

# SCOTTMORIA TENUICAULE (LECYTHIDACEAE) A NEW SPECIES WITH A NEW ARIL VARIATION FOR THE GENUS, FROM THE TROPICAL RAINFOREST OF THE CARIBBEAN SLOPE OF PANAMA

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**Abstract.** *Scottmoria tenuicaule*, a new tree species from this recently described genus in Lecythidaceae and native to the tropical forests of the Caribbean slope of central and western Panama, is described and illustrated, and taxonomic affinities inferred for this species are offered. In addition to the description of this species is a new detail in aril shape. It has the same “half I-beam” shaped aril previously reported for *Scottmoria*; however, the detail is that the seed aril of this new species is laterally more developed, “L-shaped,” with a 3-lobed end. This trait has not been previously reported or known for other species in the genus. Information on its distribution, habitat, ecology, phenology, and conservation status according to the IUCN for this new taxon is also provided.

**Keywords:** Bocas del Toro mountains, Central America, Donoso mountains, endemic, L-shaped aril

**Resumen.** *Scottmoria tenuicaule*, una nueva especie de árbol del género *Scottmoria*, Lecythidaceae, género descrito recientemente, es nativa de los bosques tropicales del centro y oeste de la vertiente caribeña de Panamá; también se ilustra y se ofrecen afinidades taxonómicas inferidas para esta especie, junto con la descripción de un nuevo detalle en la forma del arilo. Tiene el mismo arilo en forma de “I” reportado previamente para *Scottmoria*, sin embargo, el detalle es que el arilo de la semilla de esta nueva especie está más desarrollado lateralmente, en forma de “L,” con un extremo trilobulado, ese rasgo no había sido reportado previamente ni conocido para las especies del género. También se proporciona aquí información sobre su distribución, hábitat, ecología, fenología y estado de conservación según la UICN para este nuevo taxón.

**Palabras claves:** Arilo en forma de L, América Central, endémico, montañas de Bocas del Toro, montañas de Donoso

The Neotropical Lecythidaceae are represented by trees and shrubs with zygomorphic flowers of the subfamily Lecythidoideae (Prance and Mori, 1979; Mori and Prance, 1990; Mori et al., 2017; Vargas et al., 2024). These trees are diverse in the Amazon basin and the Guiana Shield (Vargas and Dick, 2020). Currently, the most diverse and complex genera are *Eschweilera* Mart. ex DC. s. str. and *Scottmoria* Cornejo, the latter recently described in honor of the American botanist Scott Allan Mori (Vargas et al., 2024). These genera have notable differences in their androecial hoods of the flowers and the arils of their mature seeds. *Eschweilera* s. str. has flowers with an androecial hood with two inner coils, seeds with a lateral, thick, white, rubbery aril with ends that do not overlap (Vargas et al., 2024), sometimes splitting at the chalazal end into 2–3 branches (Batista and Mori, 2017a, b), and the sarcotesta or rubbery coat is absent. *Scottmoria* has flowers with an androecial hood with three to four inner coils and seed coverings of two types: (1) a soft, thin, white sarcotesta that is infiltrated with testa, arranged over the entire

or most of the mature seed or at least present in young seeds and mostly dissolving at maturity, and with a thick, yellow to white, lateral aril, often half I-beam shaped with a rubber-like texture and overlapping ends on the seed; or (2) seeds surrounded by a mostly free, white, rubbery coat (Vargas et al., 2024), also called a spreading aril. In Mesoamerica, species of understory trees with slender trunks are few, among the best known of which are *Scottmoria calyculata* (Pittier) Cornejo and *Scottmoria jacquelyniae* (S.A. Mori) Cornejo (Mori et al., 2010). *Scottmoria tenuicaule* J.E. Bat., a species described in this manuscript, is characterized by having a very slender trunk and low height, as well as having a type of aril different from those described in *Scottmoria* in the latest reclassification of the Bertholletia Clade, according to Vargas et al. (2024). The new type of aril will be called “L-shaped.” In this contribution the new species is illustrated, and information on distribution, habitat, ecology, phenology, and conservation status according to the IUCN, and a key to the Central American species are presented.

## MATERIALS AND METHODS

For the description of this new species, fresh branches with flowers and fruit were collected at different times, and the most important characteristics were documented with photographs. The transverse section of the androecial hood was very important to seeing the internal chambers of the androecial hood, and the fruit section to seeing the arils of the seeds (protocol used followed Mori et al., 2011). Specimens from the herbaria PMA, MO, NY, and SCZ of the species

related to this one were reviewed and their differences compared (herbarium acronyms follow Thiers, 2022), as well as the Lecythidaceae page of the New York Botanical Garden (Mori et al., 2010). The species distribution map was made using ArcGIS (ESRI, 2017), and the conservation status treatments were made following the IUCN (2022) Red List of Threatened Species criteria and the GeoCAT geospatial conservation assessment tool (Bachman et al., 2011).

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## TAXONOMY

**Scottmorria tenuicaule** J.E. Bat., *sp. nov.* TYPE: PANAMÁ. Colón, Distrito de Donoso, Chicheme, Costal Road, Pipeline, km 19, a un costado de la parcela de restauración, camino hacia Punta Rincón. Bosque secundario intervenido, concesión de una Mina de cobre a cielo abierto, 8°53'25.9"N, 80°38'42.3"W, 115 m, 28 noviembre 2015, J. Batista, L. Rojas, I. Vergara, & E. González 1478 (Holotype: PMA [accession number, 130895; barcode, 129681]; Isotypes: MO [accession number 6972135; barcode, 3207508], NY [barcode 02840635]). Fig. 1–5.

