by Costantin & Dufour (1910), Bresadola (1927–1933), and even by Kühner & Romagnesi (1953). The unpublished description of the species by Mr. Schweers is translated and supplemented by the author, and the occurrence of this species in the mycological literature is discussed.

Pholiota gymnopodia (Bull.: Fr.) A.F.M. Reijnders, *comb. nov.* — Figs. 1, 2

Agaricus gymnopodius Bull., Herb. Fr. (1798) pl. 601, fig. 1 (basionym); Hist. Champ. Fr. (1809) 531 (accompanying text). — *Agaricus gymnopodius* Bull.: Fr., Syst. Mycol. 3 (Index) (1832) 23. — *Agaricus* (*Flammula*) *gymnopodius* (Bull.: Fr.) Fries, Hymen. Europ. (1874) 244. — Type: represented by Bulliard, Herb. Fr. (1798) pl. 601, fig. 1; Hist. Champ. Fr. (1809) 531. Type locality: France. Type specimen: not known to exist. — Epitype (illustrative specimen; chosen here): The Netherlands, Prov. Utrecht, near Amersfoort, Oct. 1939, *A.F.M. Reijnders* (L 996.339-999).

Selected illustrations. Bulliard, Herb. Fr. (1798) pl. 601, fig. 1 (as *Agaricus gymnopodius*); Cooke, Illustr. Br. Fungi (1884) pl. 431 (as *A. gymnopodius*); Britzelmayer, Hymen. Südbayern (1890) pl. 415 (as *Flammula gymnopodia*; doubtful).

Description. Cap 45–50 mm diam., plano-campanulate, obtusely umbonate, minutely squamulose, scales rusty-brown; general colour of the pileus orange-brown, with a much brighter yellow marginal zone; margin curved downward. Gills yellow-orange; edge uneven and brighter by the presence of filiform cheilocystidia; L = 40–50, shorter gills of 3 lengths,

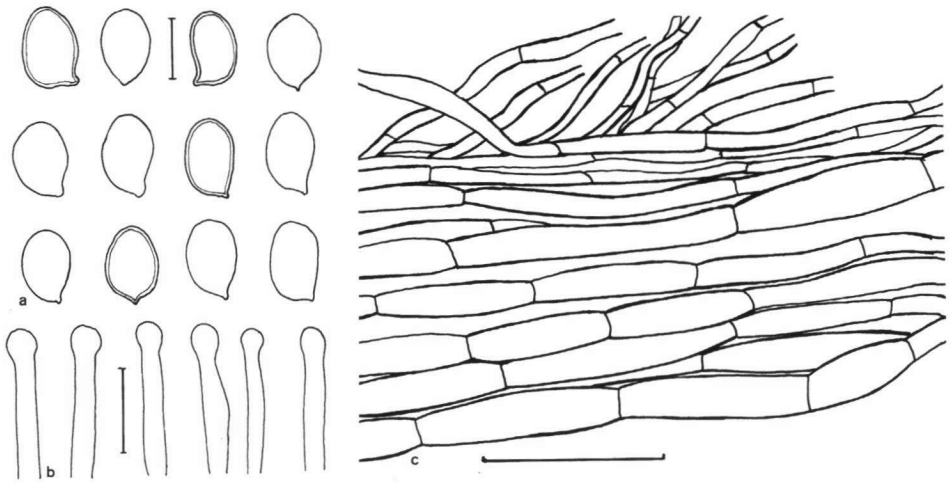

Fig. 1. *Pholiota gymnopodia* (L 996.339-999, epitype). a. Basidiospores (bar = 5 µm); b. cheilocystidia (bar = 20 µm); c. pileipellis, radial section (bar = 100 µm).

height 4–5 mm; deeply decurrent and forming striations on the uppermost part of the stem; thin near the stem and the pileus margin. Stem 6–8 cm × 6–11 mm, cylindrical tapering downwards, fasciculate; upper part yellow-white, lower part brown; fibrillose, slightly rimose, at the top somewhat flocculose but white and velvety at the base. Flesh yellow-white in cap and stem; taste bitter; smell absent.

Spores broadly ellipsoid, 7–7.5 × 5–5.5 µm. Cheilocystidia filiform; mostly 18–20 µm long.

Additional observations following a study of the exsiccatum. A spore print is unfortunately lacking. Spores (after treatment with heated 8% NH_4OH) broadly ellipsoid, smooth; yellow-brown under the microscope, somewhat depressed at the hilum, without a germ-pore, (5.75–)6.4–8.3 × 4.5–5.4 µm (average 7.1 × 5.0 µm) (Fig. 1a). Cheilocystidia filiform, often somewhat broadened (subcapitate) at the apex, up to 30 µm long (Fig. 1b). Pileipellis a cutis with an irregular outline caused by scattered tufts of hyphae, probably remnants of the inconspicuous veil (Fig. 1c); the cutis usually about 100 µm thick; hyphae 3–8 µm diam., rather dark brown, contrasting with the paler coloured pileus trama, though the latter has also darker strips; pigment probably membranal, because walls yellow.

Spore wall staining pink (dextrinoid) in Melzer's reagent and blue (cyanophilous) in cotton blue.

Specimen examined. THE NETHERLANDS: Prov. Utrecht, near Amersfoort, on rotten wood (pine?), Oct. 1939, *A. F. M. Reijnders* (L 996.339-999).

DISCUSSION

Taxonomic position of Flammula gymnopodia

Among the ochrosporous Agaricales, a species with such deeply decurrent lamellae is an exception. The only genus of such fungi where strongly decurrent gills are observed is

Fig. 2. *Pholiota gymnopodia*. Basidiocarps (× 1), after a water-colour painting by Mr. A.M. Middelhoek.

