
New Species and Combinations in Mexican and Central American *Rondeletia* (Rubiaceae)

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Rondeletia L. (Rubiaceae, Cinchonoideae) in the broad sense is a tropical American genus comprising approximately 125 species of shrubs and small trees (Mabberley, 1987; Willis, 1988) ranging from Mexico through Central America into South America and the West Indies. While revising the genus for *Flora Mesoamericana* and *Flora of Chiapas*, 11 new species came to light and are herein described and illustrated. In addition, two new names are proposed.

First described by Plumier (1703), *Rondeletia* was named for the French physician Gulliaume Rondelet. The name was later validated by Linnaeus (1753). *Rondeletia americana*, one of Linnaeus's two original species, has been designated as the lectotype species (Hitchcock, 1929: 131.). Planchon (1849) subdivided *Rondeletia* into three genera: *Rondeletia*; *Rogiera*, segregated from *Rondeletia* on the basis of its pentamerous flowers and corollas with an externally glabrous tube and bearded throat with yellow or sometimes white hairs; and *Arachnothryx*, separated on account of its cobwebby pubescence, tetramerous flowers, and corollas with a naked throat. *Rondeletia* thus included only those species with pentamerous flowers having a fleshy faucial ring (Planchon, 1849). Hooker (1873) and Hemsley (1879, 1881) accepted *Rondeletia* in the broad sense, recognizing *Arachnothryx* and *Rogiera* as sections.

In his treatment of Rubiaceae for *North American Flora*, Standley (1918) subdivided *Rondeletia* sens. lat. into 15 species groups, but these named groups were given without rank. Four occur in both Mexico and Central America (*Amoenae*, *Laniflorae*, *Leucophyllae*, and *Calycosae*), two additional ones occur in Central America (*Hondurenses*, with a single species in Honduras, and *Odoratae*, which is centered in the West Indies), whereas the remainder are restricted to the West Indies. Standley's *Amoenae* consists of those species with pentamerous flowers having a bearded corolla throat and is thus equivalent to *Rogiera*. *Calycosae*, *Laniflorae*, and *Leucophyllae* have tetramerous flowers with a naked throat and clearly pertain to the *Arachnothryx* alliance; Standley defined these groups

on the basis of pubescence and inflorescence structure. They are poorly differentiated, however, as the distinguishing characters intergrade, particularly when the species included in this paper are considered. *Hondurenses* is closely related to the latter three sections, differing primarily in having large pentamerous flowers. *Odoratae* has pentamerous flowers with a fleshy faucial ring and thus belongs in *Rondeletia* sens. str. Two species in *Odoratae* have been recorded from Panama: *R. panamensis* DC. and *R. odorata* Jacq. The latter is otherwise confined to Cuba but is widely cultivated. Its presence in Panama is likely based on cultivated material. In view of the available evidence, I believe that *Arachnothryx*, *Rogiera*, and *Rondeletia* (excluding the West Indian species, which I have not critically studied) are best treated as segregates of *Rondeletia*, probably at the level of subgenera. More detailed discussion is given below.

In most modern floristic treatments (e.g., Dwyer, 1980; Kirkbride, 1969; Standley & Williams, 1975) *Arachnothryx* and *Rogiera* have been considered as synonyms of *Rondeletia*. Kirkbride (1969) noted that capsule dehiscence and seed morphology did not consistently separate Panamanian *Arachnothryx* and *Rondeletia* species. *Arachnothryx* was recognized at the generic level by Steyermark (1967, 1974) in his treatments of Rubiaceae of the Guyana Highlands and Venezuela. He segregated *Arachnothryx* from *Rondeletia* using a combination of characters involving capsule dehiscence, pubescence type, and seed, flower, and stipule morphology. Unfortunately, Steyermark did not consider in his study any *Rondeletia* species (including *Arachnothryx* and *Rogiera*) from Mexico, Central America, and the West Indies, areas that are important centers of diversity for the group.

Borhidi and his collaborators proposed a very narrow generic concept for *Rondeletia*, limiting its scope to include about a hundred West Indian species (Borhidi, 1982, 1987; Borhidi & Fernandez Zequeira, 1981, 1982, 1983; Borhidi & J  rai-Koml  di, 1983). They consequently resurrected *Arachnothryx* and *Rogiera* and described three new genera to accommodate certain species from the West

Indies and one from Honduras. Borhidi & Fernandez Zequeira (1981, 1982, 1983) described two segregate genera, *Roigella* Borhidi & Fernandez from Cuba (one species), and *Suberanthus* Borhidi & Fernandez from Cuba and Hispaniola (nine species). Because these two genera are restricted to the West Indies, they are outside the scope of the present treatment and will not be discussed further.

The monotypic genus *Javorkaea* was described by Borhidi & J  rai-Koml  di (1983) to encompass *Rondeletia hondurensis* J. D. Sm., a species endemic to Honduras and recognized by Standley (1918) as comprising his monospecific group *Hondurenses*. According to Borhidi & J  rai-Koml  di (1983), *Javorkaea* “. . . differs from both *Rondeletia*, *Rogiera* and *Arachnothryx* in having a broad, connate stipular ring with 1–3-lobed stipules, a 2–3-storied racemelike terminal-cymose inflorescence, a 5–7-parted zygomorphic calyx, with long tube above the hypanthium, the large corolla with bearded lobes at the base, the granulated style and the headlike conduplicate stigma and the 4-colporate, punctategillate pollen grains.” However, their study and description of *Javorkaea* was based on a single specimen, which is not even the type collection of *Rondeletia hondurensis*. Examination of approximately 25 collections of this species revealed the range of morphological variation to be substantially greater than that noted by Borhidi & J  rai-Koml  di (1983). For example, I observed flowers with 4- as well as 5–7-merous calyces, and inflorescences that are generally compactly corymbiform, not distinctly 2–3-storied as they characterized it.

In the same series of papers, Borhidi (1982, 1987) resurrected *Arachnothryx* and *Rogiera*, into which he transferred the majority of Mexican and Central and South American *Rondeletia* species. Under *Arachnothryx*, Borhidi (1982) recognized three sections (*Arachnothryx*, *Laniflorae*, and *Calycosae*) based on Standley's species groups, but he failed to typify them. In the latter paper (Borhidi, 1987), the species he transferred to *Arachnothryx* were not even assigned to sections. The generic delimitations of Borhidi and collaborators are based primarily on the structure of the corolla throat (i.e., the presence or absence of pubescence or a fleshy faucial ring or callosity), pubescence of the corolla tube, placental structure (sulcate or not), and pollen morphology. However, pollen morphology fails to provide convincing evidence for generic segregation. Pollen was said to be “3-colporate” in *Arachnothryx*, *Rogiera*, and *Rondeletia* (Borhidi, 1982) and “4-colporate” in *Javorkaea*, but it is unclear how many species

were surveyed in his study. Only two photos depicting a single species each of *Arachnothryx* and *Rogiera* were published by Borhidi (1982), and these do not differ substantially in morphology.

Although cytological information was not mentioned by Borhidi, counts have been published for six species in this group (Kiehn, 1986). Diploid chromosome numbers of $2n = 34$ – 36 have been reported for two species of *Arachnothryx* (indicating a base number of $x = 9$), as opposed to $2n = ca. 40$ and $2n = 44$ for four species encompassing *Rogiera* and *Rondeletia* sens. str. (indicating base numbers of $x = 10$ and $x = 11$) (Kiehn, 1986, in press). These data are preliminary, and further cytological information may help circumscribe generic boundaries in this complex.

While studying the Mexican and Central American *Rondeletia* for treatments for *Flora Mesoamericana*, *Flora of Chiapas*, and *Flora de Veracruz* (Lorence, in prep.), I encountered species with virtually every possible combination of morphological characters used to separate *Arachnothryx*, *Rogiera*, and *Rondeletia* sens. str. For example, *Rondeletia galeottii* Standl. possesses fusiform seeds winged at both ends, a key character of *Rondeletia* sens. str., but has reflexed foliaceous stipules diagnostic of *Rogiera*, and tetramerous corollas with a naked throat lacking a fleshy ring, features that would otherwise place it in *Arachnothryx*. On the other hand, *Rondeletia izabalensis* Standl. & Steyer., a species closely related to *R. galeottii*, has unwinged seeds. *Rondeletia strigosa* (Benth.) Hemsl. has a fleshy ring and yellow pubescence in the throat, in effect linking *Rogiera* and *Rondeletia*. Septicidal versus loculicidal capsule dehiscence, used by Steyermark (1967) to separate *Arachnothryx* from *Rondeletia*, is not a constant feature. In many Mexican and Central American species, dehiscence is initially loculicidal, then septicidal. In addition, *Rondeletia secunda* Standl. from Panama matches *Arachnothryx* in all features except its loculicidally dehiscent capsules (Kirkbride, 1969). Finally, *Rondeletia brandegeana* (discussed below) combines a number of floral and fruit features of *Arachnothryx*, *Javorkaea*, *Rogiera*, and *Rondeletia*, in effect linking them.

I believe the majority of characters used to differentiate *Javorkaea* from *Rondeletia* are of minor importance (i.e., the relatively long stipular sheath and calyx cup, 1–3 stipule lobes, zygomorphic calyx, large corolla with basally barbate lobes within, and oblong ovary and capsule). Most of these features occur in various combinations in one or more species of *Rondeletia* (including *Rogiera* and *Arachno-*

thryx) and merely represent extremes in a continuum of variation. Although the subcapitate, bilobed stigma and 4-colporate pollen grains appear to be distinctive for this species at the sectional level, as proposed by Standley (1918), they do not provide sufficient bases for recognition at the generic level, in my opinion.

Because of the existence of intermediate taxa linking these four genera and lack of a firm basis from detailed analyses, I believe, at present, it is unfeasible to recognize *Arachnothryx*, *Rogiera*, and *Javorkaea* as genera distinct from *Rondeletia*. A similar conclusion was reached over a century ago by Hemsley (1879), who stated that the distinctions between *Arachnothryx*, *Rogiera*, and *Rondeletia* “. . . break down and become intermixed with a large number of species, so it becomes necessary to reunite them or increase the number [of genera] by two or three; and I think the former course preferable.” In order to circumscribe critically generic boundaries for *Rondeletia* and allied genera, additional studies analyzing the cytology, palynology, morphology and anatomy, and breeding systems of the entire range of species are required, a task that is outside the scope of this study. I therefore decided to follow Kirkbride (1969), Standley & Williams (1975), Dwyer (1980), and Lorence & Castillo-Campos (1988) in recognizing the Mexican and Central American species as belonging to *Rondeletia* in the broad sense, encompassing *Arachnothryx*, *Javorkaea*, and *Rogiera*. Based on the available evidence, these segregates are probably best recognized as subgenera of *Rondeletia*.

As interpreted here, *Rondeletia* is one of the largest genera of Rubiaceae in tropical America, with approximately 55 species in Mexico (Lorence, 1990). Some 76 species occur in the Mesoamerican region, of which about 40 are shared with Mexico. *Rondeletia* is a primarily tropical genus that attains its greatest diversity in the montane mesophytic and cloud forest communities, where it reaches about 20–23°N latitude in the Sierra Madre Oriental of Veracruz and the Sierra Madre Occidental of western Mexico in Sinaloa. A few species also occur in lowland tropical rainforest (Lorence & Castillo-Campos, 1988) and semideciduous dry forest communities. Recent botanical exploration and collecting efforts in poorly known or unexplored regions of Mexico and Central America, and study of herbarium specimens for the preparation of accounts for *Flora of Chiapas* and *Flora Mesoamericana* have brought to light 11 new species of *Rondeletia*, which are described below. In addition, two new combinations and names are proposed. A key to the Me-

soamerican species will be given in the forthcoming treatment of Rubiaceae in *Flora Mesoamericana*, and a key to the Mexican species will be published separately.

1. *Rondeletia atravesadensis* Lorence, sp. nov.

TYPE: Mexico. Oaxaca: Cerro Atravesada—Cerro Azul, Arroyo “Rana,” 6 Dec. 1956, T. MacDougall s.n. (holotype, MEXU, photo PTBG). Figure 1A, B.

