



Scottmorium umbonata sp. nov. (Lecythidaceae) from Panama's Caribbean rainforests

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Abstract

A new species, *Scottmorium umbonata*, from wet Caribbean forests on the slopes of Sierra Llorona, Province of Colón, Panama, is described and illustrated. We provide a comprehensive description of the new taxon, discuss its affinities with similar species, and include line drawings, field photographs, a distribution map, and a preliminary conservation status assessment.

Key words: *Bertholletia* clade, Endemism, *Scottmorium* complex, Sierra Llorona, Taxonomy

Resumen

Se describe e ilustra una nueva especie, *Scottmorium umbonata*, proveniente de los bosques húmedos del Caribe en las laderas de Sierra Llorona, Provincia de Colón, Panamá. Se proporciona una descripción detallada del nuevo taxón, se discuten sus afinidades con especies similares y se incluyen ilustraciones botánicas, fotografías de campo, un mapa de distribución y una evaluación de su estado de conservación preliminar.

Palabras clave: Clado *Bertholletia*, Endemismo, complejo *Scottmorium*, Sierra Llorona, Taxonomía

Introduction

The Caribbean slope of Panama stands as one of the nation's most extensive forested regions, distinguished by its exceptional biodiversity and high degree of endemism (Batista & Mori 2017, Ortiz & Croat 2017). This region maintains a profound floristic affinity with South American forests, from which it likely diverged following the uplift of the Andes and the subsequent closure of the Central American land bridge (Mori *et al.* 2017). Within this vast Caribbean landscape, the Sierra Llorona area, located in the Province of Colón, represents an area of critical biological significance defined by its very humid forests. This area plays a vital role within the Mesoamerican Biological Corridor, as it facilitates ecological connectivity between key protected areas, including Chagres, Portobelo, and Soberanía National Parks, as well as Gatún Lake (SOMASPA 2019, Guevara 2021).

Despite its strategic importance, the Caribbean lowlands rainforests of this region remain woefully underexplored (Almeda & Penneys 2018). This lack of scientific knowledge is particularly alarming given that the Sierra Llorona area is increasingly threatened by human activities. The expansion of settlements, road infrastructure, hunting, and logging are directly responsible for the significant fragmentation of its habitats (SOMASPA 2019, Guevara 2021). This degradation severely impacts mature rainforests where Lecythidaceae species of the genera *Scottmorium* Cornejo (in Vargas *et al.* 2024: 172) and *Eschweilera* Mart. ex Candolle (1823: 293) reside. According to Batista & Mori (2023), these forests have been heavily exploited since the 1970s; tragically, several individuals of the species *Eschweilera foetulenta* S.A.Mori & J.E.Bat. (2023: 319) were reported as felled shortly after the botanical specimens were gathered for study.

Recently, *Scottmorio* was segregated from *Eschweilera*, a reclassification based on phylogenetic analyses of plastome and target sequence capture data (Vargas *et al.* 2024). *Scottmorio* species are characterized as understory or canopy trees of humid to wet forests, flowers with an androecial hood with a 3 to 4-coil and seeds with a complete and conspicuous sarcotesta or inconspicuous one, or absent sarcotesta in mature seeds (Mori & Prance 1990, Vargas *et al.* 2024). They can also have an aril surrounding half of the seed, or a lateral I-beam aril, leaving a trace of the sarcotesta on the lateral sides or disappearing in mature seeds (Vargas *et al.* 2024). Lastly, there is a variable L-shaped lateral aril with 2 to 3 branches, leaving a vein-like sarcotesta visible on the sides of the seeds (Batista 2024). Another variable I-beam aril has also been documented, where a portion of the lateral aril extends further towards the lateral sides, and as with the others, the sarcotesta is gradually absorbed or becomes conspicuous in mature seeds (Batista & Prance 2026).

In this taxonomic re-evaluation, the present contribution describes a new species of *Scottmorio*, named *S. umbonata*, discovered in Sierra Llorona, Province of Colón, Panama. This description not only contributes to the knowledge of local biodiversity but also highlights the importance of conserving the Sierra Llorona area.

Material & Methods

Field photographs were used to describe this new species, reflecting important details for differentiating it from similar species, using the methodology described by Mori *et al.* (2010 ongoing, 2011). Specimens from the herbaria NY, PMA, and SCZ were also examined. Acronyms according to Thiers (2026). To detail the differences in the venation pattern of the species, the Manual of Leaf Architecture (Ellis *et al.* 2009) was reviewed.

