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1 **Taxonomy, nomenclature *Hypoxylon* taxa, Spegazzini**

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3 **Taxonomic and nomenclatural aspects of *Hypoxylon* taxa from Southern South America**

4 **proposed by Spegazzini**

5 Hladki Adriana I.[1]

6 [1]*Instituto de Micología, Fundación Miguel Lillo. Miguel Lillo 251, San Miguel de Tucumán*

7 *(CP 4000), Tucumán, Argentina*

8 Romero Andrea I. [2]

9 [2]*PRHIDEB-CONICET, Dep. de Biodiversidad y Biología Experimental, Facultad de Ciencias*

10 *Exactas y Naturales (UBA), Ciudad Universitaria, Pabellón II, 4to. Piso, CP1428EHA*

11 *Buenos Aires, Argentina*

Abstract The holotypes and isotypes of twenty *Hypoxylon* taxa described by Spegazzini have been examined and their taxonomic positions and nomenclatural problems are discussed. Two new combinations, *Annulohypoxylon apiahynum* comb. nov. and *A. subeffusum* comb. nov. are proposed. *H. goliath* is considered a synonym of *Rosellinia bunodes*. *H. albostigmatosum* and *H. guarapiense* are synonyms of *H. anthochroum*; *H. anthracoderma* of *H. monticulosum*; *H. mbaiense* of *H. notatum*; *H. paulistanum* of *H. diatrypeoides*; *H. plumbeum* and *H. rubiginosum* var. *microcarpum* of *H. perforatum. H. porteri* and *H. intermedium* belong in *Biscogniauxia capnodes*, *H. puiggarii* in *Annulophypoxylon subeffusum*, *H. subvinosum*. in *H. lenormandii, H. turbinatum* var. *guaraniticum* in *Phylacia turbinata* and *H. valsarioides* in *Creosphaeria sassafras*. *H. leptascum* is transferred to *A. leptascum, H. circostomum* to *Nemania circostoma* and *H. latissimum* to *N. latissima.* The holotype of *H. albostigmatosum* has been recovered, thus the lectotypification by Shear is no longer needed. *H. subnigricans* and *H. umbilicatum* are confirmed as good taxa. *H. anthochroum* and *H. lenormandii* are reported as first records from Argentina (Tucumán).

Key words: Latin America, new combinations**,** Xylariaceae.

INTRODUCTION

Most work on the genus Hypoxylon Bull. from South America has been carried out and published by Spegazzini (1880, 1881, 1884, 1887, 1888 a,b, 1889, 1891, 1899, 1908 a,b, 1909, 1910, 1919, 1921, 1922) who collected and described specimens from Argentina, Bolivia, Brazil, Chile and Paraguay. He described 36 species and 2 varieties, reporting a total of 49 species from these regions.

Hladki & Romero (2006) studied 13 types described by Spegazzini from Argentina. We have now completed our revision of all Hypoxylon types described by him from the southernmost part of South America. The outcome of the taxonomic and nomenclatural revision, including synonyms and accepted basionyms, is presented here.

MATERIALS AND METHODS

Type and other collections from South America kept at BPI and LPS have been examined. Fresh collections from the Tucumán province (LIL) have been studied as well. Herbarium abbreviations follow Holmgren *et al.* (1990).

Microscopy preparations and observations have been performed according to Ju & Rogers (1996).

TAXONOMY

The main results of this study are summarised in Table 1, which includes also data from previous observations (Hladki 2001; Hladki & Romero 2003, 2005, 2006). The table includes a list in alphabetical order all species from the southernmost part of South America which have been described by Spegazzini, as well as the date of the first description, the origin of the sample, synonymy, most relevant references and the conclusions reached about the final taxonomic position of the taxa studied.

1 Annulohypoxylon apiahynum (Speg.) Hladki & A.I. Romero **comb. nov.**

Mycobank MB513130 FIGS.: 1-4

≡ *Hypoxylon apiahynum* Speg., Bol. Acad. nac. Cienc. Córdoba 11 (4): 506. (1889).

HOLOTYPE: BRAZIL, Apiahy, on decayed wood, VI-1881, *J. Puiggari Nº 1655*, LPS 1678!

Miller (1961) studied the isotype kept in the Shear's herbarium and considered *H. apiahynum* a synonym of *H. truncatum* (Schwein.) J.H. Mill. At this time, the species concept for *H. truncatum* was considerably larger than it is today.

Ju & Rogers (1996) also examined the isotype of *H. apiahynum* (BPI). This collection contains only one perithecium, with remains of a disk surrounding the ostiolar papilla. They did not accept Miller's synonymization and suggested that the taxon should be placed in the

section Annulata. The holotype is conserved at LPS and well preserved, with a clearly developed disk around the ostiolar papilla, as is characteristic of the Section (FIGS.: 1-2).

The stroma of the holotype produced olive-brown pigments when in contact with KOH, the spores measure 8-9 x 4-5 µm, are light brown, navicular, with tapering rounded ends and a straight germ slit over the whole spore length. *H. truncatum* is a species widespread in the northern hemisphere on *Quercus* sp, whereas *H. apiahynum* is collected in South America. Thus, we do not agree with Miller's opinion and follow Hsieh et al.'s (2005) proposal to transfer the species to *Annulohypoxylon* Y. -M. Ju, J. D. Rogers & H. -M. Hsieh.

2 Annulohypoxylon leptascum (Speg.) Y.M. Ju, J.D. Rogers & H.M. Hsieh., Mycologia 97 (4): 859. (2005). FIGS.: 5-8

≡ *Hypoxylon leptascum* Speg., Bol. Acad. nac. Cienc. Córdoba 11 (4): 507. (1889).
HOLOTYPE: BRAZIL, São Paulo, Apiahy, on bark, 1888, *Puiggari Nº 2769*, LPS 1951!

The LPS collection contains two specimens. The one numbered 2769 corresponds to the data cited in the protologue, whereas the second one (Nº 1951) has no further data. Therefore the first (Nº 2769) must be considered the holotype.

Miller (1961) considered *H. leptascum* a synonym of *H. truncatum*. Both species, however, differ by germ slits size and shape as well as their distribution. Spores of *H. leptascum* have a short (5-6 µm) germ slit and the species is restricted to the south hemisphere, whereas the germ slit of *H. truncatum* ascospores is longer and the species is recorded on *Quercus* sp. in the north hemisphere.

Ju & Rogers (1996) later decided to follow Spegazzini's taxonomy, but we accept Hsieh et al.'s (2005) transfer of this taxon to *Annulohypoxylon*.

3 Annulohypoxylon subeffusum (Speg.) Hladki & A.I. Romero **comb. nov.**

Mycobank MB513131 FIGS.: 9-16

≡ *Hypoxylon subeffusum* Speg,. An. Soc. cient. argent. 18 (6): 274. (1884). HOLOTYPE: Paraguay, Santo Tomás, on *Eugenia* sp., 15-XII-1882, *Balansa Nº 3766*, LPS 1939!

= *Hypoxylon puiggarii* Speg., Bol. Acad. nac. Cienc. Córdoba 11 (4): 508. (1889). HOLOTYPE: BRAZIL, São Paulo, on logs, *Puiggari Nº 2341*, LPS 1950!

