***Sporormiella vexans* (Auersw.) S.I. Ahmed & Cain 1972 – AEB 1356 (= PDD 120024)**

Substrate: Moose (*Alces alces*) dung

Collection site: 22 miles NE of Ely, MN, Snowbank Lake - on the trail behind National Forest Service Summer lease lot #4 that leads to the Snowbank trail (about 50m from the cabin clearing)

Collection date: May 3, 2015 **Collector:** John Ipsen **Identifier:** Dan Mahoney

Vouchers: 3 moose pellets were dried and fumigated for herbarium material – these were covered with pseudothecia, incubated 11 July 2015, fumigated 25 July. In the process of transferring these to a storage herbarium, they were lost. Fortunately, however, 3 slides had been prepared for photographing [water mounts irrigated with Shear's mounting fluid (SMF)] and these now serve as voucher material; digital photos of microscopic detail from AO PhaseStar 10 and Olympus BX51 microscopes and dissecting scope in-situ photos of the pseudothecia on the dung (using Fujifilm 200 ASA film); Dan's brief description.

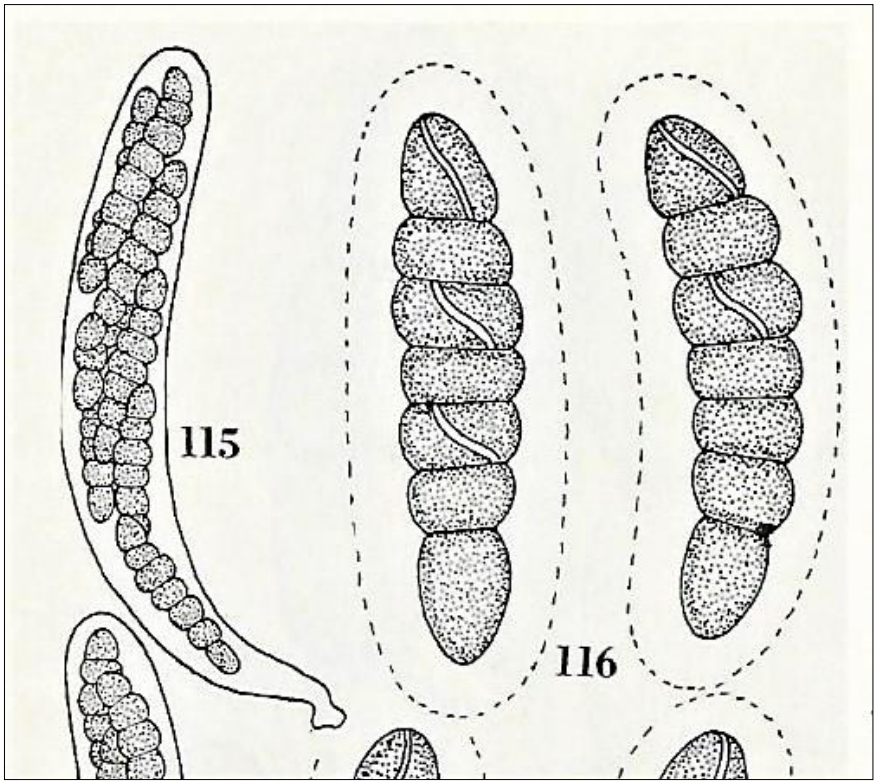
Brief description: 16 dung pellets were incubated and all were covered with pseudothecia of *S. vexans*, and little else. Dung pellets were incubated in a large moist chamber on 11 July 2015 and fertile pseudothecia were numerous when the dung was first observed on 22 July (herbarium material was prepared on 25 July). **Pseudothecia** (few measured) were very similar to each other, usually with a prominent smooth black neck emergent above the dung and a black smooth venter sunken within it (occasionally a superficial pseudothecium was seen). Those measured had globose venters 250–300 µm in diam. and longish broad necks roughly 100–150 µm long. **Peridium** textura angularis to slightly areolate. **Pseudoparaphyses** common among the asci, simple to branched (trabeculate?). **Asci** long, stout, clavate, without apical specialization, bitunicate and fissitunicate, containing 8 ascospores (biseriate to triseriate in upper portions and uniseriate nearer the base), length variable (those measured were 112.5–152.5 × 15–18 µm). **Ascospores** brown, smooth, 7-celled with a thick prominent gelatinous sheath, cell at each extremity conical (narrowly rounded apically and truncate at their opposite end) with what appeared to be a diagonal germ slit stretching the length of each, interior cells broadly oblong to ellipsoid with the third cell from the upper-spore end larger than the others. Interior cells with longitudinal germ slits straight to diagonal & perpendicular to the long axis of the spore (never as distinctly sigmoid-diagonal as those illustrated by Ahmed & Cain 1972). With age, cells of the ascospores disarticulating. Whole ascospores were mostly 45 µm from end to end & 9 µm wide, excluding the sheath.