The distribution of the species is shown on a representative map generated using ArcGIS software (ESRI 2017). Preliminary conservation assessments followed the IUCN Red List Categories and Criteria (IUCN 2012). The GeoCAT tool (www.geocat.iucnredlist.org, Bachmann *et al.* 2011) was used with the coordinates from collections made so far of *Scottmorio umbonata*, mapping was conducted to calculate the Extent of Occurrence (EOO) and Area of Occurrence (AOO), and the grid cell size (2 km²) used is specified.

Taxonomy treatment

Scottmorio umbonata S.A.Mori ex J.E.Bat., *sp. nov.* (Figs. 1–4)

Type:—PANAMA. Provincia de Colón. Entrando por la comunidad de Santa Rita Arriba, Sierra Llorona, finca privada, frente a la escuela, al lado del camino, 9°21'30.2" N, 79°43'52.01" W, 413 m, 03 Nov 2024 (fl, fr), J. Batista, I. Cisneros & L. Pérez 2174 (holotype PMA146198! sheet 1, 146199! sheet 2, isotype SCZ20313! sheet 1, 20314! sheet 2, 20315! sheet 3).

Diagnosis:—*Scottmorio umbonata* and *Scottmorio woodsoniana* (Dwyer) (1965:362) Cornejo (2025: 489) are morphologically closely related species due to their similar flower color and depressed-globose fruits, but *S. umbonata* differs by presenting leaf blades with secondary veins slightly impressed adaxially (vs. strongly impressed in *S. woodsoniana*); 1–2 intersecondary veins not impressed to slightly impressed adaxially (vs. strongly impressed); leaf blade base cuneate, acute to slightly attenuate (vs. obtuse to rounded or truncate); inflorescences 2–5 per node, clustered, sometimes 1 per node (vs. solitary or 1 per node); rachis 0.5–3 (–7) cm long, thick and robust (vs. 2–8.5 cm, thin and slender); hypanthium verrucose with crowded lenticels (vs. smooth with scattered lenticels); sepals widely ovate (vs. ovate to oblong); flowers with style finely grooved (vs. smooth); style obconical (vs. columnar); stigma long-apiculate (vs. rounded to short-apiculate); mature fruits 6–7 × 3.5–8 cm (vs. up to 2.5 × 6 cm); supra-calyx zone 1.5–2.5 cm long (vs. 1–1.5 cm); the operculum with well-developed umbo from immature fruit to maturity (vs. convex operculum to poorly-developed); seeds 2–13 per mature fruit (vs. 5–6), with a flattened funicle (vs. thickened).

