

Two new species of Agaricales and a new Japanese record for *Chaetocalathus fragilis* from Ishigaki Island, a southwestern island of Japan

Haruki Takahashi

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Abstract Two new species of Agaricales and a new Japanese record for *Chaetocalathus fragilis* from Ishigaki Island, a southwestern island of Japan, are fully described and illustrated: (1) *Crinipellis* (section *Grisentinae*) *rhizomorpha* sp. nov. produces brownish orange, fibrillose-squamulose basidiomata accompanied by white thread-like rhizomorphs on the dead twig, olivaceous hairs in KOH, and oblong-ellipsoid, relatively long basidiospores; (2) *Chaetocalathus* (section *Holocystis*) *fragilis* is a new record for Japan, growing on the dead twig; (3) *Psilocybe* (section *Cubensae*) *capitulata* sp. nov. forms a furfuraeous-squamulose pileus, cyanescent flesh, a persistent, membranous annulus, capitulate pilocystidia, and has a coprophilous habit on cow dung.

Keywords *Crinipellis rhizomorpha* · Japanese mycobiota · *Psilocybe capitulata* · Taxonomy

Introduction

Ishigaki Island is the second largest island of the Yaeyama Island group and is situated in the southwestern part of the Ryukyu Archipelago. The forest types of the Yaeyama Islands exist in subtropical climates and include predominantly laurel-leaved forest in the mountain region and a mangrove forest community developed on saline, muddy soil of estuaries or inlets under the high tide mark. The most intensively sampled area is the laurel-leaved forest type dominated by *Quercus miyagii* Koidz. and *Castanopsis sieboldii* (Makino) Hatus. ex T. Yamaz. et Mashiba

from 100 to 250 m altitude in Mt. Banna and the surrounding region. As for the agaric flora of Yaeyama Islands, no intensive investigation has hitherto been carried out, with the exception of the studies by Miyagi (1958, 1964, 1971), who reported 53 species of agarics and boletes from Ishigaki Island and Iriomote Island.

During studies on the diversity of macrofungi in the southwestern islands of Japan, a new distributional record and two species representing undescribed Agaricales were found, namely, *Chaetocalathus fragilis*, *Crinipellis rhizomorpha* sp. nov., and *Psilocybe capitulata* sp. nov., which are fully described and illustrated here.

Materials and methods

Macroscopic features are all based on fresh materials. For microscopic observations, free-hand sections of the fresh basidiomata were examined in Melzer's reagent, 5% KOH, or distilled water. Basidiospores were measured in the side view in Melzer's reagent; for each collection, at least 20 basidiospores were measured. Color notations in parentheses are taken from Kornerup and Wanscher (1983). Specimens cited here are deposited in the Kanagawa Prefectural Museum of Natural History, Japan (KPM).

Taxonomic descriptions

1. *Crinipellis rhizomorpha* Har. Takah., sp. nov.

Figs. 1–5

Mycobank no.: MB 519031

Pileo 5–8(–12) mm lato, primo hemisphaerico, dein planoconvexo, centro depresso umbonato zona leniter elevato,

H. Takahashi (✉)
284-1 Ouhama, Ishigaki, Okinawa 907-0001, Japan
e-mail: auricoma-pacutaro09@memoad.jp

fibrilloso-squamuloso, brunneolo-aurantiaco; stipite 8–15 (–20) × 0.7–1.3 mm, subaequali vel ad basim leniter incrassato, centrali, cavo, brunneolo-aurantiaco, strigoso-fibrilloso, mycelio basali non affixo; rhizomorphis filiformibus, albis; lamellis adnexis, albis; basidiosporis (9.5–)11–13 × (4–)4.5–5 μm, oblongo-ellipsoideis, levibus, hyalinis, inamyloideis; basidiis 25–27 × 3–8 μm, tetrasporis; cheilocystidiis 17–33 × 6–10 μm, subclaviformibus, aliquot breviter lobatis; pleurocystidiis nullis; pilis pilei 400–600 × 4–6 μm, crassitunicatis, pseudo-

