

***Torrentispora pilosa* Shearer et F.R. Barbosa-like and *Brachysporiella gayana* – AEB 1109 (= PDD 102710)**
(See addendum at the bottom of p. 3)

Substrate: Unidentified decorticated very decayed wet wood

Collection site: Remutaka Forest Park

Collection date: 21 January 2010

Collector: Ann Bell

Identifier: Dan Mahoney

Voucher materials: Dried herbarium specimen [AEB 1109 (= PDD 102710)] accompanied by 2 Shear's mounting fluid (SMF) slide mounts of ascomata, asci and ascospores and 1 SMF slide of *Brachysporiella gayana*; Dan's compound scope digital shots of asci and several in-situ 35 mm photos of fresh *Torrentispora pilosa*-like ascomata.

Other fungi on the same herbarium specimen: *Brachysporiella gayana*

Pertinent References consulted:

- 1) Barbosa F.R., Gusmão Luis F.P., Raja H.A. & Shearer C.A. 2013. New species and new records of freshwater ascomycetes from Brazil and Costa Rica. *Mycologia* 105(2): 335–343. *Torrentispora pilosa* sp. nov. is described here. That description is reproduced on the page after next in this pdf, with details of *T. pilosa*-like AEB 1109 inserted in red.
- 2) Reblova M. et al. 2018. Phylogenetic classification and generic delineation of *Calyptosphaeria* gen. nov., *Lentomitella*, *Spadicoides* and *Torrentispora* (Sordariomycetes). *Stud. Mycol.* 89:1–62. With a key to 9 species of *Torrentispora* and descriptions of all except *T. pilosa* and *T. fusiformis* (see *Torrentispora fusiformis* Fryar & K.D. Hyde, *Cryptog. Mycol.* 25: 256. 2004.).
- 3) Luo Z-L et al. 2019. Freshwater Sordariomycetes. *Fungal Diversity* 99: 451–660. See portions of pp. 517 & 519 on the next page of this pdf.

Continued on the next page:

Portions of pp. 517 & 519 from Luo Z-L et al. 2019 are reproduced below:

Page 517:

“*Torrentispora* Hyde et al., Mycol. Res. 104(11): 1399 (2000)

Asexual morph Undetermined. For sexual morph updated description refer to Reblova et al. (2018).

Type species: *Torrentispora fibrosa* Hyde et al., Mycol. Res. 104(11): 1399 (2000)

Notes: Hyde et al. (2000) introduced the genus *Torrentispora* with single species, *T. fibrosa*. Reblova et al. (2018) revisited *Torrentispora* with nine species in this genus and assigned it to the new family Xenospadicoidaceae within the new order Xenospadicoidales based on morphology and DNA sequence data.”

Page 519:

“*Torrentispora pilosa* Shearer & F.R. Barbosa

Distribution: Costa Rica, on submerged wood (Barbosa et al. 2013).

Asexual morph: Undetermined

Notes: Holotype ILL 40814. Sequence data is not available. This species is known only from Costa Rica, on submerged wood (Barbosa et al. 2013).”

The Barbosa et al. 2013 description of *Torrentispora pilosa*, with comparative details of *T. pilosa* AEB 1109 inserted in red, is presented on the next page.

“*Torrentispora pilosa* Shearer et F.R. Barbosa, sp. nov. – MycoBank MB564458

Ascomata 247–450 × 320–400 µm (AEB 1109 no side views but widths variable and usually larger, 400–500 µm), partially immersed (AEB 1109 superficial or nearly so) in wood, black, coriaceous, scattered, venter hairy, globose or subglobose, ostiolate (AEB 1109 with large ostioles), with a long neck (AEB 1109 with short neck, neck hairs not detected), black. Neck 440–770 × 55–180 µm, hairy, cylindrical, black; hairs short, up to 4 µm wide, septate, unbranched, dark brown. Ascomatal hairs long, 3–4 µm wide, filamentous, septate, unbranched, brown (AEB 1109 ascomatal hairs rigid rather than filamentous, longest seen 200 µm, width 2.5–5 µm but also septate, unbranched and brown). Peridium a textura prismatica in surface view (AEB 1109 peridium detail not seen), cells sometimes circular clusters of thick-walled, brown cells. **Paraphyses** 3–5 µm thick at base, tapering toward the apex, filamentous, unbranched, septate, hyaline (AEB 1109 paraphyses as described here). **Asci** 164–204 × 7–8 µm (AEB 1109 matching in original water mounts, occasionally longer in SMF slide mounts), attached to hymenium at maturity or not (AEB 1109 the same), eight-spored, unitunicate, thin-walled, cylindrical, rounded at apex, tapering at the base, with a refractive apical ring (AEB 1109 the same, ring not measured when fresh) 3–4 µm high, 4–5 µm diam, staining blue in aqueous nigrosin (AEB 1109 nigrosin not used, no bluing in Melzer’s). **Ascospores** 21–30 × 7–8 µm, uniseriate, smooth walled, unicellular when young, becoming two-septate at maturity, thick-walled, wall 1 µm at side and 1–2 µm at the apices, ellipsoid-fusiform, hyaline (AEB 1109 ascospores 22.5–27.5 × 6.5–7.5 µm, n= 25 and matching in other respects. They are mostly 2-septate at maturity and infrequently 3-septate), staining blue in aqueous nigrosin. Ascospore sheath not observed (AEB 1109 no sheath or appendage observed).