Species *Rondeletiae guerrensis* Lorence affinis, foliis minoribus 2–4 cm longis 1.2–2.4 cm latis, inflorescentia breviori 3–4 cm longa, floribus 7–13, lobis calycinis anguste triangularibus vel subulatis 0.2–0.7 mm latis, corolla lobis minoribus 1.5–2.5 mm longis, 1.5–2 mm latis differt.

Shrubs or small trees, the young twigs strigillose, the trichomes pale brown or fulvous, simple, acicular, to 0.6 mm long, the twigs terete, 0.7–1.5 mm diam., glabrate, longitudinally fissured, the internodes 1.5–3 cm long. Leaves opposite, those of a pair at a node subequal or unequal, petiolate; petioles 4–9 mm long, 0.5–0.6 mm diam., densely strigillose; lamina ovate, 2–4 × 1.2–2.4 cm, thickly chartaceous, drying dark brownish green, discolorous, adaxially dull, strigillose on the costa, sparsely so on the 2° veins and margin, abaxially strigillose on the costa and 2° veins, the base obtuse or rounded, the apex acuminate, the acumen 6–12 mm long, the 2° veins (3–)4 pairs, barbate in the axils abaxially, acrodromous, the venation visible to 3° adaxially and to 4° abaxially, the margin ciliate; stipules deltoid, 2 mm long, erect, externally strigillose. Inflorescence terminal, 3–4 cm long and wide including the corollas, cymose, 7–13-flowered, the peduncle 4–12 mm long, 1 mm diam., densely hirsutulous, trichotomous, the 3 primary branches 6–16 mm long, 0.5 mm diam., villous, subtended by a pair of narrowly ovate bracts 4–5 mm long or by reduced leaves, each branch terminating in a cymule of (1–)3(–7) flowers; flowers 4-merous, sessile or on villous pedicels to 1.5 mm long, usually subtended by a linear bracteole 1–2 mm long, the hypanthium densely fulvous villous, turbinate, 1.5 × 1 mm, the calyx cup 0.3 mm deep, internally glabrous, the calyx lobes erect-spreading, subequal or unequal, narrowly triangular or subulate, 2.5–5 × 0.2–0.7 mm, externally villous, internally glabrous, each sinus with 2 small colleters; corolla white when fresh, at anthesis salverform, the tube 12–14 mm long, externally strigillose-villous, the trichomes white, internally sparsely hirtellous in basal 1/3–1/2, the lobes spreading, broadly elliptic or semicircular, 1.5–2.5 × 1.5–2 mm, externally strigillose basally,



Figure 1. —A, B. *Rondeletia atravesadensis* Lorence. MacDougall s.n. in 6 Dec. 1956 (holotype, MEXU).

internally glabrous, the margin undulate, the throat glabrous; stamens 4, in short-styled flowers the tips exerted for 0.5 mm, anthers attached 1 mm below throat, sessile, 1.5–2 mm long; style in short-styled flowers included, 6 mm long, glabrous, the 2 ellipsoid stigmas 2 mm long, the disc 0.5 mm diam., hirtellous. Capsules and seeds unknown.

Distribution. This species is known only from the type locality in the Sierra Atravesada of Oaxaca, Mexico. Cerro Atravesada and Cerro Azul are two peaks, reaching about 1,600 m and 2,300 m, respectively, that form part of the Sierra Atravesada north of the town of Niltepec. This isolated Sierra is separate from the other mountain ranges in Oaxaca and constitutes the disjunct northwestern part of the Sierra Madre de Chiapas. Geologically it is composed of limestone and coarse-grained sandstone, a quartz brecca (MacDougall, 1971).

Habitat. MacDougall (1971) noted that the flanks of Cerros Atravesada and Azul are covered by dense, mixed evergreen rainforest and cloud forest with palms, tree ferns, and epiphyte-laden trees. The flat, boulder-strewn summits of the peaks support low elfin cloud forest with *Pinus*, *Clethra*, and Lauraceae, among other taxa. Because of its topographic

isolation, the Sierra Atravesada harbors a number of disjunct plant and animal species, including the quetzal.

Rondeletia atravesadensis is allied to *R. guerrensis* (described below) from Guerrero (Fig. 8C, D), a species differing by its larger leaves (5–15 × 2–7 cm), larger inflorescence (8–19 cm long) with more numerous (12–36) flowers, larger, foliaceous calyx lobes (2–5 × 1–2 mm), and larger corolla lobes (5–6 × 4–6 mm). *Rondeletia atravesadensis* is also closely related to *R. scoti* (Fig. 8A, B).

2. *Rondeletia brandegeana* Lorence, nom. nov.

Replaced name: *Otocalyx chiapensis* Brandege, Univ. Calif. Publ. Bot. 6: 68. 1914. Non *Rondeletia chiapasensis* Standl. (1940). TYPE: Mexico. Chiapas: Cerro del Boquerón, middle region, moist valley slopes, Aug. 1913, C. A. Purpus 7041 (holotype, UC no. 173047, photo PTBG; isotype, GH).

Tree? or shrub?, the young twigs strigillose, the trichomes simple, unicellular, whitish or pale fulvous, 0.3–0.6 mm long, the twigs 1–2 mm diam., the internodes (0.5–)1–9 cm long. Leaves opposite, those

of a pair at a node equal or subequal, petiolate; petioles 4–12 mm long, 0.5–0.6 mm diam., moderately to densely strigillose; lamina ovate or ovate-elliptic, 2.5–7 × 1.3–3.5 cm, drying brownish green, discolorous, both surfaces sparsely strigillose, the hairs denser along costa and veins, the base cuneate to rounded, occasionally attenuate, the apex long-acuminate, the acumens 1–1.5 cm long, often falcate, the 2° veins 4–6 pairs, the venation campodromous, the venation visible to 5° on both surfaces, the margin sparsely ciliate; stipules erect, deltoid, 1–1.5 mm long and wide basally, externally strigillose dorsally, internally densely strigillose-sericeous, margins scarious, the trichomes mixed with brown digitate colleters 0.5 mm long. Inflorescence terminal, dichasial-cymose, 4–5 cm long including the corollas, 2–3 cm wide, trichotomous (sessile) or with a single 1° axis (peduncle), the central 1° axis 1–3 cm long, often subtended by a pair of reduced leaves, bearing a cymule of 3–8 flowers, the 2 lateral 1° axes 1–2.5 cm long, each bearing a cymule of 1–3 flowers, the axes densely fulvous strigillose, the cymules subtended by linear bracteoles 2.5–3.5 mm long; flowers 4-merous, sessile or on pedicels to 1 mm long, each usually subtended by a linear strigillose bracteole 2–3 mm long, the hypanthium obconical-obovoid, 2 × 1.5 mm, densely fulvous strigillose, the calyx cup 0.3–0.5 mm deep, the lobes strigillose, unequal, 3 smaller lobes linear-subulate, erect, 2–5 × 0.5 mm, 1 larger lobe foliaceous, lanceolate or ligulate, 9–10 × 1.5–2 mm, each sinus with a single brown, digitate colleter; corolla with imbricate aestivation in bud, salverform at anthesis, the tube 10–11 mm long, 1 mm diam. medially, externally densely fulvous strigillose, internally pilose in basal 1/3, the lobes spreading, ovate or rounded, 3 × 2.5–3 mm, externally strigillose, internally sparsely papillose puberulent around throat with short, white, flat and bulbous trichomes; stamens in short-styled flowers sessile, attached 1.5 mm below throat, anthers linear-ellipsoid, 2–2.2 mm long, tips slightly exserted; style in short-styled flowers included, glabrous, 4 mm long, the ellipsoid stigmas 3 mm long; disc pilose, 0.5 mm diam., sunken below calyx lobe sinuses. Pollen 3-colporate. Capsule ovoid-ellipsoid or subglobose-ellipsoid, slightly bisulcate, 5 mm long, 4–5 mm diam., strigillose, crowned by persistent calyx lobes, dehiscence loculicidal then septicidal; seeds angulate, 0.3–0.4 mm diam., the testa dark brown, deeply foveolate, the cells 5–6-sided.

Distribution. This species is known only from the type locality on the Cerro del Boquerón in Chiapas, Mexico, where C. A. Purpus collected it in “rocky

forests.” No recent collections are known, suggesting that it may be extremely rare or extinct.

Additional specimens examined. MEXICO. CHIAPAS: Cerro del Boquerón, 1914, C. A. Purpus 7041' (UC, probable isotype); Cerro del Boquerón, rocky forests, June [year not given], C. A. Purpus 7514 (UC).

A careful study of the holotype and two other collections of *Otocalyx chiapensis* revealed that this species agrees well with *Rondeletia* sensu lato in terms of vegetative, floral, and fruit morphology. The name *Otocalyx* refers to one of the four calyx lobes that is expanded and foliaceous. However, this feature is not inconsistent with *Rondeletia*, many species of which have one or two large, foliaceous calyx lobes. The throat and adjacent adaxial corolla lobe surfaces are sparsely bearded with short, white, bulbous and flattened hairs, a feature characteristic of *Rogiera* and *Javorkaea*. The tetramerous flowers and internally basally pilose corolla tube are features typical of *Arachnothryx*, although the pilose nectary disc is not supposed to occur in the latter genus according to Steyermark (1967). Brandegee's (1914) statement in the protologue that *Otocalyx* is characterized by baccate fruits and a unilocular ovary with numerous ovules on a dorsifixed, laminar placenta, features that are “. . . peculiar for a Rubiaceae genus, resembling those of some species of Gesneriaceae,” is clearly erroneous. In his Rubiaceae treatment for *North American Flora*, Standley (1934: 181–182) placed *Otocalyx* in the Gardenieae tribe because of its supposedly fleshy fruit, a feature he questioned, although he did recognize the bilocular nature of the ovary.

My examination of the fruits of *Otocalyx chiapensis* revealed that they are clearly capsular and bilocular, each locule having an elongate, peltate placenta with numerous seeds. Dehiscence appears to be at first loculicidal (as in *Rondeletia*), then septicidal (as in *Arachnothryx*). The numerous seeds are nonwinged and angulate with a deeply foveolate testa consisting of 5–6-sided cells, a feature characteristic of *Arachnothryx*. For these reasons I have decided to transfer *Otocalyx chiapensis* to the genus *Rondeletia* as *R. brandegeana* and have provided an emended description of the species. This species combines key characters of *Rondeletia*, *Rogiera*, and *Arachnothryx*, thus undermining the validity of the latter two genera. *Rondeletia brandegeana* seems most closely related to *R. atravesadensis* and *R. rzedowskii*, both referable to Standley's *Calycosae* group.

3. *Rondeletia dwyeri* Lorence, nom. nov. Replaced name: *Chomelia leucophylla* Dwyer,

Ann. Missouri Bot. Gard. 67: 98, fig. 21. 1980. Non *Rondeletia leucophylla* HBK (1820). TYPE: Panama. Darién: slopes of Cerro Chucula, drainage of Río Pavarando, 11 Feb. 1972, A. Gentry 4262 (holotype, MO; isotype, MO).

