***Ascobolus crenulatus* P. Karst. – PDD 124545 (= AEB 1390) A good match**

Collected: 24 August 2024
Substrate: brush-tailed possum (*Trichosurus vulpecula*) dung – the dung was impregnated with pine pollen;
Incubated in moist chamber: 19 September 2024 – white mites & their eggs became numerous on the dung.
Collection site: rural farm batch near Hunterville, New Zealand
Collector: Stu Bisset

Identifier: Dan Mahoney

Voucher materials: No dried possum dung herbarium specimen but three Shear's mounting fluid (SMF) semi-permanent microscope slides; Zeiss SV 11 Stereo-zoom dissecting microscope in-situ photos of the fruiting bodies using a MC80 camera and Olympus BX51 microscopic slide photos of morphological detail using a DP28 camera; see reference consulted below.
Other fungi on the possum dung: *Microascus longirostris*, *Coemansia erecta, Cephalotrichum stemonitis* (see in-situ photo of *C. stemonitis* on the last page of this pdf), *Sordaria humana* (sparse and overly mature with no intact asci) & *Penicillium claviforme (*also known as *Penicillium vulpinum*). See new PDD records for *Microascus longirostris* PDD 124546 (= AEB 1391) and *Coemansia erecta* PDD 124544 (= AEB 1389).

Reference consulted:

Brummelen J. (van). 1967. A World-monograph of the genera *Ascobolus* and *Saccobolus* (Ascomycetes, Pezizales). Persoonia, supplement, I: 1-260. Brummelen's description and illustrations of *Ascobolus crenulatus* are reproduced on the next page.

Brummelen J. (van). 1967. A World-monograph of the genera *Ascobolus* and *Saccobolus* (Ascomycetes, Pezizales). Persoonia, supplement, I: 1-260. His description and illustrations of *Ascobolus crenulatus* from pp. 115 & 116 are reproduced below.

Apothecia gregarious, superficial, sessile or rarely substipitate, 0.3–1.8 mm diameter, 0.2–0.9 mm high. Receptacle at first subglobular and closed, then opening and expanding, becoming hemispherical, greenish-yellow or pale olive-green, coarsely or finely furfuraceous or granulated, especially near the margin, rarely almost smooth, with prominent crenulate margin. Disk concave, then flat, greenish-yellow, dotted with the dark purplish tips of ripe asci. Hymenium 115–140 µm thick, not always clearly differentiated, of closely compacted isodiametric cells 4.5–7(–15) µm. Flesh of varying thickness, of isodiametric or oblong cells 4.5–20 × 4.5–14 µm, hyaline. Excipulum 15–30(–65) µm, thick, of globular, subangular or oblong rather thick-walled cells 7–30(–40) × 7–20 µm (textura globulosa or angularis); the walls pale yellowish; margin consisting of fragments of excipular layer covered with groups of subglobular cells 20–37 µm diameter. Asci cylindric-clavate, tapering downwards into a rather long stalk, rounded above, 125–150 × 13–15 µm, 8-spored; only when young is the wall pale blue in Melzer's reagent. Ascospores uniseriate, at maturity biseriate; ellipsoid or shortly ellipsoid with rather blunt ends, sometimes swollen, at first hyaline, then pale violet, finally brownish-violet, (8–)9.5–15(–16) × (5–)6–8 µm, ornamented with a rather regular pattern of longitudinal, rarely anastomosing striae, sometimes with unilateral mucilaginous substance. Paraphyses simple or branched, septate, cylindrical, sometimes swollen just under the septum, 2–3.5 µm thick, hyaline; enlarged, narrowed, forked, regular or irregular above, 2.0–10.5 µm thick at the tip; embedded in abundant yellowish-green mucus.

On dung of grouse, pheasant, partridge, pigeon, raven, deer, porcupine, fox, dog, and rabbit, but also on paper saturated with dog urine, on rotten leaves of oak and on rotten leaves and stalks of herbs.

ETYMOLOGY.— From Latin, crenulatus, a diminutive of crenulatus, notched: with small notches, hence with small rounded toothings.

