The genus *Rosellinia* (*Xylariaceae*) in Guadeloupe and Martinique (French West Indies)

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Abstract: This survey deals with the *Rosellinia* taxa collected in the French West Indies in the course of an ongoing inventorial work on the mycobiota of these islands initiated in 2003. Based on the evaluation and comparison of their morphological characters, sixteen species are described, illustrated and discussed, including seven new taxa viz.: *R. aciculispora*, *R. asperata* var. *minor*, *R. discreta*, *R. granulosa*, *R. heliconiae*, *R. nigropileata* and *R. truncatispora*, and two taxonomically unsettled species provisionally referred to *R. acutispora* and *R. perusensis*. Other known recorded taxa include *R. bunodes*, *R. lechatii*, *R. leopoldensis*, *R. longispora*, *R. parva*, *R. pepo* and *R. winckleriana*. A seventeenth species, *R. arcuata*, known from Guadeloupe, was not collected during this survey and therefore is cited but not illustrated. A dichotomous identification key and a synoptical table of stromata are provided. Living cultures and ITS sequences of *R.* cf. *acutispora*, *R. asperata* var. *minor* and *R. truncatispora* were deposited at Westerdijk Fungal Biodiversity Institute (formerly CBS) and GenBank respectively. The phylogenetic analysis of ITS sequences supports the placement of these species in *Rosellinia* and their affinities with morphologically similar species.
Keywords: Ascomycota, ITS, pyrenomycetes, saproxylic fungi, taxonomy, tropical mycology, *Xylariales*, *Xylarioideae*.

Résumé : cette étude porte sur les espèces de *Rosellinia* récoltées lors de missions d'inventaire de la fonge des Antilles françaises commencées en 2003. En se fondant sur l'évaluation et la comparaison de leurs caractères morphologiques, seize espèces sont décrites, illustrées et commentées, comprenant sept taxons nouveaux, à savoir *R. aciculispora*, *R. asperata* var. *minor*, *R. discreta*, *R. granulosa*, *R. heliconiae*, *R. nigropileata* et *R. truncatispora*, ainsi que deux espèces de position taxinomique incertaine provisoirement rattachées à *R. acutispora* et *R. perusensis*. Les autres taxons connus recensés comprennent *R. bunodes*, *R. lechatii*, *R. leopoldensis*, *R. longispora*, *R. parva*, *R. pepo* et *R. winckleriana*. Une dix-septième espèce, *R. arcuata*, connue de Guadeloupe, n'a pas été récoltée durant ces missions et par conséquent est citée mais n'est pas illustrée. Une clé dichotomique d'identification et une planche synoptique des stromas sont proposées. Les cultures vivantes et les séquences ITS de *R.* cf. *acutispora*, *R. asperata* var. *minor* et *R. truncatispora* ont été déposées au Westerdijk Fungal Biodiversity Institute (anciennement CBS) et à GenBank respectivement. L'analyse phylogénétique des séquences ITS corrobore le placement de ces espèces dans le genre *Rosellinia* et leurs affinités avec les espèces morphologiquement semblables.
Mots-clés : Ascomycota, champignons saproxyliques, ITS, mycologie tropicale, pyrénomycètes, taxinomie, *Xylariales*, *Xylarioideae*.

Introduction

This survey of *Rosellinia* De Not. in the French Caribbean islands of Guadeloupe and Martinique comes after three similar studies carried out on *Hypoxylon* Bull., *Annulohypoxylon* Y.-M. Ju, J.D. Rogers & H.-M. Hsieh and *Biscogniauxia* Kuntze in the same region (Fournier *et al.*, 2015; 2016; 2017). The reader is referred to the former publication for details on the framework within which this work was carried out and for the most salient ecological features characterizing these two islands.

The purpose of these surveys is to describe and illustrate the xylariaceous ascomycetes collected during repeated field trips initiated in 2003 (Courtecuisse, 2006). Our three previous publications showed that *Xylariaceae*, along with *Hypocreales*, are particularly well represented in Guadeloupe and Martinique, featuring for example 39 taxa of *Hypoxylon* (Fournier *et al.*, 2015), 11 of *Annulohypoxylon* (Fournier *et al.*, 2016) and 14 of *Biscogniauxia* (Fournier *et al.*, 2017), with respectively 13, 3 and 4 taxa new to science and several potentially new taxa still under investigation. The 16 *Rosellinia* species exposed herein, including seven new and two taxa of uncertain taxonomic position, reinforce the view that *Xylariaceae* in these two islands show a high diversity with an amazing proportion of undescribed, possibly endemic taxa.

Neotropical species of *Rosellinia* have been documented from Brazil (Theissen, 1908; 1910; Rick, 1932), Venezuela (Dennis, 1960), México (San Martín & Rogers, 1995) and more recently from South and Central America (Petrini & Petrini, 2012). The monograph of *Rosellinia* by Petrini (2013) served as taxonomic reference throughout this work.

The first information available on the *Xylariaceae* known from Guadeloupe and Martinique dates back to Roussel (1870), who reported only three xylariaceous species: two *Xylaria* Hill ex Schrank and one *Hypoxylon*. The first reports of *Rosellinia* from these two islands were made by Patouillard (1902; 1908) and Duss (1903), who listed four *Rosellinia* species. *Rosellinia pepo* Pat. was described from Guadeloupe (Patouillard, 1908) and subsequently often reported from Central and South America as a root rot pathogen. Based on morphological characters excluding it from *Rosellinia* as currently conceived, *R. coffeicola* Pat. was combined in *Stilbohypoxylon* by Petrini (2004) as *S. coffeicola* (Pat.) L.E. Petrini. A collection of *Rosellinia* from Martinique was assigned by Duss (1903) to *R. aquila* (Fr.) De Not. Another one on a rotten rachis of *Cocos nucifera* in Guadeloupe, was listed as *Rosellinia* sp. Whereas the two former collections, described by Patouillard, had been deposited in FH and thus were available for a revision, the two latter collections, along with all the material collected by Duss, had been deposited in B and could unfortunately not be retrieved, having been lost in the war fire during World War II (R. Lücking, pers. comm.). In absence of re-examination according to the current taxonomic concepts, their status remains unfortunately unclear.

Rosellinia belongs to the *Xylariaceae* Tul. & C. Tul. based on its stromatic ascomata, unitunicate asci with an amyloid apical plug, brown, one-celled ascospores with a germ slit and hyphomycetous asexual morph with holoblastic conidiogenesis. It is accommodated in the subfamily *Xylarioideae* because of its geniculosporium- or dematophora-like asexual morphs. The phylogenetic affinities of *Rosellinia* with *Xylarioideae* were demonstrated by Hsieh *et al.* (2010) who showed that it forms with *Entoleuca* Syd., *Euepixylon* Füisting and *Nemania* S.F. Gray a well-supported subclade within *Xylaria sensu lato*. Congruent results were recently published in a large scale phylogenetic overview of the *Xylariaceae* (U'Ren *et al.*, 2016). It is primarily distinguished from other related xylariaceous genera by its uniperitheciate, superficial, carbonaceous stromata often associated with a subiculum and its ascospores which may be appendaged and/or coated with slimy material (Petrini, 1992; 2013).

While *Rosellinia* taxa from temperate zones are well known since their revision by Petrini *et al*. (1989) and Petrini (1992), as are those from New Zealand monographed by Petrini (2003), the tropical species remained in most cases difficult to unambiguously identify until the world monograph recently issued by Petrini (2013). This major comprehensive work, based on the revision of all type specimens worldwide, resulted in the delimitation of 142 accepted species, including 37 new taxa and the exclusion of 137 names. By lack of clear species concepts, most of the material of *Rosellinia* we had collected prior to this publication remained frustratingly unidentified. The detailed morphological descriptions and the efficient dichotomous keys provided by the monograph were of invaluable help to identify the species that were so far often ill-defined and to recognize new species based on their differences from known ones. Many of the species dealt with in this monograph are distinguished by the combination of subtle differences in stroma and ascospore size and shape, along with ascus apical plugs dimensions, germ slit morphology and presence of appendages or slimy material on ascospore. As highlighted in the preface by Prof. J.D. Rogers, some of these species could have been "lumped" in species complexes, but with the risk to hide taxonomically relevant variations. By making the choice of "splitting", the author of the monograph proposes narrow species concepts which appear convincing since they are based on a combination of at least two independent characters. We followed this thorough approach to analyze and identify the material we collected, which enabled the recognition of five known species [*R. bunodes* (Berk. & Broome) Sacc., *R. leopoldensis* L.E. Petrini, *R. longispora* Rick, *R. pepo* Pat. and *R. winckleriana* Henn. ex L.E. Petrini], six new species (*R. aciculispora* J. Fourn. & Lechat, *R. discreta* J. Fourn. & Lechat, *R. granulosa* J. Fourn. & Lechat, *R. heliconiae* J. Fourn. & Lechat, *R. nigropileata* J. Fourn. & Lechat and *R. truncatispora* J. Fourn. & Lechat) and a new variety *R. asperata* Massee ex Wakef. var. *minor* J. Fourn. & Lechat. Six collections resembling *R. acutispora* (Theiss.) L.E. Petrini and three resembling *R. perusensis* L.E. Petrini could not be unambiguously identified to these species but their differences were not regarded as distinctive enough to justify the segregation of new taxa. They are therefore provisionally referred to these names until new discriminant characters become available.

In addition to *R. pepo*, three species had already been reported from Guadeloupe and Martinique by Petrini (2013), viz.: *R. arcuata* Petch, *R. lechatii* L.E. Petrini and *R. parva* L.E. Petrini. The holotypes of *R. lechatii* and *R. parva*, two species recently described from Guadeloupe and Martinique respectively (Petrini, 2013), are illustrated herein; *R. arcuata*, mentioned from Guadeloupe by Petrini (2013) but not collected during our field work is listed in the taxonomic part but not illustrated. The number of *Rosellinia* taxa known from French West Indies is up to seventeen; these species are described and illustrated in the taxonomic part and their affinities and the differential characters supporting their taxonomic delimitation are discussed. A dichotomous identification key to the species known from the French West Indies and a synoptic table showing their stromata at the same scale are presented.

Three collections of *R.* cf. *acutispora*, *R. asperata* var. *minor* and *R. truncatispora* were successfully isolated and living cultures were deposited at Westerdijk Fungal Biodiversity Institute (formerly CBS). ITS sequences were generated from these cultures and deposited in GenBank. To show their phylogenetic affinities, they were included in a phylogenetic analysis containing ITS sequences of representative *Rosellinia* taxa and related xylariaceous genera available in GenBank (Fig. 1). Illustrations of the cultures and phylogenetic results are presented and commented at the end of this article.

Materials and methods

Morphological observations and cultures

The observations were carried out on dry material rehydrated in water or 1% SDS. Measurements of asci and ascospores were made in water and ascospores measurements processed with the free software Piximetre 5.2 (http://ach.log.free.fr/Piximetre/). In the formula given by this software the values into brackets represent the extreme values (20%) that are not taken into account for the calculation, N represents the number of ascospores measured, Q the quotient length/width, Me the mean values of length × width and Qe the mean value of quotient length/width. The amyloid reaction of the ascus apical plug was tested by adding a drop of Melzer's reagent to a water mount of perithecial contents. Microscopic observation of the asci and the paraphyses was carried out after 1 min in 1% SDS and mounting in diluted blue Pelikan® ink, black Pelikan® ink or Melzer's reagent; diluted blue Pelikan® ink, black Pelikan® ink, aqueous nigrosin and India ink were used to highlight the cellular appendages and the slimy material on ascospores; in case of inconspicuous germ slits, ascospores were occasionally observed in chloral-lactophenol. Measurements of stromata, asci and ascus apical plugs are recorded as height × width. Terminology and observation procedures follow Petrini (2013). Nomenclature follows MycoBank.

Photomacrographs were taken with a Nikon Coolpix 995 digital camera either directly mounted on a stand or, for higher magnifications, through the eyepiece of an Olympus SZ60 stereomicroscope, by the means of a 30 mm in diameter adapter. Photomicrographs were taken with the same camera mounted on the trinocular port of a Leitz Orthoplan microscope. The digitized photographs were processed with Adobe Photoshop Elements 10 and the plates assembled with the same software.

Cultures of the living specimens were made from single ascospore according to Rossman's (Rossman *et al*., 1999) method and isolated in Petri dishes 55 mm in diam on MA (malt agar) with 5 mg/l of streptomycin, and incubated at 20°C in daylight alternating with darkness. Living cultures were deposited at Westerdijk Fungal Biodiversity Institute (formerly CBS), Utrecht, The Netherlands (CBS).

DNA extraction, amplification and sequencing

Total DNA was extracted from dry cultures blending a portion of them using a micropestle in 600 µL CTAB buffer (CTAB 2%, NaCl 1.4 M, EDTA pH 8.0 20 mM, Tris-HCl pH 8.0 100 mM). The resulting mixture was incubated for 15 min. at 65°C. A similar volume of chloroform: isoamylalcohol (24:1) was added and carefully mixed with the samples until their emulsion. It was then centrifuged for 10 min at 13.000 g, and the DNA in the supernatant was precipitated with a volume of isopropanol. After a new centrifugation of 15 min at the same speed, the pellet was washed in cold ethanol 70%, centrifuged again for 2 min and dried. It was finally resuspended in 200 µL ddH_2O. PCR amplification was performed with the primers ITS1F and ITS4 (White *et al*., 1990; Gardes & Bruns, 1993) for ITS.

Phylogenetic analysis was performed online at www.phylogeny.lirmm.fr (Dereeper *et al*., 2008). Maximum likelihood phylogenetic analyses were performed with PhyML 3.0 aLRT (Zwickl, 2006), using the GTR + I + Γ model of evolution. Branch support was assessed using the nonparametric version of the approximate likelihood-ratio test, implemented in PhyML (SH-aLRT; Anisimova & Gascuel, 2006).

Taxonomy

Plate 1 *(next page)* – Comparison at the same scale of stromata of *Rosellinia* taxa known from Guadeloupe and Martinique (with the exception of *R. arcuata*)

A: *R. aciculispora* sp. nov., MJF 15069; B: *R.* cf. *acutispora*, MJF 14114; C: *R. asperata* var. *minor* var. nov., MJF 13063; D: *R. bunodes*, CLL 5359; E: *R. bunodes* "*echinata*" form, MJF 14065; F: *R. discreta* sp. nov., MJF 10081; G: *R. granulosa* sp. nov., MJF 15083; H: *R. heliconiae* sp. nov., MJF 14167; I: *R. lechatii*, CLL 2334; J: *R. leopoldensis*, MJF 10204; K: *R. longispora*, CLL 6019; L: *R. nigropileata* sp. nov., MJF 15004; M: *R. parva*, CLL 2236; N: *R. pepo*, CLL 6054-2; O: *R.* cf. *perusensis*, MJF 07129; P: *R. truncatispora* sp. nov., MJF 15082; Q: *R. winckleriana*, MJF 16140. Scale bar = 1 mm.


Rosellinia taxa
known from
Guadeloupe
and Martinique
1 mm
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q

Dichotomous key to *Rosellinia* taxa known from French West Indies

1 Ascospores over 20 µm long, on dead, usually corticated wood or on *Heliconia* sheaths **2**
1 Ascospores 8–15 µm long; on bleached, heavily rotten decorticated wood **14**

2 Ascospores ellipsoidal-inequilateral or fusiform, with germ slit as long as spore length **3**
2 Ascospores fusiform with pinched to thread-like ends and with germ slit much shorter than spore length **7**

3 Ascospores fusiform, pale brown, averaging 70.6 × 12.1 µm, with germ slit mostly on the flattened side ..... ***R. longispora***
3 Ascospores smaller and more broadly ellipsoidal, dark brown to blackish brown, with germ slit on the most convex side **4**

4 Ascospores with 1–2 cellular appendages **5**
4 Ascospores lacking cellular appendages **6**

5 Stroma surface coarsely granular, ascospores with one cellular appendage ..... ***R. granulosa*** sp. nov.
5 Stroma surface smooth; ascospores with two cellular appendages and lower end often pinched and truncate ..... ***R. truncatispora*** sp. nov.

6 Ascospores averaging 21.8 × 7.4 µm ..... ***R. leopoldensis***
6 Ascospores averaging 34.4 × 10.1 µm ..... ***R. lechatii***

7 Stromatata 2.5–3 mm wide ..... ***R. pepo***
7 Stromatata less than 2 mm wide **8**

8 Stromata warted; ascospores over 80 µm long, with long thread-like ends ..... ***R. bunodes***
8 Stromata smooth; ascospores smaller with acute to pinched ends **9**

9 Ascospores averaging 60.7 × 6.5 µm ..... ***R. aciculispora*** sp. nov.
9 Ascospores averaging 36–43 µm long **10**

10 Stromata lacking subiculum; ascospores averaging 42.8 × 9.6 µm, on *Heliconia* ..... ***R. heliconiae*** sp. nov.
10 Stromata associated with a persistent subiculum; ascospores averaging less than 40 µm long; on dicot hosts **11**

11 Stromata sharply conical; ascospores averaging 36.1 × 6.6 µm ..... ***R. asperata* var. *minor*** var. nov.
11 Stromata subglobose to flat-topped; ascospores averaging longer **12**

12 Stromata averaging 1800 µm in diam; ascospores averaging 45.2 × 7.2 µm ..... ***R. arcuata***
12 Stromata 900–1500 µm in diam; ascospores averaging less than 40 µm long **13**

13 Stromata averaging 0.9 mm in diam, with a black cap-like ostiolar disc; ascospores averaging 37.3 × 6.9 µm ..... ***R. nigropileata*** sp. nov.
13 Stromata 1.2–1.5 mm in diam, without cap-like apex; ascospores averaging 38.5 × 5.7 µm ..... ***R. cf. acutispora***

14 Ascospores averaging 9.6 × 4.6 µm, with germ slit less than spore-length ..... ***R. parva***
14 Ascospores averaging over 10 µm long, with germ slit spore-length **15**

15 Ascospores dark brown to blackish brown, averaging 14.8 × 6.5 µm, surrounded by a conspicuous slimy sheath visible in India ink ..... ***R. winckleriana***
15 Ascopores medium brown, averaging smaller and lacking a conspicuous slimy sheath **16**

16 Subiculum persistent; stromata gregarious, often in contact, superficial; ascospores averaging 10.8 × 5.7 µm ..... ***R. cf. perusensis***
16 Subiculum fugacious; stromata loosely scattered with the base slightly sunken and discoid; ascospores averaging 12.2 × 6.8 µm ..... ***R. discreta*** sp. nov.

Rosellinia aciculispora J. Fourn. & Lechat, *sp. nov.* – MycoBank MB 822667. Plate 2; table 1.

Diagnosis: Differs from *Rosellinia freycinetiae*, the most resembling species as to ascospores dimensions in the *R. necatrix* group (Petrini & Petrini, 2005; Petrini, 2013), by smaller stromata with more conical apex and more narrowly fusiform ascospores with more narrowly acuminate ends.

Holotype: French West Indies: Martinique: Case-Pilote, Morne Rose, mesophilic rainforest, on a dead corticated branch in a sun-exposed pile of dead branches, 14 Jun. 2015, *leg*. J. Fournier & C. Lechat, MJF 15069 (LIP).

Etymology: From Latin *acicula* = small needle, for the narrowly fusiform ascospores with acute ends.

Subiculum reduced at maturity, woolly, dark-brown. **Stromata** gregarious to loosely clustered in small groups, separate, rarely in contact, 1400–1600 µm high including the ostiolar papilla × 1350–1550 µm in diam, subglobose with the base flattened, surface dark copper brown, matt, smooth, apex broadly conical with a black conical ostiolar papilla, frequently encircled by a black discoid area; ectostroma 70–85 µm thick, carbonaceous; entostroma absent, perithecia filling entirely the stroma cavity or collapsed.

Asci cylindrical, with (6–)8 overlapping uniseriate ascospores, spore-bearing part 315–325 × 11–12 µm, stipe 90–145 µm long, fragile and easily broken, with apical plug 9.2–10.4 × 5.6–6.1 µm (Me = 9.7 × 5.8 µm; N = 20), acorn-shaped with a lateral rim, apically rounded and basally attenuated, strongly bluing in Melzer's reagent. **Paraphyses** copious, thin-walled, septate, 4–5 µm wide at base, tapering above asci. **Ascospores** (52.8–)55.2–65.2(–69.2) × (5.5–)5.9–7.3(–8.2), Q = (7.1–)8.5–10.2(–10.7); N = 60 (Me = 60.7 × 6.5 µm; Qe = 9.4), narrowly fusiform with narrowly acuminate, subfiliform ends, inequilateral, straight, brown to dark brown, with a short straight to slightly oblique germ slit 11–13.5 µm long, central, on the flattened side; epispore smooth, with an inconspicuous slimy sheath on the ventral side swollen to 2.5–3 µm around the ends, visible in water and India ink, stained by aqueous nigrosin, appearing thicker on immature ascospores.

Asexual morph on the natural substrate not seen.

Known distribution: Martinique. Known only from the type collection.

Discussion: Based on its long, narrowly fusiform ascospores with a short germ slit and ventral slimy sheath swollen at ends, this *Rosellinia* clearly belongs to the *R. necatrix* group (Petrini & Petrini, 2005; Petrini, 2013), though the typical synnemata of the dematophora-like asexual morph could not be observed. The species within this group are primarily separated based on stroma dimensions and shape, combined with ascospore dimensions and shape. This *Rosellinia* differs from species with subglobose stromata less than 2500 mm in diam by significantly larger ascospores averaging 60.7 × 6.5 µm. The only species with ascospores in the same size range is *R. freycinetiae* L.E. Petrini, known from New Zealand on *Freycinetia banksii* (*Pandanaceae*) (Petrini, 2003; 2013). Besides the different geographic origin and the occurrence on dicot wood instead of palm, this *Rosellinia* differs from *R. freycinetiae* by smaller and differently shaped stromata, more narrowly fusiform ascospores with more acuminate ends and ascus apical plugs averaging larger. *Rosellinia compacta* S. Takemoto, known from Japan on woody twigs (Takemoto *et al*., 2009), was segregated from *R. necatrix* Prill. based on its longer ascospores and smaller stromata, with support of comparison of ITS sequences. While ascospores of our *Rosellinia* resemble those of *R. compacta* in having narrowly acuminate ends, they differ in being longer and significantly narrower (Table1). The combination of these deviating characters leads us to propose the new taxon *R. aciculispora* to accommodate this collection.

Rosellinia* cf. *acutispora (Theiss.) L.E. Petrini – *Rosellinia, a world monograph - Bibl. Mycol.*, 205: 207 (2013). Plates 3, 22; table 2.

Subiculum dark reddish brown, felty, reduced at maturity, bearing dense sterile dematophora-like synnemata. **Stromata** usually densely gregarious, 1500–2000 µm high × 1200–1700 µm in diam, subglobose with the base attenuated into a broad stipe, surface dark copper brown to blackish brown, matt, smooth, apex often with a blackened discoid area surrounding the finely conical ostiolar papilla; ectostroma 80–120 µm thick, carbonaceous; entostroma absent or just visible at base, pale yellowish brown, perithecia filling entirely the stroma cavity or partly detached.

Asci cylindrical, with (6–)8 overlapping uniseriate ascospores, spore-bearing part 210–225 × 7.5–8.5 µm, stipe 80–110 µm long, often fragmentary, with apical plug 8.1–10.5 × 5–6.8 µm (Me = 9.1 × 5.6 µm; N = 120), acorn-shaped with a sharp lateral rim, apically rounded and basally attenuated, strongly bluing in Melzer's reagent. **Paraphyses** copious, thin-walled, septate, 3–5 µm wide at base, tapering above asci. **Ascospores** (33.5–)34.5–41.4(–44.1) × (4.8–)5.2–6.5(– 7.1) µm, Q = (5.3–)5.5–7.6(–8.2); N = 360 (Me = 38.3 × 5.8 µm; Qe = 6.6), narrowly fusiform-inequilateral with acute, slightly pinched ends, straight, brown to dark brown, with a short straight to slightly oblique germ slit 6–12 µm long, central, on the flattened side; epispore smooth, with an inconspicuous slimy sheath on the ventral side, swollen to 3–5 µm around the ends, visible in water and India ink, stained by aqueous nigrosin and diluted blue Pelikan® ink, appearing thicker on immature ascospores. In collection MJF 14115, immature ascospores possess hyaline, pointed bipolar appendages 2–4.5 µm long embedded in the slimy caps, which persist at maturity; the percentage of appendaged ascospores is much lower in MJF 14114 and null in other collections.

Asexual morph on the natural substrate not seen.

Culture: Colony covering entirely the medium surface after two weeks, greyish brown at inoculation site, irregularly proliferating in central area with some radiating strands developping to the margin, surrounded by a dark greenish brown to nearly black line composed of chains of moniliform, dark brown, thick-walled, sterile elements 2–6 µm wide. (Plate 22, Fig. A), surrounded by white aerial mycelium with some tinges of pale yellowish. No conidiophore or sporulation observed after five weeks. Reverse dark brown at inoculation site, cream to pale tan in the central area, surrounded by a very pale greenish brown area with a white to cream coloration at margin.

Specimens examined: French West Indies: Martinique: Le Morne-Rouge, forest track of La Propreté, hygrophilic rainforest, on dead corticated branches, 29 Aug. 2007, *leg*. J. Fournier, MJF 07211 (LIP); ibid., MJF 07211–2 (LIP); Le Morne-Vert, Caplet track, hygrophilic rainforest, on a dead corticated branch, 31 Aug. 2008, *leg*. C. Lechat, CLL 8396 (LIP); Le Prêcheur, Anse Couleuvre, coastal mesophilic rainforest, on a dead corticated branch in a ditch lining the path up to the waterfall, 9 Jun. 2014, *leg*. J. Fournier & C. Lechat, MJF 14114 (LIP) (culture CBS 138730, ITS: KY941108); *ibid*., MJF 14115 (LIP); Saint-Joseph, Forêt Coeur-Bouliki, hygrophilic rainforest, on dead corticated branchlets, 26 Aug. 2007, *leg*. C. Lécuru, MJF 07100 (LIP).

Rosellinia necatrix: Metropolitan France: Pyrénées-Atlantiques, Auterrive, Island of Gave d'Oloron, base of a dead decorticated stump of *Sambucus nigra*, 6 Nov. 2003, *leg*. J. Fournier, JF 03222.

