
NINE NEW SPECIES OF *RUPRECHTIA* (*POLYGONACEAE*) FROM CENTRAL AND SOUTH AMERICA

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Nine new species of *Ruprechtia* (*Polygonaceae*) are described. *Ruprechtia nicaraguensis* Pendry and *R. costaricensis* Pendry are from Central America; *R. carina* Pendry and *R. apurensis* Pendry are from Venezuela; *R. paranensis* Pendry is from South Brazil; and *R. peruviana* Pendry, *R. obovata* Pendry, *R. albida* Pendry and *R. aperta* Pendry are from Peru.

Keywords. Brazil, Central America, escobilla, guayabilla, guayabo de monte, Mexico, pata e' garza, Peru, Venezuela, volador.

INTRODUCTION

Ruprechtia Meyer is a genus of 37 species (including the nine newly described here) of dioecious trees, shrubs and lianas in the tribe *Triplarideae* Meyer of the *Polygonaceae* (Pendry, in press). It is most closely related to *Triplaris* L. and both genera bear distinctive fruits with three wings formed by the persistent, elongated sepals which are united at the base into a calyx tube (described by some authors as a hypanthium or perianth tube). In *Ruprechtia* the calyx tube covers no more than $\frac{3}{4}$ of the achene, the male flowers are pedicellate and the tapered base of the calyx tube extends into a short stalk which joins the pedicel. In *Triplaris*, however, the calyx tube completely encloses the achene, the male flowers are sessile and the rounded base of the tube terminates abruptly where it joins the pedicel (Brandbyge & Øllgaard, 1984).

Ruprechtia was named by Meyer (1840) after F.J. Ruprecht, an Austro-Bohemian botanist who worked in St Petersburg (Staffeu & Cowan, 1983). Meisner's (1856) account of the genus in de Candolle's *Prodromus* was the only complete treatment of *Ruprechtia* until Cocucci's (1961) monograph. Since Cocucci's work there have been many new collections, and it was decided to revise the genus completely and produce a new monograph.

Ruprechtia is distributed throughout the Neotropics and subtropics (Pendry, in press) and reaches 26°N in Mexico and 33°S in Argentina. Most of the species grow in seasonally dry tropical forests, and have rather narrow distributions which do not extend beyond a single dry forest region, as defined by Pennington *et al.* (2000). Nine species are found in the lowland moist forests of the Amazon and Orinoco basins, especially in gallery forests, and some of these have much wider distributions.

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The country with the greatest diversity is Brazil, where 15 species are found, including eight in moist forests.

SPECIES DELIMITATION

The new species have been delimited primarily on female flower and fruit characters, and secondarily on characters from the leaves. The male flowers vary little among the species, and provided no useful characters.

Ruprechtia Meyer in Mém. Acad. Imp. Sci. St.-Pétersbourg Sér. 6, Sci. Math. 6: 135–151 (1840).

Dioecious trees and lianas. *Stipules* (ochreae) intrapetiolar, sheath-like and enclosing the emerging leaf; stipule scar encircling the twig. *Leaves* simple, alternate, petiolate, pinnate-veined, sometimes with minute dark glands below, very rarely above. *Male inflorescences* solitary or clustered, axillary or terminal thyrses, with cymose partial inflorescences of 2–4 pedicellate flowers; partial inflorescences irregularly spaced along the rachis, subtended by an acute bract; bracteoles fused into a tube; sepals and petals 3, free, stamens 9, in an outer whorl of 6 and an inner whorl of 3; disk hairy, gynoeceum vermiform, rudimentary. *Female inflorescences* as the male, with partial inflorescences of 2–3 pedicellate flowers; sepals 3, free or united below into a tube; petals absent or 3, free or adnate to the calyx tube, persistent and enlarging slightly in fruit, glabrous to hairy; staminodes absent or present, tooth-like; disk present; ovary ovoid, styles 3, ovule solitary, basal; calyx enlarging and enclosing the achene in fruit, the free parts developing into prominent wings; achene 3-lobed or 3-angled.

1. **Ruprechtia nicaraguensis** Pendry, *sp. nov.*

R. pallidae Standl. affinis sed foliis majoribus et venis secundariis pluribus subtu prominentes elevatis.

Similar to *R. pallida* Standl., but leaves larger and with more secondary veins which are prominent below.

Type: Nicaragua, Estelí, mountains north of Estelí, 15 xi 1946, *Williams & Molina* 10946 (holo. GH!; iso. F!, MEXU!, MO!).

Shrub or tree to 10m. Twigs glabrous, lenticellate. *Leaves* 4–12 × 1.8–5.6cm (length:width ratio 1.8–2.6:1), ovate to elliptic or slightly obovate, apex acute to acuminate, base cuneate to rounded, margin undulate; lamina almost glabrous above, with sparse to dense short, appressed hairs on the midrib and veins below; without glands; midrib prominent above, secondary veins 8–15, sometimes slightly sunken above, prominent below; petiole glabrous to sparsely hairy, 1–2mm long; ochreae glabrous, caducous, 1–2mm long. *Male inflorescences* to 3cm long, with sparse to dense, erect silvery hairs; internodes to 3–4mm long; bracts sparsely to densely hairy, 1–2mm long; bracteoles sparsely hairy, 1–1.5mm long; pedicels hairy, 2–2.5mm long,

leaving 2–2.5mm stalks after flowers have fallen; flowers white; sepals and petals obovate, very sparsely hairy outside, 2mm long; filaments to 2mm long; anthers 0.5mm long. *Female inflorescences* to 2.5cm long, with short or long, erect silvery hairs; internodes to 0.5–3mm long; bracts sparsely hairy, 1–1.5mm long; bracteoles sparsely hairy, 1–1.5mm long; pedicels 3–6mm, leaving 2–3mm stalks after flowers have fallen; flowers green with dense silvery hairs outside; calyx tube 1.5mm long, sepals linear, 3.5–5.5 × 1mm; petals linear, 2–2.5mm long, glabrous, ciliate or sparsely hairy; staminodes tooth-like, 0.2–0.4mm long; disk glabrous; ovary 2–3mm long, densely hairy; stigmas ovoid, 0.5–1mm long. *Fruits* red-brown; pedicels 4–7mm long, leaving 2–4mm stalks after fruits have fallen; calyx tube of mature fruits 1–1.5mm long; sepals 23–32 × 4–7mm, obovate, chartaceous with evident veins, with appressed hairs at base; petals 3–3.5mm long; achene 3-lobed, more or less hairy, especially in the upper half, 8–10mm long. **Fig. 1.**

Phenology. Male flowers: January, October–November; female flowers: October–December; fruits: May, November–January.

Distribution. Guatemala (Chiquimala), Nicaragua (Boaca, Estelí, Managua, Matagalpa). Map: Fig. 2.

Ecology. Dry forests, gallery forests, 50–900m.

Vernacular name. Guayabo de monte (Nicaragua).

Ruprechtia nicaraguensis is most similar to *R. pallida*, whose fruits also have a short calyx tube; in both species the achene and petals are visible within. They differ in their leaves: those of *R. nicaraguensis* have prominent secondary veins below, whilst they are almost equally prominent on both surfaces in *R. pallida*. *Ruprechtia costata* Meyer and *R. costaricensis* Pendry also grow in the area where *R. nicaraguensis* is found. Fertile specimens of *R. nicaraguensis* are easily distinguished from *R. costata* which has much larger bracts in both male and female inflorescences. In addition the petioles are longer in *R. costata* than in *R. nicaraguensis* (4–8 vs. 1–2mm). Female specimens of *R. nicaraguensis* are easily distinguished from *R. costaricensis* by their densely hairy ovaries and rather open flowers with a short calyx tube (1mm) compared with the almost glabrous ovary and longer calyx tube (c.2mm) of *R. costaricensis*. The fruit of *R. nicaraguensis* has a very distinctive open appearance with a very short calyx tube (1mm) with the petals clearly visible between the sepals and hairy achene. The sepals of *R. costaricensis* are fused for 3–4mm so that the petals are not visible, and the achenes are glabrous. Vegetatively the two species can be distinguished by the indumentum of the leaves. In *R. nicaraguensis* the leaves have very short (0.1–0.2mm) upright hairs on the veins and sometimes also on the lamina; the density of these hairs is variable. In *R. costaricensis* the leaves are almost glabrous with a few 0.5mm long appressed hairs along the midrib beneath, and sometimes a few erect hairs at the very base of the leaf beside the midrib beneath or a few short hairs on the midrib above.

