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NEW AND RECONSIDERED MEXICAN ACANTHACEAE. VI. CHIAPAS

By

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ABSTRACT: Novelties and taxonomic discussions pertaining to miscellaneous species of Acanthaceae occurring in Chiapas, Mexico are presented prior to a treatment of the family for the *Flora of Chiapas* series. The New World species *Barleria micans* is treated as conspecific with the west African species *B. oenotheroides*. *Blechum pyramidatum* is shown to be the correct name for the species often treated as *B. brownei*. *Blechum grandiflorum* is shown to belong to *Blechum* rather than *Ruellia*. *Buceragenia* is shown to comprise species of *Pseuderanthemum* with cleistogamous flowers. *Trybliocalyx* is treated as congeneric with *Chileranthemum*, and the new combination, *C. pyramidatum*, is made for the species previously known as both *C. violaceum* and *T. pyramidatus*. Eight new species of *Justicia* are described from Chiapas; two new combinations are made in *Justicia* for Chiapan species previously treated in *Neohallia* and *Chaetothylax*; and a new name is provided for the species previously known as either *Beloperone aurea* or *Justicia flava* D.N. Gibson. The species often treated as *Teliostachya alopecuroidea* is referred to *Lepidagathis*, and a discussion of the generic distinctions is provided. The species previously known as *Ruellia longituba* from Chiapas and Guatemala does not pertain to the type of that name and a new species, *R. maya*, is described to accommodate it. *Habracanthus* (including *Hansteinia*) is treated as congeneric with *Stenostephanus*; two new Chiapan species are described in the genus; and seven new combinations in *Stenostephanus* are proposed for the Chiapan species previously treated in *Habracanthus* and *Hansteinia*.

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INTRODUCTION

Chiapas is the southernmost state of Mexico, and its vascular flora is estimated to comprise more than 8200 species (Breedlove 1981). There are 131 species in 29 genera of Acanthaceae so far recorded from the state. This is the most species of Acanthaceae presently known for any Mexican state. However, further studies may reveal that the family is even more speciose in Oaxaca. Sixteen species of Acanthaceae are endemic to Chiapas and 13 others are known only from Chiapas and neighboring Guatemala.

The following novelties and conclusions are based on studies preparatory to treatment of Acanthaceae for the *Flora of Chiapas* series. Because new taxa, new combinations, new names, and lengthy discussions are not included in the *Flora*, they are being published here in anticipation of the imminent publication of the *Flora of Chiapas, Part 4, Acanthaceae*.

BARLERIA MICANS VS. B. OENOTHEROIDES

The sole New World species of the predominately African genus *Barleria* L. has long been known as *B. micans* Nees. This species has been considered a neotropical endemic since its description by Nees in 1846. A superficial exami-

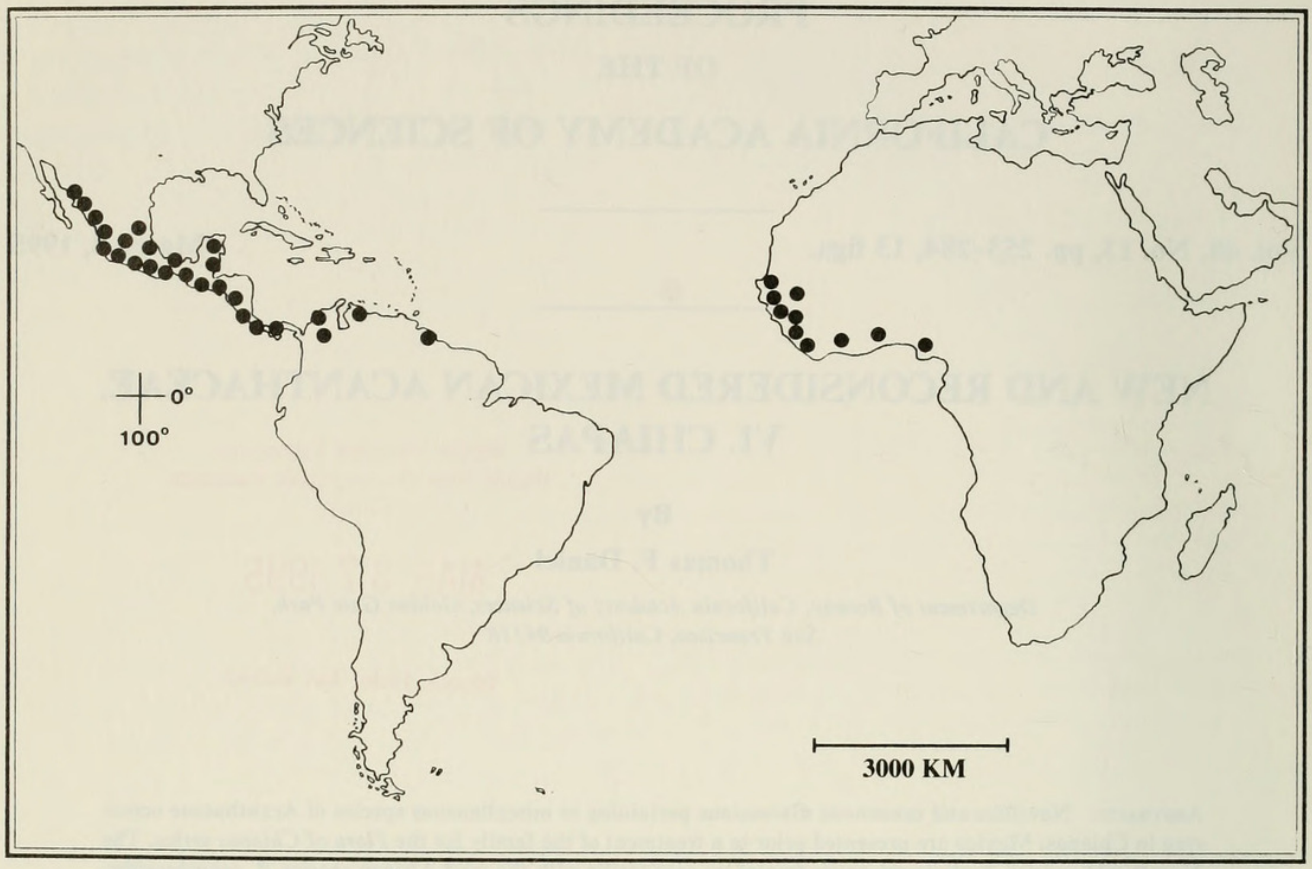

FIGURE 1. Distribution of *Barleria oenotheroides*.

nation of several African species revealed that *B. oenotheroides* Dum. Cours. greatly resembles *B. micans*. Further examination of specimens of *B. oenotheroides* at CAS, K, and P revealed these species to be similar in all characters. In addition to sharing all of the diagnostic characteristics usually attributed to *B. micans* (including the unusual feature of a yellow corolla that turns dark blackish-purple on drying), *B. oenotheroides* in Africa expresses the same types of character variation (e.g., robustness of spikes, size of corollas, degree of bracteal serration) as seen among American plants. Therefore, *B. micans* is included in the synonymy of *B. oenotheroides*. Based on the apparent pre-Columbian presence of *B. oenotheroides* in both hemispheres, the phytogeographical link between *Barleria* in Africa and America is elevated to the level of a common species. Indeed, the tendency of identical taxa to occur under different names in Africa and South America was noted by Gentry (1993).

The relationships among African (including Madagascan) and American (including West Indian) Acanthaceae have been shown to be closer than previously believed. In addition to numerous pantropical genera that occur in both Africa and America, the genera *Oplonia* Raf., *Mendoncia* Vell. ex Vand., and *Stenandrium* Nees are known only from these two regions. African species of *Oplonia* were previously referred to *Forsythiopsis* Baker (Stearn 1971); African species of *Mendoncia* were previously referred to *Afromendonica* Gilg ex Lindau and *Monachochlamys* Baker (Lindau 1895); and African species of *Stenandrium* were previously treated in *Stenandriopsis* S. Moore (Vollesen 1992). The present phytogeographical links of Acanthaceae between Africa (including Madagascar) and South America are suggestive of a Gondwanan origin for the family (Leroy 1978) or, at least, an early radiation in southern land masses. Interestingly, the present distribution of *B. oenotheroides* in tropical west Africa and northern South America (Fig. 1) coincides with near adjacent regions of South America and Africa in northern West Gondwanaland (cf. maps in Behrensmeyer et al. 1992, Goldblatt 1993). While *B. oenotheroides* has a modern distribution evocative of Gondwanan ancestry, Acanthaceae are absent from the Cretaceous fossil record, and there is no evidence that the species had a formerly continuous distribution in northern West Gondwanaland. The

species may have arrived in South America in relatively recent geologic time. *B. oenotheroides,* which often occurs in disturbed habitats, undoubtedly radiated northward into Mexico.

Blechum Brownei vs. B. Pyramidatum

Two names are currently in use for the tropical weed first described in the Acanthaceae simply as *Blechum* by Patrick Browne (Browne 1756; for a discussion of the validity of Browne's generic names, see Dandy 1967). Both *B. brownei* Juss. (e.g., Long 1970, Gibson 1974, Croat 1978, Correll and Correll 1982, Proctor 1984, Durkee 1986, Fosberg et al. 1993) and *B. pyramidatum* (Lam.) Urb. (e.g., Adams 1972, Hsieh and Huang 1978, Durkee 1978, Steyermark and Huber 1978, Howard 1989, Smith 1991, Wasshausen 1991) have been used in recent floristic treatments with one name usually listed as a synonym of the other. In order to determine the correct name for this widespread taxon that occurs in Chiapas, the appropriate literature was reviewed.

Browne (1756) described the taxon as *Blechum* and cited pre-Linnaean descriptions and illustrations of Sloane and Rhedde. Linnaeus (1759) included Browne's taxon in *Ruellia* L. and gave it an epithet, *R. blechum* L. (as "*blechnũ*"), which resulted in the first publication of a name for the species. Linnaeus cited illustrations of Plumier (1756) and Sloane (1707). Lamarck (1785) described the species as *Barleria pyramidata* and cited the illustration of Plumier (1756). Jussieu (1807) accepted the genus *Blechum*; cited the illustrations of Plumier and Sloane; referred to previous treatments of Browne, Linnaeus, and others; and gave the species the name *B. brownei.* This name was used by Nees (1847b) and Lindau (1895) in important works on the family and therefore became widely known. Millspaugh (1900) transferred Linnaeus's epithet to *Blechum* and created the tautonym *B. blechum* (L.) Millsp. Urban (1918) transferred Lamarck's epithet to *Blechum,* resulting in *B. pyramidatum.* Bremekamp (1938:149) argued that the combination *B. pyramidatum* could not be accepted because its basionym (i.e., *Barleria pyramidata*) was "merely a binomial appellation for Patrick Browne's *Blechum,* and as Linné had used already for the same purpose the name *Ruellia Blechum,* the epithet pyramidata is invalid. In the genus *Blechum* the name chosen by de Jussieu is therefore correct." Long (1970) referred to this argument in accepting *B. brownei,* and Gillis (1974) arrived at the same conclusion.

In assessing the correct name for this taxon, the question of typification becomes relevant. The type of Linnaeus's name would have to be chosen from among those illustrations or specimens cited or used by him in drawing up his protologue. Browne sold his Jamaican herbarium to Linnaeus in 1758, and it is now at LINN. There are presently two specimens of *Blechum* at LINN. Sheet 804.1 appears to have been cultivated in the Hortus at Uppsala. It is not known when it was cultivated there nor whether Linnaeus had it in his possession by 1759. Sheet 804.2 was collected by Mutis and likely was not received by Linnaeus prior to 1773 (C. Jarvis, in litt., 1990). If there was a specimen of *Blechum* in Browne's herbarium, it does not appear to be extant at LINN now. The illustrations of Sloane and Plumier cited by Linnaeus both appear to pertain to our species and one of them would be a logical choice for a lectotype.

It is clear from an examination of the literature that because on transfer to *Blechum* the earliest epithet results in a tautonym, the epithet provided by Lamarck (1783) is the next one available for the name pertaining to this species. Because Lamarck cited only one of the syntypes utilized by Linnaeus, his name may not be considered as superfluous under the stated requirements of Article 63 of the International Code of Botanical Nomenclature (Greuter et al. 1988). *Blechum pyramidatum* (Lam.) Urban is the correct name for this tropical weed.

Blechum Grandiflorum vs. Ruellia Mirandana

Based on pollen and floral morphology, Ramamoorthy and Hornelas (1988) transferred *Blechum grandiflorum* Oerst. to *Ruellia* L. and provided the new name, *R. mirandana* Ramamoorthy & Hornelas, for it. They noted that pollen of *Blechum* is tricolporate and syncolpate at the poles and that the exine is reticulate. Although it also has a reticulate exine, pollen of *Ruellia* is triporate. Interestingly, their figure (Ramamoorthy and Hornelas 1988, Fig. 1A) of *R. mirandana* shows a polar view of a pollen grain that is tricolporate and syncolpate and agrees with my observations of other collections of *B. grandiflorum* (Fig. 2a,b). At a gross level, pollen of *B. grandiflorum* superficially resembles that

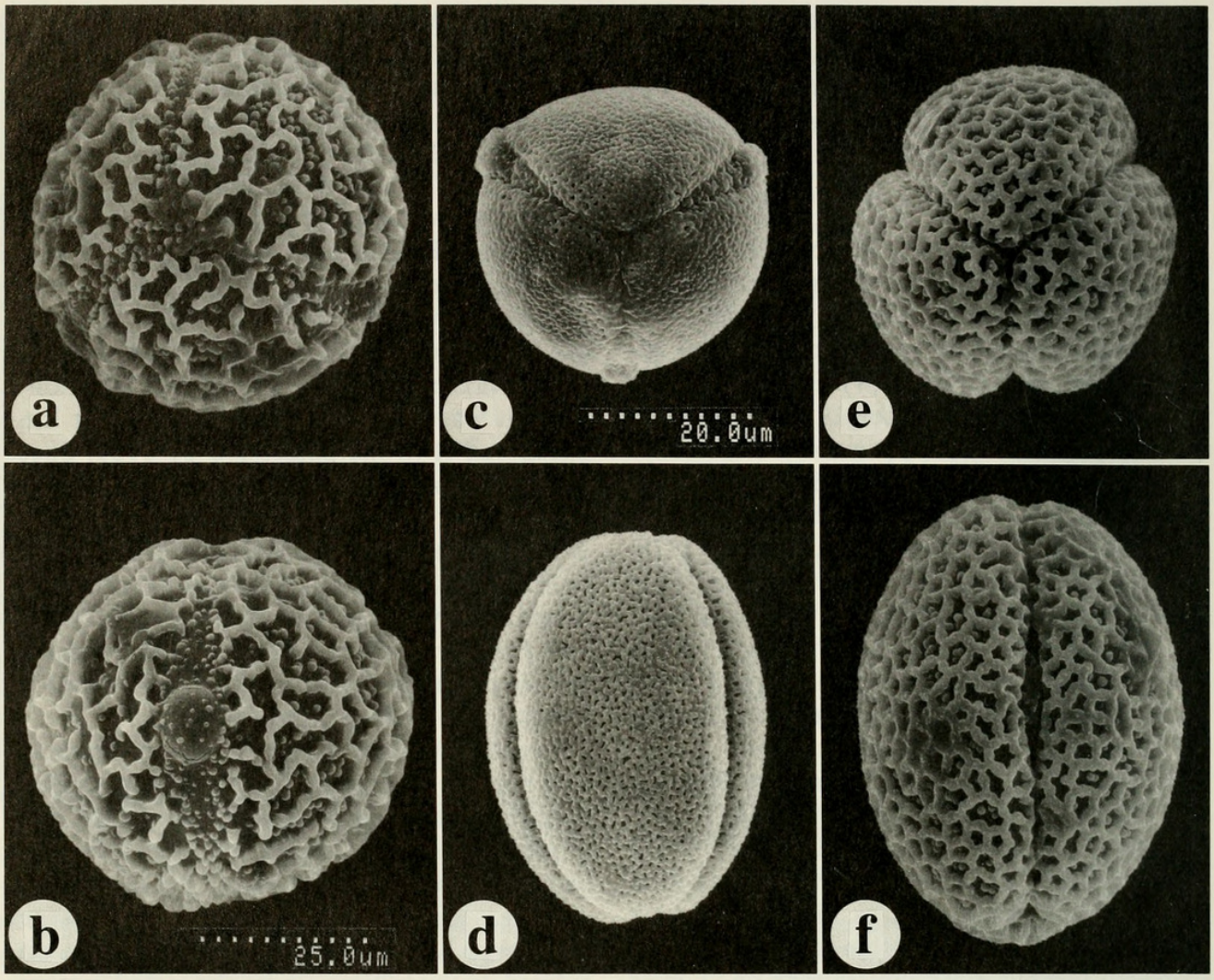

FIGURE 2. Scanning electron micrographs of *Blechum* pollen. (a) *B. grandiflorum* (*Breedlove 50544*), polar view; (b) *B. grandiflorum*, equatorial (colpal) view; (c) *B. pyramidatum* (*Daniel et al. 5454*), polar view; (d) *B. pyramidatum*, equatorial (intercolpal) view; (e) *B. costaricense* (*Daniel et al. 6342*), polar view; (f) *B. costaricense*, equatorial (colpal) view. a, b at same scale; c–f at same scale.

of *Ruellia* by its coarser and more open reticulum compared with that of *B. pyramidatum* (as *B. brownei* in Ramamoorthy and Hornelas 1988, Fig. 1D; Fig. 2c,d above). However, other species of *Blechum* (e.g., *B. costaricense* Oerst., Fig. 2e, f) exhibit a reticulum somewhat intermediate between that of *B. grandiflorum* and *B. pyramidatum*. Pollen of all species of *Blechum* (including *B. grandiflorum*) examined so far are tricolporate and syncolpate whereas species of *Ruellia* are neither. Ultimately, pollen provides excellent micromorphological characters for distinguishing between these genera.

Ramamoorthy and Hornelas (1988:161) further noted that the "large strongly exserted flowers" of *B. grandiflorum* were more suggestive of *Ruellia* than *Blechum*. Indeed, most species of the large and morphologically diverse genus *Ruellia* have large flowers (usually more than 20 mm in length). In Chiapas, *B. pyramidatum* has corollas 10–20 mm in length whereas *B. grandiflorum* has corollas 30–45 mm long. However, *B. costaricense* has corollas intermediate in length (i.e., 20–25 mm long in Costa Rica; Durkee 1986) between the two Mexican species. Thus, corolla size is not very useful for distinguishing the two genera.