Trees 5–15 m tall, the twigs 1.5–2.5 mm diam., covered by a white or pale brown, matted arachnoid tomentum when young, glabrescent, the internodes 1–5 cm long. Leaves opposite, those of a pair at a node subequal to unequal, one up to twice as large as the other, shortly petiolate; petioles 4–20 mm long, 0.8–1.5 mm diam., arachnoid tomentose when young; lamina elliptic, obovate-elliptic, or broadly obovate-elliptic, (5–)8–21.5 × (2–)3.5–11 cm, the base cuneate, obtuse, rounded, or truncate, the apex acute or shortly acuminate, the acumen to 1.5 cm long, occasionally falcate, the lamina chartaceous, drying greenish brown, strongly discolorous, adaxially sparsely flocculose tomentose when young, glabrescent, abaxially densely and persistently white pannose or arachnoid tomentose, the 2° veins 7–8 pairs, arcuate, camptodromous, the venation raised and visible to 5° adaxially and to 4° abaxially, the margin thin, slightly revolute; stipules ligulate or lanceolate, erect, thin, brown, foliaceous, 4–8 × 1.5–2.5 mm, externally sparsely arachnoid tomentose basally, internally more densely so, with long, white, sericeous trichomes basally. Inflorescence terminal or axillary on short shoots at leafless nodes, a reduced, 5–27-flowered thyrsoid cyme 2.5–4 × 2–3 cm (including corollas), the peduncle 3–8 mm long or sessile and branched from the base, the 1° branches 1–3 pairs, 1–13 mm long, each bearing 3–6 flowers in dichasia or a single flower, the axes densely whitish or tan arachnoid tomentose, subtended by subulate bracteoles 2 mm long; flowers distylous, 4-merous, sessile or on pedicels to 1 mm long, each subtended by a subulate bracteole 2–2.5 mm long; hypanthium turbinate or ovoid, bisulcate, 1.5–2 × 1–1.5 mm, the calyx lobes subequal, narrowly triangular, subulate, or ovate-elliptic and foliaceous, 1–5 × 0.8–4 mm, becoming reflexed, externally tomentose, internally glabrous and venose, each sinus with 6–8 sessile, brown colleters, calyx cup 0.3–0.5 mm deep; corolla when fresh pink or orange-brown, or lobes cream, center lilac and tube red, salverform at anthesis, the tube 9–13 mm long, 0.8–1.2 mm diam. medially, externally moderately to densely arachnoid tomentose, internally villous in basal 1/3, the lobes broadly elliptic or obovate, spreading, 3–4 × 2.5–3 mm, obtuse, margins undulate or crisped, externally flocculose tomentose, stamens sessile, anthers linear-ellipsoid, 2–2.2 mm long, in long-styled flowers attached 4–5

mm below throat, in short-styled flowers attached 1–2 mm below throat, style glabrous, in long-styled flowers 11 mm long, tip exerted, in short-styled flowers 6–7 mm long, tip included, stigmas linear, 2–3 mm long, disc glabrous, 0.8 mm diam. Capsules broadly ovoid or broadly ellipsoid, 5–6 mm long, 3–5 mm diam., slightly bisulcate, weakly 8-ribbed, pale brownish arachnoid tomentose, dehiscence loculicidal then septicidal; seeds light brown, sharply angulose, 0.3–0.5 mm diam.

Distribution. *Rondeletia dwyeri* is known from the provinces of Colón and Darién in Panama.

Habitat. It occurs in lowland tropical rainforest, often along rivers and streams, from near sea level to about 600 m. Flowering occurs from January to April, closely followed by fruiting.

Additional specimens examined. PANAMA. COLÓN: trail along first river W of Portobelo, Gentry 5145 (F, MO); lower Río Guanche, Dressler 4346 (F, MO); Río Guanche, 3 km upriver from bridge on road to Portobelo, 25 m, Mori & Kallunki 5181 (MO), Antonio 4831 (MO); along Río Guanche, 1–4 km S of Portobelo Highway, 9°30'N, 79°40'W, 0–50 m, S. Knapp et al. 4601 (MO, PTBG); Río Trapiche, 5 m, Holdridge 6452 (MO); end of Río Boquerón road, forest on ridge W of road end, 1,500–2,000 ft., Hammel 2447 (MO); Río Igunita, to 3 mi. upstream from sea, 0–500 m, D'Arcy & Croat 13605 (MO); Río Igunita and inland to 2 km, 0–50 m, D'Arcy 14610 (MEXU, MO). DARIÉN: rocky banks of stream at Ensenada del Guayabo, 18 km SE of Jaqué, Garwood et al. 107 (F), Garwood et al. 282 (MO); 16–19 km SE of Jaqué, Garwood 988 (MO); 10 km NE of Jaqué, slopes of Río Tabuelitas above Biroqueirá, Indian village on Río Jaqué below mouth of Río Pavarando, to 400 ft., Sytsma & D'Arcy 3320 (MEXU, MO), D'Arcy & Sytsma 14481 (MO); headwaters of Río Tabuelita & ridge to Río Pavarando, 10 km NE of Jaqué, 150–500 m, D'Arcy & Sytsma 14604 (MO).

Examination of flowering and fruiting collections of *Chomelia leucophylla* Dwyer revealed that this species actually belongs in the genus *Rondeletia*; an expanded description is therefore given above. The floral morphology, capsular fruits with axile placentation and loculicidal, then septicidal dehiscence, and numerous small, angular seeds are all characteristic of *Rondeletia*. The white, arachnoid-tomentose pubescence of the lower leaf surface and corolla tube, and short, terminal and axillary inflorescences of *R. dwyeri* are distinctive among Panamanian species and suggest placement in Standley's (1918) *Leucophyllae* or *Laniflorae*, groups that share many features and should be combined. *Rondeletia dwyeri* is most closely related to *R. dariensis* Standl., which differs by its larger, more open inflorescences, flowers with pedicels 1–11 mm long, and much larger, foliaceous calyx lobes 10–13 × 2–4 mm. I am pleased to name this species for my

mentor and collaborator, John D. Dwyer, whose studies of tropical American Rubiaceae have contributed greatly to our understanding of this large and complex family.

4. *Rondeletia ginetteae* Lorence, sp. nov. TYPE: Mexico. Oaxaca: Distrito de Tuxtepec, Ruta 175 Tuxtepec to Oaxaca, ca. 10 km S of Valle Nacional, Sierra de Juárez, ca. 750 m, 6 Dec. 1980, D. H. Lorence & R. Cedillo T. 2973 (holotype, MEXU, photo PTBG; isotype, F, photo PTBG). Figure 2A–G.

Species *Rondeletiae acuminatae* (Oerst. ex Standl.) Lorence & Castillo-Campos affinis, inflorescentia elongata spiciforme 3–6 pares cymarum parvarum dense conglomeratarum ferente, floribus cum lobis calycinis minoribus subaequalibus, corolla cum tubo roseo et lobis extus rubello-purpureis et capsulis subglobosis minoribus 4–5 mm diametro, differt.

Shrubs 1–2 m tall, the young twigs densely hirsutulous to hirsute, the trichomes brown or purple, to 1 mm long, the twigs dark brown, 1–2 mm diam., the internodes 1–10 cm long. Leaves opposite, those of a pair at a node subequal or unequal, one occasionally up to 6 times larger than the other, shortly petiolate or subsessile; petioles 1.5–3 mm long, 1–1.5 mm diam., densely hirsutulous-hirsute; lamina elliptic or obovate-elliptic, (5–)9–23 × (2–)4–11 cm, often somewhat falcate, chartaceous, drying green or pale brownish green, slightly discoloured, adaxially hirsutulous, especially along the costa and 2° veins, abaxially more densely whitish hirsutulous or villosulous, the trichomes longer and denser along the costa and veins, the base obtuse, rounded, or subcordate, the apex shortly acuminate, the acumen 1–3 cm long, often falcate, the 2° veins 7–10 pairs, camptodromous or weakly brochidodromous, the 2°(–3°) veins depressed adaxially, the venation very prominent and visible to 4° on both surfaces, finely reticulate, the margin ciliolate; stipules erect, elliptic-lanceolate, acuminate, 8–13 × 1.5–3 mm, thin, brown, externally strigose especially basally and along margins, internally densely short strigose, with a ring of white trichomes 1–2 mm long basally. Inflorescence terminal, cymose, thyriform-spiciform, 5.5–8 × 3–4 cm including the corollas, the peduncle 1–4.5 cm long, the flowers numerous, the axes hirtellous-tomentose, brownish purple, the primary branches 3–6 pairs, crowded along the rachis, bearing sessile or subsessile glomerulate cymules of 4–6 flowers, subtended by thin, 2–3-lobed bracteoles 4–5 mm long; flowers 4-merous, sessile, the hypanthium obconic, 1–1.5 × 1 mm, the thin calyx purplish brown, externally densely arachnoid to-

mentose, internally strigillose, the calyx cup 1–1.5 mm long, the lobes subequal, ovate or elliptic, 4–7 × 1.5–2.5 mm, venose, apically acuminate, internally with 2 or 3 reddish colletes in each sinus; corolla reddish purple in bud, at anthesis salverform, tube externally densely arachnoid tomentose, brownish pink, 13–15 mm long, 2–2.5 mm diam., internally villosulous basally, the lobes ovate or rounded, obtuse, 2.5–3.5 mm long and wide, spreading, externally reddish purple basally, tomentose, internally glabrous, white, the margin crisped; stamens 4, in short-styled flowers sessile, attached 1–1.5 mm below throat, anthers 2–2.5 mm long, ellipsoid, tips exerted; style in short-styled flowers glabrous, included, 8 mm long, the ellipsoid stigmas 2 mm long. Capsule subglobose-ellipsoid, 4–5 × 4–5 mm, hirtellous, crowned by the persistent calyx lobes, dehiscence loculicidal then septicidal; seeds angulate, 0.4–0.7 × 0.3–0.4 mm, the testa reticulate, dark brown.

Distribution. Known only from the lower northern slopes of the Sierra de Juárez in Oaxaca, Mexico.

Habitat. *Rondeletia ginetteae* occurs in lower montane tropical evergreen rainforest with *Terminalia amazonia*, *Dussia mexicana*, and *Swartzia* from about 150 to 900 m (not 1,600 m as erroneously indicated on the isotype). The type was collected from a wet, vertical rock face in a shady arroyo. Flowers were collected in December and January, and fruits were found in April.

Additional specimens examined. MEXICO. OAXACA: District of Tuxtepec, 5 km N of Valle Nacional, 150 m, Breedlove & Almeda 56774 (CAS); Distrito de Ixtlán, Mun. de Comaltepec, Sierra de Juárez, Ruta 175 a 2.5 km al NE de Puerto Eligio, 900 m, Cedillo T. & Lorence 2395 (BM, MEXU, MO, PTBG).

Because of its somewhat elongate, spiciform-thyriform inflorescence and tetramerous flowers, *Rondeletia ginetteae* keys out to the *Laniflorae* group in Standley (1918). It is, however, clearly most closely related to *R. acuminata* (Oerst. ex Standl.) Lorence & Castillo-Campos and also to *R. macrocalyx* Standl. & Steyererm., both of which obviously belong in Standley's *Calycosae* group. This again underscores the artificiality of these groups. Although it occurs in the same region as the latter two species, *R. ginetteae* is readily distinguished by its elongate, spiciform inflorescence with flowers in paired, densely glomerulate cymules, smaller subequal calyx lobes, arachnoid-tomentose corolla with a brownish pink tube and externally reddish purple lobes toward the base, and smaller, subglobose capsules. It is with pleasure that I name this species



Figure 2. *Rondeletia ginetteae* Lorence. — A, B. Habit. — C. Corolla of short-styled flower, opened to show stamens. — D. Calyx, seen from above. — E. Style of short-styled flower. — F. Dehiscent capsule. — G. Seed. A–E, Lorence & Cedillo T. 2973 (F); F, G, Cedillo T. & Lorence 2395 (PTBG).

for my wife, Ginette, frequent field companion and dearest friend.

5. *Rondeletia guerrerensis* Lorence, sp. nov.

TYPE: Mexico. Guerrero: Municipio de Atoyac de Alvarez, a 23.5 km al NE de El Paraiso, camino Atoyac-Puerto del Gallo, 1,700 m, 22 Nov. 1983, E. Martínez S. & F. Barrie 5596 (holotype, MEXU, photo PTBG; isotypes, BM, CAS, CHAPA, F, MO, PTBG). Figure 8C, D.

Species *Rondeletiae leucophyllae* HBK affinis, a qua corolla albo-rosea dense velutino-tomentosa cum tubo crassioro 0.5–0.7 mm diametro differt.