*Scottmorria tenuicaule* has a pedicel/hypanthium 10–15 mm long, smooth lenticels, calyx lobes that are imbricate at the base, and an androecial hood with a triple inner coil; the fruit is conical-depressed, without prominent woody knobs at the calycine ring. The smooth testa of the seed is covered with a thin, white sarcotesta that features multiple faintly marked veins and is covered with a white, lateral, L-shaped aril with a rubber-like texture, and splitting at the chalazal end into three branches.

Understory trees, 2.5–8.0 m tall × 3–8 cm DBH and the trunk cylindrical to the base, bark deep brown, thin, smooth and a few brown lenticels, inner bark cream. Leaves, petiole 8–14 × 2.5–4.0 mm, terete, black when dry; blade 17.0–32.4 × 5.7–10.5 cm, lanceolate to ovate-elliptic, reddish punctations associated with veins abaxially (seen only with magnification), chartaceous, base acute to rounded, margin entire; secondary veins in 14–16 pairs, plain adaxially, raised abaxially. Inflorescences from branches below leaves (ramiflorous), axillary, or terminal (suprafoliar), unbranched, rachis, 2.2–7.8 cm long, cylindrical, puberulous; pedicel/hypanthium 10–15 mm long, puberulous (seen only under magnification). Flowers 6–8 cm in diam.; hypanthium puberulous, cylindrical; calyx with 6–7 (–8) lobes, ovate, 6–9 × 3–8 mm, green-yellowish, horizontally oriented at anthesis, imbricate at the base; 6 petals, pale yellow, 19–35 × 10–16 mm; androecial hood with a triple inner coil, intense yellow, ligule 27–35 × 10–18 mm, ovary with two locules and 3–4 ovules per locule. Fruit conical-depressed, brown, 3 (including operculum) × 3.0–3.5 cm in diam.; calycine ring visible, remnants of calyx-lobes usually visible, persistent; supracalycine zone erect, infracalycine zone conical, lenticellate, operculum convex. Seeds globose, 2.0–2.5 × 2.5–3.0 cm, 1–3 per fruit, the smooth testa of the seed is covered with a thin, white sarcotesta that features multiple, faintly marked veins and is topped with a white lateral L-shaped aril with a rubber-like texture, splitting at the chalazal end into three branches, that sometimes may resemble the footprint of a Central American Tapir or *Tapirus bairdii* Gill.

At first glance, *Scottmorria tenuicaule* resembles the lowland rainforest species, *Scottmorria hondurensis* Standl., *Eschweilera pittieri* R. Knuth, and *Eschweilera biflora* S.A. Mori, because it is a small tree, has yellow flowers and turbinate to depressed fruits. However, *S. hondurensis* is an understory to canopy tree 7–25 m tall (vs. understory tree 2.5–8 m), with flowers 3–5 cm in diam. (vs. flowers 6–8 cm in diam.) and the smooth testa of the seed has a white, lateral aril that is often half I-beam shaped with a rubber-like texture not splitting at the chalazal end into three

branches (vs. the smooth testa of the seed covered with a thin white sarcotesta that features multiple faintly marked veins and is topped with a white, lateral L-shaped aril, with a rubber-like texture, splitting at the chalazal end into three branches; Fig. 5). *E. pittieri* differs from *S. tenuicaule* by having an androecial hood with a double inner coil (vs. three to four inner coils), a lateral aril (vs. L-shaped aril), and fruit with the calycine ring with calyx-lobes persisting as prominent woody knobs (vs. the calycine ring with calyx-lobes persisting without prominent woody knobs). *E. biflora* differs from *S. tenuicaule*, by having an androecial hood with a double coil (vs. three to four inner coils), deep brown seeds (vs. cream-colored seeds) and a lateral aril (vs. L-shaped aril).

*Scottmorria* species in Mesoamerica generally have fuchsia, magenta, or pink flowers. However, in 2017 several species with yellow flowers were described, such as *Scottmorria rotundicarpa* (J.E. Bat. & S.A. Mori) Cornejo, *Scottmorria jefensis* (J.E. Bat. & S.A. Mori) Cornejo, and *Scottmorria roseocalyx* (J.E. Bat., S.A. Mori, & J.S. Harrison) Cornejo, all endemic to Panama (Batista and Mori, 2017a, c; Vargas et al., 2024). *Scottmorria tenuicaule* can be a shrub from 2–5 m to a low tree of 6–8 (–10) m in height. It has a thin trunk and cream-colored inner bark, while other *Scottmorria* species are generally trees ranging from 10–35 m. This species has leaves with lanceolate to ovate-elliptic blades in the Donoso region, and one collection in Bocas del Toro has ovate-elliptic blades.

**Etymology:** The specific epithet refers to the tree's slender trunk, 3–8 cm DBH, and thin bark.

**Common names:** Known as “Ollito” in the Donoso communities.

**Habitat and Distribution:** Understory trees of lowland, non-flooded, primary rainforest at 40–113 m elevation, near the Quebrada Jujuca and Río Del Medio River, in the Donoso mountains. This species is associated at both sites with these species: *Scottmorria calyculata* (Pittier) Cornejo, *Taralea oppositifolia* Aubl., and *Pausandra trianae* (Müll. Arg.) Baill. The species is also known from Isla Bastimento Marine National Park, Bocas del Toro (Fig. 4).

**Phenology:** Flowering collections were made in February. (*I. Vergara* et al. 1070), March (*Batista* et al. 1557, 1558), July (*L. Martínez* et al. 884), September (*De Sedas* et al. 420), October (*A. Espinosa* & *B. Fuentes* 5764), November (*Batista* et al. 1478), and December (*Zapata* et al. 2616). Fruiting specimens were collected in September (*De Sedas* et al. 420), February (*I. Vergara* et al. 1070), March (*Batista* et al. 1557), and December (*Zapata* et al. 2616).

