***Lentomitella investita (*Schw.) Réblová – PDD 101972 (= AEB 1138)**

Collection site: Kaitoke Regional Park (Forty-five minutes north of Wellington City, Kaitoke Regional Park covers 2860 hectares in the foothills of the Tararua Ranges.)
Collection date: 19 October 2010
Substrate: firm dead wood from what appeared to be part of a older decaying larger tree
Collector & Identifier: Dan Mahoney

Voucher materials: Dried herbarium specimen with 1 semipermanent Shear's mounting fluid (SMF) voucher slide; 5 dissecting scope in-situ projection slides of the long-necked perithecia with venters mostly submerged in the wood were taken (4 of these presented in the following pages); a number of compound scope digital photos from water, water + aniline blue lactic acid and Shear's mounting fluid (SMF) are also presented; Dan's brief description below.

Brief description: **Perithecia** numerous, separate but often crowded, black, glabrous, with long thin cylindrical necks; **venters** submerged to partially emergent from the firm dead decorticated wood, mostly 200–300 µm in diameter with **necks** to 2 mm+ long × 125–175 µm wide near their bases and ca 85 µm wide near their apices (the apex itself often irregularly swollen, or detached – but not noticeably sulcate). **Paraphyses** numerous, filamentous, simple, septate, smooth, hyaline and tapering apically. **Asci** unitunicate, easily detached from the hymenium and free-floating in fluid mounts, cylindrically clavate with a very short stubby stipe and a well-defined, but small, non-amyloid apical ring (the ring clearly seen in SMF under phase microscopy – occasionally appearing almost double), asci mostly 42.5–60 × 7–9 µm in SMF. **Ascospores** 8 per ascus, irregularly biseriate or strongly uniseriately overlapping (usually the former), hyaline, smooth (with occasional indistinct longitudinal striations), fusoid-clavate to narrowly ellipsoid (usually somewhat fusoid-clavate) with tapering rounded apices; a clear transverse septum at the indented median and often an additional less prominent septum in each half (these septa occasionally very slightly indented); with a uniseriate row of ca 3-4 large vacuoles in water mounts (these often one per cell in 3-septate spores); mostly (9–)10–11(–12) × (3–)4 µm (in the larger portion of this range in water mounts and in the lower portion in SMF or SMF/aniline blue lactic acid mounts).

Portions of a pertinent reference are shown on the next 2 pages.

Reblova M. et al. 2018. Phylogenetic classification and generic delineation of *Calyptosphaeria* gen. nov., *Lentomitella, Spadicoides* and *Torrentispora* (Sordariomycetes). Studies in Mycology 89, 1–62 10.1016/j.simyco.2017.11.004

See pp. 17 & 18 below and the description of *Lentomitella investita* pp. 23 & 24 on the next page

Key to the species accepted in *Lentomitella*

1. Ascospores shorter than 11 µm 2
1. Ascospore longer than 11 µm 8

2. Ascospores 1-septate; (5.5–)6–7 × 3–3.5 µm ..... *L. vestita*
2. Ascospores 1–3-septate, longer than 7 µm 3

3. Asci (46–)50–56(–65) × 6–7 µm, ascospores (7–)7.5–9 × 3.5–4(–4.5) µm ..... *L. investita*
3. Asci longer than 56 µm 4

4. Ascospores usually 1–2-septate, old ascospores 3-septate 5
4. Ascospores 3-septate early in ontogeny 7

5. Ascospores 1(–3)-septate, first-formed septum in the middle, 8–10 × 4.5–5 µm ..... *L. cirrhosa*
5. Ascospores usually 1–2-septate, first-formed septum in the middle or slightly above or below the middle 6

6. Ascospores up to 9.5 µm long; aerial mycelium on MLA woolly, woolly-floccose or almost cobwebby at the margin; margin of the colony consisting of densely branched hyphae ..... *L. conoidea*
6. Ascospores usually slightly longer, 9–10.5 µm; aerial mycelium on MLA cottony to felty having a more compact appearance; margin of the colony consisting of unbranched or sparsely branched hyphae ..... *L. tenuirostris*

