

***Ascobolus stictoideus* Speg. PDD 121668 (= AEB 1377)**

Collection site: Kāpiti Island nature reserve

Collection date: 18 May 2024

Substrate: Takahē (*Porphyrio hochstetteri*) dung; Incubated in moist chamber 20 May 2024

Collector: Ian Flux

Identifiers: Ann Bell & Dan Mahoney

Voucher materials: dried herbarium material PDD 121668 (= AEB 1377) accompanied by four Shear's mounting fluid (SMF) semi-permanent slide mounts; several in-situ dissecting scope photos of apothecia on the dung and a number of photos of microscopic detail from SMF and water mounts.

Dan's brief comments: A good match. Van Brummelen's 1967 world monograph key to his *Ascobolus* sect. *Dasyobolus* (Sacc.) Brumm. is reproduced on the next page and his *Ascobolus stictoideus* description is reproduced below.

Apothecia scattered, gregarious or closely crowded, completely immersed or rarely superficial, 350–600 μ diameter, 400–650 μ high. Receptacle at first closed and globular or pyriform, then opening by irregular rupturing of the wall, watery-white, greenish-yellow or olive in colour; thinly tomentose or rarely smooth; without a margin. Disk flat or slightly concave, pale olivaceous to almost colourless, with a few almost black, ripe asci strongly protruding. Hymenium 230–280 μ thick, containing up to 40 asci. Hypothecium very thin, of isodiametric cells 6–12 μ diameter. Flesh not sharply differentiated or very thin. Excipulum about 15 μ thick, of more or less isodiametric, polygonal, thick-walled cells 9–25 μ diameter (textura angularis), with pale yellowish cell-walls, often covered with a thin layer of interwoven, cylindrical, irregularly branched, hyaline, 4–9 μ wide hyphae. Asci clavate or clavate-saccate, gradually tapering downwards into a rather thick base, rounded above, 150–400 \times 39–55 μ , 8-spored; the wall deep blue in Melzer's reagent. Ascospores biseriate or irregularly disposed, ellipsoid; at first hyaline, then pale violet, finally dark violet, (25.5–)26.5–30.5(–32) \times (14.5–)16–17.5 μ , ornamented with rather coarse, rounded warts; pigment often rather thick up to 1.5 μ ; with

unilateral, mucilaginous substance. Paraphyses filiform, simple, septate, 2.8–3.8 μ thick, not enlarged upwards, sometimes slightly narrowed at the tip 2.5–3.2 μ thick, hyaline, embedded in pale yellowish or colourless mucus.

On dung of cow, horse, sheep, dog, rabbit, muskrat, and goose, also on soil dirtied with dung.

