

*Peroneutypa scoparia* (Schwein.) Carmarán & A.I. Romero AEB 1349 (= PDD 120014) – closely accompanied by the hyperparasite *Harpographium fasciculatum* (Sacc.) Sacc. Both good matches.

See other PDFs for *Peroneutypa scoparia* with *Harpographium fasciculatum*, especially PDD 120016 (= AEB 1298) which discusses *H. fasciculatum* in detail. The *Harpographium* synnemata were few but sporulating [see PDD 111251 (= AEB 1267)] and scant and not sporulating [see PDD 117255 (= AEB 1295)] .

*Eutypella scoparia* = *Peroneutypa scoparia* = *Peroneutypa heteracantha* – Many older records & illustrations are under the latter – also used by New Zealand PDD before 2011. Those following the 2006 reference ‘Carmarán et al. 2006’ use the middle name while others use the first name (see ‘Rappaz. 1987’ for this binomial and its many synonyms). Index Fungorum and most recent records use *Peroneutypa scoparia*.

**Collection date & substrate:** 3 January 2022 on the dead bark/wood of a fallen branch

**Collection site:** near Barton’s Bush, Trentham Memorial Park, Upper Hutt; **Collector and identifier:** Dan Mahoney

**Voucher materials:** Two packets of dried herbarium specimen AEB 1349 (= PDD 120014) – one packet with relatively few sporulating clusters of *Harpographium fasciculatum* accompanied by 1 Shear’s mounting fluid (SMF) and 1 lacto-Fuchsin semi-permanent microscope slide (both slides, *P. scoparia*); the other packet with numerous heavily sporulating clusters of *H. fasciculatum* accompanied by 1 SMF slide of that species; Dan’s photos taken directly by using his Samsung Galaxy A70 smartphone camera – many through the Olympus BX51 X10 eyepiece and others through the Zeiss dissecting scope X10 eyepiece. These eyepieces were replaced with a X10 Gosky microscope eyepiece whose adaptor held his smartphone. Other in-situ photos of fruiting bodies were taken under a Zeiss MC 80 dissecting scope and digital photos of microscopic detail using an Olympus BX51 compound scope (with DP25 camera); Dan’s brief description and comments.

**References consulted for *Peroneutypa scoparia*:** (listed in chronological order)

1. Rappaz F. 1987. Taxonomie et nomenclature des Diatrypacees ä asques octospores. Mycol. Helvetica 2: 285-648. (pp. 534–541 are filled with numerous synonyms of *Eutypella scoparia*.)
2. Carmarán, C.C., Romero, A.I. & Giussani, L.M. 2006. An approach towards a new phylogenetic classification in *Peroneutypa*. Fungal Diversity 23: 67–87. (The genus *Peroneutypa* is resurrected to accommodate eight species & a key is provided.)

**Continued on the next page:**

### ***Peroneutypa scoparia* references continued:**

3. de Almeida, D.A.C., Gusmão, L.F.P. & Miller, A.N. 2016. Taxonomy and molecular phylogeny of *Peroneutypa* (Ascomycota, Xylariales) species from the Brazilian semi-arid region, including four new species. *Mycological Progress* 15: 1–27. (This study represents the first attempt to characterize species of Diatrypaceae from Brazil using an extensive collection of isolates and integrating morphology with molecular data. History of this taxonomically difficult family is discussed and the new species *Peroneutypa diminutispora* D.A.C. Almeida, Gusmão & A.N. Mill. Is compared with *P. scoparia*.)
4. Shang, Q-J., Hyde, K.D., Jeewon, R., Khan, S., Promputtha, I. & Phookamsak, R. 2018. Morpho-molecular characterization of *Peroneutypa* (Diatrypaceae, Xylariales) with two novel species from Thailand. *Phytotaxa* 356(1): 1–18. (See this publication for its extensive list of references cited on the genus *Peroneutypa*, in addition to its comments on *P. scoparia*, its coelomycetous asexual morph and a key to thirteen species.)
5. Zhu, H., Pan, M., Wijayawardene, N.N., Jiang, N., Ma, R., Dai, D., Tian, C. & Fan, X. 2021. The Hidden Diversity of Diatrypaceous Fungi in China. *Front. Microbiol.* 12: 646262. (See this reference for its extensive list of references cited on diatrypaceous fungi and its key to genera in the Diatrypaceae.)

**Comment:** Publications that deal in some way with the morphology, phylogeny, pathology or biology of the synonyms *Eutypella scoparia*, *Peroneutypa heteracantha*, *Peroneutypa scoparia* (or others in the Index Fungorum list of synonyms) are numerous. *Peroneutypa scoparia* is recognized in Index Fungorum as the accepted name. It is the most common species in the genus *Peroneutypa*. To date, however, few of the 59 species and varieties in the genus *Peroneutypa* recorded in Index Fungorum have full morphological descriptions or illustrations, and far fewer have been cultured or sequenced. The same can be said for collections of the species *Peroneutypa scoparia*.

**AEB 1349 (= PDD 120014): Dan's brief description and comments for *Peroneutypa scoparia*.**

**Photos and legends for the its close associate *Harpoglyphium fasciculatum* are provided in the last five pages of this pdf.** Its biological associations with *P. scoparia* in our 4 collections, to date, are worth noting since I can find no record of that association for other collections of *Peroneutypa* or *P. scoparia* in New Zealand – but occasionally elsewhere for *Peroneutypa scoparia* and other members of the Diatrypaceae [see detailed comments in my pdf for *Peroneutypa scoparia* with *Harpoglyphium fasciculatum* PDD 120016 (= AEB 1298)].

