

# Galerina pruinatipes, a new species to the Nordic countries

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The rare or overlooked *Galerina* species *G. pruinatipes* A.H. Sm. is reported as new for northern Europe with two finds from Finland. The species is previously known only from rotting coniferous wood while the specimens of the two Finnish finds were growing on rotting wood of *Alnus* and *Betula*.

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## Introduction

During the 17th Nordic Mycological congress at Hyytiälä, S Finland the latter author found a small *Gymnopilus*-like fungus growing among moss on very decayed *Alnus* wood. A somewhat hairy-scurfy pileus brought to mind also the genus *Flammulaster*. However, a closer look at the spores revealed a distinct plage – a characteristic feature of the genus *Galerina*. The cystidia of this fungus were conspicuous with large heads (Fig. 1), more or less matching the term utriform, and they occurred as cheilo-, pleuro-, caulo- and pileocystidia. The specimens were readily identified as *Galerina pruinatipes* A.H.Sm. – a species belonging to sect. *Physocystis* A.H. Sm. of subg. *Galerina*. This is a quite particular *Galerina* species both with regard to the gross-morphology and anatomy. Outstanding field characters are found in the shape and colour of

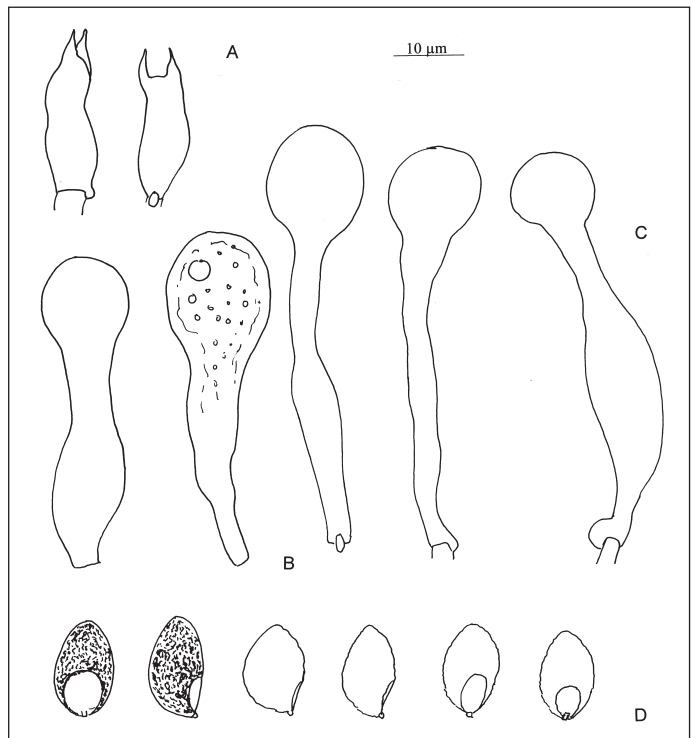


Fig 1. *Galerina pruinatipes* A.H. Sm., drawn in 5% KOH. FINLAND: Etelä-Häme, Ruovesi GG 109/05 (O). A) Basidia, B) Cheilocystidia, C) Caulocystidium, D) Spores.

the pileus and the stipe and in the taste, which is strongly bitter. The pileus is expanded (umbonate–convex to almost plane), tends to become pruinose to scurfy especially on drying, and the colour is reddish ochre to date-brown. The upper part of the stipe is coarsely pruinose and the base dark-brown.

The species has not been reported earlier from the Nordic countries, but Ilkka Kytövuori kindly provided us with one additional collection from northern Finland. Further south in Europe the species appears to be rare, or its typical kind of habitat, mountainous conifer forests with abundance of decaying wood, have been little investigated. The former of the authors has previously collected *G. pruinatipes* in France (in the mountains of Chartreuse (Isère) at 1280 m altitude). Recent descriptions and illustrations of *Galerina pruinatipes* can be found in Breitenbach and Kränzlin (2000) and Senn-Irlet (2005), but Breitenbach and Kränzlin have worked with a mixed collection: The fruitbodies shown in the plate 420 are of *G. sahléri* (Qué.) Kühner, while the accompanying illustration of anatomical features represents *G. pruinatipes* (Senn-Irlet 2005).



