***Helminthosporium velutinum* Link – PDD 111257 (= AEB 1273)**

Collected: 17 February 2016 on a firm dead *Freycinetia banksii* (kiekie) stem and ensheathing dead leaf bases

Collection site: Rimutaka Forest Park – Orongorongo Track

Collected and identified by: Dan Mahoney

Voucher materials: Dried herbarium specimen and several semipermanent slide mounts; Dan's in-situ photos of 'fresh' conidiophores and conidia under a Zeiss dissecting scope and his digital photos of microscopic detail from slide mounts; Dan's brief description & comments.

Dan's brief description and comments: This collection was made during a very dry summer and wasn't as fresh as I would have wished. Present on the same kiekie stem was also a *Lentomitella investita* specimen: [PDD 111256 (= AEB 1272)]. Below I've reproduced portions of the *Lentomitella* description to explain what I believe to be a reasonable assumption concerning the relationship between these 2 species.

Notable was the presence of both *Helminthosporium* and *Lentomitella* on different portions of the same dead kiekie leaves. At an area of overlap between the two fungi the *Lentomitella* perithecia were fewer and all venters examined were sterile (no asci). Here the *Helminthosporium* was less abundant but further on was sporulating on the tall black *Lentomitella* necks (especially from conidiophores at the neck apices) as well as from the firm kiekie surface. Further still along the substrate, sporulating *Helminthosporium* conidiophores covered primarily the kiekie surface. Two herbarium samples were prepared from the kiekie by cutting appropriate portions apart: 1) The abundant *Lentomitella* fertile perithecial portion and 2) The *Helminthosporium* portion that also included the sterile *Lentomitella* perithecia). No *Helminthosporium* teleomorph was observed.

Althought difficult to verify, it suggests that the *Helminthosporium* had parasitized the *Lentomitella.*

Further details of the *Helminthosporium velutinum* – PDD 111257 (= *AEB 1273)*:

Conidiophores numerous, simple, straight to variously bent, long and thread-like, dark brown, smooth, septate, many 450–650+ X 18–20 µm (near the base) & narrowing to 9–12 µm near the apex. Percurrent growth often occurs once or more following formation of an apical conidium. Conidiophores (and conidia) associated with necks of the sterile *Lentomitella* fungus were the same as those produced from the kiekie substrate but weren't as abundant.

Conidia smooth, produced singly, apically and laterally, from small pores. These seen initially as globular blastic out-growths, first hyaline to light yellow and aseptate but becoming obclavate (straight to curving), golden brown and transversely septate as they mature. As conidia mature many (most) apically narrow, approx. 5–7 µm and continue to lengthen at that width (some to a length equal to or greater than the length of the swollen base). Septations in the swollen basal portion are pseudosepta but those in the apical extension appear euseptate (although the latter is not indicated in other descriptions – e.g. those of M.B. Ellis or Matsushima given in MycoBank.). Transverse septations roughly number 8–14 overall. Growth of the conidia is acropetal with the uppermost portions of the extension more lightly pigmented (and some of these conidia may still be lengthening at the time they were measured). A dark truncate scar is seen basally in mature detached conidia. Conidial sizes variable: 65–125 X 17.5–22.5(–24) µm at their widest point (n=15). Conidia with 2 equal apical branches infrequently seen and smaller.

Pages 390 & 391 from Dematiaceous Hyphomycetes by M.B. Ellis. Publ. by the Commonwealth Mycological Institute, Kew, Surrey, England 1971.

KEY

Conidia obclavate, not in chains		1
Conidia not obclavate, often in short chains		*hypselodelphyos*
1. Conidia usually less than 10μ thick		2
Conidia usually more than 10μ but less than 14μ thick		3
Conidia usually more than 14μ thick		5
2. Conidiophores thinner at the apex than at the base		*solani*
Coniodiphores thicker at the apex than at the base		*chlorophorae*
3. Conidia mostly more than 90μ long		*dalbergiae*
Conidia less than 60μ long		4
4. Conidiophores 14–20μ thick at the base		*mauritianum*
Conidiophores less than 12μ thick at the base		*acaciae*
5. Conidia more than 23μ thick		*ahmadii*
Conidia less than 23μ thick		6
6. Conidia rostrate		*bauhiniae*
Conidia not rostrate		7
7. Conidia averaging 68×15μ		*velutinum*
Conidia averaging 114×17μ		*microsorum*

Helminthosporium solani Dur. & Mont., 1849, Flore d'Algérie, Crypt.: 356.
Spondylocladium atrovirens (Harz) Harz ex Sacc., 1886, Syll. Fung., **4**: 428.
For other synonyms, see *Mycol. Pap.*, **82**.
(Fig. 266)

Colonies dark brown to black, hairy. *Stroma* rudimentary or absent. *Conidiophores* subulate, mid to very dark brown, paler near the apex, smooth or occasionally verruculose, up to 600μ long, 9–15μ thick near the base, 6–9μ at the apex. *Conidia* straight or curved, obclavate, subhyaline to brown, 2–8-pseudoseptate, 24–85 (39)μ long, 7–11 (9·4)μ thick in the broadest part, tapering to 2–5μ at the apex, with a dark brown to black scar at the base.

On *Solanum* and occasionally other plants, the cause of ' silver scurf ' disease of potato; common and widely distributed [CMI Distribution Map 233].

Helminthosporium velutinum Link ex Ficinus & Schubert, 1823, Fl. Geg. Dresd. Krypt.: 283. For synonymy, see *Mycol. Pap.*, **82**.
(Fig. 267)

Colonies effuse, black, hairy. *Stroma* erumpent, brown to dark brown, pseudoparenchymatous, 20–400μ high, 40–700μ wide. *Conidiophores* usually caespitose, straight or flexuous, subulate, mid to very dark brown, smooth, up to 950μ long, 14–26μ thick at the base, 8·5–12μ at the apex. *Conidia* arising through small pores at the apex and laterally in up to 12 whorls beneath the upper septa, straight or flexuous, obclavate, subhyaline to rather pale golden brown, occasionally darker, smooth, 6–16-pseudoseptate, 40–118 (68)μ long, 11–20 (15)μ thick in the broadest part tapering gradually to 5–7μ near the apex, with a large blackish brown scar at the base.

