

***Peroneutypa scoparia* (Schwein.) Carmarán & A.I. Romero AEB 1298 (= PDD 120016) – closely accompanied by the hyperparasite *Harpoglyphium fasciculatum* (Sacc.) Sacc.**

**Collection site:** Barton's Bush, Upper Hutt, New Zealand

**Substrate:** a dead stem approx. 1.5 cm in diameter

**Collection date:** 30 March 2017

**Collector and identifier:** Dan Mahoney

**Voucher materials:** dried herbarium specimen AEB 1298 (= PDD 120016) accompanied by one Shear's mounting fluid (SMF) with aniline blue lactic acid semi-permanent microscope slide of *Peroneutypa scoparia* and three heated and non-heated SMF microscope slides of *Harpoglyphium fasciculatum*; in-situ dissecting scope photos of the fruiting structures and compound scope photos of microscopic detail; Dan's brief descriptions and comments.

**Nomenclatural history and references consulted:** *Eutypella scoparia* = *Peroneutypa scoparia* = *Peroneutypa heteracantha* – Many older records & illustrations are under the latter – also used by New Zealand PDD before 2011. Those following the 2006 reference 'Carmarán et al. 2006. A new phylogenetic classification in Diatrypaceae. Fungal Diversity 23: 67–87.' use the middle name while others use the first name (see 'Rappaz. 1987. Taxonomie & nomenclature des Diatrypacees à asques octospores. Mycologica Helvetica 2: 285–648.' for this binomial and its many synonyms). See also the reference 'Vasilyeva, L.N. and Stephenson, S.L. 2006. Pyrenomycetes of the Great Smoky Mountains National Park. III. *Cryptosphaeria* Ces. & De Not., *Eutypa* Tul. & C. Tul., and *Eutypella* (Nitschke) Sacc. (Diatrypaceae). Fungal Diversity 22: 243–254.'

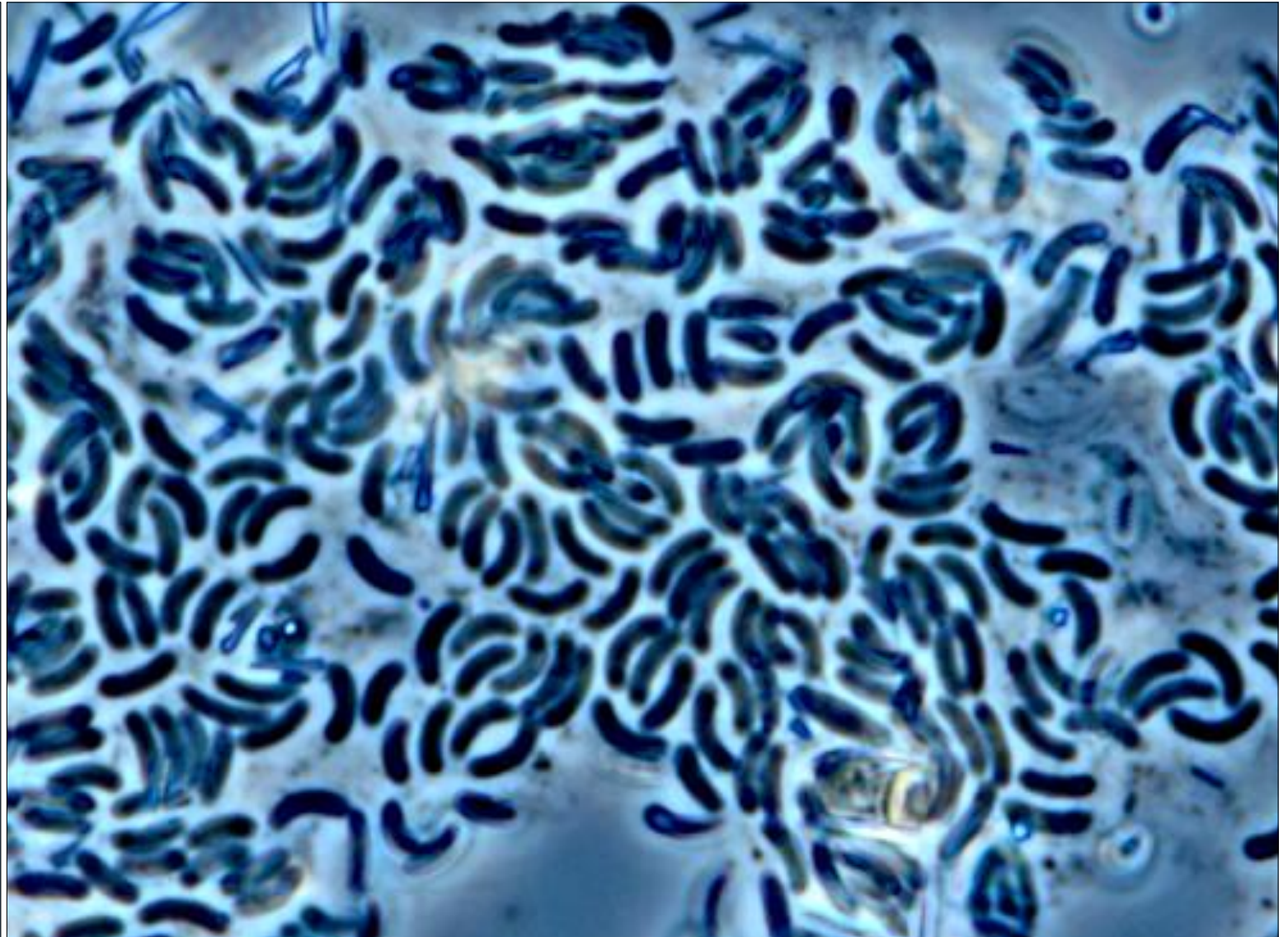
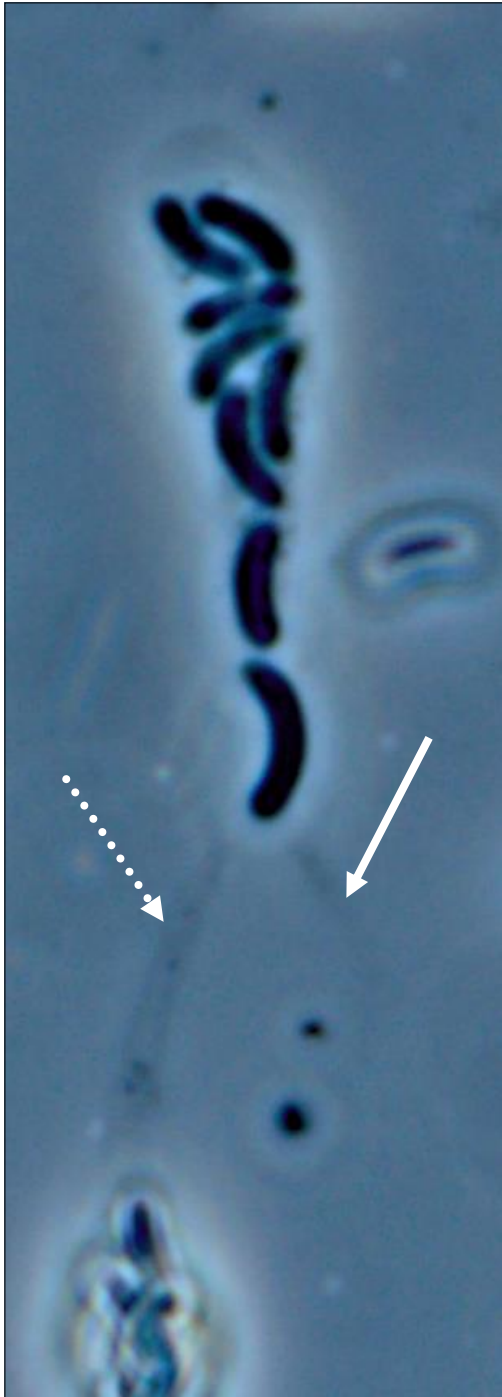
Index Fungorum and most recent records use *Peroneutypa scoparia*.

