

Observations on lichenicolous fungi described by Spegazzini

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Abstract: We have studied and tried to clarify the application of names of all the lichenicolous fungi described by Carlos Spegazzini. Several of these names have not previously been treated by mycologists currently specializing in lichenicolous fungi. *Verruculina* gen. nov. is introduced with *V. sigmatospora* (Speg.) Etayo (syn. *Metanectria sigmatospora*) as type, and the new combination *Scutula nephromatis* (Speg.) Etayo (syn. *Patellea nephromatis*) is made. Material of several species, *Diplosporium caudatum* (on *Punctelia*), *Pleurotus lichenicolus* (on *Usnea*), *Pyrenopeziza lichenicola* (on *Flavoparmelia*), *Selenosporium lichenicola* (on *Candelaria*) and *Vermiculariella lichenicolum* (on *Physcia* and *Peltigera*), could not be located in Spegazzini's collections in La Plata (LPS), therefore these names remain to be clarified.

Key words: *Ascomycota*, deuteromycetes, lichens, *Scutula*, *Verruculina*

Introduction

During two expeditions to southernmost Chile, J. E. collected many species of apparently unknown lichenicolous fungi. As Carlos Spegazzini (1858–1926) participated in an Italian-Argentinean expedition to Patagonia and Tierra del Fuego in 1881, we felt it would be prudent to first revise the lichenicolous fungi described by him. Spegazzini was an extraordinary mycologist, who single-handedly increased the number of non-lichenized fungi known in Argentina from less than 50 to *c.* 4000, of which about 2000 were described as new (<http://www.fcnym.unlp.edu.ar/museo/institutos/spegazzini/ibsmicologo.html>).

J. E. extracted all records of lichenicolous fungi in the catalogue of species names introduced by Spegazzini prepared by Farr (1973), and V.G.R. endeavoured to locate the type material of these amongst Spegazzini's collections, which are now

preserved in the institute that bears his name in La Plata (LPS). Some of these had already been studied by previous researchers (Hawksworth 1979, 1981; Rossmann 1983; Lowen 1990; Etayo 1996, 2002, 2003; R. Santesson unpublished), but others had not. The aim of this paper is thus to clarify the application and identities of the names we have accessed of the lichenicolous fungi described by Spegazzini.

The Names

Calonectria lichenigena Speg.

Bol. Acad. Nac. Ci. 11: 530 (1889); type: Brazil, Apiahy, July 1881, *J. Puiggari* (LPS—holotype).

Rossmann *et al.* (1999) placed this name as a synonym of *Albonectria rigidiuscula* (Berk. et Broome) Rossmann (syn. *Nectria rigidiuscula* Berk. et Broome), but did not mention its reported lichenicolous habit. *Albonectria rigidiuscula* is saprophytic or pathogenic on dicotyledonous plants. Rossmann (1983) examined the type specimen of *C. lichenigena*, and did not find any ascomata but she did, however, find that there was a stroma erumpent through lichen thalli from dead wood below. This explanation had already

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been suggested by Vouaux (1914) and the description of the microscopic characters by Spegazzini leaves no doubt it was this common species.

Didymosphaeria infestans Speg.

Anales Soc. Ci. Argent. **12**: 176 (1881); type: Argentina, Buenos Aires, Las Conchas, on *Teloschistes flavicans*, 1 May 1881, *C. Spegazzini* 5854 (LPS—holotype).

As was pointed out by Etayo (1996), this is a *Polycoccum* species lichenicolous on *Teloschistes flavicans*, and is now known as *Polycoccum infestans* (Speg.) Etayo.

Diplosporium caudatum Speg.

Anales Mus. Nac. Buenos Aires **6**: 334 (1899); type: Argentina, Parque de La Plata, on *Punctelia constantimontium* (as “*Ricasolia casarettiana*”) on *Melia azederach*, April 1890, *C. Spegazzini* (not located).

This species was described as a hyphomycete growing in what is now a *Punctelia* species. Hawksworth (1979) did not find the type, and considered it impossible to give an actual name to the conidial fungus on the basis of the description alone. The fungus was growing with *Pronectria subimperspicua* (see below), so Vouaux (1914) argued that it could be the anamorph of that species.

Epicymatia (as “Epicymactia”) microspora Speg.

