

New taxa and a new name in Mexican and Central American *Randia* (Rubiaceae, Gardenieae)

DAVID H. LORENCE¹ AND JOHN D. DWYER²

ABSTRACT. Four new species of *Randia* are described from Mexico and Central America: *R. hidalgensis* Lorence, *R. lonicerioides* Dwyer & Lorence, *R. pterocarpa* Lorence & Dwyer, and *R. vazquezii* Lorence & Dwyer. *Casasia chiapensis* Miranda is transferred to *Randia* under the new name *R. matudae* Lorence & Dwyer.

RESUMEN. Se describen cuatro nuevas especies de *Randia* para México y Centroamérica: *R. hidalgensis* Lorence, *R. lonicerioides* Dwyer y Lorence, *R. pterocarpa* Lorence y Dwyer, y *R. vazquezii* Lorence y Dwyer. *Casasia chiapensis* Miranda se transfiere al género *Randia* con el nombre nuevo de *R. matudae* Lorence y Dwyer.

Randia L., with approximately 100 species distributed in the tropics and subtropics of the New World is one of the most problematic and taxonomically complex genera of Rubiaceae. This complexity is partly attributable to the fact that in most species flowering and fruiting occur at different times of the year, some are dioecious and, furthermore, many are deciduous. In addition, as certain characters as degree of pubescence and size and shape of the leaves and calyx lobes display considerable intraspecific variation in many taxa, field studies and extensive series of collections are frequently necessary to delimit species.

Mexico is one of the centers of diversity for *Randia* in the New World, with 33 species, of which 23 are endemic (Lorence & Dwyer unpublished data). Mexican members of the genus include shrubs, treelets, large trees and even canopy vines, which occur in virtually every vegetation type in Mexico. Intensive collecting and field studies by the staff at the Herbario Nacional of the Instituto de Biología, U.N.A.M. and other institutions in botanically unknown or poorly explored regions of Mexico and Central America are providing a large influx of material and yielding a significant number of species new to science. As part of our studies on the Rubiaceae of Mexico and Central

¹ Herbario Nacional, Instituto de Biología, Universidad Nacional Autónoma de México, Apdo. Postal 70-233, 04510 México, D.F.

² Missouri Botanical Garden, Department of Botany, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

America, four new species of *Randia* are described herein, and one transfer is made from *Casasia* to *Randia*.

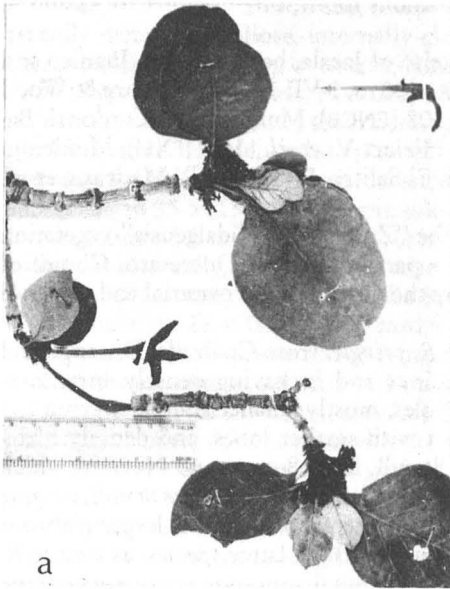
1. *Randia hidalgensis* Lorence, sp. n. (fig. 1, A y B)

Haec species *R. pringlei* A. Gray affinis, sed ramulis glabris vel glabratis, stipulis resinaceis glabris, calyce subtruncato, lobis brevioribus tantum 0.5 mm longis, corolla maiore, tubo longiore glabro 30-35 mm, lobis maioribus ad 15 mm longis, floribus femineis solitariis pedicello longiore ad 5 mm saepe reflexo, fructibus glabris differt.

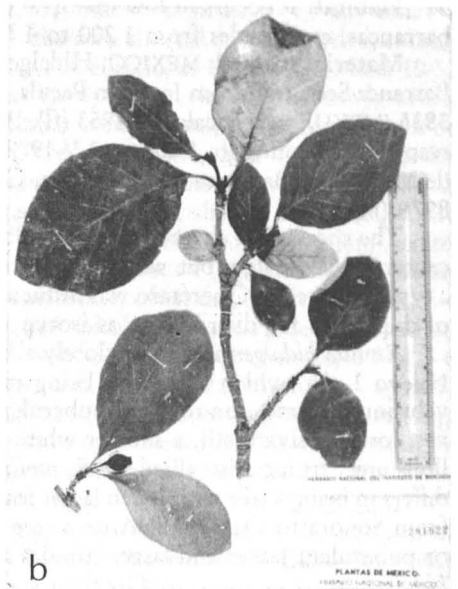
TYPE: MEXICO. Querétaro; Municipio de Arroyo Seco, 12 km NW de El Trapiche, camino a Río Verde, a 1 km SE de Puerto de Ayutla, 1 200 m, 29-IV-1982 (fl), P. Tenorio & R. Hernández M. 297 (HOLOTYPE, MEXU).