**Dan's brief description of *Peroneutypa scoparia*:** Perithecial venters clustered and submerged in the dead branch, their long necks (of variable length) emerging among the *Harpographium* synnemata. The necks apically rounded and faintly sulcate with a terminal ostiole. Asci small, clavate and Very numerous, with long stipes. Details of any apical apparatus unclear, 8-spored with ascospores often clustered in the upper ascus. Ascospores single-celled, mostly 4–5 × 1–1.5 µm, allantoid, hyaline, smooth.

**Earlier collections of *Peroneutypa scoparia*: (See their collection records in Landcare Research PDD online. The pdf for each is found there under the External Link to the Datastore)**

1) *Peroneutypa scoparia* AEB 1267 (= PDD 111251) Rimutaka Forest Park, 21 January 2016 on the bark of a fallen dead unidentified branch.

2) *Peroneutypa scoparia* AEB 1295 (= PDD 117255) Dry Creek (Belmont Regional Park), 25 February 2017 on a dead, firm branch (approx. 1.5 cm in diam) lying on the soil surface. This specimen also includes many areas where *Anellodochium ramulisporum* is associated with *P. scoparia*. *A. ramulisporum* is reported as a hyperparasite of *Peroneutypa heteracantha*.



***Peroneutypa scoparia* ascus and ascospores. Left photo an ascus with 8 ascospores. Ascus stipe a solid arrow; out-of-view ascus stipe a dotted arrow. Right photo ascospores, mostly 4–5 × 1–1.5 μm. Both photos SMF/aniline blue lactic acid mount, X100 objective enlarged, phase microscopy.**

To follow the path of association between *Harpographium* and any of the 3 binomials (*Eutypella scoparia*, *Peroneutypa scoparia* or *Peroneutypa heteracantha*), one needs to search each binomial online. Since the 1800's, descriptions assignable to *Eutypella scoparia*, *Peroneutypa heteracantha* or their synonyms frequently mention a stilbellaceous association with a *Graphium*-like, *Harpographium*-like or *Phaeoisaria*-like conidial state. Yet, no final answer concerning the relationship of this stilbellaceous form has emerged. Is it an anamorph to *E. scoparia* or a hyperparasite on it? What is the relationship? I'll include a few examples of past association records on the next few pages, but I'll include the comments of Jacques Fournier from the ASCOFrance Website here (having Googled '[Diaporthe on Berberis - Forum ASCOFrance](#)' – see his comments under Jacques Fournier, 22-11-2009 08:31). I agree with those comments. Jacques' comments:

“The question about the putative anamorph being *Harpographium* is still unclear, but I am inclined to consider *Harpographium* merely as a parasite frequently occurring on *E. scoparia*. *Harpographium* is a synnematosus hyphomycete, while most of known anamorphs of Diatrypaceae are coelomycetous, occurring in pycnidia and referred to the genus *Liberella*. Rappaz (1987) described such pycnidial formation in cultures of *E. scoparia*, but curiously the shape and dimensions of conidia are similar to those of *Harpographium*! This problem would maybe deserve more field work and comparison of DNA sequences to be solved.”