Very common on dead stems of herbaceous plants and twigs and branches of many different kinds of trees; Europe, Ceylon, India, North America, Pakistan, Venezuela, most abundant in temperate regions.

Conidial measurements, substrata and geographical distribution of 8 other species of *Helminthosporium* are given below.

H. hypselodelphyos M. B. Ellis (Fig. 268 A): 15–28 (25) × 6·5–8 (7·1)μ, on *Hypselodelphys*; Sierra Leone.
H. chlorophorae M. B. Ellis (Fig. 268 B): 50–102 (73) × 8–11 (9·5)μ, on *Chlorophora*; Sierra Leone.

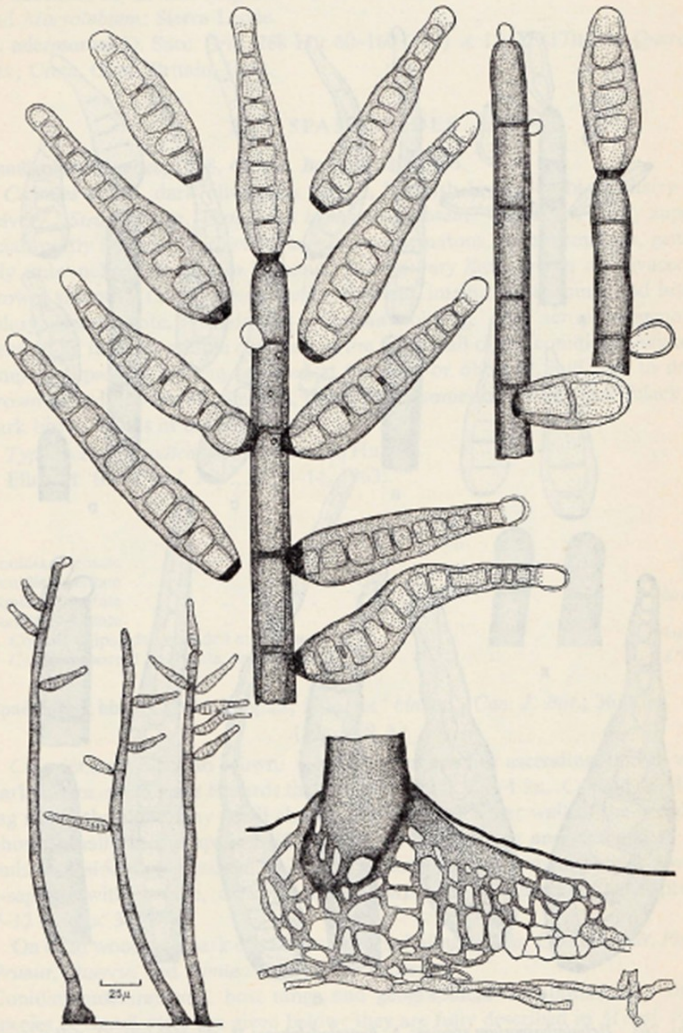
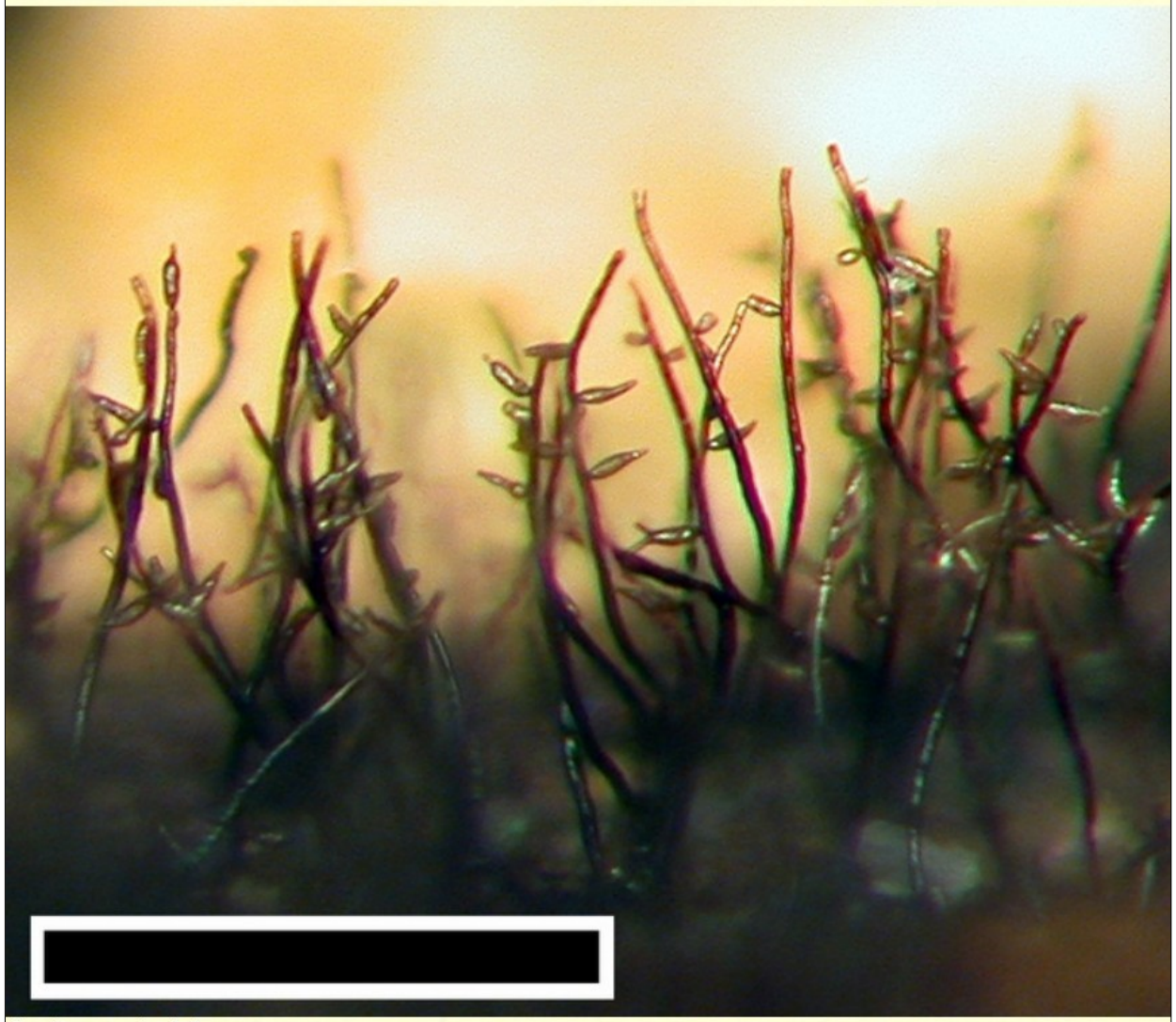


FIG. 267. *Helminthosporium velutinum* (× 650 except where indicated by the scale).