7. Ascospores (8–)9–10.5(–11) × 4–5 µm, asci 72–81 × 6.5–7.5 µm ..... *L. unipretoriae*
7. Ascospores longer than 10.5 µm 8

8. Ascospores (12.5–)13–15 × 5.5–6.5 µm ..... *L. magna*
8. Ascospores shorter than 13 µm 9

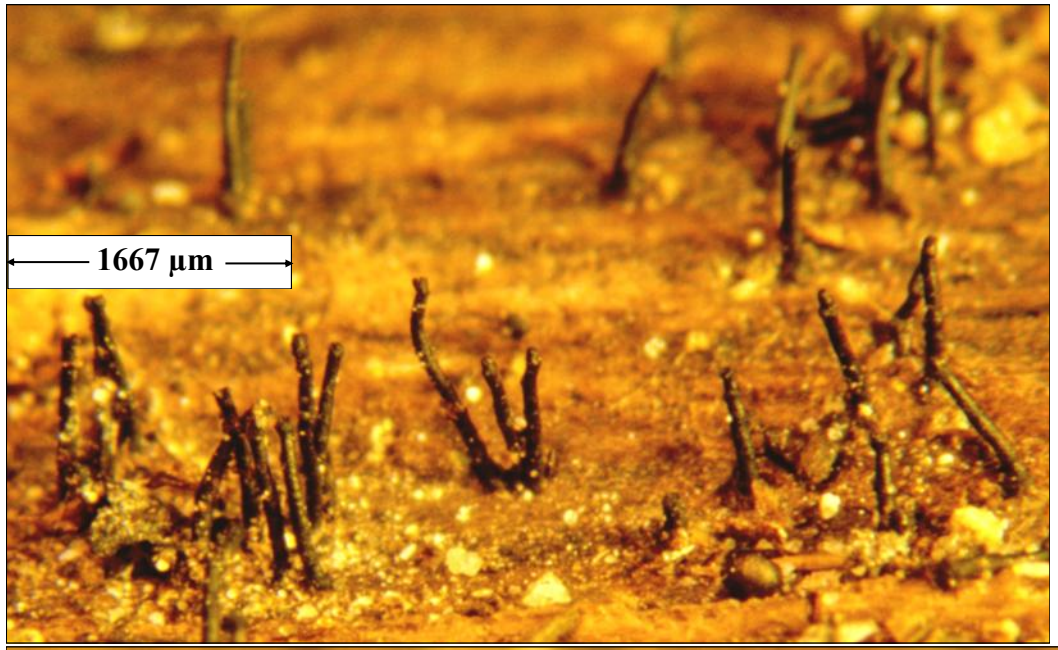
9. Preferring coniferous wood; ascomata up to 600 µm diam with a neck up to 170 µm wide; ascospores (10–)10.5–13 × 4–5.5 µm, asci (66–)70–88(–90) × (7.5–)8–9.5(–10) µm ..... *L. crinigera*
9. Species without substrate preferences, ascomata and necks smaller 10