**Dan's brief description of *Harpographium fasciculatum*:** Synnemata numerous, of variable length to 1 mm+ and of variable width, arising among the emerging necks of *Peroneutypa scoparia*, with their basal portions effuse to tufted but gradually giving rise to straight divergent synnemata. Each synnema consisting of parallel dark brown septate hyphae, often seen twisting in a squash mount, these producing numerous terminal sympodial polyblastic sporogenous cells along the peripheral length of each synnema. The density of these didn't allow me a clear view of actual sporogeny (attached conidia weren't well seen) but the denticles from which conidia had detached were seen. Sporogeny is described as phialidic and the conidial detachment schizolytic but the denticles and conidia are so narrow that this is difficult to see. Conidia were seen as white dry masses along the brown synnemata. Conidia were scolecosporus, irregularly straight to falcate, smooth, single-celled, narrowly truncate basally and tapering to a narrowly rounded apex, 8–15 × 2 µm.

Continued on the next page:

## An assortment of reports linking *Peroneutypa heteracantha* (or a synonym) to a *Harpoglyphium*-like associate:

### 1) [PDF][Synnemata stipitata, apice capitata vel rotundato-attenuata, fuliginea ...](#)

[bibdigital.rjb.csic.es/.../K21.../SBI\\_Fl\\_Ital\\_Crypt\\_1\\_6\\_175.pdf](#)

[Translate this page](#)

*Harpoglyphium fasciculatum* Sacc. *Michelia* II. pag. 33 (1880); Syll. ... Ar. distr. Francia, Italia. Osserv. Rappresenta lo stato macroconidico della *Peroneutypa*.

1. *Harpoglyphium fasciculatum* Sacc. *Michelia* II. pag. 33 (1880); Syll. IV. pag. 619; Lindau, *Hyph.* II. pag. 369; *Graphium fasciculatum* Sacc. *Michel.* I. pag. 76 (1877); *F. ital.* t. 13.

*Exsicc.* Sacc. *Mycoth. ven.* n. 739.

*Icon.* Sacc. *F. ital.* t. 13.

*Bibl.* 128, 209, 673, 1133.

Synnematibus gregariis, fuligineis, compositis, cylindratis, sursum obtusiuscule attenuatis, quandoque e basi incrassata communi pluribus fasciculatis, undique, praecipue vero sursum, ramulos obliquos subdenticulatos emittentibus; conidiis prope ramulorum apicem insertis, cylindratis-fusoideis, curvulis, utrinque acutis  $15 \approx 1,75 - 2,5$ , hyalinis.

*Hab.* in ramulis *Robiniae Pseudacaciae*, in ligno *Carpini*, in ramulis *Fici*, *Rhois Toxicodendri* ecc. Veneto; Piem., (Ferraris); Tosc., Sardegna.

*Ar. distr.* Francia, Italia.

*Osserv.* Rappresenta lo stato macroconidico della *Peroneutypa heteracantha* (Sacc.) Berl. con cui spesso trovasi consociata (Cfr. Traverso, *Pyrenom.* pag. 125).

### 2) [PDF][Taxonomic Studies of Japanese Diaporthaceae with ...](#) - 森林総合研究所

[www.ffpri.affrc.go.jp/labs/kanko/226-1.pdf](#)

*Peroneutypa* BERLESE, *Icon. Fung.* 3 : 80, 1902 ..... The imperfect state of *Scoptria* presumably belongs to the form-genus *Harpoglyphium* of Stilbaceae.

130. *Scoptria* NITSCHKE, *Pyren.* Germ. 83, 1867; WINTER, *Rabh. Kryptgf.* I, 2 : 827, 1887; LINDAU, *Engl. Naturl. Pflfam.* I, 1 : 477, 1897

HÖHNEL (1917a, 1918) included this genus in Diaporthaceae. According to him, it has *Diaportha*-type centrum of perithecium, but he did not give any details. It is not accepted to be a member of Diaporthaceae by its structure of perithecial centrum, if we are to judge from the description by WINTER (1887) and LINDAU (1897). It may belong to Diatrypaceae. The imperfect state of *Scoptria* presumably belongs to the form-genus *Harpoglyphium* of Stilbaceae.














3) Ellis M.B. 1971. Dematiaceous Hyphomycetes. Kew: Commonwealth Mycological Institute. 608 p. Page 563.

(*Harpographium fasciculatum*) “On dead wood, sometimes associated with *Peroneutypa heteracantha* (Sacc.) Berl.; Europe, N. America.”

