

A new fungicolous *Scolecobasidium* (hyphomycetes) and *Caducirostrum* gen. nov. (coelomycetes) from leaf litter in the UK and Italy

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Summary. Two new microfungi, a fungicolous *Scolecobasidium*, *S. rostricola* sp. nov., colonising the ostiolar necks of a new coelomycete, *Caducirostrum foliicola* gen. & sp. nov., on leaf litter of *Viburnum tinus*, *Arbutus unedo*, *Prunus laurocerasus* and *P. lusitanica* from the U.K. and Italy, are described, illustrated and compared with other relevant taxa. *Rhabdostromina*, with new combinations for *Dendroseptoria arrhenatheri* and *D. oryzopsidis*, is resurrected.

Key Words. *Arbutus*, *Coleophoma*, *Dendroseptoria*, new genus, new species, *Prunus*, *Rhabdostromina*, United Kingdom, *Viburnum*.

Introduction

During April 2005 an examination of damp leaf litter collected beneath a large bush of *Viburnum tinus* L. in the Royal Botanic Gardens, Kew, revealed swarms of conspicuous long, cylindrical, black necks of an undetermined fungus projecting from the leaf surface, with bulbous bases partly immersed in the leaf tissue, each base with one or sometimes two to several necks. Repeated microscopic mounts of this material showed the fungus to be consistently sterile, lacking any hymenial development. Subsequent examination of later collections of leaves from the same site continued to reveal only sterile fruiting structures but eventually, in one collection, the long, protruding fungal necks were seen to be colonised by a hyphomycete species. Examination of this showed it to conform well with the general concept of the genus *Scolecobasidium* E. V. Abbott (Abbott 1927; Barron & Busch 1962; Deighton & Pirozynski 1972; Ellis 1971, 1976; de Hoog 1985; Graniti 1963; Matsushima 1993). This species, found subsequently in other collections, differs in various respects from other known species of the genus, and is further discussed below and described as new.

Examination of further decaying *Viburnum* leaves collected at irregular intervals during the ensuing months from various localities showed that the long-necked fungus was present in virtually all collections, but repeatedly sterile. The neck was also found to be unusual in structure, being cellular throughout and lacking any central channel or apical vent, unlike that of other long-necked coelomycetes, such as species of *Sphaeronaema* Fr. and *Sphaerographium* Sacc., in which conidia are dehiscence through a central channel and often held in a mucilaginous mass at the apex of the neck.

Also present on leaves in several collections were sunken pycnidium-like structures, each with a broad ostiolar pore and containing cylindrical, hyaline, non-septate conidia, highly reminiscent in general form and conidial morphology of species of *Coleophoma* Höhn. (Sutton 1980; Wu *et al.* 1996). Continued careful observation finally showed that these broad-pored pycnidia and the long-necked fungus were actually the same species, some of the former being seen to have necks still partly attached but ruptured around the base leaving the broad opening. Hence, it became evident that the long necks eventually detached from the partly immersed bulbous basal part revealing a wide, pore-like ostiole with periphyses. At this stage, mature conidia had developed inside. This confirmed that the fungus in question was a coelomycete with *Coleophoma*-like conidia and a unique method of ostiole formation.

The abundance of this long-necked fungus on leaves of *Viburnum* prompted a search of leaf litter from other host plants with thick, rather leathery leaves in England as well as on a field work visit to Sardinia. The species was discovered to be frequent in both countries on *Arbutus unedo* L., and, when searched for in England, also present at times on *Prunus laurocerasus* L. and *P. lusitanica* L. It may well occur on other plant hosts not yet examined. Its presence in Sardinia suggests a wider distribution at least in Europe where appropriate host plants occur. Despite its abundance, no appropriate name for it has been located. An appropriate genus for it is also unclear. It resembles *Coleophoma* (including *Cylindrophoma* (Berl. & Vogl.) Höhn.) with regard especially to conidial shape and in the appearance of the dehiscence

conidiomata which exhibit a broad pore, but differs markedly in the method of ostiole formation. It also superficially resembles some beaked *Phoma* species, but in these ostiole formation again differs, being predetermined and sited at the apex of the neck, as also do conidial characters.

In an attempt to find an appropriate name for the present species, a comparison with species of *Coleophoma* and likely long-necked genera was undertaken, and fungi reported from *Viburnum* and *Arbutus* leaves also considered. It seemed conceivable that the species might have been referred either to *Sphaeronaema* Fr. or to *Sphaerographium* Sacc., genera which typically include species with long-necked pycnidial conidiomata, so that a brief review of species in these genera was also undertaken. Other genera with long-necked or beaked conidiomata, notably *Corniculariella* P. Karst. (= *Cornularia* Sacc.) and *Rhynchophoma* P. Karst., were also considered.

There is no modern treatment of *Sphaeronaema*, although clearly the c. 250 names referred there represent an heterogeneous mix of species, many of which have been redisposed. An early account by Jaczewski (1898) accepted 72 species with a further 25 recorded as lacking useful details, some with suggested dispositions in other genera. His included species vary markedly in pycnidial form and conidial characters and are, again, clearly heterogeneous and in need of modern taxonomic treatment. The lectotype species of *Sphaeronaema* Fr., *S. cylindricum* (Tode) Fr. (basinym: *Sphaeria cylindricum* Tode 1791), selected by Petrak & Sydow (1923) and accepted by Seeler (1943) and Sutton (1977), differs markedly from the present species in conidial characters and mode of dehiscence. On an appropriate host genus is *Sphaeronaema viburni* (Sacc.) Jaczewski (= *Cornularia viburni* Sacc.), on *V. lantana* L. from Switzerland and *V. opulus* L. from Germany, but this was considered a *nomen dubium* by DiCosmo (1978). It occurs on branches, in association with *Cenangium viburni* Fuckel, and is described as having similar acicular, lunate, 1 – 3-septate conidia perhaps similar to those of *Sphaerographium*, but quite unlike those of the present fungus. The present fungus also does not match descriptions and illustrations of other species included in the account by Jaczewski (1898), nor of subsequently described species such as *S. acerinum* Peck (Barnett & Hunter 1998).

Sphaerographium, typified by *S. lonicerae* (Fuckel) Sacc. (= *S. squarrosum* (Riess.) Sacc.), differs from *Sphaeronaema* in having falcate, typically septate conidia (Sutton 1980; Verkley 2002) similar to those of *Corniculariella*. The genus was revised by Verkley (2002) who accepted just three species, all of which differ markedly from the present fungus in pycnidial structure, conidial characters and substrate. The other 23 species previously referred there, summarised also

by Verkley (2001), have been redisposed and are variously placed, sometimes as anamorphs of *Dermea*, *Durandiella*, or *Godronia*, or remain inadequately known (Verkley 2002). None can be identified with the present fungus.

It may be noted that Grove (1935) refers to a species of *Sphaerographium* on *Viburnum* that “has not yet been recorded from Britain”. This is *S. lantanae* Died., described from decaying leaves of *V. lantana* in Europe, the monotype species of *Cryptorhynchella* Höhn. It superficially resembles the present species but is quite different in other characters, with acicular conidia 30 – 40 × c. 1.5 µm. Verkley (2002) did not see this species but considered *Cryptorhynchella* a possible synonym of *Sphaerographium*. Two further taxa have been described from *Viburnum*, viz. *Sphaerographium lantanoides* Peck, on *V. lantanoides* Michx. in USA, and *S. hystricinum* var. *viburni* Dearn. & House, on *V. cassinoides* L. in USA. Both occur on branches and differ in conidia and conidiomatal structure from the present fungus. The first is anamorphic *Durandiella viburnicola* (Seaver) J. W. Groves, the latter a synonym of *Corniculariella hystricina* (Ellis) DiCosmo, the anamorph of *Dermea viburni* J. W. Groves (Groves 1940; Verkley 2002).

Corniculariella, typified by *C. abietis* P. Karst., was revised by DiCosmo (1978). It includes species with erumpent, beaked conidiomata and curved to falcate, septate conidia arising from phialides, similar to *Sphaerographium* except for the conidiophores and the position of the phialidic conidiogenous cells on the conidiophores (see Sutton 1980). *Rhynchophoma*, based on the type species *R. crypta* P. Karst., was shown by Petrak (1953) to be a synonym of *Ceratostomella* Sacc. (ascomycetes), confirmed by Verkley (2002). However, other taxa referred there are anamorphic and, for example, Barnett & Hunter (1998) included *Rhynchophoma* as a coelomycete genus, illustrated by *R. raduloides* Sacc. & Scalia, more recently combined as *Topospora raduloides* (Sacc. & Scalia) Verkley (2002). This typically occurs on branches of *Ribes laxiflorum* Pursh and is the presumed anamorph of a species of *Godronia* which occurs with it (Verkley 2002). Although superficially reminiscent of the present species, this fungus is quite unlike it in mode of dehiscence and in having 1-septate conidia and branched conidiophores. *Topospora* Fr. is typified by *T. uberiformis* (Fr.) Fr., anamorph of *Godronia uberiformis* J. W. Groves. Other taxa referred to *Rhynchophoma*, mostly considered by Verkley (2002), also differ from the present species.