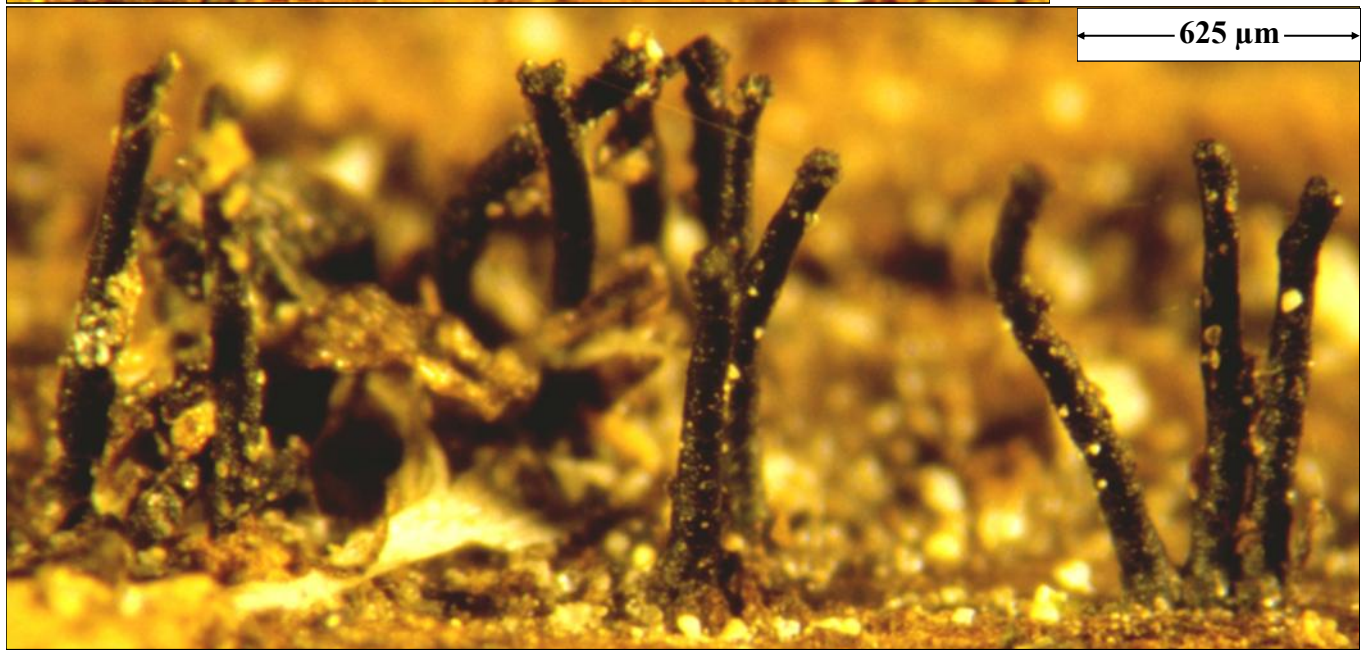
10. Asci up to 8 µm wide, ascospores up to 5 µm wide; asci (70–)72–80(–82) × 7.5–8(–8.5) µm, ascospores (10–)11–12 × 4–5(–5.5) µm ..... *L. obscura*
10. Asci wider than 8 µm, ascospores wider than 5 µm 11

11. Asci length/width ratio 9.4, ascospores (10.5–)11–12(–13) µm long ..... *L. sulcata*
11. Asci length/width ratio 8.6, ascospores 11.5–13(–14) µm long ..... *L. striatella*

