Coemansia erecta Bainier – PDD 124544 (= AEB 1389) A good match

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

<u>Voucher materials:</u> 5 dried possum-dung pellets accompanied by 3 aniline blue lactic acid (ABLA) 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 references consulted below.
<u>Other fungi on the possum dung:</u> *Microascus longirostris*, *Ascobolus crenulatus*, *Cephalotrichum stemonitis*, *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) & *Ascobolus crenulatus* PDD 124545 (= AEB 1390).

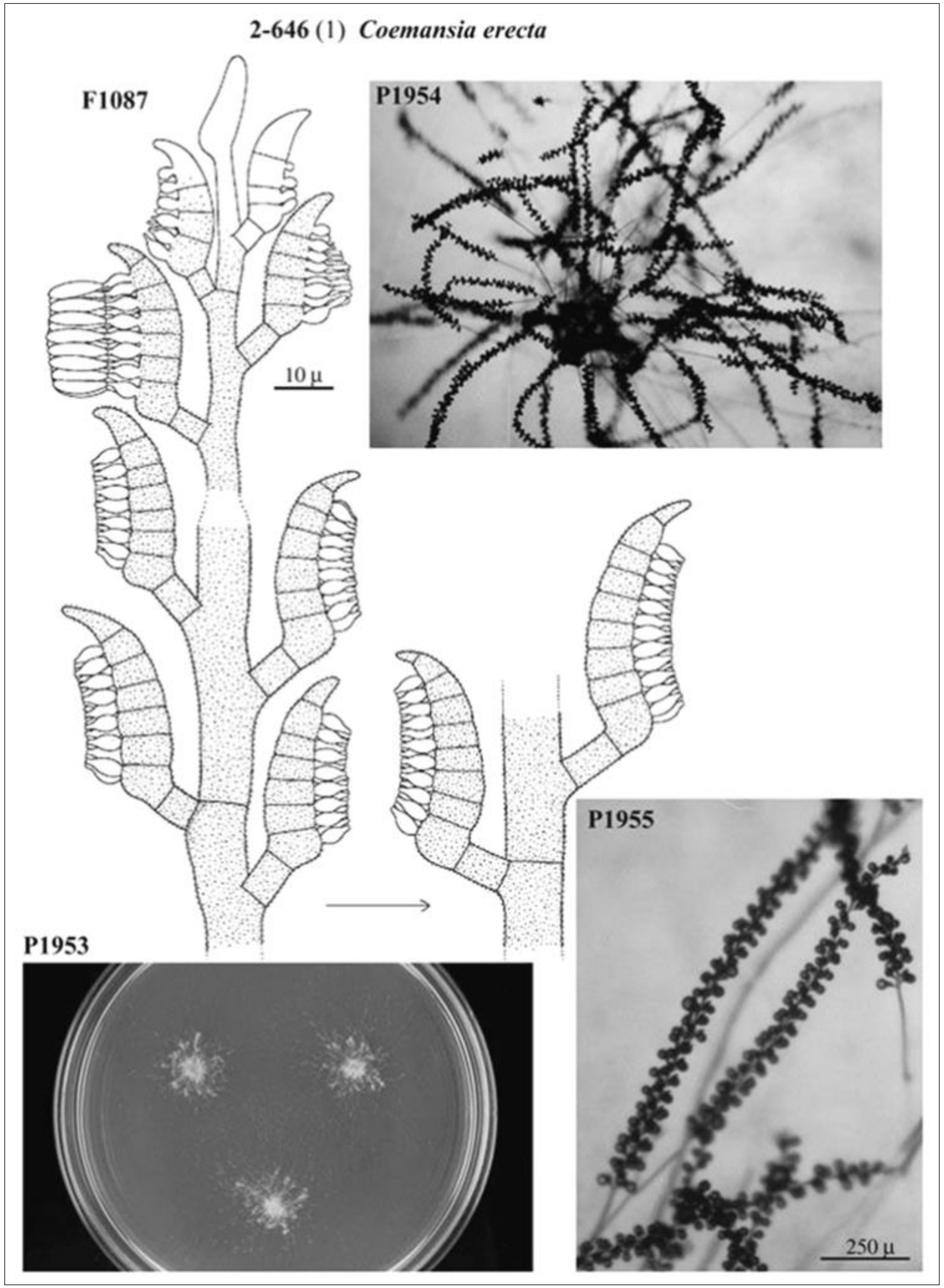
<u>References consulted:</u>

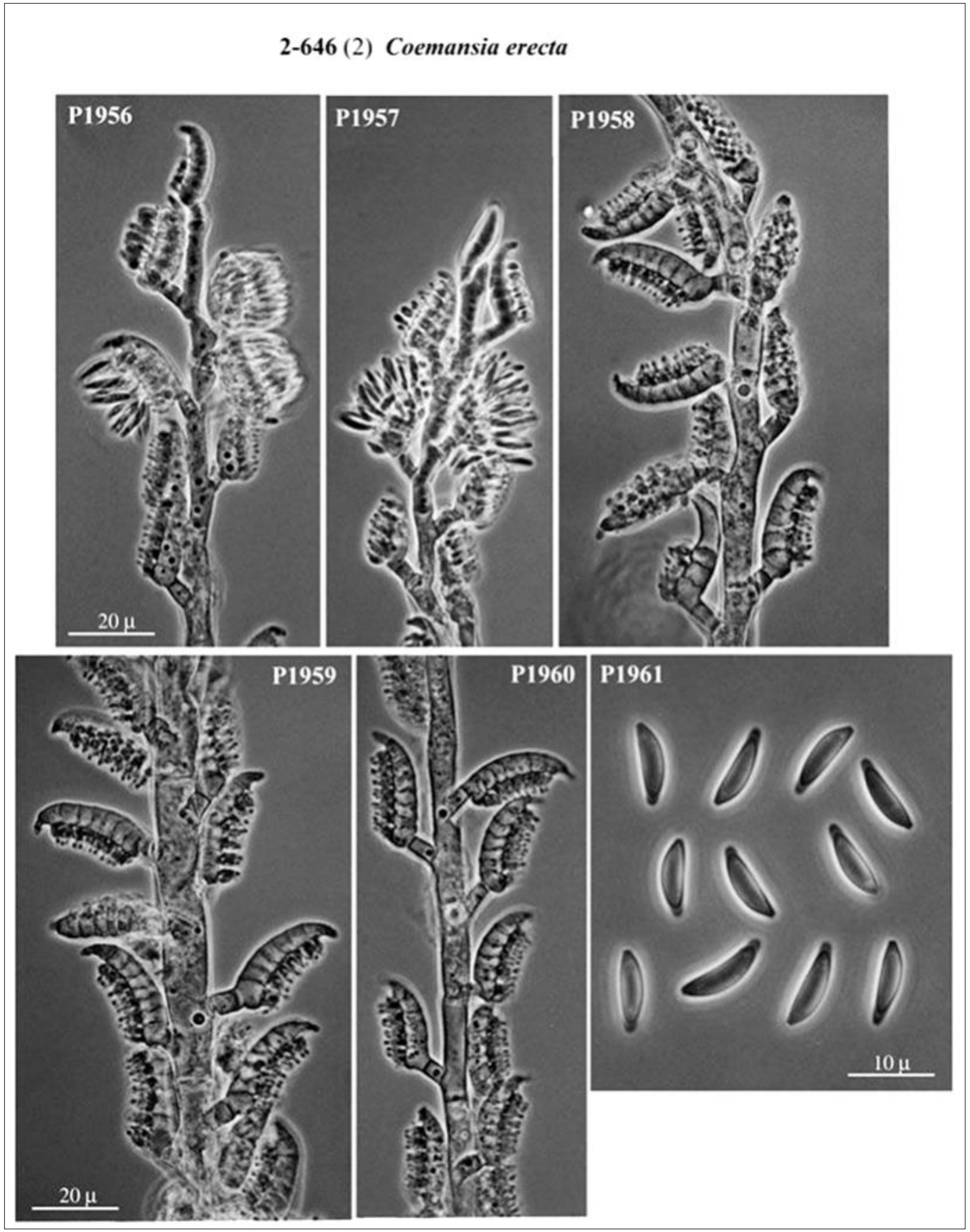
1. Chuang S-C et al. 2017. Preliminary phylogeny of *Coemansia* (Kickxellales), with descriptions of four new species from Taiwan. Mycologia 109(5): 815–831. See their key to world species on the next page.
2. *Coemansia erecta* PDD 73546 (= AEB 380): until now was the only *Coemansia* record (as *Coemansia* sp.) on PDD online. Its slide record was reexamined and found to be *C. erecta* – also on possum dung (see its amended PDD record and pdf in the datastore.
3. Mycobank illustration of *C. erecta* – see on the page after next.
4. Cruz M. & Santiago A. 2022. The first record of the coprophilous *Coemansia erecta* in South America. Mycotaxon 137: 345–351.