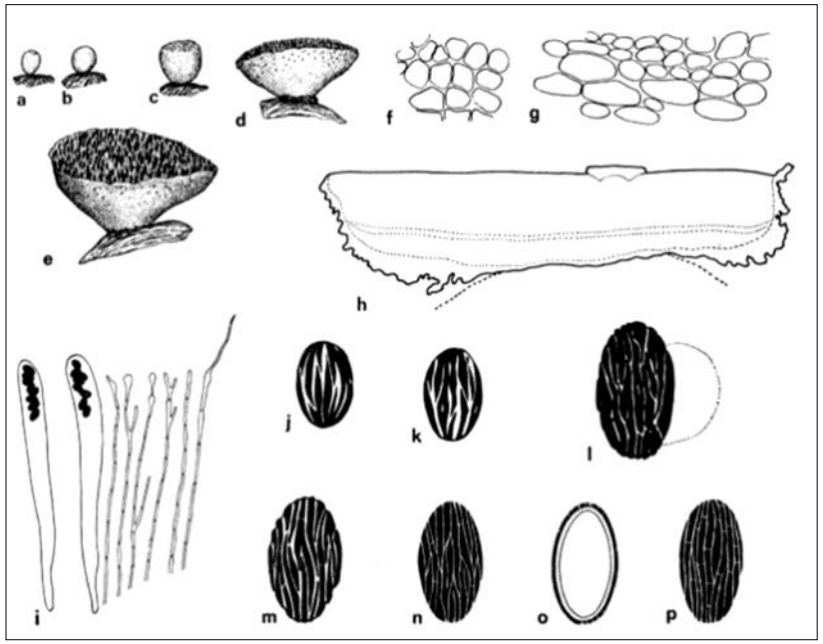
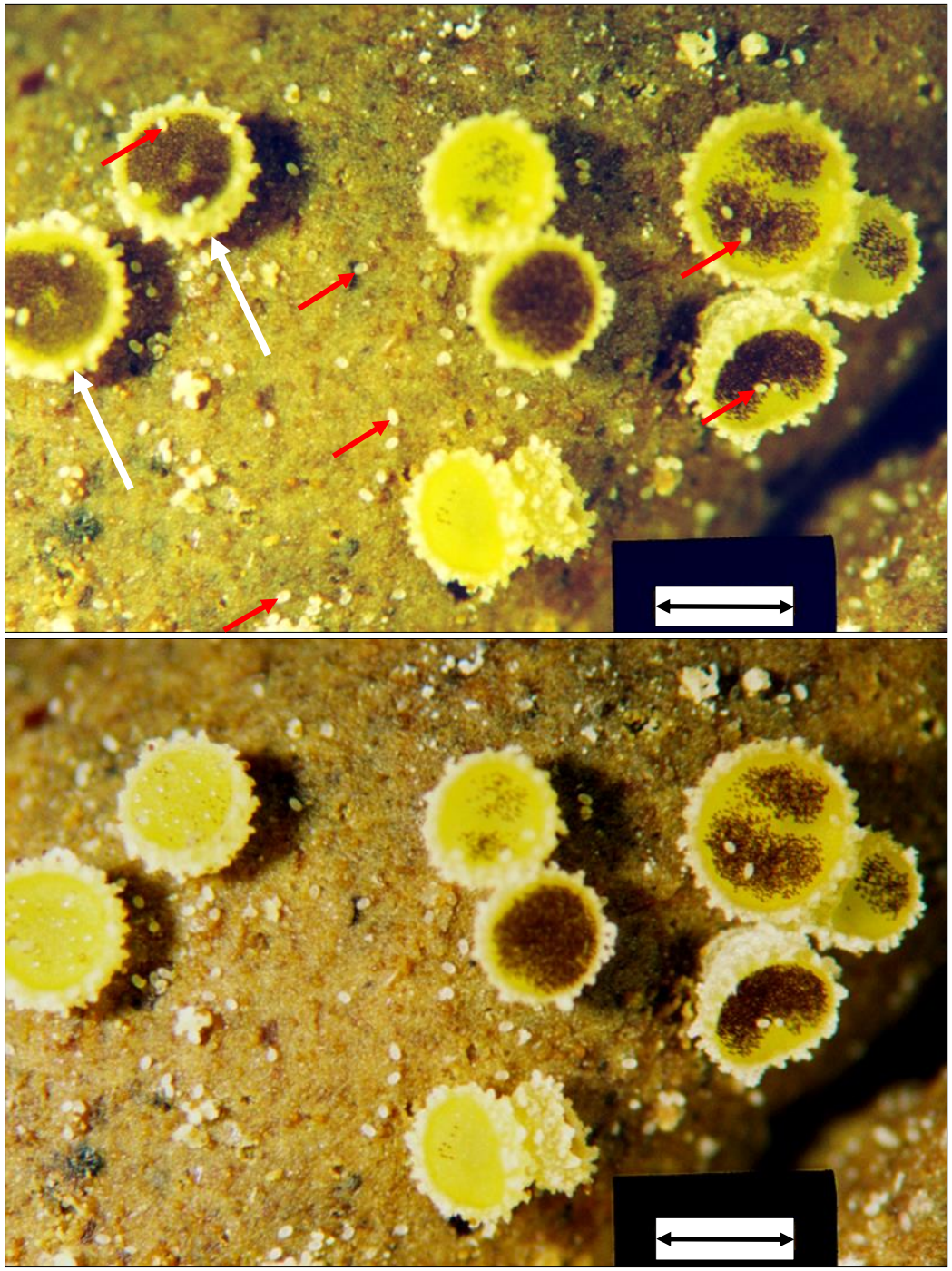
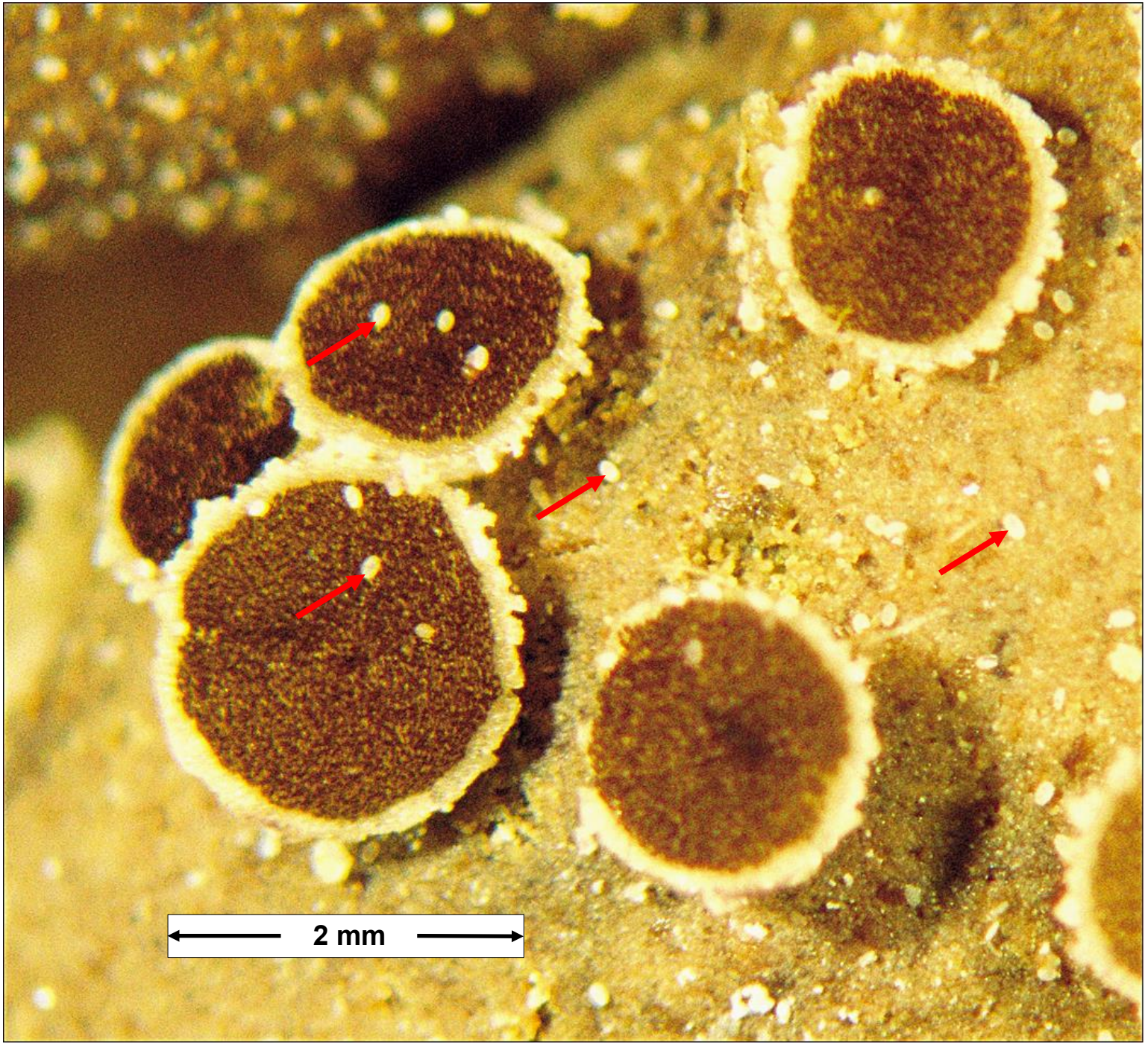


