

Annulohypoxylon bovei (Speg.) Y.-M. Ju, J.D. Rogers & H.-M. Hsieh AEB 1327 (= PDD 117265) – See Hsieh H-M, Ju Y-M & Rogers J.D. 2005. Molecular phylogeny of *Hypoxylon* and closely related genera. *Mycologia* 97(4): 844-865.

Collected by John Steel

Collection date: 25 May 2019

Collection site and substrate: growing on an old, but still solid, log in native beech (most likely *Nothofagus cliffortioides*) remnant forest beside the Clutha River near Beaumont, New Zealand.

Identified by: Dan Mahoney & John Steel

Voucher material: dried herbarium specimen AEB 1327 [two Shear's mounting fluid (SMF) semipermanent glass slides accompany the herbarium material]; several in situ dissecting scope photos of the stromatic ascomata and several compound scope photos of microscopic detail (in water, SMF & 10% KOH).

Dan's comments: Having made a number of slides, I'm unable to find any intact asci. However, the effete stromatic ascomata contain many free ascospores which I have examined and measured. Photos and their legends shown later in this pdf detail my observations. My 10% KOH treatment of a small pulvinate cluster of stromatic ascomata yielded only a dull faint yellow extractable pigment which did not change over time. I had little success in demonstrating ascospores with dehiscent perispores (in 10% KOH) that have a thickening at approx. 1/3 their length, but see 'H' in the final pdf photo plate. The next 2 pages are copied from Ju and Roger's online key to the Xylariaceae (last updated in 2002) - a valuable reference despite treating *Annulohypoxylon* species in the *Annulata* section of *Hypoxylon* and omitting more recently described species. Worth noting are the number of PDD New Zealand online collections included under a search for *Annulohypoxylon bovei* – 136 (the most common of the 291 *Annulohypoxylon* collections included there).


I have found the following publications on *Annulohypoxylon* particularly helpful in my identification:

- 1) Hsieh H-M, Ju Y-M & Rogers J.D. 2005. Molecular phylogeny of *Hypoxylon* and closely related genera. *Mycologia* 97(4): 844–865.
- 2) Fournier J., Lechat C. & Courtecuisse R. 2016. The genus *Annulohypoxylon* (Xylariaceae) in Guadeloupe and Martinique (FWI). *Ascomycete.org* 8(4): 127–156.
- 3) Kuhnert E, Sir EB, Lambert C, Hyde KD et al. 2017. Phylogenetic and chemotaxonomic resolution of the genus *Annulohypoxylon* (Xylariaceae) including four new species. *Fungal diversity* 85(1): 1–43. doi:10.1007/s13225-016-0377-6 **The most recent dichotomous key to world species is provided.**
- 4) Sir EB, Kuhnert E, Hladki AI & Romero AI. 2018. *Annulohypoxylon* (Hypoxylaceae) species from Argentina. *Darwiniana, nueva serie* 6(1): 68–83. **I have reproduced (later in this pdf) the portion which deals with *Annulohypoxylon bovei*, since its treatment of that species is most recent.**

Online reference:


[Xylariaceae: Home – Mycology
mycology.sinica.edu.tw/Xylariaceae/](http://mycology.sinica.edu.tw/Xylariaceae/)

Xylariaceae is one of the most commonly encountered groups... try our **KEY TO THE GENERA** ...



Please select characteristics below and press "Submit Query" button at bottom. To avoid the frustration of screening out everything, start with one or a few characteristics and, if necessary, come back to this page to select one or a few more characteristics each time. Then, press "Submit Query" button again.

KEY TO TAXA OF HYPOXYLON SECTION ANNULATA



[Home of Xylariaceae](#)

[Genus Hypoxylon](#)

[Accepted Taxa of Section Annulata](#)

[List of Names](#)

Comments and Questions:
[Jack D. Rogers](#)
[Yu-Ming Ju](#)
[Michael J. Adams](#)

Stromata	Shape	<input type="text"/>
	KOH Pigments	<input type="text"/>
	Surface Color	<input type="text"/>
	Thickness	<input type="text"/>
	Substrates	<input type="text"/>
Perithecia	Mounds	<input type="text"/>
	Ostiolar Disc Diameter	<input type="text" value="larger than 0.5 mm"/>
	Ostiolar Disc Rim	<input type="text"/>
Ascospores	Equality	<input type="text"/>
	Flatness	<input type="text"/>
	Epispore Ormentation	<input type="text"/>
	Length	<input type="text" value="11-13 µm"/>
Germ Slits	Morphology	<input type="text" value="less than to much less than spore-length"/>
	Position	<input type="text"/>
Perisporia	Dehiscence	<input type="text"/>

