

The genus *Camillea* (Xylariales) in Argentina's Yungas: a comprehensive morphological study with two new species and identification key

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Article info

Received: 11 Aug. 2024
Revision received: 19 Sept. 2024
Accepted: 23 Sept. 2024
Published: 13 Dec. 2024

Associate Editor

Marcin Piątek

Abstract. From an exhaustive taxonomic survey of *Xylariales* carried out in the subtropical montane forest of the Argentine northwest (“Las Yungas”), a first comprehensive revision of *Camillea* for the country is presented. Based on a new combination of sexual and asexual morphology, *C. hladkiae* and *C. romeroae* are proposed as new species for the genus; *C. hladkiae* is principally distinguished by its conidiogenous structure from similar species such as *C. guzmanii* and *C. magnifica*. On the other hand, *C. romeroae* is mainly differentiated from other known species of *Camillea* by the ornamentation of the ascospores under SEM. Additionally, the conidiogenous structure of *C. coroniformis*, *C. flosculosa*, *C. hainesii*, *C. hyalospora* and *C. signata* are described and illustrated for the first time. Furthermore, four species reports are new for the Southern Cone of South America (*C. coroniformis*, *C. hainesii*, *C. hyalospora* and *C. signata*) and three are a novelty for Argentine Yunga (*C. flosculosa*, *C. obularia* and *C. punctulata*). Finally, full descriptions, illustrations of all species and a dichotomous key to the identification of *Camillea* species for the region are provided.

Key words: *Ascomycota*, *Graphostromataceae*, new species, neotropical fungi, SEM

Introduction

Species of *Camillea* are stromatic pyrenomycetous fungi assigned to *Graphostromataceae* alongside the genus *Biscogniauxia* (Wendt et al. 2018). The genus was introduced by Fries (1849) to accommodate fungi with black, carbonous, upright, cylindrical or short discoid stromata. Læssøe et al. (1989) broadened the generic concept to include those species assigned to *Hypoxylon* section *Applanata sensu* Miller (1961) with colorless ascospores and some species of *Nummularia* with light-brown spores. The genus is taxonomically delimited by three features: 1) light-colored ascospores with distinctive ornamentation as viewed by scanning electron microscopy (SEM), 2) diamond-shaped or rhomboid ascal apical apparatus, and 3) a xylocladium-like anamorph or

rarely periconiella-like (Læssøe et al. 1989). The more than 33 species are delimited mostly by the combination of stromatal anatomy, the configuration of the ostioles, morphometry of ascospores and spore wall ornaments by SEM (Fournier 2022, Fournier et al. 2023; Hastrup & Læssøe 2009, Læssøe et al. 1989; Rogers et al. 1991, 2002; Rogers 1975, 1977; San Martín González & Rogers 1993; Whalley 1995; Whalley et al. 1996, 1999). Different ornament types are found among *Camillea* species; for example, *Camillea leprieurii* has wavy longitudinal rib-structure with ladder-like transverse substructure by SEM, a warty ornamentation is distinctive in *C. selan-gorensis* (Whalley et al. 1996); other species such as *C. venezuelensis* and *C. labellum* show ascospores with longitudinal twisted ribs, while the majority of species in the genus have ascospores with a poroid-reticulate ornamentation (Læssøe et al. 1989).

Species richness of *Camillea* is concentrated in the Amazon region, and in particular, many species are encountered in the cloud forest from the tropical Andes (Hastrup & Læssøe 2009, Læssøe et al. 1989). The southernmost extended distribution of subtropical montane cloud forests of the Andes is located in northwest of Argentina. This humid forest area is known as “Las Yungas” and is recognized as an unparalleled biodiversity hotspot of *Xylariales* in the country (Sir et al. 2012,

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2018); however, the incidence of *Camillea* in the fungal community remained obscure. At present, four species are recorded in Argentina, three of them for the Parana Forest, in the Northeast of the country: *Camillea fossulata*, *C. sulcata* and *C. scriblita* (Grassi et al. 2016; Læssøe et al. 1989; Sir et al. 2017), whereas *C. tinctor* is the sole species documented for Las Yungas Forest (Daranagama et al. 2018).

The current research deals with *Camillea* specimens collected during our long-term surveys of *Xylariales* carried out in “Las Yungas”. Herein, we provide a detailed macro- and micromorphological study of the sexual and asexual morphs of ten taxa identified in this subtropical forest from the Argentine northwest.

Materials and methods

Collection and morphological study

The specimens studied in this work were collected during our long-term survey carried out between 2011 and 2023 in the preserved areas of Las Yungas from Jujuy (Calilegua National Park), Salta (Baritú National Park, El Rey National Park, El Nogalar de Los Toldos National Reserve, and Acambuco Provincial Reserve) and Tucuman provinces (La Florida Provincial Reserve and Sierra de San Javier Park) (Sir et al. 2012). All collections are deposited at the Fungarium of LIL (Thiers, 2018) and were characterized according to Hastrup & Læssøe (2009), Læssøe et al. (1989), Rogers et al. (1991, 2002), San Martín González & Rogers (1993) and Whalley et al. (1996, 1999).

The microscopic preparations were performed using distilled water and KOH solution (3% w/v), and Melzer’s reagent was used for testing the amyloid reaction of the ascus apical apparatus (Sir 2021). The ornamentation of ascospores was analyzed under scanning electron microscopy (SEM, Zeis Supra 55 VP) at the “Centro Integral de Microscopía Electrónica” (CIME, CONICET-UNT) and at the “Centro de Microscopías Avanzadas” (CMA, MINCYT- FCEN-UBA).

The author names of the fungal and plants species were taken from Index Fungorum (<http://www.indexfungorum.org>) and Tropicos (<https://www.tropicos.org>) respectively.

Result and discussion

Taxonomy

Camillea hladkiae Sir, sp. nov. (Figs 1, 2)

Mycobank MB 855410

Diagnosis: Differs from *C. guzmanii* by having conspicuous papillate ostioles and bigger apical apparatus and wider ascospores. It differs from *C. magnifica* by having smaller apical apparatus and slightly shorter ascospores.

Type: Argentina, Salta province. dept. General José de San Martín; road to Acambuco Provincial Reserve, on dead trunk of *Chrysophyllum gonocarpum* (Sapotaceae – “aguai”), 21 May 2015, Sir & Hladki 797 (LIL 160920, holotype!).

Description. Stromata erumpent through bark, applanate, irregularly elongate, rarely elliptic, 4–48 × 4–20 mm and 0.6–0.8 mm thick, sterile margin up to 1 mm wide, surface dull black. Ostioles evenly scattered, strongly conic-papillate sometimes in a shallow depression. Perithecia packed in black, brittle entostroma, basally seated, flask-shaped, 0.4–0.5 × 0.3–0.36 mm, sometimes with more than one perithecium per ostiole. Asci 8-spored, cylindrical, 145–234 µm total length, spore-bearing part 91–150 × 8–12.5 µm, stipe 26–76 µm length, with amyloid apical apparatus, with acutely flared sides, attenuated downwards (approaching rhomboid), 2.7–5 × 5–6 µm. Paraphyses septate, 5.5–8.2 µm wide at base, apically tapering to 1.6–4.2 µm wide. Ascospores hyaline to pale yellow, ellipsoid-inequilateral, somewhat crescentic, attenuated in lower end, (17.9–)18.8–25(–26) × (5.8–)6.2–7.5(–8.0) µm (N = 60), av. 21.4 × 6.8 µm, without germ slit; epispore with indistinct ornamentation by LM, poroid-reticulate by SEM. Conidiophores on natural substrate xylocadium-like, up to 350 µm long, upright, mononematous, red-brown or brown, smooth to slightly roughened, robust, upper portion septate with segments of increasing size towards the apex (4–22 µm long), without well-defined ampulla and with lateral branches originating under each septa usually with nodulisporium-like branching pattern, with 1–3 conidiogenous cells per branch. Conidiogenous cells hyaline to pale red-brown, cylindrical, (6.7–)8.3–12.5(–13.3) × (2.9–)3.4–4.2(–5.6) µm, with conspicuous secession scars. Conidia hyaline, ellipsoid, smooth, 4.7–7.6(–8.7) × 2.9–3.7 µm, av. 5.8 × 3.1 µm. Not cultured.

Etymology. In honor of Adriana I. Hladki for her outstanding contribution to research in xylarialean fungi from Las Yungas.

Host and known distribution. Only known on *Chrysophyllum gonocarpum* (Sapotaceae) and unidentified dicot hosts from the provinces Misiones, Salta and Tucuman, Argentina.

Additional specimens examined. ARGENTINA. Misiones province, dept. Oberá, CIAR, corticated wood, 24 Feb 2015, Sir 777 (LIL 160911). Tucumán province, dept. Tafí Viejo, Sierra de San Javier Provincial Park, Cumbre de Taficillo, El Balcón, 1 March 1999, Hladki 2244 (LIL 160967).

Discussion. *Camillea hladkiae* can be recognized because of its unusual conidiogenous structure (see Fig. 2D–H). A large number of conidiophores were observed in the holotype between the dehiscing outer layer and underlying stromatal layers. Additional materials studied here also had conidiophores with the same morphological structure but they were not as abundant.

Ascospores of *C. hladkiae* resemble those of *C. guzmanii*, and *C. magnifica* in shape and ornamentation (San Martín González & Rogers 1993). However, stromata of *C. hladkiae* have prominent conical papillate ostioles in contrast to the other species. Moreover, *C. guzmanii* has a slightly smaller apical apparatus and narrower ascospores and *C. magnifica* has a bigger apical apparatus (Table 1).

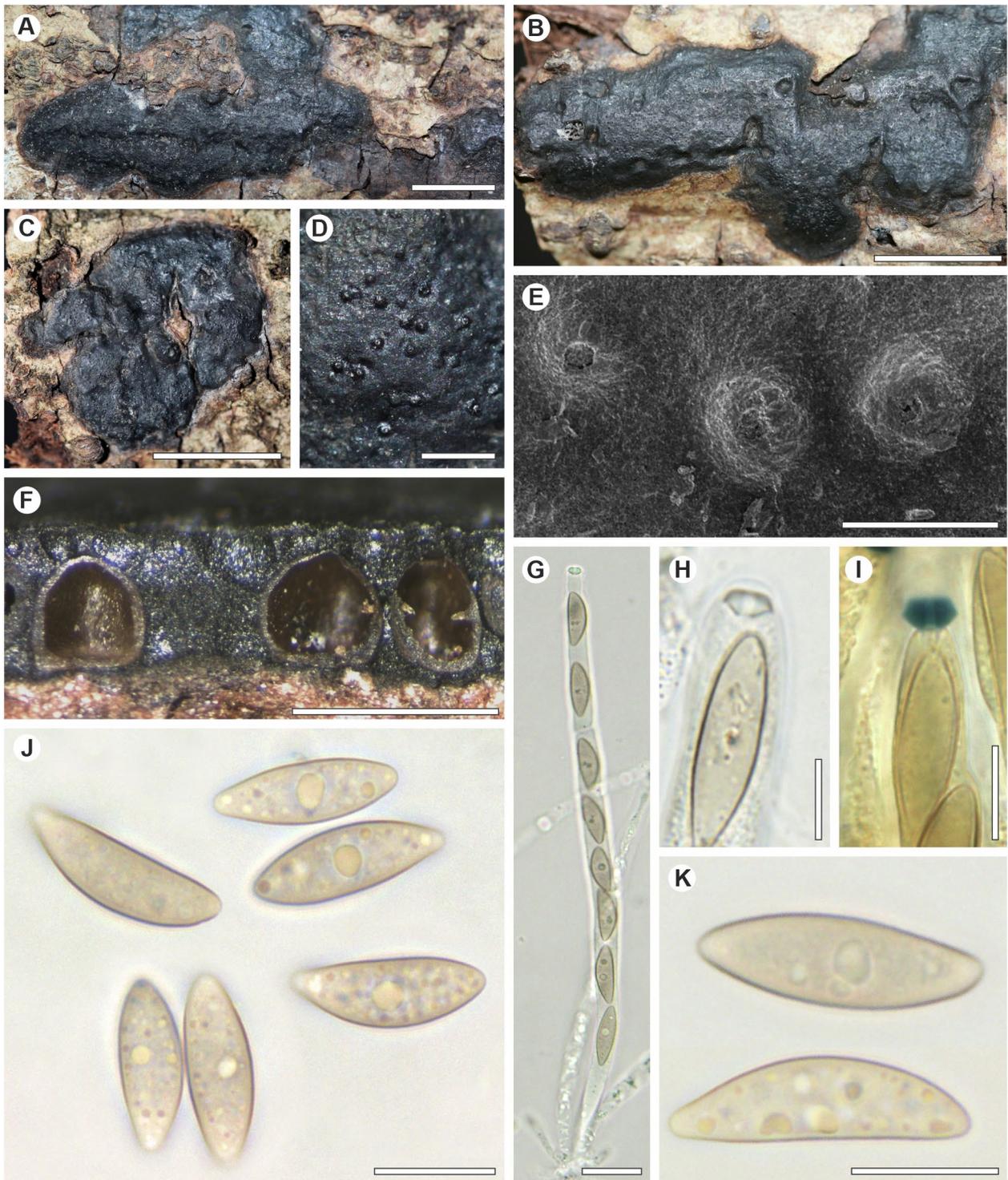


Figure 1. *Camillea hladkiae* (holotype). A–C – stromata on corticated wood; D – stromatal surface showing papillate ostioles; E – ostioles by SEM; F – stroma in section showing perithecia; G – ascus in 3% KOH; H – apical apparatus in 3% KOH; I – amyloid apical apparatus; J–K – ascospores in 3% KOH. Scales: A–C = 5 mm; D, F = 1 mm; E = 100 μ m; G = 20 μ m; H–K = 10 μ m.