Additional material examined. – Argentina, Buenos Aires, Santa Catalina, on *Eucalyptus* sp., X-1905, LPS 2000. Formosa, on *Machura mora*, XII-1900, *Kermes Nº 820*, LPS 1974. Paraguay, no location given, on branches, *Sivisitz Nº 219*, LPS 2013; Guaiaviti, VIII-1883, on logs, *B. Balansa Nº 3951*, LPS 1998.

Miller (1961) studied an isotype of *H. puiggarii* conserved in Shear's herbarium and put this taxon in synonymy with *H. stygium* (Lév.) Sacc. Ju & Rogers (1996) later considered *H. puiggarii* and *H. subeffusum* taxonomically very close to *H. truncatum* (Schwein.) J.H. Mill., from which they differ by their smaller ascospores, their distribution in the southern hemisphere and for having *Quercus* sp., as their host. Based also on the additional material examined we propose to consider *H. puiggarii* a synonym of *H. subeffusum* and to transfer the taxon into *Annulohypoxylon* as *A. subeffusum*.

4 Biscogniauxia capnodes (Berk.) Y.M. Ju & J.D. Rogers, Mycotaxon 66: 28. (1998).

FIGS.: 17-21

= *H. intermedium* Speg., An, Soc. cient. argent. 18: 274. (1884). HOLOTYPE: Paraguay, Guarapí, VII-1881, LPS 1948. syn. *fide* Ju & Rogers.

= *H. pseudopachyloma* Speg., Bol. Acad. Nac. Cienc. Cordóba 11 (2): 203. (1888). HOLOTYPE: Argentina, Tierra del Fuego, Slogget-bay, on *Fagus* sp., 1882, *Spegazzini,* LPS 1963! syn. *fide* Ju & Rogers.

= *Hypoxylon porteri* Speg., Bol. Acad. Nac. Cienc. Córdoba 25: 54. (1921). HOLOTYPE: Chile, Los Perales, on *Quillaja saponaria*, 1917, *Spegazzini*, LPS 1967! syn. *fide* Ju & Rogers.

Description and illustrations. – Ju *et al.* (1998); Hladki & Romero (2006) (as *B. capnodes*).

Additional material examined. – *H. intermedium* Speg. Paraguay, Yaguarón, on wood, IX-1883, *Balansa Nº 4005*, det. Spegazzini, LPS 1478.

Miller (1961), in his discussion of *H. serpens* (Pers.) Fr. mentioned that the Shear's herbarium at BPI contains an "isotype" of *H. porteri* Speg. (Chile, 1917, Nº 1967) that is composed of two distinct taxa, one of which is described by Miller as *H. serpens* and the other as *H. divergens* (Theiss.) J.H. Mill. ex Dennis. Later Ju & Rogers (1996) examined the holotype (LPS) and the isotype (BPI) and concluded that "they appear to be conspecific, although they might be from different gatherings". They (Ju *et al.*, 1998) thus excluded *H. porteri* from *Hypoxylon* and transferred it to *Biscogniauxia* in *B. capnodes*. In fact, the holotype deposited in LPS contains one single taxon. We thus agree with Ju *et al*.'s (1998) concept.

We could not localize the holotype of *H. intermedium*, but based on LPS 1978, identified by Spegazzini, we follow Ju *et al.* (1998) and consider it synonymous with *B. capnodes*.

We have already studied this species (Hladki & Romero, 2006), when we included *H. pseudopachyloma* Speg. in *B. capnodes*. The distribution of this species can now be extended to the northern parts of Argentina.

5 Creosphaeria sassafras (Schwein.) Y.M. Ju, F. San Martin & J.D. Rogers, Mycotaxon 47: 223. (1993). FIGS.: 22-26

= *Hypoxylon valsarioides* Speg. Rev. Fac. Agron. Vet. La Plata 6 (1): 48. (1910). HOLOTYPE: Chile, Valdivia, on *Persea lingue*, I- 1909, *Spegazzini*, LPS 1965!

Miller (1961) considered *H. valsarioides* a synonym of *Hypoxylon sassafras* (Schwein.) M.A. Curtis. Ju *et al.* (1993) later transferred it correctly to *Creosphaeria* as a synonym *C. sassafras*.

6 Hypoxylon lenormandii Berk. & M.A. Curtis, in Berkeley, J. Linn. Soc. Bot. 10 (46): 385. (1868). FIGS.: 27-30

= *Hypoxylon subvinosum* Speg. An. Soc. cient. argent. 18 (6): 269. (1884). HOLOTYPE: Paraguay, Guarapí, on logs, XI-1881, *Balansa Nº 3423*, LPS 1943!

Additional material examined. – Argentina, Tucumán, Depto. Capital, jardín de la Fundación Miguel Lillo, 8-X-07, *Hladki 4011* LIL.

Miller (1961) considered *H. subvinosum* a synonym of *H. investiens* (Schwein.) M.A. Curtis. Ju & Rogers (1996), however, correctly proposed to include this taxon in *H. lenormandii* because of the character combination seen in the material studied (colour of the internal layers of the stromatic tissue and of the pigments seen after KOH treatment, dehiscence of the perispore after KOH treatment, germ slit).

We could observe the *Nodulisporium* anamorphs on the surface of the material collected in Tucumán. The conidiophores are arranged in a palisade, conidiophore long, mononematous, conidiogenous cell cylindrical, terminal and hyaline, subglobose conidia. This is the first record of *H. lenormandii* in Argentina (Tucumán).

7 Hypoxylon notatum Berk. & M.A. Curtis, Grevillea 4: 50. (1875).

FIGS.: 31-33

= *H. nectrioides* Speg., An. Soc. cient. argent. 18 (6): 271. (1884). HOLOTYPE: Paraguay, Guarapí, on logs, 29-VII-1881, *Balansa Nº 2762*, LPS 1941!

= *H. mbaiense* Speg. An. Soc. cient. argent. 18 (6): 273. (1884). HOLOTYPE: Paraguay, Mbay, Paraguarí, on branches of *Quebrachia lorentzii*, 7-II-1882, *Balansa Nº 3419*, LPS 1945!

Miller (1961) studied the isotype of *H. mbaiense* deposited in NY and included it in *H. rubiginosum* (Pers.) Fr. Ju & Rogers (1996) considered it to belong in *H. notatum*, also because of the chestnut brown coloration of the granules present immediately below the stromatal surface and the pigments seen after treatment of the stroma with KOH. We agree with Ju & Rogers (1996) and believe that the same applies to *H. nectrioides* (Hladki & Romero, 2006).

8 Hypoxylon anthochroum Berk. & Broome, J. Linn. Soc., Bot. 14: 122. (1873).

FIGS.: 34-42

= *Hypoxylon albostigmatosum* Speg., An. Soc. cient. argent. 18 (6): 271. (1884). HOLOTYPE: Paraguay, Guarapí, on decaying wood, 10-X-1878, *Balansa Nº 2781*, LPS 1576!

= *Hypoxylon guarapiense* Speg., An. Soc. cient. argent. 18 (6): 272. (1884). HOLOTYPE: Paraguay, Guarapí, on *Citrus aurantium*, 29-VII-1881, *Balansa Nº 2764*, LPS 1946!