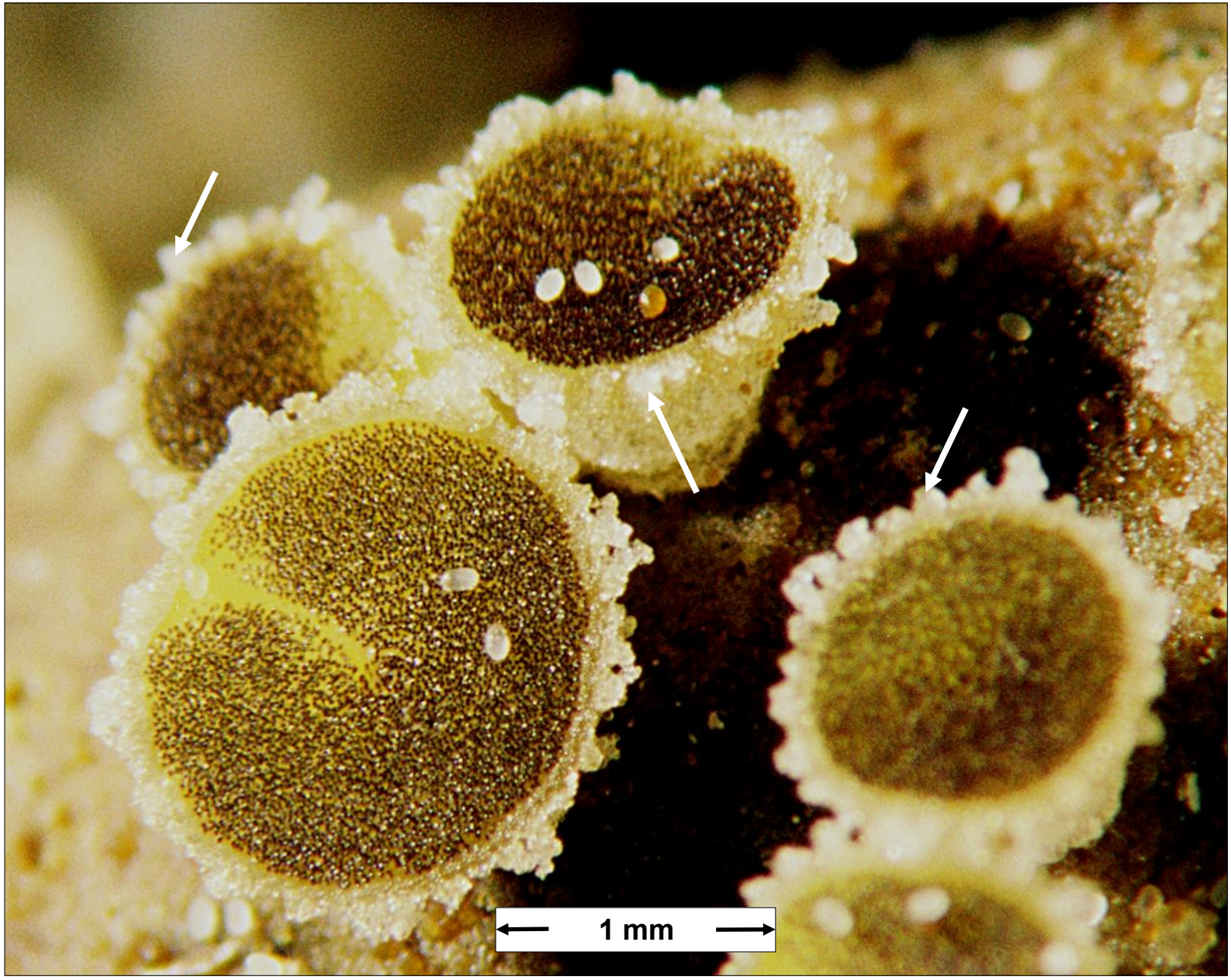
Fig. 27. — *Ascobolus crenulatus:* a–e, habit of fruit-bodies X 12; f, g, texture of excipulum seen from outside, near base (f) and margin (g) of receptacle X 275; h, diagrammatic section of fruit-body X 140; i, asci and paraphyses X 275; j–n, p, ascospores X 1600; o, ascospore in optical section X 1600. (a–l, from *van Brummelen 684;* m–p, from type of *A. crenulatus,* H-A2752.)



