***Volutella ciliata* (Alb. & Schwein.) Fr. – AEB 1369 (= PDD 121657) A good match**

Collection site: NZTM grid ref. E1770110 N5447412 , a private residence surrounded by native bush, Moonshine Hill Road, Upper Hutt

Collection date: 3 November 2023; **Moist chamber incubation date:** 6 February 2024

Substrate: rabbit (*Oryctolagus cuniculus*) dung

Collectors: Ian Flux & Merryl Park; **Identifiers:** Ann Bell & Dan Mahoney

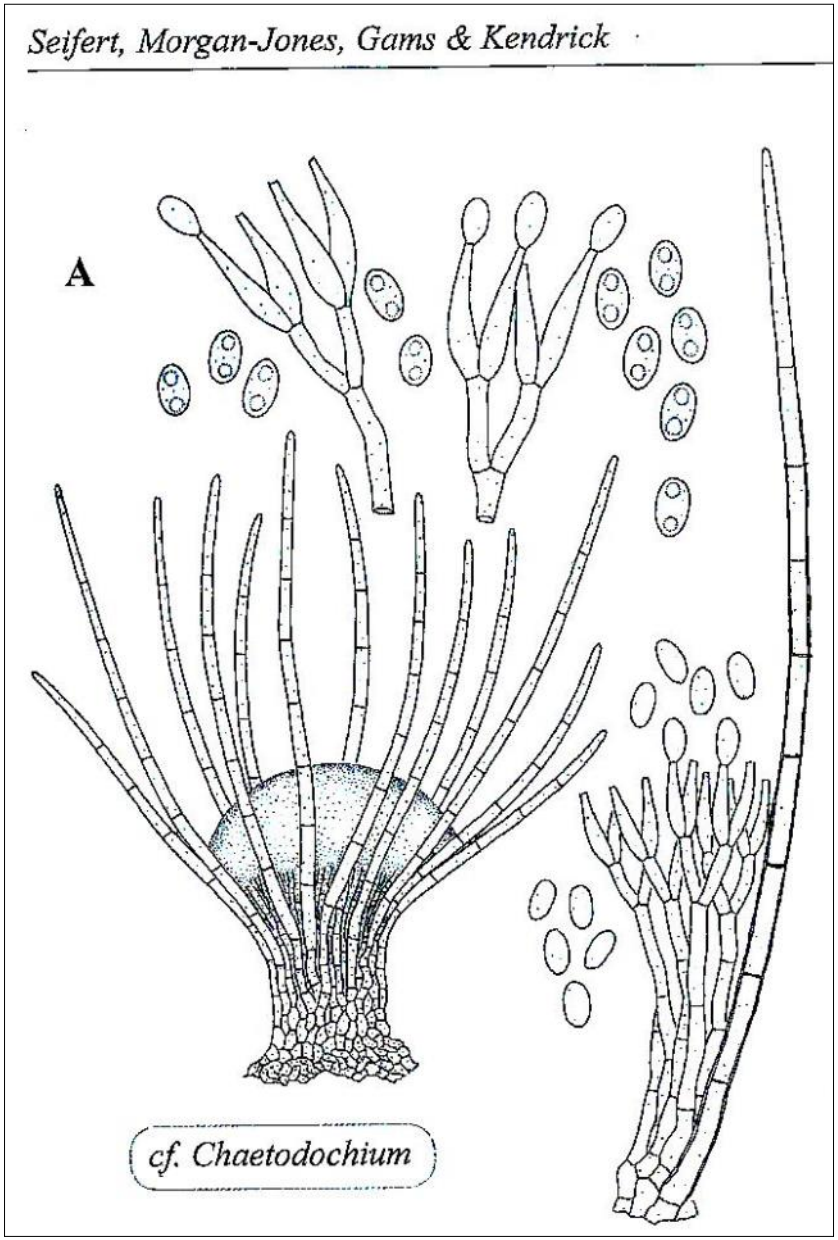
Voucher material: No dried herbarium material but 2 Shear's mounting fluid (SMF) semi-permanent microscope slides; various in-situ fruiting-body photos on the dung using a Samsung Galaxy A70 smartphone camera mounted on an Olympus compound microscope and various photos of microscopic detail using an Olympus compound scope with a DP22 camera; Dan's comments.

