

**MARASMIELLUS PHAEOMARASMIOIDES SPEC. NOV.
(TRICHOLOMATACEAE, AGARICALES) FROM SPAIN**

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Marasmiellus phaeomarasmioides, a new species growing on bark of *Juniperus thurifera* trees in Spain, is described and illustrated. Besides, it is compared with other related species of subsect. *Sphaerosporini* Singer, viz. *M. guzmanii* Singer and *M. parlatorei* Singer.

In the autumn of 1995, which has been exceptionally rainy in the Iberian Peninsula, we carried out several forays to the autochthonous forests of *Juniperus thurifera* L., in the province of Guadalajara – see comments on the botanical and mycological interest of this vegetation in a previous paper (Moreno et Heykoop, 1996) and the references cited therein – and collected a very characteristic and abundant species of *Marasmiellus* on bark of these trees which we are now describing as new.

Marasmiellus Murrill is mainly characterized by its collybioid to omphalioid habit, pileipellis normally a cutis, sometimes tending to be a trichodermium, stipe with poorly developed basal mycelium and non dextrinoid context hyphae.

Two important monographical works on this genus are available: i.e. Singer (1976), which deals mainly with tropical species, and Antonín & Noordeloos (1993), which includes a revision of all European taxa. The latter gathers all the bibliographical references about this genus. Recently, another new species in this genus has been described from Spain (Barcelona and Cáceres) by Robich et al. (1994), viz. *Marasmiellus virgatocutis* Robich, Esteve-Raventós & G. Moreno, in that occasion growing on dead branches of *Quercus ilex* subsp. *ballota*.

***Marasmiellus phaeomarasmioides* G. Moreno, Heykoop, Esteve-Raventós & E. Horak, spec. nov. (Figs. 1–32)**

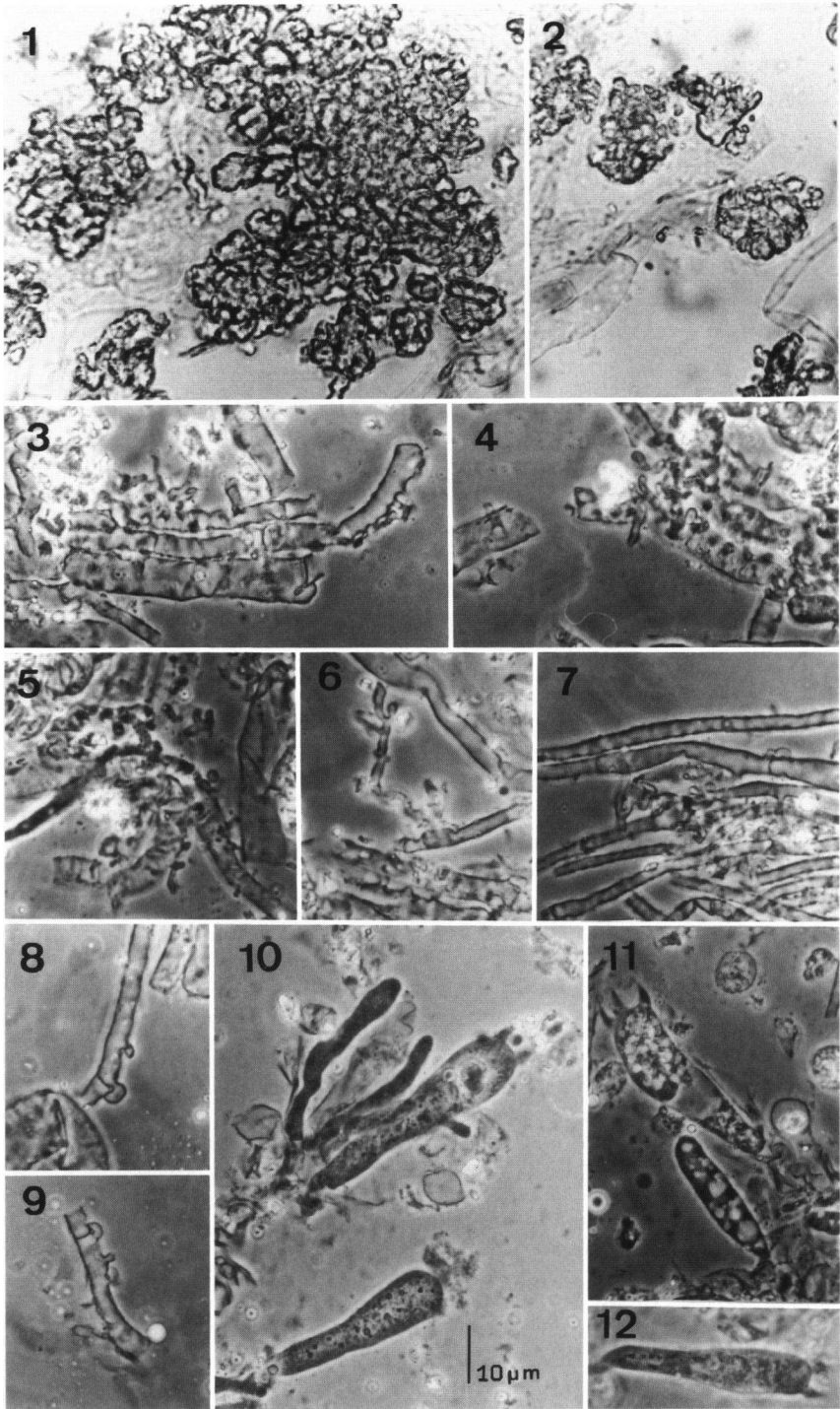
Pileus 2–7 (9) mm diam., conico-convexus vel plano convexus, fusco-cremeus vel griseus, in sicco griseus, plus minusve plicatus; pileipellis granulatus, granulis albo-griseis abundantibus exornatis, in sicco persistentibus. Hymenophorum laeve, leniter plicato seu lamellis bene evolutis interdum anastomosantibus, adnatis vel adnato-subdecurrentibus, concoloribus. Stipes 1–3 × 0.1–0.5 mm, cylindricus, excentricus, concoloribus.

