
***Marasmius* (Basidiomycota, *Marasmiaceae*) in Madagascar and the Mascarenes**

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Twenty six collections representing 19 taxa of the genus *Marasmius* from Madagascar, Mauritius and Réunion were studied. The following new taxa are described: *Marasmius andasibensis*, *Marasmius andasibensis* var. *obscurostipitatus*, *M. brunneoaurantiacus* and *M. curreyi* var. *bicystidiatus* in sect. *Marasmius*; *M. cecropiformis* and *Marasmius neosessiliformis* (introduced as a *nom. prov.* because of the absence of the macroscopic description) in sect. *Neosessiles*; *M. pseudocyphella* in sect. *Hygrometrici* and *M. eyssartieri* in sect. *Sicci*.

Key words: Africa, tropical, Mauritius, Réunion, systematics, taxonomy

Introduction

There has been renewed interest in the genus *Marasmius* (Antonín, 2003, 2004a,b; Wannathes *et al.*, 2004; Antonín *et al.*, 2005; Desjardin and Ovrebo, 2006) and in this paper we discuss and illustrate 19 species from Madagascar and the Mascarenes. The only records or rare species of *Marasmius* already reported or described from Madagascar and the Mascarenes were published by Patouillard (1924, 1928) and Hennings (1908) some 80 to 100 years ago. Too often, these taxa were attached to European or already known species as was common practice in a period that macroscopic features were still predominant in descriptions. As early as 1893, Hennings reported on some collections made by J. Braun in 1891 of *Marasmius foetidus* (Sowerby: Fr.) Fr. (= *Micromphale foetidus* (Sowerby: Fr.) Singer, *Lloydia* 8: 182. 1945 = *Marasmiellus foetidus* (Sowerby: Fr.) Antonín, Halling & Noordel., *Mycotaxon* 63: 366. 1997) from Ankoraka and *M. oreades* (Bolton: Fr.) Fr. from a meadow at „Champ de Meclas“. Hennings (1908) cited *Marasmius rotula* (Scop.: Fr.) Fr. and *M. rhodocephalus* Fr., both from SW Madagascar near Andranohinaly.

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Several years later, Patouillard (1927) published on some *Marasmius* as well as on some more typical tropical species of what was at that time recognized as genus *Androsaceus* Pat. for the Madagascan mycota, based on the many collections sent in 1923-24 to the Natural History Museum in Paris by Raymond Decary, a French resident in Madagascar. These collections, made on the central Plateau near the towns of Antananarivo and Maromandia, comprised apart from the European *Marasmius candidus* (Bolton) Fr. (= *Marasmiellus candidus* (Bolton) Singer) and *M. ramealis* Fr. (= *Marasmiellus ramealis* (Bull.: Fr.) Singer), also *M. aureotomentosus* Kalchbr., *M. aculeatus* Pat. and introduced *M. sulcatipes* n.sp. (considered close to *M. schweinfurthianus* Henn.), as well as 4 taxa of *Androsaceus*, viz. *A. rhodocephalus* (Fr.) Pat. (= *Marasmius haematocephalus* (Mont.) Fr.), *A. haematocephalus* (Mont.) Pat. (= *Marasmius haematocephalus* (Mont.) Fr.), *A. polyadelphus* Lasch (= *Mycena polyadelpa* (Lasch) Kühner) and introduced a new variety „*substipitatus*“ for *A. sessilis* Pat. (= *Marasmius sessilis* (Pat.) Sacc. & Syd.)

The study of the *Marasmius* collections sent by Decary was later continued by George Métrod but never published. Since these collections were kept in formol or alcohol, most of these dried out in later years and are not suitable any more for descriptive purposes, particularly not for the description of new taxa.

More recently Antonín *et al.* (2005) recombined *Collybia tamatavae* Bouriquet, a Madagascan twin species of the African *Marasmius heinemannianus* Antonín (1998), into *Gymnopus*.

Perhaps remarkable for a saprotrophic genus such as *Marasmius* is the fact that approximately one fourth of the Malagasy taxa presented here appear to be endemic at a moment considering a major revision introducing many new tropical African *Marasmius* has just been completed (Antonin, 2006). This may, however, merely reflect the need for more collecting in Africa as preliminary data (Buyck, unpubl.) on some of the major ectomycorrhizal genera in Madagascar such as *Russula*, *Lactarius* and *Cantharellus*, suggest the presence of a strong African component in Madagascar.

Materials and methods

Most of the studied material was collected in recent years by the second author and his collaborators (G. Eyssartier, P.-A. Moreau) in Madagascar between 1997 and 2000. Nearly all Madagascan collections come from four localities: from the higher elevations at Andasibe (S 19°00'32.8" E 47°08'30.0") and Mandraka (S 19°00'32.8" E 47°08'30.0"), from littoral forest on the east coast near Foulpointe (S 17.38 24.2 E 49.29 10.3"), and from the

Botanical Garden of Tsimbazaza in the capital, Antananarivo (S 19° 01' 44.40" E 047°10' 18.52"). Additional collections from Mauritius and Réunion were provided by Anton Hausknecht (Austria). Species are discussed in systematic order following the classification of Antonín and Noordeloos (1993).

Macroscopic descriptions are mostly made according to colour slides, sometimes also to dry specimens (it is always noted in each description). Microscopic features are described from material mounted in Melzer's reagent, Congo Red, Cresyl Blue and c. 5% KOH. For microscopic studies, an Olympus BX 50 light microscope was used. Authors of fungal names are cited according to Kirk and Ansell (1992), colour abbreviations are according to Kornerup and Wanscher (1983), and herbarium abbreviations follow Holmgren (2003). For the basidiospores the following factors are used: E (quotient of length and width in any one spore); Q (mean of E-values). In lamellae, L means number of lamellae and l number of lamellulae tiers between two complete lamellae.

Results

Key for identification of *Marasmius* species included in this paper

1. Lamellae attached to a distinct collarium, stipe always insititious (sect. *Marasmius*)2
- 1*. Lamellae not attached to a distinct collarium, if a pseudocollarium present, stipe not insititious9
2. Pileipellis cells and cheilocystidia in the form of broom-cells of the Rotalis-type (subsect. *Marasmius*).....3
- 2*. Pileipellis cells and cheilocystidia in the form of broom-cells of the Siccus-type (subsect. *Sicciformes*)4
3. Stipe pale brown **1. *M. andasibensis* var. *andasibensis***
- 3*. Stipe brown-black **2. *M. andasibensis* var. *obscurostipitatus***
4. Pileus with brown-black or black colour5
- 4*. Pileus differently coloured (reddish brown, brown, orange brown, grey).....6
5. Pileus brown-black with slightly paler striae; basidiospores 9–12 × 4.5–6.5 µm; cheilocystidia 10–14 × 5–8 µm **6. *M. nigrobrunneus***
- 5*. Pileus black at centre and on sulci, grey towards margin; basidiospores 8.5–10.5 × 4.2–5 µm; cheilocystidia 10–25 × 7–12 µm **7. *M. nigrogriseus***
6. Pileus small, up to 5 mm broad, red-brown, sometimes with pinkish tinge at centre and paler, yellow-brown towards margin; lamellae distant (L = 10–11); stipe short, up to 12 mm long (*M. curreyi*)7
- 6*. Pileus larger, reddish brown, brownish orange, light brown to brown; lamellae more numerous (L = 10–16); stipe distinctly longer (up to 65 mm)8

7. Basidiospores $8.5\text{--}10.5 \times 4.5\text{--}5.5 \mu\text{m}$; cheilocystidia of one type... **4. *M. curreyi* var. *curreyi***
- 7*. Basidiospores $10\text{--}12.5 \times 4.5\text{--}6 \mu\text{m}$; cheilocystidia of two types **5. *M. curreyi* var. *bicystidiatus***
7. Pileus up to 13 mm broad, brownish orange, light brown to brown, slightly paler at margin and in striae; stipe up to 50 mm long; basidiospores $9.5\text{--}11 \times 4.5\text{--}6 \mu\text{m}$ **3. *M. brunneoaurantiacus***
- 8*. Pileus up to 7 mm broad, (dark) reddish brown; stipe up to 65 mm long; basidiospores $8.5\text{--}11 \times 4.5\text{--}(5.5) \mu\text{m}$ **8. *M. (cf.) subruforotula***
9. Pileipellis composed of smooth cells (sect. *Globulares*); pileus 100–120 mm broad, membranaceous, strongly sulcate, pale mouse grey; basidiospores $28\text{--}35 \times 5.5\text{--}8 \mu\text{m}$; cheilocystidia $17\text{--}25 \times 10\text{--}15 \mu\text{m}$ **17. *M. sulcatipes***
- 9*. Pileipellis composed of broom-cells **10**
10. Pileipellis composed of broom-cells of the Rotalis-type; stipe insititious; trama hyphae non-dextrinoid (sect. *Hygrometrici*) **11**
- 10*. Pileipellis composed of broom-cells of the Siccus-type **12**
11. Lamellae 4–6(7); basidiospores (7) $7.5\text{--}9 \times 4.5\text{--}5.5 \mu\text{m}$, (broadly) ellipsoid; basidioles up to $19 \mu\text{m}$ long; pileipellis cells $28\text{--}36 \times 12\text{--}26 \mu\text{m}$ **18. *M. pseudocyphella***
- 11*. Lamellae (0)1(3); basidiospores (7) $8\text{--}10 \times 4\text{--}5 \mu\text{m}$, (sub)fusoid-ellipsoid; basidioles $15\text{--}30 \mu\text{m}$ long; pileipellis cells $18\text{--}27(45) \times 12\text{--}20(27) \mu\text{m}$ **19. *M. unilamellatus***
12. Stipe eccentric or rudimentary (sect. *Neosessiles*) **3**
- 12*. Stipe always central **14**
13. Pileus 5–8 mm broad, non-striate, orange-brown, yellow-brown to pink-flesh coloured; lamellae with a reddish orange edge; basidiospores (14–) $14.5\text{--}17(18) \times (6\text{--})6.5\text{--}8(9) \mu\text{m}$, lacrimoid; hymenial cystidia $30\text{--}62 \times 9\text{--}18 \mu\text{m}$, fusoid, sublageniform, subutriform, (sub)rostrate **9. *M. cecropiformis***
- 13*. Pileus up to 4 mm broad, distinctly sulcate-striate, reddish brown; lamellae with a concolorous edge; basidiospores $10\text{--}11 \times 5\text{--}6 \mu\text{m}$, ellipsoid; cheilocystidia $18\text{--}27 \times 6\text{--}9 \mu\text{m}$, clavate, subcylindrical, subfusoid, with several projections or subcoralloid; pleurocystidia absent **10. *M. neosessiliformis***
14. Caulocystidia present (sect. *Sicci*, ser. *Atrorubentes*); pileus striate, slightly rugulose, orange brown at centre, distinctly paler, light orange towards margin; lamellae close ($L = c. 50\text{--}60$); basidiospores small, $7\text{--}8.5 \times 2.75\text{--}3.5 \mu\text{m}$; cheilocystidia $14\text{--}15 \times 7\text{--}8 \mu\text{m}$; pleurocystidia absent; caulocystidia $10\text{--}25 \times 4\text{--}6 \mu\text{m}$, of two types.. **11. *M. corrugatiformis***
- 14*. Caulocystidia absent (except for the stipe apex where broom-cells may be present) **15**
15. Pleurocystidia absent (sect. *Sicci*, ser. *Leonini*); pileus 4 mm broad, pale orangish ochraceous; stipe 3–4 mm long; basidiospores $13.5\text{--}16.9 \times 3.8\text{--}4.6 \mu\text{m}$; cheilocystidia scattered, $20\text{--}37 \times 5\text{--}6.9 \mu\text{m}$, cylindrical to clavate, irregular to subcoralloid..... **16. *M. rammelooi***
- 15*. Pleurocystidia present (sect. *Sicci*, ser. *Haematocephali*) **16**