Ahmed S.E. and Cain R.F. 1972. Revision of the genera *Sporormia* and *Sporormiella*. Canadian Journal of Botany 50(3): 419–477. Portions of pages 464, 473 & 474 are reproduced below.

***Sporormiella vexans* (Auersw.) Ahmed & Cain, comb. nov.** **Figs. 115-116 (p. 464)**

Perithecia scattered or loosely aggregated, immersed, pyriform, 250-325 X 200-250 µ, smooth, bare, light brown when young, becoming dark brown to black when mature; neck papilliform to short cylindrical, measuring up to 125 µ in length, smooth, bare, black. **Peridium** thin, membranaceous. **Asci** eight-spored, clavate, (125-)130-170 X 17-20 µ, broadly rounded above, gradually narrowing below into a short stipe, measuring up to 15 µ in length. **Paraphyses** filiform, septate, sparingly branched, longer than the asci and mixed with them, measuring 3.0-3.5 µ in diameter. **Ascospores** obliquely biseriate above, uniseriate below, seven-celled, fusiform-cylindrical, (38-)41-45(-50) X 7-9 µ, straight or curved, light brown when young, becoming dark brown and opaque when mature, septa transverse to slightly oblique, constrictions at septa deep, segments easily separable; third cell from the upper end larger, measuring 5.5-6.0 X 8.5-9.0 µ, terminal cells broadly conical, measuring 7-9 X 5-6 µ, remaining cells ellipsoid to oblong or rhomboidal, broader than long; germ slit strongly oblique to diagonal, occasionally almost transverse; gelatinous sheath hyaline, fairly broad.

HABITAT: On dung of deer, horse, moose, partridge, rodent, and wapiti.
TYPE: Europe.