Known distribution: Martinique.

Table 1 – Comparison of differential characters between *R. aciculispora*, *R. compacta* and *R. freycinetiae*

Species	Stroma shape	Stroma dimensions mm height × diam (µm)	Ascospores dimensions (µm)	Quotient L/W	Ascospores ends	Ascus apical plug dimensions (µm)
R. aciculispora	subglobose apically conical	1400–1600 × 1350–1550	55.2–65.2 × 5.9–7.3 Me = 60.7 × 6.5	9.4	narrowly acuminate	9.2–10.4 × 5.6–6.1 Me = 9.7 × 5.8
R. compacta	globose	1130–1710 × 990–1360 Me = 1430 × 1160	42–62.5 × 5.0-10.9 Me = 52.2 × 7.5	6.9	narrowly acuminate	Me = 6.9 × 5.4
R. freycinetiae	subglobose flat-topped	1500–2000 × 2050–2375	60.1–63.3 × 7.8–8.2 Me = 61.7 × 8	7.7	narrowly rounded	7.6–8.6 × 6.5–7 Me = 8.1 × 6.8

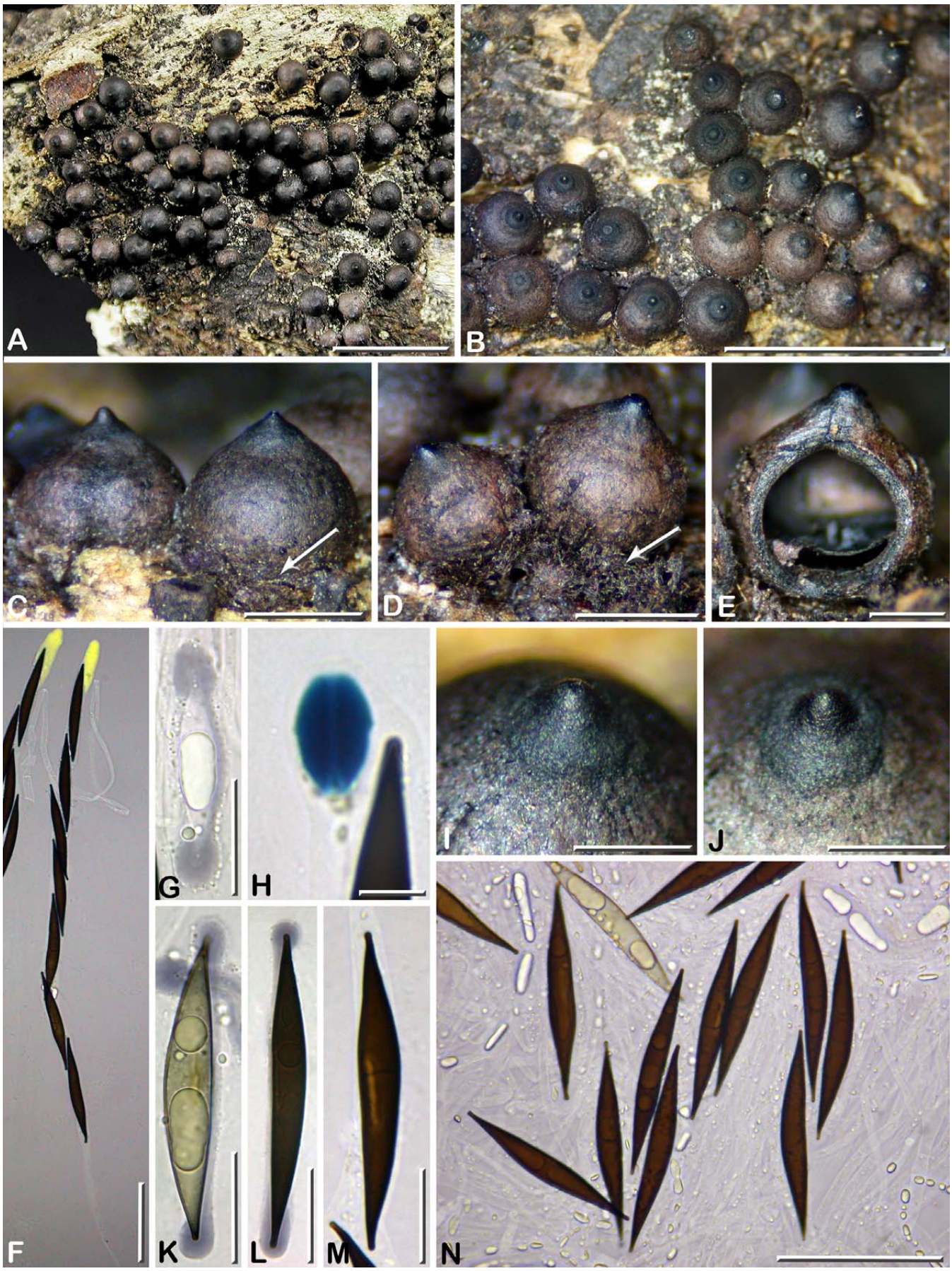

Plate 2 – *Rosellinia aciculispora*

Holotype MJF 15069. A, B: Habit of stromata on host surface; C, D: Stromata in side view showing a conical apex and remnants of subiculum at base (arrows); E: Stroma in vertical section showing the carbonaceous ectostroma and the collapsed perithecium detached from the ectostroma; F: Ascus and paraphyses, in black Pelikan® ink; G, K: Immature ascospores in side view with slimy sheath stained in aqueous nigrosin; H: Ascus apical plug in Melzer's reagent; I, J: Two stromata in close-up showing a blackened discoid ostiolar area and a coarsely papillate ostiole; L: Mature ascospore in side view with slimy sheath restricted to the ends; M: Mature ascospore in ventral view showing a germ slit, in black Pelikan® ink; N: Ascospores and paraphyses, in black Pelikan® ink. Scale bars: A, B = 5 mm; C, D = 1 mm; E, I, J = 0.5 mm; F, N = 50 µm; G, K-M = 20 µm; H = 5 µm.

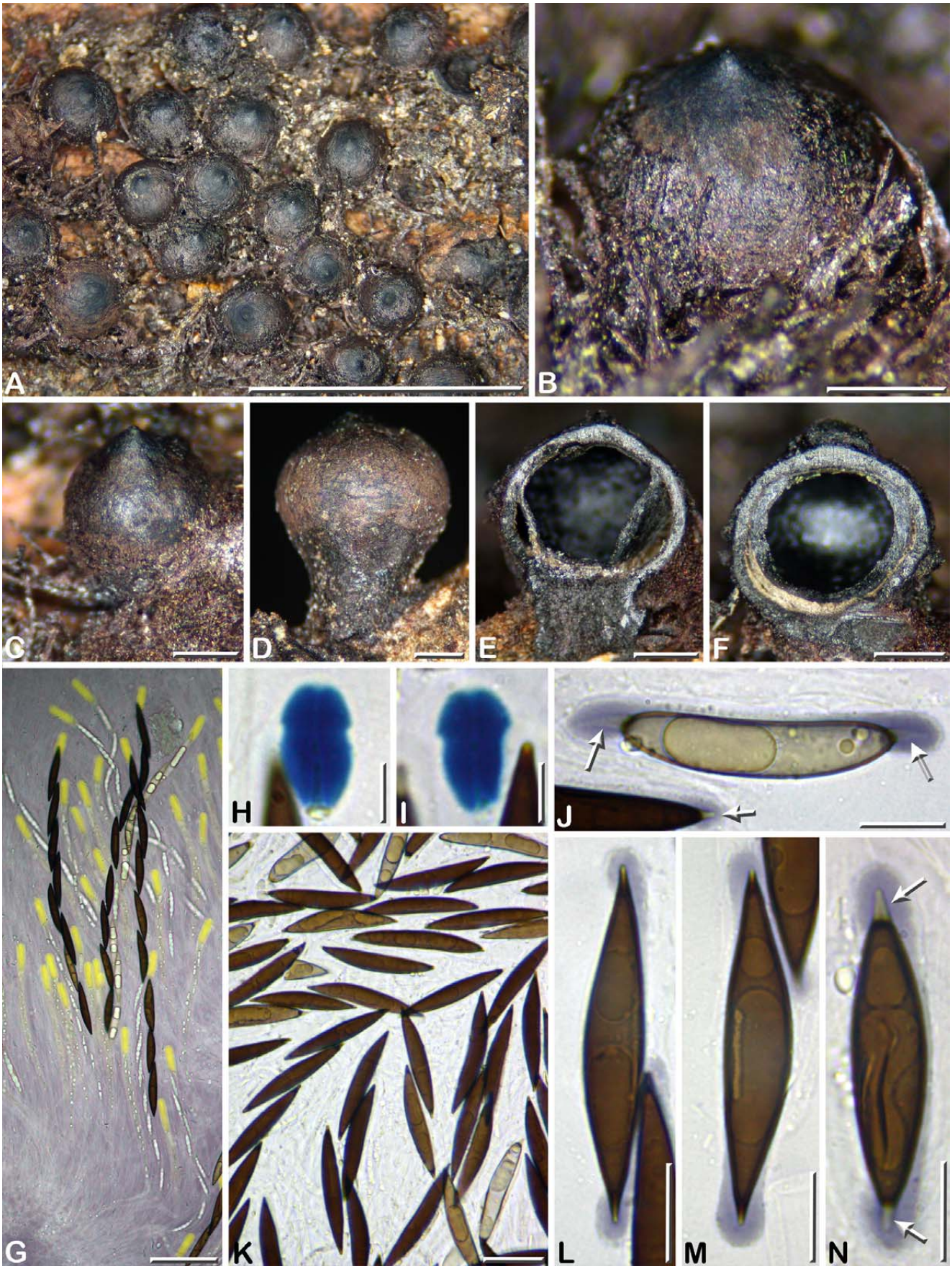

Plate 3 – *Rosellinia* cf. *acutispora*

A-I, L, M: MJF 14114; J, N: MJF 14115. A: Habit of stromata aggregated on host surface; B: Stroma in side view showing a conical ostiolar papilla and sterile synnemata at base; C: Stroma partly embedded in the felty subiculum; D: Stipitate stroma in side view; E: Stipitate stroma in vertical section showing the carbonaceous ectostroma and the perithecium partly detached from the ectostroma; F: Sessile stroma in vertical section showing the pale brown entostroma at base; G: Immature and mature asci, in black Pelikan® ink; H, I: Ascus apical plugs in Melzer's reagent; J: Immature ascospore showing bipolar pointed appendages (arrows) embedded in slimy caps, and below a smaller appendage on a mature ascospore (arrow), in aqueous nigrosin; K: Ascospores in 1% SDS; L, M: Mature ascospores showing a germ slit and bipolar slimy caps; N: Mature ascospore with persistent bipolar appendages embedded in slimy caps. Scale bars: A = 5 mm; B-F = 0.5 mm; G = 50 µm; H, I = 5 µm; J, L-N = 10 µm; K = 20 µm.

Discussion: It is assumed that the first six collections listed in Table 2 represent a same taxon in the *R. necatrix* group (Petrini & Petrini, 2005; Petrini, 2013), characterized by sessile to stipitate stromata 1200–2000 × 1200–1700 µm and ascospores averaging 38.3 × 5.8 µm, with a quotient L/W = 6.6. The only slightly deviating collection is MJF 07211, with smaller stromata and ascospores. Our collections appear most closely related to *R. acutispora* because of ascospore and stroma dimensions, which, however, overlap with those of *R. necatrix*, *R. arcuata* and *R. acutispora*. *Rosellinia necatrix* (Petrini, 2013) is basically a warm temperate species and therefore is unlikely to be widespread in Martinique. *Rosellinia acutispora*, known from Brazil and Trinidad & Tobago, and *R. arcuata*, pantropical, are characterized by ascospores averaging 41.8 × 7 µm and 45.2 × 7.2 µm respectively, thus distinctly larger than those of our collections from Martinique.

The lack of additional discriminating characters leads us to tentatively refer these collections to *R.* cf. *acutispora*. The phylogenetic affinities of this species with *R. necatrix* are supported by comparison of ITS sequences (Fig. 1).

The observation of appendaged ascospores in MJF 14114 and MJF 14115 is remarkable since this character is most unusual in species of the *R. necatrix* group. As it is much more widespread in the former collection than in the latter and not correlated with any other deviating morphological character, we provisionally assume it is fortuitous, until further observations show whether it is taxonomically significant or not.

Rosellinia arcuata Petch, *Ann. R. Bot. Gard. Peradenyia*, 6: 175 (1916).

Rosellinia arcuata was reported from Guadeloupe by Petrini (2013), based on material collected by J. Vivant in 1997 and communicated by F. Candoussau. We did not see this material and we did not collect material referable to this taxon during our survey.

As discussed by Petrini (2013), *R. arcuata* is a pantropical species originally described from Sri Lanka, closely related to *R. necatrix* and its tropical counterparts like *R. acutispora*, *R. beccariana* Ces., *R. boedijnii* L.E. Petrini, *R. bothrina* (Berk. & Broome) Sacc., *R. compacta* S. Takemoto, *R. grantii* L.E. Petrini and *R. siggersii* L.E. Petrini. The combination of differences in stroma and ascospores dimensions enables to distinguish these species, sometimes tentatively. The species most similar to *R. arcuata* that we recorded from Martinique is *R.* cf. *acutispora*, from which it differs by average larger stromata and ascospores (Petrini, 2013) (Table 2).

Rosellinia asperata Massee ex Wakef. **var. *minor*** J. Fourn. & Lechat, *var. nov*. – MycoBank MB 822673. Plates 4, 5, 22; table 3.

Diagnosis: Differs from *Rosellinia asperata* by smaller stromata rarely over 1000 µm in diam vs. 1000–1500 µm in diam and smaller ascospores averaging 36.2 × 6 µm vs. 51.9 × 7.3 µm.

Holotype: French West Indies: Martinique: Fort-de-France, edge of the parking area of the Maison Forestière de la Donis, hygrophilic rainforest, on dead corticated twigs of *Piper* sp., 15 Jun. 2014, *leg*. C. Lechat, MJF 14172 (LIP)), ex-type culture CBS 138641, ITS: KY941107.

Etymology: From Latin *minor* = smaller, for the significantly smaller stromata and ascospores as compared with the typical variety.

Subiculum dark reddish or purplish brown, felty, reduced at maturity or absent, occasionally bearing scattered sterile synnemata. **Stromata** scattered to densely gregarious, 750–1100 µm high × 600–930 µm in diam, conical to pear-shaped with a stout acutely conical apex; surface brownish black to black, matt, roughened, ostiole integrated; ectostroma 80–100 µm thick, to 120 µm thick at apex and base, carbonaceous; entostroma reduced to the base, pale yellowish brown, perithecia shrivelled and detached from the ectostroma except at base.

Table 2 – Comparison of differential characters between *R.* cf. *acutispora*, *R. acutispora*, *R. arcuata* and *R. necatrix*

Collection numbers	Stroma dimensions height × diam µm	Ascospores dimensions µm	Mean values of ascospores µm	Average quotient L/W
R. cf. *acutispora* MJF 07100	1500–2000 × 1350–1700	(35.4–)36.5–40.2(–41) × (5.2–)5.6–6.4(6.6) N= 60	38.4 × 5.9	Qe = 6.5
R. cf. *acutispora* MJF 07211	1200–1500 × 1200–1350	(33.7–)34.5–37.4(–38.8) × (5.1–)5.4–6.5(–6.8) N= 60	35.9 × 6	Qe = 6
R. cf. *acutispora* MJF 07211–2	1500–1800 × 1200–1550	(36.7–)37.6–41(–43.5) × (4.8–)5.2–6.1(–6.4) N= 60	39.3 × 5.7	Qe = 6.9
R. cf. *acutispora* CLL 8396	1350–1550 × 1300–1700	(36–)36.6–41(–42.8) × (5.1–)5.3–6.1(–6.6) N= 60	39.1 × 5.7	Qe = 6.8
R. cf. *acutispora* MJF 14114	1500–2000 × 1200–1550	(35.3–)37–41.4(–44.1) × (5.1–)5.5–6.3(–7.1) N= 60	39.2 × 5.9	Qe = 6.7
R. cf. *acutispora* MJF 14115	1500–2000 × 1200–1400	(33.5–)35.7–41.1(–42.1) × (4.8–)5.2–6.3(–6.8) N= 60	38.0 × 5.7	Qe = 6.7
Cumulated values from above collections	1200–2000 × 1200–1700	(33.5–)34.5–41.4(–44.1) × (4.8–)5.2–6.5(– 7.1) N = 360	38.3 x 5.8	Qe = 6.6
R. acutispora (Petrini, 2013)	1000–1750 × 1250–1600	39–44.6 × 6–8	41.8 × 7	Qe = 6
R. arcuata (Petrini, 2013)	1700–1900 × 1750–1900	40.5–50 × 6.4–8	45.2 × 7.2	Qe = 6.3
R. necatrix (Petrini, 2013)	1300–1700 × 1200–2000	35–40.4 × 6.1–6.9	37.7 × 6.5	Qe = 5.8
R. necatrix JF 03222	1700–2000 × 1350–1850	(30.5–)32.1–37.8(–40.5) × (4.4–)5.1–6.4(–7) N= 60	35 × 5.7	Qe = 6.2

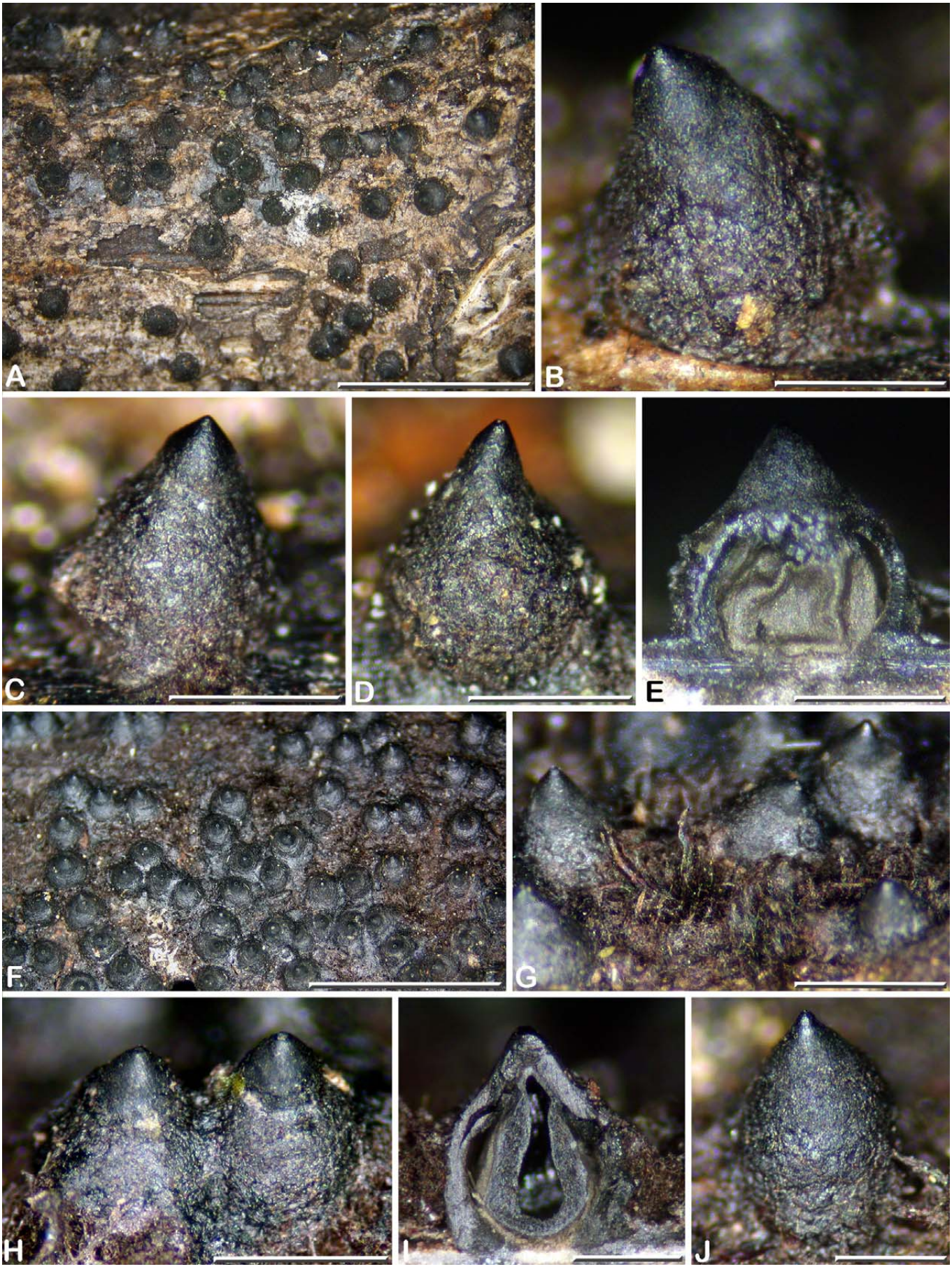

Plate 4 – *Rosellinia asperata* var. *minor*

A-E: MJF 14172 (Holotype); F-I: MJF 13063; J: MJF 13208. A: Habit of stromata scattered on host surface, associated with reduced remnants of subiculum; B-D, H, J: Variously shaped stromata in side view showing a stout conical apex and a roughened ectostroma; E, I: Stromata in vertical section showing a flattened base, a thick conical apex and a shrivelled perithecium detached from the ectostroma, with pale brown basal entostroma in I; F: Gregarious stromata partly immersed in a well-developed purplish brown subiculum; G: Stromata associated with sterile synnemata. Scale bars: A, F = 5 mm; B-E, I, J = 0.5 mm; G, H = 1 mm.

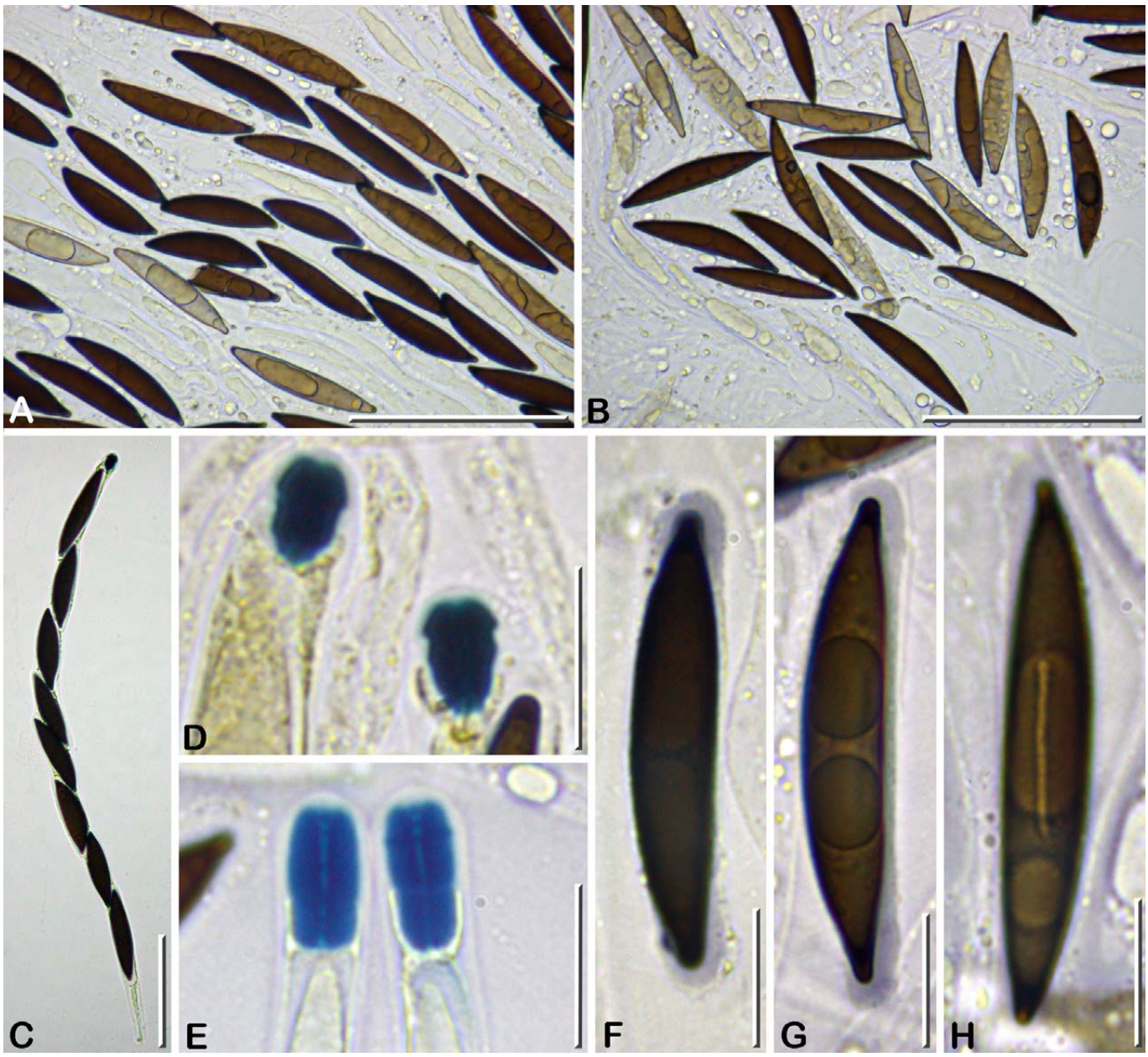

Plate 5 – *Rosellinia asperata* var. *minor*

A, E: MJF 14172 (Holotype); C, D, F, G: MJF 13063; B, H: MJF 13302. A, B: Variously shaped immature and mature ascospores, in 1% SDS; C: Ascus with broken stipe, in Melzer's reagent; D, E: Ascus apical plugs, in Melzer's reagent; F, G: Ascospores in side view showing slimy caps, in aqueous nigrosin; H: Ascospore in ventral view showing a germ slit, in aqueous nigrosin. Scale bars: A-C = 50 µm; D-H = 10 µm.