Etymology: *pilosa*, from Latin, referring to the hairy ascomata.

Holotype: COSTA RICA. HEREDIA: La Selva Biological Station, 10°25’48”N, 84°1’32”W, water 25 C, pH 5. On submerged wood, 18 May 2000, *J. Anderson & R. Wulffen*, A 652–1, ILL 40814.

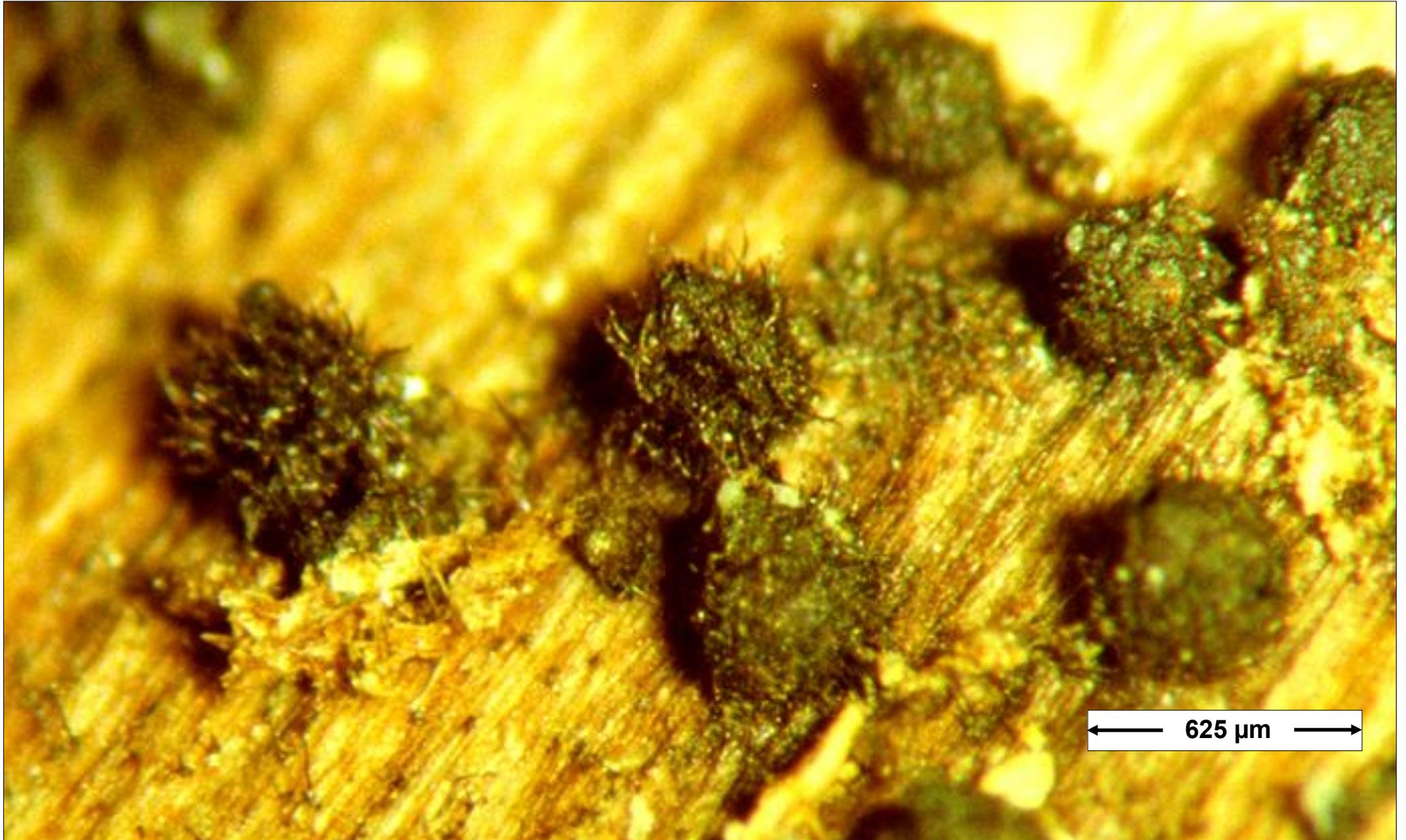
Notes: Of the three known species of *Torrentispora*, *T. pilosa* is most similar to *T. fusiformis* (Hyde et al. 2000, Fryar and Hyde 2004) in size and morphology of the ascospores, but it differs in having large, hairy ascomata, much shorter asci, and ascospores that are two-septate at maturity.”

My Comment: The short neck, more rigid and ‘shorter’ ascomatal hairs and the infrequently seen 3-septate ascospores are the principal reasons I have attached ‘like’ to the name *Torrentispora pilosa*. AEB 1109 may represent a new, but related species, or simply a variant of that species. So far no phylogenetic information or other collection is available for comparison.