**Fruiting bodies** of *P. scoparia* covered most of a 48 × 5 cm dead fallen branch, making this collection among my largest. **Stromata** were submerged within the outer dead wood with their upper portions extending into the overlying bark and slightly above. **Necks** (called 'ostiolar canals' by some) from perithecia within the stromata were visible, to the naked eye, above the bark (as seen on the first photo plate). **Perithecia** within each stroma varied from 1–8) with their venters at roughly the same level. Space between perithecia in each stroma did not appear to have further stromatic development with the stroma boundary a black line. *Peroneutypa* stromata are sometimes referred to as valsoid (Shang et al. 2018), but this has the perithecial necks bending toward the center while those I saw were bending away from the center. Necks long and prominent above the bark surface with measurements variable but usually exceeding 1 mm with what appear to be growth-increment transverse lines at intervals along their length, apical portions faintly sulcate and tapering to a small ostiole. **Asci and free ascospores** exuded in droplets at the apex and these usually slide down the neck surface forming an obvious bulge along the neck. **Venter** with numerous conspicuous paraphyses above the many much smaller asci. **Asci** long-stalked urcinate with truncate apices where a very small amyloid pore appeared to stain blue in Melzer's reagent. Although ascus measurements are usually given, I find these difficult because that measurement varies with the stage of maturity. The 8 single-celled, smooth-walled, hyaline, allantoid **ascospores** (usually with 2 polar guttules in water mounts) were crowded in the swollen ascus apical portion. Ascospores measured were mostly 4–5 × 1–1.5(–2) µm.

**Asexual morph not observed.** To date, *Peroneutypa* species seem to have a coelomycetous anamorph in culture.

Not all descriptions and keys that include *P. scoparia* are alike. Perithecial neck length is variable (for example, Shang et al. 2018 describe shorter necks than AEB 1349) while some say the ascus pore is amyloid (de Almeida et al. 2016 & AEB 1349), but others say non-amyloid (Shang et al. 2018). More collections, descriptions and illustrations are needed as are cultures and phylogenetic information.



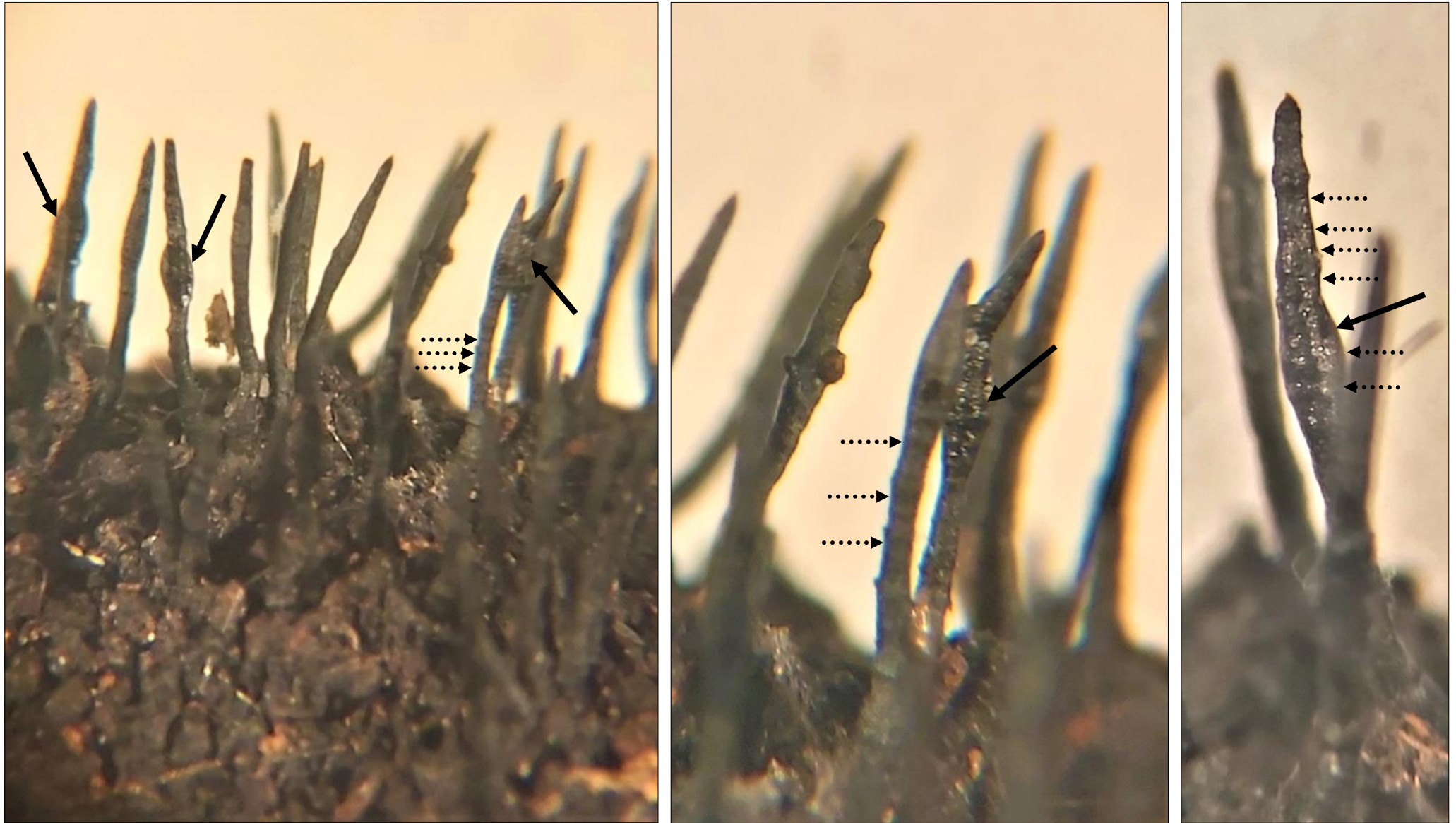
**AEB 1349. My smartphone camera photos of the massive fruiting seen on the bark surface of the dead fallen branch. Seen here, especially at the sides of the branch with its white background, are the long necks of the mostly submerged ascomata venters. The red double-headed line indicates that portion enlarged in the middle and right photos. Black arrows in the right photo point to exuded asci & ascospores – their apical discharge usually slides down the sides of the long necks.**