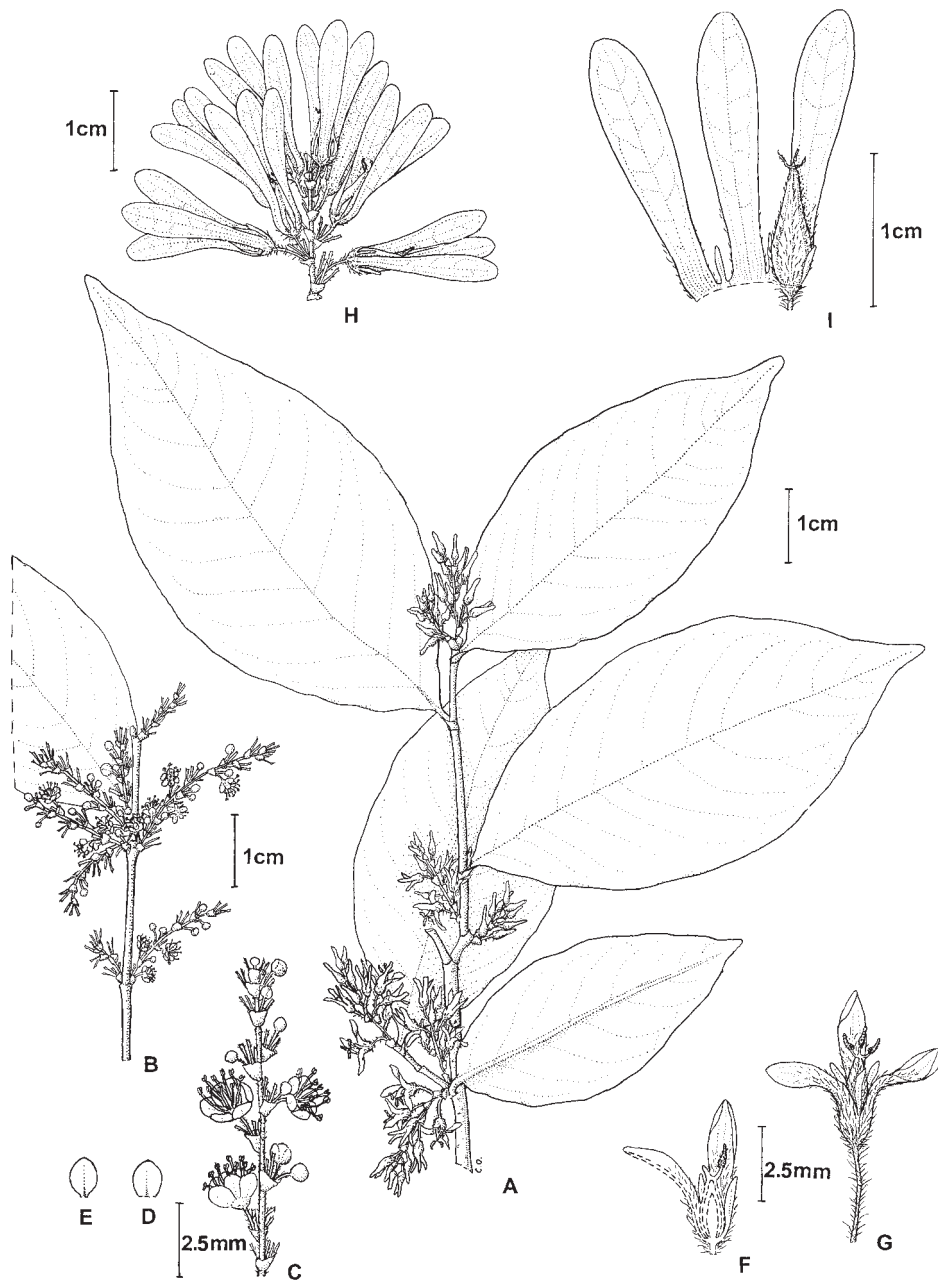


FIG. 1. *Ruprechtia nicaraguensis*: A, habit; B, male inflorescence; C, male inflorescence; D, male sepal; E, male petal; F, vertical section of female flower; G, female flower; H, infructescence; I, fruit with the sepals opened (A, G–F: *Standley* 73744; B–E: *Moreno* 25088; H–I: *Williams & Molina* 10946).

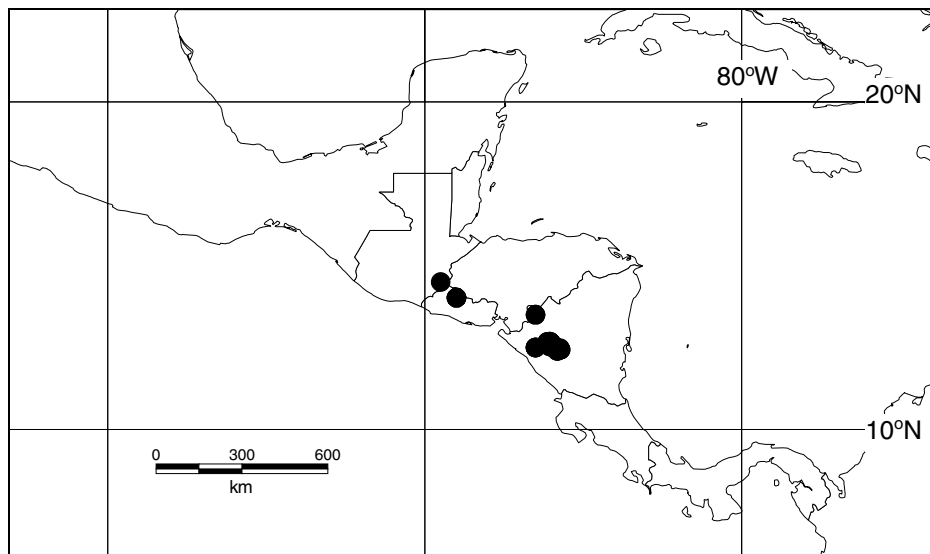


FIG. 2. Distribution of *Ruprechtia nicaraguensis*.

Specimens examined. GUATEMALA. **Chiquimala**: near divide on road from Zacapa to Chiquimala, *Standley* 73706 (F); near divide on road from Zacapa to Chiquimala, *Standley* 73744 (F, US); between Ramírez and Cumbre de Chiquimala on road between Chiquimala and Zacapa, *Standley* 74547 (F, US).

NICARAGUA. **Boaco**: 2km al N de Boaquito, camino a Santa Lucía, 12°28'N, 85°44'W, *Moreno* 18097A (MEXU); Santa Cruz, km 63 carretera al Rama, 12°24'N, 85°49'W, *Moreno* 18615 (NY); sobre el Río Boaco o Fonseca, 3km al SE de Boaquito, 12°26'N, 85°43'W, *Moreno* 22494 (GH, MEXU); 'San Diego', 9km al n de Teustepe, 12°29'N, 85°48'W, *Moreno* 25136 (GH, MEXU, NY); Hacienda San Antonio, carretera a Boaquito, 12°26'N, 85°44'W, *Moreno & Robleto* 22814 (MEXU, NY); Boaquito, 12°29'N, 85°44'W, *Robleto* 106 (NY). **Estelí**: mountains north of Estelí, *Williams & Molina* 10946 (F, GH, MEXU, MO). **Managua**: km 51 de la Carretera Panamericana N, *Laguna* 227 (MO); km 64 al W del Caserío 'El Madrono', 12°32'N, 86°04'W, *Moreno* 22546 (GH, MEXU); 8km de carretera Managua Sébaco, camino a San Francisco Libre, Orillas de Estero Grande, 12°00'N, 86°00'W, *Sandino* 373 (MEXU, MO). **Matagalpa**: 5km N of Darío, *Harmon & Fuentes* 5026 (MO, US); Carretera Panamericana, de la cuesta El Venado, 4km al E 'Las Delicias', 12°41'N, 86°03'W, *Moreno* 18349 (GH, MEXU); 6.5km al S de Ciudad Darío, Soledad, 12°40'N, 86°08'W, *Moreno* 25088 (GH, NY); at ford of Río Grande de Matagalpa on road to Terrabona, 12°38'N, 86°00'W, *Stevens* 10923 (MO, U); at ford of Río Grande de Matagalpa on road to Terrabona, 12°38'N, 86°00'W, *Stevens* 11267 (MO, U).

2. *Ruprechtia costaricensis* Pendry, sp. nov.

Ruprechtia fructibus *R. fuscae* Fernald affinibus sed foliis glabris sine venatione tertiaria propria ab ea recedens.

Fruits similar to *R. fusca* Fernald; leaves glabrous, lacking the distinctive tertiary veins of that species.

Type: Costa Rica, Bord des chemins a Nicoya, iii 1900, *Tonduz* 13872 (holo. K!; iso. BM!, P!).

Shrub or tree to 20m. Twigs glabrous, slightly lenticellate, appressed hairy when very young. *Leaves* 3–13 × 1–4cm (length:width ratio 1.8–4.0:1), elliptic or oblong to obovate, apex acute to acuminate, base cuneate to attenuate, margin smooth or undulate, occasionally inrolled; lamina glabrous above and generally below, but sometimes with dense short hairs along sides of midrib, without glands; midrib prominent above, secondary veins 9–15, flat above and prominent below, tertiary veins reticulate, faint; petiole glabrous, 2–3mm long; ochreae caducous, glabrous to sparsely hairy, 1–2mm long. *Male inflorescences* to 4cm long, with short, silvery, curved hairs; internodes to 3mm long; bracts appressed hairy, 0.5–1.5mm long; bracteoles sparsely hairy, ciliate, 1–1.5mm long; pedicels hairy, 1.5–2mm long, leaving 1–2mm stalks after flowers have fallen; flowers pale green or yellow-green; sepals and petals obovate, glabrous and ciliate, 1.5–2mm long; filaments to 2.5mm long; anthers 0.7mm long. *Female inflorescences* to 6cm long, with short, erect silvery hairs; internodes to 2–3mm long; bracts 0.5–1.5mm long, with a short, sparse to dense indumentum; bracteoles sparsely hairy, 1–2mm long; pedicels hairy, 3–5mm long, leaving 1.5–2.5mm stalks after flowers have fallen; flowers yellow with dense silvery hairs outside; calyx tube 1.5–2mm long, sepals linear, 3.5–6 × 1mm; petals linear, glabrous or slightly ciliate, 2mm long; staminodes inconspicuous or tooth-like, c.0.2mm long; disk glabrous or sparsely hairy; ovary 2–3mm long, hairy in the upper part; stigmas ovoid, 0.5–0.8mm long. *Fruits* red-brown, pale brown or white; pedicels 4–7mm long, leaving 2–4mm stalks after fruits have fallen; calyx tube of mature fruits 3–5mm long; sepals 20–30 × 3–7mm, obovate to oblong, chartaceous with evident veins, appressed hairy; petals 3–4mm long; achene 3-lobed, glabrous or sparsely hairy towards apex, 8–10mm long. **Fig. 3.**

Phenology. Male flowers: January; female flowers: January–February; fruits: January–March.

Distribution. Costa Rica (Guanacaste), Nicaragua (Rivas). Map: Fig. 4.

Ecology. Seasonally dry tropical forests, gallery forests, savannas, 0–200m.

Vernacular name. Escobilla (Costa Rica).

The fruits of *R. costaricensis* are similar to those of the Mexican species *R. fusca* though less hairy, but the leaves are quite different and lack the distinctive reticulate tertiary veins of *R. fusca* which are prominent on the lower surface of the leaf and sometimes sunken above. *Ruprechtia costaricensis* differs from *R. pallida* and *R. nicaraguensis* which both have very short calyx tubes and spreading sepals, so that petals and achene are clearly visible within. *Ruprechtia costaricensis* differs from *R. chiapensis* Lundell ex Standl. & Steyerl. which has secondary veins almost equally prominent on both leaf surfaces. *Ruprechtia costata* has much longer bracts (2.5mm vs. up to 1.5mm).