16. Pileus (greyish) ruby or pale red, purplish red, dark red **14. *M. haematocephalus***
 16*. Pileus differently coloured, never red **17**
17. Basidiospores $8.5\text{--}12 \times 3\text{--}5 \mu\text{m}$, ellipsoid, ellipsoid-fusoid
 **12. *M. confertus* var. *parvisporus***
 17*. Basidiospores larger ($13.5\text{--}18 \times 3.5\text{--}5 \mu\text{m}$), clavate, subcylindrical, clavate-fusoid **18**
18. Pileus up to 15 mm broad, dark brown at centre, light brown towards margin when young; stipe orange to umbra brown; basidiospores $15\text{--}18 \times 4\text{--}5 \mu\text{m}$; pleurocystidia $38\text{--}65 \times 9\text{--}15 \mu\text{m}$, (sub)fusoid, often rostrate; pileipellis cells with $8\text{--}20$ projections up to $6 \times 1(-1.5) \mu\text{m}$ large. **13. *M. grandisetulosus***
 18*. Pileus up to 5 mm broad, brown to reddish brown; stipe reddish brown; basidiospores $13.5\text{--}16 \times 3.5\text{--}5 \mu\text{m}$; pleurocystidia $30\text{--}50 \times 8\text{--}14 \mu\text{m}$, clavate, (sub)fusoid, sometimes rostrate; pileipellis cells with up to 35(40) projections up to $8(10) \times 1.5(2) \mu\text{m}$
 ***M. eyssartieri***

I. Sect. *Marasmius*

Ia. subsect. *Marasmius*

1. *Marasmius andasibensis* V. Antonín & B. Buyck, **sp. nov.** (Fig. 1)

Pileo usque 3,5 mm lato, convexo, umbilicato, albido cum aurantiaco tincto. *Lamellis* collariatis, L = 9–12. *Stipite* usque 30 mm longo, filiforme, insititio, glabro, pallide brunneo. *Basidiosporis* $8\text{--}10(-11) \times 4\text{--}5 \mu\text{m}$, ellipsoideis, sublacrymiformibus, hyalinis. *Basidiis* tetrasporis. *Cheilocystidiis* e cellulis typo *Marasmii rotalis* similibus, $15\text{--}20 \times 9\text{--}14 \mu\text{m}$, clavatis, subcylindraceis. *Pleurocystidiis* absentibus. *Pileipellis* hymeniformis, e cellulis similibus cellulis hymenidermatis *Marasmii rotalis*, $17\text{--}25 \times 10\text{--}14 \mu\text{m}$, clavatis vel pyriformibus. *Caulocystidiis* absentibus. *Hyphis* fibulatis, in stipite dextrinoideis. Ad folia.

Holotypus: Madagascar, Andasibe, 23. II. 2000, B. Buyck 00.1704 (holotypus hic designatus, in herbario PC asservatur).

Pileus up to 3.5 mm broad, convex, umbilicate, without papilla in umbilicus, with a crenulate margin, whitish with pale orangish tinge, with more distinctly greyish orange (5B3–4, 6B4) centre. *Lamellae* distant, L = 9–12, l = 0(–1), collariate, pale cream, with a concolorous edge. *Stipe* up to 30 mm long, filiform, insititious, smooth, glabrous, white at apex, pale brown (6D–E8). (Description according to a slide and dry carpophores.)

Basidiospores $8\text{--}10(-11) \times 4\text{--}5 \mu\text{m}$, E = 1.6–2.3, Q = 2.1, ellipsoid, sublacrimoid, ellipsoid-fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* $19\text{--}27 \times 9\text{--}11 \mu\text{m}$, 4-spored, clavate. *Basidioles* $12\text{--}28 \times 4\text{--}9 \mu\text{m}$, clavate, cylindrical, fusoid. *Cheilocystidia* in the form of broom-cells of the *Rotalis*-type, $15\text{--}20 \times 9\text{--}14 \mu\text{m}$, clavate, subcylindrical, thin-walled, with \pm thin-walled or slightly thick-walled, obtuse projections. *Pleurocystidia* not found. *Trama* hyphae cylindrical to subinflated, thin-walled, hyaline, dextrinoid, up to $12 \mu\text{m}$ wide. *Pileipellis* a hymeniderm consisting of broom-cells of the *Rotalis*-type, $17\text{--}25 \times 10\text{--}14 \mu\text{m}$, clavate, subvesiculose, pyriform, thin-walled, sometimes

with slightly thick-walled apex, with cylindrical to warty, obtuse, slightly thick-walled, up to $3 \times 1 \mu\text{m}$ large projections. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, up to $5 \mu\text{m}$ wide hyphae with yellowish walls in KOH; medulla hyphae slightly dextrinoid. *Caulocystidia* absent. *Clamp connections* present in all tissues.

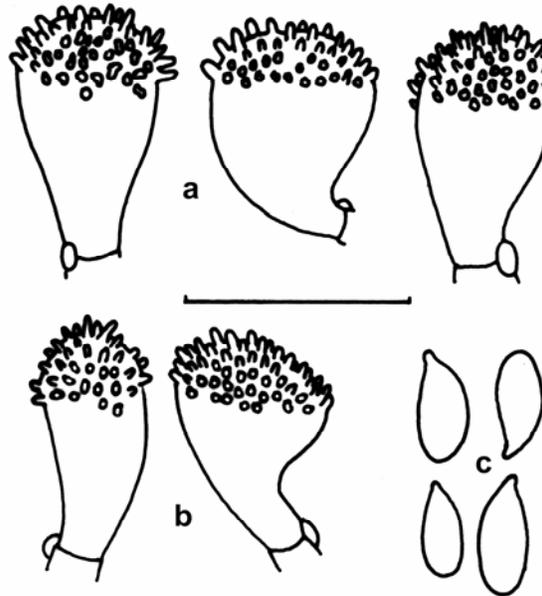


Fig. 1. *Marasmius andasibensis*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = $20 \mu\text{m}$.



Fig. 2. *Marasmius brunneoaurantiacus*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = $20 \mu\text{m}$.

Material examined: MADAGASCAR, Andasibe, in mixed *Eucalyptus-Uapaca* moist forest, on *Uapaca* leaves, 23 February 2000, B. Buyck 00.1704 (PC, **holotype**).

Notes: *Marasmius andasibensis* is characterised by having a pale, orange tinged pileus, collariate lamellae with concolorous edge, pale brown coloured stipe, moderately large basidiospores and cheilocystidia and pileipellis cells in the form of broom-cells of the Rotalis-type. Especially the combination of a very pale pileus and a pale (never very dark, blackish-brown) stipe represents a unique feature.

Another species with pale brown (stramineous) stipe, *Marasmius ubiquipallens* Desjardin & E. Horak has a tan coloured pileus, a brown coloured lamella edge and broader pileipellis cells ($15\text{--}27 \times 10\text{--}22 \mu\text{m}$). It has been originally collected in Papua New Guinea growing on bamboo leaves (Desjardin and Horak, 1997).

2. *Marasmius andasibensis* var. *obscurostipitatus* V. Antonín & B. Buyck, var. nov.

A varietate typica stipite brunneo-nigro differt.

Holotypus: Madagascar, Andasibe, 21. II. 1997, B. Buyck 00.1699b (holotypus hic designatus, in herbario PC asservatur).

Pileus up to 3 mm broad, convex, depressed at centre, with a small papilla in depression especially when young, with a crenulate margin, sulcate, slightly tomentose, greyish orange to orange (6B5–7) at centre, paler, sometimes almost whitish towards margin. *Lamellae* distant, L = 10–12, l = 0(–1), collariate, broad, white, with concolorous edge. *Stipe* up to 25 mm long, filiform, smooth, glabrous, lustrous, insititious, white at apex, brown-black. (Description according to a slide and dry carpophores.)

Basidiospores $7.5\text{--}9\text{--}(10) \times 3.7\text{--}5.2 \mu\text{m}$, E = 1.8–2.3, Q = 2.0, ellipsoid-fusoid, pip-shaped, thin-walled, hyaline, non-dextrinoid. *Basidia* 4-spored, clavate. *Basidioles* $13\text{--}25 \times 4\text{--}9 \mu\text{m}$, clavate, subcylindrical, fusoid. *Cheilocystidia* in the form of broom-cells of the Rotalis-type, $16\text{--}23 \times 9\text{--}17 \mu\text{m}$, clavate, subvesiculose, pyriform, thin-walled with slightly thick-walled apex and projections. *Pleurocystidia* not found. *Trama* hyphae \pm cylindrical, thin-walled, hyaline, up to $12 \mu\text{m}$ wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Rotalis-type, $15\text{--}25 \times 10\text{--}17 \mu\text{m}$, clavate, pyriform, subvesiculose, thin- to slightly thick-walled, with warty, slightly thick-walled, up to $3 \times 1\text{--}1.5 \mu\text{m}$ large projections. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, dextrinoid, up to $4 \mu\text{m}$ wide hyphae with dark brown walls in KOH; medulla hyphae dextrinoid. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: Madagascar, Andasibe, wet bush, on leaves, 21 February 1997, B. Buyck 00.1699b (PC, **holotype**).

Notes: It differs from the typical variety only by having a brown-black coloured stipe and slightly darker pileus.

Ib. subsect. *Sicciformes* V. Antonín

3. *Marasmius brunneoaurantiacus* V. Antonín & B. Buyck, sp. nov. (Fig. 2)

Pileo usque 13 mm lato, convexo vel campanulato-convexo, umbilicato, brunneo aurantiaco vel (pallide) brunneo. Lamellis collariatis, L = 10–16, albidis, acie bruneis. Stipite usque 45 mm longo, filiforme, insititio, glabro, obscuriore brunneo vel nigro-brunneo. Basidiosporis 9,5–11 × 4,5–6 µm, ellipsoideis vel ellipsoideis-fusififormibus, hyalinis. Basidiis tetrasporis. *Cheilocystidiis* e cellulis typo Marasmii sicci similibus, 10–20 × 6–10 µm, clavatis, subcylindraceis. *Pleurocystidiis* absentibus. *Pileipellis* hymeniformis, e cellulis similibus cellulis hymenidermatis Marasmii sicci, 12–20(–26) × 8–12 µm, clavatis vel pyriformibus. *Caulocystidiis* absentibus. *Hyphis* fibulatis, dextrinoideis. Ad folia putrida.

Holotypus: Madagascar, Ranomafana National Park, 4. II. 1999, leg. B. Buyck & G. Eyssartier, Buyck 99.450 (holotypus hic designatus, in herbario PC asservatur).

Pileus up to 13 mm broad, convex or campanulate-convex, depressed at centre, without central papilla or with a small one, sulcate, crenulate at margin, finely tomentose, brownish orange, light brown to brown (6C–D6–7), slightly paler at margin and in striae. *Lamellae* distant, L = 10–16, L = 0(–1), collariate, rather broad, white?, with brown, finely pubescent edge. *Stipe* up to 50 mm long, filiform, insititious, smooth, glabrous, dark brown to black-brown. Rhizomorphs present. (Description according to a slide and dry carpophores.)

Basidiospores 9.5–11 × 4.5–6 µm, E = 1.7–2.5, Q = 1.9–2.1, (broadly) ellipsoid, ellipsoid-fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* 25–28 × 4–9.5 µm, 4-spored, clavate. *Basidioles* 15–30 × 4–9 µm, clavate, subcylindrical, fusoid. *Cheilocystidia* in the form of broom-cells of the Siccus-type, 10–20 × 6–10 µm, clavate, subcylindrical, thin-walled, sometimes with slightly thick-walled apex, with ± thin-walled to slightly thick-walled, sometimes branched projections; mixed with scattered irregular to branched, smooth cells. *Pleurocystidia* not found. *Trama* hyphae cylindrical, thin-walled, smooth or minutely incrustated, hyaline, dextrinoid, up to 15 µm wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, 12–20(–26) × 8–12 µm, clavate, pyriform, rarely (sub)cylindrical, thin-walled with slightly thick-walled apex, with 8–20 digitate to narrowly conical, nodulose, obtuse, slightly thick-walled, up to 5(–7) × 1.5(–2) µm large projections; mixed with scattered, irregular to coralloid, thick-walled cells; thick-walled parts ochraceous in KOH. *Stipitipellis* a cutis of cylindrical, parallel, slightly thick-walled, smooth, dextrinoid, up to 5 µm wide hyphae with ochraceous walls in KOH. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Ranomafana National Park, along crest near roadside just outside Park area, on dead leaves of *Uapaca ferruginea*, 3 February 1999 leg. B.

Buyck and G. Eyssartier, Buyck 99.439 (PC) ; *ibid.*, 4 February 1999, leg. B. Buyck & G. Eyssartier, Buyck 99.450 (PC, **holotype**).

Notes: *Marasmius brunneoaurantiacus* is characterised by a rather large, convex or campanulate-convex, light brown to brown pileus, rather distant, collariate lamellae with a brown coloured edge, a very long stipe, moderately large basidiospores, cheilocystidia and pileipellis cells in the form of broom cells of the Siccus-type, and dextrinoid hyphae.

