***Sporormiella australis* (Speg.) S.I. Ahmed & Cain – AEB 1379 (= PDD 124530)**
A reasonable match but see comments on the morphologically similar *S. intermedia.*

Collected: 20 March 2024

Substrate: hare (*Lepus europaeus*) dung; Incubated in moist chamber 25 March 2024

Collection site: NZTM grid ref. E1689530 N5650853, between the pyramids NW side of Mt. Taranaki, altitude 1237m among tussock (alpine scrub zone on old lava flows); **Collectors:** Ian Flux & Merryl Park; **Identifier:** Dan Mahoney

Voucher materials: dried fumigated hare pellet accompanied by 1 Shear's mounting fluid (SMF) semi-permanent microscope slides; In-situ Zeiss and Olympus BX51 microscopic photos; references consulted and Dan's comments.

References consulted: (listed in chronological order)

Ahmed S.E. & Cain R.F. 1972. Revision of the genera *Sporormia* and *Sporormiella*. Canadian Journal of Botany 50(3): 419–477. With a worldwide key to species. Portions of pages 428, 434, 435 & 444 are reproduced on the next page.

Bell A. 1983. Dung Fungi: An Illustrated Guide to Coprophilous Fungi in New Zealand. Wellington, Victoria University Press, 88 pp. (see pp. 47, 48 & 78)

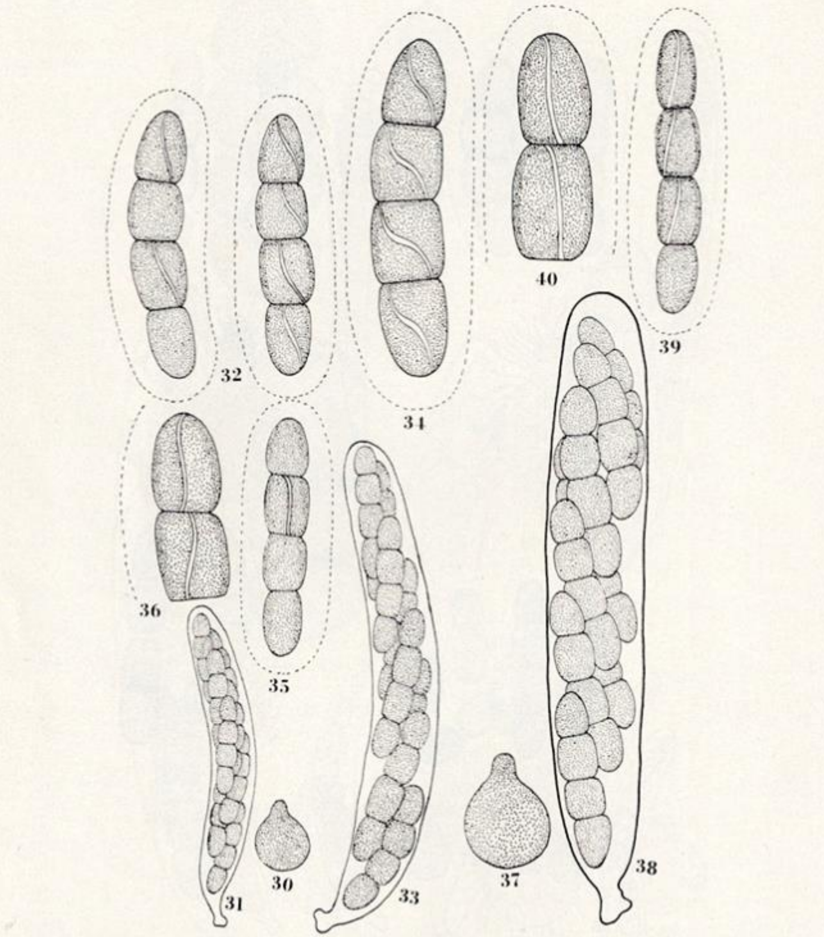
Doveri F. 2004. Fungi fimicoli Italici. AMB, Fondazione Studi Micologici, Vicenza. 1104 pp. (see descriptions and illustrations of *Sporormiella australis* and *S. intermedia* on pp. 630–636)

BELL A. 2005. An Illustrated Guide to the Coprophilous Ascomycetes of Australia. Centraalbureau voor Schimmelcultures (CBS) Biodiversity Series No. 3. Utrecht, 172 pp. (see pp. 54–58 & 161–162)

Doveri F. & Sarrocco S. 2013. *Sporormiella octomegaspora*, a new hairy species with eight–celled ascospores from Spain. Mycotaxon 123, 129–140. With a discussion of the *Preussia-Sporormiella* complex and general details of *Sporormiella* spp.

