

GUSTAVIA CRASSIFOLIA (LECYTHIDACEAE): A LARGE-FLOWERED NEW SPECIES FROM NORTHWESTERN COLOMBIA

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ABSTRACT

Gustavia crassifolia (Lecythidaceae), a new species of tree that produces beautiful large flowers, ca. 24 cm in diameter, from the departments Chocó and Antioquia in northwestern Colombia is formally presented and illustrated.

RESUMEN

Gustavia crassifolia (Lecythidaceae), una nueva especie de árbol que produce hermosas flores de gran tamaño, de unos 24 cm de diámetro, de los departamentos de Chocó y Antioquia en el noroccidente de Colombia es formalmente presentada e ilustrada.

KEY WORDS: Antioquia, Chocó, Endemic, Horticulture, Neotropics, Ornamental

INTRODUCTION

Gustavia L. (Lecythidaceae) is a Neotropical genus of understory shrubs or treelets to medium size trees that predominantly occur in moist to pluvial forests from near sea level to lower Andean slopes from Costa Rica to eastern Brazil and Bolivia (Mori 1979; Cornejo & Mori 2019; Cornejo et al. 2023). *Gustavia* is characterized by the medium size to often large leaves, inflorescences suprafoliar, ramiflorous or cauline, usually in acropetally flowered racemes or (sub) fasciculate, sometimes also producing solitary flowers, always bracteate and with a pair of opposite or subopposite bracteoles inserted on pedicels or hypanthium. The showy actinomorphic flowers emit a sweet scent. The androecium is composed of a thin-walled staminal cup formed by the partial fusion at base of dozens to hundreds of erect-incurved filaments along the rim of the margin, that support oblong-elongate apically-poricidal, motile upside-down abaxial anthers, that when shaken by wind or by bees can shed a cascade of pollen grains into the interior of the flower. The ovary is 4–6(–8)-locular, the very short and thick to obconical style is centered and emerging on a flat receptacle, the poorly differentiated stigma has 4 to 6 horizontally arranged rays; the dispersal units are (sub)globose, indehiscent fruits that contain a thin mesocarp palatable to mammals, usually enveloping 1–10 massive seeds. The genus forms a sister clade to *Grias* L. and is clearly defined by both molecular and morphological characters (Mori 1979; Mori et al. 2007; Huang et al. 2015; Cornejo et al. 2023; Vargas et al. 2024). *Gustavia* was first monographed by Mori (1979) under supervision of Hugh Iltis (H.H. Iltis pers. com. to Cornejo in Madison, WI, 2006), recognizing 40 species; five additional species have been described since then and *G. paucisperma* (S.A. Mori) S.A. Mori has been raised to specific rank (Mori & Cornejo 2013; Cornejo & Mori 2019; Cornejo et al. 2023). During the revision of *Gustavia* for a Supplement to Flora Neotropica (Prance et al. submitted), the author found a new species with distinctive large flowers, previously recognized by Scott Mori as a taxonomic novelty but never published (Mori et al. 2015). This new species is recognized and formally presented here. The genus now includes 47 species, of which 85% of its diversity is concentrated in Colombia and Ecuador (Mori et al. 2017; Cornejo et al. 2023). Further field studies and additional collections of poorly known species mainly in northwestern South America are recommended.

Gustavia crassifolia S.A. Mori ex Cornejo, **sp. nov.** (Fig. 1). TYPE: COLOMBIA. CHOCÓ: 12 km on road from Quibdó from Tutunendó [spelled incorrectly on label], 05°44'N, 76°32'W, 45 m, 18 Apr 1982 (immature fr), G.T. Prance & E. Rentería 27968 (HOLOTYPE: NY 00810254 barcode [fr]!; ISOTYPES: COL accession 257285 [fr]!, NY barcode 00810255 [fr]!).

Diagnosis.—By the petiolate large leaves and suprafoliar inflorescences, *Gustavia crassifolia* resembles *G. petiolata* S.A. Mori (1979), but differs by having larger leaves, ca. 60 cm long, venation mostly eucamptodromous, the blade without punctuations and glabrous abaxially (vs. leaves shorter, 26–45 cm long, the venation mostly brochidodromous, and the blade punctuate and pilose abaxially), calyx of 6 lobes fused at base forming a rim, up to 5 mm high (vs. calyx of 4 lobes, those barely fused or not fused at base), larger flowers (ca. 24 cm vs. 10–15 cm in diam.), and immature fruit mostly ecostate (vs. immature and mature fruit distinctively costate).