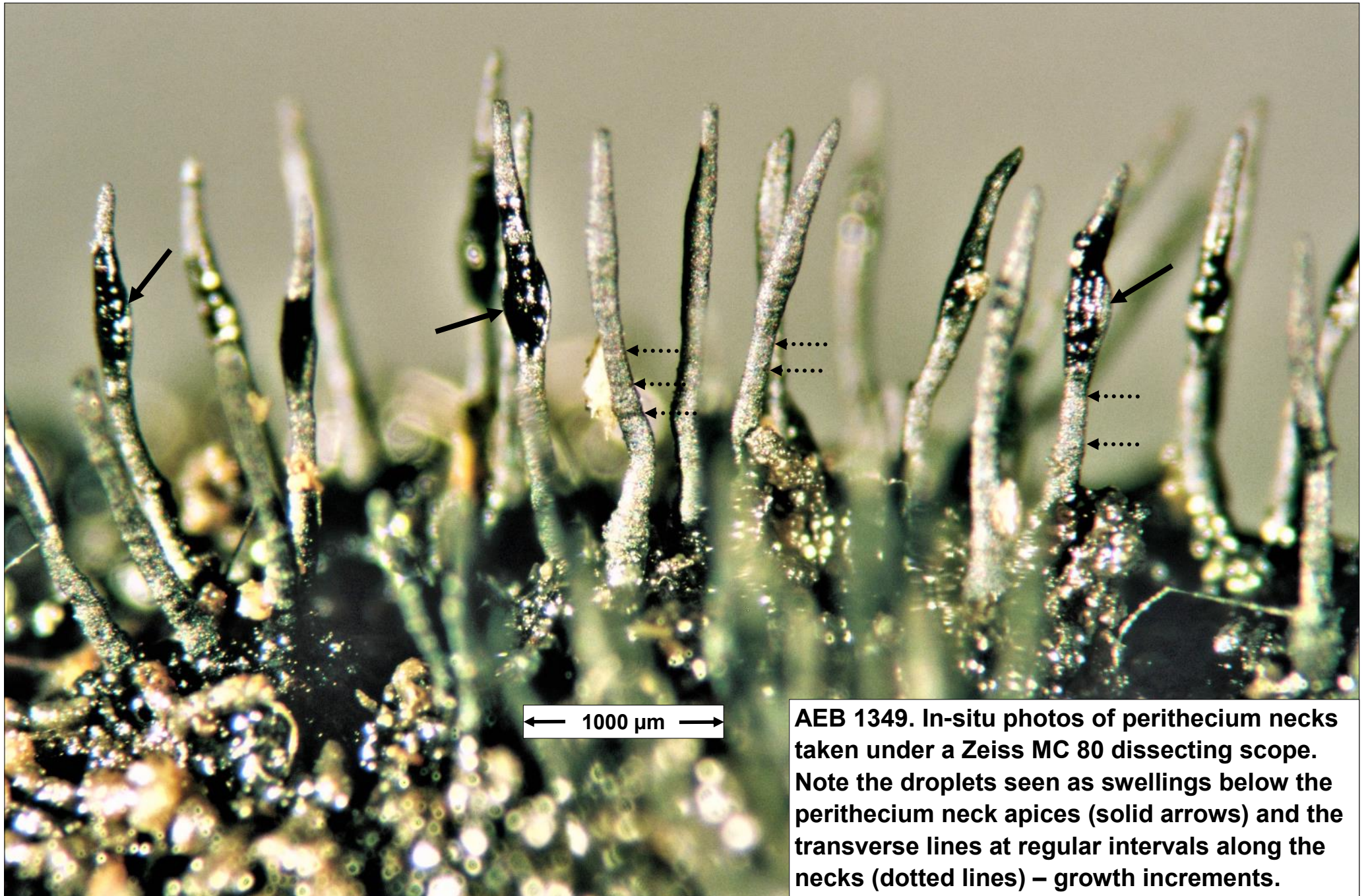
**AEB 1349. Samsung smartphone camera closeup photos of fresh field material. Perithecium necks shown here (sometimes called 'long ostiolar canals') stand upright above their submerged venters. Note their tapered apices (sulcate in closer views) and especially the shiny fresh droplets (arrowed) that exude apically and then 'slide' down the neck. Within the droplet are numerous asci and ascospores – the source of those seen later in this PDF.**



**AEB 1349. Samsung smartphone camera closeup photo of drying fresh field material. Emphasis is on the drying masses of asci and ascospores in the droplets seen drying just below the perithecium neck apices (solid arrows). Note their point of origin seen as a small tiny shiny droplet at the very apex of one neck (dotted arrow).**



**AEB 1349. Another Samsung smartphone camera closeup of drying fresh field material. Emphasis is on the drying masses of asci and ascospores in the droplets seen as swellings below the perithecium neck apices (solid arrows). Note also what appear to be transverse lines at regular intervals along the necks (dotted lines) – seemingly growth increments.**