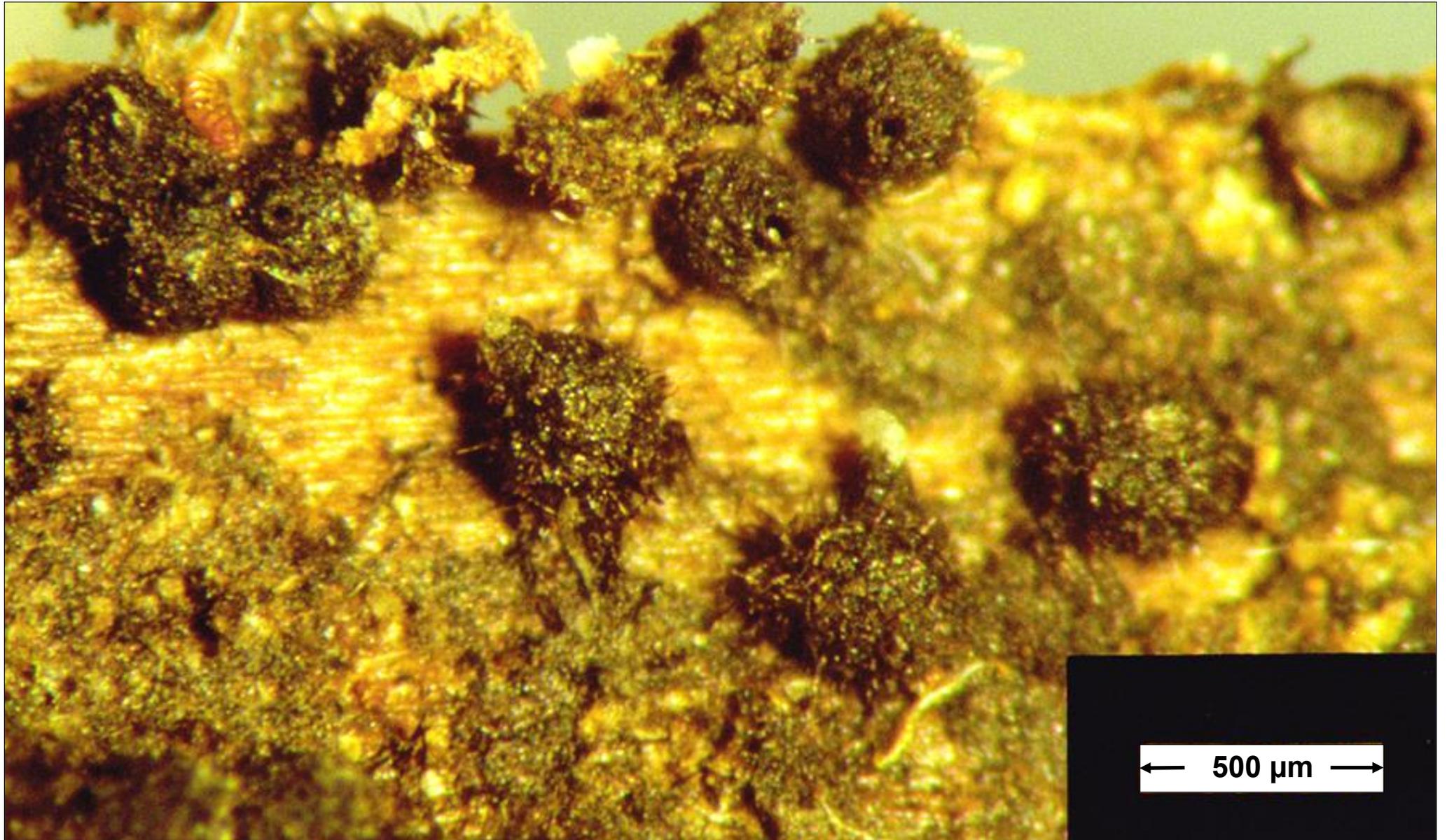
Addendum: The ‘like’ addition is now in question after my final observation of the dried herbarium specimen on 30 November 2023.

- 1) Among the hundreds of ascomata in the collection, a very few had long, dried, fragile-looking necks. This may explain the large ostioles seen on some ascomata where necks had detached.
- 2) While the original Shearer/Barbosa fresh collection was described from submerged wood, the AEB 1109 collection is described from wet, older, but not submerged wood. This would explain the ascomatal hair difference (long & filamentous vs. short & rigid). Just as ascomatal necks had detached so hair portions once long & filamentous had detached, leaving only the shorter more rigid basal portions.
- 3) Finally with age, the rarely seen 3-septate ascospore was seen.