Low dioecious shrubs 0.2-2.0 m tall, the branches often trailing, the twigs glabrous or with scattered spreading hairs, 2-3 mm diam., wrinkled, the bark thin, peeling, the nodes crowded or distant, the branching sympodial; stipules rigid, dark brown, eventually deciduous, resinous, ovate to deltoid, acuminate, 2-4 × 2-5 (-8) mm, basally connate into a sheath, the acumen 1-2 mm long, externally glabrous, internally glabrous except for resinous brown colleters basally, the stipule scars thick, annular. Leaves opposite, those of a pair subequal to unequal, petiolate; petioles 5-15 × 1-2 mm, densely spreading hirtellous-velutinous; lamina ovate, elliptic or obovate, 40-110 × 25-75 mm, the apex acute, obtuse or rounded, the base narrowly to broadly cuneate, obtuse or rounded, occasionally attenuate, the sides equal, the lamina thickly chartaceous to subcoriaceous, discoloured, adaxially grayish- or brownish-green, finely short velutinous with spreading hairs, abaxially pale grayish or yellowish, densely flocculose-tomentose with curling hairs, the 2° veins 5-8 pairs, arcuate, festooned brochidodromous, visible on both surfaces, the 3° and 4° venation visible only abaxially, the margin plane. Inflorescence terminal. Staminate inflorescence sessile or subsessile, a corymbose cyme of 3-20 (-40) flowers, occasionally, 2-3-branched from the base; staminate flowers subsessile or the pedicel 2-5 × 1 mm, sparsely to densely villous, bracteolate, the hypanthium subcylindrical 2-3 × 1.5-2 mm, densely villous or subglabrous, the calyx broadly cupuliform, 1.5-2.5 × 3-4 mm, sparsely villosulous or glabrous externally, internally glabrous, the margin scarious, ± undulate, with 4 (-5) pilose deltoid teeth 0.5-1 mm long; corolla salverform, yellowish, the tube 32-45 mm long × 2 mm wide medially, dilated apically, externally glabrous or distally sparsely hirtellous, the lobes 4 (-5), ovate-elliptic, acute to obtuse, 13-18 × 6-10 mm; stamens 4 (-5), sessile, the anthers linear, 5-6 × 1 mm, apiculate, attached 2.5-3 mm below the faux; style glabrous, 30 mm long, the 2 stigmas ellipsoid, 5 mm long. Pistillate flowers solitary, becoming pseudoaxillary in fruit, the pedicel glabrate, 5 × 1 mm, the hypanthium ellipsoid, 5 × 3 mm, subglabrous, the calyx cupuliform, 2.0-2.5 × 5 mm, subglabrous, the margin scarious, undulate, the teeth 4, broad, 0.2 mm long; corolla unknown. Submature fruit ellipsoid, 35 × 23 mm, umbonate, the calyx 5 mm long, the pedicel 15 × 1.5 mm, usually recurved, the fruit surface smooth, glabrous, the wall 1-1.5 mm thick, the seeds numerous, discoid, 3-5 mm diam.

Distribution: The species is known only from the Hidalgan Arid Zone in central and northwestern Hidalgo and adjacent Querétaro, México.



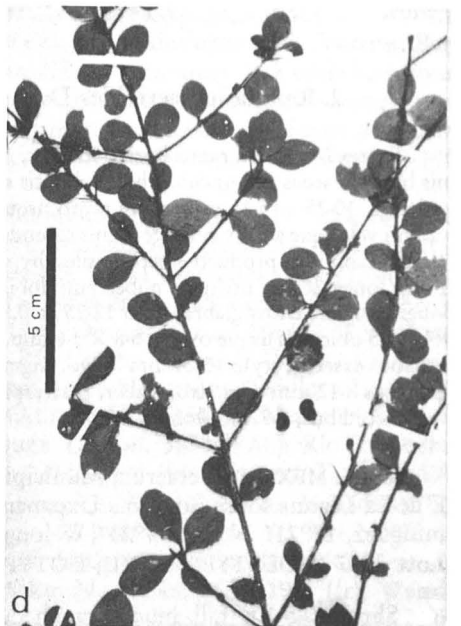
a



b



c



d

Figure 1. a,b. *Randia hidalgensis* Lorence; a. Staminate plant with flowers (Tenorio L. & Hernández M. 297, MEXU); b. Pistillate plant with immature fruits (Hiriart V. 114, MEXU); c,d. *Randia lonicerioides* Dwyer & Lorence; c. Flowering branch (Wendt & Lott 3207, MEXU); d. Fruiting branch (Beaman 5191, MEXU).

Habitat: It occurs in low matorral or deciduous forest, often among rocks and in barrancas, at altitudes from 1 200 to 1 600 m.

Material studied: MEXICO. Hidalgo; Distrito of Jacala, between Hilo Juanico and Barranca Seca, trail from Jacala to Pacula, 1 400-1 600 m, 9-VII-1948 (fr), **Moore & Wood 3835** (MEXU); near Jacala, IV-1953 (fl), **Paray 308** (ENCB); Municipio de Cardonal, Barranca de Tolantongo, 1 600 m, 3-V-1978 (fr), **Hiriart V. et al. 114** (MEXU); Municipio de Metztlán, Barranca de Metztlán, Cañada El Salitre, 5-V-1976 (fl), **Medrano et al. 8976** (MEXU).

The species is a characteristic element of the "Zona Arida Hidalgensis" vegetation centered in Hidalgo, but which also includes a part of adjacent Querétaro. Choice of a type collected in Querétaro was influenced by the quality of the material and presence of duplicates for distribution as isotypes.