Asci cylindrical, with (6–)8 overlapping uniseriate ascospores, spore-bearing part 250–265 × 7–7.5 µm, stipe 36–54 µm long, with apical plug 7–9.2 × 3.2–5 (Me = 8.1 × 4.4 µm; N = 60), acorn-shaped with a sharp lateral rim to tubular, apically flattened or depressed, basally attenuated or not, strongly bluing in Melzer's reagent. **Paraphyses** copious, thin-walled, septate, 4–6 µm wide at base, gradually tapering above asci. **Ascospores** (28–)29.3–42.5(–46.8) × (4.4–)4.8–7.1(–7.6) µm, Q = (4–)4.8–7.8(8.7); N = 360 (Me = 36.2 × 6 µm; Qe = 6.1), fusiform-inequilateral with narrowly rounded to acute, slightly pinched ends, straight to slightly ventrally concave, brown to dark brown, with a short straight to slightly oblique germ slit 6–10 µm long, central, on the flattened side; epispore smooth, with an inconspicuous slimy sheath on the ventral side, swollen to 3–4 µm around the ends, visible in water and India ink, stained by aqueous nigrosin and diluted blue Pelikan® ink.

Asexual morph on the natural substrate not seen.

Culture: Colony covering entirely the medium surface after two weeks, dark greenish brown at inoculation site, surrounded by a white to pale yellowish area limited by a dark brownish line composed of densely intertwined dark brown, thick-walled, septate, hyphal sterile elements 2–3 µm wide with hyaline to pale brown, rounded, swollen, free ends 3–4 µm wide (Plate 22, Fig. B). Dark brownish line surrounded by white to pale yellow aerial mycelium with some tinges of greenish yellow to pale brown. No conidiophore or sporulation observed after five weeks. Reverse dark brown at inoculation site, surrounded by a pale yellow circular area and a concentric ring-like area, pale yellow at margin.

Other specimens examined (paratypes): French West Indies: Martinique: Case-Pilote, Fond Boucher, mesophilic to xerophilic forest, on a corticated branchlet, 17 Aug. 2013, *leg*. J. Fournier, MJF 13302 (LIP); Case-Pilote, Morne Rose, mesophilic to xerophilic forest, on a corticated branch, 14 Jun. 2015, *leg*. J. Fournier & C. Lechat, MJF 15068 (LIP); Fond Saint-Denis, Morne Gaubert, mesophilic rainforest,

on a corticated branchlet, 16 Aug. 2011, *leg*. C. Lechat, CLLMAR 11016B (LIP); Fort-de-France, Absalon, trail to Plateau Michel, ca. 350 m, hygrophilic rainforest, on a corticated branchlet, 5 Jun. 2014, *leg*. J. Fournier, MJF 14050 (LIP); Sainte-Marie, La Philippe, mesophilic to xerophilic coastal forest, 50 m, on a corticated branch, 8 Aug. 2013, *leg*. J. Fournier, MJF 13063 (LIP); *ibid*., on corticated branchlets, 14 Aug. 2013, *leg*. J. Fournier, MJF 13208 (LIP); *ibid*., on a corticated branchlet, MJF 13211 (LIP) (partly depauperate).

Known distribution of the typical species: Central African Republic, Costa Rica, Gold Coast (Ghana) (Petrini, 2013). **Known distribution of the variety:** Martinique.

Discussion: *Rosellinia asperata* Massee ex Wakef. is a distinctive member of the *R. necatrix* group (Petrini & Petrini, 2005; Petrini, 2013), distinguished from other species by conical to pear-shaped stromata extended by a stout, sharply conical apex.

The six collections from Martinique show the same stroma morphology but have smaller stromata and significantly smaller ascospores (Table 3). Their phylogenetic affinities with *R. necatrix* are supported by comparison of ITS sequences (Fig. 1).

Most species of the *R. necatrix* group are distinguished by the combination of stroma and ascospores dimensions; based on this, the collections from Martinique could have been described as a new species. The striking resemblance of their stromata with those of *R. asperata* suggests a strong phylogenetic relationship to be verified by molecular comparison, which will be possible when typical material of *R. asperata* is sequenced. In the meantime, we prefer to assign to the collections from Martinique the varietal rank, *R. asperata* var. *minor*, to account merely for the differences in spore and stroma size compared to *R. asperata*.

A careful examination of ascospores of all collections showed they are roughly of two types, either short and broadly fusiform with narrowly rounded ends or long fusiform with pointed ends, usually both present on a same slide. However, the ratio of broadly fusiform vs. narrowly fusiform is not the same in all collections, as exemplified by the collections MJF 14172 and MJF 13302 (Plate 5, Figs. A and B), thus the different distribution of the two types of ascospores is likely to account for the fairly wide variation range observed in the measurements (Table 3).

Rosellinia asperata var. *minor* appears to be not uncommon in Martinique, in hygrophilic as well mesophilic forests. Its almost exclusive occurrence on twigs and branchlets rarely over 1 cm in diam is noticeable and might reflect some ecological preference, if it is confirmed by further observations.

Rosellinia bunodes (Berk. & Broome) Sacc., *Syll. Fung*., 1: 257 (1882). Plates 6–8; table 4.

Subiculum finely felty, appressed, greyish brown to reddish-brown, persistent but usually inconspicuous at maturity. **Stromata** often densely gregarious and in contact, rarely in small clusters or separate, 1350–1550 µm high × 1350–1700 µm in diam, subglobose with the base flattened, surface dark brown to blackish brown, reticulately warted, apex obtusely rounded to flattened, with a black obtusely conical ostiolar papilla, frequently encircled by a black, discoid, smooth area 0.5–0.6 mm in diam; ectostroma 80–110 µm thick, carbonaceous; entostroma poorly developed at the base, tan when present, perithecia filling entirely the stroma cavity.

Asci fragmentary, not measured, with (4–)8 overlapping uniseriate ascospores, with apical plug 10.1–12.1 × 7.5–8.6 µm (Me = 11.2 × 8 µm; N = 20), acorn-shaped with a faint lateral rim, with a shallow depression at both ends, strongly bluing in Melzer's reagent. **Paraphyses** copious, filiform, thin-walled, septate. **Ascospores** (77.7–)88.7–124.4(–137) × (6.5–)7.5–10.1(–11.2) µm, Q = (8.5–) 9.6–14.4 (–16.1); N = 60 (Me = 105.4 × 8.6 µm; Qe = 12.4), fusiform-inequilateral with narrowly acuminate to filiform ends, straight, dark brown to blackish brown, with a short, often inconspicuous straight to slightly oblique germ slit 9–15 µm long, central, on the flattened side; epispore smooth, with a thin slimy sheath on the ventral side, swollen around the ends, visible in water, stained by aqueous nigrosin, India ink and diluted blue Pelikan® ink.

Asexual morph on the natural substrate not seen; scattered sterile synnemata often present.

Specimens examined: French West Indies: Guadeloupe: Basse-Terre, Petit-Bourg, Rivière Moustique, hygrophilic rainforest, on a dead corticated branch, 5 Sept. 2005, *leg*. C. Lécuru, CLL 5359 (LIP); Basse-Terre, Capesterre-Belle-Eau, troisième chute du Carbet, hygrophilic rainforest, on a dead palm rachis, 13 Aug. 2008, *leg*. C. Lechat, CLL

Table 3 – Comparison of differential characters between *R. asperata* var. *minor* and *R. asperata*

Collection numbers	Stroma dimensions height × diam (µm)	Ascospore measurements (µm)	Q = quotient L/W N = number of measurements	Mean values
R. asperata var. *minor* CLLMAR 11016B	750–950 × 600–850	(29–)33.5–42.2(–44.4) × (4.4–)4.8–6.1(–6.7)	Q = (5.3–)6–7.8(–8.4) N = 60	37 × 5.5 µm Qe = 6.7
R. asperata var. *minor* MJF 13063	850–1000 × 750–930	(30.6–)33.1–38.2(–41.5) × (5–)5.3–6.5(–7.2)	Q = (4.8–)5.2–6.7(–7.5) N = 60	35.4 × 6 µm Qe = 6
R. asperata var. *minor* MJF 13208	850–1000 × 700–900	(31–)33.3–39.3(–40.8) × (5–)5.5–6.6(–7.1)	Q = (4.8–)5.3–6.5(–7.8) N = 60	36.2 × 6 µm Qe = 6
R. asperata var. *minor* MJF 13302	750–950 × 750–850	(31.5–)34–42.5(–46.8) × (4.9–)5.3–6.5(–6.9)	Q = (4.7–)5.5–7.3(–8.7) N = 60	38.1 × 6 µm Qe = 6.4
R. asperata var. *minor* MJF 14172	750–950 × 600–850	(31–)33.1–38.5(–39.6) × (5.5–)6–7.1(–7.6)	Q = (4.5–) 5.1–6.1 (–6.9) N = 60	35.8 × 6.5 µm Qe = 5.5
R. asperata var. *minor* MJF 15068	930–1100 × 850–1100	(28–)29.3–38.2(–41.2) × (5.2–)5.5–6.7(–7.2)	Q = (4–)4.8–6.7(–7.5) N = 60	34.8 × 6.1 µm Qe = 5.8
R. asperata var. *minor* cumulated values from above collections	750–1100 × 600–930	(28–)29.3–42.5(–46.8) × (4.4–)4.8–7.1(–7.6)	Q = (4–)4.8–7.8(–8.4) N = 360	36.2 × 6 µm Qe = 6.1
R. asperata (Petrini, 2013)	1029–1273 × 1015–1493	46.9–56.9 × 6–8.6		51.9 × 7.3 µm Qe = 7.1

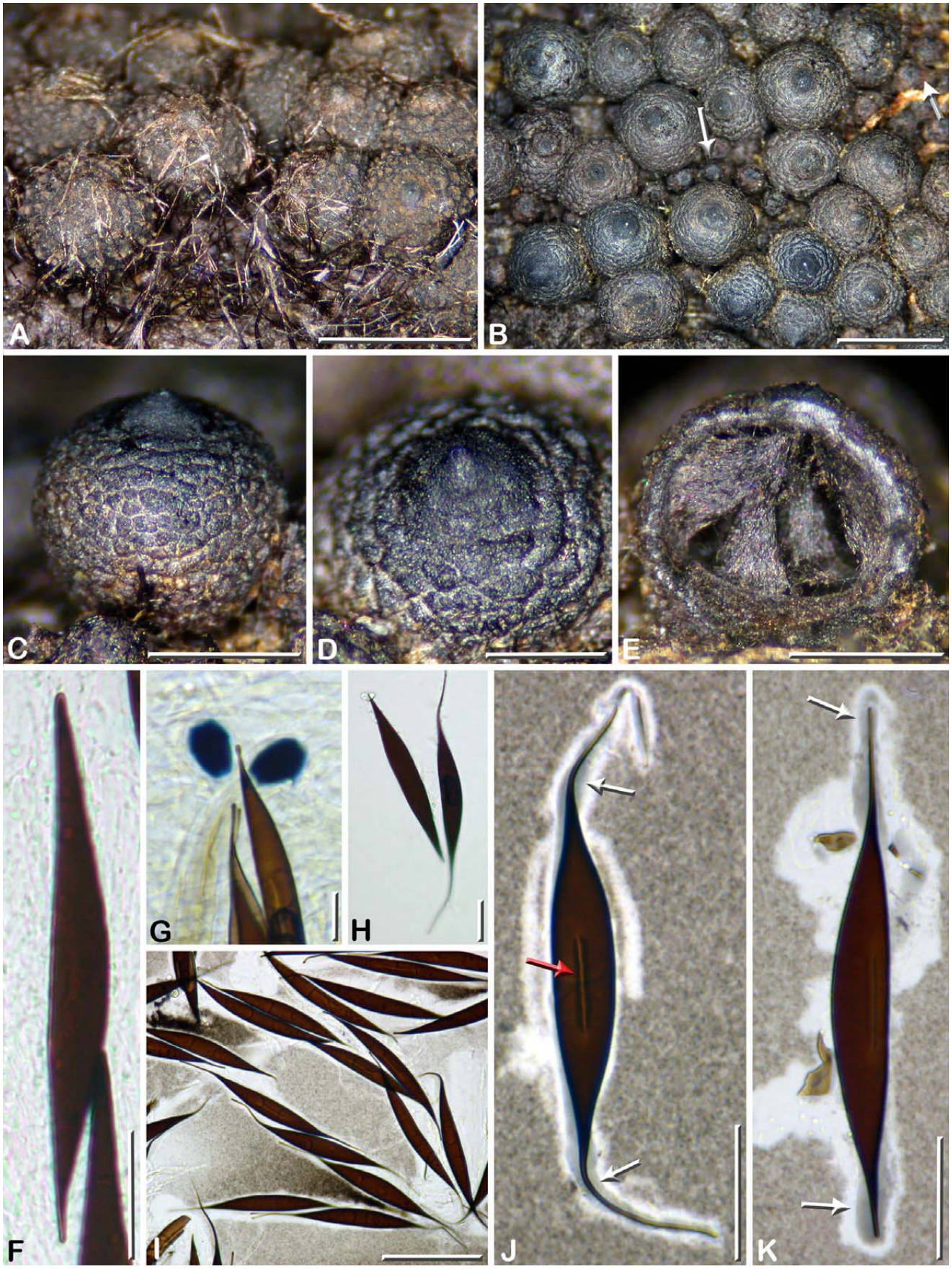

Plate 6 – *Rosellinia bunodes*

A: MJF 14136; B-E, G-K: MJF 07192; F: CLL 5359. A: Habit of immature stromata on host surface, associated with sterile synnemata of the asexual morph; B: Habit of mature stromata on host surface, associated with small primordia or aborted stromata (arrows); C: Stroma in side view showing a warted surface; D: Stroma apex in close-up showing an ostiole in the centre of a smooth black discoid area; E: Stroma in vertical section showing the carbonaceous ectostroma and a perithecium filling the stroma cavity; F: Narrowly acuminate ascospore, in 1% SDS; G: Ascus apical plugs in Melzer's reagent; H: Ascospores from a same slide with narrowly acuminate (left) and filiform (right) ends, in 1% SDS; I: Ascospores mostly with filiform ends, in India ink; J, K: Ascospores showing their ends coated with slimy material stained grey in India ink (white arrows) and a germ slit (red arrow). Scale bars: A, B = 2 mm; C, E = 1 mm; D = 0.5 mm; F, H, J, K = 20 µm; G = 10 µm; I = 50 µm.

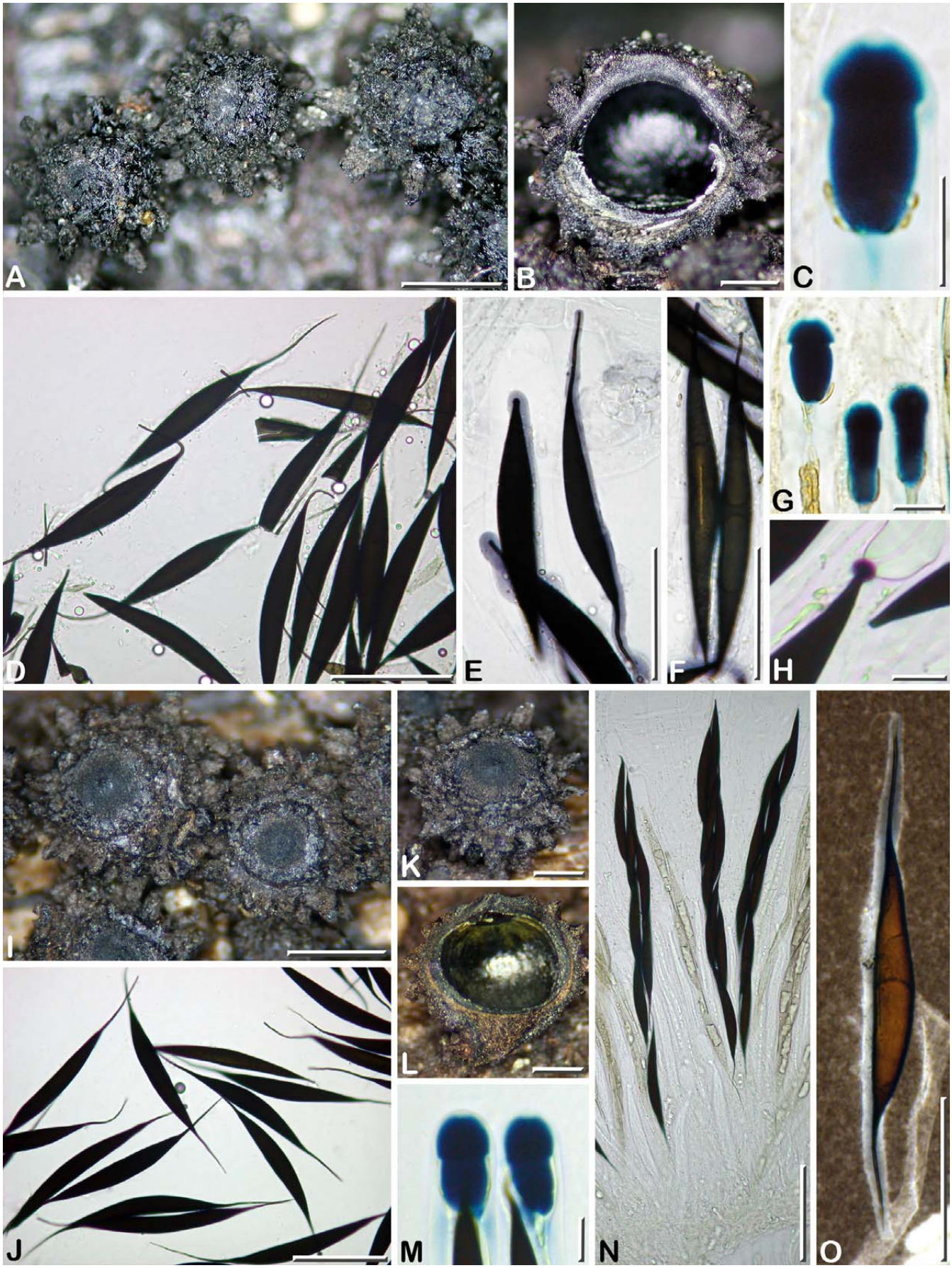

Plate 7 – *Rosellinia bunodes* ("*echinata*" form)

A-H: CLL 8213; I-O: MJF 14065. A, I, K: Stromata on host surface in top view showing spiny warts and a smooth ostiolar area; B, L: Stromata in vertical section showing the carbonaceous ectostroma, a perithecium filling the stroma cavity and yellowish brown entostroma present at base in L; C, G, M: Ascus apical plugs in Melzer's reagent, with two abnormal stretched ones (G, lower right); D, J: Ascospores with typical filiform ends, in 1% SDS; E: Two ascospores showing narrowly acuminate or filiform ends, both with slimy sheath stained by aqueous nigrosin; F: Ascospore in ventral view showing a short germ slit; H: Abnormal knob-like ascospore tip; N: Immature and mature asci in 1% SDS; O: Ascospore in side view showing a slimy sheath, in India ink. Scale bars: A, I = 1 mm; B, K, L = 0.5 mm; C, G, H, M = 10 µm; D-F, J, O = 50 µm; N = 100 µm.

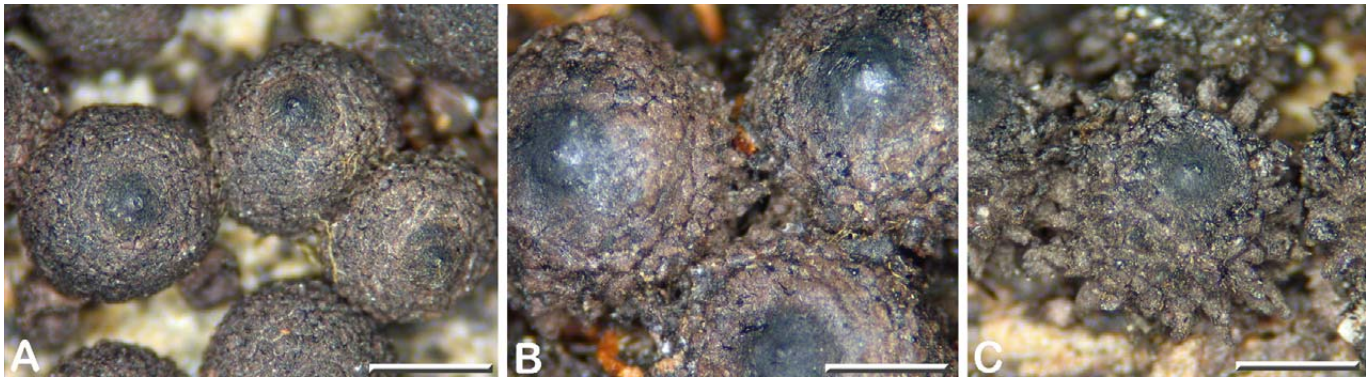

Plate 8 – *Rosellinia bunodes*

A: MJF 07192; B: CLL 5359; C: MJF 14065. Stromata on host surface in top view, at the same scale, showing the different types of vestiture grading from polyhedral warts (A) to spiny warts (C) through intermediate type of warts (B). Scale bars = 1 mm.

8213 (LIP). Martinique: Le Morne-Rouge, forest track of La Propreté, hygrophilic rainforest, on dead corticated branchlets of *Hibiscus elatus* Sw. (*Malvaceae*), 29 Aug. 2007, *leg*. J. Fournier, MJF 07192 (LIP); *ibid*., on a dead corticated branch, 6 Jun. 2014, *leg*. J. Fournier, MJF 14065 (LIP); *ibid*., on dead corticated branchlets, 12 Jun. 2014, *leg*. J. Fournier, MJF 14136 (immature) (LIP).

Known distribution: Pantropical.

Discussion: *Rosellinia bunodes* is a widespread pantropical species characterized by the combination of warted stromata and long-fusiform ascospores with filiform ends, in average more than 80 µm long. Its root-pathogen activity, its association with a synnematous asexual morph and its ascospore morphology match well the *R. necatrix* group (Petrini & Petrini, 2005; Petrini, 2013). Although the five collections studied here conform well to the definition of *R. bunodes*, they show striking deviations in stroma dimensions and vestiture and in ascospore and ascus apical plug morphology and dimensions summarized in Table 4.

Out of the three collections MJF 14136, CLL 5359 and MJF 07192, the latter appears the most typical of *R. bunodes* with regard to stroma dimensions, vestiture composed of low polyhedric warts and ascospores averaging 105.4 × 8.6 µm, mostly with filiform ends. The collection CLL 5359 deviates in that its stromata are larger and its ascospores lack filiform ends and thus are substantially smaller than those of MJF 07192 but with a slight overlap.

Interestingly, the stromata of CLL 5359 are coated with thick warts, some of them somewhat conical (Plate 8, Fig. B). The two collections CLL 8213 and MJF 14065 display striking spiny warts projecting up to 450 µm high combined with ascospores with long filiform ends, in the upper size range given by Petrini (2013), along with ascus apical plugs larger than those of MJF 07192 and also in the upper size range assigned to this species. Stromata with such a conspicuous spiny vestiture would conform to *R. echinata* Massee (Massee, 1901), an aggressive root-pathogen species collected in Singapore synonymized with *R. bunodes* by Petrini (2013). The collection CLL 8213 was submitted to Dr. L. Petrini who identified it as *R. bunodes* (pers. comm., 2008).

Comparing the five collections with the concept of *R. bunodes* assessed by Petrini (2013), it appears that stroma dimensions, the expression of the stroma warts, the dimensions of ascospores and that of the ascus apical plug are continuous and not correlated. This strongly suggests that *R. bunodes* shows a wide range of intraspecific variations.

Rosellinia bunodes has been frequently reported as an agressive root-pathogen from various tropical or subtropical locations. In a recent account on *Rosellinia* taxa affecting coffee plantations in Colombia, *R. bunodes* was shown to be with *R. pepo* one of the prevailing pathogens, relying on ITS-based identification (Castro *et al*., 2013).

Table 4 – Comparison of differential characters between five collections of *R. bunodes*

Collection numbers	Stroma shape and vestiture	Stroma dimensions height × diam (µm)	Ascospores dimensions (µm)	Quotient L/W	Ascospores ends	Ascus apical plug dimensions (µm)
MJF 14136 immature	subglobose with low warts	1350–1550 × 1350–1550				
CLL 5359	subglobose with low to slightly spiny warts	1850–2200 × 2000–2350	79.2–92.3 × 8.6–10.2 Me = 85.7 × 9.4 N = 70	Qe = 9.2	narrowly acuminate	not recorded
MJF 07192	subglobose with low warts	1350–1550 × 1350–1700	88.7–124.4 × 7.5–10.1 Me = 105.4 × 8.6 N = 60	Qe = 12.4	mostly filiform, rarely narrowly acuminate	10.1–12.1 × 7.5–8.6 Me = 11.2 × 8 Qe = 1.4 ; N = 20
CLL 8213 "*echinata*" form	subglobose with spiny warts	1350–1550 × 1250–1300	109.2–148.2 × 9.4–12.8 Me = 127.4 × 10.9 N = 60	Qe = 11.8	filiform, rarely narrowly acuminate or knob-like	13.8–15.4 × 9.8–11.2 Me = 14.6 × 10.5 Qe = 1.4 ; N = 20
MJF 14065 "*echinata*" form	subglobose with spiny warts and sometimes attenuated base	1350–1800 × 1500–1700	116.6–152.2 × 8.5–10.3 Me = 137.4 × 9.5 N = 60	Qe = 14.6	filiform, rarely narrowly acuminate or knob-like	18.9–21.9 × 9.7–11 Me = 20.4 × 10.5 Qe = 2 ; N = 20

Rosellinia discreta J. Fourn. & Lechat, *sp. nov.* – MycoBank MB 822668. Plate 9; table 5.

Diagnosis: Differs from *Rosellinia mouchaccae*, the most similar species in the *R. mammoidea* group (Petrini & Petrini, 2005; Petrini, 2013) in having stroma base slightly immersed in the substrate, by loosely scattered and slightly smaller stromata and ascospores averaging 12 × 6.9 µm vs. 11.1 × 6.3 µm.

Holotype: French West Indies: Martinique: Le Prêcheur, Anse Couleuvre, mesophilic coastal rainforest, on heavily rotten decorticated wood on the ground, 2 Sept. 2007, *leg*. J. Fournier, MJF 07270 (LIP).

Etymology: From Latin *discretus* = separate, for the stromata loosely scattered on host surface.