**Conservation status:** *Scottmorria tenuicaule* is known from seven collections which were found in two occurrences. A single collection was registered on Isla Bastimentos (Bocas del Toro), which is included in a protected area (Isla Bastimentos National Park). The other collections were made within a working mining concession area located in the Donoso district (Colón). This species has an EOO of 817.2 km<sup>2</sup> and an AOO 25 km<sup>2</sup>. Considering the imminent peril of mining activities on the suitable habitats, this species must be considered as endangered [EN B1ab(ii,iii,iv,v) + B2ab(ii,iii,iv,v)].

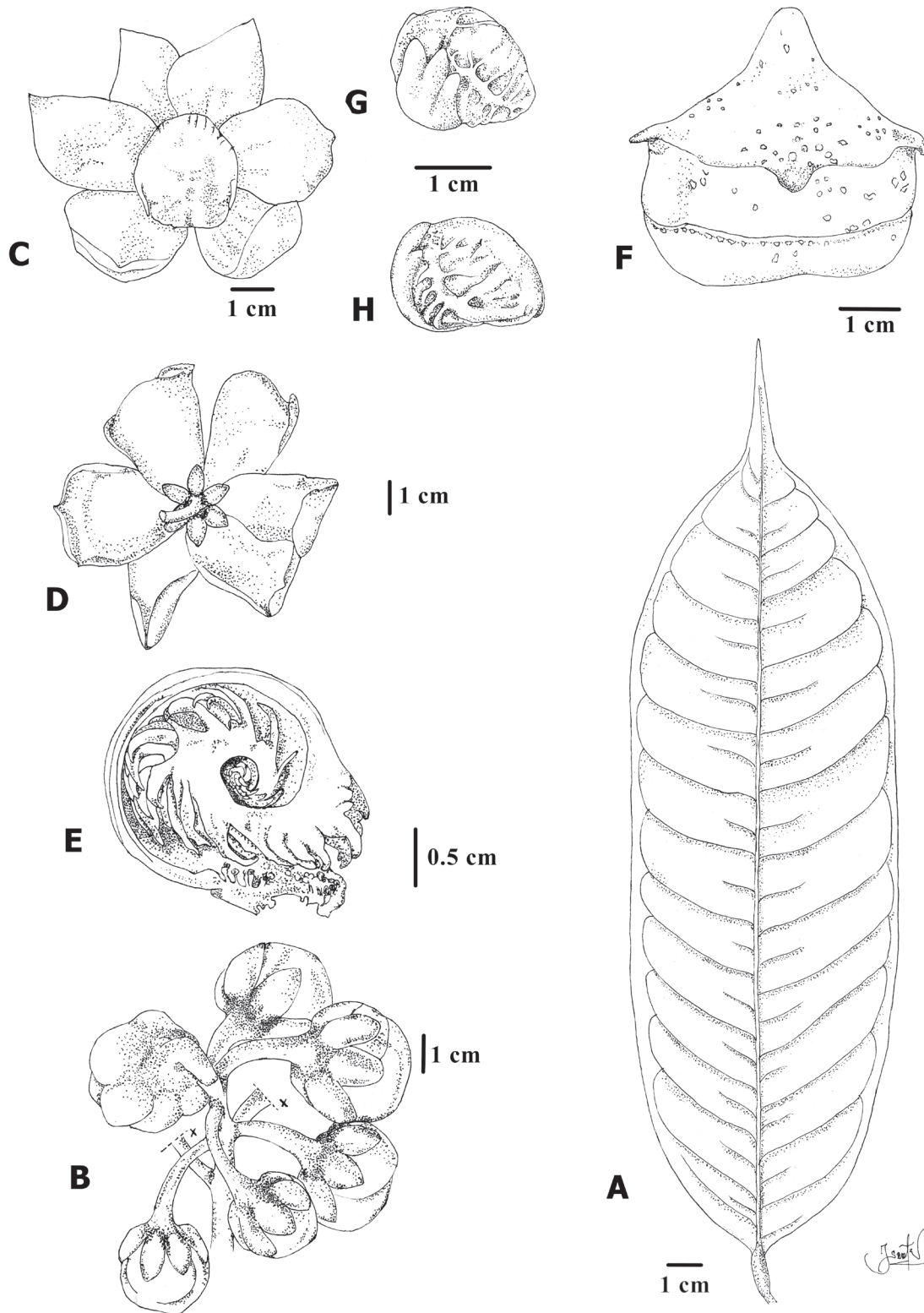


FIGURE 1. Drawing of *Scottmoria tenuicaule* J.E. Bat. **A**, adaxial view of leaf blade showing venation; **B**, magnified view of buds in the inflorescence; **C**, apical view of flower; **D**, basal view of flower showing the calyx; **E**, cross section of the hood showing the coils; **F**, side view of a closed fruit; **G**, apical view of seed showing sarcotesta branching of veins and L-shaped aril with branches; **H**, lateral view of seed showing sarcotesta branching of veins and L-shaped aril. A–E, are based on the holotype; F–H, are based on the paratype *J. Batista* et al. 1557. Drawn by Jeraldin Vergara.



FIGURE 2. *Scottmorium tenuicaule* J.E. Bat. **A**, slender cylindrical trunk, thin, dark-brown bark, cream inner bark; **B**, leaf blade showing abaxial surface; **C**, leaf blade showing adaxial surface. A–C are based on the paratype *J. Batista et al. 1557*; B is based on the holotype.

