**AEB 1173 (= PDD 102615)**
***Chaetosphaeria ellisii* (M.E. Barr) Huhndorf & F.A. Fernández – a reasonably good match. With abundant scattered perithecial setae - some within the species range but others longer and in the lowermost portion of the *C. raciborskii* range. Ascospores in the upper portion of the *C. ellisii* range but occasionally longer and within the *C. raciborskii* range. A beautiful collection!**

**Substrate:** inner side of dead *Populus* bark from a downed dead *Populus* tree trunk

**Collection site:** Behind and to the left of the privy behind cabin #4 in the USDA Forest Service Summer lease lot group on Snowbank Lake, Lake County, approx. 22 miles NE of Ely, MN

**Collection date:** 12 August 2011

**Collector:** Ann Bell

**Identifier:** Dan Mahoney

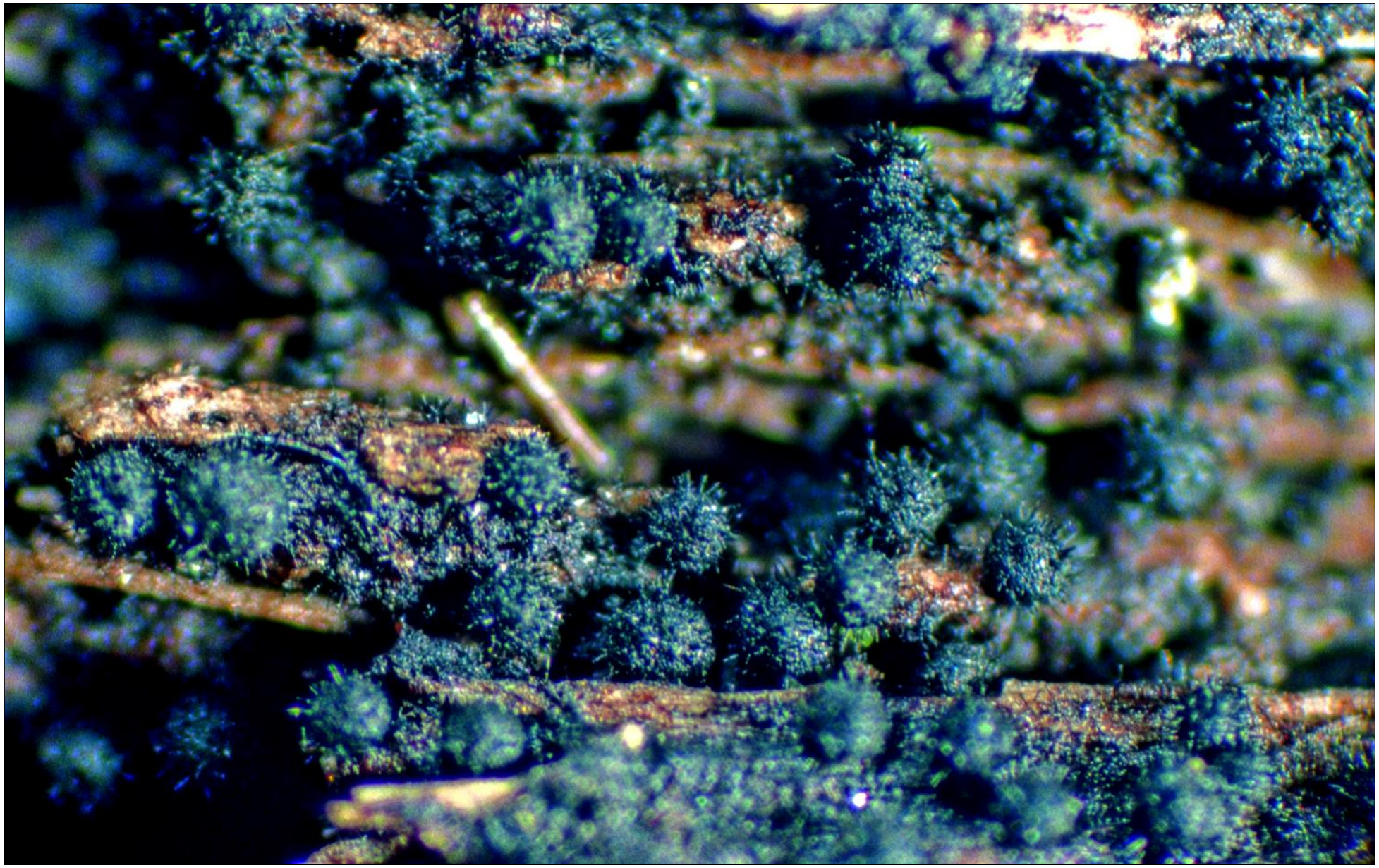
**Voucher materials:** Dried herbarium specimen accompanied by 3 Shear's mounting fluid (SMF) microscope slides; a couple of dissecting scope photos of in-situ perithecia and compound scope photos of microscopic detail; Dan's description of AEB 1173. A species of *Helicoma* was also common among the perithecia but most of its conidiophores had lost their conidia.

