Rubiacearum Americanarum Magna Hama Pars XX. New Species of *Faramea* (Coussareae) from Central and South America

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ABSTRACT. Seven new species of *Faramea* Aublet (Rubiaceae, Coussareae) are newly described from Colombia, Ecuador, Panama, and Peru. The new species *F. colombiana* C. M. Taylor from northwestern Colombia differs from *F. robusta* C. M. Taylor by its longer pedicels and larger flowers; *F. condorica* C. M. Taylor from southeastern Ecuador differs from *F. phyllonomoides* Standley by its longer calyx limbs and corollas with the tubes about twice as long as the lobes; *F. frondosa* C. M. Taylor from Panama differs from *F. eurycarpa* Donnell Smith by its oblanceolate to obovate calyx lobes 3.5–7 mm long; *F. melicoccoides* C. M. Taylor from western Colombia is distinguished by its relatively large fruits with a thickened pericarp, juicy mesocarp, and single smooth seed; *F. ortiziana* C. M. Taylor from Amazonian Peru differs from *F. guianensis* (Aublet) Bremekamp by its often terminal inflorescences and larger flowers and fruits; *F. robusta* C. M. Taylor from northwestern Colombia differs from *F. polytriadophora* Bremekamp by its longer peduncles and larger flowers; and *F. schunkeana* C. M. Taylor from central Peru differs from *F. morilloi* Steyermark by its leaves obtuse to rounded or cordulate at base, its larger corollas, and its smooth seeds.

Key words: Colombia, Coussareae, Ecuador, *Faramea*, IUCN Red List, Neotropics, Panama, Peru, Rubiaceae.

During study of recent collections of *Faramea* Aublet from Central and South America, the following undescribed taxa were discovered. A summary of the morphology of *Faramea* has previously been presented (Taylor, 1999, 2002). This Neotropical genus of about 130 species of understory shrubs is characterized within the Rubiaceae by its indehiscent, often leathery, blue to black fruits with one rather thin-walled seed; its ovaries 1-locular with one basal ovule; and its internally glabrous corollas with four valvate lobes. Additionally, *Faramea* can often be recognized by its stipules that usually terminate in a well-developed arista and are often also costate; its flattened stems with a slender longitudinal ridge descending along each side as an apparent continuation of the stipule rib; and its distichous leaf arrangement. The inflorescences are notably variable, with flowers solitary to numerous, axillary and/or terminal, and variously cymose to capitate or fasciculate with bracts well developed to reduced. Species of *Faramea* grow in moist to wet forests at 0–3200 m; many if not most of them are distylous.

Faramea is similar to *Coussarea* Aublet; *Coussarea* is distinguished by its usually white inflorescence axes (vs. green to blue) and fruits with spongy mesocarp and white surfaces (vs. fleshy to juicy and blue to black, respectively). *Faramea* has not been studied as a whole, but several floristic treatments have been presented (e.g., Taylor, 1999, 2004); additional comments on the characteristics, range, and classification of this genus were presented by Taylor (2002).

The study presented here is taxonomic and floristic; the objective is enumeration of the species that belong to various Rubiaceae genera, and the species that occur in the area of tropical Central and South America. The methods employed here correspond only to this objective; however, this study is based on survey of specimens collected over more than 60 years using various survey methods aimed at various objectives. The specimens that here outline the range and commonness of these new species were located through a non-exhaustive survey of a few herbaria. No field studies have been done either targeting these species or broadly surveying their occurrence in regions where they are known to grow or may be expected to occur (e.g., as in Cheek & Csiba, 2002). Thus, the floristic information presented here is a simplified presence report based on an incomplete survey of the data available, and the botanical data are uneven and incomplete for this region (Schulman et al., 2007). Knowledge of the range of a species is essential to understanding the threats to its existence and thus to understanding its actual conservation status; no claim is made here to accurately describe the entire geographic range of any of these new species. Knowledge of the existence of a species based only on one or a few collections does not provide a reasonable estimate of its population size,

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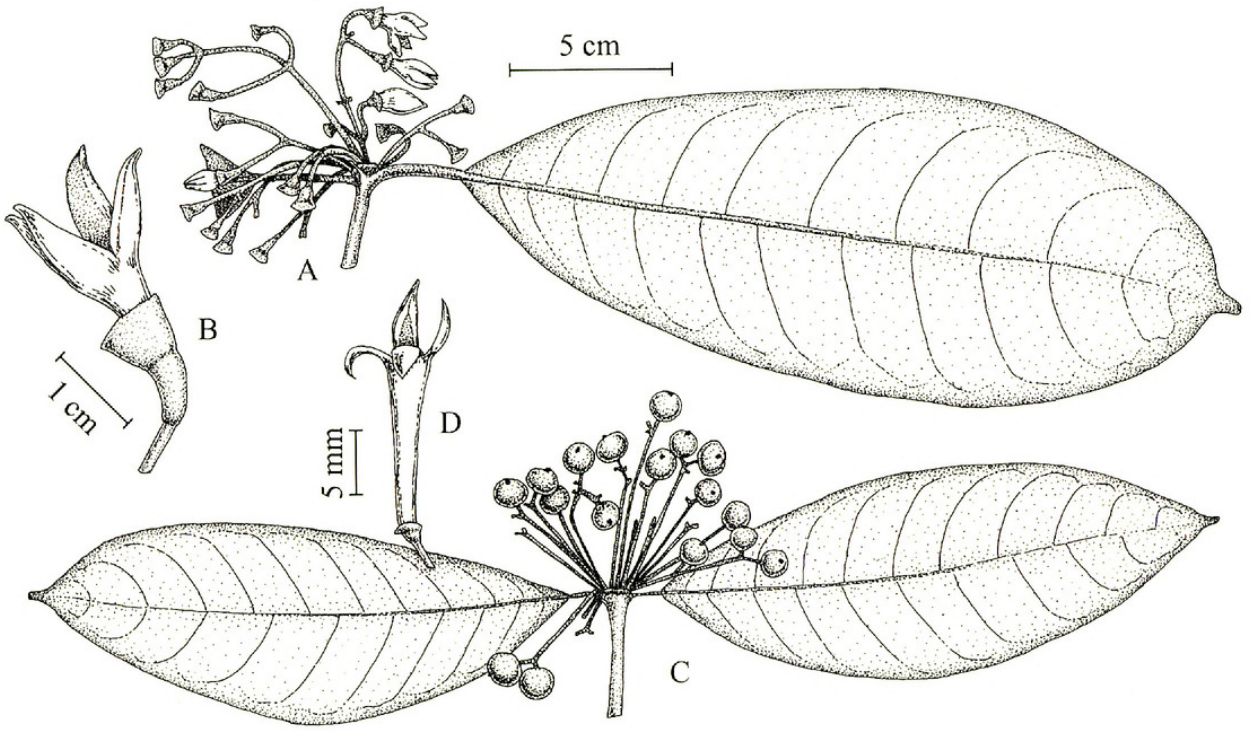

