SCOTTMORIA CUPELLASTYLA AND *S. STYLIVULCANICA*, TWO NEW TREES OF LECYTHIDACEAE FROM COSTA RICA, AND *S. WOODSONIANA*, A NEW COMBINATION FROM PANAMA

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ABSTRACT

Two new species of medium size to canopy trees of Lecythidaceae from Costa Rica are formally presented: **Scottmoria cupellastyla,** from the Pacific lowlands of the Peninsula de Osa, in the province of Puntarenas; and **S. stylivulcanica,** from the Caribbean lowlands in the province of Limón. The new combination, **Scottmoria woodsoniana** (Dwyer) Cornejo, comb. nov., is here provided for a species known from Panama. The new species are described and illustrated and the relationships with related species are discussed.

RESUMEN

Se describen dos nuevas especies de árboles de talla mediana hasta dosel de Lecythidaceae de Costa Rica: **Scottmoria cupellastyla,** de las tierras bajas del Pacífico de la Península de Osa, en la provincia de Puntarenas; y **S. stylivulcanica,** de las zonas bajas del Caribe en la provincia Limón. Se provee la nueva combinación **S. woodsoniana** (Dwyer) Cornejo, comb. nov. para una especie de Panamá. Las nuevas especies son descritas e ilustradas y se discute sus relaciones con las especies cercanas.

Key Words: Caribbean lowlands, Limon, Mesoamerica, Osa, Puntarenas, stylar ring

INTRODUCTION

Scottmoria Cornejo in Vargas et al. (2024) is a genus of Neotropical Lecythidaceae currently consisting of 42 species of trees ranging from Honduras to Ecuador and Bolivia (Vargas et al. 2024; Cornejo & Prance 2024, submitted). Recent studies in the Lecythidaceae for a Supplement of the family in *Flora Neotropica* (Cornejo in Prance, in prep.) have yielded 12 new species of *Scottmoria* for northwestern South America and Panama (Cornejo 2023a, 2023b; Batista 2024; Cornejo & Prance 2024, 2025, submitted). In this paper, two new species of *Scottmoria* from Costa Rica are formally presented, and a new combination for a species known from Panama from the *Scottmoria integrifolia* complex is here proposed.

MATERIALS AND METHODS

All relevant specimens in the AAU, B, GB, COL, CR, GUAY, K, LOJA, MO, NY, QCA, QCNE, and US herbaria were studied (acronyms follow Thiers 2024). Type collections are recorded with barcodes, the only exception is the isotype of *Scottmoria stylivulcanica* from MO, that is recorded with accession number as it does not yet have a barcode. Measurements are from field observations on fresh material and herbarium specimens, the description of *Scottmoria stylivulcanica* was mostly done by Scott A. Mori. The botanical terms used in the descriptions of the species follow Jackson (1991) and Mori et al. (2015). The preliminary conservation status was determined using the coordinates of the studied specimens, GeoCAT (Bachman & Moat 2012;), and a buffer area of 2 × 2 km, as recommended by IUCN (2022).

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1. Scottmoria cupellastyla Cornejo, **sp. nov.** (**Fig. 1, 2**). Type: COSTA RICA: Puntarenas: Sierpe, Parque Nacional Corcovado, Los Planes, 8°38′35″N 83°40′03″W, 158 m, 7 Apr 2010 (fl), *R. Aguilar 12911* (holotype: NY-1204406!; isotype: NY-02840643!).

***Note.*—**For additional images of fresh material of type collection, see the Lecythidaceae Pages (Mori et al. 2015), and https://www.flickr.com/photos/plantaspeninsulaosa/54477727425/in/photostream/

Diagnosis.*—Scottmoria cupellastyla* has leaves similar to *S. integrifolia* (Ruiz & Pav. ex Miers) Cornejo (2024), but differs by having a more developed tree size (15–40 m tall vs. 5–15 m tall), bark reddish-brown (vs. bark grayish to grayish-beige, often with white spots), the inflorescences mostly ramiflorous arising from leafless branches under the leaves, the rachis more developed (up to 6 cm long vs. inflorescences terminal and subterminal, arising from terminal leafy branches only, and the rachis up to 2 cm long in *S. integrifolia*), floral bracts absent (vs. floral bracts present at least in buds, deciduous), flowers smaller (2.5–3 cm in diam. vs. 4.5–5 cm in diam.), and style thicker, cupular, dome-like when fresh (vs. style cylindric and stout when fresh).