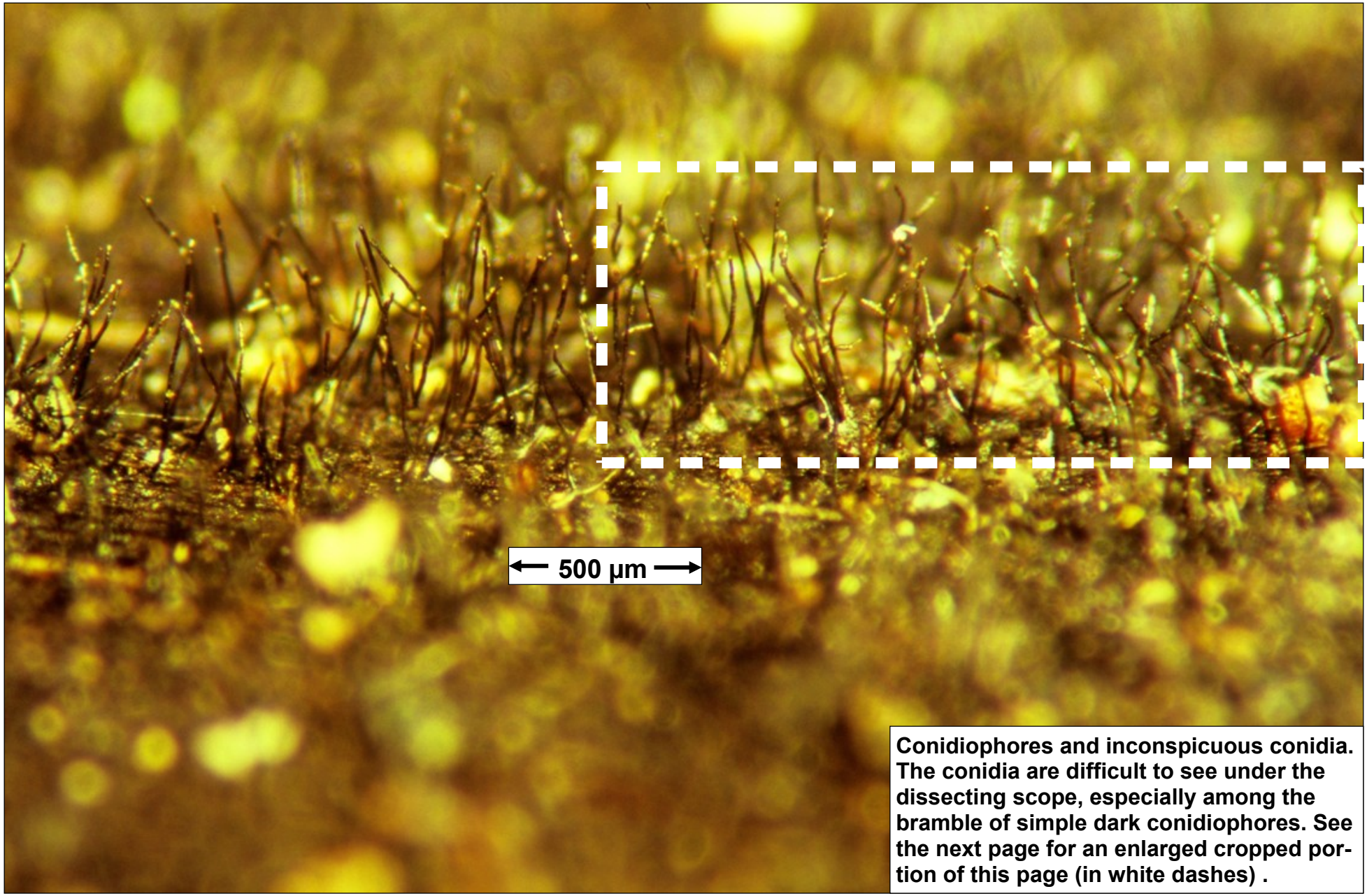
A photo by Jerry Cooper from the PDD website.

