

Two new species of *Marasmiellus* from eastern Honshu, Japan

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Two new species of *Marasmiellus* are described from eastern Honshu, Japan: *Marasmiellus atrostipitatus* sp. nov. (section *Rameales* subsection *Opacini*) is characterized by a white pileus and a blackish stipe covered with white pruinose to flocculose scales. *Marasmiellus brunneocarpus* sp. nov. (section *Tricolores*) has small brownish basidiomata. Both species occur on dead leaves and twigs in *Quercus-Eurya* forests.

Key Words—Agaricales; *Marasmiellus atrostipitatus*; *Marasmiellus brunneocarpus*; new species.

This paper reports two new species belonging to *Marasmiellus* which occur in the lowland forests of eastern Honshu, Japan. These species are described and illustrated with photographs showing macromorphological features. Color notations in parentheses are taken from Kornerup and Wanscher (1978). Specimens cited are preserved in Kanagawa Prefectural Museum of Natural History, Japan (KPM).

Species descriptions

Marasmiellus atrostipitatus Har. Takahashi, sp. nov.

Figs. 1, 2

Pileo 4–12 mm lato, primo hemisphaerico, dein plano-convexo, striato-sulcato, glabro vel subtomentoso, albo; odore alliaceo; sapore nullo; stipite 6–18 × 0.2–1 mm, subaequali vel deorsum leviter attenuato, centrali vel parum excentrico, cavo, ad basim nigro, superne pallide brunneo et pruinoso, inferne flocculoso; mycelio basali non affixo; lamellis adnexis, distantibus, albis, margine fimbriatis; basidiosporis 7–9 × 3.5–4.5 μm, oblongo-ellipsoideis, levibus, hyalinis, inamyloideis; basidiis 22–29 × 5–8 μm, tetrasporis; cheilocystidiis 19–55 × 8–15 μm, abundantibus, clavatis vel irregulariter clavatis, diverticulatis; pleurocystidiis nullis; pileipelle ex hyphis repentibus cylindricis vix vel non inflatis 2–11 μm latis hyalinis tenuiparietalibus cum diverticulis copiosis verruciformibus vel digitiformibus instructibus constanti; caulocystidiis clavatis vel subcylindraceis, levibus vel diverticulatis, crassitunicatis; hyphis fibulatis.

Holotypus: In ramulis arboris delapsis et ad foliam emortuam arboris frondosae in silva, Yamato-shi, Kanagawa-ken, Japonia, 24 Jul. 1998, H. Takahashi (KPM-NC-0005075).

Etymology: *atrostipitatus*, referring to the blackish stipe.

Pileus 4–12 mm in diam, at first hemispherical with involute margin, then plano-convex, often with slightly

depressed center, at first smooth but soon radially sulcate-striate almost to the disk, glabrous or slightly tomentose under lens, pure white, often with undulating marginal zone. Flesh very thin (up to 0.5 mm), white; odor alliaceous in age; taste none. Stipe 6–18 × 0.2–1 mm, almost equal, slightly tapering toward the base, central or somewhat eccentric, slender, terete, hollow, pale brownish above, blackish brown to almost black below, white pruinose in upper part, becoming flocculose toward the insititious base. Lamellae adnexed, distant (10–15 reach the stipe), somewhat broad (up to 1.5 mm broad), thin, white; edges fimbriate, concolorous.

Spore print pure white. Basidiospores 7–9 × 3.5–4.5 μm [Q=length/breadth: 2], ellipsoid to oblong, smooth, colorless, inamyloid, thin-walled. Basidia 22–29 × 5–8 μm, clavate, four-spored. Basidioles subclavate to fusiform. Cheilocystidia 19–55 × 8–15 μm, abundant, clavate to irregularly clavate, often with a variable number of digitate, 2–12 μm long projections, colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama subregular to irregular; element hyphae similar to those of the pileitrama. Pileipellis a cutis with well-developed Rameales-structure; constituent hyphae 2–11 μm wide, parallel, cylindric, inflated or not, with abundant warty or finger-like protuberances, colorless, thin-walled, without clamped septa. Hyphae of pileitrama 3–17 μm wide, subparallel, cylindric, often inflated, walls thin, smooth, colorless, inamyloid, without clamped septa. Stipitipellis a cutis of parallel, repent hyphae 2.5–6 μm wide, cylindric, often encrusted with granules of brown pigment, with inamyloid, brown walls up to 1 μm thick, without clamped septa; caulocystidia 15–28 × 5–15 μm, abundant, clavate to subcylindric, smooth or with a few broad, irregular to knob-like diverticula 5–12 × 3–8 μm, colorless or brown, inamyloid, slightly thick-walled (up to 1 μm thick). Stipe trama composed of longitudinally running, cylindric hyphae 4–9 μm wide, unbranched, smooth, colorless or light brown, in-