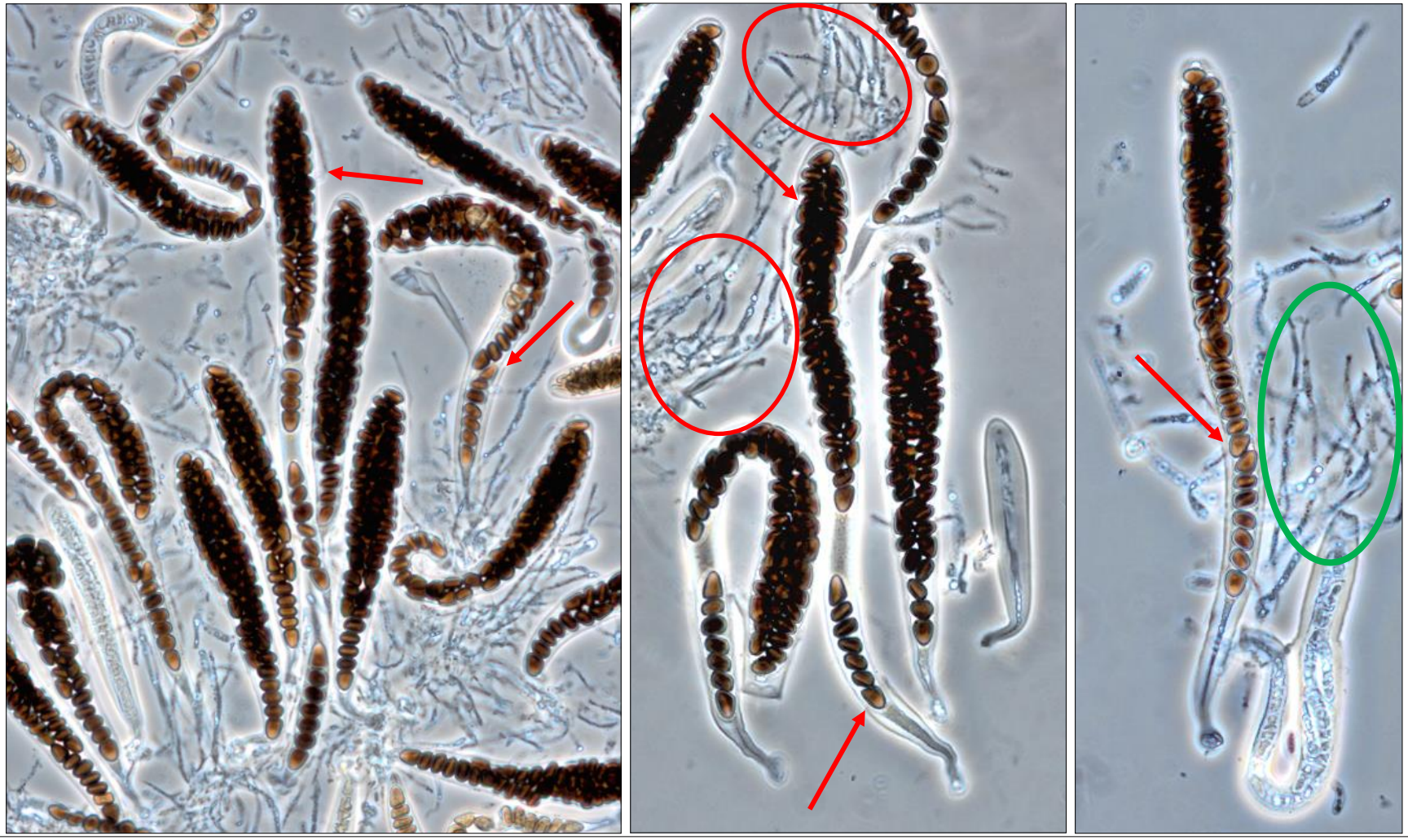
Figs. 115, 116. Fig. 115. Ascus with ascospores. Fig. 116. Ascospores.

***Sporormiella vexans*. In-situ photos of the numerous pseudothecial necks protruding from the moose dung. Venter portions of the pseudothecia were usually sunken in the dung although the lower right photo and those on the next page show superficial ascomata with clearly seen venters.**