Description and illustrations. – Ju & Rogers (1996)

Additional material examined. – Argentina, Tucumán, Depto. Monteros, Reserva provincial "La Florida", 19-V-06, *Hladki 2993, 2998*, LIL.

The holotype of *H. albostigmatosum* is kept in LPS (Fig. 3: 1-4). Apparently Shear (1945) was not aware of its presence in LPS and designated Balansa 2781 (NY) as the lectotype.

Miller (1961) considered *H. anthochroum*, *H. albostigmatosum* and *H. guarapiense* as synonyms of *H. rubiginosum* (Pers.) Fr. We have also been able to examine the holotypes of *H. albostigmatosum* and *H. guarapiense* (LPS) and agree with Ju & Rogers (1996), who

accepted *H. anthochroum*, based on the colour of the internal layers of the stromatic tissue and on the pigment seen after KOH treatment and considered the other two species by Spegazzini as synonyms. The chemical composition of both holotypes has been analysed by Marc Stadler, as stated in a note inserted in the specimens. He came to the same conclusion as Ju & Rogers (1966) and ourselves.

This is the first record of *H. anthochroum* in Argentina (Tucumán).

9 Hypoxylon diatrypeoides Rehm, Ann. Mycol. 5: 525. (1907).

FIGS.: 43-46

= *H. paulistanum* Speg. Rev. Mus. La Plata 15 (2): 19. (1908). HOLOTYPE: Brazil, São Paulo, on branches, *Ainisitz Nº 92*, LPS 1955!

H. paulistanum has not been considered in Miller's (1961) monograph. Ju & Rogers (1996) examined the isotype (BPI-CLS) and considered it a synonym of *H. diatrypeoides*. We could also observe in the holotype all characters typical of *H. diatrypeoides*, such as the pulvinate, erumpent stromata with conspicuous perithecial openings, the presence of orange granules under the surface of the stroma, the ostioles sunken in the stromatal surface and the large ascospores (22-23.5 x 10-12 µm) with broadly rounded ends and a dehiscent, ornamented perispore. The LPS material contains a note by Marc Stadler stating that the synonymy is confirmed also by chemical analyses.

10 Hypoxylon umbilicatum Speg., Bol. Acad. nac. Cienc. Córdoba 11 (4): 507. (1889).

FIGS.: 47-51

HOLOTYPE – Brasil, São Paulo, Apiahy, on logs, V-1888, *Puiggari Nº 2858*, LPS 1952!

Description and synonyms. – Ju & Rogers (1996).

Miller (1961) did not consider this species and Ju & Rogers (1996) accepted it but pointed out that the isotype (BPI) was in poor conditions. The LPS material, however, is very well

preserved and all important characters can be observed. The spores are very large (38-40 x 20-22 µm), brown to blackish or black, with a straight, central, short germ slit and a perispore not dehiscent in KOH; stroma with pigments dark olivaceous brown dissolved in 10% KOH.

11 Hypoxylon monticulosum Mont., Syll. gen. spec. Pl. Crypt.: 214. (1856).

FIGS.: 52-55

= *Hypoxylon anthracoderma* Speg., An. Soc. cient. argent. 26 (1): 30. (1888).

HOLOTYPE: Paraguay, Guarapí, on dead branches, IX-1883, *Balansa Nº 3996,* LPS 1677!

Miller (1961) considered *H. anthracoderma* a synonym of *H. investiens* (Schwein.) M.A. Curtis. Ju & Rogers (1996) suggested to include it in *H. monticulosum* because of the microscopic characters they observed in the isotype deposited in BPI. We agree with the latter, because the type specimen (LPS) does not produce any pigments in KOH and the stromatal surface in mature collections is blackish. In our opinion, these two characters are very important to differentiate closely related species, as already discussed by Ju & Rogers (1996).

12 Hypoxylon subnigricans Speg., An. Soc. cient. argent. 18 (6): 273. (1884).

FIGS.: 56-59

HOLOTYPE: Paraguay, Guarapí, on branches, XI-1881, *Balansa Nº 3424*, LPS 1942!

= *Hypoxylon rubigineoareolatum* Rehm, Ann. Mycol. 6: 345. (1908). HOLOTYPE: Brasil, Brasica, *in cortice ramorum,* leg: Theiper, *Rick Nº 360*, BPI 00985440!

Stromata applanate to pulvinate, with conspicuous perithecia, 30 x 15 x 0.5 mm; stromatal surface vinaceous blackish to blackish with orange brown granules in the surface depressions and black granules beneath the surface and among the perithecia, subperithecial tissue dark brown, 0.6-0.8 mm thick; no pigments dissolved in 10% KOH. *Perithecia* obovoidal to

tubular 0.4-0.6 x 0.1-0.3 mm. *Ostiolar papilla* prominent, conical. *Asci* not observed. *Ascospores* brown to dark brown, ellipsoidal, inaequilateral to navicular with narrowly rounded ends, 9-13 x 5-6.5 µm, with a short, straight germ slit on the convex side, perispore not dehiscent in 10% KOH, epispore smooth.

Miller (1961) did not mention *H. subnigricans.* Ju & Rogers (1996) examined a microscopic preparation of the isotype and suggested to put it into synonymy with *H. monticulosum. H. subnigricans*, however, has larger ascospores (9-13 x 5-6.5 *vs* 7-11 x 3.5-4.5 µm) than *H. monticulosum*, with a straight germ slit over the whole ascospore length. We do not believe thus that it would be justified to merge the two species.

13 **Nemania latissima** (Speg.) Y.M. Ju & J.D. Rogers, Nova Hedwigia 74 (1-2): 100. (2002). FIGS.: 60-64

= *Hypoxylon latissimum* Speg., An. Soc. cient. argent. 26 (1): 31. (1888). HOLOTYPE: Paraguay, Guarapí, on bark, IX-1883, *Balansa Nº 4030*, LPS 1954!

Description and illustrations. – Ju & Rogers (2002)

Additional material examined. – Argentina, Formosa, on a log, XII-1990, *Kermes Nº 712*, LPS 1979. HOLOTYPE of *Hypoxylon rubigineoareolatum*, Barrica in cortice ramorum, leg: Theiper, *Rick Nº 360*, BPI 00985440.

Miller (1961) considered Spegazzini's species a synonym of *H. rubigineoareolatum* Rehm, but later Ju & Rogers (2002) transferred the taxon to *Nemania latissima*, a fungus characterized by the presence of a brown-reddish subiculum covering the margins of the stroma, by conical, black, prominent ostiolar papillae, ascospores that are darker and larger (14.5-26 x 8-10.5 vs 12-14.5 x 5-6.5 µm) than those of *H. rubigineoareolatum*, a perispore that is indehiscent in KOH and a short, straight germ slit slightly oblique on the convex side of the spore. We have been able to see all these characters in both holotypes. In both we could

not observe the liberation of any pigments after KOH treatment of the stroma. Thus, we confirm Ju & Rogers' (2002) decision that *N. latissima* is a good species.

14 Nemania circostoma (Schwein.) Y.M. Ju & J.D. Rogers, Nova Hedwigia 74 (1-2): 92. (2002).

= *Hypoxylon circostomum* Speg., Bol. Acad. nac. Cienc. Córdoba 25: 55. (1921). HOLOTYPE: Chile, Valparaíso, Los Perales, on rotten wood, 1918, *Spegazzini,* LPS 1966!