Comments: This collection fits nicely into the descriptions provided by Babu A.G. et al. 2015. A New Record of *Volutella ciliata* Isolated from Crop Field Soil in Korea. Mycobiology 43(1): 71-74. See their Table 1 'Comparison of morphological characteristics of the study isolate with respect to previously reported *Volutella ciliata*' reproduced below.

Characteristics	Study isolate *Volutella ciliata* KNU14-516	*Volutella ciliata*[a]
Setae	Setae subglobose, arising from stromatic base and also surrounding the conidiophores, usually with 20~25 setae around, 215~735 µm long, 5~7.5 µm wide at base, tapering to a round apex, septate, spinulose, hyaline, walls 0.5~1.5 µm thick	Conspicuous hyaline, thickwalled, unbranched, spine-like setae or median and psuedoseptate, tapering to a round apex, 510 × 5~5.5 µm
Sporodochia	Sporodochia solitary or gregarious on substrate, hemispheric, usually with over 20 setae around, substipitate with a small and basal stroma, 300~560 µm diam.	Sporodochial conidiomata, hemispheric, substipitate, 130~440 µm diam.
Conidiophore	Conidiophores hyline, branched, bearing conidia apically and 61.5~89.5 µm tall. Phialides determinate, discrete, cylindrical, smooth, hyaline, slightly curved when developed from more or less penicillately branched conidiophores	Conidiophores phialosporous, hyaline, brached, one-celled, cylindrical; phialidic conidiogenous cells arising from more or less penicillately branched conidiophores
Conidia	Conidial masses slimy; conidia ellipsoid, unicellular, aseptate, one celled, distally rounded ends, smooth, 5~7 × 2~2.4 µm (n = 50)	Smooth, elliptical straight, or equilateral, hyaline, 5~5.5 × 1.7~2 µm

The description of setae from their study isolate comes from their cultures and varies somewhat from those described in-situ from natural substrates. The latter appear nearly smooth and in AEB 1369 yellowish.

[a]**Sources of other descriptions and illustrations – For [a] See 'A New Record of Volutella ciliata Isolated from Crop Field ...National Institutes of Health (NIH) (.gov) https://www.ncbi.nlm.nih.gov › articles › PMC4397383'**



Volutella ciliata **drawing from Seifert et al. page 556, Plate 74A.**

Seifert K., Morgan-Jones G., Gams W. & Kendrick B. 2011. The Genera of Hyphomycetes. CBS Biodiversity Series no. 9: 1–997. CBS-KNAW Fungal Biodiversity Centre, Utrecht, Netherlands.

Details of *Volutella* from p. 470 reproduced below.

VOLUTELLA Tode 1790 : Fr. 1832 — *Fungi mecklenb. sel.* 1: 28 (28–29, Tab. v, Fig. 43–44) / *V. ciliata* (Alb. & Schw. : Fr.) Fr. 1832, *typus conservandus* ≡ *Tubercularia ciliata* Alb. & Schw. 1805

nom. cons. [non *Volutella* Forsk. 1775 (*Lauraceae*)]

= *Medusula* Corda 1837, *fide* Lindau 1910

= *Thysanopyxis* Ces. ex Rabenh. 1851, *fide* Saccardo 1886, Lindau 1910

?= *Volutina* Penz. & Sacc. 1902, *fide* Pirozynski 1972, but considered distinct by von Arx 1981

= *Chaetodochium* Höhn. 1932, *fide* Tulloch 1972, von Arx 1981, but considered distinct by Gräfenhan *et al.* 2011

CDM: sporodochia or determinate synnemata, pale. SET: hyaline, unbranched, on cdm. CPH: branched or penicillate, hyaline. CGC: phialides, hyaline. CDA: amero, hyaline, slimy, schizo.