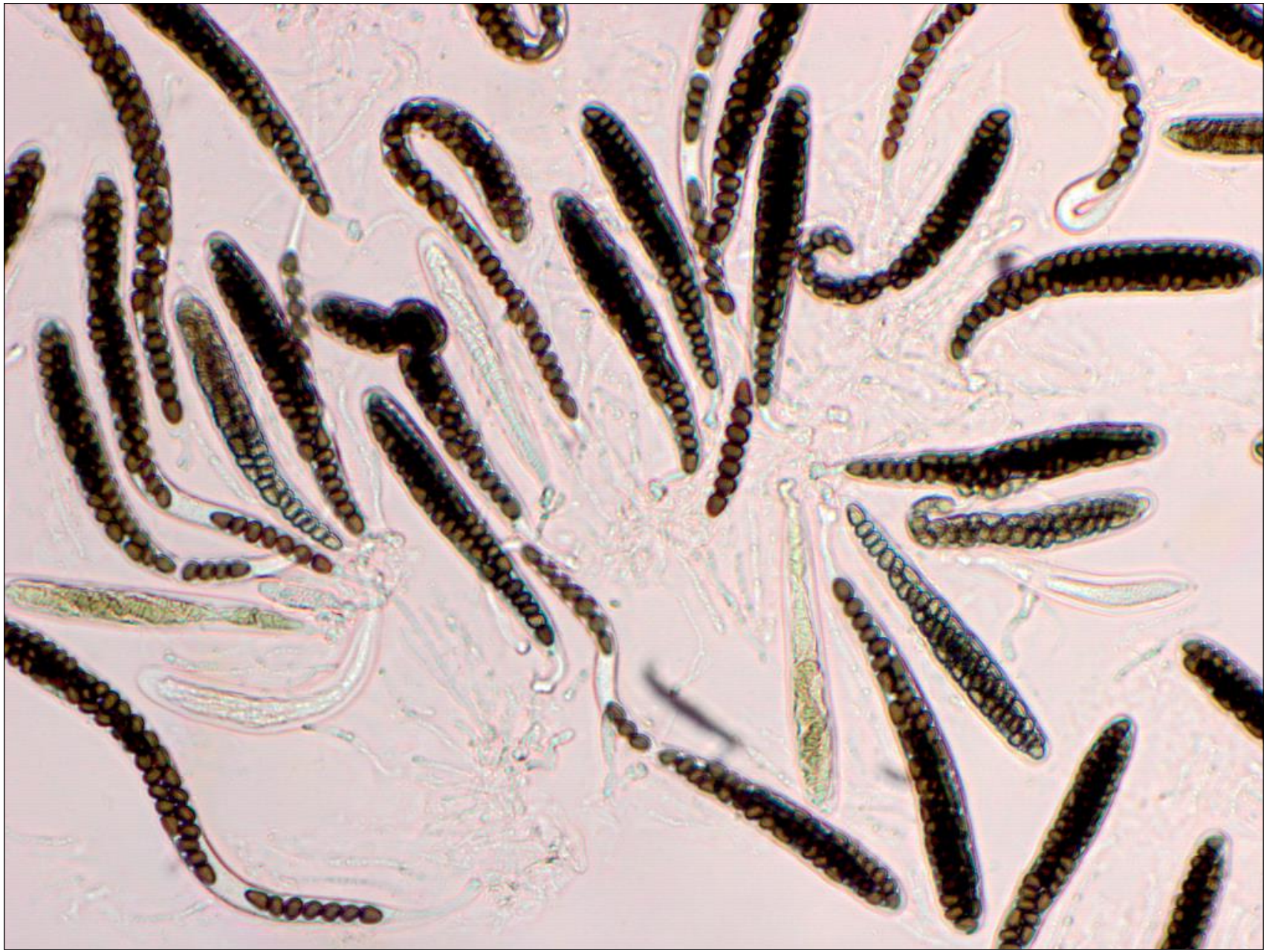
***Sporormiella vexans*. In-situ photo of whole fresh pseudothecia on the moose dung. This view was infrequently seen since most pseudothecia had their venters sunken in the dung with only the necks protruding.**

Ascoma peridium, water irrigated with SMF, brightfield, X40 objective.

Asci, ascospores and pseudoparaphyses. SMF mount using the X40 objective & DIC microscopy.

