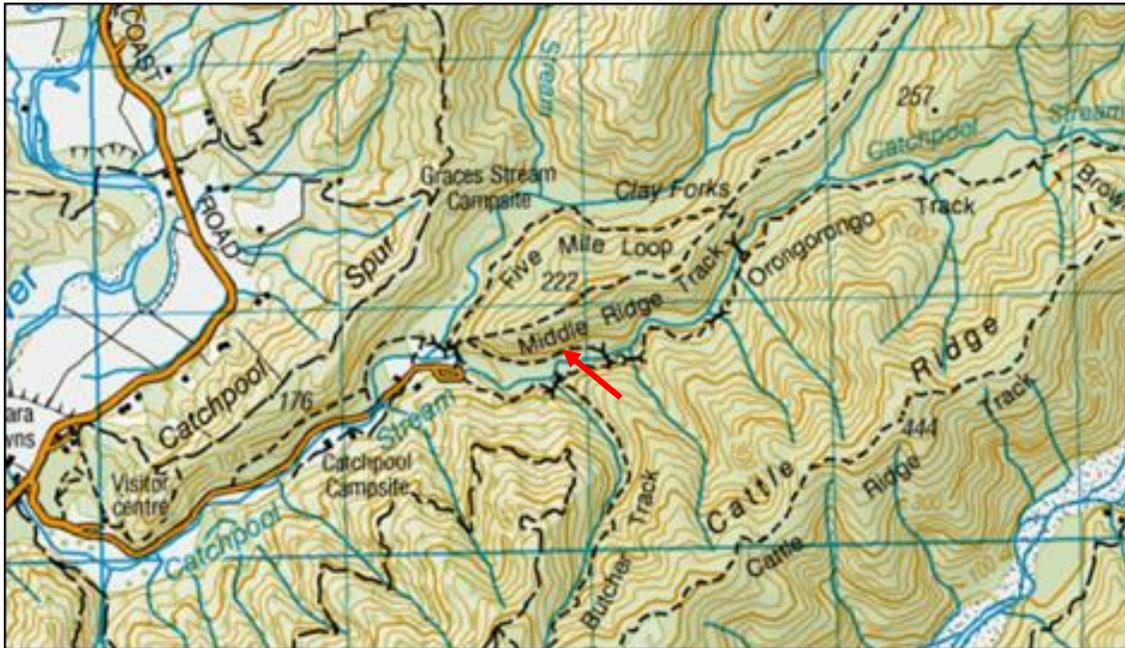


***Sporidesmium* sp. AEB 1330 (= PDD 117231) – on a wet dead nīkau palm (*Rhopalostylis sapida*) frond and on the numerous unidentified ‘ascomycetous perithecia’ also growing there**

Collection site: Remutaka Forest Park, Catchpool Loop Track (see red arrow on map insert)



Collection date: 25 November 2019

Substrate: on the wet protected surface (of the folded concavity) at the basal portion of a downed dead nīkau palm frond AND on the numerous unidentified ‘ascomycetous perithecia’ also growing there

Collector and Identifier: Dan Mahoney

Voucher materials: Dried herbarium specimen AEB 1330 (= PDD 117231) accompanied by 2 Shear’s mounting fluid (SMF) semi-permanent slide mounts; dissecting scope colored 35 mm film (best scanned) of fresh in-situ fruiting bodies

on the Nikau frond; compound scope digital photos of fruiting structure detail; Dan’s comments and description.

Dan’s comments: The first 3 photo pages of this pdf treat those unidentified ‘ascomycetous perithecia’ which are, I believe, not genetically related to the *Sporidesmium* growing upon them. Descriptive details, including measurements, are included in the photo legends. Unfortunately, this versicolorous-spored fungus was overly mature and didn’t provide any proof of spore origin (no asci were seen). The final 4 pages deal principally with the *Sporidesmium* growing upon the ‘ascomycetous perithecia’ but also with the *Sporidesmium* that is fruiting on the dead nikau frond surface itself.

Continued on the next page:

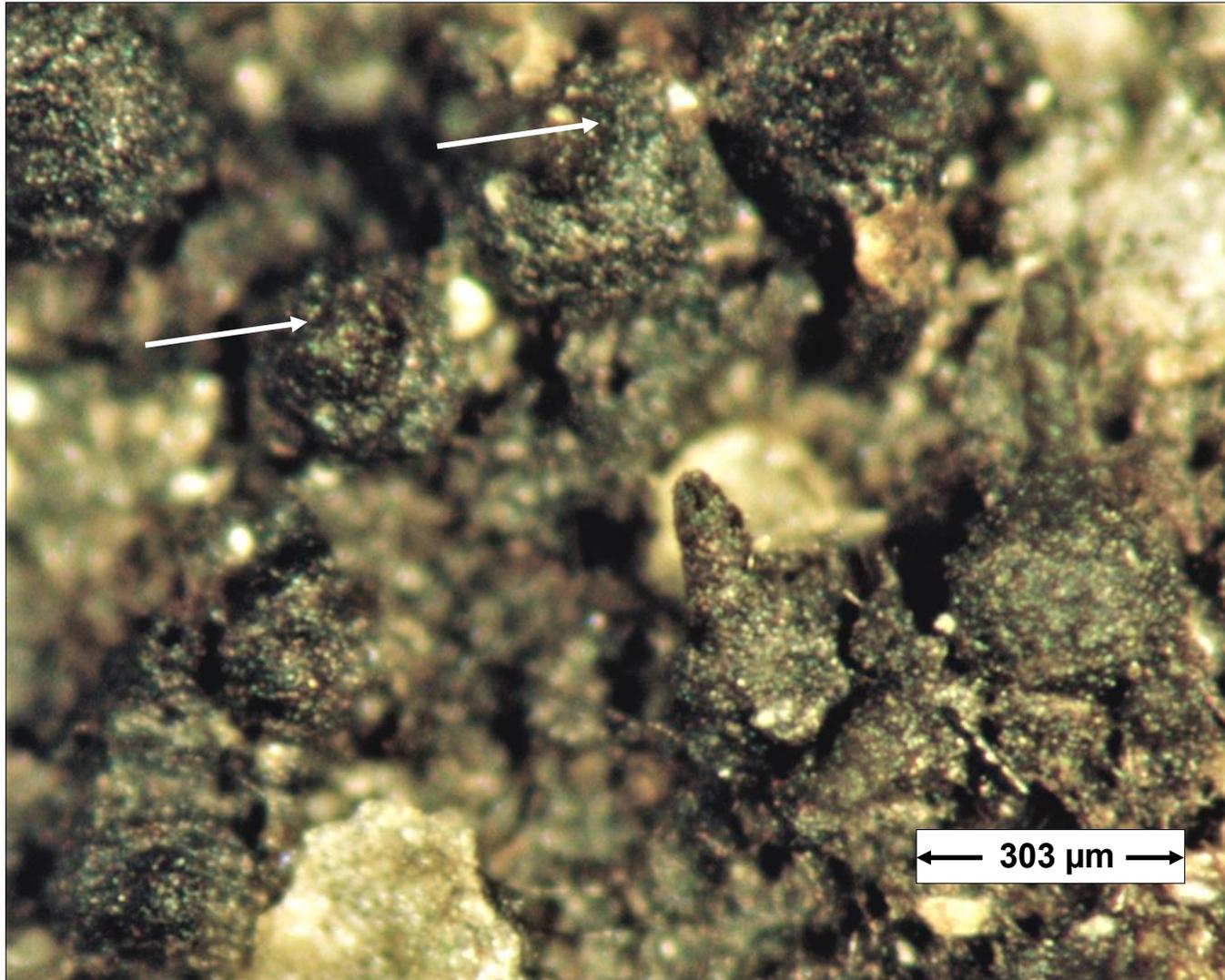
Description of *Sporidesmium* AEB 1330: Conidiophores numerous, separate, unbranched, brown, smooth, arising from a dead downed frond of a nikau palm and, likewise, from numerous unidentified 'ascomycetous perithecia' seen there. Variable in length (short to $62.5 \times 5 \mu\text{m}$) and in the number of cells (usually 3–7); occasionally with terminal percurrent proliferations. **Conidia** formed singly as blown-out ends at the apex of the conidiophores or occasionally at the apex of a percurrent proliferation; phragmospores obclavate euseptate (not indented at the septa) and smooth, straight or curving, conico-truncate at the base (secession schizolytic). All but the tapering, hyaline to faintly pigmented, apical cell were pale brown. The apical cell appeared to have very faint transverse septations and was surrounded by mucilage. Conidial measurements (excluding the hyaline mucilage-covered apical cell) were $30\text{--}55 \times 7.5\text{--}8.5 \mu\text{m}$ ($n=50$) and the number of pigmented cells varied from 4 to 10. Allowing $15 \mu\text{m}$ maximum for the hyaline cell length, the longest spores were $70 \mu\text{m}$.

Species identification: Recent comments concerning *Sporidesmium* nomenclature are provided in the following:

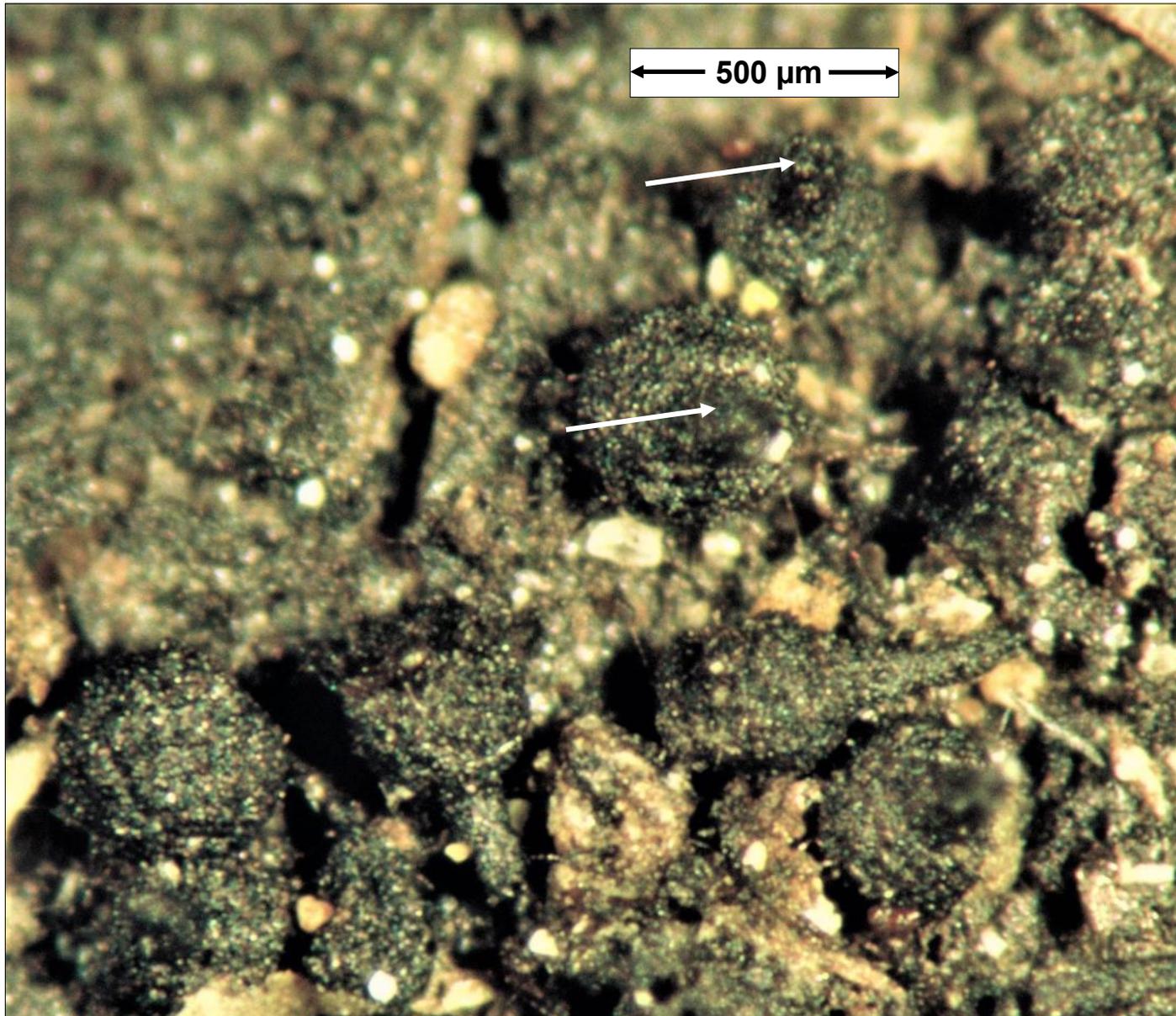
- 1) Seifert K, Morgan-Jones G, Gams W, Kendrick B. 2011. The Genera of Hyphomycetes. CBS Biodiversity Series no. 9: 1–997. CBS-KNAW Fungal Biodiversity Centre, Utrecht, Netherlands. (see pp. 413 & 414).
- 2) Santa Izabel TS, Cruz ACR & Gusmão LFP. 2013. Conidial fungi from the semi-arid Caatinga biome of Brazil. *Ellisembiopsis* gen. nov., new variety of *Sporidesmiella* and some notes of *Sporidesmium* complex. *Mycosphere* 4(2), 156–163. (see the reference 'Introduction')

The above publications and others have emphasized the breakup of a so-called '*Sporidesmium* species complex' into a number of separate genera. These have been accepted by some but not by others. Complicating this are the ever-increasing number of species—Seifert et al. noted approx. 330 species in 2011 but Index Fungorum (December 2019) lists 491 records. Other than some dichotomous keys to specific localities, the longer more extensive keys date from Ellis's Mycological Paper in 1958 and his key in 'More Dematiaceous Hyphomycetes' in 1976. Extensive monographic work is needed - based on morphology, ecology, cultures and sequencing. Until then, species identifications will remain problematic. The New Zealand PDD Landcare website records 142 collections, 50 of which are identified only as *Sporidesmium* sp. I can do no better with AEB 1330 but have provided this pdf record in hopes that someone else in the future will give it a binomial.