Description and illustrations. – Ju & Rogers (2002), as *N. circostoma*.

Miller (1961) did not mention *H. circostomum* and Ju & Rogers (1996) excluded this taxon from *Hypoxylon*, pointing out its similarity with *Nemania bipapillata* (Berk. & M.A. Curtis) Pouzar. Later (Ju & Rogers 2002) they formally transferred it to *Nemania* as *N. circostoma* and described it as similar to *N. bipapillata* and *N. immersidiscus* Van der Gucht, Y.M. Ju & J.D. Rogers. We have examined the holotype of the species and fully support the taxonomy proposed by Ju & Rogers (2002).

15 Phylacia turbinata (Berk.) Dennis, Kew Bull.: 297-332. (1957).

FIGS.: 65-67

= *H. turbinatum* Berk. *var. guaraniticum* Speg. An. Soc. cient. arg. 18(6): 275. (1884). HOLOTYPE: Paraguay, Guarapí, on *Citrus aurantium,* 1879, *Balansa N° 3417*, LPS 1944!

Additional material examined. – Brazil. Florianópolis, I-2001, on wood remains, A.I. Hladki 2392 LIL.

Dennis (1957) in his study of the tropical American Xylariales mentioned *H. turbinatum* var. *guaraniticum* as a synonym of *P. turbinata*. We confirm this decision after having studied the holotype.

16 Hypoxylon perforatum (Schwein.) Fr**.**, Summa Veg. Scand., Section Post. (Stockholm): 384. (1849). FIGS.: 68-71

= *Hypoxylon plumbeum* Speg. An. Soc. cient. argent. 18 (6): 270. (1884). HOLOTYPE: Paraguay, Guarapí, on fallen wood, VIII-1881, *Balansa Nº 2760*, LPS 1949.

= *Hypoxylon rubiginosum* (Pers.) Fr. var. *microcarpum* Speg. An. Mus. nac. B. Aires 17 (10): 120. (1908). HOLOTYPE: Argentina, Misiones, San Pedro, on dead branches of *Ilex paraguayensis*, II-1907, *Spegazzini*, LPS 2017!

Miller (1961) examined the "isotype" present in the Shear's herbarium and concluded that *H. plumbeum* is a synonym of *H. investiens* (Schwein.) M.A. Curtis. Ju & Rogers (1996) included it in *H. perforatum.* We have studied the holotype and observed that this fungus produces a yellowish-green pigment after treatment with KOH. This supports Ju & Rogers (1996) conclusions. Marc Stadler also analysed the material and the results of his chemical analysis support the synonymy proposed by Ju & Rogers (1996).

Miller (1961) did not study *Hypoxylon rubiginosum* (Pers.) Fr. var. *microcarpum*, a variety erected by Spegazzini, but Ju & Rogers (1996) suggested to consider it a synonym of *H. perforatum*; this is supported by the chemical analyses by Marc Stadler. Overall, we believe that this decision can be fully approved, even if the material we have seen in LPS is immature.

17 Rosellinia bunodes (Berk. & Broome) Sacc., Syll. fung. (Abellini) 1: 254. (1882).

FIGS.: 72-74

= *Hypoxylon goliath* Speg. Bol. Acad. nac. Cienc. Córdoba 11(4): 505. (1889).

HOLOTYPE: Brasil, São Paulo, Apiahy, on rotten logs, VII-1888, *Puiggari*, LPS 1137!

Description and illustrations. –San Martin & Rogers (1995), as *Rosellinia bunodes*.

Höhnel (1907) transferred *H. goliath* to *Rosellinia*. Ju & Rogers (1996) suggested that this could be a synonym of *R. bunodes*. Our studies of the holotype confirm this hypothesis, because we observed stromata with an ornamented surface, and cylindrical, evanescent large asci, containing 8 biseriate ascospores with long tapering, almost filiform ends typical of *R. bunodes*.

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FIGURES

Figs. 1-4. ***Annulohypoxylon apiahynum*** (Speg.) Hladki & A.I. Romero, from holotype of *H. apiahynum* Speg., LPS 1678. 1. Stromata. 2. Detail of the stromatal surface, with the disk surrounding the ostiolar papilla. 3. Longitudinal section of a stroma across a perithecium. 4. Ascospores. 5-8. ***Annulohypoxylon leptascum*** (Speg.) Y.M. Ju & J.D. Rogers, from holotype of *H. leptascum* Speg., LPS 1951. 5. Stromata. 6a. Detail of the stromatal surface, with a disk surrounding the ostiolar papilla. 6b. Detail of stroma with prominent, conical ostiolar papilla. 7. Longitudinal section of a stroma. 8. Ascospores. 9-16 ***Annulohypoxylon subeffusum*** (Speg.) Hladki & A.I. Romero, from holotype *H. puiggarii* Speg., LPS 1950. 9. Stromata. 10a. Detail of stromatal surface, with the light brown disk surrounding the ostiolar papilla. 10b. Lateral view of stroma with well delimited perithecial structures en este caso se debe alargar la escala, un rectángulo de 15mm corresponde a 1 mm. 11. Longitudinal section of stromata. 12. Ascospores. 13-16. From holotype of *H. subeffusum* Speg., LPS 1939. 13. Stromata; 14a. Detail of the stromatal surface, with light brown to dark brown ostiolar disks. 14b. Lateral view of the stroma. 15. Longitudinal section of a stroma. 16. Ascospores, some with perispore dehiscent in KOH. Bars: 1-3, 6a, 6b, 7, 10a, 10b-11, 14b, 15 = 1 mm; 14a = 2,5 mm; 4, 8, 16 = 10 µm; 12 = 5 µm; 5, 9, 13 = 10 mm.

Figs. 17-21. ***Biscogniauxia capnodes*** (Berk.) Y.M. Ju & J.D. Rogers, from holotype of *Hypoxylon porteri* Speg. , LPS 1967. 17. Stromata on a small branch. 18. Detail of the flat stromatal surface with prominent ostiolar papillae. 19. Lateral view showing the prominente

ostiolar papilla. 20. Longitudinal section of stroma. 21. Ascal apical tip KI^+ and ascospores. 22-26. ***Creosphaeria sassafras*** (Schwein.) Y.M. Ju, F. San Martin & J.D. Rogers, from holotype of *Hypoxylon valsarioides* Speg., LPS 1965. 22. Erumpent stromata. 23. Detail of stroma with abrupt margin and stromatal surface with rounded ostiolar papilla (arrow: broken bark). 24. Lateral view (arrow: broken bark). 25. Longitudinal section of stroma. 26. Ascospores and ascal apical tip KI^+. 27-30 ***Hypoxylon lenormandii*** Berk. & M.A. Curtis, from holotype of *Hypoxylon subvinosum* Speg., LPS 1943. 27. Effuse to perithecioid stroma. 28. Detail of the stromatal surface with non-papillate ostioles. 29. Ascospores with slightly sigmoid germ slit. 30. Conidiophores and conidia, Hladki 4011 LIL. 31-33 ***Hypoxylon notatum*** Berk. & M.A. Curtis, from holotype of *H. mbaiense* Speg., LPS 1945. 31. Glomerate stroma (arrow). 32. Details of stroma with well delimited perithecial structures and umbilicate ostioles. 33. Ascospores. Bars: 17, 31 = 10 mm; 18-20, 23-25, 28, 32 = 1 mm; 27 = 2,5 mm; 22 =5 mm; 21, 26, 29, 30, 33 = 10 μm.

