

Haruki Takahashi

## Eight new species of the genus *Mycena* from central Honshu, Japan

Received: January 18, 2006 / Accepted: June 15, 2007

**Abstract** Eight new species of the genus *Mycena* (Agaricales) found on dead leaves or twigs in warm temperate lowland forests are described and illustrated from central Honshu, Japan: (1) *Mycena fonticola* sp. nov. (section *Fragilipedes*); (2) *Mycena intersecta* sp. nov. (section *Fragilipedes*); (3) *Mycena lanuginosa* sp. nov. (section *Fragilipedes*); (4) *Mycena mustea* sp. nov. (section *Fragilipedes*); (5) *Mycena multiplicata* sp. nov. (section *Mycena*); (6) *Mycena nidificata* sp. nov. (section *Hiemales*); (7) *Mycena fuscoaurantiaca* sp. nov. (section *Fragilipedes*); and (8) *Mycena clariviolacea* sp. nov. (section *Fragilipedes*).

**Key words** Agaricales · *Mycena* · New species · Taxonomy

### Introduction

This article reports eight new species of the genus *Mycena* that occur in the warm temperate lowland forests of central Honshu, Japan (Kanagawa, Tokyo). These species are described and illustrated with photographs showing macro-morphological features. Color notations in parentheses are taken from Kornerup and Wanscher (1978). Specimens cited are preserved in the Kanagawa Prefectural Museum of Natural History, Japan (KPM).

### Taxonomy

#### 1. *Mycena fonticola* Har. Takah., sp. nov. Figs. 1, 2

Pileo 10–25 mm lato, conico-convexo vel campanulato, sulcato-striato, subhygrophano, glabro, violaceo-brunneo; odore saporeque nullo; stipite 70–100 × 1–2.5 mm, subae-

quali vel ad basim leviter incrassato, cavo, violaceo-brunneo, primo pruinoso, dein glabro; mycelio basali albo strigoso; lamellis adnexis, albis; basidiosporis 11.5–14 × 6–8 μm, ellipsoideis, levibus, hyalinis, amyloideis; basidiis 17–28 × 6–8 μm, tetrasporis; cheilocystidiis 32–39 × 5–12 μm, numerosis, fusiformibus; pleurocystidiis nullis; hyphis defibulatis.

Holotypus: Ad folia dejecta in *quercetis*, Izumino-mori, Yamato-shi, Kanagawa-ken, Japonia, 21 Nov. 2000, H. Takahashi (KPM-NC0007439).

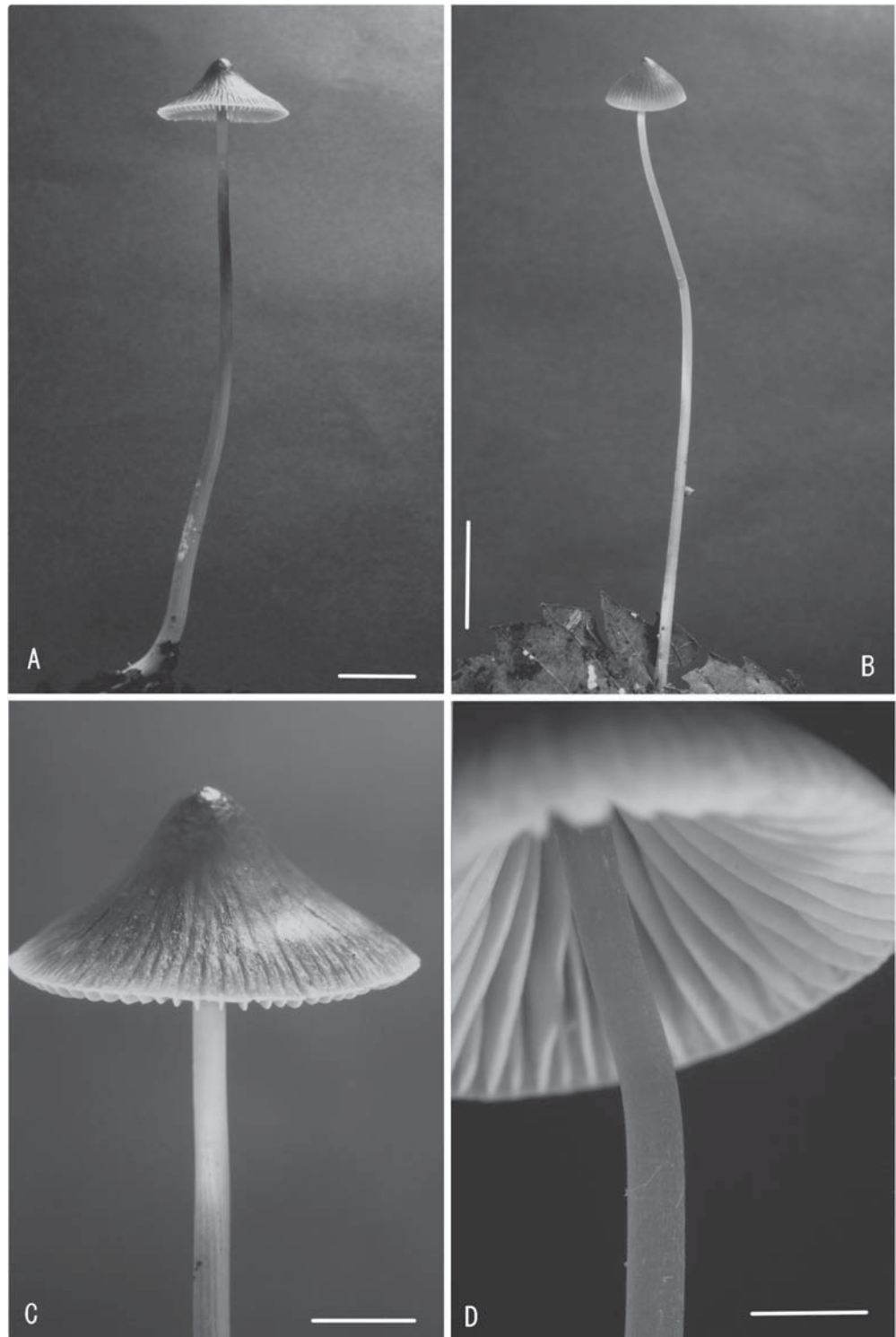
Etymology: From Latin, *fonticola* = dweller in fountain.

Pileus 10–25 mm in diameter, conico-convex to campanulate, more or less shallowly sulcate-striate almost to the disc, subhygrophanous, dry, glabrous, evenly colored violet-brown (10F5-7 to 11F5-7) when young, then somewhat paler from the margin. Flesh up to 1 mm, white; odor and taste not distinctive. Stipe 70–100 × 1–2.5 mm, cylindrical, slightly enlarged at the base, central, slender, terete, hollow, dry, greyish-brown (10F3) to violet-brown (10F4) at the apex, violet-brown (10F4-6) downward, at first entirely white pruinose, glabrescent in age; base white strigose. Lamellae adnexed, 23–27 reach the stipe, up to 2.5 mm broad, thin, whitish or with a grayish hue; edges concolorous.

Basidiospores ( $n = 61$  spores of 5 basidiocarps) 11.5–14 × 6–8 μm,  $Q$  (length/breadth) = 1.7–1.9, ellipsoid, smooth, colorless, distinctly amyloid, thin-walled. Basidia 17–28 × 6–8 μm, clavate, four-spored. Basidioles clavate. Cheilocystidia 32–39 × 5–12 μm, abundant, forming a sterile lamella edge, fusiform to subclavate, often apically broadly rounded, smooth, colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama regular; element hyphae 7–15 μm wide, cylindrical, walls thin, smooth, colorless, dextrinoid. Pileipellis a cutis of parallel, repent hyphae 2–5 μm wide, cylindrical, densely covered with warty or finger-like diverticulae, walls thin, colorless or with cytoplasmic brownish pigment, inamyloid; underlying hyphae parallel, colorless or with cytoplasmic brownish pigment, dextrinoid, with short and inflated cells up to 30 μm wide. Stipitipellis a cutis of parallel, repent hyphae 3–5 μm wide, cylindrical, covered with scattered, warty or finger-like diverticulae, colorless or with

H. Takahashi (✉)  
284-1 Ouhama, Ishigaki, Okinawa 907-0001, Japan  
Tel. +81-80-3954-1253  
e-mail: auricoma-mycology@memoad.jp

**Fig. 1.** Basidiomata of *Mycena fonticola*. (All figures from the holotype.) Bars **A** 10mm; **B** 20mm; **C** 3mm; **D** 2mm



cytoplasmic brownish pigment, inamyloid, thin-walled. Stipe trama composed of longitudinally running, cylindrical hyphae 5–17  $\mu\text{m}$  wide, smooth, colorless, dextrinoid. Clamp connections absent in all tissues.

Known distribution: Japan (Kanagawa).

Habitat: Solitary or scattered, on dead leaves and twigs in lowland forests dominated by *Quercus myrsinaefolia* Blume and *Q. serrata* Thunb. ex Murray.

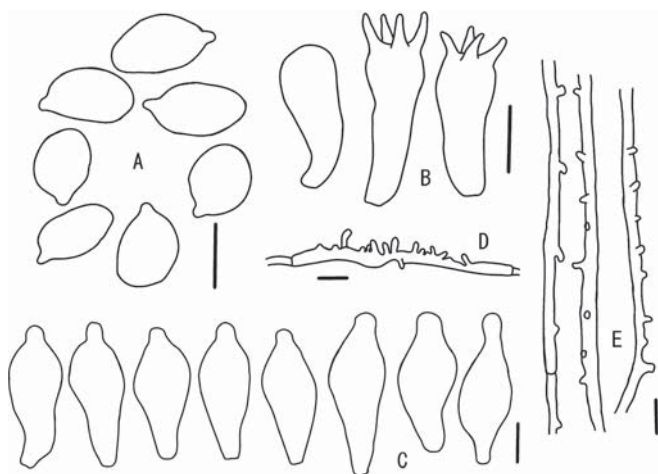
Specimens examined: KPM-NC0007439 (holotype), Izumino-mori, Yamato-shi, Kanagawa Pref., 21 Nov. 2000, coll. H. Takahashi; same place, 25 Nov. 1999 coll. H. Takahashi; same place, 27 Nov. 1999, coll. H. Takahashi; same place, 16 Nov. 2000, coll. H. Takahashi.

Japanese name: Izumino-ashinagatake.

**Notes.** This species is characterized by its glabrous, violet-brown pileus and stipe, the relatively large, distinctly

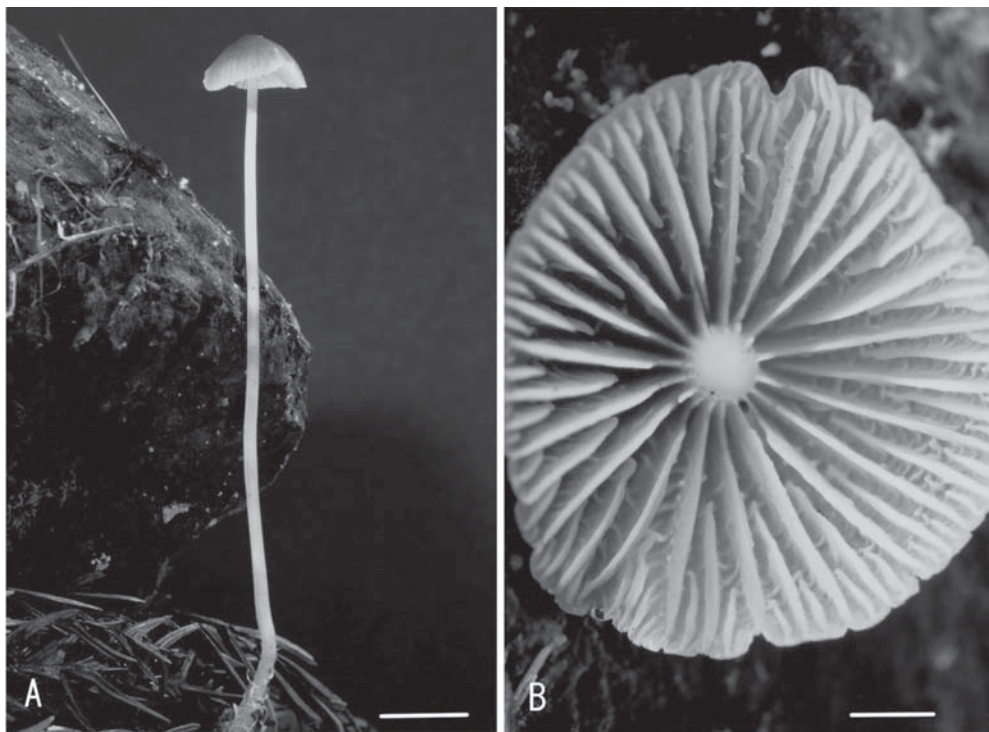
amyloid basidiospores, the smooth, fusiform cheilocystidia, the absence of pleurocystidia, the diverticulate pileipellis elements, and the absence of clamp connections. These features suggest that this species belongs in the section *Fragilipedes* (Fr.) Quél., as defined by Maas Geesteranus (Maas Geesteranus 1980, 1988a).