Probably the most reliable macromorphological character for distinguishing these two genera is whether or not the septa, with attached retinacula, separate from the inner wall of the mature capsule upon dehiscence. In *Blechum* septal separation occurs whereas in *Ruellia* it does not. Septal separation was observed in all fruiting collections of *B. grandiflorum* from throughout its range.

Based on these lines of evidence, *B. grandiflorum* is maintained in *Blechum*.

Buceragenia vs. Pseuderanthemum

Buceragenia Greenm. comprises five species from Mexico and Central America that have been distinguished from other Acanthaceae by their small (less than 5 mm long), budlike flowers and androecium consisting of two staminodes and two dithecous to monothecous stamens. Vegetative and fruiting organs greatly resemble those of *Pseuderanthemum*. Cleistogamous flowers, resembling typical flowers of *Buceragenia*, sometimes occur in species of *Pseuderanthemum*. For example, specimens of both *P. alatum* (Nees) Radlk. (e.g., *Daniel & Baker 3713*, CAS) and *P. cuspidatum* (Nees) Radlk. (e.g., *Breedlove 15414*, CAS) have both chasmogamous and cleistogamous flowers. Examination of the androecium of cleistogamous flowers of *Pseuderanthemum* (both collections noted above) reveals an androecium comprising stamens that have one theca either greatly reduced or entirely suppressed. Thus, there are no distinctions between these genera; *Buceragenia* is a genus that merely comprises species of *Pseuderanthemum* with cleistogamous flowers.

In Chiapas, there are two species referable to *Buceragenia*. One of these concurs with descriptions of *B. glandulosa* Leonard in the protologue and in Gibson (1974) and closely resembles a paratype from Costa Rica. This species appears to represent cleistogamous *P. cuspidatum*. Both Leonard (1938) and Gibson (1974) had noted that *B. glandulosa* resembles *P. cuspidatum* but differs by its minute, densely fasciculate flowers. Some plants of *P. cuspidatum* from Chiapas (e.g. *Breedlove 7007*) exhibit both cleistogamous and chasmogamous flowers. The other Chiapan species matches the type (from Mirador, Veracruz) of *B. foliaceobracteata* (Oerst.) V.M. Baum. My examination of the type (from Zacuapam, Veracruz) of *B. ruellioides* Leonard confirms that it is similar in all respects to that of *B. foliaceobracteata*. A collection of this species from Chiapas (*Daniel et al. 5875*, CAS, K, MEXU, MICH) has cleistogamous flowers. Seed from this collection grown in a greenhouse in San Francisco initially yielded plants with cleistogamous flowers similar to those observed in the field. Eventually chasmogamous flowers typical of *Pseuderanthemum* were produced on these plants. Based on my preliminary studies of these and other species of *Pseuderanthemum* in Mexico, I tentatively include *B. foliaceobracteata* and *B. ruellioides* within *P. fasciculatum*. While there is little doubt that types of the former names represent the same taxon, there appear to be several differences between that taxon and representatives of *P. fasciculatum* from Chiapas. In the latter, cauline trichomes are bifariously (vs. evenly) disposed, the rachis and abaxial surface of the calyx are glandular (vs. rachis eglandular and calyx usually eglandular), bracteoles are shorter (1.5–4 vs. 4–13 mm long), and flowers are pedicellate with pedicels (1–) 2.5–4.5 mm long (vs. sessile or with pedicels to 1 mm long). The type of *P. fasciculatum*, which is also from Mirador in Veracruz, is somewhat fragmentary. It has cauline trichomes concentrated in (but not restricted to) two lines, pedicels to 1 mm long, and some calyces distinctly glandular while others are eglandular. Plants of *Daniel 5875gh* (CAS) grown in a greenhouse and producing chasmogamous flowers have cauline trichomes sometimes concentrated in (but not restricted to) two lines, pedicels to 2 mm long, and calyces varying from eglandular to distinctly glandular. Considering these data, and pending further studies of *Pseuderanthemum*, plants resembling the types of *B. foliaceobracteatum* and *B. ruellioides* are treated as part of a variable *P. fasciculatum*.

Further studies will be necessary in order to determine whether there are already names available in *Pseuderanthemum* for the remaining two Mexican species that were described in *Buceragenia*.

Chileranthemum vs. Trybliocalyx

Gibson (1970) discussed the delimitation of *Trybliocalyx* Lindau and recognized the genus based on its "inflated, cupular calyx." Although the calyx is not truly inflated, it is decidedly cupular and has broad, triangular lobes. Gibson (1970, 1974) recognized two species of *Trybliocalyx*: *T. pyramidatus* Lindau (including *Clerodendrum standleyi* Moldenke) and *T. albicaulis* (Brandegee) D.N. Gibson (based on *Jacobinia albicaulis* Brandegee). Unfortunately the holotype of the former name was destroyed at B and despite attempts by L.O. Williams (fide correspondence at F) and myself to locate isotypes, none have been found. Fortunately, Lindau's description corresponds well with extant speci-

mens. The characters used by Gibson (1970, 1974) to distinguish these two species vary within populations. For example, plants from the only known locality of the species in Chiapas (Mpio. La Trinitaria, ca. 8 km S of La Trinitaria along Hwy. 190) have either glabrous or pubescent peduncles and pedicels, calyces (during anthesis) 6–10 mm long that are abaxially either glabrous or pubescent, and corollas 16–22 mm long. Also the isotype of *J. albicaulis* at MO has pubescent peduncles, pedicels, and calyx lobes and calyces varying from 6–12 mm in length. There appears to be no basis for distinguishing these two species. Miranda (1950) described *Chileranthemum violaceum* Miranda, a species that is similar to *T. pyramidatus* in all respects and is herewith included as a synonym of that species.

In spite of its cupular calyx with broad lobes, *Trybliocalyx* has all of the generic characteristics of *Chileranthemum* Oerst.: distyly; androecium of two bithecous stamens and two staminodes; thecae parallel, subequally inserted, and lacking basal appendages; pollen tricolporate, hexapseudocolpate, and reticulate; and corollas purplish or pinkish with colored markings on the lower lip and with a relatively short tube. For this reason, *Trybliocalyx* is included in *Chileranthemum* and a new combination is made below for *T. pyramidatus* in *Chileranthemum*. A key to the three species of *Chileranthemum* is provided by Daniel (1993). The generic distinctions among several New World genera of tribe Justicieae subtribe Odontoneminae (e.g., *Chileranthemum, Odontonema* Nees, *Oplonia* Raf., and *Pseuderanthemum* Radlk.) are much in need of study.

Chileranthemum pyramidatum (Lindau) T.F. Daniel, comb. nov.

Trybliocalyx pyramidatus Lindau, Bull. Herb. Boiss. ser. 2, 4: 401. 1904. Type.—GUATEMALA. **Huehuetenango**: "prope Nenton," September 1896, *C. Seler & E. Seler 3276* (holotype: B, destroyed).

Jacobinia albicaulis Brandegee, Univ. Calif. Publ. Bot. 4: 386. 1913. *Trybliocalyx albicaulis* (Brandegee) D.N. Gibson, Fieldiana, Bot. 32: 176. 1970. Type.—MEXICO. **Veracruz**: near Baños del Carrizal, August 1912, *C. Purpus 6049* (holotype: UC!; isotypes: BM!, F!, GH!, MO!, US!).

Clerodendrum standleyi Moldenke, Known Geogr. Distr. Verben. 76. 1942. Type.—GUATEMALA. **Zacapa**: near divide on road between Zacapa and Chiquimula, 500–600 m, 9 October 1940, *P. Standley 73793* (holotype: NY; isotype: F!).

Chileranthemum violaceum Miranda, Ann. Inst. Biol. México 21: 315. 1950. Type.—MEXICO. **Oaxaca**: barrancas SE de Cuicatlán, cercanas al camino a Reyes Pápalo, 1100–1300 m, 18 September 1948, *F. Miranda 4710* (holotype: MEXU!; isotype: MEXU!).

Justicia

Justicia L. is the largest and morphologically most diverse genus of Mexican Acanthaceae. Thirty-three species are known from Chiapas. Below, eight new species from Chiapas are described, two new combinations are proposed, and a new name is provided.

Justicia breedlovei T.F. Daniel, sp. nov.
(Fig. 3)

Type.—MEXICO. **Chiapas**: Mpio. La Trinitaria, 10 km ENE of Dos Lagos above Santa Elena, 1170 m, 15 December 1981, *D. Breedlove 56242* (holotype: CAS!; isotypes: CAS!, C!, ENCB!, K!, MEXU!, MICH!, MO!, US!).

Frutex usque ad 1.2 m altus. Folia petiolata, laminae ellipticae vel obovato-ellipticae, (37–) 65–200 mm longae (17–) 21–53 mm latae, (2.2–) 3.1–4.6-plo longiores quam latiores. Inflorescentia floribus in spicas pedunculatas vel paniculas spicarum; dichasia alterna, sessilia, uniflora. Bracteae ovato-ellipticae vel anguste ellipticae vel ellipticae vel obovato-ellipticae, 8–19 mm longae, 2–9.5 mm latae, apice rotundatae vel truncatae (vel emarginatae), pagina abaxialis glabra. Flores sessiles. Calyx 5-lobus, 8–9.5 mm longus, lobis homomorphis. Corolla aurantiaca, 32–34 mm longa, extus pubescens trichomatibus eglandulosis. Stamina filamentis pubescentibus trichomatibus eglandulosis, thecis 2–2.3 mm longis, impariter insertis vel superpositis, basi calcaratis. Capsula 9.5 mm longa, glabra.

Shrub to 1.2 m tall; young stems quadrate to quadrate-sulcate, nodes pubescent with flexuose eglandular trichomes 0.3–0.6 mm long, internodes glabrous or bifariously pubescent for a few mm proximal to nodes with trichomes like those at nodes. Leaves turning ± blackish on drying, petiolate; petioles to 25 mm long; blades elliptic to obovate-elliptic, (37–) 65–200 mm long, (17–) 21–53 mm wide, (2.2–) 3.1–4.6 times longer than wide, acuminate at apex, attenuate at base, surfaces glabrous, margin entire. Inflorescence of axillary and terminal, pedunculate, dichasiate spikes or panicles of spikes to 180 mm long (including peduncles and excluding flowers) from axils of leaves or bracts (= inflorescence bracts), spikes or panicles alternate or opposite, 1 per axil, peduncles to 45 mm long, glabrous or pubescent like young stems, rachises of both spikes and panicles pubescent with antrorse to flexuose eglandular trichomes 0.2–0.7 mm long, tri-

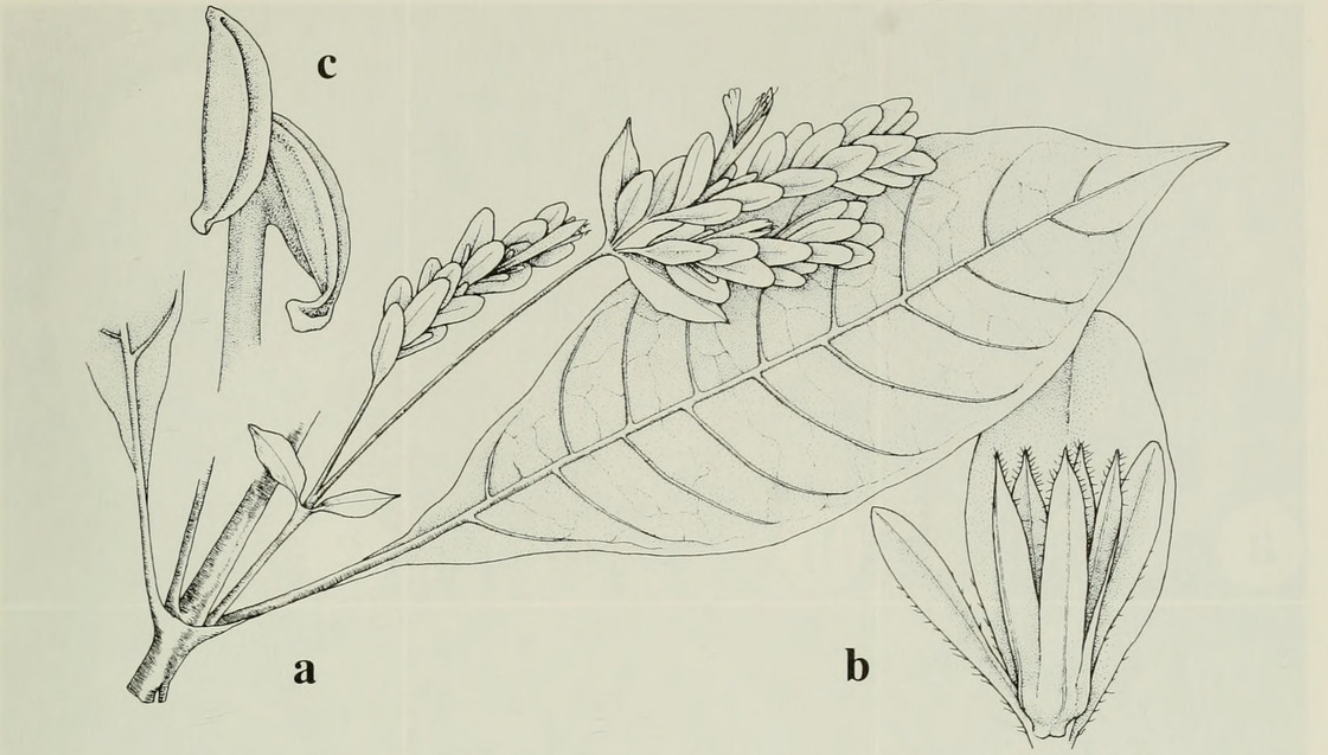

FIGURE 3. *Justicia breedlovei* (*Breedlove 56242*). (a) node with leaf and inflorescence, × 0.6; (b) bract, bractlets, and calyx, × 3.2; (c) distal portion of stamen, × 11. Drawn by J. Speckels.

chomes restricted to or concentrated in 2 lines, inflorescence bracts foliose, elliptic to obovate, 10–30 mm long, 1–13 mm wide; dichasia alternate, sessile, 1-flowered, 1 per axil. Bracts alternate, apically tinged with reddish purple, ovate-elliptic to narrowly elliptic to elliptic to obovate-elliptic, 8–19 mm long, 2–9.5 mm wide, apically rounded to truncate (to emarginate), abaxial surface glabrous, margin ciliate with ± antrorse eglandular trichomes to 0.7 mm long. Bractlets colored like bracts, elliptic-oblanceolate, 5.5–11 mm long, 1–2 mm wide, abaxial surface glabrous. Flowers sessile. Calyx 5-lobed, 8–9.5 mm long, abaxially glabrous, lobes homomorphic, linear, 7–8.5 mm long, 1–1.3 mm wide. Corolla orange, 32–34 mm long, externally pubescent with flexuose eglandular trichomes 0.2–0.5 mm long, tube gradually expanded distally, 17–19 mm long, 2.5–3.6 mm in diameter near midpoint, upper lip 15–16 mm long, 2-fid at apex, lobes 0.3 mm long, lower lip 14–15.5 mm long, lobes 0.8–2 mm long, 0.7–1.5 mm wide. Stamens inserted near apex of corolla tube, 15–16 mm long, filaments proximally pubescent with sparse eglandular trichomes, thecae 2–2.3 mm long, equal, subperpendicular to parallel, unequally inserted (i.e., overlapping by up to 1 mm) to superposed (i.e., contiguous), glabrous, both with a bulbous, rounded, basal appendage to 0.3 mm long (appendage of lower theca larger than that of upper theca); pollen (Fig. 4a,b) 3-aperturate, apertures flanked on each side by 1 row of insulae, exine reticulate. Style 29–32 mm long, pubescent with eglandular trichomes; stigma lobes 0.1 mm long, equal. Capsule 9.5 mm long, glabrous, stipe 2.5–3 mm long, head ellipsoid, 6.5–7 mm long. Seeds lenticular, 2.5 mm long, 2 mm wide, surface and margin covered with sparse glandular and eglandular trichomes less than 0.05 mm long.

PHENOLOGY.—Flowering and fruiting: December.

DISTRIBUTION AND HABITAT.—Endemic to Chiapas; plants occur on cliff faces in montane rain forests at an elevation of about 1170 m.