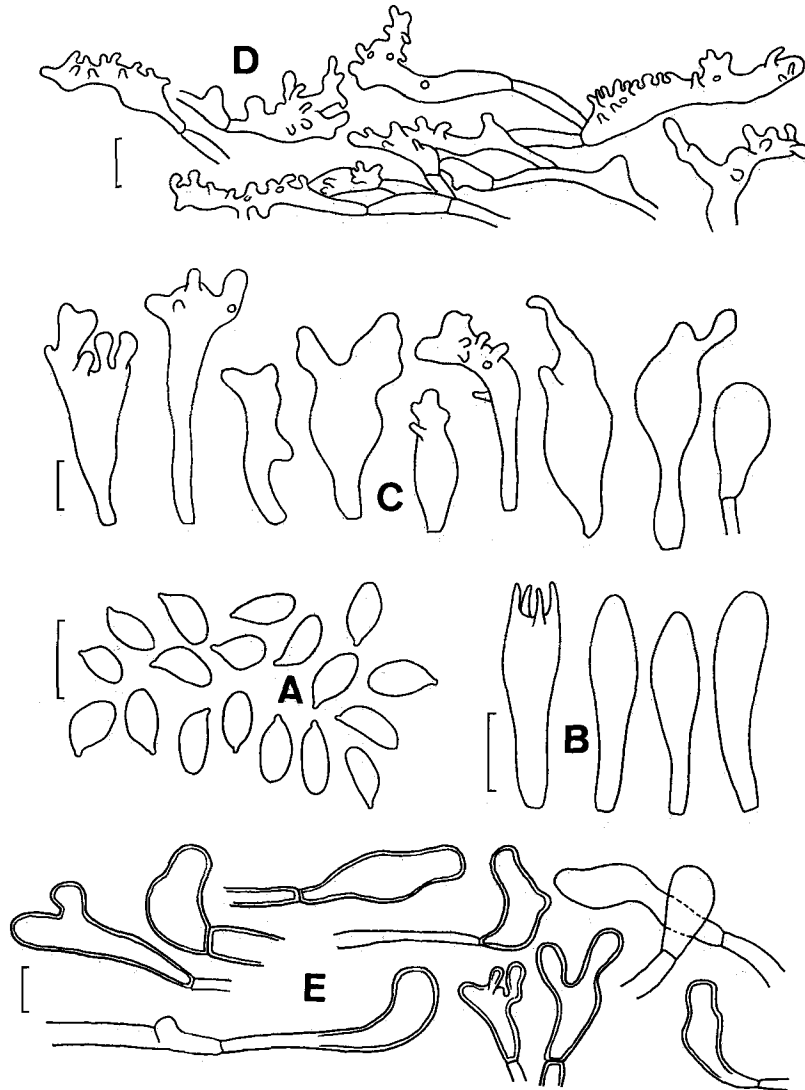


Fig. 1. *Marasmiellus atrostopitatus*.

A. Basidiospores. B. Basidium and basidioles. C. Cheilocystidia.

D. Elements of the pileipellis. E. Caulocystidia. Scales: 10 μm . All figures from the holotype.

amyloid, slightly thick-walled (up to 1 μm thick), occasionally with clamped septa.

Known distribution: Japan (Kanagawa).

Habitat: Solitary to caespitose, on dead leaves and twigs in lowland forests dominated by *Quercus myrsinaefolia* Blume and *Eurya japonica* Thunb., from June to September, not common.

Holotype: KPM-NC-0005075, on dead leaves and twigs under broad-leaved trees, Yamato-shi, Kanagawa-ken, 24 Jul. 1998.

Other specimens examined: on dead leaves and twigs under broad-leaved trees, Yamato-shi, Kanagawa-ken, 4 Jul. 1999; *ibid.* 12 Jul. 1999

Japanese name: Shimofuri-ashigurotake.