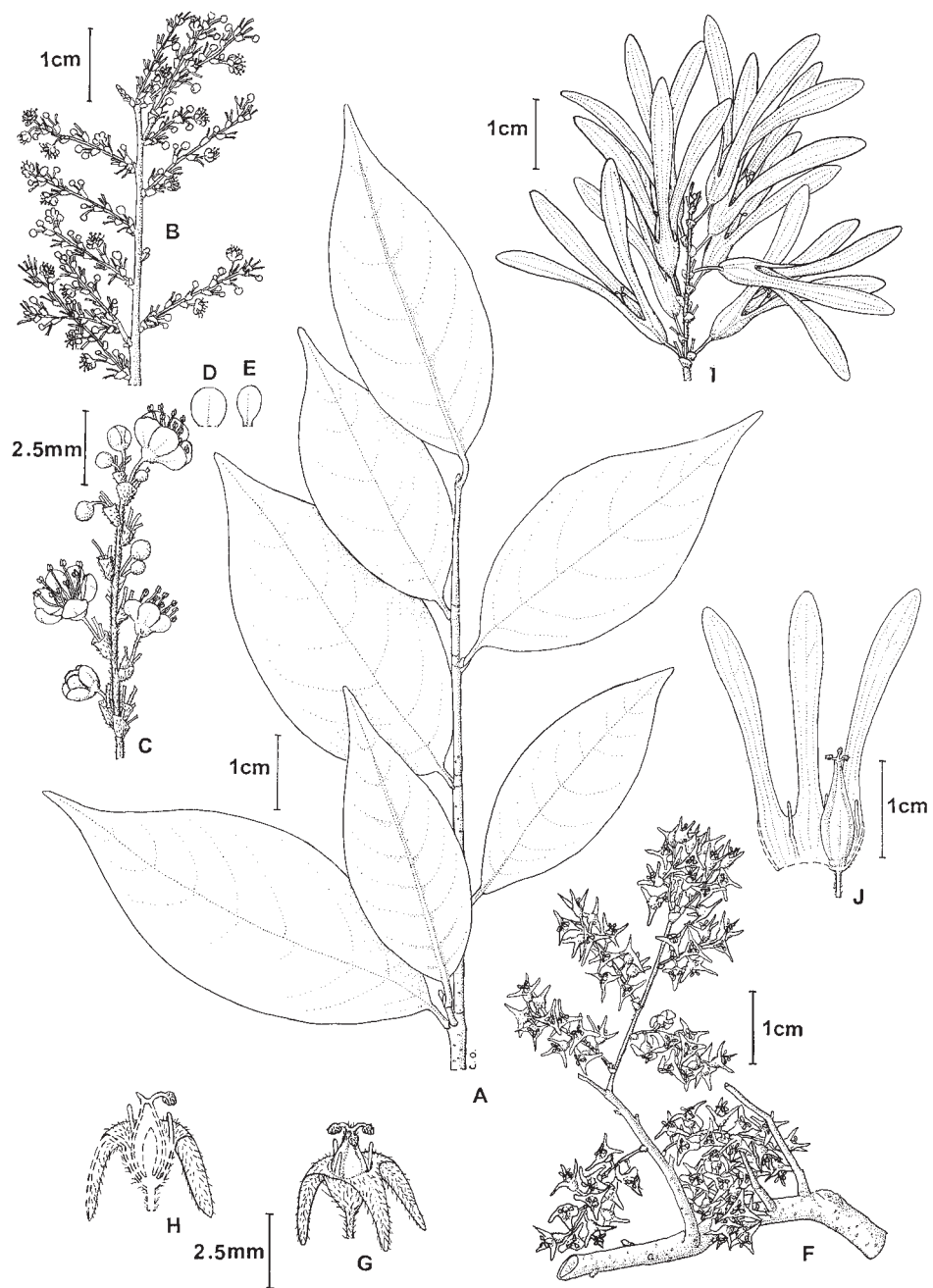


FIG. 3. *Ruprechtia costaricensis*: A, habit; B, male inflorescence; C, male inflorescence; D, male sepal; E, male petal; F, female inflorescence; G, female flower; H, vertical section of female flower; I, infructescence; J, fruit with the sepals opened (A, F–H: *Rueda, Dolmus & Prado* 1433; B–E: *Hartshorn* 2244; I–J: *Daubenmire* 632).

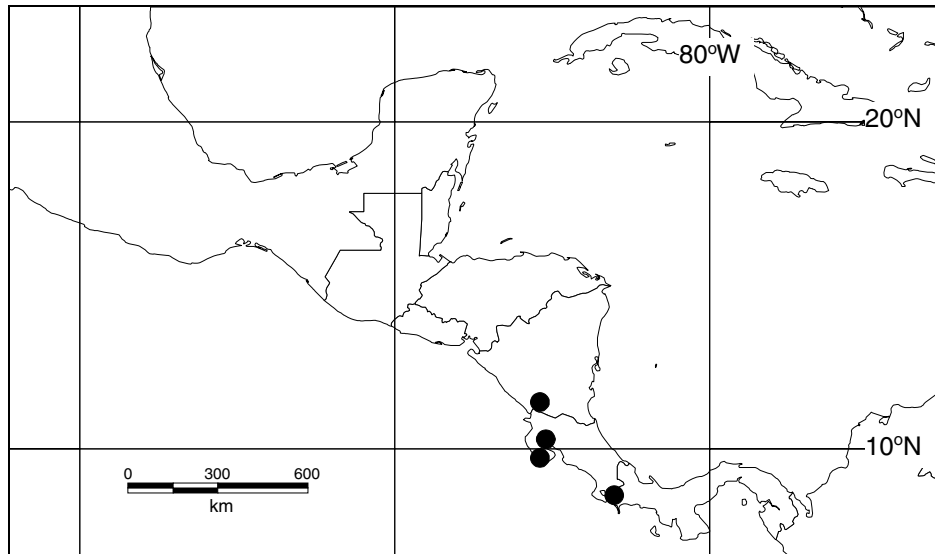


FIG. 4. Distribution of *Ruprechtia costaricensis*.

Specimens examined. COSTA RICA. **Guanacaste:** Comelco, *Bawa* 134 (MO); Canton de Bagaces, PN Palo Verde, Valle de Tempisque, Camino a Hoto Viejo, Lomas del Patio y El Colmenar, 10°21'45"N, 85°18'50"W, *Chavarría* 739 (F); vicinity of Cañas, *Daubenmire* 632 (F); Palo Verde, *Frankie* 420a (MO); along slough prior to Chamorro dock, Palo Verde, Comelco Ranch, Bagaces, 10°25'N, 85°20'W, *Hartshorn* 2243 (F); gas station, Limonal de Abangares, Interamerican Highway, 10°25'N, 85°20'W, *Hartshorn* 2244 (F, MO); Comelco property near Bagaces, *Opler* 566 (F); Comelco 5km NW of Bagaces, *Opler* 1679 (AAU, F, MO); vicinity of Cañas, *Poveda* 921 (F).

NICARAGUA. **Rivas:** Marsella, 11°16'N, 85°52'W, *Araquistain* 3827 (NY); San Juan del Sur, camino entre Las Playas de Marsella y Rivas, 11°17'N, 85°54'W, *Rueda, Dolmus & Prado* 1433 (MO).

3. *Ruprechtia paranensis* Pendry, sp. nov.

R. laxiflorae Meisn. affinis, sed sepalis fructus majoribus (30–36mm nec 14–24mm), folia subter venatione elevata et ramulis foliisque pubescentibus.

Similar to *R. laxiflora* Meisn., but differing in the larger sepals in fruit (30–36mm vs. 14–24mm), leaves and twigs hairy; leaves with prominent veins below.

Type: Brazil, Paraná, Patrimônio, 900m, 13 iii 1915, *Dusén* 16810 (holo. MO!, iso. GH!).

Shrub or tree to 27m. Twigs with erect, wavy hairs and appressed straight hairs. *Leaves* 4.0–9.0 × 1.7–3.6cm (length:width ratio 1.8–2.9:1), elliptic or ovate, apex acuminate, base rounded to cuneate or attenuate, margins slightly undulate; lamina hairy below, particularly along the sides of midrib at base, hairy at base of midrib above, without glands; midrib prominent above; secondary veins 11–14, more

prominent below than the reticulate tertiary veins; petiole hairy, 2–4mm long; ochreae glabrous or hairy, persistent or caducous, 0.5–2mm long. *Male inflorescences* to 7cm long, rather lax with internodes up to 5mm long, with spreading yellowish indumentum; bracts to 1.5mm long, hairy; pedicels 3–4mm long leaving 2–3mm stalks after flowers have fallen; flowers whitish, sepals broadly ovate, c.2mm long, petals obovate, c.2mm long, glabrous with a ciliate margin; filaments to 2.5mm long, anthers 0.7mm long. *Female inflorescences* to 5cm long, lax, with internodes to 7mm long, glabrous or with spreading yellowish indumentum; bracts 1–1.5mm long; bracteoles glabrous to sparsely hairy, c.1mm long; flower colour unknown; sepals free, oblong to slightly obovate, glabrous, 6 × 1mm; petals absent; staminodes absent; disk glabrous; ovary glabrous, 3mm long; stigmas oblong to triangular, 0.5–0.7mm long. *Fruits* pale brown, pedicels to 9mm long, leaving 2–5mm stalks after fruits have fallen; sepals of mature fruits 30–36 × 7–8mm, diverging from base and achene clearly visible within, spatulate, chartaceous with evident veins, glabrous or very sparsely hairy; achene 3-angled, glabrous, c.10mm long. **Fig. 5.**

Phenology. Male flowers: November; female flowers: November–December; fruits: January, March.

Distribution. Brazil (Paraná, Santa Catarina). Map: Fig. 6.

Ecology. Moist forest, 500–900m.

Ruprechtia paranensis is close to *R. laxiflora* with which it shares 3-angled achenes and free spatulate sepals. However, it differs in the size of the fruiting sepals and the hairy twigs and leaves. Furthermore, the secondary veins are more prominent on the lower surfaces of the leaves in *R. paranensis*, but almost equal on both surfaces in *R. laxiflora*.

Reitz & Klein 17013 (US) bears the label ‘*R. simulans* L.B. Sm. & R.M. Klein Holotype’. However, I have found no record of this name, and there is a pencil annotation on the specimen to this effect dated June 1997.

Specimens examined. BRAZIL. **Paraná:** Londrina, *Chagas & Silva* 1455 (F); *Dusen* s.n. (MO); Mçpo. Cuaratuba, Col. Limeira, *Hatschbach* 28606 (C, NY, US); Mçpo. Ponta Grossa, Vila Velha, 25°13’S, 50°02’W, *Smith & Klein* 14909 (GH, MO, NY, P). **Santa Catarina:** Morro do Baú, Ilhota, *Reitz & Klein* 17013 (US).

4. *Ruprechtia carina* Pendry, *sp. nov.*

R. ramiflorae (Jacq.) C.A. Meyer affinis, sed differt petalis calyci in floribus femineis et in fructibus adnatis, fructum tricarinatum formantibus.

Similar to *R. ramiflora* (Jacq.) C.A. Meyer, but differing in the petals which are adnate to the calyx in the female flower and fruit, forming three prominent keel-like structures.

Type: Venezuela, Sucre, Peninsula de Paria, vicinity of Cristóbal Colón, 5 i–22 ii 1923, *Broadway* 3 (holo. GH!; iso. K!, NY!).