Shrub or treelet 2.5–4 m tall, the twigs 1.5–3 mm diam., becoming longitudinally fissured, persistently strigillose-hirtellous or velutinous, the trichomes to 0.6 mm long, flattened, twisted, white or pale brown, the internodes 0.5–6.5 cm long. Leaves opposite, those of a pair at a node subequal or unequal, one up to twice as large as the other, petiolate; petioles 0.5–2.1 cm long, 0.5–1 mm diam., densely velutinous; lamina ovate-elliptic or elliptic, (3–)5–15 × (1–)2–7 cm, membranaceous or chartaceous, drying green or brown, slightly discolorous, adaxially often lustrous, sparsely strigillose-hirtellous, the hairs denser on costa and 2° veins, abaxially with sparse to moderately dense, whitish flocculose-arachnoid pubescence over entire surface, denser on costa and veins and mixed with scattered curved or straight hairs, the base cuneate, narrowly cuneate, or attenuate, rarely obtuse, the apex acuminate or acute, the acumen 7–15 mm long, the 2° veins 6–9 pairs, acrodromous, the venation visible to 5° on both surfaces; stipules narrowly triangular or subulate, 2–5 × 1–3 mm, appressed, persistent, externally strigose, internally densely white velutinous, the hairs interspersed with several brown, digitate colleters 0.5 mm long, the margins entire. Inflorescence terminal, usually solitary, rarely in groups of 2–3, cymose, a thyriform pleiochasium 8–19 × 3–7 cm including the corollas, cylindrical or broadest basally, 12–36-flowered, the peduncle 2–6 cm long, 1–1.5 mm diam., the peduncle and axes densely strigillose-velutinous, the primary branches 2–4 pairs, the lower pair 3–12 mm long, the upper pairs shorter or sessile, each branch subtended by a linear-subulate bract to 1 cm long or a reduced leaf and terminated by 1(–2) cymules of 3–4(–5) flowers; flowers 4(–5)-merous, sessile or the pedicels to 1 mm long, subtended by a small bracteole, the hypanthium subglobose or turbinate, 1–1.5 × 1.5 mm, densely whitish velutinous, the calyx cup 0.5–0.6 mm deep, internally glabrous, externally velutinous-tomentose, the calyx lobes 4, some-

what unequal, ovate-elliptic or ligulate, foliaceous, 2–5 × 1–2 mm, apically acute, erect-spreading, venose, externally densely flocculose-tomentose, internally densely strigose, each sinus with 3–8 white or red colleters; corolla pink or pinkish white when fresh, salverform at anthesis, the tube 10–17 mm long, 1–1.5 mm diam. medially, externally villous, internally pilose in the basal 1/3–1/2, the lobes 4(–5), suborbicular or obovate, 5–6 × 4–6(–8) mm, spreading, glabrous, the margin undulate or erose-incised, the throat glabrous; stamens 4, in long-styled flowers included, sessile, attached 2.5–3 mm below the throat, in short-styled flowers attached at the throat, the tips exerted for 1 mm, the anthers ellipsoid, 2–3 mm long; style in long-styled flowers 12–19 mm long, exerted for 2 mm, in short-styled flowers 7–9 mm long, included, the 2 stigmas 1–2.5 mm long, linear-ovoid, the disc glabrous. Capsules broadly ellipsoid or subglobose, 6–7 mm long, 4–5 mm diam., bisulcate, hirtellous-velutinous, the dehiscence loculicidal then septicidal; seeds angulate, 0.5–0.6 mm long, the testa reticulate, light brown.

Distribution. Known only from the Sierra Madre del Sur of Guerrero, Mexico.

Habitat. *Rondeletia guerrerensis* occurs in montane cloud forest with *Quercus*, *Abies*, and *Pinus* from about 1,700 to 1,900 m. Flowers were collected in October, November, and January and old fruits were found in November.

Additional specimens examined. MEXICO. GUERRERO: Cerro Teotepec y alrededores, L. Paray 4056 (MEXU); Galeana District, Carrizo-Pie de la Cuesta, 1,750 m, Hinton *et al.* 14738 (F, MO); 14 km al SSW del Campamento El Gallo, camino a Atoyac, estribaciones sur-occidentales del Cerro Teotepec, 1,900 m, Rzedowski & McVaugh 81 (ENCB, XAL).

Rondeletia guerrerensis is most closely allied to *R. leucophylla*, a species also having leaves that are densely white arachnoid tomentose or pannose below, at least when young. *Rondeletia leucophylla*, including *R. leptodictya* Standl. and the synonyms listed by Standley (1918: 54), is extremely variable in leaf size and shape as well as length of inflorescence branches and peduncles. However, the corollas of *R. leucophylla* are consistently more slender (1.2–1.5 mm diam. distally and 0.5–0.7 mm medially), deep pink to blood red when fresh, and externally arachnoid pannose with a cobwebby tomentum of fine, matted white hairs (occasionally mixed with crisped antrorse hairs), whereas corollas of *R. guerrerensis* are thicker (1.8–2 mm diam. distally and 1–1.5 mm medially), pink or white tinged with pink when fresh, and externally veluti-

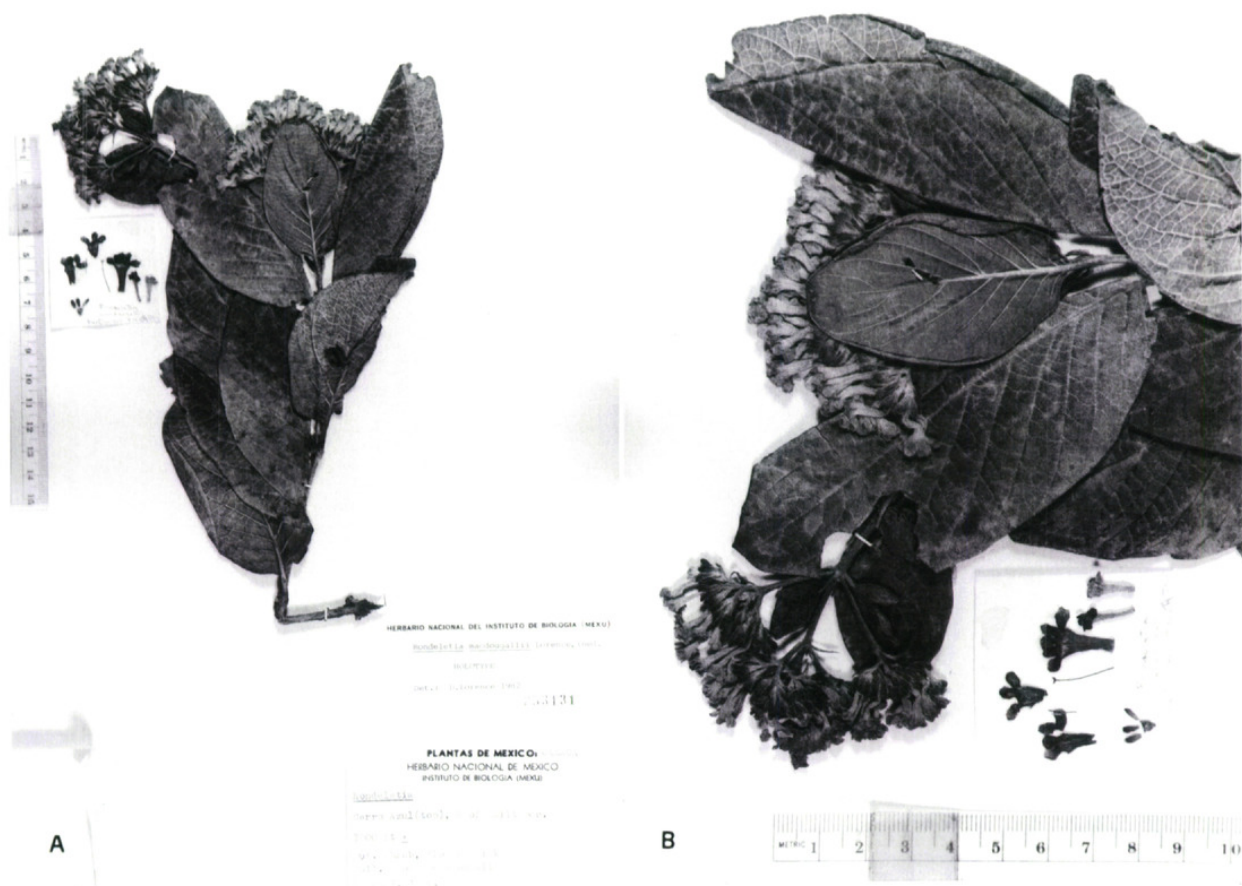


Figure 3. —A, B. *Rondeletia macdougallii* Lorence. MacDougall s.n. in 7 Mar. 1956 (holotype, MEXU).

nous tomentose with straight or crisped, pale yellowish white antrorse hairs. In addition, *R. leucophylla* differs by its dense, white arachnoid-pannose tomentum (sometimes mixed with crisped or straight hairs) on the petioles, young twigs, and inflorescence parts. *Rondeletia guerrerensis* is intermediate between Standley's (1918) *Laniflorae* and *Leucophyllae* groups, which are in turn linked to his *Calycosae* group by species such as *R. ginetteae* (q.v.).

6. *Rondeletia macdougallii* Lorence, sp. nov.

TYPE: Mexico. Oaxaca: Cerro Azul (top), N of Niltpec, 7,000 ft., dwarf shrub, flowers pink, 7 Mar. 1956 (fl), T. MacDougall s.n. (holotype, MEXU, photo PTBG). Figure 3A, B.

Species *Rondeletiae gratissimae* (Planch. & Linden) Hemsl. affinis, sed foliis late ovatis, lamina bullata obtusa 58–105 × 33–64 mm, inflorescentia floribusque dense fulvostrigosis, calycis lobis foliaceis longioribus 3–4 × 1.2–1.8 mm, corolla brevior dense strigosa et tubo 8–12 mm longo differt.

Densely branching shrub about 1 m tall, the twigs 3–4 mm diam., compressed, densely strigose when young, the trichomes fulvous, simple, to 1 mm long. Leaves opposite, shortly petiolate, those of a pair at a node equal; petioles 5–10 mm long, 2–2.5 mm diam., stout, terete, adaxially narrowly sulcate, strigose; lamina ovate to broadly ovate-elliptic, 5.8–10.5 × 3.3–6.4 cm, the base rounded to subtruncate, the apex obtuse or rounded, the tip often folded under, the lamina drying greenish brown, slightly discolored, coriaceous, bullate, adaxially sparsely strigillose when young, glabrate, abaxially strigillose along the costa and veins, the 2° veins 7–9 pairs, weakly festooned brochidodromous, the 3° veins oblique, the venation deeply sunken adaxially and visible to 5°, abaxially prominent and yellowish, visible to 4°, the margin thick, revolute; stipules erect, persistent, subulate or narrowly triangular, acuminate from a broad base, 6–9 mm long, 3–4 mm wide basally, coriaceous, involute, externally densely strigose. Inflorescence terminal, cymose-corymbose, rounded, 6.5–7.5 × 6.5–7 cm including the corollas, branching to 3°, the axes densely fulvous

strigose, the peduncle 2–2.5 cm long, 1.5–2 mm diam., the 1° branches 3, these 1.5–2 cm long, subtended by a pair of reduced leaves, the 2° branches, cymules and flowers often subtended by linear-ligulate or oblanceolate-strigillose bracteoles 2–7 mm long; flowers 5-merous, subsessile or on pedicels to 1.5 mm long, the hypanthium densely fulvous strigose, 1.5–2 × 1.3–1.6 mm, the calyx cup 0.2 mm deep, the lobes subequal, foliaceous, obovate-elliptic, 3–4 × 1.2–1.8 mm, thick, erect, obtuse or rounded apically, strigillose especially basally and internally, each sinus with a small white colleter; corolla pink when fresh, at anthesis narrowly funnelform, the tube 8–12 mm long, 1–1.5 mm diam. medially, flaring to 2–2.5 mm diam. distally, externally densely fulvous strigose, internally sparsely villosulous, the throat densely yellow barbate, the lobes spreading to 90°, broadly elliptic to subcircular, 2–4 × 2–3.5 mm, externally strigillose-tomentose, internally farinose-puberulent basally, the margins entire to crenulate; stamens in long-styled flowers included, the anthers linear-ellipsoid, 2 mm long, the filaments 1 mm long, affixed 3–3.5 mm below the throat; style glabrous, in long-styled flowers exerted 1–2 mm from the throat, 9–12 mm long, the 2 ellipsoid stigma lobes 0.8–1 mm long, the disc 1.5 mm diam. Capsules and seeds unknown.

Distribution. Known only from the type locality in the Sierra Atravesada in southeastern Oaxaca (see comments under *Rondeletia atravesadensis*).

Habitat. *Rondeletia macdougallii* occurs in elfin cloud forest on the summit of Cerro Azul.