Notes: This species is characterized by its pure white pileus, the conspicuously white pruinose to flocculose, blackish stipe, basidiospores less than 10 μm long, clavate cheilocystidia with a few finger-like projections, and

the pileipellis with a distinct Rameales-structure. The combination of these features suggests that this species belongs in the section *Rameales* (J. Lange) Singer, subsection *Opacini* Singer (Singer, 1973, 1986). Within the section *Rameales*, the closest related species is *Marasmiellus stypinoides* (Petch) Pegler (Pegler, 1986) from Sri Lanka, which differs in having an umbilicate pileus, a nigrescent (at first white) stipe, and absence of garlic odor. *Marasmiellus nigripes* (Schwein.) Singer, the type species of the section *Nigripedes* Singer, has superficial resemblance to *M. atrostopitatus*, but it can be readily differentiated because of its stellate-cruciform basidiospores. European *Marasmiellus trabutii* (R. Maire) Singer (Antonín and Noordeloos, 1993), which belongs in the section *Tricolores* Singer, is also similar in appearance but differs in having adnate to subdecurrent lamellae, much longer basidiospores (12.5–17.5 μm : Antonín and Noordeloos, 1993), and irregularly cylindrical

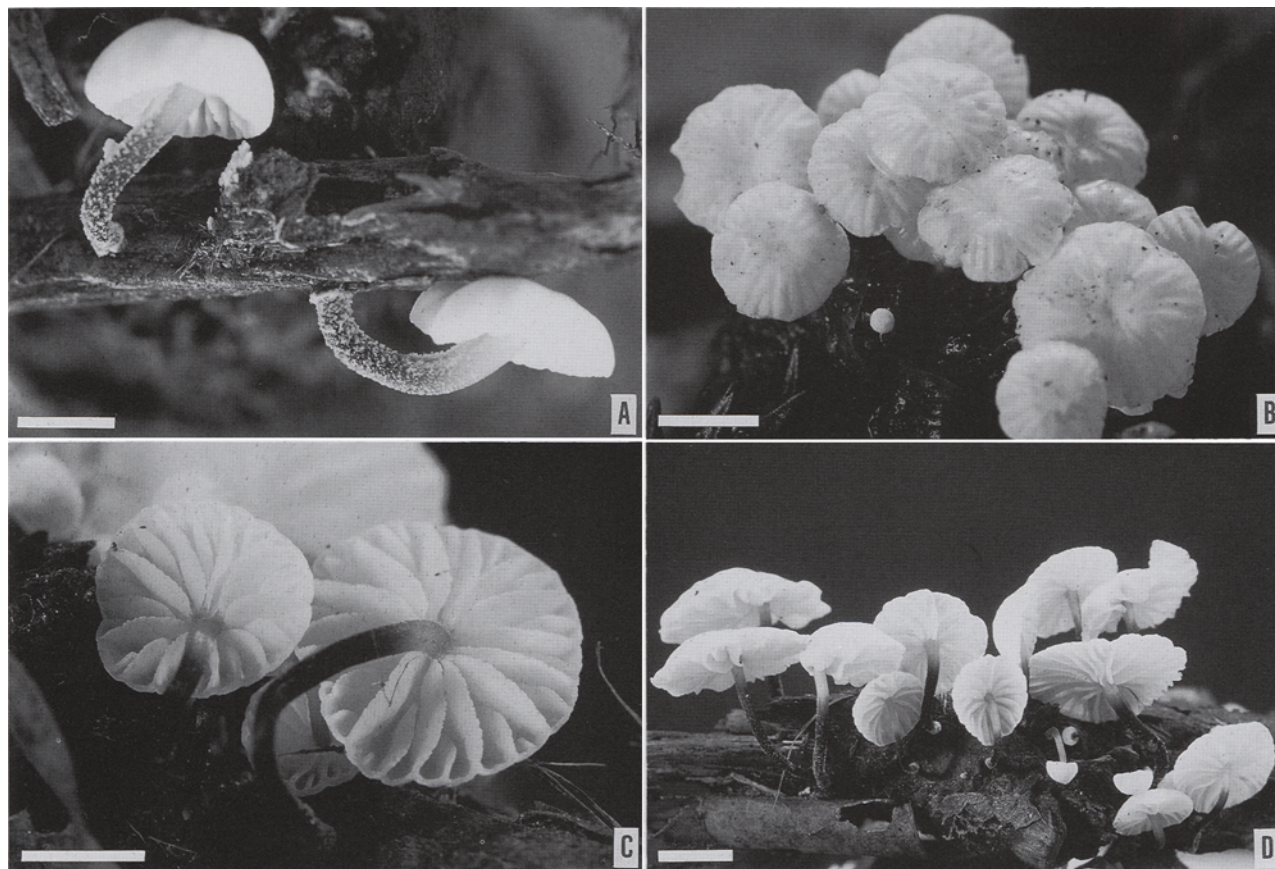


Fig. 2. Basidiomata of *Marasmiellus atrostipitatus*.
Scales: 5 mm. All figures from the holotype.

cheilocystidia and caulocystidia.