**Description of AEB 1173 on the next page**

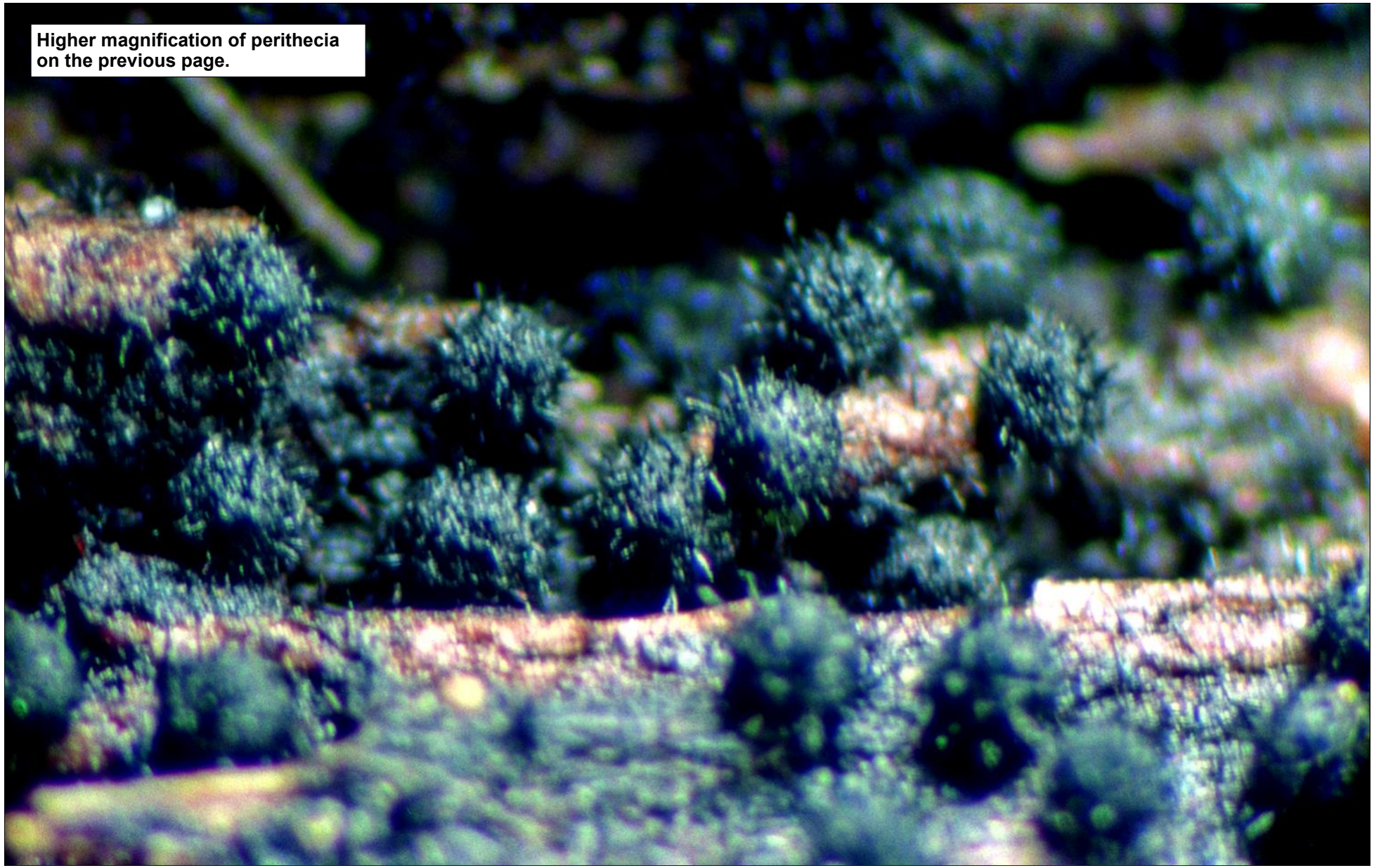
**Description of AEB 1173:**

**Perithecia** numerous, superficial, clustered to separate, black, with abundant dark pointed setae scattered over the entire peridium (and sometimes more numerous near the ostiole). Some bark surface areas among the mature perithecia were blackish (a subiculum of sorts?) and in this 'subiculum' were seen tiny ascomata (young or aborted?, non-sporulating and with or without spinose outgrowths). **Setae** dark yellow brown to blackish, simple, thick-walled, 0–1(–2) septate (septa often difficult to see due to the dark pigment), tapering from a broad base to a pointed apex, mostly 30–65 × 5 µm (mid-length width), swollen (up to 10 µm) at the base (n=10). **Outer peridium** a thin layer of globular cells (not very obvious), **middle peridium** thickest, a brown layer of prosenchyma (textura intricata) and the **innermost peridium** of lightly pigmented, more flattened pseudoparenchyma (of regular to irregularly shaped cells). **Paraphyses** abundant, equal to & somewhat longer than the asci, simple, septate, hyaline, tapering somewhat apically to a rounded apex. **Asci** cylindrically clavate, widest in the middle portions, with a small non-amyloid apical ring. **Ascospores** 8 per ascus, arranged triseriately to quadraseriately, filiform with the apical portion somewhat broader than the basal portion, hyaline, usually curving, with 7 more clearly seen transverse septa and often 8, 9 (or perhaps more). The vacuolar nature of many ascospores made it difficult to determine septal number. When present, additional septa seemed to form especially near the apices. Of various lengths but 10 of the typical mid to larger spores measured 60–80(–92.5) × 2.5 µm (width at widest point in the apical portion). Germination seen once as a long simple germ tube from the basal cell.