Subiculum fugacious, most frequently absent, when present limited to an inconspicuous silky, white tissue spreading around the stroma base. **Stromata** widely scattered on host surface, separate, rarely in small clusters, 500–680 µm high × 600–850 µm in diam, broadly conical to more rarely subglobose, with a broadly rounded apex, the base flattened, slightly immersed in the substrate, sometimes surrounded by a loose white, silky tissue or wood fibres; surface dull black, finely roughened; ostioles inconspicuous, undifferentiated, rarely finely papillate; ectostroma 60–70 µm thick, carbonaceous, 120 µm thick around the base where it forms a slightly immersed rim, absent to poorly developed at the bottom; entostroma absent, perithecia shrivelled and detached from the ectostroma, adherent to the bottom, rarely filling entirely the stroma cavity.

Asci cylindrical, with (4–)8 overlapping uniseriate ascospores, spore-bearing part 76–85 × 7.5–8 µm, stipe 54–72 µm long, strongly adherent to a thick subhymenium, with apical plug 1.4–2.7 × 2.7–3.4 µm (Me = 2.2 × 3.1 µm, N = 60), wider than high to short-cylindrical and cuneate, without marked upper rim, bluing in Melzer's reagent. **Paraphyses** thin-walled, remotely septate, 5–7 µm wide at base, tapering above asci. **Ascospores** (10–)10.3–13.9(–15.1) × (5.9–)6.2–7.4(–7.7) µm, Q = (1.4–)1.5–2.2(–2.4); N = 240 (Me = 12.2 × 6.8 µm; Qe = 1.8), narrowly to broadly ellipsoidal-equilateral with broadly rounded, occasionally beaked ends, brown, with a conspicuous straight germ slit spore-length; epispore smooth, with a very thin slimy sheath visible in India ink, surrounding immature ascospores, sometimes partially present on mature ascospores but most often absent; appendages not seen.

Asexual morph on the natural substrate not seen.

Other specimens examined (paratypes): French West Indies: Martinique: Fort-de-France, Absalon, trail to Plateau Michel, ca. 350 m, hygrophilic rainforest, on heavily rotten decorticated wood on the ground, 7 Aug. 2013, *leg*. J. Fournier, MJF 13052 (LIP); Le Prêcheur, Anse Couleuvre, mesophilic coastal rainforest, on heavily rotten decorticated wood on the ground, 24 Aug. 2010, *leg*. J. Fournier, MJF 10081 (LIP); Schoelcher, Fond Lahaye, banks of River Fond Lahaye, mesophilic rainforest, on heavily rotten decorticated wood on the ground, 12 Aug. 2013, *leg*. J. Fournier, MJF 13157 (LIP).

Known distribution: Martinique.

Discussion: Based on its carbonaceous stromata with highly reduced white subiculum and ellipsoidal ascospores with a ratio L/W < 4, the *Rosellinia* described above conforms to the *R. mammoidea* group (Petrini & Petrini, 2005; Petrini, 2013). Amongst the small-spored species of this group, the most similar species is *R. mouchaccae* L.E. Petrini, known from New Caledonia, characterized by mostly conical stromata erumpent from the substrate and lacking subiculum (Petrini, 2013). The erumpent habit of stromata was pointed out by the author as atypical for the genus *Rosellinia*, which therefore makes a good differential character in this difficult group featuring stromata often associated with a white or cream-coloured subiculum and occurring on heavily rotten wood. As our four collections from Martinique feature such conical stromata with the base remaining slightly immersed in the substrate, we carried out a thorough comparison with *R. mouchaccae*, summarized in Table 5.

The stromata of the collections from Martinique appear consistently smaller than those of *R. mouchaccae*; although there is a wide overlap in stroma height, the difference in stroma width is more pronounced. The presence of an inconspicuous ring of white subiculum encircling the base of some stromata might be regarded as a difference with *R. mouchaccae* but the frequency of this feature is too low to be significant as compared with the single known collection of *R. mouchaccae* in which the subiculum is absent. Ascospore measurements from the collections from Martinique show some heterogeneity as to size and shape, illustrated in Plate 9, Figs. M and P, grading from broadly ellipsoidal (M) to longer and more narrowly ellipsoidal (P). As both types co-exist in a same collection, but with a different ratio of distribution, and as ascospores of the narrowly ellipsoidal type are usually associated with 4–spored asci it is assumed this just represents intraspecific variations devoid of taxonomic relevance. However, the consistently wider ascospores of the collections from Martinique suggest a significant difference with *R. mouchaccae*. The most striking feature of our collections, noticeable in the field, is that colonies are widespread with stromata most often single and distantly distributed. This character, on which is based the name of our new species *R. discreta*, combined with other characters deviating from *R. mouchaccae*, sets it apart from the latter

Table 5 – Comparison of differential characters between four collections of *R. discreta* and *R. mouchaccae*

Collection numbers	Stroma dimensions height × diam (µm)	Ascospore measurements (µm)	Q = quotient L/W N = number of measurements	Mean values of ascospores (µm)	Ascus apical plug dimensions (µm)
R. discreta MJF 07270	500–680 × 750–850	(10–)10.3–12.5(–13.4) × (6.1–)6.5–7.2(–7.8)	Q = (1.4–)1.5–1.8 (–1.9); N = 60	Me = 11.4 × 6.8 Qe = 1.7	Me = 1.9 × 3
R. discreta MJF 10081	600–680 × 650–850	(11.1–)11.6–13.9(–15.1) × (5.9–)6.2–7.2(–7.9)	Q = (1.5–)1.7–2.2 (–2.4); N = 60	Me = 12.7 × 6.6 Qe = 1.9	Me = 2.3 × 3.2
R. discreta MJF 13052	500–680 × 700–850	(10.3–) 11.2–12.7 (–14.2) × (6.3–) 6.6–7.4 (–7.7)	Q = (1.5–)1.6–1.9 (–2.2); N = 60	Me = 12 × 7 Qe = 1.7	Me = 2.4 × 3
R. discreta MJF 13157	500–680 × 600–750	(10.4–) 11.9–13.8 (–14.5) × (6–) 6.3–7.4 (–7.9)	Q = (1.6–)1.7–2 (–2.3); N = 60	Me = 12.8 × 6.9 Qe = 1.9	nd
R. discreta cumulated values	500–680 × 600–850	(10–)10.3–13.9(–15.1) × (5.9–)6.2–7.4(–7.9)	Q = (1.4–)1.5–2.2 (–2.4); N = 240	Me = 12.2 × 6.8 Qe = 1.8	Me = 2.2 × 3.1 N = 60
R. mouchaccae (Petrini, 2013)	500–900 × 800–1100	10.8–11.3 × 6.1–6.4	-	Me = 11.1 × 6.3 Qe = 1.75	nd

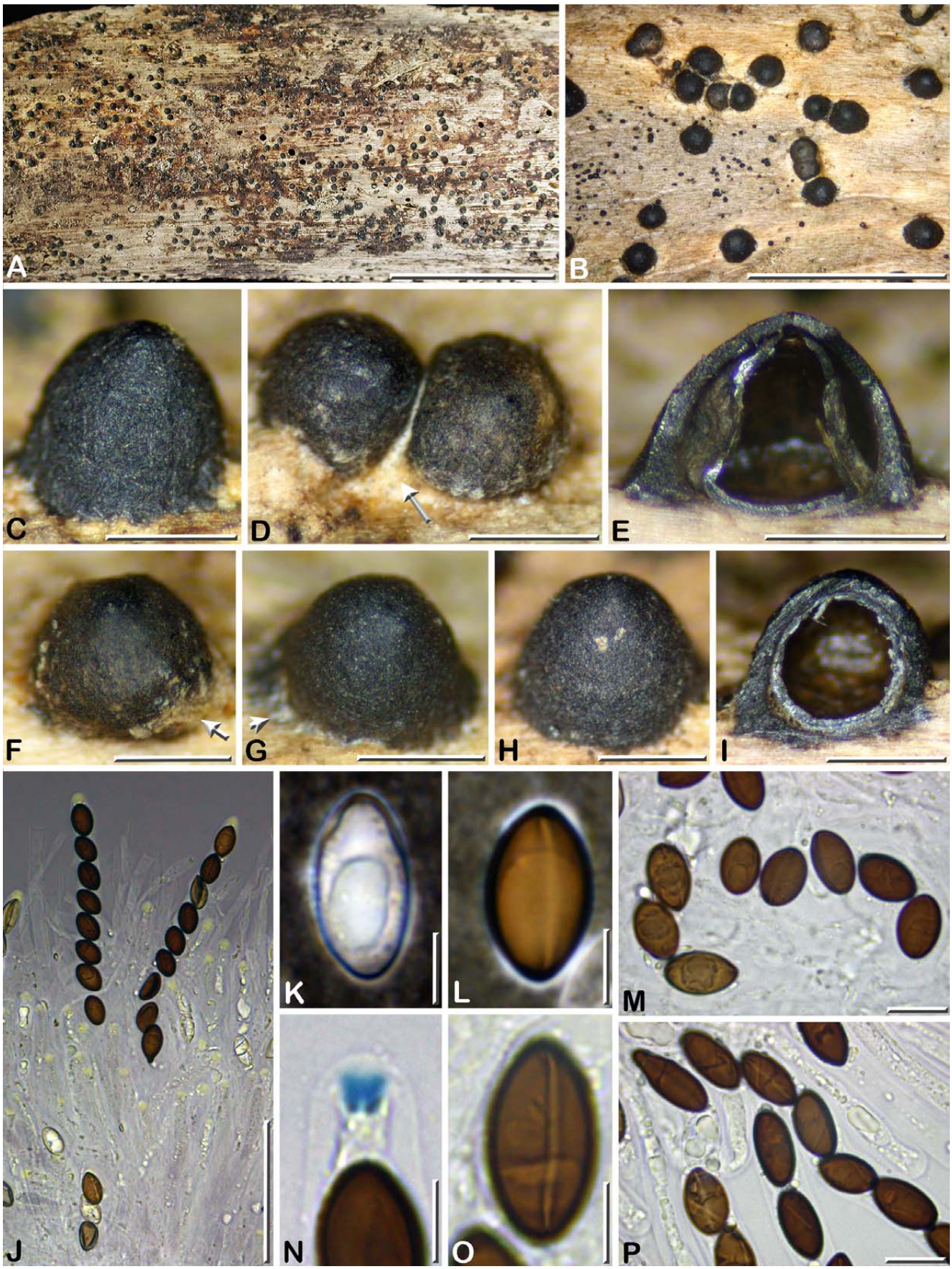

Plate 9 – *Rosellinia discreta*

A, N-P: MJF 10081; B-J, M: MJF 07270 (Holotype); K, L: MJF 13157. A: Habit of loosely scattered stromata on host surface; B: Variously distributed stromata; C, D, F-H: Variously shaped stromata, some with remnants of white silky subiculum or wood fibres at base (arrows); E, I: Stromata in vertical section showing a thickened base slightly immersed in the substrate and a perithecium detached from (E) or adherent (I) to the ectostroma; J: Immature and mature asci with paraphyses, in black Pelikan® ink; K: Immature ascospore surrounded by a thin slimy sheath, in India ink; L: Mature ascospore with remnants of slimy sheath at both ends, in India ink; M, P: Mature and immature ascospores of the two types, in 1% SDS; N: Ascus apical plug in Melzer's reagent; O: Ascospore showing a spore-length germ slit. Scale bars: A = 20 mm; B = 5 mm; C-I = 0.5 mm; J = 50 µm; K, L = 5 µm; M, P = 10 µm.

and its relatives. However, intraspecific morphological variations of *R. mouchaccae* are unknown and further collections from New Caledonia might show that the the segregation of *R. discreta* should be reconsidered and would need to be confirmed by cultural and molecular data.

Rosellinia granulosa J. Fourn. & Lechat, *sp. nov.* – MycoBank MB 822669. Plates 10, 11.

Diagnosis: Differs from other members of the *Rosellinia aquila* group (Petrini & Petrini, 2005; Petrini, 2013) by conspicuously roughened, granular ectostroma and frequently ventrally concave ascospores.

Holotype: French West Indies: Martinique: Case-Pilote, Morne Rose, mesophilic rainforest, on a dead corticated branch in a sun-exposed pile of dead branches, 14 Jun. 2015, *leg*. C. Lechat, MJF 15083 (LIP).

Etymology: From Latin *granulosus* = granular, for the conspicuously roughened ectostroma.

Subiculum felty, reddish brown, persistent. **Stromata** loosely clustered in small groups, rarely in contact, superficial, 800–1000 µm high including the ostiolar papilla × 800–1000 µm in diam, subglobose with the base flattened, apex flattened to broadly conical with a conical ostiolar papilla surrounded or not by a greyish black to tan discoid smooth area 400–600 µm wide; ectostroma 70–100(–120 at base) µm thick, carbonaceous, blackish brown to blackish, matt, roughened by coarse granulations forming irregular circular ridges; entostroma absent, perithecia filling entirely the stroma cavity.

Asci cylindrical, with (4–)8 obliquely overlapping uniseriate ascospores, short-stipitate, spore-bearing part 170–180 × 9–11 µm, stipe 27–36 µm long, with apical plug 6.6–8 × 4.4–5 µm (Me = 7 × 4.6 µm; N = 22), cuboid to urn-shaped with a marked upper rim or 10.2–12.3 × 5.3–6.1 µm (Me = 11.2 × 5.6 µm, N = 15), urn-shaped and apically cylindrical, strongly bluing in Melzer's reagent. **Paraphyses** sparse, thin-walled, septate, 4–5 µm wide at base, tapering above asci. **Ascospores** (20.8–)21.5–26.7(–30.8) × (7.5–)7.7–8.9(–9.4)µm, Q = (2.1–)2.6–3.2(–3.6); N = 120 (Me = 24.2 × 8.3 µm; Qe = 2.9), ellipsoidal-inequilateral with broadly rounded ends, frequently ventrally concave, at times suballantoid, dark brown, with a slightly oblique, straight to faintly sinuous germ slit almost spore-length located on the most convex side, entirely surrounded by a slimy sheath visible in water and in India ink, stained by blue ink and aqueous nigrosin, with a rounded cellular appendage on lower end, often inconspicuous at maturity.

Asexual morph on the natural substrate not seen.

Known distribution: Martinique.

Other specimen examined: French West Indies: Martinique: Sainte-Marie, La Philippe, Trou Mulet, mesophilic coastal forest, on decayed woody fruits of *Swietenia macrophylla* King (*Meliaceae*), 14 Aug. 2013, *leg*. J. Fournier, MJF 13212 (LIP, Paratype).

Discussion: This *Rosellinia* conforms well to the *R. aquila* group (Petrini & Petrini, 2005; Petrini, 2013) in having stromata embedded in a persistent subiculum and inequilateral-ellipsoidal ascospores with a cellular appendage and with a germ slit on the most convex side. It is characterized by stromata not over 1000 µm in diam with a conspicuously granular ectostroma. Its ascospores averaging 24.2 × 8.3 µm are surrounded by an entire slimy sheath and bear one cellular appendage at lower end, which makes it similar to *R. caudata* Petch and *R. corticium* (Schwein. : Fr.) Sacc. While the widespread temperate *R. corticium* is set apart by larger stromata up to 1700 µm in diam with a smooth ectostroma and a mostly temperate distribution, *R. caudata*, known from two collections from Sri Lanka, just differs by its smooth ectostroma.

As the conspicuous granular ornamentation of the ectostroma, often forming concentric ridges is consistent in the two collections examined and is not reported in any other member of the *R. aquila* group, we feel justified in proposing the new species *R. granulosa* to accommodate these collections.

Stromata with ornamented ectostroma are rarely encountered within *Rosellinia*, which makes this character highly discriminant. In her synoptic key, Petrini (2013) mentions three species featuring rugose to squamulose ectostroma, viz. *R. bunodes*, *R. insularis* Lar. N. Vassiljeva and *R. samuelsii* L.E. Petrini. The former is readily distinguished from *R. granulosa* by larger stromata with warted to spiny vestiture and much longer ascospores of the *R. necatrix*-type with thread-like ends and a short germ slit on the flattened side (Petrini, 2013; this paper). *Rosellinia insularis* was described from Far East Russia based on stromata not associated with a subiculum, with soft, squamulose ectostroma 25 µm thick and ascospores 23–30 × 7–10 µm with two cellular appendages. As mature ascospores lack in the holotype, the status of *R. insularis* remains uncertain (Petrini, 2013) but this set of characters clearly deviates from all known *Rosellinia* taxa and therefore from *R. granulosa*.

The stromata of *R. samuelsii* have a rugose to wrinkled surface somewhat similar to that of *R. granulosa* and their ascospores averaging 23.3 × 7.7 µm likewise possess a slimy sheath but they differ in lacking cellular appendages and they have a short germ slit on the flattened side (Petrini, 2013). A further difference is that the stromata of *R. samuelsii* are associated with dematophora-like synnemata (Petrini, 2013).

The collection MJF 13212, although occurring on decayed woody fruits, an unusual substrate for *Rosellinia* taxa, is referred to *R. granulosa* with which it shares a similar granular ectostroma and ascospores morphologically similar. We illustrate it on a separate plate (Plate 11) to highlight the resemblances but also the slight differences between the two collections. The stromata of MJF 13212 are similar in size to those of the holotype and also embedded in an abundant persistent reddish brown subiculum. The ectostroma is likewise granular with a pattern of concentric ridges but the ornamentation is overall less marked. Ascus apical plugs differ in being smaller and differently shaped in MJF 13212 but such observations are not uncommon in some species of *Rosellinia* where apical plugs appear easily deformed due to excessive pressure when mounted for observation under the microscope. This point is discussed in the conclusion of the article. The ascospores of the two collections are in the same size range, are frequently ventrally concave, giving a suballantoid outline, and share a similar slimy sheath encircling the whole ascospore and a cellular appendage on the lower end. Compared to the numerous morphological similarities reported above, the slight differences we recorded are considered as intraspecific variations encountered in this species.

Rosellinia heliconiae J. Fourn. & Lechat, *sp. nov*. – MycoBank MB 822670. Plate 12.

Diagnosis: Differs from other *Rosellinia* taxa with small stromata less than 800 µm in diam that are not associated with a subiculum by fusiform apiculate ascospores 40–46 × 9–10 µm with a short oblique germ slit and an unilateral slimy sheath, combined with host affiliation to *Heliconia*.

Holotype: French West Indies: Martinique: Fond Saint-Denis, forêt des Pitons du Carbet, road of Rivière Blanche, hygrophilic rainforest, on dead hanging sheaths of *Heliconia caribaea* Lam. (*Heliconiaceae*), associated with an unidentified dematiaceous hyphomycete, 17 Jun. 2015, *leg*. J. Fournier & C. Lechat, MJF 15133 (LIP).

Etymology: The epithet is derived from the host genus *Heliconia*.

Subiculum absent, even around developing stromata. **Stromata** loosely clustered in small groups, rarely in contact, superficial, 680–760 µm high including the ostiolar papilla × 600–760 µm in diam,

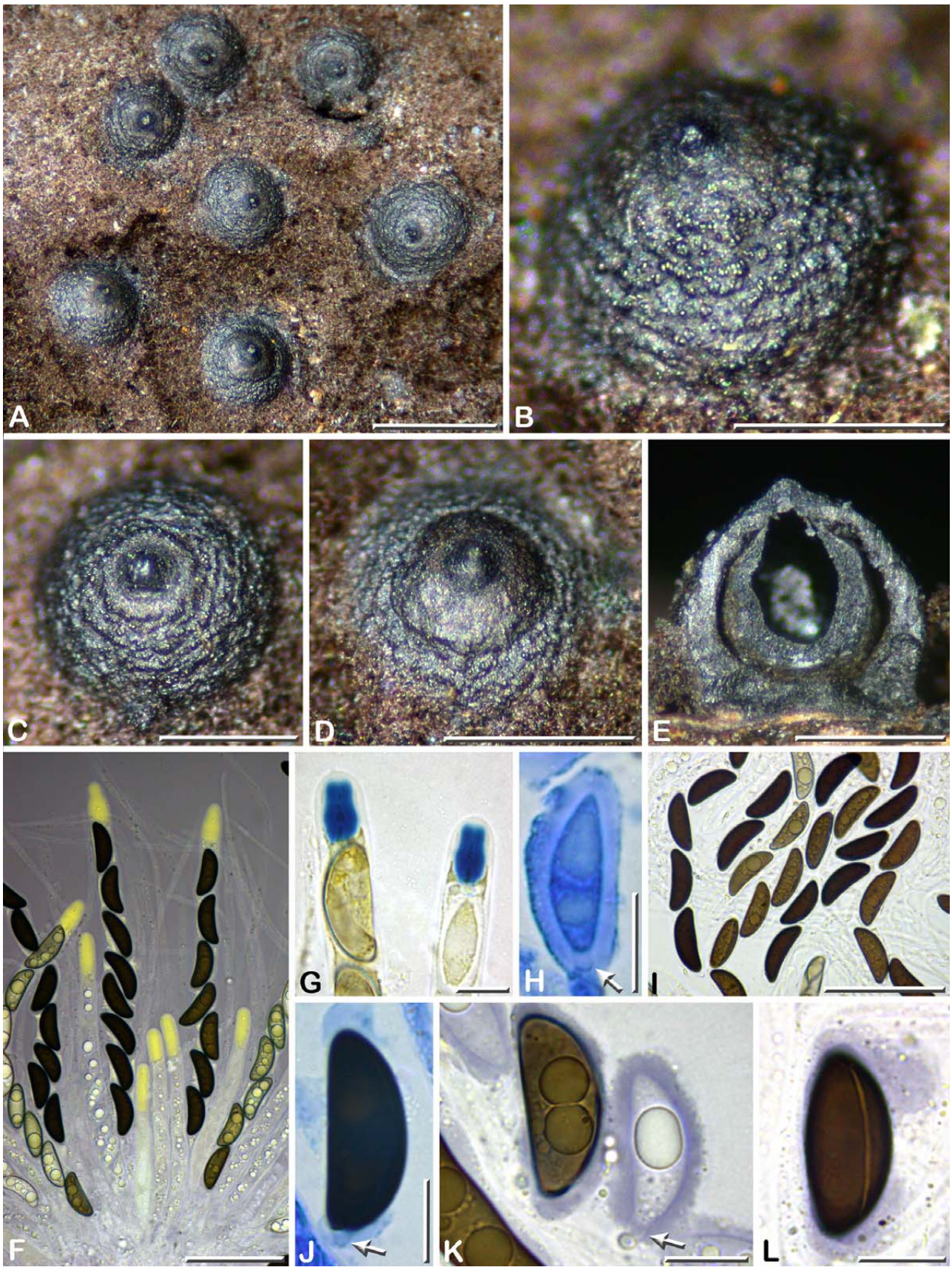

Plate 10 – *Rosellinia granulosa*

MJF 15083 Holotype. A: Habit of stromata on host surface, half-embedded in reddish brown felty subiculum; B, C: Stromata in lateral and top view in close-up showing the granular and coarsely ridged surface; D: Stroma in close-up showing a large smooth discoid ostiolar area surrounding a coarsely papillate ostiole; E: Stroma in vertical section showing the thick carbonaceous ectostroma and a perithecium detached from the ectostroma; F: Immature and mature asci with paraphyses, in black Pelikan® ink; G: Ascus apical plugs in Melzer's reagent; H: Immature ascospore in side view showing an entire slimy sheath and a basal cellular appendage (arrow), in diluted blue Pelikan® ink; I: Ascospores in 1% SDS, note the frequently concave ventral side; J: Mature ascospore showing a reduced sheath and a cellular appendage (arrow), in blue Pelikan® ink; K: Immature ascospores with a slimy sheath stained by aqueous nigrosin, the small hyaline one with a cellular appendage (arrow), the more pigmented one without visible appendage; L: Ascospore in dorso-lateral view showing a germ slit and a slimy sheath, in aqueous nigrosin. Scale bars: A = 1 mm; B-E = 0.5 mm; F, I = 50 µm; G, H, J-L = 10 µm.