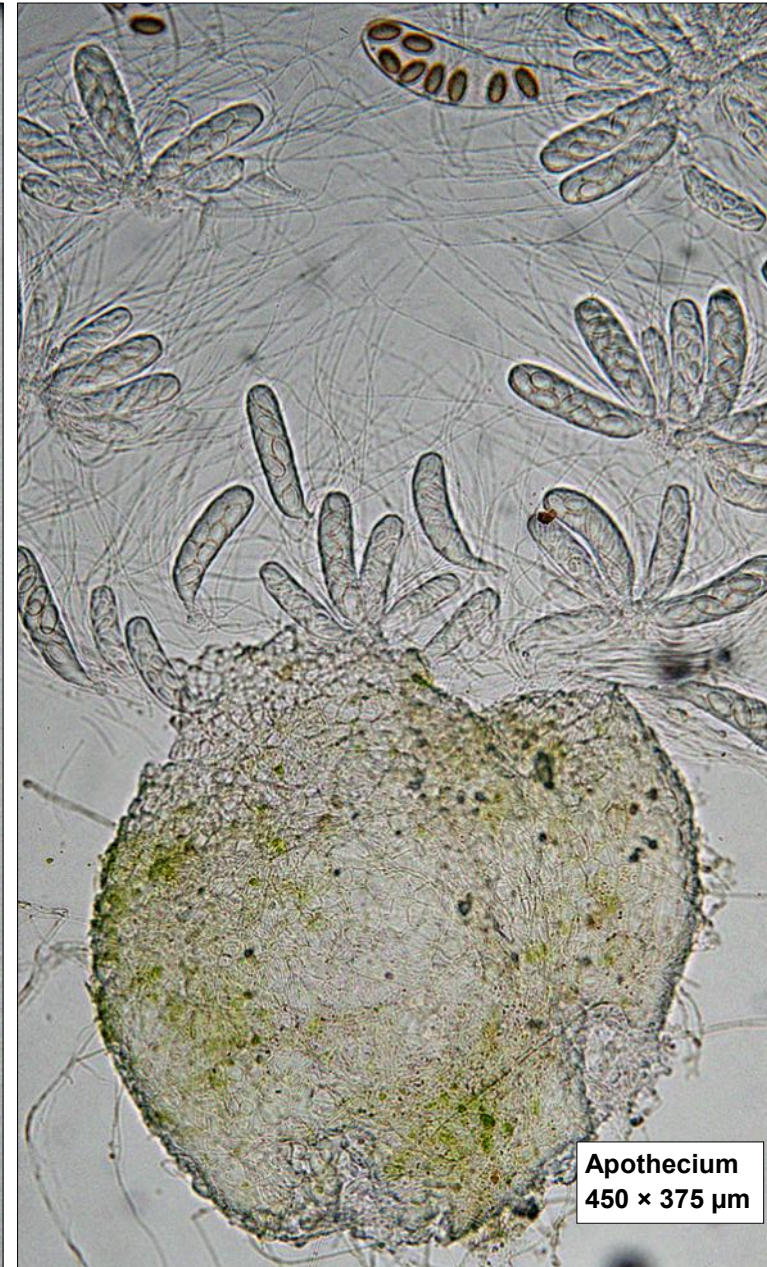
AEB 1377 matched van Brummelen's description with the following variations: 1. Ascus walls were very faintly bluish, never deep blue in Melzer's reagent. 2. Ascospores had an obvious gelatinous sheath but this did not always appear to be unilateral. 3. Young apothecia were more immersed and often greenish although green algae were common on the dung; mature apothecia were yellowish to greenish-yellow and more superficial. For our earlier collections of this species in the PDD datastore see PDD 117248 and PDD 76919.

Brummelen J. Van. 1967. A world monograph of the genera *Ascobolus* and *Saccobolus* (Ascomycetes, Pezizales). Persoonia, supplement Vol. I. Rijksherbarium, Leiden. Pages 66–68.

I. *Ascobolus* sect. *Dasyobolus* (Sacc.) Brumm., *comb. nov.*

- KEY TO THE SPECIES OF ASCOBOLUS SECT. DASYOBOLUS
1. Episporium smooth or finely granular:
 2. Ascospores globular or subglobular; more than 33 μ long; with all-sided gelatinous envelope 1. *Ascobolus immersus*, p. 68
 2. Ascospores ellipsoid:
 3. Ascospores more than 50 μ long and surrounded by a gelatinous envelope. Episporium smooth or with some irregular fine crevices
1. *Ascobolus immersus*, p. 68
 3. Ascospores less than 50 μ long:
 4. Ascospores more than 17 μ long:
 5. Excipulum smooth, tomentose or rarely finely powdery; not brown; not furfuraceous. Hymenial mucus greenish-yellow:
 - 6a. Ascospores 29–38(–48) \times 14–18(–21) μ
5. *Ascobolus amoenus*, p. 80
 - 6b. Ascospores 23–29 \times 12–17 μ 6. *Ascobolus elegans*, p. 82

- 6c. Ascospores (17.5–)19–23(–24) \times 10–12(–13) μ
7. *Ascobolus mancus*, p. 84
- 6d. Ascospores 42–48 \times 20–25 μ cf. “*A. quezelii*”, p. 74
5. Excipulum rich with brown intercellular pigment; in the upper part covered with brown warts. Hymenial mucus vivid sulphur-yellow. Ascospores 20–25 \times 11–13 μ 8. *Ascobolus boudieri*, p. 85
4. Ascospores less than 17 μ long:
 7. Ascospores 15–16 \times 6–7 μ cf. *Ascobolus masseei*, p. 226
 7. Ascospores 11–13 \times 6–8 μ cf. *Ascobolus candidus*, p. 210
1. Episporium warted or with a net-work of irregular fine crevices:
 8. Ascospores ellipsoid. Ascus-wall staining blue with iodine:
 9. Episporium with a reticulum of irregular fine crevices. Ascospores more than 50 μ long 1. *Ascobolus immersus*, p. 68
 9. Episporium warted:
 10. Ascospores 50–60 \times 30–36 μ 2. *Ascobolus bistitii*, p. 75
 10. Ascospores less than 50 μ long:
 11. Apothecia with a thick margin. Ascospores 40–45 \times 21–33 μ
cf. *Ascobolus asininus*, p. 208
 11. Apothecia without a prominent margin. Ascospores less than 40 μ long:
 12. Apothecia immersed. Ascospores more than 25 μ long:
 13. Episporium with a regular pattern of warts. Ascospores 26–31 \times 15–17.5 μ 3. *Ascobolus stictoides*, p. 76
 13. Episporium besides having a pattern of warts also with large and thick caps of pigment and a submedian pigment-free zone. Ascospores 30–34 \times 16–18 μ
4. *Ascobolus degluptus*, p. 78
 12. Apothecia superficial. Ascospores 18.5–21 \times 10–11.5 μ
9. *Ascobolus hawaiiensis*, p. 87
 8. Ascospores subglobular to very shortly ellipsoid; 17–20 \times 15–17 μ . Ascus-wall not blue with iodine 10. *Ascobolus siamensis*, p. 88