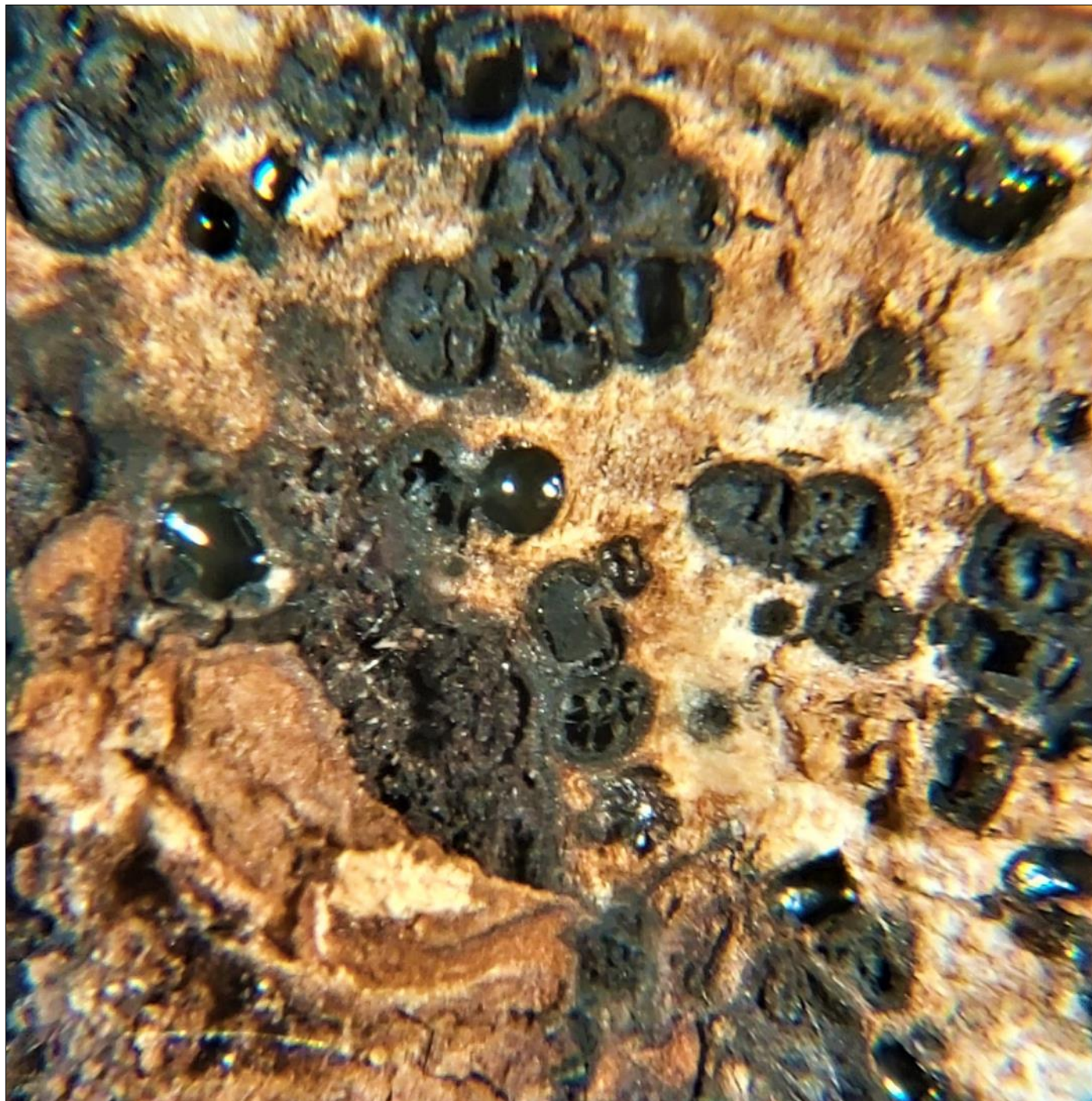


**AEB 1349. In-situ photos of perithecium necks taken under a Zeiss MC 80 dissecting scope. Note the droplets seen as swellings below the perithecium neck apices (solid arrows) and the transverse lines at regular intervals along the necks (dotted lines) – growth increments.**





**AEB 1349. Smartphone camera photo of a horizontal razor section through the outer wood of a fresh specimen. Note the bark on the right side of the photo. The shiny black areas represent the fresh contents of each perithecial venter's centrum. I believe that each grouping of 1-3 or 4 fresh venters represent separate stomata although that is unclear at this magnification.**



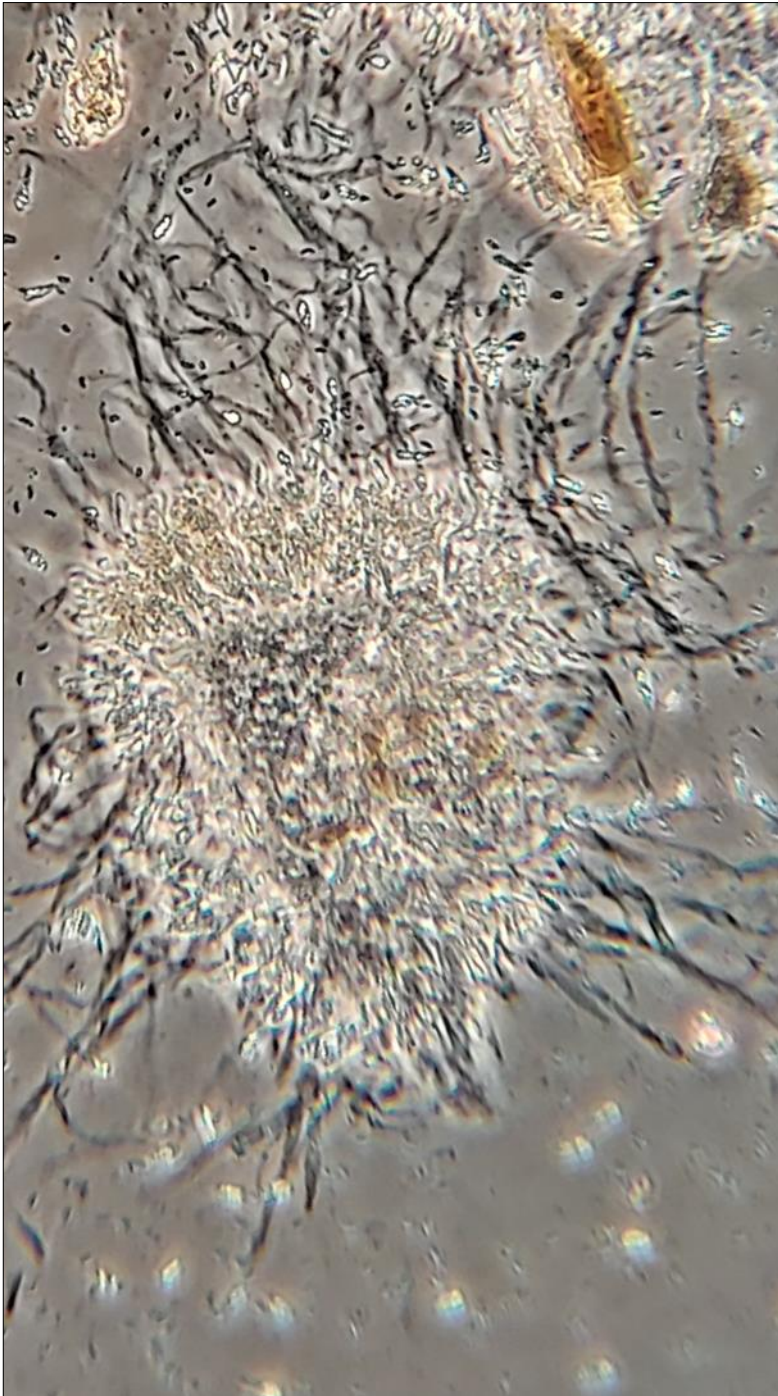
**AEB 1349. Another Smartphone camera view of a horizontal razor section through the outer wood of a fresh specimen. As mentioned on the previous page, the stromata appear to have from 1–7 perithecia (the venters of some exhibiting their fresh shiny contents).**