*Mycena mustea* Har. Takah., described in this article (see following), is most similar to *M. fonticola*, but differs in forming a pale grayish purple pileus with low and broad umbo, clavate cheilocystidia apically with several short digitate excrescences, and nondiverticulate elements in the stipitipellis.



**Fig. 2.** *Mycena fonticola*. **A** Basidiospores. **B** Basidia and basidiole. **C** Cheilocystidia. **D** Element of the pileipellis. **E** Elements of the stipitipellis. (All figures from the holotype.) Bars 10  $\mu$ m

**Fig. 3.** Basidiomata of *Mycena intersecta*. (All figures from the holotype.) Bars **A** 6 mm; **B** 1 mm



**2. *Mycena intersecta* Har. Takah., sp. nov.** Figs. 3, 4

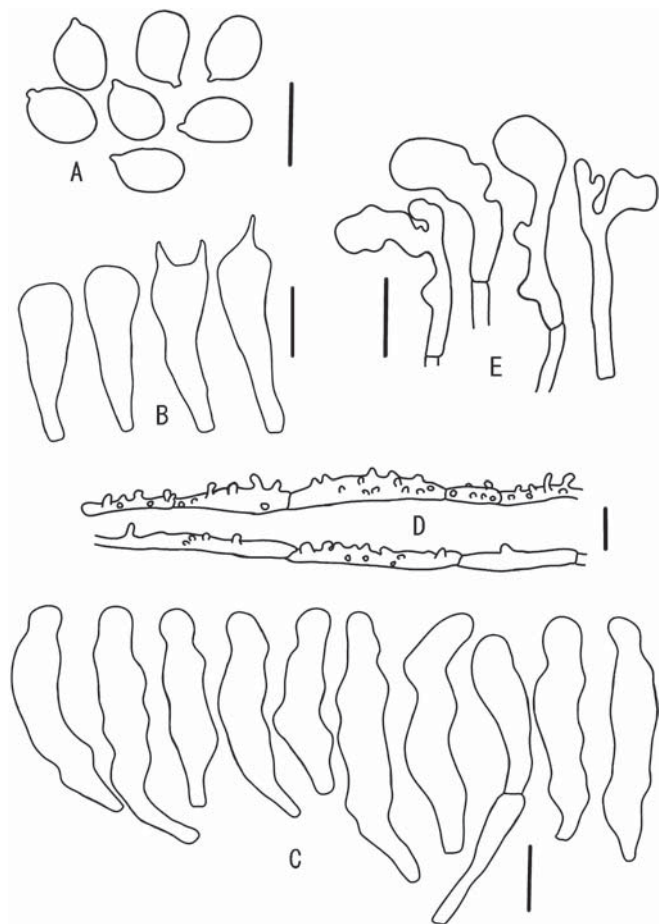
Pileus 8–12 mm lato, conico-convexo vel campanulato, subhygrophano, primo pruinoso, dein glabro, olivaceo-brunneo; odore saporeque nullo; stipite 50–80  $\times$  0.7–1.2 mm, subaequali, cavo, olivaceo-brunneo, primo pruinoso, dein glabro; mycelio basali albo strigoso; lamellis adnatis vel subdecurrentibus, distantibus, intervenosis, albis; basidiosporis 7.5–8.5  $\times$  5–6  $\mu$ m, breviter ellipsoideis, levibus, hyalinis, inamyloideis vel amyloideis; basidiis 22–31  $\times$  5.5–7  $\mu$ m, bisporis; cheilocystidiis 27–40  $\times$  3–6  $\mu$ m, numerosis, irregulariter cylindraceis vel strangulatis; pleurocystidiis nullis; caulocystidiis 13–29  $\times$  3–7  $\mu$ m, clavatis; hyphis defibulatis.

Holotypus: Ad folia dejecta in *quercetis*, Izumino-mori, Yamato-shi, Kanagawa-ken, Japonia, 25 Nov. 1999, H. Takahashi (KPM-NC0008728).

Etymology: From Latin, *intersecta* = intersected, referring to the intervenose lamellae.

Pileus 8–12 mm in diameter, conico-convex to campanulate, faintly translucent-striate when moist, subhygrophanous, dry, minutely white pruinose at first, soon glabrescent, at first olive-brown (4E5-8) to yellowish-brown (5E5-7) overall, then somewhat paler from the margin. Flesh up to 0.7 mm, white; odor and taste not distinctive. Stipe 50–80  $\times$  0.7–1.2 mm, cylindrical, slender, terete, hollow, dry, pale olive-brown (4E3-4) at the apex, olive-brown (4E4-6) downward, at first entirely white pruinose, glabrescent in age; base white strigose. Lamellae adnate to subdecurrent, distant (16–19 reach the stipe), up to 1.5 mm broad, thin, somewhat intervenose, whitish; edges concolorous.

Basidiospores ( $n = 73$  spores of 5 basidiocarps) 7.5–8.5  $\times$  5–6  $\mu$ m,  $Q$  (length/breadth) = 1.4–1.5, short ellipsoid, smooth, colorless, inamyloid to weakly amyloid, thin-walled.



**Fig. 4.** *Mycena intersecta*. **A** Basidiospores. **B** Basidia and basidioles. **C** Cheilocystidia. **D** Elements of the pileipellis. **E** Caulocystidia. (All figures from the holotype.) Bars 10  $\mu\text{m}$

Basidia 22–31  $\times$  5.5–7  $\mu\text{m}$ , clavate, mostly two-spored. Basidioles clavate. Cheilocystidia 27–40  $\times$  3–6  $\mu\text{m}$ , abundant, forming a sterile lamella edge, irregularly cylindrical to strangulated, smooth, colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama regular; element hyphae 5–18  $\mu\text{m}$  wide, cylindrical, walls thin, smooth, colorless, weakly dextrinoid. Pileipellis a cutis of parallel, repent hyphae 2–6  $\mu\text{m}$  wide, cylindrical, densely covered with warty or finger-like diverticulae, walls thin, colorless, inamyloid; underlying hyphae parallel, olive-brown, weakly dextrinoid, with short and inflated cells up to 22  $\mu\text{m}$  wide. Stipitipellis a cutis of parallel, repent hyphae 2–4  $\mu\text{m}$  wide, cylindrical, smooth to sparsely diverticulate, curving outward to form clavate or irregularly shaped caulocystidia, olive-brown, inamyloid, thin-walled; terminal cells (caulocystidia) 13–29  $\times$  3–7  $\mu\text{m}$ , broadly clavate to irregularly shaped, often with one to three knob-like excrescences, ascendant. Stipe trama composed of longitudinally running, cylindrical hyphae 5–12  $\mu\text{m}$  wide, smooth, colorless, weakly dextrinoid. Clamp connections absent in all tissues.

Known distribution: Japan (Kanagawa).

Habitat: Solitary or scattered, on dead leaves in lowland forests dominated by *Quercus myrsinaefolia* Blume and *Q. serrata* Thunb. ex Murray.

Specimens examined: KPM-NC0008728 (holotype), Izumino-mori, Yamato-shi, Kanagawa Pref., 25 Nov. 1999, coll. H. Takahashi; same place, 27 Nov. 1999, coll. H. Takahashi; same place, 21 Nov. 2000, coll. H. Takahashi.

Japanese name: Oriibu-ashinagatake.

**Notes.** The important combination of features delimiting this species is its glabrescent, olive-brown pileus and stipe, the somewhat intervenose lamellae, the smooth, irregularly cylindrical to strangulated cheilocystidia, the absence of pleurocystidia, the diverticulate pileipellis elements, the broadly clavate to irregularly shaped caulocystidia, the weakly dextrinoid trama, and the absence of clamp connections. These characteristics place this species in the section *Fragilipedes* (Fr.) Quél., as defined by Maas Geesteranus (Maas Geesteranus 1980, 1988a).

*Mycena viridimarginata* P. Karst., reported from Europe (Kühner 1938; Maas Geesteranus 1981, 1988c; Lisiewska 1987; Breitenbach and Kränzlin 1991; Courtecuisse and Duhem 1994; Moser and Jülich 1999; Robich 2003), seems to be closely allied to *M. intersecta*. The former species, however, differs in having greenish marginate lamellae, mucronate cheilocystidia, and clamp connections.

### 3. *Mycena lanuginosa* Har. Takah., sp. nov. Figs. 5, 6

Pileo 7–11 mm lato, conico-convexo vel campanulato, sulcato-striato, subhygrophano, primo pruinoso, dein glabro, griseo-brunneo vel violaceo-brunneo; odore saporeque nullo; stipite 30–60  $\times$  0.8–1.3 mm, subaequali, cavo, griseo-brunneo vel violaceo-brunneo, superne pruinoso, inferne piloso, mycelio basali albo affixo; lamellis adnexis, distantibus, albis; basidiosporis 10–12  $\times$  5.5–6.5  $\mu\text{m}$ , ellipsoideis, levibus, hyalinis, amyloideis; basidiis 35–42  $\times$  7–9  $\mu\text{m}$ , tetrasporis; cheilocystidiis 40–80  $\times$  5–15  $\mu\text{m}$ , numerosis, fusoides, saepe mucronatis; pleurocystidiis 63–102  $\times$  8–15  $\mu\text{m}$ , fusoides; hyphis fibulatis.

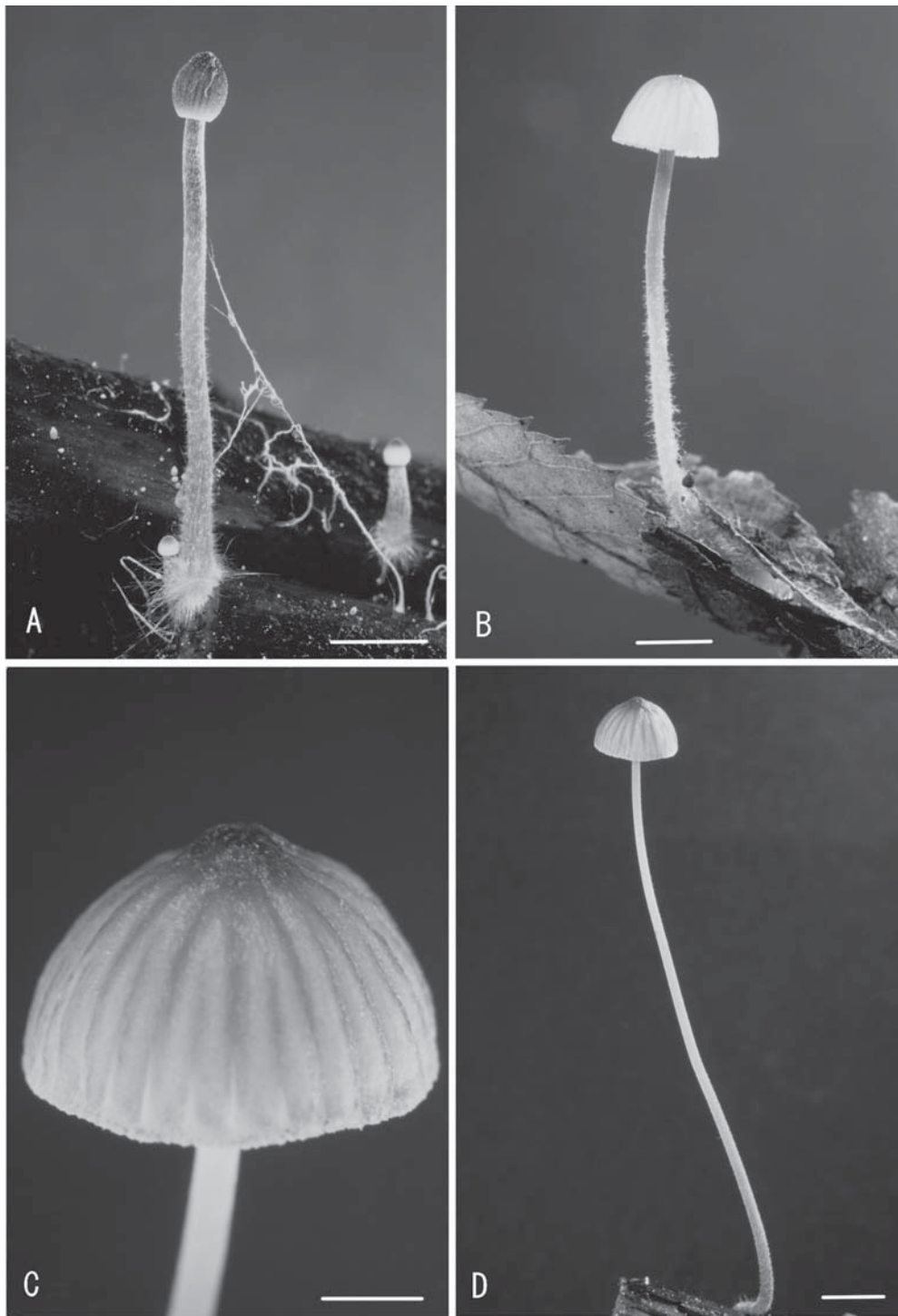
Holotypus: Ad folia dejecta in *quercetis*, Izumino-mori, Yamato-shi, Kanagawa Pref., Japonia, 27 Apr. 2000, H. Takahashi (KPM-NC0008702).

