

***Porosphaerella setosa* A.I. Romero & Samuels – AEB 1054 (= PDD 97361)**

**Spiny perithecium with 2-celled brown smooth ascospores which have germ pores at each end**

**Substrate:** wet dead wood

**Collection site:** Swampy Spur Track. Begins at the Leith Saddle at the high point of Highway 1 just N. of Dunedin. The track rises steeply and has extensive boardwalks. It eventually reaches bushline. Swampy Spur Forest is a diverse mixed podocarp hardwood forest with some stands of *Libocedrus* (a beautiful stand of native bush).

**Collection date:** 12 May 2008 (1<sup>st</sup> full day of the Dunedin Fungal Foray)

**Collector and Identifier:** Dan Mahoney

**Voucher materials:** dried herbarium material AEB 1054 (= PDD 97361); 3 Shear's mounting fluid (SMF) semipermanent slide mounts of perithecial squashes; 2 in-situ colored projection photos of the perithecia and numerous digital photos of perithecial squashes showing microscopic detail of the peridium, spines, paraphyses, asci and ascospores. In July 2021 the dried herbarium material was re-examined and several dissecting scope photos taken of the in-situ perithecia.

**Brief description:** **Perithecia** numerous on the dead wood substrate, blackish, superficial, roughly 300 µm in diameter, mostly conical with a narrowly rounded apex; **spines** numerous over the outer peridium but lacking on the conical dome, spines black, rigid, tapering from base to apex, septations not observed; **peridial detail** requires closer observation. **Paraphyses** not seen. **Asci** cylindrically clavate with a distinct apical ring, containing 8 irregularly biserially arranged ascospores. **Ascospores** brown, moderately thick-walled, smooth, typically 2-celled (very rarely 3- or 4-celled), fusiform and tapering to a germ pore at each end, with a very slight indentation at the septum (except in one ascus where 3-septate ascospores were more obviously indented at the septa – see photo), symmetrical with a median septum or asymmetrical with the septum not median and, therefore, the resultant cells longer or shorter and frequently of slightly different widths, occasionally somewhat flattened on one side; septum extremely prominent, dark brown and 'double' (with each cell contributing to the septum with an inconspicuous light area between); in SMF with a one or more large guttules in each cell; germination from one germ pore was seen in a few ascospores (see photo); ascospores in SMF (12-)14-19 X 5-7 µm (n=38).

**Continued on the next page:**

**Comments:** The spiny perithecia, asci having an apical ring and containing 8 brown, 2-celled ascospores with apical germ pores and no anamorph distinguish this fungus.

The New Zealand AEB 1054 specimen differs from the ROMERO & SAMUELS, 1991, original Argentina material in having somewhat larger ascospores – (12-)14-19 X 5-7 µm vs 10-15 x 4.5-5(-6). How significant this is remains to be seen since the only other collection records I've found are 14 collections from Costa Rica for which no descriptions or illustrations are provided [see Fungi of Costa Rica (INBio) and Mycoportal records online].

### **A brief history of *Porosphaerella*: (3 species)**

1) MÜLLER, E. & G. J. SAMUELS (1982). Anamorphs of pyrenomycetous ascomycetes II. *Porosphaerella* gen. nov. and its *Cordana* anamorph. — *Sydowia* 35: 150–154.

Summary. — *Porosphaerella cordanophora* gen. et spec. nov. is proposed. Colonies derived from ascospores isolated from Swiss and New Zealand collections produced a *Cordana pauciseptata* PREUSS anamorph. This is the first report of a teleomorph for a species of *Cordana*. The relationship of *Porosphaerella* to other genera of the Trichosphaeriaceae is discussed.

2) ROMERO, A. I. & G. J. SAMUELS (1991). Studies on xylophilous fungi from Argentina. VI. Ascomycotina on *Eucalyptus viminalis* (Myrtaceae). — *Sydowia* 43: 228–248.

Portions of pages 232–234 are reproduced below:

*Porosphaerella setosa* ROMERO & SAMUELS, sp. nov.