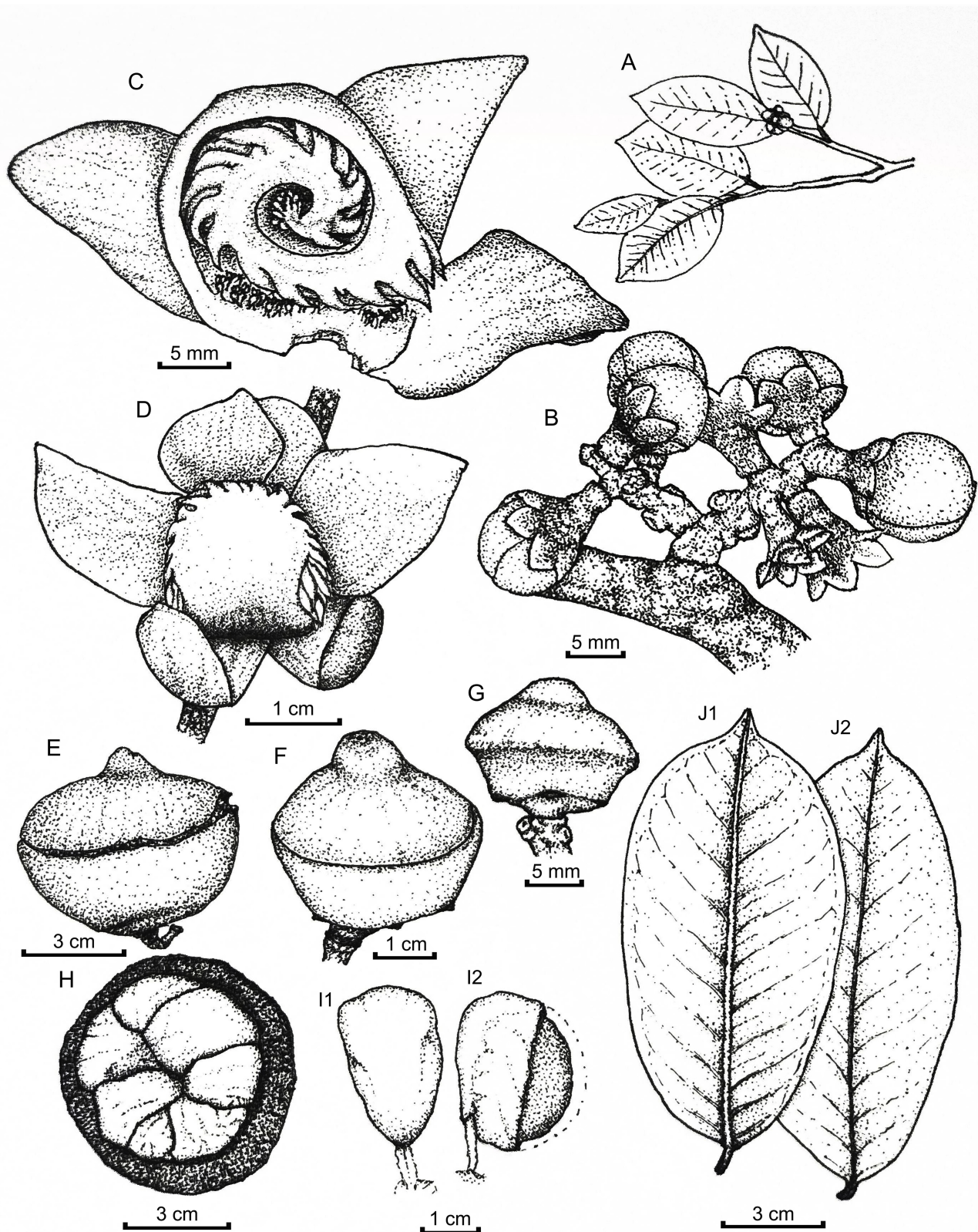


FIGURE 1. Drawing plate of *Scottmoria umbonata* by Wilmar Guzmán. **A.** Branch with an inflorescence. **B.** Inflorescence. **C.** Androecial hood cross section. **D.** Apical view of flower. **E.** Lateral view of dry-mature fruit. **F.** Lateral view of fresh-immature fruit. **G.** Lateral view of immature fruit. **H.** Open mature fruit showing seeds. **I1.** Apical view of seed with spreading sarcotesta and flat funicle. **I2.** Lateral view of seed showing smooth testa section. **J1.** Abaxial view of leaf blade, showing the conspicuous brochidodromous veins. **J2.** Adaxial view of leaf blade, showing inconspicuous secondary veins. **Illustrations** based on: *Galdames et al.* 6359 (A, B; NY, PMA, SCZ), *J. Batista et al.* 2174 (C, D, E, H–J2; PMA), *F. Hernández, I. Álvarez* 192 (F; NY, PMA); *J. Batista et al.* 2173 (G; PMA).