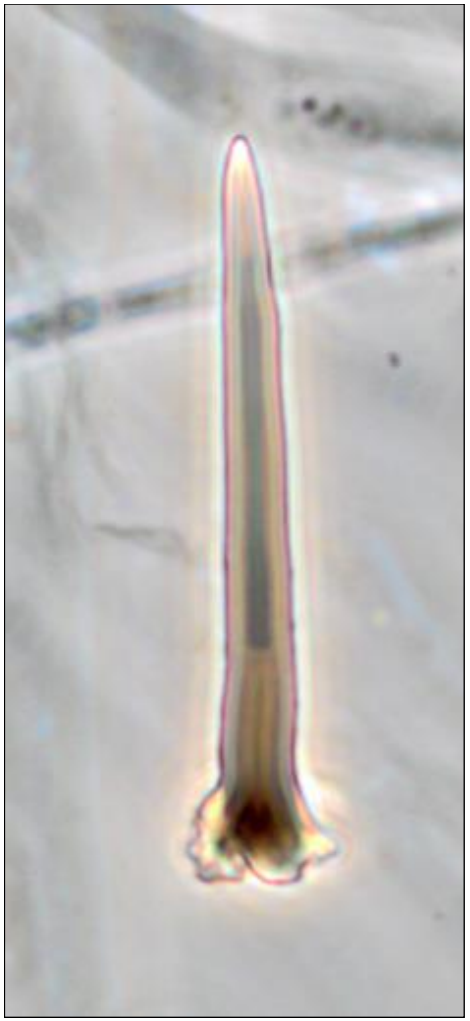
A yellow-brown stalked hyphomycete with hyaline conidia was also present. Later examination revealed that the hyphomycete was a species of *Helicoma* (in the *Helicoma* Section of the genus). The *Helicoma* was common but most of the conidia had been dislodged – although a few were still attached (see photos).