**AEB 1349. Smartphone camera photo of a horizontal razor section through the outer wood – portions of the bark are seen around the periphery. Note the black line (arrowed) that forms the border of a stoma containing 7 perithecia (rough x-sections of their dried blackish venters are seen here). The whitish, woody, stoma interior is undeveloped.**

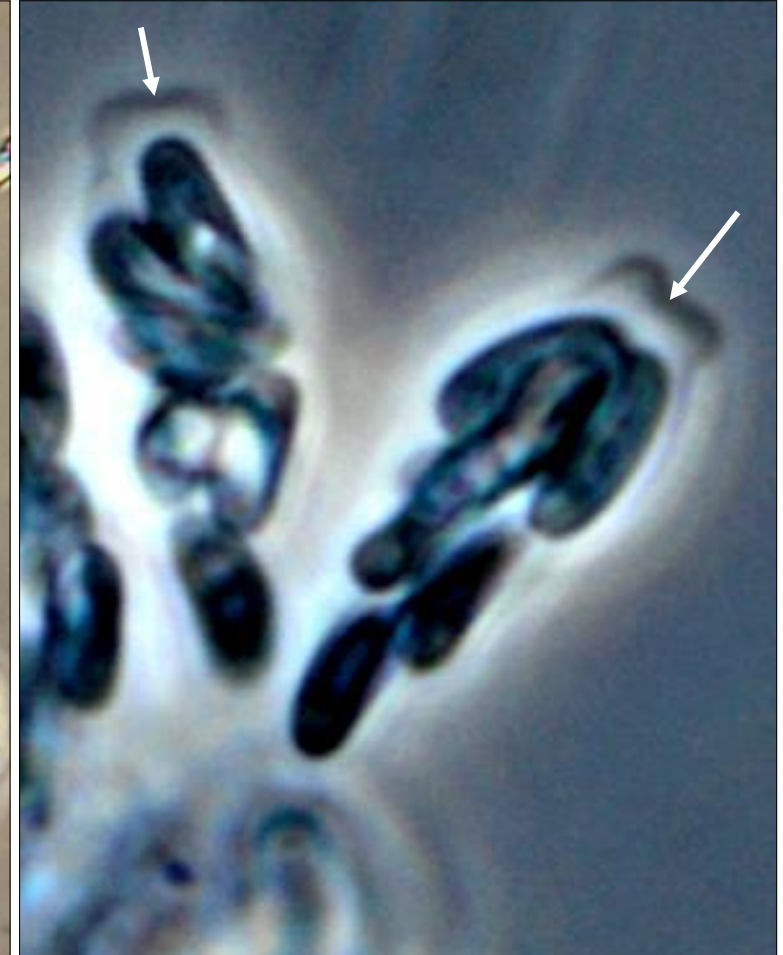


**AEB 1349. As shown on the previous page, this higher magnification of a horizontal razor section through the outer wood appears to show the venters within perithecia of a single(?) stroma.**