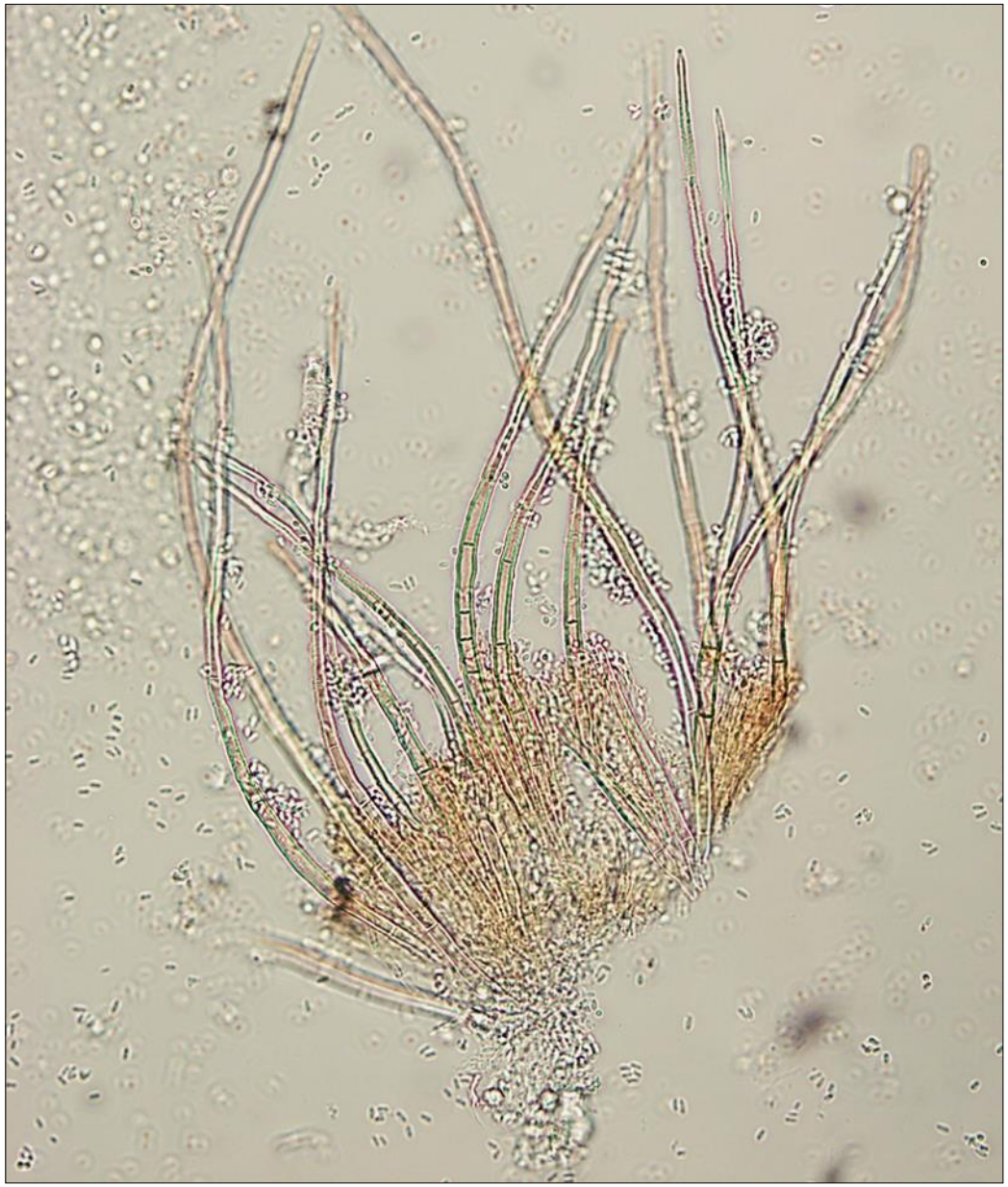
Fig. 27, Pl. 74A. On plants, litter, soil, dung and fish: Cosmopolitan. About 10 species, although about 120 species were described. Teleomorphs: *Cosmospora*, *fide* Samuels 1977 (as *Nectria*), Rossman *et al.* 1999; *Pseudonectria, fide* Rossman *et al.* 1983. Synanamorphs (hypho): verticillium-like, acremonium-like, *fide* Matsushima 1975, 1989. ITS barcode: DQ914740 (Merck EXP0556F).