This species differs from other Mexican species of *Justicia* by the combination of its alternate, sessile, and uniflorous dichasia; alternate, relatively large, and apically colored bracts; calyx with five homomorphic lobes; orange corolla with eglandular trichomes on the external surface; thecae with unequal basal appendages; triaperturate pollen; and seeds with minute glandular and eglandular trichomes. It shares numerous

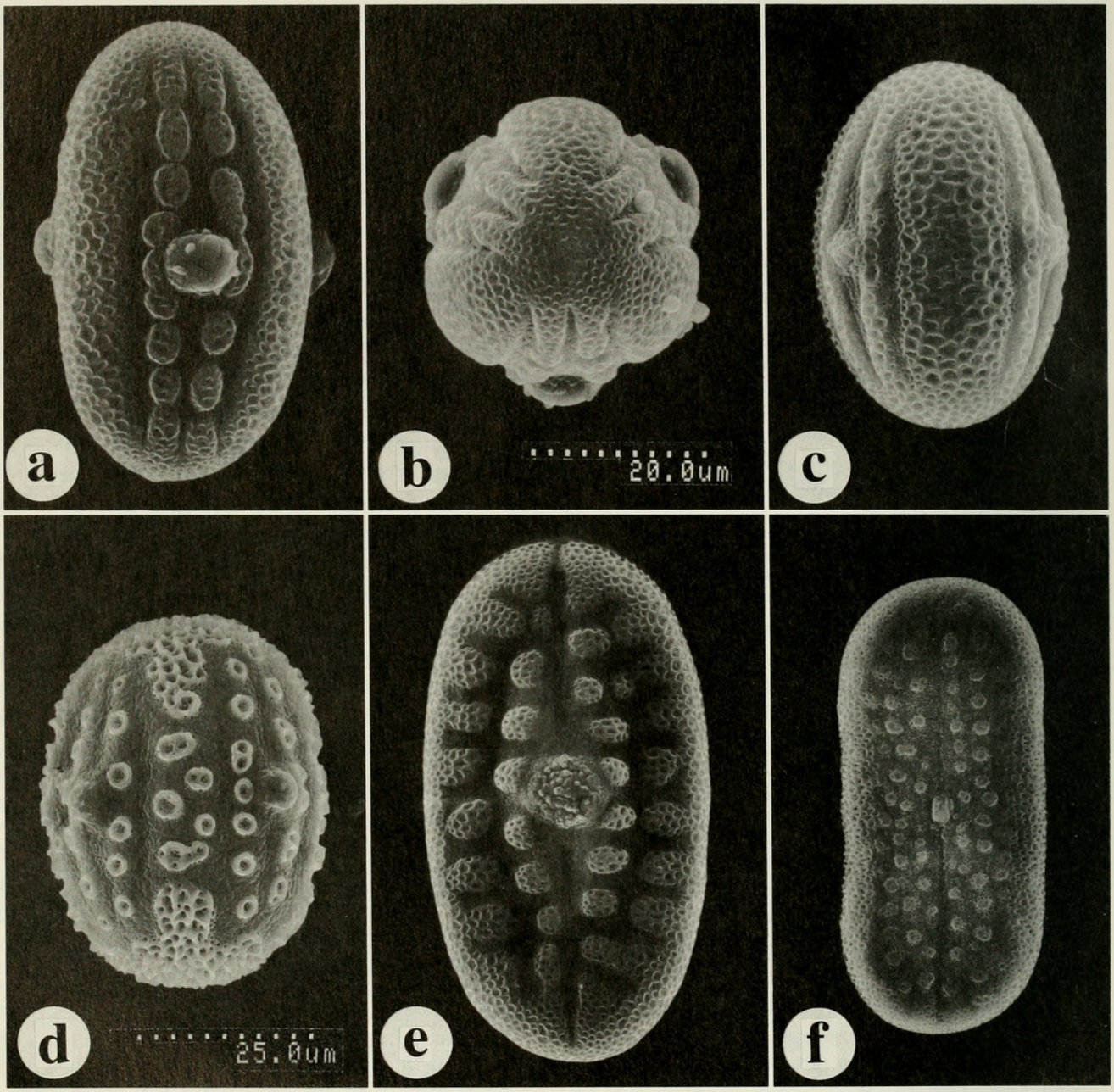

FIGURE 4. Scanning electron micrographs of *Justicia* pollen. (a) *J. breedlovei* (*Breedlove 56242*), equatorial (colpal) view; (b) *J. breedlovei*, polar view; (c) *J. chol* (*Cowan & Magaña 3138*), equatorial (intercolpal) view; (d) *J. jitotolana* (*Thorne & Lathrop 41662*), equatorial (intercolpal) view; (e) *J. madrensis* (*Breedlove 38656*, equatorial (colpal) view; (f) *J. turipachensis* (*Breedlove 31242*), equatorial (colpal) view. a–c at same scale; d–f at same scale.

characteristics with *Justicia* section *Plagiacanthus* (Nees) V.A.W. Graham but differs from that section by its larger bracts, triaperturate pollen, and pubescent seeds.

The epithet honors Dennis Breedlove, collector of this and many other interesting Chiapan Acanthaceae.

Justicia chol T.F. Daniel, sp. nov.

(Fig. 5a–c)

TYPE.—MEXICO. **Chiapas**: Mpio. Palenque, near Cascada Mizola S of Palenque on road to Ocosingo, 300 m, 26 February 1981, *D. Breedlove 49836* (holotype: CAS!; isotypes: C!, K!, MEXU!).

Herba perennis usque ad 6 dm alta. Folia petiolata, laminae ovatae vel ovato-ellipticae, 28–110 mm longae, 8–35 mm latae, 2.1–3.5-plo longiores quam latiores. Inflorescentia floribus in spicas pedunculatas e folium axillis ortas; dichasia alterna, sessilia, uniflora. Bracteae heteromorphae; bracteae fertiles late obovatae vel spatulatae vel obdeltatae, 4.5–8 mm longae, 3.5–6 mm latae, apice rotundatae vel truncatae et plerumque apiculatae, pagina abaxialis pubescens trichomatibus eglandulosis et glandulosis; bracteae steriles bracteis fertilibus parviores. Flores sessiles. Calyx 5-lobus, 2.5–3.5 mm longus, lobis homomorphis. Corolla alba vel cremea-lutea, 8.5–11.5 mm longa, extus pubescens trichomatibus eglandulosis. Stamina

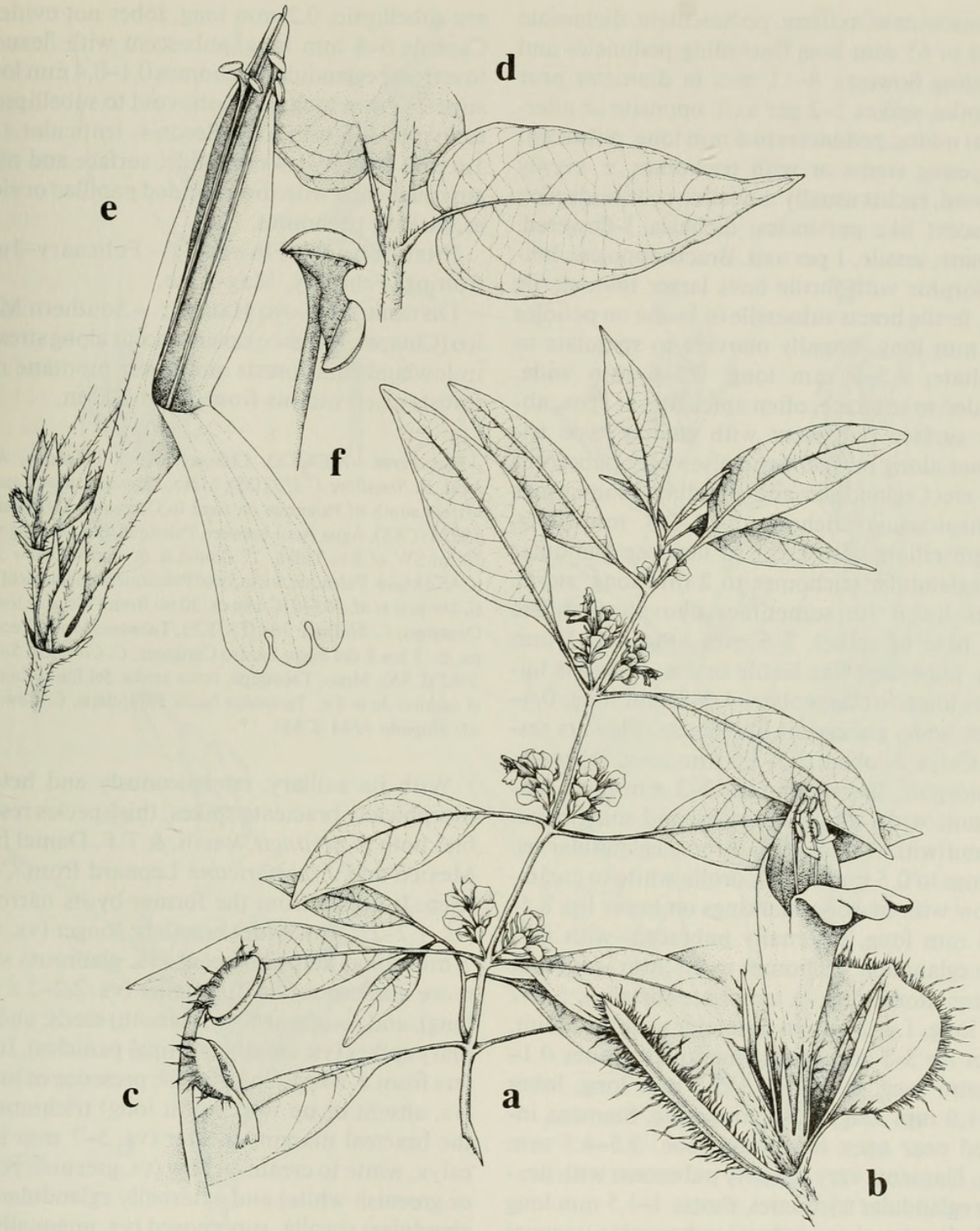

FIGURE 5. *Justicia chol* (*Breedlove 49836*; a–c) and *J. madrensis* (*Breedlove 38656*; d–f). (a) habit, × 0.6; (b) inflorescence node with flower, × 5; distal portion of stamen, × 10; (d) vegetative node with leaf, × 0.75; (e) inflorescence with flower, × 2; (f) distal portion of stamen, × 6. Drawn by J. Speckels.

filamentis pubescentibus trichomatibus eglandulosis, thecis 1–1.5 mm longis, superpositis, inferiore calcare usque ad 0.7 mm longo instructa. Capsula 6–8 mm longa, pubescens trichomatibus eglandulosis.

Perennial herb to 6 dm tall; young stems quadrate to quadrate-sulcate, pubescent with flexuose to antrorse eglandular trichomes 0.4–1 mm long concentrated in 2 lines, trichomes with maroon septae. Leaves petiolate; petioles to 35 mm long; blades ovate to ovate-elliptic, 28–110 mm long, 8–35 mm wide, 2.1–3.5 times longer than wide, acuminate at apex, attenuate at base, surfaces (especially midvein) and margin pubescent with cauline type trichomes, margin entire to crenate.

Inflorescence of axillary, pedunculate, dichasiate spikes to 65 mm long (including peduncles and excluding flowers), 8–11 mm in diameter near midspike, spikes 1–2 per axil, opposite or alternate at nodes, peduncles to 6 mm long, pubescent like young stems or with trichomes ± evenly disposed, rachis usually ± visible near midspike, pubescent like peduncles; dichasia 1-flowered, alternate, sessile, 1 per axil. Bracts opposite, heteromorphic with fertile ones larger than sterile ones, fertile bracts subsessile or borne on petioles to 2 mm long, broadly obovate to spatulate to obdeltate, 4.5–8 mm long, 3.5–6 mm wide, rounded to truncate, often apiculate, at apex, abaxial surface pubescent with cauline type trichomes along midvein and elsewhere pubescent with erect eglandular and glandular (sometimes inconspicuous) trichomes 0.1–0.3 mm long, margin ciliate with erect to flexuose glandular and eglandular trichomes to 2 mm long, sterile bracts linear (to sometimes obovate-spatulate near base of spike), 2–6 mm long, 0.2–3 mm wide, pubescent like fertile bracts. Bractlets linear to linear-oblanceolate, 4.5–8 mm long, 0.4–1 mm wide, pubescent like bracts. Flowers sessile. Calyx 5-lobed, 2.5–3.5 mm long, lobes homomorphic, lance-subulate, 2–3 mm long, 0.4–0.7 mm wide, abaxial surface and margin pubescent with flexuose to antrorse eglandular trichomes to 0.5 mm long. Corolla white to cream-yellow with maroon markings on lower lip, 8.5–11.5 mm long, externally pubescent with flexuose eglandular trichomes to 0.5 mm long, tube ± funnelform (i.e., ± ampliate distally), 5.5–7 mm long, 1.4–2 mm in diameter near midpoint, upper lip 3–5 mm long, emarginate, lobes 0.1–0.2 mm long, lower lip 3–5.5 mm long, lobes 0.8–1.9 mm long, 0.8–2 mm wide. Stamens inserted near apex of corolla tube, 3.5–4.5 mm long, filaments very sparsely pubescent with flexuose eglandular trichomes, thecae 1–1.5 mm long (including basal appendage), subequal to unequal in length, ± parallel, superposed (up to 0.5 mm distant), pubescent with eglandular trichomes, lower theca with a clublike basal appendage to 0.7 mm long; 2 staminodelike protrusions of corolla present near midpoint of corolla tube, each with a cluster of flexuose eglandular trichomes; pollen (Fig. 4c) 3-aperturate, apertures flanked on each side by both a continuous band and a pseudocolpus, exine reticulate. Style 7–9 mm long, pubescent with eglandular trichomes; stigma subelliptic, 0.2 mm long, lobes not evident. Capsule 6–8 mm long, pubescent with flexuose to retrorse eglandular trichomes 0.1–0.4 mm long, stipe 2–3 mm long, head obovoid to subellipsoid to ovoid, 4–5 mm long. Seeds 4, lenticular 1.3–1.6 mm long, 1–1.4 mm wide, surface and margin roughened with low rounded papillae or ridges, lacking trichomes.

PHENOLOGY.—Flowering: February–July; fruiting: February, May–June.

DISTRIBUTION AND HABITAT.—Southern Mexico (Chiapas, Tabasco); plants occur along streams in lowland rain forests and lower montane rain forests at elevations from 50 to 300 m.

PARATYPES.—MEXICO. **Chiapas**: Mpio. Palenque, Agua Azul, *D. Breedlove 35373* (DS); Mpio. Palenque, near Cascada Mizola south of Palenque on road to Ocosingo, *D. Breedlove 49836* (CAS); Agua Azul between Palenque and Ocosingo, ca. 10 mi SW of Río Tulija, *T. Daniel & B. Bartholomew 5011* (CAS); Mpio. Palenque, vicinity of Palenque archeological site, *G. Davidse et al. 20340* (CAS); ca. 30 mi from Palenque toward Ocosingo, *L. McDade 204* (DUKE). **Tabasco**: Mpio. Tacotalpa, ca. 3 km E del Ejido Lázaro Cárdenas, *C. Cowan & Solano 2085* (CAS); Mpio. Tacotalpa, cerro arriba del Ejido Zunú en el camino de la Est. Tacotalpa hacia Tapijulapa, *C. Cowan & M. Magaña 3138* (CAS).

With its axillary, conspicuously and heteromorphically bracteate spikes, this species resembles both *J. nevlingii* Wassh. & T.F. Daniel from Mexico and *J. costaricana* Leonard from Costa Rica. It differs from the former by its narrower (vs. 1.2–2.2 mm wide) bractlets; longer (vs. 6.5–7 mm long) and pubescent (vs. glabrous) style; more numerous (vs. 2), smaller (vs. 2.2–2.8 mm long), and roughened (vs. smooth) seeds; and axillary spikes (vs. mostly terminal panicles). It differs from *J. costaricana* by the presence of longer (vs. absent or up to 0.2 mm long) trichomes of the bracteal margin, shorter (vs. 5–7 mm long) calyx, white to cream-yellow (vs. greenish yellow or greenish white) and externally eglandular (vs. glandular) corolla, superposed (vs. unequally inserted and overlapping by up to 1 mm) thecae, flexuose to antrorse (vs. retrorse to flexuose) cauline trichomes with maroon septae (vs. lacking maroon septae), and lowland rain forest (vs. cloud forest) habitat at elevations from 50 to 300 m (vs. 900 to 1550 m). Unfortunately, capsules and seeds are not known for *J. costaricana.*

The epithet honors the Chol (Maya) people who inhabit the lowlands of Chiapas and Tabasco.

FIGURE 6. *Justicia jitotolana* (a, b), *J. tianguensis* (*Breedlove 7365*; c–e), and *J. turipachensis* (*Breedlove 31242*; f, g). (a) dichaisum with dehisced capsule (*Breedlove & Almeda 60297*), × 3.3; (b) distal portion of stamen (*Thorne & Lathrop 41662*), × 8; (c) inflorescence node with flower, × 1.5; (d) bract, bractlets, and calyx, × 2.5; (e) distal portion of stamen, × 5; (f) distal portion of shoot with inflorescence, × 0.75; (g) distal portion of stamen, × 12. Drawn by J. Speckels.

Justicia jitotolana T.F. Daniel

(Fig. 6a, b)

TYPE.—MEXICO. **Chiapas**: Mpio. Rayón, 9 mi NW of Pueblo Nuevo Solistahuacán along rd. between Rincón Chamula and Rayón, near Puerto del Viento, 17°30'N, 92°40'W, 1760 m, September 1971, *R. Thorne & E. Lathrop 41662* (holotype: DS!; isotype: RSA!).

Herba perennis vel frutex usque ad 1 m altus. Folia petiolata, laminae ovato-ellipticae vel ellipticae vel obovato-ellipticae, 31–115 mm longae, 14–62 mm latae, 1.5–2.8-plo longiores

quam latiores. Inflorescentia floribus in thyrsos spicoideos congestos pedunculatos terminales et axillares; dichasia in quoque spica 3–7, alterna vel subopposita, pedunculata, uniflora. Bracteae obovato-spatulatae, (6–) 7.5–16 mm longae, 2–5.5 mm latae, apice truncatae (vel emarginatae), pagina abaxialis glabra vel pubescens trichomatibus eglandulosis. Flores sessiles vel subsessiles. Calyx 5-lobus, 6.5–10 mm longus, lobis homomorphis vel heteromorphis (4 + 1). Corolla subrosea-purpurea, 23–27 mm longa, extus glabra. Stamina filamentis pubescentibus trichomatibus glandulosis, thecis 1.2–2.5 mm longis, superpositis, inferiore calcare usque ad 1 mm longa instructa. Capsula 13–16 mm longa, glabra.

Perennial herb or shrub to 1 m tall; young stems quadrate to quadrate-sulcate to quadrate-flattened, bifariously pubescent with retrorse, eglandular, conspicuously multi-septate (with maroon septae) trichomes to 0.5 mm long. Leaves petiolate; petioles to 34 mm long; blades ovate-elliptic to elliptic to obovate-elliptic, 31–115 mm long, 14–62 mm wide, 1.5–2.8 times longer than wide, acuminate at apex, attenuate at base, adaxial surface sparsely pubescent with coarse, eglandular trichomes to 0.5 mm long, soon glabrate, abaxial surface pubescent along major veins with antrorse, conspicuously multi-septate, eglandular trichomes to 0.5 mm long, punctate-pitted, margin entire to subsinuate. Inflorescence of congested, somewhat headlike, axillary (in axils of distalmost pair of leaves) and terminal, pedunculate spikelike thyrses to 37 mm long (including peduncle and excluding flowers), (6–) 10–20 mm in diameter near midspike, peduncles to 13 mm long, pubescent like young stems; rachis pubescent like young stems; dichasia 3–7 per spikelike thyrse, 1 per axil, subopposite to alternate (proximalmost pair sometimes opposite), pedunculate, 1-flowered, peduncles to 1.5 mm long. Bracts subopposite to alternate, obovate-spatulate (proximalmost sometimes petiolate), (6–) 7.5–16 mm long, 2–5.5 mm wide, rounded to truncate (to emarginate) at apex, abaxial surface glabrous or sparsely pubescent with eglandular trichomes to 0.2 mm long along major veins, punctate-pitted. Bractlets spatulate, (5.5–) 7.5–13.5 mm long, 1–3 mm wide, apically rounded to truncate, abaxial surface glabrous or pubescent like bracts. Flowers sessile to subsessile (i.e., pedicels to 1 mm long). Calyx 5-lobed, 6.5–10 mm long, lobes homomorphic to heteromorphic (i.e., with posterior lobe ± reduced in length), linear, 6–9.5 mm long, 0.8–1.1 mm wide, abaxially glabrous and punctate-pitted (sometimes obscurely so). Corolla pinkish purple with white markings on lower lip, 23–27 mm long, externally glabrous, tube distally expanded, 14–18 mm long, 1.6–2.5 mm in diameter near midpoint, upper lip 7–9.5 mm long, apically 2-lobed, lobes 1–1.5 mm long, lower lip 8–10 mm long, lobes rounded, 4–6 mm long, 4–5.7 mm wide. Stamens inserted near apex of corolla tube, 7–8 mm long, filaments pubescent with glands to 0.1 mm long, thecae 1.2–2.5 mm long (including basal spur), unequal in length (lower theca longer), subparallel to subperpendicular, unequally inserted (overlapping by up to 0.3 mm) to superposed (contiguous), glabrous, lower theca with a broad, rounded, basal appendage to 1 mm long; pollen (Fig. 4d) 4-aperturate, apertures flanked on each side by 4–5 rows of insulae, rows continuous across mesocolpia, exine evident only near poles, reticulate. Style 16 mm long, glabrous; stigma 0.3 mm long, lobes (if distinct) 0.2 mm long. Capsule 13–16 mm long, glabrous, stipe 5–6 mm long, head subovoid to ellipsoid (often with a slight medial constriction), 8–10 mm long. Seeds 4, lenticular, 3.2–3.4 mm long, 2.2–2.5 mm wide, surface and margin minutely roughened, sometimes covered with sparse glands to 0.05 mm long.