Figure 1. A, B. *Faramea colombiana* C. M. Taylor. —A. Flowering stem. —B. Flower at anthesis. C, D. *Faramea robusta* C. M. Taylor. —C. Fruiting stem. —D. Flower at anthesis. A, B based on the type, *Haught 4597*; C based on a paratype, *F. García 463*; D based on the type, *Tuberquia et al. 494*. A, C to 5-cm scale.

which is also essential to understanding its actual conservation status. Pro forma conservation assessments are provided here for these newly described species according to IUCN categories (IUCN, 2001) and following current taxonomic practices, but these assessments are not intended to be submitted to IUCN for acceptance and the basis for these assessments should be carefully evaluated by the reader.

1. Faramea colombiana C. M. Taylor, sp. nov. TYPE: Colombia. Antioquia: 6 km S of Guapá & ca. 60 km S of Turbo, ca. 60 m, 24 Apr. 1945, *O. Haught 4597* (holotype, US 1709167; isotypes, COL, F 1175415, US 1709166). Figure 1A, B.

Haec species a *Faramea robusta* C. M. Taylor pedicellis 8–20 mm longis, calycis limbo 3–4 mm longo atque corollae tubo 7–8 mm longo ac lobulis 10–11 mm longis distinguitur.

Small trees to 7 m tall, glabrous. *Leaves* elliptic to elliptic-obovate, 16–34 × 8–16 cm, at apex rounded then abruptly acuminate with tips 6–10 mm, at base cuneate to obtuse, drying chartaceous to subcoriaceous, adaxially shiny, abaxially matte to somewhat shiny; secondary veins 9 to 15 pairs, looping weakly to interconnect, adaxially venation plane or costa sometimes prominent, abaxially costa prominent, secondary veins plane to prominulous, and higher order venation plane; petioles 15–25 mm; *stipules* united around the stem, persistent, 5–15 mm, abaxially smooth (i.e., without ribs), truncate to broadly rounded, aristate with arista ca. 2.5 mm. *Inflorescences* terminal, fasciculate, 8–10 × 8.5–9 cm, glabrous, ebracteate or bracts reduced; peduncles 7 to 8, 2–3.5 cm, with branched portion 1.5–8 cm, branched to 1 or 2 orders, unarticulated; pedicels 8–20 mm. *Flowers* with hypanthium cylindrical, 3–3.5 mm; calyx limb 3–4 mm, truncate; corolla white, fleshy, glabrous externally and internally, tube funnelform, 7–8 mm, lobes triangular to lanceolate, 10–11 mm, acute to acuminate; anthers and stigmas not seen. *Infructescences* similar to inflorescences. *Fruits* subglobose, ca. 15 mm diam., color unknown; seed smooth.

Distribution, habitat, and phenology. Wet forests at 30–60 m in northwestern Colombia; collected with flowers in April, with immature fruits in June.

Conservation assessment. This species is documented so far by two collections that were distributed to North American herbaria, one collected more than 40 years ago and the other more than 20 years ago. These were both collected in the same general region; neither of the collection sites can be located exactly. This general area has not been explored botanically in the past 20 years, or at least specimens have not been distributed to North American herbaria. The possible occurrence of this species in other sites is unknown. The vegetation of the areas where these specimens were collected is presumed to be degraded, because

most areas accessible to collectors 20 or more years ago are now degraded. Other species of northwestern South American Rubiaceae considered locally endemic have later been found widely distributed (e.g., Taylor, 1999), although these distributions have not always been documented with specimens due to various factors, including government restrictions on collecting specimens (e.g., *Duroia sancti-ciprianii* Devia, C. Persson & C. M. Taylor is documented only from Valle Department, Colombia, but is also frequent in disturbed forests near Quibdó, Chocó, where it has not been collected, apparently because it grows close to urban development; pers. obs.). Because these considerations counter each other, this species is here considered Data Deficient (DD; IUCN, 2001).

Discussion. *Faramea colombiana* is notable for its rather large firm-textured leaves, its unusual inflorescences composed of a terminal group of seven or eight fasciculate peduncles each bearing three to five flowers, its well-developed truncate calyx limb, and its stout white corollas with the lobes about equal in length to the tube. This new species is known only from the region of the Bahía Colombia at the base of the Golfo de Urabá, an inlet of the Caribbean Sea located at the southern end of the Panamanian isthmus; the specific epithet refers to this region. The name "*Coussarea locuples*" was annotated on the collection *Haught 4597* by Standley, but this name was eventually published by him for a very different species from Amazonian Brazil. This new species is similar to *F. robusta* C. M. Taylor (described herein), also found in northwestern Colombia, which has a similar inflorescence arrangement; *F. robusta* differs in its more numerous (14 to 18) and apparently more slender peduncles, its calyx limbs ca. 1 mm long, and its corolla with the tubes ca. 18 mm long and much longer than the lobes. This new species is also similar to *F. cyathocalyx* Standley, also of northwestern Colombia; *F. cyathocalyx* has one to four (or possibly more) flowers borne from the leaf axils or stem apex in a fasciculate group, each on a peduncle 1–25 mm long, with calyx limbs 7–11 mm long. Haught's first set of collections appears to have been deposited at US, and this is the best specimen of the set he made of his number *4597* and is therefore chosen as the holotype.

Paratype. COLOMBIA. **Antioquia**: Zona Bohios, Finca La Cabaña, camino al Río León, *E. Rentería y otros [sic on label] 4209* (JAUM, MO).

2. Faramea condorica C. M. Taylor, sp. nov. TYPE: Ecuador. Zamora-Chinchipe: Pachicutza, sendero hacia el Hito, 1000–1200 m, 18 Oct. 1991, *J. Jaramillo 14095* (holotype, NY). Figure 2D–F.

Haec species a *Faramea phyllonomoides* Standley calycis limbo longiore atque corollae tubo lobulis subduplo longiore distinguitur.