Notes: Anamorphic *Ascomycota* (*Nectriaceae, Hypocreales*). Compare with *Chaetodochium*, *Sarcopodium*, *Actinostilbe*. The teleomorph of *V. ciliata* was called *Cosmospora consors* by Samuels (1977, as *Nectria*), but Domsch *et al.* (1980) and Rossman & Samuels (1999) reidentified the anamorph of the latter as *V. minima*.

Refs: Barron, *Gen. Hyphom. Soil*, pp. 38, 325–327, 1968 (illus.). — Matsushima, *Microf. Solomon Isl.*, p. 68, 1971 (Fig. 25). — Subramanian, *Hyphomycetes*, pp. 493–494, 1971 (illus.). — Hawksworth & Tulloch, Taxon 21: 707–708, 1972 (*nom. cons. prop.*). — Matsushima, *Ic. Microf. Mats. lect.*, p. 164, 1975 (Pl. 329, 330). — Petersen, Taxon 23: 647, 1974, 1975 (conservation). — Samuels, Mycologia 69: 255–262, 1977 (teleomorph, as *Nectria*). — Domsch *et al.*, *Compendium of Soil Fungi*, pp. 846–848, 1980; 2nd ed. pp. 511–512, 2007 (docum.). — Kobayashi, Trans. mycol. Soc. Japan 21: 311–319, 1980 (n. sp.). — von Arx, *Gen. Fungi Sporul. Pure Cult.* 3rd ed., pp. 268–269, 1981 (Fig. 71c). — Rossman *et al.*, Mycologia 85: 685–704, 1993 (teleomorph). — Marchenko, Mikol. Fitopatol. 19: 471–474, 1985 (n. sp.). — Ellis & Ellis, *Microf. Land Plants*, pp. 101, 298, 537, 1987 (repr. 1997) (Figs 1318, 1998, 1999, partly as *Pseudonectria*). — Matsushima, Mats. Mycol. Mem. 6: 45–48, 1989 (n. sp., Figs 509–512, P-48–52, synanamorph). — Rossman *et al.*, Mycologia 85: 685–704, 1993 (teleomorph). — Matsushima, Mats. Mycol. Mem. 8: 42–43, 1995 (Pl. 69 P-477–478). — de Hoog & Guarro, *Atlas clin. Fungi*, pp. 662–663, 1995; 2nd ed., pp. 1004–1005, 2001 (medical spp.). — Rossman *et al.*, Stud. Mycol. 42: 115–131, 1999 (revis. teleomorphs). — Samuels *et al.*, *Hypocreales of the SE United States*, p. 101, 2006 (teleomorph: *Cosmospora*). — Gräfenhan *et al.*, Stud. Mycol. 68: 59–93, 2011 (n. comb.).

AEB 1369. In-situ fruiting bodies on moist-chamber incubated rabbit dung. Note the central white to faintly yellowish spore mass and the surrounding setae. Photos taken with a Samsung Galaxy A70 cell phone camera.