Helminthosporium velutinum

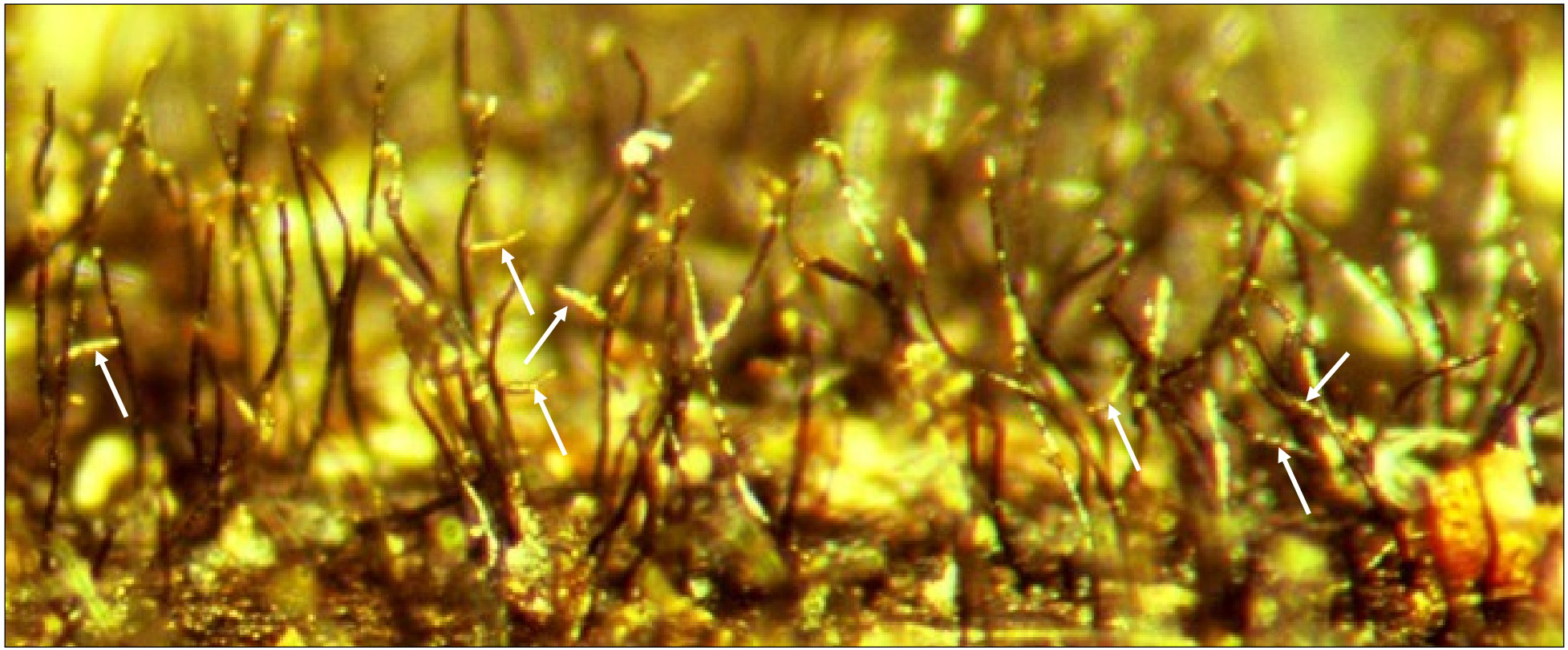


Caption: scale=0.5mm
Owner: J.A. Cooper
PDD: PDD87243

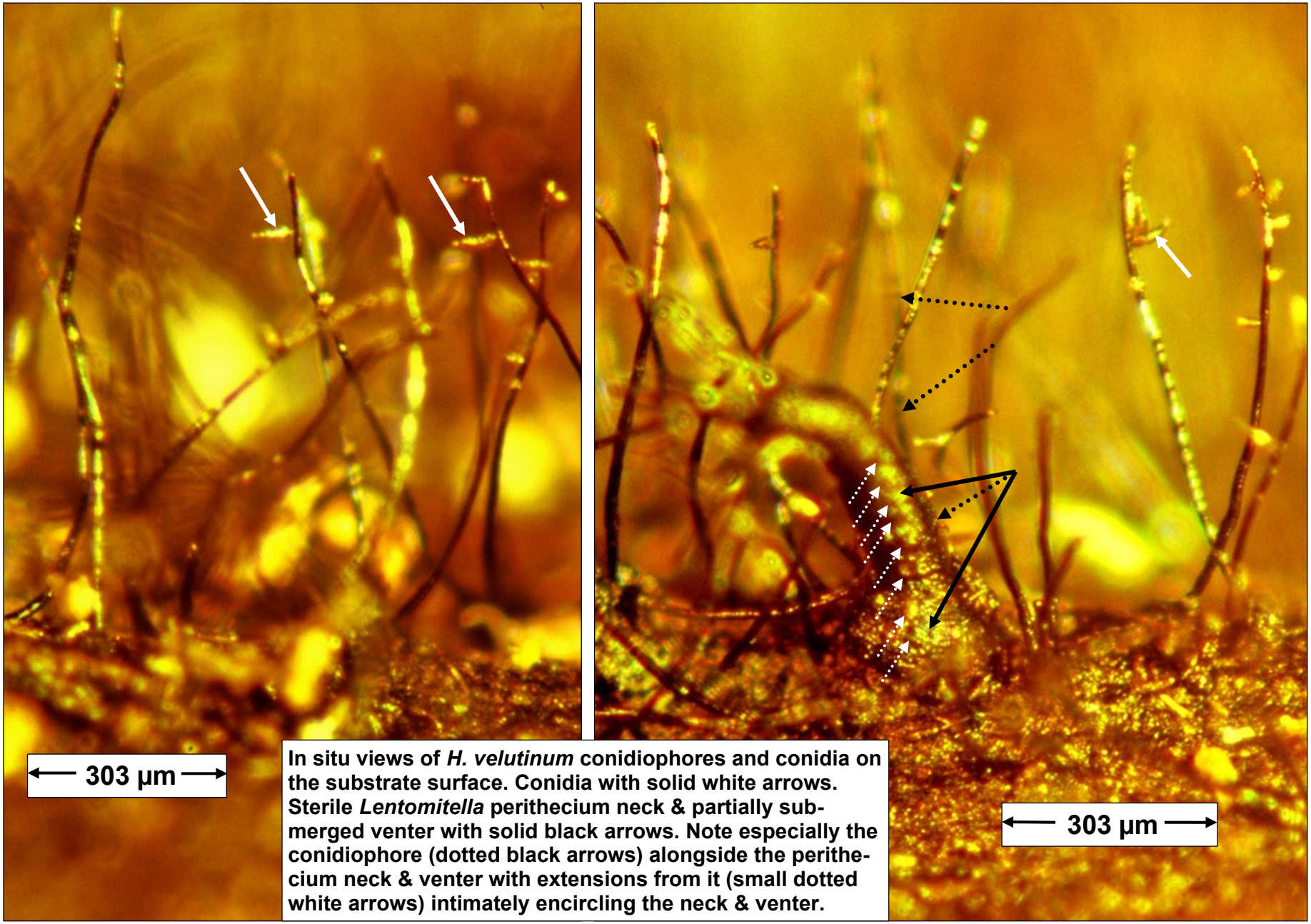
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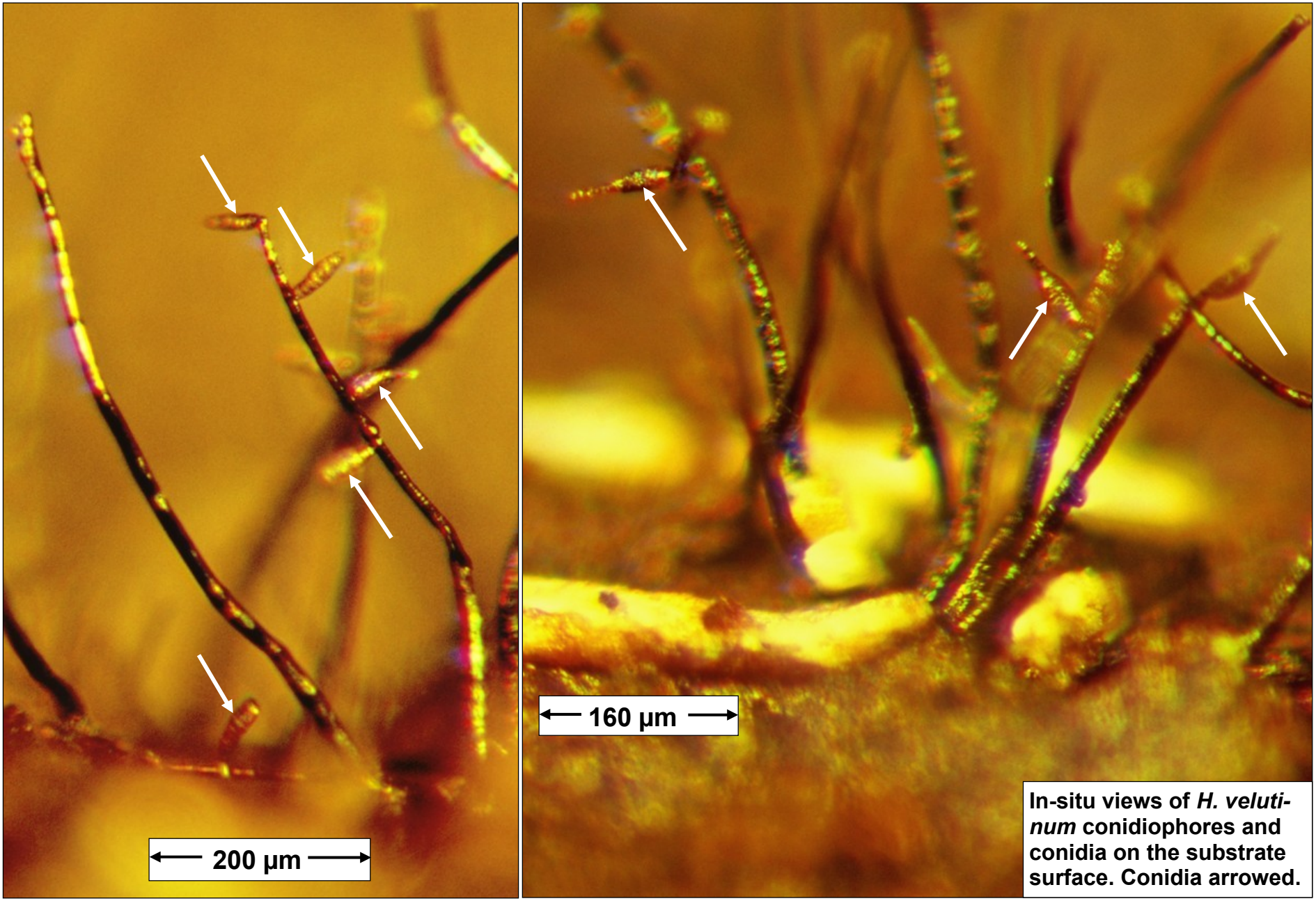
Conidiophores and inconspicuous conidia. The conidia are difficult to see under the dissecting scope, especially among the bramble of simple dark conidiophores. See the next page for an enlarged cropped portion of this page (in white dashes) .