Marasmiellus brunneocarpus Har. Takahashi, sp. nov.

Figs. 3,4

Pileo 4–8 mm lato, primo hemisphaerico, dein convexo, mox applanato et centro depresso, striato-sulcato, fibrilloso vel tomentososo, rubro-brunneo vel brunneo; odore saporeque nullo; stipite 8–12 × 0.3–1 mm, subaequali vel ad basim leviter incrassato, centrali vel parum excentrico, cavo, ad basim brunneo, pruinoso vel flocculoso; mycelio basali non affixo; lamellis adnatis, distantibus, albis, margine fimbriatis; basidiosporis 9–12.5 × 2.5–3 μm, subcylindraceis, levibus, hyalinis, inamyloideis; basidiis 28–36 × 4.5–6 μm, bisporis; cheilocystidiis 27–55 × 12–18 μm, abundantibus, clavatis vel subglobose, diverticulatis; pleurocystidiis nullis; pileipelle ex hyphis repentibus cylindricis vix vel non inflatis 2.5–10 μm latis hyalinis tenuiparietalibus cum diverticulis copiosis verruciformibus vel digitiformibus instructibus constanti; hyphis fibulatis.

Holotypus: In ramulis arboris delapsis et ad foliam emortuam arboris frondosae in silva, Yamato-shi, Kanagawa-ken, Japonia, 15 Jun. 1998, H. Takahashi (KPM-NC-0005076).

Etymology: *brunneocarpus*, referring to the brownish basidiomata.

Pileo 4–8 mm in diam, at first hemispherical with involute margin, then convex, finally applanate with slightly depressed center, at first smooth but soon radially grooved, minutely appressed fibrillose to felted-tomentose, reddish brown (8E6–8E7) to brown (7E6–7E7), paler toward the crenulate margin. Flesh very thin (up to 0.5 mm), white; odor and taste not distinctive. Stipe 8–12 × 0.3–1 mm, almost equal but sometimes subbulbous or slightly swollen at the base, central or somewhat eccentric, slender, terete, hollow, deep concolorous with the pileus, paler toward the apex, white pruinose to flocculose overall; base insititious. Lamellae adnexed, distant (15–18 reach the stipe), narrow (up to 1.2 mm broad), thin, white; edges fimbriate, concolorous.

Spore print pure white. Basidiospores 9–12.5 × 2.5–3 μm [Q=length/breadth: 3.8], subcylindric, smooth, colorless, inamyloid, thin-walled. Basidia 28–36 × 4.5–6 μm, clavate, two-spored. Basidioles clavate to subclavate. Cheilocystidia 27–55 × 12–18 μm, abundant, clavate to subglobose, with numerous, up to 10 × 3 μm, finger-like or coralloid protuberances in upper part, colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama subregular to irregular; element hyphae similar to those of the pileitrama. Pileipellis a cutis with strongly developed Rameales-structure; con-