Shrubs or small trees to 4 m tall, glabrous. *Leaves* elliptic-oblong to lanceolate-oblong, 9–19 × 3.5–7 cm, at apex acute to acuminate with tips 5–10 mm, at base obtuse to rounded, truncate, or cordulate, drying papyraceous to chartaceous, adaxially and abaxially matte; secondary veins 7 to 15 pairs, looping to interconnect, forming a weak undulating submarginal vein, adaxially and abaxially costa prominent and remaining venation prominulous; petioles 2–10 mm; *stipules* united around stem, on each side 13–26 mm, abaxially smooth to costate, at apex triangular, apiculate, persistent, often splitting along one side. *Inflorescences* terminal, cymose, 3–4 × 3–4 cm, glabrous, sessile and tripartite, branched to 2 or 3 orders; bracts triangular to ligulate, 1–2.5 mm, rounded to acute or erose; pedicels 0.5–2.5 mm. *Flowers* subsessile to pedicellate in cymose groups of 3 to 9; hypanthium cylindrical to ellipsoid, 1–1.5 mm; calyx limb with tube 2–2.5 mm, truncate to concave between lobes, lobes narrowly triangular to linear, 1–2.5 mm; corolla salverform, white or flushed with lavender, glabrous externally and internally, tube 10–12 mm, lobes narrowly elliptic to lanceolate, ca. 5 mm, acute; anthers and stigmas not seen. *Infructescences* similar to inflorescences. *Fruits* oblate and laterally somewhat flattened, ca. 8 × 12–15 mm, blue; seeds smooth.

Distribution, habitat, and phenology. Wet forests at 800–1600 m in southeastern Ecuador and northern Peru, in the Cordillera del Cóndor and the Cordillera de Cutucú; collected with flowers in October, with fruits in February, March, and July.

Conservation assessment. This species is known from two phytogeographically related but physically separated mountain ranges. It is documented by a number of collections from unsystematic, generalized botanical surveys made over a decade in these two separated areas with different collectors all locating it. Thus, this species appears to be rather frequent and its populations do not appear to be declining, and it is here considered Least Concern (LC; IUCN, 2001).

Discussion. *Faramea condorica* can be recognized by its well-developed stipules that generally persist at least on the upper several nodes, its cymose, rather congested (i.e., with relatively short axes) terminal inflorescences, and its well-developed calyx limbs. It is only known from the Cordillera del Cóndor and Cordillera de Cutucú, which are sandstone outcrops

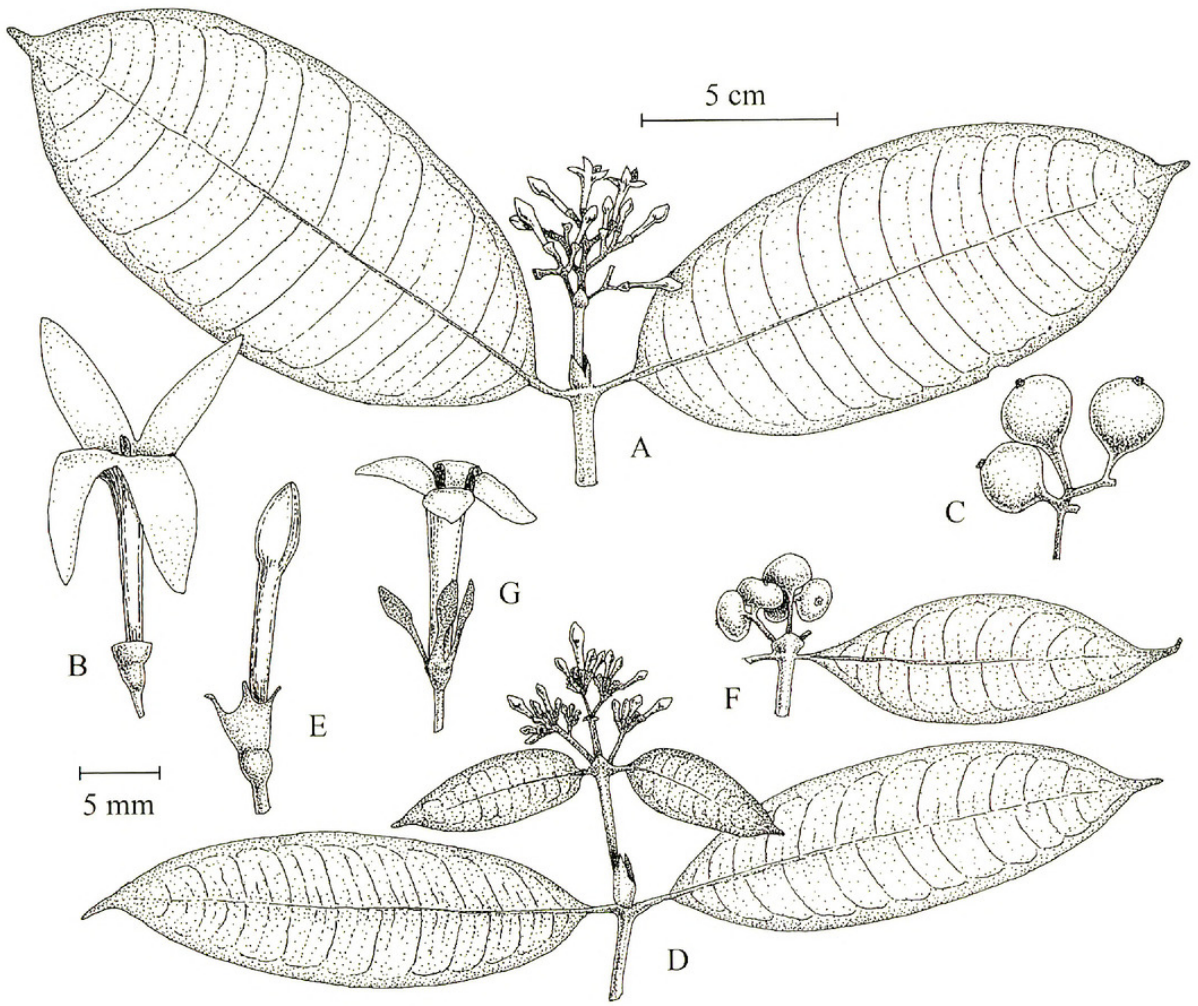

Figure 2. A–C. *Faramea melicoccoides* C. M. Taylor. —A. Flowering stem. —B. Flower at anthesis. —C. Portion of infructescence with three immature fruits. D–F. *Faramea condorica* C. M. Taylor. —D. Flowering stem. —E. Flower in bud. —F. Fruiting stem. —G. *Faramea frondosa* C. M. Taylor, flower at anthesis. A, C, D, F based on 5-cm scale; B, E, G to 5-mm scale. A, B based on the type, *Croat 61285*; C based on a paratype, *Croat 71105*; D based on the type, *Jaramillo 14095*; E based on a paratype, *Toasa 8954*; F based on a paratype, *Quizhpe 1754*; G based on *McPherson 12160*, the type and the only known specimen of this species.

