

***Xylaria apiculata* Cooke – AEB 746 (= PDD 76453)**

Collection occasion and site: **Occasion:** 15th New Zealand Fungal Foray. **Site:** Urewara Nat. Pk. (as of 2014 a New Zealand protected area known as Te Urewera), Lake Waikaremoana. Along the Tawa Track which is an approx. 30 minute loop track.

Collection date: 10 May 2001

Substrate: dead tawa (*Beilschmiedia tawa*) bark

Collectors: Dan Mahoney, Ann Bell and Toni Atkinson

Identifier: Peter Johnston

Voucher material: Good dried herbarium material [AEB 746 (= PDD 76453)] accompanied by 2 Shear's mounting fluid (SMF) slides; Dan's various in-situ scanned projection slides of fresh stromata and microscopic detail; Dan's brief description & comments.

Brief description and comments:

STROMATA: sessile or with a short but distinct stalk. Unfortunately, I didn't measure the fertile portion or the stalk of the stroma, but I would say it was approx. 2–5 mm high (stalk included) by about 1–2 mm wide. The sterile interior portion of the stroma was white and the embedded perithecia black with their numerous ascospores. The approx. 10–20 perithecia could be seen as swellings along the flanks of the stroma. The outermost portion of the stroma was dark and was clothed with a layer that seemed to cover it like the closely overlapping outer leaves of a cabbage but leaving the narrower, often apiculate apex and region just below it bare. **ASCI:** numerous with 8 uniseriate to obliquely uniseriate ascospores, a reasonably long stalk and an apex whose elongate ring (approx. $5 \times 3 \mu\text{m}$) stained beautifully blue in Melzer's reagent. The single ascus measured was $175 \times 12 \mu\text{m}$. **PARAPHYSES:** present but not characterized. **ASCOSPORES:** one-celled, dark brown, smooth, asymmetric fusoid-ellipsoid (plano-convex) in side view and symmetric fusoid-ellipsoid in face view tapering toward each narrowly rounded apex, with a narrow germ slit running the length of the spore on its flattened side, a single deBary bubble present when mounted in Melzer's. Ascospores $19\text{--}21 \times 7\text{--}8 \mu\text{m}$ ($n=10$), sizes fairly uniform among the thousands of spores.

Portions of primary reference and number of PDD collections in New Zealand – on this page and the next
Rogers J.D. and Samuels G.J. 1986. Ascomycetes of New Zealand 8: *Xylaria*. New Zealand Journal of Botany 24(4): 615–650.

Groups of *Xylaria* species from New Zealand A–G, Group C, p. 616

C. Stromata with peeling or flaking greyish to brownish outer layer, the remnants persisting as conspicuous plates or shreds in some species or not noticeably persisting in other species. Stromatal tips often attenuated acute, sterile. Ostioles umbilicate, usually obscure, or slightly raised--X, *apiculata*, *X. arbuscula*, *X. palmicola*, *X. schreuderiana*, *X. zealandica*.

GROUP KEYS TO SPECIES OF *XYLARIA* FROM NEW ZEALAND, Group C, p. 617

1 Ascospores 18–25 µm long. Stromata usually roughened by dehiscent outer layer

.....2

Ascospore size range larger or smaller. Shredding layer on stroma

usually not conspicuous3

2 Ascospores 18–22 µm with germ slit somewhat less than spore length. Stromata 2–4 mm high, with a few prominent perithecia

.....**X. schreuderiana**

Ascospores 20–25 µm with germ slit slightly or conspicuously less than spore length. Stromata cylindric-clavate to conic, up to 6 cm high, with perithecial outlines usually not pronounced **X. apiculata**

3 Ascospores 23–28 µm, otherwise much like *X. apiculata* (2, above)

..... **X. zealandica**

Ascospores usually not longer than 17 µm.....4

4 Ascospores 13–16 µm. Much like *X. apiculata* (2 above), but not usually roughened by the remnants of a dehiscing outer layer and surface often cinereous. Not noticeably associated with palms **X. arbuscula**