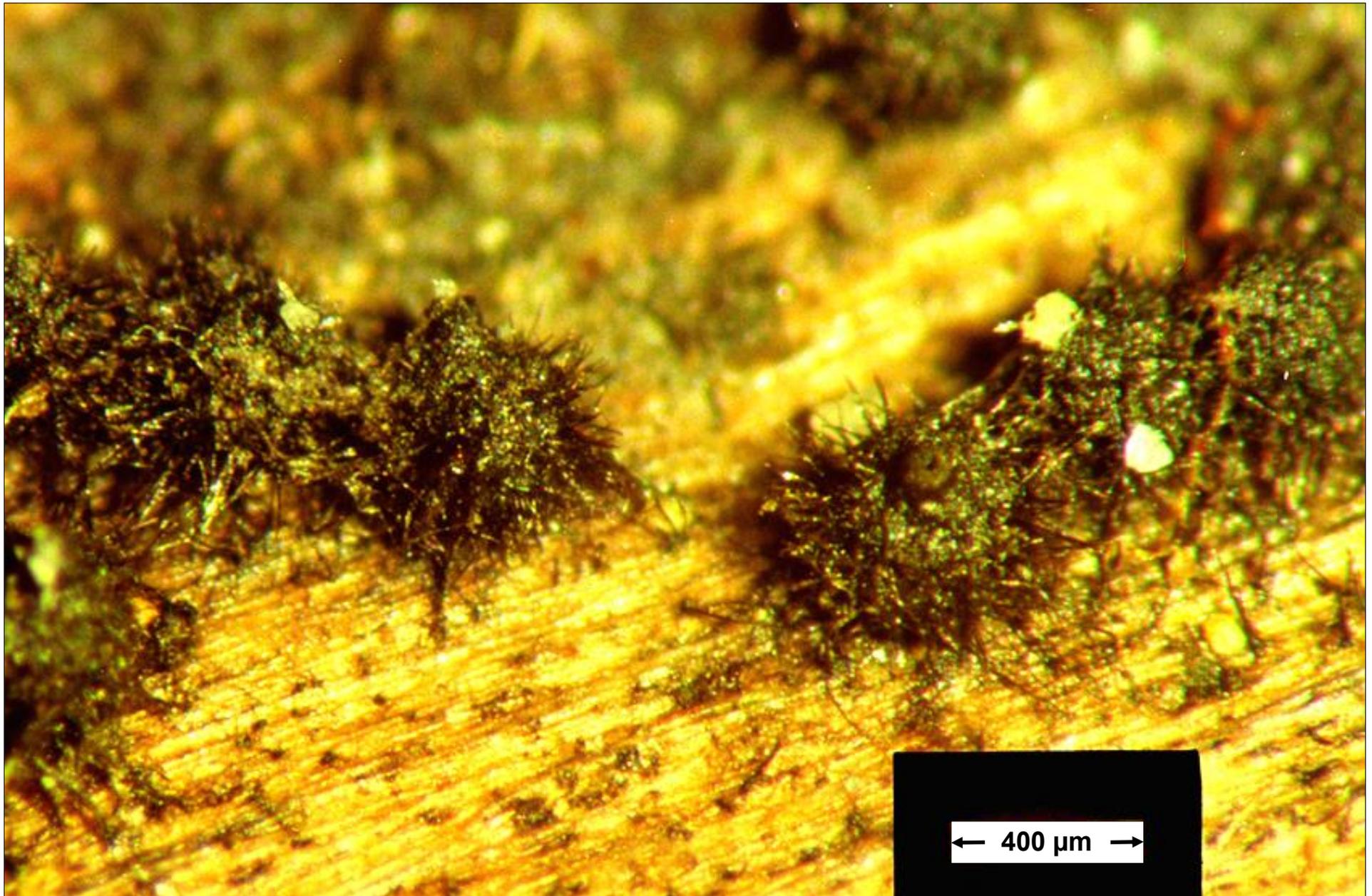
Conclusion: In retrospect, the older AEB 1109 collection suggests a variant *T. pilosa*.



AEB 1109. Superficial hairy, and not so hairy, ascomata in-situ on dead decorticated wet wood. Photo in 2010 from fresh collection.