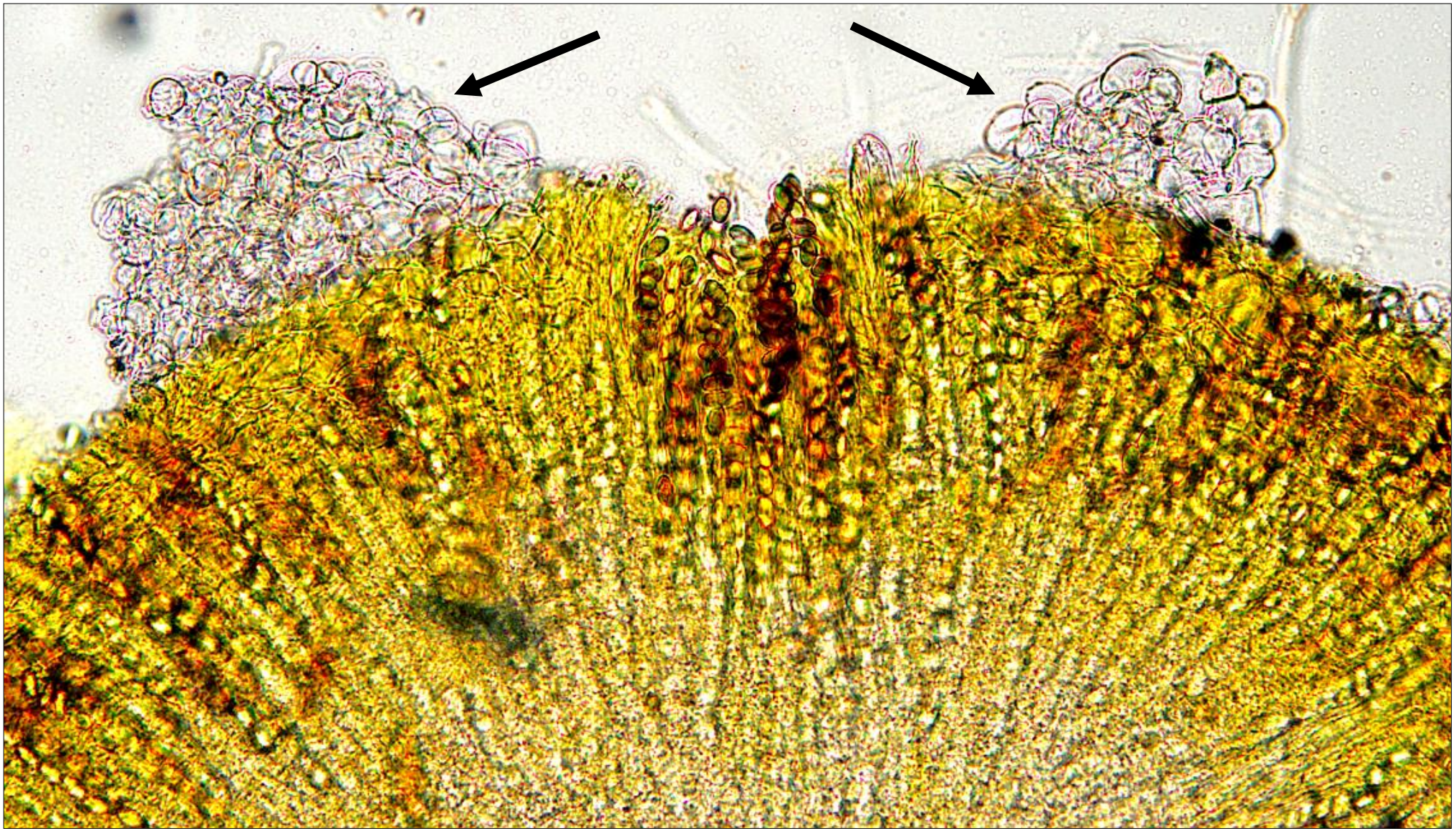
AEB 1390. Both in-situ photos show apothecia on possum dung in a moist incubation chamber. They represent the same field of view (top photo taken several seconds before bottom photo). In the interrum between photos, asci in 2 apothecia (white-arrowed) have discharged their ascospores. This was triggered by removal of the lid from the incubation chamber and the extra light needed for the photo. Note also the numerous small white ellipsoidal bodies (red-arrowed). These are mobile mite nymphs that were moving over both apothecia and possum dung surfaces. Double-headed arrows in the white rectangular boxes (lower right in each photo) are 1667 µm long.