The reticulate ornamentation of the ascospores of *C. hladkiae* appears similar to those documented for *C. gigaspora* (Rogers 1977, as *Hypoxyylon hemisphaericum*). However, the latter species can easily be distinguished by having ostioles papillate on raised hemispherical mounds and bigger ascospores (Table 1).

Camillea romeroae Sir, sp. nov. (Figs 3, 4)

Mycobank MB 855411

Diagnosis: Differs from other known species of *Camillea* by

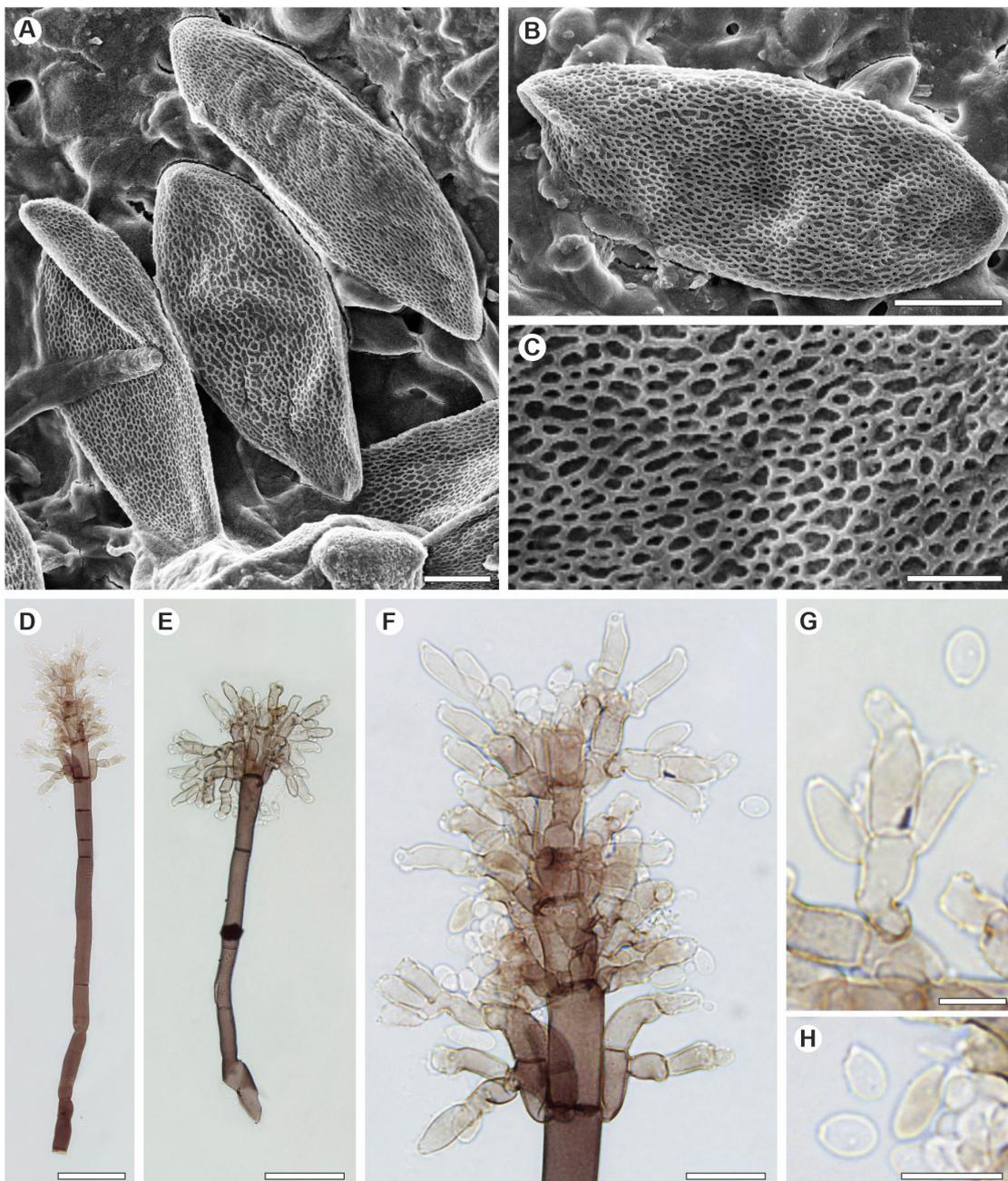
ascospores ornamented with asymmetrical, elongated reticulations with small pores visible by SEM.

Type: Argentina, Jujuy province, dept. Ledesma, Calilegua National Park, La Junta trail, on dead branches of “tabaquillo”, 6 June 2017, Sir 1043 (LIL 160933, holotype!).

Description. Stromata erumpent through bark, elliptic or irregular, coalescent or irregularly confluent, plano-convex, 3.4–20 \times 3–10 mm, and 1.2–1.6 mm thick; sterile margin up to 1.5 mm wide, fairly steeply sloping, surface dull grayish becoming dull black. Ostioles widely

Table 1. Distinctive characters of *Camillea hladkiae* and *C. romeroae* compared with closely related *Camillea* species.

Species	Ostioles	Apical ring (μm)	Ascospores (μm)	Surface ascospores by SEM	References
<i>C. hladkiae</i> sp. nov.	conic-papillate usually in shallow depressions	2.7–5 × 5–6	(17.9–)18.8–25(–26) × (5.8–)6.2–7.5(–8)	punctate-reticulate	this study
<i>C. romeroae</i> sp. nov.	conic-papillate placed in circular depressions	2–3 × 3.9–5.5	(18–)20–23(–25.2) × 7.2–9.1(–10.3)	intricate and asymmetrical elongated reticulations with intercalate pores	this study
<i>C. gigaspora</i>	punctate	12–14.5 × 5–6	20–30 × 8–9	punctate-reticulate	Miller (1961); Rogers (1975)
<i>C. guzmanii</i>	obscure slightly papillate	3–4 × 3–4	(19–)21–24 × (4.5–)5–6	punctate-reticulate	San Martín González & Rogers (1993)
<i>C. magnifica</i>	punctate to slightly raised	12–14.5 × 5–6	(22–)23–33 × (7–)8–9	punctate-reticulate	San Martín González & Rogers (1993)
<i>C. ovalispora</i>	conic-papillate placed in circular depressions	3.9–4.7 × 5.5–7.1	19.6–25.9 × 11.4–12.6	intricate meshes with further subdivisions	Hastrup & Læssøe (2009)

**Figure 2.** Ascospores ornamentation by SEM and conidiophores of *Camillea hladkiae* (holotype). A, B – general view of ascospores; C – detail of ascospore wall; D–F – conidiophores in general view; G – conidiogenous cells; H – conidia. Scales: A, B = 5 μm ; C = 2 μm ; D = 50 μm ; E, F = 20 μm ; G, H = 10 μm .

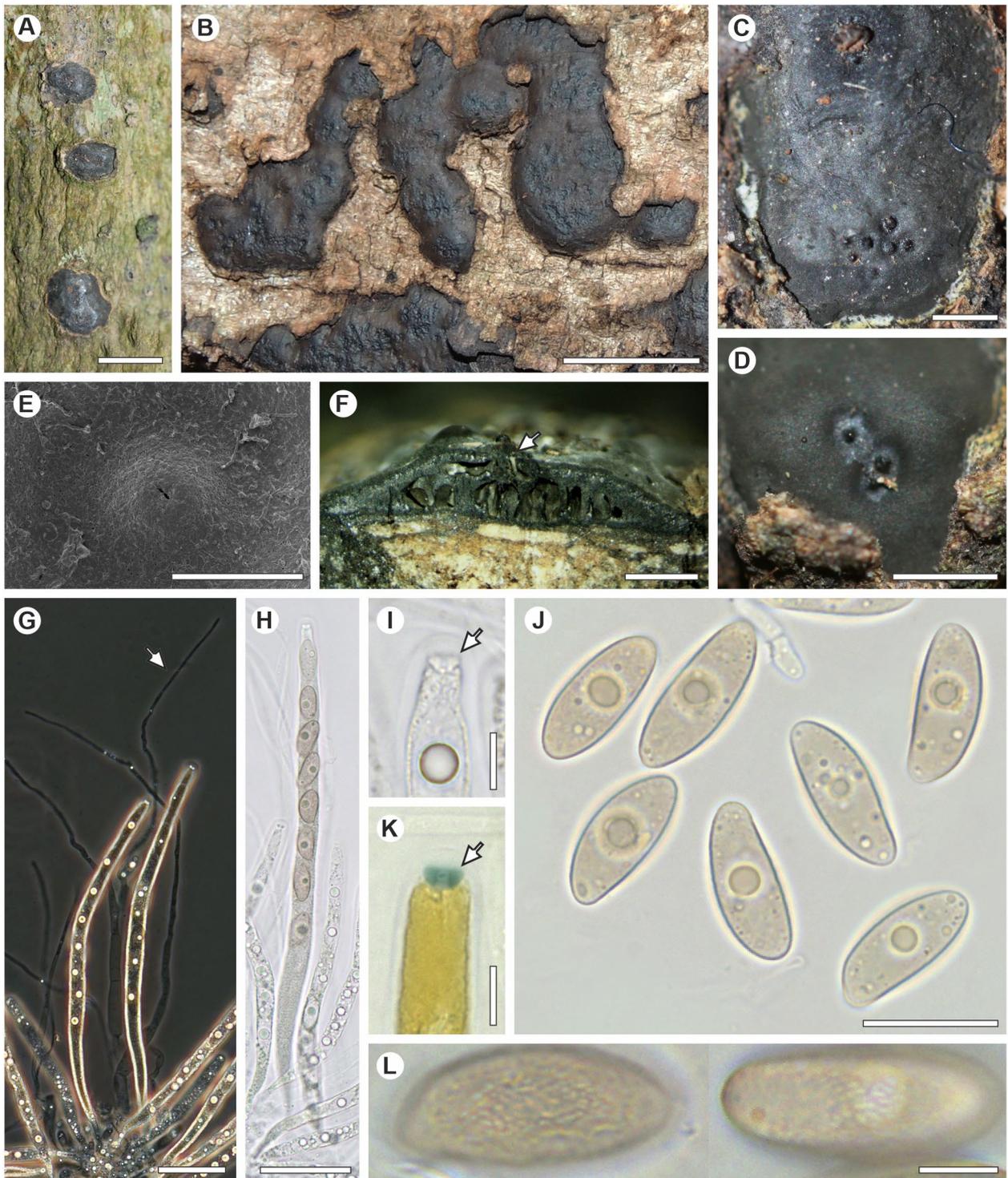


Figure 3. *Camillea romeroae* (holotype). A – stromata in general view; B – detail of stroma; C – stromatal surface; D – ostiole in details; E – ostiole by SEM; F – stromata in section showing perithecia and ostiolar canal (arrow); G – asci and paraphyses (arrow); H – ascus in 3% KOH solution; I – ascus tips clarified with 3% KOH solution; J – ascospores in 3% KOH solution; K – amyloid apical apparatus; L – ascospores surface showing ornamentation. Scales: A, B = 10 mm; C, D, F = 1 mm; E = 200 μ m; G, H = 50 μ m; I, K, L = 5 μ m; J = 20 μ m.

scattered, conical papillate, usually individually placed in circular to irregular, conspicuous to inconspicuous depressions, 0.24–0.47 mm wide. Perithecia packed in black, brittle entostroma, basally seated, obovoid, 0.8–1 \times 0.2–0.3 mm, collectively erumpent in clusters of up to 10 perithecia per ostiole. Asci 8-spored, cylindrical, 209–278 μ m total length, spore-bearing parts 130.5–190 \times 10.5–14.5 μ m, stipe 67–114 μ m long, with amyloid apical apparatus, attenuated towards base (almost flared

shape), 2–3 \times 3.9–5.5 μ m broad in upper part, 2.5–3 μ m wide at base. Paraphyses septate, 6.7–12.4 μ m wide at base, apically tapering to 1.5–2.6 μ m wide. Ascospores pale yellow, ellipsoid, slightly inequilateral, more or less attenuated at one or both end(s) (18–)20–23(–25.2) \times 7.2–9.1(–10.3) μ m (N = 60), av. 21.4 \times 8.4 μ m, episporium with inconspicuous reticulate ornamentation by LM, asymmetrical and elongate reticulation combined with small pores by SEM.