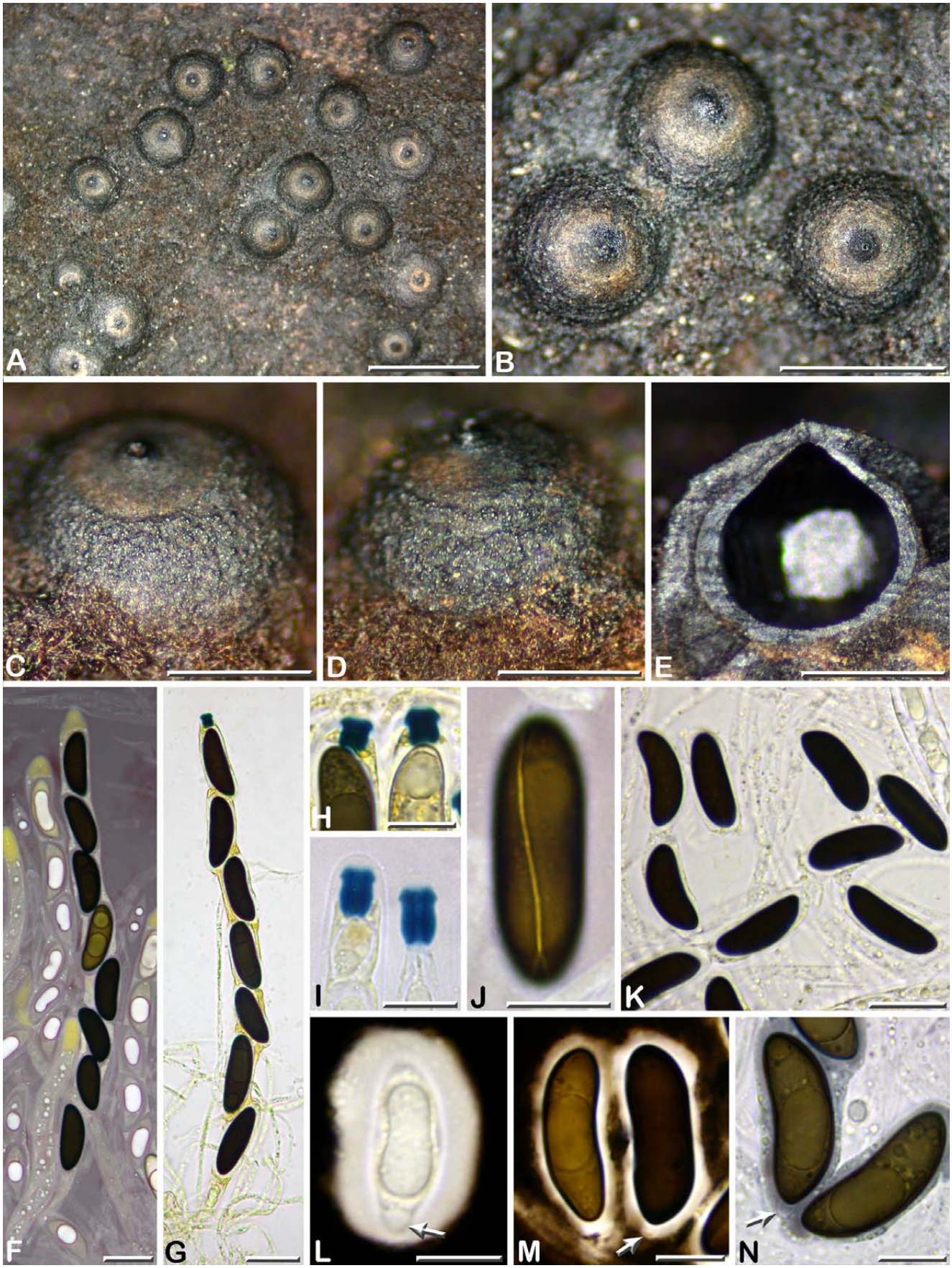

Plate 11 – *Rosellinia granulosa*

MJF 13212 (Paratype). A: Habit of stromata on host surface, half-embedded in reddish brown felty subiculum; B-D: Stromata in top and lateral view in close-up showing a granular surface and a tan discoid area encircling a papillate ostiole; E: Stroma in vertical section showing the thick carbonaceous ectostroma and a perithecium; F: Immature and mature asci, in black Pelikan® ink; G: Mature ascus in Melzer's reagent, with paraphyses; H, I: Ascus apical plugs in Melzer's reagent; J: Ascospore in dorsal view showing a germ slit, in black Pelikan® ink; K: Ascospores in 1% SDS; L: Immature ascospore in India ink showing a thick slimy sheath and a basal cellular appendage (arrow); M: Two mature ascospores in India ink showing a slimy sheath and a cellular appendage (arrow); N: Two mature ascospores in aqueous nigrosin showing a slimy sheath and a cellular appendage (arrow). Scale bars: A = 2 mm; B = 1 mm; C-E = 0.5 mm; F, G, K = 20 µm; H-J, L-N = 10 µm.

subglobose with the base flattened, apex broadly conical with a truncate conical ostiolar papilla 70–100 µm high, central to slightly eccentric; ectostroma 40–50 µm thick, blackish brown to blackish, matt, roughened, weakly carbonaceous, brittle; entostroma absent, perithecia filling entirely the stroma cavity.

Asci cylindrical, with (6–)8 obliquely overlapping uniseriate ascospores, short-stipitate to subsessile, spore-bearing part 225–244 × 15–17 µm, stipe 12–20 µm long, with apical plug 7.7–9.2 × 4.0–4.8 µm (Me = 8.6 × 4.3 µm; N = 18), cylindrical to slightly ventricose, apically rounded and often tapering basally, strongly bluing in Melzer's reagent. **Paraphyses** sparse, thin-walled, septate, 12–15 µm wide at base, gradually tapering above asci. **Ascospores** (37.8–)40–48(–51.8) × (7.8–)8.4 –10.3(–11.5) µm, Q = (3.7–)4.1–5.5(–5.9); N = 120 (Me = 43.6 × 9.4 µm; Qe = 4.6), slightly inequilaterally fusiform with apiculate ends, apiculi curved towards the most convex side, olivaceous brown to brown, with a short oblique to diagonal germ slit 6–9 µm long, central, on the least convex side; epispore smooth, with a slimy sheath 2–4 µm thick on the least convex side, extending and thinning around the ends, visible in water and India ink, stained by aqueous nigrosin.

Asexual morph on the natural substrate not seen.

Other specimens examined (paratypes): French West Indies: Martinique: Fond Saint-Denis, forêt des Pitons du Carbet, road of Rivière Blanche, hygrophilic rainforest, on dead hanging sheaths of *Heliconia caribaea*, 15 Jun. 2014, *leg*. J. Fournier & C. Lechat, MJF 14167 (LIP); Sainte-Marie, forêt de Pérou, 430–450 m., hygrophilic rainforest, on dead hanging sheaths of *Heliconia caribaea*, 13 Jun. 2015, *leg*. C. Lechat & J. Fournier, MJF 15052 (LIP); Fort-de-France, forêt des Pitons du Carbet, Fond Mitton, hygrophilic rainforest, on dead hanging sheaths of *Heliconia caribaea*, 21 Jun. 2015, *leg*. J. Fournier & C. Lechat, MJF 15183 (LIP).

Known distribution: Martinique, ?México.

Discussion: This distinctive *Rosellinia* is characterized by scattered stromata with pronounced ostioles and not associated with a subiculum, fusiform ascospores with pinched, stretched ends, a short oblique germ slit and an unilateral slimy sheath, both on the least convex side; moreover all collections come from the same monotyledonous herbaceous host *Heliconia caribaea*.

A similar species occurring on *Bambusa* sp. known from Indonesia is *R. decipiens* Penz. & Sacc. (Petrini, 2013). *Rosellinia decipiens* has cupulate stromata with less pronounced ostioles that are wider than those of the Martinique material, viz. 775–850 × 975–1000 µm vs. 680–760 × 600–760 µm. Its ascospores feature the same morphology but are darker brown and larger, averaging 48.6 × 13.5 (Qe = 3.6) vs. 43.6 × 9.4 µm (Qe = 4.6). A further difference might be that slimy caps were observed surrounding the ascospores ends while in our material a slimy sheath adheres to the least convex side and barely reaches the ends. However, assessing the shape of slimy sheaths and caps in old material like the type of *R. decipiens* (1897) is often challenging and observation of fresh material would be more informative.

Based primarily on differently shaped stromata and smaller ascospores and also on different host affiliation, we feel justified in segregating the new species *R. heliconiae* from *R. decipiens*.

As pointed out by Petrini (2013), an unnamed collection on "monocot stem" from rainforest in México (San Martín 762) described by San Martín & Rogers (1995), is deviating from *R. decipiens* by smaller stromata and ascospores. It is very likely conspecific with *R. heliconiae* based on its morphological traits and it would have been interesting to know if *Heliconia* was the host of the Mexican collection.

Heliconia caribaea, restricted to the Caribbean, is a tall herb widespread in rather open places in rainforests, especially along trailsides, which harbours an amazing diversity of microfungi, mostly *Hypocreales*. A *Rosellinia*-like fungus assignable to *Astrocystis rachidis* (Pat.) Fröhlich & Hyde (Fröhlich & Hyde, 2000; Smith & Hyde, 2001) likewise occurs in Martinique on dead *Heliconia* leaves and sheaths and can be confused with *R. heliconiae* because of its scattered, superficial, uniperitheciate, black, slightly carbonaceous stromata. It is primarily distinguished from *R. heliconiae* by the presence of a wide and conspicuous black discoid ring around the stroma base and much smaller ellipsoidal-equilateral ascospores 6–9.5 × 3–4.5 µm.

Rosellinia lechatii L.E. Petrini, *Rosellinia, a world monograph - Bibl. Mycol.*, 205: 49 (2013). Plate 13.

Subiculum felty, dark brown, persistent in places, overlaid by a thin brownish grey layer comprised of the geniculosporium-like asexual morph. **Stromata** loosely clustered, rarely in contact, superficial, 950–1100 µm high including the ostiolar papilla × 850–1250 µm in diam, subglobose with the base flattened, apex with a conical blackish ostiolar papilla; ectostroma 80–100(–140 at base) µm thick, carbonaceous, brown to dark brown, matt, smooth; entostroma absent at maturity, perithecia partly collapsed in the stroma cavity.

Asci cylindrical, with 6–8 obliquely overlapping uniseriate ascospores, subsessile, 200–225 × 10–12 µm total length, with apical plug 9.7–10.8 × 4.8–5.5 µm (Me = 10.3 × 5.2 µm, N = 20), cylindrical with attenuated base and with a rounded upper rim, strongly bluing in Melzer's reagent. **Paraphyses** abundant, thin-walled, septate, 4–5 µm wide at base, tapering above asci. **Ascospores** (28.1–)30.6–38.4(–45.3) × (8.7–)9.2–10.9(–12.4) µm, Q = (2.8–)2.9–3.8(–4.4); N = 60 (Me = 34.4 × 10.1 µm; Qe = 3.4), ellipsoidal-inequilateral to fusiform-inequilateral with narrowly rounded to subacute ends, the lower end often pinched, dark brown to blackish brown, with a straight to slightly oblique germ slit almost spore-length located on the most convex side, entirely surrounded by a thin slimy sheath slightly thicker at the ends, visible in water, stained grey in India ink, stained by blue ink, without cellular appendages.

Asexual morph on the natural substrate geniculosporium-like.

Specimen examined: French West Indies: Guadeloupe: Grande-Terre, Le Gosier, Grand Bois, Montête, on a dead corticated branch, 4 Sept. 2004, *leg*. C. Lechat, CLL 2334 (Holotype, LIP).

Known distribution: Guadeloupe.

Discussion: *Rosellinia lechatii* was recently described based on a single collection from the French West Indies (Petrini, 2013). It has not been collected again neither in Guadeloupe nor in Martinique since 2004. It is distinguished from the other species of the *R. aquila* group (Petrini & Petrini, 2005; Petrini, 2013) by having large ascospores averaging 34.4 × 10.1 µm entirely surrounded by a narrow slimy sheath and lacking cellular appendages. In the *R. aquila* group, the most resembling species is *R. merrillii* Syd., a species from South East Asia differing from *R. lechatii* by ascospores ending more obtusely and bearing two cellular appendages.

Rosellinia leopoldensis L.E. Petrini, *Rosellinia, a world monograph - Bibl. Mycol.*, 205: 52 (2013). Plate 14.

Subiculum felty, dark reddish brown, persistent. **Stromata** gregarious, clustered, separate or fused by 2–3, deeply embedded in the subiculum, 850–1200 µm high including the ostiolar papilla × 800–1100 µm in diam, subglobose with the base flattened, apex smooth with a finely conical blackish ostiolar papilla; ectostroma 80–100(–160 at base) µm thick, carbonaceous, brown to dark brown, smooth in upper half, roughened by subiculum remnants in lower half; entostroma absent at maturity, perithecia entirely filling the stroma cavity.

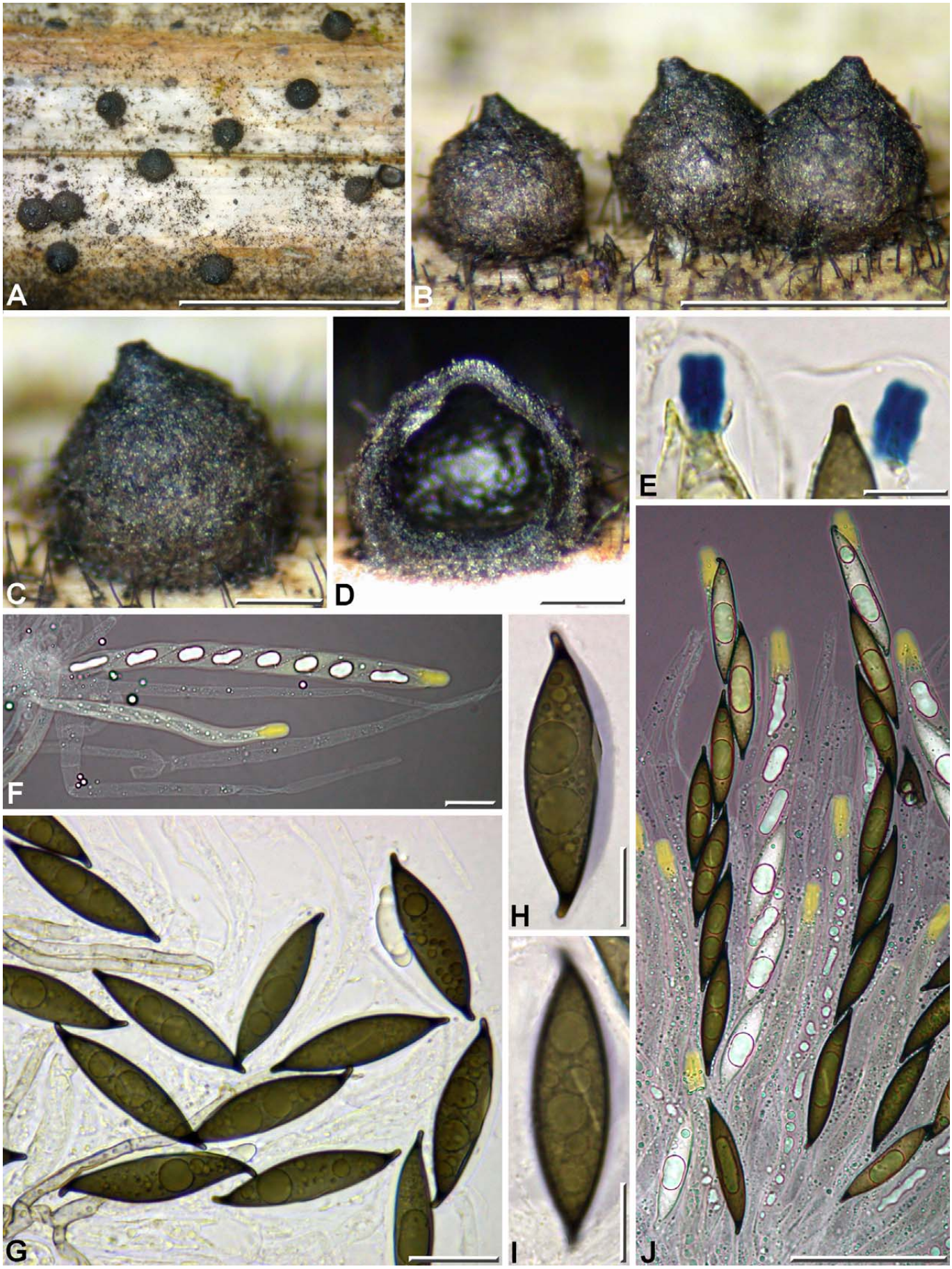

Plate 12 – *Rosellinia heliconiae*

Holotype MJF 15133. A: Habit of stromata on host surface; B, C: Stromata in lateral close-up; D: Stroma in vertical section; E: Ascus apical plugs in Melzer's reagent; F: Immature asci and paraphyses, in black Pelikan® ink; G: Ascospores in water; H: Ascospore in side view showing a slimy sheath stained by aqueous nigrosin; I: Ascospore in ventral view showing a germ slit; J: Immature and mature asci in black Pelikan® ink. Scale bars: A = 5 mm; B = 1 mm; C, D = 0.2 mm; E, H, I = 10 µm; F, G = 20 µm; J = 50 µm.

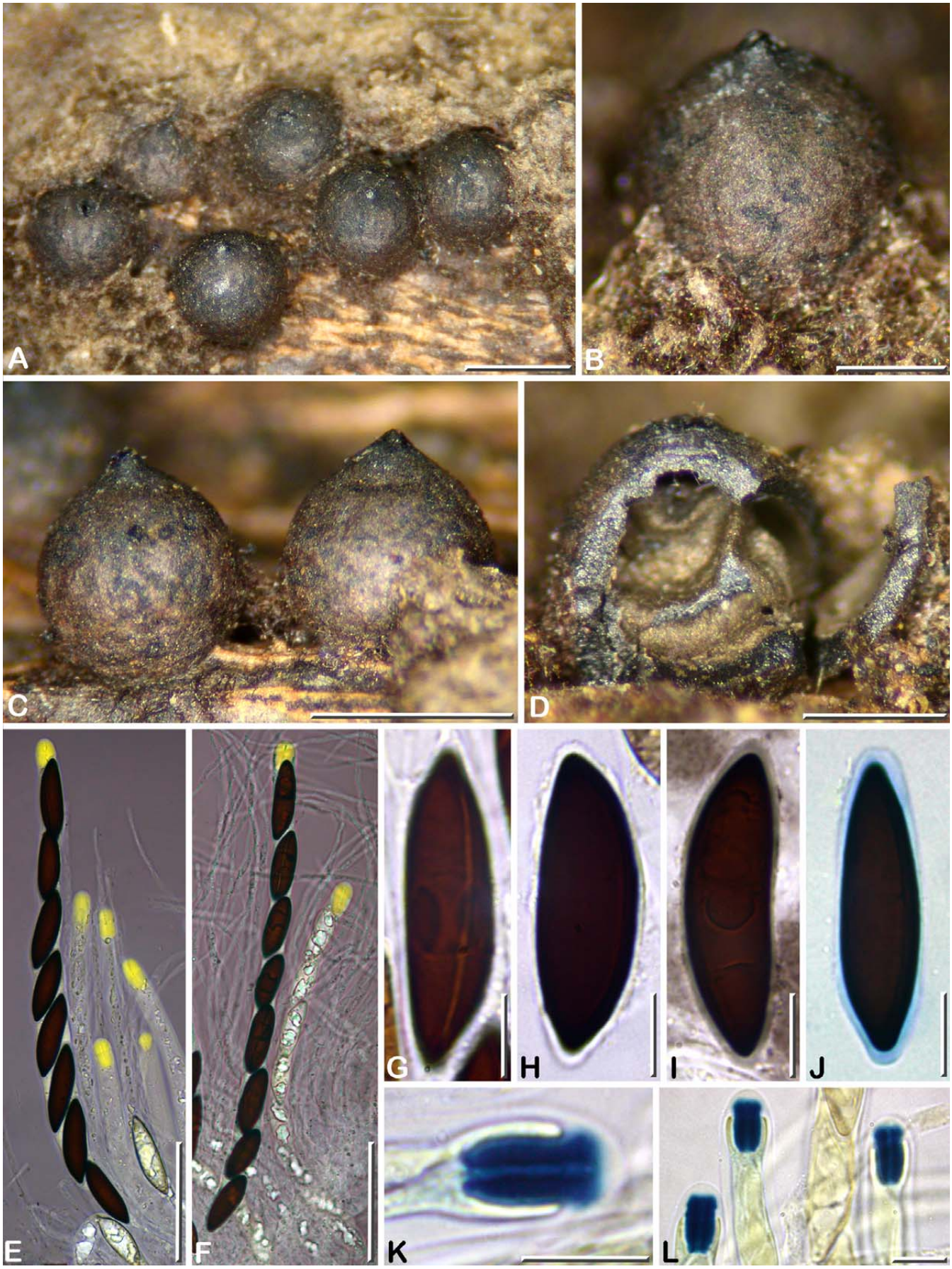

Plate 13 – *Rosellinia lechatii*

CLL 2234 (Holotype). A-C: Habit of stromata on host surface, half-embedded in the superficially pale brown felty subiculum to naked; B, C: Stromata in lateral and top view in close-up showing the variably persistent subiculum and conic-papillate ostioles; D: Vertically broken stroma showing the thick carbonaceous ectostroma and a collapsed perithecium; E, F: Mature and immature asci with paraphyses, in black Pelikan® ink; G: Ascospore in dorso-lateral view showing a germ slit; H-J: Ascospores in side (H, I) and ventral (J) view showing a thin appressed sheath, in 1% SDS, India ink and diluted blue Pelikan® ink respectively; K, L: Ascus apical plugs, in Melzer's reagent. Scale bars: A, C = 1 mm; B, D = 0.5 mm; E, F = 50 µm; G-J = 5 µm; K, L = 10 µm.

Asci cylindrical to fusiform, with 6–8 obliquely overlapping uniseriate or irregularly biseriate ascospores, long-stipitate, spore-bearing part 95–120 × 11–18 µm, stipe 100–160 µm long, with apical plug 5.9–7.1 × 3.6–4.3 µm (Me = 6.4 × 3.9 µm, N = 16), slightly urn-shaped with a sharp upper rim, strongly bluing in Melzer's reagent. **Paraphyses** abundant, thin-walled, septate, 4–7 µm wide at base, tapering above asci. **Ascospores** (17.5–)20–23.9(–25.5) × (6.2–)6.6–8.1(–8.9) µm, Q = (2.6–)2.7–3.3(–3.6); N = 60 (Me = 21.8 × 7.4 µm; Qe = 3), fusiform-inequilateral with most often narrowly rounded ends, dark brown to blackish brown, with a straight to slightly oblique germ slit almost spore-length located on the most convex side; smooth-walled, entirely surrounded by a thin appressed slimy sheath slightly swollen at the ends, best seen in India ink, faintly stained by blue ink, without cellular appendages.

Asexual morph on the natural substrate not seen.

Specimen examined: French West Indies: Martinique: Schoelcher, Case Navire River, mesophilic rainforest, at base of a dead standing corticated shrub, 28 Aug. 2010, *leg*. C. Lechat & J. Fournier, MJF 10204 (LIP).

Known distribution: Brazil, Martinique.

Discussion: Our specimen conforms well to *R. leopoldensis*, a newly erected species in the *R. aquila* group based on material collected by Rick (1932) in Brazil, formerly identified as *R.* "*desmazierii*" (Berk. & Broome) Sacc. (Petrini, 2013). It is distinguished mainly from other similar species without cellular appendages in this group by larger ascospores and narrower stromata. The most similar species encountered during this survey is *R. lechatii* which primarily differs from *R. leopoldensis* by significantly larger ascospores averaging 34.4 × 10.1 µm. The Caribbean material described and illustrated above appears to be the first record since Rick's collections.

Our material features ascospores averaging 21.8 × 7.4 µm (22.8 × 7.8 µm in Petrini's description). On fresh material, but not on five years old herbarium material we observed ascus stipe length up to 160 µm and a biseriate arrangement of ascospores not reported by Petrini (2013), probably absent due to the age of the studied material.

Rosellinia longispora Rick, *Brotéria*, 1: 189 (1932). Plate 15.

Subiculum felty, dark brown, reduced to the base of stromata, gradually wearing off. **Stromata** gregarious, clustered in small groups or separate, 500–650 µm high including the ostiolar papilla × 550–700 µm in diam, subglobose to slightly conical with the base flattened, apex with a finely conical blackish ostiolar papilla; ectostroma 40–50 µm thick, carbonaceous, black, roughened; entostroma absent at maturity, perithecia entirely filling the stroma cavity.

Asci broadly fusiform to obclavate, with 8 fasciculate ascospores, subsessile, spore-bearing part 155–180 × 40–45 µm, with apical plug 14.3–17× 8.1–10.2 µm (Me = 15.9 × 9.4 µm, N = 15), cylindrical to slightly conical, apically convex with an obtuse upper rim, strongly bluing in Melzer's reagent, expanding to 30 µm in height under pressure. **Paraphyses** abundant, thin-walled, septate, constricted at the septa, 11–15 µm wide at base, tapering above asci. **Ascospores** (58.9–)63.1–77.6(–85.1) × (9.4–)10.7–13.7(–15.6) µm, Q = (4.3–)4.8–6.7(–7.5); N = 60 (Me = 70.6 × 12.1 µm; Qe = 5.9), fusiform-inequilateral with acute ends, pale brown, smooth-walled, with a straight to slightly oblique germ slit spore-length located on the flattened side, with two bipolar slimy caps but lacking a sheath on sides, without cellular appendages.

Asexual morph on the natural substrate not seen.

Specimen examined: French West Indies: Guadeloupe: Basse-Terre, Vieux-Fort, Ravine Blondeau, mesophilic rainforest, on dead twigs (possibly a liana), 22 Nov. 2006, *leg*. C. Lechat, CLL 6019 (LIP).

Known distribution: Brazil, Ecuador, Guadeloupe, New Zealand.

Discussion: This collection was sent for identification to Dr. L. Petrini who identified it as *R. longispora*, described from Brazil by Rick (1932). Petrini (2013) also assigned material from Ecuador and from New Zealand to this name, pointing out that the New Zealand collection has ascospores smaller than those from South America and has stromata surrounded by a rim, whereas in the material from South America ascospores have bipolar slimy caps but lack the unilateral slimy sheath present in the collection from New Zealand.

Our collection of *R. longispora* is characterized by slightly smaller stromata 550–700 vs. 575–900 µm in diam and smaller pale brown ascospores (70.6 × 12.1 µm vs. 77.1 × 12.8 µm) than reported by Petrini (2013). Moreover, its ascospores feature bipolar slimy caps without a lateral sheath, unlike in the type material from Brazil but like in the material from New Zealand.

Rosellinia nigropileata J. Fourn. & Lechat, *sp. nov.* – MycoBank MB 822671. Plate 16.

Diagnosis: Differs from *Rosellinia necatrix* (Petrini & Petrini, 2005; Petrini, 2013) by smaller stromata less than 1000 µm in diam with a conspicuous, black, thickened, discoid cap-like apex and a tropical distribution.

Holotype: French West Indies: Martinique: Le Prêcheur, Anse Couleuvre, mesophilic coastal rainforest, at the base of a small, dead corticated trunk on the banks of Couleuvre River, 11 Jun. 2015, *leg*. J. Fournier & C. Lechat, MJF 15004 (LIP).

Etymology: From Latin *niger* = black, and *pileatus* = cap-shaped, for the black raised disc forming a distinctive cap-like structure around the ostiole.

Subiculum dark reddish brown, coarsely felty, reduced at maturity, bearing dense dematophora-like synnemata. **Stromata** usually densely gregarious, often in contact, 850–1100 µm high × 850–1000 µm in diam, subglobose with the base flattened, sessile, surface dark copper brown to blackish brown, matt, smooth, apex with a black, flattened discoid cap-like thickening 340–460 µm in diam raised above stroma surface, at times overlain by white coating, with a low, central, bluntly rounded ostiolar papilla; ectostroma 80–100 µm thick, 120–130 µm thick at the apex, carbonaceous; entostroma absent or barely visible at base, pale yellowish brown, perithecia filling entirely the stroma cavity.