Amongst *Phoma* species, *P. proboscis* D. K. Heiny from Colorado, USA, is notable for its rostrate pycnidial conidiomata with ostiolar necks sometimes forked or multiple and up to c. 500 µm long (Heiny 1990). However, it is parasitic on leaves of *Convolvulus arvensis* L., has typical *Phoma* conidia and dehiscence, and is quite unlike the present fungus.

Species of *Coleophoma* Höhn., often common in decaying leaf litter, may, as noted, also resemble the present species, particularly when its prominent, caducous rostrum has been shed. A comparison of the present fungus with the type, *C. crateriformis* (Durieu & Mont.) Höhn., and other species of *Coleophoma*, based on published details as well as examination of relevant material in K, was therefore undertaken. This study showed that the unique method of ostiole formation in the present species readily distinguishes it from all known and currently accepted *Coleophoma* species (Sutton 1980; Wu *et al.* 1996). Furthermore, the present species proves to have conidia which are narrower than those of species currently referred to *Coleophoma* with the exception (as described) of *C. aesculi* (Petr.) Nag Raj on cupules of *Aesculus*. However, that has smaller conidiomata (50 – 90 µm diam. *vide* Nag Raj 1978) which lack a neck and have an ostiole formed by irregular rupture of the apical wall (Nag Raj 1978). It also differs in having multiseptate conidiophores with cuboid conidiogenous cells (Nag Raj 1978). Our examination of isotype material of this species in K revealed only a *Phomopsis* from the inner wall of the cupules. *Coleophoma maculiformis* (Cooke & Harkn.) Petr., described from leaves of *Arbutus menziesii* Pursh in USA (Cooke & Harkness 1881), should be mentioned in the present context. However, this is a typical *Coleophoma* with conidiomata 200 – 230 µm diam., opening by a broad pore (ex type, Harkness). Conidia measure 24 – 28.5 (– 30) × 2.5 – 3 (– <3.5) µm, and are cylindrical, with apex acute, and base narrowed, truncate.

Key results of this study of *Coleophoma* are given in Table 1. Full details are beyond the scope of the present paper. However, worth noting here is the identity of *Septoria empetri* Rostr. (Rostrup 1888), a pycnidial fungus collected by Rostrup in Greenland in 1886 on *Empetrum nigrum*, and later combined as *Coleophoma empetri* (Rostr.) Petr. though without examination of the holotype material (Petrak 1929). Collections on various hosts have been commonly identified and documented under that name in major herbaria and by several authors (Sutton 1980; Wu *et al.* 1996; Aa & Vanev 2002). Diedicke (1921) examined a fragment of the type of *S. empetri* which did not reveal the *Septoria* but only ascomycete ascomata. However, he introduced here the name *Rhabdostromina* Died. for this species, based on material collected in Germany. Petrak (1929) did not see type material but nevertheless placed *Rhabdostromina* as a synonym of *Coleophoma*. Although not included by Lind (1913) in the catalogue of the Rostrup herbarium, the type of *S. empetri* is preserved in C, to whom we are grateful for its loan. We have now examined the holotype of *S. empetri* (on *Empetrum nigrum*, 14 Sept. 1886, Greenland, Kekertak, Rostrup, Herb. C) and found in this material a fungus with 1 – 3-septate conidia (Fig. 1A) borne in ‘fascicles’ conforming to all essential details

published by Rostrup (1888) and also matching the illustration of the fungus made by Rostrup on the holotype packet (Fig. 2A). Since the fungus shows holoblastic conidiogenesis and conidia arising from conidiophores just below the septum, conidia appear as in fascicles (Fig. 1B – C). These characters agree with those of *Dendroseptoria* Alcalde (Alcalde 1948), which should therefore be regarded as a synonym of *Rhabdostromina*. Combinations in this genus for the two known species of *Dendroseptoria* are therefore proposed here:

***Rhabdostromina arrhenatheri* (Alcalde) Punith. & Spooner comb. nov.**

Dendroseptoria arrhenatheri Alcalde [as ‘*arrhanatheri*’] in *Anales Jard. Bot. Madrid* 7: 489 (1948).

***Rhabdostromina oryzopsidis* (Punith.) Punith. & Spooner comb. nov.**

Dendroseptoria oryzopsidis Punith. in *Nova Hedwigia* 34 (1 & 2): 83 (Punithalingam 1981).

NOTES. *Rhabdostromina empetri* (Rostr.) Died. (Figs 1 and 2) remains uncollected since its description and is known only from *Empetrum*. Collections of *Coleophoma* identified as *C. empetri* in herbaria remain to be studied and redetermined, but it is likely that the appropriate name for these will be *C. rhododendri* Syd. This also occurs on *Empetrum*, as shown from the literature and from examination of British collections in K. *Sporonema oxycocci* Shear (Shear 1907a, b) has been placed as a synonym of *C. empetri* (Eriksson 1974; Sutton 1980) and potentially provides an earlier name. However, as described it differs from *C. rhododendri* in the form of the conidiomata, which open by a slit (figured by Shear 1907b) or triangular split, and has broader conidia (17 – 19 × 3 – 4 µm). It requires further study.

It may be noted that, in addition to *Rhabdostromina empetri*, two ascomycetes, *Herpotrichiella polyspora* M. E. Barr and *Physalospora empetri* Rostr., are present in abundance on the *Empetrum* leaves in the holotype material of *Septoria empetri*.

The most characteristic feature of the present species is that the long necks of the conidiomata are shed at maturity to leave a wide ostiolar opening. As noted, the necks are shed from a pre-formed line of dehiscence, breaking away from the bulbous base at maturity, and have no other evident function. As far as we are aware no other coelomycete is known to have this method of ostiole formation and, therefore, it is considered to represent a new genus, described here as *Caducirostrum*.

***Caducirostrum* Punith. & Spooner gen. nov.** Conidiomata foliicola, partim immersa, pycnidialia initio cylindrica postea ad basim subglobosa, longirostrata,

Table 1. Comparison of pycnidial and conidial details of *Caducirostrum foliicola* with selected *Coleophoma* and *Rhabdostromina* species and isotypes in herb. K.

Species	Material examined and host	Conidiomata characters	Conidia: shape and size (μm)
<i>Caducirostrum foliicola</i> Punith. & Spooner	Types. <i>Viburnum tinus</i> L., <i>Arbutus unedo</i> L., <i>Prunus laurocerasus</i> L., <i>P. lusitanica</i> L. leaf litter Isotype: <i>Ascalus hippocastanum</i> L. cupules. Only <i>Phomopsis</i> conidia found in isotype in K.	pycnidial, globose with one or more long, cylindrical necks	cylindrical, apex rounded, base rounded with a very short papilla; 14 – 16 \times 1.5 – 2
<i>Coleophoma aesculi</i> (Petr.) Nag Raj (1978)	Only <i>Phomopsis</i> conidia found in isotype in K.	orbicular, glabrous, 50 – 90 μm diam. <i>vide</i> Nag Raj (1978)	cylindrical, rounded at apex, truncate at base, 10 – 17 \times 1.5 – 2 <i>vide</i> Nag Raj (1978)
<i>Coleophoma crateriformis</i> (Durieu & Mont.) Höhn. (Höhnel 1907)	Desmazières Plantes Cryptogames de France Edit. I., 1825 – 51, 1889. K(M)154502a. Type host: <i>Phillyrea</i> sp. leaves	125 \times 150 μm high; erumpent, crateriform, with ostioles c. 70 μm wide (ovoid, crateriform, glabrous, 140 – 270 μm diam. <i>vide</i> Nag Raj 1978)	cylindrical, narrowed at base, 12.5 – 14 \times 1.5 – 2 (– 2.5); cylindrical, 15 \times 2.5 (Durieu & Montagne 1856); 11 – 17 \times 2 – 2.5, apex obtuse, base narrowed, truncate (Nag Raj 1978)
<i>Coleophoma cylindrospora</i> (Desm.) Höhn. (Höhnel 1919)	Type not seen; Herb. Crypt. Belg. 540, on <i>Hedera helix</i> leaf. K(M)161921. type host: <i>Hedera helix</i> dead leaves	subglobose 160 – 175 μm , with wide ostiole 80 – 100 μm wide. (Globose, protruding in clusters <i>vide</i> Saccardo 1884)	cylindrical, apex rounded, (19 –) 20 – 24 \times 2.5 – 3 (– <3.5), 20 – 25 \times 2 – 3 (Desmazières 1849); 16.5 – 24 \times 2.5 – 3 (Sutton 1980)
<i>Coleophoma maculiformis</i> (Cooke & Harkn.) Petr. (Petra 1957)	Isotypes, K(M)161919a & b. <i>Arbutus menziesii</i> leaves	black, 200 – 230 μm diam., opening by a broad pore	cylindrical-fusoid, 24 – 28.5 (– 30) \times 2.5 – 3 (– <3.5); cylindrical, apex acute, base narrowed, truncate. 18 – 26 \times 3 – 3.5 (Petra 1957)
<i>Coleophoma oleae</i> (DC.) Petr. & Syd. (Petra & Sydow 1927)	De Thumen, Mycotheca Universalis 1397, K (M)161917. Type host: <i>Olea europaea</i> leaves	conical, to c. 250 μm diam. with broad pore c. 50 μm wide Globose, ostiole erumpent, conical, moderately long (Saccardo 1884)	cylindrical, narrowed at base, guttulate. 19 – 22 \times 3.5 – 4.5; oblong to cylindrical, 18 – 25 \times 3.5 – 5 (Saccardo 1884); 16 – 23 \times 3 – 4.5 (Petra & Sydow 1927); 15.5 – 22.5 \times 3 – 4.5 (Sutton 1980)
<i>Coleophoma rhododendri</i> Syd. (Sydow 1936)	Isotype (Sydow, Mycotheca germanica 2955), K(M)161918a. Type host: <i>Rhododendron</i> sp. cult. cf. <i>ponticum</i> leaves	conical, 160 – 185 μm diam., with conical neck, opening by wide pore. (90 – 160 μm diam. <i>vide</i> Sydow 1936)	cylindrical, narrowed at base, (14 –) 16 – 19 \times 2 – 2.5 (– <3); 13 – 20 \times 2 – 2.5 (Sydow 1936)
<i>Rhabdostromina empatri</i> (Rostr.) Died. (Diedicke 1921)	Holotype. Type host: <i>Empetrum nigrum</i>	hemispherical, to c. 180 μm diam.	curved-cylindrical to acicular, 18 – 24 \times c. 2, 1 – 3-septate; 20 – 25 \times 1 – 1.5 (Rostrup 1888)