Fig. 2. *Galerina pruinatipes* A.H. Sm. FINLAND. Etelä-Häme, Ruovesi GG 109/05 (O). Photo Mauri Lahti.

## Description of the Finnish material

*Pileus* up to 1.2 cm, broad compared to the length of the stipe, convex, matt, somewhat scurfy-subscaly at centre, faintly translucently striate up to  $\frac{1}{2}$  of the radius, warm yellow-brown to red-brown. *Lamellae* broadly adnexed-adnate, narrow, not ventricose, edge white fimbriate, pale beige to dull and rather dark yellow-brown. *Stipe*  $50 \times 1$  mm, apex white pruinose, downwards with ochre to yellow-brown fibrils, becoming dark red-brown from the base upwards. *Veil* evanescent, seen as fibrils on stipe, no ring. *Taste* very bitter.

*Spores*  $10.0\text{--}11.6 \times 6.1\text{--}7.7$   $\mu\text{m}$ ,  $Q = 1.5\text{--}1.7$  ( $n = 32$ ), amygdaliform,  $\pm$  attenuated at apex (with callus), verrucose or with cracked surface, leaving small ridges between cracks, plage distinct, tawny in KOH, dextrinoid. *Basidia*  $19.2\text{--}26.5 \times 5.0\text{--}7.2$   $\mu\text{m}$ , small (esp. compared to the cystidia), 2-spored. *Cheilo-* and *pleurocystidia* present. *Cheilocystidia* crowded,  $45.0\text{--}72.5 \times 7.3\text{--}22.0 \times 4.8\text{--}9.6 \times 8.0\text{--}25$   $\mu\text{m}$ , generally ventricose-capitate with distinctly delimited head and a stragulation or a broad, short neck, also rather frequently without ventral inflation, rarely lageniform or cylindrical, with narrow, hyphoid basal elongation, becoming  $\pm$  amber to tawny from oily-granulose content. *Pleurocystidia* scattered, corresponding in shape but often larger, with  $\pm$  brown content. *Caulo-* and *pileocystidia* corresponding to the hymenial cystidia but generally larger, often  $> 100$   $\mu\text{m}$  long. *Subhymenium* of narrow, 2-3  $\mu\text{m}$  wide hyphae; *lamella trama* of inflated and rather short-celled,  $\pm$  brown hyphae. *Stipitepellis* of amber to red-brown rather narrow and short-celled hyphae, 2-7  $\mu\text{m}$  wide. *Pileipellis* of inflated and rather short-celled hyphae, ca 8-40  $\mu\text{m}$  wide. *Clamps* numerous in all tissues. *Pigment* incrusting. – Microscopical characters were observed in Melzer's reagent and in 5% KOH.

*Specimens examined*: FINLAND. Etelä-Häme: Ruovesi, along highway 66 at Ryövärikuoppa, on rotting, very decayed *Alnus glutinosa*, 7.IX.2005 Tea von Bonsdorff GG 109/05 (O). Sompion Lappi: Sodankylä, in Urho Kekkonen National Park, Nattastunturit, SSW foot of Pyhä-Nattanen, at the beginning of the footpath from the forest road, springy depression with spruce-hardwood swamp and *Salix* spp., on strongly decayed *Betula* wood, alt. 295 m, 23.VIII.1990 Kytövuori 90-599 (H).