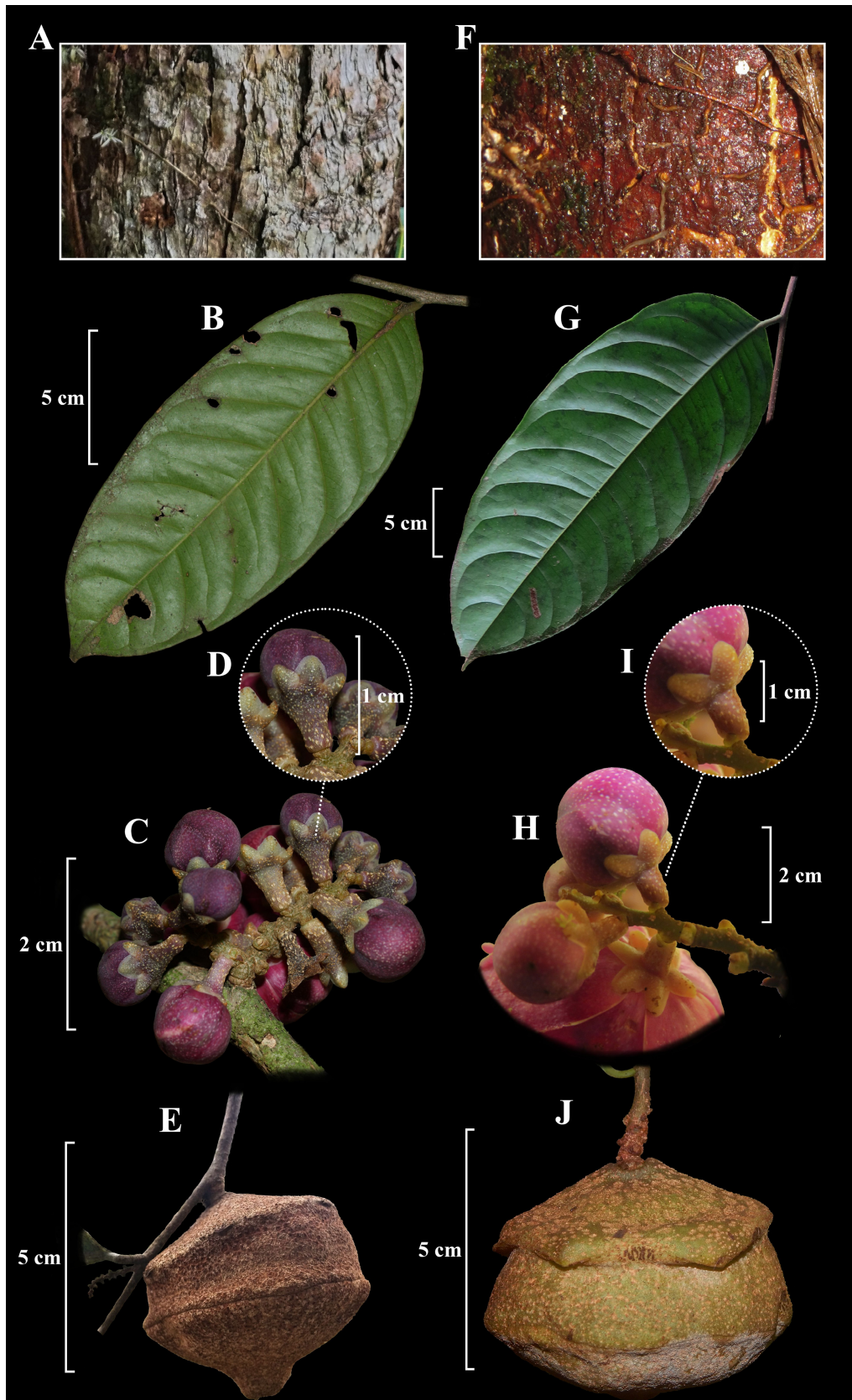


FIGURE 2. Plate comparing *Scottmoria umbonata* (A–E) and *Scottmoria woodsoniana* (F–J). **A.** Laminated grey bark. **B.** Abaxial leaf blade, showing 1–2 intersecondary veins not impressed to slightly impressed adaxially. **C.** Inflorescence. **D.** Close up of bud, showing calyx lobes and pedicel-hypanthium zone. **E.** Lateral view of mature fruit. **F.** Smooth reddish-brown bark. **G.** Abaxial leaf blade, showing 1–2 intersecondary veins strongly impressed adaxially. **H.** Inflorescence. **I.** Close up of bud, showing calyx lobes and pedicel-hypanthium zone. **J.** Lateral view of mature fruit. (A, E, J, *J. Batista et al.* 2174; B–D, *Galdames et al.* 6359; F, I, H, *J. Batista* 1449; G, *J. Batista* 1455; J, *J. Batista* 1659). Photos by Juvenal Batista and Carmen Galdames.



FIGURE 3. *Scottmoria umbonata*. **A.** Apical and lateral views of flowers. **B.** Androecial hood in cross section showing yellow staminodes and nectaries. **C.** Androecial hood in cross section showing pink staminodes and yellow nectaries. **D.** Clustered or agglomerated inflorescences. **E.** Agglomerated inflorescences showing buds, robust rachis and lateral view of flowers. **F.** Rachis of inflorescences in groups of 5–6 per node. (A, B, D–F, *J. Batista et al.* 2174; C, *J. Batista et al.* 2173). Photos by Juvenal Batista.