**Anamorph.** - None known.

**Perithecia** pyriform to conical, 340-500 µm high, 200-300 µm wide, black, superficial on immersed mycelium, solitary or gregarious, papillate, setose; setae 48-90 µm long, 6 µm at base, stiff, black, aseptate, unbranched, ends acute. Perithecial wall 25-35 µm wide, cells angular, walls thickened and dark brown. **Asci** clavate, 90-120 x 10-15(-20) µm, with eight, biserial ascospores, apical ring conspicuous, J-. **Ascospores** ellipsoidal, 10-15 x 4.5-5(-6, -8 in the Latin diagnosis) µm, equally 2-celled or less frequently with the septum suprmedian, slightly constricted at the septum, with a pore at each end, 1-2-guttulate, punctate, brown. **Paraphyses** not observed.

**Continued on the next page:**

**Habitat.** - Decorticated wood.

**Distribution.** - Argentina, known only from the type locality.

**Material examined.** - ARGENTINA: Buenos Aires: San Pedro, obernador Castro, on *Eucalyptus viminalis*, Feb 1982, ROMERO 21/22-4 (BAFC 32014), Aug 1982, ROMERO 21/22-8 (BAFC 32015), ROMERO 37/22-8 (BAFC 32016); May 1983, 30/22-8 (BAFC 32013, holotype), ROMERO 30/22-8 (BAFC 32017), ROMERO 34/22-4 (BAFC 32018).

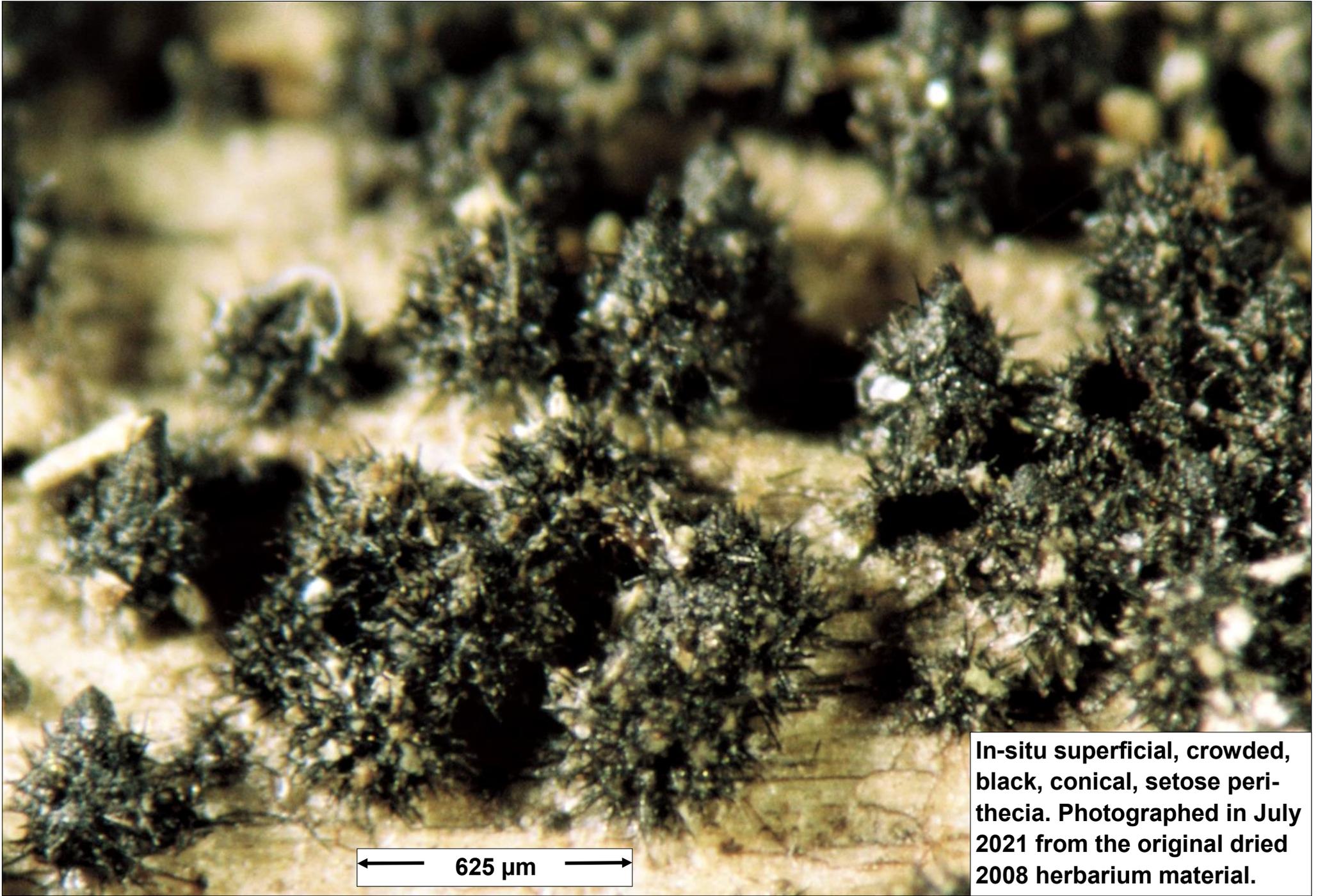
As in *Porosphaerella cordanaphora* MÜLLER & SAMUELS (MÜLLER & SAMUELS, 1982) asci have a conspicuous apical ring and the ascospores are brown, bicellular, and have a pore at each end. Perithecia of *P. cordanaphora* are glabrous and ascospores of that species are not constricted at the septum. The anamorph of *P. cordanaphora* is conspicuous, a species of *Cordana*. Unfortunately, no anamorph was found to be associated with perithecia of *P. setosa*.