Etymology: From Latin, *lanuginosa* = lanugineous, referring to the pilose stipe.

Pileus 7–11 mm in diameter conico-convex to campanulate, distinctly radially sulcate-striate almost to the disc, subhygrophanous, dry, minutely white pruinose at first, soon becoming glabrous, dark brown (8F5-6 to 9F5-7) at the center, reddish-brown (8E4-7 to 9E4-7) farther outward, much paler again to almost whitish at the margin. Flesh up to 0.5 mm, white; odor and taste not distinctive. Stipe 30–60  $\times$  0.8–1.3 mm, cylindrical, central, slender, terete, hollow, dry, white pruinose above, pilose toward the base, greyish-brown (8E3) to reddish-brown (8E4) at the apex, reddish-brown (8E4-7) downward; base covered with long, fairly coarse, whitish fibrils. Lamellae adnexed, distant (12–18 reach the stipe), up to 1.5 mm broad, thin, whitish; edges concolorous.

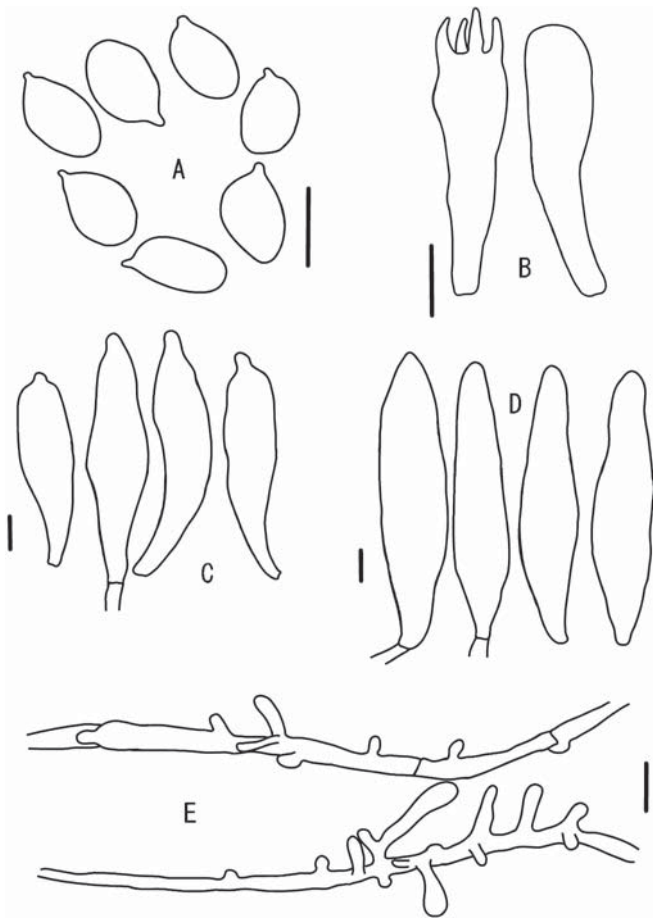
Basidiospores ( $n = 69$  spores of 6 basidiocarps) 10–12  $\times$  5.5–6.5  $\mu\text{m}$ ,  $Q$  (length/breadth) = 1.8, short ellipsoid to ellipsoid, smooth, colorless, amyloid, thin-walled. Basidia 35–42  $\times$  7–9  $\mu\text{m}$ , clavate, four-spored, with basal clamps. Basid-

**Fig. 5.** Basidiomata of *Mycena lanuginosa*. (All figures from the holotype.) Bars **A, B** 3 mm; **C** 2 mm; **D** 5 mm



ioles clavate. Cheilocystidia  $40\text{--}80 \times 5\text{--}15\mu\text{m}$ , abundant, forming a sterile lamella edge, fusiform, sometimes mucronate, smooth, colorless, thin-walled. Pleurocystidia  $63\text{--}102 \times 8\text{--}15\mu\text{m}$ , abundant, fusiform, smooth, colorless, thin-walled. Hymenophoral trama regular; element hyphae  $3\text{--}25\mu\text{m}$  wide, cylindrical, often inflated, walls thin, smooth, hyaline, dextrinoid. Pileipellis a cutis of parallel, repent hyphae  $2\text{--}6\mu\text{m}$  wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, walls thin,

brownish; underlying hyphae parallel, hyaline or brownish, dextrinoid, with short and inflated cells up to  $35\mu\text{m}$  wide. Stipitipellis a cutis of parallel, repent hyphae  $3\text{--}6\mu\text{m}$  wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, colorless or brownish, inamyloid or dextrinoid, thin-walled; terminal cells (caulocystidia)  $5\text{--}9\mu\text{m}$  wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, colorless, thin-walled. Stipe trama composed of longitudinally running, cylindrical



**Fig. 6.** *Mycena lanuginosa*. **A** Basidiospores. **B** Basidium and basidiole. **C** Cheilocystidia. **D** Pleurocystidia. **E** Elements of the pileipellis. (All figures from the holotype.) Bars 10  $\mu$ m

hyphae 6–20  $\mu$ m wide, smooth, hyaline, dextrinoid. Clamp connections present in the cortical layer of pileus and stipe and at the basal septa of basidia.

Known distribution: Japan (Kanagawa, Tokyo).

Habitat: Solitary or scattered, on dead leaves and twigs in lowland forests dominated by *Quercus myrsinaefolia* Blume and *Q. serrata* Thunb. ex Murray., from March to November.

Specimens examined: KPM-NC0008702 (holotype), Izumino-mori, Yamato-shi, Kanagawa Pref., 27 Apr. 2000, coll. H. Takahashi; KPM-NC0008729, same place, 25 Nov. 1999 coll. H. Takahashi; same place, 16 Mar. 2000, coll. H. Takahashi; same place, 27 Nov. 1999, coll. H. Takahashi; Mt. Takao, Hachioji, Tokyo, 30 Oct. 1999, coll. H. Takahashi.

Japanese name: Keashi-hairotake.

**Notes.** This species is distinct in its sulcate-striate, grayish-brown to violet-brown pileus, the pilose stipe, the amyloid basidiospores, the smooth, fusiform cheilocystidia and pleurocystidia, and the diverticulate elements in the cortical layer of pileus and stipe. These characteristics suggest placement of this taxon in the section *Fragilipedes* (Fr.) Quél., as defined by Maas Geesteranus (Maas Geesteranus 1980, 1988a). Within the section, *M. lanugi-*

*nosa* seems to be closely allied with *M. pilosella* Maas Geest., originally described from Netherlands (Maas Geesteranus 1988b; Courtecuisse and Duhem 1994; Robich 2003), and European *M. zephirus* (Weinm.) Quél. (Kühner 1938; Lisiewska 1987; Maas Geesteranus 1988c; Dähncke 1993; Courtecuisse and Duhem 1994; Moser and Jülich 1999; Robich 2003). *Mycena pilosella* differs in having densely diverticulate elements of the pileipellis, long, cylindrical caulocystidia that diverge at a right angle, and lacking pleurocystidia. *Mycena zephirus* is distinct in forming a whitish pileus, a glabrescent stipe, raphanoid odor, ellipsoid-cylindrical basidiospores, and apically branched cheilocystidia.

#### 4. *Mycena mustea* Har. Takah., sp. nov.

Figs. 7, 8

Pileo 7–10 mm lato, conico-convexo vel campanulato, saepe umbonato, subhygrophano, primo pruinoso, dein glabro, violaceo; odore saporeque nullo; stipite 40–90  $\times$  0.5–1.5 mm, subaequali, cavo, griseo-violaceo, primo pruinoso, dein glabro; mycelio basali albo strigoso; lamellis adnexis, distantibus, albis; basidiosporis 11–12  $\times$  6–7  $\mu$ m, ellipsoideis, levibus, hyalinis, inamyloideis vel amyloideis; basidiis 28–37  $\times$  8–10  $\mu$ m, tetrasporis; cheilocystidiis 30–45  $\times$  8–11  $\mu$ m, numerosis, clavatis, aliquot breviter lobatis; pleurocystidiis nullis; hyphis defibulatis.

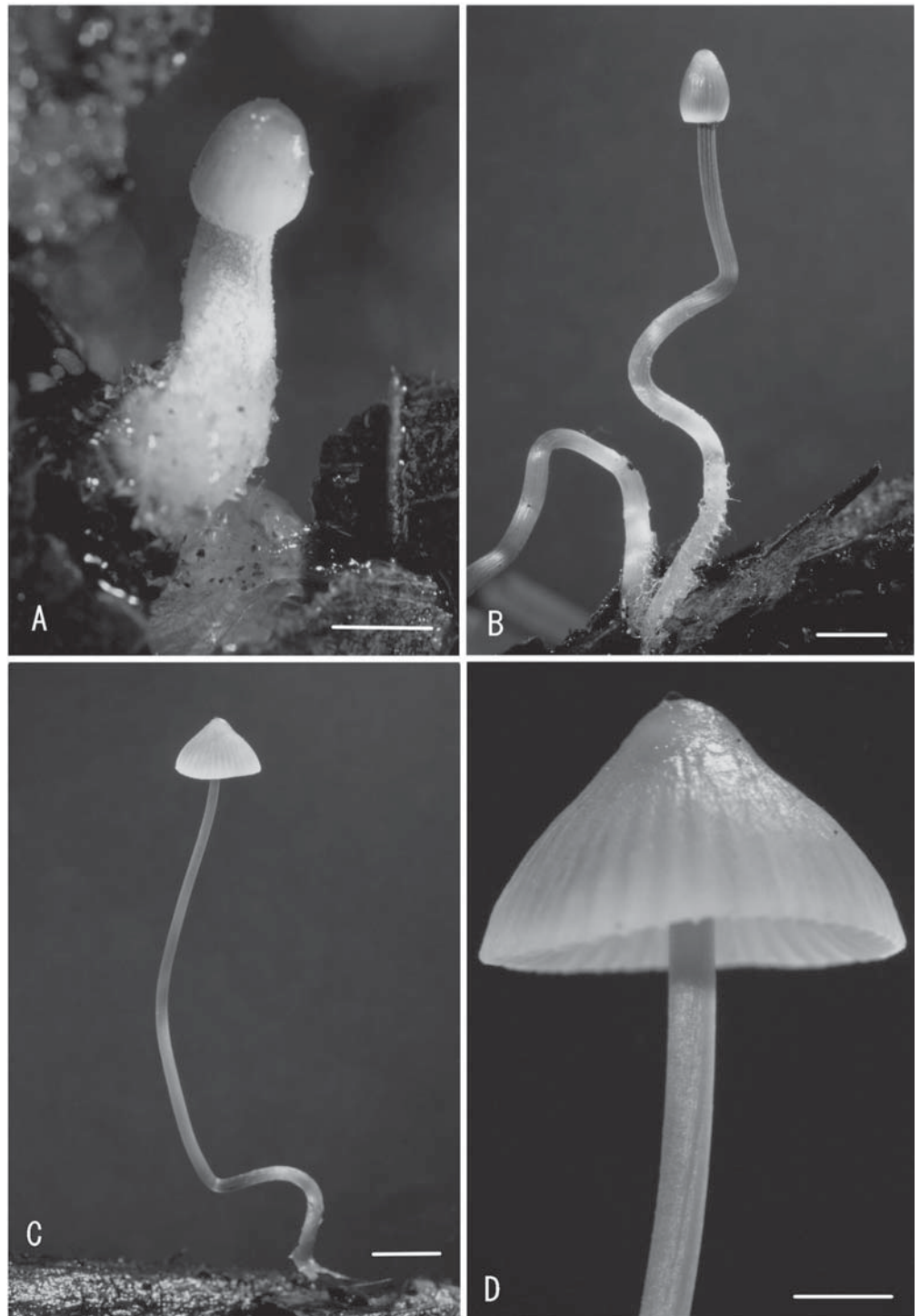
Holotypus: In ramulis delapsis in silva, Ikuta-ryokuchi, Kawasaki-shi, Kanagawa Pref., Japonia, 30 Nov. 2000, H. Takahashi (KPM-NC0008699).