FIGURE 4. *Scottmorium umbonata*. **A.** Lateral view of mature fruit with developed umbo. **B.** Lateral view of immature fruit with developed umbo. **C.** Lateral view of mature fruit with very developed umbo. **D.** Open mature fruit, showing seeds and white sarcotesta. **E.** Seeds showing free sarcotesta and flattened funicle. **F.** Two seeds, showing white sarcotesta and smooth yellow testa. (A, D–F, *J. Batista et al.* 2174; B, *J. Batista et al.* 2173); C, *F. Hernández, I. Álvarez* 192). Photos by Juvenal Batista and Fermín Hernández.

Description:—*Understory trees*, 3–10 m tall, trunk cylindrical, 23–30 cm dbh, unbuttressed at base; crown rounded; *bark* laminated, grey, sometimes with brown spots and cream internal bark. *Leaves* with petioles 8–12 mm long, canaliculate adaxially, semi-circular in cross section; blades obovate to elliptic, 10–18 × 6–10 cm, chartaceous to coriaceous, glabrous, with scattered to dense black punctations abaxially, the base cuneate, apex acute to slightly attenuate, the margins entire with scattered black gland-punctations, the apex obtuse to short acuminate; venation brochidodromous, secondary veins in 10–12 pairs, slightly impressed adaxially (in fresh and dry), 1–2 intersecondary veins not to slightly impressed (in fresh and dry). *Inflorescences* in racemes, often on branches below leaves (ramiflorous), unbranched, flexuose, 2–5 per node, clustered or agglomerated, sometimes 1 inflorescence per node, rachis 0.5–3 (–7) cm long, shortly flexuose, thick, robust and brown lenticels, puberulous; pedicel 1–2.2 mm long (in fresh), 1–1.5 mm long (in dry), puberulous, bract 1, 0.5 mm long, ovate, bracteoles 2, 1 mm long, ovate to broadly triangular, not persistent at anthesis. *Flowers* at least 3.5–4.5 cm diam, scattered verrucose-lenticellate, hypanthium 4–5 mm long (in dry), 4–6.5 mm long (in fresh), not sulcate, puberulous, with diffuse lenticels, white, dark purple to tinged rose (in fresh), with white dots when fresh, and black and white diffuse lenticels when dry; sepals 1.8–3.1 × 2.2–5 mm (in fresh), 1.5–4 × 1.8–3 mm (in dry), thick, widely ovate, convex to slightly carinate abaxially, nearly horizontally oriented at anthesis, tinged purple with white dots, imbricate only at bases; petals 6, pink to magenta, speckled with white dots, 1.4–2.1 × 1.2–1.3 cm (in fresh); androecial hood 3-coiled, the internal nectaries forming a poorly developed fourth coil, pink to yellowish, ligule 2 × 1 cm; stamens 150–180, filaments 0.9–2 × 0.4 mm, white to yellowish, anthers 0.5–0.8 × 0.6 mm, yellow, clavate; ovary with style obconical, grooved, pale yellow throughout most of its length and pink to fuchsia near the stigma; stigma long apiculate, pink; locules two, 7–8 ovules per locule, axillar placentation. *Fruits* depressed globose, light brownish, lenticellate-rugose, 6–7 × 3.5–8 cm (including operculum) in fresh, the supracalycine zone erect to slightly convex, 1.5–2.5 × 3.5–8 cm, the infracalycine zone developed, widely obconical to poorly developed, 3–3.5 × 5–6 cm, truncate at the pedicel/hypanthium zone, the pericarp exterior rough; operculum 3.5–6 × 3.5–8 cm, with well-developed umbo, 1–1.2 × 1.2–1.5 cm, the operculum surface rough with

irregular lenticels with the margins or spaces between lenticels with creamy to khaki triangular to rhomboid patterns mottled and arranged radially from the umbo toward the base of the operculum, which is preserved in the dry fruit. *Seeds* 2–13 per mature fruit, 1.5–3 × 1.5–3.2 cm, 1–1.3 cm thick, pale yellow, surface smooth, shape plano-convex (the lateral sides are flat and the front side is convex); sarcotesta white, thin, rubbery, completely surrounded the seed; funicle flat, 1.5–2 cm long, white.