PHENOLOGY.—Flowering: September–October; fruiting: November–January.

DISTRIBUTION AND HABITAT.—Endemic to Chiapas; plants occur on steep slopes in montane rain forests and evergreen cloud forests at elevations from 1700 to 2030 m.

PARATYPES.—MEXICO. **Chiapas**: Mpio. Rayón, in the Selva Negra 10 km above Rayón Mezcalapa along rd. to Jitotol, *D. Breedlove & F. Almeda 60297* (CAS), *D. Breedlove & R. Dressler 29824* (DS, MEXU), *D. Breedlove & B. Keller 49312* (CAS); Mpio. Pueblo Solistahuacán, N of Clínica Yerba Buena near Pueblo Nuevo Solistahuacán, *P. Raven & D. Breedlove 20032* (DS, US); Mpio Rayón, 9 mi NW of Pueblo Nuevo Solistahuacán along rd. between Rincón Chamula and Rayón, 17°30'N, 92°40'W, *R. Thorne & E. Lathrop 46662* (RSA), *H. Zuill 631* (DS); Mpio. Pueblo Nuevo Solistahuacán, 3 km NW of Pueblo Nuevo Solistahuacán, *H. Zuill 415* (DS).

This species resembles *J. angustiflora* D.N. Gibson from Oaxaca and *J. silvicola* D.N. Gibson from Guatemala. It differs from *J. angustiflora* by its more floriferous (vs. 2 to 3-flowered) inflorescences, glabrous or sparsely pubescent with eglandular trichomes (vs. pubescent with glandular trichomes) bracts and bractlets, shorter (vs. 48–49 mm long) and externally glabrous (vs. pubescent) corollas, and shorter (vs. 18–20 mm long) stamens with the filaments pubescent (vs. glabrous) with glandular trichomes. It differs from

J. silvicola by the pubescent (vs. glabrous or with a few remnant trichomes like those of *J. jitotolana* present just proximal to several nodes on the holotype) young stems, pubescent (vs. glabrous) inflorescence peduncles, pubescent (vs. glabrous) abaxial leaf surfaces, pinkish purple (vs. white) and longer (vs. 18–19 mm long) corollas, glandular pubescent (vs. glabrous) filaments, and sparsely glandular (vs. pubescent with apically barbed eglandular trichomes 0.05–0.2 mm long) seeds. Pollen of these three species is unusual, although not unique, in *Justicia* by having four apertures. Pollen of *J. jitotolana* (Fig. 4d) appears nearly identical to that of *J. silvicola* (cf. Gibson 1972, Fig. 10b). Pollen of *J. angustiflora* (cf. Daniel 1993, Fig. 7a, b) differs by having spines rather than insulae and no continuous exine evident.

The epithet is in reference to the Jitotol Ridge in a region of the northern highlands of Chiapas known as the Selva Negra from which all of the collections came.

Justicia madrensis T.F. Daniel, sp. nov.
(Fig. 5d–f)

TYPE.—MEXICO. **Chiapas**: Mpio. Angel Albino Corzo (Jaltenango), 3–5 km above Jaltenango toward Finca Prusia, 900 m, 11 October 1974, *D. Breedlove 38656* (holotype: DS!; isotypes: C!, K!, MEXU!).

Frutex usque ad 2 m altus. Folia petiolata, laminae ovatae, 23–75 mm longae, 9–39 mm latae, 1.9–2.6-plo longiores quam latiores. Inflorescentia floribus in spicas pedunculatas e foliorum axillis ortas; dichasia alterna, ± secunda, sessilia, uniflora. Bracteae subulatae, 1.8–2.5 mm longae, 0.9 mm latae, apice attenuatae, pagina abaxialis pubescens trichomatibus eglandulosis. Flores sessiles. Calyx 4-lobus, 5.5–9 mm longus, lobis homomorphis. Corolla subrosea-aurantiaca, 34–43 mm longa, extus pubescens trichomatibus eglandulosis. Stamina filamentis pubescentibus trichomatibus eglandulosis, thecis 2–2.2 mm longis, impariter insertis vel superpositis, basi calcaratis. Capsula 20 mm longa, pubescens trichomatibus glandulosis et eglandulosis.

Shrub to 2 m tall; young stems subquadrate to quadrate, evenly pubescent with flexuose to retrorse eglandular trichomes (some internodes with glandular trichomes as well) 0.2–1.3 mm long. Leaves petiolate; petioles to 12 mm long; blades ovate, 23–75 mm long, 9–39 mm wide, 1.9–2.6 times longer than wide, acuminate at apex, cordate at base, surfaces pubescent with flexuose to antrorse eglandular trichomes to 1 mm long, margin entire to subsinuate. Inflorescence of axillary, pedunculate, dichasiate spikes to 55 mm long (including peduncle and excluding flowers), 3–4 mm in diameter near midpoint of fertile portion, spikes alternate or opposite in leaf axils, 1 per axil, peduncles to 26 mm long, evenly pubescent with flexuose to retrorse eglandular trichomes to 1.3 mm long, rachises pubescent like peduncles; dichasia alternate, ± secund, sessile, 1-flowered, 1 per axil. Bracts opposite, subulate, 1.8–2.5 mm long, 0.9 mm wide, attenuate at apex, abaxial surface pubescent with flexuose to antrorse eglandular trichomes to 0.7 mm long. Bractlets subulate, 1.8–2.2 mm long, 0.6–0.7 mm wide, abaxial surface pubescent like bracts (sometimes with a few flexuose glandular trichomes to 0.5 mm long as well). Flowers sessile. Calyx 4-lobed, 5.5–9 mm long, lobes homomorphic, lanceolate, 5–7 mm long, 1.5–1.8 mm wide, abaxially pubescent with flexuose glandular and eglandular trichomes 0.2–0.9 mm long. Corolla pinkish orange, 34–43 mm long, externally pubescent with flexuose eglandular trichomes 0.2–0.7 mm long, tube very gradually (if at all) expanded from near base, 18–22 mm long, 2.8–4 mm in diameter near midpoint, upper lip 17–21 mm long, entire, lower lip 15–22 mm long, lobes 2.5–4 mm long, 2.9–4.5 mm wide, apically entire. Stamens inserted near apex of corolla tube, 19–22 mm long, filaments proximally pubescent with eglandular trichomes, thecae 2–2.2 mm long, equal in length, subperpendicular to perpendicular, unequally inserted (overlapping by up to 1.5 mm) to superposed (up to 1.2 mm distant), glabrous or pubescent with eglandular trichomes, lacking basal appendages; pollen (Fig. 4e) 2-aperturate, apertures flanked on each side by 2 rows of insulae, outer rows of insulae often intergrading into peninsulae, exine reticulate. Style 33–40 mm long, proximally pubescent with eglandular trichomes; stigma lobes 0.1–0.2 mm long, unequal. Capsule 20 mm long, pubescent with flexuose to retrorse eglandular and glandular trichomes 0.1–0.6 mm long, stipe 9 mm long, subellipsoid with a medial constriction, 11 mm long. Seeds 4, not seen.

PHENOLOGY.—Flowering and fruiting: October.

DISTRIBUTION AND HABITAT.—Endemic to Chiapas; plants occur on slopes in pine-oak forests at an elevation of about 900 m.

In general appearance (i.e., axillary inflorescences with large pink and orange corollas) and pollen morphology, *J. madrensis* looks somewhat like *J. macrantha* Benth. of Oaxaca, Guatemala, Costa Rica, and Panama. *Justicia macrantha* differs by its glabrous young stems (except

FIGURE 7. *Justicia mirandae*. (a) habit (*Breedlove 50163*), × 0.4; (b) leaf (*Breedlove 50163*), × 0.5; (c) bract (*Breedlove 50163*), × 2.25; (d) bractlet (*Breedlove 50163*), × 2.25; (e) flower (*Neill 5570*), × 2.2; (f) anthers (*Neill 5570*), × 7.5; (g) capsule (*Laughlin 285*), × 3. Drawn by E. del Valle.

in *J. macrantha* var. *piliformis* D.N. Gibson), basally attenuate leaf blades, pedunculate and often opposite dichasia, five-lobed calyces, longer (45–48 mm long) corollas with apically fringed lobes, and parallel thecae.

Rhytiglossa latifolia Nees (the species has not yet been transferred to *Justicia*; not *J. latifolia* Vahl) from Tabasco also superficially resembles *J. madrensis*. It differs from the Chiapan species by its glabrous or bifariously pubescent vegetative internodes, basally rounded to acute leaf blades, glandular pubescent rachises, longer calyces, and longer, red corollas.

The epithet is in reference to the Sierra Madre de Chiapas where the species occurs.

Justicia mirandae T.F. Daniel, sp. nov.
(Fig. 7)

TYPE.—MEXICO. **Chiapas**: Mpio. Chiapa de Corzo, above El Chorreadero, 800 m, 18 March 1981, *D. Breedlove 50163* (holotype: CAS!; isotypes: C!, K!, MEXU!).

Frutex usque ad 3 m altus. Folia petiolata; laminae anguste

ellipticae vel ellipticae vel ovatae vel oblanceolato-ellipticae, 65–250 mm longae, 12–67 mm latae, 3.3–6.9-plo longiores quam latiores. Inflorescentia floribus in spicas pedunculatas terminales et axillares (vel in paniculam); dichasia (opposita vel) alterna, aliquando ± secunda, sessilia, uniflora. Bracteae lanceolatae vel lanci-ovatae vel ellipticae vel obovato-ellipticae, 15–22 mm longae, (2–) 3.5–9.5 mm latae, apice acuminatae, pagina abaxialis glabra vel pubescens trichomatibus eglandulosis. Flores sessiles. Calyx 5-lobus, 5–10 mm longus, lobis homomorphis. Corolla lutea punctis rubris notata, 30–34 mm longa, extus pubescens trichomatibus eglandulosis et glandulosis. Stamina filamentis pubescentibus trichomatibus eglandulosis (et aliquando glandulosis), thecis 1.8–2.4 mm longis, impariter insertis, basi calcaratis. Capsula 9–11 mm longa, glabra.

Shrub to 3 m tall; young stems quadrate to quadrate-alate, internodes glabrous or sometimes evenly to bifariously pubescent with erect to flexuose to retrorse to antrorse to appressed eglandular trichomes to 0.6 mm long, nodes sometimes pubescent with flexuose eglandular trichomes to 0.5 mm long. Leaves sessile; blades narrowly elliptic to elliptic to ovate to oblanceolate-elliptic, 65–250 mm long, 12–67 mm wide, 3.3–6.9 times longer than wide, acuminate to attenuate at apex, attenuate to node and often somewhat amplexicaule at base, surfaces glabrous (or with eglandular trichomes on plants with pubescent stems), margin entire to shallowly crenate. Inflorescence of axillary and terminal pedunculate dichasiate spikes (or panicles of spikes) to 120 mm long (including peduncles and excluding flowers), 18–40 mm in diameter near midspike, sometimes forming a terminal panicle with spikes or panicles in axils of subfoliose inflorescence bracts, inflorescence bracts (if present) tinged with red, ovate, 28–50 mm long, 10–15.5 mm wide, spikes (or panicles) 1–2 per axil of leaf or inflorescence bract, alternate or opposite, peduncles to 80 mm long, glabrous or pubescent like young stems, rachis glabrous or pubescent with cauline type trichomes; dichasia (opposite to) alternate, sometimes ± secund, 1-flowered, 1 per axil, sessile. Bracts (opposite to) alternate, tinged with red, often drying blackish, lanceolate to lance-ovate to elliptic to obovate-elliptic, 15–22 mm long, (2–) 3.5–9.5 mm wide (the proximalmost pair often subfoliose and larger), apically acuminate, abaxial surface glabrous (or with eglandular trichomes on plants with pubescent stems), margin usually ciliate with flexuose eglandular trichomes to 0.7 mm long. Bractlets tinged with red, linear to linear-lanceolate to oblanceolate-elliptic, 7–19 mm long, 0.9–2.1 (–3) mm wide, abaxial surface glabrous (or pubescent like bracts), margin with flexuose eglandular trichomes to 0.7 mm long. Flowers sessile. Calyx 5-lobed, 5–10 mm long (accrescent in fruit and up to 13 mm long), lobes homomorphic, lanceolate to linear-lanceolate, 4.5–9 (–12) mm long, 1.2–2 mm wide, abaxially glabrous (or pubescent like bracts), margin eciliate or ciliate like bractlets or glabrous. Corolla yellow speckled with red, subfusiform in bud, 30–34 mm long, externally pubescent with straight to flexuose glandular trichomes to 0.4 mm long and flexuose eglandular trichomes to 0.8 mm long, tube gradually expanded distally, 17–19 mm long, 3–3.5 mm in diameter near midpoint, upper lip 11–14 mm long, apically emarginate, lobes 0.1–0.2 mm long, lower lip 10–16 mm long, lobes 1–2.8 mm long, 0.8–1.5 mm wide. Stamens inserted in distal ½ of corolla tube, 15–20 mm long, filaments distally glabrous, proximally pubescent with eglandular (and sometimes glandular as well) trichomes, thecae 1.8–2.4 mm long (including basal appendages), equal in length, parallel to subperpendicular, unequally inserted (i.e., overlapping by up to 1.2 mm), upper theca pubescent with eglandular trichomes, both thecae with a bulbous, rounded, basal appendage 0.2–0.4 mm long (appendage of lower theca larger than that of upper theca); pollen (Fig. 8a, b) 3-aperturate, apertures flanked on each side by 1 row of insulae, insulae sometimes nearly fused into a band with only 1–2 distinct, exine reticulate. Style 30 mm long, distally glabrous, proximally pubescent with eglandular (and sometimes glandular trichomes as well); stigma 0.2–0.3 mm long, asymmetrically funnelform to unequally 2-lobed. Capsule 9–11 mm long, glabrous, stipe 2–3 mm long, head subovoid to ellipsoid, 7–8.5 mm long. Seeds 4, lenticular, 2.5–3.5 mm long, 2.5–2.8 mm wide, surfaces minutely roughened, lacking trichomes, entire to ± crenate.

PHENOLOGY.—Flowering: December–April; fruiting: December–July.

DISTRIBUTION AND HABITAT.—Endemic to Chiapas; plants occur along streams in tropical deciduous and subdeciduous forests at elevations from 600 to 900 m.

PARATYPES.—MEXICO. **Chiapas**: Mpio. Ocozocoautla de Espinosa, 13–15 km S of Ocozocoautla along rd. to Villa Flores, *D. Breedlove 24580* (DS); Mpio. La Trinitaria, along Hwy. 190, 13 mi S of La Trinitaria, *D. Breedlove & P. Raven 8446* (DS, F, MICH, US); Mpio. Ocozocoautla de Espinosa, head of Río de la Venta at Chorreadero near Derna, *D. Breedlove & R. Thorne 30309* (DS, MICH); El Aguacero, 13 km NO de Ocozocoautla, *E. Cabrera & H. de Cabrera 7895* (CAS, MEXU); along Hwy. 190, ca. 20 mi SE of Comitán, *R. King 3036* (MICH); barranca between S. Fernando and Plan de

Ayala, *I. Langman 3918* (US); Mpio. Venustiano Carranza, Rancho Nacimiento along rd. between Chiapilla and San Lucas, *R. Laughlin 285* (DS, US); Mpio. Ocozocoautla, Cascada El Aguacero, Río La Venta, 16°45'N, 93°31'W, *E. Martínez S. & A. Reyes 22017* (MEXU); arriba Chacona (NO Tuxtla G.), *F. Miranda 5262* (MEXU), *7844* (MEXU); Mpio. Ocozocoautla, canyon of Río de la Venta at Cascada El Aguacero, 16°46'N, 93°33'W, *D. Neill 5570* (CAS); Mpio. San Fernando, Cañada Muñiz, *G. Rodríguez-Guillén 103* (CAS); road to San Fernando from Tuxtla Gutiérrez, *B. Schubert & A. Gómez-Pompa 1764* (US).

This species superficially resembles certain species of *Lophostachys* Pohl by its colored bracts and more or less secund dichasia. Several specimens of *J. mirandae* have been misidentified with the name *Beloperone comosa* Nees. This name applies to *J. fulvicoma* Schltdl. & Cham., a related species from northeastern Mexico (Daniel 1989). Both species have bracts colored with red or maroon, five homomorphic calyx lobes, yellow to orange corollas with reddish spots within, and 3-aperturate pollen. They may be distinguished by the following couplet:

Leaves sessile, blades 3.3–6.9 times longer than wide; corolla externally pubescent with glandular and eglandular trichomes; capsule glabrous ..... *J. mirandae.*
Leaves petiolate, blades 1.6–3 times longer than wide; corolla externally pubescent with eglandular trichomes only; capsule pubescent with eglandular trichomes ..... *J. fulvicoma.*

Two sprigs of *Cabrera & H. de Cabrera 7895* (CAS) differ from other specimens of *J. mirandae* and from another sprig on that sheet by having eglandular hairs on the young stems, leaves, and abaxial surface of bracts. They appear to represent a pubescent form of the species.