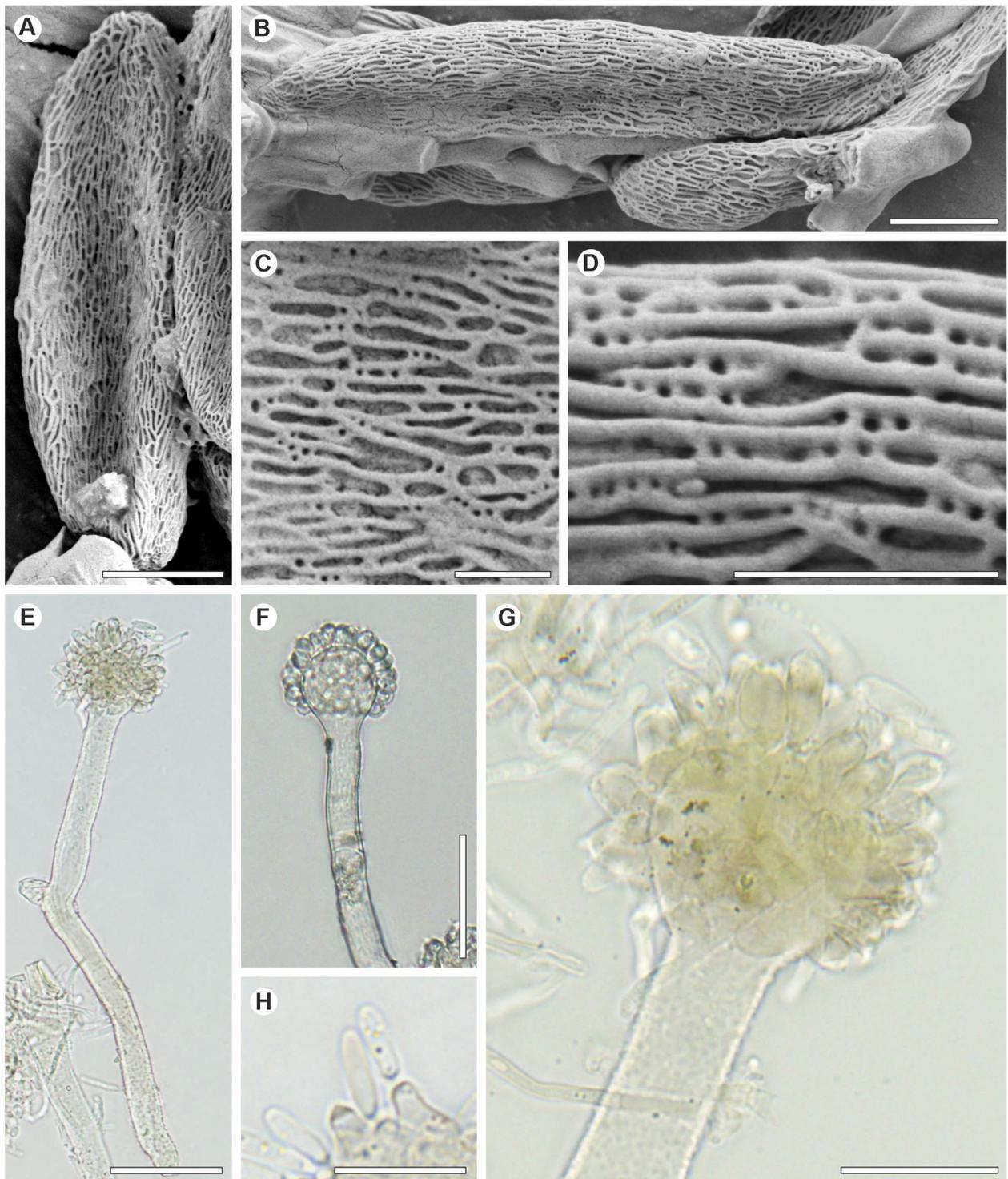


Figure 4. Ascospore ornamentation under SEM and conidiogenous structure of *C. romeroae* (holotype). A, B – SEM microphotographs of ascospores; C, D – details of ascospore ornamentation showing irregular reticulations and small pores; E, F – conidiophores in general view; G – ampulla and conidiogenous cells; H – mature conidia. Scales: A, B = 3 μm ; C, D = 1 μm ; E, F = 20 μm ; G, H = 10 μm .

Conidiophores on natural substrate xylocladium-like; upright, mononematous with determinate growth, single or branched, hyaline to pale yellow, smooth to roughened, stipe more than 190 μm long, ampullae globose to subglobose, 23–26 \times 20–25 μm . Conidiogenous cells hyaline to pale yellow, cylindrical, numerous, compacted, 6.6–11 \times 3.5–5.4 μm , with conspicuous secession scars. Conidia hyaline, ellipsoid, smooth, 4–7 \times 1.9–4.2 μm , av. 6.1 \times 2.2 μm . Not cultured.

Etymology. In honor of Andrea Irene Romero for her outstanding contribution to research in pyrenomycetous *Ascomycota* from Argentina.

Host and known distribution. *Camillea romeroae* was collected in the Jujuy and Salta provinces and is possibly only associated with *Solanum riparium*, “tabaquillo” (*Solanaceae*).

Additional specimens examined. ARGENTINA. Jujuy province, dept. Ledesma, Calilegua National Park, La Junta trail,

on dead trunk, 6 June 2017, Sir, Delgado & Medina 1285 (LIL 160947). Salta province, dept. Santa Victoria, Baritú National Park, on bark of *Solanum riparium*, 28 Dec 2011, Sir & Hladki 151 (LIL 160906).

Discussion. *Camillea romeroae* resembles partially *C. ovalispora* in having conical papillate ostioles usually located in the center of circular depressions and in having groups of perithecia arranged in rosettes that share a single ostiolar canal (Hastrup & Læssøe 2009). The form and ornamentation of ascospores are the most salient characteristics for differentiating these species. In fact, the structure of asymmetrical and elongate reticulation combined with small pores present in the ascospores of *C. romeroae* is unique in *Camillea* (see Fig. 4A–D). Additionally, *C. ovalispora* has thinner stromata (0.8 mm vs 1.2–1.6 mm), bigger apical apparatusi ($3.9\text{--}4.7 \times 5.5\text{--}7.1$ vs $2\text{--}3 \times 3.9\text{--}5.5$ μm) and wider ascospores (11.4–12.6, av. 12 μm vs 7.1–10.3 μm , av. 8.4 μm) (Table 1).

Camillea coroniformis J.D. Rogers, F. San Martín & Y.M. Ju, Sydowia 54(1): 87. 2002. (Fig. 5)

Description. Stromata erumpent through bark, discoid-concave, elliptic or irregularly elongate, 8–20 \times 8–11 mm, and 1.6–2 mm thick, surface dark brown to dull black. Ostioles punctate to somewhat elevated or papillate surrounded by raised annulus. Perithecia cylindrical, 0.8–1 \times 0.3–0.5 mm, with one or two perithecium per ostiole. Asci fragmentary, apical apparatus amyloid, rounded at base and concave at apex, 2.7–3.2 \times 2.7–3.1 μm . Paraphyses not observed. Ascospores subhyaline, inequilaterally ellipsoid to falcate with acute apices, (12.7–)13.3–15(–16.2) \times (4.3–)4.5–5.3(–5.8) (N = 60), av. 14.1 \times 5 μm , smooth by LM, by SEM composed of tightly packed rods.

Conidiophores on natural substrate xylocladium-like; upright, mononematous with determinate growth, single, red-brown, smooth to roughed, stipe 250–345 μm long, ampullae usually globose 17–21 \times 14.5–17 μm . Conidiogenous cells pale brown, cylindrical, numerous, very compacted, 6–7 \times 2.5–3 μm , with conspicuous secession scars. Conidia hyaline, ellipsoid, smooth, 5–6 \times 2.5–3 μm , av. 4.2 \times 2.9 μm . Not cultured.

Host and known distribution. This species was found on *Citrus* sp. in Costa Rica (Rogers et al. 2002). Raymond et al. (2014) recorded it for the tropical dry forest of Oaxaca-Mexico, on dead wood of an angiosperm. The new collections from Las Yungas were only found on recently fallen dead branches of *Anadenanthera colubrina* var. *colubrina* (Fabaceae).

Specimens examined. ARGENTINA. Jujuy province, dept. Ledesma, Calilegua National Park, camping, on dead branch of *Anadenanthera colubrina*, 15 May 2023, E.B. Sir, R.O. Delgado & P. del V. Medina 1263 (LIL 160946). Salta province, dept. Orán, road to Isla de Cañas, on corticated branches of *A. colubrina*, 23 May 2015, Sir & Hladki 856 (LIL 160922), Sir & Hladki 952 (LIL 160925), Sir & Hladki 954 (LIL 160927).

Discussion. *Camillea coroniformis* is distinguished by elevated ostioles surrounded by a raised annulus (see Fig. 5D, E) and by its falcate ascospores with spirally

arranged, parallel rods or ribs ornamentation by SEM (see Fig. 5F, G) (Rogers et al. 2002). The Yungas collections show slightly bigger perithecia (0.8–1 \times 0.3–0.5 vs 0.5–0.7 \times 0.3 mm) and slightly smaller ascospores (12.7–16.2 \times 4.3–5.8 vs 14–16 \times 5–6 μm).

The anamorphic structure (on natural substrate) of *C. coroniformis* is described and illustrated for the first time herein (see Fig. 5H–L).

Camillea flosculosa (Starbäck) Læssøe, J.D. Rogers & Whalley, Mycol. Res. 93(2): 131. 1989. (Fig. 6)

Description. Stromata erumpent through bark, circular, elliptic or irregularly elongate, slightly convex to applanate, 25–40 \times 10–22 mm, and 0.5–0.9 mm thick, surface shiny black to dull black. Perithecia obpyriform, 0.5–0.7(–8) \times 0.2–0.3(–0.5) mm, with central or rarely eccentric ostiolar neck. Ostioles punctate, grouped in discrete, circular depressions with one perithecium per ostiole. Asci 8-spored, cylindrical, 119–141 μm total length, spore-bearing parts 88–116 \times 7–8(–13.5) μm , stipe 22–50 μm long, with amyloid apical apparatus, partially flared apically to sub-apically, rhomboid 2.4–3.4 \times 3–4 μm . Paraphyses septate. Ascospores pale yellow, ellipsoid to slightly inequilateral, attenuated at one end (8.8–)9.4–12.4 \times (3.6–)4.3–5.8(–6.3) μm (N = 60), av. 10.7 \times 4.9 μm , smooth by LM, poroid-reticulate by SEM.

Conidiophores on natural substrate, xylocladium-like, upright, mononematous with determinate growth, single, hyaline to red-brown, smooth to roughened, stipe up to 300 μm long, ampullae more or less obovoid, 53–95 \times 27–42 μm . Conidiogenous cells hyaline to pale brown, cylindrical, numerous, very compacted, 6–9 \times 2.5–3 μm , with conspicuous secession scars. Conidia hyaline, ellipsoid, smooth, 5.5–7 \times 1.6–2.6 μm , av. 5.9 \times 2.1 μm . Not cultured.