Comments and Questions:
[Jack D. Rogers](#)
[Yu-Ming Ju](#)
[Michael J. Adams](#)

Continued on the next page:

QUERY RESULTS

You have selected:

ostiolar disc diameter: larger than 0.5 mm
ascospore length: 11-13 µm
ascospore germ slit morphology: less than to much less than spore-length

You have got only one species left!

<i>H. bovei</i> Speg.
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Last updated 2002

TELEOMORPH | CULTURES AND ANAMORPH | SPECIMENS EXAMINED | NOTES

Hypoxylon bovei Speg., Bol. Acad. Nac. Ci. 11: 201. 1887.

= *Hypoxylon ophthalmidium* Mont. apud C. Gay, Fl. Chilena VII, p. 445. 1850; [nom. inval., ICBN Art. 34.1 (b)].

= ? *Hypoxylon annulatum* var. *patagoniensis* Henn., Öfvers. Förh. Kongl. Svenska Vetensk. Akad. 1900: 327. 1900.

Stromata pulvinate, containing fewer than ten perithecia, slightly constricted at base, with perithecial mounds inconspicuous to 1/3 exposed, 1-5 mm diam x 1 mm thick; surface dark brown, with olivaceous tone, usually granulose; blackish woody tissue immediately beneath surface, without apparent KOH-extractable pigments; the tissue below the perithecial layer inconspicuous.

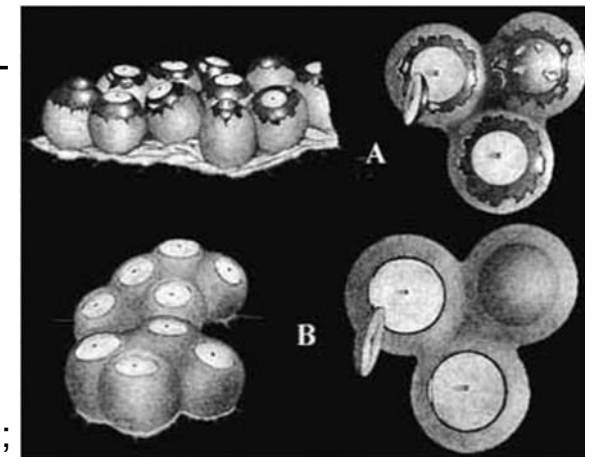
Perithecia spherical, 0.7-1 mm diam.

Ostioles papillate, encircled with a bovei-type disc 0.5-0.7 mm diam. **Bovei-type disc** formation differs from truncatum-type disc formation in having the outermost layer of stroma around ostioles dehisces abruptly. The bovei-type disc formation was described in detail by Tsuneda and Arita (1984).

Asci 170-200 µm total length x 8-9 µm broad, the spore-bearing parts 80-100 µm long, the stipes 70-105 µm long, with apical ring bluing in Melzer's iodine reagent, discoid, 1-1.5 µm high x 2.5-3 µm broad.

Ascospores brown to dark brown, unicellular, ellipsoid-inequilateral, with narrowly rounded ends, 10.5-13 (-14) x 5-6.5 µm, with **straight germ slit less than spore-length**; perispore dehiscent in 10% KOH, smooth; epispore smooth.

NOTES: *Hypoxylon bovei* is highly associated with *Nothofagus*. It probably is associated with *Nothofagus* throughout the range of the genus. The stromata are noteworthy in being restrictedly pulvinate and containing only a few perithecia. Miller (1961) separated *H. bovei* from other members of section *Annulata* with pulvinate stromata mainly by using the size of ostiolar discs, 0.7-1 mm diam. However, **our measurements of the ostiolar discs give a smaller range, 0.5-0.7 mm diam**, thus overlapping with that of *H. bovei* var. *microspora*.



A: *Hypoxylon nitens*. B: *H. bovei*.

Sir EB, Kuhnert E, Hladki AI & Romero AI. 2018. *Annulohypoxyton* (Hypoxyloaceae) species from Argentina. *Darwiniana*, nueva serie 6(1): 68–83.