Randia hidalgensis is most closely allied to *R. pringlei* from Coahuila, Durango and Nuevo León, which differs in being monoecious and in having densely hirtellous-velutinous stems, non-resinous puberulent stipules, mostly smaller and paler green leaves, longer calyx teeth, a shorter white corolla with smaller lobes, and densely hirtellous erect fruits. Also allied are *R. mollifolia* Standl. from Sonora and Nayarit, which differs in being a tree with much larger leaves and stipules, and *R. laevigata* Standl. ranging from Sonora to Oaxaca, likewise a tree reaching 6 meters with much larger glabrous or puberulent leaves and larger stipules and fruits. Both the latter species, as well as *R. hidalgensis*, are characterized by their yellow corollas, an uncommon feature within the genus.

2. *Randia lonicerioides* Dwyer & Lorence, sp. n. (fig. 1, C y D)

Frutex 0.5-1.0 m, ramis horizontalibus, ramunculis dense apice puberulis, inermibus vel spinis binatim secus ramunculos, brachyblastis ascendentibus. Folia subsessilia, chartacea, obovato-oblonga, 10-25 × 5-15 mm, apice acuto usque obtuso, base anguste cuneata, decurrenti petiolo carenti vel usque ad 1 mm longo, venis secundariis in 3-6 paria dispositis. Flores solitariae, in brachyblastis terminales producti erecti, sessiles; hypanthio 1.0-1.5 mm longo, puberulo, cupula calycina 1 mm longa, scaria, utrinque pubescenti, lobis 4-5 subulatis usque ligulato-linearibus, 0.4-1.2 mm longis; corolla extus glabra, tubo 12-23 × 0.8-1.0 mm, intus glabro vel in fauce sparsim piloso, lobis 4-5 oblongis usque ovoidis, 6-8 × 3-6 mm, staminibus 4-5 sessilibus, antheris 2.5-3 mm longis, apicibus exsertis, stylo 13-24 mm longo, stigmatibus ellipticis 1.0-1.5 mm longis, exsertis. Fructus globosus 8-12 mm diametro, glaber, pericarpio tenui 0.2 mm crasso, seminibus 4-6 reniformibus vel discoidibus, 5-7 mm longis.

TYPE: MEXICO. Veracruz; Municipio de Minatitlán, Zona de Uxpanapa; 13.7 km E de La Laguna sobre camino a Uxpanapa, luego 8 km N sobre camino a Belisario Domínguez, 17°21' N lat., 94°23' W long., alt. 130 m, 19-IV-1981 (fl), **T. Wendt & E. Lott 3207** (HOLOTYPE, MEXU; ISOTYPES, CHAPA, ENCB).

Shrubs 0.5-1 m tall, much branched, the branches horizontal, the twiglets slender, ascendent, the bark peeling, yellowish-brown, the extremities densely rufous strigillose, unarmed or sparsely armed with slender paired divergent spines to 10 mm long spaced along the twigs, the nodes 10-30 mm apart. Leaves mostly on ascendent spur shoots

2-10 mm long; stipules crowded, brown, scarious, ovate-deltoid, 1.5-2 × 1-1.5 mm, externally densely strigillose, internally glabrous, the awn short. Leaves crowded, subsessile; petioles 1-2 mm long or absent; lamina obovate, elliptic, or rarely obcordate, 10-30 × 5-15 mm, the apex acute, rounded, obtuse or rarely retuse, the base narrowly acute, decurrent, often attenuate, the lamina chartaceous, concolorous, drying dark green or blackish, often minutely white punctate, the 2° veins 3-5 pairs, dark, the higher order venation scarcely visible. Leaves on actively growing long shoots often ovate to deltoid, subsessile, to 15 × 13 mm. Flowers solitary, terminal on spur shoots, erect, sessile, the hypanthium 1-1.5 mm long, glabrous or strigillose, the calycine cup 1 mm long, externally and internally strigillose, the margin scarious, the lobes 4 (-5), subulate to linear-ligulate, 0.4-1.2 mm, ciliolate; corolla salverform, white, often drying bluish-black, the tube slender, 12-23 × 0.8-1.0 mm medially, dilated apically, glabrous externally and internally or sparsely pilose at the faux, the lobes 4 (-5), spreading, obovate, 6-9 × 3-6 mm, glabrous, venose; stamens 4 (-5), the anthers sessile, linear, 2.5-3 mm long, apiculate, the tips exerted for 1 mm, attached 1-1.5 mm below the faux; style 13-24 mm long, glabrous, slender, the 2 stigmas elliptic, 1-1.5 mm long, exerted for 1-2 mm. Fruit globose, 8-12 mm diam., glabrous, smooth, pale, venose, the pericarp 0.1-0.2 mm thick, the seeds (2-) 4-6, discoid or reniform, 5-7 mm long.

Distribution: Mexico, Veracruz, in the Uxpanapa River zone of the Isthmus of Tehuantepec, and from near Lake Catemaco. Known also from NE Costa Rica near Puerto Viejo and near San Rafael River.

Habitat: The species is often common locally in the Uxpanapa River zone where it occurs in the understory of lowland tropical evergreen rain forest with *Pouteria*, *Bursera*, *Dialium*, and *Ficus* at altitudes from 100 to 200 m, sometimes on karstic limestone substrate. It may also be riparian with *Calyptanthus* and *Lindenia* in the same region. The single collection from Lake Catemaco was made in tropical wet forest at 450 m altitude. The two collections from Costa Rica were made in tropical wet forest at 100 m and 500 m, respectively.