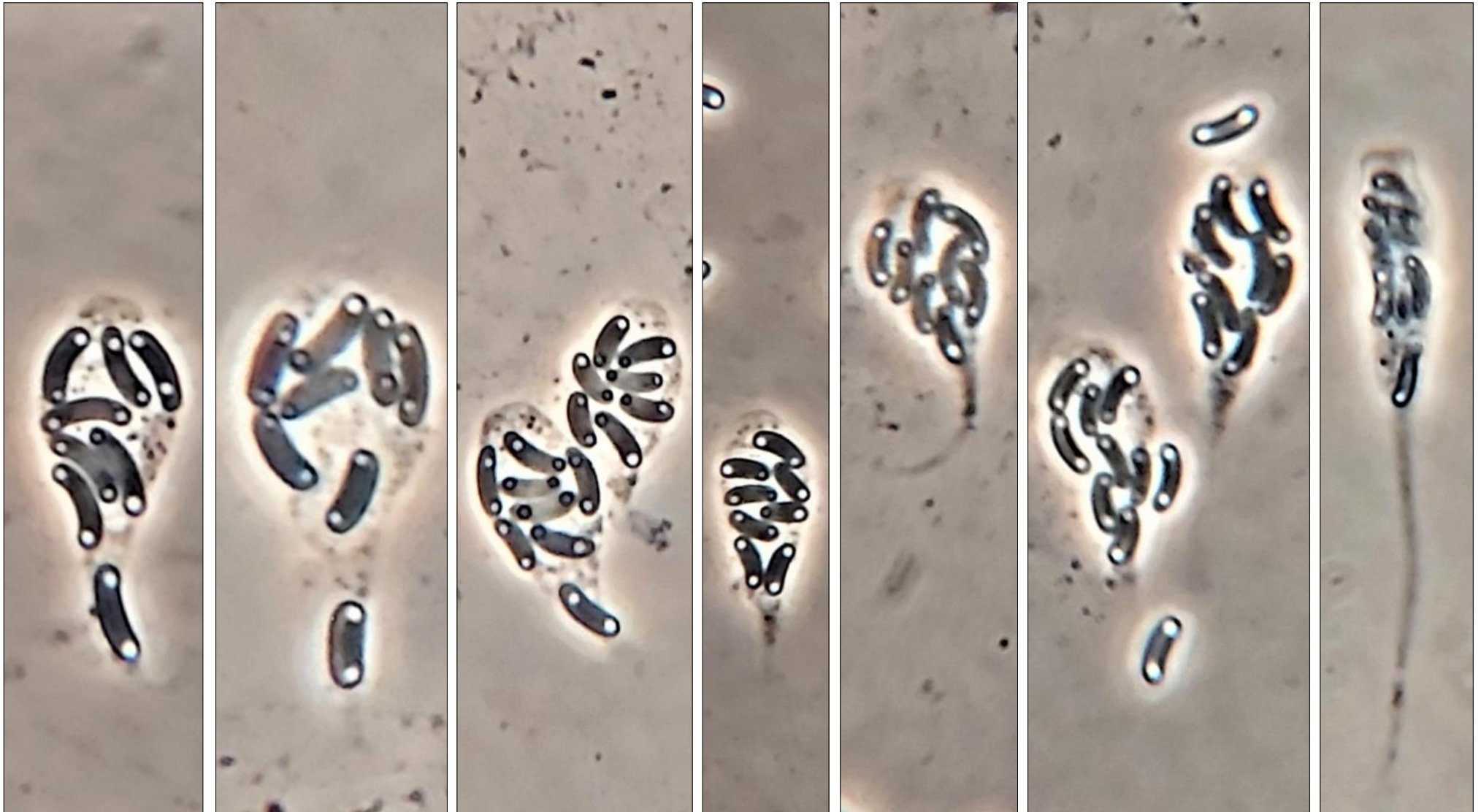


**AEB 1349. Smartphone camera photos of paraphyses at successively higher resolutions. Water mounts from a submerged ascoma venter (see photos shown earlier on photo plate 6 of the shiny black areas that represent the fresh contents of each perithecial venter's centrum).**

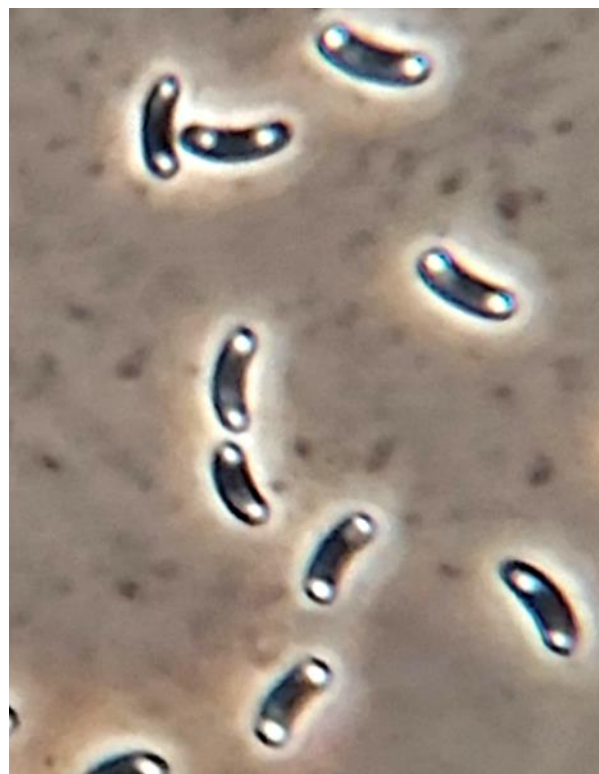
AEB 1349. Smartphone camera photos of young asci. Note their truncate apices. Water mount from a submerged ascoma venter (see photos shown earlier on photo plate 6 of the shiny black areas that represent the fresh contents of each perithecial venter's centrum).



AEB 1349. Urn-shaped asci, with truncate apices from an ascoma venter submerged in the wood (same venter location as described for the left photo on this page). A Melzer's reagent mount using an Olympus BX51 compound microscope (with DP25 camera), X100 objective & phase microscopy. Arrows indicate the Tiny amyloid positive apical pore. Try as I did, I was unable to clearly photograph the pore bluing in brightfield microscopy.