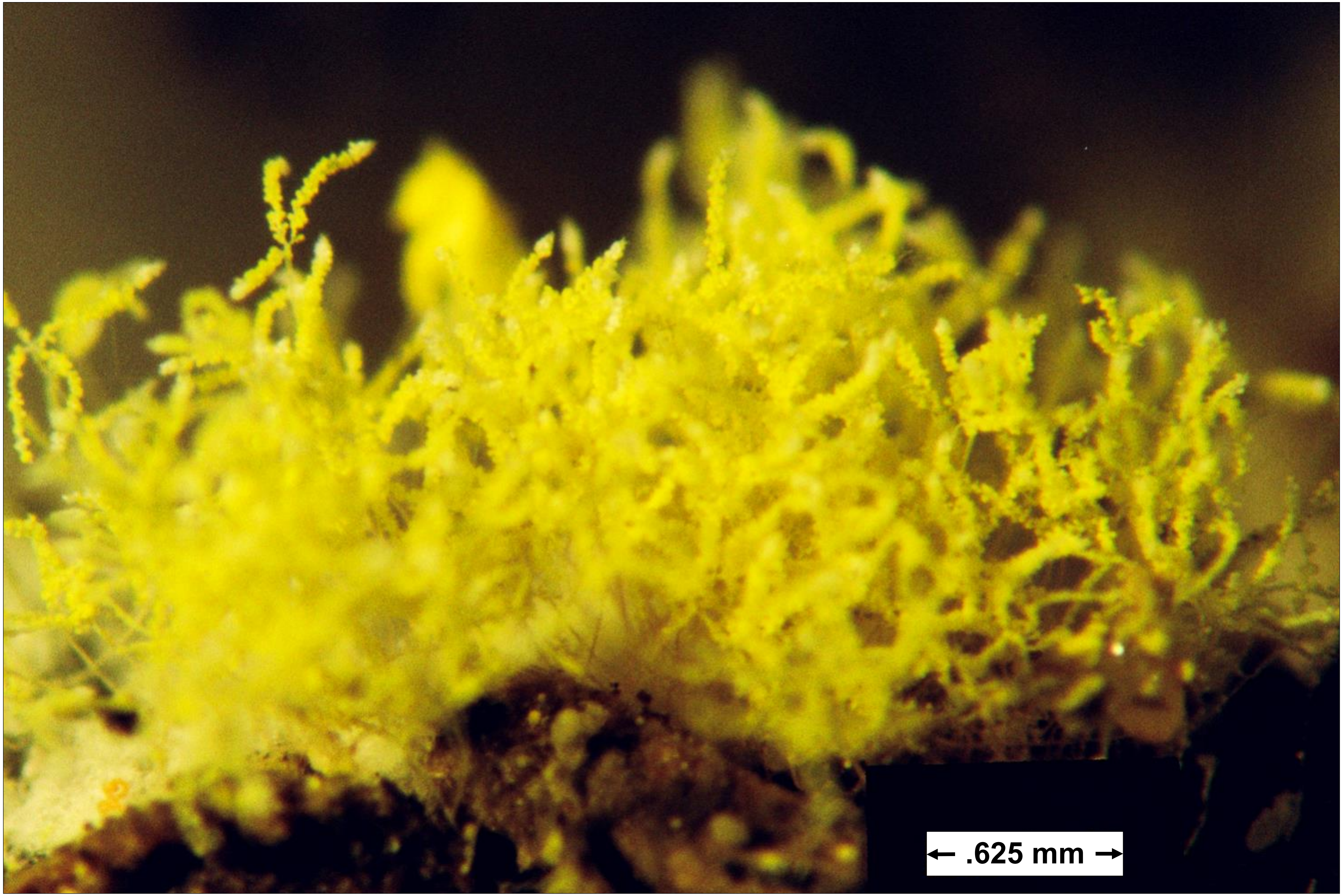
Key to *Coemansia* species (pp. 827–828) in Preliminary phylogeny of *Coemansia* (Kickxellales), with descriptions of four new species from Taiwan. Red type follows the choices leading to *Coemansia erecta*.