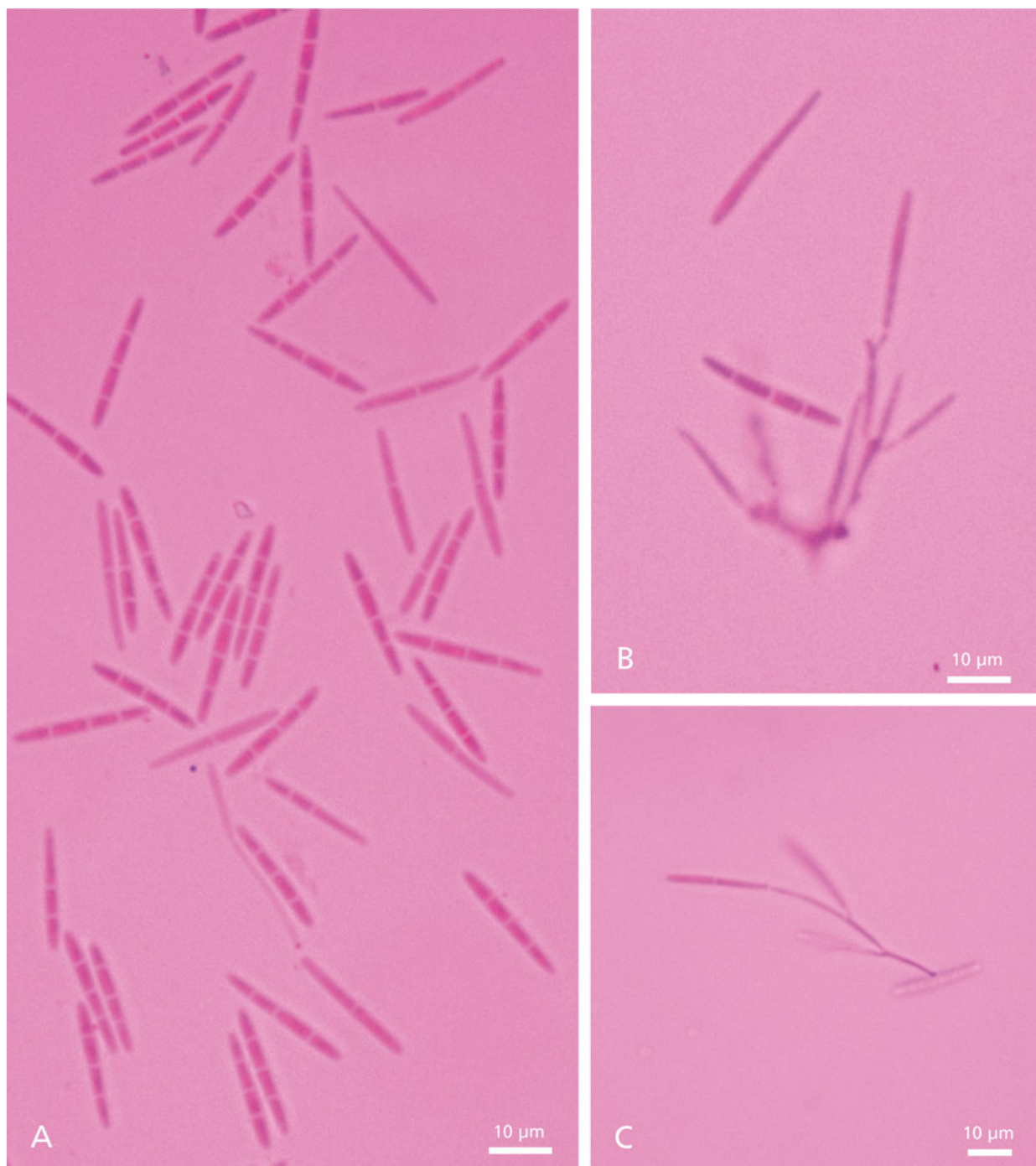


Fig. 1. A – C *Septoria empetri*, holotype. Stained in lactofuchsin. A conidia; B – C branched conidiophores with conidia attached to conidiogenous cells on conidiophores.

plerumque 1 – 3 rostrata, interdum multirostrata; demum rostra caduca. Rostrum elongatum, multicellulosum, absque canale vel orificio apicali. Conidiophora brevia, 1 – 2 septata. Cellulae conidiogenae hyalinae, in conidiophoris incorporatae vel stratis cellularum cavitatis conidiomatis exorientia, ampulliformes vel cylindricae, laevibus, phialidicae. Conidia hyalina, cylindrica. Conidiomata primo non-ostiolata,

post demum ostiolata. Species typica: *Caducirostrum foliicola* Punith. & Spooner.

***Caducirostrum foliicola* Punith. & Spooner sp. nov.** Conidiomata abundantia, amphigena, pycnidialia, partim immersa, brunnea vel atrobrunnea vel nigra, initio cylindrica, postea ad basim subglobosa,