Apothecia, gently squashed to release their asci, viewed in a SMF slide mount using the X20 objective and brightfield microscopy. Note the large-celled, tissue angularis in the ectal excipulum.

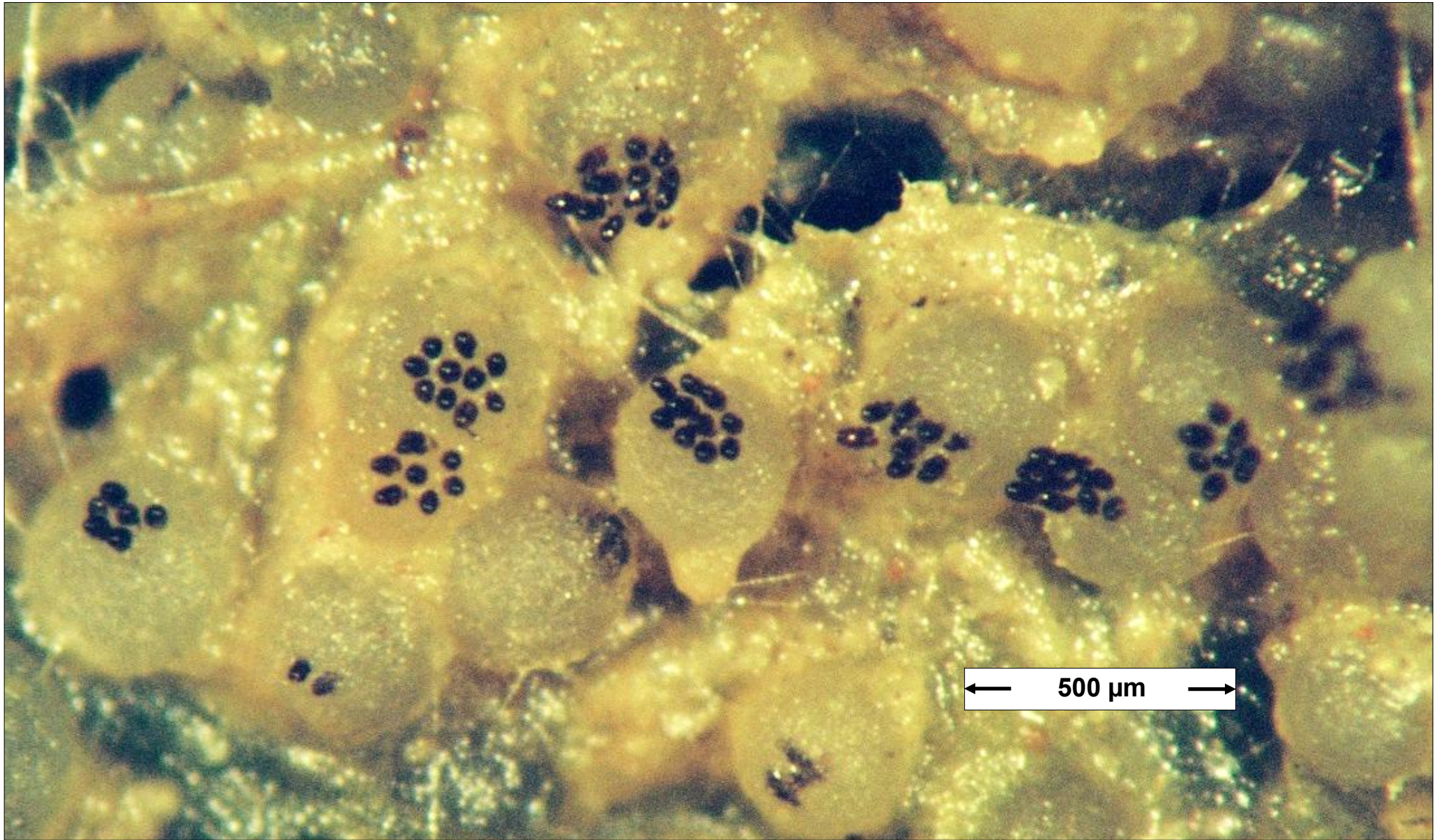


← 1667 μm →

Numerous yellow to greenish apothecia seen in-situ on the fresh moist-chamber-incubated Takaha dung. Note their ripe, strongly protruding asci.