Anales Mus. Nac. Buenos Aires **6**: 266 (1898); type: Argentina, La Plata, Parque, on *Punctelia constantimontium* (as “*Ricasolia casarettiana*”), October 1895, *C. Spegazzini* (LPS 6068—holotype).

As demonstrated by Etayo (2003), this name is a synonym of *Phacopsis thallicola* (A. Massal.) Triebel & Rambold.

Libertiella malmedyensis Speg. & Roum.

In Roum., *Rev. mycol. (Toulouse)* **2**: 22 (1880); type: Belgium, “prope malmedyanum”, on *Peltigera didactyla*, “Hieme”, *M.A. Libert* (BR—holotype [not seen]; K—isotype).

A detailed study of this species was made by Hawksworth (1981). The species is

known from many countries in Europe, including Ukraine (Martínez & Hafellner 1998).

Metanectria sigmatospora Speg.

Bol. Acad. Nac. Ci. **11**: 528 (1889); type: Brazil, Apiaty, on *Anaptychia* cf. *podocarpa* (= *Heterodermia*), July 1889, *J. Puiggari* 124 (LPS-1715—holotype).

(Fig. 1A–E)

Ascomata completely immersed in the thallus of the host, forming round, ostiolate, but not papillate verrucae, 300–500 µm diam., concolorous with the thallus. *Exciple* 12–15 µm thick, composed of 4–6 rows of cells, the cells compressed in section, hyaline, surrounded by a prosoplectenchymatous tissue typical of the thallus of the host. *Hamathecium* of hymenium KI–. Paraphyses abundant, simple to branched, septate, 2–2.5 µm thick at the base and narrowing to *c.* 1 µm at the apex. *Asci* clavate, with a short stalk, walls thin, unitunicate in structure, slightly thickened at the convex apex, polysporous (probably 32 spores), 120–150 × 15–20 µm. *Ascospores* fusiform, 1-septate, not constricted at the septum, hyaline, smooth, with long, attenuated ends, 50–60 µm long (including the long ends) and 22–25 × 3–4 µm without them.

Host. Lichenicolous on *Anaptychia* cf. *podocarpa* (a small *Heterodermia* with sorediate lobules), not on *Physcia* as indicated in Farr (1973). The type specimen is a small lichen thallus of about 2 cm² well-covered by the fungus. Note that the type locality and host are the same as for *Nectriopsis lichenophila* (Etayo 2002).

Observations. This is one of the neglected species described by Spegazzini, because it does not appear in any of the fascicles of Vouaux (1912–1914), or in Clauzade *et al.* (1989).

According to Salisbury (1966), the type specimen of *Metanectria* Sacc. is *M. citrum* (Wallr.) Sacc., an earlier synonym of *Thelocarpon vicinellum* Nyl., which is thus