This species is pictured in flower in MacDougall (1971: 94). Its pentamerous flowers with a densely yellow barbate corolla throat place *Rondeletia macdougallii* in Standley's (1918) *Amoenae* (equivalent to the genus *Rogiera*), a group of predominantly Mexican and Central American species. Among the species of this group, *R. macdougallii* seems most closely related to *R. gratissima* (syn. *R. seleriana* Loesener), a rainforest species from Chiapas and Guatemala. The latter species is also characterized by having thick, erect, nonfoliaceous stipules and coriaceous leaves but differs in having smaller, non-bullate, acuminate leaves, much more sparsely pubescent inflorescence and flowers, and flowers with much shorter, acute calyx lobes and a longer, more slender corolla tube 12–16 mm long. By its inflorescence structure and bullate leaves *R. macdougallii* also resembles *R. amoena* (Planch.) Hemsl., but in the latter species the stipules are 10–15 mm long, foliaceous, and reflexed. I am pleased to name this species for the late Thomas Baille MacDougall, an intrepid botanical explorer and naturalist who

spent each winter in the Isthmus of Tehuantepec, Oaxaca, collecting botanical and zoological specimens (Stix, 1975). The two main sets of MacDougall's botanical collections, mostly unicates, are deposited in the MEXU and NY herbaria.

7. *Rondeletia manantlanensis* Lorence, sp. nov.

TYPE: Mexico. Jalisco: Mpio. de Autlán, Cañada del Laurelito, Las Joyas, bosque mesófilo de montaña, 1,850 m, 7 Dec. 1985, *A. Vázquez* 3750 (holotype, WIS, photo PTBG; isotype, IBUG not seen). Figure 4A, B.

Species *Rondeletiae buddleioides* Benth. affinis, axis inflorescentiae caulibusque hirtello-villosis, pagina adaxiali laminae hirtello-strigillosa, corolla rosea vel rubra extus arachnoideo-tomentosa differt.

Shrub 1.2–5 m tall, twigs terete to slightly quadrangular, 1.2–2 mm diam., when young densely villous, the trichomes pale brownish white or buff, 0.5–1 mm long, flattened, twisted, septate; internodes 1.5–6 cm long. Leaves opposite, those of a pair at a node subequal to unequal, petiolate; petioles (2–)5–25 mm long, 0.7–1.2 mm diam., densely villous, winged distally; lamina elliptic to narrowly elliptic, (3.5–)5–16 × (1–)2–5.5 cm, the base narrowly cuneate to attenuate, the apex acute, the tip acuminate, 1–2 cm long, the lamina chartaceous, drying strongly discoloured, adaxially green or brownish green, short-strigose or hirsutulous with scattered hairs, denser on costa and veins, abaxially densely and persistently white arachnoid pannose, short-strigose or hirsutulous on veins and costa, the 2° veins (6–)7–9(–12) pairs, weakly festooned brochidodromous, the venation visible to 4° adaxially, to 3° abaxially, the margin ciliate; stipules narrowly subulate-acuminate, 3–7 mm × 1–2.5 mm, dorsally carinate, externally glabrous, internally densely villous, with 4–5 dark brown digitate colleters. Inflorescence terminal, a narrow, elongate, spiciform cyme, 11–16 × 2–3 cm including the corollas, the peduncle 1.5–4 cm long, 0.6–1 mm diam., sparsely to densely villose-hirtellous, the lateral branches 10–14 pairs, the 2° axes 2–6 mm long, villose-hirtellous, each subtended by a narrowly subulate, ciliolate bracteole 2–5 mm long, ending in 1–2 cymules of (1–)2–5 flowers; flowers 4-merous, distylous, sessile or on villose-hirtellous pedicels 1–2 mm long, each subtended by a linear-subulate bracteole 1–2 mm long with a pair of reddish colleters basally on margins, the hypanthium subglobose-turbinate, 1 × 0.8–1 mm, densely white arachnoid tomentose, the calyx cup 0.3–0.5 mm deep, the calyx lobes subequal to unequal, erect in flower, reflexed in fruit, narrowly deltoid or linear-subulate, the 1 large lobe (1–)2–3



Figure 4. —A, B. *Rondeletia manantlanensis* Lorence. Vázquez 3750 (holotype, WIS).

$\times 0.5$ mm, the 3 smaller lobes $(0.5-1)2 \times 0.2-0.4$ mm, externally strigillose, arachnoid tomentose toward base, the margins ciliolate, each sinus with a small, conical reddish colleter; corolla when fresh rose-colored or dark red, at anthesis salverform, the tube 5.5–7 mm long, 0.6–1 mm diam. medially, to 1.5 mm diam. distally, externally white arachnoid tomentose or flocculose, more densely so distally, internally sparsely hirtellous-villosulous toward base, with a villosulous ring basally, the lobes spreading 90° , subcircular or obovate, $1.5-2 \times 1.5-2$ mm, the margins erose-cripsed, the stamens sessile, the anthers linear-ellipsoid, 1 mm long, in short-styled flowers affixed 0.7 mm below throat, in long-styled flowers affixed 1.5 mm below throat; style glabrous, in short-styled flowers 2.5 mm long, in long-styled flowers 8 mm long, the stigmas linear-ellipsoid, 0.7 mm long, the disc annular, glabrous, 0.4–0.5 mm diam. Mature fruits and seeds not seen.

Distribution. *Rondeletia manantlanensis* is known only from the Sierra de Manantlán region in southern Jalisco.

Habitat. This species occurs in montane cloud forest associated with *Ardisia*, *Carpinus*, *Chusquea*, *Cornus*, *Conostegia*, *Magnolia*, *Meliosma*, *Oreopanax*, *Quercus*, *Rhamnus*, *Tilia*, Lauraceae, and Theaceae from 1,820 to 2,050 m. Flowering specimens were collected in December and January.

Additional specimens examined. MEXICO. JALISCO: Sierra de Manantlán Occidental, headwaters of Arroyo Las Joyas, 2–3 km ESE of Las Joyas, *Iltis & Guzman M. 29067* (MEXU, WIS); Arroyo El Chilacayote al “Cerro La Piedra Bola,” 2.5–3 km NE de la Estación Biológica “Las Joyas” (“Zarzamora”), *Judziewicz et al. 4875* (WIS); Estación Biológica “Las Joyas,” 1.5 km al SE de Las Joyas, *Cochrane & Judziewicz 10653* (WIS).

Rondeletia manantlanensis is most closely related to *R. buddleioides*, a widespread and variable species ranging from southern Mexico through Panama. The latter species, however, has strictly arachnoid-tomentose or pannose pubescence on its stems, leaves, and inflorescence. This new species represents a narrow-ranging vicariant presumably derived from *R. buddleioides*. This also seems to be the case for many other species in this complex, in-



Figure 5. —A, B. *Rondeletia monteverdensis* Lorence. *Haber 2340* (holotype, MO).

cluding *R. albida* Lundell, *R. pyramidalis* Lundell, and *R. ovandensis* Lundell, all from Chiapas, and *R. laniflora* Benth. from Chiapas and Guatemala. *Rondeletia manantlensis* is also closely related to *R. villosa* Hemsl. from Oaxaca, Chiapas, and Tabasco, a species differing by its much larger, externally villose stipules 15–25 × 5–10 mm, larger

leaves 10–23 × 3.5–8.5 cm, and longer inflorescences 10–24 cm long with white corollas.

8. *Rondeletia monteverdensis* Lorence, sp. nov.
TYPE: Costa Rica. Puntarenas: Monteverde Reserve, road to TV tower, elev. 1,700 m, 24

Aug. 1985, *W. A. Haber* 2340 (holotype, MO no. 3595758, photo PTBG). Figure 5A, B.

Species *Rondeletia calycosae* J. D. Sm. affinis, a qua ramunculis petiolisque glabrescentibus, foliis ternatis, et corolla alba glabra differt.

Trees or treelets 2–7(–16) m tall, rarely shrubby, the trunk to 15 cm diam., the twigs slender, 0.8–2 mm diam., trigonous to cylindrical, when young with scattered, white, straight or curved, adpressed hairs to 1 mm long, soon glabrate, the internodes 0.5–4 cm long. Leaves in whorls of 3, those at a node subequal to unequal, the smallest 50% smaller than the largest, petiolate; petioles 2–8 mm long, 0.5–1 mm diam., narrowly winged, with scattered white hairs when young, soon glabrate; lamina elliptic, narrowly elliptic, or narrowly ovate-elliptic, 3–8 × 1–2.5 cm, stiffly chartaceous, drying slightly discolorous, when young both surfaces with scattered, white, sericeous or strigose hairs to 1 mm long, adaxially soon glabrate, the hairs often persisting abaxially along costa and veins, the base acute, the apex acute with an abrupt, straight or falcate acumen 1–1.5 cm long, the 2° veins 5–7 pairs, arcuate, camptodromous, the venation adaxially obscure and visible to 2°(–3°), abaxially dark and visible to 4°, the margin slightly revolute; stipules narrowly triangular, acuminate, erect, rigid, dark brown, 1–3 × 1–2 mm basally and united into a short sheath 0.5–0.7 mm long, externally sparsely strigillose, internally densely white sericeous, the margins with 2–3 pairs of brown, cylindrical colleters. Inflorescence terminal, corymbiform-cymose, 4.5–8(–12) × 4–5 cm (including the corollas), 15–30-flowered, the peduncle 2–3(–7) cm long, 0.5–1.2 mm diam., the axes sparsely sericeous or strigillose, the 1° branches in 2 whorls of 3 separated by a short internode 6–20 mm long, each 1° branch 4–15 mm long, subtended by a lanceolate-elliptic, foliaceous bract 7–17 × 2–3 mm, terminating in dichasia of 3–5 flowers; flowers 4-merous, distylous, on strigose-sericeous pedicels 1–3 mm long, subtended by foliaceous bracteoles 4–5 mm long, the hypanthium obovoid-ellipsoid, 1.5 × 1 mm, sparsely strigose or glabrate, the calyx cup 0.5–0.6 mm deep, the calyx lobes unequal, erect-spreading, foliaceous, whitish green, venose, the 2–3 smaller linear-ligulate, 5–7 × 0.8–1 mm, the 1–2 larger lobes oblanceolate, 8–11 × 1.5–2 mm, the apex acute or rounded, each sinus with a single, sessile black colleter; corolla salverform at anthesis, white when fresh (or pink in bud), the tube 13–15 mm long, 1–1.2 mm wide medially, externally glabrous, internally sparsely hirtellous in basal 1/3–1/2, the lobes spreading, subcircular, 3–4 × 3–4 mm, margin

undulate, externally glabrous or with scattered hairs, internally papillose-puberulent around throat, stamens sessile, anthers linear-ellipsoid, 2.5–3 mm long, in long-styled flowers attached 5 mm below throat, in short-styled flowers attached 1.5–2 mm below throat, the tips visible, the style glabrous, 12 mm long in long-styled flowers, 5–8 mm long in short-styled flowers, the stigmas 1.5–2 mm long, linear-elliptic, disc glabrous, 0.5–0.7 mm diam. Capsules obovoid-ellipsoid, 4–5 × 2.5–4 mm, bisulcate, 8-ribbed, glabrous or with scattered hairs, the calyx lobes persistent; mature seeds not seen.

Distribution. Known only from Costa Rica, in and around the Monteverde Biological Reserve on the Cordillera de Tilarán (continental divide) separating the Alajuela, Puntarenas, and Guanacaste provinces, and on the Volcán Cacao in Guanacaste.

Habitat. Premontane and lower montane rain-forest and cloud forest formations, from 1,200 to 1,700 m. Flowers were collected from February to August and fruits from August to November. Of the seven flowering collections examined, six had short-styled flowers and only one had long-styled flowers. It is uncertain whether these data signify a trend toward homostyly or are merely an artifact of the small sample size.