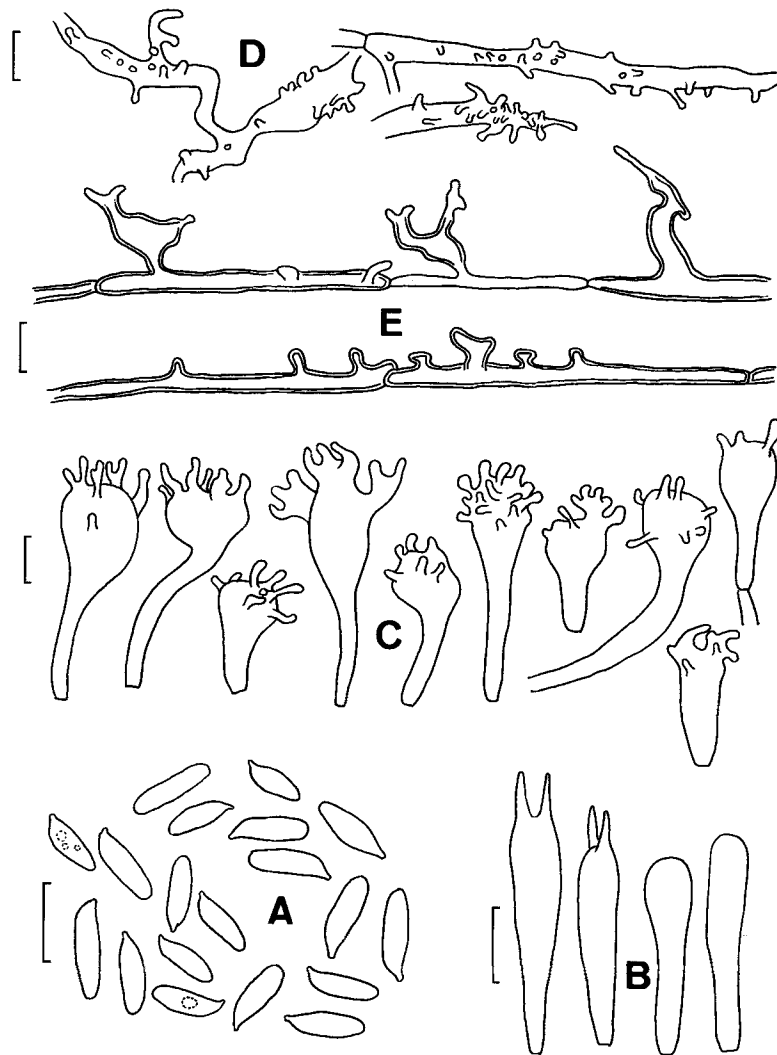


Fig. 3. *Marasmiellus brunneocarpus*.

A. Basidiospores. B. Basidia and basidioles. C. Cheilocystidia. D. Elements of the pileipellis. E. Elements of stipeipellis. Scales: 10 μm . All figures from the holotype.

stituent hyphae 2.5–10 μm wide, interwoven, cylindrical, somewhat inflated, with abundant warty or finger-like protuberances, with granules of brown pigment among the hyphae, thin-walled. Hyphae of pileitrama 3–13 μm wide, subparallel, cylindrical, somewhat inflated, walls thin, smooth, colorless, inamyloid. Stipeipellis a cutis of parallel, repent hyphae 2.5–7 μm wide, cylindrical, diverticulate, with smooth, inamyloid, brown walls up to 1 μm thick. Stipe trama composed of longitudinally running, cylindrical hyphae 4–8 μm wide, unbranched, with smooth, inamyloid, colorless or light brown walls up to 1.5 μm thick. Clamps present in all tissues.

Known distribution: Japan (Kanagawa).

Habitat: Solitary to caespitose, on dead leaves and twigs in lowland forests dominated by *Quercus myrsinaefolia* Blume and *Eurya japonica* Thunb., from June to September, not common.