Figs. 34-42. ***Hypoxylon anthochroum*** Berk. & Broome, from holotype of *H. albostigmatosum* Speg., LPS 1576. 34. Effuse stroma. 35. Detail of the stromatal surface; arrow shows ostioles sunken in the stromatal surface. 36. Lateral view of stroma with well defined perithecial structures. 37. Longitudinal section of stroma. 38. Ascospores. From holotype of *H. guarapiense* Speg., LPS 1946. 39. Stroma. 40. Detail of stromatal surface with black, umbilicate ostioles (arrow) sunken in the stromatal surface. 41. Stromatal surface with cracks (arrow) and without conspicuous perithecial structures. 42. Ascospores with germ slit on their convex side. 43-46. ***Hypoxylon diatrypeoides*** Rehm., from holotype of *H. paulistanum* Speg., LPS 1955. 43. Pulvinate, erumpent stromata. 44. Detail of stromata with umbilicate ostioles (arrow shows one) and conspicuous perithecial structures. 45. Longitudinal section of stroma. 46. Ascospores, one with perispore dehiscent in KOH (left). 47-51. ***Hypoxylon umbilicatum***

Speg., LPS 1952. 47. Stromata with conspicuous perithecial structures. 48. Details of stromatal surface with umbilicate ostioles surrounded by a light brown disk. 49. Lateral view of perithecia. 50. Longitudinal section of stroma. 51. Ascospore. Bars: 34, 39 = 10 mm; 35, 36, 40, 41, 44, 45, 48-50 = 1 mm; 37, 43, 47 = 5 mm; 38, 42, 46, 51 = 10 µm.

Figs. 52-55. ***Hypoxylon monticulosum*** Mont., from holotype of *H. anthracoderma* Speg., LPS 1677. 52. Pulvinate stroma. 53. Details of stromatal surface. 54. Longitudinal section of stroma, with spherical to obovoid perithecia. 55. Ascospores, some with perispore dehiscent in KOH and slightly sigmoid germ slit. 56-59 ***Hypoxylon subnigricans*** Speg., LPS 1942. 56. Effuse stroma. 57. Details of pruinose, stromatal surface with conspicuous perithecial structures. 58. Longitudinal section of stroma. 59. Ascospores. 60-64 ***Nemania latissima*** (Speg.) Y.M. Ju & J.D. Rogers, from holotype of *H. latissimum* Speg., LPS 1954. 60. Effused-pulvinate stroma. 61. Details of stromatal surface with prominent ostiolar papilla (arrow); 62. Details of basal subiculum (arrow) covering the margins of the stroma. 63. Longitudinal seciton of stroma with stromatic tissue beneath the surface. 64. Ascospores. 65-67 ***Phylacia turbinata*** (Berk.) Dennis, from holotype of *H. turbinatum* Berk. *var. guaraniticum* Speg., LPS 1944. 65. Cleistothecial stroma. 66. Longitudinal section of stroma. 67. Ascospores. 68-71 ***Hypoxylon perforatum*** (Schwein.) Fr., from holotype of *H. plumbeum* Speg., LPS 1949. 68. Effuse, pulvinate stroma. 69. Detail of stroma with conspicuous perithecial structures. 70. Longitudinal section of stroma. 71. Ascospores, one with dehiscent, coil-like ornamentation perispore. 72-74 ***Rosellinia bunodes*** (Berk. & Broome) Sacc., from holotype of *Hypoxylon goliath* Speg., LPS 1137. 72. Stroma with abundant basal subiculum. 73. Details of stromatal surface with ostioles surrounded by a ring. 74. Ascospores with broadly acute ends. Bars: 52, 60, = 10 mm; 56, 61, 62, 65, 66, 68, 72 = 5 mm; 73 = 3 mm ; 53, 54, 57, 58, 63, 69, 70 = 1 mm; 55, 59, 64, 67, 71, 74 = 10 µm.

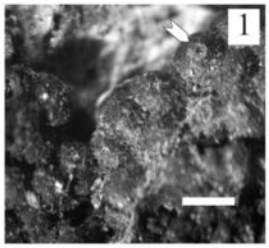
e-mail address of the corresponding author: romero@bg.fcen.uba.ar

TABLE 1. Revision of *Hypoxylon* Bull. type species described by Spegazzini for South America.

Spegazzini's denomination **LPS Accession number**	**Year of description** **Distribution**	**Accepted taxon**	**Other names**	**Reference** **Material examined**
Hypoxylon albostigmatosum LPS 1576	1884 Paraguay	***Hypoxylon anthochroum***	*H. rubiginosum* (Pers.) Fr.	Miller (1961) Isolectotype (NY)
			H. anthochroum Berk. & Broome	Ju & Rogers (1996) Isotype (BPI) Isolectotype (NY)
Hypoxylon anthracoderma LPS 1677	1888 Paraguay	***Hypoxylon monticulosum***	*H. investiens* (Schwein.) M.A. Curtis	Miller (1961) Isotype herb. Shear (K)
			H. monticulosum Mont.	Ju & Rogers (1996) Isotype (BPI-CLS)
Hypoxylon apiahynum LPS 1678	1889 Brazil	***Annulohypoxylon apiahynum*** comb. nov.	*H. truncatum* (Schwein.) J.H. Mill.	Miller (1961) Isotype herb. Shear (K)
			Incertae sedis	Ju & Rogers (1996) Isotype (BPI)
Hypoxylon circostomum LPS 1966	1921 Chile	***Nemania circostoma***	*Nemania circostoma* (Schwein.) Y.M. Ju & J.D. Rogers	Ju & Rogers (2002) Holotype (LPS) Isotype (BPI)
Hypoxylon goliath LPS 1137	1889 Brazil	***Rosellinia bunodes***	*Rosellinia goliath* (Speg.) Höhn.	Höhn (1907)
			Close to *Rosellinia bunodes* (Berk. & Broome) Sacc.	Ju & Rogers (1996)
Hypoxylon guarapiense LPS 1946	1884 Paraguay	***Hypoxylon anthochroum***	*H. rubiginosum* (Pers.) Fr.	Miller (1961) Isotype (NY)
			H. anthochroum Berk. & Broome	Ju & Rogers (1996) Isotype (BPI), (NY)
Hypoxylon intermedium LPS 1948	1884 Paraguay	***Biscogniauxia capnodes***	*Biscogniauxia capnodes* (Berk.) Y.M. Ju & J.D. Rogers	Ju *et al*. (1998)