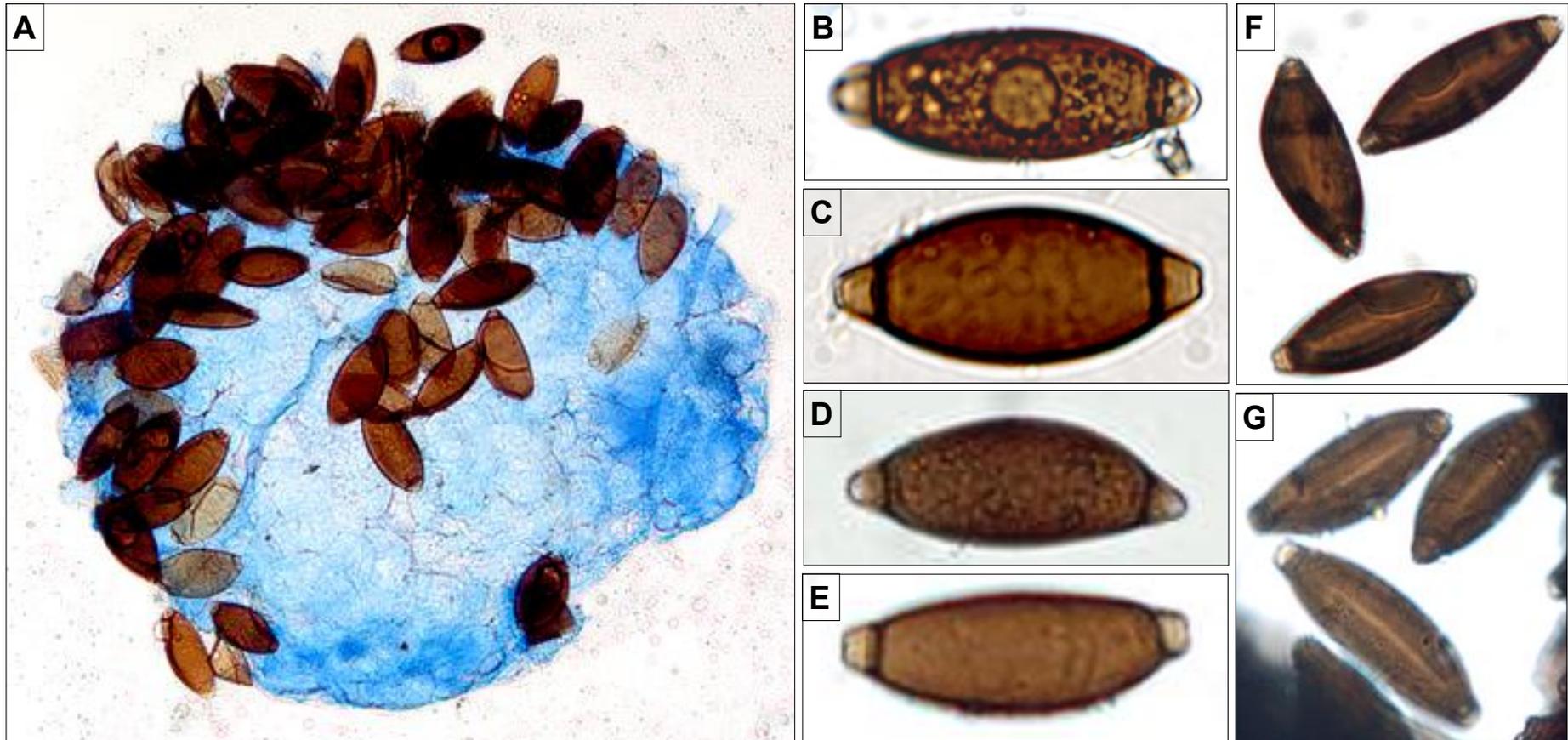
With some temerity, I have identified 3 earlier PDD collections as *Sporidesmium australiense* (AEB 1004 = PDD 92346), *Sporidesmium larvatum* (AEB 1289 = PDD 117232) and, after re-evaluation, changed the *Sporidesmium* segregate *Stanjehughesia caespitulosa* (AEB 1041 = PDD 94220) to *Sporidesmium hormiscioides* (AEB 1041 = PDD 94220).