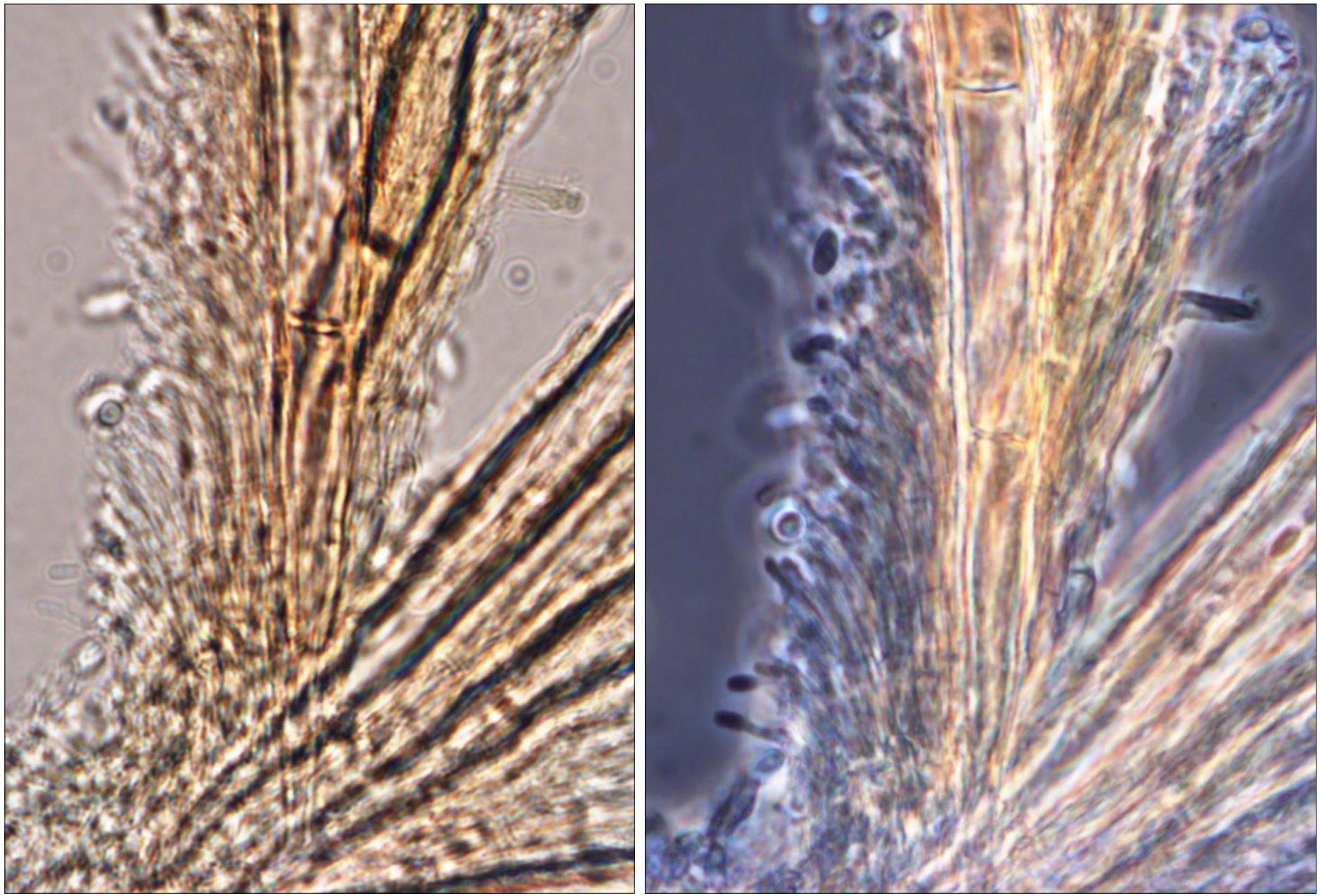
AEB 1369. In-situ fruiting bodies on moist-chamber incubated rabbit dung. Note the central white spore mass, the surrounding yellowish setae and the unrelated mite eggs? (arrowed) nearby. Photos taken with a Samsung Galaxy A70 cell phone camera.