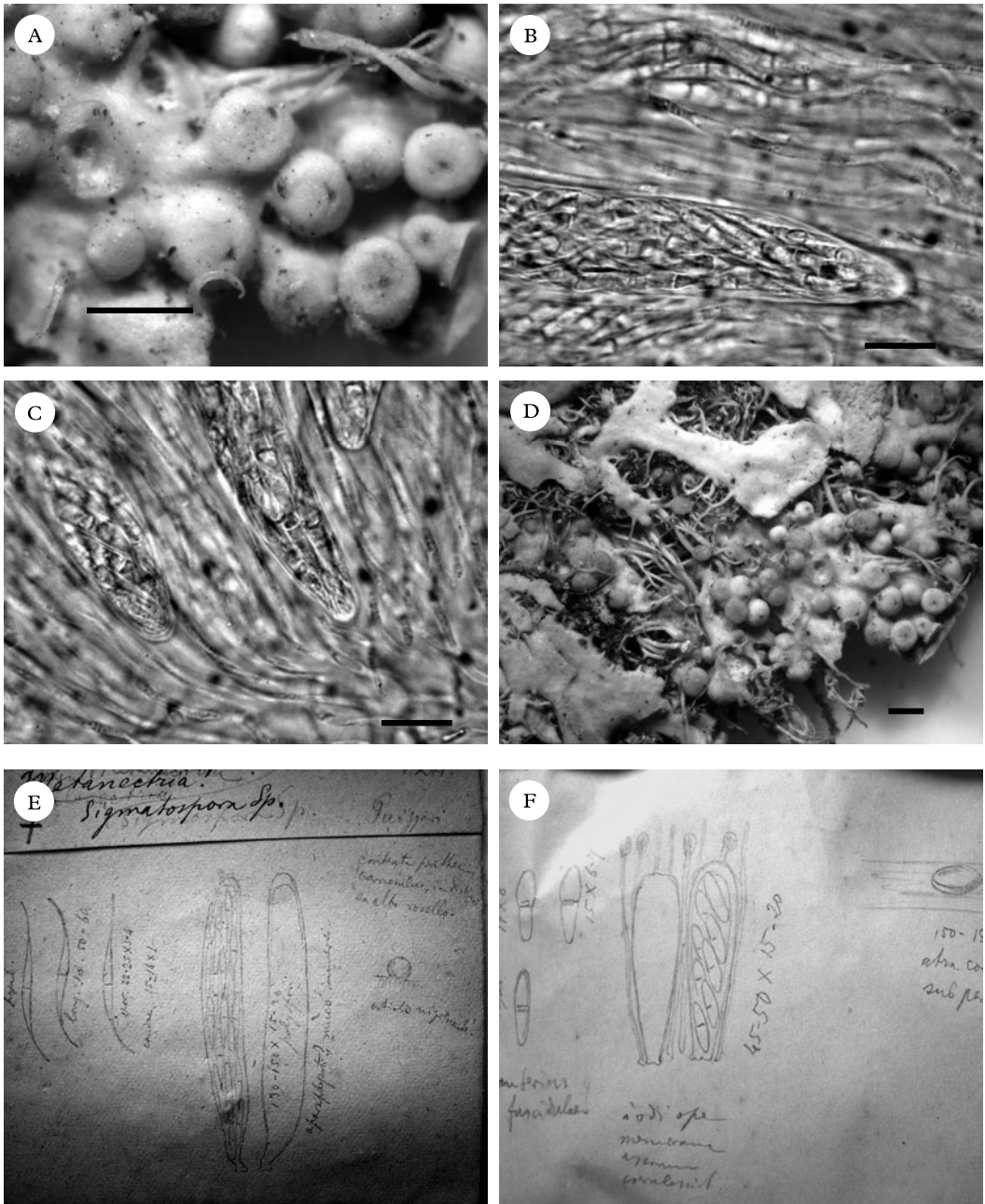


FIG. 1. Lichenicolous fungi described by Spegazzini. A–D *Verruculina sigmatospora*; A & D habitus (holotypus); B & C, multisporied asci with paraphyses. E & F, original envelopes drawn by Spegazzini in the type material; E, *Verruculina sigmatospora* (*Metanectria sigmatospora* Speg.); F, *Scutula nephromatis* (*Patellea nephromatis* Speg.). Scales: A & D=0.5 mm; B & C=10 μ m.

now known as *T. citrum* (Wallr.) Rossman. However, *M. sigmatospora* is not related to *Thelocarpon*. In the type box, a manuscript note by Rolf Santesson indicates that he planned to transfer it to *Rhynchonectria* Höhnelt, but the combination does not appear to have been made. According to Höhnelt (1902), that genus is close to *Nectria*, *Paranectria* and *Ophionectria*. However, the generic name *Rhynchonectria* is of uncertain application because the original material of the type species, *R. longispora* (W. Phillips & Plowr.) Höhnelt (syn. *Eleutheromyces longisporus* W. Phillips & Plowr., *Grevillea* 13: 78, 1885) could not be found in K (Rossman *et al.* 1999).

Rossman *et al.* (1999) did not consider the name *M. sigmatospora* in their study of *Hypocreales*, but, while the perithecial structure and ascospores are as might be expected in that order, the well-developed paraphyses are not. *Pronectria* Clem. is similar in some respects, but the paraphyses soon disappear and no known species has either polysporous asci or ascospores with attenuated ends. *Paranectria* Sacc. has similar spores but they are multiseptate to muriform, and the perithecia are superficial and hairy (*Nectriopsis*-like) with no paraphyses evident when mature. *Perigrapha superveniens* (Nyl.) Hafellner (Hafellner 1996), has somewhat similar ascospores and forms galls, but this species belongs to the *Opegraphales*, with a KI+ blue centrum, a ring in the tip of the endoascus, and a brown exciple.