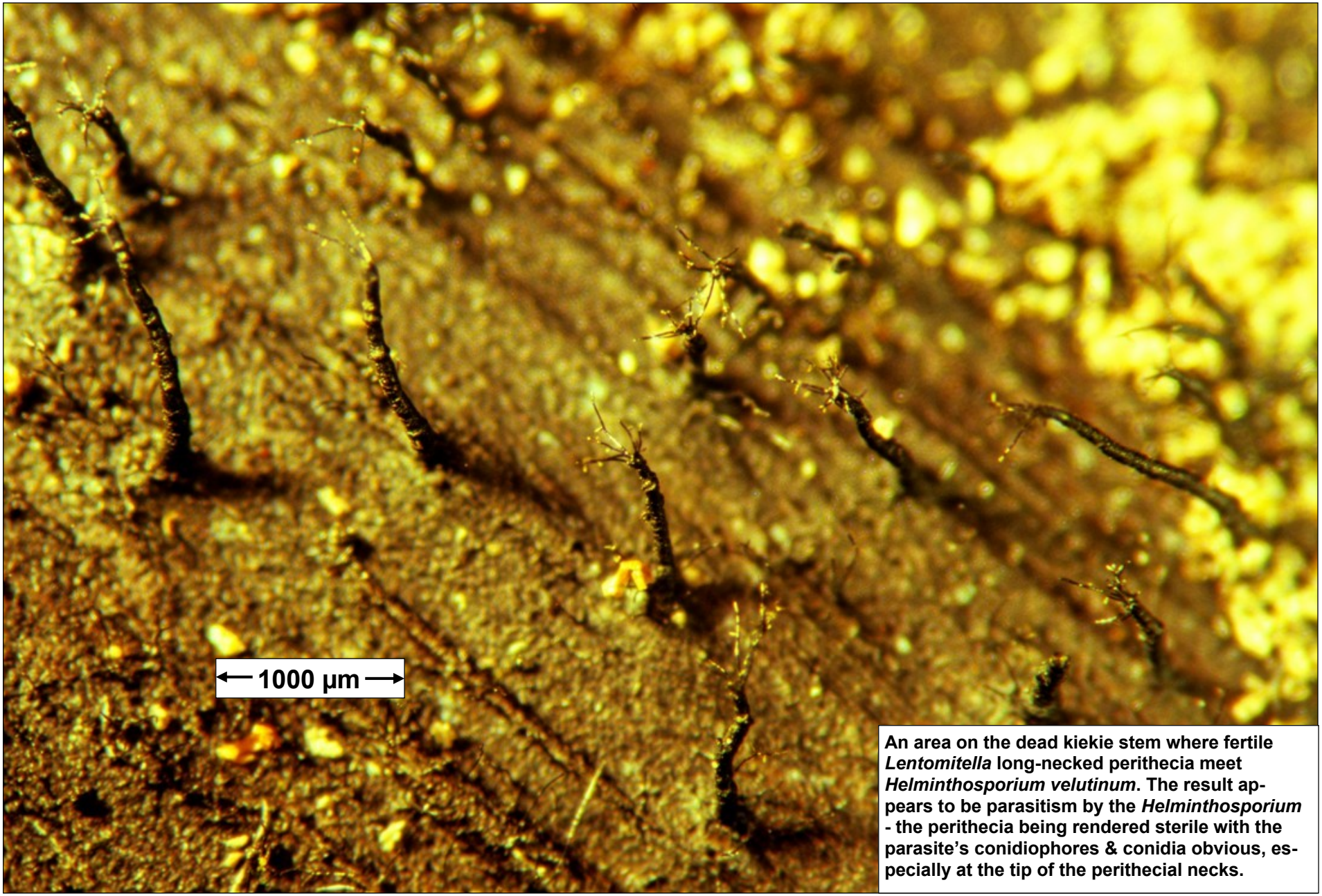
Conidiophores and arrowed conidia cropped from the photo on the previous page. The conidia are difficult to see under the dissecting scope, especially among the bramble of numerous simple dark conidiophores.