The epithet honors Faustino Miranda, student of the vegetation and flora of Chiapas who collected a paratype of this species.

Justicia teletheca T.F. Daniel, sp. nov.
(Fig. 9)

Type.—MEXICO. **Chiapas**: Mpio. Arriaga, La Mina Microwave Station, 915 m, 21 December 1981, *D. Breedlove 56314* (holotype: CAS!; isotypes: C!, K!, MEXU!, MO!, US!).

Herba perennis usque ad 1.1 m alta. Folia petiolata, laminae ovatae vel ellipticae, 19–185 mm longae, 6–77 mm latae, 2–3.7-plo longiores quam latiores. Inflorescentia floribus in spicas pedunculatas terminales et axillares vel in paniculam; dichasia opposita, sessilia, uniflora. Bracteae lineares vel oblanceolatae vel obovatae, 6–14 mm longae, 1.2–7 mm latae, apice acutae, bracteae distales pagina abaxiali pubescenti trichomatibus glandulosis et eglandulosis. Flores sessiles. Calyx 4-lobus, 9–11 mm longus, lobis homomorphis. Corolla atrorosea-rubra, 30–35 mm longa, extus pubescens trichomatibus glandulosis et eglandulosis. Stamina filamentis pubescentibus trichomatibus eglandulosis, thecis heteromorphis, superpositis, theca supera fertilis, 2–2.5 mm longa, basi ecalcarata, theca inferna sterilis, 1–1.2 mm longa, basi calcarata. Capsula (immatura) 8 mm longa, pubescens trichomatibus glandulosis.

Erect perennial herb to 1.1 m tall; young stems subquadrate, internodes glabrous or bifariously pubescent (sometimes only for a short distance proximal to only certain nodes) with flexuose to antrorsely appressed eglandular trichomes to 0.7 mm long, nodes usually with at least a few antrorse eglandular trichomes. Leaves subsessile to petiolate; petioles to 37 mm long; blades ovate to elliptic, 19–185 mm long, 6–77 mm wide, 2–3.7 times longer than wide, acute to acuminate at apex, acute to attenuate at base, surfaces pubescent (mostly along major veins) with antrorse eglandular trichomes, margin entire to subcrenate. Inflorescence of axillary (in leaf axils) and terminal, pedunculate dichasiate spikes or panicles of spikes to 110 mm long (including peduncle and excluding flowers), 11–18 mm in diameter near midpoint of fertile portion, spikes or panicles mostly opposite, 1–3 per axil, peduncles to 75 mm long, nearly glabrous or ± evenly to ± bifariously pubescent with antrorse to antrorsely appressed eglandular trichomes 0.1–0.9 mm long (strigose), rachises strigose proximally and pubescent with erect glandular and eglandular trichomes 0.05–0.1 mm long (glandular puberulent) distally, inflorescence bracts (if present) similar to leaves but sometimes smaller; dichasia opposite, sessile, 1-flowered, 1 per axil. Bracts opposite, linear to oblanceolate to obovate, 6–14 mm long, 1.2–7 mm wide, acute at apex, abaxial surface of proximal bracts glabrous or with antrorse eglandular trichomes 0.1–0.5 mm long, abaxial surface of distal bracts glandular puberulent and often with a few longer, antrorse eglandular trichomes as well, margin ciliate with flexuose to antrorse eglandular trichomes and (on distal bracts) glandular puberulent. Bractlets subulate to linear, 4–6 mm long, 0.3–0.5 mm wide, pubescent like bracts. Flowers sessile. Calyx 4-lobed, 9–11 mm long, lobes homomorphic, linear to linear-lanceolate, 8–10.3 mm long, 0.9–1.2 mm wide, abaxially pubescent like bracts or sometimes lobes of proximal calyces glandular puberulent like lobes of distal calyces. Corolla dark pink-red with white markings on lower lip, 30–35 mm long, externally

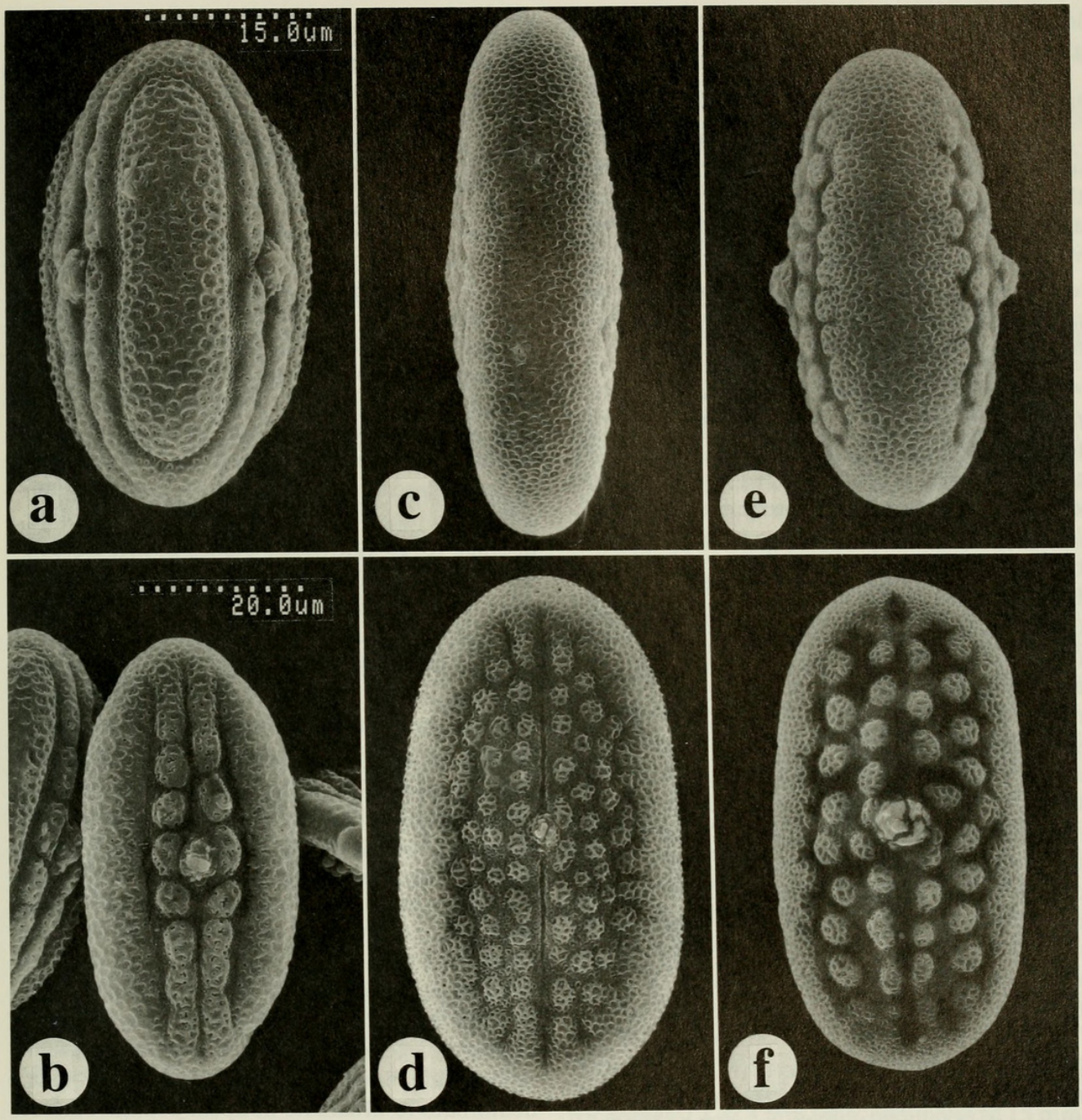

FIGURE 8. Scanning electron micrographs of *Justicia* pollen. (a) *J. mirandae* (*Breedlove 50163*), equatorial (intercolpal) view; (b) *J. mirandae*, equatorial (colpal) view; (c) *J. teletheca* (*Breedlove 56314*), equatorial (intercolpal) view; (d) *J. teletheca*, equatorial (colpal) view; (e) *J. tianguensis* (*Breedlove 7365*), equatorial (intercolpal) view; (f) *J. tianguensis*, equatorial (colpal) view. b–f at same scale.

pubescent with erect to subflexuose glandular and eglandular trichomes 0.05–0.3 mm long, tube ± funnelform, 17–19 mm long, 1.9–2.5 mm in diameter near midpoint, upper lip 11–16 mm long, entire to emarginate, lobes 0.2 mm long, lower lip 14–18.5 mm long, lobes 3–5 mm long, 1.5–3 mm wide. Stamens inserted near apex of corolla tube, 13.5–16 mm long, filaments distally glabrous, proximally pubescent with eglandular trichomes, thecae subparallel to subperpendicular, superposed (1.5–3 mm distant), dimorphic, distal theca fertile, 2–2.5 mm long, pubescent with eglandular trichomes, proximal theca borne on a projection of the connective to 0.5 mm long, sterile, 1–1.2 mm long (including a basal spur to 0.4 mm long); pollen (Fig. 8c, d) 2-aperturate, apertures flanked on each side by 3–4 rows of insulae, exine reticulate. Style 25–30 mm long, sparsely pubescent at base (if at all) with eglandular trichomes; stigma 0.2 mm long,

lobes not evident. Capsule (immature) 8 mm long, glandular puberulent.

PHENOLOGY.—Flowering: November–December; fruiting: December.

DISTRIBUTION AND HABITAT.—Southern Mexico (Chiapas, Oaxaca); plants occur on slopes in the ecotone between tropical deciduous forests and oak forests and in pine-oak forests at elevations from 900 to 915 m.

PARATYPES.—MEXICO. Oaxaca: Mpio. San Miguel Chimalapa, El Pedregal del Río Portamonedas, ca. 3 km S de Benito Juárez, 16°42'N, 94°08'W, *S. Maya J. 864* (CAS).

This species is referable to *Justicia* sect. *Chaetothylax* (Nees) V.A.W. Graham and conforms to plants previously treated in the genus *Chaetothylax* Nees (see discussion below under *J. rzedowskii*). *Justicia teletheca* is similar to *C. phyllostachyus* Nees from Tabasco in most respects but differs from the holotype (i.e., *Linden 188*, K!) of that species in characters of the inflorescence and calyx, and in habitat preference. In *C. phyllostachyus* the dichasia are solitary in the leaf axils (or if this arrangement is construed to represent a dichasiate spike, then the bracts are subfoliose (16–22 mm long, 5.5–10 mm wide) and the rachises lack glandular trichomes); and the calyx lobes lack glandular trichomes. *Chaetothylax phyllostachyus* occurs at lower elevations on the Caribbean escarpment in a region of rain forest. *Justicia teletheca* differs from the description of *C. cuspidatus* D.N. Gibson (Gibson 1974) by its axillary inflorescences (vs. terminal and subcapitate), larger anthers, and lack of a cusp (1 mm long or more) on the bracts.

There is a collection from Chiapas at BM that greatly resembles *J. teletheca* (Mpio. Frontera Comalapa, 12 km W de Frontera Comalapa, carr. 211 hacia Motozintla, 810 m, 6 Feb 1990, *A. Reyes G. et al. 1577*). It does not have any opened corollas and therefore I cannot be certain that it represents the species.

The epithet is derived from the Greek elements tele (far) and theca (case) in reference to the remote anther thecae.

Justicia tianguensis T.F. Daniel, sp. nov.
(Fig. 6c–e)

TYPE.—MEXICO. **Chiapas**: Mpio. Tenejapa, Yochib, Paraje of Kotol Te', 1300 m, 21 November 1964, *D. Breedlove 7365* (holotype: DS!; isotypes: F!, MICH!, US!).

Herba perennis. Folia petiolata, laminae ovatae, 58–130 mm longae, 18–57 mm latae, 2–3.2-plo longiores quam latiores. Inflorescentia floribus in spicas pedunculatas terminales; dichasia opposita, sessilia, uniflora. Bracteae lanceolatae vel lanci-ovatae, 4.5–6 mm longae, 1.6–2.5 mm latae, apice acuminatae vel attenuatae, pagina abaxialis pubescens trichomatibus eglandulosis. Flores sessiles. Calyx 5-lobus, 8–10 mm longus, lobis heteromorphis (4+1). Corolla rubra, 39–51 mm longa, extus pubescens trichomatibus eglandulosis. Stamina filamentis pubescentibus trichomatibus eglandulosis, thecis 2–2.5 mm longis, impariter insertis vel superpositis, basi ecalcaratis. Ovarium pubescens trichomatibus eglandulosis. Capsula ignota.

Perennial to 3 (probably considerably more) dm tall; young stems quadrate-compressed, internodes unifariously to bifariously pubescent with retrorse eglandular trichomes 0.2–1 mm long, soon glabrate, trichomes sometimes sparse or absent along proximal portions of internodes, nodes pubescent with straight (not erect) eglandular trichomes to 1 mm long. Leaves petiolate; petioles to 10 mm long; blades ovate, 58–130 mm long, 18–57 mm wide, 2–3.2 times longer than wide, acuminate to subfalcate at apex, rounded to acute at base, adaxial surface pubescent with antrorse eglandular trichomes along midvein, abaxial surface glabrous or with a few antrorse eglandular trichomes along midvein, margin entire to subcrenate. Inflorescence of terminal (sometimes appearing axillary), pedunculate, dichasiate spikes to 200 mm long (including peduncle and excluding flowers), 6–8 mm in diameter near midspike (excluding flowers), peduncles to 55 mm long, ± evenly pubescent with erect to retrorse to flexuose to antrorse eglandular trichomes 0.1–0.5 mm long, rachises evenly pubescent with erect eglandular trichomes 0.1–0.2 mm long; dichasia 1-flowered, opposite, 1 per axil, sessile. Bracts lanceolate to lance-ovate, 4.5–6 mm long, 1.6–2.5 mm wide, acuminate to attenuate at apex, abaxial surface pubescent with erect eglandular trichomes 0.05–0.1 mm long. Bractlets lanceolate to lance-subulate, 4–5 mm long, 0.7–1.1 mm wide, abaxial surface pubescent like bracts. Flowers sessile. Calyx 5-lobed, 8–10 mm long, pubescent like bracts, lobes heteromorphic, 4 lobes homomorphic, lanceolate, 6.5–9 mm long, 1–1.5 mm wide, widest at base, posterior lobe greatly reduced, 1.8–2.5 mm long, margins neither thickened nor discolored. Corolla red, 39–51 mm long, externally pubescent with erect eglandular trichomes 0.05–0.2 mm long, tube gradually expanded distally, 22–27 mm long, 4.3–5.2 mm in diameter near midpoint, upper lip 17–22 mm long, entire, lower lip 17–24 mm long, lobes 2.5–5.5 mm long,

1.8–5 mm wide. Stamens inserted near apex of corolla tube, 17–20 mm long, filaments proximally pubescent with eglandular trichomes, thecae 2–2.5 mm long, subequal, perpendicular, unequally inserted (overlapping by 0.5–1 mm) to superposed (up to 0.4 mm distant), glabrous, lacking basal appendages; pollen (Fig. 8e,f) 2-aperturate, apertures flanked on each side by 2 rows of insulae, exine reticulate. Style 37–44 mm long, proximally pubescent with eglandular trichomes; stigma unequally 2-lobed, 1 lobe 0.3–0.4 mm long, other lobe 0.1 mm long. Ovary densely pubescent with erect eglandular trichomes 0.1–0.2 mm long. Capsule not seen.

PHENOLOGY.—Flowering: November, February.

DISTRIBUTION AND HABITAT.—Southern Mexico (Chiapas) and Guatemala; plants occur on moist slopes in pine-oak-*Liquidambar* forests at elevations from 1300 to 1500 m.

PARATYPE.—GUATEMALA. **Alta Verapaz**: along Río Cobán, ca. 5 km SE of Tactic, ca. 15°19'N, 90°15'W, *L. Williams et al. 40603* (F).

Gibson (1974) included the above cited specimens in *J. inaequalis* Benth. (based on her annotations and inclusion of Chiapas within the range of that species). They differ from *J. inaequalis* by the characteristics in the following couplet:

Calyx 5-lobed (with posterior lobe greatly reduced), 8–10 mm long, lobes widest at base, margins neither thickened nor discolored; inflorescences not secund, dichasia opposite (= paired) at nodes; peduncle, rachis, and abaxial surfaces of bracts, bractlets, and calyx pubescent; style and ovary pubescent ..... *J. tianguensis.*

Calyx 4-lobed, 11–18 mm long, lobes widest near middle, margins thickened and discolored; inflorescence secund, dichasia alternate (= solitary) at nodes; peduncle, rachis, and abaxial surfaces of bracts, bractlets, and calyx glabrous; style and ovary glabrous ..... *J. inaequalis.*

The epithet is derived from the Spanish word *tiangue,* which means small market. Yochib is a sacred place that serves as a common marketplace for Tzeltal peoples living in three municipalities.

Justicia turipachensis T.F. Daniel, sp. nov.
(Fig. 6f, g)

TYPE.—MEXICO. **Chiapas**: Mpio. Berriozábal, 13 km N of Berriozábal near Pozo Turipache and Finca El Suspiro, 900 m, 1 Jan 1973, *D. Breedlove 31242* (holotype: CAS!; isotypes: C!, DS!, K!, MEXU!, US!).

Frutex usque ad 4.5 m altus. Folia petiolata, laminae ellipticae, 121–260 mm longae, 31–90 mm latae, 2.9–3.9-plo longiores quam latiores. Inflorescentia floribus in paniculam terminalem complexum; dichasia alterna vel opposita, sessilia vel subsessilia, uniflora. Bracteae subulatae vel lance-subulatae, 1.5–3 mm longae, 0.4–0.7 mm latae, apice acutae vel subattenuatae, pagina abaxialis pubescens trichomatibus eglandulosis (et aliquando inconspicuo glandulosis). Flores pedicellati. Calyx 5-lobus, 4–6 mm longus, lobis homomorphis. Corolla lutea, 31–35 mm longa, extus pubescens trichomatibus glandulosis et eglandulosis. Stamina filamentis pubescentibus trichomatibus eglandulosis, thecis 2.3–2.6 mm longis, subpariter vel impariter insertis, basi calcaratis. Capsula ignota.