Among species with coloured lamella edge and similar microscopic characters, *Marasmius subruforotula* Singer mostly differs by a smaller, only up to 5 mm broad pileus with (red-)orange tinge, a shorter stipe (10–35 mm), and slightly smaller basidiospores, $7.7\text{--}9.6(-10) \times (3.8\text{--})4.2\text{--}5.4 \mu\text{m}$ (Pegler, 1983, but see notes under *M. cf. subruforotula* in this paper; Desjardin and Horak, 1997). The microscopically very similar *Marasmius gordipes* Sacc. & Paol. from Sri Lanka differs by a very small, ochraceous to reddish brown pileus with a black papilla, a short (6–13 mm) stipe, well-developed rhizomorphs and cheilocystidia and pileipellis cells with less numerous (6–9) and shorter projections (Petch, 1948; Pegler, 1986; Corner, 1996). *Marasmius purpureobrunneolus* Henn. has a reddish brown, dark brown or purplish brown pileus, a shorter, 18–35 mm long stipe, longer basidiospores, measuring $12.5\text{--}15 (-17.5) \times 2.5\text{--}4 \mu\text{m}$ (Desjardin *et al.*, 2000).

4. *Marasmius curreyi* Berk. & Broome, Ann. Mag. Nat. Hist. 3: 209. 1879.

(Fig. 3)

Pileus up to 4 mm broad, convex, depressed at centre, sulcate, with a crenulate margin, slightly tomentose, reddish brown (8E6–7). *Lamellae* distant, L = 10–11, l = 0, collariate, collarium broadly umbilicate when old, with concolorous, finely pubescent edge. *Stipe* up to 10 mm long, filiform, smooth, glabrous, insititious, black-brown with paler apex. (Description according to dry carpophores.)

Basidiospores $8.5\text{--}10.5 \times 4.5\text{--}5.5 \mu\text{m}$, E = 1.7–2.2, Q = 2, ellipsoid, ellipsoid-fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* $22\text{--}23 \times 8 \mu\text{m}$, 4-spored, clavate. *Basidioles* $15\text{--}27 \times 4\text{--}9 \mu\text{m}$, clavate, cylindrical, fusoid. *Cheilocystidia* $(11\text{--})14\text{--}20 \times (6.5\text{--})8\text{--}12 \mu\text{m}$, in the form of broom-cells of the Siccus-type, clavate, pyriform, (sub)cylindrical, thin-walled with thin- to slightly thick-walled projections. *Pleurocystidia* absent. *Trama* hyphae cylindrical to subinflated, thin-walled, non-dextrinoid, up to $8(-10) \mu\text{m}$ wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, clavate, pyriform, subcylindrical, thin-walled or less frequently with slightly thick-walled apex, with slightly thick-walled and ochraceous yellow, rarely thin-walled and hyaline projections. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, dextrinoid, up to $5 \mu\text{m}$ wide hyphae with

ochraceous brown walls in KOH; medulla hyphae dextrinoid. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Foulpointe, coastal humid forest, on dead stems of plants, 11 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.374 (PC).

Notes: This collection is characterised by a small, reddish brown pileus, distant, collariate lamellae with a concolorous edges and a very short stipe. The latter feature represents the only difference between the Madagascar collection and those from Europe with a stipe 18–26 mm long (Antonín and Noordeloos, 1993) and from South America with a stipe 10–30 mm long (Singer, 1976).

5. *Marasmius curreyi* Berk. & Broome var. *bicystidiatus* V. Antonín & A. Hauskn., var. nov. (Fig. 4)

A varietate typica stipitis brevibus et cheilocystidiis dimorphis differt.

Holotypus: Mauritius, Rivière du Rempart, Grand Baie, Bougain Villas, 4. III. 1993 leg. A. Hausknecht MA04a (holotypus hic designatus, in herbario WU 14896 asservatur).

Pileus up to 5 mm broad, plano-convex, distinctly umbilicate at centre, without any central papilla, crenulate at margin, sulcate, slightly tomentose, red-brown, with almost pink-red centre, yellow-brown towards margin. *Lamellae* very distant, L = 10–11, l = 0, broadly collariate, yellowish with darker edge. *Stipe* up to 12 mm long, filiform, smooth, insititious, pale yellowish at apex, almost black towards base. *Context* without smell. (Description according to the collector's notes and dry specimens.)

Basidiospores 10–12.5 × 4.5–6 µm, E = 2–2.4, Q = 2.2, ellipsoid-fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* 28–33 × 8–9 µm, 4-spored, clavate. *Basidioles* up to 35 × 9 µm, cylindrical, fusoid, (sub)cylindrical. *Cheilocystidia* of two types: (1) 15–25 × (6–)8–11 µm, clavate, (sub)fusoid, irregular to coralloid, thin-walled; (2) 10–17 × 7–10 µm, broom-cells of the Siccus-type similar to pileipellis ones; in some carpophores, cheilocystidia of the type 1 are dominating, the ones of the type 2 dominate in other carpophores or cheilocystidia represent a ± equal mixture of both types. *Pleurocystidia* not found. *Trama* hyphae cylindrical to subinflated, thin-walled, smooth or minutely incrustated, non-dextrinoid, up to 12 µm wide. *Pileipellis* a hymeniderm of broom-cells of the Siccus-type, 11–25 × 7–13 µm, clavate, subcylindrical, thin-walled with (slightly) thick-walled apex, or less frequently entirely slightly thick-walled, mixed with ± clavate, irregular to subcoralloid cells. *Stipitipellis* a cutis composed of parallel, cylindrical, slightly thick-walled, up to 5 µm wide hyphae with ochraceous walls in KOH; stipitipellis and some medulla hyphae dextrinoid. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MAURITIUS, Rivière du Rempart, Grand Baie, Bougain Villas, in grass, 4 March 1993 leg. A. Hausknecht MA04a (WU 14896, **holotype**).

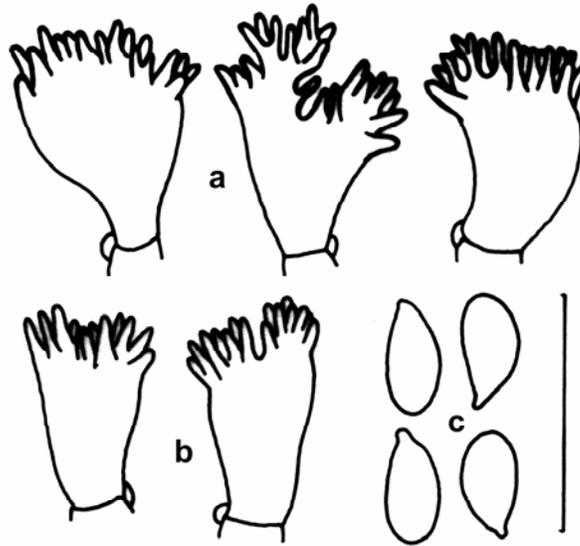


Fig. 3. *Marasmius curreyi* var. *curreyi*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = 20 μ m.

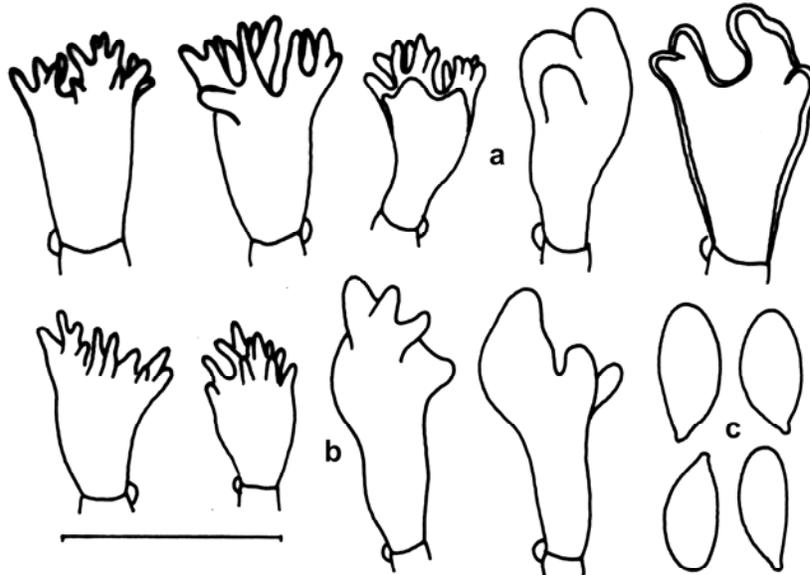


Fig. 4. *Marasmius curreyi* var. *bicytidiatus*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = 20 μ m.

Notes: This fungus is characterised by having a small, umbilicate, red-brown pileus with almost pink-red centre and paler margin, distant, collariate lamellae, a short, filiform, insititious stipe, moderately large basidiospores, and both pileipellis cells and cheilocystidia in the form of broom-cells of the Siccus-type and irregular to coralloid smooth cells.

Marasmius curreyi var. *curreyi* differs by a larger, 18–26 mm long stipe and only one type of cheilocystidia (Antonín and Noordeloos, 1993); var. *culmisedus* (Singer) Singer has an often darker, tan to blackish central umbilicus, slightly narrower basidiospores ((8–)9–12.3 × (4–)4.2–5.3(–7) µm), and only one type of cheilocystidia (Singer, 1976, as *M. graminum* var. *culmisedus*); var. *distantifolius* Antonín has more distant lamellae (L = (6–)7–9), slightly smaller basidiospores ((8–)9–10.5(–12) × (4.5–)5–6 µm) and only the one type of cheilocystidia (Antonín, 2004b, 2006).

6. *Marasmius nigrobrunneus* (Pat.) Sacc., Syl. Fung. 11: 37 (1895). (Fig. 5)
= *Androsaceus nigrobrunneus* Pat., J. Bot. 5: 308 (1891).

Pileus up to 10 mm broad, convex, then plano-convex, slightly depressed at centre, with a small papilla in depression, with an inflexed, crenulate margin, sulcate, tomentose, brown-black with slightly paler striae. *Lamellae* distant, L = 8–9, l = 0–2, broad, collariate, slightly rugulose-intervenose when old, white, with brown-black, pubescent edge. *Stipe* up to 65 mm long, filiform, smooth, glabrous, lustrous, twisted, insititious, (brown-)black. (Description according to a slide and dry carpophores.)

Basidiospores 9–12 × 4.5–6.5 µm, E = 1.5–2.2, Q = 2, fusoid, ellipsoid-fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* 4-spored, clavate. *Basidioles* 15–33 × 4–9 µm, clavate, subcylindrical, fusoid. *Cheilocystidia* in the form of broom-cells, 10–14 × 5–8 µm, clavate, subcylindrical, thin-walled with slightly thick-walled apex and projections. *Pleurocystidia* not found. *Trama* hyphae ± cylindrical, thin-walled, hyaline, dextrinoid, up to 10 µm wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, (9–)10–16 × (7–)8–10(–11) µm, clavate, pyriform, rarely subcylindrical, thin- to slightly thick-walled below and slightly to distinctly thick-walled above, with up to 25 digitate to narrowly conical, nodulose, obtuse, (slightly) thick-walled, up to 6 × 1.5(–2) µm large projections; thick-walled parts dark brown in KOH. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, dextrinoid, up to 5 µm wide hyphae with dark brown walls in KOH. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Antananarivo, Botanical Garden of Tsimbazaza, on bamboo leaves, 29 January 1997, leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.011 (PC); *ibid.*, 2 February 1997 leg. B. Buyck 97.156 (PC)

Notes: *Marasmius nigrobrunneus* is characterised by a brown-black pileus, a dark coloured lamellar edge, a long stipe, rather large and broad basidiospores and very dark pigmented pileipellis cells. The collection “Buyck 97.011” also belongs here. However, it differs only by narrower basidiospores ($8.5\text{--}11 \times 4.5\text{--}5 \mu\text{m}$) and up to $25 \mu\text{m}$ long cheilocystidia.

It represents a pantropical species. It is known in Africa from Nigeria and Sierra Leone (Antonín, 2006), in South America from Argentina and Bolivia (Singer, 1976), from Venezuela (Pegler and Calonge, 1997), from Trinidad (Dennis, 1951; Pegler, 1983), in Asia from India (Singer, 1976) and Sri Lanka (Pegler, 1983, 1986) and also from Papua New Guinea (Desjardin and Horak, 1997).