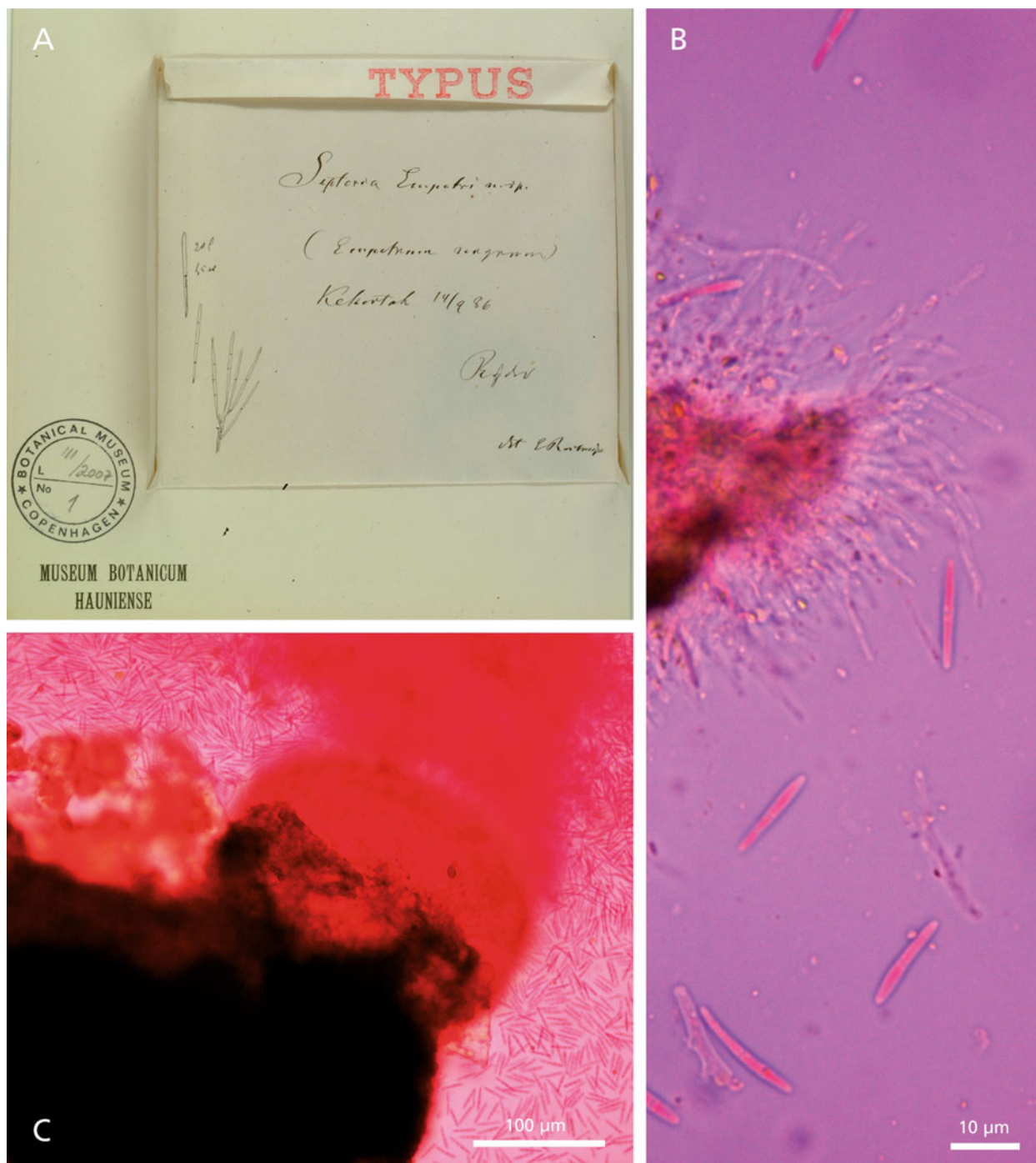


Fig. 2. A – C *Septoria empetri*, holotype. A handwritten label from holotype, with illustrations of conidiophores by Rostrup; B – C stained in lactofuchsin. B squash preparation, showing part of pycnidial wall, conidiophores and conidia; C pycnidium showing a globose mass of conidia and dispersed conidia.

110 – 150 µm diam., longirostrata, plerumque 1 – 3-rostrata, interdum multirostrata, cylindrica, 215 – 320 × 25 – 45 µm; post demum rostra caduca; conidiomata postremo ostiolata. Ostiola circularia, 30 – 55 µm lata. Paris conidiomatalis pseudoparenchymatus, ex 2 – 4 stratis cellularum (textura angularis) compositus; strato extimo atrobrunneo, crassoparietali, stratis intimis stramineis vel hyalinis. Conidiophora hyalina, 1 – 2-

septata. Cellulae conidiogenae hyalinae, cylindricae vel ampulliformes in conidiophoris incorporatae vel exintimis stratis cellularum cavitatis conidiomatis exorientia. Conidia hyalina, cylindrica, 14 – 16 × 1.5 – <2 (plerumque 1.5 – 1.75) µm, ad apicem rotundata, basi angustata vel papillata, truncata. Typus: U.K., Surrey, Kew, Royal Botanic Gardens, outside Hanover House, north west facing corner, in foliis dejectis emortuis lectum

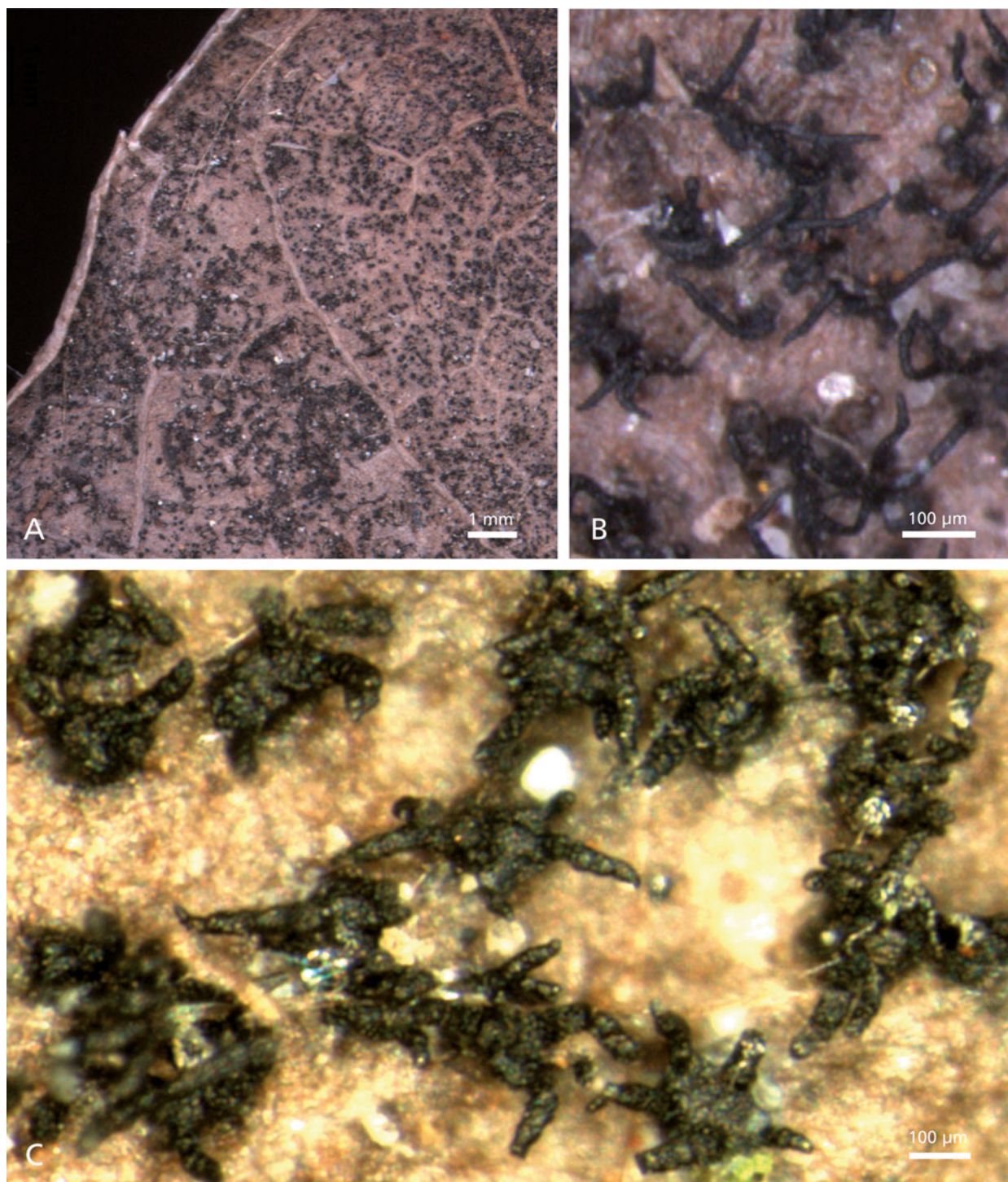


Fig. 3. *Caducirostrum foliicola*. **A – B** holotype, on *Viburnum* leaves. **A** habit; groups of pycnidia, on leaf underside; **B** elongated necks rising above leaf surface; **C** on *Arbutus* leaf; groups of multirostrate pycnidia (K(M)153957).

Viburni tini L., 28 Feb. 2006, B. Spooner (holotypus K(M)153963).