The well-developed and persistent paraphyses in mature ascomata of *M. sigmatospora* suggest that the family *Hyponectriaceae* in *Xylariales* might be a more likely position, though no appropriate genus has been traced. A new generic name is therefore introduced here for this fungus.

Verruculina Etayo gen. nov.

Fungi lichenicoli ad *Hyponectriaceae* pertinent. Ascomata densiscule gregaria, immersa, perithecioidea, globosa vel globoso depressula, alborosea, glabra, parietis 12–15 µm crassis, cellulis hyalinis. Asci subcylindracei, polysporis, ca 32-spori. Ascospores fusioideo-sigmoideae utrinque setigero-caudatae, uniseptatae, hyalinae, laevigatae.

Typus: *Verruculina sigmatospora* (Speg.) Etayo.

Verruculina sigmatospora (Speg.) Etayo comb. nov.

Basionym: *Metanectria sigmatospora* Speg., *Bol. Acad. Nac. Ci.* 11: 528 (1889).

(Fig. 1A–E)

Monospermella Speg.

Bol. Acad. Ci. (Córdoba) 26: 360 (1923).

Monospermella portoricensis Speg.

Bol. Acad. Ci. (Córdoba) 26: 360 (1923); type: Puerto Rico, on leaf of *Randia aculeata* L. or Blanco, without date, *C. Spegazzini* (not located).

This species was studied by Santesson (1952) who treated it as a synonym of the foliicolous lichen *Psorotheciopsis premneella* (Müll. Arg.) R. Sant. (*Asterothyriaceae*).

Nectria heterospora Speg.

Bol. Acad. Nac. Ci. 11: 523 (1889); type: Brazil, Apiaty, on *Durietzia crenulata* (as “*Lobaria* sp.”) on tree, 1881/86, *J. Puiggari* 126 (LPS 1.585a—lectotype selected by Hawksworth & Booth 1976).

According to Hawksworth (1981) this species name is a synonym of *Nectriopsis parmeliae* (Berk. & M. A. Curtis) M. S. Cole & D. Hawksw. [syn. *Nectria parmeliae* (Berk. & Curt.) D. Hawksw., *N. diplocarpa* Ellis & Everh.]. It seems to be able to grow on a number of different genera of foliose and fruticose lichens. The type material consists of three samples in small envelopes. The most abundant is on *Sticta* aff. *ambavillaria* (det. R. Santesson). Perithecia are 250–300 µm diam., and according to drawings by Spegazzini, the asci have one large spore, 50 × 25 µm, and some smaller ones c. 10 × 5 µm with a verruculose surface. The lectotype is a small sample growing on *Durietzia crenulata* (Hook.) Yoshim. The envelope shows a good drawing of the perithecia, asci and ascospores. Three asci are depicted, one with eight small spores, and two with one large spore and seven smaller ones. The large spores are of 40–60 × 20–30 µm and smaller about 10–12 × 5–6 µm. Finally, the sample in the third

envelope grew on *Pseudocyphellaria clathrata* with one perithecium and is without drawings or notes on the envelope.

***Nectria lichenophila* Speg.**

Bol. Acad. Nac. Ci. **11**: 525 (1889); type: Brazil: Apiaby, on *Heterodermia* sp. (as *Anaptychia* cf. *podocarpa*) winter 1881, *J. Puiggari* (LPS 1587—holotype).

This is a species of *Nectriopsis*, and the transfer was made by Etayo (2002). The host is not a *Phyrcia* as reported by Farr (1973), but *Anaptychia* cf. *podocarpa* (i.e. *Heterodermia*).

***Nectria marelliana* Speg.**

Anales Mus. Nac. Buenos Aires **19**: 408 (1909); type: Argentina, La Plata, Los Hornos, on living thallus of *Parmelia microsticta*, June 1906, *C. Marelli* (LPS 1607—holotype).

The host was originally stated to be *Ricasolia casarettoana* but it in reality belongs to a genus of *Parmeliaceae*. The new combination *Cosmospora marelliana* (Speg.) Etayo was introduced for this fungus by Etayo (2003), who also provided illustrations and a modern description.

***Nectria subimperspicua* Speg.**

Anales Mus. Nac. Hist. Nat. Buenos Aires **6**: 290 (1899); type: Argentina, Buenos Aires, La Plata, on *Punctelia constantimontium* (as “*Ricasolia casarettoana*”), 1 April 1890, *C. Spegazzini* (LPS 1618—holotype).