Pileipellis ab cutis hypsis cylindricis, 2–7 µm diam., fibulatis efformatibus pigmento membranae flavo, diverticulatis; diverticulis plus minusve curtis, extremis in curta trichodermis coralloidea crystallis aggregatis exornatis. Basidiis 45–48 × 9–10 µm, claviformis, hyalinis, tetrasporis, fibulatis, guttis oleosis abundantibus, inamyloideiam indextrinoideis. Cystidiis hymenialis paucis, filiformibus plus minusve variabilis, e. gr. 35 × 7 µm. Caulocystidiis simulantibus.

Holotypus: Hispaniae, Guadalajara, Tamajón, Ermita de los Enebrales, sub cortice *Juniperi thuriferi*, 28-XII-95, leg. A. Altés, M. Villarreal, M. Heykoop & G. Moreno, AH 18355.

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Etymology: *phaeomarasmioides* on account of its great resemblance with species of the genus *Phaeomarasmius*.

Pileus 2–7 (9) mm in diam., convex-flabelliform to plano-convex, cream-brown to greyish depending on moisture, grey when dry, more or less strongly plicate or wrinkled, pileipellis granulose with very abundant white-greyish granules remaining in dried material. Margin straight, concolorous. Hymenophore smooth or slightly folded or with well-developed gills sometimes anastomosing, adnate becoming adnate-subdecurrent, concolorous with pileus. Stipe 1–3 × 0.1–0.5 mm, cylindrical, eccentric, curved, concolorous with pileus or greyish, velutinous-furfuraceous.