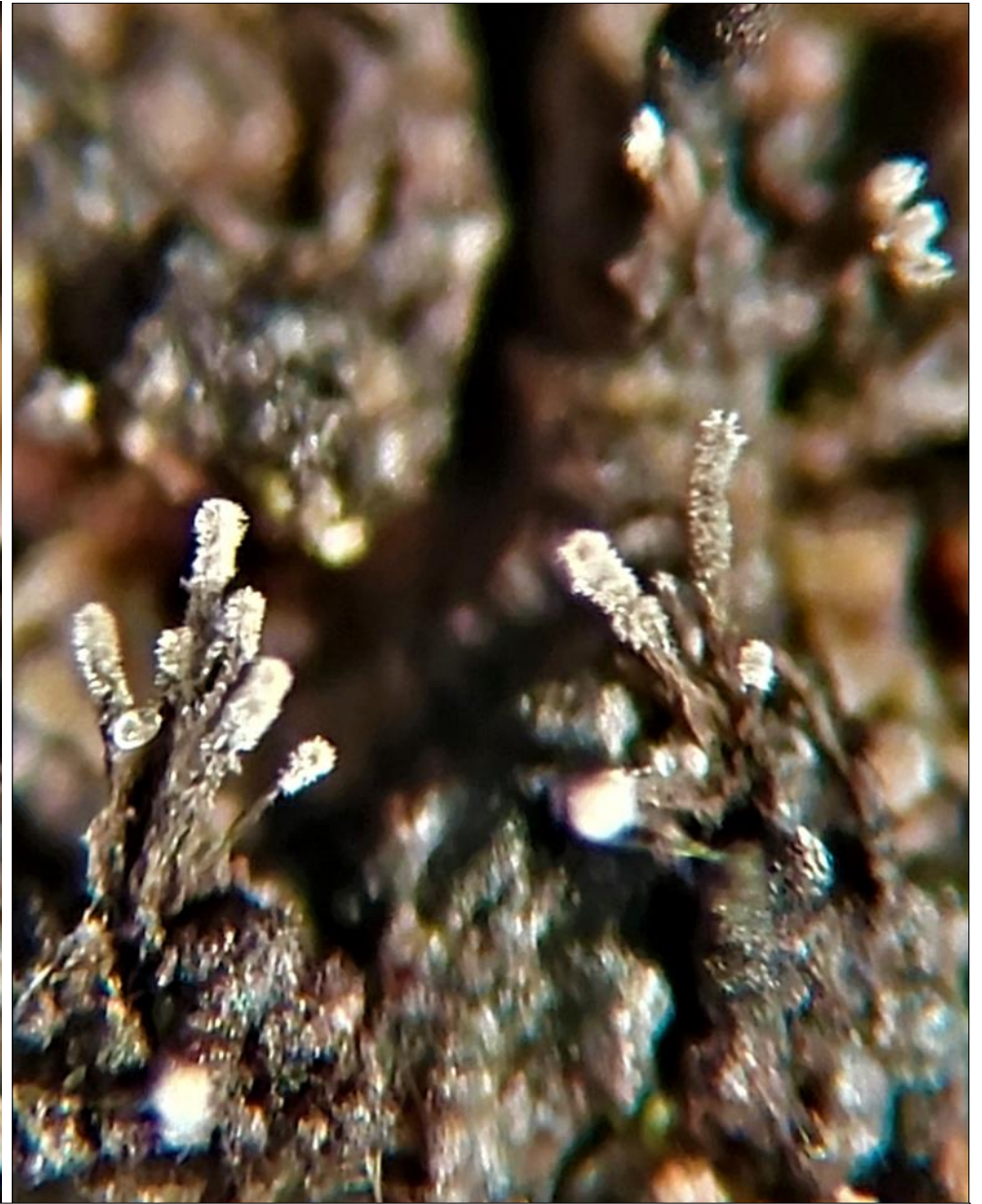


**AEB 1349. Asci with 8 allantoid hyaline ascospores in water mounts using X100 objectives and phase microscopy. Photos taken directly by using my smartphone camera. The X10 microscope eyepiece was replaced with the X10 Gosky microscope eyepiece whose adaptor held the smartphone. All but the far right photo were taken from fresh asci/ascospores that exuded from the ascomata long-necked apices. The far-right photo features a long-stiped, urn-shaped ascus, with truncate apex from a submerged ascoma venter. Asci there were mostly long-stiped and immature but when exuded became swollen at the ascospore-containing ascus apex with the long stipe infrequently seen.**



**AEB 1349. Allantoid hyaline ascospores ( $4-5 \times 1-1.5 \mu\text{m}$ ) in water mounts using X100 objectives and phase microscopy. Photos taken directly by using my smartphone camera as described on the previous page.**