Asci cylindrical, with (6–)8 overlapping uniseriate ascospores, often fragmentary, spore-bearing part 210–235 × 7.5–8.5 µm, stipe 35–45 µm long, with apical plug 8.6–11.9 × 5.7–7.6 µm (Me = 10.1 × 6.8 µm; N = 60), acorn-shaped with a sharp lateral rim, apically rounded and basally attenuated, strongly bluing in Melzer's reagent. **Paraphyses** copious, thin-walled, septate, 4–5 µm wide at base, tapering above asci. **Ascospores** (31.6–)33.9–41.9(–43.7) × (5.8–)6.3–7.7(–8.4) µm, Q = (4.5–)4.8–6.3(–6.8); N = 180 (Me = 37.9 × 6.9 µm; Qe = 5.45), fusiform-inequilateral with narrowly rounded, slightly pinched ends, straight, brown to dark brown, with a short straight to slightly oblique germ slit 9–13.5 µm long, central, on the flattened side; epispore smooth, with an inconspicuous slimy sheath on the ventral side, swollen to 4–6 µm around the ends, visible in water and India ink, stained by aqueous nigrosin and diluted blue Pelikan® ink, appearing thicker on immature ascospores.

Asexual morph on the natural substrate scattered around mature stromata, synnematous, dematophora-like; synnemata up to 1 mm high, blackish brown, upright, sterile or bearing tan conidiogenous heads with geniculate conidiogenous cells of the genicu-

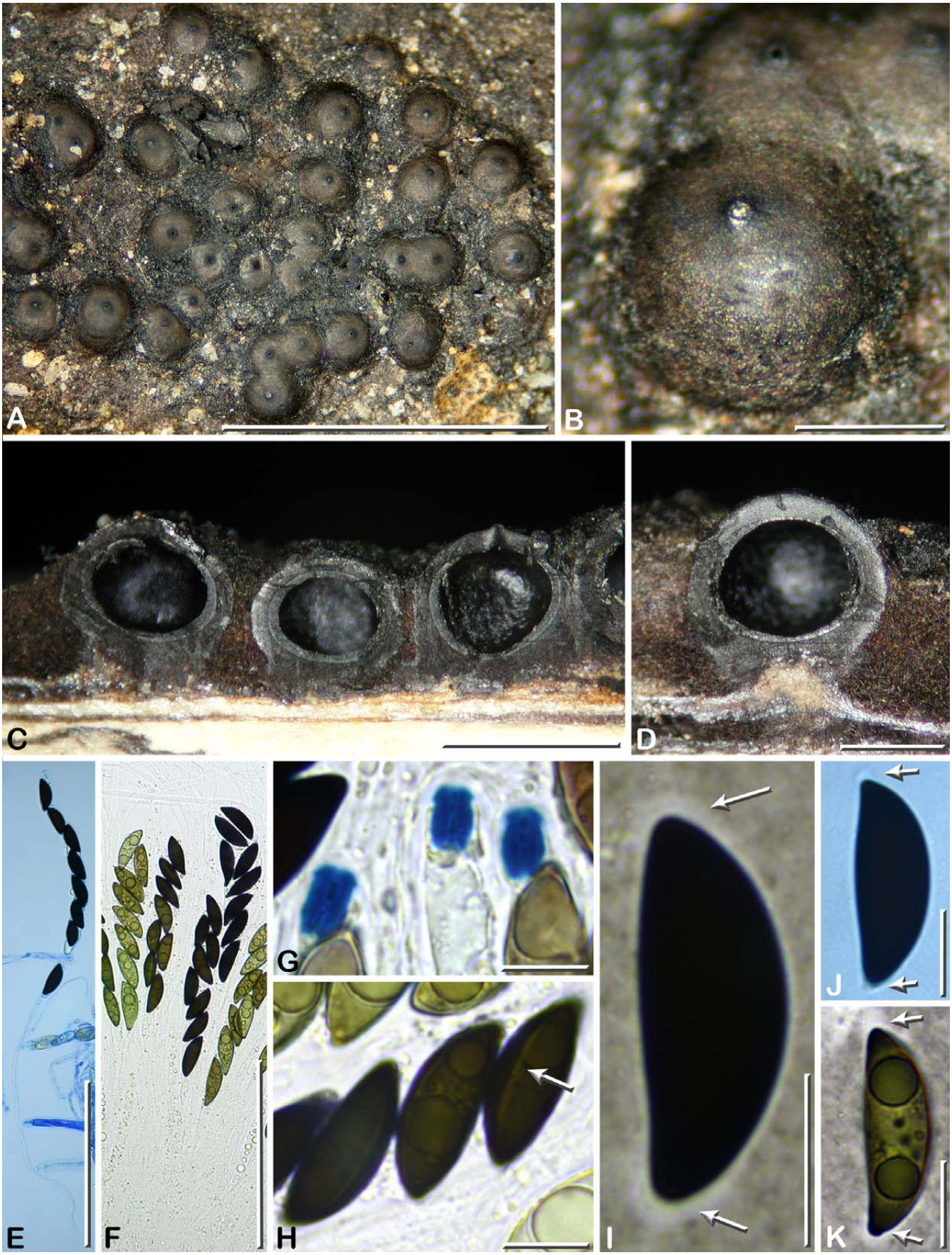

Plate14 – *Rosellinia leopoldensis*

MJF 10204. A: Habit of stromata on host surface; B, C: Stroma in close-up showing the smooth upper surface and an ostiolar papilla; C, D: Stromata in vertical section showing the thick reddish brown subiculum and perithecia filling entirely the stroma cavity; E: Long-stipitate ascus, in blue Pelikan® ink; F. Long-stipitate mature and immature asci showing the somewhat biseriate arrangement of ascospores, in water; G: Ascus apical plugs, in Melzer's reagent; H: Ascospores in water, showing a faint germ slit (arrow); I: Mature ascospore in side view showing a thin appressed slimy sheath swollen at tips, in India ink; J: Mature ascospore in side view showing slimy apical appendages (arrows), faintly stained in blue Pelikan® ink; K: Immature ascospore in side view showing a thin slimy sheath swollen at tips (arrows), in India ink . Scale bars: A = 5 mm; B, D = 0.5 mm; C = 1 mm; E, F = 100 µm; G-K = 10 µm.

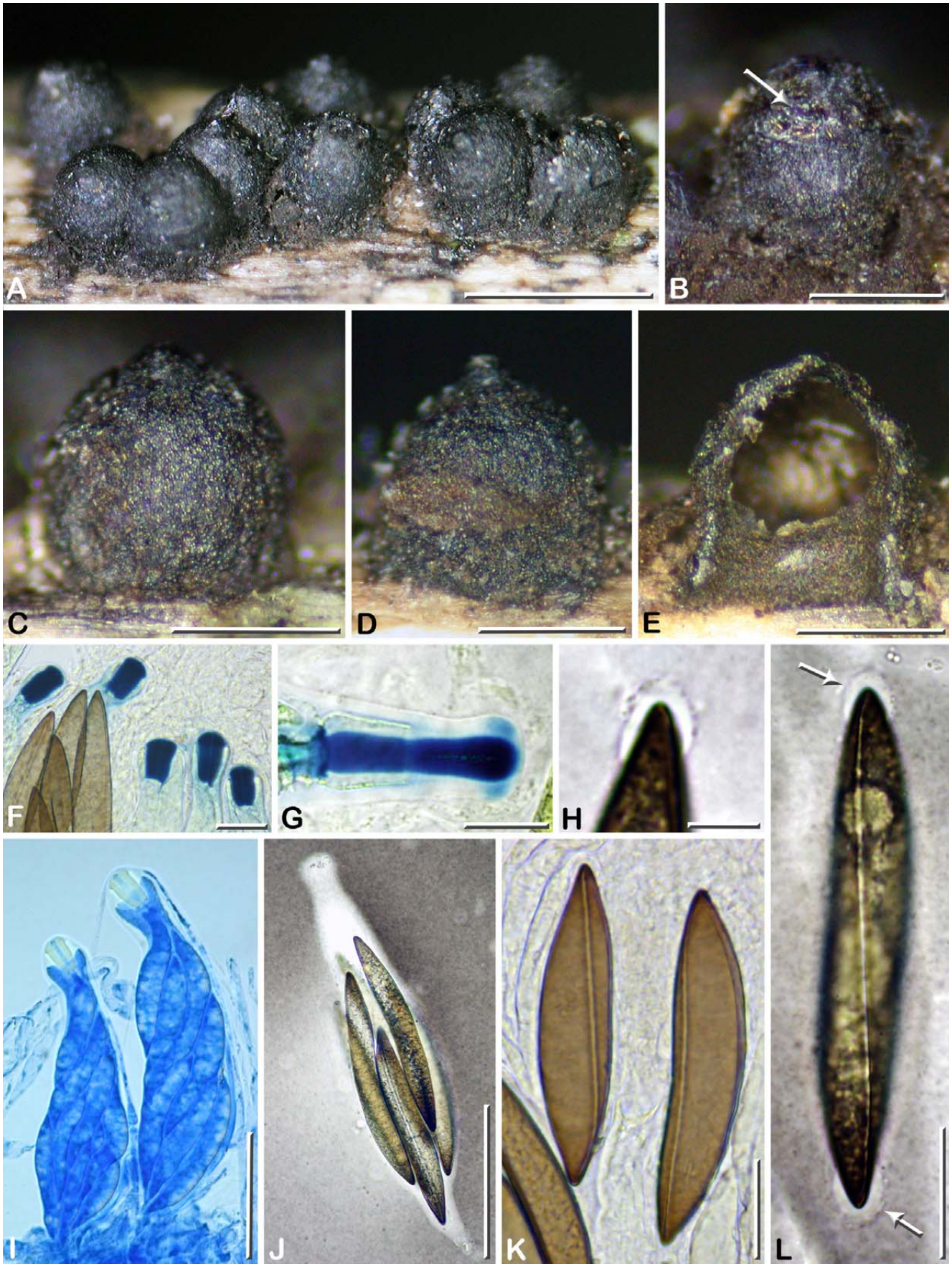

Plate 15– *Rosellinia longispora*

CLL 6019. A: Habit of stromata on host surface with remnants of subiculum around their base; B: Stroma in close-up showing dark brown subiculum at base and shiny brown ascospores deposits below the ostiole (arrow); C, D: Stromata in close-up showing the roughened surface, the broadly attached base and the ostiolar papilla; E: Stroma in vertical section showing the thin ectostroma and a perithecium filling entirely the stroma cavity; F: Ascus apical plugs, in Melzer's reagent; G: Abnormal ascus apical plug expanded under pressure, in Melzer's reagent; H: Slimy cap on ascospore tip, in India ink; I: Immature asci and paraphyses, in blue Pelikan® ink; J: Mature ascus, in India ink; K: Ascospores showing a ventral germ slit, in 1% SDS; L: Ascospore showing bipolar slimy caps (arrows), in India ink. Scale bars: A = 1 mm; B-E = 0.5 mm; F, K, L = 20 µm; G = 10 µm; H = 5 µm; I, J = 50 µm.

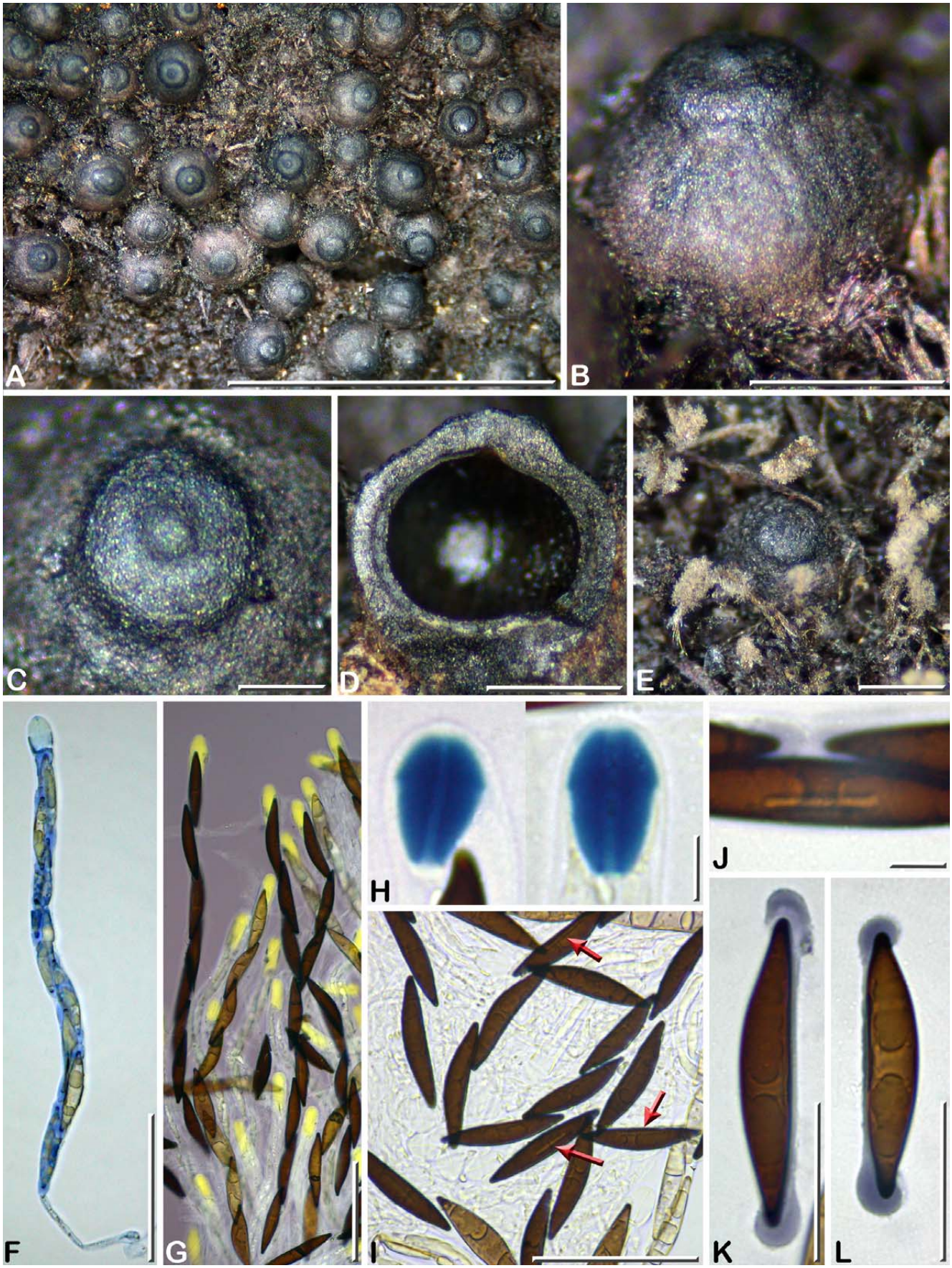

Plate 16 – *Rosellinia nigropileata*

A-E: Holotype MJF 15004; F-L: MJF 07055 (paratype). A: Habit of stromata aggregated on host surface; B: Stroma in side view showing the black cap-like apex and remnants of subiculum and synnemata at base; C: Ostiolar area in top view showing a raised disc and an obtusely papillate ostiole; D: Stroma in vertical section showing the carbonaceous apically thickened ectostroma and the perithecium adherent to the ectostroma; E: Tan fertile heads of the synnemata surrounding an isolated stroma; F: Immature ascus, in diluted blue Pelikan® ink; G: Immature and mature asci, in black Pelikan® ink; H: Ascus apical plugs in Melzer's reagent; I: Ascospores in 1% SDS, some in ventral view showing a germ slit (arrows); J: Ascospore in ventral view showing a germ slit, in aqueous nigrosin; K, L: Ascospores in side view showing a thin, ventral slimy sheath swollen at the ends, in aqueous nigrosin. Scale bars: A = 5 mm; B, D, E = 0.5 mm; C = 0.2 mm; F, G, I = 50 µm; H, J = 5 µm; K, L = 20 µm.

losporium-type; conidia narrowly ellipsoidal with the base truncate, hyaline, smooth, 3.5–4.5 × 2.2–2.7 µm (measurements in 3% KOH).

Other specimens examined (paratypes): French West Indies: Martinique: Le Prêcheur, Anse Couleuvre, mesophilic coastal rainforest, on a dead corticated branch on the ground, 27 Aug. 2007, *leg*. J. Fournier, MJF 07141 (LIP); *ibid*., on a dead rotten root, 2 Sept. 2007, *leg*. J. Fournier, MJF 07278 (LIP); Le Morne-Rouge, forest trail of La Propreté, hygrophilic rainforest, on dead corticated branches in a pile, 24 Aug. 2007, *leg*. J. Fournier, MJF 07055 (LIP); Saint-Joseph, Forêt Coeur-Bouliki, hygrophilic rainforest, on dead corticated branchlets, 26 Aug. 2007, *leg*. C. Lechat, MJF 07101 (LIP).

Known distribution: Martinique.

Discussion: *Rosellinia nigropileata* is characterized in the *R. necatrix* group by rather small stromata less than 1000 µm in diam topped with a black discoid cap-like apical thickening, which sets it apart from other species with ascospores of similar size. The most closely resembling species is the temperate *R. necatrix* with ascospores of the same size (Petrini, 2013). However, typical *R. necatrix* features significantly larger stromata 1200–2000 µm in diam with finely papillate ostioles and lacks a cap-like thickening at apex. *Rosellinia* cf. *acutispora* collected at the same site has wider stromata with conic-papillate ostioles without a black discoid thickening allowing to be distinguished with a hand lens. Moreover, the ascospores of our collections of *R.* cf. *acutispora* are more narrowly fusiform than those of *R. nigropileata*, with a ratio L/W averaging 6.6 vs. 5.5. The black discoid cap-like apex conspicuously raised above the stroma surface sets *R. nigropileata* clearly apart from species with similar stromatal width or ascospore size such as *R. bothrina* (Berk. & Broome) Sacc. or *R. grantii* L.E. Petrini (Petrini, 2013). As this striking and unusual character is consistent throughout the four collections studied, we feel justified in regarding it as diagnostic and to base the name of the new species *R. nigropileata* on this distinctive feature.

Rosellinia parva L.E. Petrini, *Rosellinia, a world monograph -Bibl. Mycol*., 205: 184 (2013). Plate 17.

Subiculum felty, appressed, cream-coloured, long persistent on host surface. **Stromata** scattered to gregarious, superficial, 450–500 µm high × 600–700 µm in diam, depressed-spherical, often almost flat-topped, black, apex with a finely conical ostiolar papilla, associated with small primordia; ectostroma 40–50 µm thick, carbonaceous, black, finely roughened, thickened at base and spreading around the stroma base beneath the subiculum, the surrounding wood blackened; entostroma restricted to a thin fibrous pale brown tissue encasing the perithecium, perithecia not collapsed in the stroma cavity.

Asci cylindrical, with 6–8 obliquely overlapping uniseriate ascospores, spore-bearing part 56–63 × 6–7 µm, stipe 42–55 µm long, strongly adherent to a thick subhymenium, with apical plug 0.9–1.2 × 1.8–2.1 µm (Me = 1 × 2 µm, N = 20), discoid, slightly cuneate with an upper rim, bluing in Melzer's reagent. **Paraphyses** thin-walled, remotely septate, tapering above asci. **Ascospores** (7.9–)8.7–10.6 (–11.5) × (3.9–)4.2–5.1(–5.5) µm, Q = (1.7–)1.9–2.3(–2.6); N = 120 (Me = 9.6 × 4.6 µm, Qe = 2.1), ellipsoidal-equilateral with broadly rounded ends, yellowish brown to brown, with a conspicuous straight germ slit ¾ to ⅘ spore-length, without slimy sheath or appendages.

Asexual morph on the natural substrate not seen.

Specimen examined: French West Indies: Martinique: Le Lorrain, Morne du Lorrain, on heavily rotten wood, 30 Aug. 2004, *leg*. C. Lechat, CLL 2236 (Holotype, LIP).

Known distribution: Martinique.

Discussion: *Rosellinia parva* was recently described by Petrini (2013) based on a single collection from Martinique in 2004 and was not collected again during this survey. It is characterized by small depressed-spherical stromata associated with a persistent cream-coloured subiculum and in average less than 10 µm long ascospores with a germ slit less than spore-length. This latter character and the rather pale brown equilateral ascospores help distinguish it from the most closely related species *R. eucalypticola* Henn. & E. Nyman, known from Indonesia and Hawaii (Petrini, 2013).

Rosellinia breensis Starb. and *R. neblinae* L.E. Petrini should likewise be compared with *R. parva* because of their rather small ascospores with a less than spore-length germ slit. The former, known from Argentina, differs from *R. parva* by larger up to 1100 µm wide stromata and inequilateral, darker brown ascospores. The latter, known from Venezuela, is distinguished from *R. parva* by its smaller stromata 500–550 µm wide and smaller ascospores averaging 7.2 × 4 µm, likewise inequilateral.

Rosellinia pepo Pat., *Bull. Soc. mycol. France*, 24: 9 (1908). Plate 18.

Subiculum wiry, dark-brown, persistent. **Stromata** gregarious to loosely clustered in small groups, often in contact, 3–3.9 mm high including the ostiolar papilla × 2.6–3.4 mm in diam, subglobose with the base attenuated, surface dark copper brown, matt, smooth, apex rounded to flattened, with a black obtusely to sharply conical ostiolar papilla, frequently encircled by a black discoid area; ectostroma 160–180 µm thick, to 250 µm thick at base, carbonaceous; entostroma poorly developed at base, tan, perithecia filling entirely the stroma cavity or partly collapsed.

Asci fragmentary, not measured, with (4–) 8 overlapping uniseriate ascospores, with apical plug 12.5–14.7 × 6.6–7.5 µm (Me = 13.3 × 7.1 µm; N = 20), acorn-shaped with a faint lateral rim, rounded at both ends, strongly bluing in Melzer's reagent. **Paraphyses** copious, filiform, thin-walled, septate. **Ascospores** (54.5–)60.7–73.2(–80) × (5.9–)6.4–7.4(–8.1) µm, Q = (7.9–)8.3–11(–12.3); N = 70 (Me = 67 × 7 µm; Qe = 9.7), fusiform-inequilateral with acute and often slightly pinched ends, straight, dark brown, with a short, often inconspicuous straight to slightly oblique germ slit, central, on the flattened side; epispore smooth, with an inconspicuous slimy sheath on the ventral side swollen around the ends, visible in water, stained by aqueous nigrosin, India ink and diluted blue Pelikan® ink.

Asexual morph on the natural substrate present around young or overmature stromata, synnematous, dematophora-like; synnemata up to 3 mm high, blackish brown, upright, sterile or bearing tan conidiogenous heads with geniculate conidiogenous cells of the geniculosporium-type; conidia narrowly ellipsoidal to oblong with the base truncate, hyaline, smooth, 5.4–6.3 × 2.2–2.7 µm (measurements in 3% KOH).

Specimens examined: French West Indies: Guadeloupe: Basse-Terre, Petit-Bourg, Maison de la Forêt, hygrophilic rainforest, on a dead corticated branch, 26 Nov. 2006, *leg*. C. Lechat, CLL 6054-2 (LIP). Martinique: Fort-de-France, Absalon, trail to Plateau Michel, hygrophilic rainforest, on rotten corticated wood, 15 Aug. 2013, *leg*. R. Courtecuisse, MJF 13253; Le Prêcheur, Anse Couleuvre, coastal mesophilic rainforest, on roots of a living *Ficus* sp., 16 Aug. 2013, *leg*. J. Fournier & C. Lechat, MJF 13258 (LIP); Saint-Joseph, Fond Fougères, hygrophilic rainforest, base of a dead standing corticated small trunk, *leg*. J. Fournier & C. Lechat, MJF 13267 (LIP); Saint-Joseph, Rivière Blanche, hygrophilic rainforest, on a dead corticated branch, 4 Sept. 2003, *leg*. C. Lechat, CLL 871 (LIP).

Known distribution: Central America.

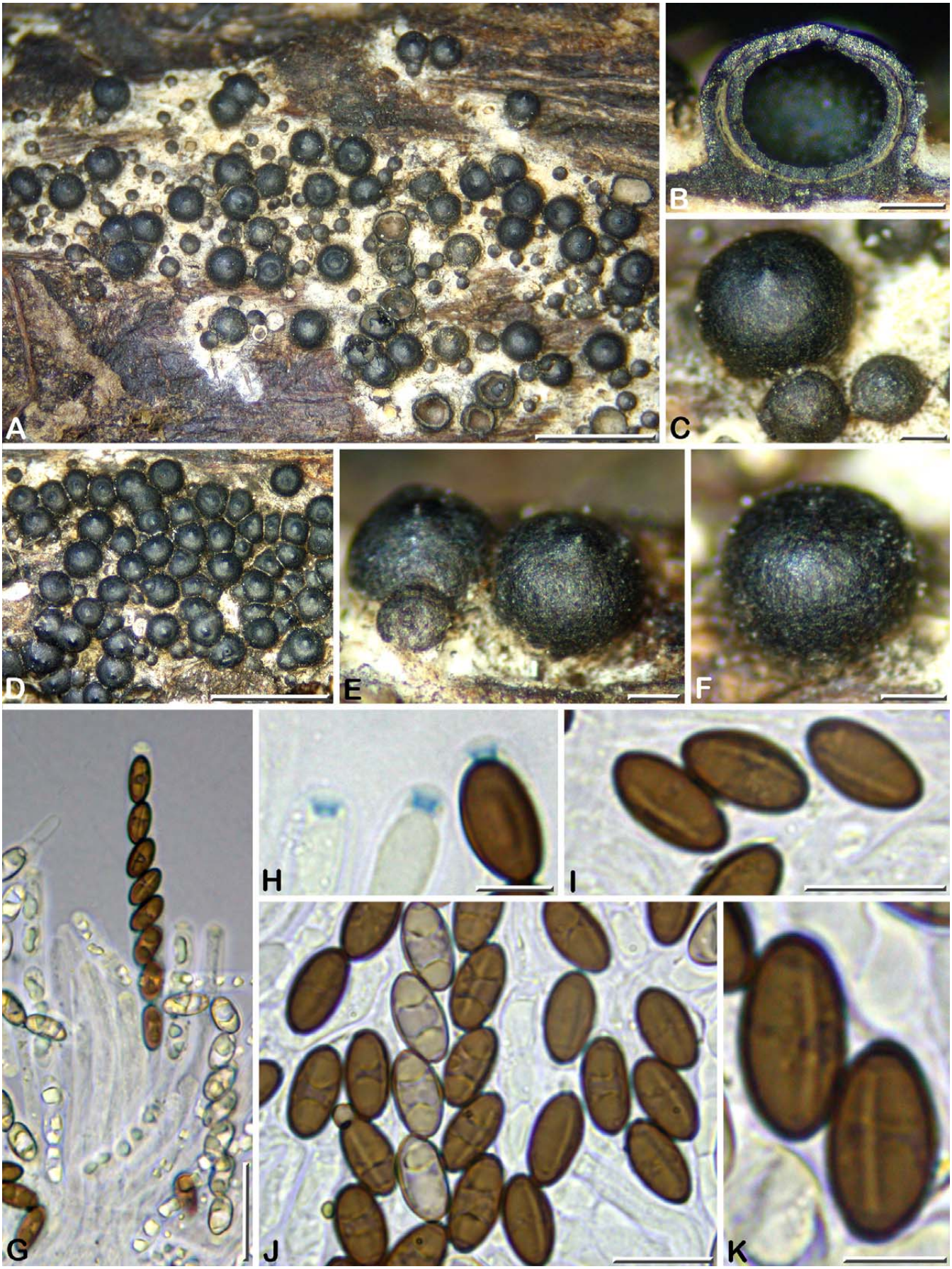

Plate 17 – *Rosellinia parva*

CLL 2236 Holotype. A: Habit of stromata scattered on host surface, associated with a cream subiculum; B: Stroma in vertical section showing pale brown entostroma lining the perithecium and the carbonaceous ectostroma spreading around the base beneath the subiculum; C: Stroma in top view showing a finely papillate ostiole and two adjacent primordia; D: Densely crowded stromata with poorly developed subiculum; E, F: Flat-topped stromata in side view showing the papillate ostiole and the finely roughened surface; G: Mature and immature asci, in black Pelikan® ink; H: Ascus apical plugs, in Melzer's reagent; I, K: Ascospores showing a germ slit less than spore length, in 1% SDS; J: Ascospores in 1% SDS, some showing a germ slit. Scale bars: A, D = 2 mm; B, C, E, F = 0.2 mm; G = 20 µm; H, K = 5 µm; I, J = 10 µm.