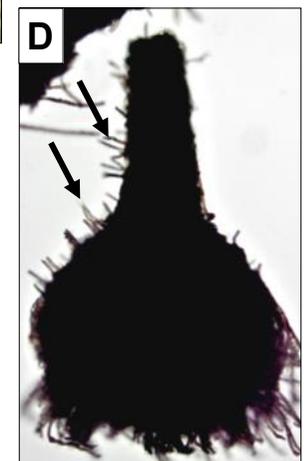
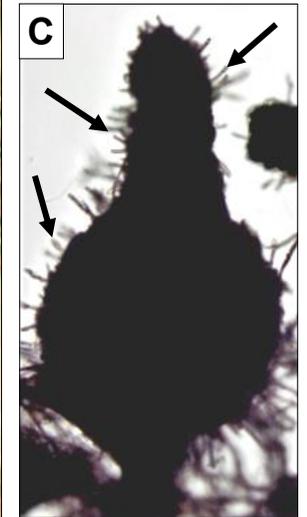
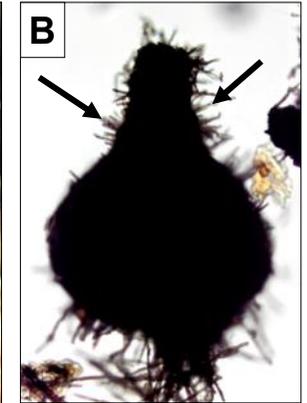
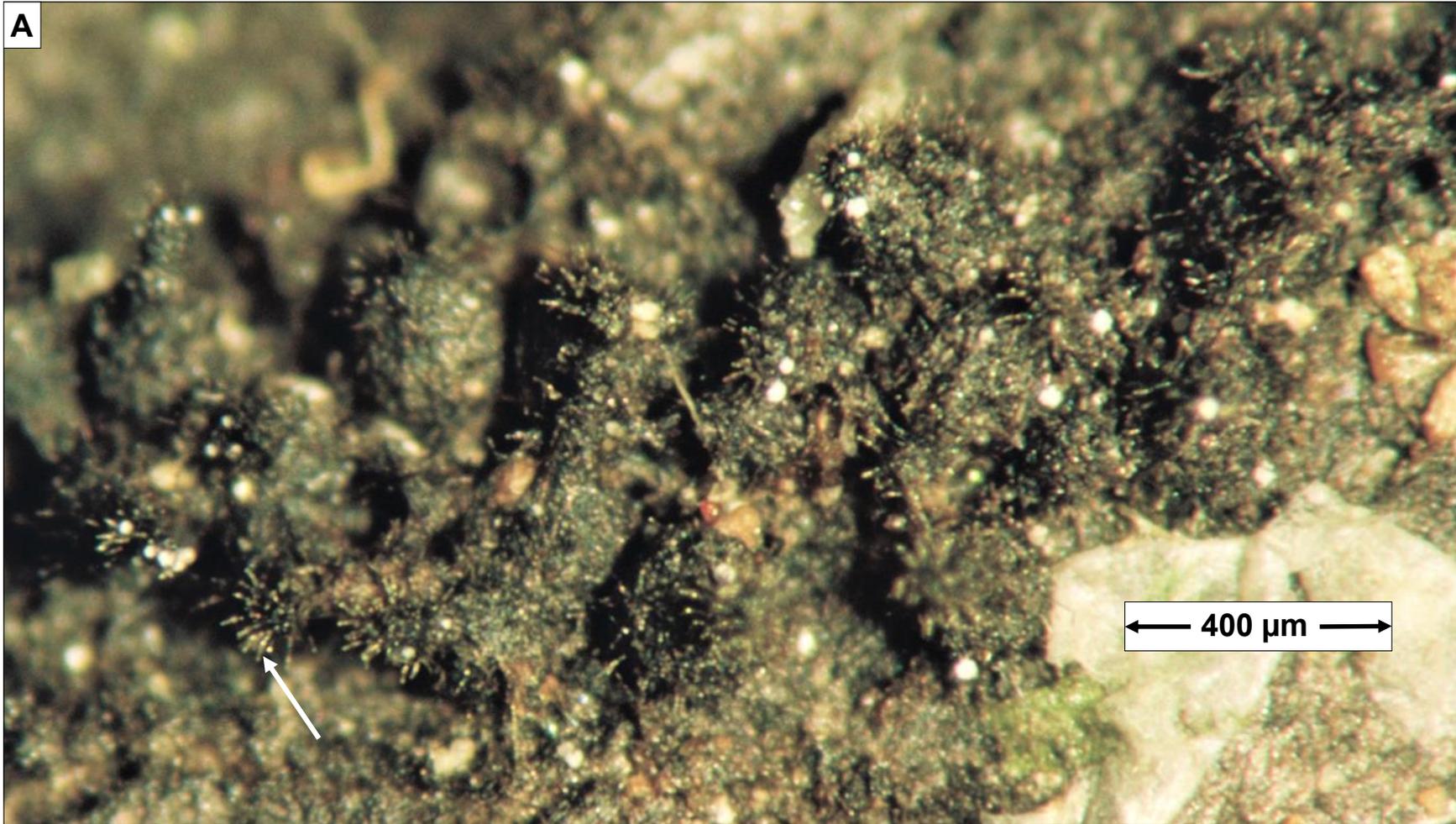
Left photo. In-situ overly mature, unidentified 'ascomycetous perithecia'. 'Perithecia' in side view exhibit their long necks while others in overhead views show their ostioles (these arrowed). Right photo. 'Perithecium' silhouette in water mount without any coverslip ('perithecium' $520 \times 340 \mu\text{m}$), X10 objective, brightfield microscopy. Note that 'perithecia' in both photos are not associated with any *Sporidesmium* hyphomycete.