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Annulohypoxyton bovei (Speg.) Y.M. Ju, J.D. Rogers & H.M. Hsieh, *Mycologia* 97(4): 857. 2005. Type: Argentina, Tierra del Fuego, Isla de los Estados, on *Fagus* sp. 1882, *Spegazzini s.n.* (holotype LPS 1707!). Figs. 3A–D, 6.

For teleomorph and anamorph descriptions, see Ju & Rogers (1996: 207, as *Hypoxyton bovei*). (My comment: This information is summarized online in the [Xylariaceae key online \(2002\)](#) by Rogers, Ju & Adams – portions of which were included on the preceding 2 pages.)

Distribution. Argentina, Australia, Chile, Indonesia, and New Zealand (Ju & Rogers, 1996).

Observations. *Annulohypoxyton bovei* is probably host-specific for *Nothofagus* Blume (Ju & Rogers, 1996). Its stromata are always pulvinate with only a few perithecia (Fig. 3A) and ostiolar discs with *bovei*-type dehiscence (Fig. 3B, C). The ascospores are ellipsoid-inequilateral with a central and short germ slit on the convex side (Fig. 3D).

The young stromata release Vinaceous Purple (101) pigments in contact with 10% KOH, but in mature stromata they are Fawn (87) or lacking. Kuhnert et al. (2017) reported the presence of daldinone A as chemotaxonomic marker for this species.