***Description.*—Medium size to emergent trees,** 15–40 m tall, ca. 20–50 cm DBH, buttressed at base. Sapwood unknown. Bark reddish to reddish-brown, fibrose; heartwood unknown. **Leaves** petiolate, the petioles channeled adaxially, rounded abaxially, hemispherical in cross section, 5–13 × 1–1.5 mm, more or less lenticellate, glabrous; blades elliptic to elliptic obovate, 8–15 × 3.5–7 cm, thinly chartaceous, glabrous, dark-punctuate abaxially, the base cuneate, the margins entire, occasionally minutely dentate at apex (*Kernan 1001*), slightly revolute, marginal glands present in young leaves, turning inconspicuous dark-brown dots to short streaks in mature leaves, the apex obtuse to rounded, short acuminate, the acumen up to 1 cm long; venation mostly brochidodromous but sometimes eucamptodromous at base, the midrib somewhat prominent, more or less finely veined and with dark dots to short streaks abaxially, glabrous, the secondary veins in 8–10 pairs, plane to slightly raised adaxially, salient abaxially; the tertiaries veins reticulate, intersecondaries present. **Inflorescences** mostly ramiflorous from leafless branches under the leaves (infrafoliar), and sometimes also axillary and subterminal on terminal leafy branches, unbranched, spicate, the rachis 1–6 cm long, straight to somewhat flexuose, glabrous, sparsely lenticellate; floral bracts absent; pedicels 1–3 mm × 2.5–3 mm, thicker than rachis, truncate at articulation, sulcate, somewhat glossy, verruculose-white-lenticellate, glabrous, drying dark-brown. **Flowers** ca. 4 cm in diam. (fresh), ca. 3 cm diam. (dry); calyx with 6 lobes, the lobes triangular or deltoid to ovate, 1–3 × 2–2.5 mm (fresh), broadly divergent at anthesis, cucullate, ecarinate, faintly coral to yellowish or cream, verruculose-white-lenticellate (fresh) abaxially, glabrous, drying dark-brown, the bases valvate; petals subobovate to ovate, 1.2–2 × 0.8–1.7 cm (fresh), often cream to yellow, sometimes purple, margin revolute; androecial hood with three coils, ca. 1.5–1.7 cm across, yellow, vestigial stamens on outside of coils, staminal ring with ca. 150 stamens, the filaments 1–1.8 mm long (fresh), clavate, the anthers ca. 0.3 mm diam. (fresh); hypanthium swollen, sessile or hypanthium-pedicel tapered from obconical to shortly subcylindric at base, ca. 4 mm long to articulation; the ovary summit raised over hypanthium surrounded by an intrastaminal ring scar; style thickly cupular, dome-like (fresh), with annular ring at base and a rather inconspicuous subapical stylar collar. **Fruits** not seen.

Paratypes.—**COSTA RICA. Puntarenas:** Canton de Osa, R.F. Golfo Dulce, Rancho Quemado, 8°43′00″N 83°34′50″W, 200–350 m, 3 Feb 1994 (fl), *B. Hammel, Morales, Ramírez, R. Aguilar & Garita 19426* (CR, MO, NY); Fila a Cerro Chocuaco, sector sur de Estero Guerra, Sierpe, 8°43′40″N 83°34′20″W, 100 m, 4 Apr 1992 (fl), *J. Marín 444* (CR, MO, NY); Corcovado National Park, Llorona to Los Planes, 8°36′N 83°44′W, 100 m, 25 Mar 1989 (fl), *C. Kernan & P. Phillips 1001* (CR, MO, NY).