1. Having two different asexual reproductive structures..C. biformis
1. Having only one type of asexual reproductive structure...2
2. Fertile region of the sporangiophore twisted in a spiral 3
2. Fertile region of the sporangiophore straight to curved or scorpioid...7
3. Distance between sporocladia longer than 10 µm…...4
3. Distance between sporocladia shorter than 10 µm, usually 4–5 µm...5
4. Sporangiophores simple or rarely branched; sporocladial stipe cells 10–12 µm long.................................C. linderi
4. Sporangiophores producing 3–6 umbel-like primary branches, primary branches remaining simple or branching into 3–12 secondary branches; sporocladial stipe cells 6–8 µm long……………………………………C. umbellate
5. Sporocladia 16–23 µm long.....................C. helicoidea
5. Sporocladia longer than 23 µm..................................6
6. Sporangiospores 10–15 × 0.8–1.5 µm (L/W = 10.9).. ....C. spiralis
6. Sporangiospores 15–20 × 2–2.5 µm (L/W = 7.8).... ....C. bainieri
7. Sporangiophores less than 0.5 mm long.................. ....C. ceylonensis
7. Sporangiophores longer than 0.5 mm........................8
8. Sporocladia closing together in cluster of 2–15 and arising in two or more groups separated by sterile regions..C. interrupta
8. Sporocladium-forming region continuous 9
9. Sporangiophores repeatedly and dichotomously branching 10
9. Sporangiophores not repeatedly branching, may be simple, bifurcate, or trifurcate 11
10. Sporangiophores dichotomously branching several times, forming a relatively loose apical fertile head; sporangiospores cylindrical, slight pointed at apex. ....C. furcata
10. Sporangiophores occasionally dichotomously forked, forming a longer fertile region; sporangiospores fusoid ....C. kamerunensis
11. Stipe cells longer than 13 µm 12
11. Stipe cells up to 11 µm 16
12. Sporangiophores simple, apically bearing (1–)2–5 sporocladia in a scorpioid manner; sporangiospores acicular ....C. scorpioidea
12. Sporangiophores erect or curved, with numerous sporocladia 13
13. Sporocladia densely and spirally arranged on sporangiophore; sporangiospores 14 µm or shorter........ ....C. pennisetoides
13. Sporocladia distantly spaced and not spirally arranged on the sporangiophore; sporangiospores longer than 14 µm 14
14. Sporangiospores acicular, sharply pointed at either end ....C. aciculifera
14. Sporangiospores fusiform or cylindrical, rounded at the apical end..15
15. Sporangiospores fusiform, 14 × 3 µm (L/W = 4.7) ....C. pectinata
15. Sporangiospores cylindrical, (18–)21–23.5(–25) × 1.5–2 µm (L/W = 12.7) ....C. thaxteri
16. Sporocladia arcuate-recurved, making spore-bearing side concave; apical one or two cells on the sporocladia obviously pointing downwards......................... C. reversa
16. Sporocladia straight, somewhat bent at an angle, or curved backward, making spore-bearing side convex; apical one or two cells of sporocladia obviously pointing upwards 17
17. Apical cell of nearly half of all sporocladia bear irregular sporangiospores without pseudophialides ....C. javanensis
17. Apical cell of sporocladia rarely bearing irregular sporangiospores 18
18. Sporangiospores acicular, 18–20 µm long ....C. breviramosa
18. Sporangiospores not acicular, up to 15 µm long…..19
19. Fan-like appearance of sporocladia with spores, spore-bearing side convex ....C. braziliensis
19. Sporocladia not fan-like 20
20. Sporangiospores slightly curved..............................21
20. Sporangiospores not curved 22
21. Sporangiospores 9–13 × 2–2.5 µm (L/W = 4.9), with an apical spine …..............C. mojavensis
21. Sporangiospores 7–13.5(–15) × 2.5–3.5 µm (L/W = 3.4), slightly tapering to the apex, not conspicuously pointed at the apex ....C. asiatica
22. Sporangiospores 6.5–9(–11) × 1.5–2.5 µm (L/W = 3.9); sporangiophores mostly trifurcate……………………………………C. erecta
22. Sporangiospores 12.5–14.5 × 1.5–2.5 µm (L/W = 6.8); sporangiophores simple or occasionally

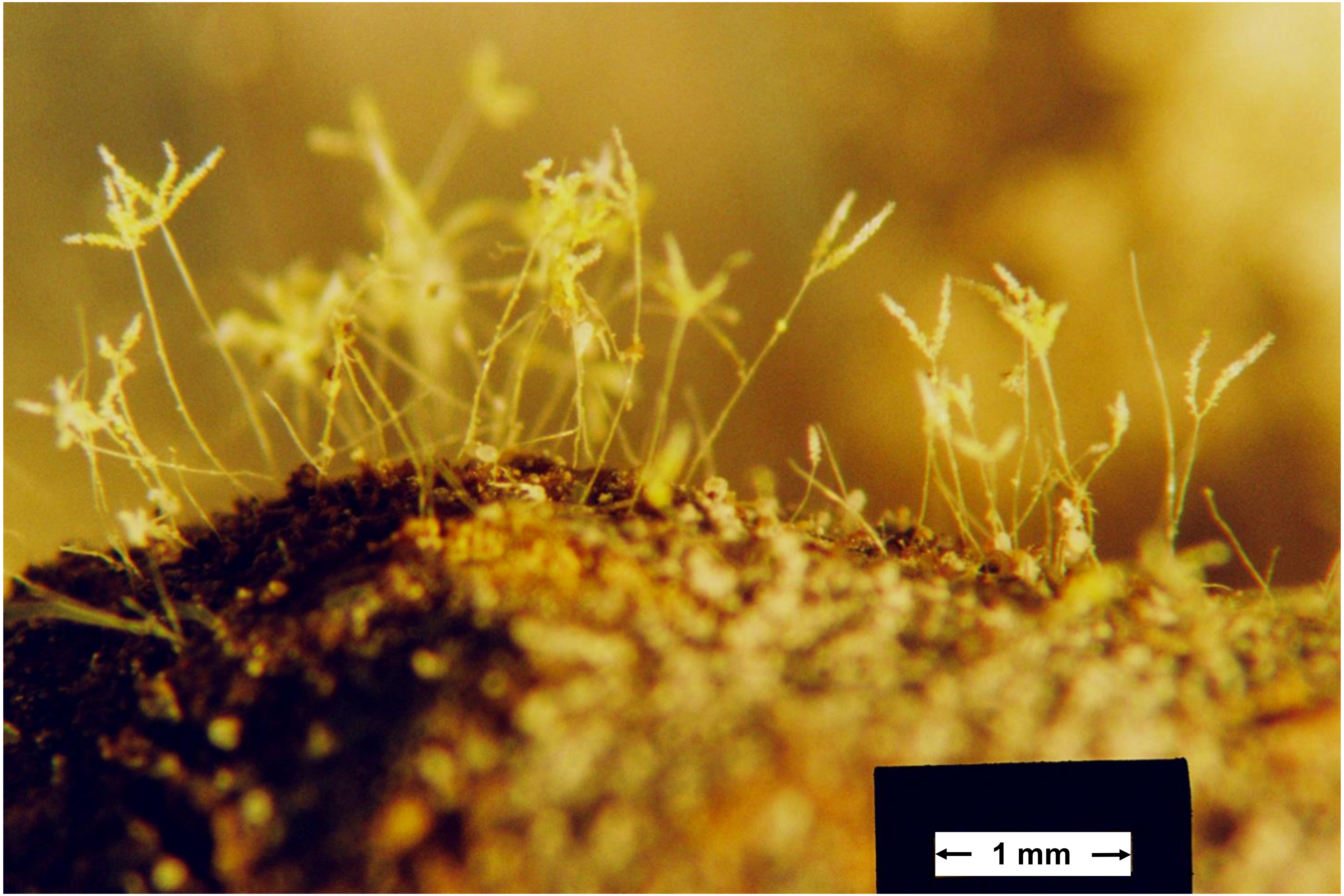
Coemansia erecta from Mycobank online – Associated Pictures:



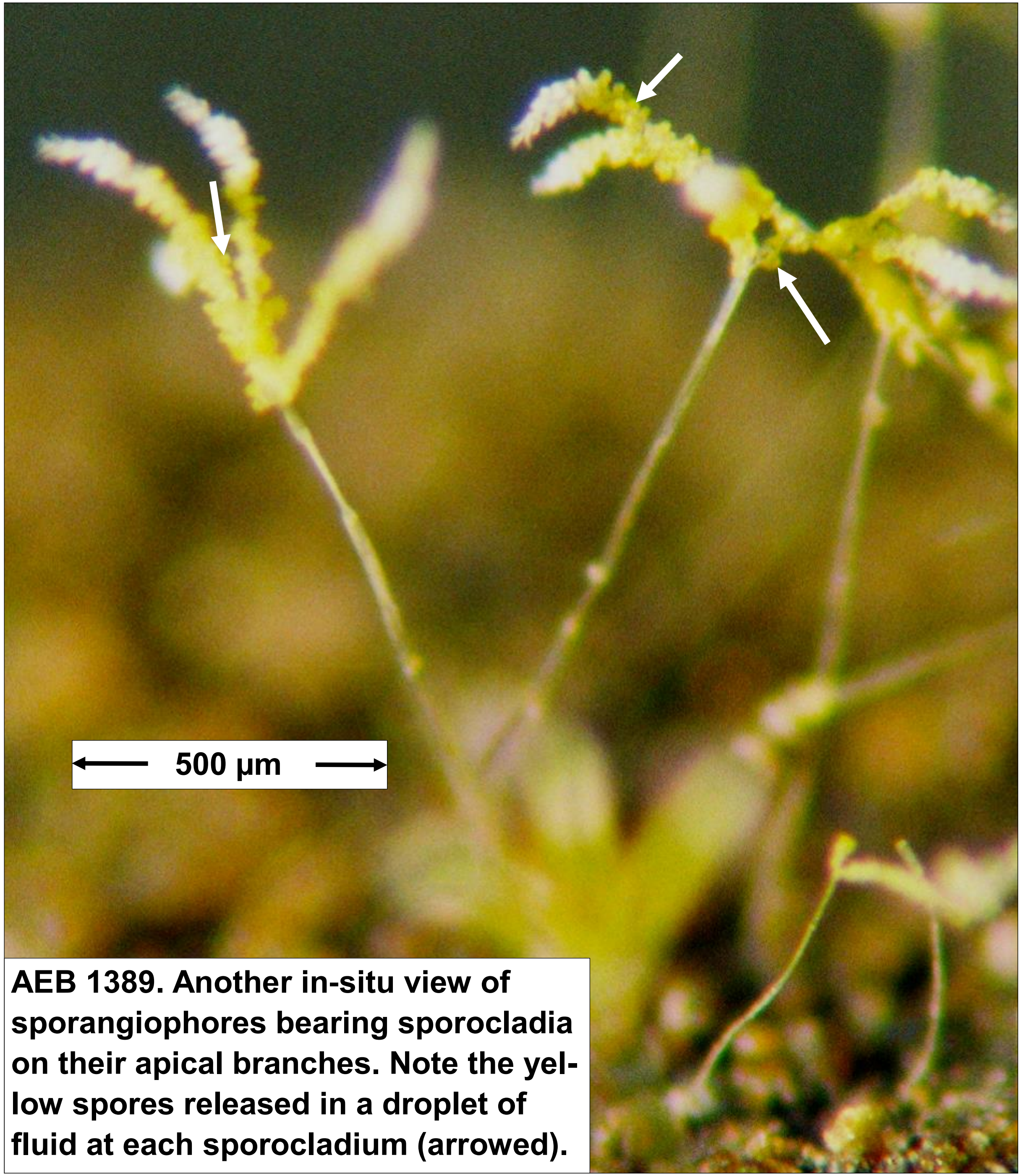




AEB 1389. In-situ view of a dense cluster of sporangiophores bearing sporocladia seen on possum dung after growth in a moist incubation chamber for 25 days.