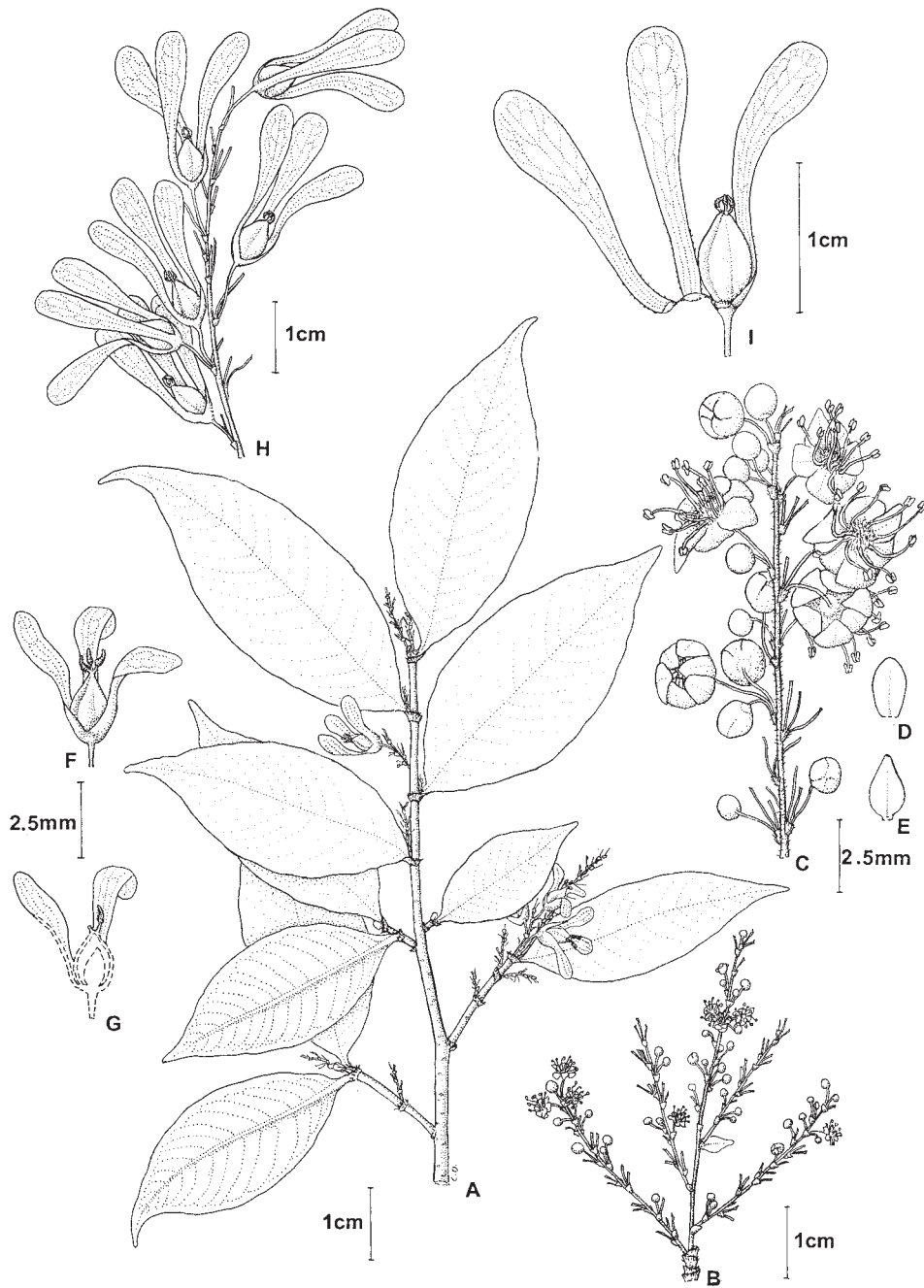


FIG. 5. *Ruprechtia paranensis*: A, habit; B, male inflorescence; C, male inflorescence; D, male sepal; E, male petal; F, female flower; G, vertical section of female flower; H, infructescence; I, fruit with the sepals opened (A: *Hatschbach* 28606; B–E: *Hatschbach* 13161; F–G: *Hatschbach* 13164; H–I: *Dusen* 16810).

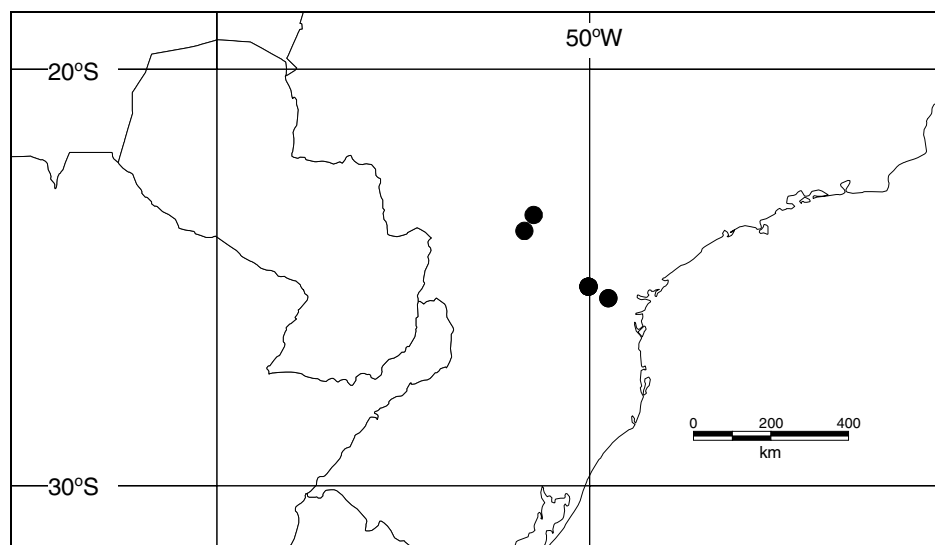


FIG. 6. Distribution of *Ruprechtia paranensis*.

Tree to 18m. Twigs lenticellate, glabrous. *Leaves* 4–12 × 2–6cm (length:width ratio 1.7–3.0:1), ovate to elliptic, apex acuminate, acute or obtuse, base rounded to cuneate, sometimes cordate, margin undulate; lamina glabrous above, glabrous to evenly erect hairy below, sometimes with appressed hairs on midrib; lamina without glands; midrib flat or prominent above, secondary veins 8–12, markedly sunken above or almost as prominent above as below; petiole glabrous or with a few appressed hairs or densely minutely hairy, 4–10mm long; ochreae caducous or persistent, glabrous, 1–2mm long. *Male inflorescences* to 5–7cm long, with sparse, wavy hairs; internodes to 2mm long; bracts sparsely appressed hairy, 1mm long; bracteoles sparsely appressed hairy, 1mm long; pedicels glabrous, 1.5–2mm long, leaving 1–1.5mm stalks after flowers have fallen; flower colour unknown; sepals ovate to oblong, glabrous, ciliate, 1–1.5mm long; petals obovate, glabrous, ciliate, 1–1.5mm long; filaments to 2.5mm long; anthers 0.4–0.5mm long. *Female inflorescences* with short, erect, straight or wavy hairs, to 2cm long; internodes to 1.5–4mm long; bracts appressed hairy, 1mm long; bracteoles appressed hairy, 1.5–2mm long; pedicels hairy, 3–4mm long, leaving 1–3mm stalks after flowers have fallen; flowers red, densely appressed hairy outside; calyx tube 3mm long, sepals oblong or slightly triangular, reflexed, 3.5–5mm long; petals glabrous, ciliate, 3–4mm long, adnate to calyx tube for 1–2.5mm, the free parts linear; staminodes tooth-like, 0.3–0.7mm long; disk glabrous; ovary 3–4mm long, glabrous or densely hairy at apex only; stigmas ovoid, 0.9–1.5mm long. *Fruits* red; pedicels c.5mm long, leaving 3–5mm stalks after fruits have fallen; calyx tube of mature fruits 4–6mm long; sepals 28–35 × 7–8mm, obovate, chartaceous with evident secondary veins, appressed hairy, especially at base; petals

4–8mm long, adnate to the calyx for 3–4mm; achene 3-lobed, glabrous or sparsely hairy at the apex, 8–10mm long. **Fig. 7.**

Phenology. Male flowers: January–February; female flowers: December–February; fruits: January–February, October–November.

Distribution. Colombia (Magdalena), Venezuela (Aragua, Distrito Federal, Sucre). Map: Fig. 8.

Ecology. Coastal dry forests, 200–500m.

Vernacular name. Volador (Colombia).

Ruprechtia carina is named for my wife Karina and for the keel-like structures formed by the fusion of the petals with the inner surface of the calyx tube in female flowers and fruits. The presence of these ‘keels’ is the most reliable character by which to distinguish it from the rather variable *R. ramiflora*. *Ruprechtia carina* differs from *R. curranii* S.F. Blake in its larger fruits with more rounded bases (fruiting sepals 28–35 × 7–8mm vs. 20–30 × 4–7mm) and from *R. coriacea* (H. Karst.) S.F. Blake in its shorter bracts (1mm vs. 3–5mm).

There are notable differences between the leaves of collections from the Paria Peninsula in northeastern Venezuela (flat and chartaceous) and those from Caracas, Aragua and Colombia (strongly bullate and rather coriaceous). It is possible that the latter collections represent a different species, but this will be confirmed only when more collections have been made and the morphological limits of the taxa properly established.

Specimens examined. VENEZUELA. **Aragua:** Selvas de Guarnitas, PN Aragua, *Pittier & Nakichenovich* 15642 (VEN); Carmen, *Williams* 10406 (F, US, VEN). **Distrito Federal:** Peña de Mora, carretera de La Guaira, *Lugo* 28 (VEN); on the slopes of the hillside 100m W of the entrance, Jardín Botánico, Caracas, *Pendry* 1040 (E, VEN); near zigzag road from Caracas to La Guaira, *Pittier* 8694 (GH, NY, US). **Sucre:** vicinity of Cristóbal Colón, *Broadway* 14 (GH, K, NY); vicinity of Cristóbal Colón, *Broadway* 115 (GH); vicinity of Cristóbal Colón, *Broadway* 145 (NY); vicinity of Cristóbal Colón, *Broadway* 429 (K, NY, US); vicinity of Cristóbal Colón, *Broadway* 690 (GH, NY).

COLOMBIA. **Magdalena:** sine loc., *Bro. Elias* 1107 (F).

5. *Ruprechtia apurensis* Pendry, sp. nov.

R. tenuiflorae Benth. affinis, sed sepalis fructus latioribus (4mm nec 1–2mm) et marginibus haud involutis differt.

Similar to *R. tenuiflora* Benth., but differing in the much wider fruiting sepals (4mm vs. 1–2mm) without inrolled margins.

Type: Venezuela, Apure, San Fernando de Apure, Caño Caramacate, 4 iv 1969, *Aristeguieta* 7067 (holo. A!; iso. F!, NY!, VEN!).