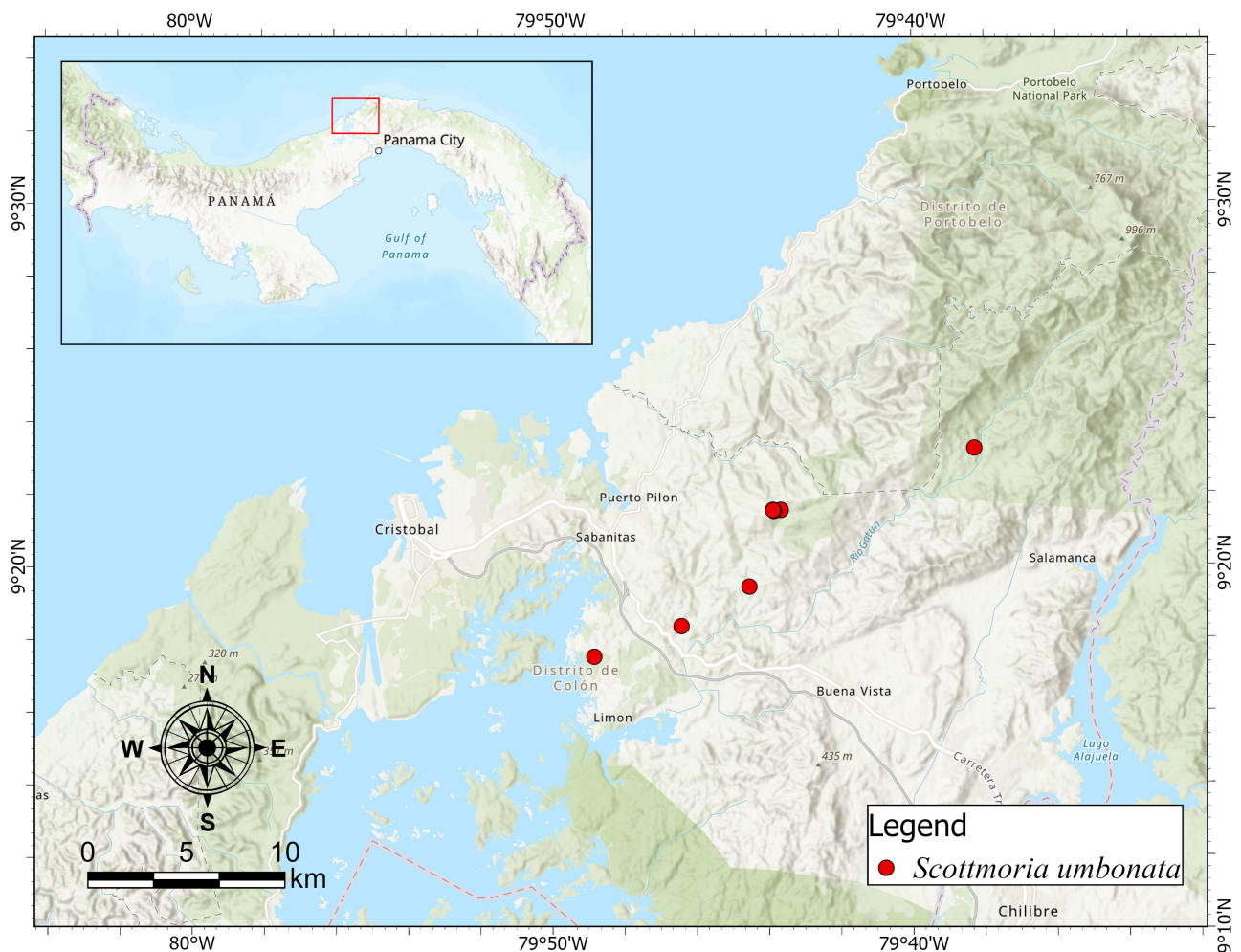


FIGURE 5. Distribution of *Scottmoria umbonata* on the upper coast (Costa Arriba) in the Colon province.

Discussion:—*Scottmoria umbonata* is similar to *Scottmoria garagarae* (Pittier) (1927: 12) Cornejo (2025: 260). However, *S. garagarae* is recognized by its leaf blades with 8–10 pairs of secondary veins (vs. 10–12 pairs in *S. umbonata*); narrowly elliptic (vs. broadly obovate to elliptic); narrowly cuneate base (vs. widely cuneate, acute to slightly attenuate); membranaceous leaves (vs. chartaceous to coriaceous); rachis of inflorescence 2–5 cm long (vs. 0.5–3 [–7] cm long); hypanthium smooth, scattered lenticels (vs. verrucose, crowded lenticels); sepals narrowly triangular to oblong (vs. sepals widely ovate); flowers with style smooth (vs. finely grooved); mature fruit with the infra-calycine zone poorly-developed, truncate or nearly so from calycine ring to pedicel/hypanthium (vs. developed, widely obconical to poorly developed, truncate at the pedicel/hypanthium zone); the operculum with well-developed umbo from immature fruit to maturity (vs. convex operculum to poorly-developed umbo); seeds 5–7 per mature fruits (vs. 2–13).