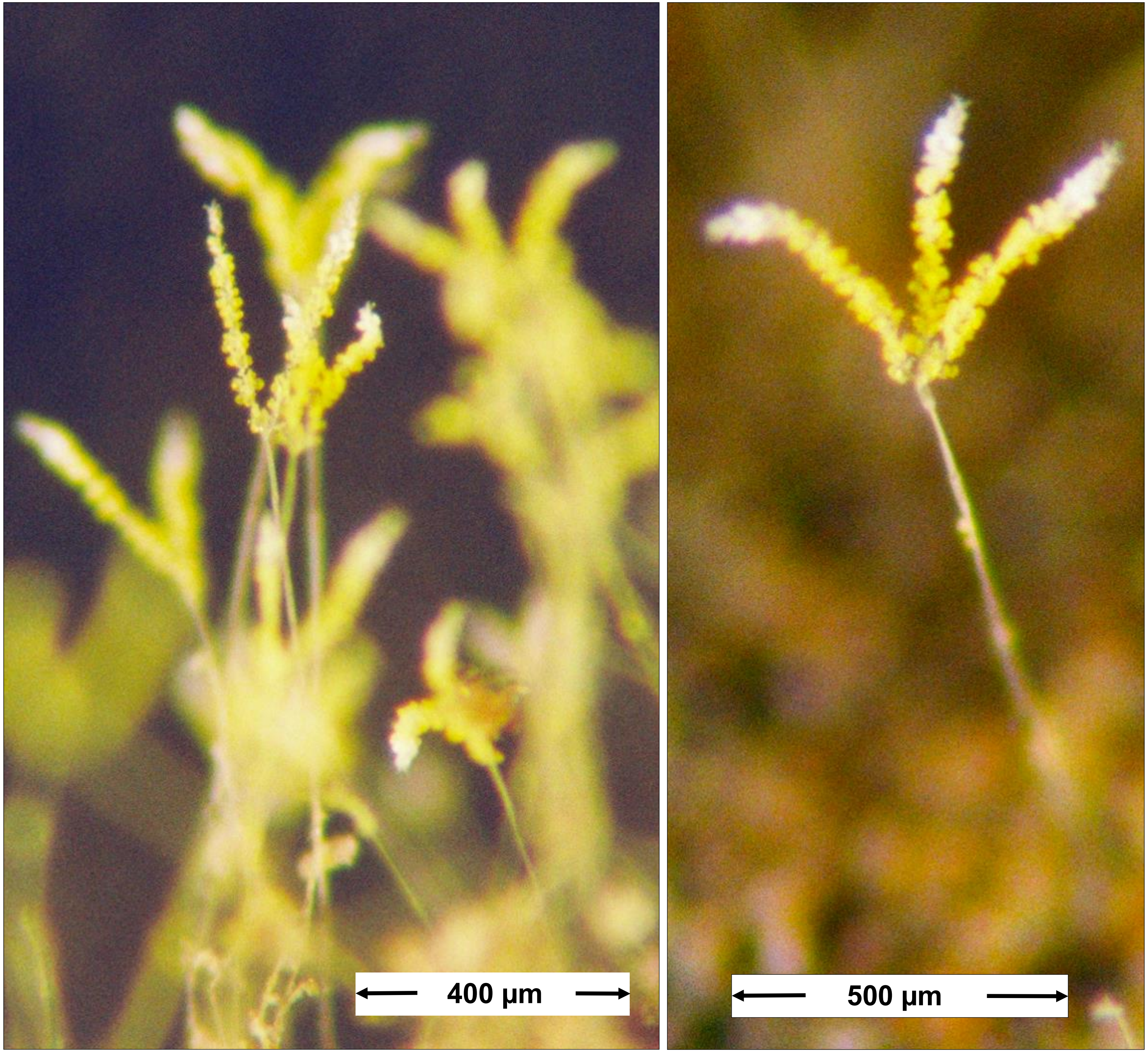


AEB 1389. In-situ view of sporangiophores bearing sporocladia seen on possum dung after growth in a moist incubation chamber for 25 days. This less-dense fruiting allows a view of long sporangiophores and their branching.

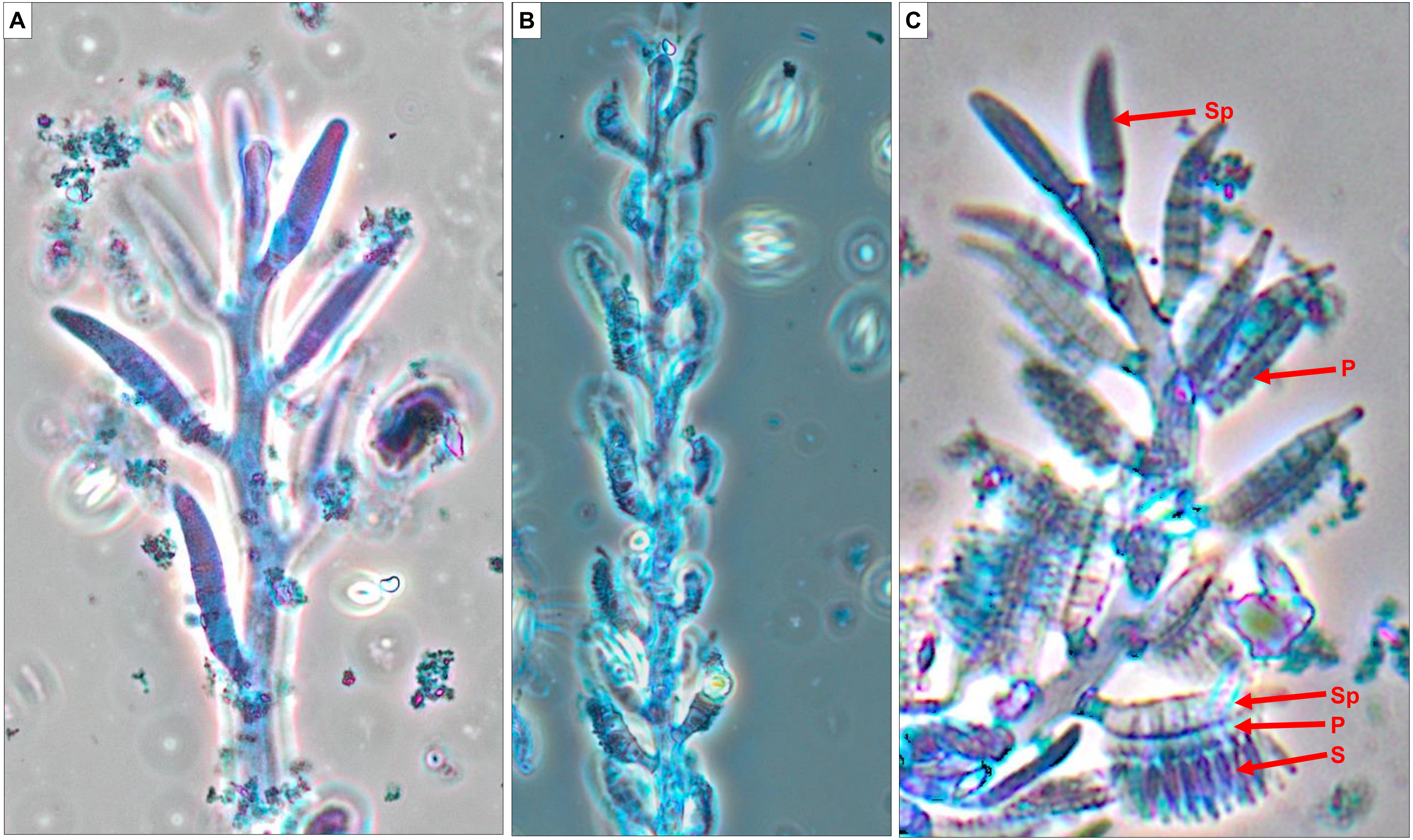


AEB 1389. Another in-situ view of sporangiophores bearing sporocladia on their apical branches. Note the yellow spores released in a droplet of fluid at each sporocladium (arrowed).