7. *Marasmius nigrogriseus* V. Antonín & B. Buyck, sp. nov. (Fig. 6)

Pileo usque 5 mm lato, convexo, umbilicato, bicolore, centro nigro, marginem griseolo. *Lamellis* collariatis, L = 9–11, albidis, acie brunneo-nigris. Stipite usque 60 mm longo, filiforme, insititio, glabro, brunneo-nigro. Basidiosporis $8.5\text{--}10.5 \times 4.2\text{--}5 \mu\text{m}$, fusiformibus, ellipsoideo-fusiformibus. Basidiis tetrasporis. *Cheilocystidiis* e cellulis typo Marasmii sicci similibus, $10\text{--}25 \times 7\text{--}12 \mu\text{m}$, clavatis, subcylindraceis. *Pleurocystidiis* absentibus. *Pileipellis* hymeniformis, e cellulis similibus cellulis hymenidermatis Marasmii sicci, $13\text{--}21 \times 7\text{--}11 \mu\text{m}$, clavatis, pyriformibus, (subtiliter) crassitunicatis. *Caulocystidiis* absentibus. *Hyphis* fibulatis, in stipite dextrinoideis.

Holotypus: Madagascar, Andasibe, 22. II. 1997, leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.011 (holotypus hic designatus, in herbario PC asservatur).

Pileus up to 5 mm broad, convex, depressed at centre, with a small papilla in depression especially when young, with an inflexed, crenulate margin, sulcate, tomentose, distinctly bicoloured, black at centre and also on sulci, grey towards margin. *Lamellae* distant, L = 9–11, l = 0–1, collariate, broad, white, with irregularly brown-black, pubescent edge. *Stipe* up to 60 mm long, filiform, smooth, glabrous, lustrous, insititious, (brown-)black. *Rhizomorphs* present. (Description according to a slide and dry carpophores.)

Basidiospores $8.5\text{--}10.5 \times 4.2\text{--}5 \mu\text{m}$, E = 1.8–2.1, Q = 2, fusoid, ellipsoid-fusoid, pip-shaped, thin-walled, hyaline, non-dextrinoid. *Basidia* $24\text{--}27 \times 6.5\text{--}8 \mu\text{m}$, 4-spored, clavate. *Basidioles* $12\text{--}28 \times 4\text{--}9 \mu\text{m}$, clavate, subcylindrical, fusoid. *Cheilocystidia* in the form of broom-cells of the Siccus-type, $10\text{--}25 \times 7\text{--}12 \mu\text{m}$, clavate, subcylindrical, thin-walled with slightly thick-walled apex and projections. *Pleurocystidia* not found. *Trama* hyphae \pm cylindrical, thin-walled, hyaline, up to $10 \mu\text{m}$ wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, $13\text{--}21 \times 7\text{--}11 \mu\text{m}$, clavate, pyriform, rarely subcylindrical, thin- to slightly thick-walled below and slightly to distinctly thick-walled above, with digitate to narrowly conical, subnodulose, obtuse, (slightly) thick-walled, up to $5\text{--}6 \times 1.5\text{--}2 \mu\text{m}$ large projections; sometimes transient forms to coralloid cell present; thick-walled

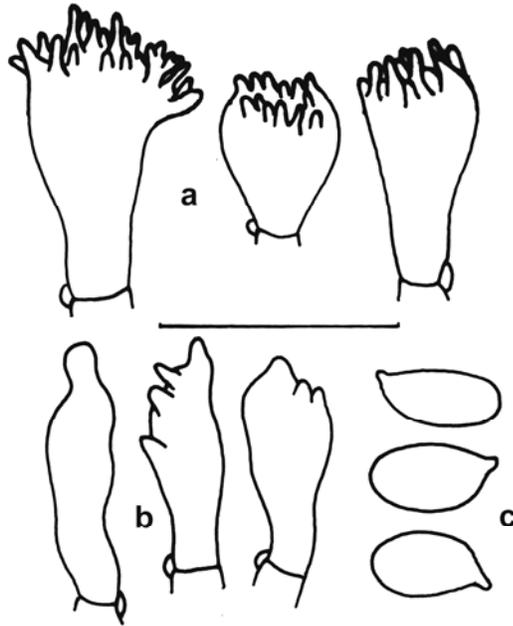


Fig. 5. *Marasmius nigrobrunneus*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = 20 μ m.

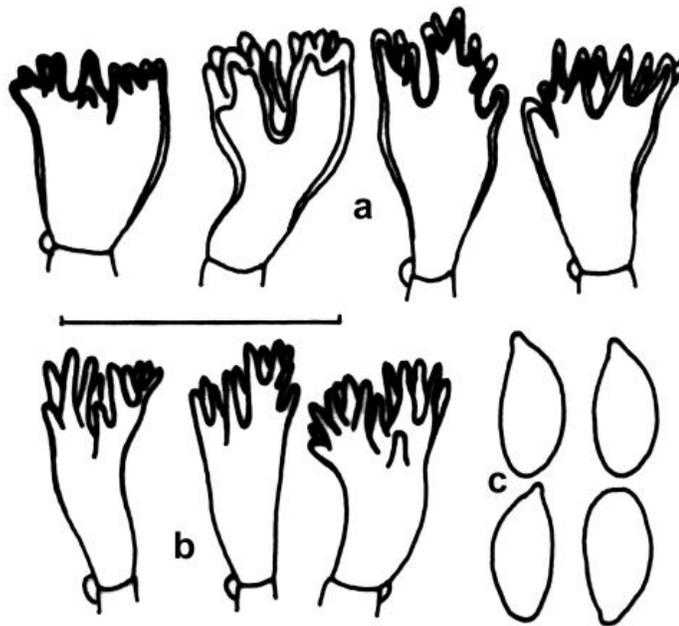


Fig. 6. *Marasmius nigrogriseus*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = 20 μ m.

parts dark brown in KOH. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, dextrinoid, up to 5 μm wide hyphae with dark brown walls in KOH; medulla hyphae dextrinoid. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Andasibe, on twigs of *Eucalyptus*, 22 February 1997, leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.011 (PC; **holotype**).

Notes: *Marasmius nigrogriseus* is characterised by having a distinctly bicolorous pileus with a black centre and sulci and a grey margin, distant, collariate lamellae with a irregularly brown-black edge, a very long insititious stipe, moderately large basidiospores and pileipellis cells and cheilocystidia in the form of broom-cells of the Siccus-type; rhizomorphs are well-developed.

We consider it a good species because of the unique combination of the following characters: a bicolorous black-grey pileus, a irregularly brown-black coloured lamellar edge, a very long stipe, well-developed rhizomorphs and pileipellis cells and cheilocystidia in the form of broom-cells of the Siccus-type.

The apparently similar *Marasmius nigrobrunneus* (Pat.) Sacc. has a uniformly grey or fuliginous pileus, slightly broader basidiospores (8–11.5 \times 5–6(–6.5) μm), and slightly smaller cheilocystidia (9–19 \times 4.5–7 μm) (Antonín, 2006).

8. *Marasmius cf. subruforotula* Singer, Bull. Jard. Bot. Brux. 34: 339 (1964).

(Fig. 7)

Pileus up to 7 mm broad, convex to \pm plano-convex when mature, plicate, with a crenulate margin, distinctly umbilicate, sometimes with a small central papilla, (dark) reddish brown (8E7–8), surface often slightly cracking in umbilicus and around papilla. *Lamellae* moderately distant, L = 12–15, l = 0(–1), collariate, pale yellowish, with concolorous, sometimes irregularly brownish coloured edge. *Stipe* up to 65 mm long, filiform, insititious, glabrous, concolorous with lamellae above, brown to brown-black towards base. (Description according to a slide and dry carpophores.)

Basidiospores 8.5–11 \times 4.5–5(–5.5) μm , E = 1.8–2.3, Q = 2.0–2.1, ellipsoid, fusoid-ellipsoid, thin-walled, hyaline, non-dextrinoid. *Basidia* 21–28 \times 6.5–8 μm , 4-spored, clavate. *Basidioles* 12–28 \times 4–10 μm , clavate, cylindrical, fusoid. *Cheilocystidia* in the form of broom-cells, 10–19 \times 5–12 μm , (broadly) clavate, cylindrical, thin-walled or slightly thick-walled, with obtuse, subnodulose, thin- to slightly thick-walled, up to 6 \times 1.5 μm large projections. *Pleurocystidia* not found. *Pileipellis* a hymeniderm consisting of (1) broom-cells of the Siccus-type, 12–20 \times 7–10 μm , \pm clavate, thin-walled, at apex slightly thick-walled and (2) of 18–22 \times 5–9 μm , thin- to thick-walled, irregular to coralloid cells; thick-walled parts dark ochraceous-brown

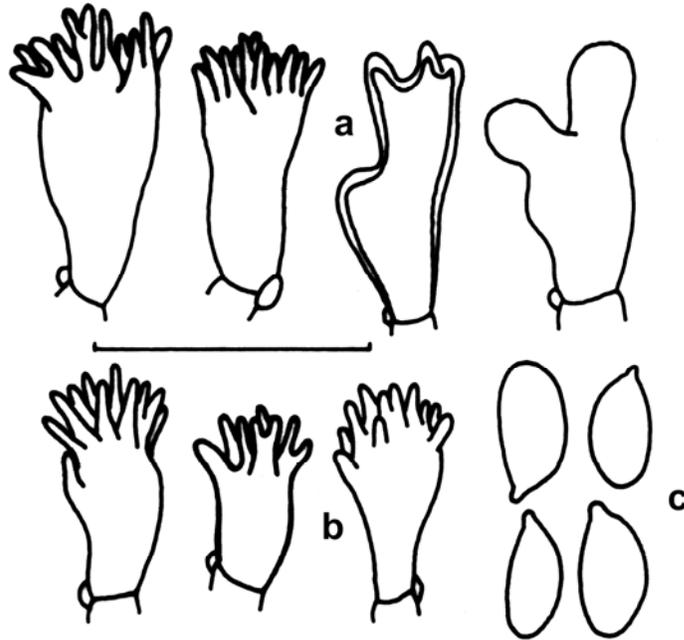


Fig. 7. *Marasmius subruforotula*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = 20 μ m.

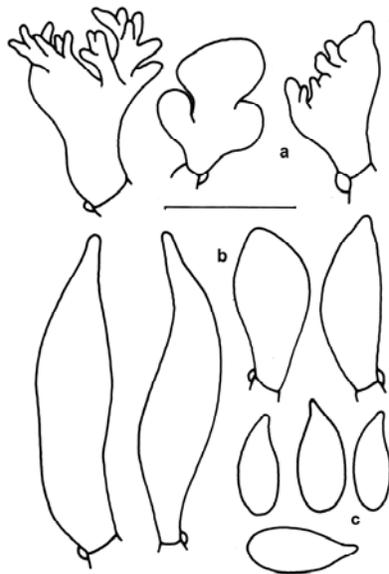


Fig. 8. *Marasmius cecropiformis*: a) pileipellis cells, b) hymenial cystidia, c) basidiospores. Scale bar = 20 μ m.

in KOH, thin-walled ones subhyaline. *Stipitipellis* a cutis of cylindrical, parallel, slightly thick-walled, up to 6 μm wide hyphae with dark ochraceous brown walls in KOH; medulla hyphae slightly dextrinoid. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Antananarivo, Botanical Garden of Tsimbazaza, leg. B. Buyck, G. Eyssartier, P.-A. Moreau as *Marasmius "graminum"*, 29 January 1997, Buyck 97.012 (PC); *ibid.*, on bamboo leaves, leg. B. Buyck, G. Eyssartier, P.-A. Moreau as *Marasmius "graminum"*, 1 February 1997, Buyck 97.163 (PC).

Notes: *Marasmius subrufotula* is characterised by having a grey or chestnut brown pileus at centre, red-orange or orange near a margin, distant lamellae, often well-developed rhizomorphs and moderately large basidiospores. Both collections from Madagascar slightly differ by a darker reddish brown pileus (slide), slightly larger cheilocystidia and pileipellis broom-cells measuring $9.2\text{--}11.5 \times 5.4\text{--}7.7 \mu\text{m}$ and $11.5\text{--}15.5 \times 6.2\text{--}12 \mu\text{m}$ respectively (Antonín, 2006).

This species has been collected only in tropical Africa, being known from Cameroon, Democratic Republic of Congo, Nigeria, Uganda and probably also Tanzania (Singer, 1964, 1965; Pegler, 1977; Antonín, 2006).