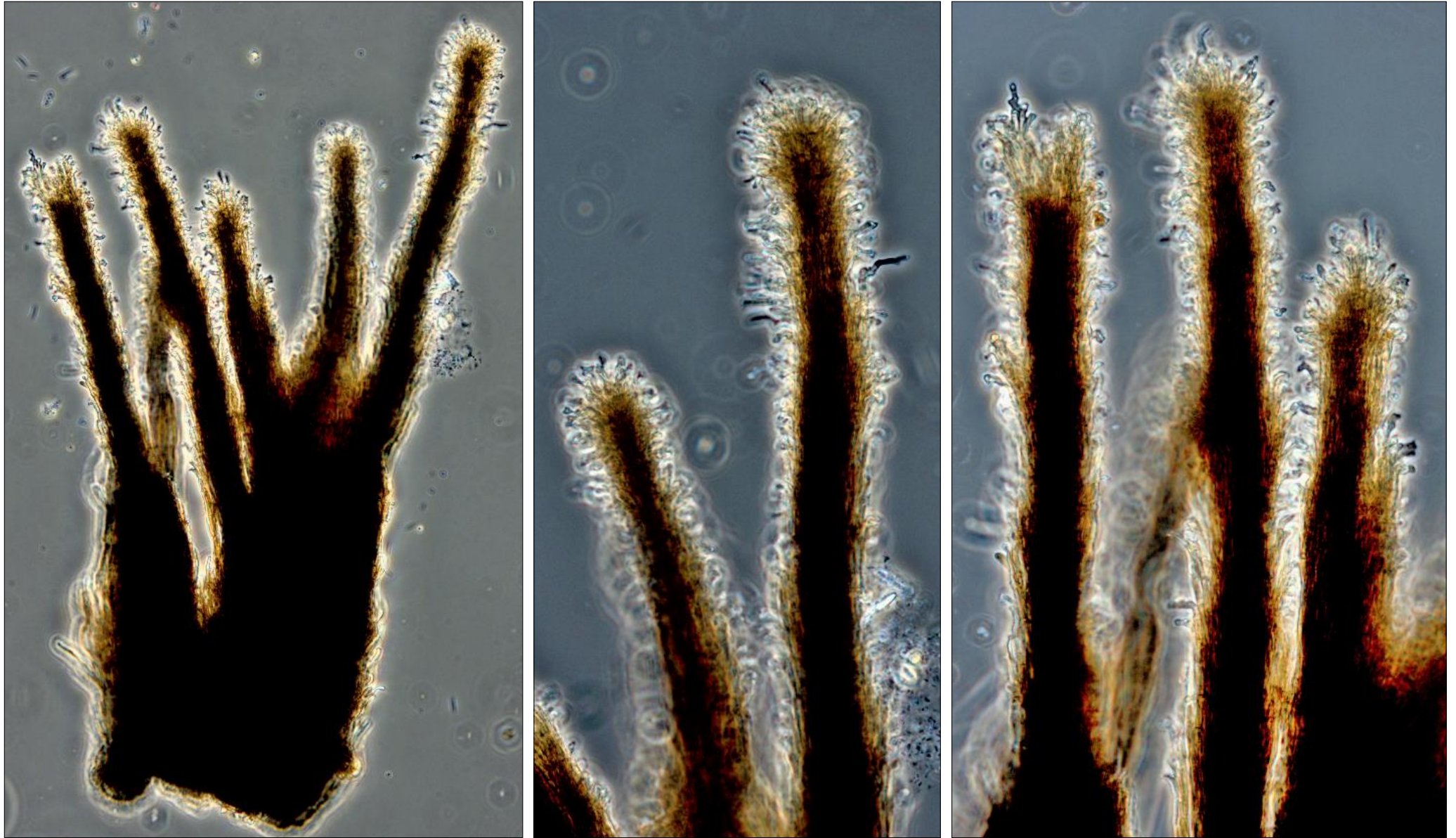




**AEB 1349. Smartphone camera photos of *Harpoglyphium fasciculatum* in-situ on the dried herbarium specimen (packet #2 of *Peroneutypa scoparia* PDD 120014). Although dried, the white-spored conidial clusters on the synnemata are easily seen under a dissecting scope. See the last 3 pages of this PDF for their microscopic detail.**



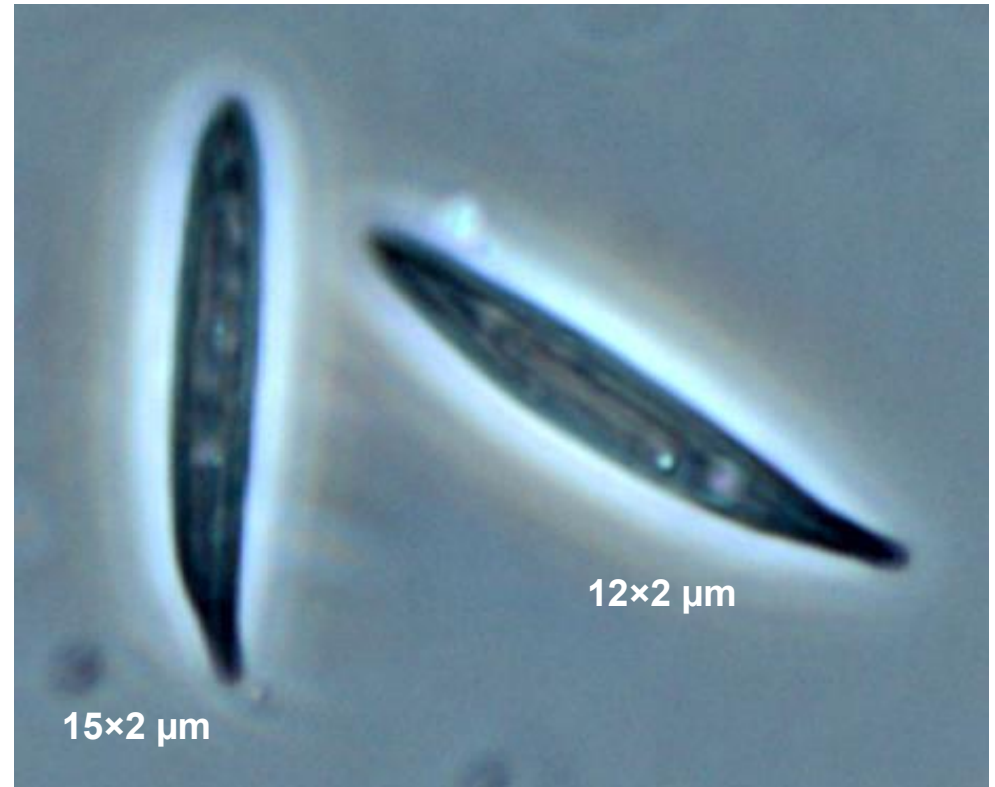
**AEB 1349. Closeups of the synnemata grouping at the left on photos from the previous page.**



**AEB 1349. A cluster of branching synnemata with views of the sporogenous areas along their peripheries. A SMF mount using an Olympus BX51 compound microscope (with DP25 camera) X20 objective (left photo) & X40 obj. (right photos). All phase microscopy.**



**AEB 1349. *Harpographium fasciculatum* conidia in a water mount using the X40 objective and phase microscopy. The photograph was taken under an Olympus BX51 compound microscope (with a DP25 camera).**



**AEB 1349. *Harpoglyphium fasciculatum* conidia in water mounts using the X100 objective and phase microscopy. The photograph was taken under an Olympus BX51 compound microscope (with a DP25 camera). Conidia overall were mostly within the measurements given on the photos. They were scolecosporus, irregularly straight to falcate, smooth, single-celled, narrowly truncate basally and tapering to a narrowly rounded apex.**