

SHORT COMMUNICATION

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## Two new records for Japan, *Lepiota calcicola* and *Melanophyllum eyrei* (Agaricaceae)

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**Abstract** Two species of Agaricaceae were collected on soil in metropolitan Tokyo, central Japan. These species were identified as *Lepiota calcicola* and *Melanophyllum eyrei*. These are new records for Japan. Macroscopic and microscopic descriptions and a summary of their known distribution are given.

**Key words** Agaricaceae · Japan · *Lepiota calcicola* · *Melanophyllum eyrei* · Taxonomy

Two species of Agaricaceae new to Japan, collected on soil in metropolitan Tokyo, were identified as *Lepiota calcicola* Knudsen and *Melanophyllum eyrei* (Mass.) Sing. In this article, they are described and illustrated. A brief survey of their known distribution is also given. Macroscopic descriptions are based on fresh specimens. Descriptions of microscopic characters are based on observations of sections of fresh material mounted in Melzer's reagent. For the size of basidiospores, a total of 20 spores from mounted lamellae were measured in each species. Specimens are deposited at the Natural History Museum and Institute, Chiba (CBM-FB).

*Lepiota calcicola* Knudsen, Bot. Tidsskr. 75:140, 1980.

Figs. 1,2

Pileus 50–65 mm in diameter, hemispherical to conical when young, later convex-expanded, umbonate with a conical umbo, tomentose, surface dry, reddish-brown to brown, completely covered when young with dark brownish conical spines 2–3 mm long, later with somewhat appressed brown fibrillose scales remaining toward the margin, scales persis-

tent or often partly disappeared when old, margin incurved when young, later recurved. Lamellae white when young, later cream to pale yellow, crowded at first, later distant, edges pale, floccose. Stipe 45–60 × 7–9 mm, fragile, fistulose, cylindrical or enlarged below, white mycelium attached to the base, annular zone fibrillose-scaly, brown, below annulus with scales brown to dark reddish-brown, above annular zone paler, with an arachnoid tomentum. Annulus superior, membranaceous, white, evanescent. Flesh white. Spore print pale yellow.

Basidiospores 4.0–5.3 (–5.5) × 2.5–2.8 (–3.0) μm, Q (length/breadth ratio) = 1.43–1.83 (–1.89),  $\bar{Q} = 1.63 \pm 0.09$ , broadly ellipsoid to ellipsoid, hyaline, smooth. Basidia 15–32 × 5.0–6.0 μm, four-spored, clavate. Cheilocystidia 24–30 × 4.5–7.0 μm, abundant, hyaline, confluent to a palisade, cylindrical with obtuse apex or clavate to fusiform, with basal clamp connection. Pleurocystidia not seen. Epicutis composed of up three types of cell. Basal cells hyaline, 2.0–3.0 μm broad, intermediate cells 4.0–6.5 μm broad, brown, most apical cells subglobose to oblong, 28–55 × 17–30 μm, brown to yellowish-brown, with brown walls. Clamp connections present.

Habitat: Basidiomata usually solitary or dispersed, but often gregarious, growing on limestone or rich soil in woods (especially with various deciduous trees), gardens, parks, among grasses. Late summer until late fall.

Distribution: New to Japan (Tokyo). Originally described from Denmark, then from Germany, UK, Switzerland, Austria, France, and Czechoslovakia (Knudsen 1980), later also recorded from Italy (Candusso and Lanzoni 1990), the Netherlands (Vellinga 2001), and Sweden (Herb. C).

Specimens examined: Japan; Kami-ikebukuro, Toshima ward, metropolitan Tokyo, growing on the ground in the garden under *Rhododendron* spp., Sept. 1, 2001, collected by T. Kasuya, CBM-FB 31000; same location, Sept. 17, 2001, collected by T. Kasuya, CBM-FB 31001.