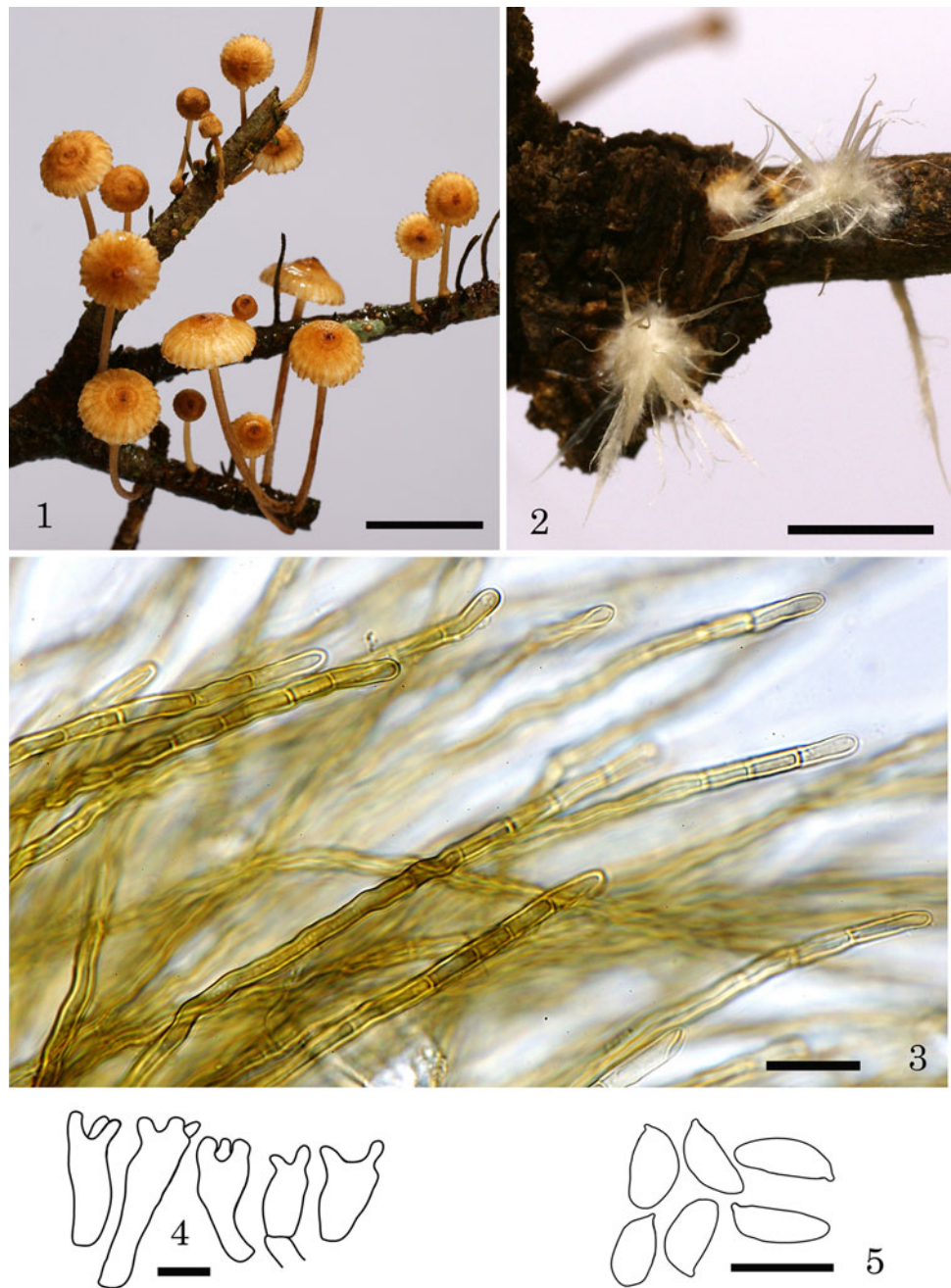
amyloideis, in KOH olivaceis, septatis, pilis stipitis similibus; hyphis fibulatis.

Holotypus: In ramulis dejectis in silva, Banna-dake, Ishigaki-shi, Okinawa Pref., Japonia, 25 July 2010, H. Takahashi and Y. Terashima (KPM-NC0017526).

Etymology: from Latin, *rhizomorphica*, referring to the thread-like, white rhizomorphs on the substratum.

Pileus (Fig. 1) 5–8(–12) mm in diameter, at first hemispherical to convex with incurved margin, then broadly