3) Fernández, F.A. and Huhndorf, S.M. (2004). Neotropical pyrenomycetes: *Porosphaerella borinquensis* sp. nov. and its *Pseudobotrytis terrestris* anamorph. Fungal Diversity 17: 11-16.

Species Fungorum current name for *Porosphaerella borinquensis* = *Cordana terrestris* (Timonin) Hern.-Restr., Gené & Guarro, following 'Hernández-Restrepo M., Gené J., Mena-Portales J., Cano J., Madrid H., Castañeda-Ruiz R.F. & Guarro J. 2014. New species of *Cordana* and epitypification of the genus. Mycologia 106: 723–734.'

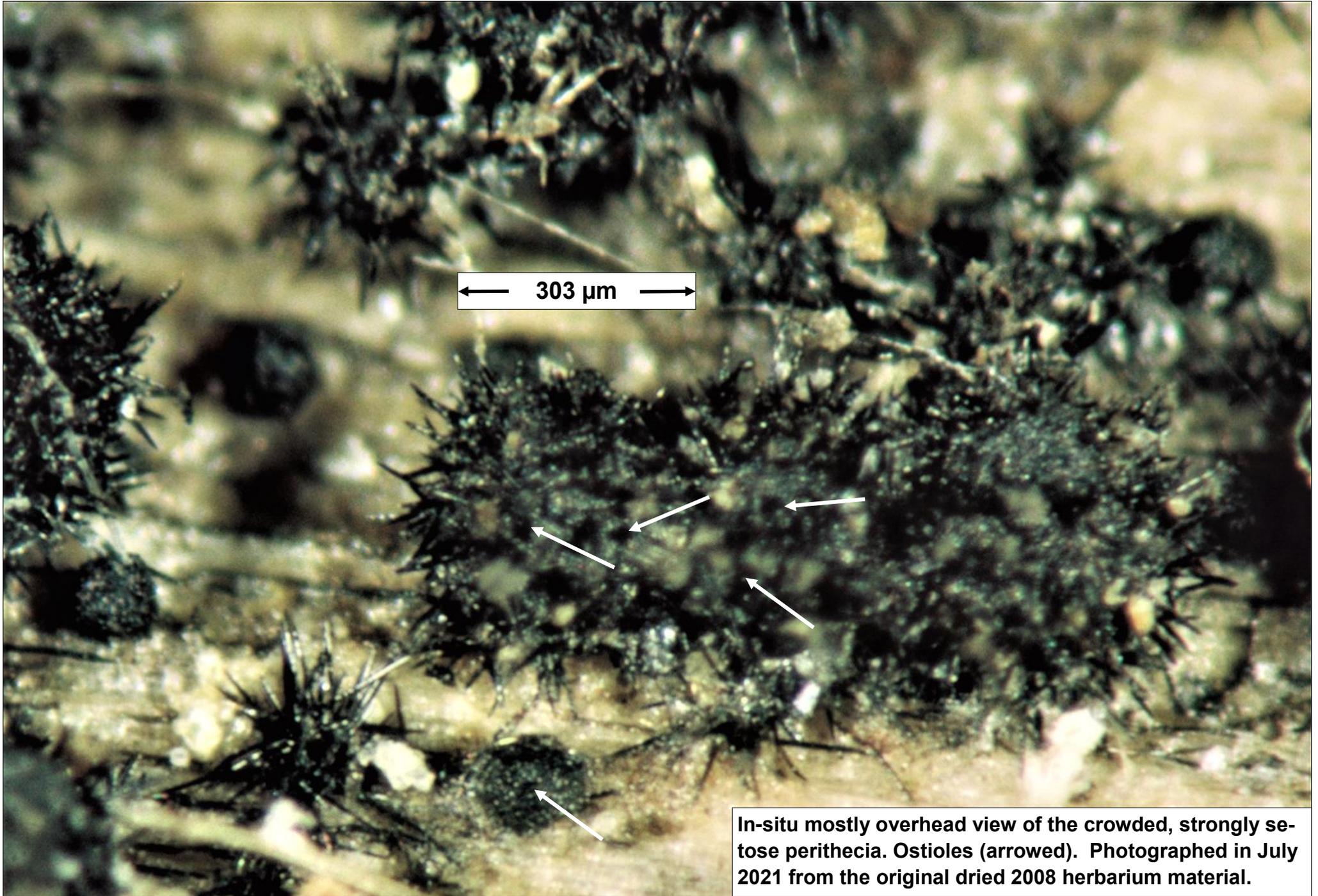
The same treatment (in Hernández-Restrepo et al., 2014) is also given the name *Porosphaerella cordanaphora*, now recognized by Species Fungorum as *Cordana pauciseptata* Preuss

**Conundrum:** Based on one fungus-one name, chronological priority and the Hernández-Restrepo et al., 2014, epitypification of the genus *Cordana*, the genus *Porosphaerella* is now recognized for only *Porosphaerella setosa*. That species lacks a known anamorph but has yet to be cultured or sequenced. It differs from the other two *Porosphaerella* species (now *Cordana* species) in having spinose perithecia as well as in lacking an anamorph. Aside from its spinose perithecia, however, its other ascosporic features are very similar to those of the other two previously *Porosphaerella* species. More collecting and further work remains to be done.