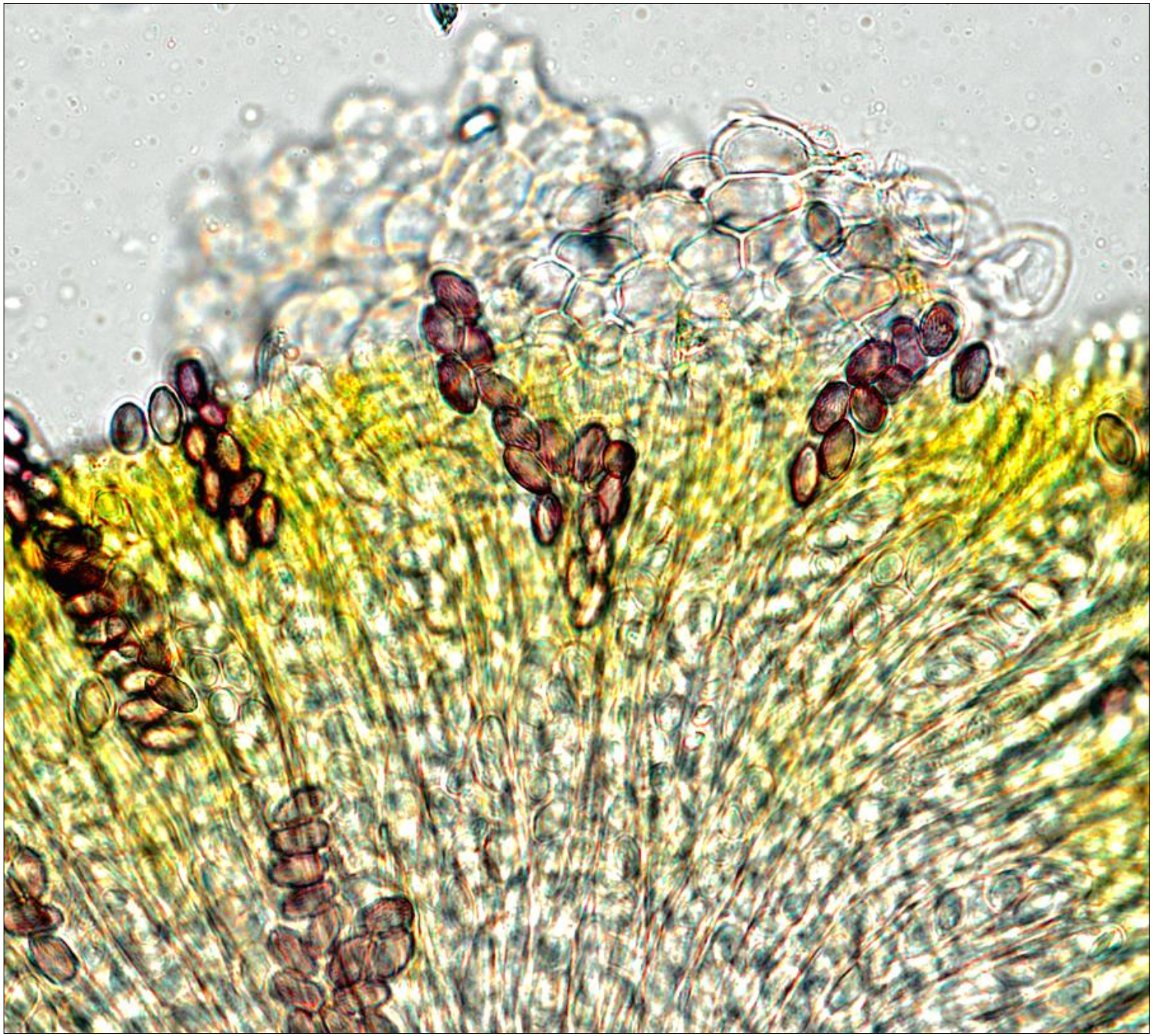
AEB 1390. An in-situ photo of fertile apothecia on possum dung in a moist incubation chamber. As shown on the previous page, the numerous red-arrowed white ellipsoidal bodies are mite nymphs.