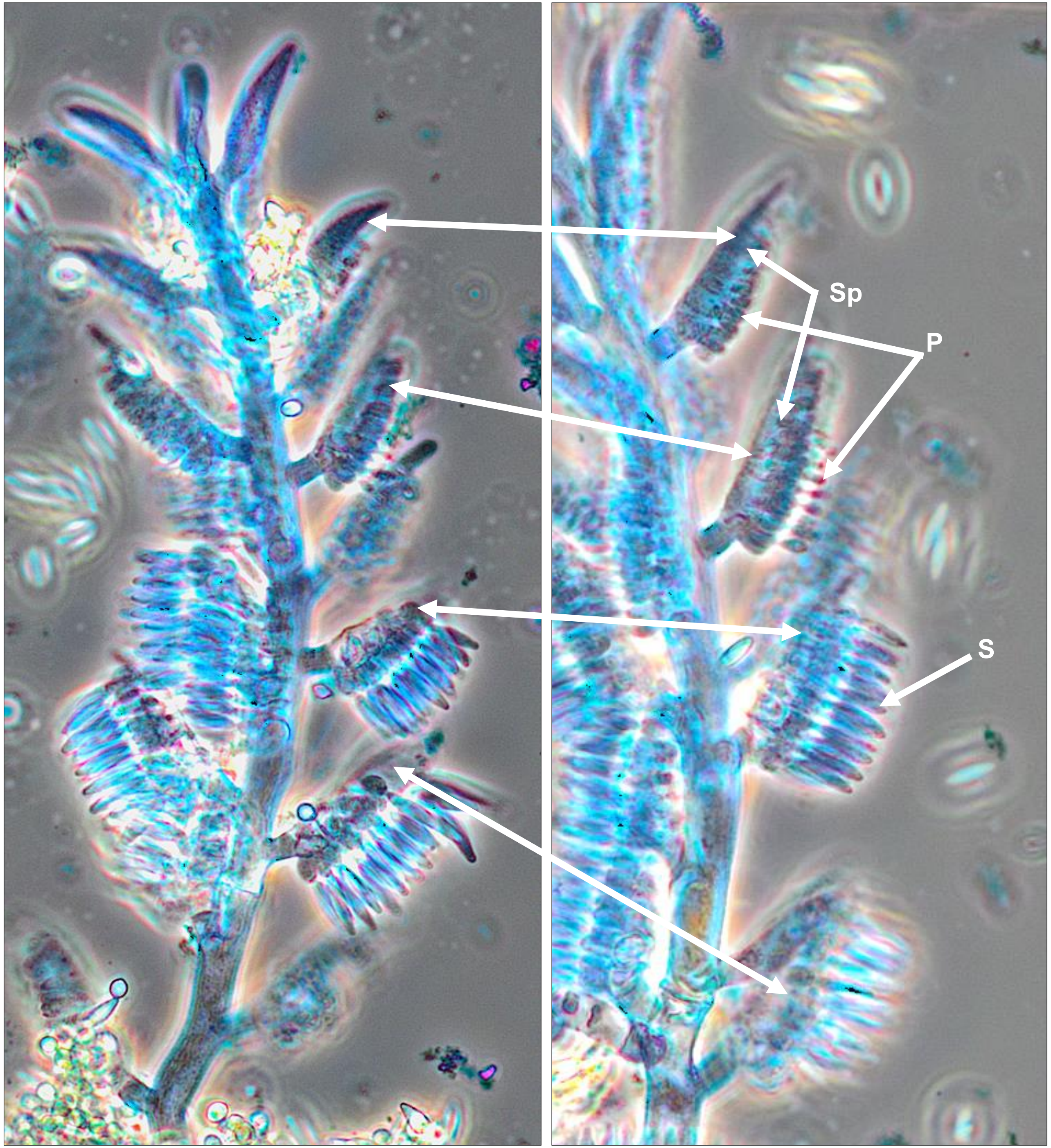
AEB 1389. Same comments as photo at left. Embedded is a view of young sporocladia at a sporangiophore apex nearby.



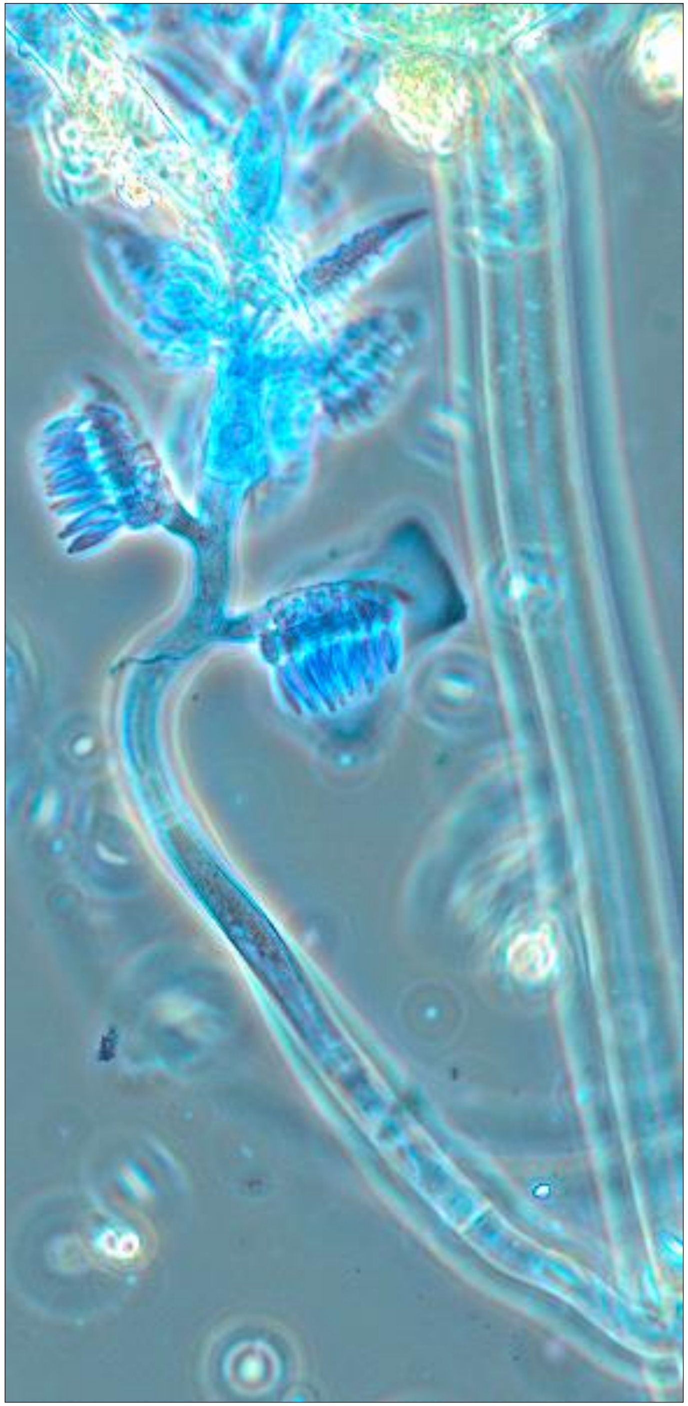
AEB 1389. Two more in-situ photos of sporangiophores bearing sporocladia on their apical branches. Note the yellow spores released in a droplet of fluid at each sporocladium.