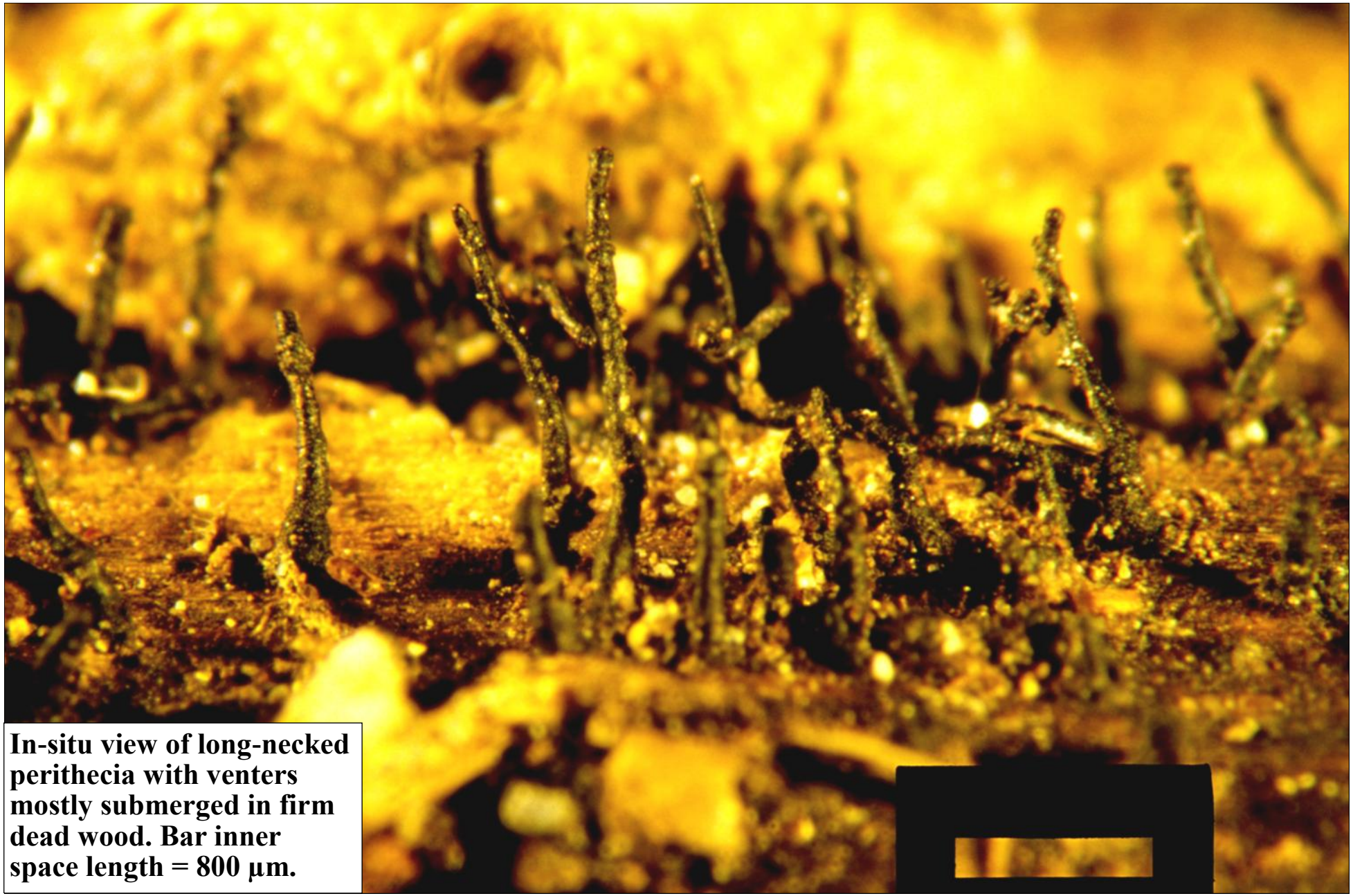
Lentomitella investita
(Schw.) Réblová comb. nov.
MycoBank MB821766