that lie just east of the Andes in the Amazonian Basin of Ecuador; the specific epithet refers to the geographic distribution. Plants from the Cordillera de Cutucú have leaves that are rounded to truncate or cordulate at the base (e.g., *Harling & Ståhl 26923*), while plants from the Cordillera del Cóndor have leaves that are obtuse to rounded at the base (as in the type; cf. Fig. 2D, F). However, no other differences are evident between these populations, which are here treated as conspecific. This new species is similar to *F. phyllonomoides*; however, *F. phyllonomoides* has shorter calyx limbs, with the tubular portion 0.5–1 mm long, and shorter corollas with the tubes (4–5 mm long) shorter than the lobes (7–8 mm long). [*Faramea uncinata* C. M. Taylor (Taylor, 1999) is a synonym of *F. phyllonomoides* (Taylor, 2005).]

Paratypes. ECUADOR. **Morona-Santiago**: Cordillera de Cutucú, Patuca–Santiago rd., E of Río Namangoza, Km 35, *L. Dorr & L. Barnett 5849* (MO), new rd. Patuca–Morona, Km 20, "Piantza," *G. Harling & B. Ståhl 26963* (GB, S), rd. Méndez–Morona, *H. van der Werff & W. Palacios 10350* (MO); Cordillera del Cóndor, valle del Río Coangos, Río Psurim entre los centros Shuar de Numpatkain y Banderas, *P. Fuentes, J. Ronquillo & A. Tankamash 1143* (MO), Limón Indanza, cumbre del Cerro Chikichiki Naint a 4 km al SE del Centro Shuar Warints, *G. Toasa 8954* (MO). **Zamora-Chinchipe**: Cordillera del Cóndor, Nangaritza cantón, Río Nangaritza, camino al hito de Pachicutza, *W. Palacios & Exp. Tratado Cooperación Amazónica 8205* (MO); Yantzaza, carr. desde Los Encuentros hacia el Cerro Machinaza, sector San Antonio, *W. Quizhpe 1754* (MO). PERU. **Amazonas**: Cordillera del Cóndor, prov. Condorcanqui, Puesto de Vigilancia Alfonso Ugarte (PV 3), cabeceras del Río Comainas, tributario al O del Río Cenepa, *H. Beltrán & R. Foster 790* (F, MO).

3. Faramea frondosa C. M. Taylor, sp. nov. TYPE: Panama. Coclé: above El Valle, along trail to top of Cerro Gaital, 8°37′N, 80°07′W, 1000–1100 m, 24 Feb. 1988, *G. McPherson 12160* (holotype, MO 37562841). Figure 2G.

Haec species a *Faramea eurycarpa* Donnell Smith limbo calycino fere ad basin lobato lobulis oblanceolatis usque obovatis 3.5–7 mm longis distinguitur.

Small trees to 3.5 m tall, glabrous. *Leaves* elliptic-oblong, 8–12 × 3–4.5 cm, at apex acuminate with tips 8–15 mm, at base cuneate to obtuse, drying chartaceous, adaxially and abaxially matte; secondary veins 8 to 10 pairs, looping to interconnect along entire length of blade, forming an undulating submarginal vein, adaxially costa prominent and remaining venation plane, abaxially costa prominent and remaining venation plane to prominulous; petioles 5–8 mm; *stipules* united around the stem, persistent only on the apical 1 or 2 nodes, on each side 10–11 mm, abaxially smooth, at apex triangular and aristate, arista ca. 2.5 mm. *Inflorescences* terminal, cymose, ca. 4 × 5 cm, glabrous, sessile and tripartite, ebracteate or bracts reduced, branched to 3 orders, pale blue; pedicels 3–5 mm. *Flowers* with hypanthium cylindrical to subglobose, ca. 1.5 mm; calyx limb lobed nearly to base, lobes oblanceolate to obovate, 3.5–7 × 1–2.5 mm, usually a little unequal in length on an individual flower, obtuse to acute; corolla salverform, pale blue, glabrous externally and internally, tube ca. 12.5 mm, lobes elliptic, ca. 5 mm, acute; anthers ca. 5 mm, partially exserted; stigmas not seen. *Infructescences* and *fruits* not seen.

Distribution, habitat, and phenology. Wet forests at 1000–1100 m in western Panama; collected with flowers in February.

Conservation assessment. This species is known from one specimen made on a general floristic survey ca. 20 years ago. The region is botanically poorly known in general, and has not been much explored since. The mountains and Caribbean coast of western Panama continue to yield new botanical records, often of species previously known from the poorly explored Caribbean slopes of southern Costa Rica (e.g., *Osa pulchra* (D. R. Simpson) Aiello; Aiello et al., 2007). The restriction of *Faramea frondosa* to one small population in one site mandates an assessment of Critically Endangered (CR), but there is a realistic possibility of the occurrence of this species elsewhere and the size of the population is unknown, thus it is considered Data Deficient (DD; IUCN, 2001).

Discussion. *Faramea frondosa* is distinguished by its unusual calyx limb, which is relatively well developed and lobed nearly to the base, with the lobes markedly broadened at the apex. *Faramea frondosa* is very similar to *F. eurycarpa*, including in its dried leaves that are markedly yellow-green on the undersides, but the calyx limb of *F. eurycarpa* is 1–3 mm long and dentate with the teeth less than half its length. This new species is known from only one collection, apparently without duplicates in Panama (M. Correa, pers. comm.), but the unusual calyx limbs are unique in *Faramea*; the specific epithet refers to this feature. The one collection of this species resembles the short-styled form of distylous species of *Faramea*, with the anthers partially exserted and the stigmas included; whether this species is actually distylous cannot be determined from this one collection.