Page 75, Fig. 3. A–D. *Annulohypoxyton bovei*

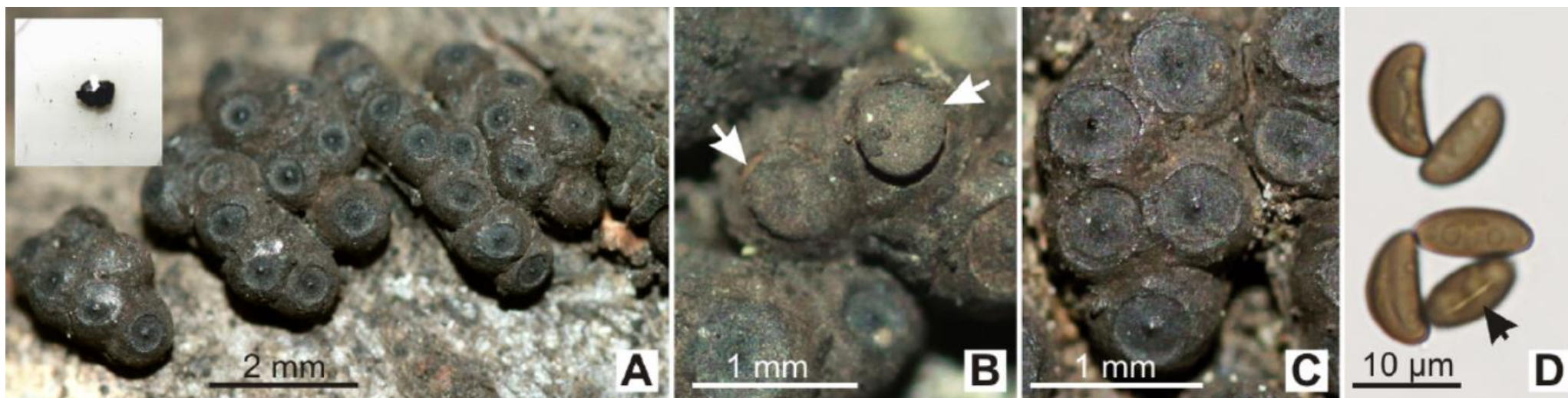
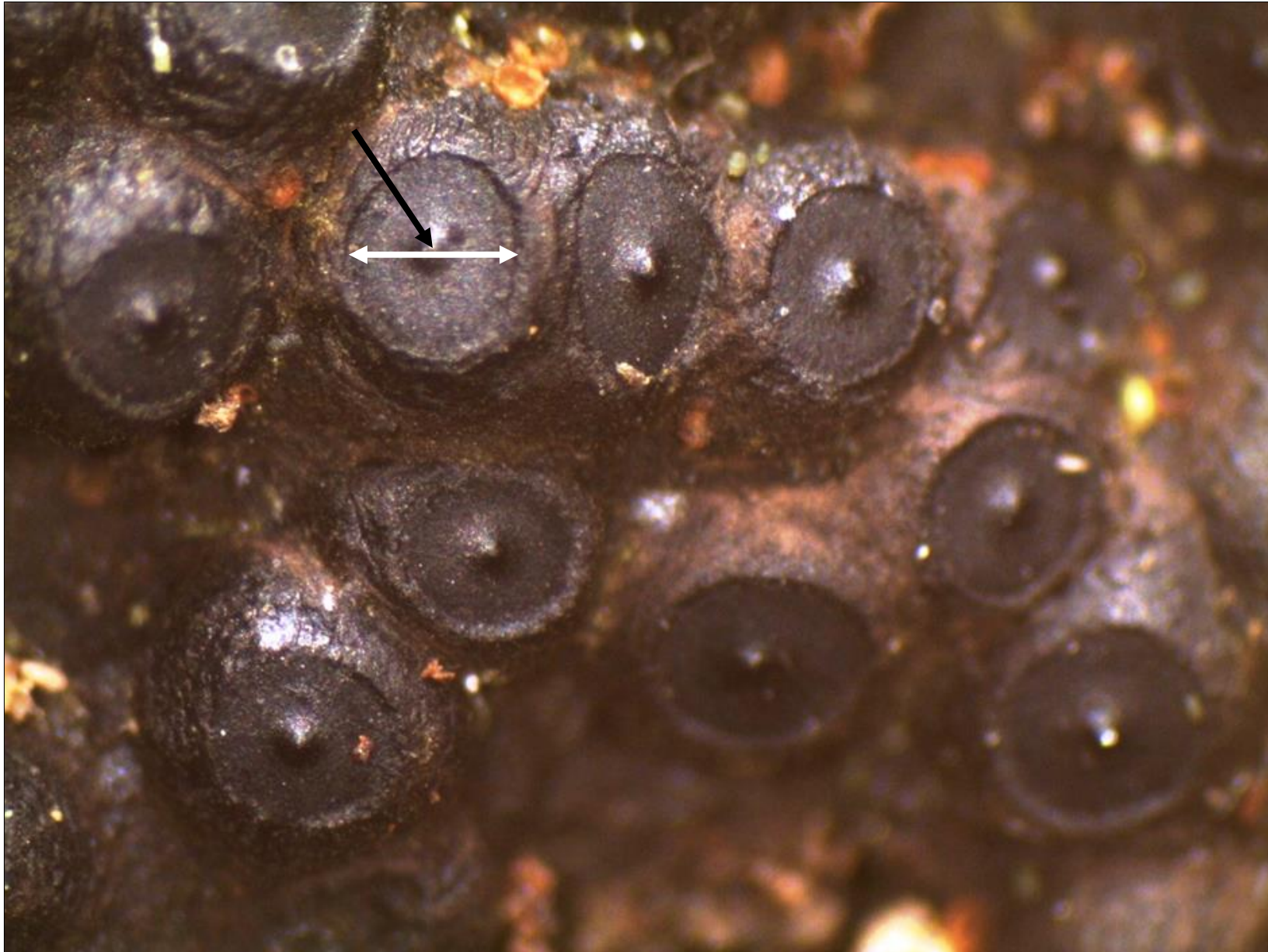