Etymology: From Latin, *mustea* = fresh.

Pileus 7–10 mm in diameter, conico-convex to campanulate, occasionally with low and broad umbo, faintly translucent-striate when moist, subhygrophanous, dry, minutely white pruinose at first, soon glabrescent, evenly colored dull violet (16E3-4) when young, then somewhat paler near the margin. Flesh up to 0.5 mm, white; odor and taste not distinctive. Stipe 40–90  $\times$  0.5–1.5 mm, cylindrical, central, slender, terete, hollow, dry, dull violet (16E4) to greyish-violet (16E5-6) over the entire length, at first entirely white pruinose, glabrescent in age; base white strigose. Lamellae adnexed, distant (15–19 reach the stipe), up to 1.2 mm broad, thin, pale brownish; edges pruinose, concolorous.

Basidiospores ( $n = 83$  spores of 10 basidiocarps) 11–12  $\times$  6–7  $\mu$ m,  $Q$  (length/breadth) = 1.7–1.8, short ellipsoid to ellipsoid, smooth, colorless, inamyloid to weakly amyloid, thin-walled. Basidia 28–37  $\times$  8–10  $\mu$ m, clavate, mostly four-spored. Basidioles clavate. Cheilocystidia 30–45  $\times$  8–11  $\mu$ m, abundant, forming a sterile lamella edge, clavate, apically with one or more short knob-like excrescences, colorless, thin-walled. Pleurocystidia not seen. Hymenophoral trama regular; element hyphae 5–16  $\mu$ m wide, cylindrical, often somewhat inflated, walls thin, smooth, colorless, inamyloid. Pileipellis a cutis of parallel, repent hyphae 2–6  $\mu$ m wide, cylindrical, covered with scattered, warty or finger-like diverticulae, walls thin, hyaline; underlying hyphae parallel, hyaline or pale violet, dextrinoid, with short and inflated cells up to 25  $\mu$ m wide. Stipitipellis a cutis of parallel, repent hyphae 2–6  $\mu$ m wide, cylindrical, smooth, hyaline or pale

**Fig. 7.** Basidiomata of *Mycena mustea*. (All figures from the holotype.) Bars **A** 1 mm; **B** 4 mm; **C** 7 mm; **D** 2 mm



violet, thin-walled. Stipe trama composed of longitudinally running, cylindrical hyphae 8–15  $\mu\text{m}$  wide, smooth, colorless, dextrinoid. Clamp connections absent in all tissues.

Known distribution: Japan (Kanagawa).

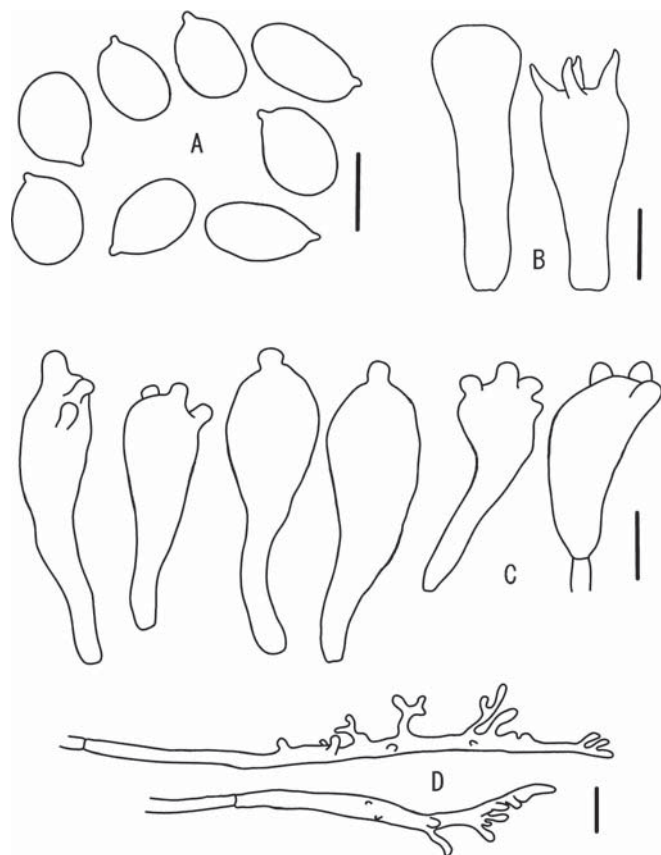
Habitat: Solitary to scattered on dead fallen twigs in lowland forests dominated by *Carpinus tschonoskii* Maxim. and *Quercus myrsinaefolia* Blume.

Specimens examined: KPM-NC0008699 (holotype), Ikuta-ryokuchi, Kawasaki-shi, Kanagawa Pref., 30 Nov.

2000, coll. H. Takahashi; same place, 13 Nov. 1999, coll. H. Takahashi; same place, 23 Nov. 2000, coll. H. Takahashi.

Japanese name: Sumire-ashinagatake.

**Notes.** This species is characterized by its glabrescent, dull violet to grayish-violet pileus and stipe, the weakly amyloid basidiospores, the clavate cheilocystidia apically with one or more short knob-like excrescences, the absence of pleurocystidia, the diverticulate pileipellis elements, and the absence of clamp connections.



**Fig. 8.** *Mycena mustea*. **A** Basidiospores. **B** Basidium and basidiole. **C** Cheilocystidia. **D** Elements of the pileipellis. (All figures from the holotype.) Bars 10  $\mu\text{m}$

Its violet pigment, the inamyloid hymenophoral trama, and the smooth hyphae of the cortical layer of stipe suggest that this species belongs in the section *Adonideae* (Fr.) Quel., as defined by Maas Geesteranus (Maas Geesteranus 1980, 1990). However, if greater taxonomic emphasis is placed on the weakly amyloid basidiospores, it would be better placed in the section *Fragilipedes* (Fr.) Quél. (Maas Geesteranus 1980, 1988a).

*Mycena mustea* seems to be closely allied with North American *M. umbrinovinosa* Maas Geest. (Smith 1947; Maas Geesteranus 1985) which differs in having a vinaceous brown to purplish-black pileus, irregularly shaped cheilocystidia apically covered with long, flexuous excrescences, and clamp connections. *Mycena mustea* is also similar to European *M. urania* (Fr.: Fr.) Quél. (Kühner 1938; Smith 1947; Maas Geesteranus 1984; Lisiewska 1987; Moser and Jülich 1999; Robich 2003), which differs in forming a blackish-violet pileus, broadly clavate cheilocystidia covered with numerous, evenly spaced warts, and clamp connections.

*Mycena mustea* might be mistaken also for *M. fonticola* Har. Takah., described in this article, but can be distinguished as follows. The pileus in *M. mustea* usually becomes pale grayish-purple when mature; the cheilocystidia has several short digitate excrescences at the above portion; the

stipitipellis is made up of smooth elements. The pileus in *M. fonticola* becomes intensely violet-brown when mature; the cheilocystidia has no excrescences; the elements of stipitipellis are covered with scattered, warty, or finger-like diverticulae.

##### 5. *Mycena multiplicata* Har. Takah., sp. nov. Figs. 9, 10

Pileo 7–13 mm lato, conico-convexo vel campanulato, subhygrophano, primo pruinoso, dein glabro, albo; odore saporeque nullo; stipite 15–20  $\times$  1–1.3 mm, subaequali, cavo, superne pruinoso, inferne piloso, obscure-violaceo; mycelio basali albo affixo; lamellis adnexis, distantibus, albis; basidiosporis 8–9.5  $\times$  4–5  $\mu\text{m}$ , ellipsoideis, levibus, hyalinis, amyloideis; basidiis 24–31  $\times$  6.5–7.5  $\mu\text{m}$ , tetrasporis; cheilocystidiis 17–28  $\times$  11–20  $\mu\text{m}$ , numerosis, obpyriformibus vel late clavatis, processibus 2–18  $\times$  1–3  $\mu\text{m}$  digitiformibus paucis praeditis; pleurocystidiis nullis; hyphis fibulatis.

Holotypus: Ad folia dejecta in *quercetis*, Izumino-mori, Yamato-shi, Kanagawa Pref., Japonia, 16 Nov. 1999, H. Takahashi (KPM-NC0008731).

Etymology: From Latin, *multiplicata* = multiplicative.

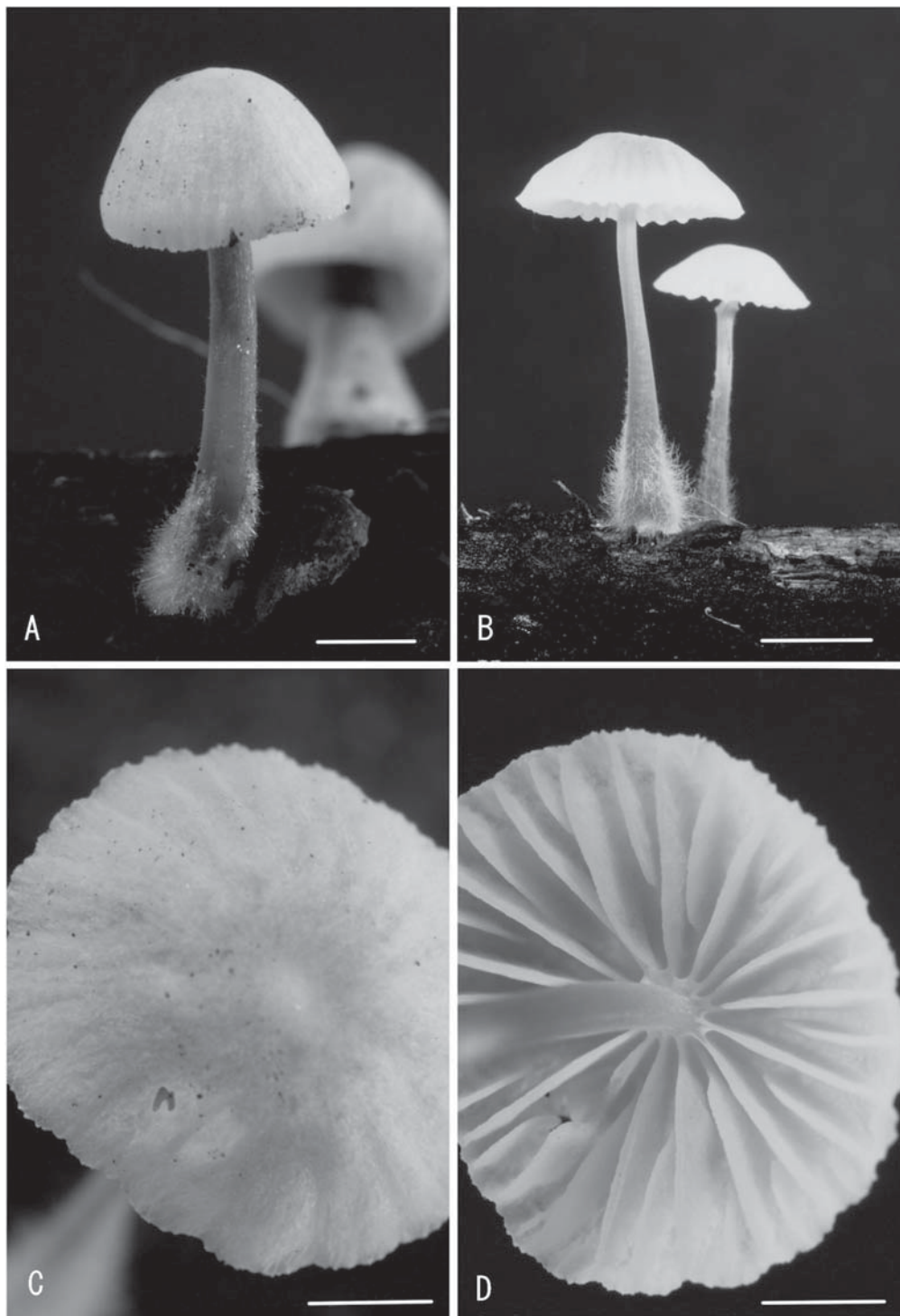
Pileo 7–13 mm in diameter, conico-convex to campanulate, often shallowly sulcate-striate toward the margin, dry, subhygrophanous, minutely white pruinose at first, soon becoming glabrous, almost whitish overall from the outset, sometimes pale brownish at the center. Flesh up to 0.3 mm, white; odor and taste not distinctive. Stipe 15–20  $\times$  1–1.3 mm, cylindrical, central, slender, terete, hollow, dry, white pruinose above, pilose toward the base, whitish to grayish-violet (17C3) at the apex, dark violet (17F4-5) downward; base covered with long, fairly coarse, whitish fibrils. Lamellae adnexed, distant (13–16 reach the stipe), up to 1.7 mm broad, thin, whitish; edges concolorous.