Material studied: MEXICO. Veracruz; Municipio of Catemaco, NE side of Lake Catemaco, E of Coyame, 450 m, 27-X-1971 (fr), **Beaman 5191** (F, MEXU, XAL); Municipio de Hidalgotitlán, camino de Cedillo a Corolino, 150 m, **Dorantes et al. 4171** (XAL); 4.5 km de La Laguna, 140 m, 6-IX-1974 (fr), **Dorantes et al. 3501** (XAL); Plan de Arroyos a Alvaro Obregón, 130-150 m, 15-IV-1974 (st), **Dorantes et al. 2865** (XAL); 140 m, 18-IV-1974 (fl), **Dorantes et al. 2877** (MEXU); Río Cueva, 200 m, 17-IV-1982 (fl), **Méndez Ton 4218** (CHAPA, MEXU); Río Solosuchil, entre Hermanos Cedillo y La Escudra, 17-VII-1974(fr), **Vázquez T. et al. 920** (XAL); 23-VII-1974 (fr), **Vázquez T. et al. 972** (XAL); O de Cedillo, 11-I-1975 (fr), **Vázquez T. et al. 1633** (XAL); Río Solosuchil cerca Campamento Hermanos Cedillo, 150 m, 29-III-1974 (fr), **Vázquez T. et al. 199** (MEXU); Río Solosuchil a 5-6 km ESE de Hermanos Cedillo, 100-200 m, 26-III-1982 (fl), **Lorence et al. 3933** (CHAPA MEXU); Municipio de Jesús Carranza, 1-3 km NNO de Poblado 2, 120 m, 30-III-1982 (fl), **Lorence et al. 3993** (CHAPA, MEXU); Municipio de Minatitlán, 13.7 km E de La Laguna, luego 8 km N, 150 m, 26-IX-1980 (fr), **Wendt et al. 2752** (CHAPA, ENCB, MEXU); camino a La Laguna, 2 km de Campamento Hermanos Cedillo, 150 m, 15-V-1975 (fl, fr), **Ortiz 114** (F, MEXU, MO). COSTA RICA. Prov. Alajuela, E of Río San Rafael, W of La María, 500 m, 19-V-1968 (fl), **Burger & Stoltze 5042** (MO); 5 km N of Puerto Viejo, 100 m, 8-I-1967 (fr), **Burger & Matta 4323** (MO).

In the field, *Randia lonicerioides* can be easily distinguished by its shrubby habit and tiered, horizontal branches. The long, slender corolla with a glabrous or only sparsely pilose faux readily sets it apart from members of the *R. aculeata* complex, which it otherwise resembles vegetatively and in fruit. Among other Mexican species it appears to be most closely allied to *R. xalapensis* Mart. & Gal., a treelet with erect branches, larger spines, a shorter, thicker corolla tube, and larger fruits. Leaves and flowers of both species often dry dark or blackish. Another closely allied species is *R. breneisii* Standl. from Costa Rica, which differs by its anisophyllous long shoot leaves, much larger, foliaceous calyx lobes to 4×3 mm, and more robust corolla with a thicker tube and larger lobes.

3. *Randia matudae* Lorence & Dwyer, nom. n.

Casasia chiapensis Miranda, *Ceiba* 4:142, fig. p. 144. 1954, non *Randia chiapensis* Standl.

TYPE: MEXICO. Chiapas; Rancho el Ocote, 30 km NW de Ocozocuatla, 650 m, 21-V-1950, F. **Miranda 7734** (LECTOTYPE, MEXU, here designated).

As two different collections were cited by Miranda in his protologue, it was necessary to select one as lectotype. **Miranda 7734** was chosen because it is the specimen on which the illustration was based and because **Miranda 6624**, collected at the same locality, could not be located.

In describing this taxon, Miranda gave no explicit reasons for placing it in *Casasia* as opposed to *Randia*. *Casasia* consists of about six or eight species restricted to the Antilles and Florida (Standley, 1921; Liogier, 1964). A. Richard (1850) based the genus on a single Cuban species, *C. calophylla*. Other species were later described from Jamaica and Hispaniola. Urban (1908) transferred to *Casasia* a species from Florida and the Bahamas originally described as *Gardenia clusiifolia* and later placed in *Randia*. This gives some indication of how ambiguous generic distinctions tend to be in the Gardenieae, particularly between *Casasia*, *Genipa* and *Randia*.

Apparently the only major differences separating *Casasia* from *Randia* are its filiform stigmatic lobes and terminal, cymose inflorescence, as characters of the ovary have proven untenable. For example, Richard (1850) described the ovary of *Casasia* as being unilocular, whereas Urban (1908) stated it was bilocular. Paradoxically, Bentham & Hooker (1873) described it as being unilocular in flower but bilocular in fruit! A study of sectioned, fixed material of *Casasia chiapensis* (**Lorence 3926**) shows it to possess a unilocular ovary with two massive, intrusive parietal placentas that extend longitudinally from apex to base and abut centrally, giving the impression of being bilocular, especially in fruit. The same condition was found to occur in a diverse array of *Randia* species that were studied. Furthermore, certain *Randias* such as *R. laevigata*, *R. mollifolia* and *R. hidalgensis* have similar terminal cymose inflorescences and sympodial branching. It was also noted that in *C. chiapensis* the stigmatic lobes are thick and ellipsoid like most *Randias*, not filiform. Except for their extraordinary size (exceeded, however, by those of *R. mira* (Dwyer, 1980) from Panama), flowers of *C. chiapensis* correspond perfectly well with those of *Randia*, as do the vegetative features, fruits, and pollen (shed

in tetrads). For these reasons we propose its transfer to *Randia* under the name *R. matudae* in honor of the late botanist E. Matuda who collected it a number of times in Chiapas. A critical reevaluation of generic delimitations in the neotropical Gardenieae is obviously required to decide whether or not *Casasia* can be maintained as a valid genus.