Ascospores 10–13 µm. Stroma surface blackish, not cinereous; arising from palm

seeds **X. palmicola**

Continued on the next page

DESCRIPTION OF TAXON pp. 617, 628

Xylaria apiculata Cooke, *Grevillea* 8: 66. 1897

Stromata gregarious and sometimes fasciculate to solitary and scattered, unbranched, dichotomously branched, or palmately branched, 1–4(–6) cm long; tip at first conidiogenous. Fertile portion subapical, cylindrical in section, 1–2(–5) cm long × 2–3 mm diam., rounded or apiculate at apex, apiculus 2–3 mm long; at first brown and with brown hairs, later hairs not evident and brown tissue splitting longitudinally; perithecia completely immersed, 400–1000 µm diam., ostioles umbilicate, difficult to see. Internal tissue of stroma white, solid. Stipe sharply delimited from fertile portion, wiry, 1–1.5(–2) mm diam.; at first with stiff, erect, setose, brown hyphal hairs; hairs not evident on old material.

Asci 229–280 µm total length × (5–)7–9(–10) µm, sporiferous part 120–180 µm, cylindrical; 8-spored, apical ring J +, cylindrical, (3.5–)4–5 µm high × 3–4(–5) µm wide; ascospores uniseriate with overlapping ends.

Ascospores (16.0–)20.0–24.5(–30.0) × (5.0–)6.7–8.0(–9.0) µm, inequilateral with one side flat to concave and the other side curved, elliptical in top view; one-celled or occasionally with an inconspicuous cellular appendage (primary appendage) on one end, transparent brown; slit somewhat less than full length or full length, parallel to long axis of ascospore or slightly undulate.

PDD collections (from a search for '*Xylaria*' in the Systematics Collections Data on 26 October 2023)

593 records:

Most recorded – *X. castorea* with 131±

2nd most recorded – *Xylaria* sp. 102±

X. apiculata – 68±

X. arbuscula – 26±

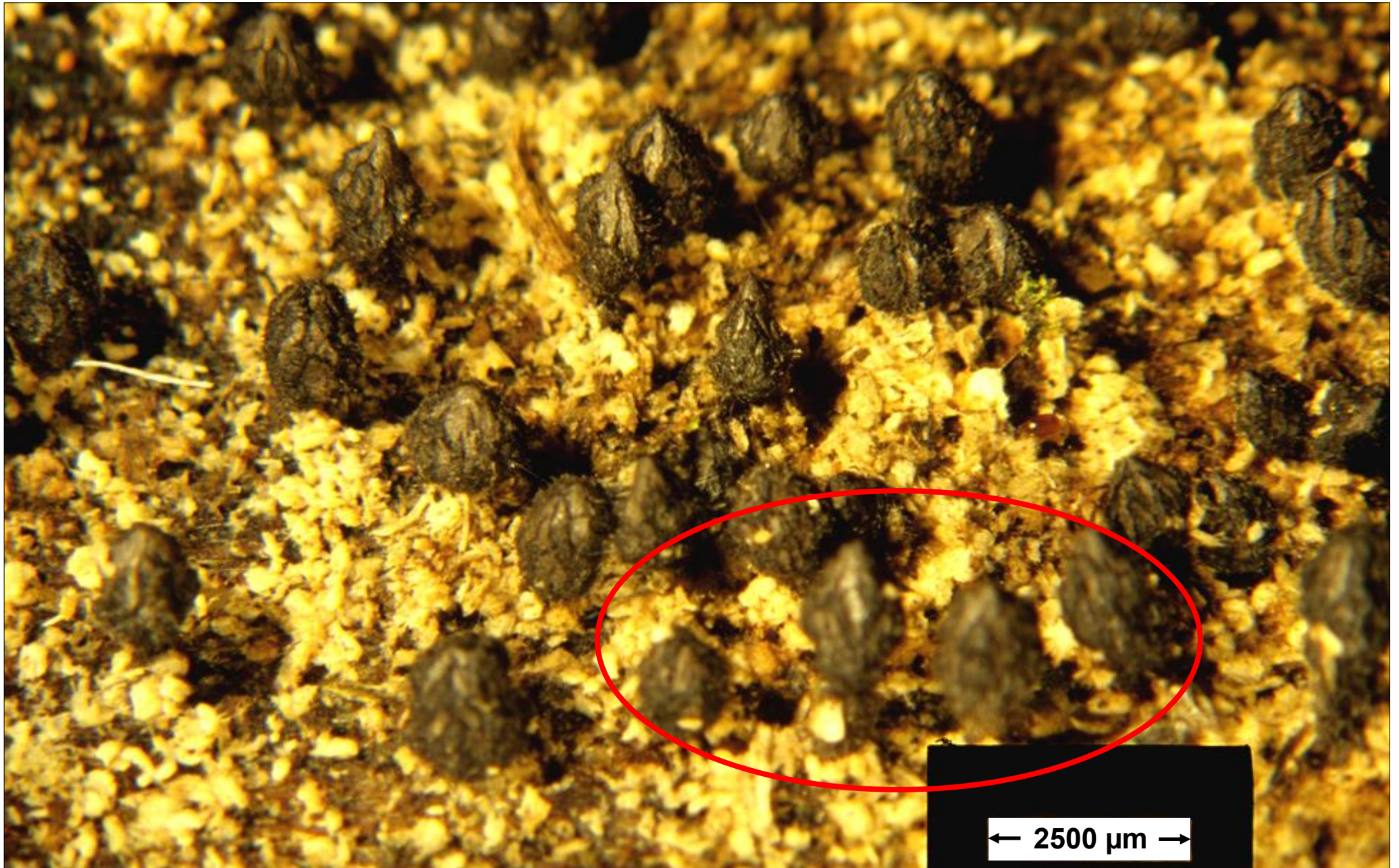
X. schreuderiana – 28±

X. palmicola – 4±

X. zealandiae – 1±