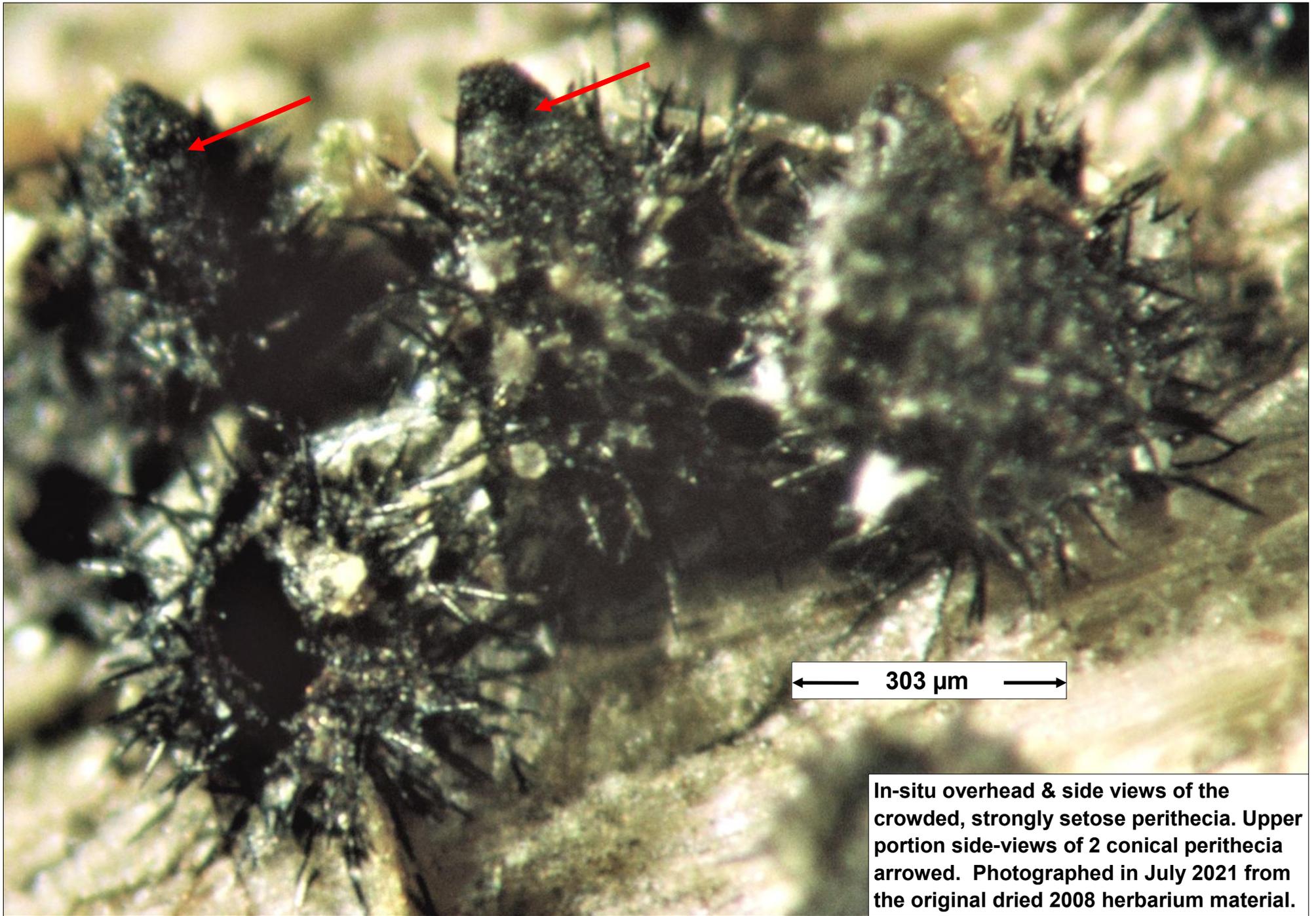


← 625  $\mu\text{m}$  →

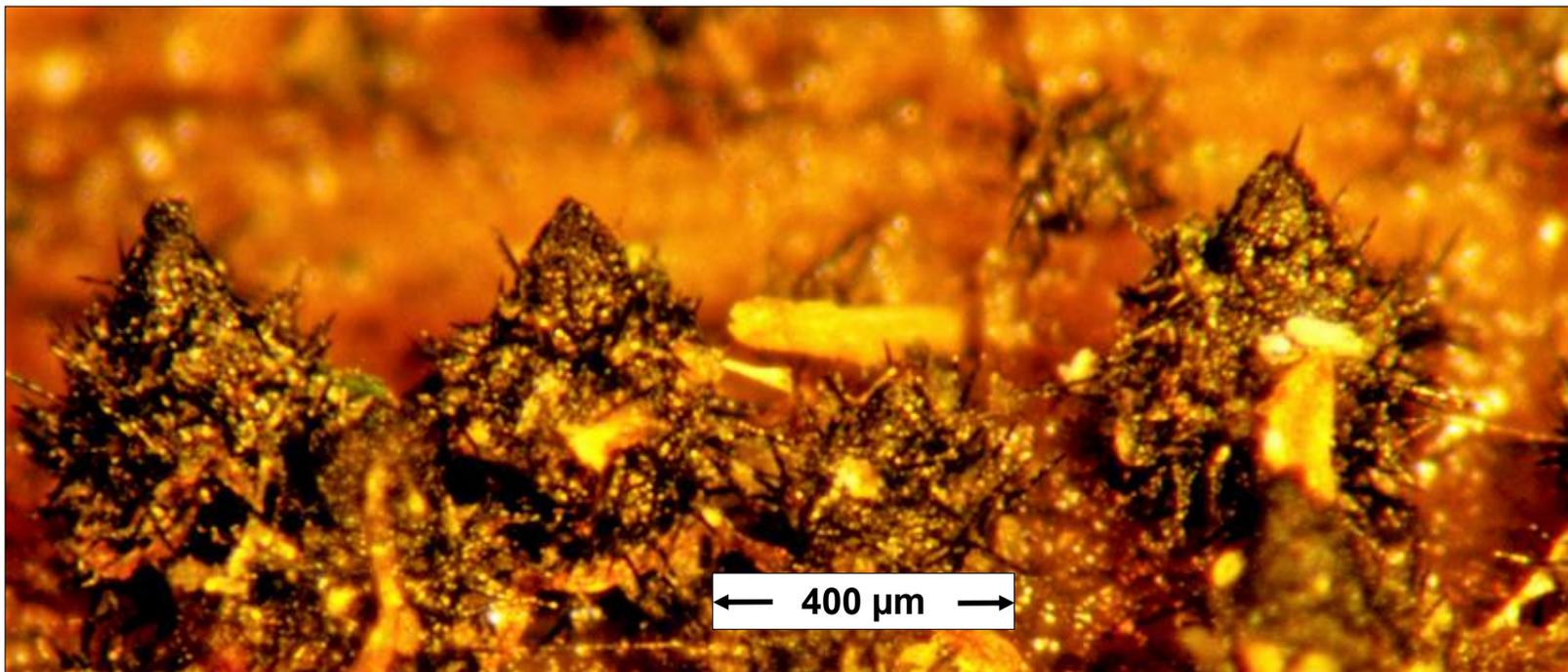
In-situ superficial, crowded, black, conical, setose perithecia. Photographed in July 2021 from the original dried 2008 herbarium material.



In-situ mostly overhead view of the crowded, strongly setose perithecia. Ostioles (arrowed). Photographed in July 2021 from the original dried 2008 herbarium material.