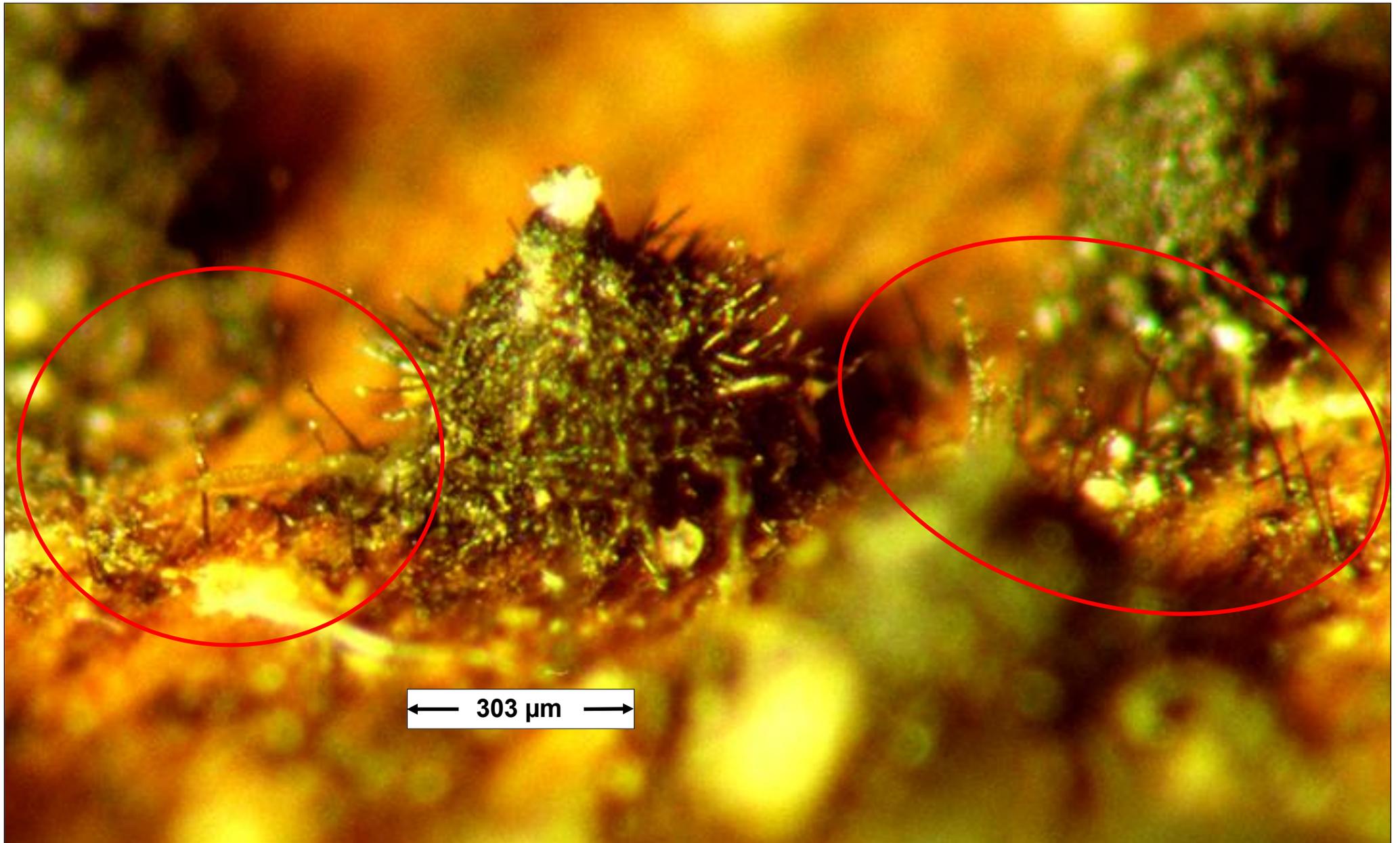
AEB 1109. Superficial hairy ascomata in-situ on dead decorticated wet wood. Note the large ostioles & short necks. Photo in 2010 from fresh collection.



AEB 1109. Superficial hairy ascomata in-situ on dead decorticated wet wood. Note especially the numerous stiff dark-brown hairs. Photo in 2010 from fresh collection.



AEB 1109. Another view of hairy ascomata in-situ on dead decorticated wet wood. Here, also, can be seen a small area of the hyphomycete *Brachysporiella gayana* (circled in red). Photo in 2010 from fresh collection.



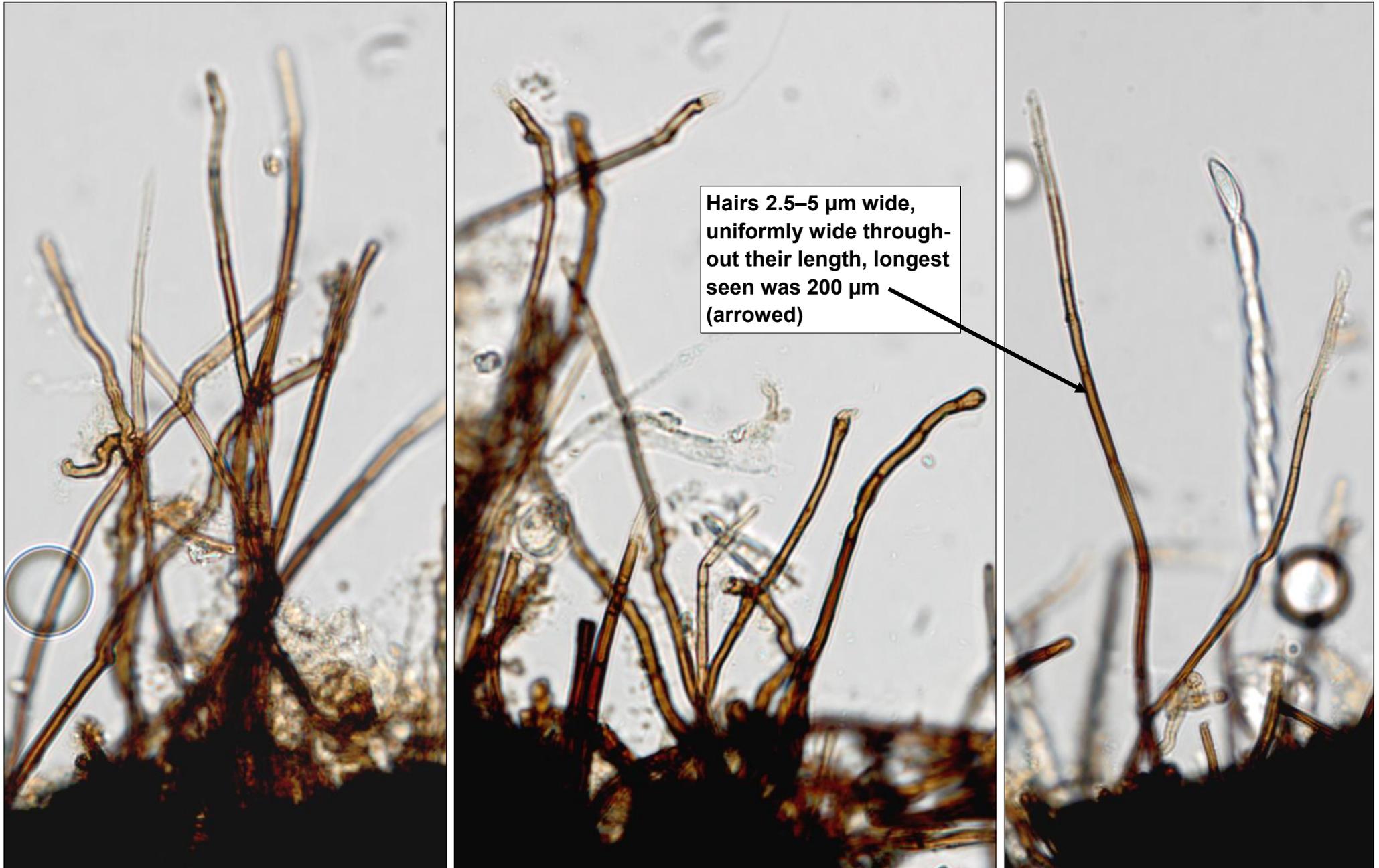
AEB 1109. Like the previous page but here seen at a higher magnification with more areas of the hyphomycete *Brachysporiella gayana* (circled in red). Photo in 2010 from fresh collection.