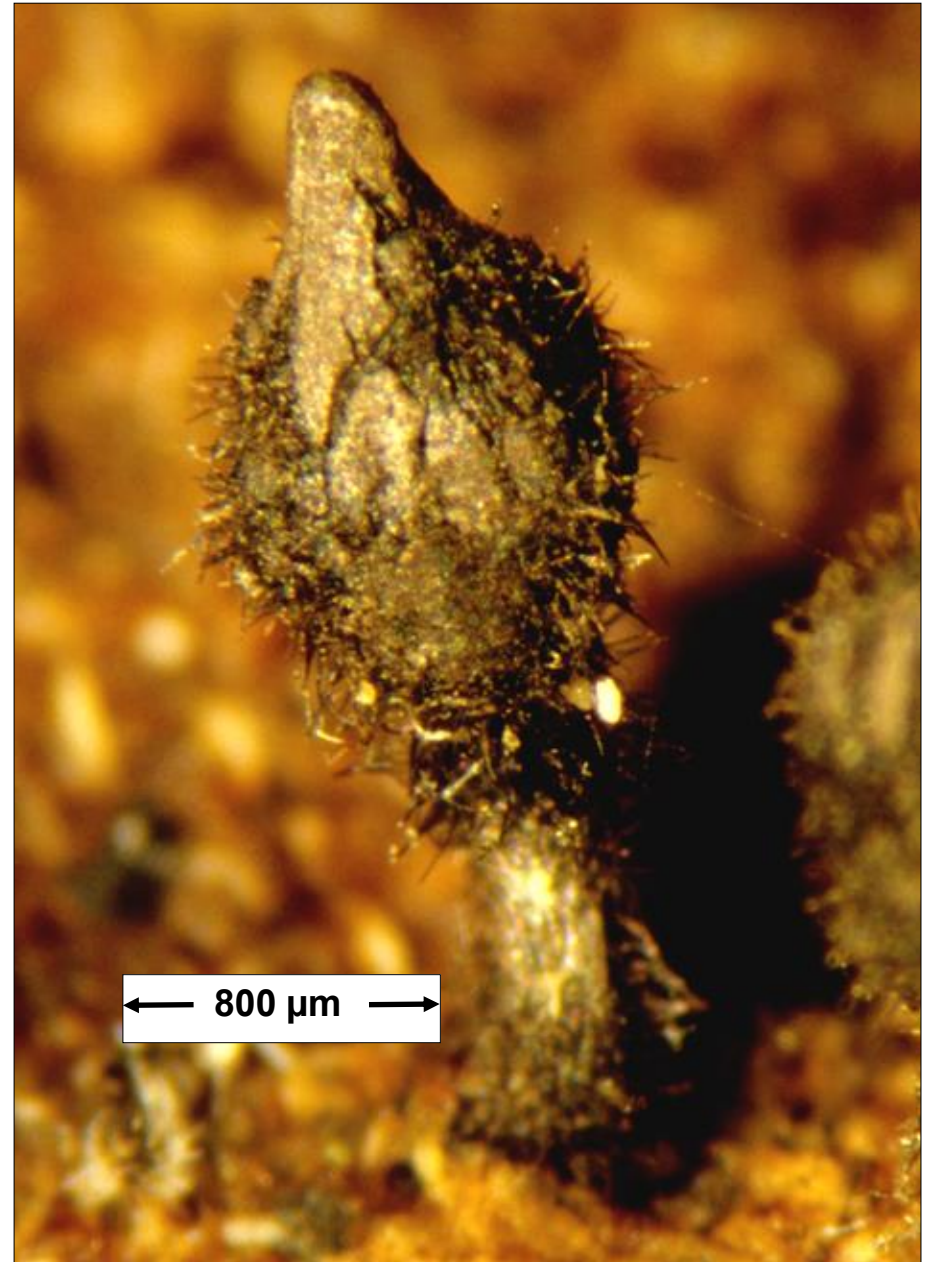
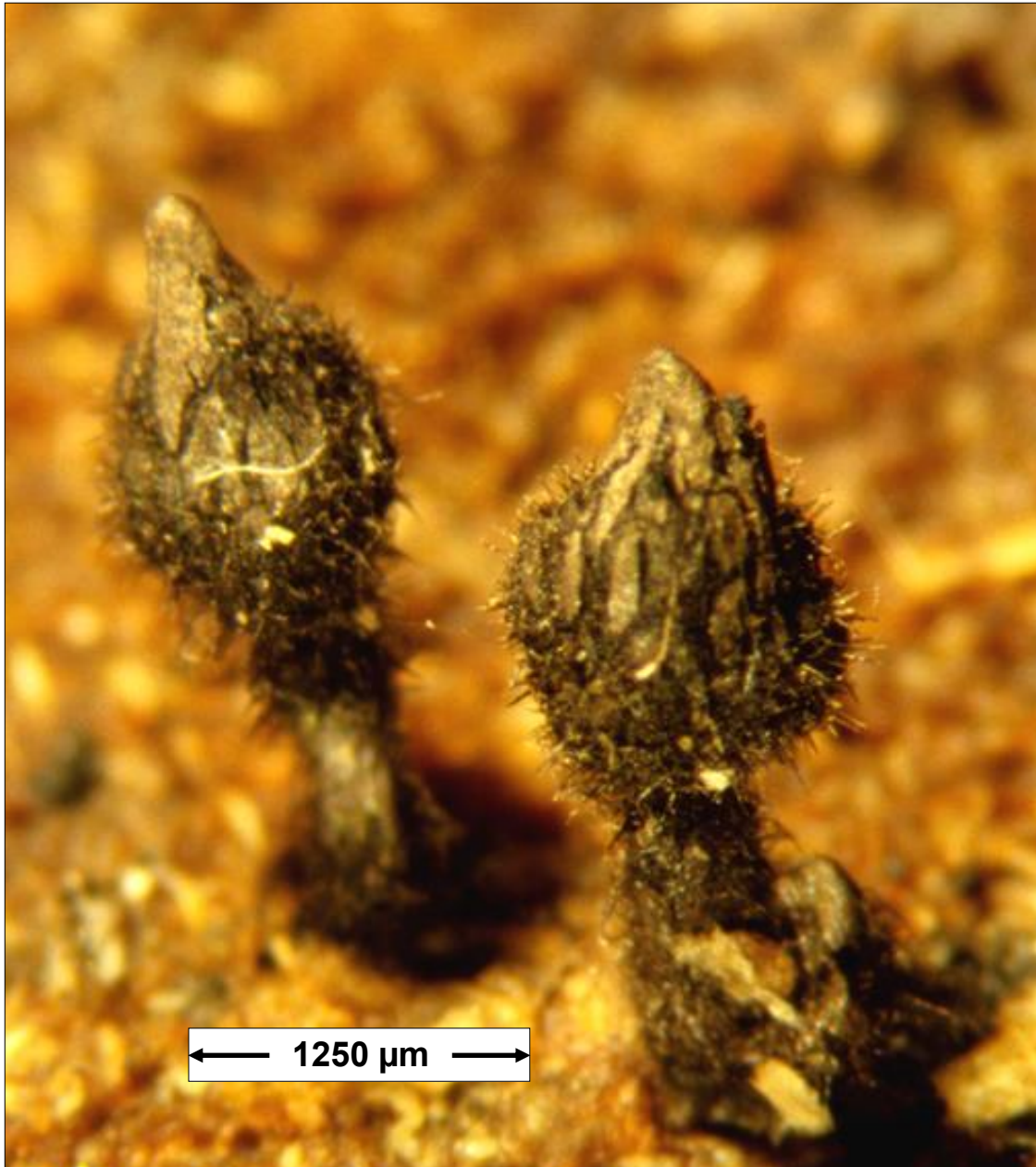
Left: *Xylaria arbuscula* PDD 120026 (= AEB 1358) stroma with obvious perithecial openings (arrowed). Right: *Xylaria apiculata* PDD 76453 (AEB 746) stroma. Here the perithecial openings are obscured since its perithecia are more immersed than those of *X. arbuscula* with ostioles umbilicate and difficult to see, especially with the overlying stroma cover that is not present in *X. arbuscula*.