Distribution.*—Scottmoria cupellastyla* is known only from the Osa Peninsula in Costa Rica. Flowering plants have been observed from February to April.

Discussion.*—Scottmoria cupellastyla* resembles the South American *S. integrifolia*, a species that occur from western Ecuador to southwestern Colombia, but the new species can be recognized by the characters discussed above in the diagnosis; see also discussion under *S. woodsoniana*.

***Etymology.*—**The epithet refers to the cupular, dome-like style that can be observed in fresh material in this new species.

***Conservation status.*—**Based on georeferenced herbarium data the four collections including the type of

Fig. 1. ***Scottmoria cupellastyla*** **Cornejo. Holotype,** ***Aguilar 12911*****, NY (Image courtesy, The New York Botanical Garden).**

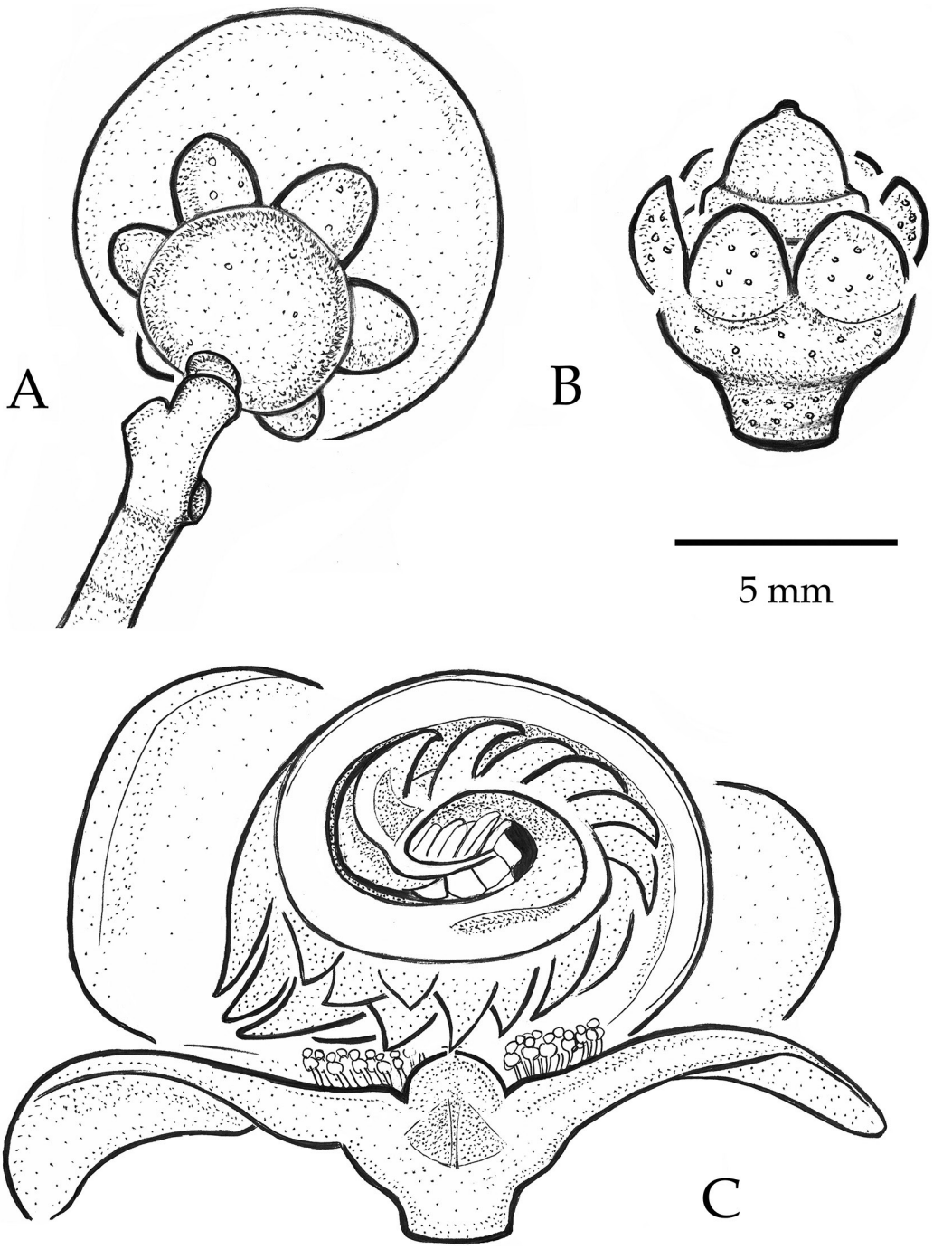

Fig. 2. *Scottmoria cupellastyla* Cornejo. **A**. Rachis and flower bud, abaxial view. **B**. Calyx and pistil at post-anthesis, lateral view. **C**. Medial section of androecial hood exhibiting a triple coil, lateral view (A–C, based on the type, *Aguilar 12911*, NY; drawing by the author).

Scottmoria cupellastyla came from an extent of occurrence of less than 1000 km^2 at the interior of the Osa Peninsula. Therefore, the provisional category of Endangered (EN B2 a, b, i, ii) is assigned to this species following the IUCN (2022) criteria.

2. Scottmoria stylivulcanica S.A. Mori & Cornejo, **sp. nov.** (**Fig. 3**). Type: COSTA RICA. Limón: one hour from San Clemente, 9°48′N 82°57′W, ca. 205 m, 17 Oct 1967 (fl, y fr), *S.A. Mori 349* (holotype: NY-00685492!; isotypes: MO-1964721!, MO-1964722!, NY-00685467!).

Diagnosis.—*Scottmoria stylivulcanica* has leaves similar to *S. calyculata* (Pittier) Cornejo (2024), but differs by having a well-developed habit as a canopy tree ca. 45 m tall (vs. small to medium size tree 5–20 m tall), the calyx lobes are much thicker and smaller (3–3.5 × 3–3.5 mm) than in *S. calyculata* (vs. calyx lobes distinctively larger, 6–10 × 6–10 mm), and petals rose at apex and along margins (vs. petals usually yellow or pale pink to rose with white margins in some populations in Panama).