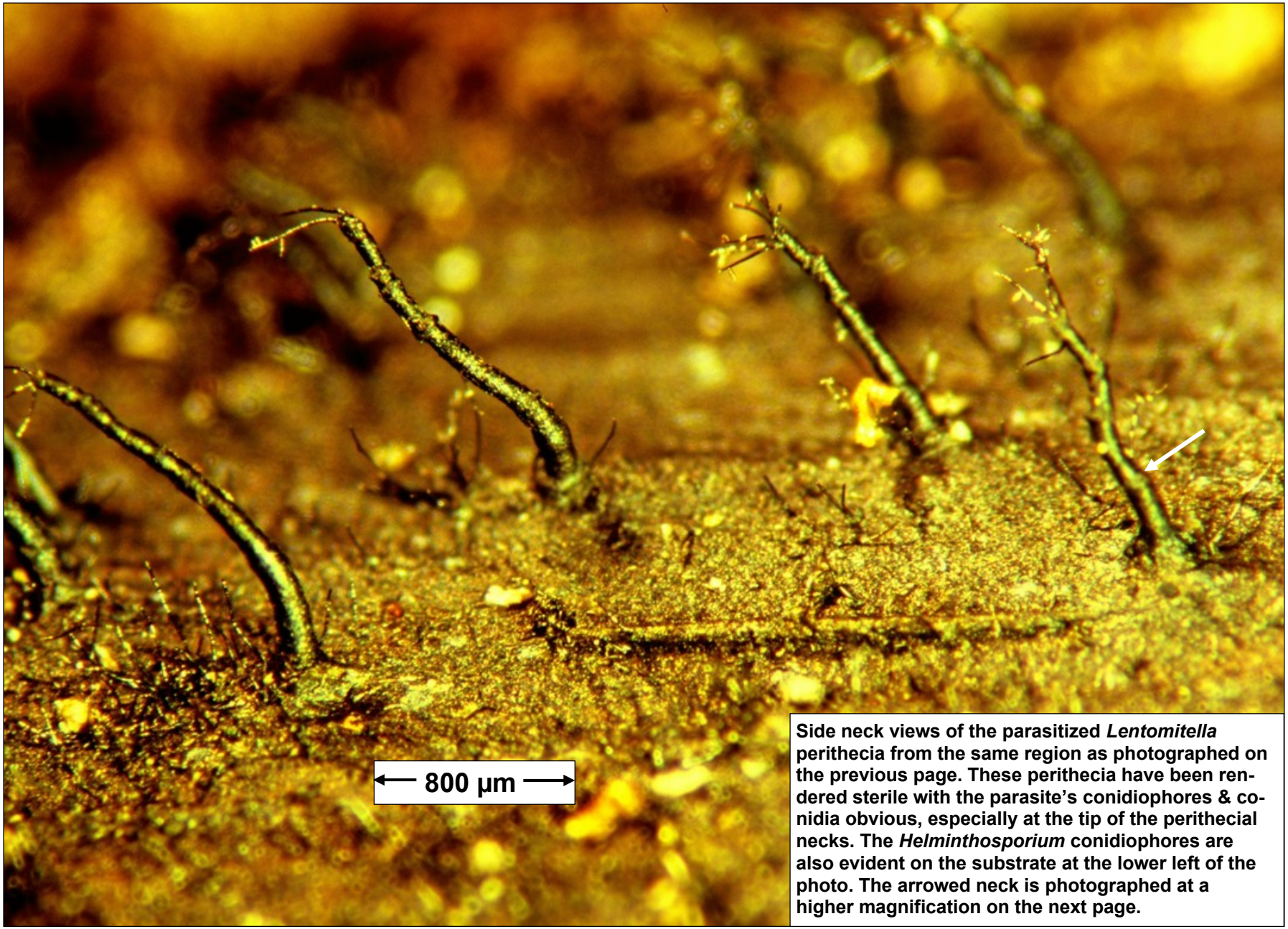
In situ views of *H. velutinum* conidiophores and conidia on the substrate surface. Conidia with solid white arrows. Sterile *Lentomitella* perithecium neck & partially submerged venter with solid black arrows. Note especially the conidiophore (dotted black arrows) alongside the perithecium neck & venter with extensions from it (small dotted white arrows) intimately encircling the neck & venter.