Spegazzini's denomination LPS Accession number	**Year of description Distribution**	**Accepted taxon**	**Other names**	**Reference Material examined**
Hypoxylon latissimum. LPS 1954	1884 Paraguay	***Nemania latissima***	*H. rubigineoareolatum* Rehm	Miller (1961) Isotype (K)
			Nemania latissima (Speg.) Y.M. Ju & J.D. Rogers	Ju & Rogers (2002) Holotype (LPS) Isotype (BPI), (K)
Hypoxylon leptascum LPS 1951	1889 Brazil	***Annulohypoxylon leptascum***	*H. truncatum* (Schwein.) J.H. Mill.	Miller (1961) Isotype herb. Shear
			H. leptascum Speg.	Ju & Rogers (1996) Isotype (BPI)
			Annulohypoxylon leptascum (Speg.) Y.M. Ju, J.D. Rogers & H.M. Hsieh	Hsieh *et al.* (2005) Isotype(BPI)
Hypoxylon mbaiense LPS 1945	1884 Paraguay	***Hypoxylon notatum***	*H. rubiginosum* (Pers.) Fr.	Miller (1961) Isotype (NY)
			H. notatum Berk. & M.A. Curtis	Ju & Rogers (1996) Isotype (NY)
Hypoxylon paulistanum LPS 1955	1908a Brazil	***Hypoxylon diatrypeoides***	*H. diatrypeoides* Rehm	Ju & Rogers (1996) Isotype (BPI-CLS)
Hypoxylon plumbeum LPS 1949	1884 Paraguay	***Hypoxylon perforatum***	*H. investiens* (Schwein.) M.A. Curtis	Miller (1961) Isotype herb. Shear
			H. perforatum (Schwein) Fr.	Ju & Rogers (1996) Isotype (BPI)
Hypoxylon porteri LPS 1967	1921 Chile	***Biscogniauxia capnodes***	*H. serpens* (Pers.) Fr. + *H. divergens* (Theiss.) J. H. Mill. ex Dennis	Miller (1961) Isotype herb. Shear (BPI)
			Biscogniauxia capnodes (Berk.) Y.M. Ju & J.D. Rogers	Ju *et al*. (1998) Holotype (LPS) Isotype (BPI)