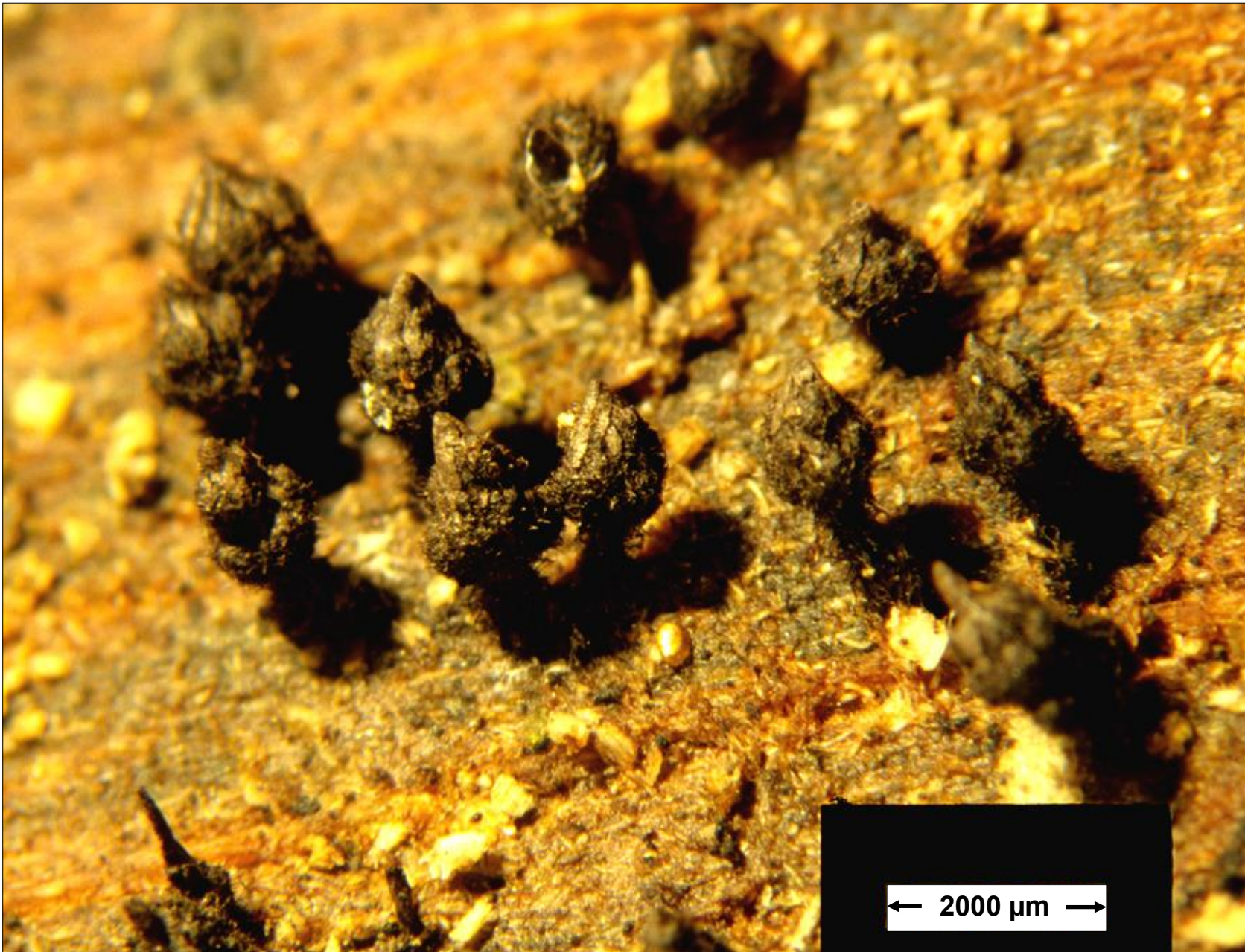
In-situ view of fresh *Xylaria apiculata* stromata on the inner bark of a downed dead tawa trunk. What stalks may be present are less visible in this overhead view and many may be sunken in the bark. See a closeup (outlined in red) on the next page.