Pileipellis a cutis formed by cylindrical clamped hyphae, 2–7 µm in diam., with yellowish parietal pigment, with abundant more or less short outgrowths (Figs. 3–6 and 8–9) which form a short coralloid trichodermium, covered by abundant crystals. Basidia 45–48 × 9–10 µm, clavate, hyaline, tetrasporic and clamped. Sterigmata curved, up to 7 µm. Spores 7–9.5(10) µm, globose, smooth, hyaline with abundant lipid guttules, non-amyloid, non-dextrinoid. Hymenophoral trama non-amyloid and non-dextrinoid. Hymenial cystidia scarce, filiform, sometimes with few outgrowths, variable in shape and size (e.g. 35 × 7 µm). Caulocystidia similar to hymenial cystidia.

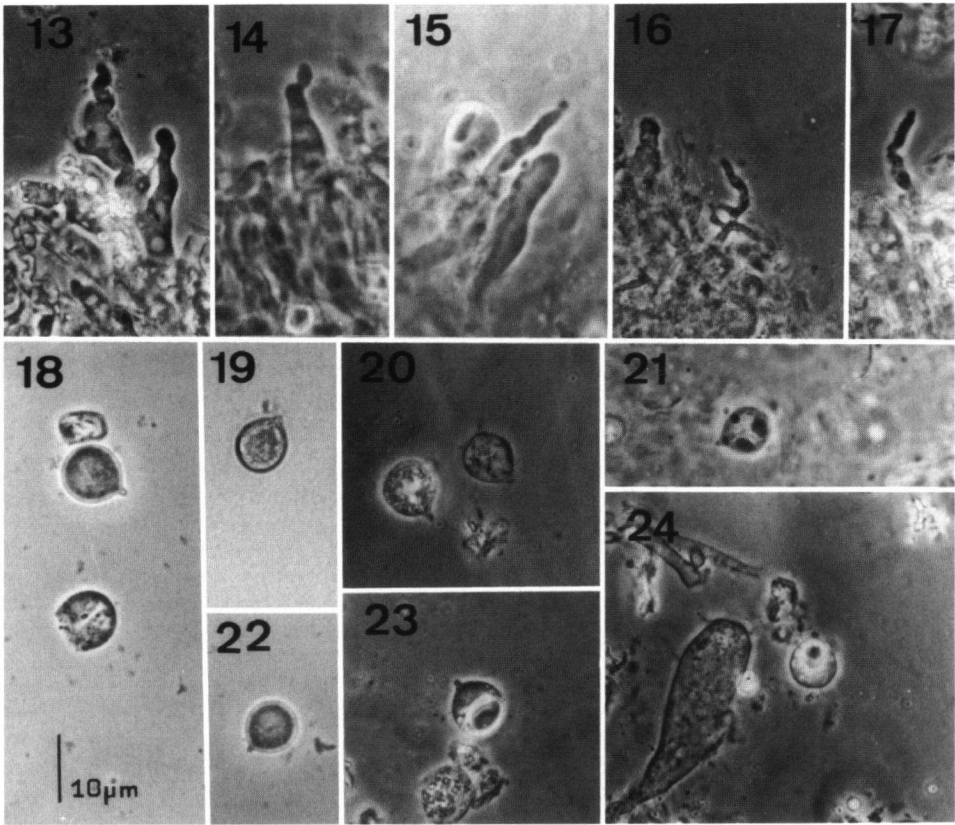
Material studied. SPAIN: Guadalajara, Tamajón, Ermita de los Enebrales, growing on bark of *Juniperus thurifera*, 11-XII-95, leg. G. Moreno, M. Lizárraga, F. Esteve-Raventós & E. Horak, AH 18353; *ibid.*, 21-XII-95, leg. M. Heykoop & G. Moreno AH 18354; *ibid.*, 28-XII-95, leg. A. Altés, M. Villarreal, M. Heykoop & G. Moreno, AH 18355 (holotype).

Other collections examined: *Marasmiellus guzmanii* Singer, Mexico, Morelos, NW of Tepoxtlán, 2200 m alt., "ad ramos delapsos in querceto", 27-VI-1969, leg. R. Singer, M 8210 typus (F). *Idem*, 27-VI-1969, M 8210 a (F). *Marasmiellus parlatorei* Singer, Argentina, Ciudad Universitaria, Tucumán, on bark of living *Piptadenia* in forest at 1250 m, 3-III-1957, leg. R. Singer, T 3054 (F).