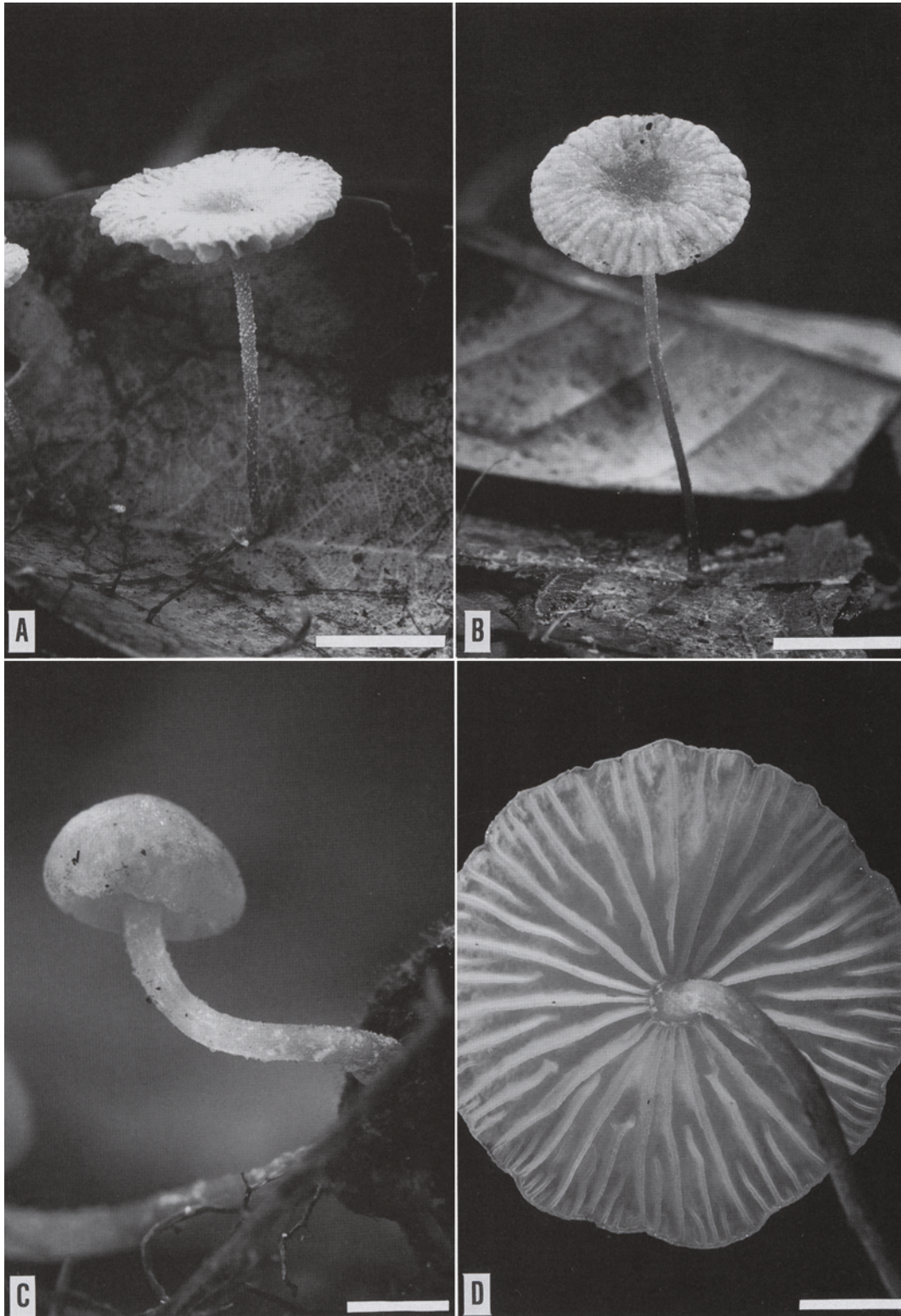
Holotype: KPM-NC-0005076, on dead leaves and twigs under broad-leaved trees, Yamato-shi, Kanagawa-

ken, 15 Jun. 1998.

Other specimens examined: on dead leaves and twigs under broad-leaved trees, Yamato-shi, Kanagawa-ken, 28 Sept. 1998; *ibid.* 12 Jul. 1999.

Japanese name: Futatsumi-karebatake.

Notes: The collybioid basidiomata, the more than 10 μm long basidiospores, and the pileipellis with a distinct Rameales-structure suggest placement of this species in the section *Tricolores* Singer (Singer, 1973, 1986). Within the section, *M. brunneocarpus* is closely allied with North American *Marasmiellus pluvinus* Redhead (Desjardin, 1987; Redhead, 1982). The latter species, however, differs in having four-spored basidia, thick-walled, clavate to vesiculose pileipellis elements with apical diverticulae, and habitat on senescent leaves of conifers. *Marasmiellus ramealis* (Bull.: Fr.) Singer var. *macrosporus* (Courtec.) Antonín & Noordel. (Antonín and Noordeloos, 1993; Courtecuisse, 1986) from France, which belongs to the subsection *Ramealini* Singer of the



Figs. 4. Basidiomata of *Marasmiellus brunneocarpus*.

A, B. Mature basidioma. C. Immature basidioma. D. Underside view. Scales: A, B=4 mm; C=2 mm; D=2 mm. All figures from the holotype.

section *Rameales* (J.Lange) Singer, also has two-spored basidia and similar cheilocystida. This species differs from *M. brunneocarpus* in forming cream-pinkish to pale ochraceous basidiomata with subdecurrent lamellae, and much larger basidiospores ($10\text{--}16.5 \times 3\text{--}5 \mu\text{m}$: Antonín and Noordeloos, 1993).

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