Tree to 8m. Twigs glabrous, sometimes lenticellate. *Leaves* 3–10 × 2–7.5cm (length:width ratio 1.3–2.5:1), elliptic to obovate, apex acute to shortly acuminate, base rounded to cuneate, margin smooth to undulate, sometimes inrolled; lamina

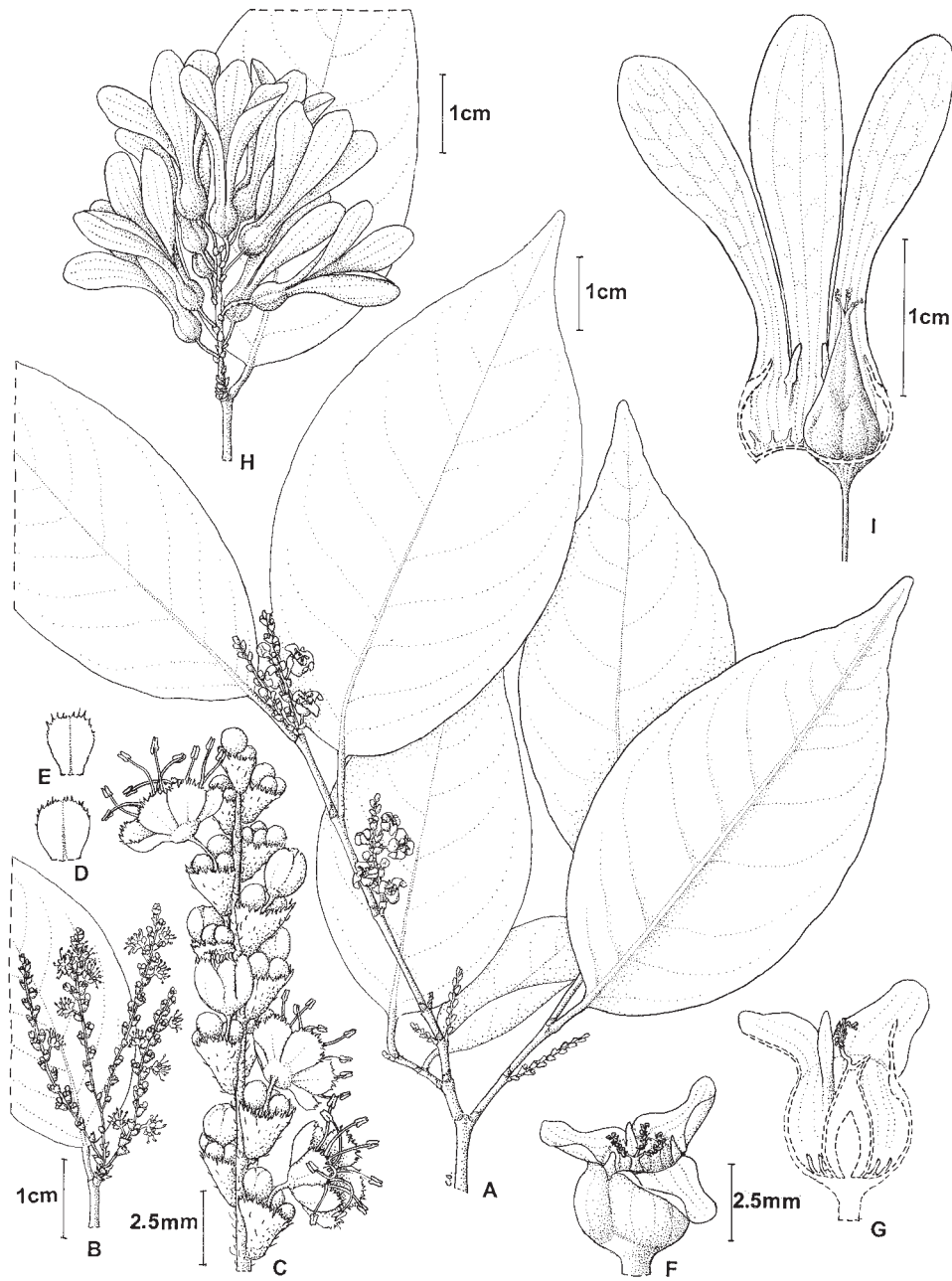


FIG. 7. *Ruprechtia carina*: A, habit; B, male inflorescence; C, male inflorescence; D, male sepal; E, male petal; F, female flower; G, vertical section of female flower; H, infructescence; I, fruit with the sepals opened (A, F-I: *Broadway* 3; B-E: *Broadway* 14).

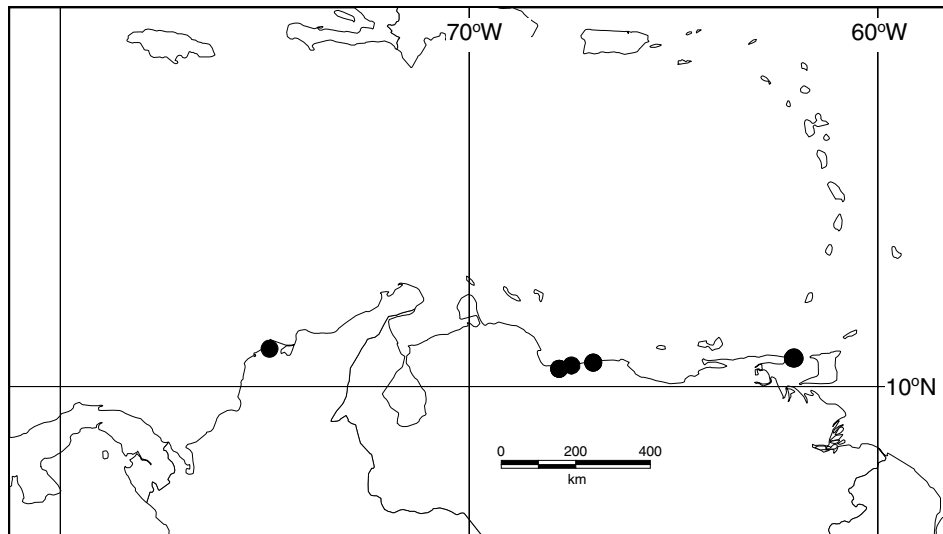


FIG. 8. Distribution of *Ruprechtia carina*.

glabrous above and below, without glands; midrib flat or slightly prominent above, glabrous to densely short hairy at the base above, sometimes with appressed hairs below; secondary veins 8–12, almost equally prominent above and below; petiole glabrous or hairy above, 5–7mm long; ochreae sparsely hairy, more or less persistent, 1–1.5mm long. *Male inflorescences* to 3cm long, with dense, short, erect, wavy hairs; internodes to 2mm long; bracts appressed hairy, 1–1.5mm long; bracteoles sparsely hairy, 1.5mm long; pedicels sparsely hairy, 1.5–2mm long, leaving c.0.5mm stalks after flowers have fallen; flowers cream; sepals elliptic, cucullate, sparsely hairy outside, 1.5–2mm long; petals ovate, glabrous, 1.5mm long; filaments to 2.5mm long; anthers 0.6mm long. *Female inflorescences* to 4cm long, with dense, semi-erect, wavy hairs; internodes to 5mm long; bracts densely appressed hairy, 1.5mm long; bracteoles appressed hairy, 1.5–2mm long; pedicels hairy, 2–3mm long, leaving 1–1.5mm stalks after flowers have fallen; flowers with dense, appressed, silvery hairs outside, colour unknown; calyx tube 1mm long, sepals acuminate, 4mm long; petals linear, united with the calyx tube, sparsely hairy, the free part c.1.5mm long; staminodes inconspicuous; disk glabrous; ovary 3mm long, hairy in the upper half; stigmas narrowly triangular, 1.2mm long. *Fruits* green; pedicels 2–3mm long, leaving 1–1.5mm stalks after fruits have fallen; sepals of mature fruits 12 × 4mm scarcely united at base, oblong, coriaceous with obscure veins, minutely hairy, especially at the base; petals slightly hairy, 1.5mm long; achene 3-lobed, very sparsely hairy, 10mm long. **Fig. 9.**

Phenology. Male flowers: March–April; female flowers: May; fruits: April.

Distribution. Venezuela (Apure, Bolívar). Map: Fig. 10.

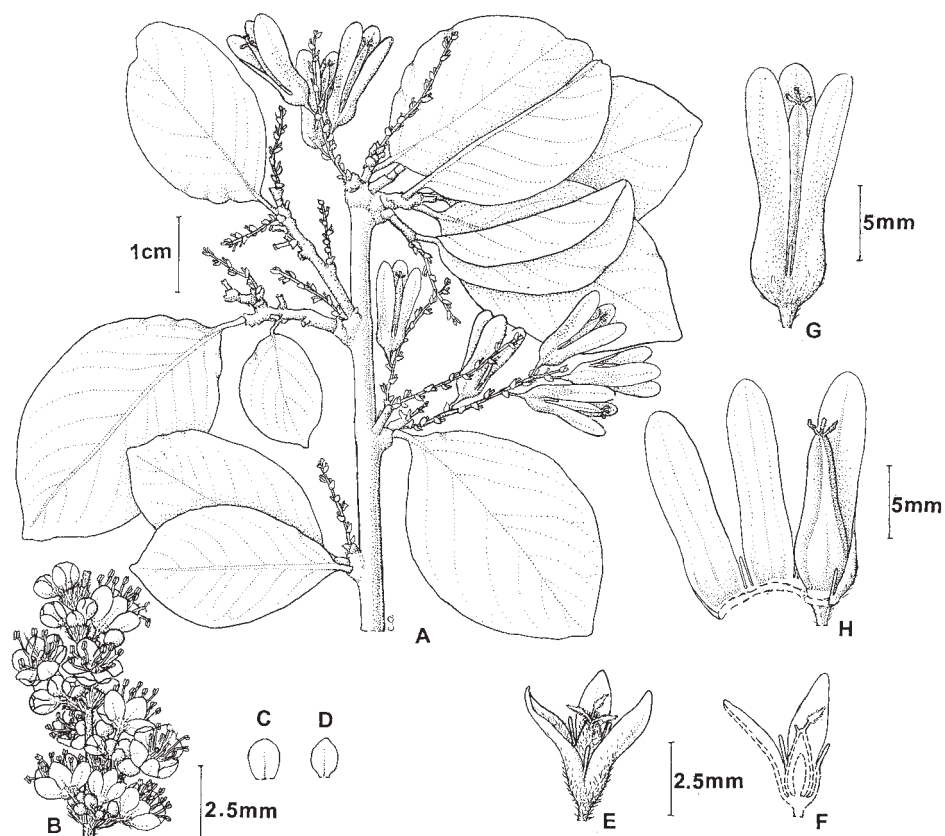


FIG. 9. *Ruprechtia apurensis*: A, habit; B, male inflorescence; C, male sepal; D, male petal; E, female flower; F, vertical section of female flower; G, fruit; H, fruit with the sepals opened (A, G–H: *Aristeguieta & Zabala* 7067; B–D: *Aristeguieta* 5271; E–F: *Rusby & Squires* 417).