Marasmiellus phaeomarasmioides is characterized by its flabelliform pileus densely covered by excreted crystals, its well developed eccentric stipe and its globose spores. These characters clearly separate it from the known species of the genus *Marasmiellus* in Europe. However, due to its eccentric stipe, it shows some macroscopic similarities with *M. lateralis* Bas & Noordel. (Antonín & Noordeloos, 1993), a taxon from the Netherlands, which is characterized, however, by its different pileipellis and oblong to subcylindrical spores.

Singer (1973) created the subsection *Sphaerosporini* Singer for the neotropical species of *Marasmiellus* with characteristically broad spores, the majority of them having a Q value (= L/l) of 1.1–1.5. According to literature, two species of this subsect. (*Marasmiellus guzmanii* Singer and *M. parlatorei* Singer) seem to be close to *M. phaeomarasmioides* and, therefore, have been revised by us. The first one, *M. guzmanii* Singer, was described, and is actually known only from Morelos in Mexico, on branches of several dicotyledonous trees (e.g. *Quercus*). The latter differs, however, from *M. phaeomarasmioides* by the presence of well-developed gills and lamellulae, the absence of crystals on the pilei-

Figs. 1–12. *Marasmiellus phaeomarasmioides* (AH 18355 holotypus). 1, 2. Crystals on pileipellis; 3–6. pileipellis with outgrowths; 7. pileipellis with encrusting pigment; 8, 9. clamps and pileipellis with outgrowths; 10–12. basidia.

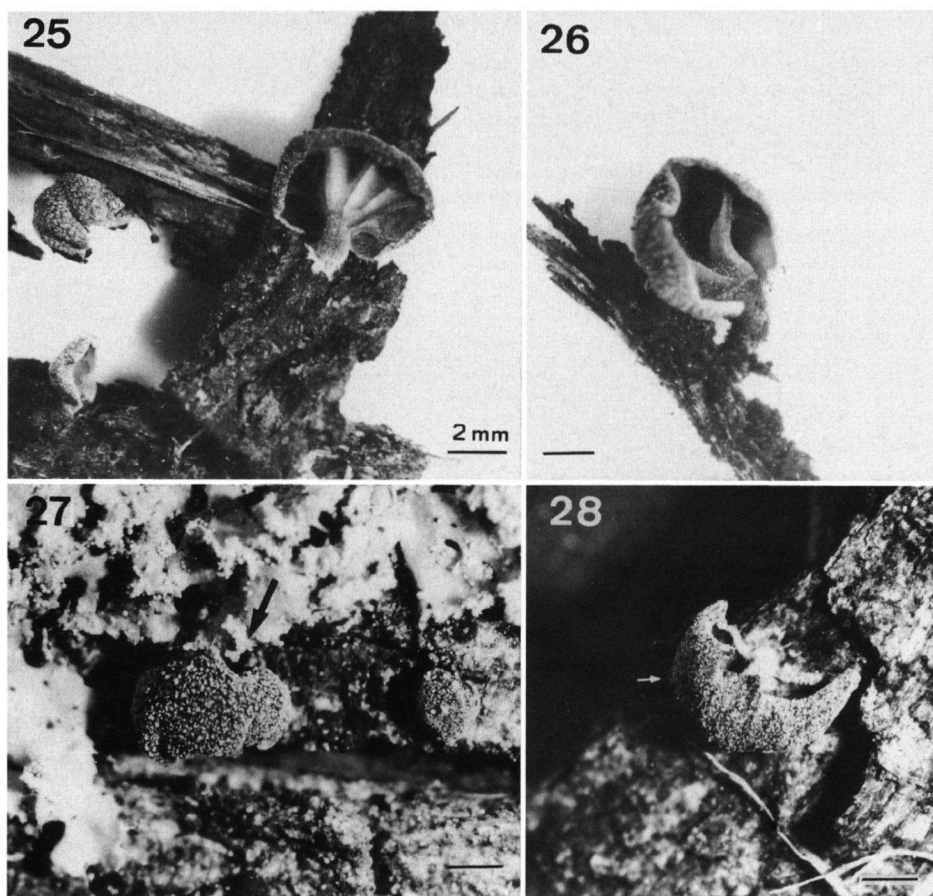


Figs. 13–24. *Marasmiellus phaeomarasmioides* (AH 18355 holotypus). 13–17. Hymenial cystidia; 18–24. spores.