***Chaetosphaeria ellisii* 12 August 2011. In-situ perithecia on dead *Populus* bark.**

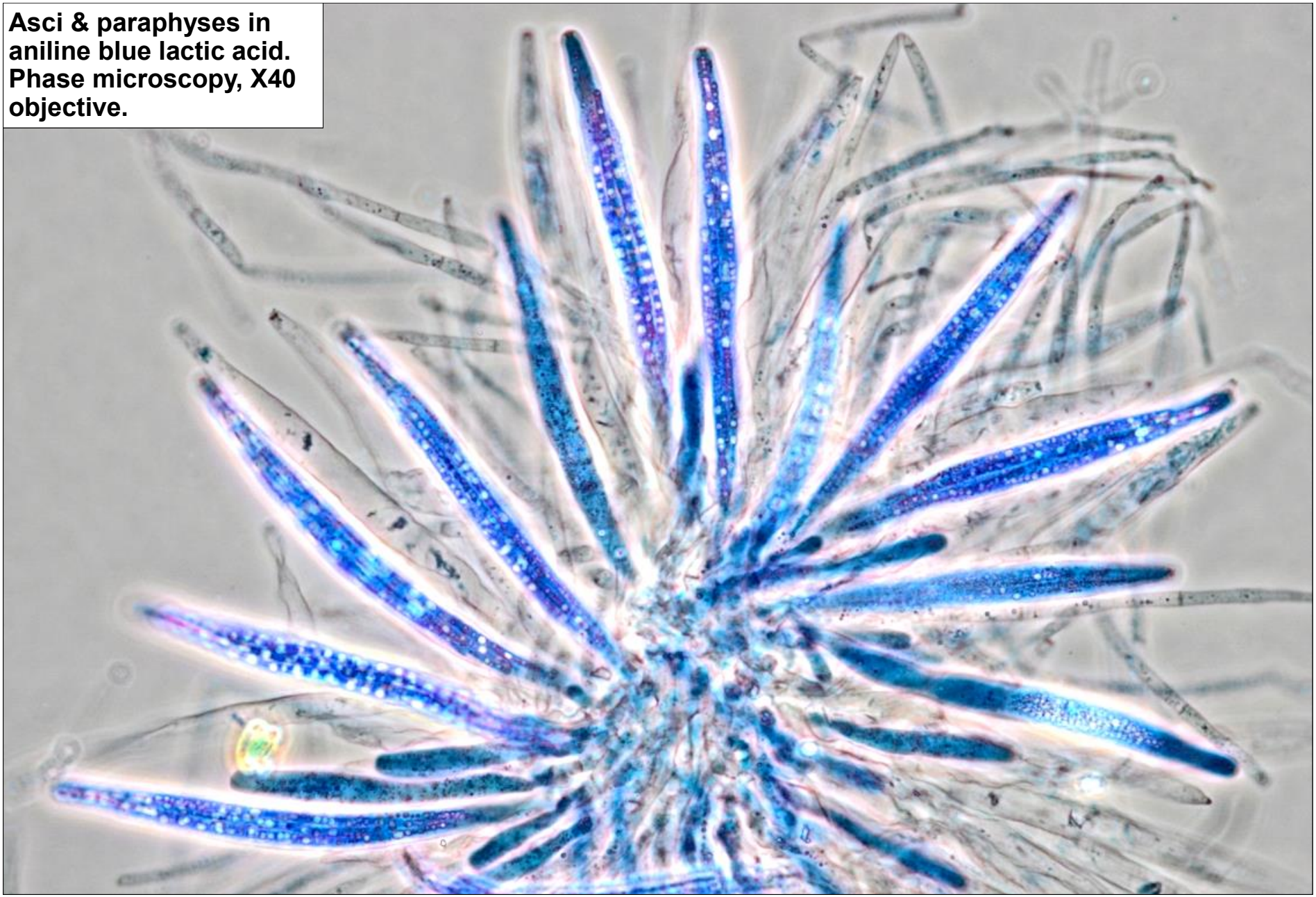



***Chaetosphaeria ellisii* 12 August 2011. In situ perithecia on dead *Populus* bark.**



***Chaetosphaeria ellisii*. Seta 50 × 5 µm. X40 objective, cropped & enlarged. Melzer's mount, phase microscopy.**

**Asci & paraphyses in aniline blue lactic acid. Phase microscopy, X40 objective.**



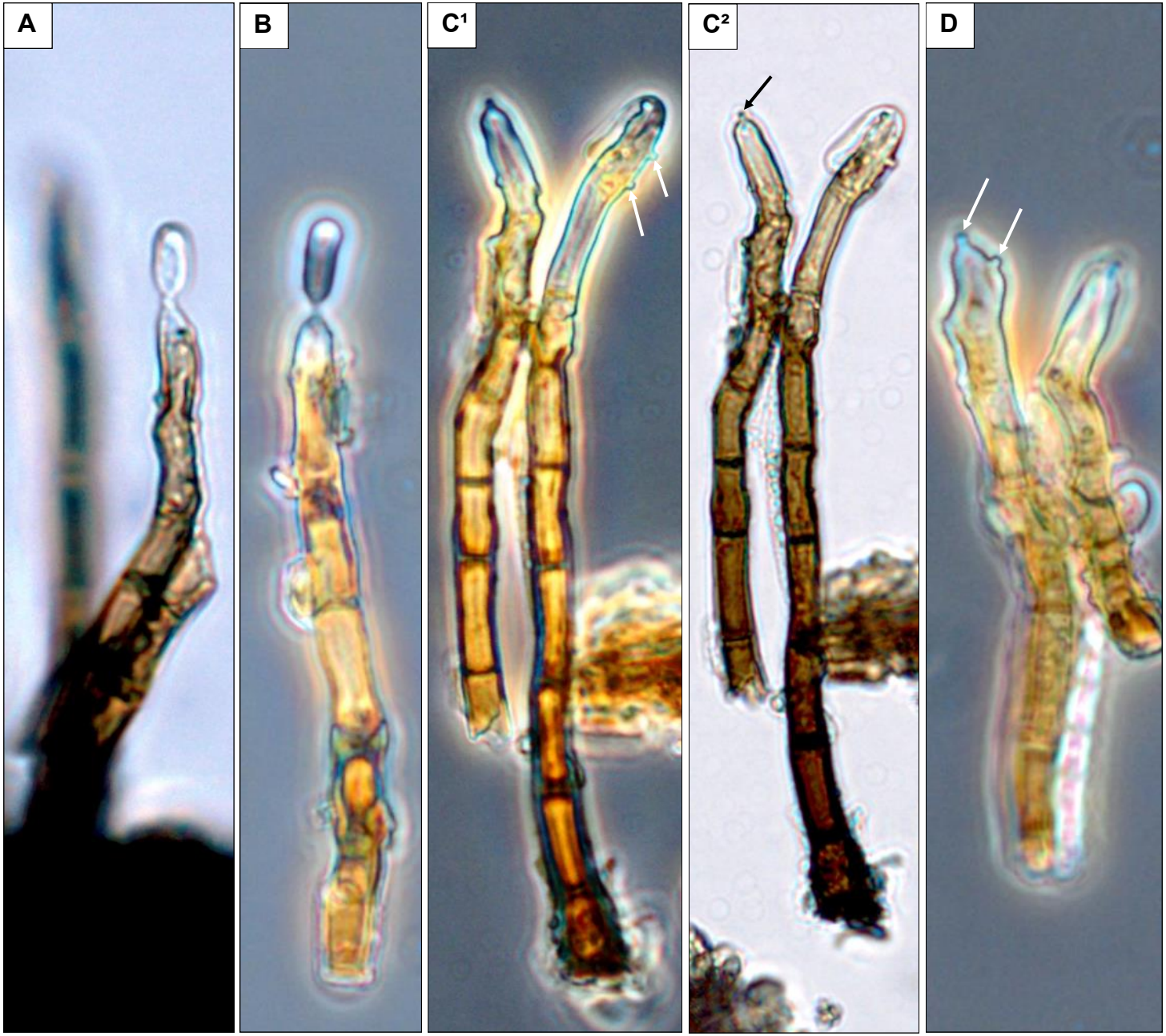

A–E. All phase microscopy. A–C. Asci with filiform ascospores arranged triseriately to quadraseriately, X100 objective. Note apical rings & vacuolated spores in A & C but not in B. A. aniline blue lactic acid. B–C. Melzer's reagent. D–E. X40 obj., SMF mounts. D. Ascus tips with apical rings. E. Paraphyses.


**Ascospores. A & B. X40 objective, SMF mt., nonvacuolated ascospores. A. 7-septate, 70 × 2.5 µm. B. 9-septate, 77.5 × 2.5 µm. C. X100 obj., Melzer's reagent mt., vacuolated ascospore, 67 × 2.5 µm. Septa are difficult to discern clearly in vacuolated ascospores.**

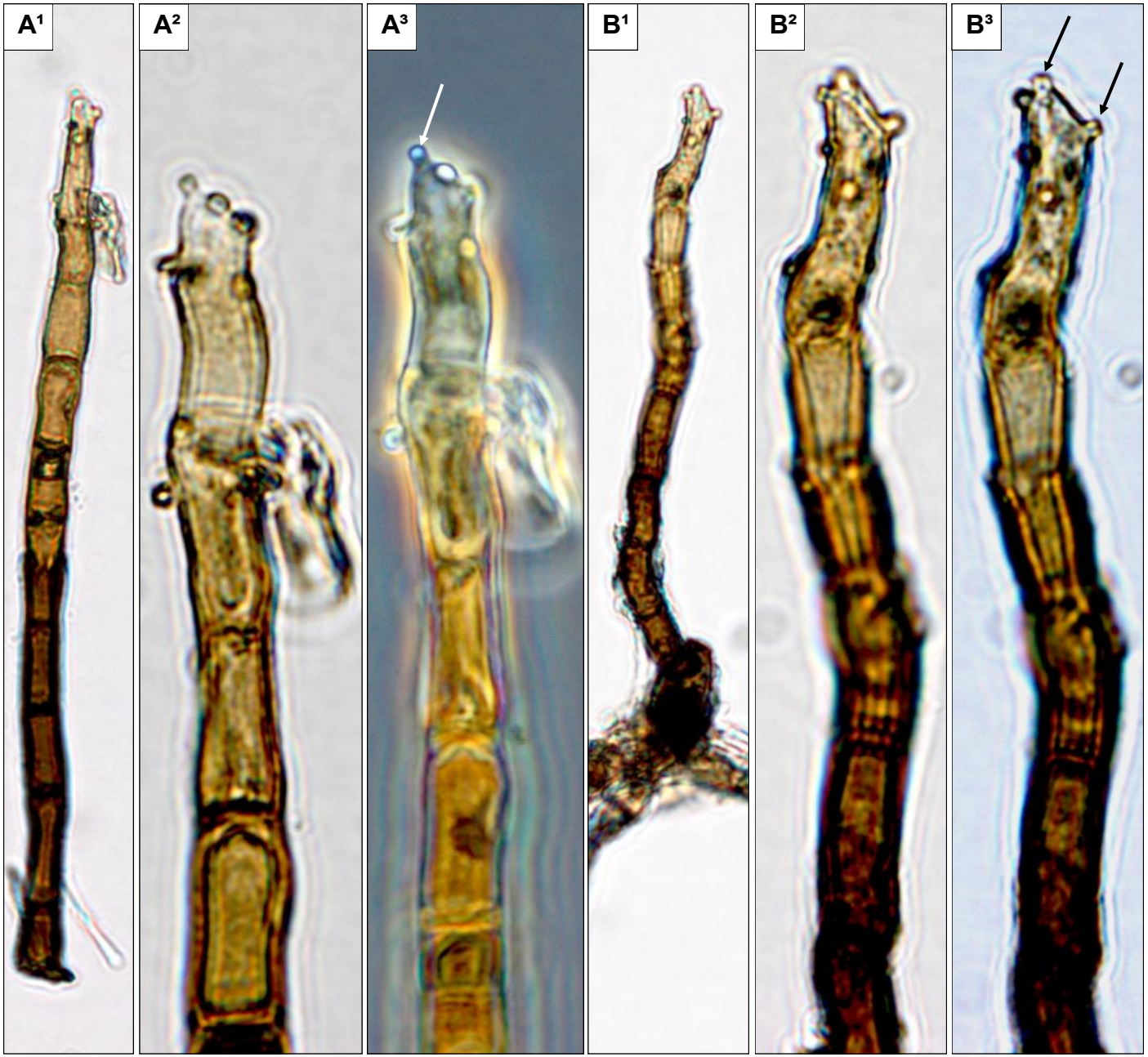
**AEB 1173**
***Helicoma* sp. – Found commonly among perithecia of the herbarium specimen *Chaetosphaeria ellisii* AEB 1173. A good match to the *Helicoma* section of the genus.**