II. Sect. *Neosessiles* Singer

9. *Marasmius cecropiformis* V. Antonín & A. Hauskn., **sp. nov.** (Fig. 8)

Pileo 5–8 mm lato, applanato, ruguloso, aurantiaco-brunneo, luteolo-brunneo vel roseo-brunneo. *Lamellis* distantibus, L = cca. 10, adnatis, pallide aurantiacis vel luteo-aurantiacis. *Stipite* brevi, eccentrico, albido cum aurantiaco tincto. *Sporis* (14–)14,5–17(–18) \times (6–)6,5–8(–9) μm , lacrimoideis, clavate-fusiformibus, hyalinis, inamyloideis. *Basidiis* tetrasporis. *Cystidiis* hymenialibus 30–62 \times 9–18 μm , fusiformibus, sublageniformibus, subutriformibus. *Pileipellis* hymeniformis, e cellulis clavatis vel vesiculosis, similibus cellulis hymenodermatis *Marasmii* sicci, clavatis, subcylindratis vel subvesiculosis, 15–28 \times 10–16 μm . *Hyphis* dextrinoideis, fibulatis.

Holotypus: France, La Réunion, Forêt de Belouve, ca. 140 m, 13. III. 1996 leg. A. Hausknecht RE 59/96 and G. Wölfel (holotypus hic designatus, in herbario WU 25700 asservatur).

Pileus 5–8 mm broad, applanate, irregularly rugulose, with a crenulate margin, finely tomentose, slightly radially rugulose, not hygrophanous, non-striate, orange-brown, yellow-brown to pink-flesh coloured. *Lamellae* very distant, L = c. 10, broadly adnate, ventricose, intervenose, pale orange, orange to yellow-orange, with finely floccose, darker, reddish orange edge. *Stipe* distinctly eccentric, very small, 1–2 \times 1 mm, finely granulose-floccose, insititious, whitish with pale orange tinge. *Context* thin, without smell.

Basidiospores (14–)14.5–17(–18) \times (6–)6.5–8(–9) μm , E = 1.8–2.5, Q = 2.3, lacrimoid, clavate-fusoid, thin-walled. *Basidia* 4-spored. *Basidioles* 15–36

× 4–10 µm, clavate, subfusoid, subcylindrical. *Hymenial cystidia* 30–62 × 9–18 µm, fusoid, sublageniform, subutriform, (sub)rostrate, thin- to slightly thick-walled, hyaline or with pale yellowish contents. *Trama* hyphae cylindrical, hyaline, smooth or minutely incrustated, dextrinoid, 3–8 µm wide. *Pileipellis* a loose hymeniderm consisting of 15–28 × 10–16 µm, clavate, subcylindrical, subvesiculose, thin- to slightly thick-walled broom-cells of the Siccus-type. *Clamp connections* present in all tissues.

Material examined: FRANCE, La Réunion, Forêt de Belouve, ca. 140 m, 13 March 1996 leg. A. Hausknecht RE 59/96 and G. Wölfel (WU 25700; **holotype**).

Notes: *Marasmius cecropiformis* is characterised by having orange-brown, yellow-brown to pink-flesh coloured, very distant, intervenose, orange, orange to yellow-orange lamellae with coloured edge, a very small, eccentric stipe, large basidiospores, fusoid, sublageniform or subutriform hymenial cystidia, dextrinoid hyphae and a pileipellis in the form of loose hymeniderm of the Siccus-type broom-cells.

The most closely related species seems to be *M. cecropiae* Dennis. However, it has an ochraceous, drying fulvous-orange or orange-buff pileus colour, more distant lamellae (L = 4–7), smaller basidiospores (11–14 × 4–4.8 µm) and smaller cystidia (ca. 35 × 8 µm) (Dennis, 1961; Singer, 1976).

10. *Marasmius neosessiliformis* V. Antonín & B. Buyck, **nom. prov.** (Fig. 9)

Pileus up to 4 mm broad, hemispherical to convex, with involute to inflexed margin, thin, distinctly sulcate-striate, tomentose to finely granulose, reddish brown (8E6–8). *Lamellae* distant, L = 8–10, l = 0–1, adnate, rather thick, not intervenose to slightly intervenose, sometimes branched when old, cream coloured, edge concolorous, finely tomentose. *Stipe* very short to almost absent, eccentric to lateral, up to c. 3 × 1 mm, ± cylindrical, strongly curved, very shortly fibrillose, ± concolorous with lamellae above, brownish-greyish to brown at base. (According to dry specimens.)

Basidiospores 10–11 × 5–6 µm, E = 1.6–2.2, Q = 1.9, ellipsoid, thin-walled, hyaline, non-dextrinoid. *Basidia* 4-spored, clavate. *Basidioles* cylindrical, clavate, fusoid. *Cheilocystidia* 18–27 × 6–9 µm, clavate, subcylindrical, subfusoid, thin-walled, with several projections or subcoralloid. *Pleurocystidia* absent. *Trama* hyphae cylindrical, thin-walled, hyaline, dextrinoid, up to 12 µm wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, 15–23 × 8–13 µm, clavate, pyriform, thin-walled with slightly thick-walled apex and projections. *Stipitipellis* a cutis composed of cylindrical, parallel, thin-walled, smooth, dextrinoid, up to 5 µm wide hyphae. *Stipe* medulla a mixture of thin-walled and thick-walled, narrow, up to 5 µm wide, strongly dextrinoid hyphae. *Caulocystidia* 17–28 × 6–11 µm, cylindrical

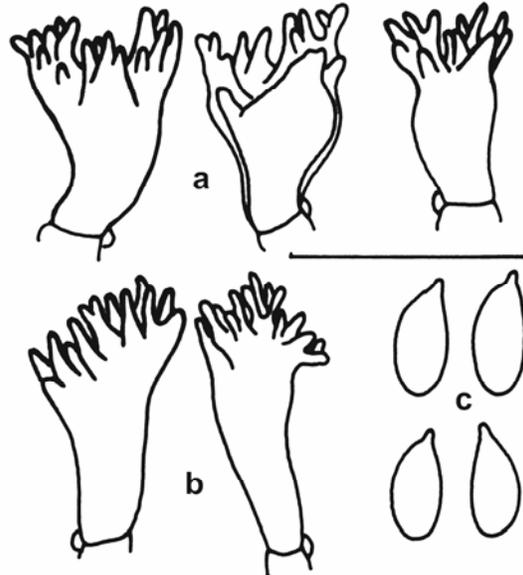


Fig. 9. *Marasmius neosessiliformis*: a) pileipellis cells, b) cheilocystidia, c) basidiospores. Scale bar = 20 μ m.

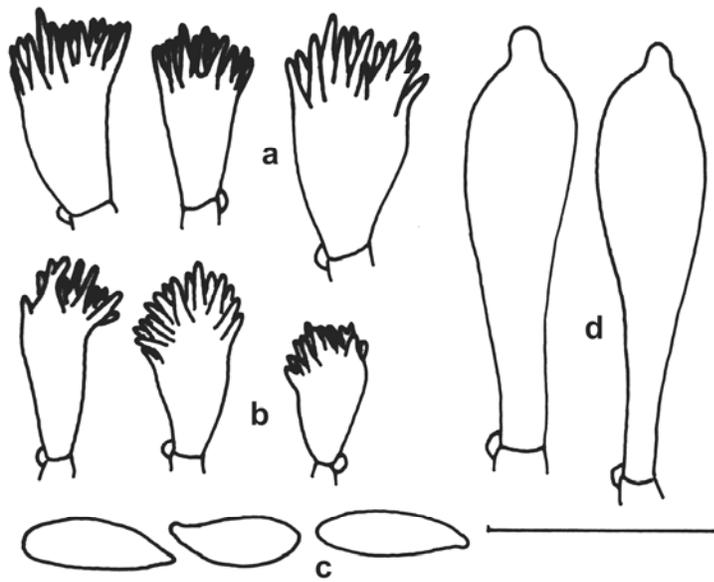


Fig. 10. *Marasmius confertus* var. *parvisporus*: a) pileipellis cells, b) cheilocystidia, c) basidiospores, d) pleurocystidia. Scale bar = 20 μ m.

to clavate, slightly thick-walled, sometimes covered by an amorphous matrix. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Andasibe, in moist road side bush, 21 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.615 (PC).

Notes: This collection is characterised by having a small tomentose to finely granulose, reddish brown pileus, distant lamellae, a very short to almost absent stipe, rather broad basidiospores, and by the presence of cheilocystidia with several projections or subcoralloid. It seems to be a well-limited species, however, because of the absence of the macroscopic description, it is presented as *nomen provisorium* here.

Marasmius neosessilis Singer has a (slightly) differently coloured and sized pileus (1–19 mm broad, almost white, then “apricot” to salmon coloured in var. *neosessilis*, and 9–17 mm broad, grey, becoming yellow-beige to grey when dry in var. *montepiensis* Singer), more distant lamellae ($L = 3-4$, resp. $4-7$ in both varieties) and smaller basidiospores ($7-10 \times 3.3-4.8 \mu\text{m}$, resp. $7.5-9 \times 4.5-5.3 \mu\text{m}$) (Singer, 1976).

Marasmius bururiensis Antonín differs by having a very pale off-white to light beige, beige, brown-grey to greyish-yellow pileus with a tinge of yellowish white, covered by dark brown to almost black, somewhat spiny granules, and a pileipellis consisting of slightly to rather distinctly thick-walled cells (Antonín, 2003); it has been collected in Burundi, Cameroon and Tanzania till now.

III. Sect. *Sicci* Singer

IIIa. ser. *Atrorubentes* Desjardin & E. Horak

11. *Marasmius corrugatiformis* Singer, Bull. Jard. Bot. Brux. 34: 374 (1964).

(Fig. 11)

Pileus up to 15 mm broad, convex, with slightly depressed centre, slightly crenulate at margin, striate, slightly rugulose, finely tomentose, orange brown (8E8) at centre, distinctly paler, light orange (5–6A4) towards margin. *Lamellae* close, $L = c. 50-60$, $l = 2-3$, rather narrow, white, with concolorous, pubescent edge. *Stipe* $20-60 \times 1$ mm, \pm cylindrical, finely tomentose, non-insititious, dark brown, apex slightly paler (Description from dry carpophores).

Basidiospores $7-8.5 \times 2.75-3.5 \mu\text{m}$, $E = 2.3-2.8$, $Q = 2.6$, (sub)fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* $14-22 \times 4-7 \mu\text{m}$, 4-spored, clavate. *Basidioles* $14-22 \times 4-7 \mu\text{m}$, clavate, subcylindrical, fusoid. *Cheilocystidia* in the form of broom-cells, $14-15 \times 7-8 \mu\text{m}$, clavate, thin-walled, with nodulose, thin-walled, up to 10×1.5 mm large projections. *Pleurocystidia* absent. *Trama* hyphae cylindrical to subinflated, thin-walled,

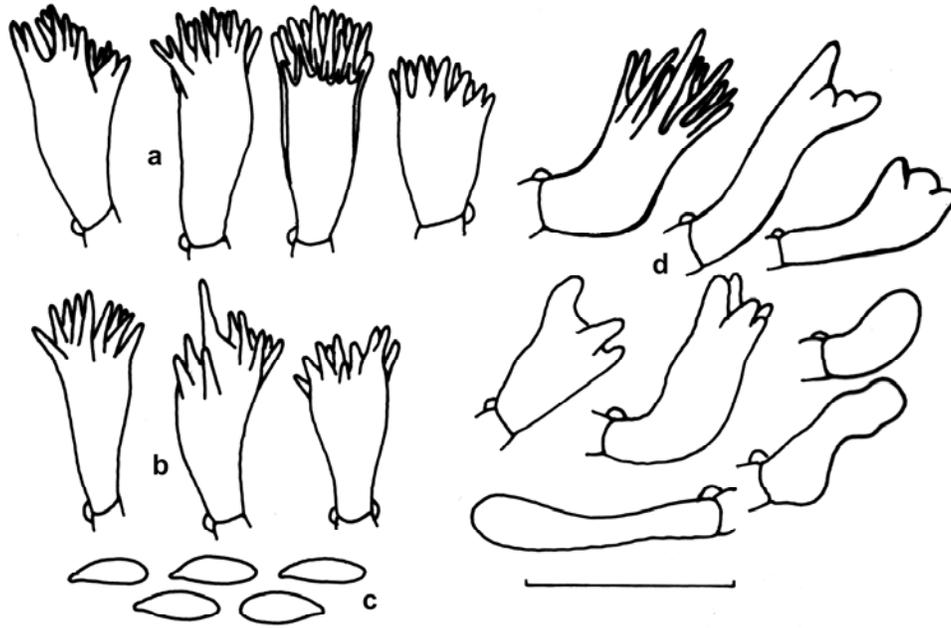


Fig. 11. *Marasmius corrugatiformis*: a) pileipellis cells, b) cheilocystidia, c) basidiospores, d) caulocystidia. Scale bar = 20 μ m.