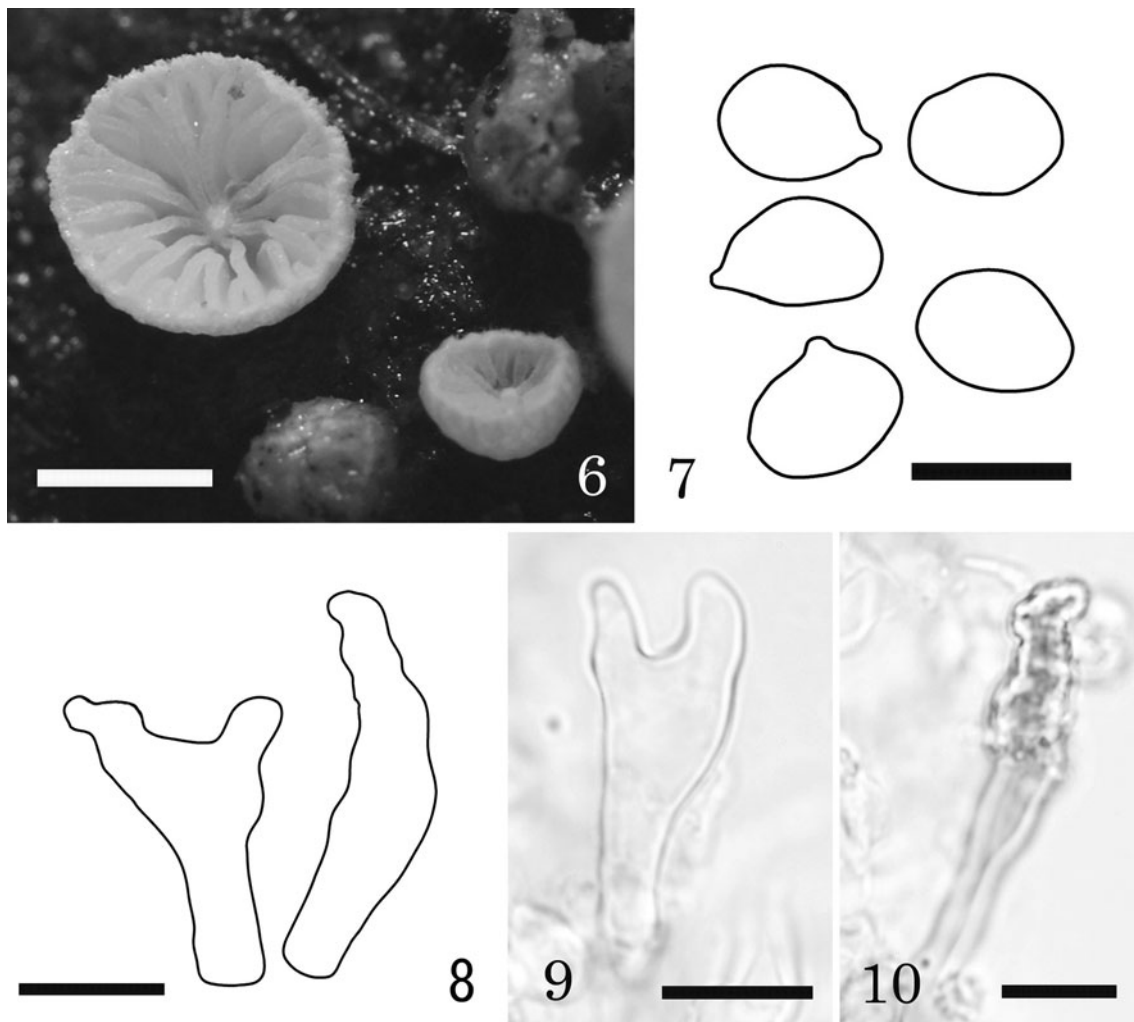
Figs. 1–5 *Crinipellis rhizomorphica* (Holotype): **Fig. 1** Basidiomata. **Fig. 2** Rhizomorphs. **Fig. 3** Hairs of pileus. **Fig. 4** Cheilocystidia. **Fig. 5** Basidiospores. Bars 1 10 mm; 2 15 mm; 3 20 μm; 4 10 μm; 5 13 μm. Color photos of *Crinipellis rhizomorphica* can be seen at <http://www7a.biglobe.ne.jp/~har-takah/page128.html>



convex to nearly plane, sometimes with a depressed center, often with a brownish orange (6C7–8 or 7C7–8) or blackish, broad umbo at the center; surface dry, radially fibrillose-squamulose with strigose, brownish orange (6C7–8 or 7C7–8) to brown (7D7–8) hairs projecting beyond the margin, often concentrically zoned, dull, opaque. Flesh very thin (up to 0.5 mm), white, pliant but easily broken, odor and taste not distinctive. Stipe 8–15 (–20) \times 0.7–1.3 mm, subequal or slightly enlarged at the base, central, slender, terete, hollow, entirely strigose-fibrillose with brownish orange (6C7–8 or 7C7–8) to brown (7D7–8) hairs, basal mycelium not seen. Lamellae adnexed, 19–23 reach the stipe, with 1–3 series of lamellulae, up to 1.5 mm broad, white; edges ciliate to fimbriate, concolorous. Rhizomorphs (Fig. 2) independent of the formation of basidiomata, growing into the air, scattered on the substratum, 5–15 (–30) \times 0.02–0.6 mm,

thread-like, gradually tapering toward the apex, tough, not branched, dense, parallel, white, inamyloid in the apical portion but otherwise dextrinoid, hyaline or turning pale olivaceous in KOH; constituent hyphae similar to the hairs of basidiomata, 2–5 μ m diameter, cylindrical, with rounded apex, with smooth walls 0.5–2 μ m thick, often with several secondary septa near the apical portion.

Basidiospores (Fig. 5) (9.5–)11–13 \times (4–)4.5–5 μ m (Q = length/breadth: 2.44–2.6), oblong-ellipsoid, smooth, colorless, inamyloid, rarely septate, thin-walled. Basidia 25–27 \times 3–8 μ m, clavate, 4-spored; basidioles fusiform to subclavate. Cheilocystidia (Fig. 4) 17–33 \times 6–10 μ m, gregarious, forming a compact sterile edge, projecting from the hymenium, subclavate, with two or three short cylindrical apical appendages 1–5 \times 1–2.5 μ m, smooth, colorless, inamyloid, hyaline in KOH, thin-walled. Pleurocystidia, none.