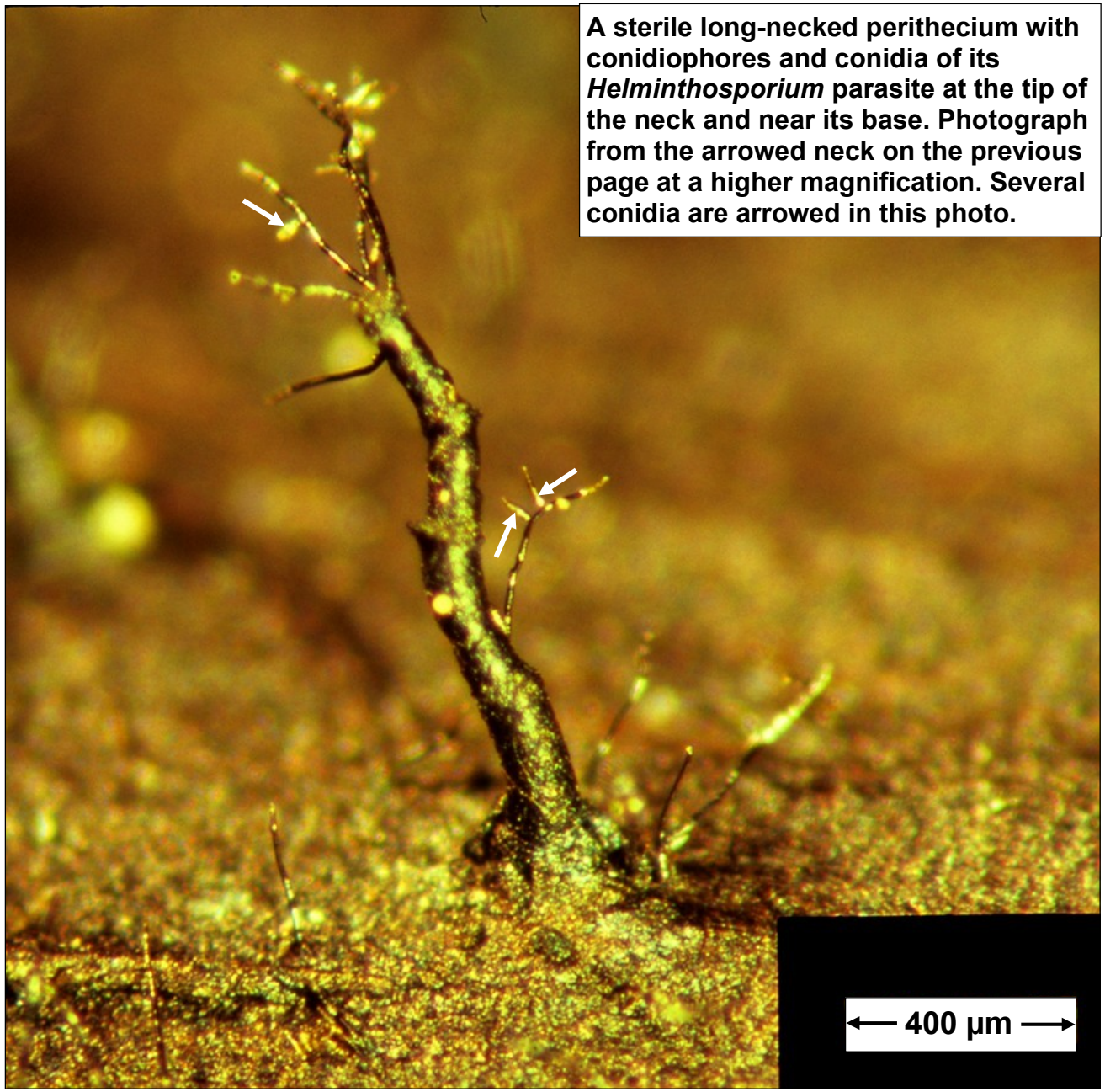
In-situ views of *H. velutinum* conidiophores and conidia on the substrate surface. Conidia arrowed.



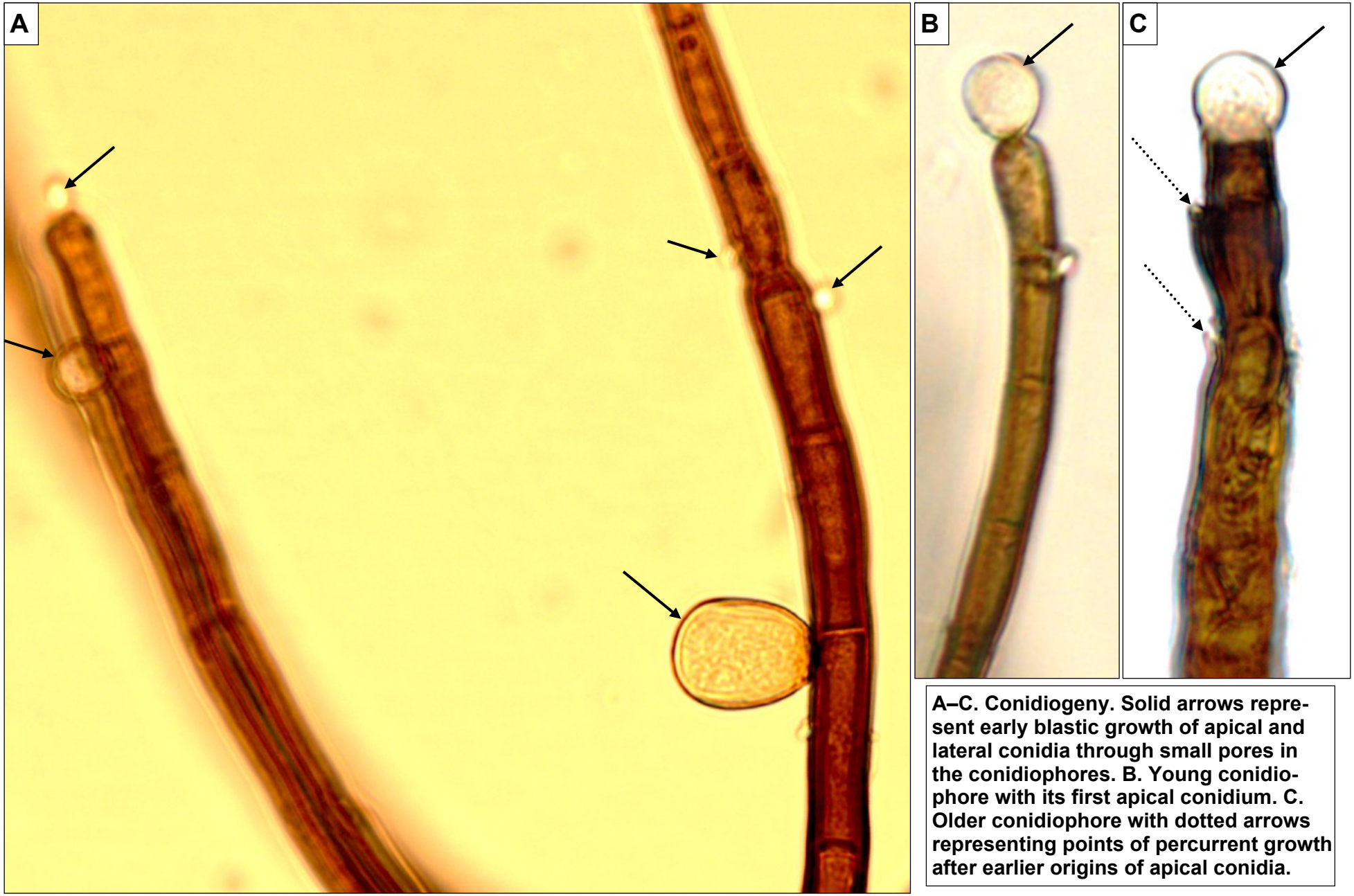
An area on the dead kiekie stem where fertile *Lentomitella* long-necked perithecia meet *Helminthosporium velutinum*. The result appears to be parasitism by the *Helminthosporium* - the perithecia being rendered sterile with the parasite's conidiophores & conidia obvious, especially at the tip of the perithecial necks.