Due to its similarity in flower color and depressed-globose fruits, *Scottmoria umbonata* was misidentified as *Scottmoria integrifolia* (Ruiz & Pav. ex Miers 1874: 225) Cornejo (2024: 174). However, a detailed study showed that it is a distinct species. *S. umbonata* has inflorescences in clustered racemes of 2–5 racemes per node, sometimes a solitary raceme (vs. a solitary raceme, not clustered, in *S. integrifolia*); sepals widely ovate (vs. broadly ovate to hemi-orbicular); the infra-calycine zone developed to poorly developed, obconical, truncate at the pedicel/hypanthium (vs. well developed, convex from calycine ring to pedicel/hypanthium); and fruits light brownish at maturity (vs. green at maturity).

Furthermore, in the field, *S. umbonata* is differentiated from *S. woodsoniana* by its rounded crown (vs. pyramidal crown in *S. woodsoniana*); the former has laminated, grey bark (vs. smooth bark with scattered whitish horizontal lines along the reddish-brown trunk); and hard wood in *S. umbonata* (vs. soft in *S. woodsoniana*). In addition, *S. garagarae* has pyramidal crown (vs. rounded crown); smooth to finely rugose, grayish to dark brown bark (vs. laminated, grey bark in *S. umbonata*). *S. woodsoniana* and *S. garagarae* are distributed in the lowland and midland rainforests of eastern Panama, specifically in Darién National Park (Darién Province) and surrounding indigenous areas; however, more field data is needed to define the geographic boundaries of these two species (these differences between the new species and similar species are compared in Table 1).

TABLE 1. Comparative characters of *S. umbonata* with other similar species.

Characters	<i>Scottmoria umbonata</i>	<i>Scottmoria woodsoniana</i>	<i>Scottmoria garagarae</i>	<i>Scottmoria integrifolia</i>
Bark	Laminated, grey	Smooth, scattered lenticels, reddish-brown	Smooth to finely rugose, grayish to dark brown	Rugose, brown to brown-greenish
Leaves				
Secondary veins	Slightly impressed adaxially, 10–12 pairs	Strongly impressed, 10–12 pairs	Strongly impressed adaxially, 8–10 pairs	Strongly impressed adaxially, 7–12 pairs
Texture	Chartaceous to coriaceous	Chartaceous	Membranaceous	Chartaceous
Inflorescences				
Racemes per nude	2–5, clustered, sometimes solitary	1–2, not clustered	1 (solitary)	1 (solitary)
Rachis length	0.5–3 (–7) cm, robust	2–8.5 cm, slender	ca. 5 cm, verruculose	up to 2 cm, slender
Flowers				
Hypanthium	Verrucose, crowded lenticels	Smooth, scattered spots lenticels	Smooth, scattered lenticels	Smooth, scattered lenticels
Sepals	Widely ovate	Ovate to oblong	Narrowly triangular to oblong	Broadly ovate to hemiorbicular
Mature fruit				
Infra-calycine	Developed, widely obconical to poorly developed, truncate at pedicel/hypanthium zone	Poorly developed, truncate or nearly so from calycine ring to pedicel/hypanthium	Poorly developed, truncate or nearly so from calycine ring to pedicel/hypanthium zone	Developed, convex from calycine ring to pedicel/hypanthium zone
Fruit ripening	Khaki to light brown	Brown to greenish chocolate	Brown-chocolate	Green
Number seeds	2–13	5–7	5–7	3–7