pellis, the frequently up to 10 µm long sterigmata, the very abundant, diverticulate and thick (8–15 µm in diam.) cheilocystidia, sometimes septate, and the different spores (10–13 × 7.5–11.5 µm) and basidia (25–42 × 13–16 µm); in addition, its pileipellis is formed by strongly ramified and thick-walled hyphae (up to 2 µm), with obtuse and sometimes encrusted apices.

Marasmiellus parlatorei Singer, described from Northern Argentina growing on *Piptadenia* sp. and *Podocarpus parlatorei*, differs from *M. phaeomarasmioides* by the larger (8–30 × 5–20 mm) and whitish basidiocarps with well-developed stipes (3–11 × 1–2.5 mm), the absence of crystals on the pileus and the larger subglobose to broadly ellipsoid spores (8–12 × 7–11 µm). Furthermore, *Marasmius parlatorei* is characterized by scattered cheilocystidia, larger basidia (55–60 × 12.5–16 µm), which are morphologically similar to those of *M. phaeomarasmioides*, and the pileipellis with typical *Rameales*-structure.

Hibbett et al. (1995) described a fossil agaric preserved in amber of *Cupressaceae* in New Jersey (USA), which bears a strong resemblance to an extant species of either

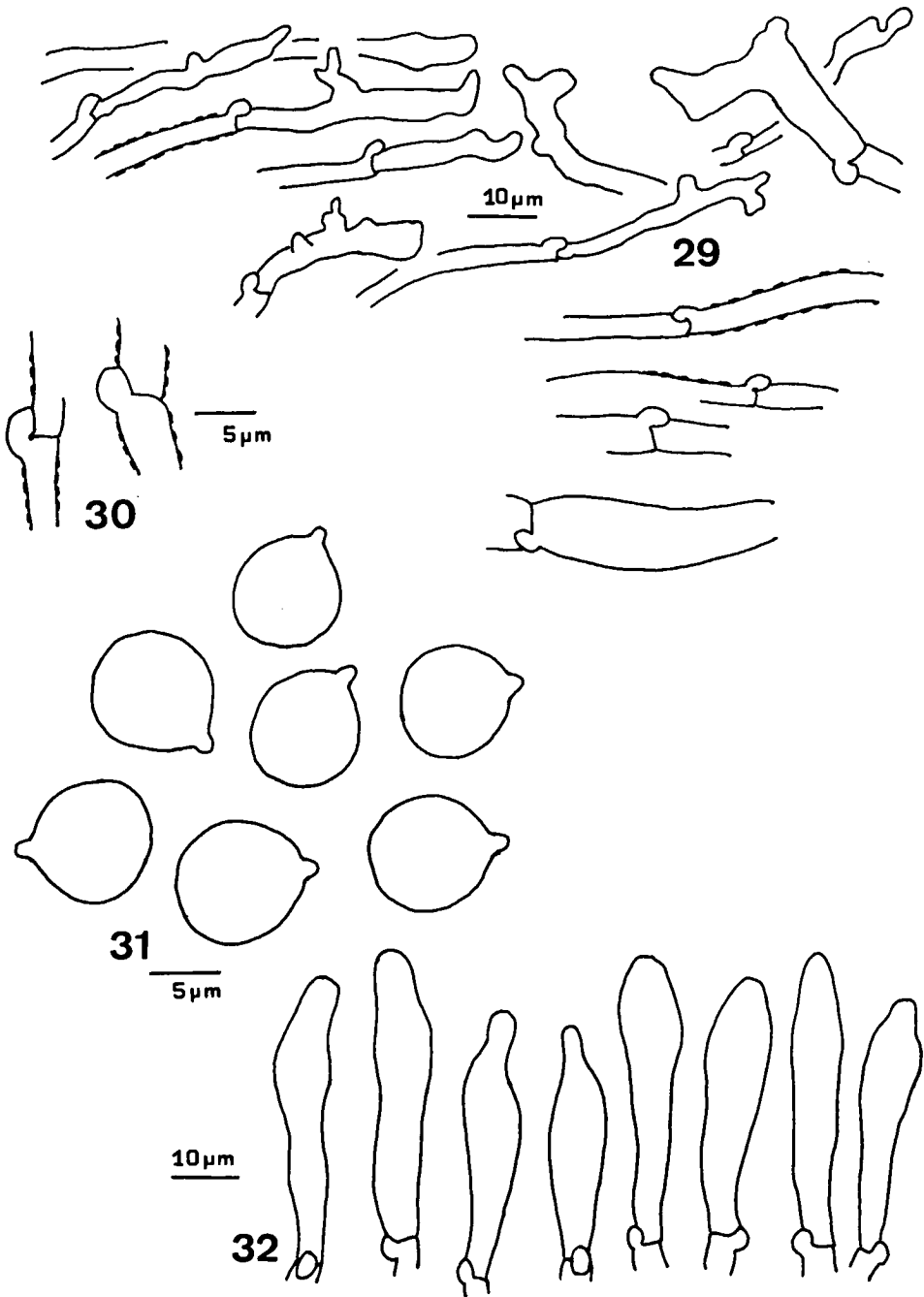


Figs. 25–28. *Marasmiellus phaeomarasmioides* (AH 18355 holotypus). 25, 26. Detail of gills and stipe; 27, 28. detail of the encrusted surface of pileus.

Marasmius or more probably *Marasmiellus*. This material seems to be related to *M. phaeomarasmioides*, sharing the same habitat on *Cupressaceae* (*Juniperus thurifera* in our case); it differs, however, in having ellipsoid spores.