Description.—Pachycauls, understory trees 6–12 m tall and ca. 25 cm DBH. Bark unknown. Stems thick, 12–15 mm diam. **Leaves** present at anthesis, aggregated at ends of branches; petioles hemispherical in cross section, 60–90 mm long × 5 mm diam., glabrous. Leaf blades narrowly obovate to oblanceolate, ca. 60 cm long × 16–17 cm wide, coriaceous, without punctae, glabrous, the base long cuneate to obtuse, the margins entire, the apex damaged in available specimens; venation mostly eucamptodromous, a few secondaries brochidodromous near apex, the midrib salient on both surfaces, abaxially rounded, adaxially somewhat carinate, the secondary veins in 27–35 pairs, decurrent at base on midrib attachment, ca. 20–28 mm apart in middle of blade, adaxially prominulous, abaxially salient, the intersecondary veins short, extending less than half way to margin, not present between all secondaries, the tertiary veins percurrent, the higher order venation reticulate, the venules often free-ending. **Inflorescences** terminal, racemose, the rachis 4–8 cm long × ca. 15 mm diam., nearly as thick as stem below inflorescence, densely covered with bract scars; pedicels 7–8 cm long × 6–7 mm diam. in immature fruits, the floral bract not seen, the bracteoles not seen but scars inserted well above middle and sometimes just below hypanthium. **Flowers** very large, not seen fresh but flattened flower on herbarium sheet (*Zarucchi et al.* 6639) 24 cm diam; hypanthium densely ferruginous pubescent, costae very poorly developed; calyx with 6 lobes, the lobes very broadly ovate, ca. 10 × 20 mm, fused at base to form calycine rim to 5 mm wide; petals 6, obovate to narrowly obovate, white (*vide Zarucchi et al.* 6639); **androecium** with staminal tube ca. 14 mm high, yellow (*vide Zarucchi et al.* 6639), the outermost filaments ca. 20 mm long, markedly constricted at apex, the anthers 3.5 mm long; ovary 6-locular, summit truncate, pubescent, the style obconical, 3–5 mm long, 6 stigmatic rays. **Fruits** only known immature, the opercular area nearly as wide as fruit diam.

Distribution.—Pacific coast of Colombia in the departments of Antioquia and Chocó.

Discussion.—*Gustavia crassifolia* resembles *G. petiolata*, but can be recognized by the characters mentioned in the diagnosis. The suprafoliar inflorescences, large leaves without punctuations, glabrous abaxially, and calyx of 6 lobes fused at base forming a rim of *Gustavia crassifolia* are traits shared with *G. jhonclarkii* S.A. Mori & Cornejo from northwestern Ecuador (Mori & Cornejo 2013), but the new species can be recognized from the latter by the leaves distinctively petiolate (vs. sessile), and distinctive larger flowers (ca. 24 cm vs. 10–15 cm in diam.). The collection from Antioquia (*Zarucchi et al.* 6639) differs from the type collection from near Quibdó in the Chocó (*Prance & Rentería* 27968) by the more acute to obtuse versus cuneate leaf blade bases and the chartaceous versus coriaceous leaf blades, both of which are features that often vary among populations of the same species of *Gustavia*.

Etymology.—The epithet *crassifolia* refers to the relative thicker chartaceous leaf blades that characterize the type.

Conservation Status.—IUCN: Based on georeferenced herbarium data the two collections including the type of *Gustavia crassifolia* came from an extend of occurrence (EOO) of less than 1200 km² with an area of occupancy of 50 Km² at northwestern Colombia. Therefore, the species is listed as Endangered (EN) under criteria B1 ab(iii) + 2ab (ii, iii, iv) following the IUCN (2022) criteria.

Paratype.—COLOMBIA. Antioquia; San Carlos, Embalse Punchiná, margin of streams leading into reservoir near site of dam, 06°12'N, 74°52'W, 780 m, 18 May 1988 (fl), J.L. Zarucchi, M.P. Velásquez, O. Escobar, & A. Ayala 6639 (MO [2 sheets], NY [2 sheets]).