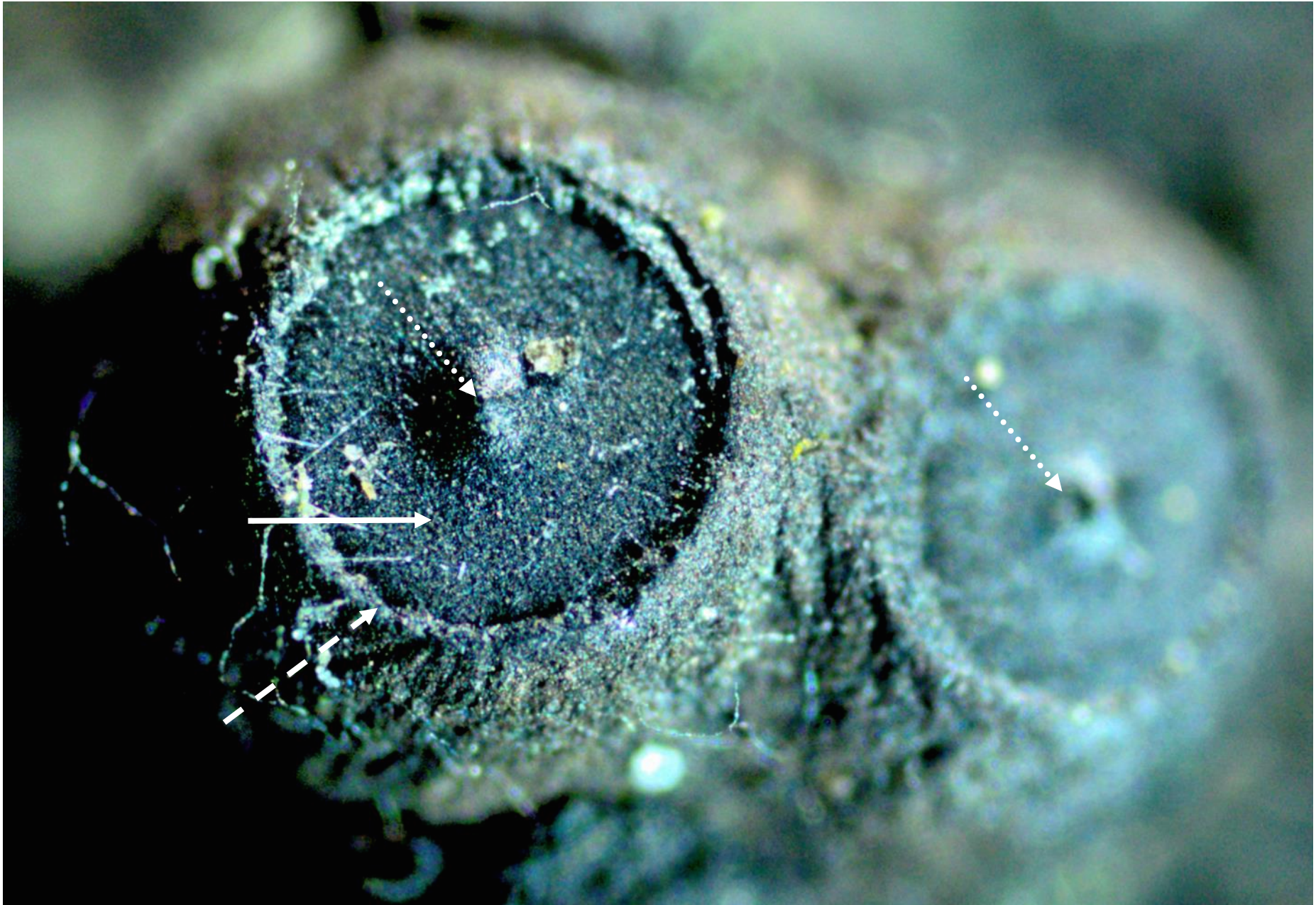
Fig. 3. A–D, *Annulohypoxyton bovei*. A, stromata on substrate and detail of a fragment in 10% KOH solution (inset). B, dehiscence of ostiolar discs (arrows). C, ostiolar discs. D, ascospores showing germ slit (arrow).