Conidiomata abundant, amphigenous, partly immersed, pycnidial, dark brown to black, initially cylindrical with base subglobose, 110 – 150 µm diam.,

initially with long necks, usually 1 – 3 or occasionally up to 5 or more prominent slightly tapered necks; necks 215 – 320 × 25 – 55 µm, sometimes colonised by *Scolecobasidium*; long cylindrical pycnidial necks eventually become detached from the basal subglobose part of the conidiomata leaving the partly immersed

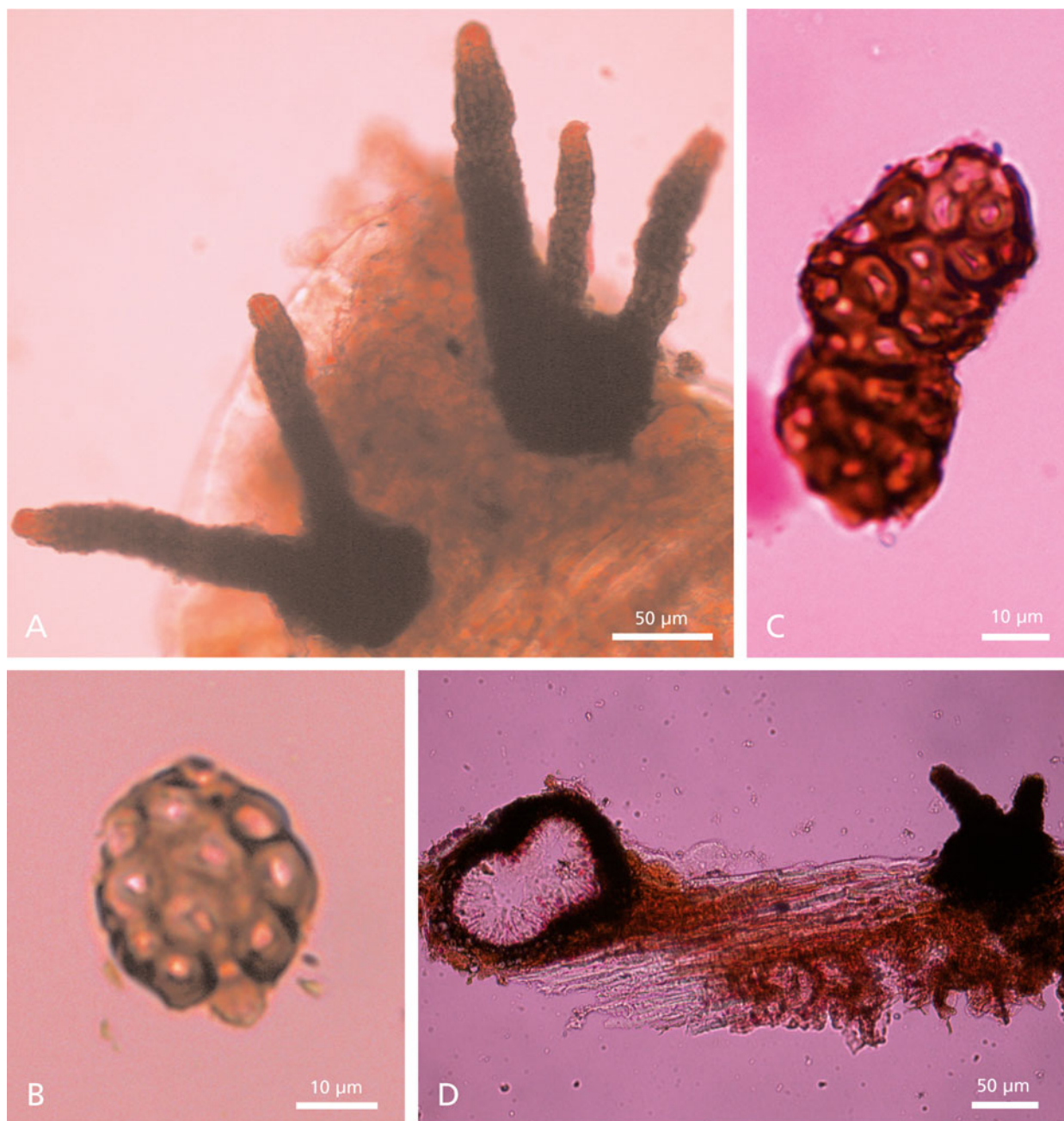


Fig. 4. *Caducirostrum foliicola*, holotype, stained in lactofuchsin. A bi- and tri-rostrate pycnidia; B – C t.s. of rostrum; B near mid-region; C two fused rostra, near base; D t.s. of part-immersed pycnidium, with entire, part-immersed birostrate pycnidium.

subglobose bases with distinct wide ostioles. Neck dark brown to blackish, paler at the apex, lacking central channel and apical vent, composed of angular to cuboid cells $7 - 10 \times 5 - 8 \mu\text{m}$, slightly smaller to apex, walls brown, thickened, with reduced lumen, arranged at the apex into rows.

Conidiomatal wall stromatic, pseudoparenchymatous, 2 – 4 cell layers thick, the outermost cell layer dark brown, thick-walled, the innermost layer yellowish to hyaline. *Conidiophores* usually absent, when present short, 1 – 2-septate, hyaline, arising from the innermost

cell layers lining the pycnidial cavity. *Conidiogenous* cell arising directly from the innermost layer of cells lining the conidiomatal cavity or borne on short conidiophores, hyaline, ampulliform or cylindrical, smooth, integrated, phialidic. *Conidia* hyaline, cylindrical, $14 - 16 \times 1.5 - <2 \mu\text{m}$ (mostly $1.5 - 1.75 \mu\text{m}$), guttulate, apex rounded, base narrowed and drawn out, truncate. Figs 3, 4, 5, 6 and 7.

DISTRIBUTION. Southern England, Italy (Sardinia). Known from the holotype, three further collections

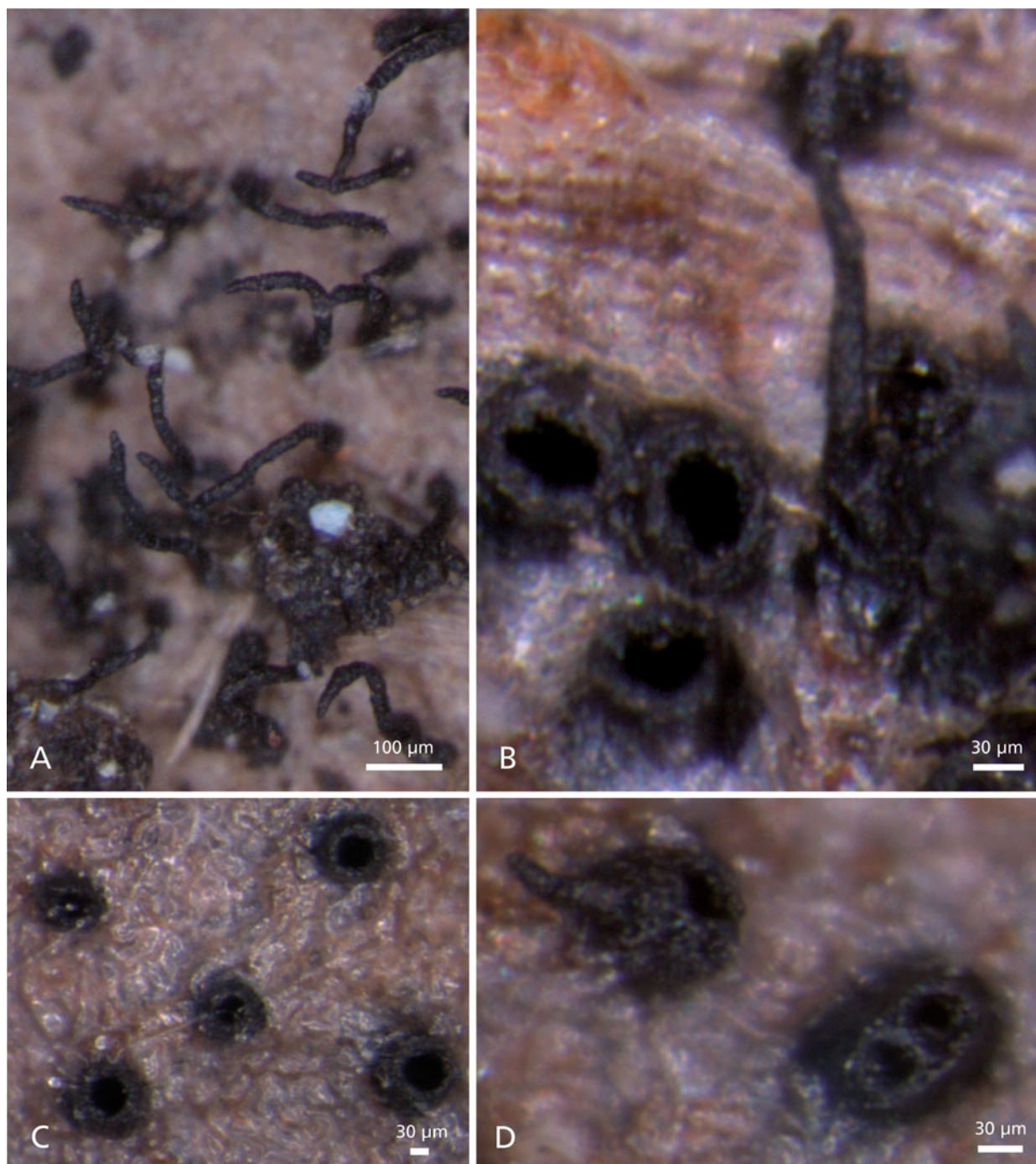


Fig. 5. *Caducirostrum follicola*, holotype, showing stages in ostiole formation by the detachment of the long cylindrical necks. **A** pycnidia with prominent cylindrical necks; **B** almost detached neck at the base; pycnidia with wide ostiole after detachment of necks; **C** pycnidium and partly detached neck and another with two ostioles after detachment of necks; **D** ostiolate pycnidia after losing necks.

on *Viburnum tinus*, and three other collections from *Arbutus unedo*, *Prunus laurocerasus* and *P. lusitanica*.