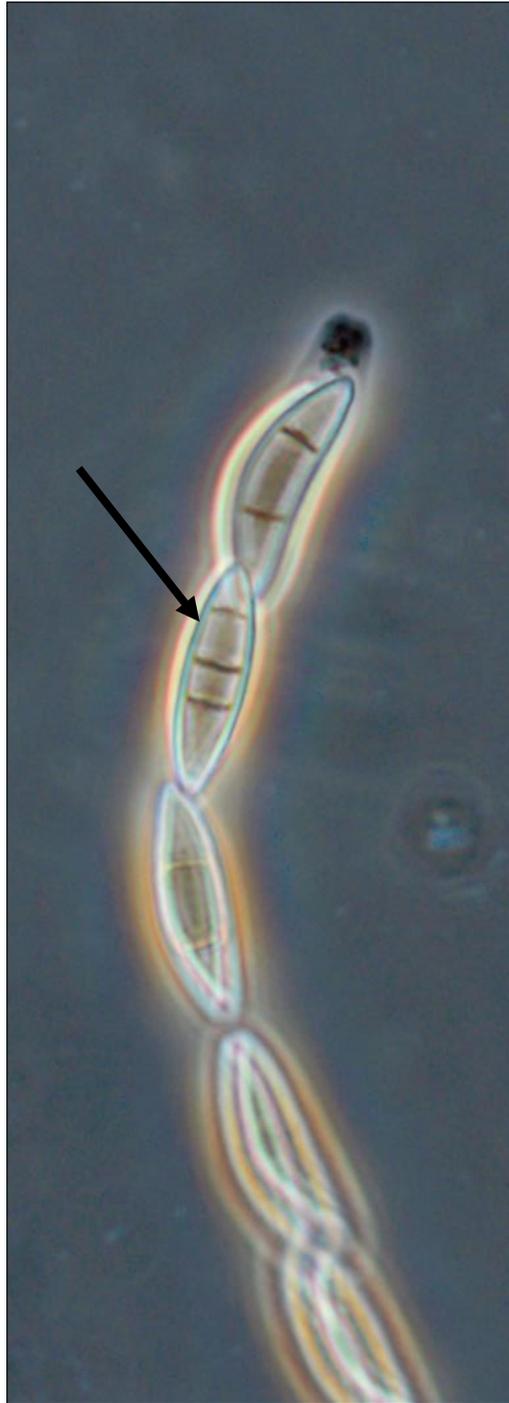
AEB 1109. Asci and ascospores from a water slide mount (X40 objective) in 2010. Left 2 photos same ascus $187.5 \times 10 \mu\text{m}$, brightfield & phase resp. Right 2 photos another ascus $180 \times 10 \mu\text{m}$, brightfield & phase resp. Note the 2-septate ascospores & the prominent ascus apical ring.