Dan's comments: When one compares the descriptions of *Sporormiella australis* and *S. intermedia* on the next page, the primary morphological difference between the two is the ascospore size (38–46 × 7–8 µm for the former and 48–59 × 9.5–11.5 µm for the latter). Ascospores for AEB 1379 measured 40–52.5 × 8–10 µm with most <50 µm long. Both species have been reported from various animal dungs although Doveri 2004 p. 631 says that *S. australis* favours cervid & lagomorph dung. Whether ascospore size differences that overlap are significant enough to separate closely similar species remains to be seen.

Ahmed S.E. & Cain R.F. 1972. Revision of the genera *Sporormia* and *Sporormiella*. Canadian Journal of Botany 50(3): 419–477. Portions of pages 428, 434, 435 & 444 are reproduced below.



FIGS. 30–32. *Sporormiella australis* (TRTC 36629). Fig. 30. Perithecium, × 40. Fig. 31. Ascus with ascospores, × 430. Fig. 32. Ascospores, × 920. FIGS. 33, 34. *Sporormiella intermedia* (TRTC 36108). Fig. 33. Ascus with ascospores, × 430. Fig. 34. Ascospore, × 920. FIGS. 35, 36. *Sporormiella teretispora* (LPS 3502). Fig. 35. Ascospore, × 660. Fig. 36. Part of ascospore, × 920. FIGS. 37–40. *Sporormiella cylindrospora* (TRTC 38977). Fig. 37. Perithecium, × 40. Fig. 38. Ascus with ascospores, × 430. Fig. 39. Ascospore, × 660. Fig. 40. Part of ascospore, × 920.

6. ***Sporormiella australis*** (Speg.) Ahmed & Cain, comb. nov. Figs. 30–32
≡ *Sporormia australis* Speg., Bol. Acad. Nac. Cienc. Cordoba, 11: 50. 1887.

= *Sporormia intermedia* Auersw. var. *lagopina* Bres., Malpighia, 11: 52. 1897.

Perithecia scattered, embedded when young, becoming superficial when old, subglobose to pyriform, 220–300 × 160–200 μ, smooth, bare, dark brown to nearly black; neck small papilliform, smooth, bare, dark brown to nearly black. Peridium thin, membranaceous. Asci eight-spored, subcylindrical, (120–)136–150 × 17–21 μ, broadly rounded above, broadest below the middle, abruptly contracted below into a very short stout stipe. Paraphyses scanty, filiform, septate, mixed with the asci. Ascospores obliquely bi- or tri-seriate, four-celled, 38–46 × 7–8 μ, broadly rounded at the ends, dark brown and opaque when mature, transversely septate; constrictions at septa broad and shallow, segments easily separable; terminal cells slightly narrowing toward the ends; germ slit slightly to strongly oblique, occasionally almost diagonal; gelatinous sheath hyaline, broad.

HABITAT: On dung of burro, cow, deer, goat, horse, moose, porcupine, rabbit, and sheep.

TYPE: Argentina.

26. *Sporormiella intermedia* (Auersw.) Ahmed & Cain, in Kobayasi, Hiratsuka, Otani, Tubaki, Udagawa, and Soneda, Bull. Natl. Sci. Mus. Tokyo, 12: 311–430. 1969. Figs. 33, 34