Distribution: Known from Oaxaca, Veracruz, and Chiapas in and around the Isthmus of Tehuantepec, Mexico, and from Monteverde forest in the Puntarenas Province of Costa Rica.

Habitat: It occurs in lowland rain forest with *Dialium*, *Symphonia*, and *Virola* in hills with deep soil at altitudes of 100-230 m in Oaxaca and Veracruz. In Chiapas it is known from montane rain or cloud forest with *Pinus*, *Quercus*, *Liquidambar*, *Symplocos*, *Oecopetalum*, *Magnolia*, and *Clethra* at altitudes from 900 to 2 100 m. The Costa Rican collections are from montane wet and cloud forest at 1 350 and 1 480 m, respectively.

Material studied: MEXICO . Chiapas; Municipio de Escuintla, San Juan Panamá, Escuintla, 29-XI-1984 (fl), **Matuda 18475** (MEXU, 2 colls.); 900 m, 30-XI-1948 (fr), **Matuda 18489** (MEXU); Municipio of La Trinitaria, Lagos de Montebello National Park, between Lago Tziscaco and Dos Lagos, 1 372 m, 13-X-1981 (fr), **Breedlove 53475** (MEXU); 10 km ENE of Dos Lagos above Santa Elena, 1 170 m, 15-XII-1981 (fr), **Breedlove 56153** (MEXU); Comitán River, Lagos de Montebello, 42 km NE of La Trinitaria, 1 300 m, 3-XI-1971 (fr), **Breedlove 22367** (MEXU); Dos Lagos, Montebello National Park, 1 400 m, 19-XI-1980 (fr), **Breedlove 47574** (MEXU); E of Lago Tziscaco, 1 300 m, 13-V-1973 (fr), **Breedlove 35256** (MEXU); Municipio of Motozintla de Mendoza, Cerro Mozotal, El Porvenir to Siltepec road, 2 100 m, 20-I-1982 (fl), **Breedlove 58148** (MEXU). Oaxaca; Municipio de Matías Romero, 8.8 km ESE de Aserradero La Floresta, 31 km S de Esmeralda, 230 m, 1-XII-1981 (fr), **Wendt et al. 3570** (MEXU). Veracruz, Municipio de Hidalgotitlán, 4 km S de entronque de la terracería La Laguna-Sarabia con carretera al N de Poblado 2 (16.2 km O de La Laguna), 230 m, 28-IV-1981 (fl), **Wendt & Navarrete 3250** (MEXU); Río Solosuchil, 5-6 km ESE de Hermanos Cedillo, 100-200 m, 25-III-1982 (fl), **Lorence et al. 3926** (CHAPA, MEXU). COSTA RICA. Prov. Puntarenas, Monteverde wet forest, 1480 m, 15-VIII-1978 (fl), **Haber 166** (MO); 1350 m, 15-VI-1979 (fl), **Haber 344** (MO).

Randia matudae is a medium-sized to large, unarmed canopy tree reaching 24 m tall and 40 cm or more in diameter. The thick, fleshy, gardenia-scented flowers are white when fresh, or the tube is externally green. The species is not closely related to any of the other Mexican or Central American Randias.

4. *Randia pterocarpa* Lorence & Dwyer, sp. n. (Fig. 2.)

Haec species *R. oaxacanae* Standl. affinis, sed habitu arborescenti, foliis maioribus lamina 240-420 × 75-175 mm, venis secundariis numerosioribus in 15-21 paribus, hypanthio 5-angulato, calycis lobis minoribus 0.5-1.5 mm longis, corollae tubo longiore, 45-55 mm longo, fructibusque maioribus 5-alatis, 70-90 × 40-55 mm differt.