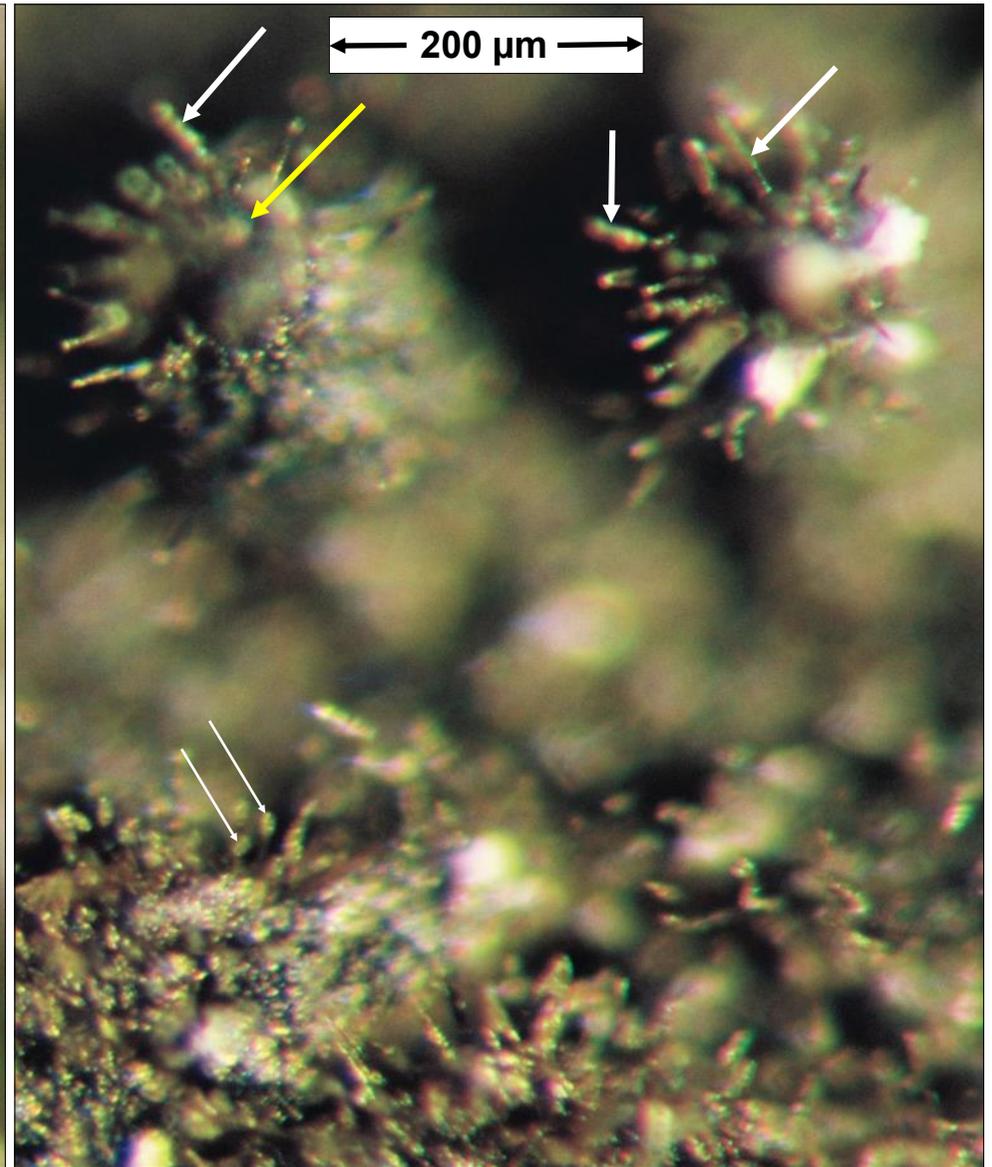
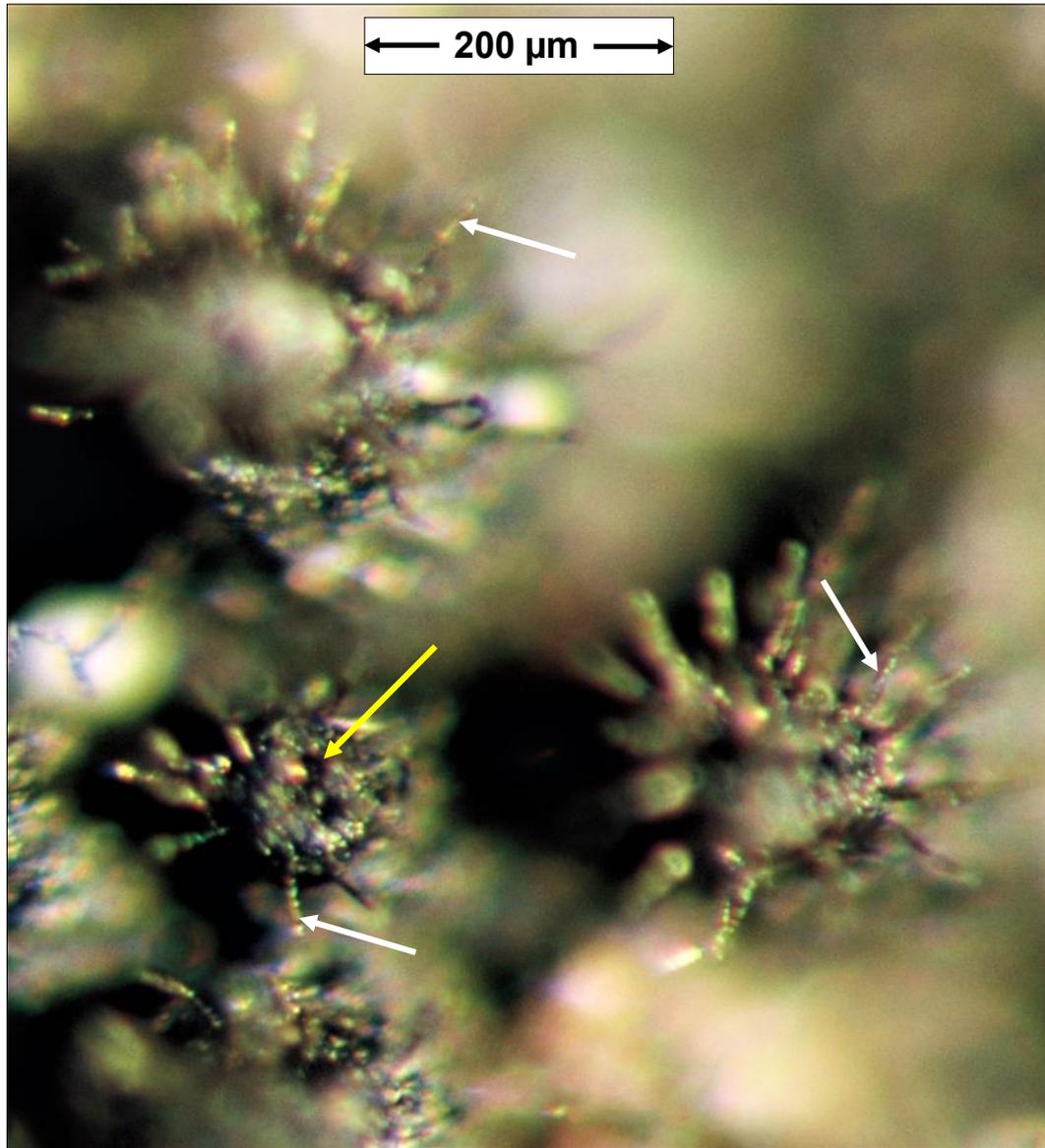
In-situ overly mature, unidentified 'ascomycetous perithecia'. The long-necked 'perithecium' in side view has been displaced from its superficial location on the palm frond while others in overhead views show their ostioles (these arrowed). Note that 'perithecia' are not associated with any *Sporidesmium* hyphomycete.