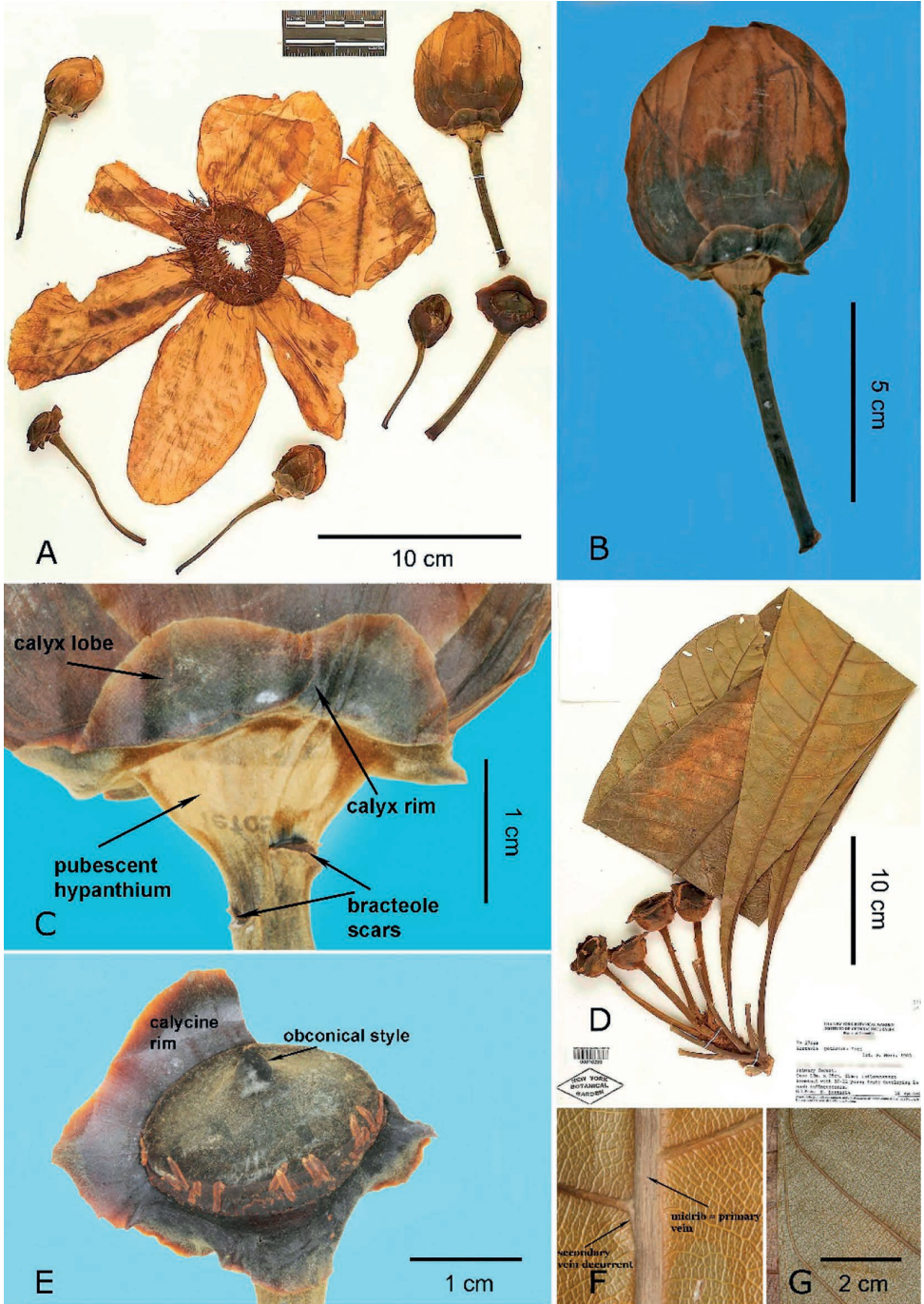


FIG. 1. *Gustavia crassifolia* S.A. Mori ex Cornejo. **A.** herbarium specimen composed of a dried open corolla surrounded by four flower buds at different stages, and two pedicels with attached calyx at post flowering. **B.** lateral view of a flower bud near maturity. **C.** close up of calyx rim and hypanthium. **D.** mounted material of a terminal leafy branch bearing young fruits. **E.** lateral-axial view of receptacle surrounded by the calycine rim. **F.** abaxial view of midvein, lateral veins attachment with decurrent bases, and reticulate tertiaries. **G.** eucamptodromous venation and thinly percurrent tertiaries (A–C, E, based on Zaruchy et al. 6639 (NY); D, F, G, based on Prance & Rentería 27968 (NY, the type). Photos: A–G, Scott Mori).