Description.—**Canopy to emergent trees,** ca. 45 m tall, 3 m DBH, buttressed at base. Sapwood white. Bark light gray, sheds in flakes, scalloped; heartwood red. **Leaves** petiolate, the petioles channeled adaxially, rounded abaxially, hemispherical in cross section, 15–20 × 2.5–4 mm, lenticellate, glabrous; blades oblong to oblanceolate, 18–24 × 5.5–9 cm, coriaceous, glabrous, black-punctuate abaxially, the base cuneate to obtuse, the margins entire, somewhat incurved, revolute, marginal glands present in young leaves, turning inconspicuous dark-brown dots in mature leaves, the apex short acuminate; venation eucamptodromous towards base and brochidodromous towards apex, the midrib rather smooth, prominent, more or less finely veined and with dark dots to short streaks abaxially, glabrous, the secondary veins in 10–15 pairs, plane to slightly raised adaxially, salient abaxially; the tertiaries veins reticulate, intersecondaries present. **Inflorescences** axillary and terminal (suprafoliar), unbranched, spicate, the rachis 8–12 cm long, straight to somewhat flexuose, glabrous, sparsely lenticellate; floral bracts apparently absent; pedicel/hypanthium 4 mm long, thick, cylindric, truncate at articulation, not sulcate, glabrous, scarcely lenticellate, drying black. **Flowers** ca. 4 cm in diam. (fresh), ca. 3 cm diam. (dry); calyx with 6 lobes, the lobes ovate to broadly ovate, 3–3.5 × 3–3.5 mm, broadly divergent at anthesis, carinate, yellow, glabrous, drying black, the bases imbricate; petals subobovate to ovate, ca. 1.5–2 × 1–1.5 cm (fresh), rose at apex and along margins, cream colored at base; androecial hood with three coils, ca. 1.5–1.7 cm across, pink to rose, vestigial stamens and stamens not seen; pedicel shortly subcylindric, 3–5 mm long to articulation; the ovary summit raised over hypanthium surrounded by an intrastaminal ring scar; style thick, volcano-like in shape, with a stylar ring at base and a narrower slightly salient stylar collar at apex. Immature **fruits** 2–2.5 × 2–3 cm (based on a single immature fruit at NY), short-cylindric and oblate-subglobose, the infracalycine zone approximately one third of length of fruit, broadly tapered from calycine ring to pedicel, the calycine ring with expanded, woody calyx-lobes, the supracalycine zone straight upwards, the operculum occupying ca. one-third of fruit length, convex, without a developed umbo, apical pore present, the pericarp rough, lenticellate, reddish-brown. Seeds ca. 3 per fruit; aril not known.