Yellow to greenish apothecia seen in-situ on the fresh moist-chamber-incubated Takaha dung. Note their ripe, strongly protruding asci.

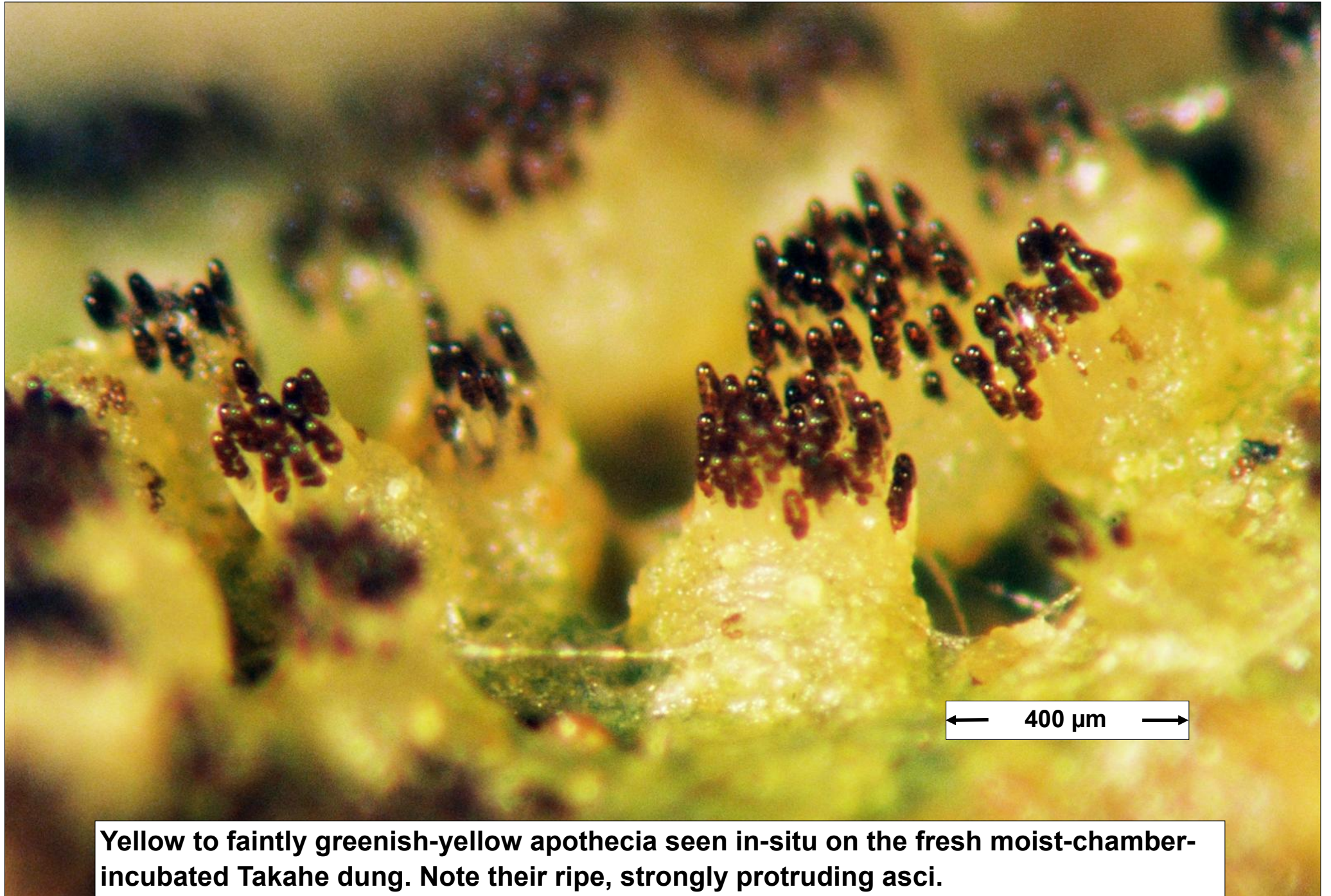


Yellow to greenish apothecia seen in-situ on the fresh moist-chamber-incubated Takahé dung. Note their ripe, strongly protruding asci.