Figs. 6–10 *Chaetocalathus fragilis* (KPM-NC0017300): **Fig. 6** Basidiomata. **Fig. 7** Basidiospores. **Figs. 8, 9** Cheilocystidia (metuloid) mounted in KOH. **Fig. 10** Cheilocystidia (metuloid) mounted in

Melzer's reagent. Bars **6** 1 mm; **7** 8 μ m; **8–10** 10 μ m. Color photos of *Chaetocalathus fragilis* can be seen at <http://www7a.biglobe.ne.jp/~har-takah/page134.html>

Hyphae of hymenophoral trama 3–8 μm wide, parallel, subcylindrical, not inflated, smooth, colorless, inamyloid, hyaline in KOH, thin-walled. Pileipellis a hypotrachelial layer of subcylindrical cells 5–7 μm wide, with smooth, colorless walls 1–2 μm thick, inamyloid or weakly dextrinoid; hairs of pileus (Fig. 3) 400–600 \times 4–6 μm , arising directly from the hypotrachelium, repent or erect, cylindrical, with a rounded apex, sometimes flexuous, with smooth, brownish orange (6C7–8) walls 1–2 μm thick, strongly dextrinoid, turning olive yellow (3C6–8) in KOH, occasionally with several secondary septa. Hyphae of pileitrama 5–10 μm wide, similar to those of the hymenophoral trama. Hairs of stipe similar to those of the pileus. Stipe trama composed of longitudinally running, cylindrical hyphae 5–13 μm wide, smooth, colorless, inamyloid, hyaline in KOH, thin-walled. Clamps present in all tissues.

Habitat: Gregarious or scattered, on dead twigs (unidentified substrata), June to July.

Specimens examined: KPM-NC0017526 (holotype), Banna-dake, Ishigaki-shi, Okinawa Pref., on dead twigs, 25 July 2010, coll. Takahashi, H. and Terashima, Y.; KPM-NC0017297, same place, 3 July 2006, coll. Takahashi, H.; KPM-NC0017298, same place, 13 June 2006, coll. Takahashi, H.; KPM-NC0017299, same place, 15 June 2007, coll. Takahashi, H.; KPM-NC0017527, same place, 11 August 2010, coll. Takahashi, H.

Known distribution: Japan (Okinawa).

Japanese name: Midori-nisehouraitake.

Comments: *Crinipellis rhizomorpha* has the characteristics of the brownish orange, fibrillose-squamulose basidiomata accompanied by the white thread-like rhizomorphs on the dead twig, the dextrinoid hairs turning olivaceous in KOH, the oblong-ellipsoid, relatively long basidiospores averaging $12 \times 4.75 \mu\text{m}$, the subclavate cheilocystidia with two or three short cylindrical apical appendages, and the absence of pleurocystidia. Its olivaceous-colored hairs in KOH suggest that the present fungus is best accommodated in the section *Grisentinae* (Singer) Singer (Singer 1976, 1986).

Within the section *Grisentinae*, *C. rhizomorpha* has macromorphological similarities to the following four species: *C. sapindacearum* Singer from Brazil (Singer 1976); *C. trichialis* (Lév.) Pat. ex Antonín R. Ryoo & H.D. Shin (Léveillé 1846; Saccardo 1887; Antonín et al. 2009), redescribed by Singer from Venezuela (Singer 1976) and by Kerekes and Desjardin from Indonesia and Malaysia (Kerekes and Desjardin 2009); *C. tucumanensis* Singer from Argentina (Singer 1976); and *C. rhizomaticola*

Antonín from the Republic of Korea (Antonín et al. 2009). These taxa mainly differ from *C. rhizomorpha* in having well-developed pleurocystidia and lacking rhizomorphs. Furthermore, *C. sapindacearum* has much smaller basidiospores: $7.5\text{--}8.2 \times 3\text{--}3.5 \mu\text{m}$ (Singer 1976) and a habit on dead fallen coriaceous leaves of Sapindaceae. *Crinipellis trichialis* produces shorter and broader basidiospores: $(8.5\text{--}) 9.6\text{--}11.5 \times (5.5\text{--})6\text{--}7\text{--}(7.4) \mu\text{m}$ (Kerekes and Desjardin 2009, Holotype: FH!). *Crinipellis tucumanensis* forms much shorter basidiospores: 5.5–8.5 μm long (Singer 1976). *Crinipellis rhizomaticola* is distinct in having a chestnut-brown, larger pileus: 12–22 mm in diameter (Antonín et al. 2009), and significantly shorter basidiospores: 8.5–10 μm long (Antonín et al. 2009). *Crinipellis rhizomorpha* also shares characteristics such as olivaceous-colored hairs in KOH, copious rhizomorphs, and a radially fibrillose-strigose pileus with a minute blackish papilla in umbilicus in common with the following two species: Southeast Asian *C. actinophora* (Berk. and Broome) Singer (Berkeley and Broome 1874; Singer 1955; Pegler, 1986; Corner 1996; Kerekes and Desjardin 2009); and *C. nigricaulis* Har. Takah. from Japan (Takahashi 2000) and Republic of Korea (Antonín et al. 2009). These two taxa, however, can be discerned from *C. rhizomorpha* by forming a dark brown stipe occasionally associating with the much longer, dark brown, ‘hair-blight’ rhizomorphs, significantly shorter basidiospores: 6–10 μm long (Kerekes and Desjardin 2009), and cheilocystidia with numerous apical appendages.