Host and known distribution. This species has hitherto only been reliably recorded from Rio Grande do Sul (Brazil) and the province Orellana in Ecuador (Hastrup & Læssøe 2009). The species is common in the montane forests of northwestern Argentina, usually it is found on dead trunks of *Enterolobium contortisiliquum* (“Pacará” – Fabaceae) and recently fallen trunks of *Celtis ehrenbergiana* (“tala” – Cannabaceae).

Specimens examined. ARGENTINA. Jujuy Province, dept. Ledesma, Calilegua National Park, Guaraní trail, on dead trunk of “tala”, 7 June 2017, E.B. Sir 1047 (LIL 160937). Salta, dept. Anta, El Rey National Park, road to El chorro de los Loros, 18 May 2023, Sir, Delgado & Medina 1286 (LIL 160948); Tucumán Province, dept. Juan Bautista Alberdi, Escaba, 8 June 2015, Sir & Hladki 989 (LIL 160929); dept. Tafí viejo, Sierra de San Javier Park, Cumbre de Taficillo, road to Nina Velardez, El Balcón, 24 May 1999, Hladki 2505 (LIL 160949), Hladki 2524 (LIL 160950); 20 August 1999, Hladki 2645 (LIL 160951), Hladki 2657 (LIL 160952); 1 Dec 1999, Hladki 2805 (LIL 160953), Hladki 2807 (LIL 160954), Hladki 2812 (LIL 160955), Hladki 2821 (LIL 160956); dept. Monteros, Reserva Provincial La Florida, on dead trunk of “pacará”, 24 June 2011; Sir & Hladki 497 (LIL 160908); dept. Yerba Buena, Sierra de San Javier Park, Horco Molle, 8 May 2017, Sir 1023 (LIL 160931). BRAZIL. Rio Grande do Sul, Santo

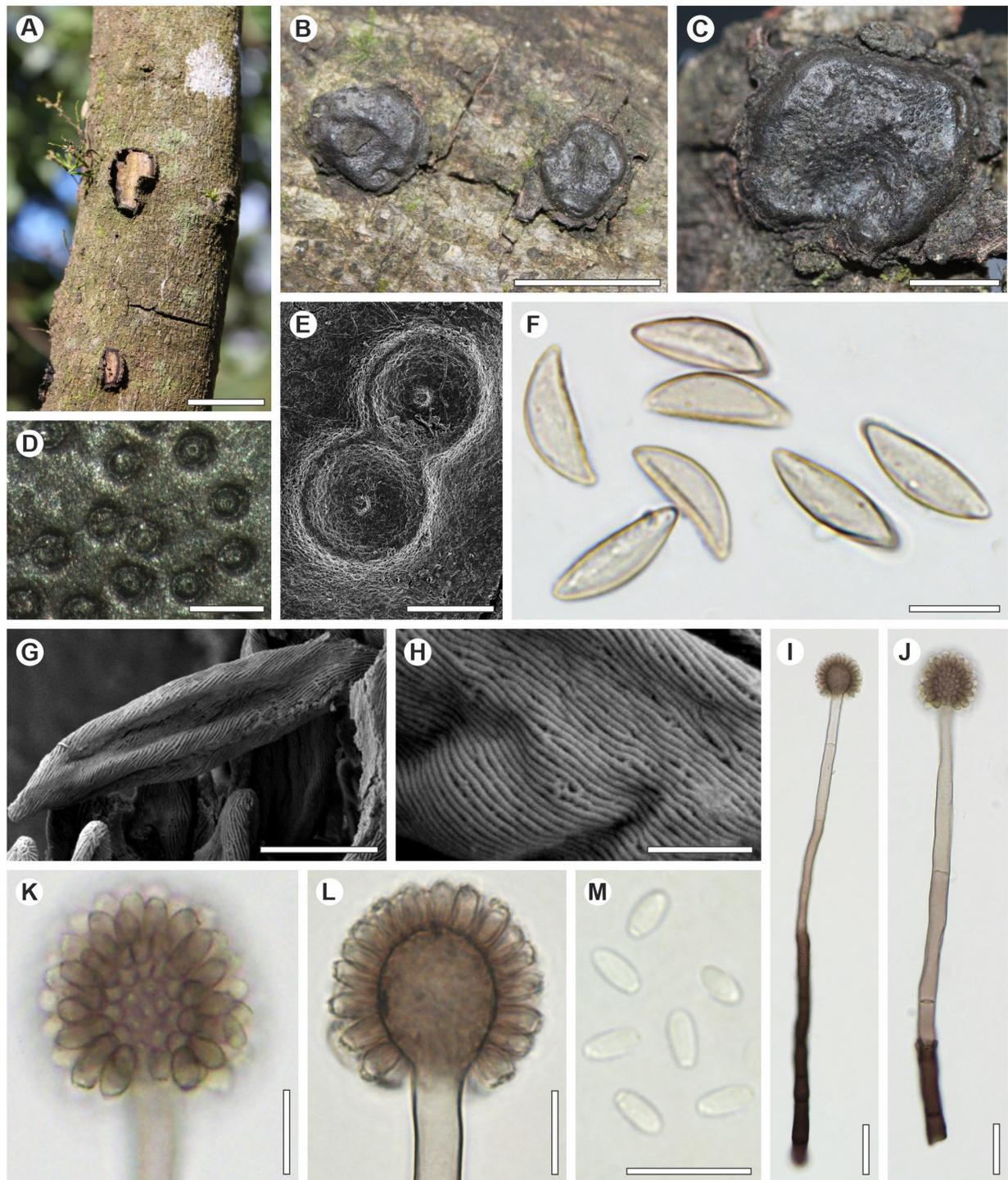


Figure 5. *Camillea coroniformis* (LIL 160922). A – young stromata on substrate; B, C – mature stroma; D – detail of stromatal surface showing raised annulus; E – details of raised annulus by SEM; F – ascospores in 3% KOH; G – ascospore by SEM; H – details of ascospore surface by SEM; I, J – conidiophores in general view; K, L – details of ampullae and conidiogenous cells; M – mature conidia. Scales: A, B = 10 mm; C = 5 mm; D = 500 μ m; E = 50 μ m; F, K–M = 10 μ m; G = 2 μ m; H = 1 μ m; I, J = 25 μ m.

Angelo, 13 January 1893, G. Malme 116 (S, F44581, holotype of *Nummularia flosculosum*).

Discussion. *Camillea flosculosa* is a remarkable species for its peculiarly grouped perithecia and ostioles in discrete depressions – Fig. 6B, C – (Miller 1961). Rogers (1977) described the characteristic ornaments of the ascospores, which are pitted in a reticulate fashion. Our study provides the first description and illustration of its anamorphic structure on the natural substrate (see Fig. 6I–N).

Camillea hainesii (J.D. Rogers & Dumont) Læssøe, J.D. Rogers & Whalley, Mycol. Res. 93(2): 134. 1989. (Fig. 7)

Description. Stromata erumpent through bark, orbicular, applanate to slightly convex, 20–60 \times 20–36 mm, and 0.6–1 mm thick, surface shiny black. Perithecia cylindrical, 0.5–0.8 \times 0.3–0.5 mm, with usually central ostiolar neck. Ostioles conical-papillate, one or two perithecium per ostiole. Asci 8-spored, cylindrical, 85–119 μ m total length, spore-bearing parts 79–95 \times

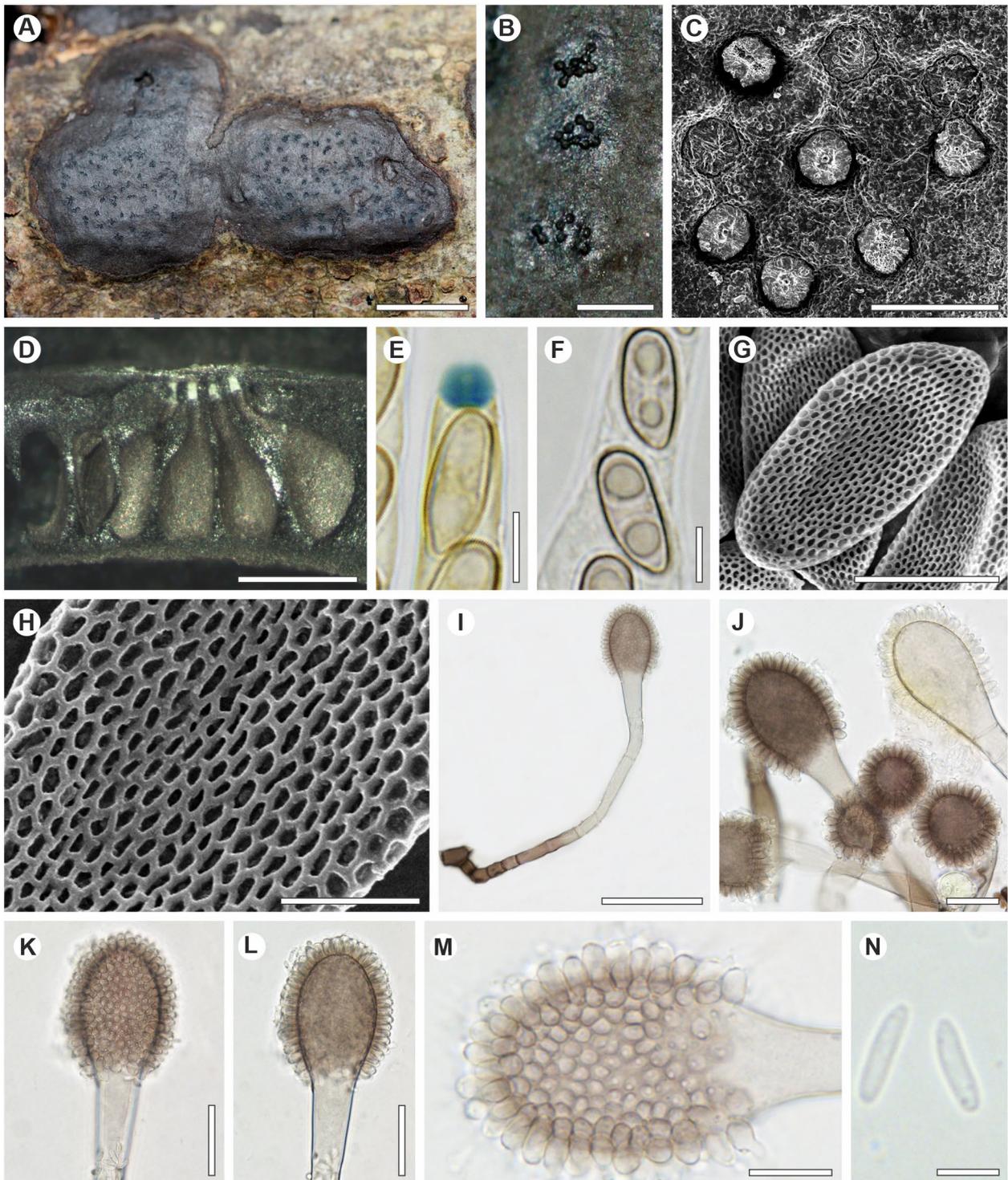


Figure 6. *Camillea flosculosa* (LIL 160937). A – stromata; B – detail of ostioles; C – ostioles by SEM; D – stroma in section showing Perithecia; E – amyloid apical apparatus; F – ascospores in 3% KOH solution; G – ascospore by SEM; H – ascospore surface in details; I – conidiophore; J–L – ampullae with conidiogenous cells; M – ampullae and conidiogenous cells in details; N – mature conidia. Scales: A = 5 mm; B = 300 μ m, C = 100 μ m. D = 1 mm; E–G, N = 5 μ m, H = 1 μ m; I = 50 μ m; J–L = 20 μ m; M = 10 μ m.