Ecology. Gallery forests on river banks, c.50m.

Vernacular name. Pata e' garza (Venezuela).

Uses. The dense, close-grained timber is used for musical instruments and cudgels.

Ruprechtia apurensis is similar to *R. tenuiflora* whose fruits also have oblong, coriaceous fruiting sepals. However, the sepals lack the inrolled margins usually seen in *R. tenuiflora* and are obtuse and much wider (4mm vs. 1–2mm). It is distinguished from the other species of *Ruprechtia* found in moist habitats as follows: *R. brachysepala* Meisn. has coriaceous, more or less deltoid, acute sepals; *R. brachystachya* Benth. has coriaceous, ovate, cucullate sepals which completely enclose the achene; *R. cruegerii* Griseb. ex Lindau has chartaceous, obovate sepals; *R. maracensis* Brandbyge has longer, obovate, coriaceous sepals; *R. tangarana* Standl. has reflexed, coriaceous sepals with strongly inrolled margins.

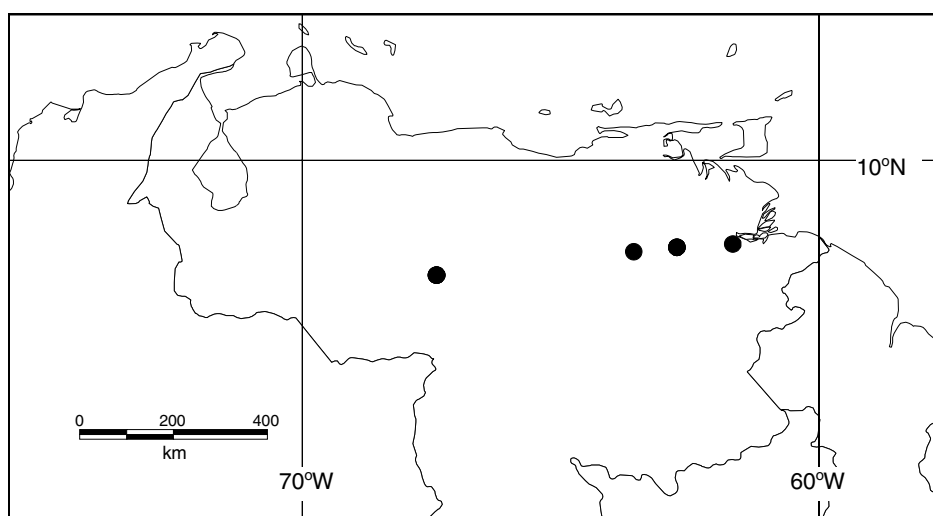


FIG. 10. Distribution of *Ruprechtia apurensis*.

Specimens examined. VENEZUELA. **Apure:** Fundo los Malabares, SW of San Fernando de Apure, 7°47'57"N, 67°23'33"W, Pendry 1030 (E, VEN). **Bolívar:** Puerto Ordaz/San Felix, Aristeguieta 5271 (F, MO, NY, VEN); Margenes del Río Caroni, Pto Ordaz/San Felix, Aristeguieta 5294 (F, MO, NY); Mcpo. Heres, Puente Angostura, 8°15'N, 63°35'W, Chacon 637 (MO). **Unknown:** Santa Catalina, Rusby & Squires 417 (GH, K, M, MO, NY).

6. *Ruprechtia peruviana* Pendry, sp. nov.

R. jamesonii Meisn. affinis sed sepalis fructus majoribus (28–31 × 6–7mm nec 23–28 × 4–6mm), tubo calycis brevior et apertior achenium non includens.

Similar to *R. jamesonii* Meisn., but differing in the larger fruiting sepals (28–31 × 6–7mm vs. 23–28 × 4–6mm) and shorter, more open calyx tube (2mm vs. 4–5mm) that does not enclose the achene.

Type: Peru, Tumbes, Contramirante Villar Province Casitas; Parque Nacional 'Cerros de Amatape', Quebrada del Plátano, 4 v 1990, Díaz & Peña 4064 (holo. AAU!, iso. MO!).

Shrub or tree to 6m. Twigs glabrous, appressed hairy when young; leaves sometimes borne on condensed side branches. Leaves 3.5–8 × 2–4cm (length:width ratio 1.5–2.4:1), oblong, to elliptic, ovate or obovate, apex obtuse and sometimes abruptly acuminate, base rounded to slightly cordate or rarely cuneate, margin undulate to crenate; lamina with dense, even, erect hairs below, sparsely hairy above, without glands; midrib flat or slightly raised above, secondary veins 9–15, prominent below and sometimes slightly sunken above; petiole densely hairy, 3–7mm long; ochreae hairy, glabrescent, caducous or persistent, 0.8–1mm long. Male inflorescences to 5–7cm long, with long, dense, erect, wavy hairs; internodes to 4mm long; bracts

densely long appressed hairy, 1.5–2mm long; bracteoles densely hairy, 0.5–1mm long; pedicels hairy, 2–3mm long, leaving 1.5–2mm stalks after flowers have fallen; flowers wine-red; sepals elliptic, or obovate and cucullate, hairy, 2mm long; petals elliptic, hairy, 2mm long; filaments to 2–2.5mm long; anthers 0.7–0.8mm long. *Female inflorescences* to 7–8cm long, lax, with dense, long, erect, wavy hairs; internodes to 5–10mm long; bracts densely long appressed hairy, 1.5–2.5mm long; bracteoles densely hairy, 0.5–1mm long; pedicels 3–5mm long, leaving 2mm stalks after flowers have fallen; flowers purple-red, with dense, appressed, silvery hairs outside; calyx tube 1–1.5mm long, sepals linear to acuminate, 7–8.5mm long; petals linear, hairy, 2–3.5mm long; staminodes slender, 0.5–1mm long; disk glabrous; ovary densely hairy at apex, 2mm long; stigmas linear, 0.9–1mm long. *Fruits* reddish; pedicels 3–5mm long, leaving 2–4mm stalks after fruits have fallen; calyx tube in mature fruit c.2mm; sepals 28–31 × 6–7mm, oblong to obovate, chartaceous, with evident veins, hairy at the base; petals 3–4mm long, occasionally sepaloid and to 8mm long; achene 3-lobed, sparsely hairy, 9mm long. **Fig. 11.**

Phenology. Male flowers: May, July; female flowers: May; fruits: April–May, July.

Distribution. Peru (Piura, Tumbes). Map: Fig. 13.

Ecology. Coastal dry thickets to premontane moist forest at 800m.

Most similar to *R. jamesonii*, but differing in the fruiting sepals which are larger, more divergent and not enclosing the achene. Differs from *R. albida* and *R. obovata* in having much larger sepals.

Specimens examined. PERU. **Piura:** Cerro Vicento, *Haught* 131 (BM, GH, NY, US); Cerro Vicento, *Haught* 131a (F); Cerro Vicento, *Haught* F-29 (F); 24km E of Olmos, *Hudson* 1200 (F); near Ecuador border north of Tumbes, *Oleson* s.n. (F). **Tumbes:** Contralmirante Villar Province Casitas, PN Cerros de Amotape, *Diaz & Pena* 4040 (AAU); Contralmirante Villar Province Casitas, PN Cerros de Amotape, Quebrada del Plátano, *Diaz & Pena* 4041 (AAU, MO); Contralmirante Villar Province Casitas, PN Cerros de Amotape, Quebrada del Plátano, *Diaz & Pena* 4064 (AAU, MO); Cerros de Amotape, Quebrada los Conejos, c.25km SE of Cherrelique, 4°09'S, 80°37'W, *Gentry & Diaz* 58276 (MO).

7. *Ruprechtia albida* Pendry, *sp. nov.*

A *R. glauca* Meisn. foliis ellipticis usque ad ovatis nervis secundaris 9–11 praeditis differt.

Differs from *R. glauca* Meisn. in its elliptic to ovate leaves with 9–11 secondary veins. Type: Peru, La Libertad, Pataz, along road W of Chagual, along Marañón River, 1300m, c.7°S, 77°W, *Young* 1202 (holo. F!, iso. A!).

Shrub to 3m. Twigs glabrous, sometimes lenticellate. *Leaves* 3–5.5 × 1.3–2.8cm (length:width ratio 1.4–2.8:1), elliptic to ovate or oblong, apex acute to acuminate, base cuneate to rounded or occasionally cordate, margin undulate to crenate; lamina completely glabrous or with a few scattered hairs on the midrib and veins below, glaucous below, without glands; midrib prominent above, secondary veins 9–11;