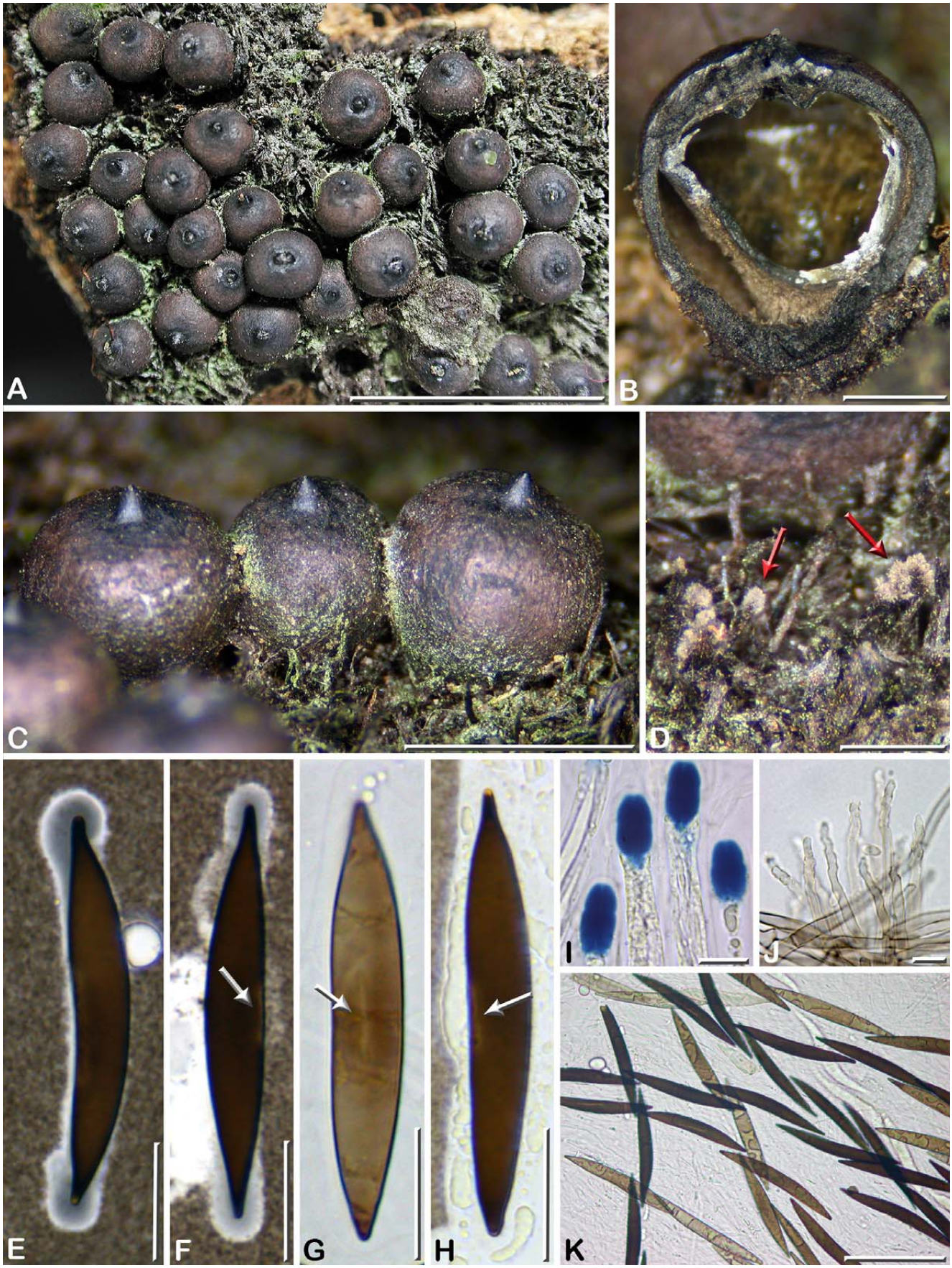

Plate 18 – *Rosellinia pepo*

MJF 15258. A: Habit of stromata on host surface; B: Stroma in vertical section showing the attenuated base, the carbonaceous ectostroma, a perithecium partly detached from the ectostroma and the tan entostroma; C: Stromata in side view showing the sharply conical ostioles; D: Upright synnemata of the asexual morph, some with fertile conidiogenous tips (arrows); E, F: Ascospores in side view showing slimy caps and an inconspicuous germ slit (arrow), in India ink; G: Immature ascospore in ventral view showing a germ slit (arrow), in chloral-lactophenol; H: Mature ascospore in side view showing a ventral germ slit (arrow); I: Ascus apical plugs in Melzer's reagent; J: Geniculate conidiogenous cells and pigmented conidiophores, in 3% KOH; K: Immature and mature ascospores in 1% SDS. Scale bars: A = 10 mm; B, D = 1 mm; C = 3 mm; E-H = 20 µm; I, J = 10 µm; K = 50 µm.

Discussion: *Rosellinia pepo* is distinguished from other members of the *R. necatrix* group by large stromata over 2.5 mm in diam with an attenuated base and in average 60–70 µm long ascospores, and thus easily recognized.

Since its description by Patouillard (1908) from a collection on *Coffea* in Guadeloupe, *Rosellinia pepo* has been frequently reported as a root-pathogen from Central America. In a recent account on *Rosellinia* taxa affecting coffee plantations in Colombia (Castro *et al.*, 2013), *R. bunodes* and *R. pepo* were shown to be the two prevailing species responsible for root rot and the authors provided a comprehensive list of references on the pathogenic *Rosellinia* taxa. Saccas (1956) reported *R. pepo* from coffee plantations in Central African Republic (formerly Oubangui-Chari) with stromata 1.5–3 mm in diam and ascospores 50–69 × 7–9 µm, but after revision this material was assigned to *R. asperata* by Petrini (2013). Therefore, the distribution of *R. pepo* appears so far restricted to the Neotropics.

Rosellinia* cf. *perusensis Henn., *Hedwigia*, 48: 10 (1909). Plate 19.

Subiculum white to cream-coloured, silky to felty, covering young stromata and spreading between them, partly vanishing but persistent in places at maturity. **Stromata** densely gregarious, often in contact and sometimes coalescent in small groups of 2–4, 350–500 µm high × 500–600 µm in diam, subglobose or depressed-spherical, the base flattened and horizontally expanded into a black discoid carbonaceous area; surface dull greyish black, slightly roughened, apex rounded to obtusely conical with a small rounded ostiolar papilla; ectostroma 35–45 µm thick on sides, 85–120 µm thick at base, carbonaceous; entostroma absent or just visible at base, pale yellowish brown, perithecia filling entirely the stroma cavity or partly detached and shrivelled.

Asci cylindrical, with (6–)8 obliquely uniseriate ascospores, spore-bearing part 66–72 × 7.2–7.5 µm, stipe 15–24 µm long, with ascus apical plug 1.1–1.6 × 2.3–2.4 µm (Me = 1.4 × 2.4 µm; N = 60), discoid-cuneate with a sharp upper rim, bluing in Melzer's reagent. **Paraphyses** copious, thin-walled, septate, 4–5 µm wide at base, tapering above asci. **Ascospores** (8.9–)9.2–12.2(–12.8) × (4.1–)4.7–6.5(–6.6) µm, Q = (1.6–)1.62–2.3(–2.6); N = 300 (Me = 10.8 × 5.7 µm; Qe = 1.9), ellipsoidal-equilateral to rarely slightly inequilateral, with narrowly to broadly rounded ends, brown, with a conspicuous straight spore-length to almost spore-length germ slit; epispore smooth, lacking slimy sheath or appendages.

Asexual morph on the natural substrate not seen.

Specimens examined: French West Indies: Martinique: Le Lorrain, Rivière Pirogue, meso- to hygrophilic rainforest, on heavily rotten partly blackened wood on the ground, 11 Jun. 2014, *leg*. J. Fournier, MJF 14121 (LIP); Le Prêcheur, Anse Couleuvre, mesophilic coastal rainforest, on heavily rotten wood on the ground, 27 Aug. 2007, *leg*. C. Lechat, MJF 07129 (LIP); Sainte-Marie, La Philippe forest, coastal mesophilic forest, on heavily rotten wood on the ground, 14 Aug. 2013, *leg*. J. Fournier, MJF 13206 (LIP).

Known distribution: Martinique.

Discussion: These three collections characterized by small gregarious stromata occurring on rotten wood, associated with a long-persistent white silky subiculum and ellipsoidal ascospores 9–12 µm long lacking slimy sheaths or caps key out to *R. perusensis* in the dichotomous key provided by Petrini (2013). The holotype of *R. perusensis* is from Brazil, and a collection from India that Petrini (2013) considered as conspecific is slightly deviating in having a thinner ectostroma up to 25 µm thick and ascus apical plug 2.5 µm high. As the material from Martinique features almost equilateral ascospores with a germ slit almost spore-length, unlike those of *R. perusensis* described as inequilateral with a short germ slit, we prefer to refrain from assigning this name to our collections until the variation range occurring within *R. perusensis* is better understood.

The most resembling species encountered in Martinique is *R. parva*, differing by slightly smaller ascospores averaging 9.6 × 4.6 µm, with a germ slit less than spore-length (Petrini, 2013; this paper).

Rosellinia truncatispora J. Fourn. & Lechat, *sp. nov.* – MycoBank MB 822672. Plates 20, 22.

Diagnosis: Differs from other members of the *R. aquila* group with ascospores bearing bipolar cellular appendages by ascospores averaging smaller and having frequently a pinched and truncate lower end.

Holotype: French West Indies: Martinique: Le Prêcheur, Anse Couleuvre, path up to the Couleuvre River waterfall, mesophilic coastal forest, on a dead corticated branch in a ditch, 9 Jun. 2014, *leg*. C. Lechat & J. Fournier, MJF 14112 (LIP), ex-type culture CBS 138732; ITS KY941109.

Etymology: From Latin *truncatus* = truncate and *spora* = seed, spore, for the frequently truncate lower end of ascospores.

Subiculum felty, reddish brown, persistent. **Stromata** densely gregarious to loosely clustered in small groups, rarely in contact, half-embedded in the subiculum and gradually emerging, 850–1000 µm high including the ostiolar papilla × 850–1000 µm in diam, subglobose with the base flattened, apex rounded or slightly conical with a black, sharply conical ostiolar papilla; ectostroma 80–120 (–170 at base) µm thick, blackish brown to blackish, matt, smooth to finely roughened; entostroma absent, perithecia filling entirely the stroma cavity, vertically collapsing upon drying.

Asci cylindrical, with (6–)8 obliquely overlapping uniseriate ascospores, short-stipitate, spore-bearing part 162–168 × 11.5–13.5 µm, stipe 18–34 µm long, with apical plug 7.5–8.6 × 4.8–5.4 µm (Me = 8 × 5.1 µm, N = 20), slightly urn-shaped with a sharp subapical rim, bluing in Melzer's reagent. Deformed (tubular with a bulbous base, fig. H, Plate 20) and larger ascus apical plugs averaging 12.7 × 6 µm were encountered in both collections but more frequently in collection MJF 15082; they are assumed to be abnormal, likely damaged by excess pressure on the cover slip, and were not taken into account. **Paraphyses** sparse, thin-walled, septate, 6–7 µm wide at base, tapering above asci. **Ascospores** (22–)23.4–27.8(–30.2) × (7.2–)8.2–9.3(–10.1) µm, Q = (2.4–)2.6–3(–3.5); N = 120 (Me = 25.5 × 8.9 µm; Qe = 2.9), ellipsoidal-inequilateral with upper end narrowly to broadly rounded, rarely truncate, lower end frequently slightly pinched and truncate, dark brown, with a straight to slightly oblique germ slit almost spore-length located on the most convex side, entirely surrounded by a thin slimy sheath visible in water and in India ink, stained by aqueous nigrosin, appressed on sides and more developed around the ends, with a low rounded cellular appendage on upper end, and a hemispherical to cylindrical cellular appendage 0.8–2 µm long on lower end.

Asexual morph on the natural substrate not seen.

Culture: Colony covering entirely the medium surface after two weeks, dark brown at inoculation site, irregularly proliferating in the central area, surrounded by a pale greenish yellow aerial mycelium, becoming white at margin with numerous clusters of pale brown to dark brown, thick-walled, septate, straight, branched, hyphal sterile elements 2–3 µm wide, pale brown to nearly hyaline at rounded free ends (Plate 22, Fig. C). No conidiophore or sporulation observed after five weeks. Reverse dark brown at inoculation site, tan outside with pale brown spots in central area.

Known distribution: Martinique.

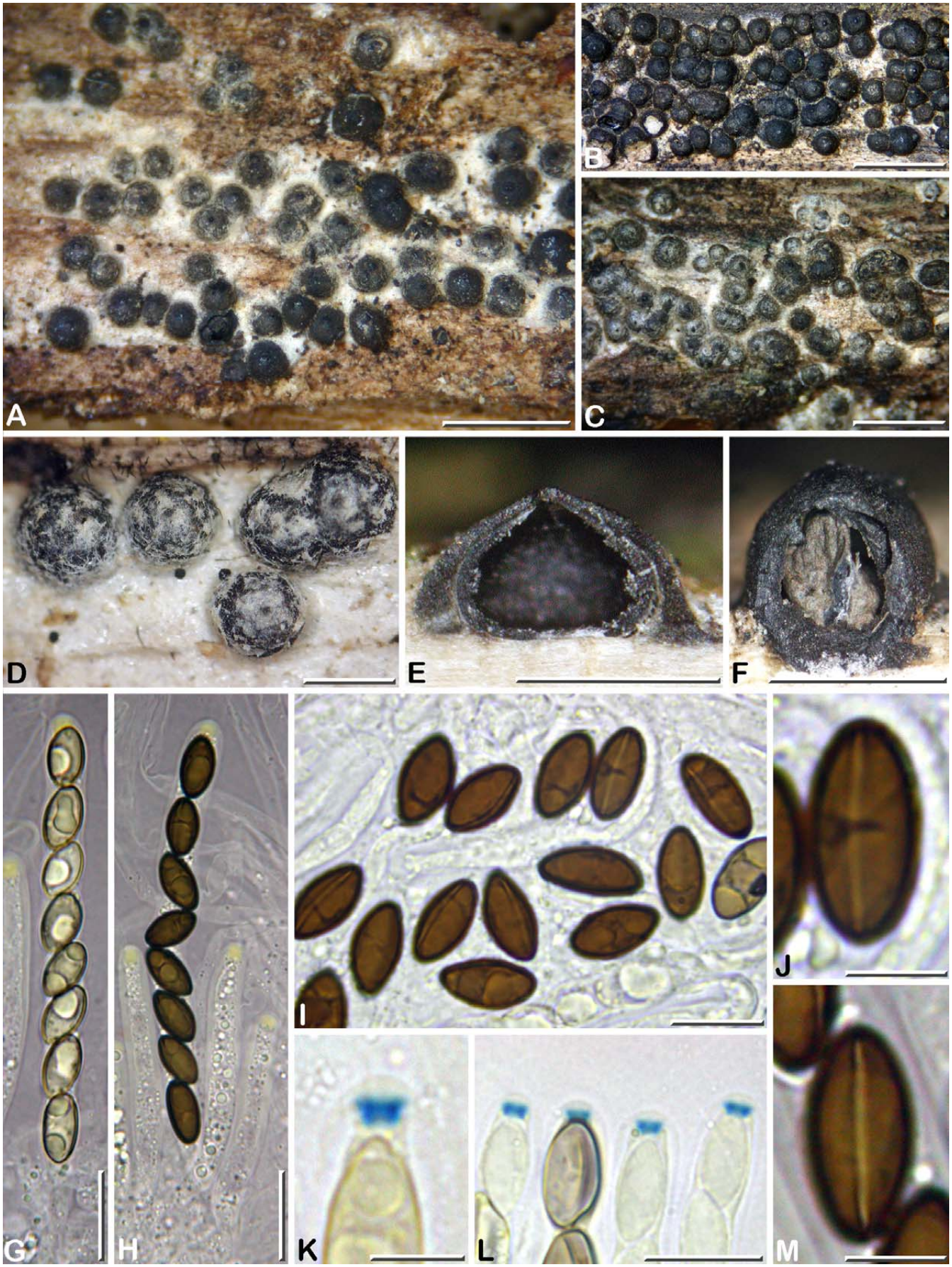

Plate 19 – *Rosellinia* cf. *perusensis*

A, D-M: MJF 07129; B: MJF 13206; C: MJF 14121. A-C: Habit of stromata aggregated on host surface with variously developed white subiculum; D: Stromata in close-up showing small papillate ostioles and remnants of white subiculum on ectostroma; E: Stroma in vertical section showing the thickened discoid base; F: Stroma in vertical section showing a shrivelled perithecium; G: Immature ascus in black Pelikan® ink; H: Mature ascus, immature asci and paraphyses, in black Pelikan® ink; I: Ascospores with narrowly to broadly rounded ends, in 1% SDS; J, M: Ascospores in ventral view showing a long germ slit, in 1% SDS and black Pelikan® ink respectively; K, L: Ascus apical plugs in Melzer's reagent. Scale bars: A-C = 2 mm; D-F = 0.5 mm; G, H = 20 µm; I, L = 10 µm; J, K = 5 µm.

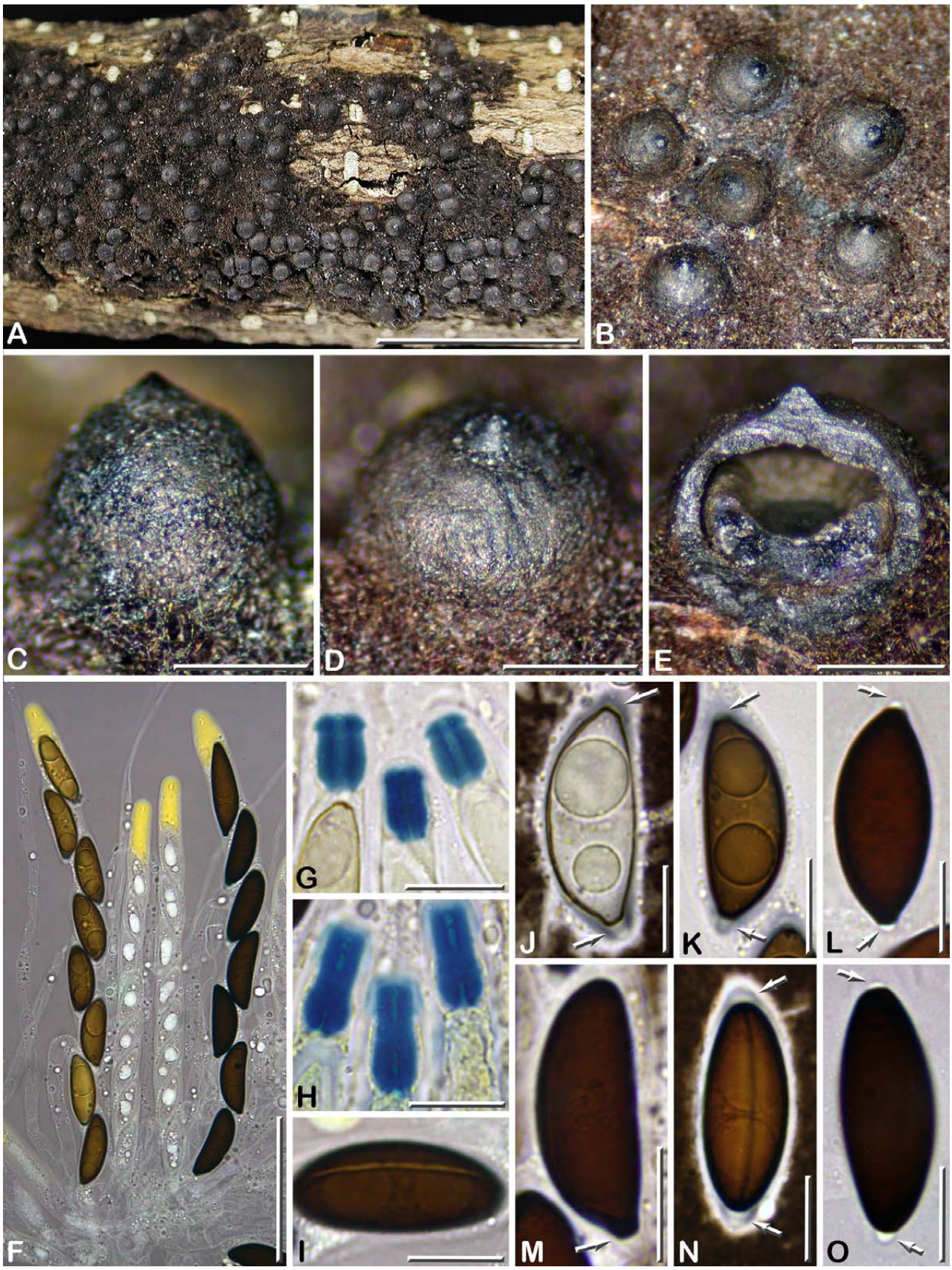

Plate 20 – *Rosellinia truncatispora*

A-G, L, N, O: MJF 14112 (Holotype); H-K, M: MJF 15082 (Paratype). A, B: Habit of stromata on host surface, half-embedded in reddish brown felty subiculum; C, D: Stromata in lateral close-up showing the smooth ectostroma (with shiny black spore deposits in C) and papillate ostioles; E: Stroma in vertical section showing the thick carbonaceous ectostroma and a collapsed perithecium; F: Immature and mature asci with paraphyses, in black Pelikan® ink; G, H: Variously shaped ascus apical plugs in Melzer's reagent; I: Ascospore in dorso-lateral view showing a germ slit, in black Pelikan® ink; J: Immature ascospore in side view showing a slimy sheath, truncate ends and cellular appendages (arrows), in India ink; K: Barely mature ascospore in aqueous nigrosin, showing remnants of slimy sheath and cellular appendages (arrows); L, O: Ascospores with bipolar cellular appendages and truncate lower end (arrows), in black Pelikan® ink; M: Ascospore in side view showing a truncate lower end (arrow); N: Ascospore in dorsal view showing a whole slimy sheath and bipolar appendages (arrows), in India ink. Scale bars: A = 10 mm; B = 1 mm; C-E = 0.5 mm; F = 50 µm; G-O = 10 µm.

Other specimen examined: French West Indies: Martinique: Case-Pilote, Morne Rose, mesophilic rainforest, on a dead corticated branch in a sun-exposed pile of dead branches, 14 Jun. 2015, *leg*. C. Lechat, MJF 15082 (Paratype, LIP).

Discussion: *Rosellinia truncatispora* conforms well to the *R. aquila* group (Petrini & Petrini, 2005; Petrini, 2013) in having stromata embedded in a persistent subiculum and inequilateral-ellipsoidal ascospores with a germ slit on the most convex side. The phylogenetic affinities of this fungus with *R. aquila*, *R. corticium* and *R. merrillii* Syd. are well-supported by comparison of ITS sequences (Fig. 1).

Rosellinia truncatispora is characterized by stromata not over 1 mm in diam and ascospores 23.4–27.8 × 8.2–9.3 µm, entirely surrounded by a narrow slimy sheath and provided with two rounded cellular appendages. Species featuring ascospores with two cellular appendages are *R. merrillii*, *R. nothofagi* L.E. Petrini and *R. radiciperda* Massee. They differ from *R. truncatispora* by larger ascospores (32 × 11.4 µm, 29 × 8.3 µm and 39 × 11.8 µm, respectively) and lacking a truncate and slightly pinched lower end; moreover, ascospores of *R. nothofagi* have conical cellular 3–4 µm long appendages. Ascospores of *R. aquila* may also feature two cellular appendages but they differ from those of *R. truncatispora* in being smaller in average (19.7 × 7.5 µm) and in having bipolar slimy caps instead of a an entire sheath.

If the small upper appendage on ascospores of *R. truncatispora* is overlooked, this species could be confused with *R. caudata* which is known from two collections from Sri Lanka (Petrini, 2013). *Rosellinia caudata* is similar to *R. truncatispora* in stroma and ascospore dimensions but mainly differs by the presence of only one cellular appendage on ascospores having broadly rounded, not truncate ends.