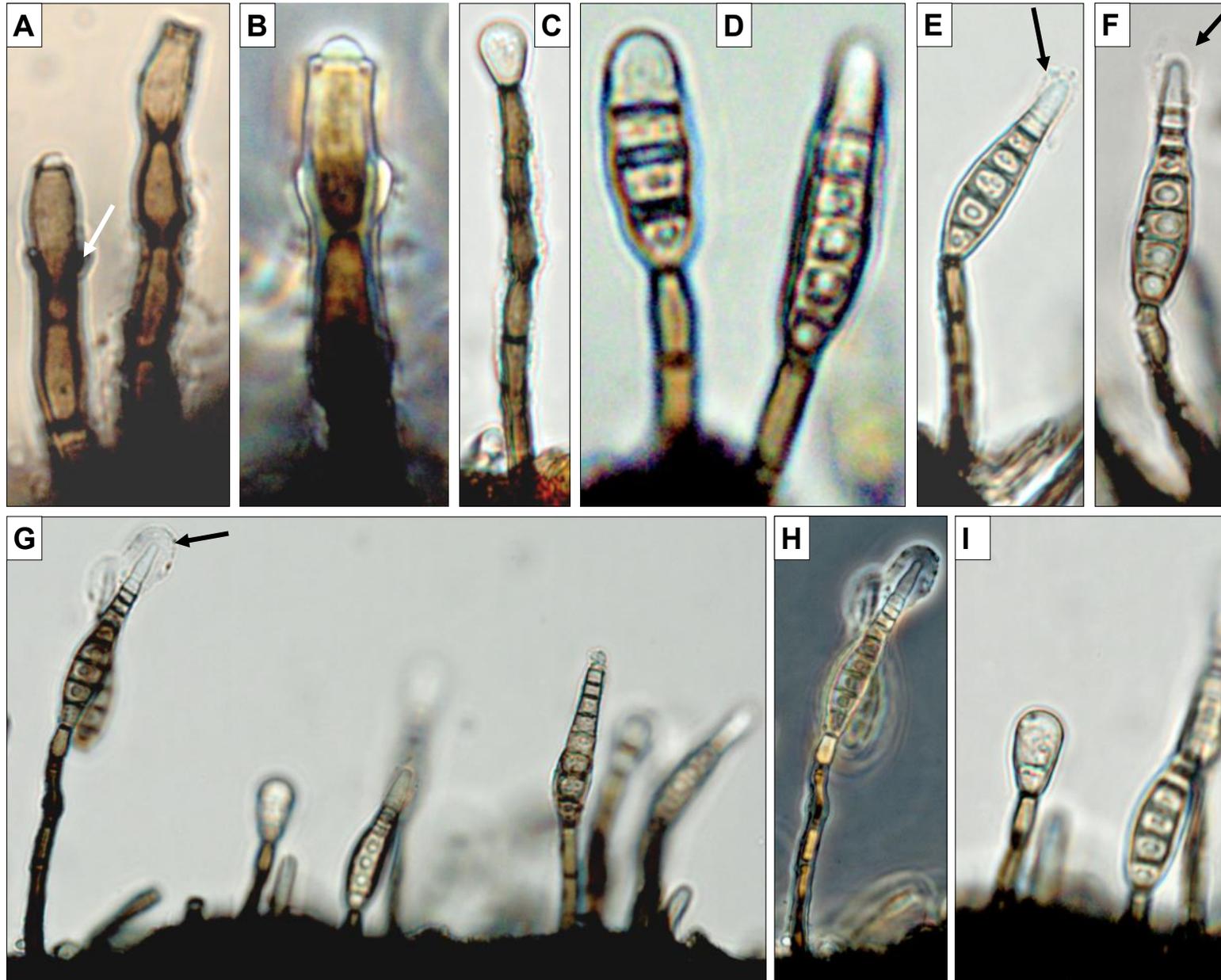
A–G. Centrum and ‘ascospore’ views from unidentified ‘ascomycetous perithecia’. Despite numerous attempts, I was unable to find any asci (or pycnidial ontogenies) for the spores that were found in most of the overly-mature ‘perithecia’. Photo ‘A’ and similar fragments were rare but represent the ‘centrum’ body within which the spores were held. When first viewed, the spores in ‘A’ were all within the aniline blue lactic acid stained area (which was then globose) and only broke free when I attempted to move the staining mass to a different water drop free of debris. Cells forming the staining mass were regularly globular and formed the centrum exterior. Spores were all versicolorous with large pigmented middle cells and smaller less-pigmented or hyaline (broadly rounded, blunted or rarely acute) terminal cells. Normally the spores were fairly symmetrical (see ‘B’–‘E’) but had a tendency to collapse (then looking plano-convex) and developing cracks in their walls which sometimes appeared to be false longitudinal germ slits (see ‘F’ & ‘G’). B–G. Spores in water mounts. B. 47×17 μm, X100 objective. C. 42×18, end cells 7–9×5 μm, X100 obj. D. 50×20 μm, X40 obj. E. not measured, X40 obj. Spore measurements overall were 40–55 × 15–20 μm (n=50).