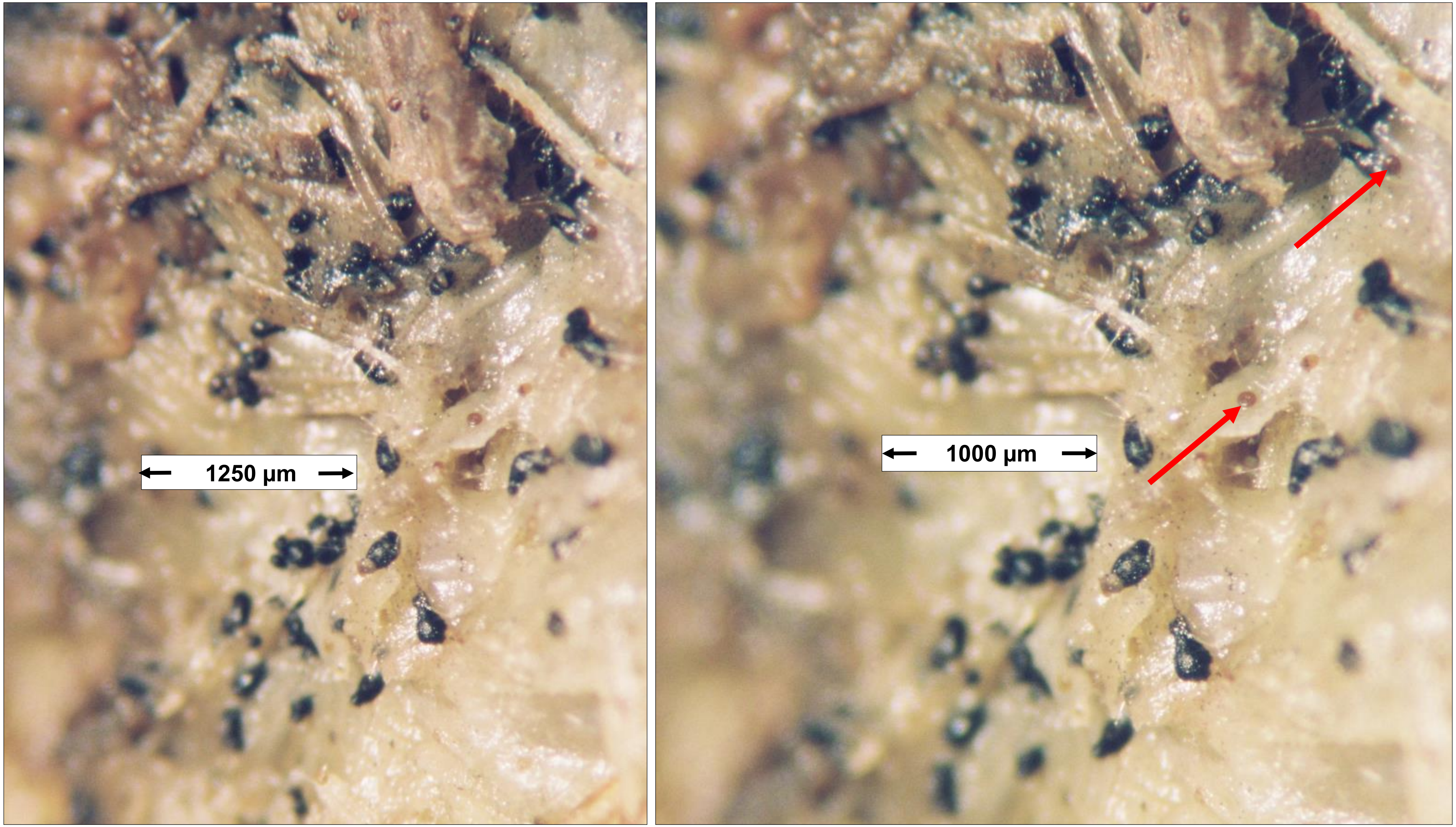
BASIONYM: *Sporormia intermedia* Auersw., Hedwigia, 7: 67. 1868.

Perithecia scattered or aggregated in small groups, embedded when young, becoming more or less superficial when old, subglobose to pyriform, 175–250 × 150–230 μ, smooth, bare, dark brown to black; neck short papilliform, smooth, bare, shining, black. Peridium thin, slightly coriaceous. Asci eight-spored, subcylindrical, 150–180(–200) × 25–28 μ, slightly broader below the middle, abruptly contracted below into a very short stipe. Paraphyses filiform, septate, longer than the asci and mixed with them. Ascospores bi- or tri-seriate throughout, four-celled, cylindrical, 48–59 × 9.5–11.5 μ, broadly rounded at the ends, straight or curved, dark brown and opaque at maturity, septa transverse, constrictions at septa broad and shallow; segments easily separable; terminal cells slightly longer than the mid-cells, tapering slightly toward the ends; germ slit oblique to diagonal; gelatinous sheath hyaline, broad.