Sexual morph: Ascomata immersed to partially erumpent with protruding necks becoming superficial with only base immersed, solitary or in groups. Venter 300–350(–400) µm diam, 320–360 µm high, globose to subglobose, dark brown to black, with sparse, brown to reddish-brown, septate hairs 3.5–4 µm wide at the lower part. Neck central, 90–110 µm wide, up to 800 µm long, cylindrical, upright, straight or slightly flexuous, glabrous, tapering, apex sulcate. Ostiole periphysate. Ascomatal wall fragile to leathery, 37–56 µm thick, two-layered; outer layer consisting of thick-walled, brown, polyhedral cells of textura angularis to textura prismatica with opaque walls; cells tending to be darker towards the outside, becoming flattened and paler towards the interior. Inner layer consisting of several rows of thinwalled, hyaline, flattened cells. Paraphyses becoming disintegrated with age, septate, constricted at the septa, hyaline, 4.5–10 µm wide, tapering to ca. 3.5 µm. Asci (46–)50–56(–65) × 6–7 µm (mean ± SD = 54.3 ± 2.3 × 6.7 ± 0.3 µm), 45–52 µm (mean ± SD = 49.3 ± 2.3 µm) long in the sporiferous part, truncate at the apex, cylindrical to clavate, with a short stipe; with 8 obliquely uniseriate, partly overlapping ascospores; apical annulus ca. 2.5–3 µm wide, 1.5 µm high. Ascospores (7–)7.5–9 × 3.5–4(–4.5) µm (mean ± SD = 8.1 ± 0.3 × 3.7 ±0.3 µm), ellipsoidal or ellipsoidal-fusiform, slightly inequilateral, hyaline, longitudinally striate, 1(–3)-septate, first-formed septum in the middle, with two large drops. **Asexual morph:** A phaeoisaria-like asexual morph was formed in vitro. Sporulation sparse, widespread throughout the colony. Conidiophores macronematous, mononematous, arising terminally or laterally from aerial hyphae, unbranched or branched apically, brown near the base, subhyaline to hyaline towards the tip, 64–80 × 2–2.5 µm. Conidiogenous cells terminal or intercalary, pale brown to subhyaline at the bottom, hyaline in the conidiogenous part, subcylindrical or slender flask-shaped, tapering toward the apex, with a rachis 16–20 × 1.5–2 µm at the tip; conidiogenesis holoblastic-denticulate, conidial heads slimy, inconspicuous, transparent. Conidia clavate to obovate, slightly apiculate at the base, broadly rounded at the apical end, 4.5–7 × 2 (mean ± SE = 5.2 ± 0.9 × 2) µm, hyaline, aseptate, smooth.