4.8–6 μ m, stipe 15–30 μ m long, with amyloid apical apparatus, rhomboid, 2.8–3.2 \times 3–3.4 μ m. Paraphyses septate. Ascospores pale yellow, rectangular oblong, (7.6–)8.1–9.5(–10.4) \times (4.1–)4.5–5(–5.6) μ m (N = 60), av. 8.7 \times 4.8 μ m, smooth by LM, reticulate and punctate by SEM. Conidiophores on the natural substrate, xylocladium-like, upright, mononematous with determinate growth, single, hyaline to pale livid vinaceous, smooth to roughened; stipe up to 240 μ m long; ampullae globose,

11.5–25 \times 9–15 μ m. Conidiogenous cells hyaline to pale brown, cylindrical, numerous, compacted, 6–8.3 \times 3.7–4.8 μ m, with inconspicuous secession scars. Conidia hyaline, ellipsoid, smooth, 3.6–6.4 \times 3–3.3 μ m. av. 4.8 \times 3 μ m. Not Cultured.

Host and known distribution. *C. hainesii* was described from Colombia, dept. Antioquia, (Rogers & Dumont 1979); afterwards, San Martín González & Rogers (1993)

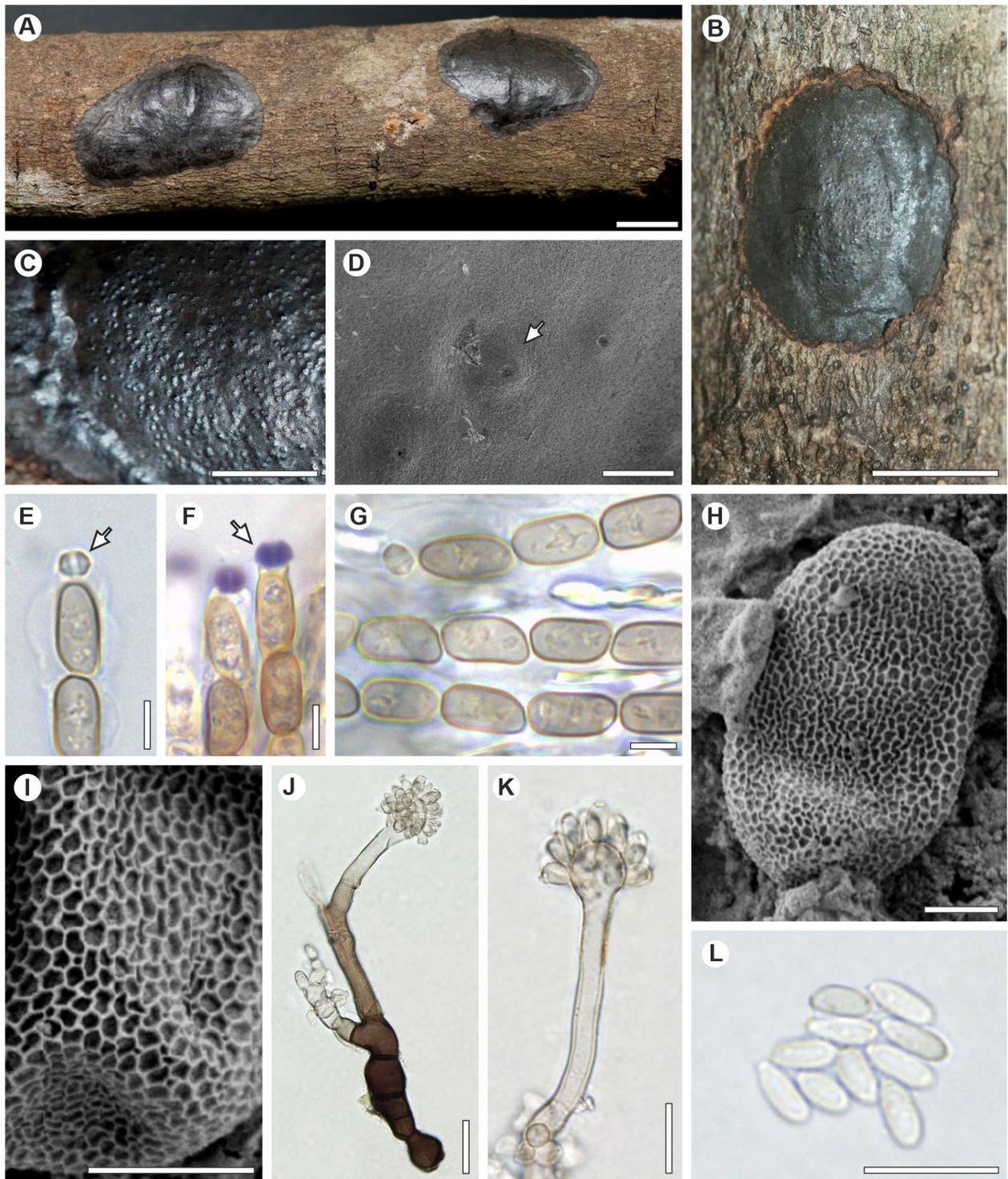


Figure 7. *Camillea hainesii* (LIL 160904). A, B – stromata; C – stromatal surface showing papillate ostioles; D – ostioles papillate by SEM (white arrow); E – ascus apex in 3% KOH solution; F – amyloid ascus apical apparatus; G – ascospores in 3% KOH solution; H – ascospore by SEM; I – detail of ascospore surface under SEM; J, K – conidiogenous structures in general view; L – mature conidia. Scales: A, B = 5 mm; C = 1 mm; D = 100 μ m. E–G = 5 μ m; H and I = 1 μ m; J–L = 10 μ m.

cited this species for Mexico, Minter et al. (2001) for Costa Rica and Hastrup & Læssøe (2009) for Ecuador.

Specimens examined. ARGENTINA. Misiones province, sin data (LIL 160957); Salta province, dept. Santa Victoria, El Nogalar de los Toldos National Reserve, on recently fallen branches of undetermined dicot., 27 Dec 2011, Sir & Hladki 082 (LIL 160904).

Notes. Læssøe et al. (1989) highlighted that *C. hainesii* is very similar to *C. punctulata*, but that it can be separated by the ostiolar shape (papillate vs pitted). *Camillea hainesii* is characterized by having rounded to elongate, plane-convex stromata, papillate ostioles, and rectangular oblong ascospores with punctate-reticulate ornaments by SEM (Rogers & Dumont, 1979). The conidiogenous structure of *C. hainesii* is described and illustrated for first time in this work (see Fig. 7J–L).

Camillea hyalospora (Pat.) J.D. Rogers, Læssøe & Lodge, Mycologia 83(2): 224. 1991. (Fig. 8)

Description. Stromata erumpent through the bark, elliptic or irregularly elongate, slightly convex, 10–28 × 15–25 mm, and 0.9–2.1 mm thick, surface shiny black to dull black. Perithecia ovoid to cylindrical, 0.5–0.9 × 0.3–0.6 mm, usually centras ostiolar neck. Ostioles slightly raised with broad porus, 3–5 perithecium per

ostiole. Asci 8-spored, cylindrical, 220–275 µm total length, spore-bearing parts 210–234 × 7–9.4 µm, stipe 16–40 µm long, with amyloid apical apparatus, diamond-shaped, 3–4.2 × 4.6–5.3 µm. Paraphyses septate. Ascospores hyaline, ellipsoid-inequilateral with attenuated ends, (21.3–)22.8–29.7(–32.7) × 6.5–8.4 µm (N = 60), av. 27.1 × 7.3 µm, smooth by LM, poroid by SEM.

Conidiophores on natural substrate, xylocladium-like; upright, mononematous with determinate growth, single,

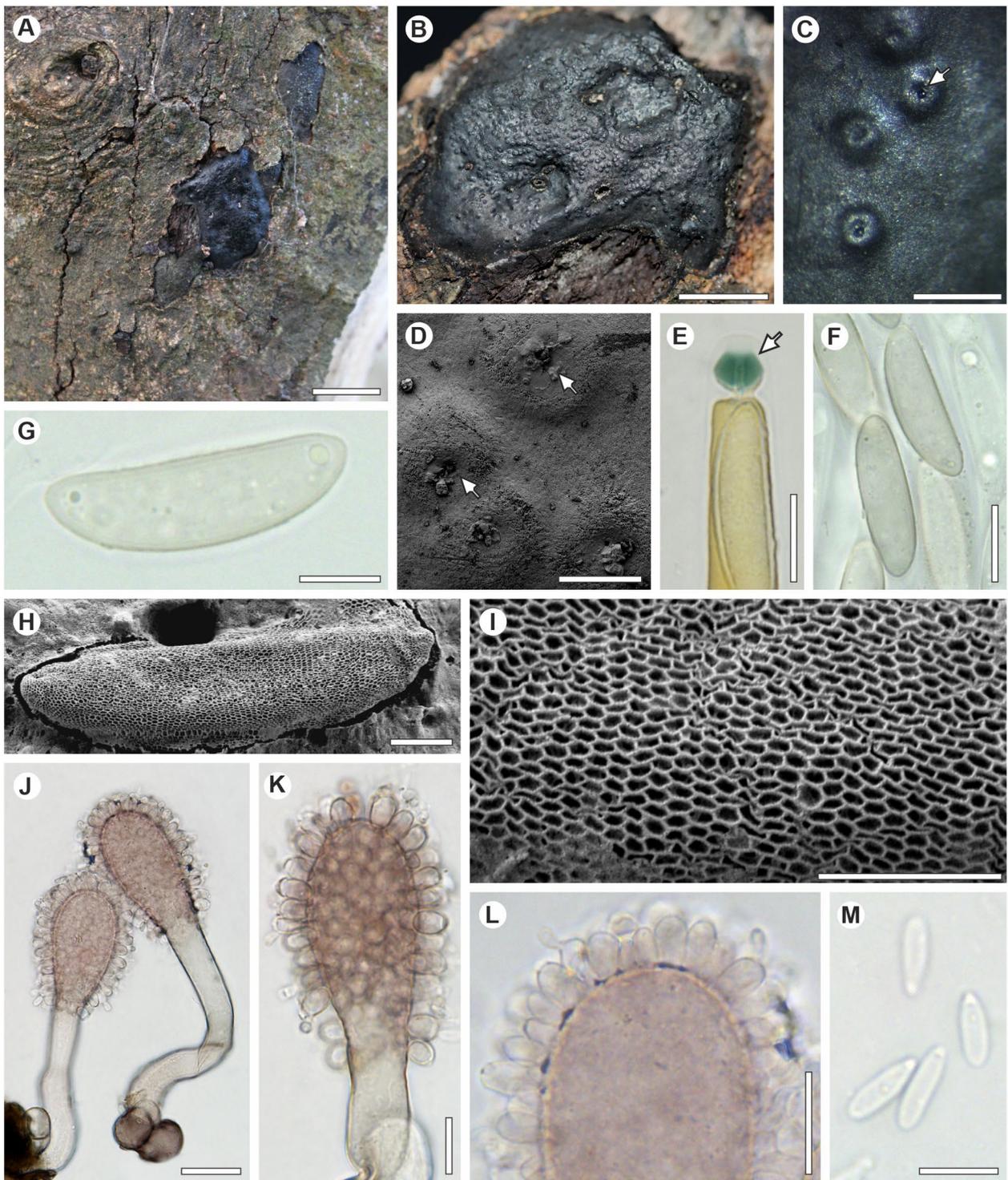


Figure 8. *Camillea hyalospora* (LIL 160930). A – stromata on dead branch of *Morus alba*; B – detail of stroma; C – stromatal surface showing broad porus. D – porus in detail view by SEM; E – Amyloid apical apparatus; F – ascospores in 3% KOH solution. G – ascospores in details; H – ascospore by SEM; I – ascospore surface by SEM; J, K – conidiophores; L – conidiogenous cells; M – mature conidia. Scales: A = 20 mm; B = 5 mm; C = 1 mm; D = 100 µm; E, F, K, L = 10 µm; G, M = 5 µm; H = 2 µm; I = 1 µm.

hyaline to pale livid vinaceous, smooth to roughened; stipe up to 250 μm long; ampullae subglobose, $50\text{--}80 \times 19\text{--}28 \mu\text{m}$. Conidiogenous cells hyaline to pale livid vinaceous, cylindrical to, numerous, compacted, $6\text{--}8.5 \times 2.7\text{--}4.6 \mu\text{m}$, with inconspicuous secession scars. Conidia hyaline, ellipsoid, smooth, $4\text{--}6.5 \times 1.9\text{--}2.6 \mu\text{m}$, av. $5.6 \times 2.3 \mu\text{m}$. Not cultured.

Host and known distribution. This species was recorded from Ecuador, Mexico, USA (Hastrup & Læssøe 2009). The new collections of *C. hyalospora* from “Las Yungas” were found on dead branches of *Morus alba* an exotic, introduces tree in the region, and on indeterminate native liana.