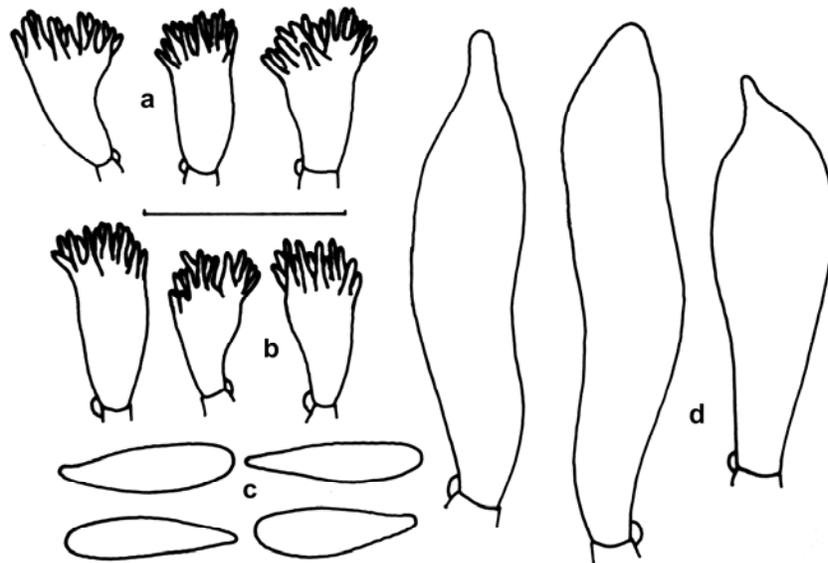


Fig. 12. *Marasmius grandisetulosus*: a) pileipellis cells, b) cheilocystidia, c) basidiospores, d) pleurocystidia. Scale bar = 20 μ m.

hyaline, dextrinoid, up to 12 μm wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, 12–25 \times 7–12(–17) μm , clavate, pyriform, subvesiculose, thin-walled; projections 10–30(–35), digitate, nodulose, obtuse, thick- to slightly thick-walled, hyaline, up to 6 \times 1 μm large, mixed with scattered entirely slightly thick-walled, pale yellowish cells. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, dextrinoid, up to 7 μm wide hyphae with olivaceous walls in KOH. *Caulocystidia* 10–25 \times 4–6 μm , of two types: (1) clavate, subfusoid, cylindrical, thin- to slightly thick-walled, (2) broom-cells to coralloid cells, thin- to slightly thick-walled; thick-walled parts with olivaceous walls. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Andasibe, moist mountain forest, 12 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.425 (PC); *ibid.*, in moist road side bush, 21 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.639 (PC).

Notes: *Marasmius corrugatiformis* is characterised by having a brightly coloured, rugulose pileus, close lamellae, small basidiospores, two types of cheilocystidia (smooth cells and broom-cells), well-developed caulocystidia, and by the absence of pleurocystidia (Antonín, 2006). The Malagasy collections differ only in having one type of cheilocystidia. The second collection (Buyck 97.639) is sterile and therefore included with a question mark here. However, all other microscopical as well as macroscopical characters agree well with this species.

M. corrugatiformis is an African species and is known from Cameroon, the Democratic Republic of Congo, Ghana and probably also Ivory Coast and Uganda (Singer, 1964, 1965; Williamson, 1976; Pegler, 1977; Morris, 1990; Antonín, 2006).

IIIb. ser. *Haematocephali* Singer

12. *Marasmius* cf. *confertus* var. *parvisporus* Antonín, Mycotaxon 89: 401 (2004). (Fig. 10)

Pileus up to 3 mm broad, conical, striate-sulcate up to ½ of diameter, finely tomentose, reddish brown (8D–E7) greyish orange to orange (6B6–8). *Lamellae* moderately close, L = c. 15, l = 1–2, emarginate, ventricose, with concolorous pubescent edge. *Stipe* up to 40 mm long, filiform, smooth, glabrous, non-insititious, with a distinct brownish basal tomentum, brown to dark brown, paler (whitish?) at apex. (Description according to dry carpophores and a slide)

Basidiospores (only 7 spores found) 8.5–12 \times 3–5 μm , ellipsoid, ellipsoid-fusoid, thin-walled, hyaline, non-dextrinoid, rarely with one septum. *Basidioles* 15–30 \times 4–9 μm , clavate, cylindrical, fusoid. *Cheilocystidia* in the

form of broom-cells, $10\text{--}15 \times 6\text{--}9 \mu\text{m}$, clavate, (sub)cylindrical, hyaline, thin-walled, with \pm thin-walled projections. *Pleurocystidia* $30\text{--}40 \times 6\text{--}11 \mu\text{m}$, clavate or subfusoid, rostrate, thin-walled, with a slightly refractive contents. *Trama* hyphae \pm cylindrical, thin-walled, hyaline, dextrinoid, up to $12 \mu\text{m}$ wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, $9\text{--}20 \times 5\text{--}10 \mu\text{m}$, clavate, subcylindrical, thin-walled or with slightly thick-walled apex; projections $15\text{--}30$, digitate to conical, nodulose, obtuse, slightly thick-walled, up to $9 \times 2 \mu\text{m}$ large; thick-walled parts pale yellow-ochraceous in KOH. *Stipitipellis* a cutis of cylindrical, parallel, slightly thick-walled, dextrinoid, up to $5\text{--}6 \mu\text{m}$ wide hyphae with yellow-ochraceous walls in KOH. *Caulocystidia* absent; scattered broom-cells present at stipe apex. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Andasibe, under *Eucalyptus*, 12 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.424 (PC).

Notes: *Marasmius confertus* var. *parvisporus* is characterised by having a broadly conical, campanulate to convex, then applanate, at margin translucently striate pileus, brown at centre, brownish orange to greyish orange towards margin, moderately crowded lamellae, small basidiospores ($7.3\text{--}10 \times 3.6\text{--}4.6 \mu\text{m}$), well-developed, refractive pleurocystidia, pileipellis broom-cells of two types, and usually well-developed caulocystidia in the form of broom-cells of the Siccus-type (Antonín, 2004). It is hitherto known from Cameroon, Democratic Republic of Congo, Kenya and Uganda (Antonín, 2006).

Because of the slightly larger basidiospores and narrower pleurocystidia, and also by its pileipellis structure the Madagascan collection is rather intermediate between *M. confertus* var. *parvisporus* and var. *tenuicystidiatus* Antonín (Antonín, 2004, 2006).

13. *Marasmius* (cf.) *grandisetulosus* Singer, Bull. Jard. Bot. Brux. 34: 379 (1964). (Fig. 12)

Pileus up to 15 mm broad, convex or campanulate-convex, with obtuse to depressed centre, sulcate, crenulate at margin, finely tomentose, dark brown (7E7–8) at centre, paler, light brown (7D4–5) towards margin when young, sometimes slightly paler striate, striation very distinct when dry. *Lamellae* distant, L = 13–16, L = 0–1, white to pale cream coloured, with concolorous or pale brownish, finely pubescent edge. *Stipe* up to $40 \times 1 \text{ mm}$, cylindrical, non-insititious, smooth, glabrous, orange to umbra brown. (Description according to a slide and dry carpophores.)

Basidiospores $15\text{--}18 \times 4\text{--}5 \mu\text{m}$, E = 3.3–4.4, Q = 3.8, lacrimoid, fusoid, clavate-fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* $28\text{--}35 \times 9\text{--}10 \mu\text{m}$, 4-spored, clavate. *Basidioles* $15\text{--}35 \times 4\text{--}10 \mu\text{m}$, clavate, subcylindrical, fusoid. *Cheilocystidia* in the form of broom-cells, $12\text{--}16\text{--}22 \times 7\text{--}10 \mu\text{m}$, clavate,

subcylindrical, entirely thin-walled or slightly thick-walled at apex, with obtuse, nodulose, slightly thick-walled, up to $6(-7) \times 1(-1.5) \mu\text{m}$ large projections. *Pleurocystidia* $38-65 \times 9-15 \mu\text{m}$, (sub)fusoid, often rostrate, thin-walled, with a refractive contents. *Trama* hyphae cylindrical to subinflated, thin-walled, smooth or minutely incrusted, hyaline, dextrinoid, up to $15 \mu\text{m}$ wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, $8-13(-16) \times 4-8(-9) \mu\text{m}$, clavate, subcylindrical, thin-walled with slightly thick-walled apex, rarely entirely thin-walled (and then hyaline) with $8-20$ digitate, nodulose, obtuse to rarely subacute, slightly thick-walled, up to $6 \times 1(-1.5) \mu\text{m}$ large projections; thick-walled parts ochraceous-yellow in KOH. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, dextrinoid, up to $6 \mu\text{m}$ wide hyphae. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Antananarivo, Botanical Garden of Tsimbazaza, 29 January 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau as *Marasmius cf. anomalus*, Buyck 97.004 (PC).

Notes: *Marasmius grandisetulosus* is characterised by having a brown and often striped pileus, distant lamellae ($L = 16-18$) with concolorous or pale yellow-brown edge, a long umbra brown stipe becoming black when old, rather large basidiospores ($17-21.5(-23) \times 3.5-5.4 \mu\text{m}$) and well-developed pleurocystidia; it lacks caulocystidia (Antonín, 2006). It was collected so far only in Africa: Cameroon, Democratic Republic of Congo, Ghana, Ivory Coast, Nigeria, Tanzania and Zambia (Singer, 1964, 1965; Zoberi, 1972; Pegler, 1977; Antonín 2006). This Madagascar collection differs in the less distinctly striped pileus when fresh and slightly smaller basidiospores.

14. *Marasmius haematocephalus* (Mont.) Fr., Epicr.: 382. 1838 (Fig. 13)

= *Agaricus haematocephalus* Mont., Ann. Sci. Nat., sér. 2, 8: 369 (1837).

= *Androsaceus haematocephalus* (Mont.) Pat., J. Bot. 3: 336 (1889).

Pileus 3–15 mm broad, mostly campanulate, then convex, sulcate-striate, slightly reflexed to uplifted at crenulate margin when old, membranaceous, finely tomentose, (greyish) ruby (12D6–8), pale red (12A3–4). *Lamellae* distant, $L = 9-13$, $l = 0-1$, free to adnexed, narrow to broad, white, pale purplish, with concolorous pubescent edge. *Stipe* 20–50 \times 0.2–0.5 mm, filiform, cylindrical, hollow, glabrous, smooth, lustrous, reddish brown to dark brown (8E6–7, 8E5), with paler apex and with white tomentose basal mycelium. *Context* thin, without smell. (Description according to slides.)