Basidiospores ( $n = 63$  spores of 6 basidiocarps) 8–9.5  $\times$  4– $\mu\text{m}$ ,  $Q$  (length/breadth) = 1.9–2, ellipsoid, smooth, colorless, amyloid, thin-walled. Basidia 24–31  $\times$  6.5–7.5  $\mu\text{m}$ , clavate, four-spored, with clamps at the basal septa. Basidioles clavate. Cheilocystidia 17–28  $\times$  11–20  $\mu\text{m}$ , abundant, forming a sterile lamella edge, obpyriform to broadly clavate, covered with a few to numerous, unevenly spaced, simple to somewhat branched, cylindrical, straight or curved to flexuous excrescences 2–18  $\times$  1–3  $\mu\text{m}$ , colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama regular; element hyphae 7–20  $\mu\text{m}$  wide, cylindrical, often inflated, walls thin, smooth, hyaline, dextrinoid. Pileipellis a cutis of parallel, repent hyphae 3–5  $\mu\text{m}$  wide, cylindrical, covered with simple to much branched diverticulae, walls thin, colorless; underlying hyphae parallel, hyaline, dextrinoid, with short and inflated cells up to 52  $\mu\text{m}$  wide. Stipitipellis a cutis of parallel, repent hyphae 2–10  $\mu\text{m}$  wide, cylindrical, diverticulate, colorless or pale violet, dextrinoid, thin-walled; caulocystidia 2–6  $\mu\text{m}$  wide, cylindrical, distinctly diverticulate, colorless, thin-walled. Stipe trama composed of longitudinally running, cylindrical hyphae 5–13  $\mu\text{m}$  wide, smooth, hyaline, dextrinoid. Clamp connections present in the pileipellis, the pileitrama, and at the basal septa of basidia.

Known distribution: Japan (Kanagawa).



**Fig. 9.** Basidiomata of *Mycena multiplicata*. (All figures from the holotype.) Bars **A** 2 mm; **B** 3 mm; **C, D** 2.5 mm



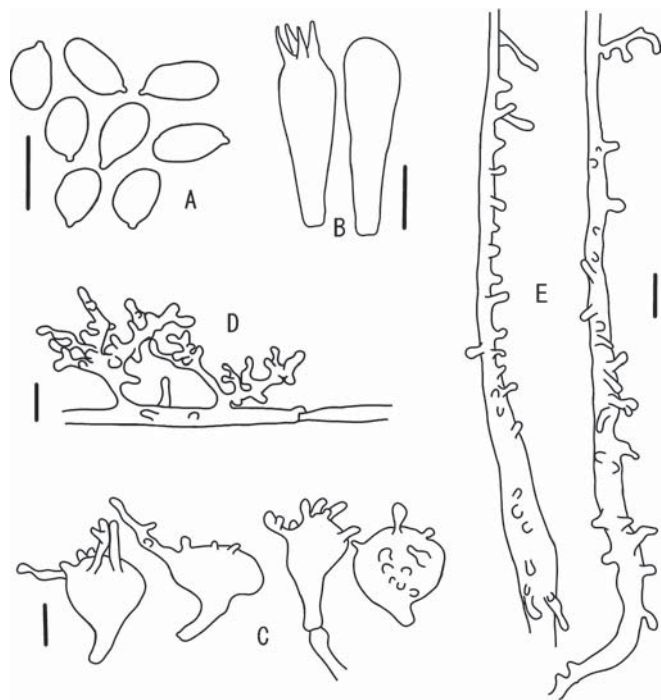
Habitat: Solitary or scattered, on dead fallen twigs in lowland forests dominated by *Quercus myrsinaefolia* Blume and *Q. serrata* Thunb. ex Murray.

Specimens examined: KPM-NC0008731 (holotype), Izumino-mori, Yamato-shi, Kanagawa Pref., 16 Nov. 1999, coll. H. Takahashi; same place, 25 Nov. 1999 coll. H. Takahashi; same place, 27 Nov. 1999, coll. H. Takahashi.

Japanese name: Keashi-ochiedatake.

**Notes.** This species is distinct in its whitish pileus, the dark violet, pilose stipe, the amyloid basidiospores, the

obpyriform to broadly clavate cheilocystidia covered with a few to numerous, unevenly spaced, cylindrical excrescences, the lack of pleurocystidia, and the diverticulate elements in the cortical layer of pileus and stipe. These characteristics suggest placement of this taxon in the section *Mycena*, as defined by Maas Geesteranus (Maas Geesteranus 1985). Within the section, *Mycena multiplicata* is comparable with *M. obcalyx* Corner from Malaya (Corner 1994) in having a grayish-white pileus, lobulate cheilocystidia with digitiform processes, and lignicolous



**Fig. 10.** *Mycena multiplicata*. **A** Basidiospores. **B** Basidium and basidiole. **C** Cheilocystidia. **D** Element of the pileipellis. **E** Elements of the stiptipellis. (All figures from the holotype.) Bars 10  $\mu$ m

habitat. The latter species, however, differs in forming much smaller basidiomata (pileus 2–4 mm wide; Corner 1994) with subdecurrent lamellae and an entirely pruinose, hyaline white stipe, and broadly ellipsoid basidiospores.

#### 6. *Mycena nidificata* Har. Takah., sp. nov. Figs. 11, 12

Pileo 10–25 mm lato, conico-convexo vel campanulato, dein plano-convexo, centro fortiter rugoso, sulcato-striato, hygrophano, primo pruinoso, dein glabro, obscure-brunneo; odore saporeque nullo; stipite 40–50  $\times$  1.5–2 mm, subaequali vel ad basim leviter incrassato, cavo, obscure-brunneo, pruinoso, mycelio basali albo affixo; lamellis adnatis, distantibus, intervenosis, griseo; basidiosporis 8–11  $\times$  5–6  $\mu$ m, ellipsoideis, levibus, hyalinis, inamyloideis; basidiis 28–35  $\times$  7–8  $\mu$ m, tetrasporis; cheilocystidiis 30–45  $\times$  10–15  $\mu$ m, numerosis, clavatis, aliquot breviter lobatis; pleurocystidiis nullis; hyphis fibulatis.

**Holotypus:** In ramulis delapsis in silva, Maruyama, Iriuda, Odawara-shi, Kanagawa Pref., Japonia, 15 Sept. 2000, H. Takahashi (KPM-NC0008695).

**Etymology:** From Latin, *nidificata* = nidificate.

Pileus 10–25 mm in diameter, at first conico-convex to campanulate, then plano-convex in age, center somewhat irregularly rugulose to pitted, less so toward the sulcate-striate margin, hygrophanous, dry, minutely white pruinose at first, soon becoming glabrous, almost blackish-brown (8E4-6) farther outward, much paler at the margin, occasionally evenly colored dark brown (7F5-7 to 8F5-7). Flesh

up to 1 mm, white; odor and taste not distinctive. Stipe 40–50  $\times$  1.5–2 mm, cylindrical, slightly enlarged at the base, central, slender, terete, hollow, dry, white pruinose over the entire length from the outset, not glabrescent with age, pale brownish at the apex, dark brown (7F5-7 to 8F5-7) toward the base; base covered with white mycelial tomentum attached to an white cord-like rhizomorphs on the substratum. Lamellae adnate, distant (15–18 reach the stipe), up to 2.5 mm broad, thin, grayish, distinctly intervenose; edges concolorous.

Basidiospores ( $n = 73$  spores of 15 basidiocarps) 8–11  $\times$  5–6  $\mu$ m,  $Q$  (length/breadth) = 1.6–1.8, short ellipsoid to ellipsoid, smooth, colorless, inamyloid, thin-walled. Basidia 28–35  $\times$  7–8  $\mu$ m, clavate, mostly four-spored. Basidioles clavate. Cheilocystidia 30–45  $\times$  10–15  $\mu$ m, abundant, forming a sterile lamella edge, clavate, with several irregularly cylindrical to knob-like apical appendages 3–11  $\times$  2–5  $\mu$ m, colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama regular; element hyphae 6–26  $\mu$ m wide, cylindrical, often inflated, thin-walled, smooth, with cytoplasmic brownish pigment, dextrinoid. Pileipellis a cutis of parallel, repent hyphae 3–10  $\mu$ m wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, walls thin, colorless; underlying hyphae parallel, with cytoplasmic brownish pigment, dextrinoid, with short and inflated cells up to 40  $\mu$ m wide. Stiptipellis a cutis of parallel, repent hyphae 3–8  $\mu$ m wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, colorless, inamyloid or dextrinoid, thin-walled; caulocystidia 45–60  $\times$  4–8  $\mu$ m, infrequent, cylindrical, diverticulate, colorless, thin-walled. Stipe trama composed of longitudinally running, cylindrical hyphae 10–25  $\mu$ m wide, smooth, with cytoplasmic brownish pigment, dextrinoid. Clamp connections present in the stipe tissues and at the basal septa of basidia.