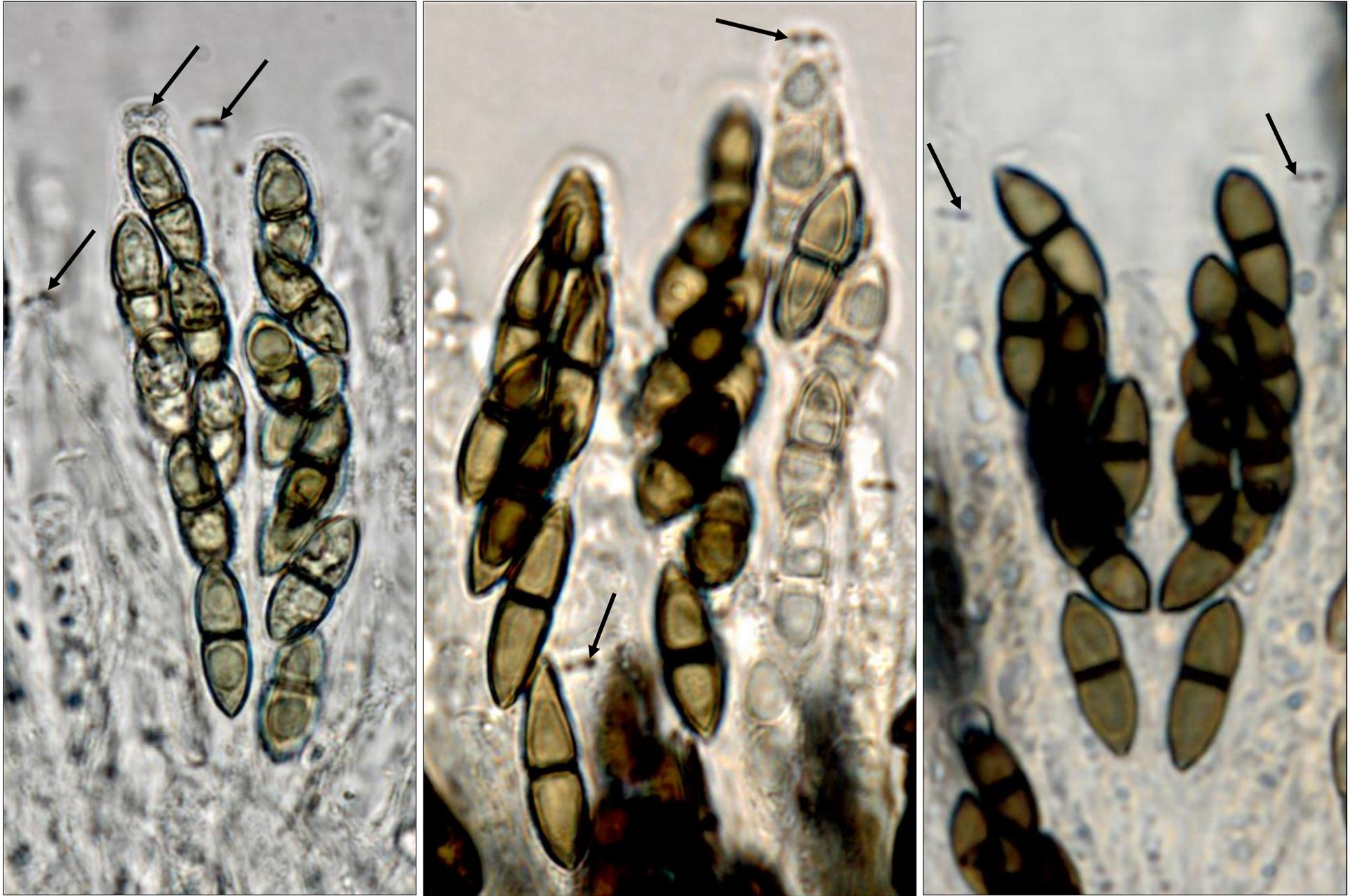
In-situ overhead & side views of the crowded, strongly setose perithecia. Upper portion side-views of 2 conical perithecia arrowed. Photographed in July 2021 from the original dried 2008 herbarium material.



**Upper photo.** In-situ side-views of several typical setose, moderately apiculate conical perithecia.

**Bottom photo.** SMF mount (using the X20 objective and brightfield microscopy) of squashed perithecia – emphasizing the stiff, black, aseptate, unbranched, acutely tipped setae.