4) BioInfo (UK)

Google “*Eutypella scoparia* (Schwein.) Ellis & Everh. (a stromatic pyrenomycete)”

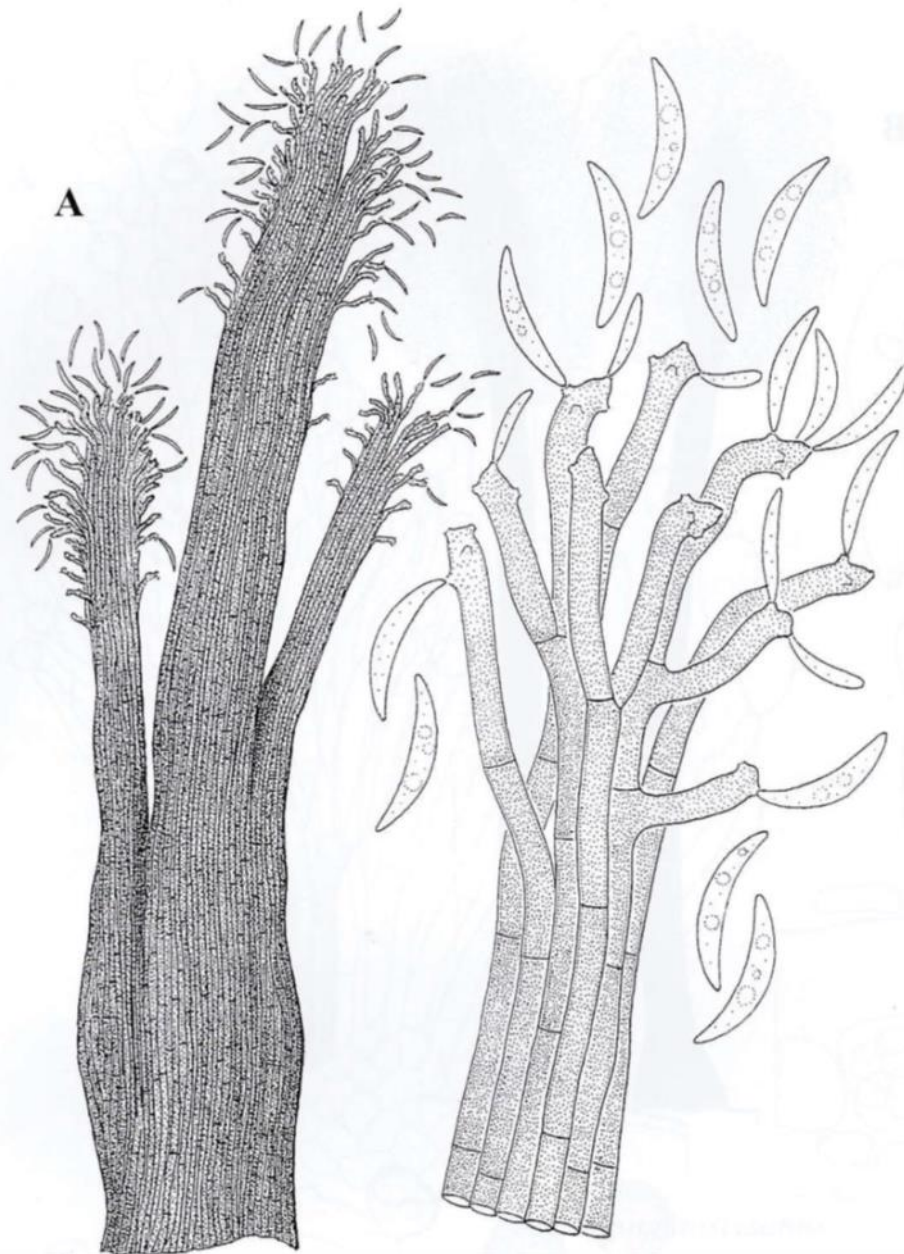
*Eutypella scoparia* is associated with:

Harpographium anamorph, synnemata, synnema	 <a href="#">Crataegus - hawthorns</a> (Rosales: Rosaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Euonymus - spindles</a> (Celastrales: Celastraceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Sambucus - elders</a> (Dipsacales: Adoxaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Cytisus - a genus of brooms</a> (Fabales: Fabaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Lupinus - lupins</a> (Fabales: Fabaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Alnus - alders</a> (Fagales: Betulaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Fagus - beeches</a> (Fagales: Fagaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Fraxinus - ashes</a> (Lamiales: Oleaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Tilia - limes</a> (Malvales: Malvaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Rubus - brambles</a> (Rosales: Rosaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Ulmus - elms</a> (Rosales: Ulmaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Acer - maples</a> (Sapindales: Sapindaceae)	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]
Harpographium anamorph, synnema	 <a href="#">Broadleaved trees and shrubs - broadleaved trees and shrubs</a>	subcortical synnema of Harpographium anamorph is saprobic on dead branch	<a href="#">Ellis, M.B. &amp; J.P., 1997</a> [under bark]

5) Réblová M, Seifert KA, Fournier J, Štěpánek V. 2016. Newly recognised lineages of perithecial ascomycetes: the new orders Conioscyphales and Pleurotheciales. *Persoonia* 37: 57–81.

Page 78

“Two genera of the *Diatrypaceae*, *Eutypella* (as *Peroneutypella*, Deighton 1974) and *Pareutypella* (Ju & Rogers 1995), were linked with *Phaeoisaria*-like synnematos asexual states. For these connections, the morphologically similar synnematos genus *Harpographium*, typified by the asexual state of *Eutypella scoparia*, should be considered.”