**Known distribution:** Japan (Kanagawa).

**Habitat:** Solitary or scattered, on dead fallen twigs in *Quercus*–*Castanopsis* forests, May to September.

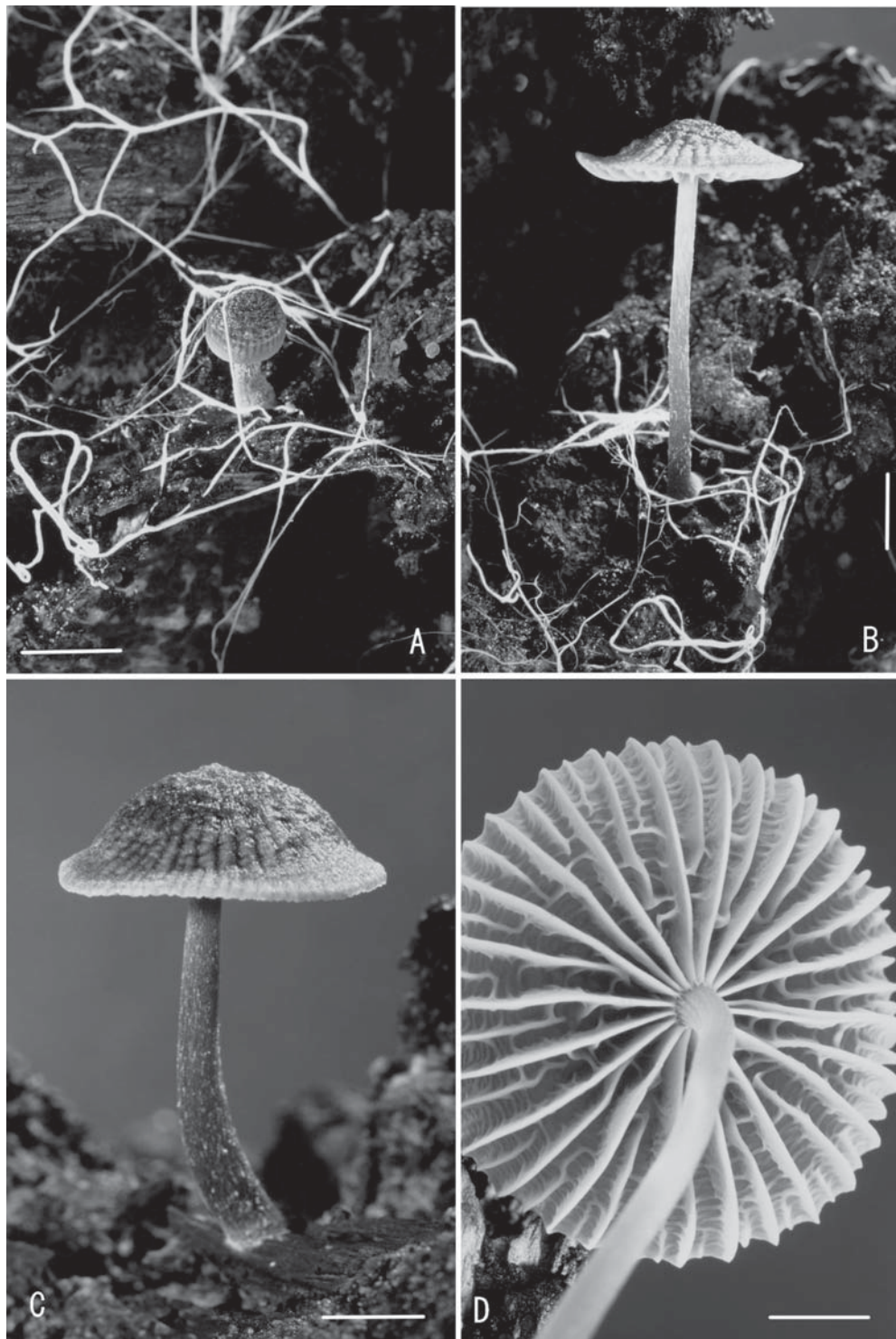
**Specimens examined:** KPM-NC0008695 (holotype), Maruyama, Iriuda, Odawara-shi, Kanagawa Pref., 15 Sept. 2000, coll. H. Takahashi; KPM-NC0008696, same place, 27 Apr. 2001, coll. H. Takahashi; KPM-NC0008697, same place, 3 May 2001, coll. H. Takahashi.

**Japanese name:** Yamiiro-kunugitake.

**Notes.** Distinctive features of this species are found in its dark brown pileus and stipe, the distinctly intervenose lamellae, the white cord-like rhizomorphs on the substratum; microscopically the inamyloid basidiospores, the clavate cheilocystidia with digitate apical appendages, the diverticulate elements in the cortical layer of pileus and stipe, and the presence of clamp connections are characteristic.

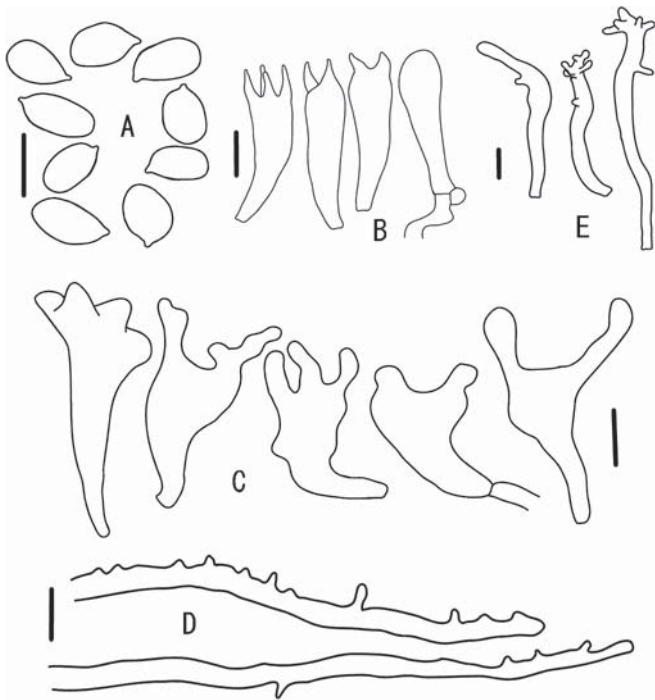
The inamyloid basidiospores, the diverticulate pileipellis elements, and the dark pigment in the tramal elements suggest placement of this taxon in the section *Hiemales* Konrad & Maubl. (Maas Geesteranus 1980, 1991). Because of its medium-sized, in part collybioid basidiomata, the white cord-like rhizomorphs, and its distinctly intervenose lamellae, it seems to have an isolated position within the section.

**Fig. 11.** Basidiomata of *Mycena nidificata*. (All figures from the holotype.) **A, B** Basidiomata accompanied by the white cord-like rhizomorphs. Bars **A** 4 mm; **B** 6 mm; **C** 3 mm; **D** 4 mm



*Mycena granulifera* Maas Geest. & de Meijer, described from Brazil (Maas Geesteranus and Meijer 1997), is comparable to *M. nidificata* in having inamyloid basidiospores, clavate cheilocystidia with digitate excrescences, and diverticulate pileipellis elements. The former species, however, differs in forming a whitish, rugulose pileus and clavate

subfusiform pleurocystidia. *Mycena nidificata* also bears some resemblance to European *M. flos-nivium* Kühner (Kühner 1938; Maas Geesteranus 1985; Breitenbach and Kränzlin 1991; Robich 2003), which differs in having cylindrical, amyloid basidiospores, nonintervenose lamellae, and lacking cord-like rhizomorphs.



**Fig. 12.** *Mycena nidificata*. **A** Basidiospores. **B** Basidia and basidiole. **C** Cheilocystidia. **D** Elements of the pileipellis. **E** Caulocystidia. (All figures from the holotype.) Bars 10  $\mu\text{m}$

### 7. *Mycena fuscoaurantiaca* Har. Takah., sp. nov.

Figs. 13, 14

Pileo 8–11 mm lato, conico-convexo vel campanulato, dein plano-convexo, sulcato-striato, subhygrophano, primo pruinoso, dein glabro, centro obscure-brunneo, brunneo vel brunneo-aurantiaco; odore saporeque nullo; stipite 30–60  $\times$  0.5–0.8 mm, subaequali, cavo, aurantiaco vel brunneo-aurantiaco, primo pruinoso, dein glabro, mycelio basali albo strigoso; lamellis adnexis, distantibus, brunneolo; basidiosporis 9–10.5  $\times$  6–7  $\mu\text{m}$ , breviter ellipsoideis, levibus, hyalinis, amyloideis; basidiis 19–30  $\times$  7–9  $\mu\text{m}$ , bisporis; cheilocystidiis 25–47  $\times$  3–20  $\mu\text{m}$ , numerosis, fusoido-ventricosis, levibus; pleurocystidiis 27–75  $\times$  5–20  $\mu\text{m}$ , cheilocystidiis similibus; hyphis defibulatis.

**Holotypus:** In ramulis delapsis in silva, Ikuta-ryokuchi, Kawasaki-shi, Kanagawa Pref., Japonia, 30 Nov. 2000, H. Takahashi (KPM-NC0008698).

**Etymology:** From Latin, *fusco-* (dark-) + *aurantiaca* (orange-yellow), referring to the color of basidiomata.

Pileus 8–11 mm in diameter, conico-convex to campanulate, then plano-convex in age, radially sulcate-striate almost to the disc, subhygrophanous, dry, minutely white pruinose at first, soon glabrescent, evenly colored brown (6D7-8 to 6E7-8) to brownish-orange (6C7-8) when young, with a somewhat darker (6F6-8) disk, fading to paler toward the margin with age. Flesh up to 0.5 mm, white; odor and taste not distinctive. Stipe 30–60  $\times$  0.5–0.8 mm, cylindrical, central, slender, terete, hollow, dry, orange (6B7-8) to brownish-orange (6C7-8) over the entire length, at first entirely white pruinose, glabrescent in age; base white strigose. Lamellae

adnexed, distant (16–18 reach the stipe), up to 1.8 mm broad, thin, pale brownish; edges pruinose, concolorous.

Basidiospores ( $n = 88$  spores of 5 basidiocarps) 9–10.5  $\times$  6–7  $\mu\text{m}$ ,  $Q$  (length/breadth) = 1.5, short ellipsoid, smooth, colorless, weakly amyloid, thin-walled. Basidia 19–30  $\times$  7–9  $\mu\text{m}$ , clavate, two-spored. Basidioles clavate. Cheilocystidia 25–47  $\times$  3–20  $\mu\text{m}$ , abundant, forming a sterile lamella edge, fusoid-ventricose with prolonged obtuse apex, smooth, colorless or pale vinaceous, thin-walled. Pleurocystidia 27–75  $\times$  5–20  $\mu\text{m}$ , scattered, similar in shape and color to the cheilocystidia. Hymenophoral trama regular; element hyphae 10–22  $\mu\text{m}$  wide, cylindrical, often somewhat inflated, walls thin, smooth, colorless, dextrinoid. Pileipellis a cutis of parallel, repent hyphae 2–7  $\mu\text{m}$  wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, thin-walled, brownish; underlying hyphae parallel, hyaline, dextrinoid, with short and inflated cells up to 34  $\mu\text{m}$  wide. Stipitipellis a cutis of parallel, repent hyphae 2–4  $\mu\text{m}$  wide, cylindrical, smooth, brownish, thin-walled. Stipe trama composed of longitudinally running, cylindrical hyphae 8–20  $\mu\text{m}$  wide, smooth, colorless, dextrinoid. The strigose hairs at the base of stipe 2–6  $\mu\text{m}$  wide, arising directly from the stipitipellis, repent or erect, cylindrical, with rounded apex, sometimes flexuous, smooth, colorless, thin-walled. Clamp connections absent in all tissues.

**Known distribution:** Japan (Kanagawa).

**Habitat:** Solitary to scattered on dead fallen twigs in lowland forests dominated by *Carpinus tschonoskii* Maxim. and *Quercus myrsinaefolia* Blume, November.

**Specimens examined:** KPM-NC0008698 (holotype), Ikuta-ryokuchi, Kawasaki-shi, Kanagawa Pref., 30 Nov. 2000, coll. H. Takahashi; same place, 13 Nov. 1999, coll. H. Takahashi; same place, 23 Nov. 2000, coll. H. Takahashi.