Shrub to 4.5 m tall; young stems subterete, glabrous. Leaves petiolate; petioles to 65 mm long; blades elliptic, 121–260 mm long, 31–90 mm wide, 2.9–3.9 times longer than wide, acuminate at apex, attenuate at base, surfaces glabrous (or with a few antrorsely appressed eglandular trichomes along midvein on abaxial surface), margin entire to subcrenulate. Inflorescence of axillary and terminal, pedunculate, dichasiate racemes or panicles of racemes from axils of distal leaves or bracts (= inflorescence bracts) forming a complex terminal panicle to 200 mm long (excluding flowers) and 150 mm in diameter near midpoint, commonly both a raceme and a panicle per axil, inflorescence bracts subfoliose, petiolate, 5.5–8 mm long, 1.3–2.1 mm wide, main rachis ± evenly pubescent with flexuose-antrorse to antrorsely appressed eglandular trichomes 0.1–0.3 mm long, peduncles to 15 mm long, pubescent like main rachis, raceme rachises pubescent like main rachis (or with trichomes denser); dichasia 1-flowered, alternate or opposite, 1 per axil, sessile to subsessile (i.e., peduncles to 0.5 mm long). Bracts opposite, subulate to lance-subulate, 1.5–3 mm long, 0.4–0.7 mm wide, acute to subattenuate at apex, abaxial surface pubescent with antrorsely appressed eglandular trichomes 0.05–0.2 mm long and sometimes with a few inconspicuous erect glandular trichomes to 0.1 mm long. Bractlets subulate, 1.2–1.5 mm long, 0.3–0.4 mm wide, abaxial surface pubescent like bracts. Flowers pedicellate, pedicels 1.5–2.5 mm long, pubescent like rachises. Calyx 5-lobed, 4–6 mm long, lobes ho-

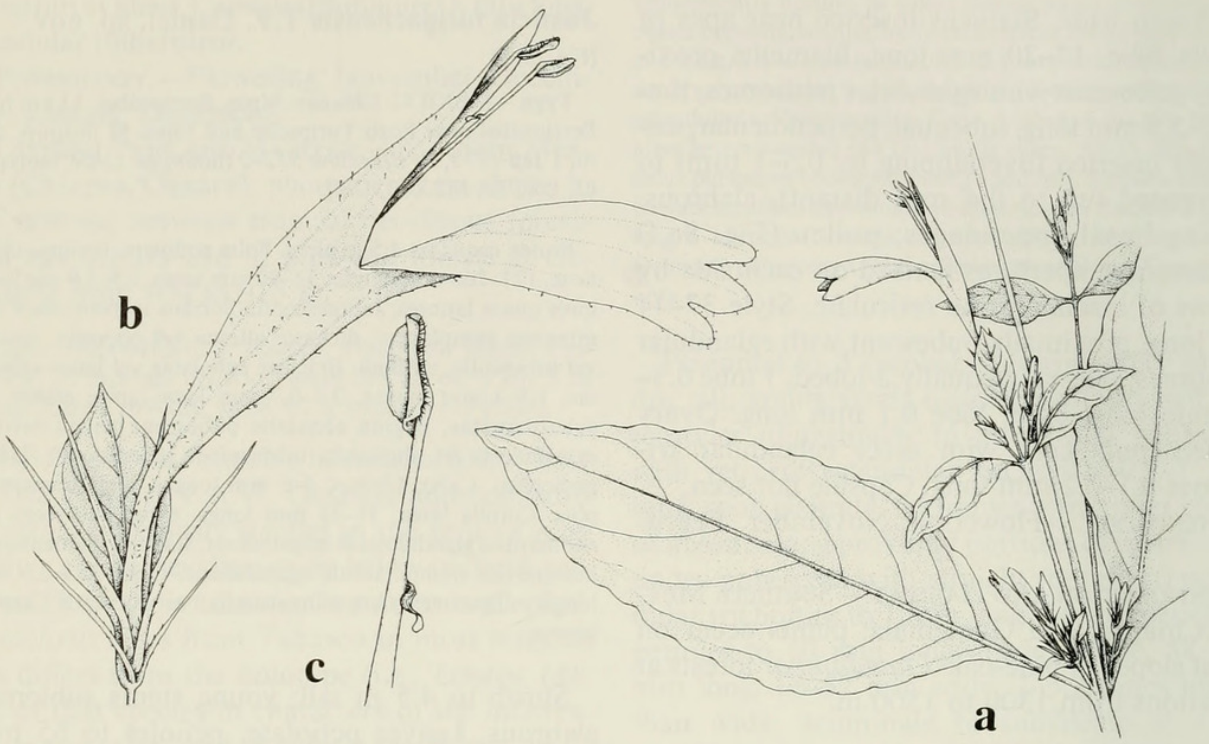

FIGURE 9. *Justicia teletheca* (*Breedlove 56314*). (a) vegetative node with inflorescences, × 0.75; (b) inflorescence node with flower, × 2.5; (c) distal portion of stamen, × 6. Drawn by J. Speckels.

momorphic, lance-subulate, 3.2–5 mm long, 0.7–0.9 mm wide, abaxially and marginally pubescent like bracts. Corolla yellow, 31–35 mm long, externally pubescent with flexuose eglandular trichomes 0.1–0.3 mm long and distally with erect glandular trichomes to 0.2 mm long as well, tube 17–18 mm long, ± gradually expanded distally, upper lip 14–15 mm long, 2-fid at apex, lobes to 0.3 mm long, lower lip 14.5–16 mm long, lobes 1.5 mm long, 0.5–0.7 mm wide. Stamens inserted near apex of corolla tube, 15–16.5 mm long, filaments proximally pubescent with eglandular trichomes, thecae 2.3–2.6 mm long, equal in length, subparallel to subsagittate, subequally to unequally inserted (overlapping by 1.5–2 mm), glabrous, each theca with a bulbous, rounded, basal appendage to 0.3 mm long (appendage of lower theca longer than that of upper theca); pollen (Fig. 4f) 2-aperturate, apertures flanked on each side by 2 (–3) rows of insulae, exine reticulate. Style 28.5–31 mm long, glabrous; stigma lobes 0.2–0.3 mm long. Capsule not seen.

PHENOLOGY.—Flowering: January.

DISTRIBUTION AND HABITAT.—Endemic to Chiapas where plants occur on limestone ridges in lower montane rain forests at elevations of about 900 m.

Justicia turipachensis resembles the widespread *J. aurea* Schltdl. in numerous features including its expansive terminal panicle and flowers with large, yellow corollas. These species can be distinguished by the following couplet:

Corolla 48–70 mm long, buds prominently curved near apex; filaments glabrous, thecae 2.5–3.6 mm long, usually dorsally pubescent, lacking basal appendages; pollen lacking differentiated trema areas, surfaces smooth ..... *J. aurea.*

Corolla 31–35 mm long, buds not prominently curved near apex; filaments proximally pubescent with eglandular trichomes, thecae 2.3–2.6 mm long, glabrous, each theca with a basal appendage; pollen with differentiated trema areas, surfaces reticulate ..... *J. turipachensis.*

The epithet is derived from the type locality "Pozo Turipache," near which at least 16 species of Acanthaceae have been collected.

Justicia kanal T.F. Daniel, nom. nov.

Beloperone aurea Leonard, Publ. Carnegie Inst. Wash. 461: 233. 1936, non *Justicia aurea* (Rose) Lindau (1897) nec *Justicia aurea* Schlecht. (1832). *Justicia flava* D.N. Gibson, Fieldiana, Bot. 34:69. 1972, non *Justicia flava* (Vahl) Vahl

(1791) nec *Justicia flava* Kurz (1873). TYPE.—GUATEMALA. **Petén**: Fallabón-Yaxha Road, 22 March 1933, *C. Lundell 2189* (holotype: US!; isotype: MICH!).

Gibson (1972) provided the new name *J. flava* for the species previously known as *Beloperone aurea*. Unfortunately, her new name represented a later homonym and is therefore illegitimate according to Article 64 of the International Code of Botanical Nomenclature (Greuter et al. 1988). Accordingly, another name is proposed for this species in *Justicia*. I have chosen one that, like the previous names for this species, highlights a conspicuous feature (i.e., the bright-yellow trichomes evident on the young growth). The epithet is derived from *k'anal*, which means yellow in the Tzeltal (Maya) language.

Justicia borrerae (Hemsl.) T.F. Daniel, comb. nov.

Neohallia borrerae Hemsl. Biol. Centr. Amer. Bot. 2:519. 1882. TYPE.—MEXICO. **Chiapas**: Rancho de la Montaña, 6 leagues from Tuxtla, November 1864–70, *A. Ghiesbreght 722* (holotype: K; isotype: GH!).

Neohallia Hemsl. was described as a probable relative of *Justicia* with large, leathery or fleshy, cup-shaped involucres enclosing several large, sessile flowers. Based on floral features (i.e., rugulate corolla, unequally inserted thecae with basal appendages, and 2-aperturate pollen with the apertures flanked by rows of insulae), the obvious affinities of this monotypic genus are with *Justicia* in the broad sense in which that genus is presently treated (Graham 1988). Two features of *N. borrerae* readily distinguish it from species of *Justicia* in North and Central America: the partially connate bracts that form the floral involucre and the exceptionally large and woody capsules. Given the diversity of bracteal size and fusion and capsule size within both *Justicia* and other genera of Acanthaceae, these features are not considered to be sufficient for recognition of a distinct genus. Pollen of *J. borrerae* corresponds to Graham's "Type 5," which is found in several sections of the genus and in several species of uncertain affinities (Graham 1988).

Justicia rzedowskii (Acosta) T.F. Daniel, comb nov.

Chaetothylax rzedowskii Acosta, Acta Bot. Méx. 5:5. 1989. TYPE.—MEXICO. **Chiapas**: Mpio. Huehuetán, Río Chamulapa, 50 m, *E. Ventura & E. López 1074* (holotype: ENCB; isotypes: CAS!, CHAPA, IEB, MEXU, OAX).

Chaetothylax Nees is treated as a distinct genus by some (e.g., Gibson 1974, Durkee 1986) and is included in *Justicia* by others (e.g., Graham 1988). The genus supposedly differs from *Justicia* by its dense inflorescence, four-lobed calyx, and stamens with the thecae conspicuously unequal (the smaller one sometimes sterile or vestigial). All of these features are known in species of *Justicia*. In species treated in *Chaetothylax* the corollas have a rugula, the thecae often have a basal appendage, and the pollen is typical of that found in *Justicia*. Thus, there appear to be no mutually exclusive distinctions between these occasionally recognized genera.

LEPIDAGATHIS VS. TELIOSTACHYA

Lepidagathis alopecuroidea (Vahl) R. Br. ex Griseb., a species known from Chiapas, and about 10 other strictly American species are sometimes treated as *Teliostachya* Nees. Bremekamp (1938) distinguished *Teliostachya* from *Lepidagathis* Willd. by its radially symmetric and terminal spikes, unfused anterior calyx lobes, unequally inserted anther thecae, and non-reticulate pollen. With the exception of its cylindric inflorescences, none of these character states that are diagnostic of *Teliostachya* apply to the widespread *L. alopecuroidea*. Subsequently, Bremekamp (1960) included *Teliostachya* in his tribe Lepidagathideae that he characterized as having partially connate anterior calyx lobes. Our species, usually treated in American literature as *T. alopecuroidea*, has all of the diagnostic characteristics of *Lepidagathis* (except for its radially symmetric inflorescences) as indicated by Bremekamp (1938). It remains to be seen whether the other American species, all of which are South American, treated by Bremekamp (1938) in *Teliostachya*, are worthy of being maintained as distinct from *Lepidagathis*.

RUELLIA

Ruellia is the second largest genus of Acanthaceae. It is represented in Mexico by about 65 species. Twenty of these occur in Chiapas. The species previously treated as *R. longituba* D.N. Gibson (Gibson 1974) does not conform to the type of that name but represents a new taxon that is described below.

Ruellia maya T.F. Daniel, sp. nov.
(Fig. 10)

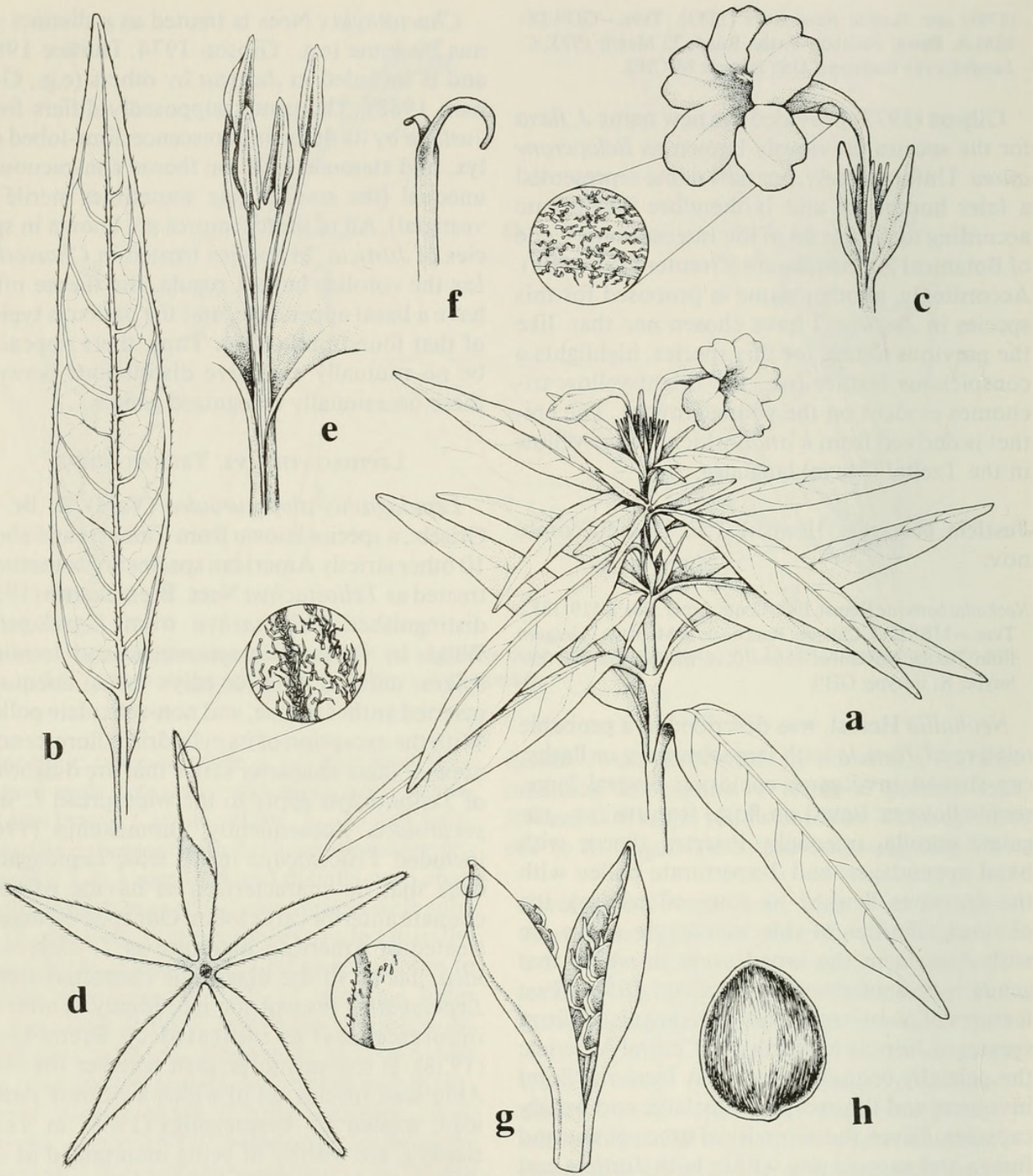

FIGURE 10. *Ruellia maya* (*Daniel & Bartholomew 5000*). (a) habit, × 0.35; (b) leaf, × 1.25; (c) flower, × 0.5, with enlargement showing pubescence of external surface of corolla; (d) calyx following dehiscence of capsule, × 1.1, with enlargement showing pubescence of abaxial surface of lobes; (e) androecium, × 2.7; (f) stigma, × 7.5; (g) capsule, × 2.3, with enlargement showing pubescence of external surface; (h) seed, × 7. Drawn by J. Speckels.

TYPE.—MEXICO. **Chiapas**: Agua Azul between Palenque and Ocosingo, ca. 10 mi SW of Río Tulija, ca. 300 m, 15 March 1987, *T. Daniel & B. Bartholomew 5000* (holotype: CAS!; isotypes: MEXU!, MICH!)

Herba perennis vel frutex usque ad 1 m altus. Folia petiolata, laminae lanceolatae vel lanceolato-ellipticae, 33–150 mm longae, 6–50 mm latae, (2.8–) 3.9–7.1-plo longiores quam latiores. Dichasia in axillis foliorum distalium, sessilia, uniflora. Bracteolae lanceolato-ovatae vel anguste ellipticae, 17–46 mm longae, 4–9 mm latae, glandulosae. Calyx 14–27 mm longus, extus glandulosus. Corolla caerulea-purpurea, 65–90 mm longa, extus pubescens trichomatibus glandulosis et eglandulosis. Stamina inclusa thecis 5–5.5 mm longis. Capsula substipitata, 13–18 mm longa, pubescens trichomatibus glandulosis et eglandulosis. Semina usque ad 16, 3.5–4 mm longa, 2.5–3 mm lata, pagina laevis vel substriata, margo pubescens trichomatibus hygroscopicis.