Left drawing:

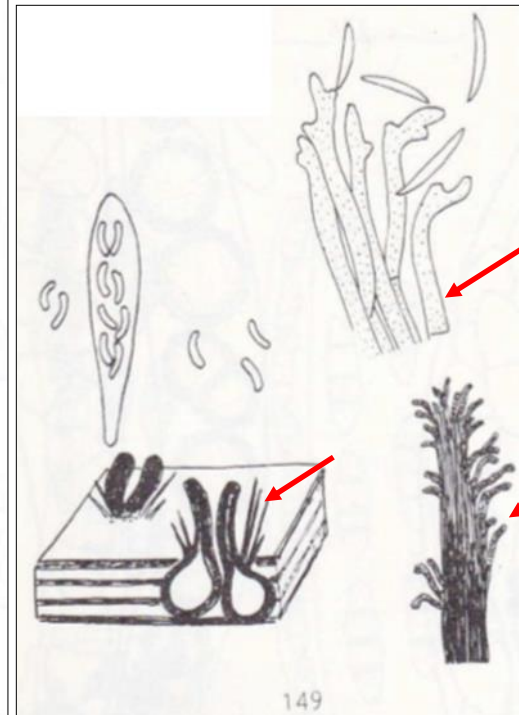
Seifert K, Morgan-Jones G, Gams W, Kendrick B. 2011. The Genera of Hyphomycetes. CBS Biodiversity Series no. 9: 1–997. CBS-KNAW Fungal Biodiversity Centre, Utrecht, Netherlands.

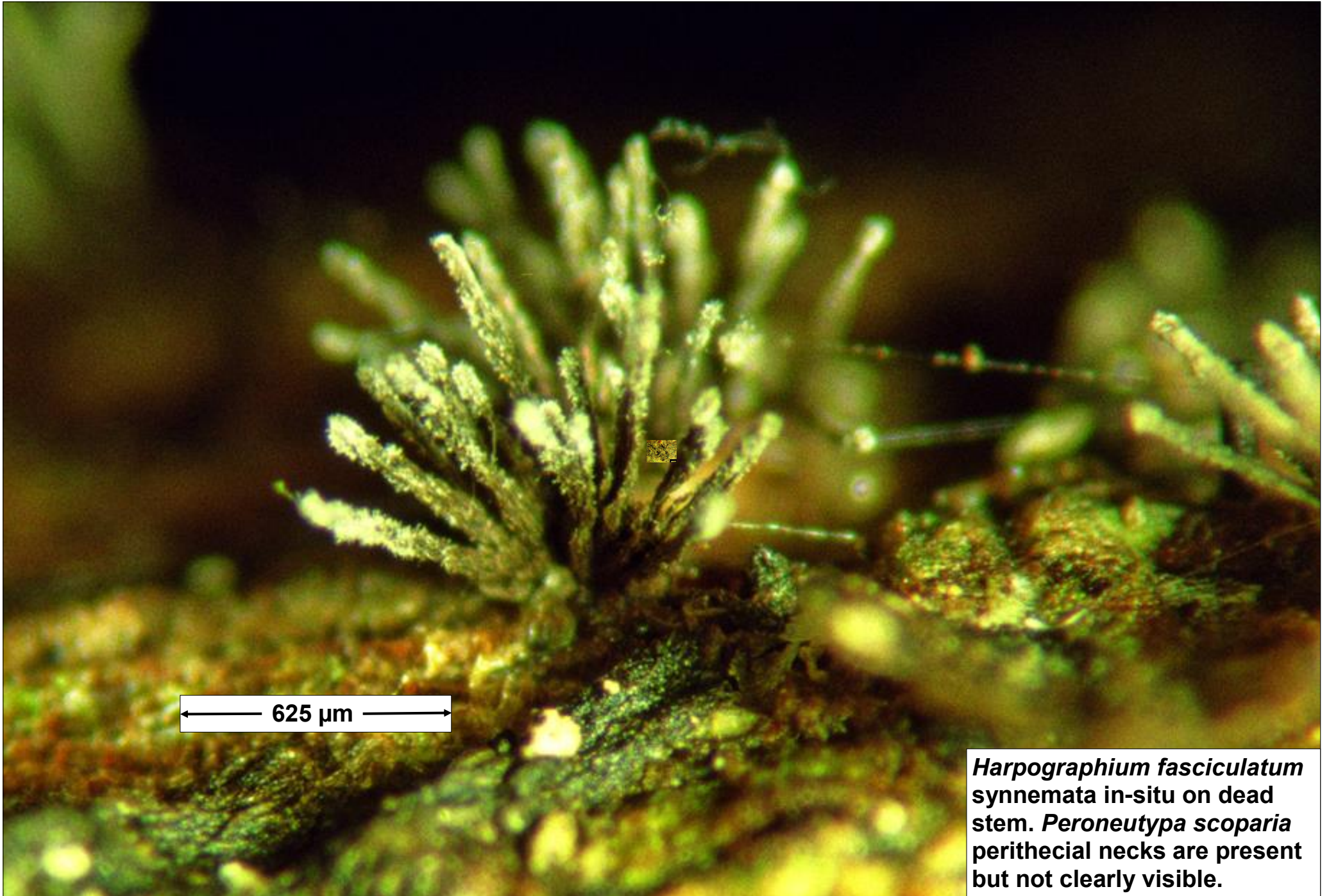
Page 630, Plate 148. A. *Harpoglyphium fasciculatum*.