Distribution.—*Scottmoria stylivulcanica* is known only from the type locality, in the Caribbean lowlands of Limón, in wet forest. Flowering plants have been observed in October.

Discussion.—Since 1977 the type collection (*S.A. Mori 349*) was determined by Scott A. Mori as *S. calyculata*, a species of similar vegetative appearance from Costa Rica and Panama, but in 2006 was provisionally identified and recorded in The Lecythidaceae Pages by Mori himself as "*Eschweilera spacostarica ined.*" (Mori et al. 2015), the latter presumed epithet that means "species a from Costa Rica" (because in LP there is a species b from Costa Rica also) was not proposed as real epithet to be used as a scientific name, but was labelled as: "a temporary designation until more material is collected" (fide determination label by S.A. Mori on NY's holotype and isotype). 58 years have passed since the type was collected in 1967 and additional material has not been found to the present, so now with an updated knowledge on *Scottmoria* and for conservation purposes the author think it is appropriate to formally recognize this species as a new taxon. *Scottmoria stylivulcanica* is a canopy tree ca. 45 m tall, and the sepals are much thicker and smaller (3–3.5 × 3–3.5 mm) than in *S. calyculata* (vs. smaller tree 5–20 m tall, the calyx lobes 6–10 × 6–10 mm). Furthermore, *S. stylivulcanica* has petals rose at apex and along margins, and cream colored at base (vs. petals usually yellow or exceptionally pale pink to rose with white margins in some populations in Panama, e.g. *Toribio 78*, NY, SCZ). Variability