Erect to ± diffuse perennial herb to shrub to

1 m tall. Young stems quadrate to quadrate-sulcate, pubescent with flexuose eglandular and glandular (sometimes absent) trichomes 0.5–1.3 (–2) mm long, trichomes often concentrated in 2 lines. Leaves petiolate; petioles to 34 mm long; blades lanceolate to lance-elliptic, 33–150 mm long, 6–50 mm wide, (2.8–) 3.9–7.1 times longer than wide, acute to acuminate at apex, attenuate at base, surfaces pubescent with scattered glandular (sometimes absent) and eglandular trichomes 0.2–1.5 mm long or becoming glabrate, margin entire to subsinuate. Inflorescence of sessile dichasia in axils of distal leaves; dichasia alternate or opposite at nodes, 1 per axil, 1-flowered. Flowers sessile to subsessile (i.e., with pedicels to 1 mm long). Bractlets petiolate, lanceovate to narrowly-elliptic, 17–46 mm long, 4–9 mm wide, pubescent like young leaves (i.e., glandular). Calyx 14–27 mm long, tube 2–3 mm long, lobes lanceolate to elliptic to oblanceolate, 12–24 mm long, 5.4–8 times longer than tube, 1.5–4 mm wide, abaxial surface pubescent like bractlets, margin ciliate with erect to flexuose to antrorse glandular and eglandular trichomes 0.3–1.6 mm long. Corolla blue-purple, 65–90 mm long, externally pubescent with flexuose glandular and eglandular trichomes 0.2–1 mm long, tube 56–70 mm long, narrow-proximal portion 32–50 mm long, arched or curved near apex, abruptly expanded into throat, throat 16–25 mm long, shorter than narrow-proximal portion of tube, 9–15 mm in diameter near midpoint, limb 32–60 mm in diameter, lobes 15–25 mm long, 14–25 mm wide. Stamens included, longer pair 13–15 mm long, shorter pair 11–12 mm long, thecae presented at 2 heights, 5–5.5 mm long, connective often with an apical elongation. Style 50–55 mm long, pubescent with eglandular trichomes ± throughout, stigma unequally 2-lobed, 1 lobe 1.7–2.8 mm long, other lobe 0.2–0.5 mm long or not evident. Capsule substipitate, 13–18 mm long, pubescent with scattered erect to flexuose eglandular and glandular (rarely becoming ± entirely eglandular with age) trichomes 0.1–0.3 mm long, stipe 2–2.5 mm long, head ellipsoid to ellipsoid-obovoid. Seeds up to 16, 3.5–4 mm long, 2.5–3 mm wide, surface smooth to substriate, margin with a prominent band of hygroscopic trichomes.

PHENOLOGY.—Flowering: September, December–March; fruiting: December–March.

DISTRIBUTION AND HABITAT.—Southern Mexico (Chiapas) and Guatemala; plants occur along streams in lowland rain forests, lower montane rain forests, montane rain forests, and seasonal evergreen forests at elevations from 280 to 1700 m.

PARATYPES.—MEXICO. **Chiapas**: Mpio. Palenque, near Agua Azul, *D. Breedlove 47419* (CAS), *D. Breedlove & F. Almeda 57264* (CAS, MEXU), *D. Breedlove & B. Keller 49578* (CAS, MEXU); Mpio. Ocosingo, 5 km NE of Ocosingo toward Palenque, *D. Breedlove 49094* (CAS); Mpio. La Libertad, 10–20 km toward Chancala on road to Bonampak from Palenque-Ocosingo road, *D. Breedlove 49113* (CAS), *D. Breedlove & F. Almeda 57394* (CAS); Mpio. Peltalcingo, slope of Ahk'ulbal Nab above Peltalcingo, *D. Breedlove 49918* (CAS), *50450* (CAS), *56133* (CAS, MEXU); Mpio. Ocosingo, near El Real, E of Ocosingo, *D. Breedlove 56347* (CAS); Mpio. La Independencia, Santa Elena Valley, 40–42 km E of Lagos de Montebello Natl. Park near Río Santa Domingo, *D. Breedlove & F. Almeda 57688* (CAS); Mpio. Bachajon, 3 km N of Bachajon-Ocosingo road toward Palenque, *D. Breedlove & B. Keller 49404* (CAS); Mpio. Palenque, near Cascada Mizola, 25 km S of Palenque toward Ocosingo, *D. Breedlove & J. Strother 46906* (CAS); ruins of Palenque, *N. Diboll s.n.* (WIS). GUATEMALA. **Alta Verapaz**: Cobán, *H. von Tuerckheim II 832 (8569)* (US); Cobán, *H. Johnson 648* (US); between Finca Chimoté near Rubeltein and Finca Cubilgüitz, *J. Steyermark 44173* (F, US); near Río Icvolay and Hacienda Yaxcabnal, 5 mi NW of Cubligüitz, *J. Steyermark 44688* (F); Pansamalá, *H. von Tuerckheim 857* (K, US).

Gibson (1972) provided the new name *Ruellia longituba* D.N. Gibson for the species originally described as *Cryphiacanthus macrosiphon* Nees. Because of the prior existence of *R. macrosiphon* Kurz for a different species, the later name for *C. macrosiphon* in *Ruellia* (i.e., *R. macrosiphon* (Nees) Donn. Sm.) is illegitimate according to Article 64 of the International Code of Botanical Nomenclature (Greuter et al. 1988). Plants from Chiapas and Guatemala conform to Gibson's (1974) description of *R. longituba,* a species that she indicated was known only from southern Mexico and Guatemala. Interestingly, the syntypes of *R. longituba* (i.e., syntypes of *C. macrosiphon*) are from Texas (*J. Berlandier 316,* K!; *J. Berlandier 1586,* K!) and Oaxaca (*G. Andrieux 132,* G, K!, M), and they are described as having white corollas. Hemsley (1882) treated *C. macrosiphon* and one syntype (*Andrieux 132*) under *R. lactea* Cav. Examination of the syntypes at K reveals that *Andrieux 132* is a perennial herb to 2.2 dm tall that further differs from our plants by having leaves with the blades elliptic, 14–41 mm long, and 6.5–16 mm wide; flowers borne in a viscid terminal thyrse; corollas to 50 mm long; and dichasia 3-flowered. In these features it is suggestive of either *R. nudiflora* (Engelm. & A. Gray) Urb. or *R. lactea.* Berlandier's collec-

tions are mounted on a sheet with three labels and seven plants. The label at lower left notes, "No 1586 = 316, fl. albi, Bejar Julio 1828." Above the label, "Berlandier" is written and the insignia for Hooker's herbarium is printed. Nees annotated several plants on the sheet (which also includes a collection of Drummond) as "*Cryphiacanthus barbadensis* var. τ." The two plants at the lower left were apparently annotated by Nees as *C. macrosiphon.* Both are small herbs with ovate to elliptic leaf blades that are considerably shorter than those of *R. maya.* One resembles *Andrieux 132* in having a viscid terminal thyrse but differs by having corollas up to 70 mm long. The other specimen has dichasia borne on short peduncles from the leaf axils. While the identities of the three syntypes remain in question, it is certain that none of them corresponds to *R. maya,* which inhabits rain forests considerably to the south and east of either Texas or Oaxaca. Gibson's attribution of *C. macrosiphon* to this species perhaps resulted from Donnell Smith's new combination in *Ruellia* with which he annotated a Guatemalan collection of *von Tuerckheim* that pertains to *R. maya.*

The epithet honors the many Mayan people who inhabit Chiapas and adjacent regions.

Stenostephanus vs. Hansteinia vs. Habracanthus

Wood (1988) reviewed the taxonomic and nomenclatural history of *Habracanthus* Nees and several other genera that he treated as congeneric with it. Based on his extensive comparison of the characters used to distinguish these genera, a single genus appears to be justified for species previously treated in *Glockeria* Nees, *Habracanthus, Hansteinia* Oerst., *Kalbreyeracanthus* Wassh., and *Syringidium* Lindau. Most Mexican species in this assemblage were described in *Hansteinia.* Several other related genera, not discussed by Wood, that are in need of study in order to determine whether they should be maintained include *Cylindrosolenium* Lindau, *Kalbreyeriella* Lindau, *Razisea* Oerst., and *Stenostephanus* Nees. The former three genera were described subsequent to *Habracanthus* but the latter was described earlier (Nees 1847a) than *Habracanthus* (Nees 1847b) and would have nomenclatural priority if it were treated as congeneric.

Seven species of *Stenostephanus* have been described from Mexico and South America. Several were examined at K and BM, and these appeared to resemble species of *Habracanthus* (including *Hansteinia*) in all respects. In the protologue of *Stenostephanus* (Nees 1847a) the androecium was noted as comprising two stamens and two minute staminodes. Nees (1847b) subsequently noted that the staminodes were lacking in some species. Bentham (1876) noted that *Stenostephanus* had all of the characters of *Hansteinia* except for the inflorescence. Lindau (1895) grouped four genera in his tribe Isoglosseae, subtribe Isoglossinae with monothecous stamens and girdled pollen: *Oreacanthus* Benth., *Habracanthus, Hansteinia,* and *Stenostephanus.* These were distinguished as follows (translated from German):

Flowers in loose, diffuse panicles.
- Panicles with stout pedicels, lax.
  - Tube short, broad ..... *Oreacanthus.*
  - Tube cylindric, straight or bent, hardly expanded ..... *Habracanthus.*
- Panicles with filiform pedicels, few-flowered, very lax ..... *Hansteinia.*

Flowers in contracted panicles ..... *Stenostephanus.*

Leonard (1953) noted that *Stenostephanus, Hansteinia,* and *Habracanthus,* were closely related but distinguishable by the following characteristics:

Corolla tube relatively long, narrow, and subventricose, lips relatively long, upper lip narrowly linear and often curled or contorted, lower lip cuneiform and flat; panicles loose and few-flowered to dense and many-flowered ..... *Habracanthus.*

Corolla tube relatively short, broad, and ventricose, lips very short (scarcely more than lobes extending from rim of corolla tube).
- Inflorescence lax ..... *Hansteinia.*
- Inflorescence narrow ..... *Stenostephanus.*

The degree of contraction and the density of the inflorescence varies among the currently recognized species of *Stenostephanus, Habracanthus,* and *Hansteinia* and does not appear to provide viable generic distinctions for these genera. Based on Leonard's distinctions, it would be illogical to consider *Hansteinia* as congeneric with *Habracanthus* and to exclude *Stenostephanus.*

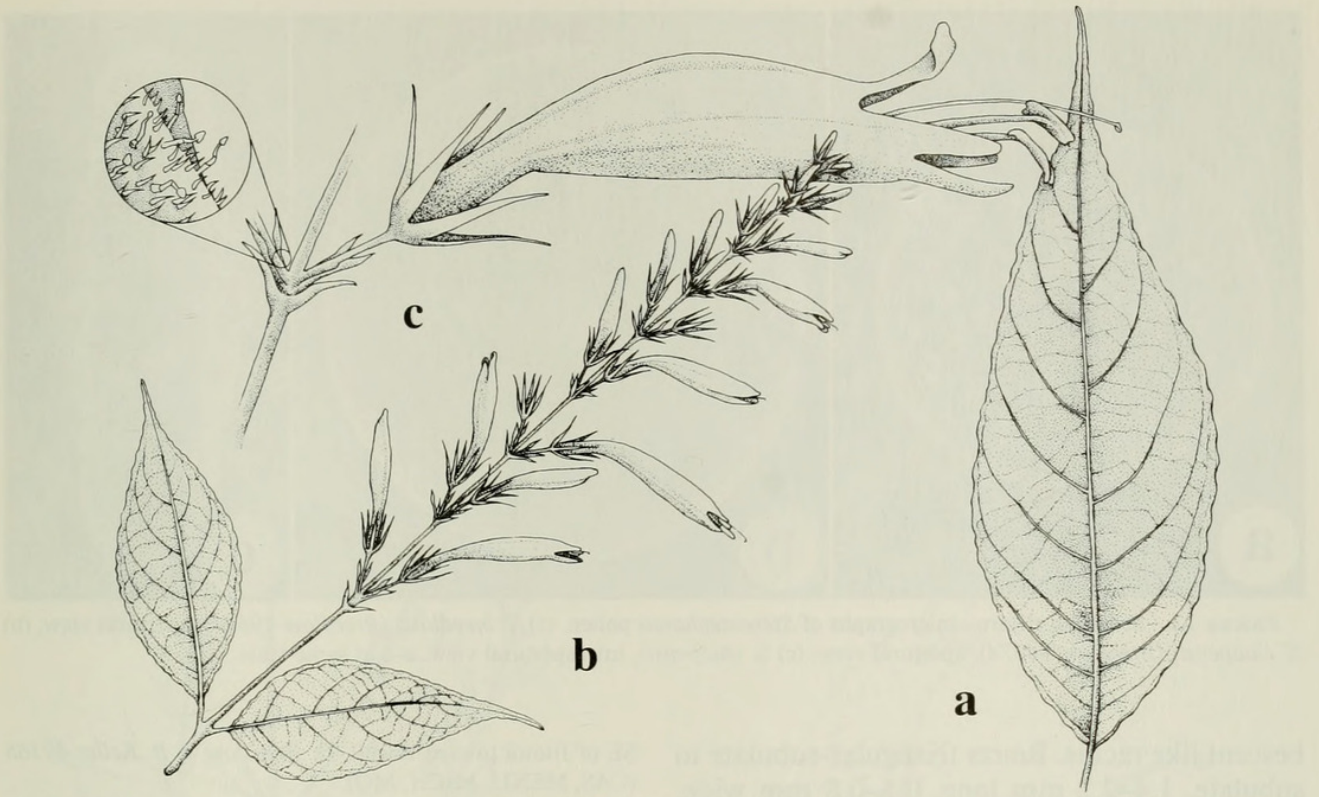

FIGURE 11. *Stenostephanus breedlovei* (*Breedlove 49995*). (a) leaf, × 0.75; (b) inflorescence, × 0.7; (c) inflorescence node with flower, × 2.3, and with enlargement of pubescence on peduncle. Drawn by J. Speckels.

Therefore the two Chiapan species of *Habracanthus* (one of which was also described in *Stenostephanus*) and the five Chiapan species of *Hansteinia* are transferred into *Stenostephanus*. In addition, two new species of the genus are described from Chiapas. Other Mexican species that would be included in *Stenostephanus* but that have not yet been sufficiently studied are not treated here. Thus, combinations in *Stenostephanus* have not been made for all Mexican species likely to belong in the genus.

Oreacanthus, a genus of four species from Central Africa (Friis and Vollesen 1982), might also prove to be congeneric with New World *Stenostephanus*.

Stenostephanus breedlovei T.F. Daniel, sp. nov. (Fig. 11)

TYPE.—MEXICO. **Chiapas**: Mpio. Tenejapa, near paraje Yashanal, 2400 m, 5 March 1981, *D. Breedlove 49995* (holotype: CAS!; isotypes: C!, K!, MEXU!, MO!, US!).

Frutex usque ad 1.2 m altus. Folia petiolata, laminae ovato-ellipticae vel ellipticae vel obovato-ellipticae, 32–140 mm longae, 11–45 mm latae, 2.4–4.3-plo longiores quam latiores. Flores in racemum (vel thyrsum) terminalem angustum pedunculatum dispositi; rachis pubescens trichomatibus glandulosis et eglandulosis; dichasia plerumque sessilia, uniflora; flores pedicellati. Corolla rubra, 25–29 mm longa, extus glabra; faux 17–19 mm longa et 5–7 mm diametro; labium superiorus 4–4.7 mm longum; labium inferiorus 4–5 mm longum lobis 3–3.5 mm longis. Capsula ignota.

Shrub to 1.2 m tall. Young stems quadrate to quadrate-sulcate, bifariously pubescent with retrorsely appressed, conspicuously septate eglandular trichomes 0.2–0.4 mm long. Leaves petiolate; petioles to 36 mm long; blades ovate-elliptic to elliptic to obovate-elliptic, 32–140 mm long, 11–45 mm wide, 2.4–4.3 times longer than wide, acuminate to subfalcate at apex, acute to subattenuate at base, surfaces pubescent with antrorse to antrorsely appressed eglandular trichomes along major veins, margin entire to subcrenate, ciliate with closely appressed trichomes. Inflorescence of terminal, narrow, pedunculate racemes (to thyrses) to 200 mm long (including peduncles), peduncles to 25 mm long, rachis subquadrate-flattened to somewhat ridge-angled, pubescent with an understory of erect mostly eglandular trichomes 0.05–0.2 mm long and an overstory of flexuose glandular trichomes 0.2–0.5 mm long; dichasia opposite or alternate, sessile (or borne on peduncles to 6 mm long at proximalmost nodes), ± contracted, 1-flowered; flowers pedicellate, pedicels to 5.5 mm long, pu-

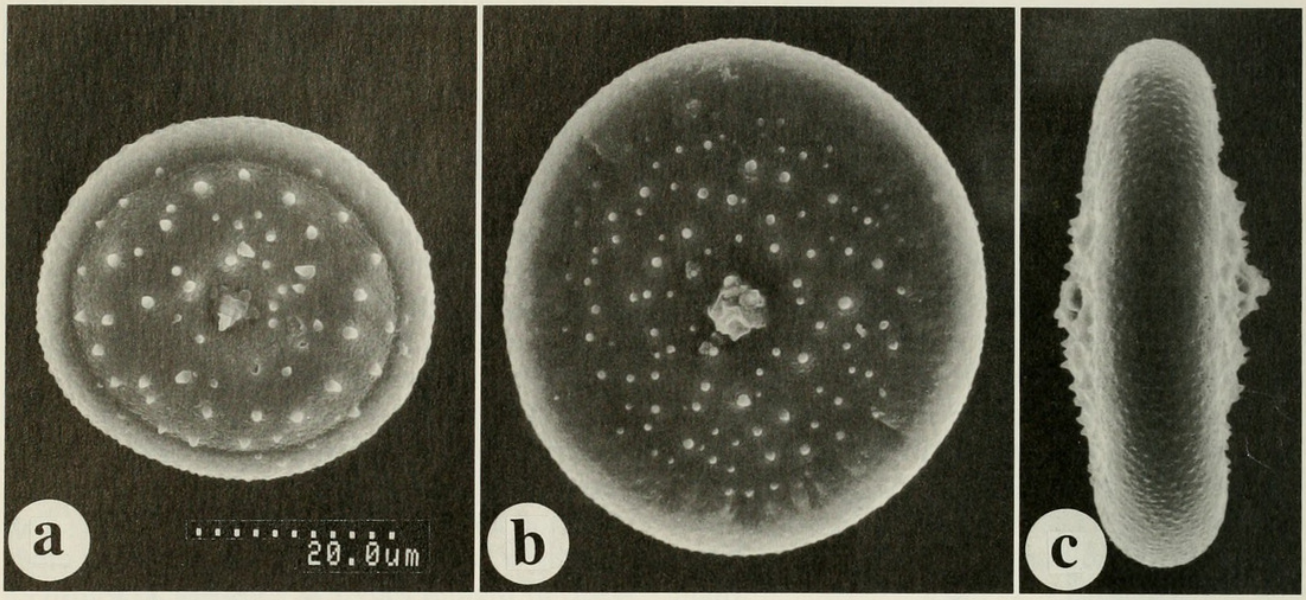

FIGURE 12. Scanning electron micrographs of *Stenostephanus* pollen. (a) *S. breedlovei* (*Breedlove 49644*), apertural view; (b) *S. chiapensis* (*Breedlove 34374*), apertural view; (c) *S. chiapensis*, interapertural view. a–c at same scale.

bescent like rachis. Bracts triangular-subulate to subulate, 1.4–2.2 mm long, 0.5–0.8 mm wide, abaxial surface glabrous or with a few antrorsely appressed eglandular trichomes or flexuose glandular trichomes to 0.3 mm long. Bractlets triangular-subulate to subulate, 1.3–2.2 mm long, 0.3–0.4 mm wide, abaxial surface pubescent like rachis. Calyx 4.5–7.5 mm long, abaxially pubescent like rachis, lobes lance-subulate, 3.5–6.2 mm long, 0.6–0.9 mm wide. Corolla linear to subfusiform in bud, red, 25–29 mm long, externally glabrous (margins of lobes with a few flexuose eglandular trichomes evident at apex of buds), tube ± gradually expanded into throat, narrow proximal portion 4–8 mm long, 2–3 mm in diameter, throat 17–19 mm long, 5–7 mm in diameter, widest near midpoint, upper lip erect to spreading, 4–4.7 mm long, 1.9–2.5 mm wide, lower lip 4–5 mm long, 3-lobed, lobes 3–3.5 mm long, 2–2.5 mm wide. Stamens inserted near base of throat (i.e., in proximal 1/2 of corolla tube), 22–31 mm long, thecae red, 3–3.4 mm long; pollen (Fig. 12a) compressed, 2-porate, exine echinate, encircling peripheral band lacking spines. Style 29–33 mm long, glabrous; stigma 0.2–0.3 mm long. Capsule not seen.