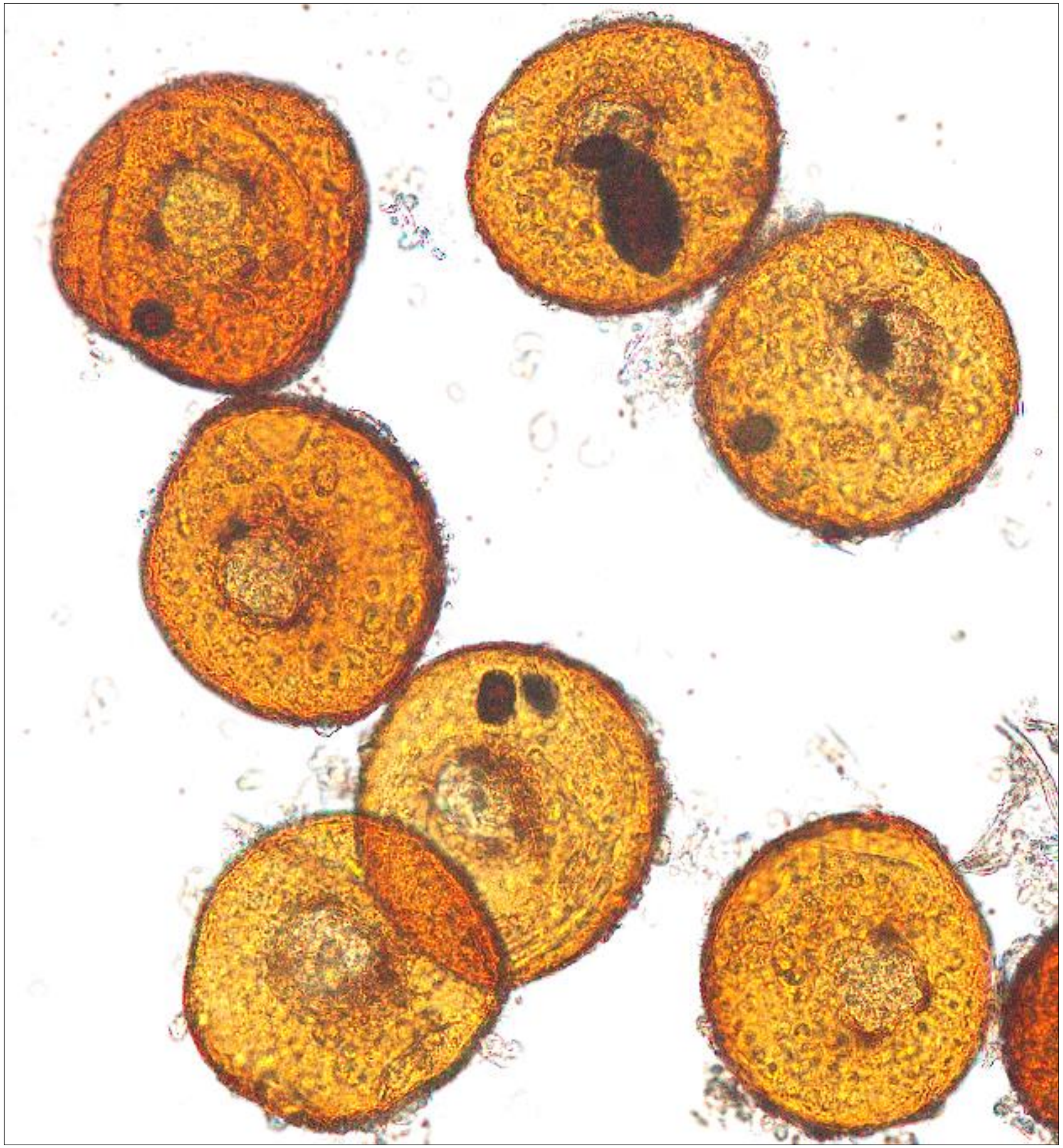
HABITAT: On dung of burro, caribou, cow, deer, goat, horse, moose, partridge, porcupine, rabbit, sheep, and wolf.