2. *Chaetocalathus fragilis* (Pat.) Singer, Lilloa 8: 520, 1943

Figs. 6–10

Basionym: *Crinipellis fragilis* Pat., Philipp. J. Sci., C, Bot. 10:97, 1915

\equiv *Marasmius fragilis* (Pat.) Sacc. and Trotter, Syll. fung. (Abellini) 23:153, 1925

\equiv *Lachnella fragilis* (Pat.) Locq., Bull. trimest. Soc. mycol. Fr. 68:166, 1952

Pileus (Fig. 6) (0.5–)1–2(–2.5) mm in diameter \times 0.5–1 mm tall, very small, membranous, astipitate and dorsally attached to a substratum, discoid-cyphelloid, with pilose margin; surface not hygrophanous, smooth, appressed fibrillose to woolly-tomentose, pure white overall. Flesh very thin (up to 0.2 mm), white. Odor and taste not distinctive. Rudiment of stipe 0.1–0.2 mm diameter, white, reduced to a central small papilla (columella), situated in the underside of the pileus and not directly attached to a substratum. Lamellae adnexed to almost free, subdistant (13–18) with 1–2 series of lamellulae, medium broad (0.2–0.6 mm), thin, white; edges even, concolorous.

Basidiospores (Fig. 7) 8–8.5 \times 6–7 μm (Q = length/breadth: 1.2–1.3), subglobose to shortly ovoid-ellipsoid, smooth, colorless, inamyloid, thin-walled. Basidia 16–22 \times

Figs. 11–14 Basidiomata of *Psilocybe capitulata* (Holotype): **Fig. 11** Primordia and immature basidiomata. **Fig. 12** Immature basidioma. **Fig. 13** Mature basidiomata. **Fig. 14** Surface of the mature pileus. Bar **11** 2 mm; **12** 5 mm; **13, 14** 20 mm. Color photos of *Psilocybe capitulata* can be seen at <http://www.7a.biglobe.ne.jp/~har-takah/page112.html>



4–6 μm , clavate, 4-spored; basidioles subclavate to subfusoid. Cheilocystidia (Figs. 8–10) 15–23 \times 6–12 μm , gregarious, forming a compact sterile edge, projecting from the hymenium, metuloid-type, clavate to subclavate, usually with one or two cylindrical apical appendages

5–11 μm long, with an obtuse apex, smooth, colorless, hyaline in KOH, with strongly dextrinoid, moderately thickened walls (up to 1 μm thick), usually in the upper portion encrusted with coarse hyaline crystals. Pleurocystidia scattered, similar to cheilocystidia. Hyphae of

hymenophoral trama 2–9 μm wide, entangled, cylindrical, smooth, colorless, inamyloid, thin-walled, occasionally with clamped septa. Pileipellis a hypotrachial layer of subcylindrical cells 3–6 μm wide, with smooth, colorless walls up to 1 μm thick, weakly dextrinoid, occasionally with clamped septa; hairs of pileus 200–300 \times 2–5 μm , arising directly from the hypotrachium, densely entangled, cylindrical, with a subacute apex, sometimes flexuous, hyaline in KOH, with smooth, hyaline walls 1–2 μm thick, strongly dextrinoid, without a secondary septum. Hyphae of pileitrama similar to those of the hymenophoral trama.

Habitat: Usually abundant, on dead twigs (unidentified substrata), June to August.

Specimens examined: KPM-NC0017520, Banna-dake, Ishigaki-shi, Okinawa Pref., on dead twigs, 25 July 2010, coll. Takahashi, H. and Terashima, Y.; KPM-NC0017521, same place, 28 July 2010, coll. Takahashi, H.; KPM-NC0017522, same place, 11 Aug. 2010, coll. Takahashi, H.; KPM-NC0017523, same place, 6 Jun. 2009, coll. Takahashi, H.; KPM-NC0017524, same place, 8 Jun. 2009, coll. Takahashi, H.; KPM-NC0017525, same place, 15 Jun. 2009, coll. Takahashi, H.

Known distribution: Japan (Okinawa).

Japanese name: Hida-fuurintake.