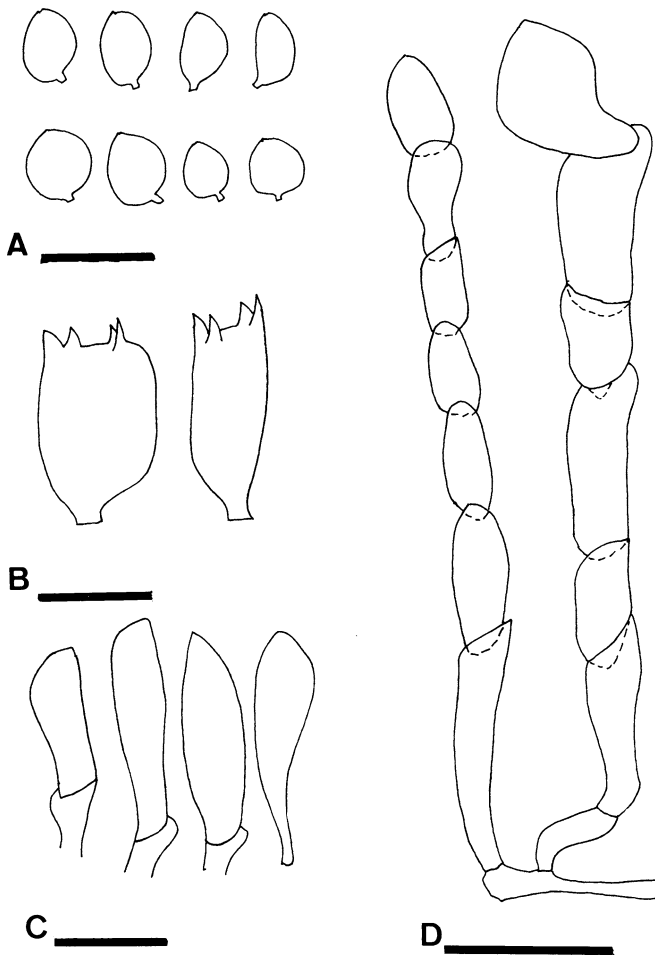
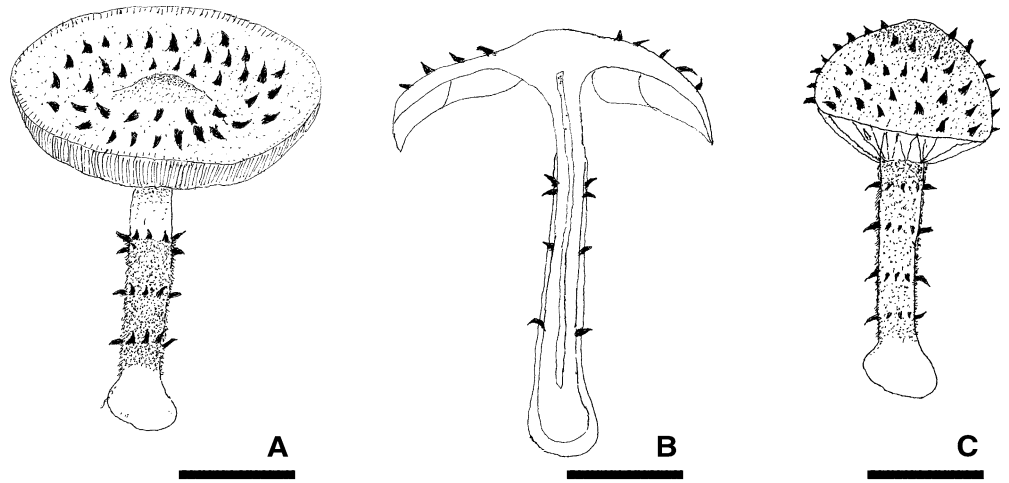
Japanese name: Togemi-no-karakasatake.

Remarks: The macro- and microscopic characteristics match *L. calcicola*, a species reported from Europe by Knudsen (1980). In Japan, *L. calcicola* has been confused

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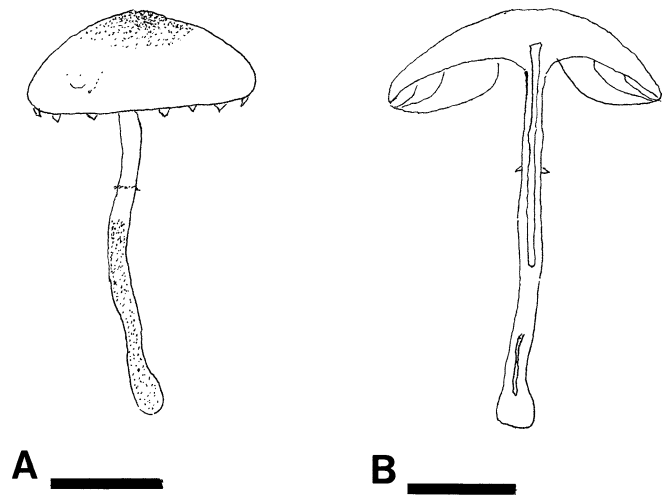
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**Fig. 1.** *Lepiota calcicola*. **A** Mature fruiting body (CBM-FB 31000). **B** Sectioned mature fruiting body (CBM-FB 31000). **C** Immature fruiting body (CBM-FB 31001). Bars **A–C** 20mm



**Fig. 2.** *Lepiota calcicola* (CBM-FB 31000). **A** Basidiospores. **B** Basidia. **C** Cheilocystidia. **D** Epicutis. Bars **A–C** 10 $\mu$ m; **D** 50 $\mu$ m

with *L. hystrix* F.H. Moeller & J.E. Lange, but it is easily distinguished from the latter by smaller (4.0–7.0  $\times$  2.0–3.0 $\mu$ m) spores and brownish to blackish lamellar edges. *Lepiota calcicola* also resembles *L. perplexa* Knudsen and *L. echinacea* J.E. Lange. It is distinguished from the latter