SPECIMENS EXAMINED. ENGLAND. Surrey: Kew, Royal Botanic Gardens, by Hanover House, on decaying, fallen leaves of *Viburnum tinus* L., 28 Feb. 2006, *B. M. Spooner* K(M)153963 (holotype K); Kew, Royal Botanic

Gardens, on fallen leaves of *Arbutus unedo*, 23 Nov. 2006, *B. M. Spooner* K(M)153957 (K); Woking, Brookwood Cemetery, on fallen leaves of *P. laurocerasus*, 3 Dec. 2006, *B. M. Spooner* K(M)143405 (K); Richmond, Ham, Parkleys, on fallen leaf of *V. tinus*, 3 Oct. 2007, *E. Punithalingam* K(M)154306 (K); Essex: Southend-on-

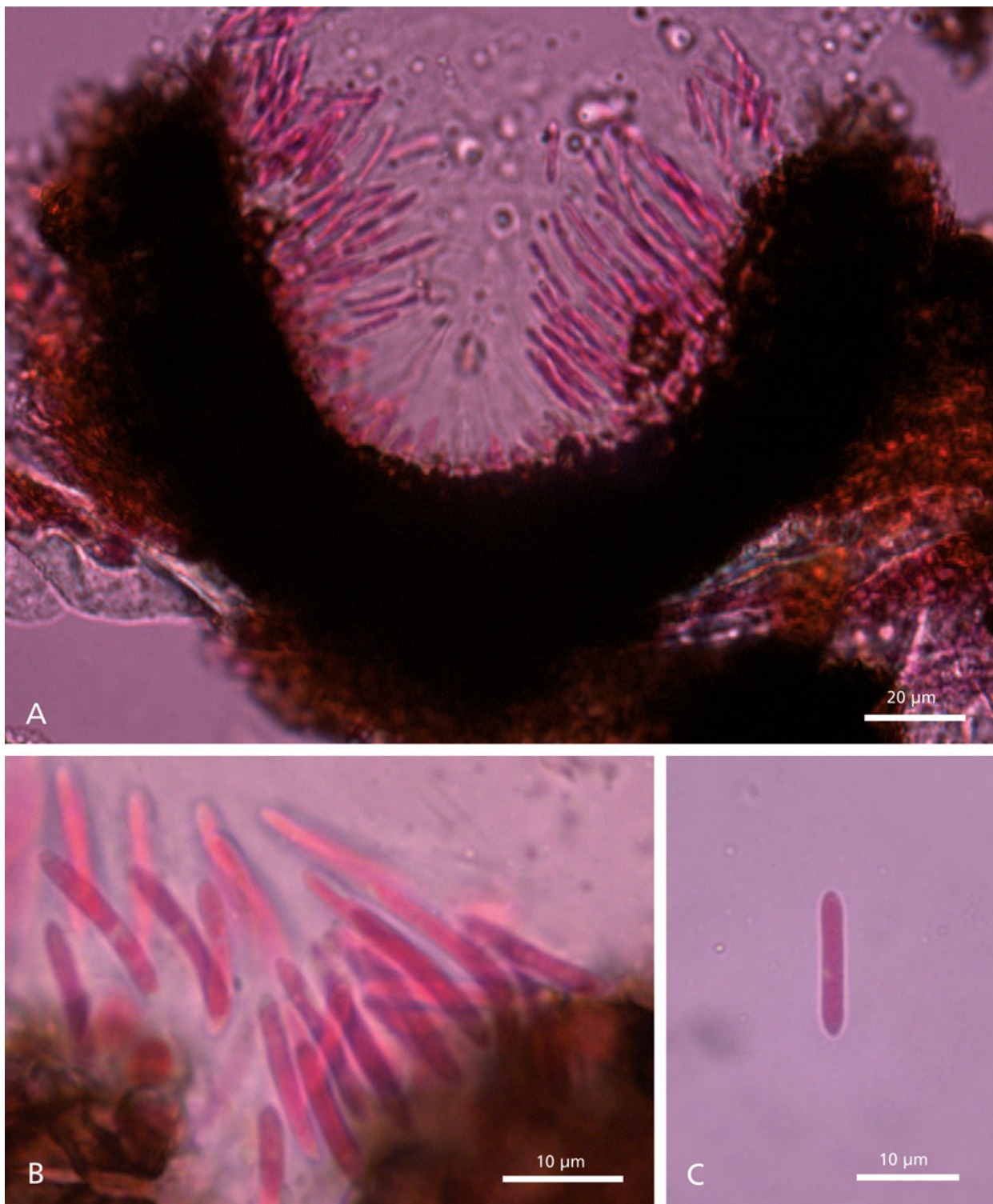


Fig. 6. *Caducirostrum foliicola*, holotype, stained in lactofuchsin. **A** vertical section of pycnidium showing pycnidial wall, conidiogenous cells and conidia; **B** part of pycnidial wall and conidiogenous cells with conidia; **C** conidium.

Sea, on fallen leaves of *V. tinus*, 25 Dec. 2005, *B. M. Spooner* K(M)136873 (K); Cambridgeshire: Wimpole, on fallen leaves of *P. lusitanica*, 21 Oct. 2006, *M. Parslow* (K (M)142901 (K). **WALES.** Monmouthshire: Abergavenny,

on fallen leaves of *V. tinus*, 4 Nov. 2005, *B. M. Spooner* K (M)136872 (K). **ITALY.** Sardinia, Tempio Pausania (near), Baldo, on fallen leaves of *V. tinus*, 11 Nov. 2006, *B. M. Spooner* K(M)143330 (K).