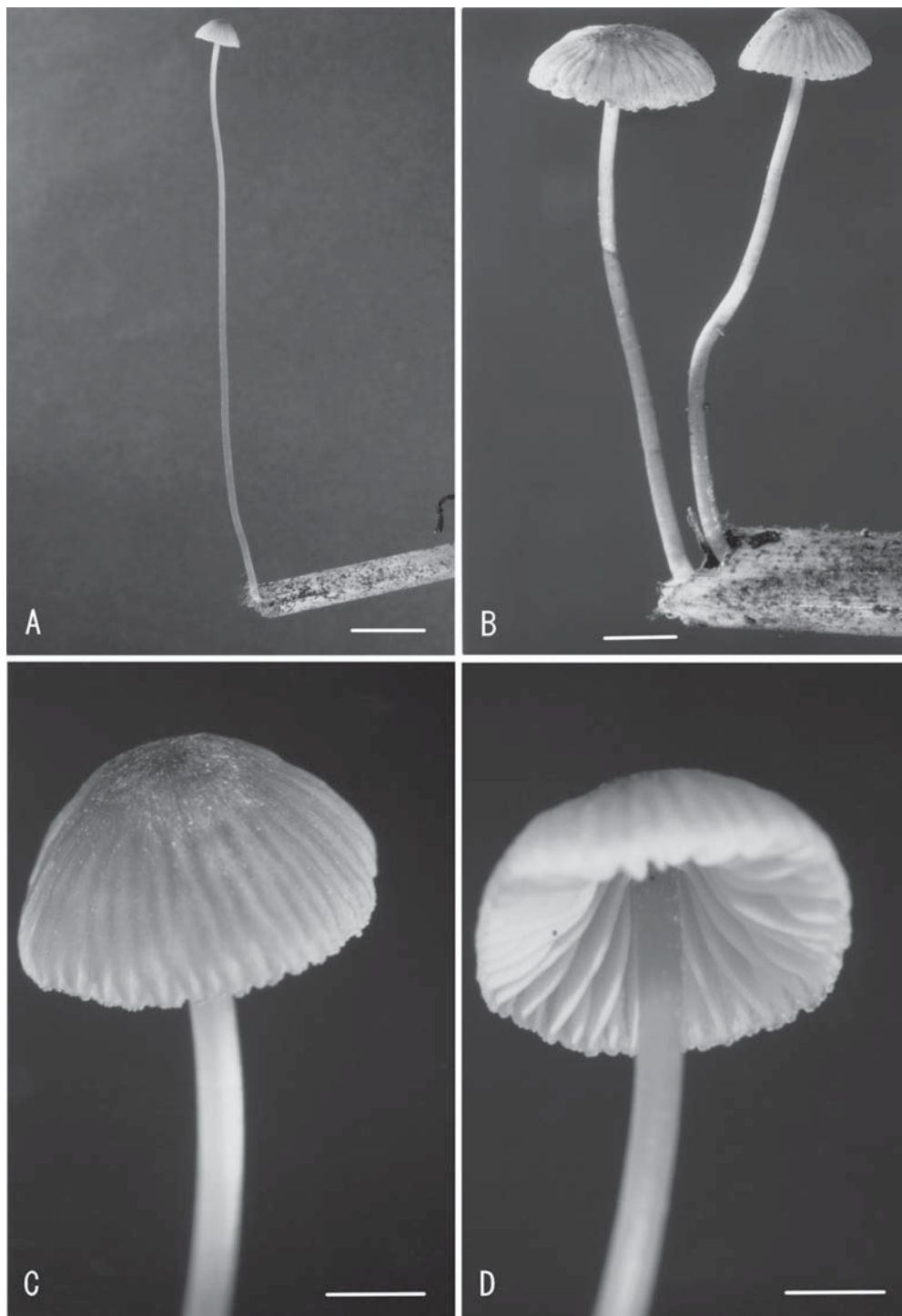
**Japanese name:** Taisha-ashinagatake.

**Notes.** This species is characterized by its glabrescent, brownish-orange pileus and stipe, the weakly amyloid basidiospores, the smooth, fusoid-ventricose cheilocystidia and pleurocystidia with prolonged obtuse apex, the diverticulate pileipellis elements, and the absence of clamp connections. These features suggest that this species belongs in the section *Fragilipedes* (Fr.) Quél., as defined by Maas Geesteranus (Maas Geesteranus 1980, 1988a). Within the section, North American *M. subfusca* A.H. Sm. (Smith 1947; Maas Geesteranus 1988c) seems to be closely related with *M. fuscoaurantiaca*. The former species, however, differs in having fusiform to broadly clavate cheilocystidia without a narrow neck, clavate to irregularly shaped caulocystidia, and lacking pleurocystidia.

### 8. *Mycena clariviolacea* Har. Takah., sp. nov. Figs. 15, 16

Pileo 10–25 mm lato, conico-convexo vel campanulato, dein plano-convexo, sulcato-striato, subhygrophano, primo pruinoso, dein glabro, obscureviolaceo; odore saporeque nullo; stipite 30–40  $\times$  1–3 mm, subaequali, cavo, obscureviolaceo, pruinoso; mycelio basali albo affixo; lamellis adnatis, distantibus, obscureviolaceo; basidiosporis 8–9  $\times$  5–6  $\mu\text{m}$ , late ellipsoideis, levibus, hyalinis, amyloideis; basidiis 40–60  $\times$  10–12  $\mu\text{m}$ , tetrasporis; cheilocystidiis 30–45  $\times$  10–17  $\mu\text{m}$ ,

**Fig. 13.** Basidiomata of *Mycena fuscoaurantiaca*. (All figures from the holotype.) Bars A 5 mm; B 3 mm; C, D 1.2 mm



numerosis, clavatis, aliquot breviter lobatis; pleurocystidiis nullis; caulocystidiis  $45\text{--}88 \times 5\text{--}8\mu\text{m}$ , cylindraceutis, diverticulatis; hyphis fibulatis.

Holotypus: In ramulis delapsis in silva, Maruyama, Iriuda, Odawara-shi, Kanagawa Pref., Japonia, 4 June 2000, H. Takahashi (KPM-NC0008701).

Etymology: From Latin, *clari-* (clear-) + *violacea* (violaceous).

Pileus 10–25 mm in diameter, at first conico-convex to campanulate, then plano-convex in age, sometimes shal-

lowly umbilicate, radially sulcate-striate almost to the disk, subhygrophanous, dry, minutely white pruinose when young, soon becoming glabrous, at first dark violet (15F6-7 to 16F6-7) overall, fading to greyish-violet (15E5-6 to 16E5-6) from the margin with age. Flesh up to 0.5 mm, whitish; odor and taste not distinctive. Stipe 30–40  $\times$  1–3 mm, cylindrical, central, slender, terete or compressed, hollow, dry, minutely white pruinose over the entire length, entirely greyish-violet (15E5-6 to 16E5-6) to dark violet (15F6-7 to 16F6-7); base covered with white, strigose mycelial tomen-

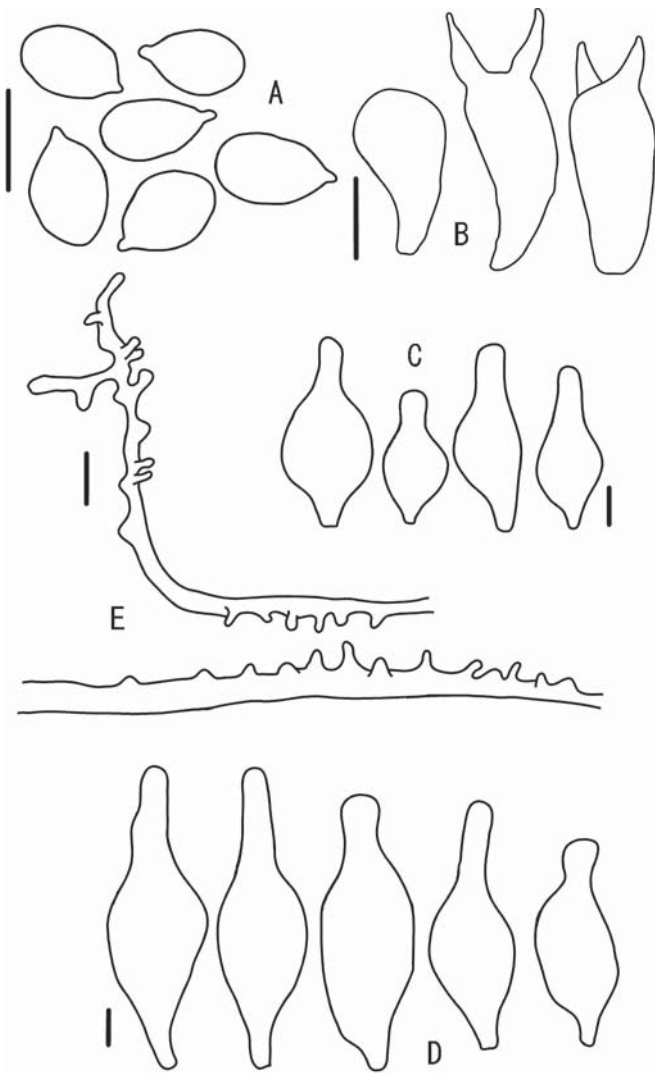


Fig. 14. *Mycena fuscoaurantiaca*. A Basidiospores. B Basidia and basidiole. C Cheilocystidia. D Pleurocystidia. E Elements of the pileipellis. (All figures from the holotype.) Bars 10µm

tum. Lamellae adnate, distant (15–19 reach the stipe), up to 2.5 mm broad, thin, paler concolorous with the pileus; edges whitish or paler.

Basidiospores ( $n = 65$  spores of 7 basidiocarps)  $8\text{--}9 \times 5\text{--}6\text{ }\mu\text{m}$ ,  $Q$  (length/breadth) = 1.5–1.6, broadly ellipsoid, smooth, colorless, amyloid, thin-walled. Basidia  $40\text{--}60 \times 10\text{--}12\text{ }\mu\text{m}$ , clavate, four-spored. Basidioles clavate. Cheilocystidia  $30\text{--}45 \times 10\text{--}17\text{ }\mu\text{m}$ , abundant, forming a sterile lamella edge, clavate, apically with one or more, knob-like short excrescences, colorless, thin-walled. Pleurocystidia absent. Hymenophoral trama regular; element hyphae  $12\text{--}21\text{ }\mu\text{m}$  wide, cylindrical, often somewhat inflated, thin-walled, smooth, with cytoplasmic brownish pigment, dextrinoid. Pileipellis a cutis of parallel, repent hyphae  $2\text{--}7\text{ }\mu\text{m}$  wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, walls thin, colorless or pale brownish, dextrinoid; underlying hyphae parallel, cylindri-

cal, hyaline or brownish, dextrinoid, with short and inflated cells up to  $48\text{ }\mu\text{m}$  wide. Stipitipellis a cutis of parallel, repent hyphae  $3\text{--}8\text{ }\mu\text{m}$  wide, cylindrical, smooth or covered with scattered, warty or finger-like diverticulae, brownish, dextrinoid, thin-walled; caulocystidia  $45\text{--}88 \times 5\text{--}8\text{ }\mu\text{m}$ , cylindrical, diverticulate, colorless or brownish, thin-walled. Stipe trama composed of longitudinally running, cylindrical hyphae  $8\text{--}25\text{ }\mu\text{m}$  wide, smooth, colorless, dextrinoid. Clamp connections present in the pileipellis, the stipitipellis, the hymenophoral trama, and at the basal septa of basidia.

Known distribution: Japan (Kanagawa).

Habitat: Solitary or scattered, on dead fallen twigs in *Quercus*–*Castanopsis* forests, June to September.

Specimens examined: KPM-NC0008701 (holotype), Maruyama, Iriuda, Odawara-shi, Kanagawa Pref., 4 June 2000, coll. H. Takahashi; same place, 27 June 2001, coll. H. Takahashi; the same place, 17 Sept. 2001, coll. H. Takahashi.

Japanese name: Shikon-sakuratake.

**Notes.** Distinctive features of this species are found in its medium-sized, in part collybioid, dark violet basidiomata, the amyloid basidiospores, the clavate cheilocystidia covered with one or more, knob-like, apical excrescences, the absence of pleurocystidia, and the cylindrical, diverticulate caulocystidia.