**Fig. 3.** *Melanophyllum eyrei* (CBM-FB 31002). **A** Mature fruiting body. **B** Sectioned mature fruiting body. Bars **A, B** 5mm

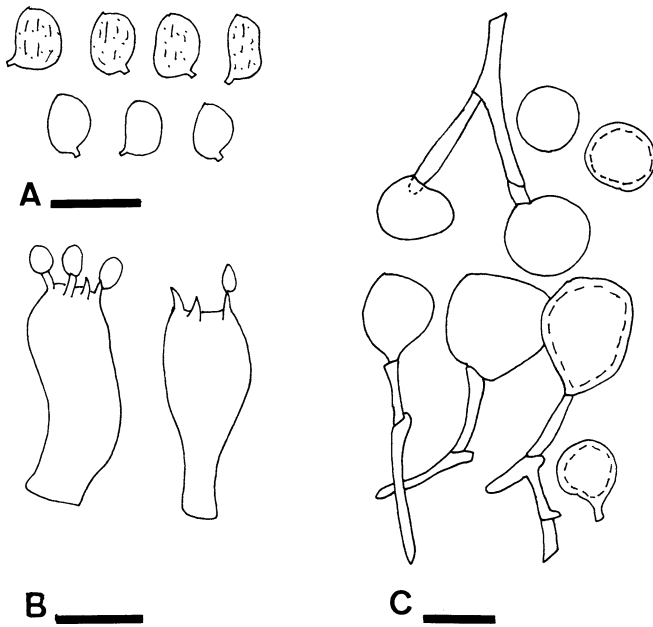
two species by the acute squamules, only up to 1 mm long, and inconspicuous to absent cheilocystidia.

*Melanophyllum eyrei* (Mass.) Sing., Lilloa 22:436, 1951.

Figs. 3,4

Pileus 10–15mm in diameter, convex to campanulate, margin incurved when young, later expanded or margin a little upturned, broadly umbonate, umbo ochraceous, granular, margin white and smooth, veil membranaceous, white, attached in fragments to the margin of the pileus when young. Lamellae pale green when young, later deep green to bluish-green, crowded at first, then distant as pileus expands, simple. Stipe 20–30  $\times$  1–2mm, white, fistulose, cylindrical or enlarged below, a few white rhizoids attached to the base, slightly flexuous, almost equal, smooth, but slightly pulverous at the apex. Annulus superior to eccentric, membranaceous, white, evanescent. Flesh white to reddish-brown. Spore print olivaceous-green.

Basidiospores 4.5–4.7 (–5.0)  $\times$  (2.3–) 2.5–3.0 $\mu$ m,  $Q = (1.67–) 1.8–1.9$ ,  $\bar{Q} = 1.85 \pm 0.06$ , ellipsoid to oblong, bluish-



**Fig. 4.** *Melanophyllum eyrei* (CBM-FB 31002). **A** Basidiospores. **B** Basidia. **C** Epicutis. Bars **A** 5  $\mu\text{m}$ ; **B** 10  $\mu\text{m}$ ; **C** 25  $\mu\text{m}$

green in water solution, smooth. Basidia 15–20  $\times$  6.0–7.0  $\mu\text{m}$ , four-spored, clavate, sterigmata up to 2.5  $\mu\text{m}$  long. Cheilocystidia and pleurocystidia absent. Epicutis composed of sphaerocysts. Sphaerocysts 15–38  $\mu\text{m}$  in diameter, yellow to yellowish-brown, silky. Clamp connections present.

**Habitat:** Basidiomata usually solitary, rarely gregarious, growing on rich soil or humus in woods (especially with various deciduous trees), gardens, parks, among grasses. Summer until late fall.

**Distribution:** New to Japan (Tokyo), otherwise known from Europe. Rare, but widespread.

**Specimens examined:** Japan; Kami-ikebukuro, Toshima ward, metropolitan Tokyo, growing on the ground in the garden under *Rhododendron* spp., Sept. 17, 2001, collected by T. Kasuya, CBM-FB 31002; same location, Sept. 19, 2002, collected by T. Kasuya, CBM-FB 32336.

**Japanese name:** Midori-hida-karakasatake.

**Remarks:** The macro- and microscopic characteristics match *M. eyrei*, a conspicuous species due to the green lamellae. *M. eyrei* has one variety, i.e., *M. eyrei* (Mass.) Sing. var. *macrosporum* Urbonas, reported from Baltic states (Urbonas 1974; Candusso and Lanzoni 1990). This variety is distinguished from *M. eyrei* by its bigger spores (5.0–7.5  $\times$  2.0–2.5  $\mu\text{m}$ ) and adnate lamellae.

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