**Additional specimens examined:** PANAMA. Colon: Distrito de Donoso, Coclé del Norte, Helipat C11, 79 m, 8°57'34.21"N 80°37'01.17"W, 18 Octubre 2010 (fl), *A. Espinosa & B. Fuentes 5764* (PMA); Coclé del Norte, Donoso, área del Helipat PR09, 99 m, 9°00'28"N, 80°41'35"W, 10 Diciembre 2010 (fl, fr), *A. Zapata, D. Santana, & R. López 2616* (PMA); Coclé del Norte, Donoso, Helipat T02A, tomando la ruta Sur, a orilla de trocha, 109 m, 8°53'28"N, 80°40'42"W, 18 Julio 2012 (fl), *L. Martínez, A. Espinosa, A. Morris, & E. Sánchez 884* (PMA); Omar Torrijos H., Área de construcción de helipuerto, Petaquilla, ± 15 km del campamento Colina (Parcela 2), área de bosque maduro bien conservado, 100–200 m, 8°52'32"N, 80°39'27"W, 13 Septiembre 2007 (fl), *A. De Sedas 420*

(PMA); Camino Costero, Pipeline, KM 19+700, a 50 metros del camino, 130 m, 8°53'25"N, 80°38'43"W, 23 Febrero 2016 (fl, fr), *I. Vergara, L. Rojas, & M. Madrid 1069* (NY, MO, PMA, SCZ, UCH); Presa Norte, Coffor Dam, bosque maduro intervenido, 80 m, 8°53'25.8"N, 80°40'32.3"W, 21 Marzo 2016 (fl, fr), *J. Batista, I. Vergara, E. González, & L. Rojas 1557* (NY, MO, PMA); Chicheme, Costal road, Pipeline, km 19, bosque maduro intervenido, 113 m, 8°53'24"N, 80°38'43"W, 21 Marzo 2016 (fr), *J. Batista, I. Vergara, E. González, & L. Rojas 1558* (NY, PMA). Bocas Del Toro: Parque Nacional Marino Isla Bastimento. Área de Bahía Honda, 42 m, 9°17'42"N, 82°09'07"W, 4 Octubre 2013 (fl), *J. Aranda & L. Martínez 4480* (PMA).

#### KEY TO *SCOTTMORIA* SPECIES OF CENTRAL AMERICA

- 1a. Flowers with petals and androecial hood magenta, fuchsia or rose, occasionally androecial hood yellow . . . . . 2
- 1b. Flowers with petals and androecial hood pale yellow, deep yellow or white . . . . . 8
- 2a. Inflorescence cauline, sometimes ramiflorous; fruit turbinate or weakly globose . . . . . 3
- 2b. Inflorescence axillary, terminal or ramiflorous; fruit depressed-globose . . . . . 4
- 3a. Blade elliptic to narrowly elliptic; flowers 5–7 cm diam.; seeds with yellow lateral aril, often half I-beam shaped with rubber-like texture and overlapping ends on seed . . . . . *Scottmorium caudiculata*
- 3b. Blade oblong; flowers 4–5 cm diam.; seeds with yellow to white sarcotesta that is infiltrated with testa in most of the mature seed . . . . . *Scottmorium jacquelyniae*
- 4a. Blades coriaceous to chartaceous; inflorescence unbranched; flower fuchsia to pink . . . . . 5
- 4b. Blades coriaceous; inflorescence once-branched, paniculate arrangement of racemes; petals pink or fuchsia and androecial hood yellow . . . . . 7