4. Faramea melicoccoides C. M. Taylor, sp. nov. TYPE: Colombia. Valle del Cauca: Bajo Calima, within forestry concession of Cartón de Colombia, betw. Buenaventura & Río Calima, 6.5 km beyond Portón Tomar (at Km 27), 22.3 km beyond Camp Portada Pulpapel, 33.3 km beyond main Cali–Buenaventura Hwy., 4°02′N, 77°07′W, 6 July 1986, *T. B. Croat 61285* (holotype, MO 3624565; isotypes, CUVC, NY). Figure 2A–C.

Haec species a congeneris fructu sat grandi pericarpio incrassato, mesocarpio succoso atque semine solitario laevi distinguitur.

Shrubs or small trees to 8 m tall, glabrous. *Leaves* elliptic-oblong, 10–17 × 3–8 cm, at apex acute to usually acuminate with tips 8–15 mm, at base obtuse to rounded, drying chartaceous, adaxially and abaxially matte; secondary veins 12 to 15 pairs, looping to interconnect along entire length of blade, forming an undulating submarginal vein, adaxially costa prominent and remaining venation plane, abaxially costa prominent and secondary veins prominent and remaining venation prominulous; petioles 8–15 mm; *stipules* united around the stem, quickly deciduous or persistent only on the apical 1 or 2 nodes, on each side 7–17 mm, abaxially smooth, at apex triangular and often apiculate. *Inflorescences* terminal, cymose, 12- to 35-flowered; peduncles 1.8–3 cm; branched portion corymbiform, 3–4.5 × 4–6 cm, branched to 3 orders, pale blue; bracts triangular to ovate, 0.5–1.5 mm; pedicels 2.5–8 mm. *Flowers* pedicellate in dichotomous or umbelliform groups, fragrant; hypanthium cylindrical to turbinate, ca. 1.5 mm; calyx limb ca. 1 mm, truncate or denticulate, teeth minute to 0.3 mm, often unequal on an individual flower; corolla salverform, pale blue, glabrous externally and internally, tube cylindrical in lower portion to shortly funnelform at throat, 12–14 mm, lobes elliptic to lanceolate, 8–10 mm, acute; anthers ca. 6 mm, included, tips apiculate, positioned just below corolla throat; stigmas ca. 2 mm, positioned in corolla throat. *Infructescences* similar to inflorescences, with 2 to 5 fruits developing. *Fruits* oblate, laterally somewhat

flattened, ca. 12 × 20 mm, blue to purple, pericarp leathery, mesocarp juicy and pulpy; seeds smooth.

Distribution, habitat, and phenology. Wet forests at 0–100 m in western Colombia; collected with flowers June–September, with fruits throughout the year.

Conservation assessment. This species is known from a number of collections from at least six different localities distributed through a somewhat localized area in western Colombia. These collections were made from over 60 years ago to ca. 15 years ago, when general botanical survey work in this region stopped due to problems of safe access and government restrictions on collecting. This species thus appears to be persisting widely through this area and rather common where it occurs (cf. multiple collections from several sites). Some of the localities are known to be disturbed to degraded, although secondary species such as this survive, but at least one site, Escalerete, has long-term preservation and this species is likely to be more widely distributed, but surrounding areas have not been explored botanically. Thus, this species is here considered Least Concern (LC; IUCN, 2001).

Discussion. *Faramea melicoccoides* can be recognized by its stiff-textured leaves with the venation all raised on the lower surface, its cymose terminal inflorescences with blue salverform flowers, and its distinctive fruits. The fruits are unusual in *Faramea* in being relatively large and with a thickened pericarp, juicy mesocarp, and single smooth seed; in these features they resemble *Melicoccus bijugatus* Jacquin (Sapindaceae), and the specific epithet refers to this similarity. Very few flowering collections have been seen; the flowers seen appear to resemble the long-styled form of distylous *Faramea* species. The corollas are rather unusual in *Faramea* in having the throat portion shortly but markedly dilated and spreading; in most *Faramea* species the tube is cylindrical and only the lobes spread, with the change in orientation located at their bases. This species is similar in general aspect to *F. calimana* C. M. Taylor and *F. lutescens* Standley; however, both of these last two species have leaves with the venation not or indistinctly visible on the lower surface, corollas with the lobes 15–20 mm long and the tubes shorter (8–9 mm long), and typical fruits of *Faramea* that are smaller (ca. 8 × 15–16 mm) and have a thin-textured pericarp. This new species has been previously confused with *F. calophylla* Standley, which grows in the same region; however, *F. calophylla* has leaves that are shiny on both surfaces, slender shorter corollas with the tubes ca. 7 mm long and the lobes ca. 4 mm long, and typical fruits of *Faramea* (ca. 10 × 15 mm with a thin-textured pericarp). The only specimen of the type collection located as deposited in Colombia is reportedly incomplete and was made from a branch that was damaged by insects (P. Silverstone-Sopkin, pers. comm.). Thus, although preferably the holotype specimen should be that deposited in the country of origin of the species, in this exceptional case the complete specimen in better condition at MO is here chosen as the holotype.

Paratypes. COLOMBIA. **Valle del Cauca**: costa del Pacífico, Río Naya, Puerto Merizalde, *J. Cuatrecasas 14105* (F); Reserva Nat. del Río Escalarete, *Devia & Cogollo, Ramirez, Kell, Gonzalez, Cruz 4331, 4363* (MO, TULV); Bajo Calima region betw. Buenaventura & Río Calima, Cartón de Colombia/Pulpalel concession, *M. Monsalve 623, 948, 1189* (CUVC, MO), *B. Stein, L. McDade & M. Monsalve 3238* (MO), Carr. Hans at Km 22 on main rd. to Canalete, *T. Croat 69457* (MO), along rd. betw. Buenaventura & Málaga on Carr. Hanz [sic; Hans], *T. Croat 71074* (MO), at Km 44 along rd. past Pulpapel headquarters to Bahía de Málaga, *T. Croat & J. Watt 70193* (MO), at Km 50.5, *T. Croat & J. Watt 70316* (MO), on Carr. Hanz [sic; Hans] 6.5 km N of main rd., *T. Croat 71105* (MO), San Isidro, vía Málaga, Km 51, *W. Devia & J. Prado 2605, 2656* (MO, TULV), *W. Devia 3030, 3036* (MO, TULV), Juanchaco area, at end of Gasolina rd., *D. Faber-Langendoen, M. Monsalve & E. Renteria 289* (MO), 3.4 km NW of San Isidro intersection on "Juanchaco Norte," *D. Faber-Langendoen & J. Hurtado 1580* (MO), ca. 15 km N of Buenaventura, *A. Gentry, A. Juncosa & H. Mazuera [sic] 40200, 40351* (MO), *A. Gentry & A. Juncosa 40515* (MO, NY), Dindo area, *A. Gentry, M. Monsalve & D. Wolfe 47883, 53634* (MO), rd. to Juanchaco Palmeras, *A. Gentry, M. Monsalve, W. Ladrach & H. Mazuero [sic] 48306* (MO, NY), carr. a Dindo, *M. Monsalve 1061, 1189* (CUVC, MO), Carr. Canalete, *M. Monsalve 1850, 1917, 3016* (CUVC, MO), Carr. Nac. Km 28, *M. Monsalve 3089* (CUVC, MO), Carr. Sol Naciente, *M. Monsalve 3168* (CUVC, MO).