## Discussion

*Galerina pruinatipes* (with two varieties) was originally described on the basis of four collections from mountainous regions in Pacific N. America (Washington state), all from decaying conifer logs (Smith 1953). From Smith's descriptions we do not see any good reason for distinction between two varieties, but our material fits best the var. *fulvipes* A.H. Sm., characterized by  $\pm$  amber to yellow-brown cheilocystidia and yellow-brown to fulvous fibrils in the lower part of the stipe. Apparently, *G. pruinatipes* grows mainly in boreal and mountainous coniferous forests. Up to now it has only been found on coniferous wood (*Larix*, *Picea*), but the specimens collected in northern Finland grew on *Betula* and the one from southern Finland on *Alnus*.

Kühner (1966) was the first to record *Galerina pruinatipes* in Europe, from six places in the mountains of Haute-Savoie and near the Pyrenees. However, Kühner was of the opinion that the species had been reported in Europe earlier, but under other names. He argued that the fungus illustrated by Bresadola (1930, in pl. 785 as *Flammula limulata* Fr.) must have been *G. pruinatipes* – in spite of a somewhat ambiguous description, and he also considered the species Favre (1960) described as *Gymnopilus laricicola* identical. We have no difficulty in supporting the conclusions of Kühner – which also have been generally accepted.

Bon (1992), however, considered *Galerina pruinatipes* and *Gymnopilus laricicola* as different species, and he made the new combination *Galerina laricicola* (J. Favre) Bon, recognizing Favre's species as a *Galerina*. Just like Senn-Irlet (2005) we consider this view erroneous, based as it is on wrong suppositions.

There is disagreement and inaccuracy in the information on the taste of *Galerina pruinatipes*. Smith, Kühner, Bresadola and also the present authors convey that the species has a distinctly bitter taste and this is one of the outstanding field characters of the species, while Favre and Breitenbach and Kränzlin signalize a mild taste. That Favre described his *Gymnopilus laricicola* without smell and taste ("inodore, insipide") was dismissed by Kühner as more or less a habit of Favre, since he had also failed to recognize the

farinaceous taste of *G. rubiginosa* (= *G. vittiformis* p.p.). We rather believe it has been a 'slip of the pen' since one of the best arguments for placing the species in the genus *Gymnopilus* is the bitter taste. However, it may also be a disability of Favre to sense a bitter taste. The quite strange indication of both a mild and a raphanoid taste by Breitenbach & Kränzlin probably results from their mixed collection and the erroneous statement by Bon (1992) that *G. pruinatipes* according to Smith has a mild taste.

Smith and Singer (1958) placed *Galerina pruinatipes* in sect. *Physocystis* on account of the capitate and broad-necked (utriform) cheilo- and pleurocystidia. This is a small section of *Galerina* and apparently only four of its 13 species are known from the northern hemisphere and only two of them, *G. pruinatipes* and *G. salicicola* P.D. Orton, are known from Europe. These two are rather different since *G. salicicola* is a fairly robust species that lacks dermatocystidia and has 4-spored basidia. Both species were included in a recent molecular study of *Galerina* (Gulden et al. 2005) that showed the genus *Galerina* to be polyphyletic with at least three or four separate lineages. In a phylogeny obtained from nuclear ribosomal LSU sequence data that included representatives of several brown-spored genera, *G. pruinatipes* appeared outside the main *Galerina* clades.

Although *Galerina pruinatipes* shows little anatomical similarity with the species of *Gymnopilus*, the two genera *Galerina* and *Gymnopilus* in general have many anatomical characters in common, including features of spores and cystidia in some groups (Kühner 1980). Especially many southern hemisphere species with tibiiform cystidia and plage on the spores are difficult to distribute between the two genera (Rees et al. 1999, 2002). The gross-morphology in the two genera is generally not very similar. While most *Galerina* species grow on bryophytes and have a mild or farinaceous taste, some, such as our *G. pruinatipes* and also *G. badipes*, have a bitter taste and a lignicolous habit, which are typical features of *Gymnopilus*. A strong connection between *Galerina* and *Gymnopilus* was found in the phylogenetic study by Gulden et al. (2005), but *G. pruinatipes* did not occur close to the *Gymnopilus* species included in the study.

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