Drawing below:

Ellis M.B., Ellis J.P. 1985. *Microfungi on Land Plants. An Identification Handbook*. 818 pp. London & Sydney; Croom Helm.

Plate 15. Ascomycetes on wood and bark. Fig.149. *Peroneutypa heteracantha* (& *Harpoglyphium*, arrowed).

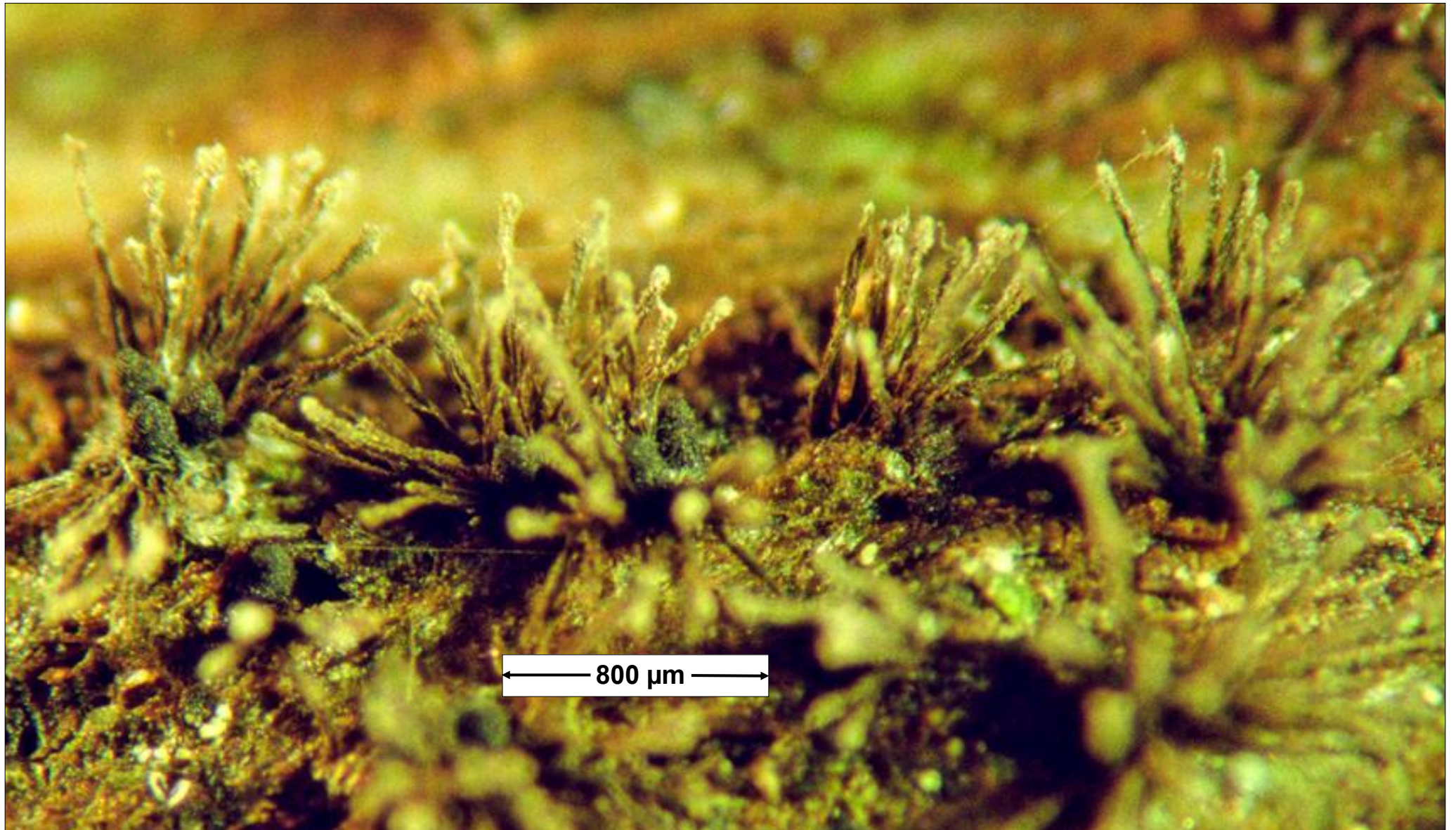




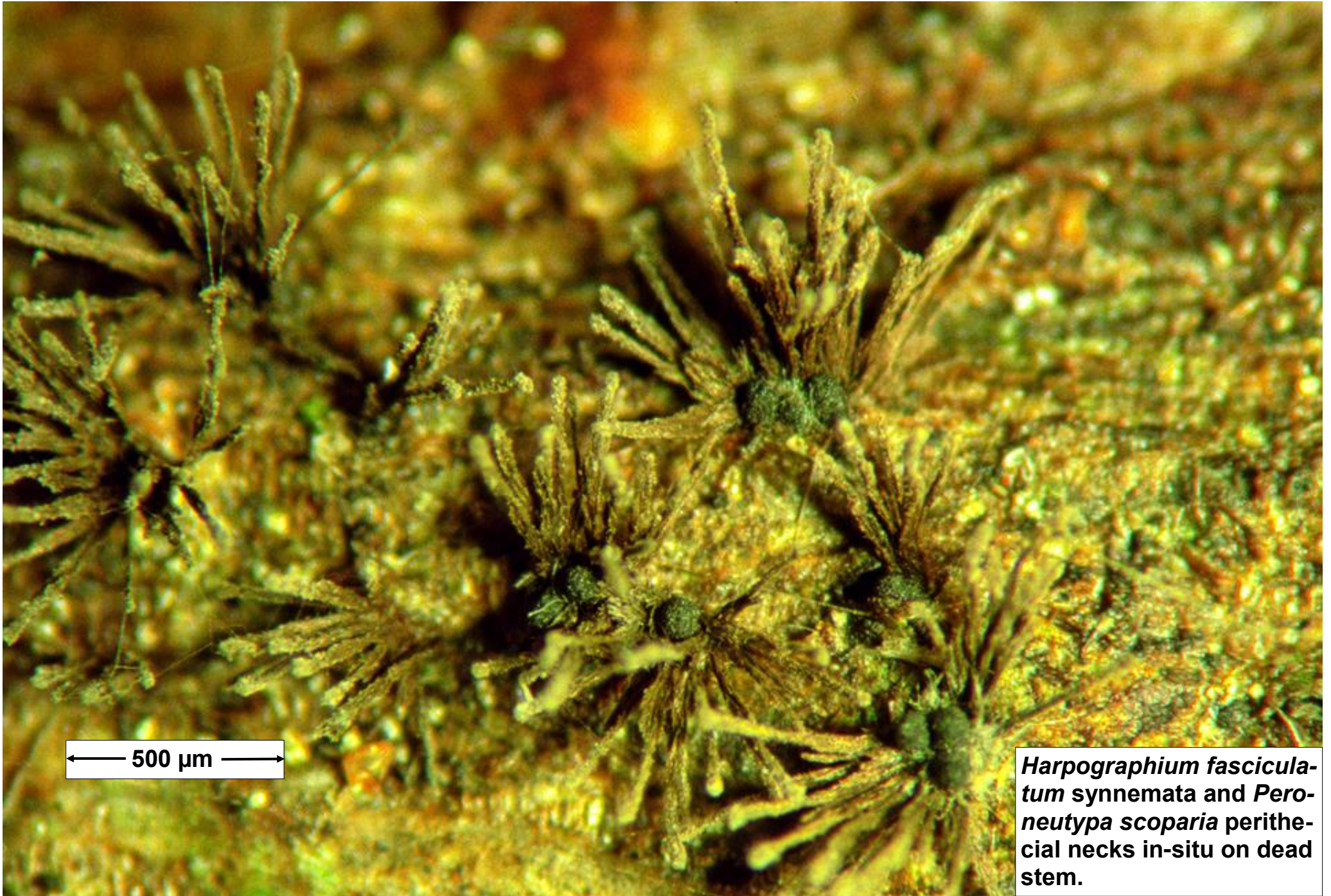
← 625  $\mu\text{m}$  →

*Harpogonium fasciculatum* synnemata in-situ on dead stem. *Peroneutypa scoparia* perithecial necks are present but not clearly visible.





*Harpoglyphium fasciculatum* synnemata and *Peroneutypa scoparia* perithecial necks in-situ on dead stem.



← 500  $\mu$ m →

*Harpoglyphium fasciculatum* synnemata and *Peroneutypa scoparia* perithecial necks in-situ on dead stem.