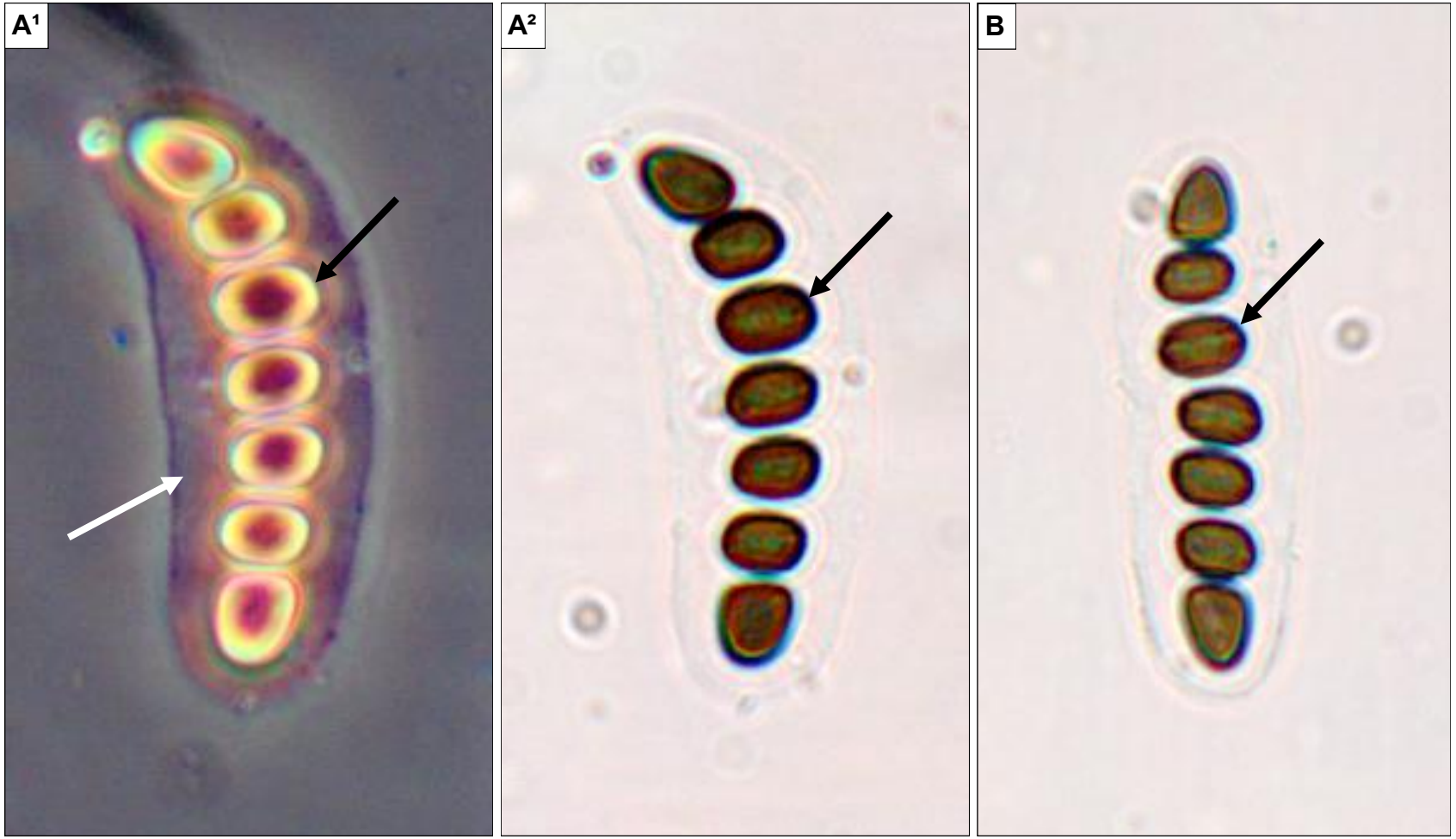


Asci, ascospores & pseudoparaphyses. SMF mounts using the X40 objective & DIC microscopy. Note the fissitunicate, functionally bitunicate asci. This ascus type, sometimes aply called the "jack-in-the-box" type, has a rigid outer wall and an extensible inner wall. When the spores are mature the outer wall, usually near the apex, breaks and the inner wall extends out to more than double its original length. Red arrows indicate where breakage took place – look for the resulting bitunicate and stretched-unitunicate portions of the ascus. Pseudoparaphyses appear simple (outlined in green) or branched (outlined in red).



Asci. Water irrigated with SMF, brightfield, X20 objective.

A–C. Asci – 112.5 X 15 µm, 112.5 X 15 µm & 152.5 X 18 µm resp. All water mounts, brightfield microscopy & X40 objectives.



A, B. 7-celled ascospores. A¹, A² same spore, phase and brightfield resp., cell portion 45 µm long, excluding the sheath (sheath white-arrowed). B. Different spore but same size. All water mounts & X40 objectives. Note that the end cells are different than the interior cells – in shape and size (and seemingly with different germ slit orientations: interior cells with straight, or sl. diagonal, germ slits and end cells with more strongly diagonal germ slits). The 3rd cell from the spore apex is the largest interior cell (arrowed in black).