Basidiospores $13-20 \times 3.5-5 \mu\text{m}$, $E = 3.0-4.7$, $Q = 3.7-4.3$, fusoid, clavate-fusoid, thin-walled, hyaline, non-dextrinoid. *Basidia* $28-33 \times 7-8 \mu\text{m}$, 4-spored, clavate. *Basidioles* $15-30(-40) \times 5-9 \mu\text{m}$, clavate, subcylindrical, fusoid. *Cheilocystidia* in the form of broom-cells, $11-21 \times 6-9 \mu\text{m}$, clavate,

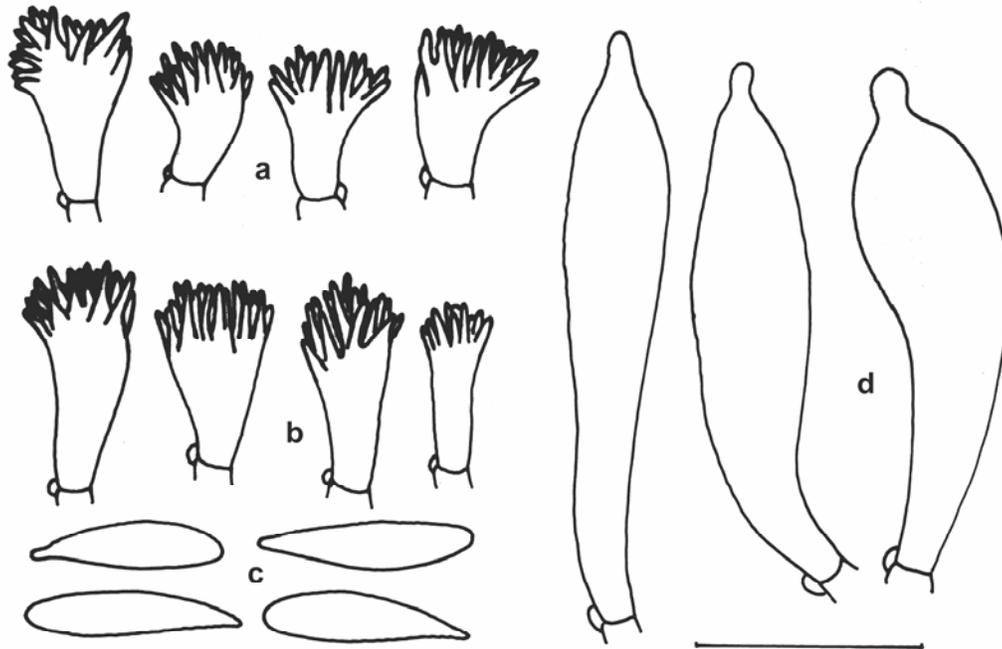


Fig. 13. *Marasmius haematocephalus*: a) pileipellis cells, b) cheilocystidia, c) basidiospores, d) pleurocystidia. Scale bar = 20 μ m.

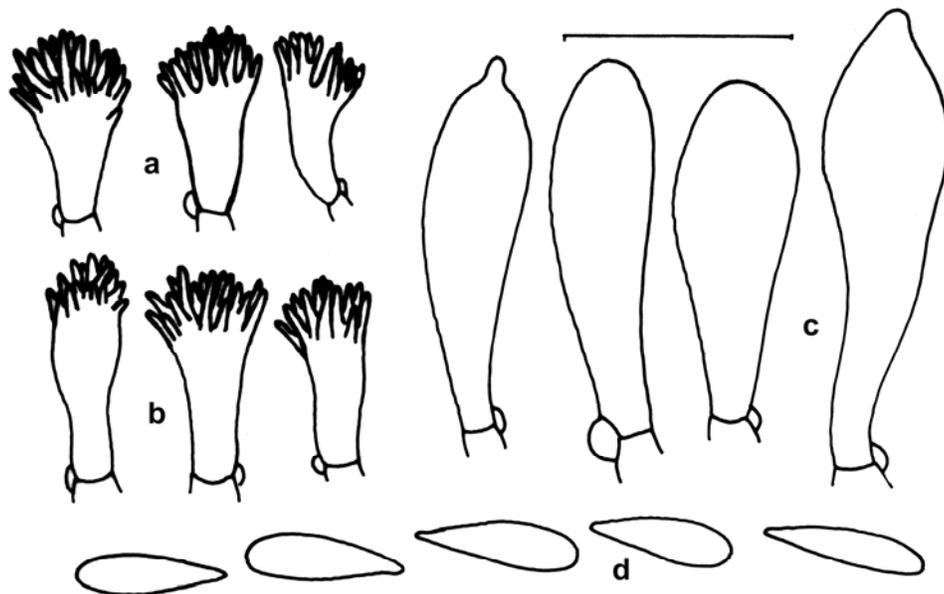


Fig. 14. *Marasmius eyssartieri*: a) pileipellis cells, b) cheilocystidia, c) pleurocystidia, d) basidiospores. Scale bar = 20 μ m.

subcylindrical, thin-walled with slightly thick-walled, coloured projections. *Pleurocystidia* 35–63 × 7–13 µm, (sub)fusoid, utriform, sublageniform, clavate, subcylindrical, often rostrate, thin-walled, with a refractive contents. *Trama* hyphae cylindrical to subinflated, thin-walled, hyaline, dextrinoid, up to 15 µm wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, 9–18 × 5–10 µm, clavate, pyriform, rarely (sub)cylindrical, thin-walled with slightly thick-walled apex; projections 15–30, digitate, narrowly conical, nodulose, obtuse to subacute, thick-walled, up to 8 × 1(–1.5) µm large; thick-walled parts purple(-grey) in KOH. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, smooth, dextrinoid, up to 5(–7) µm wide hyphae with olivaceous to olivaceous-ochraceous walls in KOH. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Melville oil palm plantation, near Tamatave, 24 February 2000 leg. B. Buyck 00.1820 (PC); Foulpointe, wet coastal forest, 9 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.309 (PC); Fénériver-est, wet coastal forest, 10 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.346 (PC); Andasibe, mountain *Eucalyptus* plantation, 22 February 1997, leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.672 (PC).

Notes: *Marasmius haematocephalus* is a very easily identifiable species by having a pileus coloured in various tinges of purple, distant lamellae, an brown or fuliginous stipe at base, long and slender basidiospores and well-developed pleurocystidia; it lacks caulocystidia.

It represents a pantropic species. In Africa, it is known from Cameroon, Democratic Republic of Congo, Gabon, Ghana, Ivory Coast, Kenya, Nigeria, Republic of the Congo, Sierra Leone, Tanzania, Uganda and Zimbabwe (Hennings, 1895; Patouillard, 1928; Pegler, 1977; Nicholson, 1989; Antonín, 2006).

15. *Marasmius eyssartieri* V. Antonín & B. Buyck, sp. nov. (Fig. 14)

Pileo usque 5 mm lato, conico, sulcato, brunneo vel rubro-brunneo. *Lamellis* distantibus, L = 14–15, acie brunneis. *Stipite* usque 50 mm longo, cylindraco, glabro, rubro-brunneo. *Basidiosporis* 13,5–16 × 3,5–5 µm, clavatis, clavato-fusififormibus, hyalinis. *Cheilocystidiis* e cellulis similibus cellulis typo Marasmii sicci, 12–18 × (5–)6–9 µm, clavatis vel cylindracois. *Pleurocystidiis* 30–50 × 8–14 µm, clavatis, subfusiformibus, rostratis, tenuitunicatis. *Pileipellis* hymeniformis, e cellulis similibus cellulis hymenidermatis Marasmii sicci, 10–15 × 6–9 µm, clavatis vel subcylindracois. *Caulocystidiis* absentibus. *Hyphis* fibulatis, in stipite et trama dextrinoideis. Ad folia putrida.

Holotypus: Madagascar, Sainte Lucie, near Fort Dauphin, 27. I. 1999, leg. B. Buyck et G. Eyssartier, Buyck 99.375 (holotypus hic designatus, in herbario PC asservatur).

Pileus up to 5 mm broad, conical, obtuse or papillate at centre, sulcate, with a crenulate margin, brown to reddish brown (7–9E8), slightly paler (up to ochraceous) striate. *Lamellae* distant, L = 14–15, l = 0–1, emarginate, with brown coloured, pubescent edge. *Stipe* up to 50 mm long, ± cylindrical,

smooth, glabrous, non-insititious, reddish brown (\pm 8E8). (Description according to a slide and dry carpophores.)

Basidiospores 13.5–16 \times 3.5–5 μm , E = 2.8–4.3, Q = 3.4, clavate, fusoid-clavate, thin-walled, hyaline, non-dextrinoid. *Basidioles* 12–30(–33) \times 3.5–8(–9) μm , clavate, fusoid, cylindrical. *Cheilocystidia* in the form of broom-cells of the Siccus-type, 12–18 \times (5–)6–9 μm , clavate, cylindrical, thin-walled sometimes with slightly thick-walled apex and thick-walled projections. *Pleurocystidia* 30–50 \times 8–14 μm , clavate, (sub)fusoid, sometimes rostrate, thin-walled, with a refractive contents. *Trama* hyphae \pm cylindrical, \pm thin-walled, hyaline, dextrinoid, up to 12(–15) μm wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Siccus-type, 10–15 \times 6–9 μm , clavate, subcylindrical, pyriform, thin-walled with slightly thick-walled apex or entirely slightly thick-walled, with up to 35(–40) strongly nodulose, digitate, obtuse to subacute, up to 8(–10) \times 1.5(–2) μm large projections. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, dextrinoid, up to 5(–6) μm wide hyphae with ochraceous-yellow walls in KOH. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Sainte Lucie, near Fort Dauphin, secondary dense wet coastal forest, 27 January 1999, leg. B. Buyck and G. Eyssartier, Buyck 99.375 (PC; **holotype**).

Notes: The here newly described *Marasmius eyssartieri* is characterised by having a very small, brown to reddish brown, palely striate pileus, distant lamellae, a dark reddish brown stipe, moderately large basidiospores and well-developed pleurocystidia.

Marasmius grandisetulosus Singer, an African species having also a striate pileus, differs by a distinctly larger pileus of (7–)20–25 mm, a stipe measuring 15–85 \times 0.5–2 mm, distinctly larger basidiospores of 17–21.5(–23) \times 3.5–5.4 μm , and larger pleurocystidia measuring 27–73 \times 5.4–15.5(–20) μm (Singer 1964, 1965; Antonín, 2006).

IIIc. ser. *Leonini* Singer

16. *Marasmius rammelooi* Antonín, Mycotaxon 89(2): 410 (2004).

Notes: *Marasmius rammelooi* is a very small fungus with a very pale coloured pileus, distant lamellae with coloured edges, a short stipe, moderately large basidiospores, scattered irregular to subcoralloid cheilocystidia which are cylindrical to clavate, a pileipellis consisting of broom-cells of the Siccus-type and well-developed caulocystidia in the form of broom-cells (for detailed description and illustrations see Antonín (2004a)). It has been collected only in the type locality on Mauritius till now (Trou d'eau douce, 10 June 1990 leg. J. Rammeloo 9251 (holotype, BR 6902-15)).

Sect. *Globulares* Kühner

17. *Marasmius sulcatipes* Pat., Bull. Mus. Nat. Hist. Natur. 13: 526 (1924), not *M. sulcatipes* Métrod, Bull. Soc. Mycol. Fr. 70: 159 (1954), nomen nudum (see Antonín and Noordeloos, 1993). (Fig. 15)

Pileus 100–120 mm broad, thin, membranaceous, conical-campanulate, obtuse at centre, straight and undulate at margin, very strongly sulcate, pale mouse grey. *Lamellae* less numerous, distant, in a concordance with sulci. *Stipe* 150 × 12 mm, tough, entirely very strongly striate, hollow, whitish. (Description according to Patouillard, 1924.)

Basidiospores 28–35 × 5.5–8 µm, clavate, subfusoid, sometimes slightly curved, thin-walled, smooth, non-dextrinoid. *Basidia* 40–46 × 10–13 µm, 4-spored, clavate. *Basidioles* up to 50 × 5–10 µm, clavate, cylindrical, subfusoid. *Cheilocystidia* 17–25 × 10–15 µm, (broadly) clavate, ± thin-walled, hyaline. *Pleurocystidia* 45–71 × 9–17 µm, fusoid, cylindrical, clavate, thin-walled, slightly refractive. *Trama* hyphae ± cylindrical, branched, thin-walled, dextrinoid, up to 15 µm wide. *Pileipellis* a hymeniderm consisting of 17–27 × 10–15 µm, clavate, thin- to slightly thick-walled, non-dextrinoid, smooth cells. *Stipitipellis* a cutis composed of cylindrical, parallel, slightly thick-walled, dextrinoid, up to 10 µm wide hyphae. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Massif de l'Ankaizniana, on old stump of tree in a humid mountain forest at 1500 m alt., leg. M. Decary (PC; **holotype**).

Notes: *Marasmius sulcatipes* is characterised by a strongly sulcate grey pileus, very large basidiospores, small clavate cheilocystidia, well-developed pleurocystidia and by the absence of caulocystidia. It is only known from the type locality.

Only a few species are comparable owing to the very large basidiospores: *M. amabilis* Hariot & Pat. has a white to cream buff pileus, *M. musisporus* Desjardin & E. Horak narrower basidiospores (30–40 × 4.5–5 µm) and a greyish lilac pileus disc and furrows whereas *M. purpureostriatus* Hongo has a purple pileus disc and furrows. Also, none of these species has well-developed pleurocystidia (Desjardin and Horak, 1997).

Sect. *Hygrometrici* Kühner.