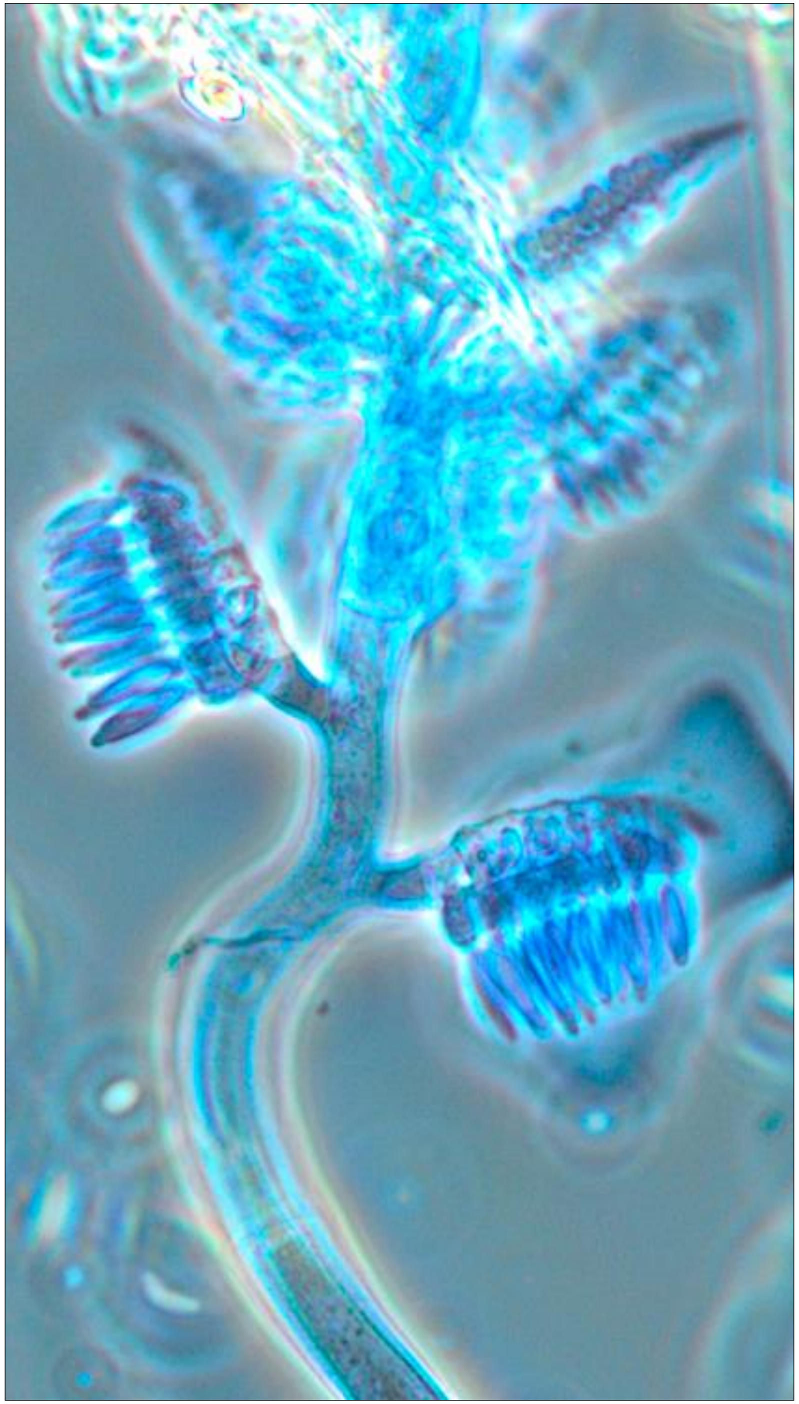


AEB 1389. ABLA slide views of acropetalous sporogenous sporocladial regions in apical branches of a sporangiophore using a X40 objective (variously enlarged) and phase microscopy. A. Very young sporocladia without pseudophialides. B. Young sporocladia with pseudophialides. C. Showing levels of sporogenous maturity – Sp = sporocladia, P = pseudophialides, S = spores.