Additional specimens examined. COSTA RICA. GUANACASTE: región del Volcán Cacao, Rancho Harold, 700–1,200 m, *Chacón & Chacón* 2151 (MO). PUNTARENAS: Monteverde, 1,420 m, *Haber & Bello* C. 1647 (MO), 1,700 m, *Haber* 2341 (MO), 1,300 m, *Solomon* 5379 (MO), *Lawton* 1143 (F); NE section of preserve, 1,600–1,700 m, *Utley & Utley* 2394 (F, MO); Monteverde community along Chimoco Trail, from Penas Blancas road to Río Guacimal, 4,100 ft., *Primack et al.* 425 (MO); Monteverde, Chomogo, Reserva Biológica, *Poveda* 1121 (MO); about 2–5 km E and SE of Monteverde, 1,580–1,700 m, *Burger & Gentry, Jr.* 8643 (F, MO), *Burger & Gentry, Jr.* 8712 (F), 1,450–1,650 m, *Burger & Baker* 9714 (F, MO); Monteverde, 1,550 m, *Haber* 523 (MO). ALAJUELA, PUNTARENAS, Y GUANACASTE: Cordillera de Tilarán, 1,450–1,500 m, *Dryer* 80 (F, MO).

Rondeletia montevertensis is referable to the *Calycosae* group of Standley (1918) and is closely related to *R. calycosa*, with which it has been confused in the herbarium. The latter species differs by its opposite leaves, persistent strigose pubescence on the stems, leaves, and inflorescence, paired inflorescence branches, and dark pink or rose red corollas with a densely strigose tube without.

9. *Rondeletia purpurea* Lorence, sp. nov. TYPE: Mexico. Oaxaca: Distrito de Ixtlán, Sierra de Juárez, Ruta 175 Tuxtepec a Oaxaca, a 5 km al N de Vista Hermosa, 1,175 m, *D. H. Lor-*



Arno Farner

Figure 6. *Rondeletia purpurea* Lorence. —A, B. Habit. —C. Calyx, showing one foliaceous lobe. —D. Open corolla of short-styled flower. —E. Style of short-styled flower. —F. Undehiscent capsule. A, C–E, *Cedillo T. & Torres C. 1594* (PTBG); B, *Lorence & Cedillo T. 4273* (PTBG); F, *Lorence 4009* (PTBG).

ence & R. Torres C. 4009 (holotype, MEXU, photo PTBG; isotypes, BM, F, MO, PTBG). Figures 6A–F, 7A, B.

Species *Rondeletiae jurgensenii* Hemsley affinis, caulibus foliis inflorescentiaque glabris, floribus cum lobis calycinis inaequalibus foliaceis, spathuli- vel ligulato-ellipti-

cis, (2–)3 minoribus deltoideis vel subulatis, et fructibus minoribus, 3–5 mm longis, 2.5–3.5 mm diametro, differt.

Shrubs or small trees 2–6 m tall, the main stem to 5 cm diam., the twigs slender, 1–2(–3) mm diam., glabrous, the internodes 1.5–9 cm long. Leaves opposite, petiolate, those of a pair at a node unequal

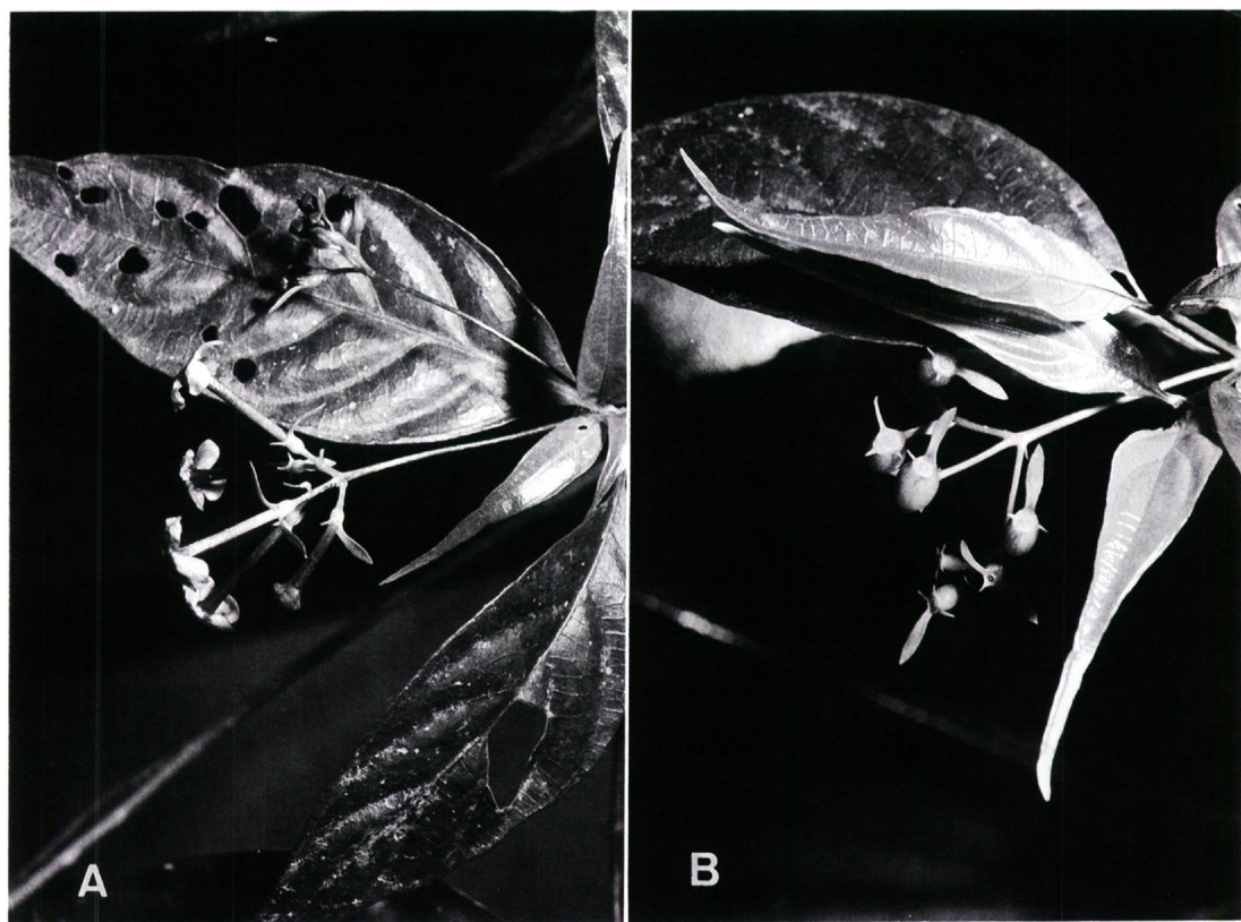


Figure 7. *Rondeletia purpurea* Lorence, growing in the Sierra de Juárez of Oaxaca, Mexico. —A. Twig with inflorescence. —B. Twig with immature fruits. Lorence & Cedillo T. 4273 (MEXU).

or subequal; petioles 0.3–3 cm long, 0.5–1 mm diam., glabrous or with rare, scattered hairs when young; lamina ovate, narrowly ovate, or ovate-elliptic, 4–13 × 1.2–5.5 cm, drying chartaceous, discolorous, green or brown, adaxially glabrous, nitid, abaxially dull, glabrous except for rare, scattered hairs along costa, veins, and margin when young, the base cuneate, obtuse, or rounded, the apex long acuminate or caudate, the acumen 1–3 cm long, falcate, the 2° veins 4–6 pairs, strongly arcuate, festooned brochidodromous, the vein axils slightly barbate and domatiate, the venation visible to 3° on both surfaces; stipules deltoid, 1.3–2 mm long and wide basally, the apex acute or acuminate, externally glabrous, internally sericeous with white trichomes to 1 mm long. Inflorescence terminal, cymose, thyrsiform, 5–8(–14) × 3–9(–12) cm including the corollas, sessile or the peduncle 5–7 cm long, 16–40-flowered, trichotomous, the 1° branches 3, ascending, 1.5–5 cm long, subequal or the central one longest, these unbranched or branching once again, ending in 3(–5)-flowered cymules, the axes glabrous; flowers 4-merous, distylous, on slender

pedicels 0.5–2 mm long, minutely bracteolate, the hypanthium ellipsoid, 1.3–1.6 × 1–1.2 mm, glabrous, the calyx cup 0.2 mm deep, the lobes sparsely strigillose externally, ciliolate, unequal, 1(–2) large and foliaceous, ligulate-elliptic or spatulate, 2.5–5 × 0.7–1 mm, apically obtuse or acute, ciliolate, the other (2–)3 lobes much smaller, deltoid or subulate, 0.5–1.2 × 0.3–0.5 mm, apically acute, each sinus with a subglobose brown colleter; corolla salverform at anthesis, when fresh uniformly dark purple or the lobes rarely light purple, the tube slender, 12–14 mm long, 1.3–1.6 mm diam. distally, externally glabrous, internally sparsely hirtellous basally, the lobes spreading, subcircular, 1.5–2.5 × 1.5–2.5 mm, externally setose with scattered hairs, internally minutely papillose between the lobes; stamens sessile, the anthers ellipsoid, 1.5 mm long, attached 1 mm below throat in short-styled flowers, 3 mm below throat in long-styled flowers; style glabrous, 7.5 mm long in short-styled flowers, 11 mm long in long-styled flowers, the 2 stigmas 1–1.5 mm long. Capsules ovoid or ellipsoid, 3–5 mm long, 2.5–3.5 mm diam., slightly bisulcate, with 8 low, lon-

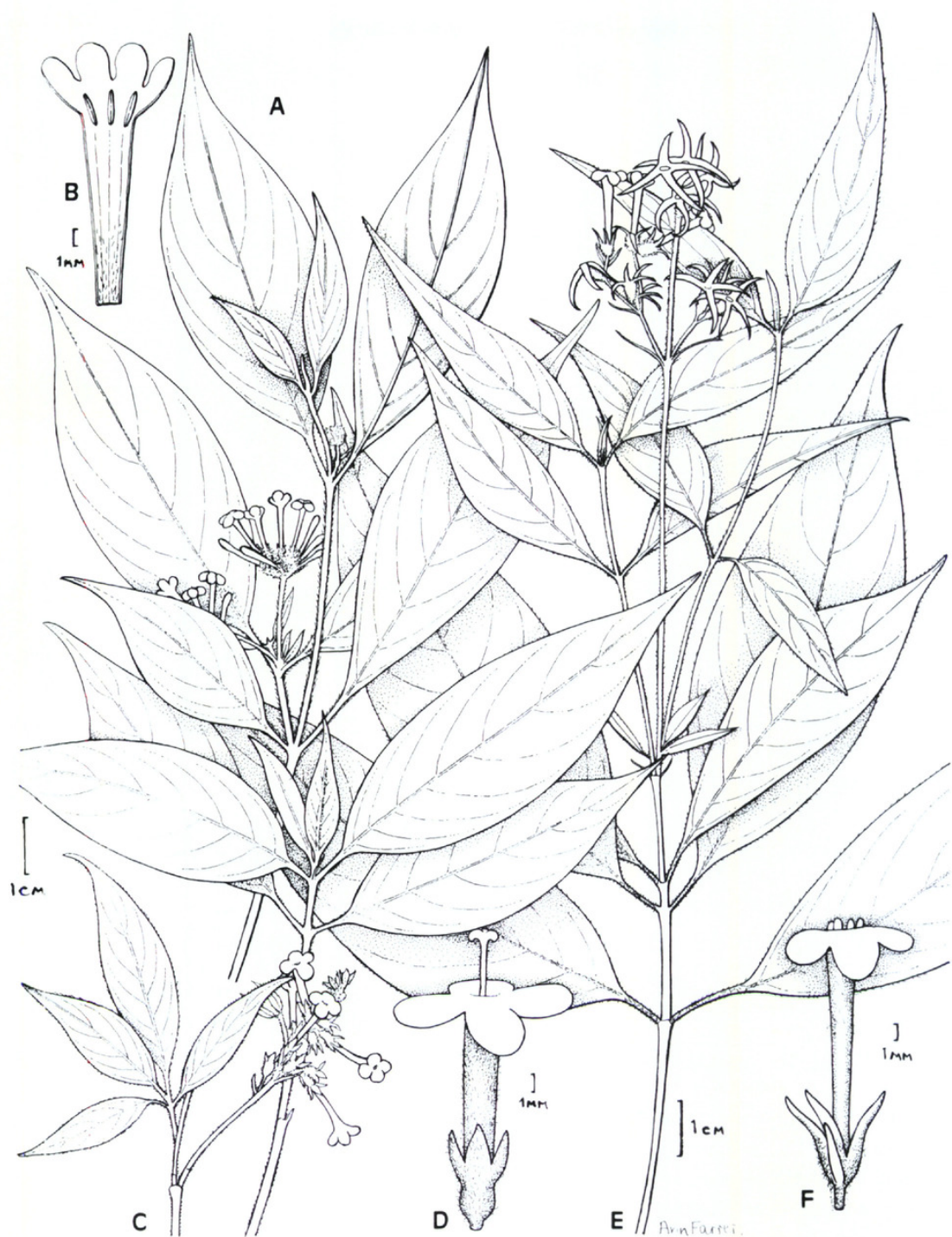


Figure 8. Three Mexican species of *Rondeletia*. A, B. *R. scoti* Lorence. —A. Habit. —B. Corolla, opened. C, D. *R. guerrerensis* Lorence. —C. Habit. —D. Detail of long-styled flower. E, F. *R. ricoi* Lorence. —E. Habit. —F. Detail of short-styled flower. A, B, MacDougall s.n. in 12 Mar. 1953 (PTBG); C, D, Martínez & Barrie 5596 (PTBG); E, F, Rico A. et al. 566 (PTBG).

gitudinal ridges, glabrous, loculicidal then septicidal; seeds subglobose, 0.4 mm diam., the testa deeply reticulate, light brown.