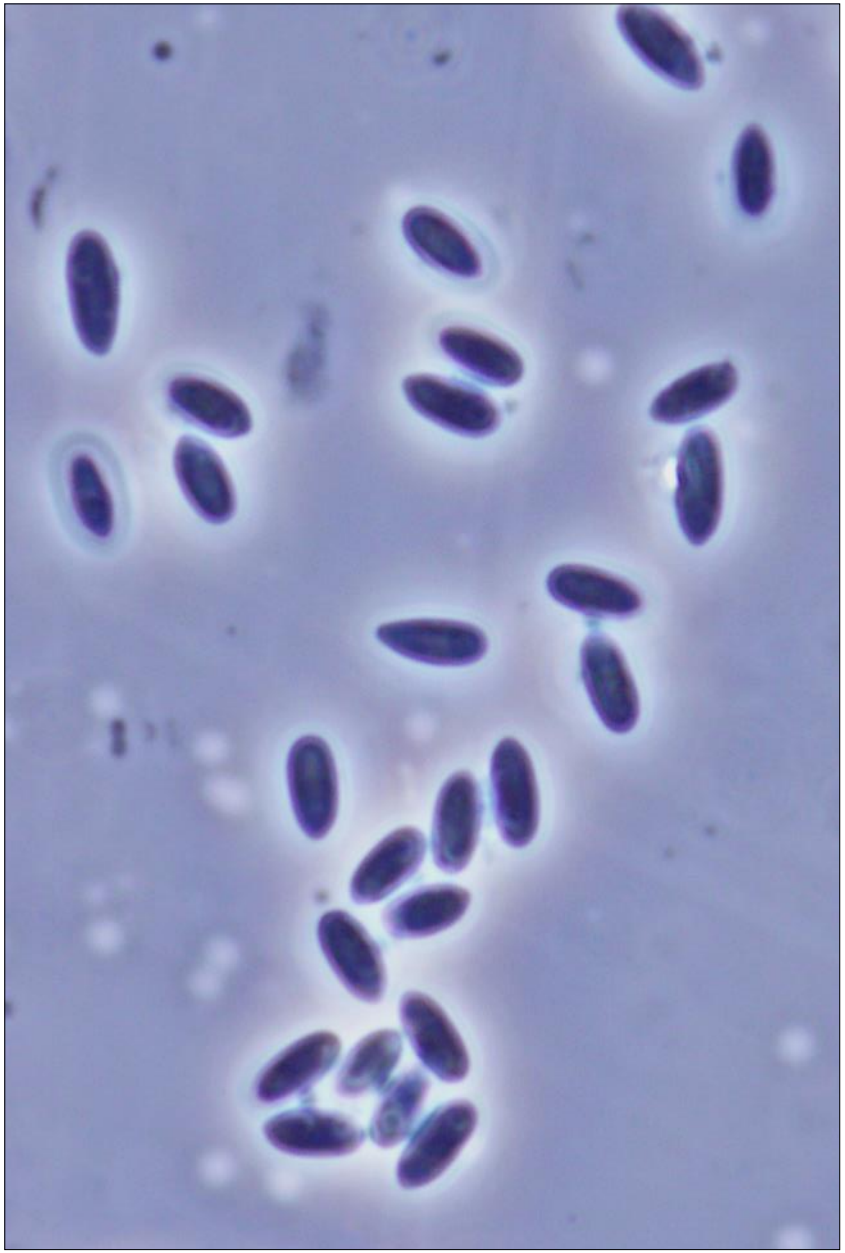
AEB 1369. Photos of the same fresh fruiting body in a SMF slide mount using the 20X & 40X objectives and brightfield microscopy. Note the yellowish, long, prominent, thick-walled, septate setae, the yellowish masses of closely packed conidiophores at their base and the tiny scattered hyaline conidia.