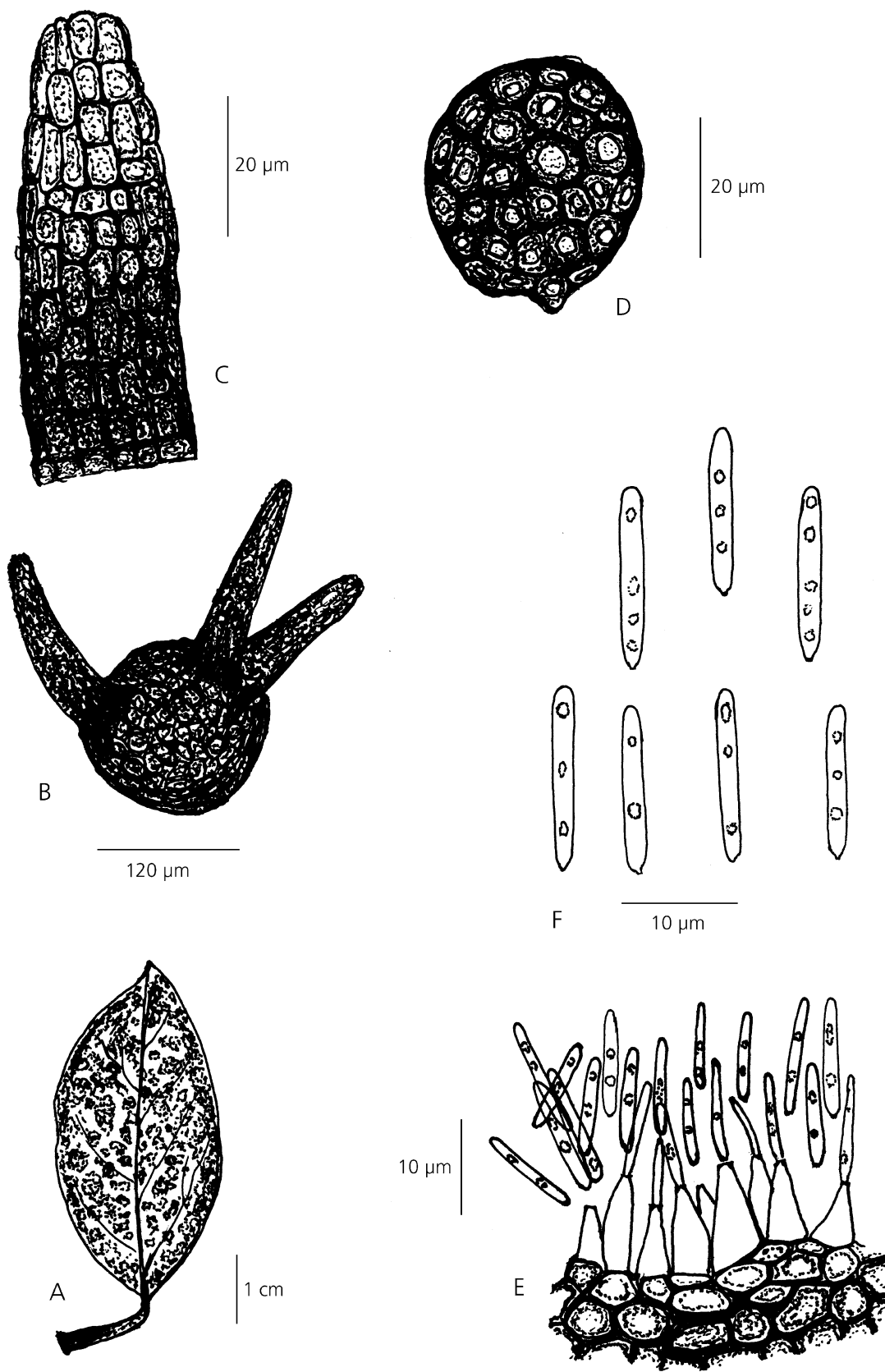


Fig. 7. *Caducirostrum foliicola*, holotype. A habit sketch; B tri-rostrate pycnidium removed from leaf; C tip of rostrum showing paler apex; D t.s. of rostrum near mid region showing thick-walled cells; E part of pycnidial wall, conidiogenous cells and conidia; F conidia.

Table 2. Comparison of the essential morphological details of *Scolecobasidium rostricola* with fungicolous *Scolecobasidium* species and others with similar conidial characters.

<i>Scolecobasidium</i> species	Source/ material examined	Host/Substrata	Conidia: size (μm)	Conidia: colour	Conidia: shape & septation
<i>S. rostricola</i> Punith. & Spooner	Holotype, UK (K(M)153962)	<i>Caducirostrum</i> on <i>Viburnum tinus</i>	(6–) 7–10 \times c. 2	straw yellow to pale brown	straight, smooth medianly 1-septate
<i>S. acanthiacaerium</i> (Cooke) M. B. Ellis (1971).	Synotype, U.K. (IMI 60527)	<i>Daedalacanthus</i> , <i>Harungana</i> and rust fungi (see Ellis 1976)	10–16 \times 2–3.5 (10–18 \times 3–4 <i>vide</i> Ellis 1971)	hyaline to very pale brown	slightly curved, ellipsoidal to fusiform, smooth, 1–5-septate, mostly 3-septate
<i>S. dendroides</i> Piroz. & Hodges (Pirozynski & Hodges 1973)	Holotype, USA (IMI 165970)	setae of <i>Cirrinotrichum fertile</i> on fallen leaves of <i>Persca borboniae</i> (L.) Spreng.	cylindrical conidia 7.5–11 \times 2.5–3; fusiform conidia 11–17 \times 2–2.5 (–3)	straw yellow	straight, cylindrical to fusiform, minutely verruculose/echinulate, 1-septate
<i>S. pusillum</i> Deighton & Piroz. (Deighton & Pirozynski 1972)	Holotype, Sierra Leone (IMI 46499c)	hyperparasite on <i>Exosporium stilbaceum</i> , on leaves of <i>Elaeis guineensis</i> Jacq.	11–26 \times 2–2.5 (12–37 \times 2–2.5 <i>vide</i> Deighton & Pirozynski 1972)	pale olivaceous	slightly curved, narrowly fusiform, smooth, 1–5-septate, mostly 2–3-septate
<i>S. salmonicolor</i> Shearer (1974)	Shearer (1974) U.S.A.	saprobic on balsa wood submerged in fresh and brackish water	(8.5–) 10.7 (–13.4) \times (2.5–) 3.2 (–4) <i>vide</i> Shearer (1974)	hyaline to pale yellow	oblong-elliptical to obovate, smooth, 1-septate
<i>S. tenerum</i> E. V. Abbott (1927) (generic type)	Authentic, U.S.A. IMI 90177	isolated ex soil	4–12 \times 2–2.5 (Abbott 1927); only chlamydospores seen in available material	pale olivaceous	'T' or 'Y' shaped, smooth, 1-septate

ETYMOLOGY. *foliicola* — refers to the substratum, on decaying leaves.

NOTES. The *Scolecobasidium* colonising the ostiolar necks of *Caducirostrum* occurs on young, developing conidiomata and seems likely to be parasitic. It can be readily distinguished from other species of the genus by conidial size and septation (see comparison of similar and fungicolous species in Table 2). Amongst the *Scolecobasidium* species described with 1-septate conidia, *S. constrictum* E. V. Abbott, *S. compactum* M. B. Ellis, and *S. dendroides* Piroz. & Hodges have some similarity with the present species but can be distinguished by their broader conidia. Furthermore, *S. compactum* has conidiophores in tight clusters, whilst *S. dendroides* has elaborately branched (dendroid) conidiophores unlike those of the present species. In *S. constrictum* the conidia are also finely echinulate and constricted at the septum. Hence, the present species is described here as a new species, *S. rostricola* sp. nov.

***Scolecobasidium rostricola* Punith. & Spooner sp. nov.**

Coloniae in collis hospitis fungalis *Caducirostri*, effusae. Mycelium partim immersum vel superficiale ex hyphis pallide brunneis vel brunneis, septatis, laevibus. Conidiophora macronemata vel mononemata, straminea vel pallide brunnea, recta, interdum flexuosa, cylindrica, non ramosa, usque 16–25 longa, 2.5 (–3) μm lata. Cellulae conidiogenae stramineae vel pallide brunneae, in conidiophoris incorporatae, sympodiales, polyblasticae, integrate, laterales vel terminales, 3–7 denticulatae. Conidia straminea vel pallide brunnea, cylindrica, ad apicem rotundata, ad basim truncata, laevia, (6–) 7–10 \times c. 2 μm , guttulate, 0–1-septata transversales. Typus: U.K. Surrey, Kew, Royal Botanic Gardens, by Hanover House, in collis hospitis fungalis *Caducirostrae* in foliis emortuis dejectis *Viburni tini* L., Dec. 2005, B. Spooner (holotypus K(M)153962).

Colonies effuse, on necks of the host fungus *Caducirostrum foliicola*. Mycelium partly immersed or superficial, composed of septate, straw-brown to brown, smooth hyphae. *Conidiophores* macronematous to mononematous, numerous, mainly straight, occasionally flexuous, septate, unbranched, up to 16–25 μm long and 2.5 (–3) μm wide. *Conidiogenous* cells straw-yellow to pale brown, pale at the apex, sympodial, polyblastic, integrated, with 3–7 denticles. *Conidia* straw-yellow to pale brown, cylindrical, apex rounded, base truncate, smooth, (6–) 7–10 \times c. 2 μm , guttulate, with 0–1 transverse septa. Figs 8 and 9.

DISTRIBUTION. Known from southern England, from the holotype and paratype specimens cited.

SPECIMENS EXAMINED. ENGLAND. Surrey: Kew, Royal Botanic Gardens, by Hanover House, north west, on