In-situ view of the fresh *Xylaria apiculata* stromata outlined in red on the previous page. Here they are seen more highly magnified and in more of a side view with their stalks apparent. Note that the stromata are roughened by a spiny over-lapping leaf-like outer layer (reminiscent of asparagus – see photo insert) with their apiculate uppermost portion largely free of this roughened spiny covering.



Another in-situ view of fresh *Xylaria apiculata* stromata on the inner bark of a downed dead tawa trunk. These photos better show a side view of stalked stromata. The photo on the right represents a better enlarged view of the left stroma in the left photo.



An in-situ view of fresh *Xylaria apiculata* stromata on the inner bark of a downed dead tawa trunk. This photo features stomata of different shapes than most in this collection. Note the broader, often irregularly swollen stromata.



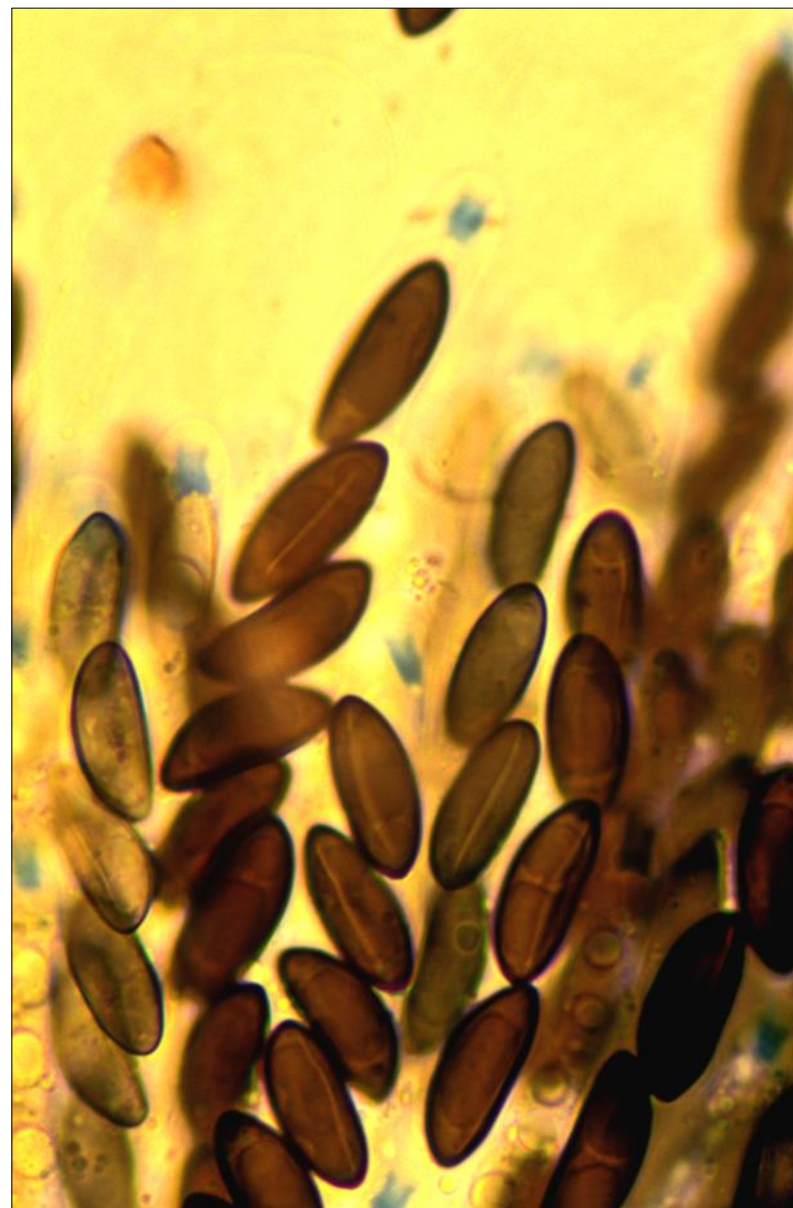
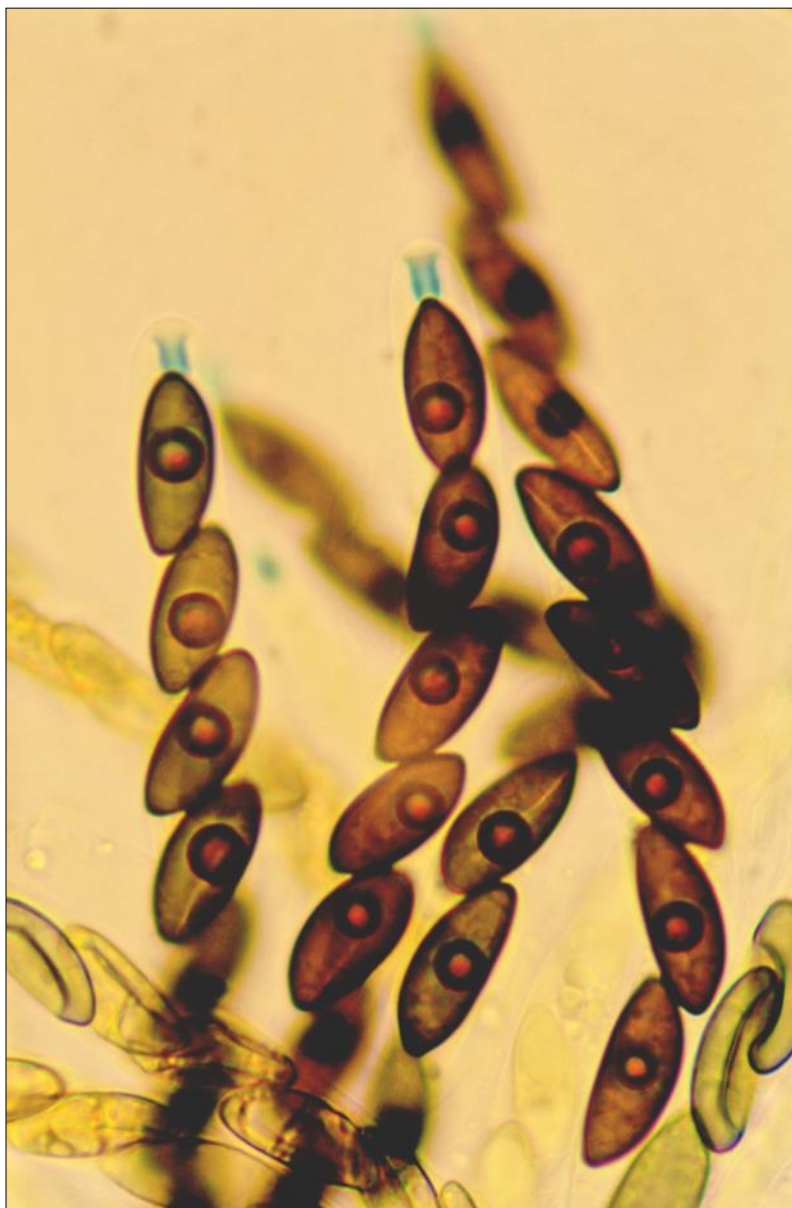
An in-situ view of fresh *Xylaria apiculata* stromata on the outer bark of a downed dead tawa trunk. Here the exposure to light has resulted in the stromata forming among moss while all earlier photos were taken from the dark inner bark and lacked moss.