A–D. *Sporidesmium* on the venter & neck of the unidentified 'ascomycetous perithecia' (arrowed). A. In-situ overhead view on to the dead, downed, nikau palm frond. Here the lightly-pigmented *Sporidesmium* conidia were easily seen on the upper neck of the 'ascomycetous perithecia'. B–D. 'Ascomycetous perithecia' as viewed in Shear's mounting fluid, X10 objective, brightfield microscopy. Those measured were 450–600 × 280–360 μm (including necks 180–350 × 80–110 μm) — n=5. Note also, especially in 'B' & 'D', the rhizoidal outgrowths at the venter base of the superficial 'perithecia'.



Both photos. In-situ lightly-pigmented *Sporidesmium* conidia on the neck of the unidentified 'ascomycetous perithecia' (larger white arrows). Right photo also showing less obvious lightly-pigmented *Sporidesmium* conidia on the surface of the dead nikau palm frond (smaller white arrows). Yellow arrows point to 'perithecium' ostioles.



A–I. *Sporidesmium* conidiophores & conidia in water mounts. From the neck surfaces of unidentified ‘ascomycetous perithecia’, X40 & X100 objectives, brightfield & phase microscopy. A–D, I. Note the blastic conidiogeny. A. The occasional percurrent growth is indicated with a white arrow. C. This conidiophore at $62.5 \times 5 \mu\text{m}$ was among the longest seen. E–G. Note mature conidia with apical mucilage (black arrows). G–I. Same field of view, ‘G’ & ‘I’ brightfield, ‘H’ phase, all slightly different focus.



A–F. *Sporidesmium* free conidia in water mounts. From the neck surfaces and venters of unidentified ‘ascomycetous perithecia’, X40 and X100 objectives, brightfield and phase microscopy. A–E. Mature conidia with truncate bases and mucilage surrounding the narrow hyaline (faintly septate) apical cell(s). F. A variety of immature and mature conidia.