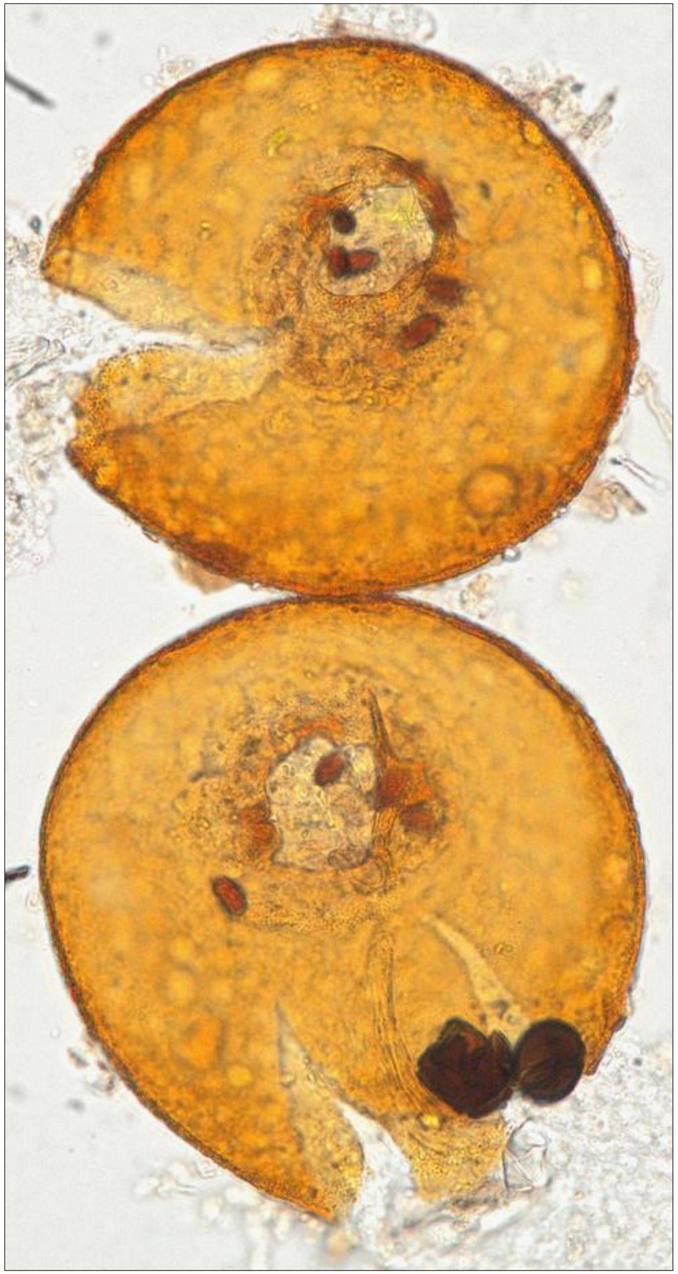
TYPE: Europe.

This species is related to *Sporormiella minima* and *Sporormiella intermedia* and possesses asci and ascospores which are intermediate in size between these two species. *S. intermedia* var. *lagopina* possesses ascospores which agree with the specimens of *S. australis* examined.



AEB 1379. In-situ views of the numerous small, smooth, black ascomata on a lighter area of the hare dung. The small bodies (red arrowed) that were numerous on many of the hare pellets were, I believe, undeveloped ascomata of *Sporormiella australis* (see them enlarged on the next page).





I believe that the bodies seen here – photographed under X40 & X100 objectives resp. – and numerous on most of the hare dung (see red arrows on the previous page) were undeveloped ascomata of *Sporormiella australis*.


AEB 1379. Asci, ascospores and peridium fragments shown in a fresh water mount using the X40 objective and brightfield microscopy. Photo taken 3 July 2024.

AEB 1379. A different orientation of the photo shown on the previous page. Asci, ascospores and peridium fragments in a fresh water mount using the X40 objective and brightfield microscopy.

AEB 1379. 5 July 2024. Confocal views of fresh asci and ascospores in water mounts using the X40 objective and brightfield microscopy. Stacking microscopy, while less focused, allows a multi-focus view of the ascus with its short stubby stipe and the number & arrangement of the 4-celled ascospores before ascus discharge & ascospore disarticulation.

AEB 1379. 5 July 2024. The bitunicate ascus paradigm recognized by E. S. Luttrell is demonstrated here. The separation of two wall regions at spore ejaculation is recognized as the single criterion for the bitunicate ascus sensu stricto (= fissitunicate, commonly called jack-in-the-box). Water mount, X20 objective and brightfield microscopy.

AEB 1379. 5 July 2024. This closeup view (X40 objective) of the photo on the previous page allows a better view of the separation of the two wall regions at spore ejaculation (arrowed). Note that the ascus break is not complete but allows the inner wall to expand quickly toward the ascoma ostiole where the ascospores are released into the surrounding environment.