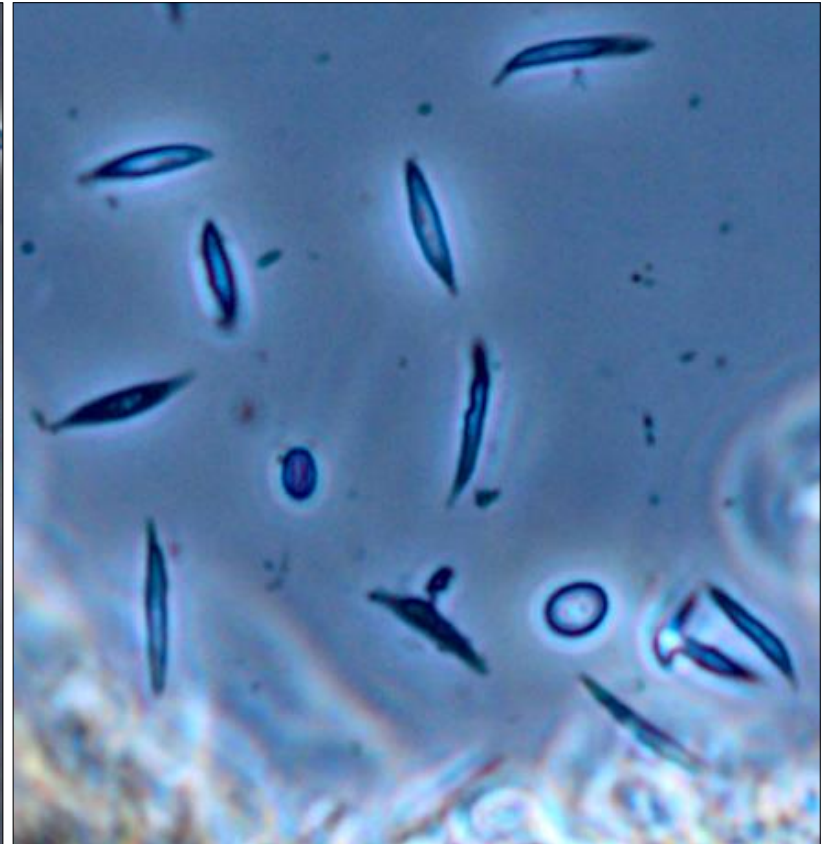
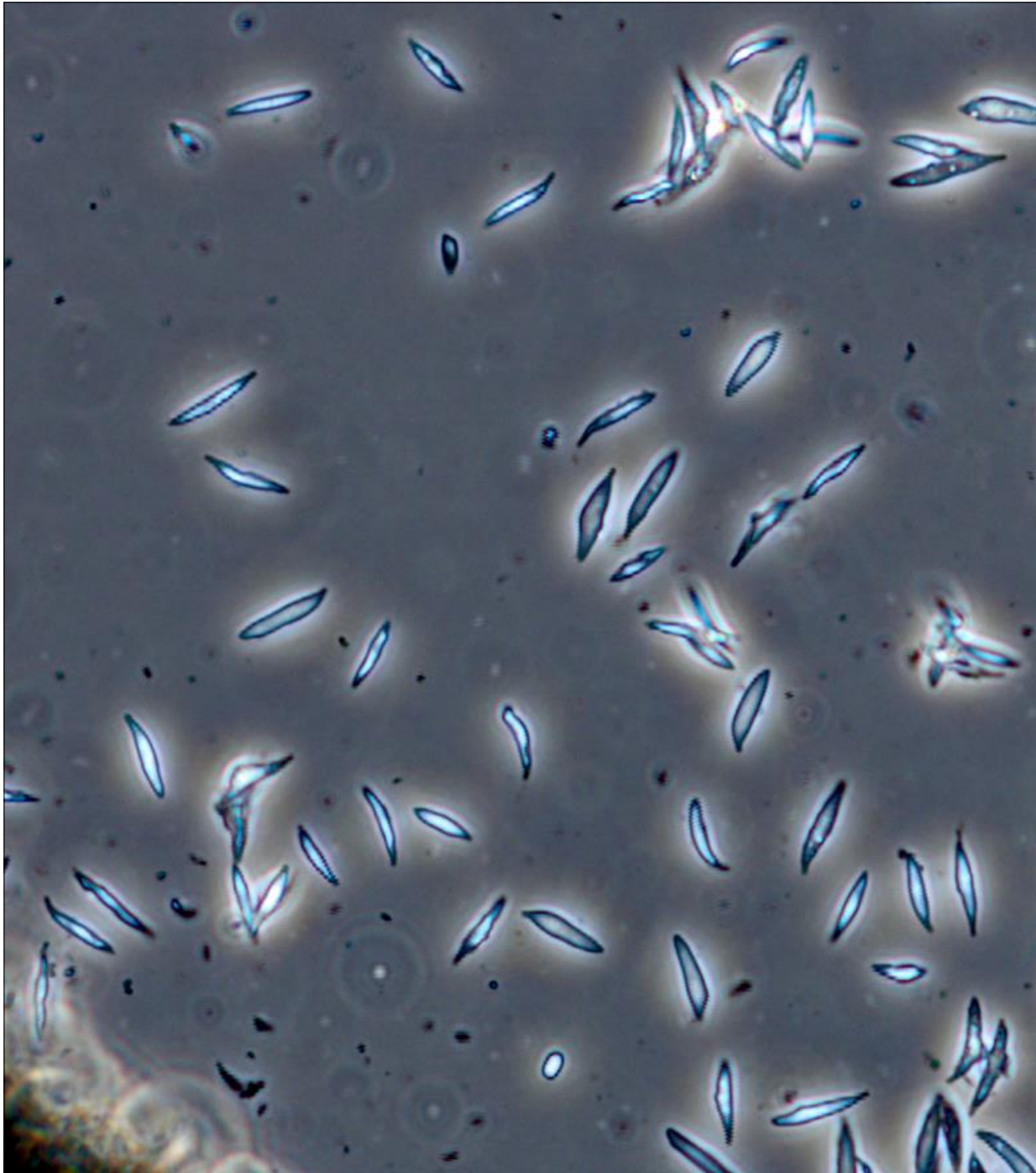
*Harpoglyphium fasciculatum*  
*synnemata* and *Peroneutypa*  
*scoparia* perithecial necks in-  
situ on dead stem.



← 500  $\mu\text{m}$  →



*Harpogonium fasciculatum* synnemata. A. SMF, X20 objective, synnemata intact. B,C. Both same field of view. Water, X10 & X40 objective resp., synnemata partially squashed. Note peripheral sporogenous cells.



***Harpographium fasciculatum* conidia.** Left photo from 70% EtOH mount, X40 objective enlarged, phase microscopy. Right photo from 70% EtOH irrigated with SMF and heated, X40 objective enlarged, phase microscopy. Conidia  $8-15 \times 2 \mu\text{m}$ .