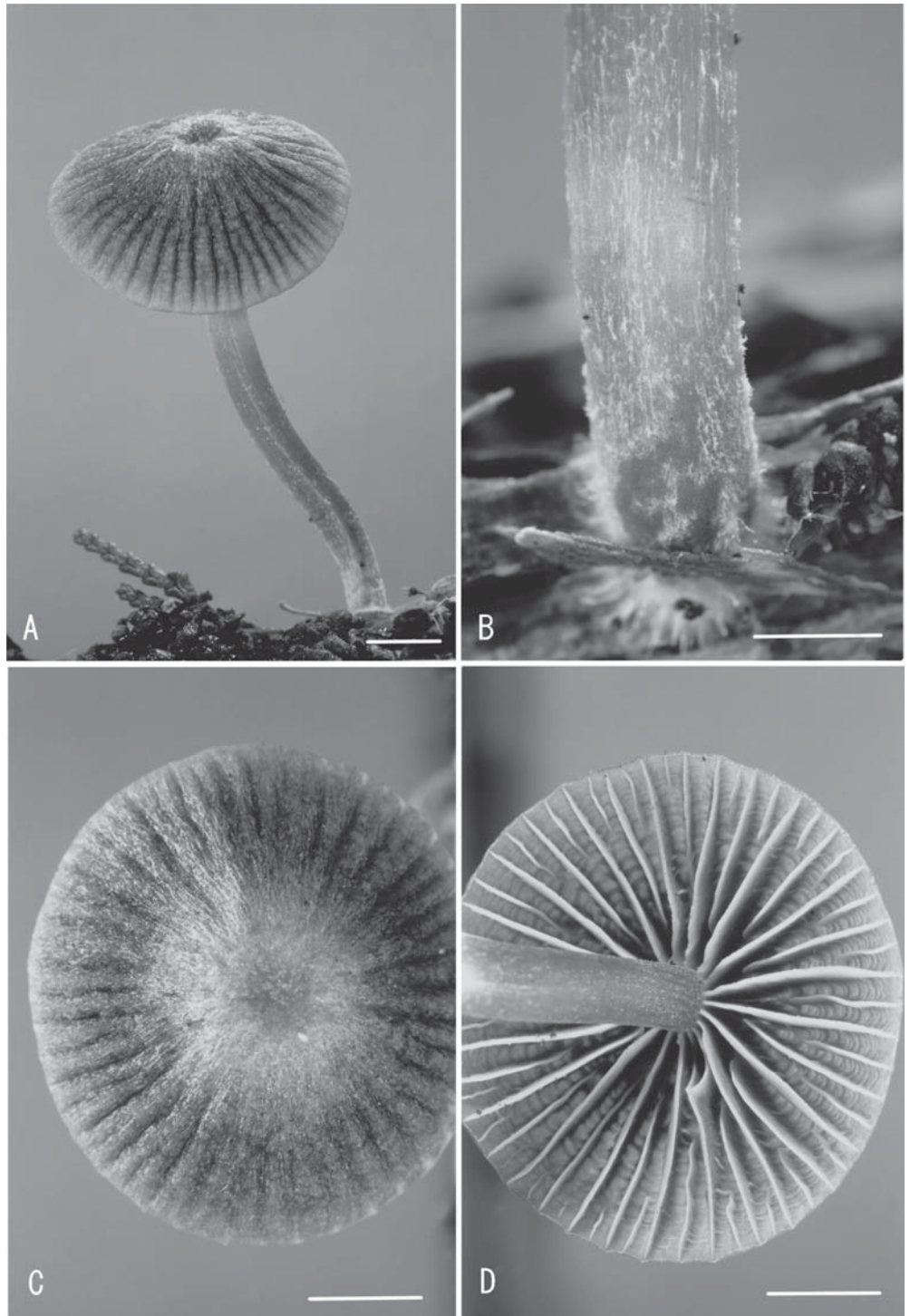
Its amyloid basidiospores, the cheilocystidia covered with one or more, knob-like, apical excrescences, the diverticulate elements in the cortical layer of pileus and stipe, and the diverticulate caulocystidia suggest placement of this taxon in the section *Fragilipedes* (Fr.) Quél., as defined by Maas Geesteranus (Maas Geesteranus 1980, 1988a).

*Mycena clariviolacea* appears to be closely related to *M. cerasina* Maas Geest. & de Meijer, described from Brazil (Maas Geesteranus and Meijer 1997), and European *M. diosma* Krieglst. & Schwöbel (Maas Geesteranus 1989; Courtecuisse and Duhem 1994; Moser and Jülich 1999; Robich 2003). *Mycena cerasina*, which belongs in the section *Cerasinae* Maas Geest. & de Meijer, differs in having a grayish-purple pileus and stipe, and forming subutriform to sublageniform, smooth cheilocystidia. *Mycena diosma*, which belongs in the section *Calodontes* (Fr. ex Berk.) Quél. subsection *Purae* (Konr. & Maubl.) Maas Geest., is distinct in having smooth, fusiform cheilocystidia and pleurocystidia, and nondiverticulate elements in the cortical layer of pileus and stipe.

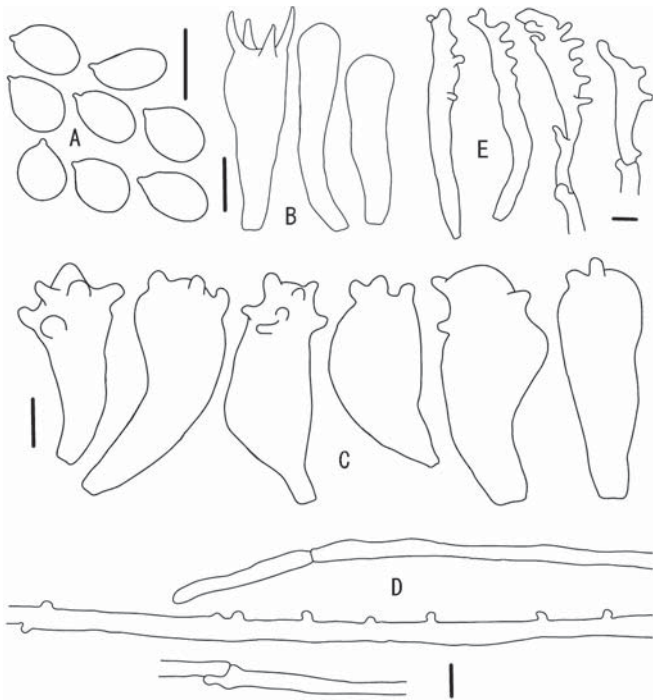
#### Key to the Japanese species of the section *Fragilipedes*

1. Pleurocystidia present. Hyphae of the pileipellis and stipitipellis smooth ..... 2
1. Pleurocystidia absent. Hyphae of the pileipellis and stipitipellis smooth or covered with scattered to crowded excrescences ..... 6
2. Pileus pale yellow to pale orange. Habitat on buried remains of beech acorns . . . *Mycena crocea* Maas Geest.

**Fig. 15.** Basidiomata of *Mycena clariviola*. (All figures from the holotype.) Bars **A** 6 mm; **B** 3 mm; **C, D** 50 mm



- |  |  |  |   |
|--|--|--|---|
| 2. Not as above . . . . .  | 3  | 5. Pileus at first dark brown, soon becoming pale grey brown. Odor nitrous. . . . .                                    | 11  |
| 3. Stipe pilose toward the base. Pileus and stipe grayish-brown to reddish-brown . . . . . | (3) <i>Mycena lanuginosa</i> Har. Takah. | 5. Pileus brownish-orange. Odor not distinctive. . . . .   | (7) <i>Mycena fuscoaurantiaca</i> Har. Takah. |
| 3. Stipe glabrous, fibrillose, pruinose, or minutely floccose. . . . .                     | 4  | 6. Hyphae of the pileipellis covered with scattered to crowded excrescences . . . . .                                  | 7   |
| 4. Pileipellis gelatinized. Pileus grey-brown to black-brown . . . . .                     | <i>Mycena algeriensis</i> Maire          | 6. Hyphae of the pileipellis smooth or with scattered, simple to somewhat branched, cylindrical excrescences . . . . . | 11  |
| 4. Pileipellis not gelatinized. . . . .  | 5  |  |   |



**Fig. 16.** *Mycena clariviolacea*. **A** Basidiospores. **B** Basidium and basidioles. **C** Cheilocystidia. **D** Elements of the pileipellis. **E** Caulocystidia. (All figures from the holotype.) Bars 10µm

7. Pileipellis gelatinized. Pileus pale grey brown to grey-brown. Lamellae whitish to grayish, often spotted with red-brown stains with age . . . . . *Mycena polygramma* (Bull.: Fr.) Gray
7. Pileipellis not gelatinized. . . . . 8
8. Lamella edge marginated . . . . . 9
8. Lamella edge not marginated . . . . . 10
9. Lamella edge marginated with yellowish- brown. Pileus light brown or dark yellowish brown. Basidiomata strongly luminescent . . . . . *Mycena lux-coeli* Corner
9. Lamella edge marginated with dark brown. Pileus olive-yellow to brown-olive. Basidiomata not luminescent . . . . . *Mycena viridimarginata* P. Karst.
10. Pileus intensely violet-brown. Cheilocystidia fusiform . . . . . (1) *Mycena fonticola* Har. Takah.
10. Pileus olive-brown to yellowish-brown. Cheilocystidia irregularly cylindrical to strangulated . . . . . (2) *Mycena intersecta* Har. Takah.
11. Pileus white overall when young. lamellae adnate to decurrent . . . . . 12
11. Pileus distinctly colored from the outset. lamellae adnate to adnexed . . . . . 13
12. Pileus glabrous, subviscid when wet, at times stained with rusty brown spots. . . . . *Mycena laevigata* Lasch: Fr.) Gillet
12. Pileus, minutely white pruinose at first, glabrescent in age, dry, without rusty brown spots . . . . . *Mycena chrysanthemiformis* Har. Takah.

13. Cheilocystidia fusiform to lageniform, smooth. Pileus at first blackish-brown then brownish-beige. Odor nitrous . . . . . *Mycena stipata* Maas Geest. & Schwöbel
13. Cheilocystidia clavate, apically with several short digitate excrescences. Odor not distinctive . . . . . 14
14. Basidiomata mycenoid. Pileus dull violet. Elements of the stipitipellis smooth. . . . . (4) *Mycena mustea* Har. Takah.
14. Basidiomata in part collybioid. Pileus dark violet. Elements of the stipitipellis smooth or occasionally covered with scattered, warty or finger-like diverticulae. . . . . (8) *Mycena clariviolacea* Har. Takah.

**Acknowledgments** I am grateful to Dr. Yousuke Degawa (KPM) for allowing the specimens cited to be kept in the Kanagawa Prefectural Museum of Natural History.

## References

- Breitenbach J, Kränzlin F (1991) Fungi of Switzerland 3. Boletes and agarics, 1st part. Edition Mycologia, Lucerne
- Corner EJH (1994) Agarics in Malasia II. Mycenoid. Beih Nova Hedwigia 109:165-271
- Courtecuisse R, Duhem B (1994) Les Champignons de France. Eclitica, Paris
- Dähncke RM (1993) 1200 Pilze in Farbfotos. AT Verlag, Stuttgart
- Kornerup A, Wanscher JH (1978) Methuen handbook of colour, 3rd edn. Methuen, London
- Kühner R (1938) Le genre *Mycena*. Paul Lechevalier, Paris
- Lisiewska M (1987) Flora Polska, Tom XVII. Polska Akademia Nauk, Warszawa
- Maas Geesteranus RA (1980) Studies in Mycenae 15. A tentative subdivision of the genus *Mycena* in the northern Hemisphere. Persoonia 11:93-120
- Maas Geesteranus RA (1981) Studies in Mycenae 26. The Mycenae described by P.A. Karsten. Proc K Ned Akad Wet C 84:221-231
- Maas Geesteranus RA (1984) Conspectus of the Mycenae of the Northern Hemisphere 3. Section *Fragilipedes*. Proc K Ned Akad Wet C 87:413-447
- Maas Geesteranus RA (1985) Conspectus of the Mycenae of the Northern Hemisphere 4. Section *Mycena*. Proc K Ned Akad Wet C 88:339-369
- Maas Geesteranus RA (1988a) Conspectus of the Mycenae of the Northern Hemisphere 9. Section *Fragilipedes*, species A-G. Proc K Ned Akad Wet C 91:43-83
- Maas Geesteranus RA (1988b) Conspectus of the Mycenae of the Northern Hemisphere 9. Section *Fragilipedes*, species I-R. Proc K Ned Akad Wet C 91:129-159
- Maas Geesteranus RA (1988c) Conspectus of the Mycenae of the Northern Hemisphere 9. Section *Fragilipedes*, species S-Z. Proc K Ned Akad Wet C 91:283-314
- Maas Geesteranus RA (1989) Conspectus of the Mycenae of the Northern Hemisphere 13. Section *Calamophilae* and *Calodontes*. Proc K Ned Akad Wet C 92:477-504
- Maas Geesteranus RA (1990) Conspectus of the Mycenae of the Northern Hemisphere 14. Section *Adonideae*, *Aciculae*, and *Oregonenses*. Proc K Ned Akad Wet C 93:163-186
- Maas Geesteranus RA (1991) Conspectus of the Mycenae of the Northern Hemisphere 15. Sections *Hiemales* and *Exornatae*. Proc K Ned Akad Wet. 94:81-102
- Maas Geesteranus RA, de Meijer AAR (1997) Mycenae Paranaenses. Royal Netherlands Academy of Arts and Sciences, Amsterdam
- Moser M, Jülich W (1993) Colour atlas of Basidiomycetes, Lief. *Mycena* 18. Fischer Verlag, Berlin
- Robich G (2003) *Mycena* d'Europa. AMB, Trento
- Smith AH (1947) North American species of *Mycena*. Univ Mich Stud Sci Ser 17:1-521