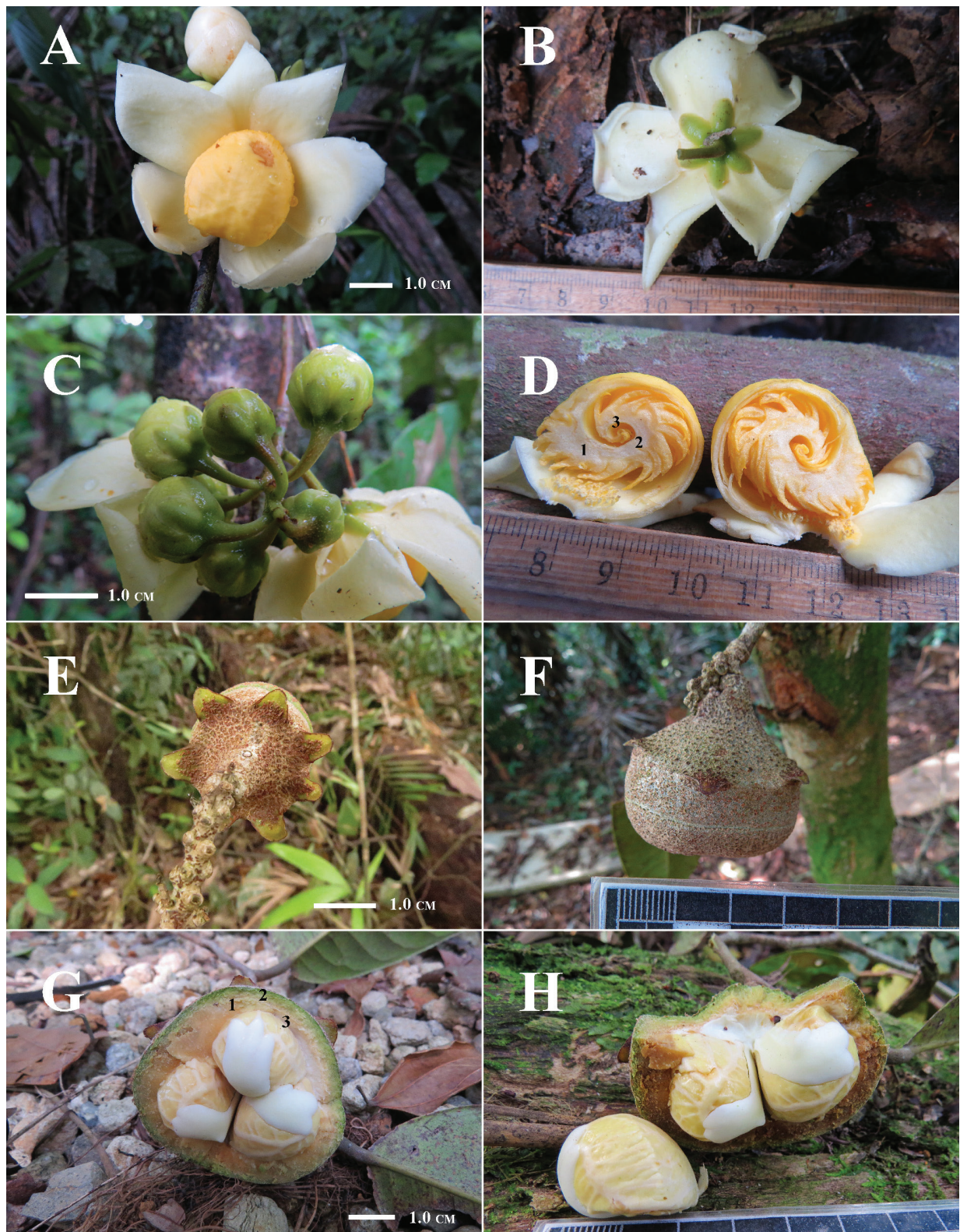


FIGURE 3. *Scottmoria tenuicaule* J.E. Bat. **A**, apical view of flower; **B**, basal view of flower showing the imbricate calyx lobes at the base; **C**, unbranched inflorescence in bud, showing pedicel/hypanthium and calyx lobes; **D**, medial longitudinal section of androecial hood showing the first, second, and third coils; **E**, basal view of an immature fruit showing the persistent, woody calyx lobes; **F**, lateral view of a nearly mature fruit; **G**, artificially opened fruit, lateral view, showing a smooth testa, topped with a thin white sarcotesta that features multiple, faintly marked veins and a lateral L-shaped aril; **H**, apical view of the seeds showing a smooth testa, topped with a thin, white sarcotesta that features multiple, faintly marked veins and a white, lateral L-shaped aril. A–D are based on the holotype. E–H are based on *J. Batista et al. 1557*.

KEY TO *SCOTTMORIA* SPECIES OF CENTRAL AMERICA CONT.

- 5a. Blade base clasping the petiole apex and the lower midrib; inflorescence terminal (suprafoliar), rachis 1–3 cm long, pedicel/hypanthium zone ca. 4 mm long; flower ca. 2.0–3.5 cm in diam., calyx lobe widely ovate, 3.0–5.5 × 2.5–4.0 mm; fruit 5–7 × 6.0–9.5 cm, widely depressed globose, infracalycine and supracalycine zone with small brown lenticels; species endemic to the Caribbean coast of Panama ..... *Scottmoria amplexifolia*
- 5b. Blade base not clasping the petiole apex and the lower midrib; inflorescence usually from branches (ramiflorous) or axillary, rachis 1–15 cm long, pedicel/hypanthium zone 1–3 mm long; flower ca. 3–5 cm diam., calyx lobe ovate, 2–10 × 1.5–10.0 mm; fruit 5–7 × 4–7 cm, depressed globose, infracalycine and supracalycine zone with large brown lenticels; species from Central to Eastern Panama ..... 6
- 6a. Rachis 1.0–4.5 cm long., pedicel/hypanthium zone narrowly short. Calyx lobe narrowly ovate, 2.5–3.0 × 1.5–4.0 mm., abaxial side narrowly carinate, bases not imbricate, sometimes scarcely imbricate in the base. Fruit 4–5 cm diam., calycine ring narrowly conspicuous forming a knob with the calyx lobe woody to inconspicuous, operculum umbonate to narrowly umbonate; species from Darien, Panama to Ecuador ..... *Scottmoria integrifolia*
- 6b. Rachis 3–15 cm long, pedicel/hypanthium zone widely short; calyx lobe widely ovate to rounded, 8–10 × 8–10 mm, abaxial side not carinate, base imbricate for much of length; fruit 7–6 cm in diam., calycine ring with calyx lobes acrescent and persisting but not woody, operculum umbonate; morphotype species endemic from Central Panama ..... *Scottmoria calyculata*
- 7a. Blades with 10–35 (50) × 4–12 cm, adaxial side with reddish punctation; inflorescence once-branched in racemes; flowers ca. 3.5–5.0 cm diam.; fruit with infracalycine and supracalycine zone with few brownish lenticels ..... *Scottmoria antioquiensis*
- 7b. Blades with 3.2–14.5 × 1.5–7.5 cm, adaxial side with dark punctation; inflorescence once-branched, paniculate arrangement of racemes, often scarcely branched or infrequently unbranched; flower ca. 2.5–4.0 cm diam.; fruit with infracalycine and supracalycine zone with large whitish lenticels ..... *Scottmoria jefensis*
- 8a. Canopy tree, laminate or scalloped bark, peeling in irregularly-shaped, thick plates; fruit depressed globose to globose; seeds with spreading aril or sarcotesta ..... 9
- 8b. Understory tree, smooth bark, sometimes peeling in irregularly-shaped, thin plates; fruit cup-shaped to conical-depressed; seeds with lateral aril, half I-beam shaped or L-shaped with rubber-like texture ..... 14
- 9a. Inflorescence unbranched or weakly branched ..... 10
- 9b. Inflorescence once-branched ..... 11