Spegazzini's denomination **LPS Accession number**	**Year of description** **Distribution**	**Accepted taxon**	**Other names**	**Reference** **Material examined**
Hypoxylon puiggarii LPS 1950	1889 Brazil	***Annulohypoxylon subeffusum*** comb. nov.	*H. stygium* (Lév.) Sacc.	Miller (1961), Isotype herb. Shear
			Incertae sedis, close to *H. truncatum* (Schwein.) J. H. Mill.	Ju & Rogers (1996)
Hypoxylon rubiginosum var. *microcarpum* LPS 2017	1907 Argentina	***Hypoxylon perforatum***	*H. perforatum* (Schwein.) Fr.	Ju & Rogers (1996)
Hypoxylon subeffusum LPS 1939	1884 Paraguay	***Annulohypoxylon subeffusum*** comb. nov.	*Incertae sedis*, close to *H. truncatum* (Schwein) J.H. Mill.	Ju & Rogers (1996)
Hypoxylon subnigricans LPS 1942	1884 Paraguay	***Hypoxylon subnigricans***	*H. monticulosum* Mont.	Ju & Rogers (1996) Isotype (BPI-CLS)
Hypoxylon subvinosum LPS 1943	1884 Paraguay	***Hypoxylon lenormandii***	*H. investiens* (Schwein.) M.A. Curtis	Miller (1961) Isotype herb. Shear (K)
			H. lenormandii Berk. & M.A. Curtis	Ju & Rogers (1996) Isotype (BPI), (K)
Hypoxylon turbinatum var. *guaraniticum* LPS 1944	1884 Paraguay	***Phylacia turbinata***	*Phylacia turbinata* (Berk.) Dennis	Dennis (1957)
Hypoxylon umbilicatum LPS 1952	1889 Brazil	***Hypoxylon umbilicatum***	*H. umbilicatum*	Ju & Rogers (1996) Isotype (BPI)
Hypoxylon valsarioides LPS 1965	1910 Chile	***Creosphaeria sassafras***	*H. sassafras* (Schwein.) M.A. Curtis	Miller (1961) Isotype herb. Shear
			Creosphaeria sassafras (Schwein.) Y.M. Ju, F. San Martin & J.D. Rogers	Ju *et al.* (1993) Isotype (BPI)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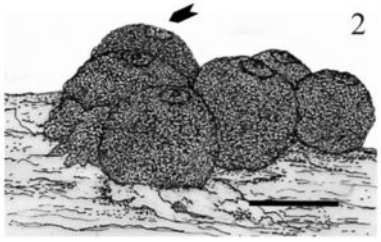
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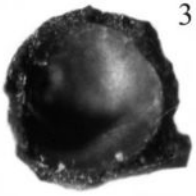
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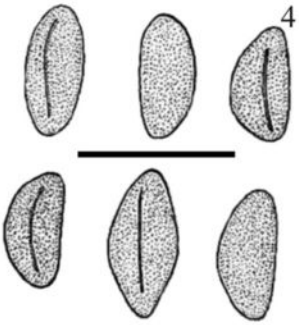
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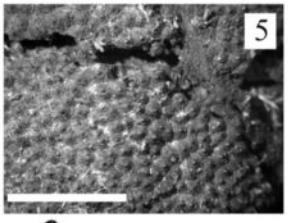
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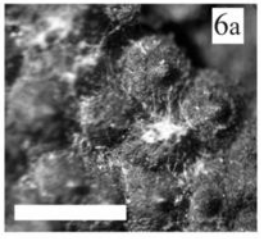
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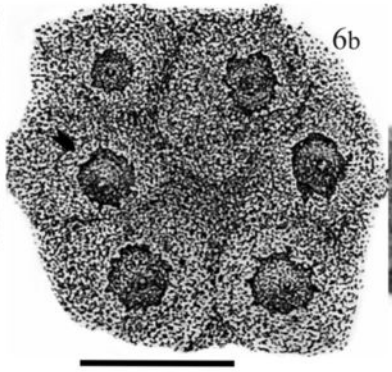
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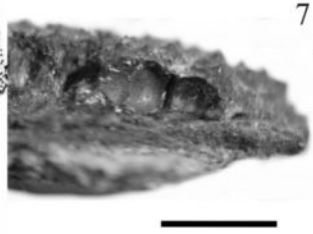
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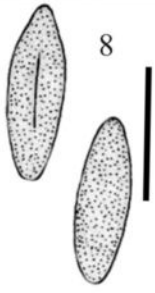
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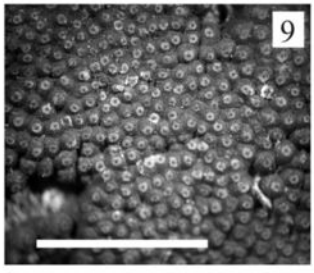