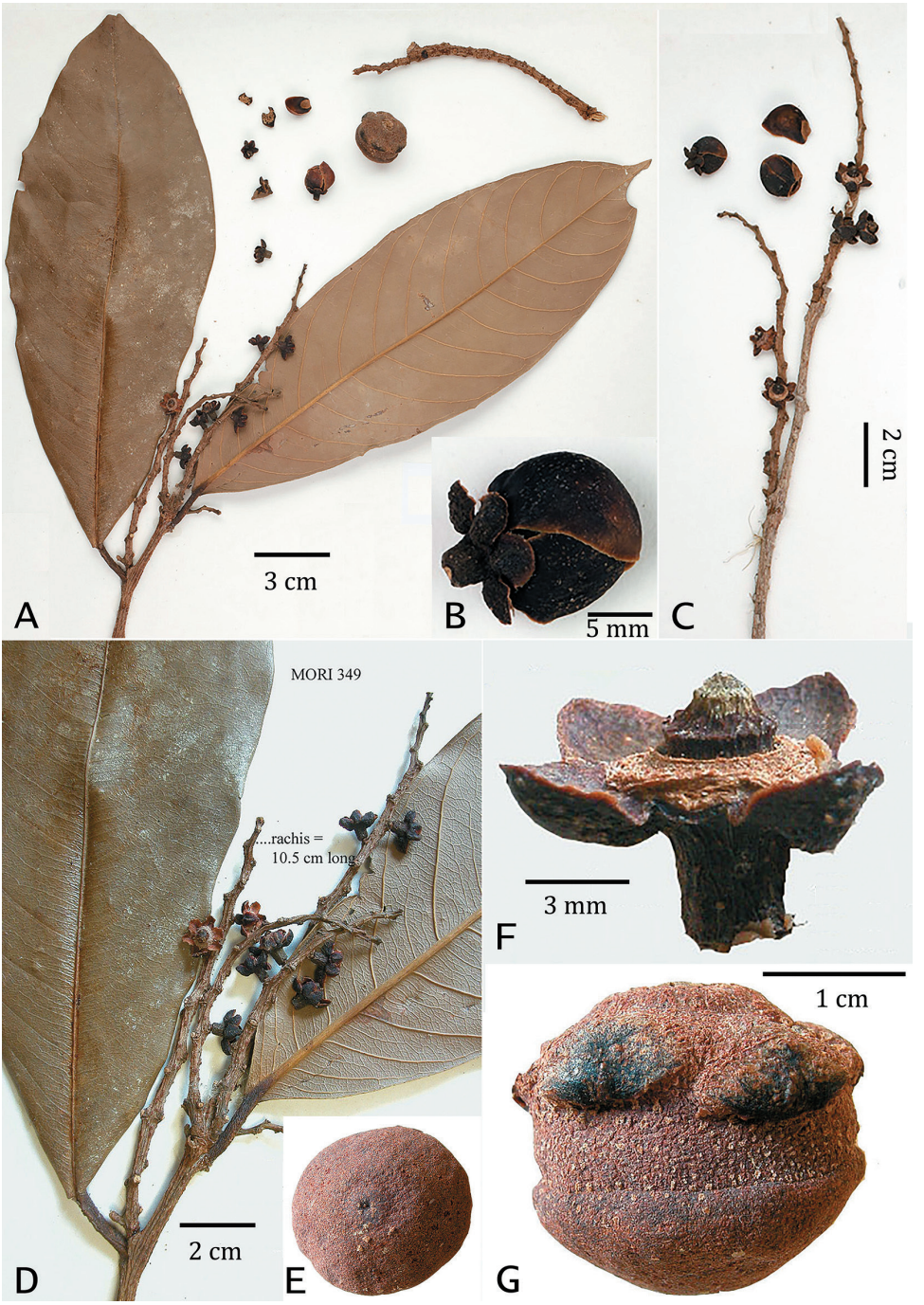

Fig. 3. *Scottmoria stylivulcanica* S.A. Mori & Cornejo. **A**. Leafy terminal branch and inflorescences at post-flowering. **B**. A flower bud, lateral view. **C**. Terminal branch with rachis of inflorescences at post-flowering and detached flower buds. **D**. Close up of leafy terminal branch and inflorescences at post-flowering. **E**. Operculum, abaxial view. F. Calyx and pistil at post-flowering, note the volcano-like style, lateral view. **G**. Immature fruit, lateral view (A–G, based on the type, *Mori 349*, NY. Photos: D–G, by Scott Mori; Images courtesy, The New York Botanical Garden).

in the color of flowers from white or yellow to pink, rose or purple has been observed but in separate individuals (such variability has been never observed in a same individual) of some species of *Scottmoria* by the author (e.g., the case of *S. integrifolia* in coastal Ecuador) and at present that is not regarded as a sole character strong enough to recognize those individuals with flowers of pink to rose petals as a new species separate from *S. calyculata*, as has been previously regarded in a molecular tree (Vargas et al. 2024, fig. 1 B as "*Scottmoria sp. nov. L 538*" based on *Toribio 78*, that in my concept refers to *S. calyculata*). Moreover, the flowers of *S. stylivulcanica* that have petals rose at apex and along margins as described in detail in the label of the type collection (*Mori 349*), as "petals rose at the tips and edges, cream colored at base …" display a different color design in contrast to *Toribio 78*, that is the reason why the color of petals of *S. stylivulcanica* is mentioned as an secondary additional difference from *S. calyculata*. Further field observations on the color of petals in the populations of these species in Costa Rica and Panama is recommended. The stylar ring of *S. stylivulcanica* is an annular crest at base of style, that is a rather uncommon feature in *Scottmoria*. The stylar collar that is sometimes present in some species in this genus (e.g., *S. magnifolia*, also in some other Neotropical Lecythidaceae) is always located right under the stigma at the upper part of style, that is also present although not expanded in *S. stylivulcanica* (fig. 3: F). Therefore, in this work the author does not interpret the stylar ring as a second stylar collar of basal position, and follow the term stylar ring, as previously used by Scott Mori in an illustration of *Mori 349*, the type collection of this new species in the Lecythidaceae Pages, available in this link https://sweetgum.nybg.org/science/projects/lp/taxon-details/?irn=217032