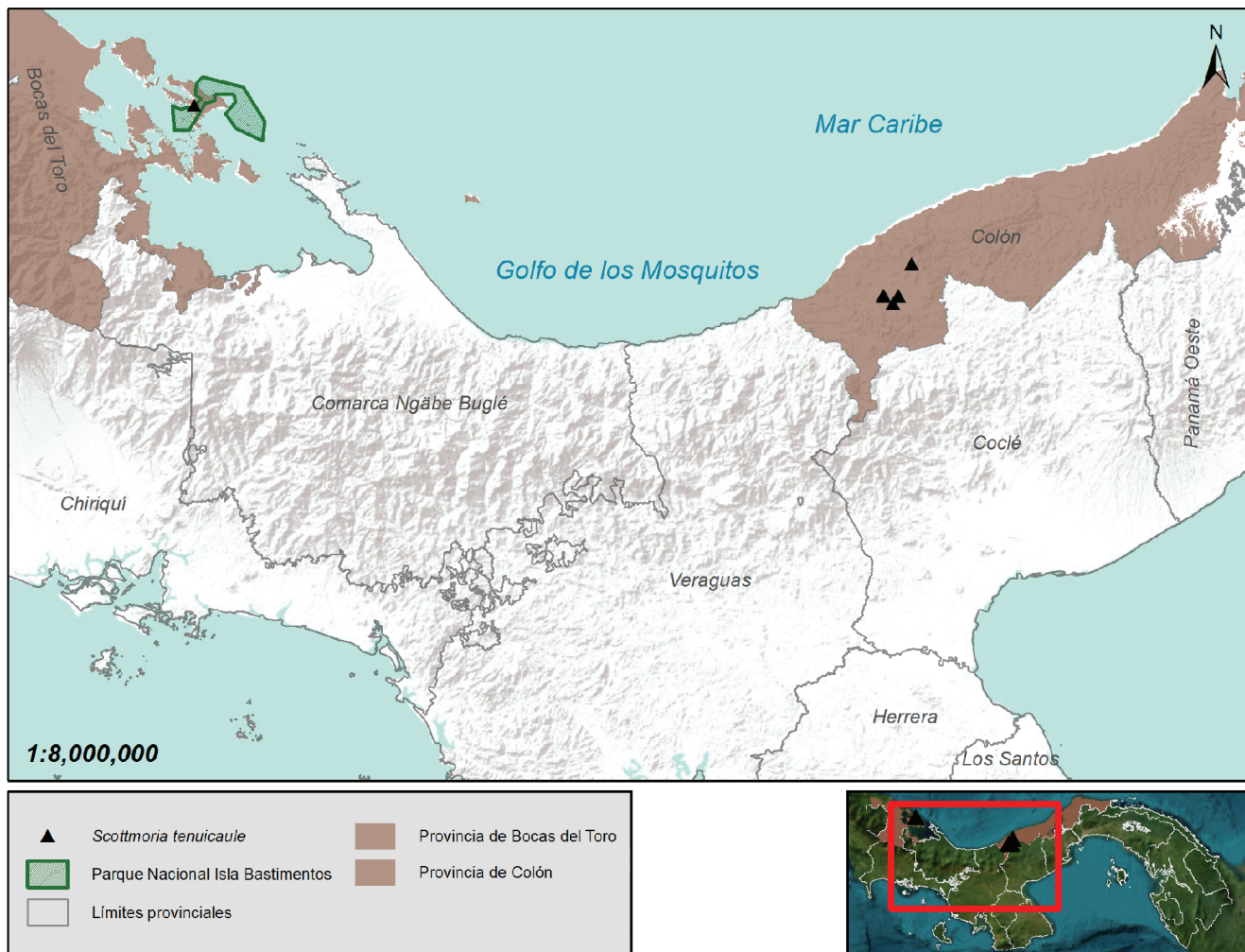


FIGURE 4. *Scottmoria tenuicaule* J.E. Bat. Distribution map. Prepared by Vayron De Gracia.

KEY TO *SCOTTMORIA* SPECIES OF CENTRAL AMERICA CONT.