Specimens examined. ARGENTINA. Tucumán Province, dept. Yerba Buena, Sierra de San Javier Park, Horco Molle, on dead branch of *Morus alba*, 8 May 2017, E.B. Sir 1022 (LIL 160930); same locality, Cuesta vieja trail, on dead liana, 27 Nov 2017, E.B. Sir 1088 (160939), E.B. Sir 1090 (LIL 160940); same locality, Funicular trail, on dead branch of *Morus alba*, 27 Nov 2017, Sir 1100 (LIL 160941).

Discussion. Rogers et al. (1991) transferred the species to *Camillea* considered by Miller (1961) to be synonym of *Hypoxylon glycyrhiza*. Previous authors distinguished *C. hyalospora* based in the size of ascospores ($26\text{--}31 \times 5\text{--}9 \mu\text{m}$) and ascus apical apparatus size ($4.5 \times 4.5 \mu\text{m}$). The ornamentation of the ascospore wall by SEM of this species was described by Rogers (1977, as *Nummularia hyalospora*) and its conidiogenous structure was unknown until the present work (see Fig. 8J–M).

Camillea obularia (Fr.) Læssøe, J.D. Rogers & Lodge, Mycologia 83(2): 224. 1991. (Fig. 9)

Description. Stromata erumpent through bark, circular to orbicular, elliptic or irregularly elongate, confluent, slightly convex or concave, $20\text{--}43 \times 11\text{--}22 \text{mm}$, and $1\text{--}1.5 \text{mm}$ thick, surface dark brown to dull black. Perithecia cylindrical to oblong, $0.9\text{--}1.7 \times 0.3\text{--}0.7 \text{mm}$, usually with central ostiolar neck. Ostioles slightly conical-papillate, one perithecium per ostiole. Asci 8-spored, cylindrical, $117\text{--}150.5 \mu\text{m}$ total length, spore-bearing parts $74\text{--}92.5 \times 6\text{--}7.5\text{--}11.5 \mu\text{m}$, stipe $31\text{--}66 \mu\text{m}$ long, with amyloid apical apparatus, partially flared apically to sub apically, rounded basally, $1.3\text{--}2.1 \times 2.9\text{--}3.8 \mu\text{m}$ wide in upper part, $1.5\text{--}2.2 \mu\text{m}$ wide at base. Paraphyses septate. Ascospores dilute yellow to dilute brown, ellipsoid to oblong, attenuated at lower end ($11.0\text{--}11.7\text{--}14.1\text{--}16.0$) \times ($4.6\text{--}4.8\text{--}5.6\text{--}6.0$) μm (N = 60), av. $12.9 \times 5.2 \mu\text{m}$ warty by LM, warty echinulate by SEM.

Conidiophores on natural substrate, xylocladium-like; upright, mononematous with determinate growth, single or branched, hyaline to red-brown, smooth to roughened; stipe up to 450 μm long; ampullae globose to subglobose, $24.1\text{--}36.6 \times 15.4\text{--}21.3 \mu\text{m}$. Conidiogenous cells pale brown, cylindrical, irregularly cylindrical, compacted, $6.4\text{--}12.2\text{--}13.3$) \times $2.7\text{--}4.1 \mu\text{m}$, with conspicuous secession scars. Conidia hyaline, ellipsoid, smooth, $5.1\text{--}8.0 \times 2.3\text{--}3.1 \mu\text{m}$, av. $6.8 \times 2.7 \mu\text{m}$. Not cultured

Host and known distribution. Widely distributed species in America and also cited from Sierra Leone (Læssøe et al. 1989; Hastrup & Læssøe 2009). *Camillea obularia* is found on *Cathormion dinklagei* (Fabaceae), *Delonix regia* (Fabaceae) and *Mangifera indica* (Anacardiaceae) (Læssøe et al. 1989; San Martin Gonzales & Rogers 1993). In northwest Argentina, it is found on dead fallen branches of *Anadenanthera colubrina* var. *colubrina* (Fabaceae), “cebil”.

Specimens examined. ARGENTINA. Jujuy province, dept. Ledesma, Calilegua National Park, La Lagunita trail, 7 June 2017, on dead branches of *Anadenanthera colubrina*, E.B. Sir 1045 (LIL 160935); same locality, camping, on dead branch of *A. colubrina*, 15 May 2023, E.B. Sir, D.O. Delgado & P.V. Medina 1263 (LIL 160946). Salta province, dept. Gral. José de San Martín, Acambuco Provincial Reserve, 22 May 2015, on dead branch, Sir & Hladki 953 (LIL 160926); dept. Orán, road to Islas de Cañas, on dead branches of *A. colubrina*, 23 May 2015, Sir & Hladki 951 (LIL 160924) Sir & Hladki 955 (LIL 160928). Tucumán province, dept. Chichigasta, El Cochuna Provincial reserve, ruta nac. 331, Camping Samay, 1020, 14 August 1999, Hladki 2592 (LIL 160958); dept. Monteros, La Florida Provincial Reserve, 15 May 2024, E.B. Sir, R.O. Delgado & P. del V. Medina 1255 (LIL 160959) and 1257 (LIL 160970); dept. Tafi Viejo, Sierra de San Javier Park, Cumbres de Taficillo, road to Nina Velardez, El Balcón, 1090 m.s.m., 24 May 1999, Hladki 2524 (LIL 160959). BRASIL, São Paulo, Guarapí, Plantae, troncos, B. Balansa, 7/1881 (LPS6695, as *Nummularia guaranitica*).

Discussion. *Camillea obularia* is mainly characterized by thick, erumpent stromata, with ostioles indistinct to distinctly papillate and ellipsoid to oblong warty ascospores, warty echinulate by SEM (Læssøe et al. 1989, as *Camillea broomeiana*).

Camillea punctulata (Berk. & Ravenel) Læssøe, J.D. Rogers & Whalley, Mycol. Res. 93: 143. 1989.

(Fig. 10)

Description. Stromata erumpent through bark, orbicular, appanate to slightly convex, $12\text{--}45 \times 12\text{--}20 \text{mm}$, and $0.8\text{--}1 \text{mm}$ thick, surface shiny black. Perithecia usually cylindrical, $0.4\text{--}0.7 \times 0.3\text{--}0.5 \text{mm}$, with central or eccentric ostiolar neck. Ostioles uniformly distributed, punctate, conspicuous, with 3–5 perithecium per ostiole. Asci 8-spored, cylindrical, $80\text{--}121 \mu\text{m}$ total length, spore-bearing parts $60\text{--}75 \times 5\text{--}6.8 \mu\text{m}$, stipe $18\text{--}27 \mu\text{m}$ long, with amyloid apical apparatus, blue in Melzer’s reagent, rhomboid, $1.5\text{--}2 \times 3.5\text{--}4 \mu\text{m}$. Paraphyses septate. Ascospores hyaline to dilute yellow, rectangularly oblong, ($6.8\text{--}7.7\text{--}9.6$) \times ($4.2\text{--}5.2 \mu\text{m}$) (N = 60), av. $8.5 \times 4.6 \mu\text{m}$, smooth by LM, reticulate and punctate by SEM.

Conidiophores on the natural substrate, xylocladium-like; upright, mononematous with determinate growth, single, hyaline to pale livid vinaceous, smooth to rough; stipe up to 278 μm long; ampullae subglobose, $15\text{--}28 \times 9\text{--}15 \mu\text{m}$. Conidiogenous cells hyaline to pale livid vinaceous, cylindrical, numerous, compacted $6\text{--}8.3 \times 3.7\text{--}4.8 \mu\text{m}$, with inconspicuous secession scars. Conidia hyaline, ellipsoid, smooth, $5\text{--}7.5 \times 2.3\text{--}3.2 \mu\text{m}$, av. $5.9 \times 2.8 \mu\text{m}$. Not cultured.

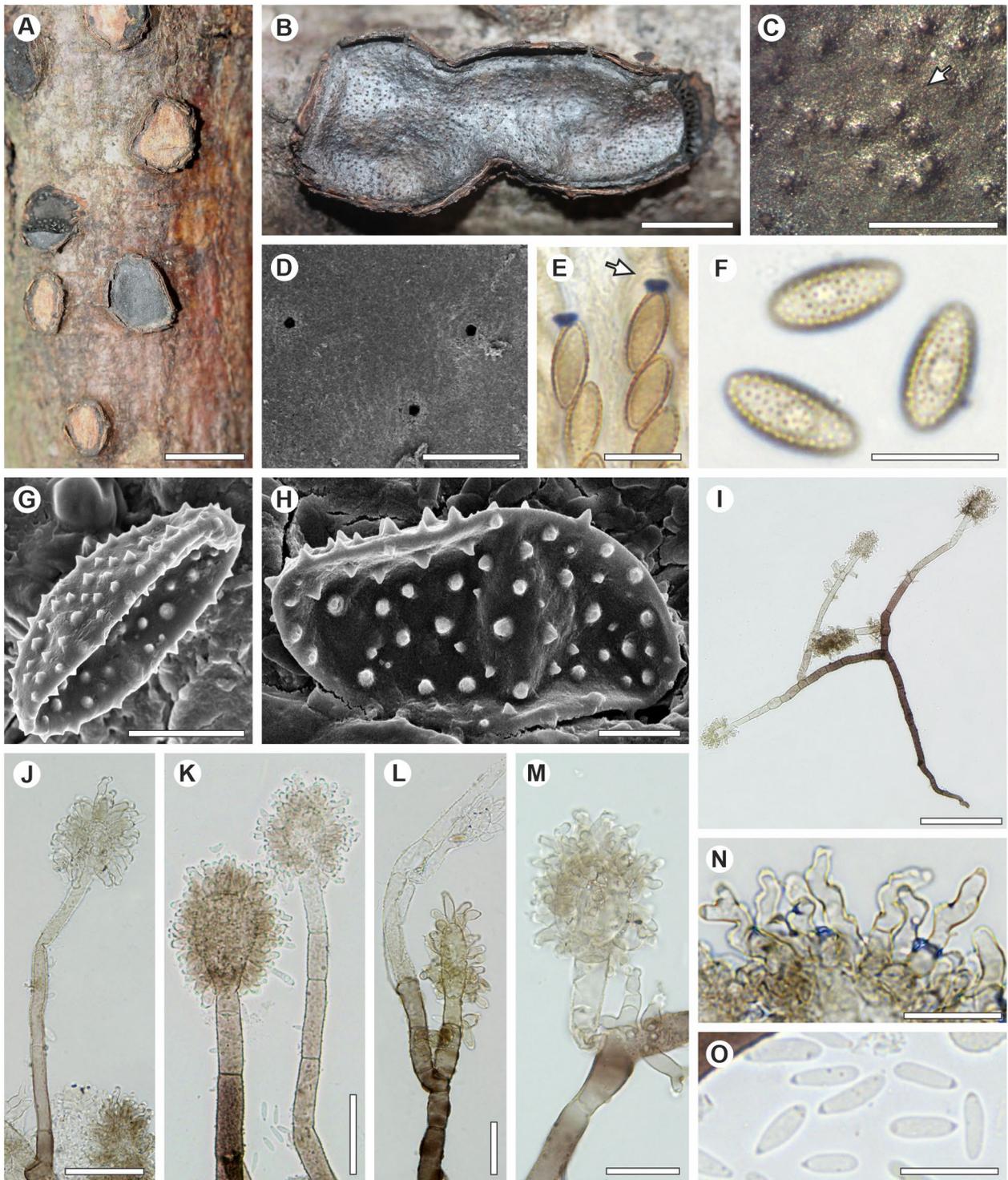


Figure 9. *Camillea obularia* (LIL 160935). A – mature and immature stromata on substrate; B – details of mature stroma; C – stromata surface showing papillate ostioles (arrows); D – ostioles by SEM; E – amyloid ascial apical rings; F – ascospores in 3% KOH solution showing superficial warts; G, H – ascospores by SEM, showing acute ornamentation; I – general aspect of conidiophores; J–M – ampullae and conidiogenous cells; N – conidiogenous cells in details; O – mature conidia. Scales: A = 10 mm; B = 5 mm; C = 1 mm; D = 100 μ m; E, F, L, N, O = 10 μ m; G = 5 μ m; H = 2 μ m; I = 50 μ m; J, K = 20 μ m.