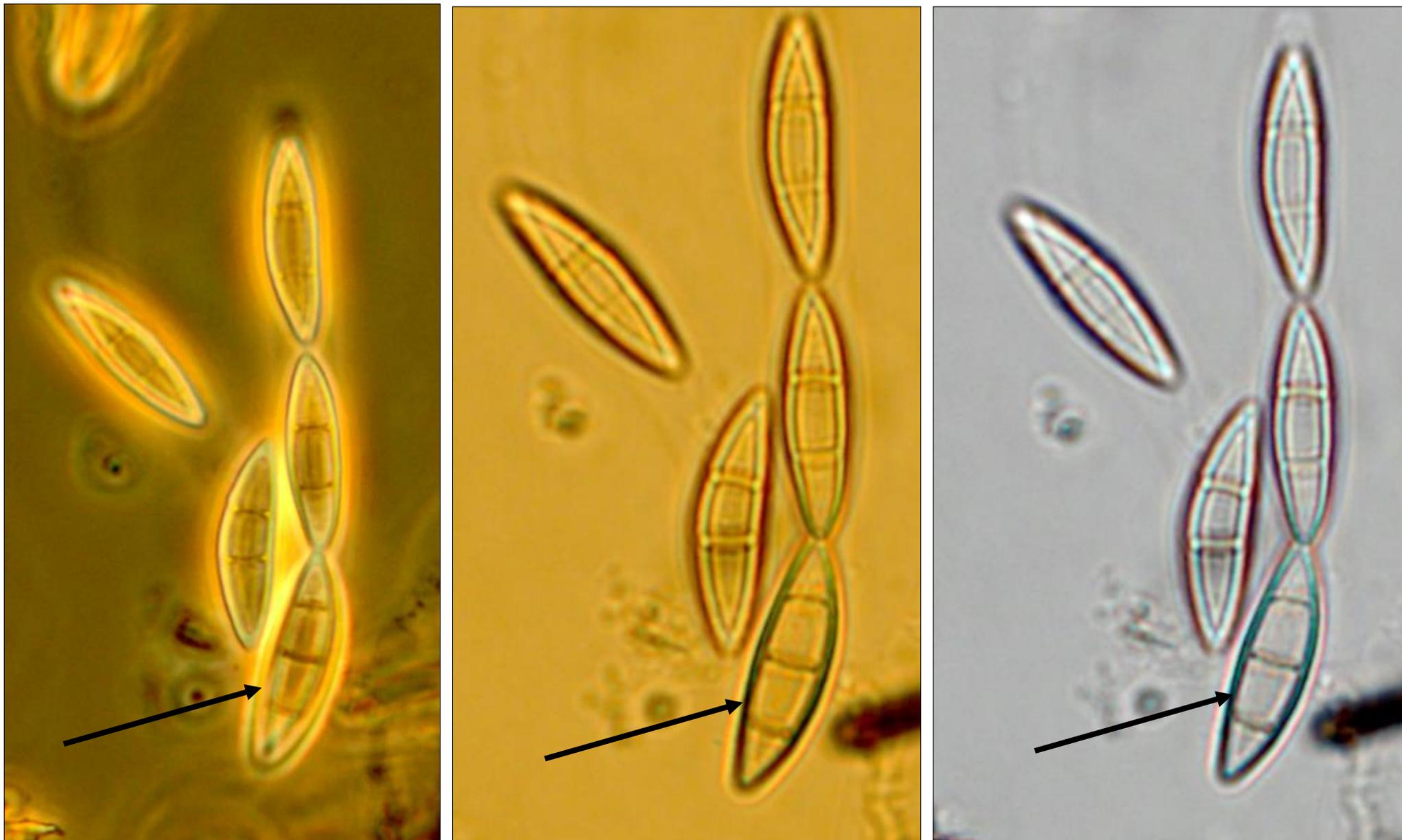
AEB 1109. Ascoma squash showing the dark brown, straight to irregular, unbranched, septate hairs emerging from the dark ascoma peridium. Photo from a rejuvenated 2010 SMF slide mount (in 2023) using the X20 objective.



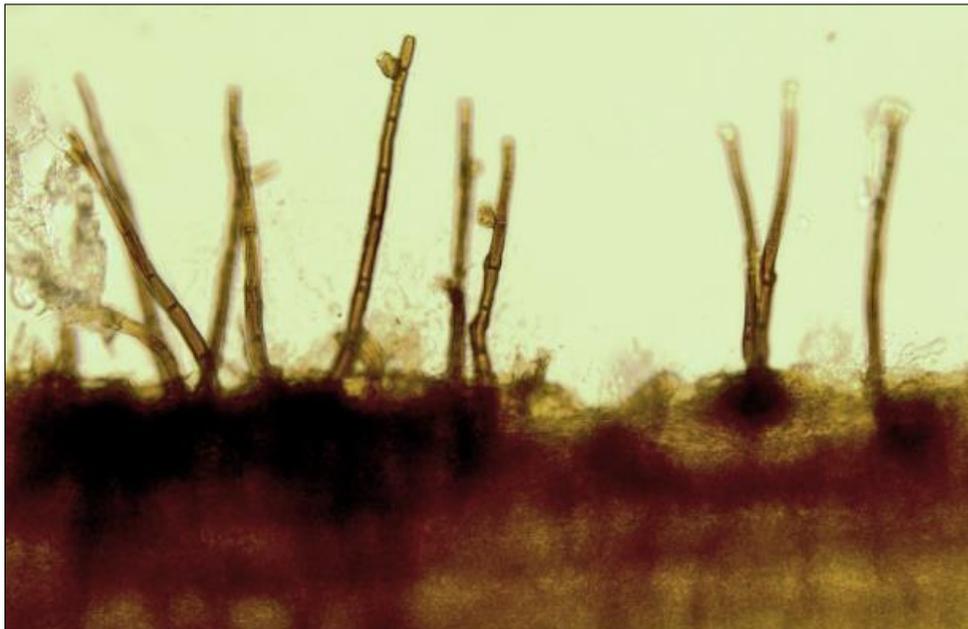
AEB 1109. Ascoma squash showing the dark brown, straight to irregular, unbranched, septate hairs emerging from the dark ascoma peridium. Photo from a rejuvenated 2010 SMF slide mount (in 2023) using the X40 objective.