- 10a. Blade 10–15 × 3–5 cm, elliptic to narrowly elliptic, blackish punctations; flower 2.0–2.5 cm diam., pedicel/hypanthium zone 5–9 mm long, calyx lobe weakly ovate, 1.5–2.0 × 1.5–2.5 mm, base not imbricate; fruit weakly depressed globose to nearly globose; species endemic to Peninsula Osa, Costa Rica . . . . . *Scottmoria aguilarii*
- 10b. Blade 10–35 × 4–12 cm, oblong to narrowly elliptic, reddish punctations; flower 3.5–4.0 cm diam., pedicel/hypanthium zone 3 mm long, calyx lobe widely ovate, 7–8 mm × 7.0–8.5 mm, base imbricate much of its length; fruit widely depressed globose; morphotype species from Costa Rica to Western Panama . . . . . *Scottmoria calyculata*
- 11a. Secondary veins not impressed adaxially; principal rachis of inflorescence 5.0–7.5 cm long; fruit with conspicuous calycine ring with individual sepal lobes expanded; trees from lowland rainforest from Osa Peninsula, Costa Rica to Caribbean slope Panama . . . . . *Scottmoria panamensis*
- 11b. Secondary veins impressed adaxially; principal rachis of inflorescence 4–35 cm long; fruit with the calycine ring inconspicuous, sometimes conspicuous forming a continuous ring; trees from mid-altitude rainforests to cloud rainforest . . . . . 12
- 12a. Blade elliptic, 3.1–11.0 × 1.2–6.7 cm long; principal rachis of inflorescence 4–7 cm long, pedicel/hypanthium zone 4–5 mm long, yellow; flower 2–3 cm. diam.; fruit globose to weakly depressed globose. . . . . *Scottmoria rotundicarpa*
- 12b. Blade widely elliptic to oblong, 15–39 × 5.5–15.5 cm long, principal rachis of inflorescence 4–35 cm long, pedicel/hypanthium zone 5–10 mm long, pink to yellow greenish; flower 3–5 cm. diam.; fruit depressed globose, conical or conical-depressed . . . . . 13
- 13a. Bark brown, slightly fissured; principal rachis of inflorescence 9–35 cm long, secondary rachises well-developed, to 40 cm long, pedicel/hypanthium zone yellow to yellow greenish; fruit 6–9 cm diam., depressed globose, calycine ring conspicuous, forming a continuous ring; seeds to 10 per fruit, surrounded by a mostly free, white, rubbery coat, thin . . . . . *Scottmoria collinsii*
- 13b. Bark scalloped, grayish brown, peeling in longitudinal plates; principal rachis of inflorescence 4–8 cm long, secondary rachises developed, to 6 cm long, pedicel/hypanthium zone pink to pale yellow pinkish; fruit 5–6 cm diam., turbinate to conical, calycine ring weakly conspicuous, not forming a continuous ring; seeds 3 per fruit, surrounded by a mostly free, white, rubbery coat, thick, especially along major veins . . . . . *Scottmoria roseocalyx*
- 14a. Tree 10–30 m tall; flower 3–5 cm diam.; fruit cup-shaped; seeds with lateral aril, often half I-beam shaped, with a rubber-like texture, without branches; species from Honduras, Nicaragua, Costa Rica, and west to Pacific coast of Central Panama. . . . . *Scottmoria hondurensis*
- 14b. Tree 2.5–8.0 m tall; flower 6–8 cm diam.; fruit conical-depressed; seeds with lateral L-shaped aril with a rubber-like texture, with three branches; endemic species from Caribbean coast of Central Panamá . . . . . *Scottmoria tenuicaule*