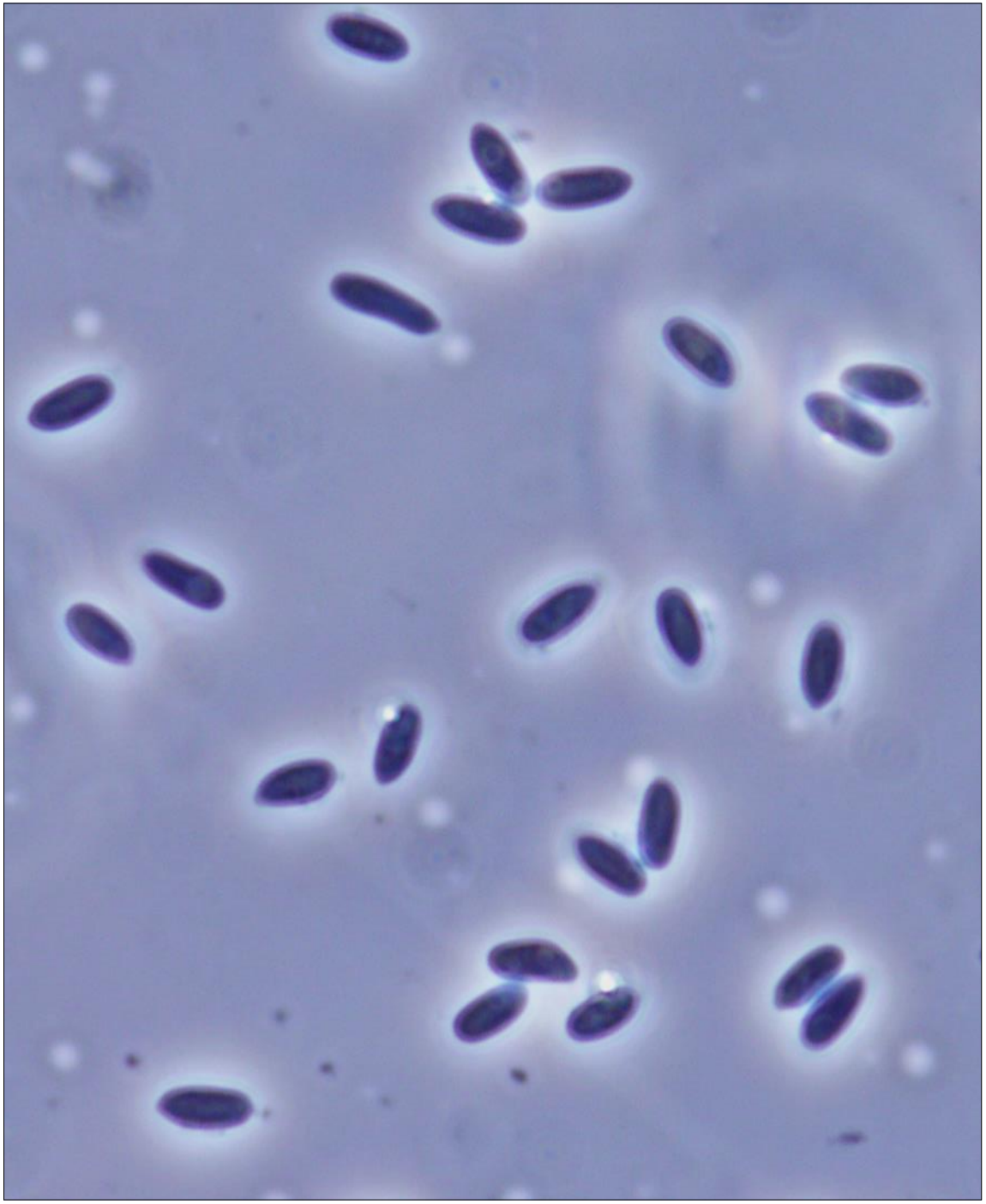
AEB 1369. Another fresh fruiting body in a SMF slide mount using the 40X objective and brightfield microscopy.

AEB 1369. Emphasis on the tightly packed conidiophores next to a seta. Left photo: SMF, brightfield, X40 objective. Right photo: same conidiophore area but an enlarged phase photo. The same area is circled and the arrows point to phialidic origin of the conidia.



AEB 1369. Other photos emphasizing the tightly packed conidiophores and conidiogeny next to the setae bases. Left photo: SMF, brightfield, X100 objective. Right photo: same field of view but phase.





AEB 1369. Conidia (mostly 4–5.5 × 2 µm) from SMF slide, X100 objective & phase microscopy. Note their rounded apices & basal truncate detachment scars.