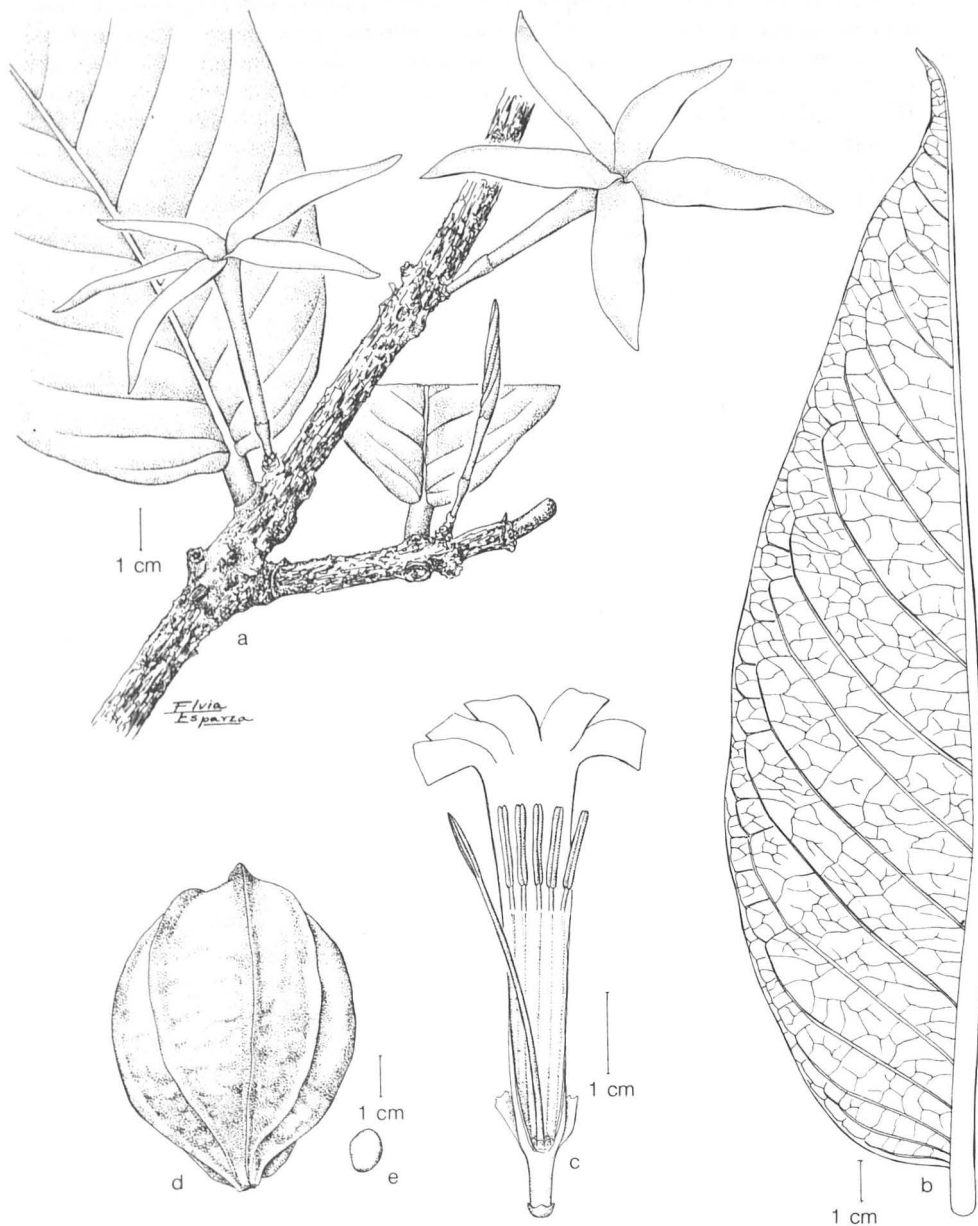


Figure 2. *Randia pterocarpa* Lorence & Dwyer. a. Habit (Ibarra M. 365, MEXU); b. Detail of leaf (Lorence 3316, MEXU); c. Dissection of flower (Ibarra M. 365, MEXU); d. Fruit (Ibarra M. 97, MEXU); e. Seed (Ibarra M. 97, MEXU).

TYPE: MEXICO. Veracruz; Municipio de San Andrés Tuxtla, Estación de Biología Tropical "Los Tuxtlas", Jardín Botánico, 95°04' -09' W Long., 18°34' -36' N Lat., 160 m, 6-XII-1983 (fl, fr), **G. Ibarra Manríquez 1109** (HOLOTYPE, MEXU; ISOTYPES, BM, F, MO, XAL).

Unarmed glabrous trees 2-4 (-5) m tall, the twigs terete to subangular, drying reddish-brown, the bark thin, often peeling, the nodes well spaced; stipules deltoid, 4-6 mm, acute, thin, glabrous, deciduous. Leaves of a pair equal, subsessile; petioles 5-10 × 2-4 mm; lamina elliptic, narrowly elliptic or ovate-elliptic, 240-360 (-420) × 75-175 mm, ± falcate, the base shallowly cordate, truncate or rounded, the apex acute to acuminate, the acumen to 20 mm long, the lamina stiffly chartaceous, slightly discoloured, drying greenish to brownish, glabrous, the costa prominent abaxially, the 2° veins 15-18 (-21) pairs, festooned brochidodromous, abaxially prominent, the intersecondary veins 2-3 (-7), perpendicular to the costa, the 3°-4° veins distinct, the margin thin, slightly revolute. Inflorescence ramiflorous, cauliflorous or rarely terminal, monochasial, the flowers hermaphroditic, solitary or in groups of 2-5, on short, densely and minutely bracteolate spurs 3-5 mm long, the pedicel 1-2 mm long, enclosed in a glabrous cupule 1-2 mm long and broad composed of united acute to obtuse bracteoles; hypanthium narrowly obconical-cylindrical, 3-5 × 1.2-1.8 mm, glabrous, 5-angled, the calyx cup tubular, 3-4 × 1.5-2 mm, 5-angled, glabrous externally and internally, the calyx teeth 5, subequal, deltoid to subulate, 0.4-1.0 mm long; corolla salverform, white, drying brownish, glabrous externally and internally, the tube (40-) 45-55 × 1.5-2.5 mm medially, dilated distally, the lobes 5, narrowly ovate to narrowly elliptic, 35-55 × 10-15 mm, acute to acuminate; stamens 5, included, the anthers linear, 8-10 mm long, the filaments 4-5 mm long, attached c. 15 mm below the faux; style included, 37-42 mm long, glabrous, the 2 stigmas elliptic, 6-8 × 1 mm, the nectary disc 5-lobed, 1 mm long. Fruit ellipsoid to ovoid-ellipsoid, 70-90 × 40-55 mm, subsessile, with 5 prominent wing-like costas 2-3 mm wide alternating with 5 smaller ribs, the apex umbonate, the pericarp 1 mm thick, drying blackish-brown, the seeds numerous, c. 200-300, ellipsoid to subdiscoid, smooth, whitish, 9-10 × 6-8 mm, imbedded in a black pulp.