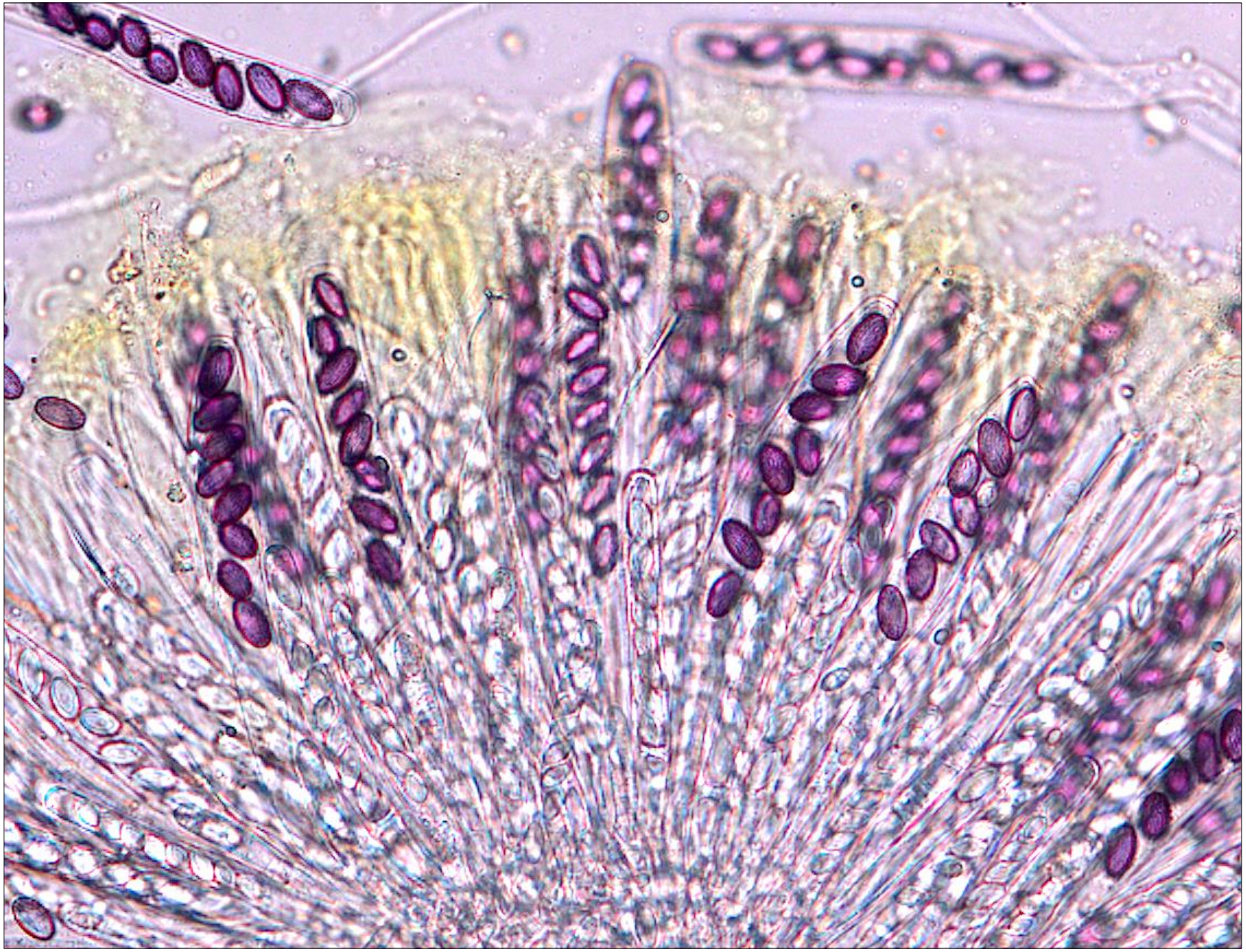
AEB 1390. An in-situ photo of fertile apothecia on possum dung in a moist incubation chamber. Emphasis is given the white crenulations along the receptacle margin (arrowed). Further details of these are shown on the next page.