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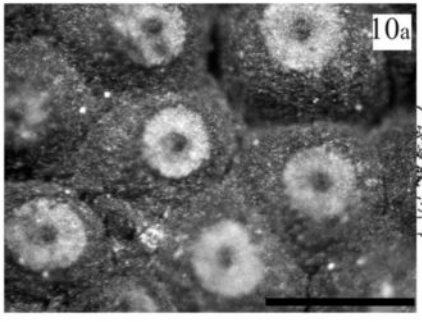
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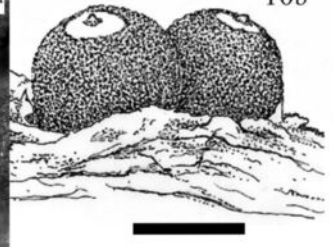
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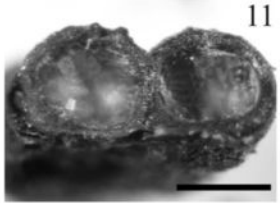
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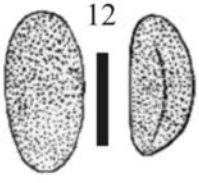
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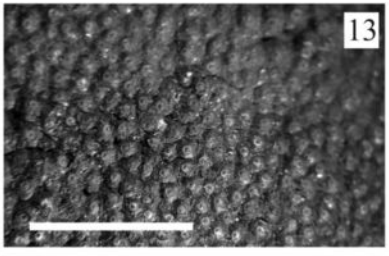
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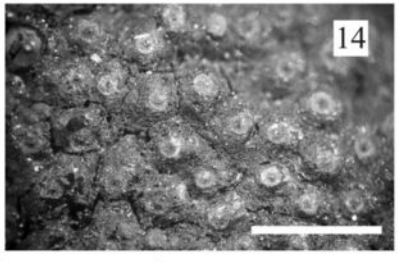
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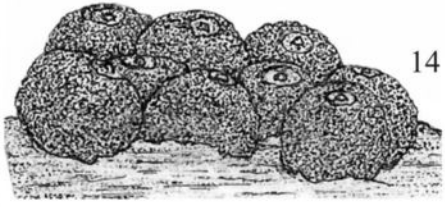
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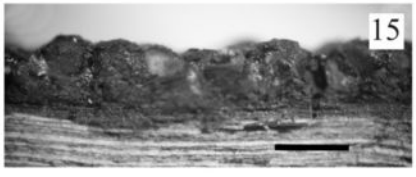
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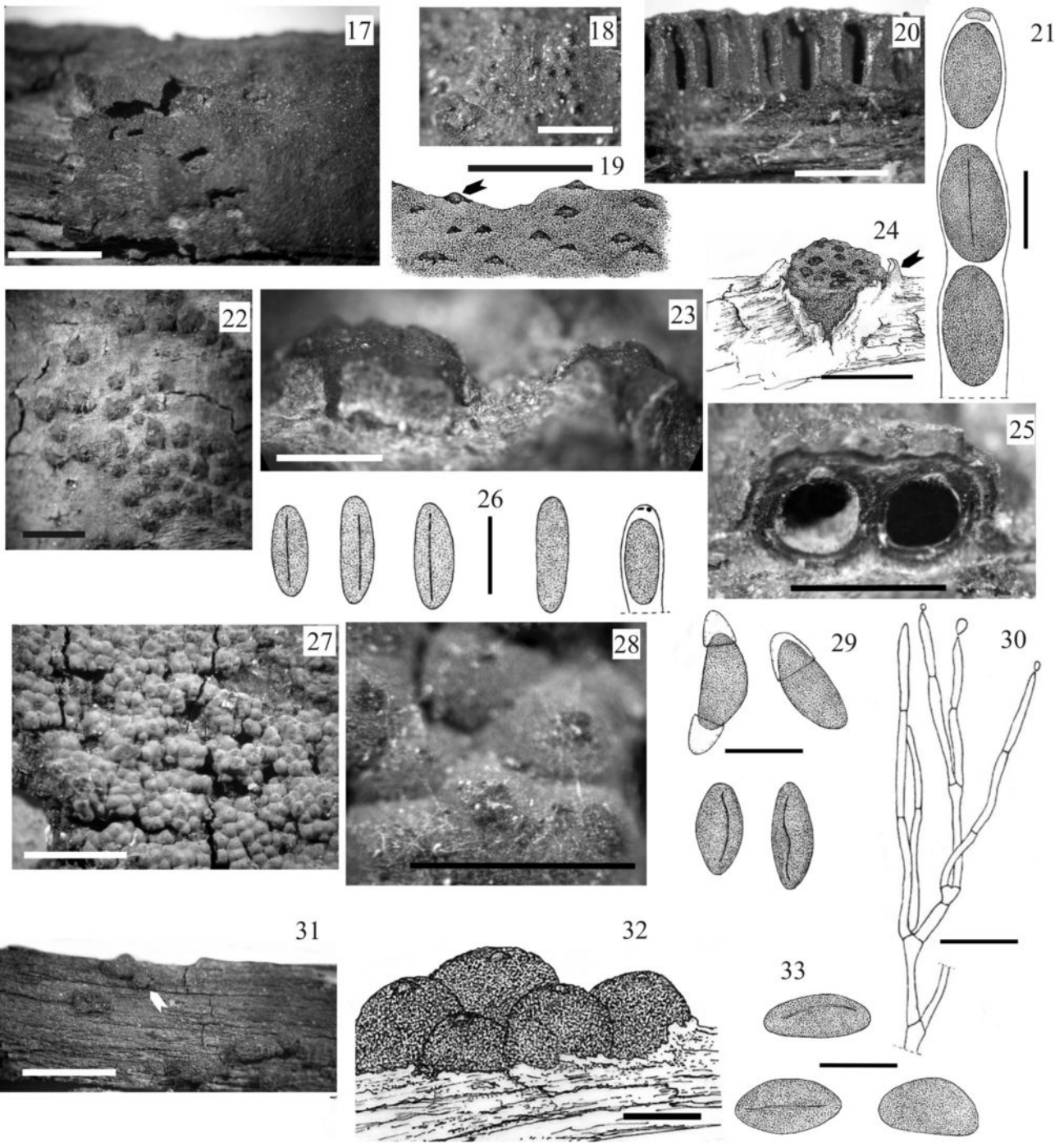
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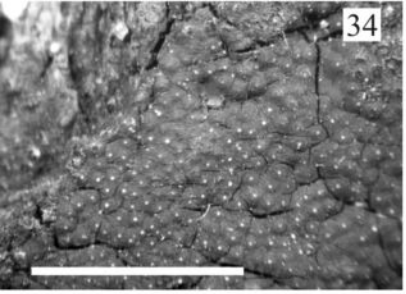
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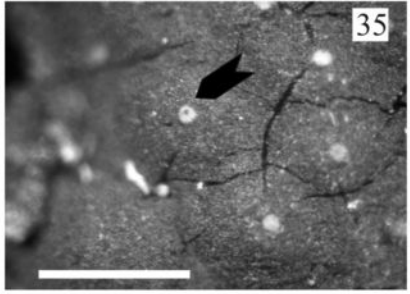
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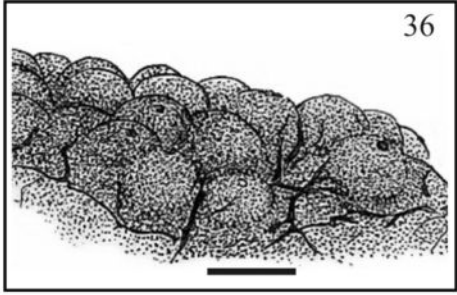
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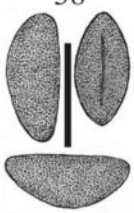
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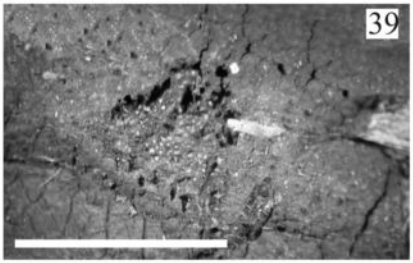
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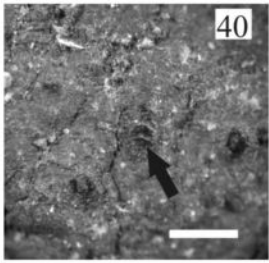
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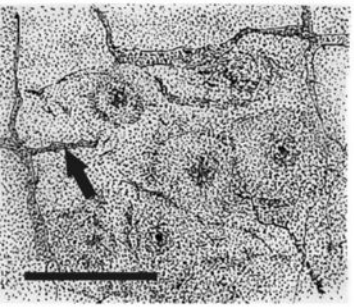
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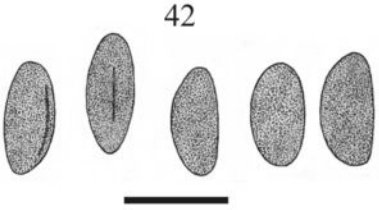
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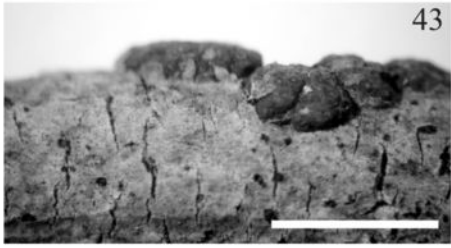
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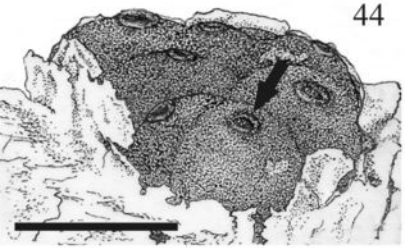
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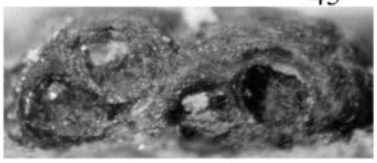
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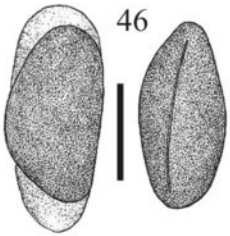
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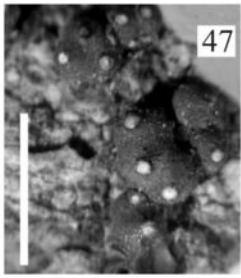
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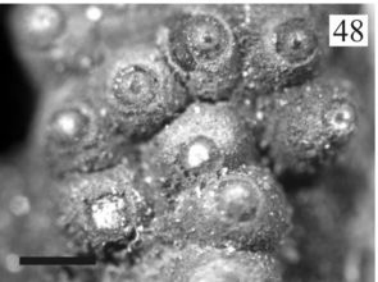
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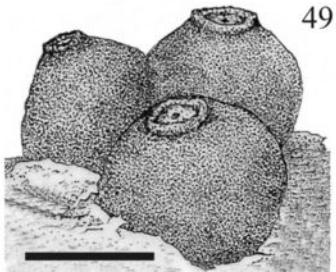
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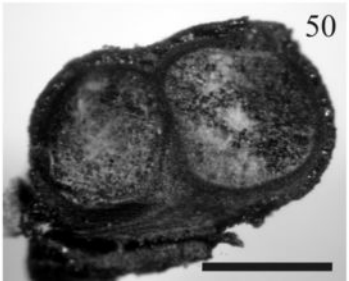
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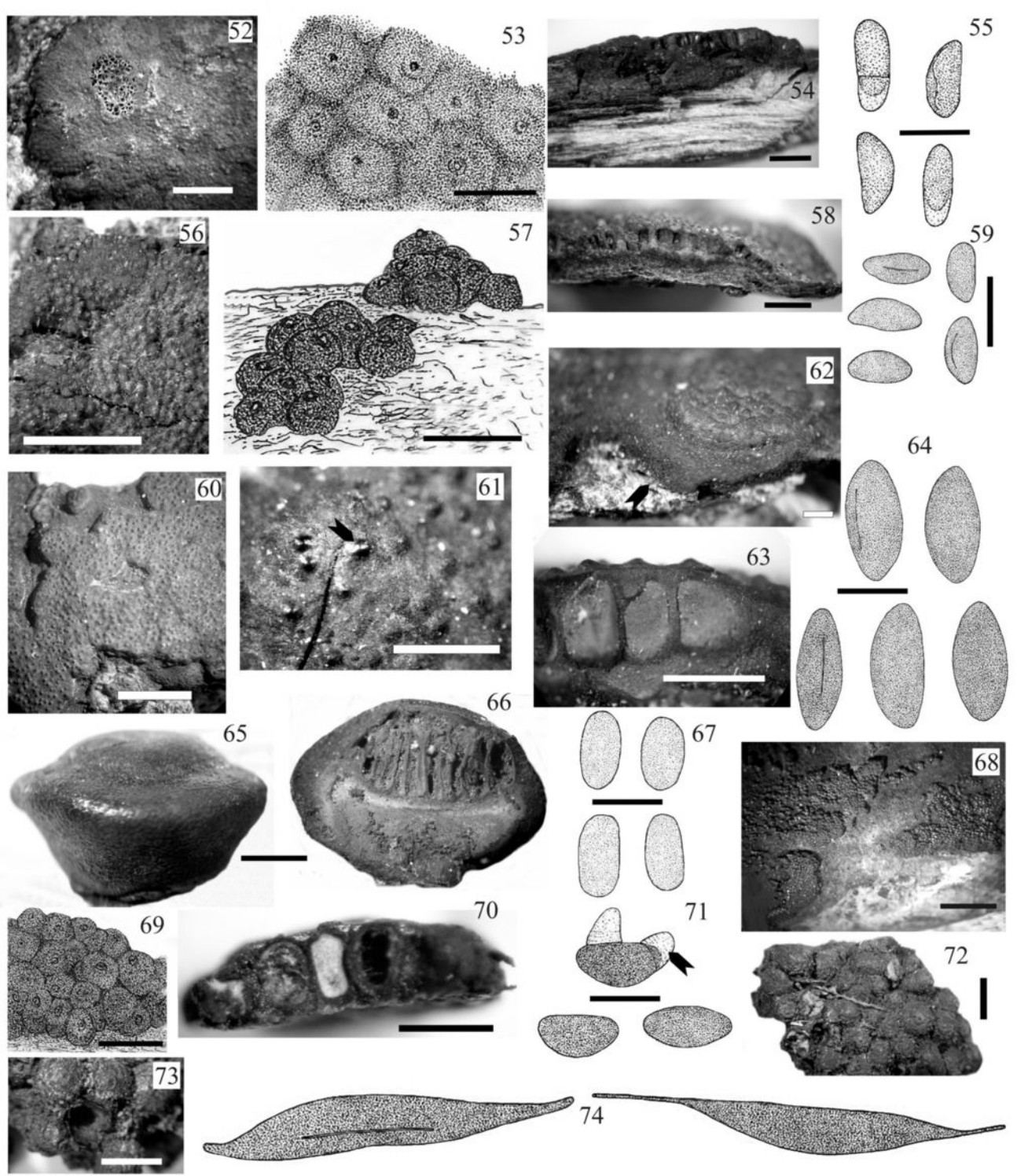
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