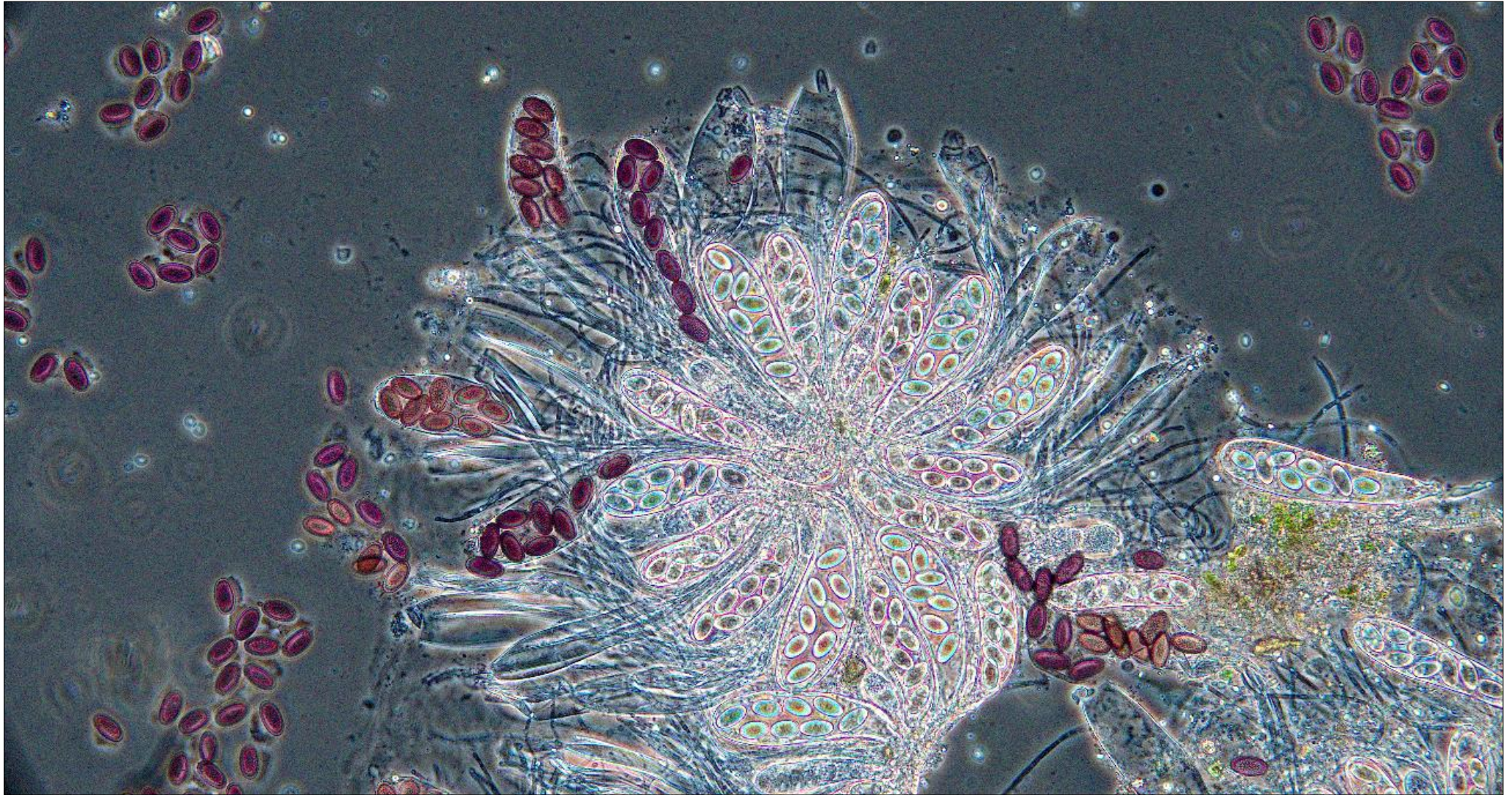


Yellow to greenish apothecia seen in-situ on the fresh moist-chamber-incubated Takahé dung. Note their ripe, strongly protruding asci.