18. *Marasmius pseudocyphella* V. Antonín & B. Buyck, **sp. nov.** (Fig. 16)

Pileo usque 1 mm lato, convexo vel subhemisphaerico, sulcato, albo. *Lamellis* distantibus, L = 4–6(–7), albidis. *Stipite* usque 1 × 0,2 mm, laterale, tomentosum, albo. *Basidiosporis* (7–)7,5–9 × 4,5–5,5 µm, ellipsoidis, hyalinis. *Basidiis* tetrasporis. *Cheilocystidiis* e cellulis typo Marasmii rotalis similibus. *Pleurocystidiis* absentibus. *Pileipellis* hymeniformis, e cellulis similibus cellulis hymenidermatis Marasmii rotalis, 28–36 × 12–26 µm, clavatis,

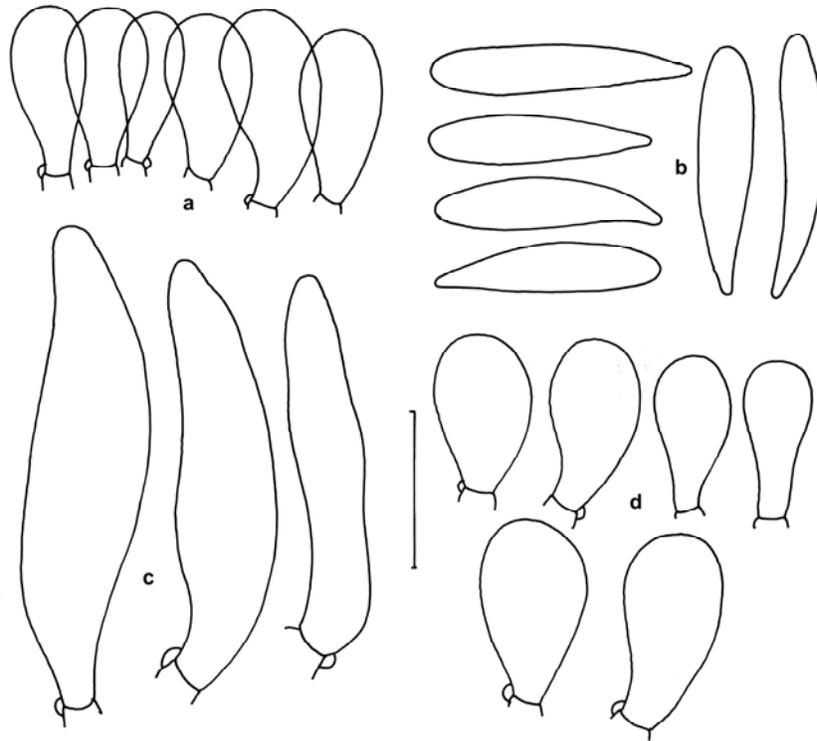


Fig. 15. *Marasmius sulcatipes*: a) pileipellis cells, b) basidiospores, c) pleurocystidia, d) cheilocystidia. Scale bar = 20 μ m.

subvesiculosus vel pyriformibus. *Caulocystidiis* absentibus. *Hyphis* fibulatis, in stipite nondextrinoideis. Ad ramulos putridos.

Holotypus: Madagascar, Andasibe, 21. II. 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.644 (holotypus hic designatus, in herbario PC asservatur).

Carpophore entirely white or milky white. *Pileus* up to 1 mm broad, convex to almost hemispherical, sulcate, distinctly pubescent. *Lamellae* distant, $L = 4-6(-7)$, $l = 0$, broadly adnate, sometimes (old specimens) seem to be almost collariate, with a concolorous, pubescent edge. *Stipe* lateral, up to 1×0.2 mm, curved, tomentose, whitish or pileus seems to be laterally inserted. (Description according to dry specimens.)

Basidiospores (7) $7.5-9 \times 4.5-5.5 \mu$ m, $E = 1.5-1.7$, $Q = 1.6$, (broadly) ellipsoid, thin-walled, hyaline, non-dextrinoid. *Basidia* $17-19 \times 7-8 \mu$ m, 4-spored, clavate. *Basidioles* up to $19 \times 3-9 \mu$ m, clavate, cylindrical.

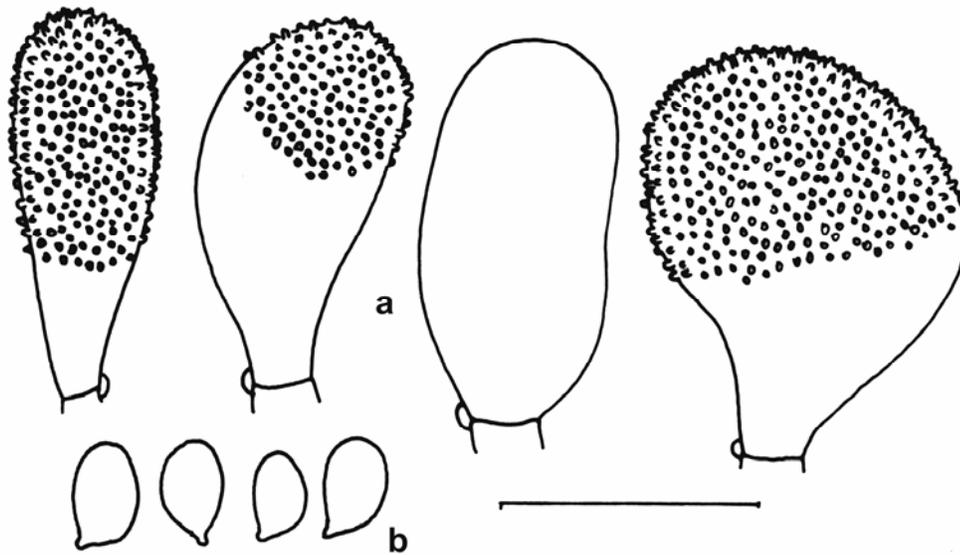


Fig. 16. *Marasmius pseudocyphella*: a) pileipellis cells, b) basidiospores. Scale bar = 20 μm .

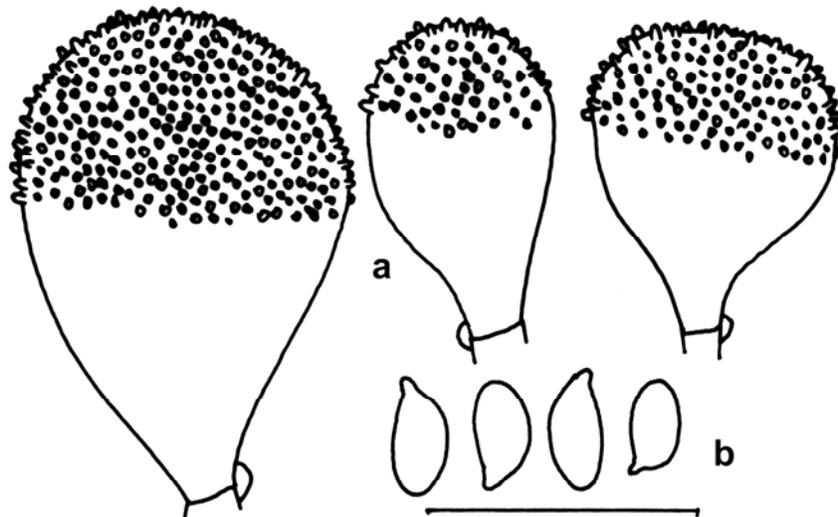


Fig. 17. *Marasmius unilamellatus*: a) pileipellis cells, b) basidiospores. Scale bar = 20 μm .

Cheilocystidia similar to pileipellis broom-cells. *Pleurocystidia* not found. *Subhymenium* of short, fusoid to ellipsoid, thin-walled, up to 15 μm wide hyphae. *Trama* hyphae of short, cylindrical to fusoid, thin-walled, non-dextrinoid, slightly gelatinised cells. *Pileipellis* a hymeniderm consisting of

broom-cells of the Rotalis-type, $28\text{--}36 \times 12\text{--}26 \mu\text{m}$, broadly clavate, pyriform, subvesiculose, thin-walled with numerous warty projections; mixed with scattered smooth cells. *Stipitipellis* a cutis composed of cylindrical, parallel, \pm thin-walled, up to $7 \mu\text{m}$ wide hyphae; some superficial hyphae diverticulate. *Caulocystidia* absent. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Andasibe, in moist road side bush, 21 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.644 (PC; **holotype**).

Notes: This species is characterised in the (milky) white coloured carpophores with well-developed, very distant lamellae, very short lateral pileus, non-dextrinoid hyphae, cheilocystidia and pileipellis cells in the form of broom-cells of the Rotalis-type and rather broad, moderately large basidiospores. Although neither a slide nor a macroscopic description are available, it undoubtedly represents a new species.

Macroscopically similar *Marasmius patellula* Corner has no lamellae (or only 1–2 wrinkles near the stipe), narrower, pip-shaped basidiospores ($8\text{--}10 \times 4\text{--}4.5 \mu\text{m}$) and no hymenial cystidia (Corner, 1996). Also *M. cyphella* Dennis & Reid has no or only wrinkled lamellae and smaller basidiospores measuring $7\text{--}8 \times 3.5\text{--}4.5 \mu\text{m}$ (Dennis, 1958; Corner, 1996). *Marasmius spaniophyllus* Berk. has a dark brown, up to 14 mm broad pileus (Dennis, 1970). A small, white coloured pileus is also a feature of *M. dicandinus* Desjardin, Retnowati & E. Horak from Indonesia. The latter differs, however, by having a dark spot in the pileus center, more numerous lamellae ($L = 10\text{--}11$), a distinctly larger stipe ($7\text{--}24 \times 0.1 \text{mm}$), and lacks cheilocystidia (Desjardin *et al.*, 2000).

19. *Marasmius unilamellatus* Desjardin & E. Horak, *Bibl. Mycol.* 168: 111 (1997). (Fig. 17)

Carpophore white. *Pileus* up to 1 mm broad, convex, mostly dorsally to laterally attached, tomentose, sometimes sulcate at margin. *Lamellae* very distant, $L = (0\text{--})1(-3)$, $l = 0$, adnate at point of attachment, sometimes venose or absent. *Stipe* absent or less frequently very short, up to $0.5 \times 0.2 \text{mm}$, lateral, insititious, tomentose, white. (Description according to dry specimens.)

Basidiospores $(7\text{--})8\text{--}10 \times 4\text{--}5 \mu\text{m}$, $E = 1.7\text{--}2.3$, $Q = 2.0$, (sub)fusoid, fusoid-ellipsoid, thin-walled, hyaline, non-dextrinoid. *Basidia* e.g. $25 \times 9.5 \mu\text{m}$, 4-spored, clavate. *Basidioles* $15\text{--}30 \times$ up to $9 \mu\text{m}$, clavate, cylindrical, fusoid. *Cheilocystidia* similar to pileipellis broom-cells. *Pleurocystidia* not found. *Trama* hyphae cylindrical to subinflated, thin-walled, non-dextrinoid, smooth or mostly incrustated, up to $10 \mu\text{m}$ wide. *Pileipellis* a hymeniderm consisting of broom-cells of the Rotalis-type, $18\text{--}27(-45) \times 12\text{--}20(-27) \mu\text{m}$, broadly clavate, pyriform, subvesiculose, thin-walled, with numerous warty projections. *Clamp connections* present in all tissues.

Material examined: MADAGASCAR, Andasibe, in moist road side bush, on leaves of *Pandanus*, 21 February 1997 leg. B. Buyck, G. Eyssartier and P.-A. Moreau, Buyck 97.671 (PC).

Notes: *Marasmius unilamellatus* is characterised by having very small white carpophores with mostly 1 lamella, less frequently 0 or 3 lamellae, an absent or very short lateral stipe, moderately large basidiospores, a pileipellis consisting of broom cells of the Rotalis-type, and the same type of cheilocystidia. It seems, if pileus is attached laterally, there is only one lamella developed, in case of a dorsal attachment, three lamellae are developed. *Marasmius unilamellatus* was described from New Zealand. Its original description (Desjardin and Horak, 1997) differs from the Madagascar collection by slightly larger basidiospores of $9\text{--}12.5 \times 4.5\text{--}5 \mu\text{m}$ and larger pileipellis cells measuring $(15\text{--})20\text{--}40 \times 12\text{--}30 \mu\text{m}$, although all sizes of the Madagascan collection fit in the range mentioned in the original description.

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