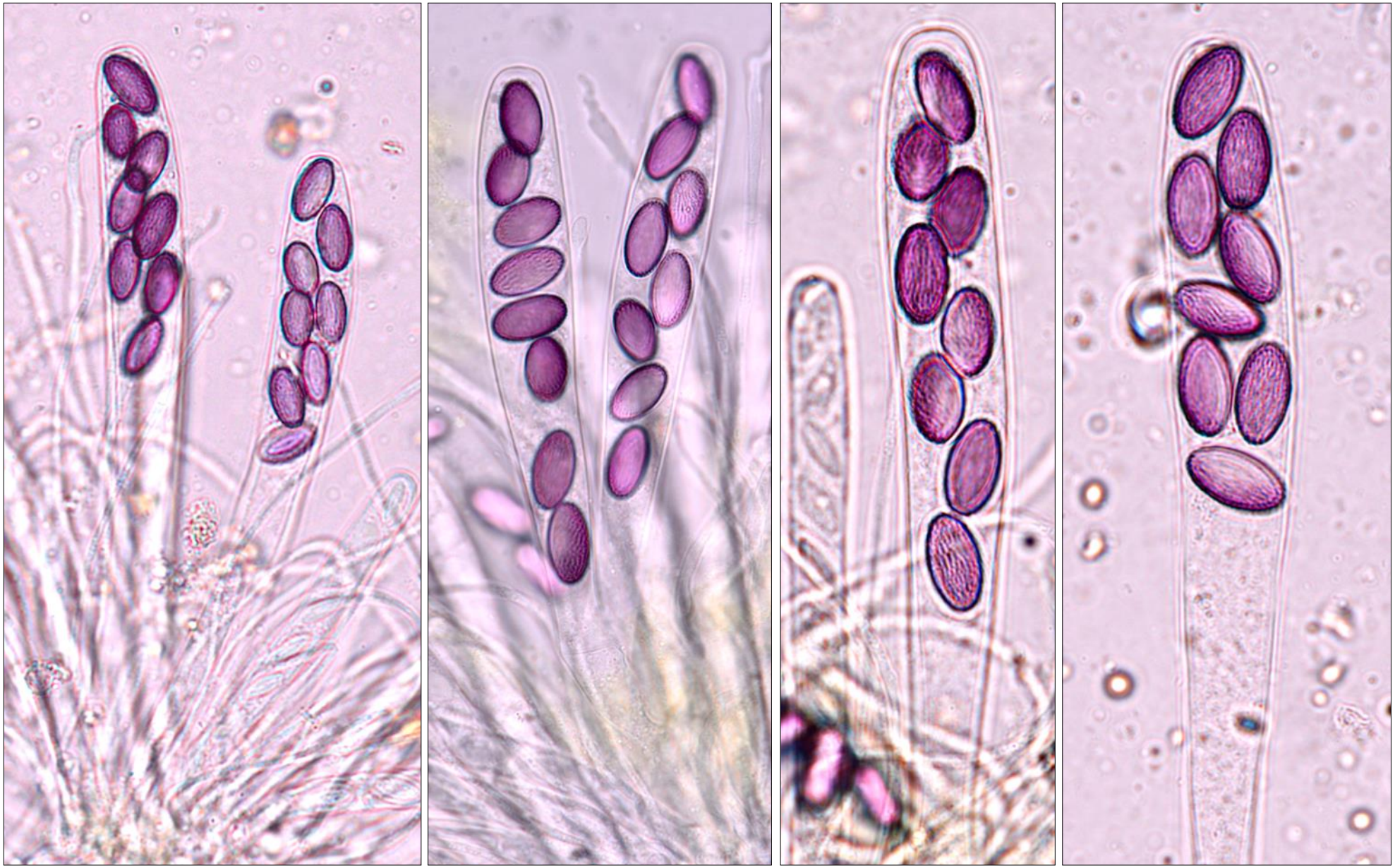
AEB 1390. Photo from a SMF slide mount of a fresh apothecium using the X40 objective (image enlarged). Note two crenulations (arrowed) along the receptacle margin. These consist of groups of hyaline subglobular cells.