5. Faramea ortiziana C. M. Taylor, sp. nov. TYPE: Peru. Loreto: Altura Tuta Pishco on Río Napo, 16 Sep. 1972, *T. B. Croat 20261* (holotype, MO 6053151). Figure 3A, B.

Haec species a *Faramea guianensis* (Aublet) Bremekamp inflorescentia interdum terminali atque corolla fructuque majoribus distinguitur.

Shrubs or small trees to 3.5 m tall, glabrous. *Leaves* elliptic, 11.5–22 × 3.5–8 cm, at apex acute to acuminate with tips 10–15 mm, at base acute to cuneate or somewhat obtuse, drying chartaceous, adaxially and abaxially matte; secondary veins 12 to 15 pairs, looping to interconnect in an undulating slender submarginal vein, adaxially costa prominent, secondary veins prominulous to impressed, and higher order venation plane, abaxially costa prominent, secondary veins prominulous, and higher order venation plane; petioles 3–5 mm; *stipules* united around the stem, persistent, 2–5 mm, costate on each

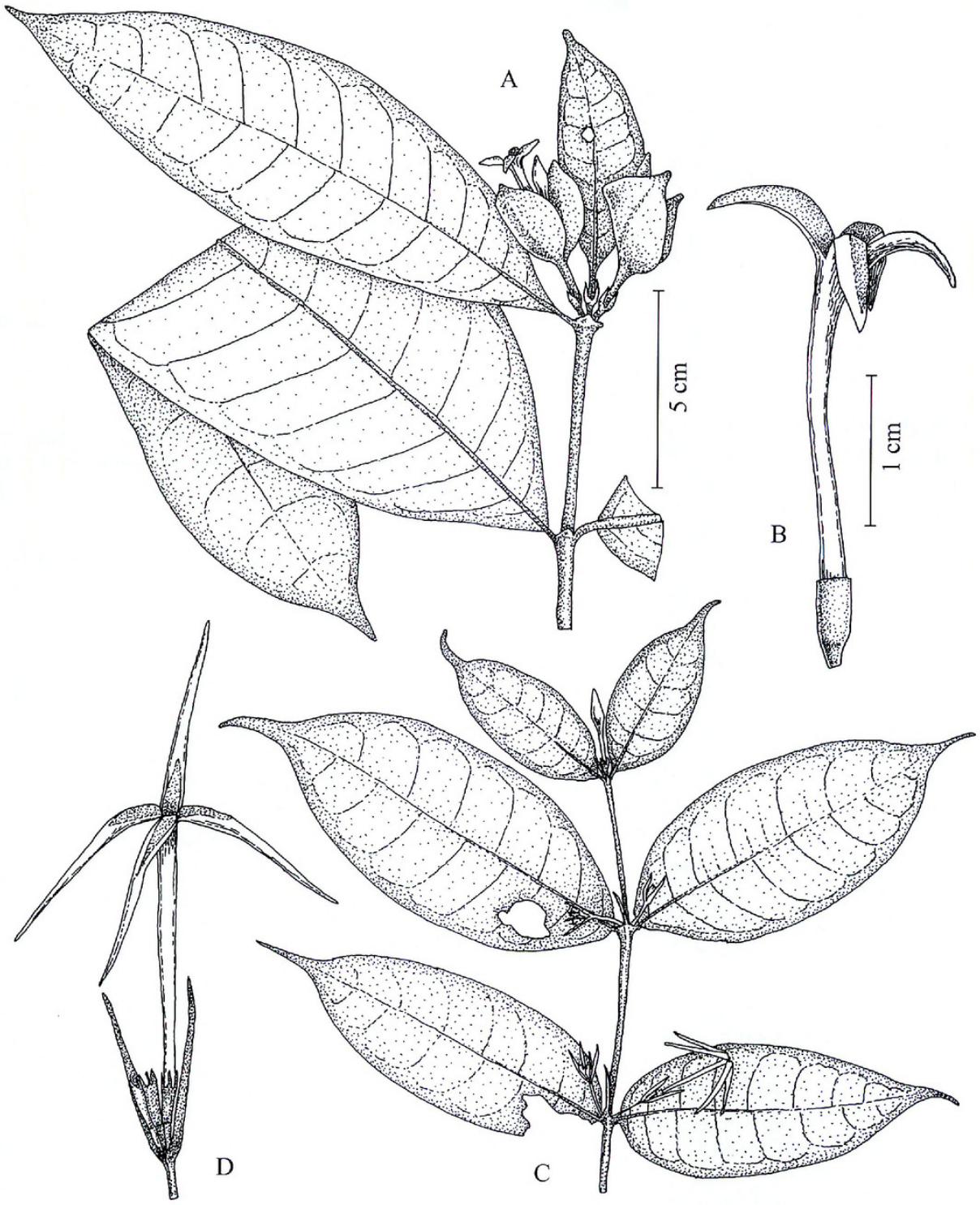

Figure 3. A, B. *Faramea ortiziana* C. M. Taylor. —A. Flowering branch. —B. Flower at anthesis. C, D. *Faramea schunkeana* C. M. Taylor. —C. Flowering branch. —D. Inflorescence with one flower at anthesis and two flowers from which corolla has fallen. A, C to 5-cm scale; B, D to 1-cm scale. A, B based on the type, *Croat 20261*; C, D based on the type, *Plowman et al. 11244*.

side, truncate, aristate with arista 10–13 mm, inserted below top of sheath, frequently broken off. *Inflorescences* axillary or terminal and fasciculate, glabrous; peduncles 1 per axil or 1 to 3 at stem apex, each bearing a single capitulum, articulated near base, basal portion 5–10 mm, at apex with a reduced stipule subtended by a pair of foliose bracts, upper portion 13–18 mm; heads ovoid, enclosed by 2 decussate pairs of involucrate bracts, outer bracts ovate, 2–2.5 × 2–3 cm, at apex shortly acuminate, at base cordate, costate and with weakly marked venation similar to that of leaves, interior bracts ovate to rhombic, ca. 10 × 8 mm, obtuse to acute. *Flowers* subsessile; hypanthium cylindrical, ca. 2 mm; calyx limb ca. 4 mm,

truncate; corolla salverform, white, glabrous externally and internally, tube ca. 23 mm, lobes narrowly triangular, 9–10 mm, acute; anthers and stigmas not seen. *Infructescences* similar to inflorescences. *Immature fruits* subglobose, 10–13 mm diam., mature color unknown; seeds smooth.