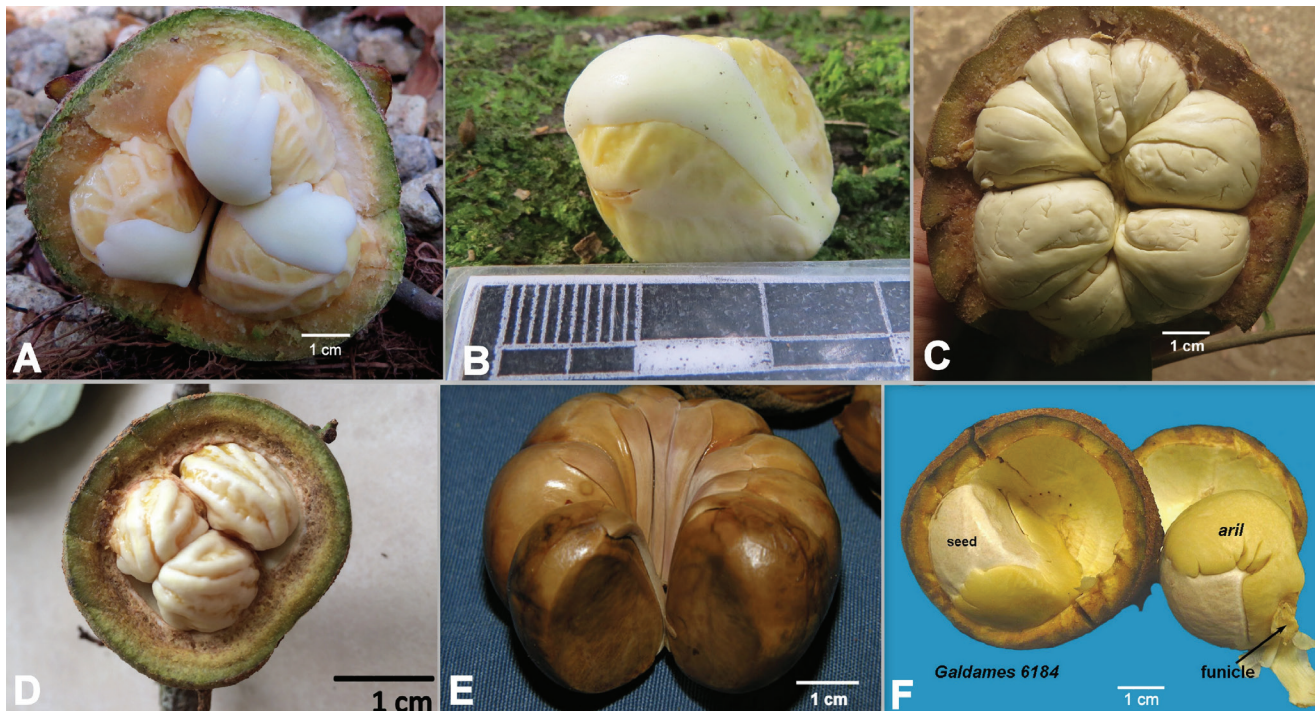


FIGURE 5. Aril types of *Scottmoria* s. str. **A**, open fruit of *Scottmoria tenuicaule*, showing three seeds with a thin white sarcotesta that features multiple, faintly marked veins and a fleshy, white, lateral L-shaped aril, splitting at the chalazal end into three branches; **B**, lateral view of seed of *S. tenuicaule* showing thin white sarcotesta that features multiple, faintly marked veins and fleshy white lateral L-shaped aril; **C**, open fruit of *Scottmoria integrifolia* showing seven seeds fully surrounded by a fleshy, thin, white sarcotesta, which in turn is surrounded by a white spreading aril, with a rubber-like texture; **D**, open fruit of *Scottmoria roseocalyx*, showing apical view of three seeds with spreading aril, growing on a thin, white sarcotesta; **E**, open fruit of *Scottmoria hondurensis* showing the seeds with lateral aril, often half I-beam shaped, with a rubber-like texture; **F**, open fruit of *Scottmoria jacquelyniae* showing two seeds with testa covered by a thin, white layer of sarcotesta and a yellow aril with a rubber-like texture that is infiltrated with testa and sarcotesta, arranged over most of the mature seed. A–B are based on the paratype *J. Batista et al.* 1557; C is based on *J. Batista et al.* 1659 (NY, PMA); D is based on *J. Batista et al.* 1682 (NY, PMA, SCZ, UCH); E is based on *R. Aguilar 11748* (NY), photo by R. Aguilar; F is based on *C. Galdames 6142* (NY, PMA, SCZ), photo by C. Galdames.

## LITERATURE CITED

- BACHMAN, S., J. MOAT, A. W. HILL, J. DE LA TORRE, AND B. SCOTT. 2011. Supporting Red List threat assessments with GeoCAT: geospatial conservation assessment tool. *ZooKeys* 150: 117–126.
- BATISTA, J. E., AND S. A. MORI. 2017a. Two New Species of *Eschweilera* (Lecythidaceae) from Rainforest on the Caribbean Slope of Panama. *Phytotaxa* 296(1): 041–052. <https://doi.org/10.11646/phytotaxa.296.1.2>
- BATISTA, J. E., AND S. A. MORI. 2017b. *Eschweilera corraeae* (Lecythidaceae), a new species from the cloud forests of Panama and Costa Rica. *Brittonia* 69: 342–345. <https://doi.org/10.1007/s12228-017-9474-4>
- BATISTA, J. E., S. A. MORI AND J. S. HARRISON. 2017c. New species of *Eschweilera* and a first record of *Cariniana* (Lecythidaceae) from Panama. *Phytoneuron* 2017-62: 1–16. <https://www.phytoneuron.net/2017Phytoneuron/62PhytoN-EschweileraJefensis.pdf>
- ESRI (Environmental Systems Research Institute). 2017. ArcMap v10.6. Redlands, California, U.S.A.
- IUCN Standards and Petitions Committee. 2022. Guidelines for Using the IUCN Red List Categories and Criteria. Version 15. Prepared by the Standards and Petitions Committee. <http://www.iucnredlist.org/documents/RedListGuidelines.pdf> (accessed May 13, 2021).
- MORI, S. A., AND G. T. PRANCE. 1990. Lecythidaceae—Part II. The zygomorphic-flowered New World genera (*Couroupita*, *Corythophora*, *Bertholletia*, *Couratari*, *Eschweilera*, and *Lecythis*). *Flora Neotropica Monographs* 21(2): 1–376.
- MORI, S. A., N. P. SMITH, X. CORNEJO, AND G. T. PRANCE. 2010 and ongoing. The Lecythidaceae Pages. The New York Botanical Garden, Bronx, New York. <http://sweetgum.nybg.org/lp/index.php> (accessed July 25, 2024).
- MORI, S. A., A. BERKOV, C. A. GRACIE, AND E. F. HECKLAU. 2011. Tropical Plant Collecting—from the Field to the Internet. Ed. 1, volume 1. TECC Editora, Florianopolis, Brazil.
- MORI, S. A., E. A. KIERNAN, N. P. SMITH, L. M. KELLY, Y.-Y. HUANG, G. T. PRANCE, AND B. THIERS. 2017. Observations on the phytogeography of the Lecythidaceae clade (Brazil nut family). *Phytoneuron* 30: 1–85.
- PRANCE, G. T., AND S. A. MORI. 1979. Lecythidaceae. Part I. The actinomorphic-flowered New World Lecythidaceae (*Asteranthos*, *Gustavia*, *Grias*, *Allantoma*, & *Cariniana*). *Flora Neotropica Monograph* 21: 1–270.
- THIERS, B. 2022. Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. <http://sweetgum.nybg.org/ih/> (accessed January 10, 2024).
- VARGAS, O. M., AND C. W. DICK. 2020. Diversification History of Neotropical Lecythidaceae, an Ecologically Dominant Tree Family of Amazon Rain Forest. Pages 791–809 in V. RULL AND A. CARNAVAL, EDs., *Neotropical Diversification: Patterns and Processes*. Fascinating Life Sciences. Springer, New York. [https://doi.org/10.1007/978-3-030-31167-4\\_29](https://doi.org/10.1007/978-3-030-31167-4_29)
- VARGAS, O. M., D. A. LARSON, J. E. BATISTA, X. CORNEJO, B. GARCIA LUIZE, D. MEDELLÍN-ZABALA, M. RIBEIRO, N. P. SMITH, S. A. SMITH, A. VICENTINI, AND C. W. DICK. 2024. Reclassification of the *Bertholletia* clade of the Brazil nut family (Lecythidaceae) based on a phylogenetic analysis of plastome and target sequence capture data. *Harvard Paper in Botany*. 29(1): 159–179. DOI: <https://doi.org/10.3100/hpib.v29iss1.2024.n18>

## APPENDIX

Since the key on pages 248–251 could not be presented as a continuous text, readers can obtain it on a single page [here](#).