**Brief description:**
Besides the numerous perithecia of *Chaetosphaeria ellisii* on the wood, a yellow-brown to darker brown stalked *Helicoma* with hyaline to lightly pigmented conidia was also present. The *Helicoma* was common but most of the conidia had been dislodged – although a few were still attached (see photos). What I saw initially was an early stage in the formation of the conidium – then elongate and not heliocosporous. **Conidiophores** were simple, thin & reasonably tall, smooth, & septate for most of their length and brown, but becoming more lightly pigmented to nearly hyaline in the sporogenous zone at their tips. Including this zone, conidiophores measured 75–135 × 5 µm (n=10). **Sporogenous zone** only slightly narrower than the pigmented portion of the conidiophore with the first denticle appearing apically and then being displaced laterally as the sporogenous zone underwent sympodial growth to produce another denticle apically (and so forth). **Denticles** were reasonably conspicuous, short and truncate apically where the conidium had broken schizolytically from them. The dry globular **Conidia** were initially elongate but became helicosporous with the planate conidial filament coiling tightly 1½ to 1¾ turns and having a narrower truncation at the base where the break with the denticle occurred. Conidia were hyaline but became slightly pigmented (faintly brownish) upon release and were initially 3–4 septate but became more septate after release and aging (8–12 septate). Measurements varied with maturity from 7–17.5 × 5–14 µm. Unfortunately, few conidia were observed so I'm unable to give a clearer picture of the septation and size that is most representative.

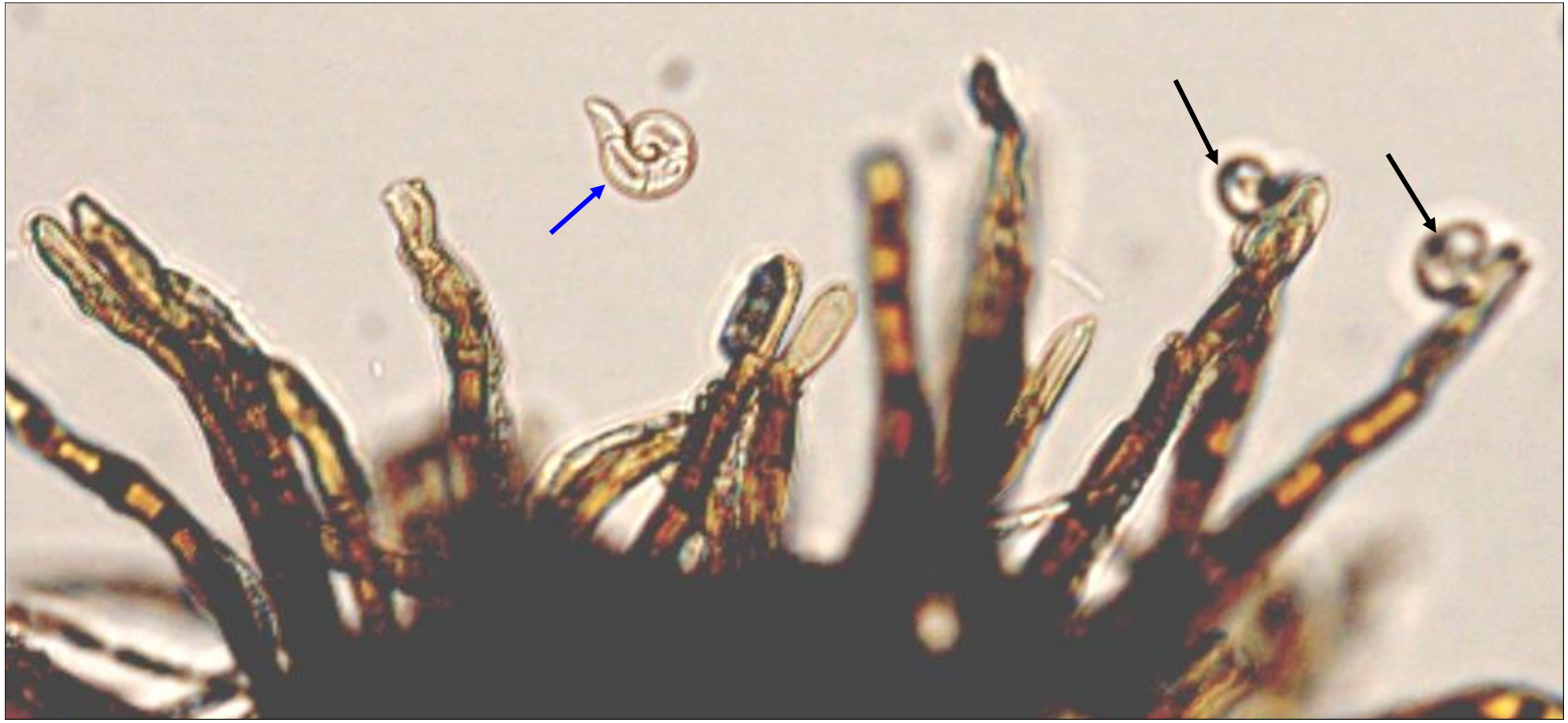
**Comment:** Goos (1986) and Zhao et al. (2007) provide monographic treatments of this genus. However, aside from my placement in their largest section (their *Helicoma* section), I am unable to go further.