Distribution, habitat, and phenology. Wet primary forests at 95–190 m in northeastern Peru, along the Río Napo and the Río Yavarí; collected with flowers in September, with fruits in March.

Conservation assessment. This species has been collected twice in ca. 35 years, in two well-separated localities, both times as part of a general floristic survey. The second collection (*Beltrán et al. 5342*) was made as part of a preliminary botanical survey of a region targeted as particularly poorly known to science as an aid to regional preservation. The full distributional range of this species is not at all clear, and could extend into adjacent Brazil, where virtually no exploration has been done. Thus, the distribution of this species cannot be considered well known, and this species is here considered Data Deficient (DD; IUCN, 2001).

Discussion. *Faramea ortiziana* can be recognized by its one to three flowering heads borne on short peduncles and enclosed by well-developed ovate bracts (possibly future collections will have more numerous flowering heads), and its slender white corollas with the upper part of the tube and the lobes exserted above the bracts. This new species is known only from northeastern Peru, both north and south of the city of Iquitos. This elegant species is named in honor of Rosa Ortiz, a plant taxonomist and native of Iquitos who has collaborated in botanical exploration of this region. The peduncles appear to comprise two distinct internodes, with a reduced stipule and pair of leaves borne at the top of the lower portion or internode and another, larger pair of foliose bracts, the outer involucral bracts, borne at the top of the upper segment or internode. Similar morphology is seen in several other species, e.g., *F. angusta* C. M. Taylor. *Faramea ortiziana* is similar to *F. guianensis* of French Guiana; however, *F. guianensis* has stipules that taper directly into a narrowly prolonged apex (i.e., the apex is not inserted below the top of the sheath), consistently axillary inflorescences, peduncles that are not articulated, shorter corollas with the tubes ca. 8 mm long and the lobes ca. 4 mm long, and smaller ovoid fruits ca. 8 × 5 mm. *Faramea ortiziana* is also similar to *F. bracteata* Bentham of north-central Brazil; however, *F. bracteata* has subsessile leaves with rounded to cordulate bases, inflorescences with five to 12 peduncles, shorter calyx limbs 0.5–1 mm long, and shorter corollas with tubes 9–10 mm long and lobes 4–5 mm long.

Paratype. PERU. **Loreto**: prov. Mariscal Ramón Castilla, Río Yavarí, 20 km río abajo desde Angamos, Quebrada Curacinha, 5°03′S, 72°44′W, *H. Beltrán, R. Foster, N. Pitman, R. Garcia, C. Vriesendorp & M. Huite 5342* (F).

6. Faramea robusta C. M. Taylor, sp. nov. TYPE: Colombia. Chocó: Mpio. de Nuquí, correg. de Arusi, Cabo Corriente region, area of El Amargal Biological Station (INGUEDE Foundation), 5°34′N, 77°30′W, 0–80 m, 5 May 1997, *D. Tuberquia, J. Rova, C. Sundbaum & L. García 494* (holotype, S). Figure 1C, D.

Haec species a *Faramea polytriadophora* Bremekamp pedunculo 20–50 mm longo, pedicello 1.5–3 mm longo atque corollae albae tubo ca. 18 mm longo lobulis ca. 5 mm longis distinguitur.

Trees to 18 m tall, glabrous. *Leaves* elliptic to obovate, 13–30 × 3.5–12 cm, at apex acute to acuminate with tips 5–10 mm, at base acute to obtuse or rounded, drying chartaceous to subcoriaceous, adaxially shiny, abaxially matte; secondary veins 8 to 11 pairs, looping to interconnect at least weakly, often forming an undulating submarginal vein, adaxially venation plane, abaxially costa and secondary venation prominulous and higher order venation plane to prominulous; petioles 0.8–3.5 cm; *stipules* united around the stem, persistent on apical 1 to 3 nodes or often fragmenting, 1–4 mm, abaxially smooth, truncate or sometimes triangular when subtending inflorescences, aristate with arista 0.5–1 mm. *Inflorescences* terminal from a somewhat thickened node at top of vegetative stem, fasciculate, glabrous, ebracteate; peduncles 14 to 18, 20–50 mm, slender, unbranched or branched to 1 order (i.e., with 1 to 3 groups of flowers), unarticulated or occasionally with an articulation 3–5 mm above the base (i.e., in the lower 1/7–1/10); pedicels 1.5–3 mm. *Flowers* in umbelliform groups of 3 to 5; hypanthium cylindrical to turbinate, ca. 0.8 mm; calyx limb ca. 1 mm, truncate; corolla white, glabrous externally and internally, tube ca. 18 mm, lobes narrowly triangular, ca. 5 mm, acute; anthers ca. 5 mm, partially exserted, apiculate at apex; style ca. 5 mm, stigmas 2, linear, ca. 1.5 mm. *Infructescences* similar to inflorescences. *Fruits* oblate, 8–9 × 10–13 mm, glabrous, smooth, becoming red then purple-black; seeds smooth.

Distribution, habitat, and phenology. Wet forests at 0–100 m in northwestern Colombia; collected with flowers in May, with mature fruits in September.

Conservation assessment. This species is known from four collections essentially separated into three

localities and made over a period of ca. 8 years during general floristic explorations. Two of these localities are protected areas. Little exploration has been done in this general region, or at least few specimens have been distributed from here to North American herbaria, and the commonness of this species is unknown. Many Rubiaceae species of this region have relatively wide ranges, although they are poorly documented by specimens (pers. obs.), and this species could be widely distributed. Thus, this species is here considered Least Concern (LC; IUCN, 2001).

