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# Observations on the *Bolbitiaceae* 31. *Conocybe volviradicata* sp. nov.

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**Abstract** — A new species of *Conocybe* from southwest Turkey, with the unique combination of a volva and long radicating stipe-base, is described as new to science; it is placed in *Conocybe* section *Singerella*.

**Key words** — new taxa, *Conocybe corneri, Conocybe antipus*

## Introduction

Other than *Conocybe peronata* Kühner & Watling, now assigned to *Pholiotina*, no peronate or volvate species were treated in the classical studies of the genus by Atkinson (1918; as *Galerula*) and Kühner (1935). Watling (1979) was the first to describe two species from South East Asia with a distinct volva — *C. corneri* Watling and *C. vaginata* Watling — and to transfer *Galerula locellina* Murrill from Florida, North America, to *Conocybe,* noting that it also possessed a volvate stipe-base. Over the intervening years, a clutch of taxa have been recognized with this character, with Horak & Hausknecht (2002) eventually providing a key to nine species. Since then Hausknecht & Krisai-Greilhuber (2009) have added a tenth species, *C. reinwaldii.* Whilst documenting the mycota of southwest Turkey, we discovered a new member of this group that differed from all others by possessing a radicating stipe-base. This new taxon, formally described herein, is the twelfth representative of *Conocybe* in the Turkish macromycota (Solak et al. 2007).

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## Taxonomy

***Conocybe volviradicata*** Watling, Işıloğlu & Baş Sermenli, **sp. nov.** Figs 1–4

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*Pileus 15 mm, e convexo vel campanulato rariore expansus clare cinnamomeus vel ferrugineo-mellinus siccitate bubalinus vel flavo-cremeus glabrus ad marginem striatus tenuis. Lamellae fere liberae aggregatae mellino-luteolobrunneae. Stipe 30 ×3 mm, tenax cremeus conspicue pruinoso-striatus ad basim leviter incrassatus volvatus et radicatus (< 20 mm longus). Caro tenuis. Sporae in cumulo ochraceo-brunneae vel cinnamomeae. Sporae hexagoneae poro germinativo 8–10 × 6–7 µm. Cystidia aciei lamellarum lecythiformia 22–25 × 4–7 µm. Cystidia stipitis 1) lecythiformia 25–35 × 2–6 µm; 2) ellipsoidea vel clavata 18–21 × 6–8 µm; et 3) utriformia vel lageniformia 25–30 × 6–9 µm. Fibuligeris nullus. Habitatio in fimo putrido. Turkey; Muğla, Göktepe. Typus H. Baş 12 in E.*

Type: Turkey; Muğla, Göktepe village, 11 September 2004, Işıloğlu 7700, H. Bas 12. **Holotype**: in E.

Etymology: The epithet *volviradicata* refers to the volvate, rooting stipe.

Pileus 15 mm conical to campanulate (Fig. 1), deep cinnamon to sienna, drying buff to yellowish cream, smooth, margin striate, silky and very thin. Gills almost free, crowded, pale ochraceous. Stipe 30 × 3 mm, tough, cream-colour, distinctly striate to beginning of the volva, volvate, rooting base < 20 mm long. Flesh thin, < 1 mm thick in cap-center. Taste and smell not recorded. Spore print ochraceous-brown to cinnamon. Spores hexagonal (Fig. 2) 8–10 × 6–7 µm, sienna, thick walled, with a distinct germ-pore. Cheilocystidia lecythiform (Fig. 3) 22–25 × 4–7 µm. Caulocystidia mixed of 3 different types: 1) lecythiform, 25–35 × 3–6 µm; 2) ellipsoid to clavate, 18–21 × 6–8 µm; 3) nettle hair-shaped to lageniform, 25–30 × 6–9 µm (Fig. 4). Clamp connections not seen.

Habitat. On manured soil bordering a vegetable garden.

## Discussion

*Conocybe volviradicata* is very easily recognized in the field by its distinct membranous volva and long, radicating stipe-base. The presence of lecythiform cheilocystidia combined with the field characters places this new species firmly in section *Singerella* Watling, and the presence of lecythiform caulocystidia places it in a slightly modified series *Corneri* Hauskn. & Krisai, as outlined by Hausknecht & Krisai-Greilhuber (2006). The stipitipellis in series *Corneri* consists of capilliform, ellipsoid, and sphaerical to lageniform elements; only in one species are these elements intermixed with lecythiform cells.