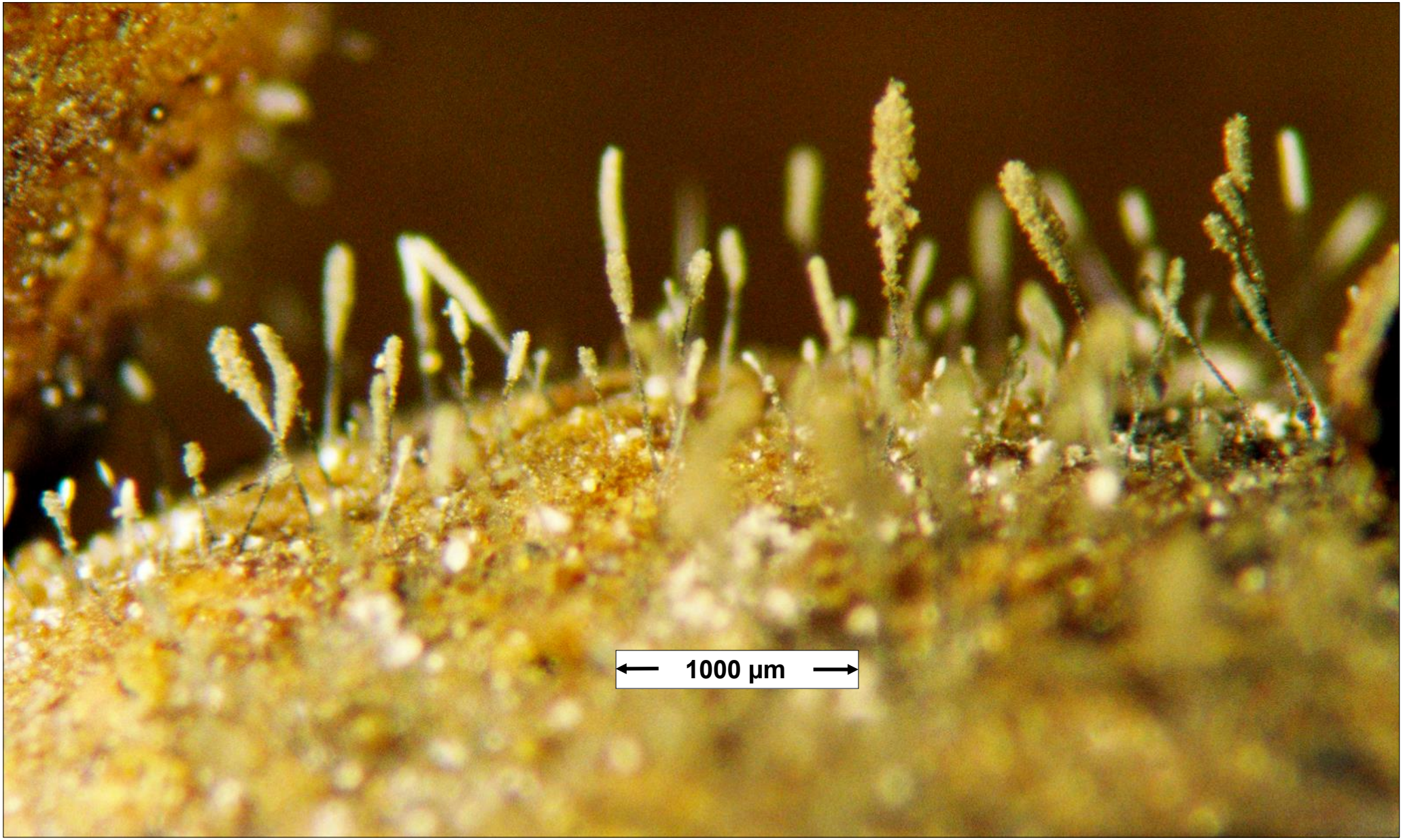
AEB 1390. Another photo from a SMF slide mount showing a more enlarged, slightly squashed portion of the hymenium edge. Note the hyaline crenulation, the indistinct paraphyses embedded in abundant yellowish mucus and the young-hyaline and pigmented-mature ascospores. See mature ascospore details on the next 2 pages.



AEB 1390. Photo from a SMF slide mount of a fresh apothecium using the X40 objective (image enlarged). Note the indistinct paraphyses embedded in abundant yellowish mucus and the and pigmented-mature ascospores.



AEB 1390. Mature ascus photos from SMF slide mounts of fresh apothecia using the X40 objective (left photo) and X100 obj. (other photos) – all images enlarged. Ascospores shown mostly 15 × 7.5–8 µm and ornamented with a rather regular pattern of longitudinal, rarely anastomosing striae.



AEB 1390. An in-situ photo of *Cephalotrichum stemonitis* whose synnemata were scattered over many of the possum dung pellets and among the apothecia of *Ascobolus crenulatus.* For more details on *C. stemontis*, see the 10 June 2024 collection from Kapiti Island on weka dung – AEB 1380 (= PDD 124531).