KEY TO *GUSTAVIA CRASSIFOLIA* AND MORPHOLOGICALLY RELATED SPECIES

1. Calyx lobes with an adaxial inverted Y-shaped thickening _____ **Gustavia hexapetala** group
1. Calyx lobes without an adaxial inverted Y-shaped thickening.
 2. Pedicels subtended by a large floral bract, 25–115 × 10–15 mm _____ **Gustavia grandibracteata** group
 2. Pedicels subtended by a small, scale-like usually caducous floral bract, up to 20 × 10 mm.
 3. Inflorescences mostly arising among or below the leaves (i.e. axillary or cauline) _____ **Gustavia** spp.
 3. Inflorescences mostly arising above the leaves (i.e., suprafoliar).
 4. Abaxial leaf surface pubescent (at × 10 magnification), at least on the veins; ovary usually obscurely 4 costate; plants of coastal Ecuador and southwestern coastal Colombia.
 5. Petioles absent or to 30 mm long; leaf blades usually serrate or serrulate towards apex; sepals 6(–4); seeds with testa brown to dark-brown at maturity; restricted to seasonally Pacific dry forest of coastal Ecuador _____ **G. angustifolia**
 5. Petioles 50–200 mm long; leaf blades entire towards apex; sepals 4; seeds with testa creamish-white at maturity; restricted from wet to pluvial forest of Chocó in western Colombia and northwestern Ecuador _____ **G. petiolata**
 4. Abaxial leaf surface glabrous (at × 10 magnification); ovary with or without costae; only *G. dodsonii* and *G. johncClarkii* of coastal Ecuador, the remaining species of the Andes, Interandean Valleys, Amazonia, or the Guianas.
 6. Calyx of 6 lobes; Pacific coast of Colombia and northwestern Ecuador, and Magdalena Valley, Colombia
 7. Leaf blades 50–100 × 16–45 cm; calyx cupular in flower buds, the lobes fused at base to form a conspicuous calycine rim; Pacific coast of Colombia and northwestern Ecuador.
 8. Leaf blades petiolate, the petioles 60–100 mm long; flowers ca. 24 cm diam.; Pacific coast of Colombia in the departments of Antioquia and Chocó _____ **G. crassifolia, sp. nov.**
 8. Leaf blades (sub)sessile, the petioles absent; flowers 10–15 cm diam.; northwestern Ecuador _____ **G. johncClarkii**
 7. Leaf blades 15–29 × 6–12.5 cm; calyx dish-like in flower buds, the shallowly rounded lobes inconspicuous, apparently entire or nearly entire not forming a conspicuous calycine rim; Magdalena Valley, Colombia _____ **G. santanderiensis**
6. Calyx entire or with 4 shallow lobes; mostly Amazonia and the Guianas (except *G. dodsonii*, *G. gracieae* from western Ecuador).
 9. Seeds with well developed, thickened, yellow or orange, elongate and contorted funicular arils; mostly Amazonian and the Guianas.
 10. Leaf blades elliptic; fruits cylindrical, 1.5–3 cm in diameter; plants of terra firme, restricted to central Amazonia _____ **G. elliptica**
 10. Leaf blades obovate to oblanceolate; fruits globose, 3–8 cm in diameter; plants mostly of várzea or river margins, infrequently of terra firme; widespread and common throughout Amazonia and the Guianas _____ **G. augusta**
 9. Seeds without well developed, thickened, yellow or orange, elongate and contorted funicular arils; mostly extra Amazonian (only *G. terminaliflora* and *G. macarenensis* Amazonian).
 11. Leaves sessile; mature blades 10–26 cm width, with 24–37 pairs of lateral veins; plants of coastal and northwestern Andean slopes of Ecuador.
 12. Pedicels glabrous, bracteoles 2–3 × 3 mm long, hypanthium smooth without costa; flowers ca. 7–8 cm diam.; fruit globose; montane forest of northwestern Andean slopes of Ecuador _____ **G. gracieae**
 12. Pedicels densely pubescent, bracteoles 8–11 × 4–6 mm long, hypanthium 4-costate; flowers 12–14 cm diam.; fruit campanulate; lowland forests of northwestern Ecuador _____ **G. dodsonii**
 11. Leaves petiolate; mature blades 4.5–10(–13) cm width, with 10–27(–31) pairs of lateral veins; plants of the Andes, Interandean Valleys, Amazonia, or Panama.
 13. Calyx entire; pedicels 15–17 mm; plants of the Magdalena Valley, Colombia into the Darién of Panama _____ **G. verticillata**
 13. Calyx 4-lobed; pedicels 25–90 mm; plants not of the Magdalena Valley or the Darién of Panama.
 14. Bracteoles of pedicels basally fused over overlapping bases to one another leaving one bracteolar scar after falling; Venezuela, Mérida _____ **G. paucisperma**
 14. Bracteoles of pedicels not basally fused, leaving two (sub)opposite bracteolar scars after falling.
 15. Petals 2–4 cm long; plants of eastern Venezuela _____ **G. parviflora**
 15. Petals 4–8 cm long; plants of Panama, Colombia and Ecuador.
 16. Leaf laminae distinctly serrate at apex; plants of Barro Colorado Island, Panama _____ **G. fosteri**
 16. Leaf laminae entire to serrulate at apex; plants of the Andes, Interandean Valleys, and western Amazonia.
 17. Fruits with operculum dome-shaped, the calycine ring inserted from middle to two thirds of length and at highest diameter of fruit, never exceeding operculum; plants of Interandean Valleys, sometimes cultivated outside of native range _____ **G. speciosa**
 17. Fruits with operculum truncate to depressed, the calycine ring apical, exceeding the operculum, inserted at distal narrower diameter of fruit; Amazonia of Colombia, Ecuador, and Peru.
 18. Leaf blades 4.5–9.5 cm wide; petals 6–8 cm long; often cultivated _____ **G. macarenensis**
 18. Leaf blades 10–13 cm wide; petals 4–6 cm long; not cultivated _____ **G. terminaliflora**

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