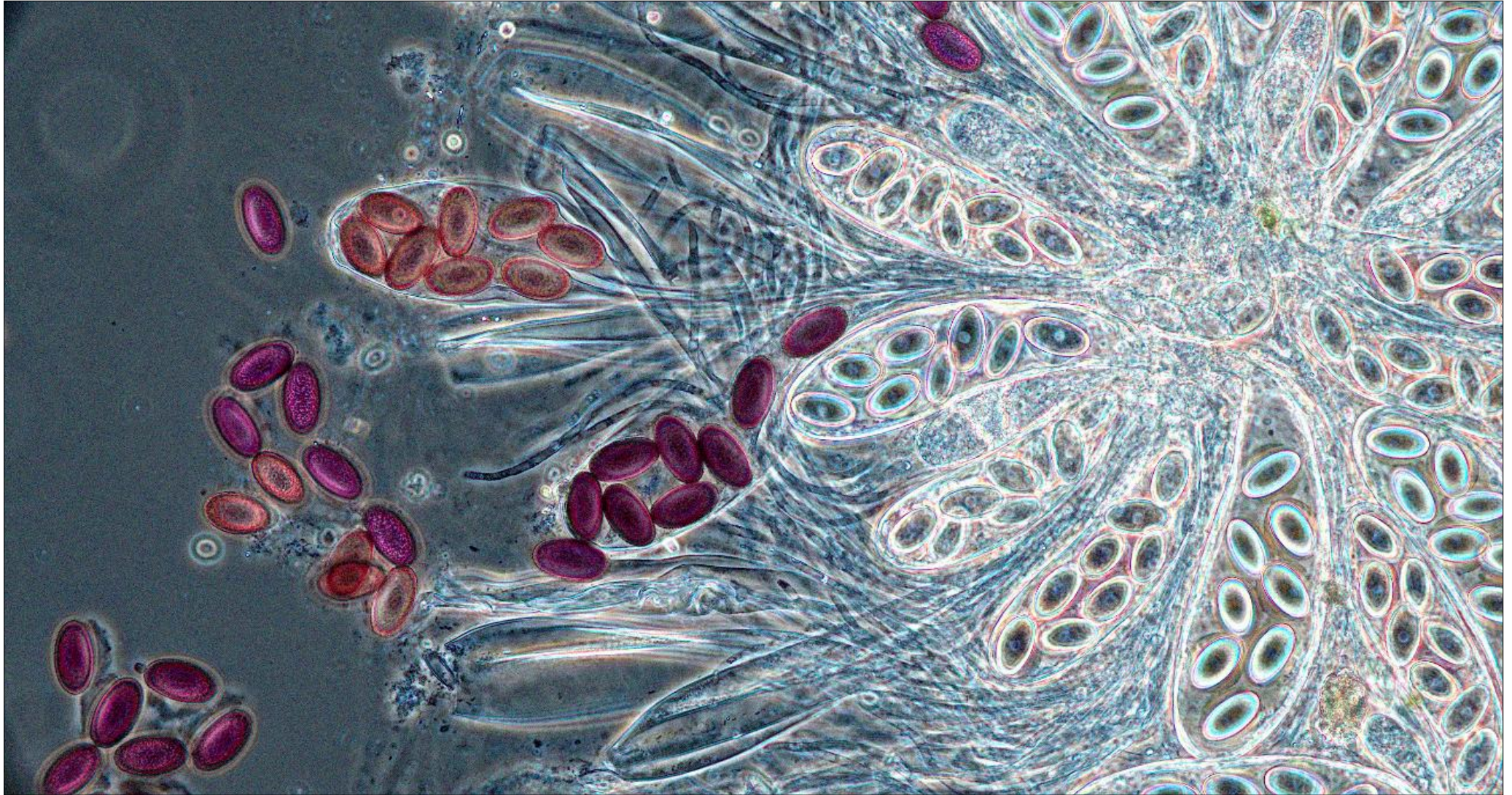




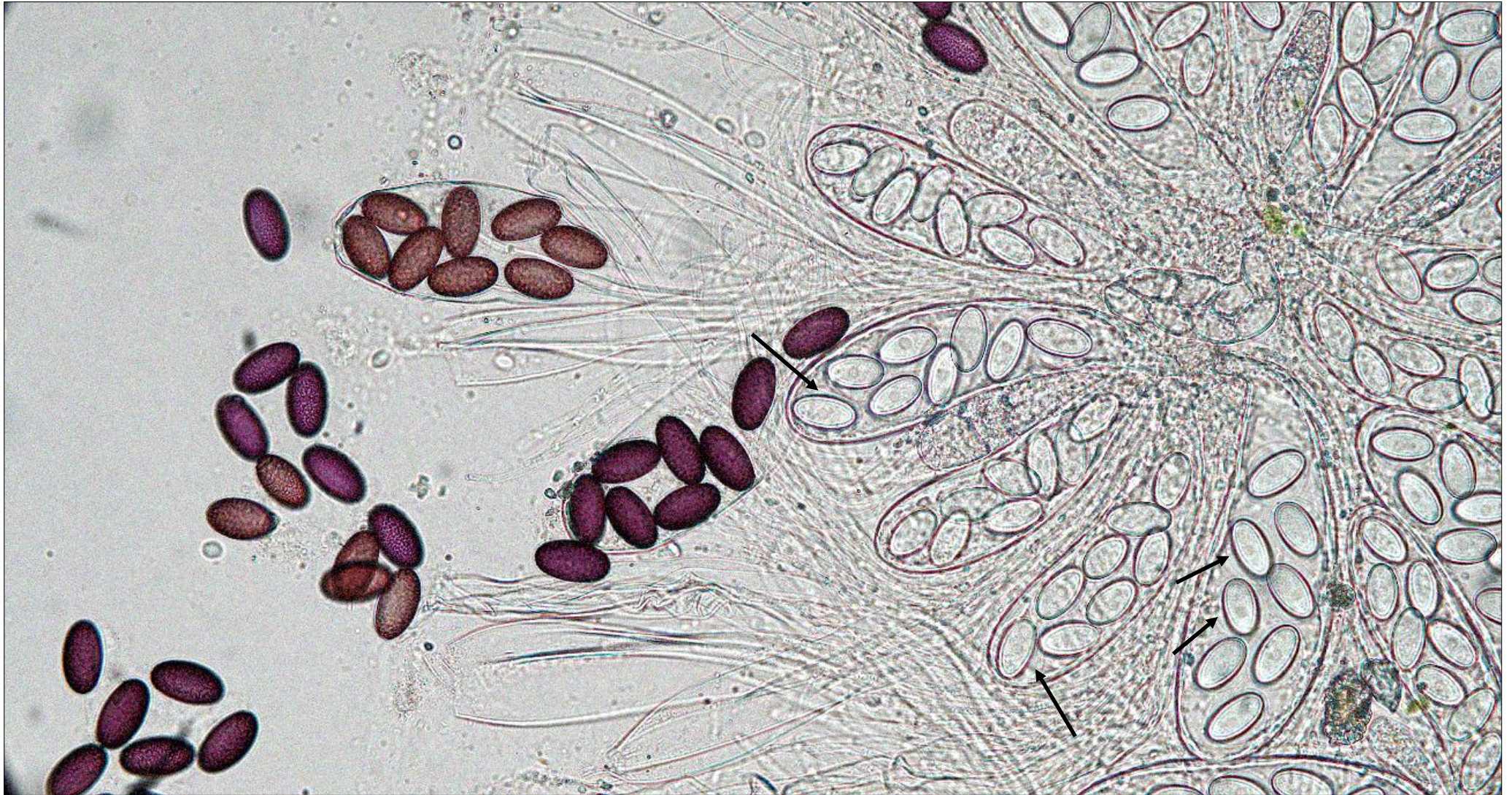
Yellow to faintly greenish-yellow apothecia seen in-situ on the fresh moist-chamber-incubated Takaha dung. Note their ripe, strongly protruding asci.