Distribution. This species is known only from the Sierra de Juárez in northeastern Oaxaca and from the northern highlands of Chiapas near Tila.

Habitat. *Rondeletia purpurea* occurs in lower montane and montane cloud forest associated with *Engelhardtia* (*Oreomunnea*) *mexicana*, *Brunellia*, *Hedyosmum*, *Liquidambar*, and *Lauraceae*, from about 1,100 to 1,900 m. Flowering specimens were collected from February to July and fruiting specimens from April to August.



Figure 9. —A, B. *Rondeletia ricoi* Lorence. Rico A. et al. 566 (holotype, MEXU).

Additional specimens examined. MEXICO. OAXACA: Distrito de Ixtlán, Sierra de Juárez, Ruta 175 Tuxtepec a Oaxaca, 5 km N de Vista Hermosa, 1,175 m, *Cedillo T. & Torres C. 1594* (MEXU, PTBG), *Tenorio M. 11034* (MEXU); 1 km SE de La Esperanza, 1,600 m, *Lorence & Cedillo T. 4273* (CHAPA, MEXU, MO, PTBG, XAL); 14.9 mi. S of Valle Nacional, *Croat 48021* (MEXU, MO). CHIAPAS: Mun. de Tila, Ejido Tiontipac, camino de Tila a Salto de Agua, 1,100 m, *Calzada et al. 3324* (XAL).

Rondeletia purpurea is referable to Standley's (1918) *Calycosae* group and is most closely allied to *R. jurgensenii*, also of southern Mexico. The latter species has larger leaves, a larger inflorescence with more numerous flowers, and subequal or equal, nonfoliaceous, linear-subulate calyx lobes.

10. *Rondeletia ricoi* Lorence, sp. nov. TYPE: Mexico. Oaxaca: Distrito de Putla de Guerrero, a 10 km al NE de Putla, 950 m, 9 Dec. 1982, *L. Rico, E. Martínez & O. Tellez V. 566* (holotype, MEXU, photo PTBG; isotypes, BM, F, MO, PTBG). Figures 8E, F, 9A, B.

Species *Rondeletiae mexicanae* (Turcz.) Standley affinis, foliis magis sparsim pubescentibus, pagina abaxiali

laminae arachnoideo-floccosa, paribus septem ad novem venarum lateralium, inflorescentia maiori 6–14 cm longa, 4–6 cm lata, floribus lobis calycinis lanceolatis vel ellipticis 5–7 mm longis, 1–1.5 mm latis, differt.

Shrubs (label says “herbacea”) 0.5 m tall, the leafy twigs 1–2 mm diam., sparsely strigillose, the trichomes to 0.5 mm long, flattened and twisted, whitish, septate, glabrate, the internodes 2–5 cm long. Leaves opposite, petiolate, those of a pair at a node equal to slightly unequal; petioles 3–12 mm long, 1 mm diam., arachnoid villosulous, especially adaxially, slightly winged distally; lamina elliptic or ovate-elliptic, somewhat falcate, 5–11 × 1.5–4 cm, chartaceous, drying brownish green, slightly discoloured, adaxially with scattered hairs along costa, abaxially arachnoid flocculose, with larger hairs scattered along costa and veins, glabrate, the base acute or obtuse, the apex acuminate, the acumen 1–2 cm long, the 2° veins 7–9 pairs, acrodromous, the venation visible to 3° adaxially and to 4° abaxially, the margin thin, ciliate; stipules narrowly subulate-acuminate, 3–7 × 1–2.5 mm basally, dorsally carinate, externally glabrous, internally densely villous.



Figure 10. *Rondeletia rzedowskii* Lorence. *Laboratorio de Biogeografía* 867 (holotype, MEXU).

Inflorescence terminal, 6–14 × 4–6 cm including the corollas, thyrsoid-pleiochasial, broadest basally, 16–36-flowered, the peduncle 2.5–8.5 cm long, 1 mm diam., villosulous, the 1° branches 2–3 pairs, the basal pair the longest, ascending at a 45° angle, unbranched or bifurcate, the ultimate branches terminated by monochasia of 3–5 flowers, the upper 1° branches smaller, opposite or alternate, few-flowered, the axes white villosulous, bracteolate, the bracteoles linear, to 1 cm × 1 mm; flowers 4-merous, distylous, subsessile or on pedicels 1–2 mm long, the hypanthium subglobose or ellipsoid, 2 × 1.5 mm, densely white villous or tomentose, the calyx cup 0.6–0.7 mm deep, the lobes externally densely villous, internally glabrous, equal or subequal, lanceolate or narrowly elliptic, 5–7 × 1–1.5 mm basally, each sinus with 1–3 reddish brown, ellipsoid colleters; corolla white when fresh, salverform at anthesis, the tube 11–12 mm long, 1 mm diam. medially, externally villous with long, white hairs in distal ½–⅔, internally glabrous, the lobes spreading, broadly obovate, 2.5–3 × 2 mm, obtuse, externally densely villous-sericeous with long, white hairs, internally glabrous; stamens in short-styled flowers sessile, the anthers ellipsoid, 2 mm long, attached just below throat, the tips exserted; style

in short-styled flowers included, 5.5 mm long, glabrous, the 2 ellipsoid stigmas 1.5 mm long. Immature capsule subglobose, 4 mm diam.; seeds unknown.

Distribution. *Rondeletia ricoi* is known only from the type locality in the vicinity of Putla de Guerrero in the Sierra Madre del Sur of Oaxaca near the border with Guerrero, Mexico.

Habitat. The species was collected in disturbed vegetation adjacent to a mesic *Quercus* forest at about 950 m.

Rondeletia ricoi keys out to Standley's (1918) *Leucophyllae* group because of the arachnoid pubescence on the abaxial leaf surface. This species is closely related to *R. mexicana*, which differs in having ferrugineous pubescence, recurved leaves with a subcordate base and the abaxial surface densely whitish tomentose, more numerous secondary veins (11–12 pairs), longer, ovate stipules, a more elongate, narrower inflorescence to 20 cm long, and flowers with narrower, linear-subulate calyx lobes. I take pleasure in naming this new species for its collector, María de Lourdes Rico Arce, formerly of the Herbario Nacional, Instituto de Biología, U.N.A.M.

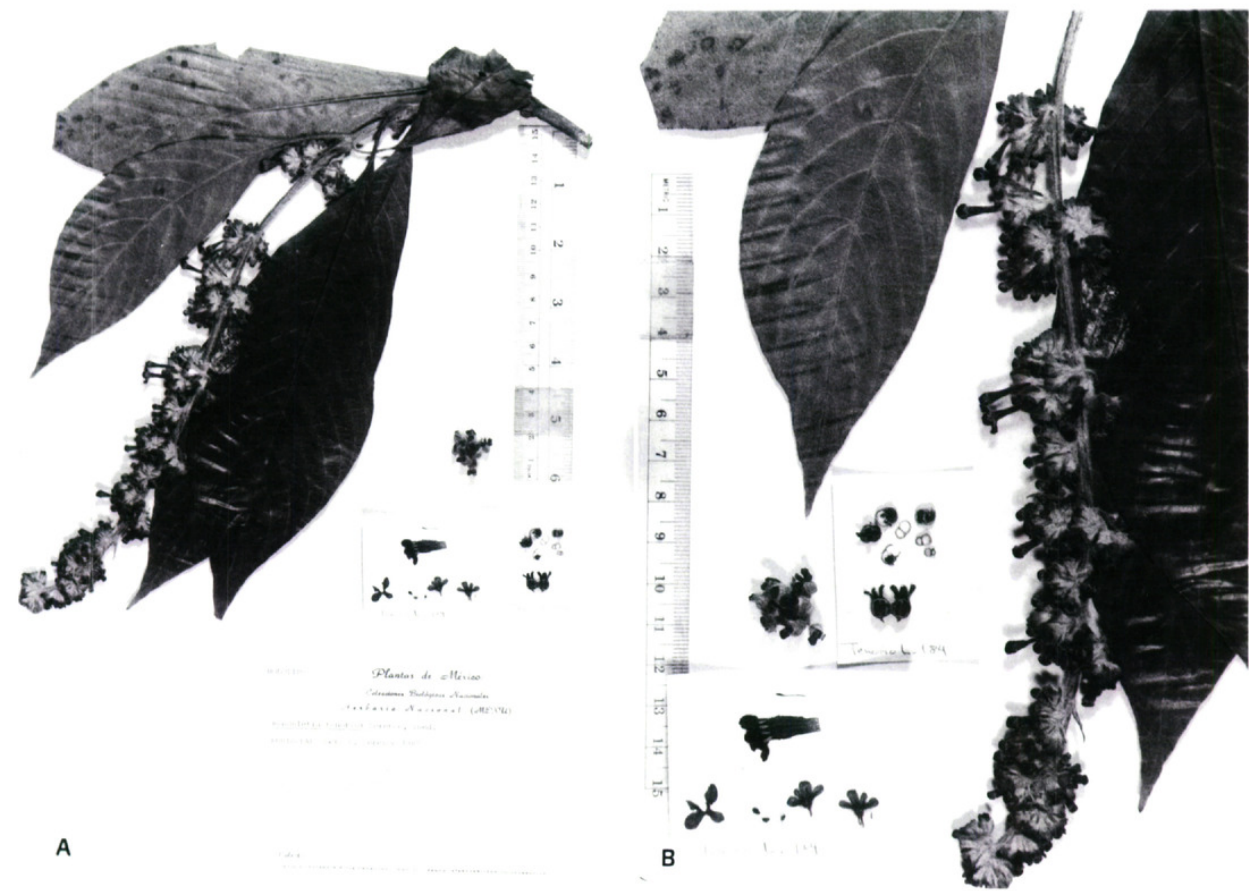


Figure 11. —A, B. *Rondeletia tenorioi* Lorence. Tenorio L. & Torres C. 184 (holotype, MEXU).

11. *Rondeletia rzedowskii* Lorence, sp. nov.
TYPE: Mexico. Guerrero: Municipio de Atoyac, Pto. de la Piedra Acanalada, 1,930 m, 6 ene. 1984, *Laboratorio de Biogeografía* 867 (holotype, MEXU, photo PTBG; isotypes, FCME, MEXU). Figure 10.

Species *Rondeletiae guerrensis* Lorence affinis, inflorescentia breviori latiori sessili corymbosa trichotoma 6–7 cm longa 7–8 cm lata, floribus 41–47, corolla lobis brevioribus 2–3 mm longis 2–2.5 mm latis differt.