Distribution: Known only from Oaxaca and Veracruz, Mexico.

Habitat: The species occurs in lowland evergreen rain forest with *Brosimum*, *Guaerea*, *Cymbopetalum*, *Pseudolmedia*, *Nectandra*, and *Pouteria* at altitudes from 150 to 400 m, and is also known from montane rain or cloud forest with *Quercus*, *Liquidambar* and Lauraceae at 1100-1200 m.

Material studied: MEXICO. Oaxaca; Distrito de Juchitán, Municipio de Santa María Chimalapa, camino a Chimalapa, c. 29 km NE de Lázaro Cárdenas, 2 km NE de Río Scolopo crucero, 25-V-1982 (fr), **Rico A. et al. 408** (MEXU). Veracruz; Municipio de San Andrés Tuxtla, Estación de Biología Tropical "Los Tuxtlas" entre Sontecomapan y Montepío, 18°34' -36' N Lat., 95°04' -09' W Long., 150 m, 25-XI-1972 (fr), **Villegas H. 64** (F, MEXU); 2-V-1972 (fr), **Calzada 811** (MEXU); Cerro El Vigía, 400 m, 25-VI-1975 (fr), **Cházon B. 435** (MEXU); 28-III-1983 (fr), **Ibarra M. 516** (MEXU); 250 m, 19-IV-1981 (fr), **Lorence & Ramanoorthy 3316** (MEXU); 18-I-1982 (fl, fr), **Ramamoorthy 3260** (MEXU); 200 m, 4-IX-1983 (st), **Ibarra M. 864** (MEXU); Jardín Botánico, 160 m, 25-X-1982 (fl, fr), **Ibarra M. 365** (MEXU); Municipio de Soteapan, Cumbres de Bastonal, c. 16 km E de Tebanco (Lago de Catemaco), 1 100-1 200 m, 26-IV-1982 (fr), **Ibarra M. 97** (ME-

XU); Bastonal, 900 m, (st), **Gómez-Pompa 5118** (XAL); NW of Catemaco, Cerro Nopo and Cerro Campana, 8-VIII-1953 (fl), **Dressler & Jones 29** (MEXU); above Río Cuetzalan, 700 m, 22-X-1971 (fr), **Beaman 5150** (XAL); Municipio of Santiago Tuxtla, Cerro Vigía de Santiago Tuxtla (st), **Beaman 6402** (F, XAL).

Randia pterocarpa is closely allied to *R. oaxacana*, a species also characterized by having relatively large paired leaves, large ramiflorous, hermaphroditic flowers arising from distinctive cupuliform bracts, and large ellipsoid fruits. The latter species is easily distinguished by its somewhat smaller habit, smaller leaves with fewer secondary veins, non-angulate hypanthium, longer calyx lobes, a shorter corolla tube, and smaller, non-winged fruits. These two species are here interpreted as being relatively unspecialized within the genus *Randia*.

5. *Randia vazquezii* Lorence & Dwyer, sp. n. (fig. 3.)

Haec species *R. tetracanthae* (Cav.) DC. affinis, sed caulibus alte scandentibus usque 20 m in arborum stratum foliare attingentibus, foliis supra pilosis, subtus ita secus venas marginesque, hypanthio sparsius piloso, cupula calycina pilosa usque fere glabra, lobis calycinis strigosis usque ciliatis, corollae lobis maioribus 30-35 × 9-15 mm differt.

TYPE: MEXICO. Veracruz; Municipio de Jesús Carranza, Zona de Uxpanapa, 2 km N del Poblado 2, Ejido F.J. Mina, 17°16' N Lat., 94°40' O Long., alt. 120 m, 23-V-1982 (fl), **M. Vázquez T. & I. Navarrete 2520** (HOLOTYPE, MEXU; ISOTYPE, CHAPA).

Armed deciduous woody vines, the stems high-climbing, reaching 20 m tall in tree canopies, the main stem to 18 cm diam., the lateral twigs divaricate-ascendent, 45-80 mm × 1.5-5 mm diam., grayish, lenticellate, the nodes crowded terminally, the spines subterminal, erect-spreading, in groups of 3-4, ± stout, 5-8 (-30) mm long, the new growth sparsely to densely strigillose, glabrescent, the stipules thin, ovate, acute, 4-11 × 3-5 mm, brownish, externally glabrous or with scattered hairs, internally densely white sericeous, the margins scarios. Leaves of a pair equal, petiolate; petioles 7-20 (-30) × 1-1.5 mm, strigillose, glabrescent; lamina ovate-elliptic, elliptic or obovate-elliptic, 80-160 (-220) × 35-75 (-115) mm, the apex shortly acuminate, the acumen 6-14 mm long, the base narrowly to broadly cuneate or obtuse, the sides ± unequal, often attenuate, the costa adaxially sulcate, abaxially prominent, the 2° veins 6-10 pairs, making a 30-45° angle with the costa, the 3°-4° veins visible on both surfaces, the lamina membranaceous to chartaceous, concolorous, drying grayish- or brownish-green, adaxially sparsely to moderately strigillose, the hairs denser along the costa and veins, abaxially strigillose, denser along the costa and veins, the margin plane, ciliolate. Inflorescence terminal; probably dioecious. Staminate flowers solitary or paired, subsessile or the pedicels 5-6 × 1-1.5 mm; hypanthium obconical, 3-5 × 3-4 mm, sparsely to densely strigillose, the calyx cup tubular, 10-18 × 4-7 mm, glabrate to strigillose, the margin membranous between the lobes, the lobes, 5, subulate-filiform, subequal, 6-10 × 0.5-1 mm, strigillose or ciliolate; corolla yellow, the tube 60-65 mm long × 3-4 mm diam. medially, dilated to 8-10 mm diam. distally, externally densely strigillose or shortly strigose, internally sparsely hirsute in the distal half, the lobes 5, ovate, acuminate, venose, 30-35 × 9-15 mm, externally strigillose along one margin, internally glabrous; stamens 5, included, the anthers