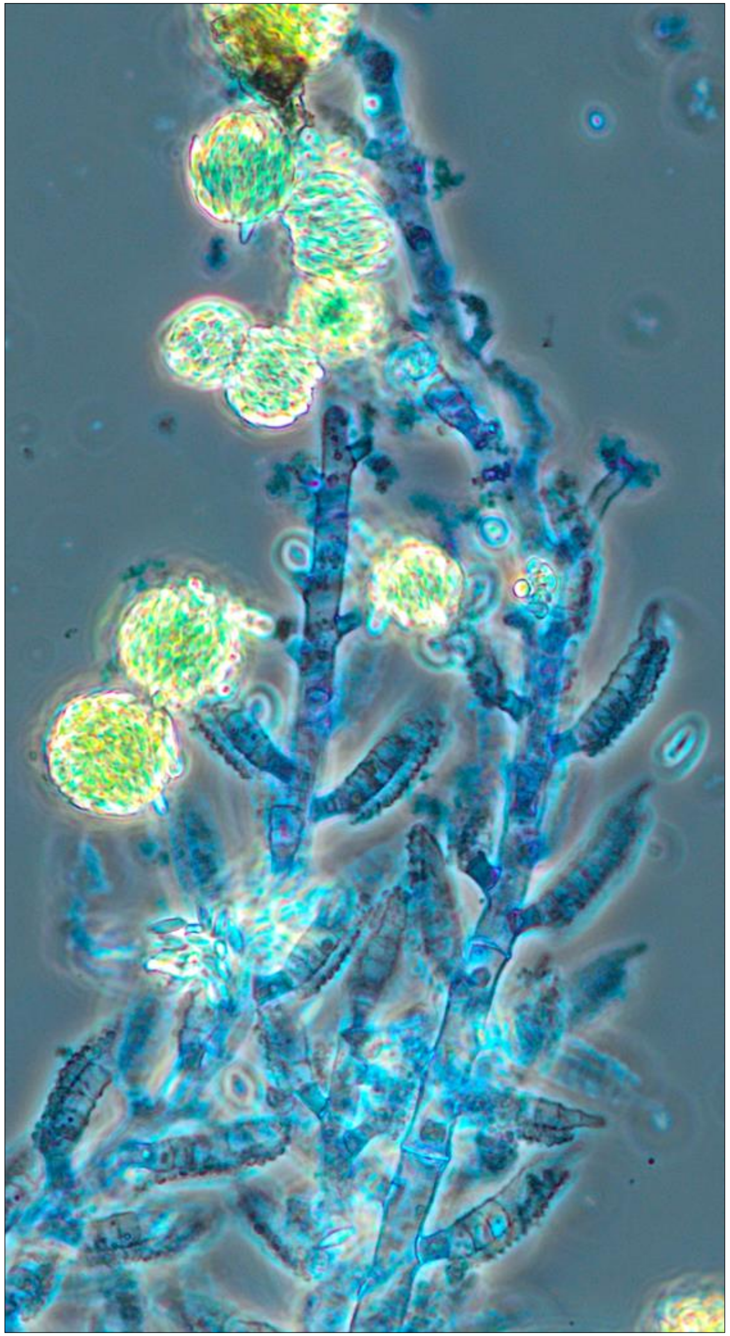


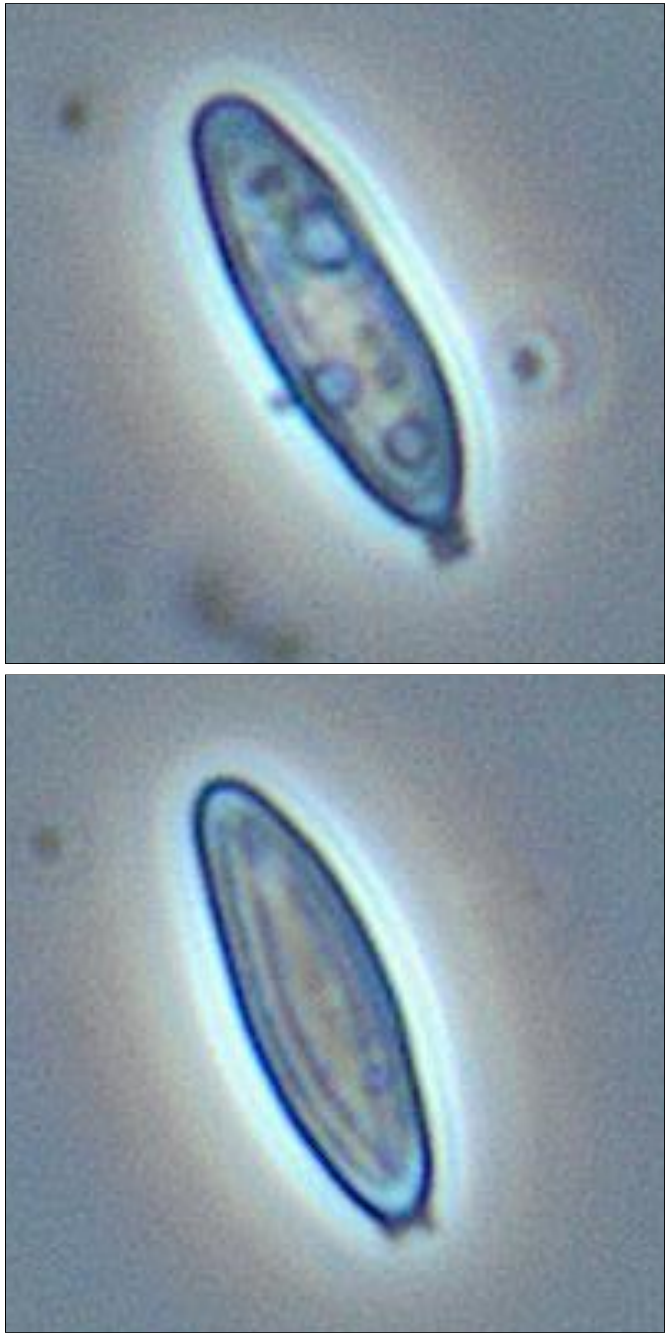
AEB 1389. Other ABLA slide views similar to photo C on the previous page. Both photos shown represent the same field of view (X40 objective), but focused & edited differently.

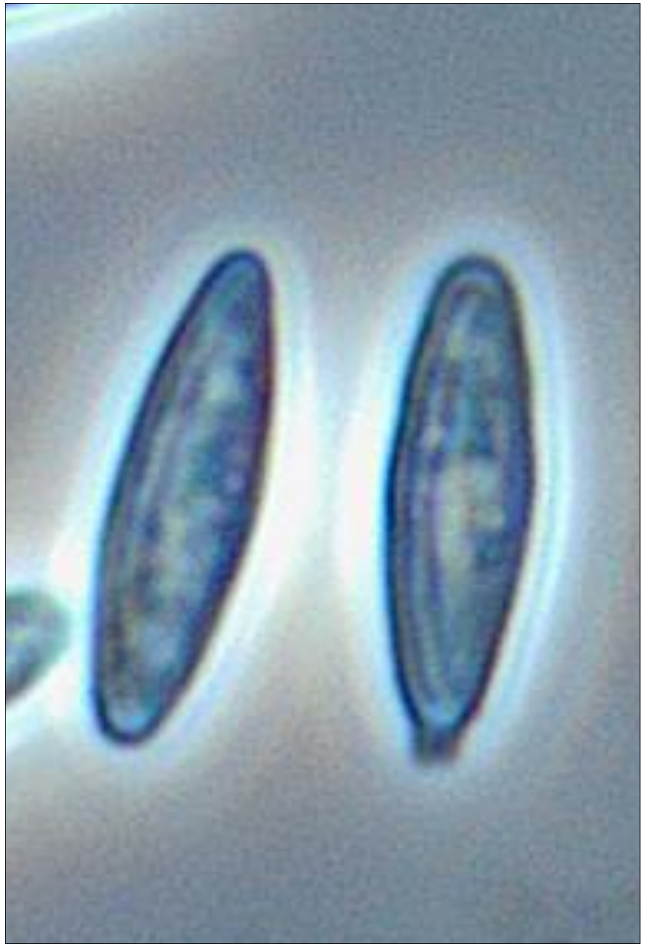




AEB 1389. Other ABLA slide views similar to photo C on the page before last. Both photos shown represent the same field of view (X40 objective), but focused & edited differently. Emphasis is on the 2 lowermost sporocladia.







AEB 1389. Left photo: ABLA mount, phase, X40 obj. Emphasis on the yellow spores released in a droplet of fluid at maturity. Other photos: Spores mounted in water-70% EtOH, X100 obj., phase. Spores overall 7–9.5 × 2–2.5 µm.