The volva in *C. volviradicata* is striate on the upper surface, and although it has been impossible to track the development to the degree followed by the senior author for *C. corneri* (Watling 1979), a striate volva characterizes both species. There are other parallels. *Conocybe corneri* is coprophilous, with the primordia

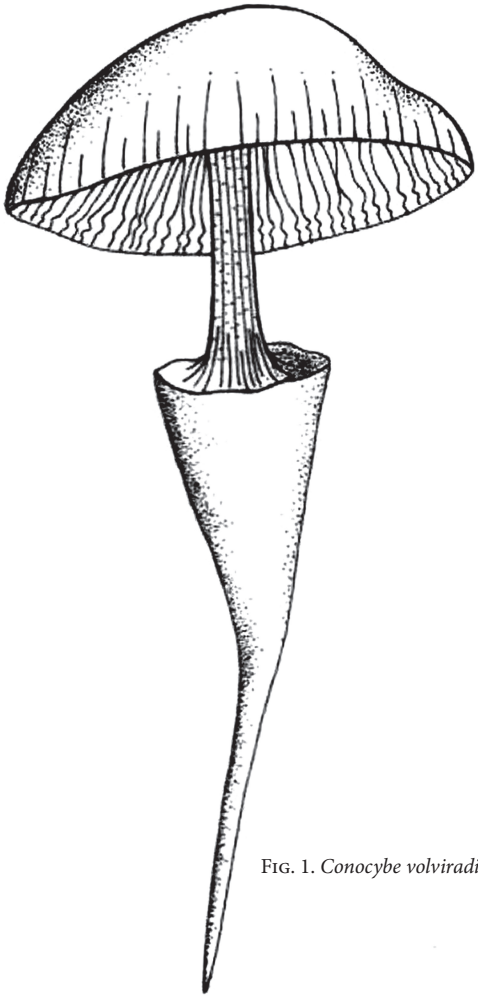
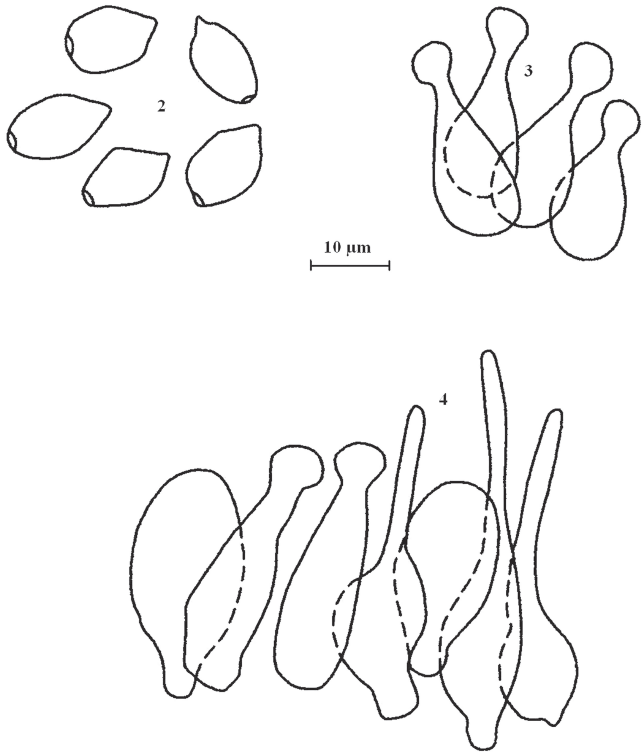


Fig. 1. *Conocybe volviradicata*. Habit.

developing below the surface of the dung, whereas in *C. volviradicata* the stipe was found buried in manured soil.

The long rooting base of *C. volviradicata* resembles that found in *C. antipus* (Lasch) Fayod known from Europe and North America, *C. humicola* (Thiers) Hauskn. et al. (≡ *C. antipus* var. *humicola* Thiers) from North America, and the European *C. fiorii* (D. Sacc.) Watling, *C. leporina* (Velen.) Singer, and *C. alboradicans* Arnolds—all assignable to *Conocybe* series *Antipus* (Hausknecht & Krisai-Greilhuber 2006). Although none of these species ever develop a volva




Figs. 2–4. *Conocybe volviradicata*. 2. Basidiospores. 3. Cheilocystidia. 4. Caulocystidia.

immediately above or at the base of the rooting stipe, *C. volviradicata* resembles *C. antipus* in producing basidiospores that are hexagonal in face view.

Hausknecht (1996, 2009), who treated European *Conocybe* species with rooting or deeply inserted stipe-bases including the species indicated above, recognized eight additional species in his key but did not depict any possessing the slightest volvate development. The recently described *C. reinwaldii* from Europe (Hausknecht & Krisai-Greilhuber 2009) and *C. radicata* Singer, an extra-European radicate taxon with minutely ornamented basidiospores, are placed in *Conocybe* section *Ochromarasmius* subsection *Pseudocystidiatae*. The spores of *C. volviradicata,* however, are smooth. *Conocybe reinwaldii* differs significantly in the lack of a volva.

*Conocybe radicata* from South America possesses lecythiform pleurocystidia, but no such structures are found in *C. volviradicata. Conocybe radicata* is also lignicolous, whereas the Turkish material is found in manured garden soil.

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