Comments: The diagnostic features of this species are the minute (1–2 mm in diameter on average), white, membranous, discoid-cyphelloid basidiomata having a central, small, papillate columella, the subglobose to shortly ovoid-ellipsoid basidiospores, the dextrinoid hymenial metuloids with an obtuse apex, the strongly dextrinoid hairs covering the pileus surface, and the basidiome formation on the dead twig.

The Japanese material fully conforms to *C. fragilis* originally described from the Philippines (Patouillard 1915; Saccardo and Trotter 1925; Singer 1943; Locquin 1952). At the collection locality in Japan (Ishigaki-shi, Okinawa Pref.), the species commonly occurs on dead twigs in the mixed forest of *Q. miyagii* and *C. sieboldii* in summer. The present species seems to be distributed widely in eastern Asia and the Pacific region.

3. *Psilocybe capitulata* Har. Takah., sp. nov. Figs. 11–18

Mycobank no.: MB 519033

Primordium 1–2 mm lato, ovoideis vel oblongo-ellipsoideis, cum flocculo albo obvolvato; pileo 42–93 mm lato, primo hemispherico vel conico-campanulato, dein late convexo vel applanato, saepe umbonato, furfuraceo-squamuloso, subviscido, hygrophano, brunneo; carne cyanescente; odore saporeque nullo; stipite 48–63 \times 5–20 mm,

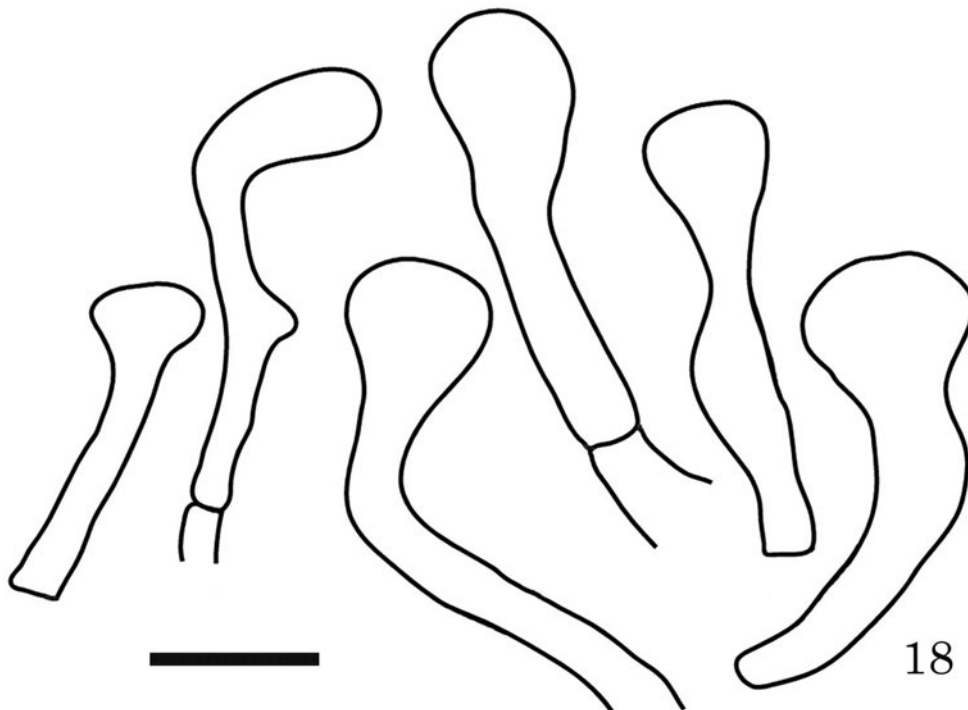
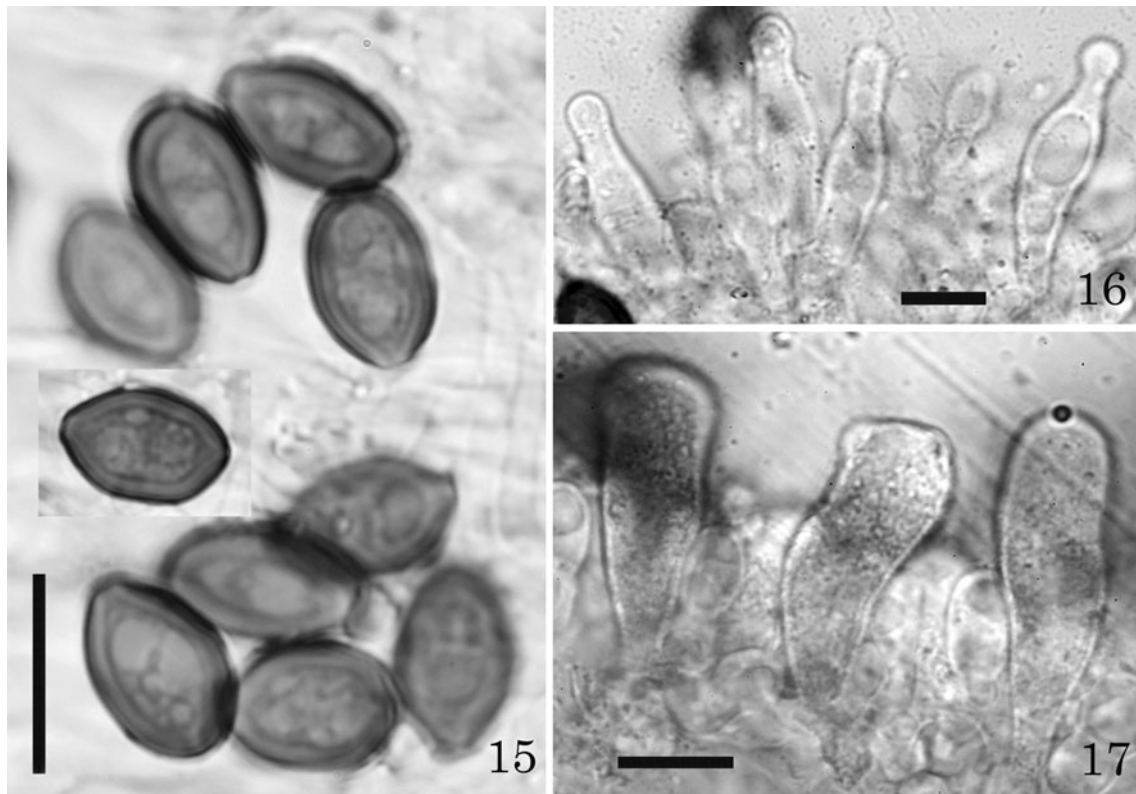
subaequali vel ad basim leniter incrassato, centrali, cavo, albo vel brunneolo, fibrilloso vel squamuloso; annuli tenuis, albis; mycelio basali albo affixo; lamellis adnexis, brunneis; basidiosporis (13–)13.5–15(–19) \times 8–9(–9.5) μm , ellipsoideis vel subhexagonoideis, levibus, rubro-brunneis, crassitunicatis; basidiis bisporis vel tetrasporis; cheilocystidiis 24–35 \times 3–9 μm , abundantibus, fusoido-ventricosis; pleurocystidiis nullis vel infrequens, 28–39 \times 10–15 μm , basidioformibus vel late clavatis; pilocystidiis 40–60 \times 2–13 μm , clavato-cylindratis, capituliformibus; hyphis fibulatis.