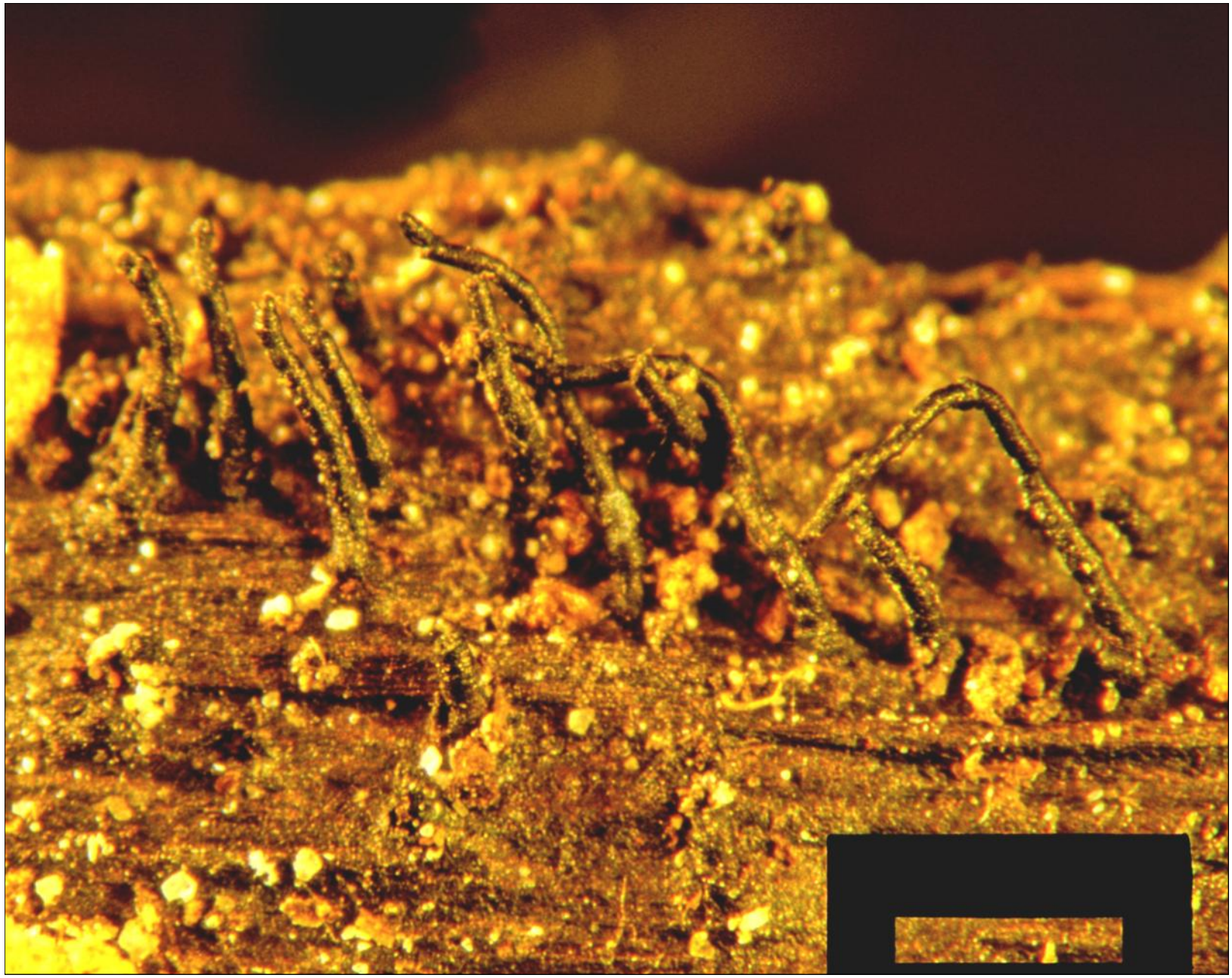




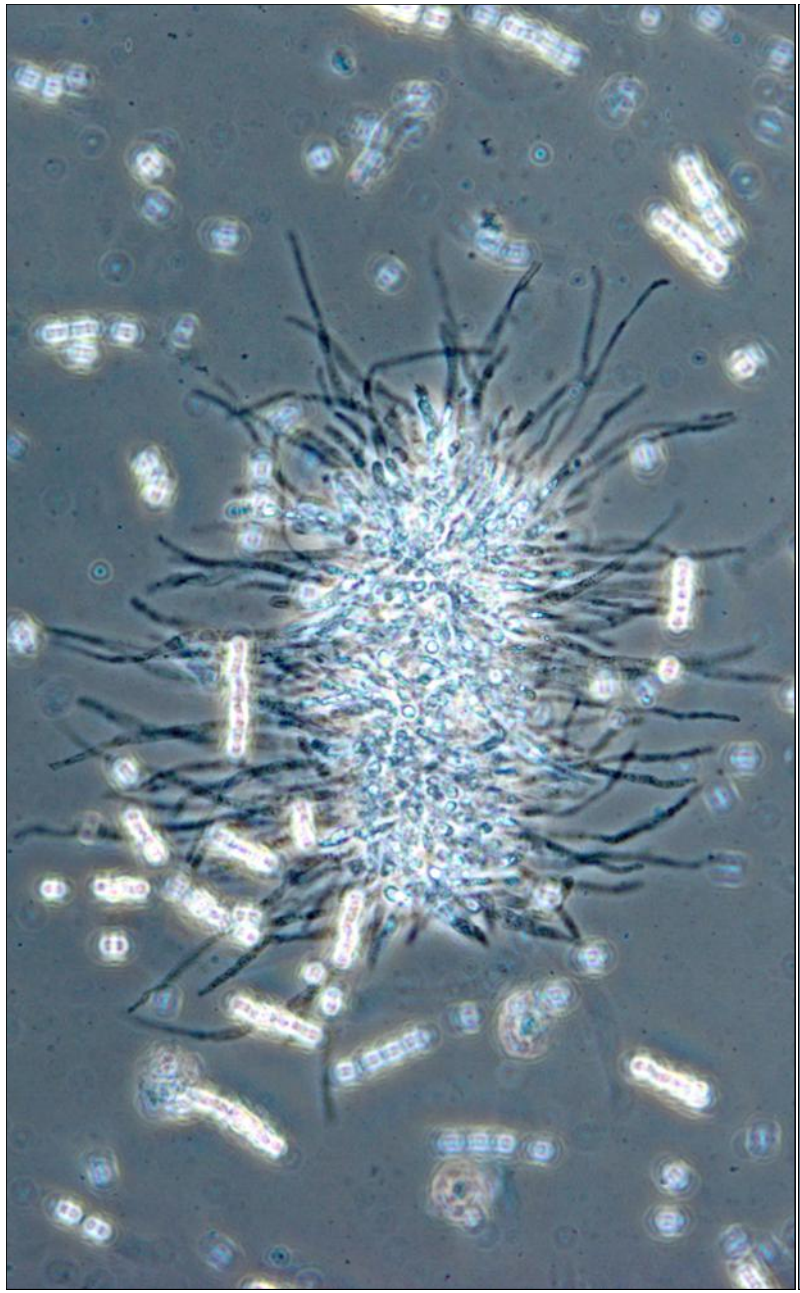
In-situ views of long-necked perithecia with venters mostly submerged in firm dead wood. Lower photo a closeup view of lower left-center perithecia in the upper photo.