Paratypes:—PANAMA. Colón: Sierra Llorona, al este de la zona maderera de Santa Rita, 9°18'18.6" N, 79°46'24.5" W, 75 m, 10 Oct 1968 (fl), *M. Correa & R. Dressler 1086* (NY, PMA); Santa Rita ridge, 19 km from Transistmica or the Pan-american highway, 9°27' N, 79°40' W, 758 m, Jan 1968 (fl), *J. D. Dwyer 8578* (NY); Santa Rita lumber road, 9°19'23.8" N, 79°39'00" W, 168 m, 24 May 1968 (fr), *R. L. Dressler 3514* (NY); Santa Rita, 9°18' N, 79°47' W, 433 m, 22 Mar 1993 (fr), *R. Pérez et al. 559* (SCZ); Santa Rita, CTFS-Proyecto Monitoreo, Parcela N°31, 6 Nov 1997 (fl), *R. Pérez 825* (SCZ); Sierra Llorona, 24 Jan 2002, *C. Galdames & S. Grose 4772* (SCZ); Quebrada Harina cerca de Nueva Providencia, 9°17'29" N, 79°48'50" W, 60 m, 21 Feb 2007 (fl, fr), *F. Hernández & I. Álvarez 192* (NY, PMA); aprox. a 11 km de la carretera Transistmica, Reserva privada, Sierra Llorona, 27 Jan 2009 (fl), 9°21'30.3" N, 79°43'39.3" W, 400 m. (1312 ft.), *C. Galdames & K. Toribio 6359* (NY, PMA, SCZ); Sierra Llorona, Santa Rita, N 1034445.1 m, E 639798.3 m, 227 m, 24 Feb 2011 (fl), *R. Pérez et al. 2451* (SCZ); Reserva Forestal Esteban Lee, Sierra Llorona, aproximadamente 2 km de la estación, 9°22'2.28" N, 79°42'10.04" W, elev. 445 m, 17 Feb 2023 (fl), *C. De León et al. 28* (PMA); Entrando por la comunidad de Santa Rita Arriba, Sierra Llorona, finca

privada, frente a la escuela, al lado del camino, 9°21'30.66" N, 79°43'51.6" W, 422 m, 03 Nov 2024 (fl, fr), *J. Batista et al. 2173* (PMA); Sierra Llorona, finca privada, frente a la escuela, al lado del camino, 9°21'30.2" N, 79°43'52.01" W, 410 m, 03 Nov 2024 (fl, fr), *J. Batista et al. 2175* (PMA); Sierra Llorona, finca privada, frente a la escuela, al lado del camino, 9°21'28.5" N, 79°43'50.4" W, 374 m, 03 Nov 2024 (fl), *J. Batista et al. 2178* (PMA); Santa Rita/Sierra Llorona, colectado dentro de un potrero, al frente de las ruinas de la primera escuela, 9°21'30" N, 79°43'52" W, 391 m, 22 May 2025 (fl, fr), *E. Campos-Pineda et al. 1493* (PMA, SCZ, UCH).

Etymology:—The epithet “*umbonata*” means having a highly developed umbo or raised central protuberance that persists from immature to mature fruit.

Vernacular name:—The people of the Santa Rita and Sierra Llorona communities call this species “Coquito de potrero”. Its vernacular name refers to its peculiar pyxidium and the fact that it is one of the few trees that survives in pastures (“potreros”) that were once primary forests its hard wood, short height, and seeds that are edible for cattle are among the reasons why it is not cut down in the area.

Habitat and Ecology:—This species grows in the Sierra Llorona rainforests, a highly endemic region of forest on the Caribbean slopes, at an elevation of 60 to 760 meters above sea level.

Distribution:—This species is well distributed in Sierra Llorona, Quebrada López, and Quebrada Harina near Nueva Providencia, Santa Rita Arriba, Province of Colón, in the “Costa Arriba” (Upper Coast) region of Panama’s Caribbean rainforests.

Phenology:—It blooms from October to May; fruits reported in February to May and November.

Preliminary Conservation status:—The Sierra Llorona forests are part of the Colón Biological Corridor, providing connectivity among several forested areas of Chagres, Portobelo and Soberanía National Parks, as well as Gatún Lake. This corridor provides an ecological service for the conservation of endangered plant and animal species, especially given the ongoing habitat fragmentation (Guevara 2021, SOMASPA 2019). The Santa Rita Arriba region has historically been under heavy pressure from road construction, human settlements, and commercial timber extraction of native and exotic species. The species has an Extent of Occurrence (EOO) of 81 km² and an Area of Occupancy (AOO) of 24 km², characterizing it as a microendemic species. Since this habitat faces forest loss due to continuous logging and the construction of the “Corredor del Caribe” highway, we recommend the species be assessed as Endangered EN B2ab(i,iii,iv,v) based on AOO.

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