Discussion. *Faramea robusta* is notable for its relatively large size, with specimen data noting a height of 4.5–18 m tall, its rather large firm-textured leaves, and its unusual inflorescences composed of a vigorous terminal spray of numerous fasciculate peduncles, each bearing several flowers. The specific epithet refers to the vigorous size of the plants, as well as to the vigorous fieldwork (in extensive travel into areas of difficult access, collection of significant numbers of significant specimens, and work with various collaborators from various institutions) of Dino Tuberquia, the collector of the type specimen. Unfortunately, some of the flowers on the type specimen appear to be galled, with enlarged ovaries and malformed corollas. This new species is similar to *F. polytriadophora* of Guyana, which has a similar inflorescence arrangement. However, *F. polytriadophora* is well separated geographically from this new species and has generally shorter peduncles (13–20 mm long), longer pedicels (7–10 mm long), and corollas with the shorter tubes lavender-pink and ca. 15 mm long and the longer white lobes ca. 8 mm long. This new species is also similar to *F. colombiana*, described herein; *F. colombiana* has longer calyx limbs (3–4 mm long) and shorter corolla tubes (10–11 mm long). This new species is also similar vegetatively and in many reproductive features to *F. torquata* Mueller Argoviensis, found from Colombia to Bolivia; *F. torquata* has an inflorescence composed of only one to three peduncles that usually bear a characteristic articulation in the lower 1/4–1/3 and shorter corolla tubes 9–10 mm long.

Paratypes. COLOMBIA. **Chocó**: mpio. Nuquí, correg. Termales, coastal zone betw. Quebrada Piedra Piedra & Río Terco, *P. Acevedo-Rodriguez, R. Callejas & S. P. Churchill 6908* (MO, US); Parque Nac. de Utría, Isla Playa Blanca, al NO de la Ensenada de Utría, terrenos del Sr. Sálomon Caisamo, *F. García C. & E. Agualimpia 301* (MO); Parque Nac. de Utría, playa al SE de las bocas del Río San Pichí, *F. García C. & E. Agualimpia 463* (MO).

7. Faramea schunkeana C. M. Taylor, sp. nov. TYPE: Peru. Huánuco: prov. Leoncio Prado, distr. Rupa Rupa, Tingo María, limestone hills opposite airport, 9°18′S, 75°59′W, 700–780 m, 9 Dec. 1981, *T. Plowman, M. Ramírez R. & P. M. Rury 11244* (holotype, F 1898603; isotype, MO 3615598). Figure 3C, D.

Haec species a *Faramea morilloi* Steyermark foliis ad basin obtusis usque rotundatis vel cordulatis, corolla majore atque seminibus laevibus distinguitur.

Shrubs to 2 m tall, glabrous. *Leaves* elliptic to elliptic-oblong or broadly elliptic, 4.5–13.5 × 2–7 cm, at apex rounded then abruptly acuminate with tips 1–18 mm, at base obtuse to usually rounded or cordulate, drying chartaceous, adaxially shiny, abaxially matte and drying paler to yellowed; secondary veins 7 to 10 pairs, looping weakly to interconnect in a slender submarginal vein, adaxially costa prominent and remaining venation plane to prominulous, abaxially costa plane to prominent and remaining venation plane to prominulous; petioles 1–3 mm; *stipules* united around stem, persistent, 0.5–2 mm, costate on each side, truncate, aristate with arista 6–12 mm, inserted at or shortly below top of sheath. *Inflorescences* supra-axillary and terminal, glabrous; peduncles 1 per axil or 1 at stem apex, 0.5–10 mm, not articulated, each bearing a single capitulum, at apex with a reduced stipule fused with 1 or 2 pairs of bracts, these narrowly triangular to lanceolate, 8–20 mm, acute; capitulum enclosed within outmost (i.e., largest) bracts. *Flowers* 1 to 3 per head, subsessile, subtended by 2 to 5 aciculate bracts, 2–4 mm; hypanthium cylindrical, 1–1.5 mm; calyx limb with tube 2.5–3 mm, truncate to concave between lobes, lobes linear, 1–2 mm; corolla salverform, white, glabrous externally and internally, tube ca. 23 mm, lobes narrowly triangular, ca. 17 mm, acuminate; anthers and stigmas not seen. *Infructescences* with peduncles elongating, up to 52 mm. *Fruits* subglobose, ca. 14 mm diam., black; seeds smooth.

Distribution, habitat, and phenology. Wet forests at 700–880 m in central Peru, at least sometimes on limestone substrate; collected with flowers in March and December, with fruits in August.

Conservation assessment. This species is known from three collections made at two widely separated localities 25–30 years ago during general floristic explorations. These sites are presumably now degraded because that is the condition of most areas accessible to collectors 30 years ago, although the state of vegetation on unusual substrates such as this is not known. The area where this new species occurs is not well known botanically overall (Schulman et al., 2007). The distribution range of this species cannot be well estimated, and this species is here considered Data Deficient (DD; IUCN, 2001).

Discussion. *Faramea robusta* can be recognized by its subsessile or very shortly petiolate leaves with obtuse to usually rounded or cordulate bases, its terminal and supra-axillary capitate inflorescences surrounded by narrow bracts and a reduced stipule, and its peduncles that apparently elongate markedly as the flowers and fruits develop. This species is only known from three collections from central Peru; two of them are from the same site, which lies on limestone substrates. This notable species is named in honor of José Schunke V., a noted and very productive Peruvian botanist. The peduncles terminate in a reduced stipule and several rather leaf-like though reduced bracts, and the flowers are surrounded by additional bracts that resemble the aristas of the stipules. Similar morphology is sometimes seen in some other species, e.g., *F. angusta*. *Faramea schunkeana* is similar to *F. morilloi* of southern Venezuela and Guyana; however, *F. morilloi* has leaves that are acute at the base, smaller corollas with the tubes ca. 17 mm long and the lobes 7–10 mm long, and seeds with eight longitudinal ridges. *Faramea schunkeana* is also similar to *F. angusta* of Ecuador; however, *F. angusta* has narrowly elliptic leaves 0.5–3.5 cm wide with acute bases, stipule sheaths 1.5–6 mm long, and smaller blue corollas with the tubes 8–9 mm long and the lobes 9–9.5 mm long.

Paratypes. PERU. **Huánuco**: prov. Leoncio Prado, distr. Rupa Rupa, al O de Tingo María, cerro frente al aeropuerto, *J. Schunke V. 10423* (MO). **San Martín**: prov. Cáceres, Madre Mía, *J. Boeke & M. Ramírez 1316* (NY).

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