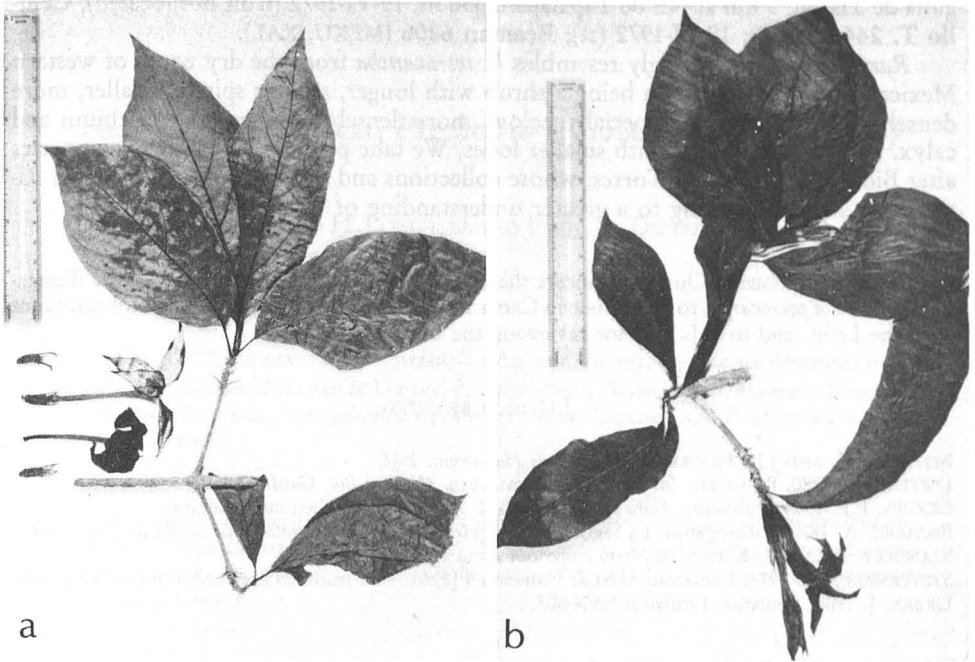


Figure 3. *Randia vazquezii* Lorence & Dwyer. a. Branch and fallen staminate flowers (Vázquez T. 2520, MEXU); b. Branch with pistillate flowers (Téllez V. & Villaseñor R. 6646, MEXU).

linear, $8-9 \times 1$ mm, apiculate, the filaments 1-1.5 mm, affixed 5 mm below the faux; style 45-50 mm long, glabrous, the 2 stigmas narrowly elliptic, 7 mm long. Pistillate flowers similar to the staminate ones but the hypanthium to 6 mm diam., the calyx lobes foliaceous, oblanceolate, $15-22 \times 2-5$ mm, the corolla tube 50-55 mm long. Fruit terminal, sessile, "verde con pubescencia" (Cedillo T. 244).

Distribution: Known from the Uxpanapa River zone and the Los Tuxtlas region of Veracruz, and from eastern Chiapas near the Guatemala border, and from northern Oaxaca (Presa Temazcal).

Habitat: In Veracruz and Oaxaca it occurs in lowland tropical rain forest with *Dialium*, *Brosimum*, *Bursera*, *Bernoullia*, *Robinsonella*, and *Ficus* at 60-120 m over karstic limestone, and 350 m at Laguna de Tisatal. In Chiapas it was collected in lower montane tropical rain forest below 1000 m.

Material studied: MEXICO. Chiapas; Municipio de La Trinitaria, camino de Montebello a Bonampak, km 38-39, E de Lago Tziscaco (7-9 km E de Amparo Agua Tinta), 8-IV-1983 (fl), Téllez V. y Villaseñor R. 6647 (MEXU). Oaxaca, Dpto. de Tuxtepec, Mpio. de Soyaltepec, 4 km S de la hidroeléctrica Temazcal, camino Temazcal-Vertedor, 60 m, 20-V-1985, L. Cortés *et al.* 342 (MEXU). Veracruz; Municipio de Santiago Tuxtla, La-

guna de Tisatal, 3 km al NE de Tapalapan, 350 m, 19-VI-1972 (fruit not located), Cedi-
llo T. 244 (MEXU); 19-VI-1972 (st); Beaman 6206 (MEXU, XAL).

Randia vazquezii strongly resembles *R. tetraacantha* from the dry zones of western Mexico. The latter differs in being a shrub with longer, stouter spines, smaller, more densely pubescent leaves, especially below, more densely pubescent hypanthium and calyx, and a white corolla with smaller lobes. We take pleasure in naming this species after Biól. Mario Vázquez Torres, whose collections and studies in the Uxpanapan River zone are contributing to a greater understanding of this fascinating flora.

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