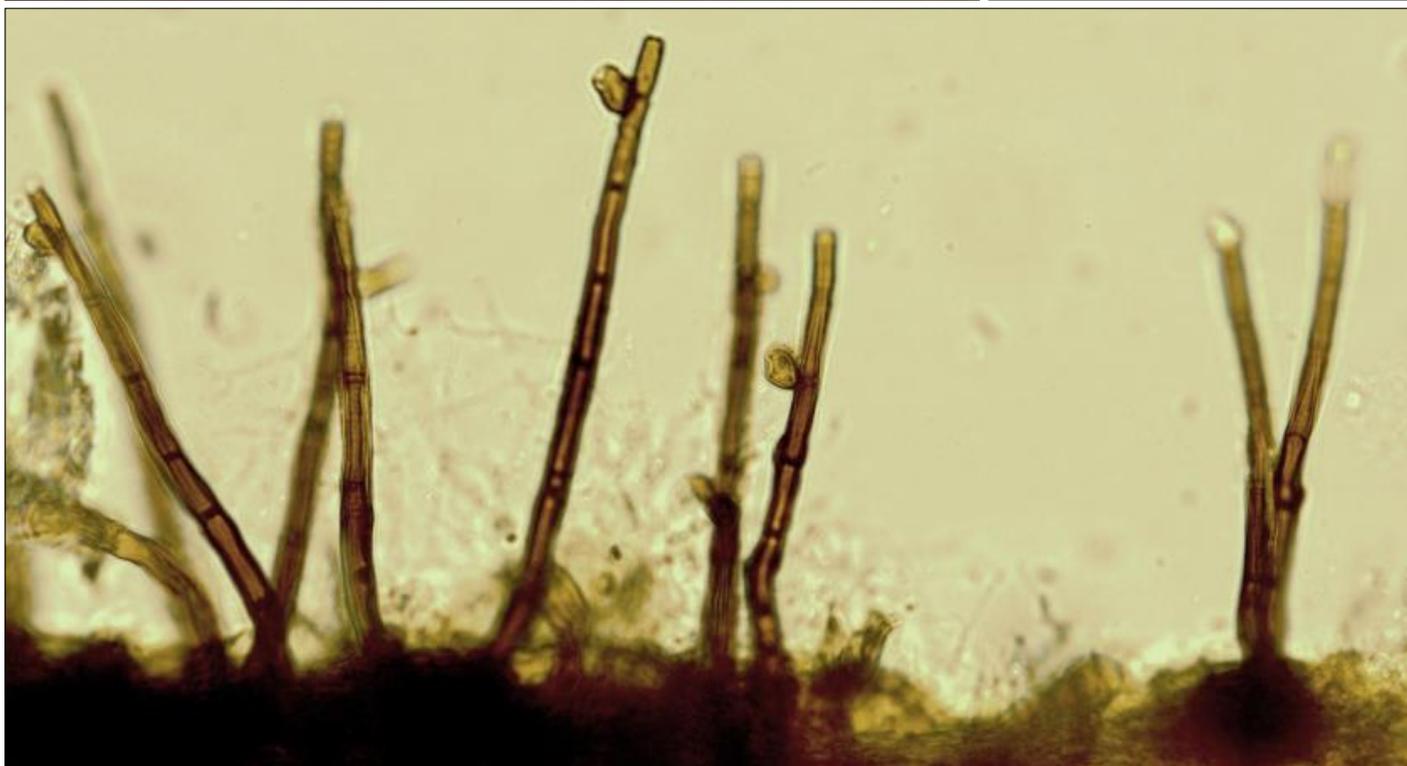
AEB 1109. Three X40 objective, variously enlarged views, of the same ascus and ascospores. Emphasis on a rarely seen 3-septate ascospore (arrowed). Other spores in the ascus were 2-septate except the basal aseptate spore. Ascus $225 \times 8 \mu\text{m}$, including its $60 \mu\text{m}$ stipe. Ascospores $24.5\text{--}25 \times 6\text{--}7 \mu\text{m}$. Phase and brightfield photos from a rejuvenated 2010 SMF slide mount (in 2023).



AEB 1109. Three X40 objective views of the same five ascospores. Emphasis on a rarely seen 3-septate ascospore (arrowed). The 3-septate spore is $24 \times 7 \mu\text{m}$, the 2-septate spores are similar but slightly narrower at $24 \times 6 \mu\text{m}$. Photos from a rejuvenated 2010 SMF slide mount (in 2023).



Brachysporiella gayana on the wood surface near ascocmata of *Torrentispora pilosa*-like AEB 1109. Left photos: the same field of view showing septate unbranched conidiophores (mostly 125–150 μm long). Conidia are detached but a few points of conidial origin are visible. Right photo: a different conidiophore 155 μm long. All photos from SMF slide mounts using the X20 & X40 objectives and brightfield microscopy.





***Brachysporiella gayana* conidiophore and several detached conidia from a SMF slide mount. All were taken using the X40 objective with the 3 conidia on the right variously enlarged. Conidia at the right (top to bottom) measure 37.5 \times 17.5 μm , 35 \times 17.5 μm and 35 \times 19 μm respectively.**