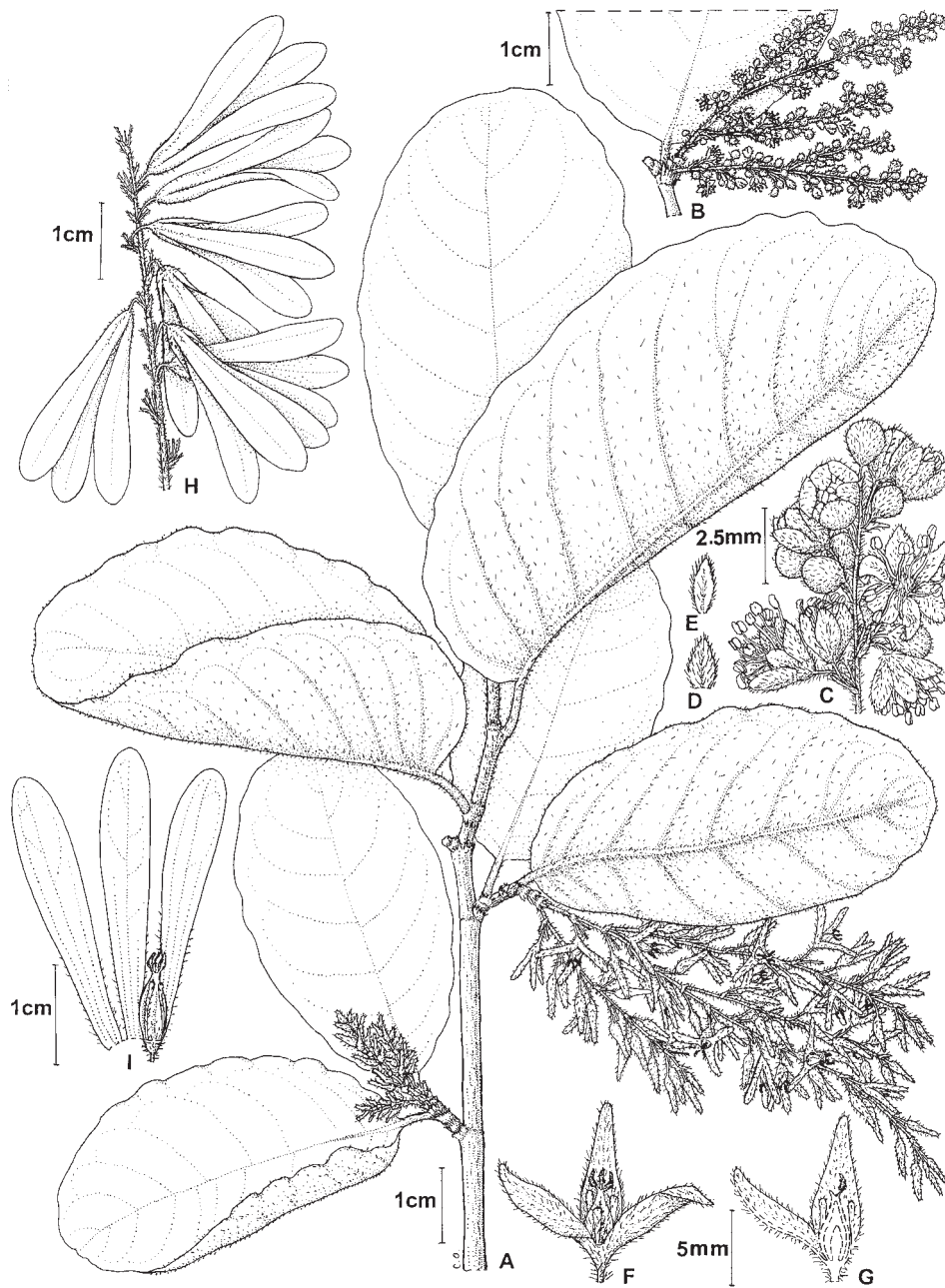


FIG. 11. *Ruprechtia peruviana*: A, habit; B, male inflorescence; C, male inflorescence; D, male sepal; E, male petal; F, female flower; G, vertical section of female flower; H, infructescence; I, fruit with the sepals opened (A, F–G: *Díaz & Peña* 4040; B–E: *Díaz & Peña* 4041; H–I: *Díaz & Peña* 4064).

petiole glabrous, 5–15mm long; ochreae glabrous, usually persistent, 1–2.5mm long. *Male inflorescences* to 3cm long, with dense, short, erect, wavy hairs; internodes to 1mm long; bracts sparsely appressed hairy, 1–1.5mm long; bracteoles sparsely hairy, 1mm long; pedicels glabrous to sparsely hairy, 1.5–2mm long, leaving 1–1.5mm stalks after flowers have fallen; flowers red; sepals broadly ovate, glabrous to sparsely hairy, ciliate, 1.5mm long; petals elliptic, glabrous, ciliate, 1.5mm long; filaments to 2mm long; anthers 0.5mm long. *Female inflorescences* to 5–9cm long, with sparse, short, erect, wavy hairs; internodes to 3–8mm long; bracts glabrous to sparsely appressed hairy, 1.5mm long; bracteoles glabrous to sparsely hairy, 0.5–1mm long; female flowers not seen at anthesis. *Fruits* orange-brown; pedicels sparsely hairy, 3–5mm long, leaving 1.5–3mm stalks after fruits have fallen; sepals of mature fruits $11\text{--}17 \times 3\text{--}5\text{mm}$, not forming a tube, obovate, chartaceous with evident veins, almost glabrous to sparsely erect hairy at the base; petals absent or to 2mm long, sparsely hairy; staminodes inconspicuous or tooth-like and to 0.4mm long; disk glabrous to hairy; achene 3-lobed, 6mm long, very sparsely hairy; stigmas linear, 0.5–0.8mm long. **Fig. 12.**

Phenology. Male flowers: July; fruits: May, July.

Distribution. Peru (La Libertad). Map: Fig. 13.

Ecology. Steep slopes with loose rock and soil in dry forest areas of inter-Andean valleys, 1300–1900m.

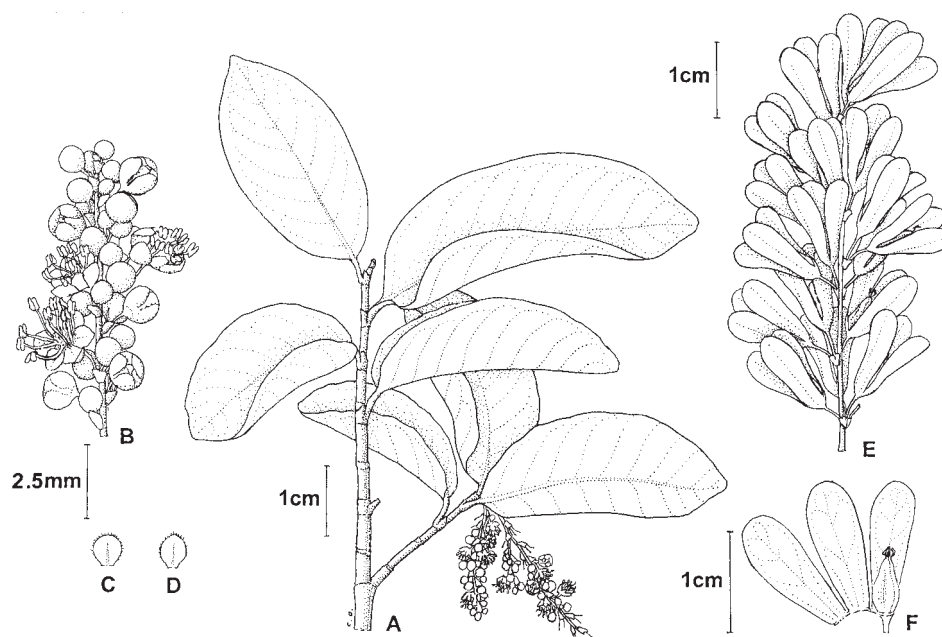


FIG. 12. *Ruprechtia albida*: A, habit; B, male inflorescence; C, male sepal; D, male petal; E, infructescence; F, fruit with the sepals opened (A–F: Young 1202).

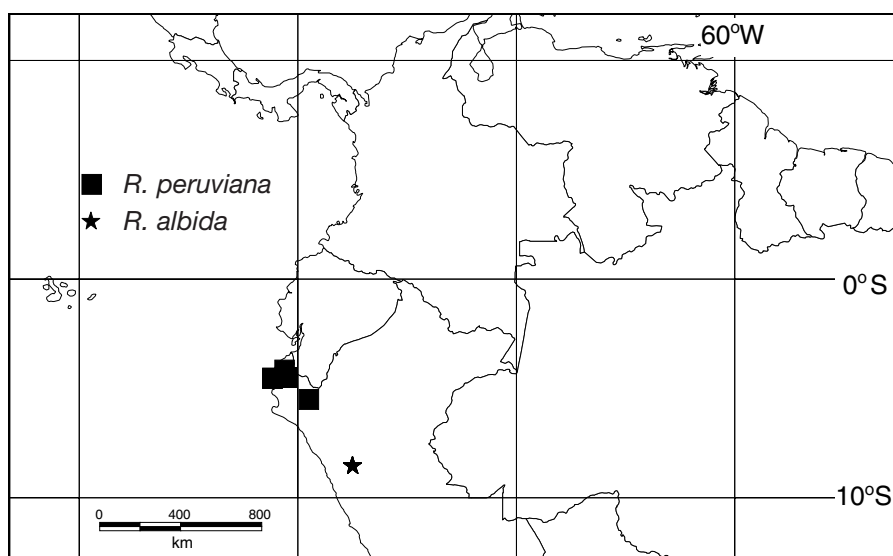


FIG. 13. Distribution of *Ruprechtia peruviana* (■) and *R. albida* (★).

Ruprechtia albida is named for the pale, glaucous undersides of its leaves. This character is unique among the Peruvian species of *Ruprechtia* and elsewhere is seen only in the incompletely known *R. glauca* from Bahia, Brazil. These species differ in their leaves: *R. albida* has flat, undulate margins and 9–11 pairs of secondary veins; the leaves of *R. glauca* have inrolled, smooth margins and 6–9 pairs of secondary veins.

Specimens examined. PERU. **La Libertad:** Patás, Antapita-Piás, *Alayo* 88 (AAU, F, MO).

8. *Ruprechtia obovata* Pendry, sp. nov.

R. albidae Pendry affinis, sed sepalis fructus majoribus late obovatis et foliis pubescentibus non glaucis. *R. jamesonii* Meisn. et *R. peruviana* Pendry foliis ellipticis pilosis similis sed sepalis brevioribus magis obovatis ad basem vix connatis recedit. Similar to *R. albida* Pendry, but with larger, broadly ovate fruiting sepals and leaves hairy not glaucous. Similar to *R. jamesonii* Meisn. and *R. peruviana* Pendry in its elliptic, hairy leaves, but differing from them in its shorter, more obovate sepals which are scarcely connate at the base.

Type: Peru, Cajamarca, Contumazá, Nanshá (Contezumá-Chilete), 2000m, 17 vi 1994, *Sagástegui, Leiva & Lezama* 15360 (holo. E!).

Tree with striate glabrous twigs. *Leaves* 4–8 × 2.5–4cm (length:width ratio 1.5–2.0:1), ovate, apex acute to shortly acuminate, base rounded to cuneate, margin slightly undulate; lamina with dense, even, erect hairs below, almost glabrous above apart from midrib, without glands; midrib prominent above, secondary veins 9–13, slightly

impressed above and prominent below; petiole hairy, 2–3mm long; ochreae hairy, persistent, 1.5mm long. *Male inflorescences* not seen. *Female inflorescences* to 11cm long, with dense, erect, wavy hairs; lax, with internodes to 12mm long; bracts densely appressed hairy, 1.5–2mm long; bracteoles densely appressed hairy, 1–1.5mm long; female flowers not seen. *Fruits* whitish; pedicels glabrescent, 3–5mm, leaving 1–3mm stalks after fruits have fallen; calyx tube in mature fruits c.1mm, sepals 20–24 × 7–9mm, broadly obovate, chartaceous with evident veins, sparsely hairy at base; petals linear, slightly hairy, 4mm long, sometimes vestigial or occasionally becoming sepal-like and then to 15mm long; staminodes inconspicuous; disk glabrous; achene 3-lobed, glabrous, 8–10mm long; stigmas narrowly ovoid, 0.9mm long. **Fig. 14.**

Phenology. Fruit: June.

Distribution. Peru (Cajamarca). Map: Fig. 15.