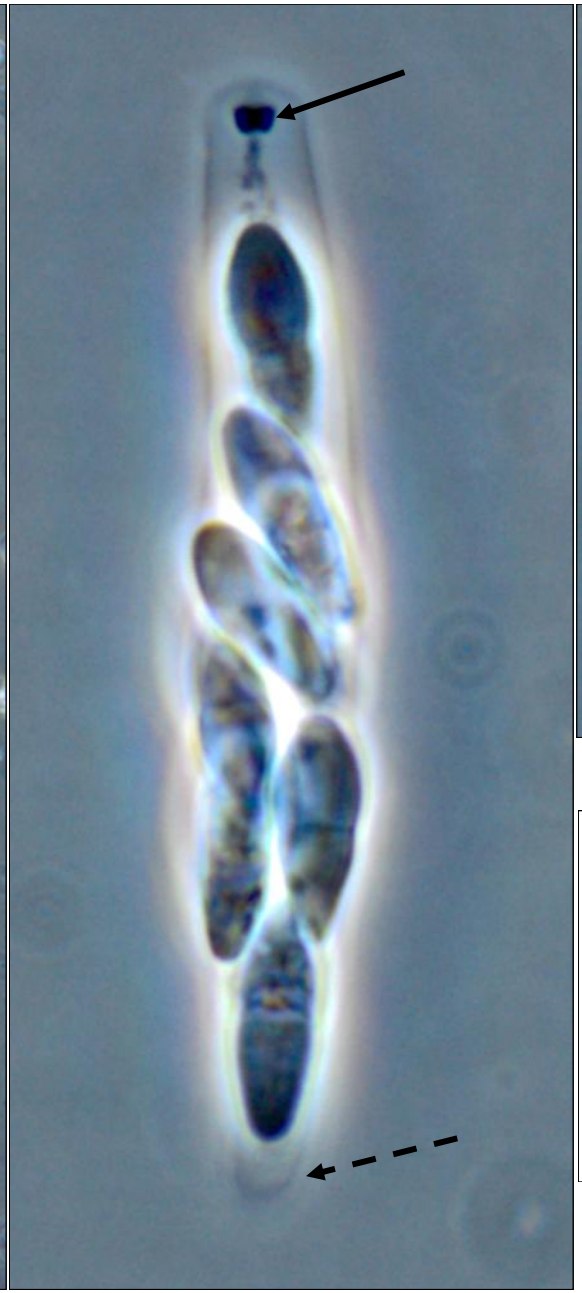


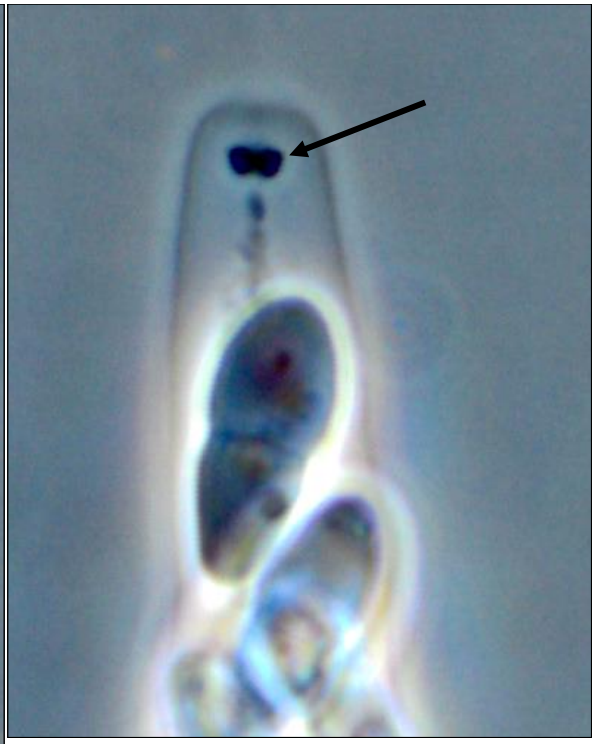
In-situ view of long-necked perithecia with venters mostly submerged in firm dead wood. Bar inner space length = 800 µm.



In-situ view of long-necked perithecia with venters mostly submerged in firm dead wood. Bar inner space length = 800 µm.





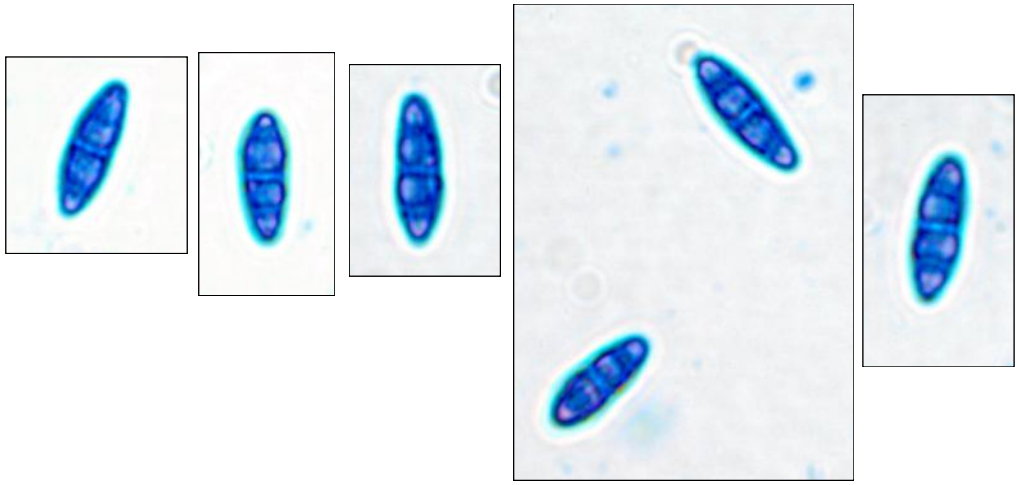


Phase microscopy photos. Left photo: paraphyses in water mount. Right two photos: asci in Shear's mounting fluid. Solid arrows = apical ring. Dashed arrow = typical short stipe of free-floating ascus. Note the shape of the ascospore below the apical ring and its indented septum.









Ascospores. All the same magnification. Three upper groupings from water mounts viewed under partial DIC microscopy. Note the vacuolar inclusions. Lower blue-stained spores from water + aniline blue lactic acid mounts viewed under brightfield microscopy - note the slight shrinkage. Spores are 1–3 septate (clearly 3-septate as viewed in aniline blue lactic acid) with the central septum indented and most prominent. Those in water mounts often exhibit a fusoid-clavate (or narrowly ellipsoid) shape with the broader portion apically oriented in the ascus. Longitudinal striations were seen in some spores. Spores (9–)10–11(–12) × (3–)4 µm.