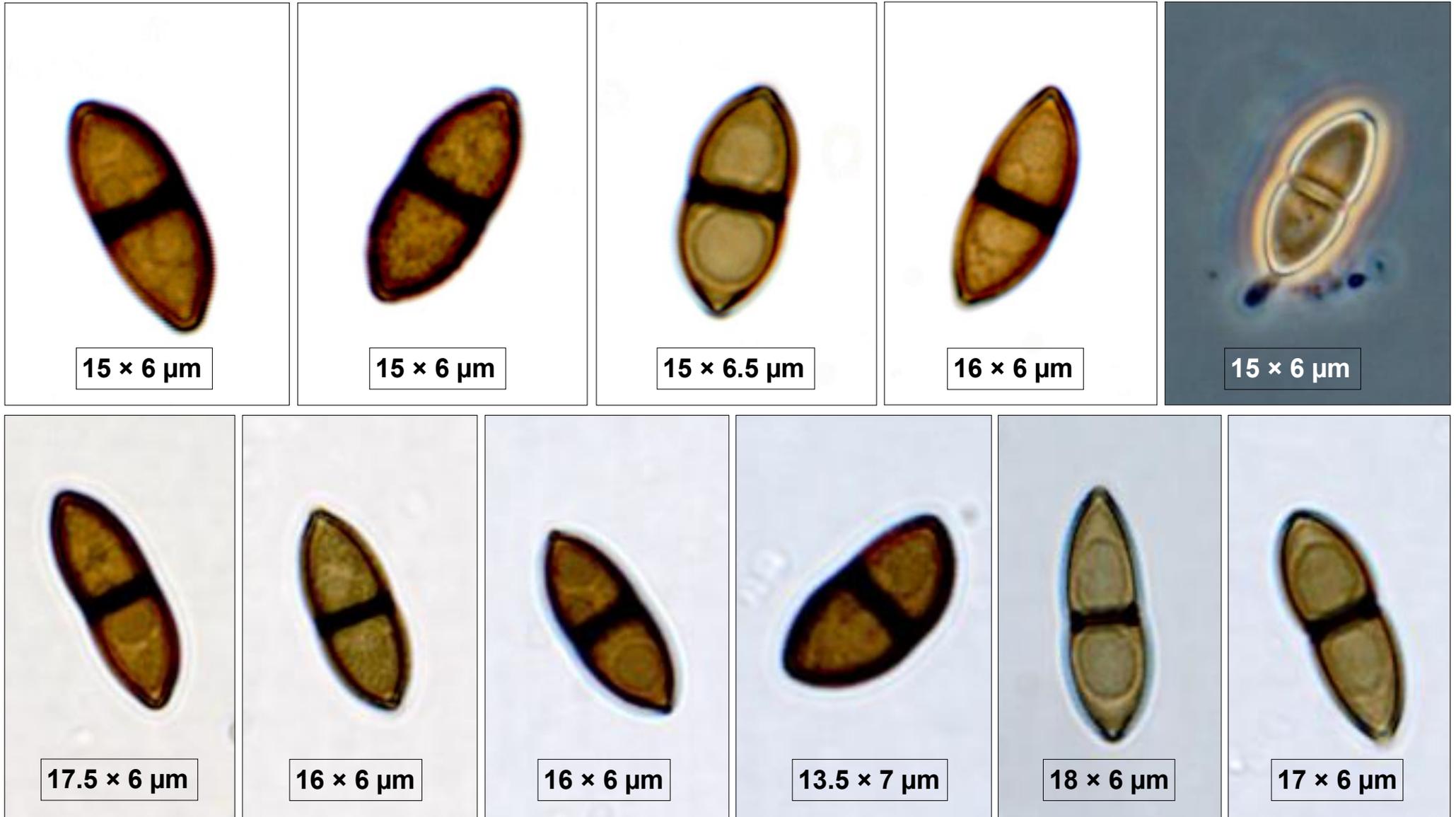
**Both photos** from fresh material in 2008.



Asci and ascospores from fresh material in 2008. All in SMF mounts using the X100 objective and brightfield microscopy. Note the biserially arranged 8-spored asci, the ascus apical ring (arrowed) and the 2-celled brown ascospores with their apical germ pores.



**Asci and ascospores. All from fresh material in 2008, mounted in SMF and using the X100 objective and brightfield microscopy (except the 2nd photo from the right which used phase). Noteworthy in the phase photo are its germ pores in the apical ascospore (solid-white arrowed) and ascus apical ring (dotted-white arrowed). The far-right ascus photo with its 3-septate ascospores was seen only once. It appeared to be a valid variant rather than an ascus from a separate species and, for that reason, I have included it here.**



***Porosphaerella setosa*. Ascospores in SMF mount, X100 objective. All brightfield except upper right which is phase to better show its germ tube. *Size differences shown aren't necessarily accurate – the measurements given are.* The photos and measurements were taken in 2008 from fresh material.**