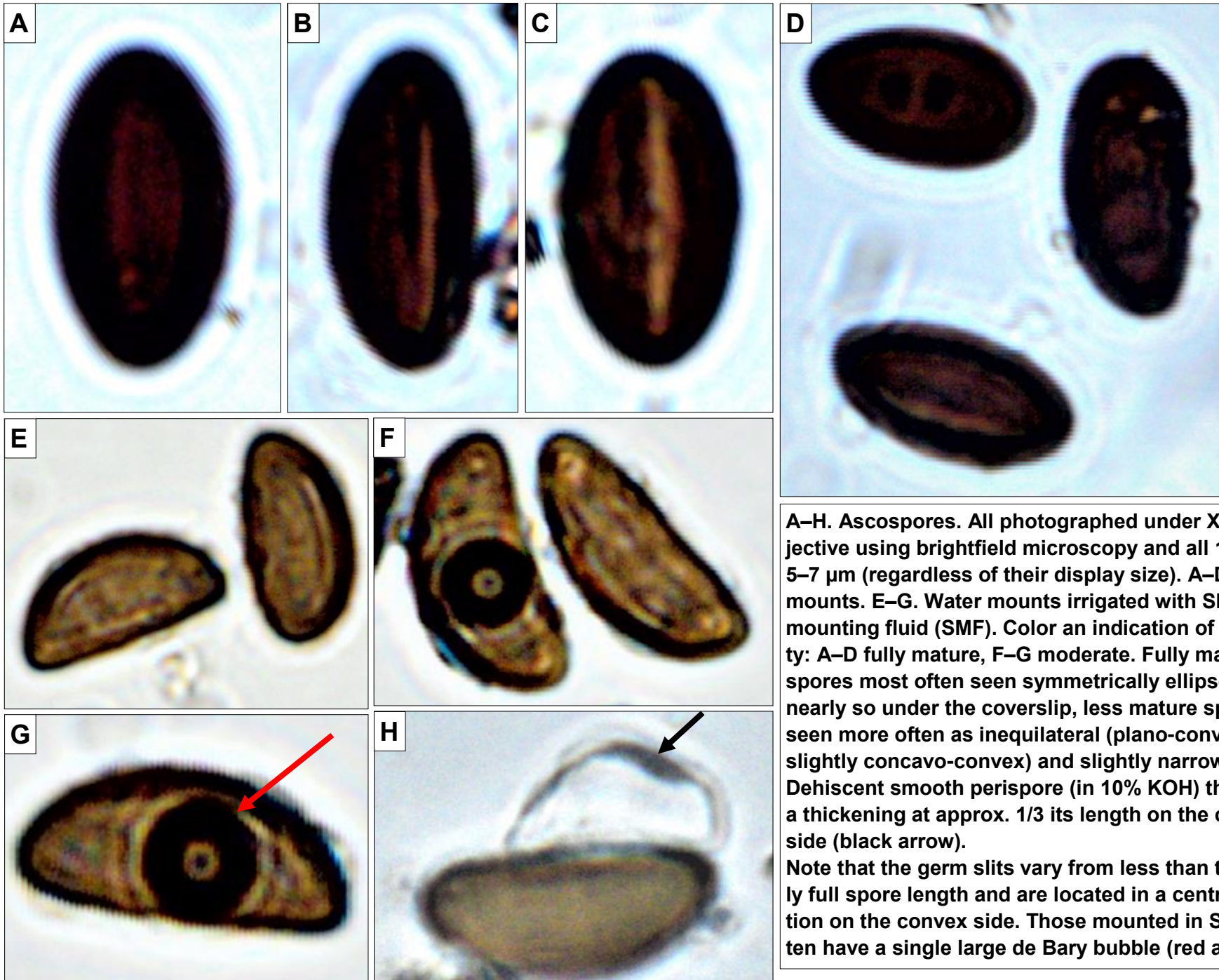
John Steel's dissection scope photo of variously mounded, but closely associated, stromata each containing relatively few spherical stromatic ascomata within which no asci were found. However, the ascomata often contained numerous free ascospores of varying maturity.



John Steel's dissecting scope closeup of stromatic ascomata from the previous page. Note the papillate ostiole (black arrow) encircled by a flat to slightly concave carbonaceous disc 0.6–0.8 mm in diameter (white arrow). These general characters are representative of what was once the *Annulata* section of the genus *Hypoxylon* but which is now the separate genus *Annulohypoxylon*.



Dan Mahoney's X4 objective direct view with an Olympus BX51 & DP25 camera of two stromatic ascomata. White arrows are the black granular disc (solid), its raised outer rim (dashed) and the papillate central ostiole (rounded dots).



A–H. Ascospores. All photographed under X100 objective using brightfield microscopy and all 11–13 × 5–7 μm (regardless of their display size). A–D. Water mounts. E–G. Water mounts irrigated with Shear's mounting fluid (SMF). Color an indication of maturity: A–D fully mature, F–G moderate. Fully mature spores most often seen symmetrically ellipsoid or nearly so under the coverslip, less mature spores seen more often as inequilateral (plano-convex to slightly concavo-convex) and slightly narrower. H. Dehiscent smooth perispore (in 10% KOH) that has a thickening at approx. 1/3 its length on the convex side (black arrow). Note that the germ slits vary from less than to nearly full spore length and are located in a central position on the convex side. Those mounted in SMF often have a single large de Bary bubble (red arrow).