Host and known distribution. *Camillea punctulata* is highly associated with *Quercus* species in North America (Læssøe et al. 1989). The material collected in northwestern Argentina was encountered in the most humid area of the Calilegua National Park on indeterminate decayed wood. The species was previously cited from Mexico (San Martín Gonzáles & Rogers 1993), Paraguay (as *Diatryopsis laccata*) and USA (Læssøe et al. 1989).

Specimens examined. ARGENTINA. Jujuy Province, dept. Ledesma, Calilegua National Park, on decorticated wood, 3 June 2019, Sir 1186 (LIL 160942). FRENCH GUIANA. Upper Marouini River, 2 km N of Oumanfou-Langa Soula; Lat/long Verbaton: 2°53'N, 54°00'W. alt 150 m, on undetermined, recently dead tree, Samuels, G.J.; de Granville, J.-J.; Allorge, L.; Hahn, W., Hoff, M. (5717) on 1987 Aug 12 – 1986 Aug 14, 23 (BPI 884010). USA. Illinois, south of Charleston, Coles Co. woods on near Hall's Ford, on old wood, 14 August

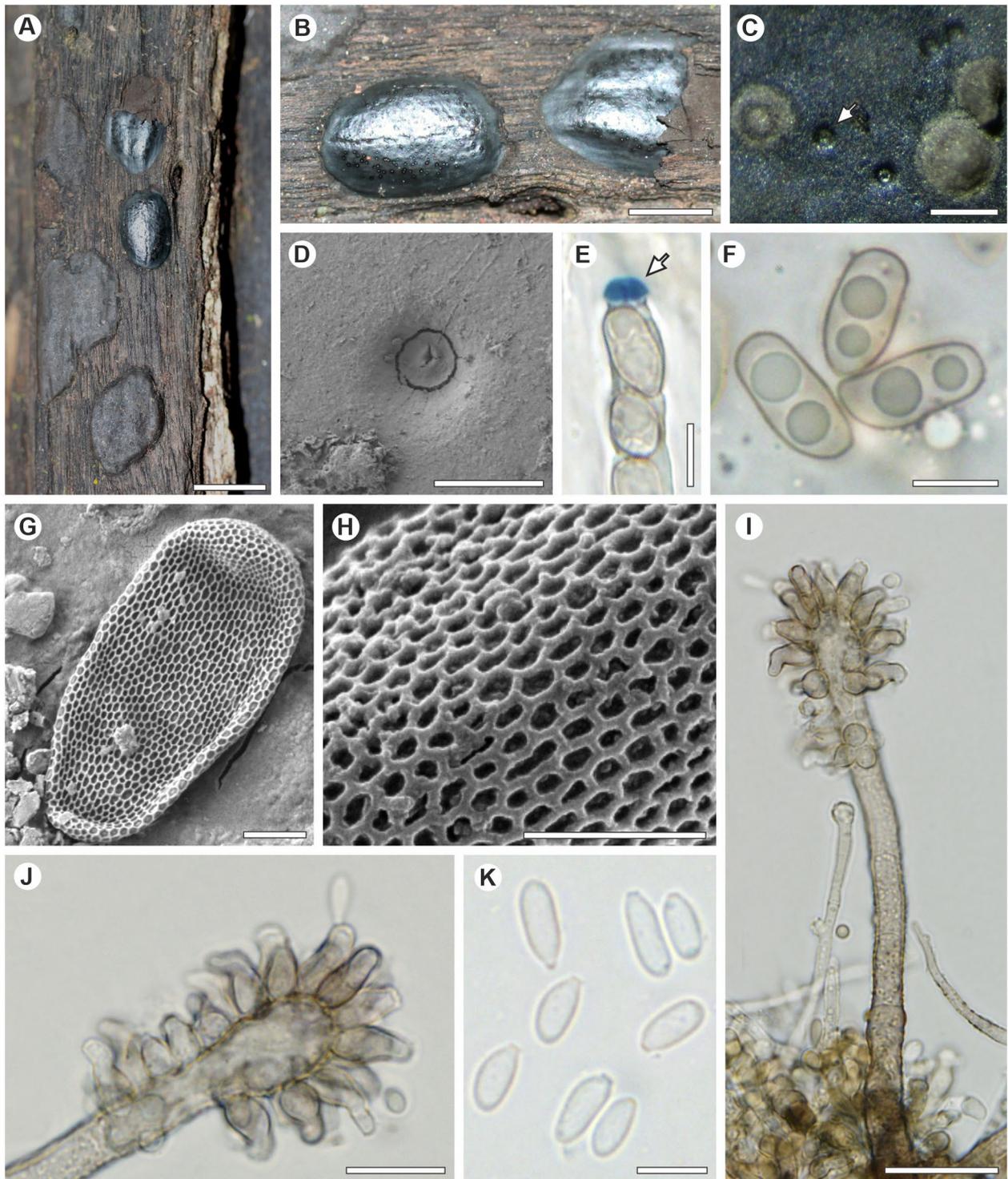


Figure 10. *Camillea punctulata* (LIL 160942). A, B – stromata on substrate; C – ostioles; D – ostioles by SEM; E – amyloid apical apparatus; F – ascospore; G – ascospore by SEM; H – ascospore surface by SEM; I – conidiophore; J – ampulla and conidiogenous cells in details; K – mature conidia. Scales: A = 20 mm; B = 10 mm; C = 200 µm; D = 100 µm; E, F, K = 5 µm; G, H = 1 µm; I = 20 µm; J = 10 µm.

1965, W.B. & B.G. Cooke 35375 (NY 00461097, as *Hypoxylon punctatum*).

Discussion. This fungus is characterized effused stromata with punctate ostioles, rectangularly oblong ascospores, 7–9 × 3–4 µm and a poroid spore ornamentation with pronounced papillate superstructure (Læssøe et al. 1989). The specimens from Argentina have the typical features of the species but with wider ascospores (4.2–5.2 vs 3–4 µm).

Camillea signata (S.C. Jong & C.R. Benj.) Læssøe, J.D. Rogers & Whalley, Mycol. Res. 93: 149. 1989.

(Fig. 11)

Description. Stromata erumpent through bark, usually orbicular, rarely elliptic or irregularly elongate, slightly convex or concave, 4–12 mm and 1–1.9 mm thick, surface dark brown to dull black. Perithecia cylindrical to oblong, 0.6–0.85 × 0.4–0.7 mm, with eccentric or central ostiolar neck. Ostioles punctate or slightly conical-papillate with

annulate rim, 1–3 perithecium per ostiole. Asci 8-spored, cylindrical, 106–138 μm total length, spore-bearing parts 80–91 \times 6.5–8.5 μm , stipe 20–54 μm long, with amyloid apical apparatus, partially flared apically to sub apically, rounded basally 1.8–2.8 \times 2.7–3.6 μm . Paraphyses septate. Ascospores pale yellow, ellipsoid to oblong, attenuated at lower end (9.1–)9.8–11.6(–13.0) \times (4.7–)5.3–6.4(–7.6) μm (N = 60), av. 10.8 \times 5.9 μm , warty by LM, warty-echinulate by SEM.

Conidiophores on natural substrate, xylocladium-like, upright, mononematous with determinate growth, single, hyaline to red-brown, smooth to roughened; stipe up to 350 μm long; ampullae subglobose to more or less cylindrical, 26.6–30.3 \times 10.2–16.2 μm . Conidiogenous cells pale brown, cylindrical, irregularly cylindrical, compacted, 5.0–7.6(–8.4) \times 3.2–5.8 μm , with conspicuous secession scars. Conidia hyaline, ellipsoid, smooth,

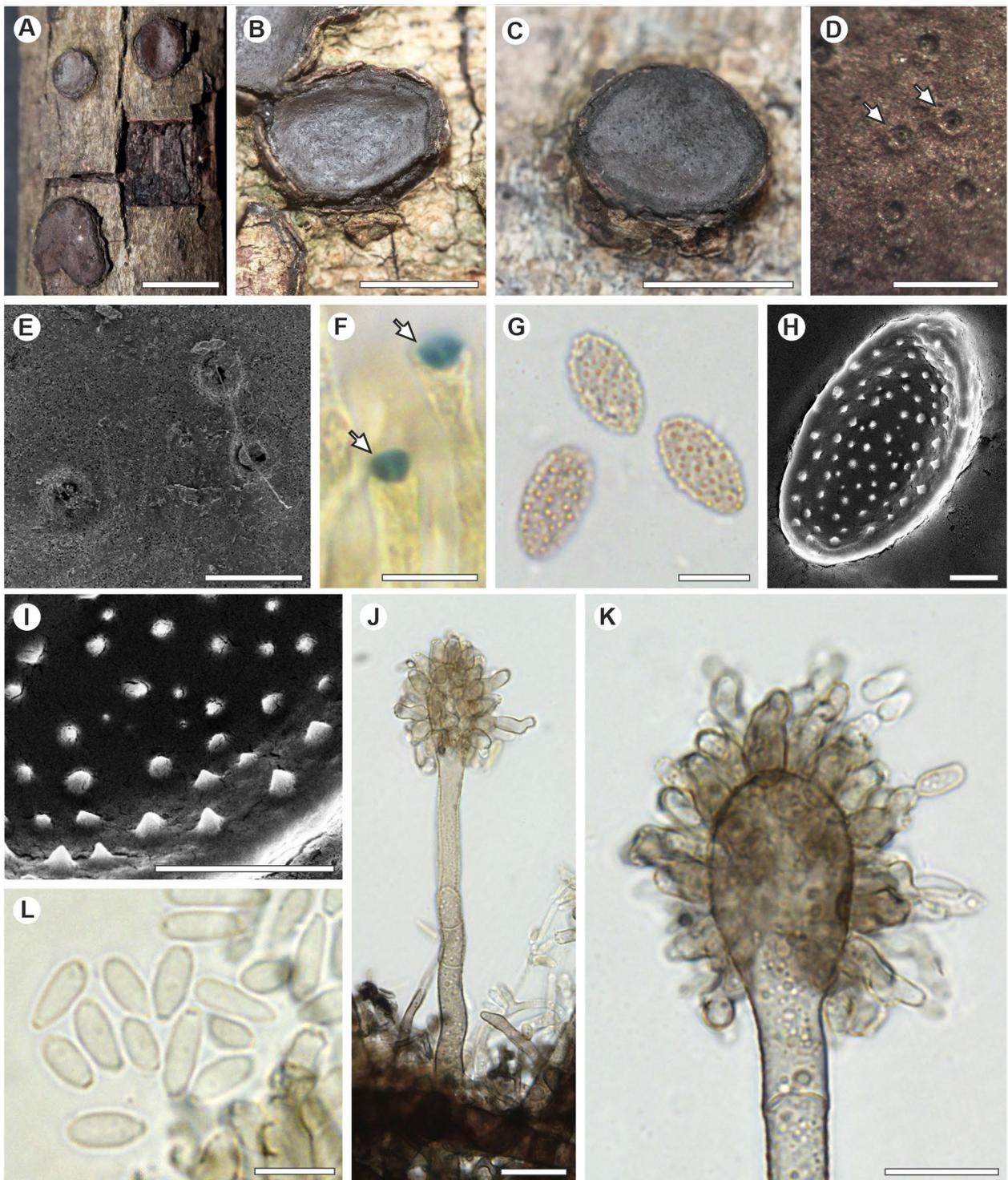


Figure 11. *Camillea signata* (A, LIL 160909; B–L, LIL160936). A–C – stromata; D – stromatal surface showing ostioles (arrow); E – ostioles by SEM; F – apical apparatus in Melzer reagent; G – ascospores in 3% KOH solution; H – ascospore by SEM; I – ascospore surface by SEM; J – conidiophore; K – ampulla and conidiogenous cells; L – mature conidia. Scales: A = 10 mm; B, C = 5 mm; D = 200 μm ; E = 100 μm ; F, G, L = 5 μm ; H, I = 2 μm ; J, K = 10 μm .

(4.9–)5.5–7.5(–8.9) × 2.2–3.7 μm, av. 6.7 × 2.9 μm.
Culture: unknown.

Habitat and known distribution. This species is commonly found in Arkansas, Louisiana, Mississippi, Missouri and Texas – USA, on different hosts, e.g., *Celtis*, *Gleditsia*, *Quercus* and *Ulmus* (Jong & Benjamin 1971). In northwestern Argentina, it is associated with *Celtis ehrenbergiana* (*Cannabaceae*) and *Gleditsia amorphoides* (*Fabaceae*).