Rosellinia corticium is set apart from *R. truncatispora* by larger stromata up to 1.7 mm in diam, having ascospores with typically one cellular appendage on the lower end and occasionally an additional cellular appendage on the upper end; they are likewise entirely surrounded by a slimy sheath, but they lack the slightly pinched and truncate lower end typical of *R. truncatispora*. Moreover, *R. corticium* has a mostly temperate distribution.

Ascospores of *R. lechatii* likewise frequently exhibit a pinched lower end but differ from those of *R. truncatispora* in significantly larger ascospores 34.4 × 10.1 µm and in lacking cellular appendages (Petrini, 2013; this paper).

The ascospores of *R. convexa* Q.R. Li & J.C. Kang recently described from China (Su *et al*., 2016) feature a lower truncate end giving them a similar outline to that of *R. truncatispora*. Although such a truncate ascospore end in *Xylariaceae* is usually associated with the presence of a cellular appendage, the authors of this new species stated that ascospores "lack appendages and clear sheath"; the fact they observed ascospores in water and in Melzer's reagent only but not in India ink may account for cellular appendages or slimy sheaths having been overlooked. However, *R. truncatispora* clearly differs from *R. convexa* by smaller stromata 850–1000 vs. 1000–1950 µm in diam, short-stipitate asci and larger ascospores 23.4–27.8 × 8.2–9.3 µm with a germ slit on the convex side vs. 17.5–20.5 × 6–9 µm with a germ slit on the flat side.

Rosellinia winckleriana Henn. ex L.E. Petrini, *Rosellinia, a world monograph, Bibliotheca Mycologica*, 205: 104 (2013). Plate 21.

Subiculum felty, appressed, cream-coloured, long persistent. **Stromata** scattered to gregarious, superficial with the base slightly sunken, 500–600 µm high × (600–)700–850 µm in diam, subglobose to slightly depressed-spherical, dark greyish brown to dark brown, apex with a finely conical ostiolar papilla; ectostroma 40–50 µm thick, slightly carbonaceous, black, externally finely roughened, thickened to 80 µm at base and spreading around the stroma base beneath the subiculum, the underlying wood blackened; entostroma restricted to a thin fibrous withish tissue encasing the perithecium, perithecia partly collapsed in the stroma cavity.

Asci cylindrical, with 6–8 obliquely overlapping uniseriate ascospores, spore-bearing part 81–90 × 9–10.5 µm, stipe 24–38 µm long, with apical plug 2.1–3.2 × 3.4–4.1 (Me = 2.6 × 3.8 µm, N = 20), cuboid-cuneate with an upper lateral rim, bluing in Melzer's reagent. **Paraphyses** thin-walled, remotely septate, 4–4.5 µm wide at base, tapering to 2 µm wide above asci. **Ascospores** (13.1–)13.9–16(–16.9) × (5.7–)6.1–7(–7.4) µm, Q = (2–)2.1–2.4(–2.7); N = 60 (Me = 14.8 × 6.5 µm; Qe = 2.3), ellipsoidal-inequilateral with narrowly to broadly rounded ends, dark brown, with a conspicuous straight germ slit almost spore-length on the ventral side, entirely surrounded by an ill-defined slimy sheath 1.8–4.5 µm thick visible in India ink, without appendages.

Asexual morph on the natural substrate not seen.

Specimens examined: French West Indies: Martinique: Le Marigot, Habitation Denel, forest track of Pérou, track to Morne Bellevue, hygrophilic rainforest, on heavily rotten decorticated wood on the ground, 10 Jun. 2014, *leg*. J. Fournier, MJF 14116 (LIP); Le Saint-Esprit, Bois La Charles, mesophilic rainforest, on heavily rotten trunk, 6 Aug. 2016, *leg*. J. Fournier, MJF 16140 (LIP); Les Anses-d'Arlet, Anse Noire, mesophilic coastal rainforest, on heavily rotten decorticated wood on the ground, 22 Aug. 2007, *leg*. C. Lécuru, MJF 07109 (LIP).

Known distribution: Martinique and unknown type locality.

Discussion: The collection MJF 16140 is characterized by weakly carbonaceous, subglobose stromata occurring on bleached rotten wood, associated with a cream-coloured silky subiculum and dark brown inequilateral ascospores averaging 14.8 × 6.5 µm with a straight germ slit spore-length and a slimy sheath. Based on this combination of characters and apart from the presence of a slimy sheath around ascospores, it keys out to *R. winckleriana* in Petrini's keys (2013). *Rosellinia winckleriana* is based on a single collection housed in S but of unknown origin. Slimy material around ascospores which is conspicuous at fresh state often vanishes over time and is frequently missing in old material, thus the absence of sheath reported by Petrini (2013) does not rule out the presence of such a sheath in fresh material. Additional characters like apical plug with a lateral upper rim and ascospores with frequently narrowly rounded apices match well the original description and support our identification.

The two collections MJF 07019 and MJF 14116 feature similar stromata with the base slightly immersed in the rotten bleached substrate with remnants of a cream silky subiculum, and ascospores averaging respectively 14 × 7.5 µm and 16.4 × 8.9 µm surrounded by a slimy sheath. As they are both in depauperate condition, they are merely tentatively referred to *R. winckleriana*. A pale greyish synnematous geniculosporium-like hyphomycete present around and on old stromata of MJF 14116 might be its asexual morph.

Rosellinia winckleriana shares with other taxa known from Martinique as *R. discreta*, *R. parva* and *R.* cf. *perusensis* a similar habitat on heavily rotten wood and association with a cream subiculum. It is primarily distinguished by its dark brown, significantly larger ascospores.

Cultures characteristics

No conidiogenesis nor primordial stromata were observed in all cultures until five weeks of incubation. The occurrence of sterile intertwined dark brown hyphae forming dark rings or patches on the surface of the three of them is congruent with observations reported as "stromatic structures" in cultures of some *Rosellinia* taxa by Petrini (1992; 2003). Similar dark brown, thick-walled, variously shaped hyphal elements were likewise reported from cultures of the xylariaceous genera *Daldinia* Ces. & De Not. (Petrini & Müller, 1986; Stadler *et al*., 2014) and *Xylaria* (Van der Gucht, 1996) and referred by

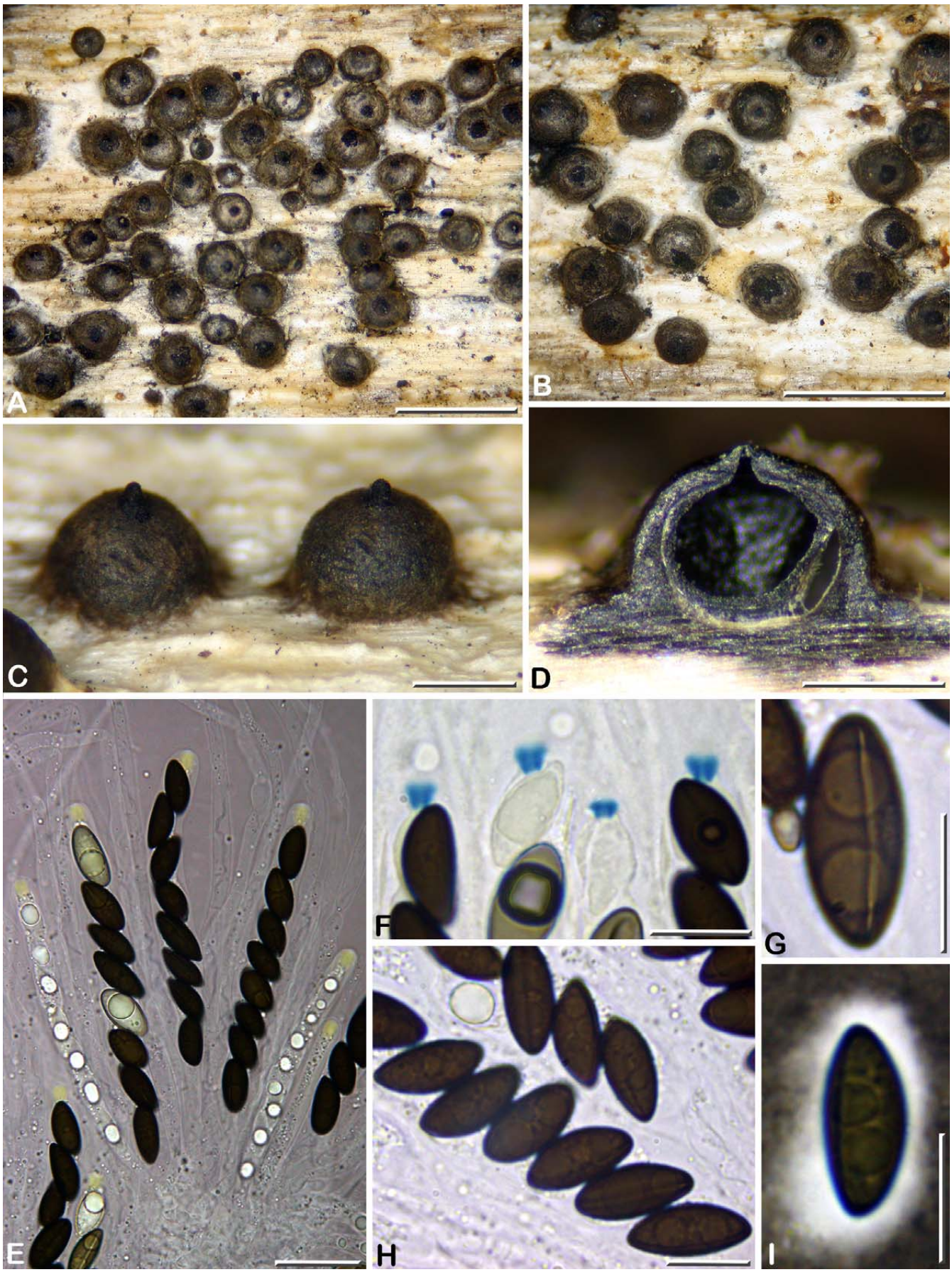

Plate 21 – *Rosellinia winckleriana*

MJF 16140. A, B: Habit of stromata crowded to scattered on host surface with black ascospores deposits around ostioles, associated with a cream subiculum; C: Two stromata in lateral view showing a subglobose outline and a finely papillate ostiole; D: Stroma in vertical section showing whitish entostroma lining a partly detached perithecium and the thick carbonaceous ectostroma spreading around the base beneath the subiculum; E: Mature and immature asci, in black Pelikan® ink, with paraphyses; F: Ascal apical plugs, in Melzer's reagent; G: Immature ascospore in ventral view showing a germ slit almost spore-length, in 1% SDS; H: Ascospores in 1% SDS; I: Ascospore surrounded by a slimy sheath, in India ink. Scale bars: A, B = 2 mm; C, D= 0.5 mm; E = 20 µm; F-I = 10 µm.

these authors to stromatic structures. In the case of *Rosellinia*, one could assume these dark brown hyphae are homologous with the subiculum associated on host surface with stromata of many species. This is dubious since the microscopic comparison of the hyphae obtained in cultures with those of the subiculum hyphae from the respective collections proved different in diameter, branching pattern and overall morphology, but cannot be ruled out.

Phylogenetic results

ITS sequences of *Xylariales* were selected from GenBank according to a BLAST query that revealed sequence homology of ITS sequences of the three new species to *Rosellinia*. The final matrix contained sequences from 34 taxa including *Anthostomella brabeji* as outgroup.

As expected from morphological traits, *R.* cf. *acutispora* and *R. asperata* var. *minor* cluster with *R. necatrix* in a *Rosellinia* subclade but on a separate branch. Their ITS sequences differ in having only 90% similarity, which reflects their morphological differences showed in the taxonomic part.

Rosellinia truncatispora, which shows clear morphological affinities with members of the *R. aquila* group likewise clusters in a subclade featuring three species representative of this group. According to our results, ITS sequence of *R. truncatispora* has 90% similarity with *R. corticium* and 86% similarity with *R. aquila*.

Entoleuca mammata (Wahlenb.) J.D. Rogers & Y.M. Ju and four species of *Coniolariella* D. García, Stchigel & Guarro form a well-sup-

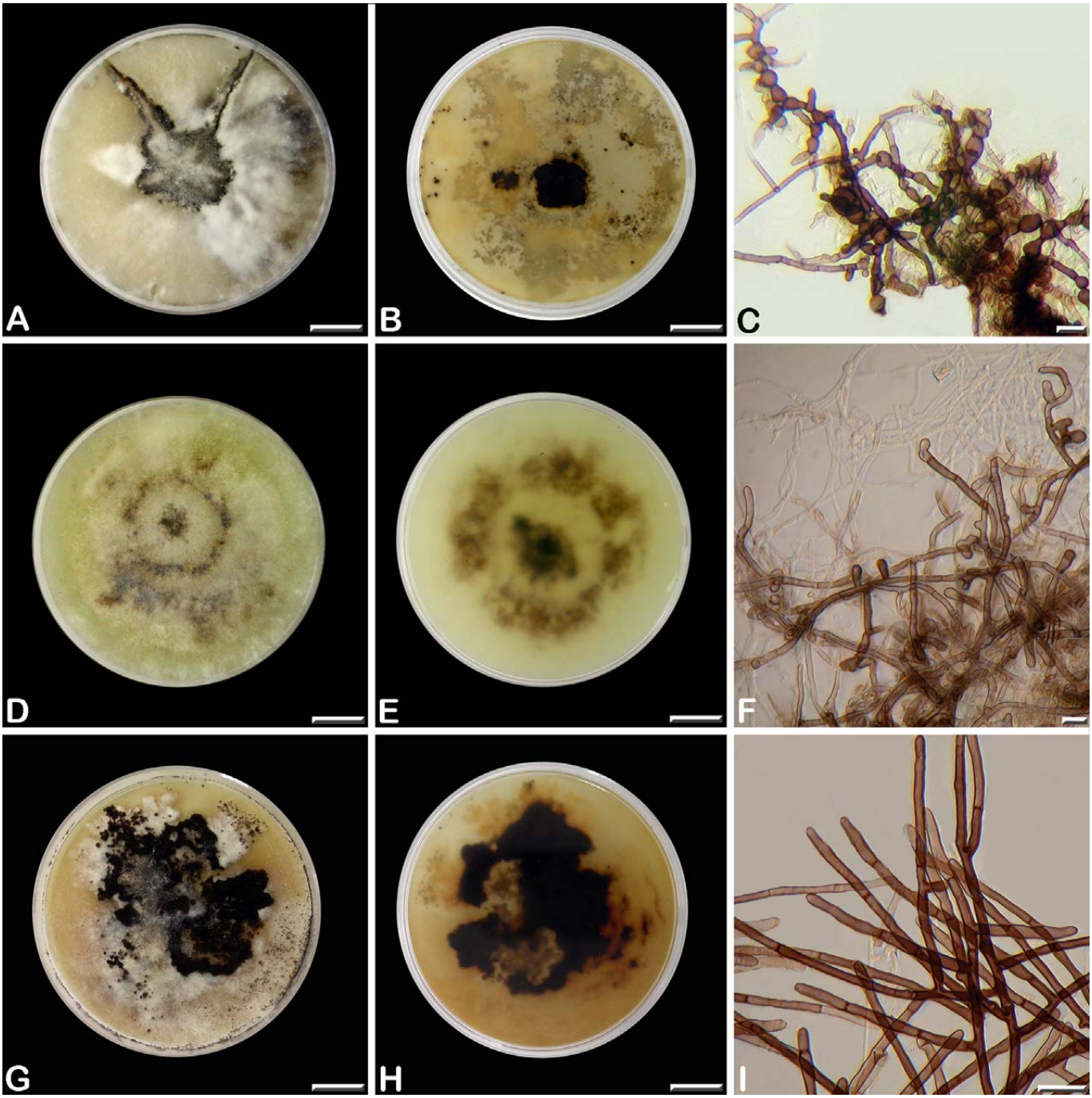

Plate 22 – *Rosellinia* cf. *acutispora*, *R. asperata* var. *minor* and *R. truncatispora* in culture
A-C: *Rosellinia* cf. *acutispora* MJF 14114; D-F: *R. asperata* var. *minor* MJF 14172; G-I: *R. truncatispora* MJF 14112 (Holotype). A, D, G: Cultures on MA in 55 mm diam Petri dishes after 2 weeks, in surface view; B, E, H: Reverse of A, D and G respectively; C, F, I: Brown superficial hyphae produced in culture, mounted in water. Scale bars: A, B, D, E, G, H = 10 mm; C, F, I = 10 µm.

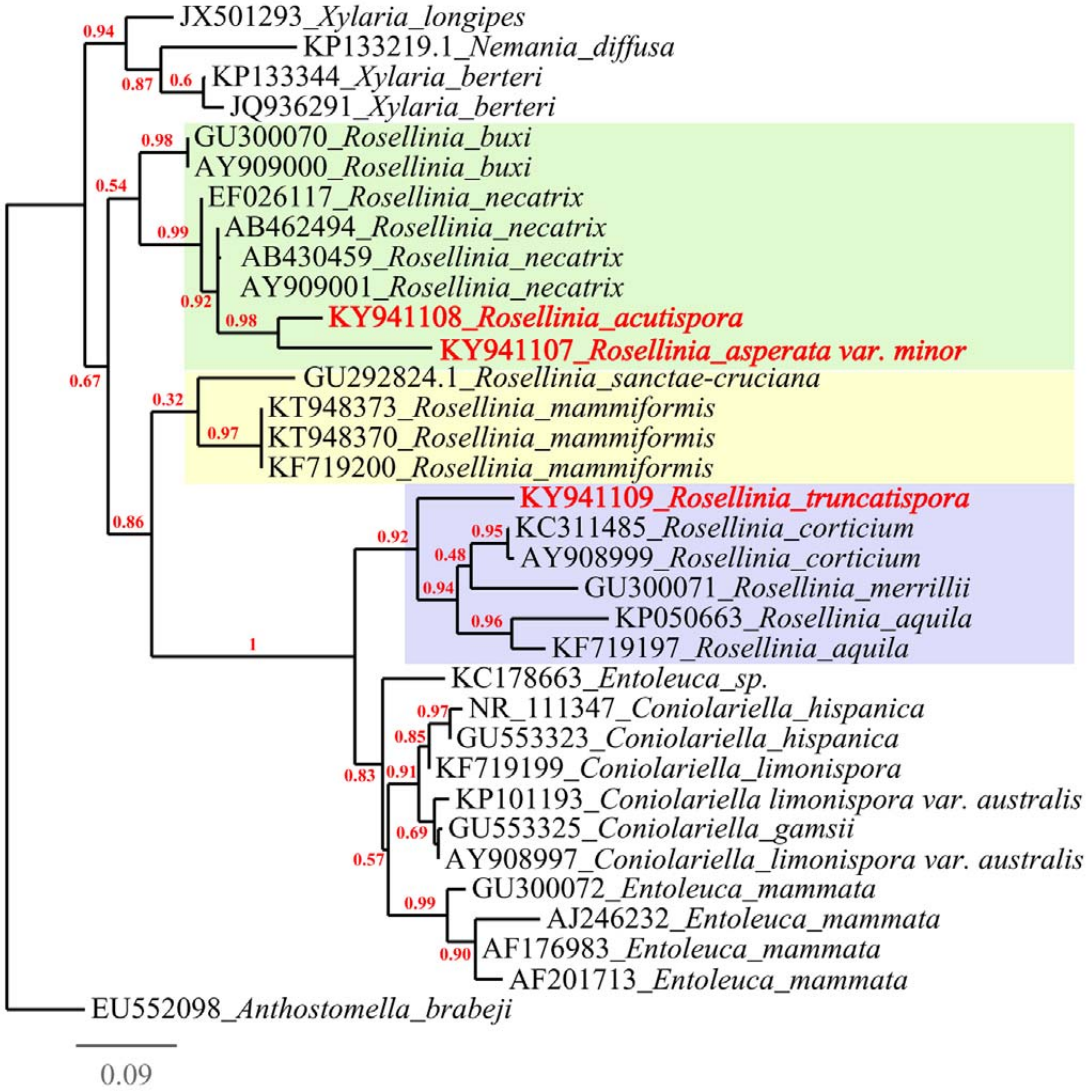

Fig. 1 – Maximum likelihood (ML) phylogenetic tree estimated from sequences of ITS of 10 species of *Rosellinia* and 8 species belonging to allied xylariaceous genera, rooted with *Anthostomella brabeji*.

ported sister branch of this subclade, which suggests that *Rosellinia* as currently delimited is paraphyletic. As discussed by Rogers & Ju (1996), *Entoleuca* Syd. is morphologically distinct from *Rosellinia* by erumpent multiperitheciate stromata lacking an associated subiculum. However, recent multigene phylogenetic studies showed its close affinities with *Rosellinia* (Hsieh *et al*., 2010; U' Ren *et al*., 2016). *Coniolariella* is a recently segregated genus accommodating some species formerly placed in *Coniochaeta* (Sacc.) Cooke (García *et al*., 2006). Based on molecular results, Checa *et al*. (2008) combined in *Coniolariella* two species formerly placed in *Rosellinia*, *R. australis* Sacc. & Trotter (non Speg. 1909) and *R. limoniispora* Ellis & Everh., introducing *C. limoniispora* (Ellis & Everh.) Checa, Arenal & J.D. Rogers for *R. limoniispora* and *C. limoniispora* var. *australis* Checa, Arenal & J.D. Rogers for *R. australis*. Subsequently, the variety was synonymized with the typical variety by Zare *et al.* (2010), which is in agreement with our results. *Coniolariella* shares with *Rosellinia* brown one-celled ascospores with a germ slit and a geniculosporium-like asexual morph but is distinguished by soft-textured stromata lacking subiculum and deliquescent asci that lack an iodine-positive apical ring (Checa *et al*., 2008). *Coniolariella* was not included in the multigene phylogenetic studies cited above and the poor phylogenetic resolution provided by ITS sequences cannot unambiguously elucidate its affinities with *Rosellinia*. Bahl *et al.* (2005) obtained similar inconclusive results based on comparison of ITS sequences of *Entoleuca mammata* and five *Rosellinia* taxa including their new species *R. capetribulensis* J. Bahl, R. Jeewon, & K.D. Hyde. A subgeneric splitting of *Rosellinia* likely appears necessary to follow a more natural classification but should await a much wider sampling including members of related genera like *Entoleuca* and *Nemania*.

Conclusions

In conclusion, we would like to emphasize 1) the high, likely underestimated potential diversity of tropical *Rosellinia* taxa, 2) their peculiar ecology, with consequences on their efficient sampling, 3) the difficulties to evaluate properly some microscopic characters.

This study results in a substantial increase in the number of *Rosellinia* taxa known from the islands of Guadeloupe and Martinique, going from four previously known species up to seventeen currently known species, including six new species and a new variety described in this paper, and two recently described new species. This may appear surprising, given the small size of these two islands, but we think it reflects the extensive field work spanning a long period of time and the richness of these islands in highly differentiated micro-habitats (Fournier *et al*., 2015). One can make a striking observation while perusing Petrini's monograph: most of tropical *Rosellinia* taxa come from a relatively limited number of geographical regions (Brazil, Central Africa, Hawaii, Indonesia, New Zealand,

Philippines, Sri Lanka, Taiwan). In most cases this is the result of extensive field work carried out by resident or temporarily resident mycologists like Rick (1932) and Theissen (1908; 1910) in Brazil, Saccas (1956) in Central Africa, Rogers in Hawaii (Rogers & Ju, 2012; 2015), Samuels and Landcare Research staff in New Zealand (Petrini, 2003) or Ju in Taiwan (Ju & Rogers, 1999; Petrini, 2013). The distribution of these hotspots for *Rosellinia* is likely more correlated with the activity of field mycologists than their peculiar species richness. Our results from Guadeloupe and Martinique strongly suggest that a similar extensive sampling carried out in any favourable tropical region should substantially expand our taxonomic knowledge of this genus which is probably much more diverse than currently assumed. In this regard, our view fully agrees with Petrini's (2013) statement in her conclusion.

Rosellinia taxa are not massive nor brightly coloured, thus they are easily overlooked in the field. They rarely occur on trunks or big branches, they preferably occur at the very base of dead or dying shrubs, on roots or on small recently dead branches either in contact with the soil or piled up. Their peculiar ecology has to be taken into account for a rewarding sampling.

The identification of *Rosellinia* taxa is highly dependant on microscopic features like ascus apical plug and ascospore sheath and appendages. Ascus apical plugs are usually massive and strongly amyloid, thus very conspicuous and their shape and dimensions are often key characters. Unusually high or deformed apical plugs may be encountered, like those illustrated in this study for *R. asperata* var *minor*, *R. bunodes* "*echinata*" form, *R. granulosa*, *R. longispora* and *R. truncatispora*. A careful examination shows that these structures are fragile and sensitive to excessive pressure on the cover slip which may involve a rupture of the plug wall and a striking stretching of its contents. According to Dr. Petrini, this is common in immature material (pers. comm., 2017). The risk of damaging apical plug involving erroneous measurements should be taken into account when preparing a slide and it can be assumed that bigger is the plug bigger is the risk to crush it. Such a fragility of apical plugs is likewise encountered in other xylariaceous genera featuring massive apical plugs like *Kretzschmaria* Fr. and *Xylaria*, which supports the likeliness of a correlation between size and risk to be damaged by pressure on the cover slip.

Cellular appendages and slimy sheaths are of critical taxonomic interest but are frequently misinterpreted because they may be difficult to make out, especially in mature and overmature ascospores where they tend to vanish or disappear. Their presence is much more conspicuous on immature hyaline or weakly pigmented ascospores and the use of stains like aqueous nigrosin or mounting medium like India ink often proves helpful to distinguish them.

Finally, a topic which must be addressed when talking about *Rosellinia* is that several species, especially in the *R. necatrix* group, are well-known pathogens of temperate or tropical wild or cultivated plants. This topic of pathology and economic relevance is not in the scope of this taxonomic paper but is largely documented in the literature. The reader interested in the pathogenic species of *Rosellinia* will find in Petrini (2013) a comprehensive review of this important aspect of the lifestyle within this fascinating genus.

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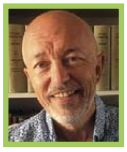

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