Holotypus: Ad fimum bovis, Ishigaki-shi, Okinawa Pref., Japonia, 9 Feb. 2002, H. Takahashi (KPM-NC0017300).

Etymology: from Latin, *capitulata* = capitulate, referring to the capitulate pilocystidia.

Primordium (Fig. 11) 1–2 mm in diameter, ovoid to oblong-ellipsoid, enveloped in white, floccose universal veil. Pileus (Figs. 12–14) 42–93 mm in diameter, at first hemispherical to conic-campanulate, expanding to broadly convex to almost plane, sometimes broadly umbonate, with straight margin, not appendiculate; surface at first spotted with fugacious, white remnants of the veil, soon glabrescent, eventually covered overall with brownish, furfuraceous squamules in age, subviscid when wet, hygrophorous, brownish orange (7C6–7) to brown (7D6–7) when moist, mottled with darker areas (near brownish red: 8C6–7) at the center, drying to paler (6C4–5) or whitish from the margin, gradually changing to blue where handled. Flesh up to 9 mm, whitish, gradually changing to blue when cut; odor and taste not distinctive. Stipe 48–63 \times 5–20 mm, subequal or at times somewhat thickening toward the base, central, terete, hollow; surface fibrillose above, squamulose below, sometimes striate above the annulus, whitish to pale brownish, gradually changing to blue where handled; annulus 8–15 mm wide, thin, membranous, persistent, fragile, white, striate; base covered with white strigose mycelial hairs. Lamellae adnate to adnexed, close (42–51 reach the stipe) with 1–3 series of lamellulae, up to 12 mm broad, dark-brown (8F6–8) to reddish-brown (9F7–8); edges subfloccose, greyish.

Basidiospores (Fig. 15) (13–)13.5–15(–19) \times 8–9(–9.5) μm (Q = length/breadth: 1.66–1.68), subellipsoid in side view, subhexagonal in face view, smooth, greyish red (10D5) to brownish red (10D6) in H_2O , orange–yellow (4A7–4B7) in KOH, thick-walled (0.5–1 μm), truncated at the apex, with a distinct germ pore. Basidia 25–35 \times 10–12 μm , clavate, 2- to 4-spored. Cheilocystidia (Fig. 16) 24–35 \times 3–9 μm , abundant, forming a compact sterile edge, fusoid-ventricose with a subcapitate apex, smooth, hyaline in KOH, thin-walled. Pleurocystidia (Fig. 17) none or infrequent, 28–39 \times 10–15 μm , basidiomorphous, broadly clavate, with a rounded apex, sometimes with a