Etymology.—The epithet refers to the distinctive volcano-like thick style that can be observed in this new species in dry material (fig. 3: F).

Conservation status.—The only collection came from a remnant tree in disturbed wet forest on well-drained soil (Mori et al. 2015). Based on georeferenced herbarium collections, the occurrence of *Scottmoria stylivulcanica* in only one locality since 1967 allows us to assign to it here the provisional category of Critically Endangered (CR B2 a, b) following the IUCN (2022) criteria.

3. Scottmoria woodsoniana (Dwyer) Cornejo, **comb. nov.** (**Fig. 3**). *Eschweilera woodsoniana* Dwyer, Ann. Missouri Bot. Gard. 52(3):362, fig. 8. 1965. Type: PANAMA: Darién: wooded ridge S of El Real, ca. 8°06′N 77°43′W, ca. 25 m, 22 Jun 1962 (fr), *J. Duke 5062* (holotype: MO-1817078!; isotype: US-2479998!).

This species has previously been regarded as a synonym of *Eschweilera integrifolia* (Ruiz & Pavon ex Miers) R. Knuth (1939: 97) (Mori & Prance 1990). The increase of field work involving accurate collections with the respective field images of *Scottmoria integrifolia* during past two decades including from the type area and five additional populations throughout coastal Ecuador by the author and in several populations in Panama by Juvenal Batista and by several other collectors, and Reinaldo Aguilar mainly in the Peninsula de Osa, Costa Rica, have yielded a considerable amount of information that lead us to be aware that we (Scott Mori and the author) were dealing with a complex of several morphologically and vegetatively similar species from coastal Ecuador northwards to the Peninsula de Osa on the Pacific coast of Costa Rica. Duplicates of many of these specimens are housed in NY herbarium, listed in the Lecythidaceae Pages, and in a very broad sense gathered together under the name of *S. integrifolia*. After obtaining anatomic details of size and structure of inflorescences, calyx, androecial hood of flowers, style, fruits, and spreading sarcotesta of *S. integrifolia* from the type area by the author, it was clear that *S. integrifolia* does not occur in Panama neither Costa Rica, and this led to the recognition of *S. garagarae* (Cornejo & Prance 2025), *S. woodsoniana* from Panama, and *S. cupellastyla* from Costa Rica (op. cit.) as three species that must be segregated from the *S. integrifolia* complex. *Scottmoria woodsoniana* can be recognized by its low tree habit, 3–8 m tall, unbuttressed at base, soft wood, maroon bark, leaf blades with obtuse to rounded or truncate base and shortly acuminate apex, pedicel-hypanthium 3–6 mm long, calyx lobes imbricate (e.g., *Duke & Bristan 318* (US), *Batista et al. 1455* (NY)), petals lilac to burgundy, androecium with a triple coil, style thickly columnar, fruit small, up to 2.5 × 6 cm, brown-chocolate, infra-calycine zone poorly developed, truncate or nearly so from calycine ring to pedicel/hypanthium, sepals persistent ca. 1 mm long in fruit, and small seeds, 2–2.5 cm long at maturity. Additional field work undoubtedly will provide further information of this poorly known species.

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