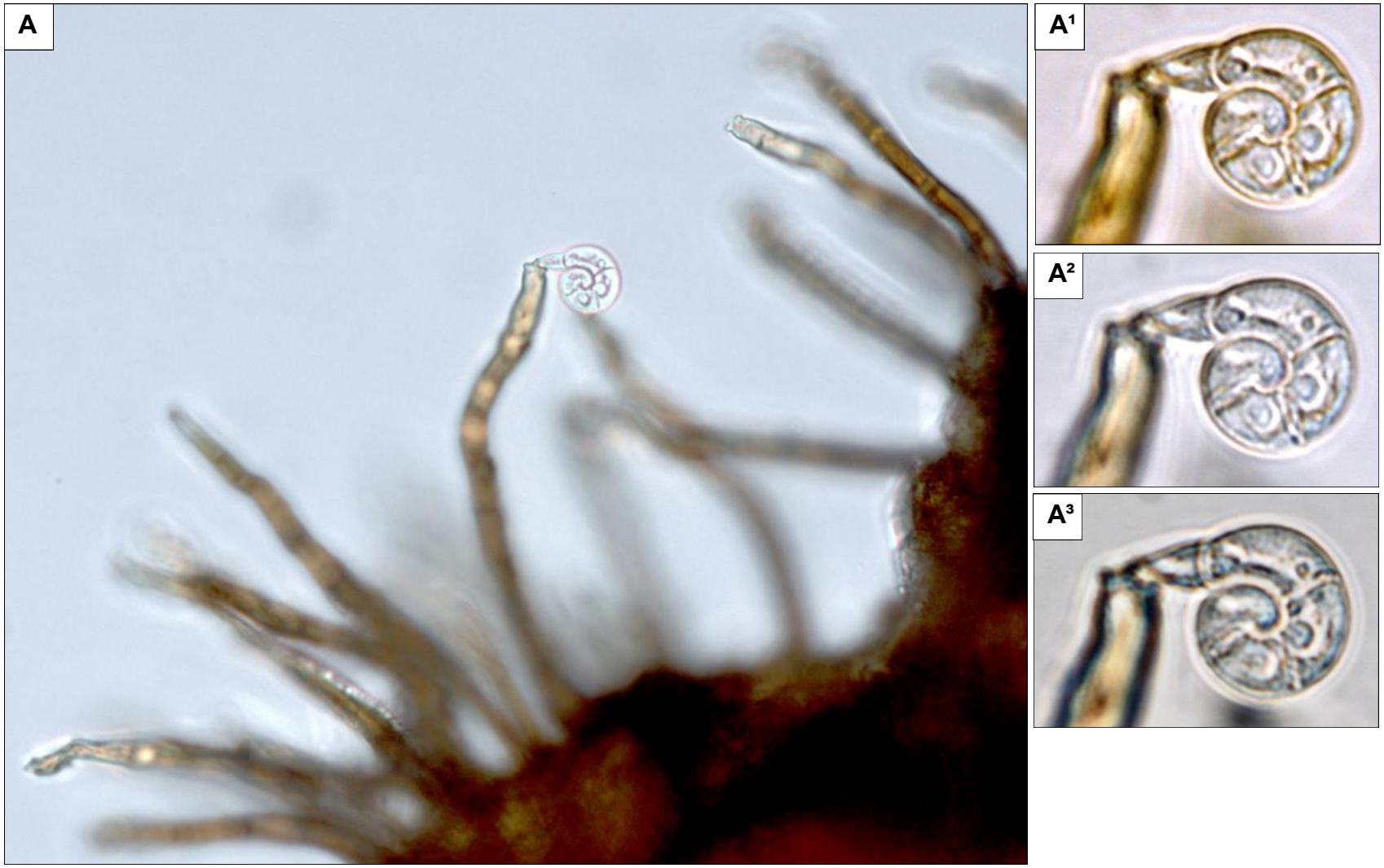

***Helicoma*** **sp. conidiophores (A–C² with forming conidia). All photos under 40X objective. A, B & D water mounts; C¹, C² SMF mounts. Microscopy: A, DIC; B, C¹ & D phase; C² brightfield. Conidiophore sizes: A, 80 × 5 µm; B, 75 × 5 µm; C¹ & C², longer conidiophores 120 × 5 µm. Note the conidiogenous denticles (arrowed) which are a prominent feature of the *Helicoma* section of the *Helicoma* genus. See Goos (1986) & Zhao et al. (2007).**



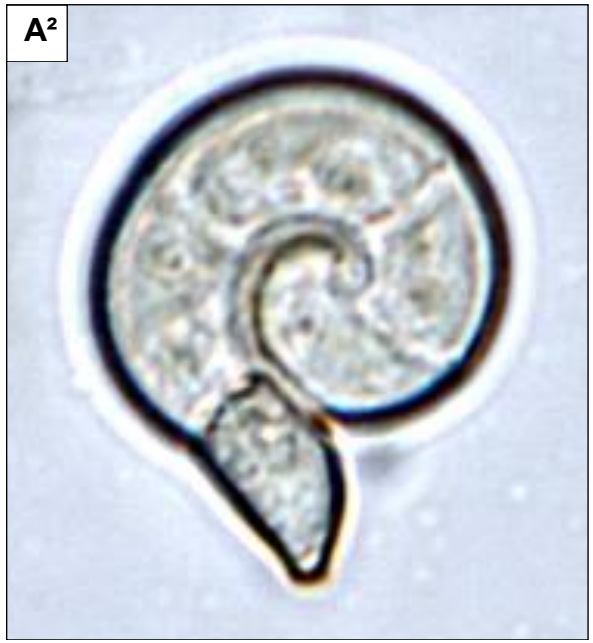

***Helicoma*** **sp. All photos from water mounts. A¹ & B¹ under 40X objective, others under 100X objective. Microscopy: All brightfield except A³ phase. Conidiophore sizes: A's 135 × 5 µm; B's 100 × 5 µm. Note the conidiogenous denticles (arrowed) which are a prominent feature of the** ***Helicoma*** **section of the** ***Helicoma*** **genus. See Goos (1986) & Zhao et al. (2007).**



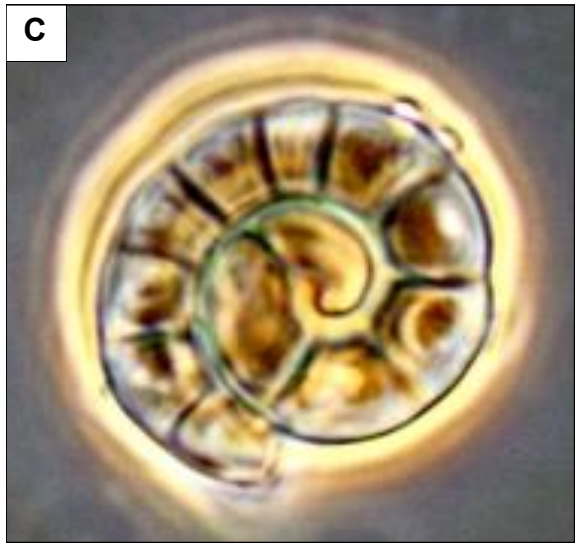
***Helicoma* sp. Conidiophores, recently detached conidium (blue arrow) and 2 attached conidia (black arrows). Water mount, 40X objective. The detached conidium is 3-septate and 5 µm wide × 7 µm long.**




**A. *Helicoma* sp. conidiophores and conidium (4-septate, 8 × 6.5 µm wide, water mt., 40X obj., DIC). A¹–A³, same conidium & same mt. as in A but 100X obj. – A¹ brightfield, A²–A³ DIC.**




***Helicoma*** **sp. conidia. A, B & C each from different SMF slides of *Chaetosphaeria ellisii* AEB 1173 among whose perithecia the *Helicoma* was growing. A¹–A³. Same conidium 17.5 × 14 µm , 4-septate, 1½–1¾ turns, hyaline to faintly pigmented, left 2 DIC, right phase. B. Conidium 14 × 13 µm, 8–9 septate, 1½–1¾ turns, lightly pigmented, DIC. C. Conidium 15 × 14 µm, 12-septate, 1½–1¾ turns, lightly pigmented, phase. Basal attachment cell of conidia B and C appear to have broken off. The number of septa and slight pigmentation appear to increase with age and, perhaps, after conidial detachment. I believe all conidia seen represent the same species.**