Small trees to 6 m tall, the young twigs densely strigillose, the trichomes fulvous or rufous, 0.3–0.4 mm long, flattened, twisted, persistent, the leafy twigs 1.5–2 mm diam. Leaves opposite, petiolate, those of a pair at a node subequal or unequal, one up to 50% larger than the other; petioles 1–2.5 cm long, 0.8–1 mm diam., densely rufous strigillose; lamina elliptic, 7–11 × 3.2–4 cm, chartaceous, drying dark green, discolorous, adaxially strigillose, the hairs denser on costa and veins, abaxially strigillose on costa and veins, costa also with spreading hairs, the 2° vein axils barbate, the base cuneate, rarely attenuate, the sides equal to slightly unequal, the apex acuminate or caudate, the acumen 1–2

cm long, often falcate, the 2° veins 7–8 pairs, acrodromous, the venation visible to 3° adaxially and to 4° abaxially, the margin thin, callose; stipules narrowly triangular, erect, 2–3 mm long. Inflorescence terminal, sessile, cymose-corymbiform or pleiochastial, 6–7 cm × 7–8 cm including the corollas, 41–47-flowered, branching to the 3°, the axes densely rufous strigillose, trichotomous, the 1° branches 2.5–3.5 cm long, these branching twice again dichasially, the ultimate branches with cymules of 2–5 flowers; flowers 4-merous, sessile or on densely strigillose pedicels to 1.5 mm long, the hypanthium turbinate-cylindrical, 1–1.5 × 0.9–1.2 mm, densely rufous strigillose-villous, the calyx cup 0.3–0.4 mm deep, externally strigillose, the calyx lobes strigillose on both surfaces, unequal, 1 large and foliaceous, elliptic or ligulate, 3–3.5 × 1–1.5 mm, green, the other 3 smaller, narrowly triangular or subulate, 0.5–0.6 × 0.3–0.4 mm, each sinus with a single brown colleter; corolla white when fresh, salverform at anthesis, the tube 12–16 mm long, 0.8–1 mm diam. medially, externally villous-strigillose, densely so basally, internally hirtellous in basal 1/3, with a small, villous-hirtellous ring at base, the throat glabrous, the lobes spreading, broadly obovate or ellip-

tic, $2-3 \times 2-2.5$ mm, obtuse, the margin entire, externally strigillose basally, internally glabrous; stamens in short-styled flowers sessile, not exerted, attached 2.5 mm below throat, the anthers ellipsoid, 3.5–4 mm long; style in short-styled flowers included, 5–6 mm long, glabrous, the 2 linear-ellipsoid stigmas 2 mm long, the disc sparsely pilose. Capsules and seeds not seen.

Distribution. *Rondeletia rzedowskii* is known only from the type locality in the Sierra Madre del Sur of Guerrero, Mexico.

Habitat. This species occurs in montane cloud forest at 1,930 m, where it was collected in a humid canyon associated with *Cyathea*. The type was flowering in January.

Rondeletia rzedowskii keys out to the *Calycosae* group of Standley (1918). It is closely allied to *R. guerrensis* (Fig. 8C, D), which differs in having leaves that are loosely white arachnoid tomentose beneath, a narrower and more elongate inflorescence with flowers in subsessile or shortly pedunculate cymes, and flowers with a dense white tomentum on the outer surface of the calyx lobes and corolla tube. I am pleased to name this species for Jerzy Rzedowski, one of Mexico's most prolific botanists, who has contributed greatly to our knowledge of the systematics and ecology of the rich and fascinating Mexican flora.

12. *Rondeletia scoti* Lorence, sp. nov. TYPE: Mexico. Oaxaca: La Glorieta–Río Grande (N slope), flowers white, shrub ± 6 ft., *T. MacDougall s.n.* in 12 Mar. 1953 (holotype, MEXU, photo PTBG; isotypes, PTBG–2 sheets). Figure 8A, B.

Species *Rondeletiae atravesadensis* Lorence affinis, sed foliis maioribus $3.5-7.5 \times 1.3-2.7$ cm, nervis secundariis in axillis domatiis barbatis instructi, inflorescentia floribusque dense fulvostrigosis, floribus sessilibus, calycis lobis latioribus ligulato-ellipticis vel oblanceolatis, $2-3.5 \times 1-1.5$ mm differt.

Shrub ca. 1.8 m tall, the leafy twigs 1–1.5 mm diam., cylindrical, densely strigillose to short strigose when young, glabrate in age, the trichomes setose, 0.4–0.6 mm long, ascending, pale grayish yellow or fulvous, the internodes 0.5–6.5 cm long. Leaves of a pair at a node subequal or unequal; petioles of a pair subequal or unequal, 5–13 mm long, 0.6–0.8 mm diam., densely strigillose to short strigose; lamina elliptic, $3.5-7.5 \times 1.3-2.7$ cm, thickly chartaceous, drying discolored, brown, adaxially strigillose-scabrid when young, the trichomes short, thick, persistent or at least the raised bases persisting, longer and more persistent along costa and

2° veins, abaxially scattered strigillose to short strigose, densely so along costa and 2° veins, the base cuneate or narrowly cuneate, the apex acuminate, the acumen 8–12 mm long, the 2° veins 5(–6) pairs, acrodromous, the axils with barbate domatia, the venation visible to 2° adaxially and to 3° abaxially, the margin ciliate; stipules narrowly triangular, $1.5-2 \times 1-1.5$ mm basally, thick, erect, both surfaces densely strigillose, internally with several dark brown, digitate colleters 0.3–0.5 mm long near base. Inflorescence terminal, $2.5-3.5 \times 2-3$ cm including the corollas, corymbiform, 12–15(–21)-flowered, trichotomous, subsessile, the peduncle 2–4 mm long, the axes densely fulvous strigillose to short strigose, the 1° branches 8–15 mm long, subequal or the middle branch slightly longer, each ending in a capitulum of 3–5(–12) flowers composed of 1–3 cymules, the cymules subtended by several subulate to ligulate or spatulate bracteoles 1–4 mm long; flowers 4-merous, sessile, the hypanthium obconical, $1.5 \times 1-1.2$ mm, densely fulvous strigillose, the calyx cup 0.2 mm deep, the lobes subequal, erect, ligulate-elliptic or oblanceolate, $2-3.5 \times (0.5-1-1.5)$ mm, the apex acute to rounded, externally densely strigillose, internally sparsely strigillose, each sinus with 2–3 short, brown digitate colleters; corolla white when fresh, at anthesis salverform, the tube 9–11 mm long, 0.8 mm diam. medially, externally densely strigillose, internally sparsely hirtellous in basal 3–4 mm, the lobes spreading, broadly obovate or subcircular, $3-4 \times 2-3$ mm, externally strigillose or short strigose, internally sparsely barbate around throat with short, broad, white, septate trichomes, the margins subentire or erose-crenulate; stamens sessile, affixed 1.5 mm below throat in short-styled flowers, the anthers linear-ellipsoid, 1.7–1.8 mm long, included; style included in short-styled flowers, 4–5 mm long, the 2 linear stigmas 3 mm long, the disc 0.5 mm diam., densely white hirtellous. Capsules and seeds not seen.

Distribution. *Rondeletia scoti* is known only from the type locality, which is actually La Gloria, not “La Glorieta” as erroneously stated on the label. La Gloria is situated at the boundary of the Municipio of Santa María Chimalapa along the northern part of the Municipio of San Miguel Chimalapa in the Juchitán District of Oaxaca (P. Dávila Aranda, pers. comm.). This was a favorite collecting locality of MacDougall during his annual visits to Mexico. The type collection was flowering in March, but the label data do not specify the habitat or elevation.

Rondeletia scoti is referable to the *Calycosae* group of Standley (1918) and is closely allied to *R.*

atravesadensis. The latter species differs by its less densely strigillose stems and leaves with more slender hairs, shorter leaves with fewer (3–4 pairs) secondary veins that lack domatia, hirtellous or hirsutulous inflorescence axes, and subsessile or shortly pedicellate flowers with much narrower triangular or subulate calyx lobes. The specific epithet is the genitive of *scotus*, a person of Scottish ancestry. This species commemorates Thomas Baille MacDougall, intrepid botanical explorer of Scottish birth.

13. *Rondeletia tenorioi* Lorence, sp. nov. TYPE: Mexico. Oaxaca: Distrito de Juxtlahuaca, 19 km al SW de Juxtlahuaca y a 5 km en la misma dirección de Sta. Ma. Asunción, 1,900 m, 4 abr. 1982, P. Tenorio & R. Torres C. 184 (holotype, MEXU, photo PTBG; isotypes, BM, F, MO). Figure 11A, B.

Species *Rondeletiae tacanensis* Lundell affinis, a qua pubescentia caulis petiolorumque alba sericeo-villosa, stipulis grandioribus ovato-acuminatis foliaceis 12–18 mm longis, 8–12 mm latis, foliis nitidis fere glabris, inflorescentia erecta ramis primariis brevioribus subsessilibus usque ad 5 mm longis differt.

Trees 2–4 m tall, the leafy twigs stout, 7–9 mm diam., densely sericeous-villous when young with matted, white trichomes to 1 mm long, the internodes often compressed, 2–8 cm long. Leaves of a pair at a node subequal or one somewhat larger, petiolate; petioles of a pair subequal, 1.5–6 cm long, 1–2 mm diam., densely villous-sericeous; lamina elliptic, 9.5–25 × 2.7–8 cm, drying discolorous, brownish green, adaxially nitid, glabrous except for scattered hairs along the costa, abaxially sericeous-villous, the base narrowly cuneate, the apex acuminate, the acumen 1–2 cm long, the 2° veins 9–17 pairs, acrodromous, the venation visible to 4° on both surfaces, the margin callose; stipules somewhat spreading, broadly ovate-acuminate, foliaceous, 12–18 × 8–12 mm, externally densely strigose-sericeous, internally densely sericeous, the trichomes mixed with numerous dark brown, digitate collectors 1–1.5 mm long, the margins revolute. Inflorescence terminal, narrowly thyriform-cymose, 29–33 × 4–5 cm medially, the peduncle quadrangular, 2.5–7 cm long, 4–5 mm diam., the axes densely sericeous-villous, the 1° branches 9–11 pairs, opposite or subopposite, subsessile or to 5 mm long, the basal pair subtended by a pair of reduced leaves and a pair of stipules, the upper 1° branches usually branched once, subtended by thin, brown, dorsally sericeous, linear or lanceolate bracts up to 2 cm long, the ultimate branches ending in cymules of 5–15 flowers; flowers 4-merous, subsessile or on dense-

ly villous pedicels 1–2 mm long, the hypanthium subglobose or turbinate, 2 × 2 mm, densely white tomentose-villous, the calyx externally densely white sericeous-villous, internally glabrous, the cup 0.6–0.7 mm deep, the lobes subequal or slightly unequal, obovate or ligulate, 3–4 mm × 1.5–3 mm, venose, the apex obtuse, truncate, or emarginate; corolla red when fresh, at anthesis salverform, the tube 12–14 mm long, 1 mm diam. medially, dilated to 2 mm distally, externally strigillose-villous, especially distally, internally hirtellous in basal half with a hirtellous ring basally, the lobes spreading 90°, suborbicular, obtuse, 2 × 3 mm; stamens in short-styled flowers sessile, the anthers attached just below throat, ellipsoid, 2.5 mm long; style in short-styled flowers included, 6 mm long, the ellipsoid stigmas 2 mm long, the disc annular, 0.7 mm diam. Immature fruits subglobose, 5 mm diam., externally villous, the calyx lobes persistent; immature seeds 0.7–0.8 × 0.5–0.6 mm, the testa light brown, reticulate.

Distribution. *Rondeletia tenorioi* is known only from the type locality in the Mixteca Alta of western Oaxaca near the Guerrero border.

Habitat. This species was collected in secondary vegetation derived from cloud forest at 1,900 m. Flowers and immature fruits were collected in April.

Rondeletia tenorioi is a distinctive species referable to the *Laniflorae* group of Standley (1918) on the basis of its narrow, elongate inflorescence. It appears to be most closely related to *R. tacanensis* of Chiapas and Guatemala, a species differing by its shorter and sparser rufous velutinous pubescence, smaller and narrower nonfoliaceous stipules 5–9 mm long, adaxially dull, hirtellous leaves, reflexed inflorescence with longer primary branches, and subulate-lanceolate, apically acute calyx lobes. I take pleasure in naming this species for Pedro Tenorio, collector for the Herbario Nacional of the Instituto de Biología, U.N.A.M.

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