This species was treated by Lowen (1990) as *Pronectria subimperspicua* (Speg.) Lowen. It is known only from the type locality.

***Patellea nephromatis* Speg.**

***Scutula nephromatis* (Speg.) Etayo comb. nov.**

Basionym: *Patellea nephromatis* Speg. *Bol. Acad. Nac. Ci.* **27**: 390 (1924); type: Argentina, Tierra del Fuego, Pto. Garibaldi, on *Nephroma antarcticum*, 19 i 1924, *C. Spegazzini* (LPS-4856—holotype!).

(Fig. 1F)

This lichenicolous fungus has not been treated in either older or recent books on

lichenicolous fungi (Clauzade *et al.* 1989; Vouaux 1912–14, etc.). The black and marginate apothecia occur on both surfaces of the thallus and also on the apothecia of *Nephroma antarcticum*. The species seems to be relatively common in southern Chile, especially in the neighbourhood of Coihaique and will be described in detail in a separate paper on the lichenicolous fungi of Navarino Island. The fungus clearly belongs to *Scutula*, so the new combination necessary is made here.

***Pleurotus lichenicolus* Speg.**

Bol. Acad. Nac. Ci. **11**: 400 (1889); type: Brazil, on *Usnea* sp., June 1881, *J. Puiggari* s.n. (not located).

This is a puzzling name because *Pleurotus* is a well-known generic name of large basidiomycetes (*Polyporaceae*) and quite different from the small lichenicolous fungi we can expect to find growing on *Usnea*. We did not find the type material in LPS.

***Pyrenopeziza lichenicola* Speg.**

Michelia **1**: 472 (1879); type: Italy, on dead thallus of *Parmelia caperata*, October 1879, *C. Spegazzini* (not located).

This species was combined as *Niptera lichenicola* (Speg.) Sacc. and grows on *Flavoparmelia caperata*. It is known only from Italy, and it has not been collected again. The type does not appear in LPS, so its status is not known.

***Rhabdospora antarctica* Speg.**

Anales Mus. Nac. Buenos Aires **20**: 390 (1910); type: Antarctica, South Orkney Islands: on *Caloplaca regalis*, February 1908, *C. Spegazzini* (LPS 11.231—holotype).

Hawksworth (1981) examined the holotype and realized the host was not really *Teloschistes* as was stated by Spegazzini but *Caloplaca regalis*. The species proved to be the common *Polycoccum rugulosarium* (Linds.) D. Hawksw.

***Selenosporium lichenicola* Speg.**

Anales Mus. Nac. Buenos Aires **20**: 459 (1910); type: Argentina, Buenos Aires, La Plata, on *Candelaria*

fibrosa, September 1906, C. Spegazzini (LPS 32.788—holotype).

Hawksworth (1979) examined the holotype (without conidia) and concluded from the drawings of Spegazzini it must belong to *Fusarium*. In that case the name *F. lichenicola* C. Massal. [= *Cylindrocarpon lichenicola* (C. Massal.) D. Hawksw.] should have priority. Hence a *nomen novum* would be required. Following the recommendation by Hawksworth (1979), this action is delayed pending the availability of further material.

Sporotrichum antarcticum Speg.

Anales Mus. Nac. Buenos Aires 20: 416 (1910); type: Antarctica, South Orkney Islands: on *Caloplaca* cf. *regalis*, January 1908, C. Spegazzini (LPS 21677—holotype).

Hawksworth (1979) restudied the type and made the new combination *Acremonium antarcticum* (Speg.) D. Hawksw. for this hyphal fungus growing on the surface of *Caloplaca regalis* (not *Teloschistes* as on the label by Spegazzini). It seems to us that the species is not growing naturally on the lichen, but is a contaminant introduced during humid storage. As reported by Hawksworth (1979), the type is accompanied by a species of *Polycoccum*, probably *P. rugulosarium*.

Verticillium lichenicolum Speg.

Bol. Acad. Nac. Ci. 11: 612 (1889); type: Brazil, on apothecia of *Physcia* sp. and *Peltigera* sp., Brazil, Winter 1880, J. Puiggari 127 (not located).

The type does not appear to be in LPS so the status of this species remains obscure.

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