Specimens examined. ARGENTINA. Jujuy province, dept. Ledesma, Parque Nacional Calilegua, on dead branches of *Gleditsia amorphoides*, 26 April 2014, Sir & Hladki 636 (LIL 160909); same locality, La junta trail, on dead trunk probably *Gleditsia amorphoides*, 27 April 2014, Sir & Hladki 664 (LIL 160910); same locality, La Lagunita trail, on dead trunk of *Gleditsia amorphoides*, 7 June 2017, Sir 1046 (LIL 160936); same loc., road to Tataupa trail, on *Celtis ehrenbergiana*, 4 July 2019, Sir EB 1195 (LIL 160943).

Discussion. This species is very similar to *C. obularia* but it has annulate ostioles instead of conical papillate ostioles (see Fig. 9D, E) and its ascospores are shorter (9.1–13.0 μm; av. 10.8 μm vs 11–16 μm, av. 12.9 μm). Our SEM study shows an ornament very similar to that of *C. obularia* (see Fig. 11H, I). The anamorphic structure of this species is described for the first time here (see Fig. 11J–L).

Camillea tinctor (Berk.) Læssøe, J.D. Rogers & Whalley, Mycol. Res. 93(2): 145. 1989. (Fig. 12)

Description. For description, habitat, known distribution and notes see Daranagama et al. (2018).

Specimens examined. ARGENTINA. Jujuy province, dept. Ledesma, Calilegua National Park, La Lagunita trail, on undetermined dead dicotyledonous branch, 11 May 2012, Sir & Hladki 019 (LIL 160903); same locality, on undetermined dead dicotyledonous branch, 7 June 2017, Sir 1048 (LIL 160938); same locality, Guarani trail, on undetermined dead dicotyledonous wood, 6 June 2017, Sir 1044 (LIL 160934); same locality, Tataupa trail, on dead wood of *Cordia saccelia* (*Boraginaceae*), Sir 1042 (LIL 160932). Salta province, dept. Anta, El Rey National Park, on undetermined dead dicotyledonous wood, 29 May 2015, Sir & Hladki 798 (LIL 160921); dept. Santa Victoria, Los Toldos Provincial Reserve, Hladki sin data (LIL). Tucumán province, dept. Chicligasta, La Florida Provincial Reserve, on undetermined dead dicotyledonous branch, 3 Mach 1998, Hladki 924, 899 (LIL 160964 and LIL 160965); dept. San Miguel de Tucumán, on dead *Platanus acerifolia* (*Platanaceae*), 19 Feb. 2015, Sir & Hladki 788 (LIL 160915); same locality, Botany Garden of Foundation Miguel Lillo, on dead trunk of *Tipuana tipu* (*Fabaceae*), 2 May 2013, E.B. Sir 374 (LIL 160966); same locality, on dead branch of *Ficus maroma* (*Moraceae*), 7 May 2015, Sir & Hladki 793 (LIL 160916); dept. Trancas, La Higuera, Cerro alto de la totora, crossing the river la higuera, on undetermined dead dicotyledonous branch, 23 March 1999, Hladki 2691 (LIL 160968); dept. Yerba Buena, Horco Molle Experimental Reserve, Botany Garden, on dead branch of *Ligustrum lucidum* (*Oleaceae*), 8 May 2015, Sir & Hladki 794 (LIL 160917); same locality, Percy Hill Botany Garden, on dead branch of *Ligustrum lucidum* (*Oleaceae*), 15 August 2021, Sir 1306 (LIL 160969). USA. Florida, 1886, W.W. Calkind s/n (BPI 00181509).

Key to the species of *Camillea* occurring in “Las Yungas” of Argentina

- 1 Ascospores yellowish to pale brown, verrucose-echinulate by LM 2
- 1 Ascospores hyaline to pale yellow, without verrucose-echinulate ornamentation 3
- 2(1) Ostioles indistinctly papillate, ascospores on average 12.9 × 5.2 μm *Camillea obularia*
- 2 Ostioles punctate or slightly conical-papillate with annulate rim, ascospores on average 10.8 × 5.9 μm *Camillea signata*
- 3(1) Ostiolles punctate or conical papillate usually located in depressions 4
- 3 Ostioles punctate or conical papillate rarely in depressions 6
- 4(3) Ostioles punctate, grouped in discrete, circular depressions; ascospores ellipsoid to slightly inequilateral, attenuated at one end *Camillea flosculosa*
- 4 Ostioles conical papillate usually located in depressions (one in each), ascospores ellipsoid-inequilateral, attenuated at both ends 5
- 5(4) Up to 10 perithecia per ostiole; ascospores 18–25.2 × 7.2–10.3 μm, av. 21.4 × 8.4 μm . . . *Camillea romeroae*
- 5b Up to two perithecia per ostiole, ascospores 17.9–26 × 5.8–8.0 μm, av. 21.4 × 6.8 μm . . . *Camillea hladkia*
- 6(3) Ascospores more or less rectangular oblong, less than 10 μm long 7
- 6 Ascospores ellipsoid-inequilateral, with narrow to acute ends, more than 11 μm long 8
- 7(6) Ostioles minutely papillate, ascospores 7.6–10.4 × 4.1–5.6 μm *Camillea hainesii*
- 7 Ostioles punctate, ascospores 6.8–9.6 × 4.2–5.2 μm *Camillea punctulata*
- 8(6) Ostioles punctate to somewhat papillate surrounded by a raised annulus, ascospores ellipsoid-inequilateral to falcate, 12.7–16.2 × 4.3–5.8 μm, with tightly packed ornamentation of rods as seen by SEM *Camillea coroniformis*
- 8b Ascospores on average longer and ornamentation different 9
- 9(8) Ostioles slightly raised with broad porus; ascospores 21.3–32.7 × 6.5–8.4 μm, av. 27.1 × 7.3 μm; wood underneath stromata never stained yellow to orange *Camillea hyalospora*
- 9a Ostioles without broad porus; ascospores 12.0–19.0 × 6.0–9.2, av. 15.6 × 7.2 μm, wood underneath stromata usually often stained yellow to orange *Camillea tinctor*

Conclusion

In this first survey of *Camillea* in Argentina, nine taxa were identified in the northwest of the country. Although it was not possible to obtain molecular data from the specimens we studied, the new species – *C. hladkia* and *C. romeroae* – and new records described here, are well-supported by their morphological traits.

Among the taxa recently recorded in the Las Yungas, *C. flosculosa* and *C. obularia* are the most common,

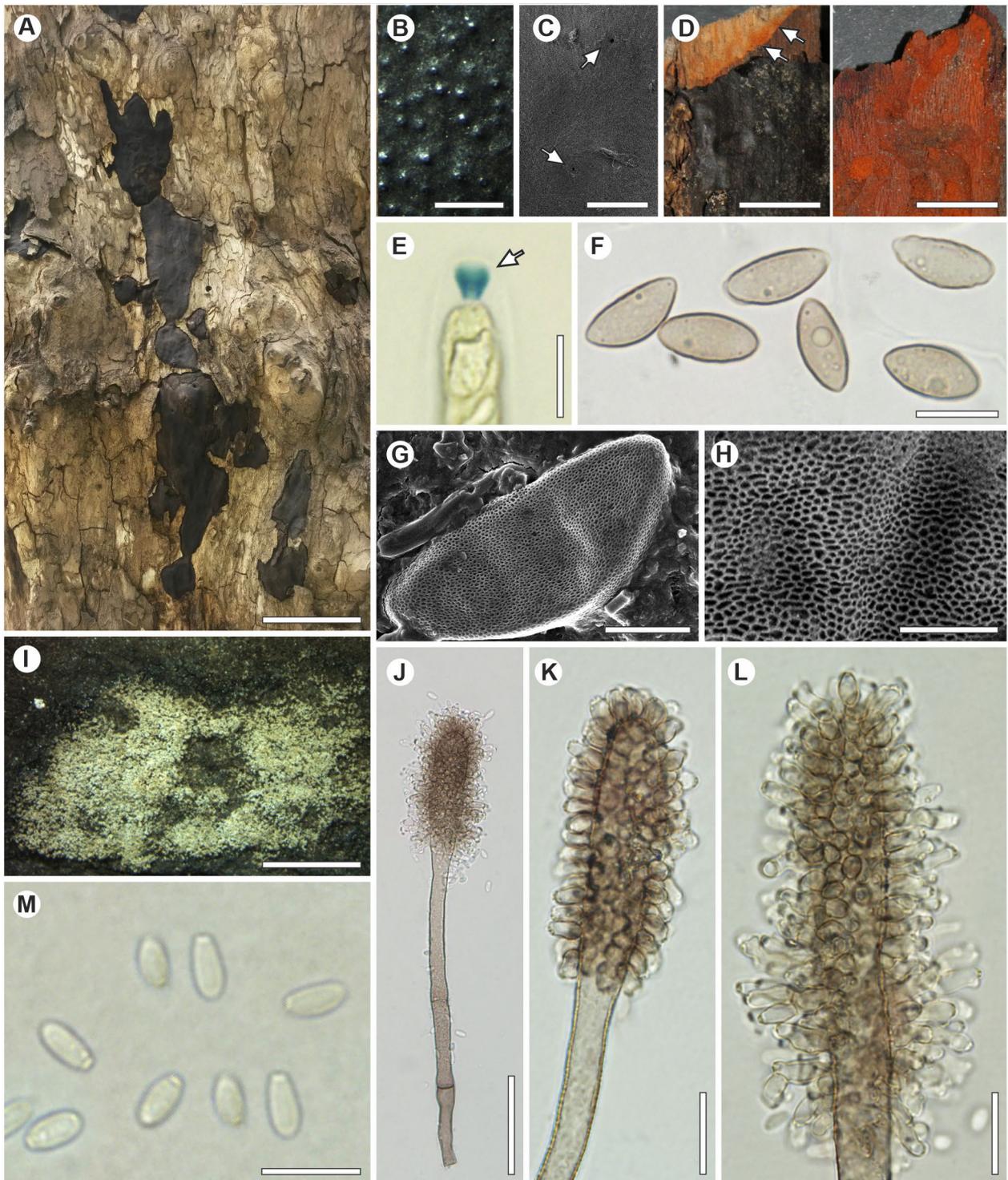


Figure 12. *Camillea tinctor* (LIL 160915). A – stroma on wood of *Platanus acerifolia*; B – stromatal surface showing papillate ostioles; C – detail of ostiole under SEM (arrows); D – wood underneath of stroma showing orange tones (left) and inside of wood showing strong orange stain (right); E – apical apparatus in Melzer’s reagent; F – ascospores in 3% KOH solution; G – ascospore under SEM; H – detail of ascospore surface under SEM; I – anamorph on substrate; J–L – conidiogenous structure; M – conidia. Scales: A = 10 cm; B = 2 mm; C = 500 μ m; D, I = 10 mm; E, F, K–M = 10 μ m; G = 5 μ m; H = 1 μ m; J = 50 μ m.

occurring on native plants of the families *Cannabaceae* and *Fabaceae* in natural areas only. In contrast, *C. tinctor* previously cited from Argentina was found in both urban and natural zones associated with native and exotic species of *Boraginaceae*, *Fabaceae*, *Moraceae*, *Oleaceae* and *Platanaceae*.

Our survey extends significantly the distribution range of *C. coroniformis*, *C. hainesii*, *C. hyalospora*

and *C. signata* to the south of the continent and contributes to knowledge of the asexual morph, substrate preference and diversity of the genus in the South Cone of South America. It is interesting to note that all the recorded species belong to the fairly morphologically simple species in the genus. More erect types, such as the type species, *C. leprieurii*, has only been recorded further north.

Acknowledgements

The authors thank the authorities the Administración de Parques Nacionales of Argentina, Ministerio de Medio Ambiente of Salta Province and the Dirección Provincial de Biodiversidad of Jujuy Province for authorizing the collection. Our warmest thank to the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) and the Fundación Miguel Lillo (FML) for constant support. We gratefully acknowledge support from the curators of BPI, LPS and S herbaria, who provided important specimens for the present study. EBS is thankful to Marc Stadler and Jacques Fournier for their valuable comments and suggestions. The logistics assistance in the mycological expeditions of Rodrigo Delgado and Jorge Salas of the FML is greatly appreciated. This research was partially funded by project PIBAA 1253.

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