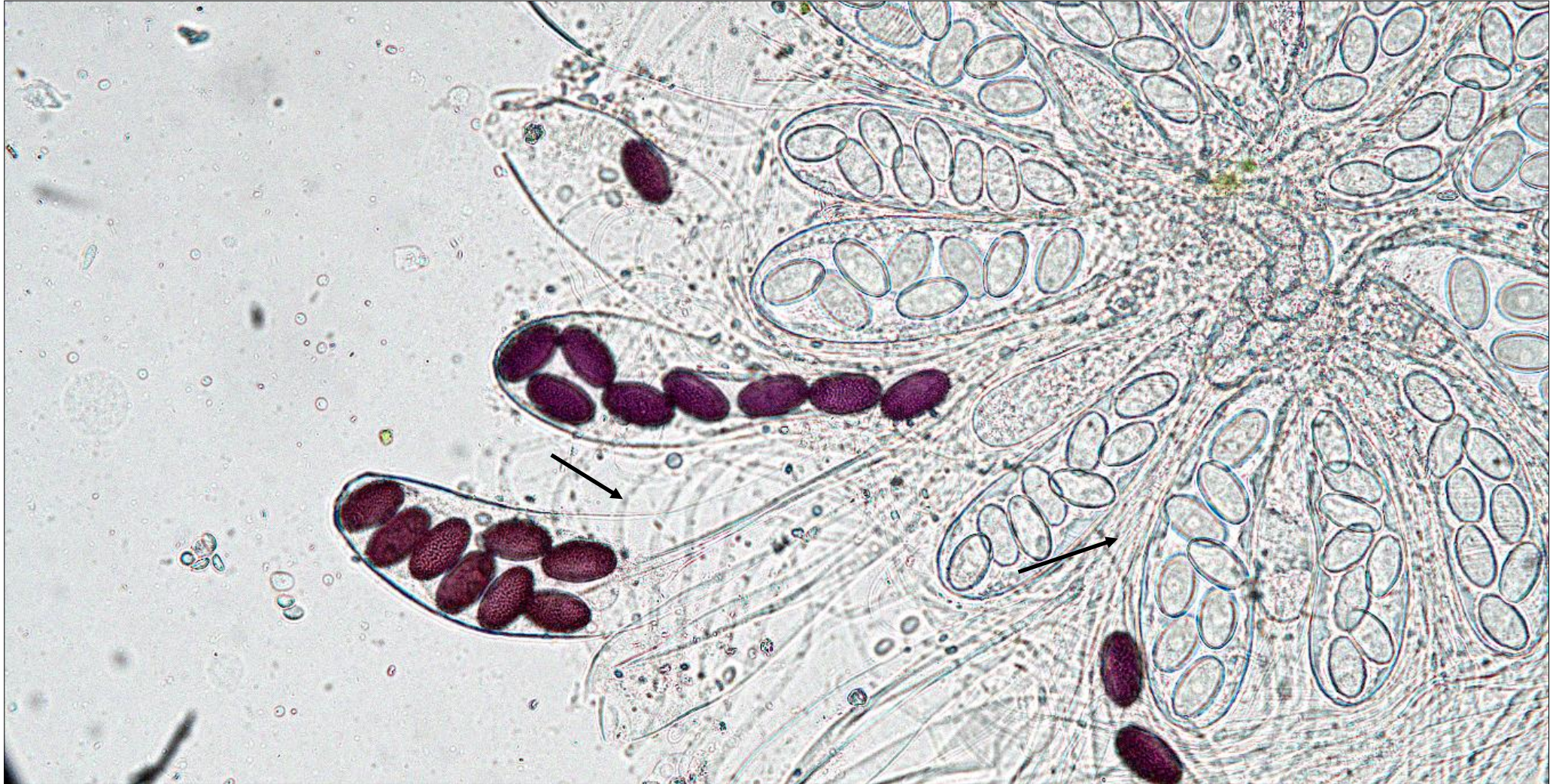
Hymenial squash showing asci with ellipsoidal ascospores in various positions within the asci and in various stages of maturity – hyaline to lightly pigmented & faintly warty and finally dark violet & warty. Water mount, using a $\times 20$ objective and phase microscopy.



Hymenial squash showing asci with ellipsoidal ascospores in various positions within the asci and in various stages of maturity – hyaline to lightly pigmented & faintly warty and finally dark violet & warty. Mature ascospores were mostly $27.5 \times 17 \mu\text{m}$. Water mount, using a $\times 40$ objective and phase microscopy.



Hymenial squash showing asci with ellipsoidal ascospores in various positions within the asci and in various stages of maturity – hyaline to lightly pigmented & faintly warty and finally dark violet & warty. Note also the faint gelatinous sheath surrounding the young hyaline ascospores (arrowed). Water mount, using a $\times 40$ objective and brightfield microscopy.



Hymenial squash showing asci with ellipsoidal ascospores in various positions within the asci and in various stages of maturity – hyaline to dark violet & warty. Note also the narrow hyaline paraphyses sandwiched among the asci (arrowed). Water mount, using a ×40 objective and brightfield microscopy.