PHENOLOGY.—Flowering: January–March.

DISTRIBUTION AND HABITAT.—Endemic to Chiapas; plants occur in evergreen cloud forests and pine-oak-*Liquidambar* forests at elevations from 1600 to 2460 m.

PARATYPES.—MEXICO. **Chiapas**: Mpio. Tenejapa, near paraje Yashanal, *D. Breedlove 49644* (CAS); Mpio. Jitotol, 5 km SE of Jitotol toward Bochil, *D. Breedlove & B. Keller 49368* (CAS, MEXU, MICH, MO).

This species differs from all others by the combination of its retrorsely appressed cauline trichomes; sessile, one-flowered dichasia (except at the proximalmost nodes); pedicellate flowers; and red corollas with the throat 17 to 19 mm long and the lobes of the lower lip 3 to 3.5 mm long.

The epithet honors Dennis Breedlove, curator of botany at the California Academy of Sciences, editor of the *Flora of Chiapas,* ethnobotanist, dillegent collector, and longtime student of the Mexican flora.

Stenostephanus chiapensis T.F. Daniel, sp. nov. (Fig. 13)

TYPE.—MEXICO. **Chiapas**: ridge above Ejido Berriozábal near Cerro Boquerón, 2440 m, 29 November 1991, *D. Breedlove & C. Burns 72688* (holotype: CAS!; isotypes: C!, K!, MEXU!, MICH!, MO!, US!).

Frutex usque ad 4 dm altus. Folia petiolata, laminae ovatae vel ovato-ellipticae, 13–190 mm longae, 7–80 mm latae, 1.4–3-plo longiores quam latiores. Flores in racemum (vel thyrsum) vel paniculam racemoideam (vel thyrsoideum) axillarem et terminalem dispositi; rachis pubescens trichomatibus glandulosis et eglandulosis; dichasia subsessilia, 1–3 (-multi)-flora; flores pedicellati. Corolla rubra et lutea, 18–23 mm longa, extus glabra vel puberula; faux 12–16 mm longa et 5.5–7.5 mm diametro; labium superiorus 2.5–4 mm longum; labium inferiorus nullum vel lobis minus quam 0.5 mm longis. Capsula 12–16 mm longa, glabra.

Shrub to 4 dm tall. Young stems quadrate-sulcate to ridge-angled, bifariously pubescent (for varying distances proximal to nodes) with flex-

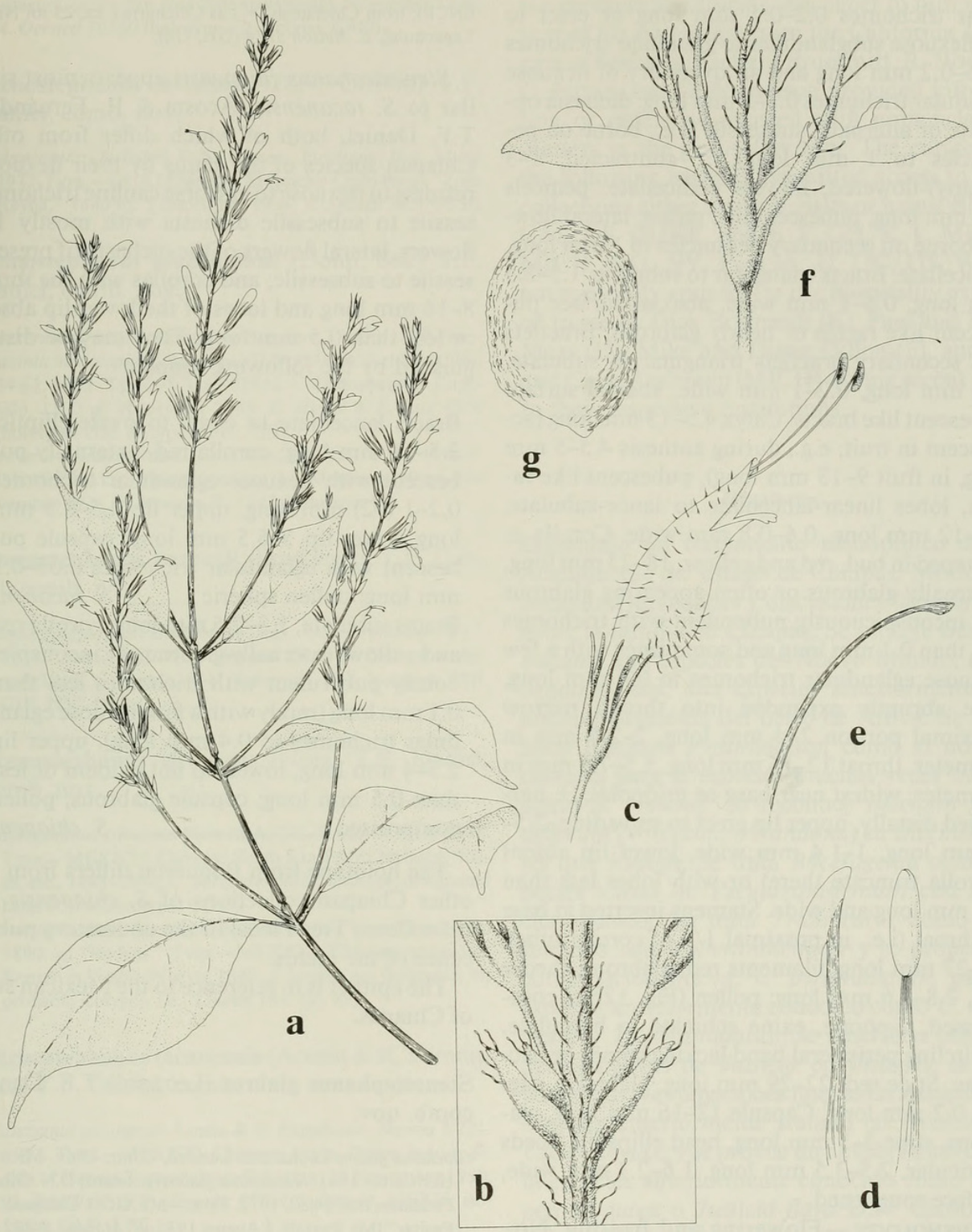

FIGURE 13. *Stenostephanus chiapensis* (*Nelson 3771*). (a) habit, × 0.5; (b) inflorescence node, × 5; (c) flower, × 2.25; (d) anthers, × 5; (e) style, × 10; (f) capsule, × 3.12; (g) seed, × 9. Drawn by E. del Valle.

uose to antrorse to antrorsely appressed eglandular trichomes to 0.5 mm long. Leaves petiolate (distal pair often sessile); petioles to 55 mm long; blades ovate to ovate-elliptic, 13–190 mm long, 7–80 mm wide, 1.4–3 times longer than wide, acuminate to abruptly acuminate at apex, acute to attenuate at base (distal, sessile pair rounded to cordate at base), surfaces glabrous or pubescent with antrorse multicelled eglandular trichomes to 0.8 mm long on major veins, margin entire to subcrenate, ciliate. Inflorescence of axillary and terminal, ± narrow, pedunculate racemes (to thyrses) or panicles of racemes (to thryses) to 23 cm long, peduncles to 75 mm long, rachis ridge-angled, densely pubescent with an understory of erect to flexuose multicelled eglan-

dular trichomes 0.2–0.5 mm long or erect to subflexuose subglandular to glandular trichomes 0.05–0.2 mm long and an overstory of flexuose glandular trichomes 0.3–2 mm long; dichasia opposite or alternate, subsessile (i.e., borne on peduncles to 1 mm long), ± contracted, 1–3 (-many)-flowered; flowers pedicellate, pedicels 1–4 mm long, pubescent like rachis, lateral flowers borne on secondary peduncles to 1 mm long, pedicellate. Bracts triangular to subulate, 1.3–2.5 mm long, 0.6–1 mm wide, abaxial surface pubescent like rachis or nearly glabrous. Bractlets and secondary bractlets triangular to subulate, 1–2 mm long, 0.2–1 mm wide, abaxial surface pubescent like bracts. Calyx 4.5–13 mm long (accrescent in fruit; e.g., during anthesis 4.5–5 mm long, in fruit 9–13 mm long), pubescent like rachis, lobes linear-lanceolate to lance-subulate, 4.3–12 mm long, 0.6–0.8 mm wide. Corolla ± c-shaped in bud, red and yellow, 18–23 mm long, externally glabrous or often appearing glabrous but inconspicuously puberulent with trichomes less than 0.1 mm long and sometimes with a few flexuose eglandular trichomes to 0.4 mm long, tube abruptly expanded into throat, narrow proximal portion 2–4 mm long, 2–2.5 mm in diameter, throat 12–16 mm long, 5.5–7.5 mm in diameter, widest near base or midpoint, ± narrowed distally, upper lip erect to spreading, 2.5–4 mm long, 1–1.4 mm wide, lower lip absent (corolla truncate there) or with lobes less than 0.5 mm long and wide. Stamens inserted at base of throat (i.e., in proximal 1/3 of corolla tube), 17–27 mm long, filaments red, glabrous, thecae red, 2.8–3.6 mm long; pollen (Fig. 12b,c) compressed, 2-porate, exine echinate to bacculate, encircling peripheral band lacking spines or bacculae. Style red, 22–29 mm long, glabrous; stigma 0.2 mm long. Capsule 12–16 mm long, glabrous, stipe 3–5 mm long, head ellipsoid. Seeds lenticular, 2.5–3.5 mm long, 1.6–2.1 mm wide, surface roughened.

PHENOLOGY.—Flowering and fruiting: November–May.

DISTRIBUTION AND HABITAT.—Endemic to Chiapas; plants occur in montane rain forests and evergreen cloud forests at elevations from 1500 to 2400 m.

PARATYPES.—MEXICO. **Chiapas**: Mpio. Villa Corzo, E base of Cerro Tres Picos near Cerro Bola along road SW of Colonia Agronomos Méxicanos, *D. Breedlove 24984* (DS, ENCB), *D. Breedlove & R. Thorne 30229* (DS, ENCB); SE side of Cerro Tres Picos and ridges near summit, *D. Breedlove 34374* (DS, ENCB); from Chicharras [= Las Chicharras, ca. 23 mi NE of Tapachula], *E. Nelson 3774* (GH, US).

Stenostephanus chiapensis appears most similar to *S. tacanensis* (Acosta & R. Fernández) T.F. Daniel, both of which differ from other Chiapan species of the genus by their flexuose-retrorse to flexuose to antrorse cauline trichomes, sessile to subsessile dichasia with mostly 1–3 flowers, lateral flowers of the dichasia (if present) sessile to subsessile, and corollas with the throat 8–16 mm long and lobes of the lower lip absent or less than 0.5 mm long. They may be distinguished by the following couplet:

Bracts lanceolate to ovate to ovate-elliptic, 2.5–11 mm long; corolla red, externally pubescent with flexuose eglandular trichomes 0.2–1 (–2) mm long, upper lip 4.5–8.5 mm long, lower lip 3–6.5 mm long; capsule pubescent with eglandular trichomes 0.05–0.2 mm long; pollen spheric ..... *S. tacanensis.*

Bracts subulate, 1.3–2.5 mm long; corolla red and yellow, externally glabrous or inconspicuously puberulent with trichomes less than 0.1 mm long (rarely with a few flexuose eglandular trichomes to 0.4 mm long), upper lip 2.5–4 mm long, lower lip not evident or less than 0.5 mm long; capsule glabrous; pollen compressed ..... *S. chiapensis.*

The holotype from Boquerón differs from the other Chiapan collections of *S. chiapensis* (all from Cerro Tres Picos) in the understory pubescence of the rachis.

The epithet is in reference to the Mexican state of Chiapas.

Stenostephanus glabrus (Leonard) T.F. Daniel, comb. nov.

Glockeria glabra Leonard in Lundell, Contr. Univ. Michigan Herb. 6:60. 1941. *Hansteinia glabra* (Leonard) D.N. Gibson, Fieldiana, Bot. 34:62. 1972. TYPE.—MEXICO. **Chiapas**: "Mt. Pasitar" [Mt. Paxtal], 4 August 1937, *E. Matuda S-212* (holotype: US!; isotypes: GH!, MICH!, NY!, US!).

Stenostephanus gracilis (Oerst.) T.F. Daniel, comb. nov.

Hansteinia gracilis Oerst. Vidensk. Meddel. Dansk Naturhist. Foren. Kjobenhavn 1854:143. 1855, non *Hansteinia gracilis* (Nees) Lindau (1893). *Hansteinia oerstedii* Lindau, Engl. Bot. Jahrb. 18:58. 1893, nomen illegit. (Article 63, International Code of Botanical Nomenclature, Greuter et al. 1988). TYPE.—COSTA RICA. **San José**: Mt. Jaris (fide pro-

tologue), prope San José (fide specimens), November 1846, *A. Oersted 10660* (holotype: C!; isotype: CAS!).

Stenostephanus latilabris (D.N. Gibson) T.F. Daniel, comb. nov.

Habracanthus latilabris D.N. Gibson, Fieldiana, Bot. 34:60. 1972. TYPE.—GUATEMALA. **El Quiché**: Cerro Putul, "Zona Reyna," 1640 m, 3 December 1934, *A. Skutch 1836* (US!).

Stenostephanus monolophus (Donn. Sm.) T.F. Daniel, comb. nov.

Glockeria monolopha Donn. Sm. Bot. Gaz. 27:439. 1899. *Hansteinia monolopha* (Donn. Sm.) D.N. Gibson, Fieldiana, Bot. 34:62. 1972. TYPE.—GUATEMALA. **Zacatepéquez**: Capetillo, 1500 m, November 1889, *E. Heyde & E. Lux 4556* (holotype: US!; isotypes: GH!, US!).

Glockeria moralesii Standl. Field Mus. Bot. 8:47. 1930. TYPE.—GUATEMALA. **Chimaltenango**: San Martín, 1800 m, November 1928, *J. Morales R. 1237* (holotype: F!).

Stenostephanus purpusii (Brandegee) T.F. Daniel, comb. nov.

Hansteinia purpusii Brandegee, Univ. Calif. Publ. Bot. 6:67. 1914. TYPE.—MEXICO. **Chiapas**: Cerro de Boquerón, August 1913, *C. Purpus 6842* (holotype: UC!; isotypes: BM!, GH!, NY!, US!).

Stenostephanus silvaticus (Nees) T.F. Daniel, comb. nov.

Habracanthus silvaticus Nees in A. DC. Prodr. 11:312. 1847. TYPE.—MEXICO. **Oaxaca**: Sierra San Pedro Nolasco, Talea, etc., 1843–1844, *C. Jürgensen 902* (lectotype, designated here: K!; isolectotype: CGE!).

Stenostephanus lindenii Baill. Bull. Mens. Soc. Linn. Paris 2:855. 1890, as "lindeni." TYPE.—MEXICO. **Chiapas**: entre San Bartolo et Pueblo-Nuevo, 1840, *J. Linden s.n.* (holotype: P!; probable isotypes, i.e., *Linden 181*: G!, K!).

Stenostephanus tacanensis (Acosta & R. Fernández) T.F. Daniel, comb. nov.

Hansteinia tacanensis Acosta & R. Fernández, Novon 3:221. 1993. TYPE.—MEXICO. **Chiapas**: Mpio. Union Juárez, SE side of Volcán Tacaná above Talquian, 23 November 1980, *D. Breedlove & F. Almeda 47714* (holotype: MEXU; isotypes: CAS!, US!).

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RESUMEN

Esperando un tratamiento taxonómico de las Acanthaceae del estado de Chiapas, México, se presentan novedades y discusiones taxonómicas sobre la familia en Chiapas. Se incluye *Barleria micans*, una especies del Nuevo Mundo, en *B. oenotheroides*, una especies anteriormente conocido solamente del oeste de Africa. Se reconoce *Blechum pyramidatum* como el nombre correcto para la especies muchas veces tratado como *B. brownei*. Se reconoce *Blechum grandiflorum* (≡ *Ruellia mirandana*) en *Blechum* antes que *Ruellia*. Se trata *Buceragenia* como especies varias de *Pseuderanthemum* con flores cleistógamas. Se trata *Tribliocalyx* como congenérico con *Chileranthemum* y se propone la combinación nueva, *C. pyramidatum*, para la especies anteriormente conocido como *C. violaceum* y *T. pyramidatus*. Se describen ocho especies nuevas de *Justicia* en Chiapas; se proponen dos combinaciones nuevas en *Justicia* para especies anteriormente tratado en *Neohallia* y *Chaetothylax*; y se provee un nombre nuevo para la especies anteriormente conocido como *Beloperone aurea* o *Justicia flava* D.N. Gibson. Se refiere *Teliostachya alopecuroidea* a *Lepidagathis* y se discuten las diferencias entre los dos géneros. La especies anteriormente conocido como *Ruellia longituba* no pertenece al tipo de este nombre; así es que se describe para ella la especies nueva, *R. maya*. Se trata *Habracanthus* (incluyendo *Hansteinia*) como congenérico con *Stenostephanus*; se describen dos especies nuevas de *Stenostephanus* de Chiapas; y se proponen siete combinaciones nuevas en *Stenostephanus*

para especies de Chiapas anteriormente tratado en *Habracanthus* y *Hansteinia.*

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