Tubaria, but classification in this genus is not possible because of significant differences in the clothing of the stem, the dimensions, the colour, and other characters.

A genus like *Gymnopilus* can be excluded on account of the smooth spores in our species.

Pholiota gymnopodia shares a set of characters with *Pholiota alnicola* (Fr.: Fr.) Sing.; such as the colour of the spores, the absence of pleurocystidia, the presence of cheilocystidia, the dextrinoid spore wall, and the inconspicuous veil. But there are also many differences, like the much taller basidiomata, the deeply decurrent lamellae, the naked stem, and the shorter spores, reaching 8–10(–12) × 4.5–5.5 µm in *P. alnicola*. *Pholiota alnicola* is a very variable species (see e.g. Tjallingii-Beukers, 1987). Even less or not bitter varieties seem to exist, but it is not well possible to include our fungus in this complex of various forms.

Jacobsson (1986) studied in detail the taxonomic position of the '*Pholiota alnicola*' group. He recognized three species: *Pholiota alnicola* (Fr.) Sing., *P. pinicola* Jacobsson, and *P. salicicola* (Fr. ex Quél.) Arnolds. The fact that *P. alnicola* sensu lato grows on pine wood as well as on wood of deciduous trees has been observed before by many mycologists. Jacobsson (1986) distinguished separate species on account of colour shades and a somewhat different smell. He stressed much the taste as a taxonomic character and therefore distinguished *P. salicicola* on account of its bitter taste. As our species also tasted bitter, as Mr. Schweers mentioned explicitly, the comparison with *P. salicicola* may be more appropriate than that with *P. pinicola*. Jacobsson's description of the latter species is somewhat fragmentary but complete enough to establish several differences with *P. gymnopodia*. According to Jacobsson, the smell of *P. salicicola* is strong and unpleasant, whereas our species was odourless (Schweers). The spores of *P. gymnopodia* are somewhat shorter and we did not observe a germ pore. But, above all, the deeply decurrent lamellae are not present in *P. salicicola*, or any other species of the *Pholiota alnicola* group, they seem to be also less dense in Middelhoek's painting. The shape of the cheilocystidia seems also to be somewhat different (Fig. 1b). According to Jacobsson's restricted conception of the species (Jacobsson, 1986), *P. gymnopodia* must be considered to be a distinct species. This relates even more to the comparison with *P. pinicola*. In a study of cultural characters in species of *Pholiota* Jacobsson (1989) found *P. alnicola* and *P. pinicola* very similar, but the interspecific matings between isolates of these species were unsuccessful.

Jacobsson (1990) reconsidered the position of *P. salicicola* and placed it with some doubt into the synonymy of *P. alnicola*, mainly because of the absence of additional material and different interpretations of the name in the older literature.

In conclusion, there seems to be sufficient evidence to maintain *Pholiota gymnopodia* as a separate species allied to *Pholiota alnicola*. It is to be regretted that data on the compatibility of the mycelia of these species are not available.

The occurrence of P. gymnopodia in the mycological literature

After Fries' (1874) redescription, the species is mentioned many times in the early British literature, e.g. in Cooke (1884), where we find that Plate 431 remarkably resembles our species with its decurrent, rather distant lamellae, its orange-brown pileus colour, its size and stout, striate stipe. Furthermore, the species is present in Massee (1893), who wrote: "a very distinct species" and in Rea (1922), but it is absent from Greville (1823–1828) and Berkeley (1844–1856).

An important indication of the existence of the species is its presence in Saccardo (1887): "species major, caespitose, distinctissima; stipites ultra longi, ...". Fries (1874) and Saccardo (1887) mentioned that the species had been observed in 'Vogesis' by Mougeot (1887). In

the French literature of the 19th century (e.g. Léveillé, 1855; Gillet, 1874) the species is absent as it is also from the Finnish work of Karsten (1876).

On the other hand, it is more frequently encountered in the earlier German mycological literature, starting with Britzelmayer (1891–1894), whose illustration was cited by Killermann (1928). Moreover, the species was included in the compilations of Winter (1884) and Migula (1912), but is absent in Ricken (1915), Michael et al. (1968–1975), and Moser (1978), whilst in the Netherlands the species was previously unknown (Oudemans, 1905). These citations are confined to the older literature, where the species has been repeatedly mentioned. However, how many times it really has been observed is rather uncertain, though Cooke's plate and Saccardo's record (Mougeot) give reliable evidence.

Statements about the habitat are vague: on the ground (Fries,1874; Persoon, 1801; Saccardo, 1887; Winter, 1884; Migula, 1912), on pine sawdust (Cooke, 1881–1891), on both (Massee, 1892–1895; Smith, 1908; Rea, 1922). Probably Cooke had observed the species growing on pine sawdust and the other authors copied this statement. Unfortunately, the habitat of our fungus is somewhat uncertain, but it probably grew on (pine?) wood.

In the recent literature on Higher Basidiomycetes, the species is no longer mentioned. The last note about it can be found in Part II of Dennis et al. (1960), as '*gymnopodia*, *Flammula*: doubtful'. No mention of it appears in the large compilations of agarics of the beginning or middle of this century (Bresadola, 1927–1933; Lange, 1935–1940; Konrad & Maublanc, 1949; Kühner & Romagnesi, 1953), nor does it occur in Singer (1986) or in the specific American works on *Pholiota* (Smith & Hesler, 1968).

So we must conclude that this well-characterized species, representing a distinct taxon, is strongly declining or has perhaps become completely extinct.

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