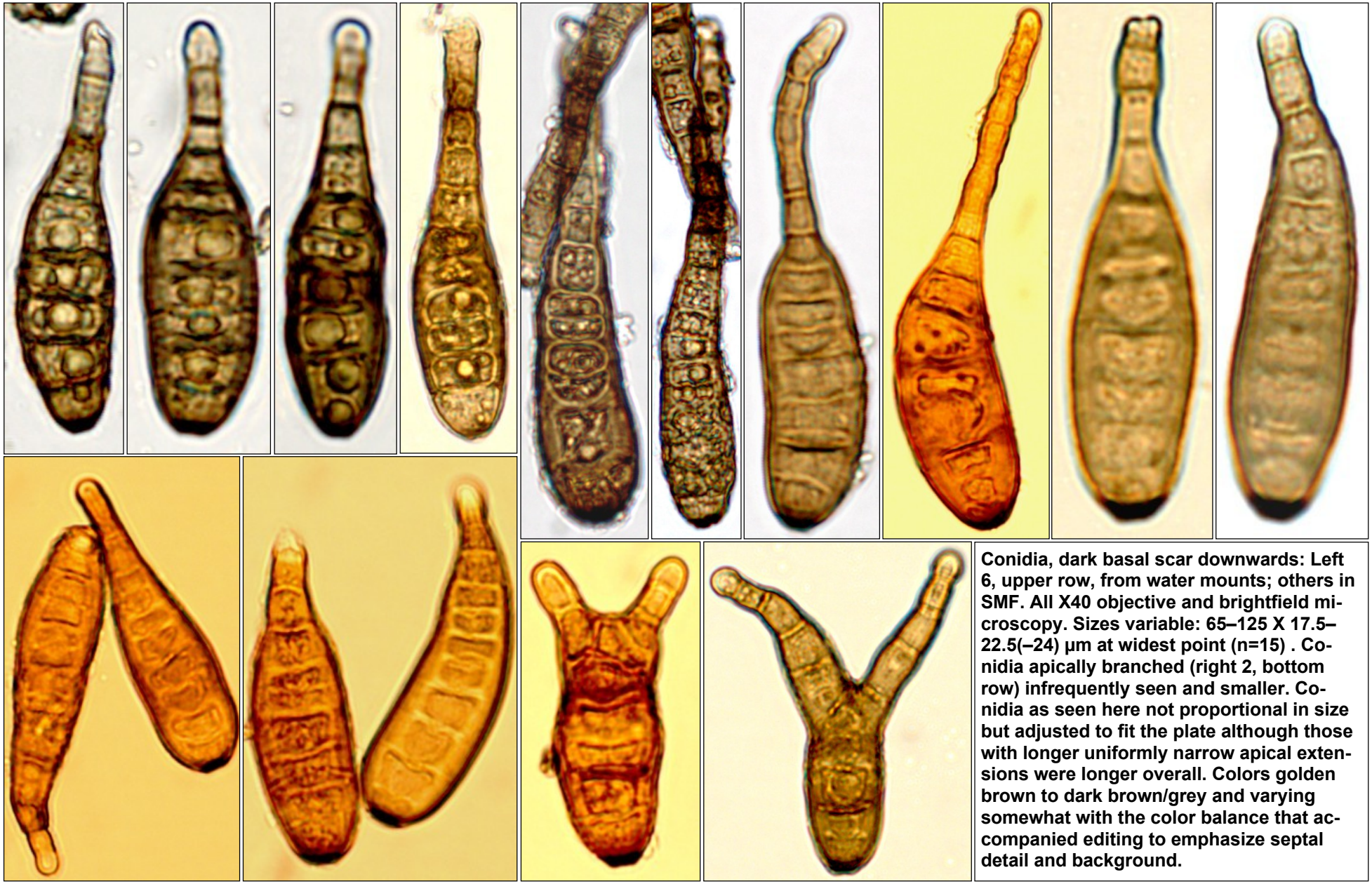
Side neck views of the parasitized *Lentomitella* perithecia from the same region as photographed on the previous page. These perithecia have been rendered sterile with the parasite's conidiophores & conidia obvious, especially at the tip of the perithecial necks. The *Helminthosporium* conidiophores are also evident on the substrate at the lower left of the photo. The arrowed neck is photographed at a higher magnification on the next page.



A sterile long-necked perithecium with conidiophores and conidia of its *Helminthosporium* parasite at the tip of the neck and near its base. Photograph from the arrowed neck on the previous page at a higher magnification. Several conidia are arrowed in this photo.



A–C. Conidiogeny. Solid arrows represent early blastic growth of apical and lateral conidia through small pores in the conidiophores. B. Young conidiophore with its first apical conidium. C. Older conidiophore with dotted arrows representing points of percurrent growth after earlier origins of apical conidia.



Conidia, dark basal scar downwards: Left 6, upper row, from water mounts; others in SMF. All X40 objective and brightfield microscopy. Sizes variable: 65–125 X 17.5–22.5(–24) µm at widest point (n=15) . Conidia apically branched (right 2, bottom row) infrequently seen and smaller. Conidia as seen here not proportional in size but adjusted to fit the plate although those with longer uniformly narrow apical extensions were longer overall. Colors golden brown to dark brown/grey and varying somewhat with the color balance that accompanied editing to emphasize septal detail and background.