Without exception, *Marasmiellus phaeomarasmioides* grows on bark of living trees of *Juniperus thurifera*, though sometimes it has been observed on dead branches attached to the tree, or even more rarely on fallen branches.

In the field it can be mistaken macroscopically with several species of the genus *Phaeomarasmius* Scherffel, especially *P. rimulincola* (Rabenh.) P.D. Orton, which shares the same corticolous habitat, and hence the taxon's name has been chosen for this new species.



Figs. 29–32. *Marasmiellus phaeomarasmioides* (AH 18355 holotypus). 29. Pileipellis; 30. clamp-connections on hyphae of stipe; 31. spores; 32. hymenial cystidia.

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REFERENCES

- Antonín, A. & M.E. Noordeloos. 1993. A monograph of *Marasmius*, *Collybia* and related genera in Europe. Part 1: *Marasmius*, *Setulipes* and *Marasmiellus*. *Libri Botanici* 8: 1–229.
- Hibbett, D.S., D. Grimaldi & M.J. Donoghue. 1995. Cretaceous mushrooms in amber. *Nature* 377: 487.
- Moreno, G. & M. Heykoop 1996. *Xeromphalina junipericola* sp. nov. (Tricholomataceae, Agaricales) from Spain. *Z. Mykol.* 62 (1): 37–41.
- Robich, G., F. Esteve-Raventós & G. Moreno. 1994. *Marasmiellus virgatocutis* sp. nov. (Tricholomataceae, Agaricales). *Riv. Mic. Assoc. Micol. Bresadola* 38: 141–148.
- Singer, R. 1973. The genera *Marasmiellus*, *Crepidotus* and *Simocybe* in the neotropics. *Beih. Nova Hedwigia* 44: 1–517.
- Singer, R. 1976. *Marasmiaceae* (Basidiomycetes–Tricholomataceae). *Flora Neotropica* 17: 1–348.