Left photo: a 2001 fresh nearly sessile stroma sliced vertically – shown under a dissecting microscope. Note the white middle tissue and especially the globular black perithecia that line its periphery. Right 2 photos of asci and ascospores: the same field of view, brightfield and phase microscopy – shown under a compound microscope, X112, using a Melzers-SMF heated slide mount. Far right mature ascus $175 \times 12 \mu\text{m}$, phase-view apical bluing barely visible.



Photo taken in 2001 of *Xylaria apiculata* asci, ascospores & paraphyses X112, phase, using a Melzers-SMF heated slide mount. Note the stages of ascus development as they emerge from the lower-right 'tangle'.



2001 photos of asci and ascospores seen X280, brightfield under a compound microscope. Left photo using a Melzer's unheated slide mount. Note the vertically elongate apical bluing of the ascus and the deBary bubbles in the ascospores. Right photo using a Melzer's-SMF heated slide. Here the ascus apical bluing is less representative and no deBary bubbles are present. In both photos note the ascospore arrangement in the asci, their color, shape and the nearly full-length longitudinal germ slits.

***Xylaria apiculata* AEB 746 (= PDD 76453)**
Photo from the original 2001 SMF slide, X40
objective & brightfield microscopy. Note the
ascospore shapes, colors and positions of
the longitudinal germ slits.





***Xylaria apiculata* AEB 746 (= PDD 76453) Photos from original 2001 SMF slide, X40 objective & brightfield microscopy. Note the ascospore shapes, colors & positions of the longitudinal germ slits. Phase & brightfield views resp.**