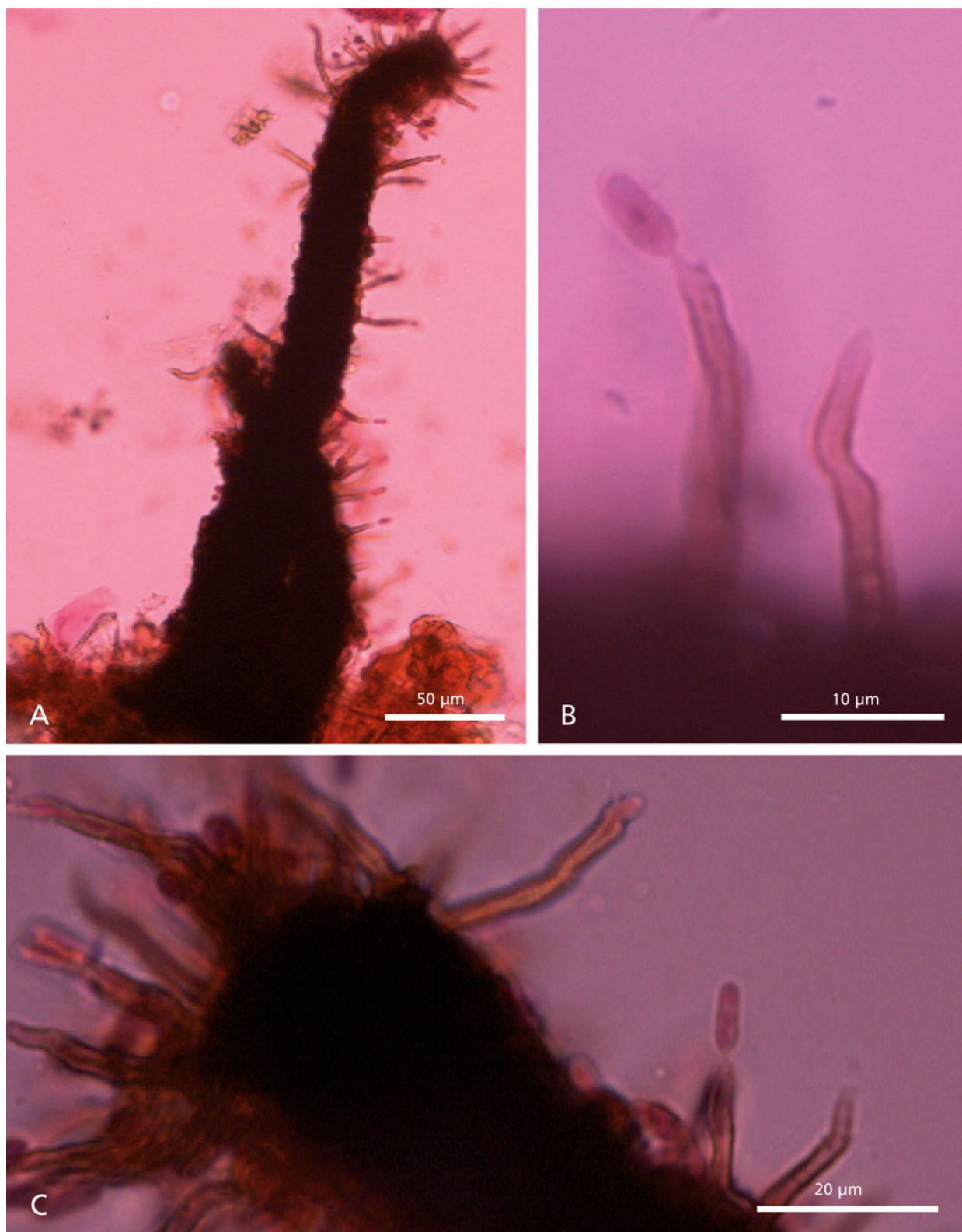


Fig. 8. *Scolecobasidium rostricola*, holotype. A – C stained in lactofuchsin. A – elongated neck of pycnidium of *Caducirostrum foliicola* colonised by *Scolecobasidium rostricola*; B conidiophores of *S. rostricola* showing denticles and attached conidium; C part of surface of neck of *C. foliicola* with conidiophores of *S. rostricola*.

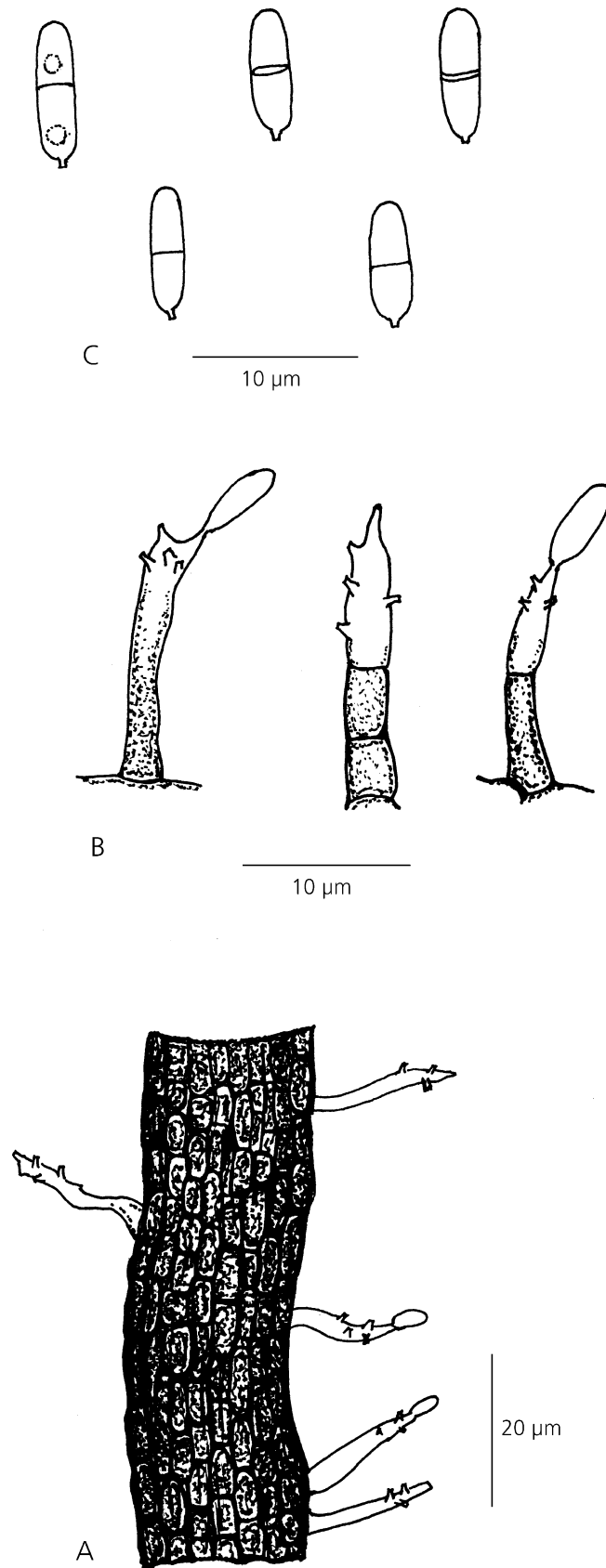


Fig. 9. *Scolecobasidium rostricola*, holotype. A conidiophores on host rostrum; B conidiophores with peg-like conidiogenous cells; C conidia.

necks of *Caducirostrum foliicola* species on dead fallen leaves of *Viburnum tinus* L., Dec. 2005, B. M. Spooner K (M)153962 (holotype K); on necks of *C. foliicola* on leaves of *Arbutus unedo*, Kew, Royal Botanic Gardens, 23 Nov. 2006, B. M. Spooner, K(M)153956 (K).

ETYMOLOGY. The epithet 'rostricola' refers to the habitat ('rostrum'-dweller).

NOTES. This is not the first report of a *Scolecobasidium* species from fungal hosts. Three other species have previously been recorded as hyperparasites of fungi, viz. *S. acanthacearum* (Cooke) M. B. Ellis from members of Uredinales (*Uredo longaensis* Henn. on *Combre-tum* Loeffl. and *Hemileia vastatrix* Berk. & Broome on *Coffea* L.; Ellis 1971), *S. dendroides* Piroz. & Hodges on *Circinotrichum fertile* Piroz. & Hodges (Pirozynski & Hodges 1973), and *S. pusillum* Deighton & Piroz. on *Exosporium stilbaceum* (Moreau) M. B. Ellis (Deighton & Pirozynski 1972). In addition, *S. constrictum* E. V. Abbott has been claimed to be parasitic on nematodes (Upadhyay 1966).

To date 42 species and two varieties of *Scolecobasidium* have been published, based on the concept of the genus as interpreted by Abbott (1927) who established the genus with *S. terreum*, a species with T- to Y-shaped conidia, and *S. constrictum* with cylindrical conidia. Although this generic concept has been accepted by several workers (Barron & Busch 1962; Deighton & Pirozynski 1972; Ellis 1971; 1976; Graniti 1963; Matsushima 1971, 1975, 1980, 1987, 1993, 1996; Pirozynski & Hodges 1973), de Hoog & von Arx (1974) on the basis of conidial shape introduced a new genus, *Ochroconis*, to which they transferred a number of species previously described in *Scolecobasidium*. However, the generic characters of *Ochroconis* were considered indistinguishable from those of *Scolecobasidium* by Ellis (1976) and Matsushima (1980, 1985, 1987, 1993, 1996) who accepted the original generic concept (Abbott 1927) of *Scolecobasidium* and relegated *Ochroconis* to synonymy. The salient characters of *Scolecobasidium* are the presence of sympodial, holoblastic conidial cells and the fact that the conidia are detached by the breaking of the conidiogenous cell in the middle leaving a part of it attached to the conidium and the other part to the conidiogenous cell as denticles.

In this paper the wider concept of *Scolecobasidium* as interpreted by Abbott (1927) is accepted and *Ochroconis* is considered a synonym of *Scolecobasidium*. It is worth mentioning that, from an inspection of published illustrations (i.e. line drawings) of *Scolecobasidium* species, it appears that conidial septation in some species could be interpreted as euseptate whilst in others it appears to be distoseptate (Luttrell 1963). Further study is required to ascertain the taxonomic importance of this character in *Scolecobasidium*. At present none of the *Scolecobasidium* species described have been linked with any teleomorph species.

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