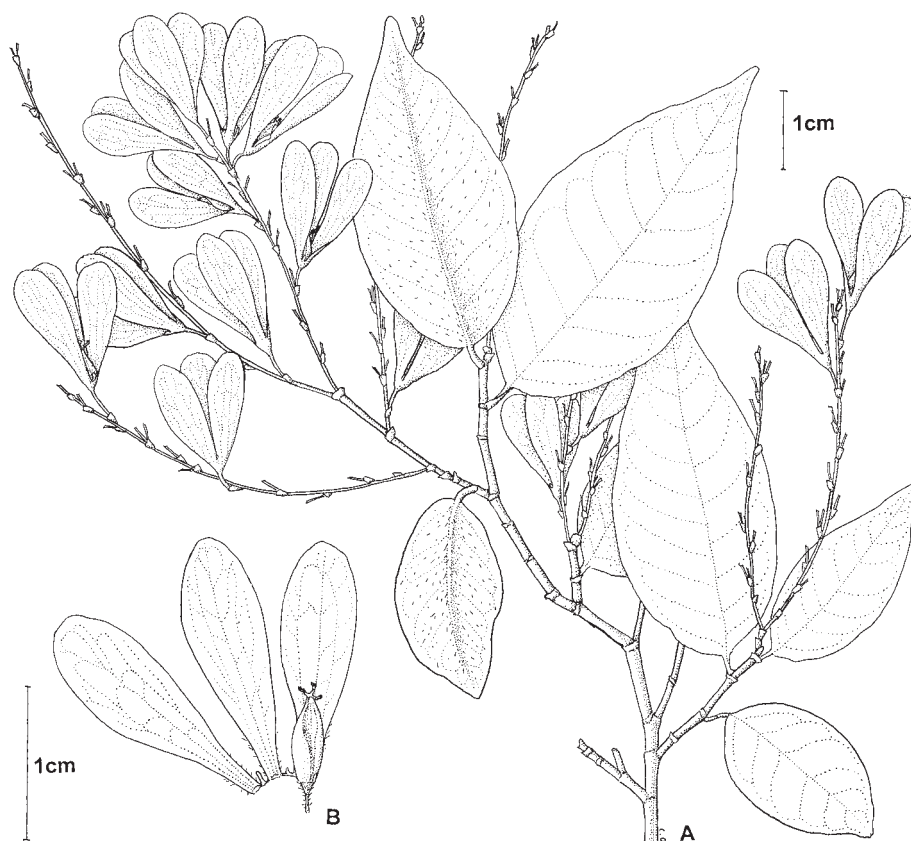


FIG. 14. *Ruprechtia obovata*: A, habit; B, fruit with the sepals opened (A–B: Sagástegui, Leiva & Lezama 15360).

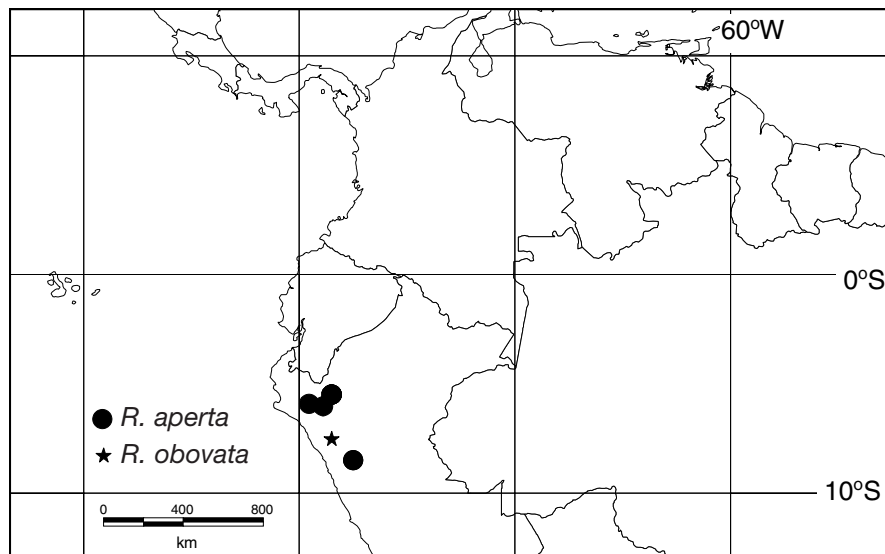


FIG. 15. Distribution of *Ruprechtia obovata* (★) and *R. aperta* (●).

Ecology. Hillsides, 2000m.

Ruprechtia obovata is known only from the type collection and is named for its distinctive, broadly obovate sepals. It resembles *R. jamesonii* and *R. peruviana* in its hairy, elliptic leaves, but its sepals are shorter, more obovate and scarcely united at the base. *Ruprechtia albida* has slightly smaller and narrower sepals, and glabrous leaves with glaucous undersides. *Ruprechtia aperta* has narrower sepals which are almost elliptic.

9. *Ruprechtia aperta* Pendry, *sp. nov.*

R. jamesonii Meisn. et *R. peruviana* Pendry accedens sed sepalis liberis tubum calyci non formantibus ab eis recedens; ab *R. albida* Pendry sepalis fructus longioribus, angustis, foliis subtus non glaucis recedens.

Differs from *R. jamesonii* Meisn. and *R. peruviana* Pendry in having free sepals not united into a tube, and from *R. albida* Pendry in its longer, narrower fruiting sepals and leaves without a glaucous underside.

Type: Peru, Cajamarca, carretera entre Huamachuco y Tayabamba, tramo entre Chagual y Aricapampa, 2000–3000m, 24 x 1986, Díaz 2190 (holo. NY!, iso. F!).

Tree to 3m. Twigs glabrous to appressed hairy. *Leaves* 3.5–7 × 1.5–3.5cm (length:width ratio 2.0–2.8:1), ovate to elliptic or oblong, apex acuminate or acute, base rounded to cuneate, margin smooth to undulate; lamina glabrous to densely, evenly, erect hairy below, glabrous to sparsely hairy above, occasionally with minute dark glands above; midrib more or less prominent above, secondary veins 8–13,

more prominent below than above; petiole hairy, 2–4mm long; ochreae appressed hairy, more or less persistent, 1–2mm long. *Male inflorescences* to 5cm long, with dense, short, erect, wavy hairs; internodes to 2–3mm long; bracts densely appressed to erect hairy, 1–1.5mm long; bracteoles glabrous to hairy, 0.5–1mm long; pedicels glabrous to sparsely hairy, 1.5–2.5mm long, leaving 1–1.5mm stalks after flowers have fallen, flower colour unknown; sepals ovate to oblong, cucullate, glabrous or sparsely hairy outside, ciliate, 1mm long; petals obovate to oblong, ciliate, 1mm long; filaments to 1.1mm long; anthers 0.3–0.4mm long. *Female inflorescences* to 9cm long, with sparse to dense, short, erect, wavy hairs; internodes to 3–5mm long; bracts sparsely to densely appressed hairy, 1–2mm long; bracteoles densely appressed hairy, 1.5–2mm long; female flowers not seen at anthesis. *Fruits* orange-brown; pedicels glabrous to sparsely hairy, 4–5mm long, leaving 2–3mm stalks after fruits have fallen; sepals of mature fruits 16–24 × 3–5mm, not forming a tube, obovate, chartaceous with evident veins, sparsely hairy; petals bristle-like, glabrous to sparsely hairy, c.1mm long; staminodes inconspicuous or tooth-like and to 0.5mm long; disk hairy; achene 3-lobed, very sparsely hairy on the angles in the upper half, 6–8mm long; stigmas linear or ovoid, c.0.7mm long. **Fig. 16.**

Phenology. Male flowers: March–April; fruits: October–November.

Distribution. Peru (Amazonas, Cajamarca, Piura). Map: Fig. 15.

Ecology. Dry forest, 360–2000(–3000)m.

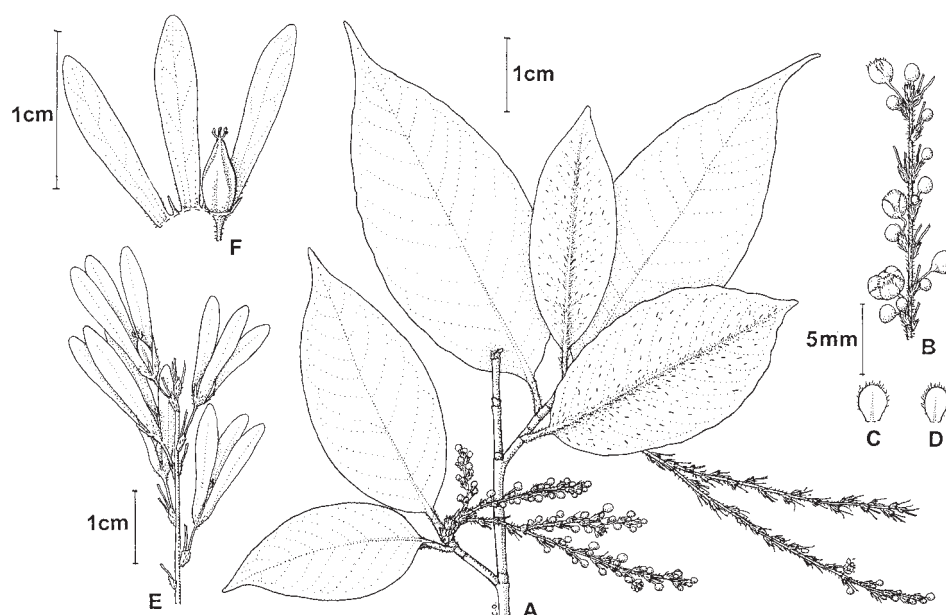


FIG. 16. *Ruprechtia aperta*: A, habit; B, male inflorescence; C, male sepal; D, male petal; E, infructescence; F, fruit with the sepals opened (A–F: Diaz 2190).

Vernacular name. Guayabilla (Peru).

This species is named for the open sepals which are united only at their base, not forming a tube and revealing the bristle-like petals and achene within. It differs from the other South American species with free sepals as follows: *R. laxiflora* and *R. paranensis* have spatulate sepals and 3-angled achenes; *R. albida* has shorter sepals (11–17 vs. 16–24mm) and glabrous leaves with glaucous undersides; *R. obovata* has more markedly obovate and much broader sepals (7–9mm vs. 3–5mm).

Although densely hairy leaves appear to be a feature of this species, the type specimen has completely glabrous leaves. Despite being atypical, Díaz 2190 was selected because it has large numbers of well-preserved, mature fruits, whilst the other fruiting specimen, *Bridgewater* S2815, has old, rather poorly preserved fruits.

Specimens examined. PERU. **Amazonas:** Bagua, towards Nazareth, 370m, *Ellenberg* 3558 (MO); Marañón, *Ellenberg* 3585 (MO). **Cajamarca:** road from Bagua Grande to Olmos, before Pucará, NE facing slope above Río Huancabamba, 6°02'08"S, 78°52'97"W, *Pennington* 812 (E); Prov. Jaén, between Jaén and Bellavista, 600m, *Weberbauer* 6206 (F, GH, US). **Piura:** km 23 on road from Olmos to Limón, 5°55'S, 79°33'W, *Bridgewater* S2815 (E).

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