Figs. 15–18 Micromorphological features of *Psilocybe capitulata* (Holotype). **Fig. 15** Basidiospores mounted in KOH. **Fig. 16** Cheilocystidia. **Fig. 17** Pleurocystidia. **Fig. 18** Pilocystidia. Bar **15** 15 μm ; **0.16** 10 μm ; **17** 15 μm ; **18** 13 μm

slight median constriction, smooth, hyaline in KOH, thin-walled. Hyphae of hymenophoral trama 5–22 μm wide, subcylindrical to fusoid, often inflated, parallel, smooth,

hyaline in KOH, thin-walled. Pileipellis a loose cutis of entangled, gelatinous, subcylindrical hyphae 2–10 μm wide, encrusted with orange (6A7–6B7) pigment in

KOH; pilocystidia (Fig. 18) 40–60 × 2–13 μm, clavate-cylindrical, often with a capitulate apex, smooth, hyaline in KOH, thin-walled. Squamules of the pileus similar to the pileipellis. Hyphae of pileitrama 5–10 μm wide, parallel, subcylindrical, not inflated, smooth, hyaline in KOH, thin-walled. Stipitipellis a loose cutis of entangled, non-gelatinous, cylindrical hyphae 2–5 μm wide, smooth, hyaline in KOH, thin-walled, lacking differentiated terminal cells. Stipe trama composed of longitudinally running, cylindrical cells 5–12 μm wide, smooth, hyaline in KOH, thin-walled. Elements of annulus 2–3 μm wide, loosely interwoven, subcylindrical, not inflated, smooth, hyaline in KOH, thin-walled. Clamp connections present in all tissues.

Habitat: Solitary to scattered, coprophilous on cow dung, almost year-round, common.

Specimens examined: KPM-NC0017300, Ishigaki-shi, Okinawa Pref., on cow dung, 9 Feb. 2002, coll. Takahashi, H., Uehara, S., and Sakamoto, H.; KPM-NC0017301, same place, 2 March 2002, coll. Takahashi, H.; KPM-NC0017302, same place, 26 Feb. 2008, coll. Takahashi, H. & Sakamoto, H.; KPM-NC0017303, same place, 28 Feb. 2008, coll. Takahashi, H.; KPM-NC0017304, same place, 3 March 2008, coll. Takahashi, H.; KPM-NC0017305, same place, 2 June 2008, coll. Takahashi, H.; KPM-NC0017306, the same place, 14 June 2008, coll. Takahashi, H.; KPM-NC0017307, same place, 2 Feb. 2009, coll. Takahashi, H.; KPM-NC0017308, same place, 9 March 2010, coll. Takahashi, H.

Known distribution: Japan (Okinawa).

Japanese name: Nanyou-sibiretake.

Comments: *Psilocybe capitulata* is well characterized by the brownish orange to brown pileus covered overall with brownish, furfuraceous squamules in age, the cyanescent flesh, the persistent, white, membranous annulus, the capitulate pilocystidia, and the coprophilous habit on the cow dung. Its cyanescent basidiomata on cow dung, the subhexagonal, thick-walled basidiospores, and the well-developed, persistent annulus indicate alignment of the present fungus with the section *Cubensae* Guzmán (Guzmán 1983). Because of its typically furfuraceous-squamulose pileus in age, the capitulate pilocystidia, and the infrequent, less-developed pleurocystidia, *P. capitulata* can be distinguished from the other previously known taxa of the section *Cubensae* such as pantropical *P. cubensis* (Earle) Singer (Earle 1906; Guzmán 1978, 1983; Pegler 1983; Stamets 1996; Thomas et al. 2002; Cortez and Coelho 2004) and *P. subcubensis* Guzmán from Mexico (Guzmán 1978, 1983).

Apart from the section *Cubensae*, *P. subaeruginascens* Höhn. from Indonesia (Höhn 1914; Guzmán 1983; Horak

and Desjardin 2006) and Japan (Nagasawa 1987) bears a superficial resemblance to *P. capitulata*, although it is distinct in possessing rhomboid basidiospores, producing well-developed, broadly fusoid-ventricose pleurocystidia, and lacking pilocystidia. *Psilocybe subannulata* E. Horak and Guzmán from Puerto Rico (Guzmán et al. 2009) is also similar to *P. capitulata* in appearance. The former is easily separated from *P. capitulata* in having rhombic basidiospores and lacking pilocystidia. The present species may possibly be related to *P. magnispora* E. Horak, Guzmán and Desjardin from Thailand (Horak et al. 2009) in having a submembranous annulus, cyanescent flesh, and a coprophilous habit. *Psilocybe magnispora*, however, is differentiated from *P. capitulata* in possessing rhomboid basidiospores, forming well-developed pleurocystidia with refrigent incrustations, and lacking pilocystidia.

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